F—260

IONOSPHERIC DATA IN JAPAN

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NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAISO BRANCH

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.	Nukui-Kitamachi, 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 and Inubo Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0′N.	140°37.5′E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken
Inubo	35°42.2′N.	140°51.5′E.	9912 Tennodai, Choshi-shi, Chiba-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_oF2, f_oF1, f_oE — The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.

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

f_bEs — The lowest ordinary wave frequency at which the Es 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.

$h'Es$ — The lowest virtual height of the trace used to give the f_oEs.

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

wave component 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 *Es*.

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. Definitions of the CNT, MED, UQ and LQ

Median count (CNT) is the number of values from which a median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (MED) of a set of numbers is the middle value when the numbers are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the *lower quartile* (LQ) is the median value of the lower half.

d. Description of Standard Types of *Es*

The eight standard types of *Es* are identified by corresponding capital letters: *F, L, C, H, Q, R, A, S*. These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. The letter *'N'* is used to designate any *Es* trace that does not correspond to any of the eight types.

F — An *Es* 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 *Es* traces observed in the daytime are classified according to their virtual hight: *H* or *L*.

L — A flat *Es* 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 *Es* 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 *Es* 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 *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

Q — An *Es* 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 *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation but which is nonblanketing 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 *Es* 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 *Es* trace which rises steadily with frequency and usually emerges from another type *Es* 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 *Es* trace such as *Es-L*, or *Es-F*, at frequencies which greatly exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from *Es-Q* *Es-C* or *Es-H* at frequencies near the regular *E* critical frequency. Type *S* is never used to determine f_0Es and $h'Es$. The slant trace is sometimes observed to start at f_0E without echoes clearly identifiable as *Es* echoes being seen.

N The designation '*N*' is used to denote an *Es* 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.

e. Multiple Reflections from *Es*

When the ionogram shows the presence of multiple reflections from *Es* 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 MHz at Hiraiso Branch. Antennas are two parabolic reflectors: 10 meter for 200 MHz and 5 meter for 500 MHz, 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 $10^{-22}\,W\cdot m^{-2}Hz^{-1}$ 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 MHz 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. Bracket means that observation time does not exceed one third of the period.

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 Strengths of WWV and WWVH

Field Strengths 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 Hz is picked up by the use of a narrow band pass filter with

±40 Hz bandwidth.

The *tabulated field strength* 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 Hz 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.

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

E : Less than the following figure.

b. Radio Propagation Quality Figures

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

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

The tabulated circuits contain Hamburg (commercial circuit), WWV (10, 15 and 20 MHz frequencies broadcast from Fort Collins, Colorado), Lima (commercial circuit) and WWVH (10 and 15 MHz frequencies broadcast from Hawaii), which are received at Hiraiso Branch.

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 Lima.

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

c. Sudden Ionospheric Disturbances (S.I.D's.)

(i) SWF

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 MHz are indicated by (′), (none), and (″), respectively. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensities

CO ..... WWV 20, 15 and 10 MHz (Fort Collins, Colorado)
LM ..... Various frequencies of commercial circuit (Lima)
HA ..... WWVH 15 and 10 MHz (Hawaii)
TO ..... JJY 15 and 10 MHz (Tokyo)
SH ..... BPV 15 and 10 MHz (Shanghai)
HB ..... 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 of phenomena associated 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.

(ii) SPA

The data of sudden phase anomaly (SPA) are prepared from the records of phase measurement of VLF radio wave propagation received at Inubo Radio Wave Observa-

tory. Characteristics of the VLF radio wave propagation are as the following table. In the last column, a spherical earth with a radius of 6371.2 km is assumed.

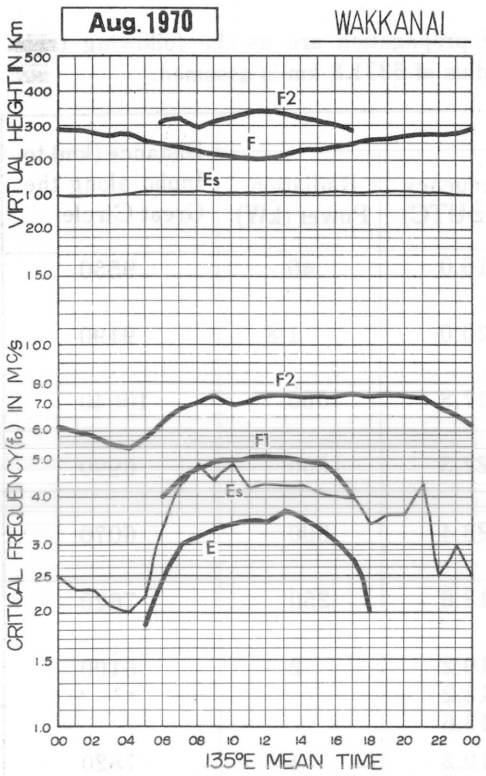
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22′N 001°11′W	GBR	16.0	40	9550
Fort Collins	40°41′N 105°03′W	WWVL	20.0	1.8	9190
Cutler	44°39′N 067°17′W	NAA	17.8	1000	10640
North West Cape	21°49′S 114°10′E	NWC	22.3	1000	6990
Lualualei	21°26′N 158°09′W	NPM	23.4	300	6070
Jim Creek	48°12′N 121°55′W	NPG	18.6	250	7620
Haiku	21°24′N 157°50′W	HA0 HA2 HA3	10.2 12.2 13.6	2	6100
Aldra	66°25′N 013°09′E	AL0 AL2 AL3	10.2 12.2 13.6	4	7820

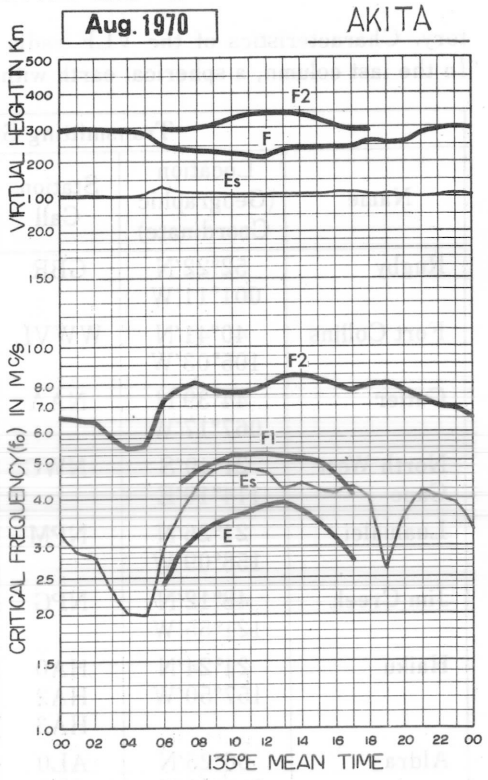
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

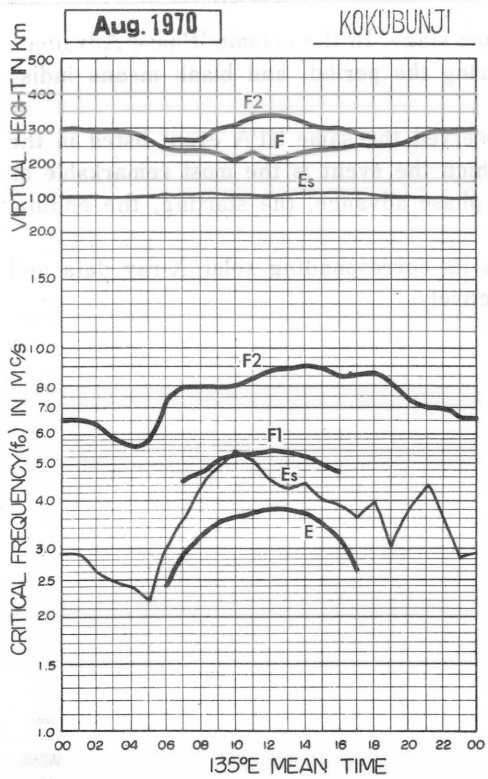
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.

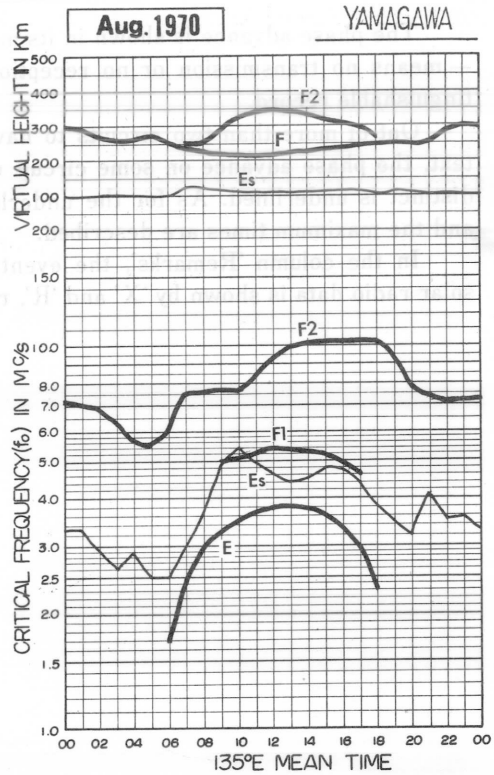
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA

AUG. 1970 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI | Lat. 45° 23.6' N | Long. 141° 41.1' E | Sweep 1 MHz to 20 MHz in 20 sec | in automatio operation

Hour / 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	67	63	59	57	58	67	75	73	I A 74	73	80	73	69	68	67	70	72	75	77	80	78	80	77	73
2	65	65	63	60	62	76	81	69	68	A 82	83	86	88	82	80	80	76	74	76	83	83	F 86	81	
3	69	68	64	61	58	62	73	81	73	74	67	70	76	82	80	78	77	80	83	83	78	83	F	F
4	F	F	F 63	F 66	F 60	74	87	93	86	91	85	77	81	76	71	76	68	69	73	86	89	85	80	70
5	68	66	68	66	64	65	76	80	78	75	71	75	73	79	74	75	74	73	74	91	87	80	73	72
6	66	65	64	61	54	57	73	81	93	81	73	77	82	86	74	69	69	76	I C 84	86	84	83	81	74
7	66	64	64	64	63	62	68	73	U R 93	79	78	C	73	83	I A 72	71	70	77	79	89	85	81	S	F
8	F 71	F	F	F 63	F 60	58	63	63	66	70	76	73	80	A	71	78	79	76	78	87	95	83	81	82
9	72	61	58	F	F	F 55	F 63	63	63	61	63	61	69	73	I A 75	74	73	66	66	73	S 73	72	68	F
10	F	F	F 63	60	55	I A 61	63	69	65	71	70	71	75	72	73	81	83	83	82	82	81	77	72	68
11	70	69	66	60	56	60	68	85	86	76	70	79	77	74	71	74	78	76	80	84	79	77	69	60
12	58	56	54	F	53	56	59	69	75	R 65	65	74	74	76	78	75	75	76	73	73	71	67	64	
13	62	61	56	53	50	57	75	95	84	73	65	71	70	73	81	77	76	74	I A 75	71	70	70	68	F 70
14	F 67	A	F	F	F	48	53	63	63	73	A	68	68	76	72	75	80	77	74	79	F	F	F	F 63
15	F	F 56	F	F 55	F 52	60	76	88	91	82	73	76	H 73	76	83	83	80	82	78	87	I A 80	80	74	71
16	68	64	59	55	47	48	59	79	83	73	72	A	A	A	82	81	81	81	79	79	F	F	70	70
17	F	F 61	F 63	F 58	F 53	54	63	73	76	66	71	84	76	73	76	93	88	89	81	60	59	64	46	54
18	50	50	48	42	36	47	62	65	62	A	59	54	59	65	63	64	65	66	64	65	69	F	F	F
19	48	50	49	39	38	44	53	56	54	W	R	59	58	60	56	56	55	56	56	56	63	63	60	57
20	56	53	52	F	50	52	60	71	71	69	67	74	72	74	73	68	67	64	64	73	F	F	F	F
21	57	55	55	47	44	52	62	68	77	83	79	74	69	75	73	71	72	71	69	73	73	68	66	F
22	F	F 66	F 59	U F 59	U F 64	66	77	70	71	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	69	70	73	78	82	80	76	73	75	74	76	73	F	F	F
25	F	F	F 57	53	53	F 57	67	67	63	60	65	64	65	70	68	69	68	68	67	75	74	69	63	60
26	55	56	57	48	46	50	55	61	58	63	62	W	55	59	54	55	56	56	56	63	66	57	57	54
27	53	58	54	47	41	43	48	56	66	73	74	72	79	80	77	74	72	70	71	78	74	68	66	60
28	57	53	52	45	42	42	56	57	C	58	55	54	61	60	63	61	62	66	66	70	74	60	56	54
29	51	50	47	46	49	58	64	68	A	A	62	56	63	67	67	67	66	74	58	56	63	F 63	F	F
30	53	46	44	45	40	53	62	65	69	78	74	75	78	80	79	77	76	78	80	83	79	74	F	F 66
31	61	56	54	52	51	53	54	58	58	65	R	67	68	68	72	70	69	72	68	73	67	65	60	57
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	26	25	27	29	29	29	27	24	26	26	28	27	29	29	29	29	29	29	26	24	21	21
MED	62	60	58	55	53	57	63	69	71	73	70	72	73	74	73	74	73	75	74	76	74	73	68	66
UQ	68	64	63	60	58	61	73	79	80	77	74	75	78	80	77	78	78	77	79	83	81	80	74	71
LQ	56	54	54	47	46	52	59	63	64	68	65	65	68	69	71	69	68	69	67	73	70	66	63	60

AUG. 1970 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1970 | FOF1 (0.01 MHZ) | 135 E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45 23.6 N Long. 141 41.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	520	530	520	570	500	A	A	A						
2								A	A	A	510	520	520	510	510	500	480	400						
3							420	460	490	510	510	500	530	520	520	510	480							
4								470		470	510	500	510	510	500	500								
5							420b	440b	460	500	520	520	A	510	U 500b	500		430b						
6									470	500		510	520	510	490	490	480	430						
7									470	500	500	C	500	A	A	A	470							
8							400	460	A	540	A	510	510	A	510	480	460							
9								460	460	520	480	A	A	A	A	A	450	400						
10							410	440	470b	470	490	520	490	500	510	480	460							
11							A	A	A	500	500	510	500	500	490	490	A	400						
12								450	A	A	490	540	510	500	500	470	430							
13								440	470	490	A	A	A	500	470	A	430							
14								470	A	A	A	500	520	A	A	480	470							
15									490	500	490	520		540	500	500	430	400b						
16								470	A	A	500b	A	A	A	510	510	470	400b						
17							410	A	480	510	510	A	A	510	500	500	440							
18							400		450	A	A	490	I A 500	500	A	490	460							
19						320	A	A	450	480	490	490	490	480	500	470	450							
20							400	460	A	500	530	500	540	500	500	500	460b							
21									490	500	510	500	530	520	500	500	470							
22									A	C	C	C	C	C	C	C	C							
23									C	C	C	C	C	C	C	C	C							
24									C	500	500	550	510	520	500	U 500b								
25								A	480	L	490	520	510	500	480	480								
26							400	440	450	460	470	510	490	480	500	470	430							
27							380	430	470	500	510	490	530	520	540	480b	450b							
28							380	420	C	470	490	510	500	510	490	A	A							
29								A	A	A	480	500b	I A 500	500	510	A								
30								A	490	510	510	520	A	A			A							
31								440	470L	490	A	500	500	500	490	500b								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	10	15	17	21	23	24	22	23	24	22	19	7						
MED						320	400	450	470	500	500	510	510	510	500	495	460	400						
UQ							410	460	480	500	510	520	520	515	510	500	470	415						
LQ							400	440	460	490	490	500	500	500	495	480	445	400						

The Radio Research Laboratories, Japan

AUG. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOE (0.01 MHZ) | 135 E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					A	200	275	300	320	330	365	355	365	A	380	340	300	280	200	S				
2					A	210	280	300	325	335	A	A	A	380	375	355	A	275	205	S				
3					A	200	265	305	320	325	330	B	A	A	385	315	A	A	220	A				
4					A	205	260	300	315	A	A	A	A	A	360	330	305	285	215	S				
5					E	A	270	300	315	330	335	A	A	A	A	A	310	280	210	S				
6					A	A	240	295	310	330	335	330	340	A	A	325	300	275	I C 210	S				
7					A	190	255	300	320	330	340	I C 360	375	370	345	330	305	260	A	S				
8					E	185	240	300	320	345	350	360	335	320	300	335	A	280	200	S				
9					E	185	240	295	320	325	305	345	350	365	345	I A 320	305	275	200	S				
10					E	A	225	290	I A 310	A	A	A	A	370	350	A	A	A	A	A				
11					E	A	235	285	A	A	A	A	A	365	A	A	A	255	A	A				
12					E	A	255	300	310	B	365	345	330	A	340	330	305	270	195	S				
13					A	195	305	A	A	345	345	380	385	360	365	345	310	295	A	S				
14					E	200	260	300	320	340	330	A	A	A	A	A	A	A	A	A				
15					E	S	285	310	I A 330	A	A	A	355	I A 370	380	350	310	275	A	E				
16					E	A	A	A	A	A	A	A	330	A	A	A	325	280	A	A				
17					E	A	260	300	315	335	A	A	385	390	360	320	300	265	190	A				
18					E	170	245	295	310	330	330	305	310	A	A	335	305	255	185					
19					E	180	240	300	310	335	360	355	340	A	340	330	305	250	185					
20					E	160	250	300	320	315	325	A	A	R	R	A	A	275	180					
21					E	A	255	300	305	320	A	A	A	A	A	330	A	A	A					
22					E	A	240	300	315	C	C	C	C	C	C	C	C	C	C					
23					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
24					C	C	C	C	C	325	330	A	A	A	A	A	A	A	A					
25					E	A	240	295	310	325	345	345	A	A	A	325	300	A	A					
26						A	225	290	320	330	A	360	365	350	345	310	300	240	S					
27						150	225	290	300	310	325	325	A	370	340	325	300	240	130					
28						A	215	285	C	A	A	A	A	A	350	325	295	245	A					
29						S	220	280	305	315	330	A	A	A	A	A	A	A	A					
30						S	235	295	320	325	330	335	A	A	A	A	305	235	S					
31						150	235	295	315	330	335	350	335	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					16	14	28	27	25	22	19	14	14	11	16	19	18	21	14	1				
MED					E	188	242	300	315	330	335	348	345	370	350	330	305	275	200	E				
UQ					E	200	260	300	320	335	345	360	365	370	370	335	305	280	210					
LQ					E	170	235	295	310	325	330	335	335	362	342	325	300	255	185					

AUG. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOES (0.1 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45 23·6 N Long. 141 41·1 E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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 15	E	E S 15	E	20	G	J X 65	J X 138	M 82	J X 66	J X 63	J X 60	J X 80	45	53	J X 68	J X 86	J X 80	J X 63	E S 15	E S 18	J X 50	J X 33	J X 24
2	J X 24	J X 33	J X 31	J X 28	13	G	39	J X 63	J X 63	81	J X 45	44	39	G 36	G	G	40	34	43	J X 63	J X 63	J X 34	J X 31	E
3	E	E	J X 23	J X 20	19	G	G	G	41	48	43	41	40	47	J X 60	J X 76	42	31	G	23	J X 51	J X 64	J X 43	J X 64
4	J X 63	J X 53	J X 33	J X 24	J X 23	G	39	J X 55	43	42	43	40	52	40	G	G 26	G	32	G 20	E S 18	J X 33	J X 21	J X 23	J X 23
5	24	J X 35	J X 21	14	E	23	G	36	40	J X 50	50	J X 55	62	44	J X 53	48	37	40	32	28	J X 36	19	E	23
6	J X 35	J X 23	E	15	J X 24	24	J X 41	38	J X 58	44	G	43	41	39	40	G	G	G	C	18	J X 38	J X 26	J X 23	J X 23
7	24	E	E	15	14	23	40	J X 53	41	49	40	C	49	J X 63	J X 80	J X 63	J X 51	43	32	J X 53	J X 63	J X 53	J X 124	J X 58
8	J X 51	J X 53	J X 43	J X 35	J X 35	J X 43	J X 53	41	J X 53	G	J X 75	46	J X 55	J X 103	J X 60	G	34	J X 51	J X 40	E S 15	E	E	E S 18	20
9	E	J X 26	J X 53	J X 105	J X 53	J X 53	J X 53	40	G	41	49	60	J X 52	J X 54	J X 80	J X 100	G	J X 51	J X 46	J X 44	J X 60	J X 45	J X 53	J X 35
10	18	J X 30	J X 43	J X 35	J X 25	J X 63	J X 60	41	J X 53	53	J X 103	50	41	G	G	35	39	40	J X 39	J X 36	J X 33	J X 58	J X 33	J X 36
11	J X 33	J X 33	J X 40	J X 31	E	24	J X 63	J X 54	J X 70	J X 70	44	40	38	G	40	41	53	44	60	J X 33	21	J X 26	J X 23	J X 26
12	J X 25	J X 33	J X 63	J X 28	J X 33	30	41	37	J X 55	62	51	45	42	38	G	G	G	34	28	E S 15	J X 26	J X 35	J X 33	E S 15
13	J X 28	E	18	J X 25	J X 25	G	40	J X 45	J X 63	42	J X 60	J X 53	J X 63	43	44	J X 85	J X 61	J X 61	J X 74	J X 32	J X 40	J X 34	J X 63	J X 83
14	J X 44	J X 73	J X 53	J X 33	J X 25	G	31	43	56	62	J X 103	42	J X 43	48	J X 63	J X 63	46	J X 63	J X 50	J X 130	J X 93	J X 51	J X 28	J X 43
15	J X 60	J X 80	J X 64	J X 61	J X 35	22	G	41	49	48	J X 63	39	G	40	45	50	44	34	41	J X 53	J X 125	J X 63	J X 34	J X 33
16	J X 38	E	J X 24	J X 25	J X 34	J X 32	J X 31	J X 37	J X 113	J X 66	J X 66	98	J X 80	D	50	45	G	G 21	31	J X 90	J X 71	J X 64	J X 35	J X 53
17	J X 34	J X 31	J X 33	J X 33	J X 31	34	31	J X 52	44	40	J X 59	J X 105	J X 73	G	G	G	G	G	J X 33	J X 41	J X 23	E	E	24
18	E	E	20	J X 24	J X 18	J X 33	G	G	43	J X 60	50	43	51	50	J X 85	G	G	J X 50	J X 44	J X 43	J X 35	J X 53	18	E
19	E	E	16	15	15	28	37	J X 44	J X 46	G	G	41	G	42	G	G 28	G	J X 40	30	J X 24	J X 40	J X 28	15	J X 23
20	J X 23	J X 24	E	E	E	22	30	43	49	41	40	40	40	G	G	41	40	33	33	J X 40	J X 93	J X 60	J X 25	J X 40
21	J X 28	J X 23	J X 35	J X 31	15	18	G	38	41	40	41	40	41	M 62	J X 43	37	31	J X 40	J X 70	J X 54	J X 58	J X 33	E	J X 60
22	J X 63	J X 53	J X 30	E	J X 33	21	G 20	40	J X 63	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	40	41	42	46	40	J X 43	J X 60	J X 41	J X 40	J X 45	J X 30	J X 28	J X 51	J X 35	J X 55
25	J X 43	J X 26	J X 27	J X 21	J X 28	J X 23	33	J X 61	44	40	G 29	38	40	42	J X 35	G	40	J X 41	J X 33	J X 56	J X 35	J X 53	J X 33	E S 15
26	E	E	E	E	15	21	36	J X 60	40	43	39	G	G	G	G	G	G	36	28	24	J X 28	E	E	E
27	E	E	E	20	18	20	30	J X 43	37	G	42	40	40	G	G	G	36	35	J X 34	J X 41	J X 50	J X 73	J X 24	J X 33
28	J X 25	E	E	E	E	21	33	G	C	33	49	J X 41	47	43	40	48	J X 58	33	J X 30	J X 50	J X 33	J X 43	J X 28	J X 30
29	E	E	E	19	J X 33	J X 33	J X 45	J X 65	J X 68	J X 59	47	J X 47	J X 65	46	43	60	41	44	33	J X 25	20	E S 15	J X 21	J X 53
30	J X 33	E	E	E	E	E S 16	31	46	54	47	53	43	J X 63	J X 85	J X 63	J X 54	J X 50	39	J X 38	J X 53	J X 63	J X 52	E S 16	J X 50
31	J X 24	E	17	E	E	G	G	G	G	39	J X 63	42	40	J X 43	44	39	J X 41	26	J X 25	J X 35	J X 28	30	18	J X 30
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	28	29	29	28	29	29	29	29	29	29	28	29	29	29	29	29
MED	J X 25	J X 23	J X 23	J X 21	J X 20	22	33	43	49	44	49	42	43	43	43	41	40	40	J X 34	J X 36	J X 36	J X 43	J X 25	J X 30
UQ	J X 35	J X 33	J X 35	J X 31	J X 31	30	41	J X 53	J X 60	59	J X 60	48	J X 55	48	J X 53	J X 60	44	J X 44	J X 44	J X 53	J X 60	J X 53	J X 33	J X 50
LQ	15	E	E	14	14	16	30	38	41	40	41	40	40	38	G	G	G	33	30	24	J X 28	J X 26	18	23

AUG. 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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 15	E	E S 15	E	15	G	48	57	A	60	G	G	G	39	G	65	66	65	54	E S 15	E S 16	37	18	20
2	18	16	18	17	12	G	G	53	51	A	40	42	39	G 33	G	G	32	G	35	50	28	28	17	E
3	E	E	15	E	12	G	G	G	G	43	G	G	40	40	G	G	32	29	G	18	50	22	27	24
4	40	30	20	16	12	G	G	37	G	36	39	39	46	38	G	G 26	G	24	G 18	E S 16	28	18	20	20
5	16	16	17	E	E	22	G	G	G	G	48	47	58	42	40	37	G	G	G	26	32	15	E	E
6	20	E	E	E	20	20	39	G	40	G	G	G	G	38	37	G	G	G	C	G	38	20	E	E
7	E	E	E	12	12	16	36	39	G	47	G	C	47	49	A	53	G	40	23	27	32	16	19	36
8	40	42	25	24	19	35	38	G	50	G	56	G	50	A	44	G	33	G	G	E S 15	E	E	E S 16	17
9	E	17	17	E	18	42	52	G	G	G	40	58	52	52	A	53	G	G	G	43	37	17	40	18
10	16	20	18	18	19	A	35	G	36	43	39	36	38	G	G	34	34	30	39	33	30	50	20	20
11	18	20	20	19	E	20	54	50	51	40	41	38	37	G	36	35	47	20	54	22	17	25	17	22
12	26	27	26	19	26	20	20	G	48	50	45	30	G	38	G	G	G	G	G	E S 15	22	20	20	E S 15
13	E	E	15	12	17	G	G	36	40	G	57	50	60	G	G	65	G	56	A	25	40	20	22	45
14	44	A	32	18	E	G	G	G	48	56	A	40	40	48	52	38	36	30	35	53	46	24	18	E
15	42	22	19	35	30	21	G	G	37	44	40	39	G	40	G	G	G	G	41	37	A	34	20	20
16	29	E	19	20	30	20	27	35	50	53	44	A	A	A	48	42	G	G 20	30	52	60	57	20	22
17	26	21	30	25	20	26	G	50	43	G	45	60	55	G	G	G	G	G	26	30	20	E	E	E
18	E	E	E	15	15	G	G	G	42	A	49	40	51	40	50	G	G	43	40	40	30	20	E	E
19	E	E	13	E	13	G	37	43	40	G	G	G	G	38	G	G 27	G	38	24	19	20	19	E	19
20	16	18	E	E	E	G	G	42	47	G	G	40	40	G	G	35	32	24	31	26	50	28	20	25
21	27	17	30	13	13	18	G	G	G	G	38	38	38	38	38	G 29	30	26	52	30	17	20	E	32
22	40	37	20	E	16	18	G 19	G	58	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	G	G	40	40	39	37	38	32	30	30	20	27	32	15	43
25	19	16	22	16	20	20	G	55	42	G	G 29	30	39	38	37	G	G	39	30	40	26	20	20	E S 15
26	E	E	E	E	E	20	31	G	G	G	36	G	G	G	G	G	G	34	24	21	18	E	E	E
27	E	E	E	17	15	G	G	G	G	G	30	G	38	G	G	G	G	G	30	30	49	52	20	28
28	16	E	E	E	E	18	G	G	C	33	40	40	39	39	G 26	48	52	31	20	50	20	30	20	26
29	E	E	E	15	20	31	42	58	A	A	46	43	53	37	37	57	41	42	22	20	19	E S 15	15	30
30	25	E	E	E	E	E S 16	G	43	44	44	G	G	50	56	42	37	47	36	20	47	40	18	E S 16	22
31	18	E	E	E	E	G	G	G	G	G	50	G	G	38	35	33	31	25	24	27	23	20	17	27
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	28	29	29	28	29	29	29	29	29	29	28	29	29	29	29	29
MED	18	16	17	13	15	18	G	G	41	33	40	38	40	38	35	33	G	26	28	27	28	20	18	20
UQ	26	20	20	18	19	20	36	43	49	47	45	41	50	40	40	38	33	36	37	40	40	28	20	26
LQ	E	E	E	E	E	G	G	G	G	G	G	G	37	G 33	G	G	G	G	20	20	20	18	E E 15	15

AUG. 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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 15	E	E S 15	E	E	E	13	17	19	18	20	20	20	20	19	18	11	11	E	E S 15	E S 16	E	E	E S 15
2	E	E	E	E	E	11	12	12	18	19	11	20	24	20	21	17	16	11	11	E S 15	E S 15	E	E	E
3	E	E	E	E	E	E	13	18	17	18	23	32	24	20	20	17	17	17	12	E	E	E	E	E S 15
4	E	E	E	E	E	12	16	17	17	20	20	20	20	20	20	17	11	11	E	E S 16	E S 14	E	E	E
5	E S 15	E	E	E	E	13	F	12	12	18	16	18	20	18	19	17	12	11	16	E S 13	E S 15	E	E	E S 15
6	E S 15	E	E	E	E	E	E	11	12	11	17	17	20	17	16	19	11	11	C	E S 12	E	E	E	E S 16
7	E S 16	E	E	E	E	E	11	11	17	17	18	C	20	19	18	27	18	17	11	E S 12	E S 14	E	E	E
8	E	E	E	E	E	12	11	12	17	18	20	20	20	18	19	17	17	12	15	E S 15	E	E	E S 16	E
9	E	E	E	E	E	E	16	16	19	18	20	20	20	20	19	18	16	11	11	E S 12	E	E S 15	E S 15	E
10	E	E	E	E	E	E	11	12	16	16	25	20	23	18	17	18	18	E	E	E	E	E	E	E
11	E S 15	E	E	E	E	E	11	16	17	18	20	20	20	20	19	16	12	E	E	E	E	E	E	E
12	E	E	E	E	E	E	15	17	17	37	28	19	20	20	24	18	17	16	E	E S 15	E	E S 15	E	E S 15
13	E S 15	E	E	E	E	E	19	17	17	18	27	26	30	26	20	20	17	18	14	E S 15	E S 15	E	E	E
14	E	E	E	E	E	E	12	17	21	20	20	20	28	24	23	19	20	13	E	E	E	E	E S 15	E
15	E S 16	E	E	E	E	E S 15	18	19	20	28	24	23	22	30	35	20	17	18	15	E	E	E	E	E
16	E	E	E	E	E	E	12	17	20	32	22	30	20	22	20	27	24	12	E	E	E	E	E S 15	E
17	E	E	E	E	E	E	12	16	19	20	20	26	20	30	20	18	E	11	E	E	E	E	E	E S 15
18	E	E	E	E	E	E	11	E	16	19	20	20	20	20	18	18	16	16	12	E	E	E	E	E
19	E	E	E	E	E	E	11	11	17	19	20	20	22	23	19	17	17	11	E	E	E	E	E	E
20	E	E	E	E	E	E	12	18	20	17	24	19	26	26	30	17	17	E	E	E	E	E	E	E
21	E	E	E	E	E	E	16	12	17	18	20	26	20	20	20	19	17	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	17	17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	18	20	20	20	17	16	16	17	11	E	E	E	E	E	E S 15
25	E S 15	E	E	E	E	E	E	12	16	16	20	18	16	17	19	17	16	E	E	E	E	E	E	E S 15
26	E	E	E	E	E	11	11	11	17	20	18	19	19	18	18	19	11	11	E S 14	E	E	E	E	E
27	E	E	E	E	E	E	11	11	18	18	20	19	18	17	17	16	11	12	E	E	E	E S 15	E S 15	E
28	E	E	E	E	E	E	11	11	C	16	17	17	20	18	17	15	11	16	E	E S 15	E	E	E S 15	E
29	E	E	E	E	E	E S 13	12	11	12	18	19	19	18	18	16	15	17	11	E	E	E	E S 15	E	E
30	E	E	E	E	E	E S 16	11	E	17	18	18	20	19	20	17	16	11	16	E S 14	E S 17	E S 16	E	E S 16	E S 15
31	E S 16	E	E	E	E	E	12	12	11	18	20	20	19	20	17	15	15	E	E	E	E	E	E	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	28	29	29	28	29	29	29	29	29	29	28	29	29	29	29	29
MED	E	E	E	E	E	E	12	12	17	18	20	20	20	20	19	17	16	11	E	E	E	E	E	E
UQ	E S 15	E	E	E	E	E E 11	13	17	18	19	20	20	22	20	20	19	17	16	12	E S 15	E	E	E	E S 15
LQ	E	E	E	E	E	E	11	11	16	18	19	19	20	18	17	17	11	11	E	E	E	E	E	E

AUG. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	260	260	250	260	285	295	275	I,A 275	260	290	290	275	270	300	295	295	310	300	300	290	280	285	275
2	275	270	280	275	280	320	330	300	290	A	280	275	275	295	285	290	305	305	300	285	270	275	F 290	295
3	270	280	270	275	275	275	305	300	300	310	320	305	295	280	300	295	305	295	310	300	280	295	F	F
4	F	F	F 260	F 275	F 280	295	315	325	310	310	320	305	300	290	295	305	290	285	280	285	300	285	305	280
5	270	275	270	290	285	290	315	325	310	325	310	305	300	295	295	305	300	305	295	295	300	295	290	290
6	280	285	285	305	295	280	300	320	325	320	295	300	295	310	305	290	275	290	I,C 300	305	295	300	300	300
7	275	280	285	285	300	280	315	285	U,R 300	315	295	C	290	315	I,A 300	310	285	290	280	290	295	285	S	F
8	F 280	F	F	F 270	F 300	295	300	285	280	285	295	280	305	A	270	300	305	295	290	275	290	275	270	270
9	280	265	255	F	F	F 270	F 275	290	300	270	280	275	275	290	I,A 300	300	310	310	305	285	S 290	280	270	F
10	F	F	F 265	275	290	I,A 295	270	320	300	325	330	280	320	305	290	300	300	300	305	305	290	300	280	270
11	270	280	290	280	285	285	280	315	335	305	300	290	295	305	300	300	310	305	310	310	285	295	280	285
12	275	270	295	F	280	315	290	305	315	R	290	270	295	300	300	310	310	305	315	290	290	280	285	275
13	280	280	285	275	280	295	280	315	330	355	280	300	275	300	300	310	315	300	I,A 310	280	270	270	270	F 270
14	F 265	A	F	F	F	300	285	285	285	295	A	355	295	305	285	295	305	320	305	280	F	F	F	F 275
15	F	F 285	F	F 270	F 280	275	295	300	320	315	300	300	265	290	290	295	295	300	295	295	I,A 290	280	280	270
16	275	280	280	275	285	290	290	315	325	330	295	A	A	A	305	305	310	310	315	305	F	F	285	285
17	F	F 290	F 275	F 285	F 275	280	285	300	315	290	255	275	305	255	235	245	235	275	295	295	255	280	260	265
18	270	265	275	250	255	260	275	280	340	A	290	230	265	275	270	295	295	305	295	285	260	F	F	F
19	255	260	265	265	235	250	265	285	295	W	R	275	260	285	270	285	295	305	305	285	270	270	275	265
20	270	270	270	F	280	325	290	280	310	290	270	295	265	300	310	310	300	300	295	280	F	F	F	F
21	265	290	275	300	280	315	305	295	310	315	305	310	280	295	305	310	310	315	305	290	290	270	275	F
22	F	F 265	F 285	U,F 255	U,F 275	305	305	305	280	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	290	305	265	310	300	310	315	300	315	305	305	290	F	F	F
25	F	F	F 290	275	275	F 295	310	310	290	265	290	280	275	285	295	305	305	305	295	280	295	270	270	265
26	260	260	280	270	265	280	255	280	235	270	290	W	240	290	250	275	285	285	285	275	270	255	265	260
27	250	260	275	300	265	280	275	285	280	315	310	305	305	305	310	320	315	305	300	295	285	275	275	265
28	255	265	260	300	255	240	270	265	C	295	250	200	290	255	295	305	300	290	290	285	295	285	260	265
29	265	260	255	260	280	295	295	340	340	340	290	305	275	290	285	290	290	330	310	260	275	F 265	F	F
30	280	270	275	280	275	310	305	330	305	300	310	305	270	300	305	300	305	295	300	290	290	285	F	F 280
31	280	270	275	265	275	270	265	300	300	290	R	285	310	290	320	315	295	305	295	290	270	280	280	265
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	26	25	27	29	29	29	28	26	26	27	28	27	29	29	29	29	29	29	26	24	21	21
MED	270	270	275	275	280	290	290	300	302	302	295	290	290	295	300	300	300	305	300	290	290	280	280	270
UQ	280	280	285	285	282	295	305	315	318	315	305	305	300	300	305	310	305	305	305	295	290	285	285	280
LQ	265	265	265	270	275	280	275	285	290	290	290	275	275	288	285	295	295	295	295	285	270	272	270	265

AUG. 1970 | M(3000)F2 (0.01)

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IONOSPHERIC DATA

AUG. 1970 | M(3000)F1 (0.01) | 135 E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45 23.6 N Long. 141 41.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	345	360	365	340	360	A	A	A						
2								A	A	A	365	350	365	355	355	345	345	375						
3							355	360	365	A	365	395	350	365	360	355	355							
4								360		405	375	390	I A 380	370	360	360								
5							370 L	370 L	390	365	A	A	A	360	U L 350	355		370 L						
6									360	360		390	360	360	365	355	340	350						
7									380	A	380	C	A	A	A	A	340							
8							A	355	A	325	A	370	A	A	A	345	350							
9								360	370	350	395	A	A	A	A	A	360	375						
10							A	380	385 L	370	370	365	380	360	350	355	350							
11							A	A	A	350	375	360	360	360	350	345	A	370						
12								345	A	A	A	345	355	345	340	360	370							
13								365	370	365	A	A	A	360	355	A	375							
14								340	A	A	A	370	355	A	A	350	345							
15									360	360	380	365		335	360	340	370	365 L						
16								355	A	A	A	A	A	A	A	345	360	375 L						
17							340	A	A	355	A	A	A	355	330	320	320							
18							350		A	A	A	390	I A 360	360	A	345	350							
19						295	A	A	I A 350	370	380	365	365	370	345	355	355							
20							345	A	A	370	370	380	350	360	350	350	360 L							
21									350	360	370	380	360	350	360	350	350							
22									A	C	C	C	C	C	C	C	C							
23									C	C	C	C	C	C	C	C	C							
24									C	360	365	365	355	350	350	U L 350								
25								A	A	L	365	350	365	360	355	355								
26							310	325	355	375	370	355	365	365	335	355	340							
27							325	350	350	375	355	365	340	345	350	360 L	365 L							
28							335	340	C	350	375	335	340	350	345	A	A							
29								A	A	A	A	355 L	I A 365	340	335	A								
30								A	A	A	375	360	A	A			A							
31								365	360 L	365	A	380	380	375	365	350 L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	8	14	13	18	18	23	20	23	22	22	19	7						
MED						295	342	358	360	362	370	365	360	360	350	350	350	370						
UQ							352	365	370	370	375	380	365	360	360	355	360	375						
LQ							330	345	355	355	365	358	355	350	345	345	345	368						

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AUG. 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

AUG. 1970 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	A	A	A	325	360	380	410	345	A	A	A						
2								320	300	A	350	350	350	315	345	325	300	280						
3							300	305	275	305	300	320	345	360	315	325	310							
4								270		265	270	310	315	330	315	320								
5							275	260	275	305	320	320	320	340	320 L	315		290						
6									270	290		320	325	300	275	315	345	310						
7									270	290	320	C	345	300	I A 300	300	325							
8							310	350	320	370	A	345	305	A	400	310	295							
9								325	310	445	345	450 A	390	350	I A 320	325	300	270						
10								275	290 L	285	295	370	300	320	345	310	300							
11							A	270	240	310	300	325	325	315	330	320	300	280						
12								325	300	275	300	420	330	320	330	300	300							
13								265	255	250	A	320	A	325	320	A	280							
14								350	320	325	A	250	355	325	350	320	300							
15									255	275	290	325		355	325	300	295	290						
16								290	270	270	310	A	A	A	310	315	290	275						
17							320	290	290	350	420	350	320	375	460	400	415							
18							310		285	A	390	600	460	390	410	325	310							
19						450	415	375	390	W	R	420	470	400	450	365	360							
20							310	330	290	325	410	320	380	345	315	310	315							
21									295	300	310	300	365	350	320	315	300							
22									310	C	C	C	C	C	C	C	C							
23									C	C	C	C	C	C	C	C	C							
24									C	310	320	370	320	310	300	280								
25								A	315	L	335	375	390	365	315	300								
26							420	375	460	400	360	W	550	385	500	400	370							
27							400	400	325	300	300	285	315	310	315	290	295							
28							370	350	C	350	515	800	350	475	340	300	A							
29								295	A	A	370	350	400	360	360	I A 320								
30								A	310	320	310	300	310	320			280							
31								350	320	350	340	335	315	320	300	305								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	11	20	25	24	24	27	26	27	28	26	21	7						
MED						450	310	322	295	308	320	345	345	340	322	315	300	280						
UQ							385	350	315	350	355	372	380	362	348	325	315	290						
LQ							305	282	275	288	300	320	320	320	315	300	295	278						

AUG. 1970 | H'F2 (KM)

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IONOSPHERIC DATA

AUG. 1970 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	265	280	285	300	310	260	A	A	A	A	240	210	225	210	250	A	A	A	A	250	250	A	260	260
2	250	285	275	275	260	250	235	A	A	A	200	230	210	210	210	225	230	220	280	A	280	310	250	230
3	250	270	275	270	260	255	225	210	215	A	200	190	200	220	210	235	215	215	245	245	I A 265	270	330	275
4	A	300	305	290	250	260	250	250	225	200	205	195	I 200	185	235	210	215	245	260	275	265	245	250	250
5	270	300	280	260	270	245	250	220	210	210	I A 210	I A 205	A	225	235	240	245	250	230	260	250	230	250	260
6	270	265	250	240	250	245	260	225	240	225	205	190	200	190	210	200	200	240	I C 250	250	I A 250	260	245	245
7	260	275	275	260	245	220	I A 240	250	210	I A 200	200	C	A	A	A	A	250	I A 250	245	A 265	260	250	270	A
8	A	A	A 335	300	250	A 290	A	240	A	235	A	225	A	A	A	210	235	255	260	265	260	250	280	275
9	225	280	310	250	295	A	A	215	210	200	200	A	A	A	A	A	240	245	260	A	A	275	I A 290	275
10	290	280	290	290	290	I A 260	I A 255	205	205	240	205	205	200	200	205	215	250	245	A	A 250	265	A	265	305
11	300	285	275	265	260	250	A	A	A	210	215	200	200	205	200	235	A	240	I A 255	235	250	245	250	260
12	300	300	300	270	275	250	225	225	A	A	A	205	200	220	235	240	220	245	245	250	260	265	255	265
13	270	265	255	260	270	245	250	235	230	200	A	A	A	225	250	A	225	A	A	250	I A 275	270	300	A
14	A	A	A 300	240	225	245	250	250	A	A	A	240	210	A	A	225	250	230	A 255	A	A	270	235	260
15	A	280	270	I A 295	300	265	250	260	245	245	200	200	H 215	220	245	235	240	235	I A 250	A	A	A	270	290
16	A 295	270	265	285	A 300	250	250	245	A	A	A	A	A	A	A	275	245	240	250	A	A	A	255	275
17	290	280	300	300	295	260	240	A	A	210	A	A	A	210	230	235	260	250	270	250	300	260	275	290
18	300	300	280	310	350	280	250	215	A	A	A	210	I A 220	225	A	240	215	A	A	A	310	280	295	265
19	295	290	310	300	375	300	I A 280	I A 250	I A 250	215	200	205	215	215	220	225	235	I A 265	260	260	300	290	270	295
20	300	295	275	300	275	245	250	A	A	200	195	200	195	220	260	225	220	245	265	275	A	275	250	300
21	310	275	300	245	250	250	245	235	225	220	205	195	200	210	225	225	225	240	A	265	275	275	285	310
22	A	A	275	275	285	260	240	225	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	215	215	200	190	230	210	235	230	250	260	250	260	A	250	A
25	305	280	270	275	280	250	245	A	A	225	205	200	200	220	225	225	240	A	265	A	260	290	270	295
26	280	300	255	265	270	265	280	250	235	225	210	200	200	200	235	220	245	285	275	280	285	275	295	310
27	325	300	275	265	280	280	250	235	215	200	200	200	200	210	220	225	240	245	260	265	I A 265	A	275	315
28	305	300	275	245	315	295	250	250	C	220	210	240	210	235	240	A	A	250	260	I A 270	260	260	275	315
29	300	300	305	295	285	A 260	A	A	A	A	A	250	I A 220	225	230	A	A	A	225	300	270	300	295	A
30	295	270	290	250	250	245	230	I A 240	A	A	225	225	A	A	A	230	A	260	255	I A 260	A	260	250	265
31	260	275	265	250	280	260	230	235	235	215	A	205	205	210	200	230	230	260	255	270	250	260	265	315
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	26	29	29	29	28	24	22	14	20	20	24	21	23	22	23	24	24	24	22	23	23	29	25
MED	292	280	275	270	275	258	250	235	225	215	205	205	200	215	228	225	235	245	258	260	265	270	270	275
UQ	300	300	300	295	295	262	250	250	235	225	210	218	210	222	235	235	245	250	260	270	275	275	280	300
LQ	268	275	275	260	260	248	240	225	210	200	200	200	200	210	210	225	222	240	250	250	260	260	250	260

AUG. 1970 | H'F (KM)

IONOSPHERIC DATA

AUG. 1970 | H'ES (KM) | 135 E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23·6' N. Long. 141° 41·1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	E	S	E	115	G	110	110	110	110	110	110	110	110	125	120	115	110	110	S	S	105	110	100
2	100	100	100	100	100	G	120	110	110	110	110	105	100	100	G	G	100	120	110	105	110	110	105	E
3	E	E	100	100	100	G	G	G	115	110	110	110	110	105	115	110	110	110	G	110	105	105	105	105
4	100	100	100	100	100	G	115	110	110	105	105	105	100	100	G	100	G	100	100	S	110	105	105	100
5	100	100	100	100	E	115	G	115	110	110	110	100	105	105	100	100	125	120	125	115	110	110	E	100
6	100	100	E	100	100	100	115	115	110	110	G	110	110	105	105	G	G	G	C	115	105	105	105	105
7	110	E	E	105	105	110	115	110	110	110	115	C	110	110	110	110	110	110	115	110	110	110	110	105
8	100	100	100	100	100	110	115	110	110	G	110	110	110	105	105	G	105	115	115	S	E	E	S	105
9	E	105	110	110	105	115	110	120	G	110	105	110	110	110	110	105	G	115	115	110	110	105	105	100
10	105	105	100	100	110	105	110	110	110	105	105	100	100	G	G	100	100	100	100	100	100	100	100	100
11	100	100	100	100	E	110	110	110	105	105	105	105	105	G	100	100	115	115	115	100	115	110	105	100
12	100	100	100	100	100	100	100	115	110	110	110	110	110	110	G	G	G	120	115	S	110	105	105	S
13	100	E	100	105	100	G	115	110	110	110	110	110	110	110	130	110	120	110	110	110	110	105	105	105
14	100	100	100	100	110	G	120	110	110	105	105	105	105	105	105	105	105	110	105	105	105	105	105	105
15	100	100	100	100	100	125	G	110	110	105	105	100	G	110	115	115	110	115	110	110	105	105	100	100
16	100	E	100	100	100	100	105	105	110	110	110	105	105	100	105	100	G	100	110	110	110	105	105	105
17	100	100	100	100	100	100	110	110	110	110	100	105	110	G	G	G	G	G	110	105	105	E	E	105
18	E	E	100	100	100	100	G	G	115	110	110	105	105	110	110	G	G	115	110	105	110	110	105	E
19	E	E	140	125	105	120	120	115	110	G	G	115	G	105	G	100	G	115	115	110	110	110	110	105
20	100	100	E	E	E	135	135	115	110	110	110	105	100	G	G	100	100	100	110	110	110	105	105	100
21	100	100	100	100	100	105	G	110	110	110	110	105	105	105	105	105	105	105	100	100	105	105	E	105
22	105	105	100	E	100	110	100	115	110	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	115	110	100	100	100	100	100	100	100	100	105	105	110	105	100
25	105	100	100	100	100	100	125	115	115	115	100	115	100	100	100	G	125	110	110	100	105	100	100	S
26	E	E	E	E	115	120	115	110	115	110	105	G	G	G	G	G	G	120	115	115	110	E	E	E
27	E	E	E	120	115	125	125	110	115	G	100	110	110	G	G	G	120	115	110	110	100	100	100	100
28	100	E	E	E	E	115	115	G	C	105	105	100	105	100	145	120	115	115	105	100	105	100	100	100
29	E	E	E	115	115	115	110	110	110	110	110	105	100	105	105	115	125	120	100	110	110	S	105	100
30	100	E	E	E	E	S	145	125	125	110	110	110	105	100	105	105	115	115	115	110	110	105	S	100
31	100	E	100	E	E	G	G	G	G	125	110	110	110	105	105	105	100	100	100	100	100	105	105	105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	16	20	22	23	21	23	25	26	26	27	27	26	23	20	20	20	27	27	25	27	25	23	24
MED	100	100	100	100	100	110	115	110	110	110	110	105	105	105	105	105	110	115	110	110	110	105	105	100
UQ	100	100	100	105	108	115	120	115	110	110	110	110	110	110	112	110	118	115	115	110	110	110	105	105
LQ	100	100	100	100	100	100	110	110	110	110	105	105	100	100	105	100	102	108	105	105	105	105	105	100

