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IONOSPHERIC DATA IN JAPAN

FOR MAY 1967

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THE RADIO RESEARCH LABORATORIES
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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

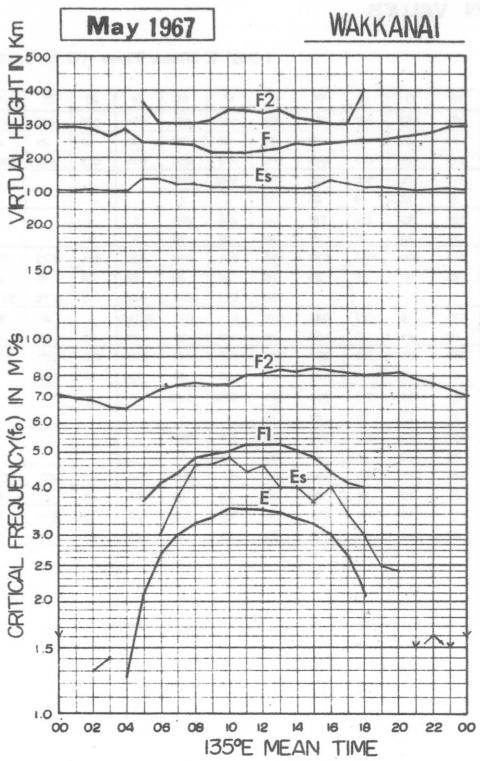
Importances

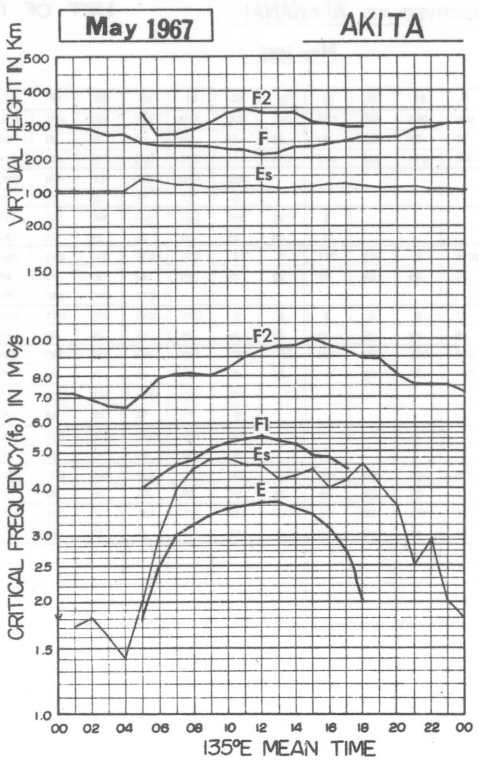
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

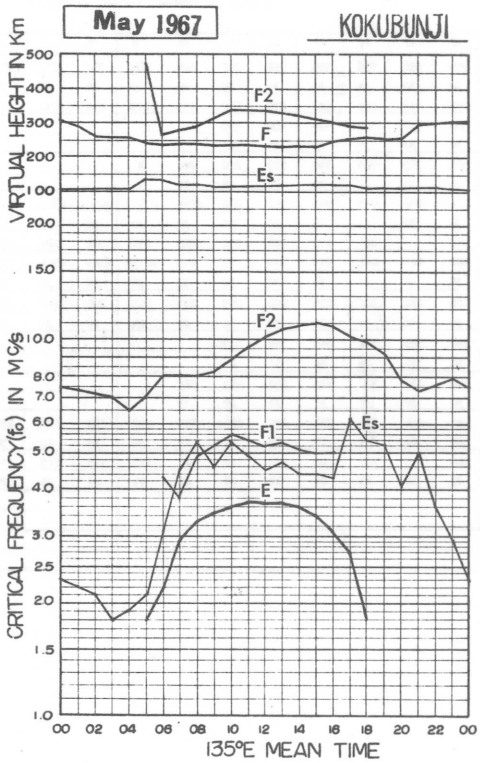
Besides, the time associated phenomena with SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record), are given in this table from interchange messages of IUWDS or measurements at Hiraiso.

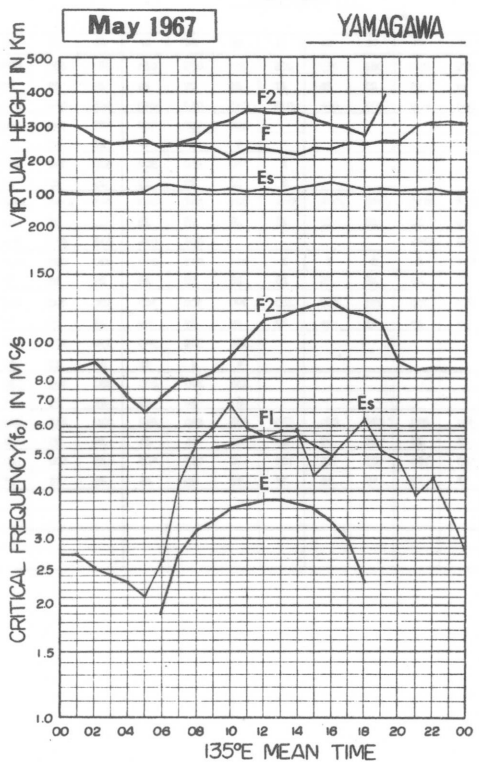
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

May 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	071	069	068	066	065	070	073	076	077	076	076	080	081	083	082	084	083	082	080	081	082	078	076	073
	CNT	27	27	29	29	29	29	29	29	28	27	28	29	29	29	29	29	29	28	28	29	29	26	26	26
	Q R	008	011	008	008	014	011	023	023	014	012	011	016	015	014	017	014	016	018	016	014	013	012	009	009
foF1	MED						370	410	440	480	490	500	520	520	520	500	480	440	410L	400L					
	CNT						5	11	19	27	25	20	28	27	28	29	26	17	9	1					
foE	MED				E	125	210	255	300	320	335	350	350	350	345	330	320	300	260	205	E	E			
	CNT				3	23	28	29	29	29	29	29	29	28	29	27	27	27	28	27	7	2			
foEs	MED	E016	E	013	014	G	G	030	038	043	043	044	042	043	040	040	037	040	034	030	025	024	E015	016	E015
	CNT	29	29	29	29	29	29	29	29	29	29	28	29	29	29	28	29	29	29	29	29	28	29	29	29
	Q R								012	011	010	014						020	019	027	022	016	D018	D020	D008
f-min	MED	E	E	E	E	E	E	011	012	017	017	018	019	019	018	020	017	012	011	011	E011S	E	E	E	E0128
	CNT	29	29	29	29	29	29	29	29	29	29	28	29	29	29	28	30	29	29	29	29	28	29	29	29
M (3000) F2	MED	265	265	270	275	280	290	295	290	300	295	290	280	285	285	285	290	290	295	295	295	285	275	270	265
	CNT	27	27	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	28	29	29	26	26	26
M (3000) F1	MED						310	350	370	365	365	365	365	355	350	350	355	365	365L	310L					
	CNT						5	11	18	22	22	19	27	26	28	28	26	15	9	1					
h'F2	MED						370	305	300	300	310	340	340	330	340	320	310	300	300	400					
	CNT						6	16	23	27	26	25	29	28	28	29	27	22	15	1					
h'F	MED	290	290	280	270	280	250	245	240	240	220	220	215	220	225	240	240	245	250	260	260	260	270	275	285
	CNT	29	29	29	29	29	29	28	26	26	26	26	27	27	29	29	28	24	22	19	23	25	27	28	28
h'Es	MED	110	105	110	105	105	135	135	125	125	120	115	115	115	115	110	115	130	125	120	120	115	110	110	110
	CNT	11	13	16	16	14	16	21	24	27	28	23	21	22	18	18	19	23	25	28	25	23	13	15	12
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

May 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	072	072	069	069	066	071	078	081	081	080	084	090	094	096	096	100	096	093	089	088	080	075	076	075
	CNT	26	24	23	26	27	29	29	29	29	29	31	30	30	30	31	31	31	30	29	29	29	28	26	26
	Q R	008	009	007	006	013	013	017	020	018	016	015	017	017	017	020	023	019	016	014	015	014	012	015	011
foF1	MED						400	430	460	480	510	530	540	550	530	520	490	480	450						
	CNT						4	9	12	20	25	30	30	30	30	31	25	21	5						
foE	MED					E	180	250	300	320	340	355	360	365	365	355	340	310	270	200	E				
	CNT					6	22	29	29	29	27	27	20	16	16	22	22	23	26	10	1				
foEs	MED	E018	J017	J018	J016	J014	021	031	040	045	J048	J048	046	046	042	043	045	J040	042	J046	J041	J036	J025	J029	J020
	CNT	29	29	28	28	28	28	28	28	29	28	31	29	30	30	31	29	30	30	30	30	30	30	30	30
	Q R	D009	D011					008	014	018	013	014	008	012		021	015	028	032	023	050	044	029	032	D019
f-min	MED	018	E	E	E	E	014	019	019	020	020	021	022	022	021	020	019	018	017	015	E0138	E014	E014	017	017
	CNT	29	29	28	28	28	28	28	28	29	28	31	29	30	30	31	30	30	30	30	30	30	30	30	30
M (3000) F2	MED	265	270	275	275	280	300	300	300	300	290	285	280	280	280	280	285	290	295	295	295	280	265	265	265
	CNT	26	24	23	26	27	29	29	29	29	29	31	30	30	30	31	31	31	30	29	29	29	28	26	26
M (3000) F1	MED						320	335	345	350	355	350	345	340	345	340	345	345	335L						
	CNT						4	9	12	20	25	30	30	30	29	29	24	21	4						
h'F2	MED						330	270	270	280	305	330	345	340	330	330	310	300	285	285					
	CNT						6	20	28	29	29	31	30	30	30	31	31	31	29	15					
h'F	MED	300	290	280	270	275	250	240	240	240	235	225	225	220	220	230	235	240	250A	265	260	260	280	290	300
	CNT	28	28	28	29	29	29	26	24	24	25	28	30	28	29	29	25	25	19	19	30	30	30	30	30
h'Es	MED	105	105	105	105	105	140	135	125	125	120	120	120	120	115	115	120	125	125	120	115	115	115	110	110
	CNT	13	19	19	16	17	17	25	26	29	28	31	29	29	22	25	24	24	28	29	29	29	26	24	17
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

May 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	075	073	072	070	065	071	080	080	080	082	089	096	102	106	108	110	108	102	098	092	078	073	076	U078
	CNT	29	29	29	31	31	31	31	31	31	30	29	31	30	30	31	30	30	30	30	30	30	31	30	30
	Q R	011	010	009	011	011	009	017	013	011	018	019	021	017	019	019	026	024	017	017	016	016	016	011	014
foF1	MED							430L	380L	490	520L	560L	540	520	530L	510	500	500L							
	CNT							1	3	1	11	12	10	12	17	13	8	5							
foE	MED						180	240	295	325	345	360	370	370	I370	360	340	310	270	180					
	CNT						6	27	31	31	30	25	19	17	21	24	25	26	25	17					
foEs	MED	023	022	021	J018	J019	021	031	J045	J053	J048	J053	049	045	047	044	044	J043	J062	J054	J052	J041	J050	J036	J029
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
	Q R	D014	008	013	011	D011		009	017	022	020	017	016	012	012		027	045	037	041	038	045	036	031	D034
f-min	MED	014	014	011	011	011	015	014	016	018	019	026	027	027	027	026	022	017	015	014	012	013	012	014	E0168
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
M (3000) F2	MED	275	280	285	290	285	305	320	315	305	280	275	275	280	285	290	295	295	300	300	300	290	270	270	U270
	CNT	28	29	29	31	31	31	31	31	31	30	29	31	30	30	31	30	30	30	30	30	30	31	30	30
M (3000) F1	MED							325L	345L	360	355L	350L	355	360	340L	360	355	350L							
	CNT							1	3	1	11	12	9	12	16	13	7	5							
h'F2	MED						475	265	275	285	310	340	340	340	330	325	310	300	290	280					
	CNT						1	16	21	28	28	28	30	30	29	30	30	27	24	12					
h'F	MED	305	285	270	260	260	240	235	240	235	230	230	235	230	230	230	230	250	255	260	255	255	295	300	305
	CNT	30	30	31	31	31	31	30	26	21	23	21	25	20	23	21	21	19	17	21	30	28	31	31	30
h'Es	MED	110	110	110	110	110	135	130	120	120	115	115	115	115	120	120	120	120	120	115	115	115	115	115	110
	CNT	23	24	24	24	19	24	27	30	31	29	27	28	27	26	22	25	29	30	31	30	30	28	28	22
hpF2	MED	380	370	355	340	360	310	285	305	315	360	375	380	370	365	360	345	340	330	320	325	345	385	385	U390
	CNT	28	29	29	31	31	31	31	30	29	26	27	28	28	30	30	30	28	29	29	27	30	31	30	30
ypF2	MED	075	070	080	080	075	080	070	070	080	085	090	085	080	080	085	080	080	080	080	080	085	080	080	U080
	CNT	28	29	29	31	31	31	31	30	29	26	27	28	28	30	30	30	28	29	29	27	30	31	30	30

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

May 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	085S	086S	088S	080S	072	066	072S	078S	080	084	091	102	113	116	121	124	126	119	117S	105	088S	084S	U086S	U085S
	CNT	17	21	21	24	26	27	28	27	27	29	31	31	30	30	30	29	29	29	30	29	25	24	20	16
	Q R	014	018	020	023	023	016	011	013	011	011	015	015	012	016	022	027	024	018	014	015	012	016	016	014
foF1	MED										520	530	550	560	540	560	530	500							
	CNT										2	5	8	14	11	12	15	6							
foE	MED							190	270	315	335	360	370	380	380	370	360	330	295	230					
	CNT							25	26	27	27	27	23	22	21	17	18	20	26	26					
foEs	MED	027	027	025	J024	023	021	026	042	J054	J059	068	059	056	058	058	044	049	J053	J062	J051	J048	J039	043	035
	CNT	28	28	28	28	28	28	28	28	27	29	30	31	30	30	29	28	29	29	30	31	30	29	29	29
	Q R	023	024	019	022	014	D013	010	014	025	023	042	050	044	037	027	017	027	025	044	030	034	029	034	037
f-min	MED	E015S	E014	E	E	E	012	013	015	016	018	023	024	025	024	024	022	022	016	015	013	E014	E014S	E015S	E014S
	CNT	28	28	28	28	28	28	28	28	27	29	30	31	30	30	29	29	29	29	30	31	30	29	29	29
M (3000) F2	MED	265S	275S	285S	290S	290	290	315S	315S	310	290	270	265	270	280	280	285	290	290	300	300	285S	260S	U260S	U265S
	CNT	17	21	21	24	26	27	28	27	27	29	31	31	30	30	30	29	29	29	29	28	25	24	20	16
M (3000) F1	MED										340	360	345	350	350	345	340	325							
	CNT										2	5	7	14	8	10	13	5							
h'F2	MED								250	265	300	320	345	340	330	330	320	300	290	275					
	CNT								14	26	27	28	29	27	28	29	28	29	29	28					
h'F	MED	305	300	275	250	255	260	240	245	240A	U230	210	230	230	225	220	235	230	250	U255A	260	260	295	310	315
	CNT	28	28	27	28	28	28	27	23	16	15	15	22	20	14	14	20	14	10	9	28	28	28	29	28
h'Es	MED	105	100	100	100	100	105	130	125	120	115	115	110	115	110	120	125	130	125	115	115	110	110	110	105
	CNT	24	24	22	26	23	17	27	28	27	29	30	30	28	29	24	24	26	29	28	31	30	29	27	24
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

May 1967 | foF2 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | L.t. 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	068	069	069	065	066	077	092H	095	096	090	082	086	089	090	091	090	091	089	089	088	075	077	076	073
2	073	072	070	067	067	074	086	100	100	094	089H	091	094	097	093	094	096	091	101	095	082	078	081	079
3	076	075	069	070	059	056	055	050	048	W	053	053	057	068	070	071	071	069	065	063	069	063	F	053F
4	043	050F	048	048	046	050	051	050	048	055	I069C	070	077	079	081	070	073	073	076	078	074	069	061	058
5	055	050	051	047	046	050	058	057	063	067	064H	070	074	076	082	084	084	087	082	078	073	071	071	068
6	066	066	063	062	062	071	077	080	076	077	077	081	086	093	100	096	095	095	090	090	083	076	071	071
7	071	071	068	064	063	080	090	095	086	083	086	086	090	096	105	106	101	103	100	097	087	082	080	074
8	071	069	068	066	065	071	065	065	067	071	077	082	080	083	I078C	080	078	077H	080	081	073	073	070	067
9	066	063	062	060	067	063	069	068	069	068	070	081	083	083	082	083	075	074	078	084	082	078	073	071
10	068	067	064	058	056	054	060	055	067	058	058	060	061	060	058	060	060	062	064	067	068	064	063	060
11	060	057	055	057	057	067	073	081	074	076	072	070	080	087	090	088	085	088	082	071	065	068	069	068
12	067	065	064	064	064	070	078	073H	078	080	088	094	097	094	093	091	099	090	079	080	083	079	075	073
13	073	070	067	067	073	067	065H	076	065	I069A	074	071	075	076	079	093	090	087	079	075	074	070	070	066
14	066	063	063	059	050	055	062	069	079	068	072	069	073	075	073	076	079	080	081	084	081	078	076	076
15	075	070	070	070	063	059	060H	065H	071	075	074	078	080	083	085	080	074	072	074	080F	085	F	F	F
16	F	F	067F	068	073	074	070H	074	075	076	076	070	083	089	093	083	083	078	075	083	085	083	079	073
17	071	070	070	069	069	070	078	088	082	081	081	086	093	093	094	090	083	075	074	080	078	083	080	074
18	073	071	071	068	070	074	086	078	082	085	093	090	090	091	094	089	089	097H	100	095	086	078	076	077
19	080	078	074	067	073	077	075	077H	082	076	079	080	080	080	079	084	081	086	090	081	074	F	075	070F
20	070F	F	072F	068F	068F	075	080H	083H	083	088	085	083	089	088	090	091	086	A	A	100	088	I084A	082	F
21	F	081F	076	074	073	073H	084	087	080	074	075	081	083	077	081	080	087	083	083	088	086	086	083	080
22	074	074	070	068	068	076	076H	075H	081	080H	083	085	086	087	088	086	083H	083	087	088	091	089	083	078
23	074	074	073	072	075	093	103	097	085	081	082H	087	087H	087	090	090	093	094	096	101	096	083	080	080
24	080	078	073	069	070	085	094	096	092	076	075	080	081	081	080	083	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	057	051	054	054	053	046F	F	F	F
27	046H	046	051	054	055	071	083H	093H	097	101	103	107	100	100	103	103	103	100	097	I100A	102	098	094	092
28	089	087	080	074	071	070	072	068	070	066	060	065	064	061	063	B	069	068	068	080	087	088	080	081
29	072	069	069	063	064	070	055	055	W	W	W	053	055	059	060	063	I061A	I061A	063	064	071	074	064	066
30	063	060	051	045F	050	063	I071A	076	073	078	074	075	073	073H	074	076	077	077	083	090	093	083S	080	077
31	074	066	058	066	056	069Z	060	063	062	070	068	060	064	064	068	063	062	064	060	066	I066C	070	071	070
Count	27	27	29	29	29	29	29	29	28	27	28	29	29	29	29	29	29	28	28	29	29	26	26	26
Median	071	069	068	066	065	070	073	076	077	076	076	080	081	083	082	084	083	082	080	081	082	078	076	073
U.Q.	074	074	070	068	070	074	084	088	082	081	082	086	089	090	093	090	090	090	090	090	086	083	080	077
L.Q.	066	063	062	060	056	063	061	065	068	069	071	070	074	076	076	076	074	072	074	076	073	071	071	068
Q.R.	008	011	008	008	014	011	023	023	014	012	011	016	015	014	017	014	016	018	016	014	013	012	009	009

The Radio Research Laboratories, Japan

foF2

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

W 1

IONOSPHERIC DATA

May 1967 | foF1 | 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									490		I500A	560	510H	530	500	500								
2								U470L	490	500L		510	540H	550H	500H	U500L	U470L							
3						320	360	400	430	450	A	500	I490A	480	480	470	L	U400L						
4						330L	360	A	430	460	I500C	520L	500	500	U480L	440L								
5							L		470	490		520	500	530	500	490L	440	400L						
6							410	430	460	490	500	490	520	520H	I500B	490	430L							
7						L	L	U430L		440		520L	520	530	510	470L	A							
8								440L	A	A	A	500	510	460	I500C	480H	430L							
9							L	430	470	480L	500H	510H	500H	500	450	450	L							
10							400	430L	440	450	A	I470A	480	480H	470	450	A	400L						
11							400L	430	460	490	U500L	500	500H	490	480	440	420	400						
12									450	480L	510H	520L	510	500H	480	490H	420							
13								430	I450A	I490A	500	500H	500	490	500H	470	430							
14							400L	A	460	460	530	510	530	500	490	A	I450A	410L						
15									480	470L	U500L	520	500	500	490	450	430							
16								450L	480	480	500	500	520	500	500	450	430							
17								450	470	500L	500L	U540L	520	520	500	470	430L	A						
18								A	470L	520	480	I520A	530L	530	510	I490A	I460A							
19								420	500	500	A	510	530	510	530	500	A	A						
20								430	490L	470	520	540	540	530H	530	A	A	A						
21							U430L	I450A	500L	500L	530	I530A	520	550	520	500	490	410						
22									500		540L	530	530	570	520	500H		U430L						
23							L	450	490			550		570L	520	520	A	A						
24							L	A	510	500L	580H	560	I550A	550	560	510H	C	C						
25						C	C	C	C	C	C	C	C	C	C	C	C	C						
26						C	C	C	C	C	C	C	C	C	C	470	440	430						
27									U500L	600H	540	550L	570	550	I560A									
28						400	430	I460A	490	500	530	520	530	530H	I520A	B	490	A						
29						370	I420A	470	490	480	500	500	510	500	500	I480A	I460A	I440A	400L					
30						420L	I440A	I470A	510	510	530	510	570H		530	500		A						
31							450	540	480	500	A	A	A	520	500	510	450	A						
Count						5	11	19	27	25	20	28	27	28	29	26	17	9	1					
Median						370	410	440	480	490	500	520	520	520	500	480	440	410L	400L					
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

W 2

IONOSPHERIC DATA

May 1967 | f_0E | **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	200	265	300	325	345	355	I340A	320	I335A	355	320	300	250	175	A				
2					A	190	260	300	325	340	350	360	370	350	I345A	I315A	I280A	250	A	A				
3					E	190	240	300	320	340	350	360	350	350	330	310	295	255	195	E				
4					E	195	240	280	305	330	I345C	365	350	330	I310A	I305A	290	250	190	E				
5					130	205	250	290	315	325	335	340	325	305	I310A	I320A	300	245	200	A				
6					E	200	250	295	315	335	340	350	350	330	I345B	330	290	255	190	S				
7					105	180	260	300	320	330	340	350	365	350	325	315	300	250	200	E				
8					A	210	260	300	320	335	350	350	350	345	I340C	315	295	250	195	E				
9					E	200	245	290	315	325	350	355	340	330	325	310	290	250	200	S				
10					105	200	265	295	315	325	340	330	315	305	I325A	320	290	250	200	E				
11					E	205	250	295	315	325	335	340	330	350	330	315	300	245	200	S				
12					105	205	260	300	315	325	335	350	380	360	320	295	290	250	200	S				
13					A	205	265	295	315	330	350	350	335	315	340	315	295	255	200	S				
14					A	205	265	300	310	325	340	350	330	I320A	I325A	320	300	260	200	S				
15					105	210	260	300	310	325	335	345	340	320	A	A	A	250	205	S				
16					125	200	250	300	320	335	345	340	345	350	320	315	295	260	210	S				
17					145	210	265	300	320	330	340	350	355	350	325	315	300	265	205	S				
18					120	215	270	300	310	340	325	335	370	380	340	320	300	275	210	S				
19					A	215	265	300	325	350	370	370	330	335	380	340	315	275	220	110				
20					A	220	270	300	320	320	325	320	325	375	380	335	310	275	205	S				
21					I140A	215	275	305	325	350	360	335	335	340	320	A	A	A	A	A				
22					140	250	295	315	330	345	360	370	360	390	380	350	315	285	215	125				
23					140	230	290	310	345	355	365	370	365	I365A	I380A	365	330	285	205	S				
24					150	B	325	335	350	380	390	390	B	390	A	350	C	C	C	C				
25					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
26					C	C	C	C	C	C	C	C	C	C	C	330	315	280	225	A				
27				E	200	255	I295A	I315A	335	375	390	390	400	345	300	I305A	335	290	230	S				
28				E	155	240	290	320	340	320	385	375	I365A	335	300	B	335	300	240	S				
29					140	230	290	315	335	355	370	375	350	I360A	375	345	320	290	240	S	E			
30					150	215	290	315	335	365	380	380	340	365	370	I335A	320	300	225	S	E			
31				E	150	235	290	315	345	365	385	365	340	330	330	340	310	275	205	S				
Count				3	23	28	29	29	29	29	29	29	28	29	27	27	27	28	27	7	2			
Median				E	125	210	265	300	320	335	350	350	350	345	330	320	300	260	205	E	E			
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

f_0E

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

W 3

IONOSPHERIC DATA

May 1967 | **foEs** | **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	013	E	E	G	G	036	036	043	055	053	047	040	G	G	G	G	023	019	J026	020	J020	E013S
2	E012S	E	E	E	013	020	G	G	G	038	G	G	G	G	041	044	040	033	028	023	018	E012S	E013S	E012S
3	E016S	E	018	017	E	023	G	G	038	040	047	048	051	G	036	G	040	034	024	025	J025	E	017	E015S
4	020	015	015	015	016	023	030	041	040	043	C	G	041	043	036	035	034	030	025	019	E015S	J025	J041	J026
5	J025	015	014	E	012G	G	029	034	043	047	040	039	043	041	040	050	033	035	024	028	018	E013S	E012S	E015S
6	E017S	E	E	E	E	J035	030	035	036	G	G	G	G	G	E055B	038	039	040	033	028	J028	J025	020	016
7	022	023	018	E	G	021	G	017G	037	040	070	042	047	040	039	G	046	043	053	J041	E014S	E012S	E	E015S
8	E	E	E	E	013	G	030	037	J063	J056	054	040	G	G	C	032	033	030	030	023	J026	E012S	E015S	E016S
9	E015S	013	014	016	014	023	030	040	043	040	G	043	038	G	G	G	G	030	026	E015S	E	E	E015S	E
10	E015S	E	E	E	G	023	G	G	038	044	048	050	040	037	037	037	043	034	033	J027	J023	E	015	J021
11	023	E	E	013	013	G	030	039	043	039	G	G	040	G	G	G	G	030	030	E015S	E	E	E	E
12	E	E	E	E	G	J023	G	034	038	041	040	G	G	G	040	033	G	031	025	023	J024	E	E012S	E015S
13	E015S	E	J024	J033	J023	G	032	035	050	084	040	040	040	J050	G	G	033	038	J056	E017S	020	E012S	E012S	J024
14	E016S	E012S	J025	015	020	G	032	045	043	037	G	048	J054	050	J061	061	J063	033	028	024	J043	E015S	E015S	E015S
15	016	015	E	014	G	G	030	037	048	041	040	G	G	G	J043	J039	J048	031	026	E017S	023	E012S	E014S	E
16	E	E	015	014	G	027	031	039	045	043	040	040	040	G	G	022G	032	030	025	020	015	015	J033	E013S
17	E015S	015	014	016	014G	G	G	G	035	038	041	G	G	G	G	G	038	044	035	019	021	E016S	E	E
18	E	E	E	E	G	G	032	048	J058	043	J063	071	049	044	051	J056	J083	G	032	J043	J051	J023	J040	J053
19	J030	J021	J021	J022	017	G	038	038	J057	051	J060	J055	J043	048	G	G	J063	074M	J061	J083	J103	J065	J063	E012S
20	E016S	E	E	014	015	025	G	G	G	041	039	041	J047	G	043	J071	J127	121	140	J073	073	J113	J063	J054
21	J033	E	013	J020	J022	026	043	050	J083	J073	J080	073	045	040	038	040	J043	J038	045	J030	023	E012S	020	020
22	019	019	J021	015	G	020G	035	043	043	039	053	043	040	046	G	G	G	G	030	030	J028	J033	016	016
23	E015S	J020	E	E	G	G	033	038	040	041	048	040	047	040	043	044	J055	J063	J053	J044	J063	J030	J021	016
24	J021	016	E	015	G	E037B	038	054	050	050	044	051	058	045	040	041	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	G	G	020G	021	E015S	E015S	E	E012S
27	E	E	E	E	G	G	030	034	040	045	044	054	048	047	J076	040	037	J071	J041	J130	J035	J029	E016S	E016S
28	E	015	E	E	G	032	035	050	047	040	048	051	J070	041	J056	B	055	J083	J073	J060	J065	J030	E018S	015
29	E012S	J028	025	016	J032	030	J050	J051	043	J059	043	042	043	040	G	J068	J083	J083	G	024	015	E015S	J031	E016S
30	J023	J023	016	J025	031	035	J078	J076	050	J054	050	G	G	041	045	040	040	044	J051	J037	J026	J073	J033	J025
31	J024	E	016	E	G	028	043	J051	047	J063	J073	063	J054	040	040	045	043	J054	J060	J083	C	J073	J053	J020
Count	29	29	29	29	29	29	29	29	29	29	28	29	29	29	28	29	29	29	29	29	28	29	29	29
Median	E016	E	013	014	G	G	030	038	043	043	044	042	043	040	040	037	040	034	030	025	024	E015	016	E015
U. Q.	022	016	017	016	016	026	035	046	049	050	054	051	048	044	043	044	052	049	052	042	032	030	032	020
L. Q.	E	E	E	E	G	G	G	034	038	040	040	G	G	G	G	G	032	030	025	020	016	E012	E012	E012
Q. R.								012	011	010	014						020	019	027	022	016	D018	D020	D008

foEs

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

The Radio Research Laboratories, Japan

W4

IONOSPHERIC DATA

May 1967 | **f_bEs** | **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					G	G	G	052	040	G	037					G	018	023	017	016	S
2	S				012	G				G					035	033	037	020G	024	018	017	S	S	S
3	S		E	E		G			G	G	047	047	050		G		040	G	G	023	029		015	S
4	016	015	014	012	015	G	G	040	G	042	C		G	G	035	035	027	020G	G	G	S	022	030	024
5	019	E	E		G		G	G	041	044	G	G	G	G	037	034	G	G	018G	027	018	S	S	S
6	S					G	G	C	G						B	G	038	040	032	027	026	022	018	015
7	E016S	015	011			G		017G	G	G	045	G	G	G	G		045	042	052	040	S	S		S
8					012		G	G	060	055	050	G			C	029	G	G	G	G	022	S	S	S
9	S	E	E	012	E	G	G	G	G	G		G	G					017	G	S			S	
10	S					G			G	038	048	049	G	G	036	G	042	G	028	023	020		012	017
11	S			E	G		G	G	G	G			G					G	029	S				
12						011		G	G	G	G				G	G		G	G	G	020		S	S
13	S		015	020	015		G	G	047	A	G	G	G	G			G	038	060	S	018	S	S	027
14	S	S	011	012	015		G	045	042	G		047	G	040	045	050	060	021G	015	022	030	S	S	S
15	016	E		E			014G	G	047	G	G				042	033	033	G	019G	S	020	S	S	
16			E	E		G	G	G	043	041	G	G	G			021G	023	G	015G	G	015	015	E016S	S
17	S	E	E	E	E				G	G	G						G	042	033	G	019	S		
18							G	045	G	042	042	062	044	G	044	051	076		G	040	050	E	030	018
19	022	015	020	017	015		G	036	041	G	052	G	G	G			060	070	045	062	042	045	016	S
20	S			E	015	020				G	G	G	044		G	070	072	A	A	043	050	A	055	043
21	020		E	E	014	G	G	047	043	048	050	060	044	G	G	035	037	036	040	022	019	S	019	017
22	013	017	017	012		020G	G	042	G	G	050	G	G	G					G	026	025	028	016	015
23	S	012					G	038	G	G	G	G	G	040	040	G	050	060	048	044	060	027	020	016
24	020	014		015		B	G	050	050	048	G	050	057	G	040	G	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				019G	020	S	S		S
27							030	033	G	G	G	G	G	G	071	036	G	047	040	A	033	027	S	S
28		012				019	G	048	043	G	047	050	044	G	056	B	047	058	046	058	052	029	S	015
29	S	017	017	012	G	G	043	045	G	042	G	G	G	040		060	A	A		020	E	S	025	S
30	E015S	012	E	019	023	G	A	069	049	048	G			G	G	035	026G	042	042	031	020	022	023	019
31	020		E			G	G	043	044	043	053	053	054	G	G	G	040	045	031	026	C	017	018	017
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

May 1967 | f-min | 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	013	011	011	017	017	017	020	018	017	020	017	012	E	E	E	E	E	E	E013S
2	E012S	E	E	E	E	E	E	012	018	017	020	017	018	018	017	017	012	E	E	E	E	E012S	E013S	E012S
3	E016S	E	E	E	E	E	011	012	017	017	018	020	019	018	017	017	012	013	012	E	E	E	E	E015S
4	E	E	E	E	E	E	011	014	017	017	C	017	019	017	019	017	011	012	012	E	E015S	E	E	E
5	E	E	E	E	E	015	E	011	013	017	017	017	018	018	019	E	011	E	E	E	E015S	E013S	E012S	E015S
6	E017S	E	E	E	E	E	016	012	019	017	011	020	017	017	055	012	017	011	017	E013S	E	E	E	E
7	E016S	E	E	E	E	E	E	E	011	018	018	018	017	021	017	017	012	E	E	E	E014S	E012S	E	E015S
8	E	E	E	E	E	013	015	013	012	017	018	021	017	021	C	017	015	011	E	E	E015S	E012S	E015S	E016S
9	E015S	E	E	E	E	E	E	011	011	018	018	017	017	018	017	016	E	E	012	E015S	E	E	E015S	E
10	E015S	E	E	E	E	E	012	017	017	E017C	017	012	017	017	013	017	E	E	012	E	E	E	E	E
11	E	E	E	E	E	E	011	012	012	017	019	021	019	017	017	017	011	E	E	E015S	E	E	E	E
12	E	E	E	E	E	E	E	011	011	016	017	020	017	013	017	015	012	012	013	E011S	E012S	E	E012S	E015S
13	E015S	E	E	E	E	E	E	011	016	017	018	017	017	017	021	017	017	E	E	E017S	E012S	E012S	E012S	E
14	E016S	E012S	E	E	E	E	012	E	012	011	020	019	018	017	013	E	011	E	E	E015S	E016S	E015S	E015S	E015S
15	E	E	E	E	E	E	E	E	011	017	011	017	017	020	020	016	016	E	E	E017S	E012S	E012S	E014S	E
16	E	E	E	E	E	E	E	011	011	017	017	018	017	012	017	015	012	011	E	E013S	E	E	E016S	E013S
17	E015S	E	E	E	E	E	011	011	017	012	017	017	017	016	016	017	011	011	011	E011S	E	E016S	E	E
18	E	E	E	E	E	E	011	012	018	017	018	018	020	025	017	017	017	E	012	E012S	E	E	E	E015S
19	E	E	E	E	E	E	012	012	017	026	021	018	021	024	021	018	016	011	E	E	E015S	E015S	E012S	E012S
20	E016S	E	E	E	E	E	012	017	018	018	018	022	019	022	020	017	012	012	015	E011S	E015S	E	E	E
21	E	E	E	E	E	E	012	011	017	018	018	018	020	018	020	019	017	E	E	E	E015S	E012S	E015S	E015S
22	E	E	E	E	E	012	013	018	017	021	020	021	020	020	021	020	018	016	011	E	E	E	E	E
23	E015S	E	E	E	E	E	011	017	019	018	020	020	020	023	020	018	017	012	015	E012S	E	E	E	E
24	E	E	E	E	E	037	022	021	025	018	026	028	040	030	022	020	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	018	011	011	E	E	E015S	E015S	E	E012S
27	E	E	E	E	E	E	012	013	017	022	020	027	022	020	020	018	017	013	E	E016S	E	E	E016S	E016S
28	E	E	E	E	E	E	011	011	017	019	023	020	019	018	018	B	018	017	013	E012S	E	E	E018S	E
29	E012S	E	E	E	E	E	017	017	019	020	020	019	020	028	020	019	017	012	013	E016S	E	E015S	E	E016S
30	E015S	E	E	E	E	E	015	017	017	021	020	025	019	021	020	019	017	012	015	E016S	E	E016S	E	E
31	E012S	E	E	E	E	E	018	018	018	022	020	025	022	022	020	018	017	016	012	E013S	C	E	E	E
Count	29	29	29	29	29	29	29	29	29	29	28	29	29	29	28	30	29	29	29	29	28	29	29	29
Median	E	E	E	E	E	E	011	012	017	017	018	019	019	018	020	017	012	011	011	E011S	E	E	E	E012S
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

W 6

IONOSPHERIC DATA

May 1967 | M(3000) F2 | 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	260	260	265	275	280	285	310H	300	310	300	295	275	285	280	285	290	295	295	295	295	270	270	270	260
2	265	270	275	270	270	265	290	290	300	290	275H	275	280	285	290	295	285	280	290	295	285	255	265	255
3	260	265	255	260	245	260	260	240	210	W	245	220	235	270	290	270	295	305	290	265	260	255	F	245F
4	255	235F	240	240	250	240	290	275	330	210	I280C	295	305	305	320	315	315	300	295	295	285	290	280	265
5	255	260	245	255	290	280	305	290	300	300	295H	280	300	290	295	300	305	315	305	300	275	265	270	270
6	270	275	270	275	265	285	315	325	310	310	325	295	290	290	300	300	305	300	300	295	300	280	270	265
7	260	260	280	285	275	300	310	325	315	305	295	290	290	270	285	285	280	290	300	300	285	275	260	265
8	270	275	280	290	290	305	290	295	280	285	305	305	300	305	I300C	300	310	305H	315	305	280	275	270	265
9	275	270	275	280	270	295	305	305	315	280	290	295	300	300	300	310	305	295	300	300	295	280	280	270
10	270	275	285	300	305	300	295	275	280	275	255	275	280	270	290	290	290	295	300	300	295	280	270	265
11	270	280	275	280	290	300	315	320	310	310	290	270	275	285	290	290	300	310	315	310	265	265	270	265
12	275	275	280	290	310	315	320	310H	320	285	275	280	290	285	280	295	305	305	310	295	290	285	280	275
13	275	265	275	275	300	320	305H	315	305	I295A	290	270	280	290	265	280	280	300	295	295	285	270	270	275
14	260	270	285	305	295	290	305	290	310	310	290	295	290	305	300	305	295	300	290	300	290	280	265	275
15	270	265	270	285	275	320	300H	280H	310	295	290	275	290	285	295	305	310	295	285	290F	295	F	F	F
16	F	F	275F	280	285	300	305H	295	315	315	310	295	280	290	290	300	300	295	295	285	290	285	285	270
17	270	270	270	290	285	280	285	305	305	295	290	280	290	280	300	300	315	310	295	300	265	270	280	270
18	265	260	280	280	290	295	300	295	295	295	300	295	285	285	300	290	280	290H	305	305	290	275	260	275
19	270	280	280	280	295	310	295	285H	305	290	295	290	290	285	275	300	285	290	310	295	280	F	275	265F
20	260F	F	270F	275F	280F	290	290H	285H	290	310	295	285	280	285	285	295	290	A	A	290	285	I285A	275	F
21	F	275F	275	275	290	285H	295	310	300	295	290	285	300	275	285	290	290	290	280	290	280	275	275	275
22	260	260	270	265	270	280	300H	280H	300	290H	280	275	280	275	285	280	280H	285	295	285	280	275	290	270
23	270	255	270	270	280	290	305	300	305	275	260H	270	270H	270	280	280	280	285	290	290	295	275	265	265
24	265	270	270	265	255	280	275	290	295	300	255	265	270	270	265	280	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	235	215	245	265	265	240F	F	F	F
27	240F	250	270	320	285	295	285H	290H	290	295	285	290	285	275	280	275	270	280	280	I275A	275	275	265	260
28	265	270	265	260	255	255	265	260	270	275	245	265	275	250	255	B	270	275	260	255	265	270	250	270
29	255	255	255	245	265	295	265	235	W	W	W	215	215	235	240	255	I260A	I260A	255	260	260	270	245	245
30	255	265	270	260F	270	250	I265A	275	265	290	285	310	275	275H	285	290	290	285	280	280	290	270S	275	265
31	260	255	240	280	265	275Z	250	245	235	265	265	215	240	245	260	275	270	280	275	275	I260C	250	250	255
Count	27	27	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	28	29	29	26	26	26
Median	265	265	270	275	280	290	295	290	300	295	290	280	285	285	285	290	290	295	295	295	285	275	270	265
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

W 7

IONOSPHERIC DATA

May 1967 | M(3000) F1 | 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									370		I380A	355	355H	350	365	360								
2								U360L	365	370L		375	350H	345H	365H	U360L	U360L							
3						295	335	345	350	365	A	A	A	345	340	340	L	U365L						
4						310L	335	A	360	I350A	I335C	345L	365	380	U355L	385L								
5							L		A	A		350	360	340	350	355L	375	375L						
6							375	380	390	370	360	390	385	350H	I355B	370	370L							
7						L	L	U395L		410		365L	365	345	350	360L	A							
8								370L	A	A	A	365	355	390	I350C	355H	380L							
9							L	375	360	375L	375H	350H	355H	360	395	365	L							
10							340	355L	365	360	A	I380A	370	375H	360	355	A	360L						
11							375L	370	370	365	U365L	360	370H	350	355	385	365	375						
12									370	375L	355H	365L	355	360H	355	345H	360							
13								370	I370A	I365A	380	360H	360	350	335H	340	355							
14							375L	A	A	390	345	I345A	345	355	A	A	I360A	365L						
15									A	360L	U360L	355	360	350	I345A	365	365							
16								375L	I370A	365	365	380	365	345	345	380	370							
17								360	375	350L	370L	U340L	350	340	345	365	370L	A						
18								A	375L	350	380	I370A	350L	345	I365A	I365A	I375A							
19								405	345	365	A	365	340	355	330	340	A	A						
20								395	345L	405	365	350	I350A	355H	330	A	A	A						
21							U370L	I360A	360L	I360A	I345A	I355A	360	335	345	355	335	370						
22									360		A	375	360	335	365	345H		U370L						
23							L	385	390			365		325L	350	340	A	A						
24							L	A	A	A	345H	I350A	I340A	335	325	345H	C	C						
25							C	C	C	C	C	C	C	C	C	C	C	C						
26							C	C	C	C	C	C	C	C	C	345	325	315						
27									U380L	350H	370	365L	355	365	I345A									
28						310	350	I350A	345	380	360	I365A	340	395H	I345A	B	A	A						
29						350	I350A	I345A	340	370	380	380	355	355	350	I350A	I340A	I330A	310L					
30						315L	I335A	I340A	I350A	I360A	375	390	340H		350	360		A						
31							310	A	A	A	A	A	A	355	340	320	A	A						
Count						5	11	18	22	22	19	27	26	28	28	26	15	9						
Median						310	350	370	365	365	365	365	355	350	350	355	365	365L	310L					
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

W8

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IONOSPHERIC DATA

May 1967 | h'F2 | 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									285		310	360	310	340	315	310								
2								300	285	290		310	325	340	315	310	305							
3						380	425	490	710	W	540	660	565	405	360	375	310	295						
4						410	360	425	325	630	I345C	340	315	290	290	270								
5							310		350	310		370	320	350	340	300	285	265						
6							275	260	270	290	290	275	325	315	310	275	275							
7						285	260	255		270		300	320	340	315	300	300							
8								315	A	350	320	310	310	290	I310C	310	275							
9							U285L	300	300	300L	330	330	305	310	310	290	275							
10							325	370L	400	420	490	420	400	440	390	375	345	300						
11							260	270	300	310	340	325	350	325	310	310	290	270						
12									275	320	315	315	310	315	310	310	275							
13								275	290	I330A	350	315L	350	340	360	325	300							
14							300	335	295	295	350	340	360	315	330	320	I305A	300						
15									300	310	320	360	315	325	300	290	295							
16								300	290	290	300	310	350	320	305	300	290							
17								285	270	310	320	340	325	325	300	300	265	265						
18								250	280	330	305	320	320	325	310	305	I305A							
19								260H	300	305	340	345	350	335	305	310	335	I310A						
20								265	280	280	315	350	340	325	345	I310A	A	A						
21							295	270	300	305	350	I360A	315	370	340	335	315	290L						
22									305		325	360	340	365	340	325		300						
23							260	265	260			370		370	345	340	310	310						
24							300	290	300	295	405	380	395	390	375	350	C	C						
25							C	C	C	C	C	C	C	C	C	C	C	C						
26							C	C	C	C	C	C	C	C	C	540	695	450						
27									290	310	315	300	320	335	I320A									
28						360	350	400	395	385	525	445	440	400	475	B	380	I350A						
29						295	400	520	W	W	W	720	670	560	520	A	A	I370A	400					
30						400L	I345A	I355A	395	320	370	315	375		355	345		305						
31							430	500	520	375	420	615	510	510	420	410	415	355						
Count						6	16	23	27	26	25	29	28	28	29	27	22	15	1					
Median						370	305	300	300	310	340	340	330	340	320	310	300	300	400					
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

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

The Radio Research Laboratories, Japan

W 9

IONOSPHERIC DATA

May 1967 | h'F | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45° 23.6'N Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	300	300	280	250	275	250	245H	240	230	240	I235A	230	220H	225	215	240	240H	235H	260	245	260	285	280	295
2	285	270	260	275	285	250	240	235	235	220	225H	210	210H	210H	205H	210	260	260	270	250	240	290	300	290
3	290	275	290	300	340	300	265	255	250	250	A	A	A	240	245	250	I265A	275	265	290	310A	290	340	270
4	360	340	360	345	365	280	265	I260A	260	I240A	I250C	235	230	225	230	230	245	250	260	260	260	260	310A	325
5	340	320	320	295	300	255	250	230	I255A	I260A	225H	210	220	210	240	245	245	250	250	245	250	280	270	275
6	300	290	290	275	300	250	245	230	215	210	210	215	205	200H	I225B	250	250	270A	250	245	260	260	265	300
7	310	300	265	250	280	255	240	235	220	220	I215A	240	240	250	240	245	I255A	A	A	A	260	260	275	275
8	260	270	260	250	260	260	245	240	A	A	A	215	220	205	I210C	220H	240	240H	260	245	255	260	265	310
9	295	300	280	265	300	245	245	250	210	210	200H	205H	205H	215	210	215	230	235H	260	260	250	250	260	265
10	295	270	250	220	250	250	250	235	235	250	I240A	I225A	240	210H	245	240	I255A	260	270	260	260	260	275	310
11	290	290	300	275	260	245	240	260	250	215	210	215	205	210	250	220	240	260	250	235	260	285	275	295
12	275	280	280	250	250	240	240	225H	235	210	200H	200	205	210H	215	230	230	240H	245	250	260	250	255	275
13	290	290	290	285	260	240	245H	245	I240A	I220A	205	210H	205	240	225H	225	245	A	A	250	260	270	270	280A
14	300	295	280	250	250	260	260	I250A	I230A	210	215	I250A	210	230	I255A	I250A	I250A	250	260	260	270A	250	285	280
15	290	300	290	260	255	240	240H	240H	I250A	245	210	210	205	225	I255A	230	240	245	250	260	260	260	270	280
16	300	300	290	270	260	250	230H	250	I240A	240	215	210	205	210	220	220	240	250	250	265	250	250	250	275
17	285	285	290	260	260	225	240H	235	220	215	210	220	205	235	225	220	240	I255A	260A	260	265	285	260	275
18	290	270	265	260	260	245	235	I240A	210	225	235	I245A	I230A	250	I240A	I245A	I255A	235H	265	I260A	I260A	250	310A	290
19	300	280	260	260	265	245	245	235	260A	235	I215A	220	235	240	230	245	A	A	A	A	A	A	265	275
20	290	285	275	275	280	235	240H	220	210H	210	220	240	I245A	210H	275	A	A	A	A	A	A	A	A	A
21	295	275	275	260	260	250H	240H	I260A	260	I250A	I255A	I245A	250A	225	230	240	250	250A	A	260	260	265	270	275
22	285	300	280	290	280	260	225H	240H	245	220H	I250A	210	200	260	225	210H	240H	250	270	260	275	270A	250	260
23	290	300	275	270	265	250H	245	225	220	210H	250H	205	260H	220	240	270	A	A	A	I265A	I260A	255	275	295
24	295	280	260	275	310	290B	265	A	A	A	215H	I225A	I245A	250	250	245H	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	250	265	260	290	310	300	340	355	300
27	250	310	310	255	295	265	240H	225H	215	225	245	220	235	220	I215A	210H	245H	I245A	A	A	A	275	275	290
28	270	270	250	275	310	275	250	I260A	260A	220	250A	I245A	260	210H	I280A	B	A	A	A	A	A	290A	295	260
29	280	300	300	330	320	260	A	A	250	250	220	210	220	250	250	I245A	I260A	I275A	275	305	305	290	350A	310
30	310	260	260	280	310	290	I260A	I255A	I255A	I235A	215	200	200H	215H	240	240	265H	I270A	A	A	255	270	280	290
31	300	315	345	270	290	245H	280	A	A	A	A	A	A	250	250	240	A	A	A	300	I300C	310	330	300
Count	29	29	29	29	29	29	28	26	26	26	26	27	27	29	29	28	2[illegible]	22	19	23	25	27	28	28
Median	290	290	280	270	280	250	245	240	240	220	220	215	220	225	240	240	245	250	260	260	260	270	275	285
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

