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IONOSPHERIC DATA IN JAPAN

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RADIO RESEARCH LABORATORIES

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_oE. 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_oE. 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.

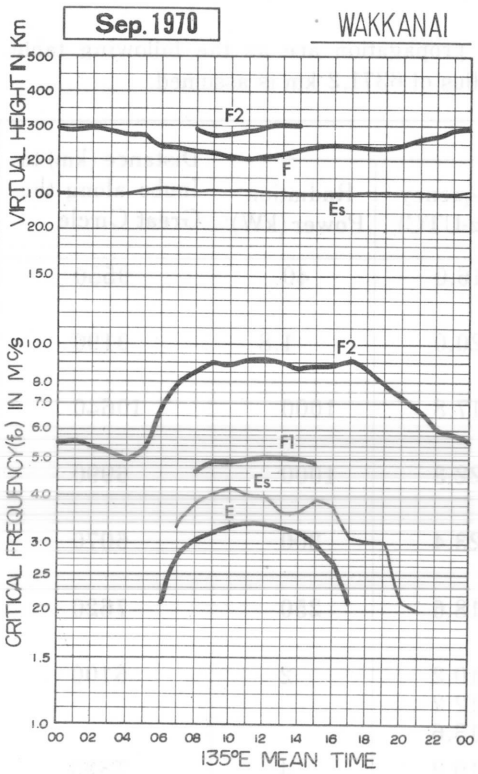
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22′N 001°11′W	GBR	16.0	40	9550
Fort Collins	40°41′N 105°03′W	WWVL	20.0	1.8	9190
Cutler	44°39′N 067°17′W	NAA	17.8	1000	10640
North West 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

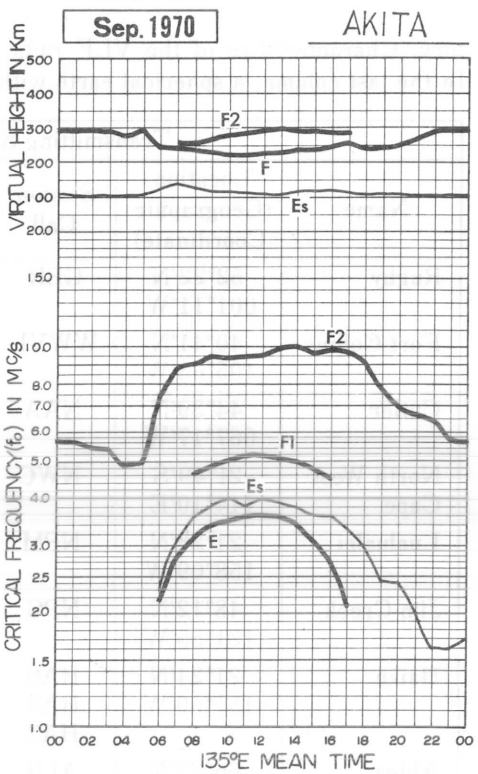
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

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.

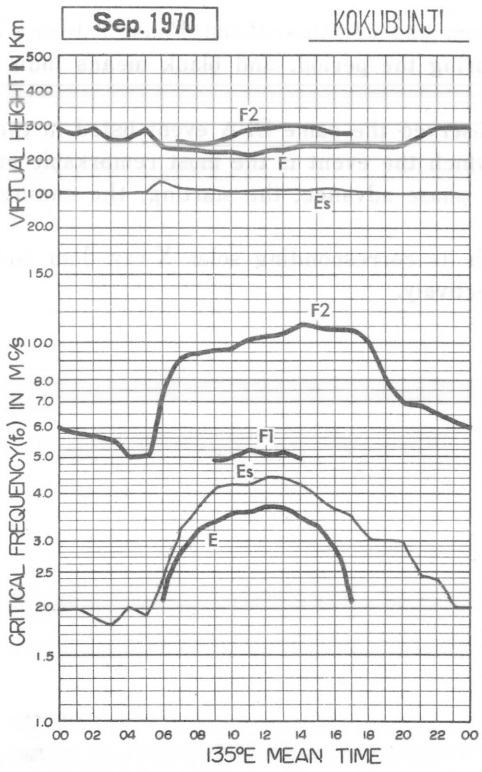
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.

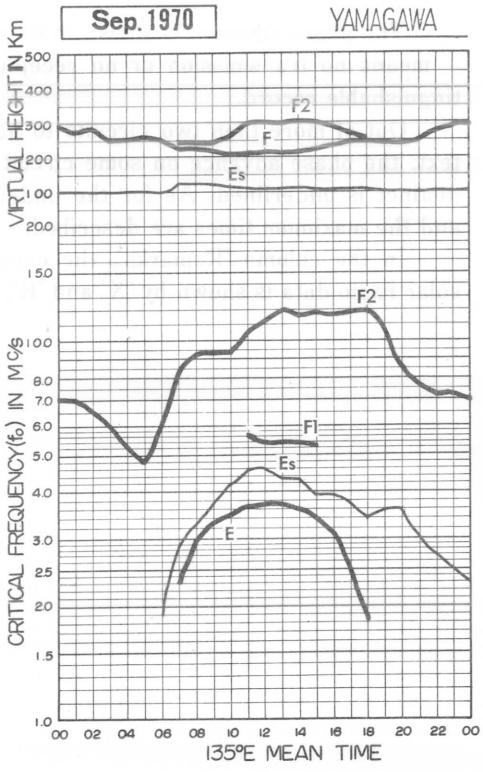
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA

SEP. 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 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	53	53	53	50	47	46	58	53	62	56	I A 57	58	57	56	61	61	62	60	61	68	71	75	67	59
2	40	F 40	F	F 40	43	50	68	66	63	56	60	55	56	I A 62	64	66	66	67	64	67	62	60	56	F 56
3	F 60	F 57	53	51	47	56	66	74	84	84	76	78	83	89	84	83	82	80	83	74	75	67	67	66
4	63	56	50	53	55	58	67	73	81	77	83	81	84	87	82	83	88	83	89	86	79	72	62	64
5	63	60	55	55	58	64	72	71	71	81	74	78	82	86	86	74	78	83	85	81	73	A	F 58	60
6	F	F	F 53	F 48	F 48	F 58	73	80	81	82	89	88	86	84	81	81	80	79	74	72	73	74	73	F
7	F	F	F 63	F 58	F 56	F	84	95	93	88	89	93	90	83	84	82	83	83	86	83	83	74	70	65
8	F 63	60	60	61	61	63	79	89	92	101	100	83	84	83	83	80	84	89	94	88	86	75	68	64
9	61	59	57	57	60	64	64	63	71	76	74	72	77	83	83	79	80	86	81	73	73	69	66	C
10	C	66	59	57	55	57	70	73	80	86	98	93	97	100	104	102	98	96	92	80	72	67	65	64
11	61	62	60	60	55	58	72	78	86	86	88	89	90	94	94	90	93	91	88	86	79	70	66	65
12	66	66	65	60	54	60	71	76	84	93	89	91	92	88	87	92	98	98	95	93	90	73	60	58
13	57	57	58	55	53	63	86	90	89	93	88	88	91	91	95	97	96	103	112	98	71	58	53	56
14	53	45	46	40	43	47	61	73	76	76	70	70	59	58	65	66	64	63	60	63	63	56	52	50
15	49	47	46	45	42	50	58	69	80	74	78	81	81	77	77	75	77	78	76	68	66	58	53	53
16	53	53	53	50	46	48	C	C	C	80	C	C	75	75	75	79	83	83	C	C	C	C	59	I C 55
17	I C 54	53	54	51	47	51	74	87	94	84	87	83	81	87	86	88	87	93	90	83	67	62	58	58
18	54	53	53	50	50	48	63	86	83	93	96	93	96	C	C	C	C	C	94	73	73	58	59	54
19	54	50	50	50	46	51	66	90	103	100	96	94	92	91	89	86	90	97	93	84	69	59	57	57
20	56	55	53	56	49	49	74	105	100	106	105	103	107	102	110	99	88	95	97	I C 80	68	62	58	58
21	54	52	53	48	48	45	56	73	83	87	87	91	94	91	85	82	87	91	87	79	76	I C 68	65	51
22	50	50	50	52	43	43	58	I C 74	86	93	90	92	95	90	94	89	86	83	79	F	A	F 60	F	F 55
23	F 56	F 56	F 46	47	44	48	68	79	97	94	92	97	95	92	93	93	91	88	83	75	70	63	55	55
24	53	53	52	50	50	54	74	85	93	93	102	97	93	98	98	93	94	93	86	75	73	F 66	F 63	59
25	57	F	F	F	F	F 56	83	98	93	100	100	97	107	106	102	103	104	96	91	81	70	61	57	57
26	56	56	54	56	47	50	73	81	98	108	108	104	108	104	96	93	97	96	85	69	66	67	66	F
27	F	F	F 60	F	F	F 61	F	89	99	103	104	100	113	112	100	94	94	96	88	80	73	68	66	66
28	63	59	58	58	56	53	66	84	90	98	100	107	115	105	92	91	91	94	85	76	64	62	56	56
29	54	56	54	53	53	53	74	83	96	97	111	110	106	100	100	96	94	93	83	73	76	70	60	58
30	58	60	58	53	53	52	74	88	101	101	104	104	95	101	105	97	93	94	82	74	70	69	69	72
31																								
	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	28	28	28	29	28	29	29	30	29	29	30	29	29	29	29	29	29	28	28	28	29	27
MED	55	56	54	52	50	53	70	80	86	90	89	91	92	90	87	88	88	91	86	78	72	67	60	58
UQ	61	59	58	56	55	58	74	88	95	98	100	97	96	100	96	93	94	95	91	83	76	70	66	64
LQ	53	52	52	50	46	49	65	73	81	81	83	81	82	83	83	80	82	83	82	73	68	60	57	56

SEP. 1970 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 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

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							380		460	480	I 490 A	500	500	500	480	470	460							
2								450	460	490	490	500	500	A	510	500	430							
3									500	500	500	500	520	520	U 500									
4									U 500	500	500	L	550	500										
5										500	A	A	A	530	A									
6										U 500	530	A		A	A									
7									A	L		A	A											
8									L		490	490	500	L	460									
9									490	500		500	520	A										
10									U 500	L	A	U 500	500		500									
11												L		I A 520	L									
12									U 460	460		490				500								
13									L	460	L			490										
14									450	490	490	490		490	480	450								
15									460	490	500	L	480	L										
16										L	C	C	520	L										
17									440	U 480		480	U 500											
18												510		C	C	C								
19										L	U 490	500		L										
20											A													
21									470	510			500											
22										500														
23												500		U 500	510									
24																								
25											460													
26																								
27																								
28																								
29											470	L												
30											L	L												
31																								
	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	11	14	11	12	11	8	7	4	2							
MED							380	450	460	495	490	500	500	500	500	485	445							
UQ									495	500	500	500	520	520	505	500								
LQ									460	480	490	490	500	495	480	460								

