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IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 1967

Vol. 19 No. 2

Issued in May 1967

Prepared by

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

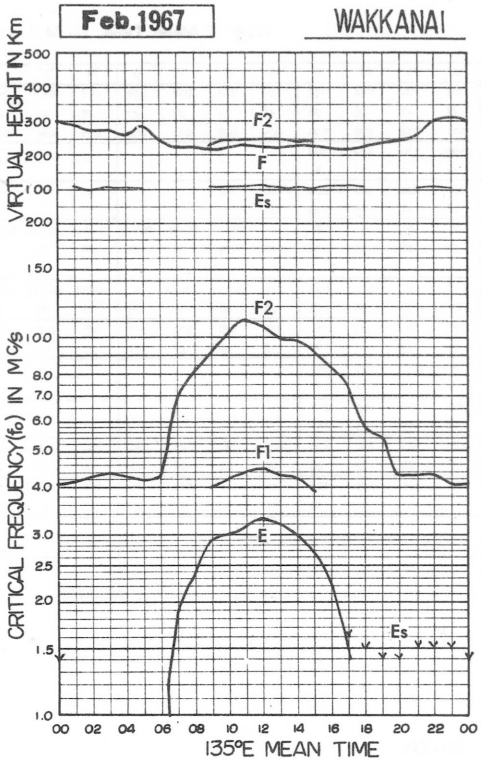
Importances

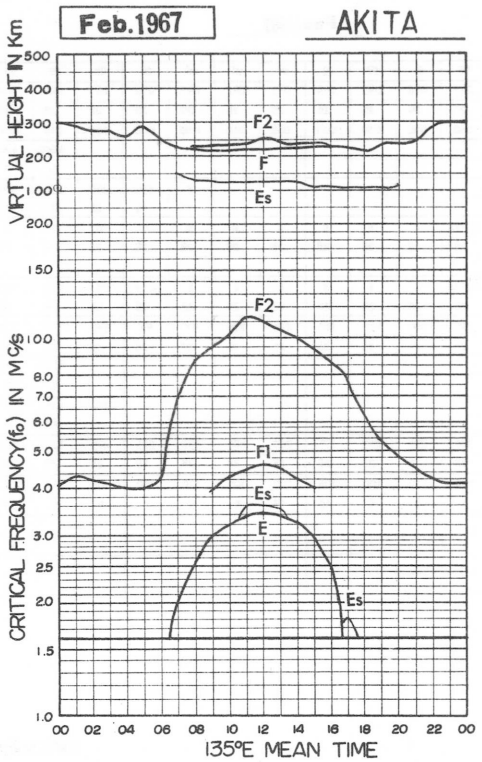
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

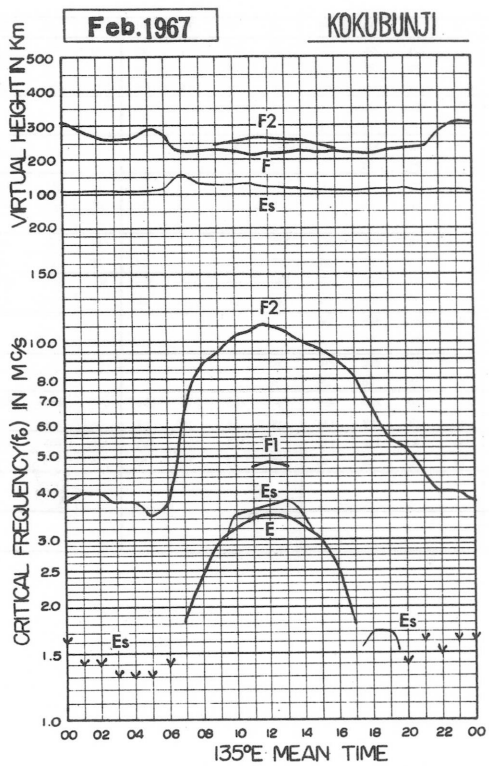
Besides, the time associated phenomena with SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record), are given in this table from interchange messages of IUWDS or measurements at Hiraiso.

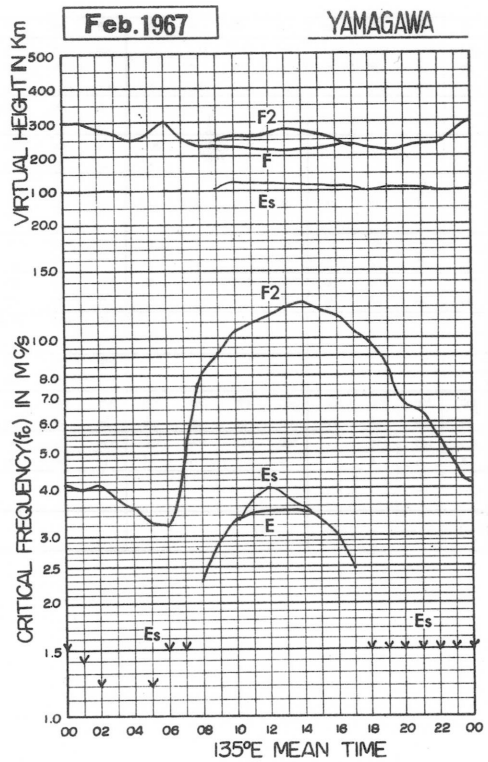
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Feb. 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	041	042	043	044	043	042	043	070	083	094	104	111	108	100	098	092	084	074	057	054	043	043	043	041
	CNT	23	24	25	26	25	24	27	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	25	23
	Q R	010	010	010	009	008	010	010	008	009	016	014	014	011	012	010	010	004	008	011	009	009	009	010	010
foF1	MED										400L	420L	U440L	U450L	430	420	390								
	CNT										5	7	12	14	14	11	5								
foE	MED							E	190	240	290	300	315	325	320	300	270	220	140			E			
	CNT							11	14	28	27	27	27	28	28	28	28	27	8			1			
foEs	MED	E014S	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E016S	E015S	E014S	E014S	E015S	E015S	E015S
	CNT	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28
	Q R																								
f-min	MED	E012S	E	E	E	E	E	E	E012	011	012	017	018	017	017	017	016	012	E015S	E012S	E	E012S	E013S	E014S	E015S
	CNT	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28
M (3000) F2	MED	275	280	280	285	285	285	300	340	340	335	325	325	325	320	320	330	330	320	310	310	305	290	285	275
	CNT	23	24	25	26	25	24	27	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	25	23
M (3000) F1	MED										400L	395L	U400L	U390L	395	395	395								
	CNT										5	7	12	14	14	11	5								
h'F2	MED									260	235	250	250	250	250	245	245								
	CNT									1	5	9	15	17	15	11	5								
h'F	MED	300	290	275	275	260	280	250	225	225	220	225	230	225	225	230	230	225	220	225	240	250	265	300	310
	CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
h'Es	MED	105	110	100	105	105	105	110	110	105	110	110	110	110	105	105	105	110	110	110	100	100	105	110	110
	CNT	3	8	8	10	13	5	3	5	4	6	10	6	6	5	7	10	11	8	6	4	3	6	6	5
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Feb. 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	041	043	042	041	040	040	042	070	088	095	102	111	110	104	100	094	086	077	063	053	048	045	042	041
	CNT	27	28	28	26	26	25	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27
	Q R	009	006	008	005	009	006	009	010	008	011	015	017	017	011	014	011	008	008	013	007	010	010	009	008
foF1	MED									330	390	430L	450	460	450L	420L	400								
	CNT									3	5	15	17	16	14	15	6								
foE	MED								200	255	300	320	335	345	340	325	295	245	E						
	CNT								22	28	27	26	23	23	25	23	21	22	17						
foEs	MED	E	E	E	E	E	E	E	G	G	G	G	036	036	035	G	G	G	018	E	E	E	E	E	E
	CNT	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
	Q R																								
f-min	MED	E	E	E	E	E	E	E	E	017	017	018	018	018	018	018	017	017	E	E	E	E	E	E	E
	CNT	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
M (3000) F2	MED	275	280	290	290	290	280	305	335	335	325	320	315	320	315	320	325	330	325	315	305	300	300	285	275
	CNT	27	28	28	26	26	25	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27
M (3000) F1	MED									395	400	395L	400	390	385L	395L	390								
	CNT									3	5	15	17	16	14	15	6								
h'F2	MED									230	230	240	240	255	245	240	240	230							
	CNT									9	27	28	28	28	28	28	24	6							
h'F	MED	300	290	280	280	260	290	255	225	225	220	215	220	220	220	220	225	230	225	215	240	240	250	285	300
	CNT	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
h'Es	MED	105	105	110		100	100	105	150	135	130	130	130	130	130	130	110	110	105	105	105	110	105	120	105
	CNT	8	4	4		2	1	1	11	11	10	15	18	19	18	16	16	17	13	11	10	8	3	4	5
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Feb. 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	038	040	040	038	038	035	038	070S	088	095	104	109	110	108	100	097	090	082	067	055	052	045	040	040
	CNT	28	28	28	28	28	28	28	26	26	28	27	27	28	28	27	28	28	28	28	28	28	28	26	27
	Q R	008	005	006	006	006	006	009	010	009	008	012	011	012	018	013	015	012	012	008	010	009	010	010	008
foF1	MED											440L	470L	480L	470L	460L		320L	230L						
	CNT											2	11	11	9	3		1	1						
foE	MED								185	250	300	320	340	350	345	325	300	250	180						
	CNT								19	26	26	27	25	26	24	24	23	16	10						
foEs	MED	E016	E014B	E014B	E013B	E013B	E013B	E014B	G	G	G	035	036	037	038	035	G	025	G	017	017	E014B	E016	E015	E016
	CNT	27	28	28	28	28	27	28	27	26	28	27	27	27	28	27	28	26	28	28	28	28	27	27	28
	Q R	D006	D003																	D008	D007	D006	D006	D009	D006
f-min	MED	014	013	013	013	012	013	013	014	014	015	016	017	017	016	016	016	015	014	014	014	014	014	014	014
	CNT	27	28	28	28	28	27	28	27	26	28	27	27	27	28	27	28	26	28	28	28	28	27	27	28
M (3000) F2	MED	270	275	290	285	280	270	290	330S	340	325	325	315	315	310	315	320	320	320	320	300	305	295	280	270
	CNT	28	28	28	28	28	28	28	26	26	28	27	27	28	28	27	28	28	28	28	28	28	28	26	27
M (3000) F1	MED											390L	380L	375L	370L	400L		385L	390L						
	CNT											2	11	11	9	3		1	1						
h'F2	MED									245	245	255	260	265	265	260	250	235	210						
	CNT									1	18	26	25	27	27	26	25	9	1						
h'F	MED	305	290	270	260	260	290	270	230	230	230	225	215	220	225	230	225	230	225	215	230	240	240	275	305
	CNT	27	28	28	28	28	28	28	27	27	28	27	27	27	28	28	27	28	28	28	28	28	27	27	28
h'Es	MED	110	110	110	110	110	110	110	155	130	130	125	130	125	120	120	110	110	110	110	110	115	110	110	110
	CNT	10	9	7	7	7	5	5	5	12	8	16	15	14	20	15	14	17	15	15	15	9	13	12	12
hpF2	MED	380	350	335	335	340	365	325	265S	265	280	285	300	300	300	295	285	285	280	285	310	305	310	340	375
	CNT	28	28	28	28	28	28	28	26	26	28	27	27	28	28	27	28	28	28	28	28	28	28	26	27
ypF2	MED	060	055	055	055	060	055	055	050S	050	055	060	065	065	060	060	065	055	055	055	055	055	055	060	060
	CNT	28	28	28	28	28	28	28	26	26	28	27	27	28	28	27	28	28	28	28	28	28	28	26	27

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Feb. 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	041	040	041	038	036	033	032	050	081	092	106	110	117	121	125	119	114	104	097	082S	067	064	054	046
	CNT	26	26	27	27	26	26	26	26	26	28	28	27	27	27	27	27	27	26	27	26	25	27	27	26
	Q R	006	009	007	004	005	006	007	009	011	016	011	017	019	019	016	014	016	018	023	028	022	014	011	009
foF1	MED												U480L		540L	500	U460L		310						
	CNT												1		1	1	1		1						
foE	MED									230	290	330	345	350	350	350	330	300	245						
	CNT									27	28	28	27	26	23	23	24	26	24						
foEs	MED	E015S	E014	E012B	E	E	E012	E015S	E015S	G	G	G	038	040	038	036	G	G	G	E015S	E015S	E015S	E015S	E015S	E015S
	CNT	27	27	27	27	27	27	27	27	27	28	28	27	27	27	27	27	27	27	28	27	27	27	27	27
	Q R	D005	D007					D004					006	006						D006	D007	D007	D005	D003	
f-min	MED	E015S	E014S	011	E	E	E012	E015S	E015S	014	014	015	017	017	018	016	016	015	012	E015S	E015S	E015S	E015S	E015S	E015S
	CNT	27	27	27	27	27	27	27	27	27	28	28	27	27	27	27	27	27	27	28	27	27	27	27	27
M (3000) F2	MED	270	270	280	290	305	275	270	310	335	325	315	315	310	300	295	300	300	305	310	305	295	300	295	275
	CNT	25	25	26	26	25	25	25	25	25	28	28	27	26	26	26	26	26	25	26	23	23	26	26	25
M (3000) F1	MED												U380L		355L	360	U350L		415						
	CNT												1		1	1	1		1						
h'F2	MED										250	260	265	270	280	275	265	250	235						
	CNT										8	28	27	26	26	24	25	19	5						
h'F	MED	300	300	280	270	250	270	300	255	230	230	230	230	220	210	220	220	230	240	230	220	230	240	240	275
	CNT	25	26	26	26	26	26	26	26	26	28	28	27	26	26	26	26	26	26	27	26	26	26	26	26
h'Es	MED	100	100	100	100	100	100	100	105	130	105	130	125	125	120	120	115	110	110	100	105	105	105	100	100
	CNT	8	8	5	6	5	4	7	6	4	5	14	22	26	23	20	16	19	18	13	9	8	10	7	5
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

Feb. 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	044	044	043	043	043	043	043	058	080	081	104	101	096	094	099	086	080	063	059	053	046	043	044	047
2	048	047	046	045	046	040	036	060	081	084	092	102H	111	095	098	083	076	066	053	053	040	040	040	041
3	043	043	044	044	046	043	046	069	083	094	101	115	094	103H	102	091	085	056	054	056	048	048	044	044
4	045	044	045	044	045	046	046	071	083	096	106	116	105	090	093	086	083	077	064	050	039	033	033	034
5	033	033	036	037	036	033	032	057	083	098	104H	123	110	106	101	090	081	071	066	054	050	043	045	045
6	047	048	044	044	044	044	041	062	085	102	122	117	112	095	091	085	079	073	051	044	041	038	038	038
7	040	041	041	040	040	041	040	071	084	096	113H	113	110	095	087	093	085	074	057	054	041	040	040	041
8	041	042	040	034	035	034	038	070	073	087	121	J123S	127	125	105	107	109	106	F	F	F	F	F	F
9	063F	F	048F	055F	055	040	032	070	100	105H	121	107	110	106H	100	094	081	070	053	058	038	036	036	037
10	038	039	043	044	044	046S	050	066	082	086	113	111	104	105	097	090	084	063	059F	048F	043F	045F	F	F
11	F	F	F	045F	043F	F	F	077F	084	088	100H	106	094	087	082	092	079	073	063	063	043F	040F	F	F
12	F	F	F	F	F	F	043F	063	083	084	084	095	I103C	106	100	085	082	066	048	045	043	045	048	F
13	F	051F	048	046	044	042	043	067	082	102	096	106	101	096	098	093	083	071	057	052	045	043	043	047
14	044	045	046	045	044	046	050	070	083	093	108	113	110	101	091	089	084	079	056	050	048	043	044	SF
15	SF	045F	048F	045F	044F	042	040	066	096	102	101	102	104	098	100	101	101	083	064	054	043	037	037	038
16	038	041	044F	F	F	044	041	060	074	103H	100	105	101	100	104	098	083	081	080	066	062	050	035	035
17	035	030	026H	027	027	027	030	063	088	091	093	093	091	100	095	091	094	071	049	040	040	037	034	035
18	035	034	033	034	034	034	038	063	081	090H	103	115	094	093	101	100	081	071	053	049	045	034	030	030
19	033	033	034	036	035	028	032	070	080	082	088	090H	101	089	088	096	086	071	054	050	042	031	030	031
20	033	033	033	034	033	033	038	071	087	082	089	093	110	093	086H	094	083	073	057	042	038	034	033	033
21	035	036	035	035	034	034	038	071	081	084	091	088	098	100	083	087	086	077	057	054	043	033	032	032
22	035	034	036	036	036	037	043	069	076	097	104	114	111	098	090	084	083	079	072	069	058	044	045	043
23	045	045	044	044	043	043	050	077	103	104	104	122	120	116	097	091	085	078	056	043	043	043	043	043
24	040	040	042	043	043	046	053	076	105	099	113	121	118	113	100	103	083	079	053	057	055	049	044	045
25	044	043	043	043	043	043	047	070	087	093	112	109	106	108	097	095	085	082	073	060	047	046	043	044
26	046	046	045	044	043	041	048	083	096	093	100	111	124	121	109	098	086	075	061	060	058	059	051	053
27	F	050F	049F	050F	051F	F	063	081	098	106	112H	121	126	121	110	106	091	087	074	058	056	052	050	048
28	050	SF	SF	053F	F	F	058	083	091	101	104	114	119	120	110	101	093	080	070	060	050	048	047	047
29																								
30																								
31																								
Count	23	24	25	26	25	24	27	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	25	23
Median	041	042	043	044	043	042	043	070	083	094	104	111	108	100	098	092	084	074	057	054	043	043	043	041
U.Q.	045	045	046	045	044	044	048	071	090	102	112	116	112	107	101	098	086	079	064	058	050	046	044	045
L.Q.	035	035	036	036	036	034	038	063	081	086	098	102	101	095	091	088	082	071	053	049	041	037	034	035
Q.R.	010	010	010	009	008	010	010	008	009	016	014	014	011	012	010	010	004	008	011	009	009	009	010	010

foF2

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

The Radio Research Laboratories, Japan

W 1

IONOSPHERIC DATA

Feb. 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												U44OL												
2													500H		420									
3												U45OL	U43OL											
4													U47OL											
5												U43OL												
6											43OL	U44OL			400									
7																								
8											L			U43OL										
9													43OL		410									
10													45OL		410									
11										380														
12													C	L	42OL									
13												U44OL	U45OL	U44OL	U42OL									
14										41OL			U45OL	400										
15												41OL	410	420										
16												U48OL	U46OL	420		U39OL								
17											41OL	L		410	430	390								
18											42OL	U42OL	U46OL	U46OL										
19										39OL	420	45OL	48OL			410								
20													U45OL	430	420									
21											U43OL	430		U45OL		370								
22											L	L	430	U43OL	U43OL									
23											400	400		410	400									
24									L					U43OL										
25										400	43OL	U46OL	U47OL	450	410									
26													L	500H										
27												L	L			380								
28										U46OL														
29																								
30																								
31																								
Count										5	7	12	14	14	11	5								
Median								—		400L	42OL	U44OL	U45OL	430	420	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

Feb. 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	205	285	305	315	320	315	300	260	200	S						
2								S	235	280	305	325	320	315	300	260	180	S						
3								S	215	295	300	315	315	320	300	260	200	E						
4								S	235	280	305	315	310	305	290	250	195	S						
5								S	230	270	305	310	320	300	295	260	210	S						
6								A	I230A	290	300	315	310	305	290	240	200	E						
7								S	235	285	310	325	325	320	300	260	160	S						
8							S	A	210	270	300	305	300	305	300	270	200	A						
9								S	240	280	300	310	320	300	300	255	205	S						
10								S	230	I265A	300	300	315	305	295	270	220	S						
11							E	S	240	290	300	315	325	315	300	270	225H	S						
12							E	S	230	270	300	315	I315C	315	300	260	205	S						
13								S	250	290	300	315	330	325	305	280	230H	S						
14							E	180	240	290	I310A	325	325	315	300	265	220	150						
15							E	185	250	300	315	330	325	325	305	280	220	S						
16							E	175	240	295	310	330	325	320	300	270	210	S						
17							E	A	225	290	300	310	315	305	295	265	210	A						
18							E	180	230	275	300	320	315	305	295	250	A	E						
19							E	185	260	295	300	310	330	325	300	270	240	S						
20							E	195	255	300	300	300	325	300	300	I275A	230	A						
21							E	185	250	300	I300A	I310A	330	320	305	270	220H	150						
22							S	180	265	A	A	A	I325A	325	315	300	250	135						
23							E	205	270	305	325	330	335	330	315	295	220	S		S				
24							S	200	250	I270A	265	I315A	335	335	320	295	270	180						
25							S	190	250	290	310	330	325	320	310	290	225	S						
26							S	210	280	295	315	340	340	330	320	300	225	S						
27							S	215	280H	315	340	340	330	340	325	300	250	A			E			
28							S	215	270	310	315	340	350	345	325	300	260	170						
29																								
30																								
31																								
Count							11	14	28	27	27	27	28	28	28	28	27	8			1			
Median							E	190	240	290	300	315	325	320	300	270	220	140			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

Feb. 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	E	E	E	E	E	E	E	020	024	G	G	023G	G	020G	G	G	G	E015S	E016S	E016S	E015S	E017S	E015S	E
2	E018S	E	E	E	E	E	E	E018S	G	G	G	G	G	G	G	G	022	E015S	E012S	E	E013S	E013S	E015S	E015S
3	E016S	E	E	E	E	E	E015S	E016S	G	G	G	G	G	G	G	G	G	E	E	E015S	E015S	E015S	E015S	E015S
4	E	J023	E	E	E016S	E	E	E018S	G	G	G	G	G	G	G	G	022	E015S	E015S	E016S	E016S	E017S	E	E018S
5	E	015	015	013	015	E	E015S	019	G	G	G	G	G	G	G	G	024	J023	E015S	E015S	E015S	E013S	E018S	E016S
6	E015S	E	E	E	E	E	J021	J038	035	J053	G	G	G	G	G	G	G	015	J028	E	E013S	E013S	E	018
7	E011S	017	013	E	E	E	E	E020S	G	G	G	G	G	G	G	033	025	E015S	021	E	E	E015S	E013S	E017S
8	E016S	E	E	E	E	E	E016S	J043	G	G	G	G	G	G	G	G	023	026	E015S	E017S	E017S	E016S	E	E012S
9	E015S	E	E	E	E	E	E	E020S	G	G	G	G	G	G	025G	020G	G	020	019	J023	J021	E016S	E015S	E017S
10	E017S	E	E	E	013	E	E015S	E021S	G	031	028G	G	G	G	G	G	G	E015S	E012S	E	E	E015S	E014S	020
11	E017S	E	E	E	E	E	E	E020S	G	G	034	G	G	G	G	G	G	E016S	E015S	E	E	E	E014S	E
12	E	E	E	E	E	E	E	G	G	G	G	G	C	G	024G	022G	G	E016S	E016S	E	E016S	E016S	E	E016S
13	E013S	E	E	015	017	E	E	G	G	G	038	G	G	G	021G	023G	G	E017S	E013S	E015S	E017S	E016S	E016S	E012S
14	J024	J023	J023	J021	018	013	E	G	G	027G	034	G	022G	021G	040	030	G	G	E	E013S	E015S	J036	J021	E
15	E	E	E	015	E	E	E	G	G	G	G	G	G	G	G	G	G	E016S	E	018	022	022	J045	E012S
16	E014S	E	E	E	E	E	E	G	G	G	036	G	G	G	034	031	G	E015S	E016S	E	E012S	E014S	E015S	E015S
17	E012S	018	E	016	016	015	J026	026	015G	G	G	G	G	G	G	G	J023	020	E	015	021	J020	014	E015S
18	E	E	013	015	014	014	E	G	G	G	040	G	036	G	033	033	J043	027	J024	J048	E012S	E013S	J053	J024
19	E016S	E	E	J036	J043	J053	J020	G	J033	G	048	J053	G	G	G	G	G	E017S	E	E014S	E015S	E	E015S	E012S
20	E018S	J023	018	E	015	E	E	G	G	G	G	034	G	033	033	J035	020G	015	J025	E	E	E	E017S	E015S
21	E015S	E	E	018	J021	E016S	E	G	G	G	035	J038	038	G	G	G	G	G	E012S	E012S	E012S	E015S	E015S	E013S
22	J020	017	J021	017	018	E	E015S	G	G	031	J035	040	J043	G	G	G	G	G	E015S	E	E	J020	J021	J024
23	J023	J023	015	E	E	E016S	E	G	G	G	G	G	041	025G	G	G	G	E018S	E016S	E015S	E014S	J020	024	023
24	E015S	E	E	E	017	014	E017S	G	G	G040	J043	037	032G	028G	G	020G	G	G	J020	E016S	E	E	E	E016S
25	E012S	E	E	E	E	E	E016S	G	G	038	G	G	G	G	G	G	029	E019S	E012S	E	E015S	020	E015S	E018S
26	E	E	E	E	E	E	E015S	G	G	G	G	G	G	G	G	G	028	E020S	E012S	E015S	E	E	E	E015S
27	E	E	E	018	014	E	E014S	G	G	G	G	G	G	G	G	020G	022G	023M	E	E	E	E	E016S	E018S
28	E	E	J023	E	013	E	E015S	G	G	G	G	G	G	G	G	G	G	G	E016S	E012S	E	E	E015S	E
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28
Median	E014S	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E016S	E015S	E014S	E014S	E015S	E015S	E015S
U.Q.	E016	016	013	015	016	E	E015	E020	G	G	034	G	G	G	G	G	022	E020	E016	E016	E016	E017	E016	E018
L.Q.	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E015	E012	E	E	E	E014	E012
Q.R.																								

The Radio Research Laboratories, Japan

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

W 4

IONOSPHERIC DATA

Feb. 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								018	G			019G		018G				S	S	S	S	S	S	
2	S							S									G	S	S		S	S	S	S
3	S						S	S												S	S	S	S	S
4		016			S			S									G	S	S	S	S	S		S
5		E	E	E	E		S	G									017	S	S	S	S	S	S	S
6	S						020	033	025	030								G	027		S	S		017
7	S	012	E					S								G	G	S	016			S	S	S
8	S						S	020									016	016	S	S	S	S		S
9	S							S							020G	019G		S	018	019	015	S	S	S
10	S				E		S	S		028	022G							S	S			S	S	015
11	S							S			025							S	S				S	
12															022G	020G		S	S		S	S		S
13	S			011	E						G				020G	019G		S	S	S	S	S	S	S
14	E015S	015	018	012	016	E				027G	033		022G	020G	025	020				S	S	017	E	
15				E														S		012	S	017	027	S
16	S										G				G	G		S	S		S	S	S	S
17	S	016		012	011	E	022	020	015G								017	017		012	S	016	012	S
18			E	013	E	E					G		G		G	031	035	021	022	016	S	S	017	015
19	S			E	020	E	015		019		G	G						S		S	S		S	S
20	S	015	012		E							G		G	028	030	018G	E015R	018				S	S
21	S			E	E	S					033	033	027						S	S	S	S	S	S
22	017	016	E	015	E		S			030	032	033	033						S			017	016	017
23	013	015	012			S							025	022G				S	S	S	S	017	S	E015S
24	S				E	E	S			030	G	034	030G	027G		020G			015	S				S
25	S						S			035							G	S	S		S	E012S	S	S
26							S										G	S	S	S				S
27				E	E		S									018G	018G	020					S	S
28			012		E		S												S	S			S	
29																								
30																								
31																								
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

Feb.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	E	E	E	E	E	E	E	E014S	016	016	017	012	013	012	017	016	016	E015S	E016S	E016S	E015S	E017S	E015S	E
2	E018S	E	E	E	E	E	E	E018S	011	019	018	023	017	017	016	017	E	E015S	E012S	E	E013S	E013S	E015S	E015S
3	E016S	E	E	E	E	E	E015S	E016S	017	018	011	016	016	018	017	012	013	E	E	E015S	E015S	E015S	E015S	E015S
4	E	E	E	E	E016S	E	E	E018S	011	011	011	012	012	017	017	011	012	E015S	E015S	E016S	E016S	E017S	E	E018S
5	E	E	E	E	E	E	E015S	E012S	011	012	017	017	018	012	016	016	E	E015S	E015S	E015S	E015S	E013S	E018S	E016S
6	E015S	E	E	E	E	E	E	E	E	E	011	012	017	012	018	017	016	E	E014S	E	E013S	E013S	E	E
7	E011S	E	E	E	E	E	E	E020S	017	012	017	017	017	018	017	011	E	E015S	E015S	E	E	E015S	E013S	E017S
8	E016S	E	E	E	E	E	E016S	E	011	018	017	017	017	012	016	017	E	E	E015S	E017S	E017S	E016S	E	E012S
9	E015S	E	E	E	E	E	E	E020S	018	017	017	017	018	017	011	011	E	E015S	E	E	E	E016S	E015S	E017S
10	E017S	E	E	E	E	E	E015S	E021S	011	018	018	018	018	017	017	016	012	E015S	E012S	E	E	E015S	E014S	E
11	E017S	E	E	E	E	E	E	E020S	017	018	018	018	019	018	018	015	012	E016S	E015S	E	E	E	E014S	E
12	E	E	E	E	E	E	E	E016S	012	012	017	020	C	019	011	011	012	E016S	E016S	E	E016S	E016S	E	E016S
13	E013S	E	E	E	E	E	E	E015S	011	011	017	018	020	017	012	012	017	E017S	E013S	E015S	E017S	E016S	E016S	E012S
14	E015S	E	E	E	E	E	E	E	011	017	018	018	017	011	011	011	012	011	E	E013S	E015S	E012S	E	E
15	E	E	E	E	E	E	E	011	011	011	018	017	017	017	012	012	011	E016S	E	E	E015S	E015S	E013S	E012S
16	E014S	E	E	E	E	E	E	011	011	011	018	017	017	013	011	017	012	E015S	E016S	E	E012S	E014S	E015S	E015S
17	E012S	E	E	E	E	E	E	E	E	011	017	020	017	017	017	012	011	E	E	E	E012S	E	E	E015S
18	E	E	E	E	E	E	E	E	011	012	018	018	018	017	016	017	012	E	E011S	E	E012S	E013S	E015S	E
19	E016S	E	E	E	E	E	E	E	011	012	020	020	019	019	018	018	018	E017S	E	E014S	E015S	E	E015S	E012S
20	E018S	E	E	E	E	E	E	015	011	011	012	017	018	017	017	016	012	E	E	E	E	E	E017S	E015S
21	E015S	E	E	E	E	E016S	E	011	012	012	013	017	017	018	013	011	011	E	E012S	E012S	E012S	E015S	E015S	E013S
22	E	E	E	E	E	E	E015S	011	011	012	017	018	018	020	016	018	014	E	E015S	E	E	E	E	E
23	E	E	E	E	E	E016S	E	011	011	017	019	017	016	012	012	020	013	E018S	E016S	E015S	E014S	E	E014S	E015S
24	E015S	E	E	E	E	E	E017S	E	011	017	017	018	017	020	018	012	020	E	E	E016S	E	E	E	E016S
25	E012S	E	E	E	E	E	E016S	011	012	018	022	019	020	018	018	017	011	E019S	E012S	E	E015S	E012S	E015S	E018S
26	E	E	E	E	E	E	E015S	014	017	017	020	019	020	020	020	017	017	E020S	E012S	E015S	E	E	E	E015S
27	E	E	E	E	E	E	E014S	012	012	018	018	017	018	016	018	011	011	E	E	E	E	E	E016S	E018S
28	E	E	E	E	E	E	E015S	011	E	011	017	023	017	017	018	015	017	E	E016S	E012S	E	E	E015S	E
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28
Median	E012S	E	E	E	E	E	E	E012	011	012	017	018	017	017	017	016	012	E015S	E012S	E	E012S	E013S	E014S	E015S
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f-min | Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

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IONOSPHERIC DATA

Feb. 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	295	295	280	280	285	280	340	345	355	345	335	325	320	320	335	300	330	315	315	320	315	290	295	285
2	280	275	290	290	315	285	330	345	345	335	345	325H	335	325	335	300	340	320	320	335	300	285	285	275
3	265	275	275	295	295	280	300	335	360	340	325	350	340	320H	330	340	335	290	300	315	310	310	295	275
4	275	290	285	290	270	285	305	340	350	335	345	335	345	325	330	305	330	320	330	330	295	305	265	265
5	275	275	270	295	305	310	275	330	345	335	315H	325	320	335	335	325	310	315	320	310	300	285	290	290
6	265	300	275	275	275	280	310	325	330	355	325	330	330	315	330	330	330	345	310	320	310	295	290	270
7	275	270	275	275	275	275	295	340	335	345	300H	335	325	325	315	330	330	325	305	320	310	285	285	275
8	280	270	275	245	255	255	280	330	315	320	315	J290S	310	310	295	300	305	300	F	F	F	F	F	F
9	270F	F	260F	275F	310	255	265	315	330	305H	330	320	325	320H	320	330	330	315	290	320	340	285	290	285
10	285	280	300	320	320	300S	315	340	340	325	320	325	330	315	335	340	335	315	340F	315F	300F	275F	F	F
11	F	F	F	310F	285F	F	F	340F	350	340	330H	330	325	320	320	330	330	325	300	315	290F	290F	F	F
12	F	F	F	F	F	F	300F	345	345	340	335	320	I325C	340	330	325	330	335	300	315	300	310	295	F
13	F	295F	300	285	295	285	300	340	340	355	315	330	325	330	325	335	350	330	310	310	310	290	290	290
14	285	280	280	265	270	285	300	345	325	335	335	310	325	325	325	335	320	330	320	305	315	300	275	SF
15	SF	275F	290F	290F	295F	295	305	335	340	340	325	315	325	325	315	320	335	330	315	325	305	295	290	295
16	285	270	265F	F	F	320	340	350	340	345H	335	325	315	315	315	335	320	315	305	280	260	230	235	240
17	330	310	270H	260	260	260	270	315	350	335	340	310	295	320	340	330	340	340	305	300	295	295	265	260
18	265	275	275	275	295	295	305	330	335	300H	315	330	330	325	320	355	330	330	310	310	335	325	270	265
19	270	280	280	305	330	295	290	345	340	340	340	320H	330	315	320	345	325	325	310	310	325	290	285	270
20	275	275	280	295	280	295	295	350	345	340	330	305	335	310	320H	320	335	320	310	300	315	275	275	275
21	275	285	295	290	295	290	315	340	355	335	335	330	320	335	320	310	325	335	305	320	325	285	270	270
22	265	285	280	280	280	295	325	350	315	330	315	325	325	315	335	335	315	315	310	305	330	305	275	275
23	275	280	275	280	290	275	300	340	340	330	320	315	310	330	330	330	310	335	320	285	280	270	265	275
24	290	250	260	255	270	270	310	345	335	315	300	315	315	315	315	330	330	325	300	300	310	305	290	290
25	275	280	280	285	280	285	320	320	320	325	320	325	305	330	320	325	320	315	310	335	285	285	280	260
26	285	285	290	295	265	255	285	335	335	295	310	295	275	315	315	320	325	325	295	290	295	310	295	290
27	F	275F	260F	280F	295F	F	295	320	315	320	305H	305	320	315	315	320	320	320	315	295	290	295	280	270
28	260	SF	SF	285F	F	F	300	315	325	335	310	300	305	310	300	325	325	315	305	305	290	290	270	275
29																								
30																								
31																								
Count	23	24	25	26	25	24	27	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	25	23
Median	275	280	280	285	285	285	300	340	340	335	325	325	325	320	320	330	330	320	310	310	305	290	285	275
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Feb. 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												U410L												
2													370H		405									
3												U370L	U395L											
4													U405L											
5												U395L												
6											395L	U410L			400									
7																								
8											L			U395L										
9													420L		390									
10													400L		400									
11										410														
12													C	L	390L									
13												U385L	U380L	U385L	U380L									
14										415L			U400L	390										
15												415L	390	405										
16												U375L	U390L	405		U400L								
17											390L	L		390	385	385								
18											405L	U395L	U390L	U390L										
19										400L	405	400L	375L			390								
20													U385L	400	405									
21											U395L	400		U380L		415								
22											L	L	395	U410L	U395L									
23											400	410		415	415									
24									L					U395L										
25										400	395L	U400L	U405L	400	395									
26													L	380H										
27												L	L			395								
28										U390L														
29																								
30																								
31																								
Count										5	7	12	14	14	11	5								
Median										400L	395L	U400L	U390L	395	395	395								
U.Q.																								
L.Q.																								
Q.R.																								

