F—220

IONOSPHERIC DATA IN JAPAN

FOR APRIL 1967

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THE RADIO RESEARCH LABORATORIES

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KOKUBUNJI, TOKYO, JAPAN

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THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES

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

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

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

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

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

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

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

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

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

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

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

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

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

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

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

a. Descriptive Letters

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

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

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

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

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

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

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

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

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

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Letters

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

value on the monthly tabulation sheets.

D greater than.

E less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-ionic component.

c. Description of Standard Types of E_s

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

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

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

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

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

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

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

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

sometimes extend over several hundred kilometers of virtual height.

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

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

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

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

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

Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

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

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

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

Variability is expressed in the following four grades:

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

The number of bursts exceeding the flux level is counted.

c. Distinctive Events

The phenomena are picked up on the following criteria:

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

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

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

Descriptive type is denoted by the following symbols:

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

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

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

C. RADIO PROPAGATION CONDITIONS

a. Field Intensities of WWV and WWVH

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

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

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

Transmitter

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

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

Receiver

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

The meaning of *Descriptive symbols* is as follows:

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

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

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

<: Less than the following figure.

b. Radio Propagation Quality Figures

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

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

The tabulated circuits contain Hamburg (commercial circuit), Thule (12.0365 and 9.195M℅), 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

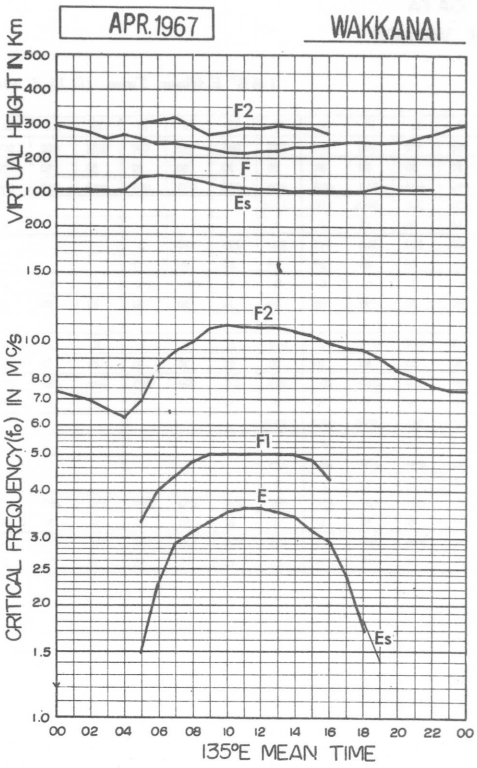
Importances

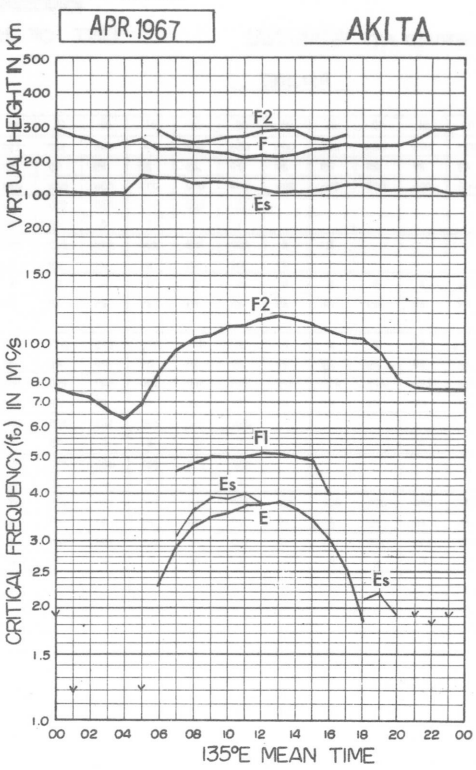
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1−	1	1+
2−	2	2+
3−	3	3+

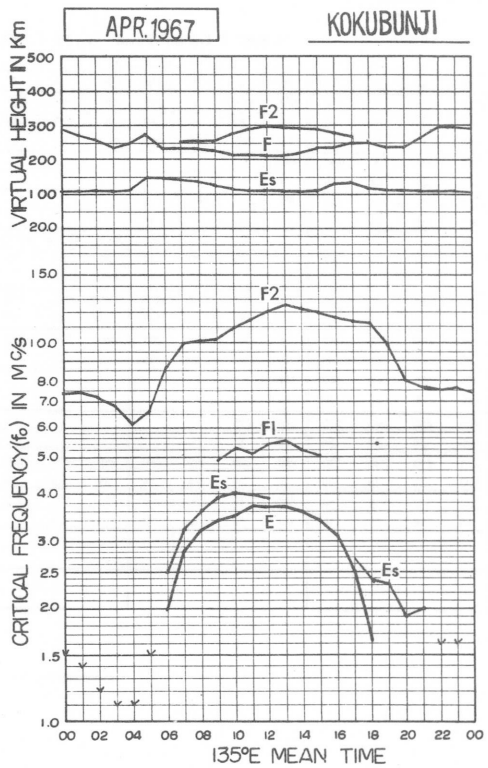
Besides, the time associated phenomena with SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record), are given in this table from interchange messages of IUWDS or measurements at Hiraiso.

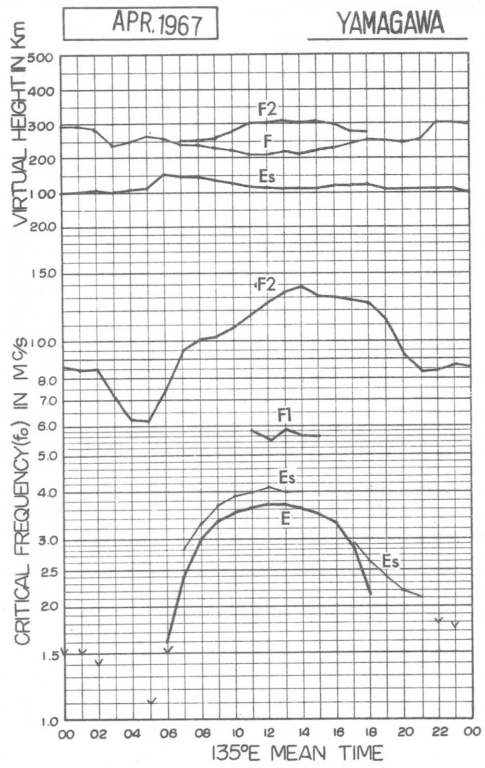
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Apr. 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	073	071	069	066	063	069	086	094	099	107	110	108	108	108	106	103	098	096	095	090	083	080	076	074
	CNT	29	29	29	29	29	29	29	28	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Q R	006	006	008	006	004	009	012	013	022	022	020	022	016	013	011	008	010	008	011	007	008	008	006	005
foF1	MED						330	400	440	480	500	500	500L	500	500	500L	480L	U430L							
	CNT						1	3	5	8	15	20	22	12	16	13	2	1							
foE	MED				E	E	150	225	290	310	335	350	360	360	350	340	315	290	235	170	E				
	CNT				1	21	29	29	29	29	29	30	30	29	28	28	28	28	28	20	17				
foEs	MED	E012	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	018	014	E	E	E	E
	CNT	29	28	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	29	30	30	30
	Q R																								
f-min	MED	E011S	E	E	E	E	E	011	011	013	017	018	019	018	018	018	017	012	E	E	E	E	E	E	E
	CNT	29	28	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	29	30	30	30
M (3000) F2	MED	270	270	275	275	275	285	300	300	305	295	295	295	290	290	290	295	295	300	300	295	290	280	270	270
	CNT	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
M (3000) F1	MED						290	340	350	360	375	380	380L	390	380	370L	370L	U370L							
	CNT						1	3	5	8	15	20	22	12	16	13	2	1							
h'F2	MED						300	315	320	285	270	275	280	280	290	280	280	275							
	CNT						1	3	7	9	22	25	26	18	23	19	7	3							
h'F	MED	290	280	275	260	270	260	240	240	235	225	220	215	220	220	230	230	240	250	250	245	250	260	270	280
	CNT	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
h'Es	MED	110	110	110	105	110	140	150	145	135	125	120	115	110	110	105	105	105	105	105	120	110	110	110	
	CNT	2	6	6	7	4	5	10	9	7	11	11	8	8	10	10	11	8	11	15	13	10	9	2	
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Apr. 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	076	073	072	067	063	069	084	096	103	104	110	111	115	118	116	112	107	103	102	095	081	077	076	076
	CNT	29	29	29	29	29	29	29	29	28	28	28	29	28	29	29	29	29	29	29	29	29	29	29	29
	Q R	004	004	007	005	006	010	010	016	012	016	020	020	012	013	010	009	009	006	008	008	009	007	006	004
foF1	MED								460L	480L	500	500	500	510	510	500	490	400L							
	CNT								3	6	15	23	27	26	28	23	14	4							
foE	MED					E	E	230	285	325	345	355	I370A	I375	380	365	340	305	255	185					
	CNT					1	10	26	29	28	27	24	24	22	25	23	24	26	28	6					
foEs	MED	E018B	E012S	E	E	E	E012	G	031	036	039	039	040	038	G	G	G	G	G	021	J022	J019	E019B	E018B	E019B
	CNT	29	29	29	29	29	28	28	27	27	28	28	29	28	28	29	29	28	29	29	28	29	29	27	28
	Q R										003	003	004							D010	D009	D006	D002		
f-min	MED	018	E012S	E	E	E	E013	019	019	019	020	021	024	024	024	021	019	019	018	018	E014	E015S	018	018	018
	CNT	29	29	29	29	29	28	28	27	27	28	28	29	28	28	29	29	28	29	29	28	29	29	27	28
M (3000) F2	MED	270	275	275	280	270	285	310	310	310	305	295	290	290	290	285	290	295	300	305	305	290	275	270	270
	CNT	29	29	29	29	29	29	29	29	28	28	28	29	28	29	29	29	29	29	29	29	29	29	29	29
M (3000) F1	MED								360L	360L	375	370	375	375	365	360	360	380L							
	CNT								3	6	15	23	26	26	28	23	14	4							
h'F2	MED							285L	260	255	260	270	275	280	290	285	270	260	275						
	CNT							2	11	27	28	28	28	28	29	29	29	26	3						
h'F	MED	290	275	270	240	255	270	235	235	230	225	220	210	215	210	220	230	240	250	245	240	240	270	280	290
	CNT	29	29	29	29	29	29	29	29	28	28	28	28	28	29	29	29	29	29	29	29	29	29	29	29
h'Es	MED	110	110	105	105	105	160	150	150	130	130	130	125	120	110	115	110	120	135	130	115	115	115	115	105
	CNT	2	2	3	5	2	2	12	18	17	25	24	23	19	12	15	14	12	12	16	17	19	13	6	1
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Apr. 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	U074R	074R	072	068	061	066	086	099	101	103	110	115	121	125	123	120	116	113	112	099	080	077	U075R	U076R
	CNT	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	28	29	29	29
	Q R	008	007	006	007	009	010	012	015	010	014	012	012	007	008	008	012	010	007	011	011	014	007	007	006
foF1	MED										490L	520L	510L	U540L	550L	520L	500L								
	CNT										1	11	10	10	9	4	3								
foE	MED						1	200	280	320	340	355	370	375	1370	360	340	310	250	165					
	CNT						E	29	26	27	27	26	18	12	13	17	24	26	27	7					
foEs	MED	E015	E014B	E012B	E011	E011	E015	025	032	036	039	040	040	039	G	G	G	G	027	024	023	019	020	E016	E016
	CNT	29	29	28	29	29	29	29	28	29	27	28	29	29	29	28	29	29	29	29	29	29	29	29	29
	Q R	D006					D005													011	D014	D008	D010	D010	D006
f-min	MED	014	014	011	010	010	013	014	014	016	017	022	026	026	026	025	018	016	013	014	012	014	014	013	E016S
	CNT	29	29	28	29	29	29	29	28	29	27	28	29	29	29	28	29	29	29	29	29	29	29	29	29
M (3000) F2	MED	U285R	285R	295	290	275	285	315	320	315	300	295	290	285	285	290	290	295	300	305	310	295	280	U280R	U280R
	CNT	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	28	29	29	29
M (3000) F1	MED										385L	370L	380L	U360L	355L	360L	370L								
	CNT										1	11	10	10	9	4	3								
h'F2	MED								260	260	260	275	280	295	295	290	285	275	270						
	CNT								7	26	28	26	29	28	29	29	28	22	6						
h'F	MED	280	275	260	235	250	275	230	230	230	225	210	210	210	210	220	230	235	250	250	230	230	270	290	290
	CNT	29	29	29	29	29	29	29	29	29	29	28	28	29	28	29	29	29	29	28	28	28	29	29	29
h'Es	MED	110	110	110	110	110	150	150	140	135	125	120	115	115	110	110	115	130	130	120	115	110	110	110	110
	CNT	10	6	4	6	4	11	16	19	21	19	21	18	16	15	14	14	14	17	25	22	21	19	14	12
hpF2	MED	U370R	355R	340	335	380	360	300	300	305	325	340	345	360	360	355	345	330	325	315	310	340	370	U375R	U370R
	CNT	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	28	29	29	29
ypF2	MED	U075R	075R	075	080	080	075	070	070	070	080	085	085	085	085	080	085	085	080	080	080	080	075	U070R	U070R
	CNT	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	28	29	29	29

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Apr. 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	086S	U084S	085S	072S	063	062	073S	092	100	103	107	116	125	132	134	130	130	127	124	112	094S	084S	084S	086S
	CNT	29	29	28	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Q R	012	014	018	016	015	017	016	014	011	014	010	007	005	009	008	010	011	011	012	019	013	011	013	015
foF1	MED												U580L	550	580	560L	U560L								
	CNT												2	3	3	4	3								
foE	MED							160	240	300	335	350	365	370	370	360	350	330	285	215					
	CNT							7	29	29	29	29	27	23	23	25	25	30	30	26					
foEs	MED	E015S	E015	E014	E	E	E011	E015	028	033	037	039	040	041	040	040	G	G	029	026	J024	J022	021	E018	E015S
	CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Q R	D009	D006					D008			004	006	005							015	022	022	D013	D034	D013
f-min	MED	E015S	E014S	E011	E	E	E	E014S	013	015	016	020	022	023	023	023	022	016	014	014	011	E015S	E014S	E015S	E015S
	CNT	30	30	30	30	30	30	30.	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
M (3000) F2	MED	275S	U280S	290S	290S	280	280	300S	320	315	305	290	280	280	280	285	285	285	290	300	305	285S	270S	265S	270S
	CNT	29	29	28	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
M (3000) F1	MED												U340L	350	325	345L	U320L								
	CNT												2	3	3	4	3								
h'F2	MED								250	250	260	275	300	305	310	300	305	295	275	275					
	CNT								1	20	30	30	30	30	30	30	30	30	29	5					
h'F	MED	290	280	260	235	250	270	260	240	235	225	220H	210H	210H	220	210	220H	230H	245	255	250	240	255	295	300
	CNT	30	30	30	30	30	30	30	30	30	29	28	30	30	28	27	30	29	29	30	30	29	29	30	30
h'Es	MED	100	100	105	100	105	110	150	145	145	130	125	120	115	110	110	110	120	120	125	115	110	110	105	105
	CNT	11	12	8	9	10	6	12	18	21	23	25	25	26	26	26	20	19	21	25	27	22	19	15	14
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

Apr. 1967 | foF2 | 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	C	C	C	C	C	C	C	C	C	C	116	124	121	115	110	112	107	104	102	090	084	085	079	078
2	080	079	075	069	067	067	077	101	103	113	120	128	116	108	106	100	099	098	103	090	080	075	073	072
3	078	079	069	060	062	063	086	095	098	112	121	116	118	120	105	107	103	100	100	091	079	070	070	069
4	068	066	064	060	056	062	086	095	101	109	118	117	120	119	116	109	103	109	108	096	081	077	073	071
5	065	065	065	063	053	061	079	103	114	119	I127C	122	120H	120	111	103	099	100	100	090	083	073	072	071
6	073	070	065	065	062	069	082	096	107	115H	129	125	116	116	110	107	104	105	101	091	080	077	076	075
7	070	068	069	067	066	073	092	106	116	123	129	121	120	112	110	107	103	101	097	086	081	079	073	071
8	067	065	064	062	060	068	089	098	108	114H	117	128	118	118H	118	111	103	105	110	101	080	074	076	076
9	076	075	073	071	062	066	090	094	100	110H	113	118	116	123	116	113	111	101	093	090	088	088	084	080
10	080	074	065	063	062	071	090	094	105	108	112	119	118H	112	113	109	102	107	105	094	088	078	075	075
11	070	068	069	066	067	073	088	100	105	111	105	103	112	114	117	108	104	097	094	090	086	082	077	074
12	071	072	073	069	066	073	089	103	111	111	103	108H	113	116	115	107	091	088	088	087	087	083	073	069
13	068	064	065	063	063	070	090	094	104	107	110	107	110	113	110	105	098	096	101	098	091	081	077	077
14	073	073	070	069	065	073	088	096	109	108	113	113	108	105	105	103	099	097	099	093	083	079	075	075
15	074	073	073	071	068	075	088H	090	096	098	110H	107H	107H	109	108	106	101	095	094	087	079	074	073	074
16	074	073	073	069	060	063	075	083	091	105H	109	111	115	115	110	102	098	096	097	098	085	079	076	076
17	073	077	074	066	062	069	076	083	098	093	096	103H	103	104	107H	105	093	088	087	085	083	083	080	080
18	079	076	074	069	069	077	091	096	108	111	114	110	104	108	115	113	103	096	095	094	091	087	080	078
19	076	075	077	073	065	064	068	068	075	083	089	096	U105C	097	094	088	088	083	077	082	083	080	080	075
20	073	069	070	066	066	071	083	096	108	108H	113	113	109	107	103	102	098	095	090	089	083	080	080	I075S
21	073	068	071	066	063	066	067	077H	086	091	094	098	103	109	105	101	095	098	100	094	I090C	085	080	076
22	074	071	070	065	063	058	062	061	066	075	078	088	089	088	093	094	095	094	088	088	089	084	075	075
23	068	064	064	063	065	065	066	070H	070	082	083	090	094	093	097	091	089	091	091	090	080	074	073	072
24	070	067	057	055	057	055	054	W	055	061	065	073	083	083	087	079	078	074	073	073	072	075	067	063
25	062	060F	063F	060F	055	056	053H	058	063	066	074	079	080H	085H	086	086	087	093	088	083	080	073	073	072
26	070	068	064	065	063	069	081	083	083	087	096	093	097	103	103	102	100	095	090	087	083	081	077	074
27	074	073	074	073	072	079	079	084	097	104	104	100	101	103	104	099	098	092	089	089	085	083	079	074
28	071	071	068	067	065	076	086	094	098	100	097	096	096	102	096	095	093	091	095	107	100	082	073	070
29	070	I068C	069	067	064	073	086	097	099	103	104	100	100	098	100	100	097	094	097	100	089	083	078	075
30	073	071	073	067	066	076	087	086	086	084	088	094	090H	093	093	088	091	085	089	092	084	082	075	069
31																								
Count	29	29	29	29	29	29	29	28	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	073	071	069	066	063	069	086	094	099	107	110	108	108	108	106	103	098	096	095	090	083	080	076	074
U.Q.	076	074	073	069	066	073	088	096	108	111	116	118	116	115	111	107	103	100	100	094	088	083	079	076
L.Q.	070	068	065	063	062	064	076	083	086	089	096	096	100	102	100	099	093	092	089	087	080	075	073	071
Q.R.	006	006	008	006	004	009	012	013	022	022	020	022	016	013	011	008	010	008	011	007	008	008	006	005

The Radio Research Laboratories, Japan

foF2

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

W 1

IONOSPHERIC DATA

Apr. 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						C	C	C	C	C		U550L	450		U500L									
2										430		L	L	L										
3											460	U480L	450	470										
4										470L	U500L				L									
5											I450C	500L		L	430L									
6											U500L	500		U500L										
7										L	L	500L	490	L										
8												L	U510L											
9											L	U480L	U500L	460	460									
10										U480L	L	490			L									
11										L	L	L	L											
12										L	500	U480L		L	L									
13									L	U490L	500L	470	U500L	LH										
14										L	L	450	470	500	500									
15										L				U530L	U510L									
16											500	500L	L	500L	490L									
17										U480L	U500L		L	U500L		L	L							
18										U500L	500	U500L	490	500L	L	L								
19								L	U500L	500	500	520	U520L	I480C	U470L	460L								
20								L			470	500H	L	510	I490A									
21										L	500L	500L		500L	480	L								
22							380	U450L	480	500	L	500		L										
23								440		500	480	I480A	L	U500L										
24						330	400L	440	460	520	520	530	520	520	500									
25								440	490	500H	510	LH			520L									
26									460	L	520L			500		L								
27									U500L	U500L	U510L	500H	U500L	L	L									
28									U480L	510	U500L	U540L		530	L	L	L							
29										510L	520L	U480L	500		U540L									
30							430	U440L	500	560	550	500H		500	530	490	U430L							
31																								
Count						1	3	5	8	15	20	22	12	16	13	2	1							
Median						330	400	440	480	500	500	500L	500	500	500L	480L	U430L							
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

Apr. 1967 | foE | 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					C	C	C	C	C	C	355	I370B	390	I370B	370	345	300	235	150	E				
2						125	230	280	310	345	360	I375B	I375B	370	350	330	300	235	S					
3						130	215	285	315	340	370	360	370	360	340	300	285	240	120					
4						130	225	280	305	330	I345A	370	360	365	335	310	285	210	140	E				
5						140	210	275	305	325	I340C	365	360	360	335	305	265	215	150	E				
6						125	215	270	300	325	325	325	335	350	340	315	280	230	140	E				
7						130	215	280	305	330	I355A	I365R	350	350	325	300	285	230	150	E				
8						150	220	270	310	330	345	350	355	365	I335A	310	290	230	A					
9					E	145	220	290	315	335	350	355	360	355	325	315	290	235	A	E				
10					A	130	210	290	315	340	360	360	360	350	335	315	290	235	S	E				
11					E	150	215	280	310	335	355	370	365	355	345	310	290	230	S	S				
12					E	150	220	290	315	325	350	350	335	350	325	305	280	230	165	E				
13					E	130	225	290H	310	325	335	330	350	355	340	310	285	235	170	E				
14					E	150	230	295	310	320	335	I350A	365	350	330	315	290	235	130	E				
15					E	E	235	290	305	340	350	335	380	345	335	310	285	235	170	E				
16					E	150	225	285	320	340	345	365	380	370	330	310	290	235	190	E				
17					E	130	215	280	315	335	345	365	I360A	350	330	310	290	240	185	E				
18					E	150	220	290	310	335	355	350	315	I350A	350	315	290	240	180	E				
19					E	140	240	295	305	335	355	355	U365C	340	345	325	300	240	170	E				
20					E	180	240	295	320	335	360	365	350	A	A	A	290	240	180	E				
21					E	180	I235C	295	325	335	355	355	I365A	I355A	335	I310A	290	I245A	A	A				
22					E	155	225	290	310	330	340	320	I330A	I340A	340	320	295	235	180	S				
23					E	200	250	295	310	330	350	325	I320A	I340A	345	315	A	A	A	S				
24				E	E	195	250	285	310	325	345	330	360	360	330	320	295	250	A	A				
25					E	180	250	300	315	335	340	360H	350	370	I345A	320	290	245	A	A				
26					E	190	255	300	315	335	340	340	A	A	A	A	A	A	A	A				
27					E	200	250	300	315	335	350	375	380	365	350	I330A	295	250	200	S				
28					E	170	250	300	325	350	360	370	365	350	340	330	305	255	185	S				
29					E	200H	265	300	330	340	385	390	380	350	330	320	300	265	195	A				
30					E	140	255	300	320	345	360	365	335	350	350	330	300	270	180	E				
31																								
Count				1	21	29	29	29	29	29	30	30	29	28	28	28	28	28	20	17				
Median				E	E	150	225	290	310	335	350	360	360	350	340	315	290	235	170	E				
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

W3

IONOSPHERIC DATA

Apr. 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	C	C	C	C	C	C	C	C	C	C	G	E043B	G	E040B	G	G	G	G	G	E	E	E	E	E
2	E	E	018	015	E	G	G	G	G	G	032G	E041B	E041B	G	G	G	G	G	E017S	E014S	E	J023	J023	E016S
3	021	015	E	E	E	G	G	032	G	039	G	G	G	G	G	025G	G	G	020	E013S	J025	020	J021	E016S
4	E	J021	E	E	E	G	G	034	G	G	042	G	G	G	G	033	023G	016G	G	E	E	E	E	E
5	E	E	E	E	E	G	G	G	G	G	C	G	G	G	G	G	G	G	G	E	E	E	E	E
6	E	014	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E
7	013	013	014	013	013	G	G	G	G	G	037	G	G	G	G	G	G	G	G	E	E	E	E	E
8	E	E	E	E	E	G	026	G	G	039	G	040	G	G	040	G	G	018G	021	E015S	E	E015S	E014S	E
9	E012S	E	E	E	E	G	G	G	G	G	040	G	G	G	040	G	G	G	020	E	E	E016S	E	E
10	E	E	018	E	015	G	027	G	G	G	G	G	G	G	G	025G	G	G	E019S	E	E	E	E014S	E
11	E016S	E	E	E	E	G	026	G	038	G	G	G	G	G	G	G	G	015G	E018S	E011S	E	E	E	E
12	E015S	E	E	013	E	G	G	G	G	G	G	G	G	G	028G	025G	G	G	G	E	E	E	E	E
13	E	E	E	E	E	G	G	G	G	036	G	038	G	G	G	G	G	G	G	015	015	E	E015S	E
14	E	E	E	E	E	G	G	G	G	G	G	038	G	G	G	G	G	G	020	E	E	E	E015S	E
15	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E
16	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	012	E	E	E	E012S
17	E012S	E	E	015	014	G	028	032	G	G	G	G	042M	G	G	G	G	G	G	E	E	E	E	E011S
18	E	E	E	E	E	G	G	G	G	G	041	040	039	037	031G	G	031	G	G	021	J026	018	E	E012S
19	E	E	E	E	E	G	G	G	G	G	041	040	G	D036C	G	030G	G	G	023	020	020	E	E016S	E
20	E012S	E	E	E	E	G	G	G	G	040	040	040	039	045M	113	040	G	G	014G	023	J021	018	E015S	E015S
21	E014S	J021	015	E	E	G	E037C	033	036	050	040	G	J051	037	030G	J035	025G	J032	021	019	C	022	E	E
22	E	E	E	E	E	G	G	G	G	039	038	038	J045	041M	031G	G	G	G	G	E012S	E012S	E015S	E	E012S
23	E015S	E	E	013	018	018G	020G	034	042	047	042	055	040	042	G	G	J035	032	020	020	E012S	E015S	E012S	E012S
24	E015S	E	E	E	E	G	032	032	037	041	G	G	031G	034G	030G	G	G	022G	J024	J030	J021	J018	E016S	E015S
25	E011S	J044	019	013	E	021	G	033	035	037	G	G	G	030G	J038	028G	025G	025	026	021	017	016	E012S	E013S
26	E015S	E	E	E	E	023	016G	G	G	G	G	G	039	040	039	J038	J041	J030	J022	J026	J023	E015S	E015S	E017S
27	E015S	E	E	E	E	G	G	G	G	G	G	G	G	G	G	034	G	G	015G	E014S	E015S	E	E	E017S
28	E015S	E	E	E	E	023	030	G	G	G	G	G	G	038	G	G	G	030	024	018	E012S	E	E	E
29	E013S	C	E	E	E	G	030	035	038	040	G	G	G	G	G	G	039	032	027	043	033	023	E015S	E012S
30	E016S	E	013	018	E	021	J053	033	040	040	040	G	G	G	G	037	033	033	032	J030	013	015	E	E
31																								
Count	29	28	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	29	30	30	30
Median	E012	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	018	014	E	E	E	E
U.Q.	E015	E	E	E	E	G	026	032	G	039	040	038	039	037	G	G	G	G	021	020	018	016	E015	E012
L.Q.	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E
Q.R.																								

foEs

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

IONOSPHERIC DATA

Apr. 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	C	C	C	C	C	C	C	C	C	C		B		B										
2			E	E							031G	B	B						S	S		020	020	S
3	E	E						G		G						025G			G	S	025	018	019	S
4		014						G			037					028	023G	015G						
5											C													
6		E																						
7	E	E	E	E	E						036													
8							G			G		G			034			016G	018	S		S	S	
9	S										G				G				017			S		
10			E		E		G									025G			S				S	
11	S						G		G									015G	S	S				
12	S			E											028G	025G								
13										G		G								014	014		S	
14												036							G				S	
15																								
16																				E				S
17	S			E	E		G	G					037											S
18											G	G	G	036	030G		027			G	020	016		S
19											G	G		E036C		029G			G	019	017		S	
20	S									G	G	G	G	036	091	033			014G	016	018	014	S	S
21	S	017	E				C	G	G	048	G		048	036	030G	033	022G	027	020	015	C	S		
22										G	G	G	042	036	031G					S	S	S		S
23	S			E	E	015G	020G	G	041	G	G	053	037	036			030	026	020	018	S	S	S	S
24	S						G	G	G	G			031G	033G	030G			018G	020	020	018	E016S	S	S
25	S	E	E	E		G		G	G	G				030G	035	027G	023G	023	023	016	016	016	S	S
26	S					014	015G						038	037	035	033	036	029	021	020	017	S	S	S
27	S															034			015G	S	S			S
28	S					G	G							G				G	G	G	S			
29	S	C					G	G	G	G							G	G	G	040	030	020	S	S
30	S		E	017		G	022	G	G	G	G					G	G	G	G	030	E	015		
31																								
Count																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

W 5

IONOSPHERIC DATA

Apr. 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	C	C	C	C	C	C	C	C	C	C	024	043	030	040	025	023	017	E	E	E	E	E	E	E
2	E	E	E	E	E	E	012	012	018	018	020	041	041	020	021	018	012	011	E017S	E014S	E	E	E015S	E016S
3	E012S	E	E	E	E	E	012	011	020	020	018	021	027	020	021	012	011	012	E	E013S	E	E	E	E016S
4	E	E	E	E	E	E	012	011	017	017	017	018	017	017	020	017	015	011	E	E	E	E	E	E
5	E	E	E	E	E	E	012	012	012	017	C	018	022	020	018	017	013	011	011	E	E	E	E	E
6	E	E	E	E	E	E	017	011	012	017	023	017	018	018	017	012	011	011	E	E	E	E	E	E
7	E	E	E	E	E	E	011	012	017	012	019	020	018	021	017	018	017	E	E	E	E	E	E	E
8	E	E	E	E	E	E	011	011	012	012	017	020	020	017	018	013	012	E	E	E015S	E	E015S	E014S	E
9	E012S	E	E	E	E	E	011	011	011	012	018	020	022	020	020	017	016	E	E	E	E	E016S	E	E
10	E	E	E017S	E	E	E	012	011	016	017	020	017	020	020	017	013	017	011	E019S	E	E	E	E014S	E
11	E016S	E	E	E	E	E	E	011	018	018	020	018	023	020	018	017	012	011	E018S	E011S	E	E	E	E
12	E015S	E	E	E	E	E	012	018	017	017	020	027	018	018	020	018	012	012	E	E	E	E	E	E
13	E	E	E	E	E	E	E	011	011	017	020	023	018	020	017	012	011	E	E	E	E	E	E015S	E
14	E	E	E	E	E	E	011	011	011	017	013	018	018	017	017	013	011	E	E	E	E	E	E015S	E
15	E	E	E	E	E	E	E	011	013	018	018	018	018	020	018	012	011	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	012	018	018	020	020	018	018	017	012	E	011	E	E	E	E	E012S
17	E012S	E	E	E	E	E	E	011	015	017	017	019	020	017	016	013	011	E	E	E	E	E	E	E011S
18	E	E	E	E	E	E	011	011	011	016	019	018	017	018	018	017	012	E	E	E	E	E	E	E012S
19	E	E	E	E	E	E	011	012	012	018	017	018	018	017	017	012	016	E	E	E	E	E	E016S	E
20	E012S	E	E	E	E	E	011	E	017	017	016	020	018	020	018	020	011	011	E	E	E	E	E015S	E015S
21	E014S	E	E	E	E	E	E037C	011	012	012	018	018	017	017	013	017	012	E	E	E	C	E012S	E	E
22	E	E	E	E	E	E	E	013	012	016	017	017	017	018	017	012	011	012	012	E012S	E012S	E015S	E	E012S
23	E015S	E	E	E	E	E	E	011	012	017	019	018	018	017	018	017	013	012	E	E012S	E012S	E015S	E012S	E012S
24	E015S	E	E	E	E	E013S	017	012	017	018	018	020	018	018	017	017	011	E	E	E	E	E016S	E016S	E015S
25	E011S	E	E	E	E	011	011	013	017	020	020	020	021	019	018	016	011	E	E	E	E	E	E012S	E013S
26	E015S	E	E	E	E	E	E	E	017	017	017	020	020	018	017	015	012	E	E	E	E	E015S	E015S	E017S
27	E015S	E	E	E	E	012	015	018	017	017	018	019	018	020	019	017	017	E	E	E014S	E015S	E	E	E017S
28	E015S	E	E	E	E	012	012	011	017	018	018	017	017	011	017	E	E	E	E	E013S	E012S	E	E	E
29	E013S	C	E	E	E	E	E	011	012	016	020	019	018	019	017	012	011	011	012	E	E	E	E015S	E012S
30	E016S	E	E	E	E	E	E	E	012	017	017	018	018	018	020	017	012	011	E015S	E	E	E	E	E
31																								
Count	29	28	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	29	30	30	30
Median	E011S	E	E	E	E	E	011	011	013	017	018	019	018	018	018	017	012	E	E	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

W6

IONOSPHERIC DATA

Apr. 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	C	C	C	C	C	C	C	C	C	C	290	285	275	280	285	290	290	290	305	285	270	270	255	255
2	265	265	285	260	270	285	290	305	270	290	285	290	290	295	290	290	295	290	300	290	290	255	250	245
3	260	295	285	265	265	260	300	315	315	295	300	290	290	290	290	300	300	305	300	305	300	265	270	270
4	270	280	285	290	270	285	330	325	305	305	295	290	285	285	290	295	280	290	305	305	285	275	260	260
5	245	255	270	270	270	280	300	295	310	295	I295C	295	290H	290	295	295	295	300	300	300	290	265	260	260
6	275	275	270	270	275	270	300	300	305	295H	295	295	295	290	290	290	295	300	305	300	290	265	275	270
7	260	255	260	260	275	265	315	300	295	295	300	290	290	295	290	300	295	300	310	290	285	290	280	280
8	275	275	265	275	275	280	310	310	305	305H	295	300	290	290H	290	295	290	295	310	315	290	270	265	275
9	275	280	280	295	285	290	310	310	305	300H	300	295	290	295	295	290	295	300	290	290	280	280	285	275
10	300	295	280	275	275	280	320	320	305	300	295	305	295H	290	290	295	295	300	305	300	295	280	270	275
11	260	260	265	265	270	280	305	310	310	315	310	295	295	290	270	295	300	310	300	300	290	295	275	275
12	260	270	285	280	275	275	305	305	305	310	300	285H	285	285	295	310	310	295	295	285	285	300	290	270
13	270	275	270	275	275	290	315	300	315	320	310	300	290	290	290	295	295	300	300	305	295	290	275	275
14	275	270	275	285	275	295	310	315	310	295	300	300	295	290	290	305	295	300	305	305	290	290	280	265
15	270	265	275	280	275	295	295H	310	320	305	305H	290H	290H	295	300	290	305	305	305	300	290	275	265	270
16	270	270	295	315	285	295	325	295	320	295H	295	295	285	285	290	285	285	290	300	305	305	280	270	265
17	250	275	280	290	265	270	295	305	310	310	290	295H	295	295	290H	305	320	295	300	290	275	275	270	275
18	280	275	285	275	270	285	295	300	300	295	300	300	280	285	285	285	295	285	305	290	285	290	275	265
19	260	250	260	280	260	275	280	300	300	290	295	295	U295C	290	300	300	295	310	285	280	270	265	265	265
20	260	265	265	280	280	300	315	315	300	295H	295	U290C	300	300	295	295	290	305	300	290	285	270	275	I270S
21	265	270	275	270	270	290	300	300H	305	315	310	295	295	295	295	305	295	300	300	285	I275C	280	280	270
22	270	265	270	275	270	270	295	295	305	295	295	300	300	295	290	290	295	300	295	285	280	285	265	270
23	275	275	275	285	275	320	290	285H	285	305	300	300	310	290	310	305	305	305	305	305	280	260	260	255
24	265	270	245	255	245	250	280	W	260	275	275	270	285	285	295	300	305	305	290	275	265	275	260	265
25	275	250F	270F	275F	275	310	300H	295	275	290	285	290	285H	285H	290	295	290	305	305	300	280	265	250	260
26	270	270	280	285	285	315	325	320	305	295	290	290	280	280	290	290	300	300	300	295	280	285	280	270
27	260	265	265	275	270	315	295	300	300	305	300	285	280	280	290	290	295	300	295	290	290	290	280	275
28	270	270	265	275	270	295	300	300	305	305	295	285	280	295	285	295	290	290	295	295	310	290	265	265
29	260	I270C	280	285	290	315	305	305	290	295	300	280	280	280	280	285	290	285	290	300	290	275	265	255
30	260	260	275	265	260	270	285	300	325	285	285	295	280H	280	290	290	300	300	295	285	300	285	280	260
31																								
Count	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	270	270	275	275	275	285	300	300	305	295	295	295	290	290	290	295	295	300	300	295	290	280	270	270
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

W 7

19

IONOSPHERIC DATA

Apr. 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						C	C	C	C	C		U365L	405		U360L									
2										420		L	L	L										
3											395	U395L	400	390										
4										390L	U380L				L									
5											I400C	385L		L	395L									
6											U380L	385		U385L										
7										L	L	385L	390	L										
8												L	U390L											
9											L	U395L	U395L	400	395									
10										U395L	L	400			L									
11										L	L	L	L											
12										L	395	U395L		L	L									
13									L	U390L	380L	405	U400L	LH										
14										L	L	400	405	380	385									
15										L				U365L	U370L									
16											370	380L	L	380L	370L									
17										U375L	U380L		L	U380L		L	L							
18										U380L	380	U380L	390	360L	L	L								
19								L	U360L	360	365	345	U365L	I380C	U385L	370L								
20								L			400	380H	L	365	I370A									
21										L	380I	380L		380L	375	L								
22							340	U340L	340	365	L	380		L										
23								365		370	385	I380A	L	U380L										
24						290	325L	345	350	330	345	360	350	340	360									
25								350	350	365H	375	LH			355L									
26									390	L	370L			375		L								
27									U380L	U365L	U375L	380H	U385L	L	L									
28									U385L	380	U380L	U360L		340	L	L	L							
29										375L	385L	U395L	380		U350L									
30							360	U375L	360	345	345	360H		380	350	365	U370L							
31																								
Count						1	3	5	8	15	20	22	12	16	13	2	1							
Median						290	340	350	360	375	380	380L	390	380	370L	370L	U370L							
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

IONOSPHERIC DATA

Apr. 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						C	C	C	C	C		290	265		270L									
2										245		275	275	280										
3											270	260	265	275										
4										260	270				280									
5											I265C	255		285	260									
6											275	265		275										
7										260	265	260	270	265										
8												280	260											
9											265	260	275	280	265									
10										250	265L	280			290									
11										260	270	270	295											
12										260	260	260H		280	275									
13									260	260	275	260	275	275										
14										265	275	275	275	270	280									
15										270				290	295									
16											275	285	300L	290	270									
17										260	275		285	295		260	255							
18										270	270	280L	270	290	305	275								
19								290	310	310	295	305	310	290C	280	280								
20								280			250H	280	290	295	I280A									
21										270	275	275		295	275	270								
22							320	345	320	305	L	300		275										
23								320		290	275	285	295	U280L										
24						300	305	W	470	420	395	390	350	335	300									
25								345	375	365	360	345L			320									
26									260	U275L	290			310		295								
27									285	275	290	275	280	310	300									
28									270	275	285	315		310	U290L	305	U280L							
29										275	285	U270L	290		320									
30							315	270	280	325	335	305		300	320	285	275							
31																								
Count						1	3	7	9	22	25	26	18	23	19	7	3							
Median						300	315	320	285	270	275	280	280	290	280	280	275							
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

W9

IONOSPHERIC DATA

Apr. 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	C	C	C	C	C	C	C	C	C	C	230	245	225	240	230	250H	260	250	245	240	270	290	275	290
2	300	275	250	250	250	260	240	250	240	225	235	220	215	250	235	245	260	260	245	245	245	290	320	325
3	300	255	240	260	290	290	245	240	240H	240	225	225	220	225	240	240	250	250	245	240	245	250	280	285
4	285	280	260	245	260	290	240	230	235	225	215	225	225	225	235	240	240	260	240	225	240	250	275	300
5	320	310	275	240	180H	275	240	240	240	235	I225C	230	210H	210H	230	220	235	250	240	240	250	250	275	300
6	285	275	295	260	260	270	235	225	220	225	225	220	220	220	235	225	240	250	250	235	240	270	270	275
7	300	300	300	275	260	270	245	240	225	225	225	210	210	215	220	235	235	250	240	230	250	250	260	270
8	260	270	275	260	275	260	240	240	225	220H	220H	225	230	225H	225H	230	245	250	250	225	225	260	290	280
9	275	270	265	250	225	250	235	225	230	210H	250	225	225	220	225	225	220	240	240	250	260	275	260	275
10	255	225	250	260	280	265	230	240	235	225	215	205	210H	220H	235	240	245	250	250	235	240	230	270	290
11	300	300	290	265	290	245	235	240	245	230	230	215	210	210H	240	225H	250	240	245	245	250	250	250	265
12	300	290	265	260	250	270	240	240	235	225	225	215	230H	215	230	235H	240	240	250	250	260	245	235	270
13	275	280	275	250	260	260	240	230	230	220	220	210	210	200H	210H	240	240	250	260	240	250	240	250	270
14	270	275	260	250	240	250	240	240	225H	220	210	200	210	220	225	225H	245	245	250	240	245	250	270	290
15	300	280	275	260	260	240	215	230	235H	210	220H	235H	225H	230	225	225H	230	245	240	240	240	250	270	290
16	290	290	250	225	230	235	240	235	235	225H	240	225	225	220	220	225	240	260	255	240	235	260	260	300
17	320	280	265	240	250	250	225	245	240H	230	220	225H	210	220	235H	230	240	245	245	250	260	260	265	280
18	270	260	260	240	270	250	235	240	240	230	235	225	215	205	230	240	240	245	250	250	270	250	260	300
19	310	315	290	255	295	265	250	245	235	225	230	235	230	I210C	225	225	245	250	260	275	285	285	290	260
20	285	290	280	245	270	240	235	230	240	235H	215	210H	220	210	I215A	230H	225	250	245	245	250	260	270	275
21	295	300	270	260	285	265	E260C	245H	235H	I225A	220	210	I230A	215	230	225	225	260	260	260	I260C	260	260	260
22	270	280	270	260	295	275	240	235	220	230	220	210	250H	230	225H	225H	235	250	260	260	270	260	260	275
23	260	285	300	265	275	245	245	240	260	250	225	I225A	220	230	235H	230H	240	250	250	250	250	260	290	305
24	300	280	300	305	330	285	270	250	230	250	220	210	200	240	235	235H	240	250	260	265	285	280	300	290
25	275	350	285	260	275	275	250H	240	220	210	200	205H	220H	225H	225	230H	240H	250H	250	240	255	250	280	300
26	285	290	270	265	255	240	245	230	220	220	210	200H	200H	215	225H	225	250H	250	250	250	260	260	265	285
27	305	290	290	260	285	235	225	240	235	220	220	210H	210	220	220	215H	235	250	250	250	255	260	250	265
28	280	275	285	270	295	255	240	235	220	210	220	210	215H	200	240	225	240	250	270	260	240	225	225	280
29	300	I285C	275	250	260	245	240	240	240	240	225	210	220	210H	210	245H	260	250	260	260A	250A	260	255	295
30	305	300	275	285	300	250	240	240	235	220	205	210H	225H	205	220	250	240	250	265	270	245	250	250	260
31																								
Count	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	290	280	275	260	270	260	240	240	235	225	220	215	220	220	230	230	240	250	250	245	250	260	270	280
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