The Radio Research Laboratories, Japan

SEP. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

SEP. 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 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	230	290	305	325	330	A	A	A	310	300	A	240	A					
2						A	215	290	310	330	340	365	340	315	A	A	A	250	S					
3						S	235	290	310	325	335	350	350	340	A	A	A	220	S					
4						140	225	290	310	330	345	I 350	370	345	335	325	295	230	S					
5						E	220	290	310	320	310	310	A	A	A	A	A	A	A					
6						S	220	290	305	320	330	335	350	330	A	A	A	A	A					
7						A	240	290	305	A	A	A	A	A	350	330	I A 290	215	A					
8						A	220	265	305	A	A	370	360	370	350	310	290	A	A					
9						S	215	290	300	325	350	A	A	A	A	A	290	220	A					
10						S	230	290	305	330	340	I A 330	310	305	I A 310	A	A	A	A					
11						A	215	285	310	335	340	A	A	A	A	A	A	A	A					
12						S	220	295	310	330	350	360	370	355	325	310	280	215	S					
13						E	210	275	305	320	340	365	355	365	320	310	275	190	E					
14						E	215	275	A	320	A	A	A	A	A	300	260	190	S					
15						E	200	255	A	A	320	340	330	330	320	305	270	195	S					
16						E	C	C	C	315	C	C	340	340	330	300	270	200	C					
17						S	205	265	A	A	330	330	340	340	A	300	I A 260	195	E					
18						E	190	255	A	A	305	A	A	C	C	C	C	C	E					
19						E	205	260	290	300	305	310	A	A	325	A	A	200	E					
20						E	A	255	290	315	320	A	A	315	A	A	A	A	E					
21						E	200	265	295	310	315	A	A	A	A	A	275	255						
22						A	205	I C 260	305	320	325	330	340	325	A	A	A	A	A					
23						E	205	265	300	320	330	330	340	340	325	305	265	A						
24						S	205	260	300	310	315	A	A	330	330	A	A	A						
25						E	A	275	305	320	320	A	A	A	A	A	A	S						
26						A	A	255	300	310	320	325	320	A	A	A	A	A						
27							195	260	305	330	340	360	355	330	310	300	265	S						
28						E	200	280	305	325	330	340	340	325	315	A	A	160						
29							195	265	300	315	330	340	330	330	310	290	245	185						
30							200	260	300	315	330	340	330	320	300	260	250	A						
31																								
	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						13	26	29	25	25	26	19	18	19	16	14	15	16	5					
MED						E	212	275	305	320	330	340	340	330	322	302	270	208	E					
UQ						E	220	290	305	325	340	355	355	340	330	310	285	225	E					
LQ						E	200	260	300	315	320	330	330	325	310	300	262	192	E					

The Radio Research Laboratories, Japan

SEP. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

SEP. 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 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_{30}^{X}	J_{38}^{X}	J_{33}^{X}	18	E	28	31	37	35	41	66	40	43	40	G	34	34	G	33	J_{36}^{X}	20	J_{35}^{X}	E_{15}^{S}	E
2	30	21	E	E	J_{24}^{X}	J_{45}^{X}	33	41	J_{53}^{X}	45	43	51	49	J_{66}^{X}	J_{53}^{X}	38	34	32	J_{31}^{X}	J_{53}^{X}	J_{30}^{X}	J_{33}^{X}	E_{15}^{S}	21
3	E	E	J_{25}^{X}	J_{28}^{X}	16	E_{15}^{S}	G	35	40	42	42	41	G	40	36	34	28	G	E_{17}^{S}	19	J_{24}^{X}	J_{20}^{X}	J_{23}^{X}	J_{25}^{X}
4	24	J_{21}^{X}	E	E	E	G	G_{22}	38	40	G	39	42	40	G	G	44	36	30	23	J_{30}^{X}	J_{21}^{X}	J_{35}^{X}	E_{15}^{S}	J_{23}^{X}
5	J_{53}^{X}	J_{21}^{X}	J_{23}^{X}	19	E	J_{46}^{X}	J_{56}^{X}	39	44	44	J_{55}^{X}	J_{60}^{X}	J_{63}^{X}	55	60	J_{45}^{X}	38	50	40	30	J_{110}^{X}	68	J_{53}^{X}	J_{25}^{X}
6	J_{33}^{X}	J_{35}^{X}	J_{33}^{X}	16	J_{24}^{X}	E_{15}^{S}	41	38	39	41	51	51	J_{51}^{X}	J_{59}^{X}	J_{90}^{X}	55	42	42	J_{33}^{X}	J_{33}^{X}	J_{33}^{X}	J_{29}^{X}	J_{54}^{X}	J_{53}^{X}
7	J_{61}^{X}	32	J_{53}^{X}	J_{33}^{X}	J_{26}^{X}	J_{25}^{X}	G	33	J_{73}^{X}	44	49	J_{73}^{X}	J_{55}^{X}	J_{60}^{X}	J_{53}^{X}	43	J_{60}^{X}	36	J_{55}^{X}	J_{45}^{X}	J_{45}^{X}	J_{28}^{X}	19	J_{36}^{X}
8	J_{51}^{X}	J_{33}^{X}	J_{25}^{X}	J_{26}^{X}	E	J_{21}^{X}	G	32	42	43	42	G	G	G_{35}	40	G	G	J_{31}^{X}	27	E_{15}^{S}	E_{18}^{S}	23	J_{31}^{X}	J_{37}^{X}
9	28	E	E_{15}^{S}	18	E	E_{16}^{S}	29	38	38	40	43	37	42	J_{70}^{X}	J_{68}^{X}	J_{60}^{X}	J_{63}^{X}	G 20	34	E	E_{15}^{S}	E_{15}^{S}	E_{16}^{S}	C
10	C	E	J_{20}^{X}	17	E	E_{15}^{S}	G	G	38	44	J_{61}^{X}	50	J_{54}^{X}	41	40	40	J_{61}^{X}	J_{36}^{X}	30	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	E_{17}^{S}	J_{25}^{X}
11	20	J_{24}^{X}	18	J_{23}^{X}	J_{25}^{X}	23	G	G	41	43	47	41	43	J_{94}^{X}	44	41	J_{54}^{X}	J_{44}^{X}	J_{56}^{X}	J_{23}^{X}	J_{31}^{X}	18	19	J_{25}^{X}
12	J_{20}^{X}	E	E_{16}^{S}	E	E	E_{15}^{S}	G	G_{25}	G	G_{29}	G_{30}	G_{31}	G_{34}	38	40	39	37	30	E_{15}^{S}	E	20	J_{23}^{X}	J_{40}^{X}	J_{30}^{X}
13	20	E	E	E	E	E	G	G	G	40	G	G_{25}	G	G	G	G	G	25	J_{33}^{X}	J_{33}^{X}	E_{15}^{S}	E_{16}^{S}	E_{15}^{S}	E_{17}^{S}
14	E_{13}^{S}	E	E	E	E	E	G	G	30	G	37	35	40	35	36	34	41	23	21	E_{15}^{S}	E	E	E	E
15	E_{16}^{S}	E	E	E	14	18	25	31	31	36	G	G	G	G	G	G	G	25	E_{15}^{S}	18	J_{20}^{X}	E	E	E_{15}^{S}
16	E_{16}^{S}	E_{15}^{S}	E	E	E	E	C	C	C	G	C	C	G_{30}	G	G	G	37	28	C	C	C	C	E_{15}^{S}	E_{14}^{S}
17	C	E	E	E	E	E_{13}^{S}	G	G	31	40	G	G	G	G	41	G	31	31	J_{43}^{X}	J_{40}^{X}	J_{21}^{X}	19	E_{16}^{S}	E
18	E_{15}^{S}	E_{15}^{S}	E	17	E	E	J_{33}^{X}	33	35	J_{55}^{X}	J_{43}^{X}	J_{53}^{X}	41	C	C	C	C	C	J_{53}^{X}	J_{38}^{X}	J_{30}^{X}	E	E_{16}^{S}	E_{15}^{S}
19	E_{14}^{S}	E	E	E	E	E	G	G	36	38	40	40	42	35	G	40	38	23	J_{30}^{X}	J_{35}^{X}	J_{27}^{X}	E_{16}^{S}	19	J_{24}^{X}
20	J_{35}^{X}	J_{33}^{X}	J_{23}^{X}	E	J_{21}^{X}	J_{21}^{X}	28	J_{44}^{X}	J_{53}^{X}	J_{56}^{X}	J_{53}^{X}	37	41	36	38	J_{41}^{X}	J_{41}^{X}	J_{35}^{X}	J_{30}^{X}	C	J_{43}^{X}	J_{24}^{X}	J_{23}^{X}	19
21	E	J_{20}^{X}	30	15	14	E	2_{6}	41	43	42	45	J_{55}^{X}	39	34	34	38	33	J_{53}^{X}	J_{50}^{X}	J_{30}^{X}	J_{36}^{X}	C	J_{28}^{X}	J_{24}^{X}
22	E_{13}^{S}	E	E	E	J_{30}^{X}	J_{21}^{X}	25	C	44	40	40	45	47	48	J_{54}^{X}	50	48	38	18	J_{103}^{X}	J_{115}^{X}	J_{81}^{X}	J_{74}^{X}	20
23	J_{35}^{X}	J_{33}^{X}	J_{34}^{X}	J_{28}^{X}	J_{24}^{X}	E	G	33	38	40	42	41	40	G	G_{23}	40	38	J_{38}^{X}	J_{53}^{X}	J_{30}^{X}	E	E	E_{16}^{S}	E_{15}^{S}
24	E	E	E	E	E_{15}^{S}	E_{14}^{S}	G	G	43	40	35	36	40	G_{28}	G_{30}	J_{44}^{X}	J_{43}^{X}	37	J_{21}^{X}	J_{33}^{X}	J_{26}^{X}	J_{53}^{X}	J_{51}^{X}	E
25	J_{30}^{X}	17	J_{20}^{X}	15	E	E	21	G_{21}	G_{23}	38	40	J_{51}^{X}	J_{51}^{X}	J_{43}^{X}	45	42	J_{56}^{X}	J_{61}^{X}	J_{35}^{X}	J_{74}^{X}	J_{33}^{X}	24	J_{53}^{X}	J_{23}^{X}
26	J_{23}^{X}	23	J_{41}^{X}	J_{23}^{X}	J_{28}^{X}	18	20	33	34	G	51	53	41	J_{65}^{X}	50	46	40	36	36	41	32	32	28	27
27	27	28	E	E	E	E	23	J_{41}^{X}	G	G	G	G	G	G_{24}	G	G_{21}	G_{19}	E_{20}^{S}	E	E_{14}^{S}	E	E	E_{15}^{S}	E_{14}^{S}
28	E_{15}^{S}	E	E	E	E	E	G	G	G	40	40	40	G	36	G	34	39	20	21	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	E_{16}^{S}
29	E_{15}^{S}	E	E	E	E	E	G	J_{35}^{X}	G	35	G	G	G	G	33	G	30	G	E	E	E_{15}^{S}	E	E	E_{13}^{S}
30	E	E	E	E	E	E	G	G	G	G	G	39	40	36	33	30	27	40	30	E	E	E	E_{15}^{S}	E_{15}^{S}
31																								
	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	30	30	30	30	30	29	28	29	30	29	29	30	29	29	29	29	29	29	28	29	28	30	29
MED	20	15	E_{15}^{E}	E	E	E_{14}^{E}	G	33	38	40	42	40	40	36	36	39	38	31	30	J_{30}^{X}	J_{21}^{X}	20	E_{16}^{E}	20
UQ	J_{30}^{X}	J_{24}^{X}	J_{25}^{X}	18	J_{21}^{X}	21	26	38	42	43	47	51	43	48	45	43	42	38	J_{36}^{X}	J_{37}^{X}	J_{32}^{X}	J_{30}^{X}	J_{28}^{X}	J_{25}^{X}
LQ	E_{14}^{S}	E	E	E	E	E	G	G	30	35	35	35	G	G_{24}	G	30	31	23	21	15	E_{15}^{E}	E_{15}^{E}	E_{15}^{S}	E_{15}^{S}

