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IONOSPHERIC DATA IN JAPAN

FOR JANUARY 1967

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THE RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS
KOKUBUNJI, TOKYO, JAPAN

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THE RADIO RESEARCH LABORATORIES

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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} $W \cdot m^{-2} \cdot (c/s)^{-1}$ 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

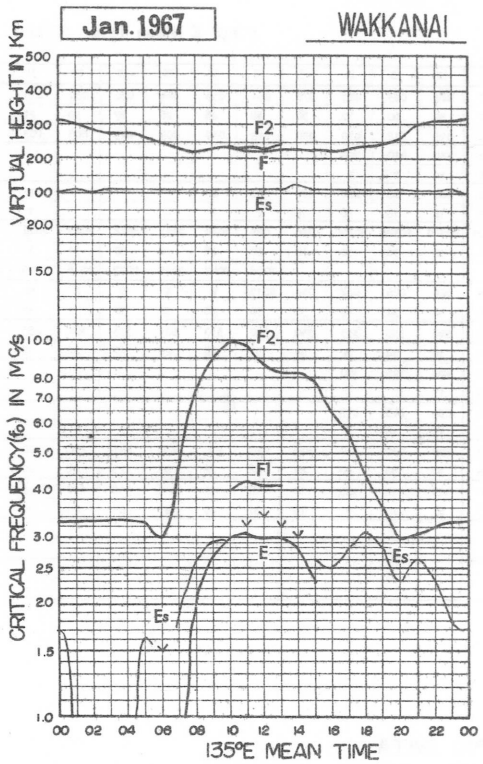
Importances

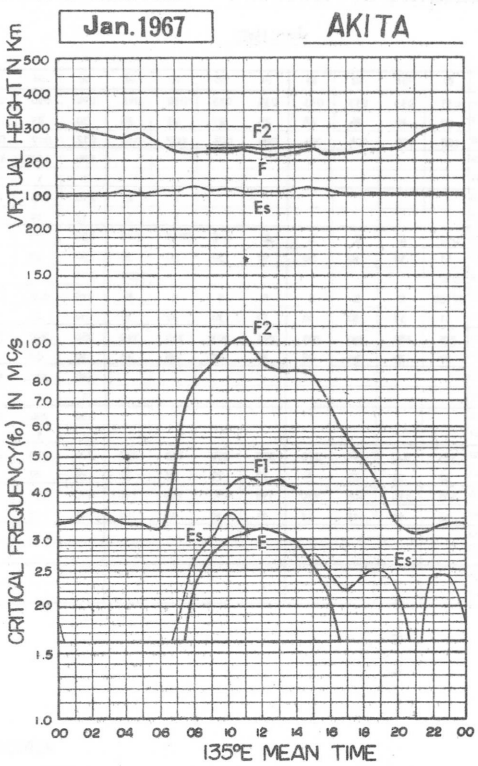
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

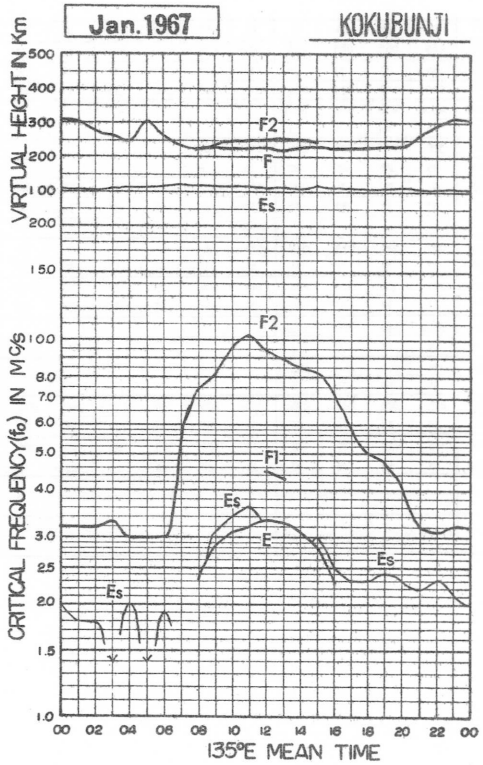
Besides, the time associated phenomena with SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record), are given in this table from interchange messages of IUWDS or measurements at Hiraiso.

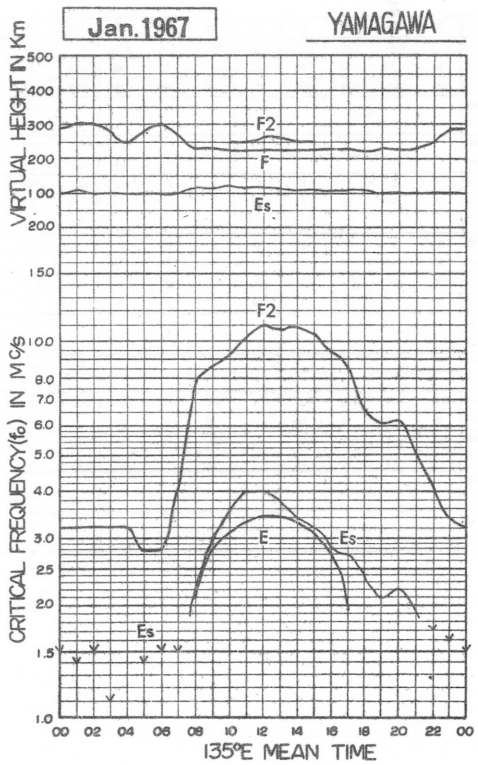
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Jan. 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	033	033	033	033	033	033	030	046	074	090	099	097	086	083	083	078	064	056	044	036	030	031	032	033
	CNT	27	27	24	28	25	27	28	28	30	29	31	31	30	30	30	30	30	28	26	27	30	27	26	28
	Q R	005	004	004	004	004	004	007	011	012	017	019	013	015	012	010	010	012	010	009	013	005	003	004	004
foF1	MED									370	410L	400L	420	410	410	390									
	CNT									1	1	7	16	11	7	3									
foE	MED							E	E	210	265	300	305	300	300	280	230	190	E				E		
	CNT							1	5	12	19	19	17	16	18	18	16	2	1				1		
foEs	MED	017	E	E	E	E	016	E015	019	026	029	G	E032G	E034G	E032G	E030G	026	025	J028	J031	J028	J023	J026	023	018
	CNT	31	31	30	30	30	30	30	30	30	29	31	31	30	30	30	30	30	28	30	30	31	31	31	31
	Q R	D010							D009	011								D018	D047	D035	D027	D028	D015	D015	E011
f-min	MED	E0128	E	E	E	E	E	E	E	018	020	021	025	028	026	022	019	E0178	E	E	E	E	E	E	E012S
	CNT	31	31	30	30	30	30	30	30	30	29	31	31	30	30	30	30	30	28	30	30	31	31	31	31
M (3000) F2	MED	275	285	290	295	295	305	315	340	350	340	340	340	340	335	335	340	330	330	325	325	300	285	280	280
	CNT	27	27	24	28	25	27	28	28	30	29	31	31	30	30	30	30	30	28	26	27	30	27	26	28
M (3000) F1	MED									390	390L	400L	400	400	395	390									
	CNT									1	1	7	16	11	7	3									
h'F2	MED									230	260	240	240	230	245	245									
	CNT									1	1	11	21	15	10	3									
h'F	MED	315	300	290	270	275	260	250	230	220	230	235	230	225	230	230	225	225	230	235	245	260	300	310	310
	CNT	30	30	29	30	29	27	26	27	28	29	29	29	30	30	30	29	28	26	25	25	28	29	30	31
h'Es	MED	105	110	105	110	110	110	110	110	110	110	110	110	110	110	125	110	110	110	110	110	110	105	105	110
	CNT	16	14	12	13	14	16	14	17	19	15	12	11	8	7	9	16	21	20	21	21	21	24	19	17
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Jan. 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	033	034	036	035	033	033	032	050	077	086	098	103	089	085	085	082	068	056	049	041	033	031	032	033
	CNT	30	30	30	31	30	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	28	28	29	30
	Q R	005	005	004	005	005	004	008	014	017	012	020	019	019	016	009	009	010	008	007	008	011	006	005	005
foF1	MED									320	340	410L	440L	420L	430	410	370L								
	CNT									1	1	5	5	8	13	8	3								
foE	MED								E	225	275	300	310	320	315	300	260	210	E						
	CNT								28	22	23	22	23	25	28	25	20	8	8						
foEs	MED	J018	E	E	E	E	E	E	J018	026	030	035	032	G	G	G	027	024	J022	J024	J025	J022	E	J024	J024
	CNT	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31
	Q R									010		010						013							
f-min	MED	E	E	E	E	E	E	E	E	017	018	019	019	021	021	019	018	017	E	E	E	E	E	E	E
	CNT	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31
M (3000) F2	MED	280	280	285	295	295	285	305	335	345	335	330	330	335	330	330	340	345	320	325	325	310	290	285	280
	CNT	30	30	30	31	30	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	28	28	29	30
M (3000) F1	MED									415	420	405L	385L	380L	395	380	395L								
	CNT									1	1	5	5	7	13	8	3								
h'F2	MED									220	240	240	240	235	240	240	240								
	CNT									1	8	31	30	31	31	23	6								
h'F	MED	305	300	290	280	270	280	255	230	220	225	225	230	225	220	225	235	220	225	230	235	240	270	295	305
	CNT	30	30	31	29	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	29	26	25	25	28
h'Es	MED	105	105	105	105	110	105	110	110	120	115	120	110	115	110	120	125	115	105	105	105	105	105	105	105
	CNT	19	15	12	11	8	12	11	17	24	22	28	18	11	10	14	17	24	21	21	23	20	15	21	22
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Jan. 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	032	032	032	033	030	030	030	057	075	081	096	102	094	089	085	082	072	058	050	047	041	032	031	032
	CNT	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	29	28	30	31	30
	Q R	004	006	005	006	004	004	007	009	015	018	017	015	024	018	011	007	014	010	010	012	014	008	004	006
foF1	MED									290L	350L		440L	450L	430L	420L									
	CNT									1	1		3	5	6	2									
foE	MED								175	235	285	310	320	335	330	315	280	230							
	CNT								1	23	23	24	24	24	23	23	17	10							
foEs	MED	020	018	018	E014B	020	E014B	019	G	G	031	034	036	G	G	G	030	025	023	023	024	023	J022	023	021
	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	D009	D010	D008	D010	D010	D011	D010											008	D014	014	012	D016	012	D009
f-min	MED	014	013	013	013	013	013	013	015	015	016	016	018	020	020	018	016	015	014	013	013	013	013	013	014
	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	275	280	290	290	305	275	295	340	345	340	325	335	325	320	325	330	340	330	325	325	315	290	280	275
	CNT	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	29	28	30	31	30
M (3000) F1	MED									400L	410L		390L	380L	390L	370L									
	CNT									1	1		3	5	6	2									
h'F2	MED									220	235	250	250	250	255	255	250	255							
	CNT									5	21	27	31	29	31	27	18	2							
h'F	MED	305	300	275	265	250	300	260	230	225	230	225	230	230	220	230	230	225	225	230	230	230	265	290	310
	CNT	30	30	29	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	28	30	30	30
h'Es	MED	105	105	105	110	110	110	115	120	120	120	120	120	115	115	110	115	110	110	110	110	110	105	105	105
	CNT	19	17	17	15	18	15	17	16	16	19	22	18	15	12	19	20	22	27	23	24	24	22	24	22
hpF2	MED	360	350	330	320	300	350	310	265	255	260	280	275	280	280	280	270	260	270	280	275	280	320	350	360
	CNT	30	29	30	30	31	31	31	31	31	31	31	31	31	31	31	30	30	31	30	28	27	29	28	30
ypF2	MED	055	050	055	055	055	055	055	050	045	050	050	050	055	055	055	050	050	050	050	050	055	060	055	055
	CNT	30	29	30	30	31	31	31	31	31	31	31	31	31	31	31	30	30	31	30	28	27	29	28	30

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Jan. 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	032	032	032	032	032	028	028	040	079	086	093	102	110	108	109	105	094	086	066	061	0623	050	040	034
	CNT	30	30	29	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30
	Q R	007	004	004	005	006	004	005	005	012	015	024	016	022	015	023	022	025	021	025	013	024	023	012	011
foF1	MED											390L	460	470L	460L	460L	450L								
	CNT											1	2	3	3	2	1								
foE	MED									210	280	310	330	340	340	330	310	270	195						
	CNT									27	25	23	20	20	24	25	27	25	12						
foEs	MED	E015S	E014S	E015	E011	E	E014	E015S	E015	022	030	035	040	040	038	034	032	028	J027	J024	021	J022	019	E017S	E016S
	CNT	30	30	30	30	30	30	30	30	30	27	28	30	30	30	29	30	30	30	30	30	30	30	30	30
	Q R		D006	D009				D005	D006				019	008					012	010	008	004	D007	D006	D005
f-min	MED	E015S	E014S	E012	E	E	E013	E015S	E015S	015	014	015	016	018	017	016	016	014	E014S	E015S	E015S	E015S	E015S	E015S	E015S
	CNT	30	30	30	30	30	30	30	30	30	27	28	30	30	30	29	30	30	30	30	30	30	30	30	30
M (3000) F2	MED	270	280	280	280	305	280	275	300	345	335	330	320	315	305	310	310	315	325	320	310	310S	295	280	270
	CNT	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	29	30	30	30	30	30	30	30
M (3000) F1	MED											410L	360	365L	370L	355L	335L								
	CNT											1	2	3	3	2	1								
h'F2	MED										245	250	250	260	265	260	250	250							
	CNT										4	24	29	30	29	28	26	9							
h'F	MED	290	300	300	280	250	U280	300	270	230	230	225	220	220	220	225	225	230	230	220	235	225	230	250	290
	CNT	30	30	29	30	30	30	30	30	30	29	28	30	29	30	28	29	30	30	29	30	30	30	30	30
h'Es	MED	100	105	100	100	100	100	100	100	115	115	120	115	115	110	105	105	105	105	105	100	100	100	100	100
	CNT	7	9	10	8	6	6	12	15	21	19	24	28	25	25	26	26	25	24	26	23	24	18	15	13
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

Jan. 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	030	031	030	030	033F	033	026	039	063	066	074	096	070	080	076H	076	059	040	042	030	027	026	028	033
2	030F	033	031	032	031	033	033	041	078	079	114	095	098	079	086	083	060	056	046	029	031	027	029	030
3	031	032	031	032	033	033	I028A	039	073H	071	090	086R	084	086	083	084	069	053	050	030	027	030F	F	028F
4	F	F	F	037F	F	036F	030	050	063	083	100	098	082	076	087	066H	063	050	050	041	030	I024A	027	028
5	030	030	031	031	032	033	032	045	068	080	086	080	081	083	087	078	057	050	044	036	030	026	030	030
6	031	033	034	032	033	034	027	044	063H	075	098	098	081	082H	084	074	064	060	044	036	035	033	034	030
7	030	031	033	035	034	034	032	046	081	085	087	098	087	092	C	C	C	C	C	C	033	031	031	032
8	032	030	032	032	031	033	I035A	045	081	123	123	102	U116R	107	094	101	096	072	065	051	048	046	043	045
9	046	036	I036A	037	038	I041A	044	A	103	I112R	126R	114	112	094	083	092	070	051	A	A	028F	F	F	F
10	F	F	C	C	C	C	C	C	C	C	108	100	085	079	083H	083	061	I056A	045	I036A	028	031	I037A	I034A
11	038	F	F	038F	F	A	A	A	076	A	106	091	095	103	084	082	065	060	034	I029A	I031A	030F	032F	030F
12	030F	030	031	035	036	029	027S	047	074	100	102	107	079	075	082	064	056	I053A	040	I031A	027	F	F	034F
13	034	035F	F	F	033F	030	I028A	043	070	091	100	084	076H	081	075	073	074	059	A	024	I025A	030	F	025
14	028F	030F	F	030	A	022	021	042	082	111	129H	123	121	101	106	110	091	075	059	057	050	052F	046F	F
15	F	024F	026F	026F	026F	020	I023A	043	075	104	103	089	087H	091	075	073	072	C	A	A	A	A	A	030
16	030	030	032	033	028	029	025	038	077	I088C	106	101	073	080	086	066	061	U061A	A	A	028	033F	033F	033F
17	033F	033F	031F	032F	030F	022	020	041	053	093	105	097	086	079	076	066	060	040	I040A	036	034	033	033	036
18	035F	036F	035	036	034	035	021	041	064	097	074	077	080	096	079	066	059	059	040	029	028	029	031	032
19	033	032	031	030	032	033	030	053	065	090	076	076	080	088	073	067	060	050	042	029	030	028F	030F	031F
20	033	034	033	033	035	033	027	046	070	103	086	077H	079	090	077	083	062	063	043	029	030	032	033	036
21	038	038	040	038	F	F	F	053	095	100	083H	106R	096	090	093	090	075	048	040	034	030	030	030	A
22	035F	035	034	032	038	030H	026	044	062	083	078	096	083	081	083	075	063	I050A	041	035	026	030	032	031
23	032	034F	F	033F	033F	033F	033	046	070H	101	081	078	090	081	082H	078	060	056	052	050	033	033	033	033
24	F	F	F	F	F	F	033	056	073H	090	103	094R	086	074H	085V	083	065	049	044	038	030	033	033	033
25	033	033	035	034	033	031	033	050	069	090	097	089	077	079	073	075	068H	057	I043S	043	033	031	032	033
26	033	034	033	031	032	U033S	028	053	087	089	096	094	C	C	077	078	060	050	046	040	034	A	029	032
27	031	034	035	035	030	035	033	055	072	087	083	105	086	081	090	076	064	051	045	032	032	I031A	030F	033F
28	033F	033F	033	033	033	034	035	058	075	093	098	101	095	094	099	083	072	073	070	045	031	031	034	034
29	036	036	037	037	036	035	036	064	084	098H	099	112	100	096	090	081	075	060	041	036	033	035	036	038
30	037	037	038	037	036	036	037	058	080	089	101	106	099	083	083	087	083	C	050	046	040	037	038	039
31	040	040	043	045	040	032	033	058	078	082	103	100	093	089	083	093	074	056	046	046	I040A	040	042	043
Count	27	27	24	28	25	27	28	28	30	29	31	31	30	30	30	30	30	28	26	27	30	27	26	28
Median	033	033	033	033	033	033	030	046	074	090	099	097	086	083	083	078	064	056	044	036	030	031	032	033
U.Q.	035	035	035	036	036	034	033	053	080	100	105	102	095	092	087	083	072	060	050	043	033	033	034	034
L.Q.	030	031	031	032	032	030	026	042	068	083	086	089	080	080	077	073	060	050	041	030	028	030	030	030
Q.R.	005	004	004	004	004	004	007	011	012	017	019	013	015	012	010	010	012	010	009	013	005	003	004	004

foF2

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

The Radio Research Laboratories, Japan

W 1

IONOSPHERIC DATA

Jan. 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											A	A	400											
2											400L	A	A	I380A										
3									370				A											
4											A	A												
5																								
6																								
7												420L	400L		C									
8												410L	A	B										
9											A	U440L												
10									C	C		410	U410L											
11											A	A												
12												420L												
13												400												
14																								
15											400	400												
16											U410L	430	410											
17											400	410	400											
18											400	400	410L	420L										
19											400L			U420L										
20												400			380									
21													440L	420L										
22												A	A	A										
23												400	400	400										
24											L	420												
25										410L	420L	L	420	L										
26												U430L	C	C										
27															390									
28														400	U410L									
29												450L	410											
30												440L	380											
31														410										
Count									1	1	7	16	11	7	3									
Median									370	410L	400L	420	410	410	390									
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

Jan. 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	230	255	265	295	300	295	260	215	S							
2							E	S	205	240	265	300	300	270	265	210	S							
3								140	S	B	B	B	B	B	B	B	B							
4								A	A	265	290	I310A	B	A	B	A	A							
5								A	210	I260A	300	A	B	B	B	A	A							
6								S	215	275	300	B	B	B	B	A	A							
7								S	I210R	255	290	300	300	290	C	C	C	C						
8								A	A	B	B	B	B	B	B	B	S					E		
9								A	A	A	A	A	300	295	250	210	S							
10							C	C	C	C	A	A	A	300	275	220	A							
11								A	A	A	A	A	A	300	270	215	S							
12								A	A	255	290	295	I305B	I295B	270	A	S							
13								A	A	250	285	300	300	I300B	I265B	225	S							
14								A	A	B	B	B	B	B	250	A	S							
15								A	A	B	B	B	B	B	B	B	A							
16								S	B	C	B	B	B	B	B	B	B							
17								A	A	A	B	B	B	B	B	B	A							
18								E	200	260	285	290	290	B	A	A	A							
19								S	I205S	250	285	300	B	295	265	225	B							
20								S	S	255	295	300	300	290	280	B	S	E						
21								E	A	A	A	R	B	B	B	B	S							
22								S	B	B	B	B	A	A	B	B	B							
23								S	225	275	A	B	B	A	B	230	S							
24								130	I210A	I270A	300	310	310	300	285	235	B	S						
25								A	C	275	300	310	305	300	290	245	S	S						
26								S	A	A	300	315	I310C	I300C	295	230	A	A						
27								A	A	280	300	315	315	300	285	255	S							
28								A	A	270	300	305	300	300	300	260	190	S						
29								S	220	280	300	305	315	315	300	250	A							
30								E	210	270	310	325	325	315	300	260	195	C						
31								S	225	285	310	320	325	315	300	270	A							
Count							1	5	12	19	19	17	16	18	18	16	2	1				1		
Median							E	E	210	265	300	305	300	300	280	230	190	E				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

Jan. 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	E017S	E	E	E	E	E	E	E016S	G	029	J051	J050	035	G	G	G	E018S	E016S	E015S	E	E018S	E015S	E	E017S
2	J023	E	E	E	E	E	E	E017S	G	035	030	045	045	J060	031	G	020	J031	E016S	J026	J020	J031	J025	J030
3	J031	E013S	J023	015	J023	J043	J070	025	026	037	J044	E036B	J045	E034B	E028B	E024B	E018B	E012S	E	E012S	E	E017S	E	E
4	E016S	E	J034	J023	J024	J030	J019	015	025	G	J043	J044	E033B	038	E030B	030	023	J026	J026	J023	J030	J030	J024	J031
5	J023	J030	E	E	015	J043	J031	025	G	040	G	034	E035B	E034B	E032B	038	J061	J075	J050	E016S	023	J030	J031	J021
6	J025	016	E	030	E	E	E	E016S	027	031	G	E037B	E034B	E034B	E029B	032	028	J030	J060	J043	J061	J041	J025	018
7	E015S	E	E	E	E	E	E	E016S	G	G	G	G	G	G	C	C	C	C	C	C	J023	J030	J030	015
8	J044	018	021	J025	J041	J038	J073	J045	051	E036B	E036B	E036B	044	E041B	E040B	044M	024	J070	E	E	E	E	E	E018S
9	015	038M	J048	J073	J063	J063	J038	J064	078M	J073	J103	039	034	032	036	J043	J055	J074	J053	050M	J071	J028	E016S	E
10	E	E	C	C	C	C	C	C	C	C	J075	040	040	033	031	040	036	J120	J043	J084	J075	J043	J053	J041
11	J030	023	J022	J023	J023	J043	J073	J053	J076	J140	J083	J060	J050	G	030	031	J036	J066	J065	J063	J073	J063	J041	J033
12	J023	J023	J023	021	J024	J083	J053	J053	033	028	025G	G	E035B	E030B	032	025	026	J070	J043	J055	025	J023	E016S	E013S
13	J023	013	E	E	E	017	038M	J033	031	G	G	G	G	E033B	E028B	G	E018S	J026	045M	J035	J063	J033	J024	J025
14	J031	020	020	J028	J073	J043	030	J065	024	E032B	E032B	E032B	E035B	E036B	030	J061	J065	J034	J053	J043	J043	J040	J033	E016S
15	020	E	E	E	E	015	J033	023	041	E027B	E029B	E033B	E036B	E040B	E033B	E030B	030	C	J075	J035	037M	038M	038M	J023
16	J023	016	022	014	J031	J031	J023	E016S	E023B	C	E036B	E036B	E036B	E036B	E038B	E027B	038	J083	J035	044M	J031	026	J031	031
17	025	J025	J030	J036	040	030	E018S	J033	051	J080	E030B	E031B	E033B	E033B	030	E026B	J040	J041	J100	J083	J023	J031	J030	J030
18	J031	E	E	E	E	E	E011S	020	032	029	G	G	G	E031B	030	031	036	E015S	E	E	E	E	E015S	E014S
19	E015S	E	E	E	E	E	E	E015S	E022S	G	G	G	E034B	G	G	G	E020B	J023	J043	J024	J033	J024	J023	015
20	E012S	016	E	E	E	E	E	E016S	022	G	G	G	G	G	G	E025B	E018S	E	020	020	E	E	E	E
21	E	E	E	E	E	E	E	025	031	030	035	032	E034B	E032B	E028B	E025B	E021S	023	021	020	J023	020	J038	J053
22	E	E	E	013	014	015	E	E015S	E025B	E034B	E034B	J065	043	J060	E034B	J074	051	J063	J050	J031	023	021	E	E
23	J040	J043	J038	J040	048	J024	015	E017S	G	G	032	032	E033B	031	E030B	G	025	J030	J031	J031	J024	033	016	025
24	E017S	031	J023	018	015	E017S	E	G	028	J043	G	G	G	G	G	G	E020B	E018S	E015S	J033	E	J025	E015S	E015S
25	E012S	E	E	E	E	E	E	020	E025C	G	G	G	G	G	G	G	020	E012S	J025	J041	E012S	J023	E017S	J023
26	E016S	E	J021	E	J021	J024	J023	E017S	J063	J053	031	033	C	C	G	036	025	J026	J031	E015S	J063	J038	J026	024
27	E014S	E	E	E	E	J021	J021	J023	039	J035	028G	G	G	G	G	036	J043	J043	J031	031	J027	J053	J023	J024
28	025	E	E	E	E	E	E	021	027	031	G	G	G	021G	G	020G	G	E016S	E	E	E015S	E	019	E
29	E016S	013	E	E	E	E	E011S	E016S	G	G	G	G	G	G	G	J043	J043	018	028	E012S	E	015	E	E012S
30	E012S	E	E	E	E	E	E	G	027	G	G	G	G	G	025G	G	G	C	E	E016S	E015S	023	024	E018S
31	E017S	E	E	E	E	E	E015S	018	G	G	G	G	G	G	G	020G	024	E015S	E	J023	J051	E	E016S	E015S
Count	31	31	30	30	30	30	30	30	30	29	31	31	30	30	30	30	30	28	30	30	31	31	31	31
Median	017	E	E	E	E	016	E015	019	026	029	G	E032G	E034G	E032G	E030G	026	025	J028	J031	J028	J023	J026	023	018
U.Q.	025	020	022	023	024	031	031	025	033	036	036	037	036	E034	E031	036	038	064	050	043	043	033	030	025
L.Q.	E015	E	E	E	E	E	E	E016	022	G	G	G	G	G	G	G	E020	E017	E015	E016	E015	E018	E015	E014
Q.R.	D010							D009	011								D018	D047	D035	D027	D028	D015	D015	D011

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

The Radio Research Laboratories, Japan

W 4

IONOSPHERIC DATA

Jan. 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							S		G	043	050	G				S	S	S		S	S		S
2	S							S		G	G	040	042	040	G		020	017	S	023	016	016	E	018
3	020	S	013	E	017	020	A	G	G	035	032	B	042	B	B	B	B	S		S		S		
4	S		018	012	016	018	016	015	023		040	040	B	035	B	023	020	020	021	020	026	A	018	018
5	018	018			E	E	022	020		035		034	B	B	B	036	042	043	017	S	018	016	015	017
6	018	012		016				S	G	G		B	B	B	B	027	024	016	020	022	E	024	016	014
7	S							S							C	C	C	C	C	C	015	018	020	014
8	018	012	019	019	019	020	A	032	023	B	B	B	042	B	B	041	022	018						S
9	013	030	A	E	012	A	031	A	072	029	042	037	G	G	G	042	050	046	A	A	018	016	S	
10			C	C	C	C	C	C	C	C	058	033	034	027G	025G	G	026	A	038	A	020	027	A	A
11	020	018	018	019	014	A	A	A	047	A	075	053	032		G	G	032	035	020	A	A	012	018	019
12	017	013	012	016	022	020	018	030	026	G	025G		B	B	G	025	022	A	027	A	022	017	S	S
13	015	012				016	A	018	023					B	B		S	026	A	020	A	017	018	020
14	016	014	017	021	A	013	017	027	024	B	B	B	B	B	G	027	036	016	019	020	020	020	017	S
15	015					014	A	020	040	B	B	B	B	B	B	B	023	C	A	A	A	A	A	018
16	018	015	020	E	020	018	016	S	B	C	B	B	B	B	B	B	038	A	A	A	017	017	020	018
17	017	019	020	020	019	019	S	020	047	036	B	B	B	B	G	B	040	034	A	026	017	018	020	020
18	020						S	G	G	G				B	030	030	032	S					S	S
19	S							S	S				B				B	016	016	015	017	016	016	012
20	S	015						S	G							B	S		015	014				
21								018	027	028	033	G	B	B	B	B	S	015	017	017	016	018	018	A
22				012	E	015		S	B	B	B	050	040	041	B	072	050	A	030	020	E	017		
23	E	024	019	020	020	020	015	S			031	G	B	031	B		025	022	020	020	020	018	016	020
24	S	022	018	018	015	S			026	033							B	S	S	030		E	S	S
25	S							018	C								E020S	S	020	E	S	S	S	020
26	S		013		013	016	017	S	025	030	023	027	C	C		G	020	017	016	S	017	A	020	S
27	S					017	016	018	026	023	020G					G	025	011	016	017	017	A	016	017
28	015							017	025	020				020G		018G		S			S		015	
29	S	E					S	S								037	033	017	015	S		015		S
30	S								G						021G			C		S	S	E	S	S
31	S						S	G								018G	020	S		018	A		S	S
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

Jan. 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	E017S	E	E	E	E	E	E	E016S	017	017	018	020	018	018	017	017	E018S	E016S	E015S	E	E018S	E015S	E	E017S
2	E017S	E	E	E	E	E	E	E017S	018	018	018	020	020	020	018	017	E012S	E	E016S	E	E013S	E	E	E012S
3	E	E013S	E	E	E	E	E	E	E021S	025	027	036	030	034	028	024	018	E012S	E	E012S	E	E017S	E	E
4	E016S	E	E	E	E	E	E	E	018	020	022	022	033	026	030	019	018	E	E	E	E	E016S	E015S	E
5	E016S	E	E	E	E	E	E	E	018	020	023	027	035	034	032	022	E016S	E	E016S	E016S	E	E	E	E
6	E012S	E	E	E	E	E	E	E016S	018	023	024	037	034	034	029	020	E012S	E	E	E	E	E	E	E
7	E015S	E	E	E	E	E	E	E016S	017	018	020	020	020	021	C	C	C	C	C	C	E	E	E	E
8	E	E	E	E	E	E	E011S	E012S	021	036	035	036	035	041	040	028	E017S	E012S	E	E	E	E	E	E018S
9	E	E	E	E	E	E	E	E	020	024	027	028	028	026	022	017	E016S	E012S	E	E	E015S	E	E016S	E
10	E	E	C	C	C	C	C	C	C	C	018	019	018	020	017	017	E	E019S	E018S	E	E	E	E015S	E013S
11	E	E	E	E	E	E	E	E	016	017	018	020	020	022	020	016	E016S	E013S	E015S	E012S	E	E	E	E013S
12	E016S	E	E	E	E	E	E	E	016	018	018	022	035	030	020	019	E018S	E	E	E	E	E	E016S	E013S
13	E	E	E	E	E	E	E015S	E	017	021	021	026	029	033	028	018	E018S	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	020	032	032	032	035	036	022	020	E018S	E015S	E	E	E	E	E	E016S
15	E	E	E	E	E	E	E	E	020	027	029	033	036	040	033	030	019	C	E	E	E	E	E	E015S
16	E	E	E	E	E	E	E	E016S	023	C	036	036	036	036	038	027	020	E	E012S	E	E011S	E	E	E
17	E	E	E	E	E	E	E018S	E	021	020	030	031	033	033	026	026	E017S	E	E015S	E012S	E	E	E	E015S
18	E012S	E	E	E	E	E	E011S	E	019	020	020	022	028	031	018	017	017	E015S	E	E	E	E	E015S	E014S
19	E015S	E	E	E	E	E	E	E015S	E022S	020	020	028	034	024	022	020	020	E	E	E	E	E	E015S	E
20	E012S	E	E	E	E	E	E	E016S	E018S	018	020	021	021	024	022	025	E018S	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	020	022	026	029	034	032	028	025	E021S	E	E	E	E	E	E015S	E
22	E	E	E	E	E	E	E	E015S	025	034	034	038	027	028	034	027	023	E016S	E017S	E	E	E	E	E
23	E	E	E	E	E	E	E	E017S	020	022	025	029	033	027	030	020	E017S	E012S	E	E	E016S	E017S	E	E018S
24	E017S	E	E	E	E	E017S	E	011	018	023	027	025	026	028	022	012	020	E018S	E015S	E	E	E	E015S	E015S
25	E012S	E	E	E	E	E	E	E	E025C	018	020	020	020	021	020	019	E	E012S	E	E	E012S	E016S	E017S	E017S
26	E016S	E	E	E	E	E	E016S	E017S	016	017	015	018	C	C	017	017	012	E	E	E015S	E013S	E	E016S	E016S
27	E014S	E	E	E	E	E	E	E	012	016	017	018	017	018	018	017	E012S	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	017	018	020	019	016	017	011	012	E016S	E	E	E015S	E	F	E
29	E016S	E	E	E	E	E	E011S	E016S	017	019	017	020	022	020	019	017	E	E	E	E012S	E	E	E	E012S
30	E012S	E	E	E	E	E	E	E	018	020	022	026	023	023	017	018	018	C	E	E016S	E015S	E	E016S	E018S
31	E017S	E	E	E	E	E	E015S	E012S	015	017	017	017	017	016	017	012	E	E015S	E	E	E014S	E	E016S	E015S
Count	31	31	30	30	30	30	30	30	30	29	31	31	30	30	30	30	30	28	30	30	31	31	31	31
Median	E012S	E	E	E	E	E	E	E	018	020	021	025	028	026	022	019	E017S	E	E	E	E	E	E	E012S
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

Jan. 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	270	275	275	280F	310	345	350	350	365	340	340	345	325	325H	340	370	320	355	325	315	285	295	265
2	265F	265	270	270	270	265	335	310	335	315	350	340	365	350	350	335	315	320	350	310	305	295	270	280
3	270	265	285	280	285	340	I340A	310	340H	350	355	345R	350	350	310	345	325	335	340	325	310	280F	F	285F
4	F	F	F	295F	F	315F	300	350	350	325	320	350	340	340	335	335H	350	315	335	350	335	I300A	315	285
5	275	285	275	285	275	255	315	340	350	340	360	320	320	360	345	320	330	305	325	325	320	285	290	285
6	275	265	270	290	295	315	305	335	330H	345	330	355	345	320H	345	345	345	335	325	305	315	285	305	300
7	275	275	275	285	285	305	305	335	350	355	345	345	325	325	C	C	C	C	C	C	305	270	270	260
8	265	255	265	315	275	320	I315A	310	305	335	335	335	U320R	320	320	305	325	265	315	275	270	285	255	290
9	305	315	I290A	270	265	I270A	315	A	350	I340R	330R	360	330	340	330	325	345	350	A	A	295F	F	F	F
10	F	F	C	C	C	C	C	C	C	C	345	330	340	330	310H	330	335	I330A	355	I320A	285	295	I280A	I280A
11	290	F	F	295F	F	A	A	A	355	A	340	345	325	340	335	340	335	345	355	I315A	I295A	300F	280F	280F
12	280F	270	290	315	335	295	295S	320	345	330	340	355	340	335	355	345	325	I335A	335	I335A	290	F	F	270F
13	285	285F	F	F	305F	310	I310A	330	345	340	350	345	300H	345	335	340	330	330	A	325	I305A	285	F	270
14	260F	270F	F	315	A	275	255	285	315	325	310H	315	310	310	310	320	310	315	270	285	260	300F	310F	F
15	F	285F	275F	290F	325F	265	I295A	315	335	325	330	355	300H	350	350	335	360	C	A	A	A	A	A	300
16	275	280	305	350	340	310	325	330	325	I345C	355	360	350	340	345	335	325	I340A	A	A	295	275F	275F	290F
17	275F	290F	295F	315F	300	325	320	340	350	335	350	340	350	340	335	345	305	325	I325A	335	300	290	305	310
18	285F	280F	310	315	295	335	335	345	360	350	340	350	340	335	355	350	335	340	320	330	295	285	290	280
19	280	280	290	295	295	320	335	360	355	365	340	330	335	345	340	345	330	350	340	330	305	300F	280F	275F
20	305	320	295	305	290	335	315	340	350	320	325	335H	350	350	325	340	325	340	350	345	275	280	275	295
21	285	290	300	295	F	F	F	320	355	370	305H	315R	345	335	325	345	345	330	335	320	320	300	270	A
22	275F	295	290	290	325	300H	335	340	355	350	335	335	360	320	330	355	350	I330A	325	335	300	280	260	270
23	280	265F	F	295F	310F	305F	310	335	315F	360	340	340	355	320	320H	335	330	330	310	345	305	290	295	275
24	F	F	F	F	F	F	310	355	315H	325	350	340R	340	320H	305V	355	325	315	325	340	300	275	275	275
25	290	295	300	320	295	290	325	340	350	335	330	360	350	335	330	335	325H	335	I325S	335	305	290	280	280
26	275	295	305	295	305	U335S	320	340	345	345	340	345	C	C	330	320	335	320	325	325	355	A	275	275
27	270	295	315	315	300	285	305	335	340	345	340	315	335	320	355	335	350	320	335	305	305	I290A	295F	275F
28	280F	305F	290	275	285	295	320	345	350	335	330	315	315	330	335	335	320	300	330	340	290	270	270	295
29	285	280	290	305	305	285	305	345	345	315H	335	330	330	335	335	345	335	320	320	325	305	285	285	290
30	295	295	290	295	280	280	325	345	355	335	325	335	335	325	310	320	335	C	300	310	300	305	285	285
31	275	290	280	320	325	270	305	345	350	340	340	315	325	305	335	345	335	315	310	325	I300A	280	275	280
Count	27	27	24	28	25	27	28	28	30	29	31	31	30	30	30	30	30	28	26	27	30	27	26	28
Median	275	285	290	295	295	305	315	340	350	340	340	340	340	335	335	340	330	330	325	325	300	285	280	280
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

W 7

IONOSPHERIC DATA

Jan. 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											A	A	400											
2											400L	A	A	I420A										
3									390				A											
4											A	A												
5																								
6																								
7												395L	400L		C									
8												410L	A	B										
9											A	U385L												
10									C	C		400	U390L											
11											A	A												
12												405L												
13												420												
14																								
15											400	400												
16											U400L	395	415											
17											400	400	400											
18											400	400	410L	385L										
19											415			U380L										
20												425			410									
21													385L	405L										
22												A	A	A										
23												425	400	400										
24											L	405												
25										390L	405L	L	410	L										
26												U395L	C	C										
27															385									
28														390	U390L									
29												380L	400											
30												390L	410											
31														395										
Count									1	1	7	16	11	7	3									
Median									390	390L	400L	400	400	395	390									
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

W 8

IONOSPHERIC DATA

Jan. 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											225	260	220											
2											250	230	230	225										
3									230				230											
4											240	230												
5																								
6																								
7												250	230		C									
8												240	260	245										
9											270	230												
10									C	C		230	225											
11											A	A												
12												240												
13												225												
14																								
15											230	240												
16											250	230	225											
17											235	235	235											
18											230	240	230	245										
19											225			240										
20												220			230									
21													245	260										
22												260	230	230										
23												225	260	245										
24											245	225												
25										260	245	240	230	250										
26												245	C	C										
27															250									
28														250	245									
29												255	245											
30												245	240											
31														240										
Count									1	1	11	21	15	10	3									
Median									230	260	240	240	230	245	245									
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

W 9

IONOSPHERIC DATA

Jan. 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	335	315	315	300	285	245	205	210	225	220	I240A	I235A	215	200H	225	225	210	250	235	245	275	265	350	360
2	355	310	330	300	310	260	225	255	240	235	240	A	A	A	240	230	225	250	225	I250A	260	285	310	335
3	355	340	325	300	300	250	I255A	260	230	210	230	240	I240A	240	235	225	245	215	225	235	250	300	310	310
4	325	300	310	280	290	260	260	225	210	200H	I235A	I230A	230	235	245	220H	220	260	250	235	295A	I325A	350	320
5	320	310	310	300	310	280	260	225	215	220	225	240	220	230	260	235	265A	I270A	225	235	250	300A	290	300
6	325	330	315	300	275	250	230	220	220	220	240	240	225	230H	235	225	215	235	250	280	250	325	275	265
7	300	305	325	275	280	250	250	245	240	220	225	225	230	240	C	C	C	C	C	C	260	315	390	345
8	360	380	370	260	345	290	A	300A	240	240	245	230	I240A	I245B	245	245A	250	255	230	280	270	255	375	295
9	270	A	A	315	340	A	A	A	A	220	A	240	225H	245	230	I240A	A	A	A	A	300	300	295	300
10	300	310	C	C	C	C	C	C	C	C	I240A	225	225	220	230	225	220	A	A	A	350	I325A	I325A	I355A
11	325	320	310	295	280	A	A	A	A	A	A	A	235	250	225	220	230	I240A	240	I275A	I295A	250	310	350
12	325	350	310	265	250	300	320	A	235	240	240	230	225	230	240	225	215	I250A	250	A	A	300	295	305
13	300	295	275	240	250	250	I270A	225	210	230	235	225	215H	245	240	240	220	225	A	I275A	A	310	300	465
14	395	355	250	220	A	350	A	305A	260	240	250H	245	260	240	260	245	250	225	285	275	310	270	235	235
15	A	345	310	270	225	420	I305A	245	240A	240	230	220	235	235	230	240	220	C	A	A	A	A	A	300
16	325	315	275	240	250	300	250	230	235	I230C	250	230	215	245	245	220	245A	I225A	A	A	300	350	350	300
17	315	300	300	320	285	A	E335S	245	I250A	255	235	230	230	245	230	220	250A	275A	I270A	260	255	310	315	290
18	340	295	260	245	260	225	250	230	215	240	225	210	230	240	230	215	235	225	215	225	285	300	300	310
19	300	300	260	260	265	250	250	230	210	230	215	220	240	240	230	220	220	210	230	230	295	250	310	315
20	275	270	275	260	295	210	235	220	210	235	220	205	200H	215	225	225	210	230	220	225	300	300	315	280
21	295	260	265	260	245	260	250	245	250	235	220H	245	230	230	235	230	225	215	220	260	250	300	300	I340A
22	300	270	290	300	245	220H	235	215	210	240	230	I240A	I225A	I235A	245	A	A	A	280A	250	275	335	330	325
23	310	360	300	300	300	300	260	230	220	240	220	220	205	215	225	225	225	235	255	240	260	285	295	335
24	340	360	325	270	280	250	255	220	210	245	240	225	220	225	230H	230	220	230	235	260A	260	270	300	310
25	300	295	270	250	250	260	250	245	215	240	230	230	225	225	230	240	235H	235	260	245	245	300	315	315
26	315	300	270	265	275	250	265	240	230	230	225	235	I230C	I230C	225	230	215	235	235	245	235	A	380	320
27	350	285	265	240	240	300	250	225	220	230	230	240	225	220	205	230	225	210	225	260	250	I310A	300	325
28	310	295	290	270	260	290	245	220	210	230	230	225	220	200	240	235	230	245	230	200	265	305	325	300
29	285	280	275	250	245	275	275	230	220	200H	240	230	220	240	230	225A	225A	220	225	250	250	300	290	300
30	280	275	260	260	290	285	245	220	215	225	240	225	215	225	235	245	225	I220C	225	245	250	270	295	300
31	305	300	275	240	210	310	250	225	210	220	240	230	225	215	220H	225	220	205	240	245	I285A	285	300	300
Count	30	30	29	30	29	27	26	27	28	29	29	29	30	30	30	29	28	26	25	25	28	29	30	31
Median	315	300	290	270	275	260	250	230	220	230	235	230	225	230	230	225	225	230	235	245	260	300	310	310
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