AUG. 1970 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1970 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23·6′ N. Long. 141° 41·1′ E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Day \ Hour	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					L1		C2	C3	C3	C3	C1	C1	C1	L1	C2	C2	C3	C2	C3			F4	F2	F2
2	F2	F2	F1	F1	L1		C2	C3	C2	C2	L1	L2	L1	L1			L1	C1	C3	L4	F3	F4	F2	
3			F1	F1	L1				C1	C2	C1	C1	L1	L1	C1	C2	L1	L2		L2	F3	F2	F3	F2
4	F3	F4	F3	F2	L1		C2	C2	C1	L1	L1	L1	L2	L1		L1		L1	L1		F4	F2	F4	F2
5	F2	F2	F2	F1		L1		C1	C2	C2	C2	L2	L2	L1	L2	L2	C1	C2	C1	C2	F3	F1		F1
6	F4	F1		F1	L3	L1	C3	C1	C2	C2		C1	C1	L1	L1					C1	F3	F3	F1	F1
7	F1			F2	L2	L1	C2	C2	C1	C1	C1		C2	C2	C3	C2	C2	C4	L1	C5	F3	F2	F2	F3
8	F3	F4	F3	F5	L3	C4	C2	C2	C2		C2	C1	C2	C3	C2		L1	C2	C2					F2
9		F2	F2	F2	L2	C3	C3	C1		C1	L1	C3	C2	C1	C3	L2		C2	C2	C3	F4	F4	F4	F2
10	F1	F2	F2	F2	L2	L3	C3	C1	L1	L1	L1	L1	L1			L1	C11	L2	L3	L2	F3	F4	F2	F2
11	F2	F1	F2	F2		L2	C4	C3	L2	L2	L2	L1	L1		L1	L1	C21	C11	C22	L2	F1	F4	F2	F2
12	F2	F4	F3	F3	L2	L1	L1	C1	C2	C1	C1	C11	C1	L1				C1	C1		F2	F2	F2	
13	F1		F1	F1	L2		C1	L2	L2	C1	C2	C2	C2	C1	H1	C2	C1	C2	L4	L2	F5	F1	F2	F3
14	F3	F3	F3	F3	L1		C1	C2	C2	C3	C2	L1	L1	L1	L2	L1	L1	L2	L2	L3	F3	F4	F3	F3
15	F4	F2	F2	F3	L3	C1		C2	L1	L1	L1	L1		L1	C1	C1	C1	C1	L2	C3	F2	F2	F3	F1
16	F3		F2	F4	L3	L1	L1	L2	L2	L1	L2	L2	C2	L2	L2	L1		L1	C41	L3	F6	F5	F3	F2
17	F2	F4	F5	F3	L5	L2	C1	C3	C2	C1	L2	L2	C2						C3	L3	F2			F1
18			F1	F1	L1	L1			C1	C2	C1	C2	C2	L2	L2			C4	C4	F4	F4	F2	F1	
19			F1	F1	L1	C1	C2	C2	C2			C1		L1		L1		C2	C2	F2	F5	F5	F1	F2
20	F2	F2				H1	H1	C2	C2	C1	C1	L1	L1			L1	L2	L1	C21	F3	F2	F3	F4	F4
21	F4	F3	F4	F1	L1	L1		C1	C1	C1	L1	L1	L1	L1	L2	L1	L1	L2	L4	F3	F2	F2		F3
22	F2	F5	F4		L2	L1	L1	C2	C4															
23																								
24										C1	C1	L1	L1	L1	L2	L1	L2	L2	L2	F2	F2	F2	F2	F5
25	F2	F1	F2	F1	L3	L1	C1	C3	C2	C1	L1	C11	L1	L1	L1		C1	L2	L3	F3	F3	F3	F3	
26					F1	L1	C2	C2	C1	C1	L1							C2	C2	F2	F1			
27				F2	F2	C1	C1	C2	C1		L1	C1	L1				C1	C2	C3	F5	F4	F3	F2	F3
28	F2					L1	C2			L1	L1	L2	L2	L1	H11	C1	C3	C2	L2	F3	F3	F2	F2	F3
29				F1	F2	C2	C3	C2	C4	C3	C1	L2	L2	L2	L1	C32	C11	C13	L2	F2	F2		F2	F3
30	F3						H1	C2	C2	C2	C1	C1	L2	L2	L2	L2	C2	C3	C2	F4	F4	F2		F3
31	F2		F1							C1	C2	C1	C1	L2	L1	L1	L3	L2	L2	F3	F2	F2	F1	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1970 | TYPES OF ES

IONOSPHERIC DATA

AUG. 1970 | FOF2 (0.1 MHZ) | 135 E Mean Time (G. M. T. + 9h)

Station AKITA | Lat. 39° 43.5' N | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz in 20 sec | in automatic operation

Hour / 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	73	71	67	66	63	66	84	85	88	91	91	96	82	84	77	78	79	83	82	I^{A}_{84}	I^{R}_{82}	79	79	74
2	70	I^{R}_{66}	66	67	64	76	72	74	73	75	80	84	91	96	100	93	90	77	I^{R}_{76}	81	80	79	81	I^{R}_{82}
3	71	68	66	63	58	67	79	76	85	74	76	70	82	86	91	I^{A}_{86}	88	92	97	I^{R}_{92}	84	82	I^{R}_{74}	F
4	78	71	67	63	63	70	85	91	I^{R}_{94}	82	82	77	77	77	81	71	74	74	79	87	87	89	74	69
5	68	68	69	68	64	70	80	82	84	78	81	76	79	86	90	82	72	74	86	I^{R}_{94}	86	86	I^{A}_{85}	I^{A}_{85}
6	R	F	74	F	F	F	76	I^{A}_{85}	I^{R}_{89}	82	82	80	87	88	83	74	77	C	C	C	$^{R}_{86}$	$^{R}_{83}$	83	71
7	63	63	64	60	62	61	68	94	84	80	78	86	89	91	86	75	79	86	87	I^{R}_{92}	88	79	$^{S}_{74}$	71
8	I^{R}_{70}	$^{S}_{67}$	64	67	63	64	I^{R}_{66}	65	66	74	79	90	86	84	79	93	101	94	87	88	93	82	81	82
9	I^{R}_{88}	74	65	64	58	58	73	74	A	A	63	67	71	78	90	88	80	78	73	73	71	64	$^{S}_{66}$	F
10	F	F	F	63	61	66	I^{R}_{76}	72	74	76	76	I^{A}_{76}	77	81	78	88	86	89	I^{A}_{83}	86	81	81	87	80
11	I^{R}_{74}	$^{S}_{73}$	F	64	62	63	76	93	I^{R}_{88}	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	R	74	I^{A}_{73}	74	84	I^{A}_{84}	82	84	84	79	83	I^{R}_{78}	$^{S}_{73}$	71	70
13	63	59	55	53	54	57	77	90	77	72	75	74	79	82	83	97	85	84	77	73	$^{R}_{69}$	70	67	F
14	66	67	65	62	46	47	57	66	76	80	77	I^{A}_{73}	71	76	78	86	90	87	85	87	78	67	R	F
15	$^{S}_{72}$	58	53	51	51	54	72	86	97	76	75	69	79	81	91	89	88	82	86	91	I^{R}_{84}	$^{R}_{70}$	72	I^{C}_{72}
16	70	$^{R}_{71}$	66	63	58	52	70	92	89	73	72	84	88	84	91	92	93	89	90	80	$^{R}_{71}$	F	$^{F}_{67}$	$^{S}_{69}$
17	$^{F}_{64}$	65	63	58	54	55	66	78	81	81	71	89	100	91	76	96	93	$^{R}_{109}$	79	63	I^{A}_{58}	63	46	49
18	56	48	55	46	43	46	74	69	64	62	69	75	77	76	82	74	72	76	77	69	68	69	66	61
19	I^{R}_{56}	58	54	49	44	44	57	67	68	59	58	$^{R}_{62}$	63	72	62	61	63	62	65	60	I^{R}_{64}	64	58	57
20	54	56	54	53	52	50	59	71	85	83	69	77	I^{A}_{79}	84	84	79	72	68	71	I^{R}_{73}	76	72	64	57
21	56	$^{S}_{57}$	54	55	42	49	62	72	84	89	86	71	78	79	85	82	81	79	79	76	69	72	69	$^{S}_{66}$
22	F	F	F	F	F	F	77	86	75	88	74	76	89	90	91	84	78	76	69	77	I^{R}_{84}	88	78	F
23	62	F	F	58	57	61	70	70	79	78	76	82	87	91	91	85	80	76	77	80	73	74	73	68
24	68	67	65	62	56	64	88	92	85	84	80	86	86	91	94	81	80	77	81	86	78	I^{R}_{70}	F	68
25	66	64	F	59	54	53	68	79	81	74	82	81	80	81	85	83	74	71	77	75	71	F	62	I^{R}_{60}
26	59	58	I^{R}_{61}	57	49	44	I^{R}_{50}	I^{R}_{62}	65	73	62	58	62	63	58	61	61	61	66	64	59	58	I^{R}_{58}	57
27	55	57	65	48	43	45	65	88	90	79	89	80	82	83	84	79	71	73	75	76	71	69	71	70
28	64	61	60	51	47	45	56	61	70	63	63	I^{R}_{70}	74	69	69	71	67	73	74	79	73	53	55	56
29	I^{R}_{56}	I^{R}_{52}	I^{R}_{48}	48	C	C	C	C	C	73	69	68	73	79	78	74	76	73	I^{A}_{66}	I^{A}_{66}	63	60	64	63
30	53	54	53	49	44	54	$^{S}_{72}$	80	79	83	91	94	93	91	91	84	81	78	85	87	81	I^{R}_{72}	I^{A}_{68}	$^{S}_{68}$
31	F	F	56	55	52	54	68	68	69	73	73	73	73	76	76	81	75	76	77	69	73	I^{R}_{64}	63	$^{S}_{59}$
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	25	25	28	27	27	29	29	28	28	30	30	30	30	30	30	30	29	29	29	30	28	28	25
MED	65	64	64	58	54	55	72	78	81	77	76	76	79	84	84	82	80	77	79	80	77	72	70	68
UQ	70	68	66	63	62	64	76	86	86	82	81	84	87	88	91	88	86	84	85	87	84	80	76	71
LQ	56	58	55	52	48	50	66	70	74	73	71	71	74	78	78	75	74	74	75	73	71	66	64	60

AUG. 1970 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA | Lat. 39° 43·5' N | Long. 140° 08·2' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	500	530	520	530	IA 510	IA 510	530	500	IA 480	440	L					
2							L	L	A	A	A	520	540	550	520	500	470	L	A					
3						L	L	450L	470L	560L	600	IA 510	IA 520	550	IA 510	IA 500	IA 480	A	L					
4							L	L	470	530	520	IA 540	510	510	500	550L	460L	L	L					
5							L	L	450L	500	520	530	560L	510	490	L	L	A	A					
6								A	A	480	IA 500	520	510	530	510	510	460	C	C					
7								450	L 510	IA 500	IA 540	IA 520	IA 520	IA 500	A	A	A	L	A					
8							A	A	IA 500	510	500	520	IA 500	IA 500	IA 500	IA 490	IA 450	IA 410						
9							L	A	A	A	510	510	510H	480	490	490	450	L	L					
10							L	500L	A	A	A	A	A	A	520	490	A	A	A					
11							A	A	A	C	C	C	C	C	C	C	C	C	C					
12							C	C	C	A	A	A	A	A	A	A	460	380L						
13							L	440L	480	500	520	510	510	IA 510	510	490	L	440	L					
14							L	L	IA 510	IA 500	A	A	A	IA 510	A	A	A	A	L					
15							L	L	480	470R	560	550	520	550	510	520	460	A	A					
16							L	L	440	B	560	540	520	550	500	L	L	L						
17							A	IA 480	IA 480	IA 520	IA 540	510	540	530	510	500	470	L						
18							360	440	460	500	520	520H	480	510	510	L	420L	L						
19						290	IA 400	IA 430	IA 460	IA 480	490	490	500	490	510	480H	450	A						
20							L	A	A	IA 500	500	520	IA 530	A	A	470	L	L						
21								450L	480	510	500	510	540	540	520	500	470	L						
22								L	L	500	IA 540	580	IA 550	530	500	470	L	L						
23								L	480L	IA 510	510	550	500	540	530	500L	L	A						
24							L	L	A	640H	550	530	520	520H	500	450	L	L						
25								L	A	A	A	540	530	510	510	500	450L	U 400L						
26							370	430	460	480	500H	520	510	510	500L	480	500	L	L					
27							L	420	500	L	520	540H	550H	530	500	490L	L	L						
28							460	430	460	470	480H	520	IA 510	510	520H	500	550L	L						
29							C	C	C	500	IA 500	IA 540	500	520	500	500H	A	L						
30								L	L	500L	540	560	540	500	520	A	L	L						
31							L	450	450	500	500	560	520H	520	540	500	440	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	4	12	19	23	25	27	27	27	26	23	17	5						
MED						290	385	445	480	500	520	520	520	510	510	500	460	410						
UQ							430	450	490	510	540	540	535	530	520	500	470	440						
LQ							365	430	460	500	500	520	510	510	500	490	450	U 400						

The Radio Research Laboratories, Japan

AUG. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA | Lat. 39° 43·5' N · Long. 140° 08·2' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	A	A	370	IA 340	315	A	A	S				
2						A	A	A	A	A	A	A	A	A	A	A	A	275	A	S				
3						180	A	A	320	IA 345	A	A	A	A	380	345	A	A	A	S				
4						A	A	A	A	A	A	A	A	A	360	340	320	290	A	S				
5						IA 170	260	A	A	A	A	A	390	A	A	A	320	280	A	S				
6						A	A	A	A	A	A	A	IA 385	390	IA 365	IA 340	315	C	C	C				
7						B	245	IA 290	325	345	A	A	A	A	A	A	A	A	A	S				
8						A	A	295	320	IA 340	360	A	A	A	A	A	A	A	A	S				
9						180	A	A	A	A	A	A	A	A	A	IA 335	IA 320	A	A	S				
10						A	A	A	A	A	A	A	A	A	A	A	320	265	A	S				
11						A	A	A	A	C	C	C	C	C	C	C	C	C	C	C				
12						C	C	C	C	B	A	A	A	A	A	A	A	A	A	S				
13						S	A	A	A	A	A	A	A	385	IA 370	345	A	A	A	S				
14						S	260	300	320	A	A	A	A	B	A	A	A	A	A	S				
15						S	A	A	340	IA 360	375	395	400	395	385	IA 360	320	A	A	S				
16						A	235	295	A	B	A	A	390	IA 390	IA 350	B	A	IA 280	A	S				
17						S	A	A	A	A	A	A	IA 390	395	IA 380	345	315	270	A	S				
18						B	A	285	315	IA 340	IA 360	375	IA 380	IA 385	380	345	315	275	A	S				
19						S	A	295	A	A	365	380	390	395	375	355	320	260	A	S				
20						S	IA 240	290	A	A	A	A	A	A	A	A	A	250	A	S				
21						A	240	A	A	A	A	A	385	A	A	A	A	A	A					
22						A	235	A	A	A	A	A	A	A	A	A	A	A	A					
23						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
24						B	A	A	A	A	A	A	385	IA 375	IA 365	A	A	A	A					
25						B	240	290	A	A	A	A	A	A	A	IA 345	IA 310	260	A					
26						S	A	A	A	A	A	370	380	390	IA 370	345	305	A	A					
27						A	A	IA 285	315	IA 335	350	R 360	375	385	IA 370	340	305	A	A					
28						S	235	IA 285	325	IA 340	IA 360	IA 370	385	390	370	330	305	A	A					
29						C	C	C	C	A	A	A	A	A	A	A	A	A	A					
30						B	230	280	320	A	A	A	A	A	360	IA 335	310	A	A					
31						S	220	285	315	345	360	A	A	395	A	A	A	A	S					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	11	12	10	8	7	6	12	12	15	15	15	10						
MED						180	240	290	320	UA 342	360	372	385	390	370	345	315	272						
UQ						180	242	295	325	345	362	380	390	395	378	345	320	280						
LQ						175	235	285	315	UA 340	360	370	382	385	UA 365	340	310	260						

AUG. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA | Lat. 39° 43·5′ N | Long. 140° 08·2′ E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	J X 26	E S 14	E S 14	J X 17	E S 14	J X 29	J X 63	J X 44	J X 44	39	J X 83	J X 46	J X 81	J X 60	G	J X 49	J X 98	J X 133	J X 44	J X 89	J X 88	J X 43	J X 59	J X 20
2	J X 34	J X 44	J X 28	J X 23	E S 14	22	35	44	J X 56	J X 60	J X 70	J X 64	J X 55	J X 58	J X 44	J E 45	J X 34	J X 43	J X 70	21	J X 46	J X 65	J X 33	J X 19
3	J X 20	J X 16	J X 18	J X 19	J X 20	G	33	36	39	J X 58	J X 86	J X 86	J X 80	40	J X 57	J X 95	J X 100	J X 93	J X 46	J X 36	J X 44	J X 45	J X 28	J X 39
4	J X 32	J X 39	J X 31	J X 29	J X 25	J X 20	J X 40	J X 35	J X 53	J X 39	J X 50	J X 63	J X 53	J X 40	G 32	G	G	G	24	J X 16	J X 25	J X 49	J X 23	J X 20
5	J X 33	J X 28	J X 30	J X 20	E S 14	20	30	34	36	J X 52	J X 49	40	G	42	J X 70	J X 46	37	J X 56	J X 51	J X 44	J X 40	J X 67	J X 130	J X 114
6	J X 33	J X 27	J X 25	J X 37	J X 40	J X 59	J X 49	J X 115	J X 84	J X 44	J X 64	J X 50	39	G	J X 44	J X 41	G	C	C	C	E S 14	E S 14	J X 40	J X 44
7	J X 30	J X 21	J X 36	J X 32	J X 21	E B 20	30	J X 43	37	62	59	J X 61	J X 71	J X 68	J X 85	J X 83	J X 44	J X 44	J X 38	J X 23	J X 23	J X 38	J X 38	J X 28
8	J X 34	J X 35	J X 36	J X 36	J X 25	25	J X 63	J X 48	J X 53	45	47	J X 63	J X 68	J X 96	J X 78	J X 68	J X 60	J X 55	J X 35	E S 14	J X 69	J X 69	J X 48	J X 53
9	J X 98	J X 73	J X 79	J X 30	J X 46	20	29	J X 57	J X 99	J X 90	J X 48	J X 45	43	40	43	41	39	J X 43	J X 44	J X 20	E S 14	J X 84	J X 41	J X 68
10	J X 41	J X 44	J X 45	J X 33	J X 21	20	29	37	J X 94	J X 69	J X 71	J X 104	J X 119	J X 56	J X 44	46	J X 101	J X 89	J X 113	E S 14	J X 30	J X 51	J X 34	J X 53
11	J X 43	J X 28	J X 18	J X 23	J X 34	J X 38	J X 58	J X 88	J X 65	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	J X 93	J X 73	J X 69	J X 70	J X 79	J X 86	J X 66	J X 46	J X 59	J X 59	J X 57	J X 59	J X 32	J X 39	J X 26
13	J X 21	J X 20	E S 15	J X 18	J X 20	20	32	J X 39	J X 69	40	J X 44	43	47	J X 70	J X 49	J X 59	J X 39	36	J X 49	J X 79	J X 29	E S 14	J X 29	J X 34
14	J X 28	J X 23	J X 24	J X 23	J X 18	J X 28	29	37	J X 74	J X 98	J X 89	J X 137	J X 88	56	62	J X 63	J X 56	J X 47	J X 31	J X 26	J X 31	J X 94	J X 70	J X 43
15	J X 40	J X 74	J X 28	J X 31	J X 23	J X 29	J X 39	J X 38	G	38	G	G	G	G	G	44	J X 64	J X 44	J X 41	E S 14	J X 61	J X 42	J X 42	C
16	J X 63	J X 30	J X 24	J X 35	J X 29	J X 18	G	G	39	E B 45	J X 58	J X 48	G	41	42	42	36	33	J X 36	J X 26	J X 65	J X 62	J X 64	J X 45
17	J X 65	J X 33	J X 50	J X 31	J X 37	24	39	J X 65	J X 65	J X 57	J X 55	47	J X 47	G	41	G	G	30	J X 30	J X 36	J X 73	J X 30	J X 33	J X 18
18	J X 18	J X 29	J X 44	E	J X 20	E B 20	27	31	36	42	43	42	J X 49	45	G	G	G	41	J X 51	J X 31	J X 41	J X 64	J X 45	E S 16
19	E S 14	E S 14	E S 14	J X 20	J X 20	26	J X 47	J X 47	J X 47	J X 53	G	G	G	G	G	G	36	J X 47	J X 43	J X 41	J X 37	J X 64	J X 69	E S 14
20	E S 14	J X 33	J X 28	J X 26	J X 30	G	27	J X 54	J X 70	J X 59	J X 46	J X 58	J X 93	54	55	J X 62	J X 43	32	23	J X 39	J X 35	J X 35	J X 43	J X 65
21	J X 68	J X 34	J X 27	J X 23	E S 14	J X 19	26	33	J X 43	J X 48	40	J X 40	G	J X 45	39	36	34	J X 33	J X 39	J X 29	E S 14	J X 20	J X 39	J X 44
22	J X 78	J X 63	J X 25	J X 25	J X 35	J X 19	G	35	J X 44	J X 50	J X 72	J X 60	J X 64	J X 45	J X 44	J X 40	J X 67	J X 30	J X 20	J X 16	E S 14	J X 25	J X 64	J X 54
23	J X 64	J X 42	J X 29	J X 20	J X 18	23	31	34	41	J X 60	J X 44	J X 49	41	J X 40	J X 42	38	J X 43	J X 44	J X 40	J X 18	J X 28	J X 32	J X 26	J X 50
24	E S 14	E S 14	E S 14	J X 17	J X 15	E B 19	27	36	J X 72	J X 44	J X 44	J X 60	G	40	39	J X 39	J X 77	J X 43	J X 38	J X 59	J X 36	J X 40	J X 41	J X 39
25	J X 37	J X 23	J X 46	J X 28	J X 23	E B 19	G	40	J X 69	J X 67	J X 56	48	J X 50	J X 44	42	37	33	31	21	J X 23	J X 20	J X 55	J X 43	J X 54
26	J X 28	J X 29	J X 26	J X 23	J X 16	J X 18	29	39	40	43	40	G	G	G	38	G	G	37	26	J X 20	J X 35	J X 48	E S 14	J X 17
27	E S 14	E S 14	J X 18	E S 14	E S 14	20	36	36	36	36	35 G	G	G	G	44	G	35	34	J X 40	J X 28	J X 44	J X 20	J X 23	J X 26
28	J X 34	J X 22	J X 20	E S 14	E S 14	18	G	32	35	36	38	J X 38	G	G	38	39	42	29	J X 50	J X 24	J X 38	J X 28	J X 34	J X 38
29	J X 26	J X 16	E S 14	E S 14	C	C	C	C	C	J X 47	J X 66	J X 57	43	J X 51	39	39	J X 43	J X 50	J X 93	J X 69	J X 36	J X 30	J X 34	J X 25
30	J X 65	J X 70	J X 38	E S 14	E	E B 18	G	33	43	43	J X 44	J X 43	J X 61	42	48	J X 84	40	J X 44	J X 25	J X 18	J X 84	J X 79	J X 94	J X 66
31	J X 29	J X 84	J X 41	J X 30	J X 16	E S 16	25	33	40	45	J X 49	J X 48	42	G	J X 46	J X 45	J X 53	J X 38	J X 44	J X 33	J X 28	J X 40	J X 30	J X 20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	29	29	29	29	30	30	30	30	30	30	30	30	29	29	29	30	30	30	29
MED	J X 33	J X 29	J X 28	J X 23	J X 20	20	30	37	J X 44	J X 48	J X 49	J X 48	47	42	44	42	J X 41	J X 43	J X 40	J X 26	J X 36	J X 42	J X 40	J X 39
UQ	J X 43	J X 42	J X 36	J X 30	J X 25	24	39	J X 44	J X 69	J X 60	J X 66	J X 61	J X 68	J X 56	J X 49	J X 59	J X 56	J X 47	J X 49	J X 39	J X 46	J X 64	J X 48	J X 53
LQ	J X 26	J X 21	J X 18	J X 18	J X 15	E G 19	27	34	39	42	44	42	G	G	39	37	34	33	J X 31	J X 20	J X 28	J X 30	J X 33	J X 20

The Radio Research Laboratories, Japan

AUG. 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA | Lat. 39° 43.5' N | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz in 20 sec | in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E_{S}^{14}	E_{S}^{14}	17	E_{S}^{14}	25	35	33	36	38	41	44	75	57	G	38	75	32	31	A	26	31	40	18
2	29	44	21	19	E_{S}^{14}	21	32	39	55	60	68	44	48	52	42	40	33	37	66	20	29	35	26	18
3	18	E	E	15	14	G	31	35	38	47	50	62	55	40	U_{57}^{R}	A	68	54	28	29	34	36	23	28
4	27	23	25	23	16	19	27	35	45	39	44	58	42	40	32^{G}	G	G	G	24	E	24	29	21	20
5	24	22	25	15	E_{S}^{14}	20	G	33	35	44	45	40	G	U_{42}^{R}	42	45	35	54	50	34	24	19	A	A
6	20	20	E	20	29	44	47	A	74	41	57	47	39	G	44	38	G	C	C	C	E_{S}^{14}	E_{S}^{14}	E	26
7	19	18	24	19	20	E_{20}^{B}	29	36	37	62	59	56	58	60	80	69	44	37	34	22	21	34	21	18
8	33	30	25	29	20	24	51	48	50	44	45	50	54	65	60	65	60	45	34	E_{S}^{14}	64	29	33	28
9	70	48	40	20	27	15	28	50	A	A	45	44	43	40	43	41	34	30	23	E	E_{S}^{14}	26	21	35
10	23	19	25	21	18	19	26	32	49	65	67	A	64	54	43	40	74	50	A	E_{S}^{14}	17	32	18	32
11	26	19	16	17	19	34	54	81	47	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	64	60	A	60	68	A	63	34	29	40	47	53	20	24	24
13	E	E	E_{S}^{15}	16	18	20	30	35	37	39	44	43	47	61	42	41	37	34	25	47	E	E_{S}^{14}	20	E
14	20	18	17	15	E	20	28	36	69	61	60	A	57	E_{56}^{R}	55	54	54	44	24	23	25	44	49	30
15	E	25	E	20	22	28	32	34	G	U_{38}^{R}	G	G	G	G	G	43	44	44	34	E_{S}^{14}	30	E	19	C
16	19	20	21	21	22	18	G	G	36	E_{45}^{B}	52	45	G	41	41	41	36	32	29	25	23	39	18	E
17	44	22	24	25	26	20	39	64	61	55	U_{55}^{R}	44	44	G	40	G	G	29	30	30	A	23	16	E
18	18	E	26	E	E	E_{20}^{B}	26	31	35	40	42	41	47	44	G	G	G	31	41	21	35	50	26	E_{S}^{16}
19	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E	18	26	45	45	47	49	G	G	G	G	G	G	34	44	42	34	19	20	44	E_{S}^{14}
20	E_{S}^{14}	15	17	20	25	G	27	49	63	59	44	45	A	E_{54}^{R}	54	44	40	30	23	35	33	30	E	18
21	E	20	19	15	E_{S}^{14}	19	26	32	43	40	40	40	G	42	39	35	34	28	20	18	E_{S}^{14}	17	E	27
22	28	40	23	18	18	18	G	31	43	48	68	44	62	41	43	35	43	28	20	E	E_{S}^{14}	21	E	36
23	33	25	25	18	18	19	26	34	39	54	43	44	41	40	40	34	40	41	37	E	23	20	19	47
24	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	15	15	E_{19}^{B}	27	35	67	42	43	48	G	40	39	35	38	38	35	59	24	35	25	E
25	25	20	34	21	E	E_{19}^{B}	G	40	69	66	56	46	50	44	40	36	32	G	20	20	20	29	42	U_{54}^{R}
26	21	22	24	23	15	18	28	35	38	42	40	G	G	G	38	G	G	35	23	20	28	28	E_{S}^{14}	E
27	E_{S}^{14}	E_{S}^{14}	E	E_{S}^{14}	E_{S}^{14}	19	34	33	35	36	34^{G}	G	G	G	44	G	34	34	39	27	40	20	21	20
28	34	20	E	E_{S}^{14}	E_{S}^{14}	18	G	31	35	35	38	U_{38}^{R}	G	G	38	38	41	27	28	21	25	25	25	E
29	18	E	E_{S}^{14}	E_{S}^{14}	C	C	C	C	C	44	57	57	42	50	39	37	43	34	A	A	27	25	25	24
30	42	42	27	E_{S}^{14}	E	E_{18}^{B}	G	32	42	43	41	41	44	42	46	70	36	33	21	E	E	40	A	E
31	18	30	30	25	E	E_{16}^{S}	25	33	39	45	45	48	42	G	46	44	38	28	31	19	18	34	24	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	29	29	29	29	30	30	30	30	30	30	30	30	29	29	29	30	30	30	29
MED	20	20	21	18	16	19	28	35	43	44	45	44	44	41	42	39	36	34	31	21	24	28	22	20
UQ	28	25	25	21	20	20	32	40	55	59	57	50	55	52	46	44	43	41	39	34	30	34	26	28
LQ	14	14	E_{E}^{14}	15	14	18	26	33	37	40	41	41	G	G	39	35	34	29	24	14	18	20	18	E

AUG. 1970 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1970 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	14	14	17	18	22	21	20	29	21	23	16	14	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
2	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	15	15	18	20	18	23	25	24	20	18	15	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
3	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E	14	14	15	16	18	20	23	31	28	23	17	18	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
4	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	14	15	14	18	20	19	23	25	21	19	18	16	14	13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
5	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	14	14	16	16	17	19	19	19	19	18	14	16	14	14	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}
6	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	14	15	17	18	19	23	23	21	18	15	C	C	C	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
7	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	20	15	15	19	21	20	23	23	20	20	21	19	14	13	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
8	E_{14}^{S}	E_{14}^{S}	E	E	E	14	14	17	15	18	19	14	23	20	14	18	16	14	13	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{15}^{S}
9	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	13	15	15	18	19	19	25	22	18	20	19	15	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
10	E_{14}^{S}	E	E	E	E	14	14	15	16	18	23	21	23	19	19	15	15	14	14	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
11	E_{14}^{S}	E_{14}^{S}	E	E	E	E	14	14	14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	43	36	20	21	24	26	22	20	14	14	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}
13	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	E	E	E_{14}^{S}	18	16	19	19	19	26	33	23	24	19	18	22	16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
14	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	15	19	20	21	23	29	28	44	23	23	24	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
15	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E	E_{13}^{S}	14	18	21	26	27	26	19	26	25	24	18	18	14	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	C
16	E_{13}^{S}	E	E	E	E	14	14	16	21	45	28	33	29	25	24	36	24	14	14	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
17	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{13}^{S}	15	14	21	22	21	28	28	31	19	19	19	14	14	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
18	E_{14}^{S}	E_{14}^{S}	E	E	E	20	16	16	18	19	22	21	22	22	22	20	16	14	14	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{16}^{S}
19	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	14	14	18	19	24	21	26	28	21	19	18	13	13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
20	E_{14}^{S}	E	E	E	E_{14}^{S}	E_{16}^{S}	14	14	16	19	26	22	21	26	32	14	16	14	13	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}
21	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	13	16	14	17	15	21	22	29	19	19	18	15	14	14	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
22	E_{13}^{S}	E	E_{14}^{S}	E_{14}^{S}	E	14	14	14	15	17	23	22	27	18	18	15	15	14	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
23	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	13	14	14	15	18	18	19	19	19	19	18	16	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}
24	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	19	14	14	18	19	20	19	19	19	20	18	14	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
25	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	19	14	15	15	18	21	26	18	24	23	16	15	15	13	E	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}
26	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	14	14	18	18	21	21	21	27	19	18	15	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
27	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	14	15	17	18	18	18	23	20	18	15	14	14	E	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}
28	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	16	14	16	26	21	21	21	22	18	15	15	14	13	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
29	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	C	C	C	C	C	18	20	20	20	19	18	18	18	E	13	E_{13}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}
30	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	18	14	15	16	19	21	19	21	19	18	15	14	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
31	E_{14}^{S}	E	E	E_{14}^{S}	E_{14}^{S}	E_{16}^{S}	14	14	15	17	19	15	20	20	19	18	16	14	E_{13}^{S}	E	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	29	29	29	29	30	30	30	30	30	30	30	30	29	29	29	30	30	30	29
MED	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	14	14	15	17	19	21	21	22	22	20	18	16	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
UQ	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	15	16	18	21	23	23	27	25	23	19	18	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
LQ	E_{14}^{S}	E_{14}^{S}	E	E	E	14	14	14	15	18	19	19	20	19	19	16	15	14	13	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}

The Radio Research Laboratories, Japan

AUG. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA | Lat. 39° 43.5' N. | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	270	260	260	260	265	280	325	285	280	280	290	265	285	280	275	290	290	295	290A	280B	280	275	280
2	275	260B	260	270	290	325	305	320	295	270	275	275	265	270	275	290	300	305	290B	285	265	270	260	290B
3	275	280	280	265	265	290	305	300	310	300	295	265	280	280	285	285A	285	290	295	295B	290	285	280B	F
4	280	275	270	270	275	290	285	310	300B	290	305	280	285	285	290	275	290	290	285	290	290	295	280	275
5	270	265	275	290	280	300	310	290	310	300	310	290	270	290	295	295	290	285	290	300B	295	280	270A	280A
6	R	F	300	F	F	F	300	300A	305B	310	295	280	285	295	290	280	285	C	C	C	290B	290B	290	295
7	270	270	280	280	280	280	305	300	300	305	285	285	280	285	290	290	285	290	285	295B	300	290	275S	275
8	270B	260S	265	270	275	275	305B	295	290	280	275	290	290	275	275	280	295	300	290	285	280	265	265	270
9	285B	280	255	280	265	265	290	285	A	A	275	275	280	270	290	305	300	310	300	290	280	265	260S	F
10	F	F	F	275	270	290	310B	290	325	295	290	295A	290	295	280	295	295	305	285A	285	285	270	285	275
11	280B	275S	F	270	260	275	280	300	300B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	R	300	285A	275	295	290A	285	295	295	290	300	280B	280S	280	280
13	275	275	280	280	280	280	300	315	315	305	285	285	295	295	280	300	295	310	310	305	275B	275	290	F
14	275	285	285	300	305	300	290	305	305	300	305	285A	275	280	275	285	290	305	285	310	295	280	R	F
15	285S	265	280	275	275	280	295	295	320	315	290	270	285	275	285	290	290	290	285	295	290B	285B	265	270C
16	270	275B	275	275	285	280	285	310	320	295	275	275	285	275	285	290	295	305	300	300	285B	F	290F	280S
17	280F	275	285	270	270	280	290	295	285	295	240	265	280	270	240	245	245	295B	280	285	240A	280	290	250
18	270	260	275	275	255	250	280	295	280	290	280	280	300	280	290	295	290	295	300	290	265	270	260	260
19	270B	260	265	265	250	240	260	285	290	285	250	250B	250	280	275	280	295	295	285	285	265B	280	260	265
20	265	260	275	265	270	285	280	280	300	315	275	285	275A	285	285	305	305	300	295	280B	290	285	280	275
21	275	265S	280	295	270	290	295	305	305	305	305	275	290	275	290	290	300	290	305	285	280	270	280	270S
22	F	F	F	F	F	F	320	315	295	305	285	275	295	285	295	300	300	290	285	285	275B	290	280	F
23	255	F	F	265	275	285	310	300	315	320	290	280	300	290	295	280	300	300	300	290	275	270	275	275
24	265	270	280	275	270	270	305	310	320	300	300	295	280	290	300	305	305	300	295	290	295	285B	F	280
25	270	265	F	275	285	280	290	300	320	275	295	290	280	285	295	285	300	300	300	280	285	F	260	255B
26	250	255	265B	270	285	270	265B	260B	265	275	260	260	255	265	265	280	280	285	290	270	270	255	260B	255
27	260	255	290	305	255	265	300	305	290	315	310	280	280	290	300	305	310	305	295	290	290	270	285	270
28	265	260	265	265	275	255	270	265	290	300	305	285B	300	285	285	290	290	295	300	285	300	290	265	265
29	270B	275B	275B	275	C	C	C	C	C	290	265	285	270	280	280	280	285	300	300A	275A	260	255	270	285
30	255	270	275	300	270	290	295S	310	320	265	300	285	290	285	290	290	290	300	290	300	270	275B	280A	280S
31	F	F	275	275	270	265	305	305	300	280	295	290	290	290	275	300	295	300	300	280	290	270B	275	270S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	25	25	28	27	27	29	29	28	28	30	30	30	30	30	30	30	29	29	29	30	28	28	25
MED	270	270	275	275	270	280	295	300	300	298	290	282	280	285	285	290	295	300	295	290	282	280	275	275
UQ	275	275	280	280	280	290	305	310	315	305	300	285	290	290	290	295	300	300	300	295	290	285	280	280
LQ	265	260	265	270	268	268	285	295	290	282	275	275	275	275	280	280	290	290	285	285	275	270	265	270

AUG. 1970 | M(3000)F2 (0.01)

IONOSPHERIC DATA

AUG. 1970 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA | Lat. 39° 43.5' N. | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz in 20 sec | in automatic operation

Hour / 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	360	350	375	355	IA 375	IA 370	340	350	IA 345	350	L					
2							L	L	A	A	A	370	335	IA 340	350	350	350	L	A					
3						L	L	L 355	L 360	L 355	340	A	A	330	IA 365	IA 350	IA 335	A	L					
4							L	L IA 360	360	370	IA 350	370	370	360	L 330	L 350	L	L						
5							L	L	L 375	360	360	380	L 360	370	385	L	L	A	A					
6								A	A	380	IA 375	380	370	360	355	340	350	C	C					
7								365	L 360	IA 380	IA 355	A	A	A	A	A	A	L	A					
8							A	A	IA 350	345	380	IA 365	IA 350	IA 350	IA 350	IA 345	IA 345	IA 345						
9							L	A	A	A	380	355	H 390	335	360	355	355	L	L					
10							L	L 360	A	A	A	A	A	A	355	355	A	A	A					
11							A	A	A	C	C	C	C	C	C	C	C	C	C					
12							C	C	C	A	A	A	A	A	A	A	335	L 355						
13							L	L 360	360	365	355	365	IA 360	IA 350	350	350	L	340	L					
14							L	L	IA 360	IA 375	A	A	A	A	A	A	A	A	L					
15							L	L	355	R 375	335	340	360	315	355	340	IA 340	A	A					
16							L	L	390	B	IA 335	345	365	345	355	L	L	L						
17							A	IA 350	A	A	A	360	345	340	355	320	315	L						
18							350	345	350	340	365	H 365	IA 360	360	340	L	L 350	L						
19						IA 270	IA 310	IA 330	IA 350	IA 365	375	385	360	350	355	H 355	335	A						
20							L	A	A	IA 365	380	350	A	A	A	A	L	L						
21								L 350	355	355	365	385	355	335	345	335	335	L						
22								L	L	A	A	330	IA 340	345	355	360	L	L						
23								L	L 365	IA 360	375	355	380	335	335	L 360	L	A						
24							L	L	A	H 335	355	IA 365	370	H 345	355	375	L	L						
25								L	A	A	A	355	IA 350	365	355	340	L 355	U L 350						
26							315	330	345	375	H 360	365	360	335	L 340	335	300	L	L					
27							L	355	340	L	375	H 360	H 345	350	360	L 365	L	L						
28							280	350	335	385	H 405	345	R 370	360	H 350	340	L 315	L						
29							C	C	C	360	IA 370	IA 355	380	IA 340	350	H 340	A	L						
30								L	L	L 370	350	340	345	380	355	A	L	L						
31							L	340	370	360	365	340	H 385	355	340	335	365	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	4	12	18	21	23	25	24	25	26	22	17	5						
MED						IA 270	312	350	360	360	365	355	360	350	355	348	345	350						
UQ							332	358	360	375	375	365	370	360	355	355	350	L 350						
LQ							295	342	350	355	355	350	350	340	350	340	335	U 345						

AUG. 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

AUG. 1970 | H'F2 (KM) | 135 E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39 43·5 N Long. 140 08·2 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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							320	260	305	310	330	320	I,A 345	350	355	350	I,A 325	305	275					
2							250	275	315	380	370	360	360	370	335	325	305	265	A					
3						290	255	280	300	305	330	I,A 320	355	350	335	I,A 330	340	315	280					
4							300	250	270	330	305	345	340	340	330	350	310	300	310					
5							270	270	280	280	290	335	370	330	310	305	310	330	290					
6								I,A 305	305	280	315	345	330	320	325	345	330	C	C					
7								290	300	305	340	325	340	320	I,A 320	I,A 345	320	300	280					
8							305	325	365	330	340	330	320	340	360	345	305	270						
9							300	275	A	A	400	400	390	370	330	305	305	285	290					
10							250	290	265	315	350	I,A 345	340	325	360	320	I,A 310	270	A					
11							300	I,A 275	270	C	C	C	C	C	C	C	C	C	C					
12							C	C	C	300	295	A	390	330	I,A 335	330	315	270						
13							295	260	270	285	320	320	330	320	345	325	260	280	240					
14							305	290	I,A 295	295	295	A	405	I,A 350	345	335	310	280	270					
15							300	290	260	280	340	340	340	360	335	315	300	280	290					
16							330	280	275	265	390	345	320	350	325	320	295	280						
17							275	330	310	295	500	355	325	350	490	430	390	270						
18							315	300	340	350	400	340	320	355	330	305	285	290						
19						460	420	345	340	370	480	470	450	370	370	380	325	310						
20							340	330	320	285	315	350	I,A 360	345	335	300	285	290						
21								295	300	310	290	300	340	360	340	305	300	290						
22								265	270	300	I,A 325	395	315	325	320	295	305	285						
23								265	280	280	305	350	315	325	325	305	290	270						
24							290	265	265	330	325	320	340	325	295	290	300	275						
25								290	300	I,A 310	310	335	345	360	325	315	300	290						
26							400	380	420	380	400	490	455	410	400	370	370	300	295					
27							305	290	300	255	310	320	340	330	310	300	280	280						
28							410	400	330	350	330	430	325	370	350	325	340	310						
29							C	C	C	345	I,A 350	355	400	340	340	350	295	260						
30								250	255	290	300	330	305	330	320	340	285	280						
31							300	310	295	340	305	335	340	340	360	315	290	290						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	22	29	28	29	30	28	30	30	30	30	30	29	10					
MED						375	305	290	300	305	328	342	340	342	335	325	302	285	285					
UQ							320	305	312	330	350	355	360	360	350	345	320	300	290					
LQ							290	270	270	285	305	328	325	330	325	305	295	275	275					

AUG. 1970 | H'F2 (KM)

IONOSPHERIC DATA

AUG. 1970 | H'F (KM) | 135 E Mean Time (G. M. T.+ 9h)

Station AKITA Lat. 39 43·5 N Long. 140 08·2 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	300	300	310	305	285	A	230	205	205	200	215	210	225	225	230	245	240	A	310	270	280	300	255
2	300	325	320	295	250	245	240	A	A	A	A	205	225	230	230	240	225	250	265	255	285	310	315	245
3	280	265	285	265	270	270	235	210	230	240	A	A	A	250	A	A	A	235	235	260	255	280	265	310
4	280	300	305	305	290	255	240	240	225	205	230	215	200	210	215	225	230	245	245	285	260	260	250	280
5	310	315	305	270	260	255	240	220	230	215	210	195	195	230	235	230	240	245	260	260	250	265	275	260
6	260	265	250	250	295	310	275	A	A	230	230	220	200	205	210	220	220	C	C	C	245	260	245	240
7	295	300	295	280	275	235	240	230	225	210	220	A	A	A	A	A	A	A	A	255	250	250	275	280
8	305	335	320	310	280	280	A	A	A	A	230	A	A	A	A	225	230	235	285	270	280	280	330	300
9	275	270	350	265	320	280	245	A	A	A	220	240	190	235	210	235	215	240	240	270	245	270	330	340
10	295	310	300	295	295	280	240	210	A	A	A	A	A	A	230	230	A	A	A	255	245	295	270	290
11	295	300	280	280	290	290	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A	240	215	270	270	290	280	270	280
13	255	270	285	280	285	270	265	210	215	205	240	230	235	245	240	250	240	245	A	270	260	270	305	300
14	315	285	275	240	230	250	245	255	230	215	A	A	A	A	A	A	A	A	260	250	245	290	330	325
15	250	295	255	290	295	295	50	240	225	230	245	240	235	240	220	240	A	A	A	255	250	260	290	300
16	295	290	285	290	255	280	255	250	215	240	220	240	200	230	250	260	245	255	260	240	240	A	290	295
17	290	300	290	300	315	285	250	235	A	A	A	240	240	245	240	250	250	250	270	250	A	280	290	350
18	290	300	310	270	330	300	250	235	220	260	220	210	235	240	230	205	240	250	270	260	330	320	295	300
19	315	300	290	295	370	A	A	A	245	240	210	210	205	230	225	205	245	265	285	300	295	295	315	310
20	305	305	295	320	305	265	245	A	A	A	230	205	A	A	A	A	A	235	275	290	285	270	245	290
21	290	310	280	255	260	285	245	235	235	215	220	210	200	225	240	235	240	250	265	255	260	290	275	320
22	295	315	290	300	300	260	245	240	A	A	A	240	225	230	220	230	225	230	250	270	275	265	245	330
23	350	350	305	315	285	250	250	230	230	230	215	215	205	210	245	220	240	245	270	270	285	295	270	300
24	285	280	280	270	295	295	230	230	240	240	215	220	230	200	230	225	250	260	265	300	245	280	330	290
25	320	280	350	290	270	275	240	250	A	A	A	230	210	230	235	230	230	240	270	255	250	305	315	330
26	340	340	295	270	280	270	255	255	250	230	210	200	200	230	230	235	250	255	280	275	310	340	320	310
27	340	320	265	240	290	295	260	240	220	230	200	230	215	230	240	230	240	245	280	250	290	295	295	310
28	335	315	290	265	300	340	265	240	250	205	190	240	220	215	230	240	260	245	270	260	250	250	330	315
29	315	305	320	305	C	C	C	C	C	240	230	240	210	250	240	230	A	A	260	325	320	305	315	270
30	320	325	320	255	260	270	230	235	235	230	220	230	220	230	A	A	245	255	275	250	270	290	265	270
31	265	305	330	305	290	280	265	240	240	A	A	210	190	200	A	A	240	255	255	265	255	300	295	290
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	28	25	22	19	20	21	24	23	24	22	23	23	24	24	29	29	29	30	30
MED	295	300	295	285	290	280	245	235	230	230	220	220	210	230	230	230	240	245	268	260	260	280	292	300
UQ	315	315	310	300	300	288	255	240	238	240	230	240	225	238	240	238	245	252	272	270	285	295	315	310
LQ	285	290	285	265	270	262	240	230	222	212	210	210	200	220	225	225	230	240	260	255	250	270	270	280

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AUG. 1970 | H'F (KM)

IONOSPHERIC DATA

AUG. 1970 | H'ES (KM) | 135 E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39 43·5 N. Long. 140 08·2 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	110	S	S	110	S	120	115	115	115	115	115	110	115	115	G	130	115	115	110	110	110	105	105	105
2	105	100	100	100	S	130	120	115	110	110	105	105	105	105	105	100	105	130	115	115	115	110	110	105
3	105	105	105	105	105	G	130	120	120	115	110	110	110	130	125	115	110	105	105	110	105	105	105	110
4	105	100	100	105	105	105	115	115	110	110	105	100	105	105	100	G	G	G	140	105	100	105	105	105
5	100	100	100	100	S	130	140	140	115	115	110	115	G	130	110	110	140	120	115	115	115	110	110	110
6	105	105	105	110	100	110	120	110	110	115	110	110	115	G	105	105	G	C	C	C	S	S	110	105
7	110	105	105	105	105	B	140	125	140	115	120	115	115	115	115	115	115	115	110	110	110	110	110	110
8	105	105	105	100	105	130	115	115	120	115	115	115	115	110	105	110	105	105	120	S	115	110	105	110
9	105	105	105	105	105	110	130	115	110	110	115	110	120	120	120	120	140	125	115	115	S	110	110	110
10	105	105	105	105	110	115	110	120	105	110	110	110	110	110	110	130	120	115	115	S	110	105	105	100
11	100	100	100	110	105	110	110	115	110	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	110	110	110	110	105	110	110	110	105	110	110	115	105	105	100
13	100	100	S	105	105	110	110	105	105	115	115	115	150	135	130	130	130	120	115	105	105	S	115	105
14	105	105	105	105	105	105	140	140	115	110	105	105	105	105	105	105	105	105	105	105	105	100	105	110
15	105	105	105	105	105	105	105	105	G	125	G	G	G	G	G	130	120	110	110	S	110	105	110	C
16	105	105	105	105	105	105	G	G	110	B	110	110	G	120	120	125	135	140	115	110	110	110	110	105
17	105	105	105	105	105	140	125	110	105	105	105	105	120	G	115	G	G	140	115	110	110	110	110	110
18	105	105	105	E	105	B	140	140	130	115	115	120	115	120	G	G	G	130	115	110	115	110	110	S
19	S	S	S	110	140	135	125	120	120	115	G	G	G	G	G	G	150	130	120	110	110	105	110	S
20	S	105	105	100	100	G	140	115	115	105	105	105	100	105	105	100	100	140	115	110	105	110	110	110
21	105	105	105	105	S	105	150	115	115	110	110	110	G	105	110	115	115	110	110	110	S	110	110	105
22	110	105	105	105	105	105	G	140	115	115	110	110	105	105	105	105	105	105	105	110	S	105	110	110
23	105	110	105	105	105	110	150	130	120	105	110	110	110	110	110	110	105	110	110	110	105	105	105	100
24	S	S	S	100	100	B	140	130	115	115	110	105	G	115	115	110	110	110	110	110	105	105	105	105
25	105	105	105	100	100	B	G	130	120	110	110	110	105	105	110	110	115	130	110	105	105	105	105	105
26	105	105	100	100	105	105	130	125	115	110	110	G	G	G	115	G	G	125	125	110	110	110	S	110
27	S	S	105	S	S	135	130	130	120	120	110	G	G	G	140	G	140	120	110	110	105	105	105	105
28	100	100	100	S	S	135	G	120	140	120	110	105	G	G	140	140	125	130	110	110	105	105	105	105
29	105	105	S	S	C	C	C	C	C	115	115	115	120	120	120	115	105	105	105	105	105	105	105	110
30	110	105	105	S	E	B	G	140	120	115	115	110	105	140	140	120	130	115	105	105	110	110	105	105
31	105	105	100	105	100	S	150	140	140	130	120	115	110	G	110	110	105	105	105	105	105	105	105	105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	25	25	22	21	24	28	28	29	28	26	21	22	26	24	25	28	29	26	26	28	29	27
MED	105	105	105	105	105	110	130	120	115	115	110	110	110	112	110	112	115	115	110	110	110	105	105	105
UQ	105	105	105	105	105	130	140	130	120	115	115	115	115	120	120	122	130	130	115	110	110	110	110	110
LQ	105	105	100	100	105	105	115	115	110	110	110	105	105	105	105	110	105	108	110	105	105	105	105	105

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IONOSPHERIC DATA

AUG. 1970 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	F1			F1		C2	C2	C1	C1	C1	C1	L1	C2	C2		H1	C2	C2	L3	L3	F3	F3	F3	F2
2	F1	F3	F3	F1		H2	C3	C2	L2	L2	L2	L1	L2	L2	L1	L2	L1	H2	C3	C2	F2	F2	F2	F2
3	F2	F2	F1	F2	F1		H2	C2	C1	C2	L2	L2	L2	H1	H2	C2	L2	L2	L2	L2	F2	F2	F2	F3
4	F3	F3	F2	F3	F2	L1	C1	C2	L4	L1	L2	L2	L2	L1	L1				H1	L1	F2	F2	F2	F1
5	F2	F2	F3	F1		H1	H1	H2	C1	C2	L2	C1		H1	L1	L2	H1	C4	C3	C3	F3	F3	F3	F3
6	F2	F2	F1	F2	F2	L2	C3	L4	L2	C2	L2	L2	C1		L2	L2							F1	F2
7	F2	F2	F3	F1	F3		H2	H1	H1	C1	C1	C2	C2	C2	C2	C2	C2	C2	L4	L2	F3	F3	F3	F2
8	F3	F3	F4	F4	F2	H2	C3	C3	C2	C2	C1	C2	C2	L3	L2	L2	L3	L3	C3		F3	F3	F2	F3
9	F3	F3	F3	F3	F4	L1	H2	C3	L3	L2	C2	L1	C1	C2	C1	C2	H1	H2	C2	C1		F3	F2	F2
10	F2	F2	F2	F3	F2	C1	L2	C1	L2	L2	L2	L3	L2	L2	L1	H1	C4	C3	C3		F2	F2	F2	F2
11	F2	F2	F1	F2	F2	L2	L4	C3	L2															
12										L2	L1	L2	L2	L2	L3	L2	L2	L2	L3	L5	F5	F2	F2	F2
13	F1	F1		F1	F2	L1	L2	L2	L2	C1	C1	C1	H1	H2	H1	H2	H2	C1	C2	L2	F2		F2	F2
14	F2	F2	F2	F1	F1	L1	H1	H1	C2	L2	L3	L2	L2	L1	L2	L2	L2	L3	L2	L2	F2	F4	F3	F2
15	F2	F2	F1	F1	F2	L4	L2	L2		H1						H1	C2	L2	L2		F2	F2	F2	
16	F2	F3	F3	F2	F2	L1			L1		L2	L1		C1	C1	H1	H1	H2	C2	L2	F4	F4	F2	F2
17	F4	F3	F2	F2	F2	H1	H2	L2	L2	L4	L2	L1	C1		C1			H1	C2	L2	F3	F2	F2	F2
18	F2	F2	F3		F2		H1	H1	H1	C1	C2	C1	C2	C1				H2	C2	L2	F5	F3	F3	
19				F1	F2	H2	H2	C3	C2	C2							H2	H4	C3	L5	F2	F2	F3	
20		F2	F2	F2	F3		H2	C2	C2	L2	L2	L2	L2	L1	L1	L3	L3	H2	C2	L4	F4	F2	F2	F2
21	F2	F2	F4	F2		L2	H1	C2	C2	L1	L1	L1		L1	L1	C1	C1	L2	L2	F1		F2	F2	F3
22	F2	F4	F2	F2	F2	L1		H1	C2	C2	L2	L2	L1	L2	L2	L2	L2	L2	L2	F1		F2	F2	F3
23	F3	F2	F4	F2	F2	L1	H1	H2	C2	L2	L1	L2	L1	L1	L2	L1	L2	L2	L3	F2	F4	F2	F2	F4
24				F1	F1		H1	H2	C2	C2	L2	L2		C1	C1	L2	L2	L3	L3	F2	F3	F2	F2	F2
25	F2	F2	F2	F2	F1			H2	C3	L2	L2	L1	L2	L1	L1	L1	C1	H1	L2	F3	F2	F3	F2	F2
26	F2	F2	F2	F2	F2	L1	H2	H2	C2	L2	L1				C1			H2	H2	F2	F2	F2		F1
27			F1			H1	H2	H2	C1	C1	L1				H1		H1	C3	L3	F2	F3	F2	F3	F2
28	F2	F2	F1			H1		C2	H1	C1	L1	L1			H1	H1	H2	H1	L2	F2	F2	F4	F3	F2
29	F2	F2								C2	C2	C1	C1	C1	C1	C1	L2	L3	L2	F2	F2	F2	F2	F2
30	F3	F3	F3					H1	C1	C2	C1	L1	L1	H1	H1	C2	H1	C3	L2	F2	F1	F2	F3	F2
31	F3	F2	F4	F2	F1		H1	H2	H1	H2	C1	C2	L1		L2	L2	L2	L2	L3	F2	F2	F4	F3	F1
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1970 | TYPES OF ES