The Radio Research Laboratories, Japan

SEP. 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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	27	30	20	12	E	26	G	G	G	G	A	38	39	40	G	G	30	G	30	31	16	23	E S 15	E
2	20	E	E	E	15	30	32	G	42	44	G	G	47	A	40	37	32	30	26	20	20	21	E S 15	19
3	E	E	18	20	E	E S 15	G	G	G	G	G	G	G	G	36	32	28	G	E S 17	17	17	17	20	18
4	E	15	E	E	E	G	G 21	G	G	G	G	38	G	G	G	G	G	G	20	28	E	12	E S 15	E
5	E	E	16	17	E	36	47	G	G	G	55	59	55	50	60	42	29	40	20	E	22	A	E	19
6	26	30	20	E	17	E S 15	40	G	G	G	50	49	45	54	68	40	30	28	24	29	19	18	18	26
7	20	17	15	20	13	18	G	G	61	42	43	62	50	47	G	G	42	G	50	45	45	25	16	36
8	31	16	17	19	E	17	G	G	G	36	39	G	G	G 33	30	G	G	27	22	E S 15	E S 16	E	20	30
9	17	E	E S 15	E	E	E S 16	G	G	G	G	G	37	40	62	40	47	20	G 17	16	E	E S 15	E S 15	E S 16	C
10	C	E	E	15	E	E S 15	G	G	G	G	50	40	G	G	38	32	41	25	16	E S 13	E S 15	E S 15	E S 17	25
11	E	E	16	15	17	18	G	G	G	G	45	40	40	65	37	34	45	43	40	19	18	17	17	20
12	E	E	E S 16	E	E	E S 15	G	G 22	G	G 29	G 30	G 29	G 27	28	30	27	20	18	E S 15	E	17	17	30	19
13	E	E	E	E	E	E	G	G	G	G	G	G 23	G	G	G	G	G	G	17	17	E S 15	E S 16	E S 15	E S 17
14	E S 13	E	E	E	E	E	G	G	30	G	35	35	36	35	33	G	40	G	20	E S 15	E	E	E	E
15	E S 16	E	E	E	E	17	G	G	30	35	G	G	G	G	G	G	G	G	E S 15	15	17	E	E	E S 15
16	E S 16	E S 15	E	E	E	E	C	C	C	G	C	C	G 29	G	G	G	G	17	C	C	C	C	E S 15	E S 14
17	C	E	E	E	E	E S 13	G	G	31	33	G	G	G	G	33	G	27	G	35	38	17	16	E S 16	E
18	E S 15	E S 15	E	E	E	E	27	G	33	36	G	36	36	C	C	C	C	C	40	27	18	E	E S 16	E S 15
19	E S 14	E	E	E	E	E	G	G	G	G	G	G	37	35	G	31	27	G	G	35	24	E S 16	17	E
20	34	22	17	E	13	20	25	40	49	50	51	37	38	G	37	36	35	27	15	C	20	20	17	14
21	E	19	20	15	E	E	G	40	40	G	G	43	37	34	34	33	G 20	42	37	20	38	C	26	20
22	E S 13	E	E	E	17	15	G	C	43	G	G	G	46	48	52	42	40	30	16	50	A	30	20	15
23	27	18	28	27	22	E	G	G	G	G	G	G	G	G	G 23	G	G 16	33	25	E	E	E	E S 16	E S 15
24	E	E	E	E	E S 15	E S 14	G	G	40	G	G	36	37	G 27	G 30	41	38	30	15	E	15	27	43	E
25	22	17	15	E	E	E	21	G 20	G 23	G	G	35	36	40	39	34	45	60	34	40	15	E	32	20
26	20	E	18	22	24	14	20	20	G	G	48	G	G	58	41	34	28	27	20	30	23	17	19	17
27	E	18	E	E	E	E	G	G	G	G	G	G	G	G 23	G	G 20	G 16	E S 20	E	E S 14	E	E	E S 15	E S 14
28	E S 15	E	E	E	E	E	G	G	G	G	G	G	G	G	G	33	26	G	16	E S 15	E S 15	E S 15	E	E S 16
29	E S 15	E	E	E	E	E	G	G	G	G	G	G	G	G	29	G	20	G	E	E	E S 15	E	E	E S 13
30	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	19	16	E	E	E	E S 15	E S 15
31																								
	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	30	30	30	30	30	29	28	29	30	29	29	30	29	29	29	29	29	29	28	29	28	30	29
MED	E 15	E	E	E	E	E 14	G	G	G	G	G	G 29	32	G 28	30	31	27	18	20	17	17	16	E 16	E 15
UQ	20	17	17	15	13	17	G 20	G	31	G 29	43	38	39	47	38	34	35	30	26	30	20	19	19	19
LQ	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G 16	G	16	E 13	E 15	E	E S 15	E 14

SEP. 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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	E	E	E	E	E S 14	16	16	17	17	19	18	19	18	20	15	16	15	E	E	E	E	E S 15	E
2	E S 15	E S 16	E	E	E	E	12	11	17	17	20	20	20	20	20	17	11	11	E S 15	E	E	E	E S 15	E S 15
3	E	E	E	E	E	E S 15	14	11	17	17	18	20	20	19	18	20	17	11	E S 17	E	E	E	E	E
4	E S 16	E	E	E	E	E	11	16	18	20	19	20	17	20	19	18	11	11	E S 13	E	E S 16	E	E S 15	E S 15
5	E	E	E	E	E	E	12	12	18	18	19	19	20	19	16	17	15	E	E	E S 15	E	E	E	E
6	E	E	E	E	E	E S 15	12	12	17	17	19	17	22	20	17	17	16	16	E	E	E	E	E S 14	E S 15
7	E	E	E	E	E	E	11	11	16	18	18	20	19	20	20	17	16	11	E	E S 12	E	E	E	E S 15
8	E	E	E	E	E	E	E	12	12	17	20	19	20	19	19	16	12	E	E	E S 15	E S 16	E S 15	E S 16	E S 16
9	E S 16	E	E S 15	E	E	E E S 16	11	13	11	17	17	18	18	17	17	17	16	E	E	E	E S 15	E S 15	E S 16	C
10	C	E	E	E	E	E S 15	12	16	16	18	20	20	20	19	19	19	16	E	E	E S 13	E S 15	E S 15	E S 17	E S 15
11	E S 15	E	E	E	E	E	E	17	18	17	19	20	27	20	20	17	17	E	16	E	E	E	E	E
12	E	E	E S 16	E	E	E S 15	16	16	18	20	19	20	19	17	12	11	11	E	E S 15	E	E	E	E S 15	E
13	E S 16	E	E	E	E	E	11	E	16	17	17	17	21	20	18	18	12	15	E	E	E S 15	E S 16	E S 15	E S 17
14	E S 13	E	E	E	E	E	E	11	16	19	16	18	20	19	18	17	12	11	E S 14	E S 15	E	E	E	E
15	E S 16	E	E	E	E	E	16	13	11	16	19	19	18	17	16	17	12	11	E S 15	E	E	E	E	E S 15
16	E S 16	E S 15	E	E	E	E	C	C	C	18	C	C	18	20	17	12	12	E	C	C	C	C	E S 15	E S 14
17	C	E	E	E	E	E S 13	15	12	17	17	17	19	17	18	12	17	17	17	E	E S 15	E S 15	E	E S 16	E
18	E S 15	E S 15	E	E	E	E	12	16	17	15	17	19	18	C	C	C	C	C	E	E	E	E	E S 16	E S 15
19	E S 14	E	E	E	E	E	11	12	16	17	16	19	12	20	19	17	15	15	E	E S 15	E	E S 16	E	E S 15
20	E S 15	E	E	E	E	E	11	15	17	20	17	18	19	19	18	16	11	15	E	C	E	E	E	E
21	E	E	E	E	E	E	16	16	18	20	13	16	20	12	15	20	16	E	E S 12	E	E S 15	C	E	E
22	E S 13	E	E	E	E	E	16	C	18	18	20	19	19	19	19	19	12	12	E	E	E	E	E S 12	E
23	E	E	E	E	E	E	17	16	16	17	17	17	17	18	17	19	11	E	E	E	E	E	E S 16	E S 15
24	E	E	E	E	E S 15	E S 14	16	11	17	18	20	20	19	19	17	14	13	E	E	E	E	E	E	E
25	E S 15	E	E	E	E	E	E	12	16	19	20	20	17	18	19	15	15	E S 15	E	E S 15	E	E	E S 15	E
26	E	E	E	E	E	E	E	E	17	17	19	21	20	19	18	17	12	E	E	E	E	E	E	E
27	E S 14	E	E	E	E	E	14	16	17	19	16	19	19	18	17	E	11	E S 20	E	E S 14	E	E	E S 15	E S 14
28	E S 15	E	E	E	E	E	12	15	17	15	19	20	16	17	16	11	11	11	E	E S 15	E S 15	E S 15	E	E S 16
29	E S 15	E	E	E	E	E	14	12	15	16	17	16	18	17	15	11	11	E	E	E	E S 15	E	E	E S 13
30	E	E	E	E	E	E	11	13	17	16	19	19	19	19	18	16	11	E	E	E	E	E	E S 15	E S 15
31																								
	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	30	30	30	30	30	29	28	29	30	29	29	30	29	29	29	29	29	29	28	29	28	30	29
MED	E S 14	E	E	E	E	E	12	12	17	17	19	19	19	19	18	17	12	E E 11	E	E	E	E	E S 14	E S 14
UQ	E S 15	E	E	E	E	E S 13	15	16	17	18	19	20	20	20	19	17	16	U 13	E E 12	E S 14	E S 15	E	E S 15	E S 15
LQ	E	E	E	E	E	E	11	12	16	17	17	18	18	18	17	15	11	E	E	E	E	E	E	E