W10

IONOSPHERIC DATA

Jan. 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	E	E	E	E	E	E	S	G	150	120	120	115	G	G	G	S	S	S	E	S	S	E	E
2	105	E	E	E	E	E	E	S	G	120	125	120	120	120	130	G	120	135	S	130	110	110	110	110
3	110	S	105	105	115	110	110	120	140	120	115	B	115	B	B	B	B	S	E	S	E	S	E	E
4	S	E	110	110	105	105	105	105	105	G	120	115	B	105	B	110	110	105	105	105	100	105	100	105
5	105	110	E	E	110	110	110	110	G	110	G	110	B	B	B	110	110	110	110	S	110	110	110	110
6	105	105	E	105	E	E	E	S	165	155	G	B	B	B	B	110	115	115	110	110	110	110	110	110
7	S	E	E	E	E	E	E	S	G	G	G	G	G	G	C	C	C	C	C	C	110	110	105	110
8	110	110	115	110	110	110	110	110	110	B	B	B	110	B	B	115	125	115	E	E	E	E	E	S
9	140	120	115	115	110	110	110	120	110	110	105	110	140	135	125	120	115	110	110	110	110	110	S	E
10	E	E	C	C	C	C	C	C	C	C	105	105	105	140	130	120	115	110	110	110	105	105	100	100
11	100	100	105	105	105	110	110	110	105	105	105	105	110	G	150	125	115	110	110	110	110	105	105	105
12	105	105	100	115	115	110	110	105	105	175	105	G	B	B	125	105	115	110	110	105	105	105	S	S
13	105	100	E	E	E	110	110	110	105	G	G	G	G	B	B	G	S	110	110	110	105	105	110	110
14	105	120	115	110	110	110	110	110	110	B	B	B	B	B	130	115	110	110	110	105	105	105	105	S
15	105	E	E	E	E	105	105	110	110	B	B	B	B	B	B	B	110	C	110	105	105	105	100	100
16	105	100	105	110	110	115	115	S	B	C	B	B	B	B	B	B	115	115	110	110	110	105	110	110
17	110	110	110	110	110	105	S	110	110	105	B	B	B	B	120	B	110	110	110	110	110	105	105	105
18	105	E	E	E	E	E	S	150	140	165	G	G	G	B	100	100	100	S	E	E	E	E	S	S
19	S	E	E	E	E	E	E	S	S	G	G	G	B	G	G	G	B	110	110	110	110	110	110	105
20	S	100	E	E	E	E	E	S	125	G	G	G	G	G	G	B	S	E	115	110	E	E	E	E
21	E	E	E	E	E	E	E	125	115	115	120	125	B	B	B	B	S	105	105	105	105	100	110	110
22	E	E	E	105	105	105	E	S	B	B	B	110	110	110	B	105	110	105	105	105	110	105	E	E
23	115	110	105	100	100	100	100	S	G	G	120	115	B	110	B	G	100	100	100	100	100	100	100	110
24	S	110	105	110	100	S	E	G	115	110	G	G	G	G	G	G	B	S	S	110	E	110	S	S
25	S	E	E	E	E	E	E	110	C	G	G	G	G	G	G	G	100	S	110	110	S	105	S	110
26	S	E	100	E	110	110	110	S	105	100	100	105	C	C	G	125	115	110	105	S	110	105	105	100
27	S	E	E	E	E	110	110	110	110	110	105	G	G	G	G	120	115	115	110	110	105	105	110	110
28	105	E	E	E	E	E	E	110	110	110	G	G	G	105	G	105	G	S	E	E	S	E	105	E
29	S	100	E	E	E	E	S	S	G	G	G	G	G	G	G	115	110	110	105	S	E	105	E	S
30	S	E	E	E	E	E	E	G	130	G	G	G	G	G	100	G	G	C	E	S	S	105	105	S
31	S	E	E	E	E	E	S	160	G	G	G	G	G	G	G	105	100	S	E	110	110	E	S	S
Count	16	14	12	13	14	16	14	17	19	15	12	11	8	7	9	16	21	20	21	21	21	24	19	17
Median	105	110	105	110	110	110	110	110	110	110	110	110	110	110	125	110	110	110	110	110	110	105	105	110
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

W11

IONOSPHERIC DATA

Jan. 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										h	c	c	c											
2	f									c	c	c	c	c	h		c	f		f2	f	f	f	f
3	f2		f	f	f2	f	f2	c	h	c	c		c											
4			f2	f2	f	f2	f	1	1		c	1		1		1	1	f	f	f	f3	f	f	f
5	f	f			f	f	f2	1		1		1				1	1⁴	f4	f		f2	f	f	f
6	f2	f		f					h	h						1	1	f	f2	f3	f	f2	f	f
7																					f	f	f2	f
8	f	f	f2	f2	f2	f2	f3	13	1				c			c	c	f						
9	f	f5	f5	f3	f3	f4	f4	c2	12	1	1	1	c	c	c	c	c2	f4	f4	f3	f2	f2		
10											12	1	1	c 1	c 1	c 1	c 1	f2	f3	f4	f2	f3	f3	f3
11	f	f	f2	f2	f2	f3	f4	14	12	13	12	12	1		h	c	c	f2	f2	f2	f2	f	f2	f2
12	f	f	f	f2	f2	f4	f2	14	1	h	1				h	1	c	f4	f3	f3	f2	f2		
13	f	f				f	f5	12	1									f2	f4	f2	f3	f	f2	f
14	f	f	f	f2	f2	f2	f	12	1						c	1	12	f	f2	f2	f2	f2	f	
15	f					f	f3	1	1								1		f2	f3	f2	f3	f2	f
16	f	f	f	f	f2	f2	f										c	f6	f2	f2	f	f	f	f
17	f	f2	f2	f2	f	f2		1	1	1					c		12	f4	f6	f2	f	f	f2	f2
18	f							h	h	h					1	1	1							
19																		f	f	f	f2	f	f	f
20		f							c										f	f				
21								c	1	1	1	c						f	f	f	f	f	f2	f3
22				f	f	f						1	1	1		1	1	f4	f2	f2	f	f		
23	f	f3	f2	f2	f3	f	f				c	c		1			1	f	f	f	f	f	f	f
24		f	f	f	f				1	1										f3		f		
25								1									1		f2	f		f		f
26			f		f2	f	f2		1	12	1	1				c	1	1	f		f	f3	f2	f
27						f2	f	1	12	1	1					c	c2	f	f	f2	f	f3	f2	f2
28	f							1	1	1				1		1							f	
29		f														c	12	f	f			f		
30									h						1							f	f	
31								h								1	1			f2	f3			
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

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

IONOSPHERIC DATA

Jan. 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	029	031	032	033	033	041	038	047	061	072	081	086	J100R	073	077	088	064	046	036	039	033	I024A	025	028
2	028	030	029	030	031	033	FS	FS	066H	087	091	118	089	086	074	086	074	046	059	036	033	029	026	029
3	030	031	032	032	034	030	029	049	072H	082	084	089	086	082	082	084	081	057	056	044	031	026	029	031
4	031	031	032	032	033	033	035	057	066	074	099	107	096S	085	077	085	066	049	049	049	040	024	025	027
5	029	029	029	029	031	030	036	057	063	077H	091	091	084H	080	083	081	067H	046H	051	043	039	028	030	032
6	030	032	034	034	035	032	033	050	070	072H	096	108	081	076	085	082	066	057	052	041	038	031	030	I030A
7	027	030	031	032	033	033	034	054	072	087	087	086	092	090	088	082	073	052	051	044	033	034	032	035
8	032	031	031	036	026F	031	025	047	091	122	132	119	102	111	095	094	091	089	085	061	066	050	042	050
9	053	050R	037	I037A	I040A	046	048	I075A	I113R	119	117	I108R	094	093	096	088	082	061	037	036	A	A	A	FS
10	FS	040	039	043	040	033F	031	048S	091	115	116	119	102	085	086	077	071H	054	054	032	028	033	034	035
11	037	036S	036	036	036	034	032	050	074	087	105	102	089	099	102	079	066	061	053	029	029	030	I032R	I032A
12	035	034	036	036	036	025	027	I048A	079	092	112	099	081	083	076	071	061	052	042	040	026	028	029	033
13	033	035	036	034	036	036	026	050	066	088	097	090	079	076H	078	082	067	056	044	029	I029A	032	I032A	I031R
14	031F	F	FS	I024A	022	024	I034A	047	088	132R	122	122	096	106	093	107	092	073	063	061	050	056	049	039
15	028	031	034	037	F	027	026	047	077	104	131	103	084	081	086	069	069	061	046	025	025	I028A	032	032
16	029	030	033	032	031	027	024	046	074	086	106	104	086	071	086	080	059	061	046	035	026	031	I033A	034
17	035	033	033	029	031	027	022	043	063	079	117	116	087	083	083	073	056	051	036	042	C	C	C	036
18	033	036	036	035	031	033	026	045	061H	081	097	108	072	087	084	079	060	053	053	033	028	030	032	034
19	035	034	034	032	032	033	032	049	079	079R	078H	073	079	087	082	072	059	057	043	040	030	I032A	034F	I033R
20	034F	034	036S	032	034	031	030	047	068	084H	101	087	069H	081	086	083	061	055	051	037	029	034	034	036
21	035	036	037	039	043	036	040	055	083	086H	111R	076	110R	101	093	094	074	061	048	035	034	030	029	031
22	034	036	036	037	042	030	026	051	066	073	089	085	096	079	085	086	066	056	052	041	A	A	029	030
23	031	032	032	033	032	030	027	052	078	089	104	089	080	089	083	079	068	056	053	054	037	036	036	036
24	036	036	036	036	036	037	035	063	084	074	098	112	086	085	073	080	077	058	042	043	031	031	032	031
25	033	036	036	030	030	033	034	053	073	076	106	092	079	079	076	072	061	057	052	042	043	033	034	035
26	036	037	036	036	035	037	033	062	082	100	097	106	086	075	079	077	066	054	046	046	039	025	029	032
27	033	035	I036C	037	027	029	032	061	077	077	088	100	096	084	086	077	070	056	046	042	030	029	033	033
28	033	034	036	036	033	034	034	061	078S	081	101R	116	103	097	091	092	075	068	070	062	031	033	034	037
29	037	038	041	041	033	033	035S	I061R	078	087	093	102	107	106	088	083	070	060	046	041S	044	039	039	039
30	040	039	039	040	039	036	041	I066R	085	089	097	110	104	089H	082	085	085	056H	049	051	046	I038R	040	040
31	I041R	042	045	051	031	032	036	I070R	085	078	087	104	102	087	089	078	074	061	046	043	046	I042A	041	041
Count	30	30	30	31	30	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	28	28	29	30
Median	033	034	036	035	033	033	032	050	077	086	098	103	089	085	085	082	068	056	049	041	033	031	032	033
U.Q.	035	036	036	037	036	034	035	061	083	089	111	108	100	090	088	086	074	061	053	044	040	034	034	036
L.Q.	030	031	032	032	031	030	027	047	066	077	091	089	081	080	079	077	064	053	046	036	029	028	029	031
Q.R.	005	005	004	005	005	004	008	014	017	012	020	019	019	010	009	009	010	008	007	008	011	006	005	005

foF2

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 1

IONOSPHERIC DATA

Jan. 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											L	L	400	L										
2											L	L	L	L										
3											L	L	L	L	L									
4											L	440L	L	420L	L									
5											L		L	L										
6											LH	L	L	L	L									
7											L	L	L	L										
8											L	L	L	L										
9											A	A	L	A	L									
10											L	A	L	L	L									
11											L	L	L	420										
12											L	L	E460S	380L										
13											L	L	L	L										
14											L	L	400L	L	L									
15										L	L	L	L	L	L									
16											L	L	L	430	380									
17											390L	L	L	L	L									
18										L	L	L	L	400	380	330L								
19										L	410L	410	430	430L	400	L								
20											L	L	L	L	400									
21											A	L	410	440L	L									
22											L	L	L	L	L									
23										L	L	400L	L	400	L									
24											400	L	L	L	L									
25											L	L	L	400	L	L								
26											L	L	410L	430H	L	370L								
27										L	L	470L	460L	L	420									
28										L	410L	460L	470L	460	420L									
29									320	340	L	L	L	470L	430L	370L								
30										L	430	L	LH	450	L	L								
31											L	L	L	L	420L									
Count									1	1	5	5	8	13	8	3								
Median									320	340	410L	440L	420L	430	410	370L								
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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								E	215	I250A	290	I300A	I310A	300	280	A	B							
2								E	A	270	295	310	I310A	305	I290R	I240A	B							
3								E	B	B	A	A	A	300	295	250	B							
4								E	210	275	305	315	325	330	305	A	E							
5								E	205	270	I305A	320	I330A	I325R	290	255	A							
6								E	225	270	I295A	I305A	I310B	305	I275A	245	A							
7								E	220	I255A	I285A	305	315	310R	295	260	B							
8								E	I230A	265	A	B	B	B	B	B	A							
9								E	210	275	295	I300A	310	I310A	305	A	A							
10								E	A	A	A	A	A	A	A	A	A							
11								E	220	275	300	315	320	320	300	265	A							
12									A	I270A	300	A	S	315	300	A	E							
13									A	275	A	A	A	310	295	255	A							
14									225	275	I295A	I310A	310	315R	A	A	A							
15								E	230	275	300	310	320	310R	R	A	A							
16								E	I225A	I265A	295	310	I315B	I310R	295	B	A							
17								E	A	A	I290A	I305A	I310A	I310A	295	255	A							
18								E	I220A	I280A	305	310	315	310	285	255R	B							
19								E	205	280	300	310	310R	310	295	250	190							
20								E	I220R	I265A	300	310	320	320	300	260	A							
21								E	220	A	A	A	315	310	I300R	265	A							
22								E	225	A	A	AS	A	A	A	A	A							
23								E	A	A	A	A	315	320	A	A	A	E						
24								E	A	A	A	320	330	325	305	260	A	E						
25								E	235	285	310	325	335	325	310A	I280R	220	E						
26								E	230	A	A	325	335	335	I320A	290	A	E						
27								E	A	290	315	330	340	330	305	275	230							
28								E	230	I275A	I300A	320	340	320	305	275	215	E						
29								E	240	295	320	335	340	340	320	290	210	E						
30								E	255	305	325	345	350	340	310	290	205	E						
31								E	235	285	320	I325R	335	330	315	275	A	E						
Count								28	22	23	22	23	25	28	25	20	8	8						
Median								E	225	275	300	310	320	315	300	260	210	E						
U.Q.																								
L.Q.																								
Q.R.																								

foE

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 3

IONOSPHERIC DATA

Jan. 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	J013E	E	E	E	E	E	J018	J016E	023	030	034	J042	J038	G	032	029	022	J023	J032	J028	E	J039	J019	J018
2	J018	J016E	J016E	E	E	J014E	J015E	J016E	023	G	036	036	J036	G	G	027	E018B	E	E	J019	J015E	J016E	J054	J024
3	E	J016E	J018	E	E	J042	J030	J051	026M	031	J045	034	033	G	G	G	020	E	E	J018	J018	J014E	J018	E
4	J044	J043	J033	J026	J024	J024	J024	J021	023	J038	035	G	G	030G	031	J038	J051	J024	J047	J030	J025	J030	J027	J020
5	E	E	E	E	E	E	E	E	J025	025G	035	G	035	G	G	G	J025	J024	J029	J037	J021	E	E	J019
6	E	E	J019	J018	E	J023	E	E	026	G	032	034	E037B	G	031	G	020	E	J020	E	E	E	J013E	J078
7	J033	J025	J023	E	E	E	E	E	G	029	J032	G	G	G	G	028	021	E	E	E	E	E	J036	J023
8	J018	E	J020	J039	J019	E	E	E	033	G	032	E036B	E034B	038	E033B	027	J030	J035	J026	J018	J043	J013E	J019	J013E
9	E	J018	J019	J043	J049	J022	J016E	J104	J082	033	J042	J045	035	J045	J025G	031	027	E	J025	J029	J038	J032	J047	J028
10	J035	J030	J018	J018	E	E	J053	J033	J033	J085	J069	J066	041	J034	037	032	J021	J022	J024	J018	J015E	J017	J021	J024
11	J018	J015E	E	J019	J018	J017	J018	J014E	G	G	J029G	J032	J025G	028G	028G	028	J033	J045	J050	J035	J022	J047	J036	J035
12	J025	J023	E	E	E	J026	J025	J052	J035	J078	J055	J042	E046S	G	032	031	J035	J049	J083	J032	J026	J032	J045	J025
13	J023	J018	J015E	J013E	E	E	J019	J032	J039	J028	J044	J053	032	G	G	028	022	J020	J021	J048	J088	J076	J044	J035
14	J026	J019	E	J046	J026	J072	J070	J042	025	030	033	032	G	G	J035	J088	J083	J054	J029	J045	J025	J024	J018	J018
15	E	E	E	E	E	J022	J018	E	G	G	J023G	G	G	G	G	028	J038	J068	J038	J053	J029	J045	J024	J032
16	J028	J020	J017	J018	E	J013E	J013E	J017	J036	J039	035	033	E033B	G	G	E027B	030	J025	J018	J016E	J025	J030	J039	J040
17	J022	J017	E	E	E	E	J019	J025	J036	J079	034	036	033	032	G	G	021	J023	J029	J036	C	C	C	J030
18	J039	J032	J019	J016E	E	E	E	E	028	J039	J028G	G	G	G	G	G	E022B	J023	J056	J031	J030	J013E	J026	J028
19	J018	E	E	E	E	J018	E	E	026	G	031	G	G	G	G	G	G	E	E	J018	J033	J044	J051	J053
20	J035	J019	J016E	E	E	E	E	E	027	032	G	G	G	G	G	G	024	J017	E	J029	J041	J038	J026	J015E
21	E	E	E	E	E	J013E	E	019	J033	J052	J046	038	G	G	G	G	J038	J019	J018	J025	J019	E	E	J034
22	J035	J024	J024	J034	J024	J028	E	E	G	J048	J044	J039S	J046	036	J035	J044	027	J034	J026	J035	J062	J053	J030	J024
23	J018	J060	J029	J018	J020	J025	J024	J018	026	J043	J052	J042	G	030G	035	J060	J047	J025	J025	J024	J018	E	E	E
24	E	J026	J034	J024	J024	J022	E	E	024	033	034	G	G	G	G	025G	023	E	E	E	J022	J026	J024	J026
25	J013E	E	E	E	E	E	E	J018	026	025G	036	037	G	034	032	G	G	E	E	E	E	E	E	E
26	E	E	E	J016E	E	E	E	E	J026	030	036	J025G	G	G	034	031	J029	J043	J028	J023	J014E	J015E	J025	J040
27	J034	J033	C	E	J015E	E	E	J024	J027	J033	G	G	G	G	G	G	G	J018	E	E	E	E	E	J023
28	J023	E	E	E	E	E	E	J031	G	032	J038	J036	J035	031G	033	G	G	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	J018	G	G	G	G	G	G	G	032	J035	020	J024	J049	J023	E	E	E
30	J017	E	E	E	E	E	E	019	029	G	036	G	G	G	G	G	G	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	022	G	G	033	G	G	G	024G	G	026	J050	J023	J032	J039	J053	J045	E
Count	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31
Median	J018	E	E	E	E	E	E	J018	026	030	035	032	G	G	G	027	024	J022	J024	J025	J022	E	J024	J024
U.Q.	028	024	019	018	018	022	019	025	033	039	042	038	034	G	032	031	033	034	029	035	030	038	036	032
L.Q.	E	E	E	E	E	E	E	E	023	G	032	G	G	G	G	G	020	E	E	E	E	E	E	E
Q.R.									010		010						013							

foEs | Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Jan. 1967 | f_bEs | 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		023	030	033	033	033		031	028	022	020	030	022		A	E	E
2	E								023		034	035	034			027	B			E			E	019
3			E			018	E	018	026	031	039S	034	U033R				020			E	E		E	
4	E	021	E	E	E	E	E	E	023	022	034			030G	025	028	022	018	035	024	E	018	019	E
5									019	023G	033		034				020	E	E	025	E			E
6			E	E		E			025		032	034	B		U031R		020		E					A
7	E	018	E							029	032					028	021						E	E
8	E		E	018	E				032		U032R	B	B	038	B	027	023	019	020	017	028		E	
9		E	E	A	A	E		A	064	033	042	043	035	042	025G	030	024		E	027	A	A	A	E
10	022	021	E	E			E	029	030	040	035	048	039	034	035	032	U021R	018	021	E		E	E	E
11	E			E	E	E	E				019G	029	024G	027G	026G	028	028	036	036	018	E	E	021	A
12	022	E				E	E	A	028	037	023	034	S		032	031	027	048	028	021	022	E	022	019
13	E	E					E	024	022	019	034	035	032			027	022	E	018	018	A	024	A	019
14	E	E		A	E	E	A	024	022	029	032	032			032	050	021	E	E	E	E	E	E	E
15						E	E				023G					028	023	028	020	019	020	A	E	024
16	018	E	E	E				E	035	038	034	033	B			B	025	023	E		E	E	A	022
17	019	E					E	E	031	039	033	035	033	032			021	E	023	018	C	C	C	019
18	019	E	E						028	034	021G						B	019	046	026	025		E	018
19	E					E			025		031									E	E	A	019	020
20	018	E							026	029							022	E		E	022	019	E	
21								E	029	046	045	038					022	E	E	021	E			021
22	021	E	E	023	019	023				047	035	039S	042	034	034	042	024	019	023	033	A	A	018	E
23	E	024	022	E	E	022	019	E	026	031	033	033		026G	032	039	036	E	022	022	E			
24		E	022	E	E	E			024	032	033					024G	023				E	E	E	E
25								E	026	022G	035	037		034	032									
26									019	030	034	023G			033	G	024	027	E	020			E	022
27	024	022	C					018	027	025								E						E
28	E							018		031	032	029	026	028G	025									
29								E								030	019	018	E	021	E			
30	E							E	028		034													
31								020			033				024G		024	031	E	019	018	A	018	
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bEs | Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Jan. 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	E	017	017	017	017	018	017	018	017	017	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	017	017	018	018	018	022	018	018	018	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	022	028	027S	029	029	024	023	018	018	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	017	018	020	020	025	022	019	018	E	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	017	017	019	025	021	021	021	020	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	017	018	024	025	037	022	022	022	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	017	017	018	019	021	021	018	018	017	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	017	024	027	036	034	032	033	025	017	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	018	021	025	025	023	022	018	018	017	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	E	E	017	018	018	018	017	018	018	018	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	017	017	017	017	019	018	018	017	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	017	017	018	018	E046S	018	024	019	E	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	018	E	018	018	022	020	019	018	017	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	018	019	020	019	021	022	019	017	017	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	018	018	019	023	021	026	023	020	017	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	018	024	023	024	033	023	023	027	018	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	017	019	023	024	023	024	023	019	017	E	E	E	C	C	C	E
18	E	E	E	E	E	E	E	E	017	018	017	018	018	024	021	021	022	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	017	018	019	022	024	020	021	018	E	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	E	018	018	018	018	019	019	019	017	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	018	018	019	021	023	023	021	022	018	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	019	025	025	026S	024	019	021	019	018	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	017	019	020	021	020	018	017	017	E	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	017	018	022	019	022	021	019	017	017	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	017	017	018	018	017	018	019	018	017	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	017	017	017	018	019	019	018	017	017	E	E	E	E	E	E	E
27	E	E	C	E	E	E	E	E	017	017	017	018	017	018	018	018	017	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	017	017	018	018	019	017	017	017	017	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	017	017	019	019	021	021	018	017	017	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	017	018	017	018	017	017	017	017	017	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	E	E	017	018	018	018	017	018	017	E	E	E	E	E	E	E
Count	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31
Median	E	E	E	E	E	E	E	E	017	018	019	019	021	021	019	018	017	E	E	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Jan. 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	265	265	275	275	285	300	315	360	360	345	335	325	J335R	315	330	350	345	335	340	335	325	I275A	250	255
2	265	275	250	260	260	275	FS	FS	335H	340	330	345	330	335	325	315	335	300	340	340	320	325	260	260
3	270	260	265	275	300	325	315	330	320H	350	345	335	325	330	340	310	345	315	325	335	325	275	255	270
4	260	265	280	285	290	275	290	355	365	310	320	340	325S	335	320	315	345	310	310	325	325	335	255	265
5	260	275	275	265	275	275	345	360	360	345H	345	355	335H	315	340	335	330H	305H	310	315	320	290	285	300
6	270	265	275	285	300	295	315	330	355	290H	330	315	345	340	330	345	335	330	330	320	325	295	295	I285A
7	265	260	260	285	280	280	310	335	350	345	335	330	330	335	320	350	345	325	315	335	305	280	255	260
8	260	235	235	305	315F	265	250	310	330	320	310	320	305	325	320	300	300	315	320	310	305	295	250	275
9	290	305R	300	I275A	I265A	285	300	I320A	I315R	320	325	I320R	335	325	325	340	350	350	340	340	A	A	A	FS
10	FS	285	290	315	340	280F	280	305S	325	320	320	315	335	330	330	350	340H	335	330	340	260	280	285	280
11	285	285S	290	290	295	295	295	305	340	325	335	325	325	320	325	355	345	325	345	315	310	315	I285R	I275A
12	265	270	275	305	345	270	295	I315A	340	325	325	335	335	345	345	355	345	325	325	325	290	295	275	275
13	280	295	295	295	315	310	315	320	340	340	330	335	340	320H	335	345	355	330	340	320	I310A	305	I290A	I265R
14	260F	F	FS	I285A	250	255	I280A	300	305	315R	310	295	300	300	290	300	315	310	300	295	285	305	305	315
15	290	260	280	295	F	300	290	340	350	325	335	350	345	345	350	365	345	340	365	260	260	I275A	285	290
16	285	275	290	320	325	275	315	325	350	350	340	350	350	345	330	350	345	315	330	325	280	275	I245A	265
17	305	305	310	280	310	300	325	350	350	345	335	345	335	345	340	355	335	320	335	330	C	C	C	335
18	280	285	275	320	295	305	315	355	315H	330	335	355	345	335	345	350	350	320	355	330	305	295	280	290
19	290	300	310	285	285	305	330	325	360	350R	345H	335	340	330	345	350	335	340	335	330	325	I295A	295F	I280R
20	280F	290	310S	320	305	310	305	340	355	310H	360	355	330	320	330	340	350	315	335	345	285	270	275	270
21	285	290	290	300	305	285	290	335	345	330H	345R	335	345R	330	325	330	345	330	335	320	310	295	290	260
22	265	280	270	290	315	320	310	335	345	355	345	340	335	335	330	340	335	315	310	335	A	A	260	255
23	265	280	285	290	295	285	295	330	360	335	345	345	325	335	325	335	355	320	330	335	325	300	305	295
24	270	270	285	285	285	300	295	335	355	345	325	330	335	340	320	340	345	350	305	325	330	285	285	275
25	280	280	310	315	315	280	290	345	335	330	330	315	330	350	345	325	355	320	325	315	315	285	295	280
26	285	280	285	295	280	315	305	340	340	335	325	330	340	320	335	340	360	315	310	325	335	265	270	260
27	265	280	I325C	335	270	265	290	345	340	330	335	330	325	340	330	335	340	320	320	350	310	290	285	290
28	280	285	285	300	290	280	320	345	350S	305	315R	315	325	315	305	325	330	315	320	345	300	280	275	285
29	280	280	305	325	315	280	305S	I325R	335	345	330	325	310	325	335	335	350	330	315	310S	310	285	275	290
30	290	285	285	295	290	285	325	I335R	355	340	315	310	325	320H	335	320	340	305H	295	305	330	I290R	285	285
31	I285R	290	300	330	335	265	295	I335R	350	355	320	310	315	320	325	320	335	315	305	315	305	I310A	295	295
Count	30	30	30	31	30	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	28	28	29	30
Median	280	280	285	295	295	285	305	335	345	335	330	330	335	330	330	340	345	320	325	325	310	290	285	280
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F2 Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Jan. 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											L	L	400	L										
2											L	L	L	L										
3											L	L	L	L	L									
4											L	385L	L	400L	L									
5											L		L	L										
6											LH	L	L	L	L									
7											L	L	L	L										
8											L	L	L	L										
9											A	A	L	A	L									
10											L	A	L	L	L									
11											L	L	L	365										
12											L	L	S	395L										
13											L	L	L	L										
14											L	L	375L	L	L									
15										L	L	L	L	L	L									
16											L	L	L	385	375									
17											380L	L	L	L	L									
18										L	L	L	L	400	380	415L								
19										L	405L	405	370	385L	385	L								
20											L	L	L	L	375									
21											A	L	370	385L	L									
22											L	L	L	L	L									
23										L	L	380L	L	395	L									
24											420	L	L	L	L									
25											L	L	L	400	L	L								
26											L	L	415L	395H	L	380L								
27										L	L	375L	390L	L	380									
28										L	395L	385L	380L	395	400L									
29									415	420	L	L	L	375L	405L	395L								
30										L	405	L	LH	415	L	L								
31											L	L	L	L	405L									
Count									1	1	5	5	7	13	8	3								
Median									415	420	405L	385L	380L	395	380	395L								
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F1 Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Jan. 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											245	240	240	230										
2											240	240	240	235										
3											225	235	240	240	240									
4											250	250	245	240	240H									
5											240		240	220H										
6											260	230	235	235	255									
7											225	225	235	235										
8											255	245	235	240										
9											240	250	230	245	235									
10											235	240	235	235	230									
11											230	235	235	260										
12											250	230	230	240										
13											255	240	240	230										
14											255	260	240	255	265									
15										250	245	225	225	235	240									
16											245	225	235	225	250									
17											255	230	225	240	245									
18										265	235	230	230	260	240	240								
19										230	240	240	250	255	240	240								
20											235	230	230	240	255									
21											265	235	260	240	245									
22											240	240	240	235	245									
23										235	235	235	235	260	240									
24											240	240	230	250	225									
25											260	235	225	240	240	240								
26											235	260	230	235	240	240								
27										235	240	250	255	250	285									
28										240H	245	265	245	250	240H									
29									220	230	240	245	255	260	245	235								
30										245	240	250H	245	240	245	250								
31											230	260	255	235	260									
Count									1	8	31	30	31	31	23	6								
Median									220	240	240	240	235	240	240	240								
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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	330	340	320	300	305	250	230	215	210	225	240	230	205	210	235	240	215	210	I250A	240	230	A	E390E	360
2	350	290	340	340	335	315	220	220	205H	230	225	240	225	230	220	240	220	215	230	220	255	230	E340E	350A
3	320	320	325	305	285	255	240	220	220H	220	I230A	230	210A	225	230	235	225	230	225	225	235	E310E	325	305
4	315	340A	290	295	285	270	265	230	210	195H	220	245	225	230	220	240	205	210	I240A	245	220	245A	A	E340E
5	335	325	320	325	325	325	230	210	200H	200H	215	235	230	210	240	240	210	200	245	250	230	255	290	270
6	295	350	330	290	275	265	250	240	215	205	190H	240	230	215	240	235	215	225	290	230	235	240	270	I295A
7	285	340	325	300	290	280	255	230	215	235	215	210	230	215	235	210	215	215	230	220	245	290	330	340
8	350	E400E	380	265	250	325	E390E	250	230	230	240	235	225	I230A	230	245	240	240	235	240	270	240	285	305
9	255	250	260	A	A	300	260	I260A	245	230	I230A	I240A	240	I230A	225	240	225	205	215	I240A	A	A	A	330
10	290A	310	290	245	225	315	300	275	240	225	220A	I230A	I235A	225A	I225A	230	210	210	240	215	290	300	300	310
11	305	300	280	280	280	280	275	240	215	200H	230	225	225	230	235	225	215	250	225	230	270	240	I300A	I315A
12	I325A	340	315	260	225	340	280	I250A	230	240	230	230	I220S	210	235	225	215	I235A	250	230	I255A	270	A	320
13	305	290	275	275	255	240	245	240	210	230	240	230	230	230	240	235	220	210	215	245	I270A	I275A	A	A
14	360	355	210	A	E420E	E390E	A	265	250	245	240	230	230	240	245	260	230	215	240	240	250	240	230	230
15	280	290	300	260	E260E	255	300	230	220	205	230	225	215	230	240	220	225	220	215	A	A	A	285	I270A
16	290	305	290	250	235	315	240	230	230	230	245	230	225	215	205	230	215	235	210	235	E290E	330	A	A
17	280	260	265	E270E	250	245	E300E	255	230	235	225	235	215	220	215	225	215H	215	240	235	C	C	C	250
18	300	290	280	235	255	270	240	205	215	225	230	230	205	205	210	235	220	240	250A	I245A	I295A	290	315	310
19	295	295	260	280	285	260	240	240	235	225	220	215	210	240	230	240	220	230	225	240	245	I275A	290A	I305A
20	320	300	280	240	255	260	250	230	215	220	215	225	215	205	205	230	215	225	230	225	A	A	320	305
21	290	295	290	270	235	280	285	225	240	230	I235A	225	255	220	215	230	220	215	220	230	240	260	275	I310A
22	I330A	300	320	I305A	255	I250A	260	225	220	230	225	230S	I225A	210	235	230	220	240	230	A	A	A	350	340
23	325	I320A	I305A	280	275	300	300	220	220	225	230	195	225	205	235	240	225	240	245	230	230	265	280	285
24	300	310	325	300	290	275	260	230	220H	215	195	190	215	230	210	230	225	215	235	230	235	290	300	310
25	300	295	260	240	290	285	250	220	225H	230	235	225	220	200	220H	215	215	230	230	245	230	275	280	290
26	305	300	300	280	280	255	260	240	225H	230H	225	205H	210	205H	215	225	225	230	240	230	225	E310E	315	A
27	A	A	I265C	240	E300E	315	275	230	220H	205H	235	230	215	235	205	235	225	220	225	225	250	280	300	295
28	315	325	300	280	275	300	250	225	220	195H	210	220	220	210	210	245	235	240	230	220	240	280	330	300
29	305	310	280	240	245	310	275	235	210	225	190H	205H	200H	245	225	230	230	230	225	260	245	280	290	285
30	285	280	290	280	260	290	250	230	230	235	220	220	215H	220	225	240	235	210	215	240	230	260	290	300
31	300	300	280	235	200	320	260	245	220	225	195H	230	235	220	210	220	220	240	220	255	250	I265A	290	290
Count	30	30	31	29	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	29	26	25	25	28
Median	305	300	290	280	270	280	255	230	220	225	225	230	225	220	225	235	220	225	230	235	240	270	295	305
U.Q.																								
L.Q.																								
Q.R.																								

h'F | Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 10

IONOSPHERIC DATA

Jan. 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	105	E	165	160	160	110	105	G	145	130	130	100	100	100	E	105	100	100
2	100	E	E	E	E	E	E	E	120	G	130	125	120	G	G	140	B	E	E	100	E	E	110	105
3	E	E	115	E	E	115	115	110	115	140	120	125	115	G	G	G	155	E	E	100	105	E	105	E
4	120	110	110	120	110	105	105	105	140	100	125	G	G	105	105	105	105	110	100	100	105	105	105	100
5	E	E	E	E	E	E	E	E	110	105	115	G	110	G	G	G	115	110	110	110	105	E	E	100
6	E	E	105	100	E	100	E	E	160	G	130	105	B	G	130	G	140	E	110	E	E	E	E	105
7	105	100	105	E	E	E	E	E	G	155	110	G	G	G	G	150	140	E	E	E	E	E	110	110
8	110	E	120	105	115	E	E	E	145	G	105	B	B	130	B	120	115	110	100	105	105	E	105	E
9	E	105	105	105	110	110	E	125	120	130	130	130	140	130	105	130	120	E	110	110	105	105	100	100
10	100	100	100	105	E	E	125	110	110	105	105	100	130	100	130	125	105	105	105	105	E	100	100	100
11	100	E	E	110	105	110	110	E	G	G	105	105	105	105	105	140	115	110	105	105	105	105	100	100
12	100	100	E	E	E	115	110	105	100	100	100	100	S	G	155	140	110	110	105	105	105	105	100	100
13	100	105	E	E	E	E	110	105	110	110	105	105	120	G	G	130	110	105	105	105	105	105	105	100
14	100	110	E	110	110	105	105	105	105	160	105	110	G	G	125	110	110	105	105	105	140	105	100	105
15	E	E	E	E	E	110	105	E	G	G	105	G	G	G	G	125	110	105	105	130	105	105	110	105
16	105	105	110	110	E	E	E	125	110	105	145	145	B	G	G	B	110	105	110	E	105	105	105	105
17	105	115	E	E	E	E	135	130	120	115	125	130	130	130	G	G	115	115	110	105	C	C	C	105
18	100	100	100	E	E	E	E	E	155	115	105	G	G	G	G	G	B	105	110	110	110	E	105	105
19	105	E	E	E	E	100	E	E	155	G	140	G	G	G	G	G	G	E	E	110	110	110	105	105
20	105	105	E	E	E	E	E	E	145	140	G	G	G	G	G	G	100	100	E	110	105	110	105	E
21	E	E	E	E	E	E	E	140	125	115	115	115	G	G	G	G	100	105	105	100	105	E	E	105
22	105	110	105	105	105	105	E	E	G	120	120	115	115	110	110	105	105	105	105	105	105	105	105	110
23	105	105	105	115	105	100	105	105	160	120	115	115	G	105	105	100	100	110	100	100	105	E	E	E
24	E	110	105	105	105	105	E	E	140	115	115	G	G	G	G	105	130	E	E	E	105	105	105	105
25	E	E	E	E	E	E	E	105	150	105	145	135	G	140	130	G	G	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	115	150	130	105	G	G	130	140	120	115	110	105	E	E	120	100
27	100	100	C	E	E	E	E	115	115	110	G	G	G	G	G	G	G	110	E	E	E	E	E	110
28	105	E	E	E	E	E	E	115	G	115	115	110	110	105	110	G	G	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	110	G	G	G	G	G	G	G	120	120	115	110	110	105	E	E	E
30	105	E	E	E	E	E	E	110	155	G	135	G	G	G	G	G	G	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	160	G	G	150	G	G	G	105	G	140	105	115	110	105	105	110	E
Count	19	15	12	11	8	12	11	17	24	22	28	18	11	10	14	17	24	21	21	23	20	15	21	22
Median	105	105	105	105	110	105	110	110	120	115	120	110	115	110	120	125	115	105	105	105	105	105	105	105
U.Q.																								
L.Q.																								
Q.R.																								

h'Es

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 11

IONOSPHERIC DATA

Jan. 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							f2		h2	h	h	12 h	12		h2	h2 1	h2	f2	f2	f2		f3	f2	f
2	f								c2		h2	h2	c			h				f			f2	f
3			f			f2	f2	12	c	h	c	h	c				h			f	f		f	
4	f2	f3	f2	f	f2	f	f2	1	h	1	h			1	1	12	1	f	f3	f3	f	f2	f	f
5									1	1	c		1				c	f	f2	f4	f			f
6			f	f		f			h		h	1			h		h		f					f3
7	f2	f	f							h 1	c					h	h2						f2	f
8	f2		f2	f3	f2				h2 1		1			h		c	c	f2	f	f2	f4		f	
9		f	f	f7	f5	f2		c4	c4	h	h2	h	h	h	1	h2	h2 12		f	f4	f3	f4	f4	f
10	f2	f2	f	f			f2	13	c4	12 h2	12	12	h2 1	1	h 1	h	1	f	f2	f		f	f2	f2
11	f			f2	f2	f2	f				1	12	1	1	12	h	c3	f4	f3	f4	f2	f2	f3	f2
12	f	f				f2	f2	f4	13	12	1 h	1			h	h c	12	f3	f4	f3	f6	f3	f2	f2
13	f	f					f2	f3	c	1	12	1	c			h	c	f	f3	f2	f7	f4	f3	f3
14	f3	f		f2	f2	f2	f5	f4	1	h 1	1	1			h	13	c2	f2	f2	f2	f2 f2	f2	f	f2
15						f2	f2				12					c	c	f3	f3	f f3	f3	f4	f2	f4
16	f2	f	f	f				c	c2	12	h	h					c	f2	f		f2	f2	f3	f3
17	f2	f					f2	c	c2	c2	h2	h	h	h			c2	f	f3	f3				f3
18	f3	f2	f						h c	c2	1							f	f3	f2	f3		f	f2
19	f					f			h 1		h									f	f	f3	f2	f2
20	f2	f							h2	h 12							1	f		f	f3	f2	f2	
21								h2	h2	c2	c2	c					1	f	f	f2	f			f2
22	f2	f2	f	f3	f	f3				c	c	c2	c	c	1	12	1	f2	f2	f2	f3	f2	f3	f
23	f2	f3	f3	f2	f2	f3	f2	1	h	c	c2	c		12	12	12	1	1	f2	f	f			
24		f2	f2	f2	f2	f2			h2	c	c					12	h2 1				f	f2	f2	f2
25								1	h	1	h 1	h2		h	h									
26									1	h	h2	1			h2	h	c2	c2	f2	f2			f2	f3
27	f2	f2						c2	c2	1								f						f
28	f2							c2		c2	c	12	1	1	1									
29								1								c2	c	c2	f	f2	f			
30	f							c2	h		h													
31								h2			h				12		h	14	f2	f2	f2	f5	f2	
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 12

IONOSPHERIC DATA

Jan. 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	029	027	028	030	030	031	043S	057	069R	067	078R	091	084	077	U078R	079	U077R	057	038	041	042	029	024	025
2	027	030	025	027R	028	032	043	U055F	U065R	095R	U090R	102	096	089	080	081	089	050	049R	050	047	036	027	027
3	028	029	027	029	032	027	028	056	064	087	078	087	094	088	084	081	086	070	057	058	045	030	032	034
4	032	032	031	028	029	028	032	058	U077R	068	096	100	097R	095	078	081R	084	063	045	052	046	031R	024	025
5	026	027	027	027	029	027	033	053	J074R	074	084R	J100R	080	085	091	091	U075R	057	045	055	044	029	029	031
6	026	029	029	031	033	029	030	054	069	U075R	085	111	094	089	078	083R	069	059	052	048	044	030	030	029
7	A	027	030	030	030	030	032	057	U075R	076R	097	092	094	095	093	090	067	057	U053R	051	033	030	032	035
8	034	032	032F	047F	038	024	023	058	095R	112	110	127	110	103	084	088	089	093	093	067	061	049	045	049
9	052	044	043	042	042	046F	058	086	132	139	115	096	108	097	097	A	081	065	045	U034R	A	027	031	032
10	034F	037	038F	U041R	029	026F	028	053	088	116	114	118	109	J101R	085	080	072	057	046	039	026	032	031	032
11	034	033	032	033	033	031	031	056	U078R	094	094R	098R	U098R	098R	J104R	082	068	054	060	032	029	029	028	030
12	031	032	032	035	027	025	025	054	U078R	085	105	114	082	080	075	074R	061	049	U044S	A	031	028	I026A	028
13	030	031	031	031	032	030	026	055R	073R	083	094	095	090	075	083	081	066	056	045S	030	027	033	029	028
14	030	031	045	017	017F	021F	025	U053R	082	128	132	108	091	J104R	086	094	091	080	075S	065	058	056	043	028
15	029	028	031	033F	025	030	027	056	074S	093	131	122	078	078	089	076	059	059	059	A	A	027	030	033
16	027	027	029	028	024	023	026	057	062	086	097R	105	087	070	077	085	066	054	054	036	A	028	026F	033
17	033	029	029	030	029	025	025	047	066	076R	104	121	095	093	088	080	060	054	041	040	037	032	030F	033
18	032	035	035	034	024	025	030	048	068	074	J104R	107	095	063	094	081	065	054	048	038	031	032	032	035
19	034	037	035	029	031	030	030	052R	074	095	090	080Z	083	081	089	076R	062	055	048	040	026S	031	029	A
20	030	032	035	030	030	029	030	056	065	079	087	098	074	074	078	085	068	053	049	043	032	033	I032A	034S
21	034	035	033	035	039	031H	035	062S	093	J101R	084	098	093	112	099	091	077	068	054	042	032	030	031	030
22	030	A	I032A	032	032	027	030	058	072	079	093	092	089	085	082	087	072	060	059	048	035	A	028	029
23	031	032	A	034	029	027	026	056	069	075	098S	095	083	087	083	083	070	056	053	053	043	037	040S	039S
24	035	035	035	036	033	034	036	067	089	080	083	115	117	J102R	085R	087	083	068	043	045	040	030	032	031
25	033	033	033	030	028	030	029	058	072	080	092	102	083	077	081	076	068	058	055	047	046	038	033	032
26	033	032	034	034	032	034	034	U065S	085	086	103	109	096	080	075	077	074	057	048	047	039	028	029	031
27	033	033	036	033	027	027	029	U065S	082S	081	099S	097	U097S	091	082	082	072S	064	050	044	033	033	032	032
28	030	032	033	038	031	031	035	063	075S	080	099	116	114	097S	095	U098S	082	066	066	061S	042	037	035	036
29	036	038	041	040	030	031	032	067	U080S	084	095	105	108	112	093	083	070	059	051	046	046	039	036	036
30	036	035	036	037	035	032	036	069	093	080	109	104	115	093	087	082	U080S	060	055	048	044	038	034	038
31	037	041	044	043	032	032	034	070	084	080	083	096S	108	102	086	081	072	067	050	047	049	046	039	039
Count	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	29	28	30	31	30
Median	032	032	032	033	030	030	030	057	075	081	096	102	094	089	085	082	072	058	050	047	041	032	031	032
U.Q.	034	035	035	036	032	031	034	063	084	094	104	111	108	098	091	087	081	065	055	052	046	037	033	035
L.Q.	030	029	030	030	028	027	027	054	069	076	087	096	084	080	080	080	067	055	045	040	032	029	029	029
Q.R.	004	006	005	006	004	004	007	009	015	018	017	015	024	018	011	007	014	010	010	012	014	008	004	006

The Radio Research Laboratories, Japan

foF2

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

K 1

IONOSPHERIC DATA

Jan. 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										L	L	L	L	L	L									
2										L	L	L	L	L	L	L								
3										L	A	L	L	L	L									
4									L		L	L	L	L										
5									L	L	L	L	L	L	440L									
6										L		L		R	L									
7											L	L	L	L	L	L								
8										L		L	L	L	L									
9												L	L	L		A								
10										L	L	L	L	L										
11										L	L	L	L	A			A							
12										L	A	L	B	L	L									
13										L	L	L	L	L	L	L								
14										L	L	L	410L	L	L	L								
15											L	L	L	400L	L									
16											R	L	L	420L	410L	L								
17											L	L	430L	L	L	L								
18										L	L	L	L	420L	L	L								
19										L	L	L	L	L	L	L								
20											L	L	L	L	L	L								
21										L		L		L	L	L	L							
22									290L	350L	A	L	L	L	L	L								
23										L	L	L	L	460L	L	L								
24									L	L	L	420L	L	L	L	L								
25										L	L	L	450L	L	L	L								
26											L	460L	L	L	L									
27											L	L	470L	L	L	L								
28										L	L	L	L	L	L	L								
29									L	L	L	L	L	440L	L	L								
30											L	L	460L	L	L	L								
31										L	L	440L	L	450L	L									
Count									1	1		3	5	6	2									
Median									290L	350L		440L	450L	430L	420L									
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