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

W11

IONOSPHERIC DATA

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

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Apr. 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	080	077	075	070	061	061	083	091	104	118	123	124	122	118	116	114	114	109	I107R	094	086	087	086	086
2	081	083	082	069	067	067	077	099	112	122	126	131	126	124	116	106	103	106R	108R	095	080	077	077	076
3	079	085	073	059	059	059	081	104	106	112	125	126	120	124	119	112	108	104	108	096	071	071	073	074
4	074	072	072	061	056	060	088	094	098	105	117	121	124	125	122	116	111	I112R	116	096	077	078	076	075
5	072	069	071	061H	060	060	079	104	119	123	126	131	123	122	117	108	104	103	I101RS	096	076	071	072	073
6	076	076	068	066	065	069	086	099	I107R	112	123	126	119	120	116	114	110	I111R	I107R	098	075	074	076	074
7	071	069	068	066	068	069	091	103R	116	121	125	122	118	117R	111R	112	111	106	102	095	086	081	076	073
8	072	068	068	065	061	067	088	105	113	114	121	126	132	126	121	120	116S	120	119	I100R	071	072	075	078
9	079	077	074	070	060	062	081	096	I101R	101	113	124	126	123	122	121	111	104	102	096	089	087	086	084
10	086	076	067	066	062	066	096	099	104	116	111	114	121	122	116	114	114	114	I105R	096	079	077	079	079
11	076	071	072	068	066	073	088	106	111	109	106	108	110	118	121	113R	109	102	102	100	086	081	079	078
12	074	074	075	071	063	069	089	I102R	108	112	109C	103	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	116	112	114	111	110	106	106	106	104	085	074	073	076
14	077	072	071	068	064	069	088	102	107	113	116	116	118	118	J114R	112	107	103	104	092	080	076	076	076
15	076	076	075	069	066	075	089	090	091	103	100	109	117	122	118	117	113	101	101R	084	077	074	074	074
16	074	073	077	071	051	054	072	086	091	104	116	118R	119	121R	119	118	109	100	103	104	091	072	076	075
17	071	072	076	061	057	061	084	086	104	098	102	112	113	114	115	107	096	093	093	089	081	078	080	081
18	080	078	071	066	064	072	088	098	104	J111R	116	110	106	110	116	116	106	103	096	094	090	088	076	076
19	076	072	074	065	058	062	074	081	085	095	100	103	111	109	105	097	I096C	096	088	082	082	081	078	I080C
20	076	073	071	070	061	I070C	I082C	I085C	I098C	104	116	111	117	119	112	105	104	102	099	086	081	081	081	078
21	074	073	072	069	066	072	079	096	103	096	096	104	110	113R	116	114	102	098	100	098	091	085	083	078
22	078	077	074	071	066	069	077	074	C	C	C	C	C	101	102	104	101	099	092	089	086	081	076	076
23	074	068	066	066	063	076	078	084	094	097	I098R	102	108	108	106	I106R	104	I102R	099	091	076	073	075	073
24	072	068	059	056	059	057	057H	056H	059	071	082	086	091	101	102	092	087	084	082	082	078	076	069	072
25	071	069	068	064	059	064	066H	061	069	072	082	102	109	109	101	108	105	103	102	089	074	074	074	074
26	075	072	071	066	061	067	082	083	087	096	098	102	106	113	116	114	112	102	096	094	081	077	076	076
27	077	078	074	071	069	076	084	092	098	102	105	108	108	118	121	117	111	104	099	I092C	086	081	I076C	073
28	073	072	069	067	064	074	091	I098C	103	096	092	097	102	104	107	103	099	097	I106R	114	091	078	083	079
29	077	076	076	073	065	074	086	101	101	102	109	104	106	J107R	108	109	107	105R	108	106	084	077	081	077
30	078	076	077	072	069	079	087	099	096	093	093	100	103	I105C	106	103	100	I099C	094	092	088	078	I074C	072
31																								
Count	29	29	29	29	29	29	29	29	28	28	28	29	28	29	29	29	29	29	29	29	29	29	29	29
Median	076	073	072	067	063	069	084	096	103	104	110	111	115	118	116	112	107	103	102	095	081	077	076	076
U.Q.	078	076	075	070	066	072	088	102	107	112	119	123	120	122	118	115	111	106	106	098	086	081	080	078
L.Q.	074	072	068	065	060	062	078	086	095	096	099	103	108	109	108	106	102	100	098	090	077	074	074	074
Q.R.	004	004	007	005	006	010	010	016	012	016	020	020	012	013	010	009	009	006	008	008	009	007	006	004

foF2

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

The Radio Research Laboratories, Japan

A 1

IONOSPHERIC DATA

Apr. 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	LH	500L	500	480L	470	L								
2									L	L	L	500	490	470L	L	L	L							
3									L	L	500L	480L	470	500	420L	L								
4									L	L	470	490	L	500	L	L	L							
5									L	L	500	470L	500	500	450	410	L							
6									L	L	480H	470L	510L	480	460L	L	410L							
7									440L	490	500	L	500	480L	480L	L	L							
8									L	480L	520L	480	510L	490L	460L	L	450L							
9									L	L	500	480L	L	470	470	430L	L							
10									L	460L	460L	500	500	510	450	L	L							
11									L	L	L	500	500L	470	450L	L	L							
12								L	L	480	500	E700C	C	C	C	C	C							
13								C	C	C	C	500	510	560	460	L	L							
14								L	L	500	520	500	500	500H	L	460	L							
15									420L	L	500L	520L	550	520L	LH	L	L							
16									L	500L	510L	500	500	510L	530L	L	L							
17									L	L	510L	510	540	520	500	L	L							
18									L	500	500H	500	500	550	500	500	L							
19								400	L	500	500	540	510H	510L	510	450L	C							
20								C	C	L	L	L	520	530	490	470L	400							
21								L	L	L	500L	540	500	490	L	L	400							
22								L	C	C	C	C	C	L	510L	L	I							
23								L	480L	470	I490A	500L	520	550L	L	470	L							
24							L		510L	520	510	520	570	550H	510	500	L							
25							L	460L	500	520L	540H	590	550	530L	510	510	L	L						
26									L	510L	550	520	550	520H	550L	480	L							
27								L	L	500	500	530L	550	550	530	520L	L	L						
28								C	L	500	600L	550	560	560	550	510	L	L						
29								L	L	L	560	550L	630H	580	600	530	L							
30								460L	480	500	L	560	600	I580C	520	510L	L							
31																								
Count								3	6	15	23	27	26	28	23	14	4							
Median								460L	480L	500	500	500	510	510	500	490	400L							
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

A 2

IONOSPHERIC DATA

Apr. 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							195	265	315	350	365	370	I375A	385	375R	365	I325A	260	190R					
2						B	I215B	285	325	350	355	I365A	I380R	380	360	350	315	265	I175B					
3						B	190	280	320	350	365	I370A	380	380	370	I340A	305	255	A					
4							225	285R	325	350	A	A	A	A	A	335	305	250	B					
5					E	S	205	270	315	I345A	I350A	I360A	365	I370A	375	340	290	245	180					
6							220	280	325	345	350	I360A	I360A	360	350	335	305	250	B					
7						E	205	285	325	345	R	A	R	375	355	335	300	I250A	R					
8						140	235	290	325	340	355	I360A	I365A	370	345	320	300	250	B					
9						S	205	270	310	345	355	375	385	380	365	345	320	270	B					
10						E	220	290	320	345	365	I370A	I370A	380	365	340	300	255A	A					
11						B	220	280	315	345	I355A	370	I380A	380R	A	A	A	245	A					
12						E	215	275	320	345	C	C	C	C	C	C	C	C	C					
13						C	C	C	C	C	C	A	A	380	365	345	315	255	A					
14						E	210	280	335	A	A	I380A	385	380	370	345	305	265	A					
15						B	A	290	315	345	355	365	370	385	370	350	310	260	B					
16						160	255	305	325	350	355	I360A	380	380R	370	350	305	260	B					
17						B	230	290	325	345	355	365	I370A	I370A	360	335	290	255	190R					
18						E	230	290	320	345	355	365	I375A	380	A	A	295	255	A					
19						S	235	295	325	345	355	365	I370A	375	I355A	330	I290C	250	A					
20						C	C	I280C	I320C	345	360	I370A	A	A	A	330	290	250	B					
21						S	240	290	320	345	360	370	A	A	A	A	290	235R	A					
22						S	230	270	C	C	C	C	C	380R	365	A	A	250	B					
23						S	A	290	320	345	360	A	A	A	A	A	A	240	B					
24						170	240	285	325	345	I355R	I360A	370	375	I350A	I330A	300	A	A					
25						A	225	280	325	345	355	I370A	375	380	I370A	340	305	265	B					
26						B	I230B	295	325	345	360	370	375	I380R	375	355	315	270	A					
27						B	250	295	325	345	355R	I360A	375	380	365	345	315	265	205					
28						175	250	I295C	330	355	365	I375A	390	395	365	335	310	265	B					
29						180	240	285	330	350	365	380	I390A	395	375	345	305	265	A					
30						S	245	300	330A	350	I360A	380	I390A	I385C	370	335	305	260	155					
31																								
Count					1	10	26	29	28	27	24	24	22	25	23	24	26	28	6					
Median					E	E	230	285	325	345	355	I370A	I375	380	365	340	305	255	185					
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

A 3

IONOSPHERIC DATA

Apr. 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	E	E012S	E012S	E012S	E	E013S	G	G	G	G	038	040	043	G	G	G	034	G	G	E018B	E018B	023M	J021	E019B
2	E019B	E	E012S	E	E	E014B	E021B	G	038	040	040	J053	G	G	038	G	G	G	E018B	E017B	J019	022M	J022	J031
3	J049	J026	J022	J020	E	E012B	G	031	037	039	040	041	G	G	G	J041	G	026	022	024M	J032	J019	022M	E018B
4	022M	E013S	J018	J014	J014	E014S	G	G	G	040	042	044	J041	J040	040	G	G	G	E018B	J023	E019B	E019B	E019B	E019B
5	E019B	E	E	E	E	E014S	G	G	G	036	J041	037	G	039	G	G	G	G	G	J016	E018B	E019B	E012S	E019B
6	E015S	E	E012S	E	E	E014S	G	G	G	037	037	037	039	039	G	G	G	G	E019B	E019B	E018B	E019B	E018B	E019B
7	E013S	E013S	J016	J020	E012B	E	G	030	G	G	025G	038	J034G	J034G	G	G	G	026	G	E018B	E018B	E019B	E012S	E019B
8	E019B	J017	E	E	E	E	G	G	G	042	041	039	038	G	037	G	G	G	E019B	E017B	E018B	E017B	E017B	E018B
9	E018B	E015S	E	E	E	E014S	G	G	G	038	039	040	G	G	G	G	G	G	E018B	E015S	J015	J044	J024	E013S
10	E018B	E012S	E	E	E	E	029	032	038	038	039	041	039	G	G	G	G	031	021	J025	021M	J020	E018B	E011S
11	E019B	E	E	E	E	E011B	028	031	036	039	037	G	041	G	039	J037	J033	G	016	E019B	J025	E018B	E012S	E019B
12	E018B	E	E	J029	E	E	G	031	G	036	E037C	E070C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	037	039	037	G	035	G	027	023	J022	E018B	E018B	E016S	E019B
14	E019B	E012S	E	E	E	018	027	032	036	J042	038	040	G	G	G	G	G	G	J034	J021	J016	E018B	E019B	E020B
15	E020B	E013S	E	E012S	E	E012B	027	032	G	039	G	G	041	G	039	G	G	G	023	E013S	E019B	E020B	E018B	E019B
16	E020B	E	E	E	E	G	G	G	G	G	039	038	037G	036G	G	G	G	G	E019B	E018B	J015	E019B	E018B	E019B
17	E018B	E013S	E	E	E	E012B	028	032	035	037	040	G	038	J044	J035G	J030G	034	G	G	E013S	E015S	E014S	E019B	E018B
18	E014S	E013S	E	E	E	E	027	031	036	037	039	040	038	G	J049	J038	J031	G	021	022M	J019	021M	E018B	E014S
19	E019B	E011S	E	E	E	E013S	025	031	034	039	038	038	039	040	039	G	C	G	024	J021	J020	J018	J021	C
20	E018B	E013S	E	J016	J019	C	C	C	C	J046	J071	J059	J044	040	038	G	G	G	E019B	J035	J030	J020	E015S	E018B
21	E019B	E012S	E	E	E	E014S	G	035	042	041	G	G	J045	039	J051	J035	G	022G	J034	J028	J024	022M	E017B	E018B
22	E018B	E	E	E	E	E014S	G	040	C	C	C	C	C	G	G	J038	034	G	E020B	E019B	J026	E018B	E017B	E019B
23	E019B	E013S	E012S	E012S	E014S	E012S	026	034	038	J045	J056	041	J044	J047	J044	J039	J033	038	023	J026	J020	E019B	E019B	E019B
24	E018B	E012S	E	E012S	E	G	G	034	037	039	041	040	G	G	J037	J039	031	J030	J037	023M	E019B	E019B	E018B	E020B
25	E018B	E013S	E	E013S	E013S	018	027	031	038	039	040	038	G	G	038	030G	G	030	027	J029	J025	E019B	E018B	E018B
26	E020B	E	E	E	E014S	E014B	E024B	032	038	039	039	042	041	G	043	046	J060	J052	J035	J035	J022	E018B	E018B	E018B
27	E018B	E013S	E012S	E	E	E015B	G	G	035	037	038	038	G	G	G	G	J030G	G	G	C	J019	023M	C	E018B
28	E018B	E	E	E	E	G	029	C	036	037	G	043	G	G	043	049	036	041	028	J038	J033	J016	E019B	E019B
29	E018B	E013S	E012S	E012S	E	G	029	037	043	046	049	042	047	041	G	037	037	J042	J050	J029	J022	J019	J017	E018B
30	E018B	E014S	E	E	E	E013S	030	J043	J047	J050	J065	G	040	C	G	037	041	J040	J084	J031	J044	J025	C	E017B
31																								
Count	29	29	29	29	29	28	28	27	27	28	28	29	28	28	29	29	28	29	29	28	29	29	27	28
Median	E018B	E012S	E	E	E	E012	G	031	036	039	039	040	038	G	G	G	G	G	021	J022	J019	E019B	E018B	E019B
U.Q.	E019	E013	E012	E012	E	E014	027	032	038	040	041	041	041	039	039	038	034	030	028	027	024	020	E019	E019
L.Q.	E018	E	E	E	E	G	G	G	G	037	038	037	G	G	G	G	G	G	E018	E018	E018	E018	E017	E018
Q.R.										003	003	004							D010	D009	D006	D002		

foEs

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

The Radio Research Laboratories, Japan

A 4

IONOSPHERIC DATA

Apr. 1967 | f_bE_s | 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		S	S	S		S					038	040	042				033			B	B	E	018	B
2	B		S			B	B		035	039	039	041			G				B	B	E	E	018	018
3	021	014	020	018		B		031	034	038	040	040				040		026	021	E	028	019	018	B
4	E	S	014	013	013	S				037	039	041	038	039	037				B	018	B	B	B	B
5	B					S				036	037	037		038						016	B	B	S	B
6	S		S			S				036	037	037	039	038					B	B	B	B	B	B
7	S	S	E	014	B			029			028G	038	024G	029G				026		B		B	S	B
8	B	E								036	040	039	038		G				B	B	B	B	B	B
9	B	S				S				037	038	040							B	S	013	035	E	S
10	B	S					028	032	034	037	038	040	039					028	019	018	E	018	B	S
11	B					B	026	031	035	037	037		039		038	035	030		U016R	B	021	B	S	B
12	B			012				031		036	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	037	039	029G		G		027	022	019	B	B	S	B
14	B	S				017	027	031	G	038	038	G							031	021	016	B	B	B
15	B	S		S		B	027	032		039			039		G				023	S	B	B	B	B
16	B										G	038	036G	029G					B	B	E	B	B	B
17	B					B	028	032	035	037	039		038	039	026G	027G	032			S	S	S	B	B
18	S	S					027	031	035	037	039	039	038		042	035	025		020	E	017	E	B	S
19	B	S				S	025	G	035	038	038	038	039	040	036		C		023	018	018	E	019	C
20	B	S		014	014	C	C	C	C	038	048	040	041	039	038				B	023	024	020	S	B
21	B	S				S		034	039	041			043	039	047	035		020G	026	025	022	E	B	B
22	B					S		040	C	C	C	C	C			037	034		B	B	024	B	B	B
23	B	S	S	S	S	S	026	033	037	038	051	040	042	044	043	038	033	038	022	024	020	B	B	B
24	B	S		S				033	037	038	039	039			037	036	027	027	033	E	B	B	B	B
25	B	S		S	S	018	027	031	038	039	039	038			038	030G		029	025	022	023	B	B	B
26	B				S	B	B	032	037	038	039	041	041		042	039	048	039	030	031	018	B	B	B
27	B	S	S			B			034	037	038	038					029G			C	014	E	C	B
28	B						029	C	035	037		042			040	043	034	036	027	028	025	016	B	B
29	B	S	S	S			029	036	041	045	046	042	040	G		037	035	036	025	019	019	018	017	B
30	B	S				S	029	034	042	044	051		040			036	038	039	074	028	026	023	C	B
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bE_s

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

The Radio Research Laboratories, Japan

A5

IONOSPHERIC DATA

Apr. 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	E	E012S	E012S	E012S	E	E013S	013	019	019	026	024	034	027	029	024	029	020	019	011	018	018	019	014	019
2	019	E	E012S	E	E	014	021	019	020	023	021	024	028	025	025	019	018	018	018	017	018	018	E012S	E
3	018	E	E	E	E	012	013	018	019	019	024	026	026	024	022	020	019	018	014	018	E012S	018	018	018
4	018	E013S	E	E	E	E014S	013	018	018	020	021	020	022	020	025	019	020	017	018	E013S	019	019	019	019
5	019	E	E	E	E	E014S	020	021	020	021	021	022	026	025	026	019	018	018	014	E012S	018	019	E012S	019
6	E015S	E	E012S	E	E	E014S	020	020	021	020	019	023	027	025	019	026	019	019	019	019	018	019	018	019
7	E013S	E013S	E	E	012	E	019	019	019	019	020	025	024	025	019	019	018	013	013	018	018	019	E012S	019
8	019	E	E	E	E	E	021	020	019	022	021	024	020	028	020	019	019	018	019	017	018	017	017	018
9	018	E015S	E	E	E	E014S	E013S	018	020	019	019	026	020	021	019	020	018	019	018	E015S	E012S	E013S	E	E013S
10	018	E012S	E	E	E	E	013	018	018	023	020	020	028	027	021	019	018	018	014	E	E016S	E014S	018	E011S
11	019	E	E	E	E	011	012	019	018	020	023	021	024	027	020	019	021	014	012	019	E012S	018	E012S	019
12	018	E	E	012	E	E	019	021	020	020	E037C	E070C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	027	026	025	026	019	020	012	013	E012S	018	018	E016S	019
14	019	E012S	E	E	E	E	019	019	019	020	019	021	020	021	019	018	019	014	017	E013S	E	018	019	020
15	020	E013S	E	E012S	E	012	021	020	019	022	020	028	020	020	024	019	021	014	019	E013S	019	020	018	019
16	020	E	E	E	E	012	023	019	019	019	023	030	026	023	019	019	019	018	019	018	E013S	019	018	019
17	018	E013S	E	E	E	012	019	018	019	019	021	024	019	019	021	018	018	012	013	E013S	E015S	E014S	019	018
18	E014S	E013S	E	E	E	E	019	019	024	019	024	023	019	024	020	019	019	013	018	018	E013S	018	018	E014S
19	019	E011S	E	E	E	E013S	019	018	019	019	019	023	021	021	022	019	C	013	018	E012S	E012S	017	018	C
20	018	E013S	E	E	E	C	C	C	C	020	024	026	028	025	026	021	019	018	019	017	E012S	E014S	E015S	018
21	019	E012S	E	E	E	E014S	019	019	021	020	019	028	027	024	024	023	019	018	013	E014S	018	018	017	018
22	018	E	E	E	E	E014S	018	019	C	C	C	C	C	028	019	020	018	018	020	019	019	018	017	019
23	019	E013S	E012S	E012S	E014S	E012S	021	019	020	026	026	021	024	027	023	023	019	014	020	013	E013S	019	019	019
24	018	E012S	E	E012S	E	014	019	019	021	021	025	024	028	024	023	019	020	014	012	019	019	019	018	020
25	018	E013S	E	E013S	E013S	013	020	019	022	021	027	027	027	023	020	020	019	018	019	018	E012S	019	018	018
26	020	E	E	E	E014S	014	024	019	019	019	021	022	024	027	027	020	020	013	012	E012S	E014S	018	018	018
27	018	E013S	E012S	E	E	015	020	020	020	021	024	020	020	020	022	019	019	018	013	C	E012S	017	C	018
28	018	E	E	E	E	014	019	C	019	020	020	019	027	024	019	019	026	018	018	E013S	018	E012S	019	019
29	018	E013S	E012S	E012S	E	013	019	019	020	026	024	025	021	019	019	018	017	012	014	E013S	E014S	E014S	E013S	018
30	018	E014S	E	E	E	E013S	018	018	019	018	019	018	019	C	018	017	013	013	012	E013S	E013S	E016S	C	017
31																								
Count	29	29	29	29	29	28	28	27	27	28	28	29	28	28	29	29	28	29	29	28	29	29	27	28
Median	018	E012S	E	E	E	E013	019	019	019	020	021	024	024	024	021	019	019	018	018	E014	E015S	018	018	018
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

A6

IONOSPHERIC DATA

Apr. 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	275	285	285	290	280	270	315	330	310	305	295	295	280	285	280	280	285	290	I300R	295	260	270	275	265
2	265	275	305	270	270	285	305	295	295	305	295	255	285	285	280	285	285	295R	305R	310	280	265	260	250
3	270	300	305	265	260	265	290	315	300	295	295	295	280	285	285	285	295	300	305	315	270	265	270	270
4	275	280	295	285	275	270	325	325	305	305	295	275	285	285	285	285	285	I290R	290	305	280	275	270	270
5	255	255	270	260H	265	270	300	300	305	305	305	300	300	290	290	295	295	290	I305R	305	285	270	255	265
6	280	290	275	275	265	265	315	320	I305R	305	300	285	290	290	280	290	290	I295R	I305R	315	280	270	275	275
7	255	265	255	265	265	270	305	315R	310	310	305	295	295	295R	290R	290	295	305	305	305	290	290	290	275
8	275	270	270	280	275	275	310	315	310	305	300	295	300	300	280	285	290S	300	310	I320R	295	265	275	275
9	280	295	295	305	290	295	315	320	I315R	305	300	300	295	295	295	295	295	305	310	305	305	295	285	280
10	295	295	285	285	275	275	315	315	310	305	300	290	290	290	285	285	295	295	I305R	310	285	275	270	275
11	280	260	265	265	265	280	310	305	315	310	305	295	290	290	290	295R	295	300	300	300	305	280	280	285
12	265	270	285	290	270	275	305	320R	315	305	320C	285	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	305	285	295	285	285	295	300	300	310	310	285	275	275
14	285	280	270	280	280	290	315	315	315	305	300	290	305	295	J290R	295	295	305	310	305	295	275	265	270
15	265	270	280	295	275	290	295	305	310	295	295	295	295	295	290	300	300	305	315R	300	285	275	270	270
16	275	275	290	315	290	285	315	315	310	295	295	290R	295	290R	285	290	295	295	300	315	315	270	270	260
17	255	275	300	295	270	265	320	310	305	305	295	295	285	290	295	300	295	305	300	305	290	280	275	275
18	280	290	285	275	275	285	310	305	305	J305R	310	300	285	290	285	295	295	300	300	310	290	295	285	265
19	255	255	275	295	255	275	300	310	285	305	290	295	285	285	295	290	I300C	305	305	280	270	260	260	I275C
20	270	265	265	285	270	I295C	I320C	I310C	I300C	305	290	285	295	295	290	290	300	295	305	295	280	280	280	275
21	260	265	270	275	275	285	295	305	310	310	295	300	295	290R	290	295	290	300	300	305	295	280	270	265
22	265	270	270	280	270	295	305	310	C	C	C	C	C	290	295	300	300	305	315	290	285	275	275	265
23	275	265	270	290	280	315	315	320	315	315	I310R	295	295	295	295	I295R	300	I310R	315	310	295	270	260	265
24	265	280	260	255	250	250	270H	280H	275	285	290	280	275	280	285	295	305	300	300	290	280	265	270	265
25	260	270	275	280	275	310	285H	300	320	300	280	280	290	285	290	295	295	300	320	310	275	260	260	265
26	270	275	280	290	275	300	315	330	290	300	295	285	280	280	275	280	285	305	305	295	285	275	270	265
27	270	280	275	270	270	295	310	315	305	300	290	285	280	280	285	285	290	295	300	I295C	300	290	I290C	270
28	270	270	270	275	270	290	310	I305C	310	275	290	280	275	280	285	280	285	290	I295R	300	325	265	270	265
29	265	275	290	290	265	285	295	305	305	285	290	280	275	J280R	275	280	285	285R	300	300	305	260	265	260
30	260	265	280	265	255	275	310	305	315	300	295	280	270	I275C	285	285	290	I300C	300	295	295	280	I275C	265
31																								
Count	29	29	29	29	29	29	29	29	28	28	28	29	28	29	29	29	29	29	29	29	29	29	29	29
Median	270	275	275	280	270	285	310	310	310	305	295	290	290	290	285	290	295	300	305	305	290	275	270	270
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

A 7

IONOSPHERIC DATA

Apr. 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	LH	380L	380	380L	385	L								
2									L	L	L	375	385	385L	L	L	L							
3									L	L	370L	375L	395	380	390L	L								
4									L	L	385	375	L	375	L	L	L							
5									L	L	380	385L	380	380	380	395	L							
6									L	L	380H	385L	365L	380	385L	L	385L							
7									370L	390	380	L	380	375L	380L	L	L							
8									L	405L	380L	395	385L	390L	400L	L	385L							
9									L	L	380	375L	L	385	385	390L	L							
10									L	390L	395L	385	385	365	405	L	L							
11									L	L	L	380	380L	405	380L	L	L							
12								L	L	380	375	C	C	C	C	C	C							
13								C	C	C	C	385	375	360	385	L	L							
14								L	L	380	365	380	380	375H	L	370	L							
15									390L	L	365L	365L	345	350L	LH	L	L							
16									L	365L	365L	370	370	365L	360L	L	L							
17									L	L	365L	355	355	350	355	L	L							
18									L	360	370H	375	375	360	360	345	L							
19								370	L	355	365	350	375H	355L	355	360L	C							
20								C	C	L	L	L	365	360	370	360L	375							
21								L	L	L	375L	355	385	375	L	L	380							
22								L	C	C	C	C	C	L	355L	L	L							
23								L	360L	380	I380A	385L	385	365L	L	365	L							
24							L		335L	345	350	365	335	325H	355	355	L							
25							L	355L	345	355L	355H	340	350	360L	360	350	L	L						
26									L	365L	360	365	345	350H	340L	355	L							
27								L	L	375	370	360L	345	345	350	350L	L	L						
28								C	L	345	335L	350	350	340	330	360	L	L						
29								L	L	L	350	350L	335H	340	320	345	L							
30								360L	370	380	L	340	300	I340C	350	360L	L							
31																								
Count								3	6	15	23	26	26	28	23	14	4							
Median								360L	360L	375	370	375	375	365	360	360	380L							
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

Apr. 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									250	265	260	280	270	255	245	265								
2									245	245	255	265	265	260	255	255	255							
3									250	245	270	265	250	270	255	255								
4									245	250	270	270	280	275	285	265	270							
5									250	255	270	265	270	280	265	255	260							
6									255	250	270	265	270	270	280	265	270							
7									255	270	280	255	275	270	275	265	260							
8									255	250	265	270	275	265	250	250H	275							
9									245	235	275	270	270	255	260	255	245							
10									245	265	250	265	275	295	255	255	265							
11									250	235	255	270	270	275	275	260	255							
12								240	255	260	250	C	C	C	C	C	C							
13								C	C	C	C	265	275	290	265	255	250							
14								250	255	265	280	265	275	270	290	275	255							
15									250	255	255	285	300	290	260	280	265							
16									255	275	285	275	280	285	290	275	265							
17									255	250	265	280	290	295	290	260	250							
18									260	275	270	270	275	310	295	295	250							
19								265	260	285	290	300	290	280	295	270	C							
20								C	I260C	255	280	265	300	290	270	275	265							
21								250	255	250	260	285	270	275	290	260	255							
22								250	C	C	C	C	C	305	295	290	260							
23								255	265	270	255	285	280	295	270	280	260							
24							290L		L	260	310	315	345	325	290	290	265							
25							280	315L	300	315L	300	330	300	305	290	290	275	265						
26									270	280	295	295	310	310	305	295	280							
27								260	265	275	280	300	310	310	295	290	280	275						
28								I260C	260	260	300	315	325	320	310	295	295	280						
29								260	265	280	305	290	330	325	330	305	290							
30								275	255	265	310	315	325	I330C	295	290	290							
31																								
Count							2	11	27	28	28	28	28	29	29	29	26	3						
Median							285L	260	255	260	270	275	280	290	285	270	260	275						
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

A9

IONOSPHERIC DATA

Apr. 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	275	270	255	230	230	280	230	230	230	230	230H	230	230	230	220	240	260	255	240	230	290	295	280	300
2	295	265	235	230	250	255	230	235	230	240	225	205	230	230	225	230	240	255	245	230	245	280	305	330
3	310	250	230	235	300	305	245	230	230	230	225	220	215	220	220	240	245	250	245	230	240	275	280	290
4	280	270	250	230	255	290	235	230	230	225	225	225	220	225	230	230	235	255	240	225	230	270	290	295
5	310	310	270	200	260	285	240	230	230	220	215	210	210	215	215	225	220H	255	235	230	230	255	290	305
6	280	265	270	255	275	285	230	240	225	225	215	210	225	215	220	225	235	245	245	230	225	280	280	275
7	260	290	295	265	270	290	235	230	230	215	210	215	210	205	220	230	240	245	240	235	245	240	255	280
8	275	275	270	245	250	285	230	230	225	230	225	205	200	200	225	235	240	260	240	225	215	280	290	290
9	280	260	250	235	230	275	230	235	230	220	215	220	215	210	205	220	230	235	240	250	240	280	260	260
10	260	215	240	255	265	290	230	230	220	230	220	215	200	200	205H	230	240	255H	240	225	235	255	280	270
11	275	280	275	255	265	275	230	235	230	220	215	210	210	200	200H	230	225	230	240	240	235	255	255	270
12	300	290	250	230	245	290	225	240	230	215	210	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	210	205	210	210	230	240	255	245	235	225	240	255	290
14	280	260	255	245	250	255	230	235	230	205	195H	180H	220	195H	230	210	215H	255	250	240	235	275	290	300
15	300	285	265	230	245	260	220	230	225	225	230	205	215	205	200H	230	230	240	245	230	250	275	290	295
16	285	285	250	210	215	250	235	235	230	220	225	200	230	210	220	230	240	250	260	235	225	250	290	320
17	325	280	250	215	255	285	235	235	235	230	225	225	225	220	215	240	230	250	250	250	250	255	290	290
18	270	265	240	240	275	270	240	240	230	220	210H	205	210	210	240	225	240	240	255	245	260	250	260	295
19	320	300	280	230	270	275	240H	240	230	225	225	220	210H	230	215	225	I240C	255	250	260	290	290	305	I280C
20	265	275	275	240	250	I250C	I240C	I230C	I235C	240	I215A	220	220	190	230	225	215	240	250	240	255	275	275	275
21	305	275	265	250	270	250	240	235	240	230	215	205	230	210	I230A	230	230	255	260	250	250	255	275	275
22	290	280	275	250	270	265	245	230	C	C	C	C	C	230	215	235	230H	250	250	260	290	240	275	285
23	270	275	290	270	245	225	225	225	225	220	I230A	205	205	240	250	230	245	245	245	240	240	270	300	305
24	305	270	280	330	345	310H	250	240H	230	225	225	215	205H	200H	235	230	235	240	255	255	265	290	270	295
25	310	280	270	245	270	255	255	235	225	220	200	205H	225	220	225	230	245	245	245	230	250	275	300	290
26	290	265	255	235	245	245	235	235	230H	210H	210	215	210	220H	245	235	I250A	270	255	250	240	260	290	315
27	300	280	275	255	255	240	240	230	230	225	210	205	205	205H	230	225	230	250	255	I240C	240	245	I260C	280
28	300	280	280	270	280	255	245	I235C	230	215	215	205	220	190H	235	250	245	255	270	240	235	255	280	290
29	290	275	270	240	240	245	235	240	240	255	240	215H	210H	195H	225H	230	235	275	260	245	225	270	290	295
30	310	290	270	260	310	255	240	235	230	235	I220A	205	220H	I230C	190H	230	255	275	I270A	260	250	255	I260C	290
31																								
Count	29	29	29	29	29	29	29	29	28	28	28	28	28	29	29	29	29	29	29	29	29	29	29	29
Median	290	275	270	240	255	270	235	235	230	225	220	210	215	210	220	230	240	250	245	240	240	270	280	290
U.Q.																								
L.Q.																								
Q.R.																								

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

IONOSPHERIC DATA

Apr. 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	E	S	S	S	E	S	G	G	G	G	140	130	120	G	G	G	125	G	G	B	B	115	115	B
2	B	E	S	E	E	B	B	G	150	135	125	125	G	G	135	G	G	G	B	B	115	120	115	105
3	110	105	105	110	E	B	G	E165G	150	135	130	125	G	G	G	115	G	155	130	125	115	115	115	B
4	110	S	105	105	105	S	G	G	G	130	130	120	115	115	115	G	G	G	B	105	B	B	B	B
5	B	E	E	E	E	S	G	G	G	130	125	120	G	130	G	G	G	G	G	110	B	B	S	B
6	S	E	S	E	E	S	G	G	G	125	125	120	110	130	G	G	G	G	B	B	B	B	B	B
7	S	S	105	105	B	E	G	155	G	G	110	115	105	105	G	G	G	130	G	B	B	B	S	B
8	B	110	E	E	E	E	G	G	C	120	120	115	115	G	120	G	G	G	B	B	B	B	B	B
9	B	S	E	E	E	S	G	G	G	120	130	135	G	G	G	G	G	G	B	S	115	110	110	S
10	B	S	E	E	E	E	140	140	125	130	140	125	130	G	G	G	G	140	130	115	115	115	B	S
11	B	E	E	E	E	B	155	155	140	125	130	G	130	G	115	115	110	G	100	B	110	B	S	B
12	B	E	E	110	E	E	G	155	G	130	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	120	130	110	G	130	G	155	120	110	B	B	S	B
14	B	S	E	E	E	150	145	140	130	115	115	140	G	G	G	G	G	G	120	115	115	B	B	B
15	B	S	E	S	E	B	140	150	G	140	G	G	130	G	125	G	G	G	130	S	B	B	B	B
16	B	E	E	E	E	G	G	G	G	G	125	115	110	105	G	G	G	G	B	B	120	B	B	B
17	B	S	E	E	E	B	150	155	140	145	135	G	125	110	105	105	130	G	G	S	S	S	B	B
18	S	S	E	E	E	E	155	155	140	125	130	140	115	G	105	110	105	G	130	120	120	115	B	S
19	B	S	E	E	E	S	165	155	145	135	140	135	130	125	115	G	C	G	130	130	120	120	115	C
20	B	S	E	105	105	C	C	C	C	125	120	120	120	115	115	G	G	G	B	115	115	115	S	B
21	B	S	E	E	E	S	G	140	135	140	G	G	110	110	105	105	G	105	105	100	100	105	B	B
22	B	E	E	E	E	S	G	155	C	C	C	C	C	G	G	110	115	G	B	B	105	B	B	B
23	B	S	S	S	S	S	145	135	130	130	115	115	110	105	105	105	105	165	130	115	105	B	B	B
24	B	S	E	S	E	G	G	140	130	130	125	120	G	G	105	110	115	105	100	100	B	B	B	B
25	B	S	E	S	S	165	155	140	130	130	130	130	G	G	115	105	G	145	130	125	100	B	B	B
26	B	E	E	E	S	B	B	150	130	130	135	130	125	G	155	145	130	140	140	100	100	B	B	B
27	B	S	S	E	E	B	G	G	E165G	150	140	130	G	G	G	G	110	G	G	C	105	105	C	B
28	B	E	E	E	E	G	155	C	145	140	G	125	G	G	150	140	140	130	125	120	115	115	B	B
29	B	S	S	S	E	G	140	135	130	130	125	130	115	125	G	160	140	125	120	115	110	110	105	B
30	B	S	E	E	E	S	130	125	115	115	110	G	130	C	G	155	135	130	115	115	140	115	C	B
31																								
Count	2	2	3	5	2	2	12	18	17	25	24	23	19	12	15	14	12	12	16	17	19	13	6	1
Median	110	110	105	105	105	160	150	150	130	130	130	125	120	110	115	110	120	135	130	115	115	115	115	105
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

A11

IONOSPHERIC DATA

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

Types of Es

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

The Radio Research Laboratories, Japan

A 12

IONOSPHERIC DATA

Apr. 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	U086R	082	077	063	057	056	077R	099	104	I119C	125	126	127	128	122	119	117	116	112	099R	092	098	098	095
2	090	094	088	069	068	068	U077R	097	116	133	125	126	125	128	118	109	110	114	115	098	076	079	081	I079R
3	U074R	U086R	071	053	052	051	072R	104R	107	117	127	129	125	128	130	120	119	114	118	095	070	073	073	073
4	076	076	073	056	052	055	087	101R	101	105	116	124	127	128	126	128	121	116	124	U102R	079R	U077R	U080R	U081R
5	076R	070	072	062	061	060	U081R	106	123	127	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	124	123	125	123	123	118	119	120	096R	074R	072R	U074R	U074R
7	070	068	066	064	066	065	087	107R	116	114	119	122	119	120	120	118	113	110	111	J106R	J085R	J076R	074	U074R
8	070	069	068	063	058	060	086	108	117	117	125	130	142	138	130	130R	135	134	125	103	073R	U069R	U077R	I079R
9	U085R	U083R	U077R	071R	058	058	084	093	103	I103C	113	127	129	126	127	125	115	111	115	105R	096	088	090	092
10	U086R	U079R	071	066	061	065	096	U105R	101	112	119	113	125	127	124	122	125	122	113	093	U075S	U076S	U072S	I082R
11	U078R	072R	U072R	070	067	071	099	108	115	112	107	114	121	125	128	123	115	110	112	U106R	090	U073R	U082R	U083R
12	U077R	078R	080R	073	065	067	091	U102R	U106R	105R	111	109	120	127	124	113	108	J104R	107	J102R	094	U077S	069	066
13	066S	065	065	059	055	059	085	099	099	104R	117	119	119	118	115	115	116	113	115	102	U079S	070	071	U071S
14	I077S	071	068	068	062	066	088	099	110	111	116	120	125	125	123	118	117	110	J104R	092	U076S	U071S	I073S	I075S
15	U071S	072S	U074S	069	065	069	088	091	095	095	110	115	120	130	134	126	118	113	107	J084S	071	073	I072S	U072S
16	U071S	I072S	073S	069	045	047	072	088	098	098	114	122	124	125	130	130	116	113	120	115	089	072	U077R	U070R
17	U070R	U071R	086R	058	053R	051	086	084	098	101	110	116	120	127	121	111	I104C	101R	097R	093R	U078R	U075R	U072R	U076R
18	I074R	U072R	067	064R	062	069R	091	092	104	111	114	115	115	121	123	121	120	114	107R	U102R	094	084R	074R	U076R
19	U070R	U073R	U072R	065	055	062	U077R	090	095	098	107	112	119H	127	117	108	104	109	097R	082R	U076R	079	U075R	J083R
20	081	074R	071R	070	061	068R	077R	093R	097	107	117	120	125	127	125	113	114	117	112	092	U083R	I084R	078R	U076R
21	074	U075R	072	071	067	069	087R	105R	102	096	099	109	120	124	126	120	111	108	112	106	095	U080S	J078S	U079S
22	J077S	U079S	072	069	066	J075S	089	092	093	097	108	108	106	108	116	117	112	108	J107R	093	086	U078S	U072S	I077S
23	073	070	I070S	068	063	U076S	U081S	080	094	098	104	114	U121R	119	123	120	125	115	112	095R	076R	U073R	U078R	079R
24	U073R	073R	062	058	059	060	067R	061	068	083	097	100	104	112	119	109	100	097R	091	091	U077R	073	075R	080R
25	U074S	U074R	071	I066R	061	070	085R	090	085	086	096	115	129	130	I125C	127	123	121	117R	091	070	072	072	074R
26	074R	U074R	I074C	064	057	063	081	I083C	087	102	101	112	116	125	129	128	124	114	110	102R	A	077	U071R	I072R
27	I070R	I072R	074R	071R	067	U070R	093	100R	097	100	106	113	122	129	134	132	123	116	110	U104R	095R	U080R	U074R	076R
28	074R	U076R	U075R	069	066	071R	094R	107R	104	091	092	103	112	115	117	114	110	108	120	120	084	081R	086	085R
29	085	084	U085R	U073R	066	071R	093	100R	102R	103	109	110	116	119	121	123	120	119	123	108	080	I077R	I083R	U079R
30	080R	I080R	U076R	072	U071R	U075R	095	108	098	098	I098A	104	113	116	120	113	110	109	101R	093	086R	079	U077R	075R
31																								
Count	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	28	29	29	29
Median	U074R	074R	072	068	061	066	086	099	101	103	110	115	121	125	123	120	116	113	112	099	080	077	U075R	U076R
U.Q.	079	079	076	070	066	070	091	105	106	112	117	123	125	128	128	126	120	116	118	104	090	080	079	080
L.Q.	071	072	070	063	057	060	079	090	096	098	105	111	118	120	120	114	110	109	107	093	076	073	072	074
Q.R.	008	007	006	007	009	010	012	015	010	014	012	012	007	008	008	012	010	007	011	011	014	007	007	006

foF2

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

The Radio Research Laboratories, Japan

K1

IONOSPHERIC DATA

Apr. 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										C	L	R		B	L	L	L							
2									L	L	L	R	510L	L	L	L	L							
3										L	L	L	L	L	L									
4									L	L	L	520L	L	L	L	L	L							
5									L	L	C	C	C	C	C	C	C	C	C					
6						C	C	C	C	C	C	510L	L	L	L	500L								
7									L	L	L	L	L	L	L	L								
8									L	L	L	510L	U510L	L	L	L	L	L						
9									L	C	L	L	L	510L	L	L								
10								L	L	L	500L	510L	520L	L	500L	L	L							
11									L	L	L	520L	L	L	L	L	L							
12									L	L	L	L	L	L	L	L								
13									L	L	U540L	L	L	L	L	L								
14									L	L	U530L	L	L	L	L	L	L							
15									L	L	510L	L	U580L	530L	L	L	L							
16									L	L	490L	510L	L	500L	L	L	L	L						
17									L	L	510L	L	L	L	L	L	L							
18									L	L	L	U500L	L	L	L	L	L							
19								L	L	L	530L	520L	U510L	L	L	L	L							
20								L	L	L	550L	L	530L	L	L	L	L							
21									L	L	L	L	U580L	U550L	U560L	L	L	L						
22									L	L	U520L	L	U580L	L	L	U480L	L	L						
23								L	L	L	L	L	L	L	500L	A	L							
24											L	500L	L	580L	L	L	L							
25								L	L	490L	500L	L	L	L	C	530L								
26								C	L	L	L	L	L	L	L	L	L							
27									L	L	L	560L	580L	540L	540L	L	L							
28								L	L	L	630L	L	L	550L	L	L	L							
29									L	L		L	L	U570L	L	L	L	L						
30								L	L	A	A	L	560L	570L	L	L	L	L						
31																								
Count										1	11	10	10	9	4	3								
Median										490L	520L	510L	U540L	550L	520L	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