The Radio Research Laboratories, Japan

SEP. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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	270	265	265	260	260	260	310	290	290	285	270	285	290	250	295	290	290	300	280	265	255	285	305	290
2	275	265	F	275	260	280	315	280	315	285	290	245	250	270	280	290	305	300	295	285	275	280	255	260
3	255	260	265	265	270	280	315	325	315	315	315	295	300	305	305	300	315	300	300	295	295	270	265	265
4	285	285	255	265	275	300	300	310	320	325	310	310	300	315	295	315	305	315	295	295	300	295	270	265
5	275	270	255	265	280	295	320	325	305	320	295	290	275	290	305	290	295	310	305	300	290	A	275	280
6	F	F	245	270	265	305	320	330	320	310	305	295	300	295	295	295	310	330	305	280	275	275	275	F
7	F	F	265	275	270	F	305	320	305	310	295	290	300	295	300	295	300	300	310	300	300	290	285	280
8	270	275	270	275	280	295	310	315	315	305	310	310	295	305	315	300	295	300	295	300	295	305	285	280
9	275	255	260	260	270	285	300	280	295	310	305	285	300	300	300	300	300	310	305	280	290	275	260	C
10	C	275	270	280	275	305	330	325	325	305	310	300	295	280	300	300	295	305	305	300	295	270	275	270
11	265	270	280	285	275	295	320	335	325	295	305	305	295	300	310	300	300	300	310	295	305	290	270	265
12	265	280	290	290	295	305	340	345	340	315	315	300	295	295	305	295	300	315	305	295	320	305	295	275
13	265	280	275	275	275	285	335	330	335	345	320	300	300	300	305	305	310	300	315	330	315	260	265	265
14	275	255	280	255	255	300	290	300	275	265	285	285	290	260	285	290	295	315	300	285	285	275	260	250
15	245	235	260	265	265	280	280	290	300	310	295	300	320	300	305	305	320	325	305	290	290	295	265	270
16	270	275	280	270	265	270	C	C	C	315	C	C	320	305	300	305	315	315	C	C	C	C	280	275
17	275	275	275	285	275	280	325	330	330	330	310	315	310	300	310	305	305	310	320	325	285	290	285	290
18	275	270	265	270	265	270	295	310	310	305	315	305	300	C	C	C	C	C	320	300	320	285	295	295
19	280	270	280	290	285	290	340	335	340	315	315	320	315	320	310	305	300	310	315	325	305	275	260	280
20	255	265	270	285	270	265	305	340	340	325	325	305	320	305	310	325	305	305	325	315	295	280	270	275
21	265	260	260	255	285	290	305	320	315	305	305	310	310	310	305	315	305	320	305	300	305	280	290	270
22	245	260	265	285	290	280	310	315	310	310	300	305	305	295	305	310	310	315	305	F	A	285	F	275
23	280	280	265	255	260	270	330	315	325	330	295	310	305	305	310	310	320	320	300	305	300	295	275	275
24	265	275	270	270	280	295	330	325	330	305	315	310	300	305	305	300	315	320	310	305	305	285	290	280
25	280	F	F	F	F	270	315	335	325	320	320	310	300	310	300	300	310	315	300	295	300	280	280	265
26	270	260	270	295	270	280	325	320	325	320	320	310	305	310	300	300	315	320	320	290	275	280	275	F
27	F	F	275	F	F	275	F	320	320	320	310	330	300	300	300	295	300	310	305	295	315	270	285	275
28	270	255	275	260	250	255	290	325	330	305	310	305	305	315	315	320	310	320	310	305	290	295	285	270
29	265	270	270	275	270	295	330	340	335	320	315	320	310	305	310	315	320	325	300	300	295	315	285	280
30	275	275	290	285	285	285	335	330	320	320	325	325	305	295	305	320	310	310	305	300	295	270	275	280
31																								
	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	28	28	28	29	28	29	29	30	29	29	30	29	29	29	29	29	29	28	28	28	29	27
MED	270	270	270	272	270	285	315	325	320	312	310	305	300	300	305	300	305	310	305	300	295	280	275	275
UQ	275	275	275	285	280	295	330	330	330	320	315	310	305	305	310	310	310	320	310	302	305	292	285	280
LQ	265	260	265	265	265	275	305	315	310	305	300	295	295	295	300	295	300	305	300	292	290	275	270	268

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

IONOSPHERIC DATA

SEP. 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							335		360	360	I A 370	370	360	355	360	355	350							
2								330	A	A	380	360	A	A	335	340	355							
3									360	360	365	380	345	345	U 350									
4									U 350	360	375	L	345	360										
5										360	A	A	A	A	A									
6										U 360	A	A		A	A									
7									A	L		A	A											
8									L		375	380	380	L	375									
9									345	345		380	350	A										
10									U 360	L	A	U 380	360		360									
11												L		I A 365	L									
12									U 375	395		380				360								
13									L	390	L			370										
14									360	370	345	345		345	335	355								
15									355	360	360	L	360	L										
16																								
17									385	U 395		375	U 360											
18												355		C	C	C								
19										L	U 390	370		L										
20											A													
21									360	355			360											
22										360														
23												380		U 360	360									
24																								
25											400													
26																								
27																								
28																								
29											385	L												
30											L	L												
31																								
	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	10	13	10	12	9	7	7	4	2							
MED							335	330	360	360	375	378	360	360	360	355	352							
UQ									360	370	385	380	360	362	360	358								
LQ									355	360	365	365	350	350	342	348								

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

IONOSPHERIC DATA

SEP. 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							315		360	405	I A 430	400	420	495	355	345	320							
2								345	300	410	395	520	500	A	375	340	300							
3									295	285	265	300	300	300	300									
4									275	270	280	290	325	290										
5										285	325	345	320	315	295									
6										265	290	280		300	I A 300									
7									275	255		A	260											
8									250		250	250	275	270	260									
9									340	300		305	320	300										
10									275	290	290	260	290		270									
11												265		300	275									
12									250	260		260				295								
13									245	250	260			275										
14									310	345	340	350		450	360	320								
15									310	270	320	310	275	315										
16										270	C	C	290	300										
17									245	250		260	280											
18												280		C	C	C								
19										250	250	270		275										
20											250													
21									285	270			275											
22										275														
23												260		260	290									
24																								
25											245													
26																								
27																								
28																								
29											260	245												
30											245	245												
31																								
	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	14	18	16	19	13	14	10	4	2							
MED							315	345	280	270	272	280	290	300	298	330	310							
UQ									310	290	322	308	320	315	355	342								
LQ									250	260	250	260	275	275	275	308								

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SEP. 1970 | H'F2 (KM)

IONOSPHERIC DATA

SEP. 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	320	340	300	305	300	310	250	250	215	230	I A 215	205	210	250	210	220	245	250	295	305	310	270	250	240
2	I A 270	325	305	300	300	295	275	275	A	I A 250	210	225	A	A	270	250	240	260	260	265	275	270	285	300
3	295	295	305	300	275	260	240	230	235	210	210	200	210	225	225	230	220	245	240	250	260	270	300	290
4	250	250	295	300	270	250	245	240	225	225	200	200	205	210	220	240	245	250	260	250	240	240	255	300
5	275	275	310	310	285	265	A	245	250	235	A	A	A	A	A	250	245	A 255	250	230	245	A	275	280
6	355	350	300	295	300	250	230	235	230	230	A	A	A	A	A	A	225	255	250	265	265	275	270	300
7	295	275	260	280	290	280	230	230	A	245	235	A	A	A	235	240	A	250	A	A	A	260	250	A
8	A	300	275	300	265	250	225	215	230	215	210	210	215	200	205	210	240	260	250	245	235	225	265	I A 280
9	280	310	300	295	280	280	250	240	210	220	210	205	215	I A 250	235	A	235	260	240	245	265	255	295	C
10	C	260	260	250	260	245	230	225	215	240	A	230	250	230	225	220	A	245	245	230	230	260	265	300
11	300	295	265	250	260	250	215	235	240	230	A	210	210	I A 235	225	240	A	A	A	240	230	235	260	300
12	300	270	260	250	240	240	210	220	210	200	190	210	210	220	245	210	245	250	240	245	225	220	265	270
13	290	290	275	270	275	260	235	230	210	210	200	205	195	215	215	210	250	250	240	220	210	250	275	300
14	255	230	265	300	300	260	245	240	225	210	205	215	245	215	230	235	270	255	250	260	255	265	290	350
15	350	350	325	275	290	260	235	235	220	210	200	200	225	220	220	225	240	245	245	240	250	250	275	295
16	290	275	265	250	280	285	C	C	C	200	C	C	210	205	230	225	250	250	C	C	C	C	250	275
17	I C 280	275	275	250	265	275	240	230	215	200	190	200	200	205	230	235	240	245	245 A	230 A	240	250	260	260
18	275	275	290	290	295	275	240	220	215	205	210	200	205	C	C	C	C	C	A	235	240	245	260	260
19	270	280	295	260	265	275	230	230	220	215	215	205	205	210	215	215	250	240	225	230 A	245	255	310	285
20	I A 310	310	300	260	260	300	245	245 A	A	A	A	210	210	220	250 A	240 A	245 A	250	230	I C 220	250	260	290	280
21	290	320	315	290	265	260	225	260 A	255 A	215	240	250	215	225	220	235	245	A	A	260	260 A	I C 265	260	300
22	325	310	300	250	250	290	250	I C 250	255 A	230	225	250	280	I A 240	A	A	A	230	220	A	A	300	260	265
23	320	275	345	325	350	290	220	240	235	230	220	220	215	225	210	250	245	245	250	235	240	250	260	275
24	295	285	275	295	265	245	225	230	240	225	200	210	215	225	240	250 A	250 A	245	230	235	240	295	A	255
25	290	300	300	250	265	285	230	225	220	220	210	205	220	240	240	225	250 A	I A 240	250	I A 250	240	230	I A 300	300
26	300	300	300	275	275	290	210	215	230	220	250 A	245	225	I A 230	250	230	250	230	215	250	270	275	280	285
27	275	245	235	265	255	275	220	225	215	210	210	205	220	215	225	235	245	245	235	230	230	260	265	265
28	265	275	300	295	300	310	250	245	240	230	220	220	205	225	225	230	240	235	225	230	225	250	255	295
29	295	275	250	265	260	245	225	220	220	215	200	200	200	215	225	230	245	230	225	230	250	245	250	275
30	280	275	250	235	250	250	220	225	225	220	225	210	200	210	220	235	230	230	225	245	250	270	275	280
31																								
	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	30	30	30	30	30	28	29	26	29	24	26	26	25	26	26	25	27	25	27	27	28	29	28
MED	290	282	295	278	268	270	230	230	225	220	210	210	210	220	225	232	245	245	240	240	245	258	265	282
UQ	300	310	300	300	290	285	245	240	235	230	220	220	220	230	235	240	250	250	250	250	258	270	280	300
LQ	275	275	265	250	260	250	225	225	215	210	200	205	205	215	220	225	240	242	230	230	238	248	260	272