Jan. 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	230	265	305	320	315	A	A	A	A							
2								A	240	295	310	325	330	325	305	245	215							
3								A	A	A	I300A	315	A	I320R	320	280	A							
4								A	205	275	310	315	335	335	A	A	A							
5								B	235	280	320	I335B	335	I330R	315	275	A							
6								B	230	285	310	I320R	I330R	325	320	A	A							
7								B	210	290	310	I320A	325	I325R	320	270	195							
8								B	235	280	310	325	345	I335B	300	A	A							
9								A	240	290	305	320	335	335	320	275	A							
10								B	240	285	315	330	340	I330R	315	285	A							
11								B	220	290	310	325	340	A	A	285	A							
12								A	A	A	A	320	I330B	330	I315R	280	A							
13								B	225	285	I315R	A	R	A	310	A	A							
14								A	A	A	I310R	I315A	325	R	A	265	220							
15								B	210	280	310	I320A	325	I320A	305	A	A							
16								A	240	R	A	A	320	I320R	310	A	A	B						
17							B	A	A	A	305	I320R	330	320	305	R	A	A						
18							B	B	R	A	310	320	320	315	300	A	230	B						
19							B	B	A	A	310	320	330	330	315	270	235	B						
20							B	B	240	295	A	325	335	330	310	270	215	B						
21							B	A	220	280	A	A	A	A	A	A	A	B						
22							B	B	B	280	305	A	A	330	320	280	A	B						
23							B	B	240	295	A	A	340	340	I315A	A	A	B						
24							B	B	235	280	A	315	A	A	A	A	A	B						
25							B	B	235	295	320	340	335	330	315	285	230	B						
26							B	B	235	290	I310R	330	335	330	320	I300R	A	B						
27							B	B	A	A	A	A	A	R	A	A	225	A						
28							B	B	I240A	285	305	A	A	A	A	A	A	B						
29							B	B	235	305	325	340	345	345	325	295	235	B						
30							B	B	265	295	325	350	350	345	320	300	245	B						
31							B	175	245	295	325	340	350	335	320	300	A	B						
Count								1	23	23	24	24	24	23	23	17	10							
Median								175	235	285	310	320	335	330	315	280	230							
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

Jan. 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	E016S	E012B	E014B	E014B	E013B	E013B	E013B	018	G	031	G	G	034	035	035	035	031	J024	J028	J041	027	E014B	E015S	E014B
2	E014B	018	E014B	017	024	024	J028	017	G	G	033	G	G	G	G	G	G	023	030	029	E014B	E014B	E015S	023
3	E014B	E014B	E013B	E011B	E013B	E011B	E013B	J025	031	032	J041	J041	034	G	G	G	021	022	020	018	020	022	018	E014B
4	E012B	E013B	J025	J023	E014B	023	023	023	G	G	G	035	G	G	J055	J038	J051	J060	017	E017S	J021	021	018	022
5	021	022	018	E014B	018	E014B	E012B	E016B	G	G	030G	E039B	G	G	G	G	J036	019	J019	J025	E014B	E017S	020	018
6	E014B	E013B	E014B	E014B	J024	024	020	E015B	026	G	039	G	G	G	034	030	024	E014B	E014B	E015S	E013B	E012B	018	019
7	J061	J041	E014B	J025	J024	E014B	E013B	017	G	G	G	J040	029G	G	G	029	024	E014B	024	021	030	J040	E014B	E015S
8	E013B	E013B	E014B	E012B	J029	E012B	E013B	018	031	034	034	036	038	E036B	036	031	J029	023	023	024	E012B	E014B	J030	E014B
9	E013B	E014B	019	019	022	024	E014B	021	029	J051	039	036	040	G	041	J094	J040	J025	J035	J032	036	030	023	021
10	E013B	018	021	E012B	E012B	E012B	023	023	031	G	J042	037	G	G	036	031	J025	J024	J019	J039	J027	J021	J024	023
11	017	E013B	E011B	E013B	E013B	023	023	E014B	G	031	G	G	G	J051	035	032	J061	J042	J025	J024	J029	J037	J026	J024
12	021	024	J027	J024	022	J029	J029	J028	J041	J051	J088	037	E052B	043	G	032	J030	J036	J053	J084	J038	J025	J041	J024
13	J023	024	E013B	018	020	E013B	023	020	028	G	G	036	037	J043	033	035	024	J038	J037	J024	023	022	024	018
14	019	E012B	E013B	020	020	024	J051	J062	J052	J051	G	J038	G	G	032	J028	G	J024	J029	023	022	J022	022	018
15	020	020	018	E012B	E013B	020	020	E015B	G	023G	G	J051	030G	034	G	034	023	J029	J029	J043	J042	J043	J035	J025
16	021	E014B	021	021	021	E013B	023	020	023G	G	J040	035	G	G	G	J031	J026	021	E013B	024	035	J043	J036	019
17	022	E012B	022	E012B	E013B	E012B	019	021	J031	J051	029G	G	G	G	G	G	023	J027	025	J029	J026	J025	J024	J025
18	J024	J023	J020	020	E013B	E012B	E011B	E016B	G	J029	J027G	G	G	023G	J028G	032	G	E016B	E011B	J085	J054	J025	J051	J025
19	J024	023	J024	J022	J027	024	E014B	E016B	J027	J041	034	G	028G	027G	G	G	G	J018	J025	J021	J029	J030	J033	J041
20	J032	J029	J025	J024	023	024	021	E013B	032	036	J043	G	G	G	G	G	G	017	E013B	J029	J029	J025	J060	J027
21	030	025	020	E013B	021	020	J029	021	028	036	J052	J058	J041	J041	J049	J051	030	J029	023	023	023	J024	J028	J024
22	J054	J052	J042	J041	J025	J021	E015B	G	E025B	G	J051	J060	J042	031G	027G	023G	J042	J029	J032	J054	J030	J041	J029	J021
23	J022	J040	J065	J027	020	E014B	024	023	G	032	J036	J043	032G	031G	035	J041	J027	J025	E015S	E014B	E014B	J024	J025	023
24	J023	021	E013B	J054	J029	J025	024	E015B	G	031	036	035	J041	J043	J038	J030	J030	J025	J024	020	J026	J021	023	023
25	020	E014B	018	020	E013B	E013B	E014B	E017B	G	032	036	037	037	G	G	G	G	019	E014B	E014B	E014B	E014B	E013B	E012B
26	E014B	E013B	E013B	E013B	022	023	018	E015B	G	G	G	G	G	G	030G	G	J025	019	023	J031	023	E013B	E011B	E016S
27	E015S	020	019	E013B	E013B	E013B	E015B	E015B	J026	J035	J035	036	035	G	035	J030	G	021	E014B	E013B	023	022	022	018
28	019	023	019	E012B	E012B	E014B	E013B	E015B	J025	032	034	J037	035	036	037	J029	J038	023	023	E013B	E013B	E013B	E014B	E014B
29	E015S	E014B	E014B	E012B	E011B	E013B	E014B	E014B	G	G	G	G	G	G	035	G	G	G	E013B	E017S	021	J021	021	E015S
30	021	018	E013B	E013B	020	020	E013B	E015B	G	035	035	G	G	G	G	G	G	022	020	019	018	E013B	E015S	E013B
31	E014B	E013B	E013B	E012B	E011B	E014B	020	022	029	G	036	G	G	G	J029G	G	J039	020	J030	J051	J042	J030	J051	J036
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	020	018	018	E014B	020	E014B	019	G	G	031	034	036	G	G	G	030	025	023	023	024	023	J022	023	021
U.Q.	023	023	021	022	023	024	023	021	029	035	039	038	036	034	035	032	031	027	029	032	030	030	030	024
L.Q.	E014	E013	E013	E012	E013	E013	E013	G	G	G	G	G	G	G	G	G	G	019	E015	018	018	E014	018	E015
Q.R.	D009	D010	D008	D010	D010	D011	D010											008	D014	014	012	D016	012	D009

The Radio Research Laboratories, Japan

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

K 4

IONOSPHERIC DATA

Jan. 1967 | f_bE_s | 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	S	B	B	B	B	B	B	017		030			033	033	031	029	021	020	015	027	017	B	S	B
2	B	E	B	E	015	015	015	017			033							015	021	016	B	B	S	016
3	B	B	B	B	B	B	B	017	026	032	040	038	E034R				E021R	016	E	014	E	015	016	B
4	B	B	E	E	B	E	016	018				035			040	038	033	039	E	S	018	016	017	E
5	E	E	E	B	E	B	B	B			030G	B					025	016	016	023	B	S	E	E
6	B	B	B	B	017	016	E	B	026		038				034	029	023	B	B	S	B	B	E	E
7	A	025	B	017	017	B	B	017				038	029G			029	024	B	017	016	017	016	B	S
8	B	B	B	B	015	B	B	018	030	033	E034R	E036R	038	B	034	029	026	019	015	E	B	B	025	B
9	B	B	E	E	014	015	B	015	026	040	038	035	038		041	A	027	016	E	027	A	022	016	E
10	B	E	E	B	B	B	E	022	027		038	037			035	030	024	016	017	034	020	019	015	015
11	E	B	B	B	B	E	E	B		030				046	E035R	031	060	040	024	017	017	016	021	017
12	E	E	016	016	E	015	E	021	028	034	068	033	B	042		030	030	027	034	A	025	016	A	016
13	016	015	B	E	E	B	E	020	027			036	037	038	032	029	023	034	037	016	E	013	E	E
14	E	B	B	E	E	015	021	040	028	034		037			032	027		016	020	016	E	016	E	E
15	016	016	E	B	B	E	E	B		023G		040	030G	034		032	022	023	024	A	A	020	025	016
16	016	B	E	E	E	B	016	020	E023R		040	E035R				030	025	016	B	015	A	019	015	E
17	E	B	E	B	B	B	G	020	025	040	029G						023	015	022	E	017	E	016	024
18	016	015	E	E	B	B	B	B		029	026G			023G	028G	028		B	B	026	026	017	028	017
19	020	015	020	015	025	016	B	B	026	033	032		028G	027G				017	016	015	016	025	018	A
20	016	016	025	019	015	015	G	B	026	032	035							016	B	016	016	016	A	024
21	016	017	E	B	E	E	G	019	028	034	044	041	041	037	038	030	025	022	016	015	016	017	016	015
22	021	A	A	026	016	014	B		B		051	041	036	031G	027G	023G	029	026	028	037	018	A	016	015
23	019	016	A	017	E	B	015	017		031	034	040	032G	031G	032	030	025	016	S	B	B	016	E	015
24	016	E	B	018	015	016	015	B		030	034	034	038	040	033	030	026	015	017	E	016	018	E	E
25	016	B	E	E	B	B	B	B		032	036	037	037					018	B	B	B	B	B	B
26	B	B	B	B	E	016	G	B							030G		022	018	E	E	E	B	B	S
27	S	E	E	B	B	B	B	B	025	029	034	035	035		033	029		019	B	B	E	E	E	E
28	E	015	E	B	B	B	B	B	025	030	033	034	E035R	036	033	028	032	017	E	B	B	B	B	B
29	S	B	B	B	B	B	B	B							034				B	S	E	017	E	S
30	016	E	B	B	E	E	B	B		030	033							016	E	E	E	B	S	B
31	B	B	B	B	B	B	G	021	028		034				029G		027	020	023	020	016	017	033	016
Count		8																						
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

K 5

IONOSPHERIC DATA

Jan. 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	E016S	012	014	014	013	013	013	015	013	015	015	015	015	015	015	015	013	013	012	012	013	014	E015S	014
2	014	013	014	014	011	011	013	014	014	015	015	016	016	016	015	016	014	013	013	013	014	014	E015S	014
3	014	014	013	011	013	011	013	014	015	024	022	022	024	023	025	018	017	014	014	013	014	[illegible]	014	014
4	012	013	012	012	014	013	015	013	015	017	023	024	026	025	019	016	015	012	011	E017S	013	013	012	014
5	014	012	014	014	014	014	012	016	016	016	020	039	022	025	025	025	015	013	012	013	014	E017S	014	014
6	014	013	014	014	013	011	016	015	015	017	016	021	027	025	026	016	015	014	014	E015S	013	012	013	013
7	013	013	014	014	013	014	013	013	014	016	017	020	021	021	018	017	016	014	014	014	013	012	014	E015S
8	013	013	014	012	012	012	013	015	016	022	022	028	030	036	026	023	016	016	013	013	012	014	013	014
9	013	014	011	011	012	013	014	011	016	015	017	021	022	020	019	016	017	014	013	013	012	014	013	014
10	013	014	013	012	012	012	013	016	014	014	016	026	026	027	027	021	016	013	011	014	014	012	013	013
11	014	013	011	013	013	012	014	014	014	015	015	017	020	018	016	017	014	014	E015S	014	013	013	013	013
12	014	014	011	013	014	013	013	013	014	017	015	016	052	018	023	016	015	013	013	014	012	012	013	013
13	013	013	013	013	014	013	014	014	015	016	022	022	021	022	016	016	015	013	014	012	012	012	014	013
14	013	012	013	013	011	012	011	013	014	015	016	020	018	016	015	015	013	014	013	013	014	014	013	014
15	E015S	014	013	012	013	012	014	015	016	016	025	016	016	023	019	017	013	012	013	013	012	013	E015S	014
16	015	014	013	012	011	013	011	012	016	017	019	023	023	025	021	019	016	014	013	012	013	014	014	013
17	014	012	011	012	013	012	015	013	015	016	016	019	021	020	018	018	014	011	011	014	013	013	013	013
18	013	014	014	012	013	012	011	016	016	016	017	017	016	020	016	016	017	016	011	012	011	014	012	013
19	012	012	012	011	011	012	014	016	015	016	016	016	020	020	018	016	016	014	012	014	013	013	013	014
20	014	013	012	013	013	012	014	013	014	016	017	013	015	017	019	016	016	015	013	012	013	014	013	012
21	013	013	012	013	014	014	014	014	017	023	025	022	016	019	018	016	015	013	012	012	013	013	013	012
22	013	014	014	013	012	012	015	017	025	021	025	023	024	022	023	016	016	013	013	014	013	013	012	013
23	011	013	013	012	014	014	014	015	016	016	016	016	017	017	015	015	015	015	E015S	014	014	014	014	014
24	013	013	013	012	011	013	013	015	015	016	016	017	020	017	018	015	013	014	013	014	013	014	014	014
25	014	014	014	013	013	013	014	017	016	015	017	017	016	015	017	018	015	013	014	014	014	014	013	012
26	014	013	013	013	013	013	014	013	015	015	015	016	017	018	016	017	016	015	016	012	012	011	013	011	E016S
27	E015S	013	013	013	013	013	013	015	015	014	016	016	016	016	016	016	015	014	013	014	013	013	013	013	013
28	014	013	014	012	012	014	013	015	013	015	015	016	017	020	015	016	013	015	014	013	013	013	014	014
29	E015S	014	014	012	011	013	014	014	013	014	016	024	022	023	018	015	015	016	013	E017S	014	014	014	E015S
30	014	014	013	013	013	014	013	015	015	016	015	016	016	015	016	016	014	015	014	012	013	013	E015S	013
31	014	013	013	012	011	014	013	014	014	015	016	018	017	017	016	016	013	015	013	014	014	014	014	013
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	014	013	013	013	013	013	013	015	015	016	016	018	020	020	018	016	015	014	013	013	013	013	013	014
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

Jan. 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	265	270	275	275	285	305	325S	350	355R	335	320R	340	335	330	U350R	330	U335R	345	330	335	330	355	255	255
2	260	290	260	275R	270	270	320	U355F	U350R	335R	U340R	335	335	325	315	315	335	370	320R	340	335	290	265	270
3	260	270	275	265	305	300	295	350	345	350	345	325	330	325	330	315	320	340	325	355	345	260	260	275
4	275	290	305	275	280	270	305	350	U350R	360	320	340	335R	340	345	330R	345	335	325	335	320	300R	260	260
5	260	270	275	265	265	265	315	360	J385R	340	315R	J345R	340	335	325	340	U360R	335	320	340	335	315	280	300
6	280	255	250	275	310	270	310	345	350	U380R	310	310	315	320	325	335R	345	320	330	325	335	290	290	295
7	A	265	255	280	275	280	290	340	U350R	355R	345	320	325	320	325	320	335	340	U315R	325	350	290	265	255
8	255	245	235F	305F	305	265	245	320	340R	340	320	340	325	340	310	305	305	330	325	295	305	290	260	265
9	310	300	300	270	265	270F	295	320	340	325	320	320	320	335	325	A	340	325	325	U330R	A	270	275	270
10	275F	280	290F	U295R	330	275F	275	315	340	330	315	320	325	J345R	335	345	345	340	320	350	265	275	285	265
11	280	290	290	285	305	275	295	335	U350R	340	325R	340R	U320R	315R	J340R	350	340	315	330	320	285	285	275	270
12	260	270	290	295	370	260	270	320	U340R	335	335	340	330	330	315	345R	345	310	U340S	A	315	320	I280A	275
13	275	275	295	295	305	325	290	345R	350R	330	330	340	335	320	330	340	350	335	335S	350	280	290	270	270
14	245	270	345	295	310F	270F	270	U300R	295	310	350	310	305	J315R	285	315	315	295	305S	290	300	315	315	340
15	310	285	290	290F	265	305	280	330	330S	310	325	350	350	320	325	345	345	330	335	A	A	280	295	295
16	285	280	295	310	335	275	310	340	330	335	330R	340	330	335	310	345	355	305	345	340	A	275	240F	265
17	305	295	295	285	295	310	320	330	345	345R	320	335	325	315	330	340	340	325	335	310	345	315	255F	290
18	285	285	305	295	340	270	330	345	325	320	J335R	335	325	310	330	330	350	345	315	340	290	290	280	275
19	280	290	305	285	310	275	305	345R	335	345	330	330Z	330	310	330	340R	350	320	340	340	335S	325	285	A
20	265	275	310	310	310	280	310	350	350	350	330	350	340	320	320	335	345	310	300	325	295	280	I285A	280S
21	280	275	290	285	320	265H	275	325S	345	J340R	340	330	295	320	320	320	325	330	325	325	300	285	300	285
22	265	A	I270A	290	315	290	305	340	345	340	330	335	325	335	315	325	345	330	330	335	305	A	270	260
23	275	280	A	310	330	280	290	365	340	340	335S	335	335	315	330	320	330	320	325	320	300	285	275S	285S
24	275	270	280	280	280	280	285	335	345	355	295	315	320	J325R	315R	320	320	350	310	325	300	260	295	275
25	280	290	305	310	275	285	300	335	345	335	325	335	310	320	335	325	330	320	320	315	320	315	290	280
26	290	280	275	285	290	290	300	U325S	365	310	330	320	340	325	315	325	345	325	325	320	335	295	300	275
27	280	280	300	325	295	270	285	U340S	345S	335	325S	290	U320S	330	320	325	350S	335	320	320	295	295	280	285
28	270	265	280	305	300	275	310	335	350S	335	310	310	305	320S	305	U315S	335	335	310	330S	325	280	265	270
29	265	270	295	315	275	270	290	330	U350S	300	320	310	315	310	320	325	340	330	305	310	320	310	285	270
30	285	275	275	290	315	280	285	340	345	340	335	315	320	310	310	310	U325S	335	320	305	315	290	275	280
31	280	285	290	335	280	270	320	335	355	340	315	320S	330	325	310	340	320	325	310	305	310	320	290	290
Count	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	29	28	30	31	30
Median	275	280	290	290	305	275	295	340	345	340	325	335	325	320	325	330	340	330	325	325	315	290	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

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IONOSPHERIC DATA

Jan. 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										L	L	L	L	L	L									
2										L	L	L	L	L	L	L								
3										L	A	L	L	L	L									
4									L		L	L	L	L										
5									L	L	L	L	L	L	360L									
6										L		L		R	L									
7											L	L	L	L	L	L								
8										L		L	L	L	L									
9												L	L	L		A								
10										L	L	L	L	L										
11										L	L	L	L	A			A							
12										L	A	L	B	L	L									
13										L	L	L	L	L	L	L								
14										L	L	L	380L	L	L	L								
15											L	L	L	395L	L									
16											R	L	L	400L	380L	L								
17											L	L	380L	L	L	L								
18										L	L	L	L	400L	L	L								
19										L	L	L	L	L	L	L								
20											L	L	L	L	L	L								
21										L		L		L	L	L	L							
22									400L	410L	A	L	L	L	L	L								
23										L	L	L	L	380L	L	L								
24									L	L	L	395L	L	L	L	L								
25										L	L	L	390L	L	L	L								
26											L	365L	L	L	L									
27											L	L	375L	L	L	L								
28										L	L	L	L	L	L	L								
29									L	L	L	L	L	370L	L	L								
30											L	L	385L	L	L	L								
31										L	L	390L	L	370L	L									
Count									1	1		3	5	6	2									
Median									400L	410L		390L	380L	390L	370L									
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

Jan. 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										225	230	250	260	230	235									
2										245	225	255	235	240	235	250								
3										235	235	230	255	255	250									
4									220		275	240	245	245										
5									215	220	230	255	230	255	275									
6										220		270		295	255									
7											255	245	255	250	250	250								
8										245		255	255	240	250									
9												230	260	245		A								
10										250	230	245	230	230										
11										235	245	245	255	250			285							
12										245	260	235	245	260	250									
13										230	245	250	250	255	260	250								
14										270	250	270	250	270	260	270								
15											250	230	220	240	255									
16											260	250	245	230	255	240								
17											260	240	245	265	245	250								
18										235	270	240	230	245	260	250								
19										250	250	240	260	265	250	230								
20											245	245	260	255	260	255								
21										255		260		260	245	255	225							
22									220	245	250	250	250	245	260	250								
23										225	255	260	235	275	255	255								
24									230	230	265	260	260	255	255	265								
25										235	260	265	250	255	250	255								
26											260	265	245	250	250									
27											255	245	260	260	255	255								
28										235	265	265	255	250	260	255								
29									220	230	250	260	260	265	250	250								
30											250	250	260	245	265	255								
31										230	255	265	265	255	255									
Count									5	21	27	31	29	31	27	18	2							
Median									220	235	250	250	250	255	255	250	255							
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

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IONOSPHERIC DATA

Jan. 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	325	325	315	300	285	255	230	215	220	225	195H	230	210	230	230	230	215	220	210	260A	230	210	360	370
2	350	285	350	350	325	330	235	230	225	245	225	230	230	235	225	230	230	205	260	220	220	240	325	345
3	340	315	310	310	260	240	260	220	210	240	I230A	230	230	230	230	230	225	215	220	215	210	280	330	315
4	310	275	260	310	280	290	260	230	225	210	200H	230	235	235	230	230	225	245A	225	230	230	245	E370A	355
5	340	310	315	330	320	350	255	210	230	210	225	240	230	210	250	250	220	210	230	230	220	230	280	260
6	280	355	375	300	260	320	255	225	220	225	235	250	245	215	230	230	220	225	220	235	215	220	275	275
7	A	E450A	340	310	295	300	275	230	220	225	225	225	220	235	230	235	210	210	245	225	235	285	300	355
8	340	355	400	265	230	355	400	260	230	230	235	245	235	235	230	250	245	230	230	225	225	260	E345A	310
9	245	255	260	310	300	300	260	260	250	230	230	225	235	230	245	I230A	225	215	210	250	A	360	325	320
10	330	305	275	250	215	310	300	250	230	230	225	230	225	230	230	230	220	215	210	E265A	355	320	280	320
11	315	275	275	280	255	305	265	235	220	230	220	225	240	I255A	250	225	A	275A	230	230	260	275	340	335
12	355	315	310	255	210	350	295	250	230	225	I250A	250	I235B	235	235H	240	220	250	255	I270A	285	230	A	320
13	315	305	270	260	255	230	265	235	220	215	200H	230	240	235	230	230	215	245	255	225	295	270	270	325
14	370	330	200	325	280	350	E375A	310	235	260	235	235	210	245	250	260	230	240	255	230	230	220	220	215
15	235	255	265	250	245	255	290	245	225	225	240	230	220	215	245	230	215	230	230	A	A	E425A	355	270
16	290	315	275	240	240	340	260	230	215	230	255	230	230	215	205	240	220	220	215	225	A	350	E420A	320
17	260	255	260	275	240	250	230	220	230	230	225	230	225	220	225	230	225	220	230	250	230	240	355	325
18	280	285	260	240	220	305	225	215	215	225	230	230	225	200	260	230	220	230	235	230	E360A	310	E380A	305
19	305	280	265	250	295	275	255	230	225	245	225	215H	215	215	235	230	220	230	220	225	235	275	295	A
20	325	315	295	255	250	295	255	225	215	245	225	230	215	215	210	230	220	230	200	245	235	290	I320A	E345A
21	280	300	275	265	250	300H	290	240	225	240	230	245	260	255	240	225	230	225	215	215	255	300	275	275
22	370	A	A	335	230	270	255	225	220	205	I235A	230	210	215	225	225	220	230	250	E265A	230	A	330	345
23	335	305	A	260	250	300	285	220	215	215	205	240	230	210	225	230	230	230	225	230	225	265	285	285
24	285	310	300	305	290	295	290	235	230	220	205	205	230	240	215	225	230	220	205	225	245	295	275	295
25	305	275	255	240	280	280	260	235	220	230	225	220	210	215	230	225	225	230	245	240	230	235	260	275
26	290	300	310	270	260	280	265	245	225	230	200H	195	230	210	220	215H	230	215	225	225	210	280	275	315
27	300	300	260	230	230	310	300	240	225	225	225	210	210	215	220	215	225	220	220	230	225	255	280	265
28	305	330	305	265	240	300	250	225	220	215	200	190H	235	215	215	230	230	230	230	220	230	270	305	305
29	305	300	270	230	210	300	290	245	225	210	200H	230	230	215	230	225	220	220	240	240	240	245	280	295
30	280	300	285	265	245	275	275	230	230	230	225H	215	215	215	210	220	235	210	235	230	230	245	290	310
31	305	290	270	215	215	305	270	235	220	230	225	210	245H	225	210	240	230	225	250	255	245	245	E345A	290
Count	30	30	29	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	28	30	30	30
Median	305	300	275	265	250	300	260	230	225	230	225	230	230	220	230	230	225	225	230	230	230	265	290	310
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

K 10

IONOSPHERIC DATA

Jan. 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	S	B	B	B	B	B	B	170	G	160	G	G	165	105	105	105	105	105	105	110	115	B	S	B
2	B	105	B	110	115	115	115	175	G	G	130	G	G	G	G	G	G	110	105	105	B	B	S	105
3	B	B	B	B	B	B	B	115	120	120	120	120	125	G	G	G	125	110	105	105	105	105	100	B
4	B	B	105	115	B	110	110	110	G	G	G	130	G	G	110	110	110	105	115	S	105	110	105	105
5	105	115	105	B	105	B	B	B	G	G	115	B	G	G	G	G	125	110	110	115	B	S	105	105
6	B	B	B	B	105	110	110	B	160	G	175	G	G	G	130	115	155	B	B	S	B	B	105	105
7	105	105	B	105	110	B	B	170	G	G	G	110	110	G	G	170	135	B	105	110	110	105	B	S
8	B	B	B	B	115	B	B	175	155	150	170	160	135	B	120	115	105	110	110	110	B	B	110	B
9	B	B	125	115	110	110	B	130	135	125	125	145	175	G	135	120	115	110	115	105	105	105	105	105
10	B	105	105	B	B	B	125	160	145	G	130	150	G	G	130	125	110	110	110	105	105	100	105	105
11	105	B	B	B	B	110	110	B	G	165	G	G	G	105	110	135	110	110	110	110	105	110	100	105
12	120	110	110	110	115	115	115	110	110	110	105	130	B	120	G	155	115	110	110	105	105	105	105	105
13	105	105	B	110	105	B	120	110	175	G	G	175	120	115	155	115	110	110	105	110	110	105	105	105
14	110	B	B	110	115	110	115	115	115	110	G	115	G	G	115	115	G	115	110	110	110	105	105	105
15	105	105	105	B	B	160	125	B	G	115	G	105	110	120	G	115	110	110	110	105	105	100	100	105
16	105	B	110	110	110	B	115	115	110	G	110	155	G	G	G	115	115	115	B	110	110	110	110	110
17	110	B	115	B	B	B	150	115	115	115	115	G	G	G	G	G	115	115	115	110	110	105	105	105
18	105	105	105	105	B	B	B	B	G	120	115	G	G	110	105	105	G	B	B	115	110	110	110	105
19	100	105	100	105	105	100	B	B	115	115	155	G	115	115	G	G	G	110	115	115	110	110	110	105
20	105	105	105	105	105	110	115	B	120	120	115	G	G	G	G	G	G	170	B	115	110	110	110	110
21	110	100	105	B	110	110	115	145	130	120	115	115	115	110	110	110	105	105	105	110	110	105	100	105
22	110	110	110	105	110	115	B	G	B	G	115	115	115	115	115	110	110	110	110	110	110	110	110	110
23	110	110	110	110	105	B	110	105	G	125	115	115	110	105	105	105	105	105	S	B	B	110	110	110
24	105	105	B	110	110	105	110	B	G	120	115	120	115	115	110	110	110	110	110	105	105	105	105	105
25	105	B	110	110	B	B	B	B	G	165	140	135	125	G	G	G	G	160	B	B	B	B	B	B
26	B	B	B	B	105	105	110	B	G	G	G	G	G	G	115	G	115	175	115	110	110	B	B	S
27	S	125	125	B	B	B	B	B	115	115	115	110	115	G	110	110	G	115	B	B	105	105	105	105
28	110	105	105	B	B	B	B	B	115	120	120	110	110	115	110	110	110	110	115	B	B	B	B	B
29	S	B	B	B	B	B	B	B	G	G	G	G	G	G	125	G	G	G	B	S	120	105	110	S
30	105	105	B	B	120	125	B	B	G	125	120	G	G	G	G	G	G	105	105	105	105	B	S	B
31	B	B	B	B	B	B	155	160	175	G	120	G	G	G	110	G	110	165	115	115	110	110	110	110
Count	19	17	17	15	18	15	17	16	16	19	22	18	15	12	19	20	22	27	23	24	24	22	24	22
Median	105	105	105	110	110	110	115	120	120	120	120	120	115	115	110	115	110	110	110	110	110	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

K 11

IONOSPHERIC DATA

Jan. 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	1	12h	12h	12h	f2	f	f2	f3			
2		f		f	f2	f2	f	h			h							f	f3	f2				f
3								1	1	1	1	c	h				h	f	f	f3	f	f2	f	
4			f	f2		f	f	1				h			1	12	12	f2	f		f2	f	f	f
5	f	f	f		f						1						h	f	f	f2			f	f
6					f	f	f		h		h				h	1	h1						f	f
7	f2	f2		f2	f			h				1	1			h	h		f2	f	f2	f2		
8					f			h	h	h	h	h	h		c	1	1	f2	f	f			f2	
9			f	f	f	f2		h	h	h	h	h	h		h	c2	12	f	f	f5	f5	f3	f2	f
10		f	f				f	h2	h		h	h			h	h	1	f	f	f2	f2	f2	f	f
11	f					f	f			h1				12	1	h	12	f2	f3	f2	f2	f2	f2	f
12	f	f	f4	f2	f	f2	f2	13	12	12	12	h1		c		h	12	f3	f2	f3	f5	f2	f2	f2
13	f2	f		f	f2		f	1	h			h1	c	1	h	c	12	f2	f2	f	f	f2	f2	f
14	f			f	f	f	f3	13	12	1		1			12	1		f	f2	f	f	f	f	f
15	f	f	f			f	f			1		12	1	1		c	1	f3	f3	f4	f3	f2	f3	f
16	f		f	f	f		f2	1	1		1	h				1	1	1		f	f3	f2	f2	f
17	f		f				h	1	1	12	1						1	1	f3	f2	f3	f2	f2	f3
18	f2	f	f2	f						1	1			1	1	1				f4	f3	f2	f3	f2
19	f4	f2	f4	f2	f3	f2			1	12	h1		1	1				1	f	f	f3	f4	f3	f3
20	f2	f2	f3	f2	f	f2	1		c	c	1							h		f2	f2	f2	f3	f4
21	f3	f2	f		f	f	1	h2	h	c	12	1	1	1	12	1	1	12	f	f	f2	f2	f2	f2
22	f2	f4	f4	f3	f	f					c2	1	1	1	1	1	12	12	f4	f4	f	f5	f4	f2
23	f3	f2	f3	f2	f		1	1		h	1	12	1	1	1	1	1	1				f	f	f
24	f	f		f2	f2	f2	1			c	c	c	1	12	12	12	12h	12	f	f	f2	f	f	f
25	f		f	f						h	h	h	h					h2						
26					f	f2	1								1		1	h	f	f2	f			
27		f	f						1	1	1	12	1		1	1		1			f	f2	f2	f
28	f	f2	f						1	c	c	1	1	1	12	1	12	12	f					
29															h						f	f4	f	
30	f	f			f	f				h	c							1	f	f	f			
31							h	h2	h2		c				12		12	h	f4	f4	f2	f3	f2	f2
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

K 12

IONOSPHERIC DATA

Jan. 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	360	380	355	345	345	285	280S	245	250R	270	295R	270	275	265	U245R	270	U265R	265	260	280	275	235	400	395
2	395	330	390	390R	380	365	285	U265F	U250R	275R	U270R	275	270	270	290	295	270	220	305R	255	275	315	380	390
3	390	355	355	350	300	310	300	240	245	255	250	270	230	290	265	295	295	265	285	245	235	355	395	375
4	350	320	305	355	335	345	290	255	U230R	225	305	270	265R	260	255	295R	250	265	270	260	275	295R	385	385
5	380	365	355	380	355	380	290	235	J225R	255	275R	J270R	260	275	295	270	U245R	275	300	275	275	270	330	310
6	335	400	415	335	285	365	300	260	250	U230R	300	295	295	305	285	270R	265	285	270	290	265	310	320	310
7	A	A	390	345	345	355	335	270	U250R	255R	280	280	295	290	285	290	245	270	U305R	275	265	335	370	420
8	415	425	470F	315F	300	405	460	300	270R	260	295	265	285	270	300	300	320	280	280	320	290	330	395	395
9	310	320	315	380	380	380F	335	300	280	285	270	285	300	270	285	A	260	275	265	U260R	A	380	360	365
10	380F	365	335F	U315R	245	385F	335	300	270	285	285	275	270	J255R	280	255	260	265	275	A	395	340	330	370
11	365	335	335	335	285	360	310	275	U255R	260	285R	260R	U290R	285R	J270R	255	A	305	275	265	310	310	360	365
12	400	365	330	280	235	385	335	285	U260R	270	275	255	270	280	280	255R	250	275	U260S	A	235	275	I360A	360
13	365	350	315	320	300	275	325	260R	255R	275	275	270	265	275	275	255	235	275	S	240	330	320	330	385
14	425	380	240	335	315F	365F	375	U330R	330	310	255	305	310	J320R	340	305	300	325	310S	330	315	275	280	255
15	285	335	320	320F	340	295	330	275	265S	300	270	250	235	310	280	250	255	280	265	A	A	A	A	310
16	345	355	320	280	275	385	305	275	260	255	295R	260	270	255	310	255	245	295	260	270	A	375	445F	375
17	295	300	310	330	285	285	265	250	250	255R	300	265	275	300	275	265	255	270	265	310	255	280	405F	345
18	340	330	305	285	255	340	260	240	275	275	J295R	265	265	275	280	270	255	265	295	255	A	335	A	345
19	330	335	305	335	300	330	295	265R	255	265	270	270Z	280	305	275	255R	245	285	265	255	255S	275	330	A
20	380	365	305	305	285	345	285	255	230	255	275	255	270	275	280	275	250	315	280	285	285	330	I350A	350S
21	340	350	325	330	285	385H	345	280S	255	J275R	255	280	345	280	270	280	270	270	270	270	305	345	320	330
22	395	A	I380A	A	275	315	285	265	255	260	275	275	280	260	300	270	255	275	280	275	280	A	395	400
23	370	345	A	295	310	345	320	235	255	245	280S	280	255	305	265	285	270	275	275	270	300	325	340S	335S
24	345	375	345	340	345	350	335	265	260	245	315	295	285	J295R	295R	300	280	255	280	275	285	375	315	345
25	355	320	285	285	330	330	305	270	250	265	280	285	285	295	270	265	270	295	285	300	275	285	320	340
26	345	345	370	320	310	325	310	U260S	245	305	275	285	260	275	295	280	260	270	285	275	265	330	330	355
27	335	350	310	275	285	370	330	U260S	245S	255	295S	335	U310S	275	285	275	255S	265	275	285	230	305	330	320
28	350	385	345	305	300	350	285	255	250S	260	310	300	290	300S	300	U300S	265	270	290	270S	275	335	385	365
29	360	355	320	275	335	360	330	275	U250S	310	295	300	300	300	275	270	260	260	305	295	285	280	345	345
30	335	350	335	320	285	335	330	255	255	255	260	300	280	295	310	300	U285S	245	295	300	290	345	340	365
31	370	345	330	255	330	355	325	265	245	255	295	300S	285	270	310	265	285	265	285	310	305	285	A	340
Count	30	29	30	30	31	31	31	31	31	31	31	31	31	31	31	30	30	31	30	28	27	29	28	30
Median	360	350	330	320	300	350	310	265	255	260	280	275	280	280	280	270	260	270	280	275	280	320	350	360
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

Jan. 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	045	045	055	065	050	050	050S	050	035R	045	050R	045	045	055	U055R	045	U050R	040	055	035	045	060	060	060
2	055	055	065	065R	065	075	060	U045F	U050R	050R	U055R	045	050	055	075	050	055	065	040R	055	040	060	070	060
3	045	050	060	055	045	055	065	055	040	040	050	050	045	045	065	045	050	050	045	055	050	075	065	070
4	055	055	045	055	045	080	065	045	U055R	050	070	050	055R	055	050	040R	050	055	050	055	050	055R	060	055
5	050	065	070	055	060	050	055	050	J040R	055	070R	J045R	050	045	045	045	U050R	045	060	045	040	065	055	055
6	065	055	050	070	050	060	050	040	035	U035R	075	050	050	050	050	045R	040	045	050	045	045	060	055	065
7	A	A	065	060	070	050	050	045	U050R	045R	050	045	045	055	050	060	050	045	U045R	050	050	070	065	045
8	045	055	055F	050F	050	045	045	045	045R	055	050	050	045	055	065	065	055	050	065	050	075	055	070	080
9	060	045	055	075	070	055F	055	050	050	050	055	065	060	055	065	A	055	055	040	U055R	A	065	055	050
10	065F	055	050F	U060R	055	060F	060	050	045	045	050	060	055	J050R	040	045	040	035	055	A	055	065	050	060
11	065	045	050	060	060	055	055	060	U040R	055	045R	055R	U060R	065R	J045R	045	A	045	050	050	065	075	065	065
12	050	040	055	055	050	075	070	050	U045R	050	055	050	055	050	065	050R	045	055	U065S	A	065	050	I055A	065
13	055	060	055	045	045	045	060	055R	045R	045	050	050	055	070	050	055	060	045	S	055	065	055	050	045
14	065	050	050	065	085F	060F	070	U055R	070	045	065	070	065	J060R	065	065	055	080	065S	065	065	080	060	065
15	055	050	055	055F	065	050	065	050	095S	060	055	075	060	040	050	050	045	040	045	A	A	A	A	055
16	065	045	060	055	040	045	045	045	045	045	040R	055	050	050	045	045	040	055	045	040	A	040	055F	055
17	050	050	055	045	065	045	050	055	050	060R	055	060	070	055	050	055	045	055	050	035	045	040	065F	055
18	045	055	045	050	060	065	045	055	045	070	J040R	045	065	075	045	055	045	050	040	050	A	060	A	055
19	055	050	045	065	045	055	050	040R	045	045	050	065Z	045	050	050	055R	050	050	045	050	055S	060	050	A
20	035	050	050	050	050	055	065	050	065	045	045	040	045	065	055	045	050	045	065	035	060	065	I050A	050S
21	070	050	055	065	045	045H	055	055S	055	J040R	050	040	060	055	070	055	045	040	055	050	050	035	050	050
22	050	A	I050A	A	050	050	050	040	040	040	050	040	045	050	045	055	045	050	045	055	055	A	055	050
23	050	055	A	050	065	055	045	050	050	055	050S	045	055	040	055	045	050	055	045	055	050	060	060S	050S
24	055	070	055	075	065	050	060	045	045	040	055	055	065	J055R	055R	045	050	045	050	055	060	075	050	050
25	055	050	065	055	055	045	045	050	045	050	050	035	055	050	055	060	045	040	050	050	055	045	050	055
26	050	055	045	060	055	065	055	U060S	040	050	050	060	055	050	055	050	050	050	035	050	040	055	055	050
27	060	055	055	040	060	050	050	U055S	040S	045	050S	065	U050S	050	045	050	045S	045	060	045	055	050	065	055
28	065	045	065	060	070	055	060	050	045S	055	065	050	065	065S	075	U075S	055	060	055	065S	055	080	070	060
29	055	060	055	040	045	050	050	055	U045S	055	040	060	065	060	055	060	045	055	045	050	060	065	055	065
30	065	055	065	055	050	060	055	050	050	055	055	065	055	055	055	045	U055S	055	050	050	055	060	060	050
31	055	050	050	045	055	050	050	050	045	050	055	055S	070	065	045	045	045	060	060	045	045	045	A	050
Count	30	29	30	30	31	31	31	31	31	31	31	31	31	31	31	30	30	31	30	28	27	29	28	30
Median	055	050	055	055	055	055	055	050	045	050	050	050	055	055	055	050	050	050	050	050	055	060	055	055
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

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IONOSPHERIC DATA

Jan. 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	026	028	028	030F	034	027	025	037	065	086	092	074	085	091	100	091	096	088	099S	J054H	057	055H	049H	037
2	035	037	034	030	041	051	059	I080S	085S	096	106	099	095	107	088	085	096S	102S	056	059	056	046	034	024
3	026	030	030	030	034	030	025	039	074S	087	112	084H	096	106	113	119	122	122S	120S	J113S	098S	072S	069H	047
4	036	031	030	026	028	027	027	041S	089	084	086	099	107	112	093	096	109	094S	072	062	J070S	072S	041	024
5	024	026	027	028	029	028	026	042	077S	079	073	098	090	093	I089C	104	098	087	072	055	069	065	044	032
6	029	027	028	031	041	026	029	040	079S	084	083	084	107	113	098S	090	093	J079S	072S	062	076S	065	040	029
7	028	I027A	028	030	031	031	030	043	J079S	080	I085C	102	100	107	127	109	101	093	062	061S	064S	051	036S	033
8	031	035	034	041	044	026F	025F	J048S	087S	094	122	135	130	102	091	092	105	108	I097S	092S	079	049	049	049
9	063	040	034	036	038S	040	035	041	121	142	110	109	124	123	118	107	090	084	063	059	038H	032H	031	034
10	034	034	033	034	034	028	032	038	080	097S	119	129	122	119	108	102	092	090	051	055S	J056S	034	032	030
11	030	032	033	032	032	030	030	039	I078S	083	093	103S	112	116	117	106	078	J072S	059	063S	045	040S	037	031S
12	033F	037F	037	029F	024F	026F	028F	036	I073S	089	108	120	118	100	094	085	083H	067	I064A	063	065	050	026	028
13	028	029	030	030	030	029	025	034	I072S	079	096S	099	118	103H	089	086	073	061	049	049	042	039	I041S	U043S
14	J041S	044S	S	020	024	024	028S	J036S	081	097S	145S	102S	102	111	100	109	113	091	J100S	090S	I078S	069	049	028
15	028	032	041S	031	024	025	031	035	082S	094S	113	122	094	103	095	113	081	064	062	063	041S	039	040S	041
16	033	027	029	034	019H	020	021	043S	058	J076S	078	093	108	107	078	085	088	063	056S	053	046	034	028	031
17	031S	034F	036	034	036	025	028	036	066S	077S	092S	101	116	130S	131	102S	086	067	050	038	046S	039	030	030S
18	I032S	030	032	035	029	027	026S	040S	062	064	083	115	115	104S	114S	142	D144S	112S	069S	081	067	039	035	031
19	030	031	030F	031	040	022	025	036	074	075S	089	097	096	096	110	100	087	069	063	062	045	032	030	026
20	028	029	031	031	030	028	030S	040S	J066S	067	084	097	091	109	107	108	112	J089S	053	059	063S	038	030	030
21	030	033	I035A	033	031	030	028	040S	079	086	J100H	100	102S	122	130	129	J130S	127S	118S	088	071S	053	046	036
22	030	030	031	036S	032	031	035S	050	090	080S	094S	101	093	115	113S	109	J120S	121H	095S	086	072	068	057H	042
23	035	032	031	034	026	025	026	041S	069	072	078	092	105	090	095	085	088	077	056	047	045	045	037	035
24	036	030	032	035	034	030	032	039S	092	I088C	081	109S	124	115	112H	114	119H	116S	I093S	070	060S	059S	045	047
25	041	033	032	031	034	029	029	038S	080S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	123	115	100	083	083	079	078S	064	059	057S	054	043	036S
27	036	034	033	035	035	031	031	040S	085	I102C	J108S	113	118	118	110	106	088	083	067S	061	056	049	044	037
28	040	033	032	034	039	029	030	043	073	086	089	104	117	108	119	121	123S	098S	067S	069S	I071S	044S	043S	033
29	038	038	038	041	031	027	024	039	084	086	096	103	125	141	146S	130S	109	080	074S	060	066S	062	040	036
30	034S	034S	033	035	035	031	031	045	087	101S	105	116	136	U143S	I144S	J125S	092	084	064S	056	057	062	062S	054H
31	040S	039	039S	034	029	031	030S	045	081	092	091	095	119	121	115	103	085	082	084	057	066S	071	068	046
Count	30	30	29	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	032	032	032	032	032	028	028	040	079	086	093	102	110	108	109	105	094	086	066	061	062S	050	040	034
U.Q.	036	034	034	035	035	030	031	043	085	094	108	113	118	118	117	113	112	098	084	069	070	062	046	041
L.Q.	029	030	030	030	029	026	026	038	073	079	084	097	096	103	094	091	087	077	059	056	046	039	034	030
Q.R.	007	004	004	005	006	004	005	005	012	015	024	016	022	015	023	022	025	021	025	013	024	023	012	011

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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								
2											L	A	L	L	A	L								
3											L	L	L	L	L	L								
4												L	L	L	L	L								
5												L	L	L	C	L								
6											390L	L	L	L	L	L								
7											C	L	L	L	L	L								
8											A	A	L	L										
9												L	L	L	L	L								
10											L	L	L	L	L									
11												L	L	L	L	L								
12										L	L	L	L	L	L	L								
13											L	L	L	L	L	L								
14											L	L	L	L	L									
15										L	L	L	470L	L	L	L								
16											L	L	L	460L	L	L								
17											L	460	L	L	L	L								
18											L	L	L	L	460L	450L	L							
19											L	L	480L	L	470	L	L							
20											L	470	460L	490	L	L								
21											L	L	L	L	A	L	L							
22											L	L	L	L	A	L	L							
23											L	L	L	L	L									
24										C	L		L	L	LH	L	L							
25										C	C	C	C	C	C	C	C							
26										C	C	L	L	460L	L	L								
27										C	L	L	L	L	L	L								
28										L	L	L	L		L	L	L							
29											L	L	L	L	L	L	L							
30										L	L	L	L	L	L	L	L							
31											L	L	L	L	L	L	L							
Count											1	2	3	3	2	1								
Median											390L	460	470L	460L	460L	450L								
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