Apr. 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							195	280	I325R	I350C	R	B	B	B	A	A	325	270	B					
2							200	285	320	345	360	I370B	I375R	I380R	I365R	355	315	225	B					
3							190	R	330	350	I370R	380	I390A	I385A	380	I345R	315	250	B					
4							200	R	320	345	365	370	R	R	R	A	300	225	B					
5							170	240	310	345	C	C	C	C	C	C	C	C	C					
6							C	C	C	C	C	R	R	R	I340R	325	290	230	S					
7							180	250	305	320	I350A	R	A	R	365	330	310	250	A					
8							200	275	A	335	350	R	R	R	355	340	I300A	235	B					
9							195	255	315	I330C	350	I365R	370	I360A	340	320	305	240	175					
10							215	285	315	345	I360R	I365R	I365A	I370R	I365R	I340R	305	245	B					
11							180	R	I300R	330	350	355	A	A	A	310	A	245	B					
12							205	280	320	340	I355A	365	365	370	355	I330A	295	250	B					
13						E	210	270	310	A	340	A	A	A	360	340	300	250	160					
14							220	300	A	A	A	A	A	A	355	335	295	260	A					
15							210	280	330	350	360	365	375R	370	355	I330A	300	255	165					
16						B	200	270	310	325	335	370	I375R	I370R	360	I340R	305	I265R	A					
17							195	280	I305R	340	360	365	A	A	A	325	295	240	A					
18						B	170	275	320	340	355	360	R	A	A	R	R	245	A					
19						B	200	275	325	340	370	365	375	360	350	330	310	250	S					
20							185	280	315	330	345	R	R	370	R	330	295	245	A					
21							175	270	330	350	370	370	380	370	365	335	300	240	A					
22						S	210	285	320	340	355	375	A	A	A	I335R	320	R	R					
23						S	230	280	325	340	I350R	R	R	A	A	A	A	240	A					
24						B	200	285	325	345	I350R	360	R	A	A	A	315	260	B					
25						B	210	280	315	345	355	A	R	A	C	340	315	260	155					
26							210	I270C	320	355	I370R	R	B	R	R	360	320	265	A					
27							225	295	325	340	I355R	R	R	R	R	350	315	R	170					
28						B	230	295	315	340	360	370	I370B	I370R	360	340	320	260	165					
29						B	220	285	325	350	375	I375R	375	I370R	365	355	315	255	A					
30						B	210	300	330	360	I360A	I370R	375	I370R	365	350	310	260	165					
31																								
Count						1	29	26	27	27	26	18	12	13	17	24	26	27	7					
Median						E	200	280	320	340	355	370	375	I370	360	340	310	250	165					
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

K3

IONOSPHERIC DATA

Apr. 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	E	E	E013B	E011B	G	G	034	C	042	042	E043B	E056B	J038	038	G	032	E014B	E013B	018	E013B	J030	J029
2	J027	021	E014B	E014B	E	E014B	G	G	G	G	043	045	G	G	G	G	G	G	018	J025	021	E014B	E014B	E016S
3	E016S	E015S	J030	020	E	E011B	G	031	036	042	042	043	042	J044	G	G	G	G	019	E015S	E014B	J025	E016S	E016S
4	J015	020	E011B	E	J016	E012B	G	G	G	042	045	043	044	043	J042	J041	G	G	J024	J024	J024	J019	022	021
5	E015S	E011B	E013B	E	E012B	E013B	G	030	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	G	G	G	G	G	021G	G	E017S	J015	E016S	E015S	E014B	E013B
7	E015S	E015S	E013B	E011B	E011B	021	G	G	G	G	040	035G	J048	031G	G	J029G	J029G	018G	J025	017	E015S	E016S	E015S	E015S
8	E014B	E014B	E	E	E	E012B	G	G	032	036	041	G	G	G	G	G	J030	027	021	E016S	E014B	E016S	E014B	E015S
9	E015S	E013B	E	E	E011B	E012B	G	G	G	C	039	G	042	039	J040	035	035	G	G	J022	J017	021	021	J021
10	J017	J025	E011B	J016	J017	E013B	026	G	036	043	G	041	041	G	G	G	G	031	018	J020	J025	J021	E014B	E014B
11	E014B	E014B	E	E011B	E011B	E013B	027	031	G	038	043	043	039	042	037	036	036	G	020	E016S	J018	J019	J024	019
12	E014B	E014B	E011B	E011B	E	E013B	025	031	G	G	037	G	G	G	G	035	G	G	019	J015	E014B	E011B	E015S	E015S
13	E015S	E012B	E	E	E	E	025	J028	035	038	039	J038	J042	J042	038	040	032	027	024	J030	023	023	022	E015S
14	E015S	E013B	E	E	E	E013B	028	G	038	J037	039	J042	041	J039	020G	G	G	028	025	032	J018	025	E015S	E016S
15	E015S	E014B	E	E	E	E015B	G	035	038	041	G	G	G	G	039	035	G	028	G	E015S	J015	018M	E016S	E015S
16	E015S	E016S	E	E	E011B	E012B	G	G	033	035	039	G	G	G	G	G	G	G	024	E013B	E014B	E012B	E014B	E014B
17	E014B	022	E013B	E	E	J017	028	033	036	039	G	044	J040	J039	J039	029G	G	G	024	J025	E013B	E014B	E013B	E015S
18	E015S	E013B	E012B	E011B	E	020	027	032	036	043	042	G	G	J039	J039	G	036	J069	J030	023	024	019	022	019
19	022	E014B	E013B	E011B	E	015	027	034	038	042	039	G	G	G	G	G	G	G	J028	J030	024	025	E014B	023
20	J026	J025	J025	J016	J015	J016	G	034	036	G	G	049	044	G	037	G	G	038	025	J022	J020	J021	J024	020
21	021	E014B	E012B	E	E	E014B	028	032	039	043	046	039	G	G	G	G	G	G	J037	035	J037	024	J026	E015S
22	E015S	E015S	E	E	E	E016S	027	033	037	043	039	041	J043	044	043	G	J029G	024G	019G	020	J018	E015S	E015S	E015S
23	E015S	E012B	E	E	E	E016S	029	034	039	G	044	047	048	J040	044	J057	J034	039	081M	J124	021	E014B	E014B	E014B
24	E014B	E011B	E011B	E011B	E011B	018	G	033	038	G	042	040	G	J041	J038	J038	G	030	025	J025	E016S	J024	022	019
25	021	E011B	014	E013B	E013B	020	029	032	036	041	042	042	G	J041	C	G	J051	J053	J042	J033	019	J028	E015S	E015S
26	023	E014B	C	E013B	E011B	E016S	031	C	042	J049	G	048	044	044	044	042	043	J051	J058	J077	J156	J051	023	022
27	022	021	E012B	019	E	020	J038	041	038	041	G	G	039	G	G	041	035	G	J031	E016S	022	020	020	J025
28	E015S	E013B	E012B	E011B	E011B	017	G	032	G	G	G	G	E054B	G	G	G	G	034	J041	J030	J025	J029	J055	E015S
29	E015S	E014B	E013B	021	E013B	016	030	038	J042	047	048	G	048	048	G	G	035	J037	J028	J025	J029	J025	J024	J021
30	J022	E014B	J016	J023	018	020	032	037	J041	J083	J104	045	J061	G	G	039	039	J043	J033	J029	J024	J029	J028	022
31																								
Count	29	29	28	29	29	29	29	28	29	27	28	29	29	29	28	29	29	29	29	29	29	29	29	29
Median	E015	E014B	E012B	E011	E011	E015	025	032	036	039	040	040	039	G	G	G	G	027	024	023	019	020	E016	E016
U.Q.	021	E015	E013	E013	E012	017	028	034	038	043	042	043	044	042	039	038	035	036	030	030	024	025	024	021
L.Q.	E015	E013	E	E	E	E012	G	G	G	G	G	G	G	G	G	G	G	G	019	E016	E016	E015	E014	E015
Q.R.	D006					D005													011	D014	D008	D010	D010	D006

foEs

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

The Radio Research Laboratories, Japan

K4

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B			B	B			034	C	041	E042R	B	B	038	038		029	B	B	E	B	028	017
2	023	E	B	B		B					041	E045R							017	015	E	B	B	S
3	S	S	017	E		B		030	035	040	E042R	040	041	041					019	S	B	024	S	S
4	014	E	B		012	B				040	041	042	043	041	040	040			018	014	019	018	016	016
5	S	B	B		B	B		029			C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C						021G		S	013	S	S	B	B
7	S	S	B	B	B	E					040	E035R	040	E031R		029G	026G	017G	020	015	S	S	S	S
8	B	B				B			032	036	039						030	026	019	S	B	S	B	S
9	S	B			B	B				C	038		040	038	039	033	032			017	015	E	E	E
10	016	018	B	013	014	B	025		035	040		040	039					026	017	016	020	016	B	B
11	B	B		B	B	B	025	030		037	039	039	E039R	040	037	034	035		G	S	014	018	016	E
12	B	B	B	B		B	024	030			037					033			019	E	B	B	S	S
13	S	B					025	026	035	038	039	038	042	040	033	040	032	026	022	028	016	018	018	S
14	S	B				B	025		034	036	039	039	040	039	E020R			027	022	025	018	020	S	S
15	S	B				B		033	037	040					038	033		028		S	E	017	S	S
16	S	S			B	B			E033R	034	038								021	B	B	B	B	B
17	B	E	B			016	026	032	035	038		039	039	038	038	029G	C		022	020	B	B	B	S
18	S	B	B	B		019	027	031	034	038	039			039	038		034	051	027	017	022	E	016	E
19	E	B	B	B		014	026	033	037	040	038								028	027	022	021	B	016
20	025	016	016	012	014	015		032	033			046	040		036			027	023	015	016	016	016	015
21	016	B	B			B	026	029	038	042	045	039	G						032	027	035	019	026	S
22	S	S				S	026	032	037	041	039	040	041	040	038		029G	E024R	016G	019	E	S	S	S
23	S	B				S	028	033	037		041	045	041	039	040	052	032	037	071	064	016	B	B	B
24	B	B	B	B	B	016		032	037		040	039		040	038	037		028	024	024	S	020	016	017
25	016	B	013	B	B	020	027	031	033	039	040	040		040	C		050	049	040	027	017	022	S	S
26	016	B	C	B	B	S	025	C	041	047		E048R	042	043	041	040	038	040	052	054	A	027	017	E
27	E	E	B	E		020	037	040	037	040			039			039	032		026	S	016	E	E	016
28	S	B	B	B	B	016		031					B					032	038	024	023	024	016	S
29	S	B	B	E	B	016	027	036	040	042	047		043	044			034	032	027	014	028	016	015	016
30	016	B	015	018	E	017	030	033	038	075	A	E045R	044			038	039	040	029	026	016	018	016	016
31																								
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

K 5

IONOSPHERIC DATA

Apr. 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	E	E	013	011	016	014	016	C	026	040	043	056	027	029	017	016	014	013	014	013	014	014
2	013	013	014	014	E	014	016	017	016	025	025	040	026	026	027	026	018	013	014	012	014	014	014	E016S
3	E016S	E015S	011	011	E	011	016	017	026	023	024	025	037	024	024	024	016	013	015	E015S	014	014	E016S	E016S
4	011	011	011	E	011	012	014	015	019	019	026	026	027	027	026	019	017	014	013	012	014	014	011	014
5	E015S	011	013	E	012	013	014	014	016	017	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	027	026	026	020	014	013	013	E017S	011	E016S	E015S	014	013
7	E015S	E015S	013	011	011	012	014	016	016	025	020	025	026	026	026	015	016	011	011	014	E015S	E016S	E015S	E015S
8	014	014	010	010	010	012	013	016	014	014	025	025	026	027	026	016	013	014	014	E016S	014	E016S	014	E015S
9	E015S	013	E	E	011	012	013	013	014	C	017	025	018	026	019	017	016	012	014	011	013	014	014	014
10	014	012	011	011	011	013	014	012	014	017	017	026	026	026	021	016	014	014	014	011	014	013	014	014
11	014	014	E	011	011	013	014	013	016	017	017	025	026	026	026	016	015	013	014	E016S	011	013	012	014
12	014	014	011	011	E	013	014	013	013	017	018	016	026	026	025	018	018	015	014	014	014	011	E015S	E015S
13	E015S	012	010	010	010	010	013	014	015	016	016	016	016	026	020	018	016	013	012	011	013	E015S	E016S	E015S
14	E015S	013	010	010	010	013	015	012	014	016	016	024	026	019	017	015	012	012	011	E015S	012	013	E015S	E016S
15	E015S	014	010	E	010	015	014	014	013	016	026	019	025	026	020	016	014	014	013	E015S	012	E015S	E016S	E015S
16	E015S	E016S	010	010	011	012	013	011	015	014	018	026	026	026	025	018	017	013	014	013	014	012	014	014
17	014	014	013	E	E	011	014	014	014	016	020	019	026	019	020	016	011	013	014	014	013	014	013	E015S
18	E015S	013	012	011	E	014	015	015	015	015	017	026	026	025	019	020	016	012	014	012	013	014	011	014
19	014	014	013	011	E	012	014	012	015	017	026	026	026	026	026	019	017	013	E016S	013	012	014	014	014
20	014	014	011	E	E	011	016	017	016	026	025	019	025	025	021	017	016	013	015	014	014	013	012	014
21	014	014	012	E	E	014	014	013	014	016	018	026	026	026	027	025	016	015	015	012	013	013	E015S	E015S
22	E015S	E015S	010	010	010	E016S	014	014	016	018	019	026	025	026	026	015	015	013	012	E015S	E015S	E015S	E015S	E015S
23	E015S	012	010	010	010	E016S	016	015	019	016	026	026	025	019	026	019	014	012	014	014	E015S	014	014	014
24	014	011	011	011	011	013	016	014	016	019	018	025	026	026	026	025	016	014	016	013	E016S	014	014	E016S
25	014	011	011	013	013	014	014	014	015	019	026	027	026	027	C	019	017	014	014	014	014	014	E015S	E015S
26	E015S	014	C	013	011	E016S	016	C	017	020	019	027	038	027	025	027	014	017	016	014	E015S	E016S	014	014
27	014	014	012	012	E	015	017	017	016	019	026	026	019	028	025	017	018	016	014	E016S	E015S	014	012	E015S
28	E015S	013	012	011	011	013	014	016	018	019	027	026	054	026	025	019	019	014	013	012	013	014	012	E015S
29	E015S	014	013	014	013	014	016	017	019	018	025	027	027	028	027	020	014	014	015	013	014	013	013	014
30	014	014	014	E	011	015	014	014	017	026	027	026	019	019	027	016	016	014	014	012	014	014	014	E015S
31																								
Count	29	29	28	29	29	29	29	28	29	27	28	29	29	29	28	29	29	29	29	29	29	29	29	29
Median	014	014	011	010	010	013	014	014	016	017	022	026	026	026	025	018	016	013	014	012	014	014	013	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

K6

IONOSPHERIC DATA

Apr. 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	U280R	285	300	315	270	275	325R	315	305	I300C	290	290	275	275	280	280	285	300	300	300R	270	265	280	265
2	265	285	305	275	280	285	U310R	285	305	295	290	280	280	290	290	275	290	295	305	305	285	260	260	I260R
3	U290R	U290R	320	285	250	265	310R	325R	315	285	285	290	290	280	295	290	295	285	320	320	265	275	285	290
4	290	290	310	295	265	275	310	335R	315	305	295	290	290	290	285	285	285	295	305	U315R	280R	U285R	U280R	U290R
5	270R	265	275	270	280	270	U295R	300	300	285	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	300	285	280	285	285	290	295	315	320R	280R	270R	U275R	U285R
7	265	270	265	270	275	275	305	310R	315	305	310	300	295	285	290	290	295	305	305	J300R	J305R	J290R	295	U285R
8	285	280	295	285	275	270	310	320	310	310	295	290	290	290	285	275R	295	305	310	330	290R	U280R	U280R	I280R
9	U295R	U300R	U310R	320R	280	290	330	320	310	I300C	290	290	300	280	290	290	295	295	300	305R	300	280	280	290
10	U310R	U305R	295	305	275	275	325	U325R	315	310	310	290	280	285	290	295	300	310	320	305	U280S	U280S	U295S	I290R
11	U300R	280R	U290R	285	265	280	310	320	325	310	300	295	290	285	295	295	295	295	305	U315R	300	U305R	U280R	U285R
12	U275R	280R	285R	305	275	280	310	U340R	U320R	300R	300	295	285	290	300	295	290	J295R	305	J310R	320	U310S	285	275
13	285S	290	295	290	275	290	325	330	320	310R	305	305	295	285	285	295	295	300	315	325	U325S	275	280	U295S
14	I300S	295	285	295	295	300	320	325	315	300	295	290	295	295	290	290	300	305	J310R	310	U305S	U295S	I290S	I290S
15	U295S	300S	U320S	310	285	300	320	335	320	295	300	285	290	295	300	300	305	310	315	J300S	295	285	I290S	U295S
16	U295S	I300S	315S	360	280	275	335	315	305	295	295	295	290	285	290	290	290	290	300	325	325	275	U275R	U285R
17	U275R	U295R	315R	310	265R	265	330	320	310	295	305	290	285	290	295	295	I305C	305R	305R	300R	U295R	U275R	U285R	U285R
18	I305R	U310R	285	280R	275	285R	315	305	305	305	300	300	285	285	280	290	290	305	310R	U315R	295	295R	290R	U275R
19	U270R	U270R	U300R	305	260	265	U315R	305	315	305	300	290	280H	290	290	295	300	330	320R	280R	U275R	270	U265R	J280R
20	285	290R	285R	295	275	305R	330R	315R	295	295	290	290	280	295	290	290	295	300	315	300	U290R	I280R	285R	U280R
21	275	U280R	280	280	280	290	305R	320R	315	330	290	285	290	290	295	300	295	295	305	300	295	U290S	J280S	U285S
22	J285S	U280S	305	315	290	J285S	335	325	325	300	305	290	285	285	295	300	305	295	J305R	290	270	U305S	U285S	I280S
23	295	285	I280S	290	275	U320S	U345S	325	310	300	290	290	U290R	285	300	290	300	300	315	320R	295R	U280R	U275R	265R
24	U270R	290R	260	245	245	275	295R	305	300	270	295	285	270	285	290	300	295	305R	300	295	U305R	260	275R	255R
25	U270S	U285R	285	I290R	270	305	315R	310	325	295	270	280	290	290	I280C	290	295	310	320R	315	275	270	270	270R
26	275R	U290R	I305C	290	280	300	325	I320C	305	300	285	285	280	275	285	290	300	300	315	315R	A	275	U285R	I290R
27	I300R	I300R	295R	295	270	U295R	315	320R	310	300	275	280	275	285	290	295	285	295	300	U310R	315R	U295R	U285R	270R
28	285R	U285R	U290R	280	280	300R	305R	315R	315	320	270	270	285	285	290	285	285	290	305	320	310	265R	275	280R
29	275	280	U305R	U315R	290	305R	310	310R	315R	285	285	275	275	275	275	285	290	290	305	335	280	I270R	I270R	U275R
30	275R	I270R	U290R	285	U275R	U300R	300	320	305	295	I280A	270	280	280	285	290	295	300	305R	300	285R	275	U285R	275R
31																								
Count	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	28	29	29	29
Median	U285R	285R	295	290	275	285	315	320	315	300	295	290	285	285	290	290	295	300	305	310	295	280	U280R	U280R
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

Apr. 1967 | 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										C	L	R		B	L	L	L							
2									L	L	L	R	390L	L	L	L	L							
3										L	L	L	L	L	L									
4									L	L	L	380L	L	L	L	L	L							
5									L	L	C	C	C	C	C	C	C	C	C					
6						C	C	C	C	C	C	375L	L	L	L	370L								
7									L	L	L	L	L	L	L	L								
8									L	L	L	390L	U385L	L	L	L	L	L						
9									L	C	L	L	L	380L	L	L								
10								L	L	L	385L	385L	370L	L	380L	L	L							
11									L	L	L	385L	L	L	L	L	L							
12									L	L	L	L	L	L	L	L								
13									L	L	U370L	L	L	L	L	L								
14									L	L	U375L	L	L	L	L	L	L							
15									L	L	370L	L	U345L	360L	L	L	L							
16									L	L	390L	370L	L	380L	L	L	L	L						
17									L	L	370L	L	L	L	L	L	L							
18									L	L	L	U380L	L	L	L	L	L							
19								L	L	L	360L	390L	U385L	L	L	L	L							
20								L	L	L	355L	L	360L	L	L	L	L							
21									L	L	L	L	U340L	U355L	U340L	L	L	L						
22									L	L	U390L	L	U360L	L	L	U375L	L	L						
23								L	L	L	L	L	L	L	370L	A	L							
24											L	385L	L	355L	L	L	L							
25								L	L	385L	380L	L	L	L	C	360L								
26								C	L	L	L	L	L	L	L	L	L							
27									L	L	L	355L	345L	350L	350L	L	L							
28								L	L	L	340L	L	L	355L	L	L	L							
29									L	L		L	L	U345L	L	L	L	L						
30								L	L	A	A	L	355L	340L	L	L	L	L						
31																								
Count										1	11	10	10	9	4	3								
Median										385L	370L	380L	U360L	355L	360L	370L								
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

K8

IONOSPHERIC DATA

Apr. 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										I270C	260	275		285	305	295	275							
2									260	275	255	270	275	270H	260H	285	270							
3										250	260	260	260	300	260									
4									250	260	275	280	280	275	275	285	275							
5									260	260	C	C	C	C	C	C	C	C	C					
6						C	C	C	C	C	C	275	295	275	275	295								
7									260	255	260	275	260	260	290	290								
8									260	255	275	275	285	270	275	285	275	260						
9									260	I270C	280	290	275	265	270	265								
10								240	255	265	270	265	285	275	280	295	275							
11									250	250	260	285	280	285	280	270	260							
12									245	250	265	260	320	290	280	260								
13									250	250	290	275	280	280	300	280								
14									260	260	275	280	300	300	300	280	275							
15									250	260	290	280	300	300	290	280	260							
16									260	265	285	285	290	280	295	285	260	270						
17									260	265	280	280	295	295	280	265	250							
18									260	270	275	275	310	300	295	270	275							
19								260	265	275	285	280	285H	295	285	275	275							
20								260	275	270	285	275	290	275	290	260	275							
21									255	250	260	290	300	305	305	275	255	280						
22									250	250	280	260	300	310	300	295	250	265						
23								240	250	270	265	280	295	285	285	270	270							
24											300	290	315	335	290	280	265							
25								265	250	255	260	320	305	295	I290C	310								
26								C	275	285	270	325	305	325	305	305	275							
27									260	275	280	305	325	315	305	300	275							
28								260	260	260	360	325	330	320	320	305	285							
29									260	295		305	285	330	325	310	295	275						
30								255	260	E310A	A	340	330	320	315	285	280	270						
31																								
Count								7	26	28	26	29	28	29	29	28	22	6						
Median								260	260	260	275	280	295	295	290	285	275	270						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

K 9

IONOSPHERIC DATA

Apr. 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	275	265	E245E	E215E	240	290	245	230	230	I235C	225	R	E270B	B	225	240	245	260	245	230	230	290	E300A	295
2	E295A	265	225	230	E255E	245	230	250	240	225	220	I235R	220	210	235	230	235	255	245	225	235	295	310	315
3	295	240	220	210	E325E	315	230	235	235	240	I230R	240	210	210	230	245	245	245	250	220	210	E300A	285	280
4	270	260	235	E210E	260	300	240	230	225	220	225	210H	230	220	220	245	230	240	245	205	230	280	295	290
5	280	310	270	E190E	250	275	245	230	230	225	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	210	210	215	220	225	245	250	245	220	230	270	280	270
7	295	300	285	255	280	280	230	230	225	225	200	200	210	225	225	220	245	245	250	230	225	245	255	275
8	260	285	260	245	240	300	240	240	240	220	220	210	200	210H	220	230	240	245	235	220	200	290	290	285
9	275	260	E235E	E225E	215	260	230	230	230	I220C	220	215H	215	195H	210H	220	230	245	255	235	235	265	280	265
10	250	240	240	235	280	300	225	230	230	225	215	215	200	205	220	220	235	250	230	225	E235A	265	275	275
11	260	300	E275E	245	270	280	230	230	230	225	230	210	200H	220	215	215H	230	230	250	240	230	E260A	E280A	275
12	280	280	260	225	E260E	300	230	230	225	225	210	210	200	210	225	225	240	250	255	245	240	210	260	290
13	295	280	250	225	255	280	240	240	230	230	205	200	220	200	210	250	240	250	250	245	210	260	300	300
14	250	255	260	250	250	260	230	230	225	205	205	180H	185	210	205	205	220	250	240	240	240	280	300	300
15	300	295	250	E210E	245	275	220	230	230	205	205	205	205	200	240	210	240	240	240	220	250	280	295	295
16	290	280	250	200	210	300	230	240	230	225	210	225	215	215	215	220	235	245	265	230	210	245	300	310
17	305	280	240	E205E	E285E	300	230	230	230	225	210	210	210	215	220	225H	220	245	250	245	240	260	290	285
18	270	245	240	240	E265E	285	230	230	230	215	210	200H	230	225	215	240	235	E265A	255	250	260	250	260	310
19	325	305	270	220	E265E	305	235	240	225	230	225	225	210	205	210	230	235	255	240	E275A	E305A	E300A	300	285
20	270	270	270	240	220	260	225	230	230	215	210	E245A	210	200H	210H	230	215H	260	245	230	260	270	265	285
21	300	280	260	E250E	E260E	265	230	235	225	220	230	210	210	210	210	225	230	250	260	250	260	250	300	295
22	295	275	260	245	260	275	225	240	220	210	205	205	200	220	205	210	225	250	250	250	275	240	280	300
23	255	265	280	255	240	245	225	225	225	210	210	240	225	215	I215A	I245A	235	255	A	A	240	270	305	300
24	300	260	280	315	350	280	255	230	230	225	220	210	215	210	230	240	235	255	255	255	240	300	285	300
25	310	260	265	255	255	260	230	230	220	210	200	180H	190	225	I220C	230	275	265	240	230	235	300	300	300
26	290	275	I240C	225	255	250	225	I230C	230	265	215	E270R	195	245	225	250	255	260	265	265	A	E275A	E305A	300
27	285	275	260	245	E260E	260	245	260	225	220	210	205	195	200	215	230	215	255	255	230	230	230	255	285
28	285	275	270	255	275	260	230	230	225	210	195H	210	I200B	220	225H	225	240	260	265	230	215	300	290	280
29	275	280	260	235	240	260	235	230	245	230	275	235	225	235	220	220H	230	255	260	220	230	280	300	295
30	305	285	270	275	300	260	225	235	220	I250A	I220A	I215R	210	200H	210	235	255	235	255	250	255	260	265	280
31																								
Count	29	29	29	29	29	29	29	29	29	29	28	28	29	28	29	29	29	29	28	28	28	29	29	29
Median	280	275	260	235	250	275	230	230	230	225	210	210	210	210	220	230	235	250	250	230	230	270	290	290
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

The Radio Research Laboratories, Japan

K10

IONOSPHERIC DATA

Apr. 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	E	E	B	B	G	G	175	C	135	125	B	B	115	115	G	125	B	B	105	B	115	110
2	110	110	B	B	E	B	G	G	G	G	115	115	G	G	G	G	G	G	120	115	115	B	B	S
3	S	S	110	110	E	B	G	165	150	115	115	130	115	110	G	G	G	G	130	S	B	110	S	S
4	110	110	B	E	110	B	G	G	G	125	115	115	115	115	115	110	G	G	110	105	110	105	100	100
5	S	B	B	E	B	B	G	165	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	G	G	G	G	G	100	G	S	115	S	S	B	B
7	S	S	B	B	B	105	G	G	G	G	115	110	105	100	G	100	115	100	100	115	S	S	S	S
8	B	B	E	E	E	B	G	G	110	130	120	G	G	G	G	G	115	150	120	S	B	S	B	S
9	S	B	E	E	B	B	G	G	G	C	120	G	120	115	115	120	125	G	G	115	115	110	115	110
10	100	110	B	110	115	B	145	G	125	125	G	120	115	G	G	G	G	130	125	115	115	115	B	B
11	B	B	E	B	B	B	155	155	G	130	120	120	110	110	115	110	110	G	160	S	110	105	100	100
12	B	B	B	B	E	B	150	165	G	G	115	G	G	G	G	115	G	G	125	120	B	B	S	S
13	S	B	E	E	E	E	150	110	140	110	115	110	105	105	105	185	175	150	120	110	110	105	105	S
14	S	B	E	E	E	B	145	G	115	110	105	110	105	110	100	G	G	180	115	110	110	105	S	S
15	S	B	E	E	E	B	G	150	130	130	G	G	G	G	120	110	G	155	G	S	100	100	S	S
16	S	S	E	E	B	B	G	G	150	130	120	G	G	G	G	G	G	G	130	B	B	B	B	B
17	B	110	B	E	E	155	155	155	140	135	G	125	110	110	110	110	G	G	125	120	B	B	B	S
18	S	B	B	B	E	160	155	155	140	125	125	G	G	110	110	G	140	120	120	115	115	105	110	105
19	105	B	B	B	E	155	145	125	135	120	130	G	G	G	G	G	G	G	130	120	115	115	B	110
20	110	110	110	110	110	115	G	135	135	G	G	115	115	G	115	G	G	145	120	115	110	110	110	105
21	105	B	B	E	E	B	155	140	130	130	125	125	G	G	G	G	G	G	120	115	100	100	100	S
22	S	S	E	E	E	S	150	140	140	120	125	130	110	110	110	G	105	105	105	110	105	S	S	S
23	S	B	E	E	E	S	150	140	130	G	120	115	110	110	110	110	110	130	115	115	110	B	B	B
24	B	B	B	B	B	160	G	130	130	G	120	115	G	115	110	115	G	150	120	115	S	110	105	100
25	120	B	110	B	B	135	130	140	135	120	120	115	G	115	C	G	130	120	120	115	110	110	S	S
26	105	B	C	B	B	S	145	C	125	120	G	125	130	170	155	150	130	130	120	115	115	110	110	105
27	105	105	B	105	E	160	140	130	135	130	G	G	125	G	G	175	155	G	130	S	110	105	115	110
28	S	B	B	B	B	150	G	160	G	G	G	G	B	G	G	G	G	130	115	115	115	115	115	S
29	S	B	B	105	B	145	140	125	120	120	120	G	115	115	G	G	140	125	120	115	115	110	115	110
30	110	B	110	110	110	135	125	120	120	115	115	115	120	G	G	160	135	120	115	115	115	115	115	115
31																								
Count	10	6	4	6	4	11	16	19	21	19	21	18	16	15	14	14	14	17	25	22	21	19	14	12
Median	110	110	110	110	110	150	150	140	135	125	120	115	115	110	110	115	130	130	120	115	110	110	110	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

K11

IONOSPHERIC DATA

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									h		h	h			1	1		h2			f		f3	f2
2	f4	f2									c	c							h	f	f			
3			f4	f				h	h	c	c	h	1	c					h			f4		
4	f	f			f					h	c	c	c2	c2	c	12			1	f	f2	f2	f	f2
5								h																
6																	1			f				
7						f					c	1	1	1		12	1	12	13	f				
8									12	h	c						1	h	h					
9											c		c	1	c	c	h			f4	f2	f	f	f
10	f2	f2		f	f2		h		h	h		c	1					h	h	f	f2	f2		
11							h2	h		h	c	c	1	1	1	c	12		h		f2	f3	f2	f
12							h	h			c					12			h2	f				
13							h	1	h12	c	c	1	12	12	12	h	h	h	c3	f6	f3	f3	f2	
14							h2		c	c	12	1	1	1	1			h	14	f4	f3	f3		
15								h2	h	h					c1	1		h			f	f		
16									h	h	c								h3					
17		f				h	h	h	h	h		h	1	12	1	1			h2	f4				
18						h	h	h	h	h	h			1	1		h	c4	14	f4	f5	f	f2	f
19	f					h	h	h	h	c	h								h2	f4	f6	f6		f
20	f3	f3	f2	f2	f2	f		h	h			c2	c		c			h	c2	f	f	f3	f2	f2
21	f						h2	h	h	h2	h	h							c2	f5	f3	f3	f4	
22							h	h	h	h	h	h	1	1	1		1	13	12	f2	f			
23							h	h2	h		c	c	1	1	1	12	13	h2	13	f4	f			
24						h		h	h		c	c		1	1	1		h	12	f2		f2	f	f
25	f		f			h2	h2	h	h	c	c	1		1			h2	c3	c3	f6	f2	f4		
26	f						h		h2	c		h	h	h	h	h	h	h3	c3	f3	f3	f3	f2	f2
27	f	f		f		h	h	h2	h	h			h			h	h		h2		f	f	f	f2
28						h		h										h2	c3	f5	f7	f4	f2	
29				f		h	h	h2	c	c	c		c	c			h	h3	12	f	f4	f2	f2	f2
30	f2		f	f3	f	h2	h4	c	c	c	13	c	c			h	h	c2	c2	f4	f2	f2	f2	f2
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

K12

IONOSPHERIC DATA

Apr. 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	U380R	350	325	300	385	385	295R	305	330	I325C	340	355	370	370	370	360	365	330	340	320R	380	405	375	400
2	385	355	310	345	365	360	U315R	340	315	330	335	370	365	370	365	365	360	340	320	300	350	415	410	I415R
3	U360R	U330R	280	335	440	415	305R	300R	315	350	350	340	360	390	350	350	330	350	300	285	395	390	375	360
4	340	340	300	315	395	380	310	275R	315	315	335	345	365	355	365	365	340	330	320	U300R	360R	U370R	U375R	U370R
5	390R	420	370	390	365	395	U330R	325	320	365	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	330	360	360	355	350	335	325	300	285R	370R	385R	U380R	U360R
7	395	395	395	385	375	375	310	325R	300	305	310	325	330	350	340	340	320	320	310	J320R	J300R	J330R	345	U355R
8	360	360	355	360	360	375	310	300	300	310	335	355	355	335	370	375R	330	320	300	275	340R	U370R	U375R	I365R
9	U350R	U330R	U310R	290R	355	350	280	290	305	I310C	360	355	335	360	355	335	330	330	320	320R	310	360	365	350
10	U320R	U320R	340	320	390	375	285	U280R	310	315	310	335	360	365	350	345	325	315	285	285	U365S	U365S	U345S	I355R
11	U340R	390R	U365R	355	390	375	300	310	280	310	330	330	355	360	345	330	330	335	320	U310R	320	U325R	U365R	U360R
12	U375R	375R	335R	310	375	370	295	U280R	U285R	330R	320	350	360	350	330	350	350	J330R	315	J315R	300	U300S	360	390
13	370S	360	345	335	380	360	290	280	300	330R	325	320	325	350	350	345	330	325	310	295	U280S	380	375	U355S
14	I330S	345	360	345	350	345	300	295	310	320	335	350	350	345	345	330	320	305	J305R	305	U315S	U345S	I350S	I360S
15	U350S	355S	U305S	320	350	330	300	265	290	330	340	355	355	350	335	325	315	305	300	J310S	350	365	I355S	U355S
16	U350S	I330S	300S	250	360	390	275	300	310	330	350	345	360	360	355	340	340	345	330	295	275	380	U380R	U375R
17	U385R	U345R	300R	300	405R	395	275	305	305	330	330	345	365	345	330	330	I320C	315R	315R	320R	U325R	U375R	U370R	U365R
18	I330R	U315R	350	365R	385	360R	290	310	315	325	320	320	360	355	365	355	345	320	320R	U310R	340	335R	365R	U400R
19	U400R	U390R	U335R	305	400	395	U305R	310	310	315	330	340	370H	345	340	330	325	310	295R	360R	U395R	380	U405R	J370R
20	355	360R	360R	335	375	320R	270R	305R	330	335	345	340	355	335	345	330	335	325	305	325	U365R	I365R	370R	U365R
21	390	U375R	355	345	370	335	300R	295R	305	300	350	350	350	350	350	320	330	330	320	320	330	U360S	J350S	U375S
22	J370S	U360S	335	310	360	J355S	260	290	300	310	320	335	350	355	350	330	320	320	J320R	345	380	U320S	U380S	I380S
23	350	360	I380S	350	380	U300S	U260S	280	305	320	340	345	U340R	345	330	345	330	315	310	305R	335R	U380R	U390R	395R
24	U385R	345R	395	450	450	375	340R	310	345	380	325	345	380	375	360	330	325	315R	330	330	U325R	395	385R	405R
25	U395S	U345R	355	I355R	385	325	295R	305	280	335	365	375	365	375	I370C	360	330	315	290R	300	360	390	385	395R
26	380R	U355R	I320C	335	380	315	280	I290C	315	330	340	365	370	375	365	360	330	335	315	310R	A	370	U375R	I360R
27	I345R	I340R	335R	335R	385	U335R	305	295R	305	330	375	375	375	365	360	355	350	345	320	U315R	310R	U330R	U365R	385R
28	370R	U365R	U340R	345	370	330R	305R	305R	305	290	380	380	365	360	365	360	360	350	325	290	310	405R	380	375R
29	375	365	U320R	U300R	340	330R	305	310R	305R	360	365	370	380	380	380	355	350	330	310	285	355	I390R	I390R	U380R
30	390R	I380R	U340R	365	U385R	U325R	320	280	315	325	I360A	385	370	365	355	330	330	320	315R	325	345R	360	U365R	385R
31																								
Count	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	28	29	29	29
Median	U370R	355R	340	335	380	360	300	300	305	325	340	345	360	360	355	345	330	325	315	310	340	370	U375R	U370R
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

K13

IONOSPHERIC DATA

Apr. 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	U075R	075	070	080	080	070	065R	060	065	I075C	090	085	090	080	080	090	080	085	060	080R	095	070	070	080
2	085	080	080	080	080	070	U070R	085	085	085	095	085	080	070	075	080	080	075	085	080	080	065	085	I080R
3	U070R	U080R	060	090	085	080	075R	075R	070	100	085	060	100	100	085	095	075	085	080	085	090	075	065	080
4	080	085	085	095	075	075	065	060R	050	075	085	080	080	065	065	075	100	080	080	U090R	080R	U060R	U070R	U060R
5	075R	075	085	090	075	065	U090R	080	080	080	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	075	075	085	080	085	100	080	080	075R	070R	070R	U070R	U080R
7	075	060	065	075	075	070	060	055R	070	095	085	080	095	090	095	085	100	080	085	J080R	J095R	J080R	075	U090R
8	085	095	090	090	100	075	090	060	075	090	085	075	080	085	070	075R	085	075	085	075	085R	U075R	U090R	I070R
9	U060R	U065R	U085R	070R	090	070	060	060	065	I080C	075	075	070	070	075	105	100	090	080	070R	075	080	065	070
10	U060R	U065R	065	060	065	065	070	U075R	050	080	080	095	080	080	090	075	075	075	090	100	U085S	U065S	U065S	I070R
11	U085R	065R	U060R	075	075	060	080	050	070	075	095	095	070	070	075	090	085	075	070	U075R	070	U070R	U075R	U065R
12	U075R	070R	070R	080	065	060	085	U070R	U075R	085R	090	095	085	095	080	095	080	J090R	085	J065R	060	U060S	090	070
13	080S	065	070	080	090	080	060	045	050	070R	075	080	105	080	100	080	085	075	085	055	U065S	080	070	U055S
14	I065S	065	090	100	070	060	055	055	070	080	080	080	080	080	085	100	090	080	J055R	090	U080S	U065S	I065S	I060S
15	U060S	055S	U055S	075	090	080	060	080	070	110	070	095	090	075	075	085	085	090	050	J090S	070	080	I065S	U060S
16	U060S	I060S	050S	050	085	105	070	060	070	070	075	070	080	090	080	080	090	085	075	070	080	075	U070R	U070R
17	U060R	U080R	085R	080	070R	085	070	065	065	070	080	085	075	080	085	095	I080C	065R	075R	070R	U075R	U065R	U050R	U060R
18	I065R	U060R	075	075R	065	065R	085	075	065	075	080	085	085	090	080	085	085	080	080R	U065R	075	075R	065R	U070R
19	U070R	U065R	U055R	085	090	080	U060R	080	065	070	075	090	085H	095	095	090	080	075	075R	075R	U085R	085	U095R	J085R
20	080	070R	080R	075	095	080R	085R	070R	085	075	090	095	085	095	085	095	090	085	075	080	U080R	I075R	060R	U075R
21	090	U075R	085	080	075	085	080R	070R	055	105	080	100	080	090	075	090	085	095	090	080	070	U090S	J095S	U070S
22	J060S	U090S	060	065	070	J090S	060	065	065	110	080	105	100	095	095	080	085	080	J080R	100	085	U080S	U070S	I080S
23	060	090	I080S	095	085	U055S	U065S	070	090	075	085	085	U090R	085	085	090	080	080	070	075R	085R	U060R	U060R	070R
24	U085R	075R	100	090	080	090	090R	100	060	090	085	095	100	085	090	080	075	080R	080	080	U085R	085	095R	090R
25	U085S	U085R	075	I090R	095	080	085R	075	095	080	105	085	065	055	I075C	070	095	085	080R	080	090	080	070	060R
26	070R	U075R	I080C	075	085	090	080	I075C	070	085	095	085	075	080	065	070	085	090	080	070R	A	095	U065R	I070R
27	I070R	I070R	075R	065R	085	U080R	070	065R	065	075	100	085	090	080	070	075	095	105	080	U080R	065R	U075R	U060R	070R
28	060R	U075R	U085R	095	070	065R	075R	070R	070	085	095	100	095	090	080	090	090	080	080	085	080	075R	085	065R
29	085	065	U075R	U075R	065	065R	070	065R	060R	065	085	090	095	090	095	085	085	095	085	070	100	I080R	I085R	U055R
30	080R	I090R	U080R	065	U075R	U080R	085	085	065	090	I100A	095	080	090	085	100	095	080	065R	075	085R	080	U065R	060R
31																								
Count	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	28	29	29	29
Median	U075R	075R	075	080	080	075	070	070	070	080	085	085	085	085	080	085	085	080	080	080	080	075	U070R	U070R
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