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

IONOSPHERIC DATA

Feb. 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												245												
2													255		245									
3												240	235											
4													245											
5												255												
6											260	235			235									
7																								
8											250			250										
9													260		240									
10													240		240									
11										225														
12													I255C	255	250									
13												255	250	250	250									
14										235			250	240										
15												240	250	245										
16												275	245	250		245								
17											250	260		260	250	245								
18											245	260	245	260										
19										235	240	230H	260			245								
20													250	245	240H									
21											240	250		250		240								
22											250	255	250	250	250									
23											235	250H		250	240									
24									260					245										
25										240	260	250	245	250	250									
26													250	260										
27												260	260			250								
28										245														
29																								
30																								
31																								
Count									1	5	9	15	17	15	11	5								
Median									260	235	250	250	250	250	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

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IONOSPHERIC DATA

Feb. 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	280	260	260	265	250	265	225	220	220	220	240	225	230	225	225	235	220	220	235	240	245	265	280	275
2	300	300	275	250	230	260	240	225	220	225	210H	240H	220H	235	230	220	215	225	220	240	230	275	300	320
3	325	300	300	270	250	285	270	230	215	220	210	240	225	225H	240	235	225	200	245	245	245	265	260	275
4	290	290	275	290	305	290	245	235	210	210H	230	245	235	215	215H	220	235	220	210	230	250	270	305	350
5	305	335	300	255	265	230	275	245	215	235	230H	240	225	230	240	225	230	225	245	235	250	250	295	300
6	275	250	290	275	250	270	245	230A	240	235	215	225	220H	225	210	235	235	210	265A	220	250	275	275	320
7	300	300	280	285	300	300	275	240	215H	225	225	200H	240	240	225	240	225	215	250	235	220	270	275	300
8	300	290	275	380	295	360	300	240	220	230	225	210H	210H	235	230	230	240	225	225	245	275	300	270	295
9	260	270	220	280	245	310	310	260	240	205H	220H	230	210	220H	220	225	225	210	245	250	215	300	295	310
10	310	300	260	235	230	230	230	225	225	210H	200H	230	225	225H	230	225	225	210	225	245	255	300	330	280
11	270	265	250	240	250	260	240	225	225	210	230H	235	230	225	225	240	220	225	250	225	215	265	300	315
12	310	290	250	225	220	295	250	225	230	215H	230	210	I235C	220	230	225	225	215	225	235	260	265	260	335
13	300	250	250	280	250	245	245	225	220	240	215	240	215	220	235	220	230	220	235	240	250	265	270	275
14	275	310	300	295	315	280	220	225	230	220	245	235	235	210	215	230	225	220	210	245	240	250	260	310
15	315	280	260	245	240	240	225	220	235	220	215	220	210	215	210	240	230	220	220	220	235	260	360A	295
16	310	300	300	290	260	240	210	215	225	245H	230	210	230	210	245	245	225	240	245	265	310	360	460	350
17	260	225	200H	360	390	400	375	265	245	245	225	220	210H	215	225	225	225	210	205	250	260	260	325	325
18	315	310	300	295	250	275	250	230	230	210H	225	200	215	215	240H	235	230A	215	250	245	235	230	310	360
19	325	300	300	270	260	250	260	230	220	225	225	210	210	215	210H	240	225	210	210	225	245	260	310	340
20	350	305	320	275	270	260	250	225	225	225	230	215	225	220	210	220	230	220	215	220	250	275	315	340
21	300	275	260	260	260	300	260	230	225	215	215	210	210	240	230	215	240	220	215	240	225	275	325	330
22	340	305	300	325	300	280	225	220	220	210H	230	240	225	230	225	230	240	235	235	240	225	250	295	340
23	290	290	275	275	260	300	260	230	240	240	225	210	225	210	210	240	225	225	215	225	265	300	300	300
24	305	300	305	310	285	300	245	230	240	240	235	225H	240	225	240	245	220	220	220	260	250	250	260	290
25	275	275	260	260	260	270	245	225	220	220	200H	230	230	235	215	225	230	235	220	220	265	270	300	335
26	290	265	260	260	300	320	290	225	225	225	245	245	240	215H	240	220H	230	220	225	260	250	250	250	265
27	300	280	290	285	235	280	250	225	225	225	240H	230	250	230H	235	200	225	230	215	220	240	250	275	300
28	310	275	290	260	255	260	250	220	220	220	205H	245	230	225H	240	225	235	220	235	230	250	270	300	300
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Median	300	290	275	275	260	280	250	225	225	220	225	230	225	225	230	230	225	220	225	240	250	265	300	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

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IONOSPHERIC DATA

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

W 11

IONOSPHERIC DATA

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

The Radio Research Laboratories, Japan

W 12

IONOSPHERIC DATA

Feb. 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	041	041	038	040	042	038	037	066	083	085	092	101	095	096	090	086	079	068	056	057	053	049	043	045
2	046	046S	047	051	043	039	041	070	076	095	089	093	101	110	086	083	073	070	058	045	046	042	039	040
3	040	041	042	043	045	041	042	075R	086	083	095	106	098	094	100	099	081	066	049	053	056	046	042	041
4	039	041	041	041	040	040	042	069R	086	090	I110R	116	104	097	089	082	086	086	072	047	046	036	033	035
5	036	034	036	036	036	034	035	062	081	097	104	112	119	105	095	084	085	079	057	058	053	045	044	045
6	046	046	045	041	042	040	043	I065R	086	101	122	122	109	096	090	093	079	072	059	051	045	039	040	041
7	040	041	041	040	040	040	040	072	096	101	102	111	112	104	089	088	091	083	063	050	048	037	039	039
8	040	042	043	037	039	036	037	I076R	088	102	117	122	127	129	115	114	I112R	I102R	075	067	075	069	070	F
9	064	065	064	054S	055	046	037	066	123	112	109	I121R	114	107	103	095	094	075	061	055	057	036	036	036
10	037	040	042	042	032	031	036	062	079	092	095	111	114	099	106	097	076	069	053	052	046	044	041	041
11	045	046	046	F	F	F	050	071	092	091	092	107	111	093	087	088	084	069	065	060	050	043	043	041
12	041	044	046	041	034	F	040	067	083	092	083	085	102	103	105	097	083	076	051	044	043	046	045	044
13	041	046S	047	046	045	043	046	070	089	092	100	102	109	098	097	096	083	076	054	051	047	046	046	046
14	046	044	043	043	048	046	051	076R	086	096	112	119	122	102	103	086	085	078	066	051	048	045	041	045
15	046	049	051	048	046	040	042	066	089	102	095	102	103	105	097	102	103	084	065	057	045	037	039	039S
16	040	042	042	044	046	043	044	073	082	081	102	102	100	101	101	106	088	080	079	073	063	068	FS	054R
17	FS	049	035	039	039	042	I046R	I098R	116	098	099	106	105	096	106	096	092	071	054	053	049	042	035	037
18	036	036	039	039	037	036	036	068	087	101	108	115	126	104	104	098	088	077	063	051	047	045	031	032
19	034	035	037	041	033	028	033	065	086	084	093	095	107	102	097	091	094	075	057	052	046	037	034	033
20	033	034	034	034	036	033	035	I068C	087	088	096S	094	103	107	093	089	085	082	061	047	040	035	033	033
21	035	036	037	033	033	033	037S	064	092	091	096	094	092	096	101	087	087	089	069	055	051	033	033	034
22	033	035	035	034	035	035	042	067	079	083	106	116	110	099	084	084	086	085R	076	068	064	047S	046	044
23	045	044	044	043	045	041	046	087	109S	103	112	119	120R	118	112	099	084	077	064	050	046	044	045	044
24	043	041	041	040	040	040	047	075R	092	115	116	129	123	116	106	093	093	076	062	052	054	051	045	043
25	044	044	045	042	043	042	047	071	091	100	108H	122	114	108	095	093	086	082	074	062	046	046	045	044S
26	046	046	046	045	040	041	041	I081R	I093R	095	099	110	122	124	114	104	087	077	067	059	059	057	055	I050R
27	051	051	054	F	FS	FS	F	084S	I095R	111	111	121R	132	120	116	108	106	092	072	058	056	051	049	048S
28	046	047	048	049	048	046	051	085	094	090	111	I111R	120	118	116	103	088	080	074	060	055	051	I050R	I050R
29																								
30																								
31																								
Count	27	28	28	26	26	25	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27
Median	041	043	042	041	040	040	042	070	088	095	102	111	110	104	100	094	086	077	063	053	048	045	042	041
U.Q.	046	046	046	044	045	042	046	076	092	101	110	119	120	109	106	099	092	082	070	058	056	048	045	045
L.Q.	037	040	038	039	036	036	037	066	084	090	095	102	103	098	092	088	084	074	057	051	046	038	036	037
Q.R.	009	006	008	005	009	006	009	010	008	011	015	017	017	011	014	011	008	008	013	007	010	010	009	008

foF2

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

The Radio Research Laboratories, Japan

A 1

IONOSPHERIC DATA

Feb. 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											410H	L	L	L	L									
2										L	L	L	450	460L	380L									
3										L	430L	400	L	L	L	L								
4										L	400L	L	L	L	L	L								
5										L	L	L	420	420L	L	L								
6										L	L	460L	440L	450L	410L	L								
7									L	L	L	450	L	L	L									
8										L	L	L	460	L	430									
9										L	L	450L	L	L	420	L								
10									300	380	410L	420L	L	L	L	L								
11									330	L	400L	L	L	L	420L	L								
12										L	390L	450	450L	L	L	400								
13										L	420L	450	430H	L	430L	L								
14									L	L	430	450	460	450L	L	L								
15										L	L	430L	450	460	L	L								
16										L	430	L	L	450	410	360L	L							
17									L	390	430	L	L	460L	400	L	L							
18									L	400	390	L	L	L	A	L	L							
19										L	L	L	460	L	410L	400								
20										L	440L	430L	480L	480L	440L	L								
21										L	L	450	460	450L	L	L	L							
22										L	450H	480	470L	440	L	I420A	A							
23									L	L	L	460L	460L	L	440L	380								
24										L	L	460L	L	450L	L	L								
25									370L	370	460	470	470	430	430L	L	A							
26										L	L	L	480	480	410	400								
27										L	500L	470	L	470	450L	L								
28									L	410L	LH	460L	470L	L	430	LH								
29																								
30																								
31																								
Count									3	5	15	17	16	14	15	6								
Median									330	390	430L	450	460	450L	420L	400								
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

A 2

IONOSPHERIC DATA

Feb. 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								A	245	I280A	305	325	340	335	A	A	220	E						
2								E	235	290	320	340	345R	330	315	280	235	E						
3								E	260	I290R	325	340	335	335	320	290	245	E						
4								A	255	I290R	320	335	340	325	305	270	230	E						
5								E	240	295	320	I340A	340	335	325	280	235	E						
6								A	I240A	295	325	340	345	335	I310A	285	240	B						
7								E	255	295	320	335	350	345	330	295	A	E						
8								180	245	295	320	I330A	340	340	I315A	285	A	E						
9								190	250	295	320	335	340	340	325	290	240	E						
10								B	245	295	315	330	340	335	330	I300A	255	E						
11								190	255	300	320	330	340	330	325	300	240	E						
12								A	I240A	300	320	I330A	340	345	325	290	225	E						
13								205	270	I305A	325	A	A	340	325	300	260	190						
14								205	260	300	I330R	340	350	I340A	I325A	295	245	190						
15								I190A	250	300	I315A	335	355	350	330	310	250	B						
16								210	I260A	300	325	340	345	340	320	295	255	200						
17								180	250	I295A	325	I335A	I340A	340	A	A	230	E						
18								190	250	290	315	335	345	335	A	A	A	180						
19								I200A	I265A	A	A	A	A	A	320	300R	245	A						
20								C	260	I300A	I320A	330	335	A	A	A	240	B						
21								200	255	300	A	A	A	340	330	300	245	A						
22								205	245	300	325	A	A	350	345	A	A	A						
23								200	260	305	325	A	A	A	A	A	255	A						
24								200	270	315	I330A	345	360	355	350	A	A	A						
25								200	265	310	I320A	330	345	350	330	315	260	A						
26								205	260	315	335	355	360	355	330	310	I245A	B						
27								205	280	310	330	355	360	355	335	310	260	205						
28								240H	300	330	340	350	I360A	360	345	320	A	A						
29																								
30																								
31																								
Count								22	28	27	26	23	23	25	23	21	22	17						
Median								200	255	300	320	335	345	340	325	295	245	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

IONOSPHERIC DATA

Feb. 1967 | foEs | 0.1 Mc | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	021	036	034	032	036	036	035	033	J034	021G	E	E	E	E	J013E	J018	E
2	J014E	J013E	E	J013E	E	E	J014E	E	G	G	G	G	G	G	G	G	G	J013E	E	J013E	E	E	E	E
3	E	E	E	J013E	E	E	E	J021	J034	G	G	G	G	G	G	G	G	J021	E	E	E	E	E	E
4	E	E	E	E	J023	E	E	019	G	G	G	G	J026G	J030G	G	G	G	J025	J019	J019	J019	E	E	E
5	E	E	E	E	J014E	E	E	020	G	G	G	036	G	G	G	J025G	J025	J018	J018	J013E	E	E	J013E	J013E
6	J013E	J015E	E	E	J013E	E	J013E	020	028	G	G	036	035	034	J032	025G	025	E018B	E	E	E	E	E	E
7	J013E	J020	E	J015E	J013E	E	E	E	G	G	G	037	G	038	035	036	J038	020	E	J018	J025	E	E	E
8	E	E	E	E	E	E	E	G	G	033	035	038	036	035	034	G	026	E	J014E	J014E	E	E	E	E
9	E	E	E	E	E	E	E	G	G	G	G	035	G	035	G	032	G	E	E	E	E	J013E	E	E
10	E	E	E	E	E	J013E	E	E017B	027	G	J024G	J032G	037	036	034	031	G	E	J019	J024	J015E	E	E	E
11	J018	J014E	E	E	E	E	E	G	G	G	G	G	036	G	J024G	G	G	E	J018	E	E	E	E	E
12	E	E	E	E	E	E	E	022	026	G	G	040	036	G	G	G	025	E	E	E	E	E	E	E
13	E	J013E	E	E	E	E	E	G	026G	J033	037	036	036	G	G	G	G	G	E	E	E	E	E	E
14	E	E	J018	J016E	E	E	E	G	G	G	G	G	036	J037	J039	J038	J023G	G	J019	E	J013E	J019	E	J032
15	J030	E	J017	E	E	E	E	021	028	032	034	G	G	G	G	G	G	E019B	E	E	E	E	E	E
16	J018	J013E	E	J013E	E	E	E	G	028	G	G	037	041	037	034	G	G	G	E	E	E	E	E	E
17	E	E	E	E	E	E	E	020	G	031	038	037	J038	037	034	J034	025	020	E	E	E	E	J015E	J013E
18	E	E	J019	E	J016E	E	J025	G	G	032	G	036	038	J047	J047	J040	J037	G	E	J018	E	E	J018	E
19	J023	J024	J014E	E	E	E	J016E	J025	J034	J033	J038	035	037	J034	G	G	J030	J033	J025	J018	J030	E	J019	E
20	J018	E	J013E	J015E	J021	J019	E	C	G	J034	J036	J036	037	J042	J034	J032	J026	J024	J015E	E	E	E	E	E
21	E	J012E	E	E	E	E	E	G	G	033	034	J037	J036	G	G	J024G	G	021	J019	J020	J017	J014E	J013E	J027
22	E	J026	J017	E	E	E	E	G	027	G	036	039	J057	J044	043	J099	J057	J049	021	J022	J032	J052	E	J034
23	J040	J018	J016E	J014E	E	E	E	024	G	G	036	J037	J037	J038	035	034	025G	021	J022	E	E	E	E	J019
24	J022	E	E	E	E	E	E	G	G	G	034	G	G	G	029G	J034	J044	J035	J036	J027	J023	J018	J016E	J013E
25	E	E	E	E	E	E	E	G	G	G	035	G	G	037	G	036	J041	022	E	E	J016E	E	J020	E
26	E	E	E	E	E	E	E	J023	029	G	032G	G	G	037	036	G	026	E018B	J018	J023	J023	J015E	J015E	J027
27	J018	J014E	E	E	E	E	E	G	G	032	G	G	038	G	G	G	G	G	E	J023	J019	E	E	E
28	E	E	E	E	E	E	E	G	G	G	035	036	037	039	039	029G	032	025	E	E	E	J012E	E	E
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Median	E	E	E	E	E	E	E	G	G	G	G	036	036	035	G	G	G	018	E	E	E	E	E	E
U.Q.	018	E	E	E	E	E	E	021	028	032	035	037	037	037	034	034	028	022	019	018	018	E	E	E
L.Q.	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
Q.R.																								

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Feb. 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								020	031	033	032	036	036	035	033	027	020G						E	
2																								
3								E	017									018						
4					E			018					026G	028G				E	E	E	E			
5								019				034				020G	018	E	E					
6								019	028			035	035	034	032	024G	025	B						
7		E										037		037	035	033	030	020		E	018			
8										032	034	037	036	035	034		025							
9												035		035		032								
10								B	G		023G	027G	036	035	034	030			E	E				
11	E												036		021G				E					
12								021	026			040	036				025							
13									023G	032	036	036	036											
14			E										036	036	034	024	018G		E			E		E
15	E		E					021	028	032	034							B						
16	E								028			037	040	037	034									
17								020		030	034	036	U038R	037	034	028	025	E						
18			E				020			G		035	037	040	046	035	025			E			E	
19	E	E						022	028	032	034	034	037	034			020	027	022	E	022		E	
20	E				E	E		C		030	033	G	G	034	032	030	021	022						
21										032	034	035	035			022G		U021R	E	018	E			018
22		018	E						027		035	039	039	042	039	047	045	028	018	022	032	023		E
23	E	E						024			036	037	037	038	034	034	024G	021	E					E
24	E										034				028G	033	043	031	023	E	E	E		
25											033			036		033	040	021					E	
26								G	027		020G			037	036		026	B	E	020	018			018
27	E									032			038							019	E			
28											035	036	U037R	038	038	021G	030	023						
29																								
30																								
31																								
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

A 5

IONOSPHERIC DATA

Feb. 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	018	018	017	018	018	017	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	E	018	018	023	018	017	018	017	017	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	017	017	017	017	018	017	017	017	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	017	017	018	018	017	018	E	E	018	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	017	017	018	018	018	017	017	017	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	017	017	018	018	017	017	020	017	017	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	017	018	017	018	021	019	017	017	017	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	017	E	017	018	018	018	018	017	017	017	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	017	017	017	019	017	017	017	017	018	017	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	017	018	017	019	019	018	019	017	017	017	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	017	017	017	018	018	021	018	017	017	017	017	E	E	E	E	E	E
14	E	E	E	E	E	E	E	017	017	017	018	018	019	017	017	017	E	017	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	017	017	018	018	018	018	018	018	017	019	E	E	E	E	E	E
16	E	E	E	E	E	E	E	017	017	017	018	017	018	E	019	017	017	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	017	018	018	019	018	018	018	018	017	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	018	017	017	021	018	019	018	018	018	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	017	017	018	018	019	018	017	E	017	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	C	020	021	020	020	020	020	020	020	019	018	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	018	017	017	018	019	018	018	017	017	018	E	E	E	E	E	E
22	E	E	E	E	E	E	E	017	017	017	018	019	019	029	018	018	018	017	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	017	019	021	019	021	020	026	028	017	017	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	018	021	019	020	022	023	021	018	023	017	E	E	E	E	E	E
25	E	E	E	E	E	E	E	017	018	019	024	023	020	024	020	017	017	017	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	017	017	020	020	023	021	021	018	018	018	E	E	E	E	E	E
27	E	E	E	E	E	E	E	017	017	018	018	018	027	020	018	017	018	017	E	E	E	E	E	E
28	E	E	E	E	E	E	E	017	017	018	019	025	023	020	018	017	017	017	E	E	E	E	E	E
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Median	E	E	E	E	E	E	E	E	017	017	018	018	018	018	018	017	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

Feb. 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	285	285	295	285	290	295	305	350	340	360	325	315	320	320	320	325	320	335	305	320	315	325	300	285
2	275	280S	285	315	305	280	305	335	335	325	330	325	305	330	325	330	330	325	330	300	310	300	285	275
3	270	270	275	295	295	270	290	335R	340	340	315	320	325	320	315	325	335	340	295	295	320	305	315	305
4	275	285	275	290	275	265	310	345R	335	335	I320R	330	315	315	315	330	320	325	330	305	305	300	275	255
5	275	270	270	285	285	290	285	310	325	320	325	315	330	315	325	320	320	325	315	310	300	305	280	285
6	290	300	285	270	275	275	305	I330R	335	315	320	320	335	315	320	325	340	325	325	315	310	305	285	275
7	260	270	275	270	275	265	275	335	325	315	315	315	310	320	305	305	315	320	315	300	310	290	280	270
8	275	285	285	245	260	245	295	I315R	320	315	305	295	305	295	305	295	I300R	I320R	310	295	295	290	270	F
9	285	295	335	270S	295	260	265	305	325	330	300	I320R	320	315	290	325	335	320	305	295	330	305	285	275
10	270	285	310	335	320	265	295	335	345	330	315	315	325	320	320	335	355	335	320	315	300	290	250	260
11	280	305	305	F	F	F	295	325	340	325	325	310	325	325	320	320	335	335	330	300	300	305	285	270
12	270	280	305	310	255	F	305	340	335	335	340	325	305	305	315	320	325	335	315	300	295	295	295	280
13	260	285S	320	305	310	280	300	345	350	330	320	315	320	325	315	325	330	330	320	295	300	300	280	285
14	280	280	285	285	275	280	300	330R	335	325	325	315	320	315	315	335	335	345	330	300	305	315	295	285
15	265	265	295	315	310	305	315	335	325	325	315	310	320	325	320	315	320	330	325	310	310	295	285	285S
16	285	280	285	285	295	305	320	345	350	345	325	325	320	305	310	325	330	315	305	305	280	275	FS	255R
17	FS	290	290	260	240	230	I270R	I300R	340	325	320	325	330	310	315	325	335	345	320	305	310	315	275	275
18	270	285	285	285	300	285	305	340	335	320	325	315	315	325	320	320	340	330	340	310	320	320	295	260
19	265	275	300	315	335	280	305	345	345	335	335	320	325	320	325	325	340	335	315	310	315	305	310	255
20	250	275	285	290	310	305	310	I330C	340	320	335S	315	320	325	325	330	315	335	315	305	300	295	280	275
21	280	290	295	290	305	290	310S	345	335	330	335	325	310	305	320	325	320	325	335	310	300	295	275	280
22	275	275	295	275	285	280	310	345	350	310	310	320	320	315	320	320	325	325R	315	315	325	300S	295	270
23	275	275	290	280	290	285	305	335	350S	320	330	305	325R	305	310	320	335	330	330	295	285	285	285	280
24	280	270	265	265	265	265	310	330R	315	325	295	310	305	310	320	315	325	325	330	290	295	295	285	275
25	285	285	290	290	295	280	305	345	330	330	310H	320	325	310	320	320	325	320	315	305	310	285	275	265S
26	275	290	300	305	265	265	295	I340R	I335R	335	305	300	305	305	305	325	330	325	315	290	290	300	285	I285R
27	280	285	280	F	FS	FS	F	340S	I325R	320	315	310R	305	305	310	305	310	325	315	295	300	295	285	295S
28	280	275	285	290	285	285	295	335	330	325	315	I295R	300	300	305	315	325	315	315	305	300	285	I290R	I285R
29																								
30																								
31																								
Count	27	28	28	26	26	25	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27
Median	275	280	290	290	290	280	305	335	335	325	320	315	320	315	320	325	330	325	315	305	300	300	285	275
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

Feb. 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											395H	L	L	L	L									
2										L	L	L	385	390L	395L									
3										L	400L	415	L	L	L	L								
4										L	380L	L	L	L	L	L								
5										L	L	L	380	385L	L	L								
6										L	L	385L	395L	405L	390L	L								
7									L	L	L	400	L	L	L									
8										L	L	L	375	L	395									
9										L	L	400L	L	L	400	L								
10									400	400	395L	400L	L	L	L	L								
11									395	L	385L	L	L	L	405L	L								
12										L	395L	400	395L	L	L	380								
13										L	405L	385	405H	L	395L	L								
14									L	L	380	385	390	385L	L	L								
15										L	L	400L	385	385	L	L								
16										L	400	L	L	380	395	410L	L							
17									L	410	395	L	L	395L	395	L	L							
18									L	400	395	L	L	L	A	L	L							
19										L	L	L	390	L	375L	375								
20										L	400L	405L	385L	380L	390L	L								
21										L	L	390	395	385L	L	L	L							
22										L	380H	375	385L	390	L	I385A	A							
23									L	L	L	390L	395L	L	410L	395								
24										L	L	395L	L	385L	L	L								
25									385L	400	385	385	385	410	405L	L	A							
26										L	L	L	370	385	410	395								
27										L	395L	400	L	390	385L	L								
28									L	400L	LH	400L	390L	L	395	LH								
29																								
30																								
31																								
Count									3	5	15	17	16	14	15	6								
Median									395	400	395L	400	390	385L	395L	390								
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

Feb. 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											240	250	245	240	235									
2										235	230	255	265	265	225									
3										210	230	230	235	230	240	235								
4										230	240	240	230	235	235	225								
5										230	240	240	235	240	240	230								
6										250	235	240	235	225	230	235								
7									235	225	240	230	255	245	230									
8										230	260	240	245	240	240									
9										225	235	240	230	240	235	235								
10									220	230	230	235	255	240	255	235								
11									225	230	230	235	235	240	240	240								
12										245	230	240	260	255	260	240								
13										235	240	245	235	245	240	240								
14									225	240	260	265	260	240	260	230								
15										230	230	240	255	255	235	240								
16										230	240	255	250	255	225	255	230							
17									235	235	240	255	260	250	240	240	230							
18									230	220	235	235	255	240	240	240	220							
19										230	235	235	265	235	250	240								
20										235	245	235	265	250	250	240								
21										235	235	240	255	265	250	245	235							
22										225	265	280	260	245	240	255	250							
23									230	230	235	270	265	250	235	240								
24										255	240	265	240	250	240	235								
25									240	240	265	270	270	255	240	250	240							
26										245	250	270	280	280	255	245								
27										245	245	270	270L	260	260	245								
28									235	240	245	245H	250	260	255	245								
29																								
30																								
31																								
Count									9	27	28	28	28	28	28	24	6							
Median									230	230	240	240	255	245	240	240	230							
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

Feb. 1967 | h'F | km | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39° 43.5'N | Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	280	265	290	255	255	250	230	220	220	180H	230	225	225	215	225	225	220	235	230	240	230	265	290
2	290	310	290	240	230	265	235	225	210	205	225	230	220	210	215	230	220H	220	210	235	240	240	285	310
3	325	320	310	275	260	295	290	230	205	210	195	190	200H	220	225	230	220	215	235	255	235	255	250	260
4	290	290	300	300	290	315	270	220	220H	200	200	215	200H	210	215	200H	215H	235	215	210	240	265	315	350
5	320	320	320	280	240	280	290	235	195H	205	230	225	225	205	225	225	230	225	215	240	240	245	270	290
6	285	260	280	280	290	280	265	240	230	235	230	220	210	200	195	210	220	220	210	240	230	240	285	290
7	320	290	290	300	305	300	290	235	225	200	210	215	225	225	230	225	235	225	210	235	245	265	280	305
8	305	290	275	370	325	390	260	250	220	225	230	225	210	225	220	240	235	220	205	250	270	240	290	270
9	255	265	230	290	255	280	320	245	235	225	220	195	215	225	210	220	230	220	225	250	230	230	300	300
10	320	290	270	230	230	300	260	225	195	195	195	210	220	220	225	220	210	215	220	230	255	270	320	330
11	290	270	240	245	265	270	255	225	190	190	200	190	235	225	220	225	225	220	220	225	230	250	300	305
12	330	300	245	230	255	300	255	225	225	200H	205	220	210	210H	230	215	225	225	205	255	260	255	255	295
13	350	290	245	255	240	275	240	230	220	210	220	205	190H	225	215	220	230	230	215	240	250	255	305	280
14	290	290	260	290	300	300	235	225	190H	195H	220	230	210	205H	225	230	230	225	215	225	240	240	265	300
15	320	310	270	235	230	260	225	220	230	225	215	220	210	215	215	235	230	215	210	230	230	250	290	295
16	300	295	290	285	265	240	240	220	205H	225	185	230	225	220	195	205H	230	230	235	240	280	280	270	350
17	285	270	265	335	375	380	320	255	240	200	215	225	I205A	225	215	230	225	210	215	240	240	240	305	300
18	320	300	300	280	255	275	255	235	230	210	205	215	230	225	I230A	225	215	215	215	240	235	230	260	340
19	340	320	280	245	235	300	270	215	225	225	215	220	215	225	205	210	205H	215	215	230	230	240	255	320
20	340	320	295	290	250	270	240	I235C	230	225	230	220	220	230	220H	220	230	230	210	225	245	255	290	310
21	320	290	250	250	260	275	250	225	235	225	225	210	205	215	225	230	195	235	215	230	225	240	300	305
22	320	310	280	320	295	300	260	215	235	225	205H	220	225	I230A	I225A	I220A	I235A	235	230	245	240	255	280	310
23	300	300	275	290	285	300	280	240	230	220	230	220	210	225	215	215A	230	230	220	230	265	290	285	270
24	280	300	340	310	290	300	245	220	230	235	230	220	240	215	225	230	235	220	220	255	255	235	255	290
25	300	290	275	255	275	290	250	215	200H	220	205H	200	225	205	230	240	I240A	230	220	220	240	285	295	300
26	300	280	245	245	320	320	295	235	235	230	225	215	215	245	210	220	240	225	240	255	255	255	255	280
27	295	295	285	300	235	290	255	220	235	235	220	200	225	235	220	225	240	230	205	240	240	240	280	295
28	295	295	285	260	255	280	255	225	225	225	205	220	230	220	240	220	235	225	235	225	250	275	290	300
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Median	300	290	280	280	260	290	255	225	225	220	215	220	220	220	220	225	230	225	215	240	240	250	285	300
U.Q.																								
L.Q.																								
Q.R.																								

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

IONOSPHERIC DATA

Feb. 1967 | **h'Es** km | **135° E Mean Time** (G.M.T. +9h) | Akita | Lat. 39° 43.5'N Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	140	135	135	140	150	140	140	135	115	110	E	E	E	E	E	130	E
2	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	150	110	G	G	G	G	G	G	G	G	105	E	E	E	E	E	E
4	E	E	E	E	100	E	E	140	G	G	G	G	105	105	G	G	G	105	100	110	115	E	E	E
5	E	E	E	E	E	E	E	155	G	G	G	115	G	G	G	105	105	105	105	E	E	E	E	E
6	E	E	E	E	E	E	E	150	125	G	G	130	130	125	115	110	150	B	E	E	E	E	E	E
7	E	105	E	E	E	E	E	E	G	G	G	155	G	155	155	140	115	115	E	110	110	E	E	E
8	E	E	E	E	E	E	E	G	G	155	155	135	130	140	130	G	115	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	G	G	G	G	145	G	140	G	150	G	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	B	120	G	105	105	150	140	140	130	G	E	105	105	E	E	E	E
11	105	E	E	E	E	E	E	G	G	G	G	G	155	G	105	G	G	E	110	E	E	E	E	E
12	E	E	E	E	E	E	E	150	140	G	G	140	140	G	G	G	150	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	G	110	115	140	130	125	G	G	G	G	G	E	E	E	E	E	E
14	E	E	110	E	E	E	E	G	G	G	G	G	160	105	100	100	100	G	105	E	E	110	E	110
15	115	E	110	E	E	E	E	155	140	140	130	G	G	G	G	G	G	B	E	E	E	E	E	E
16	105	E	E	E	E	E	E	G	140	G	G	145	130	130	130	G	G	G	E	E	E	E	E	E
17	E	E	E	E	E	E	E	135	G	130	130	130	115	130	130	110	155	105	E	E	E	E	E	E
18	E	E	110	E	E	E	105	G	G	130	G	140	135	125	115	110	110	G	E	110	E	E	110	E
19	110	105	E	E	E	E	E	120	115	115	120	130	125	115	G	G	105	100	100	105	110	E	115	E
20	110	E	E	E	105	100	E	C	G	125	115	120	125	115	120	105	105	105	E	E	E	E	E	E
21	E	E	E	E	E	E	E	G	G	140	140	115	115	G	G	105	G	105	100	100	100	E	E	105
22	E	105	105	E	E	E	E	G	155	G	155	140	125	120	125	115	115	115	110	110	110	105	E	105
23	105	105	E	E	E	E	E	155	G	G	130	115	115	115	115	115	110	105	110	E	E	E	E	105
24	105	E	E	E	E	E	E	G	G	G	130	G	G	G	105	105	105	100	100	105	100	100	E	E
25	E	E	E	E	E	E	E	G	G	G	120	G	G	E160G	G	130	120	110	E	E	E	E	130	E
26	E	E	E	E	E	E	E	125	140	G	105	G	G	E145G	135	G	115	B	110	105	110	E	E	105
27	105	E	E	E	E	E	E	G	G	E145G	G	G	130	G	G	G	G	G	E	105	105	E	E	E
28	E	E	E	E	E	E	E	G	G	G	135	135	110	140	135	105	110	110	E	E	E	E	E	E
29																								
30																								
31																								
Count	8	4	4		2	1	1	11	11	10	15	18	19	18	16	16	17	13	11	10	8	3	4	5
Median	105	105	110		100	100	105	150	135	130	130	130	130	130	130	110	110	105	105	105	110	105	120	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

Feb. 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								h2	h2	h2	h	h	h	h	h2	c2	12						f2	
2																								
3								h	1									12						
4					f			h					1	12				1	f	f	f			
5								h2				c2				12	1	12	f					
6								h2	h2			h	h	h	c	1 12	h 1							
7		f2										h		h	h	h2	c3	c2		f2	f2			
8										h	h	h2	h	h	h		c2							
9												h		h		h2								
10									h		12	1	h	h	-h	h			f3	f				
11	f2												h		1				f					
12								h2	h			h c2	h				h							
13									1	c	h2	h	h											
14			f										h	13	13	12	1		f			f2		f2
15	f2		f2					h2	h	h	h2													
16	f								h			h2	h	h	h									
17								c2		h	h	h	c2	h	h	12	h	1						
18			f				f2			h		h	h	h2	c2	c2	c2			f			f	
19	f	f2						c h2	c2	c	c	h	h	c2			12	12	f2	f	f2		f	
20	f				f	f				c	c	h	h	c	c	12	1	12						
21										h	h	c	c			12		1	f	f	f			f2
22		f2	f						h		h	h	h 1	h	h 1	c2	c2	c	f	f	f3	f2		f2
23	f2	f						h			h	c	c	c	c	c	12	1	f					f
24	f										h				12	13	1	12	f3	f	f	f		
25											c			h		h	c2	12					f	
26								c	h		1			h	h		c2		f	f2	f2			f2
27	f									h			h							f3	f2			
28											h	h	c2	h	h2 1	1	c 12	12						
29																								
30																								
31																								
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

Feb. 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	036	038	035	038	038	031	033	C	C	088	086R	094	096S	093S	097	089	078S	U073S	055	055	055	048	033	034
2	035	036	038	043	030	033	038	060S	U079S	083	100	088	094S	098	097	085	078	074	062S	043	046	I045A	A	036
3	036	037	039	041	039	034	036	U075S	088	086	083	U099R	105	097	093	U099S	085	070	049	052	057S	045	043	041
4	038	039	038	036	037	036	037	065S	083	095	111	103S	110	107	090	090	U073S	089	U074S	057	052	042	035	034
5	038	036	035	035	030	029	030	061S	083	099	113	119	113	104	090	085	088	U080S	062	056	055	052	045	044
6	046	045	043	037	038	036	039	070S	092	J107R	132	114	108	J099S	097	088	083	076	067	052	048	038	035	035
7	037	040	037	038	036	038	037S	074	J107R	096	105	110	107	098	095	090	086	090	U074S	047	045	041	036	037
8	038	039	040	037	040	U037S	042	069S	J104R	096	103	114	125	121	116	114	113	J104R	067	067	071S	062S	U055S	057
9	056	055	062	043	046	046	038	069	C	I122S	113	120	116	117	U104S	U103R	091	084	U072S	059	064	051	035	037
10	037S	040S	044	037	023	025	029	069	079	088	094	103	114	U100R	103	097S	083	064S	054	047	045	041	039	U038S
11	043S	047	042	034	032	032	033	070S	091	092	U099S	107	116	097R	092	089	083	075S	070	055	048	038S	035	037
12	037	040	046	038	027	029	033	065S	078	095	096	086	094	111	111	108	100	082	067	042	045	041	039	041S
13	U037S	042	042	040	035	033	042F	069	079	094	099	107	111	114	100S	109	094	076	059	048	049	046	043	041
14	041	040	037	036	039	040S	046	075S	090	096S	107	113	114	114	106	097S	083	078	066	049	044	044	040	041
15	041S	042	045	U045S	042	033	034	063S	084	100	100	103	108	109	099	101	U099S	087	074	051	046	038	039	040
16	038S	039	039	042	041	035	041	U075S	084	085	085	100R	104	105	100R	100S	I096C	084	030S	084	067	067S	C	F
17	U067F	U056F	056F	U058F	054	056F	U067S	U107F	115	099S	105	110	106	101	105	108	093	076	065	062	U051S	043	033	035
18	034S	035	038	039	036	031	034	067	090	102	111	118	135	131R	093	102	096S	075	066	050	046	046	038	031
19	I032C	034	038	041	025	027	032	067	080	094	100	105	109	113	095R	094	092	085	066S	055	051	042	034	031
20	032	033S	034	035	038	033S	038	065	085	093	104	109	I108C	114	107	096S	099S	095	073S	059	051	042	035	035
21	037	039S	037	034	034	033	036	062	082	100S	U100R	096	094	097S	104	096S	097	094	087S	056	054	043S	040S	038S
22	036	036	038	034	035	035	041	073S	082S	082	U101R	116	110	096S	084	085	090	090	080S	068	064	057	J051S	043
23	044	043	044	042	043	042S	045S	U082S	U100S	091	107S	106	120	117	125	J106R	084	075	067S	059	048	046S	U047S	043
24	040	040	039	038	039	038	044	072	090	114	C	C	133	116	C	095	I090C	082	067S	049	053S	I054C	I047C	041
25	043	043	042	041	040	I038C	047S	U078S	I088C	111	106	114	117	107	108	091	092S	085	070	061	055	043	045	044
26	044	048	046	041	036	038	040S	S	091	095	106	111	123	125	120	106S	087	079	068	054	056	053S	054	049
27	047	047	049	048	047	050S	064S	090S	093	107	117	117	130	132	127	122	114	095	070S	060	057	050	045S	044
28	045	043	044	045	041	040S	046	078S	089	092	117	119	124	120	114S	104S	090	085	I078C	064	058	054	053S	051
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	26	26	28	27	27	28	28	27	28	28	28	28	28	28	28	26	27
Median	038	040	040	038	038	035	038	070S	088	095	104	109	110	108	100	097	090	082	067	055	052	045	040	040
U.Q.	044	043	044	042	040	038	043	075	091	100	111	114	118	116	108	105	096	088	074	060	056	052	045	043
L.Q.	036	038	038	036	034	032	034	065	082	092	099	103	106	098	095	090	084	076	066	050	047	042	035	035
Q.R.	008	005	006	006	006	006	009	010	009	008	012	011	012	018	013	015	012	012	008	010	009	010	010	008

foF2

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

The Radio Research Laboratories, Japan

K 1

IONOSPHERIC DATA

Feb. 1967 | foF1 | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								C	C		L	L	L	L	L	L								
2											L		L	L	L	L								
3										L	L	430L	L	L	L	L								
4										L	L	L	R	L	L	L								
5											L	470L	L	L	L									
6											L	R	460L	L	410L	L								
7											L	450L	480L	470L			L							
8														460L	L	L								
9									C	L	L	L	L	L	L	L								
10										L	R	L	L	L	L									
11										L	440L	430L	430L	L	L	L	320L							
12										L	L	470L	480L	L	L	L								
13										L	L	470L	L	L	L	L								
14										L	L	L	460L	L	L	A								
15											L	L	490L	L	L	L								
16											L	430L	L	480L	460L	L	C							
17										L	L	L	A	L	L	L	L	230L						
18									L	L	450L	L	L	L	L	L	L							
19										L	L	L	470L	480L	L	L	L							
20										L	L	L	I480C	470L	L	L								
21										L	L	470L	480L	480L	L	L								
22											L	L	L		L	L	L							
23										L	R	460L	470L	420L	R	L								
24										L	C	C	L	L	C	L								
25									C	L	L	L	R	460L		A								
26										L	L	470L	L	470L	460L	L	L							
27										L	L	480L	480L	L	L	L	L							
28											L	S	L	R	L	C	L							
29																								
30																								
31																								
Count											2	11	11	9	3		1	1						
Median											440L	470L	480L	470L	460L		320L	230L						
U.Q.																								
L.Q.																								
Q.R.																								