The Radio Research Laboratories, Japan

SEP. 1970 | H'F (KM)

IONOSPHERIC DATA

SEP. 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	105	105	105	110	E	120	120	120	120	120	110	110	105	110	G	110	110	G	115	110	110	110	S	E
2	105	105	E	E	100	105	110	115	110	110	110	110	110	105	105	105	105	115	110	110	105	105	S	100
3	E	E	100	100	100	S	G	120	115	115	110	110	G	110	105	110	105	G	S	100	100	100	100	100
4	100	100	E	E	E	G	110	120	140	G	120	100	125	G	G	125	145	145	125	115	115	115	S	110
5	105	105	105	100	E	115	115	120	110	110	110	105	105	105	100	100	100	100	100	115	110	105	110	105
6	105	105	100	100	100	S	115	115	115	110	110	110	110	110	110	105	105	100	105	105	105	100	105	110
7	105	105	105	105	105	105	G	115	110	105	105	100	105	105	110	115	110	125	110	105	105	105	105	105
8	105	105	100	100	E	100	G	110	110	105	105	G	G	105	100	G	G	100	100	S	S	100	105	105
9	105	E	S	100	E	S	135	120	120	120	115	105	105	105	105	100	105	100	100	E	S	S	S	S
10	C	E	105	100	E	S	G	G	120	115	110	110	110	110	105	105	100	100	100	S	S	S	S	100
11	105	100	100	100	100	100	G	G	120	115	110	110	110	110	105	105	105	100	100	105	100	100	100	100
12	100	E	S	E	E	S	G	105	G	105	105	100	100	100	100	100	100	100	S	E	100	100	100	100
13	100	E	E	E	E	E	G	G	G	100	G	100	G	G	G	G	G	115	110	105	S	S	S	S
14	S	E	E	E	E	E	G	G	105	G	110	110	105	105	100	140	110	120	110	S	E	E	E	E
15	S	E	E	E	115	120	115	115	110	105	G	G	G	G	G	G	G	120	S	100	100	E	E	S
16	S	S	E	E	E	E	C	C	C	G	C	C	105	G	G	G	115	125	C	C	C	C	S	S
17	C	E	E	E	E	S	G	G	105	110	G	G	G	G	105	G	110	115	110	110	105	105	S	E
18	S	S	E	105	E	E	110	110	110	110	110	105	105	C	C	C	C	C	105	105	105	E	S	S
19	S	E	E	E	E	E	G	G	110	110	110	110	105	105	G	105	105	125	110	110	105	S	105	105
20	100	100	100	E	105	105	110	110	110	110	110	105	105	110	105	105	105	105	115	C	100	100	100	100
21	E	100	100	100	105	E	125	110	110	110	110	105	105	100	105	105	135	115	110	110	105	C	105	105
22	S	E	E	E	100	100	140	C	115	115	110	110	110	110	105	105	105	105	105	115	110	110	110	110
23	105	105	105	105	105	E	G	115	115	115	115	110	115	G	100	125	120	110	105	105	E	E	S	S
24	E	E	E	E	S	S	G	G	115	110	115	105	105	100	100	100	100	100	105	105	105	105	100	E
25	100	100	100	100	E	E	100	100	100	115	110	105	105	105	105	105	105	105	105	105	105	105	100	100
26	100	100	100	100	100	100	110	100	115	G	110	110	110	105	105	105	105	105	105	100	100	100	100	100
27	100	100	E	E	E	E	155	100	G	G	G	G	G	100	G	100	100	S	E	S	E	E	S	S
28	S	E	E	E	E	E	G	G	G	125	115	115	G	115	G	110	105	125	105	S	S	S	E	S
29	S	E	E	E	E	E	G	105	G	115	G	G	G	G	105	G	100	G	E	E	S	E	E	S
30	E	E	E	E	E	E	G	G	G	G	G	115	115	120	110	110	110	105	105	E	E	E	S	S
31																								
	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	13	14	11	10	14	19	23	24	23	24	22	22	21	23	26	25	24	19	19	16	14	16
MED	105	102	100	100	100	105	115	115	110	110	110	110	105	105	105	105	105	105	105	105	105	105	102	102
UQ	105	105	105	105	105	115	125	118	115	115	110	110	110	110	105	110	110	120	110	110	105	105	105	105
LQ	100	100	100	100	100	100	110	108	110	110	110	105	105	105	100	105	105	100	105	105	100	100	100	100

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SEP. 1970 | H'ES (KM)

IONOSPHERIC DATA

SEP. 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 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	F4	F3	F2	F1		C3	C1	C1	C1	C1	C2	L1	L2	L1		C1	L2		CL31	E5	F1	F3		
2	F2	F1			F1	L2	C2	C2	C2	C2	C1	C2	C2	C3	L2	L2	L2	C2	C3	F3	F3	F3		F1
3			F2	F3	F1			C1	C1	C1	C1	C1		C1	L1	L1	L1			F1	F2	F2	F2	F1
4	F1	F1					L1	C1	H1		C1	L1	C1			C1	H1	H1	C2	F2	F1	F2		F1
5	F2	F1	F2	F2		C3	C2	C1	C2	C2	C4	C2	L3	L2	L3	L2	L2	L3	L2	F1	F2	F5	F1	F2
6	F4	F6	F4	F1	F3		C2	C2	C1	C1	C2	C2	C2	C3	L4	L3	L1	L2	L3	F3	F2	F1	F2	F2
7	F2	F2	F2	F3	F2	L2		C1	C3	L2	L2	L3	L2	L2	C1	C2	L3	C1	L2	F2	F4	F3	F1	F4
8	F3	F3	F2	F2		L1		C1	C2	L1	L1			L1	L1			L2	L1			F1	F4	F5
9	F2			F1			H1	C3	C1	C1	C1	L1	L1	L2	L2	L3	L1	L1	L2					
10			F1	F1					C1	C2	C2	L1	C2	C1	L2	L1	L3	L2	L1					F2
11	F1	F1	F1	F1	F1	L1			C1	C1	C1	L1	L1	L2	L1	L2	L3	L3	L4	F2	F2	F1	F1	F2
12	F1							L1		L1	L1	L1	L1	L1	L1	L1	L1	L1			F2	F1	F3	F2
13	F1									L1		L1						C1	C2	F2				
14									L1		L1	L1	L1	L1	L2	H1	C2	C1	C2					
15					F1	C1	C1	C1	L1	L1								C2		F1	F1			
16													L1				C2	CL11						
17									L1	L1					L1		L1	C2	C4	F2	F2	F1		
18				F1			C2	C2	L1	L1	C1	L1	L1						L3	F3	F2			
19									C2	C1	C1	C1	L1	L1		L1	L1	C1	C1	F4	F2		F2	F2
20	F3	F4	F2		F1	L2	L2	C2	C2	C3	C3	L1	L1	C1	L2	L3	L3	L2	C1		F2	F2	F2	F2
21		F3	F3	F1	F1		C1	C3	C3	C2	C2	L2	L1	L1	L2	L1	H11	C2	F4	F3	F2		F3	F2
22					F2	L1	H1		C1	C1	C1	C1	C1	C2	L2	L3	L4	L2	L1	F5	F4	F3	F2	F1
23	F2	F3	F4	F4	F3			C1	C1	C1	C1	C1	C1		L1	C1	CL21	CL21	F3	F2				
24									C3	C1	C1	L1	L1	L1	L2	L2	L3	L2	F1	F1	F1	F2	F3	
25	F4	F1	F2	F1			L2	L1	L1	C1	C1	L2	L2	L2	L2	L2	L2	L6	F3	F2	F1	F1	F4	F1
26	F3	F1	F2	F2	F4	L1	L1	L1	C1		C3	C2	C1	L3	L2	L2	L2	L2	F3	F3	F3	F2	F2	F2
27	F1	F2					H1	L1						L1		L1	L1							
28										C1	C1	C1		C1		L2	L2	C1	F1					
29								L1		C1					L1		L1							
30												C1	C1	C1	C1	C1	L1	L1	F1					
31																								
	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