K14

IONOSPHERIC DATA

Apr. 1967 | foF2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5′N | Long. 130° 37.7′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	I095S	090S	086S	U072S	056	050	054S	083	104	120	123	119	129	139	136	132	131	131	131	132S	122S	I129S	U131S	124S
2	118	115S	121	I098S	I077S	069S	I070S	089S	119	127	116	116	124	129	122	117	120	121	124	112	090S	U090S	103S	102S
3	J100S	104S	I094S	F	I050S	046	I053S	085S	107	102	116	123	119	128	131	130	131	129	123	U104S	081S	J078S	U082S	081S
4	U081S	J081S	U083S	066	046	046	U055S	089	098S	105	113	118	121	125	128	130	124	128	132	111	086	081	U083S	I083S
5	I080S	U072S	S	065	061	056	062S	U092S	122	127	126	126	134	140	131	127	119	118	U120S	107	082	I076S	U074S	078S
6	081S	U082S	083	057	059	058	I068S	090	106	107	109	118	125	133	136S	130	132	135S	132S	J119S	U093S	079	I075S	077S
7	I076S	U072S	U073S	U071S	067	U064S	I073S	103	111	110	112	120	122	126	132	123	115	118S	128	124	J101S	081S	J075S	071S
8	072S	070S	J073S	067	054	050	057	091S	103	119	124	125	137	145	144	142	147S	146S	140S	126S	J096S	U092S	I093S	J096S
9	S	S	S	087S	060	049	059	082	090S	097	108	120	129	131	134	131	118	120	129	128	110	J101S	J101S	103S
10	089S	085S	085	I073S	063	062	I074S	092S	102	104	109	118	127	127	133	J140S	136	123	121	102	J085S	U087S	092S	U097S
11	I092S	U087S	085	J078S	I074S	I074S	085	102	111	113	107	113	132	140	138	132	125	127	125	123S	117	J098S	J097S	I102S
12	J097S	I093S	U096S	U089S	U073S	072S	082S	104	094S	093	104	116	125	133	129	128S	134S	131	125	125	112	J085S	070S	067S
13	U069S	U072S	J073S	063S	057	055	068	U092S	105	108	109	117	120	127	130	138	137	133	125	111	J091S	I075S	I076S	083S
14	082S	080S	I076S	U071S	063	061	U071S	U090S	101	107	103	114	124	137S	140	137S	128	122	118	109S	088S	U084S	088S	088S
15	I089S	091S	096S	083S	073S	U069S	J080S	U092S	093	096S	104	117	129	143	J153S	I154S	146S	137S	123	102	085	084	085	086S
16	086	086	I091S	S	046	042	056	083	095	091	102	114	121	128	136	128	129	127	U135S	126	095S	081S	I080S	U082S
17	082S	080	089S	063	050	052	064	082	092S	106	108	112	122	130	122	118S	119	113	116	109	085S	U082S	083	I088S
18	080	I073S	070S	065	063	060	I075S	J100S	103	108	106	110	123	128	125	129	134	133S	124	122	102S	J084S	084S	084
19	I088S	087S	I087S	I078S	065	063	U077S	098S	101	099	104	109	122	135	131	126	124	123	112S	J092S	077S	U083S	080	078S
20	081	U077S	068	066	057	049	064S	085	094S	104	114	115	127	134	132S	124	126	124	118	106S	096S	I092S	I086S	085
21	080	081	J080S	U072S	065	066	081	100	099	087	094	108	127	137	129	128	125	122S	121	123	J101S	085S	085S	I088S
22	I088S	084S	081S	U072S	069	063	I077S	087	090	102	109	108	118	127	136	130	124	120	J121S	105	I098S	091S	081S	081S
23	078S	U072S	066	062	063	063	I073S	080	091S	096	099	119	126	129	130	131	133	127	117	104	U090S	I082S	I084S	087
24	084S	I082S	I070S	061	059	064	U071S	077	090	U107S	107	118	125	132R	U139S	140	134	127S	118	113	092S	U074S	U080S	078S
25	079S	U079S	U074S	067	062	056	I080S	U096S	090S	088	098	118	140	147S	U149S	148S	153	147S	134S	111	I092A	I082A	078	U084S
26	I092S	I095S	092S	084	066	060	073S	086	096	097S	102	111	127	138S	144	145	U139S	U138S	133	126	101	083	I088S	091
27	091	U097S	101S	I085S	J076S	070S	087S	I095S	093S	092	097	112	126	133	145	U150S	139	133	137S	I135S	116	093S	091S	I095S
28	093S	U092S	090	082	079S	I075S	090S	113	102	089	091	109	121	128	134	U134S	127	134S	J139S	131	094S	091S	097S	102S
29	099S	I097S	I093S	081S	I072S	069	086	099	102	094	100	108	118	128	136S	138S	135S	137	135S	114	I094S	I094S	I099S	I108S
30	I110S	I102S	I095S	I088S	084	I088S	I104S	108	093	089	093	106	125	132	134	129	127	122	114	100S	096S	095S	I095S	I095S
31																								
Count	29	29	28	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	086S	U084S	085S	072S	063	062	073S	092	100	103	107	116	125	132	134	130	130	127	124	112	094S	084S	084S	086S
U.Q.	092	092	092	082	072	069	080	099	104	108	112	118	127	137	138	138	135	133	132	125	101	092	093	096
L.Q.	080	078	074	066	057	052	064	085	093	094	102	111	122	128	130	128	124	122	120	106	088	081	080	081
Q.R.	012	014	018	016	015	017	016	014	011	014	010	007	005	009	008	010	011	011	012	019	013	011	013	015

The Radio Research Laboratories, Japan

foF2

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

Y 1

IONOSPHERIC DATA

Apr. 1967 | foF1 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5′N | Long. 130° 37.7′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	LH	L	L	LH	L	L	L						
2										L	L	LH	LH	LH	LH	L	L	L						
3										L	LH	LH	LH	L	L	LH	L	LH						
4										L	LH	L	LH	LH	L	L	L	L						
5									L	L	L	L	LH	LH	LH	L	LH	LH						
6									L	LH	LH	LH	L	LH	LH	520H	LH	LH						
7									L	L	L	LH	LH	LH	L	L	LH	LH						
8										LH	LH	LH	LH	LH	LH	L	L	L						
9									L	L	LH	LH	LH	L	LH	LH	LH	L						
10										L	L	L	L	LH	LH	LH	L							
11										L	LH	L	L	L	L	LH	LH	LH						
12									L	L	L	LH	LH	LH	LH	LH	LH	L						
13									L	LH	L	L	L	L	L	LH	L	LH						
14									LH	L	LH	L	LH	LH	530L	LH	LH	L						
15									L	L	L	L	520L	L	550L	LH	L	L						
16									L	L	LH	L	LH	L	560L	L	LH	L	L					
17									L	L	LH	540L	LH	A	LH	LH	LH	L						
18									L	L	L	LH	LH	LH	LH	LH	LH	L						
19									L	L	L	LH	LH	U580L	U560L	LH	LH	L						
20									L	L	L	LH	A	L	L	L	LH	L						
21									L	L	LH	LH	L	L	L	LH	LH	LH						
22									L	L	LH	LH	LH	L	A	L	LH	L						
23										L	LH	L	L	L	L	LH	L	L						
24										L	L	L	L	LH	L	LH	L	L						
25										L	L	LH	L	L	L	L	L	L						
26									L	L	A	LH	L	550	A	L	L	LH						
27									L	LH	LH	L	570	A	A	LH	L	L	A					
28								L	L	LH	LH	LH	LH	LH	LH	U560L	L	L	A					
29									L	L	L	LH	LH	620	A	U560L	LH	LH	L					
30									L	L	A	U620L	550	L	L	LH	LH	L	A					
31																								
Count												2	3	3	4	3								
Median												U580L	550	580	560L	U560L								
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

Y 2

IONOSPHERIC DATA

Apr. 1967 | **foE** | **135° E Mean Time** (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5′N, Long. 130° 37.7′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S	230H	290	345	360	375	390R	400R	390	370	350	300	220					
2							B	230	290	340	360	370S	360S	370	380S	370	340	290	I205A					
3							B	230	305	340	360	380	A	A	A	A	I330A	280	200H					
4							S	235	310	345	365	A	A	A	A	A	330	270	A					
5							S	220	300	335	350H	365R	I380R	370R	370	345	320	285	A					
6							S	225	285	320	350H	350	365	365	360	340	320	275	A					
7							B	215	285	330	340	350	350	I365R	I360A	340	310	270	210					
8							S	220	290	330	350	360	I365A	370	365	345	315	280	210					
9							B	230	300	330	350	360	360	370	360	345	320H	280	210					
10							S	230	290	320	350	360	365	360S	350	350	330	285	200					
11							S	230	300	330	350	360	350	365	360R	340	I310A	280	200					
12							S	250	300	335	350	I355A	365	I365R	360	350	320H	280	195					
13							S	230	300	330	340	I365A	370	I370A	370	350H	330	280	205					
14							S	240	300	335	I340A	I360A	I375A	380	360	350	320	280	220					
15							S	240	300	330	350	A	A	R	365	345	320	280	215H					
16							S	250H	300	330	345	370	375	375	370	340	320	290	220					
17							S	230	300	335H	360	380	I375A	I370A	I360R	I360A	325	I285A	215					
18							B	250	305	330	350H	360	R	A	I360R	340	315	280	210					
19							140S	255	300	330	350	360	365	365	360	345	320	285	210R					
20							S	230	305	335	360	370	370	370	I360A	A	330	285H	220					
21							160	265H	305H	335H	355H	370	370	360	360	350	320	280	220					
22							S	240	295	335	350	360	370	370	360	340	320	285	A					
23							160	250H	300	330	345	350	A	A	A	A	330H	290	215					
24							170	250H	300H	335	A	A	A	A	A	360	340	300	220R					
25							170	265	310	335	355	370	A	A	A	A	330	290	220					
26							S	260H	300	335	355	360	365	I370A	370	355	330	300	225					
27							S	265	310	335	355	370	370R	360	350	360	340	300	230					
28							A	A	A	A	355R	I370A	380	380R	375	360	330	290	230					
29							160	260	310	340	370	370	I370A	370	380	365	330	290	220					
30							160	270	310	340	360	365	370	390R	380	360	335	300	220					
31																								
Count							7	29	29	29	29	27	23	23	25	25	30	30	26					
Median							160	240	300	335	350	365	370	370	360	350	330	285	215					
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

Y 3

IONOSPHERIC DATA

Apr. 1967 | foEs | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5'N | Long. 130° 37.7'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E015S	E011B	E	E	E	E011B	E015S	G	G	G	G	G	G	042	043	042	G	G	G	E014S	E015S	E014S	E015S	E015S
2	E015S	E011B	E014S	E	E	E	E012B	G	G	036	041	044	040	042	040	G	023G	035	027	J027	J021	J024	E015S	E015S
3	E015S	J015	J022	011	J025	E	022	031	033	036	039	J046	047	065	J054	048	047	023G	G	E015S	E015S	E015S	E015S	E014S
4	E012B	J027	020	E	E	E015S	E015S	G	G	G	039	042	047	J045	041	J048	J036	J043	J027	021	E015S	E012B	E015S	020
5	E015S	017	E011B	E	012	E	E014S	G	G	G	G	G	037G	034G	033G	032G	030G	020G	021	J021	J017	E015S	E011B	E015S
6	E015S	E012B	E	E	E	E	E013S	G	G	G	G	037	G	G	033G	J033G	023G	J028	J026	J018	J012S	E015S	E015S	E015S
7	E015S	E012B	E	E	E	E	E012B	G	G	035	G	G	G	G	047M	J030G	025G	020G	023	017	J015S	E015S	E015S	E015S
8	E015S	E015S	E	E	E	E	E015S	G	032	G	037	040	042	G	038	034G	034	J030	023	J021	E015S	E013S	E014S	E015S
9	E015S	E011B	E015S	E	E	E011B	E011B	G	G	G	038	044	040	039	G	G	035	G	G	J024	E015S	E015S	E015S	E015S
10	E015S	E015S	E012B	E	E	E	E015S	026	031	035	040	046	046	038	038	029G	027G	031	027	017	017	J020	J049	J060
11	J025	017	E	E	019	E011B	E015S	027	031	039	043	042	039	040	044	037	036	029	025	020	J023	J023	J028	023
12	019	E014S	E013B	E	E	E	E015S	G	033	037	038	039	034G	033G	030G	027G	G	016G	027	019	021M	E014S	E012B	E015S
13	E014S	E015S	E	E	E	E	E015S	G	G	037	037	038	036G	J042	G	G	G	031	029	J026	021	J033	J056	J026
14	J052	J025	J023	E011B	E	E	E015S	G	G	G	039	043	045	038G	G	G	G	G	025	J061	J052	J043	J025	020
15	021	J022	E015B	J026	J027	013	023	028	034	038	G	041	J045	037G	033G	031G	038	035	039	J043	E015S	E011B	E015S	E015S
16	E015S	E015S	E012B	E	E	E011B	E012B	028	033	035	037	G	034G	034G	027G	G	018G	G	G	E013B	E015S	E014S	E015S	E015S
17	E015S	E014S	E	E	E	E	E014S	G	034	037	039	041	041	065	031G	J041	033	J036	038	040	038	025	E015S	E015S
18	E015S	E015S	E	E	E	E	020	030	034	040	037	038	046	039	036G	033G	G	G	G	J029	J024	J020	022	J028
19	021	E015S	E015B	E	E011B	E011B	024	032	034	040	042	040	042	038	G	G	G	G	026	020	J025	J027	027	J030
20	J058	J033	J030	J016	J025	J012S	E014S	030	034	037	042	040	J064	G	J048	035	G	G	025	J032	J025	J028	J051	J043
21	J028	J020	E014B	J019	E	E014B	020	030	034	037	039	G	041	041	039	G	G	G	024	024	J021	022	J040	E015S
22	E015S	E015S	E011B	021	E	E	022	029	035	039	039	039	041	043	J065	G	G	029	J026	015	J036	021	020	E015S
23	E015S	E014S	E015B	E	J018	E012B	021	029	034	041	043	042	041	J041	J040	041	043	J046	J063	J036	J036	J029	J026	E015S
24	E015S	E011B	E011B	E014B	E014B	E014B	022	030	035	039	044	047	053	J054	J044	039	G	G	030	J041	J061	J044	J053	020M
25	E015S	020	020	E016B	E	E	G	028	034	039	043	040	038	040	J085	044	049	J054	J095	086M	116M	096M	049M	J028
26	J024	020	E015S	J015	J019	020	E014S	032	042	051	056	062	048	J049	054	049	042	040	J041	J035	J037	J023	J054	J056
27	J043	J026	J023	E015B	J045	J019	028	032	034	037	043	040	041	J105	J081	020G	044	043	J056	097M	J028	J032	067M	J044
28	J028	E017S	E015B	J013	J031	J029	023	032	032	035	033G	038	037G	045	047	043	043	045	J046	J041	067M	J042	E015S	E014S
29	E015S	E014S	J027	J028	E014B	J020	024	034	042	042	043	043	046	051	J085	G	G	032	029	018	J029	021	E015S	058M
30	J045	J039	J039	J026	J017	E013B	022	040	044	J083	J084	J054	G	054	055	G	036	039	J063	J084	022	015	090M	035M
31																								
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	E015S	E015	E014	E	E	E011	E015	028	033	037	039	040	041	040	040	G	G	029	026	J024	J022	021	E018	E015S
U.Q.	024	020	020	014	018	E013	022	030	034	039	043	043	046	045	048	041	036	036	038	040	036	028	049	028
L.Q.	E015	E014	E	E	E	E	E014	G	G	035	037	038	G	G	G	G	G	G	023	018	014	E015	E015	E015
Q.R.	D009	D006					D008			004	006	005							015	022	022	D013	D034	D013

foEs

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

IONOSPHERIC DATA

Apr. 1967 | **f_bEs** | **135° E Mean Time** (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5′N | Long. 130° 37.7′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	B				B	S							E042R	042	042				S	S	S	S	S
2	S	B	S				B			G	041	043	E040R	042	E040R		023G	G	026	022	E	020	S	S
3	S	E	019	E	017		G	G	G	036	039	040	044	042	049	041	046	020G		S	S	S	S	S
4	B	E	E			S	S				G	040	046	041	038	036	026	037	023	E	S	B	S	E
5	S	E	B		011		S						E037R	034G	033G	032G	028G	018G	E021R	017	015	S	B	S
6	S	B					S					G			033G	032G	022G	024	024	015	E	S	S	S
7	S	B					B			G					045	029G	024G	020G	G	016	S	S	S	S
8	S	S					S		G		G	039	039		034	031G	G	023	G	016	S	S	S	S
9	S	B	S			B	B				038	041	039	E039R			G			E	S	S	S	S
10	S	S	B				S	G	G	G	040	042	044	E038R	E038R	029G	027G	G	027	017	E	016	E	026
11	022	E			E	B	S	G	G	038	039	041	039	G	041	037	032	027	G	016	023	017	025	E
12	E	S	B				S		G	036	037	039	034G	033G	030G	027G		016G	026	019	S	S	B	S
13	S	S					S			G	G	038	035G	040				G	029	024	E	022	046	017
14	022	018	016	B			S				037	040	040	035G					G	061	030	025	023	E
15	E	018	B	022	025	013	G	G	G	036		040	039	E037R	033G	031G	037	034	038	021	S	B	S	S
16	S	S	B			B	B	G	G	G	G		034G	034G	027G		018G			B	S	S	S	S
17	S	S					S		G	G	038	039	039	055	029G	035	031	031	036	037	037	015	S	S
18	S	S					G	G	033	G	G	E038R	043	039	E036R	033G				027	020	017	018	023
19	E	S	B		B	B	G	G	G	039	041	039	039	E038R					025	020	024	025	018	E030S
20	053	026	023	012	015	E	S	029	032	G	040	G	060		042	035			G	031	023	017	029	031
21	023	E	B	014		B	G	G	G	G	G		041	040	039				G	021	021	016	025	S
22	S	S	B	012			G	G	034	038	G	G	040	042	063			023	024	015	026	016	E	S
23	S	S	B		013	B	G	G	G	039	040	040	040	040	038	039	042	043	054	035	025	022	016	S
24	S	B	B	B	B	B	G	G	034	038	043	043	041	043	039	037			030	039	053	042	043	E
25	S	E	E	B				G	G	038	039	E040R	E038R	040	045	041	048	042	092	071	A	A	034	028
26	021	E	S	012	014	E	S	032	040	045	053	047	047	041	054	049	042	031	034	032	031	E	016	043
27	032	017	E	B	029	017	027	031	G	G	043	040	E041R	098	058	020G	044	037	044	E097S	027	025	064	035
28	022	S	B	012	022	021	022	031	032	034	033G	038	036G	045	045	040	040	043	043	035	050	023	S	S
29	S	S	018	024	B	017	G	032	039	040	042	043	043	049	080			G	025	017	022	E	S	U036A
30	040	024	027	021	015	B	G	030	040	045	063	045		050	050		035	034	062	050	E	014	042	025
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

f_bEs

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

The Radio Research Laboratories, Japan

Y 5

IONOSPHERIC DATA

Apr. 1967 | f-min | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5′N | Long. 130° 37.7′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E015S	011	E	E	E	011	E015S	E015S	015	024	021	027	030	027	030	025	022	014	E014S	E014S	E015S	E014S	E015S	E015S
2	E015S	011	E014S	E	E	E	012	E013S	015	018	018	027	028	025	025	023	018	014	015	012	E015S	E014S	E015S	E015S
3	E015S	E014S	011	E	E	E	012	E015S	016	017	023	022	025	024	023	024	017	012	014	E015S	E015S	E015S	E015S	E014S
4	012	E015S	E	E	E	E015S	E015S	E015S	016	017	022	022	023	023	024	017	016	015	012	E015S	E015S	012	E015S	E015S
5	E015S	E015S	011	E	E	E	E014S	E014S	015	014	018	019	023	022	018	018	015	012	011	011	012	E015S	011	E015S
6	E015S	012	E	E	E	E	E013S	E014S	015	014	019	019	023	018	018	018	015	012	012	011	E013S	E015S	E015S	E015S
7	E015S	012	E	E	E	E	012	E014S	014	017	022	022	022	022	022	017	014	012	011	012	E014S	E015S	E015S	E015S
8	E015S	E015S	E	E	E	E	E015S	E014S	015	017	017	021	022	024	023	022	015	013	E014S	E015S	E015S	E013S	E014S	E015S
9	E015S	011	E015S	E	E	011	011	013	014	015	018	023	023	022	023	022	015	013	013	011	E015S	E015S	E015S	E015S
10	E015S	E015S	012	E	E	E	E015S	E015S	014	014	018	018	024	022	018	018	017	013	011	011	E015S	012	E015S	E015S
11	013	E015S	E	E	E	011	E015S	012	012	015	022	023	024	023	023	023	015	015	012	E014S	E015S	E014S	E014S	E015S
12	E015S	E014S	013	E	E	E	E015S	014	013	017	017	022	023	022	022	022	017	012	014	011	011	E014S	012	E015S
13	E014S	E015S	E	E	E	E	E015S	014	014	015	016	023	024	022	022	018	018	011	014	012	012	E014S	E015S	E014S
14	E014S	E014S	011	011	E	E	E015S	011	013	014	017	023	022	022	022	017	016	012	014	011	E015S	012	013	E015S
15	E015S	E014S	015	E	E	E	E014S	012	013	016	018	024	022	023	022	024	013	013	012	011	E015S	011	E015S	E015S
16	E015S	E015S	012	E	E	011	012	011	012	014	017	022	024	023	022	022	017	015	015	013	E015S	E014S	E015S	E015S
17	E015S	E014S	E	E	E	E	E014S	011	015	016	017	022	022	019	024	018	015	012	011	E013S	E014S	012	E015S	E015S
18	E015S	E015S	E	E	E	E	011	012	013	016	018	018	022	022	023	018	016	012	013	011	011	E015S	011	012
19	E015S	E015S	015	E	011	011	012	E015S	015	016	018	022	022	022	022	022	017	014	013	011	012	013	E015S	012
20	012	E015S	011	E	E	E015S	E014S	014	016	015	022	023	024	023	023	018	016	015	014	011	012	E014S	E015S	E015S
21	E015S	E015S	014	E	E	014	E015S	015	014	016	022	023	025	022	023	026	017	015	015	011	011	E015S	E015S	E015S
22	E015S	E015S	011	E	E	E	E014S	E015S	015	016	022	022	022	025	023	022	016	015	014	E013S	E015S	E015S	E015S	E015S
23	E015S	E014S	015	E	E	012	E014S	014	014	016	022	022	022	022	023	022	017	016	014	011	E015S	E015S	E015S	E015S
24	E015S	011	011	014	014	014	E015S	015	015	017	022	022	023	026	023	022	017	014	014	011	E015S	E015S	E015S	E015S
25	E015S	E015S	E	016	E	E	E015S	012	014	017	021	023	023	023	023	022	017	014	015	011	E015S	E015S	E014S	E015S
26	011	E015S	E015S	E	E	011	E014S	014	016	017	022	024	025	023	023	018	015	014	014	011	E014S	E015S	E015S	E015S
27	E015S	013	E015S	015	011	E	E015S	014	016	015	017	022	022	023	021	017	022	017	015	E017S	E015S	E014S	E015S	E015S
28	E015S	E017S	015	E	E	012	012	015	015	016	022	024	023	025	025	021	017	015	014	011	012	E015S	E015S	E014S
29	E015S	E014S	011	012	014	E	E015S	015	015	019	024	025	023	024	025	015	016	014	015	012	E014S	E015S	E015S	E014S
30	E015S	011	011	E	E	013	E015S	013	014	022	022	023	022	023	022	021	021	015	014	011	E015S	011	011	E015S
31																								
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	E015S	E014S	E011	E	E	E	E014S	013	015	016	020	022	023	023	023	022	016	014	014	011	E015S	E014S	E015S	E015S
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

Y 6

IONOSPHERIC DATA

Apr. 1967 | M(3000) F2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5'N Long. 130° 37.7'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	I280S	290S	300S	U295S	275	270	280S	315	305	310	295	280	270	280	280	275	275	280	285	295S	280S	I250S	U260S	265S
2	280	285S	300	I300S	I290S	280S	I285S	280S	305	305	295	265	275	280	280	265	275	280	300	295	270S	U255S	260S	265S
3	J265S	300S	I330S	F	I255S	250	I270S	320S	320	295	290	300	280	275	280	275	285	300	305	U310S	265S	J255S	U265S	275S
4	U280S	J300S	U305S	335	265	270	U290S	320	315S	300	295	290	275	280	275	280	275	290	305	305	280	260	U265S	I275S
5	I270S	U230S	S	280	275	270	265S	U290S	310	310	305	285	285	285	280	285	285	290	U305S	310	280	I265S	U250S	265S
6	285S	U300S	315	260	260	280	I280S	315	320	315	290	285	285	280	285S	285	285	295S	300S	J305S	U295S	275	I270S	270S
7	I275S	U265S	U260S	U270S	275	U270S	I285S	315	320	310	295	290	280	275	290	295	280	290S	300	315	J305S	285S	J270S	270S
8	265S	270S	J290S	300	285	265	280	310S	310	305	300	280	285	285	280	280	295S	295S	305S	310S	J270S	U270S	I265S	J270S
9	S	S	S	335S	300	285	290	330	315S	300	285	285	290	290	290	285	280	285	295	305	300	J280S	J270S	285S
10	290S	290S	295	I305S	280	290	I300S	325S	315	315	290	285	275	270	280	J285S	295	300	300	300	J265S	U275S	275S	U280S
11	I280S	U275S	275	J275S	I260S	I275S	280	320	310	310	290	275	285	285	280	290	280	290	290	300S	300	J285S	J270S	I280S
12	J280S	I280S	U290S	U315S	U290S	280S	295S	335	320S	300	285	285	285	290	285	280S	290S	300	300	300	325	J305S	255S	270S
13	U270S	U280S	J285S	295S	275	285	300	U325S	330	310	305	290	290	285	275	285	285	300	315	305	J310S	I270S	I270S	275S
14	295S	290S	I285S	U295S	285	285	U315S	U325S	325	315	290	275	280	285S	285	290S	290	295	295	305S	285S	U275S	265S	275S
15	I270S	275S	300S	300S	275S	U285S	J305S	U315S	315	305S	280	285	280	280	J290S	I295S	295S	300S	310	305	275	275	270	280S
16	280	285	I300S	S	285	265	300	325	315	320	285	285	285	280	285	280	280	285	U295S	315	295S	270S	I260S	U260S
17	270S	275	315S	350	260	260	300	320	315S	305	295	285	280	290	280	285S	290	290	300	310	285S	U270S	270	I290S
18	295	I280S	275S	285	280	280	I300S	J320S	315	310	290	280	280	280	275	270	285	295S	300	305	315S	J265S	265S	260
19	I265S	275S	I285S	I285S	275	260	U285S	325S	325	305	290	275	275	290	290	290	290	300	310S	J280S	280S	U265S	270	265S
20	280	U285S	270	275	295	280	300S	335	295S	300	300	280	285	285	290S	280	280	300	295	305S	280S	I290S	I280S	270
21	270	265	J280S	U305S	265	275	310	330	335	310	285	270	290	290	285	290	285	285S	290	300	J305S	280S	260S	I265S
22	I270S	280S	280S	U290S	305	275	I315S	345	320	305	295	280	280	275	285	285	290	290	J300S	295	I285S	285S	260S	265S
23	280S	U280S	260	270	270	290	I315S	325	310S	305	275	280	285	290	285	290	300	300	310	300	U295S	I270S	I260S	265
24	265S	I280S	I275S	245	245	265	U285S	310	295	U295S	285	280	275	275R	U280S	285	290	305S	295	305	305S	U265S	U265S	260S
25	265S	U270S	U280S	275	280	270	I295S	U335S	330S	305	275	265	285	285S	U285S	285S	295	305S	315S	315	I280A	I265A	265	U260S
26	I270S	I290S	295S	305	290	270	315S	320	315	295S	280	270	275	280S	285	285	U280S	U290S	300	300	310	255	I250S	265
27	270	U290S	295S	I285S	J290S	285S	315S	I330S	330S	290	270	270	275	280	285	U285S	280	285	290S	I310S	310	280S	270S	I270S
28	270S	U275S	290	280	280S	I280S	300S	325	335	290	265	265	275	275	285	U280S	275	280S	J300S	320	280S	265S	265S	270S
29	275S	I280S	I290S	285S	I280S	280	305	310	325	295	280	260	260	265	280S	285S	280S	290	305S	305	I280S	I260S	I260S	I260S
30	I280S	I285S	I270S	I280S	275	I285S	I310S	320	310	305	260	255	270	275	280	285	290	295	300	290S	270S	280S	I270S	I265S
31																								
Count	29	29	28	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Median	275S	U280S	290S	290S	280	280	300S	320	315	305	290	280	280	280	285	285	285	290	300	305	285S	270S	265S	270S
U.Q.																								
L.Q.																								
Q.R.																								

M(3000) F2

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

The Radio Research Laboratories, Japan

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IONOSPHERIC DATA

Apr. 1967 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5'N | Long. 130° 37.7'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	LH	L	L	LH	L	L	L						
2										L	L	LH	LH	LH	LH	L	L	L						
3										L	LH	LH	LH	L	L	LH	L	LH						
4										L	LH	L	LH	LH	L	L	L	L						
5									L	L	L	L	LH	LH	LH	L	LH	LH						
6									L	LH	LH	LH	L	LH	LH	355H	LH	LH						
7									L	L	L	LH	LH	LH	L	L	LH	LH						
8										LH	LH	LH	LH	LH	LH	L	L	L						
9									L	L	LH	LH	LH	L	LH	LH	LH	L						
10										L	L	L	L	LH	LH	LH	L							
11										L	LH	L	L	L	L	LH	LH	LH						
12									L	L	L	LH	LH	LH	LH	LH	LH	L						
13									L	LH	L	L	L	L	L	LH	L	LH						
14									LH	L	LH	L	LH	LH	365L	LH	LH	L						
15									L	L	L	L	375L	L	350L	LH	L	L						
16									L	L	LH	L	LH	L	325L	L	LH	L	L					
17									L	L	LH	360L	LH	A	LH	LH	LH	L						
18									L	L	L	LH	LH	LH	LH	LH	LH	L						
19									L	L	L	LH	LH	U325L	U340L	LH	LH	L						
20									L	L	L	LH	A	L	L	L	LH	L						
21									L	L	LH	LH	L	L	L	LH	LH	LH						
22									L	L	LH	LH	LH	L	A	L	LH	L						
23										L	LH	L	L	L	L	LH	L	L						
24										L	L	L	L	LH	L	LH	L	L						
25										L	L	LH	L	L	L	L	L	L						
26									L	L	A	LH	L	360	A	L	L	LH						
27									L	LH	LH	L	350	A	A	LH	L	L	A					
28								L	L	LH	LH	LH	LH	LH	LH	U320L	L	L	A					
29									L	L	L	LH	LH	320	A	U320L	LH	LH	L					
30									L	L	A	U325L	345	L	L	LH	LH	L	A					
31																								
Count												2	3	3	4	3								
Median												U340L	350	325	345L	U320L								
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

Apr. 1967 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5'N Long. 130° 37.7'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										270	265	300	325	310	295	325	300	280						
2										260	260	300	300	320	300	315	320	295						
3										245	275	280	300	315	285	300	300	275						
4										275	275	280	290	300	300	300	300	295						
5									260	260	270	270	300	310	275	300	280	280						
6									250	255	270	300	290	310	305	290	320	280						
7									250	250	270	290	275	305	300	280	295	290						
8										270	270	280	300	305	300	310	300	275						
9									240	250	300	300	290	300	300	280	290	300						
10										260	260	305	280	320	320	310	290							
11										250	300	325	305	295	280	300	300	275						
12									240	250	300	300	290	295	300	305	295	275						
13									250	275	270	290	280	300	320	305	295	275						
14									250	260	255	300	325	320	300	295	280	250						
15									250	280	295	305	315H	320	310	295	280	260						
16									255	260	305	315	305	330	310	290	300	280	280					
17									250	270	300	290	300	305	300	300	290	270						
18									250	260	275	300	325	300	300	335	290	280						
19									250	260	270	310	325	310	305	305	300	265						
20									295	275	280	300	315	310	300	305	295	275						
21									245	250	320	305	305	310	300	310	300	285						
22									250	260	300	270	330	335	305	280	285	250						
23										245	310	310	300	305	300	305	275	270						
24										260	270	280	300	325	310	295	280	260						
25										250	270	340	325	310	300	325	295	275						
26									250	250	275	300	320	320	320	305	295	285						
27									250	300	320	315	340	360	330	300	290	300	290					
28								250	250	250	350	340	325	340	330	320	305	305	275					
29									250	260	290	350	350	355	345	325	315	295	270					
30									240	270	300	375	350	330	330	310	295	275	255					
31																								
Count								1	20	30	30	30	30	30	30	30	30	29	5					
Median								250	250	260	275	300	305	310	300	305	295	275	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

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IONOSPHERIC DATA

Apr. 1967 | h'F | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5'N | Long. 130° 37.7'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	275	260	250	210	170H	280	295	240	250	245	240	235H	230	255	245H	245	240	250	260	250	230	260	290	290
2	280	250	240	215	200	245	280	250	245	240	230	225H	230H	235H	230H	235	230	250	270	245	230	300	295	300
3	295	245	205	200	360	345	295	245	245	235	220H	205H	E230A	230	E260A	230H	E270A	240H	255	225	210	260	290	285
4	285	270	240	210	180H	300	280	250	240	235	230H	205	E230H	220H	200	225	240	E250A	270	230	225	270	295	300
5	280	320	275	210	260	290	290	250	245	235	220	215	210H	210H	200H	210	225H	230H	260	230	225	250	310	310
6	280	255	250	250	295	265	275	240	245	215H	200H	210H	210	200H	205H	215H	220H	200H	255	240	230	240	290H	295
7	290	310	290	255	250	255	280	240	230	225	220	195H	200H	210H	250	225	225H	220H	260	245	230	225	250	280
8	295	300	270	225	200	280	280	240	240	225H	215H	220H	195H	205H	200H	230	240	250	255	240	210	255	295	290
9	285	275	250	220	200	250	270	240	230	225	225H	205H	215H	225	200H	215H	225H	245	270	255	230	245	280	270
10	250	250	250	230	250	265	260	235	240	225	220	210	E240A	205H	210H	210H	230	250	250	235	255	275	280	300
11	270	285	280	240	250	275	265	230	235	230	225H	210	215	230	225	220H	215H	230H	255	250	250	230	280	280
12	270	285	260	225	245	270	270	235	230	230	205	205H	200H	200H	210H	220H	215H	250	255	250	240	215	215	300
13	305	280	270	225	240H	255	260	240	235	225H	220	205	205	205	210	200H	250	255H	255	245	230	255	E350A	295
14	290	270	275	245H	240H	260	250	235	235H	220	200H	220	220H	225H	210	210H	220H	230	250	270	250	290	305	300
15	300	300	260	225	250	250	250	235	235	240	215	225	200	205	210	205H	250	250	245	235	245	275	295	300
16	290	275	260	215	180H	295	260	245	245	235	225H	220	225H	215	215	215	230H	250	275	240	225	240	300	305
17	300	280	230	205	300	305	250	235	240	225	220H	215	200H	A	205H	220H	210H	250	260	250	255	265	300	270
18	260	260	270	250	260	265	255	250	240	225	220	210H	220H	200H	220H	200H	225H	240	255	250	240	245	295	320
19	310	295	270	210	245	300	260	240	245	230	220	205H	185H	225	210	210H	215H	245	250	260	280	E305A	290	310
20	E320A	270	290	250	230	265	260	245	230	230	225	225H	I220A	220	225	225	235H	250	250	245	275	255	295	300
21	305	310	280	245	220	290	250	240	235	225	220H	205H	210	235	215	215H	230H	220H	255	255	250	245	310	305
22	300	280	270	250	240	255	230	230	230	230	220H	220H	200H	220	A	240	230H	225	250	255	270	250	275	300
23	280	275	300	280	295	250	240	240	230	225	210H	210	205	215	210	230H	265	260	255	250	250	275	325	300
24	300	280	255	345	350	300	250	235	230	225	220	220	215	210H	210	210H	255	245	255	255	E275A	E305A	E350A	310
25	300	275	255	275	245	270	240	230	220	225	205	200H	195	200	250	240	A	A	E275A	270	A	A	330	330
26	300	280	250	240	230	250	240	230	245	A	A	E240H	E255A	225	A	I250A	E250A	240H	265	250	245	220	325	E350A
27	315	275	255	220	E270A	270	250	240	225	225H	220H	205	210	A	A	200H	275	260	I260A	I245A	240	240	E350A	300
28	300	290	280	250	270	280	250	240	230	220H	205H	195H	195H	240H	250H	245	250	I270A	I260A	240	250	295	300	290
29	285	280	250	250	260	275	250	245	245	230	210	200H	210H	E280A	I255A	255	230H	235H	250	240	240	275	300	330
30	300	275	300	275	280	280	245	245	230	E250A	A	225	245	E300A	E295A	230H	235H	245	I255A	260	270	250	315	300
31																								
Count	30	30	30	30	30	30	30	30	30	29	28	30	30	28	27	30	29	29	30	30	29	29	30	30
Median	290	280	260	235	250	270	260	240	235	225	220H	210H	210H	220	210	220H	230H	245	255	250	240	255	295	300
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

Apr. 1967 | h'Es | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5'N | Long. 130° 37.7'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	B	E	E	E	B	S	G	G	G	G	G	G	130	125	125	G	G	G	S	S	S	S	S
2	S	B	S	E	E	E	B	G	G	150	135	125	120	125	135	G	110	130	125	115	110	110	S	S
3	S	105	100	100	100	E	170	145	150	145	130	115	110	105	105	105	100	100	G	S	S	S	S	S
4	B	105	110	E	E	S	S	G	G	G	130	120	115	110	110	110	105	120	100	100	S	B	S	105
5	S	095	B	E	110	E	S	G	G	G	G	G	105	105	105	105	105	105	100	100	100	S	B	S
6	S	B	E	E	E	E	S	G	G	G	G	150	G	G	105	105	105	100	100	100	100	S	S	S
7	S	B	E	E	E	E	B	G	G	135	G	G	G	G	100	100	100	100	E175G	120	S	S	S	S
8	S	S	E	E	E	E	S	G	155	G	130	125	110	G	110	105	140	100	145	100	S	S	S	S
9	S	B	S	E	E	B	B	G	G	G	135	120	120	145	G	G	140	G	G	120	S	S	S	S
10	S	S	B	E	E	E	S	150	150	135	125	115	110	115	115	110	105	150	125	115	100	110	110	105
11	100	100	E	E	110	B	S	140	150	130	125	125	120	130	145	150	120	120	170	125	115	100	100	100
12	100	S	B	E	E	E	S	G	140	120	110	105	105	105	110	105	G	105	135	120	115	S	B	S
13	S	S	E	E	E	E	S	G	G	130	125	120	105	105	G	G	G	E175G	130	120	110	105	105	105
14	105	105	105	B	E	E	S	G	G	G	120	120	130	110	G	G	G	G	140	115	110	110	105	105
15	105	100	B	110	110	110	145	150	150	140	G	105	105	105	105	105	160	145	130	115	S	B	S	S
16	S	S	B	E	E	B	B	160	145	140	130	G	105	105	105	G	100	G	G	B	S	S	S	S
17	S	S	E	E	E	E	S	G	145	145	130	120	110	110	105	100	100	100	125	120	115	110	S	S
18	S	S	E	E	E	E	155	150	150	130	140	125	125	105	110	110	G	G	G	120	110	110	110	105
19	105	S	B	E	B	B	145	145	145	130	120	120	120	130	G	G	G	G	150	120	110	110	105	105
20	105	105	105	105	105	115	S	140	145	140	130	145	125	G	120	125	G	G	150	120	115	110	105	105
21	100	100	B	100	E	B	150	145	145	145	135	G	125	120	120	G	G	G	145	115	110	100	105	S
22	S	S	B	100	E	E	150	145	130	130	130	130	130	130	115	G	G	105	100	125	115	100	100	S
23	S	S	B	E	105	B	155	145	140	130	125	120	115	115	110	110	150	125	120	115	110	110	110	S
24	S	B	B	B	B	B	150	145	130	120	115	110	105	105	105	150	G	G	145	110	105	110	105	105
25	S	110	110	B	E	E	G	150	140	130	125	125	125	110	105	150	135	130	120	110	110	105	100	100
26	100	100	S	110	105	110	S	140	130	120	110	110	110	110	150	140	140	145	120	110	110	105	110	105
27	105	105	105	B	100	105	140	140	140	145	125	130	130	115	170	100	150	140	155	125	110	105	105	105
28	100	S	B	095	100	105	150	140	105	105	105	105	105	175	150	150	150	130	125	115	110	100	S	S
29	S	S	105	100	B	100	130	130	125	125	125	120	145	135	125	G	G	150	125	120	110	110	S	105
30	100	100	100	105	105	B	155	135	130	120	115	120	G	150	140	G	145	130	120	115	110	110	105	105
31																								
Count	11	12	8	9	10	6	12	18	21	23	25	25	26	26	26	20	19	21	25	27	22	19	15	14
Median	100	100	105	100	105	110	150	145	145	130	125	120	115	110	110	110	120	120	125	115	110	110	105	105
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

Y 11

IONOSPHERIC DATA

Apr. 1967 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31° 12.5'N Long. 130° 37.7'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1														h	h	h								
2										h	h	h	c	c	h		1	h 1	c312	f2	f	f		
3		f	f3	f	f2		h	h5	h	h	h	c	c	12	12	12	13	1						
4		f	f								h	c	c2	c	1	12	12	c312	13	f				f
5		f			f								1	1	1	12	12	1	1	f2	f			
6												h			1	12	1	13	13h2	f	f			
7										h					13	12	1	12	h 1	f2	f			
8									h		h	h	1		1	12	h 1	14	h 1	f				
9											h	c	c	h			h			f3				
10								h	h	h	h	c	c2	c	c	1	1	h 1	h21	f2	f	f2	f	f3
11	f3	f			f			h2	h	h2	h	h	c	c	h h	h h	c	c	h	f	f3	f2	f4	f2
12	f								h	h	c	c2	1	1	1	1		1	h2	f	f			
13										h	h	c	1	12				h	h4	f2	f	f2	f4	f
14	f3	f2	f2								c	c2	h 1	1					h2	f6	f3	f4	f5	f2
15	f	f		f4	f4	f	h3	h	h	h		1	1	1	1	1	h 12	h21	h31	f2				
16								h	h	h	h		1	1	1		1							
17									h	h	h	h	c	c2	1	12	13	14	h312	f6	f6	f2		
18							h	h	h	h2	h	h	h21	1	1	1				f2	f5	f4	f4	f4
19	f						h	h2	h2	h2	h	h	h	h					h	f2	f4	f3	f3	f6
20	f5	f7	f4	f2	f3	f		h2	h	h	h2	h	h2		c2	c			h	f7	f3	f2f	f3f2	f5
21	f2	f		f2			h2	h	h	h	h		h	c	c				h	f4	f6	f2	f2f	
22				f			h2	h2	h2	h	h	h	h	h	c3			1	13	f	f4f	f2	f	
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28	f			f	f4	f3	h2c	h212	12	12	1	1	1	h	h2	h	h2	h3	h3	f6	f4	f3		
29			f2	f2		f3	h2	h2	h3	h	h	c	h c	h h	h2			h2	h	f2	f2	f		f3
30	f4	f3	f2	f2	f		h	h2	h2	h2	c2	c2		h2	h3		h	h2	c6	f5	f	f2	f4	f3
31																								
Count																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

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

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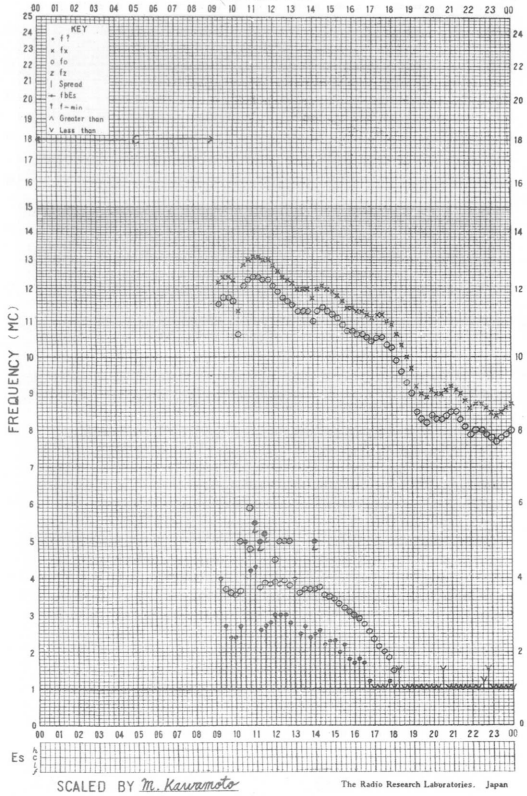
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE APR. 1.1967



SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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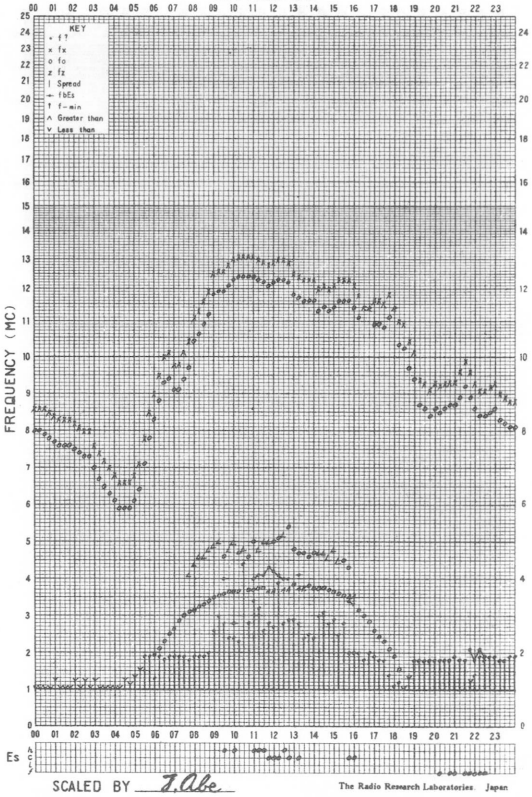

SCALED BY T. Abe.