W 10

IONOSPHERIC DATA

May 1967 | h'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	E	E	105	E	E	G	G	135	135	120	115	110	110	110	G	G	G	G	125	105	115	110	110	S
2	S	E	E	E	100	100	G	G	G	145	G	G	G	G	105	105	120	140	100	125	100	S	S	S
3	S	E	110	105	E	170	G	G	140	140	125	120	115	G	140	G	135	135	145	135	145	E	165	S
4	140	140	125	125	125	135	125	125	125	140	C	G	115	110	110	110	140	145	125	125	S	120	110	110
5	110	110	110	E	110	G	150	140	125	115	115	120	110	110	110	105	150	120	150	120	120	S	S	S
6	S	E	E	E	E	110	140	135	125	G	G	G	G	G	B	160	145	125	120	115	110	110	110	110
7	110	105	100	E	G	140	G	100	135	135	110	125	125	140	125	G	130	125	120	115	S	S	E	S
8	E	E	E	E	100	G	140	135	115	115	115	120	G	G	C	110	160	150	125	125	100	S	S	S
9	S	105	100	100	100	145	140	125	120	120	G	120	120	G	G	G	G	100	140	S	E	E	S	E
10	S	E	E	E	G	170	G	G	140	125	120	110	110	110	110	160	140	140	125	120	115	E	110	110
11	110	E	E	100	160	G	135	125	120	120	G	G	110	G	G	G	G	140	125	S	E	E	E	E
12	E	E	E	E	G	105	G	145	125	120	120	G	G	G	120	115	G	125	140	125	125	E	S	S
13	S	E	110	105	100	G	140	150	140	120	125	120	120	115	G	G	145	130	120	S	120	S	S	110
14	S	S	110	110	105	G	140	130	125	135	G	115	115	115	110	120	115	125	125	120	115	S	S	S
15	105	105	E	100	G	G	155	130	120	120	120	G	G	G	105	105	110	135	125	S	115	S	S	E
16	E	E	105	100	G	150	145	125	125	120	120	115	120	G	G	105	100	145	135	125	120	110	110	S
17	S	110	105	100	100	G	G	G	135	125	120	G	G	G	G	G	135	120	115	125	115	S	E	E
18	E	E	E	E	G	G	135	120	125	115	110	110	125	135	120	115	110	G	140	120	115	110	110	110
19	110	105	105	105	105	G	120	120	115	120	115	115	115	115	G	G	125	120	120	115	110	110	110	S
20	S	E	E	100	105	105	G	G	G	115	115	110	110	G	155	140	120	120	120	115	110	110	110	110
21	105	E	100	100	105	135	100	120	115	115	110	110	110	110	110	105	105	100	105	100	115	S	110	110
22	110	105	105	110	G	115	140	120	125	120	110	115	115	125	G	G	G	G	125	115	110	110	110	110
23	S	105	E	E	G	G	125	120	120	120	115	120	115	115	110	130	120	115	115	110	110	110	110	105
24	105	105	E	105	G	B	135	115	115	115	125	115	110	115	110	115	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	G	G	105	140	S	S	E	S
27	E	E	E	E	G	G	105	105	115	115	115	115	115	110	105	105	145	125	120	115	115	110	S	S
28	E	105	E	E	G	105	145	125	120	125	120	115	110	110	105	B	140	120	115	120	110	105	S	105
29	S	125	135	125	125	140	120	120	120	120	125	120	110	115	G	130	125	120	G	120	115	S	110	S
30	105	105	140	125	125	125	115	110	120	115	120	G	G	120	115	105	140	125	120	115	115	110	110	110
31	110	E	110	E	G	150	125	120	120	125	110	115	110	115	120	140	125	120	115	115	C	110	110	110
Count	11	13	16	16	14	16	21	24	27	28	23	21	22	18	18	19	23	25	28	25	23	13	15	12
Median	110	105	110	105	105	135	135	125	125	120	115	115	115	115	110	115	130	125	120	120	115	110	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

May 1967 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45° 23.6'N | Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			f					h	h	c	c2	1	c	1					c	1	f3	f2	f	
2					1	1				h					1	12	c 1	h 1	1 h	c 1	f			
3			f	f		h			h	h	c	c2	c2		h		h	h	h	h	f2		f	
4	f2	f	f	f	c	c	c	c	c	h			c	c	1	1	h 1	h 1	c	c		f2	f3	f3
5	f2	f2	f		1		h	h	c	c2	c	c	c2	c	1	r	h	c	h 1	c 1	f			
6						1	h	h	c							h	h	c	c	c3	f4	f3	f2	f
7	f	f2	f			h		1	h	h	1 c	c .	c	h	c		h	c2	c4 1	c5				
8					1		h	h	c2	c2	c	c				1	h	h	c	c	f			
9		f	f2	f	1	h	h	c	c	c		c	c					1	h					
10						h			h	c	c	c	c	c	c 1	h	h	h	c3	c	f2		f	f2
11	f			f	h		h	c	c	c			c					h	c					
12						1		h	c	c	c				c	c		c	h	c	f2			
13			f	f2	1		h	h	h	c4	c	c	c	c			h	h	c4		f			f2
14			f	f	1		h	h	c2	h		c	c	c 1	c 12	c2 1	c2 12	c 1	c 1	c2	f4			
15	f	f		f2			h 1	h	c2	c	c				12	12	1	h	c 1		f			
16			f	f		h	h	c	c	c	c	c	c			1	1	h	h 1	c	f	f	f	
17		f	f	f	1				h	c	c						h	c2	c2	c	f			
18							h	c3	c	c	c2	c2	c	h	c	c2	c2		h	c3	f6	f	f4	f2
19	f2	f	f2	f2	1		c	c	c	c	c2	c	c	c			c2	c2	c4	c5	f4	f4	f2	
20				f	1	1				c	c	c	c		h	h	c2	c2	c5	c4	f2	f6	f7	f6
21	f2		f	f	1	h	1 h	c2	c2	c2	c2	c2	c	c	c	1	12	14	12	12	f f		f	f
22	f	f2	f2	f		1	h	c	c	c	c	c	c	c					c	c2	f3	f4	f	f
23		f2					c	c	c	c	c	c	c	1	1	h	c3	c4	c2	c4	f4	f4	f2	f
24	f	f		f2			h	c2	c	c	c	c	c	c	1	c								
25																								
26																			1	c 1				
27							12	1	c	c	c	c	c	c	c3	1	h	c3	c2	c4	f3	f5		
28		f				1	h	c2	c	c	c	c	12	c	c2		h2	c3	c5	c4	f6	f2		f
29		f2	f2	f	c	h	c2	c2	c	c	c	c	c	1		h2	c2	c2		c	c		f2	
30	f	f	f	f2	c2	c	c3	c2	c	c2	c			c	c	1	h 1	c	c2	c4	c2	f3	f2	f4
31	f2		f			h	c2	c2	c	c2	c	c2	c2	c	c	h	c	c3	c2	c2		f2	f2	f
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

IONOSPHERIC DATA

May 1967 | foF2 | **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	071	072	070	067	068	078	091	095	094	091	088	094	103R	I102R	I102R	103R	I101C	U097R	093	086	073	075	076	074
2	074	073	071	066	067	071	090	096	091	092H	096	095	101	109	107	109	102	099R	I105R	I100R	080	074	080	077
3	077	075	069H	067	062	065	058	052	055	056	057H	064	066	077	079	079	081	075	072	064	066	064	061	065
4	054	053	051	049	052	057	064	062	077	064	094	088	092	086	083	083	083	082	086	092	077	071	064	066
5	063	060	059	056	058R	065	062R	066	068	074	076	077	080	092	095	102	I104R	098	089	I084A	071	066	F	073
6	071	071	067	066	066	081	080	085	084	085	083	090	094	097	106	113	111	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	085	093	101	106	114	114	113	108	109R	101	087	083	081	079
8	C	C	C	C	C	C	C	C	C	C	098	095	094	095	095	092	095	092	086	079	071	069	071	067
9	069	066	066	063	056	071	072H	076V	076	082	088	086	101	100	102	103	094	082	087	086	082	074	072	072
10	072	067	068	065	050	058	066	066V	059	058	063	068	070	071	I074C	I069C	069	071	072	069	071	058	059	058
11	059	058	054	057	056	066	078	076	071	072	077	079	086	097	106	107	099	094	I096R	073	063	065	067	066
12	069	066	066	065	064	077	072	072	073	078	086	101	114	106	104	108	108	100	093	090	082	079	075	076
13	076	074	070	071	069	069	076	083	076	068	076	079	089	091	094	111	102	094	084	084	077	072	076	077
14	072	F	F	061	054	061	076	082	078	071	074	078	081	086	085	082	091	096	I096R	091	082	074	FS	FS
15	F	FS	FS	F	FS	072	061	069	078	071	076	078	085	090	095	088	078	078	079	088	086	075	074	075
16	072	071	069	067	068	075	076	080	088	081	075	076	084	105	101	099	088	086	087	088	087	084	083	075
17	073	075	073	068	067	072	084	092	085	083	091	100	105	107	112	107	096	084	081	081	079	082	084	078
18	075	074	072	069	069	073	083	081	082	086	093	099	105	106	108	104	099	106	106	096R	082	076	077	078
19	079	FS	FS	076F	076S	073	076	091	091	086	092R	095	101R	103	099R	105	098	I095R	093R	088	073	I072R	U073S	072
20	069	068	069	067	066	071	078	085	083H	085	085	096	097R	100R	097	100	091	086	093	I098R	I090R	FS	FS	FS
21	U079R	I075A	FS	FS	FS	077	088	082	084	078	085	089	089	092	094	098	097	091	088	I090A	087	091	084	081
22	081	078	076	070	071	082	079H	077	081	080	090	092	098	098	099	097	096	096	I094R	096S	084	083	083	079
23	080	079	076	074	078	096	101	090	081	081	084	091	098	102	099	102	101	101	109	108	078S	082	082	FS
24	FS	FS	FS	072	069	086	099	099	095	083	079	090	094	092	093	096	101	097	I089A	086R	084	086	086	085
25	FS	085	084	076	063	069	089	U101R	103	088	086	097	099	092	096	100	107	104R	I099R	093	087	087	094	096
26	077	072	I076C	I065C	I054C	I064C	I072C	I073C	D068W	I064C	065	C	C	C	061	065	061	070	062	059	053	054	I058A	061
27	058	I052A	054	067	047	065	086	095	098	103	107	117	106	103	105	103	106	I107R	A	R	A	RS	FS	096
28	089	FS	FS	081F	079	081	081	077	073	066	063	065	068	066	067	I072B	073	078	076	079	086	I088R	080F	082
29	076	071	072F	F	067	078	062	062	062	061	059	E052G	060	063	067	068	065	I066R	066	071	074	075	064	068
30	066	071	073	059	053	069	087	090	096	096	082	I080C	085	085	084	082	083	084	091	098	I090R	078	081	FS
31	082	077	066	073	066	061	I054R	064	065	071	073	067	075	074	072	073	061	066	065	069	I066R	066S	066	069
Count	26	24	23	26	27	29	29	29	29	29	31	30	30	30	31	31	31	30	29	29	29	28	26	26
Median	072	072	069	067	066	071	078	081	081	080	084	090	094	096	096	100	096	093	089	088	080	075	076	075
U.Q.	077	075	073	071	069	078	086	090	090	086	090	095	101	103	104	105	102	098	094	094	086	082	082	079
L.Q.	069	066	066	065	056	065	069	070	072	070	075	078	084	086	084	082	083	082	080	079	072	070	067	068
Q.R.	008	009	007	006	013	013	017	020	018	016	015	017	017	017	020	023	019	016	014	015	014	012	015	011

foF2

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

A 1

IONOSPHERIC DATA

May 1967 | foF1 | 135° E Mean Time (G.M.T.+9h) | Akita | Lat. 39° 43.5'N Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	510L	550	570H	550L	530H	530	520	I470C	A						
2							380L	L	470	470	530	680	570	560	550	470	510L	L						
3						320	380	420	440	480	490	520	560H	520	I510A	470	450L	L						
4						L	380	440	L	590	530	520	560	560	500	L	L	L						
5							480	450L	500	520	520	I510A	530	I530A	I510A	480	A	A						
6								L	450L	490	500	510	550H	510	E580S	500H	480L	C						
7								C	C	C	A	590	530	570	I530A	I490A	420L	A	A					
8								C	C	C	520	510	560	530	510	490	460L	L						
9								L	L	530L	500	530	520	510	510	470	L	L						
10							430	460L	470	470	490	490	500	490	480	I470C	430	L	L					
11							L	440	460	480	520	550	520	520H	I490A	480	450L	A	A					
12							L	L	460L	500	530	520	520	480	480	480	450L	A						
13							L	L	A	A	450	520	500	550	520	I460A	450	L						
14							L	L	460	480	550	520	I540A	510	500	500L	A	L	A					
15								460	470A	I520A	530	520	540	520	490	480	L	L						
16							L	L	480L	500L	510H	560	560	520	500	490	460	L						
17							L	450	480L	510	570	540	540	520	510	480L	480	400L						
18								A	480L	I510A	I540A	530	540	I540A	I510A	A	A	L	L					
19							A	A	500	480	550	570	540	I530A	540	510	I490A	A	A					
20								480	LH	500	590H	550	540	530	520H	L	A	A	A					
21								A	A	A	540	560	I560A	I560A	560	510	480	440	L					
22								L	530L	600	600	500	570	550	590L	540L	500	L	L					
23							L	L	L	580	600	590	550	560	540	A	A	A	A					
24							L	A	500L	L	580H	580	560	570	550	520	500	450L	A					
25						L	L	A	A	A	590H	590	550	610	570	510	500H	L	A					
26						I460C	I480C	I490C	480A	I510C	480A	C	C	C	540	530	500L	450	L					
27							L	L	L	550L	600	510	560	560	I560A	L	L	A	A					
28						410L	440	470	500	540A	540	550H	550	540	520	B	A	A	A					
29						L	410	490A	490	I510A	520	520R	520	510	520H	500	490	460	A					
30						400	L	A	530	I530A	520	I600C	580H	570L	560	I520A	520	A	A					
31							510	490	500	520	530A	540	550	510	520A	490	490	L	A					
Count						4	9	12	20	25	30	30	30	30	31	25	21	5						
Median						400	430	460	480	510	530	540	550	530	520	490	480	450						
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

IONOSPHERIC DATA

May 1967 | foE | 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						B	245	300	I330A	355	360	I370A	I375A	360R	350	335	I310C	260	B					
2						170	245	300H	320	345	R	A	355	355	355	330	300	255	B					
3						165	240	280	320	340	350	360	365	370	355	335	305	A	B					
4						A	235	285	315	335	355	365	370	I365A	I355A	I330A	295	255	A					
5						170	240	290	320	I340A	350	I350A	A	A	A	A	A	A	A					
6						B	230	295	320	335	I345A	355	360	365	I355S	335	300	C	C					
7						C	C	C	C	C	I350A	I355A	I365A	360	350	340	305	255	A					
8						C	C	C	C	C	350	360	365	355	I345A	330	305	260	195					
9						165	235	285	320	335	345	355	I365A	370	360	320	285	260	200					
10						160	230	295	325	335	350	355	I360A	360	350	I320C	295	260	195					
11						155	245	295	320	335	345	355	A	A	A	I340A	I300A	255	190					
12						165	245	285	310	335A	345	I350A	360	370	355	330	I295A	I245A	I175A					
13						A	220	285	320	335	350	I350A	A	A	A	A	A	255	A					
14						190	250	290	320	I335A	345	355	I360A	365	355	340	315	A	A					
15						155	230	285	315	335	355	360	365	A	A	A	A	260	200					
16						190	265	300	320	340	350	A	A	A	345A	330	I300A	265	A					
17						180	255	300	320	335	345	I355A	360	365	355	340	310	270	210	S				
18						160	245	290	315	335	355	365	375	375	360	335	315	285	A	S				
19						155	235	290	325	355	370	A	A	A	370	350	320	275	210A					
20						I175R	250A	285A	315	A	A	A	A	395	375R	345	315	270	A					
21						A	275A	315A	345	365	375	380	A	A	375	A	A	A	A					
22						I195B	280	320	340	370	390	A	A	390	I380A	365	325	290	A					
23					E	190	265	320	345	360	375	A	A	A	I390A	370	340	285	A					
24					150	280	305	325	I345A	A	A	A	R	A	A	A	A	295	A					
25					E	210	275A	I310A	I335A	365	A	A	395	A	A	A	355	I295A	230	S				
26						C	I265C	I315C	350	I360C	370	C	C	C	370	I355A	320	280	A	S				
27						A	285	320	I340A	I360A	375	385	A	A	A	A	A	290	A	S				
28						200	275	320	335	355	375	A	A	400	I375A	I370B	345	305	I200A	S				
29					E	225	285	320	I340A	365	375	A	A	A	380	360	325	285	A	S				
30					E	220	275	315	345	I360A	I375A	I385C	I390A	A	A	A	A	290	A	E				
31					E	200	280	I320A	345	365	I380A	385	A	A	A	A	A	280	A	S				
Count					6	22	29	29	29	27	27	20	16	16	22	22	23	26	10	1				
Median					E	180	250	300	320	340	355	360	365	365	355	340	310	270	200	E				
U.Q.																								
L.Q.																								
Q.R.																								

foE

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

May 1967 | **foEs** | **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	E017B	E012S	E	E	E	E014B	029	035	044	042	041	040	044	G	G	041	C	J047	J046	J032	J024	J021	J032	026M
2	J020	024M	J023	E	E	G	G	G	035	041	J056	J043	038	038	042	039	040	038	024	022	J048	J021	J020	025M
3	022	E018B	E	E	E	G	026	G	038	J043	049	049	045	G	J053	G	G	031	E021B	E018B	E018B	E018B	E022B	E017B
4	E014S	J017	J016	J016	J015	021	028	036	036	038	041	048	040	041	J077	037	038	038	J031	J020	023M	J016	E018B	J018
5	J026	J023	J029	J027	J013	G	G	034	046	044	048	J051	J047	J057	J064	J045	J071	J054	J066	J118	J063	J030	J044	E019B
6	E018B	E012S	J018	E	J011	023	030	037	037	041	041	043	043	G	E058S	038	G	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	J057	J080	050	J057	J061	J046	035	J047	J055	J050	J032	024M	022M	E018B
8	C	C	C	C	C	C	C	C	C	C	J050	049	048	J051	J040	G	038	042	J034	J038	022M	J024	J019	E013S
9	E018B	E013S	J018	E	E	G	G	040	J056	J050	J051	039	039	G	G	G	G	G	029	J021	J020	E016B	E018B	E018B
10	E018B	E013S	E	E	E	021	027	032	039	041	041	040	J045	043	042	C	038	037	J046	J030	J026	J024	E018B	E018B
11	E017B	E	E	E	E	G	031	039	041	J042	045	042	038	039	J065	037	035	J079	J078	J044	J021	J018	J017	E018B
12	E018B	E013S	E	E	E	022	027	035	041	046	J04[illegible]	043	J044	G	044	J052	041	J066	J028	J023	J025	J033	023M	E018B
13	E013S	E012S	J020	J025	J023	021	029	036	J049	J056	J054	J057	J052	J049	040	J060	J044	031	J037	J044	J042	J033	J037	J020
14	J024	J020	J019	J028	J079	G	032	044	J044	J060	041	046	J073	051	J061	J052	J050	J041	J060	J078	J037	J025	J049	J040
15	E018B	J016	J014	J019	J015	G	032	041	048	J053	045	043	041	039	038	036	J036	030	J035	J044	J028	J024	022M	J018
16	E019B	J016	E	E	E	G	030	038	J046	053	J054	041	039	J042	041	J038	J034	031	025	J022	J021	E018B	E013S	E018B
17	E018B	E012S	E	E	J020	022	031	036	J045	041	045	041	G	G	G	G	036	037	J036	J033	J043	E018B	J018	E019B
18	E012S	E013S	E	E	E013S	021	J040	J054	J048	J074	J101	051	048	J080	J080	J071	J087	032	035	J077	J057	J052	J051	J032
19	J045	J052	J066	J038	J040	027	J076	J065	J045	045	045	J045	J051	J064	040	047	J053	044	J056	J056	J056	J051	J081	J063
20	J027	025M	J019	015	J020	015G	032	036	037	J044	J063	J075	040	G	G	051	J060	J076	J053	J028	J067	J083	J073	J063
21	J082	J077	J062	J038	J052	J032	041	J050	J057	J067	J077	J079	J175	J087	J066	J055	J074	J064	J050	J170	J154	J021	J026	E
22	E018B	J015	J024	J017	J026	025	031	J049	061	053	046	045	J065	G	043	G	G	034	J043	J051	J071	J050	J036	J025
23	021M	J027	E	E	E	022	031	J045	J060	045	046	J050	J045	J069	043	J060	J073	J072	J055	J108	J083	J045	J046	J054
24	J025	J022	J017	J014	J020	G	043	J053	J074	051	J046	046	046	051	J053	J046	J058	J062	J108	J078	J031	J080	J078	E
25	E	J011S	J021	J020	012	G	040	J063	J074	J054	044	041	041	042	043	041	G	041	J048	J035	J022	J076	J020	J026
26	J018	J035	C	C	C	C	C	C	J062	C	J075	C	C	C	034G	038	G	G	026	J024	J021	J020	J090	J042
27	J080	J064	J043	J029	J028	024	031	035	040	J056	047	J047	J064	J084	J099	J085	J063	J085	J170	J168	J135	J123	J067	J065
28	E017B	J017	J021	J030	J016	029	036	043	045	J052	J060	046	053	054	043	B	J075	J075	J085	J064	J080	J087	J050	J022
29	E	J017	J016	J021	018	025	J049	J050	J060	J062	J065	J063	J073	J040	G	047	J054	J076	J075	J075	J035	J025	E014S	E014S
30	J029	J023	J015	J035	J021	027	036	J075	J058	J102	J059	C	J060	J058	J048	J066	J084	J074	J057	025	J068	J043	J045	J037
31	J029	J029	J032	J018	E	024	035	J060	041	046	J063	043	J076	J048	J066	J050	J083	039	J043	J034	J076	J077	J070	J043
Count	29	29	28	28	28	28	28	28	29	28	31	29	30	30	31	29	30	30	30	30	30	30	30	30
Median	E018	J017	J018	J016	J014	021	031	040	045	J048	J048	046	046	042	043	045	J040	042	J046	J041	J036	J025	J029	J020
U.Q.	026	024	022	026	020	024	036	050	058	055	059	050	053	057	061	052	063	066	057	075	067	050	050	037
L.Q.	E017	E013	E	E	E	G	028	036	040	042	045	042	041	G	040	037	035	034	034	025	023	021	018	E018
Q.R.	D009	D011					008	014	018	013	014	008	012		021	015	028	032	023	050	044	029	032	D019

foEs

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

A 4

IONOSPHERIC DATA

May 1967 | f_bEs | 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	B	S				B	027	033	038	041	038	038	040			038	C	043	040	017	021	019	019	019
2	019	E	020						034	038	038	037	038		040	035	037	038	020	020	023	020	020	E
3	E	B					026		036	037	042	043	043		053			027	B	B	B	B	B	B
4	S	013S	014	013	013	019	027	032	G	037	040	043	039	039	019	037	033	034	031	018	E	016	B	017
5	020	019	019	018	012			033	044	042	047	051	045	057	058	034	062	041	062	A	F	027	024	B
6	B	S	014		011	023	030	036	035	037	039	042	041		S	038		C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	057	050	048	056	058	046	034	044	057	042	025	E	018	B
8	C	C	C	C	C	C	C	C	C	C	048	048	047	047	039		038	039	027	037	E	020	E	S
9	B	S	013S					G	043	042	042	039	038						028	019	018	B	B	B
10	B	S				021	027	032	037	039	039	039	041	039	039	C	037	034	039	024	024	022	B	B
11	B						030	036	038	040	043	042	038	038	058	036	034	058	078	039	018	017	017	B
12	B	S				022	027	032	039	043	019	038	020		039	044	038	051	026	018	018	033	E	B
13	S	S	E	013	E	021	028	034	048	056	048	047	041	038	036	053	036	029	036	025	019	026	030	018
14	E	017	014	022	017		032	042	043	038	039	045	061	051	041	042	046	040	058	058	028	023	020	019
15	B	012S	013	015	014		031	040	047	049	043	041	039	038	037	036	036	029	033	037	024	019	E	018
16	B	013					028	037	043	044	039	039	039	038	037	027	033	029	024	020	018	B	S	B
17	B	S			E	021	029	035	042	040	043	038					035	033	034	029	024	B	018	B
18	S	S			S	020	033	051	043	067	074	044	048	077	074	059	087	031	033	051	057	044	025	020
19	025	030	030	021	024	024	058	063	043	043	041	042	045	059	038	043	053	043	U056R	056	047	040	033	046
20	022	E	018	013	018	E015R	032	035	036	040	042	041	U042R			047	056	058	047	025	056	055	030	020
21	040	A	031	026	028	023	040	048	055	061	044	047	077	059	055	049	039	042	035	A	025	018	023	
22	B	013	012	014	021	025	030	044	047	049	043	042	045		039			033	043	046	040	043	028	023
23	018	018				029	029	043	048	043	042	042	041	046	043	055	065	069	054	078	016	018	028	042
24	019	015	014	E	012		041	052	044	048	043	042	045	049	040	039	038	040	A	055	028	035S	031	
25		E	014	012	012		035	059	061	053	040	041	041	042	042	039		037	045	033	018	016	E	018
26	E	029	C	C	C	C	C	C	048	C	048	C	C	C	033G	038			026	018	014	017	A	017
27	017	A	019	017	020	024	030	034	039	049	045	043	046	044	068	046	040	085	A	058	A	024	055	045
28	B	013	E	018	014	028	034	042	042	054	051	044	050	047	043	B	070	069	068	030	025	060S	E	020
29		013	E	013	014	024	039	049	045	057	044	044	043	040		044	042	042	041	038	E	019	S	S
30	021	012	014	028	014	026	033	U075R	044	076	043	C	041	041	044	066	051	069	044	023	065	021	024	026
31	018	017	021	016		023	033	039	038	044	053	043	044	042	052	046	036	036	036	029	042	047	018	019
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bEs

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

A 5

IONOSPHERIC DATA

May 1967 | f-min | 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	017	E012S	E	E	E	014	018	018	019	021	024	020	023	023	021	020	C	014	018	017	019	018	018	019
2	018	E014S	E	E	E	015	019	020	020	020	024	026	027	021	024	020	020	017	018	017	019	016	018	019
3	018	018	E	E	E	014	020	020	020	020	024	021	022	027	019	018	018	018	021	018	018	018	022	017
4	E014S	E	E	E	E	013	018	020	019	020	025	023	025	019	019	018	019	014	013	E012S	018	E012S	018	E013S
5	018	E	E	E	E	014	020	019	019	025	019	019	026	023	019	019	018	017	017	E	017	E014S	018	019
6	018	E012S	E	E	E	016	019	019	021	024	019	024	028	020	E058S	018	017	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	024	024	027	025	023	019	018	021	019	E013S	E014S	E014S	018	018
8	C	C	C	C	C	C	C	C	C	C	023	021	022	019	020	018	018	017	018	E012S	018	016	E014S	E013S
9	018	E013S	E	E	E	014	019	019	020	018	019	018	020	022	019	017	017	020	014	E013S	017	016	018	018
10	018	E013S	E	E	E	014	019	018	018	021	019	020	025	019	019	C	018	018	017	E	E012S	E013S	018	018
11	017	E	E	E	E	013	018	019	018	019	020	023	019	021	019	018	018	014	013	E013S	E013S	E014S	E013S	018
12	018	E013S	E	E	E	013	018	018	019	018	019	020	020	021	018	020	018	017	017	E	E015S	E013S	017	018
13	E013S	E012S	E	E	E	015	018	018	019	018	019	021	019	020	019	017	014	014	012	E012S	E	E	E	E
14	018	E	E	E	E	013	018	019	019	020	019	020	019	021	020	019	020	019	018	018	E012S	E012S	E012S	E013S
15	018	E	E	E	E	013	019	018	019	020	020	027	027	024	023	019	018	018	014	E014S	017	018	018	018
16	019	E	E	E	E	012	018	018	023	020	019	025	026	019	021	020	019	018	013	E012S	E012S	018	E013S	018
17	018	E012S	E	E	E	014	019	021	019	019	024	023	021	020	022	021	018	018	018	E013S	E012S	018	018	019
18	E012S	E013S	E	E	E013S	014	019	019	019	020	024	026	026	022	020	020	019	019	019	E012S	017	E013S	019	E014S
19	E012S	E	E	E	E	013	019	019	019	031	026	024	025	026	023	024	020	020	013	018	018	018	018	018
20	018	018	E	E	E	012	020	020	021	019	026	028	029	026	020	023	019	019	020	014	019	018	018	019
21	018	019	E	012	011	011	020	022	023	019	023	021	023	020	018	019	018	013	012	E	E012S	E012S	E	E
22	018	E	E	E	E	021	019	020	020	026	021	020	021	022	020	020	019	017	012	013	017	017	017	017
23	018	E012S	E	E	E	014	018	019	021	021	021	020	023	021	018	017	016	013	013	E012S	E	E	E012S	E
24	017	E	E	E	E	024	027	024	020	021	025	026	032	033	E030S	021	019	018	012	014	E	017	017	019
25	017	E	E	E	E	013	019	019	020	019	019	018	018	027	021	018	019	017	017	E014S	E014S	E014S	E013S	E013S
26	017	E	C	C	C	C	C	C	020	C	019	C	C	C	019	017	017	013	016	E012S	E	E012S	017	016
27	E	E	E	E	E	014	018	019	019	020	019	026	022	023	017	017	017	014	E	E014S	E012S	E014S	017	E012S
28	017	E	E	E	E	014	019	019	019	019	023	022	020	018	018	B	021	017	012	E012S	E	E012S	017	E013S
29	E	E	E	E	E	015	018	020	021	021	021	018	022	022	022	019	017	017	012	E014S	E013S	E	E014S	E014S
30	016	E	E	E	E	014	019	020	020	019	018	C	020	019	019	019	017	017	017	E	016	E012S	E013S	E014S
31	E012S	E	E	E	E	012	018	019	020	023	021	024	020	020	019	016	017	014	013	E014S	E014S	016	016	016
Count	29	29	28	28	28	28	28	28	29	28	31	29	30	30	31	30	30	30	30	30	30	30	30	30
Median	018	E	E	E	E	014	019	019	020	020	021	022	022	021	020	019	018	017	015	E013S	E014	E014	017	017
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

A 6

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IONOSPHERIC DATA

May 1967 | M(3000) F2 | **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	255	265	275	275	270	295	300	305	300	310	290	270	280R	I280R	I290R	295R	I290C	U300R	315	310	280	260	265	265
2	270	275	275	270	270	280	305	320	305	280H	280	260	275	280	280	290	285	290R	I290R	I300R	280	250	255	260
3	265	270	260H	255	250	265	250	235	245	220	245H	265	250	275	285	285	300	300	300	270	255	255	240	270
4	255	255	245	240	230	275	285	310	325	225	290	320	305	300	305	305	320	305	305	295	295	280	265	265
5	260	260	245	265	265R	320	300R	295	300	285	290	275	280	285	290	295	I295R	310	305	I295A	280	260	F	280
6	255	270	270	275	270	310	335	330	320	325	300	290	295	285	290	300	295	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	295	275	285	275	280	275	290	285	295R	300	300	270	265	270
8	C	C	C	C	C	C	C	C	C	C	290	285	290	285	295	295	305	310	310	310	285	270	270	265
9	265	265	275	290	270	300	300H	315V	300	300	300	285	290	290	290	300	310	300	310	295	290	280	265	265
10	270	275	290	315	290	330	305	285V	260	265	270	265	275	270	I290C	I285C	300	305	310	295	295	280	265	260
11	265	265	260	275	280	320	325	320	310	305	285	280	270	275	280	290	300	300	I315R	300	275	265	270	265
12	270	275	275	290	295	335	325	330	300	295	265	275	290	285	280	285	290	295	305	305	285	285	270	265
13	270	275	275	285	300	300	320	315	330	310	295	280	290	275	265	280	285	300	300	295	290	265	270	275
14	260	F	F	305	285	290	310	335	320	310	290	295	285	295	295	290	295	290	I300R	305	285	280	FS	FS
15	F	FS	FS	F	FS	295	300	300	325	290	290	285	275	280	300	300	300	300	285	295	290	285	265	270
16	265	255	275	285	280	315	315	310	320	300	295	285	270	285	290	295	295	305	300	295	285	280	275	275
17	265	275	280	280	280	290	295	320	305	295	275	280	280	280	290	300	300	305	295	285	270	265	275	275
18	255	270	275	280	290	300	300	310	275	290	270	280	280	285	285	290	285	295	305	305R	275	275	265	275
19	275	FS	FS	280F	295S	300	290	300	310	290	285R	275	280R	285	275R	285	285	I310R	310R	305	265	I265R	U260S	255
20	270	280	275	275	285	300	300	300	300H	305	285	280	280R	280R	285	290	295	285	285	I295R	I305R	FS	FS	FS
21	U280R	I280A	FS	FS	FS	305	330	300	315	290	290	285	275	275	275	280	290	295	285	I285A	280	275	270	265
22	260	270	275	270	265	315	290H	315	300	265	265	270	270	280	275	280	285	290	I290R	300S	280	275	270	270
23	270	270	270	275	285	305	320	310	320	285	270	265	260	265	270	270	275	255	290	305	320S	255	260	FS
24	FS	FS	FS	265	260	290	305	295	295	295	255	255	270	265	265	275	290	300	I295A	285R	265	270	270	270
25	FS	275	280	295	280	280	290	U295R	295	260	255	245	270	255	260	265	270	275R	I285R	290	275	265	240	255
26	235	230	I255C	I270C	I245C	I230C	I220C	I210C	220W	I220C	225	C	C	C	240	245	235	275	260	275	255	255	I240A	265
27	275	I240A	245	290	285	285	305	300	290	285	285	290	285	265	265	255	265	I275R	A	R	A	RS	FS	260
28	265	FS	FS	275F	270	265	275	275	275	260	245	250	260	265	260	I255B	265	285	265	265	260	I255R	255F	275
29	275	250	250F	F	255	290	305	255	275	220	230	G	235	240	255	260	255	I255R	260	255	250	265	245	245
30	245	255	275	280	255	260	275	265	270	295	295	I280C	280	290	285	280	285	285	280	295	I290R	265	265	FS
31	270	260	235	265	285	300	I300R	250	280	255	255	250	240	255	260	285	265	280	275	275	I260R	255S	255	255
Count	26	24	23	26	27	29	29	29	29	29	31	30	30	30	31	31	31	30	29	29	29	28	26	26
Median	265	270	275	275	280	300	300	300	300	290	285	280	280	280	280	285	290	295	295	295	280	265	265	265
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F2

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

May 1967 | M(3000) F1 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39° 43.5'N Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	370L	355	340H	345L	345H	345	340	I350C	A						
2							385L	L	370	395	365	300	340	330	330	355	345L	L						
3						310	325	340	345	350	355	350	305H	325	I330A	350	340L	L						
4						L	345	345	L	345	325	350	335	340	360	L	L	L						
5							345	360L	345	345	350	I350A	345	I335A	I345A	355	A	A						
6								L	380L	370	365	370	350H	355	I340S	345H	355L	C						
7								C	C	C	A	325	340	I335A	I330A	I345A	350L	A	A					
8								C	C	C	345	355	340	345	350	345	350L	L						
9								L	L	345L	360	345	345	345	345	355	L	L						
10							335	330L	345	355	365	360	360	355	355	I345C	345	L	L					
11							L	370	365	355	340	330	350	330H	I335A	340	355L	A	A					
12							L	L	375L	360	345	365	365	380	375	360	355L	A						
13							L	L	A	A	400	330	340	330	325	I345A	350	L						
14							L	L	370	370	330	330	I335A	I350A	355	340L	A	L	A					
15								345	I345A	I335A	340	350	340	345	365	350	L	L						
16							L	L	365L	360L	375H	325	325	350	350	350	360	L						
17							L	360	365L	355	335	350	335	340	335	345L	350	375L						
18								A	370L	I355A	I345A	340	335	I335A	A	A	A	L	L					
19							A	A	355	375	340	335	350	I345A	335	325	I340A	A	A					
20								355	LH	380	320H	345	350	360	340H	L	A	A	A					
21								A	A	A	360	325	I325A	A	A	A	345	A	L					
22								L	345L	335	335	380	340	345	305L	325L	320	L	L					
23							L	L	L	330	330	325	345	335	340	A	A	A	A					
24							L	A	365L	L	345H	340	325	325	325	340	325	335L	A					
25						L	L	A	A	A	340H	335	365	315	320	335	325H	L	A					
26						I290C	I300C	I310C	I310C	I330C	I350A	C	C	C	320	325	325L	335	L					
27							L	L	L	365L	350	395	360	355	I350A	L	L	A	A					
28						335L	330	345	340	I340A	375	365H	310	335	350	B	A	A	A					
29						L	370	I340A	325	I340A	350	350R	345	345	325H	325	310	310	A					
30						345	L	A	335	I350A	370	I330C	345H	335L	325	I335A	I340A	A	A					
31							315	320	335	340	340A	350	330	360	I330A	330	320	L	A					
Count						4	9	12	20	25	30	30	30	29	29	24	21	4						
Median						320	335	345	350	355	350	345	340	345	340	345	345	335L						
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F1

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

IONOSPHERIC DATA

May 1967 | h'F2 | 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								255	255	280	330	375	325	330	335	310	I285C	275						
2							260	255	275	260	330	385	330	330	335	300	300	290						
3						355	380	570	520	595	470H	440	440	380	340	340	290	290						
4						340	305	300	280	660	325	280	305	310	295	275	275	275						
5							325	300L	320	330	325	315	325	325	320	285	290	260						
6								255	255	270	275	285	310	305	310	280	280	C						
7								C	C	C	305	345	320	335	315	315	285	290	270					
8								C	C	C	295	290	300	320	305	295	280	265						
9								260	275	310	305	335	310	290	305	280	270	275						
10							315	360L	430	440	430	400	370	390	330	I340C	310	280	270					
11							265	265	280	305	330	350	345	330	325	285	275	280	I265A					
12							250	255	250	295	335	335	310	290	320	300	290	275						
13							260	260	265	I285A	325	350	320	345	345	315	290	275						
14							290	270	275	280	350	315	345	315	300	310	305	295	275					
15								310	275	300	340	345	345	330	290	305	290	280						
16							265	265	275	285	275	345	365	325	295	285	280	275						
17							270	255	265	290	360	320	320	320	300	280	285	260						
18								250	280	I305A	I315A	320	320	325	320	295	I305A	280	265					
19							I270A	295	285	275	330	350	340	325	330	320	300	285	275A					
20								290	255H	280	355	340	340	325	330	305	300	300A	295					
21								260	275	340	330	335	I340A	345	335	320	305	285	290					
22								255	305	400	375	305	350	325	335	325	315	295	285					
23							240	255	245	330	365	360	345	340	340	330	325	310	285					
24							270	270	280	320	425	410	355	375	365	350	320	295	A					
25						320	295	300	280	280	360	395	345	395	380	345	320	300	280					
26						C	I495C	C	560	I595C	540	C	C	C	570	490	550L	325	340L					
27							260	250	270	280	330	290	290	325	330	290	320	I315A	A					
28						320	320	355	360	445	525	500	440	410	440	I410B	I385A	A	A					
29						280	275	470	415	690	590	G	570	510	450	430	430	390	350					
30						345	305	I315A	325	325	285	I360C	350	335	340	I325A	330	I320A	290					
31							L	470	345	430	420	475	470	430	430	390	395	340	300					
Count						6	20	28	29	29	31	30	30	30	31	31	31	29	15					
Median						330	270	270	280	305	330	345	340	330	330	310	300	285	285					
U.Q.																								
L.Q.																								
Q.R.																								