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

IONOSPHERIC DATA

Feb. 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	C	C	320	320	335	345	340	320	255	A	B						
2							B	B	235	305	325	I340R	355	345	315	300	240	B						
3							B	165	245	I290A	I320A	I335A	350	345	I335R	I300A	230	B						
4							B	B	240	295	320	330	335	I335R	325	300	A	B						
5							B	B	220	280	320	340	345	I340A	R	285	235	B						
6							B	165	245	310	320	340	340	330	I315R	295	245	B						
7							B	170	245	310	330	345	360	I350R	330	I310R	260	A						
8							B	B	245	295	315	330	340	I345R	325	I285A	R	A						
9							B	165	235	300	320	330	330	330	305	295	245	160						
10							B	B	240	285	315	325	340	345	I330R	310	255	A						
11							B	B	245	300	325	340	335	340	325	300	250	150						
12							B	B	250	295	320	345	350	A	315	290	230	B						
13							B	B	245	300	320	340	350	350	320	300	265	A						
14							B	180	225	310	320	340	355	345	A	A	A	160						
15							B	165	230	305	I330R	345	360	350	335	315	260	B						
16							B	175	260	305	325	340	355	345	325	I295A	C	190						
17							B	170	250	B	330	335	350	335	325	A	220	B						
18							B	160	250	295	305	330	345	345	330	305	A	B						
19							B	185	255	310	335	345	355	350	335	315	A	185						
20							B	205	275	300	325	335	I350C	A	A	R	A	A						
21							B	190	250	I300B	330	A	A	A	335	310	260	190						
22							B	190	255	300	325	340	350	B	335	325	270	A						
23							B	200	280	285	300	330	350	I345A	315	R	A	190						
24							B	220	280	305	C	C	350	340	C	325	I295C	A						
25							B	210	C	I295R	320	R	R	335	340	320	A	180						
26							B	210	275	320	345	360	360	350	I325A	315	A	185						
27							B	200	265	315	335	345	355	355	345	R	A	A						
28							B	190	275	C	350	370	365	350	355	I330C	285	175						
29																								
30																								
31																								
Count								19	26	26	27	25	26	24	24	23	16	10						
Median								185	250	300	320	340	350	345	325	300	250	180						
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

Feb. 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	J025	J025	020	E013B	E013B	E013B	E014B	C	C	036	037	036	G	040	036	035	025	E013B	E014B	E013B	E013B	E014B	E014B	E014B
2	E014B	E014B	E013B	E013B	E014B	E013B	019	E013B	G	G	G	G	G	G	031G	G	018G	J020	024	J040	J030	048	J055	023
3	019	E012B	E013B	E012B	E012B	E014B	E013B	020	031	J031	035	J039	G	G	G	034	G	020	E014B	E013B	E016S	E015S	E014B	E013B
4	E013B	E014B	E014B	E011B	E014B	E013B	E013B	E015B	032	G	G	037	G	G	G	J025G	J025	E013B	020	E015S	E012B	024	J024	E015S
5	021	E014B	E013B	E012B	E013B	E013B	E014B	E015B	027	G	G	G	G	036	G	G	G	E014B	E014B	020	E014B	E013B	E014B	E015S
6	E013B	E014B	E012B	021	E012B	019	E014B	022	030	G	G	036	037	035	035	G	027	E015B	E016S	E016S	J025	020	J024	022
7	021	E013B	E014B	E013B	E013B	E013B	E015B	G	033	G	037	G	G	039	G	G	030	J024	023	021	E013B	E013B	020	021
8	018	J020	019	E013B	E013B	E018B	020	E015B	G	G	G	038	042	G	G	032	020G	J022	023	023	E014B	E014B	E015S	E014B
9	E013B	E013B	E014B	E014B	E012B	E012B	E013B	G	G	G	G	038	041	036	035	026G	G	G	E014B	E013B	E013B	E013B	E014B	021
10	E013B	E014B	E	E013B	E012B	E014B	E013B	E016B	G	G	G	G	G	038	G	G	G	J024	J029	J024	020	018	023	E015S
11	E014B	E013B	E013B	E012B	020	E014B	E013B	E015B	G	G	G	G	037	036	G	G	G	G	E014B	E015S	E012B	E014B	E013B	E015S
12	E016S	E012B	E014B	E011B	E011B	E013B	E013B	E015B	029	G	035	G	G	035	G	021G	G	E016B	020	017	E014B	E015S	E013B	J019
13	E015S	E014B	020	E012B	E011B	E014B	E013B	E016B	G	G	036	040	G	039	G	J024G	019G	J020	E013B	E014B	E014B	E014B	E014B	E014B
14	E014B	E013B	E013B	E014B	018	E014B	E013B	G	029	G	G	G	G	G	J052	J054	J035	022	019	E014B	E014B	021	019	023
15	E016S	019	022	E013B	E011B	E013B	E013B	022	G	034	G	G	G	G	G	G	G	E013B	E014B	E013B	E013B	019	E013B	020
16	E014B	016	E013B	E013B	E012B	019	E013B	G	G	G	037	G	043	042	035	032	C	G	022	E014B	E014B	018	024	E015S
17	E014B	E012B	J018	E011B	E013B	E013B	019	G	031	E033B	J036	036	J060	J051	040	033	J053	020	E013B	E016B	018	023	E013B	E014B
18	E014B	E014B	E014B	019	J016	017	J024	G	G	G	G	G	040	043	040	036	J038	020	020	019	E015S	E016S	E014B	E016S
19	C	J038	E014B	E013B	E013B	E012B	E014B	023	029	032	036	G	039	J053	038	G	J029	G	022	024	E014B	019	J022	J021
20	J022	E013B	E014B	020	J025	J025	023	G	G	032	038	038	C	J041	036	J029G	J028	021	019	023	E014B	E015S	E014B	E016S
21	E016S	017	E014B	E013B	020	E014B	E013B	G	G	E036B	037	J040	J041	J035	G	G	G	G	E014B	J018	J021	023	023	019
22	024	E014B	E014B	J017	018	019	E013B	G	030	G	035	039	J042	E038B	037	039	J045	J051	J051	J030	J031	J020	J024	024
23	020	J021	020	019	E013B	E013B	E014B	G	G	G	034	037	G	J038	036	G	J030	022	J024	E015S	E015S	E015S	E015S	E014B
24	E016S	J024	E015B	J018	E014B	E014B	E015B	G	G	034	C	C	038	G	C	G	C	024	E015S	J017	022	C	C	E016S
25	021	E013B	E	E	E	C	E015B	G	C	G	036	034G	038	038	036	J054	J035	G	J016	021	E015S	022	J016	J020
26	E013B	E011B	E012B	E	E011B	E013B	E016B	G	031	J038	043	043	043	039	036	G	J029	018G	018	J018	021	J018	J026	018
27	020	J015	021	J016	018	E011B	E014B	018G	033	G	030G	G	G	039	G	G	J033	021	E014B	E015S	E013B	E014B	E013B	E014B
28	E012B	E013B	E	E	E	E013B	E013B	G	G	042	J036	043	043	040	043	E055C	G	G	E013B	021	020	E014B	E015S	E015S
29																								
30																								
31																								
Count	27	28	28	28	28	27	28	27	26	28	27	27	27	28	27	28	26	28	28	28	28	27	27	28
Median	E016	E014B	E014B	E013B	E013B	E013B	E014B	G	G	G	035	036	037	038	035	G	025	G	017	017	E014B	E016	E015	E016
U.Q.	020	016	E016	E015	E015	E014	E015	G	030	032	036	038	041	040	036	032	030	022	022	021	020	020	023	020
L.Q.	E014	E013	E013	E012	E012	E013	E013	E016	G	G	G	G	G	G	G	G	G	G	E014	E014	E014	E014	E014	E014
Q.R.	D006	D003																	D008	D007	D006	D006	D009	D006

foEs

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Feb. 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	017	017	E	B	B	B	B	C	C	033	034	035		038	036	032	024	B	B	B	B	B	B	B
2	B	B	B	B	B	B	G	B							031G		018G	018	017	033	024	A	A	E
3	E	B	B	B	B	B	B	018	026	031	033	035				032		020	B	B	S	S	B	B
4	B	B	B	B	B	B	B	B	032			035				025G	025	B	E	S	B	013	018	S
5	017	B	B	B	B	B	B	B	025					034				B	B	016	B	B	B	S
6	B	B	B	E	B	E	B	021	027			036	037	035	033		027	B	S	S	E	E	019	E
7	E	B	B	B	B	B	B		031		036			039			028	020	E	E	B	B	015	E
8	E	E	E	B	B	B	G	B				036	041			031	020G	020	016	016	B	B	S	B
9	B	B	B	B	B	B	B					036	040	036	033	026G			B	B	B	B	B	E
10	B	B		B	B	B	B	B						038				022	016	017	E	E	016	S
11	B	B	B	B	016	B	B	B					037	036					B	S	B	B	B	S
12	S	B	B	B	B	B	B	B	029		035			035		021G		B	E	E	B	S	B	016
13	S	B	E	B	B	B	B	B			036	038		032		024G	019G	020	B	B	B	B	B	B
14	B	B	B	B	E	B	B		026						039	042	027	021	E	B	B	E	E	016
15	S	E	015	B	B	B	B	022		033								B	B	B	B	E	B	E
16	B	E	B	B	B	E	B				036		039	041	033	031	C		016	B	B	E	E	S
17	B	B	E	B	B	B	G		029	B	036	036	054	039	039	032	026	018	B	B	E	016	B	B
18	B	B	B	E	014	E	G						040	040	039	034	027	017	015	016	S	S	B	S
19	C	026	B	B	B	B	B	022	G	032	036		037	038	037		027		E	019	B	E	016	016
20	016	B	B	E	016	016	016			032	038	038	C	039	036	029G	026	021	016	018	B	S	B	S
21	S	E	B	B	E	B	B			B	036	037	038	035					B	016	016	E	016	E
22	E	B	B	015	E	016	B		028		E035R	039	041	B	035	036	040	041	028	017	030	018	016	016
23	E	015	E	E	B	B	B				033	034		035	036		030	022	016	S	S	S	S	B
24	S	016	B	016	B	B	B			E034R	C	C	037		C		C	024	S	017	014	C	C	S
25	E	B				C	B		C		036	E034R	038	037	E036R	051	030		014	E	S	E	015	017
26	B	B	B		B	B	B		030	034	037	041	040	038	036		028	018G	016	E	E	017	016	E
27	E	013	E	012	E	B	B	018G	029		030G			038			031	021	B	S	B	B	B	B
28	B	B				B	B			038	036	041	041	037	040	C			B	E	E	B	S	S
29																								
30																								
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

foEs

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

The Radio Research Laboratories, Japan

K 5

IONOSPHERIC DATA

Feb. 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	014	013	014	013	013	013	014	C	C	015	016	016	016	015	015	016	015	013	014	013	013	014	014	014
2	014	014	013	013	014	013	013	013	014	025	017	027	022	016	016	015	014	014	013	013	014	013	014	014
3	014	012	013	012	012	014	013	013	015	014	016	016	015	025	016	015	015	014	014	013	E016S	E015S	014	013
4	013	014	014	011	014	013	013	015	013	014	016	017	016	016	015	014	013	013	014	E015S	012	011	013	E015S
5	E016S	014	013	012	013	013	014	015	013	014	023	016	016	015	015	016	014	014	014	014	014	013	014	E015S
6	013	014	012	011	012	012	014	014	013	016	015	016	016	016	016	016	015	015	E016S	E016S	014	013	014	014
7	014	013	014	013	013	013	015	014	014	016	016	021	017	023	016	015	015	014	012	014	013	013	013	013
8	014	013	014	013	013	018	014	015	012	014	016	016	017	016	015	014	014	013	012	013	014	014	E015S	014
9	013	013	014	014	012	012	013	014	015	015	016	016	017	017	016	015	015	013	014	013	013	013	014	014
10	013	014	010	013	012	014	013	016	013	015	015	017	017	016	016	016	015	012	014	014	014	014	014	E015S
11	014	013	013	012	015	014	013	015	015	015	016	018	016	016	015	016	016	013	014	E015S	012	014	013	E015S
12	E016S	012	014	011	011	013	013	015	013	015	016	017	017	015	016	015	014	016	014	012	014	E015S	013	014
13	E015S	014	013	012	011	014	013	016	013	015	016	017	016	015	015	014	013	013	013	014	014	014	014	014
14	014	013	013	014	013	014	013	014	015	016	015	017	018	016	015	012	012	014	014	014	014	013	014	014
15	E016S	013	011	013	011	013	013	014	013	015	016	016	017	016	016	015	014	013	014	013	013	014	013	014
16	014	014	013	013	012	014	013	013	014	015	019	016	017	015	016	015	C	014	014	014	014	013	013	E015S
17	014	012	011	011	013	013	015	014	013	033	016	016	025	016	016	015	015	015	013	016	012	013	013	014
18	014	014	014	013	011	013	013	014	013	015	017	018	023	019	016	016	016	015	014	E015S	E015S	E016S	014	E016S
19	C	013	014	013	013	012	014	014	016	016	016	016	022	020	016	014	016	015	014	014	014	014	014	013
20	013	013	014	013	011	012	013	013	014	015	021	016	C	018	017	016	015	014	013	014	014	E015S	014	E016S
21	E016S	014	014	013	014	014	013	013	015	036	016	016	017	016	016	016	014	015	014	011	013	013	012	014
22	014	014	014	012	013	014	013	015	015	015	016	024	022	038	013	016	016	012	012	012	013	013	014	014
23	013	012	011	013	013	013	014	012	015	012	017	014	024	017	018	026	016	014	013	E015S	E015S	E015S	E015S	014
24	E016S	014	015	013	014	014	015	016	016	018	C	C	024	025	C	017	C	014	E015S	012	011	C	C	E016S
25	011	013	010	010	010	C	015	012	C	026	024	030	017	017	016	015	015	015	011	012	E015S	014	012	010
26	013	011	012	010	011	013	016	012	017	018	019	025	025	025	018	018	013	014	011	012	014	012	012	014
27	013	010	012	010	010	011	014	014	014	013	014	026	026	017	017	017	015	012	014	E015S	013	014	013	014
28	012	013	010	010	010	013	013	012	014	E037C	012	025	018	020	017	E055C	012	012	013	014	014	014	E015S	E015S
29																								
30																								
31																								
Count	27	28	28	28	28	27	28	27	26	28	27	27	27	28	27	28	26	28	28	28	28	27	27	28
Median	014	013	013	013	012	013	013	014	014	015	016	017	017	016	016	016	015	014	014	014	014	014	014	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

Feb. 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	290	280	285	285	305	315	295	C	C	350	345R	315	320S	300S	320	320	325S	U335S	305	310	320	320	310	265
2	270	265	275	335	290	275	295	335S	U335S	330	350	315	315S	325	320	325	345	320	325S	300	310	I315A	A	270
3	260	270	285	285	320	275	280	U335S	360	345	350	U330R	330	315	310	U325S	335	315	315	290	315S	320	305	295
4	275	270	280	275	275	255	280	340S	350	340	325	330S	320	325	325	320	U325S	320	U330S	305	300	295	275	260
5	265	275	275	300	290	270	275	320S	325	325	320	315	320	325	305	295	315	U325S	325	295	300	310	295	270
6	280	300	300	280	280	280	295	335S	325	J325R	330	315	310	J325S	325	325	320	315	330	300	315	295	285	265
7	260	290	270	280	260	260	275S	325	J350R	325	315	315	320	300	315	305	305	320	U340S	295	325	310	270	270
8	265	290	285	250	245	U250S	300	320S	J330R	325	310	305	290	285	295	290	305	J315R	295	275	290S	315S	U265S	275
9	270	280	315	265	275	265	265	295	C	I320S	340	305	315	310	U320S	U330R	315	315	U320S	285	315	325	265	270
10	260S	285S	325	340	330	270	285	325	340	330	320	315	310	U320R	320	340S	335	335S	310	290	300	285	275	U265S
11	270S	295	320	280	290	270	280	335S	335	335	U325S	315	310	305R	315	320	325	325S	315	300	310	290S	265	270
12	260	285	320	330	265	265	290	340S	345	325	340	320	305	305	310	310	305	340	320	275	300	295	270	275S
13	U275S	275	300	315	325	285	295F	345	335	325	325	320	300	320	300S	325	320	325	330	300	300	295	280	270
14	275	285	290	285	270	275S	300	340S	340	325S	320	315	305	305	310	320S	305	315	320	310	305	295	285	270
15	260S	270	280	U320S	325	295	315	335S	340	320	340	320	320	320	315	320	U320S	320	325	300	315	290	270	275
16	270S	270	270	285	305	290	300	U340S	355	320	315	315R	330	320	315R	310S	I320C	315	300S	310	275	290S	C	F
17	U295F	U280F	300F	U270F	240	250F	U270S	U320F	350	325S	330	305	315	325	325	330	330	325	305	320	U330S	325	265	270
18	275S	270	270	295	295	285	285	320	330	320	315	310	310	320R	310	320	330S	310	310	305	295	315	300	265
19	I260C	260	290	330	315	290	300	340	345	330	330	325	320	325	320R	325	320	340	310S	300	310	310	295	270
20	260	265S	270	275	300	280S	290	330	335	330	325	320	I320C	310	320	315S	320S	320	325S	320	290	280	270	270
21	270	275S	295	290	285	275	295	325	325	335S	U335R	320	320	305S	315	315S	310	320	330S	315	310	295S	265S	265S
22	265	270	290	270	275	270	290	330S	330S	310	U310R	315	310	325S	320	310	310	315	320S	305	315	310	J295S	265
23	265	275	290	270	270	270S	285S	U330S	U340S	310	320S	300	310	310	310	J320R	320	315	325S	315	290	280S	U295S	300
24	285	270	265	265	270	275	290	320	320	305	C	C	325	315	C	320	I320C	325	325S	300	285S	I305C	I305C	270
25	270	275	295	295	280	I270C	295S	U340S	I325C	350	320	325	325	300	325	295	325S	315	320	315	310	280	280	280
26	270	290	300	335	245	265	285S	S	340	320	320	310	300	310	310	315S	330	330	320	305	295	300S	300	290
27	290	290	270	270	275	270S	310S	340S	335	320	320	305	310	300	290	300	315	325	315S	295	305	285	290S	280
28	280	275	280	305	295	270S	295	320S	340	315	320	310	305	305	305S	310S	315	315	I310C	305	290	280	285S	275
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	26	26	28	27	27	28	28	27	28	28	28	28	28	28	28	26	27
Median	270	275	290	285	280	270	290	330S	340	325	325	315	315	310	315	320	320	320	320	300	305	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

K 7

IONOSPHERIC DATA

Feb. 1967 | M(3000) F1 | 0.01 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								C	C		L	L	L	L	L	L								
2											L		L	L	L	L								
3										L	L	400L	L	L	L	L								
4										L	L	L	R	L	L	L								
5											L	370L	L	L	L									
6											L	R	390L	L	410L	L								
7											L	390L	370L	375L			L							
8														370L	L	L								
9									C	L	L	L	L	L	L	L								
10										L	R	L	L	L	L									
11										L	380L	410L	400L	L	L	L	385L							
12										L	L	375L	375L	L	L	L								
13										L	L	375L	L	L	L	L								
14										L	L	L	360L	L	L	A								
15											L	L	375L	L	L	L								
16											L	395L	L	370L	360L	L	C							
17										L	L	L	A	L	L	L	L	390L						
18									L	L	395L	L	L	L	L	L	L							
19										L	L	L	370L	370L	L	L	L							
20										L	L	L	I370C	370L	L	L								
21										L	L	380L	370L	370L	L	L								
22											L	L	L		L	L	L							
23										L	R	370L	380L	395L	R	L								
24										L	C	C	L	L	C	L								
25									C	L	L	L	R	390L		A								
26										L	L	390L	L	375L	400L	L	L							
27										L	L	370L	380L	L	L	L	L							
28											L	S	L	R	L	C	L							
29																								
30																								
31																								
Count											2	11	11	9	3		1	1						
Median											390L	380L	375L	370L	400L		385L	390L						
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

K 8

IONOSPHERIC DATA

Feb. 1967 | h'F2 km | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								C	C		225	260	265	265	260	255								
2											230		265	265	255	245								
3										230	225	255	245	255	250	250								
4										230	255	240	260	265	235	255								
5											265	260	255	250	245									
6											250	245	245	260	245	250								
7											255	265	250	260			255							
8														260	265	255								
9									C	230	230	255	265	265	265	240								
10										245	250	260	255	250	260									
11										245	255	250	260	255	245	245	235							
12										245	250	255	265	285	260	250								
13										245	255	265	255	255	245	245								
14										245	265	260	250	260	255	240								
15											250	260	265	255	260	245								
16											235	265	260	270	270	250	C							
17										235	260	260	235	265	265	255	230	210						
18									245	245	255	255	265	245	230	250	230							
19										245	255	265	260	270	230	245	245							
20										245	270	250	I265C	270	250	250								
21										250	255	255	270	270	265	255								
22											270	270	265		250	260	260							
23										235	265	260	280	265	270	255								
24										265	C	C	265	260	I250C	240								
25									C	250	265	265	260	255		245								
26										265	270	265	275	275	260	230	230							
27										260	250	260	275	275	275	260	240							
28											250	260	280	275	260	250	235							
29																								
30																								
31																								
Count									1	18	26	25	27	27	26	25	9	1						
Median									245	245	255	260	265	265	260	250	235	210						
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

K 9

IONOSPHERIC DATA

Feb. 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	295	290	270	280	245	225	250	C	C	230	225	220	230	225	230	225	240	230	230	245	230	230	230	320
2	315	315	305	230	235	275	255	215	230	230	230	230	235	225	220	220	230	230	215	E305A	270	A	A	310
3	345	330	300	265	245	280	295	250	215	210	210	200	235	230	230	230	225	215	210	255	235	230	245	250
4	275	290	300	290	290	310	270	225	220	220	220	210H	210	210	225	210	225	230	210	215	240	230	300	340
5	320	300	305	260	210	305	290	250	220	235	220H	215	215	225	210	220	235	220	205	250	250	245	260	300
6	275	250	255	265	275	265	270	245	230	230	230	225	210	210	200	230	235	230	215	230	235	230	285	315
7	310	265	275	290	305	310	295	235H	230	225	230	215	220	215	245	240	230	225	215	220	240	230	275	300
8	310	275	260	360	360	345	275	240	230	220	230	235	240	225	230	230	225	225	200	280	265	225	280	260
9	260	265	235	220	275	265	310	260	I235C	220	230	215	205H	230	205	230	220	215	215	250	230	215	275	305
10	315	290	240	215	210	320	295	230	225	225	230	210	230	230	225	240	220	220	230	245	240	270	295	345
11	305	260	230	255	260	300	280	235	240	215	210	210	220	215	210	225	225	225	225	240	230	250	295	325
12	330	295	235	220	300	310	270	225	230	230	230	215	210	220	230	220	225	220	210	250	250	265	290	295
13	300	300	250	240	215	260	255	230	225	225	225	210	200H	250	215	215H	235	225	215	230	250	255	265	305
14	305	275	255	275	280	305	250	235	230	210H	215	230	220	235	235	A	225	235	210	220	240	265	255	305
15	325	315	290	245	225	250	230	225	225	230	215	225	225	225	215	235	235	225	220	210	235	260	285	290
16	300	300	280	280	240	250	260	230	225	230	215	210	245	215	210	215	I235C	230	235	235	255	270	270	360
17	295	230	250	305	350	370	315	260	220	220	230	225	A	230	235	210	220	210	215	225	220	240	280	310
18	320	310	305	260	255	255	270	230	220	210	200	200	230	245	215	225	225	220	215	220	250	235	250	330
19	C	E370A	280	230	220	300	265	225	230	225	225	220	215	215	230	210H	215	220	215	240	225	230	255	E310A
20	E355A	315	320	295	260	280	255	220	230	230	235	225	I220C	225	230	225	250	230	210	210	230	250	290	320
21	310	285	255	260	270	295	250	225	235	240	225	215	215	210	225	220	240	230	220	210	230	225	280	310
22	310	305	270	310	280	300	265	235	230	230	235	250	250	220	235	240	235	240	250	250	245	230	290	305
23	305	295	260	285	280	290	285	240	235	230	230	220	210	210	225	230	225	220	220	225	250	290	270	255
24	285	310	345	315	295	290	260	230	230	235	C	C	215	225	I230C	225	I230C	225	225	230	265	I240C	I230C	285
25	300	285	255	250	240	I275C	260	230	I215C	235	220	215H	225H	210	245	I230A	240	225	225	225	230	260	280	290
26	310	275	235	220	335	320	285	230	235	230	225	220	225	210	220	230	225	230	215	220	255	265	260	265
27	270	305	295	295	230	295	265	220	225	220	215	215	210	225	240	230	230	225	210	240	240	235	275	285
28	280	300	270	245	230	280	270	220	230	230	205	245	225	225	230	I230C	230	230	225	225	230	270	285	295
29																								
30																								
31																								
Count	27	28	28	28	28	28	28	27	27	28	27	27	27	28	28	27	28	28	28	28	28	27	27	28
Median	305	290	270	260	260	290	270	230	230	230	225	215	220	225	230	225	230	225	215	230	240	240	275	305
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

IONOSPHERIC DATA

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

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

Types of Es | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Feb. 1967 | hpF2 | km | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	340	335	345	335	295	265	320	C	C	255	255R	300	295S	310S	300	280	280S	U275S	305	305	280	285	280	375
2	375	380	350	260	295	360	310	265S	U260S	270	265	295	290S	300	295	275	260	280	260S	305	315	I290A	A	375
3	400	385	355	330	285	375	350	U265S	230	250	245	U280R	280	300	285	U280S	255	285	285	330	290S	275	295	310
4	350	355	345	355	340	385	340	255S	255	260	280	295S	290	305	270	285	U280S	275	U260S	295	315	300	345	395
5	370	350	350	305	345	355	340	295S	270	280	290	290	285	275	310	315	285	U275S	275	345	315	295	325	365
6	345	305	310	345	370	335	335	270S	275	J300R	270	285	300	J295S	290	280	270	285	265	310	305	295	335	390
7	385	330	350	355	395	395	345S	275	J265R	270	285	300	280	325	285	300	305	280	U255S	305	305	285	340	365
8	380	330	340	440	435	U450S	325	285S	J270R	270	310	310	325	330	325	330	315	J300R	315	370	340S	285S	U385S	370
9	375	340	295	390	360	385	395	320	C	I290S	270	310	300	315	U295S	U280R	275	275	U285S	340	290	275	355	365
10	380S	335S	280	240	255	355	340	275	260	260	280	305	290	U285R	285	255S	255	255S	285	325	295	330	355	U400S
11	365S	315	280	325	320	355	335	265S	275	270	U300S	295	300	310R	285	280	275	275S	295	325	285	315S	385	390
12	395	345	280	260	395	375	320	260S	260	270	265	275	310	310	300	310	300	260	275	350	300	315	340	345S
13	U350S	360	310	285	265	325	320F	260	260	280	280	290	310	285	315S	280	285	265	270	325	310	320	335	380
14	355	340	325	345	350	375S	305	260S	265	280S	300	300	300	300	295	280S	290	290	285	295	305	325	340	385
15	405S	380	345	U280S	275	295	275	265S	255	295	270	300	295	290	300	285	U285S	285	270	300	290	335	350	350
16	375S	370	345	340	290	320	320	U260S	250	280	285	305R	285	295	300R	300S	I285C	280	305S	315	360	345S	C	F
17	U345F	U350F	320F	U385F	450	455F	U390S	U300F	265	275S	285	295	285	295	305	275	270	275	305	280	U275S	275	380	385
18	395S	380	355	305	300	305	325	275	285	275	295	300	300	275R	285	295	275S	275	285	295	320	285	295	380
19	I400C	395	325	275	300	360	310	260	265	280	275	285	290	300	280R	280	285	250	285S	305	300	285	300	355
20	400	385S	385	335	300	335S	310	260	265	280	295	280	I300C	300	295	300S	285S	280	270S	275	320	320	370	390
21	385	340S	305	320	320	355	305	265	280	275S	U280R	285	295	310S	300	305S	295	285	265S	285	295	295S	355S	375S
22	380	370	315	385	340	375	320	265S	270S	295	U305R	295	300	290S	285	300	295	290	285S	315	295	295	J355S	385
23	380	350	330	370	355	370S	335S	U270S	U265S	285	300S	325	315	315	310	J305R	275	305	300S	290	345	360S	U335S	310
24	345	395	420	395	355	360	335	280	305	320	C	C	305	310	C	285	I295C	275	290S	345	340S	I320C	I305C	375
25	390	355	330	340	345	I370C	325S	U265S	I270C	270	300	300	290	325	275	330	290S	290	290	300	300	345	355	370
26	395	345	295	270	445	395	335S	S	260	300	310	315	325	310	315	275S	275	275	285	310	340	345S	330	345
27	345	340	385	395	355	380S	315S	265S	280	300	290	315	310	325	335	310	300	270	300S	345	310	340	345S	365
28	360	370	355	320	320	370S	330	275S	265	300	305	300	325	320	310S	305S	285	285	I300C	315	340	355	360S	380
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	26	26	28	27	27	28	28	27	28	28	28	28	28	28	28	26	27
Median	380	350	335	335	340	365	325	265S	265	280	285	300	300	300	295	285	285	280	285	310	305	310	340	375
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Feb. 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	055	065	055	060	055	050	055	C	C	050	045R	050	055S	065S	055	050	060S	U045S	045	045	050	045	055	070
2	055	050	070	055	070	060	045	050S	U050S	050	045	050	065S	050	050	050	050	050	055S	045	035	I050A	A	055
3	055	050	060	045	060	060	055	U055S	050	050	055	U065R	060	055	065	U065S	050	045	055	060	065S	050	035	045
4	070	060	065	060	055	055	060	050S	045	055	060	055S	060	055	060	065	U050S	060	U055S	055	055	065	065	065
5	065	065	065	050	060	060	060	040S	040	055	060	060	070	070	050	050	065	U060S	055	055	045	065	045	050
6	070	060	045	055	070	075	060	075S	055	J055R	065	075	065	J055S	055	050	055	060	055	055	045	050	055	055
7	065	055	070	065	055	055	055S	060	J045R	055	060	060	060	060	065	065	060	055	U055S	060	055	060	075	065
8	065	055	055	060	060	U045S	060	055S	J065R	065	070	090	085	080	075	080	065	J065R	075	070	060S	065S	U070S	060
9	070	075	060	060	065	065	055	055	C	I050S	070	065	060	050	U080S	U065R	070	070	U050S	065	065	055	085	060
10	070S	060S	050	055	050	045	050	050	045	060	055	065	060	U070R	065	060S	050	055S	060	055	055	065	055S	U055S
11	060S	060	050	045	050	060	055	055S	045	045	U045S	060	060	060R	045	065	055	055S	055	055	065	055S	065	055
12	060	050	050	045	055	055	050	050S	045	050	045	055	065	065	055	055	075	045	055	055	060	055	065	060S
13	U060S	055	045	060	040	060	055F	045	050	050	060	060	065	065	065S	065	045	050	045	055	060	050	055	055
14	060	045	055	055	065	050S	065	050S	050	070S	050	060	070	060	060	065S	055	055	055	045	050	050	060	065
15	060S	055	055	U055S	045	055	055	045S	050	060	060	065	060	055	060	070	U055S	045	055	060	045	050	050	060
16	050S	050	055	055	055	040	055	U045S	045	055	055	055R	055	060	060R	065S	I055C	060	060S	045	050	050S	C	F
17	U060F	U070F	070F	U070F	080	065F	U075S	U070F	050	060S	050	060	070	055	060	065	050	045	055	055	U045S	045	050	065
18	060S	060	065	045	060	055	050	055	055	075	065	065	065	075R	070	055	055S	045	050	050	050	050	050	055
19	I050C	055	050	040	040	045	050	045	045	050	055	065	065	060	065R	045	050	045	060S	055	050	045	045	050
20	060	060S	055	060	055	045S	045	055	050	050	060	065	I060C	060	060	050S	055S	045	050S	045	060	055	060	055
21	055	055S	045	065	055	050	050	045	045	050S	U045R	050	060	065S	060	050S	060	060	055S	055	055	075S	065S	065S
22	065	050	045	045	065	040	055	050S	050S	045	U070R	060	065	050S	060	050	055	055	065S	050	055	060	J045S	055
23	065	055	050	055	045	055S	065S	U045S	U060S	085	060S	085	080	085	085	J075R	090	055	050S	065	055	060S	U060S	060
24	065	050	055	050	070	060	060	065	065	060	C	C	055	065	C	070	I060C	045	045S	070	070S	I060C	I070C	065
25	055	075	065	050	065	I060C	075S	U065S	I060C	060	055	070	060	055	075	070	060S	065	055	065	055	070	065	060
26	055	070	065	050	070	065	065S	S	055	060	060	075	075	070	065	075S	055	065	060	055	070	055S	055	065
27	055	075	060	055	080	065S	055S	055S	055	060	065	075	070	075	080	075	070	065	055S	055	055	070	060S	060
28	065	055	075	055	065	075S	065	065S	050	060	055	080	075	085	065S	075S	075	065	I060C	050	055	070	070S	060
29																								
30																								
31																								
Count	28	28	28	28	28	28	28	26	26	28	27	27	28	28	27	28	28	28	28	28	28	28	26	27
Median	060	055	055	055	060	055	055	050S	050	055	060	065	065	060	060	065	055	055	055	055	055	055	060	060
U.Q.																								
L.Q.																								
Q.R.																								

ypF2

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

IONOSPHERIC DATA

Feb. 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	I036A	034S	035	036	039	035	029	042	081S	103	086	093	107	117	126	J121H	107	089S	086	070	072	062	045H	035
2	035	035	034	037	032	030	029	042S	072	086	100	092	090	096	106	105	096S	087	085	062	063	073	051	034
3	032	I034A	035	036	037	028H	029	044S	075	080	088	099	101	104	101	109	100	098S	075	057	060	063	059	043S
4	035	034	034	032	032	032	032	045	079S	092	108	107	104	116	110	118S	111	106	109	098S	I081S	076S	058	056S
5	041	041S	038	040	033	025	026	038	081	095	104	120	118	101	099	105	107	110	091S	075S	067	064	065	054
6	046	047	042	039	034	030	029	042	086	108S	133	138	129	130	136	138	U119S	084H	084	067	051	053	044S	036
7	036	038	037	041	038S	039	039	J043S	087	114	112	131	113	119	116	124	110	104S	100S	086	058	056	048	042
8	040	039	038	036S	036	037	I041S	054	113H	095S	085	115	129	121	123	119	122	103	088	076S	087S	086S	054	054
9	051	051	062S	038	042	046	J043S	053S	113	114	J115S	135	118	131	126	U131S	J126S	124S	J125S	D126S	U137S	U142S	U118S	I092S
10	I070S	064	I063S	U061S	040S	020H	021	045	085	088	090	105	103	111	119	117	108	I090S	069S	069	U061S	J064S	058S	046
11	043	J043S	044	039	034	030	030	047	J075S	093S	102	110	112	125S	130	U130S	J116S	J101S	J098S	I081S	J064S	050S	J042S	J042S
12	041	041	046	050	027	027	030S	050S	J074S	081	106	099	093	109	132	146S	152S	S	S	S	J065S	U064S	047	043
13	038S	034	035	038	040	029	029	045	070S	094	092	105	107	127	131	132	120	108S	090	071	067	055	048	046
14	044	040	036	036	037	036	038S	054	084	098	101	106	119	120	117	119	112	096	097	J079S	061	053	042	038
15	038	039	041	044S	047	033	026	048	076S	091	105	C	C	C	C	C	C	C	097	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	084	093	102	105	111	112	116	112	108	107	U122S	S	092S	I078S	S
17	S	S	060	063	S	S	FS	S	F	116Z	114	119	121	119	117	119	123	098	113	099S	087	066	052	042
18	042	040	038	040	038	033	025	047	083	102	110	126	141	150S	125	119	124	114	107	084	067	069	058	039
19	033	034	036	038	029	029	030	050	077S	086	109	122	130	130	126	118	118	114	113	I099S	088S	I080S	067S	051
20	040	035	034	035	036	034S	032	051	075S	082	103	121	122	124	133	129	128	134	131	113	D078S	065	052	044
21	040	039	041	038	036	033	033S	053	077	101S	111	104	096	102	118	130	123	118	U129S	D119S	S	098	062S	049
22	042	040	041	037	038	038	036	054	082S	080	104	106	115	104	096	099	096	104	103	088	I086S	084	056	046
23	042	044S	043	041	037	036	035	059	096	094	107	110	120	127	134	118	104	089	086	083	071S	062	059	056
24	041	039S	036	038	035	034	034	055	081	103	131	138	138S	124	119	099	095	091	082	059	057	064S	057	043S
25	040	042	042S	038	036	032	034	057	090	086	112	113	112	122	127	116	113	107	096S	J075S	068	062	051	047
26	044S	048	047	039	032	036	035S	059	072S	087	111	110	117	131	140	128	114	100S	089	071S	060	060	052	049
27	047	045	042	041	043	045	045S	066S	086	089S	109	130	127	U137S	U149S	152S	U138S	U127S	U119S	U104S	I083S	070S	054	046
28	045	044S	043	048	047	035	036	061	084	086	105	122	124	132	136	133	122S	114	105S	090S	I080S	072	070	067S
29																								
30																								
31																								
Count	26	26	27	27	26	26	26	26	26	28	28	27	27	27	27	27	27	26	27	26	25	27	27	26
Median	041	040	041	038	036	033	032	050	081	092	106	110	117	121	125	119	114	104	097	082S	067	064	054	046
U.Q.	044	044	043	041	039	036	036	054	086	102	111	122	124	130	132	130	123	114	109	099	083	076	059	051
L.Q.	038	035	036	037	034	030	029	045	075	086	100	105	105	111	116	116	107	096	086	071	061	062	048	042
Q.R.	006	009	007	004	005	006	007	009	011	016	011	017	019	019	016	014	016	018	023	028	022	014	011	009

foF2

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

The Radio Research Laboratories, Japan

Y 1

IONOSPHERIC DATA

Feb. 1967 | foF1 | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L	L	L	L							
2											L	L	LH	L	L	L	L							
3											L	L	L	L	L	L	L							
4										L	L	L	L	L	L	L	L							
5											L	L	L	L	L									
6										L	L	L	L	L	L	L								
7										L	L	L	L	L		L	L							
8											L	L	L	L		U460L								
9											L	LH	L	L	L	L	L							
10											L	L	L	L	L	L								
11											L	U480L	L	L	L	L								
12											L	L	L	540L	500	L	L	L						
13											L	L	L	L	L	L	L							
14											L	L	L	L	L	L								
15										L	L	C	C	C	C	C	C							
16											L	L	L	L	L	L	L							
17										L	L	L	L	L	L	L	L							
18										L	L	L	L	L	L	L	L							
19											L	L	L	L	L	L	L	310						
20											L	L	L	L	L	L	L	L						
21										L	L	L	L	L	L	L	L							
22											L	L	L	L	L	L								
23											L	L	L	L	L	L	L	L						
24											L	L	L	L	L	L	A							
25										L	L	L	L	L	L	L	L							
26											L	L	L	L	L	L	L							
27											L	L	L	LH	L	L	L	L						
28											L	L	L	L	L	LH	L							
29																								
30																								
31																								
Count												1		1	1	1		1						
Median												U480L		540L	500	U460L		310						
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