IONOSPHERIC DATA

AUG. 1970 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	I^{R}_{78}	J^{R}_{74}	73	69	62	70	91	90	J^{R}_{87}	96	94	97	94	89	86	84	85	87	A	A	83	J^{R}_{77}	S_{78}	74
2	F_{65}	F_{65}	J^{F}_{73}	F	Z_{74}	61	65	69	77	76	82	87	97	107	116	104	93	92	84	81	78	82	F	F
3	U^{F}_{80}	F_{74}	71	66	64	67	79	73	89	78	J^{R}_{77}	76	82	97	97	94	98	97	J^{R}_{101}	104	86	88	82	J^{R}_{77}
4	F_{78}	74	B_{67}	F_{67}	66	65	81	91	89	89	78	74	78	83	86	83	82	83	83	88	90	79	F_{74}	71
5	70	68	69	69	65	68	74	83	81	80	81	77	84	95	95	88	74	80	92	92	83	F	F	A
6	A	F	F	F	E_{55}	F_{60}	F_{70}	91	86	83	90	83	91	88	90	90	89	96	103	104	93	I^{R}_{90}	86	76
7	70	70	F	60	60	60	76	91	76	76	78	88	99	93	94	88	88	94	S_{100}	91	89	74	71	69
8	68	S_{65}	64	66	F_{64}	F_{69}	61	71	73	81	86	96	94	89	91	110	116	110	95	94	95	86	90	93
9	86	82	67	64	J^{F}_{63}	62	78	92	79	66	I^{A}_{64}	75	76	86	100	96	80	86	76	73	71	66	65	E_{65}
10	F	F	70	65	I^{A}_{61}	66	I^{R}_{70}	71	76	A	81	A	A	86	91	91	92	87	I^{R}_{87}	I^{A}_{88}	I^{A}_{86}	F	F	F
11	I^{R}_{84}	83	85	R_{71}	F_{63}	63	83	J^{R}_{102}	97	86	92	95	96	98	C	C	108	108	96	76	68	J^{F}_{69}	F_{72}	I^{R}_{67}
12	61	56	56	53	49	J^{R}_{51}	72	79	79	81	76	71	76	88	90	88	90	88	93	91	70	F	F_{66}	F
13	60	59	56	55	52	56	79	80	68	76	86	85	88	83	87	100	95	88	87	78	71	70	67	71
14	69	65	66	59	49	49	58	79	90	80	I^{R}_{72}	I^{A}_{79}	I^{R}_{77}	R	90	88	94	96	95	86	70	65	61	F
15	F	F	F_{60}	F_{50}	50	52	66	90	88	J^{R}_{72}	75	75	84	89	98	94	91	86	90	94	87	69	71	69
16	70	68	67	64	60	58	82	93	76	80	78	90	101	100	J^{R}_{103}	105	105	99	96	81	69	I^{A}_{63}	F	A
17	F_{66}	F_{64}	64	F_{58}	54	54	71	77	80	90	I^{R}_{73}	95	108	105	86	108	113	118	80	66	I^{A}_{64}	I^{A}_{68}	50	51
18	58	56	57	55	F_{49}	46	73	J^{R}_{73}	75	74	91	104	87	81	90	82	79	81	85	S_{74}	73	S_{68}	68	64
19	61	58	55	52	49	45	59	76	71	65	62	66	72	83	69	66	67	66	68	66	62	61	59	56
20	F_{58}	F	58	56	F_{54}	50	60	J^{R}_{75}	84	80	A	81	91	94	96	91	76	71	76	76	73	71	70	62
21	61	F	61	59	41	47	61	77	86	89	81	81	86	90	96	96	90	89	90	76	70	I^{R}_{71}	75	65
22	F_{65}	65	61	59	57	65	85	79	79	85	78	81	99	104	I^{A}_{97}	89	82	80	82	86	86	90	J^{R}_{81}	66
23	69	F_{68}	68	64	59	64	S_{73}	77	86	83	80	88	93	100	102	92	87	80	87	81	72	S_{72}	79	J^{S}_{78}
24	74	69	67	61	59	65	87	90	95	80	79	90	95	103	J^{R}_{103}	93	84	81	89	I^{A}_{90}	86	75	70	F
25	71	65	66	61	55	56	68	86	84	77	88	90	91	88	96	88	81	78	81	B_{75}	71	61	61	59
26	59	61	F	61	43	45	49	59	69	73	63	I^{A}_{70}	68	66	66	66	64	66	70	65	60	F	F_{59}	58
27	58	58	58	50	46	47	68	90	83	81	83	87	88	83	86	80	73	76	78	79	68	68	71	J^{R}_{71}
28	65	63	59	57	54	49	56	66	74	70	69	80	82	73	76	76	I^{A}_{76}	A	81	83	69	58	56	58
29	57	54	52	51	51	55	74	88	73	84	75	84	88	88	87	84	81	74	71	60	F_{58}	F_{60}	62	65
30	55	54	54	I^{A}_{50}	A	52	J^{R}_{75}	85	79	79	89	98	98	95	97	93	83	81	84	88	78	69	68	66
31	62	55	F_{52}	F_{51}	52	F	66	80	81	78	83	71	J^{R}_{75}	77	85	87	84	A	A	A	74	R_{66}	65	63
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	26	28	29	30	30	31	31	31	30	30	30	30	30	30	30	31	29	29	29	31	27	27	24
MED	66	65	64	59	55	57	72	80	80	80	80	84	88	89	91	90	85	86	87	81	73	69	70	66
UQ	70	69	68	64	62	65	78	90	86	83	86	90	95	97	97	94	92	94	93	90	86	76	74	71
LQ	60	58	58	55	50	50	66	76	76	76	75	76	82	83	86	84	80	80	81	76	70	66	64	62

AUG. 1970 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1970 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	L	L	480	540	540	L	A	520	530	A	A	A	A					
2									A	A	520	A	A	A	A	A	L	L	A					
3									A	L	L	L	A	540	540	A	A	L	L					
4							L	L	L	510	510	L	550	570	510	510	500	L	L					
5								450	500	L	520	L	550	510	A	490	L	A	L					
6							L	L	L	A	A	A	510	500	510	500	480	L						
7							L		L	L	L	L	A	530	550	A	A	A	A					
8							A	A	A	A	A	A	A	A	A	A	470	430	L					
9						L	L	440	L	510	A	490	510	490	500	490	L	L	A					
10								L	A	A	A	A	A	R 550	480	A	450	L	A					
11							L	L	L	A	490	A	510	510	C	C	A	L						
12							L	L	L	A	A	A	A	510	500	490	460	L						
13							L	L	460	480	490	510	510	A	A	490	L	L						
14							L	450	460	R 490	580	A	R	R	A	490	450	L						
15							L	L	L	540	500	L	540	550	530	510	490	L						
16							L	L	L	L	500	560	540	520	520	510	480	L						
17							L	L		A	A	A	A	540	530	490	480	L						
18							L	L	490	L	L	510	500	550	520	460	L	L						
19						280	A	A	A	500	510	510	510	500	L	490	L	A						
20								A	490	510	A	530	520	A	R	460	L	L						
21								L	L	510	A	530	540	550	520	L	480	L						
22							L	L	L	500	A	A	560	A	A	490	L							
23								L	L	L	A	A	550	540	520	510	500							
24							L	L	L	L	510	540	A	A	A	L	A	L						
25							L	L	A	550	A	A	A	A	530	L	A	L						
26								410	A	A	550	A	500	500	490	R 490	420	L						
27							L	L	460	U 500	520	530	530	540	520	L	L	L	A					
28						L	L	500	460	490	530	630	510	480	550	510	A	A						
29							L	L	L	L	H 600	560	550	530	L	L	U 470							
30									L	L	L	L	570	540	L	520	U 460							
31								L	L	A	A	A	560	L	L	510	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1		5	8	13	15	11	20	22	18	19	14	1						
MED						280		450	470	510	520	530	535	530	520	490	475	430						
UQ								450	490	510	535	550	550	540	530	510	480							
LQ								440	460	500	505	510	510	510	510	490	460							

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AUG. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	395	395	380	355	320	280	A					
2						A	A	A	A	A	A	A	A	A	A	A	320	270	A					
3						160	245	290	320	350	A	S	390 R	380 R	390	365	330 I A	A	A					
4						175	A	320	A	A	A	A	380	380 I R	370 I R	350 I R	320	275	200					
5						160	240	305	335 I A	A	A	A	A	A	A	355	325	265	A					
6						B	240 I A	290	325	A	A	A	A	A	A	A	A	275	A					
7						A	A	A	A	A	A	380	390	370	355	350	300	A	A					
8						B	240	290	320	350 I A	355	370	365	A	A	A	A	A	A					
9						175	245	A	A	A	A	A	R	R	A	A	320 I R	R	A					
10						A	A	A	A	A	A	A	A	A	A	340 I A	A	A	A					
11						A	A	285	A	A	A	A	A	A	C	C	310 I A	260	A					
12						A	A	A	A	B	B	A	A	A	B	R	A	A	A					
13						A	A	A	A	A	R	A	B	390 I A	380 I A	350	310	A	A					
14						R	A	300	A	A	B	B	A	B	A	A	R	285	A					
15						A	A	A	A	R	385 R	A	R	390	380	360	325	A	A					
16						B	245	300 I A	A	B	A	R	390	380 I R	370	360 I R	335	285	200 I A					
17						A	A	A	A	A	A	A	A	R	360	350	320	270	A					
18						B	225 I A	280	A	340	A	A	A	385	385	345	325	265	A					
19						A	245	295	325	350 I A	360 I A	370	R	390	375	360	320	265	170 I A					
20						B	230	295	A	A	A	A	R	A	A	350	320 I R	260	R					
21						A	A	290	A	A	A	A	A	A	A	A	A	A	A					
22						A	230	285	A	350	360	A	A	A	A	350	320	A	A					
23						B	A	290	310	330	A	A	A	A	A	350	A	A	A					
24						B	225	280	A	A	A	A	A	A	A	A	A	A	A					
25						A	235	285	320	350	A	A	A	A	A	A	A	A	R					
26						A	230 I A	A	A	A	A	A	A	A	A	R	320 I R	A	A					
27						A	A	A	A	325	A	A	A	365	370	330	300	230	140					
28						B	230	275	340	335 I A	360 I R	A	A	A	345 I R	345 I A	A	A	A					
29						A	A	A	A	345	360	A	375 I A	360	360	340	305	250 I A	A					
30						B	A	280	320 I A	350	360	A	A	A	R	350	315	A	A					
31						B	240	290	325	355	370	375	375 I A	A	A	320	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	15	19	10	12	8	4	8	11	13	20	20	14	4					
MED						168	240	290	322	350	360	372	385	380	370	350	320	268	185					
UQ						175	242	295	325	350	365	378	390	390	380	355	322	275	200					
LQ						160	230	285	320	338	360	370	375	375	360	345	312	260	155					

AUG. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	J X 25	J X 29	J X 31	J X 29	21	35	35	35	J X 39	J X 43	J X 39	J X 47	J X 67	47	J X 61	J X 59	J X 155	J X 103	J X 173	J X 134	J X 109	J X 108	J X 22	J X 30
2	J X 42	J X 30	J X 24	J X 29	M 19	21	J X 39	48	J X 52	J X 104	48	J X 57	J X 58	J X 62	J X 60	J X 57	37	J X 40	J X 87	J X 40	J X 74	32	J X 42	J X 70
3	J X 23	J X 24	19	J X 24	J X 19	G	32	J X 41	J X 54	J X 56	J X 58	J X 50	J X 51	G	47	J X 82	J X 71	J X 84	J X 41	J X 41	J X 58	J X 50	J X 25	J X 22
4	J X 19	J X 28	J X 26	J X 25	J X 25	20	J X 36	J X 38	37	J X 43	J X 39	J X 43	G	J G 37	G	G 29	J G 28	31	25	20	M 24	J X 29	J X 37	J X 27
5	J X 39	J X 28	J X 28	J X 24	19	19	30	32	J X 41	37	40	J X 49	J X 39	J X 49	59	41	38	J X 62	J X 43	J X 65	J X 79	J X 84	J X 84	J X 142
6	J X 130	J X 74	J X 65	J X 50	J X 24	J X 25	J X 28	J X 42	J X 52	J X 75	J X 57	J X 56	46	43	J X 45	J X 45	J X 41	G	J X 31	J X 24	20	J X 41	J X 64	J X 24
7	J X 30	J X 51	J X 75	J X 74	J X 51	J X 41	J X 41	J X 51	J X 84	J X 110	J X 61	J X 53	J X 60	J X 61	J X 57	J X 56	J X 74	J X 65	J X 66	J X 55	J X 38	J X 30	J X 29	J X 25
8	J X 26	J X 39	J X 30	J X 24	M 20	17	J X 60	J X 76	J X 67	J X 73	J X 56	J X 59	88	J X 106	J X 60	94	J X 35	33	J X 29	J X 23	J X 30	J X 21	43	J X 60
9	J X 38	J X 25	J X 23	J X 53	J X 40	J X 22	G	J X 38	36	J X 45	82	38	G	G	49	J X 45	G	G	26	J X 51	J X 31	J X 44	J X 29	J X 24
10	J X 41	J X 29	J X 41	J X 29	80	J X 32	J X 41	35	J X 89	J X 81	J X 85	J X 198	J X 102	47	43	J X 51	J X 45	J X 51	80	J X 181	J X 131	J X 31	J X 64	J X 44
11	J X 25	E B 14	J X 24	J X 24	J X 21	J X 32	J X 34	J X 41	J X 51	J X 61	J X 41	56	49	43	C	C	J X 51	36	J X 59	J X 52	21	J X 34	J X 52	J X 51
12	J X 39	J X 41	J X 39	J X 24	J X 26	J X 29	J X 29	34	44	49	J X 55	J X 57	J X 52	43	E B 40	G	39	36	J X 105	21	J X 29	J X 54	J X 41	J X 25
13	J X 29	J X 24	J X 21	J X 24	E S 15	20	J X 29	J X 35	J X 41	45	G 39	42	E B 44	J X 58	J X 61	40	39	J X 41	J X 41	J X 29	J X 51	21	J X 25	23
14	J X 21	J X 29	J X 25	J X 29	E B 14	G	30	G	J X 61	J X 89	J X 64	J X 91	45	45	J X 84	45	G 21	35	J X 29	J X 24	J X 31	J X 35	21	J X 52
15	J X 30	J X 30	J X 25	J X 25	J X 55	J X 25	J X 31	J X 54	J X 41	G 35	G	42	G	G	G	38	42	J X 108	J X 38	J X 29	J X 36	J X 58	J X 36	J X 28
16	J X 30	J X 30	J X 26	J X 25	J X 21	18	G	J G 30	36	E B 42	J X 38	G	42	45	44	G	39	J X 44	J X 42	J X 30	J X 30	J X 116	J X 64	J X 78
17	J X 40	J X 42	J X 54	J X 45	J X 43	J X 30	J X 38	32	J X 48	J X 57	J X 55	J X 62	55	G	G	G	G	36	J X 31	J X 24	J X 84	J X 89	J X 54	J X 21
18	21	J X 51	J X 31	J X 20	J X 25	22	29	35	36	J X 49	J X 42	J X 40	J X 42	G 32	G	G	39	J X 50	J X 40	J X 57	J X 72	J X 52	J X 54	J X 50
19	J X 47	J X 24	J X 25	J X 14	J X 36	J X 26	47	J X 51	J X 54	J X 59	J X 49	40	G 37	G 34	G 29	G	36	J X 45	J X 31	J X 24	J X 59	J X 37	J X 36	J X 72
20	20	J X 17	J X 58	J X 36	J X 42	J X 24	30	J X 56	J X 47	45	J X 85	47	G 35	J X 59	45	G	G	35	G	20	J X 21	J X 51	J X 51	J X 51
21	J X 84	J X 51	J X 24	J X 35	23	21	J X 39	35	39	J X 45	J X 54	J X 45	42	41	J X 39	J X 35	J X 35	J X 29	J X 25	J X 29	21	23	18	20
22	21	20	17	J X 23	20	20	G	G	37	J X 52	J X 66	79	J X 54	J X 60	J X 173	37	36	30	J X 26	J X 29	J X 26	J X 26	J X 24	J X 17
23	21	17	J X 54	J X 59	J X 51	J X 30	30	38	J X 46	42	66	71	39	41	J X 40	J X 37	J X 34	J X 30	J X 40	J X 51	48	J X 76	J X 41	21
24	J X 24	J X 30	24	J X 23	M 24	J X 16	J X 28	31	J X 39	J X 48	J X 51	45	J X 55	J X 81	J X 85	J X 52	J X 91	35	J X 51	J X 108	J X 55	J X 54	J X 39	J X 61
25	J X 54	J X 61	J X 30	J X 29	J X 29	J X 19	G 20	36	J X 52	J X 51	71	J X 51	66	J X 55	J X 51	J X 39	J X 51	J X 31	G	21	J X 21	23	J X 24	J X 44
26	J X 24	J X 52	J X 29	23	19	21	25	37	J X 54	J X 71	J X 55	J X 65	J X 57	J X 44	J X 45	G	G	35	J X 29	J X 21	J X 24	J X 41	J X 29	J X 24
27	J X 19	21	20	19	E S 15	24	25	J X 41	36	37	J X 40	45	J X 41	G	G	G	33	36	J X 65	J X 30	J X 55	J X 52	J X 30	20
28	22	J X 26	J X 20	J X 16	J X 19	20	28	34	G	37	G	56	42	40	G	J X 44	J X 87	J X 104	J X 64	J X 51	J X 74	J X 52	J X 32	J X 30
29	J X 29	J X 24	23	E S 15	20	J X 25	J X 29	J X 42	J X 37	J X 44	42	J X 43	45	38	38	40	36	36	J X 49	J X 77	J X 90	J X 50	J X 29	J X 59
30	J X 70	J X 62	J X 47	J X 74	J X 58	J X 50	J X 60	30	41	J X 50	48	J X 67	37	37	G	G	39	J X 50	J X 29	J X 33	E B 13	J X 52	J X 42	J X 27
31	J X 40	J X 30	J X 44	J X 37	J X 37	J X 18	27	36	J X 48	J X 54	J X 58	J X 61	J X 50	42	J X 55	J X 41	J X 61	J X 86	J X 117	M 133	J X 62	J X 42	J X 36	21
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31
MED	J X 29	J X 29	J X 26	J X 25	J X 24	J X 22	30	36	J X 44	J X 49	J X 54	J X 51	45	43	45	40	39	J X 36	J X 40	J X 30	J X 38	J X 44	J X 36	J X 28
UQ	J X 40	J X 42	J X 40	J X 36	J X 38	J X 28	J X 37	J X 42	J X 52	J X 60	J X 60	J X 60	J X 55	J X 52	J X 59	J X 45	J X 48	J X 50	J X 62	J X 54	J X 67	J X 53	J X 47	J X 52
LQ	J X 22	J X 24	J X 24	J X 24	20	20	28	34	38	44	J X 40	44	40	37	E G 29	G	34	34	J X 29	J X 24	J X 25	J X 32	J X 29	J X 24

AUG. 1970 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1970 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	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	25	30	25	G	30	35	34	35	40	40	44	67	47	47	52	56	78	A	A	51	41	E	E
2	20	16	16	E	E	19	34	41	52	59	41	52	52	56	56	54	36	37	79	30	46	16	30	25
3	16	20	E	16	E	G	32	40	54	44	42	50	E R 51	G	45	57	51	35	23	22	40	40	19	17
4	E	17	23	18	20	17	30	29	37	40	39	43	G	E R 37	G	G 29	G 26	31	25	15	17	17	17	20
5	33	17	20	17	E	18	27	32	35	37	40	48	E R 39	45	59	39	36	62	33	30	51	70	60	A
6	A	50	51	24	16	17	26	41	46	70	51	56	43	41	44	43	34	G	24	24	E	40	30	24
7	30	30	40	30	35	26	28	40	50	42	41	46	54	49	52	55	68	65	54	51	26	30	22	21
8	25	32	26	22	E	17	58	54	66	70	54	51	86	57	51	90	34	29	23	20	24	17	34	40
9	24	16	16	34	19	15	G	36	35	43	A	E R 38	G	G	40	43	G	G	25	28	20	20	17	E
10	25	25	20	16	A	25	25	34	50	A	75	A	A	42	40	51	39	35	A	50	A	25	25	25
11	18	E B 14	17	15	E	28	29	40	46	59	40	50	46	40	C	C	50	33	30	50	E	25	50	30
12	E	E	16	15	20	20	26	33	40	49	55	50	52	43	E B 40	G	35	36	50	E	24	E	30	E
13	19	E	17	18	E S 15	17	28	33	39	40	E R 39	E R 42	E B 44	57	52	38	38	36	34	20	20	E	16	E
14	E	19	19	25	E B 14	G	29	G	43	40	41	A	E R 45	E R 45	58	40	E R 21	30	27	22	16	20	18	19
15	23	26	16	18	25	20	29	36	40	G 35	G	42	G	G	G	38	40	31	27	26	31	51	16	E
16	E	22	21	19	16	16	G	G 30	36	E B 42	E R 38	G	42	45	44	G	38	37	42	25	22	A	40	A
17	25	22	16	23	25	24	32	32	45	55	52	60	51	G	G	G	G	33	29	20	A	45	29	15
18	E	25	16	15	17	G	26	34	35	46	42	40	41	G 32	G	G	37	35	34	51	52	22	25	30
19	28	E	16	E	22	23	41	51	51	40	43	40	E R 37	G 33	G 28	G	35	45	21	22	18	16	16	44
20	E	E	15	25	15	G	25	52	41	44	A	42	E R 35	51	E R 45	G	G	30	G	E	15	40	40	16
21	17	15	E	25	15	20	35	32	37	44	52	40	42	40	39	35	34	29	25	E	E	E	E	E
22	E	E	16	E	E	G	G	G	35	45	56	76	48	56	A	37	33	30	22	E	20	22	15	17
23	E	E	40	36	44	21	28	38	42	41	64	70	E R 39	E R 41	40	32	33	30	25	49	48	51	22	E
24	16	25	16	E	15	G	27	31	35	46	44	43	53	77	78	45	75	27	48	A	50	46	19	26
25	25	25	22	25	25	16	G 16	30	49	49	64	50	A	55	40	39	50	31	G	E	16	E	E	30
26	20	26	16	E	E	18	24	30	50	50	50	59	40	42	40	G	G	31	25	15	23	25	50	20
27	16	E	E	E	E S 15	16	25	35	35	37	40	42	41	G	G	G	33	36	65	21	25	31	20	E
28	E	25	15	E	E	G	25	33	G	E R 37	G	55	40	40	G	40	A	A	42	29	23	E	29	25
29	20	16	15	E S 15	E	18	25	35	35	43	42	41	42	38	38	40	37	34	45	30	40	17	24	51
30	51	49	45	A	A	30	50	30	40	48	47	46	E R 37	E R 37	G	G	38	31	24	20	E B 13	E	19	23
31	34	25	19	26	26	E	27	35	47	54	56	57	48	42	50	40	60	A	A	A	40	40	28	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31
MED	19	20	16	18	15	17	27	34	40	44	43	48	42	42	40	38	36	33	29	24	24	25	22	20
UQ	25	25	22	25	24	20	31	39	48	50	54	56	52	48	51	43	45	36	46	40	43	40	30	28
LQ	E	14	16	15	E	E G 15	25	32	35	40	40	42	40	U 34	E G 28	G	33	30	24	20	18	16	17	E

AUG. 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	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 15	E S 15	14	13	E S 15	15	15	15	18	15	26	25	26	26	16	15	15	16	14	14	E S 15	E S 15	E S 15	E S 15
2	E S 15	13	13	14	14	13	15	15	15	16	26	26	26	25	16	16	15	14	15	14	E S 15	12	E S 15	E S 15
3	12	12	14	13	13	14	14	16	15	16	23	E S 30	26	26	26	15	15	14	13	12	E S 15	E S 15	E S 15	E S 15
4	E S 15	14	12	E S 15	13	14	14	15	15	26	29	25	28	25	26	15	15	14	14	12	13	12	E S 15	13
5	12	E S 15	E S 15	E S 15	14	14	14	15	15	17	28	19	18	22	15	14	15	15	14	E S 15	E S 15	E S 15	13	13
6	E S 15	13	12	13	13	15	14	15	15	15	23	18	25	25	15	15	15	14	14	E S 15	E S 15	E S 15	E S 15	13
7	E S 15	13	E S 15	13	E S 15	14	15	15	15	15	25	26	24	19	22	26	15	15	14	E S 15	E S 15	14	12	13
8	13	E S 15	13	13	13	14	14	15	15	26	15	22	26	27	15	16	15	14	14	12	14	13	E S 15	13
9	13	13	13	14	12	14	14	14	15	25	25	26	26	27	25	19	16	15	15	13	E S 15	E S 15	14	14
10	E S 15	13	13	13	13	15	15	15	15	18	25	28	30	26	19	15	15	15	14	E S 15	E S 15	E S 15	14	13
11	14	14	14	13	E S 15	13	14	15	15	18	20	25	28	33	C	C	15	15	14	E S 15	E S 15	E S 15	E S 15	14
12	14	14	14	12	13	14	15	15	19	40	39	27	25	29	40	25	15	15	15	14	14	E S 15	E S 15	E S 15
13	E S 15	E S 15	E S 15	13	E S 15	12	17	17	17	25	30	28	44	25	25	15	15	15	15	13	14	E S 15	14	E S 15
14	E S 15	14	14	14	14	15	15	15	16	29	36	34	24	40	25	24	25	15	15	14	14	E S 15	E S 15	E S 15
15	E S 15	13	14	E S 15	E S 15	15	15	16	21	25	26	26	26	31	26	22	15	15	14	12	E S 15	E S 15	12	14
16	13	12	E S 15	12	12	13	15	15	20	42	26	32	26	26	26	31	19	15	14	14	E S 15	E S 15	13	13
17	13	14	13	12	13	14	14	15	15	25	26	28	27	29	25	15	15	15	15	13	E S 15	E S 15	E S 15	13
18	14	13	13	13	13	15	15	15	15	15	16	22	25	26	20	15	14	14	14	13	14	12	12	E S 15
19	13	E S 15	13	14	12	13	14	14	16	21	19	26	23	22	16	19	15	14	14	12	11	E S 15	13	E S 15
20	14	14	13	12	12	15	14	15	16	25	25	27	25	29	30	15	14	15	15	E S 15	13	E S 15	E S 15	14
21	14	13	13	13	12	15	15	15	15	15	25	26	25	25	19	15	15	15	14	14	E S 15	E S 15	E S 15	E S 15
22	13	E S 15	14	14	E S 15	15	15	15	15	15	26	26	34	19	18	15	15	14	14	E S 15	14	12	12	13
23	12	13	13	14	12	12	14	14	14	15	27	24	22	26	27	14	15	13	14	E S 15	E S 15	12	14	12
24	12	13	12	13	13	14	15	15	15	22	25	25	25	25	25	19	15	15	14	E S 15	E S 15	E S 15	E S 15	13
25	E S 15	E S 15	E S 15	E S 15	E S 15	13	14	15	15	15	15	19	29	26	29	15	15	15	13	E S 15	13	E S 15	E S 15	13
26	E S 15	13	E S 15	13	E S 15	14	14	15	15	15	19	23	23	23	26	15	14	15	15	14	14	E S 15	E S 15	13
27	13	E S 15	E S 15	E S 15	E S 15	14	15	15	15	15	25	18	26	15	15	15	15	14	13	12	13	13	13	13
28	E S 15	13	12	E S 15	13	14	14	14	14	25	15	15	20	15	19	15	15	14	14	E S 15	E S 15	E S 15	13	E S 15
29	E S 15	E S 15	13	E S 15	E S 15	13	14	15	15	25	26	29	26	26	28	15	15	14	14	13	14	13	14	13
30	14	13	13	13	13	13	14	14	15	15	19	19	26	15	28	15	14	14	13	12	13	E S 15	E S 15	E S 15
31	12	14	13	13	13	13	14	14	15	15	16	15	26	25	17	15	15	14	13	13	12	13	13	E S 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31
MED	13	14	13	13	12	14	14	15	15	18	25	26	26	26	25	15	15	15	14	13	E S 15	E S 15	E S 15	14
UQ	E S 15	E S 15	14	14	E S 15	15	15	15	16	25	26	26	26	26	26	19	15	15	14	E S 15	E S 15	E S 15	E S 15	E S 15
LQ	13	13	13	13	13	13	14	15	15	15	20	22	25	24	17	15	15	14	14	13	14	12	13	13

The Radio Research Laboratories, Japan

AUG. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4' N. Long. 139° 29·3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	I_{270}^{B}	J_{275}^{B}	280	280	275	255	270	290	J_{325}^{B}	285	270	280	275	290	285	290	300	305	A	A	290	J_{285}^{B}	S_{290}	280
2	$_{285}^{E}$	$_{270}^{E}$	J_{270}^{E}	F	$_{325}^{Z}$	335	310	325	290	295	280	255	270	265	285	290	290	295	I_{300}^{A}	305	280	280	F	F
3	U_{285}^{E}	$_{280}^{E}$	295	285	285	305	330	300	325	330	J_{305}^{B}	290	270	285	285	275	285	290	J_{295}^{B}	320	295	280	300	J_{285}^{B}
4	$_{280}^{E}$	285	$_{295}^{B}$	$_{270}^{E}$	280	300	305	305	315	330	305	290	285	280	290	290	295	290	300	295	305	290	$_{280}^{E}$	285
5	270	265	290	285	310	330	310	320	315	300	300	275	275	295	295	305	300	290	305	310	275	F	F	A
6	A	F	F	F	$_{260}^{E}$	$_{295}^{E}$	$_{290}^{E}$	340	335	295	300	280	295	285	290	280	285	290	305	310	310	I_{290}^{B}	295	275
7	270	285	F	280	290	315	310	355	290	305	270	275	305	285	300	285	285	285	S_{310}	295	305	275	295	275
8	270	$_{255}^{S}$	270	270	$_{270}^{E}$	$_{315}^{E}$	I_{330}^{A}	335	A	295	290	290	305	270	275	270	300	310	305	290	285	280	270	280
9	295	310	265	265	J_{270}^{E}	280	300	325	345	305	I_{285}^{A}	280	270	265	290	315	295	300	300	300	295	275	265	$_{270}^{F}$
10	F	F	270	290	I_{290}^{A}	315	I_{320}^{B}	350	330	A	310	A	A	295	305	310	305	300	I_{290}^{B}	I_{290}^{A}	I_{290}^{A}	F	F	F
11	I_{280}^{B}	285	295	$_{295}^{B}$	$_{270}^{E}$	270	300	J_{325}^{B}	320	290	295	285	275	285	C	C	300	325	335	320	270	$_{250}^{E}$	$_{290}^{E}$	I_{290}^{B}
12	295	290	275	290	295	J_{310}^{B}	320	315	305	310	305	285	275	290	310	290	290	300	305	295	300	F	$_{295}^{E}$	F
13	290	280	295	280	295	305	320	325	310	290	300	285	295	280	285	305	315	305	320	300	275	285	265	275
14	275	285	295	260	305	290	285	305	335	340	I_{290}^{B}	I_{290}^{A}	I_{285}^{B}	R	290	290	290	315	315	315	290	275	280	F
15	F	F	$_{300}^{E}$	$_{300}^{E}$	300	310	310	265	340	J_{315}^{B}	310	290	285	275	300	300	305	295	295	310	310	260	270	280
16	280	280	280	290	295	290	320	345	330	300	295	280	295	280	J_{295}^{B}	295	305	315	315	315	285	I_{260}^{A}	F	A
17	$_{275}^{E}$	$_{280}^{E}$	285	$_{295}^{E}$	275	280	315	325	300	300	I_{255}^{B}	240	285	285	235	240	270	315	295	275	I_{275}^{A}	I_{295}^{A}	280	255
18	285	275	280	275	$_{265}^{E}$	235	315	J_{305}^{B}	315	295	275	315	300	295	310	315	305	305	315	$_{305}^{S}$	275	$_{285}^{S}$	275	265
19	265	270	265	265	245	245	270	295	300	290	275	265	270	295	305	300	310	305	315	290	280	280	270	265
20	$_{275}^{E}$	F	285	270	$_{275}^{E}$	300	310	J_{305}^{B}	310	315	A	285	280	285	300	310	310	310	305	300	290	280	275	275
21	270	F	295	305	290	285	310	310	300	315	310	295	280	280	285	290	305	305	310	305	270	I_{280}^{B}	265	270
22	$_{275}^{E}$	275	295	285	280	290	330	315	295	305	285	I_{270}^{A}	285	295	I_{300}^{A}	300	295	290	300	290	300	300	J_{310}^{B}	265
23	260	$_{265}^{E}$	275	275	290	300	$_{325}^{S}$	300	335	325	310	295	280	290	305	305	305	300	300	300	280	$_{265}^{S}$	280	J_{285}^{S}
24	285	285	285	295	270	280	345	330	335	350	290	290	275	290	J_{295}^{B}	300	300	310	290	I_{295}^{A}	300	280	275	F
25	280	280	290	295	285	270	320	320	320	290	285	290	285	280	290	300	315	300	310	$_{295}^{B}$	280	280	265	255
26	250	260	F	295	325	265	285	255	275	305	240	I_{270}^{A}	285	295	290	295	295	295	300	310	270	F	$_{255}^{E}$	260
27	245	260	280	270	265	280	310	320	335	305	285	315	305	300	310	305	310	305	310	305	285	260	270	J_{280}^{B}
28	270	280	275	265	270	265	275	265	310	315	275	295	315	285	315	305	I_{305}^{A}	A	310	300	305	260	275	265
29	270	275	250	275	290	300	315	315	300	300	265	280	280	295	290	310	315	305	320	290	$_{260}^{E}$	$_{255}^{E}$	280	300
30	A	A	285	I_{290}^{A}	A	290	J_{320}^{B}	320	320	290	280	280	295	285	300	310	305	300	310	310	305	290	285	295
31	285	280	$_{290}^{F}$	$_{265}^{F}$	270	F	305	325	310	310	310	310	J_{285}^{B}	285	290	300	310	A	A	A	290	$_{285}^{B}$	275	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	25	28	29	30	30	31	31	30	30	30	30	30	30	30	30	31	29	29	29	31	27	27	24
MED	275	280	285	280	282	290	310	320	315	305	290	285	285	285	292	300	300	300	305	300	290	280	275	275
UQ	285	285	295	290	295	305	320	325	330	315	305	290	295	295	300	305	305	305	310	310	300	285	288	282
LQ	270	270	275	270	270	280	302	305	300	295	275	280	275	280	290	290	295	295	300	295	278	270	270	265

AUG. 1970 | M(3000)F2 (0.01)

IONOSPHERIC DATA

AUG. 1970 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	L	L	L 395	L 370	L 375	L	A	A	360	A	A	A	A					
2									A	A	380	A	A	A	A	A	L	L	A					
3									A	L	L	L	A	365	345	A	A	L	L					
4							L	L	L	395	L 400	L	380	L 365	390	350	L 335	L	L					
5								L 365	L 360	L	L 385	L	370	365	A	L 365	L	A	L					
6							L	L	L	A	A	A	390	L 385	360	345	L 350	L						
7							L		L	L	L	L	A	A	L 365	A	A	A	A					
8							A	A	A	A	A	A	A	A	A	A	355	L 350	L					
9						L	L	L 360	L	L 370	A	390	380	380	380	L 355	L	L	A					
10								L	A	A	A	A	A	R 355	L 355	A	L 365	L	A					
11							L	L	L	A	350	A	L 350	375	C	C	A	L						
12							L	L	L	A	A	A	A	375	380	L 340	L 355	L						
13							L	L	L 415	L 405	400	L 360	L 380	A	A	L 385	L	L						
14							L	L 365	390	R 390	L 335	A	R	R	A	L 355	L 360	L						
15							L	L	L	L 375	L 400	L	370	L 335	L 340	L 355	L 335	L						
16							L	L	L	L	L 395	345	360	L 350	355	L 345	L 350	L						
17							L	L		A	A	A	A	L 340	340	325	L 340	L						
18							L	L	L 365	L	L	390	L 390	L 355	L 360	L 400	L	L						
19						L 455	A	A	A	370	375	390	380	380	L	L 365	L	A						
20								A	L 355	L 370	A	380	370	A	R	L 415	L	L						
21								L	L	375	A	385	L 375	L 355	L 365	L	L 365	L						
22							L	L	L	L 380	A	A	L 340	A	A	365	L							
23								L	L	L	A	A	L 370	L 325	L 350	L 355	L 340							
24							L	L	L	L	410	375	A	A	A	L	A	L						
25							L	L	A	L 345	A	A	A	A	L 340	L	A	L						
26								L 335	A	A	385	A	385	370	365	R 370	L 365	L						
27							L	L	U L 390	U L 360	L 385	380	L 375	355	L 365	L	L	L	A					
28						L	L	L 300	360	365	375	335	380	440	L 345	L 355	A	A						
29							L	L	L	L	H 350	355	365	360	L	L	U L 350							
30									L	L	L	L	L 340	L 355	L	L 350	U L 365							
31								L	L	L	A	A	A	L 355	L	L	L 335	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1		5	8	13	15	11	20	20	18	19	14	1						
MED						L 455		L 360	L 378	L 370	L 385	L 380	L 372	L 362	L 360	L 355	L 352	L 350						
UQ								L 365	L 392	L 380	L 398	L 388	L 380	L 375	L 365	L 365	L 365							
LQ								L 335	L 360	L 370	L 375	L 358	L 362	L 355	L 345	L 348	L 340							

The Radio Research Laboratories. Japan

AUG. 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

AUG. 1970 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							290	260	250	330	305	320	370	320	340	330	310	A	A					
2									350	320 A	365	370	350	370	320	300	280	290	A					
3									260	270	320	355	385	325	325	340	310	300	275					
4							270	275	255	275	295	310	370	360	335	325	330	290	270					
5								260	295	310	290	360	375	320	310	290	300	330 A	270					
6							290	250	250	350	290	300	310	340	320	340	320	295						
7							280		310	300	360	340	305	325	300	320	I A 315	330	270					
8							A	275	290	350 A	305	325	I A 310	370	355	360 A	280	265	275					
9						290	290	270	270	330	I A 350	360	400	360	335	285	300	290	245					
10							250	250	260	A	340 A	A	A	345	300	295	290	280	I A 325					
11							295	260	285	340	315	340	310	315	C	C	245	270						
12							275	280	290	310	310	300	350	340	290	310	300	265						
13							260	260	260	280	300	310	320	340	340	300	280	285						
14							270	290	265	260	380	I A 330	350	I B 350	325	310	305	280						
15							260	280	250	305	300	345	355	355	310	310	290	280						
16							270	240	270	320	285	355	320	310	320	290	280	270						
17							260	250		295	360 A	430	290	315	375	415	315	250						
18							275	250	290	300	310	300	280	330	305	290	290	275						
19						430	380	320	320	360	440	440	395	325	310	330	300	295						
20								285	280	290	A	375	340	340	315	300	300	290						
21								280	290	285	290	310	340	350	325	300	290	285						
22							250	300	250	295	290	I A 360	330	305	I A 300	300	300							
23								260	275	275	300	330	345	320	300	300	280							
24							225	255	270	255	300	320	305	320	315	285	340 A	280						
25							260	270	260	350	350 A	320	330	350	320	290	290	280						
26								390	380	310	540	395	360	375	365	375	340	290						
27							250	270	250	270	310	290	310	320	310	290	270	280	E A 300					
28						345	300	400	300	290	390	360	315	310	320	320	I A 300	I A 295						
29							260	280	250	310	410	365	360	325	325	305	280							
30									240	310	330	300	310	315	310	290	280							
31								275	300	280	295	280 A	355	355	330	310	295	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	21	27	30	30	30	30	30	31	30	30	31	25	8					
MED						345	270	270	270	302	310	335	340	330	320	302	300	285	271					
UQ						388	290	280	290	320	360	360	360	350	330	325	308	290	282					
LQ						318	260	260	255	280	300	310	310	320	310	290	280	280	270					

AUG. 1970 | H'F2 (KM)

IONOSPHERIC DATA

AUG. 1970 | H'F (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4' N. Long. 139° 29·3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	300	300	290	290	310	250	210	210	200	180	200	I 250 A	I 240 A	250	I 225 A	A	A	A	A	300 A	300	245	260
2	290	300	290	255	230	220	245	245	I 235 A	I 255 A	180	I 235 A	A	A	A	A	220	255	A	240	310 A	280	340	300
3	255	275	255	250	270	240	220	220	I 250 A	240	220	A	A	195	280	A	A	260	240	240	255	300 A	250	280
4	280	260	280	300	270	255	240	210	220	195	190	230	190	170	205	210	220	240	240	255	245	245	275	270
5	320	310	290	260	240	240	225	220	200	220	200	280 A	195	245 A	I 225 A	220	220	I 245 A	260	250	310 A	A	A	A
6	A	290 A	270	310	300	255	220	A	A	A	A	I 230 A	210	200	240	240	240	240	265	245	240	290	270	250
7	310	315	305	310	300	250	250	240	250	230	210	240	A	A	250	A	A	A	A	275	250	250	250	270
8	310	310	310	300	275	240	I 255 A	A	A	A	A	A	A	A	A	A	230	225	260	270	270	250	320	310
9	250	240	280	300	290	270 A	240	250	200	250	I 210 A	230	210	210	200 H	250 A	240	240	I 250 A	260	250	290	300	300
10	325	305	290	280	I 315 A	255	240	200	A	A	A	A	A	210	240	I 230 A	240	250	A	295	I 330 A	290	300	290
11	260	260	240	250	260	300	240	250	I 255 A	I 250 A	200	A	280 A	230	C	C	A	250	255	250	240	340	300	240
12	260	275	275	260	280	265	240	240	240	A	A	I 240 A	A	240	220	210 H	240	250	265	240	240	340	290	240
13	250	275	270	290	280	270	250	220	210	200	200	240	225	A	A	240	250	260	255	240	260	255	295	295
14	290	290	260	250	240	260	240	240	250 A	220	195 H	A	R	R	A	240	240	240	255	240	240	250	285	305
15	300	285	245	260	300	285	240	240	240	195	195	220	200	220	225	230	250	230	260	240	245	I 265 A	300	280
16	275	280	280	275	250	270	245	205 H	220	200 H	180	255	225	255	240	245	250	I 240 A	250	220	240	A	350	I 295 A
17	295	300	270	275	310	275	250 A	220	250 A	A	A	A	A	240	240	240	240	250	255	240	A	300	300	345
18	290	310	300	290	340	290	245	240	240	250 A	230	205	205	230	235	210	245	255 A	260	I 270 A	I 300 A	280	300	310
19	340	290	290	310	370	350	A	A	A	220	230	200	205	205	230	210	230	I 275 A	250	260	270	280	295	I 350 A
20	300	295	280	310	290	255	245	I 250 A	245	210	I 210 A	200	180 H	A	A	240	240	240	260	250	250	300	300	295
21	300	295	245	250	245	270	290	240	240	240	I 265 A	210	195	200	240	240	240	240	250	240	290	290	290	285
22	290	265	280	290	290	250	240	240	240	230	I 255 A	I 265 A	270 A	A	A	220	225	245	250	255	270	250	230	270
23	310	295	340 A	320	320 A	250	230 A	245	255	210	A	A	195	260	225	220	210	250	250	270 A	E 320 A	370 A	290	270
24	270	290	275	225	300	275	230	220	220	250	200	210	A	A	I 255 A	270 A	A	250	265	A	260	295	290	300
25	300	295	290	290	300	295	240	240	A	280	A	I 260 A	A	A	220	250	I 250 A	250	250	245	240	260	290	350
26	340	340	290	240	240	320	340	240	A	A	350 A	A	200	240	230	240	240	260	285	245	290	345	E 450 A	310
27	340	300	260	245	300	300	240	250	210	210	200	195	210	210	205	220	230	275	I 265 A	255	255	320 A	290	270
28	290	300	285	275	280	300	255	230	220	240	200	270	240	200	240	240	A	A	260	250	220	290	325	330
29	300	295	315	300	265	275	240	240	210	255	225 H	205	210	205	210 H	225	250	260	I 250 A	280	350 A	330	295	I 285 A
30	A	A	310 A	I 300 A	I 320 A	320 A	250 A	225	225	250 A	240 A	I 200 A	220	205	225	220	230	250	255	250	245	245	275	270
31	300 A	290	280	310	310	280	240	240	260 A	A	A	A	250 A	220	I 265 A	245	A	A	A	A	280	300 A	290 A	275
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	31	31	31	31	30	28	25	24	23	22	21	22	24	26	24	27	26	28	30	29	30	30
MED	295	295	280	290	290	270	240	240	240	230	200	230	210	215	232	235	240	250	255	250	256	290	291	288
UQ	310	300	290	300	300	292	250	240	250	250	228	240 A	225	240	240	240	242	255	260	260	290	300	300	305
LQ	280	280	270	258	268	255	240	220	220	210	198	205	200	205	222	220	230	240	250	240	245	260	285	270

AUG. 1970 | H'F (KM)

IONOSPHERIC DATA

AUG. 1970 | H'ES (KM) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	100	100	120	120	115	110	110	110	110	110	110	140	125	125	115	115	110	110	105	105	110	100
2	100	100	100	100	100	120	110	110	105	105	105	105	100	100	110	115	130	115	110	105	105	105	105	105
3	105	100	105	100	105	G	120	110	110	110	110	110	115	G	125	110	110	110	110	105	105	105	100	100
4	100	100	100	100	100	100	110	105	105	105	105	100	G	105	G	100	105	130	120	100	100	100	105	100
5	100	100	95	95	100	150	130	130	110	110	110	105	105	110	110	140	130	115	110	110	110	110	105	105
6	105	100	100	100	100	130	105	115	110	110	110	105	105	110	100	100	105	G	100	100	100	100	100	100
7	100	100	100	100	100	100	100	100	115	120	125	120	120	115	115	110	110	110	105	105	105	105	105	105
8	100	100	100	100	105	150	115	110	110	110	110	110	110	110	105	105	105	100	100	110	110	100	105	105
9	105	105	105	105	105	100	G	110	110	110	105	110	G	G	130	120	G	G	120	110	100	100	100	110
10	100	100	100	100	100	100	110	110	105	105	105	105	105	110	130	130	120	110	110	105	110	100	100	100
11	100	B	100	100	100	110	110	110	110	110	110	110	150	110	C	C	140	130	120	115	100	110	110	110
12	100	100	100	100	100	100	100	115	110	110	110	110	110	115	B	G	130	115	110	110	100	110	100	100
13	100	100	100	100	S	110	110	100	100	110	110	110	B	130	140	140	115	110	110	105	100	100	100	100
14	100	100	100	100	B	G	130	G	110	110	110	100	100	100	100	100	100	130	110	100	100	100	100	100
15	100	100	100	100	100	100	100	100	100	100	G	110	G	G	G	130	125	110	110	105	105	105	105	100
16	100	100	100	100	105	115	G	105	105	B	105	G	125	115	115	G	135	115	110	105	105	105	105	105
17	100	100	100	100	105	105	105	105	100	100	100	100	100	G	G	G	G	130	110	110	105	100	105	100
18	100	100	100	100	100	105	130	120	115	110	100	100	100	105	G	G	155	120	115	110	105	105	105	105
19	105	120	105	105	105	130	125	115	115	110	110	110	105	100	105	G	150	125	115	115	110	105	105	105
20	100	100	100	100	100	105	145	115	110	105	100	100	100	100	100	G	G	140	G	100	110	100	100	100
21	105	100	100	100	100	100	130	130	115	105	100	100	110	105	110	110	110	110	100	100	100	100	100	100
22	100	110	100	100	100	100	G	G	135	115	110	105	105	105	105	145	125	125	105	125	105	100	100	105
23	105	100	100	100	100	100	125	120	115	110	110	105	105	110	105	105	110	110	105	100	100	100	100	100
24	100	100	100	95	100	105	135	130	100	105	100	110	110	110	105	110	110	110	100	100	100	100	100	100
25	100	100	100	100	100	100	100	120	110	110	110	105	100	100	110	110	110	110	G	100	100	100	100	100
26	100	100	100	100	100	100	140	130	110	110	105	110	100	100	100	G	G	140	110	110	100	100	100	100
27	100	100	100	100	S	130	130	110	110	115	105	105	105	G	G	G	155	120	115	110	105	105	105	105
28	100	100	95	100	100	120	125	115	G	135	G	100	100	100	G	120	110	110	110	100	100	100	100	100
29	100	100	100	S	110	110	110	110	120	110	110	110	110	130	130	130	130	130	125	115	110	120	110	105
30	105	105	100	100	100	100	100	150	125	110	110	110	110	120	G	G	125	110	105	105	B	105	100	100
31	100	100	100	100	100	100	140	130	120	115	115	110	110	110	110	115	110	105	105	105	100	100	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	30	28	29	28	29	30	30	29	30	27	26	22	21	27	29	29	31	30	31	31	31
MED	100	100	100	100	100	105	115	110	110	110	110	108	105	110	110	115	115	115	110	105	105	100	100	100
UQ	100	100	100	100	105	120	130	120	115	110	110	110	110	115	125	130	130	125	110	110	105	105	105	105
LQ	100	100	100	100	100	100	108	110	105	105	105	105	100	100	105	110	110	110	105	100	100	100	100	100

AUG. 1970 | H'ES (KM)