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

May 1967 | h'F | 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	310	300	265	255	280	260	240	235	235	225	205	200	200H	200H	235	235	I230C	I240A	245	245	255	300	305	300
2	295	270	280	260	295	265	245	245	225	230	200	225	225	220H	230H	240	240	I265A	275	245	230	315	325	290
3	295	290	300	295	340	295	270	245	245	255	240	230	270H	230	I265A	230	235	255	270	275	305	290	340B	290
4	300	325	360	325	340	290	245	245	230	225H	230	250	225	230	235	240	265	245	265	250	240	255	280	310
5	325	330	340	290	265	240	230	235	275	235	I255A	I255A	245	I245A	I250A	230	I245A	I250A	280	I270A	240	305	335	290
6	300	280	280	270	285	240	230	230	220	215	205	210	205H	205H	I250S	240H	245	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	A	270	I230A	I240A	I210A	I225A	235	A	A	260	235	275	290	290
8	C	C	C	C	C	C	C	C	C	C	I245A	I250A	250	I230A	225	225	270	I260A	250	240	245	270	290	300
9	295	285	280	260	275	240H	230	240	250A	240	215	210	215	215	210	225	230	240	260	245	245	250	275	305
10	290	275	260	225	235	240	235	230	225	230	220	215	225	225	235	I235C	I250A	I255A	I255A	250	250	255	280	325
11	310	290	310	285	275	245	240	230	225	230	240	225	195	205H	I210A	240	235	A	A	250	260	300	290	315
12	300	285	280	250	250	240	230	230	235	255	210	210	195	225	220	I225A	245	I245A	255	240	250	280S	270	290
13	290	275	275	270	240	240	245	235	A	A	A	I245A	225	215	210H	I240A	240	240	255	250	275	295	315	290
14	300	290	260	245	280	255	245	I245A	240A	220	195	I230A	I230A	I220A	230	I235A	A	A	A	280	250	260	300	320
15	310	290	270	275	270	235	230H	255	A	A	245	225	220	205	230	225	235	245	275	270	250	245	285	300
16	305	300	280	265	270	235	230	240	250A	245	180H	195	215	215	215	230	230	250	265	260	265	255	265	275
17	310	290	270	235	280	240	240	230	245	215	225	205	205	225	230	225	230	235A	265	260	280	305	280	280
18	280	285	250	245	255	240	245	I230A	245	I235A	I240A	240	I230A	I220A	A	A	A	255	I250A	260	I255A	300	310	295
19	300	320	300	240	265	235	A	A	240A	245A	220	225	230	I230A	230	A	A	A	A	275A	I275A	I285A	I300A	I310A
20	320	295	280	260	265	245	230	215	I220A	205	245	210	240	215	180H	A	A	A	A	260	275	I280A	295A	300
21	A	A	A	285	285A	255	260	A	A	A	225	250A	A	A	A	A	230	I250A	I270A	I310A	280	275	280	270
22	305	290	270	275	295	250	230	I245A	250A	260	225	225	235	205H	200H	245	240	250	I265A	275A	295A	I275A	290	300
23	305	295	275	270	280	250H	240	240	I240A	220	220	205	215	240	230S	A	A	A	A	270	225	255	300	I315A
24	290	275	260	280	330	285	A	A	230A	I230A	205H	210	I220A	I255A	240	240	250	A	A	I260A	I275A	I300A	I290A	300
25	305	295	270	230	245	270	255A	A	A	A	195H	210	205	235	225	250	245H	270A	I270A	265	245	285	290	310
26	355	385	I320C	I220C	I325C	I265C	C	C	A	I265C	I250C	C	C	C	240	240	250	240	260	265	290	315	I335A	305
27	300	I320A	325A	275	225	270	240	225	225	I220A	230	210	210	215	I225A	I240A	250	A	A	I260A	I280A	270	300	310
28	270	275	265	275	280	270	255	250A	240A	I250A	240H	205H	A	255A	240	B	A	A	A	300A	300	I330A	340	275
29	255	290	330	310	325	255	I260A	I250A	I245A	I240A	245	240	220	225	240H	I245A	I235A	A	A	320	300	275	280	315
30	350	310	270	270	275	255	245	I240A	240	I240A	220	I225C	205H	205	240A	I230A	I255A	A	A	270	I250A	240	285	315
31	285	305	365	275	250	255	240	245A	240	245	A	235	250	220	I245A	I250A	240	I260A	I260A	280	I295A	I320A	290	315
Count	28	28	28	29	29	29	26	24	24	25	28	30	28	29	29	25	25	19	19	30	30	30	30	30
Median	300	290	280	270	275	250	240	240	240	235	225	225	220	220	230	235	240	250A	265	260	260	280	290	300
U.Q.																								
L.Q.																								
Q.R.																								

h'F

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

May 1967 | h'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	B	S	E	E	E	B	140	130	125	130	130	125	120	G	G	140	C	125	125	105	115	105	120	105
2	105	105	105	E	E	G	G	G	135	125	145	110	135	140	135	130	125	135	140	130	120	115	110	110
3	110	B	E	E	E	G	E160G	G	145	110	125	120	125	G	125	G	G	130	B	B	B	B	B	B
4	S	130	130	120	120	130	135	130	145	155	145	140	150	160	110	155	140	135	120	125	125	120	B	125
5	115	105	105	105	110	G	G	140	130	125	115	115	110	110	105	105	110	115	125	120	135	115	115	B
6	B	S	105	E	110	140	140	130	130	130	125	120	120	G	S	140	G	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	115	110	140	130	130	145	135	125	125	115	115	115	110	B
8	C	C	C	C	C	C	C	C	C	C	125	120	120	115	115	G	145	130	125	115	125	115	115	S
9	B	S	100	E	E	G	G	125	120	120	120	125	125	G	G	G	G	G	130	125	120	B	B	B
10	B	S	E	E	E	145	165	140	125	125	120	120	120	125	120	C	140	130	125	115	115	110	B	B
11	B	E	E	E	E	G	125	125	125	125	120	120	125	125	110	150	120	125	120	120	120	115	115	B
12	B	S	E	E	E	165	155	130	125	120	115	120	105	G	130	120	120	115	120	125	115	115	115	B
13	S	S	100	105	105	155	160	140	125	120	120	115	115	110	115	110	110	140	125	120	125	125	115	110
14	100	100	100	105	105	G	140	125	125	120	125	120	115	125	125	125	125	120	115	115	115	115	115	115
15	B	105	105	105	100	G	140	125	125	120	120	120	120	115	115	115	115	145	120	115	115	110	110	110
16	B	100	E	E	E	G	145	130	120	125	115	115	115	110	110	105	110	135	110	125	115	B	S	B
17	B	S	E	E	100	140	135	125	120	125	115	115	G	G	G	G	140	125	120	120	115	B	110	B
18	S	S	E	E	S	145	125	120	120	120	120	125	125	120	115	120	115	150	135	120	115	110	115	110
19	105	105	105	105	105	125	115	115	125	120	120	120	115	120	E145G	150	130	125	120	120	115	115	110	110
20	110	105	105	105	105	110	115	115	120	115	110	110	115	G	G	140	130	125	125	120	115	115	110	105
21	105	105	105	100	105	105	125	120	120	120	120	115	140	110	115	110	110	105	115	110	115	115	115	E
22	B	105	100	105	110	145	150	125	120	120	125	120	110	G	110	G	G	130	115	115	110	110	105	110
23	110	105	E	E	E	165	130	120	115	125	120	115	110	115	150	130	120	120	115	110	110	110	105	110
24	105	105	105	105	105	G	125	120	115	115	115	115	115	115	135	115	130	120	115	115	115	110	110	E
25	E	105	100	100	130	G	125	115	115	115	120	120	135	130	120	120	G	130	120	120	105	115	105	110
26	110	105	C	C	C	C	C	C	115	C	110	C	C	C	110	115	G	G	120	105	105	120	105	105
27	105	105	105	105	105	105	120	130	125	115	120	120	115	105	105	130	115	125	115	115	115	110	110	110
28	B	105	115	105	110	145	140	125	125	120	115	115	135	130	125	B	130	125	120	115	110	105	105	105
29	E	110	140	130	130	140	125	120	120	120	120	120	115	110	G	135	125	120	115	115	110	105	S	S
30	105	105	130	115	130	140	135	115	115	110	115	C	115	115	115	115	115	120	120	115	115	110	110	110
31	105	105	105	105	E	140	140	125	130	125	115	120	110	110	110	115	140	130	120	115	120	115	110	110
Count	13	19	19	16	17	17	25	26	29	28	31	29	29	22	25	24	24	28	29	29	29	26	24	17
Median	105	105	105	105	105	140	135	125	125	120	120	120	120	115	115	120	125	125	120	115	115	115	110	110
U.Q.																								
L.Q.																								
Q.R.																								

h'Es Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

A 11

35

IONOSPHERIC DATA

May 1967 | **Types of Es** | **135° E Mean Time** (G.M.T. +9h) | **Akita** | Lat. 39° 43.5′N Long. 140° 08.2′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							h	h	h2	h	h	h	h			h		h31	h21	f2	f	f	f2	f
2	f2	f	f3						h	h	h h	c	h	h	h	h	h2	h	h	f	f2	f2	f	f
3	f						h		h	1 h	h2	h2	h		h2			h						
4		f2	f2	f2	f2	h	h	h	h	h	h	h	h	h c	1 h	h c3	h	h2	c4	f	f	f2		f2
5	f2	f3	f3	f3	f			h	h2	h	h2	h2	c2	c3	13	12	c3	c21	h213	f3f2	f f	f3	f3	
6			f		f	h	h	h	h	h	h	h	h2			h								
7											c2	c2	h2c2	h2	h3	h2	h2	h2	h3	f4	f5	f	f	
8											h2	h2	h2	c3	c2		h2	h2	c5	f6	f	f	f2	
9			f2					h	h3	h2	h2	h2	h						h2	f2	f			
10						h2	h	h2	h2	h2	h2	h	h2	h2	h2		h2	h2	c3	f3	f4	f3		
11							h2	h3	h2	h2	h	h2	h	h	c2	h	c2	h5	c3	f3	f2	f2	f	
12						h	h	h2	h2	h2	1 h	h	1 h2		h2	h3	h4	c4	c2	f	f2	f5	f	
13			f	f2	f2	h	h	h2	h3	h3	h3	c2	h2	c2	c	c4	c3	h212	h31	f2f3	f5	f4	f6	f2
14	f2	f3	f	f3	f2		h2	h3	h3	h	h	h2	c2	h2	h2	h2	h2	c3	c4	f3	f4	f2	f2	f2
15		f2	f3	f5	f3		h2	h	h2	h3	h2	h2	h	c	c2	c2	c2	h2	c3	f4	f2	f2	f	f
16		f					h	h2	h3	h2	h2	h2	c2	c	c	12	13	h212	1	c2	f			
17					f	h	h	h2	h2	h	h2	c					h2	h2	c6	c4	f3			
18						h	h2	h3	h2	h3	h4	h2	h2	h4	h5	h4	c4	h	h2	c5	f3	f4	f4	f3
19	f2	f3	f4	f6	f3	c2	c3	h3	h2	c	c	h	c2	h2	h	h	h2	c2	c4	f3	f3	f2	f3	f3
20	f2	f	f2	f	f2	1	c3	c2	h	c2	c2	c	c			h3	h3	c4	c3	f4	f5	f3	f4	f2
21	f3	f4	f4	f2	f2	1	c2	c3	h3	h3	h2	h2	h2c3	c3	c3	13	c3	13	h413	f4	f3	f2	f3	
22		f3	f	f2	f3	h	h	h2	h2	h2	h	h	c2		1			h2	c3	f5	f3	f4	f3	f3
23	f	f2				h	h	h2	c3	h2	h	c	c	c2	h	h3	h3	h3	c4	f4	f2	f3	f3	f5
24	f5	f3	f3	f2	12		h2	h3	c2	h2	h	c	c	c2	h c	c2	h2c2	c3	c4	f5	f3	f2	f5	
25		f	f	f	h		c2	c4	c3	c2	h2	c2	h	h	c2	c2		h2	c4	c6	f3	f2	f2	f2
26	f2	f6							c3		c2				1	c2			c212	12	f	f2	f5	f2
27	f2	f4	f3	f2	f4	12	h2	h	h2	c2	h2	h	c	12	12	h212	c2	h2	c31	c2	f4	f4	f4	f7
28		f2	f	f4	f2	h2	h2	h2	h	h2	c2	c2	h2c2	h	h		h3	h3	c	c4	f3	f4	f3	f2
29		f2	f	f3	c2	h	h2	h3	h2	h2	h2	h	h2	c2		h2	h2	c3	c3	c3	f2	f3		
30	f4	f2	f2	f6f	h 12	h2	h2	c3	c2	c2	c2		c	c2	c2	c3	c3	c2	c4	c412	f4	f3	f3	f5
31	f3	f2	f3	f2		h	h2	h2	h2	h2	c2	h2	c2	c2	c2	c3	h213	h3	c312	c6	f3	f3	f2	f2
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

Types of Es

A 12

IONOSPHERIC DATA

May 1967 | foF2 | 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	074R	U073R	U068R	U067R	063	U073R	095	097	096	091	097	104	116	121	121	120	111	109	103	I088A	072	072	I077S	078
2	075	071	I069S	065	065	U073S	094	096	085	092	095	100	113	119	124	125	113	113	121	110	089	073R	082	U085R
3	U083R	U081R	072R	071R	068R	073	066	058	058	064	060	073	081	086	093	088	087	078	077	067	066	065	060	068
4	060	060	I056R	055	053	060	071R	074	079	070	098	100	100	089	088	093	091	094	092	097	075R	067	065	U067S
5	065	063	059	061	058	063R	071R	076R	078	082	089	087	092	103	110	117	117	105	093	086R	A	066R	071	072
6	072	U074R	069	065	068	083	078	080	087	088	089	100	106	107	113	122	I121A	117	I115A	096	078R	U075R	074R	070
7	070R	069R	074	U075S	063	069	095	093	085	079	I088A	100	111	114	120	123	124	117	112	104R	092	085	083	U083R
8	080	U079R	U074R	077R	069	075R	085	078	084	098	108	102	103	106	114	111	108	094R	089	U079R	068	066	070	068R
9	068	068	065	062	058	064	I073R	075	078	091	098	098	109	115	122	126	116	098	091	085	078R	069	071	070R
10	070	069	069	065	048	054	068	076R	068	065	073	083	083	089	092	083	083	080	081	074	071	055	055	057
11	059	060	054	057	057	066	066	072	071	070	083	092	095	106	115	122	113	111	103	082	067	066	069	067
12	U069R	070R	U070R	069	069	071	073	075R	071	079	088	104	116	115	114	115	111	109	107	U094S	I078S	I080S	080	077
13	U074S	I072S	069	068	064	070	082	078	078	067	077	I082A	099R	I104A	108	119	112	099	090	089	077S	U070S	U076S	081
14	U069S	U066S	066S	055	056	065	082	088	080	068	075	085	087	095	096	A	A	105	108	093	078	075	075	I077R
15	A	A	R	072	070	074	069	072	075	068	078	081	092	098R	099	093	087	086	087	094	085S	U073R	I073R	I075R
16	U074R	072R	073	071	067	U074R	073S	076	087	080	077	080	096	109	112	110	099R	099	U102R	092	088	083	I082S	U079S
17	U075S	U073S	073S	068	065	073S	089	084	086	085	097	109	114	116	125	115	103R	097	094	U085R	U079R	083	I088R	U083R
18	I080R	U074R	075R	070	068	073	074	U075R	081	085	096	105	114	116	116	118	115	111	J105R	U098S	U072S	U074S	074	I073S
19	J080R	S	F	U086F	J070R	U070S	U078R	084	085	090	099	I106A	113	115	118	124	116	106	106	089	076	U072S	078S	U080S
20	U077S	J075S	072S	073	065S	069	080S	088	084	075R	094	105	108	107	103	U105R	098S	098	098S	104S	094	072	F	U087S
21	080S	I080S	U077S	068S	066S	074	089	080	082	082	090	090	097	105R	108	109	104	104	095	095	I091A	I088S	086	J086S
22	083	I080S	U078S	072	072	072	074S	078	072	081	095	103	105	108	111	110	108	105	105	099S	076	U073S	081	083
23	J081R	I083S	079	078	082	096	088	083	080	084	087	094	104	113	113	114	115	120	122	104	083	079S	U075S	I080A
24	I078S	J074S	J075S	J076F	069	078R	096	097	091	087	087	097	106	102	104	111	I110A	A	A	A	I088A	092S	093S	091
25	092	U090S	093S	086	069	070	084	108	092	084	089	096	103	102	104	110	115	113	106	092	092	100	U094S	F
26	F	I078S	U080S	079S	U055S	066	081	084	080	081	R	064	088	079	068	072	066	079	066	068	056	058	057	U065S
27	062S	057	057	064S	048	057	086	U102R	101R	109	108R	113	A	A	096	101	107	112	113	109	110R	I104S	U104R	U098S
28	096S	090S	092	090S	085	U082S	083	082	076	070	I066R	066R	073	075R	072	I075B	080	087	082	078	086	088S	I087S	084S
29	080	071S	I072S	078S	068	082	068S	062	066	A	A	062R	J064R	073	J073R	069	I069A	073	068	070	073	074	U071S	069
30	J068S	075	077	065	058	064	089	097	108	102R	085	086	099	102R	096	093	093	097	099S	U099S	091S	077S	082	U080S
31	U087S	079S	064S	070S	064	064	065	065	070	065	071	076R	088	084	080	080	068S	069	071S	069	067	U065S	068S	U064S
Count	29	29	29	31	31	31	31	31	31	30	29	31	30	30	31	30	30	30	30	30	30	31	30	30
Median	075	073	072	070	065	071	080	080	080	082	089	096	102	106	108	110	108	102	098	092	078	073	076	U078
U.Q.	080	079	076	076	069	074	088	088	086	088	096	103	109	114	115	119	115	111	106	098	088	083	082	083
L.Q.	069	069	067	065	058	065	071	075	075	070	078	082	092	095	096	093	091	094	089	082	072	067	071	069
Q.R.	011	010	009	011	011	009	017	013	011	018	018	021	017	019	019	026	024	017	017	016	016	016	011	014

foF2

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

The Radio Research Laboratories, Japan

K 1

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	580	L	560	570L	L	L	L	L						
2								L	L	A	L	580L	L	560L	A	L	L	L						
3							430L	440L	R	U490L	510	L	R	530L	U510L	L	L	L						
4							L		L		510L	A	L	L	L	L								
5								L	L	L	A	L	L	L	520L	510L	L							
6									L	L	L	L	L	L	B	L	A							
7									A	500L	A	L	A	A	A	A	A	A						
8									A	L	A	L	L	R	L	R	A							
9							L		L	L	A	530L	530L	510L	L	500L	L	L						
10							L	L	A	480	I480R	500	500	A	480	480	450L	A	A					
11							L	L	A	480L	530	500R	530	530	A	A	A	A						
12								L	L	U540L	L	530	500	U530L	530L	A	A	A	A					
13							L			L	A	A	A	A	U480L	L	L	A						
14							L	A	A	A	560L	L	I500R	500	A	A	A	A	A					
15								A	A	A	A	500L	510	510	L	L	A	A						
16									L	500L	510L	560	520L	530L	500	460	L	L						
17							L	L	L		550	A	530	530	510	L	L							
18								A	A	520L	580L	550	540	A	A	A	A	A						
19								A	A	L	A	A	A	L	510L	500	L	A						
20							L	A	A	A	A	L	A	540L	500	L	A	A	A					
21								A	A	A	560L	A	A	550L	A	A	460L	A						
22									A	L	A	590	L	550L	U550L	540L	L	A	A					
23							L	L		U630L	L	A	A	560	A	A	A	A	A					
24							A	A	A	A	L	L	B	B	L	A	A	A	A					
25							L	A	A	620L	600L	L	570	550L	560	520	510L	A	A					
26						L	A	A	A	A	A	540	R	530L	R	U530R	A	A						
27							L		L	L	590L	A	A	A	A	A	L	A	A					
28								L	A	570	R	A	A	R		B	A	A	A					
29								480L	A	A	A	A	520	540	530	A	A	A	A					
30							L	A	A	A	A	A	A	A	A	A	500L	A	L					
31							L	480	490	570	A	A	A	L	U530R	A	510L	A	A					
Count							1	3	1	11	12	10	12	17	13	8	5							
Median							430L	480L	490	520L	560L	540	520	530L	510	500	500L							
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

K 2

IONOSPHERIC DATA

May 1967 | foE | 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	210	285	320	360	365	370	380	370	370	335	320	270	180					
2						B	250	290	325	335	355	365	370	370	360	335	300	260	170					
3						B	215	I280R	315	I330R	I350R	I360R	I365B	I365B	360	345	305	260	B					
4						B	235	285	320	345	I360R	370	I380R	I370R	I360R	340	315	260	175					
5						I150B	225	285	320	330	350	I360R	365	I360R	355	345	305	250	B					
6						B	240	285	325	340	350	R	R	R	I360B	340	305	R	B					
7						B	225	285	315	320	R	B	R	I370R	365	340	310	265	190					
8						B	235	290	320	340	I360R	375	370	I350R	340	I320R	305	260	175					
9						B	220	285	320	340	350	360	I365R	355	350	320	300	255	175					
10						B	230	285	325	335	340	I365R	I365R	I365R	I350R	325	305	255	165					
11						B	220	280	315	330	355	365	370	360	355	330	290	250	180					
12						B	R	280	310	340	350	I365A	370R	370	350	340	295	240	A					
13						B	260	300	325	330	345	A	A	A	A	A	A	A	A					
14						B	230	280	325	340	R	A	R	I380R	360	345	315	285	A					
15						185	245	295	325	335	355	365	370	I350A	I330A	315	315	270	180					
16						B	235	290	315	335	360	365	I360R	I360R	360	A	A	R	A					
17						B	265	310	335	345	365	A	A	R	R	A	310	265	200					
18						B	A	305	I325A	360	I365R	380	395	I390R	370	340	310	265	175					
19						A	240	305	330	I350R	365	370	380	I380R	365	350	I330R	275	200					
20						B	220	I280A	I310A	A	A	A	A	390	370	I350R	325	290	200					
21						A	R	305	330	350	375	I380R	I385R	I380B	360	325	I300A	285	A					
22						B	260	320	I340R	370	A	A	A	A	A	375	335	295	A					
23						180	270	I320A	340	365	I385A	I390A	A	A	395	365	340	290	A					
24						240	310	340	I360A	I370R	R	B	B	B	A	A	A	R	200					
25						B	260	320	340	345	B	A	A	385	I365A	355	355	290	R					
26						195	R	320	340	370	I375A	A	A	A	A	A	A	A	A					
27						B	260	320	I340R	370	375	B	R	I385R	I375A	360	325	290	205					
28						155	265	315	I340R	370	I370R	R	A	R	R	B	I345R	290	215					
29						B	275	315	335	360	385	I390A	405	400	385	365	330	295	A					
30						B	280	320	350	365	370	I370A	370	R	R	I350R	320	290	205					
31						B	230	320	350	I360R	380	385	B	R	I350R	325	A	A	A					
Count						6	27	31	31	30	25	19	17	21	24	25	26	25	17					
Median						180	240	295	325	345	360	370	370	I370	360	340	310	270	180					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foE

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

K 3

IONOSPHERIC DATA

May 1967 | foEs | 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	E014B	E014B	E013B	J015	E011B	018	028	033	J054	G	G	G	048	G	044	039	038	032	J027	090M	024	E015S	J030	J037
2	031M	J024	J016	J023	E	E017B	G	J026G	038	J051	042	G	J043	G	J053	043	J041	029	027	J033	J027	J026	J029	J025
3	022	020	E	E011B	E014B	018	G	G	036	040	G	044	045	E038B	G	G	G	031	J028	E014B	E015S	E016S	E014B	022
4	E015S	023	022	J016	J016	018	J038	035	038	G	G	J061	048	048	042	038	J042	J045	J036	J036	J024	020	023	E016S
5	023	J025	J025	J018	J020	021	031	035	039	043	J054	J050	044	044	G	G	J043	J055	J048	J053	J115	J067	018	J041
6	J025	022	021	J036	J023	026	031	038	J040	042	044	048	G	047	E088B	039	J125	J169	J148	J088	J054	J049	J036	J026
7	020	J024	J054	J025	J024	019	G	J058	J061	041	J090	043	J053	J060	J058	J085	J106	J085	J093	J051	J084	J055	J025	024
8	020	J029	E013B	021	E014B	020	031	J042	J068	J051	J065	J048	J045	044	045	048	043	J044	J054	J058	J025	E016S	023	E015S
9	E013B	E014B	E011B	E013B	E011B	021	G	J040	J048	J054	J065	045	044	041	039	G	G	G	023	J030	J024	023	021	E014B
10	E015S	E013B	019	J014	025	021	J029	037	J048	J054	J048	G	G	J065	G	039	040	061	J038	J053	J026	J022	J023	E015S
11	E014B	E014B	E013B	E013B	E011B	E016B	029	J039	J045	J041	045	046	044	J051	J052	J058	J085	J064	J059	J074	J038	022	023	E013B
12	E014B	E014B	E012B	E012B	E013B	E013B	028	037	J044	048	G	039	G	047	045	071	J136	091	090	J068	J038	J065	J044	J029
13	018	019	019	J028	J026	J016G	034	039	043	J041	061	J086	J139	J126	J046	J043	J042	J062	J054	J057	J021	J041	J051	J050
14	022	E014B	E013B	E	E011B	021	030	J044	J053	J065	047	J041	046	047	J085	J095	J135	J089	J063	J053	J071	J050	025	J030
15	J085	J091	J018	J018	J025	024	J041	J047	J059	J065	J060	046	041	J042	043	J040	J059	J075	J061	J027	J052	J030	J025	J021
16	023	J017	J023	J018	J025	022	029	J062	J041	J041	J042	J042	042	J041	G	J038	J039	033	J047	J032	J024	J026	E014B	E013B
17	E014B	021	J015	E	E011B	021	032	J046	040	J051	047	J055	044	G	G	J038	042	J044	J042	J047	J030	J051	E014B	E015S
18	023	E013B	020	E011B	E014B	E016B	J030	J051	J064	041	044	049	043	J065	J081	J070	J061	J051	J030	J033	J029	J061	J042	023
19	J065	J062	J041	J041	J044	J041	J043	J058	J066	047	J060	J141	J070	060	G	G	035	J051	J051	J050	J061	J053	J053	J065
20	J042	J029	J028	J029	025	E016B	J029	054	J065	074M	J115	J051	J055	049	G	046	J060	J071	J084	J038	045	J053	J051	J066
21	J084	J046	J060	J063	J063	J071	033	J069	J065	J056	049	J064	J064	048	J088	J075	J039	J061	J074	J139	J140	093M	J061	J033
22	J025	J024	J036	J026	J019	021	033	J048	J071	047	J060	047	044	J054	044	G	042	J043	J059	042	J048	J061	J053	J031
23	J030	019	023M	023	J024	G	J031	J043	J049	J055	J053	080	J061	049	079	J085	091	J089	113	J114	J088	J094	J054	J084
24	J060	019	025M	021M	E014B	G	J042	J080	J089	J076	J055	049	E066B	E052B	048	J055	J120	J111	J120	J090	J120	J062	J062	J029
25	J025	J025	J018	J016	E014B	024	J041	J054	J067	J061	J060	J058	J050	J051	J043	040	043	J064	J041	J039	J041	J036	J107	J053
26	J029	023	J025	J020	J024	J041	J065	J054	J056	J068	J071	047	045	J050	J053	047	J056	J046	J029	J029	J029	J029	J024	E014B
27	021	020	J015	016	J020	024	033	037	043	044	048	072	J148	J168	J170	079	J055	J094	J131	J085	J088	J084	J065	J084
28	J055	J050	J035	J026	J029	J027	J043	J048	J051	043	049	055	J055	046	G	B	J068	J073	J075	J070	J035	J063	J065	J042
29	J055	J024	J036	J015	J017	J043	J043	J047	J056	061	060	060	045	044	042	059	J088	J073	J043	J052	J053	J060	J043	E016S
30	E017S	020	022M	J015	J019	023	031	J048	J083	J084	J070	J130	J084	079	J070	J065	039	081	J060	J121	J063	J063	J061	J054
31	J025	J024	J029	J024	J026	023	031	J045	J053	J042	J070	059	J064	042	043	J062	J060	J066	J079	J043	J109	J050	J084	J065
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
Median	023	022	021	J018	J019	021	031	J045	J053	J048	J053	049	045	047	044	044	J043	J062	J054	J052	J041	J050	J036	J029
U.Q.	031	025	028	025	025	024	038	054	065	061	061	060	055	054	053	065	085	081	079	074	071	062	054	050
L.Q.	E017	017	015	014	E014	G	029	037	043	041	044	044	043	042	G	038	040	044	038	036	026	026	023	E016
Q.R.	D014	008	013	011	D011		009	017	022	020	017	016	012	012		027	045	037	041	038	045	036	031	D034

foEs

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	013	B	018	027	032	041				048		042	039	038	030	026	A	019	S	020	034
2	025	017	016	022		B		026G	038	049	040		040		053	039	039	028	025	025	026	024	016	017
3	017	E		B	B	018			E036R	039		E044R	E045R	B				027	026	B	S	S	B	016
4	S	015	016	014	013	017	025	032	037			060	044	E048R	041	036	040	044	030	031	016	016	016	S
5	016	016	020	016	017	019	027	032	038	042	052	041	040	E044R			040	041	043	045	A	046	E	038
6	016	015	013	026	015	024	030	037	039	039	043	E048R		040	B	038	A	086	A	084	051	040	028	025
7	E	016	026	020	019	018		039	053	037	A	E043R	051	059	054	065	079	079	061	042	021	040	019	016
8	E	016	B	E	B	019	028	040	056	046	055	043	044	E044R	043	E048R	043	043	052	046	019	S	016	S
9	B	B	B	B	B	019		038	041	046	056	041	040	040	037				021	025	020	016	015	B
10	S	B	E	013	E	019	026	034	046	040	044			052		038	038	054	037	051	025	017	016	S
11	B	B	B	B	B	B	028	037	044	040	041	044	042	044	051	055	084	063	055	051	022	E	016	B
12	B	B	B	B	B	B	026	034	040	041		039		043	040	065	074	079	085	065	029	056	042	019
13	E	E	E	016	021	G	029	039	043	040	058	A	083	A	039	041	037	041	050	055	016	038	038	039
14	E	B	B		B	020	029	043	052	062	040	040	E046R	045	079	A	A	088	062	051	039	032	022	028
15	A	A	015	014	019	022	038	046	054	057	056	043	040	040	042	039	047	067	037	026	027	020	017	017
16	016	015	016	016	016	020	028	040	037	038	040	040	039	040		036	038	031	045	031	019	025	B	B
17	B	E	E		B	020	029	038	039	047	045	054	040			038	041	042	040	044	029	016	B	S
18	E	B	E	B	B	B	028	045	063	039	042	043	042	062	080	070	058	046	025	025	028	053	026	016
19	040	041	038	028	026	027	038	054	066	046	054	A	058	052			034	049	049	045	053	040	033	018
20	018	016	024	017	023	B	028	052	062	064	064	048	054	046		045	060	070	083	034	045	016	039	055
21	020	040	027	054	042	053	028	066	064	052	047	057	060	046	074	052	038	059	032	088	A	054	037	026
22	020	016	018	021	016	020	032	046	066	045	058	044	043	053	040		040	043	055	034	023	037	045	019
23	018	E	015	014	015		G	040	048	050	053	080	058	048	078	085	085	086	106	091	053	059	020	A
24	054	E	016	012	B		042	079	079	072	051	046	B	B	048	054	A	A	A	A	A	053	026	016
25	016	016	015	015	B	021	037	051	062	050	053	052	049	049	043	039	041	061	040	036	040	025	016	041
26	016	016	022	014	015	040	064	053	055	059	E071R	047	E045R	047	E053R	046	056	040	028	026	029	027	017	B
27	E	E	014	E	014	024	030	033	040	043	045	072	A	A	081	079	047	084	051	022	076	052	E065R	046
28	042	018	015	023	014	025	042	046	050	E043R	E049R	055	054	E046R		B	067	070	071	051	026	026	054	039
29	034	015	017	013	012	032	040	041	051	A	A	056	044	044	042	059	A	068	032	025	019	040	040	S
30	S	E	016	E	015	022	030	048	079	073	070	063	074	079	070	061	038	078	023	088	051	018	044	026
31	019	014	016	018	017	022	030	041	041	040	055	058	063	E042R	042	060	039	044	052	040	016	032	025	026
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

May 1967 | f-min | 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	014	013	011	011	014	015	016	016	018	018	026	026	026	018	018	016	016	013	E016S	E015S	E015S	E015S	E015S
2	E015S	013	010	010	010	017	014	014	016	019	026	023	025	026	026	016	016	014	015	013	013	E015S	014	014
3	012	014	E	011	014	014	014	016	017	026	026	027	037	038	027	019	016	014	016	014	E015S	E016S	014	E015S
4	E015S	014	011	010	E	015	014	012	020	019	027	019	028	027	025	022	017	013	014	012	013	011	014	E016S
5	013	012	011	011	011	014	016	016	017	017	027	026	026	023	025	018	016	013	016	013	014	E015S	014	014
6	013	013	011	012	011	014	014	017	018	022	026	026	026	027	088	027	016	014	014	E016S	013	014	014	E015S
7	E015S	012	011	010	011	015	015	017	017	018	028	039	029	027	026	026	019	017	014	013	013	013	013	014
8	014	014	013	011	014	016	015	017	019	018	032	026	026	020	027	026	016	013	014	014	011	E016S	014	E015S
9	013	014	011	013	011	016	013	016	018	017	017	026	019	028	026	016	017	013	014	013	013	013	014	014
10	E015S	013	012	011	012	015	014	014	015	016	018	027	027	026	020	017	015	014	015	011	014	012	014	E015S
11	014	014	013	013	011	016	013	014	018	017	026	028	019	026	025	024	019	017	013	011	012	014	011	013
12	014	014	012	012	013	013	013	013	016	016	026	025	026	024	026	025	018	014	012	E016S	011	E015S	013	E015S
13	E015S	E016S	011	E	011	015	015	015	018	020	026	027	027	026	026	019	017	014	013	014	014	013	014	014
14	013	014	013	E	011	015	015	015	014	019	020	026	026	026	026	024	019	018	014	E015S	014	014	014	E016S
15	014	011	011	E	011	014	013	013	015	017	026	027	027	028	027	018	016	017	016	014	013	013	014	014
16	E015S	013	011	011	E	017	015	016	013	017	025	026	027	025	027	019	017	016	013	011	014	011	014	013
17	014	014	011	E	011	014	013	016	015	026	026	020	025	026	019	014	017	014	014	013	014	014	014	E015S
18	014	013	014	011	014	016	013	017	019	019	029	027	026	029	026	019	017	013	014	011	013	E016S	011	012
19	014	011	011	010	011	012	014	016	016	019	025	020	026	025	026	027	019	014	013	013	E017S	E015S	013	014
20	014	014	011	011	E	016	017	015	017	020	025	027	027	027	025	026	016	016	015	011	013	E015S	E015S	E015S
21	012	012	011	011	013	011	012	015	018	026	026	027	020	038	026	017	018	015	014	011	013	014	011	012
22	011	014	011	011	011	013	013	017	017	027	025	032	032	031	026	026	018	015	014	012	E015S	013	E015S	E015S
23	013	014	012	E	012	013	016	016	020	025	026	028	031	027	027	019	017	015	014	011	E015S	E016S	E015S	E015S
24	E016S	012	011	010	014	023	019	026	026	025	029	037	066	052	026	026	026	019	014	011	014	E015S	014	E015S
25	013	014	010	011	014	016	015	017	026	026	040	029	034	028	031	026	027	015	013	012	013	012	014	E015S
26	014	012	010	010	011	014	018	017	019	028	027	033	036	027	028	025	017	014	013	011	014	013	012	014
27	014	014	011	013	011	017	015	017	024	025	027	042	031	027	023	019	017	016	014	012	013	E015S	014	014
28	013	013	011	010	011	013	014	017	018	026	027	028	031	027	026	B	029	022	013	013	011	E015S	013	E015S
29	E015S	011	011	011	010	016	016	014	017	024	025	032	028	028	029	026	025	016	015	011	E015S	E015S	E015S	E016S
30	E017S	014	011	011	011	017	016	025	018	026	026	028	027	028	028	027	016	016	013	011	013	013	011	013
31	013	011	011	010	010	016	013	017	019	019	026	028	039	027	025	019	014	014	014	011	014	014	014	011
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	014	014	011	011	011	015	014	016	018	019	026	027	027	027	026	022	017	015	014	012	013	012	014	E016S
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

May 1967 | M(3000).F2 | 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	270R	U275R	U295R	U295R	280	U300R	320	315	300	280	275	265	280	280	290	290	295	330	310	I295A	285	270	I280S	275
2	280	305	I280S	275	275	U310S	320	325	295	275	270	265	275	275	280	295	295	290	300	305	280	265R	255	U270R
3	U280R	U275R	275R	265R	250R	290	275	265	255	275	250	275	295	285	295	305	300	300	300	280	260	270	255	270
4	245	250	I240R	250	265	300	340R	280	315	295	285	295	300	300	300	310	310	305	310	310	320R	270	270	U270S
5	265	265	260	285	270	315R	315R	310R	305	285	300	285	280	290	295	300	310	320	320	310R	A	270R	270	270
6	280	U285R	290	270	280	310	335	330	330	315	290	295	290	285	290	300	I305A	300	I315A	320	295R	U280R	280R	270
7	265R	280R	285	U315S	295	305	325	330	330	305	I275A	270	285	280	275	285	295	295	305	295R	310	265	270	U265R
8	275	U290R	U300R	285R	300	315R	325	300	285	280	300	310	290	290	290	305	320	305R	335	U305R	290	270	275	265R
9	280	280	290	295	275	305	I340R	320	305	305	295	285	295	295	295	300	315	310	315	310	305R	275	270	270R
10	285	275	295	320	305	310	310	315R	275	275	270	285	275	270	290	305	300	310	320	305	315	265	255	255
11	270	280	265	280	280	335	320	335	300	285	280	275	275	290	290	305	310	310	320	300	310	270	270	270
12	U280R	285R	U285R	295	310	335	340	340R	320	290	250	275	295	295	290	285	290	300	310	U310S	I300S	I280S	275	275
13	U280S	I290S	290	310	295	330	345	325	335	310	285	I280A	290R	I290A	285	290	305	310	300	310	300S	U275S	I270S	265
14	U290S	U285S	290S	320	280	305	340	325	335	310	285	285	290	295	290	A	A	305	320	310	285	285	285	I270R
15	A	A	R	295	290	330	325	315	325	320	290	275	290	290R	300	305	300	295	290	300	310S	U280R	I275R	I270R
16	U275R	280R	280	285	295	U325R	335S	315	330	330	300	270	275	285	295	310	300R	300	U310R	295	285	290	I280S	U280S
17	U275S	U295S	310S	295	285	305S	315	320	290	275	270	290	285	290	300	305	300R	305	305	U300R	U290R	270	I280R	U280R
18	I285R	U295R	295R	300	305	320	330	U315R	305	295	275	275	290	295	290	295	300	295	J310R	U325S	U310S	U280S	275	I290S
19	R	S	F	U315F	J305R	U305S	U320R	320	275	270	280	I280A	275	285	285	290	310	305	285	315	270	U275S	290S	U275S
20	U275S	J290S	285S	300	295S	315	305S	305	305	275R	270	280	290	290	290	U295R	290S	295	290S	295S	305	275	F	U270S
21	275S	I290S	U295S	300S	295S	305	325	305	310	285	275	270	270	275R	280	295	290	290	285	300	I290A	I290S	270	J275S
22	275	I275S	U280S	280	295	330	330S	315	330	270	260	265	270	275	280	280	280	290	295	310S	290	U285S	275	275
23	J270R	I280S	275	285	295	335	345	325	310	265	265	255	265	270	270	270	280	285	310	325	265	265S	U280S	I280A
24	I285S	J295S	J290S	J285F	275	310R	315	295	285	285	260	255	270	270	270	280	I290A	A	A	A	I270A	265S	270S	260
25	270	U280S	290S	300	280	305	275	310	310	270	260	255	270	265	265	275	285	290	295	290	260	255	U255S	F
26	F	I240S	U260S	270S	U240S	235	225	220	215	210	R	185	255	285	255	250	250	280	275	285	245	245	225	U265S
27	265S	240	255	295S	315	260	310	U305R	305R	295	290R	280	A	A	260	255	270	285	285	285	295R	I280S	U290R	U275S
28	270S	280S	265	280S	280	U255S	285	285	280	255	I250R	255R	270	270R	270	I285B	280	290	295	265	260	260S	I260S	275S
29	280	255S	I260S	265S	260	305	335S	270	260	A	A	225R	J255R	260	J255R	260	I260A	275	270	285	265	270	U275S	260
30	J255S	255	295	295	260	280	275	280	295	280R	290	265	280	285R	285	285	285	285	285S	U290S	290S	270S	265	U275S
31	U300S	275S	245S	285S	330	290	300	250	295	250	250	260R	270	265	270	295	280S	285	290S	295	265	U260S	260S	U265S
Count	28	29	29	31	31	31	31	31	31	30	29	31	30	30	31	30	30	30	30	30	30	31	30	30
Median	275	280	285	290	285	305	320	315	305	280	275	275	280	285	290	295	295	300	300	300	290	270	270	U270
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

May 1987 | M(3000) F1 | 135° E Mean Time (G. M. T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	350	L	355	330L	L	L	L	L						
2								L	L	A	L	340L	L	345L	A	L	L	L						
3							325L	340L	R	U355L	350	L	R	340L	U350L	L	L	L						
4							L		L		355L	A	L	L	L	L								
5								L	L	L	A	L	L	L	355L	350L	L							
6									L	L	L	L	L	L	B	L	A							
7									A	375L	A	L	A	A	A	A	A	A						
8									A	L	A	L	L	R	L	R	A							
9							L		L	L	A	355L	360L	370L	L	355L	L	L						
10							L	L	A	365	I360R	360	365	A	370	350	350L	A	A					
11							L	L	A	365L	340	370R	340	370	A	A	A	A						
12								L	L	U335L	L	355	375	U355L	330L	A	A	A	A					
13							L			L	A	A	A	A	U385L	L	L	A						
14							L	A	A	A	345L	L	I370R	360	A	A	A	A	A					
15								A	A	A	A	365L	370	365	L	L	A	A						
16									L	370L	380L	355	370L	335L	360	370	L	L						
17							L	L	L		340	A	360	340	350	L	L							
18								A	A	365L	340L	365	350	A	A	A	A	A						
19								A	A	L	A	A	A	L	360L	355	L	A						
20							L	A	A	A	A	L	A	370L	380	L	A	A	A					
21								A	A	A	340L	A	A	340L	A	A	365L	A						
22									A	L	A	340	L	A	U360L	340L	L	A	A					
23							L	L		U335L	L	A	A	330	A	A	A	A	A					
24							A	A	A	A	L	L	B	B	L	A	A	A	A					
25							L	A	A	325L	335L	L	325	330L	340	355	340L	A	A					
26						L	A	A	A	A	A	R	R	330L	R	R	A	A						
27							L		L	L	355L	A	A	A	A	A	L	A	A					
28								L	A	330	R	A	A	R		B	A	A	A					
29								365L	A	A	A	A	370	350	350	A	A	A	A					
30							L	A	A	A	A	A	A	A	A	A	350L	A	L					
31							L	345	360	315	A	A	A	L	U375R	A	330L	A	A					
Count							1	3	1	11	12	9	12	16	13	7	5							
Median							325L	345L	360	355L	350L	355	360	340L	360	355	350L							
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									265	260	340	325	345	330	305	300	290	270						
2								250	250	270	315	360	325	330	310	295	280	290						
3							365	415	520	425	525	400	340	360	325	310	280	275						
4							265		260		325	305	270	275	310	275								
5								280	290	320	310	310	335	330	310	285	275							
6									260	275	275	315	305	315	E340B	295	A							
7									250	275	A	360	325	330	330	315	300	E305A						
8									300	315	305	280	310	320	310	280	270							
9							260		270	280	305	320	325	325	305	280	270	265						
10							270	300	310	425	385	340	350	350	315	305	310	285	260					
11							255	260	270	305	335	320	355	330	325	295	310	275						
12								260	265	330	350	350	300	305	320	310	300	300	E300A					
13							240			265	330	I320A	E365A	A	330	315	275	265						
14							265	260	250	E365A	375	325	330	315	330	A	A	E330A	E270A					
15								275	270	300	350	325	325	325	300	290	300	E325A						
16									260	260	305	380	330	320	310	290	280	280						
17							255	250	315		350	315	325	325	305	275	275							
18								270	305	310	345	350	320	310	E330A	305	285	270						
19								265	E310A	285	320	A	330	325	320	310	275	275						
20							265	285	295	E375A	E350A	335	330	315	320	310	300	320	260					
21								E325A	E305A	300	335	320	350	345	345	325	280	280						
22									E350A	345	340	375	340	350	330	330	310	300	280					
23							230	275		370	350	E410A	380	350	350	350	350	340	E330A					
24							255	320	350A	E375A	415	405	360	360	360	330	A	A	A					
25							320	275	265	380	400	395	360	360	365	335	320	300	265					
26						475	525	405	585	530	A	625	430	375	475	455	460	315						
27							275		260	285	320	340	A	A	E420A	385	330	350	300					
28								320	375	460	I480R	465	415	410		I395B	390	355	350					
29								400	430	A	A	560	490	445	430	405	I420A	A	300A					
30							315	270	310	320	285	365	355	350	330	335	325	345	280					
31							325	435	355	505	465	415	400	395	375	340	370	310	330					
Count						1	16	21	28	28	28	30	30	29	30	30	27	24	12					
Median						475	265	275	285	310	340	340	340	330	325	310	300	290	280					
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

May 1967 | h'F | 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	310	275	250	260	275	255	235	230	230	220	205	200	230	200	260	240	250	245	245	I250A	250	300	310	290
2	300	260	255	300	300	275	245	230	225	A	200H	225	220	220	I240A	230	245	240	270	230	225	305	320	300
3	295	285	E290E	310	330	285	255	240	235	225	215	I270R	I265R	230	255	225	235	240	265	250	285	305	320	305
4	330	335	360	350	315	285	250	225	220	210	225	I240A	240	I250R	225	230	260	275	260	260	225	260	295	315
5	310	330	325	285	275	230	235	235	225	260	I260A	275	235	E310A	230	230	E260A	250	230	260	A	E360A	305	E345A
6	305	275	260	300	265	235	225	230	235	225	220	I205R	235	200	B	220H	A	305	A	E325A	E285A	E325A	E295A	E325A
7	320	300	295	240	255	235	235	230	I230A	210	I235A	325	A	A	A	A	A	A	270	265	235	E320A	275	295
8	300	270	260	235	230	240	235	240	A	E275A	I240A	230	250	I220R	260	I240R	I270A	255	235	E275A	260	280	290	310
9	305	290	270	250	270	235	220	240	235	E275A	A	230	215	210	210H	225	230	245	255	250	245	245	280	310
10	275	275	260	220	225	230	225	240	A	230	I230A	215	215	I235A	215	250	265	A	A	280	245	255	315	330
11	310	290	310	285	270	230	230	245	I235A	230	240	245	245	225	A	A	A	A	250	E270A	255	290	305	310
12	300	285	270	255	245	225	230	230	230	240	205	210	205	225	250	A	A	A	A	260	250	310A	320	310
13	295	275	260	260	240	240	240	240	250	215	A	A	A	A	215	I220A	245	I255A	E265A	E280A	230	E310A	E325A	E330A
14	285	290	250	E220E	280	235	230	I250A	I235A	I230A	200	255	I225R	255	A	A	A	A	A	E260A	E275A	280	275	E340A
15	A	A	260	260	290	225	260	A	A	A	A	240	215	220	225	235	I240A	I260A	275	255	250	260	295	300
16	300	305	275	270	255	230	230	235	220	210	200	200	195H	225	215	225	250	230	270	250	255	265	265	275
17	305	275	250	E225E	275	250	230	235	210	255	250	I210A	210	225	225	225	255	265	265	E270A	E280A	310	275	280
18	305	275	255	240	255	230	230	I255A	I250A	225	225	210	210	A	A	A	A	A	240	230	235	E370A	E325A	290
19	E315A	E320A	E315A	245	250	255	260	A	A	240	A	A	A	I230A	215	230	245	I260A	265	245	E345A	E345A	E310A	300
20	310	285	280	265	250	215	225	A	A	A	A	E290A	A	210	220	E305A	A	A	A	260	255	205	E365A	E360A
21	275	E315A	270	E330A	E310A	E275A	230	I235A	I230A	A	260	I255A	A	260	I255A	I250A	230	A	265	E385A	A	E325A	E315A	300
22	305	280	265	280	270	225	230	255	I255A	270	A	220	260	I240A	200	205H	255	I250A	I260A	250	250	310	E330A	300
23	305	295	270	280	255	240	225	240	250	255	I235A	A	A	E290A	A	A	A	A	A	E300A	E300A	E350A	310	A
24	330	255	255	270	320	275	A	A	A	A	A	340	I235B	B	A	A	A	A	A	A	A	E340A	310	300
25	305	300	260	225	220	260	240	I275A	I270A	300	285	355	300	305	240	230	275	I250A	I255A	260	310	300	330	E350A
26	360	360	330	275	355	380	I295A	A	A	A	A	480	R	A	R	E290A	A	A	270	270	330	360	395	315
27	310	250	320	245	215	265	240	255	235	230	220	A	A	A	A	I320A	270	I335A	I295A	280	320	305	E360R	350
28	340	280	305	265	250	260	285	I255R	A	250	R	A	A	R	415	B	A	A	A	335	330	315	365	315
29	310	315	365	305	295	265	250	240	A	A	I240A	I230A	225	245	240	A	A	A	A	300	300	320A	300	340
30	330	320	270	250	260	250	240	I265A	A	A	A	I260A	A	A	A	A	255	I275A	250	365	290	295	360	315
31	275	285	375	275	215	260	250	240	230	225H	I235A	A	A	260	230	I240A	260	A	A	295	290	365	330	330
Count	30	30	31	31	31	31	30	26	21	23	21	25	20	23	21	21	19	17	21	30	28	31	31	30
Median	305	285	270	260	260	240	235	240	235	230	230	235	230	230	230	230	250	255	260	255	255	295	300	305
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

May 1967 | f'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	B	B	B	110	B	145	160	140	120	G	G	G	125	G	150	150	130	130	125	115	115	S	105	105
2	100	100	100	100	E	B	G	105	125	115	115	G	120	G	125	125	125	150	125	120	115	115	115	110
3	105	110	E	B	B	155	G	G	135	130	G	125	120	B	G	G	G	125	115	B	S	S	B	130
4	S	130	125	125	125	130	120	125	130	G	G	130	130	135	150	160	130	120	115	115	115	115	115	S
5	110	110	110	110	110	155	140	135	125	125	120	115	115	125	G	G	115	115	115	115	115	115	105	110
6	110	105	110	110	110	130	130	125	120	120	115	115	G	145	B	140	115	115	115	115	115	115	115	110
7	110	105	110	110	110	155	G	120	120	120	115	125	150	130	130	125	120	120	120	115	115	115	110	110
8	110	115	B	120	B	160	140	125	120	120	120	120	120	115	115	115	130	125	120	120	115	S	115	S
9	B	B	B	B	B	135	G	120	115	120	115	115	120	120	120	G	G	G	125	120	115	115	115	B
10	S	B	115	115	115	140	130	125	120	120	115	G	G	120	G	150	130	125	120	115	115	115	110	S
11	B	B	B	B	B	B	125	125	120	120	120	120	125	120	120	120	120	125	120	120	115	115	115	B
12	B	B	B	B	B	B	140	125	120	110	G	110	G	125	125	115	110	110	110	110	115	110	110	105
13	100	100	100	100	100	100	140	140	125	120	115	115	115	115	110	110	110	110	105	105	115	115	115	115
14	110	B	B	E	B	150	135	120	125	115	120	115	150	130	125	120	115	120	115	115	115	115	115	115
15	115	115	110	105	105	155	130	125	120	115	115	115	120	115	115	120	130	120	125	115	115	115	115	110
16	110	105	105	105	100	130	140	125	120	125	120	120	115	115	G	115	115	125	115	115	115	115	B	B
17	B	110	110	E	B	135	130	125	125	115	115	115	115	G	G	110	125	120	120	120	115	115	B	S
18	110	B	105	B	B	B	115	120	115	140	130	115	130	120	120	115	115	115	125	120	115	115	115	115
19	115	115	115	115	110	110	120	120	115	115	115	115	120	120	G	G	165	125	120	115	115	115	115	115
20	115	115	110	110	110	B	125	115	110	115	115	115	115	135	G	150	130	120	120	115	115	115	120	115
21	115	110	110	110	105	105	125	120	120	115	125	120	115	115	115	115	115	115	115	115	115	110	110	105
22	105	105	105	100	110	135	130	120	120	115	115	110	110	105	110	G	150	125	110	110	105	105	105	105
23	105	105	100	100	100	G	120	120	115	115	115	110	110	110	130	125	120	115	110	110	110	110	105	105
24	105	110	100	100	B	G	120	115	110	115	115	115	B	B	115	125	120	115	115	115	115	115	110	115
25	105	105	105	105	B	170	120	115	115	115	115	115	115	115	120	120	130	125	120	115	115	115	115	115
26	110	105	105	105	110	125	120	120	115	115	115	115	115	115	115	115	115	110	110	105	105	105	105	B
27	105	105	130	125	115	125	125	120	120	120	115	115	115	115	115	125	130	120	120	120	115	115	115	115
28	115	115	110	110	115	130	130	125	120	120	120	115	115	120	G	B	130	120	120	120	115	115	115	110
29	115	110	110	125	135	125	125	125	120	115	115	115	125	150	155	130	120	120	115	110	110	110	110	S
30	S	105	100	100	110	130	140	120	115	115	115	115	115	115	115	115	125	125	115	115	120	115	115	115
31	115	110	110	110	110	150	145	120	120	120	120	120	115	115	120	115	115	110	110	115	115	110	115	115
Count	23	24	24	24	19	24	27	30	31	29	27	28	27	26	22	25	29	30	31	30	30	28	28	22
Median	110	110	110	110	110	135	130	120	120	115	115	115	115	120	120	120	120	120	115	115	115	115	115	110
U.Q.																								
L.Q.																								
Q.R.																								