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f-PLOT OF IONOSPHERIC DATA

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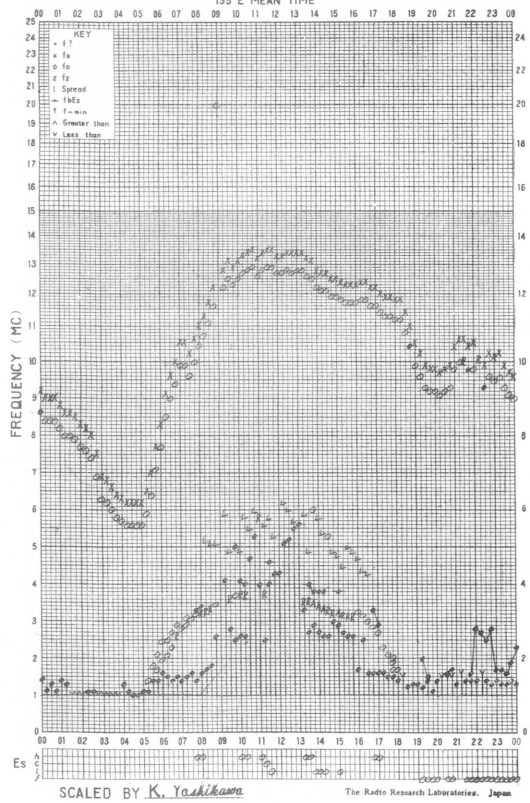

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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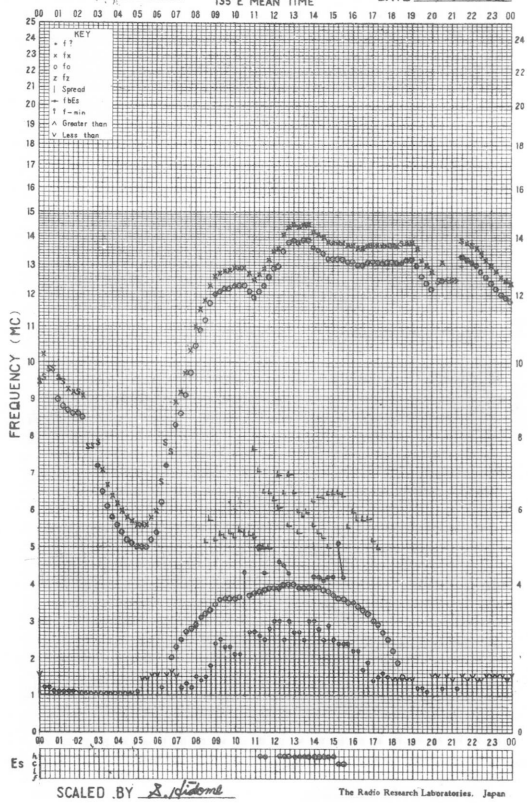

SCALED BY S. Nishimoto

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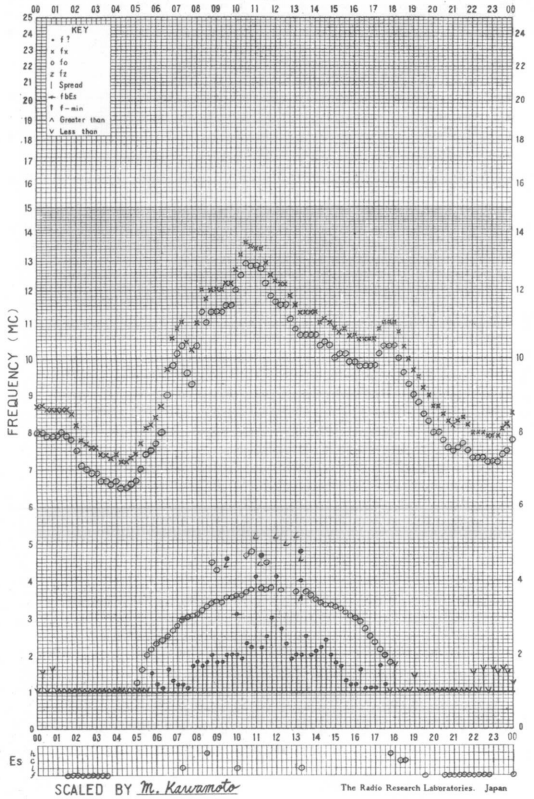

SCALED BY M. Kawamoto

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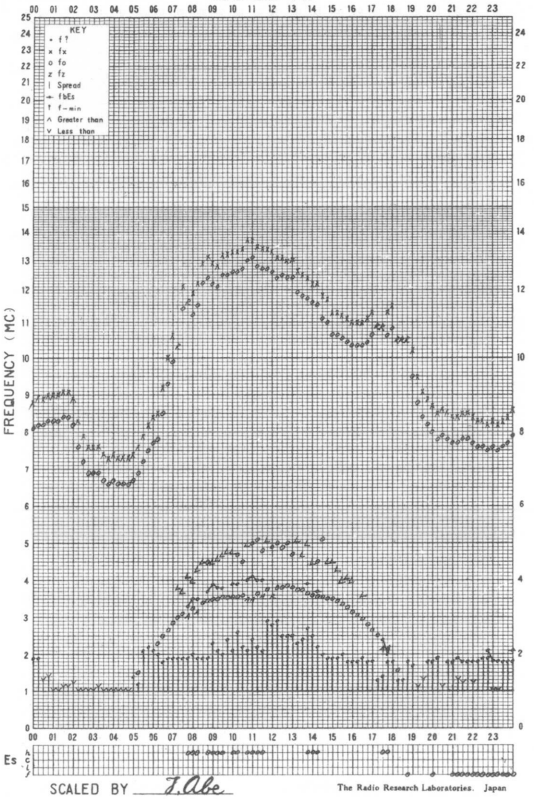

SCALED BY T. Abe

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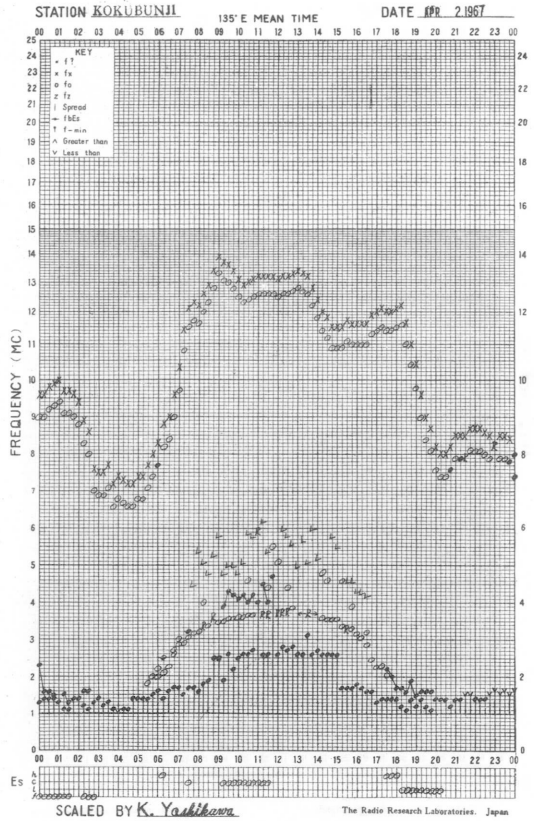
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE APR. 2, 1967



SCALED BY K. Yashikawa

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f-PLOT OF IONOSPHERIC DATA

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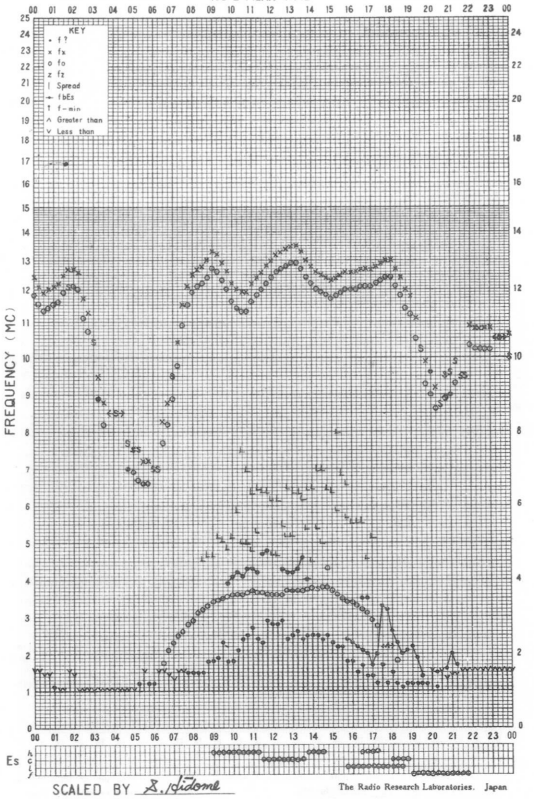

SCALED BY S. Nidome

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f-PLOT OF IONOSPHERIC DATA

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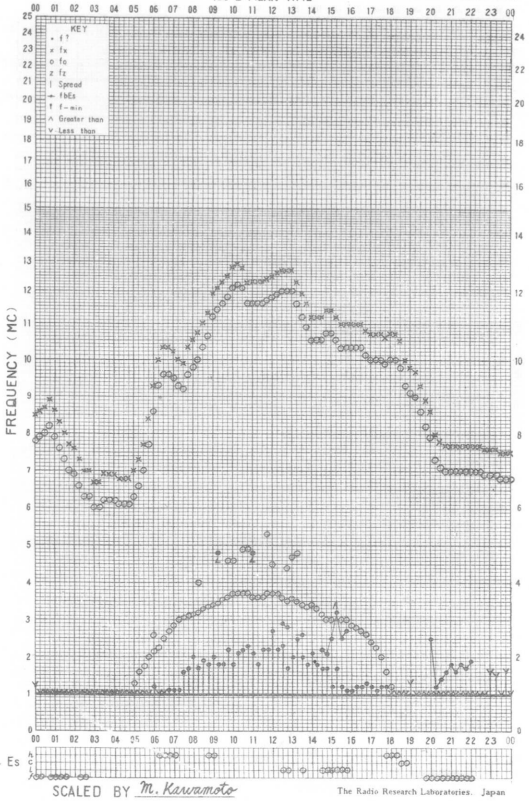

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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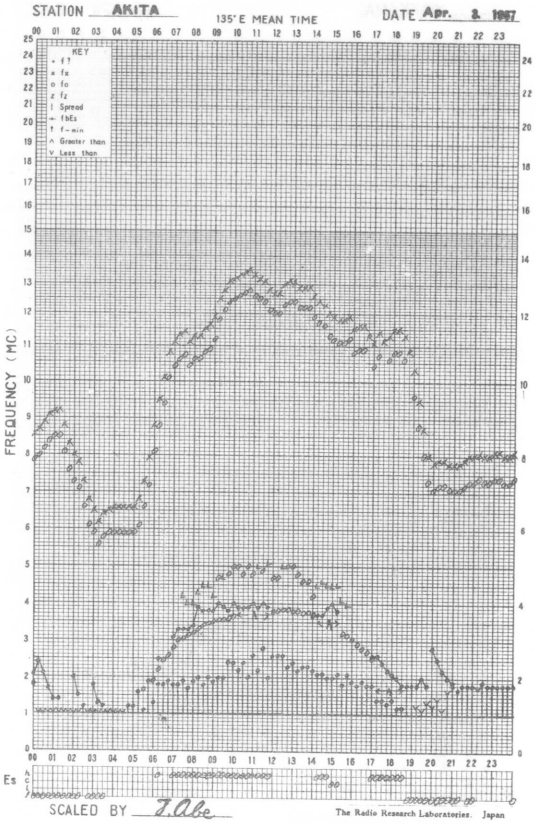

SCALED BY T. Abe The Radio Research Laboratories. Japan

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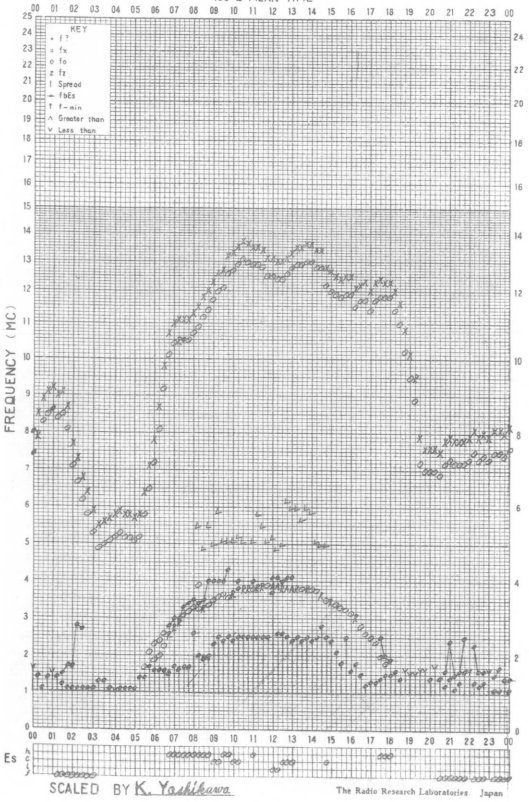
STATION KOKUBUNJI 135°E MEAN TIME DATE APR. 3.1967



SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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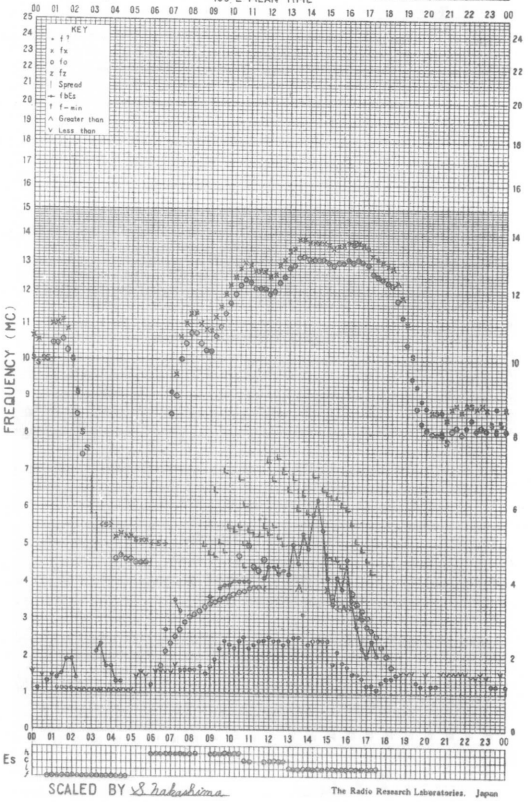
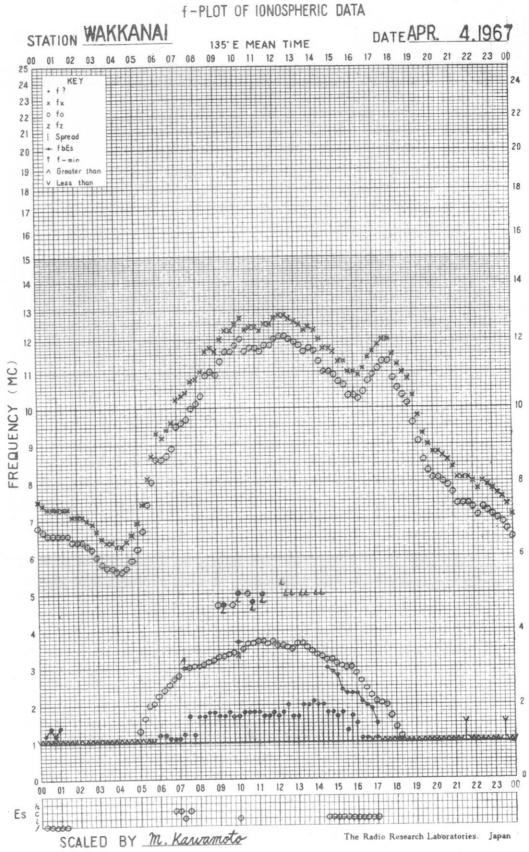
STATION YAMAGAWA 135°E MEAN TIME DATE APR. 3.1967



SCALED BY S. Nakashima The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE APR. 4.1967



SCALED BY M. Kawamoto

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f-PLOT OF IONOSPHERIC DATA

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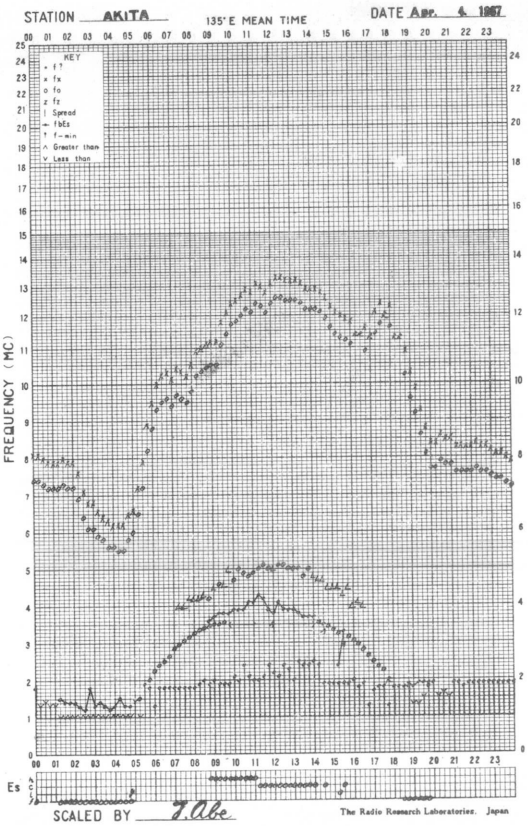

SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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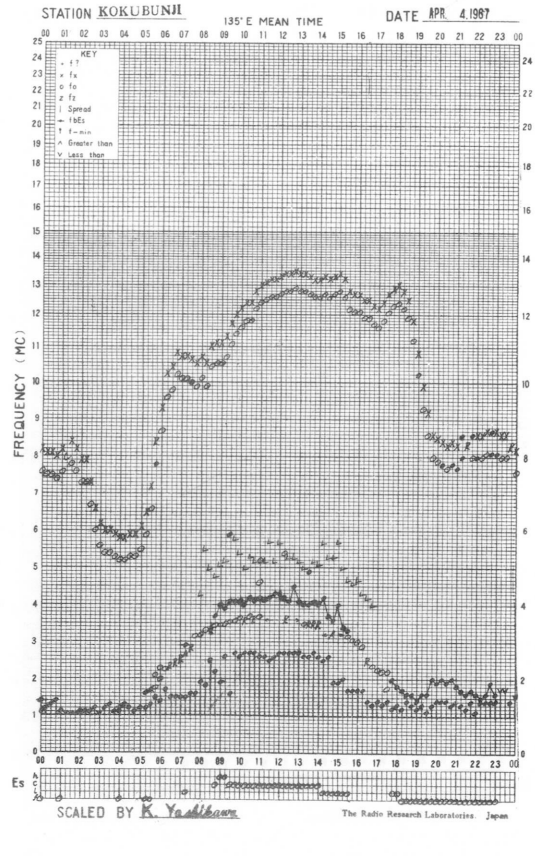
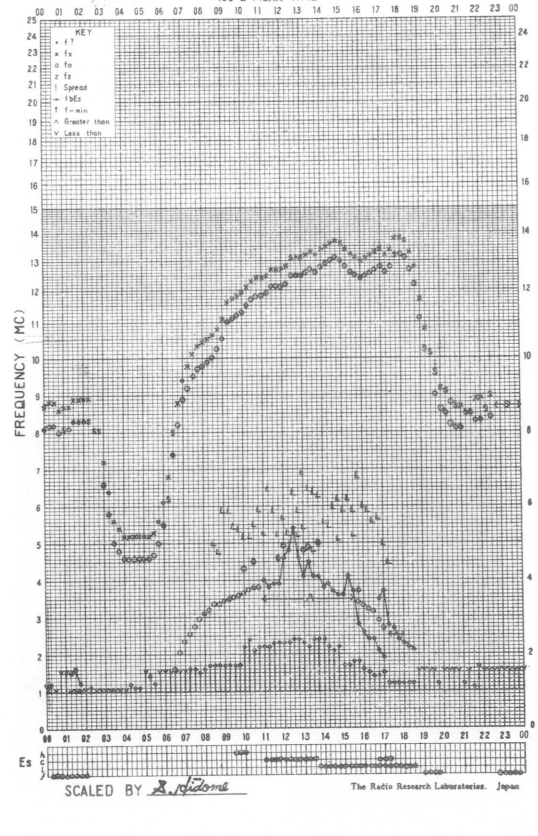


SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE APR. - 4. 1967



SCALED BY S. Kidoma

The Radio Research Laboratories. Japan

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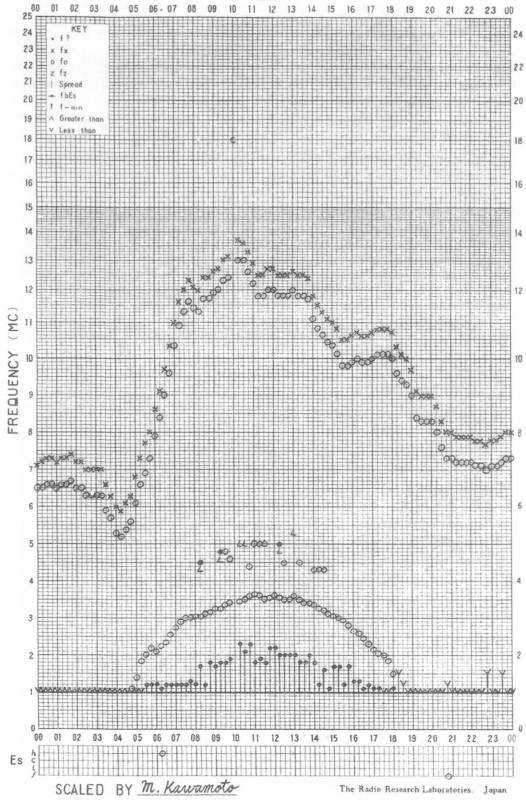
STATION WAKKANAI 135° E MEAN TIME DATE APR. 5.1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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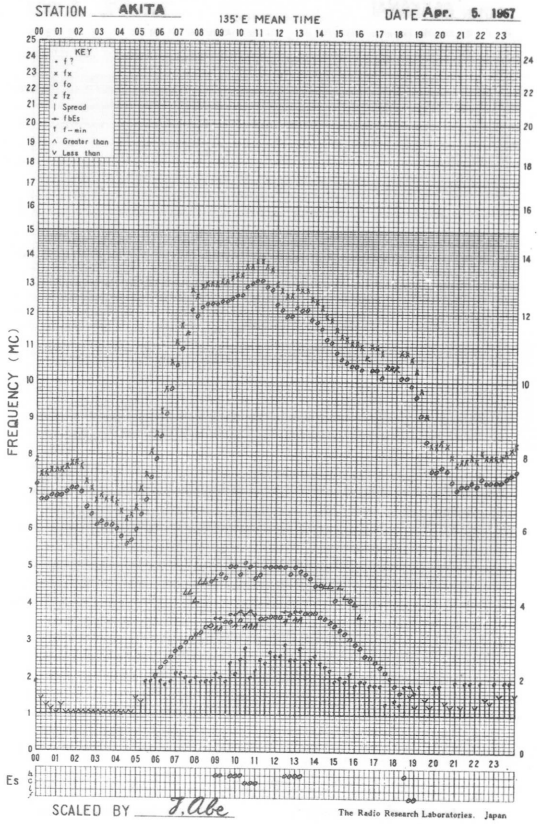

SCALED BY T. Abe The Radio Research Laboratories. Japan

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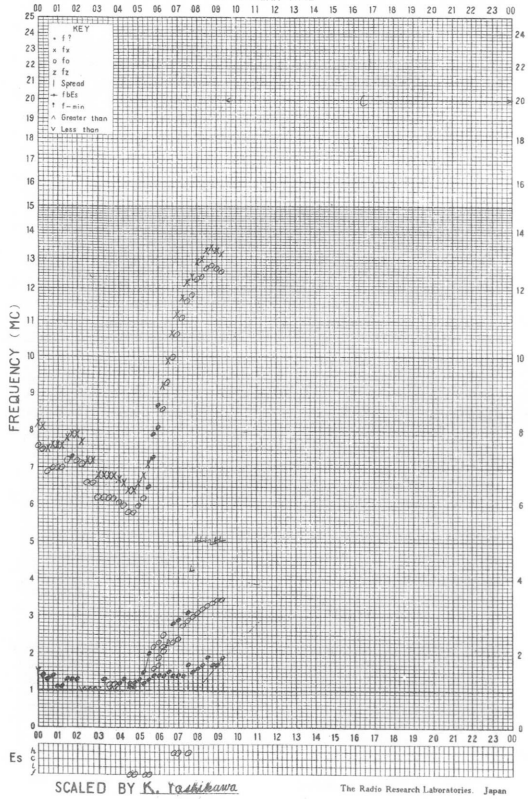

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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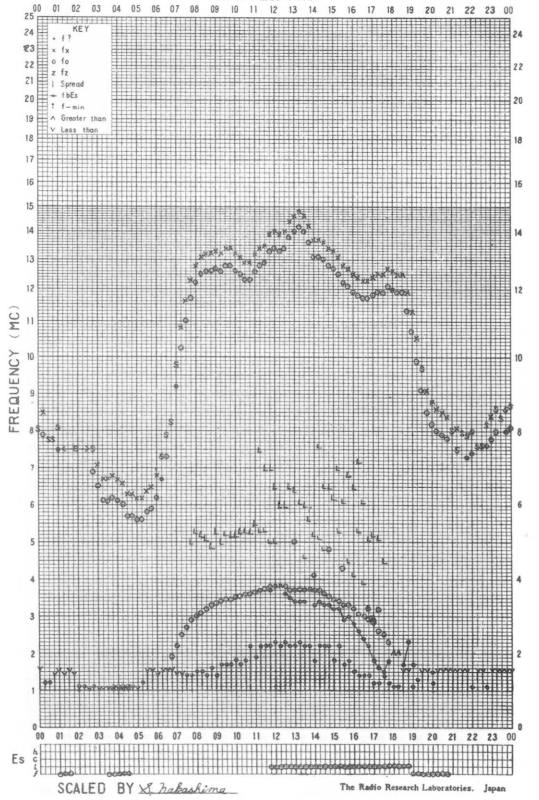

SCALED BY K. Takashima The Radio Research Laboratories. Japan

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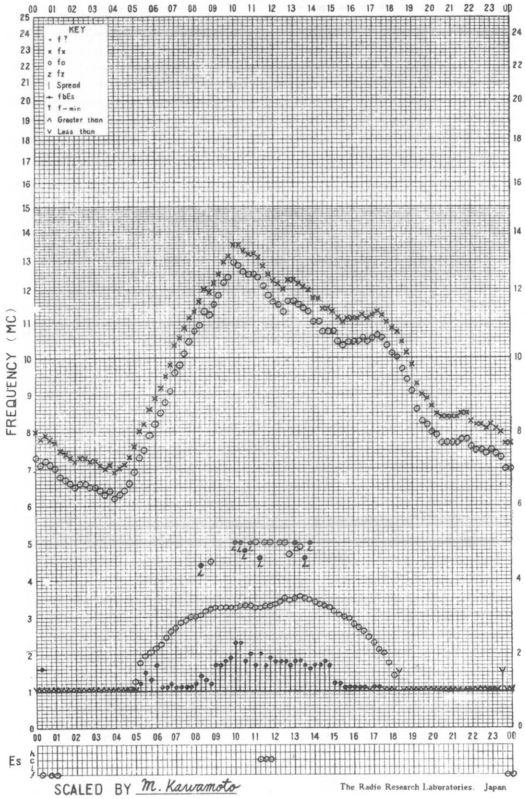
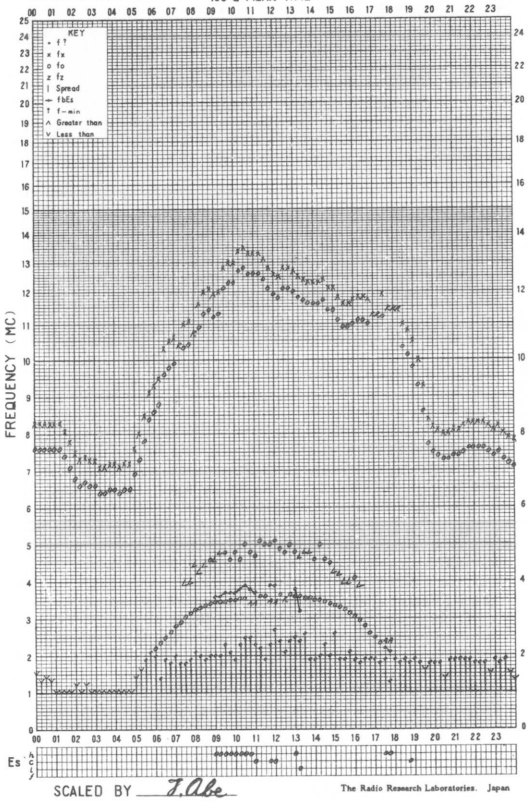


SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Apr. 6. 1967



SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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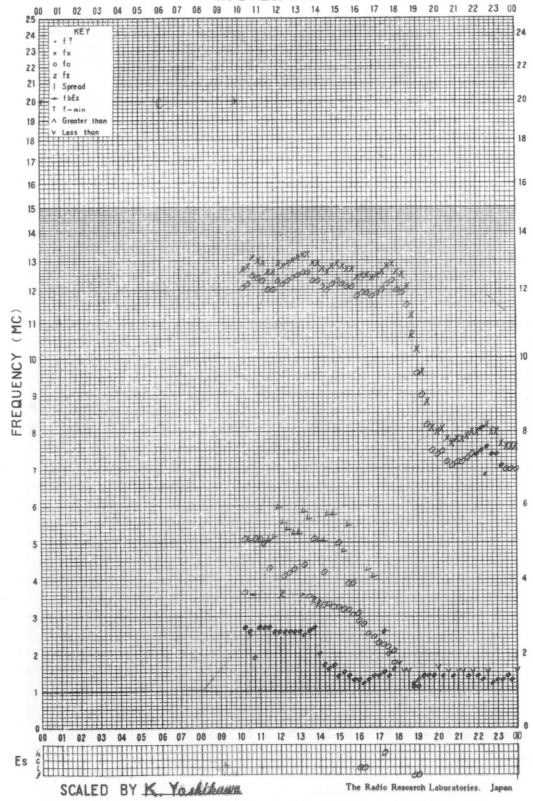

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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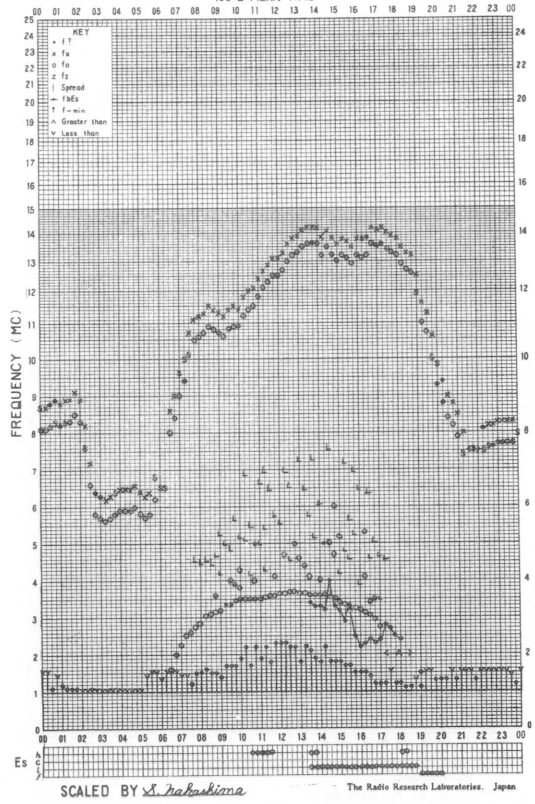

SCALED BY S. Nakashima

The Radio Research Laboratories. Japan

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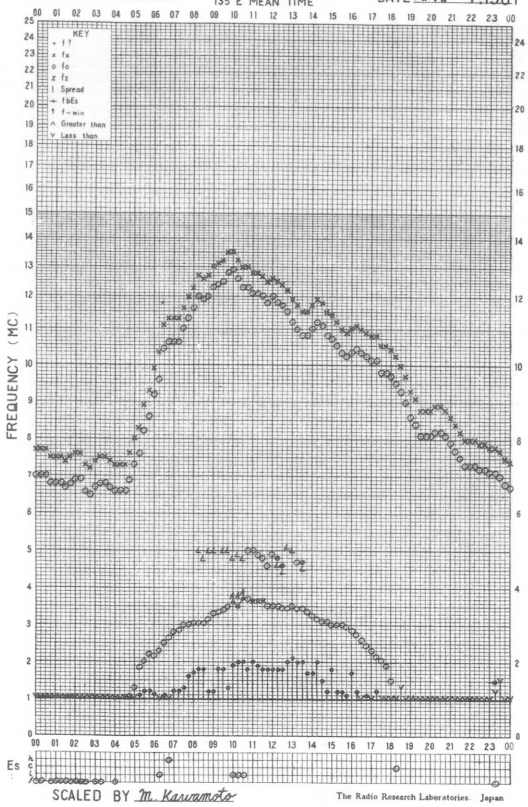

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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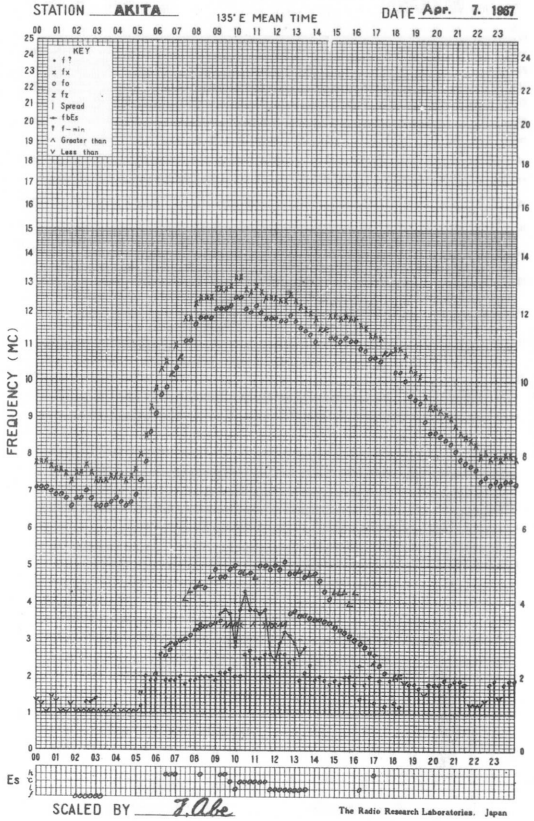

SCALED BY T. Abe The Radio Research Laboratories. Japan

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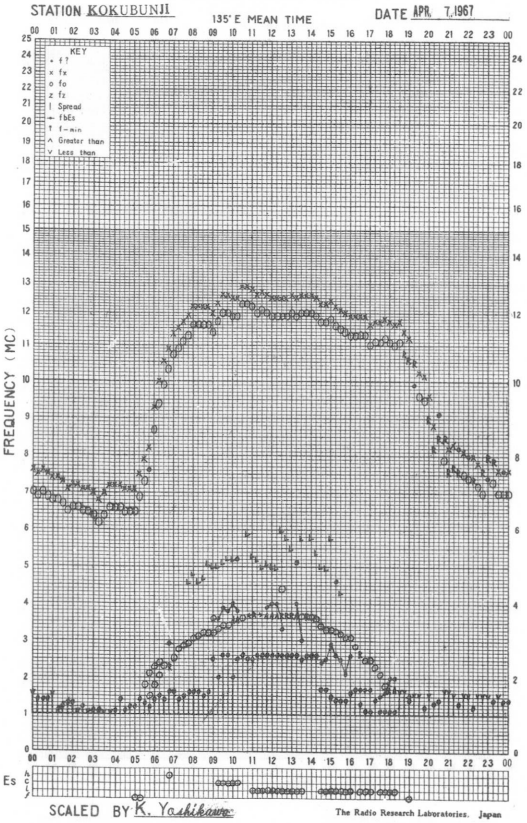

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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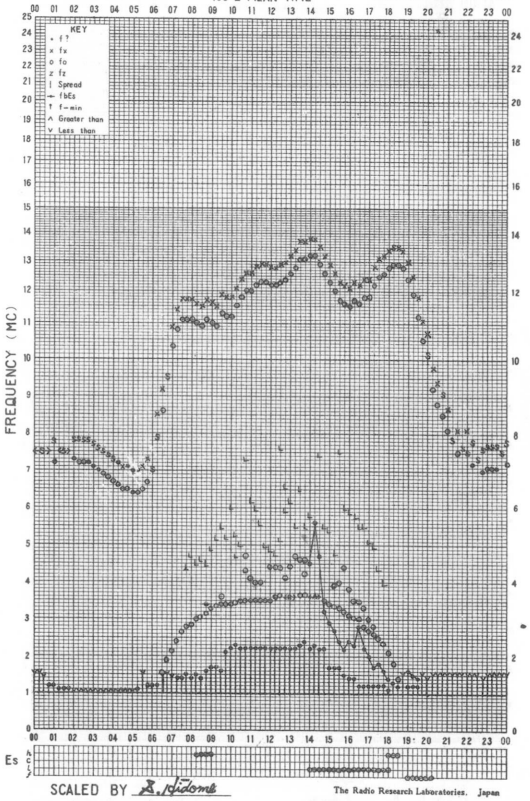

SCALED BY S. Kitami The Radio Research Laboratories. Japan

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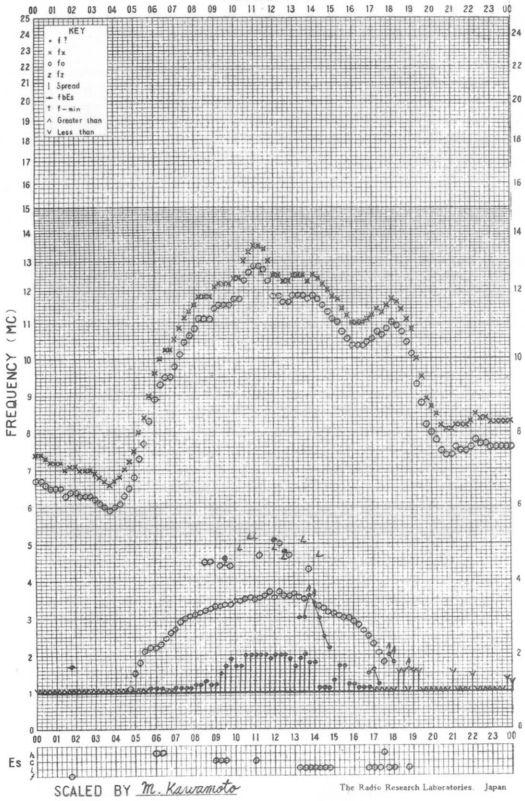

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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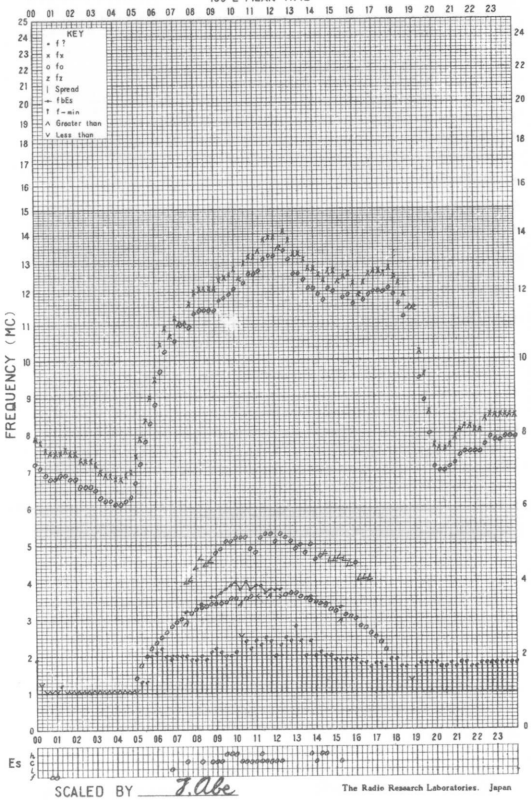

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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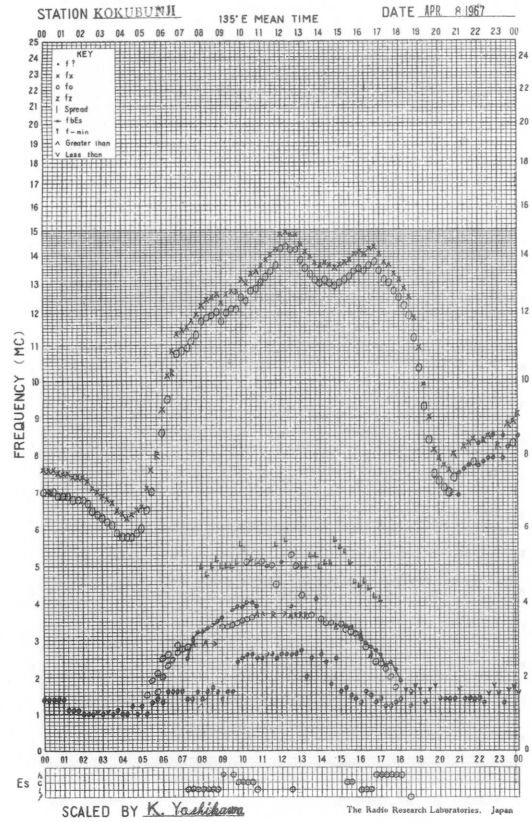