IONOSPHERIC DATA

AUG. 1970 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2	F4	F4	L1	H2	C2	C1	C1	C1	L1	C1	C2	H1	H2	H2	C3	C4	C4	F4	F4	F3	F1	F3
2	F4	F3	F2	F1	F1	C2	C3	C3	C3	C2	C1	C2	L2	L2	C L 22	C L 22	H L 11	C2	C4	F4	F4	F4	F4	F4
3	F3	F6	F1	F3	F1		C3	C2	C L 21	C2	C1	C1	C1		H1	C2	C2	C2	C2	F4	F4	F5	F2	F3
4	F2	F2	F4	F2	F2	L1	C3	L2	L2	L2	L2	L2		L1		L1	L1	H1	C2	F2	F2	F2	F3	F4
5	F4	F2	F3	F2	F1	H1	H1	H1	C1	C1	C1	C2	L1	C1	C2	H L 11	H L 21	C3	C3	F5	F3	F5	F6	F5
6	F5	F3	F3	F3	F3	C L 11	L2	C3	C3	C1	C2	C2	C1	C1	C2	L2	L2		L3	F3	F1	F4	F4	F1
7	F4	F4	F4	F3	F3	L3	L2	L3	H L 11	H L 22	H L 11	H1	H2	C2	C2	C2	C3	C3	C4	F4	F6	F5	F5	F3
8	F4	F4	F4	F4	F1	H2	C4	C3	C3	C2	C2	C2	C2	C3	C2	C3	C2	L2	L3	F F 34	F4	F4	F4	F4
9	F3	F3	F3	F4	F4	L4		C2	C1	C2	C2	L1			H1	H1			H1	F3	F3	F2	F2	F2
10	F3	F2	F2	F3	F3	L2	L1	L1	C2	C2	C2	C2	C2	L1	H1	H1	H2	C2	C5	F2	F4	F3	F3	F4
11	F3		F2	F2	F1	L2	C2	C2	C2	C2	C1	C2	H L 11	C1			H2	H1	H4	F2	F2	F3	F3	F3
12	F2	F3	F4	F3	F3	L3	L2	C1	C1	C1	C1	C2	C2	C1			H1	C2	L2	F1	F3	F2	F3	F2
13	F2	F2	F2	F2		L1	L1	L2	C2	C1	C1	C1		H1	H1	H1	C1	C2	L2	F3	F2	F1	F2	F1
14	F2	F3	F2	F2			H1		C2	C1	C1	C2	C1	C1	L2	L1	L1	H L 11	L2	F3	F3	F2	F3	F2
15	F3	F3	F2	F2	F2	L2	L2	L2	L1	L1		C1				H1	H2	C3	C3	F4	F4	F4	F2	F1
16	F3	F6	F4	F4	F3	C1		L2	L1		L1		H1	C1	C1		H1	C2	C4	F4	F4	F4	F3	F6
17	F6	F3	F2	F6	F3	L3	L4	L2	L2	L3	L2	L2	L2					H2	C2	F2	F3	F3	F3	F2
18	F2	F3	F2	F2	F3	L1	H1	H1	C1	C L 21	L C 21	L1	L2	L1			H1	H3	C4	F6	F4	F4	F4	F4
19	F5	F1	F2	F1	F6	H4	H3	C4	C2	C1	C2	C1	L1	L1	L1		H1	H2	C4	F4	F6	F3	F2	F4
20	F1	F1	F4	F4	F3	L1	H L 11	C3	C1	C2	C2	C1	C1	L1	L1			H1		F2	F F 12	F3	F3	F2
21	F2	F2	F2	F3	F2	L1	H2	H1	C1	C2	C2	C1	C1	C1	C1	C1	C1	C2	L2	F1	F2	F2	F1	F1
22	F1	F1	F2	F2	F2	L1			H1	C2	C2	C2	L2	L2	L3	H1	H1	H1	L2	F1	F3	F3	F3	F1
23	F2	F1	F5	F4	F6	L4	H L 22	H3	C3	C2	C2	C2	L1	C1	C1	L2	C2	C4	C3	F6	F6	F4	F5	F2
24	F3	F4	F2	F2	F3	L1	H1	H1	L2	L1	L1	L1	C2	C2	C2	C2	C3	C1	L2	F4	F4	F4	F3	F3
25	F4	F3	F2	F3	F4	L2	L1	H1	C2	C2	C3	C1	L2	L2	L1	C2	C2	L2		F1	F1	F1	F2	F4
26	F3	F4	F2	F2	F1	L1	H1	H1	C2	C2	C1	C2	L1	L2	L1			H1	C2	F2	F3	F3	F4	F4
27	F3	F2	F2	F1		H1	H1	C2	C1	C1	C2	C1	L1				H1	H4	C4	F4	F4	F4	F4	F2
28	F2	F3	F2	F2	F1	C1	H1	C3		H1		L2	L1	L1		H1	C2	C3	L3	F3	F3	F2	F4	F3
29	F3	F2	F2		F1	L2	L1	C2	H1	C2	C1	C1	C1	H1	H1	H1	H L 11	H L 22	H L 44	F4	F3	F F 13	F2	F4
30	F4	F4	F3	F4	F5	L4	L3	H L 12	H L 12	C2	C2	C2	C1	H1			H2	C3	C4	F4		F2	F3	F3
31	F3	F3	F3	F3	F2	L1	H L 11	H2	H L 32	C2	C2	C2	C2	C1	C2	C2	C4	C5	C6	F4	F4	F4	F2	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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AUG. 1970 | TYPES OF ES

IONOSPHERIC DATA

AUG. 1970 | HPF2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4' N. Long. 139° 29·3' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Day \ Hour	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	I 400 B	J 400 B	390	390	390	410	300	350	J 290 B	360	380	360	380	350	350	350	320	A	A	A	330	J 360 B	330 S	360
2	355 E	385 E	J 380 E	F	290 Z	260	300	275	350	345	370	410	380	400	350	350	320	320	I 310 A	310	360	370	F	F
3	J 350 E	370 E	345	345	350	295	260	315	280	280	J 320 B	355	390	350	355	370	350	350	J 330 B	290	310	355	320	J 355 B
4	355 E	350	330 B	370 E	355	315	310	315	290	290	310	340	370	360	350	350	350	320	310	320	310	340	365 E	355
5	390	400	355	350	310	280	295	280	300	320	310	370	375	340	330	310	320	345	310	310	380	F	F	A
6	A	F	F	F	385 E	310 E	320 E	260	265	360	335	350	340	390	360	360	380	370	310	350	300	I 345 B	350	380
7	390	390	F	390	350	300	340	250	350	315	380	375	320	350	315	350	350	350	310 S	310	310	350	320	360
8	385	385 S	380	390	375 E	290 E	I 280 A	280	A	A	330	350	A	390	380	370	310	300	320	345	355	355	400	375
9	335	300	390	370	J 380 E	350	310	280	270	350	I 380 A	390	410	400	370	300	350	330	320	350	340	400	390	400 E
10	F	F	390	380	I 350 A	300	I 310 B	260	300	A	A	A	A	360	340	330	320	340	I 365 B	I 370 A	I 380 A	F	F	F
11	I 375 B	380	350	350 B	380 E	390	350	J 290 B	300	370	340	380	390	380	C	C	350	300	280	300	380	J 430 E	370 E	I 360 B
12	360	390	390	350	360	J 320 B	300	300	330	315	310	350	400	350	300	360	360	340	350	300	300	F	350 E	F
13	350	390	390	350	350	350	300	290	300	350	330	350	350	340	350	340	300	315	300	350	390	380	400	350
14	390	380	350	340	340	340	340	310	280	275	I 375 B	I 350 A	I 385 B	R	350	370	350	300	300	300	340	390	390	F
15	F	F	340 E	350 E	340	340	310	300	265	J 310 B	310	350	360	370	330	320	320	320	325	300	300	390	395	370
16	370	370	370	350	340	330	290	260	280	330	310	365	340	350	J 350 B	340	315	300	295	290	340	I 360 A	F	A
17	370 E	370 E	340	320 E	370	340	300	270	310	315	I 430 B	460	350	370	500	460	390	300	340	390	I 400 A	I 360 A	390	415
18	380	390	390	390	400 E	430	300	J 290 B	300	330	355	310	305	340	315	300	315	310	300	320 S	375	355 S	370	390
19	400	380	380	395	445	450	400	330	320	360	G	440	400	340	330	340	310	315	300	345	370	370	380	400
20	385 E	F	350	360	375 E	320	300	J 300 B	300	300	A	380	390	370	350	325	310	310	340	350	370	350	380	390
21	400	F	340	300	390	340	340	300	340	300	300	340	390	380	350	350	310	340	300	340	400	I 375 B	390	390
22	400 E	390	350	390	390	350	290	300	340	310	340	I 380 A	370	330	I 315 A	320	320	330	310	350	320	330	J 300 B	395
23	400	400 E	380	380	340	310	275 S	280	280	285	305	350	360	350	320	320	315	310	320	310	375	405 S	360	J 355 S
24	350	350	335	320	395	350	250	290	280	260	380	340	390	350	J 360 B	320	I 325 A	300	350	I 310 A	310	400	400	F
25	390	390	350	350	390	390	300	300	300	370	360	350	350	390	350	340	300	300	300	350 B	350	390	390	400
26	450	400	F	310	300	400	380	440	400	330	G	I 405 A	380	360	370	360	350	350	340	330	380	F	A	400
27	440	400	380	390	400	380	325	300	265	295	350	300	320	330	310	310	300	310	I 300 A	315	345	405	380	J 360 B
28	390	380	355	380	375	395	370	410	300	300	400	370	320	390	320	340	I 320 A	A	300	350	340	400	400	400
29	390	400	400	400	380	345	310	310	330	320	410	370	370	340	345	310	300	310	290	330	400 E	400 E	355	I 335 A
30	A	A	350	I 350 A	A	355	J 290 B	270	270	340	360	350	330	355	325	310	310	310	305	310	310	335	350	330
31	350	350	325 E	375 E	370	F	305	290	305	290	305	300	J 355 B	360	350	320	310	A	A	A	320	350 B	370	355
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	25	28	29	30	30	31	31	30	29	27	30	29	30	30	30	31	28	29	29	31	27	26	24
MED	385	385	355	360	372	340	300	290	300	315	340	352	370	358	350	340	320	315	310	320	345	370	375	372
UQ	395	390	385	390	390	380	322	305	320	345	378	380	390	380	350	350	350	340	325	350	378	395	390	398
LQ	358	370	348	350	350	310	298	280	280	300	310	350	350	350	325	320	310	305	300	310	315	352	350	355

IONOSPHERIC DATA

AUG. 1970 | YPF2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4′ N. Long. 139° 29·3′ E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	I 100 R	J 100 R	100	100	110	110	110	100	J 100 R	85	95	100	80	95	100	95	80	A	A	A	90	J 90 R	S 80	90
2	90 F	85 F	J 95 F	F	Z 60	85	105	80	95	100	100	110	115	100	95	95	125	100	I 90 A	90	95	80	F	F
3	U 95 F	80 F	70	100	95	90	65	95	70	50	J 75 R	90	105	100	90	85	95	95	J 80 R	60	90	90	85	J 90 R
4	90 F	75	70 R	90 F	90	85	85	80	85	50	80	155	75	100	95	80	90	125	100	90	85	85	85 F	90
5	105	80	85	95	65	70	60	80	75	70	105	75	85	70	70	90	80	100	85	70	110	F	F	A
6	A	F	F	F	100 F	90 F	125 F	60	80	120	105	90	80	100	120	130	110	110	100	90	100	I 100 R	100	110
7	110	100	F	100	100	100	80	100	100	80	90	120	85	90	85	120	105	95	85 S	90	85	100	75	90
8	90	90 S	95	105	80 F	65 F	I 50 A	45	A	A	125	90	A	90	80	90	95	100	80	70	90	90	95	75
9	90	75	110	75	J 75 F	100	95	65	40	100	I 110 A	110	110	100	120	100	100	90	90	90	100	100	110	100 F
10	F	F	100	100	I 100 A	100	I 100 R	90	100	A	A	A	A	120	100	110	100	100	I 100 R	I 100 A	I 100 A	F	F	F
11	I 95 R	110	100	100 R	110 F	100	100	J 100 R	100	120	100	110	100	100	C	C	100	100	80	100	110	J 90 F	110 F	I 100 R
12	110	100	100	100	120	J 100 R	100	100	110	85	90	100	100	100	100	110	100	100	90	100	100	F	100 F	F
13	100	100	100	100	100	100	100	110	100	100	110	100	100	100	100	100	100	85	100	90	100	110	90	100
14	100	110	100	100	100	110	110	90	100	85	I 100 R	I 100 A	I 105 R	R	100	120	100	100	100	100	100	100	100	F
15	F	F	90 F	100 F	100	100	90	100	85	J 65 R	65	80	90	120	85	75	80	105	85	75	80	105	90	60
16	80	85	85	90	105	85	70	45	65	70	115	95	80	145	J 75 R	110	85	95	80	80	110	I 90 A	F	A
17	80 F	75 F	85	80 F	80	105	95	100	100	115	I 120 R	130	100	100	170	150	100	100	100	100	I 100 A	I 100 A	100	85
18	100	100	100	100	100 F	90	100	J 110 R	100	115	100	65	125	75	80	85	80	85	70	75 S	95	95 S	100	100
19	80	90	95	100	105	100	100	70	75	60	G	60	100	100	70	105	85	85	95	100	75	75	90	100
20	70 F	F	90	90	80 F	100	100	J 75 R	95	100	A	110	100	90	100	75	90	90	100	100	80	100	110	100
21	100	F	100	100	100	100	100	100	100	100	100	100	100	110	100	100	90	100	100	100	90	I 100 R	100	100
22	100 F	100	100	100	100	100	110	100	100	90	100	I 100 A	100	100	I 75 A	75	100	115	95	95	75	95	J 70 R	100
23	95	95 F	70	75	105	100	75 S	65	65	70	90	95	90	95	80	75	85	90	80	105	75	95 S	85	J 95 S
24	95	95	80	80	80	95	65	60	65	90	60	100	100	100	J 90 R	90	I 115 A	100	100	I 90 A	90	100	100	F
25	100	100	100	100	100	100	100	100	100	120	100	100	100	100	100	100	100	100	100	100 R	100	100	100	100
26	100	100	F	90	100	100	110	140	100	110	G	I 110 A	110	130	120	120	100	100	100	110	110	F	A	100
27	100	100	110	100	100	110	115	100	105	115	120	75	80	70	75	90	100	95	I 80 A	85	100	100	115	J 90 R
28	105	70	95	120	95	100	100	85	70	100	100	110	90	100	90	100	I 100 A	A	100	100	100	100	100	100
29	100	100	100	100	100	105	90	90	110	80	90	125	100	70	100	90	95	90	80	80	100 F	100 F	90	I 80 A
30	A	A	100	I 95 A	A	90	J 60 R	85	90	100	90	100	100	90	80	65	90	90	90	75	75	80	95	80
31	90	95	90 F	120 F	90	F	95	60	70	70	95	145	J 90 R	90	95	95	85	A	A	A	105	95 R	100	90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	25	28	29	30	30	31	31	30	29	27	30	29	30	30	30	31	28	29	29	31	27	26	24
MED	100	95	98	100	100	100	100	90	98	90	100	100	100	100	95	95	100	100	90	90	100	100	100	98
UQ	100	100	100	100	100	100	100	100	100	100	105	110	100	100	100	110	100	100	100	100	100	100	100	100
LQ	90	85	88	90	90	90	82	72	75	70	90	90	90	90	80	85	88	90	80	80	88	90	90	90

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AUG. 1970 | YPF2 (KM)

IONOSPHERIC DATA

AUG. 1970 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	U 71 S	F	U 73 S	I 70 S	69	67	U 75 S	I 80 C	I 82 C	88	91	99 S	Y 100 R	95	Y 100 R	101	Y 100 S	Y 101 S	97 S	I 92 S	80	77	J 81 S	J 88 S
2	85 S	81	82	84	79	43	53	65	76	76	73	86	101	114	125	Y 118 S	114 S	111 S	107	J 99 S	78	76	77	78
3	J 81 S	80	J 78 S	72 S	71	56	60	75	74	77	75	78	87	96	105	116 S	116 S	Y 124 S	125	115 S	Y 102 S	S	93 S	94 S
4	Y 102 S	81	79	J 91 S	I 85 S	75 S	75	89	86	81	73	72	75	85	89	85	89	96	90	89	I 86 S	76	70 S	I 74 S
5	78 S	77 S	74 S	70 S	59 S	56	63	77 S	76	78	78	71	80	94	95 S	88	87	86	89 R	86	73 S	75	S	S
6	S	81 S	66 S	F	61 S	60 S	77 S	84	68	75	J 78 R	I 91 A	85	89	102	106	107	111	113	114 S	108 S	89	81	82 S
7	I 85 S	I 80 S	77	65 S	56 S	57	89 S	70	71	72	73	88 R	90	94	101	99	101	108	109	100 S	I 91 S	U 85 S	67	65
8	66	64 S	64	67	I 65 S	I 64 S	71	68	70	77	80	I 83 A	86	I 89 A	103	Y 118 S	131	115 S	98	95 S	J 89 S	I 87 S	85 S	U 77 S
9	87 S	93 S	64	61 S	F	59 S	74	98	70	71	67	78	81	100	115	109	97	93	92 R	85	73 S	76 S	67	69
10	72	72 S	73 S	64	61	58	78 S	72	65	71	69	78	80	92	97 S	93	94 S	J 99 S	105	92	S	I 80 S	81	74
11	F	F	J 76 S	66	I 59 F	F 59	68 S	92 S	87	78	77	89 R	Y 103 R	110 R	Y 117 S	Y 122 S	Y 123 S	Y 125 S	107	83	J 76 S	J 74 S	78	I 78 S
12	J 75 S	72 S	67	59	56	F	61 S	75	87 S	77	74	70	74	91	96	I 87 R	92 R	Y 104 S	107	I 98 S	J 76 S	67	69	62 Z
13	F	64 S	61	F	55 F	54	59	72	74	78	90	J 88 R	98	95 R	101	110	110	110 S	I 112 S	Y 101 S	J 77 S	71	74 S	I 71 S
14	69 S	I 68 C	66	I 65 C	J 52 S	I 48 C	52	J 90 S	79	69	67	75	81	93 R	97	99	107	112	106	89	68	65 S	66	64 S
15	59	F	F	F	F	F	60 S	J 97 S	83	66	69	80	90	99	106	104	98 R	99 S	102 S	105 R	90	78	U 73 S	J 74 S
16	72	72	69 S	63	60	J 66 S	J 76 S	76	70	81	88	97	113 R	116	121 R	131 R	140	138 S	I 115 S	Y 100 S	J 87 S	76 S	68	70 S
17	J 66 S	72 S	72	63	50	47 S	60	67	81	86	66 H	85	112	115 R	97 S	112 S	135	124 S	95 S	75	70	69	I 60 A	61
18	68 S	63	55	56	51	48 S	69	78	I 78 C	79	98	123	100	87	97	100	96	97 S	91	89	83 S	79 S	U 76 S	74 S
19	72 S	68	68	61	58	58	61	75	73	73	85	93	103	116	124	118 S	113 R	Y 106 R	104 R	95 S	64	58	62	61
20	60 S	65 S	61	56	53 S	I 55 S	I 59 S	72	72	71	72	81	92 R	109	116 R	117	116	115	113 R	93 S	76 S	73 S	U 65 S	59
21	60 S	69 S	74	52 S	44 S	I 43 A	53 S	78	95 S	81	80	83 R	94	106	112	119	Y 122 S	Y 125 S	109	87	77 S	71 S	68	71 S
22	I 72 S	I 73 S	67 S	66	62	59	64	70	85	83	76	95	119	124	113	108	107	109	117	114 S	98 S	I 92 S	78	68
23	67 S	I 78 S	77	71	62 S	58	65 S	85	83	78	I 79 A	78	95	109	115	115	115 S	111	107	I 91 S	74	72	75	75
24	71	70 S	66	59	54	54	67	I 95 S	84	72	87	95	110	112	121	114	105	Y 101 S	111	108	J 82 S	72 S	75	79 S
25	72	U 70 S	71 S	67	54	J 54 S	59	81	90	73	85	102 R	102 R	Y 103 R	109	114	105	90 R	U 94 S	U 85 S	74	61 S	63	J 62 S
26	61	64 S	69	62	38	36	44	62 S	77 H	58	68	76	78	79	86	81	77	84	85	79	J 62 S	U 62 S	U 60 S	J 62 S
27	59 S	59 S	58	54	43	U 45 S	U 53 S	J 86 S	69	75	82	95	105	U 102 S	109	93	82	84	83	77	69	I 68 S	70 S	I 76 S
28	77 S	70 S	67	64	57	53	60 S	68	69	69 Z	68	80	84 R	85 R	90	93	87	U 86 S	91	U 95 S	60 S	56	55	S
29	S	J 66 S	63	60	56	52 S	60	74	71	77	75	89	103	109	112	106	92	87	J 98 S	76	J 64 S	60 S	S	S
30	C	65	59	49 S	47	47	59	72	70	73	I 80 R	88	94	105	111	118	113	110	107	I 106 S	U 92 S	83 S	80 S	77
31	J 65 S	60 S	59 S	58	56	48	57	92 S	84 S	90	74	77	I 83 A	86 R	98	105	104	102	94	94 S	I 89 S	I 77 S	66	65
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	30	28	29	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29	28
MED	72 S	70 S	68	64	56	55	61	76	76	77	76	85	94	99	105	108	105	106	105	93 S	77 S	74 S	70	72 S
UQ	76 S	78 S	74	67	61	59	70	86	84	78	81	92	102	109	114	116	114	112	109	100 S	89 S	78 S	78 S	77 S
LQ	68 S	65 S	64	59	53	48	59	72	70	72	72	78	84	92	97	99	95	96	94	86	73 S	68 S	66	64

AUG. 1970 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1970 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	C	U L 620	U L 560	570	530	560	540	540	A	A	A					
2							220	L	L	A	L	H 540	I A 540	530	A	A	A	L 480	L					
3								L	L	L	L	L	530	A	540	A	A	A	L					
4								L	L	490	L	L 500	L	H 530	H 510	520	L 500	U L 470	L					
5								A	L	A	490	L	520	500	L	L 500	L 490	L 460	A					
6								L	L	L 500	A	A	A	L 550	500	510	L 500	L	L					
7								L	L	L 500	500	520	510	A	L	L	A	460	A					
8								L	L	540	A	A	A	A	A	A	L 480	L	L					
9							L	A	L	L	L	A	L 540	500	L	L 510	L 480	L	L					
10								L	L	L 520	L	H 520	L 550	500	530	L	A	L 470	L					
11									A	A	L	A	A	A	A	A	A	450	A					
12								L	L	A	520	L 520	520	510	510	A	A	A	L					
13								L	L	L	L 510	L	510	L	510	510	490	L	L					
14								L	L	L	580	530	540	B	530	540	L	L	L					
15							L	L	L	L	560	L	540	550	540	540	L	L	L					
16								L	L	L	L	570	560	540	550	530	500	440	L					
17									L	L	L	550	510	550	H 550	H 500	490	L	L					
18									C	L	A	L 540	A	U 570	530	530	490	L	L					
19								L	L	A	A	A	A	530	A	L	500	L	L					
20									L	L 490	L	H 520	550	L	B	520	510	L	A					
21								L	L	L 490	L 570	L	570	L	550	520	A	A	L					
22								L	L	L 500	L	A	540	530	L	530	L	L 460	L					
23								L	L	A	A	A	L	540	530	L 520	L	A	A					
24								L	A	L	530	540	L	A	540	I A 520	L	A	A					
25									L	L	L	A	550	U L 570	530	L 520	L	L	L					
26								L	L 440	500	490	510	B 520	H 530	520	L 480	L	A	A					
27								L	L	U L 520	L	490	U L 530	U L 540	520	L	L	A						
28								L	L	U L 490	510	H 520	L 530	U 530	A	A	L	L	L					
29								L	L	L	L	560	L 530	530	A	A	I A 500	L						
30								L	L	A	A	A	L 550	I A 570	U L 550	L	L	L	L					
31								L	L	L 490	A	L	A	540	L 540	L	L	L	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1		1	13	11	16	22	22	20	18	12	8						
MED							220		440	L 500	520	525	535	535	530	520	L 495	L 460						
UQ										L 520	560	545	550	550	540	530	500	L 470						
LQ										L 490	505	520	520	530	520	L 510	490	455						

AUG. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	A	250	C	A	A	I A 380	I A 395	U R 400	375	365	335	300	245	A				
2						B	165	265	A	A	365	A	A	A	A	A	A	A	A	A				
3						B	190	270	305	330	350	I R 375	R 390	R 390	390	H 370	340	310	240	S				
4						S	A	265	310	345	I A 365	I A 375	I R 380	I R 390	390	370	340	310	A	S				
5						B	A	A	A	A	A	A	A	R	R	A	330	300	H 240	S				
6						S	170	260	305	335	360	370	A	A	A	A	A	305	230	S				
7						E	A	H 260	A	A	A	375	I R 380	380	370	360	320	290	210	S				
8						B	170	250	300	330	A	A	A	A	A	A	A	300	230	S				
9						S	A	A	A	A	A	A	R	380	375	350	320	280	220	B				
10						S	180	240	300	330	340	I A 350	365	380	370	360	330	H 290	230	S				
11							S	250	300	A	A	A	A	A	A	A	A	A	A	A				
12							160	250	300	I B 335	375	380	R 385	385	I A 365	360	335	300	240	S				
13							A	A	A	A	A	A	A	R	R	I R 365	330	305	I A 245	S				
14							H 205	H 265	H 300	340	A	A	R	B	I R 395	380	I B 360	320	240	A				
15							A	A	A	A	A	A	A	A	R	370	330	305	240	B				
16							160	250	300	B	A	A	R	R	R	B	350	300	240	S				
17							155	240	I A 300	I A 350	A	A	R	R	375	355	335	300	225	S				
18							S	A	C	I A 335	360	A	A	390	I A 375	360	335	300	I A 220	S				
19							170	255	305	330	350	A	A	A	A	A	A	300	230	B				
20							A	250	290	320	I A 340	I R 355	I R 375	B	B	365	340	300	A	S				
21							A	H 260	300	325	A	A	A	A	A	A	A	A	A	S				
22							A	H 265	300	330	350	A	A	390	380	360	A	A	A	S				
23							160	240	300	325	340	A	A	A	R	A	A	A	A	B				
24							S	230	300	A	A	A	R	A	A	355	325	A	A	S				
25							A	240	300	320	330	A	A	365	360	330	A	A	A	S				
26							160	245	295	A	A	R	A	R 365	I R 370	360	330	290	210	S				
27							140	245	290	320	350	360	370	370	380	370	340	280	200	B				
28							170	230	290	315	355	I A 370	370	385	380	365	335	290	220	S				
29							A	240	I A 295	330	355	365	370	370	360	330	310	H 300	220	S				
30							S	260	305	330	R 345	360	370	I A 375	375	340	330	290	195	S				
31							S	255	310	330	360	370	380	380	370	360	I A 320	A	A	S				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	14	26	23	20	17	13	12	16	18	22	22	23	21					
MED						E	168	250	300	330	350	370	378	380	375	360	332	300	230					
UQ							170	260	302	335	360	U 375	R 382	390	380	365	340	302	240					
LQ							160	240	300	325	345	360	370	372	370	355	330	290	220					

AUG. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	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	J_{26}^{X}	J_{28}^{X}	J_{37}^{X}	J_{20}^{X}	J_{31}^{X}	J_{25}^{X}	J_{29}^{X}	33	C	J_{88}^{X}	J_{79}^{X}	J_{47}^{X}	40	G	40	47	J_{53}^{X}	J_{51}^{X}	J_{57}^{X}	J_{35}^{X}	J_{28}^{X}	J_{82}^{X}	J_{63}^{X}	J_{36}^{X}
2	J_{33}^{X}	J_{27}^{X}	J_{36}^{X}	J_{26}^{X}	J_{23}^{X}	E_{15}^{B}	24	J_{52}^{X}	J_{73}^{X}	J_{88}^{X}	J_{52}^{X}	J_{95}^{X}	J_{80}^{X}	J_{50}^{X}	82^{M}	91^{M}	J_{87}^{X}	J_{47}^{X}	J_{37}^{X}	J_{32}^{X}	J_{29}^{X}	J_{28}^{X}	J_{29}^{X}	J_{29}^{X}
3	J_{51}^{X}	J_{52}^{X}	J_{26}^{X}	J_{35}^{X}	J_{29}^{X}	J_{27}^{X}	J_{27}^{X}	30	37	50	J_{81}^{X}	J_{66}^{X}	J_{62}^{X}	59	54	J_{67}^{X}	J_{82}^{X}	J_{66}^{X}	35	18	J_{14}^{S}	20	22	J_{43}^{X}
4	J_{35}^{X}	J_{26}^{X}	J_{29}^{X}	J_{28}^{X}	J_{30}^{X}	J_{35}^{X}	J_{29}^{X}	32	J_{30}^{G}	J_{69}^{X}	46	44	28^{G}	30^{G}	27^{G}	28^{G}	J_{34}^{G}	35	J_{66}^{X}	J_{50}^{X}	J_{21}^{X}	21	E_{15}^{S}	J_{36}^{X}
5	J_{31}^{X}	J_{23}^{X}	E_{14}^{S}	E_{12}^{B}	E_{15}^{B}	E_{14}^{B}	J_{41}^{X}	J_{63}^{X}	J_{86}^{X}	J_{129}^{X}	J_{83}^{X}	47	J_{40}^{X}	39^{G}	43	41	40	38	J_{53}^{X}	J_{75}^{X}	J_{28}^{X}	36	J_{33}^{X}	J_{51}^{X}
6	J_{85}^{X}	J_{41}^{X}	J_{30}^{X}	J_{30}^{X}	J_{31}^{X}	22	24	32	43	J_{51}^{X}	J_{89}^{X}	125	J_{88}^{X}	43	J_{45}^{X}	J_{41}^{X}	J_{47}^{X}	J_{48}^{X}	J_{42}^{X}	J_{62}^{X}	J_{34}^{X}	J_{30}^{X}	J_{62}^{X}	J_{88}^{X}
7	71	J_{86}^{X}	J_{64}^{X}	J_{40}^{X}	J_{49}^{X}	J_{34}^{X}	J_{27}^{X}	J_{29}^{X}	36	39	45	51	J_{65}^{X}	J_{76}^{X}	50	55	J_{53}^{X}	43	J_{40}^{X}	J_{35}^{X}	J_{34}^{X}	J_{61}^{X}	J_{35}^{X}	J_{22}^{X}
8	J_{30}^{X}	J_{32}^{X}	J_{35}^{X}	20	E_{15}^{B}	E_{15}^{B}	G	G	40	J_{50}^{X}	J_{55}^{X}	J_{108}^{X}	J_{88}^{X}	105	J_{70}^{X}	J_{71}^{X}	J_{57}^{X}	25^{G}	13^{G}	17	J_{17}^{X}	20	E_{15}^{S}	J_{39}^{X}
9	J_{64}^{X}	J_{34}^{X}	J_{24}^{X}	J_{29}^{X}	J_{60}^{X}	J_{29}^{X}	J_{45}^{X}	J_{58}^{X}	35	41	43	J_{64}^{X}	37^{G}	G	G	41	38	39	29	E_{15}^{B}	21	20	J_{43}^{X}	J_{61}^{X}
10	J_{29}^{X}	J_{25}^{X}	22	E_{15}^{B}	E	J_{28}^{X}	G	G	J_{50}^{X}	43	41	47	43	47	J_{58}^{X}	38	J_{52}^{X}	49	32	18	35^{M}	J_{61}^{X}	J_{29}^{X}	J_{35}^{X}
11	J_{30}^{X}	J_{40}^{X}	J_{61}^{X}	J_{44}^{X}	J_{31}^{X}	25	J_{41}^{X}	J_{75}^{X}	83	J_{52}^{X}	J_{62}^{X}	94^{M}	J_{87}^{X}	J_{101}^{X}	J_{73}^{X}	69^{M}	J_{94}^{X}	J_{83}^{X}	47	J_{46}^{X}	J_{29}^{X}	J_{42}^{X}	J_{35}^{X}	J_{36}^{X}
12	J_{51}^{X}	J_{29}^{X}	J_{32}^{X}	J_{35}^{X}	J_{26}^{X}	J_{51}^{X}	J_{22}^{X}	33	33	J_{71}^{X}	49	43	58	46	J_{83}^{X}	J_{72}^{X}	J_{78}^{X}	J_{63}^{X}	J_{53}^{X}	J_{42}^{X}	J_{66}^{X}	J_{84}^{X}	J_{41}^{X}	J_{62}^{X}
13	48	J_{61}^{X}	77	J_{64}^{X}	J_{33}^{X}	J_{35}^{X}	J_{31}^{X}	33	J_{39}^{X}	J_{43}^{X}	J_{73}^{X}	40	39	37^{G}	36^{G}	49	43	36	27	19	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	J_{32}^{X}
14	E_{15}^{S}	C	J_{21}^{X}	C	J_{29}^{X}	C	23	30	35	40	J_{51}^{X}	49	36^{G}	E_{54}^{B}	G	46	E_{44}^{B}	36	J_{40}^{X}	J_{47}^{X}	J_{41}^{X}	J_{65}^{X}	J_{37}^{X}	J_{26}^{X}
15	42	J_{63}^{X}	J_{41}^{X}	J_{52}^{X}	J_{36}^{X}	J_{38}^{X}	J_{35}^{X}	J_{34}^{X}	J_{47}^{X}	J_{62}^{X}	J_{50}^{X}	J_{41}^{X}	42	41	44	G	60	J_{46}^{X}	29	J_{33}^{X}	J_{35}^{X}	J_{26}^{X}	J_{25}^{X}	E_{15}^{S}
16	22	E_{15}^{S}	E_{15}^{B}	E_{11}^{B}	E_{11}^{B}	E	34	23^{G}	32	E_{50}^{B}	39	39	38^{G}	44	G	E_{50}^{B}	37	32	G	21	20	J_{23}^{X}	J_{26}^{X}	J_{62}^{X}
17	J_{33}^{X}	J_{83}^{X}	J_{71}^{X}	J_{31}^{X}	J_{29}^{X}	22	18	27	31	J_{44}^{X}	41	41	42	34^{G}	26^{G}	G	37	33	30	19	21	J_{39}^{X}	J_{70}^{X}	J_{50}^{X}
18	J_{35}^{X}	J_{34}^{X}	J_{26}^{X}	J_{27}^{X}	J_{23}^{X}	E_{15}^{S}	J_{26}^{X}	J_{41}^{X}	C	J_{56}^{X}	J_{76}^{X}	J_{52}^{X}	J_{113}^{X}	J_{34}^{G}	J_{40}^{X}	46	36	36	J_{34}^{X}	70	J_{35}^{X}	J_{45}^{X}	J_{19}^{X}	J_{83}^{X}
19	40	J_{42}^{X}	J_{30}^{X}	E_{13}^{B}	E	E	25	36	46	J_{76}^{X}	J_{68}^{X}	J_{63}^{X}	J_{84}^{X}	45	J_{87}^{X}	J_{83}^{X}	J_{43}^{X}	G	32	J_{31}^{X}	J_{44}^{X}	J_{63}^{X}	J_{27}^{X}	J_{51}^{X}
20	J_{33}^{X}	J_{65}^{X}	E	E	J_{75}^{X}	J_{25}^{X}	J_{25}^{X}	G	34	36	36	28^{G}	J_{34}^{G}	E_{50}^{B}	E_{53}^{B}	50	43	44	J_{43}^{X}	J_{33}^{X}	J_{31}^{X}	29	J_{25}^{X}	J_{24}^{X}
21	J_{31}^{X}	J_{52}^{X}	J_{31}^{X}	J_{26}^{X}	J_{27}^{X}	J_{76}^{X}	J_{30}^{X}	30	38	J_{44}^{X}	J_{64}^{X}	60	J_{47}^{X}	J_{54}^{X}	J_{52}^{X}	J_{62}^{X}	J_{74}^{X}	J_{63}^{X}	J_{35}^{X}	23	J_{27}^{X}	E_{15}^{S}	E_{15}^{S}	J_{21}^{X}
22	J_{35}^{X}	J_{31}^{X}	J_{30}^{X}	J_{24}^{X}	J_{26}^{X}	J_{32}^{X}	J_{28}^{X}	30	33	40	J_{54}^{X}	J_{78}^{X}	J_{56}^{X}	47	45	G	J_{58}^{X}	J_{53}^{X}	J_{41}^{X}	J_{106}^{X}	J_{91}^{X}	J_{61}^{X}	J_{29}^{X}	J_{34}^{X}
23	J_{23}^{X}	J_{89}^{X}	J_{21}^{X}	J_{34}^{X}	J_{40}^{X}	J_{35}^{X}	J_{24}^{X}	31	J_{53}^{X}	J_{68}^{X}	J_{98}^{X}	J_{65}^{X}	J_{53}^{X}	J_{44}^{X}	37^{G}	42	38	J_{101}^{X}	J_{78}^{X}	87	J_{63}^{X}	J_{41}^{X}	J_{40}^{X}	J_{34}^{X}
24	J_{60}^{X}	J_{44}^{X}	J_{40}^{X}	J_{30}^{X}	J_{34}^{X}	J_{30}^{X}	20	28	J_{62}^{X}	J_{60}^{X}	J_{60}^{X}	37	30^{G}	J_{68}^{X}	J_{53}^{X}	J_{65}^{X}	J_{47}^{X}	J_{72}^{X}	J_{78}^{X}	J_{50}^{X}	J_{32}^{X}	J_{62}^{X}	J_{82}^{X}	J_{62}^{X}
25	J_{21}^{X}	J_{19}^{X}	J_{31}^{X}	J_{42}^{X}	J_{39}^{X}	J_{19}^{X}	J_{28}^{X}	J_{29}^{X}	32	41	J_{56}^{X}	J_{66}^{X}	46	43	45	J_{48}^{X}	J_{42}^{X}	J_{35}^{X}	J_{36}^{X}	J_{24}^{X}	J_{28}^{X}	J_{29}^{X}	J_{37}^{X}	J_{29}^{X}
26	J_{25}^{X}	J_{23}^{X}	E_{15}^{S}	E_{11}^{B}	E	E_{14}^{B}	G	29	36	37	40	37^{G}	J_{42}^{X}	35^{G}	37^{G}	G	J_{51}^{X}	J_{75}^{X}	J_{51}^{X}	J_{29}^{X}	31	J_{31}^{X}	J_{64}^{X}	J_{51}^{X}
27	J_{51}^{X}	J_{42}^{X}	J_{21}^{X}	J_{20}^{X}	E_{11}^{B}	E_{15}^{S}	G	27	36	37	42	41	44	45	45	48	J_{54}^{X}	J_{81}^{X}	J_{53}^{X}	J_{63}^{X}	J_{62}^{X}	J_{79}^{X}	J_{54}^{X}	J_{29}^{X}
28	J_{23}^{X}	J_{20}^{X}	23	E	E	E_{13}^{S}	G	29	J_{41}^{X}	38	J_{49}^{X}	42	42	43	J_{63}^{X}	J_{73}^{X}	J_{71}^{X}	32	J_{38}^{X}	J_{29}^{X}	J_{36}^{X}	J_{74}^{X}	J_{78}^{X}	J_{43}^{X}
29	J_{25}^{X}	J_{26}^{X}	J_{26}^{X}	J_{22}^{X}	J_{29}^{X}	J_{29}^{X}	J_{26}^{X}	32	J_{41}^{X}	43	J_{60}^{X}	J_{48}^{X}	50	48	J_{64}^{X}	J_{54}^{X}	J_{83}^{X}	G	J_{54}^{X}	J_{81}^{X}	J_{77}^{X}	J_{70}^{X}	J_{80}^{X}	J_{54}^{X}
30	C	E_{11}^{B}	21	E_{11}^{B}	E_{14}^{B}	19	J_{22}^{X}	28	37	J_{66}^{X}	J_{78}^{X}	87	J_{58}^{X}	J_{61}^{X}	46	33^{G}	G	34	24	J_{58}^{X}	J_{42}^{X}	J_{50}^{X}	J_{41}^{X}	J_{19}^{X}
31	21	J_{21}^{X}	E_{13}^{B}	J_{22}^{X}	20	18	20	28	J_{34}^{X}	43	50	J_{59}^{X}	J_{110}^{X}	47	44	G	37	50	J_{35}^{X}	36	J_{39}^{X}	J_{44}^{X}	J_{54}^{X}	J_{44}^{X}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	31	30	31	31	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J_{33}^{X}	J_{33}^{X}	J_{29}^{X}	J_{26}^{X}	J_{29}^{X}	J_{25}^{X}	J_{25}^{X}	30	37	J_{50}^{X}	J_{54}^{X}	49	J_{46}^{X}	44	45	48	J_{47}^{X}	44	J_{38}^{X}	J_{35}^{X}	J_{32}^{X}	J_{41}^{X}	J_{35}^{X}	J_{36}^{X}
UQ	J_{48}^{X}	J_{52}^{X}	J_{36}^{X}	J_{34}^{X}	J_{32}^{X}	J_{32}^{X}	J_{29}^{X}	34	J_{46}^{X}	J_{64}^{X}	J_{70}^{X}	J_{66}^{X}	J_{64}^{X}	50	J_{56}^{X}	J_{64}^{X}	J_{59}^{X}	J_{58}^{X}	J_{52}^{X}	J_{54}^{X}	J_{40}^{X}	J_{62}^{X}	J_{54}^{X}	J_{51}^{X}
LQ	J_{25}^{X}	J_{25}^{X}	21	15	15	15	21	28	34	40	46	42	40	40	38	40	38	35	32	24	J_{28}^{X}	26	J_{26}^{X}	J_{29}^{X}

AUG. 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	18	E	22	15	21	16	25	32	C	51	41	42	E_{40}^{R}	G	E_{40}^{R}	46	52	50	55	31	22	53	45	26
2	20	21	30	19	16	E_{15}^{B}	19	G	46	49	35	45	63	48	73	84	64	38	30	26	26	16	18	18
3	18	E	15	33	18	20	G	G	36	49	41	53	47	53	52	62	59	51	33	17	S	E	E	36
4	25	16	20	16	24	25	24	25	G 27	31	42	44	G 28	G 30	G 27	G 28	G 25	G	36	41	18	E	E_{15}^{S}	23
5	19	E	E_{14}^{S}	E_{12}^{B}	E_{15}^{B}	E_{14}^{B}	27	45	39	67	43	40	E_{40}^{R}	E_{39}^{R}	43	40	39	33	52	62	16	21	E	E_{51}^{S}
6	53	30	20	19	22	S	G	G	42	39	60	A	59	42	39	38	43	44	33	36	20	16	20	22
7	26	54	19	22	20	20	19	21	32	35	43	50	50	60	46	51	48	38	37	31	30	30	25	16
8	E	14	16	E	E_{15}^{B}	E_{15}^{B}	G	G	37	46	53	A	75	A	67	52	44	G 24	G 13	17	E	E	E_{15}^{S}	24
9	50	18	17	19	E	25	24	54	34	40	43	60	E_{37}^{R}	G	G	41	38	38	28	E_{15}^{B}	E	E	16	33
10	20	22	E	E_{15}^{B}	E	18	G	G	28	38	41	44	42	46	49	G	44	G	32	G	E	29	E	19
11	26	29	27	28	20	15	27	73	78	50	51	80	74	96	61	54	87	44	43	46	17	30	24	E
12	21	E	20	18	18	18	G	22	G	63	49	43	46	45	45	E_{72}^{R}	75	57	28	E_{42}^{S}	53	31	17	18
13	33	29	51	47	21	26	19	31	32	39	41	E_{40}^{R}	E_{39}^{R}	G 25	G 29	47	42	34	27	G	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	20
14	E_{15}^{S}	C	15	C	22	C	G	E_{30}^{C}	G	39	49	47	E_{36}^{R}	E_{54}^{B}	G	44	E_{44}^{B}	36	29	27	38	40	25	E
15	17	26	38	16	E	19	23	31	44	42	43	E_{41}^{R}	E_{42}^{R}	E_{41}^{R}	44	G	41	36	29	29	32	21	E	E_{15}^{S}
16	E	E_{15}^{S}	E_{15}^{B}	E_{11}^{B}	E_{11}^{B}	E	G	G 22	29	E_{50}^{B}	E_{39}^{R}	E_{39}^{R}	E_{38}^{R}	E_{44}^{R}	G	E_{50}^{B}	E_{37}^{R}	G	G	20	19	E	17	44
17	16	28	30	20	E	E	14	G	30	41	E_{41}^{R}	41	E_{42}^{R}	E_{34}^{R}	G 26	G	36	G	29	18	E	36	A	20
18	E	15	15	14	15	E_{15}^{S}	18	26	C	42	58	47	66	G 34	E_{40}^{R}	45	G	35	31	60	30	45	16	21
19	16	17	17	E_{13}^{B}	E	E	20	32	44	50	60	53	59	43	60	42	33	G	31	28	40	35	16	E
20	15	35	E	E	E	14	19	G	G	G	E_{36}^{R}	G 28	E_{34}^{R}	E_{50}^{B}	E_{53}^{B}	49	42	43	40	21	16	20	17	E
21	E	20	20	E	20	A	25	G	36	40	45	48	41	52	52	50	52	52	33	19	E	E_{15}^{S}	E_{15}^{S}	18
22	19	21	19	19	19	23	19	G	G	38	42	65	53	45	44	G	47	32	27	102	25	36	16	26
23	14	51	14	23	31	22	14	28	40	66	A	63	50	43	E_{37}^{R}	41	36	57	70	66	50	40	21	19
24	34	31	27	25	20	19	19	G	43	35	47	E_{37}^{R}	E_{38}^{R}	63	48	62	44	55	77	46	30	24	40	22
25	E	E	19	30	11	E	15	17	G	41	53	65	46	43	44	48	41	32	29	18	22	21	28	27
26	21	20	E_{15}^{S}	E_{11}^{B}	E	E_{14}^{B}	G	28	34	37	38	E_{37}^{R}	42	G 35	E_{37}^{R}	G	48	75	50	26	21	25	32	31
27	35	36	20	16	E_{11}^{B}	E_{15}^{S}	G	G	34	35	41	40	44	44	44	48	48	52	28	23	19	51	17	20
28	18	E	16	E	E	E_{13}^{S}	G	G	32	35	48	41	41	41	61	64	40	G	27	23	26	53	18	28
29	20	20	22	18	26	24	21	31	32	42	50	47	43	48	61	53	68	G	52	72	51	51	52	25
30	C	E_{11}^{B}	14	E_{11}^{B}	E_{14}^{B}	E	20	G	36	66	E_{78}^{R}	80	53	61	42	G 32	G	34	24	25	25	33	29	E
31	17	E	E_{13}^{B}	E	13	15	19	27	24	40	49	57	A	47	42	G	36	37	34	27	22	31	26	27
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	31	29	31	31	29	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31
MED	18	20	19	16	15	16	19	22	34	40	43	47	43	44	44	45	42	36	31	26	22	29	17	20
UQ	25	29	21	20	20	22	20	30	39	50	50	58	53	50	51	51	48	47	38	42	30	36	26	26
LQ	15	E_{11}^{E}	15	E_{11}^{E}	E_{11}^{E}	E_{14}^{E}	G	G	28	38	41	41	E_{40}^{R}	U_{36}	U_{32}	35	38	28	28	20	16	16	16	18

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1970 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12·1' N. Long. 130° 37·1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	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_{15}^{S}	E_{15}^{S}	14	E	E	E_{13}^{S}	E_{14}^{S}	16	C	19	19	20	32	20	21	19	19	15	17	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
2	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	15	12	15	E_{15}^{S}	E_{15}^{S}	15	16	18	22	19	22	19	20	15	14	16	13	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
3	E_{15}^{S}	E_{15}^{S}	12	11	E	11	E_{15}^{S}	15	15	18	19	26	20	22	20	19	18	15	14	E_{12}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
4	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	13	E	E_{14}^{S}	E_{15}^{S}	E_{14}^{S}	15	16	17	22	20	22	20	16	16	15	17	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
5	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	12	15	14	E_{15}^{S}	E_{15}^{S}	16	17	17	21	21	20	20	20	17	15	15	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
6	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}	E	E_{15}^{S}	E_{15}^{S}	11	15	15	19	19	20	20	18	16	15	15	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
7	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	E	E_{13}^{S}	14	15	16	17	19	24	20	20	26	18	15	15	E_{12}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
8	E_{15}^{S}	12	E_{15}^{S}	12	15	15	E_{15}^{S}	15	15	16	19	20	20	19	20	18	15	15	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}
9	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	16	15	19	26	20	21	20	18	18	15	16	15	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	13
10	E_{15}^{S}	E_{14}^{S}	15	15	E	E_{12}^{S}	E_{15}^{S}	E_{14}^{S}	15	15	18	19	25	19	19	19	17	15	16	E_{15}^{S}	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
11	E_{15}^{S}	E_{15}^{S}	13	11	12	11	E_{15}^{S}	15	15	15	18	21	22	22	20	19	17	15	15	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{16}^{S}
12	12	E_{15}^{S}	12	E_{14}^{S}	E	E_{15}^{S}	E_{15}^{S}	14	16	43	29	22	27	25	24	21	17	18	16	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
13	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}	15	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	15	16	19	19	27	27	22	22	18	19	19	18	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}
14	E_{15}^{S}	C	11	C	E	C	E_{16}^{S}	14	19	20	22	26	26	54	25	26	44	17	17	11	11	E_{16}^{S}	E_{15}^{S}	E_{14}^{S}
15	E_{13}^{S}	12	12	11	E_{14}^{S}	E_{14}^{S}	12	14	18	26	25	28	30	29	29	22	18	18	21	13	12	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
16	E_{15}^{S}	E_{15}^{S}	15	11	11	E	E_{15}^{S}	17	20	50	28	31	25	28	25	50	27	16	16	E_{15}^{S}	12	E_{15}^{S}	E_{15}^{S}	E_{13}^{S}
17	E_{15}^{S}	E_{11}^{S}	E_{14}^{S}	E	15	E_{13}^{S}	E_{13}^{S}	14	16	20	23	27	26	29	19	21	18	16	15	E_{12}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}
18	E_{15}^{S}	E_{11}^{S}	E	E	13	E_{15}^{S}	E_{15}^{S}	11	C	17	18	19	21	25	21	21	19	15	15	E_{15}^{S}	E_{11}^{S}	E_{11}^{S}	E_{11}^{S}	E_{15}^{S}
19	11	E_{11}^{S}	E	13	E	E	E_{13}^{S}	15	15	20	20	22	25	22	20	20	15	15	15	12	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
20	E_{12}^{S}	E_{12}^{S}	E	E	E	E_{11}^{S}	E_{11}^{S}	11	17	15	24	21	24	50	53	19	14	14	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
21	E_{15}^{S}	E_{11}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	E_{15}^{S}	11	14	19	20	22	20	25	22	20	14	11	15	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}
22	E_{15}^{S}	E_{11}^{S}	E_{13}^{S}	E	E	E_{15}^{S}	E_{14}^{S}	15	15	16	20	22	23	21	20	20	20	11	15	E_{15}^{S}	11	E_{11}^{S}	E_{15}^{S}	E_{14}^{S}
23	E_{11}^{S}	E_{13}^{S}	11	E	E	E_{15}^{S}	11	E_{15}^{S}	14	11	20	20	19	20	20	18	15	11	11	11	E_{15}^{S}	E_{16}^{S}	E_{15}^{S}	11
24	11	E_{15}^{S}	11	E	E	E	E_{14}^{S}	E_{15}^{S}	16	20	19	20	24	22	22	20	17	12	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
25	E_{15}^{S}	E_{15}^{S}	12	11	E	13	E_{13}^{S}	11	11	15	16	24	24	23	23	20	15	11	14	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}	E_{15}^{S}
26	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	11	E	14	E_{15}^{S}	E_{15}^{S}	15	20	20	21	22	24	21	17	18	11	15	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
27	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	11	E_{15}^{S}	E_{13}^{S}	11	14	15	18	20	20	24	22	22	15	12	15	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
28	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	E	E_{13}^{S}	E_{15}^{S}	11	11	16	15	20	23	24	21	21	21	11	E_{15}^{S}	E_{12}^{S}	E_{12}^{S}	E_{12}^{S}	E_{15}^{S}	E_{15}^{S}
29	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}	E	11	E_{15}^{S}	E_{15}^{S}	11	15	15	20	21	22	22	21	21	20	15	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}
30	C	11	12	11	14	12	E_{15}^{S}	E_{12}^{S}	11	15	20	21	21	20	19	20	15	11	11	E_{12}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{13}^{S}
31	E_{15}^{S}	E_{15}^{S}	13	11	E	12	E_{15}^{S}	17	11	15	18	24	24	25	23	22	16	15	14	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E_{13}^{S}	E_{15}^{S}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	31	30	31	31	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E_{15}^{S}	E_{15}^{S}	E_{14}^{E}	11	E	E_{14}^{S}	E_{15}^{S}	12	15	16	19	21	23	22	21	20	17	15	15	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
UQ	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	12	13	E_{15}^{S}	E_{15}^{S}	15	16	20	20	24	25	25	22	21	18	15	16	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
LQ	E_{15}^{S}	E_{12}^{S}	12	E	E	E_{12}^{E}	E_{14}^{S}	12	15	15	18	20	20	20	20	19	15	12	13	E_{12}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}

AUG. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1970 | M(3000)F2 (0.01)