SEP. 1970 | TYPES OF ES

IONOSPHERIC DATA

SEP. 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	57	54	52	51	49	47S	62	63	62	67	63	I A 66	69	66	I C 68	70	70	65	66	71	I B 73	I B 74	68	46
2	45	40	40	41	I R 41	46	76	74	71	I A 66	63	64	I A 65	66	I A 74	77	71	73	73	74	67	I A 56	I A 56	55
3	56	54	51	51	49	52	71	81	86	85	83	85	86	89	93	92	90	90	90	77	69	65	65	63
4	63	62	54	54	56	64	78	94	82	89	91	86	87	88	93	90	94	94	88	89	81	69	65	61
5	66	61	57	56	58	63	80	91	90	96	94	98	103	102	106	94	92	97	91	77	65	63	59	F
6	F	F	54S	51S	51	56	73	77	81	84	87	90	91	89	86	86	87	84	I A 74	69	71	71	71	71
7	70	67	63S	61	57	58	82	92	89	92	93	92	91	86	92	88	90	91	91	86	83	76	75	68
8	64	60	I R 59S	58	59	61	85	92	91	114	94	94	83	91	92	85	86	94	101	95	87	78	63	63
9	63	58	58	57	I R 58	61	I R 70	69	72	75	74	79	88	96	88	85	88	92	91	72	71	74	69	I R 68
10	70	64	62	57	52	56	71	85	88	92	97	101	97	I R 106	113	109	106	103	100	87	78	71	70	70
11	63	63	62	58	53	58	75	86	89	91	95	93	93	97	102	104	103	103	98	88	I B 82	I C 70	67	69
12	70	68	63	61	56	58	73	84	82	87	95	95	90	88	93	97	106	I R 107	I R 103	96	87	67	59	56
13	54	54	55	55	49	54	83	86	88	88	89	94	98	101	105	I R 110	111	107	I R 114	I R 104	69	53	51	52
14	54	46	42	38	40	48	79	70S	75	69	71	72	62	61	67	69	72	67	66	59	60	54	51	49
15	49	47	48	48	40	44	58	74	87	97	91	89	92	89	88	80	82	85	I R 77	66	62	56	51	53
16	51	52	49	47	44	43	69	I R 88	85	81	80	86	90	76	81	82	91	91	88	69	66	62	61	56
17	58	55	55	54	49	48	74	89	102	88	90	87	81	94	102	96	97	98	95	84	57	55	52	54
18	50	51	49	47	47	46	71	91	100	97	96	102	101	107	106	101	102	101	98	78	66	62	56	57
19	53	51	48	52	44	45	71	79	99	96	104	104	95	96	93	94	101	107	101	88	58	I R 56	54	57
20	53	51	56	54	53	45	73	I R 100	123	108	105	113	109	109	112	117	113	107	98	86	63	57	I R 56	57
21	54	52	51	51	52	40	63	92	102	99	101	105	109	99	97	88	90	96	91	81	73	66	69	47
22	47	49	49	53	48	46	60	83	102	94	C	C	C	101	102	98	103	96	88	72	71	68	66	57
23	56	F	48S	F	F	F	73	92	102	108	91	98	110	104	100	101	106	103	92	86	67	59	56	57
24	55	52	51	49	49	52	81	98	97	96	98	103	102	108	105	101	98	102	89	74	69	63	65	63
25	57	56	56	58	56	51	78	I R 106	111	106	94	102	113	118	114	106	111	107	109	87	71	67	65	63
26	62	57	57	57	49	47	78	86	108	101	97	108	106	111	104	106	104	106	96	68	63	67	64	66
27	64	57	54	48	48	50	77	I R 103	102	100	102	109	113	113	114	108	104	106	94	76	69	67	67	64
28	63	59	56	57	51	54	78	102	108	103	112	111	124	117	105	95	99	101	98	76	67	61	59	57
29	57	57	55	51	50	49	76	92	102	103	108	111	108	106	109	107	101	97	92	77	77	70	58	56
30	57	58	57	54	47	46	76	I R 94	106	106	106	102	102	111	117	109	97	94	91	76	68	62	64	65
31																								
	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	30	29	29	29	30	30	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	29
MED	57	56	54	54	49	50	74	88	90	95	94	95	95	98	101	96	98	97	92	77	69	66	64	57
UQ	63	60	57	57	53	56	78	92	102	101	98	103	106	107	106	106	104	103	98	87	73	70	67	64
LQ	54	52	49	51	48	46	71	81	85	87	89	87	88	89	92	86	90	91	88	72	66	59	56	56

SEP. 1970 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 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								440b	460b	490	I A 490	I A 530	510	550	I C 510	480	480b	L						
2							L	L	470	I A 470	470	530	A	A	A	A	L 460b	A						
3								L	L	500b	530	550b	560	510	550	L	L	A						
4								L	L	500	520b	H 500	560b	L	500	540	L	A						
5								L	A	A	520	550	530	H 560	550	L	L	A						
6								L	A	I A 490	A	A	A	520	A	A	A	A						
7								L	L	490	520	550	510	500	520	L	L 420b	A						
8								L	L	490	510	510	530	560	500	L 460	L	L						
9								L 500b	500	500	500	560	480	510	L	L	L							
10								L	L	L 540	L	A	L 550b	A	500	L	L							
11								L	L	L 540b	540b	500	510	L 610b	500	500	L							
12								L	L	L	L	L	480	L	L 530b	480	450b							
13									L	420	470	560	L 510b	530	430	460	L							
14								440	460	470	470	480	520b	510	480	450	420	L						
15								L	L 460b	440	490b	520	510	480	500	L	A	A						
16								L	L	L 470b	480b	L	480	480b	500b	L	L							
17								L	L	L	480	520	L 470b	540	L	A	A							
18								A	A	L	500	500	L	L 470	500	L	L							
19									L	L 450b	480	500	510	520	450	L	L							
20								L	L	L	500b	L 510b	L	L 550	L	L	L							
21								L	L	L	A	L	L	L 490	L	A	L							
22								L	U L 500	L	C	C	C	A	A	A	A							
23									A	A	L	600b	L 500b	L	L	L	L							
24									A	A	500	530b	540b	510b	L	L	L							
25									L	L	L	480	L 510b	490	L	L	L							
26									L	L	L	L	A	L	L	L	L							
27									L	L	500	540	L 550b	480	L	L	L							
28									L	L	L	L	510	L	L	L	L							
29									L	L	500	470	L	460	L	L	L							
30									L	L	L	L	L 470b	L 520b	L	L								
31																								
	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	6	15	20	21	22	22	15	7	5							
MED								440b	465	490	500	520	510	510	500	480	450b							
UQ								470b	500	500	515	550	530	540	515	490	L 460b							
LQ								440	L 460b	470	480	500	500	490	500	L 460	L 420b							

The Radio Research Laboratories, Japan

SEP. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

SEP. 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						S	230	280	IA 315	350	A	A	A	A	C	A	310	260	200					
2						S	A	285	A	A	360	375	A	A	A	A	A	A	S					
3						S	220	285	325	A	A	A	A	A	A	A	A	A	A					
4						S	A	270	315	345	355	365	375	375	360	330	295	A	S					
5						S	A	A	A	A	A	A	A	A	A	330	310	A	S					
6						S	215	IA 275	320	335	A	A	A	A	A	A	A	A	S					
7						S	230	A	A	A	A	A	A	A	A	A	A	A	S					
8						S	A	280	310	IA 340	IA 360	A	A	IA 380	IA 355	IA 340	A	A	A					
9						S	IA 240	280	315	335	350	360	380	A	A	320	295	A	A					
10						S	230	280	315	340	A	A	A	A	A	A	A	A	A					
11						S	235	280	315	IA 340	A	A	A	380	A	A	285	A	S					
12						S	220	280	315	330	350	360	365	355	340	315	280	225	S					
13						E	190	265	300	330	355	370	365	IB 360	325	305	260	205	S					
14						E	200	A	A	IA 325	340	A	A	355	335	305	260	A	S					
15						S	205	255	295	IA 315	335	350	360	345	330	305	265	A	S					
16						E	180	A	A	A	IA 340	355	355	345	330	310	275	220	S					
17						S	A	A	A	325	335	350	355	IA 355	340	320	285	195	S					
18						E	A	A	A	A	A	A	A	A	345	IA 310	IA 265	210	S					
19						S	190	A	A	A	A	A	A	365	IA 335	305	275	A	S					
20							205	A	A	IA 335	345	360	IA 370	IA 375	350	310	280	A	S					
21							IA 205	IA 280	305	A	A	A	A	A	A	310	270	A	S					
22							S	265	310	340	C	C	C	A	A	A	A	A	S					
23							205	280	310	335	A	A	365	IA 355	325	305	280	A	S					
24							IA 200	IA 270	305	A	A	A	370	375	345	IA 310	IA 275	IA 210	S					
25							210	280	310	A	A	A	A	375	355	A	A	215	S					
26							220	270	310	340	360	A	A	375	IA 355	325	A	A	S					
27							IA 220	270	315	340	355	365	370	360	345	315	275	220	S					
28							215	280	315	340	355	A	A	A	A	IA 310	260	195	S					
29							200	270	310	340	A 355	IA 370	A	A	A	A	A	A	S					
30							220	290	310	340	350	360	A	A	345	A	A	A	S					
31																								
	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	23	22	21	20	16	12	11	16	17	19	19	10	1					
MED						E	215	280	310	340	352	360	365	362	345	310	275	212	200					
UQ						E	220	280	315	340	355	368	370	375	350	320	285	220						
LQ						E	202	270	310	332	342	358	362	355	335	308	268	205						