SCALED BY K. Yashikawa

The Radio Research Laboratories. Japan

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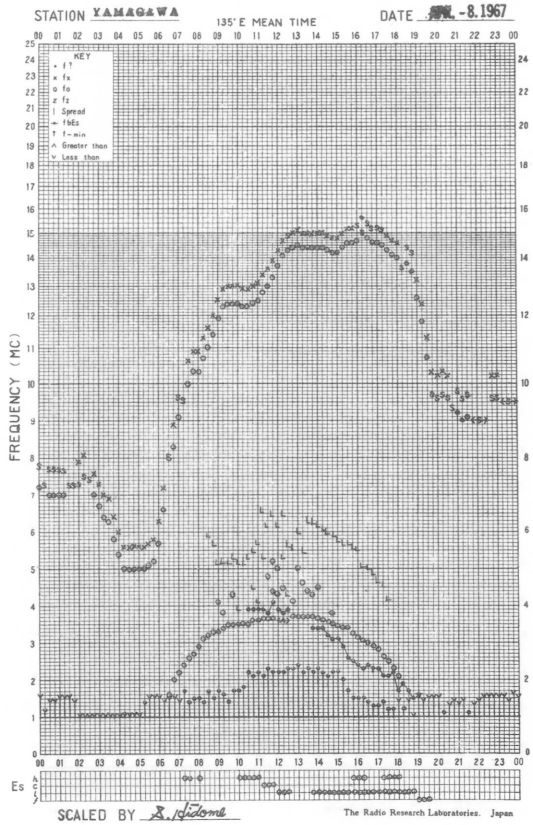

SCALED BY S. Ishioka

The Radio Research Laboratories. Japan

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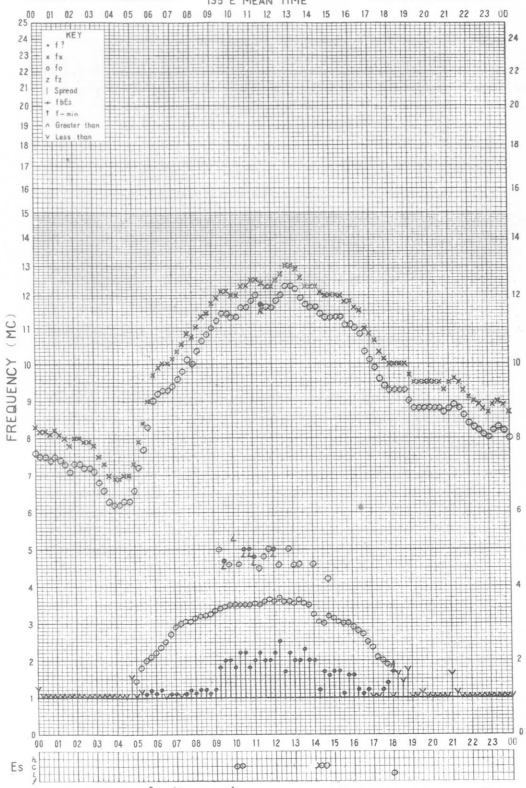

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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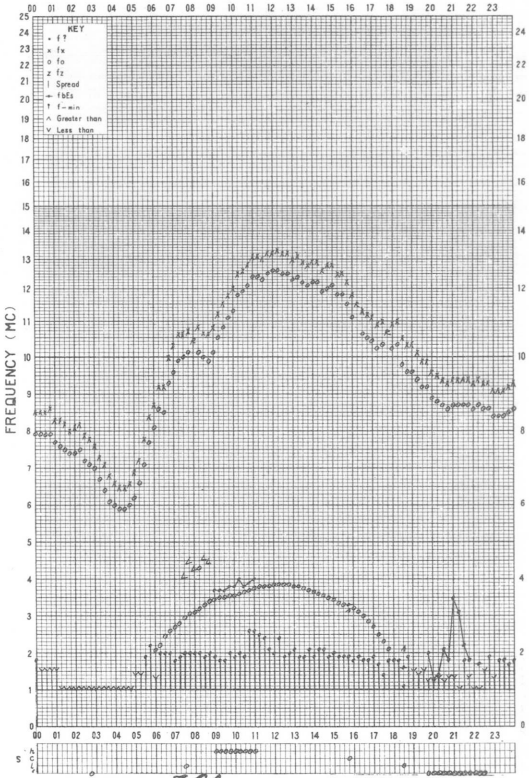

SCALED BY T. Abe The Radio Research Laboratories. Japan

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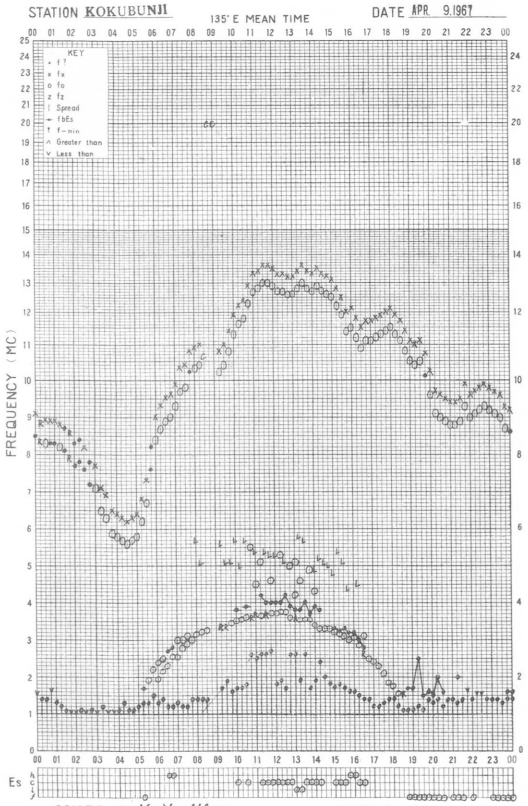

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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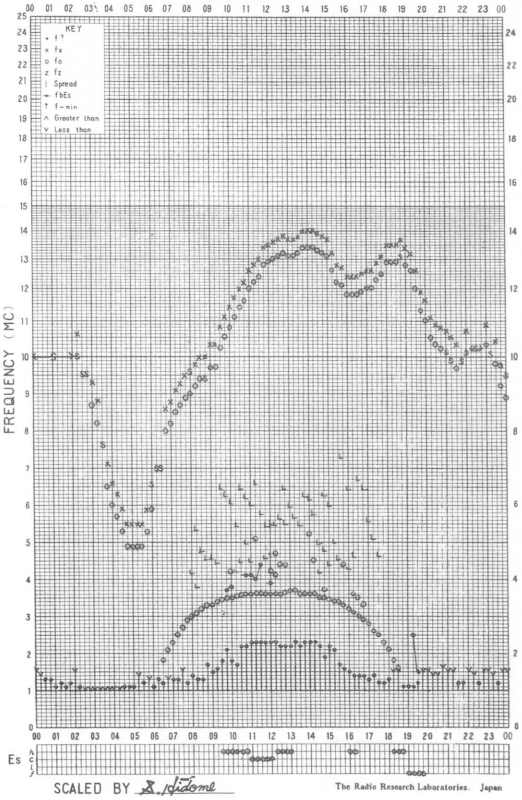

SCALED BY S. Fukami The Radio Research Laboratories. Japan

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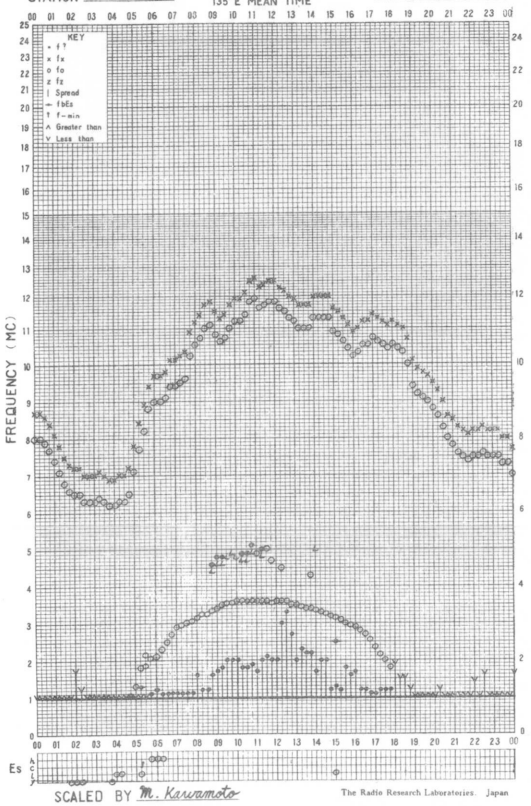

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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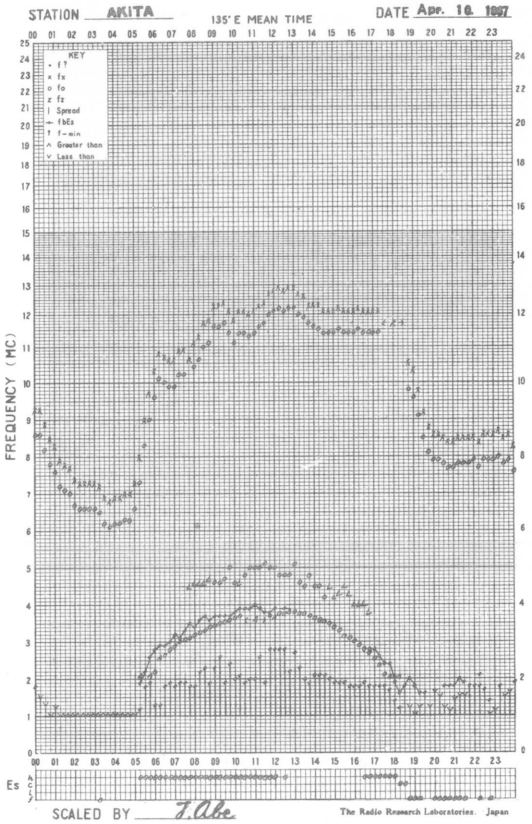

SCALED BY T. Abe

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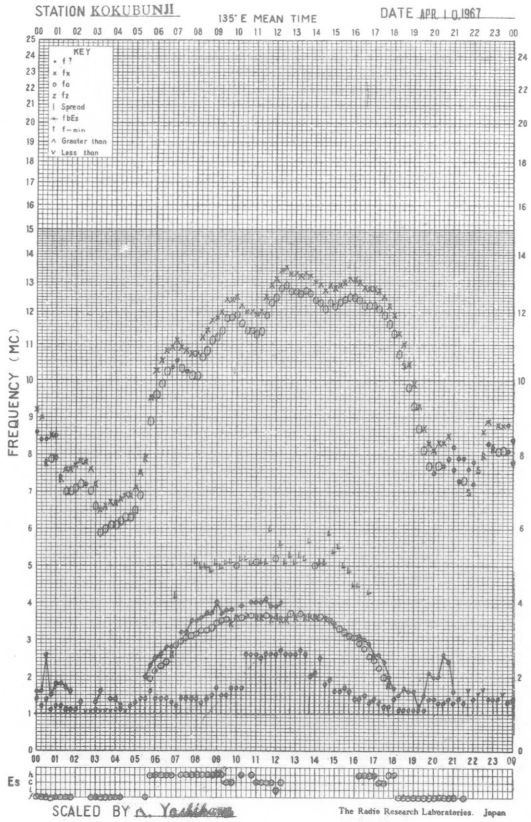

SCALED BY A. Yashikawa

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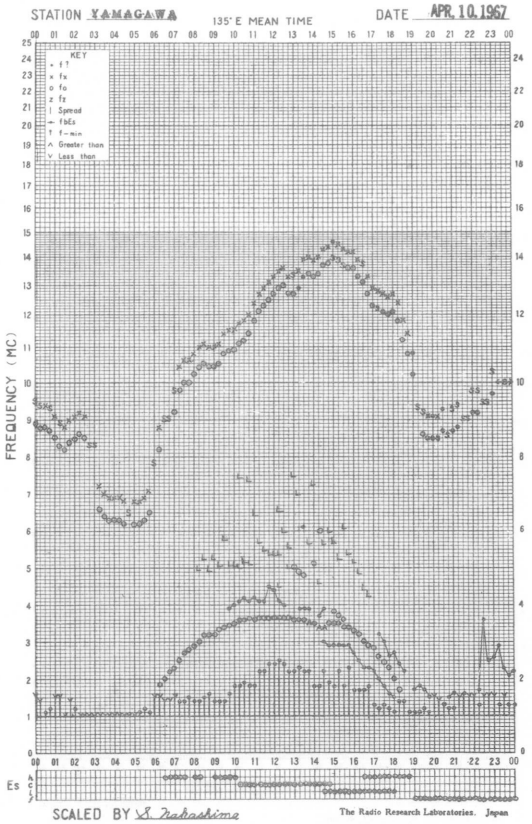
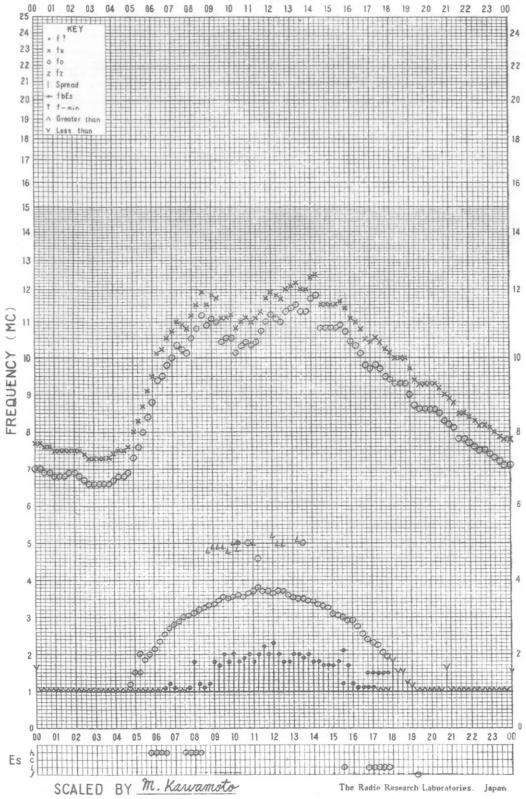


SCALED BY S. Nakashima

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

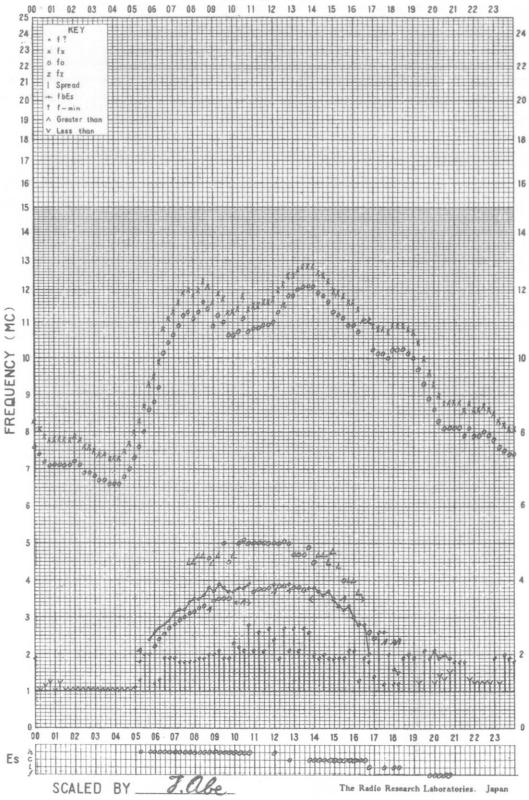
STATION WAKKANAI 135°E MEAN TIME DATE APR. 11.1967



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Apr. 11. 1967



SCALED BY T. Abe The Radio Research Laboratories. Japan

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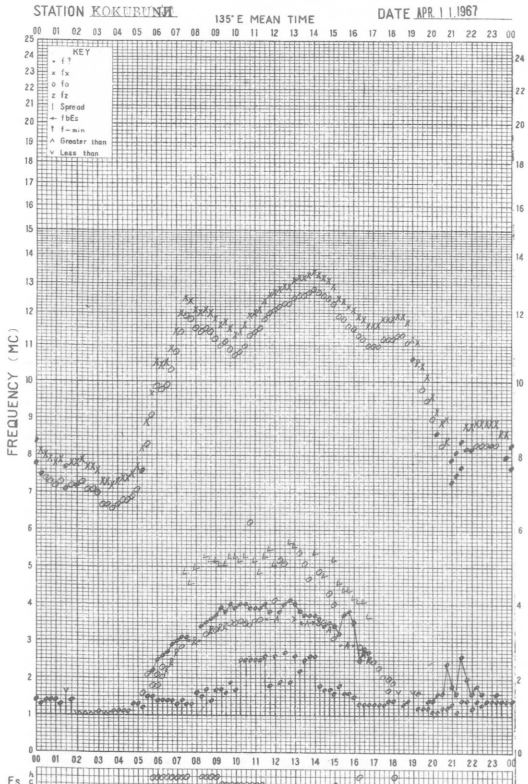

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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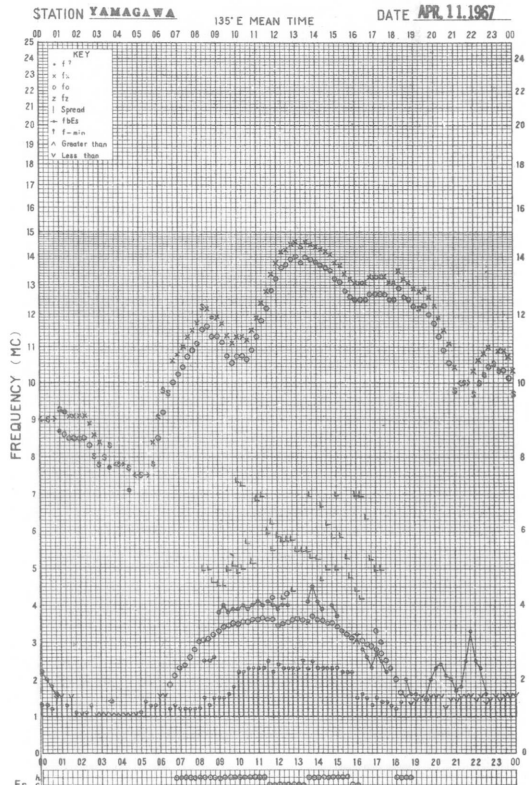

SCALED BY S. Ichome The Radio Research Laboratories. Japan

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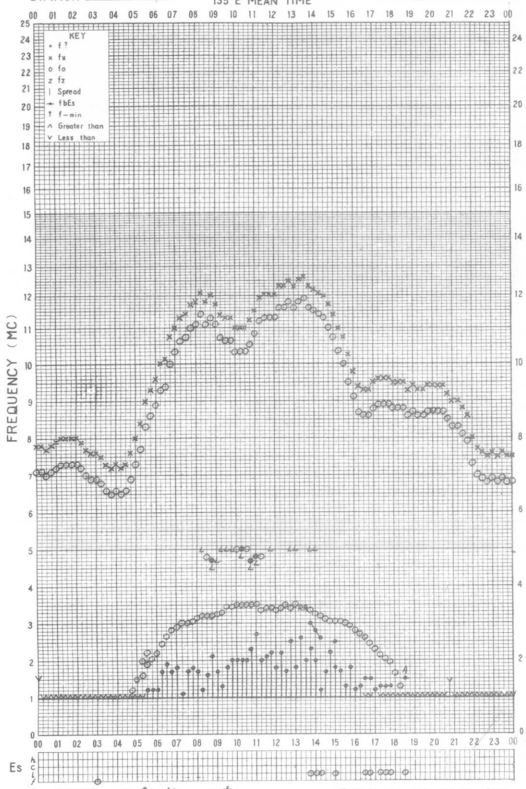

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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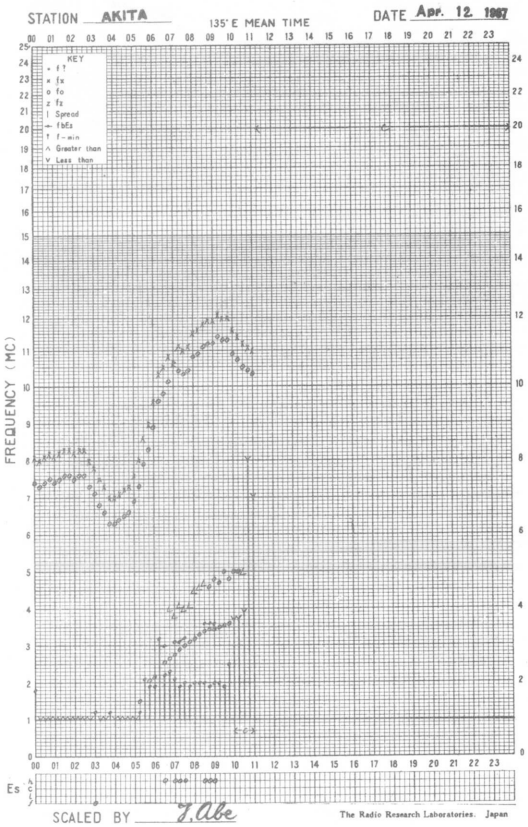

SCALED BY T. Abe The Radio Research Laboratories. Japan

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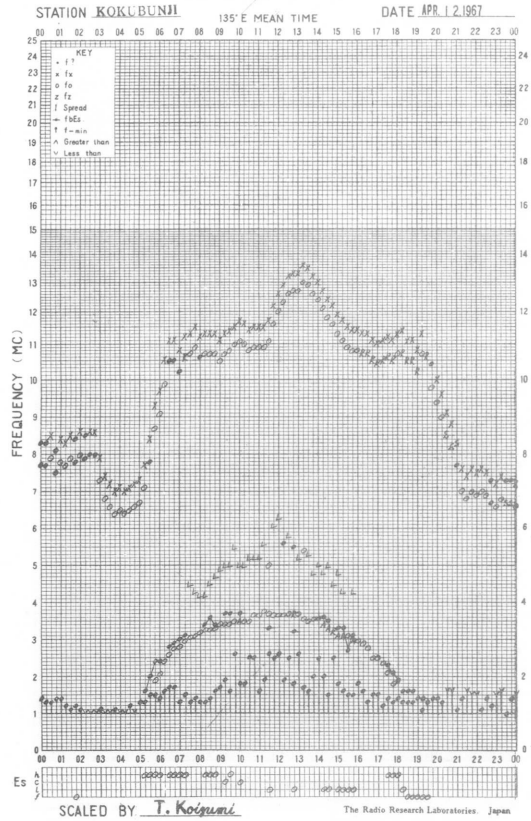

SCALED BY T. Koizumi The Radio Research Laboratories. Japan

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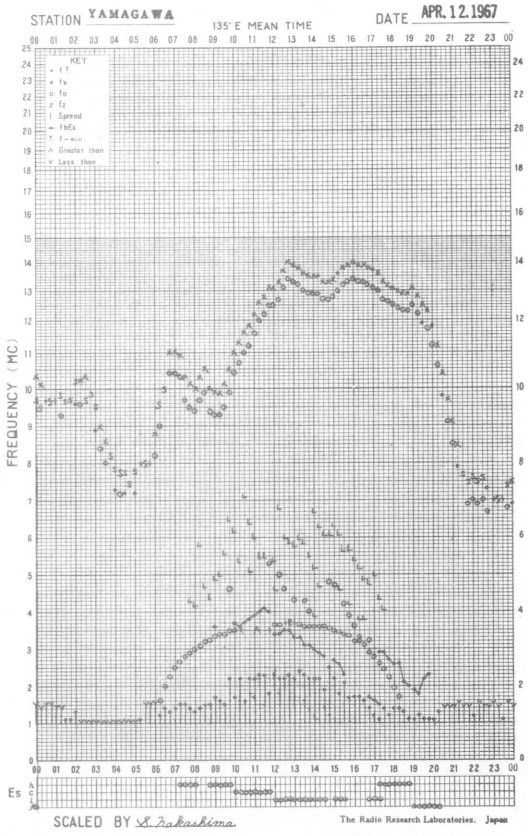

SCALED BY S. Takashima The Radio Research Laboratories. Japan

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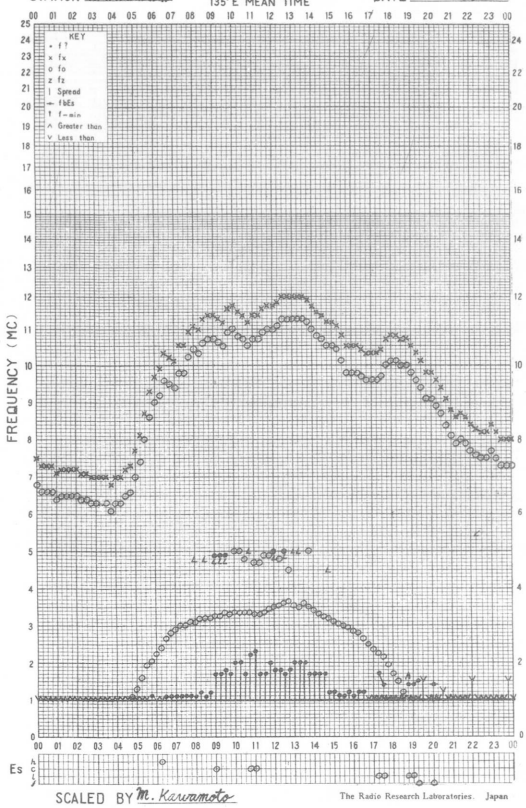

SCALED BY M. Kawamoto

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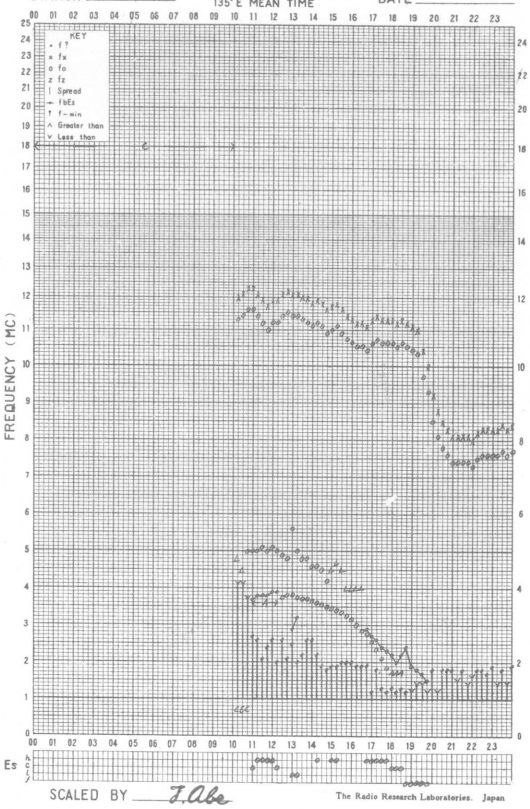

SCALED BY I. Abe

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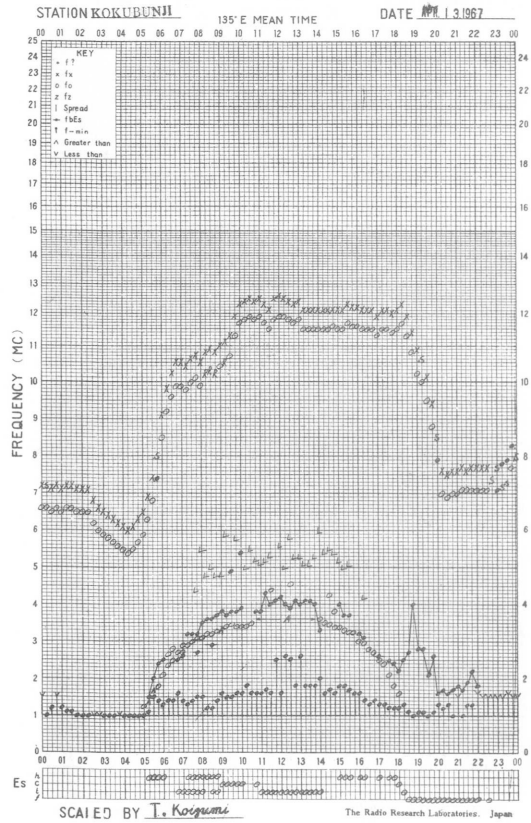

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The Radio Research Laboratories. Japan

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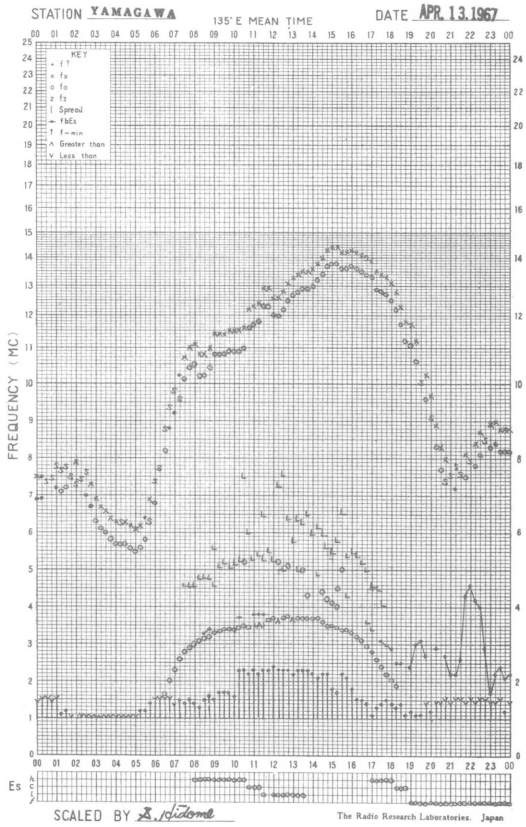

SCALED BY A. Ichidome

The Radio Research Laboratories. Japan

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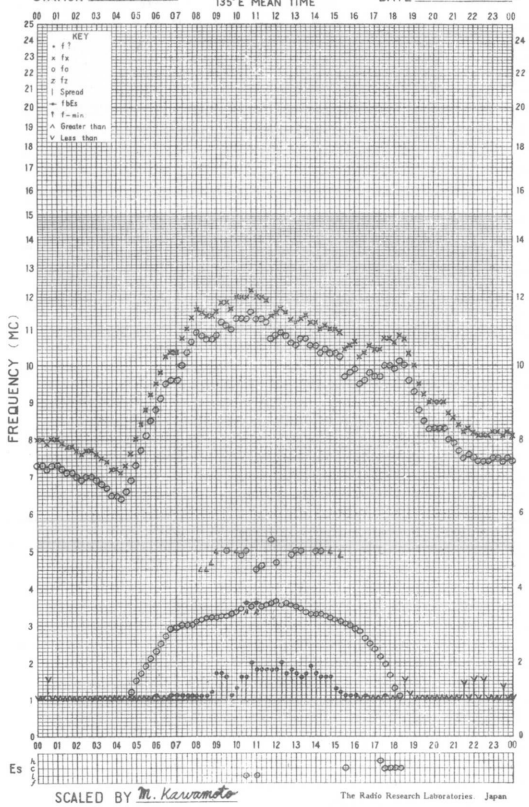

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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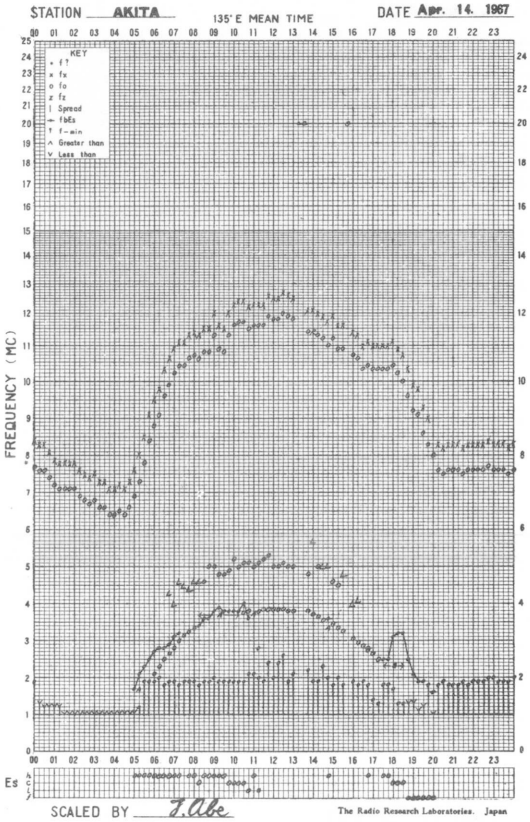

SCALED BY T. Abe The Radio Research Laboratories. Japan

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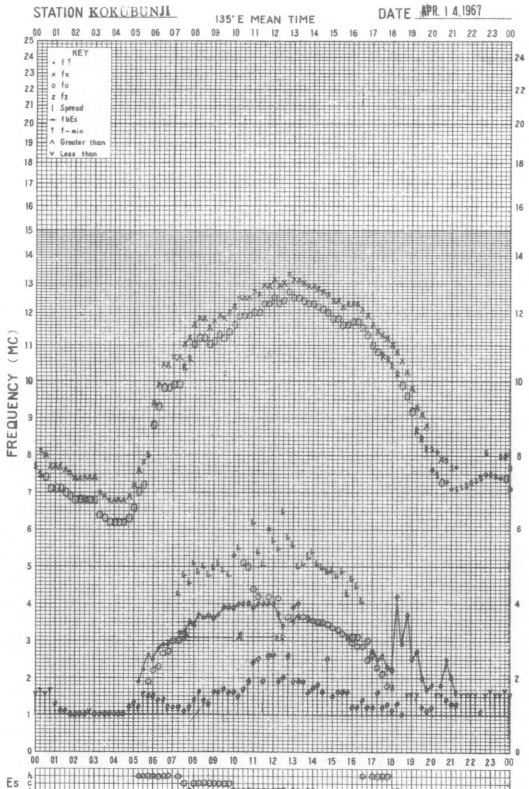

SCALED BY T. Koigumi The Radio Research Laboratories. Japan

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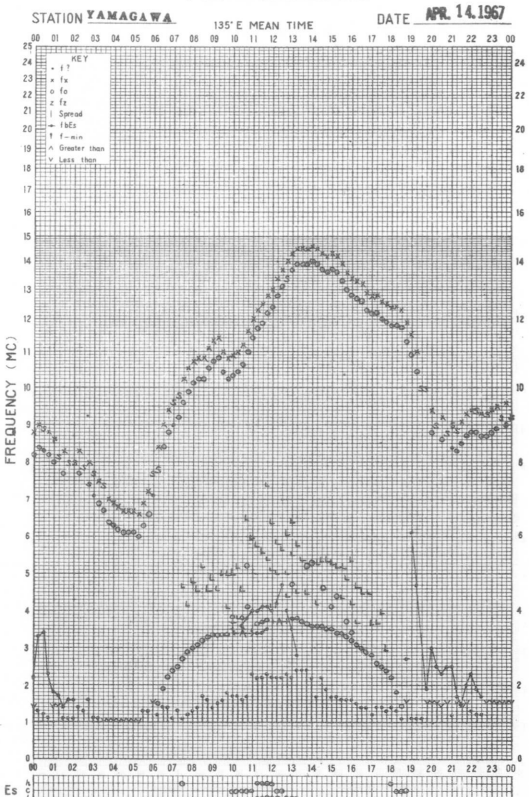

SCALED BY S. Sidomi The Radio Research Laboratories. Japan

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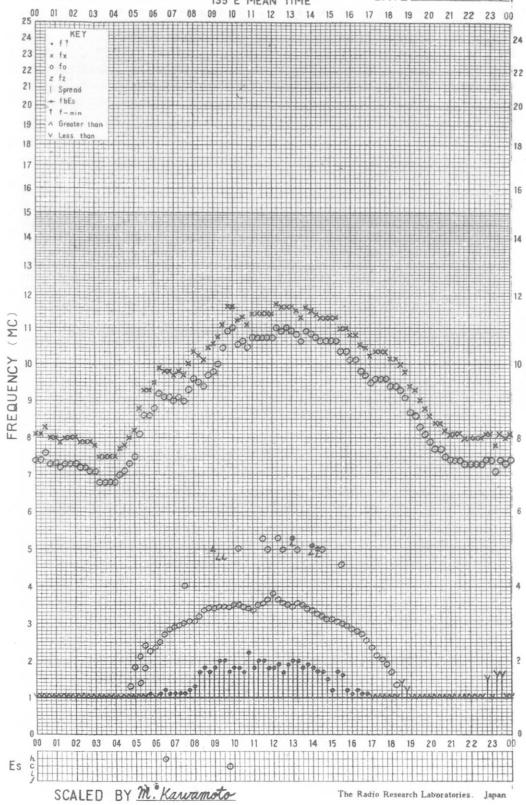

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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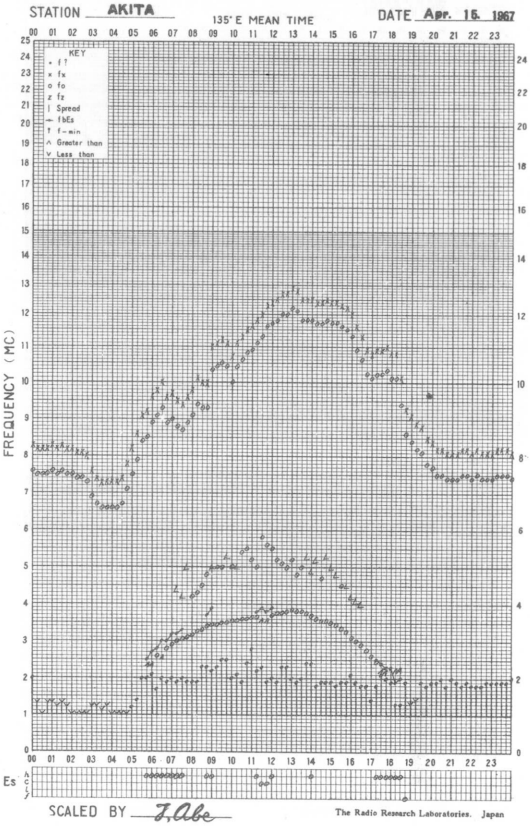

SCALED BY T. Abe The Radio Research Laboratories. Japan

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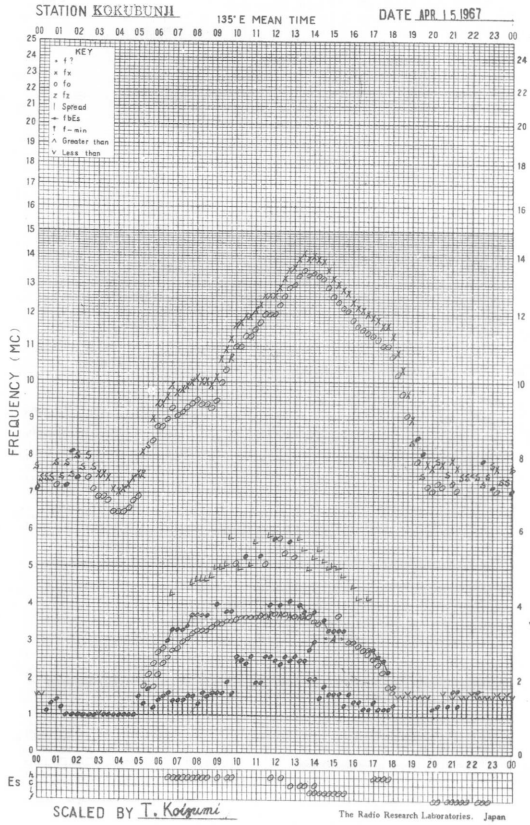

SCALED BY T. Kobyumi The Radio Research Laboratories. Japan

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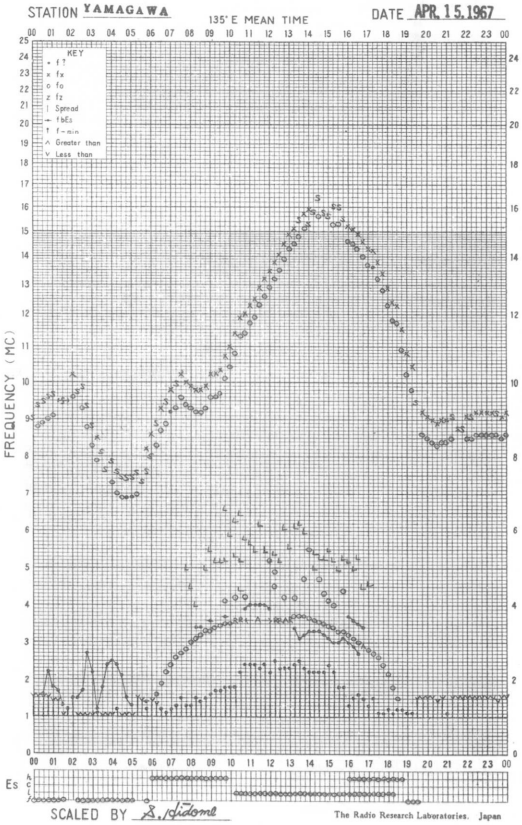

SCALED BY S. Nitome The Radio Research Laboratories. Japan

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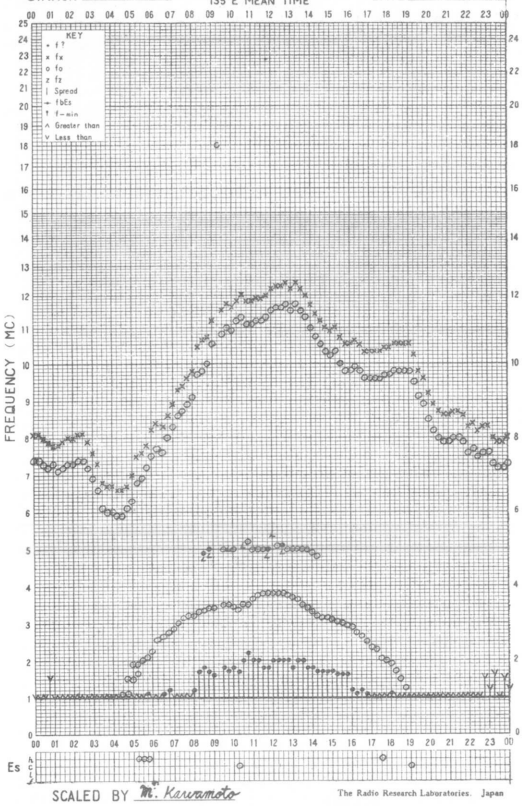

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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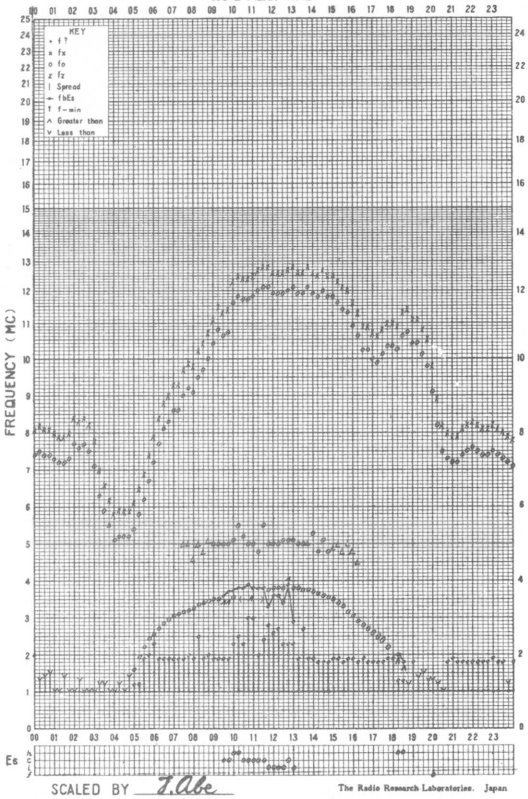

SCALED BY T. Abe The Radio Research Laboratories. Japan

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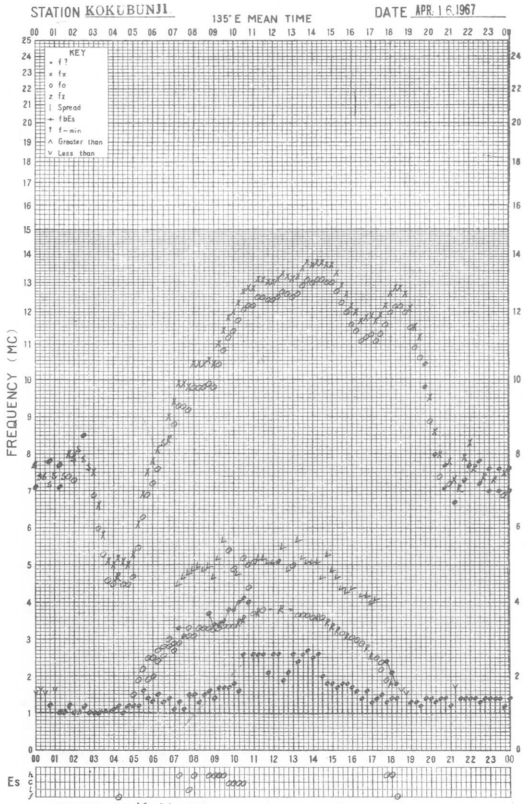