135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	265	F	280	270	280	275	285	310	300	260	260	275	285	270	275	280	285	295	308	300	280	260	268	280
2	280	275	290	315	285	290	315	305	320	300	255	245	255	270	285	275	285	295	305	315	275	260	265	280
3	270	295	290	290	315	295	335	325	330	325	305	295	285	260	265	275	280	285	300	315	290	S	265	275
4	285	270	255	265	295	295	295	315	335	335	315	285	265	275	280	280	295	305	305	290	295	275	255	265
5	270	270	268	308	290	285	315	325	330	305	320	290	280	280	285	285	300	280	310	305	275	270	S	S
6	S	305	285	F	280	285	325	345	340	315	310	290	295	260	275	280	280	290	290	305	310	305	285	280
7	280	280	300	295	285	300	280	330	325	320	285	295	290	265	275	285	285	290	300	308	290	300	270	270
8	275	265	265	275	290	290	325	335	330	300	305	300	280	265	270	280	285	295	285	275	285	280	275	270
9	280	290	280	270	F	308	300	315	315	325	300	275	260	270	295	305	305	300	315	310	290	280	265	260
10	270	280	285	280	295	295	345	345	340	320	305	305	295	300	305	290	290	295	305	315	S	280	285	275
11	F	F	315	300	300	306	310	315	325	320	290	270	275	285	285	285	308	310	330	300	275	270	285	290
12	285	280	300	285	295	F	320	315	335	325	310	310	270	285	300	280	270	290	310	310	290	275	305	290
13	F	290	285	F	295	305	310	325	310	295	305	285	285	275	285	290	300	308	310	305	270	270	260	270
14	280	280	285	305	315	280	295	335	340	335	255	285	280	280	285	275	290	310	320	325	280	260	270	265
15	280	F	F	F	F	F	300	350	360	345	275	285	280	285	285	290	290	290	295	315	305	270	275	280
16	270	270	280	280	285	310	320	340	315	310	295	270	285	285	270	290	300	310	308	305	308	265	265	265
17	265	270	305	305	280	265	300	325	330	335	260	225	285	280	235	240	290	300	285	265	270	290	245	235
18	280	285	255	275	255	250	305	320	305	305	275	300	330	275	280	295	290	310	300	290	290	265	265	265
19	265	260	280	260	250	250	265	280	315	300	270	270	260	285	290	285	275	295	308	325	295	250	260	260
20	250	260	280	275	245	255	290	320	310	295	280	290	265	275	285	300	285	295	310	310	290	290	280	255
21	250	275	330	310	295	260	300	315	325	325	295	290	275	275	275	285	310	290	315	310	285	275	265	265
22	275	280	270	285	285	290	310	300	340	325	285	265	285	290	285	275	265	275	290	305	305	290	285	265
23	255	265	300	280	290	290	310	330	325	320	305	270	265	275	280	285	285	295	315	305	275	265	265	275
24	265	270	285	280	260	280	300	325	345	315	295	275	270	280	290	295	295	290	310	325	325	265	265	285
25	285	285	295	290	285	270	305	345	345	315	290	290	285	270	285	300	300	308	305	305	300	265	260	265
26	255	265	290	325	265	265	295	290	270	275	270	275	290	290	295	305	290	310	315	320	265	265	255	253
27	250	260	275	275	280	280	295	335	325	300	290	295	290	285	295	305	290	305	320	305	290	260	250	280
28	290	285	275	280	270	275	305	325	305	330	290	305	305	305	295	305	310	325	315	330	305	A	260	S
29	S	270	265	275	300	305	325	330	300	305	265	270	285	285	290	300	290	285	315	305	280	270	S	S
30	C	290	335	275	275	290	335	345	330	315	290	285	270	280	280	290	290	295	300	310	295	275	285	300
31	285	280	265	285	295	280	310	335	340	330	325	280	285	275	285	285	295	305	300	290	285	290	270	275
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	30	28	29	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	29	28
MED	272	278	285	280	285	285	305	325	325	315	290	285	285	280	285	285	290	295	305	305	290	270	265	270
UQ	280	285	295	298	295	295	318	335	338	325	305	292	285	285	290	295	300	305	315	315	295	280	275	280
LQ	265	270	275	275	280	275	298	315	315	302	275	272	270	272	278	280	285	290	300	302	280	265	260	265

AUG. 1970 | M(3000)F2 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1970 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	C	UL 315	UL 340	355	375	335	L 335	L 340	A	A	A					
2							435	L	L	A	L	H 370	A	A	A	A	A	L 350	L					
3								L	L	L	L	L	360	A	A	A	A	A	L					
4								L	L	L 365	L	L 400	L	H 375	H 370	335	L 330	UL 340	L					
5								A	L	A	405	L	385	400	L	L 360	L 345	L 345	A					
6								L	L	L 360	A	A	A	L 365	380	355	A	L	L					
7								L	L	L 360	L 380	A	A	A	L	L	A	365	A					
8								L	L	345	A	A	A	A	A	A	A	L	L					
9							L	A	L	L	L	A	L 345	380	L	L 355	L 355	L	L					
10								L	L	L 360	L	H 355	L 350	380	A	L	A	L 335	L					
11									A	A	L	A	A	A	A	A	A	A	A					
12								L	L	A	A	L 330	365	A	A	A	A	A	L					
13								L	L	L	L 355	L	375	L	365	A	345	L	L					
14								L	L	L	350	A	335	B	340	335	L	L	L					
15							L	L	L	L	355	L	360	R	335	330	L	L	L					
16								L	L	L	L	335	330	350	345	B	325	350	L					
17									L	L	L	325	L 375	335	H 325	H 345	L 325	L	L					
18									C	L	A	L 340	A	UL 335	L 345	L 340	L 330	L	L					
19								L	L	A	A	A	A	360	A	L	340	L	L					
20									L	L 355	L	H 385	365	L	B	A	345	L	A					
21								L	L	L 365	L 345	L	335	L	A	A	A	A	L					
22								L	L	L 350	L	A	A	360	L	L 340	L	L 330	L					
23								L	L	A	A	A	L	C 350	C 340	L 345	L	A	A					
24								L	A	L	C 360	C 380	L	A	A	A	L	A	A					
25									L	L	L	A	350	UL 325	340	A	L	L	L					
26								L	L 465	340	365	365	R 375	H 340	360	L 370	L	A	A					
27								L	L	UL 345	L	L 405	UL 360	UL 360	345	L	L	A						
28								L	L	UL 355	380	H 355	L 360	UL 365	A	A	L	L	L					
29								L	L	L	L	345	L 360	355	A	A	A	L						
30								L	L	A	A	A	A	A	UL 335	L	L	L	L					
31								L	L	L 365	A	L	A	370	L 345	L	L	L	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1		1	13	10	14	18	18	15	12	9	7						
MED							435		465	355	358	355	360	360	345	342	340	345						
UQ										360	380	380	375	370	352	355	345	350						
LQ										345	350	340	350	340	338	338	330	338						

AUG. 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

AUG. 1970 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	370	310	355	315	370	330	335	320	300	285					
2							240	320	300	280	450	405	390	350	320	340	315	295	255					
3								255	250	280	300	340	350	350	375	330	320	300	270					
4								260	250	260	285	290	395	360	330	350	325	290	270					
5								250	245	E A 300	295	345	340	325	315	310	310	315	270					
6								240	245	295	290	A	300	385	340	340	315	300	285					
7								250	245	290	315	305	320	345	340	310	310	305	260					
8								245	260	330	295	A	E A 400	I A 355	355	330	275	260	265					
9							285	250	250	275	290	395	350	360	295	295	290	275	270					
10								225	250	300	335	330	345	320	305	320	300	300	280					
11									E A 305	275	325	E A 440	350	E A 380	330	315	305	280	235					
12								250	250	275	310	310	405	330	315	I A 325	E A 380	300	270					
13								240	250	315	300	340	305	330	330	310	295	295	260					
14								250	245	255	455	350	350	345	325	345	305	290	255					
15							290	245	240	250	400	355	345	345	325	315	295	300	280					
16								235	250	310	295	350	330	310	320	310	290	260	245					
17									260	245	280	450	310	330	410	445	290	285	260					
18									C	285	340	300	255	340	325	305	305	280	260					
19								270	300	300	355	345	355	315	295	290	300	290	275					
20									250	290	340	340	350	325	320	300	295	295	265					
21								265	255	250	325	325	345	330	330	325	300	280	250					
22								240	260	270	300	350	320	300	305	325	330	305	280					
23								245	245	275	I A 345	350	350 C	340 C	325 C	315 C	300 C	290 C	270 C					
24								250 C	240 C	240 C	330 C	340 C	320	330	315	290	290	320	290					
25									255	250	340	300	320	340	320	300	285	255	265					
26								290	310	415	410	360	350	355	330	315	350	330	285					
27								250	250	305	340	320	315	325	315	290	325	300						
28								270	300	290	360	325	310	315	330	310	300	275	260					
29								240	250	280	360	370	325	320	325	285	320	300						
30								240	270	E A 340	A	E A 400	350	335	320	310	300	290	260					
31								250	240	270	250	375	I A 360	350	330	315	295	275	260					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	25	29	31	30	29	31	31	31	31	31	31	29					
MED							285	250	250	280	325	342	345	338	325	315	300	295	265					
UQ							288	255	260	299	345	358	350	350	330	328	316	300	275					
LQ							262	240	245	270	295	325	320	325	318	308	295	280	260					

AUG. 1970 | H'F2 (KM)

IONOSPHERIC DATA

AUG. 1970 | H'F (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	300	315	275	270	300	290	250	210	C	A	205	200	200	225	230	E 255 A	A	A	A	255	240	E 360 A	E 350 A	300
2	280	300	290	250	220	195	205	200 H	A	A	205 H	215 H	I 210 A	E 280 A	A	A	A	235	240	250	250	290	305	275
3	305	280	255	275	245	230	220	225	225	I 215 A	200	I 200 A	E 250 A	A	A	A	A	A	A	240	240	250	270	300
4	275	270	300	280	250	250	250	225	225	195	215 H	200	200 H	240 H	195 H	230	225 H	220 H	I 245 A	260	245	230	280	315
5	300	290	255	245	240	250	250	I 235 A	225	I 230 A	195	180 H	200	200	200 H	225 H	225	225	I 250 A	E 280 A	235	280	300	E 315 A
6	E 300 A	250	240	280	290	255	245	225	240	215	A	A	A	200	200	205	I 220 A	I 235 A	250	255	240	230	250	250
7	290	I 285 A	250	270	285	290	240	200	200	200	215	A	A	A	250 H	A	A	E 250 A	I 245 A	250	255	245	250	275
8	295	315	300	280	275	225	245	215 H	215	E 255 A	A	A	A	A	A	A	I 230 A	225	240	265	255	250	280	295
9	300	240	250	295	275	250	250	A	215	245	230	I 200 A	195 H	200	E 230 A	245	225	250	240	245	230	265	275	E 350 A
10	300	295	260	250	250	280	230	205	200 H	220 H	210	205 H	200 H	E 240 A	A	240	285	200	270	240	250	260	270	250
11	325	300	255	260	300	260	275	E 280 A	A	A	A	A	A	A	A	A	A	A	I 240 A	245	240	300	280	275
12	255	275	250	250	250	250	240	235	230	A	A	235	245	A	A	I 240 A	I 250 A	I 245 A	255	250	275	300	250	250
13	350	290	A	A	285	270	250	220	210	225 H	210	250	225	220	230	A	250	240	250	230	230	270 H	300	300
14	290	I 295 C	270	I 260 C	240	I 260 C	250	250	230	220	250	A	250	I 245 B	240	240	B	250	250	240	270	E 340 A	305	295 H
15	295	305	320	280	295	280	270	245	I 240 A	230	205	A	225	I 235 B	E 250 A	240	E 255 A	250	250	255	245	255	300	275
16	290	300	280	260	255	255	250	230	210	I 240 B	190 H	230	230	250	245	I 240 B	245	245	245	240	235	240	305	E 355 A
17	320	290	255	245	270	295	250	230	225 H	230	205	245	210 H	E 250 B	230 H	225 H	250	250	250	235	255	280	A	350
18	285	265	275	295	335	355	265	240	C	250	A	E 250 A	A	230	230	E 250 A	225	250	250	A	E 280 A	E 300 A	270	290
19	300	300	290	275	340	350	280	250	A	A	A	A	A	220	A	225	225	235	250	240	250	E 350 A	325	305
20	305	E 315 A	275	250	290	305	250	230	230	205	210 H	195 H	215	B	B	I 240 A	250	I 230 A	I 235 A	240	250	250	245	295
21	340	290	245	225	250	I 310 A	270	235	240	225	E 240 A	E 260 A	200	A	A	A	A	A	I 245 A	240	245	250	290	295
22	295	290	295	255	270	255	245	225	225	220	225	I 225 A	I 250 A	245	200 H	230	I 240 A	225 H	250	A	250	260	225	295
23	325	350	260	255	290	270	245	240	I 240 A	A	A	A	A	230 C	225 C	220 C	225 C	A	A	265 C	E 300 A	E 315 A	295 C	290 C
24	310 C	300 C	280 C	270 C	E 300 A	295 C	260 C	225 H	I 225 A	200 C	E 250 A	200 C	185 H	A	A	A	A	A	A	255	240	260	E 350 A	295
25	265	275	260	260	240	300	255	240	220 H	225	A	A	E 240 A	225	E 250 A	A	E 250 A	240	250	250	250	240	330	325
26	340	320	270	225	180 H	300	270	250	230	220	210	215	215	205 H	215	215	A	A	A	250	265	325	E 360 A	340
27	E 400 A	350	300	255	240	290	260	240	220	210	205 H	205	E 215 A	220	E 250 A	A	A	A	250	250	250	A	310	300
28	275	260	285	265	250	275	260	240	230	220	E 250 A	190 H	200	215	A	A	E 240 A	240	255	240	240	A	315	350
29	305	305	310	300	275	260	250	225	220	E 245 A	E 270 A	E 250 A	220	E 260 A	A	A	A	225 H	260	I 250 A	I 265 A	A	E 370 A	290
30	I 275 C	270	235	205	285	260	230	225	215	A	A	A	A	A	210 H	230	225	245	250	250	250	260	270	255
31	250	275	300	275	240	270	260	240	220	215	A	A	A	245	210	200 H	240 H	E 250 A	I 250 A	250	245	250	280	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	31	31	31	30	26	24	21	20	22	22	19	19	20	23	26	29	31	28	30	31
MED	298	290	272	260	262	270	250	230	225	220	208	205	210	225	220	230	232	238	250	250	248	255	286	295
UQ	306	301	290	275	286	292	260	240	230	229	220	230	228	240	236	240	249	250	250	252	252	U 284	305	305
LQ	285	275	255	250	248	255	245	225	215	215	205	200	200	220	208	225	225	228	245	240	240	250	270	282

AUG. 1970 | H'F (KM)

IONOSPHERIC DATA

AUG. 1970 | H'ES (KM) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	105	115	105	105	105	110	110	110	C	105	105	105	105	G	160	125	115	120	115	110	105	105	105	100
2	100	100	100	95	95	B	125	120	105	105	100	100	100	100	100	100	100	100	100	95	95	95	105	105
3	105	105	100	100	100	100	100	150	120	115	115	115	120	120	125	115	110	110	110	110	S	100	100	100
4	100	100	100	95	95	100	100	115	100	100	100	100	100	100	100	100	100	130	95	95	100	100	S	100
5	95	100	S	B	B	B	100	100	100	100	100	100	100	100	170	150	130	125	115	110	110	105	115	100
6	95	95	95	100	100	110	130	140	125	115	105	105	100	100	100	100	100	125	120	110	105	100	100	105
7	105	100	100	100	100	100	100	100	125	125	120	115	115	115	120	115	110	110	105	105	100	100	100	100
8	100	100	100	105	B	B	G	G	110	105	105	105	100	100	100	100	100	100	100	100	100	100	S	105
9	110	105	100	100	105	100	100	100	100	110	105	100	100	G	G	130	115	110	110	B	100	100	105	105
10	100	100	100	B	E	100	G	G	100	125	120	115	125	125	120	150	120	115	110	110	100	100	100	100
11	100	100	110	100	100	105	120	110	105	100	105	100	100	100	100	100	100	100	100	100	100	110	110	110
12	110	105	100	100	100	100	100	105	130	110	125	130	125	120	115	115	120	125	120	110	110	110	110	105
13	110	110	110	105	105	100	105	105	105	105	105	110	110	105	105	130	125	120	110	110	S	S	S	105
14	S	C	100	C	100	C	100	145	125	125	115	125	110	B	G	125	B	135	110	110	110	105	110	120
15	105	105	105	105	100	105	100	105	105	105	105	105	105	115	140	G	110	120	120	110	110	110	110	S
16	110	S	B	B	B	E	110	110	110	B	110	110	110	155	G	B	130	125	G	130	110	105	100	100
17	100	105	100	105	100	100	100	150	150	100	105	105	140	110	105	G	140	140	115	110	115	105	105	100
18	100	100	100	100	100	S	100	125	C	115	110	110	110	100	100	135	150	135	115	105	105	105	105	105
19	105	105	105	B	E	E	130	125	115	115	110	105	100	100	105	105	110	G	125	110	105	105	105	105
20	100	105	E	E	100	100	100	G	120	120	110	100	100	B	B	125	120	120	110	105	105	105	105	100
21	100	100	100	100	100	100	100	130	120	115	105	105	115	110	110	110	105	105	105	105	105	S	S	100
22	100	100	100	100	100	100	100	150	145	120	110	110	110	130	120	G	115	110	105	105	100	100	100	100
23	100	105	100	100	100	100	100	125	120	115	110	110	110	105	105	125	110	110	105	105	100	100	100	100
24	100	100	100	100	100	95	125	130	110	105	105	110	105	105	105	110	110	110	105	105	105	105	105	105
25	100	100	100	100	100	105	100	100	125	115	110	105	110	120	115	110	110	105	105	105	100	100	100	100
26	100	100	S	B	E	B	G	135	125	110	105	105	105	105	100	G	125	115	115	110	105	105	105	105
27	105	105	100	100	B	S	G	125	120	120	120	120	115	115	115	150	140	120	120	110	110	105	105	105
28	105	105	100	E	E	S	G	125	120	120	125	120	120	130	125	115	120	140	115	110	105	120	105	105
29	100	100	100	100	100	100	100	115	115	115	115	115	115	125	110	110	110	G	120	115	110	110	115	105
30	C	B	105	B	B	100	105	150	125	120	120	115	115	115	125	100	G	125	120	110	105	105	100	150
31	145	100	B	110	100	100	100	145	100	125	120	110	110	115	115	G	115	110	110	105	100	100	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	26	22	22	21	26	28	29	30	31	31	31	27	27	25	29	29	30	30	29	29	27	30
MED	100	100	100	100	100	100	100	125	120	115	110	110	110	110	110	115	115	120	110	110	105	105	105	105
UQ	105	105	100	105	100	100	110	138	125	120	115	115	115	120	120	125	120	125	115	110	110	105	105	105
LQ	100	100	100	100	100	100	100	108	105	105	105	105	100	100	102	105	110	110	105	105	100	100	100	100

AUG. 1970 | H'ES (KM)

IONOSPHERIC DATA

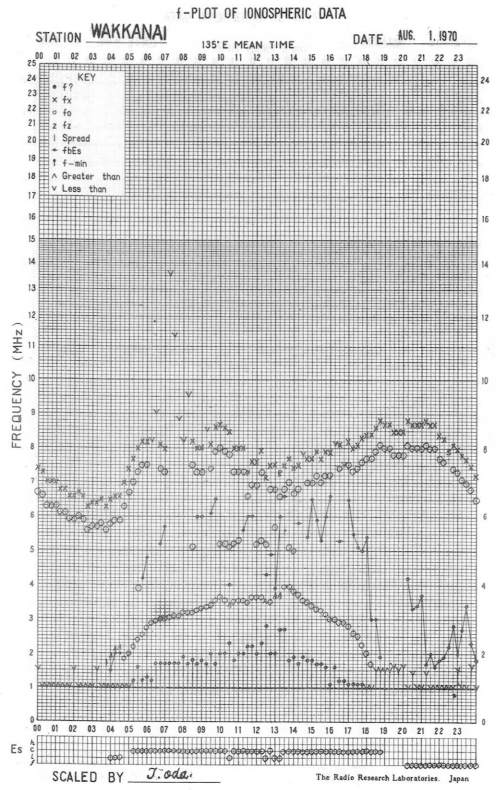
AUG. 1970 | TYPES OF ES | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	FF 12	F 1	F 3	F 2	F 5	L 3	L 3	C 2		C 3	L 2	L 1	L 1		H 1	HL 11	CL 11	C 2	C 2	C 4	F 6	F 5	F 3	F 4
2	F 4	F 2	F 4	F 1	F 2		H 2	C 1	L 4	L 3	LH 11	L 2	L 2	L 2	L 3	L 3	L 3	L 3	L 3	L 5	F 3	F 2	FF 22	F 2
3	F 2	F 2	F 2	F 4	F 3	L 5	L 1	H 1	C 1	C 2	C 1	C 2	H 2	C 2	H 2	C 2	C 5	C 3	C 3	C 1	FF 11	F 1	F 1	F 5
4	F 6	F 2	FF 21	F 2	F 6	L 8	L 8	CHL 22	L 2	L 1	LH 21	L 1	L 1	L 1	L 1	L 1	L 2	HL 13	L 3	L 3	F 1	F 1		F 4
5	F 4	F 1					L 5	L 4	L 3	L 3	L 1	L 1	L 1	L 1	HL 11	HL 11	H 2	H 2	C 2	C 4	F 3	F 6	FF 31	F 4
6	F 6	F 6	F 4	FF 32	F 4	L 1	H 3	H 2	H 2	C 2	C 3	C 2	C 2	L 1	L 1	L 2	L 2	HL 33	CL 43	CL 51	FF 62	F 6	FF 34	FF 34
7	FF 24	F 5	F 3	F 5	F 3	L 6	L 3	LH 22	HL 21	HL 11	CL 11	CL 11	CL 21	CL 21	C 2	C 2	C 2	CL 21	C 3	C 5	F 7	F 4	F 5	F 5
8	F 2	F 2	F 3	F 1					C 2	C 2	C 2	C 3	L 3	L 3	L 3	L 2	L 3	L 2	L 1	HL 11	F 1	F 2		F 3
9	FF 23	FF 12	F 3	F 2	F 3	L 7	L 4	L 4	L 2	C 1	C 1	L 2	L 1			H 1	C 1	CL 31	C 2		F 1	F 1	FF 31	F 4
10	F 2	F 2	F 1			L 6			L 2	HL 12	CL 11	C 1	H 1	H 1	C 1	HL 11	C 2	C 2	C 2	C 1	F 1	F 3	F 2	F 2
11	F 3	F 4	FF 13	F 3	F 3	F 2	CL 71	C 3	C 4	L 2	L 2	L 3	L 3	L 3	L 3	L 4	L 4	L 3	L 2	L 5	F 2	FF 32	FF 41	F 2
12	F 2	F 2	F 3	F 3	F 2	F 2	L 1	L 3	H 1	C 1	C 1	H 1	C 1	C 1	C 1	C 1	C 3	C 4	C 2	C 6	F 4	F 2	F 3	F 2
13	FF 42	F 4	F 5	F 6	F 7	F 4	L 3	L 3	L 2	L 2	L 1	L 1	L 1	L 1	L 1	HL 11	H 1	C 1	L 1	L 1				F 4
14			F 1		F 2		L 1	H 1	H 1	H 1	CL 11	CL 11	L 1			H 1		H 1	C 3	CL 32	FF 72	F 5	FF 22	FF 12
15	F 4	F 3	F 4	F 3	F 2	F 2	L 3	L 2	L 2	L 1	L 1	L 1	L 1	L 1	H 1		C 1	C 2	C 1	C 3	F 7	F 5	F 2	
16	F 1						L 1	L 1	L 1		L 1	L 1	L 1	HL 11			C 1	C 1		HL 21	F 2	F 2	F 3	F 3
17	F 2	FF 32	F 4	FF 22	FF 21	F 2	L 1	HL 22	HL 22	L 2	L 1	L 1	HL 11	L 1	L 1		H 1	H 1	C 2	L 1	FF 11	FF 81	F 7	F 4
18	F 2	F 2	F 2	F 1	F 1		LH 32	HL 22		CL 22	C 5	CL 11	CL 21	L 1	L 2	HL 11	HL 11	HL 21	C 2	L 5	F 7	F 7	F 4	F 4
19	F 3	F 3	F 3				H 2	H 3	C 2	C 3	C 3	C 2	L 2	L 1	C 2	C 2	C 1		H 2	C 6	F 7	F 7	F 1	F 3
20	F 2	F 6			F 3	F 2	LH 21		H 2	CL 11	CL 11	L 1	L 1			HL 12	HL 11	CL 21	CL 21	L 3	F 3	F 3	F 2	F 2
21	F 4	F 4	F 5	F 2	F 3	F 5	L 5	HL 31	CL 12	C 1	C 2	C 1	C 1	C 2	C 2	C 2	C 2	C 4	L 2	L 1	F 1			F 3
22	F 2	F 2	F 2	F 2	F 2	F 5	L 3	H 2	H 1	CL 11	C 1	C 3	C 2	H 1	C 1		C 2	C 2	C 4	L 4	F 6	F 3	F 3	F 4
23	F 1	F 4	F 1	F 4	F 3	F 5	L 2	H 4	C 2	CL 51	CL 41	CL 21	CL 21	C 1	L 1	HL 21	C 2	L 4	L 4	L 7	F 7	F 6	F 5	F 2
24	F 4	F 4	F 6	F 4	F 3	F 2	H 2	H 2	C 3	L 1	L 1	L 1	L 1	L 2	L 1	C 2	C 2	C 2	L 4	L 4	F 4	F 3	F 2	F 3
25	F 1	F 1	F 2	F 3	F 2	F 1	L 1	L 1	HL 12	CL 21	C 2	C 2	C 1	C 1	C 1	C 2	C 2	L 4	L 4	L 1	F 2	F 2	F 2	F 2
26	F 2	F 1						H 1	H 2	L 1	L 1	L 1	L 1	L 1	L 1		H 2	C 4	C 5	L 3	F 3	F 3	F 3	F 3
27	F 4	F 5	F 2	F 2				HL 22	C 2	C 2	C 1	C 1	C 1	C 1	C 1	H 1	H 2	C 4	C 3	C 3	F 3	F 3	F 2	F 2
28	F 2	F 2	F 1					HL 31	C 2	C 1	H 1	C 1	C 1	HL 11	H 1	C 2	C 1	H 1	C 2	L 3	F 7	FF 23	F 3	F 4
29	F 3	F 3	F 4	F 3	F 3	F 3	L 3	C 2	C 1	C 2	C 2	C 1	C 1	HC 11	C 2	C 2	C 2		C 4	C 3	F 3	F 3	F 6	F 4
30			F 2			F 1	LH 12	HL 21	HL 11	CL 41	CL 21	C 2	C 2	CL 11	HL 11	L 2		H 2	CL 11	L 4	F 4	F 4	F 4	F 1
31	F 1	F 1		F 1	F 3	F 2	L 2	H 2	LH 21	H 1	CL 21	C 2	CL 21	C 1	C 1		C 2	C 2	C 3	L 6	F 5	F 7	F 3	F 5
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1970 | TYPES OF ES