IONOSPHERIC DATA

Jan. 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								B	210	270	305	320	330	330	320	300	260	A						
2								S	210	270	300	A	A	I330A	I315A	295H	260	A						
3								S	210	I270A	310	I330A	345	350	335	I305A	270	A						
4								S	200	280	310	330	340	I335A	I330A	I310A	I265A	A						
5								S	200	280	I320A	330	340	I340A	I330C	310	280	A						
6								S	210	280	310	330	340	345	330	310	270	170						
7								S	200H	270	C	A	A	330	330	305	270	A						
8								S	220	280	320	330	340	340	325	300	270	170						
9								S	210H	280F	305	320	325	I325A	325	310	260	A						
10								S	220	280	310	325	I320A	I320A	320	I300A	270	A						
11								S	200H	280	310	325	I340A	350	335	315H	260R	A						
12								S	200	280	315	330	B	350	340	310	265	A						
13								S	200	270	A	A	A	A	A	A	A	A						
14								S	200	270	300	A	A	340	I320A	I295A	260	S						
15								S	190	280	305	320	I325A	320	320	300	A	170						
16								S	A	A	310	I325A	330	340	325	A	A	A						
17								S	A	A	A	320	335	340	330	305	270	190						
18								S	200	A	A	330	I340A	340	330	300	270	165						
19								B	190	A	A	A	I330A	330	330	310	290	190						
20								S	200	270	I305A	330	340	340	325	305	A	A						
21								S	210H	280	305	A	A	A	A	315	280	A						
22								S	220	280	I310A	A	A	A	A	320	290	A						
23								S	I205A	I275A	310	A	A	A	A	310	270	200H						
24								S	200	I280C	310	320	I330A	340	I335A	I315A	280	210						
25								S	230	C	C	C	C	C	C	C	C	C						
26								C	C	C	C	330	345	350	340	320	280	200						
27								S	A	I295C	320	A	A	A	340	320	290	230H						
28								S	220	290	320	330	A	A	A	A	A	A						
29								S	230	I295A	315	I340A	360	360H	I350A	325	280	210	S					
30								S	230	300	325	340	I345A	350	345	325	290	220						
31								S	240H	300	A	A	360	I350A	I345A	320	290	A						
Count									27	25	23	20	20	24	25	27	25	12						
Median									210	280	310	330	340	340	330	310	270	195						
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

Jan. 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	E014S	E015S	E	E	E	E015S	E012B	026	030	033	035	036	037	034	035	J041	J029	J022	E015S	E014S	E014S	E014S	E015S
2	E015S	E014S	E	E012B	E	E012B	021	E015S	J020G	030	035	J066	060	J051	J045	020G	030	019	020	E015S	E015S	E015S	022	J022
3	E015S	E014S	E015S	E	E	E011B	J014S	E015S	022	033	035	J043	036	031G	J035	J039	022G	J028	020	020	J022	021	020	E014S
4	E014S	E014S	E	E	E	021	022	021	G	G	G	042	033G	039	J046	J054	J051	J046	020	021	J024	J022	019	021
5	022	021	020	E014B	E011B	E015S	021	021	023	034	034	J039	G	J044	C	019G	021G	J027	J024	J020	023	022	E015S	E015S
6	E015S	E014S	E015S	E011B	E	E014S	E014S	E015S	J022	G	020G	032G	032G	G	G	033	031	022	J022	J022	J022	020	019	020
7	018	J046	020	J029	E013B	E014S	J021	E014S	G	G	C	J035	J051	J036	033G	J024G	J033	J030	J034	J062	J027	021	022	020
8	E015S	E014S	E	E	019	J016	E014S	E015S	G	032	J055	J063	038	038	036	034	028	J030	J023	E015S	E017S	E015S	E014S	E014S
9	E015S	E012B	E012B	E014B	E	E	021	021	G	027G	037	J061	042	037	021G	J026G	J026G	J032	J040	J026	J026	J027	E014S	J021
10	J027	J026	J026	021	E011B	E013B	E015S	020	021G	G	036	041	J042	J060	034	J059	J033	J026	E015S	020	J023	J019	019	019
11	E015S	E014B	E014B	E	E	E012B	E015S	021	026	031	J036	039	037	J034G	031G	034	034	027	037	J031	E015S	E014S	E015S	E015S
12	E014S	E014S	E	E	020	018	020	020	021	J030	035	035	039	G	G	050	J043	J078	J078	J063	J027	J022	J023	J031
13	021	020	E015S	E013B	E011B	E012B	017	019	025	J028	034	038	J046	042	036	039	J045	J028	J030	J023	J023	J020	021	020
14	E015S	E014S	E013S	E011B	021	020	E015S	J022	G	030	J030G	J088	J044	G	034	030	029	026	E015S	E015S	J022	018	E014S	021
15	022	021	020	E	E015B	E	E015S	023	J023	J043	030G	029G	J042	037	G	G	026	G	J024	J028	020	E015S	E015S	E015S
16	E014S	E014S	E014B	E	E	E014S	020	022	J030	043	033	J069	G	G	028G	J036	029	020	J030	022	J023	E015S	E015S	E016S
17	E015S	021	022	021	E	E014S	E015S	E015S	J029	035	039	J043	G	032G	029G	G	G	J027	J024	021	J024	022	E015S	E015S
18	E015S	020	E015B	018	E014B	E015S	E015S	E014S	023	J046	J040	G	038	029G	035	031	026G	G	E013S	E014S	020	E015S	E015S	E014S
19	E016S	E014S	J034	020	J030	E014S	E015S	015	024	J042	J050	049	J058	036	022G	022G	G	G	J016	J015S	E014S	E014S	021	020
20	E015S	E014S	E011B	E	E	E015S	022	020	J027	029	035	J053	J043	J045	J030G	J030G	J047	J044	J025	J026	J026	021	020	E016S
21	E015S	J030	J044	J019	J019	J021	020	E014S	028	035	041	J054	J044	J045	J093	024G	020G	J030	J027	E015S	021	J040	J030	021
22	020	J024	J029	J027	J031	J024	J022	022	G	G	J043	J060	J056	J059	J129	J047	J045	J054	J047	J060	J035	J023	J023	J026
23	021	E018S	021	E013B	E014B	E014S	E013S	E015S	J028	030	036	054	040	J041	J049	027G	020G	025	J023	022	J026	021	022	020
24	E015S	E015S	E012B	E	E	E013B	020	021	021	C	035	040	039	J044	054	J047	027G	J023	J039	J043	J025	J018	E015S	E015S
25	E015S	E015S	021	E	E	E	E015S	E015S	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	G	G	G	033G	G	G	G	E016S	021	018	E015S	E015S	E017S
27	E015S	E015S	E015S	J018	E	E015S	E014S	E014S	025	C	G	040	J040	J040	J041	J035	024G	J038	J034	020	E015S	E014S	E015S	E015S
28	E013S	E	E	E	E	E011B	E015S	020	G	G	G	037	040	039	J050	J045	071M	J034	J025	J024	021	J025	021	E011B
29	E014S	E014S	E011B	E	E	E	E013S	E014S	022G	032	036	040	044	040	J043	G	G	G	018	018	020	J019	020	E015S
30	E014S	E014S	E015S	E013B	E015B	E	E015S	E015S	J032	G	G	035	036	034G	033G	021G	G	G	016	021	021	E015S	E015S	E014S
31	E014S	E014S	E	E	E	E	E015S	E015S	G	G	037	J039	G	J039	J048	035	035	J041	J027	J036	J024	E015S	E015S	E015S
Count	30	30	30	30	30	30	30	30	30	27	28	30	30	30	29	30	30	30	30	30	30	30	30	30
Median	E015S	E014S	E015	E011	E	E014	E015S	E015	022	030	035	040	040	038	034	032	028	J027	J024	021	J022	019	E017S	E016S
U.Q.	E016	020	020	018	E015	E015	020	021	026	034	037	054	044	042	046	039	035	032	030	026	024	022	021	020
L.Q.	E015	E014	E011	E	E	E011	E015	E015	G	G	G	035	036	G	G	G	G	020	020	018	020	E015	E015	E015
Q.R.		D006	D009				D005	D006				019	008					012	010	008	004	D007	D006	D005

The Radio Research Laboratories, Japan

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

Y 4

IONOSPHERIC DATA

Jan. 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	S	S				S	B	G	G	G	G	G	G	G	033	036	022	017	S	S	S	S	S
2	S	S		B		B	S	S	G	G	G	051	043	039	043	020G	G	E019R	E	S	S	S	E	E
3	S	S	S			B	S	S	020	030	G	038	G	030G	031	032	021G	021	E	E	018	E	E	S
4	S	S				E	S	S				039	033G	037	038	032	036	025	017	E	E	020	E	E
5	E	E	E	B	B	S	S	S	G	G	032	031		035	C	019G	019G	021	S	015	E	E	S	S
6	S	S	S	B		S	S	S	015		020G	032G	031G			G	G	G	E	019	020	E	E	E
7	E	A	E	017	B	S	S	S			C	033	036	030	026G	022G	021	022	022	026	025	E	018	E
8	S	S			011	014	S	S		G	050	056	G	G	G	G	017	014	023	S	S	S	S	S
9	S	B	B	B			S	S		022G	G	036	037	034	021G	019G	017G	027	021	023	E	016	S	015
10	E	E	013	E	B	B	S	S	015G		G	038	035	041	G	031	021	G	S	E	016	017	E	E
11	S	B	B			B	S	S	G	G	G	G	035	033G	029G	G	030	022	028	027	S	S	S	S
12	S	S			014	E	S	S	G	014	G	G	G			G	G	050	A	031	016	E	E	018
13	017	E	S	B	B	B	S	S	018	024	034	036	040	036	034	034	028	022	023	021	016	E	017	E
14	S	S	S	B	E	E	S	S		023	028G	032	034		032	030	023	G	S	S	E	E	S	E
15	018	E	014		B		S	G	017	023	029G	029G	034	G			E026R		024	023	E	S	S	S
16	S	S	B			S	S	016	024	031	G	041			028G	033	027	E020R	023	E	019	S	S	S
17	S	E	014	019		S	S	S	023	035	032	G		030G	028G			016	017	E	E	E	S	S
18	S	016	B	E	B	S	S	S	G	030	032		035	026G	023	029	023G		S	S	E	S	S	S
19	S	S	013	E	021	S	S	014	G	029	040	033	040	026	022G	022G			015	S	S	S	E	E
20	S	S	B			S	E	S	G	G	030	030	031	028	028G	024G	035	026	022	017	E	E	E	S
21	S	014	A	014	015	017	S	S	G	033	040	042	038	041	086	022G	020G	023	020	S	E	026	021	E
22	E	018	020	018	023	015	016	S			034	043	037	040	087	026	025	040	040	045	025	019	017	017
23	021	S	E	B	B	S	S	S	023	029	G	035	036	035	034	026G	020G	G	016	016	022	E	017	E
24	S	S	B			B	S	S	G	C	033	038	036	029	040	039	023G	017	035	021	017	017	S	S
25	S	S	E				S	S		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C				032G				S	E	E	S	S	S
27	S	S	S	E		S	S	S	023	C		035	035	037	032	029	022G	017	022	E	S	S	S	S
28	S					B	S	S				G	038	036	040	033	030	023	E	022	E	015	E	B
29	S	S	B				S	S	022G	030	G	038	042	G	038				G	E	E	E	E	S
30	S	S	S	B	B		S	S	021			G	036	032G	032G	021G			015	E	E	S	S	S
31	S	S					S	S			034	035		037	044	G	G	037	025	025	017	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

Jan. 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	E014S	E015S	E	E	E	E015S	012	012	014	014	017	016	017	014	012	016	E015S	E014S	E015S	E014S	E014S	E014S	E015S
2	E015S	E014S	E	012	E	012	E013S	E015S	015	013	015	014	016	017	015	013	014	E015S	E015S	E015S	E015S	E015S	E015S	E014S
3	E015S	E014S	E015S	E	E	011	012	E015S	015	016	015	017	018	019	016	019	014	012	E015S	E015S	E014S	E014S	E014S	E014S
4	E014S	E014S	E	E	E	E	E014S	E015S	015	014	017	023	022	022	018	016	015	014	013	E015S	E015S	E014S	E015S	E014S
5	E014S	E015S	E015S	014	011	E015S	E015S	E015S	015	014	016	019	020	020	C	014	014	012	E015S	E014S	E014S	E015S	E015S	E015S
6	E015S	E014S	E015S	011	E	E014S	E014S	E015S	014	014	016	015	016	017	017	016	015	E015S	E015S	E015S	E013S	E015S	E014S	E015S
7	E014S	E	012	E	013	E014S	E015S	E014S	014	014	C	015	017	017	015	015	012	E015S	E014S	E015S	E015S	E015S	E014S	E015S
8	E015S	E014S	E	E	E	E	E014S	E015S	014	013	015	018	017	022	015	017	014	012	012	E015S	E017S	E015S	E014S	E014S
9	E015S	012	012	014	E	E	E015S	E015S	015	012	014	014	014	014	015	011	011	E015S	E015S	012	E014S	E014S	E014S	E014S
10	E014S	E014S	E	E	011	013	E015S	E015S	012	012	012	018	018	018	017	014	011	E014S	E015S	E015S	E014S	E014S	E014S	E015S
11	E015S	014	014	E	E	012	E015S	E015S	011	011	011	015	019	022	016	015	014	E015S	013	E015S	E015S	E014S	E015S	E015S
12	E014S	E014S	E	E	E	E014S	E015S	E015S	015	011	017	019	035	022	018	016	015	E015S	E015S	E014S	E015S	E015S	E015S	E014S
13	E015S	E014S	E015S	013	011	012	E015S	E015S	015	015	015	017	019	023	018	017	014	011	E015S	E015S	E014S	E015S	E015S	E014S
14	E015S	E014S	E013S	011	012	E015S	E015S	E015S	015	014	014	018	019	021	018	014	014	E015S	E015S	E015S	E015S	E015S	E014S	E015S
15	E015S	E015S	011	E	015	E	E015S	E015S	014	017	022	017	018	022	023	022	016	E015S	011	E014S	E014S	E015S	E015S	E015S
16	E014S	E014S	014	E	E	E014S	E014S	E014S	015	012	017	021	022	022	023	017	015	015	E015S	E015S	E014S	E015S	E015S	E016S
17	E015S	E014S	E	E	E	E014S	E015S	E015S	015	014	015	018	018	019	018	017	015	E014S	E015S	E014S	E015S	E015S	E015S	E015S
18	E015S	E015S	015	015	014	E015S	E015S	E014S	015	014	016	019	017	015	015	015	012	012	E013S	E014S	E014S	E015S	E015S	E014S
19	E016S	E014S	012	015	011	E014S	E015S	011	015	015	014	016	018	018	017	015	015	015	012	E013S	E014S	E014S	E015S	E015S
20	E015S	E014S	011	E	E	E015S	E015S	E015S	015	012	013	014	015	017	015	016	015	E015S	E015S	E015S	E015S	E015S	012	E016S
21	E015S	011	E	E	E	E015S	E015S	E014S	015	014	017	015	018	017	017	017	015	015	E015S	E015S	E015S	E015S	E015S	E015S
22	E015S	E015S	E014S	E	E	E014S	E015S	E015S	014	015	015	015	017	015	017	018	015	E015S	E015S	E013S	E015S	E015S	E015S	E015S
23	E015S	E018S	E014S	013	014	E014S	E013S	E015S	015	012	015	015	015	014	016	015	018	E014S	E015S	E015S	E015S	E015S	E015S	E015S
24	E015S	E015S	012	E	E	013	E015S	E015S	015	C	016	015	019	017	016	018	015	012	E015S	E015S	E015S	E015S	E015S	E015S
25	E015S	E015S	E014S	E	E	E	E015S	E015S	015	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	014	022	017	017	017	013	012	E016S	E015S	011	E015S	E015S	E017S
27	E015S	E015S	E015S	E	E	E015S	E014S	E014S	014	C	014	016	015	017	015	015	014	012	E015S	E015S	E015S	E014S	E015S	E015S
28	E013S	E	E	E	E	011	E015S	E014S	011	011	012	012	013	015	015	013	015	012	E015S	011	E015S	E013S	E015S	011
29	E014S	E014S	011	E	E	E	E013S	E014S	015	014	016	017	017	015	015	014	013	012	E013S	E015S	E014S	E015S	E015S	E015S
30	E014S	E014S	E015S	013	015	E	E015S	E015S	015	015	015	015	015	016	014	014	012	E014S	011	E014S	E015S	E015S	E015S	E014S
31	E014S	E014S	E	E	E	E	E015S	E015S	015	012	015	016	018	017	015	016	015	E015S	012	E015S	E015S	E015S	E015S	E015S
Count	30	30	30	30	30	30	30	30	30	27	28	30	30	30	29	30	30	30	30	30	30	30	30	30
Median	E015S	E014S	E012	E	E	E013	E015S	E015S	015	014	015	016	018	017	016	016	014	E014S	E015S	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

IONOSPHERIC DATA

Jan. 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	260	285	280	280F	305	305	290	295	340	355	345	355	320	320	340	330	320	325	355S	J265H	310	260H	265H	245
2	260	295	270	265	275	255	275	I315S	330S	325	350	340	315	320	320	315	315S	345S	340	305	340	305	325	260
3	245	275	275	275	310	335	285	295	340S	325	355	310H	315	315	310	310	310	305S	310S	J320S	330S	290S	275H	235
4	255	285	305	275	290	265	275	295S	360	350	335	345	325	320	315	305	340	350S	305	305	J315S	305S	290	250
5	270	270	280	285	285	280	275	305	360S	355	330	325	335	305	I315C	315	325	335	335	290	305	330	320	280
6	290	280	255	270	315	275	275	300	355S	350	360	315	315	300	310S	310	345	J345S	320S	295	310S	355	[illegible]	270
7	275	I270A	255	275	280	265	270	300	J340S	335	I335C	320	310	295	305	310	320	325	325	295S	320S	295	265S	275
8	240	255	240	270	325	240F	245F	J300S	345S	320	310	310	320	315	295	295	285	300	I300S	315S	310	265	250	270
9	315	290	270	250	265S	275	265	275	320	340	305	285	305	310	295	325	315	335	325	340	265H	260H	270	265
10	290	280	270	265	325	270	280	295	350	335S	330	335	310	320	335	325	315	345	295	290S	J340S	280	290	275
11	265	280	280	280	290	265	265	295	I340S	335	325	320S	315	300	315	340	320	J335S	320	310S	310	265S	295	270S
12	245F	295F	310	245F	260F	275F	270F	305	I340S	335	325	325	320	290	310	330	315H	330	I315A	300	325	345	270	250
13	255	275	295	300	305	310	285	300	I335S	345	345S	315	320	305H	315	335	335	335	310	315	305	310	I270S	U255S
14	J235S	305S	S	235	265	260	270S	J305S	335	300S	325S	325S	295	280	285	290	310	295	J290S	310S	I315S	330	330	290
15	270	295	320S	290	270	250	290	295	330S	340S	330	330	330	310	295	330	350	345	315	335	300S	285	285S	310
16	310	270	285	325	305H	255	285	325S	360	J345S	335	310	315	325	305	320	340	340	320S	325	345	280	275	285
17	290S	240F	280	300	310	280	320	295	350S	340S	325S	325	300	310S	305	310S	315	345	340	290	325S	320	300	265S
18	I300S	285	290	330	315	275	275S	350S	355	365	325	330	330	300S	290S	305	S	315S	320S	320	330	260	275	295
19	300	295	275F	315	365	245	285	305	345	360S	325	320	320	295	320	325	320	330	325	330	320	290	315	305
20	270	280	290	295	305	285	295S	315S	J355S	360	335	330	320	320	310	315	320	J325S	300	330	350S	295	300	275
21	295	280	I285A	305	295	295	270	300S	355	330	J320H	300	295S	295	310	300	J285S	300S	305S	320	310S	260	265	305
22	275	275	275	280S	295	285	285S	300	355	325S	340S	325	310	305	290S	310	J300S	300H	315S	315	335	310	260H	260
23	260	280	270	295	310	280	275	305S	355	340	310	310	325	320	315	305	320	325	340	320	320	310	285	285
24	305	265	280	290	310	265	280	280S	350	I350C	320	285S	305	305	275H	290	295H	310S	I325S	290	285S	305S	265	300
25	295	280	285	290	300	310	270	290S	350S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	310	335	330	320	325	305	355S	320	320	300S	295	280	280S
27	280	295	280	300	315	290	285	300S	340	I330C	J325S	300	315	315	295	300	305	325	345S	310	305	290	275	275
28	275	265	265	265	310	315	270	300	330	330	320	300	310	285	285	280	300S	320S	305S	295S	I330S	275S	280S	250
29	265	265	290	295	340	295	285	280	335	330	325	300	295	300	290S	280S	310	300	310S	285	305S	325	285	265
30	270S	270S	275	280	285	290	265	310	345	325S	340	300	310	U275S	I295S	J265S	305	310	325S	320	300	295	290S	240H
31	265S	260	285S	325	275	280	275S	310	345	335	330	305	305	305	295	300	300	300	320	290	280S	305	315	285
Count	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	29	30	30	30	30	30	30	30
Median	270	280	280	280	305	280	275	300	345	335	330	320	315	305	310	310	315	325	320	310	310S	295	280	270
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

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IONOSPHERIC DATA

Jan. 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								
2											L	A	L	L	A	L								
3											L	L	L	L	L	L								
4												L	L	L	L	L								
5												L	L	L	C	L								
6											410L	L	L	L	L	L								
7											C	L	L	L	L	L								
8											A	A	L	L										
9												L	L	L	L	L								
10											L	L	L	L	L									
11												L	L	L	L	L								
12										L	L	L	L	L	L	L								
13											L	L	L	L	L	L								
14											L	L	L	L	L									
15										L	L	L	360L	L	L	L								
16											L	L	L	370L	L	L								
17											L	370	L	L	L	L								
18											L	L	L	L	365L	335L	L							
19											L	L	365L	L	345	L	L							
20											L	355	370L	345	L	L								
21											L	L	L	L	A	L	L							
22											L	L	L	L	A	L	L							
23											L	L	L	L	L									
24										C	L		L	L	LH	L	L							
25										C	C	C	C	C	C	C	C							
26										C	C	L	L	395L	L	L								
27										C	L	L	L	L	L	L								
28										L	L	L	L		L	L	L							
29											L	L	L	L	L	L	L							
30										L	L	L	L	L	L	L	L							
31											L	L	L	L	L	L	L							
Count											1	2	3	3	2	1								
Median											410L	360	365L	370L	355L	335L								
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Jan. 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											245	220	240H	250	255	235								
2											230	245	260	250	240	245								
3											240	225	260	270	250	250								
4												250	280	255	245	250								
5												250	240	240H	C	280								
6											225	240	280	250	245	240								
7											C	250	260	280	270	240								
8											270	260	255	235										
9												245	270	255	255	245								
10											250	250	245	245	245									
11												240	270	275	255	250								
12										250	250	245	245	230H	280	250								
13											240	255	270	260	275	245								
14											275	250	245H	310	290									
15										230	255	250	240	280	280	250								
16											250	280	260	245	240	275								
17											275	245	275	270	255	240								
18											255	260	250	245	250	275	220							
19											270	265	255	275	260	255	230							
20											255	265	260	275	255	270								
21											255	265	275	305	275	260	245							
22											245	250	250	300	E315A	255	270							
23											230	255	255	265	275									
24										C	225		280	255	285	270	255							
25										C	C	C	C	C	C	C	C							
26										C	C	275	245	245	240	250								
27										C	240	280	260	295	250H	255								
28										240	250	250H	275		275	275	255							
29											250	260	290	295	270	255	250							
30										250	250	290	275	280	260	250	250							
31											250	265	295	280	275	275	240							
Count										4	24	29	30	29	28	26	9							
Median										245	250	250	260	265	260	250	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

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IONOSPHERIC DATA

Jan. 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	E350S	310	310	300	250	215	260	240	220	230	225H	210	200	220	220	230	230	225	205	200	240	200	245	E300S
2	320	280	255	350	280	260	275	240	230	230	200H	I210A	I220A	245	I230A	240	240	225	200	245	210	200H	250	E275S
3	E360S	E310S	300	300	245	230	260	245	225	240H	240	225	220	220	220	230	240	230	200	200	200	200	220	275H
4	300	300	240	280	275	315	300	275	225	205H	225H	240	210	225	235	225	240	205	210	215	215	200	200	E350S
5	E340A	E330S	300	300	280	300	315	250	210H	220H	200H	200	225	205	I225C	240	240	220	200	240	240	220	240	300
6	270	300	350	300	245	E290S	300	245	230	220H	210	180H	185H	225	215	215	230	225	215	225	245	200	225	305
7	300	I300A	350	350	300	315	325	250	230H	220	I205C	200H	225	195H	200H	235	235	225	225	250	240	215	265	325
8	E400S	E380S	360	305	245	E400A	E400S	295	220	240	I230A	I250A	230	230	230H	225H	250H	245	250	245	250	200H	325	295
9	245	275	275	355	345	290	325	320	250	230	230H	230	240	240	230	230	230	230	225	230	205	250	E340S	305
10	280	300	305	300	240	350	295	275	230	230	230	240	230	I225A	225	215H	220H	220	195	250	210	250	250	300
11	E350S	305	295	255	255	305	315	275	230	230	225	220	225	245	240	230	230	225	245	250	210	250	250	280
12	350	280	240	200	E350A	E350S	E340S	280	225	230H	240	230	225	205	240	240	240	E250A	A	250	220	200	E275S	E350A
13	350	300	300	270	250	240	300	275	240	225	240	235	240	250	225	E230A	230	220	240	240	245	245	315	335
14	360	270	185H	E350S	305	E350S	300	275	240	240	270	230	225	240	245H	245H	245	240	235	225	250	220	210	250
15	E340A	295	230	200	355	300	300	290	245	225	220	225H	210	215	205H	205H	230	220	245	225	235	250	295	255
16	235	305	300	230	200	E380S	E340S	240	225	240	225	I225A	225	225	225	225	235	225	225	230	225	245	E300S	300
17	305	350	295	285	230	E290S	250	235	235	240H	225	225	220	235	225	225	230H	230	220	245	235	230	260	295
18	290	300	300	250	240	330	E290S	230	225	200H	200H	200H	230	205	220	200	240	210H	200	225	205	250	275	280
19	280	275	305	275	220	E360S	E300S	270	230	225	A	210	A	215	225	225	230	220H	230	215	205	250	230	275
20	305	300	260	250	245	300	295	245	220	210H	190H	205	200	195	200	215	245	210	250	215	230	230	265	300
21	300	300	A	250	250	300	325	275	225	245	250	I235A	215	E245A	A	225	230	230	220	210	205	270	270	245
22	300	340	335	310	300	280	295	270	225	230	225	E230A	205	E240A	A	245	225	230	240	250	210	230	250	300
23	E345A	E300S	300	280	240	300	300	255	220	205H	195H	225	235	215	210H	215H	245	240	210	245	240	240	255	295
24	255	E300S	300	250	235	E305B	E300S	295	235	I230C	200H	205H	200H	240	220	A	240	230H	210	220	225	230	250	265
25	250	275	275	275	250	240	E300S	280	235	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	225	200H	195	195H	205H	225H	215	215	205	210	220	250	295
27	275	285	280	255	245	255	E290S	280	245	I240C	235	210	200H	215	225	200H	230	230	225	215	225	245	245	280
28	280	300	315	300	250	230	300	250	230	215H	200H	215	210	210H	E240A	240	250	245	205	260	225	240	245	300
29	315	300	275	250	205	265	E300S	295	245	200H	230	230	245	210	230	215	225H	230	230	240	240	230	245	300
30	300	305	295	290	290	245	320	265	245	240H	225	210H	230	215	220	225	230	245	210	240	240	230	245	270
31	305	300	270	240	250	295	300	250	230	240	230H	220	220H	225H	255	210	225	235	225	250	250	245	225	230
Count	30	30	29	30	30	30	30	30	30	29	28	30	29	30	28	29	30	30	29	30	30	30	30	30
Median	290	300	300	280	250	U280	300	270	230	230	225	220	220	220	225	225	230	230	220	235	225	230	250	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

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IONOSPHERIC DATA

Jan. 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	S	S	E	E	E	S	B	150	E170G	160	145	165	145	150	130	115	105	100	S	S	S	S	S
2	S	S	E	B	E	B	105	S	095	115	115	105	100	100	100	100	140	100	095	S	S	S	100	095
3	S	S	S	E	E	B	S	S	105	155	125	110	125	105	105	100	100	095	100	100	095	095	095	S
4	S	S	E	E	E	100	095	100	G	G	G	120	105	100	100	100	100	100	095	110	105	100	095	100
5	095	095	095	B	B	S	100	095	145	120	110	105	G	100	C	100	100	100	100	100	100	100	S	S
6	S	S	S	B	E	S	S	S	100	G	100	105	105	G	G	125	150	135	100	100	100	100	100	100
7	100	105	100	100	B	S	105	S	G	G	C	115	105	105	105	100	100	100	120	110	110	100	095	100
8	S	S	E	E	105	105	S	S	G	E170G	125	120	130	130	130	125	100	100	100	S	S	S	S	S
9	S	B	B	B	E	E	100	100	G	110	145	115	120	115	100	100	100	100	100	120	125	115	S	105
10	105	105	100	100	B	B	S	100	100	G	130	125	115	110	120	115	100	100	S	100	100	100	100	095
11	S	B	B	E	E	B	S	100	100	E160G	125	125	120	110	105	145	140	125	105	100	S	S	S	S
12	S	S	E	E	100	100	100	100	100	100	145	140	125	G	G	130	125	115	110	110	105	100	100	100
13	100	100	S	B	B	B	130	125	120	115	160	155	115	120	120	110	105	105	105	100	100	100	100	100
14	S	S	S	B	110	105	S	110	G	115	110	110	110	G	110	110	105	120	S	S	100	100	S	100
15	100	125	120	E	B	E	S	105	110	110	115	110	100	120	G	G	115	G	105	100	100	S	S	S
16	S	S	B	E	E	S	150	110	110	105	150	105	G	G	110	115	110	115	105	105	105	S	S	S
17	S	105	105	100	E	S	S	S	125	115	110	130	G	110	110	G	G	105	105	105	100	100	S	S
18	S	100	B	100	B	S	S	S	130	110	105	G	115	100	100	125	110	G	S	S	110	S	S	S
19	S	S	105	110	100	S	S	120	120	110	115	110	105	105	105	105	G	G	105	S	S	S	100	100
20	S	S	B	E	E	S	100	100	100	125	115	110	105	100	100	100	100	100	105	100	100	100	100	S
21	S	105	100	100	100	100	105	S	140	130	120	110	110	105	105	100	100	100	100	S	105	100	100	100
22	100	100	100	100	100	100	100	100	G	G	115	110	105	105	100	105	105	105	105	105	100	100	100	105
23	095	S	100	B	B	S	S	S	120	115	140	115	115	110	105	105	105	140	100	100	100	100	100	100
24	S	S	B	E	E	B	100	100	100	C	125	120	110	110	105	105	110	100	100	100	105	100	S	S
25	S	S	100	E	E	E	S	S	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	G	G	G	105	G	G	G	S	100	105	S	S	S
27	S	S	S	105	E	S	S	S	115	C	G	115	105	105	110	105	105	105	100	100	S	S	S	S
28	S	E	E	E	E	B	S	100	G	G	G	125	115	110	105	105	105	105	110	110	105	100	100	B
29	S	S	B	E	E	E	S	S	120	125	120	155	145	150	110	G	G	G	105	100	100	100	100	S
30	S	S	S	B	B	E	S	S	120	G	G	160	140	105	105	105	G	G	125	110	100	S	S	S
31	S	S	E	E	E	E	S	S	G	G	120	120	G	110	110	120	115	110	110	105	105	S	S	S
Count	7	9	10	8	6	6	12	15	21	19	24	28	25	25	26	26	25	24	26	23	24	18	15	13
Median	100	105	100	100	100	100	100	100	115	115	120	115	115	110	105	105	105	105	105	100	100	100	100	100
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

Jan. 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									h2	h	h	h 1	h 1	h 1	h 1	h21	c4	13	f2					
2							f		1	c2	c3	13	14	14	14	1	h 1	1	f				f f	f
3							f		12	h212	h 12	c2	h 1	12	12	14	12	13	f	f	f	f	f	
4						f	f	1				c	1	1	13	13	13	12	f	f f	f f	f f2	f	f
5	f3	f2	f				f	1	h	c2	1	1		12		1	1	1	f	f	f	f		
6									12		1	1	1 1			h	h21	h 1	f	f	f	f	f	f
7	f	f3	f	f			f					c	12	12	1	1	1 h2	13	f f	f3	f2f	f	f2	f
8					f	f				h c	h4	h3	h	h	h2	h	1	1	f					
9							f	12		1	h 1	c2	c	c 12	1	1	1	12	f2	f2	f f	f2		f
10	f2	f2	f2	f				1	1		h21	h2	c	c2	c	c212	12h	1		f	f2	f2	f	f
11								12	12	h21	h21	h2	c	1	1	h 1	h313	h 121	f3	f2				
12					f	f	f2	1	1	1	h2	h	h			h	h3	c4	f4	f4	f	f	f2	f
13	f	f					f	h	1	1	h 1	h 1	12	12	1	13	12	12h	f2	f2	f	f2	f	f
14					f	f		c3		12	12	12	1		1	12	12h	c3			f2	f		f
15	f	f	f					1	1	1	1	1	12	c			1		f2	f4	f			
16							f	14	13	14h2	h 12	13			1	12	12	1	f2	f	f3			
17		f	f	f2					c2	c3	12	h		1	1			12	f	f	f	f2		
18		f		f					c	c3	1		12	1	1	h 1	1 1				f f			
19			f	f	f2			c	c3	c2	c3	c2	13	1	1	1			f	f			f	f
20							f2	12	1	h2	12	1	1	1	12	1	13	12	f3	f2	f	f	f	
21		f2	f4	f3	f2	f2	f		h2	h3	c3	c3	c2	12	16	1	1	12	f		f	f3	f2	f2
22	f	f2	f2	f2	f2	f3	f2	12			c2	c2	12	14	13	12	12	13	f4	f4	f2	f2	f	f f2
23	f3		f						c	c	h	c2	c	12	12	12	1	h	f	f2	f2	f	f	f
24							f	1	1		h2	c 1	12	12	13	13	1	13	f7	f2	f f	f		
25			f																					
26															1					f	f			
27				f					c			c2	1	12	12	12	12	12	f2	f				
28								1				h2	c3	c2	13	13	13	13	f	f4	f2	f2	f	
29									c	c2	c2	h 1	h212	h 1	12				1	f	f2	f2	f	
30									c			h	h 1	1	13	1			f	f	f3			
31											c2	c		12c	12	c2	c2	13	f3	f3	f3			
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

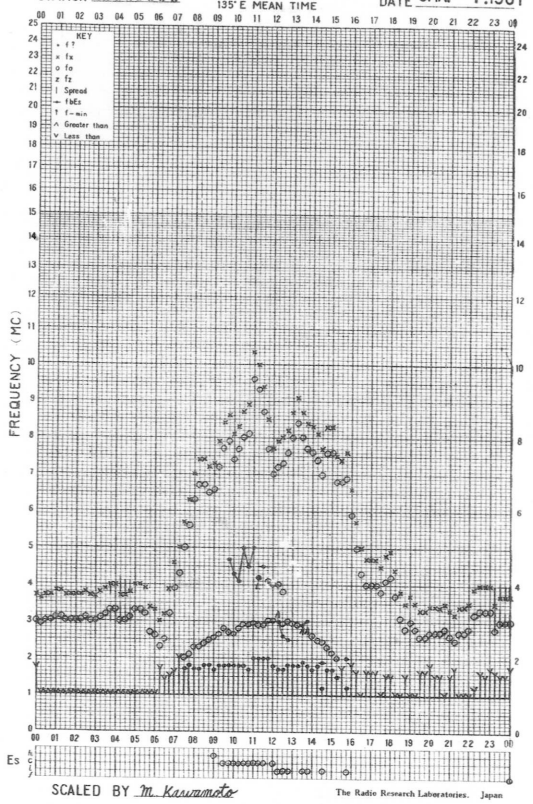
Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 12

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 1.1967



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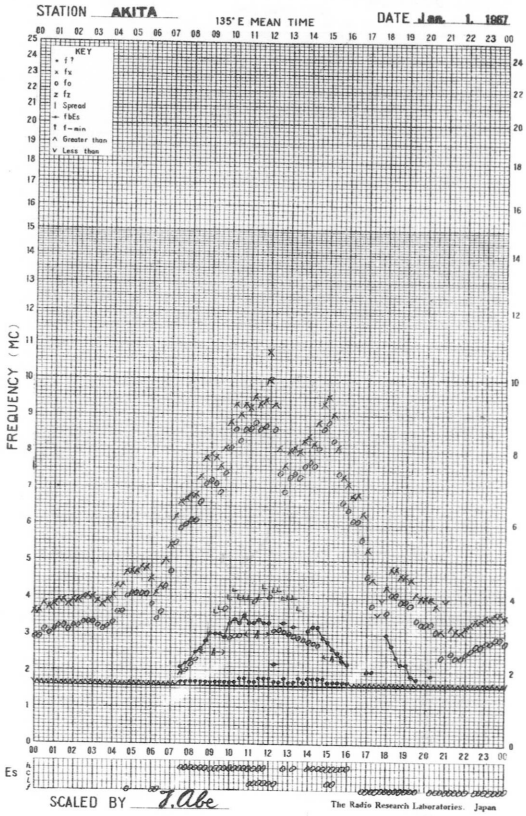
f-PLOT OF IONOSPHERIC DATA

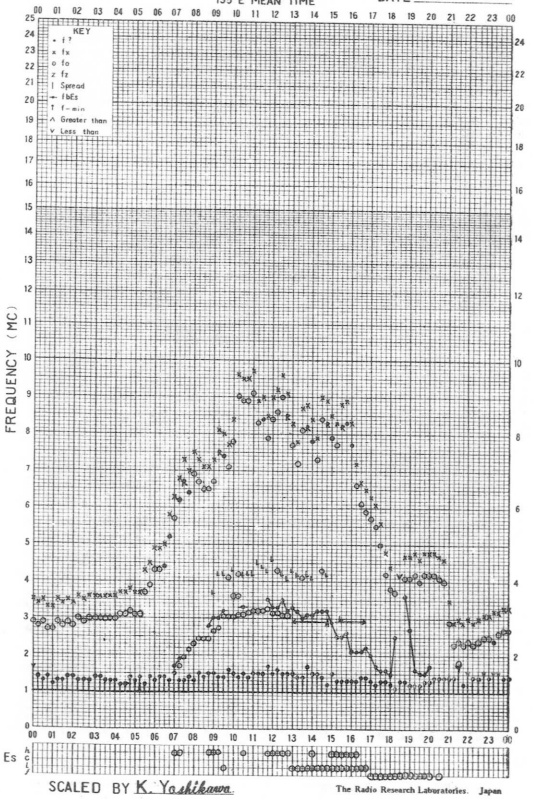
STATION AKITA 135°E MEAN TIME DATE Jan. 1. 1967



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

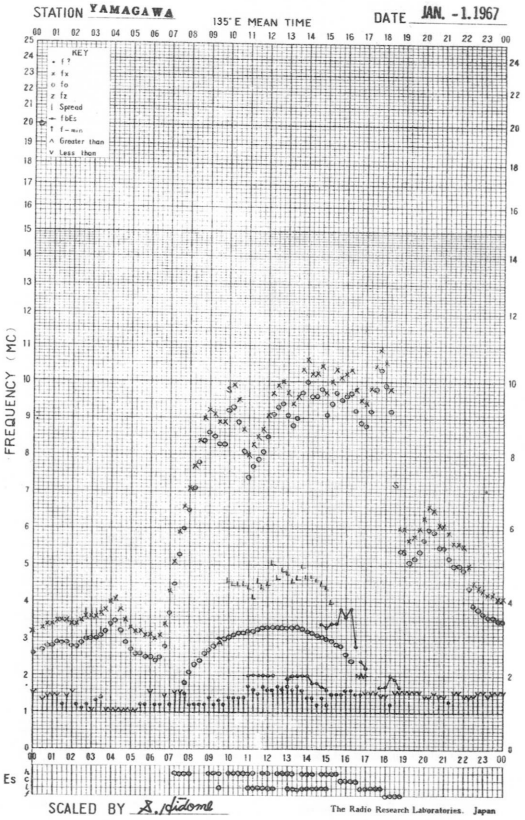
STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 1.1967



SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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



SCALED BY S. Midorne The Radio Research Laboratories. Japan

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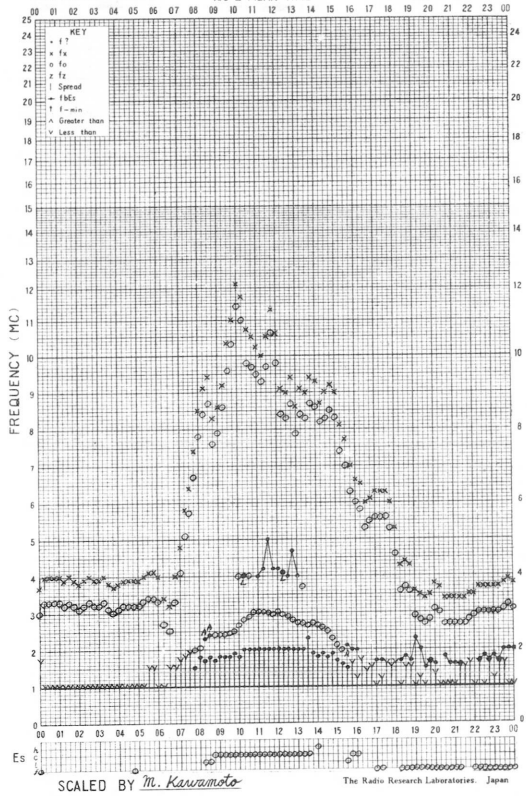
STATION WAKKANAI 135°E MEAN TIME DATE JAN. 2, 1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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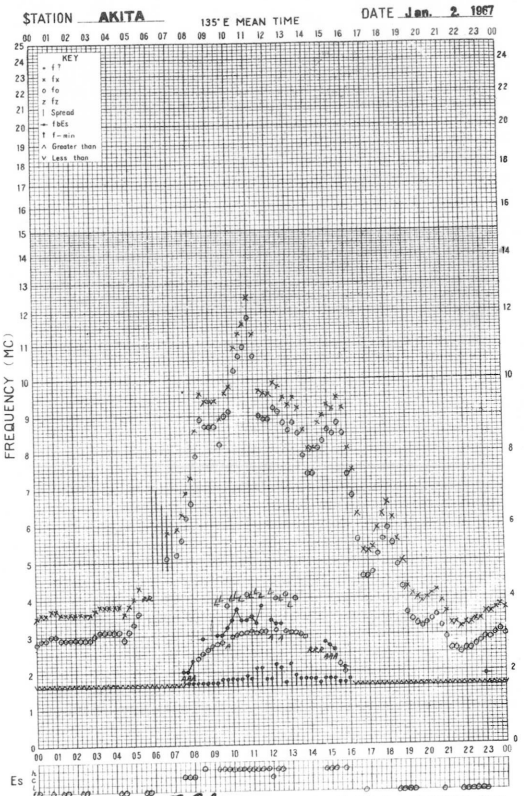

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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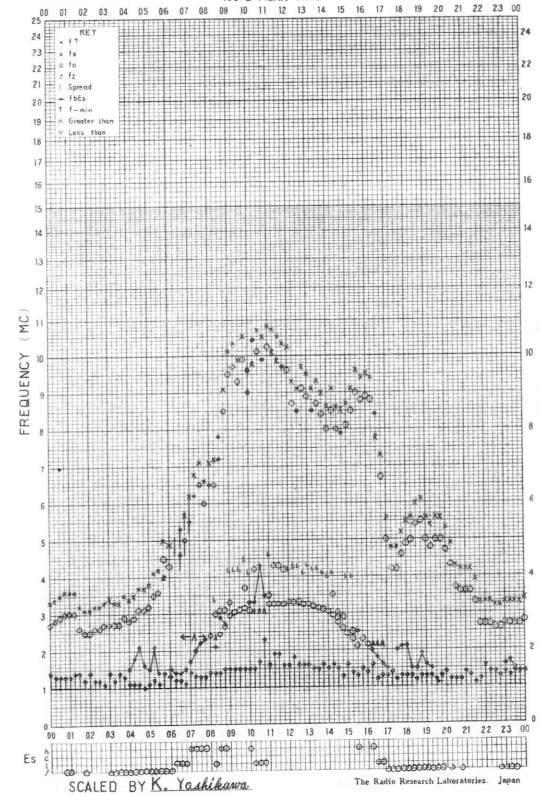

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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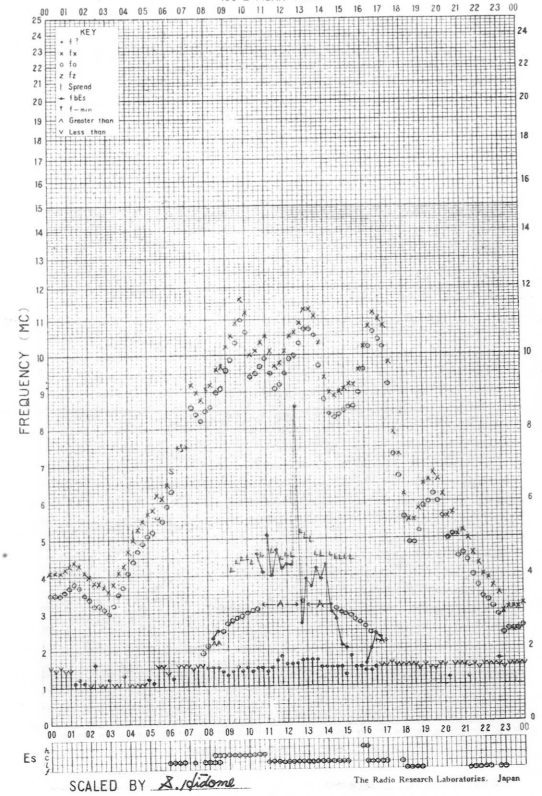