Y 2

IONOSPHERIC DATA

Feb. 1967 | foE | 0.01 Mc | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								S	220	300	330	350	350	350	340	320	300	220						
2								S	220	290	325	·345	360	360	340	330	280	I210A						
3								S	210	280	310	I330A	350	I350A	345	325	300	240						
4								S	210	280H	315	340	340	A	A	330	290	A						
5								S	200	280	320	345	355	A	A	320	290	240						
6								S	230	290	330	340	350	340	330	I310A	I295A	A						
7								S	230	300	330	355	360	I360A	I355A	330H	300	235						
8								S	210H	280	320	340	345	350	340	325H	290	235						
9								S	230	300	320	340	340	345	340	A	290H	220						
10								S	220H	285H	320H	345H	350R	360	350	320	280	250H						
11								S	230	290	315	345	355	355	340	325	290	235						
12								S	230	295	325	345	340	340	335	320	285	240H						
13								S	230H	280	320	345	350	350	350	325	305	240H						
14								S	230	290	330	340	340	350	350	320	300H	250						
15								S	230H	290H	330H	C	C	C	C	C	C	C						
16								C	C	295	330	350	350	A	A	310	290	230						
17								S	220	290	320	340	A	A	A	A	290	250						
18								S	220	290	315	335	350	350	I345A	330	310	260						
19								S	230	290	325	340	I340A	I345A	350	325	300	250						
20								S	250	300	330	350	350	350	I345A	335	300	240						
21								S	230	290	330	340	350	I350A	350	340	310	250						
22								S	240	300	330	350	345	I340A	I340A	335	320	260						
23								S	250	310	340	360	365	360	350	A	A	A						
24								S	250	310	335	350	360	360	360	350	335	250						
25								S	250	300	335	360	360	360	360	345	I310A	250						
26								S	250	300	340	360	365	360	350	335	I300A	250						
27								S	250	310	350	365	370	370	365	340	320	260						
28								S	250	315	345	360	360	370	365	350	330	270						
29																								
30																								
31																								
Count									27	28	28	27	26	23	23	24	26	24						
Median									230	290	330	345	350	350	350	330	300	245						
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

Feb. 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	066M	J030	J026	E011B	E	E	E014S	019	026	037	J045	J054	046	040	037	G	G	021G	E015S	E014S	E015S	E014S	019	E015S
2	E015S	E014S	E011B	E	E	E012B	E014S	E014S	G	G	037	040	039	038	G	G	037	024	E015S	E014S	E014S	E015S	E015S	E015S
3	E014S	J045	E	021	E	E	E015S	E014S	G	G	039	J038	G	037	G	G	G	G	E015S	E015S	E015S	E014S	E015S	E014S
4	E012B	E012B	E011B	E	E	E011B	E015S	E015S	G	G	G	038	036	035	036	J031G	J028G	J029	022	J026	J027	J027	025M	E015S
5	E015S	020	E013B	E012B	E	E013S	E015S	E015S	025	G	G	G	040	039	035	028G	J029G	J025	J017	E014S	E015S	E015S	E013S	E015S
6	E015S	E011B	E011B	E	E	E	E014S	E015S	G	G	G	036	044	040	040	040	033	J028	015	E015S	E011B	020	J030	J019
7	E014S	E014S	025M	E	E	E011B	E015S	E015S	G	G	G	G	038	037	036	G	G	G	021	E015S	E011B	E014S	E011B	E015S
8	E014S	E011B	E	E015B	014	015	020	018	G	G	035	G	046	G	G	G	G	026	E015S	E015S	E015S	E014S	E011B	E015S
9	020	E015S	E	019	E	E011B	E015S	E015S	G	G	034	036	036	038	036	032	027G	016G	E015S	E011B	E015S	017	E015S	E015S
10	E015S	019	E011B	E	E	E	E014S	E014S	G	G	G	037	040	G	G	029G	J028G	J029	J027	021	021	020	020	E015S
11	E015S	E012B	E011B	E	E	E	022	020	G	G	G	047M	036	020G	020G	G	G	G	021	E015S	E015S	E012B	E015S	E015S
12	E015S	E015S	E	E	E	E	E015S	E015S	G	038	G	G	035	033G	031G	J036	025G	G	017	J024	021	020	022	E015S
13	E015S	021	019	020	020	020	E015S	E015S	G	G	G	038	045	038	G	G	014G	013G	016	J015S	J014S	E015S	E015S	020
14	E015S	E015S	E011B	E011B	E	E015S	E014S	E014S	G	G	037	G	036	033G	033G	G	014G	J015S	J014S	E015S	J013S	018	E015S	021
15	E015S	E012B	E014B	J024	E011B	J015S	018	021	G	015G	022G	C	C	C	C	C	C	C	E015S	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	G	040	047	J048	J053	039	039	039	031	J028	J015S	020	021	020	017
17	J015S	J019	J015S	013	011	E012B	E015S	020	G	G	G	037	040	J040	040	038	G	G	E014S	E015S	E015S	E015S	E014S	E015S
18	J034	J035	020	E012B	021	E014B	E015S	E014S	G	G	038	053	J055	038	042	G	G	G	019	E016S	J026	E015S	E015S	E015S
19	E015S	E011B	E015B	E	E	E015S	J021	E015S	G	021G	035	039	040	039	G	033	030G	022G	J027	J030	E014S	E015S	E015S	E015S
20	031M	J025	E012B	E014B	E011B	021	021	E015S	G	G	G	037	040	J047	042	035	029G	J026	J024	J030	J024	E015S	E016S	E015S
21	E012B	E011B	E	E	E	020	020	020	G	G	036	039	038	038	036	033G	030G	025G	E015S	E012B	E015S	E015S	E015S	E015S
22	021	E015S	021	J024	021	E015S	E015S	E015S	G	G	G	047	043	J043	041	038	034	G	E016B	E014S	E015S	E011B	E014S	020
23	021	E012B	E011B	E	E	E014S	E012B	E013S	G	G	043	045	044	044	039	039	J043	028	E015S	E015S	E014S	E015S	E013S	E015S
24	E015S	E014S	E014B	E	E	E015S	E015S	E015S	G	G	036	029G	038	G	G	040	043	039	J033	J026	022	J030	E015S	E015S
25	E015S	E012B	E012B	E	E	E011B	E014S	E014S	022G	G	G	040	039	041	039	043	034	022G	E015S	J021	E015S	E015S	E015S	E015S
26	022	E012B	E013S	E	E012B	E012B	E015S	E015S	G	G	038	042	042	046	J053	042	033	024G	E015S	E014S	E015S	021	018	E014S
27	020	E015S	E015S	E	E	E015S	021	E014S	G	035	G	040	044	044	041	G	030G	020G	E015S	017	E015S	E015S	E015S	E015S
28	E014S	E013S	E011B	E	E	E	E015S	E015S	029	G	G	040	044	G	035G	G	G	G	E015S	020	021	018	E015S	E014S
29																								
30																								
31																								
Count	27	27	27	27	27	27	27	27	27	28	28	27	27	27	27	27	27	27	28	27	27	27	27	27
Median	E015S	E014	E012B	E	E	E012	E015S	E015S	G	G	G	038	040	038	036	G	G	G	E015S	E015S	E015S	E015S	E015S	E015S
U.Q.	020	019	E015	E014	E011	E015	018	E015	G	G	037	042	044	041	040	038	033	026	021	021	021	020	018	E015
L.Q.	E015	E012	E011	E	E	E	E014	E014	G	G	G	036	038	G	G	G	G	G	E015	E014	E014	E015	E015	E015
Q.R.	D005	D007					D004					006	006						D006	D007	D007	D005	D003	

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Feb. 1967 | **fbEs** | 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	A	018	014	B			S	S	G	G	G	041	039	039	G			014G	S	S	S	S	E	S
2	S	S	B			B	S	S			036	G	G	G			035	024	S	S	S	S	S	S
3	S	A		E			S	S			034	037		037					S	S	S	S	S	S
4	B	B	B			B	S	S				037	G	035	034	022G	024G	025	016	021	022	017	019	S
5	S	E	B	B		S	S	S	G				G	037	035	028G	022G	016	015	S	S	S	S	S	S
6	S	B	B				S	S				G	042	040	G	040	033	025	015	S	B	E	019	019
7	S	S	015			B	S	S					G	037	036				E	S	B	S	B	S
8	S	B		B	011	015	S	G			G		045					G	S	S	S	S	B	S
9	E	S		014		B	S	S			G	G	G	G	G	032	027G	016G	S	B	S	E	S	S
10	S	E	B				S	S				G	G			028G	024G	018	015	E	E	018	E	S
11	S	B	B				E	G				022	026	020G	E020R				018	S	S	B	S	S
12	S	S					S	S		G			G	032G	030G	030	020G		E017R	023	015	016	E	S
13	S	E	E	E	E	E	S	S				G	040	G			014G	E013S	E016R	S	S	S	S	E
14	S	S	B	B		S	S	S			G		G	033G	032G		014G	S	S	S	S	E	S	E
15	S	B	B	017	B	S	E	G		015G	022G	C	C	C	C	C	C	C	S	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C		037	044	044	036	035	035	037	029	027	S	E	E	E	017
17	S	016	S	012	E	B	S	S				G	039	039	035	035			S	S	S	S	S	S
18	021	030	E	B	014	B	S	S			037	037	G	G	036				G	S	024	S	S	S
19	S	B	B			S	015	S		021G	G	G	037	037		031	028G	022G	018	023	S	S	S	S
20	E	E	B	B	B	017	E	S				G	G	039	036	032	024G	021	018	E	020	S	S	S
21	B	B				E	E	S			G	G	G	036	033	032G	027G	022G	S	B	S	S	S	S
22	E	S	E	017	014	S	S	S				045	038	037	037	G	G		B	S	S	B	S	E
23	E	B	B			S	B	S			G	042	042	041	038	039	040	026	S	S	S	S	S	S
24	S	S	B			S	S	S			G	029G	G			038	041	037	030	023	015	026	S	S
25	S	B	B			B	S	S	021G			040	G	G	G	039	034	022G	S	018	S	S	S	S
26	022	B	S		B	B	S	S			G	G	G	043	043	G	032	022G	S	S	S	E	E	S
27	E	S	S			S	E	S		G		G	G	041	G		029G	020G	S	E	S	S	S	S
28	S	S	B				S	S	G			G	G		035G				S	E	E	E	S	S
29																								
30																								
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

fbEs

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

The Radio Research Laboratories, Japan

Y 5

IONOSPHERIC DATA

Feb. 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	E014S	E014S	E	011	E	E	E014S	E015S	014	015	011	015	015	013	011	013	015	012	E015S	E014S	E015S	E014S	E015S	E015S
2	E015S	E014S	011	E	E	012	E014S	E014S	014	019	016	029	016	018	015	018	015	E014S	E015S	E014S	E014S	E015S	E015S	E015S
3	E014S	E014S	E	E	E	E	E015S	E014S	014	011	014	015	017	022	017	015	015	012	E015S	E015S	E015S	E014S	E015S	E014S
4	012	012	011	E	E	011	E015S	E015S	015	012	012	014	018	015	016	012	011	012	011	E015S	E014S	E014S	012	E015S
5	E015S	E015S	013	012	E	E013S	E015S	E015S	014	014	015	017	016	016	015	015	012	011	E013S	E014S	E015S	E015S	E013S	E015S
6	E015S	011	011	E	E	E	E014S	E015S	015	011	015	017	015	015	014	014	014	E015S	011	E015S	011	E014S	E015S	011
7	E014S	E014S	E	E	E	011	E015S	E015S	015	011	012	022	022	025	016	016	015	E015S	E015S	E015S	011	E014S	011	E015S
8	E014S	011	E	015	E	E	E015S	E014S	015	012	014	015	017	019	021	012	015	E014S	E015S	E015S	E015S	E014S	011	E015S
9	E014S	E015S	E	E	E	011	E015S	E015S	014	012	014	018	017	018	015	015	012	011	E015S	011	E015S	E015S	E015S	E015S
10	E015S	E015S	011	E	E	E	E014S	E014S	015	012	012	022	019	017	017	016	012	012	012	E015S	E015S	E015S	013	E015S
11	E015S	012	011	E	E	E	E015S	E015S	012	012	016	015	018	016	015	017	017	E016S	017	E015S	E015S	012	E015S	E015S
12	E015S	E015S	E	E	E	E	E015S	E015S	015	016	017	014	016	017	018	017	015	014	012	012	012	E015S	E015S	E015S
13	E015S	E015S	011	E	E	012	E015S	E015S	012	013	015	014	018	015	015	013	011	011	012	E015S	E015S	E015S	E015S	E015S
14	E015S	E015S	011	011	E	E015S	E014S	E014S	012	015	017	015	016	017	015	015	011	E015S	E015S	E015S	E015S	E015S	E015S	E015S
15	E015S	012	014	E	011	E015S	E015S	016	012	012	015	C	C	C	C	C	C	C	E015S	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	012	016	017	017	022	017	011	012	011	E015S	E015S	E015S	E015S	E015S	E015S
17	E015S	012	E015S	E	E	012	E015S	E015S	015	011	014	016	017	016	014	015	015	013	E014S	E015S	E015S	E015S	E014S	E015S
18	E015S	E015S	E	012	E	014	E015S	E014S	014	015	015	017	017	017	016	017	016	E015S	E015S	E016S	E014S	E015S	E015S	E015S
19	E015S	011	015	E	E	E015S	012	E015S	015	014	014	017	017	018	018	015	015	015	E015S	E015S	E014S	E015S	E015S	E015S
20	E015S	E015S	012	014	011	E	E015S	E015S	012	014	015	017	016	018	016	017	014	E014S	E015S	E015S	E015S	E015S	E016S	E015S
21	012	011	E	E	E	E014S	E015S	E014S	013	012	014	014	016	019	016	017	015	E015S	E015S	012	E015S	E015S	E015S	E015S
22	E015S	E015S	E015S	E	E	E015S	E015S	E015S	012	015	022	022	019	029	022	024	017	E014S	016	E014S	E015S	011	E014S	E015S
23	E015S	012	011	E	E	E014S	012	E013S	012	015	015	019	023	023	022	027	017	013	E015S	E015S	E014S	E015S	E013S	E015S
24	E015S	E014S	014	E	E	E015S	E015S	E015S	015	015	017	022	023	023	023	023	030	017	012	E014S	012	E015S	E015S	E015S
25	E015S	012	012	E	E	011	E014S	E014S	012	016	023	022	017	022	021	022	015	015	E015S	012	E015S	E015S	E015S	E015S
26	E015S	012	E013S	E	012	012	E015S	E015S	015	012	017	022	019	023	023	017	017	E015S	E015S	E014S	E015S	E014S	E015S	E014S
27	E014S	E015S	E015S	E	E	E015S	E015S	E014S	015	015	017	017	025	024	022	018	015	E014S	E015S	E015S	E015S	E015S	E015S	E015S
28	E014S	E013S	011	E	E	E	E015S	E015S	012	014	014	023	024	024	023	023	017	014	E015S	E015S	E015S	E015S	E015S	E014S
29																								
30																								
31																								
Count	27	27	27	27	27	27	27	27	27	28	28	27	27	27	27	27	27	27	28	27	27	27	27	27
Median	E015S	E014S	011	E	E	E012	E015S	E015S	014	014	015	017	017	018	016	016	015	012	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

The Radio Research Laboratories, Japan

Y 6

IONOSPHERIC DATA

Feb. 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	I285A	270S	270	280	310	305	285	310	320S	340	335	310	295	290	295	J280H	290	305S	305	305	320	305	290H	280
2	260	255	275	305	300	300	290	310S	335	335	340	335	315	300	310	315	300S	310	330	325	285	300	325	270
3	255	I240A	270	305	320	255H	245	295S	345	350	330	325	305	320	285	310	310	330S	315	300	290	300	320	280S
4	275	270	275	275	285	280	280	310	335S	325	325	325	310	300	295	295S	295	300	305	295S	I285S	300S	315	250S
5	260	280S	275	290	340	270	270	290	335	315	315	315	325	310	295	285	300	310	305S	295S	300	285	295	295
6	285	300	290	280	295	295	270	290	325	315S	315	320	300	290	295	255	U285S	305H	325	330	295	300	300S	265
7	270	275	270	280	265S	260	265	J295S	320	325	315	330	290	295	280	305	310	300S	310S	320	285	290	290	270
8	280	270	275	245S	245	255	I260S	285	320H	330S	305	280	295	280	280	285	295	285	295	265S	300S	305S	300	275
9	295	255	290S	315	250	260	J265S	290S	335	325	J315S	305	330	300	295	U290S	J295S	295S	J290S	S	U305S	U310S	U295S	I280S
10	I270S	280	I295S	U310S	340S	250H	260	290	340	335	315	325	310	305	305	315	315	I320S	325S	305	U275S	J295S	285S	270
11	270	J280S	300	310	320	275	285	320	J355S	320S	310	325	290	295S	305	U290S	J285S	J300S	J305S	I290S	J300S	280S	J280S	J270S
12	260	270	295	340	340	280	295S	320S	J345S	330	330	325	315	285	295	295S	290S	S	S	S	J275S	U280S	295	300
13	270S	275	270	290	345	315	305	315	330S	335	315	325	300	300	295	305	290	305S	315	295	300	300	310	270
14	275	265	280	270	270	260	250S	315	340	330	315	300	310	300	295	300	305	295	320	J305S	295	300	285	265
15	265	260	280	300S	340	335	310	310	340S	330	325	C	C	C	C	C	C	C	325	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	335	325	305	320	305	305	310	315	295	300	U310S	S	285S	I275S	S
17	S	S	285	285	S	S	FS	S	F	345Z	325	315	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	325	310	315	310	320S	300	295	305	305	320	320	280	305	295	275
19	275	275	290	320	330	260	270	320	345S	315	305	310	310	310	315	315	305	310	310	I310S	300S	I300S	315S	280
20	250	255	270	270	305	295S	290	325	325S	315	305	315	310	300	300	295	305	305	305	310	S	275	275	285
21	275	270	295	290	305	275	275S	305	320	325S	325	325	305	305	295	310	300	290	U300S	S	S	295	275S	250
22	270	255	295	270	275	290	265	310	340S	325	315	315	315	315	300	315	300	310	315	305	I290S	300	305	285
23	265	275S	280	275	295	280	255	310	345	320	325	310	300	305	315	305	315	315	300	300	295S	275	305	305
24	275	255S	250	265	285	270	270	325	310	300	315	320	310S	300	310	325	315	325	330	290	265	300S	325	265S
25	275	270	285S	290	330	270	270	320	355	325	315	310	305	295	290	295	300	320	315S	J290S	310	295	275	275
26	250S	290	310	320	250	260	265S	340	335S	305	315	300	290	290	300	295	300	300S	315	295S	300	285	290	285
27	280	280	260	255	280	290	310S	320S	335	315S	295	315	300	U290S	U295S	305S	U295S	U290S	U295S	U310S	I295S	285S	280	265
28	265	275S	265	295	320	265	280	330	345	315	305	310	305	295	295	295	295S	295	295S	315S	I285S	265	275	270S
29																								
30																								
31																								
Count	25	25	26	26	25	25	25	25	25	28	28	27	26	26	26	26	26	25	26	23	23	26	26	25
Median	270	270	280	290	305	275	270	310	335	325	315	315	310	300	295	300	300	305	310	305	295	300	295	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

Y 7

IONOSPHERIC DATA

Feb. 1967 | M(3000) F1 0.01 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L	L	L	L							
2											L	L	LH	L	L	L	L							
3											L	L	L	L	L	L	L							
4										L	L	L	L	L	L	L	L							
5											L	L	L	L	L									
6										L	L	L	L	L	L	L								
7										L	L	L	L	L		L	L							
8											L	L	L	L		U350L								
9											L	LH	L	L	L	L	L							
10											L	L	L	L	L	L								
11											L	U380L	L	L	L	L								
12											L	L	L	355L	360	L	L	L						
13											L	L	L	L	L	L	L							
14											L	L	L	L	L	L								
15										L	L	C	C	C	C	C	C							
16											L	L	L	L	L	L	L							
17										L	L	L	L	L	L	L	L							
18										L	L	L	L	L	L	L	L							
19											L	L	L	L	L	L	L	415						
20											L	L	L	L	L	L	L	L						
21										L	L	L	L	L	L	L	L							
22											L	L	L	L	L	L								
23											L	L	L	L	L	L	L	L						
24											L	L	L	L	L	L	A							
25										L	L	L	L	L	L	L	L							
26											L	L	L	L	L	L	L							
27											L	L	L	LH	L	L	L	L						
28											L	L	L	L	L	LH	L							
29																								
30																								
31																								
Count												1		1	1	1		1						
Median												U380L		355L	360	U350L		415						
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

Y 8

IONOSPHERIC DATA

Feb. 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											235	250	300	310	275	250	245							
2											250	250	260	275	285	280	250							
3											250	260	265	275	250	265	250							
4										245	250	255	240	285	280	275	250							
5											260	270	255	270	230H									
6										245	260	265	250	255	275	250								
7										250	240	250	240	280		275	250							
8											250	280	250	280		265								
9											250	255	245	300	255H	255	250							
10											250	265	260	275	280	255								
11											255	250	275	280	280	260								
12											260	255	255	320	300	280	250	235						
13											250	255	275	290	275	280	245							
14											250	270	255	290	250	260								
15										250	260	C	C	C	C	C	C							
16											250	290	275	280	265	275	250							
17										230	270	265	C	C	C	C	C							
18										250	255	275	275	255	245	245	250							
19											280	280	285	275	265	265	250	235						
20											280	275	270	280	280	260	255	245						
21										260	265	250	260	275	300	275	250							
22											275	265	275	265	250H	270								
23											260	275	280	280	270	240	250	230						
24											275	265	280	270	275	245	250							
25										250	275	245	270	300	255	250	275							
26											275	265	290	300	280	250	250							
27											255	275	255	300	285	275	250	240						
28											280	275	275	300	280	280	250							
29																								
30																								
31																								
Count										8	28	27	26	26	24	25	19	5						
Median										250	260	265	270	280	275	265	250	235						
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

Y 9

IONOSPHERIC DATA

Feb. 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	A	E310A	315	295	245	245	250	260	240	245	230	225	210	220	240	225	220	230	240	225	235	210	225	280
2	330	330	310	250	240	250	300	240	230	240	240	235	210H	225	210	215	230	240	230	200	250	230	220	265
3	350	I360A	300	275	250	240H	350	280	210	215H	200	235H	225H	225	200	210	235	235	215	225	235	240	230	240
4	275	300	300	300	275	300	305	270	235	230	230	220	200	200	200	220	230	240	245	210	245	225	230	275
5	330	300	300	275	210	E315S	E350S	295	245	240	230	230	225	225	215	210H	205H	245	225	225	250	250	245	250
6	280	250	260	270	230	225	E310S	290	245	230	230	240	225	200	200H	250	240H	235	230	220	225	230	250	300
7	325	300	300	280	275	300	300	280	230	230	220	225H	215	200	225H	240	225	240	230	220	200H	240	240	280
8	290	300	275	350	380	350	330	280	235	225H	225H	180H	250	205	245H	230	240H	225	230	245	265	225	220	300
9	250	300	265	205	250	295	340	290	240	230	230	200H	205H	210	230	200H	225	240	230	220	225	220	215	240
10	275	285	245	225	200	200H	E350S	275	240	240	240	230	220	220	200H	205	230H	230	220	240	250	250	250	295
11	305	300	255	230	240	240H	300	270	230	240	225	220	210	200H	190H	205	235H	240	230	225	230	235	275	300
12	320	315	270	230	200	280	300	250	230	230H	235H	210	215	200	220	230	235	230	230	210	250	240	260	255
13	295	315	305	290	220	245	E250S	250	230	235	225	235	210	195H	230	205	220	235	225	220	235	245	250	280
14	290	300	295	300	300	340	340	270	230	240	230	220H	210H	225	220	210	225	230	240	230	230	230	275	300
15	330	330	280	255	230	240	250	255	225	220	230	C	C	C	C	C	C	C	230	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	220H	225	250	240	215	210	225	I215A	245	245	230	230	260	240	400
17	280	250	280	270	280	380	340F	275	230	230	210H	225	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	CH	230	220H	200H	225	210	220	205	205	230	225	210	250	230	230	255
19	330	295	275	245	230	E320S	300	250	230	220H	225	225	210	230	225	220	220	220	225	205	220	220	225	240
20	300	320	300	305	250	275	280	245	235	220H	230	225	225	220	220	225	230	240	230	205	210	250	250	275
21	295	300	255	250	245	245	310	255	230H	235	240	230	225	215	210	225	235	240	240	200	215	230	245	275
22	285	315	280	300	295	280	300	255	245	235	240	255	215	205	230	210	230H	245	230	210	245	215	230	250
23	300	300	250	250	250	300	E340B	250	230	230	230	230	210H	200	205H	230	I235A	230	230	225	220	255	250	245
24	250	320	350	300	240	E300S	E300S	240	230	235	235	230	225	245	225	E245A	I240A	245	230	235	280	270	225	250
25	300	300	255	250	245	300	315	250	240	225H	230	245	225	210	230H	230	200H	240	230	240	225	250	245	300
26	E350A	275	240	230	350	350	320	240	230	230H	240	225	220	260	E250A	240	230	240	235	225	240	260	250	280
27	275	285	300	320	295	275	250	250	225	225	225	235	230	200H	220H	220	225	235	230	220	220	245	235	295
28	300	300	300	275	250	250	290	240	230	225	240	245	235	225	215	200H	230	245	240	230	225	250	260	275
29																								
30																								
31																								
Count	25	26	26	26	26	26	26	26	26	28	28	27	26	26	26	26	26	26	27	26	26	26	26	26
Median	300	300	280	270	250	270	300	255	230	230	230	230	220	210	220	220	230	240	230	220	230	240	240	275
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

The Radio Research Laboratories, Japan

Y 10

IONOSPHERIC DATA

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

Y 11

IONOSPHERIC DATA

Feb. 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	f2	f2	f2					1	h	h2	h2	h2	c2	h	h			1					f	
2											h	h	h 1	h			c3	c						
3		f3		f							h2	c		c										
4												h	c	c	c21	1	13	13	f	f4	f2	f	f2	
5		f							h				h	c2	12	12	12	1	f					
6												h	h 1	c	c	c2	c2	15	f			f	f	f3
7			f										h	c	c				f					
8					f	f3	f	h3			h		h2					h2						
9	f2			f2							h2	h	h	h	h	c	12	1				f		
10		f										h	h			12	12	12	f	f	f	f	f	
11							f2	1				1	1	1	1				f					
12										1			c	1	1	13	1		f	f2	f	f	f	
13		f	f	f	f2	f						h	h2	h			1	1	f	f	f			f
14											h		h	1	1		1	1	f		f	f		f
15				f2		f	f	1		1	1													
16											h2	h3	c2	c	c	c21	c212	c21	f3f	f	f	f	f	f f
17	f2	f2	f	f	f			1				h	c	c2	c 1	13								
18	f4	f3	f		f						h2	h	c	c	c2				f		f2			
19							f			1	h	c	c	c		12	12	1	f2	f2f				
20	f	f				f2	f					h	h	c2	c	c	1	12	f	f	f3			
21						f	f	1			h	h	h	c	c	12	12	12						
22	f2		f	f2	f							h3	c	c	c	c	c							f
23	f										h	c	c	c	c	c	13	1						
24											h	1	h			h	c	c3	f3	f3	f2	f4		
25									1			h	h	h	h	h2	c2	1		f2				
26	f2										h	h	h	c2	c2	c	c	1				f	f	
27	f						f			h		h	h	h	h		1	1		f				
28									h			h	h		1					f	f	f		
29																								
30																								
31																								
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

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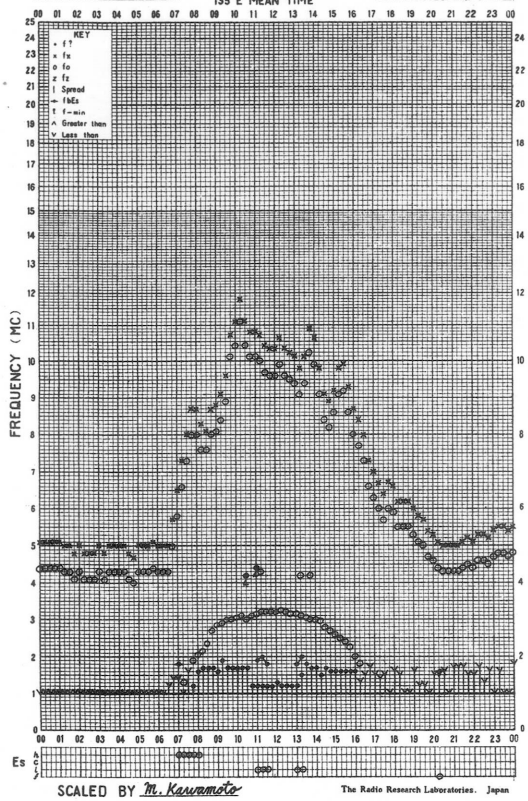
Y 12

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE FEB. 1.1967

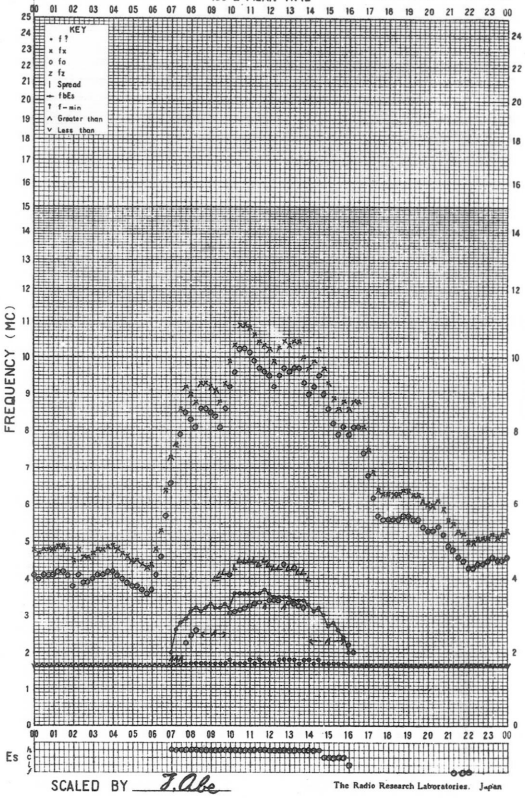


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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

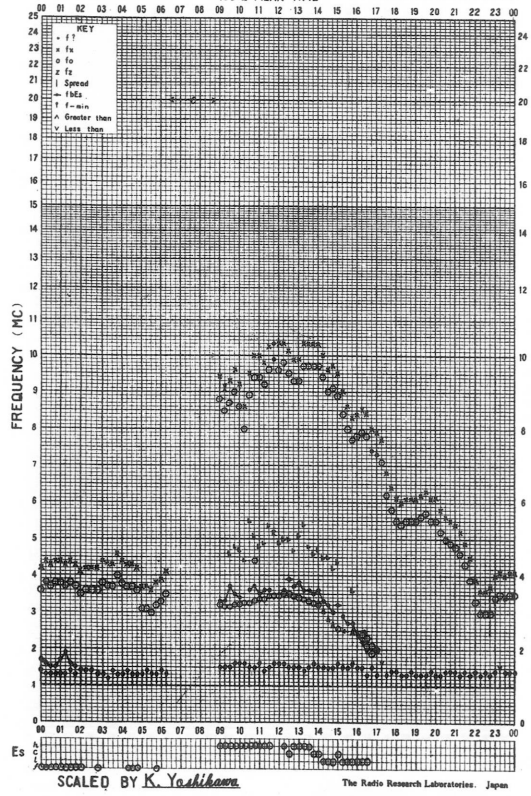


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE FEB. 1.1967

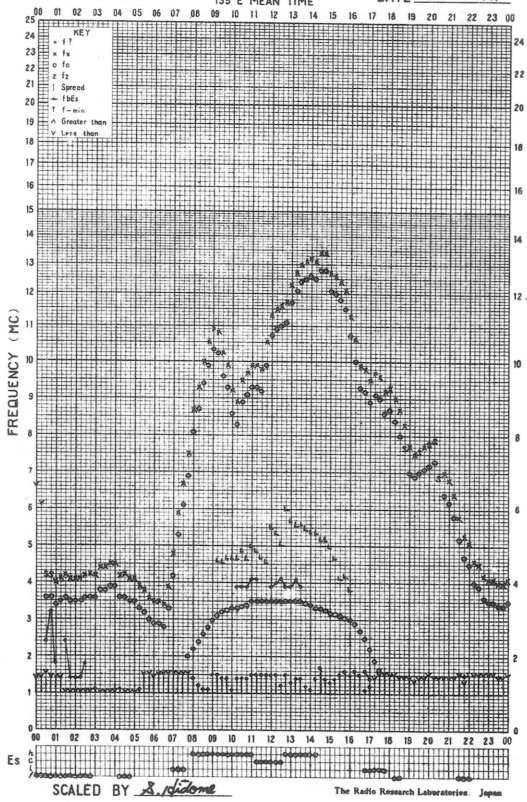


SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE FEB. - 1. 1967

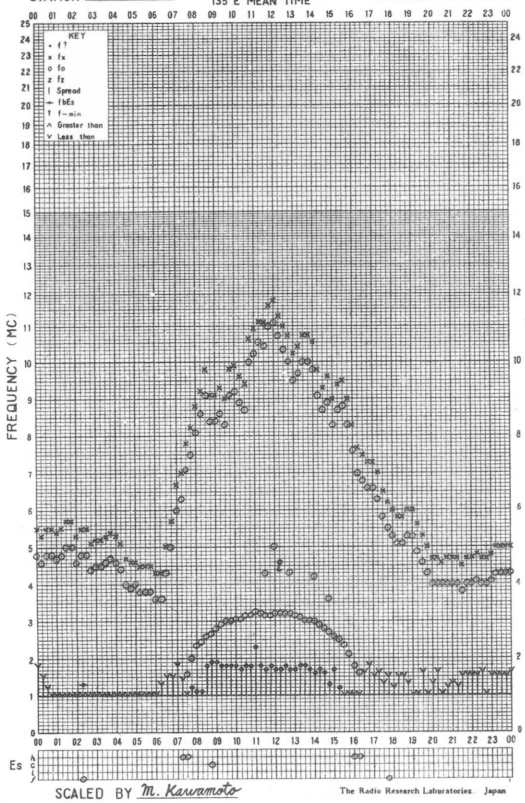


SCALED BY S. Sidomi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE FEB. 2.1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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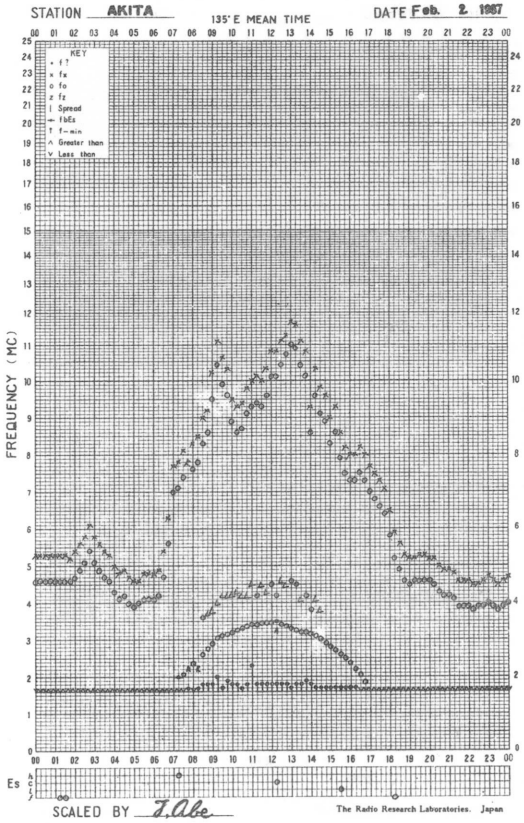
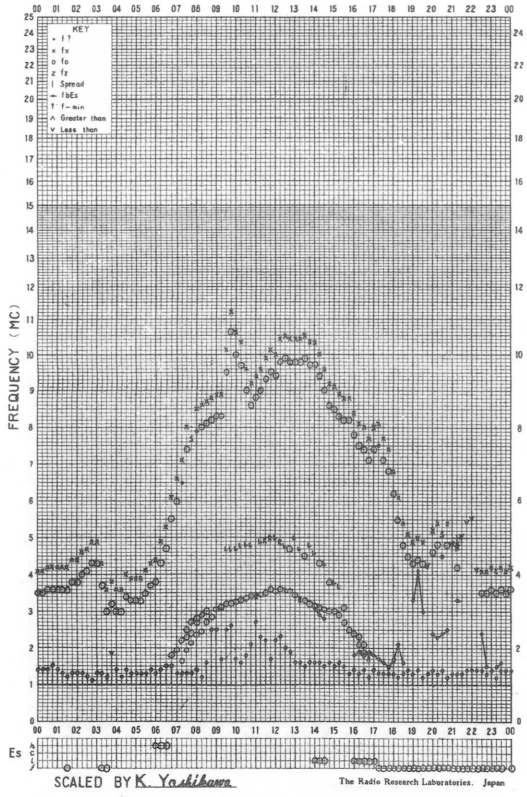


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE FEB. 2.1967

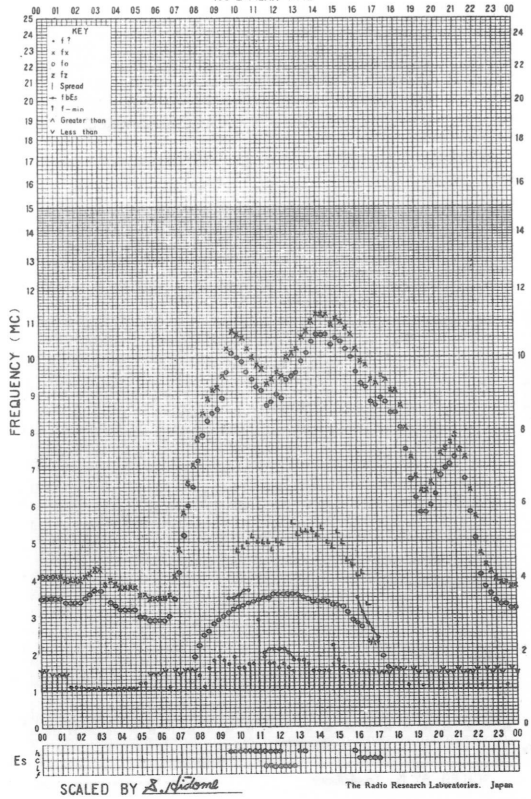


SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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