f'Es

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

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

May 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		h	h	h	c				h		h	h	h	h	c2	f3	f3		f3	f3
2	f3	f3	f2	f3				1	c	c2	c		c		h	h	h	h2	h2	f4	f3	f5	f2	f2
3	f2	f				h			h	h		h	1					h	14					f
4		f2	f2	f2	f	h	c2	h2	h			h	h	h2	h	h	h2	c3	c3	f6	f	f2	f2	
5	f2	f3	f5	f2	f2	h2	h	h2	h	h	c	c	c	h			c2	c3	c5	f4	f3	f3	f	f3
6	f2	f	f	f4	f2	h2	h2	h	c	c	c	c		h		h2	c3	c2	14	f5	f5	f7	f7	f3
7	f	f2	f3	f3	f5	h		c2	c2	c	c2	h	h	h	h2	h2	c2	c4	c4	f6	f5	f2	f3	f2
8	f	f		f		h	h2	h2	c2	c	c	c	c	c	c2	c2	h2	h2	c2	f3	f4		f	
9						h2		c2	c	c2	c2	c	c	c	c				h2	f6	f6	f	f2	
10			f	f	f	h2	h	h2	c2	c	c			c		h	h2	h3	c3	f6	f4	f2	f2	
11							h2	h2	c2	c	c	c2	h	c2	c	c2	c2	h5	c2	f4	f3	f	f2	
12							h2	h3	c2	c		1		h	h	c2	c3	c3	c3	f4	f5	f3	f3	f2
13	f	f	f	f2	f2	1	h	h2	h2	c	c	1	13	14	1	12	12	12	13	f5	f	f4	f2	f3
14	f					h2	h2	c2	h2	c2	c	1	h	h	h2	c2	c3	c2	12	f2	f2	f4	f	f3
15	f7	f5	f3	f3	f2	h	h3	h3	c2	c2	c2	c2	c	1	12	c2	h3	c3	h2	f5	f3	f2	f3	f2
16	f2	f	f4	f2	f	h	h	h2	c	h	c	c	c	1		1	13	h	13	f7	f6	f3		
17		f2	f			h	h2	h	h	c2	c	12	1			12	h2	c3	c4	f6	f7	f2		
18	f2		f				1h	c2	12	h	h	c	h	c	c	c3	c2	c3	h2	f6	f6	f3	f7	f2
19	f3	f7	f7	f6	f7	13	c4	c2	c3	c	c	c2	c	c			h	h4	c3	f2	f3	f2	f3	f2
20	f2	f2	f5	f2	f3		h	13	c2	13	12	1	1	h		h	h2	c3	c2	f7	f3	f	f6	f4
21	f2	f2	f3	f3	f4	12	h	c2	c2	c2	h	c	c	1	c2	c2	12	c2	13	f3	f3	f3	f3	f3
22	f4	f2	f2	f3	f5	h	h2	c2	c2	c	c2	c	12	1	1		h	h2	13	f3	f3	f3	f3	f3
23	f3	f	f2	f2	f2		h	h2	c	c2	c	12	1	1	h2	h2	h2	c2	13	f3	f3	f3	f3	f4
24	f4	f	f2	f2			c2	c2	c2	c2	c2	1			1	h1	14	c2	c3	f4	f3	f3	f2	f2
25	f2	f	f2	f		h	c2	c3	c2	c2	12	1	1	c	1	c	h	h2	c5	f4	f3	f3	f	f3
26	f3	f3	f5	f2	f	h3	c3	c2	c2	c2	12	1	1	12	12	1	12	13	13	f4	f3	f6	f2	
27	f	f	f	f	f	h	h	c	c	c	c	1	c2	c4	c2	h	h2	c3	c2	f4	f4	f2	f3	f3
28	f5	f5	f2	f7	f2	h3	h2	h2	c2	c	c	c	1	c			h	c2	c4	f4	f4	f3	f3	f4
29	f3	f2	f3	f	f	h3	h3	h	c2	c	c	c	h	h	h	h2	c2	c3	c2	f4	f3	f3	f4	
30		f	f2	f	f	h	h	h2	c2	c2	c2	12	c2	c2	c2	c2	h	h2	c2	f4	f4	f2	f3	f4
31	f5	f2	f3	f5	f3	h	h	c	c	c	c	c	12	c	c	c2	1	12	13	f2	f3	f3	f2	f3
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

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

The Radio Research Laboratories, Japan

K 12

IONOSPHERIC DATA

May 1967 | hpF2 | 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	400R	U365R	U330R	U330R	370	U325R	285	310	315	380	380	405	390	360	350	340	330	320	305	I325A	350	390	I375S	390
2	380	330	I365S	380	395	U320S	290	295	350	360	345	415	385	375	360	345	360	355	320	305	345	410R	430	U385R
3	U375R	U370R	385R	415R	440R	355	385	420	R	430	G	410	355	375	340	330	325	330	320	360	415	385	435	385
4	455	440	I455R	435	405	330	280R	365	285	355	355	335	330	315	330	315	320	315	305	310	300R	370	395	U405S
5	400	415	415	360	370	295R	315R	315R	315	360	330	345	360	355	330	320	315	305	300	300R	A	390R	385	405
6	375	U365R	340	375	360	285	270	275	280	315	340	335	360	360	365	335	I340A	325	I300A	A	330R	U375R	375R	395
7	415R	375R	355	U310S	340	315	280	275	280	305	I375A	395	365	370	375	355	335	335	315	335R	300	395	385	U385R
8	380	U335R	U330R	340R	305	290R	275	305	350	360	335	335	365	365	345	325	310	315R	280	U315R	345	390	395	410R
9	380	375	350	340	385	310	I270R	285	335	320	330	360	355	360	340	320	315	315	295	310	320R	370	385	395R
10	365	360	330	295	305	295	310	315R	380	425	400	360	380	380	345	330	335	315	300	315	300	380	410	425
11	395	375	390	365	355	270	290	275	310	345	360	370	380	365	360	330	340	320	285	330	330	385	385	400
12	U380R	370R	U360R	330	320	280	270	270R	300	350	440	390	340	330	350	350	350	315	310	U295S	I320S	I370S	380	390
13	U355S	I350S	345	320	330	290	250	280	280	295	360	I365A	A	I350A	370	330	325	310	320	315	330S	U375S	I400S	395
14	U360S	U360S	330S	280	370	320	275	290	275	A	380	355	350	335	330	A	A	330	310	310	335	360	370	I410R
15	A	A	R	335	365	275	285	315	290	I310A	360	375	340	355R	330	325	330	340	330	325	315S	U355R	I385R	I385R
16	U385R	390R	360	360	330	U280R	280S	295	280	280	325	390	380	365	345	325	330R	335	U315R	325	345	335	I360S	U365S
17	U390S	U340S	325S	340	370	320S	295	285	350	380	380	365	365	360	330	320	325R	315	325	U330R	U350R	400	I380R	U370R
18	I375R	U360R	340R	330	330	290	275	U305R	315	330	380	380	365	340	330	330	325	330	J315R	U285S	U315S	U380S	385	I360S
19	R	S	F	U290F	J325R	U335S	U295R	300	380	375	365	I370A	375	360	365	360	315	325	345	295	390	U390S	370S	U380S
20	U385S	J355S	360S	330	335S	310	320S	320	325	A	390	375	365	360	350	U345R	345S	345	I350A	335S	315	370	F	U385S
21	355S	I360S	U335S	330S	330S	315	280	A	315	340	380	380	385	380R	375	360	345	325	345	A	I360A	I370S	380	J390S
22	385	I370S	U345S	370	335	275	280S	295	A	380	400	400	385	390	360	360	360	350	330	300S	350	U375S	380	380
23	J400R	I365S	360	350	330	270	250	300	300	400	400	A	400	390	390	385	370	355	A	A	400	405S	U370S	I365A
24	I355S	J325S	J355S	J380F	390	310R	300	330	355	380	430	435	395	400	385	385	A	A	A	A	I400A	400S	400S	415
25	410	U380S	335S	325	370	325	375	320	300	405	420	425	385	385	395	380	365	335	325	335	400	405	U425S	F
26	F	I470S	U435S	375S	U470S	515	540	520	605	570	R	G	455	375	480	465	A	360	365	350	450	445	510	U410S
27	395S	470	430	325S	290	405	310	U300R	315R	375	355R	375	A	A	A	425	400	375	355	360	345R	I380S	U360R	U385S
28	410S	360S	385	360S	360	U405S	345	355	380	G	R	475R	415	410R	415	I395B	390	355	I350A	385	420	400S	I410S	385S
29	370	475S	I420S	400S	405	310	285S	405	435	A	A	A	G	450	J430R	I420A	I430A	A	380	370	400	395	U390S	430
30	J430S	420	340	330	400	360	360	360	330	350R	340	400	370	360R	355	360	355	355	340S	I365A	345S	375S	415	U385S
31	U345S	380S	475S	360S	275	345	335	450	355	G	465	430R	415	410	385	355	375S	360	360S	330	370	U430S	410S	U400S
Count	28	29	29	31	31	31	31	30	29	26	27	28	28	30	30	30	28	29	29	27	30	31	30	30
Median	380	370	355	340	360	310	285	305	315	360	375	380	370	365	360	345	340	330	320	325	345	385	385	U390
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

K 13

IONOSPHERIC DATA

May 1967 | ypF2 | 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	060R	U065R	U085R	U085R	065	U065R	090	065	070	110	100	105	090	090	100	105	095	080	080	I100A	095	080	I080S	075
2	070	065	I080S	070	070	U055S	075	070	115	110	145	085	085	090	090	085	070	090	090	080	100	070R	085	U080R
3	U075R	U080R	090R	075R	105R	085	090	075	R	050	G	065	085	065	065	065	070	055	065	085	100	100	095	080
4	085	090	I080R	080	090	075	065R	065	070	140	075	070	080	090	065	055	070	070	075	070	070R	080	065	U055S
5	065	065	065	085	080	080R	070R	060R	070	070	080	085	085	060	100	080	070	070	065	075R	A	075R	085	070
6	080	U060R	080	070	070	090	060	070	055	065	090	070	065	080	065	070	I060A	085	I080A	A	075R	U075R	080R	065
7	065R	070R	070	U080S	070	075	065	070	075	080	I100A	075	075	080	080	080	085	075	100	085R	070	095	080	U090R
8	090	U075R	U085R	090R	090	085R	070	100	100	085	075	090	060	075	080	085	065	080R	060	U065R	095	075	070	065R
9	075	070	075	070	085	085	I070R	070	095	065	075	080	075	065	085	070	075	065	070	075	065R	075	075	070R
10	075	085	075	065	085	085	070	065R	100	045	080	085	100	100	105	070	075	080	065	065	070	095	105	085
11	075	100	095	090	090	070	065	070	085	105	070	095	090	090	070	075	060	085	085	070	070	075	090	075
12	U075R	060R	U075R	075	060	065	060	055R	060	060	110	070	065	075	095	070	075	080	075	U075S	I090S	I080S	065	060
13	U060S	I060S	060	075	070	055	060	070	070	085	085	I080A	A	I070A	065	095	090	075	085	065	070S	U075S	I080S	085
14	U070S	U070S	095S	070	075	090	080	060	060	A	065	075	075	085	090	A	A	085	060	065	090	070	055	I080R
15	A	A	R	080	060	085	080	065	065	I070A	080	095	095	075R	065	070	075	085	090	070	070S	U065R	I090R	I090R
16	U085R	075R	070	095	065	U085R	060S	075	065	060	095	085	090	075	075	075	065R	075	U075R	085	085	085	I075S	U075S
17	U075S	U075S	065S	085	075	080S	075	090	080	090	095	070	075	065	075	085	085R	065	080	U085R	U080R	075	I075R	U075R
18	I070R	U065R	070R	075	060	070	065	U080R	065	085	090	095	070	090	095	085	085	085	J080R	U075S	U085S	U100S	080	I070S
19	R	S	F	U080F	J090R	U085S	U075R	070	115	110	085	I100A	085	090	085	080	095	090	070	095	095	U090S	075S	U080S
20	U085S	J070S	070S	080	080S	080	070S	070	070	A	100	085	080	080	080	U085R	085S	085	I080A	095S	070	100	F	U090S
21	080S	I070S	U095S	075S	090S	070	070	A	070	105	085	105	095	095R	105	065	085	095	100	A	I080A	I075S	075	J085S
22	075	I080S	U085S	075	075	075	085S	080	A	120	110	080	080	080	090	100	100	070	080	060S	095	U075S	075	070
23	J070R	I060S	090	095	070	065	060	050	095	100	095	A	100	100	110	105	090	090	A	A	090	075S	U085S	I080A
24	I080S	J075S	J060S	J045F	060	080R	060	090	100	095	100	090	115	095	095	090	A	A	A	A	I085A	090S	075S	080
25	070	U055S	075S	070	080	075	090	080	105	075	105	090	080	095	085	100	090	090	100	095	100	090	U090S	F
26	F	I090S	U085S	095S	U115S	080	110	115	105	110	R	G	080	085	055	085	A	095	095	080	115	095	105	U090S
27	085S	110	095	090S	100	120	085	U100R	105R	070	080R	095	A	A	A	105	095	115	090	085	085R	I090S	U085R	U070S
28	075S	070S	095	090S	070	U110S	085	090	095	G	R	070R	065	065R	065	I060B	060	075	I085A	095	080	100S	I100S	075S
29	105	050S	I080S	080S	090	090	065S	100	095	A	A	A	G	065	J070R	I080A	I070A	A	085	080	095	090	U065S	080
30	J085S	090	075	070	100	105	115	110	070	120R	100	095	090	075R	085	085	085	085	085S	I085A	100S	100S	085	U095S
31	U085S	075S	080S	085S	070	100	085	090	080	G	080	090R	080	070	090	075	080S	075	070S	070	105	U085S	085S	U075S
Count	28	29	29	31	31	31	31	30	29	26	27	28	28	30	30	30	28	29	29	27	30	31	30	30
Median	075	070	080	080	075	080	060	070	080	085	090	085	080	080	085	080	080	080	080	080	085	080	080	U080
U.Q.																								
L.Q.																								
Q.R.																								

ypF2

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

The Radio Research Laboratories, Japan

K 14

IONOSPHERIC DATA

May 1967 | foF2 | **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	I092S	J089S	J096S	085	I077S	I073S	084	090S	096	092	104	113	127	135	U138S	J138S	131	128	124	112	093S	086S	086S	U088S
2	086S	083S	U077S	I072S	I084S	080	100	086S	076	085	091	097	115	130	128	128	127	127	130	124	104	U088S	I090S	S
3	C	C	C	C	C	C	C	C	C	C	084	105	117S	114	119	110	103	U097S	097S	U090S	U083S	I076S	U072S	U071S
4	J063S	J066S	FS	060F	057	053S	059	078	U071S	096	109	123	119	099	095	108	112	105	104S	109S	083S	U069S	073S	U071S
5	I070S	067S	065S	062	059	056	064S	078	U090S	086	088	097	114S	125	125	137S	130	126	114	105	086S	I075S	I074S	078S
6	J076S	I075S	I071S	067S	066	066	070S	077S	085	J092S	099	106	117	127	129R	128	134S	135	J132S	125	095S	I089S	I089S	090S
7	087	I091S	S	S	081S	068S	083S	077S	079	080	092S	112	123	125	131	138	137S	122	126	114	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	104	111	I114A	I119A	I126A	I131A	130	119	J100S	I088S	S	S	S	S
9	S	S	S	066S	060F	060S	069S	078S	078	091	U094C	100	C	C	C	C	C	C	C	098	I076S	067	U067S	070S
10	J076S	I074S	J076S	077S	054	043	059S	072S	074	088	107	110	114	122S	121	120S	116	114S	I112S	S	S	U063S	S	S
11	S	I070S	I065S	I062S	U065S	U064S	I069S	070S	I074C	079	I095C	108	124	135S	144	148S	147S	131	118	103S	U080S	S	S	S
12	S	S	I098S	U089S	083S	U071S	069	070S	069	079	089	108	122	125	I128C	132	139S	138	124	112	I093S	C	C	C
13	C	C	C	C	C	C	C	C	C	071S	069	086	104	113	114	122	126	121	118S	101	084	J074S	I069S	S
14	S	S	F	S	U072S	I067S	I076S	082S	072	066H	077	093	105	110	113	114	117	125	118	U107S	093S	I093S	094S	FS
15	S	S	092S	087S	U073S	I079S	I080S	071S	067	C79	071	086	103	105	106	105	107	108	110	111S	I105S	I095S	I091S	I095S
16	I097S	U092S	091S	U087S	U073S	068	U071S	I077S	080	085	077	097	120	131	131	128	127	119	122S	112S	S	S	I085S	085
17	084S	086S	083	067	059	062S	071	078	086	090	102	116	125R	I129R	137	I137S	130	127	U117S	J098S	I093S	086	087S	U090S
18	I084S	079S	J079S	066S	066	062	070S	073	076	082	094S	106	J123S	125	126	I134S	129	119	117S	112S	088	I083S	S	S
19	S	086	086	082S	060	063	U073S	071	I081A	090	101	115S	117S	122	132	J138S	133	125	I121S	S	A	A	S	S
20	S	093S	I095S	I094S	I083S	I075S	081	085	075	080	096	105	112	109	106	102	105	108	I109R	110	096S	086S	I089S	085
21	I085S	087F	F	F	F	F	075S	080	081	086	085	096	106	115	124	126	125	I118A	112R	I110A	099S	090S	I090S	A
22	S	J100S	I095S	090	076	062	065	080	080	I084R	096	103	112	112	116	124R	126	125R	118S	U103R	084	084	I087S	086S
23	U090S	U092S	J096S	J088S	J088R	077	J079S	080	078	081	I090A	098	107	116	123R	C	C	C	J134S	104	FS	091	S	S
24	S	S	092S	I092S	090	I089S	100	094	082	I080A	I089A	102	112	115	120	126	124	119	112	J099S	091	091S	094S	S
25	S	S	I108S	J090S	086S	076S	077	097	084	079	089	I099A	I108A	I110A	114	122	134	132	121	107	I113S	S	R	121
26	S	S	A	I091S	F	065	I066A	A	C	099	I097A	I092A	112	120	086	101	J098S	098	088S	088	068	064	062	U074S
27	068	066	065	070	053H	043	066	092S	U097S	111	125	109	111H	096	D092W	095	103	113	118	114	110	102S	104S	I102S
28	108S	I107S	102	I102S	I098S	J096S	096S	091S	I082A	077	I079A	080	090	096	096	I102B	101	100	J096S	088S	086	085S	079	I078S
29	I078S	I078S	S	S	069F	081	087	065	073	069R	078	D082W	084R	098R	098	096S	098S	100S	I098S	092S	086	083	084	085
30	U085S	082S	085	I069S	058	059F	073S	089	094S	084	087	090	102	109	105	108	109	115	107	096S	086	I081S	S	S
31	091	I092S	I088S	I078S	I072S	059	070	J074S	089	087	060	090	110	101	089	097	083	078	087	081	073	073	S	A
Count	17	21	21	24	26	27	28	27	27	29	31	31	30	30	30	29	29	29	30	29	25	24	20	16
Median	085S	086S	088S	080S	072	066	072S	078S	080	084	091	102	113	116	121	124	126	119	117S	105	088S	084S	U086S	U085S
U.Q.	090	092	096	090	083	076	080	086	085	090	099	109	119	125	128	133	130	126	121	112	096	090	090	090
L.Q.	076	074	076	067	060	060	069	073	074	079	084	094	107	109	106	106	106	108	107	097	084	074	074	076
Q.R.	014	018	020	023	023	016	011	013	011	011	015	015	012	016	022	027	024	018	014	015	012	016	016	014

foF2

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

The Radio Research Laboratories, Japan

Y1

IONOSPHERIC DATA

May 1967 | foF1 | 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	LH	L	LH	560H	L	550L	LH	L	L	L					
2									L	L	LH	LH	530	540	560H	520L	LH	L	L					
3									C	C	530L	560L	L	570L	L	L	LH	L	A					
4									L	LH	L	L	L	L	LH	U520L	L	A	C					
5									L	L	L	LH	A	A	A	510	L	A	A					
6								L	L	L	L	LH	LH	LH	B	A	L	A	A					
7									L	LH	LH	LH	A	A	A	A	A	A	A					
8									C	C	A	A	A	A	A	A	L	L	A					
9									A	A	A	LH	C	C	C	C	C	C	C					
10									L	550	530	530	LH	530	530	490	480	A	A					
11								A	C	A	C	L	U560L	A	520	LH	A	A	A					
12								L	L	A	LH	520	510	510	C	LH	490H	L	L					
13									C	490	LH	L	L	A	520	500	480	L	L					
14								L	A	L	530	L	L	A	A	A	A	A	A					
15								A	A	A	A	A	530	530	A	LH	LH	L	A					
16								L	L	L	L	LH	540	530	520	480	LH	A	A					
17								A	LH	A	L	A	A	A	A	A	L	LH	A					
18								L	A	L	LH	550	L	560H	LH	520	A	L	A					
19									A	A	A	LH	540	L	LH	L	L	L	A					
20									A	A	L	A	540	A	A	L	A	A	A					
21								A	A	A	A	A	L	550	A	530	A	A	A					
22								A	A	A	A	A	A	A	A	550L	L	A	A					
23									L	L	A	L	580	A	A	C	C	C	A					
24								L	LH	A	A	A	A	A	A	A	A	A	A					
25									A	A	A	A	A	A	A	540	530	A	A					
26								A	C	A	A	A	590	A	610	L	A	A	A					
27								L	L	L	560	A	I590A	L	I580A	530H	L	L	A					
28								L	A	L	A	550	560H	520	580H	I550B	520	A	A					
29									A	L	540	580	I550A	560	I550A	560L	550	L	L					
30								L	A	A	A	580	I580A	550H	560H	540	L	L	A					
31									L	L	L	540	A	A	560	550H	A	L	A					
Count										2	5	8	14	11	12	15	6							
Median										520	530	550	560	540	560	530	500							
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

52

IONOSPHERIC DATA

May 1967 | foE | **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							170	270H	310	335	355	370R	I385R	390R	365R	350	325	290	220					
2							185	270	320	335	345	350	375	380	365	345	325	285	215R					
3							C	C	C	C	355	345	365	365R	360	345	325	300	215					
4							170	265	300	330	350	350	I365A	365	350	350H	330	290	C					
5							180	260	300	330	350	360	360	370	350	345H	330	295	230					
6							170	260	300	330	350	I370A	I370R	380H	I375B	350	330	290	210					
7							S	260	300	335	360	I375R	380	380R	370	355	310	300	225					
8							C	C	C	C	360	370	370	A	A	A	A	290H	230H					
9							S	I250C	I310C	330	350C	360	C	C	C	C	C	C	C					
10							165	260	305	330	340	A	A	A	A	A	A	290	230					
11							190	260	I300C	330	I345C	I350R	365	I360A	A	A	A	285	220					
12							185	270	310	330	A	A	A	A	C	345	320	280	210H					
13							C	C	C	335	340	A	A	A	A	A	320	285	230					
14							A	A	300	330	I350A	360	370	380	365	350	320	290	230					
15							200	260H	310	330	350	355	360	350	A	A	335	295	235					
16							150	255	310	335	345	A	A	A	A	A	A	290	220					
17							170	270	315	340	A	A	A	A	A	A	A	300	235					
18							205	275H	315	A	A	A	390	I390A	390	360	340	290H	230					
19							180	280	320	350	I365A	I380A	390	I400R	I385R	I365R	350	300	250					
20							210	A	A	A	A	A	A	A	A	390H	340	300	240					
21							220H	290	320	355	360	370	380	370	A	A	A	330	250H					
22							230H	290H	325	360	375	A	A	A	A	R	350	310H	250					
23							180	275	I325A	355	365	I385A	400	400	390	C	C	C	250					
24							240	300	335	355	I360C	360R	B	B	A	A	A	A	A					
25							210	285	320	350	370	380	380	380	370	360	360	320H	250					
26							210	295	340	365	370	370	380	365	A	A	A	A	A					
27							210	280	330	360	380	390	400	400	390	370	340	320	260					
28							220H	290H	320	350	370	390	400H	400	390H	I380B	360	320	250					
29							230	290	330	350	365	370R	I375A	385R	I385R	375H	350	320	270					
30							190	285	330	355	370	375	I375A	365	370H	360	345	315	260					
31							230	290	330	370	380	380	390	380	370	370	A	A	A					
Count							25	26	27	27	27	23	22	21	17	18	20	26	26					
Median							190	270	315	335	360	370	380	380	370	360	330	295	230					
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

Y 3

IONOSPHERIC DATA

May 1967 | **foEs** | **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	J030	J027	020	J041	J022	J024	022	040	045	045	051	054	G	044	043	039	051	031	026	024	J018	025	J032	035
2	025	022	025	J014	E017B	018	018G	034	J044	J065	038	043	040	044	039	J071	036	031	033	J032	024	J038	J031	E015S
3	C	C	C	C	C	C	C	C	C	C	J049	J051	047	J084	047	038	034	035	032	J029	J046	J029	E015S	E015S
4	E015S	021	J019	020	017	J025	020	033	034	038	059	J049	046	062	048	039	049	J058	E085C	J083	040	J030	023	J031
5	J027	E011B	E015B	E	E015B	E011B	023	029	041	041	040	045	J091	059	J057	044	037	J051	129M	067M	090M	084M	J029	031M
6	J025	J025	022	021	J029	E011B	023	034	043	036	046	044	G	040	E058B	052	J053	J064	077M	J044	J091	J043	061M	090M
7	070M	083M	064M	067M	J064	J066	028	044	J054	044	041	G	059	057	J067	J059	J070	068M	J078	130M	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	J081	J095	J191	J121	D	J171	J101	J045	J119	J046	J061	052	J051	J031
9	027M	028	025	021	019	E015B	024	J041	J043	J055	U053C	045	C	C	C	C	C	C	C	J051	J032	J019	J018	020
10	E015S	E	E012B	018	021	E	024	035	043	J047	046	J044	J054	J052	J054	038	J049	J060	090M	J061	067M	023M	E016S	E016S
11	E015S	E016S	E016S	J024	022	E016S	023	J052	C	J059	C	J056	045	064M	042	042	J058	J060	J044	J071	104M	J031	J053	J025
12	019	E013B	E	E011B	J018	E014S	G	035	J047	J056	091M	070M	J066	049	C	J044	G	021G	016G	J046	044M	C	C	C
13	C	C	C	C	C	C	C	C	C	J060	043	074M	045	123M	104M	J053	G	037	039	J041	J026	J039	J032	J052
14	038M	042M	J025	J019	E011B	J026	J038	J040	J060	046	J056	049	J077	054	053	J075	076M	J085	J088	J065	061M	059M	058M	J061
15	026	020	025	J027	J042	J039	031	J050	J077	J083	J076	J059	J054	053	J063	042	G	041	J118	085	051	J043	043	050
16	025	030	E016B	018	E015B	E014B	024	039	050	J056	040	037	040	J045	044	042	051	046	J041	J035	J025	032M	021	020
17	020	020	E	019	021	E	026	J044	J057	063	066	078	071	J084	073	J064	032	026G	J055	050M	060	059	034	E015S
18	E017B	028	037	044	020	E017B	025	041	J045	J056	055	045	055	040	G	G	049	045	J053	J051	J031	024	059M	036M
19	034M	020	021	020	E015B	E014B	025	035	J114	095	J095	060	054	G	G	G	039	040	J056	J104	120	103M	070M	064M
20	J045	J046	049M	J031	J024	025	023	042	045	J062	J059	059	049	J081	J069	052	067	J088	J108	071M	066M	082M	J054	034M
21	J053	061M	065M	J033	035M	J030	039	JC60	J067	J077	J086	J078	J058	055	J060	054	J080	J139	J112	J148	J064	J040	090M	092M
22	J054	J024	J026	J027	033M	E013B	025	J050	J071	J085	J091	117	J107	J098	J086	050	046	J058	J080	J065	J046	J053	030	035
23	J050	028	021	J043	030	021	J028	042	J072	J101	176M	117M	J099	J130	J095	C	C	C	J118	J088	J121	094M	092M	J043
24	J035	J074	J039	J028	J030	J029	028	J052	J063	105	122M	098	117	J107	J105	107	J097	J098	J057	051	J058	J083	J084	J053
25	052	027	J023	019	J028	019	026	040	J064	J089	150M	J143	146	J140	J090	050	047	J064	J072	J058	J061	J045	J052	J024
26	J021	J051	107M	J109	J055	029	J116	J144	D056G	064	J128	J113	054	J061	J068	J056	091M	J053	080M	J041	J024	J021	030	J021
27	023	020	020	J016	J024	025	030	050	040	J062	J070	J109	J128	047	J066	041	051	051	050	J061	J029	021	020	J042
28	J040	J029	J039	J060	J051	J026	040	J054	J125	J059	J118	053	049	046	G	B	046	J059	J061	J051	J034	J025	019	E013S
29	J045	J080	J039	J041	J043	J028	J067	J052	J079	J061	090	J105	J138	092	J060	G	047	J064	G	J036	J041	J038	J072	J074
30	026	024	J040	025	030	J043	J075	J077	J062	050	J083	J078	J077	050	G	034G	032G	038	J055	J029	J041	J032	J076	144
31	J061	J061	081	J059	J021	J021	035	J048	047	058	J084	061	J081	J068	046	G	J059	091	J083	J040	J083	J051	J052	J110
Count	28	28	28	28	28	28	28	28	27	29	30	31	30	30	29	28	29	29	30	31	30	29	29	29
Median	027	027	025	J024	023	021	026	042	J054	J059	068	059	056	058	058	044	049	J053	J062	J051	J048	J039	043	035
U.Q.	045	044	039	041	032	027	033	051	069	071	091	095	091	084	071	055	063	064	088	071	066	056	060	057
L.Q.	022	020	020	019	018	E014	023	037	044	048	049	045	047	047	044	038	036	039	044	041	032	027	026	020
Q.R.	023	024	019	022	014	D013	010	014	025	023	042	050	044	037	027	017	027	025	044	030	034	029	034	037

The Radio Research Laboratories, Japan

foEs

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

IONOSPHERIC DATA

May 1967 | **f_bEs** | **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	022	022	018	030	016	021	G	038	042	040	049	047		044	042	G	048	G	G	023	015	022	023	025
2	023	021	022	011	B	015	016G	G	029	G	038	042	G	043	G	040	036	G	032	031	022	025	018	S
3	C	C	C	C	C	C	C	C	C	C	040	047	046	041	045	G	G	033	031	028	042	029	S	S
4	S	E	015	012	E	023	G	G	G	037	049	049	040	053	047	G	049	055	C	083	034	025	E	029
5	017	B	B		B	B	G	G	039	039	039	044	079	059	055	041	037	044	099	036	045	041	023	023
6	022	018	016	015	018	B	G	030	041	G	042	043		G	B	052	043	058	055	044	044	030	032	055
7	036	054	043	042	044	050	028	042	046	038	040		058	056	064	057	070	041	065	064	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	080	093	A	A	A	A	038	042	089	040	028	043	022	017
9	E	E	018	015	E	B	G	041	042	051	049C	043	C	C	C	C	C	C	C	047	030	015	E	E
10	S		B	E	014		023	034	041	043	043	040	042	043	040	E038R	046	058	087	E061S	E067S	017	S	S
11	S	S	S	021	018	S	022	051	C	054	C	043	045	056	040	040	057	044	034	058	070	025	028	015
12	E	B		B	014	S		G	043	051	042	044	041	047	C	032		021G	016G	037	038	C	C	C
13	C	C	C	C	C	C	C	C	C	042	038	041	043	052	045	040		037	031	038	024	019	024	E052S
14	E	027	015	015	B	023	035	033	054	045	040	045	053	053	052	074	070	076	086	E065S	029	040	024	044
15	015	E	014	024	033	030	025	048	056	070	068	057	044	052	060	042		041	094	070	024	015	025	032
16	018	018	B	016	B	B	G	035	039	G	040	E037R	039	045	043	041	044	043	040	035	024	016	E	E
17	E	E		E	021		G	040	040	061	050	073	060	056	056	054	E032R	026G	054	045	E060S	030	016	S
18	B	018	025	024	018	B	023	040	042	044	047	043	051	E040R			049	045	053	049	030	024	032	024
19	E	017	017	015	B	B	G	035	A	077	075	042	047				038	037	056	E104S	A	A	055	039
20	023	027	019	026	E024S	023	G	034	043	057	052	059	048	064	068	051	065	069	E108R	E071S	044	059	045	015
21	045	045	037	025	017	021	036	054	065	057	058	062	050	047	057	044	074	A	095	A	064	029	032	A
22	026	021	017	023	018	B	G	046	065	E085R	076	069	102	088	061	043	045	057	079	065	043	022	023	023
23	035	018	E	036	023	018	G	040	050	044	A	046	049	056	091	C	C	C	115	E088S	054	051	026	022
24	018	055	023	024	016	025	G	035	061	A	A	092	104	103	084	099	090	072	050	039	045	049	073	035
25	029	020	022	015	022	014	023	037	054	064	067	A	A	A	076	049	045	062	072	057	061	035	041	021
26	016	025	A	028	041	022	A	A	C	060	A	A	052	059	055	050	079	051	079	041	021	018	022	021
27	E	016	013	015	023	023	G	035	G	046	043	056	080	042	E066R	040	041	047	044	051	028	E	E	031
28	034	017	025	034	030	017	039	049	A	042	A	048	047	045		B	044	056	043	024	E034S	022	E	S
29	027	070	024	E035A	019	021	050	044	058	043	048	047	075	048	060		046	043		034	038	035	035	028
30	018	024	025	020	023	024	057	038	062	049	054	055	076	047		033G	030G	035	050	026	034	025	040	024
31	024	055	016	014	014	E	033	E038A	045	043	044	046	056	065	045		057	047	059	040	041	034	029	A
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

Y5

IONOSPHERIC DATA

May 1967 | **f-min** | **135° E Mean Time** (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E015S	E015S	E	011	E	E	012	013	018	023	023	023	022	023	023	022	017	014	018	013	011	E015S	E014S	E014S
2	E015S	012	E	E	017	011	012	014	014	019	025	026	025	023	024	022	019	017	015	013	012	E015S	E014S	E015S
3	C	C	C	C	C	C	C	C	C	C	023	023	023	023	022	023	022	015	014	011	E015S	E015S	E015S	E015S
4	E015S	015	011	E	014	E	E015S	015	016	017	022	023	024	023	022	024	017	017	E085C	013	E014S	E014S	E015S	E015S
5	E015S	011	015	E	015	011	E015S	012	013	017	023	022	022	024	022	018	017	014	014	E013S	E015S	E014S	E014S	012
6	E015S	E014S	E015S	E	E	011	E015S	013	014	016	023	022	023	023	058	022	022	014	014	012	E015S	011	E015S	E015S
7	011	E015S	011	E	E	013	E015S	015	014	018	022	022	023	023	022	022	022	017	013	013	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	018	025	026	024	022	022	017	017	015	013	E012S	E013S	012	013
9	E015S	E014S	E015S	E	013	015	E015S	015	018	018	017C	024	C	C	C	C	C	C	C	013	E015S	E013S	E015S	E015S
10	E015S	E	012	014	E	E	E015S	E015S	017	016	023	022	025	025	025	024	018	016	014	E015S	E015S	E016S	E016S	E016S
11	E015S	E016S	E016S	E017S	E016S	E016S	E015S	016	C	023	C	025	025	024	022	020	016	013	013	E	E	E015S	E	012
12	E015S	013	E	011	E	E014S	E015S	012	016	017	022	021	023	023	C	018	018	016	014	013	E015S	C	C	C
13	C	C	C	C	C	C	C	C	C	017	021	023	022	025	023	022	015	015	014	012	011	E015S	E014S	012
14	E015S	011	E	011	011	015	E015S	014	015	018	022	022	025	025	023	020	022	015	014	011	E015S	E015S	E014S	E015S
15	011	E014S	E	E	E	013	E014S	011	016	022	022	024	028	024	026	019	023	017	022	011	015	012	014	012
16	014	014	016	E	015	014	013	013	014	018	023	026	025	023	024	022	019	017	013	011	011	E014S	E015S	E017S
17	E014S	015	E	E	E	E	012	016	018	017	018	026	027	024	028	024	022	014	018	014	014	016	E015S	E015S
18	017	E015S	E015S	E	011	017	E015S	016	017	022	022	024	029	E031C	025	024	022	015	015	015	011	014	015	015
19	017	015	011	E	015	014	014	015	015	022	024	024	024	031	031	024	024	013	015	E	E015S	E015S	E014S	E014S
20	E014S	E	E	E	E	017	E015S	015	022	022	025	025	024	029	023	022	025	016	017	015	012	E014S	E014S	E014S
21	E015S	E	E	E	E	011	013	013	015	017	023	023	024	025	025	018	017	019	015	015	012	E	E015S	E
22	E014S	E	014	E	E	013	011	015	018	024	027	026	025	033	029	024	024	019	015	011	E	E015S	E015S	E015S
23	E015S	014	E015S	E	E	E	E015S	015	017	023	022	024	025	024	029	C	C	C	015	014	014	014	E015S	E014S
24	014	E	E	E	E	015	014	022	022	024	029	029	040	039	027	025	022	017	018	014	E015S	015	012	015
25	E015S	013	E	E	E	E	016	015	015	015	023	023	025	029	027	023	026	017	020	014	E014S	014	E014S	E
26	E015S	E	E	E	E	E	014	017	021	023	022	025	030	025	024	023	022	015	018	011	014	015	E015S	E014S
27	E015S	014	011	E	E	E	013	015	015	018	023	032	031	024	029	021	017	015	016	013	012	E014S	E015S	E014S
28	016	E	E	E	E	E	014	015	017	020	023	023	024	025	022	B	028	021	023	014	E014S	E014S	E015S	E013S
29	E015S	E014S	E	E	E	E	014	015	015	018	023	024	028	025	030	025	018	017	017	014	014	E015S	E015S	E015S
30	015	015	014	E	E	015	015	015	018	021	023	024	024	022	024	022	022	016	014	015	011	014	014	E014S
31	E015S	014	E	E	E	014	014	015	017	023	023	024	024	024	023	023	019	015	016	011	014	E	E015S	E014S
Count	28	28	28	28	28	28	28	28	27	29	30	31	30	30	29	29	29	29	30	31	30	29	29	29
Median	E015S	E014	E	E	E	012	013	015	016	018	023	024	025	024	024	022	022	016	015	013	E014	E014S	E015S	E014S
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f-min Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 6

IONOSPHERIC DATA

May 1967 | M(3000) F2 | 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	I270S	J275S	J300S	295	I295S	I290S	310	310S	320	265	265	260	275	280	U285S	J290S	290	290	300	310	270S	260S	265S	U275S
2	280S	290S	U285S	I280S	I285S	300	340	345S	315	290	265	255	260	285	280	280	285	285	300	305	295	U250S	I260S	S
3	C	C	C	C	C	C	C	C	C	C	260	275	285S	280	285	290	290	U300S	290S	U280S	U270S	I270S	U270S	U270S
4	J240S	J240S	FS	250F	250	270S	270	320	U275S	275	275	285	305	300	295	300	315	305	300S	310S	300S	U260S	265S	U270S
5	I265S	270S	265S	265	270	270	290S	295	U315S	290	275	260	275S	290	290	300S	300	305	305	305	300S	I270S	I260S	280S
6	J275S	I280S	I275S	275S	290	305	340S	315S	320	J295S	295	285	280	290	290R	285	295S	295	J310S	320	295S	I270S	I265S	260S
7	260	I270S	S	S	325S	295S	325S	340S	330	310	275S	270	285	275	280	285	290S	290	300	300	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	285	280	I285A	I285A	I290A	I300A	305	320	J320S	I315S	S	S	S	S
9	S	S	S	290S	275F	265S	320S	320S	310	300	U285C	265	C	C	C	C	C	C	C	320	I300S	265	U255S	260S
10	J270S	I280S	J295S	310S	335	300	320S	320S	310	250	250	275	265	285S	290	275S	295	305S	I310S	S	S	U245S	S	S
11	S	I280S	I275S	I280S	U290S	U310S	I335S	330S	I310C	290	I280C	275	275	280S	285	290S	305S	305	305	300S	U290S	S	S	S
12	S	S	I300S	U305S	320S	U310S	325	315S	305	280	255	270	290	295	I290C	285	290S	305	305	305	I300S	C	C	C
13	C	C	C	C	C	C	C	C	C	310S	295	265	270	285	280	280	295	300	295S	310	290	J275S	I260S	S
14	S	S	F	S	U280S	I305S	I310S	335S	335	315H	275	280	275	285	285	290	280	305	315	U295S	285S	I290S	285S	FS
15	S	S	285S	300S	U275S	I305S	I330S	340S	335	315	270	265	285	290	295	285	295	290	300	300S	I300S	I290S	I275S	I270S
16	I280S	U275S	290S	U285S	U310S	310	U315S	I325S	320	320	285	260	280	290	290	290	290	290	310S	315S	S	S	I270S	270
17	260S	285S	300	310	270	275S	315	295	290	265	270	280	280R	I280R	290	I290S	290	305	U300S	J290S	I285S	265	275S	U265S
18	I270S	270S	J270S	290S	295	300	330S	320	310	280	260S	265	J285S	280	285	I290S	300	295	290S	300S	295	I265S	S	S
19	S	280	305	315S	300	300	U340S	295	I305A	265	265	275S	270S	270	280	J290S	295	290	I295S	S	A	A	S	S
20	S	265S	I280S	I295S	I295S	I290S	295	305	285	255	270	270	285	285	275	265	275	270	I290R	290	280S	255S	I265S	280
21	I280S	275F	F	F	F	F	310S	300	300	295	280	260	265	270	275	280	290	I290A	285R	A	295S	265S	I260S	A
22	S	J285S	I300S	290	305	290	290	300	300	I285R	255	255	265	265	270	280R	285	290R	300S	U300R	275	260	I260S	265S
23	U260S	U285S	J305S	J305S	J305R	330	J325S	315	315	290	I255A	250	255	265	260R	C	C	C	J320S	310	FS	255	S	S
24	S	S	290S	I285S	275	I290S	310	310	280	I275A	I260A	255	265	260	265	280	280	285	295	J280S	275	255S	245S	S
25	S	S	I295S	J300S	315S	280S	285	300	310	280	255	I250A	I260A	I255A	255	260	280	295	290	275	I255S	S	R	265
26	S	S	A	I295S	F	245	I235A	A	C	230	I240A	I230A	240	290	255	250	J255S	260	275S	285	250	235	235	U250S
27	250	260	265	285	305H	260	290	285S	U300S	285	310	275	245H	225	D215W	240	250	260	280	280	275	265S	260S	I260S
28	250S	I270S	275	I285S	I295S	J290S	315S	295S	I290A	285	I250A	250	260	275	260	I270B	275	280	S	270S	255	260S	255	I250S
29	I255S	I265S	S	S	260F	285	335	325	280	310R	280	D265W	260R	265R	265	260S	255S	265S	I270S	270S	270	265	250	250
30	U255S	255S	285	I285S	260	255F	275S	280	280S	295	265	250	265	275	270	270	275	285	290	280S	285	I255S	S	S
31	265	I260S	I260S	I255S	I280S	255	285	J275S	280	310	335	245	265	270	270	285	280	270	295	275	260	250	S	A
Count	17	21	21	24	26	27	28	27	27	29	31	31	30	30	30	29	29	29	29	28	25	24	20	16
Median	265S	275S	285S	290S	290	290	315S	315S	310	290	270	265	270	280	280	285	290	290	300	300	285S	260S	U260S	U265S
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000) F2

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

Y 7

IONOSPHERIC DATA

May 1967 | M(3000) F1 | 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	LH	L	LH	350H	L	325L	LH	L	L	L					
2									L	L	LH	LH	370	360	335H	350L	LH	L	L					
3									C	C	360L	325L	L	325L	L	L	LH	L	A					
4									L	LH	L	L	L	L	LH	U335L	L	A	C					
5									L	L	L	LH	A	A	A	350	L	A	A					
6								L	L	L	L	LH	LH	LH	B	A	L	A	A					
7									L	LH	LH	LH	A	A	A	A	A	A	A					
8									C	C	A	A	A	A	A	A	L	L	A					
9									A	A	A	LH	C	C	C	C	C	C	C					
10									L	325	340	360	LH	360	355	345	A	A	A					
11								A	C	A	C	L	U340L	A	345	LH	A	A	A					
12								L	L	A	LH	345	365	A	C	LH	330H	L	L					
13									C	355	LH	L	L	A	345	350	325	L	L					
14								L	A	L	360	L	L	A	A	A	A	A	A					
15								A	A	A	A	A	350	A	A	LH	LH	L	A					
16								L	L	L	L	LH	360	A	345	365	LH	A	A					
17								A	LH	A	L	A	A	A	A	A	L	LH	A					
18								L	A	L	LH	340	L	340H	LH	325	A	L	A					
19									A	A	A	LH	370	L	LH	L	L	L	A					
20									A	A	L	A	350	A	A	L	A	A	A					
21								A	A	A	A	A	L	350	A	340	A	A	A					
22								A	A	A	A	A	A	A	A	335L	L	A	A					
23									L	L	A	L	335	A	A	C	C	C	A					
24								L	LH	A	A	A	A	A	A	A	A	A	A					
25									A	A	A	A	A	A	A	A	320	A	A					
26								A	C	A	A	A	305	A	A	L	A	A	A					
27								L	L	L	370	A	I340A	L	A	345H	L	L	A					
28								L	A	L	A	365	355H	385	345H	B	325	A	A					
29									A	L	345	340	I355A	355	I350A	320L	320	L	L					
30								L	A	A	A	A	I325A	350H	355H	335	L	L	A					
31									L	L	L	350	A	A	320	330H	A	L	A					
Count										2	5	7	14	8	10	13	5							
Median										340	360	345	350	350	345	340	325							
U.Q.																								
L.Q.																								
Q.R.																								