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The Radio Research Laboratories. Japan

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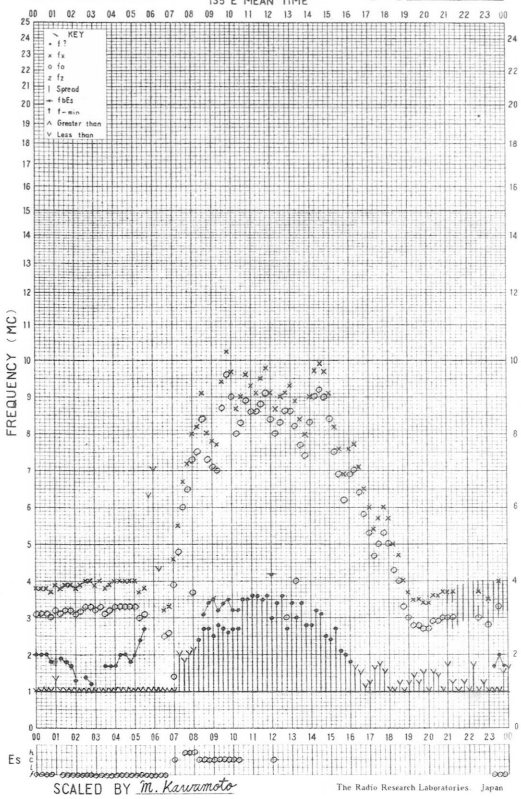

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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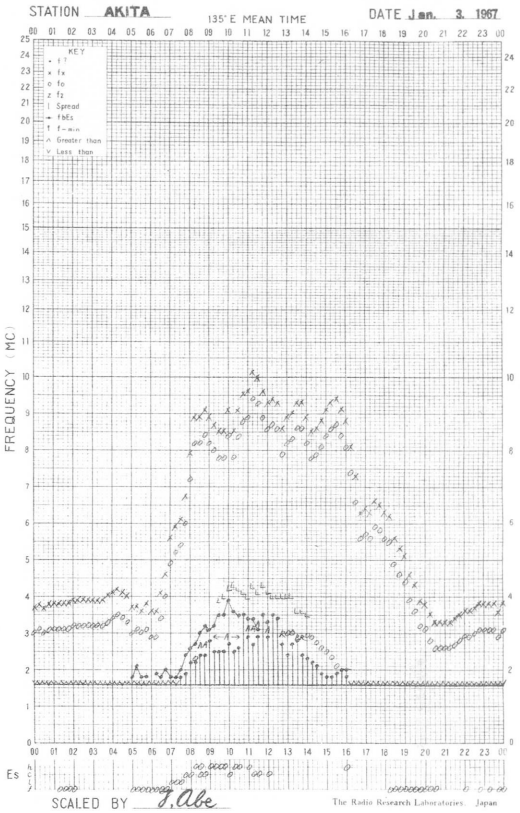

SCALED BY J. Abe

The Radio Research Laboratories. Japan

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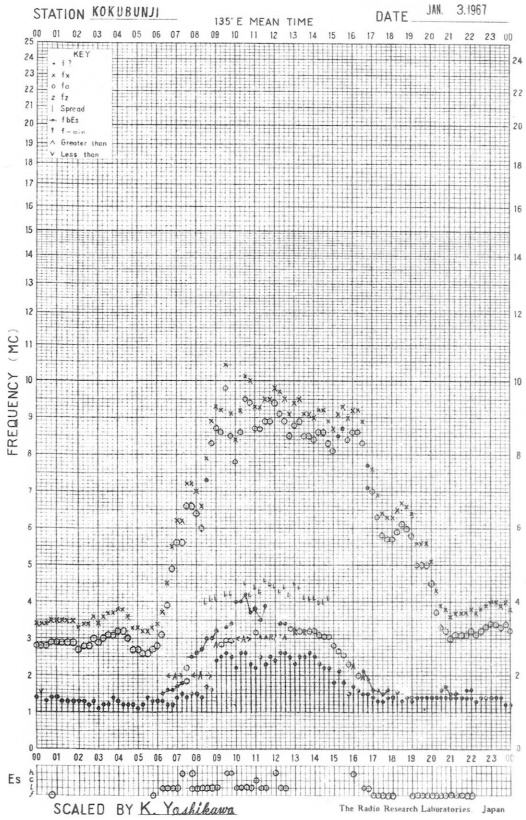

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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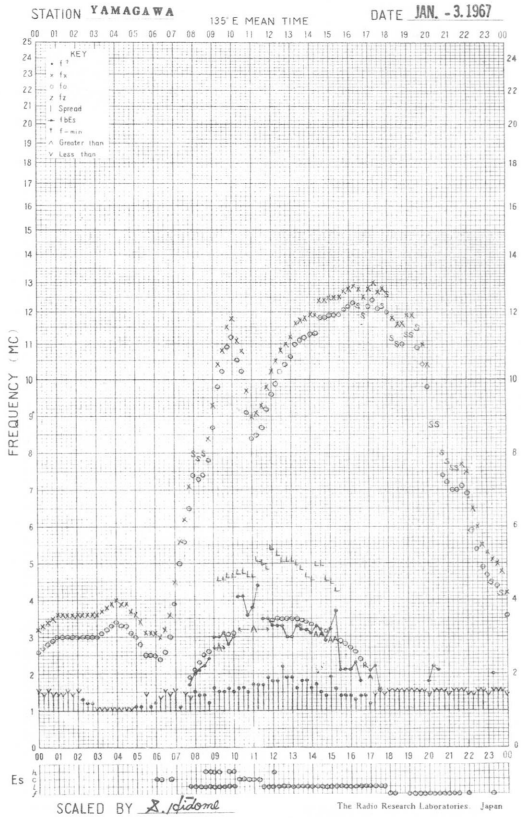
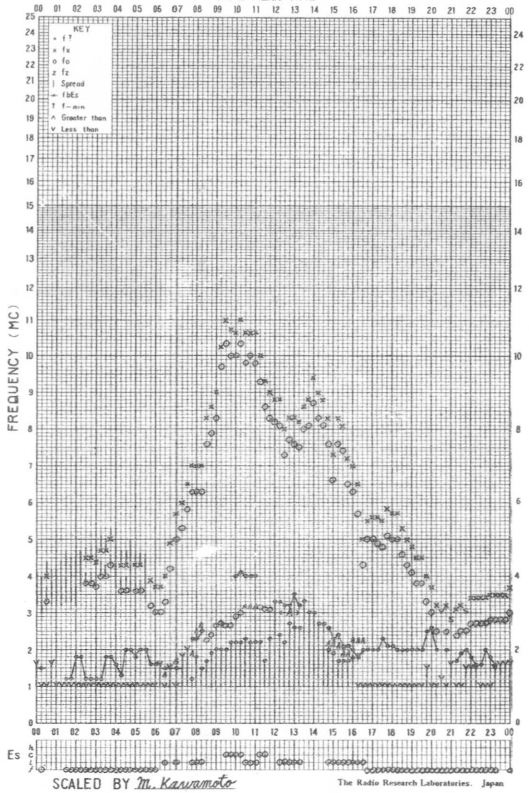


SCALED BY S. Odome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 4.1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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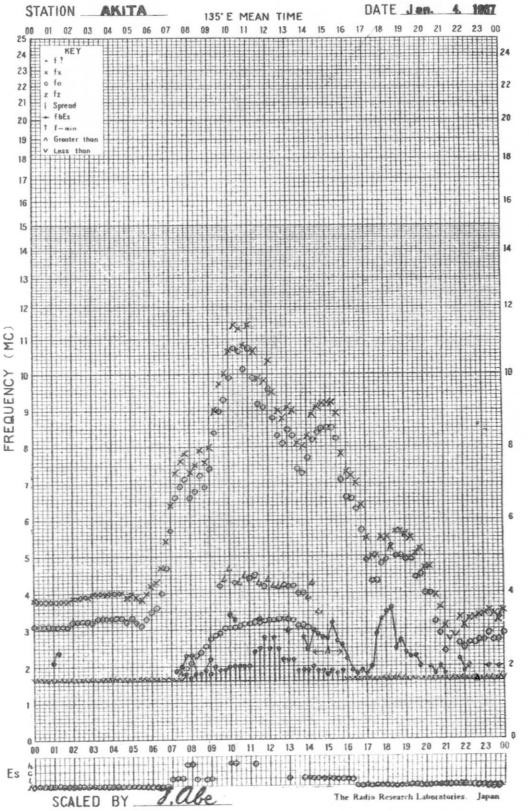

SCALED BY J. Abe The Radio Research Laboratories. Japan

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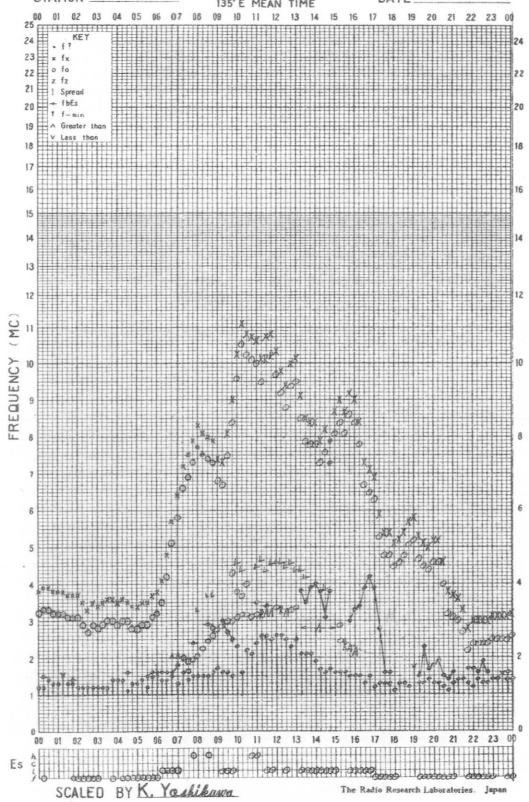

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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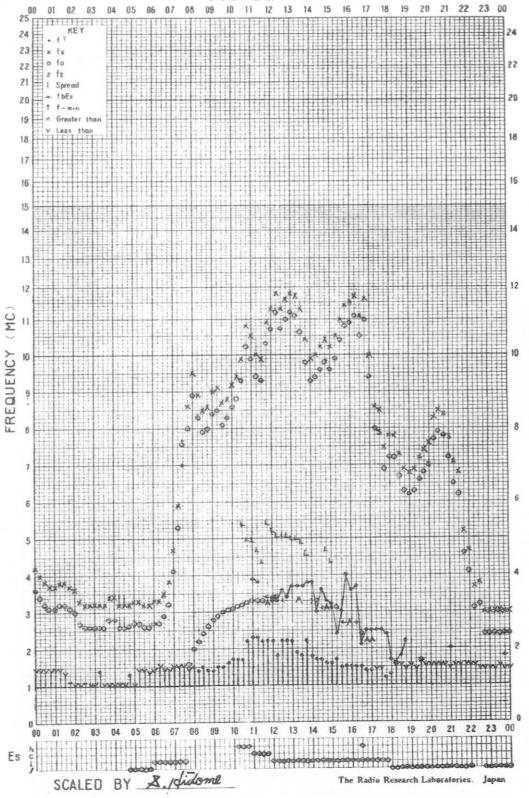

SCALED BY S. Fukami The Radio Research Laboratories. Japan

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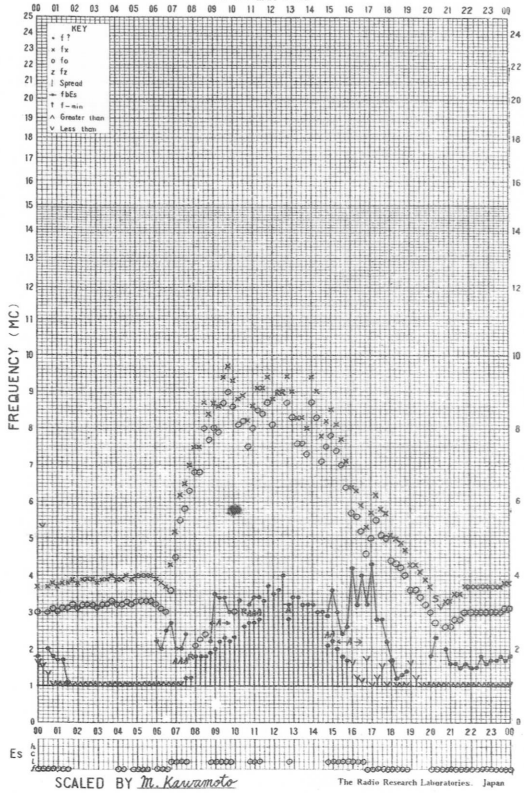

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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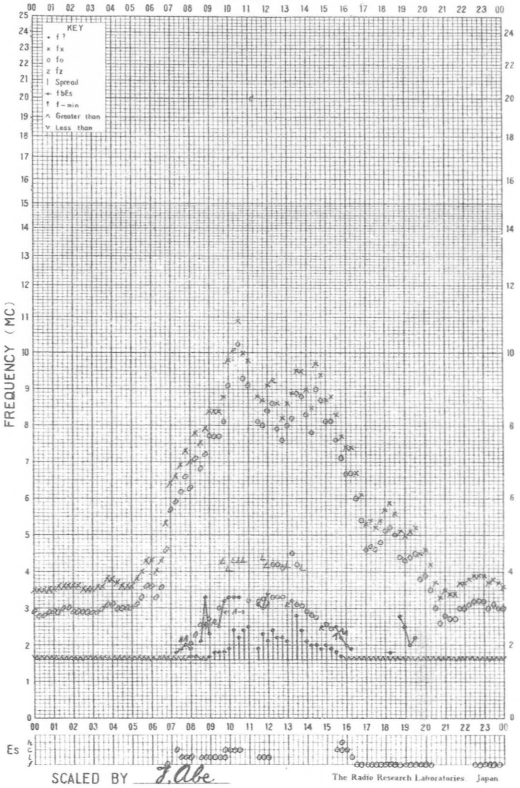

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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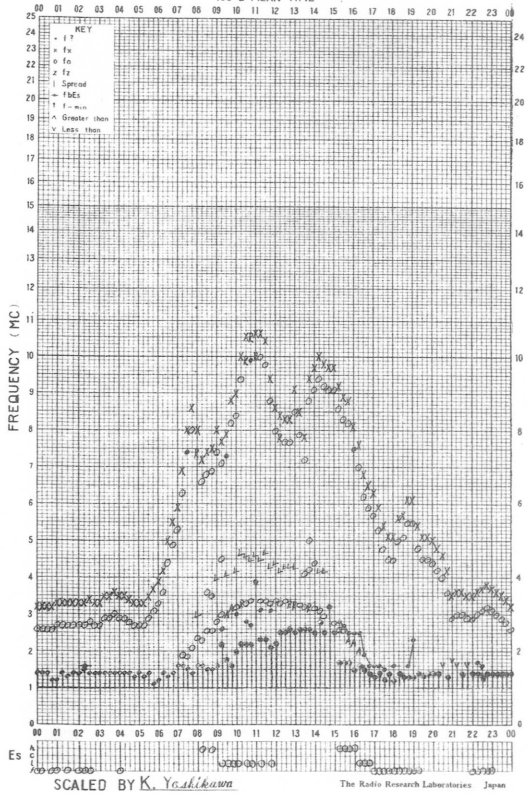

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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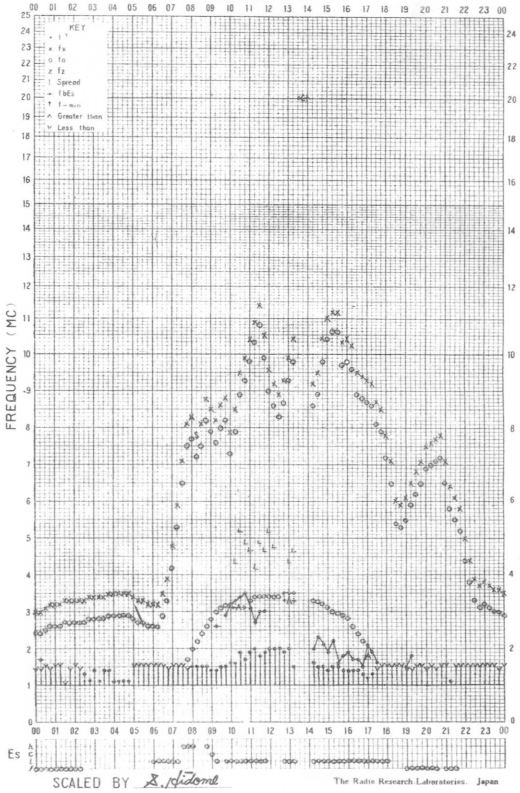

SCALED BY S. Shitomi

The Radio Research Laboratories. Japan

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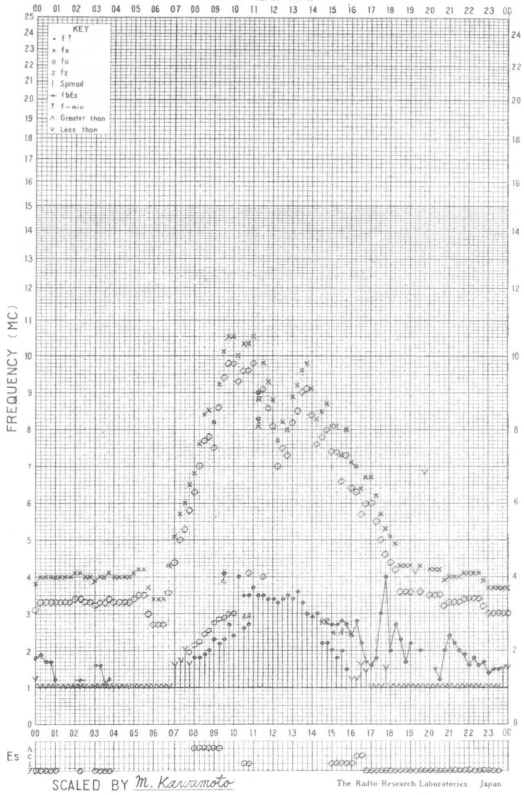

SCALED BY M. Kawamoto

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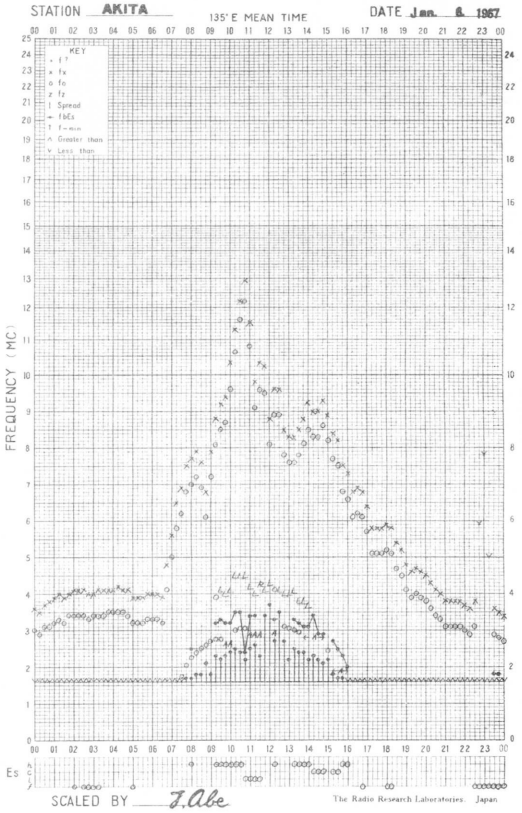

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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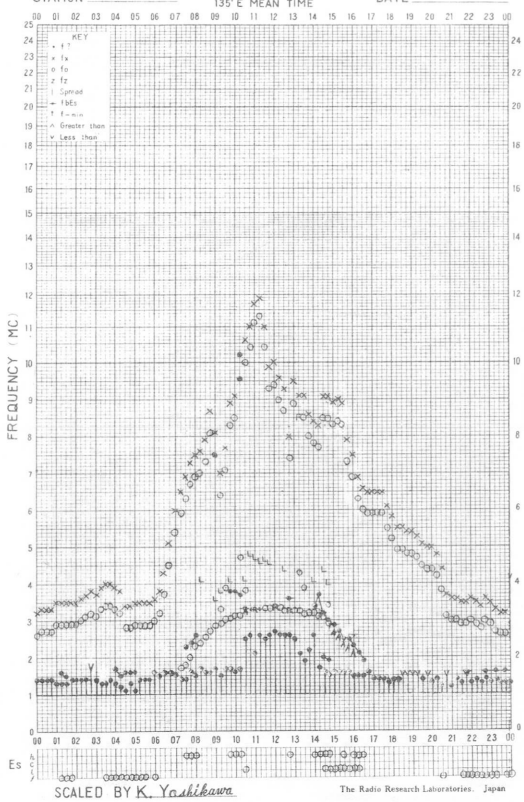

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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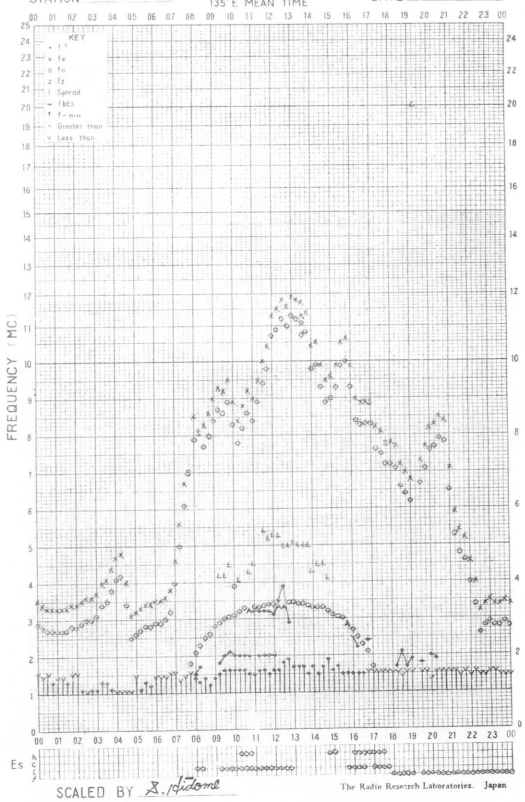

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The Radio Research Laboratories. Japan

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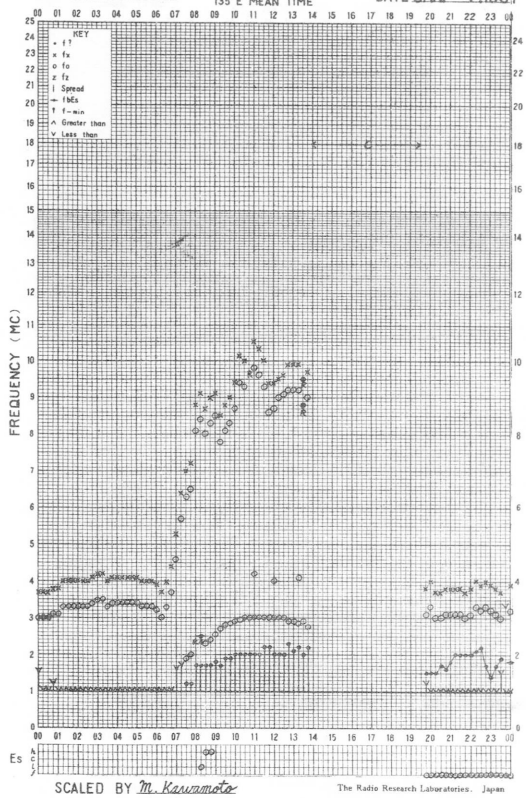
STATION WAKKANAI 135°E MEAN TIME DATE JAN. 7.1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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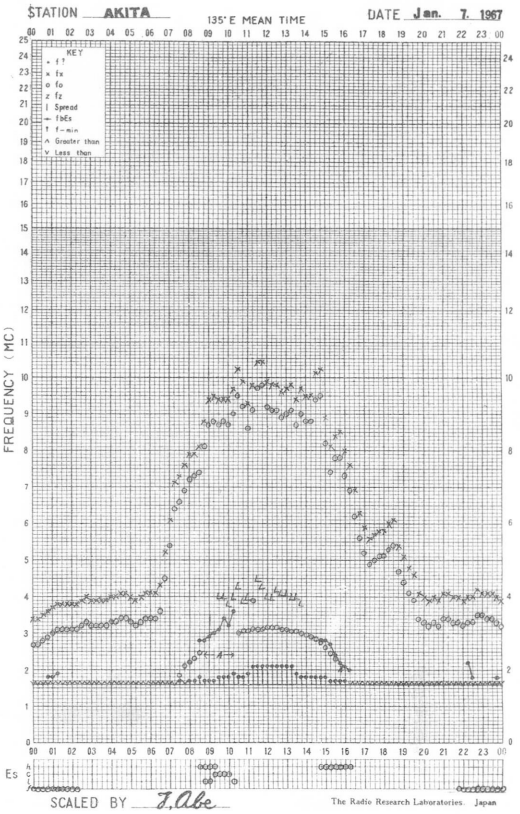

SCALED BY T. Abe The Radio Research Laboratories. Japan

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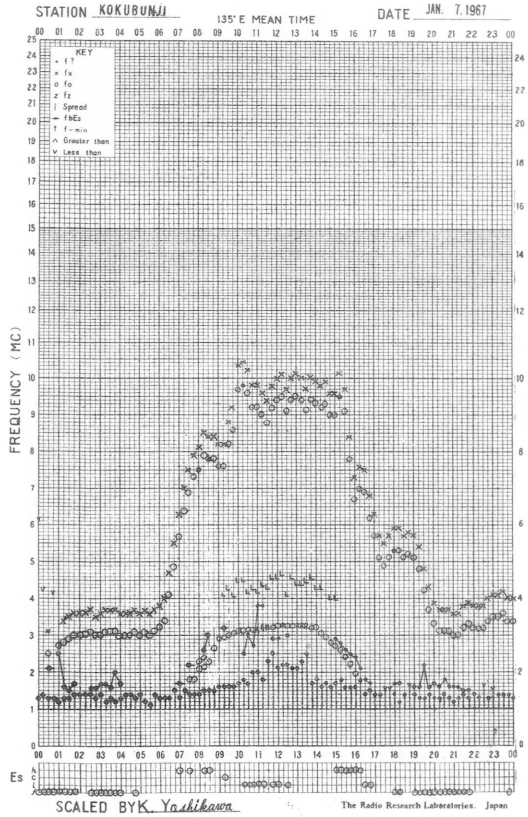

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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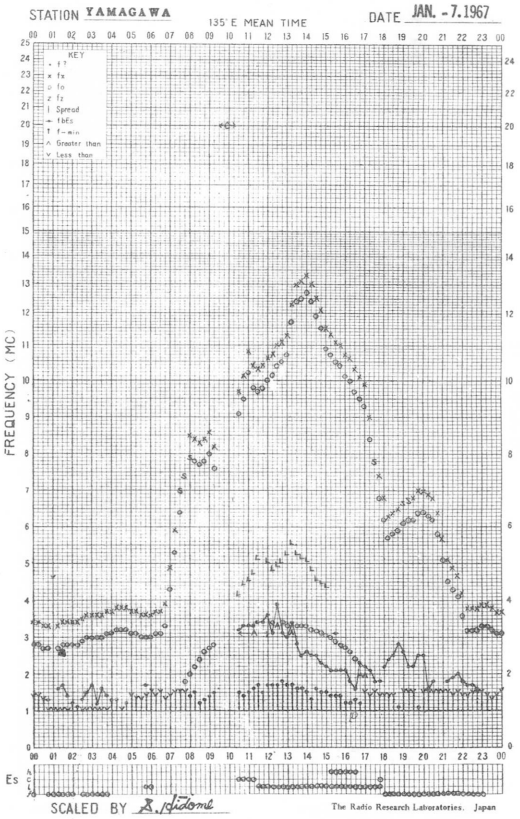

SCALED BY A. Shitomi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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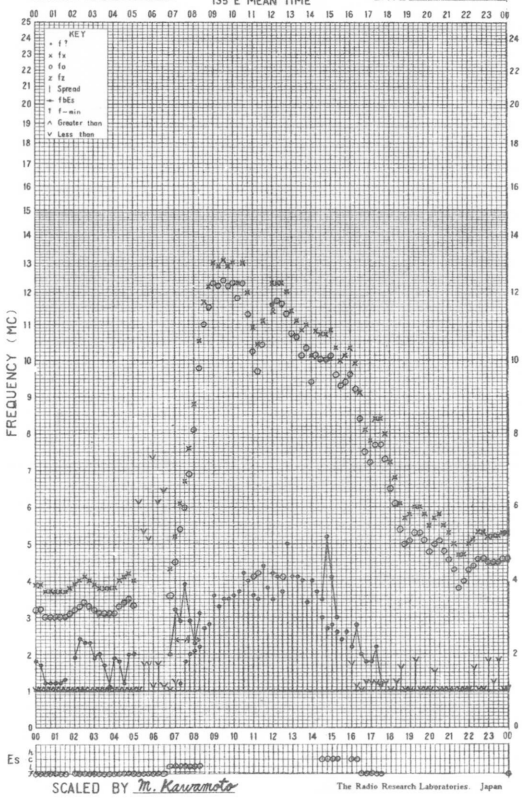

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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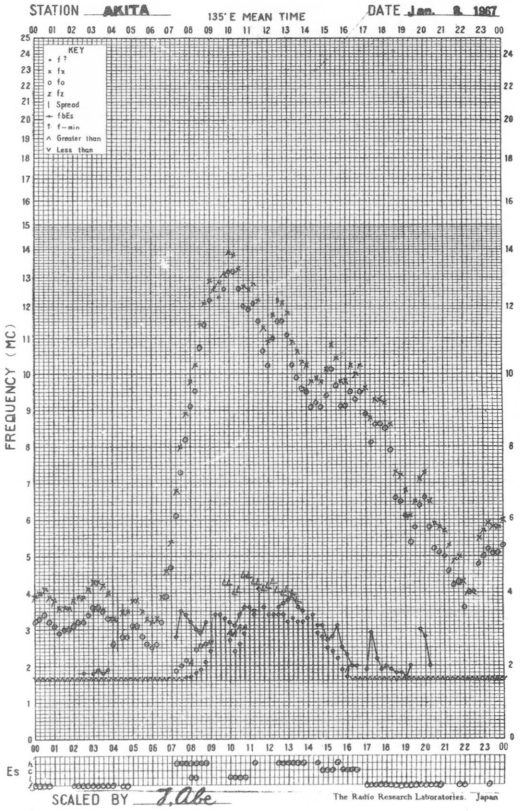

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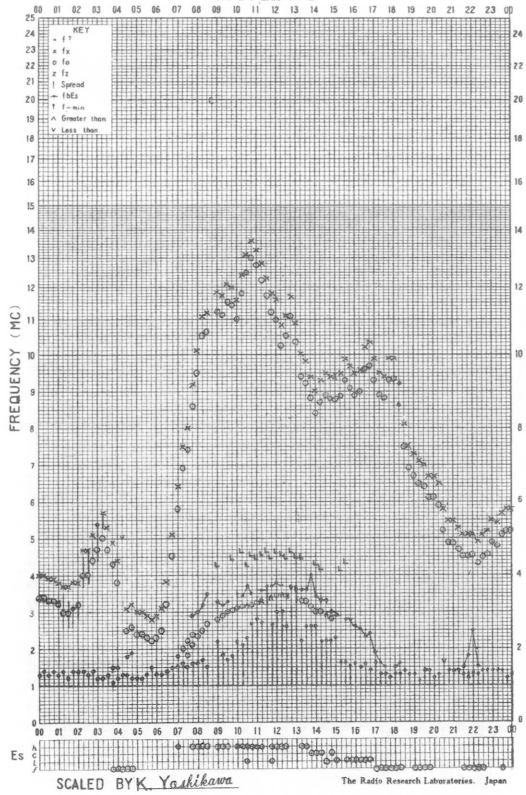

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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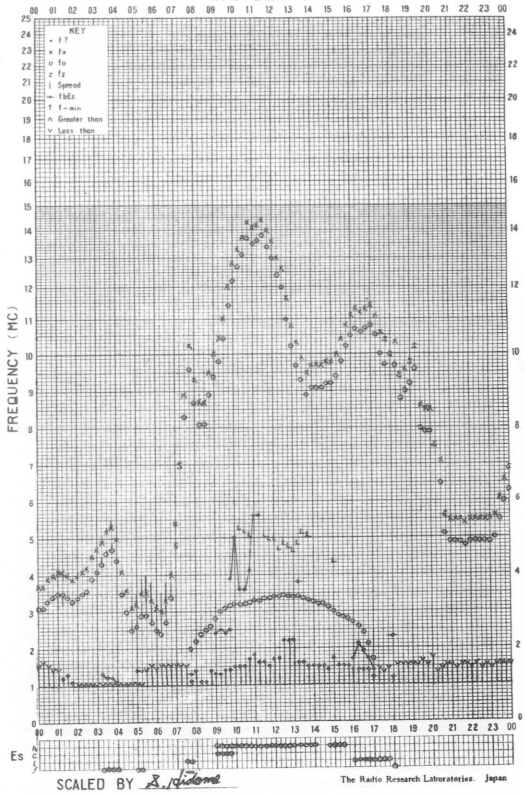

SCALED BY S. Sidomi

The Radio Research Laboratories. Japan

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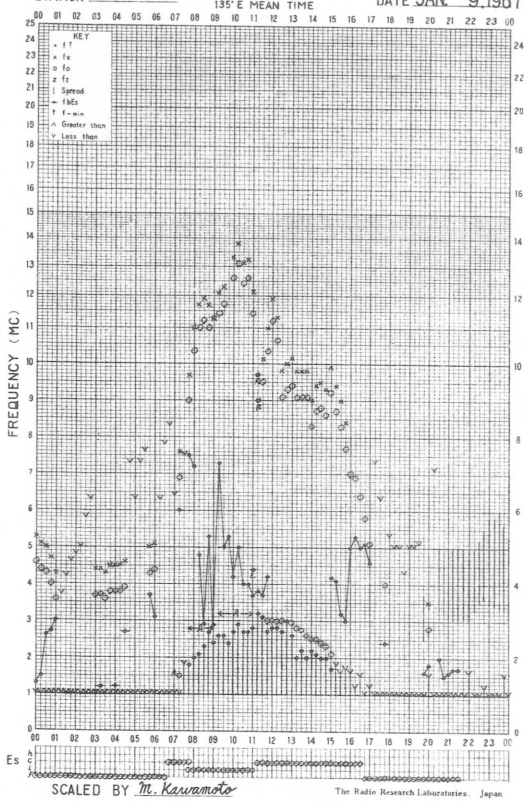

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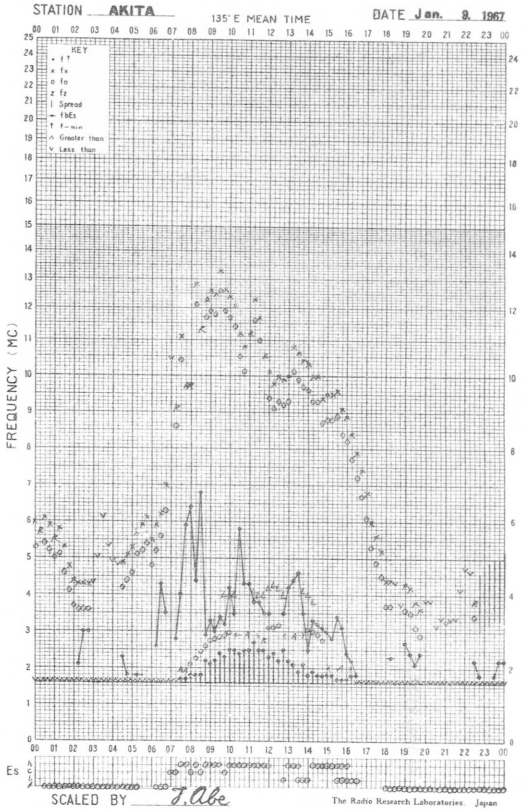

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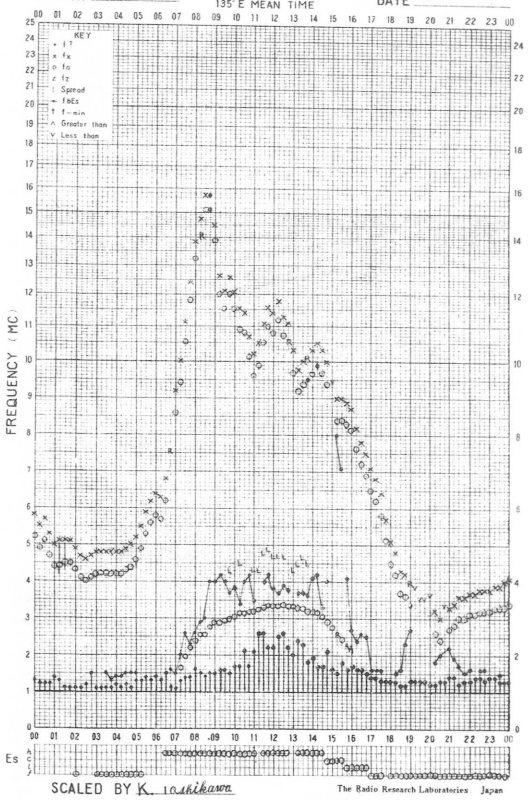

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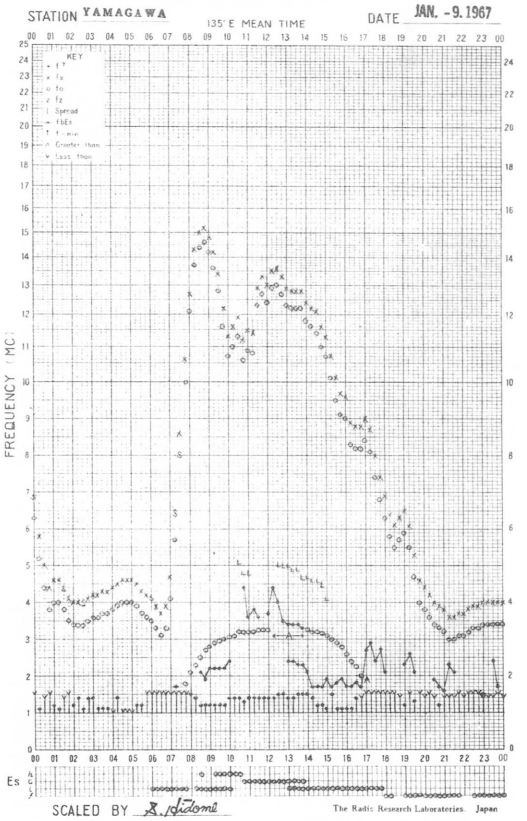

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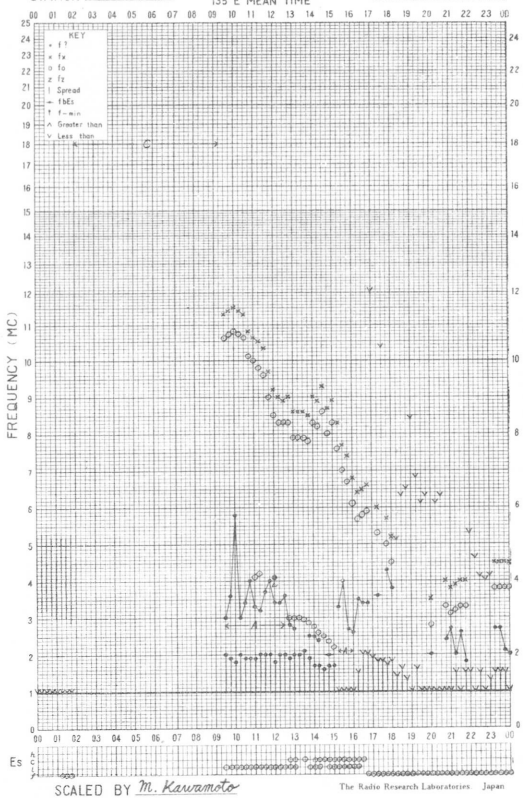

SCALED BY M. Kawamoto The Radio Research Laboratories Japan

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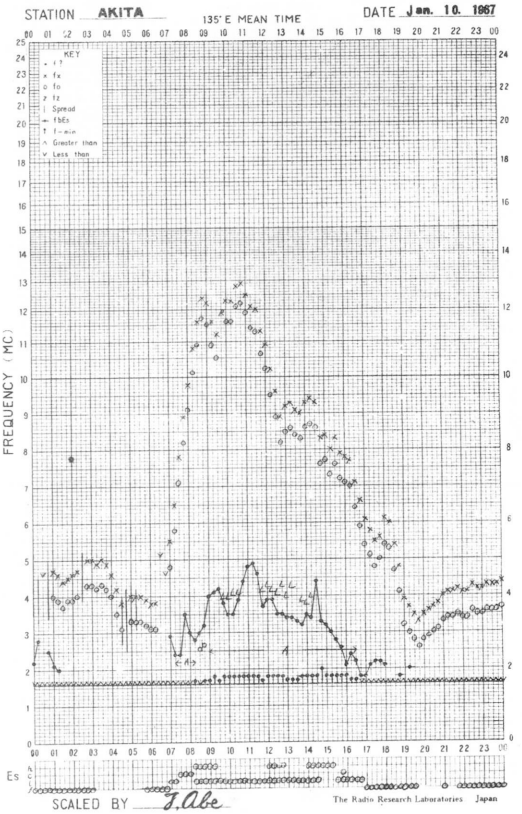

SCALED BY T. Abe The Radio Research Laboratories Japan

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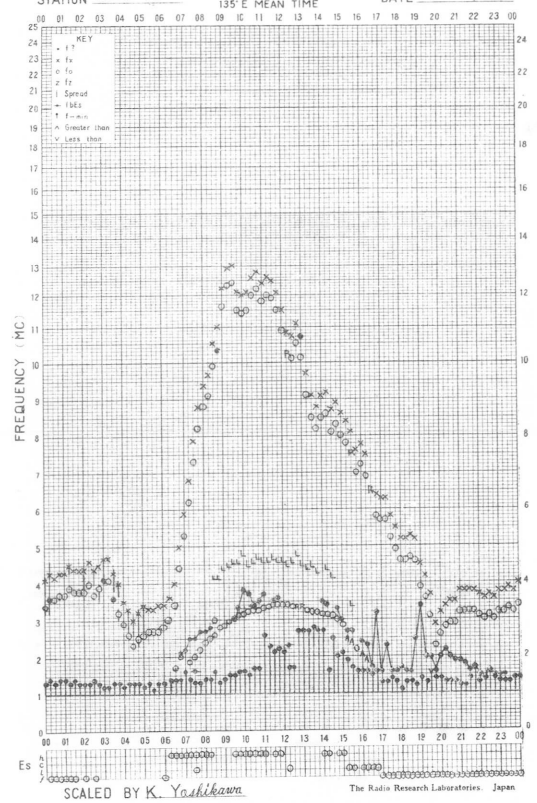

SCALED BY K. Yoshikawa The Radio Research Laboratories Japan

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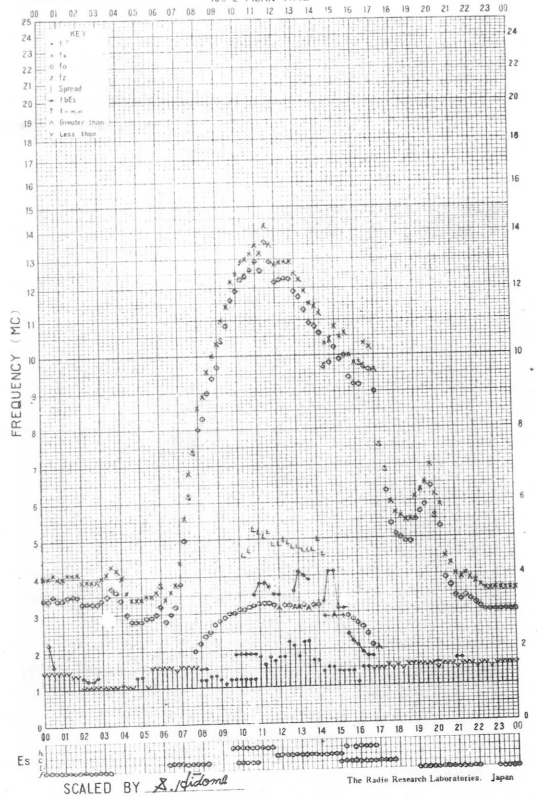

SCALED BY S. Sidooni The Radio Research Laboratories. Japan

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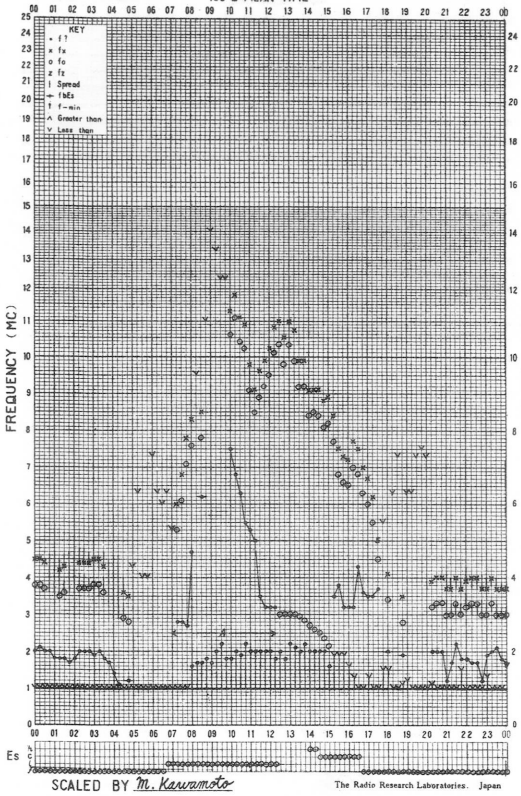