SCALED BY S. Sidomi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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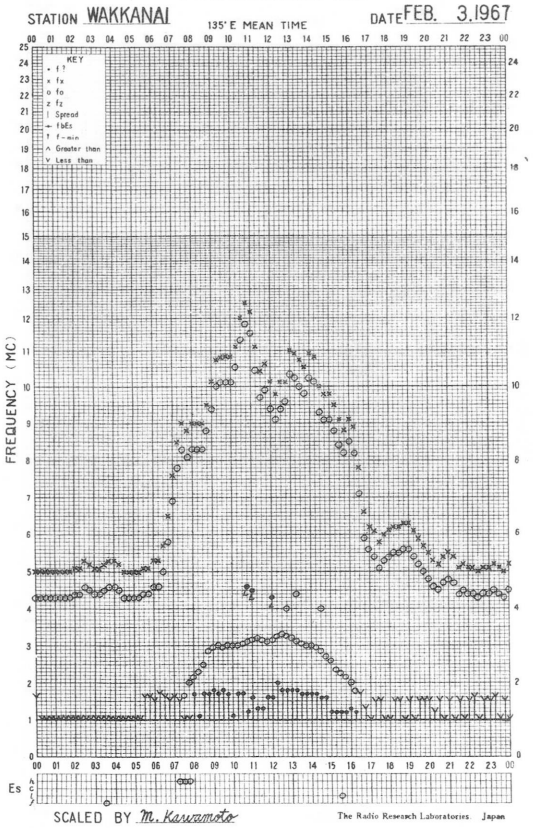

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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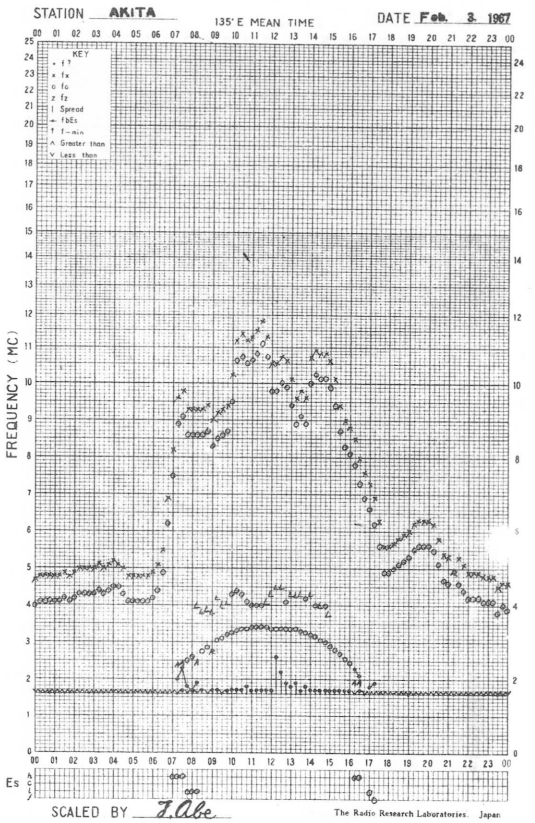
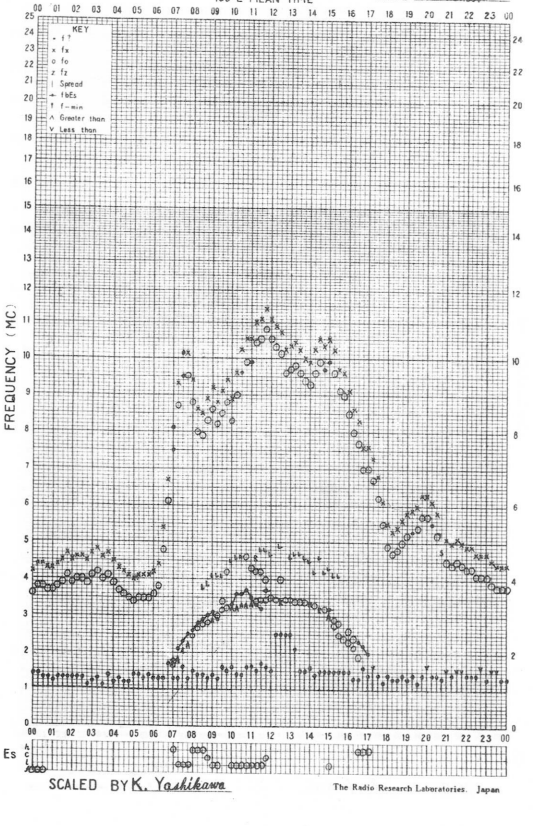


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE FEB. 3.1967

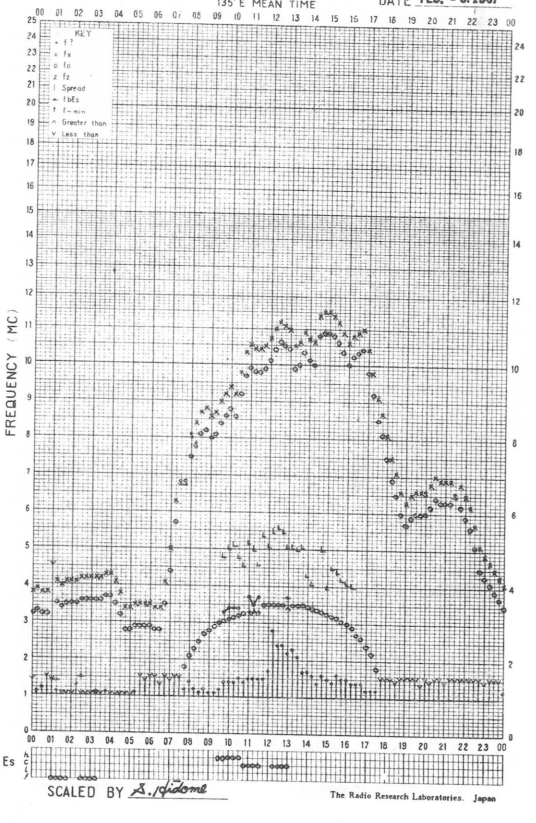


SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE FEB. - 3.1967



SCALED BY S. Ishimoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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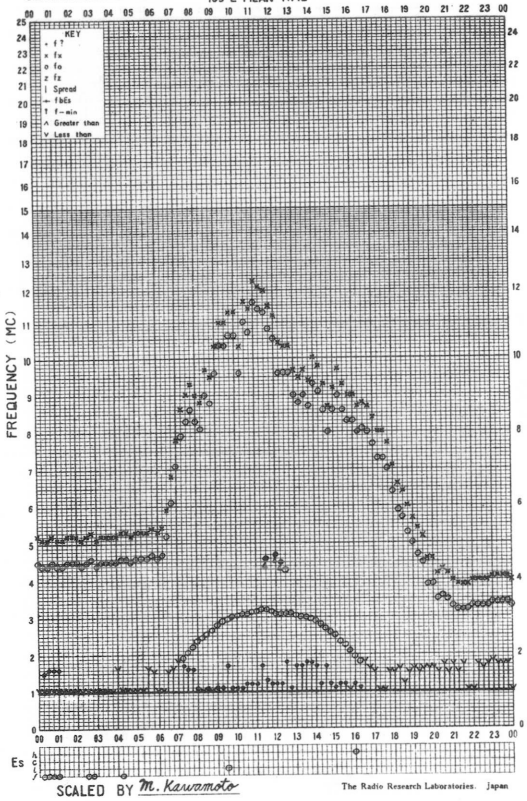

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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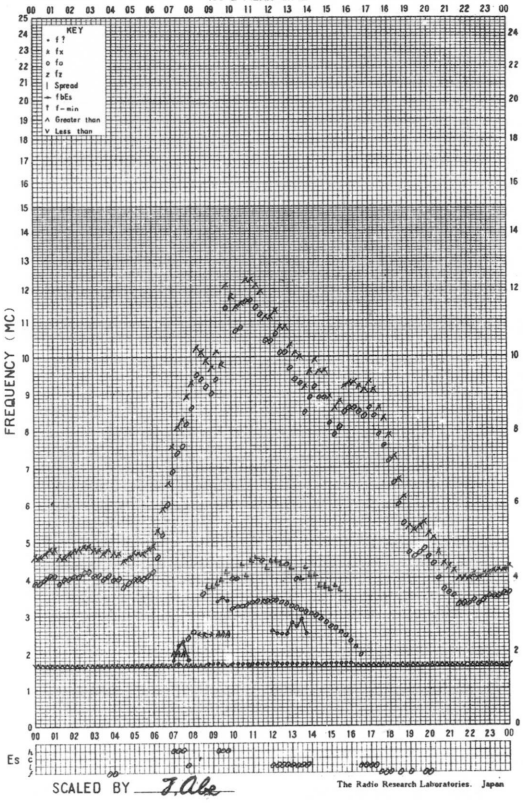
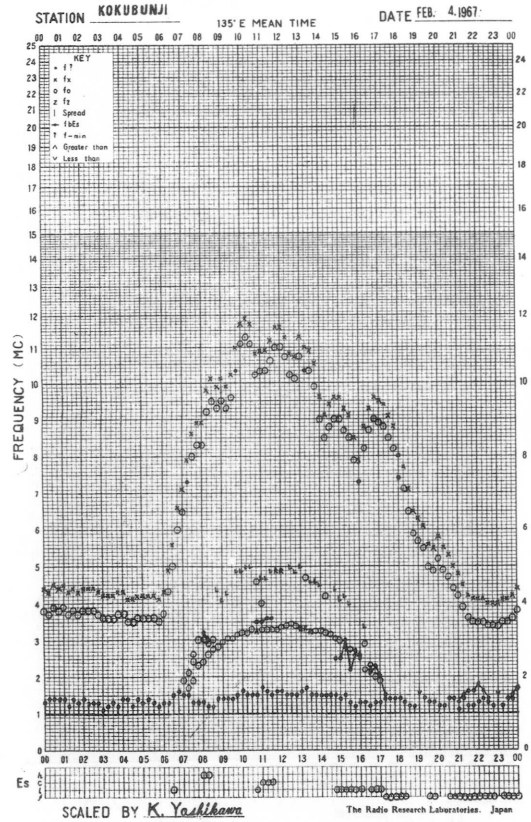


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE FEB. 4, 1967



SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

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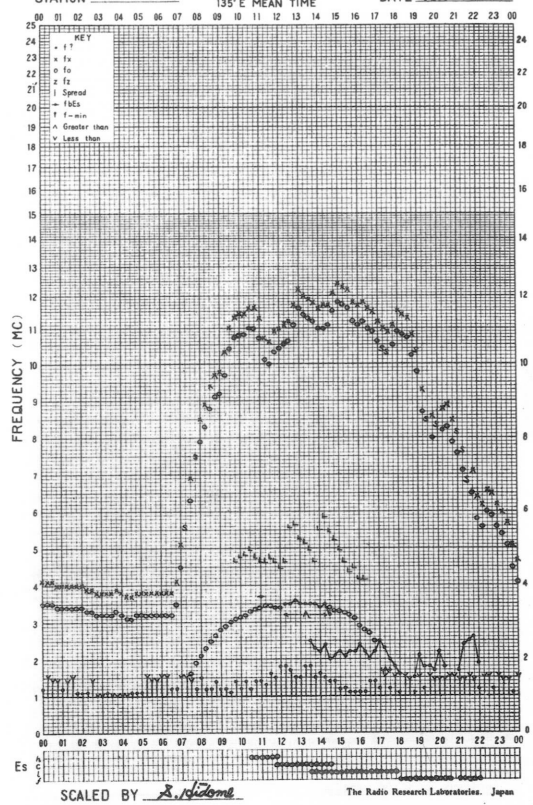

SCALED BY S. Ichimoto

The Radio Research Laboratories. Japan

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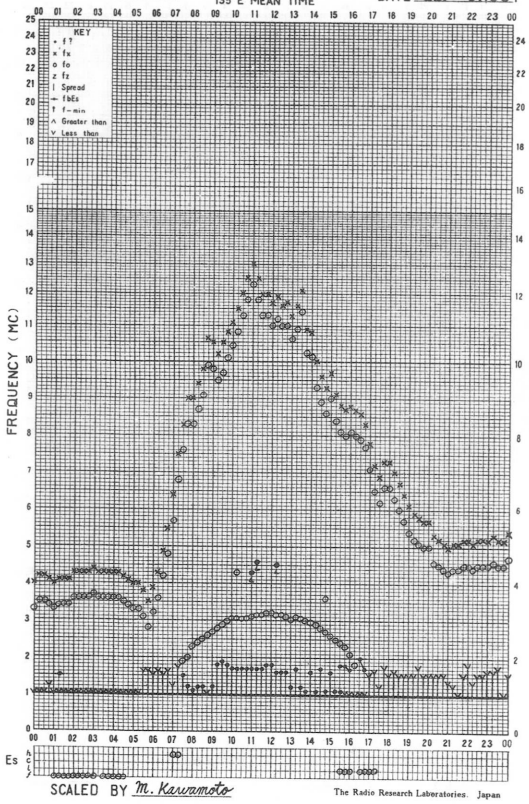
STATION WAKKANAI 135°E MEAN TIME DATE FEB. 5.1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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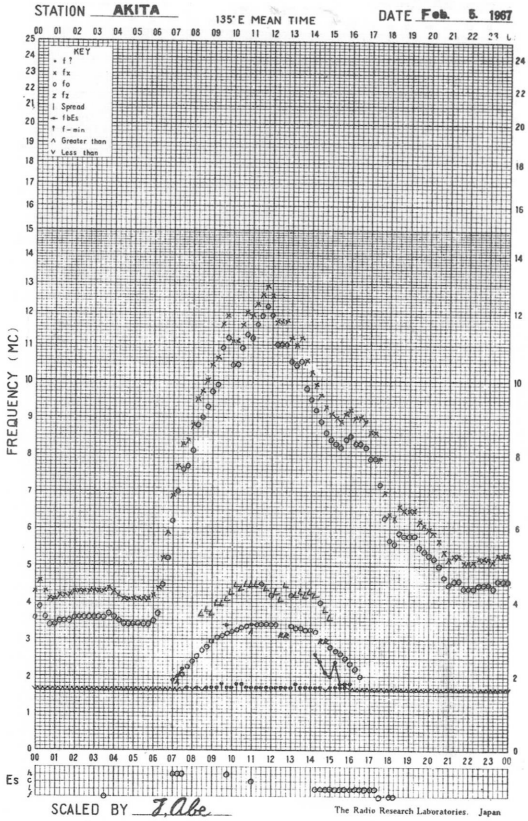

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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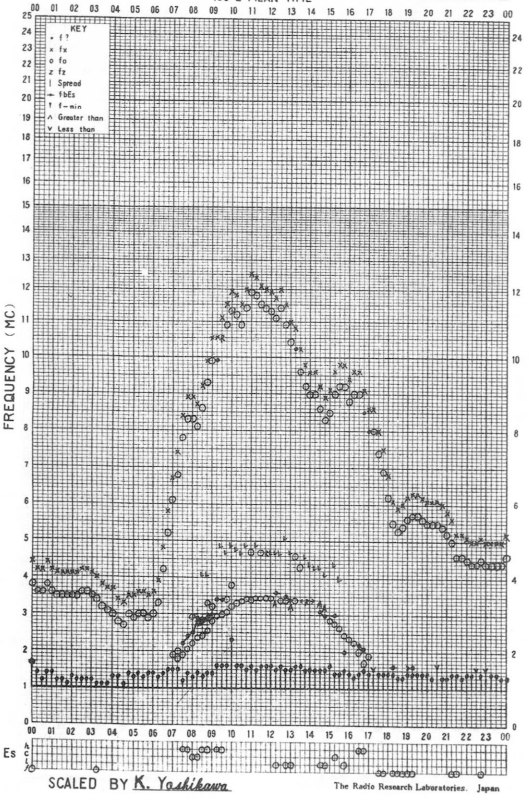

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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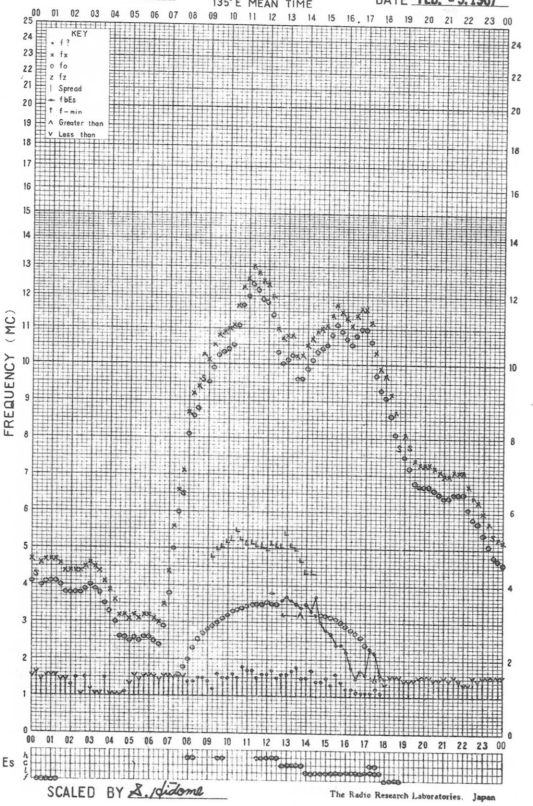
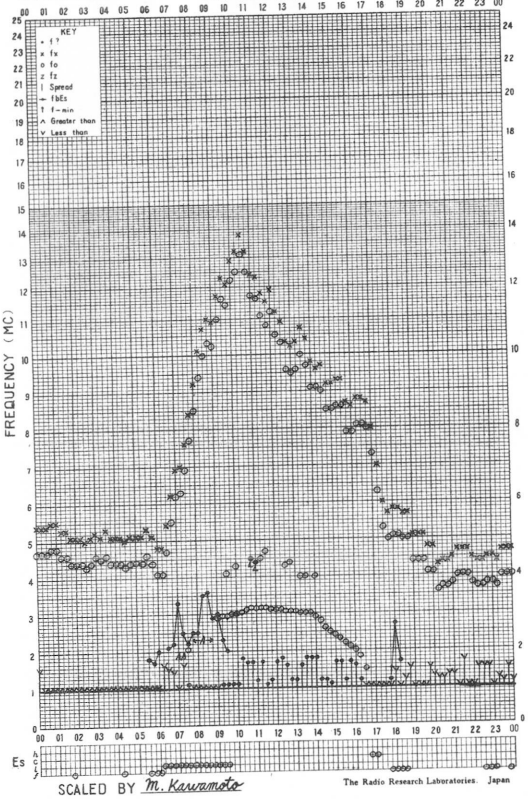


SCALED BY S. Ishizome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE FEB. 6.1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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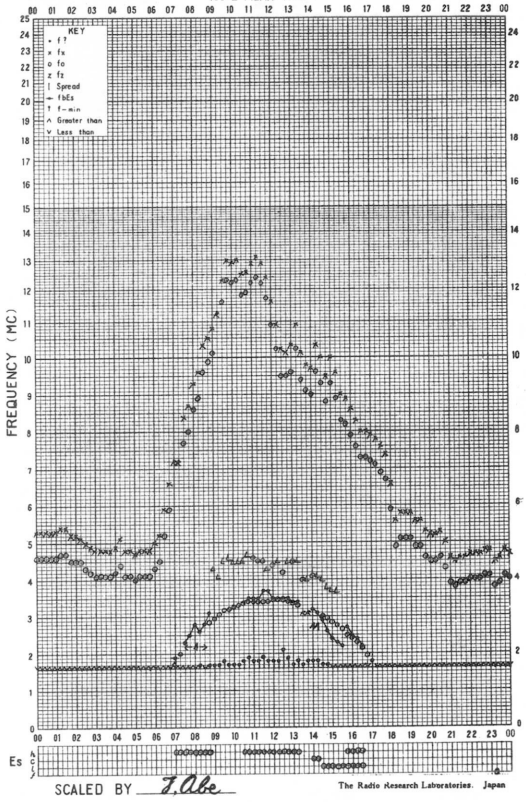

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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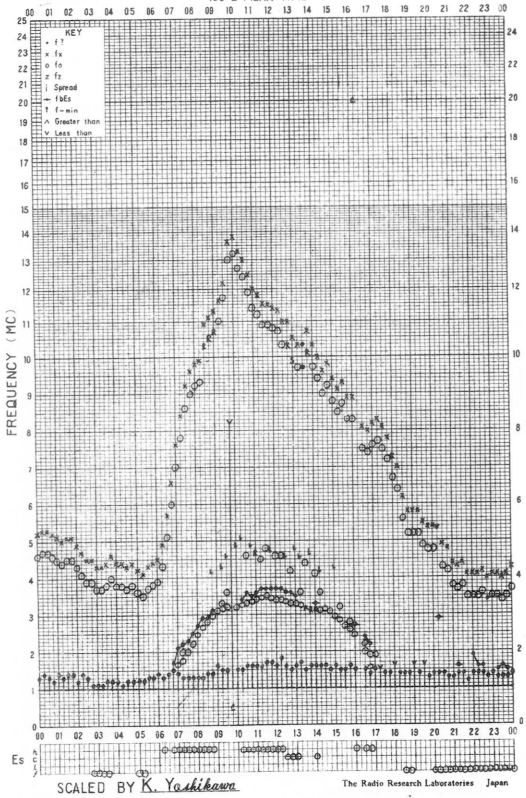

SCALED BY K. Yoshikawa

The Radio Research Laboratories Japan

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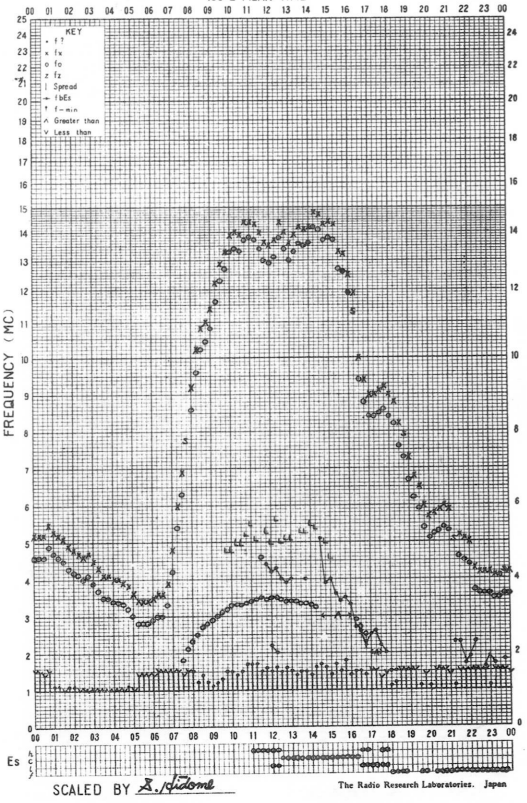

SCALED BY S. Ajioma

The Radio Research Laboratories. Japan

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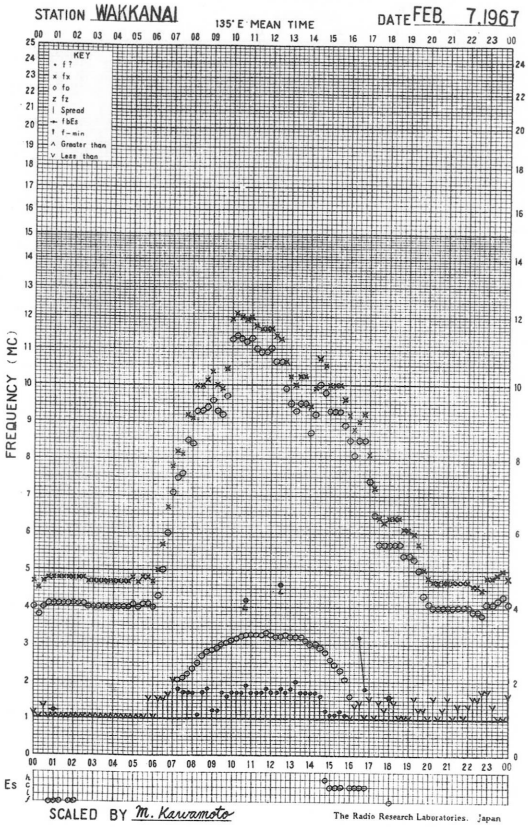

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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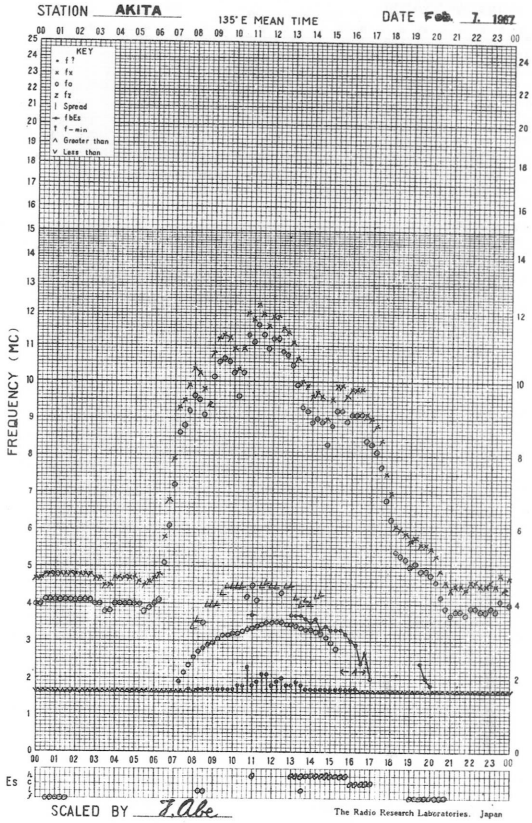

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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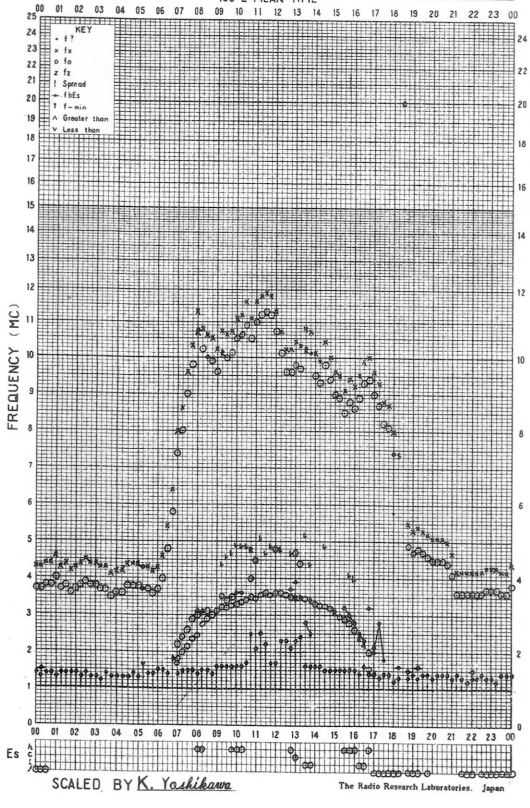

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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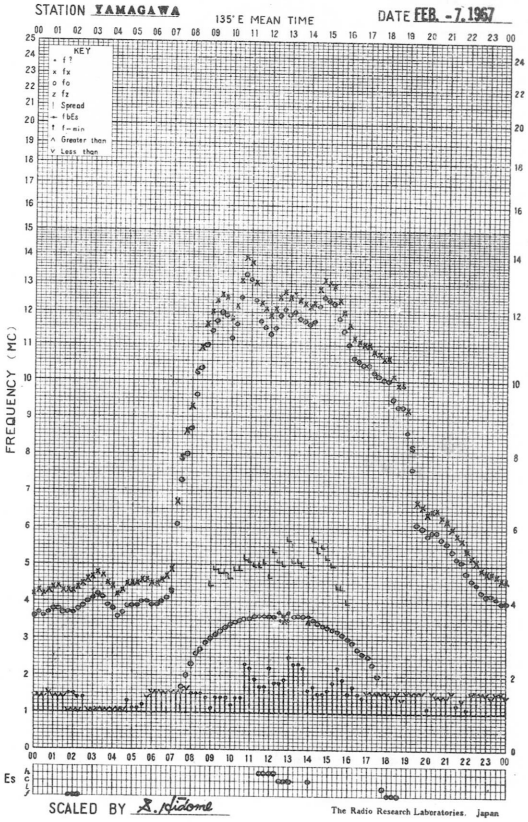

SCALED BY S. Kitome

The Radio Research Laboratories. Japan

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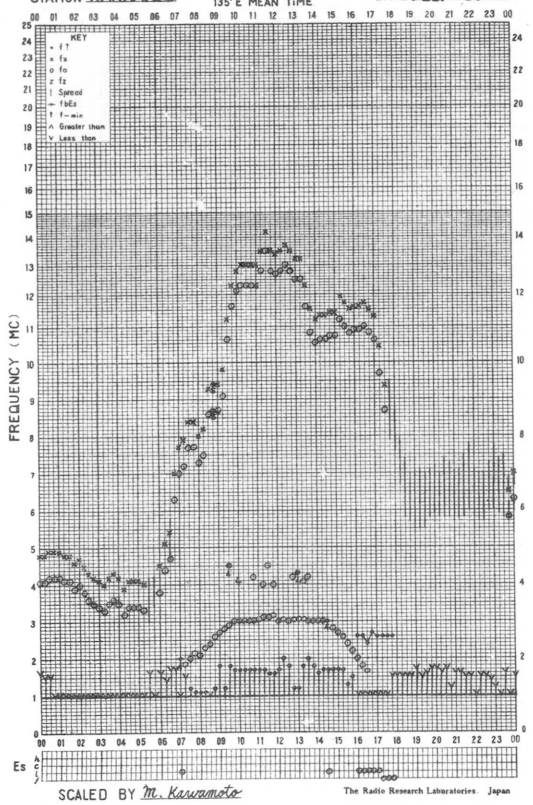
STATION WAKKANAI 135°E MEAN TIME DATE FEB. 8.1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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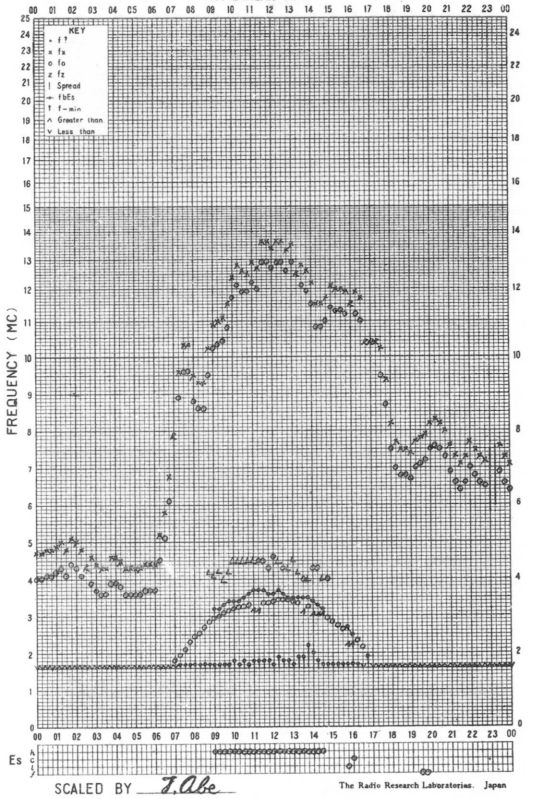

SCALED BY T. Abe The Radio Research Laboratories. Japan

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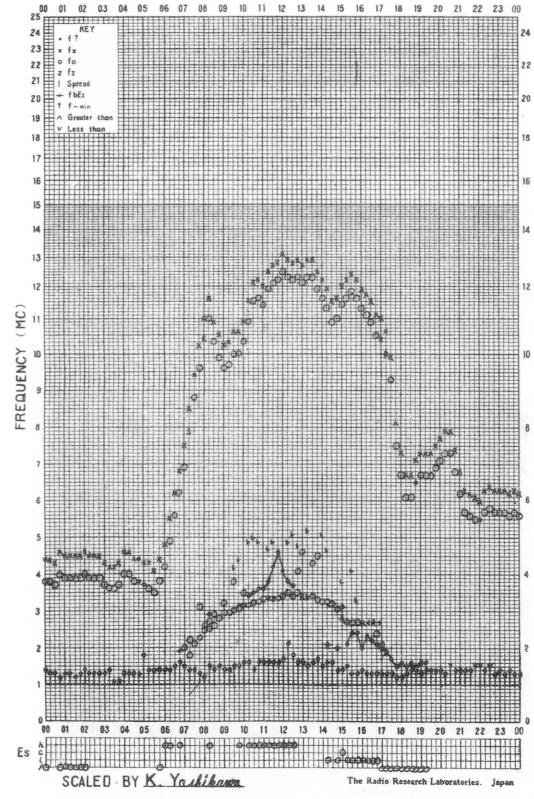

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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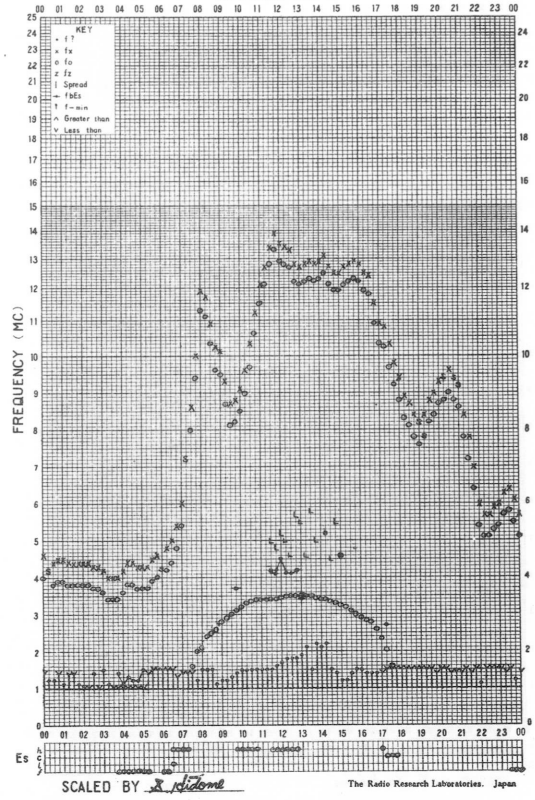

SCALED BY S. Kidomé The Radio Research Laboratories. Japan

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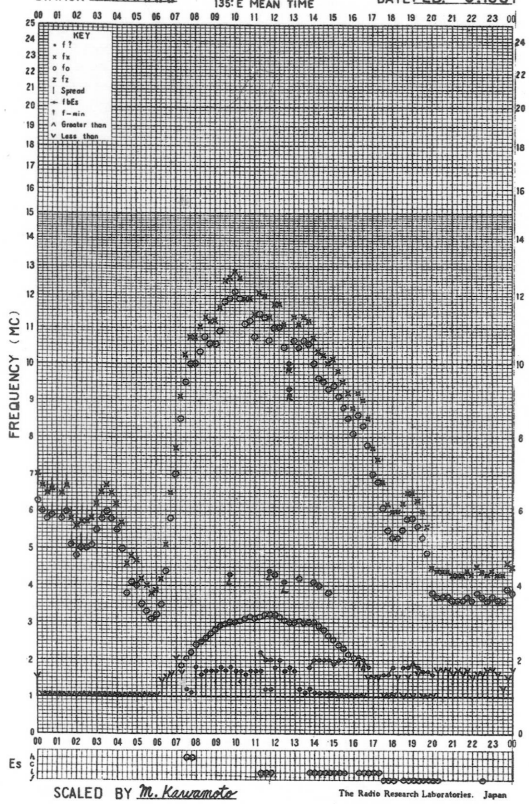

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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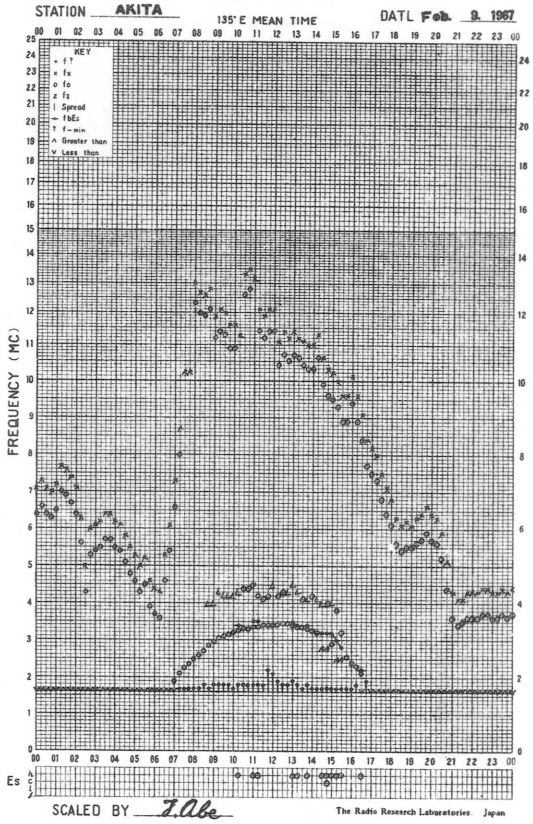

SCALED BY T. Abe The Radio Research Laboratories. Japan

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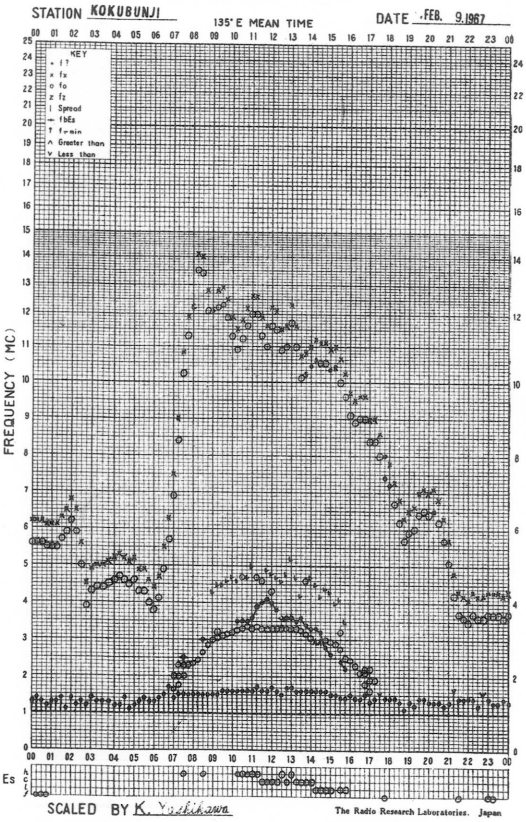

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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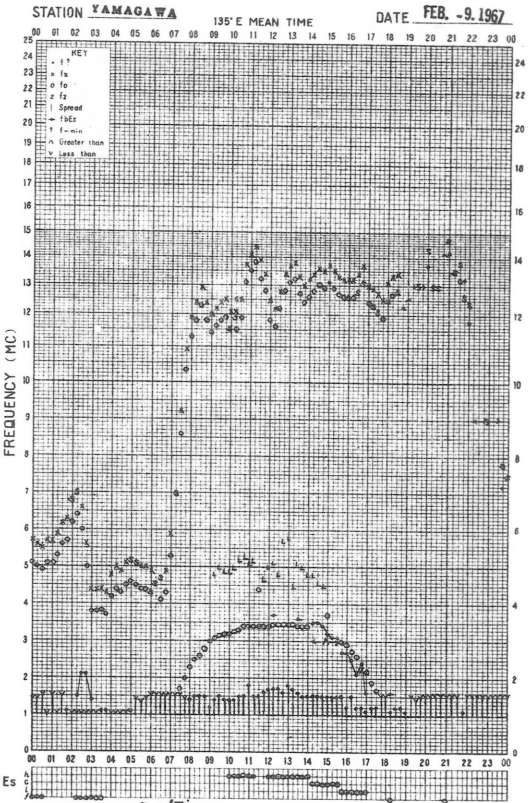