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

IONOSPHERIC DATA

May 1967 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.1'N | Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									250	350	320	350	345	340	310	305	285	280	250					
2									240	250	260	340	350	320	315	305	305	300	275					
3									C	C	360	320	305	325	310	305	300	275	260					
4									380	325	330	310	280	300	315	305	280	280	E305C					
5									270	290	260	350	345	305	300	295	275	275	I275A					
6								240	250	275	300	305	305	320	305	305	300	290	265					
7									250	290	330	345	320	340	345	320	300	280C	295					
8									C	C	E340A	E380A	A	A	A	A	275	260	E300A					
9									250	290	280	350	C	C	C	C	C	C	C					
10									260	350	350	330	345	330	315	300	295	280	280					
11								255	I285C	320	I310C	325	350	330	335	310	280	260	250					
12								230	260	350	380	340	305	310	I325C	335	300	275	250					
13									C	280	415	350	345	325	325	345	300	275	255					
14								250	260	250	355	330	330	310	320	325	325	300	290					
15								240	275	310	E500A	370	325	300	310	310	300	290	I295A					
16								250	250	280	300	370	340	315	310	300	295	280	270					
17								250	300	325	330	340	330	330	310	290	290	290	265					
18								255	240	310	330	345	330	325	320	315	285	280	275					
19									A	E400A	360	340	335	345	330	310	300	295	270					
20									245	E350A	330	345	330	325	330	350	330	E340A	A					
21								275	305	305	300	370	350	360	330	320	305	I310A	E350A					
22								275	310	A	E400A	360	A	E380A	350	335	310	300	290					
23									260	300	A	335	390	355	E395A	C	C	C	E310A					
24								250	370	A	A	E460A	E450A	E440A	375	360	340	310	270					
25									280	350	E375A	A	A	A	380	360	335	300	280					
26								A	C	400	A	A	445	310	415	355	E395A	345	A					
27								300	255	310	290	310	405	380	E500R	430	380	340	290					
28								300	I325A	300	I400A	420	395	345	380	I360B	340	325	290					
29									350	300	400	410	E450A	380	380	380	375	350	300					
30								275	285	280	310	355	375	340	350	345	340	310	280					
31									300	285	275	435	350	340	375	350	325	375	300					
Count								14	26	27	28	29	27	28	29	28	29	29	28					
Median								250	265	300	320	345	340	330	330	320	300	290	275					
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

May 1967 | h'F | 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	300	300	255	250	240	250	250	230	I240A	220H	A	245H	215H	220	225	220H	A	220	240	230	230	265	315	305
2	E295A	255	265	265	305	265	225	215	225	210	200H	200H	215	220	205H	225	235H	245	265	250	230	260	340	295
3	C	C	C	C	C	C	C	C	C	C	205	E275A	E255A	230	E255A	230	230H	245	A	255	305	305	300	305
4	300	350	300	310	300	310	250	255	220	220H	A	A	220	A	AH	230	A	A	C	E300A	245	E275A	305	335
5	305	310	305	275	270	285	250	235	E250A	230	220	225H	A	A	A	E240A	230	A	A	250	265	E300A	330	300
6	300	300	280	295	275	250	225	225	250	215	220	225H	210H	210H	I255B	A	A	A	A	250	250	300	305	370
7	355	350	300	250	250	E300A	235	225	I215A	225H	205H	200H	A	A	A	A	A	A	A	280	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	230	A	A	250	260	E390A	320	305
9	310	300	300	255	255	285	225	250	A	A	A	230H	C	C	C	C	C	C	C	255	240	275H	315	325
10	305	275	255	230	215	250	235	240	E250A	E260A	245	215	200H	225	210	240	A	A	A	A	I265A	275	300	300
11	310	300	280	300	255	245	240	A	C	A	C	E240A	245	I230A	230	E265H	A	A	A	250	A	325	330	300
12	310	290	250	240H	230	230	235	225	A	A	E250H	E240A	200	A	C	225H	220H	225	245	255	250	C	C	C
13	C	C	C	C	C	C	C	C	C	E250A	205H	200	225	A	E250A	225	225	260	I245A	245	245	250	300	A
14	295	300	250	250	265	280	250	240	A	A	200	E275A	A	A	A	A	A	A	A	E290S	250	295	280	350
15	280	275	275	250	250	260	230	A	A	A	A	A	E245A	A	A	E245H	220H	I260A	I280A	280	250	230	275	320
16	295	290	275	250	240	235	220	I235A	225	215	210	200H	200	E250A	250	240	AH	A	A	250	250	270	275	300
17	300	285	250	225	280	285	240	I250A	250H	A	A	A	A	A	A	A	230	220H	I255A	270	I300A	300	300	295
18	305	300	285	250	255	250	245	245	I240A	250	250H	245	I245A	230H	195H	280	A	A	A	255	235	305	325	340
19	285	290	250	230	220	260	240	230	A	A	A	225H	230	240	205H	255	245	265	A	A	A	A	350	E310A
20	305	315	275	245	260	250	250	250	I245A	A	A	A	E265A	A	A	A	A	A	A	E300S	250	I265A	330	275
21	355	E320A	275	250	260	250	250	A	A	A	A	I255A	I235A	E250A	A	250	A	A	A	A	300	290	340	I340A
22	320	290	255	260	240	240	245	A	A	A	A	A	A	A	A	245	A	A	A	260	E295A	290	300	320
23	350	290	250	265	250	230	230	245	E250A	250	A	230	250	A	A	C	C	C	A	E330A	340	355	340	330
24	295	350	275	275	280	280	250	230	AH	A	A	A	A	A	A	A	A	A	A	260	305	350	E400A	E300A
25	335	255	250	220	240	250	250	245	A	A	A	A	A	A	A	I280A	300	A	A	275	E345A	300	305	290
26	350	380	A	E375A	E410A	370H	A	A	A	A	A	A	E325A	A	A	A	A	A	A	280	280	330	380	345
27	305	275	285	255	210	E320A	275H	250	250	250	230	I290A	I245A	225	I240A	225H	E275A	E300A	I290A	290	275	270	280	340
28	340	300	300	270	295	260	240	250	I245A	E240A	I255A	250	240H	220	200H	B	E290A	A	A	290	305	290	300	320
29	350	I335A	355	300	275	280	230	250	A	E245A	E280A	250	A	E250A	A	250	E300A	A	255	305	310	300	350	355
30	325	335	280	240	300	350	E350A	255	I230A	A	A	I250A	I260A	250H	205H	230	240	250	I270A	260	275	310	350	290
31	300	340	350	300	240	290	265	250	275	E250A	E240A	250	A	A	280	245H	A	A	A	280	320	350	E400A	I360A
Count	28	28	27	28	28	28	27	23	16	15	15	22	20	14	14	20	14	10	9	28	28	28	29	28
Median	305	300	275	250	255	260	240	245	240A	U230	210	230	230	225	220	235	230	250	U255A	260	260	295	310	315
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

Y10

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IONOSPHERIC DATA

May 1967 | **h'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	100	105	100	100	100	105	150	130	130	120	115	120	G	165	140	140	120	140	130	110	110	110	110	105
2	105	105	100	100	B	105	105	125	105	115	120	110	130	125	140	140	150	150	120	115	110	105	105	S
3	C	C	C	C	C	C	C	C	C	C	120	115	120	120	120	140	150	130	110	110	105	105	S	S
4	S	130	125	125	130	120	120	125	130	120	110	110	115	110	110	125	135	125	C	110	110	105	105	105
5	105	B	B	E	B	B	150	135	125	125	125	125	120	120	120	125	150	125	115	115	110	105	105	105
6	100	100	100	100	105	B	145	135	125	145	125	125	G	170	B	150	140	115	115	110	110	110	105	105
7	100	100	100	100	100	100	105	125	120	135	150	G	145	140	130	125	125	120	120	110	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	115	115	110	105	105	105	105	135	120	115	115	115	110	110
9	115	105	100	100	100	B	140	130	120	115	115	115	C	C	C	C	C	C	C	115	110	110	110	110
10	S	E	B	100	100	E	140	120	115	115	110	110	125	105	105	105	140	125	120	110	105	105	S	S
11	S	S	S	100	095	S	130	120	C	110	C	110	115	125	130	150	125	125	115	110	115	115	110	110
12	105	B	E	B	105	S	G	140	120	115	110	110	105	150	C	110	G	105	115	120	115	C	C	C
13	C	C	C	C	C	C	C	C	C	115	125	110	105	105	105	105	G	130	125	115	115	110	110	110
14	110	110	105	105	B	105	105	130	120	120	110	125	125	140	140	125	125	120	115	110	110	110	110	105
15	105	100	100	100	100	100	140	125	125	110	110	110	110	110	105	110	G	150	115	115	115	110	105	105
16	105	100	B	100	B	B	125	120	115	120	120	120	120	105	160	160	140	135	120	110	110	115	110	105
17	100	100	E	110	110	E	140	125	120	110	105	105	105	105	105	105	105	110	125	115	115	115	115	S
18	B	110	105	105	110	B	140	125	120	105	125	135	130	110	G	G	140	140	125	120	115	110	105	105
19	105	100	100	100	B	B	145	125	115	115	110	110	130	G	G	G	155	145	125	115	115	110	110	110
20	110	110	105	100	100	100	135	105	120	115	115	150	150	100	130	130	125	120	115	115	110	110	110	110
21	110	105	100	100	100	100	125	120	120	115	115	115	115	110	110	110	125	120	115	110	110	105	105	110
22	110	100	100	100	100	B	155	125	120	115	110	105	105	105	105	155	140	125	115	110	110	110	110	110
23	110	105	105	100	095	100	100	125	115	110	110	125	120	130	130	C	C	C	115	110	110	110	105	105
24	100	100	100	100	095	095	140	120	110	105	105	105	105	105	105	105	105	125	100	125	120	120	110	105
25	110	100	100	100	100	100	130	115	110	110	110	110	110	110	110	140	140	125	115	110	105	110	105	105
26	105	100	100	100	100	120	115	115	110	110	105	105	105	105	100	100	100	100	100	100	100	100	115	100
27	100	100	100	100	125	120	125	115	120	115	120	115	115	150	135	150	130	130	125	120	115	115	100	105
28	105	105	100	100	100	105	130	125	115	120	120	130	130	130	G	B	140	125	120	120	105	110	110	S
29	105	100	100	100	125	125	125	125	120	110	110	130	105	115	125	G	125	115	G	110	110	105	105	105
30	100	100	100	100	125	130	115	120	110	120	110	110	110	115	G	100	100	130	120	120	110	110	110	110
31	110	105	105	105	105	110	130	130	125	120	115	110	110	105	115	G	125	100	100	120	115	110	120	110
Count	24	24	22	26	23	17	27	28	27	29	30	30	28	29	24	24	26	29	28	31	30	29	27	24
Median	105	100	100	100	100	105	130	125	120	115	115	110	115	110	120	125	130	125	115	115	110	110	110	105
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'Es | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation | Y 11

IONOSPHERIC DATA

May 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	f3	f3	f	f5	f2	f4	h	h3	h2	h	h2	h2		h	h	h	h4	h	h	f2	f	f2f	f2	f3
2	f2	f2	f4	f2		f	1	h2	12	c	c	c2	h	h	h	h h	h	h	c2	f7	f2	f3	f3	
3											h2	c2	h2	h	h2	h	h	h2	c2	f3	f4	f2		
4		f	f	f	f	f3	h2	h	h	h	c2	c2	c	c2	c2	h	h3	h4		f6	f4	f2	f2	f3
5	f2						h	h	h2	h2	h	h c	c3	c3	c2	c	h	h3	c2	f6	f4	f4	f5	f3
6	f2	f2	f2	f2	f2		h	h2	h3	h	h2	h c		h		h2	h2	c5	c3	f6	f3	f3	f4	f5
7	f4	f3	f4	f5	f5	f4	13	h3	h2	h	h		h2	h2	h3	h2	h5	c2	c7	f3				
8											c2	c2	c3	13	14	13	12	h2	h2	f4f	f3f	f3f	f3	f2
9	f	f	f	f	f		h	h3	h2	c3	c2	c								f6	f3	f2	f2	f2
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31	f2	f5	f3	f2	f2	f	h4	h3	h3	c2	c2	c2	c3	c2	c2		h213	15	14	f5f3	f6	f4	f3f3	f3
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Q.R.																								

Types of Es

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

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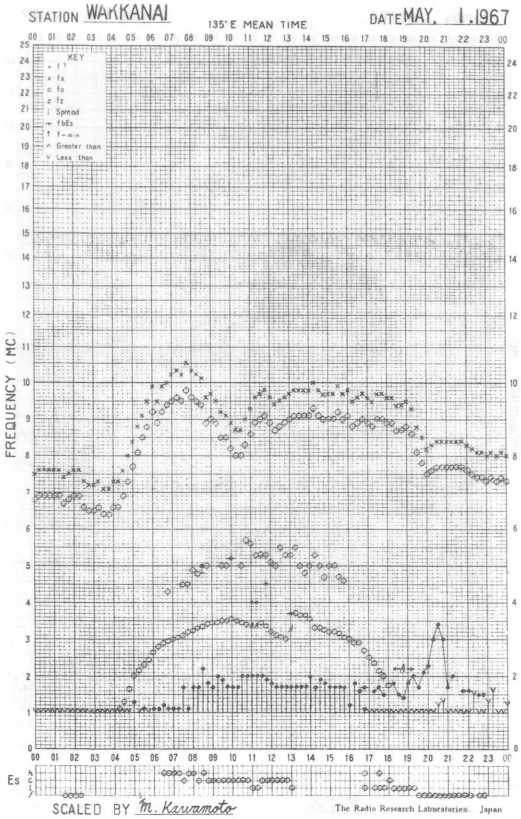
Y 12

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE MAY. 1.1967



SCALED BY M. Kawamoto

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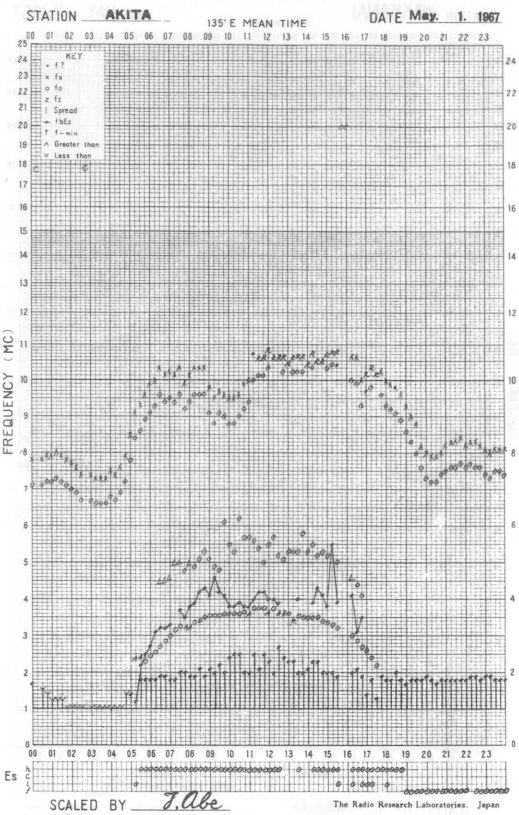

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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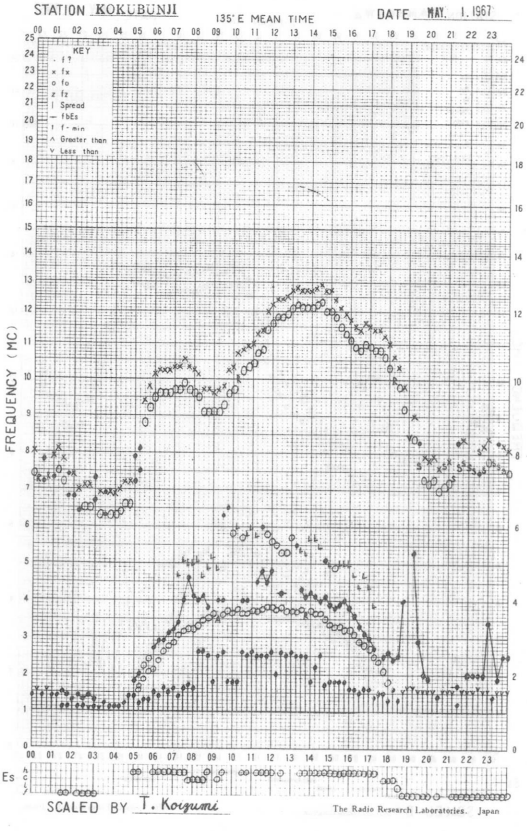

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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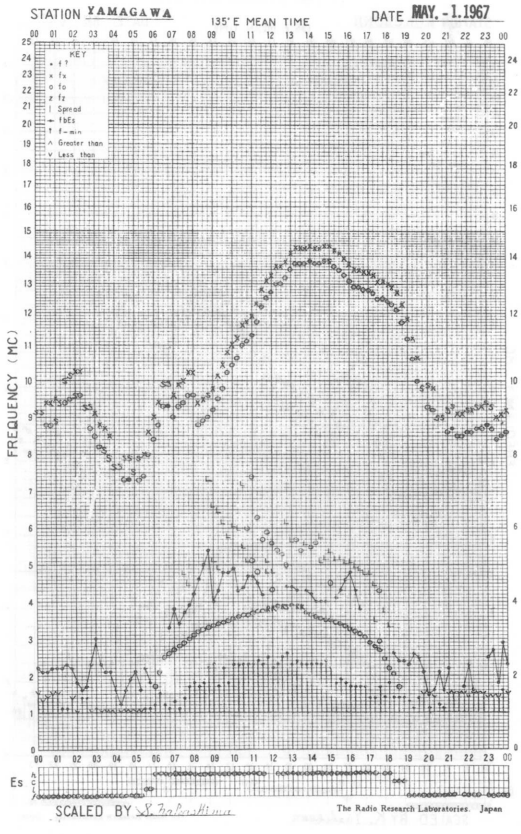

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The Radio Research Laboratories. Japan

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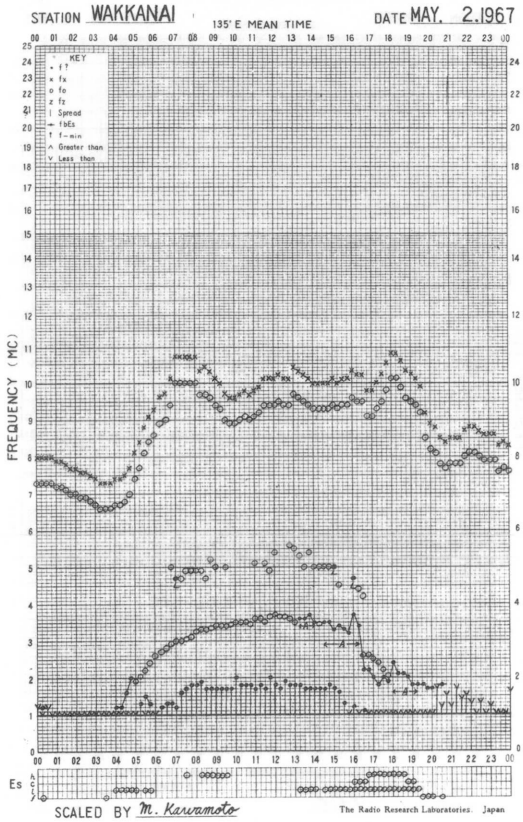

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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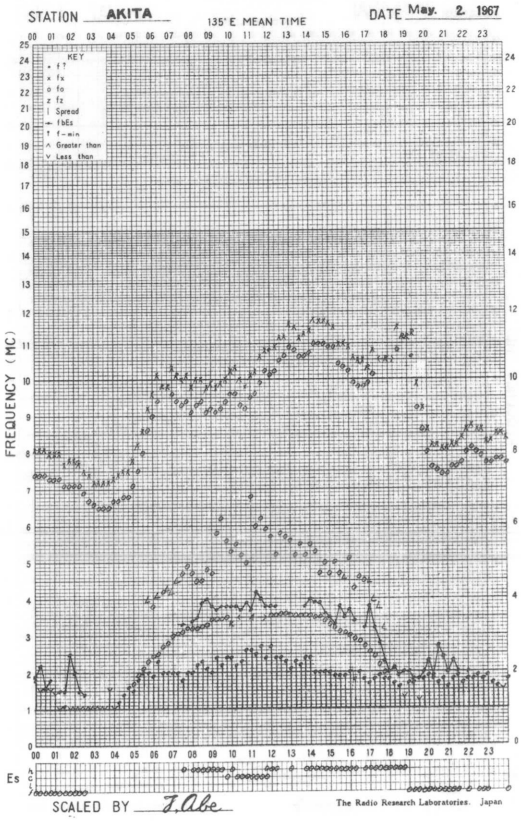

SCALED BY T. Abe The Radio Research Laboratories. Japan

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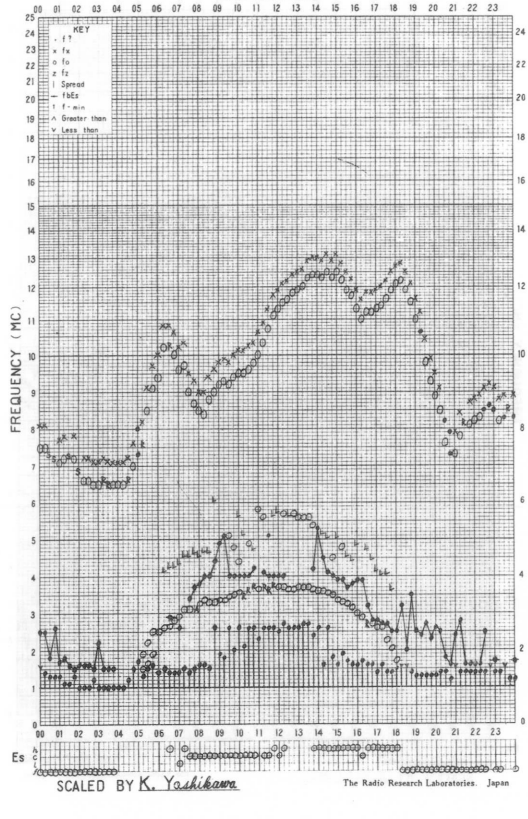

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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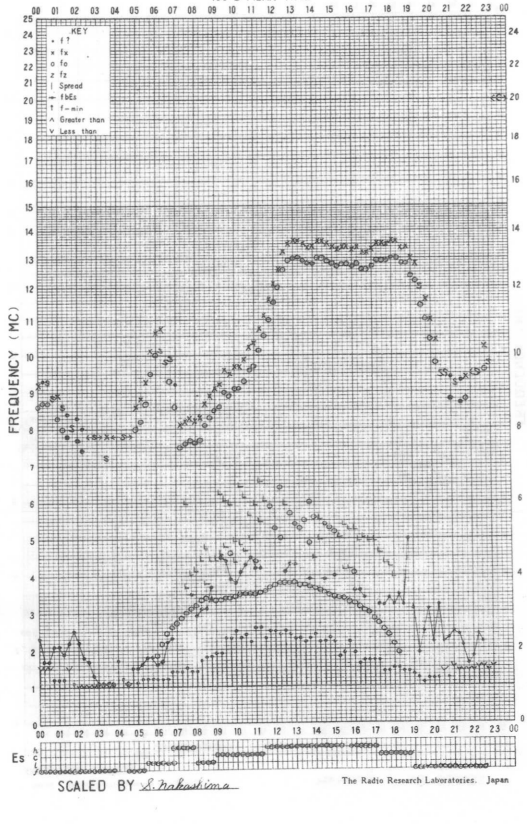

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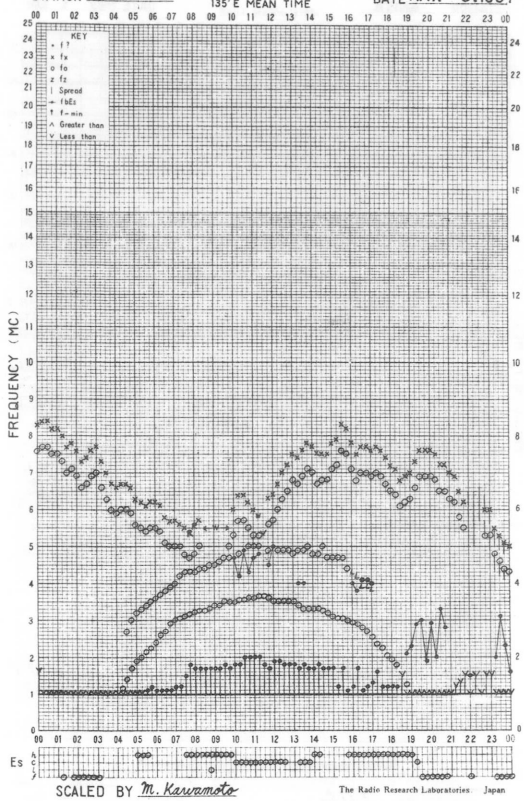

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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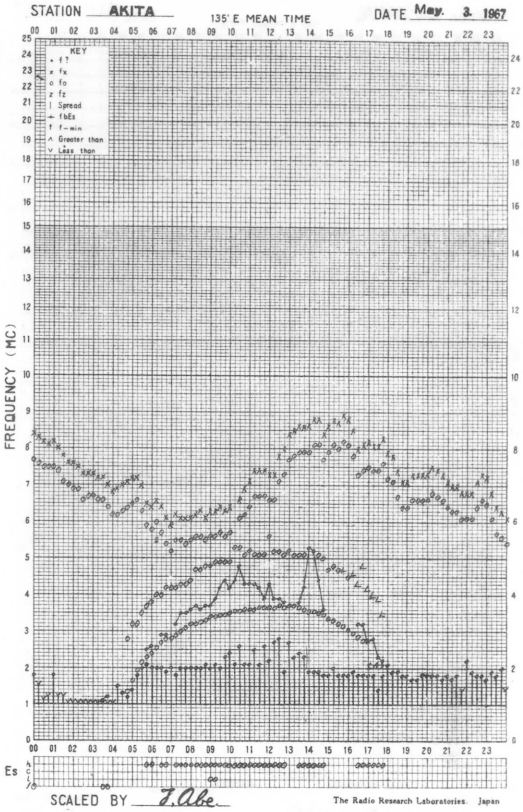

SCALED BY T. Abe The Radio Research Laboratories. Japan

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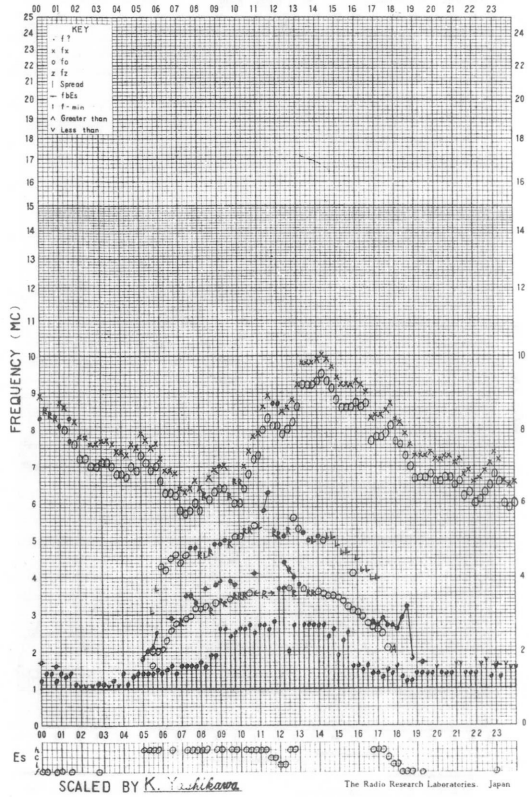

SCALED BY K. Ishikawa The Radio Research Laboratories. Japan

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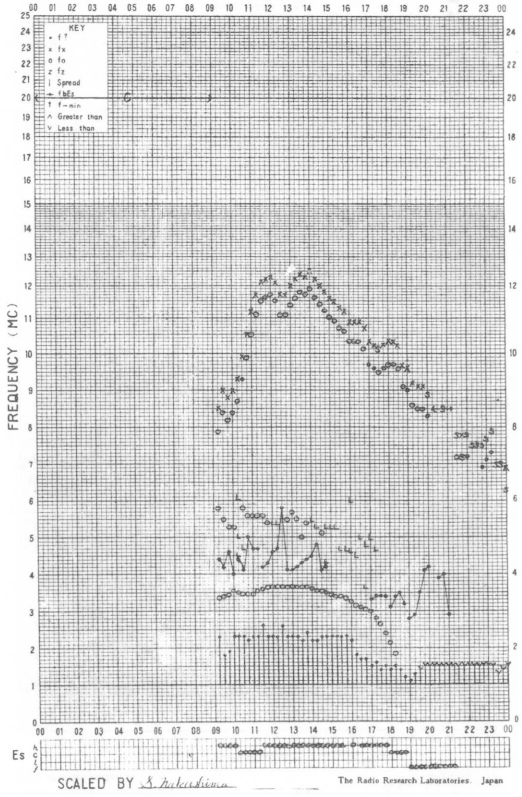

SCALED BY S. Nakashima The Radio Research Laboratories. Japan

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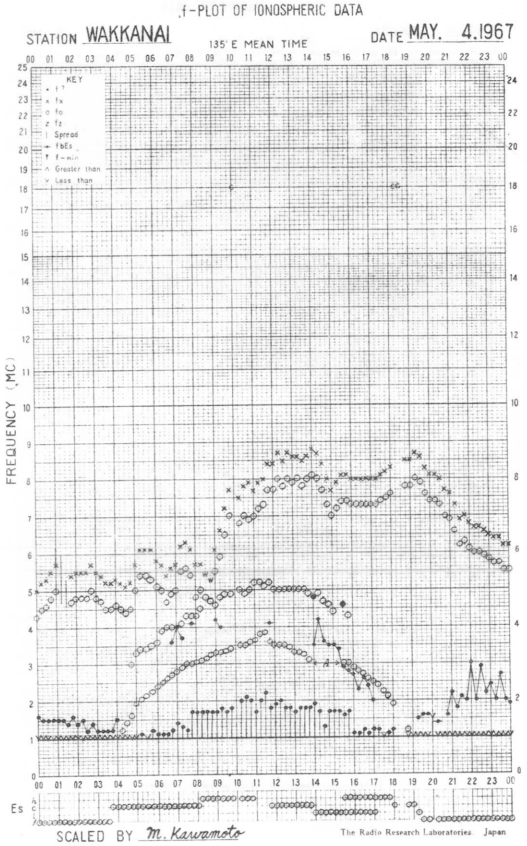

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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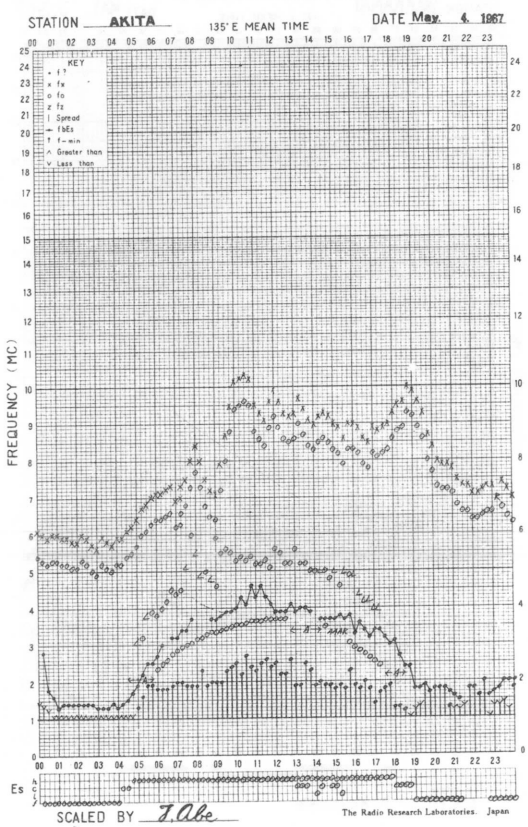

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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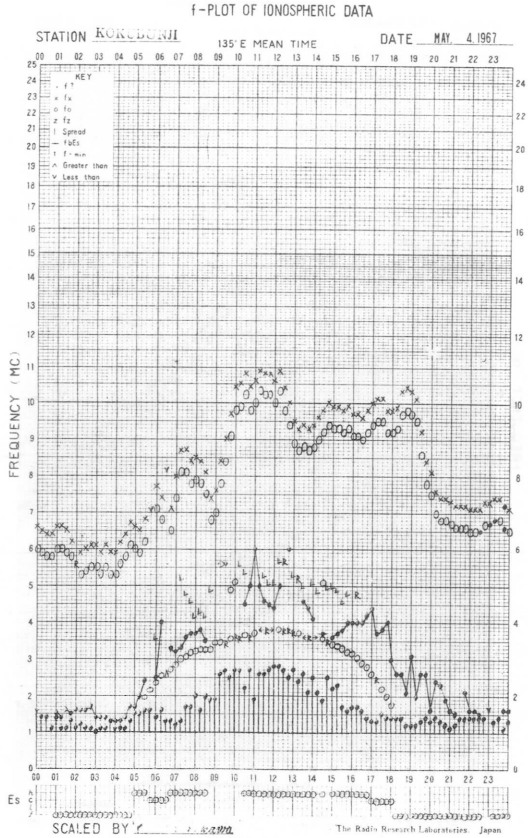

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The Radio Research Laboratories. Japan

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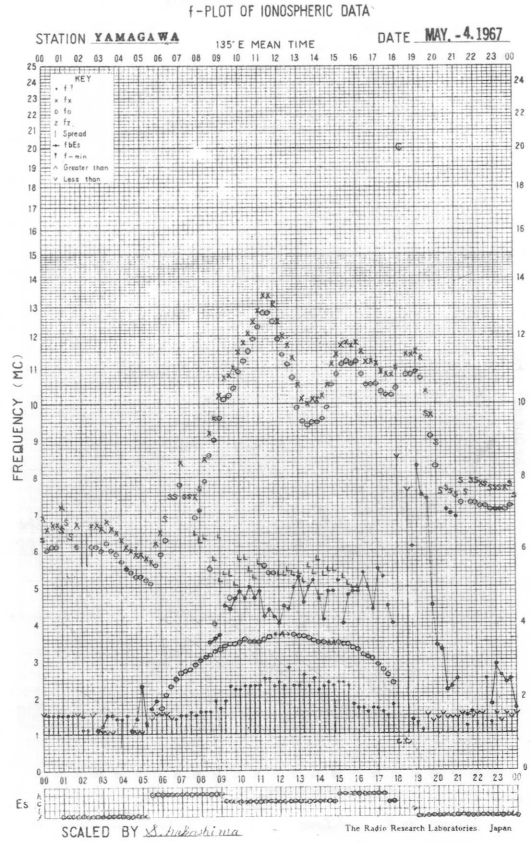

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The Radio Research Laboratories. Japan

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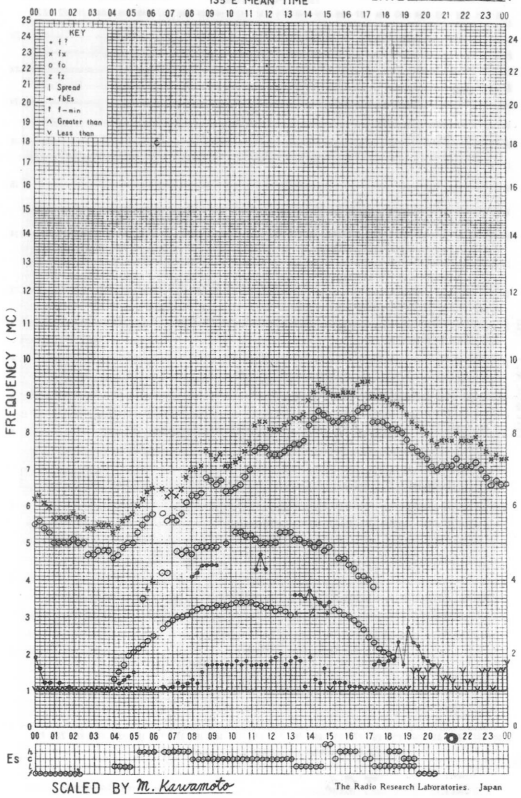

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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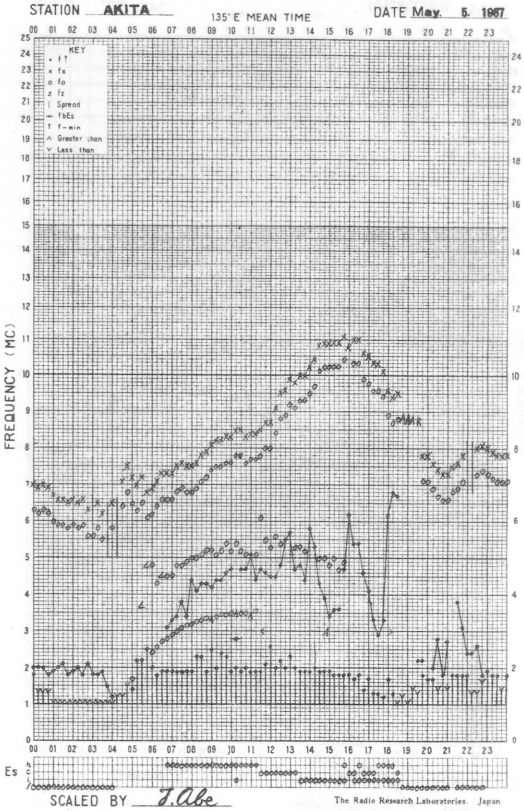

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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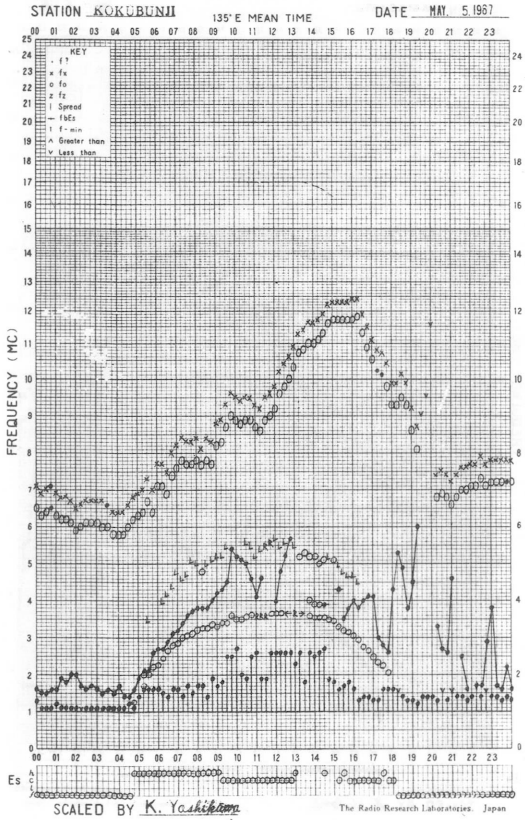

SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

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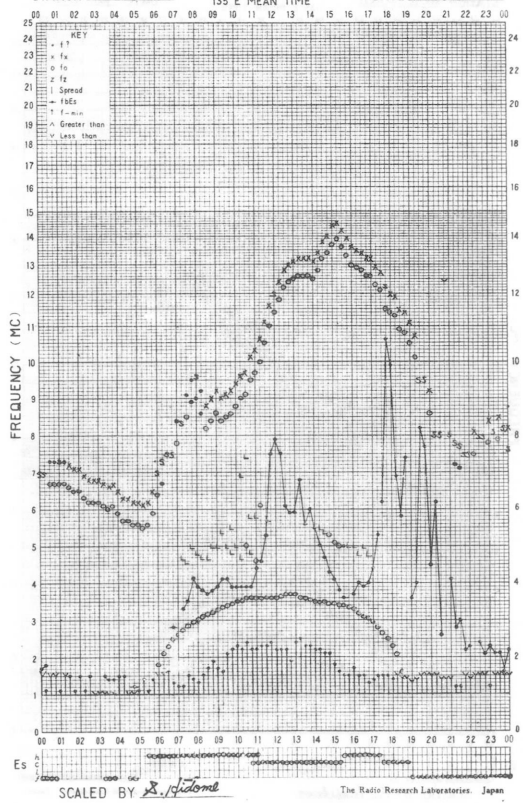

SCALED BY S. Shidome

The Radio Research Laboratories. Japan

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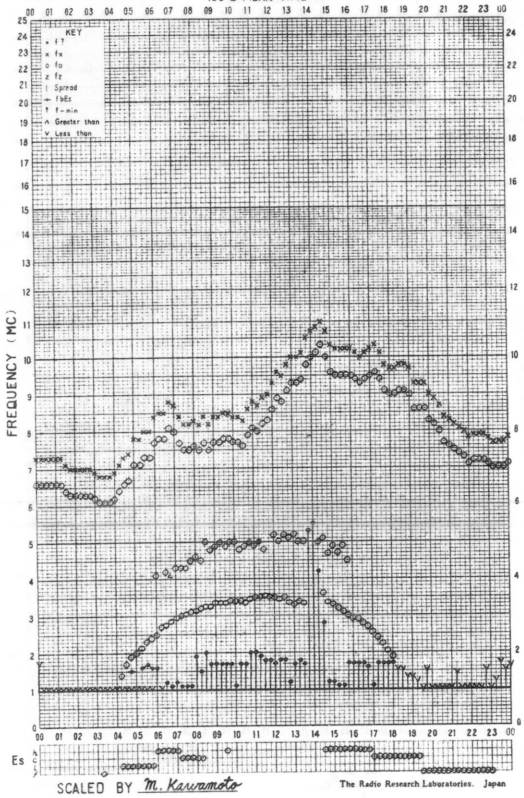

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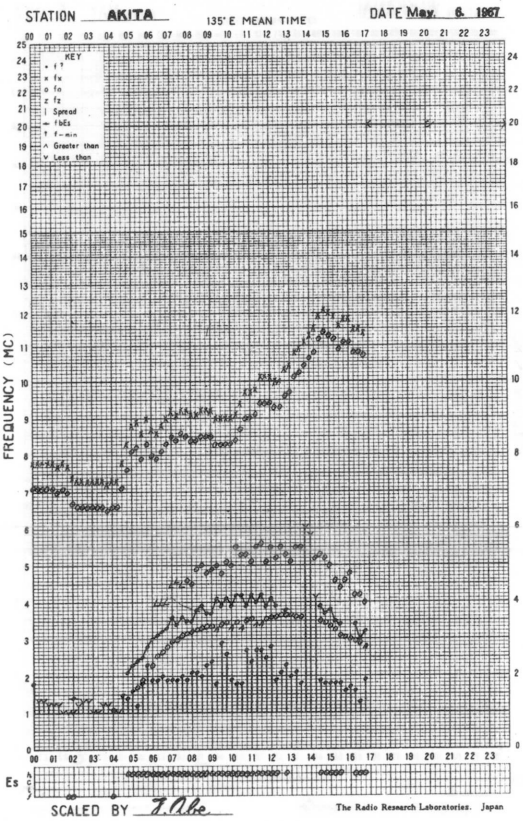

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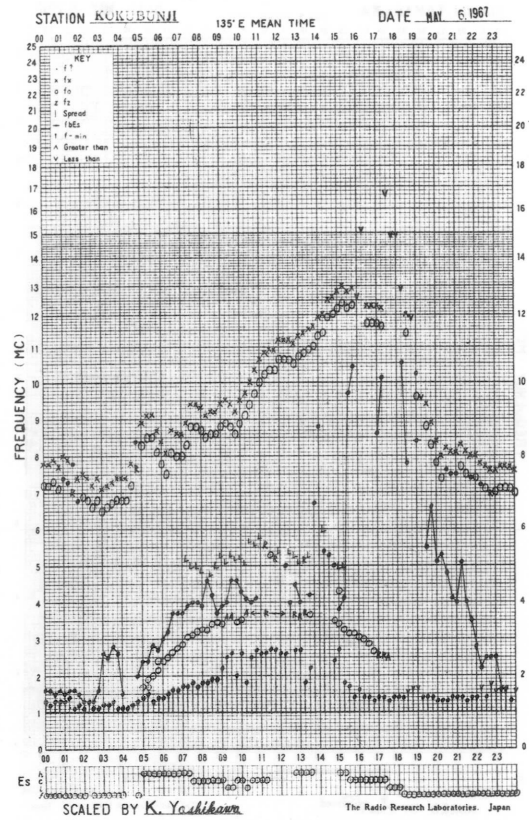

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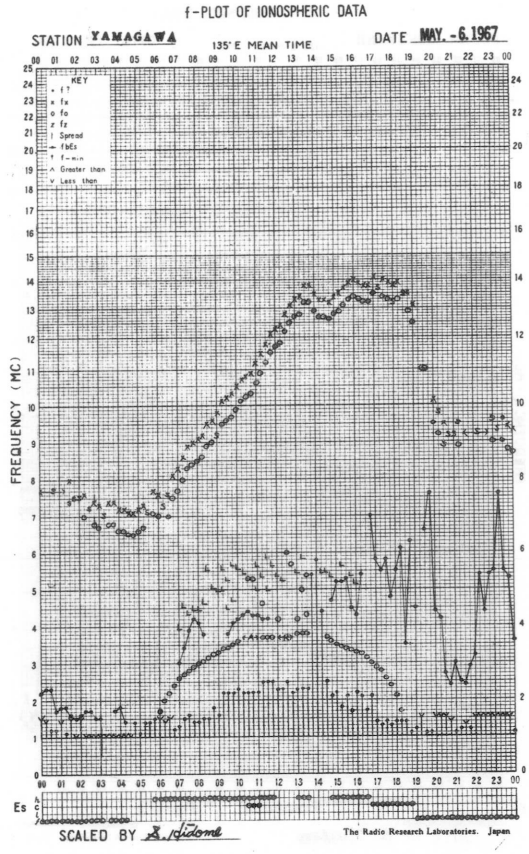

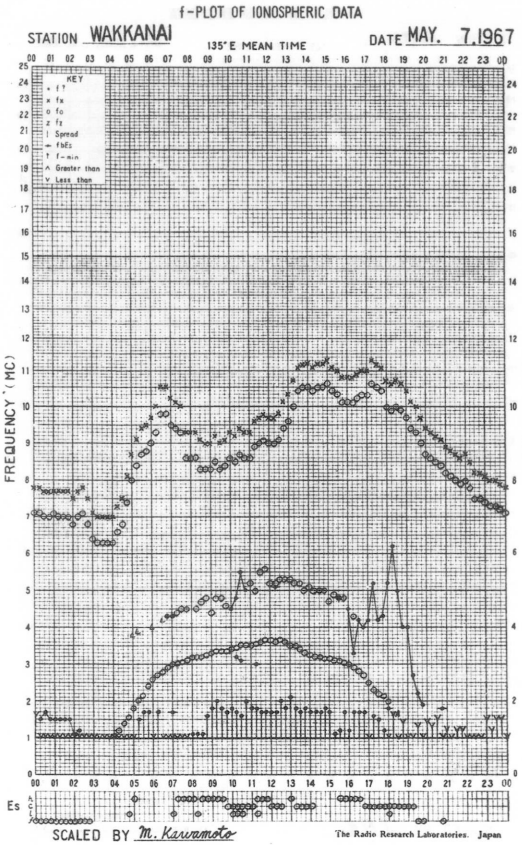
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STATION WAKKANAI
135° E MEAN TIME
DATE MAY. 7.1967
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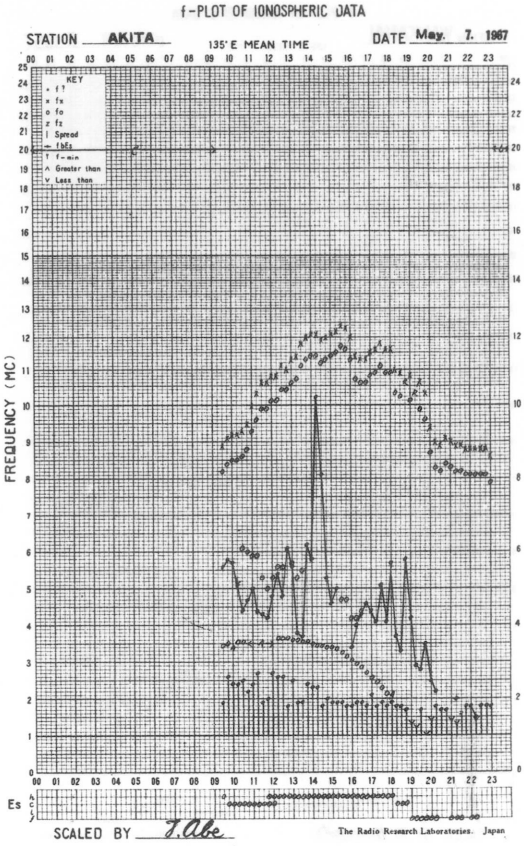
FREQUENCY (MC)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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135° E MEAN TIME
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KEY
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× fx
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FREQUENCY (MC)
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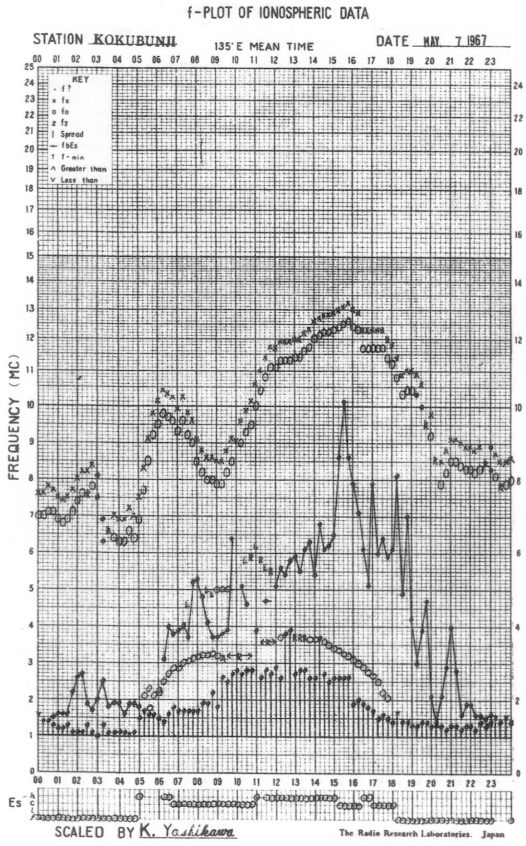
SCALED BY T. Abe
The Radio Research Laboratories. Japan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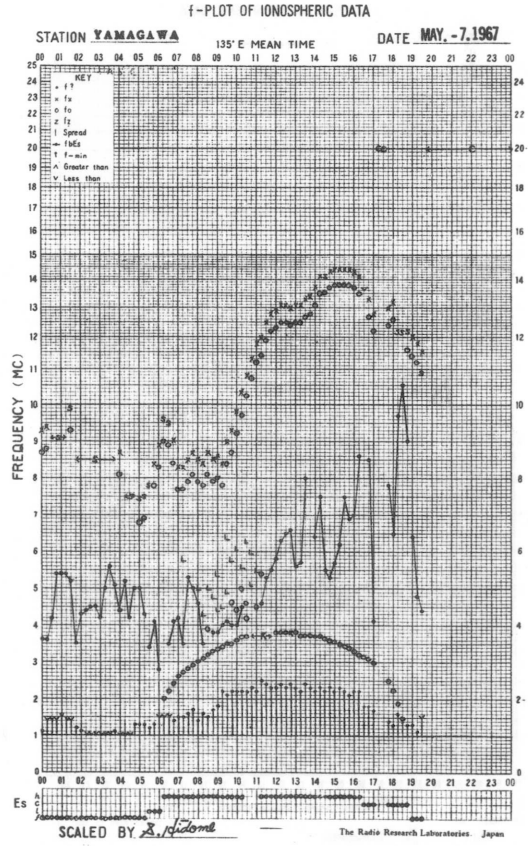
SCALED BY K. Yoshikawa
The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE MAY. -7.1967
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FREQUENCY (MC)
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SCALED BY S. Ichiomi
The Radio Research Laboratories. Japan