SEP. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

SEP. 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 15	E S 14	E S 14	E S 14	J X 24	E S 14	G	33	39	43	J X 64	J X 71	J X 60	J X 44	C	36	J X 36	J X 27	G	E S 14	J X 23	J X 24	J X 36	J X 20
2	J X 33	J X 28	J X 34	J X 28	J X 43	J X 30	29	36	J X 48	J X 83	J X 48	48	J X 69	J X 55	J X 83	J X 60	J X 45	J X 47	J X 55	J X 54	J X 43	J X 80	J X 63	J X 24
3	J X 28	J X 25	J X 26	J X 27	J X 26	J X 51	J X 28	32	38	45	40	41	J X 46	42	39	J X 52	J X 40	J X 48	J X 48	J X 18	E S 14	E S 14	E S 14	E S 14
4	E S 14	E S 14	J X 18	J X 25	J X 26	J X 20	J X 25	G 27	34	37	40	39	40	41	J G 33	J X 51	J X 45	J X 56	J X 69	J X 33	E S 14	E S 14	E S 14	E S 14
5	E S 14	E S 14	E S 14	E S 14	E S 13	E S 14	J X 37	J X 51	J X 64	J X 66	J X 48	38	40	J X 43	J X 45	G	36	J X 75	J X 36	J X 39	J X 26	E S 14	J X 44	J X 41
6	J X 23	J X 65	J X 36	J X 35	J X 25	E S 14	G	39	J X 55	J X 70	J X 50	J X 49	J X 55	J X 46	J X 66	J X 77	J X 83	J X 93	J X 100	J X 43	J X 36	J X 39	J X 24	J X 36
7	J X 44	J X 53	J X 26	J X 23	J X 28	J X 26	G	33	35	38	J X 57	J X 43	49	J X 46	J X 63	J X 58	J X 37	J X 85	J X 28	J X 39	J X 26	J X 20	J X 16	E S 14
8	E S 13	E S 14	E S 13	J X 20	J X 17	J X 29	J X 40	33	38	39	40	40	42	J X 44	38	35	36	34	J X 32	J X 20	J X 19	J X 23	E S 14	E S 14
9	J X 23	J X 34	J X 25	E	E S 14	J X 17	27	34	41	45	45	39	G	41	46	43	40	J X 30	J X 36	J X 33	J X 28	J X 20	E S 14	J X 17
10	J X 20	J X 30	J X 35	J X 25	J X 18	J X 19	25	34	38	42	J X 40	J X 58	J X 50	J X 59	J X 43	J X 46	J X 47	J X 28	J X 23	E S 14	E	J X 30	J X 25	J X 18
11	J X 29	J X 40	J X 29	J X 29	J X 29	J X 26	J X 24	31	34	36	37	42	40	G	38	36	J X 33	J X 27	J X 36	J X 30	J X 55	C	J X 24	J X 16
12	J X 16	E S 14	J X 18	J X 20	E S 14	E S 14	G	G	G	G 30	G 31	G 32	G 32	G 32	40	42	40	J X 40	J X 19	J X 18	E S 14	E S 14	E S 13	16
13	E S 13	E S 14	E S 14	E S 14	E S 13	E	25	32	34	35	G	G	G	38	G	G	G	28	19	J X 19	J X 29	J X 28	J X 15	J X 14
14	M 20	J X 20	M 20	J X 14	E	E	G	31	J X 65	34	G	37	39	39	36	34	34	J X 28	J X 31	J X 24	J X 25	E S 13	E S 14	E S 14
15	E S 13	E S 13	E S 14	E S 12	E S 12	J X 23	25	31	33	37	G	G	G	G	G	39	J X 42	J X 59	J X 43	J X 63	J X 20	J X 18	E S 14	E S 14
16	E S 14	E S 14	E S 14	M 20	M 21	E S 14	21	29	32	33	35	G	G	G	G	38	43	32	J X 50	J X 20	J X 40	E S 14	E S 14	E S 14
17	E S 14	E S 14	J X 18	J X 18	M 18	E S 15	22	30	35	G	G	G	G	38	37	45	J X 42	J X 33	J X 28	J X 35	J X 40	J X 38	J X 28	J X 18
18	J X 15	J X 20	J X 16	J X 15	E S 13	E S 14	27	J X 43	J X 65	J X 44	J X 40	37	J X 50	42	44	38	36	J X 28	J X 29	J X 75	J X 43	J X 26	J X 16	E S 14
19	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	G	30	36	J X 40	39	39	38	G	34	J X 34	J X 34	J X 29	J X 24	J X 20	J X 23	J X 20	J X 46	J X 44
20	J X 33	J X 19	E S 14	E S 14	E S 14	J X 16	G	28	35	36	G	G	38	38	G	G	33	J X 33	J X 33	J X 40	J X 23	J X 19	J X 28	J X 28
21	J X 29	J X 20	J X 18	J X 25	J X 20	E S 14	25	J X 38	J X 44	J X 53	J X 69	J X 48	J X 41	J X 41	J X 49	J X 53	J X 53	J X 50	J X 63	J X 34	J X 64	J X 63	J X 20	J X 19
22	J X 28	J X 28	J X 36	J X 29	J X 30	J X 21	E S 21	32	40	J X 50	C	C	C	J X 54	J X 63	J X 88	J X 90	I X 100	J X 44	J X 41	J X 20	J X 20	E S 14	J X 26
23	M 21	E S 14	E S 14	J X 48	J X 54	J X 51	26	J X 43	J X 53	J X 51	J X 47	J X 49	43	39	38	J G 30	30	J X 33	J X 21	J X 24	J X 35	E S 14	J X 26	J X 18
24	J X 18	J X 20	J X 16	E S 14	E S 14	E S 14	22	31	J X 47	J X 47	38	38	G	G	J G 28	32	28	J X 35	J X 18	J X 18	J X 23	J X 23	E S 14	E S 14
25	J X 18	E S 14	E S 14	E S 14	E S 14	E S 14	G	G	G	45	42	38	J X 43	G	G	36	29	G	E S 14	E S 14	J X 40	J X 55	J X 43	J X 34
26	J X 26	J X 23	E S 14	E S 14	E S 14	E S 14	J X 40	G	37	39	J X 49	J X 48	46	G	37	36	37	J X 28	J X 21	J X 20	J X 24	J X 23	J X 23	E S 14
27	E S 14	E S 14	E S 14	E S 14	E	E S 14	25	30	G	G	G	G	G	G	G	G	G	G	J X 24	E S 14	E S 14	E S 14	E S 14	E S 14
28	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	G	G	G	37	39	38	40	39	40	35	35	26	J X 28	E S 14	J X 18	J X 20	J X 18	J X 16
29	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	G	G	34	37	38	37	38	39	J X 39	J X 32	J X 29	J X 40	J X 47	J X 41	J X 24	J X 20	E S 14	E S 14
30	E S 14	E S 14	E S 14	E S 14	E	E S 14	G	G	G	37	38	37	38	37	36	33	28	J X 38	J X 23	J X 24	J X 18	E S 14	E S 14	J X 23
31																								
	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	30	30	30	30	30	30	29	29	29	30	29	30	30	30	30	30	30	29	30	30
MED	J X 17	E S 14	15	14	14	E S 14	23	31	36	39	40	38	40	39	38	36	36	J X 33	J X 30	J X 24	J X 24	J X 20	J X 16	J X 16
UQ	J X 26	J X 25	J X 25	J X 25	J X 25	J X 21	26	34	J X 44	J X 45	J X 47	43	J X 46	J X 43	J X 44	J X 46	J X 42	J X 48	J X 44	J X 39	J X 36	J X 26	J X 26	J X 29
LQ	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	G	28	34	36	35	37	G 32	G	G 33	33	33	J X 28	J X 23	J X 18	J X 19	E S 14	E S 14	E S 14

SEP. 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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

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	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E	E_{S}^{14}	G	32	38	36	52	A	50	40	C	34	25	19	G	E_{S}^{14}	E	E	E	E
2	20	20	20	20	A	19	28	33	40	A	43	48	A	54	A	50	40	44	34	40	37	A	A	18
3	18	20	20	24	18	28	20	30	36	43	39	41	45	40	38	48	37	48	45	18	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}
4	E_{S}^{14}	E_{S}^{14}	E	19	E	18	25	G 26	34	36	40	39	40	41	G 31	47	33	45	61	23	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}
5	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{13}	E_{S}^{14}	28	41	58	64	40	38	40	40	43	G	G	75	21	28	21	E_{S}^{14}	36	33
6	E	44	28	27	20	E_{S}^{14}	G	35	53	68	50	49	53	43	55	56	48	51	A	21	22	21	18	E
7	E	23	15	15	15	18	G	31	35	37	41	43	47	46	44	48	34	38	20	30	E	17	E	E_{S}^{14}
8	E_{S}^{13}	E_{S}^{14}	E_{S}^{13}	19	14	21	25	G	37	39	38	40	41	41	37	35	34	28	27	18	E	E	E_{S}^{14}	E_{S}^{14}
9	E	25	E	E	E_{S}^{14}	E	25	33	40	44	44	39	G	40	40	42	39	28	26	20	26	E	E_{S}^{14}	E
10	E	24	18	E	E	E	25	33	35	40	40	52	44	55	39	40	34	25	18	E_{S}^{14}	E	17	18	E
11	24	26	21	23	20	18	17	30	34	36	37	41	40	G	38	35	25	27	24	25	45	C	20	E
12	E	E_{S}^{14}	E	17	E_{S}^{14}	E_{S}^{14}	G	G	G	G 30	G 31	G 30	G 30	G 29	37	42	36	38	16	15	E_{S}^{14}	E_{S}^{14}	E_{S}^{13}	15
13	E_{S}^{13}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{13}	E	23	30	32	35	G	G	G	36	G	G	G	25	18	18	16	16	15	E
14	E	15	E	E	E	E	G	29	31	34	G	36	37	39	35	33	30	25	22	22	22	E_{S}^{13}	E_{S}^{14}	E_{S}^{14}
15	E_{S}^{13}	E_{S}^{13}	E_{S}^{14}	E_{S}^{12}	12	18	23	28	32	35	G	G	G	G	G	37	42	E_{59}^{R}	34	30	18	15	E_{S}^{14}	E_{S}^{14}
16	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E	E	E_{S}^{14}	20	28	31	33	35	G	G	G	G	37	32	27	40	16	20	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}
17	E_{S}^{14}	E_{S}^{14}	E	18	E	E_{S}^{15}	20	28	34	G	G	G	G	38	37	44	40	28	18	21	17	20	23	E
18	15	19	U_{16}^{R}	E	E_{S}^{13}	E_{S}^{14}	26	43	47	44	39	37	45	38	39	34	33	24	18	40	31	20	E	E_{S}^{14}
19	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	G	29	34	35	39	39	38	G	34	25	22	24	18	E	E	E	23	E
20	18	E	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E	G	28	34	36	G	G	38	38	G	G	29	26	21	20	18	18	26	25
21	26	18	15	18	15	E_{S}^{14}	24	35	42	49	65	48	41	41	44	44	39	45	55	30	35	30	20	E
22	27	25	35	26	E	18	E_{S}^{21}	31	39	46	C	C	C	52	54	71	81	67	40	35	18	E	E_{S}^{14}	21
23	E	E_{S}^{14}	E_{S}^{14}	E	E	22	25	40	51	50	44	49	40	39	37	G 26	G	29	E	E	21	E_{S}^{14}	24	E
24	E	E	E	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	22	29	46	47	37	38	G	G	G 28	32	28	30	E	E	18	18	E_{S}^{14}	E_{S}^{14}
25	E	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	G	G	G	44	41	38	42	G	G	34	29	G	E_{S}^{14}	E_{S}^{14}	31	34	25	21
26	20	18	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	14	G	35	39	48	47	44	G	37	35	34	24	18	18	21	19	E	E_{S}^{14}
27	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E	E_{S}^{14}	25	30	G	G	G	G	G	G	G	G	G	G	E	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}
28	E_{S}^{14}	E_{S}^{13}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	G	G	G	36	38	38	40	39	36	33	32	22	E	E_{S}^{14}	E	E	E	E
29	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	G	G	33	36	38	37	38	39	35	31	27	26	26	23	19	E	E_{S}^{14}	E_{S}^{14}
30	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E	E_{S}^{14}	G	G	G	36	38	37	38	37	36	33	28	20	E	E	E	E_{S}^{14}	E_{S}^{14}	E
31																								
	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	30	30	30	30	30	30	29	29	29	30	29	30	30	30	30	30	30	29	30	30
MED	14	E_{S}^{14}	14	14	14	E_{S}^{14}	20	30	34	36	39	38	40	39	37	35	32	28	20	19	18	14	14	14
UQ	15	20	15	18	E_{S}^{14}	18	25	33	40	44	41	43	44	41	39	44	37	U_{41}	34	25	22	18	20	E_{S}^{14}
LQ	E	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}	E	E_{S}^{14}	G	G 26	32	35	35	36	30	G	G 31	32	27	24	16	14	14	E_{S}^{13}	E_{S}^{14}	E