SCALED BY S. Iidoma The Radio Research Laboratories. Japan

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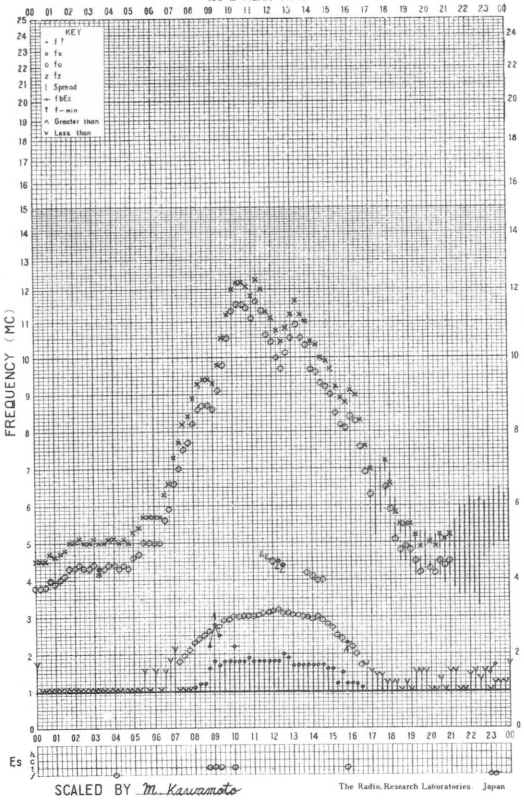

SCALED BY M. Kawamoto

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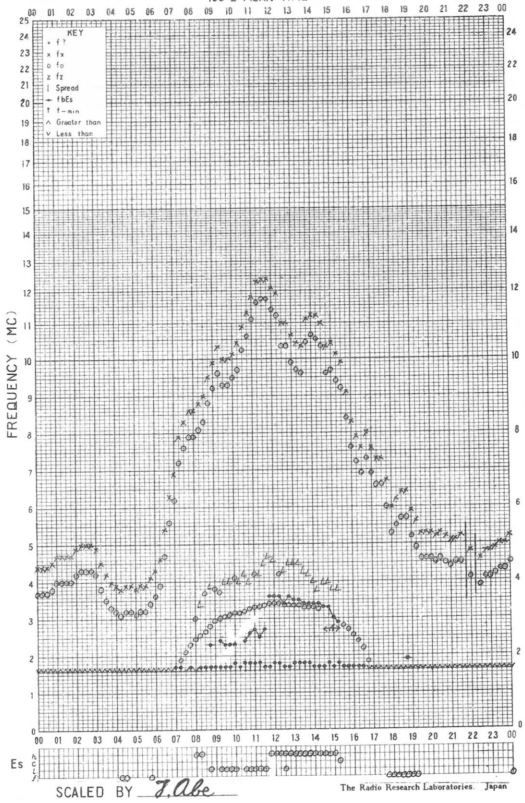

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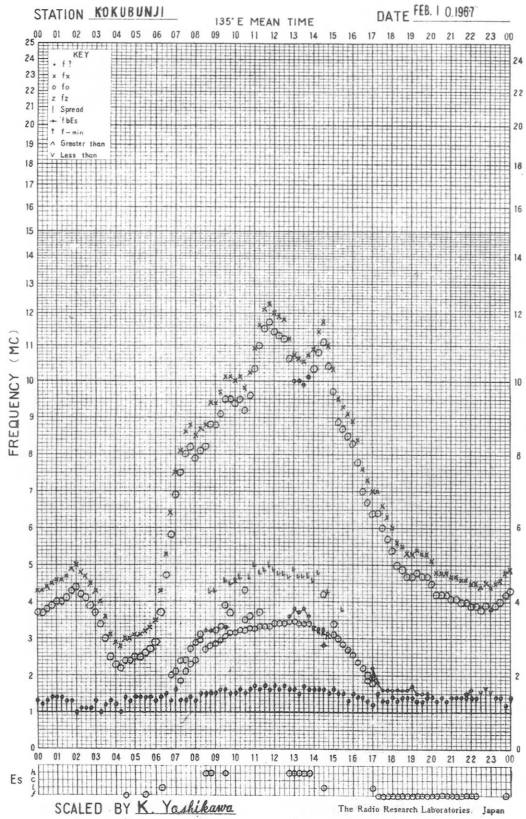
STATION KOKUBUNJI 135°E MEAN TIME DATE FEB. 10 1967

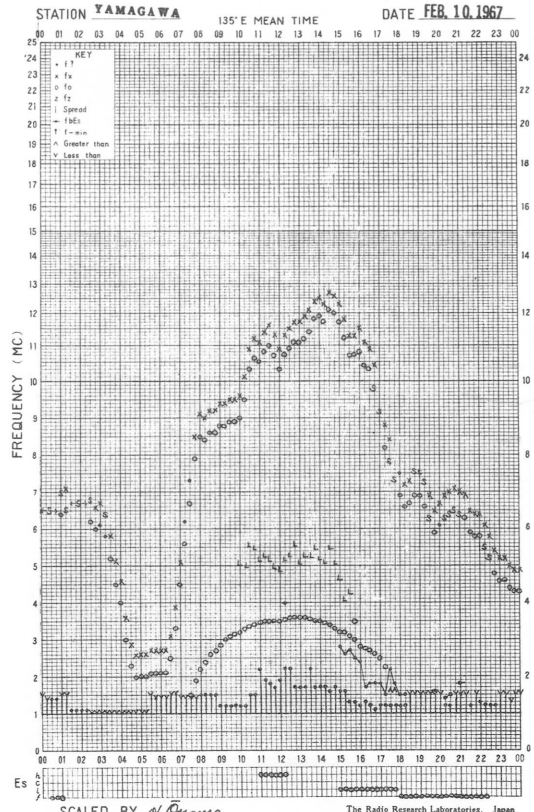


SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE FEB. 10. 1967



SCALED BY S. Oyama

The Radio Research Laboratories. Japan

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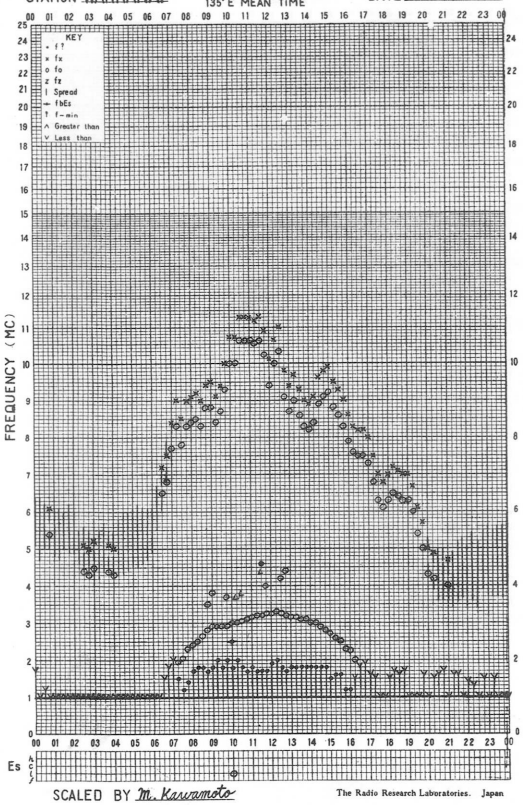

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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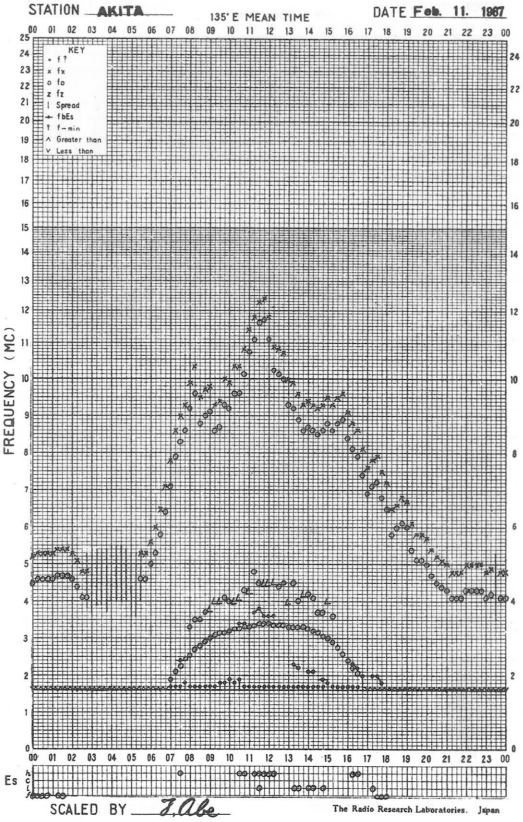

SCALED BY T. Abe The Radio Research Laboratories. Japan

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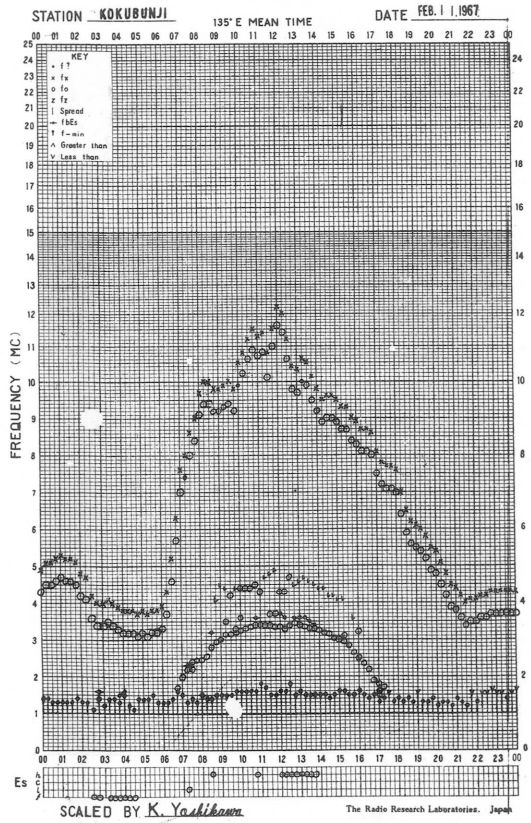

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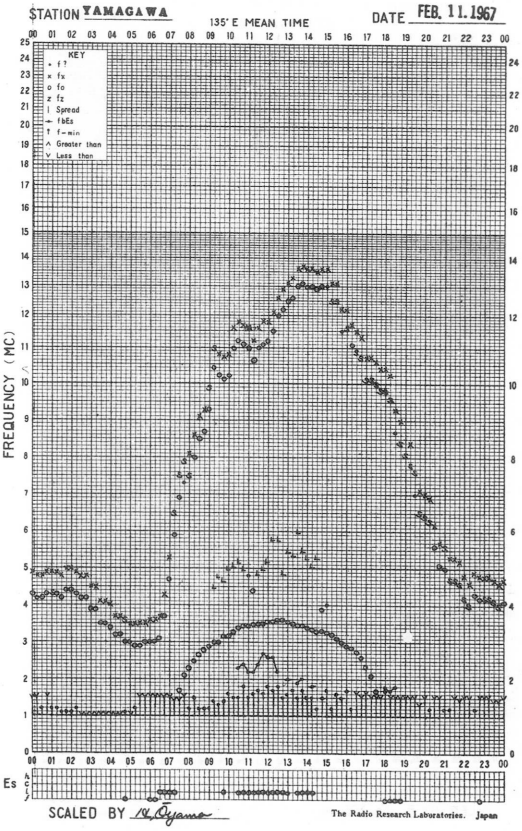

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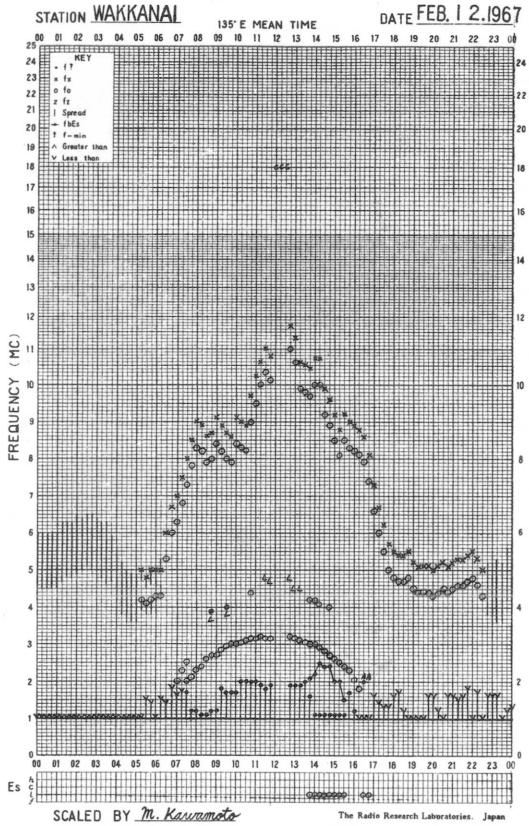

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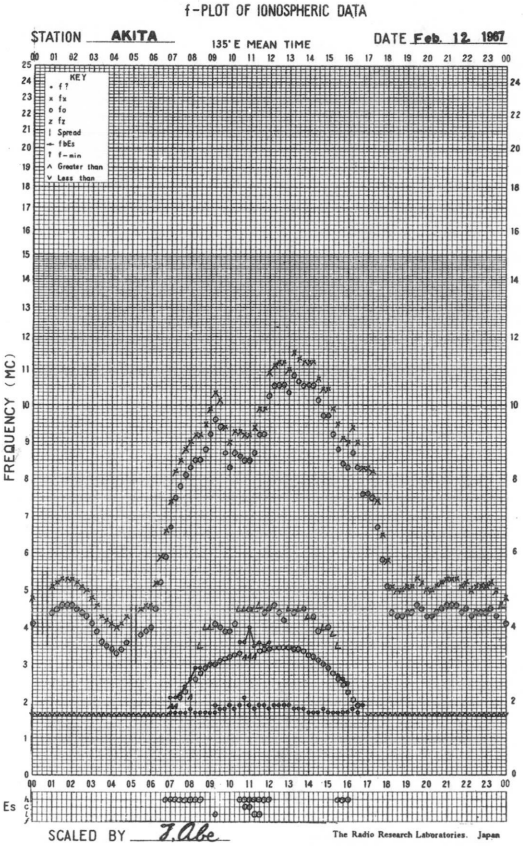

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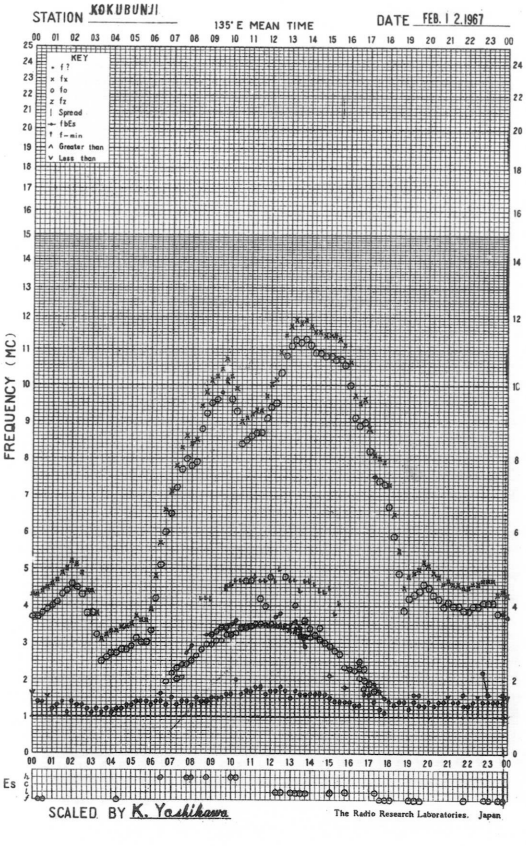

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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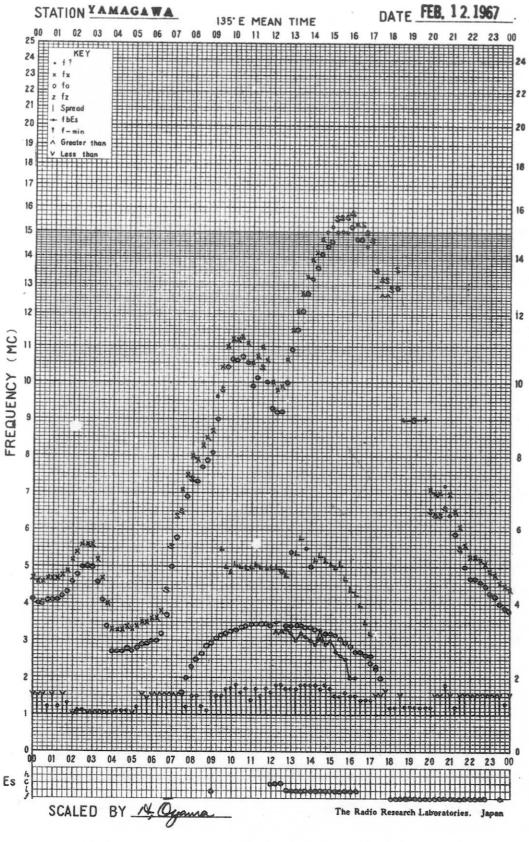
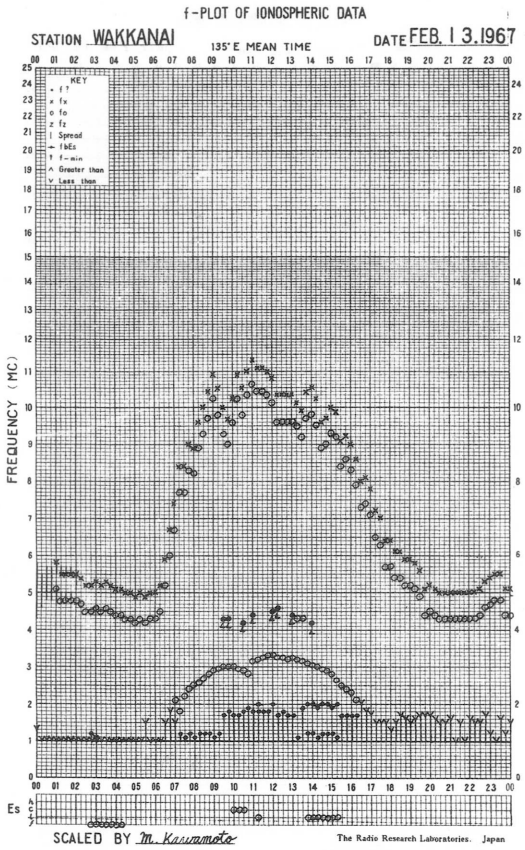


SCALED BY M. Ogawa The Radio Research Laboratories. Japan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DATE FEB. 13.1967
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FREQUENCY (MC)
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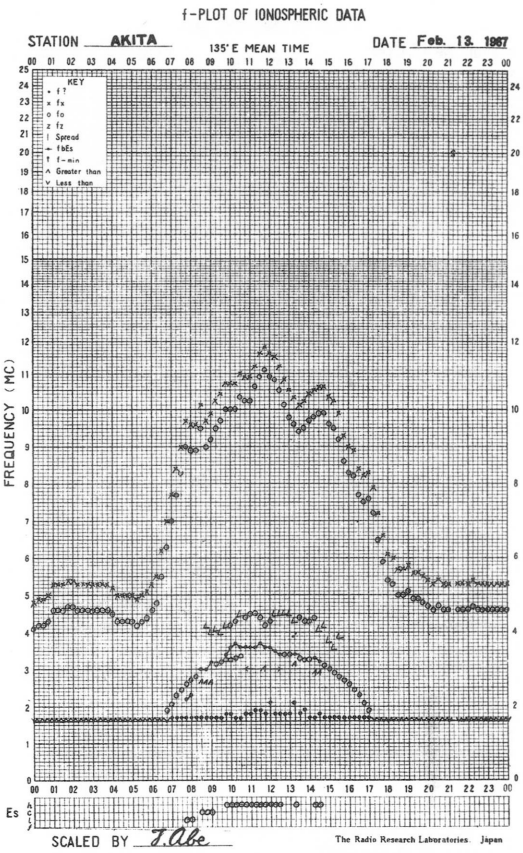
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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DATE Feb. 13. 1967
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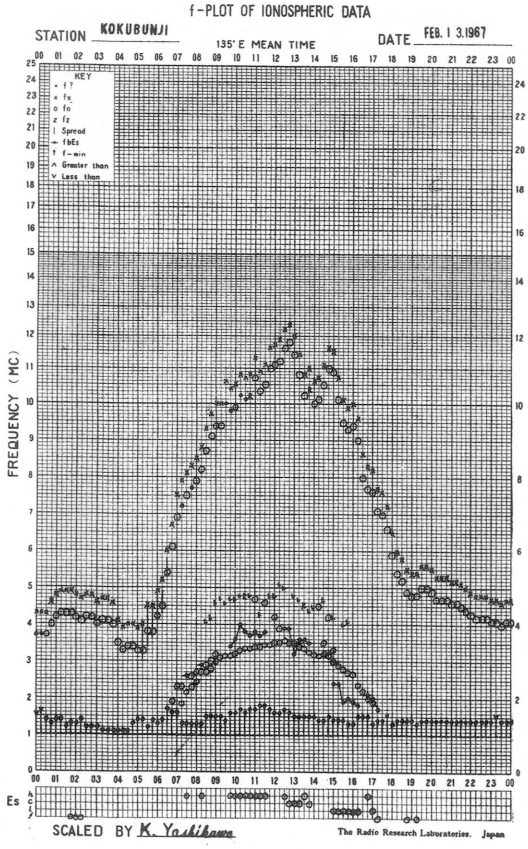
The Radio Research Laboratories. Japan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DATE FEB. 13.1967
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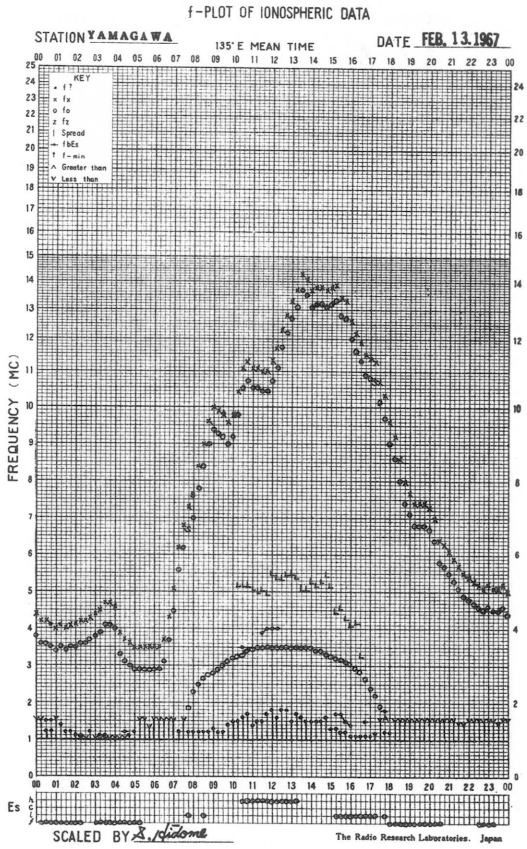
The Radio Research Laboratories. Japan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The Radio Research Laboratories. Japan

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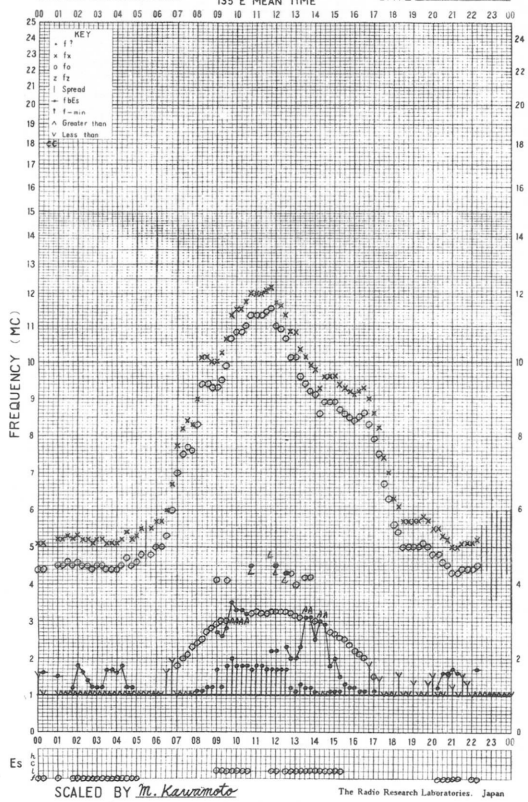

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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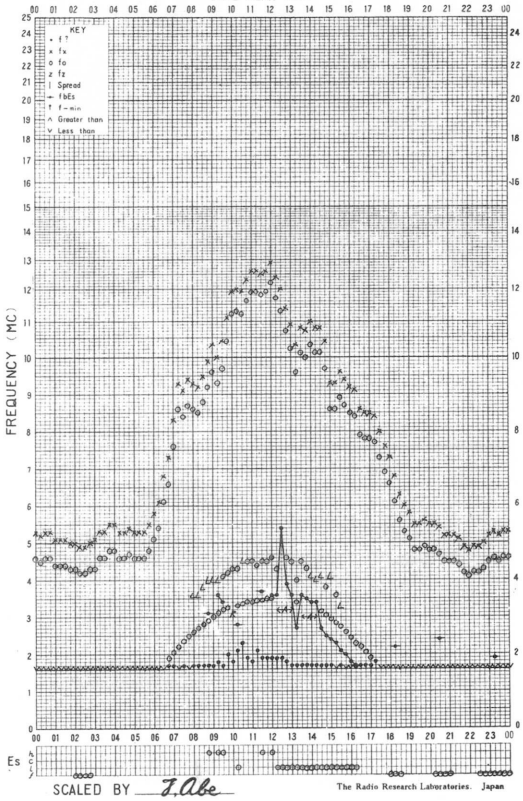

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The Radio Research Laboratories. Japan

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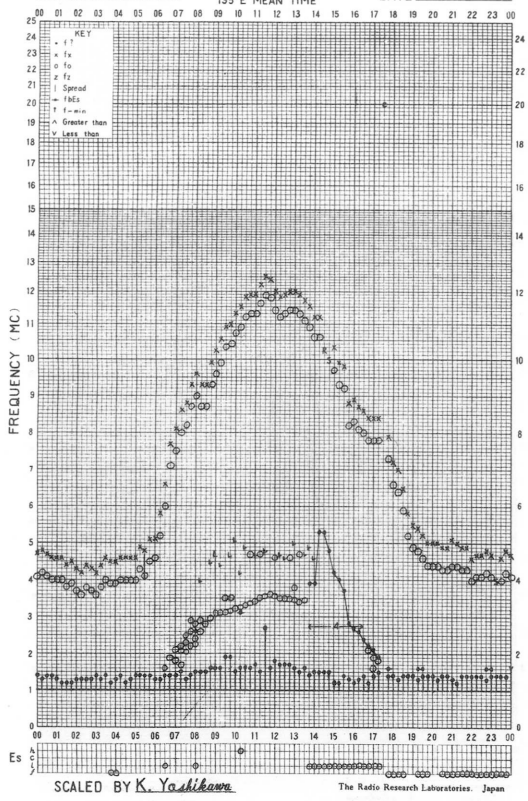

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The Radio Research Laboratories. Japan

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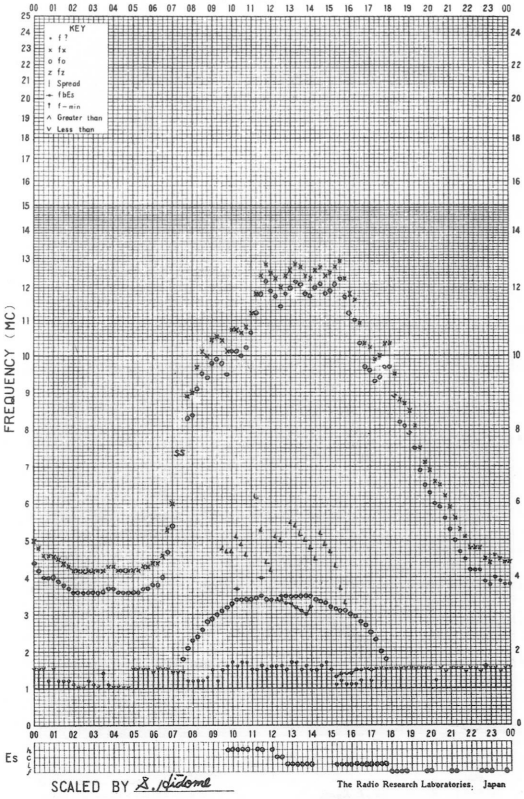

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The Radio Research Laboratories. Japan

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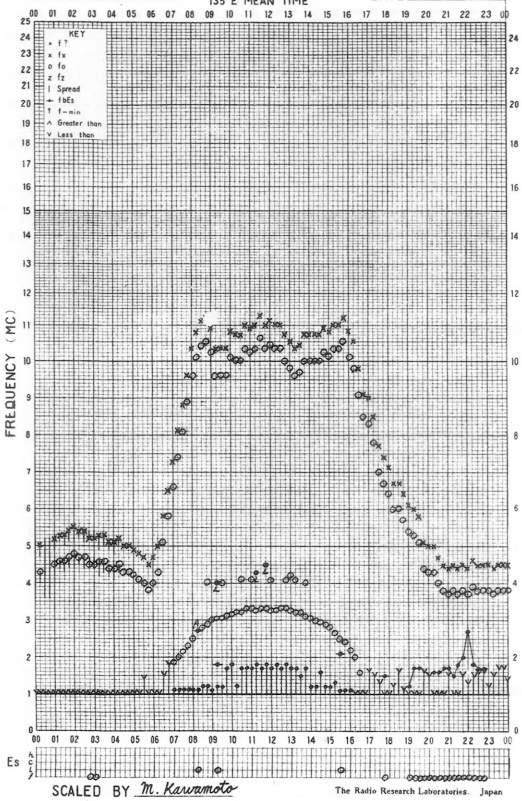

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The Radio Research Laboratories. Japan

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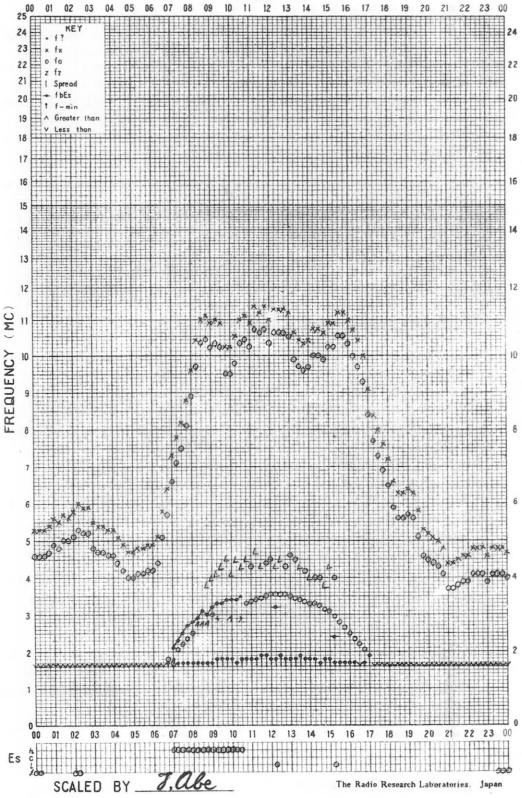

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The Radio Research Laboratories. Japan

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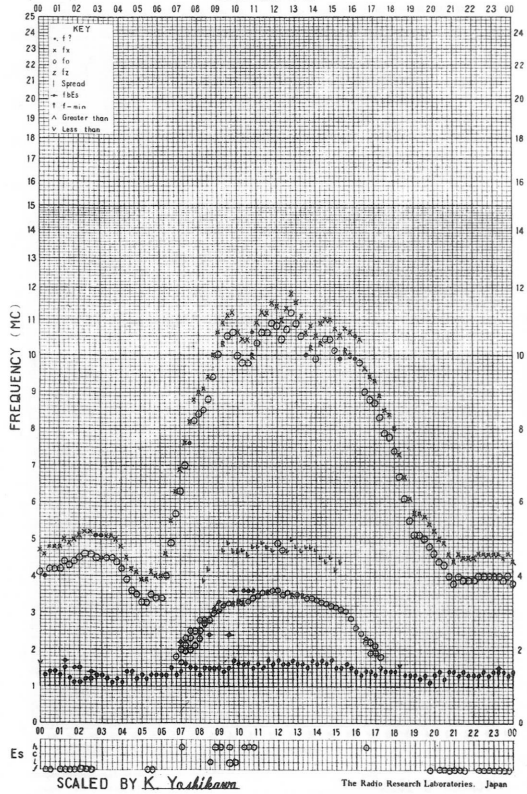

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The Radio Research Laboratories. Japan

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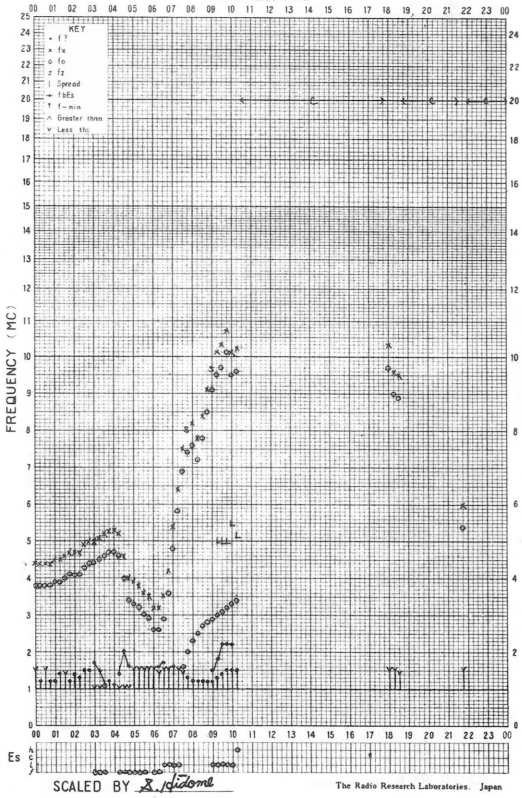

SCALED BY S. Kidoma

The Radio Research Laboratories. Japan

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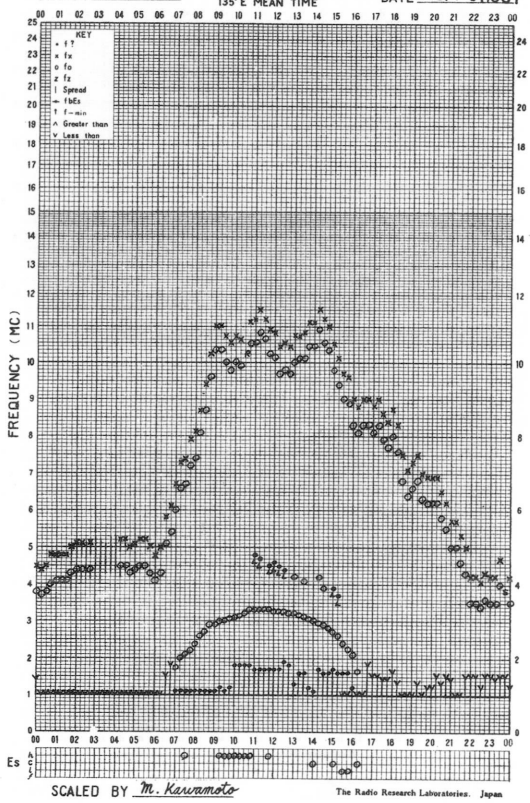

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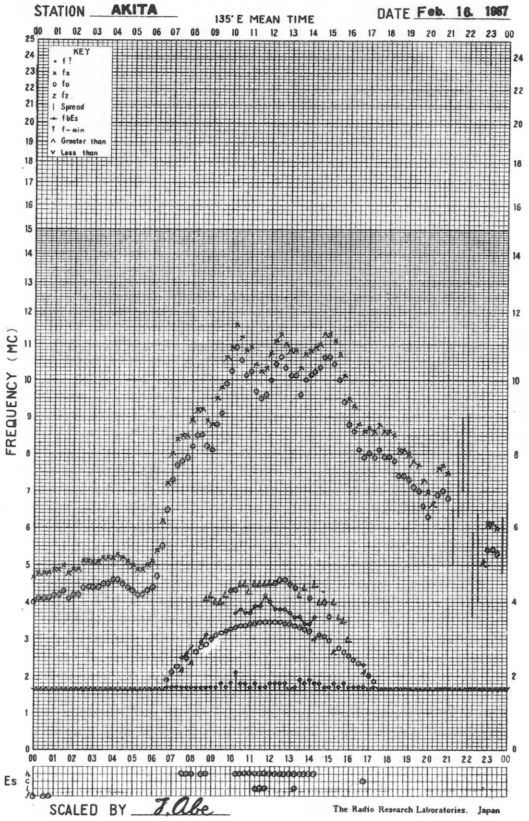

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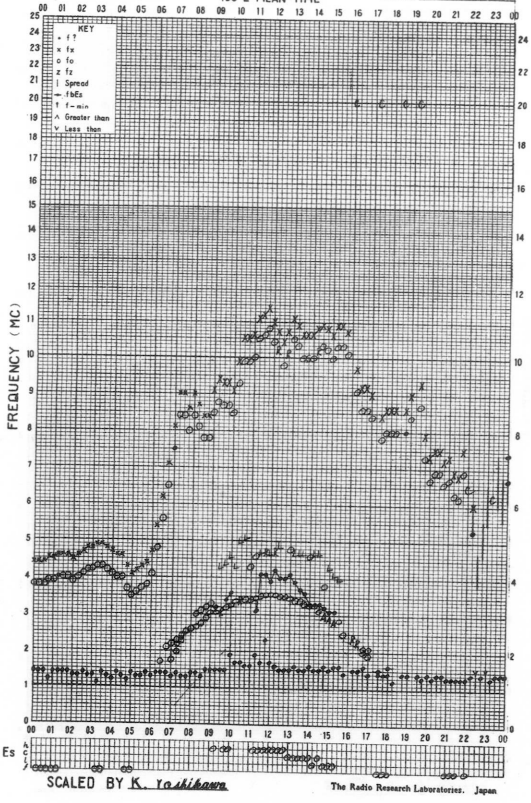