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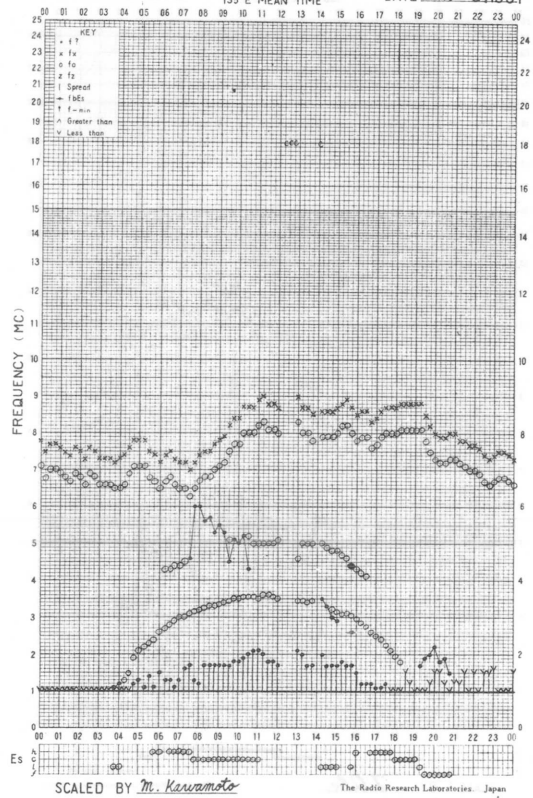

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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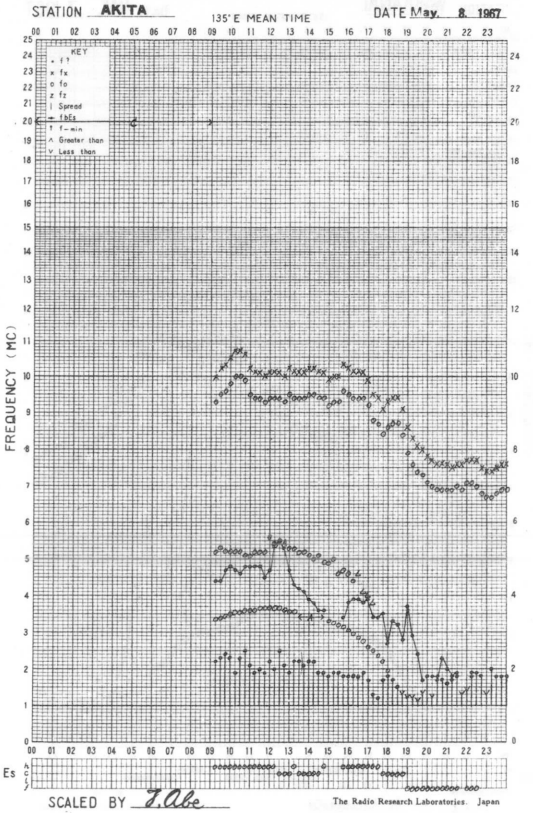

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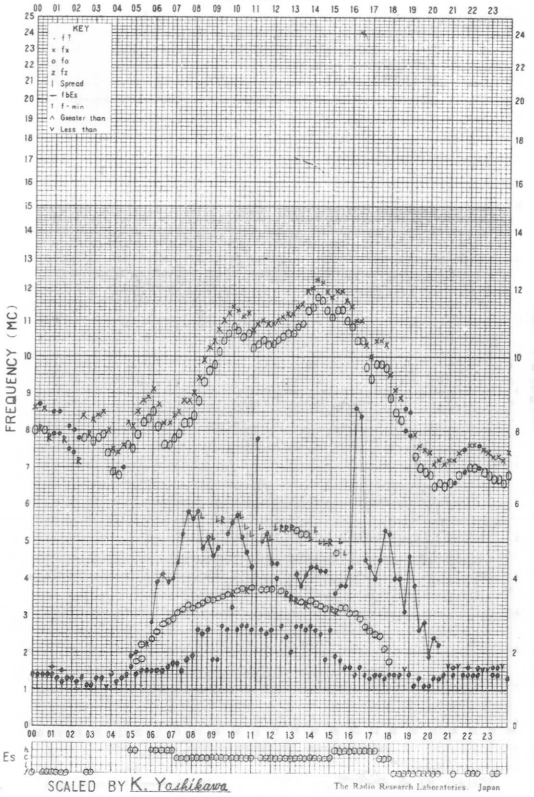

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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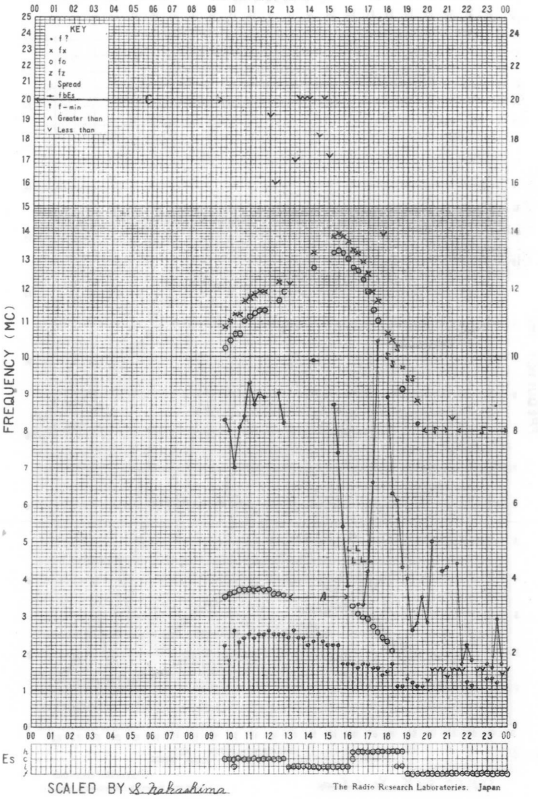

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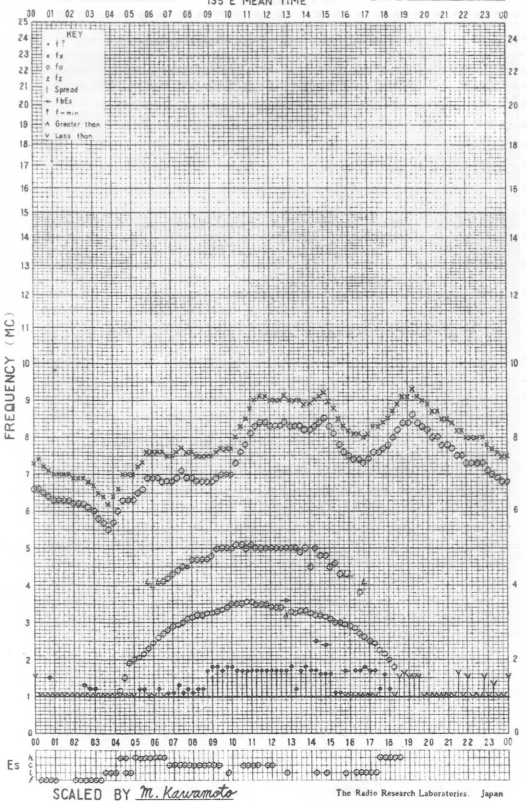
STATION WAKKANAI 135°E MEAN TIME DATE MAY. 9.1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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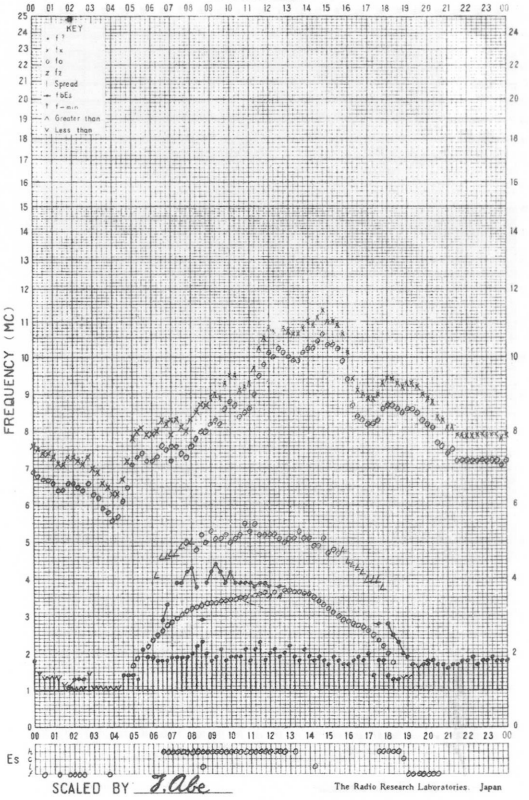

SCALED BY T. Abe The Radio Research Laboratories. Japan

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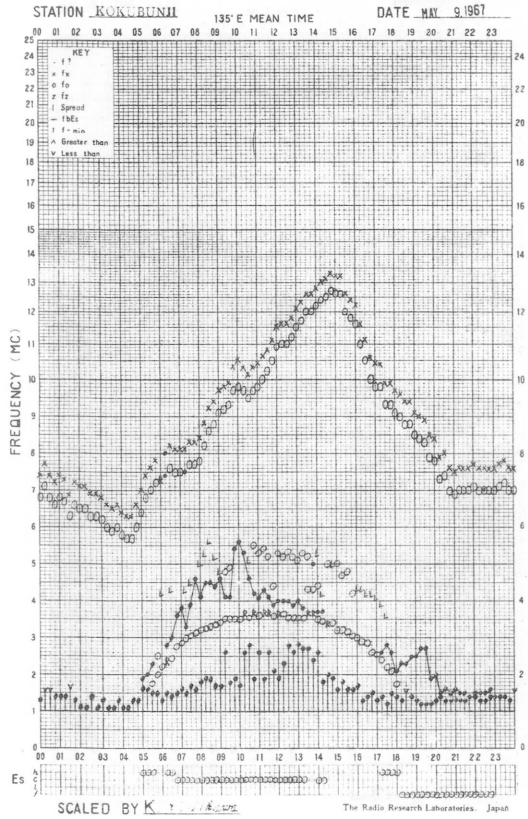

SCALED BY K[illegible] The Radio Research Laboratories. Japan

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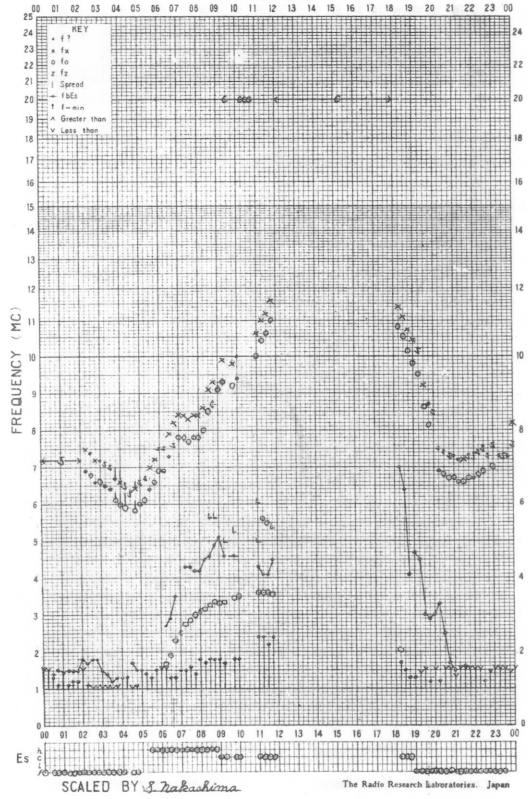

SCALED BY S. Nakashima The Radio Research Laboratories. Japan

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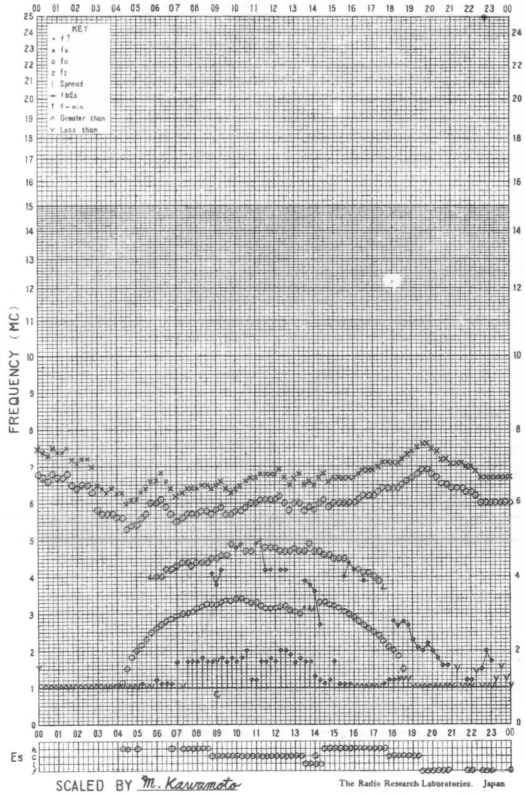

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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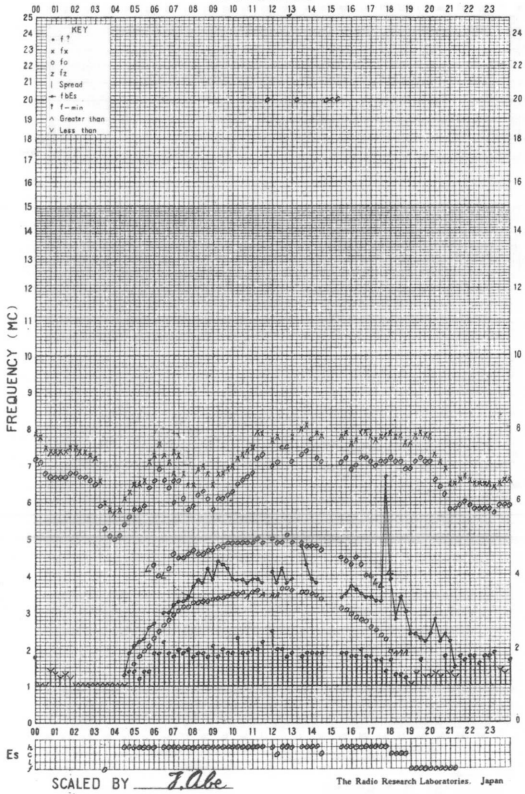

SCALED BY T. Abe The Radio Research Laboratories. Japan

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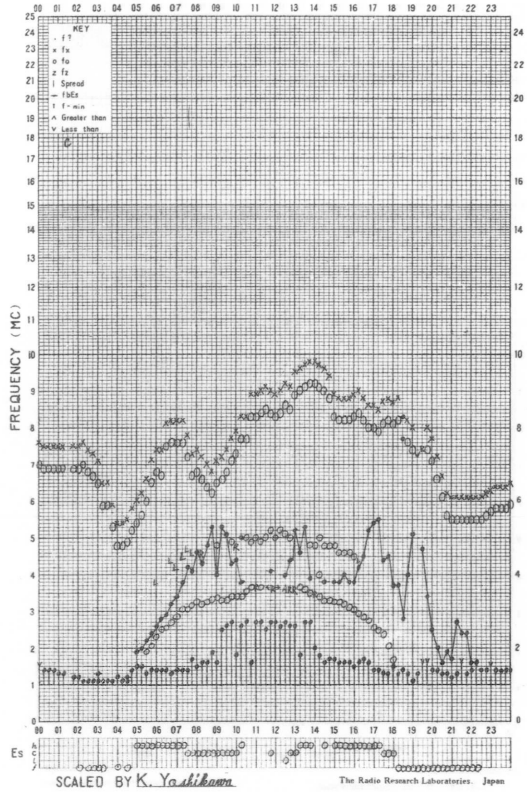

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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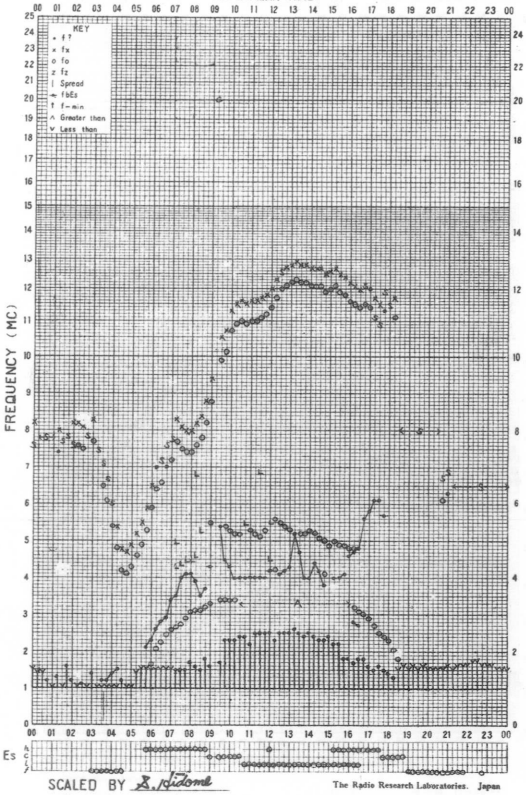

SCALED BY S. Ichidome The Radio Research Laboratories. Japan

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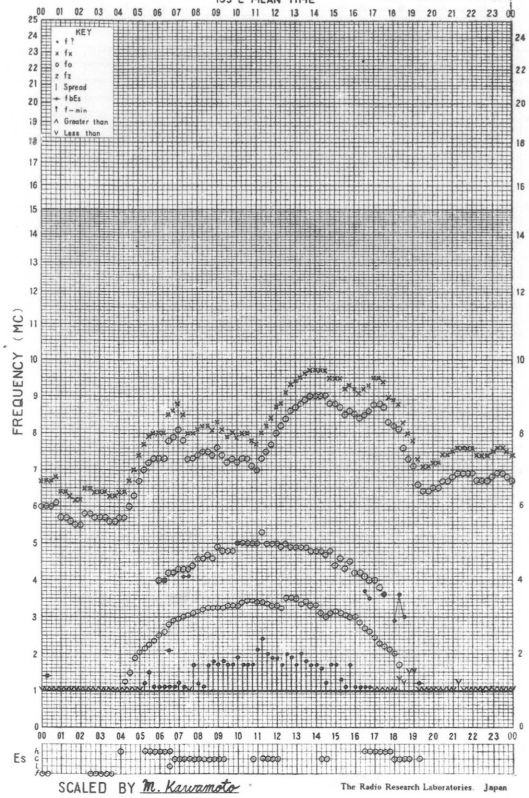

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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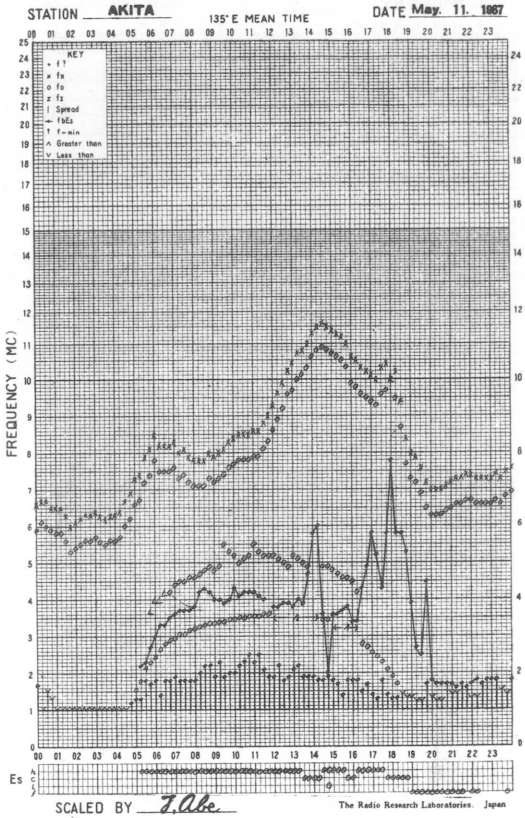

SCALED BY T. Abe The Radio Research Laboratories. Japan

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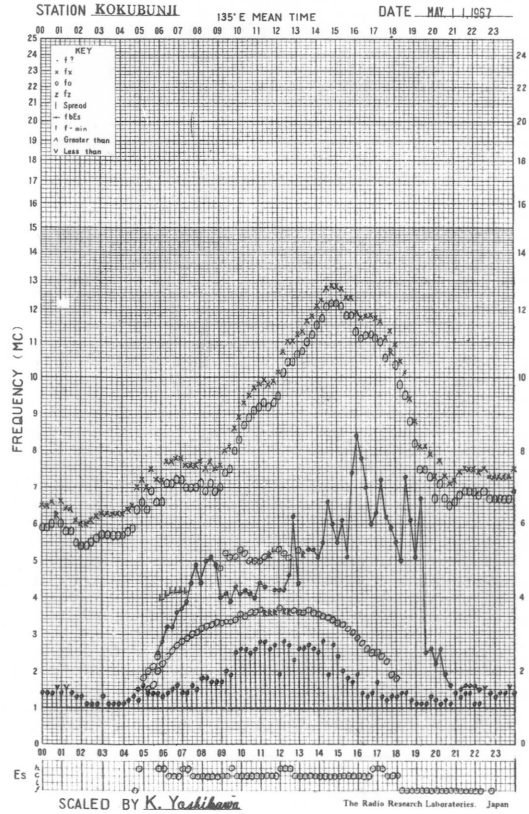

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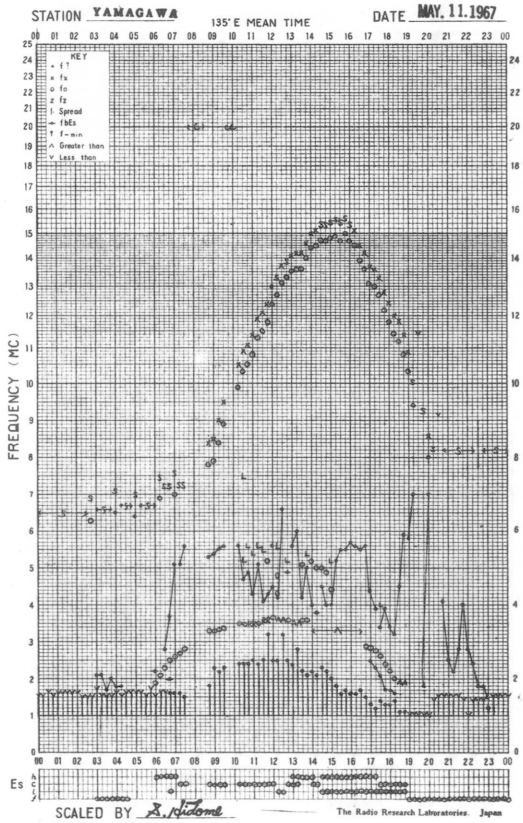

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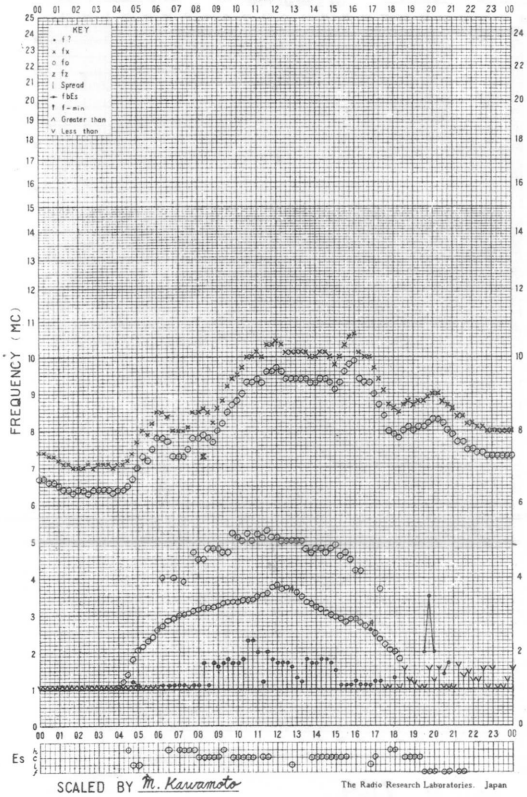

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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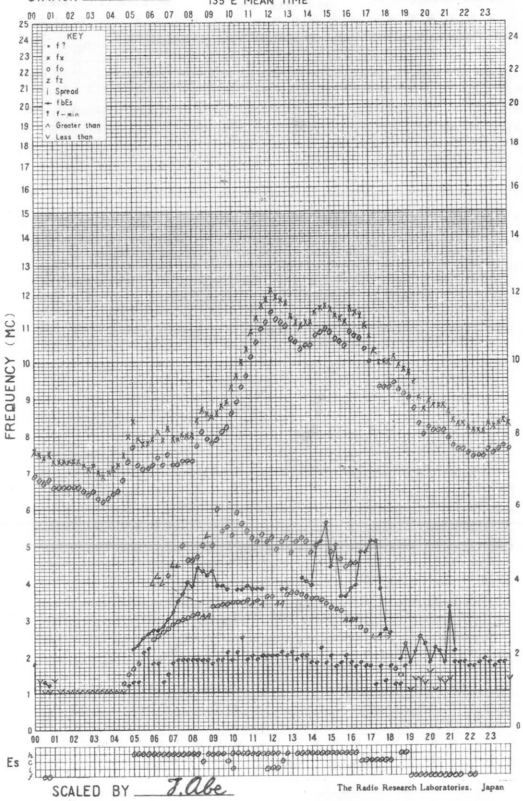

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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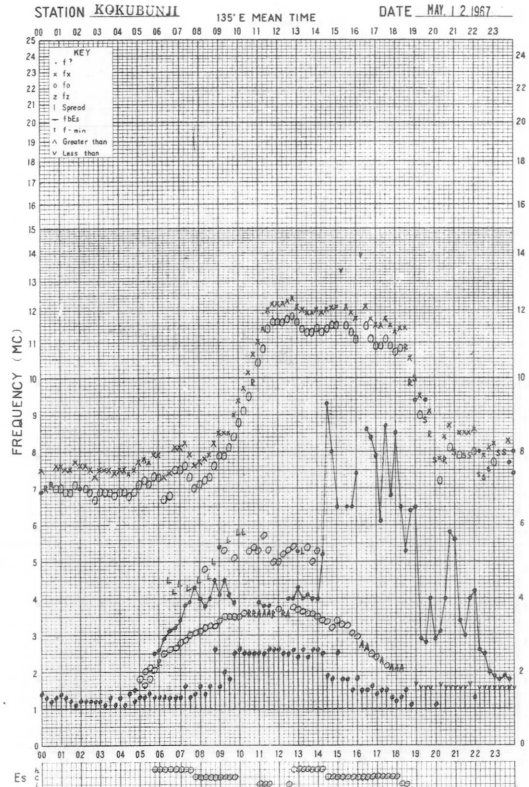

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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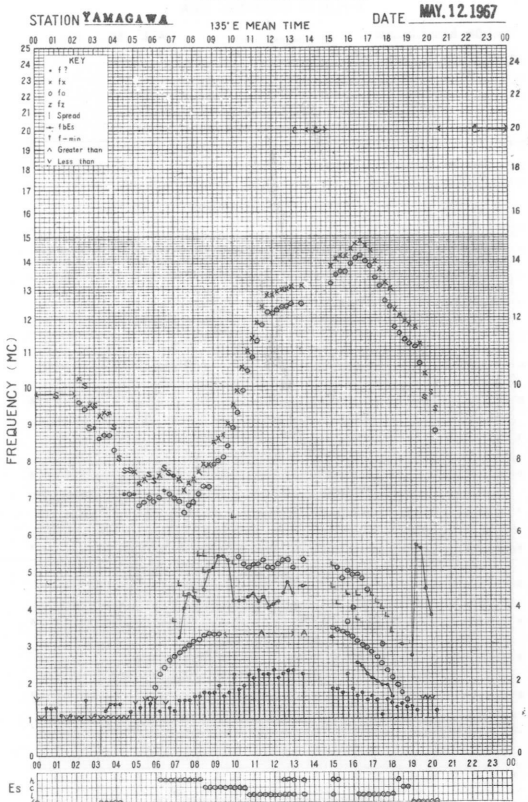

SCALED BY S. Ichiome

The Radio Research Laboratories. Japan

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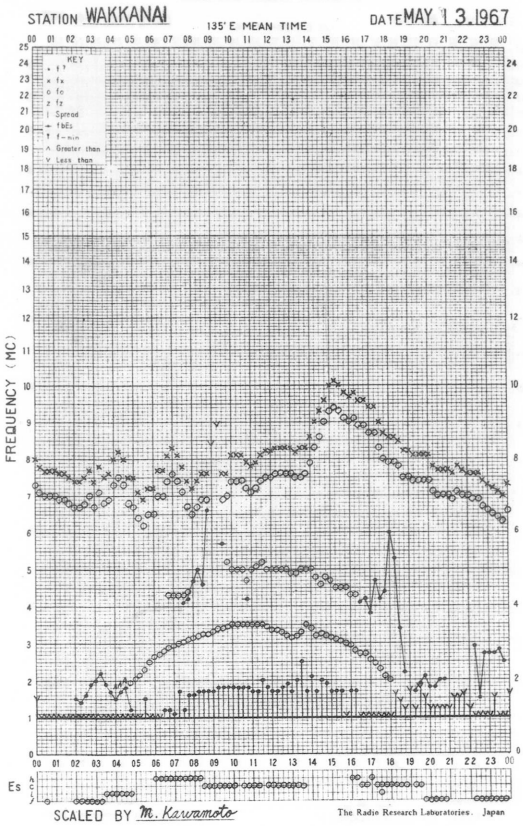

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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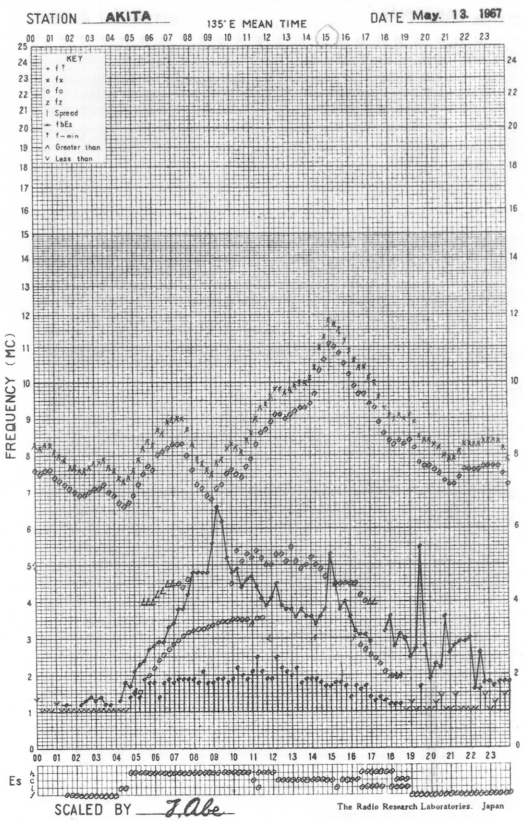

SCALED BY I. Abe The Radio Research Laboratories. Japan

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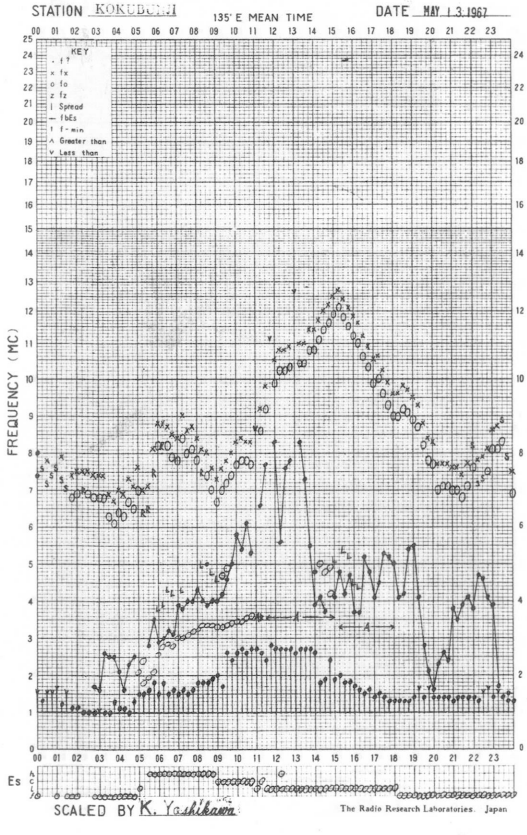

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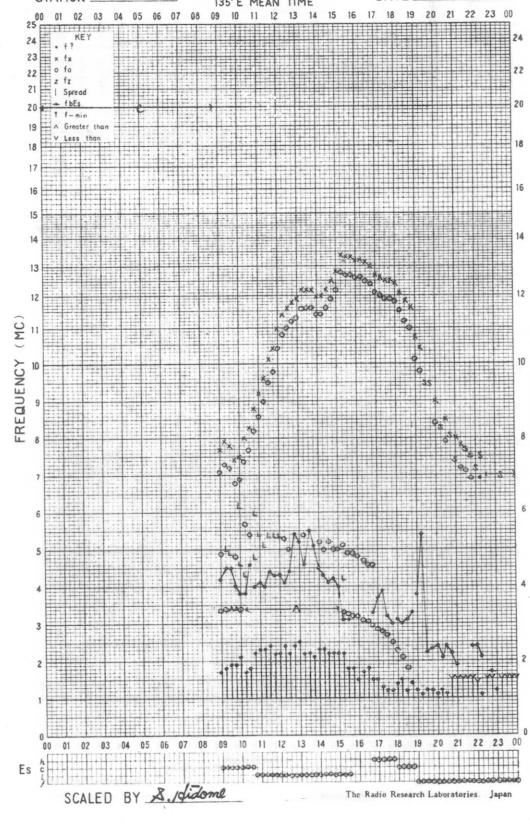

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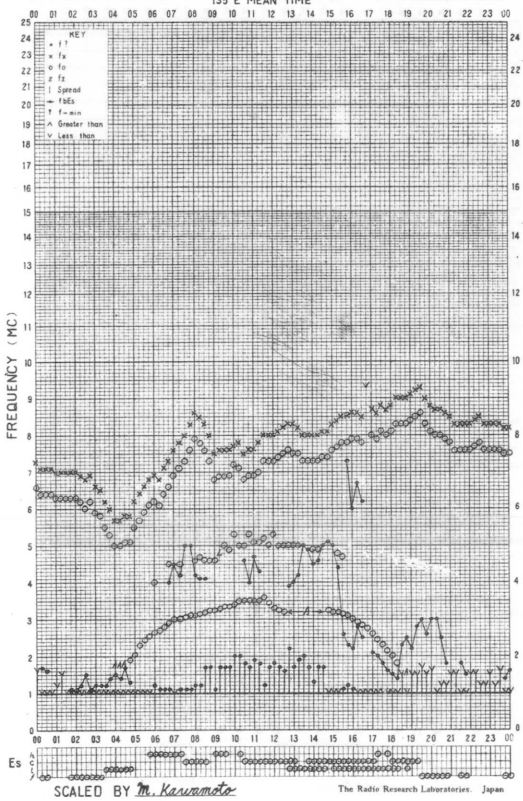

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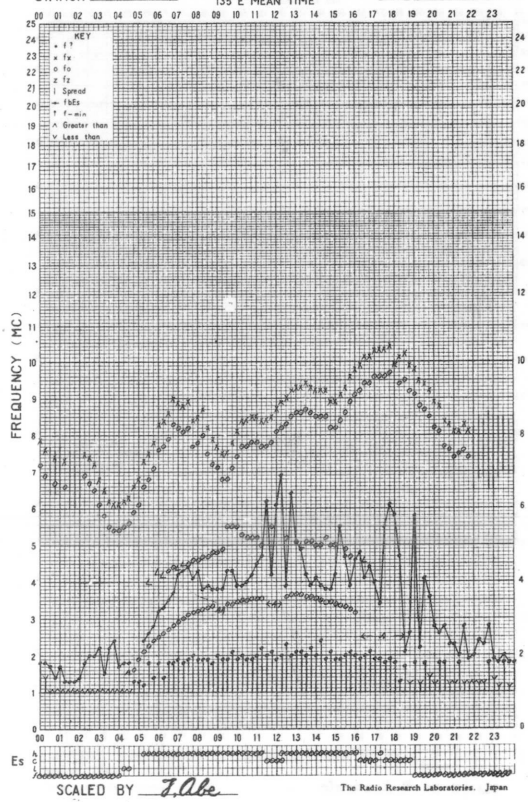

SCALED BY T. Abe The Radio Research Laboratories. Japan

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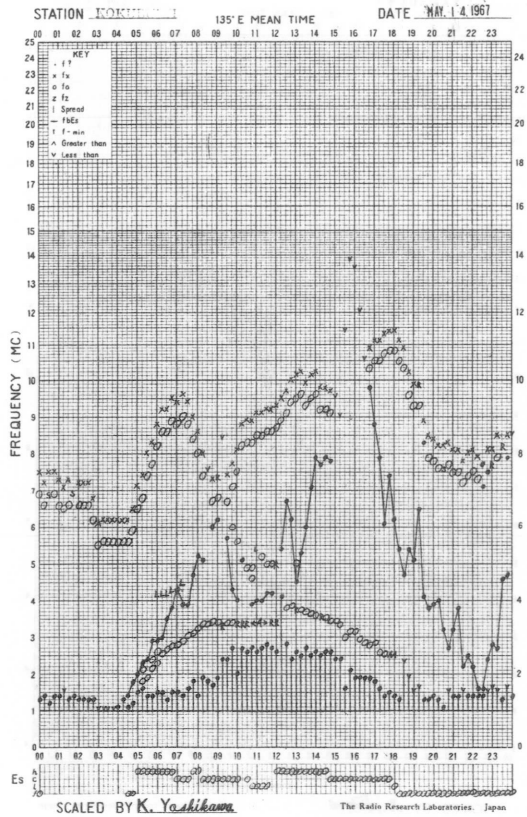

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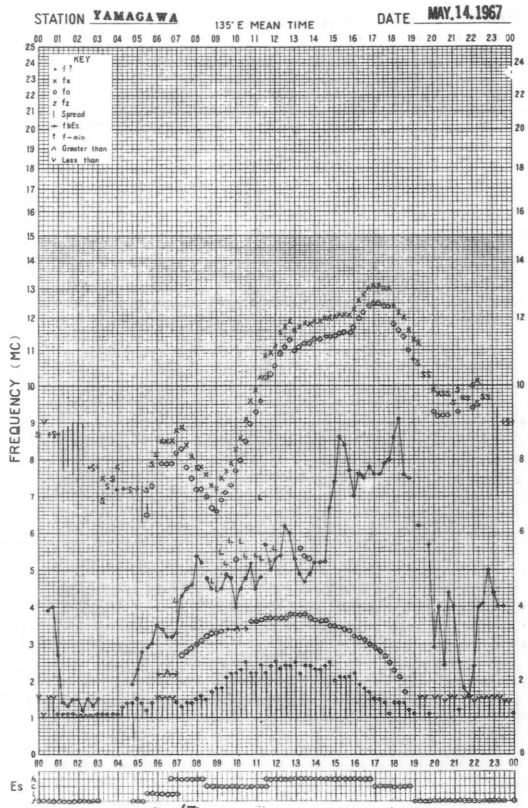

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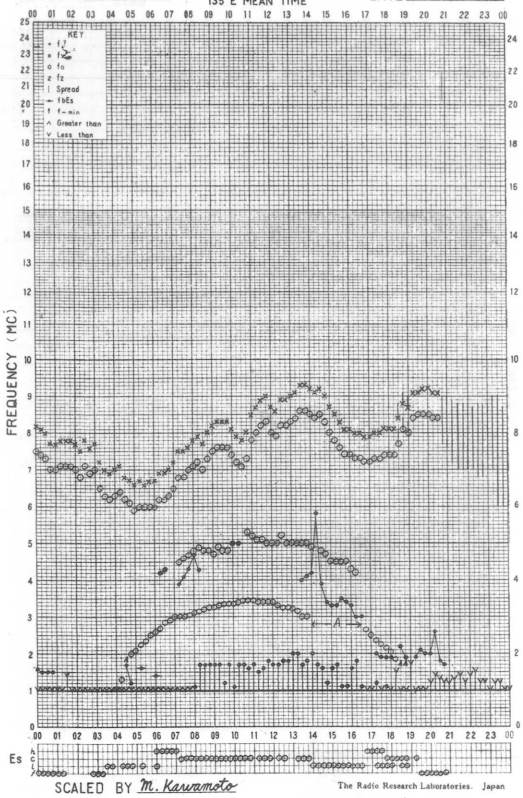

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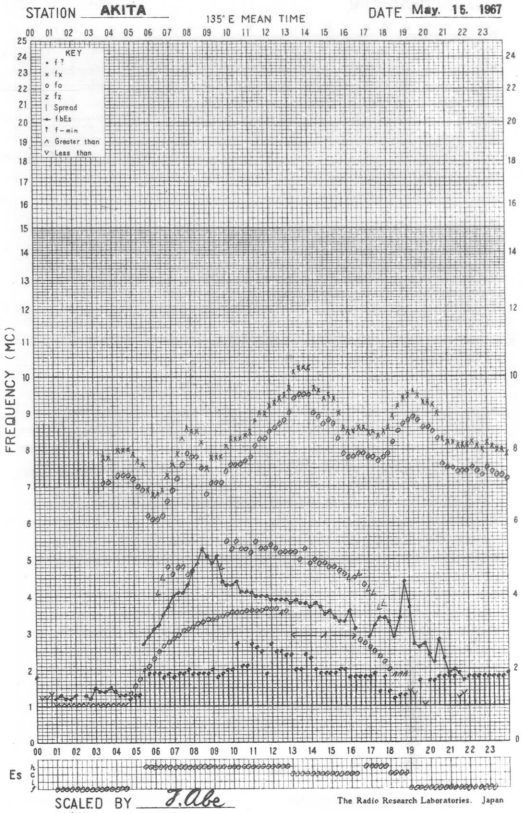

SCALED BY T. Abe The Radio Research Laboratories. Japan

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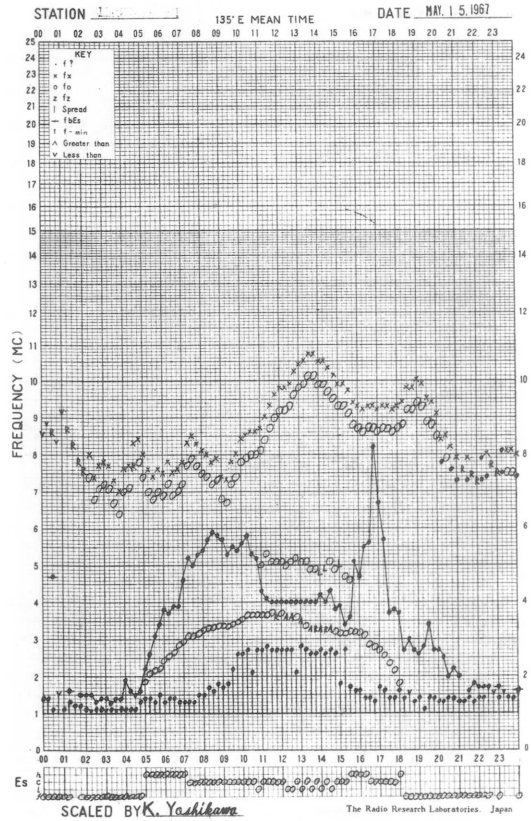

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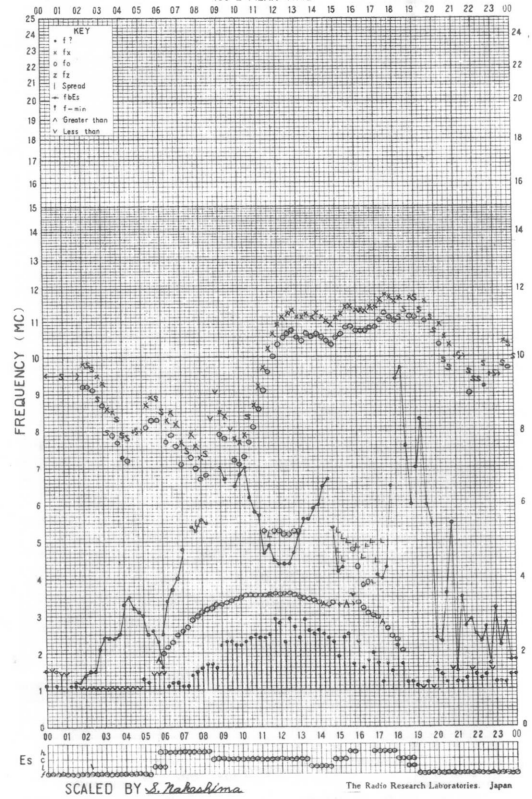

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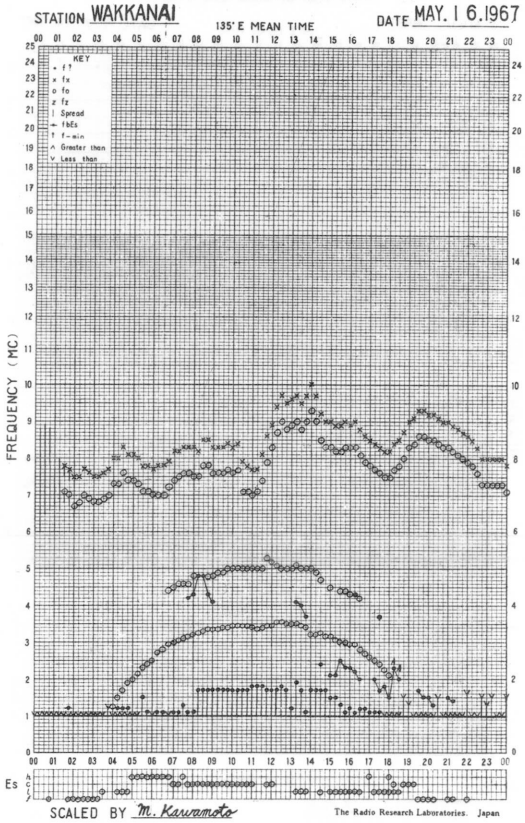

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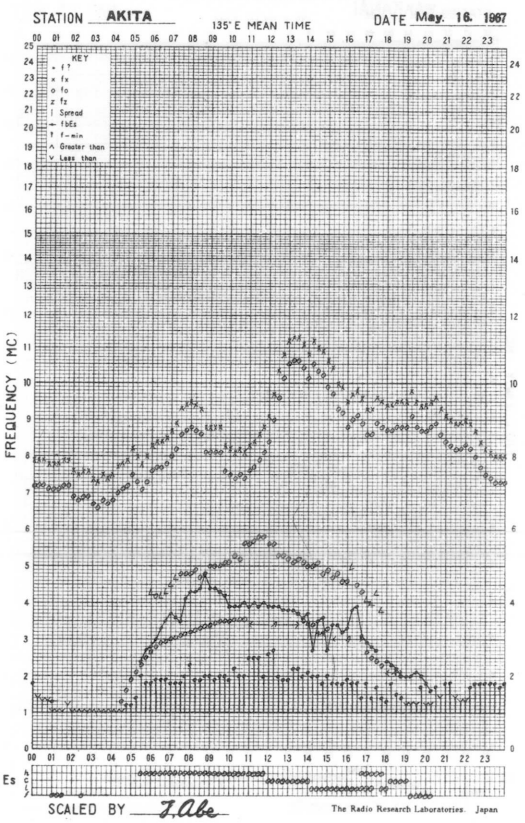

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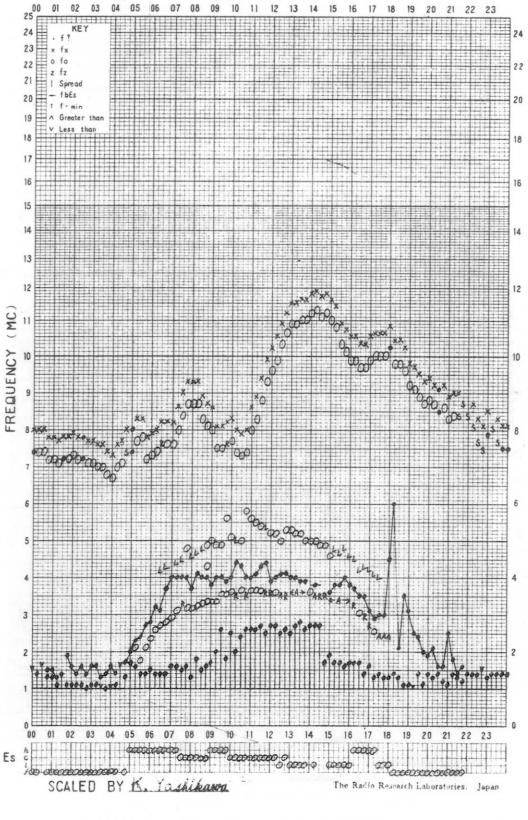