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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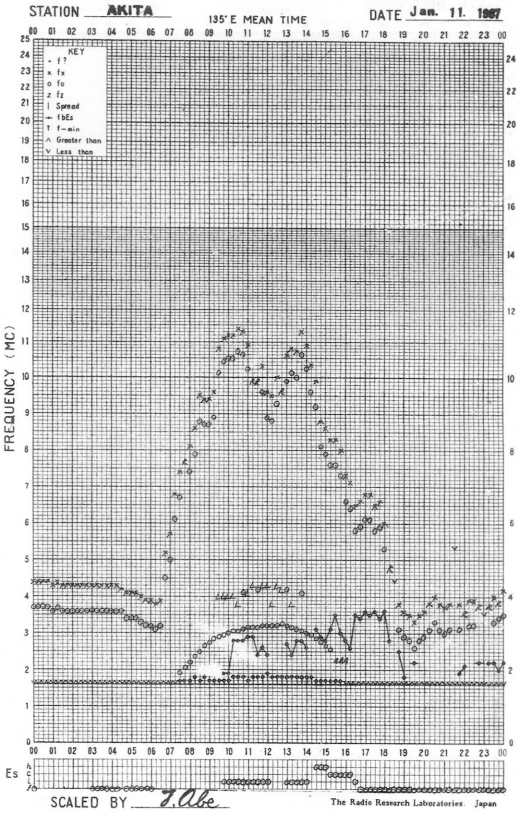

SCALED BY T. Abe

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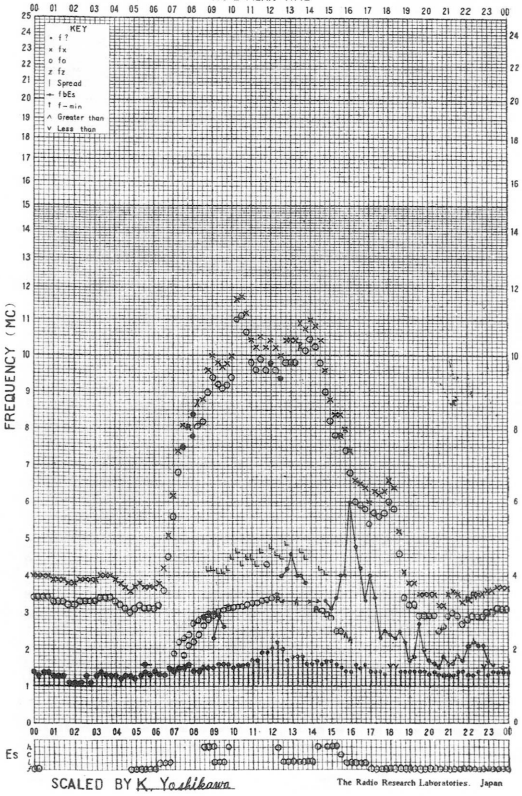

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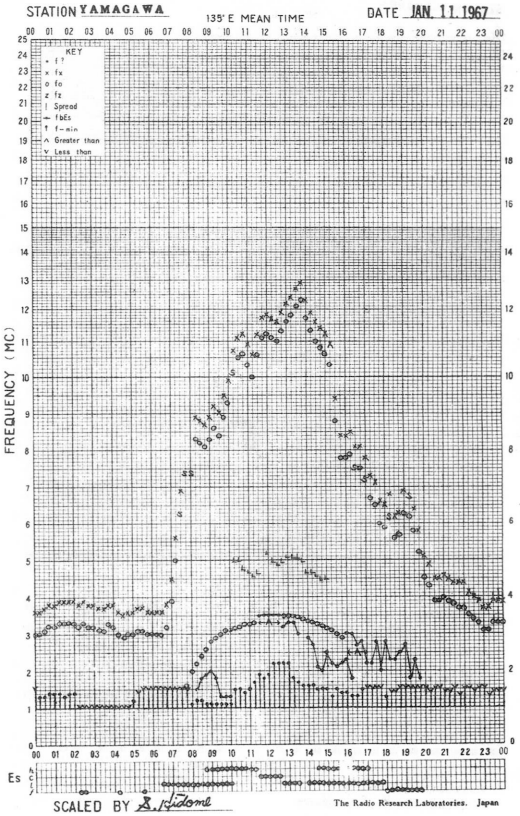

SCALED BY S. Kitami

The Radio Research Laboratories. Japan

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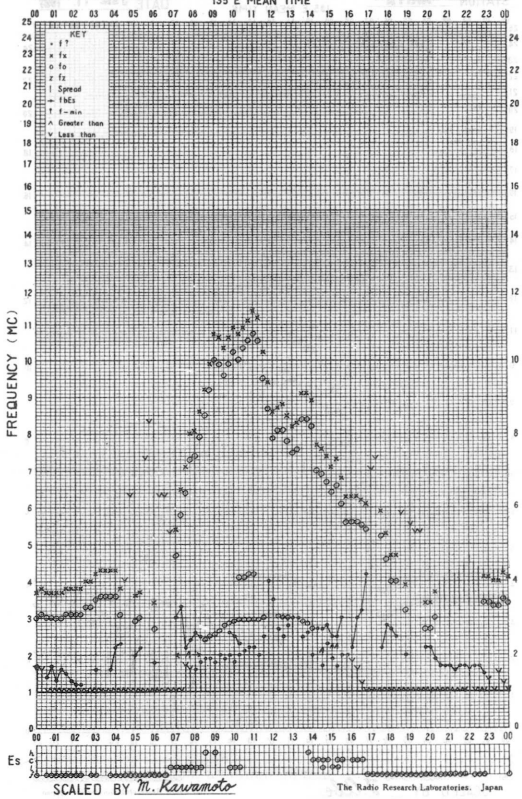

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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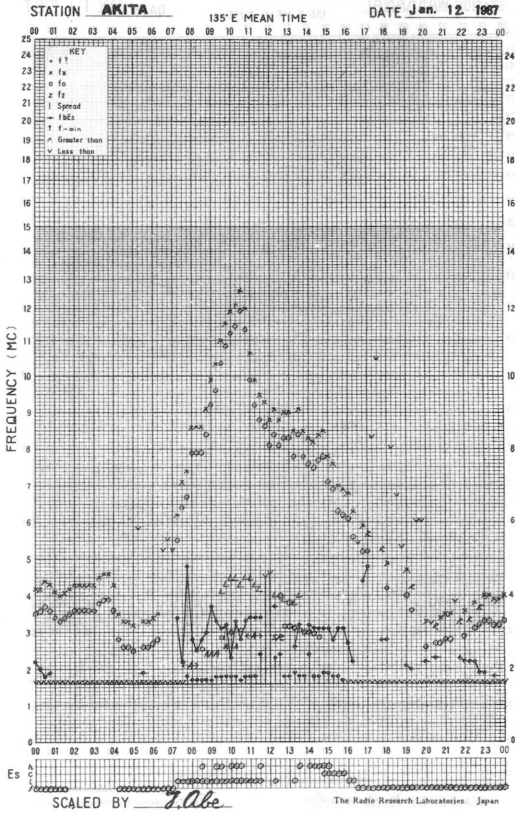

SCALED BY T. Abe

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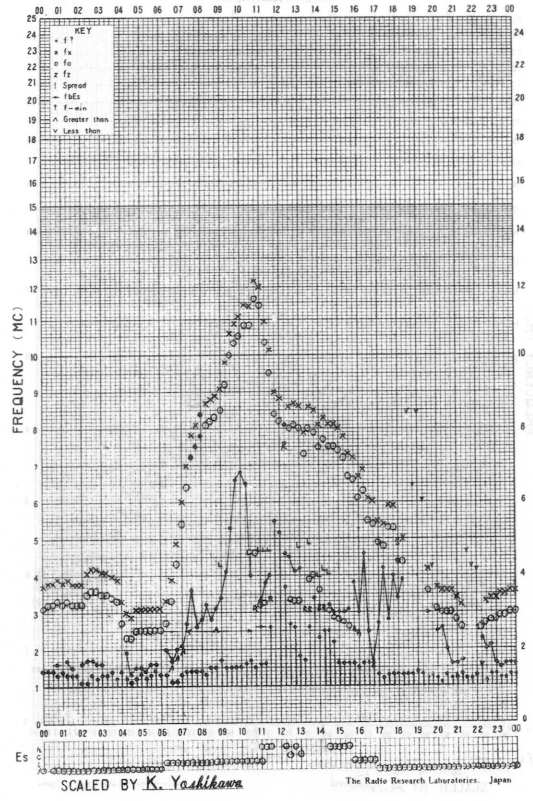
STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 12, 1967



SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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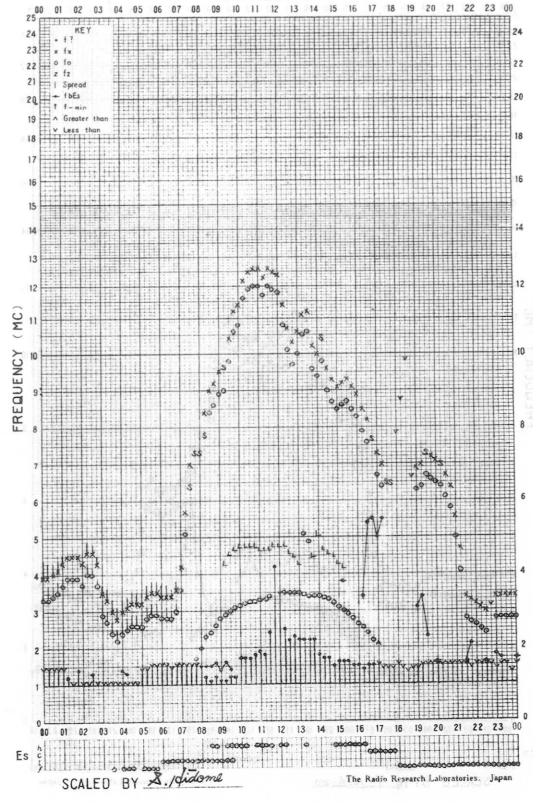
STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 12. 1967



SCALED BY S. Fukami

The Radio Research Laboratories. Japan

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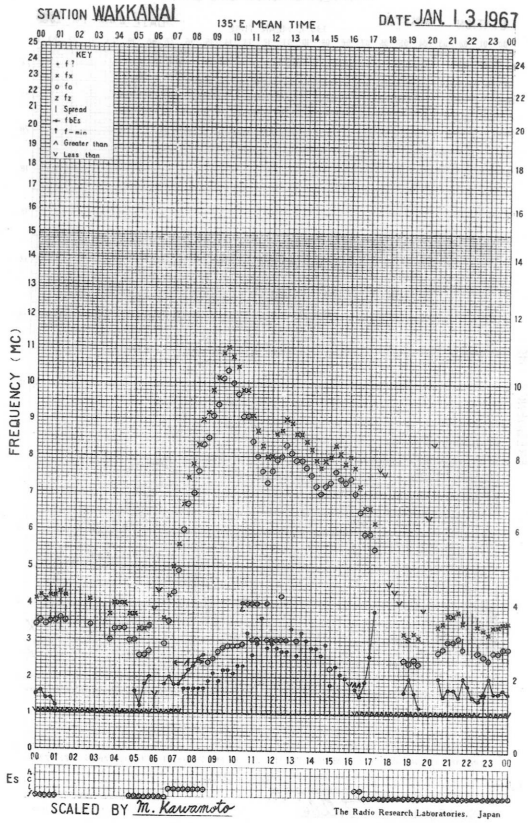

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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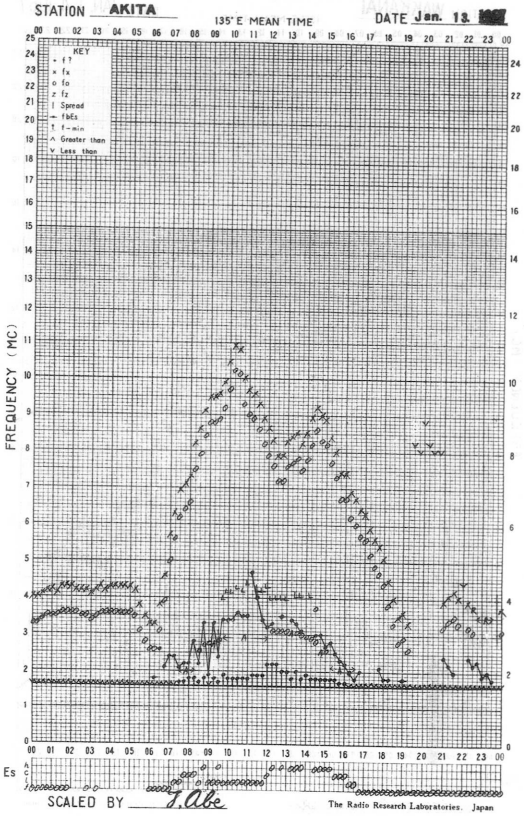

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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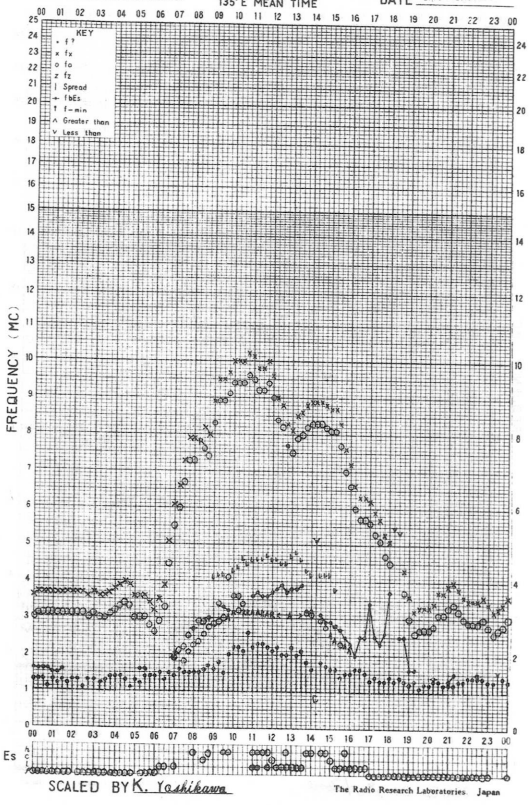

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The Radio Research Laboratories. Japan

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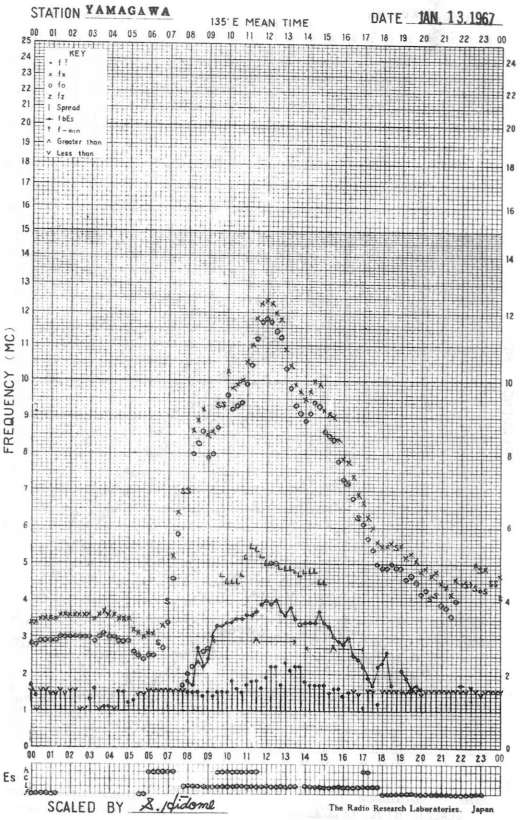

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The Radio Research Laboratories. Japan

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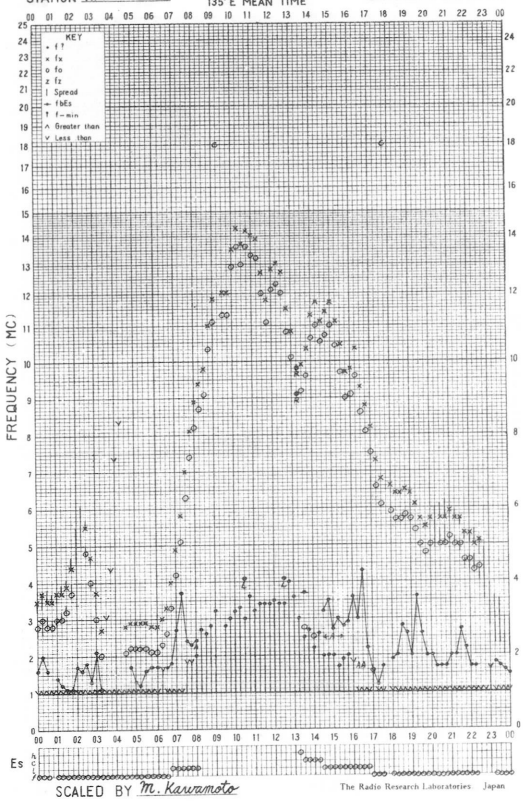

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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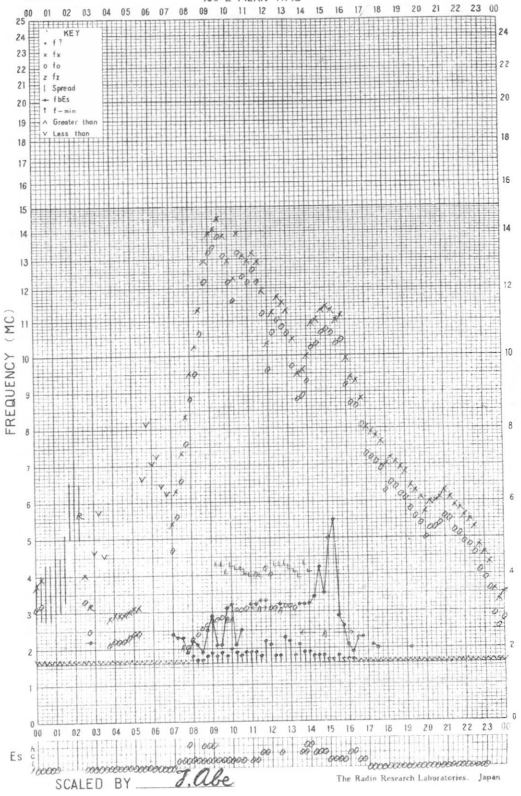

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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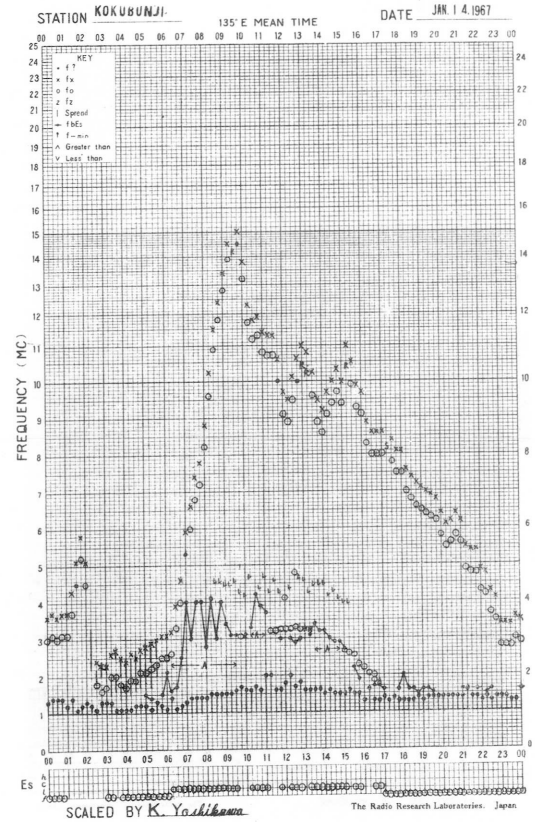

SCALED BY K. Yoshikawa

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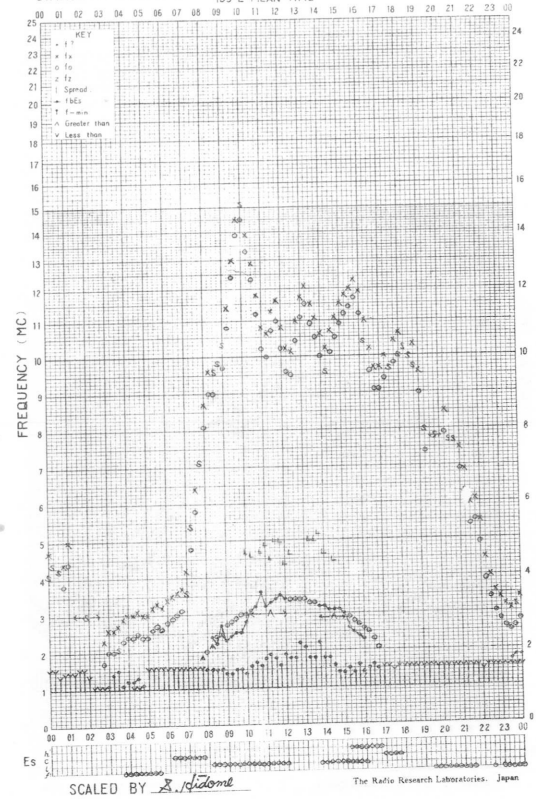

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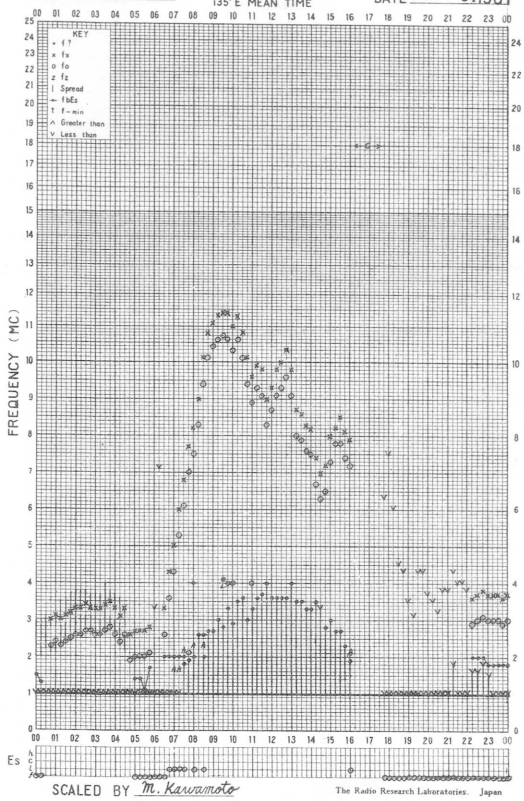

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The Radio Research Laboratories. Japan

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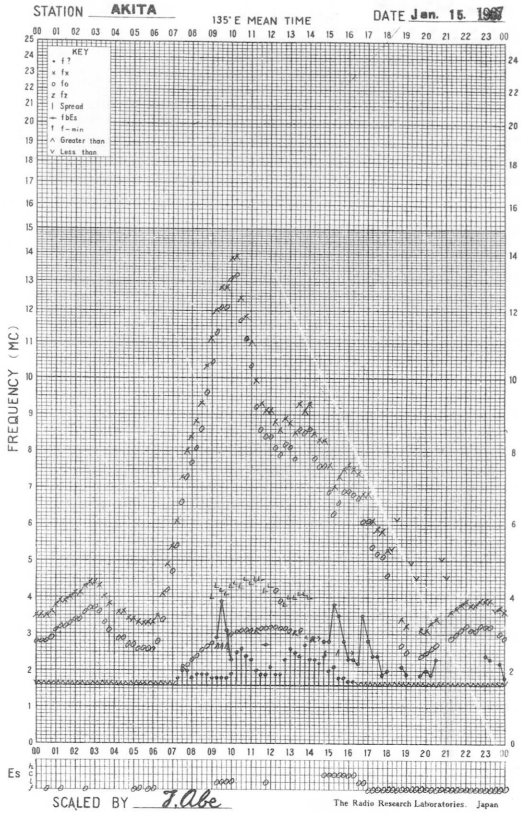

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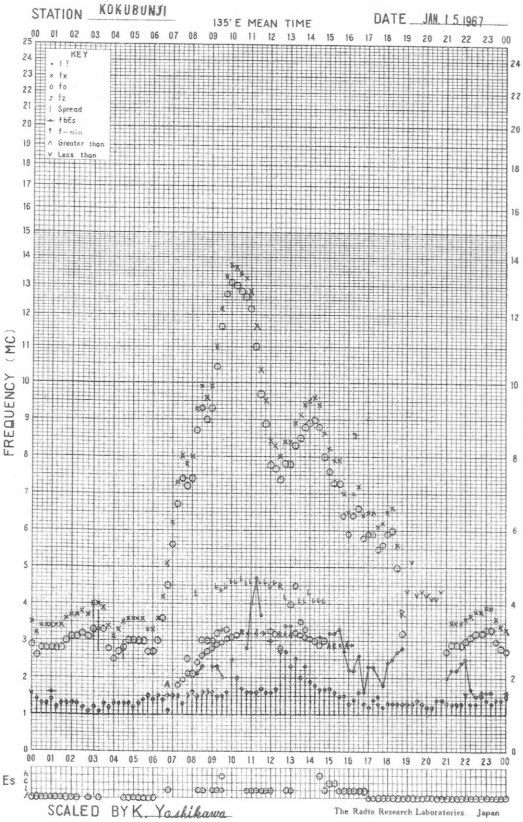

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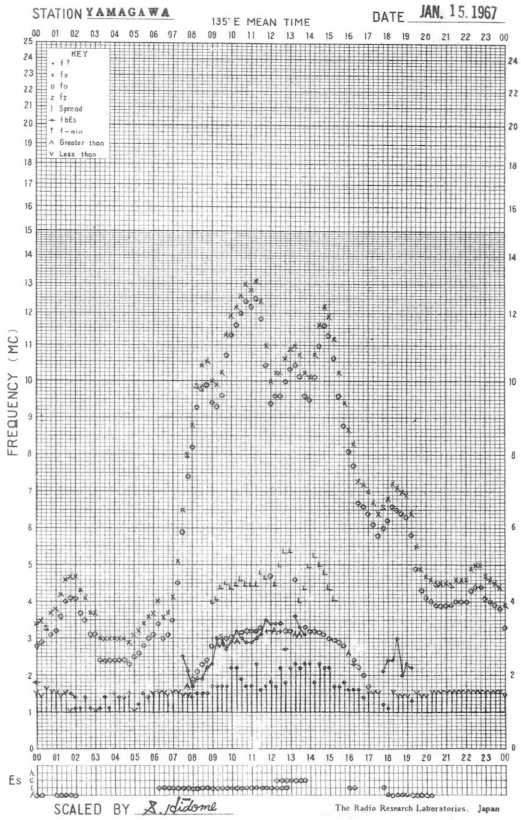

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The Radio Research Laboratories. Japan

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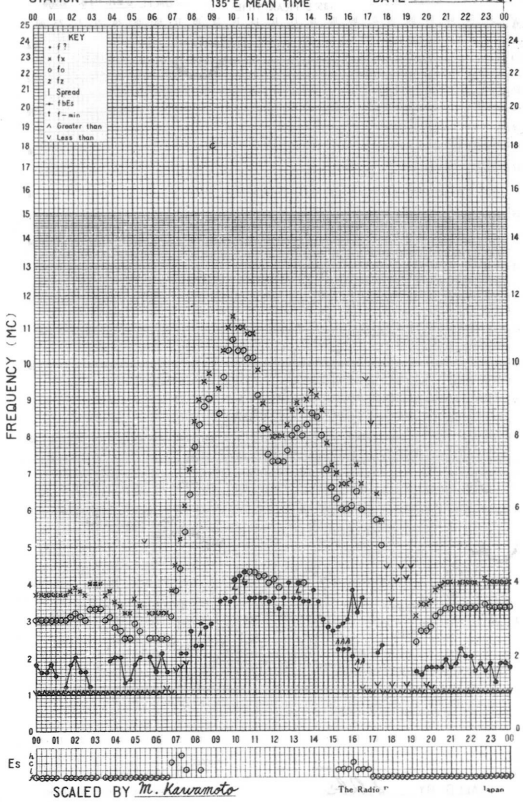

SCALED BY M. Kawamoto The Radio R Japan

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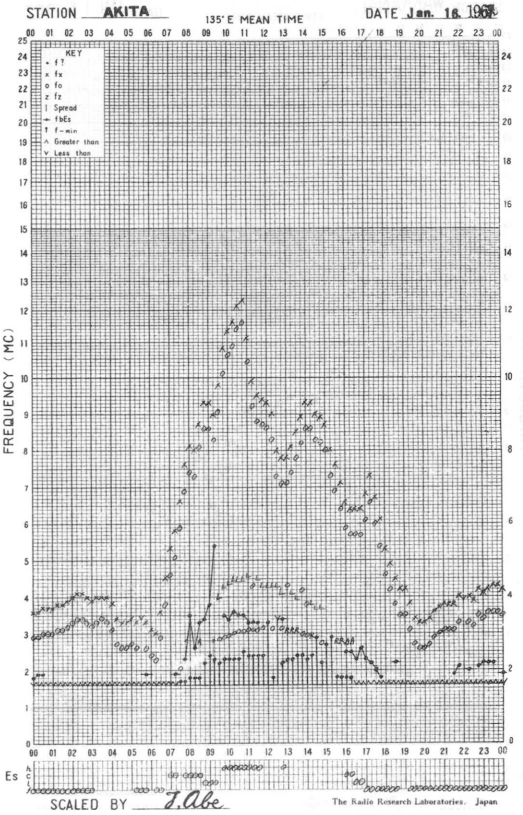

SCALED BY J. Abe The Radio Research Laboratories. Japan

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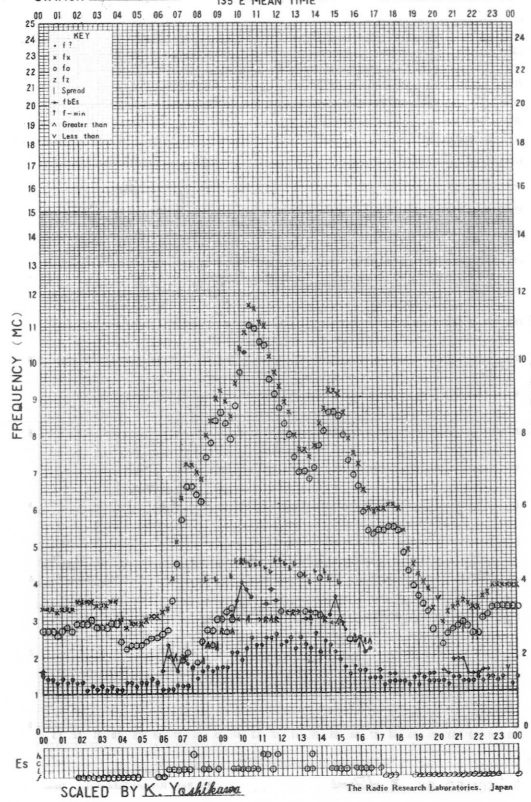

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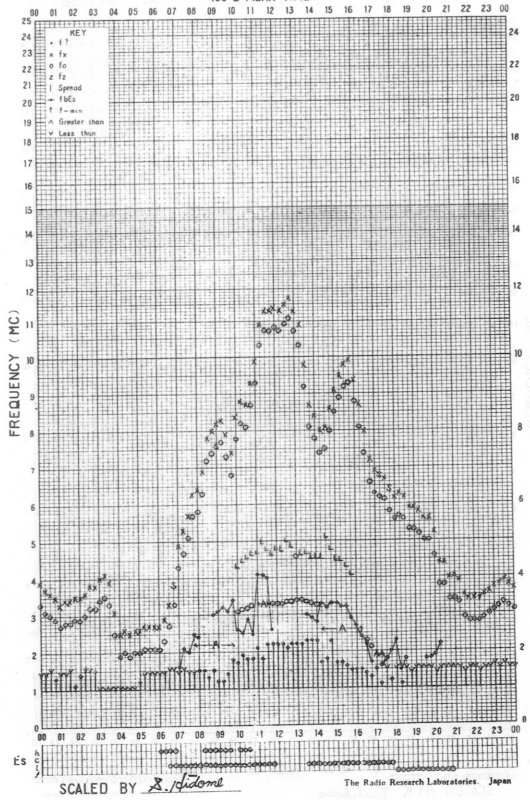
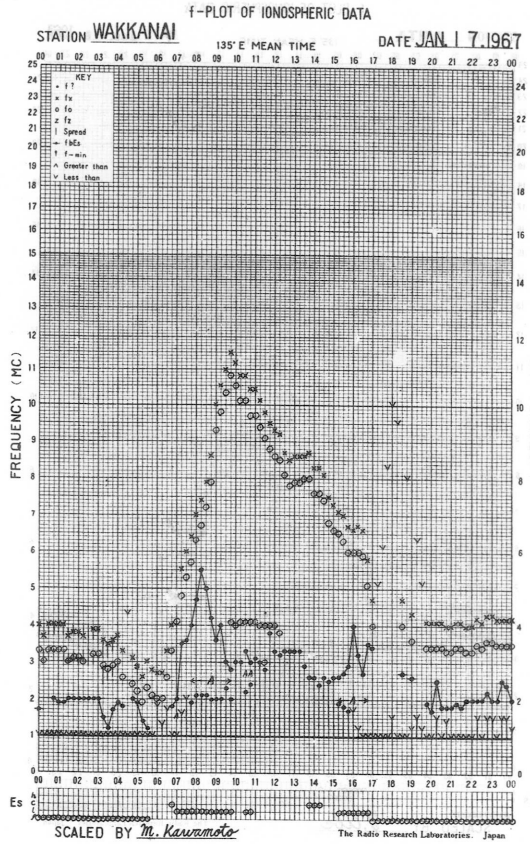


SCALED BY S. Kidome The Radio Research Laboratories. Japan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STATION WAKKANAI
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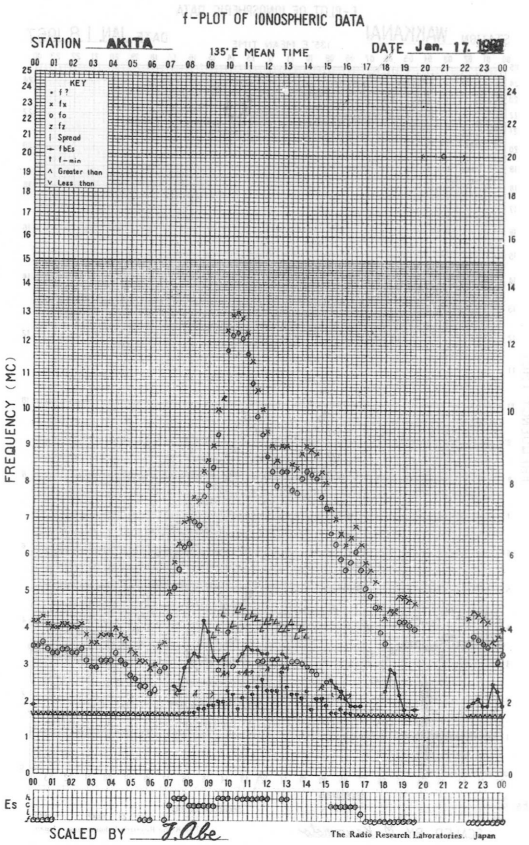
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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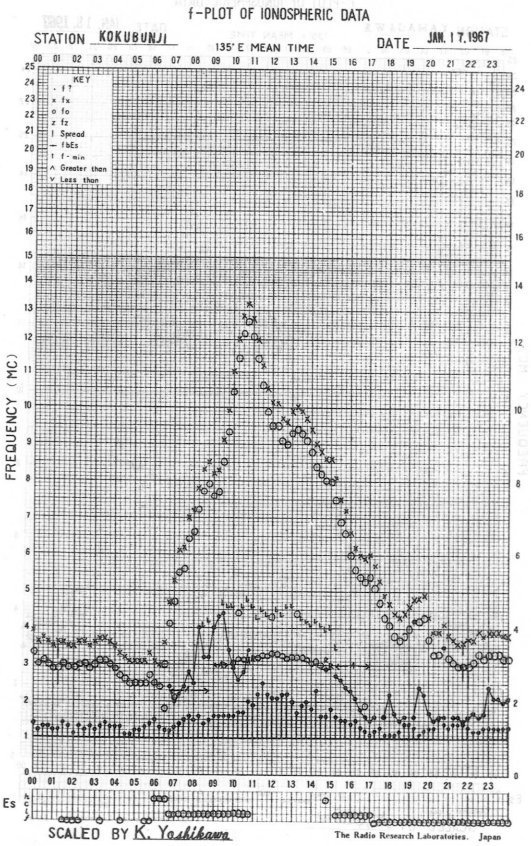
SCALED BY T. Abe
The Radio Research Laboratories. Japan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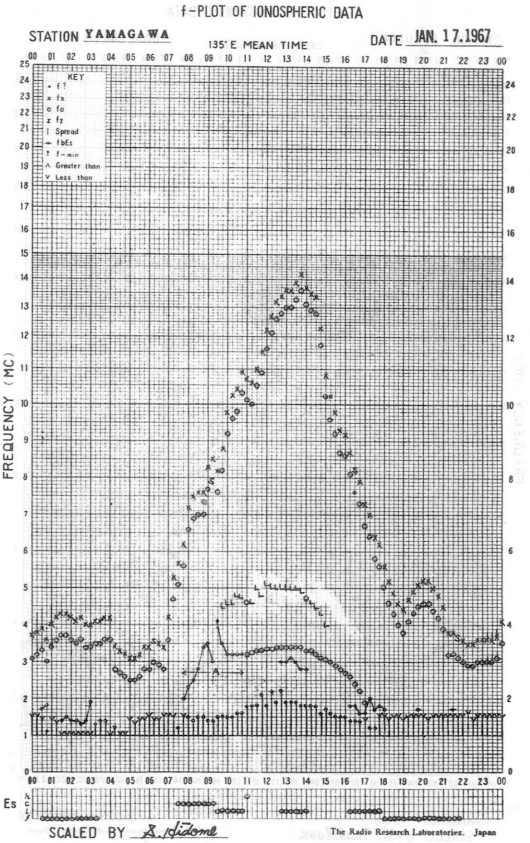
SCALED BY K. Yoshikawa
The Radio Research Laboratories. Japan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SCALED BY S. Ichome
The Radio Research Laboratories. Japan

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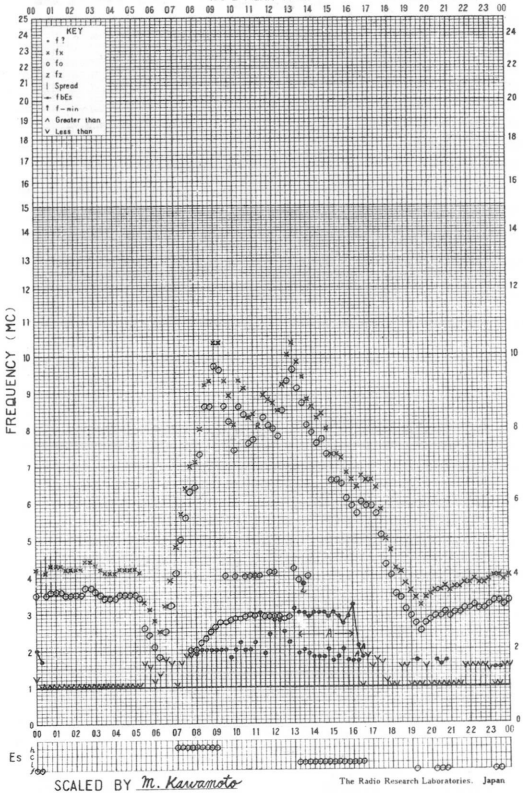

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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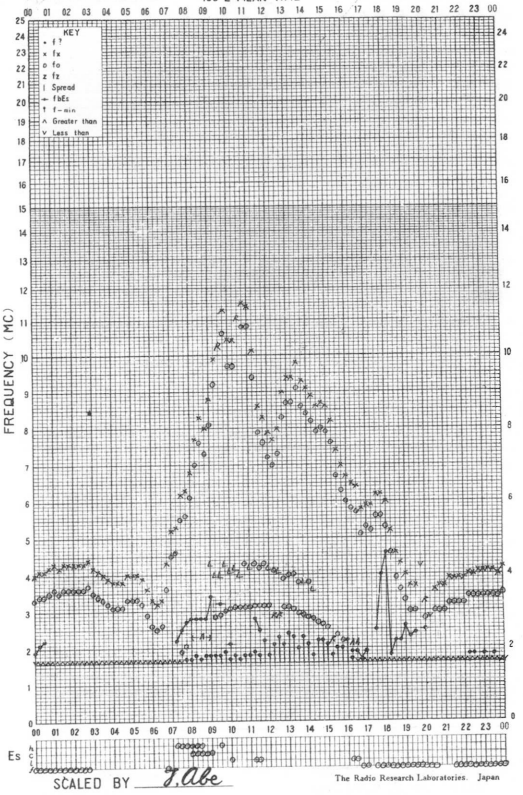

SCALED BY T. Abe

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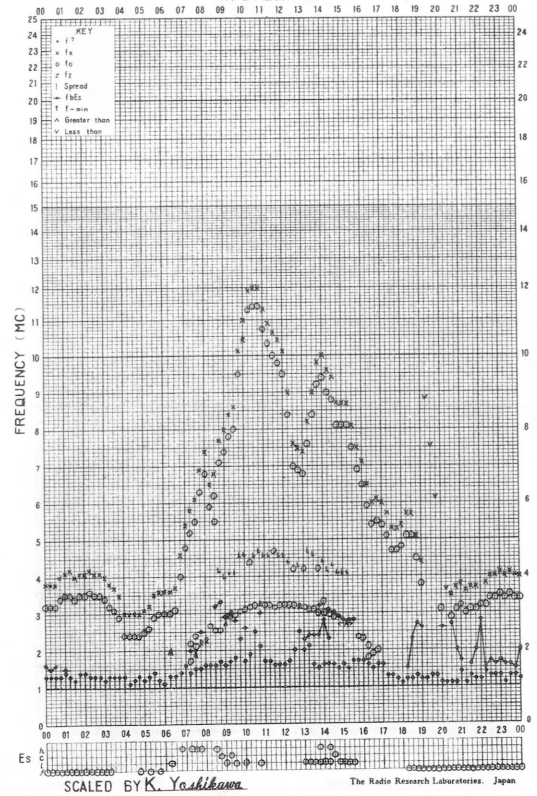

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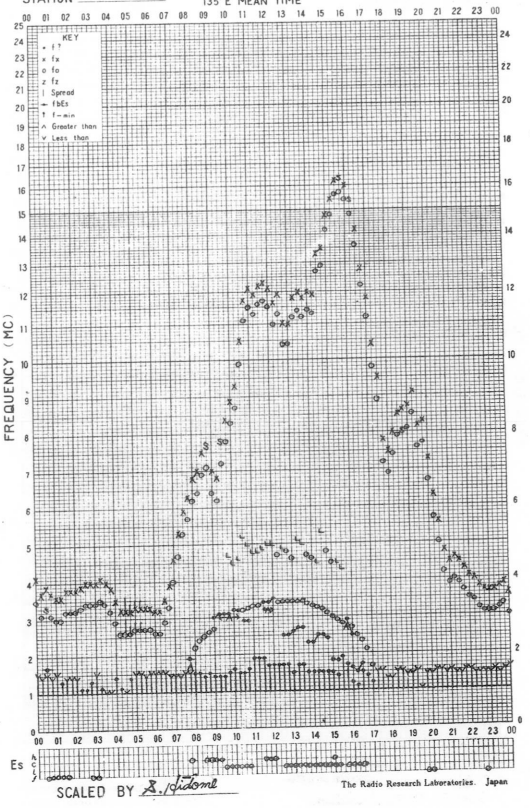

SCALED BY S. Isidome

The Radio Research Laboratories. Japan

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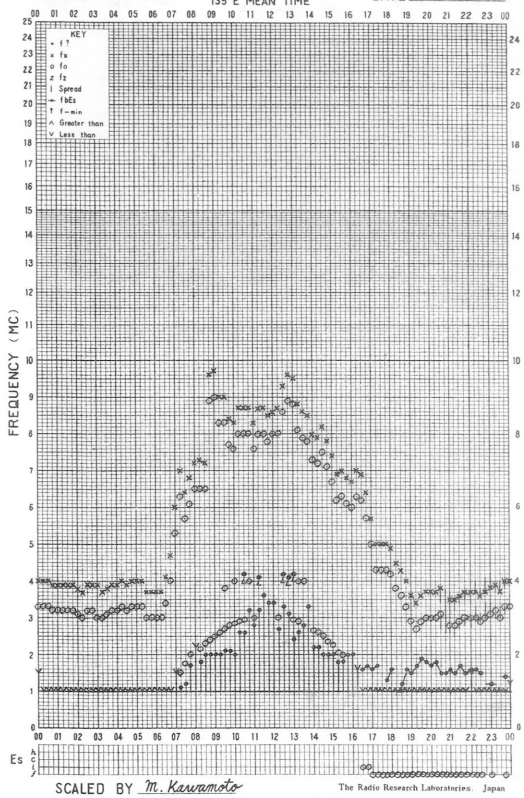

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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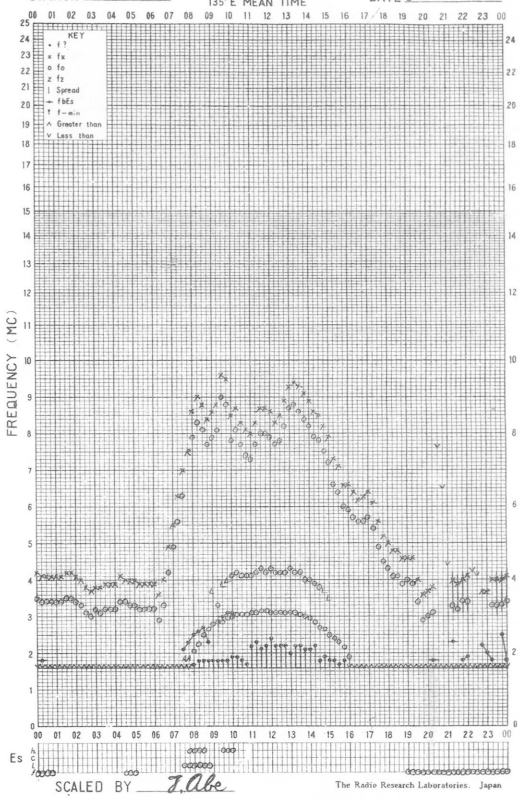