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE AUG. 1, 1970
KEY
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× fx
○ fo
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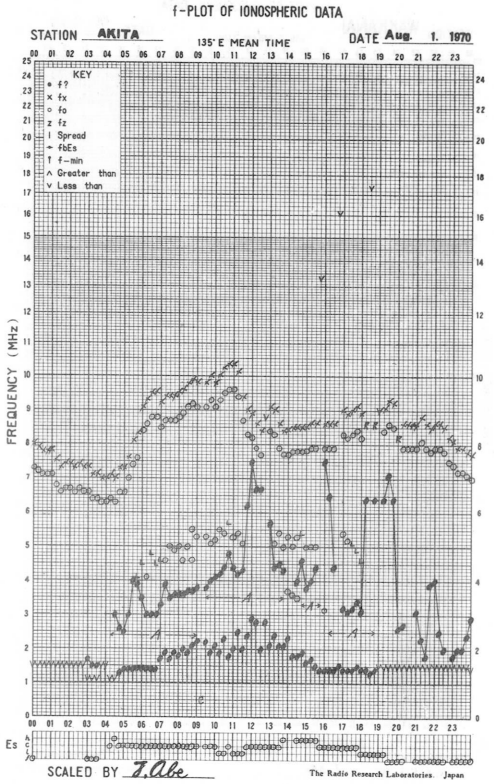
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda.
The Radio Research Laboratories. Japan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DATE Aug. 1. 1970
KEY
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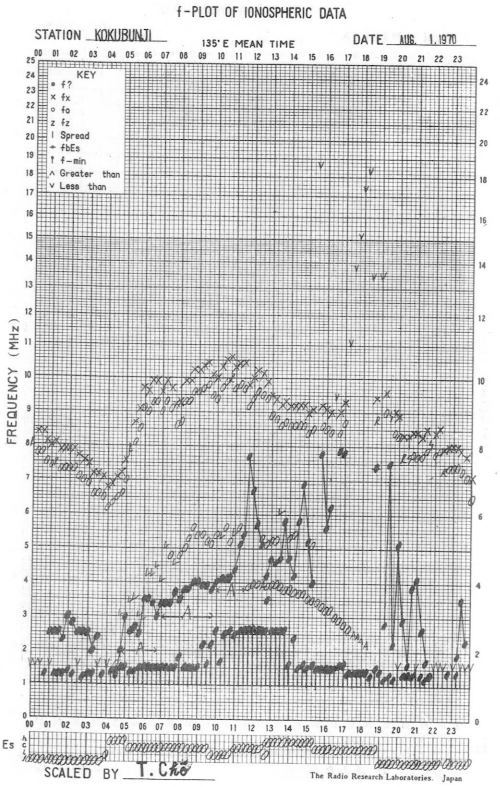
SCALED BY T. Abe
The Radio Research Laboratories. Japan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DATE AUG. 1, 1970
KEY
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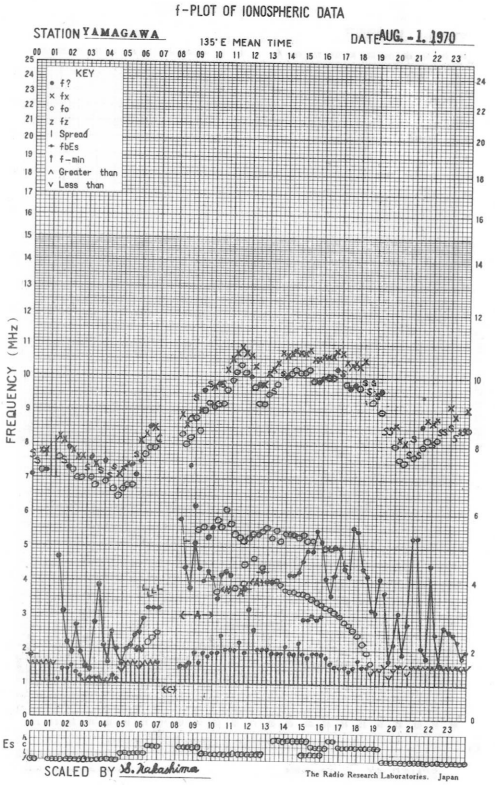
SCALED BY T. Cho
The Radio Research Laboratories. Japan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KEY
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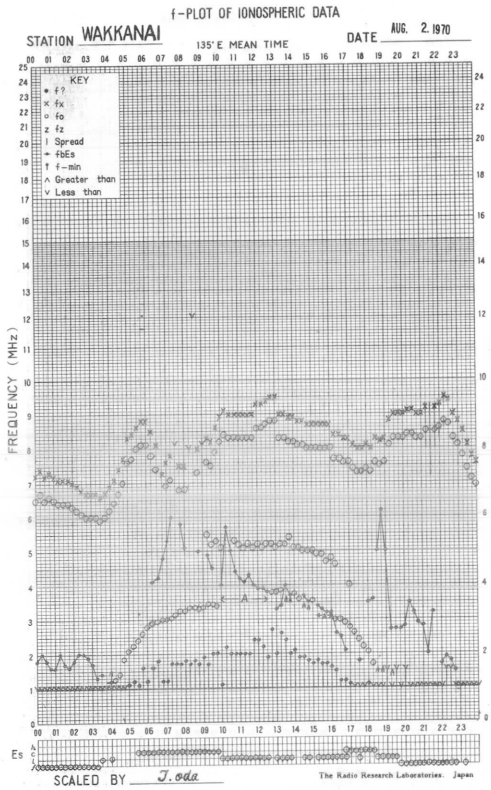
The Radio Research Laboratories. Japan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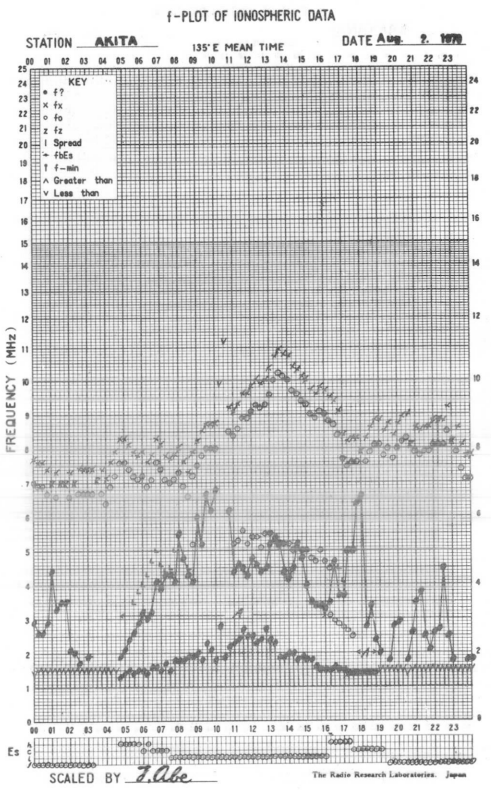
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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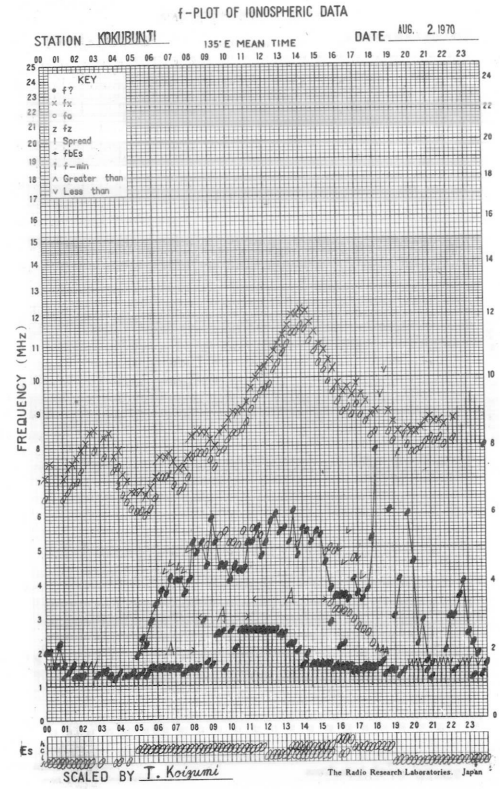
SCALED BY T. Abe
The Radio Research Laboratories. Japan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KEY
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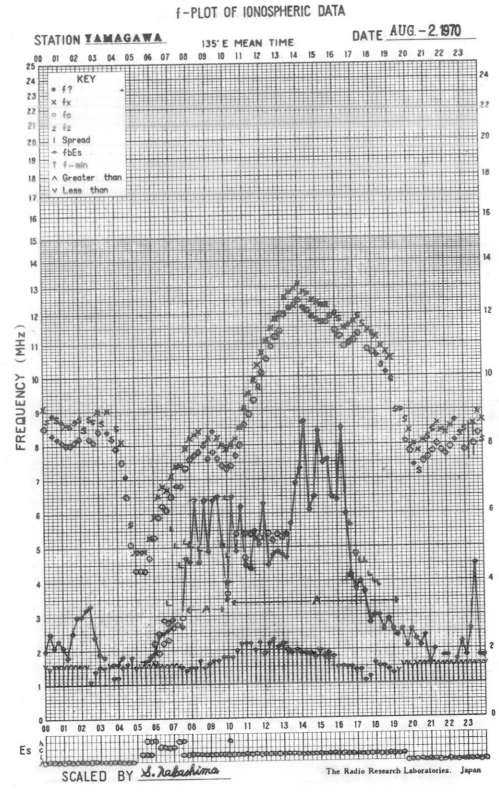
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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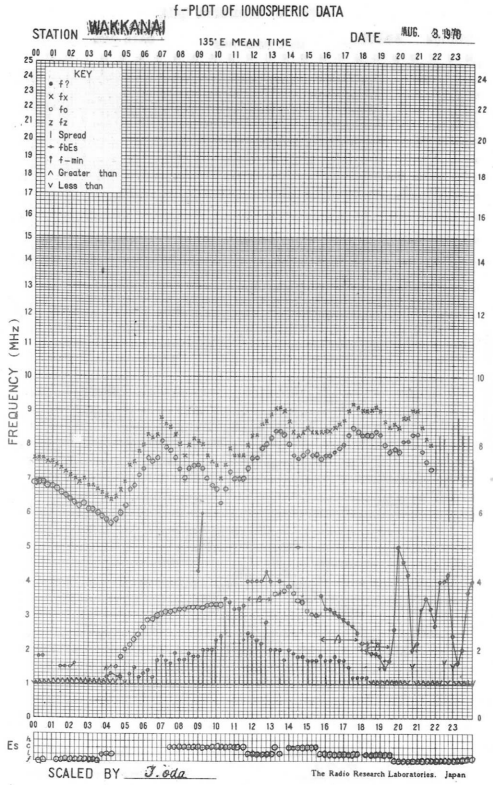
SCALED BY S. Takashima
The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE AUG. 3, 1970
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○ fo
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^ Greater than
v Less than
FREQUENCY (MHz)
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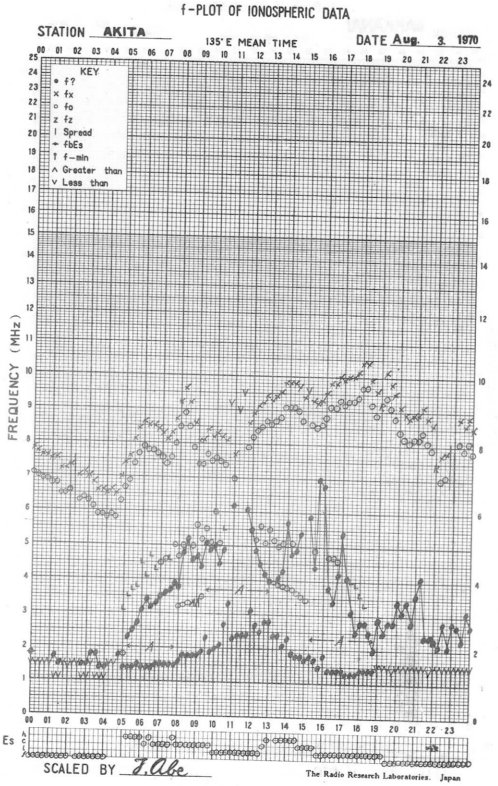
SCALED BY T. Ioda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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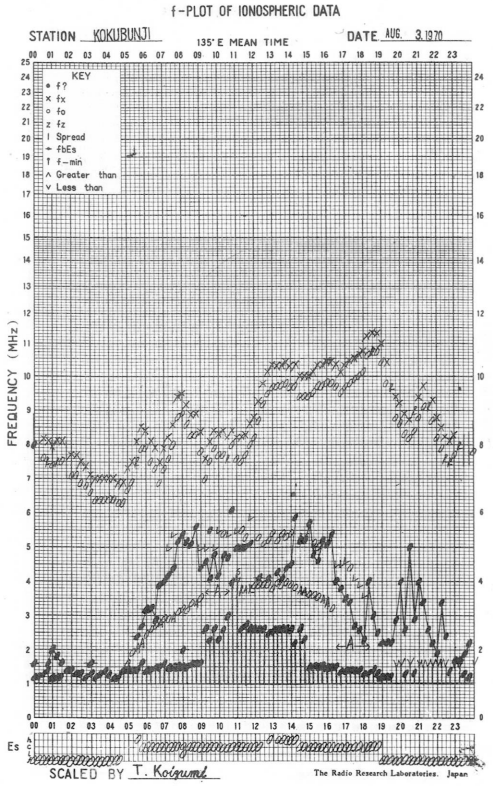
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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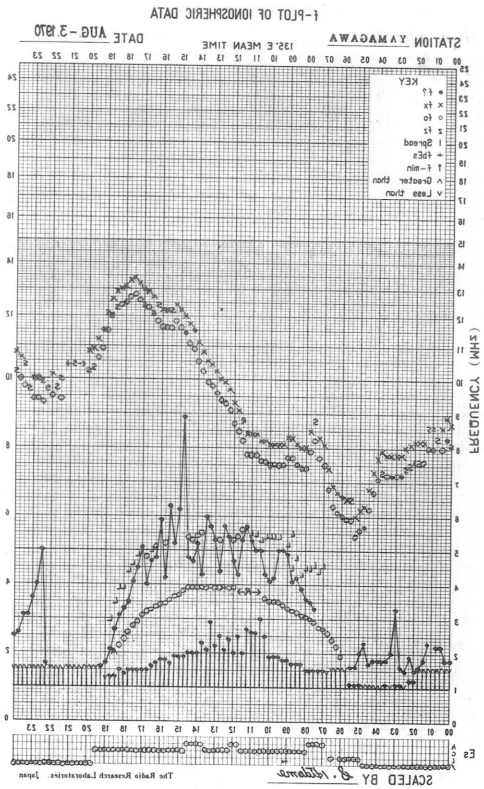
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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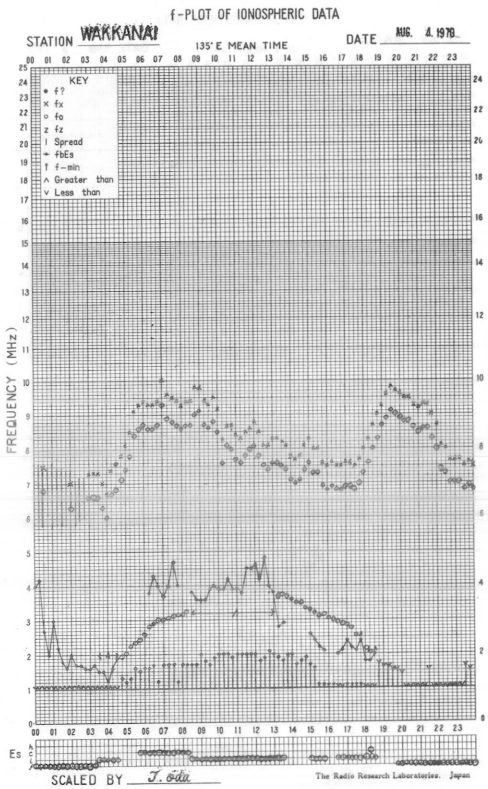
SCALED BY T. Kitamura
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE AUG. 4, 1970
KEY
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○ fo
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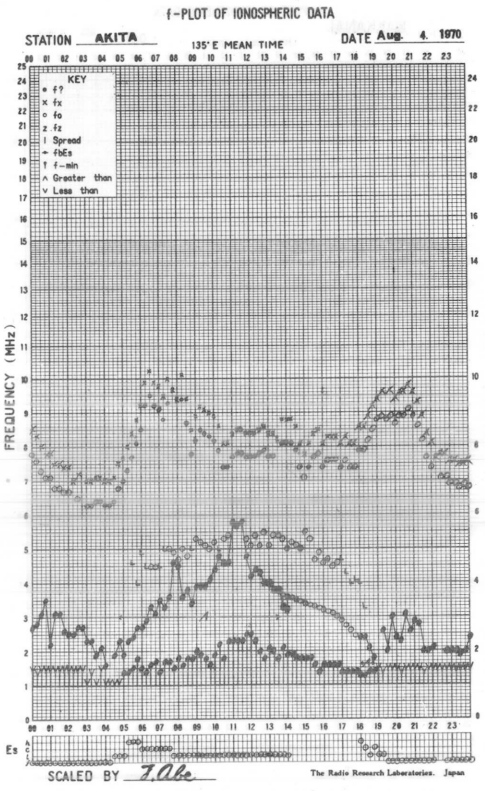
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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DATE Aug. 4, 1970
KEY
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FREQUENCY (MHz)
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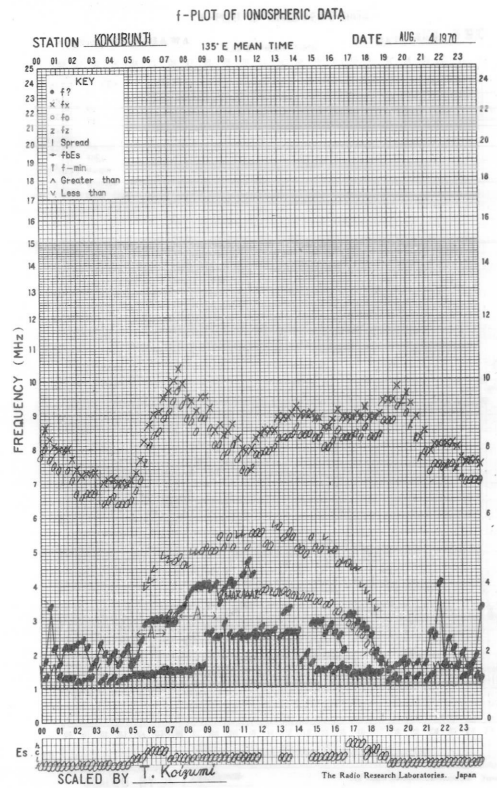
SCALED BY T. Abe
The Radio Research Laboratories. Japan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KEY
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FREQUENCY (MHz)
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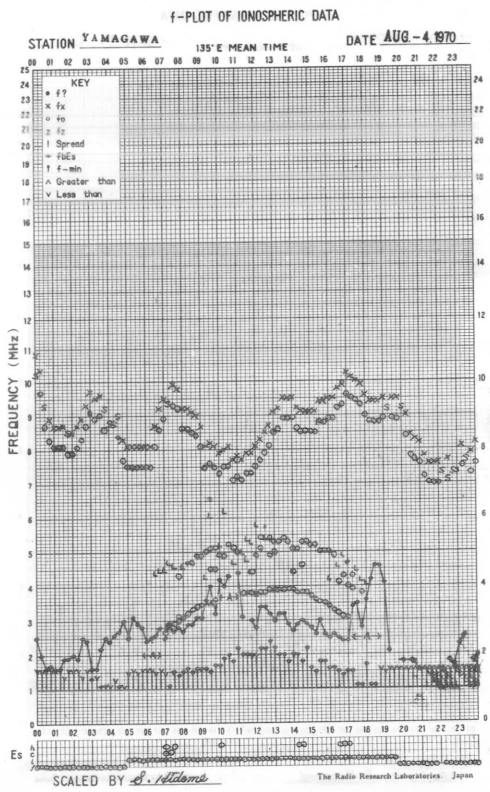
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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KEY
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○ fo
z fz
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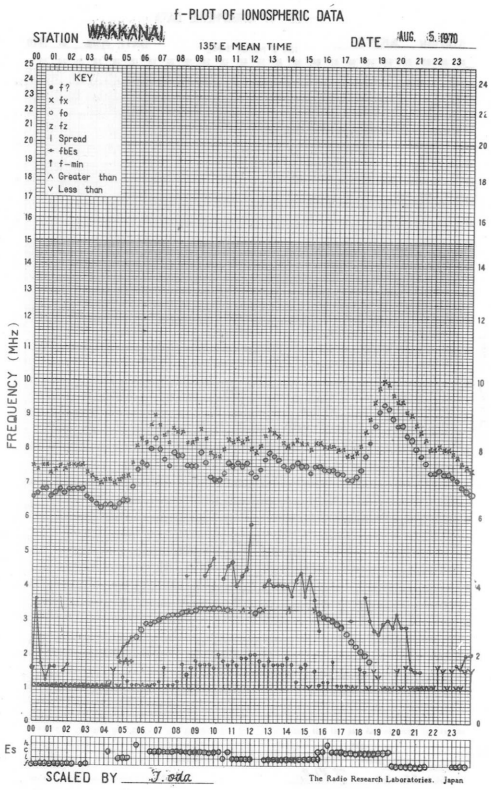
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Aidoma
The Radio Research Laboratories. Japan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KEY
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○ fo
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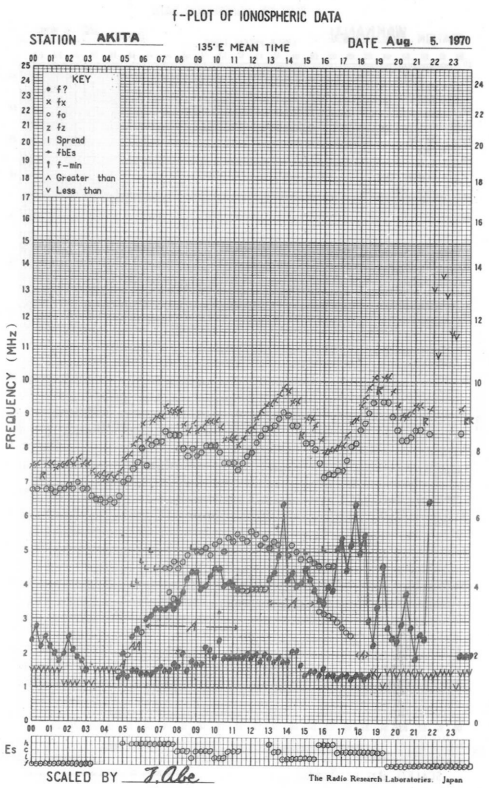
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE Aug. 5. 1970
KEY
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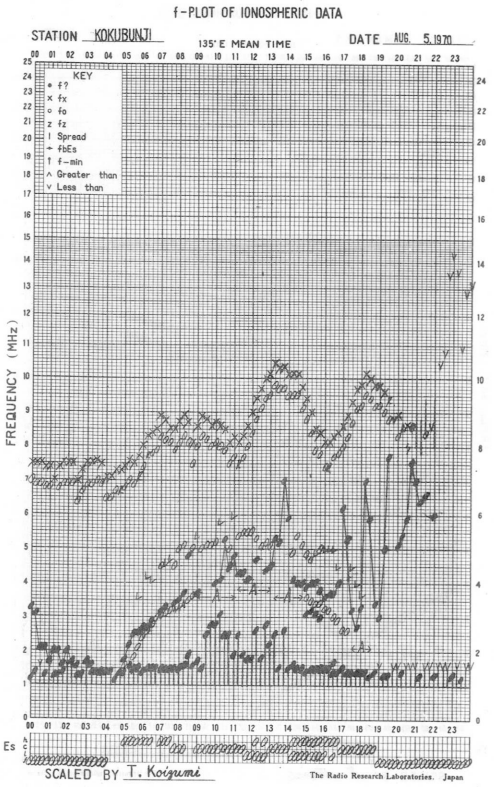
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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KEY
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○ fo
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FREQUENCY (MHz)
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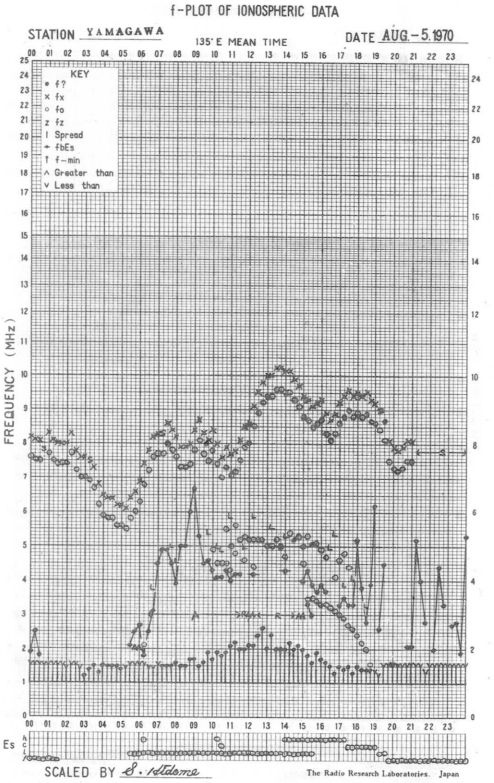
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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KEY
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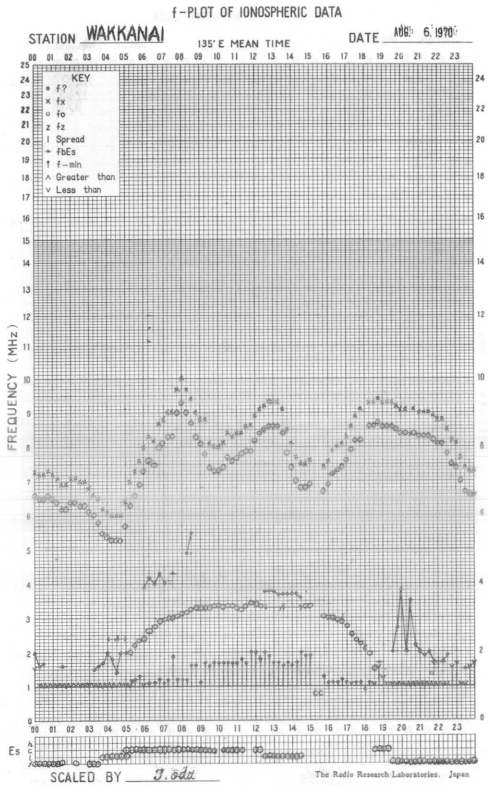
SCALED BY S. Ishidome
The Radio Research Laboratories. Japan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DATE AUG. 6. 1970
KEY
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○ fo
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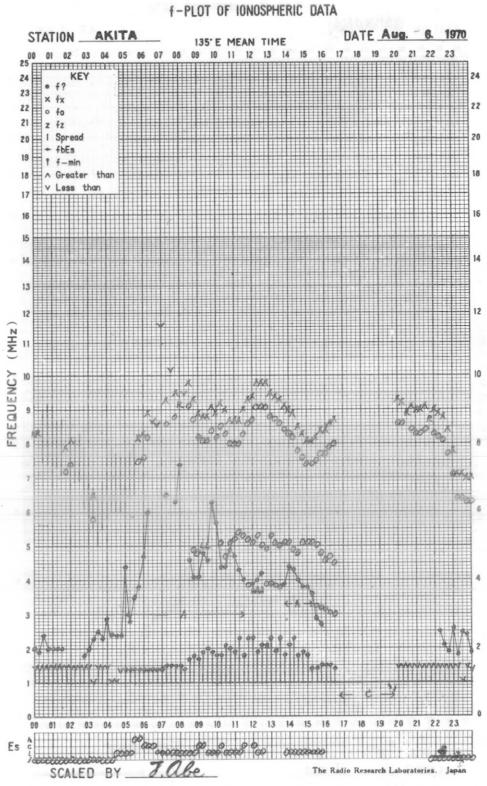
| Spread
÷ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ichii
The Radio Research Laboratories. Japan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DATE Aug. 6. 1970
KEY
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○ fo
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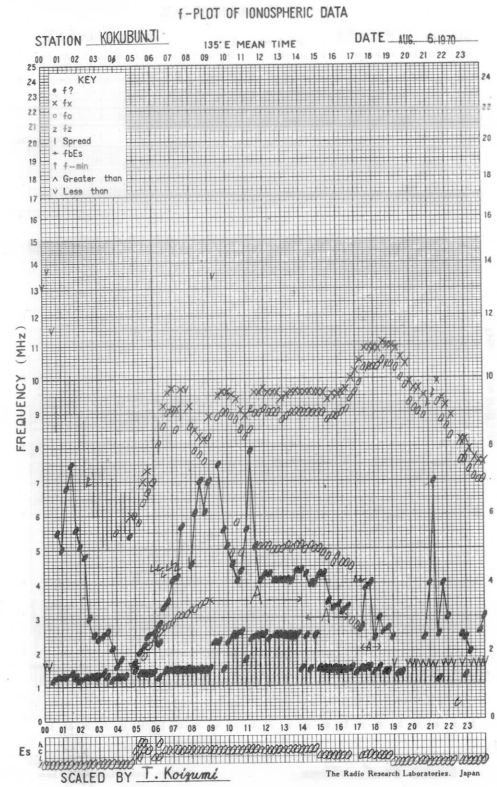
| Spread
÷ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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DATE AUG. 6.1970
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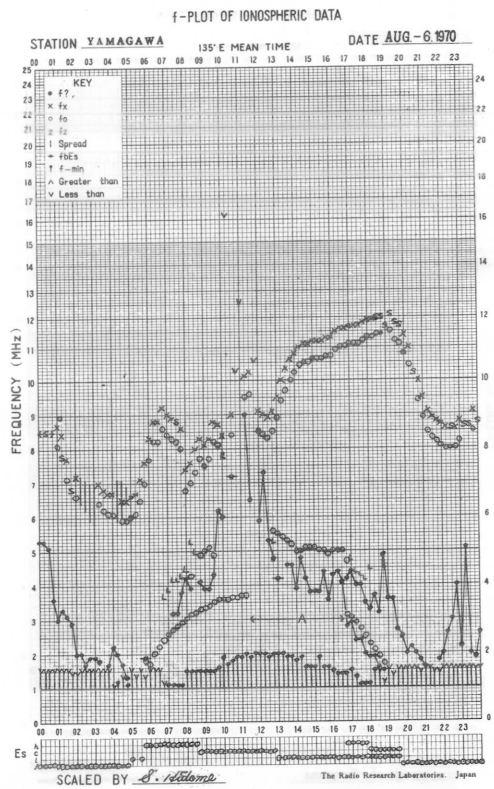
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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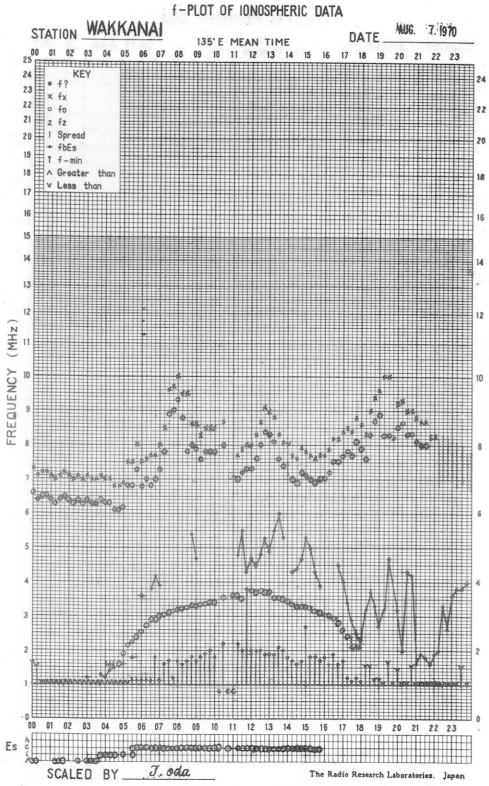
SCALED BY S. Watanabe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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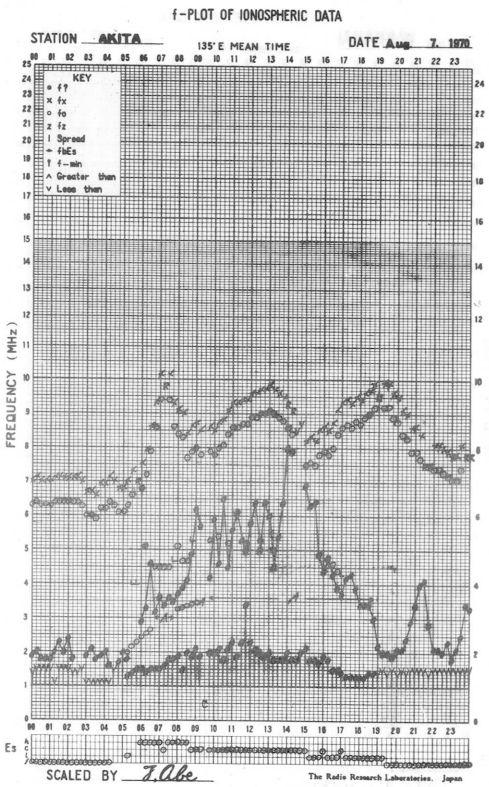
SCALED BY T. oda
The Radio Research Laboratories. Japan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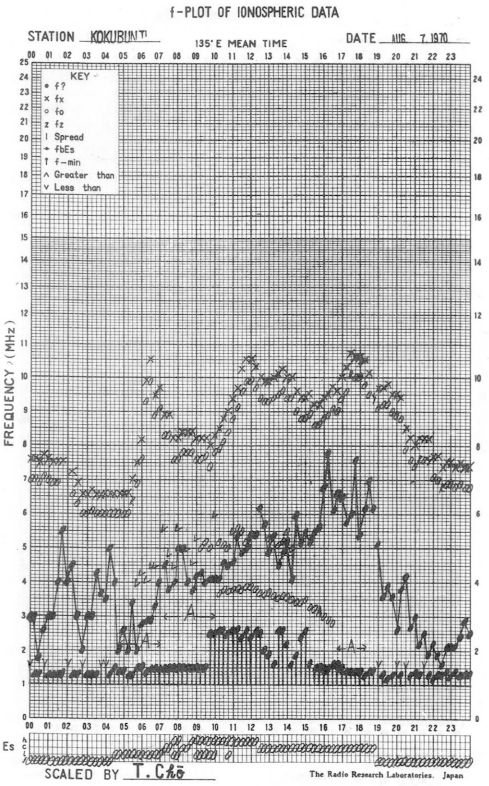
SCALED BY T. Abe
The Radio Research Laboratories. Japan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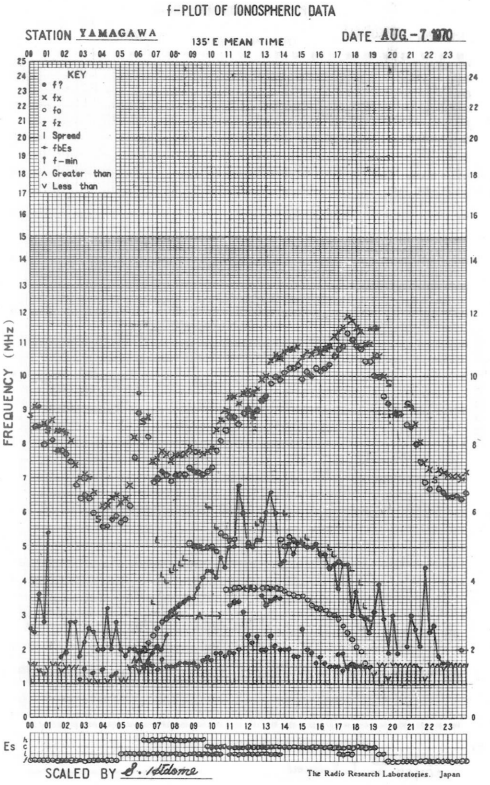
The Radio Research Laboratories. Japan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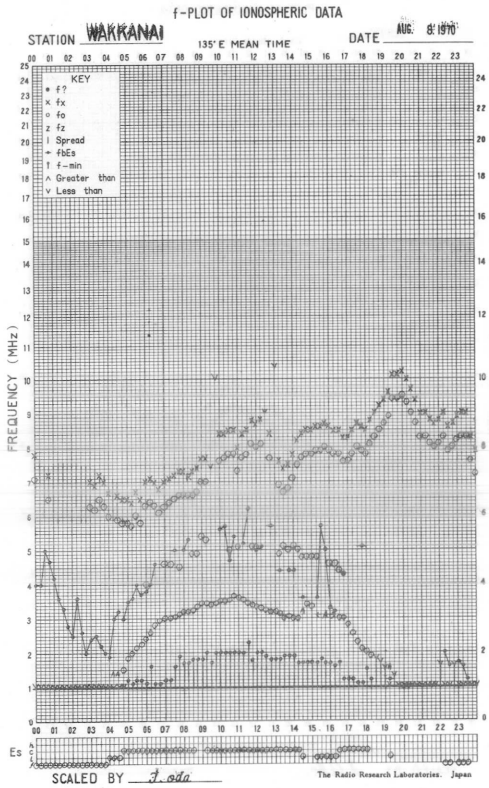
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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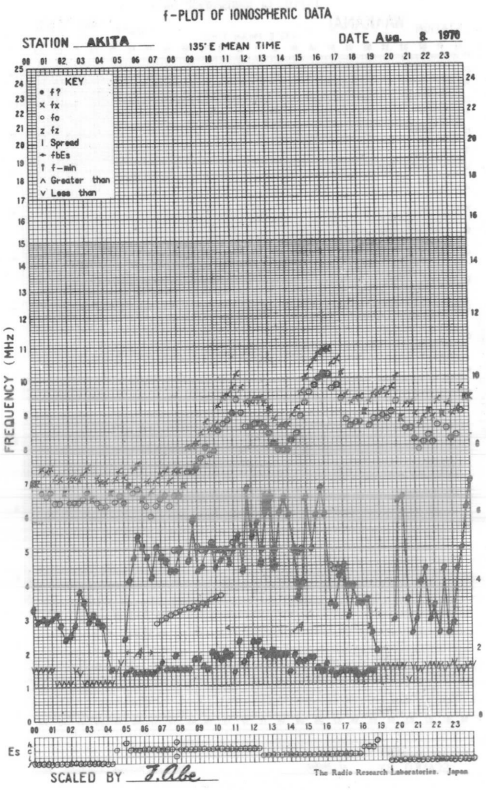
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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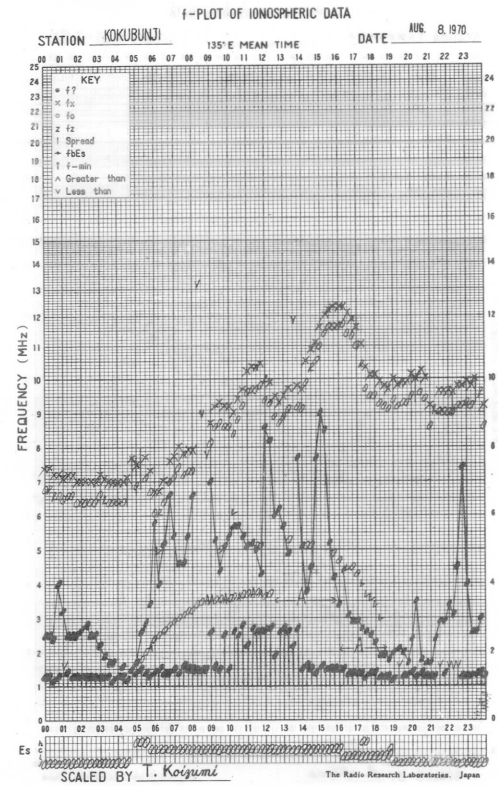
SCALED BY T. Abe
The Radio Research Laboratories. Japan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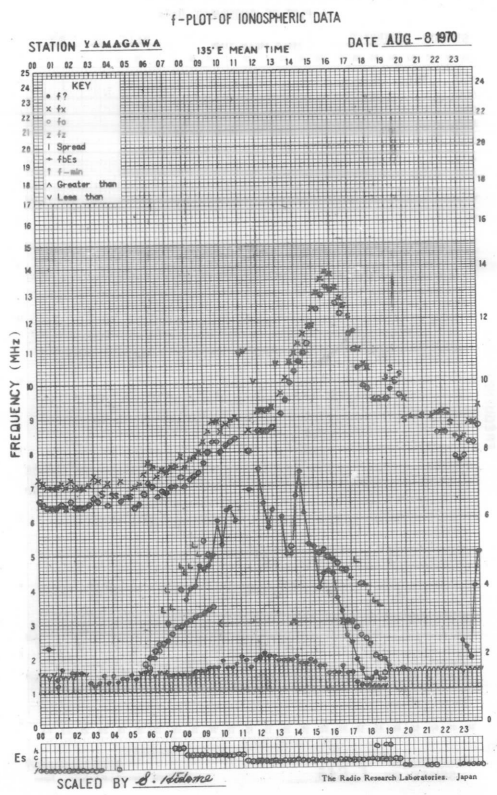
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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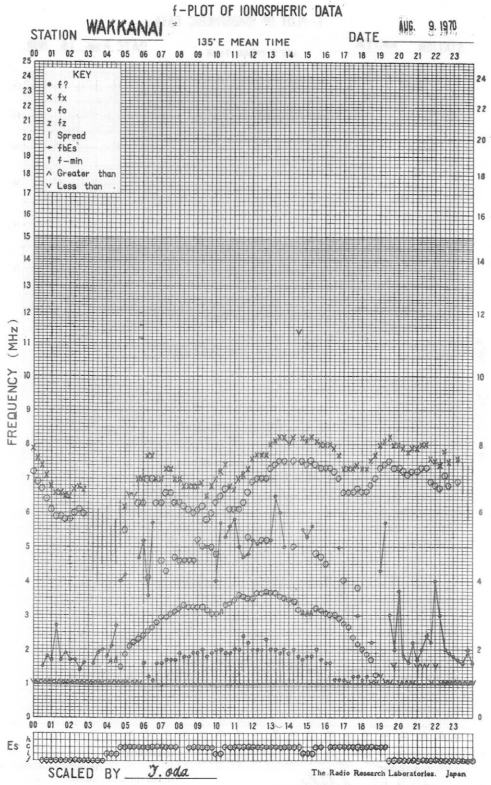
SCALED BY S. Iidaka
The Radio Research Laboratories. Japan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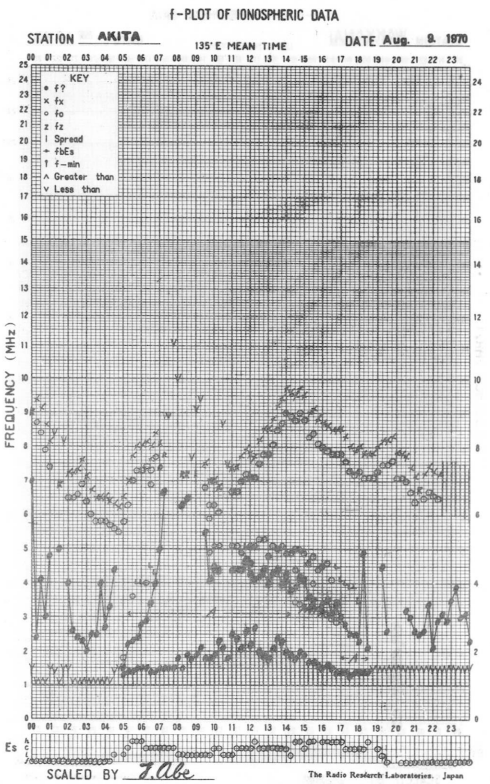
SCALED BY T. Oda
The Radio Research Laboratories. Japan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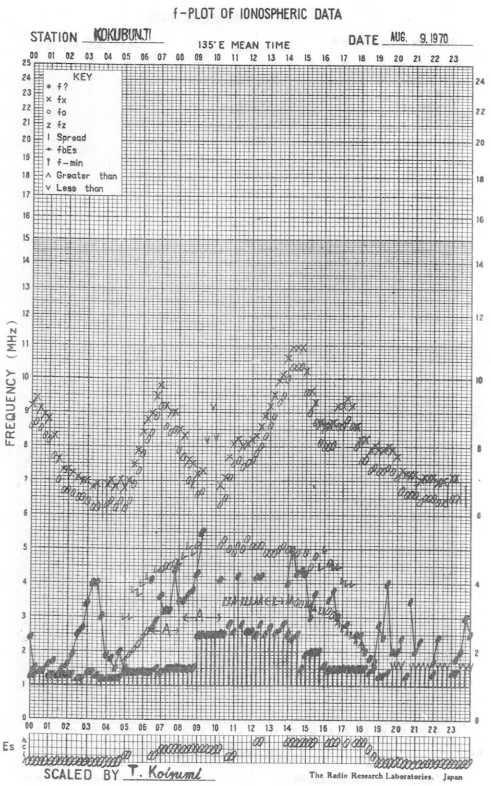
SCALED BY T. Abe
The Radio Research Laboratories. Japan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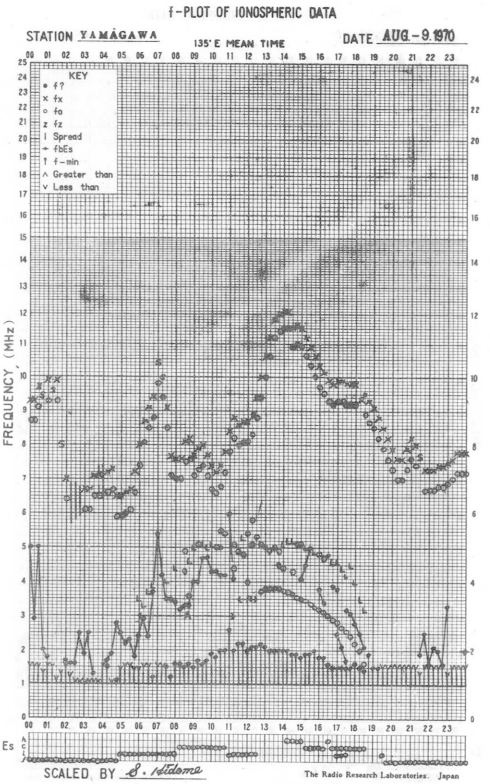
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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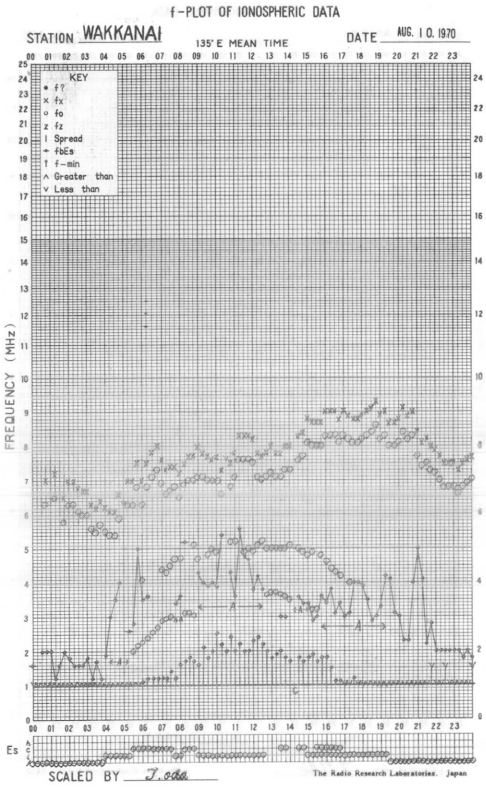
The Radio Research Laboratories. Japan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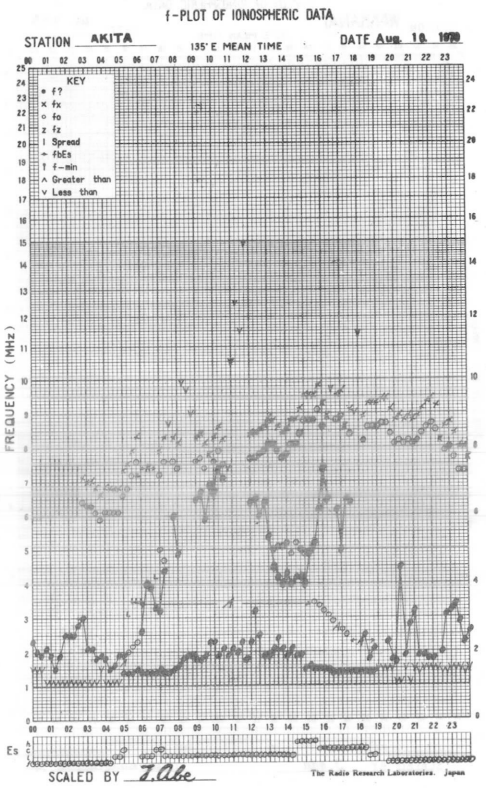
SCALED BY T. oda
The Radio Research Laboratories. Japan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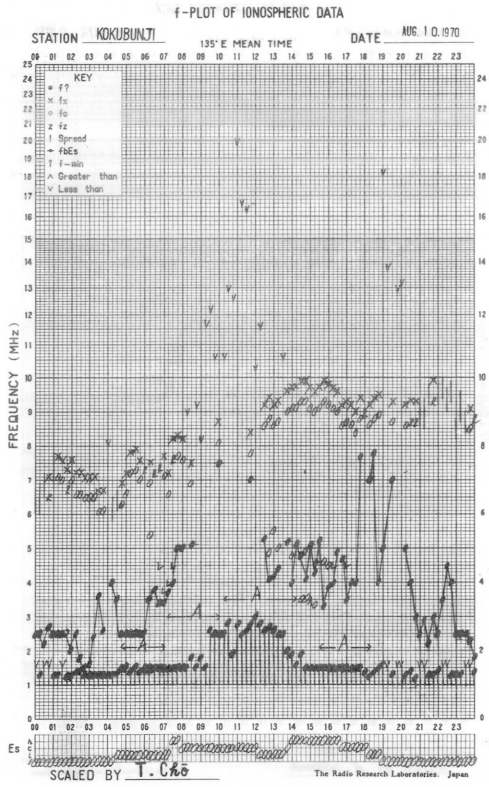
The Radio Research Laboratories. Japan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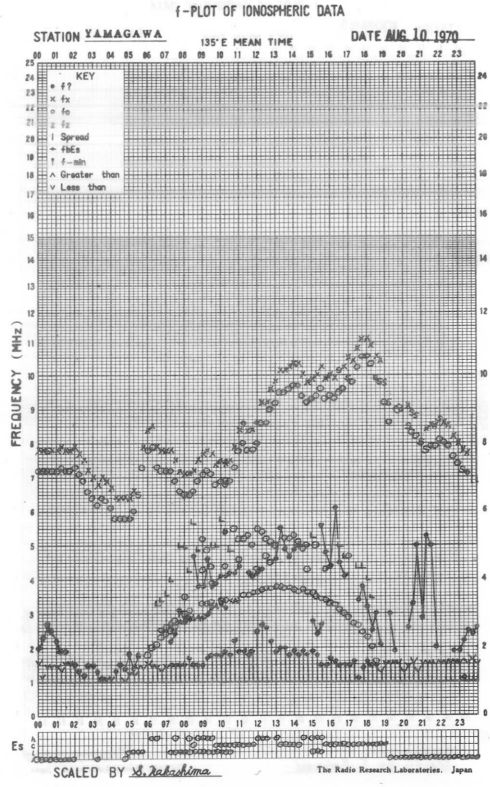
The Radio Research Laboratories. Japan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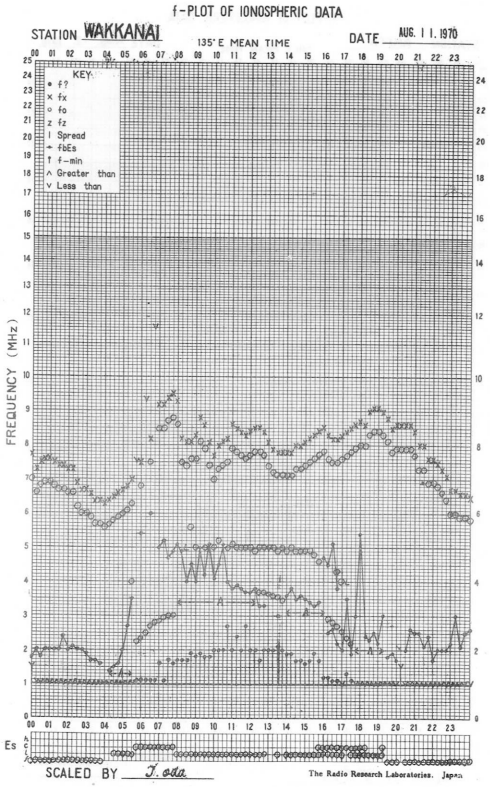
SCALED BY S. Takashima
The Radio Research Laboratories. Japan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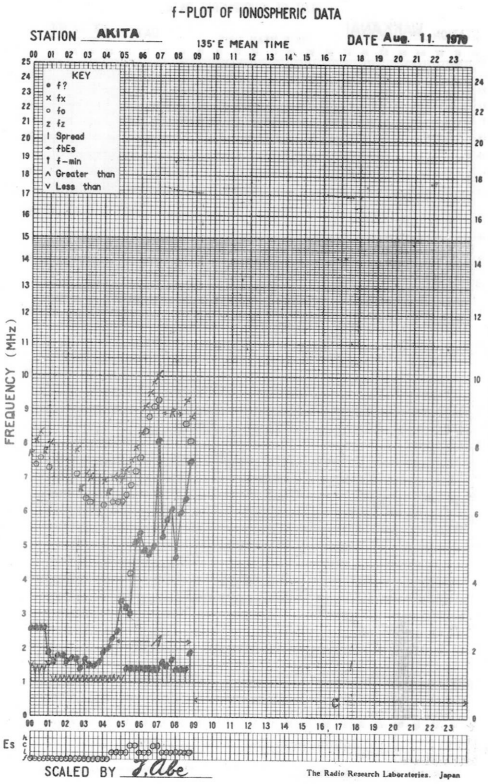
SCALED BY T. Oda
The Radio Research Laboratories. Japan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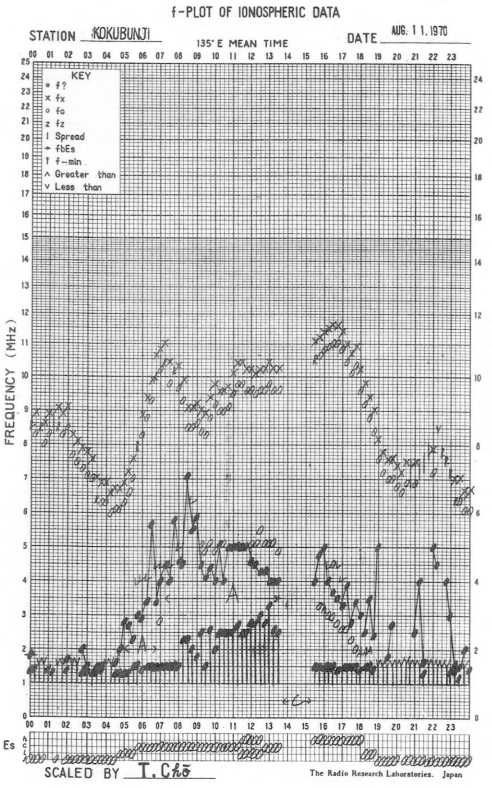
The Radio Research Laboratories. Japan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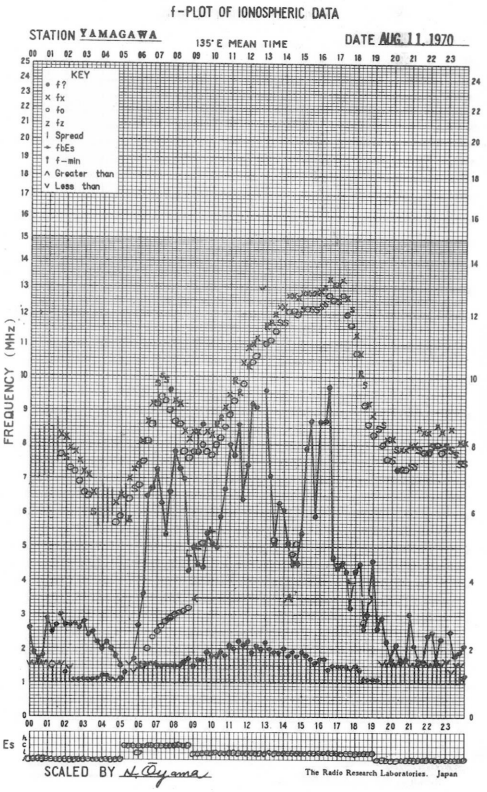
The Radio Research Laboratories. Japan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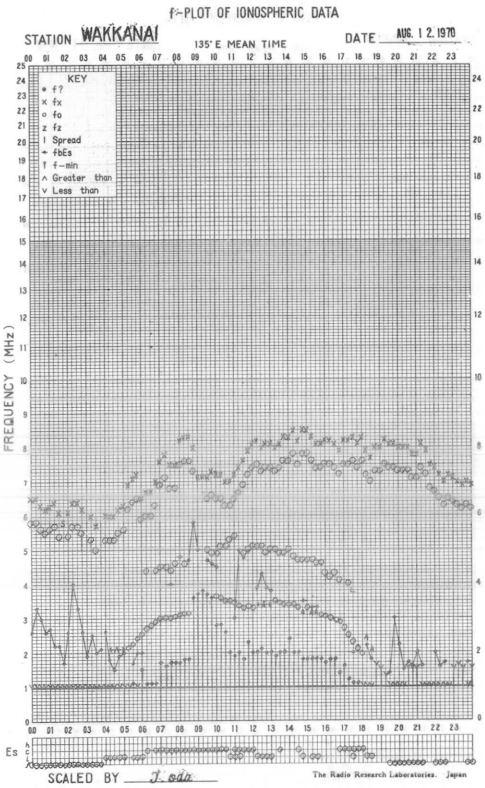
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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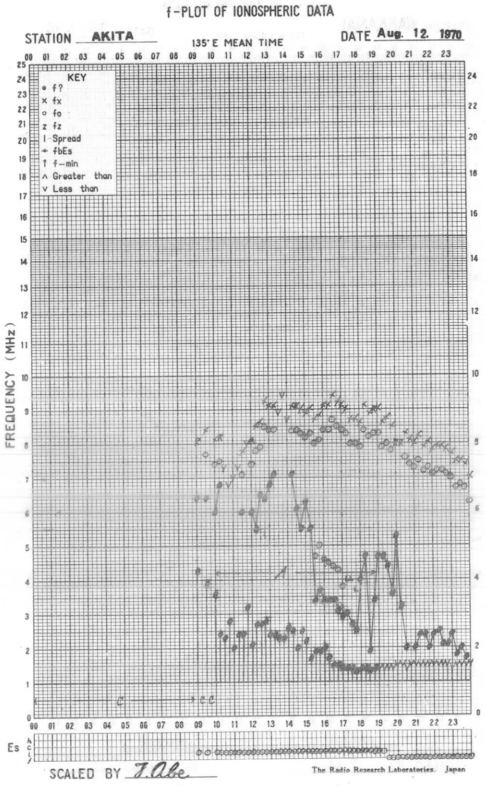
SCALED BY T. Oda
The Radio Research Laboratories. Japan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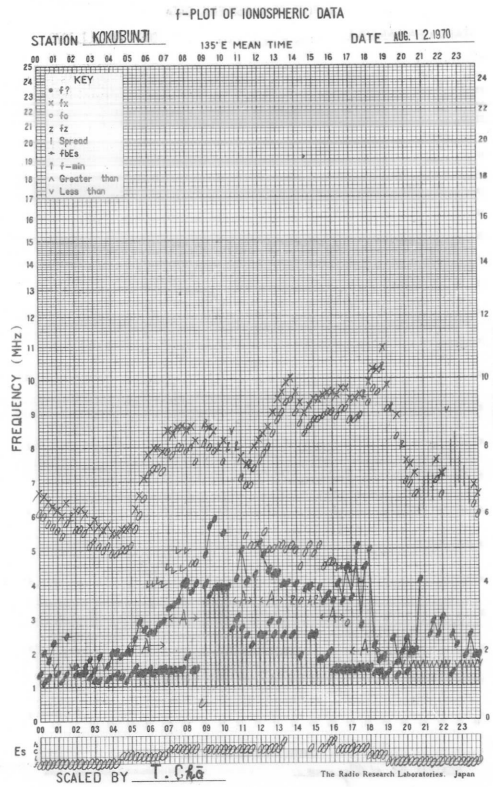
SCALED BY T. Abe
The Radio Research Laboratories. Japan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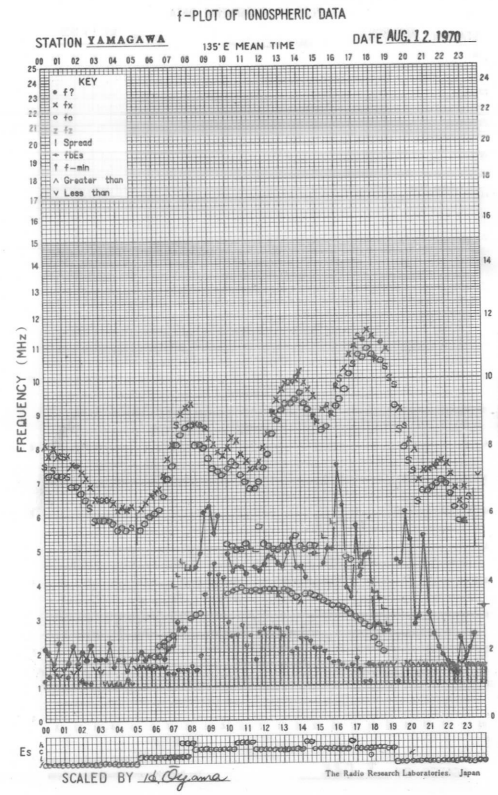
The Radio Research Laboratories. Japan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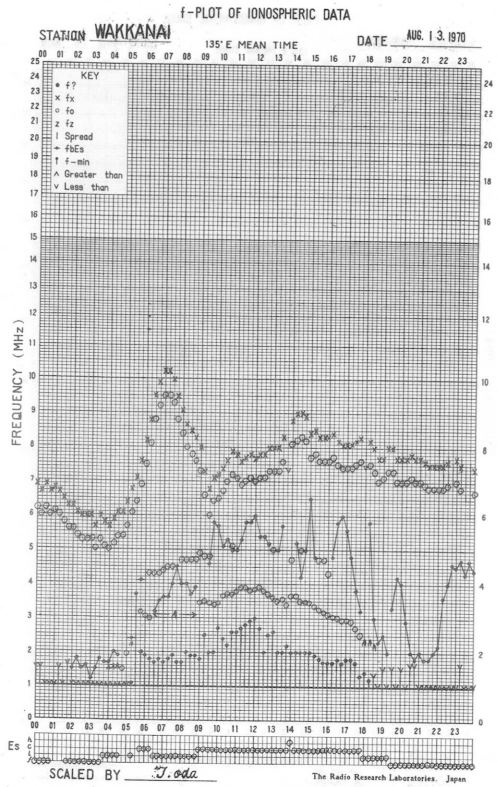
The Radio Research Laboratories. Japan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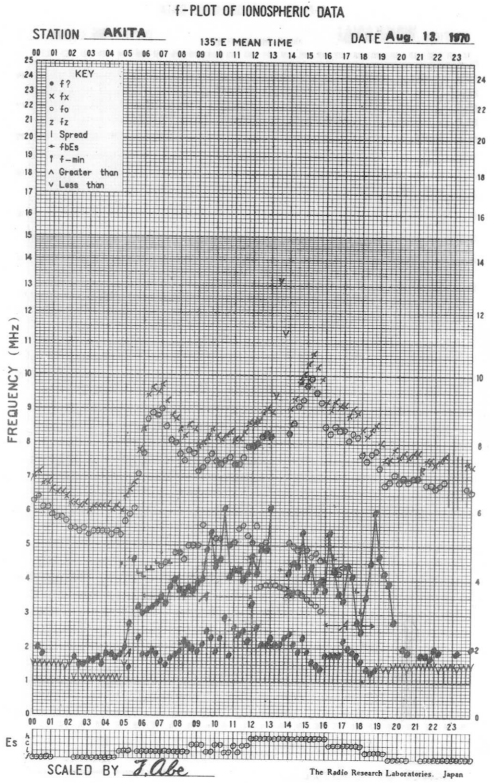
SCALED BY T. Oda
The Radio Research Laboratories. Japan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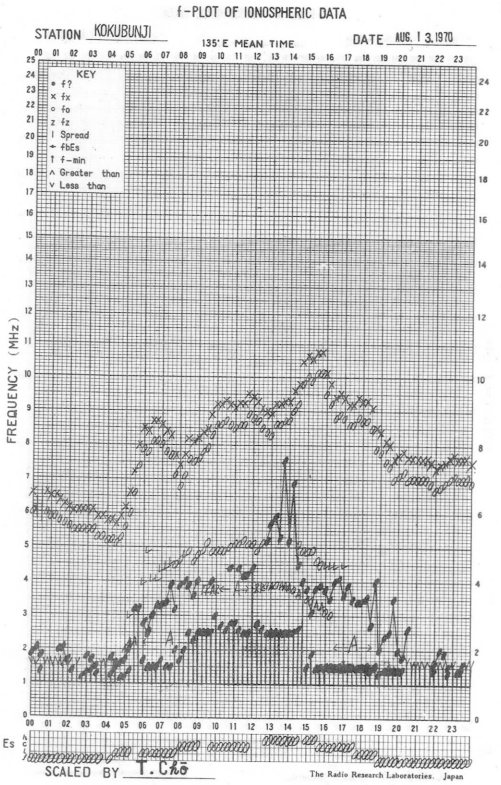
The Radio Research Laboratories. Japan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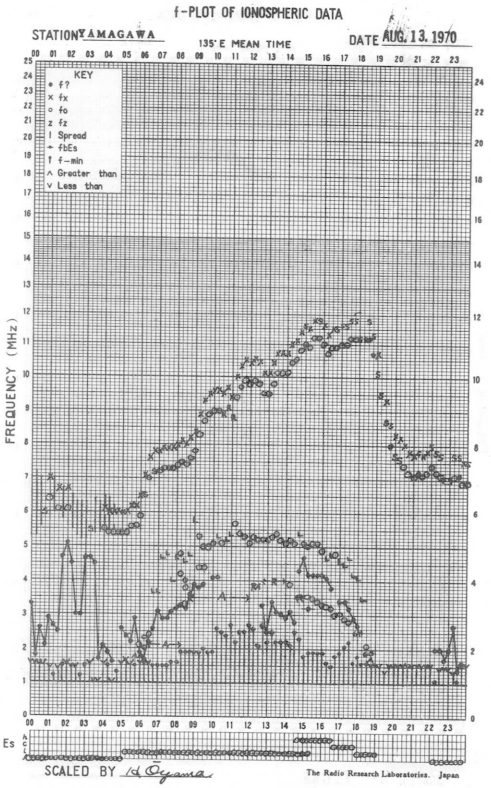
The Radio Research Laboratories. Japan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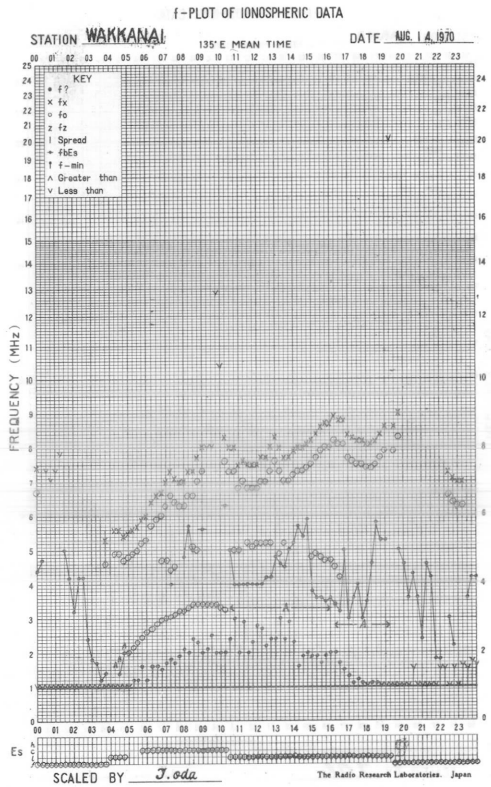
The Radio Research Laboratories. Japan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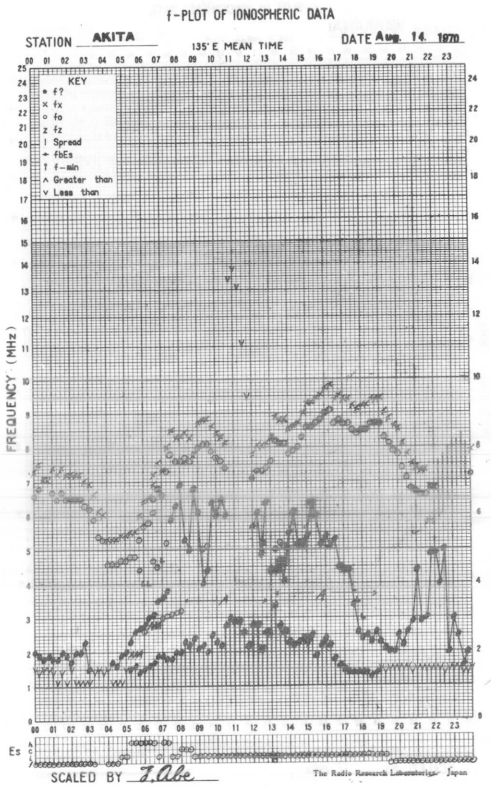
SCALED BY T. Oda
The Radio Research Laboratories. Japan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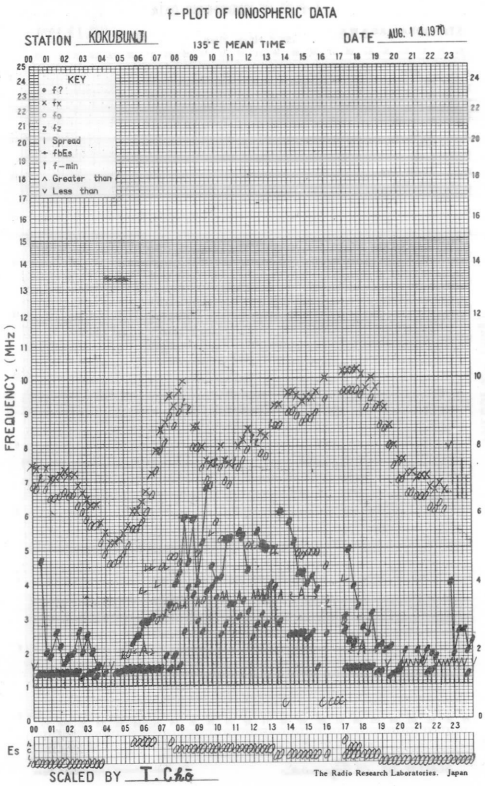
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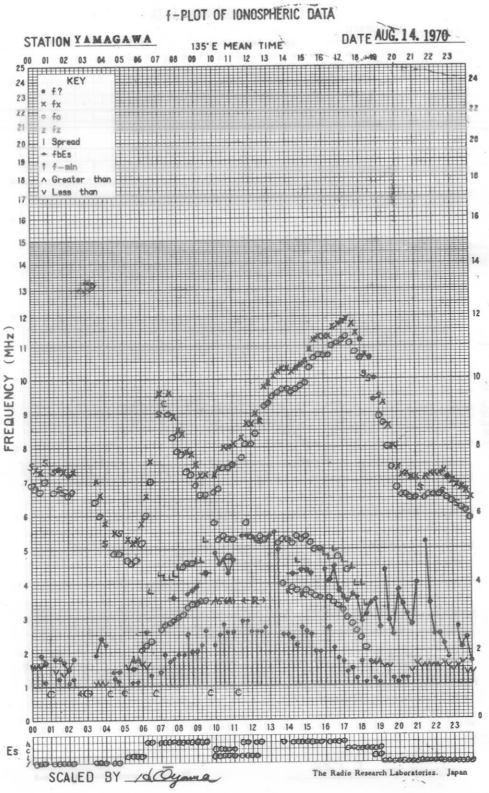
FREQUENCY (MHz)
Es
SCALED BY T. Obi
The Radio Research Laboratories. Japan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DATE AUG. 14, 1970
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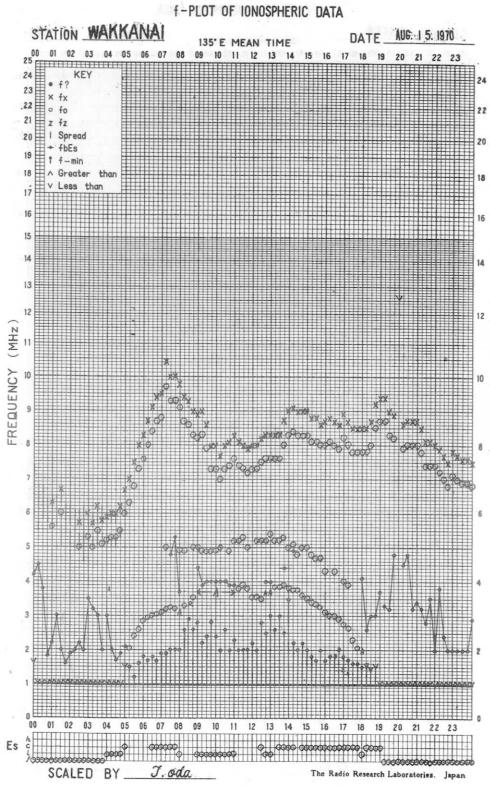
FREQUENCY (MHz)
Es
SCALED BY A. Oyama
The Radio Research Laboratories. Japan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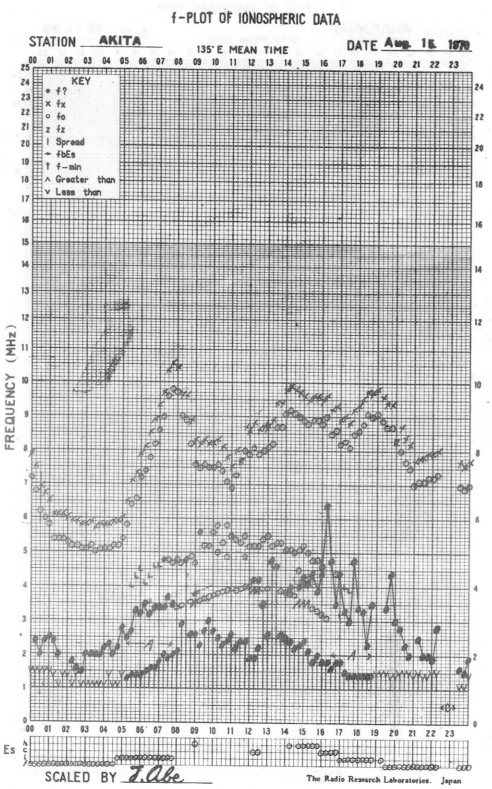
SCALED BY T. oda
The Radio Research Laboratories. Japan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DATE Aug. 15. 1970
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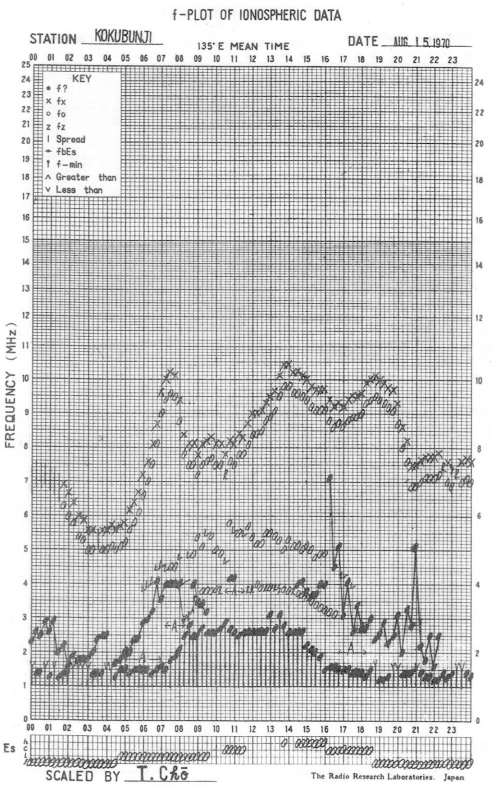
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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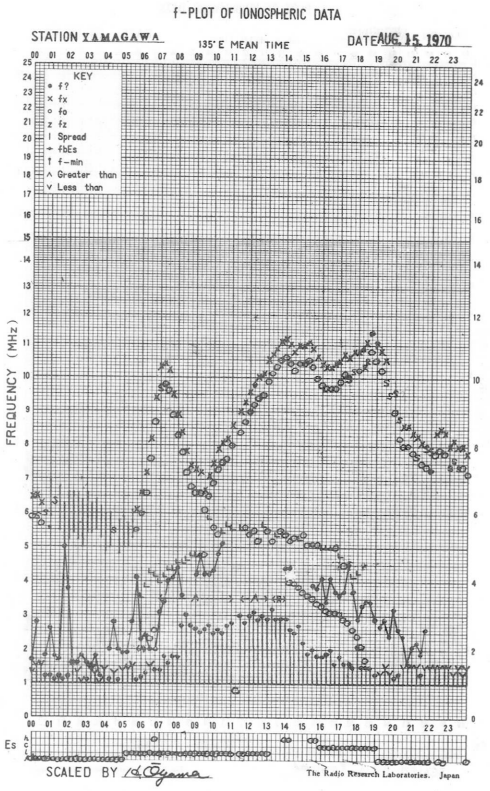
SCALED BY T. Cho
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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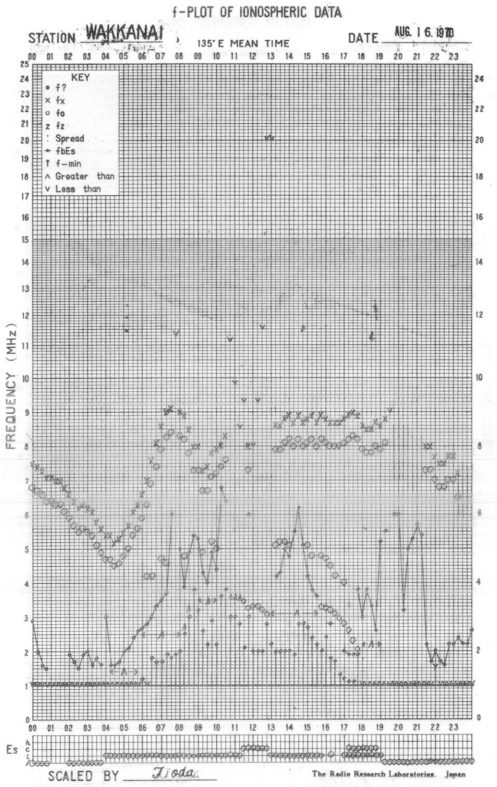
SCALED BY A. Oyama
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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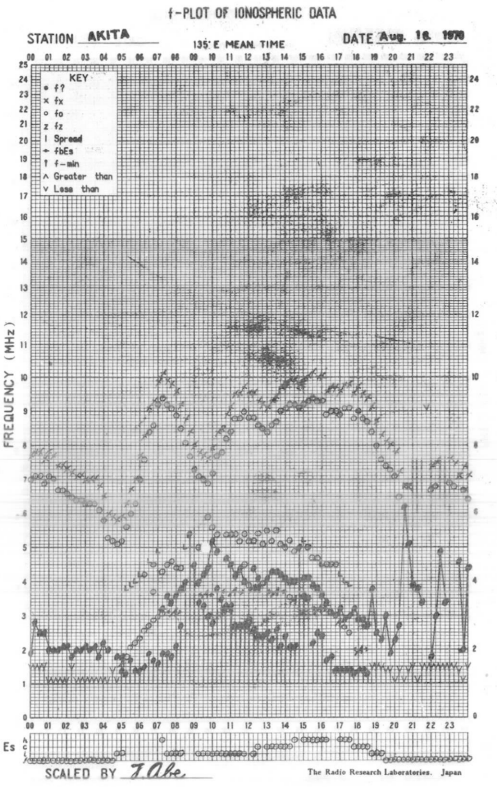
SCALED BY Ioda.
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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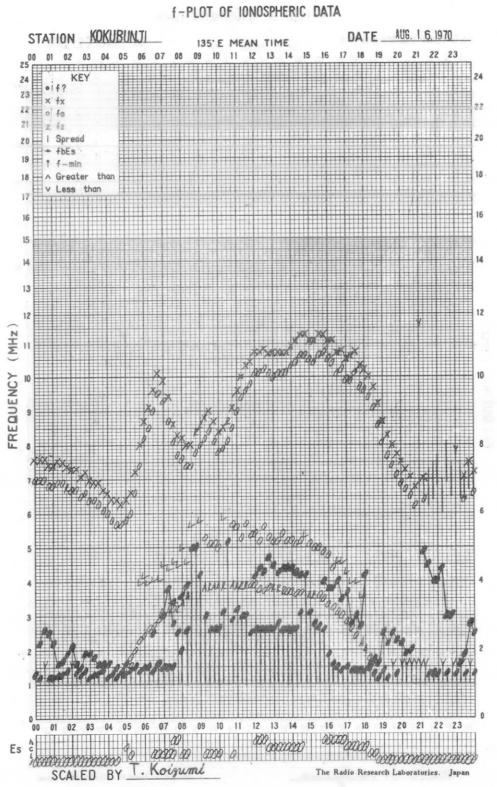
SCALED BY T. Abe.
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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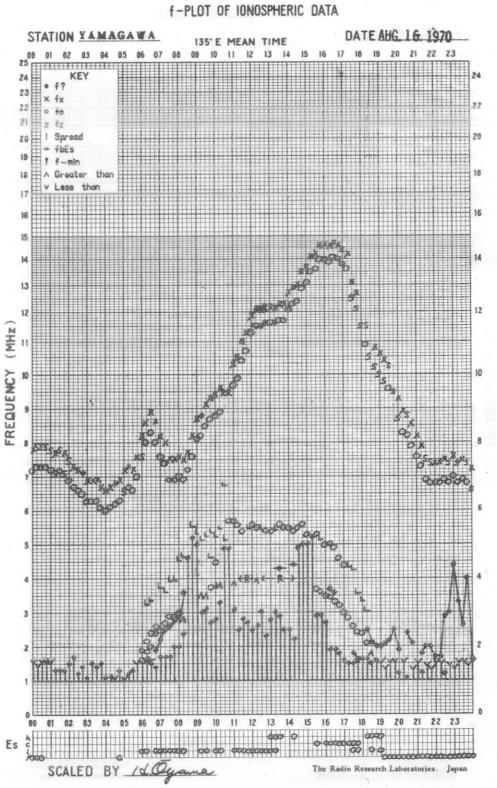
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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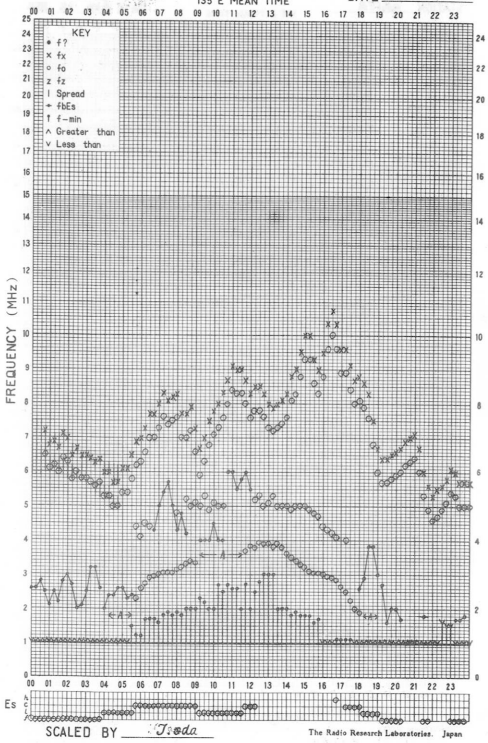
SCALED BY H. Oyama
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 17. 1970