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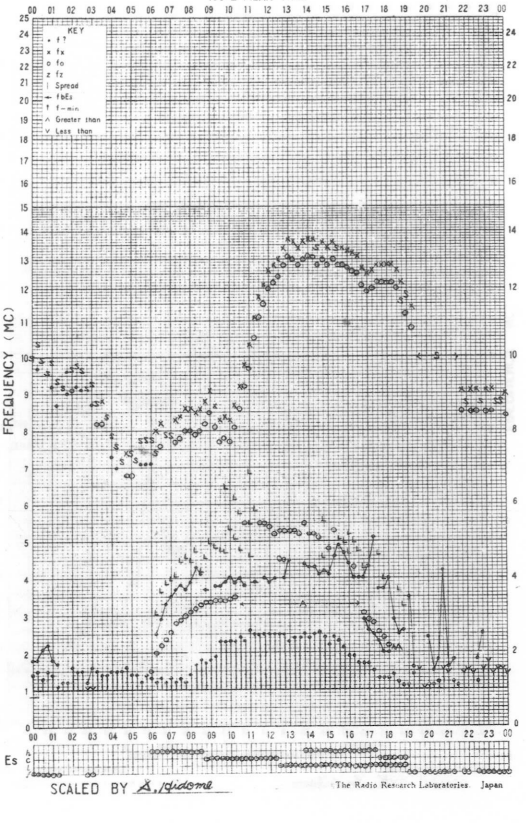

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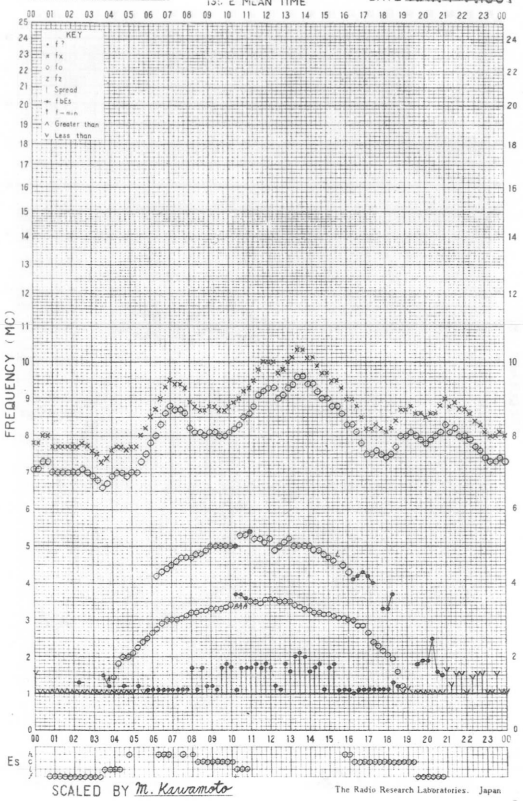

SCALED BY M. Kawamoto

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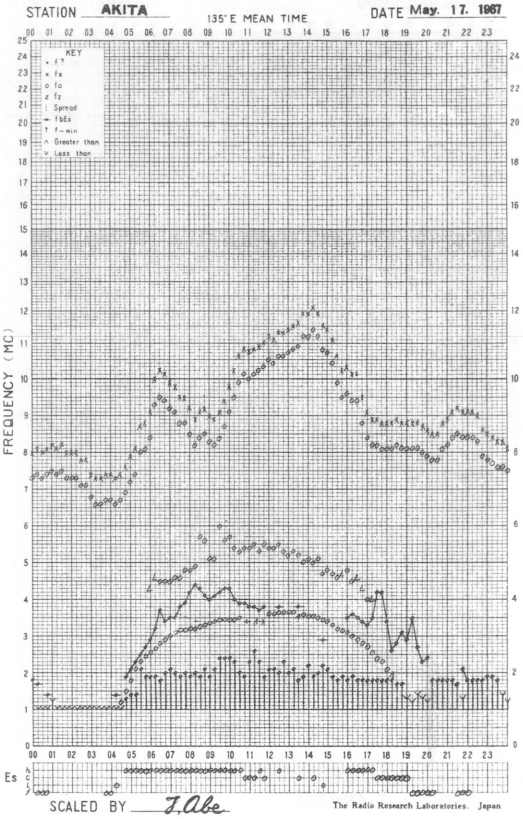

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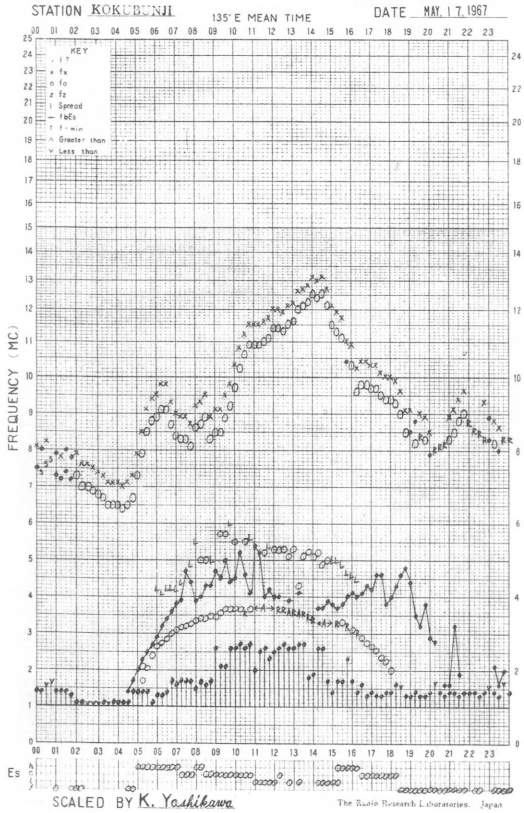

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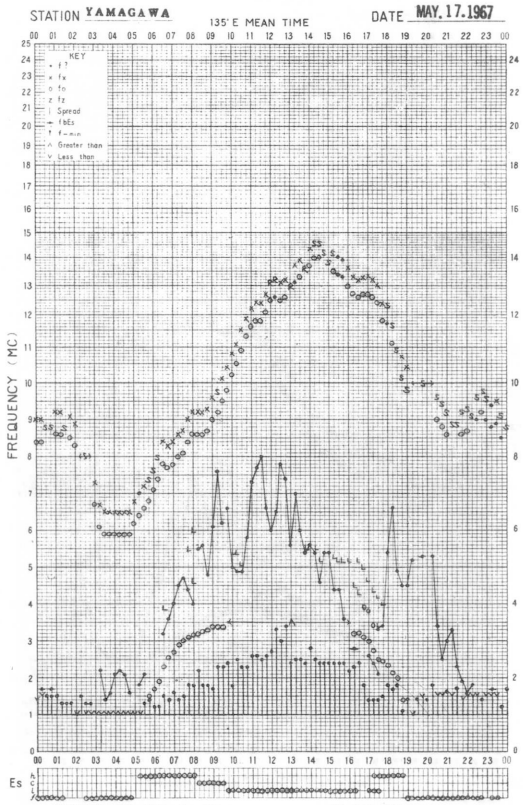

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The Radio Research Laboratories. Japan

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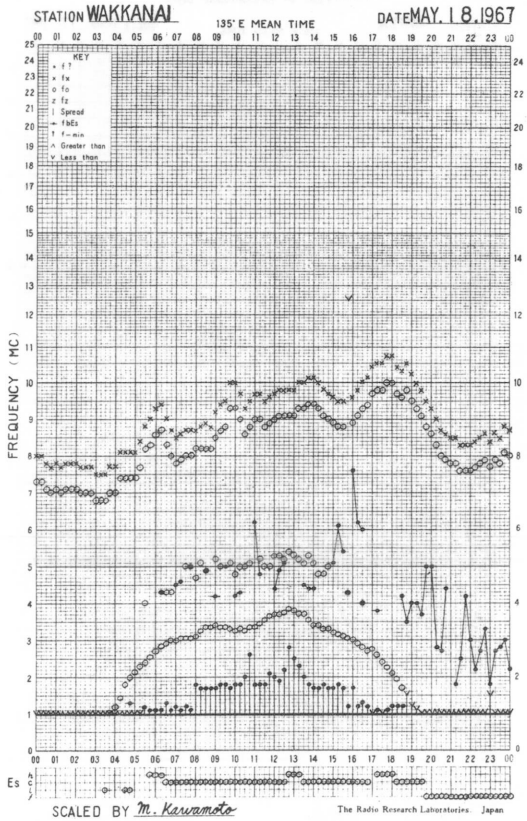

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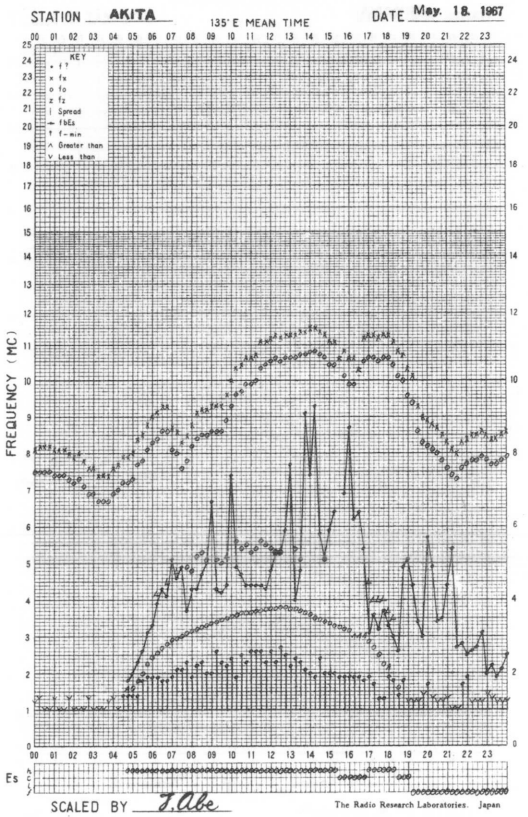

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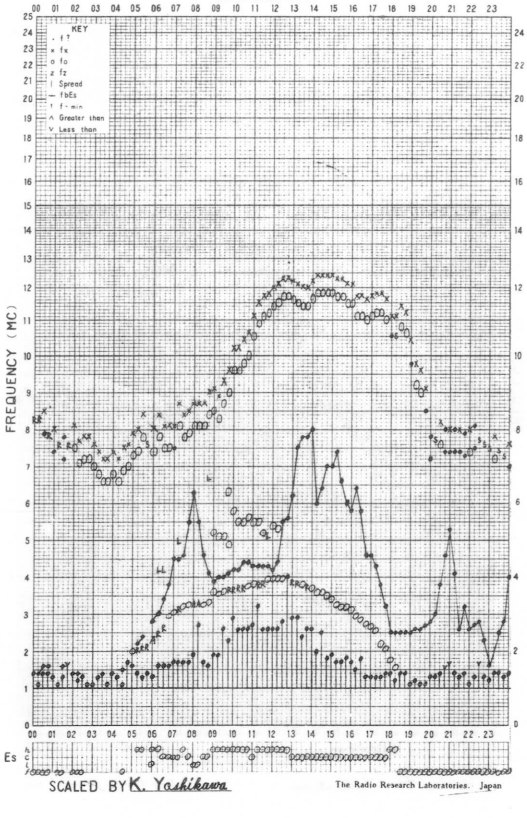

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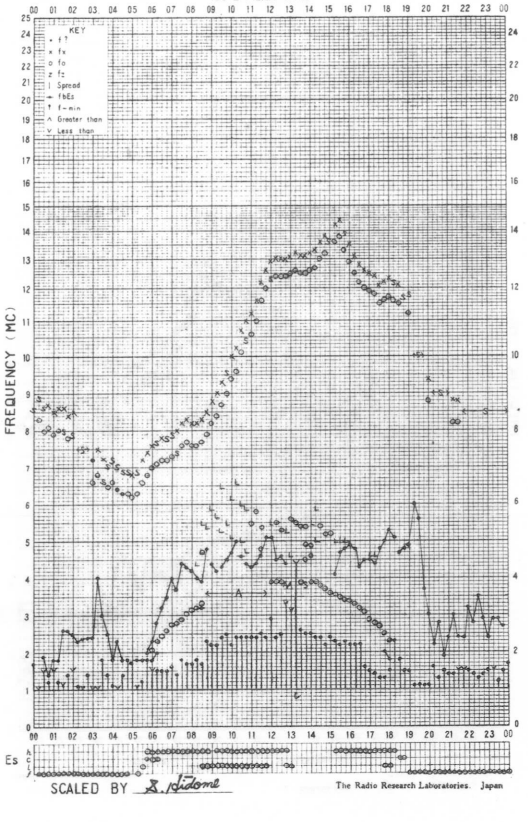

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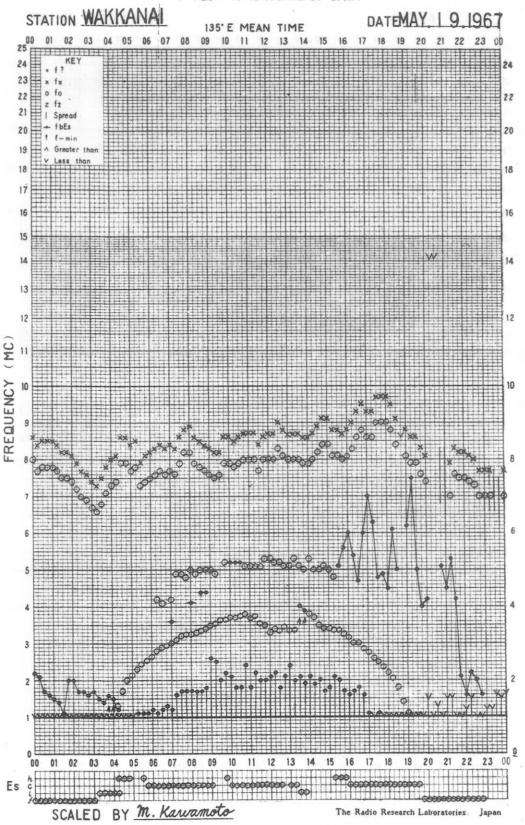

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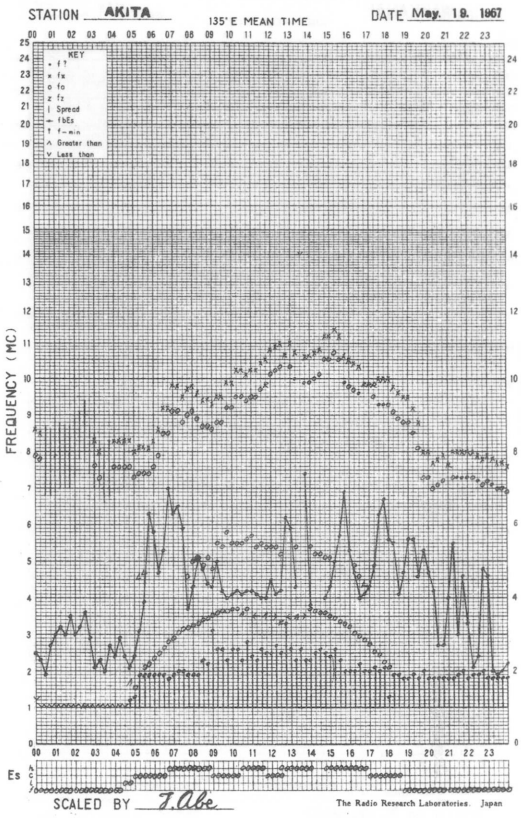

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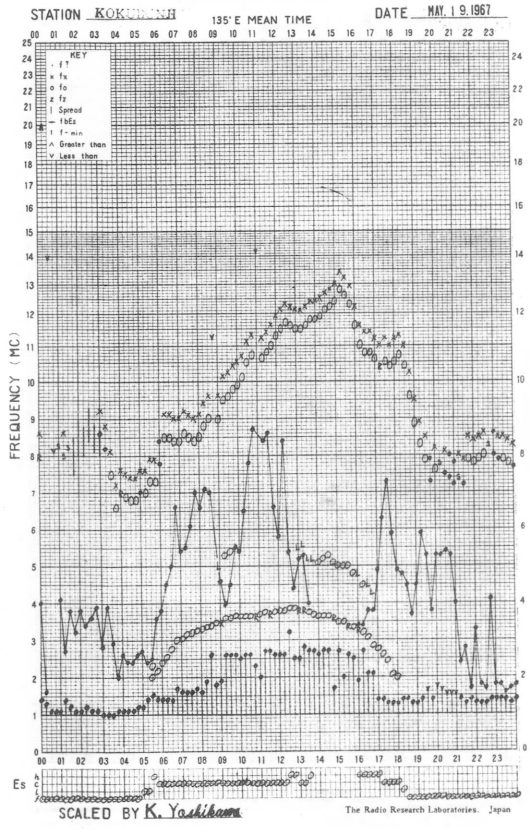

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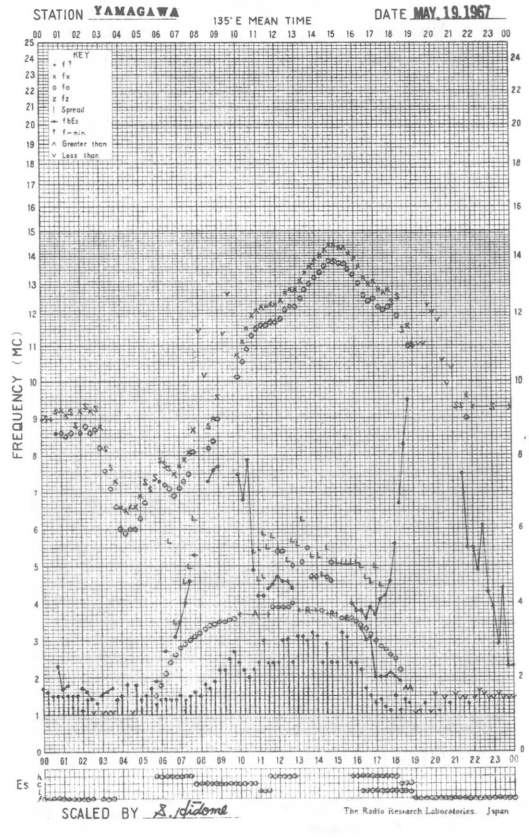

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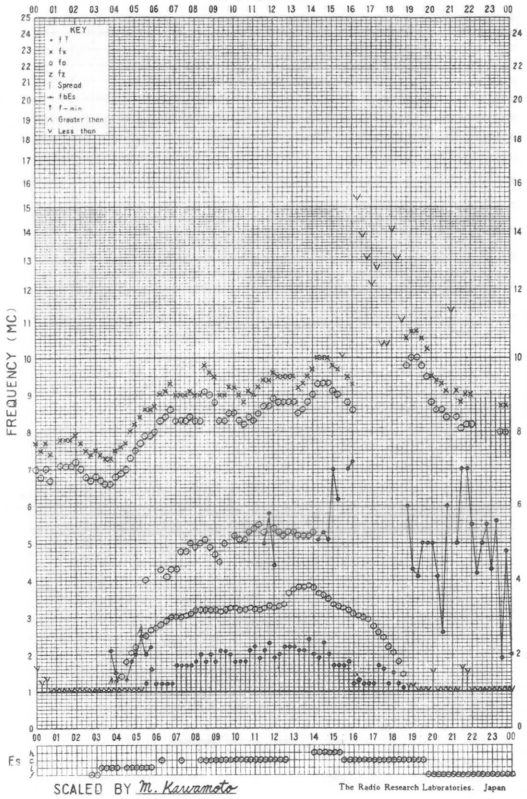

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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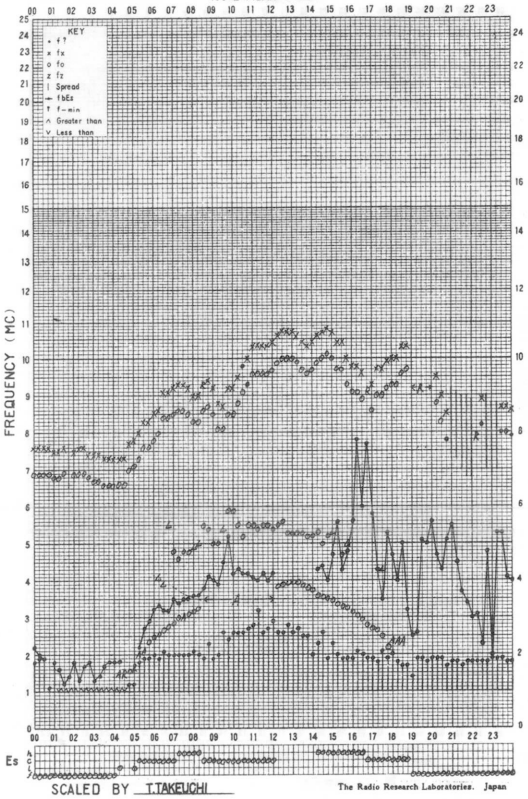
STATION AKITA 135°E MEAN TIME DATE May. 20. 1967



SCALED BY T.TAKEUCHI

The Radio Research Laboratories. Japan

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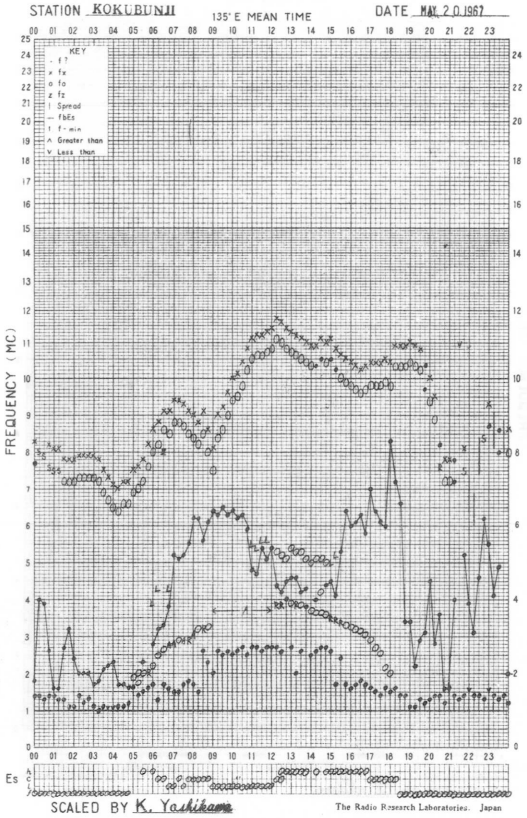
STATION KOKUBUNJI 135°E MEAN TIME DATE MAY. 20. 1967



SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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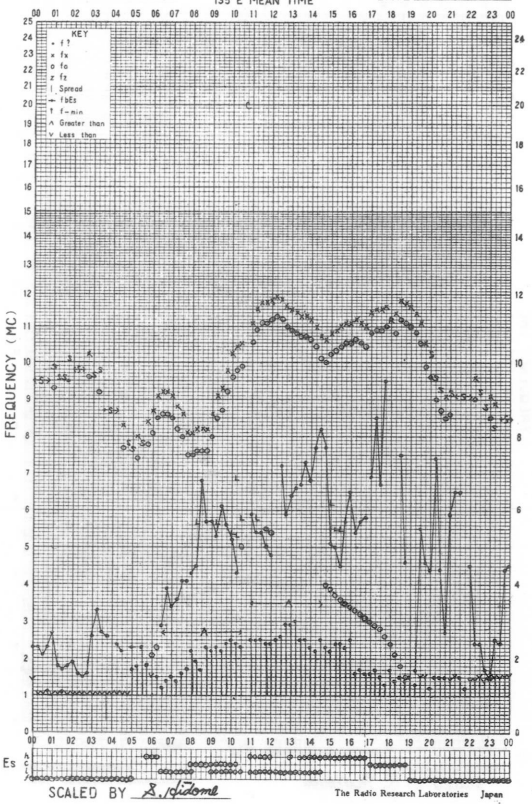
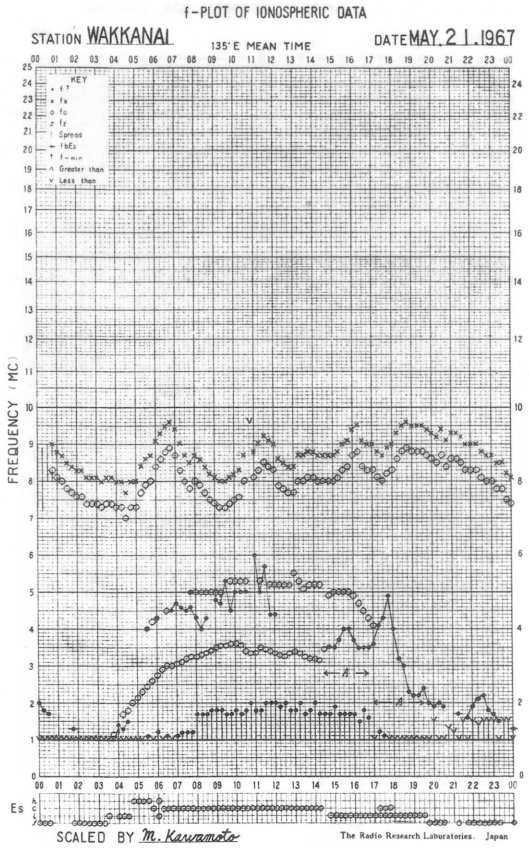
STATION YAMAGAWA 135°E MEAN TIME DATE MAY. 20. 1967



SCALED BY S. Sitomi

The Radio Research Laboratories Japan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135°E MEAN TIME
DATE MAY. 21. 1967
KEY
FREQUENCY (MC)
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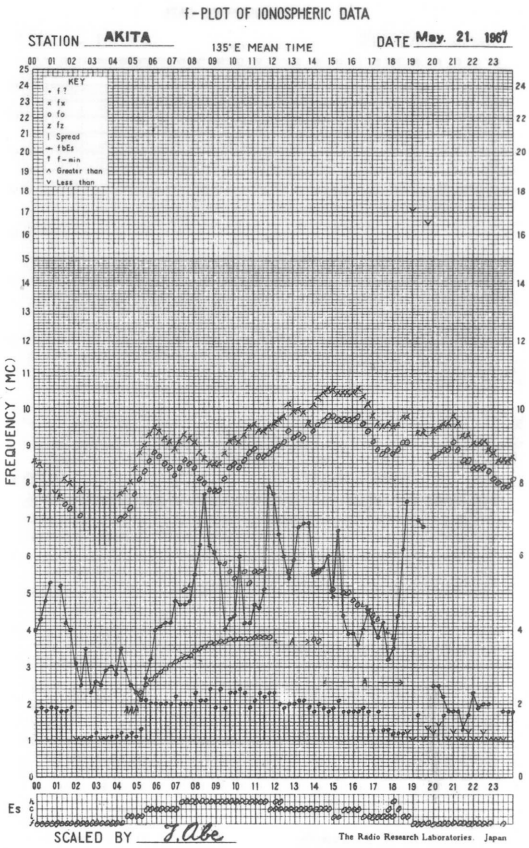
The Radio Research Laboratories. Japan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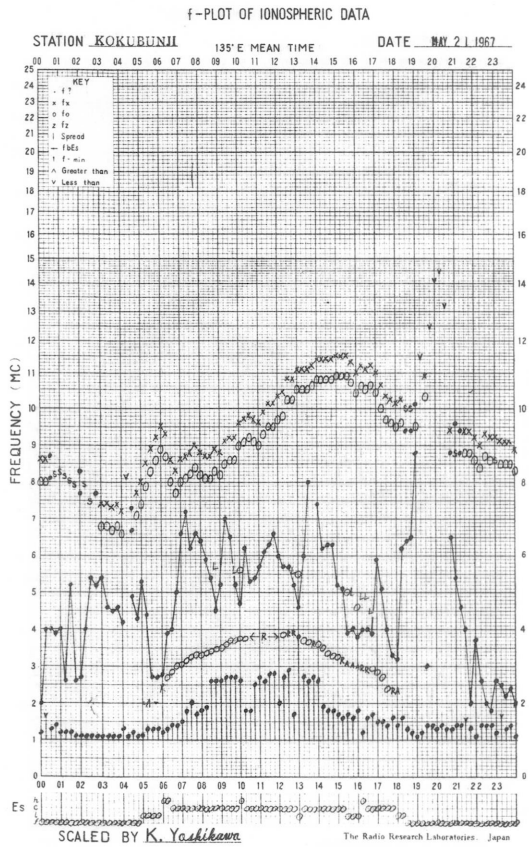
The Radio Research Laboratories. Japan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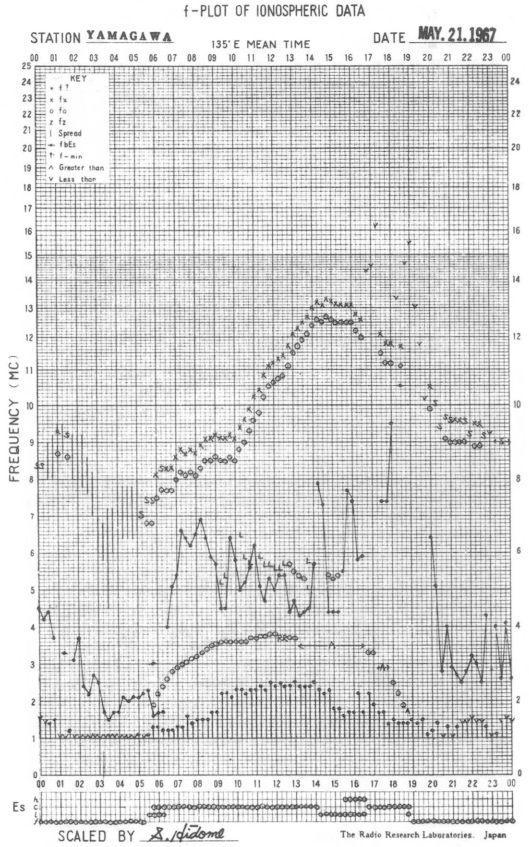
The Radio Research Laboratories. Japan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DATE MAY. 21. 1967
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The Radio Research Laboratories. Japan

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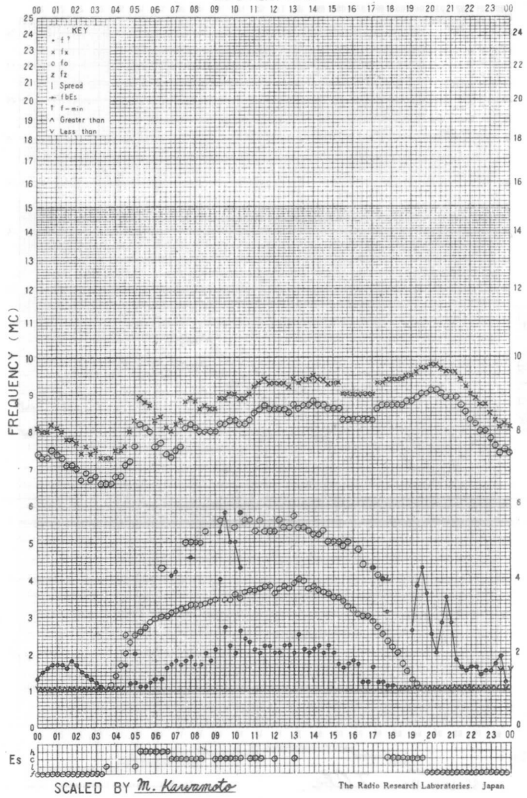
STATION WAKKANAI 135°E MEAN TIME DATE MAY. 22. 1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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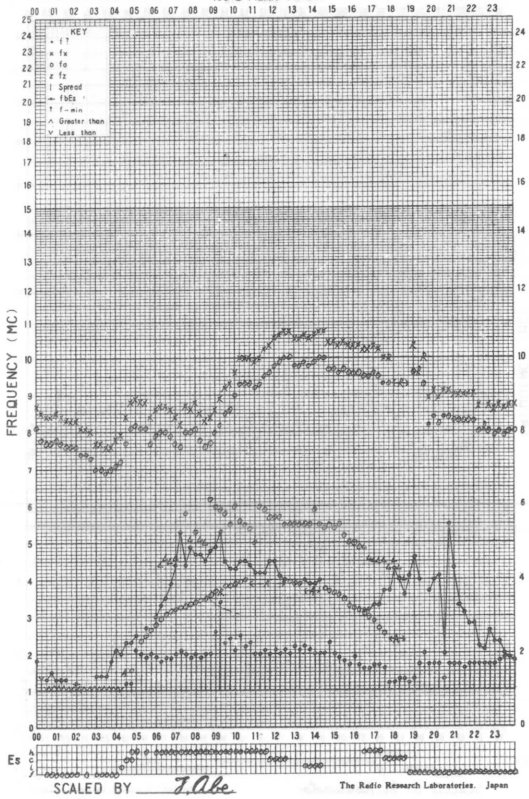

SCALED BY T. Abe The Radio Research Laboratories. Japan

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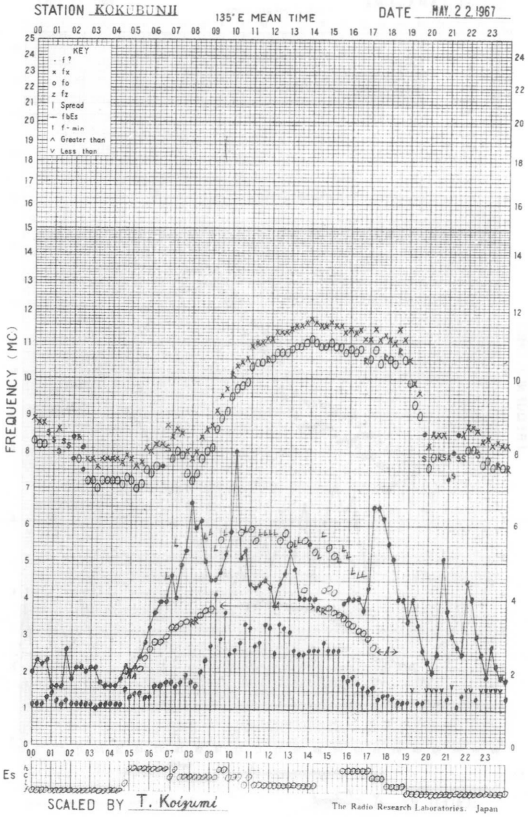

SCALED BY T. Koizumi The Radio Research Laboratories. Japan

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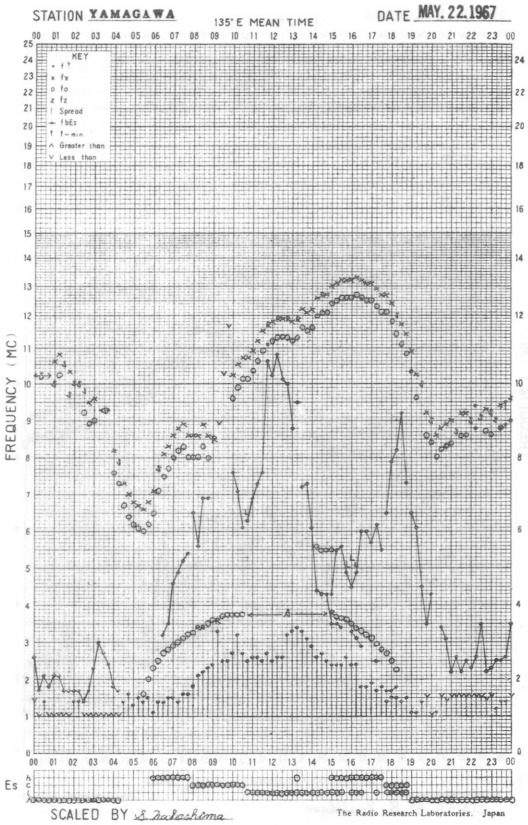

SCALED BY S. Sakashima The Radio Research Laboratories. Japan

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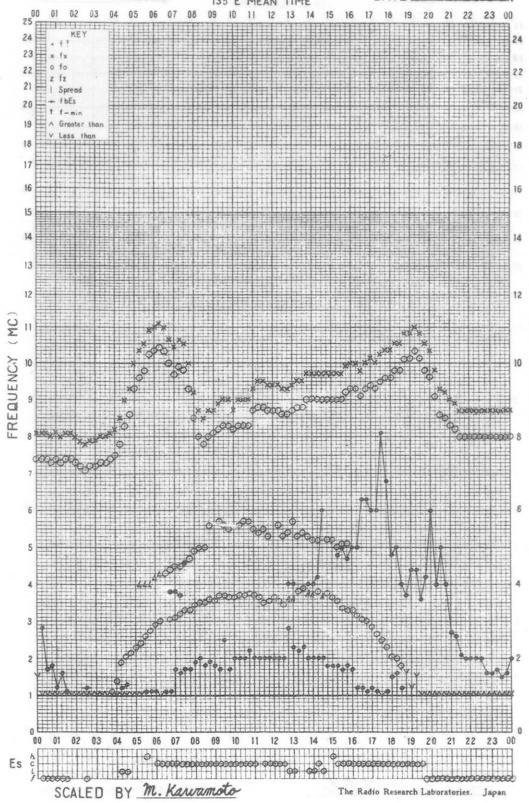

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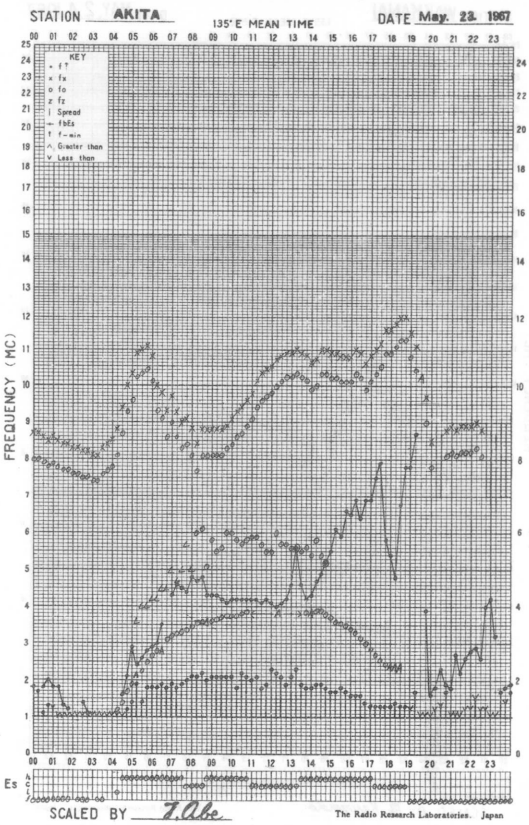

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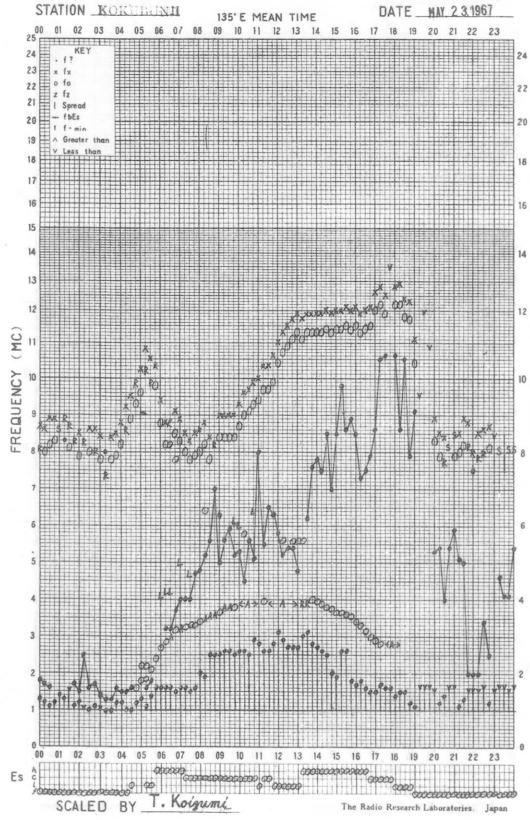

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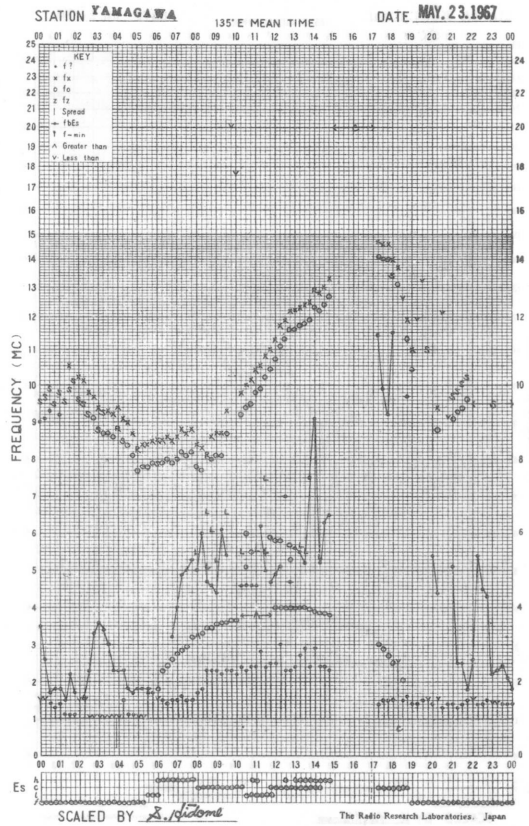

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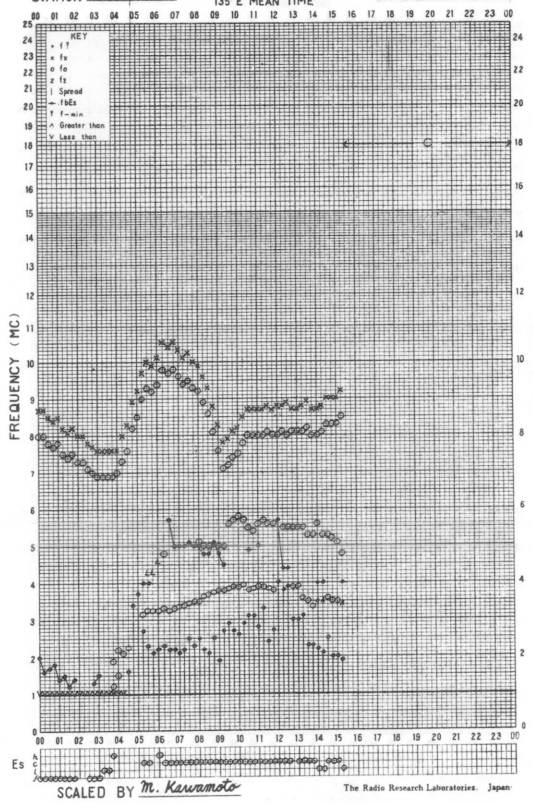

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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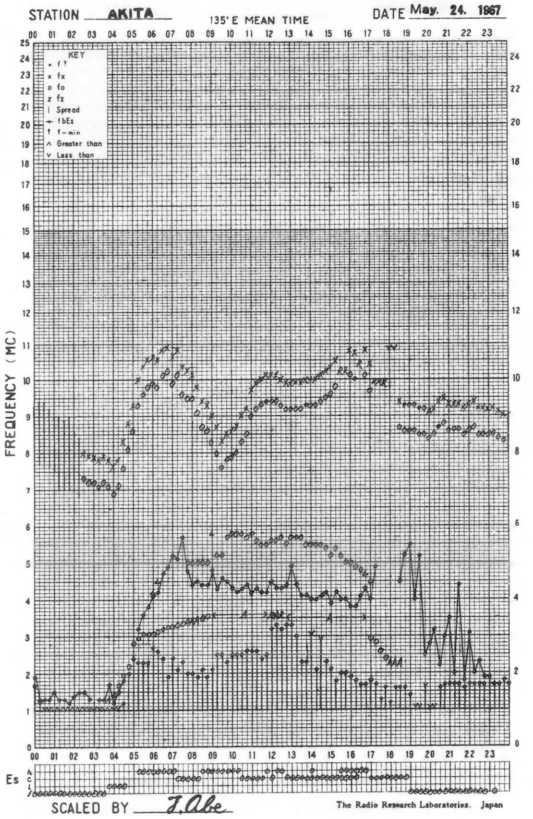

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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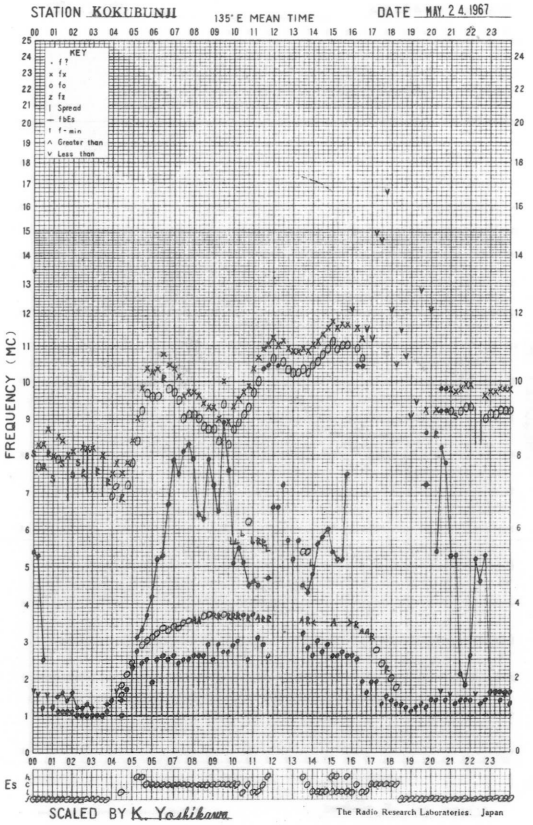

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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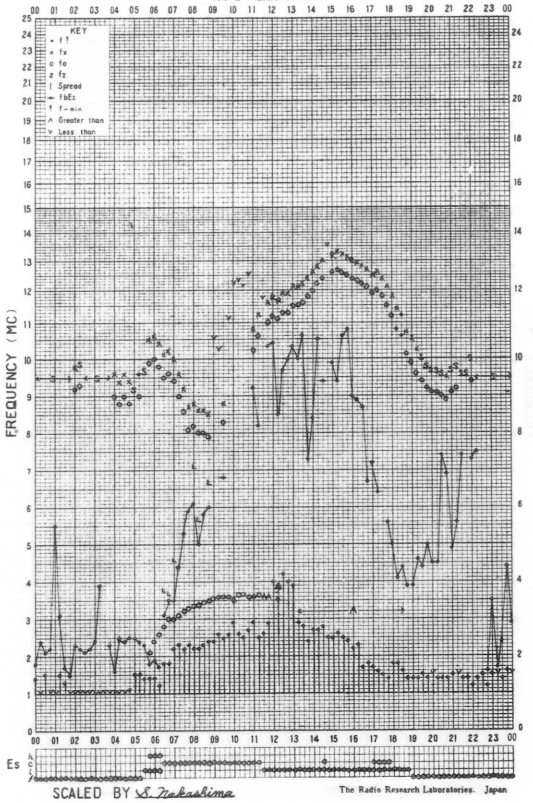

SCALED BY S. Nakashima

The Radio Research Laboratories. Japan

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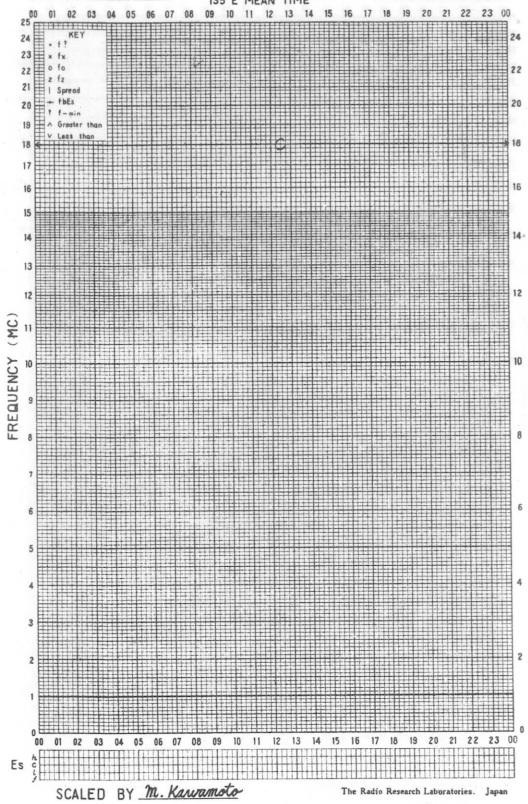