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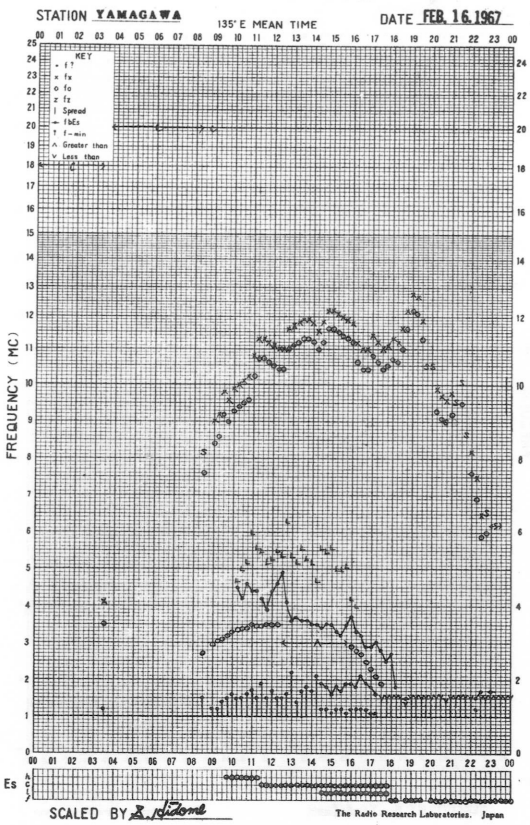

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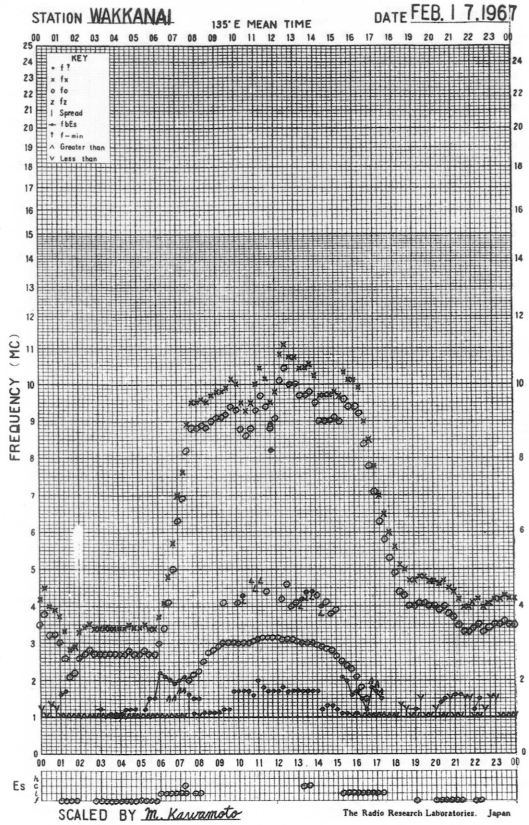

SCALED BY M. Kasuyamoto The Radio Research Laboratories. Japan

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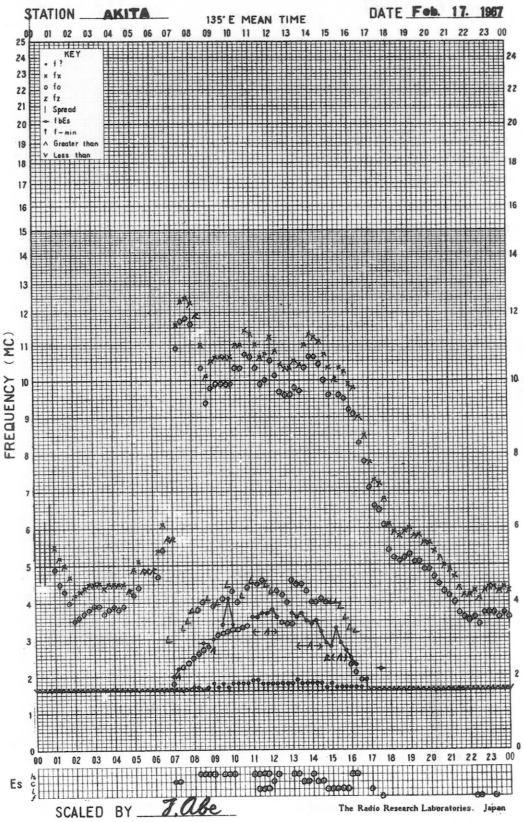

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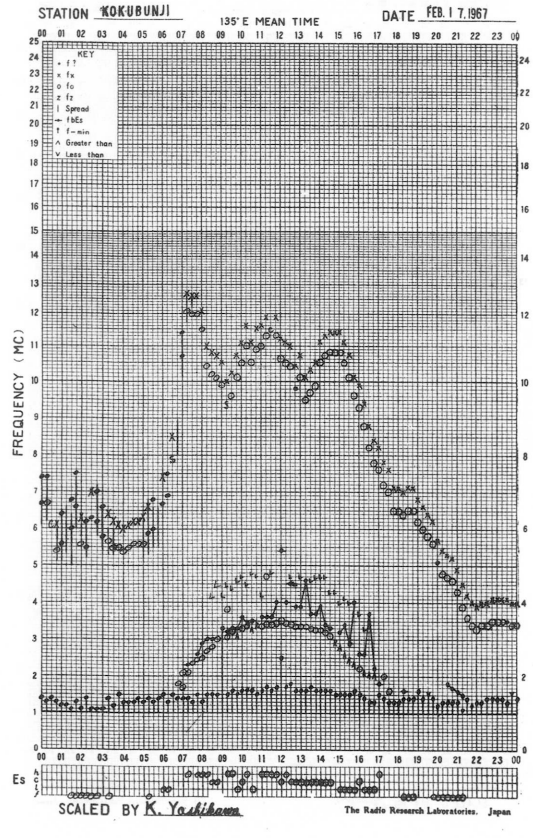

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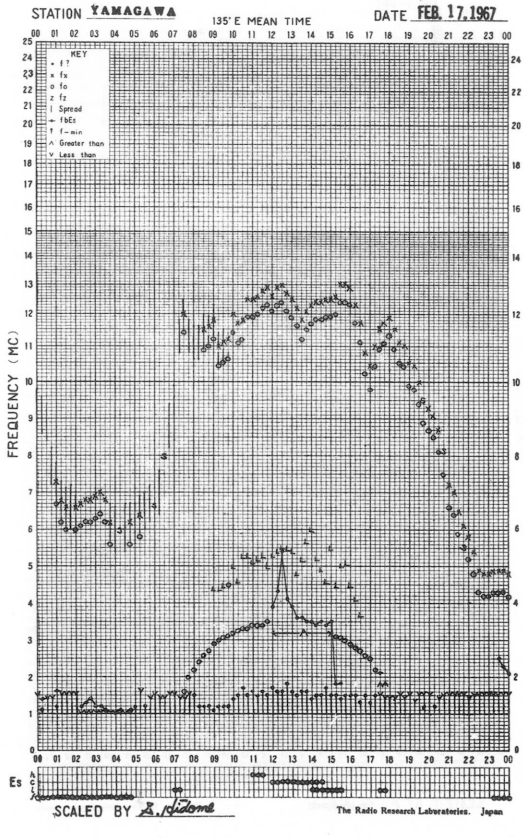

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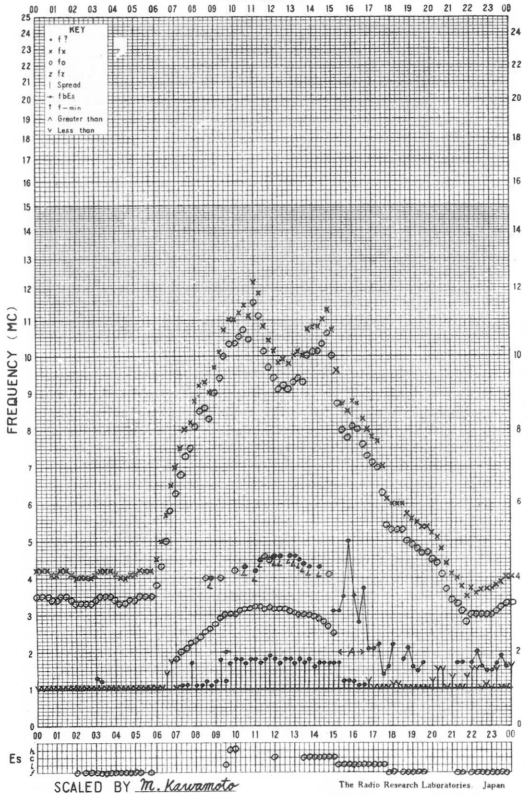

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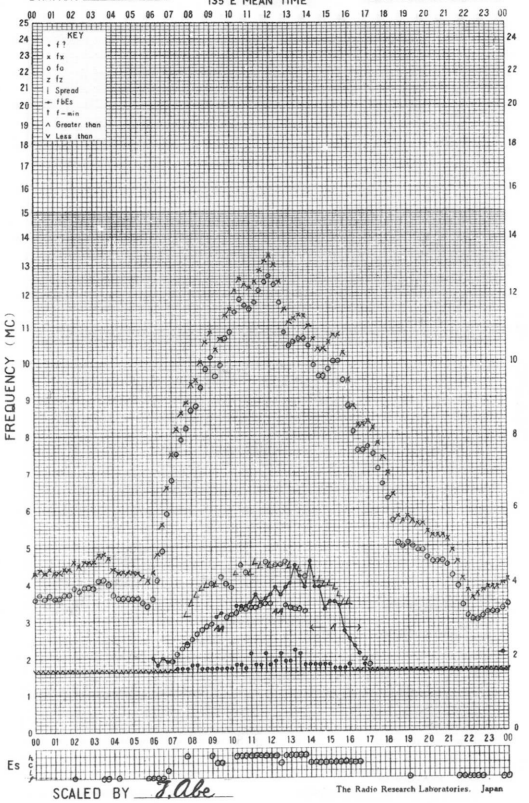

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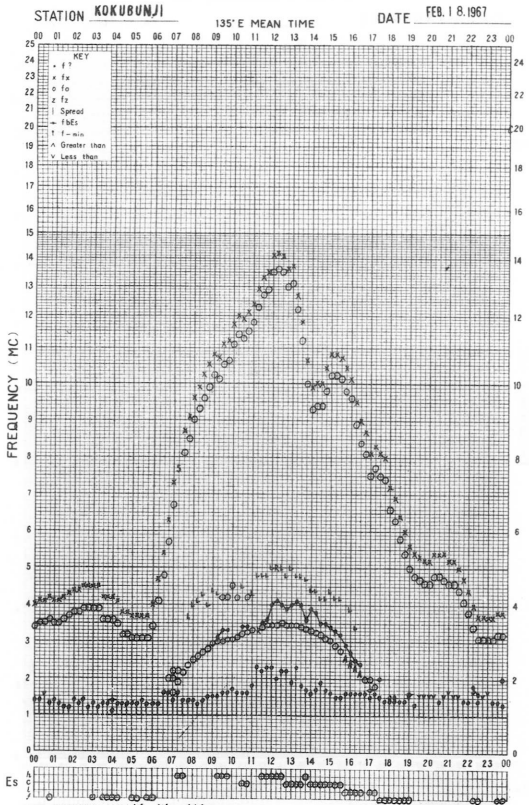

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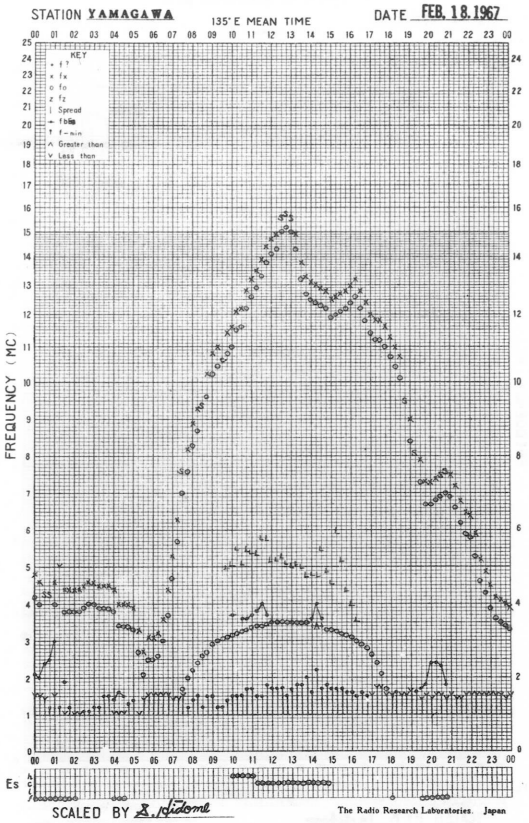

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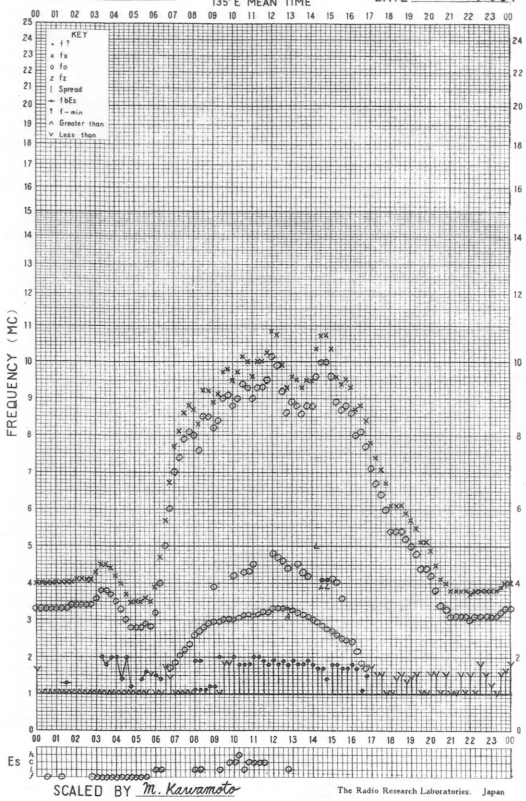

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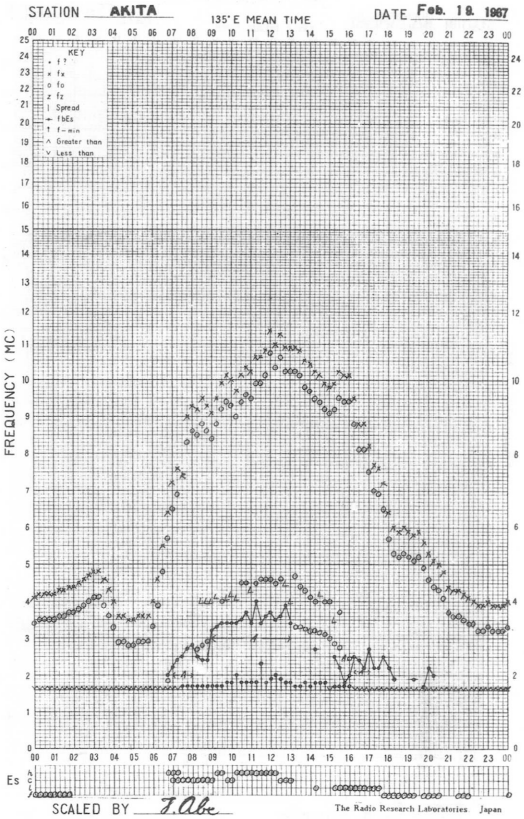

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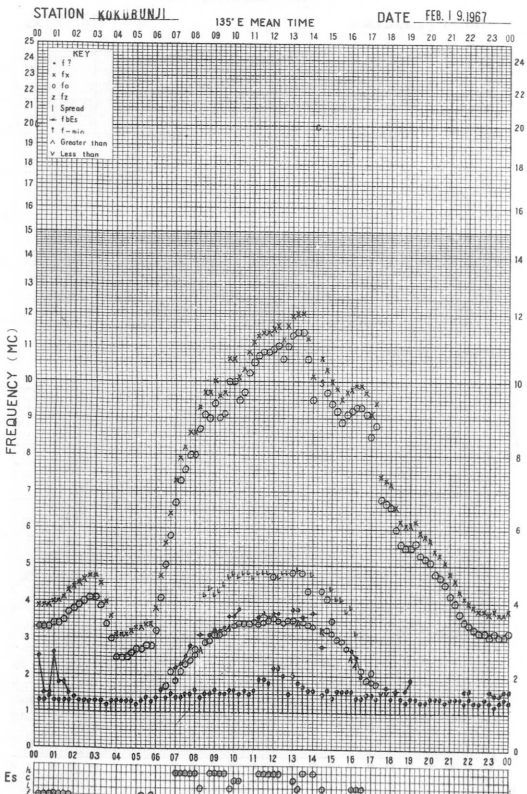

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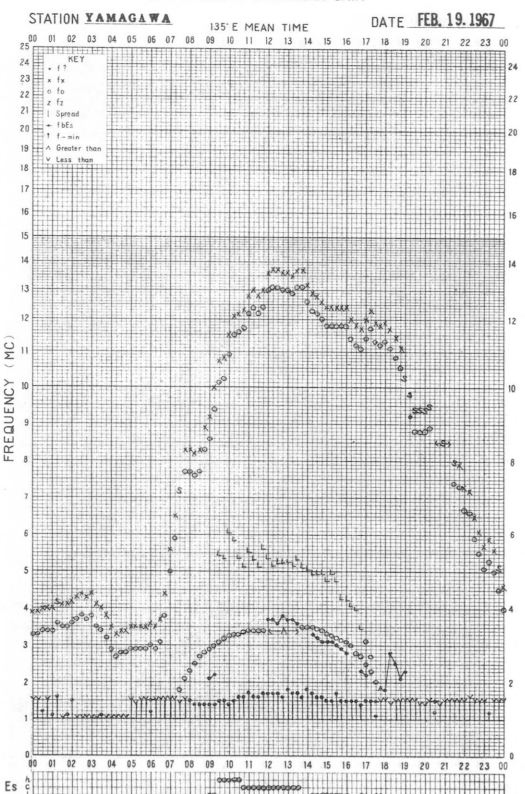

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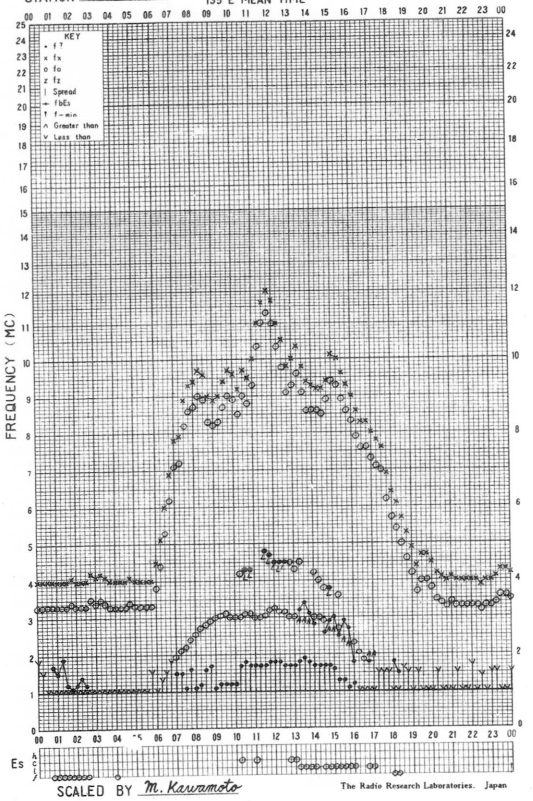

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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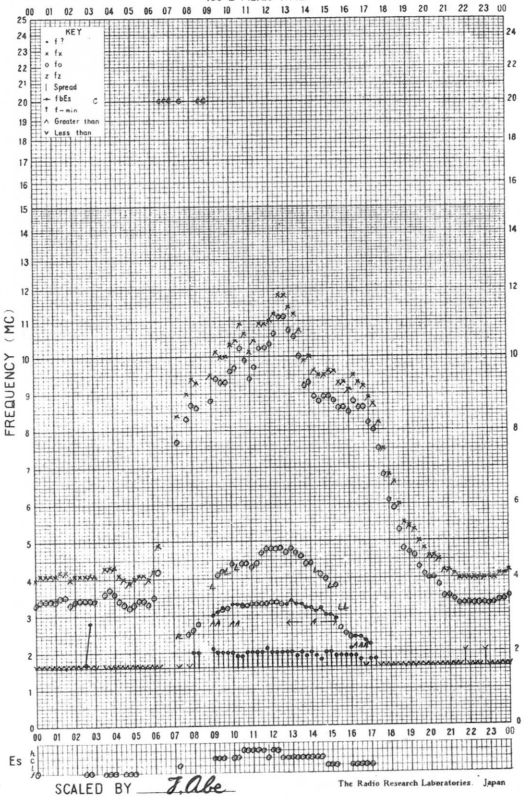

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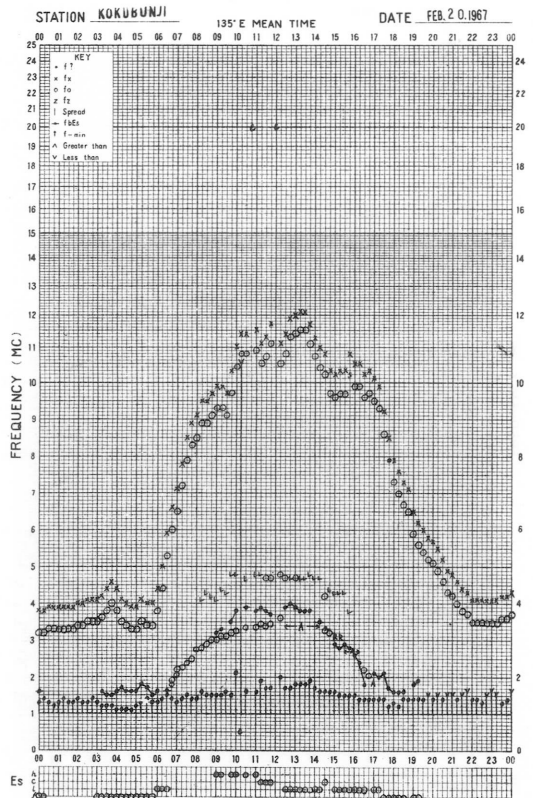

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The Radio Research Laboratories. Japan

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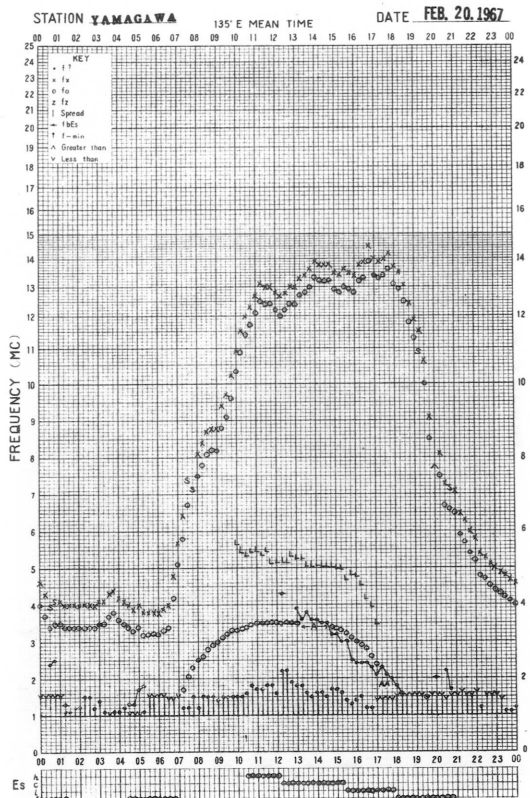

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The Radio Research Laboratories. Japan

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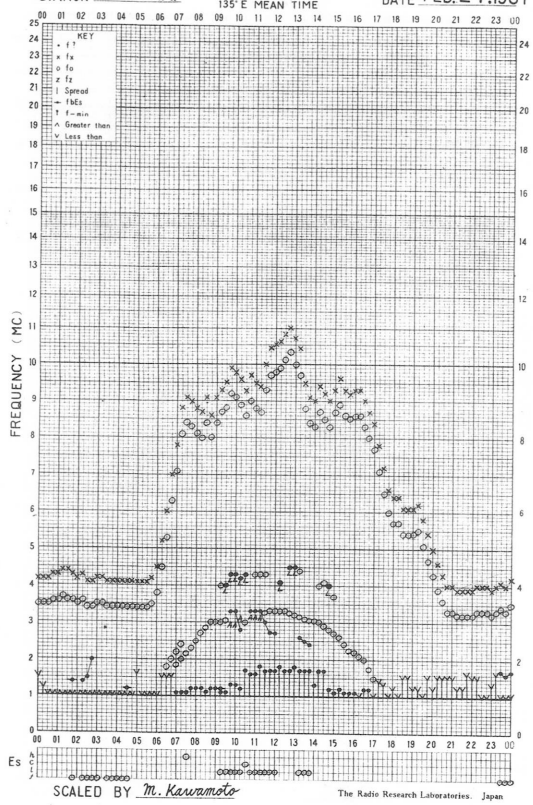

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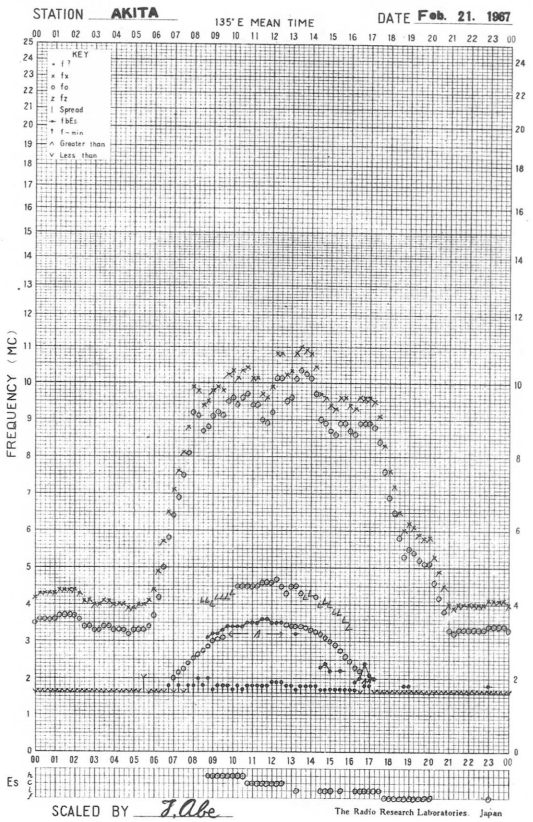
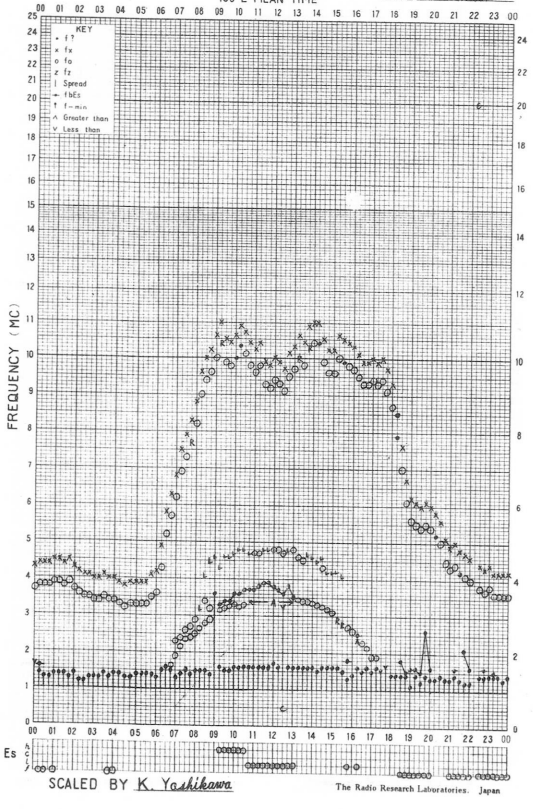


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE FEB. 21. 1967



SCALED BY K. Yashikawa

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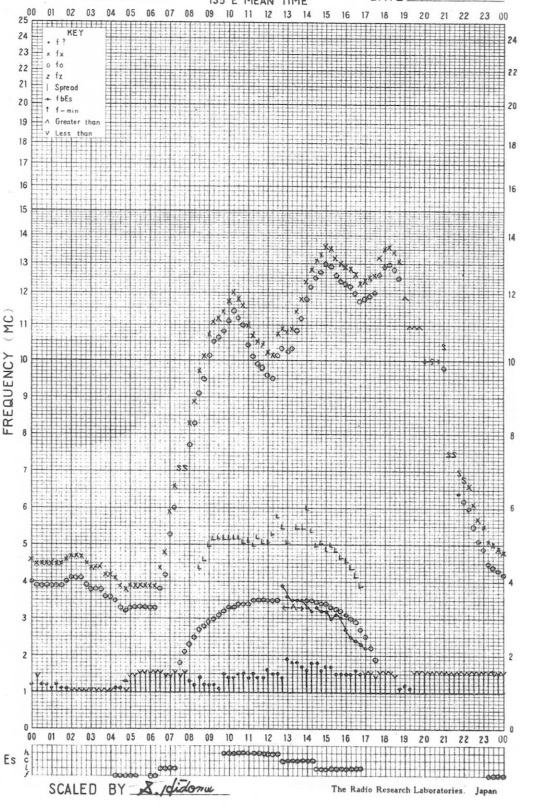
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE FEB. 21. 1967



SCALED BY A. Ishizawa

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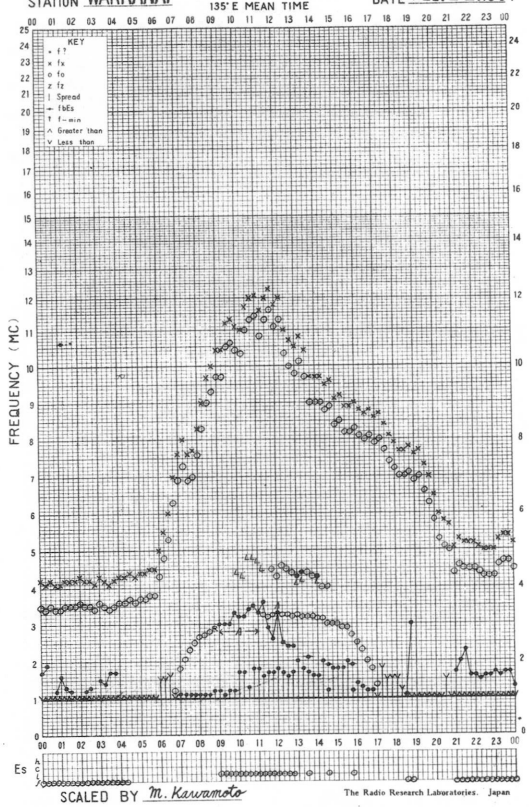
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE FEB. 22. 1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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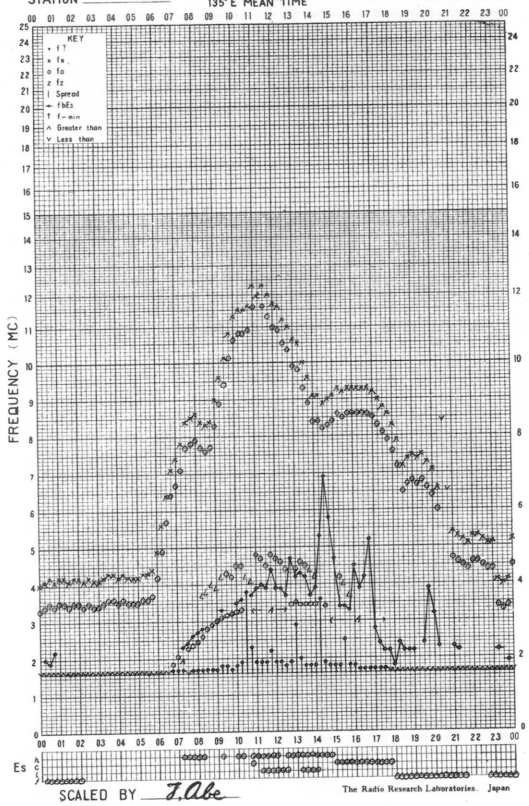

SCALED BY T. Abe

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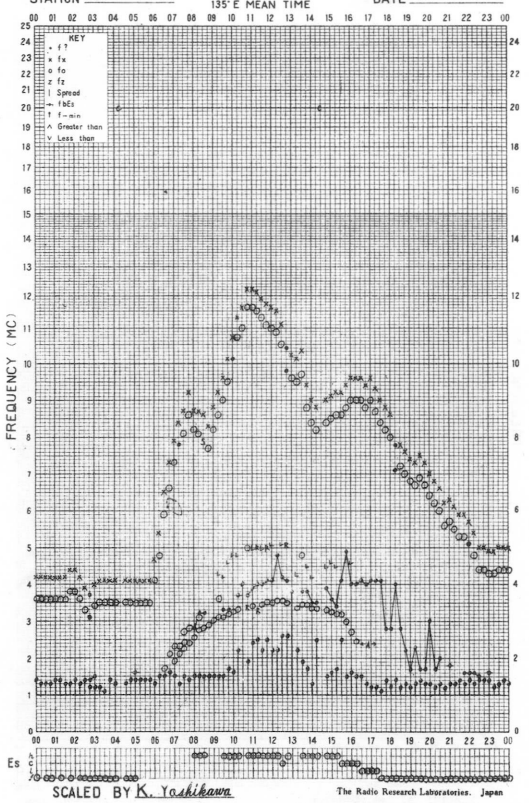
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE FEB. 22. 1967



SCALED BY K. Yoshikawa

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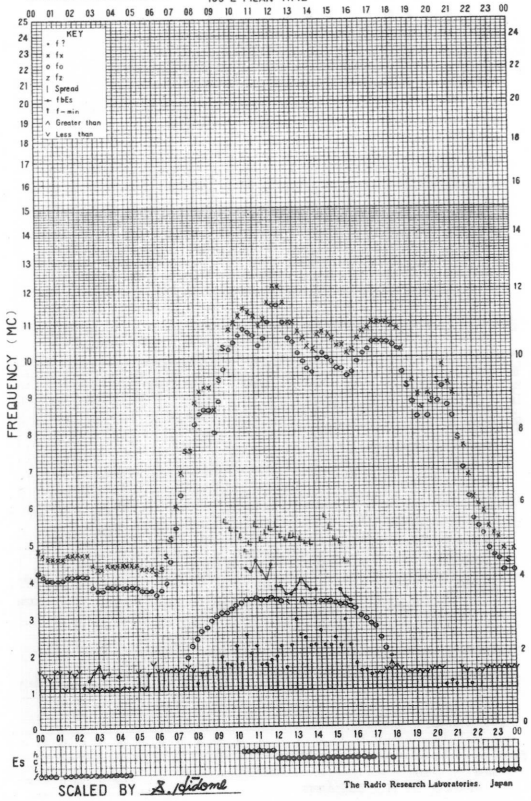
STATION YAMAGAWA 135° E MEAN TIME DATE FEB. 22. 1967



SCALED BY S. Ishimoto

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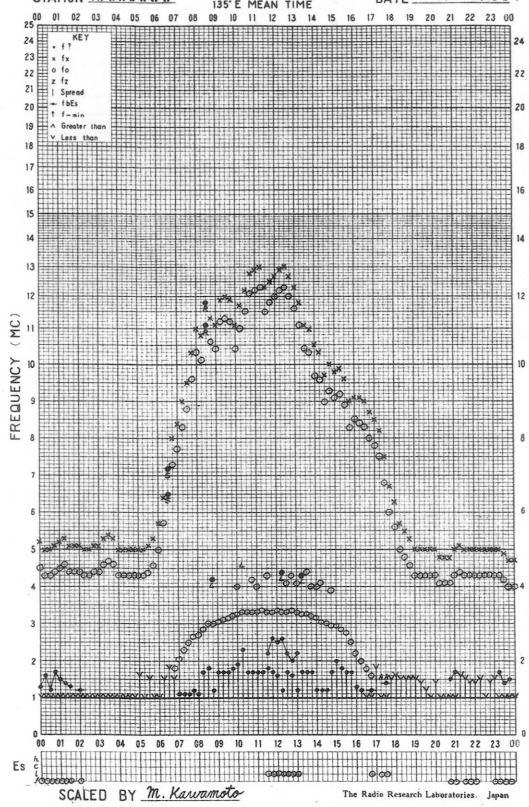
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE FEB. 23. 1967

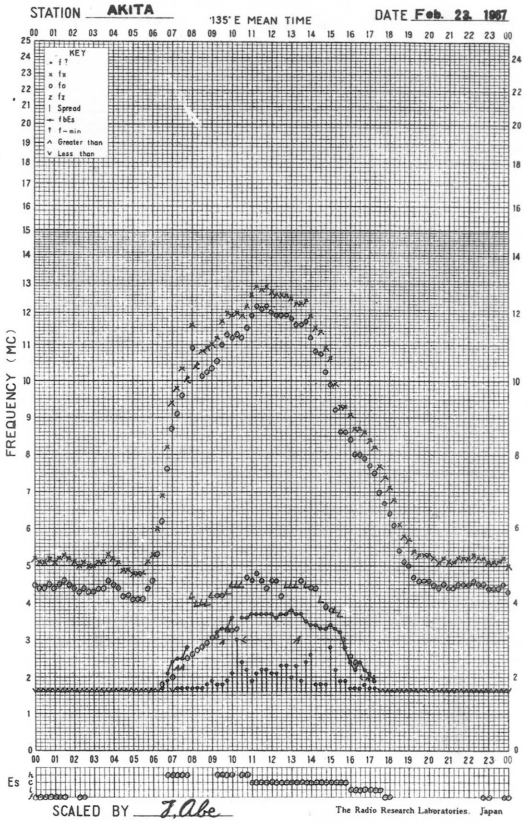


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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



SCALED BY T. Abe

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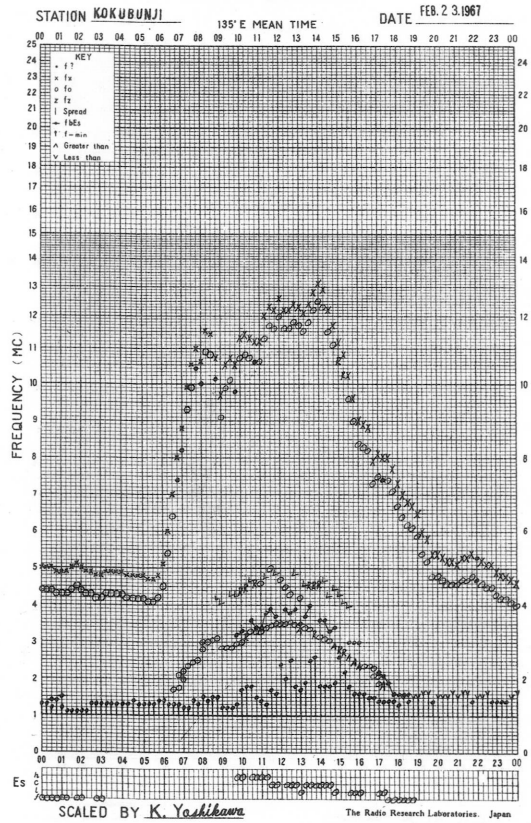
STATION KOKUBUNJI 135° E MEAN TIME DATE FEB. 23. 1967