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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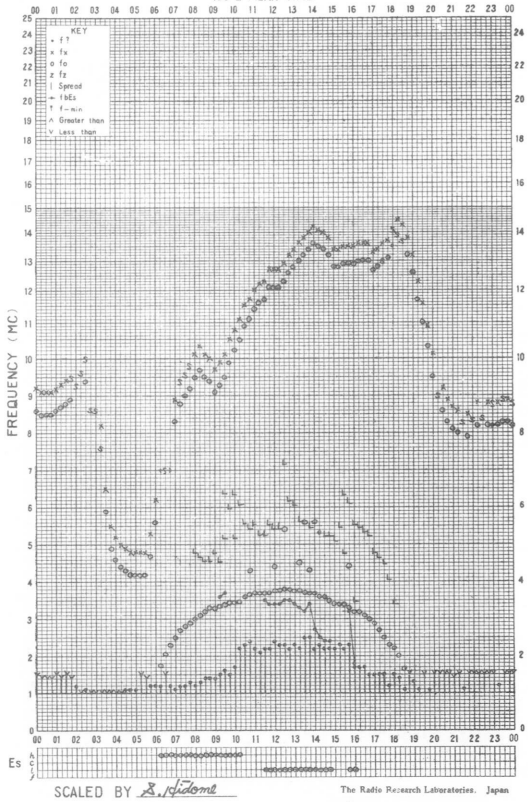

SCALED BY S. Hidome The Radio Research Laboratories. Japan

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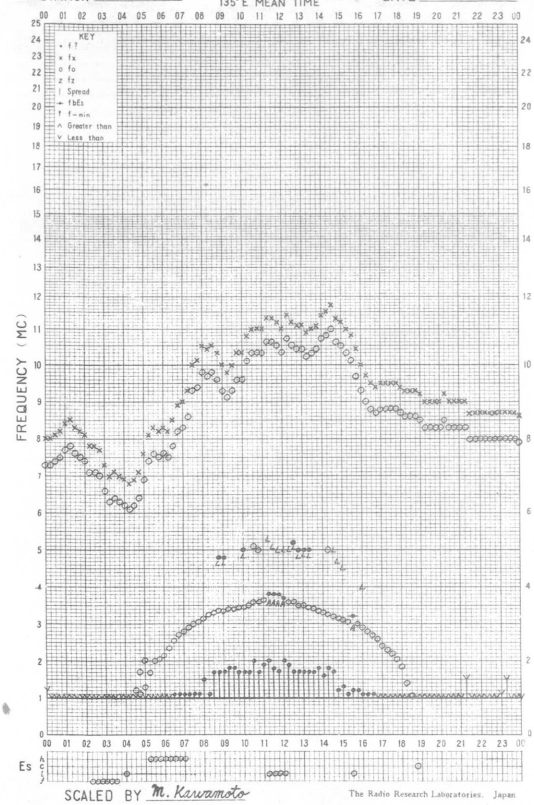

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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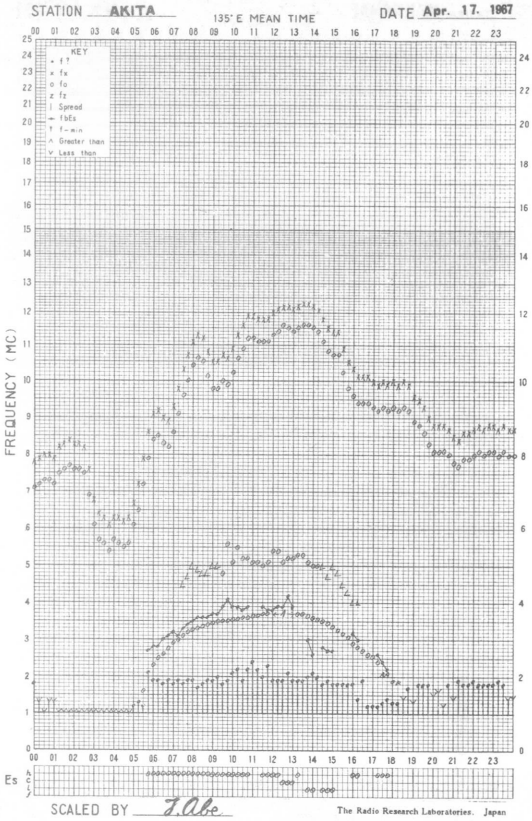

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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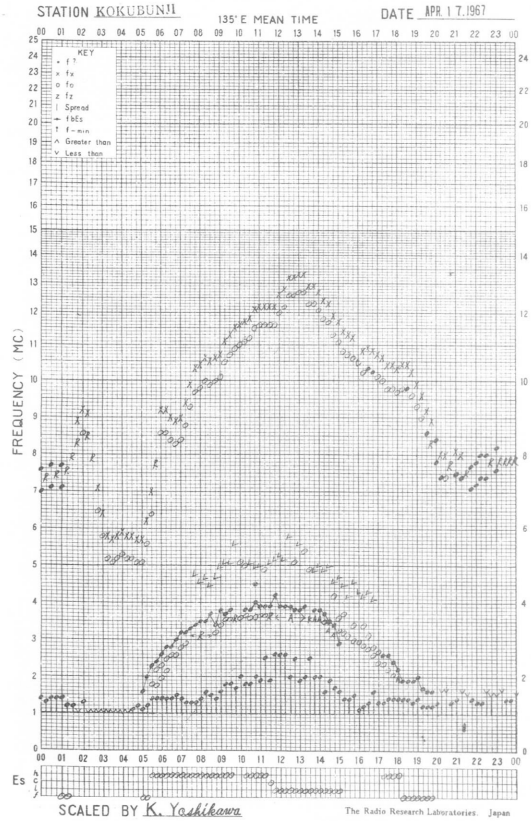

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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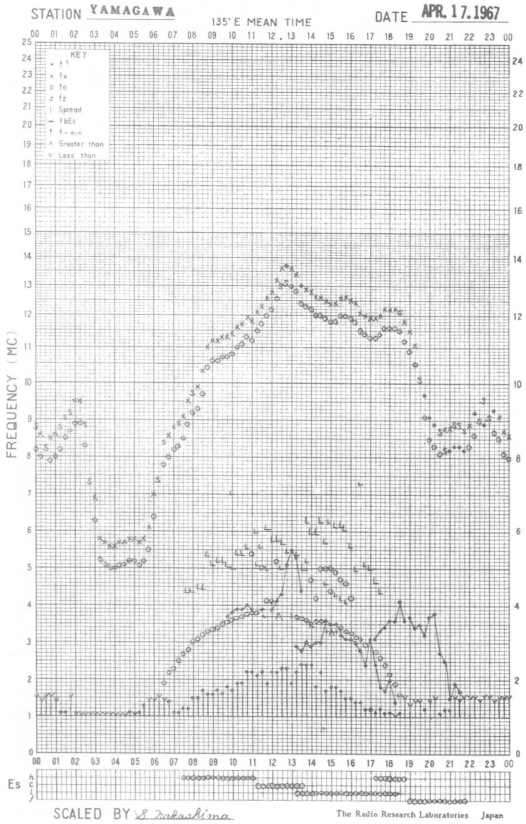

SCALED BY S. Takashima

The Radio Research Laboratories. Japan

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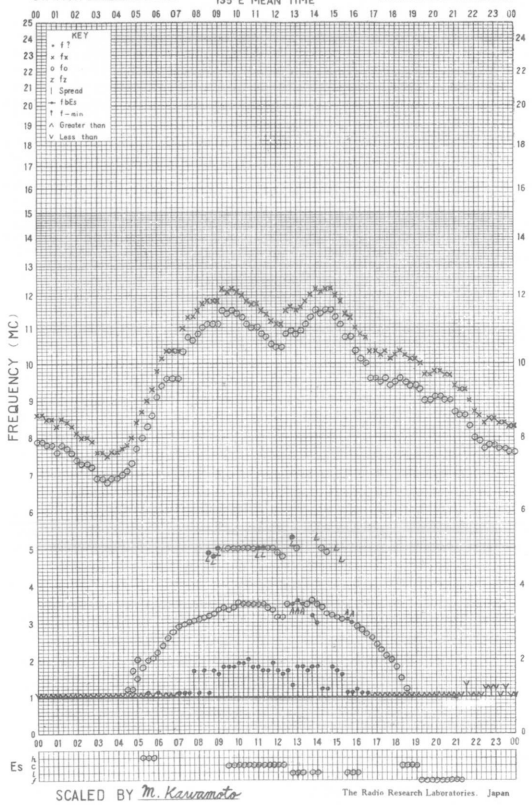

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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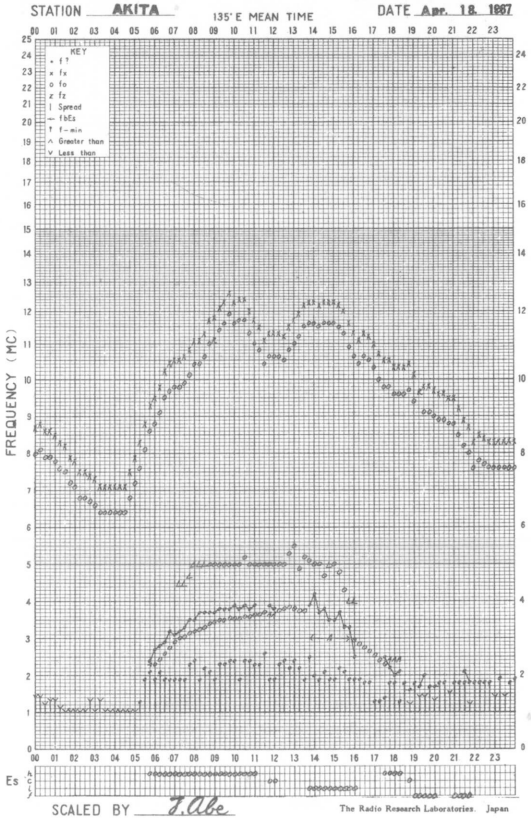

SCALED BY T. Abe The Radio Research Laboratories. Japan

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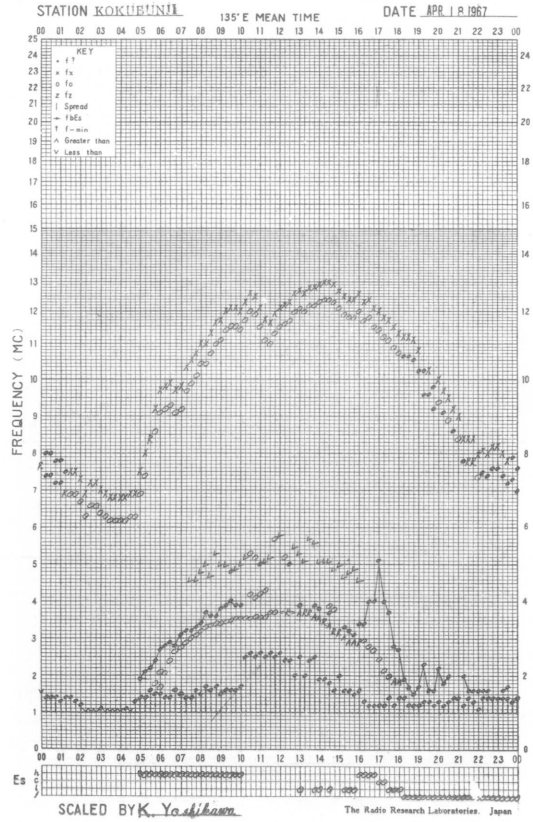

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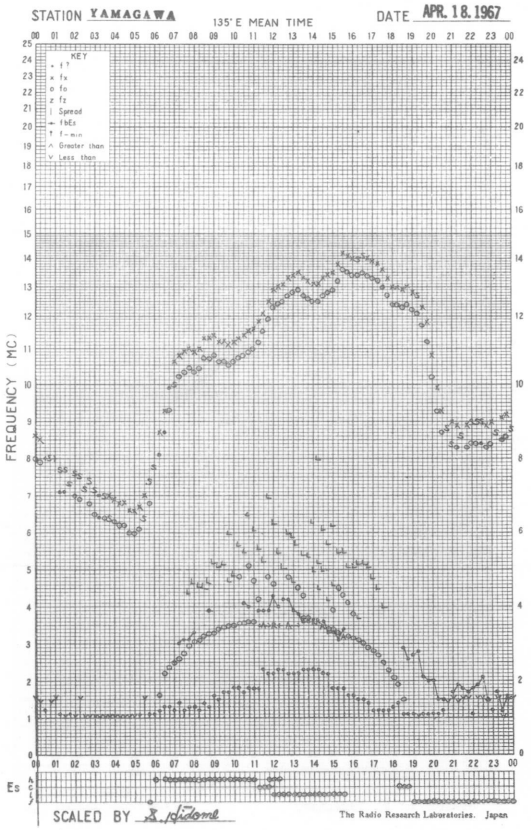

SCALED BY S. Ishidome The Radio Research Laboratories. Japan

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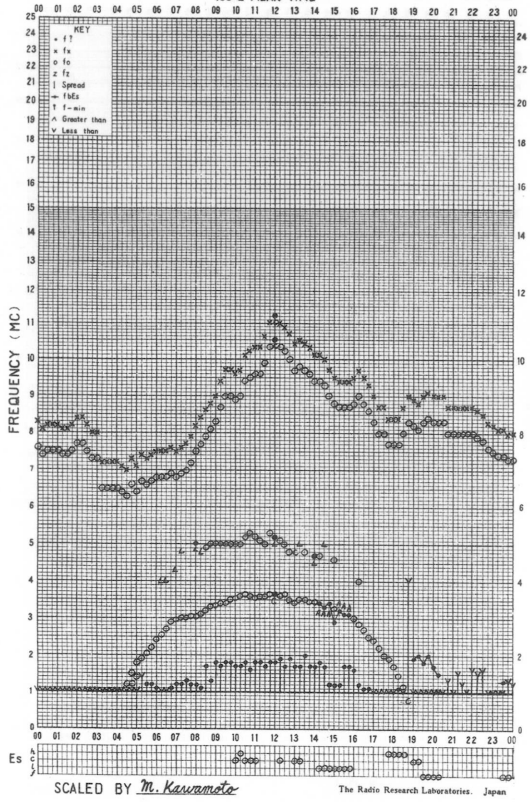

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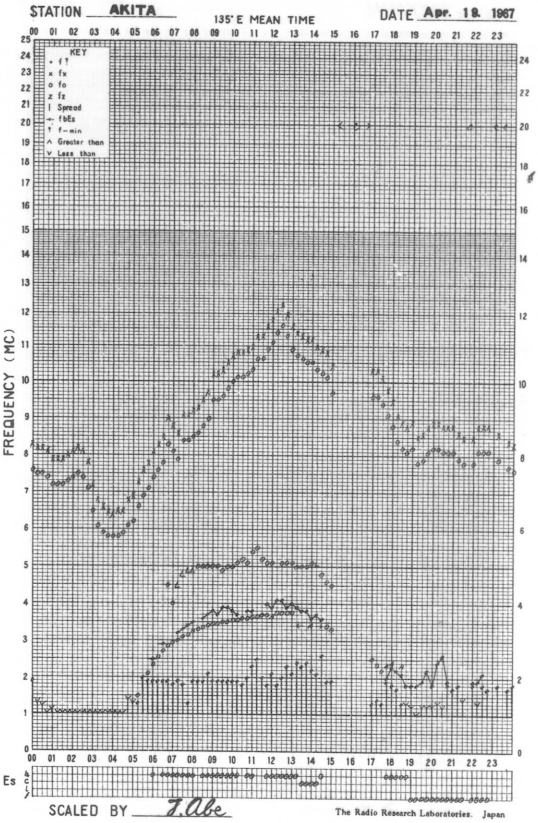

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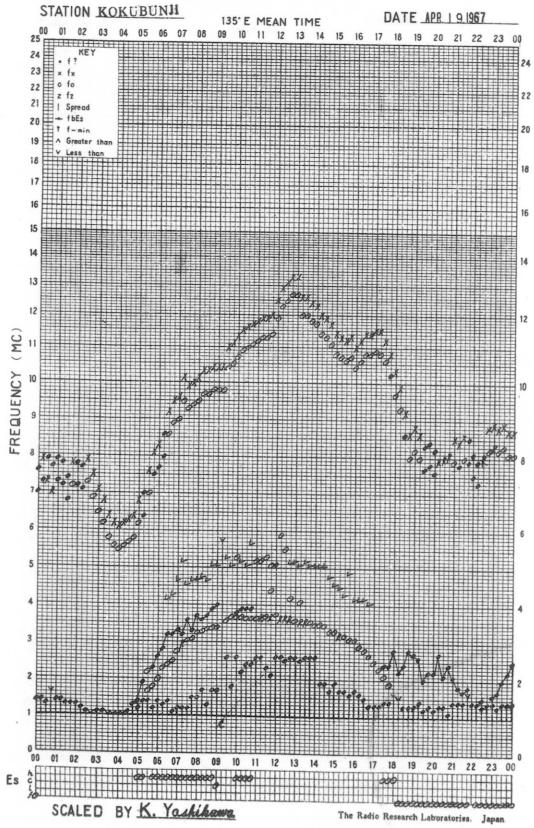

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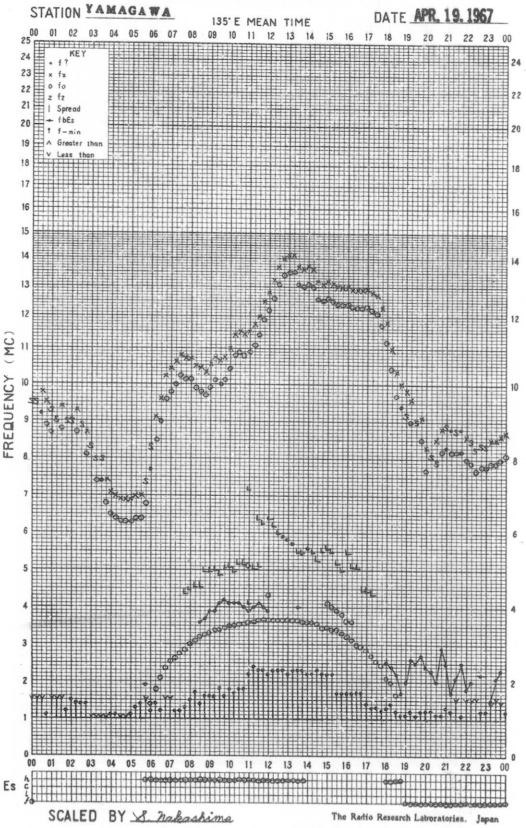

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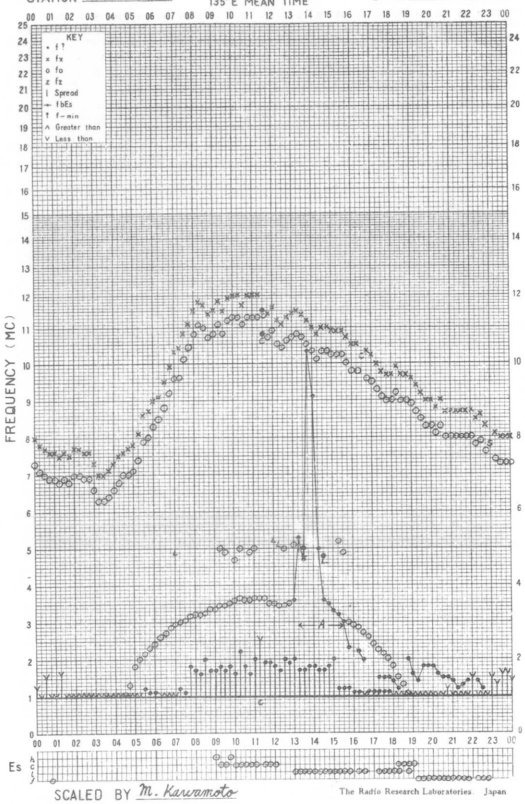

SCALED BY M. Kawamoto

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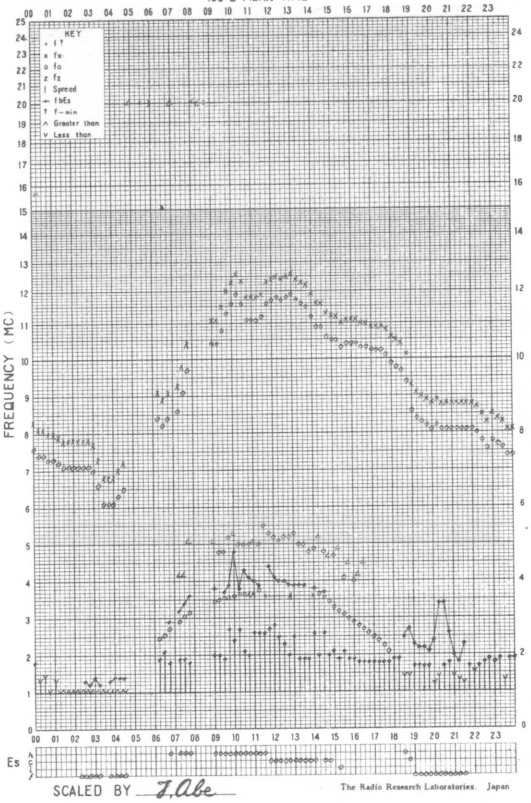

SCALED BY T. Abe

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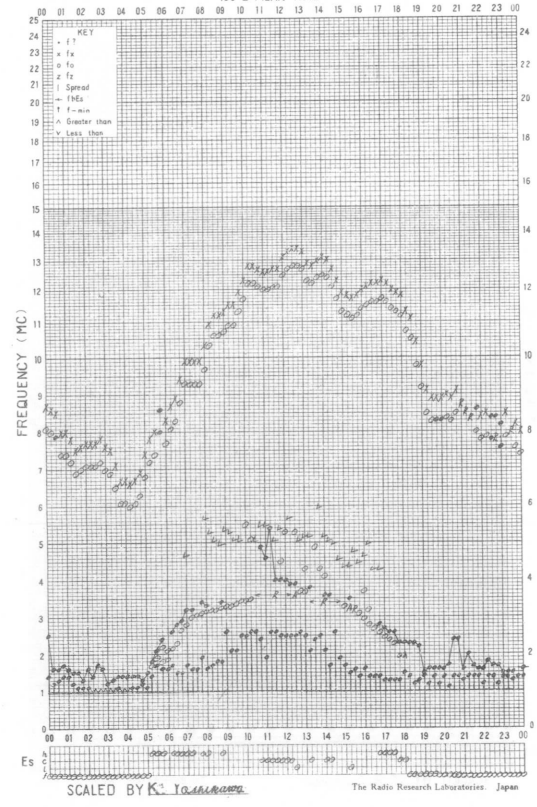

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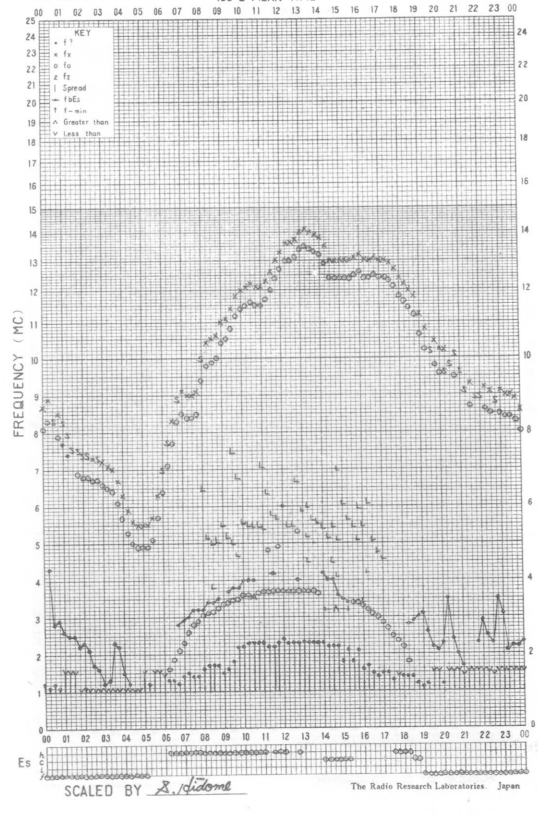

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The Radio Research Laboratories. Japan

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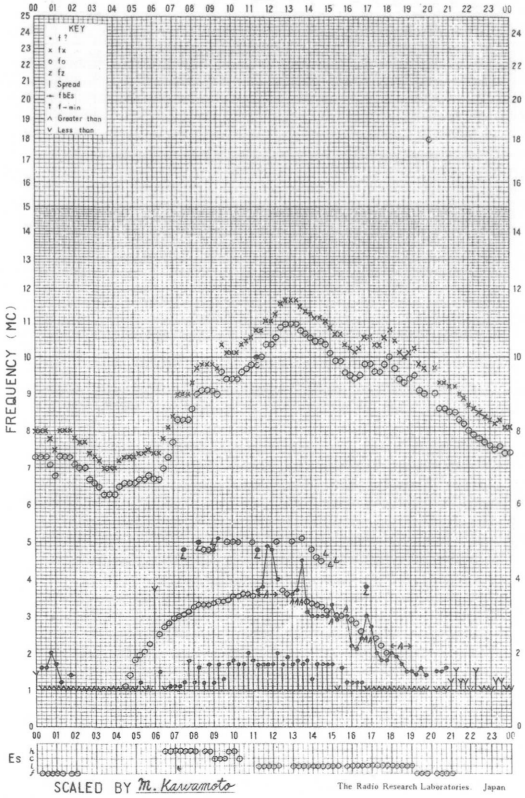

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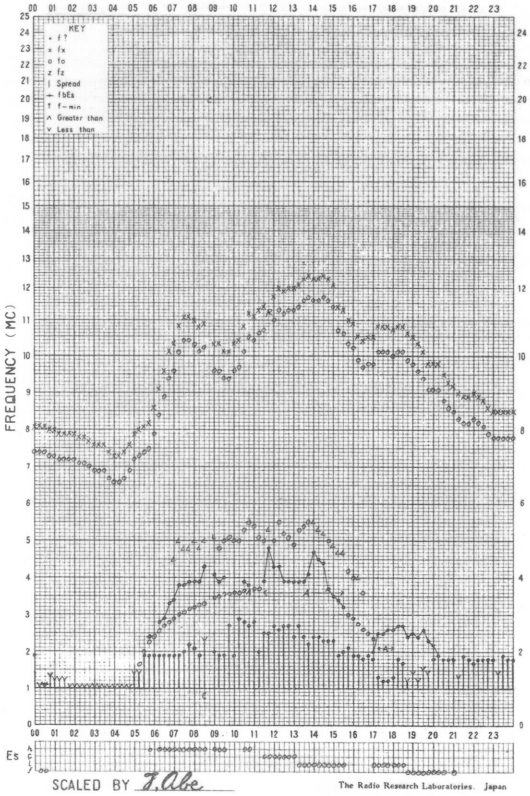

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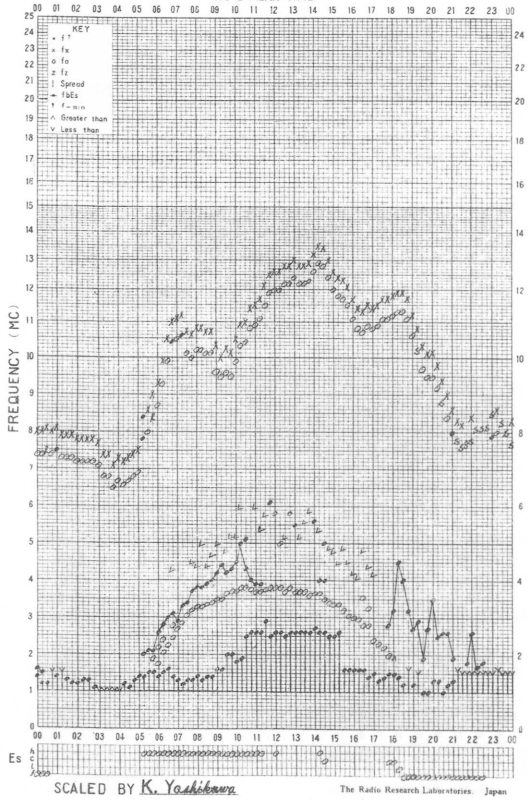

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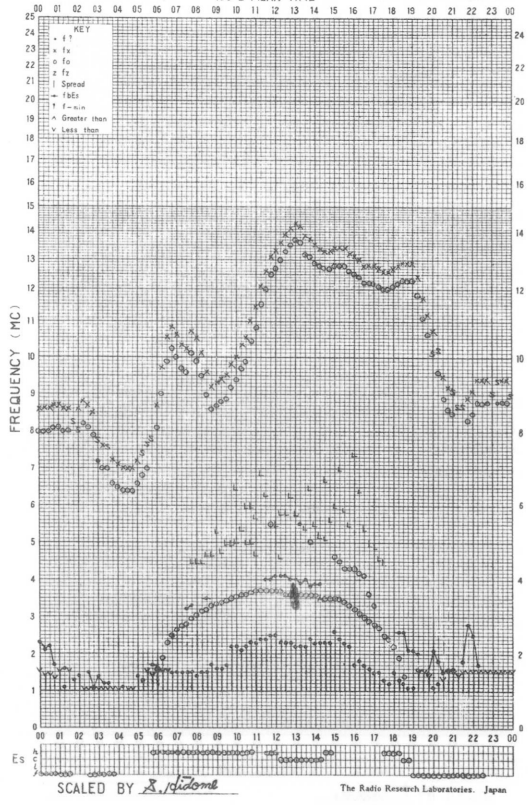

SCALED BY S. Ichidome

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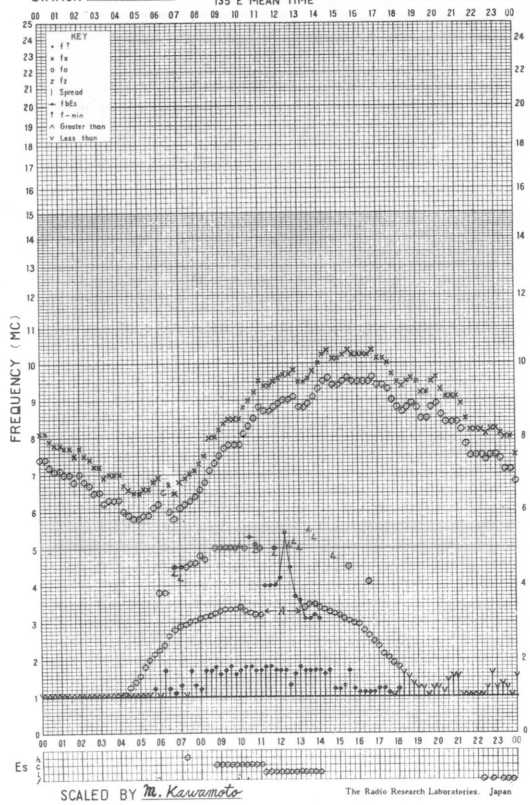

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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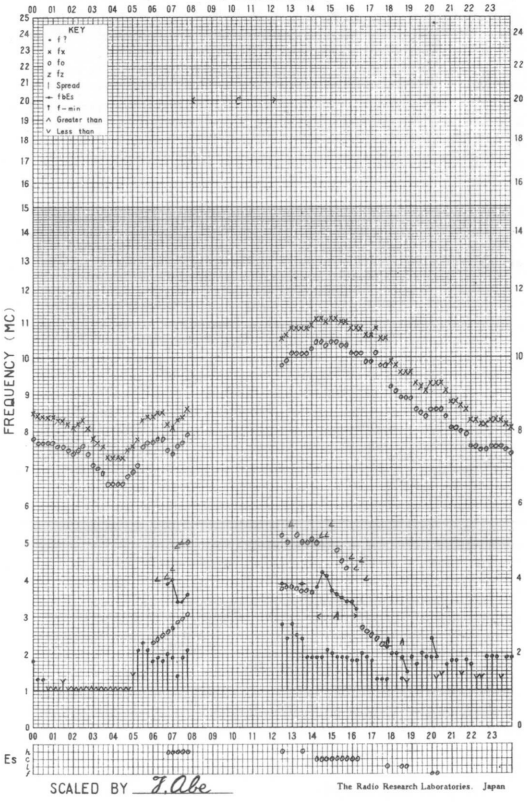
STATION AKITA 135° E MEAN TIME DATE Apr. 22 1967



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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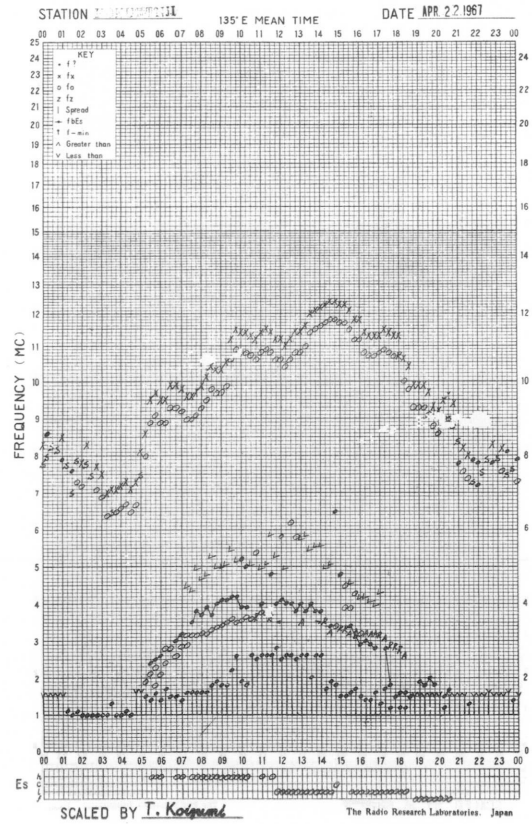

SCALED BY T. Koizumi The Radio Research Laboratories. Japan

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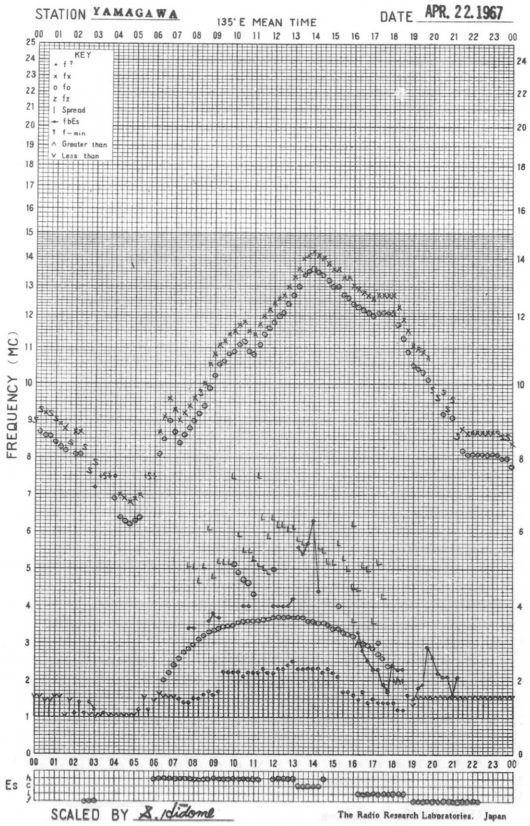

SCALED BY S. Kitamoto The Radio Research Laboratories. Japan

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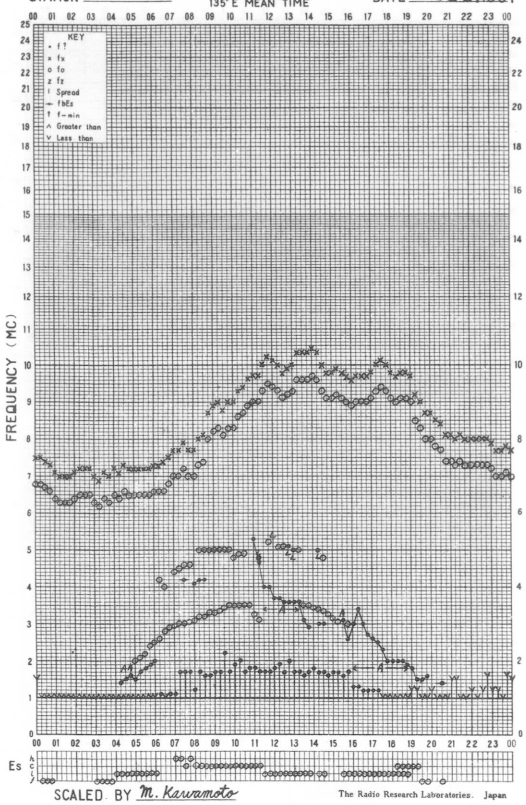

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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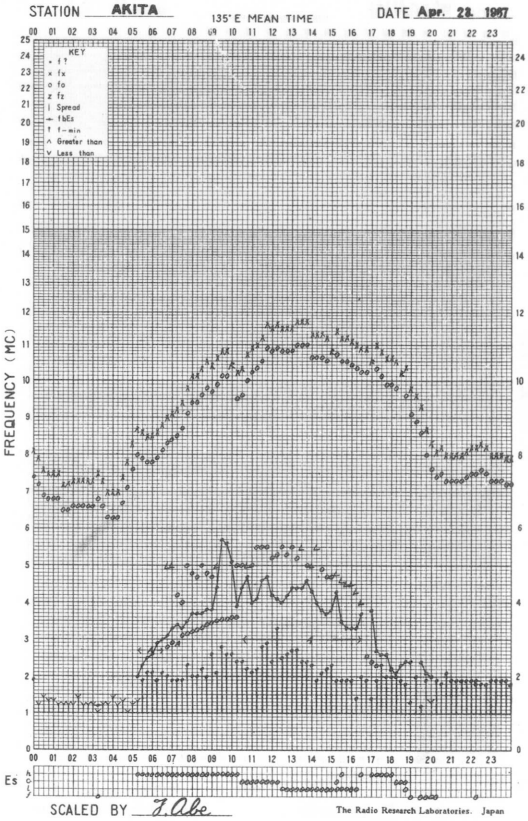

SCALED BY T. Abe The Radio Research Laboratories. Japan

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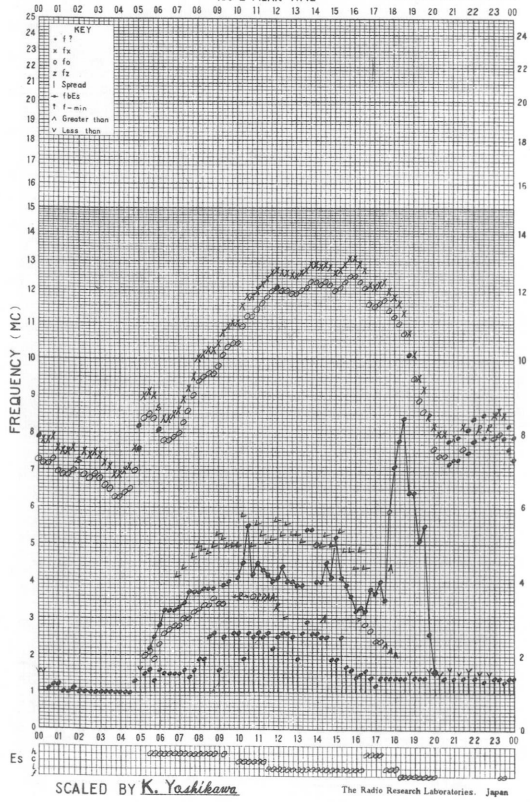

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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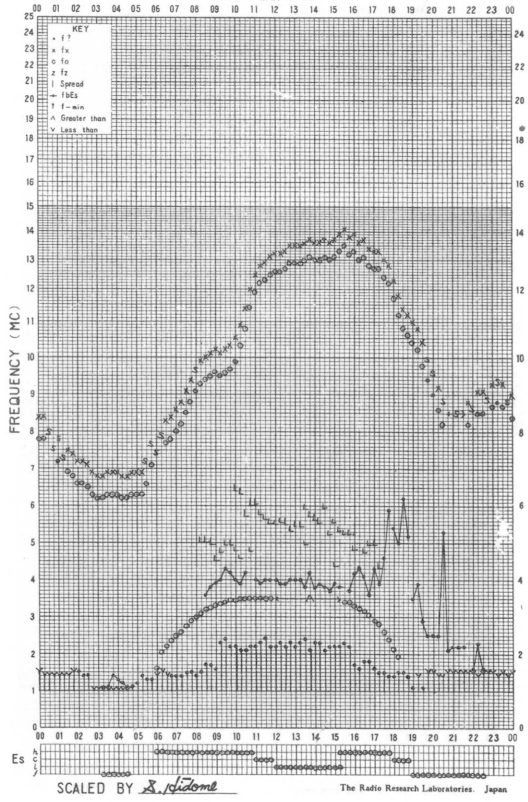

SCALED BY S. Sidomi The Radio Research Laboratories. Japan

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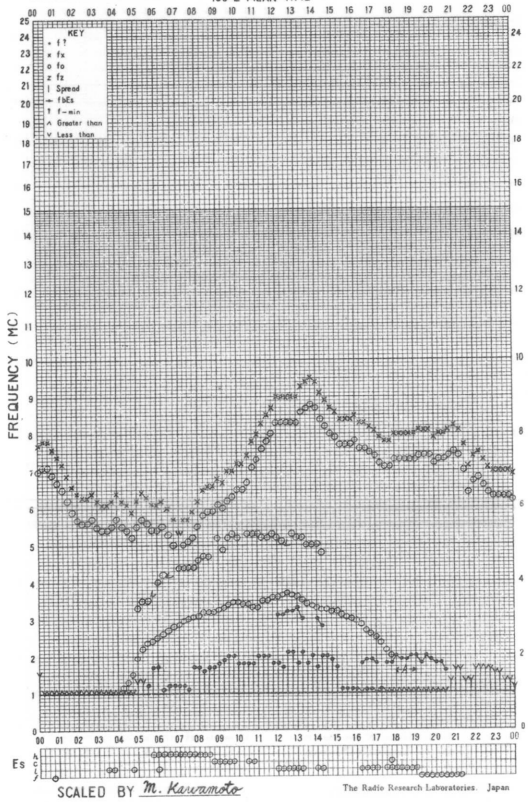

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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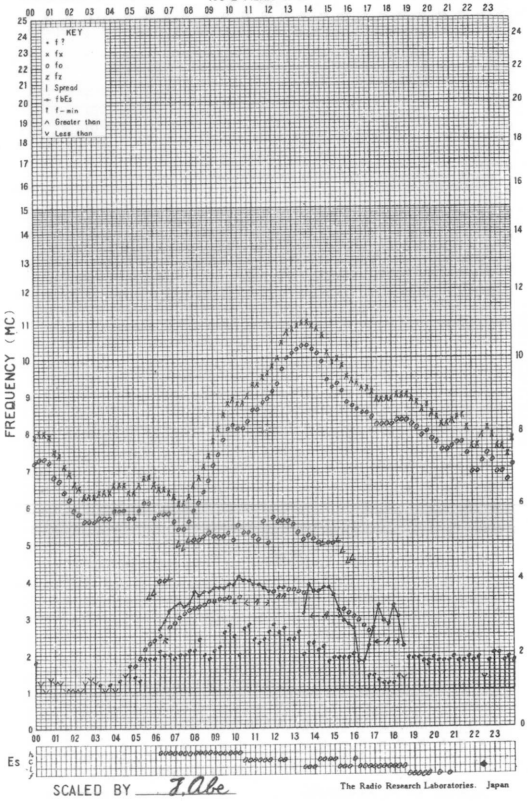