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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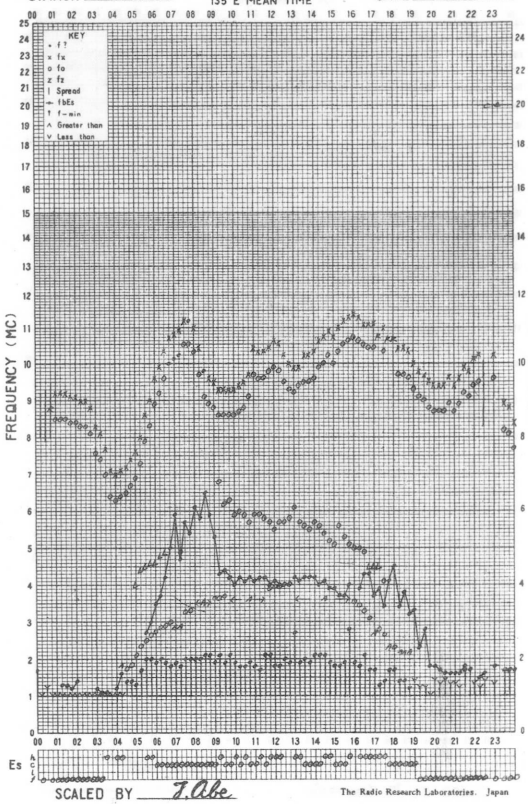

SCALED BY T. Abe The Radio Research Laboratories. Japan

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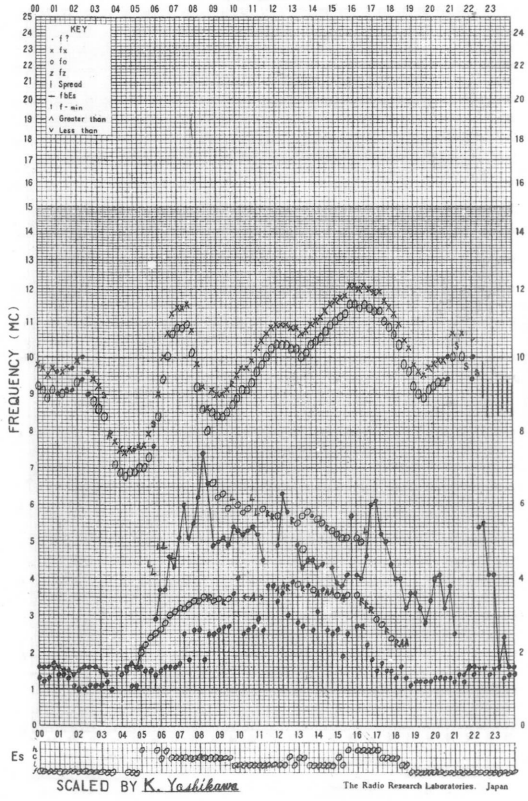

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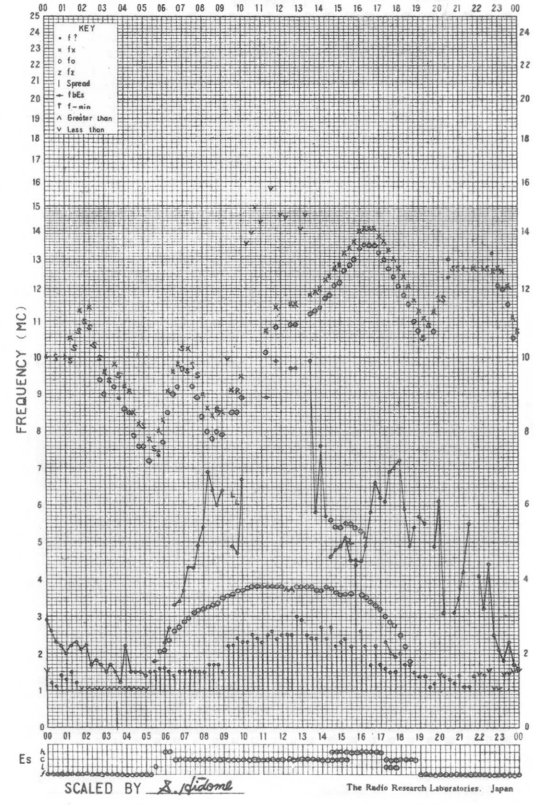

SCALED BY S. Sidomi The Radio Research Laboratories. Japan

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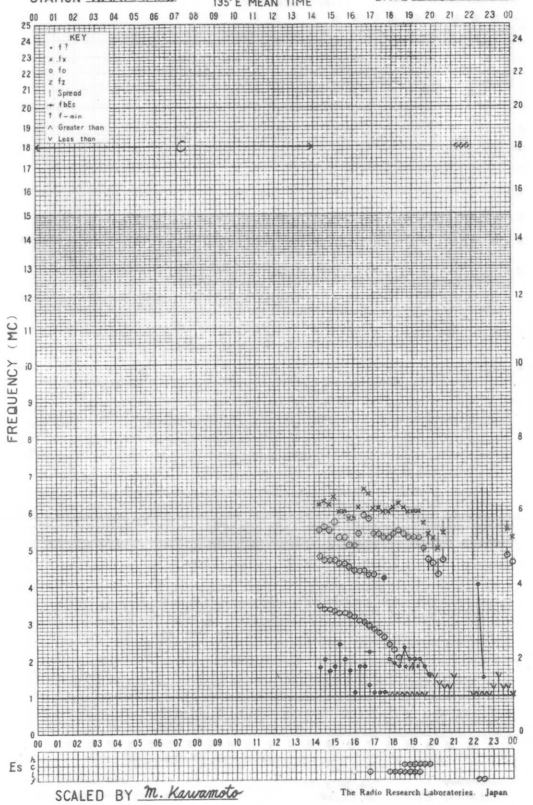

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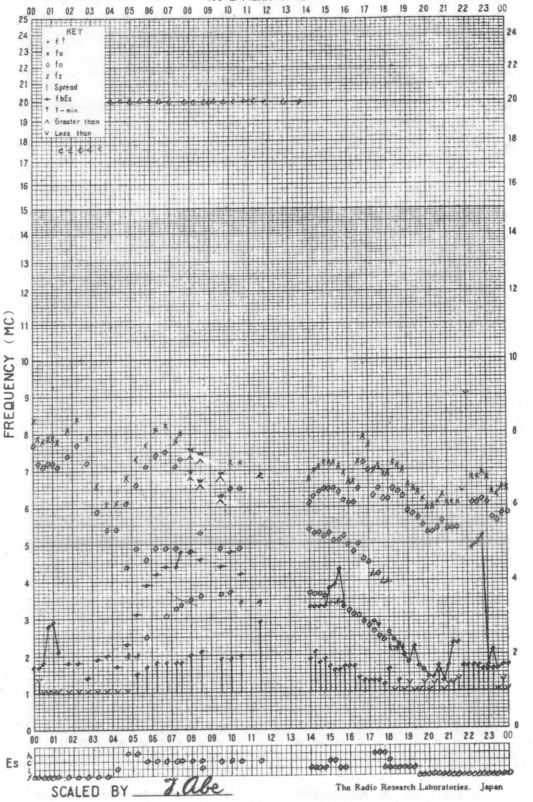

SCALED BY T. Abe The Radio Research Laboratories. Japan

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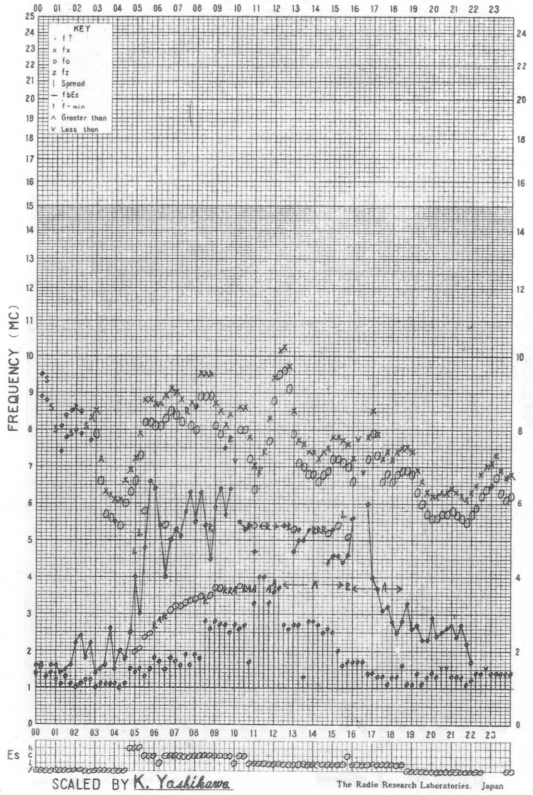

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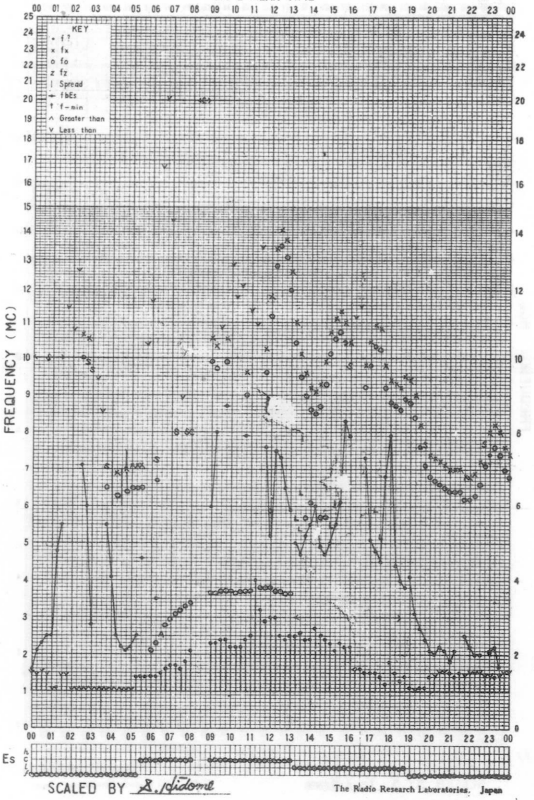

SCALED BY S. Sidomi The Radio Research Laboratories. Japan

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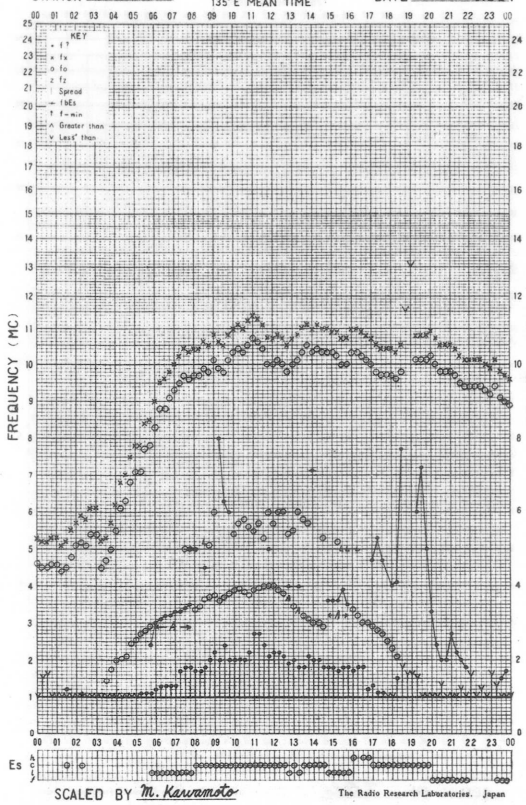

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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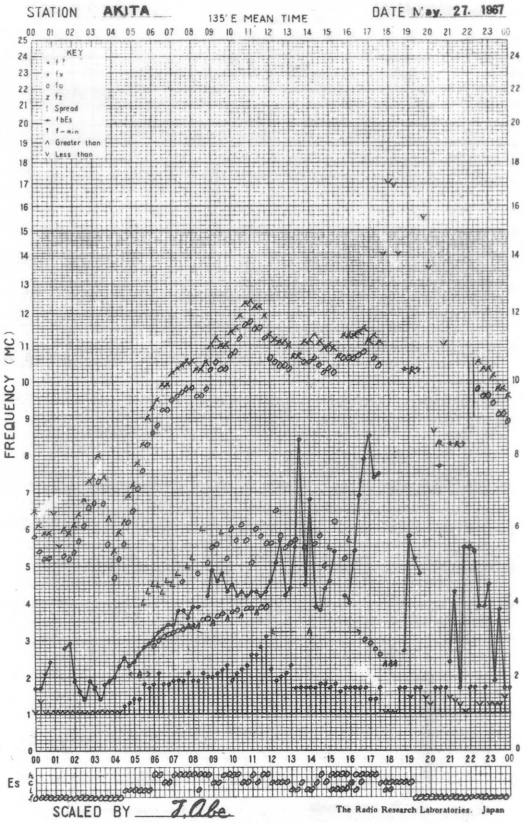

SCALED BY T. Abe The Radio Research Laboratories. Japan

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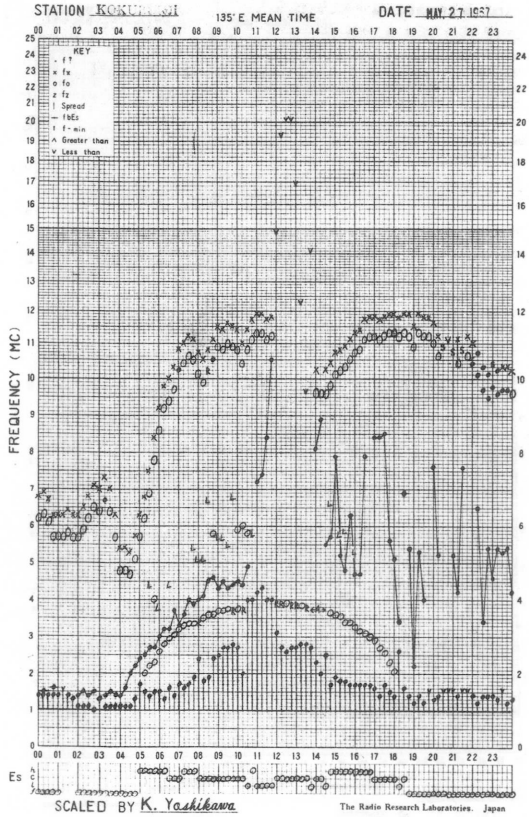

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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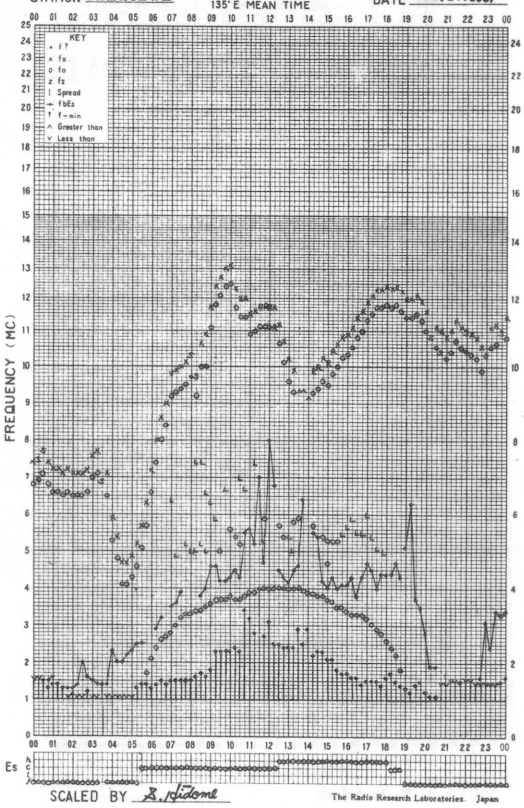

SCALED BY S. Tidome The Radio Research Laboratories. Japan

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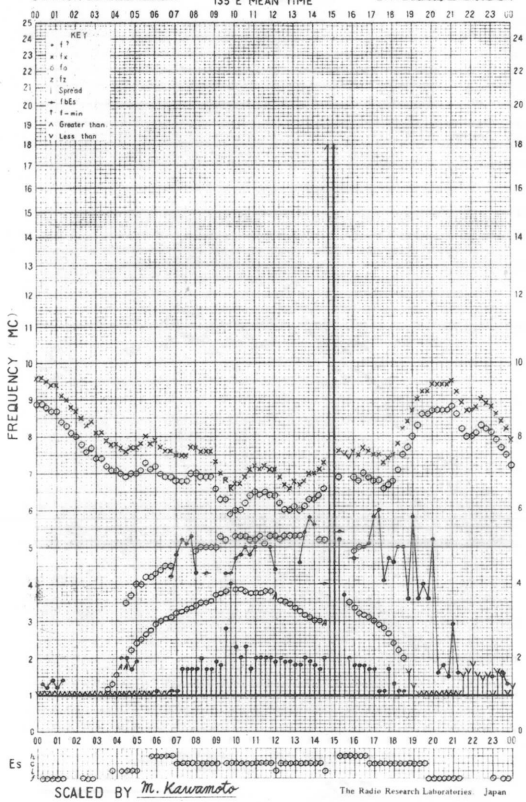

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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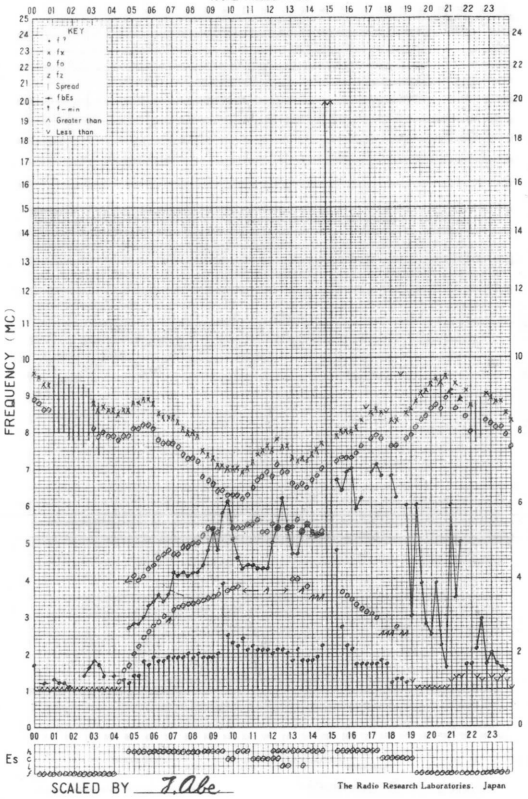

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The Radio Research Laboratories. Japan

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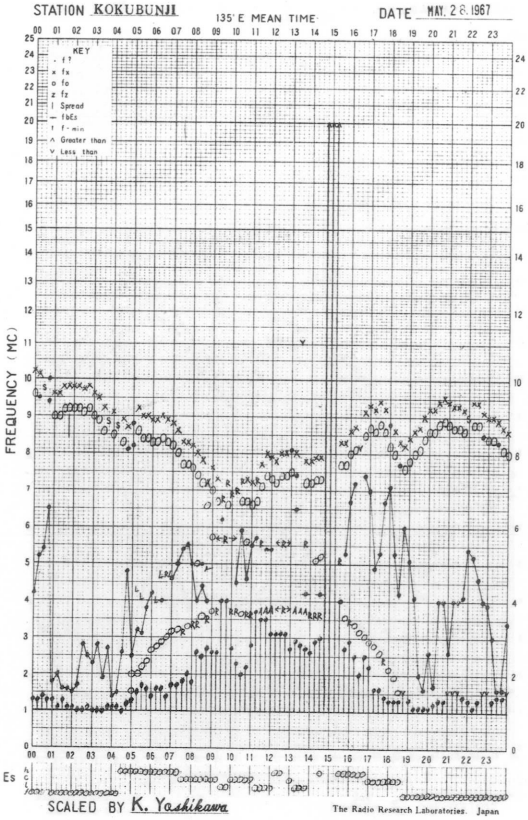

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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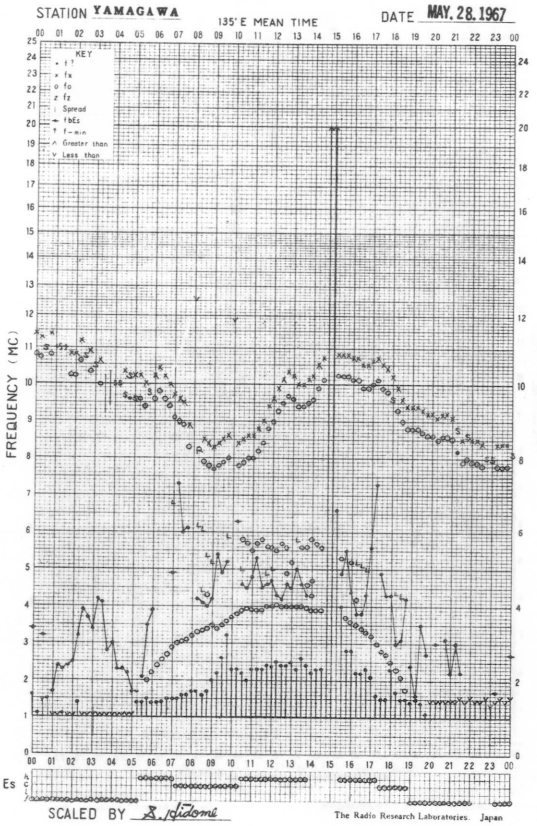

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The Radio Research Laboratories. Japan

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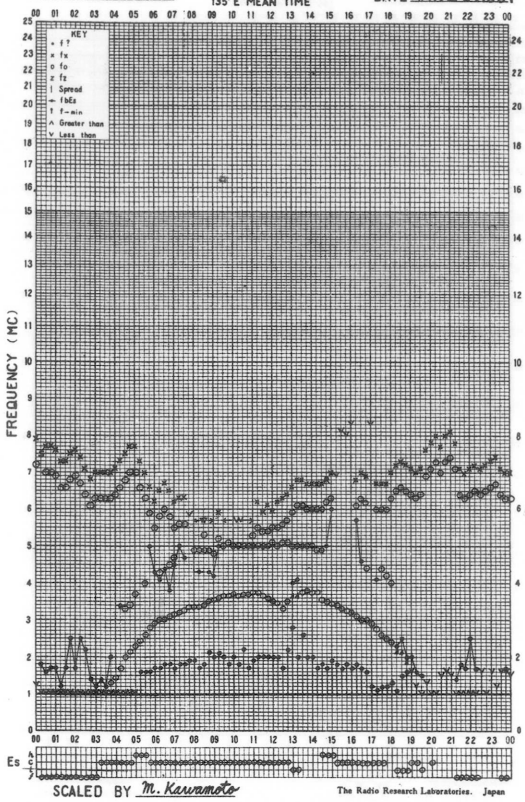

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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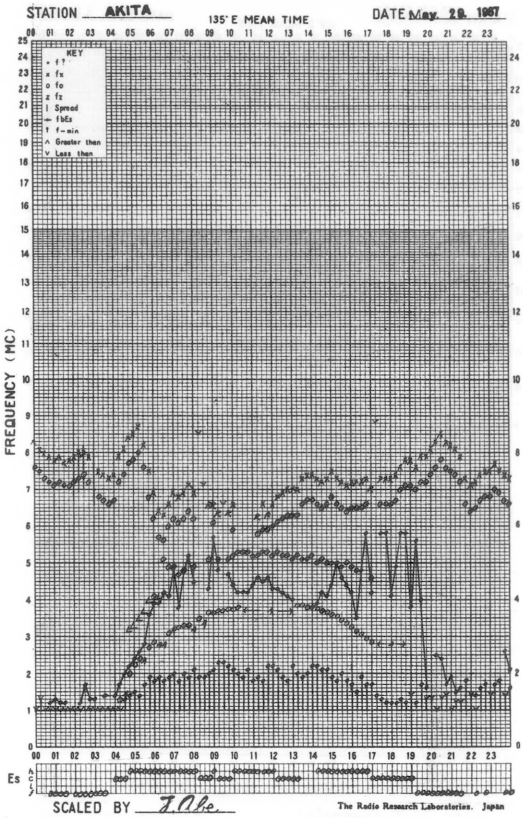

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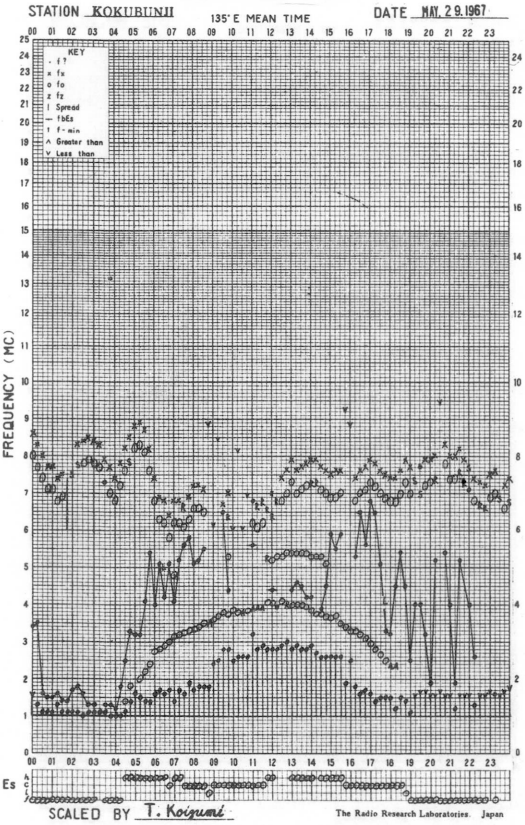

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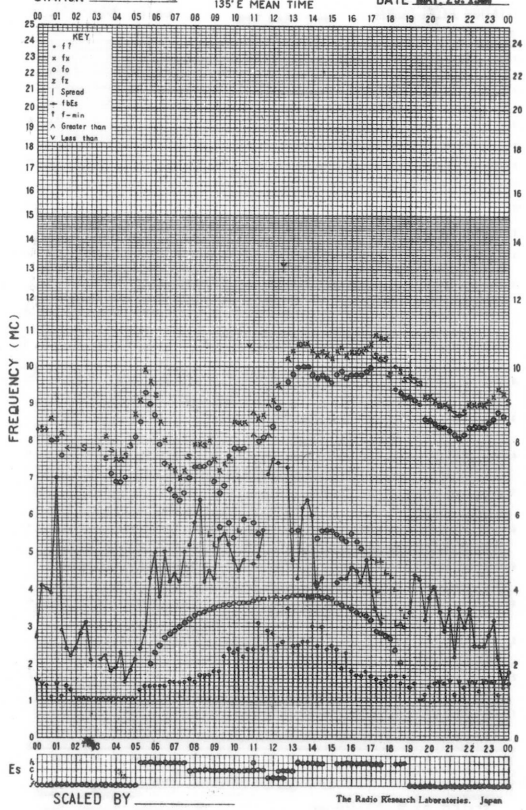

SCALED BY _____ The Radio Research Laboratories. Japan

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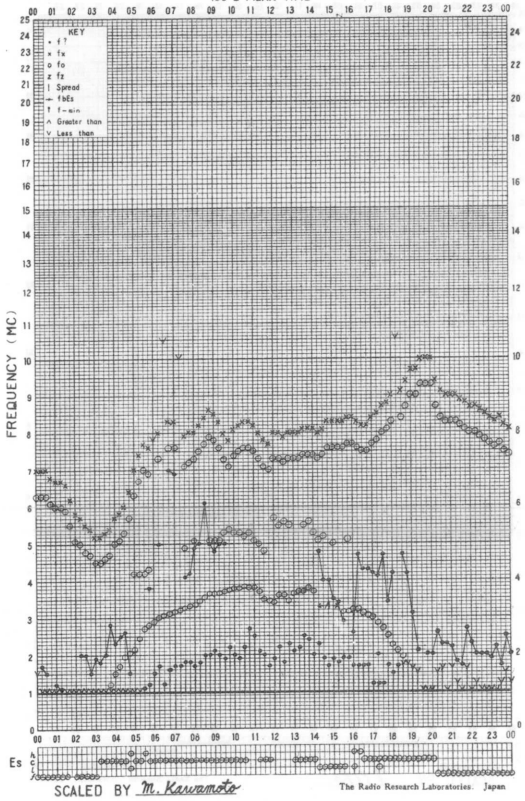

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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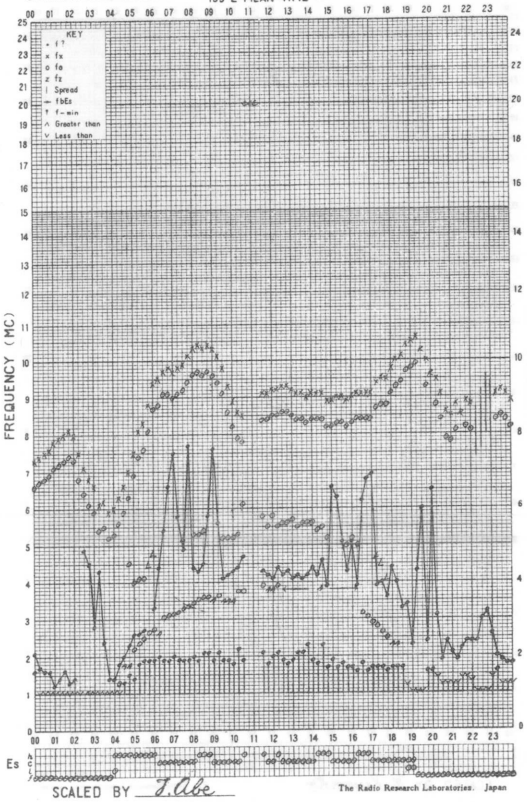

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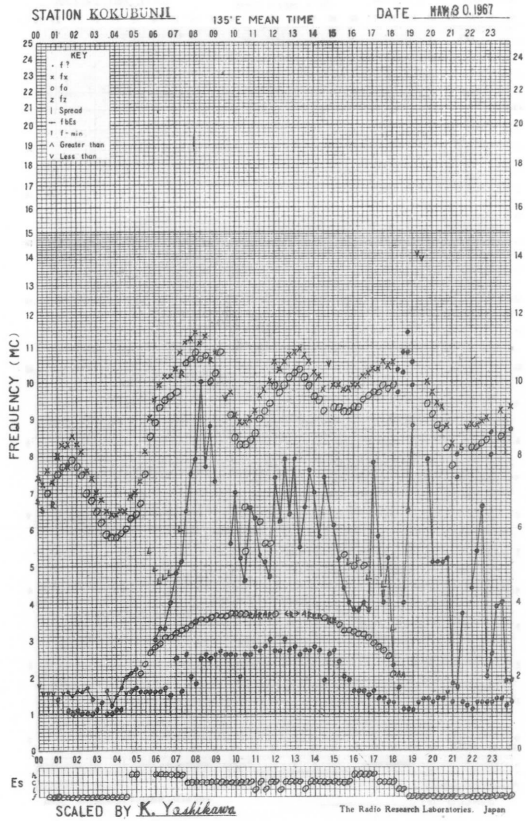

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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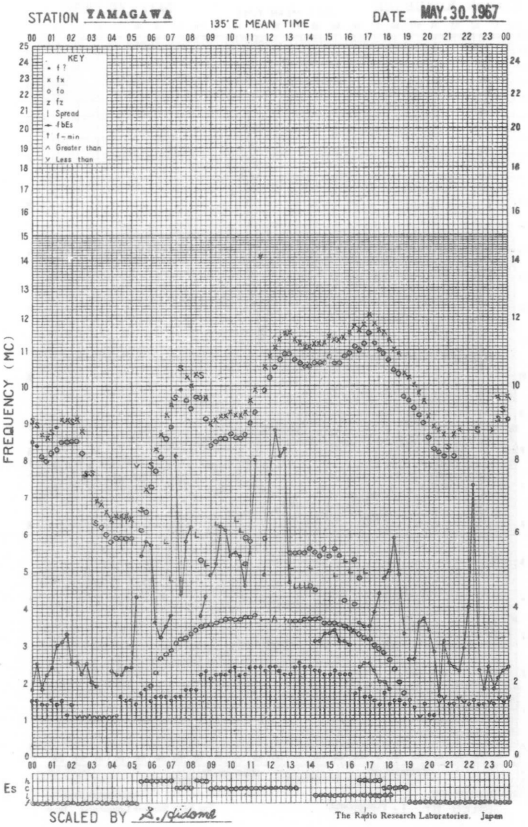

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The Radio Research Laboratories. Japan

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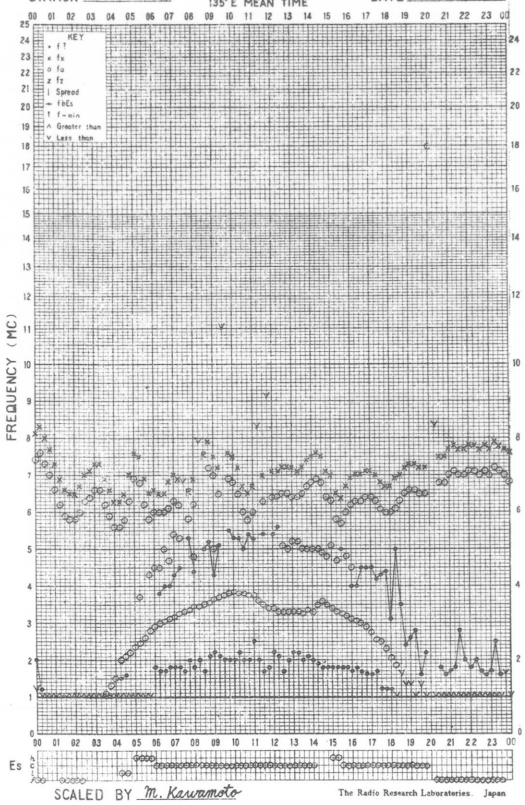

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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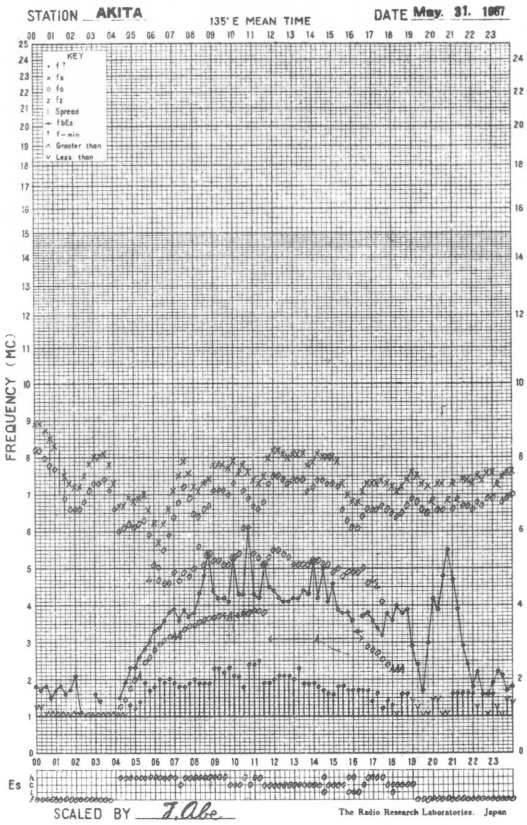

SCALED BY T. Abe

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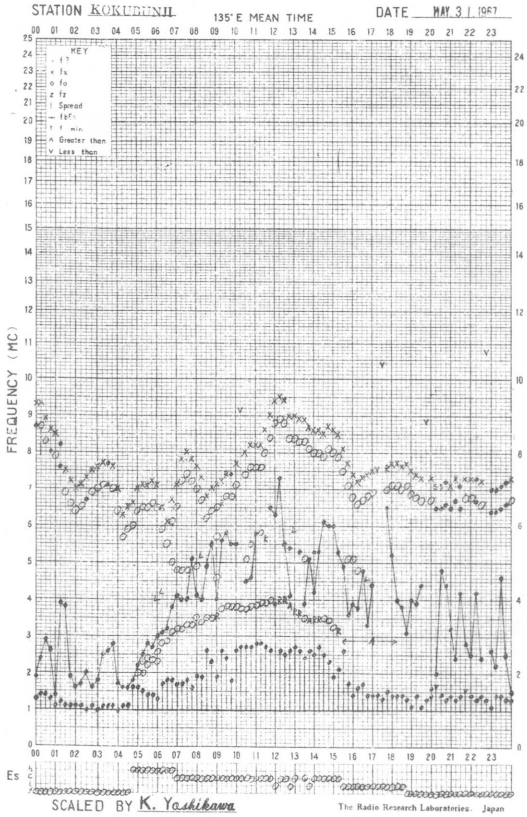
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE MAY. 31. 1967

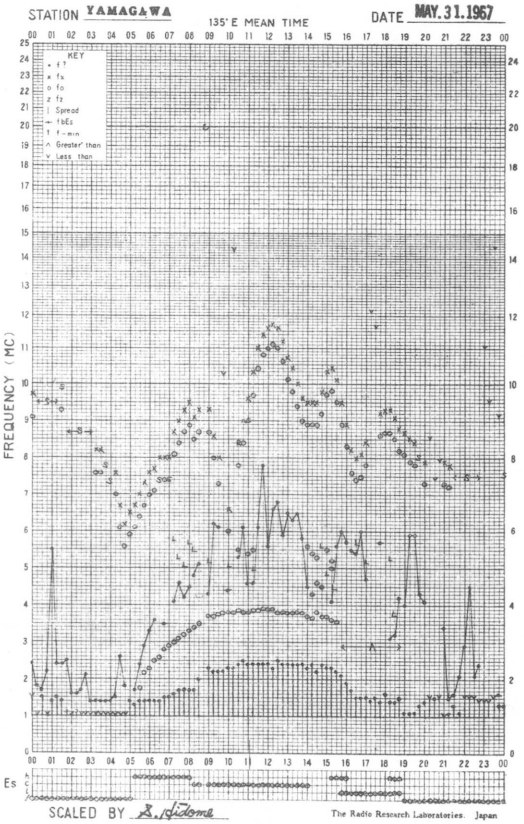


SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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



SCALED BY S. Sidome

The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: May 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	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	8	(7)	10	8	(9)	0	(0)	0	0	(0)
10	9	6	8	8	8	0	0	0	0	0
11	8	-	-	13	(8)	0	-	-	0	(0)
12	12	-	9	8	11	0	-	0	0	0
13	7	-	-	10	8	0	-	-	0	0
14	8	-	-	-	9	0	-	-	-	0
15	-	-	-	-	-	-	-	-	-	-
16	10	7	(9)	6	8	0	0	(0)	0	0
17	8	-	12	(9)	8	0	-	0	(0)	0
18	10	9	11	-	10	0	0	0	-	0
19	7	-	6	-	7	0	-	0	-	0
20	8	-	(12)	20	(9)	0	-	(0)	2	(0)
21	13	-	15	20	16	1	-	0	2	1
22	18	(15)	21	9	19	2	(1)	1	1	1
23	12	10	11	21	10	1	0	1	(3)	1
24	21	21	21	17	21	2	3	3	1	3
25	28	35	33	22	28	2	2	2	2	2
26	38	46	38	19	36	2	2	2	2	2
27	36	33	33	12	30	2	2	2	0	2
28	13	11	33	10	17	1	1	1	1	1
29	9	9	13	10	10	0	0	0	0	0
30	9	8	12	9	10	0	0	0	0	0
31	9	(9)	9	9	9	0	(0)	1	0	0

Note No observations during the following periods:

1st	1930-	9th	0100	receiver unstable			
9th	0300-		0500	19th	1930-		2400
11th	0300-		0940	20th	0200-		0700
12th	0200-		0600	21st	0200-		0600
13th	0300-		0940	22nd	0400-		0600
14th	0300-	15th	2400	26th	0000-		0100
16th	0700-		0940	27th	1930-		2200
17th	0300-		0600	28th	1930-		2200
17th	1930-		2300	29th	0300-		0400
18th	0300-		0400	30th	1930-		2200
18th	1930-		2400	31st	0300-		0500
19th	0300-		0600				

SOLAR RADIO EMISSION

Flux Density

Month: May 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	34	33	34	32	32
2	33	34	33	33	33
3	33	30	33	31	32
4	32	36	36	34	34
5	33	33	31	-	33
6	(34)	33	33	31	33
7	33	33	35	-	33
8	-	-	-	30	-
9	30	30	29	30	30
10	31	31	28	27	30
11	28	29	28	26	28
12	-	-	-	-	(26)
13	-	-	-	-	-
14	29	30	31	30	30
15	29	30	29	29	30
16	29	30	29	31	29
17	31	31	-	31	31
18	30	30	32	33	31
19	33	33	30	34	32
20	36	35	32	37	34
21	36	35	32	39	35
22	39	37	33	38	37
23	39	37	33	37	37
24	42	56	47	38	48
25	38	37	37	44	37
26	37	37	36	40	39
27	42	42	37	35	40
28	34	35	32	38	34
29	37	38	34	34	37
30	35	33	31	36	33
31	35	35	33	34	35

Note No observations during the following periods:

2nd	0000- 0100		17th	0500-	0940
5th	1930- 6th 0200		29th	0000-	0100
7th	1930- 8th 0940		31st	0100-	0200
12th	0000- 13th 2400				

Distinctive Events

(single-frequency observations)

Month: May 1967
Observing station: Hiraiso
Normal observing period: 1930 - 0940 (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	
20	200	2130	~0100	150	RF	-	-	
	500	2224	2224	13.0	C	40	3	
	200	2225	2225	0.5	C	> 250	>150	
21	500	0241.5	0241.7	1.0	C	500	75	
	200	0241.5	0241.5	0.5	C	> 250	>150	
	500	0736	0736.5	1.0	C	45	13	
	200	0741	0742	1.0	C	100	11	
	500	0756	0758.5	4.0	F	180	-	
	500	0844	0844	1.0	C	630	200	
	200	0844	0844	1.0	C	180	70	
	500	2015	2058.6	50.0	C	230	95	*
	200	2017	~2200	113.0	RF			*
	500	2232.5	2232.8	1.0	C	310	70	
22	500	0008.5	0009.4	2.0	C	160	14	
	200	0008.5	0008.5	1.5	C	75	14	
23	500	1920	-	280.0	C	> 720	>220	
	200	1920	1951.3	240	C	9200	1250	
24	500	0312	0540.1	190	C	1900	200	
	200	0334	0517	236	C	4870	340	
	500	0813	0835	66	C	400	50	
24-27	200	1930	(SR) ~ 0940	(SS)				noise storm
26	500	0157	0223	58	C	640	60	
	200	0154	0213.8	66	C	>190	>40	
	500	0316	0316	0.5	C	720	160	
	500	0707	0711.5	6.0	C	20	3	
28	500	0536	0558.5	34.0	C	720	90	
	200	0537	0540.5	83.0	C	2300	70	
	500	0627	0653	26.0	C	1070	200	
	500	0740	0750.4	33.0	C	20	4	
	500	2202.5	2212	14.0	C	40	20	
29	500	2110	2114.3	85.0	C	40	2	
	200	2115	2120.9	15.0	C	45	15	
31	500	0736	0736	2.0	C	12	7	
	200	0736	0736	1.0	C	>290	>80	

* Before 2000, last part of a burst-train was observed

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

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

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

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

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

May 1967	Whole Day Index	H B 06 12 18 / 12 18 24	T H 00 06 12 18 / 06 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	4 (4) 4	- (3) - (2)	4 4 4 4	4 4 4 4	4 4 4 4	N N N N	1907	---	178γ
2	3+	4 (3) 3	- - - -	3 4 4 3	4 3 4 3	4 4 4 4	N N N N	---	---	
3	2+	3 (2 2)	- (3 3 3)	3 2 2 1	3 3 3 3	4 4 4 4	N U U U	---	---	
4	2+	(2 3 3)	- (4 3 3)	(1) 2 2 2	3 (3 3) 3	4 4 4 3	U U U U	---	19xx	
5	3+	(3) C C	- - (2 2)	3 3 3 4	4 3 (4) C	4 4 4 4	U U U U			
6	4-	4 3 4	- - (3 3)	3 3 4 4	4 (4) 4 4	5 4 4 4	N N N N			
7	4-	3 3 4	- - (1 1)	4 3 4 (4)	4 (4) 4 4	4 4 5 4	N N N N			
8	4o	5 5 4	- - (3 2)	4 4 3 4	4 4 4 4	4 4 4 4	N N N N			
(9)	4-	4 4 5	- - 3 4	4 4 3 3	4 4 (3) 4	5 4 4 4	N N N N			
(10)	4o	4 4 5	- (4) 4 5	(4) 4 3 4	4 4 4 4	4 4 3 4	N N N N			
(11)	4-	3 3 4	- - 5 (4)	4 4 4 4	4 4 4 4	5 4 4 4	N N N N			
12	4+	4 3 4	- - 4 4	4 (5) 5 5	5 5 (5) 4	5 5 5 4	N N N N			
13	4o	3 3 4	- (4) 4 5	4 4 4 4	5 4 4 4	4 4 4 4	N N N N			
14	4o	4 4 3	- (4 4 3)	4 (3) 4 4	4 4 4 5	4 4 4 4	N N N N			
15	4+	3 (3) 4	- - 5 5	4 5 5 4	4 5 5 5	5 5 4 4	N N N N			
16	4+	4 4 4	- - 4 4	4 5 5 5	4 4 4 5	4 4 4 5	N N N N			
17	4o	4 3 4	- - 3 3	4 3 4 4	5 4 4 5	5 4 4 4	N N N N			
18	4o	4 4 4	- - 4 4	(4) 4 4 4	4 4 5 4	4 4 4 4	N N N N			
19	4-	3 4 4	- - 4 5	3 3 4 4	4 4 (4) 5	4 4 4 5	N N N N			
20	5-	4 5 5	- - 4 5	4 5 5 5	4 4 5 4	5 4 4 4	N N N N			
21	4+	4 4 4	- (4) 4 4	5 4 5 5	4 4 4 4	4 4 4 4	N N N N			
22	5-	4 4 5	- (4) 4 4	5 5 4 5	4 5 5 4	4 4 5 5	N N N N			
23	4o	4 5 4	- - 4 2	4 5 4 3	4 5 4 2	4 4 4 2	N N N N			
24	4+	4 4 4	- - 1 1	3 5 5 (4)	(4 5) 4 C	3 (4) 4 (4)	N N N N	1726	---	
25	3o	3 3 2	- - 1 1	4 4 3 2	4 4 3 2	4 4 3 4	N N W W	1235	---	509γ
26*o	2-	(2) 3 3	- - 1 1	1 1 1 1	1 2 (3) 2	3 4 3 4	W W W W	---	---	
27	3o	3 4 3	- - 2 3	1 2 3 (4)	2 3 3 4	3 4 4 4	U U U U	---	---	
28	3o	3 3 3	- - 1 1	3 4 3 1	4 4 (3) 2	3 4 4 4	U N U U	---	---	
29*	3-	(2 3) 4	- - 2 2	2 3 3 2	3 3 3 2	3 4 4 4	U U U U	---	20xx	
30*	3+	4 4 (3)	- - 3 3	(3) 4 3 3	3 3 3 3	4 4 3 4	U N N N	1426	---	139γ
31	3o	(3 3 4)	(4) - 4 3	3 3 3 2	3 (3) 3 3	4 4 4 3	U U U U	---	24xx	

IQSY GEOALERT and ADALERT
(Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = COSMIC EVENT

( ) = Regular World Day

\- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

May 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							
3		22	9				06.03	54	G	1+			
6		35	>30		31		04.35	72	Slow	3-	x	x	
21	35	24	-				19.24	34	S	2+	x		
22	-	12	-				00.10	16	S	1-		x	
23	25"						17.30	25	Slow	2-		x	
23	18"	16	-				18.10	-	Slow	1+	x	x	
23	21"	10	-		19		18.30	180	S	1+	x	x	
24	10	12	-				02.59	48	S	1-	x	x	
25	15	10	10		>30		06.34	28	Slow	3-	x	x	
26		-	-	13			02.03	-	Slow	1+	x	x	
28		30	12	-	10		00.25	26	Slow	2	x		
28	30	50	33	-	30		05.37	60	Slow	3+	x	x	

IONOSPHERIC DATA IN JAPAN FOR MAY 1967
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