SCALED BY K. Yoshikawa

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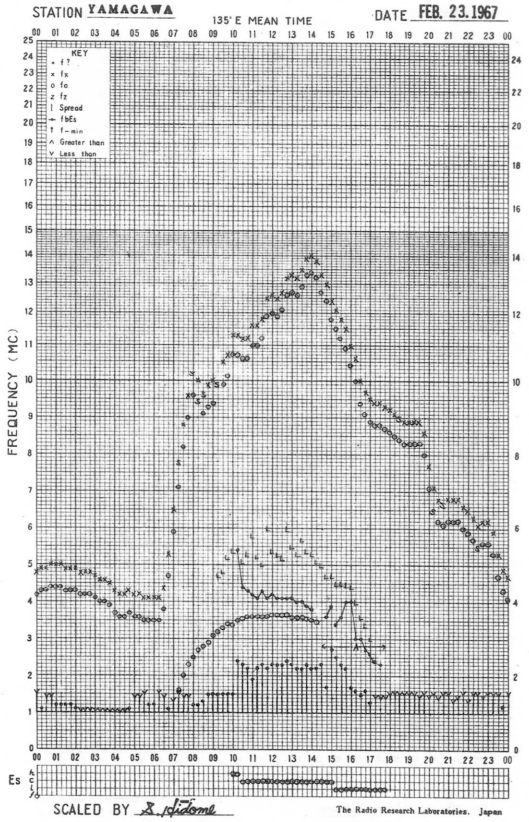
STATION YAMAGAWA 135° E MEAN TIME DATE FEB. 23. 1967

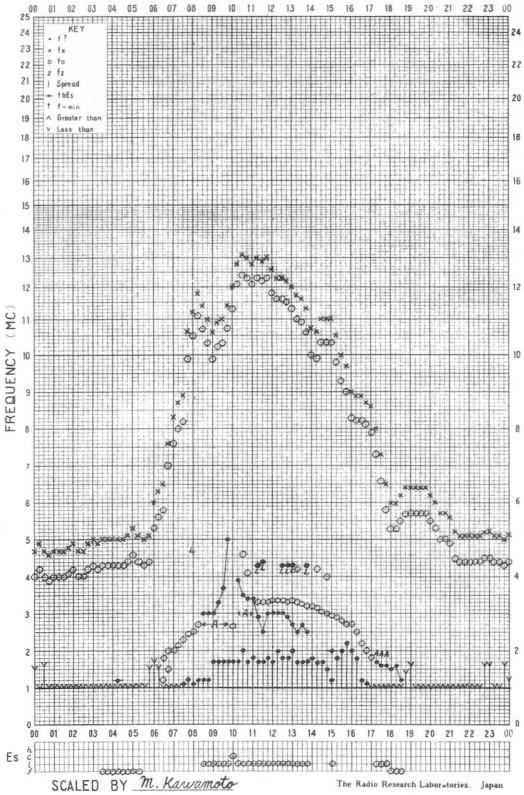


SCALED BY S. Ichiome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE FEB. 24, 1967



SCALED BY M. Kawamoto

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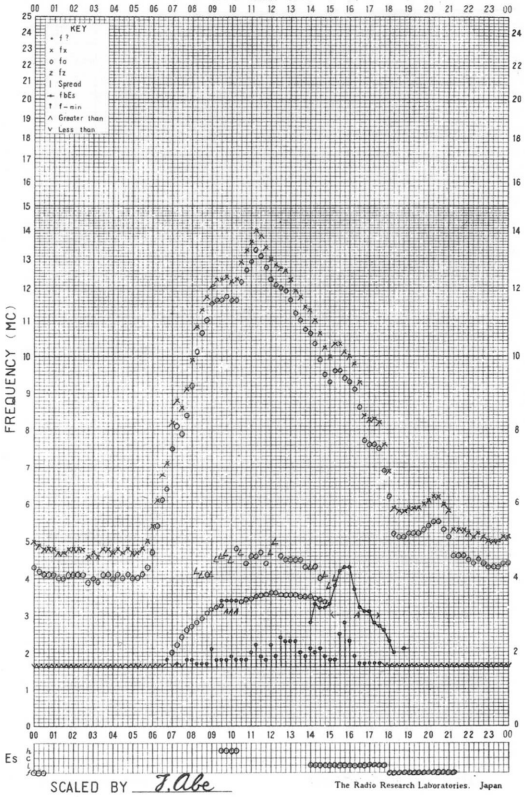

SCALED BY T. Abe

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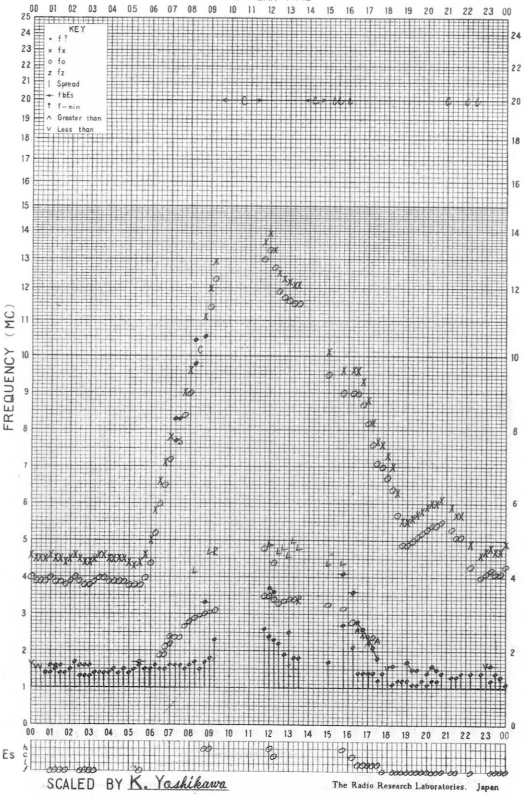
STATION KOKUBUNJI 135°E MEAN TIME DATE FEB. 24.1967



SCALED BY K. Yoshikawa

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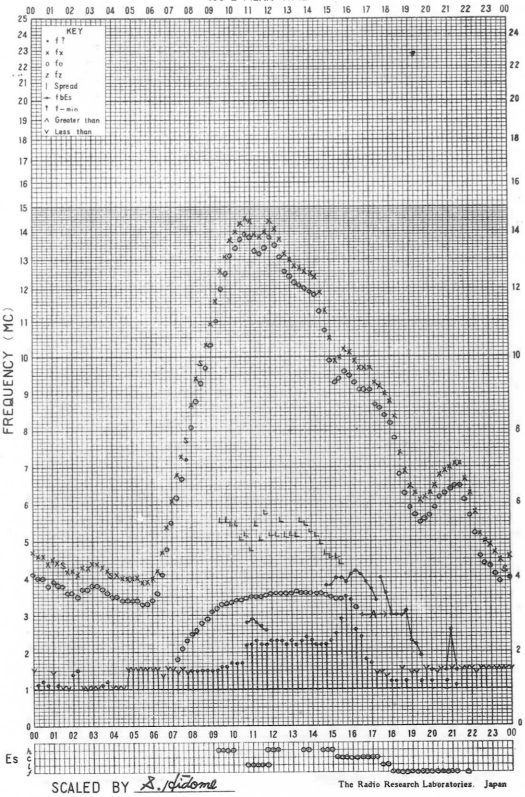
STATION YAMAGAWA 135°E MEAN TIME DATE FEB. 24, 1967



SCALED BY S. Ichome

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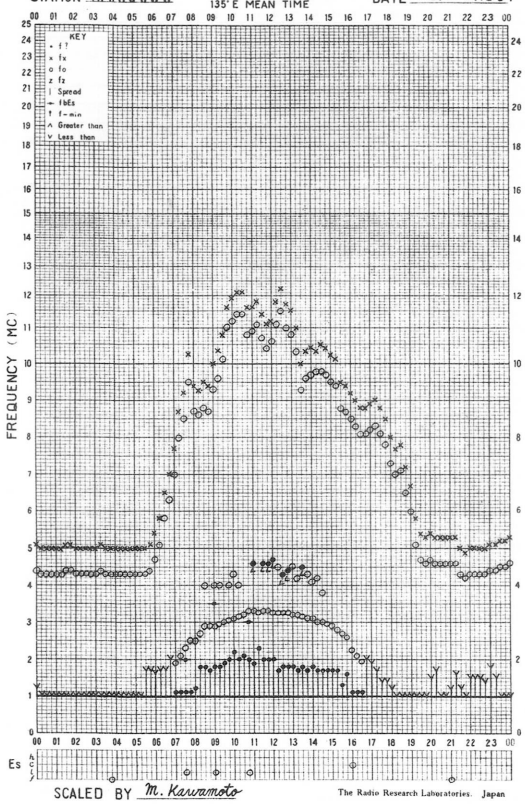
f-PLOT OF IONOSPHERIC DATA

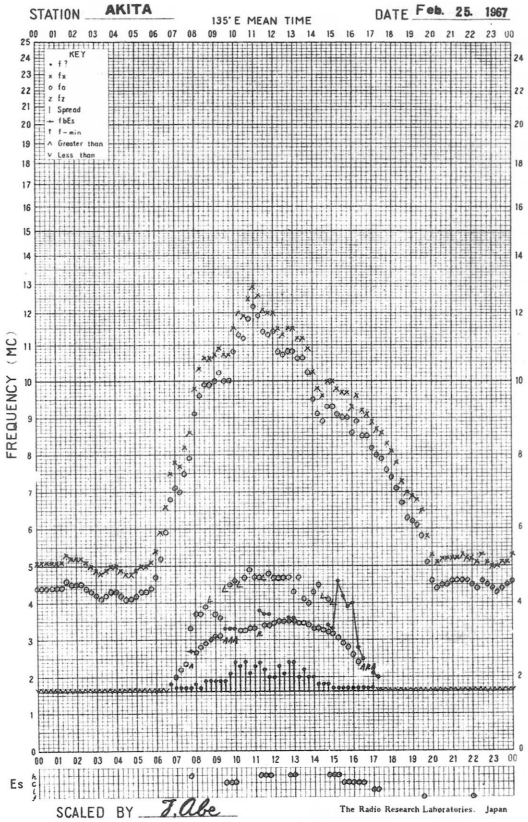
STATION WAKKANAI 135°E MEAN TIME DATE FEB. 25.1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

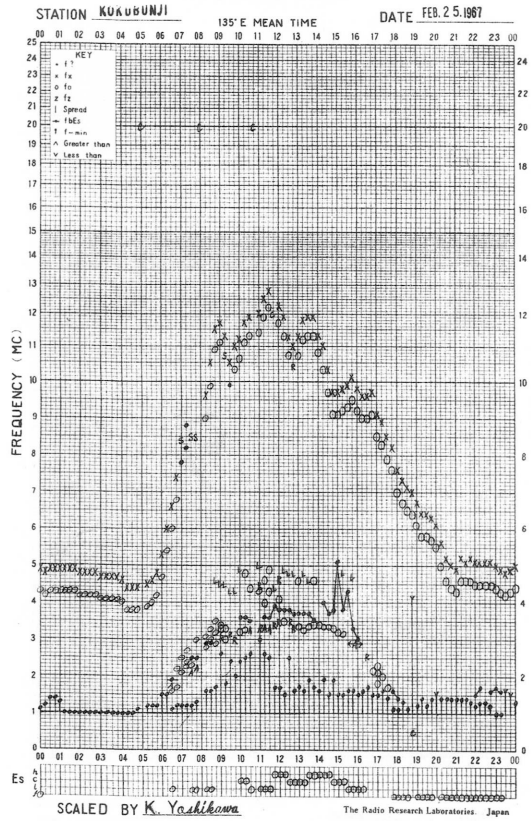
STATION AKITA 135°E MEAN TIME DATE Feb. 25. 1967



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

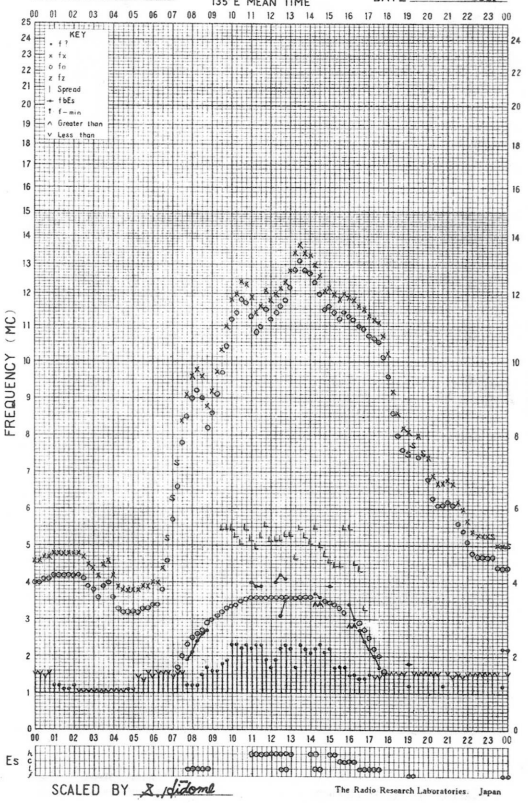
STATION KOKUBUNJI 135°E MEAN TIME DATE FEB. 25.1967



SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

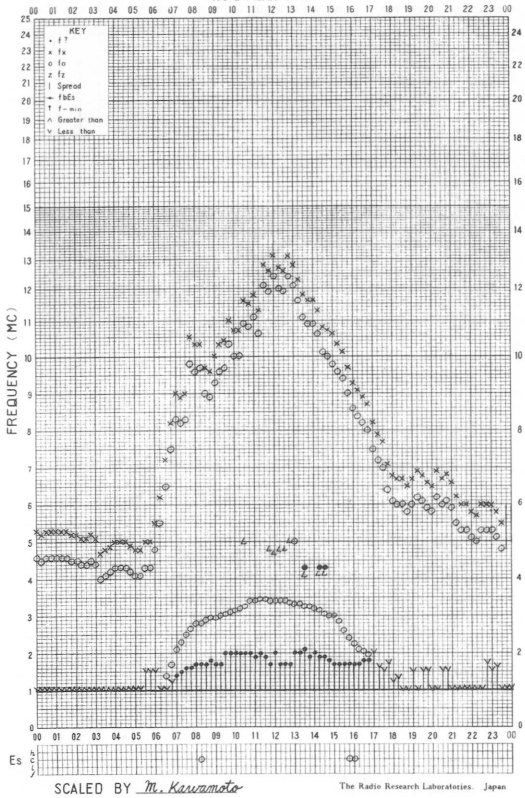
STATION YAMAGAWA 135°E MEAN TIME DATE FEB. 25. 1967



SCALED BY S. Ishitomi The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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



SCALED BY M. Kazumoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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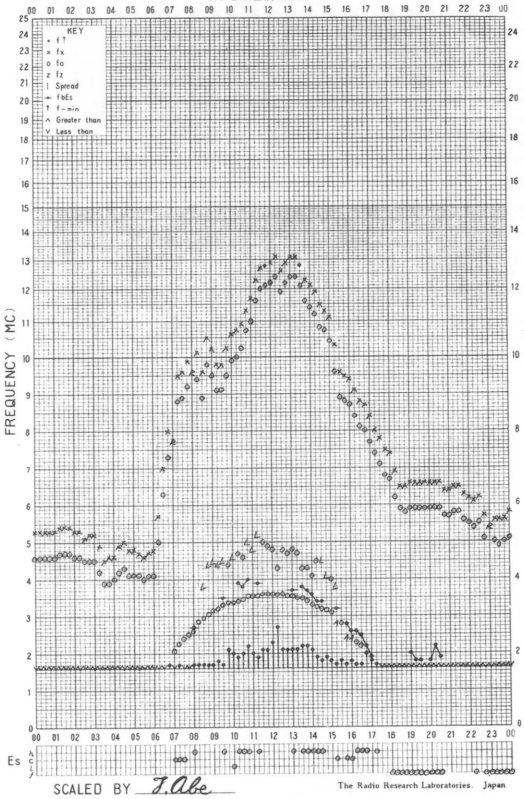

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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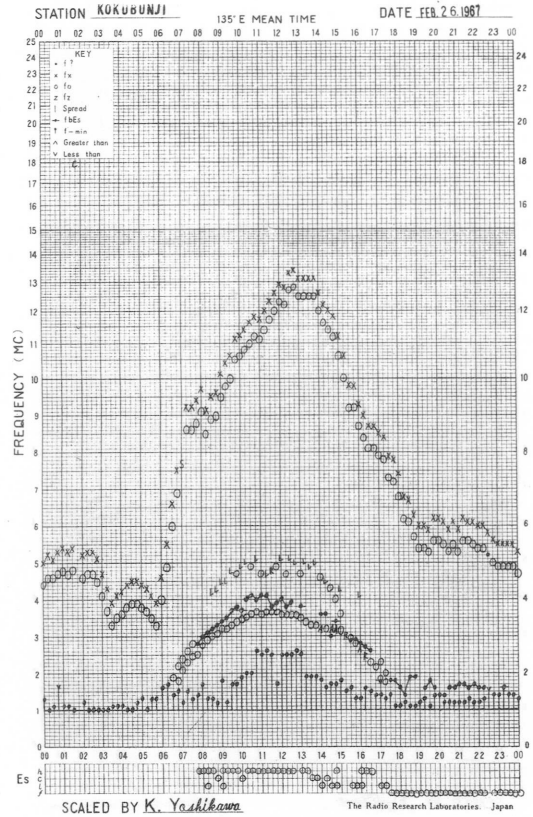

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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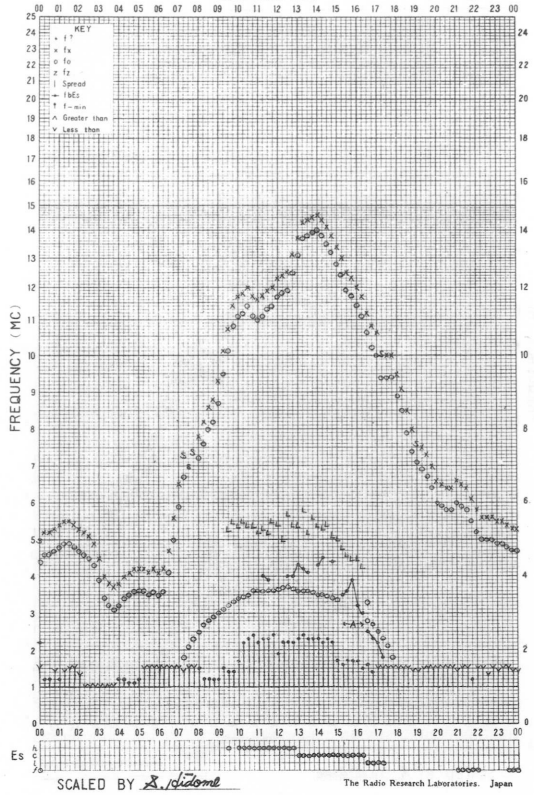
STATION YAMAGAWA 135° E MEAN TIME DATE FEB. 26. 1967

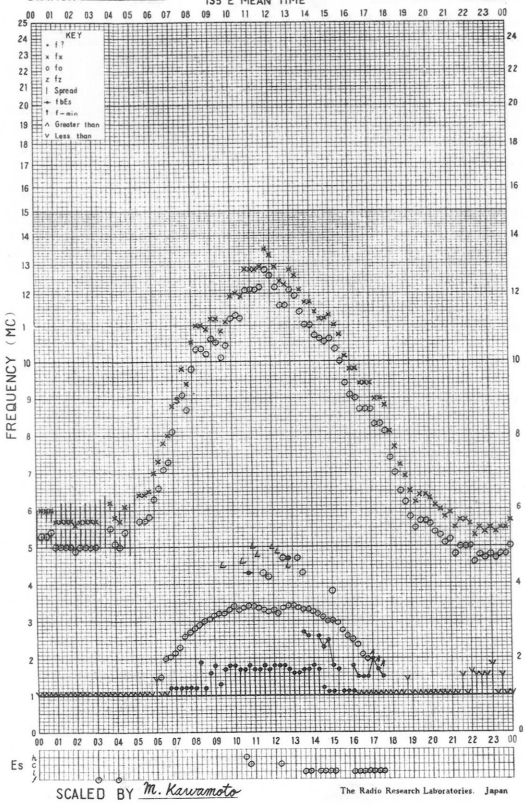


SCALED BY S. Uchome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE FEB. 2 7. 1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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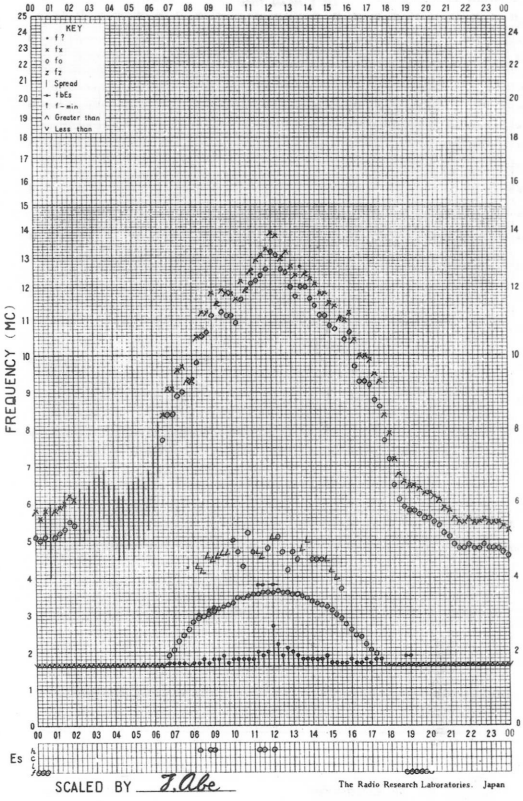

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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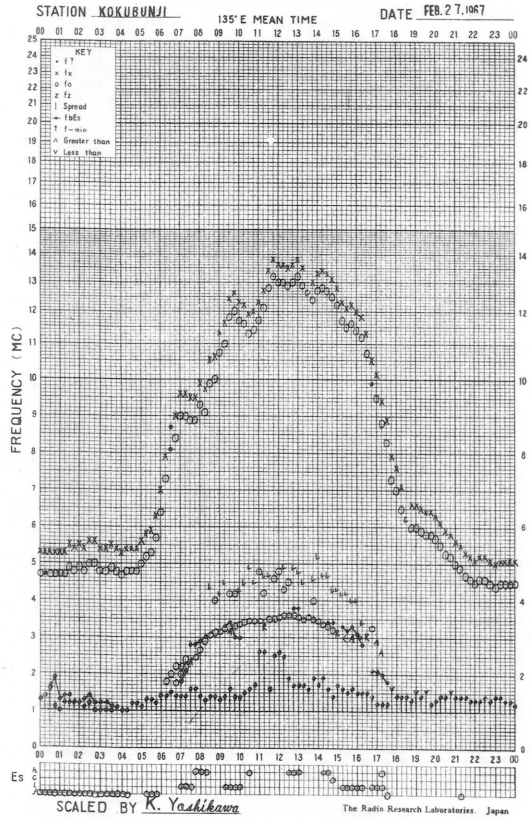

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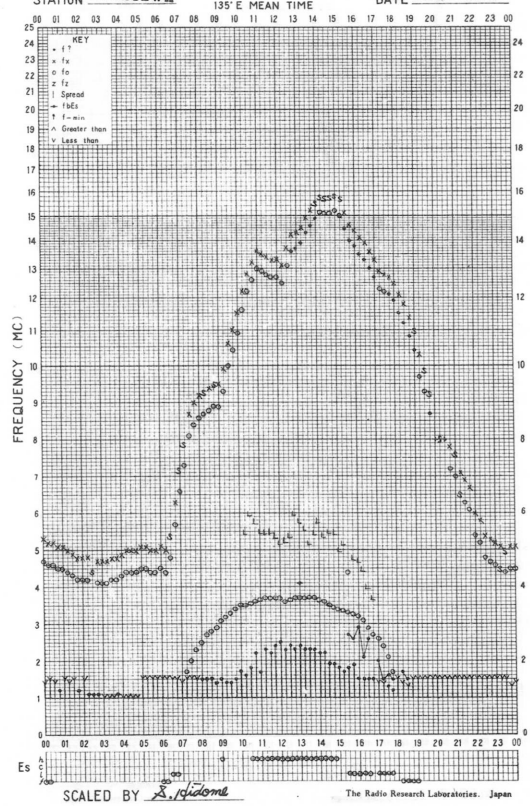
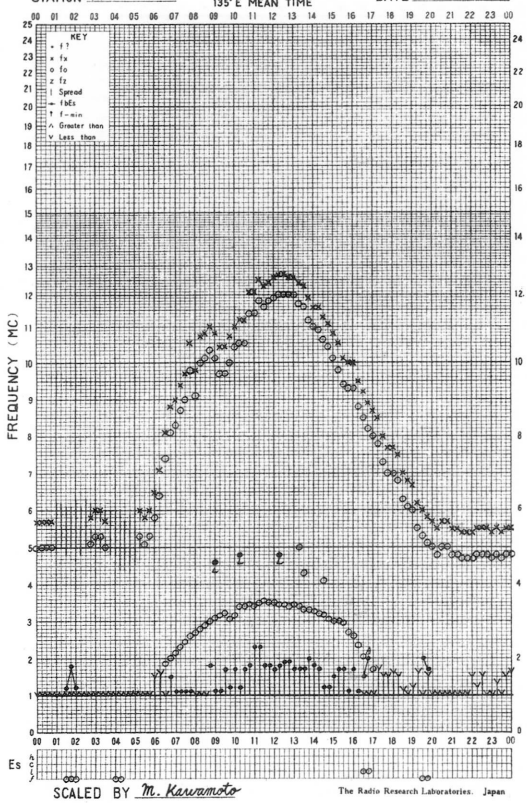


SCALED BY S. Midorne

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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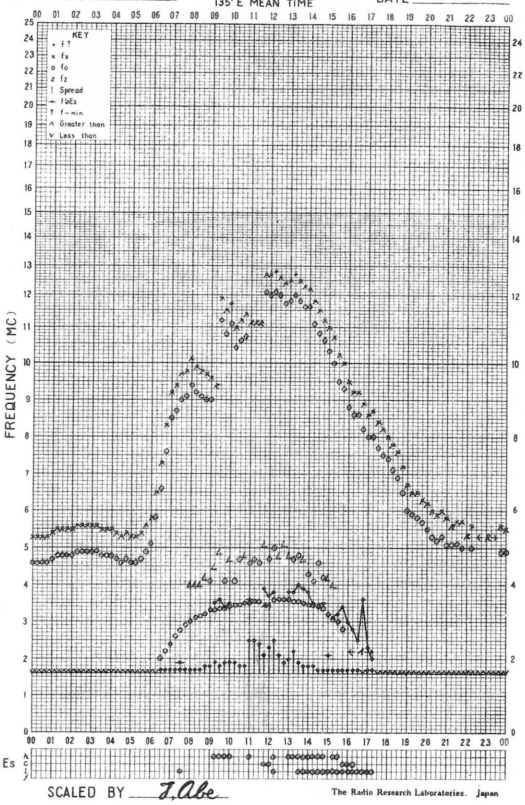

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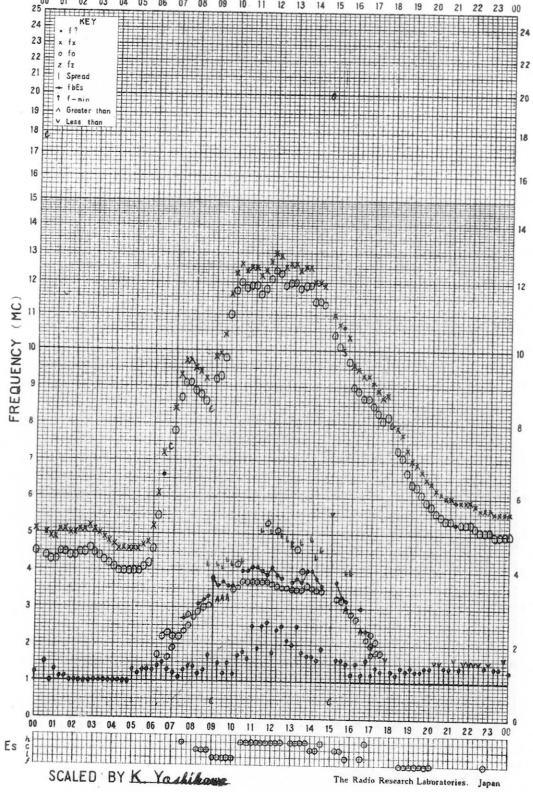

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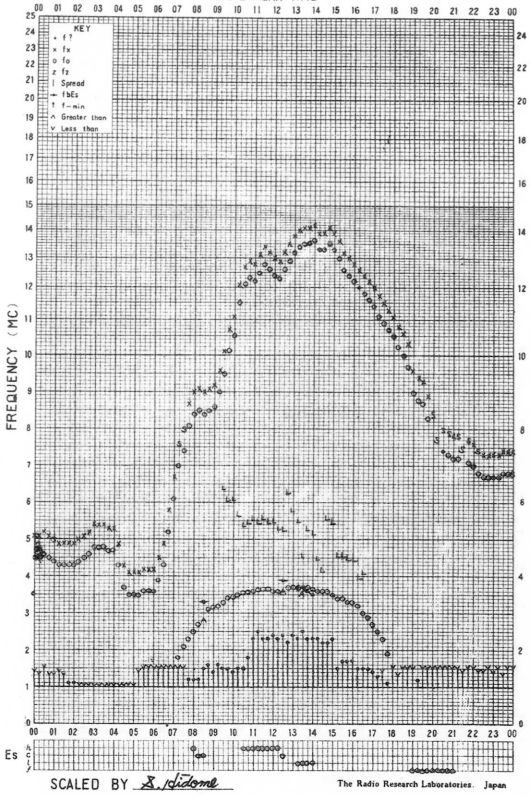

SCALED BY S. Ichidome

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SOLAR RADIO EMISSION

Flux Density and Variability

Month: February 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	9	9	(7)	10	9	0	0	(0)	0	0
2	12	13	(17)	10	12	0	1	(0)	1	0
3	12	20	(20)	13	15	1	1	(1)	0	1
4	13	(12)	(11)	(23)	13	0	(1)	(0)	(2)	0
5	19	13	(8)	-	16	1	1	(0)	-	1
6	10	10	(12)	-	11	0	0	(0)	-	0
7	18	44	(36)	(12)	32	1	2	(1)	(0)	1
8	(12)	11	(12)	-	(12)	(0)	1	(0)	-	(1)
9	11	13	(10)	-	12	1	1	(0)	-	1
10	11	10	(12)	(7)	11	0	0	(0)	(0)	0
11	8	(q)	(8)	-	(8)	0	(0)	(0)	-	(0)
12	9	8	(7)	-	8	0	0	(0)	-	0
13	8	(q)	(q)	-	(q)	0	(0)	(0)	-	(0)
14	(q)	(q)	(q)	-	(q)	(0)	(0)	(0)	-	(0)
15	(q)	(q)	(q)	-	(q)	(0)	(0)	(0)	-	(0)
16	(q)	(q)	(q)	-	(q)	(0)	(0)	(0)	-	(0)
17	(q)	(q)	(q)	-	(q)	(0)	(0)	(0)	-	(0)
18	(q)	(q)	(q)	(q)	(q)	(0)	(0)	(0)	(0)	(0)
19	-	(q)	(q)	7	(q)	-	(0)	(0)	1	(0)
20	12	9	(7)	7	10	0	0	(0)	0	0
21	10	9	(10)	9	9	1	1	(1)	1	1
22	11	33	(12)	(55)	19	1	1	(1)	(3)	1
23	34	29	(13)	-	32	2	2	(2)	-	2
24	12	13	(26)	22	15	0	1	(2)	1	1
25	37	24	(58)	27	32	0	2	(2)	1	1
26	58	73	(71)	-	57	1	1	(1)	-	1
27	21	13	(11)	7	16	0	0	(0)	0	0
28	9	10	(9)	11	10	0	0	(0)	1	0

Note No observations during the following periods:

4th	0318-	0420	12th	2120-	2400
4th	0500-	0600	13th	2120-	2400
4th	2120-	2300	14th	2120-	2400
5th	2120-	2400	15th	2120-	2400
6th	2120-	2400	16th	2120-	2400
7th	2120-	2312	17th	2120-	2400
8th	2120-	2340	19th	0000-	0300
9th	2120-	2400	22nd	2120-	2300
10th	2120-	2300	23rd	0630-	2400
11th	2120-	2400	26th	2120-	2400

" q " means quiet level, when radiometer is unstable.

SOLAR RADIO EMISSION

Flux Density

Month: February 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	41	43	(43)	39	42
2	44	43	(41)	39	42
3	41	43	(38)	39	41
4	44	41	(42)	(41)	41
5	43	(41)	(42)	40	42
6	43	45	(44)	38	43
7	39	38	(36)	(35)	38
8	37	38	(35)	33	37
9	35	38	(35)	34	36
10	36	38	(35)	35	36
11	35	35	(36)	34	35
12	37	36	(35)	37	36
13	35	35	(35)	35	36
14	34	35	(36)	33	35
15	35	34	(33)	33	34
16	33	33	(35)	34	34
17	33	34	(32)	32	33
18	33	33	(33)	32	33
19	35	35	(36)	32	34
20	36	35	(33)	35	34
21	35	34	(35)	35	35
22	34	37	(35)	38	35
23	42	41	(40)	41	40
24	38	40	(43)	37	40
25	41	40	(39)	35	39
26	41	38	(37)	35	38
27	40	37	(37)	38	37
28	39	40	(40)	39	39

Note No observations during the following periods:

4th 2307- 2400
5th 0330- 0435
7th 2120- 2300

Distinctive Events

(single-frequency observations)

Month: February 1967
Observing station: Hiraiso
Normal observing period: 2120 - 0820 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22}Wm^{-2}(c/s)^{-1}$		Remarks
	Mc/s	UT	UT	minutes		peak	mean	
1	500	2304	2305.5	10.0	C	93	69	1st peak
			2307.2			93		2nd peak
3	500	0245	0327.5	155.0	C	370	72	
	200	0245	0325.0	70.0	C	100	34	
6	200	2120 (SR)	0820 (SS)					weak noise storm
7	500	0136	0139	13.0	C	21	6	
9	200	0037	0038	2.0	C	>1230	>140	
	200	0124	0124.3	1.0	C	320	45	
22	500	0509.5	0510.0	10.0	C	280	9	
	200	0508.5	-	4.0	C	800	-	
	200	0515.5	-	2.0	C	1000	-	
	200	2120 (SR)	23rd 0820 (SS)					moderate noise storm
23	500	0109.5	0110.5	5.0	C	230	9	
	200	0109.0	0109.5	2.0	C	1000	-	
24	200	0430	0820 (SS)	4hrs				weak noise storm
	500	0606.5	0610.5	8.0	C	38	-	
	200	2120 (SR)	25th 0820 (SS)					weak noise storm
27	500	0506.6	0506.9	0.6	C	66	16	
	500	0510.7	0510.7	0.5	C	46	2	
	500	0513.0	0513.2	0.7	C	65	16	
	500	2334.5	2336.5	4.0	S	25	10	
	200	2335.0	2336.5	3.0	S	30	20	

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

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

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

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

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Feb. 1967	Whole Day Index	H B 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S F 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4o	5 (4) C	4 - (4) 4	4 4 4 3	4 5 (4) 4	N N N N			
2	4o	4 C C	4 - 4 4	4 4 4 4	(4) 4 4 4	U N N N			
3	4+	5 4 4	4 - 4 4	5 4 4 4	4 4 4 4	N N N N			
4	4o	4 (3 5)	4 - (4 4)	4 (4) 4 (4)	4 4 3 4	N N N N			
5	4o	(4) 4 4	5 - (4) 4	4 4 4 4	4 5 4 4	N N N N			
6	4o	4 4 4	4 - 4 4	4 4 4 3	4 4 4 3	N N N N			
7	4-	4 3 3	4 (4) 4 4	4 4 4 3	4 4 3 3	N N N N	1416	---	174γ
8*	4+	4 C 3	5 (5) 5 4	4 (4) 4 4	4 5 3 3	N N U U	---	---	
9	4-	(3 4) 3	4 - 3 4	4 4 4 4	4 4 3 4	N U U U	---	04xx	
10	4o	(4) 4 3	4 - 4 (4)	4 4 4 4	4 4 4 4	N N N N			
11	4o	C 4 4	4 - 4 4	4 4 4 4	4 4 3 4	N N N N			
12	4o	4 5 3	(4) - 4 4	4 4 4 5	4 4 4 4	N N N N			
13	4o	C 4 (4)	4 (4) 5 4	4 4 4 4	4 4 4 4	N N N N			
(14)	4+	4 5 (4)	5 (4) 5 4	4 4 4 4	4 4 5 4	N N N N			
(15)	4o	4 4 (4)	4 - 4 4	4 5 4 3	4 4 4 4	N N N N	2348	---	256γ
(16*)	4-	(4 3) 3	5 (4) 4 4	4 5 3 3	4 4 4 4	N N W W	---	---	
17	4o	3 3 4	4 (4) 4 5	4 5 4 (4)	4 4 3 4	U U N N	---	19xx	
18	4o	4 (3) 4	4 4 4 4	4 4 4 4	4 3 3 4	N N N N			
19	4-	4 3 4	(4 3) 3 4	4 4 4 4	4 3 3 4	N N N N			
20	4o	4 C 4	4 4 4 4	4 4 4 4	4 4 4 4	N N N N			
21	4o	4 3 4	4 4 4 4	4 4 4 4	4 5 3 4	N N N N			
22	4o	4 4 4	4 5 5 4	4 4 4 3	4 5 4 4	N N N N			
23	4-	4 3 3	4 (3) 4 4	4 4 4 (4)	4 4 4 4	U N N N			
24	4o	4 4 4	4 4 4 4	(4 4) 4 (3)	4 5 4 4	N N N N			
25	4o	4 4 4	4 5 4 4	(3) 4 4 (3)	4 5 4 3	N N N N			
26	4+	4 4 4	5 5 5 5	(3) 4 4 (4)	4 4 4 5	N N N N			
27	4o	C (4) 4	5 4 4 4	(4) 4 4 (4)	4 5 4 4	N N N N			
28	4+	C C C	5 5 4 4	4 4 4 4	4 4 4 4	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.

Feb. 1967	S W F									Correspondence		
	Drop-out Intensities (db)						Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
	CO	SF	HA	TO	HB	SH							
1	-	22	-				23.07	60	G	1+		x	
2	18	22	-	-		-	01.47	14	S	1+	x		
7	10	17					01.33	23	S	1		x	
22	11	17					01.23	18	Slow	1	x	x	
22	-	7			-		03.55	13	Slow	1-	x		
22	-	15	-		-	20	05.10	6	S	2		x	x
22					14		06.23	16	S	1			
23	10	22					01.11	13	S	2-	x	x	
24	9	11					23.26	54	G	1+			
27	25	30					16.43	38	S	2-	x		
27	11	17	-				21.20	20	Slow	2-			

IONOSPHERIC DATA IN JAPAN FOR FEBRUARY 1967

第19巻 第2号

1967年5月20日 印刷
1967年5月25日 発行

(不許複製非売品)

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電話 (260) 1831, 1832