SCALED BY Ioda

The Radio Research Laboratories. Japan

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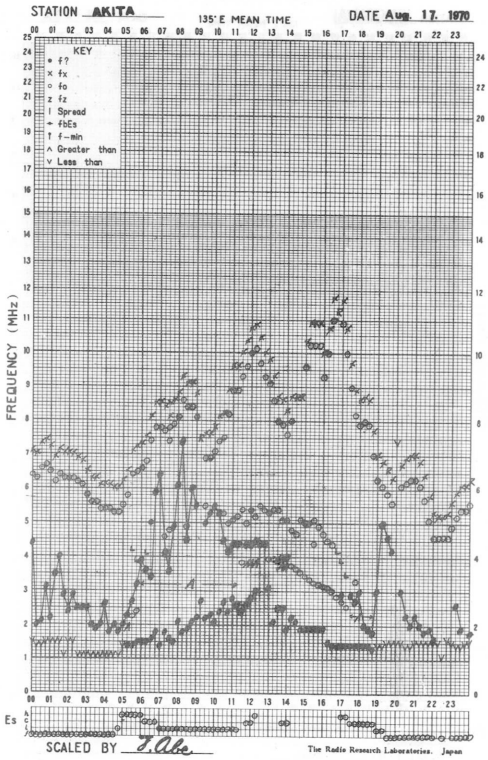

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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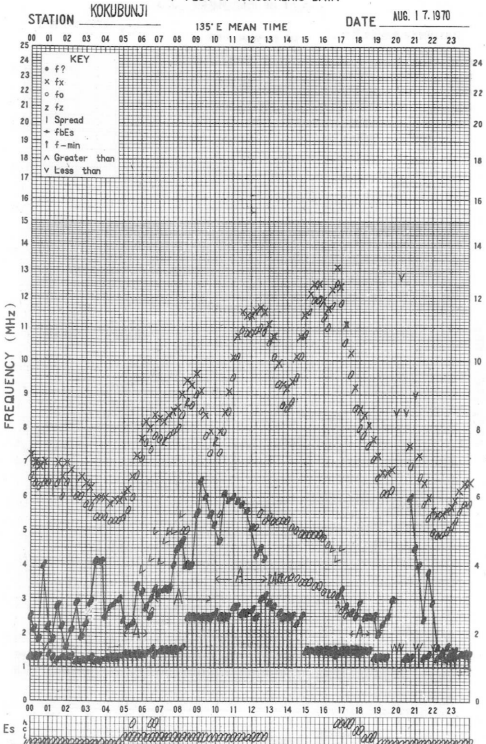

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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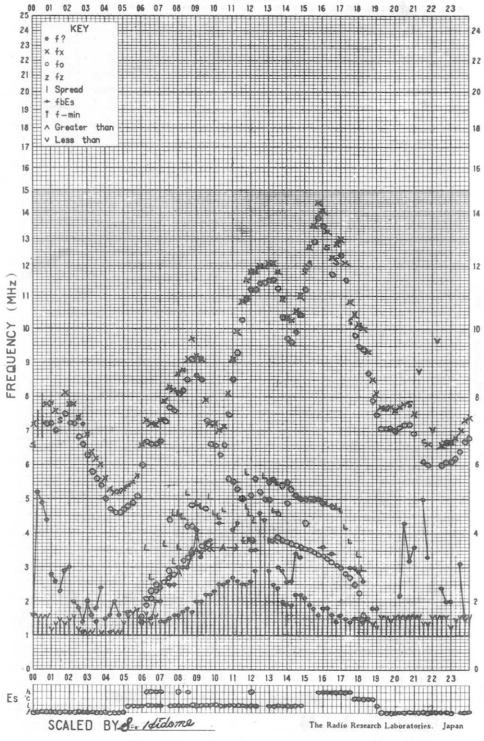
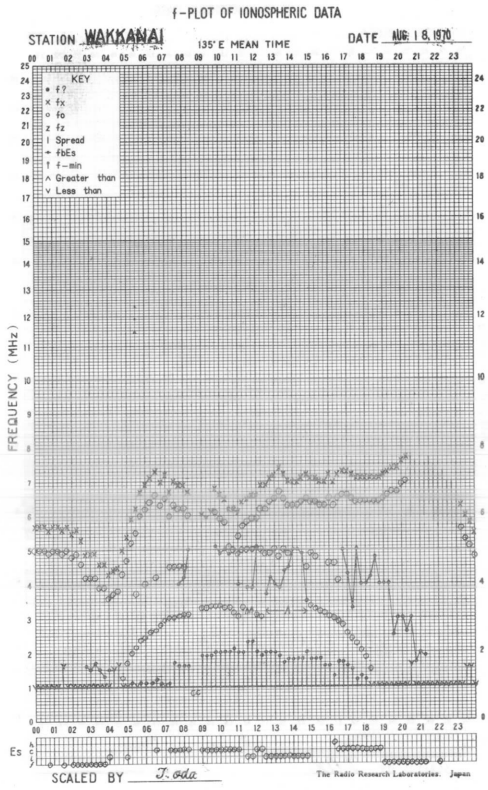


SCALED BY S. Ishidoma

The Radio Research Laboratories. Japan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135° E MEAN TIME
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KEY
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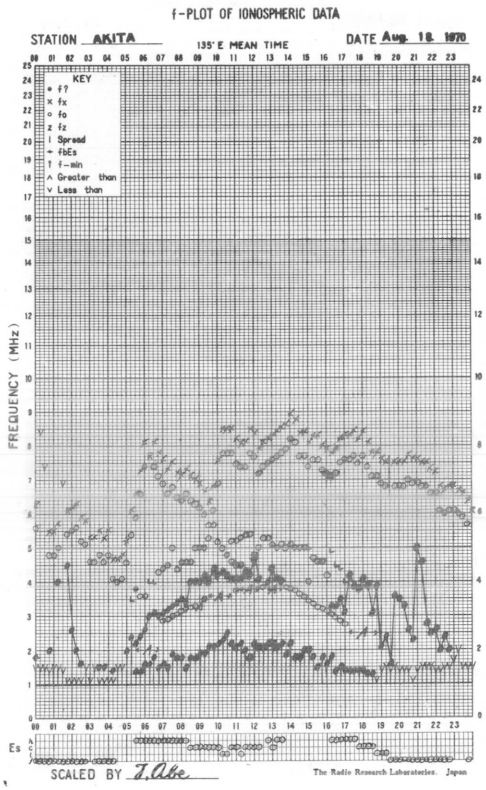
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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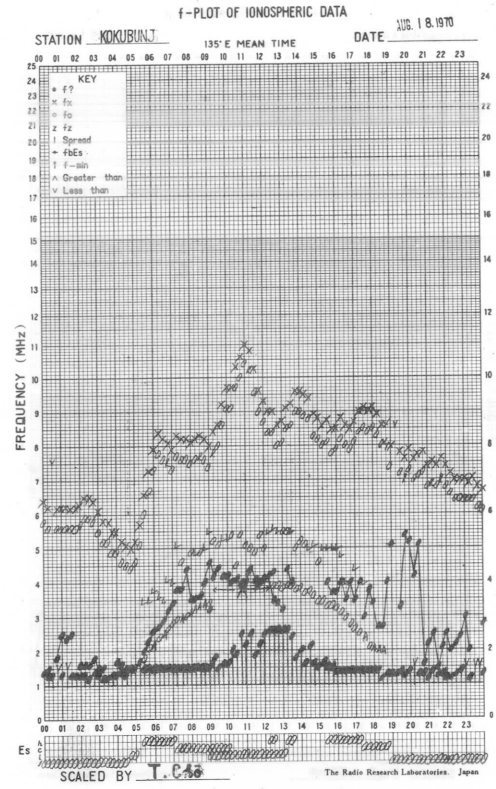
SCALED BY T. Abe
The Radio Research Laboratories. Japan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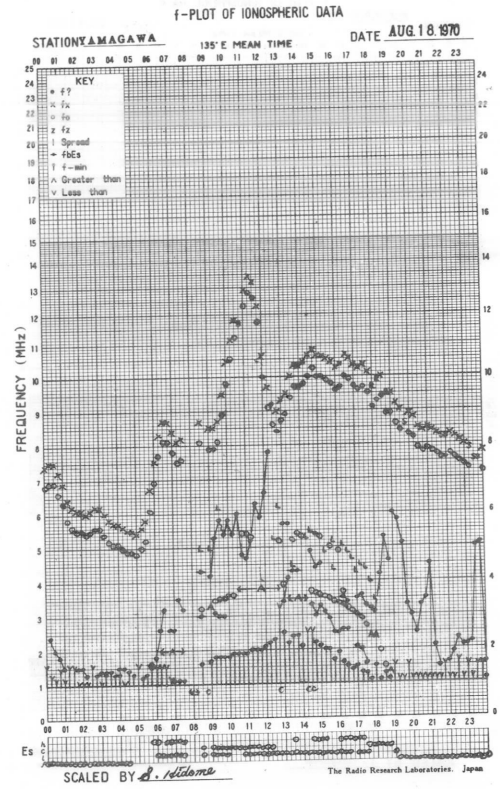
SCALED BY T. Eto
The Radio Research Laboratories. Japan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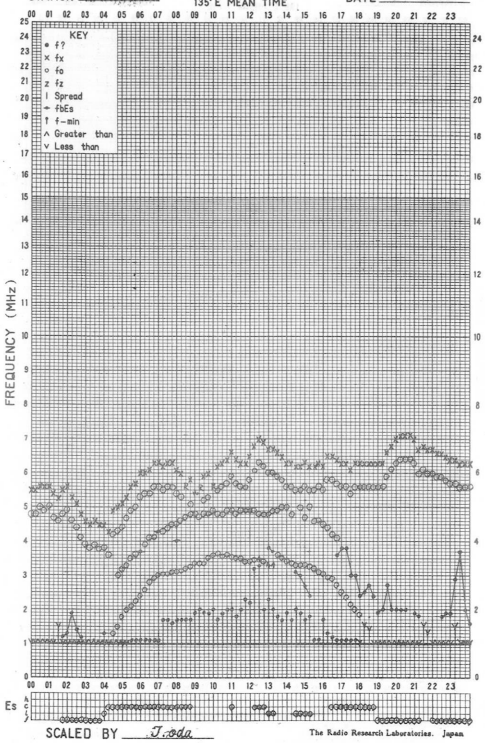
SCALED BY S. Hidema
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE AUG. 19. 1970



SCALED BY T. Ioda

The Radio Research Laboratories. Japan

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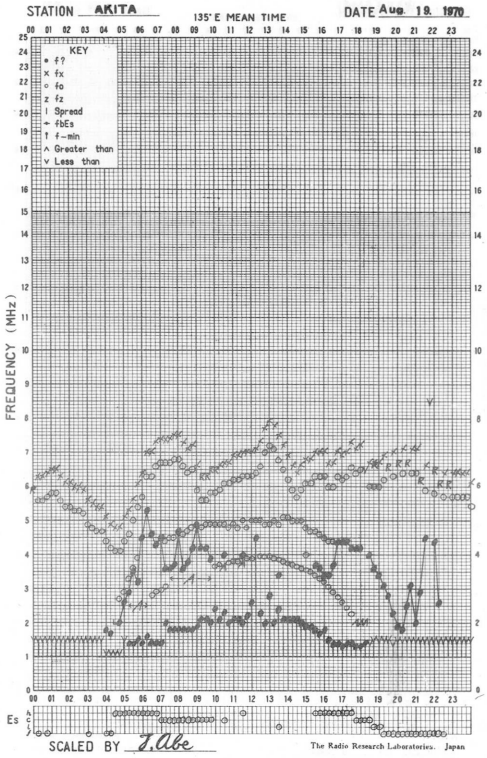

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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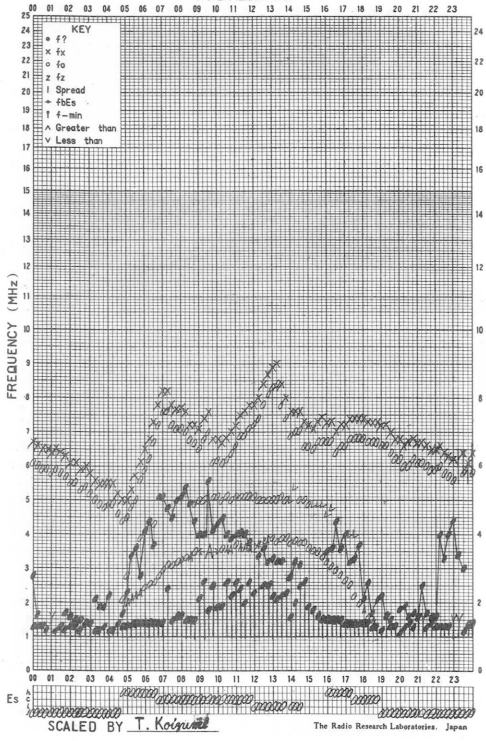

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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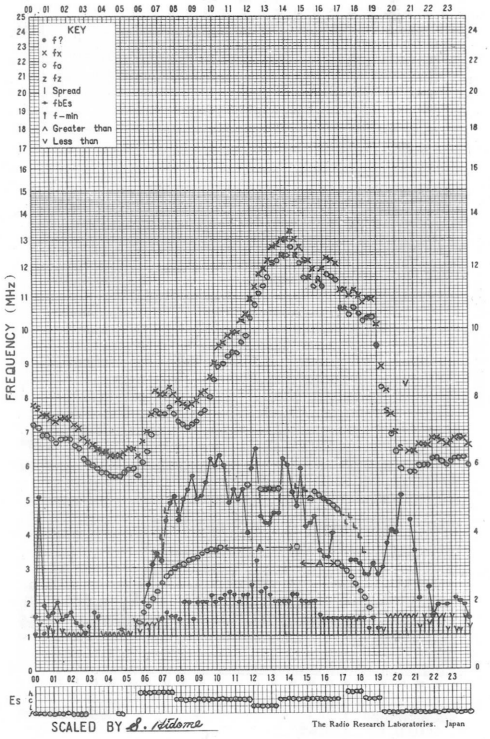
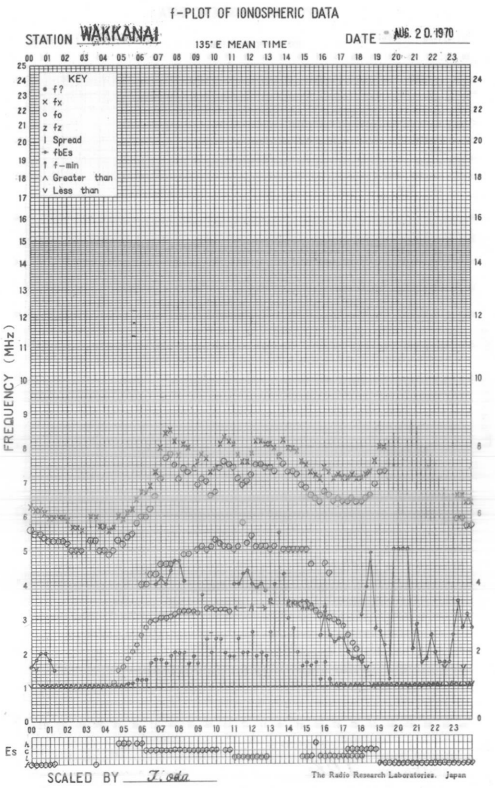


SCALED BY S. Nidome

The Radio Research Laboratories. Japan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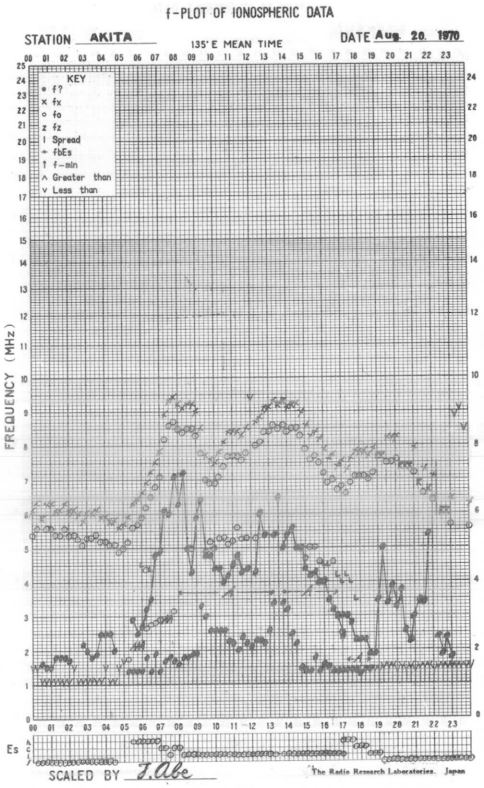
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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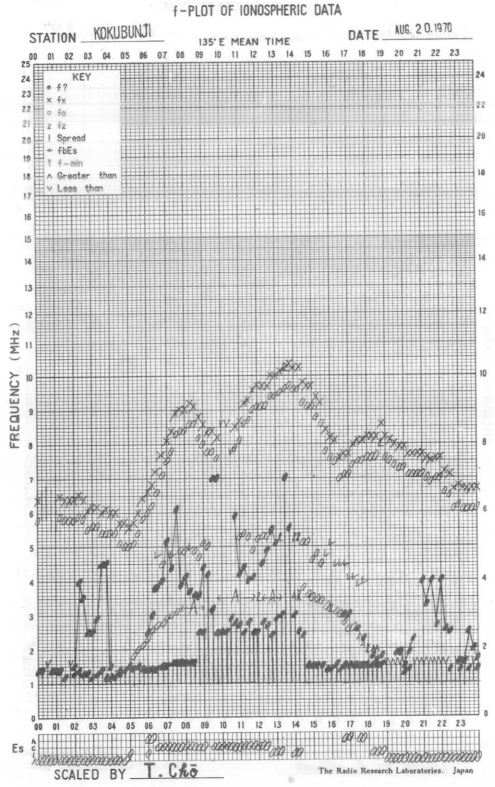
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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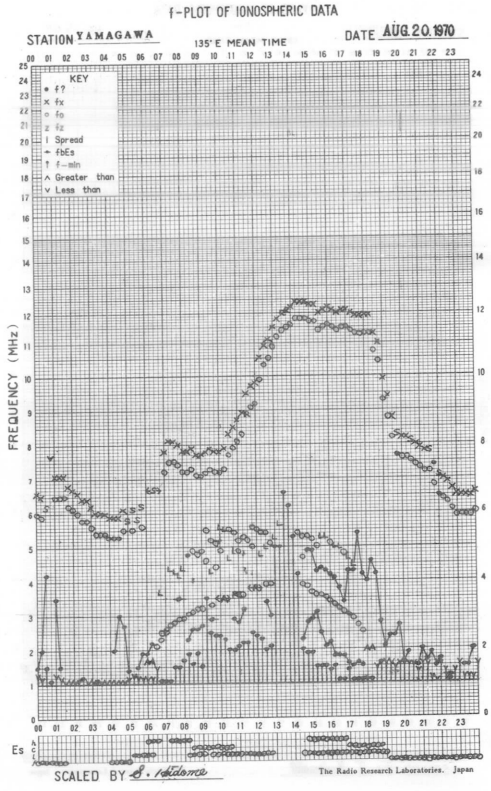
SCALED BY T. Cho
The Radio Research Laboratories. Japan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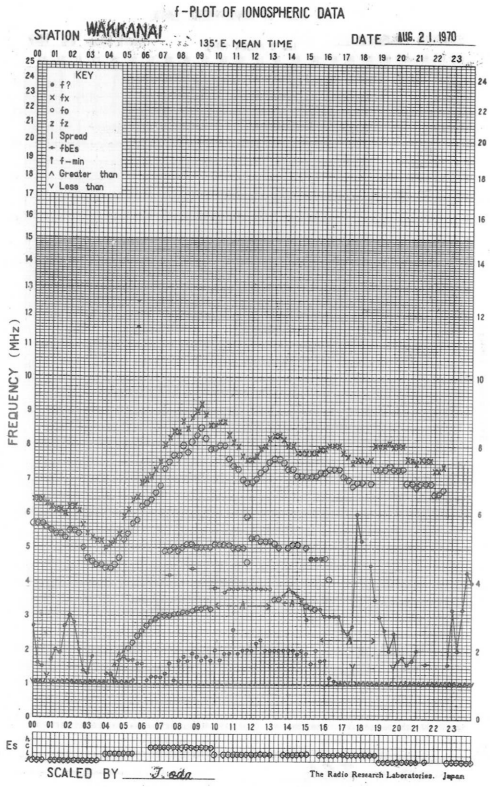
SCALED BY S. Ishidoma
The Radio Research Laboratories. Japan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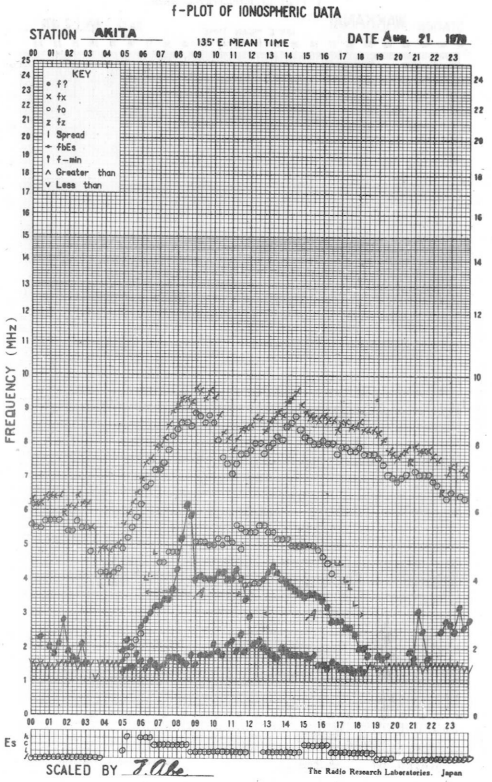
The Radio Research Laboratories. Japan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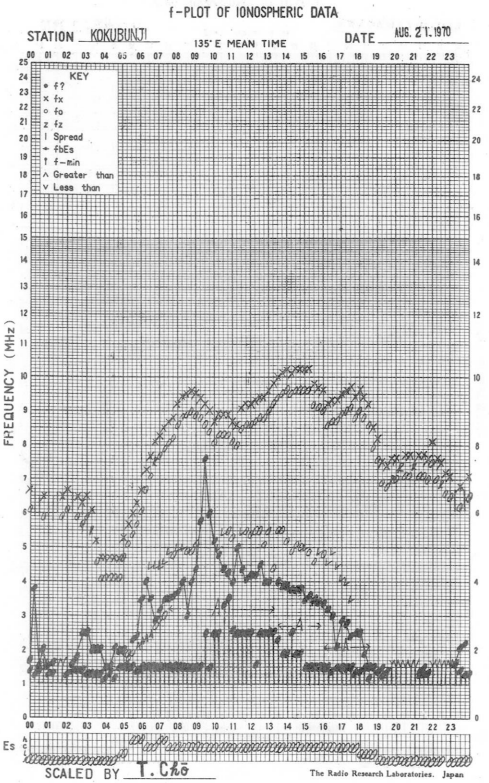
The Radio Research Laboratories. Japan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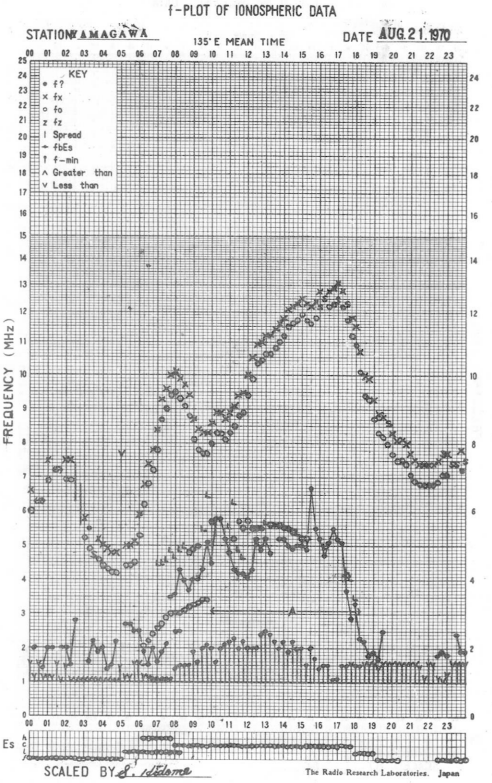
The Radio Research Laboratories. Japan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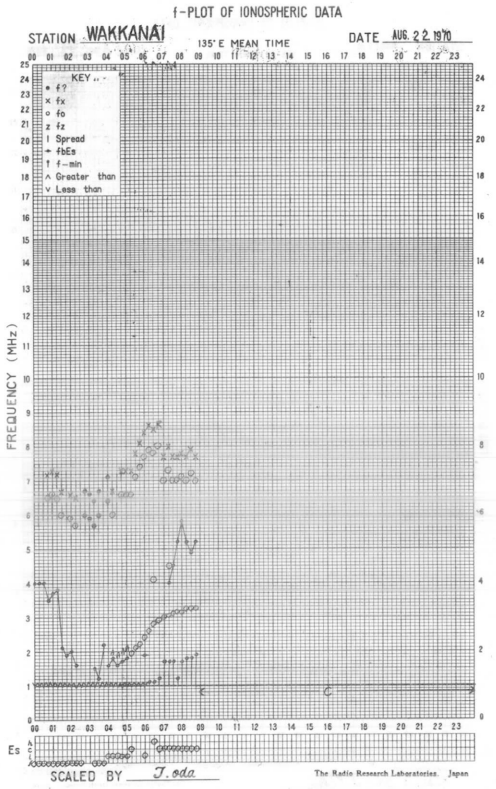
The Radio Research Laboratories. Japan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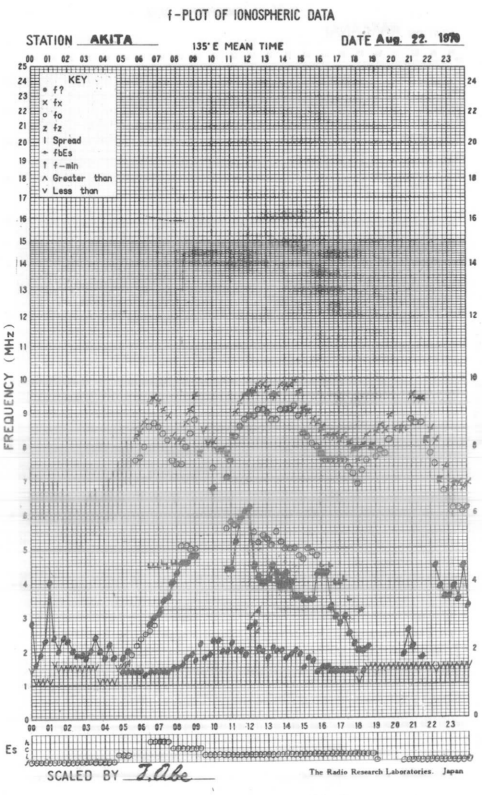
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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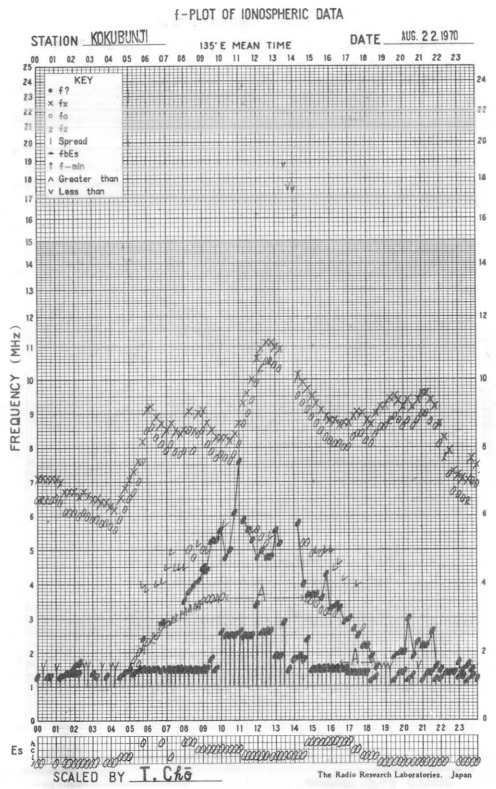
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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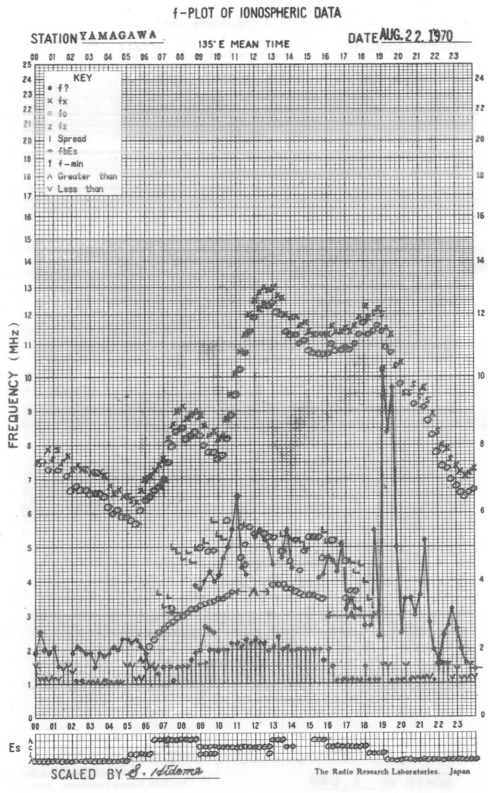
SCALED BY T. Cho
The Radio Research Laboratories. Japan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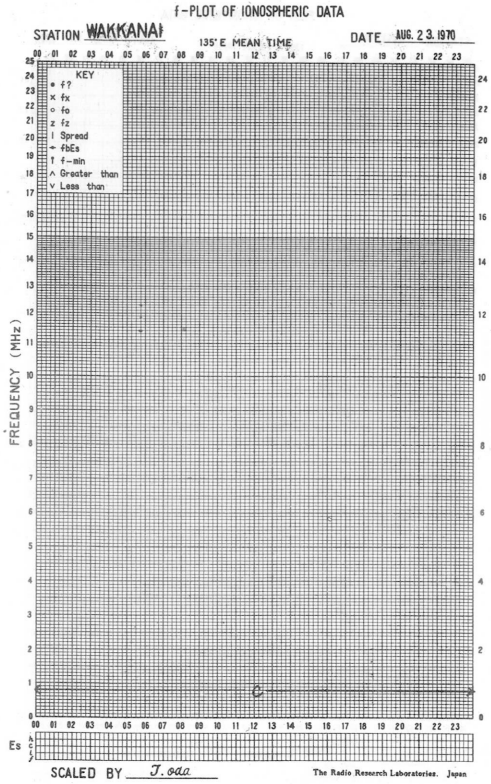
SCALED BY S. Kitama
The Radio Research Laboratories. Japan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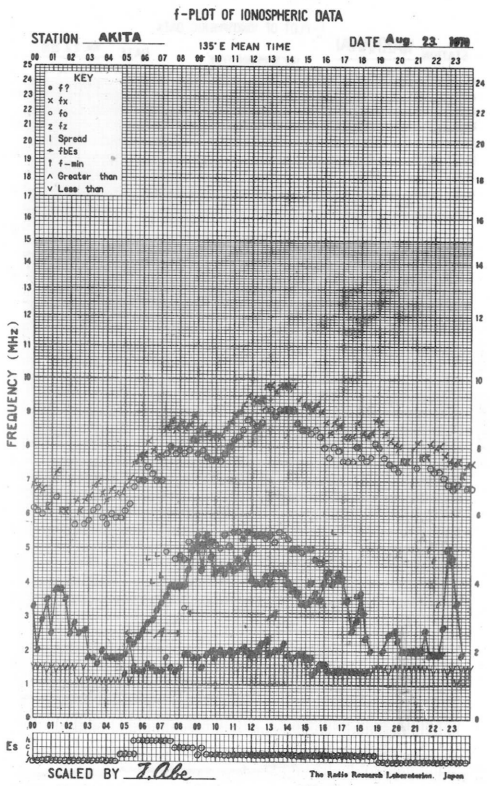
SCALED BY J. oda
The Radio Research Laboratories. Japan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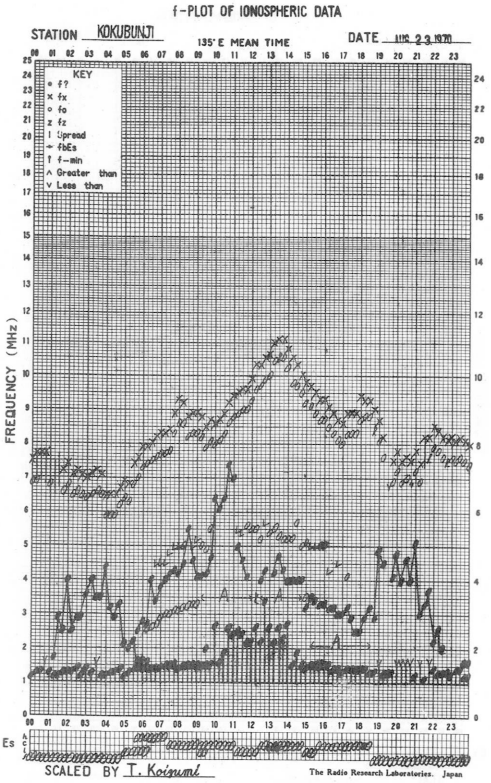
The Radio Research Laboratories. Japan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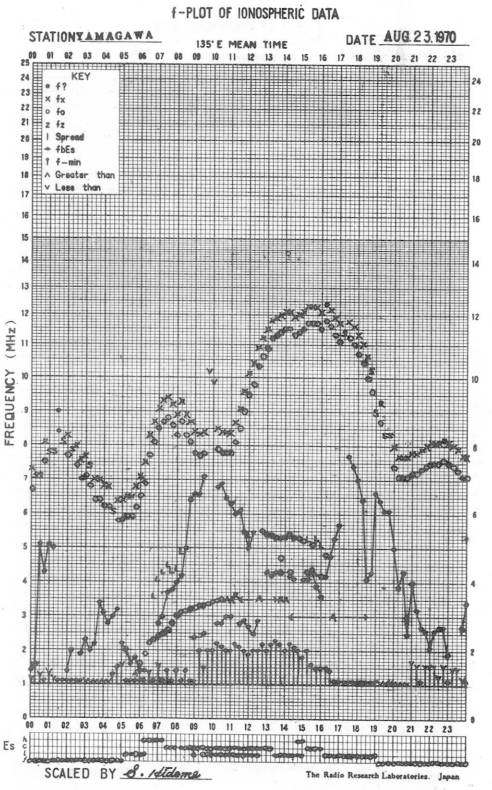
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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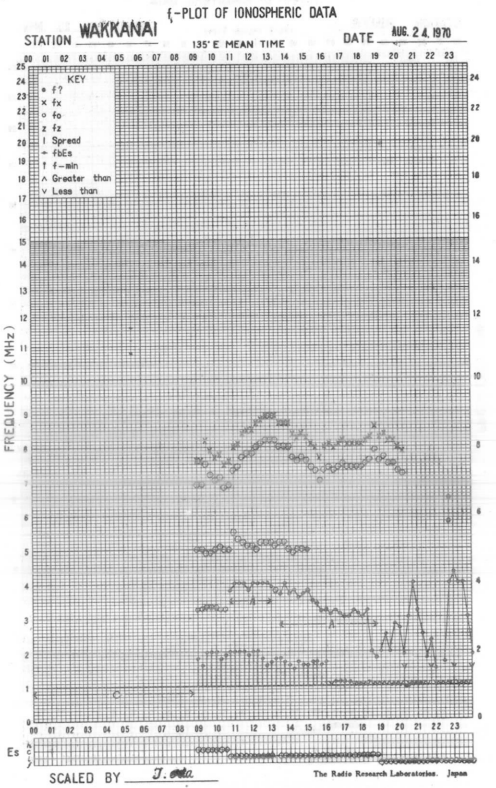
135°E MEAN TIME
DATE AUG. 23. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY S. Kitamo
The Radio Research Laboratories. Japan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STATION WAKKANAI
135° E MEAN TIME
DATE AUG. 24, 1970
KEY
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× fx
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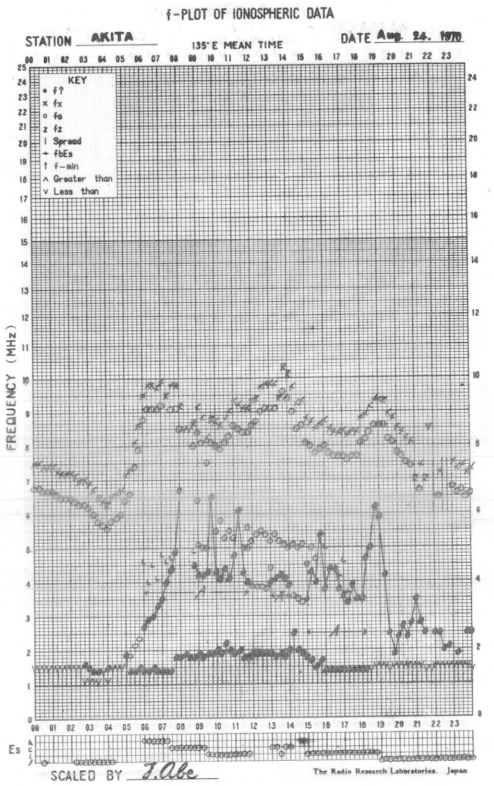
FREQUENCY (MHz)
Es
SCALED BY J. Ata
The Radio Research Laboratories. Japan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DATE Aug. 24, 1970
KEY
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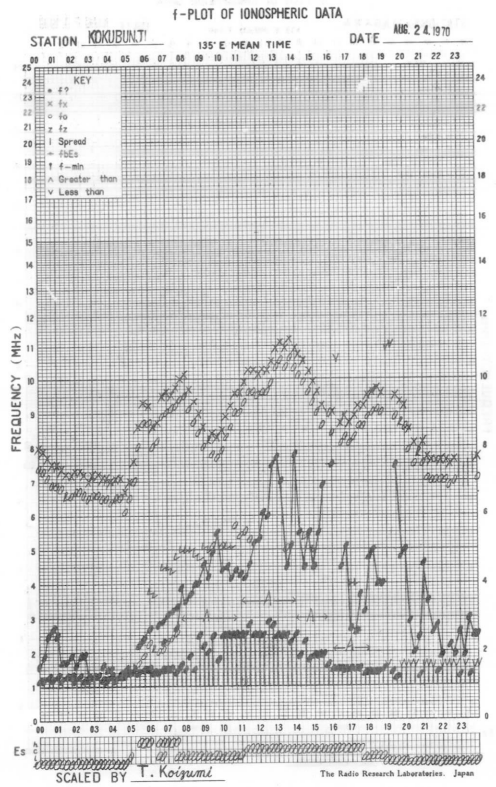
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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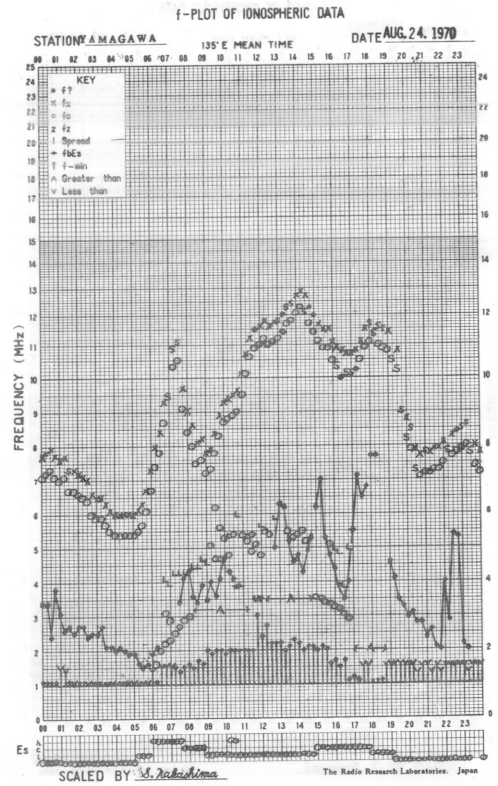
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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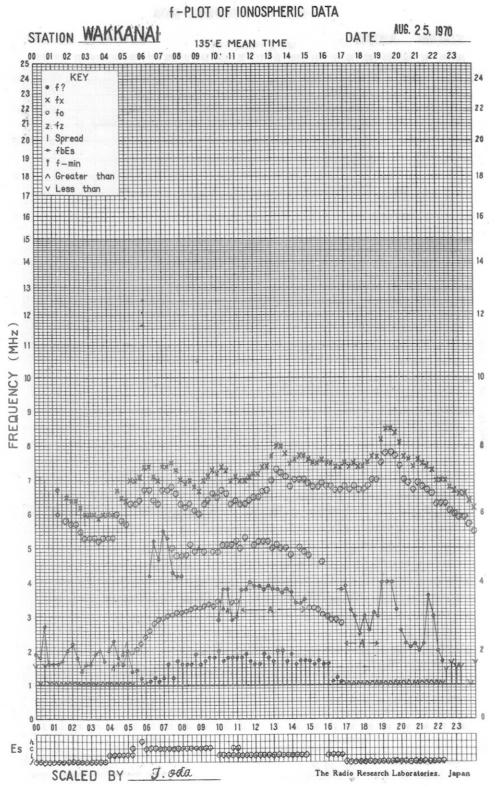
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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○ fo
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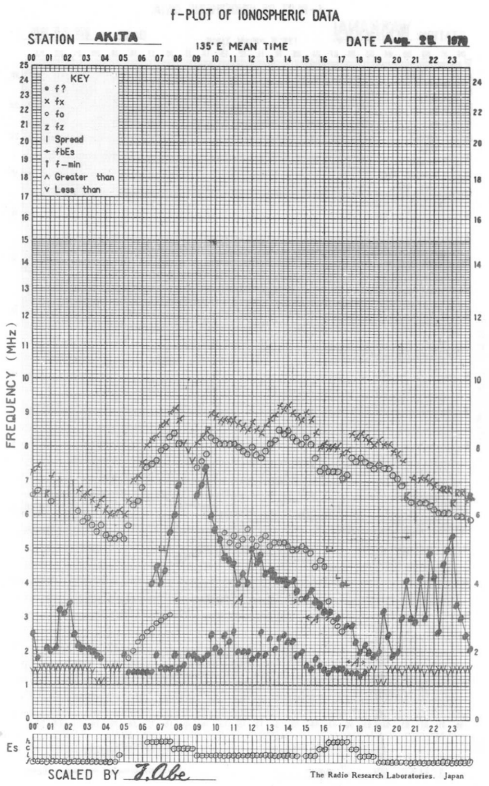
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan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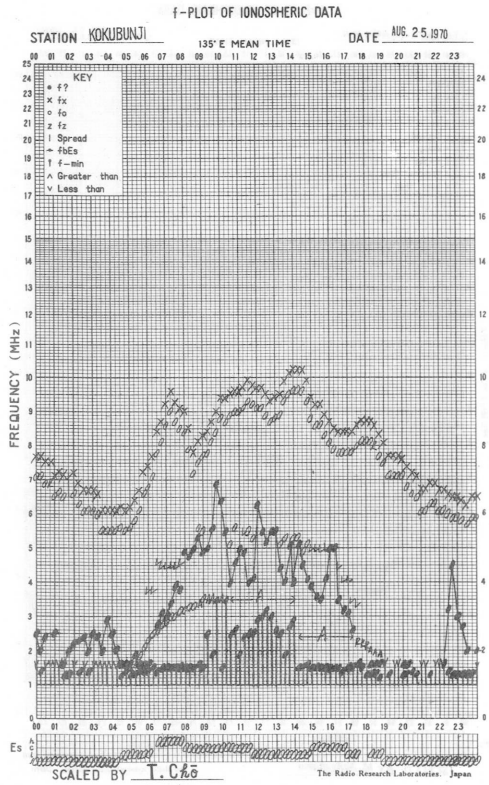
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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DATE AUG. 25, 1970
KEY
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FREQUENCY (MHz)
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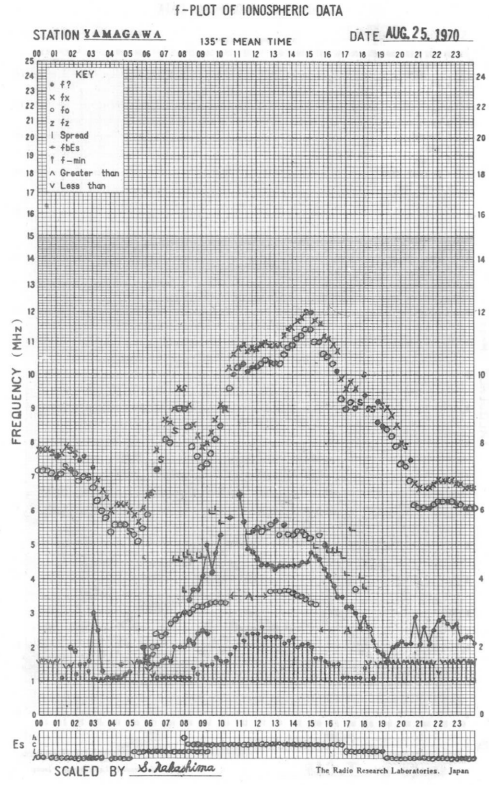
SCALED BY T. Chō
The Radio Research Laboratories. Japan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DATE AUG. 25, 1970
KEY
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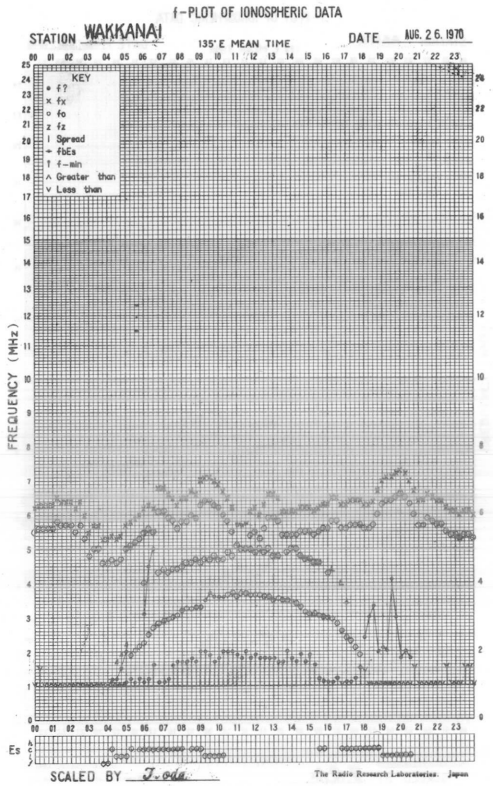
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE AUG. 26. 1970
KEY
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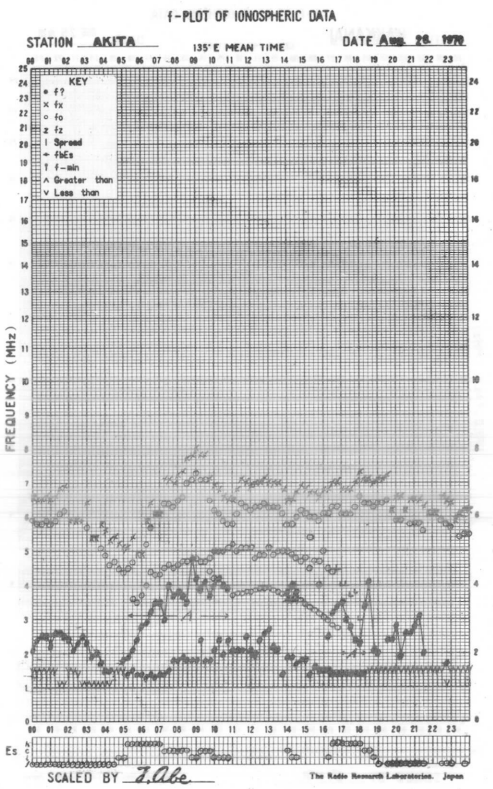
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ода
The Radio Research Laboratories. Japan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DATE Aug. 26. 1970
KEY
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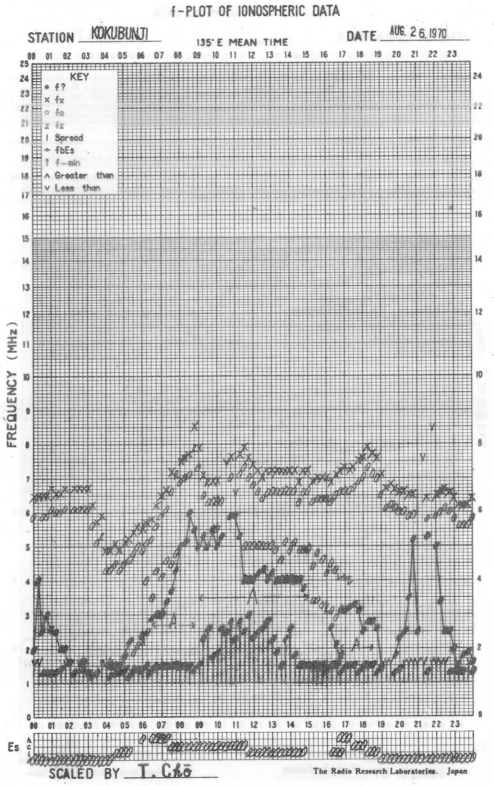
FREQUENCY (MHz)
Es
SCALED BY I. Abe
The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE AUG. 26. 1970
KEY
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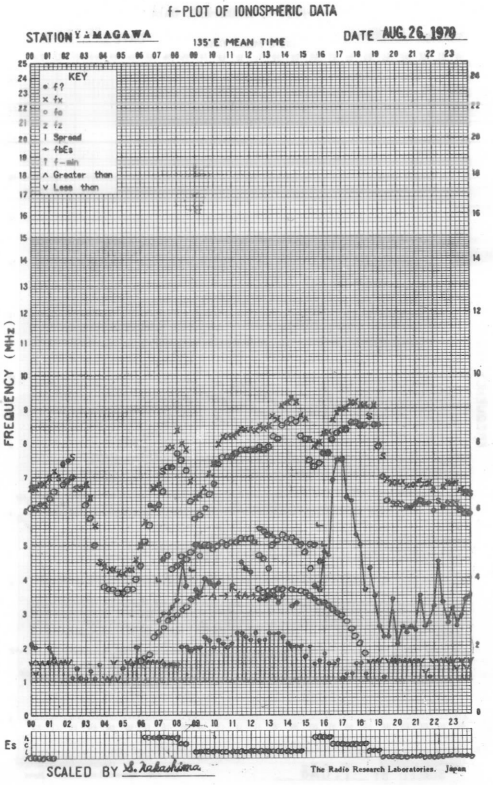
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ода
The Radio Research Laboratories. Japan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DATE AUG. 26. 1970
KEY
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^ Greater than
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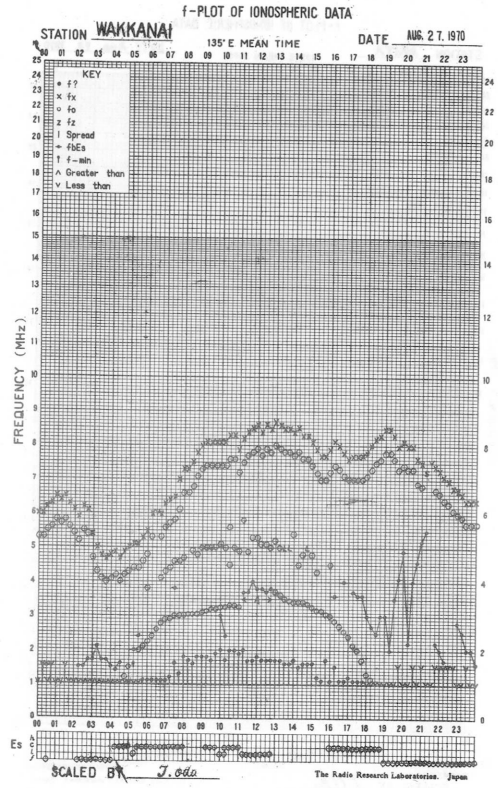
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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STATION WAKKANAI
135° E MEAN TIME
DATE AUG. 27, 1970
KEY
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^ Greater than
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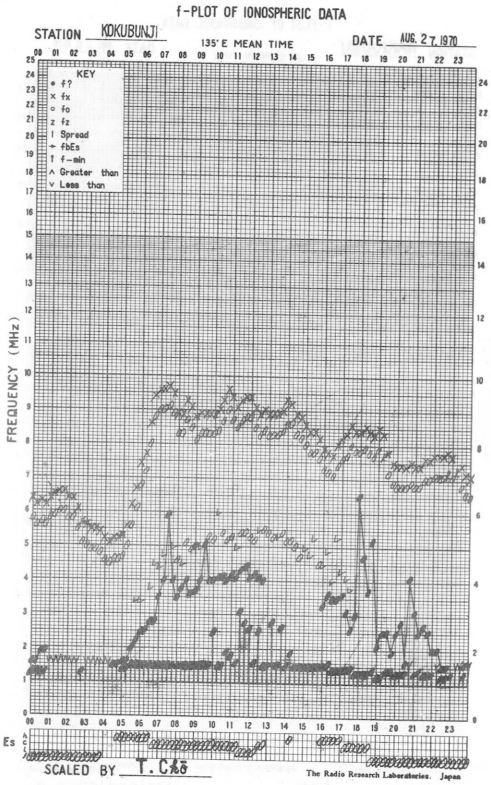
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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STATION KOKUBUNJI
135° E MEAN TIME
DATE AUG. 27, 1970
KEY
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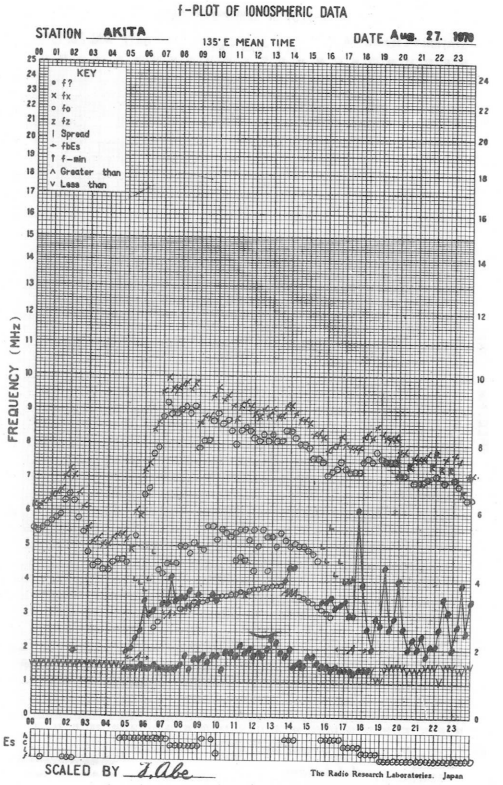
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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STATION AKITA
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KEY
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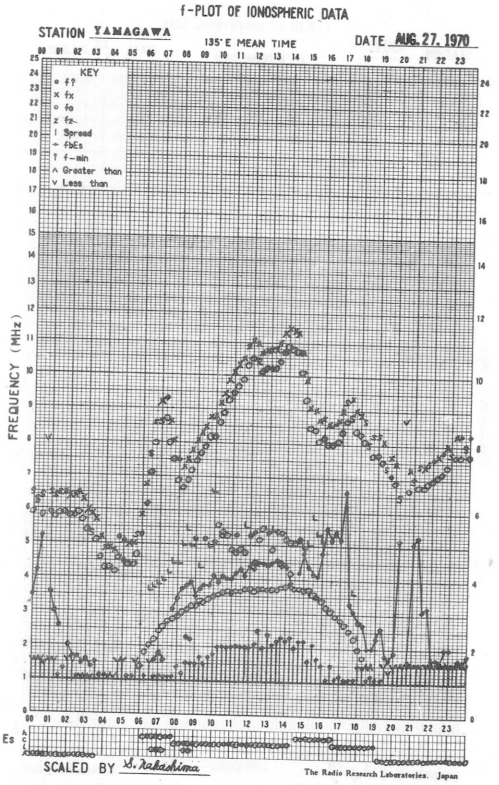
FREQUENCY (MHz)
Es
SCALED BY I. Abe
The Radio Research Laboratories. Japan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DATE AUG. 27, 1970
KEY
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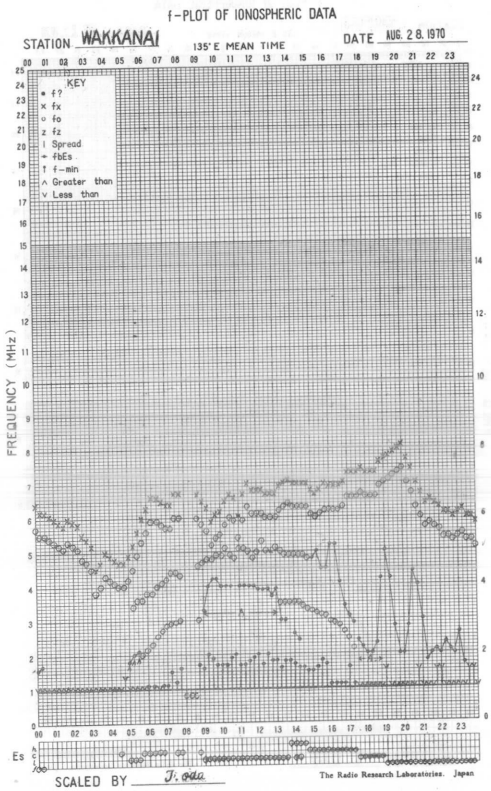
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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DATE AUG. 28. 1970
KEY
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○ fo
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↑ f-min
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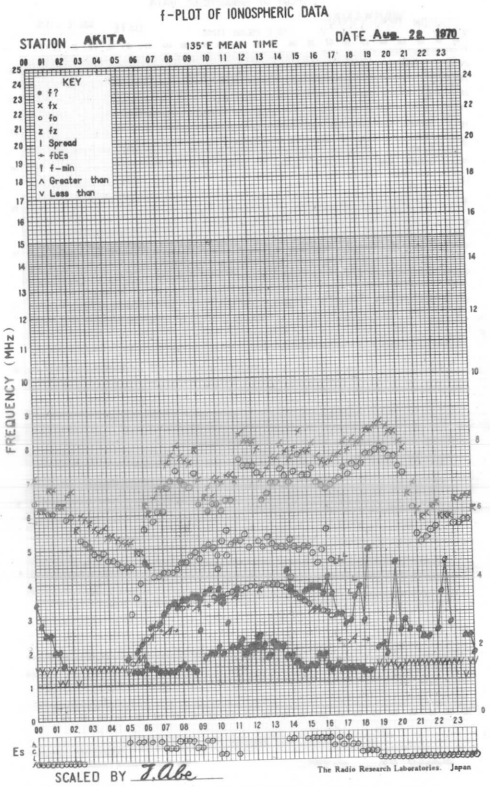
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan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KEY
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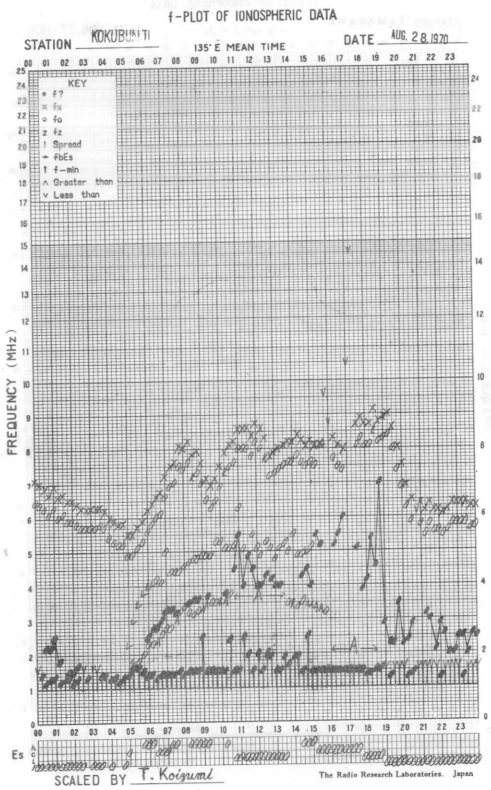
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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KEY
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× fx
○ fo
z fz
| Spread
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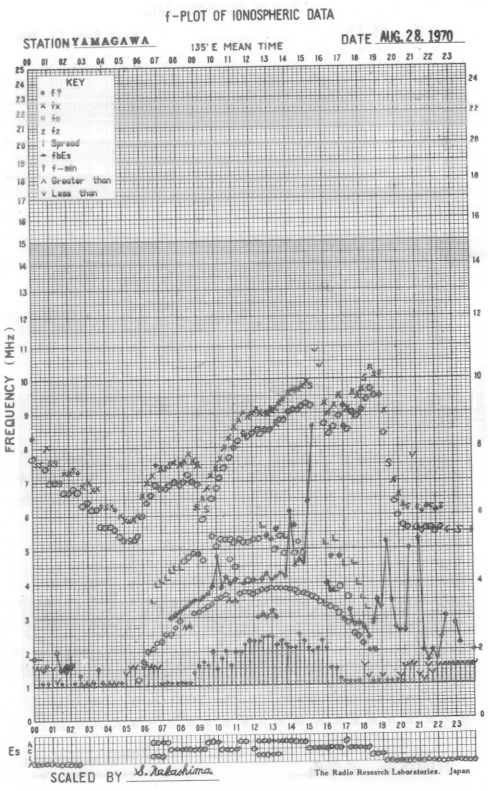
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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STATION YAMAGAWA
135° E MEAN TIME
DATE AUG. 28. 1970
KEY
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× fx
○ fo
z fz
| Spread
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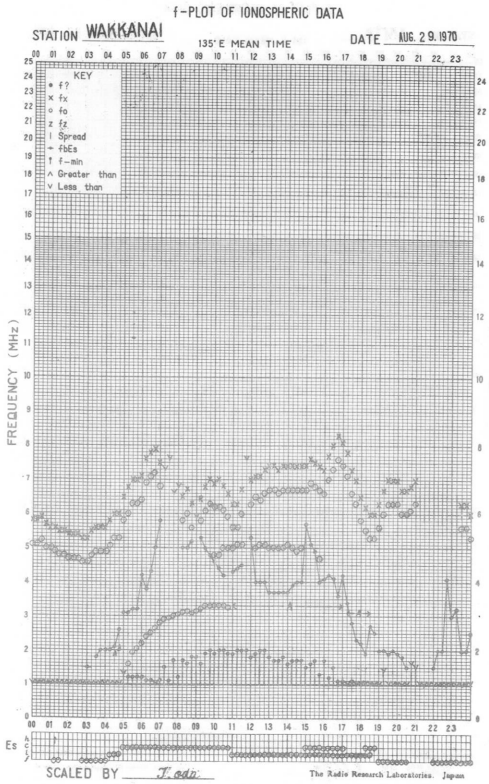
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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DATE AUG. 29. 1970
KEY
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× fx
○ fo
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↑ f-min
^ Greater than
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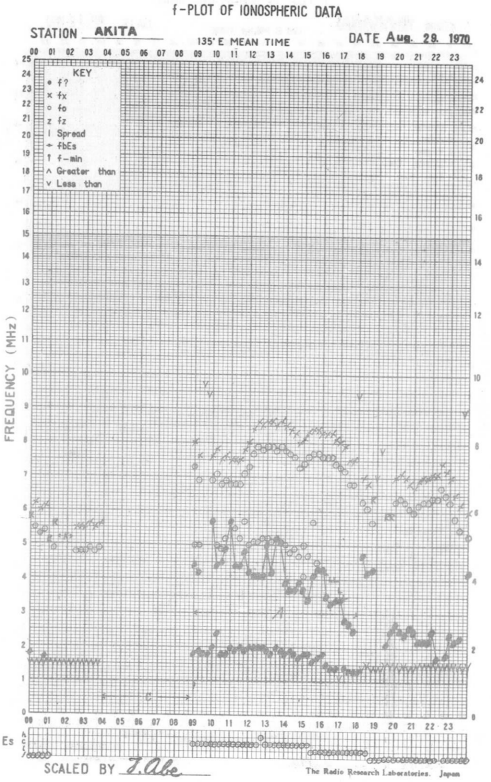
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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135° E MEAN TIME
DATE Aug. 29. 1970
KEY
* f?
× fx
○ fo
z fz
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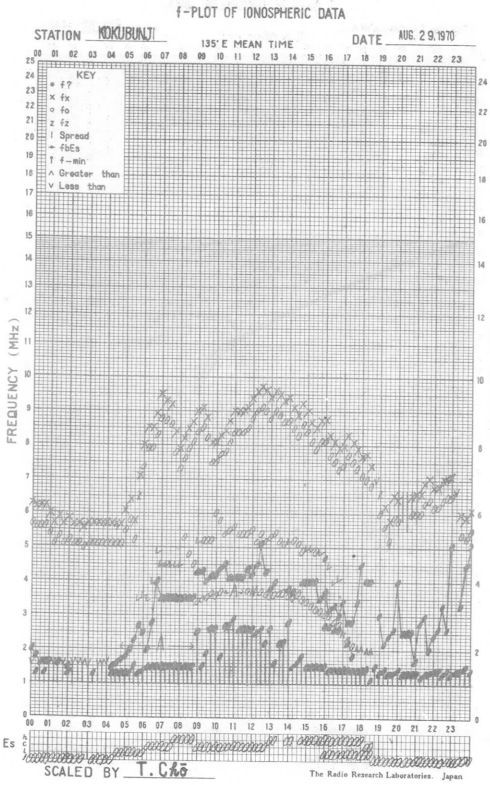
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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STATION KOKUBUNJI
135° E MEAN TIME
DATE AUG. 29. 1970
KEY
* f?
× fx
○ fo
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I Spread
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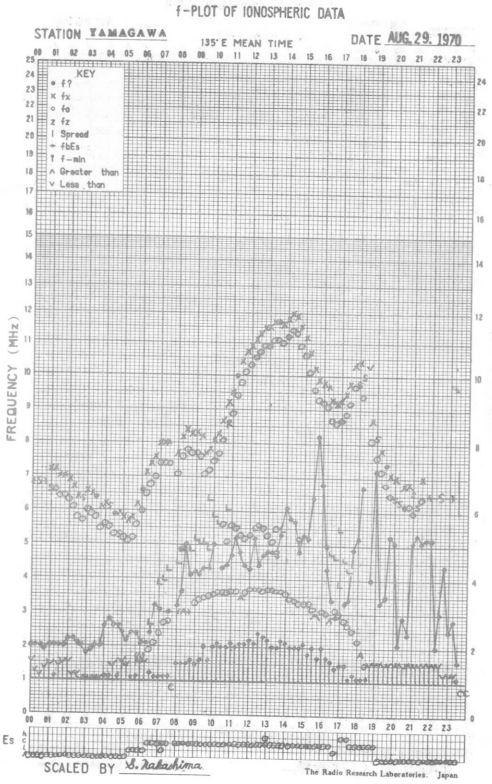
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ch5
The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE AUG. 29. 1970
KEY
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○ fo
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I Spread
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^ Greater than
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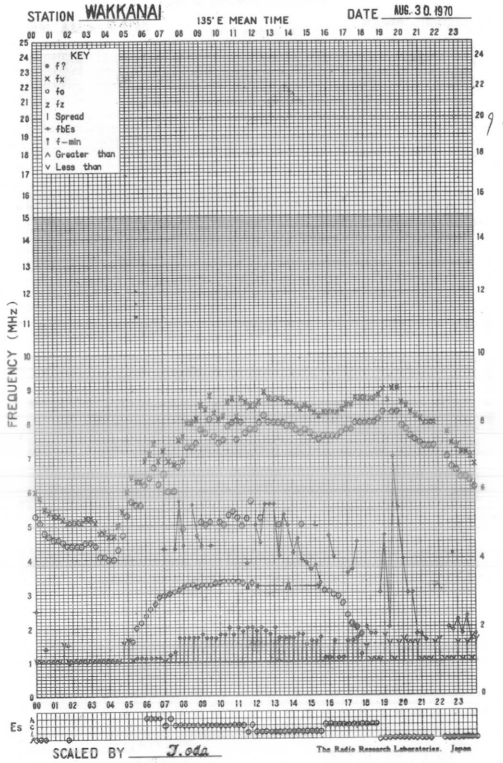
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 30. 1970