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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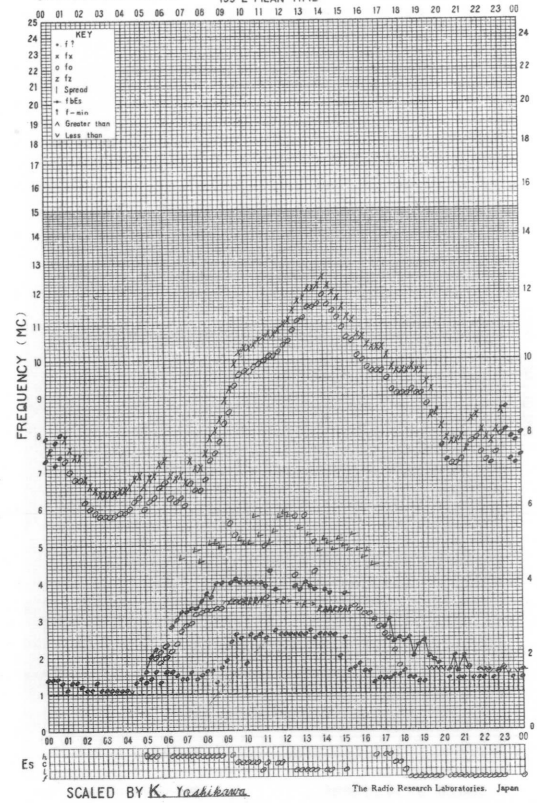

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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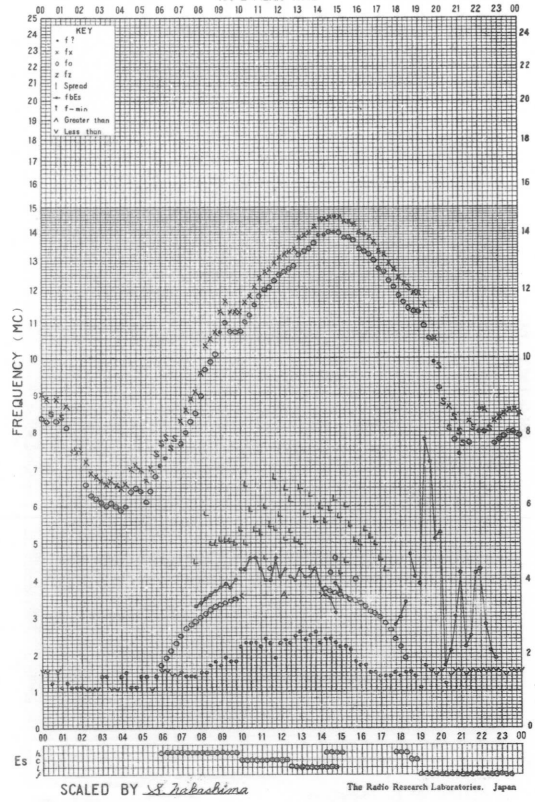

SCALED BY S. Takashima

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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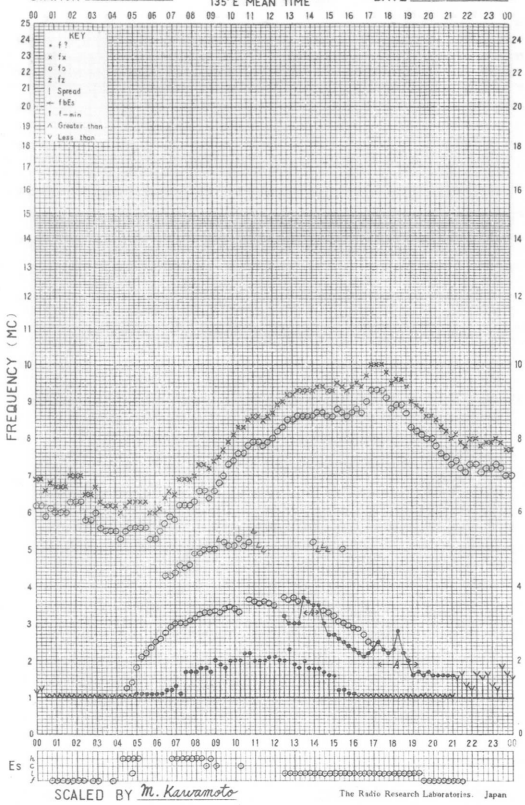

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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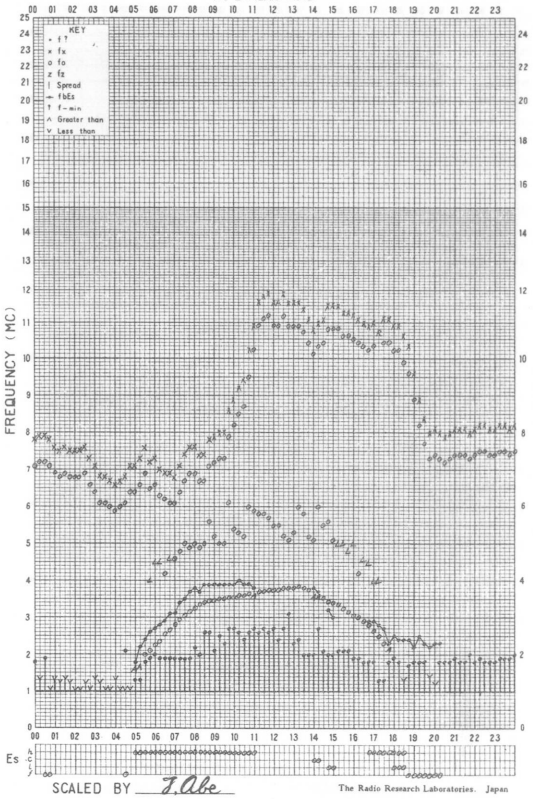

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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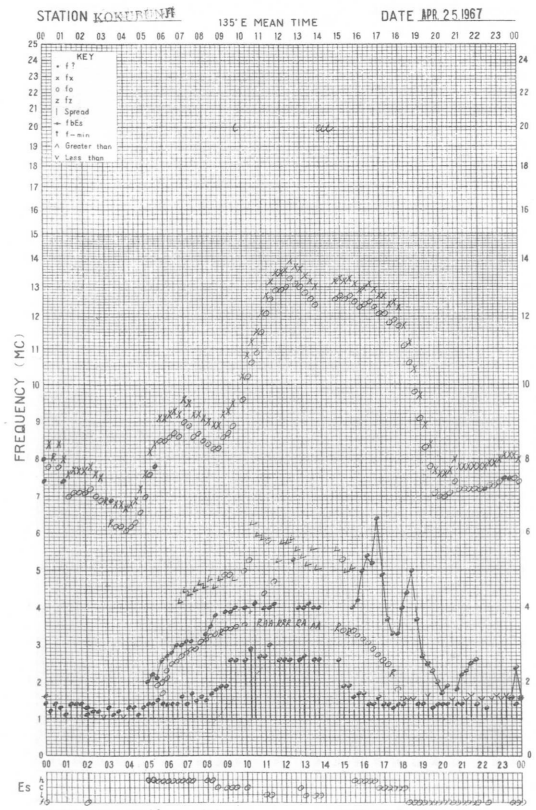

SCALED BY [illegible]

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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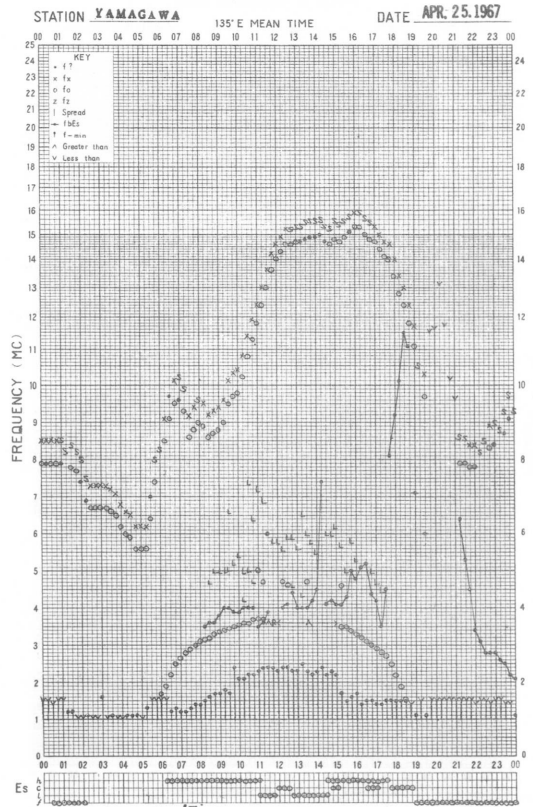

SCALED BY S. Ishitomi

The Radio Research Laboratories. Japan

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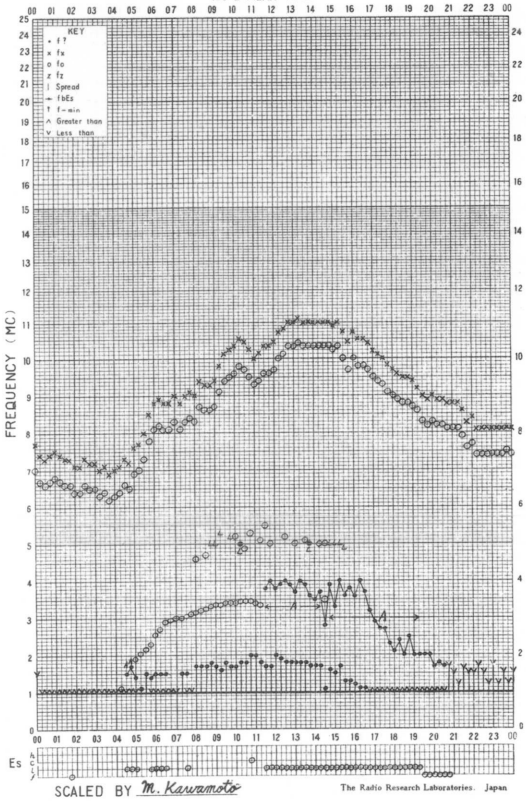

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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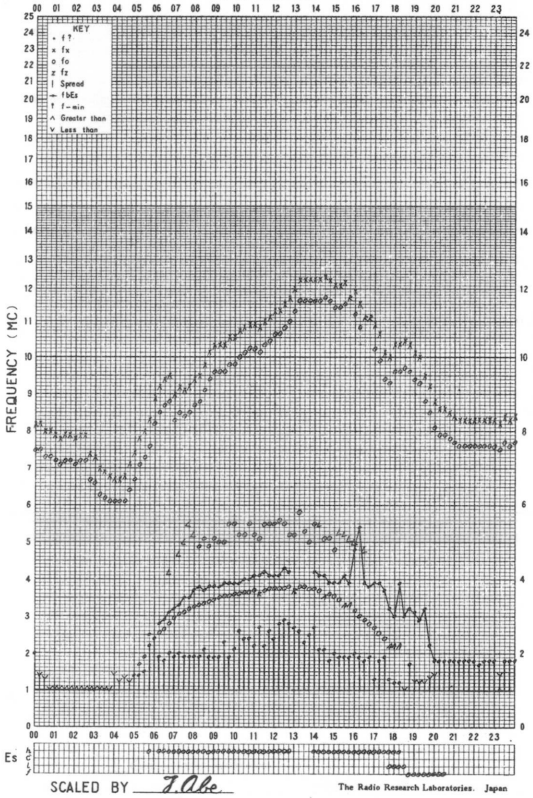

SCALED BY T. Abe The Radio Research Laboratories. Japan

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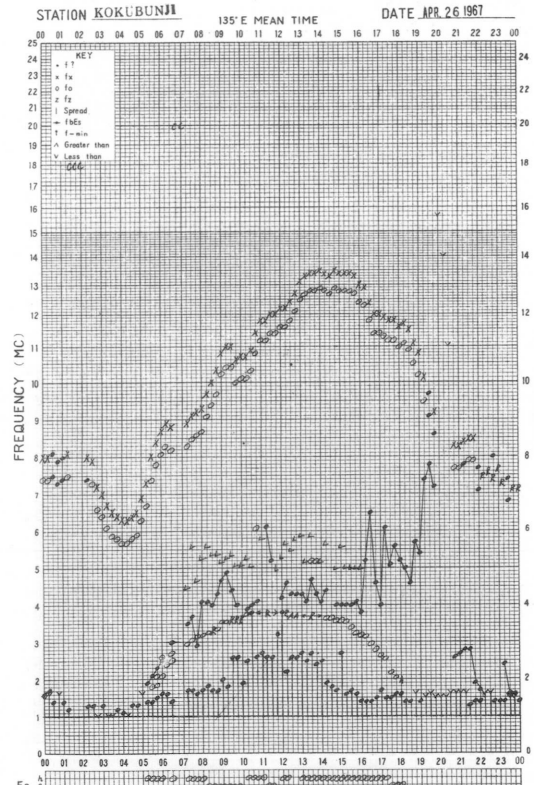

SCALED BY K. Yoshikawa The Radio Research Laboratories. Japan

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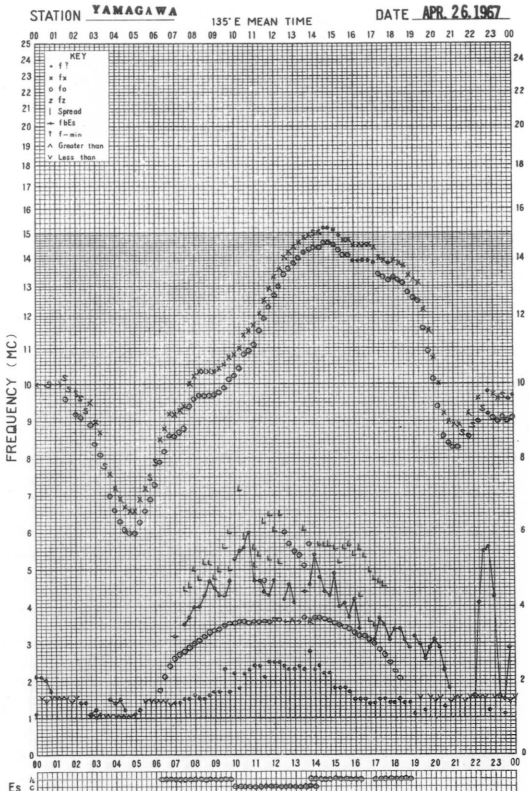

SCALED BY S. Ichidome The Radio Research Laboratories. Japan

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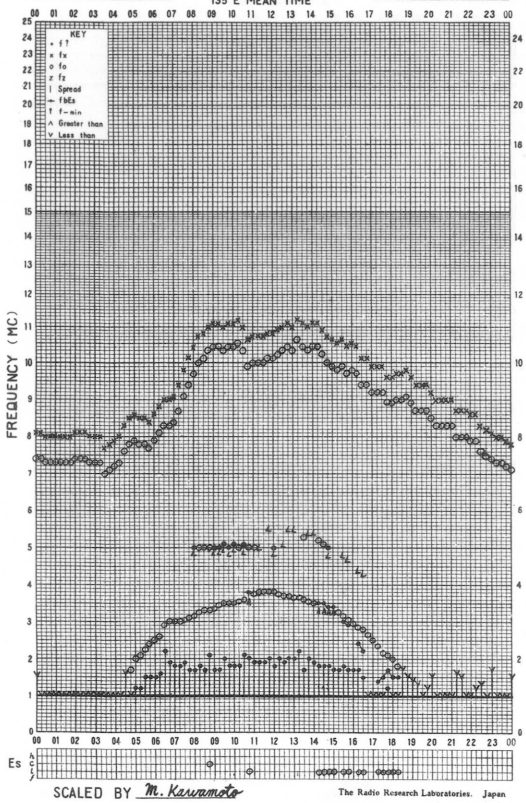

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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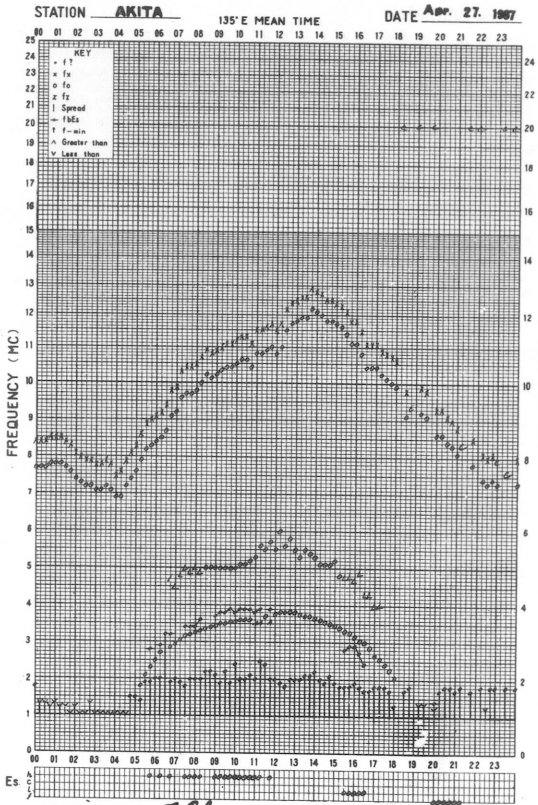

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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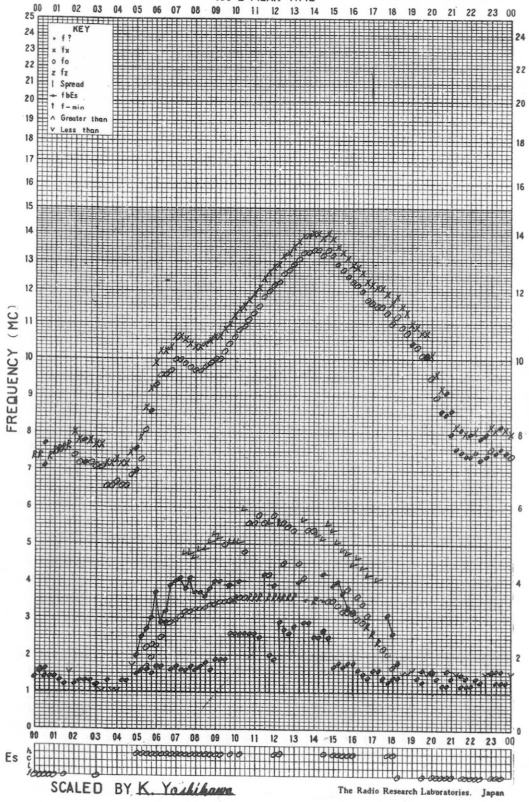

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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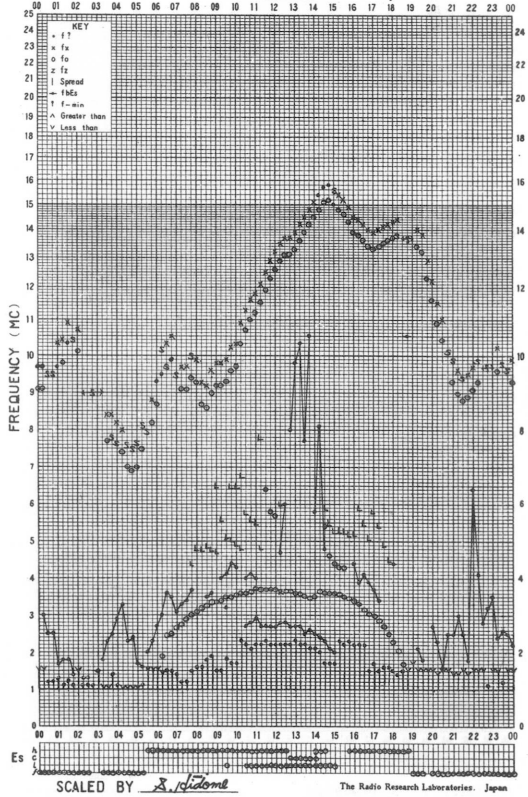

SCALED BY S. Sidomi

The Radio Research Laboratories. Japan

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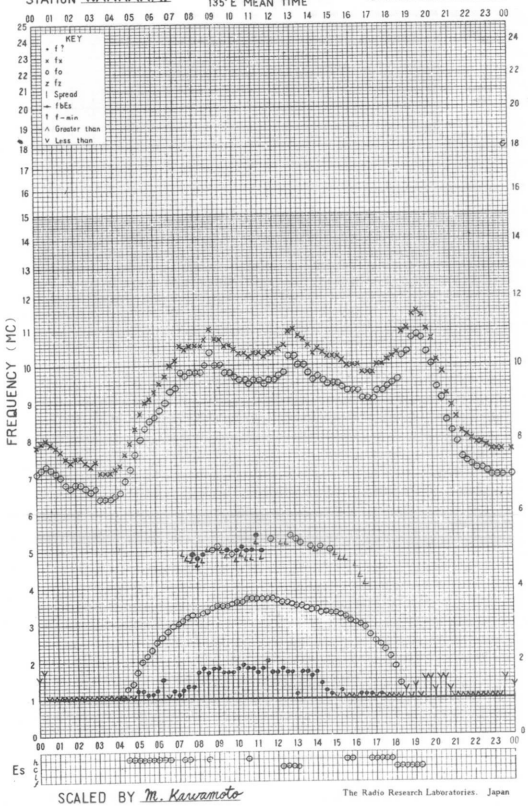

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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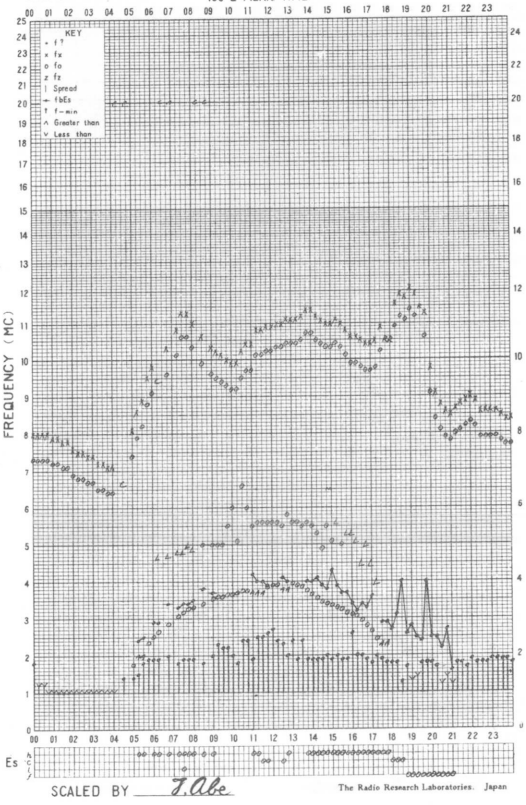

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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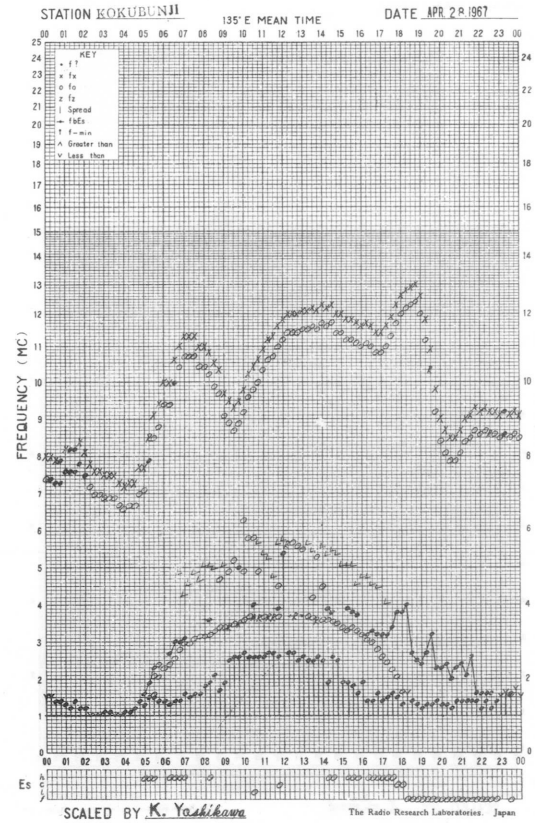

SCALED BY K. Yoshikawa

The Radio Research Laboratories. Japan

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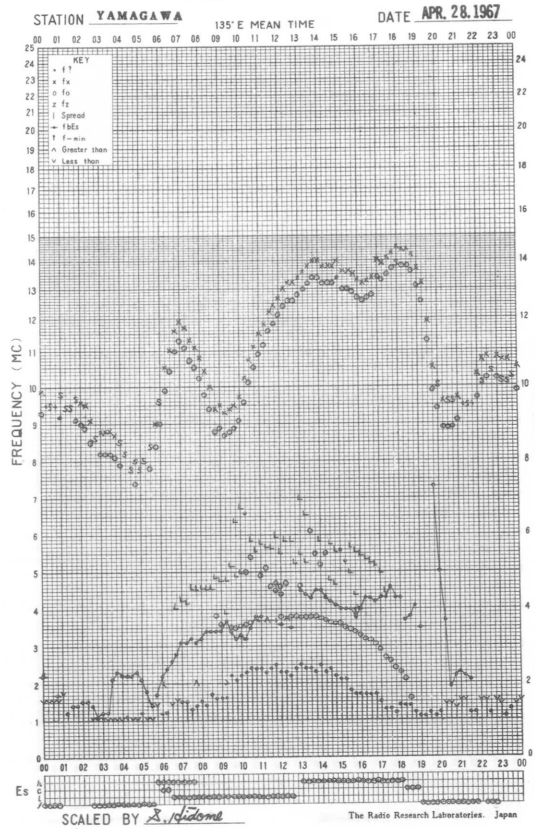

SCALED BY S. Ishizome

The Radio Research Laboratories. Japan

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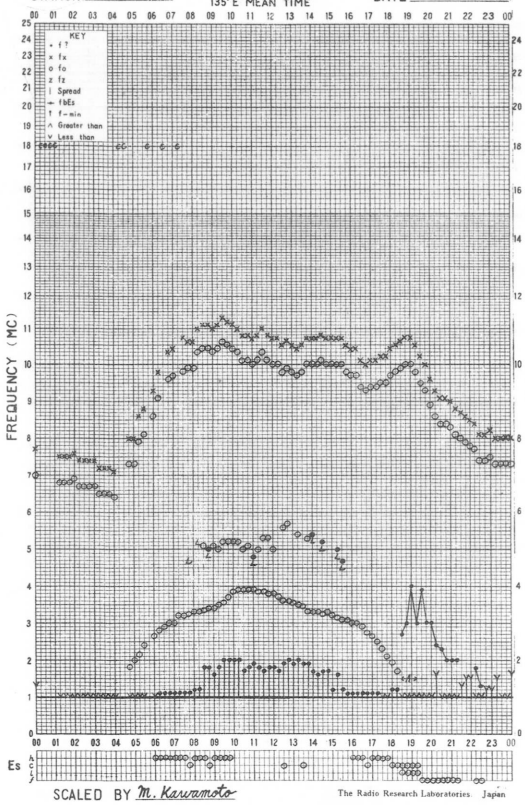

SCALED BY M. Kawamoto The Radio Research Laboratories Japan

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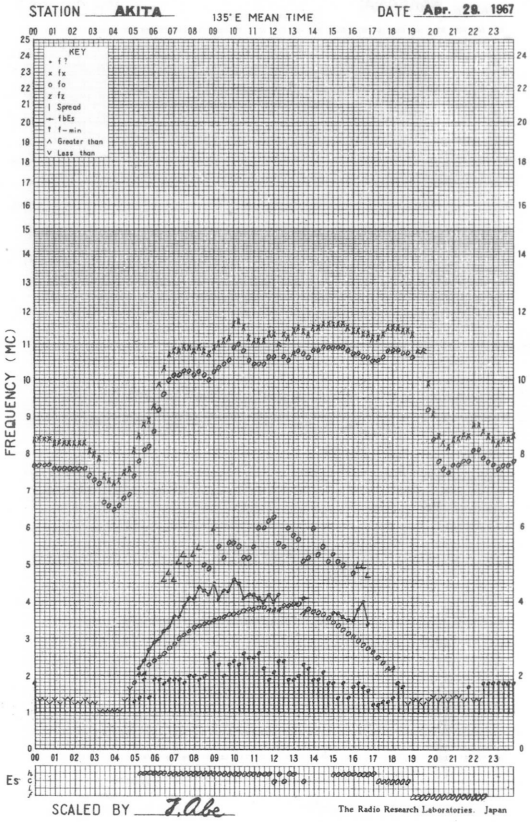

SCALED BY T. Abe The Radio Research Laboratories Japan

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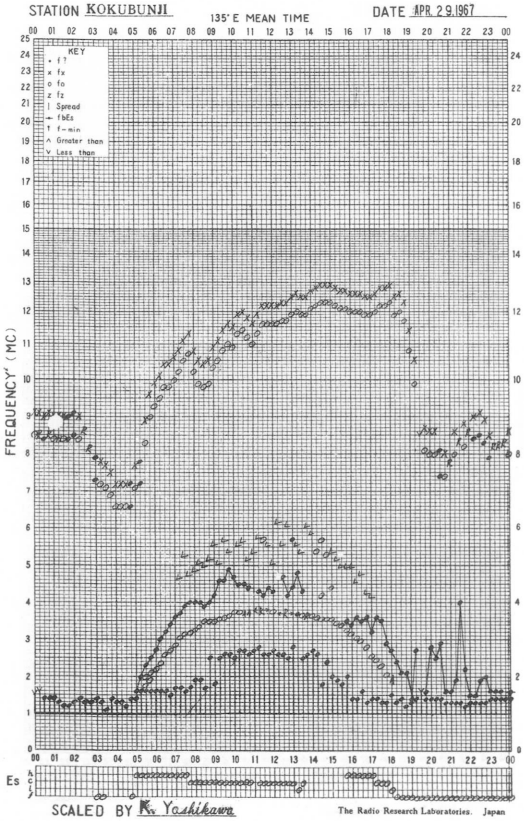

SCALED BY K. Yoshikawa The Radio Research Laboratories Japan

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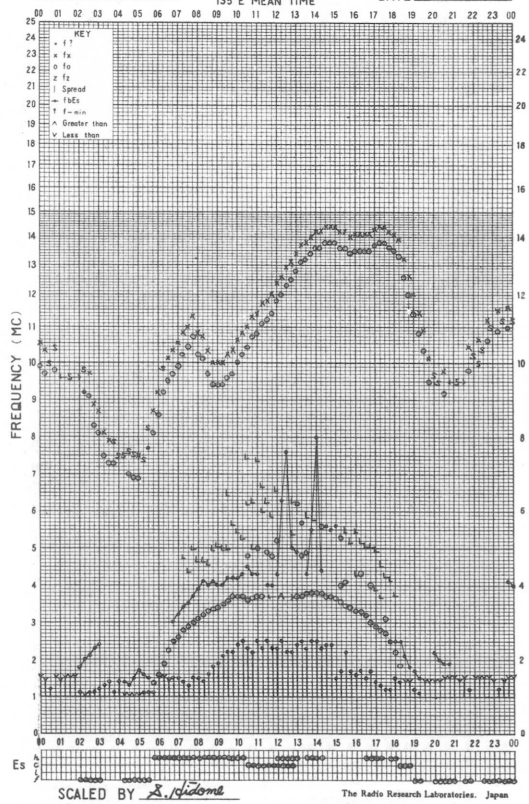

SCALED BY S. Sidomi The Radio Research Laboratories Japan

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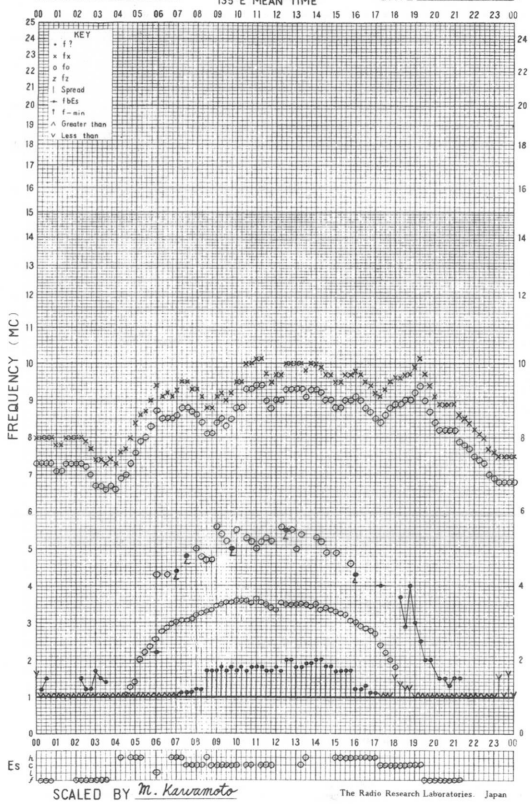

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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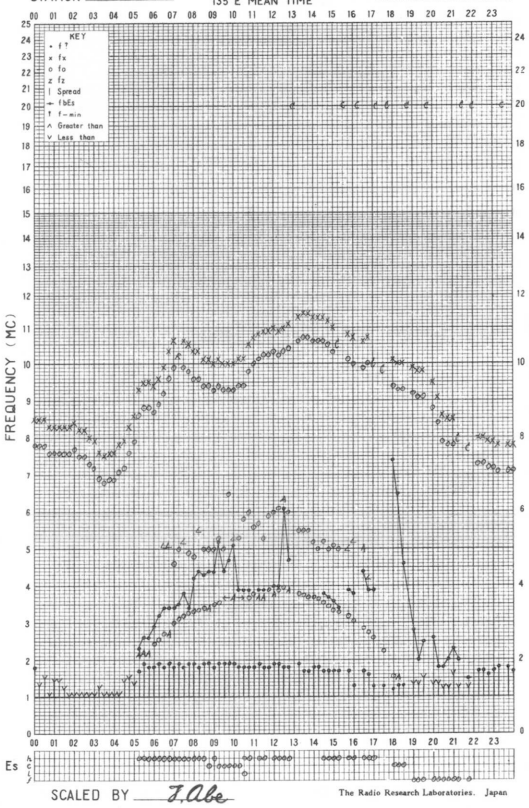

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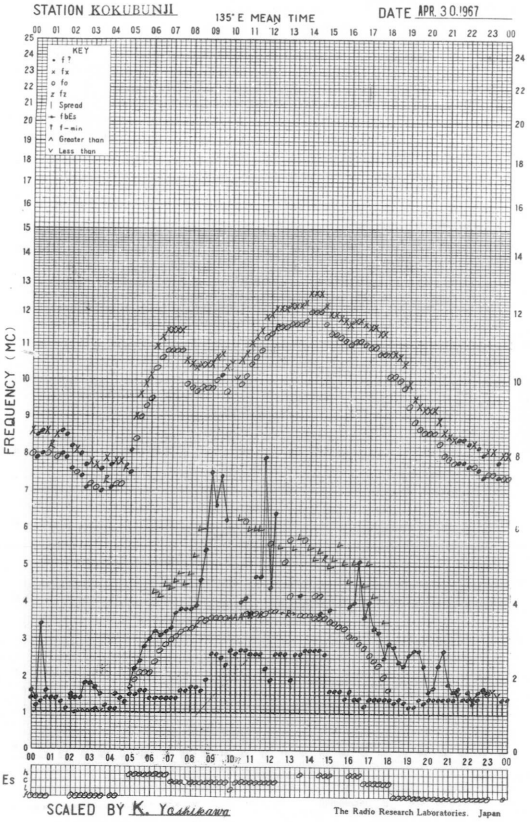

SCALED BY K. Yashikawa The Radio Research Laboratories. Japan

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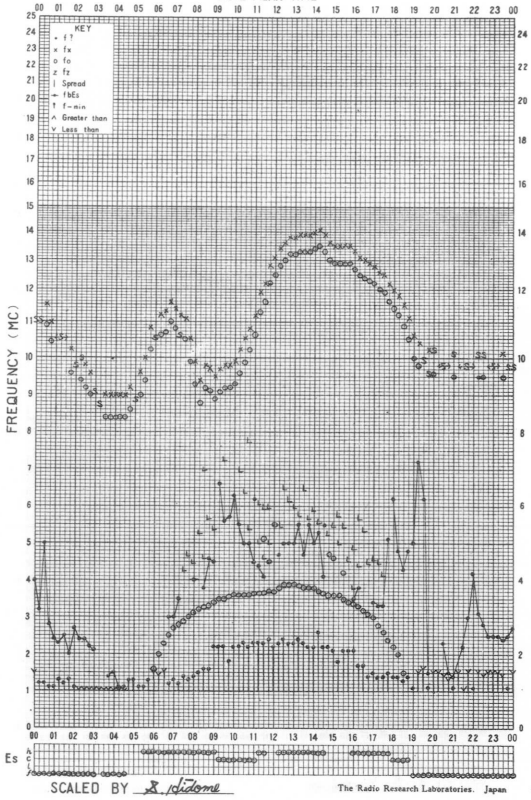

SCALED BY S. Ichiome The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

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

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

Note No observations during the following periods:

3rd	0700-	2400	15th	0600-	0910
4th	2000-	2400	16th	0535-	0600
5th	2000-	2400	17th	2000- 31st	0900
13th	0400-	0425	receiver unstable		

SOLAR RADIO EMISSION

Flux Density

Month: April 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	43	44	46	-	43
2	41	42	38	-	41
3	38	38	38	32	38
4	34	-	-	34	33
5	36	31	30	-	33
6	-	31	29	30	30
7	-	33	30	-	32
8	35	36	36	37	36
9	37	32	(32)	36	35
10	35	32	30	35	34
11	37	38	40	32	37
12	39	36	36	35	36
13	38	35	36	33	36
14	33	33	31	31	33
15	32	33	34	33	32
16	35	34	33	32	34
17	33	36	37	28	34
18	31	31	32	27	30
19	31	30	30	26	30
20	29	30	31	26	29
21	35	35	37	31	32
22	36	35	35	32	34
23	35	31	33	28	33
24	34	34	35	31	32
25	32	34	35	31	33
26	33	33	35	27	33
27	32	32	-	32	30
28	36	39	(35)	34	35
29	40	39	37	31	37
30	33	34	32	28	33

Note No observations during the following periods:

1st	2000-	2400	7th	2000-	2400
2nd	2000-	2400	9th	0700-	0910
4th	0200-	0910	17th	0220-	0300
5th	2000- 6th	0300	27th	0600-	0910
7th	0000-	0300	28th	0700-	0910

Distinctive Events

(single-frequency observations)

Month: April 1967
Observing station: Hiraiso
Normal observing period: 2000 - 0910 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density 10^{-22} Wm^{-2}(c/s)$^{-1}$		Remarks
	Mc/s	UT	UT	minutes		peak	mean	
1	500	0346.0	0349.2	4.0	F	460	-	
	200	0526.5	0527.0	1.5	C	300	90	
	500	0616.5	0617.0	8.0	C	1070	45	
	200	0616.5	0617.0	1.5	C	180	50	
	500	0653.0	0653.0	2.0	C	140	11	
	500	0706.0	0707.5	13.0	RF	29	15	
	500	0755.0	0756.5	4.0	C	460	25	
2	500	0156.0	0156.5	2.0	C	830	95	
3	200	0250.0	0251.5	1.5	C	230	26	
5	200	0000	0900 (SS)	weak noise storm				
9	200	2020 (SR)	10th	0900 (SS)	weak noise storm			

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

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

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

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

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Apr. 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 (3)	- (4 4) 4	4 4 5 4	(3) 4 4 4	3 4 4 4	N N N N	0807	23xx	63γ
2	4-	4 4 (4)	- (4) 4 4	4 4 4 3	4 4 4 3	4 4 4 4	N N N N			
3	4o	4 4 4	- 4 5 (5)	4 4 4 4	4 4 4 4	4 4 4 4	N N N N			
4	4+	4 4 4	- 4 4 (3)	4 5 4 4	4 5 5 5	4 4 4 4	N N N N	0304	20xx	62γ
5	4+	4 4 4	- 3 4 4	4 4 5 4	4 4 5 5	4 4 4 4	N N N N			
6	4o	4 4 4	- 4 (4) 4	4 4 4 4	4 4 4 4	4 4 4 4	N N N N			
7	4o	4 4 4	- (4 4) 4	4 4 4 4	4 4 4 4	4 4 4 4	N N N N			
8	4o	(4) 4 4	- (3 4) C	(4 4) 4 4	4 5 4 4	C (4) 4 4	N N N N			
9	4+	4 4 (4)	- (4) C C	4 5 5 4	4 4 4 4	4 4 4 4	N N N N			
10	4o	4 4 4	- 4 4 4	4 4 4 4	4 4 4 4	4 4 3 4	N N N N			
(11)	4o	4 4 (5)	- 4 4 3	4 4 4 4	4 4 4 4	4 4 4 4	N N N N			
(12)	4+	5 4 4	- 4 5 4	5 5 4 4	4 4 4 4	5 4 4 4	N N N N			
(13)	4+	5 5 4	- 3 3 (3)	4 5 5 4	4 4 4 4	4 4 4 4	N N N N			
14	4+	5 5 5	- 3 3 (3)	5 4 4 5	4 4 4 4	4 4 5 4	N N N N			
15	4+	5 5 4	- 4 4 4	4 4 5 4	4 (4) 4 4	5 4 4 4	N N N N			
16	4o	4 4 (4)	- 4 5 5	4 5 4 4	4 (4 4) 4	4 4 4 4	N N N N			
17	4o	4 4 (4)	- 3 3 3	4 4 4 4	4 (4 4) 4	4 4 4 4	N N N N			
18	4o	4 4 4	- 4 4 4	4 4 4 4	4 4 4 (4)	4 4 4 4	N N N N			
19	3+	4 4 3	- 4 4 4	3 3 3 3	4 3 4 4	4 4 4 4	N N N N			
20	4-	4 4 4	- 4 4 5	3 3 4 4	4 4 (4) 4	4 4 4 4	N N N N			
21	4o	4 4 4	- (4) 4 5	4 4 4 4	4 3 4 4	4 4 4 4	N N N N			
22	4-	3 4 3	- (3) 3 (3)	3 3 4 4	4 3 4 4	4 4 4 4	N N N N			
23	3+	4 (4 3)	- 5 4 4	4 3 3 3	4 4 3 3	4 4 4 4	N N N N			
24	4-	(3 3) 4	- 4 4 5	3 3 4 4	4 4 4 3	4 4 4 4	N N N N			
25	4o	4 4 4	- (4) 4 (4)	4 4 4 (4)	4 5 4 4	4 4 4 4	N N N N			
26	4o	4 4 4	- (3) 4 5	4 4 4 4	4 5 4 4	4 4 4 4	N N N N			
27	4+	4 4 (4)	- (3) C C	5 5 4 5	4 5 4 4	4 4 4 4	N N N N			
28	4+	4 4 4	- (4 4 4)	5 5 5 4	4 5 4 4	4 4 4 4	N N N N			
29	4o	4 4 4	- 3 (3 3)	4 5 4 4	4 4 4 4	4 (4 4 4)	N N N N			
30	4o	4 4 (4)	- (3 3 3)	4 4 4 4	4 4 (4) 4	3 4 4 4	N N N N			

IQSY GEOALERT and ADALERT
(Western Pacific Region)

* = MAGSTORM

o = MAGCALME

△ = 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.

Apr. 1967	S W F										Correspondence		
	Drop-out Intensities (db)						Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
	CO	SF	HA	TO	HB	SH							
1	18	26					01.17	33	Slow	2-	x	x	
1	-	21					03.47	25	S	1+		x	
1	-'				24		06.17	14	S	2	x	x	
1					10		08.34	14	S	1-	x		
11	29"	35	(20)				21.08	40	S	2+	x		
12	7'				11		05.42	9	S	1-			
23	7	22					00.22	20	S	1+		x	
26	22	33		-	9		21.23	27	S	2+	x		

IONOSPHERIC DATA IN JAPAN FOR APRIL 1967
第19巻 第4号

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