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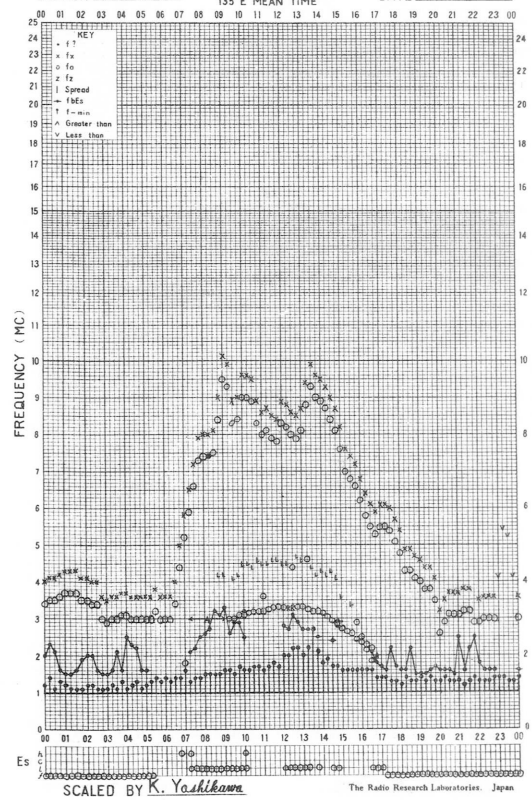

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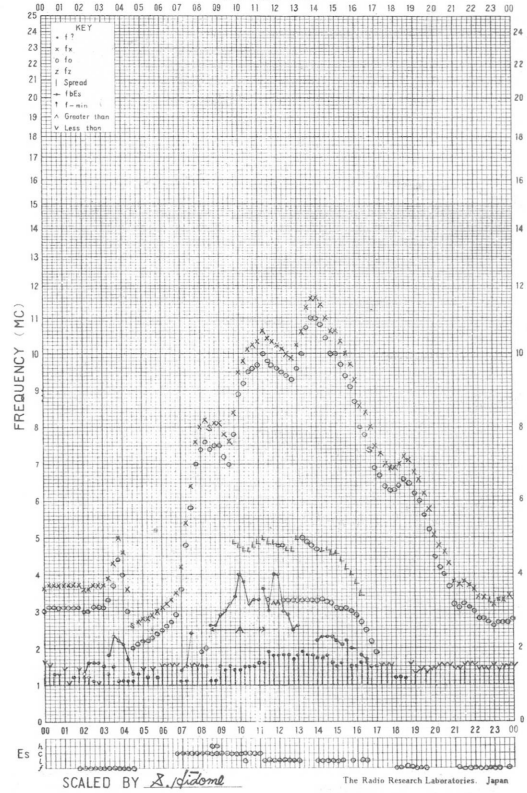

SCALED BY S. Shitome The Radio Research Laboratories. Japan

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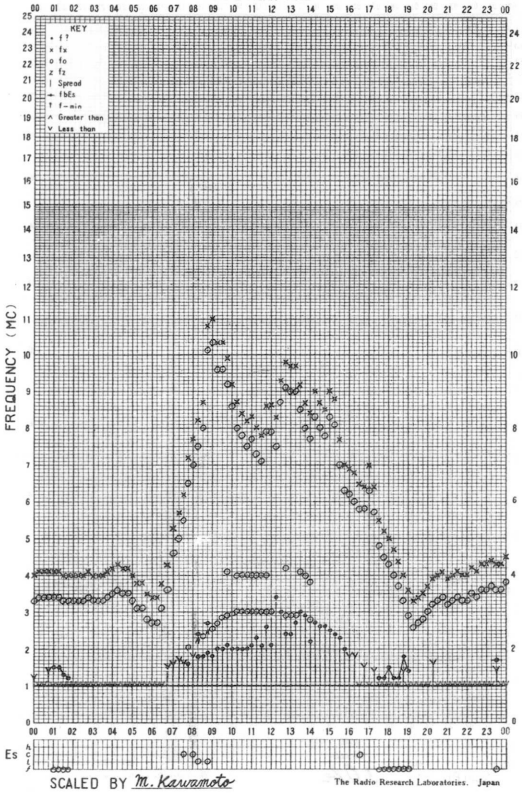

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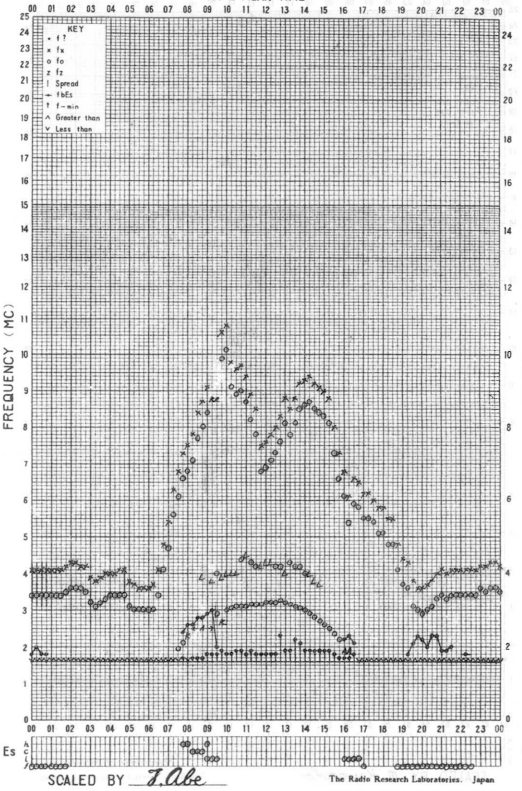

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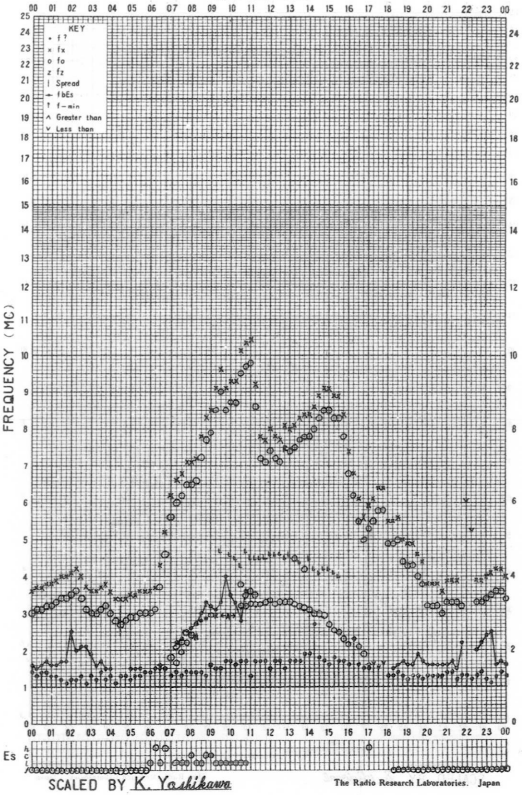

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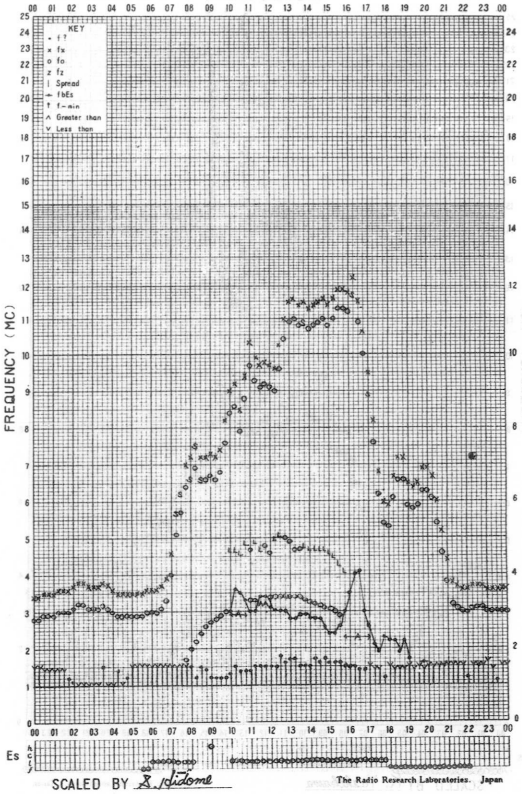

SCALED BY S. Shidome The Radio Research Laboratories. Japan

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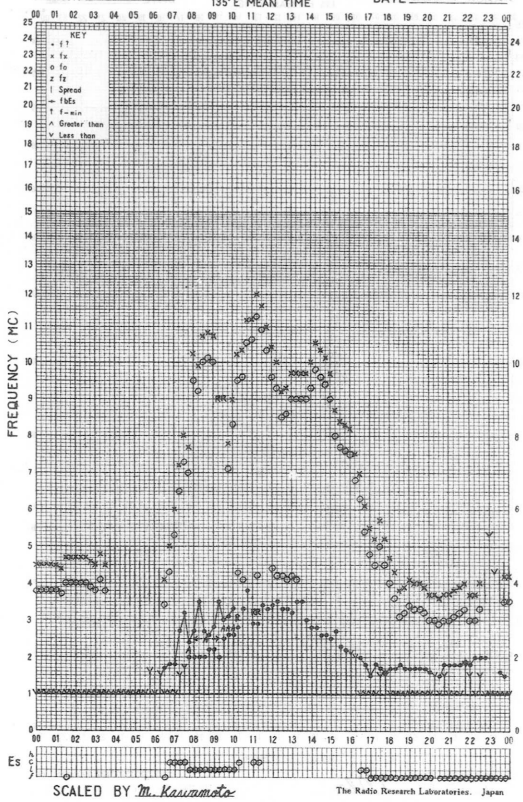

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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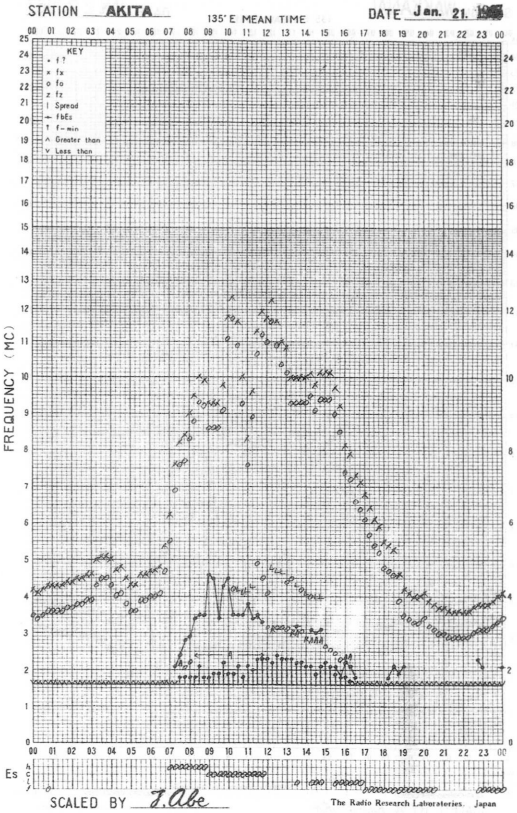

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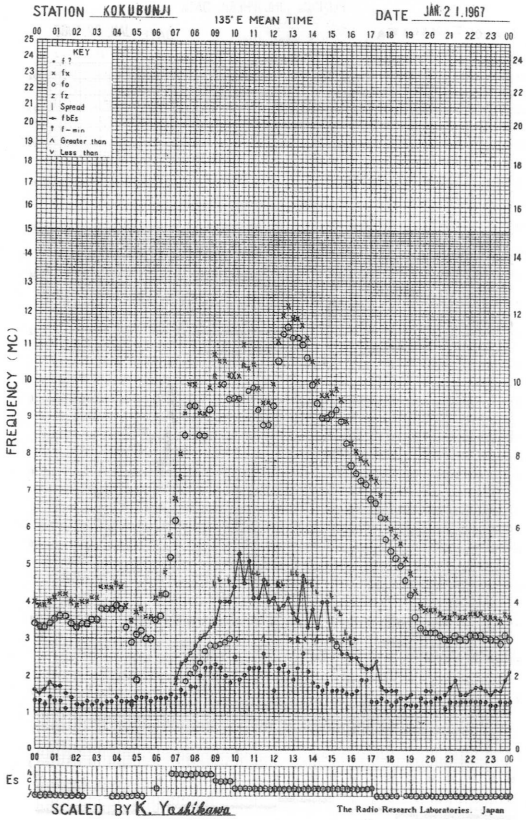

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The Radio Research Laboratories. Japan

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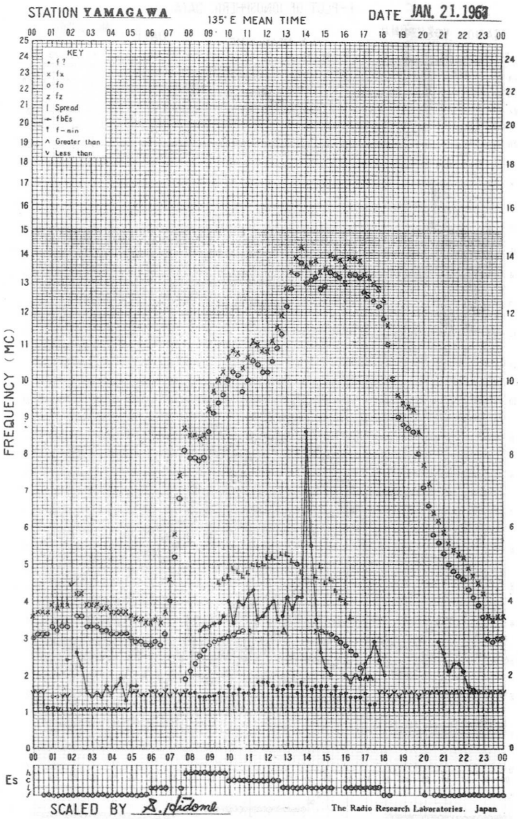

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The Radio Research Laboratories. Japan

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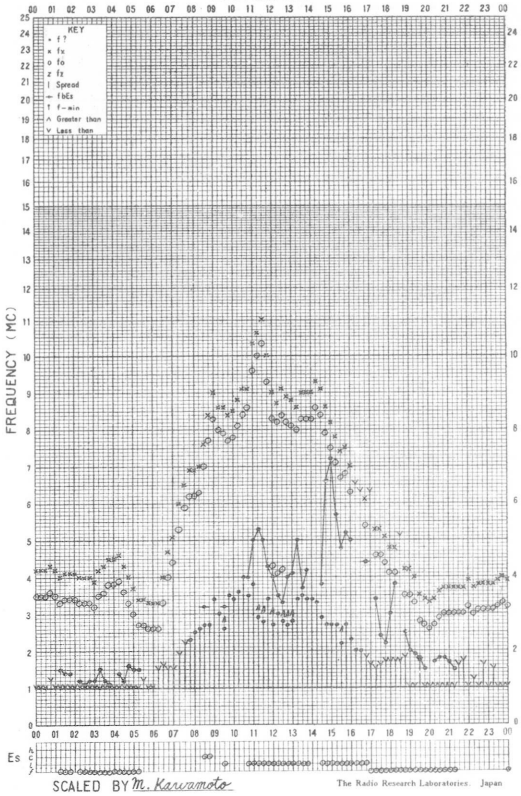

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The Radio Research Laboratories. Japan

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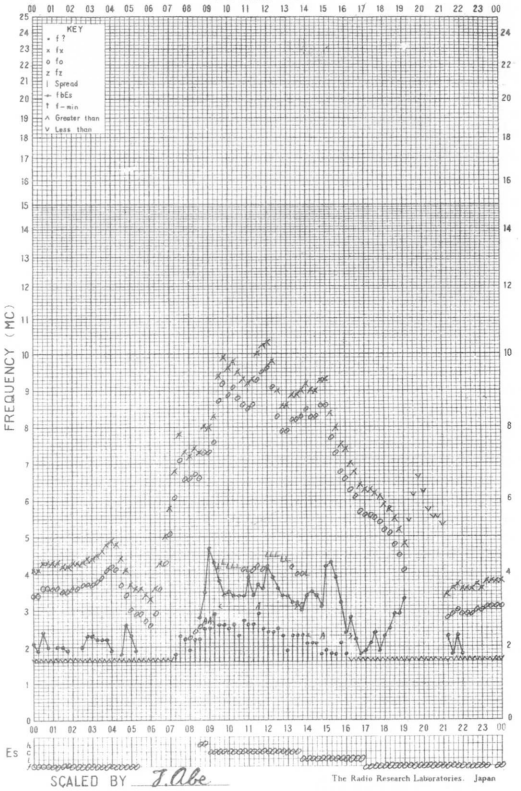

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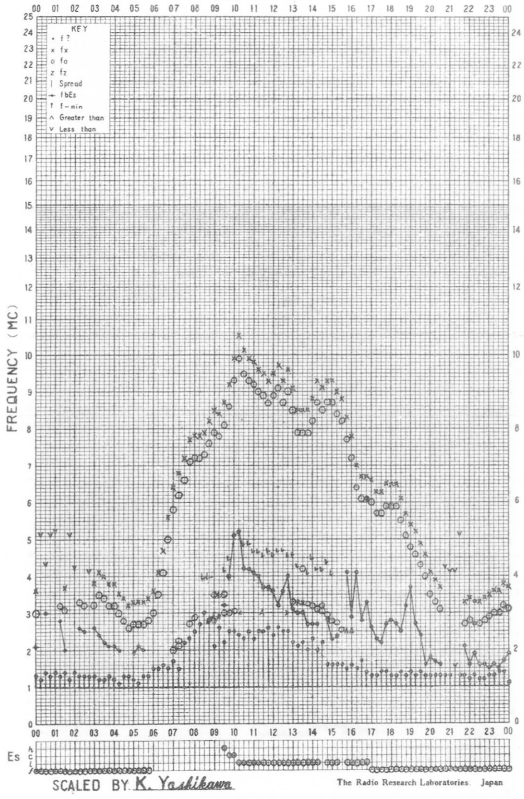

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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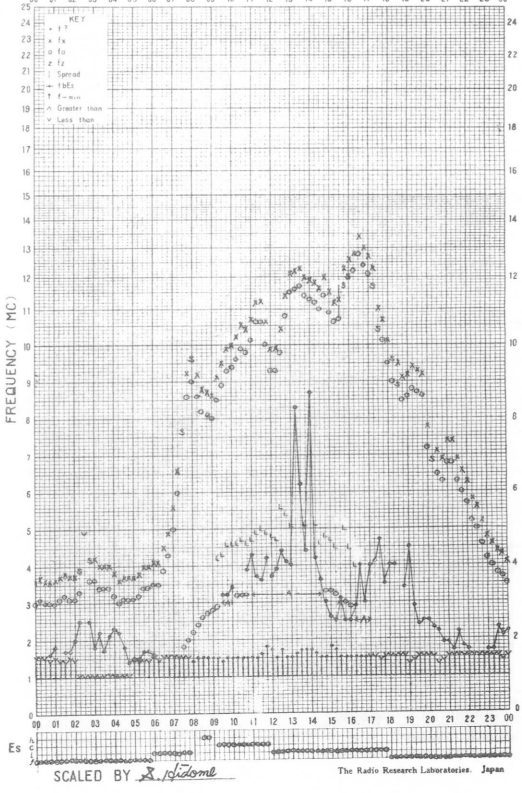

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The Radio Research Laboratories. Japan

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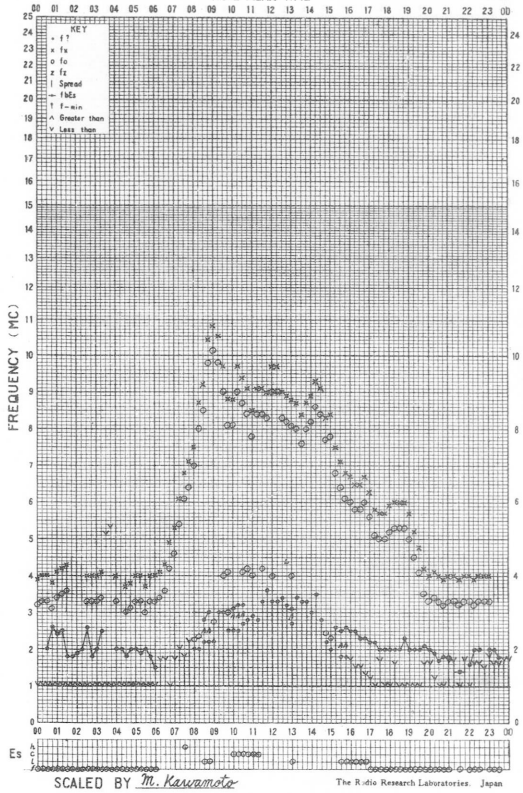
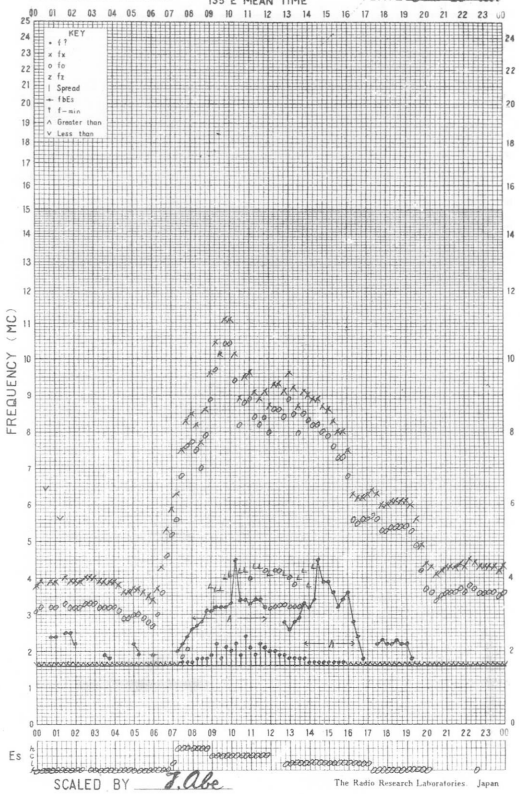


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 23 1967

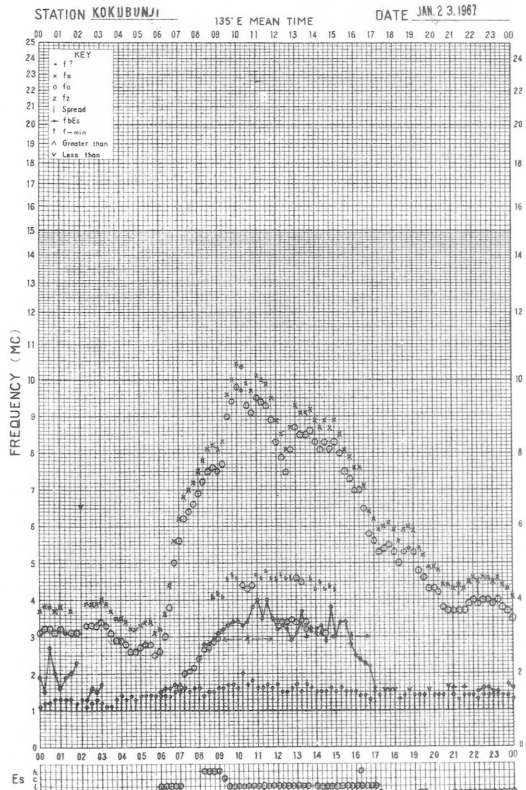


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 2 3. 1967



SCALED BY K. Yoshikawa

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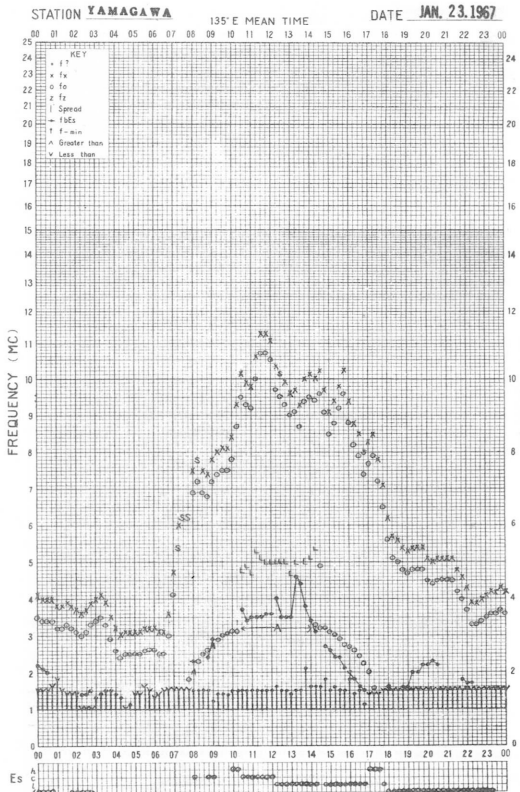
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 23. 1967

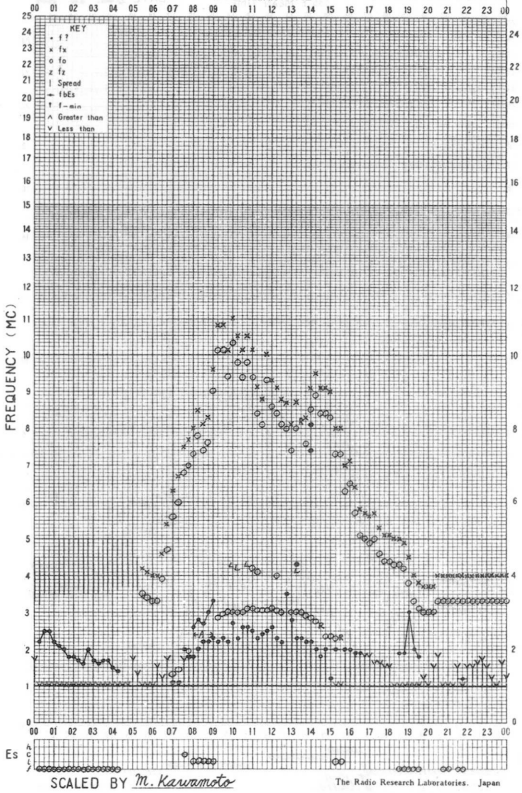


SCALED BY S. Hidome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 24. 1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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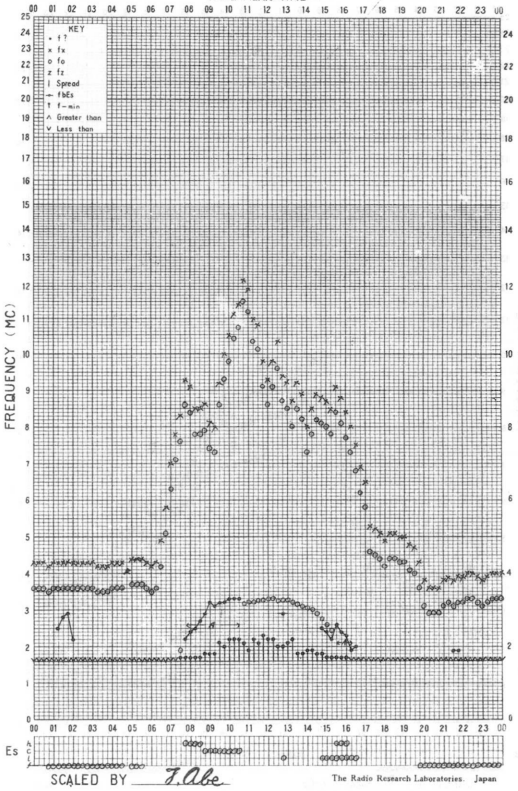

SCALED BY T. Abe

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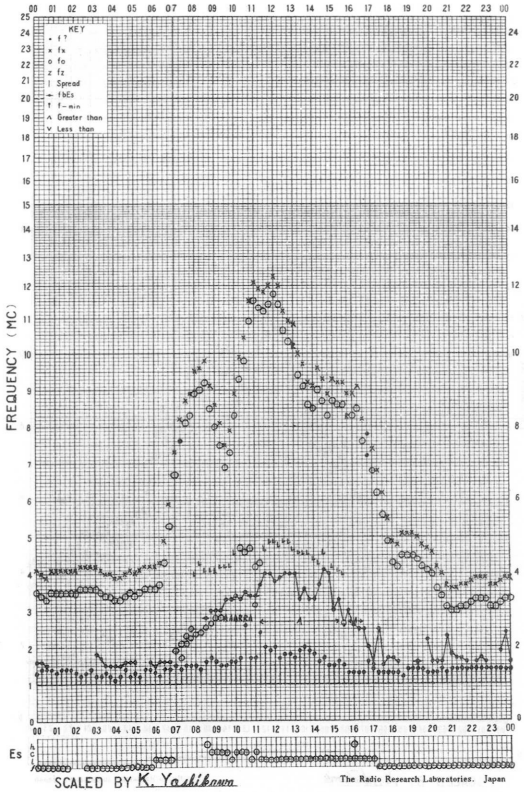

SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

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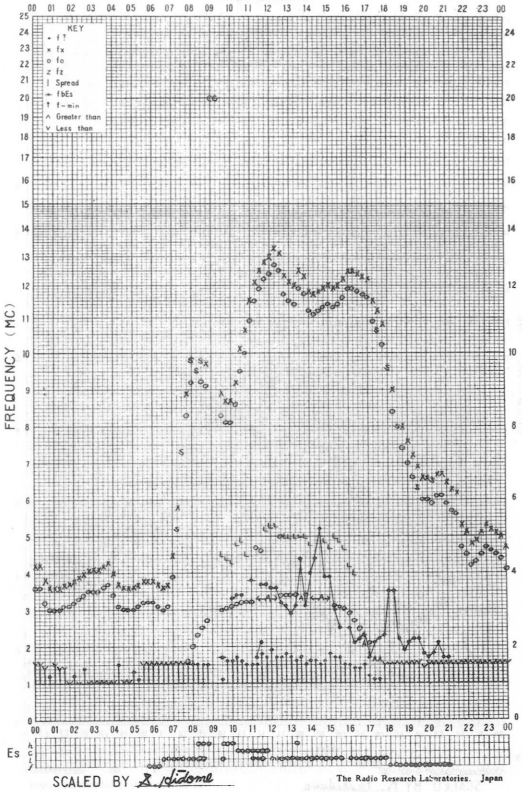
STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 24. 1967

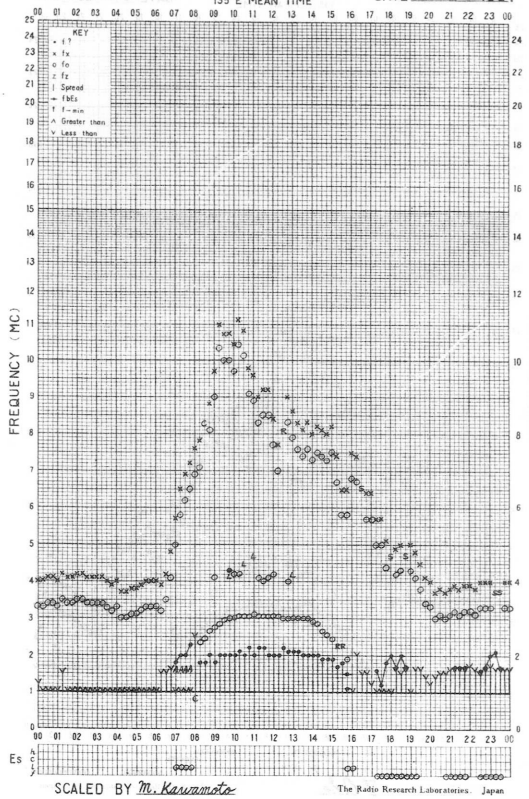


SCALED BY S. Kidome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JAN. 25. 1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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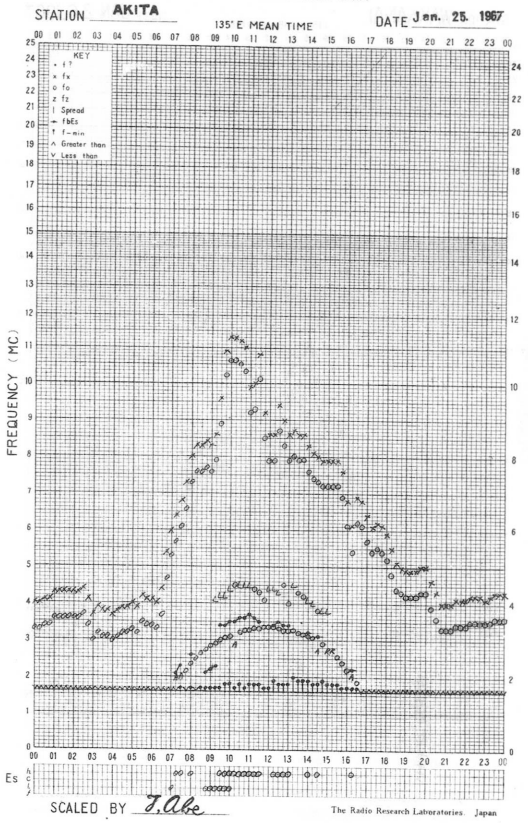

SCALED BY T. Abe The Radio Research Laboratories. Japan

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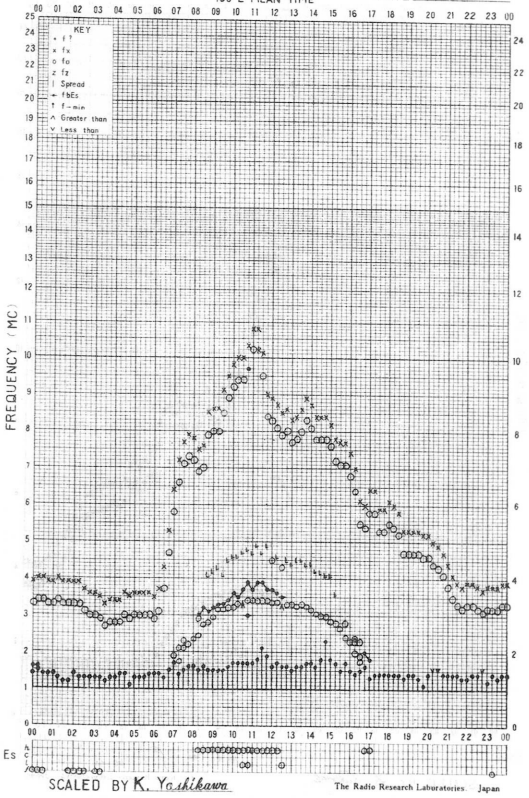

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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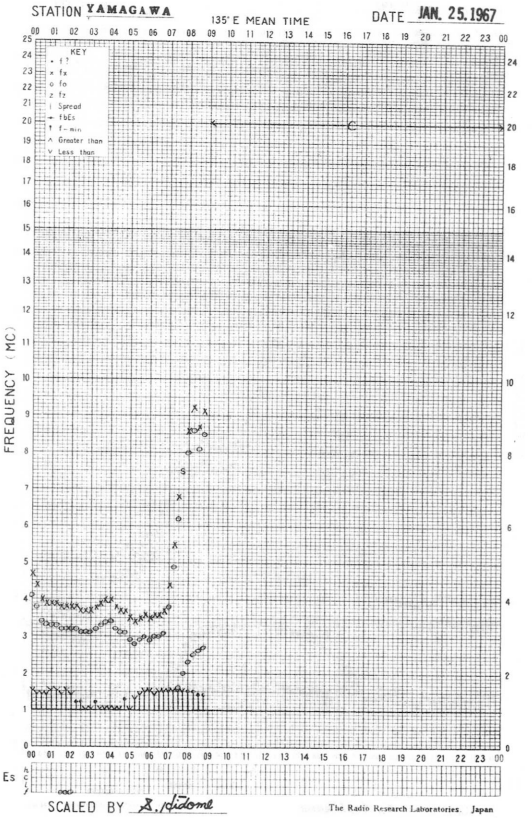
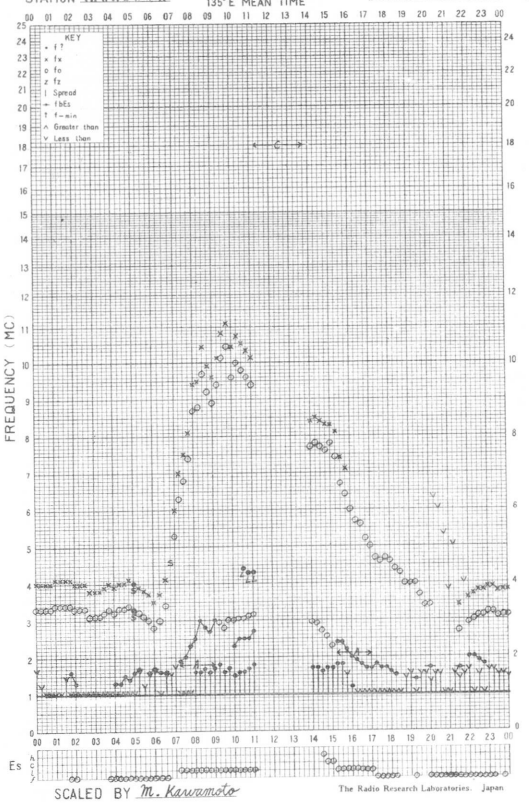


SCALED BY S. Midorne The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JAN. 26. 1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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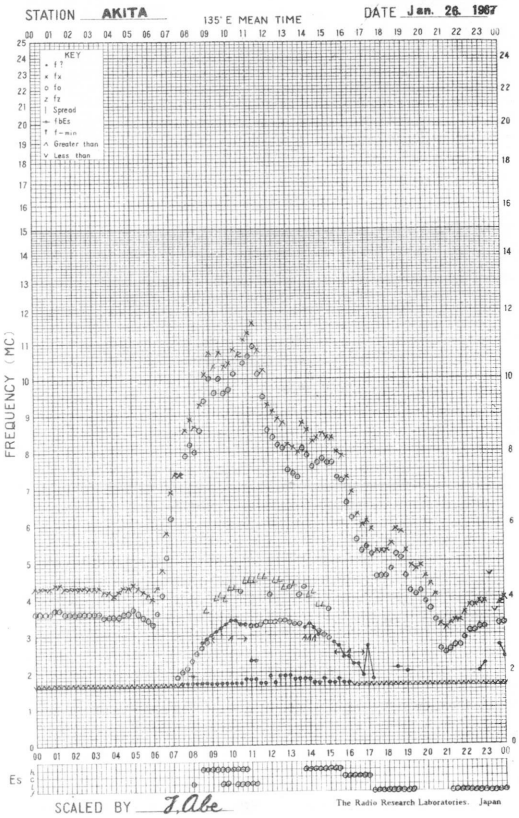
STATION AKITA 135° E MEAN TIME DATE Jan. 26. 1967



SCALED BY T. Abe

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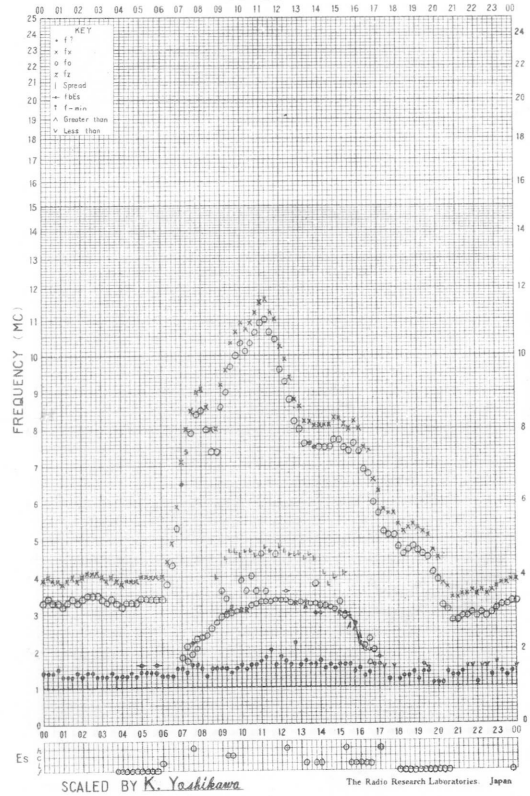

SCALED BY K. Yoshikawa

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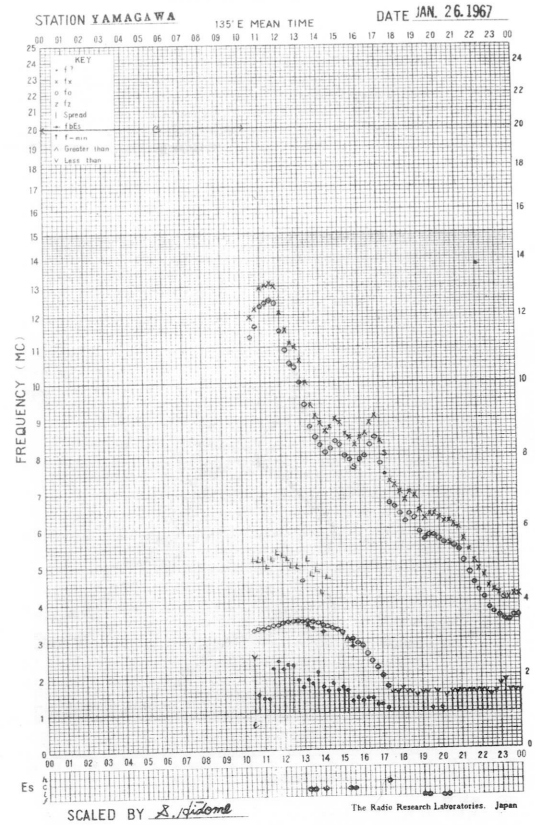
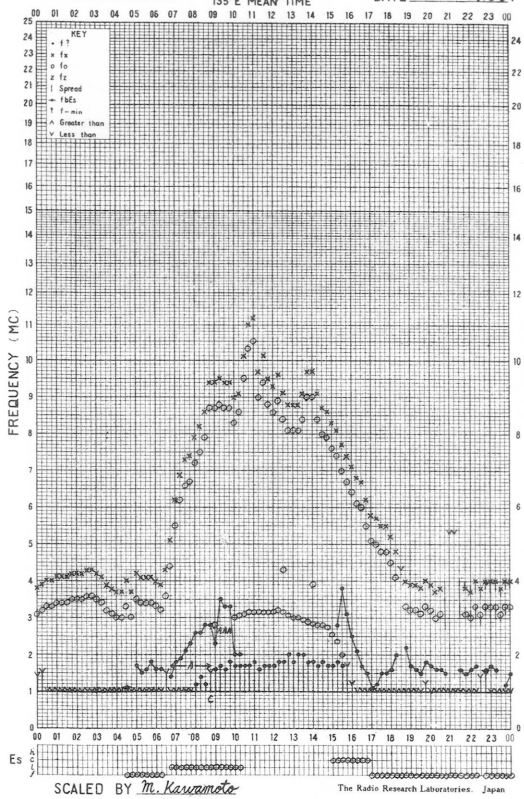


SCALED BY S. Sidomi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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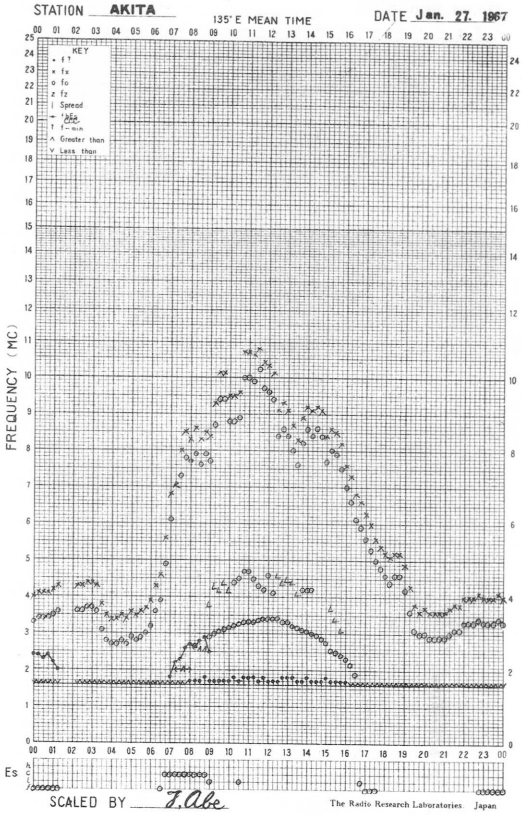
STATION AKITA 135° E MEAN TIME DATE Jan. 27. 1967



SCALED BY T. Abe The Radio Research Laboratories. Japan

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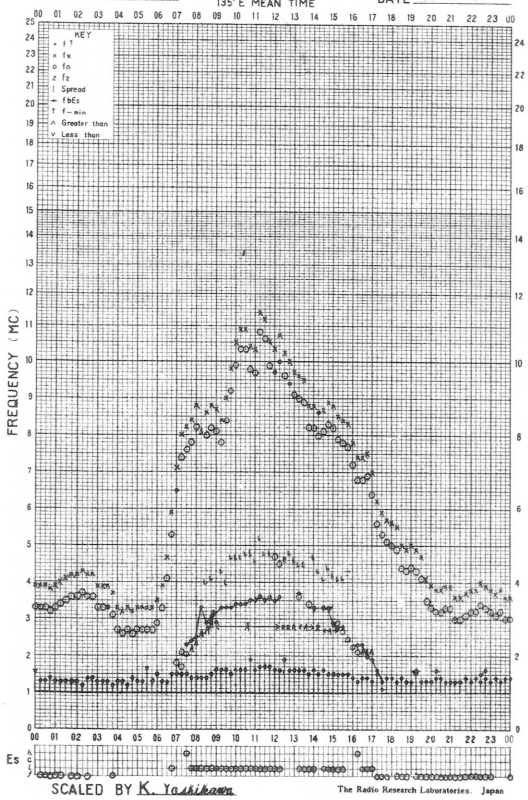

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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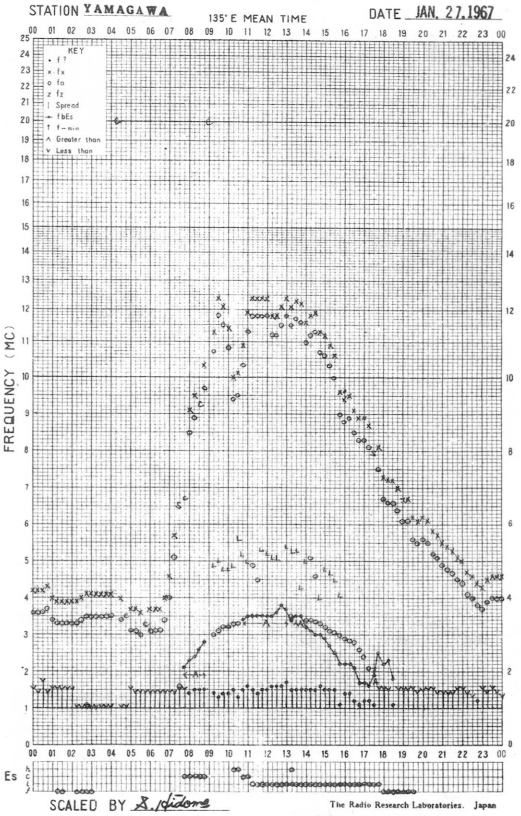
STATION YAMAGAWA 135° E MEAN TIME DATE JAN. 27. 1967