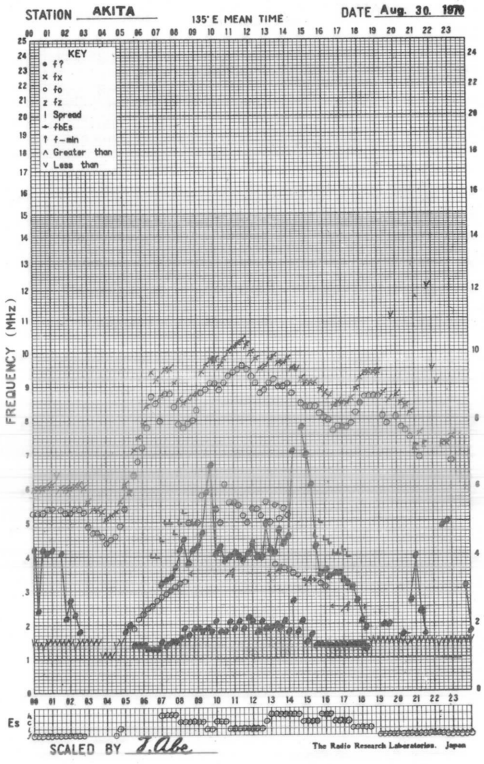


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Aug. 30. 1970

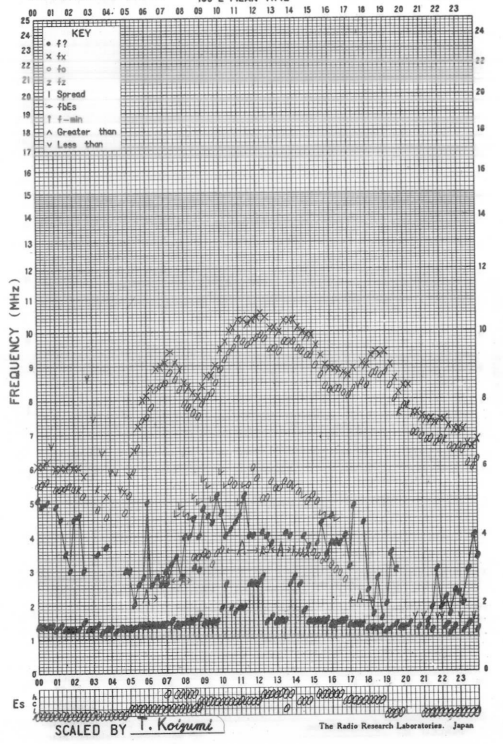


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE AUG. 30. 1970

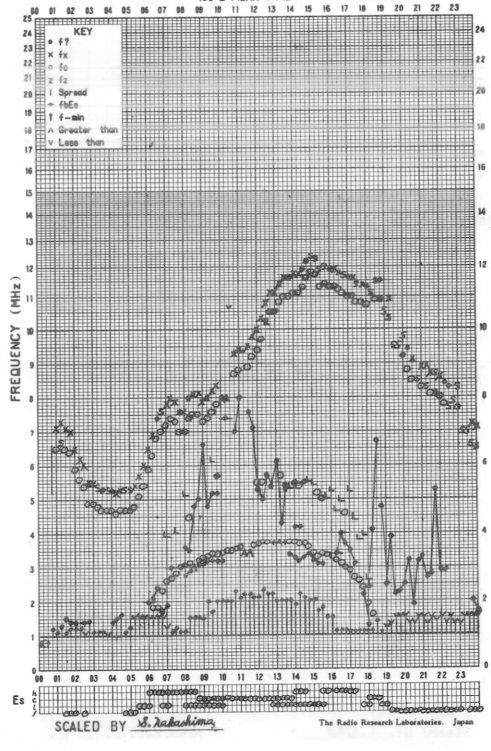


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

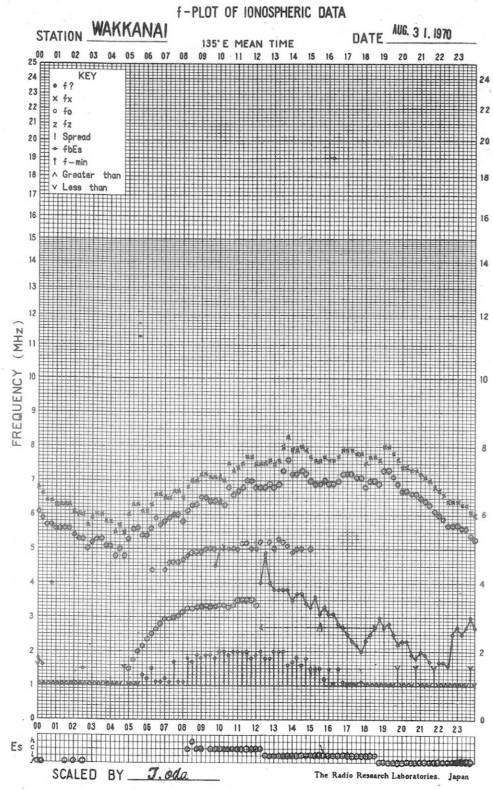
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE AUG. 30. 1970



SCALED BY S. Takashima

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE AUG. 31, 1970
KEY
• f?
× fx
○ fo
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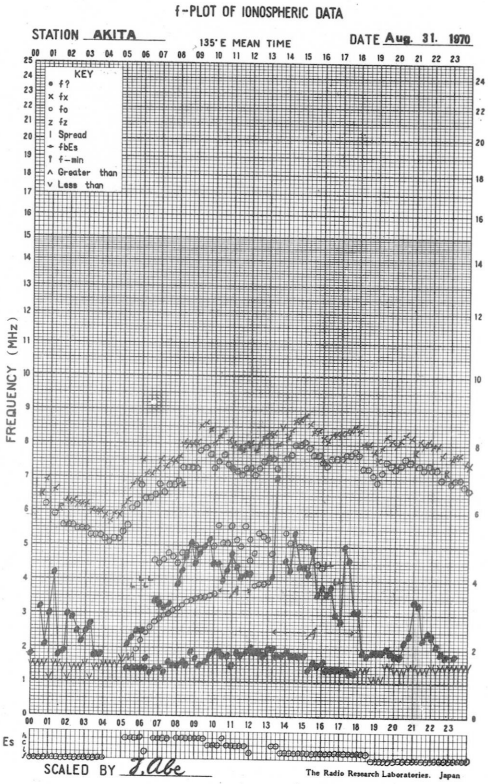
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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STATION AKITA
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KEY
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○ fo
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| Spread
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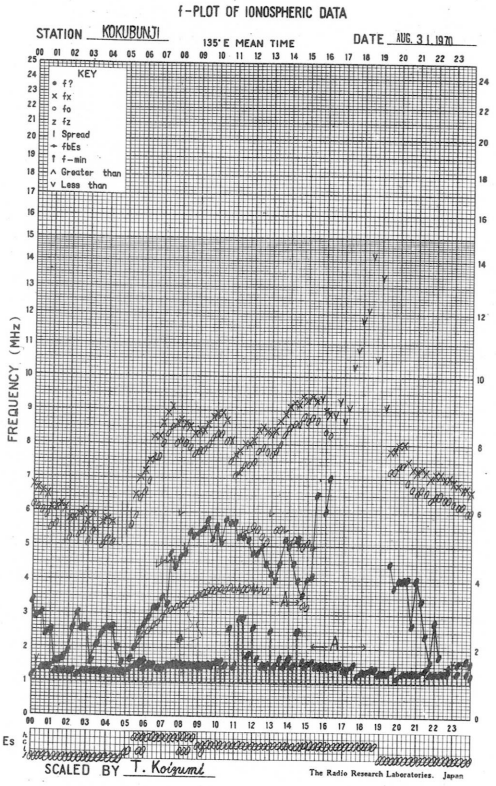
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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DATE AUG. 31, 1970
KEY
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○ fo
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↑ f-min
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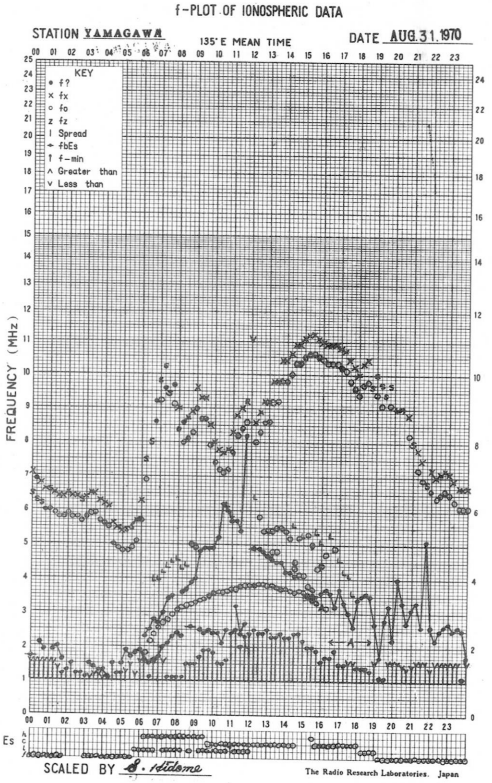
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE AUG. 31, 1970
KEY
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○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nitoma
The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: August 1970
Observing station: Hiraiso
Frequency: 200 MHz

	Flux density 10^{-22} $Wm^{-2}(Hz)^{-1}$					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	(5)	-	-	-	(6)	(0)	-	-	-	(1)
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	-	-	-	15	-	-	-	-	2	-
10	12	8	(6)	-	11	1	0	(0)	-	1
11	-	6	6	15	6	-	0	0	0	0
12	8	6	6	6	9	1	0	0	1	0
13	7	6	5	7	6	0	1	0	0	1
14	7	6	9	7	7	0	0	0	0	0
15	7	6	8	18	7	0	0	0	0	0
16	18	24	48	28	27	0	0	0	0	0
17	35	37	42	24	35	0	0	0	0	0
18	21	31	31	20	27	0	0	*	0	0
19	23	25	30	20	24	0	0	0	0	0
20	18	23	29	16	22	0	0	0	0	0
21	13	13	15	8	14	0	0	0	0	0
22	12	9	10	7	10	0	0	0	0	0
23	6	6	8	8	7	0	0	*	0	0
24	7	7	8	7	7	0	0	0	0	0
25	7	6	7	6	7	0	0	0	0	0
26	6	6	5	7	6	0	0	0	0	0
27	6	7	8	7	7	0	0	0	0	0
28	5	5	7	-	6	0	0	0	-	0
29	6	5	6	6	6	0	0	0	0	0
30	5	5	6	6	5	0	0	0	0	0
31	5	6	5	4	6	0	0	0	0	0

Note No observations during the following periods:

1st 0025- 9th 0930
10th 0700- 11th 0300
28th 0810- 29th 0020

* interference by atmospherics.

SOLAR RADIO EMISSION

Flux Density

Month: August 1970
Observing station: Hiraiso Frequency: 500 MHz

Flux density 10^{-22} $Wm^{-2}(Hz)^{-1}$

UT	00-03	03-06	06-09	21-24	Day
Date					
1	28	29	27	29	28
2	28	27	27	26	28
3	26	24	24	26	25
4	26	27	26	24	26
5	24	25	26	27	25
6	26	27	q	q	27
7	q	-	-	q	q
8	q	q	q	q	q
9	q	q	q	q	q
10	q	(22)	21	23	(21)
11	22	22	20	26	22
12	23	23	22	28	24
13	26	25	23	26	25
14	22	23	22	28	23
15	27	23	23	27	25
16	27	25	25	26	26
17	27	27	23	24	26
18	24	25	(24)	(26)	24
19	26	25	23	25	25
20	23	24	23	24	24
21	25	24	23	25	24
22	27	26	24	24	25
23	23	23	23	23	23
24	25	29	28	25	26
25	27	27	26	27	26
26	26	28	27	26	27
27	25	28	27	26	27
28	27	27	27	-	27
29	28	27	27	26	28
30	27	28	26	28	27
31	28	26	26	25	27

Note No observations during the following periods:

6th	0515-	0540	19th	0000-	0100
7th	0300-	0930	24th	0130-	0315
14th	0000-	0100	28th	0815- 29th	0120
16th	0400-	0454	31st	0030-	0100
18th	0700-	0830			

q: quiet level, when radiometer is unstable.

Distinctive Events

(single-frequency observations)

Month: August 1970
Observing station: Hiraiso
Normal observing period: 1950 - 0930 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density 10^{-22} Wm^{-2}(Hz)$^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
11	200	2329.0	2330.2	3.0	C	340	90	
12	500	2011.4	2016.9	10.0	C	180	60	
	200	2012.0	2019.0	14.0	C	> 4000	> 440	
		2106.0	2107.5	2.0	C	320	35	
13	200	0116.0	0117.0	2.5	C	760	95	
22	200	0020	0035.5	28	RF	100	10	
28	500	0613.8	0614.0	0.7	C	45	10	
	200	0613.0	0614.0	2.0	C	180	50	
30	200	0321.0	0321.0	0.5	C	> 3500	> 1400	

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWV)

AUG 1970 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 15M	01H 15M	02H 15M	03H 15M	04H 15M	05H 15M	06H 15M	07H 15M	08H 15M	09H 15M	10H 15M	11H 15M	12H 15M	13H 15M	14H 15M	15H 15M	16H 15M	17H 15M	18H 15M	19H 15M	20H 15M	21H 15M	22H 15M	23H 15M
1	-5	-21	-10	-15	-6	10	10	ES -11	ES -8	ES -6	ES -7	ES -5	ES -3	6	16	9	9	8	1	3	4	-6	-7	-8
2	-3	-7	-1	1	ES 8	5	20	20	-6	-9	ES -9	-3	ES -6	22	22	5	1	7	-11	-3	9	2	-2	-6
3	-7	-10	-2	4	8	8	7	9	13	3	-3	2	-7	22	22	17	7	5	-2	2	-2	-3	-6	-5
4	-5	-6	-3	-1	3	14	13	16	0	-7	ES -16	-2	U	11	18	6	-1	3	4	1	6	-4	4	-7
5	-11	-9	-8	-2	5	9	10	8	-1	-2	10	1	-3	12	10	22	15	4	-1	1	1	-5	-6	-6
6	-8	-10	-6	0	5	12	7	7	9	-3	-4	0	-2	26	23	13	5	12	8	1	2	C	0	-5
7	-6	-5	-2	-3	-2	5	7	-14	-11	-5	-12	4	-6	23	14	21	10	6	3	5	0	1	2	-5
8	1	-4	-7	-9	4	4	12	7	2	-9	ES -12	-8	15	21	23	5	9	0	3	-6	11	-2	2	1
9	-7	0	5	2	-13	ES -9	-11	-15	ES -8	ES -12	ES -13	ES -8	-13	3	19	5	3	2	-9	2	-3	-3	1	-5
10	-4	-4	-6	0	5	7	-3	-5	2	-2	-4	-5	5	17	8	5	8	10	5	8	9	-1	-6	-2
11	-6	4	-7	0	1	9	4	-6	-16	ES -15	ES -14	ES 0	ES 9	-4	6	15	0	9	4	8	3	1	-2	3
12	ES -29	-17	-6	-5	1	5	-8	-12	-9	-11	ES -9	ES 5	-14	-6	5	-7	15	0	-5	2	-7	-9	5	-8
13	-13	-8	-9	-6	0	6	6	8	6	-3	-11	ES 9	-13	16	1	-2	0	3	7	-12	ES -18	-9	-21	ES -27
14	-8	-14	-6	C	-6	4	8	2	-10	-9	ES -13	ES 8	ES -15	14	7	4	-17	-19	-8	ES -19	ES -8	ES -28	ES -19	ES -28
15	ES -28	-15	-10	-2	-2	10	3	-5	-15	ES -20	ES -11	ES 6	-12	18	15	10	4	2	-11	-8	-5	-7	-7	-20
16	ES -28	ES -28	-5	1	6	6	3	0	-10	-6	-15	3	ES -12	2	9	4	1	-1	-3	-5	-4	-5	-6	-9
17	4	2	-7	-6	-29	ES -29	ES -29	ES -17	ES -18	ES -11	ES -30	C	ES -11	ES -24	ES -24	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22
18	-22	-7	ES -26	-23	ES -27	ES -27	-15	ES -14	ES -18	-14	ES -14	ES -8	-9	ES -18	ES -15	ES -26	ES -26	ES -12	ES -26	ES -26	ES -17	-20	-20	-22
19	ES -27	ES -18	-14	-13	-11	ES -17	ES -26	ES -4	ES 2	ES 5	ES -20	ES -15	ES -11	-12	-8	ES -10	ES -18	ES -30	ES -30	-21	3	-5	-11	ES -4
20	ES -29	-16	-7	2	-13	S	S	S	S	S	S	S	S	C	C	C	C	C	C	C	-5	-5	-9	-6
21	-11	-15	-11	-1	-2	8	15	7	7	-5	-9	7	ES -9	-3	11	5	8	0	-5	-9	-1	-2	-5	-17
22	-16	ES -27	-10	-6	6	12	18	7	C	ES -10	-14	ES 0	ES -9	8	-1	-2	-1	-4	-2	-4	0	-18	C	-6
23	-7	-4	-8	-1	11	17	6	-8	-10	-13	-12	ES 5	ES 1	1	13	-9	-2	3	-10	-18	-1	-7	-12	-8
24	1	-8	-3	-1	8	10	10	11	10	-10	-8	-5	-1	ES -5	1	-1	2	5	-7	-8	1	-10	-9	-20
25	-25	-5	-4	1	4	C	C	-15	-14	-6	ES -9	ES 3	ES -2	ES 1	-3	7	3	3	-19	-6	-13	-4	4	-6
26	-5	-15	ES -20	-15	-3	ES -18	ES -27	ES -27	ES -28	-14	ES -31	ES -1	C	C	C	C	C	C	C	C	C	C	C	C
27	1	-15	-23	-14	4	6	ES -23	ES -23	ES -15	ES -15	ES -16	ES -4	ES -22	ES -10	ES -13	ES -9	ES -28	-2	ES -28	ES -28	-9	-9	-14	-7
28	-5	-9	-2	-7	-6	-4	-1	-16	-8	-11	ES -15	ES -5	ES -8	ES -4	ES -20	-8	-18	ES -29	ES -29	ES -29	-7	-9	ES -29	-21
29	-16	-14	-8	-1	5	10	-2	ES 2	ES 2	-10	ES -19	ES 0	ES -25	-20	-8	ES -15	-20	-20	-28	ES -29	ES -7	-11	-14	ES -14
30	-15	-7	-2	3	18	8	-3	-10	-16	ES -27	-18	ES 7	ES -8	-8	ES -9	-9	-7	-18	-14	ES -27	ES -8	ES -16	-18	ES -13
31	-14	-9	-5	-6	0	11	3	-9	ES -14	-17	8	9	-7	-3	-12	-5	-4	-8	ES -29	-11	-1	-6	-9	-5
CNT	31	31	31	30	31	29	29	30	29	30	30	29	28	29	29	29	29	29	29	29	30	29	29	30
MED	-8	-9	-7	-2	US 1	7	4	US -5	ES -8	US -10	ES -12	ES 0	ES -8	2	7	4	1	2	-7	-6	-2	-6	-7	US -7
UD	1	0	-2	2	8	12	15	11	9	ES -2	-3	ES 8	ES 5	22	22	17	10	9	5	5	9	1	4	-2
LD	ES -28	ES -21	ES -20	-15	ES -13	ES -18	ES -26	ES -17	ES -18	ES -17	ES -20	ES -8	ES -15	ES -18	ES -15	ES -15	ES -22	ES -22	ES -29	ES -28	ES -17	ES -20	ES -21	ES -22

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWVH)

AUG 1970 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 45M	01H 45M	02H 45M	03H 45M	04H 45M	05H 45M	06H 45M	07H 45M	08H 45M	09H 45M	10H 45M	11H 45M	12H 45M	13H 45M	14H 45M	15H 45M	16H 45M	17H 45M	18H 45M	19H 45M	20H 45M	21H 45M	22H 45M	23H 45M
1	-7	-10	-8	-2	15	10	20	22	21	21	26	25	24	17	0	-7	-1	7	4	11	0	2	-3	-5
2	-5	-7	-3	5	14	16	22	20	24	22	21	22	22	21	17	14	12	5	4	-1	1	0	-5	-9
3	-10	-20	-2	0	7	10	11	15	15	16	16	12	22	14	24	7	1	12	7	2	-3	-2	-2	-10
4	-10	-13	-6	-1	3	11	14	18	16	19	21	19	14	22	9	10	17	5	2	1	8	-10	-3	-5
5	-2	-8	0	3	8	10	13	19	18	20	21	17	20	20	9	10	13	13	1	-2	3	-4	-6	-9
6	ES -8	-7	-4	1	ES 7	11	17	20	19	19	18	15	22	24	22	13	13	12	10	1	-1	-1	-5	-4
7	-2	-7	-7	-7	2	10	15	15	23	18	21	13	12	4	16	12	15	12	3	5	2	-4	-4	-5
8	-4	-9	-5	-1	4	9	15	23	18	23	24	22	20	23	20	19	23	18	ES -8	7	6	0	-5	-9
9	-8	-8	-2	5	11	16	17	16	25	15	5	17	12	10	6	-13	-14	15	5	8	0	6	-2	-5
10	-7	-9	-2	1	5	12	16	17	16	16	21	19	23	25	5	4	10	20	3	1	4	3	4	-6
11	-7	-6	2	3	6	12	15	22	17	18	15	14	20	14	ES -2	ES -15	-2	11	ES -28	-8	-2	-7	-8	ES -28
12	ES -29	ES -28	-3	-7	-2	7	C	16	19	16	16	12	16	2	ES 1	ES -18	-6	5	-3	-3	-7	-6	5	-10
13	-16	-14	-11	-2	2	4	9	10	10	13	16	11	11	6	ES -4	ES -16	6	4	ES -27	ES -27	ES -12	-18	ES -27	ES -27
14	ES -27	ES -27	-8	C	-1	4	14	20	17	17	18	10	14	9	15	1	11	0	ES -13	ES -17	-13	ES -13	-19	ES -28
15	-28	ES -15	ES -13	-10	4	3	11	16	14	16	12	10	9	7	7	-2	10	3	-3	-3	-5	-10	-25	ES -29
16	ES -28	ES -28	-11	-6	0	0	11	14	15	12	15	13	9	8	11	7	7	2	-6	-9	-8	-20	-23	-18
17	-18	-14	-10	-20	3	-4	6	14	12	14	7	C	-2	-11	7	6	ES -16	ES -22	-1	-4	-4	-9	ES -22	-19
18	-9	-11	-4	-3	10	2	9	10	14	10	10	9	9	ES -14	ES -10	ES -26	ES -7	ES -12	ES -26	-8	-12	-2	-14	-11
19	ES -21	-12	-12	-3	2	0	-2	1	8	ES 2	ES -7	0	9	-11	ES -6	ES -17	-13	-13	ES -30	1	-6	ES -7	ES -12	-9
20	ES -29	-24	-16	-6	C	S	S	S	S	S	15	S	S	C	C	C	C	C	C	C	1	ES -2	ES -6	-10
21	-17	-11	-11	-6	4	7	13	15	15	19	12	10	13	16	9	-16	12	15	ES -16	2	-1	-1	-5	-8
22	ES -27	-7	-8	0	4	7	13	C	C	15	15	13	12	14	4	4	10	5	-2	-4	-1	ES -13	C	-7
23	-6	-6	-3	4	11	13	18	19	19	16	18	9	15	17	7	-12	-16	16	-16	-3	7	-5	-9	-16
24	-14	-8	-3	-3	5	8	12	22	11	10	10	9	9	9	8	ES -25	-8	12	7	1	0	-2	-11	-12
25	-7	-7	-4	-3	2	C	C	20	9	14	5	9	12	10	-2	-5	13	11	-5	-5	-4	-6	-7	-8
26	-19	-9	-7	-7	7	2	-6	4	16	14	10	10	C	C	C	C	C	C	C	C	C	C	C	C
27	-13	-18	-10	2	6	14	17	6	21	15	12	14	-1	1	ES -2	ES -28	ES -28	-10	ES -28	-7	-7	-6	-14	-11
28	-19	-16	-11	-13	-2	4	8	6	-8	12	6	6	ES -2	ES -15	-10	ES -29	ES -29	ES -29	ES -29	-8	0	-8	-17	-17
29	-17	-20	-9	-4	5	9	12	14	14	16	8	8	7	0	-3	ES -29	-8	-5	-5	-11	ES 2	-6	-14	ES -10
30	ES -24	-17	-10	0	8	7	11	8	8	7	11	15	12	-2	ES -6	ES -27	ES -27	-1	ES -27	-9	ES -1	-10	-21	-12
31	-16	-20	-12	-9	C	6	9	12	15	12	9	12	3	0	-7	ES -29	ES -20	ES 2	ES -29	-3	7	-7	-7	-16
CNT	31	31	31	30	29	29	28	29	29	30	31	29	29	29	29	29	29	29	29	29	30	30	29	30
MED	US -14	-11	-7	-2	US 5	8	13	16	16	16	15	12	12	9	6	-7	1	5	-5	-3	US -1	US -6	US -7	-10
UD	-4	-7	-2	4	11	14	18	22	23	21	21	22	22	23	20	13	15	16	7	7	7	2	-2	-5
LD	ES -28	ES -27	-12	-10	ES -1	0	6	6	8	10	5	8	-1	-11	ES -7	ES -29	ES -27	ES -13	ES -29	-11	ES -12	ES -13	ES -23	ES -28

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Aug. 1970	Whole Day Index		W W V 00 06 12 18 / 06 12 18 24	L M 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4+		(3)(4)(5)(5)	4 5 - -	4 5 4 5	N N N N			
2	5-		(4)(5)(5) 5	- - - -	5 5 5 4	N N N N			
3	5-		5 5 5 5	4 4 - 5	4 4 5 4	N N N N			
4	5°		5 (5)(5) 5	4 5 - 5	4 4 5 4	N N N N			
5	5-		4 5 5 5	4 5 - 5	5 4 5 4	N N N N			
6	5-		4 5 5 5	4 4 - 5	(4) 4 5 5	N N N N			
7	4+		5 4 5 (4)	5 (4) - 4	4 4 5 5	N N N N	20.7	---	82γ
8	4+		4 (5) 5 (4)	5 3 - -	4 5 5 (5)	N N U U	---	---	
9	3+		(4) 2 (4)(4)	(3) - - -	5 4 4 5	U U U U	---	08××	
10	4°		(4) 4 (4)(5)	(4) 2 - 5	4 4 5 5	N N N N			
11	4-		(4)(4)(4)(4)	4 3 - 3	4 4 (4)(3)	N N N N			
12	4°		(3)(4)(4) 4	4 4 - 4	(3) 4 (4) 3	N N N N			
13	4+		4 5 (4)(4)	4 5 - 4	4 4 (4)(2)	N N N N			
14	4°		(3)(4)(4) 4	4 4 - 5	(3) 4 4 (3)	N N N N			
15'	4°		(4)(4)(3) 4	4 5 - -	(3) 4 4 (3)	N N N N			
16'	4-		(3)(4) 4 4	(4) - - -	(3) 4 4 3	N N N N	22.04	---	256γ
17*'	3-		(3) 1 (2)(2)	4 4 - (2)	3 3 (3)(3)	U N N N	---	---	
18*'	2+		(2)(2)(2)(2)	3 4 - (2)	4 4 (3)(3)	N U U U	---	---	
19*	3-		(2)(2)(2)(3)	3 4 - 3	(4)(3)(3)(3)	U U U U	---	04××	
20	4-		(3) S (4)(5)	3 4 - 4	(3) S S (4)	N N N N			
21	4+		(4) 5 (4) 4	5 4 - 5	4 4 4 4	N N N N			
22	4+		4 (5)(4) 4	4 5 - -	(4) 4 4 (4)	N N N N			
23	4+		5 (4)(4) 4	5 - - -	5 4 4 4	N N N N			
24	4+		4 5 (4) 4	(5) 5 - 4	4 4 (4) 4	N N N N			
25	4-		(4)(4) 4 (3)	4 5 - (2)	4 4 4 4	N N N N			
26	3-		(2) 2 3 (3)	1 4 - 4	4 3 C C	N N N N			
27	3-		(3)(2) 3 (3)	4 3 - 1	4 4 (3)(3)	N N N N			
28	3°		(3)(3) 2 3	3 4 - 3	3 3 (2)(3)	N N N N			
29	3+		(5)(4) 2 (3)	3 4 - -	4 4 (3)(4)	N N N N			
30	3+		(4)(3) 3 (3)	(4) - - -	(4) 4 (3)(3)	N N N N			
31	3°		(4)(4) 3 (3)	4 3 - 1	4 4 (3)(4)	N N N N	03.34	23××	59γ

GEOALERT

" = PROTON FLARE
* = MAGSTORM
° = 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.

Aug. 1970	S W F								Correspondence		
	Drop-out Intensities (db)					Start-time	Dura-tion	Type	Imp.	Flare	Solae Noise	Mag.
	CO	LM	HA	TO	SH							
11	×	×				23.30	120	G	×		×	
12	×	31				20.08	28	Slow	3		×	
12		8				22.31	15	S	1-		×	
14		5				02.00	18	Slow	1-			
14		10				03.58	54	S	1-		×	
14		17				23.05	30	Slow	1+			
16	×	×				01.03	42	Slow	×			
16	×					05.23	42	G	×			
17		×				03.13	49	Slow	×			
19		×				03.00	33	Slow	×			
20	16 13"					00.08	19	S	1			
20	28	12	×'		× ×'	03.57	93	G	2			
22	8	×			15	00.37	×	G	1+			

I N U B O

1970	S P A								
Aug.	Phase Advance (degrees)					Time (U.T.)			Remarks
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
3		29	27	—	36	0114	0240	0140	X
7	20		13	45	40	0237	0332	0245	X
7	—	—	13	48		0554	0619	0603	X
8	28					2152	2253	2204	
9				16	13	0149	0235	0200	
9	45					1753	1832	1803	
9					11	2103	2143	2110	
10				6		0425	0504	0432	
10				8	10	2332	0002	2335	
11		9			8	2135	2200	2141	X
11		77	77	108	130	2325	0214	2352	X
12		94	147		186	2010	2224	2027	
12		13		8	26	2232	2257	2236	X
12			8	8	22*	2302	0012	2324	X
13		6	8	16	14	0014	0107	0026	X
13		4		8	7	0117	0144	0120	X
13	30		8	6	11	0256	0337	0303	X
13				12		0437	0504	0442	X
13	26*			48*		0746	0915	0828	X
13		20	22		44	2003	2056	2012	
13	30	16	16	32*	48*	2320	0020	2327	
14			17	26	29	0025	0108	0034	
14			13	24	22	0133	0214	0142	
14	46		37	96	83	0357	0515	0406	
14			—	32		0535	0653	0555	X

1970 Aug.	S P A								Remarks
	Phase Advance (degrees)					Time (U.T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximun	
14	30			54		0657	0813	0706	X
14		22			22	2047	2140	2103	
14		20	15		23	2211	2234	2216	X
14				4		2245	2300	2250	
14	23	56*	45*	56*	64*	2305	0034	2317	
15				12	11	0045	0115	0047	X
15				12	7	0207	0230	0212	
15				16	14	0403	0503	0425	
15				24		0728	0834	0757	X
15	34			16		0856	0937	0900	X
15	30					1143	1221	1147	
15					18	2123	2209	2135	
15	32	72	37*	67*	104*	2238	0057	2338	X
16	25	63*	34*	64*	75*	0104	0221	0125	
16				8	7	0347	0415	0353	
16				8	6	0426	0444	0430	
16	36	37*	40*	72	31*	0521	0613	0544	
16	30					1139	1222	1155	X
16					11	1956	2043	2007	
16		53			24	2135	2234	2155	X
16		43		16	29	2246	2358	2300	X
17			—	—	10	0141	0208	0145	
17		13	12	—	7	0213	0239	0222	
17	50	—79	19	64	57	0315	0447	0330	
17					26	2045	2128	2050	

1970 Aug.	S P A								Remarks
	Phase Advance (degrees)					Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
18			47		101	2206	2327	2211	X
19			26	16	11	0010	0043	0022	
19	—		32	56	55	0258	0406	0312	X
19	20			32	22	0530	0604	0537	X
19	80					1114	1221	1118	X
19					16	2058	2119	2103	
19					8	2146	2210	2153	
19					13	2231	2320	2237	
20	35	72	38	92	90	0007	0138	0018	X
20				8	7	0155	0237	0210	
20	60*	72	45*	106*	95*	0356	0544	0434	X
20	23			32		0750	0850	0800	
22				24	17	0038	0148	0100	X
22	—	—	—	40	23	0247	0336	0254	
22	50					1200	1317	1224	
28			8	36		0614	0731	0620	X
28	—	—			22	2209	2259	2215	X
29				22	13	0317	0410	0323	X
29				48		0647	0748	0654	X
29				8	18	2314	0002	2323	
30				16		0505	0550	0514	
31				10		0742	0804	0748	X

NOTES (1): The letter E or D attached to a time shows that the pertinent time is earlier or more delayed than the given time, respectively.

(2): The mark * shows a multi—peak event.

(3): The mark ** shows a time on the day before the pertinent day.

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