SCALED BY S. Kidoma The Radio Research Laboratories. Japan

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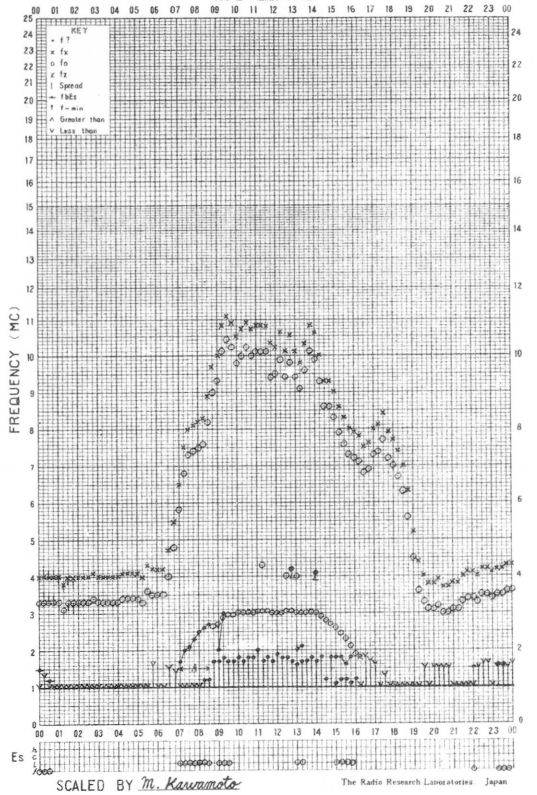
STATION WAKKANAI 135° E MEAN TIME DATE JAN. 28. 1967



SCALED BY M. Kawamoto

The Radio Research Laboratories Japan

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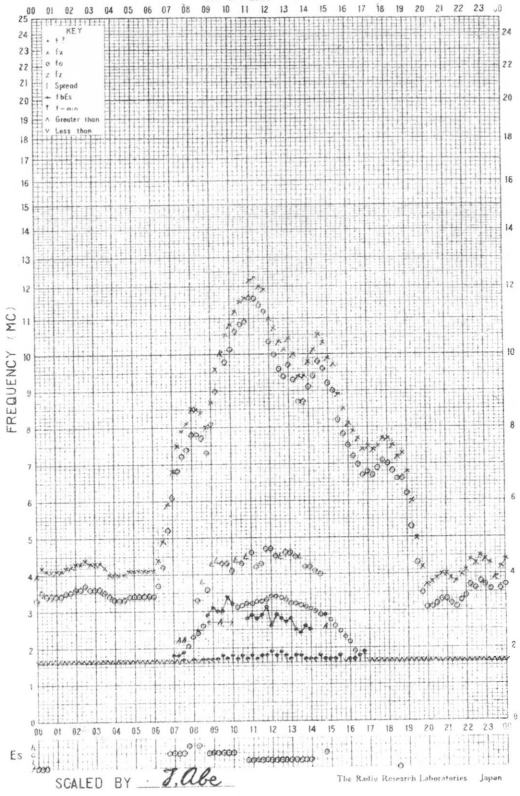

SCALED BY T. Abe

The Radio Research Laboratories Japan

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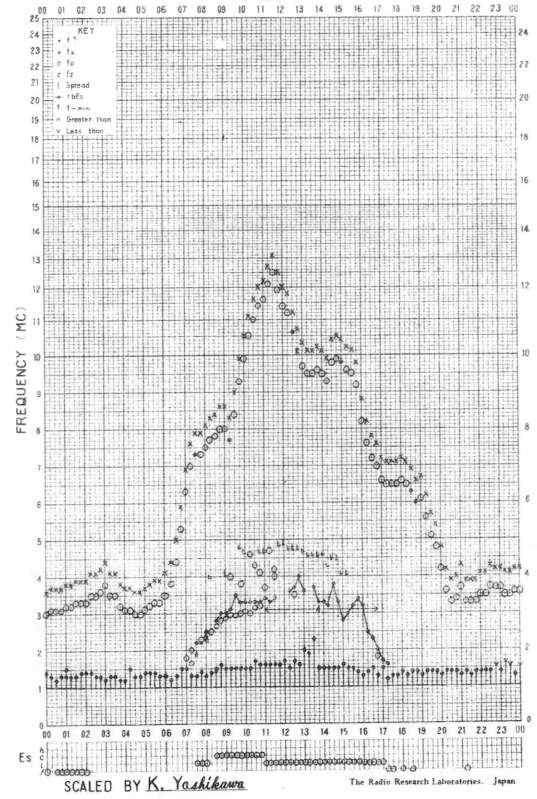

SCALED BY K. Yoshikawa

The Radio Research Laboratories Japan

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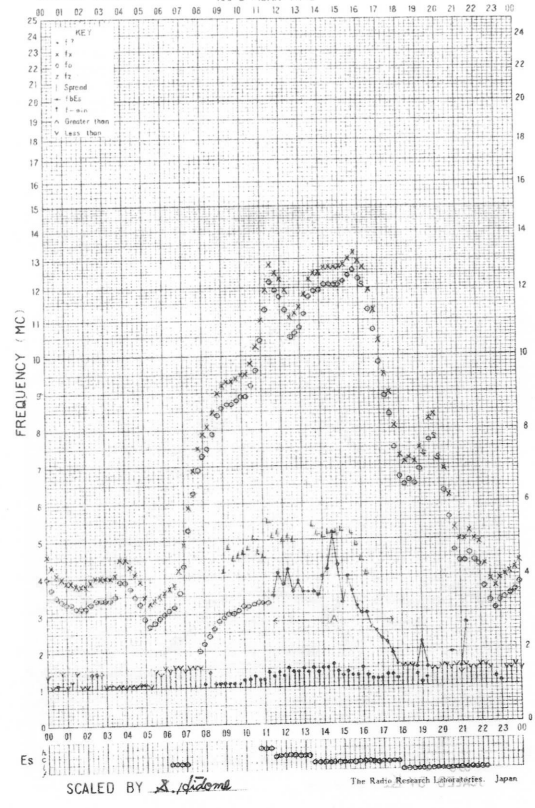
STATION YAMAGAWA 135° E MEAN TIME DATE JAN. 28. 1967



SCALED BY S. Ichiome

The Radio Research Laboratories Japan

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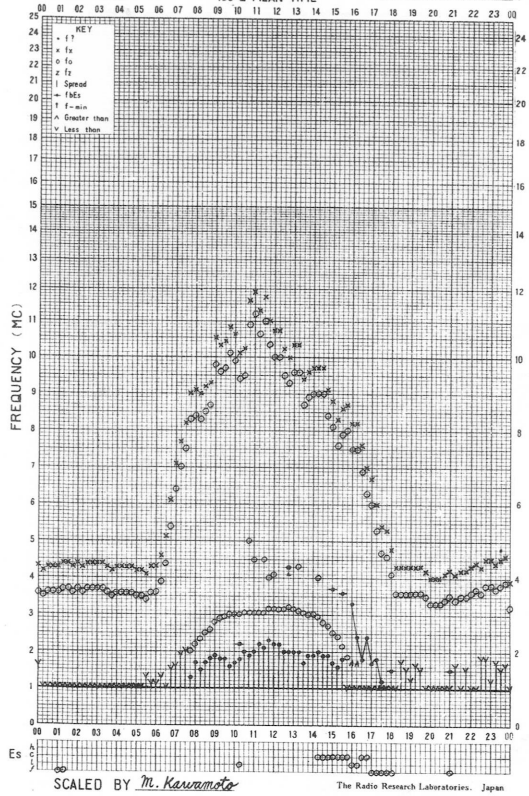
STATION WAKKANAI 135° E MEAN TIME DATE JAN. 29. 1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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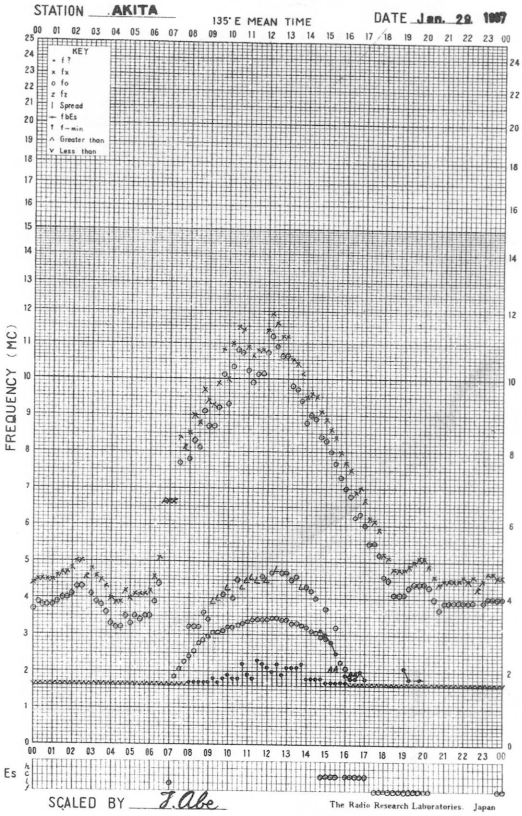

SCALED BY T. Abe The Radio Research Laboratories. Japan

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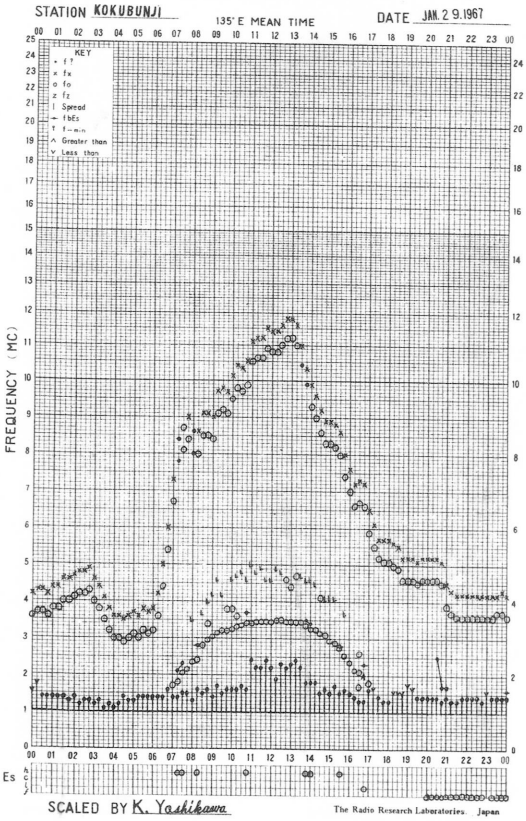

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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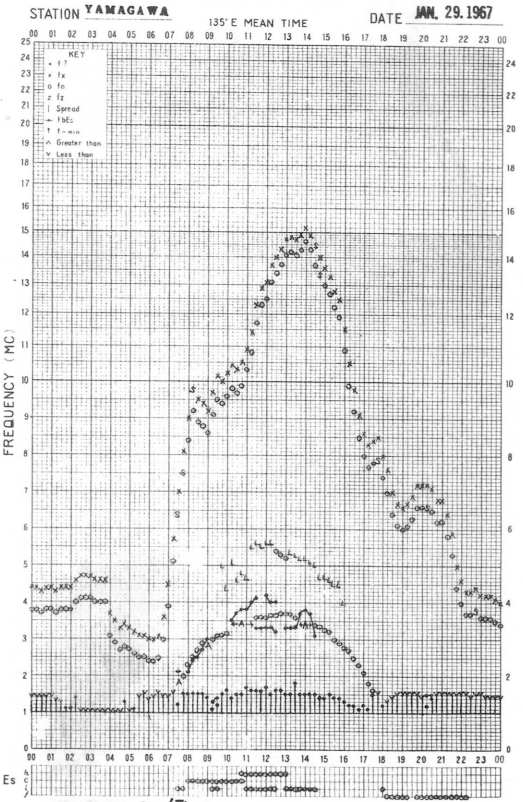
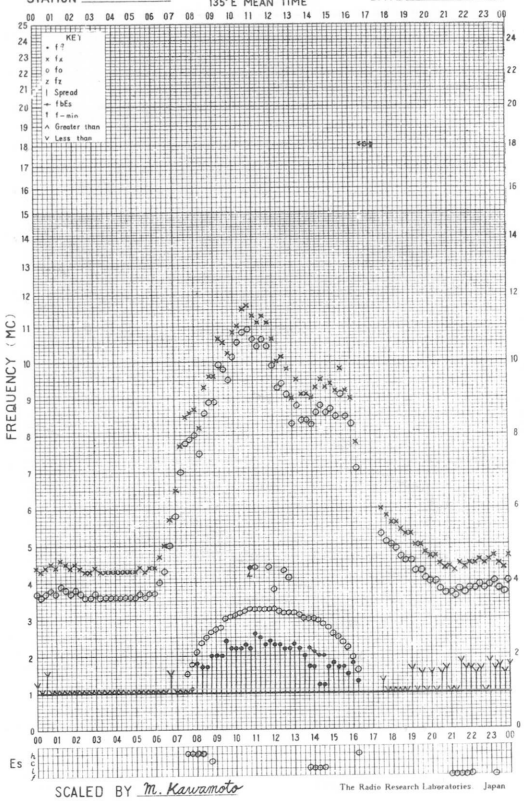


SCALED BY S. Kitami The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 30.1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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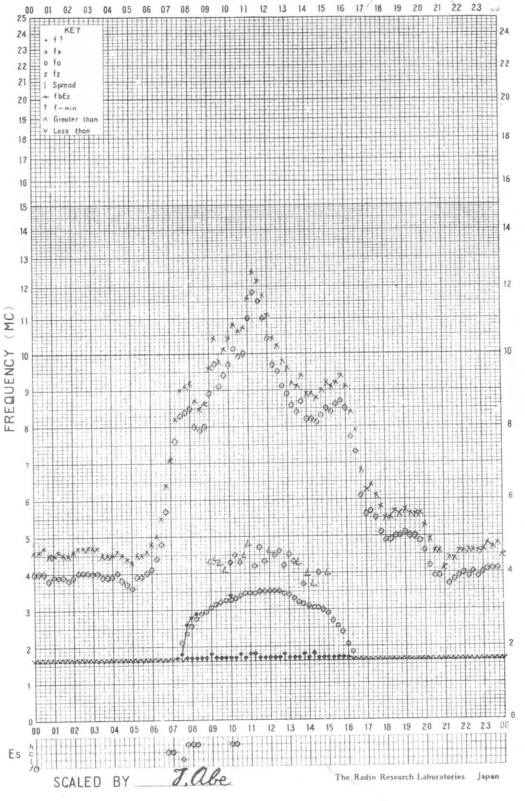

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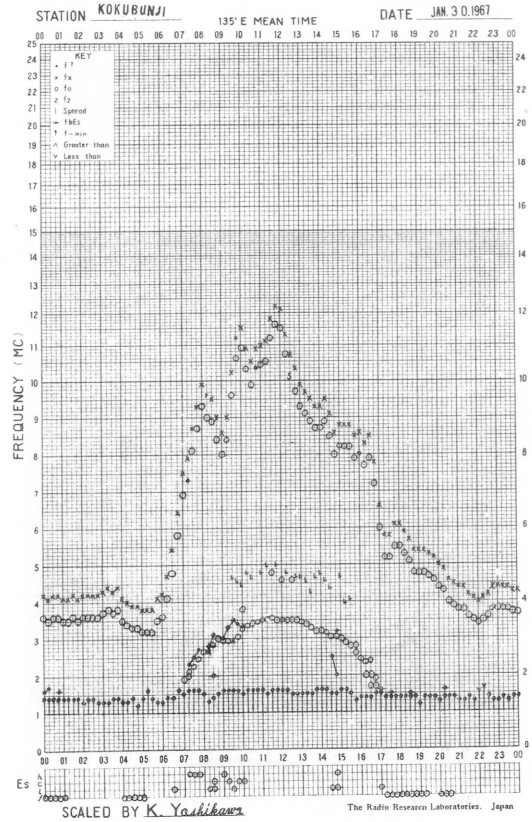

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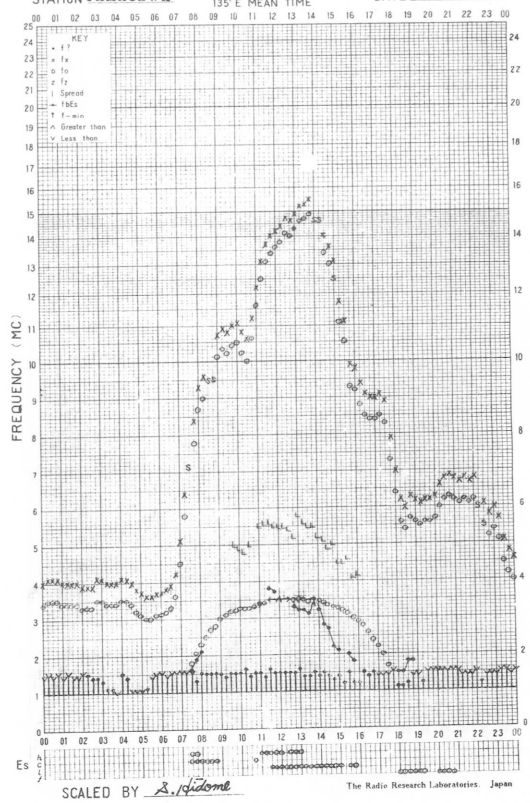
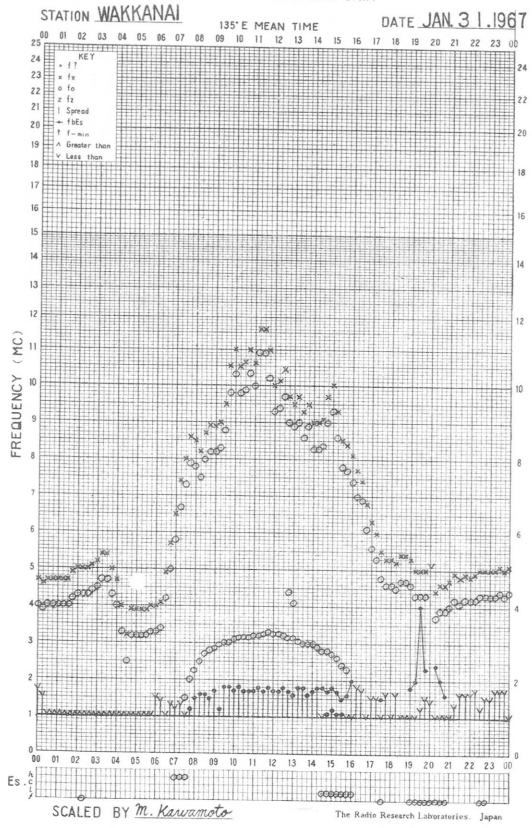


SCALED BY S. Ijima

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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



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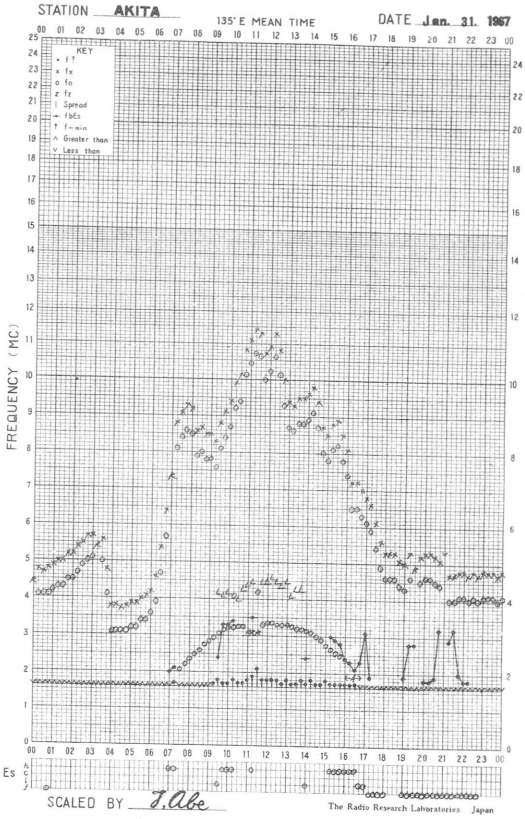

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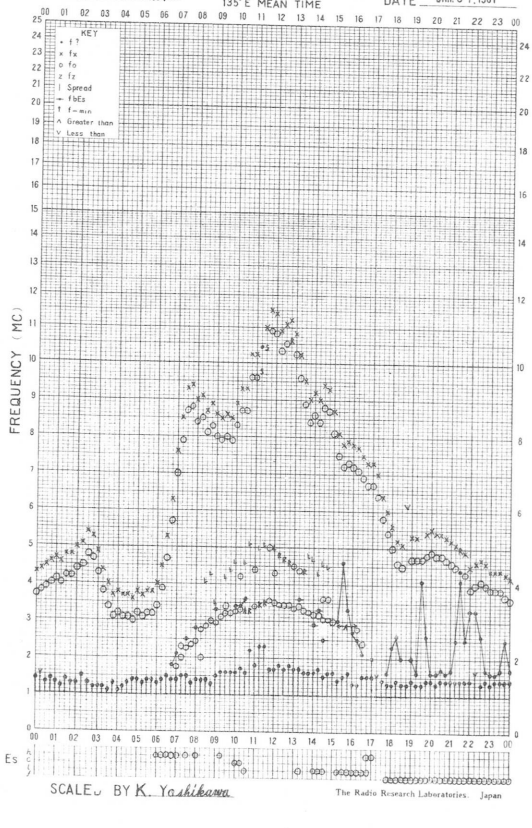

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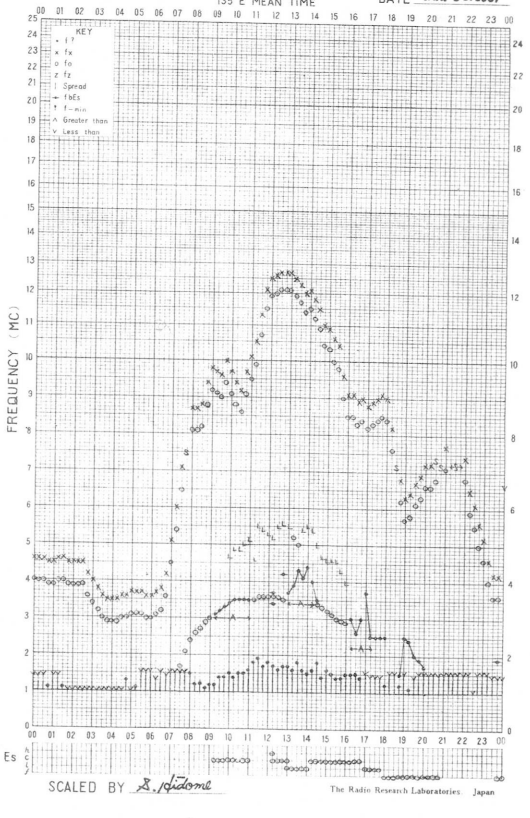

SCALED BY S. Iidomi

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SOLAR RADIO EMISSION

Flux Density and Variability

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

	Flux density 10^{-22} Wm^{-2}(c/s)$^{-1}$					Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	18	18	(14)	21	17	1	0	(0)	1	1
2	24	22	18	(27)	23	1	1	1	(1)	1
3	27	22	14	(19)	22	1	1	1	(1)	1
4	(31)	43	16	(51)	30	(1)	2	1	(2)	1
5	24	25	38	(33)	34	1	2	1	(2)	2
6	-	-	-	-	(33)	-	-	-	-	(2)
7	17	11	12	(28)	13	0	1	0	1	0
8	24	17	10	-	19	1	1	0	0	1
9	12	10	8	9	10	0	0	0	0	0
10	11	14	12	-	12	0	0	0	-	0
11	17	18	11	20	16	1	1	1	1	1
12	16	12	9	10	14	1	0	0	0	1
13	11	14	12	17	12	0	0	0	0	0
14	13	19	(14)	14	16	0	1	0	1	0
15	16	15	20	24	16	1	1	1	1	1
16	37	15	(9)	9	24	2	1	0	0	1
17	10	10	(9)	-	10	0	0	0	(1)	0
18	16	14	(13)	8	15	0	1	0	0	1
19	8	9	(7)	7	8	0	0	0	0	0
20	11	10	(11)	11	10	0	0	0	0	0
21	11	8	(8)	18	10	0	0	0	2	0
22	27	17	(10)	7	20	1	1	0	1	1
23	23	30	(18)	14	21	2	2	1	0	2
24	13	12	(17)	-	13	1	1	1	-	1
25	11	8	(8)	7	9	0	0	0	0	0
26	7	8	(10)	8	8	0	0	0	0	0
27	9	8	(7)	12	8	0	0	0	0	0
28	14	10	(12)	12	12	0	0	0	0	0
29	11	9	(7)	10	10	0	0	0	0	0
30	10	11	(10)	13	10	0	0	0	1	0
31	13	9	(9)	10	11	1	1	0	0	0

Note No observations during the following periods:

4th 0000-0150
6th 0000-2400
10th 2220-2400
17th 2220-2400
24th 2150-2400

SOLAR RADIO EMISSION

Flux Density

Month: January 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	36	35	(35)	(33)	35
2	34	36	(38)	(40)	35
3	41	39	(42)	(39)	40
4	38	40	(38)	(45)	39
5	44	45	(50)	(58)	45
6	48	47	(45)	(45)	48
7	39	39	(37)	(39)	39
8	40	37	(38)	(37)	39
9	37	37	(36)	(37)	37
10	36	37	(35)	(35)	36
11	37	36	(34)	-	36
12	32	33	(32)	(33)	33
13	36	35	(37)	(33)	35
14	34	36	(35)	(33)	35
15	36	33	(33)	(35)	34
16	40	35	(35)	(32)	37
17	32	32	(33)	(32)	32
18	33	36	(33)	(32)	34
19	32	29	(29)	(29)	31
20	33	32	(33)	(32)	32
21	33	34	(32)	(35)	33
22	35	32	(32)	(33)	33
23	36	38	(36)	(34)	36
24	34	35	(34)	(31)	34
25	30	33	(30)	(30)	31
26	31	32	(31)	(35)	32
27	33	33	(32)	(35)	33
28	34	37	(34)	(36)	35
29	36	39	(37)	(36)	37
30	40	38	(39)	-	39
31	39	40	(40)	(39)	40

Note No observations during the following periods:

11th 2150- 12th 0100
30th 2150- 31st 0020

Distinctive Events

(single-frequency observations)

Month: January 1967
Observing station: Hiraiso
Normal observing period: 2150 - 0750 (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	200	0040.0	0040.8	1.3	C	490	100	
	500	0242.6	0243.3	2.5	C	13	-	
	200	0241.5	0243.4	3.0	C	240	30	
2	500	0417.0	0418.4	2.0	C	>490	>37	
11	500	0620.5	0620.7	1.5	C	330	15	
	200	0620.7	0620.8	1.3	C	850	110	
12	500	0233.7	0236.2	15.3	C	100	35	
15	500	0323.0	0323.0	1.0	C	10	-	
	200	0323.9	0325.5	3.2	C	940	130	

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

Jan. 1967 Frequency: 15 Mc/s, Bandwidth: 40 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	7	-12	1	(-10c	C	C	-18	-18	-16	<-23s	<-35s	<-13s	<-36s	<-36s	<-36s	<-36s	<-36s	<-36s	<-36s	<-36s	-18	2	7	8
2	11	7	12	5	- 4	<-11s	<-17s	<-15s	<-15s	- 7	-15	<-15s	<-36s	<-36s	<-36s	-28	<-36s	-36	-35	-32	-14	- 1	6	5
3	9	5	- 4	<-28s	<-10s	<- 6s	<-30s	<-13s	<-30s	<- 7s	<-14s	<-12s	<-32s	<-36s	<-36s	-18	-12	-13	- 3	- 4	- 4	- 1	5	2
4	- 1	7	4	-32	< 2s	<-20s	<-32s	<-28s	<-24s	<-23s	<-20s	<-15s	<-36s	<-36s	<-37s	<-36s	<-36s	<-36s	<-36s	<-36s	-28	- 2	5	7
5	1	1	3	C	C	<-10s	<-22s	<-16s	<- 8s	<- 5s	< 3s	<-13s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-33	-12	3	6
6	- 6	1	- 6	<-21s	<-13s	<-13s	<-18s	<-14s	<-13s	<-15s	<-18s	<- 9s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-14	- 8	- 2
7	-15	- 4	3	-19	<-13s	<- 8s	<-19s	<-13s	<-10s	<- 9s	<- 4s	<- 9s	<-27s	<-35s	<-35s	<-36s	<-36s	-19	-26	-15	-34	- 8	- 2	0
8	- 3	- 1	4	4	11	- 4	-13	- 6	< 3s	< 17s	C	<- 1s	-16	-30	-11	-14	-20	- 2	-15	S	-20	- 3	-10	<- 4s
9	<- 8s	<-11s	-23	-14	<- 6s	<-10s	<-20s	-13	<-11s	<-19s	<-16s	<- 2s	<-36s	<-36s	<-36s	<-35s	<-35s	<-34s	<-36s	-22	-11	-10	- 7	- 4
10	- 1	1	- 3	<-31s	<-17s	<-16s	<-14s	<-13s	<-10s	<- 3s	<-21s	<-12s	<-36s	<-36s	<-37s	<-36s	<-36s	<-36s	<-35s	-35	-31	-17	- 8	- 5
11	3	2	- 4	<-18s	<-10s	<- 9s	<-12s	<-10s	< 0s	<-15s	<-18s	<-20s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-21	-10	-10	- 9	-11	- 7
12	-10	1	- 7	-36	-16	-15	-15	-13	- 9	< 2s	<- 1s	C	<-35s	<-32s	<-35s	<-35s	<-35s	<-35s	<-35s	<-35s	<-35s	- 7	- 1	- 3
13	- 2	(2c	6	-22	<-14s	<-12s	<-12s	<- 9s	<- 9s	<- 9s	<-10s	<- 9s	<-35s	<-35s	-35	- 6	-23	5	- 7	- 7	- 8	-15	- 5	3
14	4	6	5	<- 1s	C	C	- 3	- 7	<- 6s	< 0s	< 5s	<- 2s	-14	<-27s	<-36s	<-36s	<-37s	<-37s	<-37s	<-37s	<-37s	- 2	- 6	- 5
15	- 7	0	(-14c	-17	<-14s	<- 2s	<-24s	<-17s	<-11s	<- 8s	<- 8s	<-17s	<-23s	<-37s	<-30s	<-37s	<-37s	<-37s	- 9	-16	-10	-13	-12	-11
16	C	<-15s	<-12s	<-24s	<-14s	<-16s	<-21s	<-17s	<-11s	<- 8s	<-20s	<-30s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-12	-21	<-36s	-15	- 8	- 8
17	-13	-13	<-15s	-22	<-12s	<-12s	<-22s	-19	<-24s	<-18s	<-16s	<-19s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-15	-13	-10
18	- 9	< 11s	0	< 2s	-13	<-17s	C	<-32s	-21	<-25s	<-12s	<-14s	<-37s	<-37s	<-28s	<-19s	<-36s	-28	<-36s	<-36s	<-36s	-16	- 9	- 8
19	<- 3s	< 5s	<- 5s	< 9s	<- 5s	< 2s	<-15s	<-16s	-14	<- 9s	-26	<-12s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-20	-16	- 8
20	-15	C	<-17s	C	C	<- 3s	<-19s	<- 8s	<-14s	<-12s	-25	<-14s	<-37s	<-37s	<-34s	<-37s	<-37s	<-37s	<-37s	- 6	<-28s	-12	-13	- 7
21	(7c	-10	-20	-22	<- 2s	<-12s	-24	<-18s	S	<-16s	<-17s	<- 7s	<-35s	<-31s	<-29s	-28	-28	-23	-10	-11	-18	-18	-12	(-11s
22	<-14s	<- 2s	<-14s	<-15s	< 1s	<- 9s	-23	<-17s	-17	<- 8s	<- 9s	<- 8s	<-18s	<-34s	-27	-11	-12	- 7	- 2	-15	-27	-22	- 9	- 5
23	-15	<- 4s	< 3s	<- 3s	<- 5s	<- 7s	-14	-10	<-14s	<-12s	<-14s	<-11s	<-37s	<-37s	<-37s	<-37s	<-37s	-29	-19	<-31s	<-29s	<-25s	-16	- 6
24	-10	- 6	< 3s	<-21s	<- 9s	<-10s	<-11s	<-15s	<- 9s	<-13s	<- 4s	<- 9s	<-36s	<-36s	<-36s	<-35s	<-36s	<-36s	<-36s	<-30s	<-30s	-12	- 3	3
25	<- 2s	C	< 1s	C	<- 5s	<-11s	<-12s	<-14s	<-15s	<-14s	<- 7s	<- 3s	<-26s	<-34s	<-34s	<-35s	<-35s	<-35s	<-35s	<-34s	<-30s	- 2	1	5
26	< 4s	2	7	<- 5s	<-15s	-11	<-12s	<-14s	<-12s	<-10s	<- 7s	<-11s	<-24s	<-37s	<-37s	-28	<-36s	<-36s	<-36s	<-36s	<-36s	- 2	- 3	4
27	6	8	7	-16	<-12s	<-10s	-17	-22	-14	-17	-19	<-10s	<-24s	<-34s	<-35s	<-35s	<-35s	<-36s	<-36s	<-36s	<-36s	-13	- 5	4
28	- 7	- 5	7	- 4	<- 4s	<- 3s	-15	-14	<-11s	S	<- 5s	<- 9s	<-32s	<-36s	<-29s	<-29s	<-35s	C	C	C	C	C	C	C
29	C	C	C	-15	< 5s	<- 1s	<-21s	<-18s	<-16s	<-14s	<- 4s	<- 8s	<-27s	<-36s	<-36s	<-36s	<-36s	<-36s	<-37s	<-37s	<-37s	- 8	- 5	4
30	0	C	7	5	<- 9s	<- 3s	<-15s	-14	-12	-14	-10	<- 7s	<-27s	<-29s	<-29s	-23	-25	C	0	C	C	C	C	C
31	3	6	8	6	<- 9s	< 0s	<-17s	<-15s	<- 5s	<-12s	<- 9s	< 0s	<-17s	<-26s	-29	<-29s	<-37s	<-37s	<-36s	-27	- 6	- 4	0	7
Median	(- 3s	(1s	(1s	(-18s	<- 9s	<-10s	<-17s	<-14s	<-12s	<-12s	<-12s	<-11s	<-35s	<-36s	<-36s	<-35s	<-36s	<-36s	<-36s	<-33s	(-31s	-12	- 6	- 3
Median Count	29	27	30	28	27	29	30	31	30	30	30	30	31	31	31	31	31	29	30	28	29	29	29	29
Upper decile	7	< 7s	7	< 5s	< 2s	<- 1s	<-12s	<- 8s	<- 5s	< 0s	<- 1s	<- 2s	<-17s	<-29s	<-28s	-14	-20	- 7	- 3	- 7	- 8	- 1	5	7
Lower decile	<-15s	<-12s	<-17s	<-31s	<-15s	<-16s	<-24s	<-22s	<-24s	<-23s	<-25s	<-19s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-20	-13	<-10s

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

Jan. 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	4	7	8	10	12	11	8	- 5	1	-18	<-15s	<-18s	<-36s	<-36s	<-36s	<-36s	<-36s	<-36s	<-36s	-32	9	- 1	4	2
2	2	5	7	9	14	2	-10	7	-11	- 3	<- 9s	<-20s	<-36s	<-36s	<-36s	<-36s	<-36s	-35	<-36s	<-36s	- 1	5	2	1
3	- 1	3	5	11	14	6	2	- 9	- 1	<- 9s	<- 9s	<-17s	<-36s	<-36s	<-36s	<-36s	<-36s	-34	-25	- 6	2	2	5	5
4	2	3	5	12	12	- 2	15	13	- 3	-13	(-19s	<-19s	<-28s	-31	<-37s	<-36s	<-36s	<-36s	<-36s	<-36s	4	4	2	2
5	- 3	- 2	1	5	S	<- 2s	15	15	9	<-15s	<-17s	<-17s	-19	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	- 3	4	2	2	5
6	0	3	5	16	14	13	21	C	- 7	<-20s	<-17s	<-14s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	- 2	1	3	2
7	2	C	9	15	11	- 1	9	12	9	<-13s	<-11s	<-16s	-18	<-35s	<-35s	<-36s	<-36s	<-36s	<-29s	-34	-11	6	3	4
8	1	2	7	7	13	27	16	19	18	26	13	22	13	9	11	9	5	S	1	S	8	2	S	<- 9s
9	<-10s	-10	- 4	4	9	14	9	4	<-10s	-16	<- 9s	<-23s	-31	-33	<-35s	<-35s	<-35s	-35	-11	- 2	0	- 6	- 3	- 1
10	- 2	0	1	8	10	- 1	- 6	- 7	<- 6s	<- 7s	-15	<-31s	<-36s	<-37s	<-37s	<-36s	<-36s	<-36s	<-35s	<-35s	-14	9	5	4
11	3	0	- 1	11	16	17	15	9	< 3s	<-17s	<-12s	0	-31	<-37s	<-37s	<-37s	<-37s	-28	- 2	1	- 7	4	1	1
12	- 2	- 2	<-37s	0	9	4	- 4	<-12s	<- 6s	<- 3s	<- 7s	<-12s	-10	<-35s	<-35s	<-35s	<-35s	<-35s	<-35s	<-35s	- 6	3	0	1
13	2	0	0	7	11	13	11	1	- 8	<-16s	<- 7s	<-34s	-11	<-35s	<-35s	<-35s	<-35s	<-34s	- 2	4	7	9	6	6
14	3	4	10	11	20	19	7	22	3	6	18	20	- 9	<-36s	<-36s	<-37s	<-37s	<-37s	<-37s	<-37s	-10	9	6	3
15	1	1	6	11	10	13	8	- 7	<-10s	<- 7s	- 7	-20	<-38s	<-30s	<-30s	<-37s	<-37s	<-37s	<-37s	-35	- 7	6	4	3
16	- 5	- 1	2	2	9	15	-13	<-18s	<- 5s	<-25s	<-17s	-13	-29	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-28s	- 5	5	2	5
17	- 3	- 1	2	9	13	<-13s	4	6	<-19s	<-30s	<-15s	<-12s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-12	3	2	- 2
18	- 2	- 2	8	< 7s	9	< 8s	1	-15	<-26s	<-25s	<-31s	<-15s	<-37s	<-37s	<-27s	<-31s	<-36s	<-36s	<-36s	<-36s	-12	4	6	< 5s
19	< 3s	< 3s	7	12	15	< 2s	- 5	6	- 8	<-12s	-16	<-15s	<-32s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-20	-10	3	0	< 3s
20	1	2	- 1	2	11	6	-11	11	<-12s	<-21s	<-13s	<-16s	-26	-32	<-37s	<-37s	<-37s	<-37s	-34	-32	1	5	4	1
21	1	1	1	< 4s	8	6	15	- 9	-17	<-25s	<-29s	<-13s	-29	-21	-16	-33	<-33s	-16	-19	-29	1	-13	- 1	- 5
22	- 6	<- 5s	- 4	4	7	12	2	- 2	-10	<- 9s	<- 1s	<-13s	-27	-27	<-34s	<-21s	<-37s	-26	<- 9s	-32	- 4	7	1	1
23	- 2	< 1s	3	9	1	-12	5	11	- 5	<-13s	<-12s	<- 9s	<-37s	<-37s	<-37s	<-37s	<-37s	<-33s	<-29s	-23	- 9	1	2	0
24	- 4	<- 5s	5	3	7	<-18s	(- 1s	12	< 8s	<- 6s	<-15s	<-10s	<-36s	<-36s	<-26s	<-35s	<-36s	<-36s	<-36s	<-30s	- 2	7	2	< 5s
25	< 0s	<- 2s	1	5	9	4	15	12	<-11s	<-12s	<- 1s	<- 7s	-29	<-34s	<-34s	<-35s	<-35s	<-35s	<-35s	<-34s	3	9	6	2
26	< 4s	4	6	8	11	- 7	<-10s	- 2	3	- 9	<- 5s	<-12s	<-37s	<-37s	<-37s	<-36s	<-36s	<-36s	<-36s	<-36s	- 1	4	2	7
27	5	5	5	7	15	16	10	- 4	-13	-16	-20	<-16s	-20	-31	<-35s	<-35s	<-35s	<-36s	<-36s	<-36s	2	5	0	- 1
28	- 1	- 4	6	10	19	- 1	24	18	- 1	S	<- 9s	<-14s	-21	-28	<-29s	<-35s	<-35s	C	C	C	C	C	C	C
29	C	C	<-17s	8	11	< 2s	19	5	6	-11	<-10s	<- 8s	-17	-26	<-36s	<-36s	<-36s	-28	<-37s	<-37s	- 4	8	- 9	1
30	- 2	5	8	16	14	3	15	14	5	<-15s	< 2s	< 3s	-25	-26	-27	<-30s	<-32s	<-32s	<-37s	C	C	C	C	- 4.
31	- 5	6	5	15	15	15	-11	9	- 7	<-13s	<- 9s	<-12s	-15	<-19s	<-37s	<-37s	<-37s	<-37s	<-36s	-28	0	4	4	- 4
Median	(- 1s	(1s	5	8	11	(5s	8	6	(- 7s	<-13s	<-11s	<-14s	(-29s	<-35s	<-30s	<-36s	<-36s	<-36s	<-36s	(-34s	- 2	4	2	(2s
Median Count	30	29	31	31	30	31	31	30	31	30	31	31	31	31	31	31	31	29	30	28	29	29	28	30
Upper decile	< 4s	5	8	15	16	17	19	18	9	- 3	< 2s	< 3s	-10	<-21s	<-26s	<-30s	<-33s	-28	- 2	- 2	7	9	6	< 5s
Lower decile	<- 5s	<- 5s	- 4	< 2s	7	<-12s	<-11s	<-12s	<-17s	<-25s	<-20s	<-23s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	<-37s	-12	- 1	- 1	<- 4s

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jan. 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	4+	5 (4) C	4 - 4 4	5 4 4 4	4 4 - 4	N N N N			
2	4+	4 4 (4)	5 - 4 4	5 4 4 5	4 4 - 4	N N N N			
3	4+	4 (4) 4	4 - 4 5	5 4 4 5	4 4 - 4	N N N N			
4	4+	5 4 4	4 - 4 4	5 4 4 4	4 4 - 4	N N N N			
5	4o	4 4 5	4 - 4 4	4 4 4 4	4 4 - 4	N N N N			
6	4o	4 5 (5)	4 - 4 4	4 4 4 3	4 4 - 4	N N N N	0715	---	162γ
7	4o	4 (4) 4	4 - 4 4	4 4 4 3	4 4 - 4	N N N N	---	---	
8*	4o	4 C 4	5 (5) 4 3	3 4 4 3	4 5 (5) 4	U U U U	---	---	
9	3+	4 4 4	3 - 2 (3)	3 4 4 3	3 4 - 4	U U N N	---	20xx	
10	4-	4 4 C	4 - 3 4	3 4 4 3	4 4 - 3	N N N N			
11	4o	C 4 4	4 - 4 5	4 4 4 3	4 4 - 5	N N N N			
12	4-	4 4 (4)	(3 4) 4 4	3 4 4 3	4 4 - 3	N N N N			
13	4-	C (4) 3	4 - 4 4	4 4 3 4	4 4 - 5	N N U U	1203	---	185γ
14*	4o	C 5 (4)	5 (5 2) 4	4 C 3 4	4 5 - C	U U U U	---	21xx	
15	4-	4 4 3	3 - 4 4	4 4 4 3	4 4 - 3	N N N N			
16	4-	4 4 (4)	(3) - 4 4	3 4 4 3	4 4 - 3	N N N N			
(17)	4-	4 4 3	(3) - 4 4	3 4 4 3	4 4 - 3	N N N N			
(18)	4-	3 4 4	4 - 4 4	3 4 4 3	4 4 - 4	N N N N			
(19)	4-	4 4 (4)	(3) - 4 3	3 4 4 3	(4) 4 - 4	N N N N			
20	4o	(3) C C	(3) - 5 4	4 4 4 4	4 4 - 4	N N N N			
21	4-	(3) 4 4	3 - 4 4	4 4 4 2	4 4 - 4	N N N N			
22	4-	(5) 4 5	4 - 4 4	2 4 4 2	4 4 - 4	N N N N			
23	4-	4 4 (4)	(3) - 4 3	3 4 4 3	4 4 - 4	N N N N			
24	4-	4 4 4	(3) - 4 4	3 4 4 C	4 4 - 3	N N N N			
25	4o	4 5 C	4 - 4 4	4 4 4 4	4 4 - 4	N N N N			
26	4o	(4) 4 4	4 - 4 4	5 4 4 (4)	4 4 - 4	N N N N			
27	4o	(4) 4 4	4 - 4 4	4 4 4 3	4 4 - 4	N N N N			
28	4o	4 (4) 4	4 - 4 4	(4) 4 4 3	4 5 - C	N N N N			
29	4o	4 (4) C	4 - 4 4	3 4 4 4	(4) 4 - 4	N N N N			
30	4+	4 5 C	4 - 5 4	4 5 4 3	4 4 - 4	N N N N			
31	4+	5 (4) C	5 - 4 4	4 4 4 C	4 4 - 5	N N N N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = COSMIC EVENT

( ) = Regular World Day

C = artificial accident

\- = impossible to evaluate

--- = continuing magnetic storm

( ) = inaccurate

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Jan.	S W F										Correspondence		
	Drop-out Intensities (db)						Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
1967	CO	SF	HA	TO	HB	SH							
12		25	9				02.33	22	Slow	2-		x	
15		15					15.24	16	Slow	1			
29		18	-				22.25	15	Slow	1+			
31		10	-				00.20	23	S	1-		x	

IONOSPHERIC DATA IN JAPAN FOR JANUARY 1967

第19巻 第1号

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1967年4月25日 発 行

(不許複製非売品)

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