SEP. 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	15	18	15	15	18	15	20	C	14	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_{13}^{S}	E	E	E_{14}^{S}	13	14	14	14	25	20	23	23	25	18	14	14	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}
3	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E	E_{13}^{S}	13	14	18	15	20	22	22	19	17	17	14	14	16	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}^{S}	E_{14}^{S}	14	14	15	14	15	18	19	15	16	14	13	14	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
5	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	14	14	14	14	18	18	24	18	16	15	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
6	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	15	14	18	19	19	18	18	14	18	14	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
7	E_{14}^{S}	E_{14}^{S}	E	E	E	E_{14}^{S}	14	14	15	14	17	20	19	19	16	15	14	13	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}
8	E_{13}^{S}	E_{14}^{S}	E_{13}^{S}	E	E	14	14	14	15	15	19	20	18	16	18	14	14	13	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
9	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E	E_{14}^{S}	E_{14}^{S}	15	14	14	17	14	18	19	19	19	14	15	13	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
10	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	15	14	15	18	15	21	22	20	14	18	14	14	14	E_{14}^{S}	E	E	E_{14}^{S}	E_{14}^{S}
11	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	14	14	16	16	16	21	25	19	20	18	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	C	E_{13}^{S}	E_{14}^{S}
12	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{15}^{S}	14	14	14	18	19	19	18	18	18	15	13	13	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}
13	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	15	15	17	18	17	21	18	17	16	15	15	14	E_{14}^{S}	E_{12}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E_{13}^{S}
14	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	14	15	15	17	16	18	19	16	16	16	16	14	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}
15	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E_{12}^{S}	E_{12}^{S}	E_{14}^{S}	14	16	16	16	19	18	18	17	13	18	15	13	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	15	16	17	16	18	16	19	14	13	15	E_{15}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
17	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{15}^{S}	14	14	15	16	17	17	17	18	20	17	15	15	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}
18	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	15	15	15	16	19	19	20	19	19	18	15	14	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}
19	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	13	16	18	19	18	20	19	18	14	13	13	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}
20	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	15	15	18	19	18	18	18	15	14	14	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
21	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	14	13	15	18	16	14	21	22	18	17	14	14	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
22	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	E_{21}^{S}	16	18	19	C	C	C	19	18	16	13	14	E_{14}^{S}	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_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	17	15	16	19	27	21	18	16	16	13	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
24	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	18	18	14	19	20	18	14	14	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
25	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	15	18	15	18	16	14	19	19	14	14	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}
26	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	17	18	19	19	19	19	19	18	14	14	E_{13}^{S}	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	E_{14}^{S}	14	14	16	18	19	19	18	18	15	18	14	13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
28	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	16	15	18	18	19	18	19	18	14	14	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}
29	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	18	17	19	19	19	18	15	15	14	14	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
30	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	15	14	18	18	18	18	21	19	18	16	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
31																								
	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	30	30	30	30	30	30	29	29	29	30	29	30	30	30	30	30	30	29	30	30
MED	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	14	15	16	18	19	19	18	18	16	14	14	E_{14}^{S}	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}	E_{14}^{S}	14	14	17	18	19	20	21	19	19	18	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
LQ	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	14	14	15	15	16	18	18	18	16	14	14	14	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}

The Radio Research Laboratories, Japan

SEP. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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	265	265	260	255	260	265S	290	280	290	295	280	280A	280	275	280C	290	290	300	280	270	260B	270B	300	285
2	280	270	250	260	260A	285	295	315	305	300A	285	260	285A	260	285A	300	290	290	300	290	290	270A	265A	260
3	275	265	270	290	270	270	310	305	315	320	310	295	280	295	290	295	300	300	315	300	285	270	260	255
4	270	280	270	260	275	305	310	325	320	315	295	295	290	290	295	290	300	305	305	305	310	265	275	260
5	275	260	260	250	270	275	305	320	310	305	300	295	295	290	295	290	295	310	320	290	280	270	265	F
6	F	F	260S	270S	275	290	335	325	315	295	295	290	295	290	300	295	300	310	300A	275	270	270	275	275
7	275	285	265S	275	275	275	305	325	310	300	305	295	300	285	295	300	305	300	305	290	290	275	280	280
8	270	270	270B	275	285	285	300	310	310	315	305	325	295	280	310	295	290	285	305	305	300	310	275	265
9	270	260	255	265	270B	275	315B	295	295	310	315	285	290	300	310	295	290	305	305	300	275	280	275	270B
10	280	270	275	280	280	300	315	320	320	305	305	300	280	290B	285	305	300	310	305	300	285	275	270	280
11	265	260	275	275	280	290	320	320	325	320	310	305	300	280	295	295	300	305	305	295	300B	290C	270	265
12	275	285	275	280	295	310	330	330	330	325	315	300	305	280	290	290	295	310B	320B	305	305	310	270	270
13	275	265	275	285	270	285	330	335	345	315	315	300	295	295	290	300B	310	310	305B	320B	315	255	260	260
14	285	285	270	265	260	285	330	285	290	285	270	275	265	255	285	295	310	310	300	270	275	280	255	240
15	245	250	245	275	265	295	275	295	300	300	315	290	295	300	305	300	310	310	310B	290	280	275	265	265
16	270	285	280	295	260	270	325	335B	325	330	310	300	315	310	300	300	305	310	320	300	285	280	280	260
17	270	265	280	280	290	280	320	320	340	310	320	310	275	290	305	295	305	305	315	325	290	275	275	280
18	270	280	270	265	260	265	320	325	335	315	310	310	290	305	310	300	310	305	330	315	285	280	280	280
19	280	270	270	280	280	280	315	320	320	320	310	320	300	300	305	295	305	310	310	320	275	265B	255	265
20	270	260	270	280	290	260	300	310B	325	325	295	310	295	295	290	290	300	310	300	315	290	265	260B	265
21	265	260	255	265	280	270	275	315	315	310	310	310	295	295	305	305	300	305	310	310	295	265	295	280
22	255	260	265	285	295	270	300	305	315	300	C	C	C	300	300	295	310	315	305	305	290	275	290	275
23	270	F	270S	F	F	F	315	330	320	315	310	290	310	290	290	290	305	310	305	305	295	270	275	280
24	275	270	275	275	280	280	325	330	320	325	315	310	295	300	305	310	305	315	315	300	280	270	275	280
25	280	265	270	280	280	275	310	315B	325	335	320	295	300	305	310	295	300	310	315	305	295	280	270	265
26	270	270	265	280	285	285	310	325	325	335	315	305	290	290	300	305	310	315	315	300	270	270	270	275
27	285	285	290	270	295	270	310	335B	325	320	315	305	290	290	295	300	310	305	310	290	290	270	285	270
28	270	265	260	265	260	260	310	325	325	310	310	290	300	300	305	305	305	305	320	305	295	265	270	265
29	265	280	275	280	280	290	320	330	315	330	315	305	300	295	295	305	300	300	305	300	295	290	280	270
30	265	280	285	285	290	280	320	330B	325	325	320	300	290	300	300	300	305	300	315	305	290	270	265	275
31																								
	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	30	29	29	29	30	30	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	29
MED	270	270	270	275	280	280	312	320	320	315	310	300	295	292	298	295	302	308	308	300	290	270	272	270
UQ	275	280	275	280	285	285	320	330	325	325	315	305	300	300	305	300	305	310	315	305	295	280	280	280
LQ	270	262	260	265	270	270	305	310	310	305	305	290	290	290	290	295	300	305	305	290	280	270	265	265

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

IONOSPHERIC DATA

SEP. 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								320L	355L	350	335IA	340IA	365IA	330	340IC	350	335L	L						
2							L	L	365	A	A	360	A	A	A	A	350L	A						
3								L	L	365L	360	345L	345	355	330	L	L	A						
4								L	L	360	365L	380H	340	L	365	340	L	A						
5								L	A	A	365	355	365	345H	335	L	L	A						
6								L	A	IA 360	A	A	A	350	A	A	A	A						
7								L	L	370	365	360	370	IA 350	355	L	330L	A						
8								L	L	370	370	375	360	340	350	370L	L	L						
9								325L	345	360	380	340	380	335	L	L	L							
10								L	L	355L	L	A	360L	A	360	L	L							
11								L	L	355L	350L	365	365	330L	360	350	L							
12								L	L	L	L	L	400	L	355L	355	350L							
13									L	405	390	350	365L	355	380	370	L							
14								350	340	350	370	370	325L	330	340	345	335	L						
15								L	355L	400	365L	345	345	365	340	L	A	A						
16								L	L	380L	375L	L	365	365L	350L	L	L							
17								L	L	L	375	365	385L	345	L	A	A							
18								A	A	L	360	360	L	370	350	L	L							
19									L	380L	375	370	375	320	380	L	L							
20								L	L	L	360L	355L	L	340	L	L	L							
21								L	L	L	A	L	L	370	L	A	L							
22								L	U 355L	L	C	C	C	A	A	A	A							
23									A	A	L	350L	365L	L	L	L	L							
24									A	A	370	360L	360L	375L	L	L	L							
25									L	L	L	380	375L	370	L	L	L							
26									L	L	L	L	A	L	L	L	L							
27									L	L	370	350	355L	360	L	L	L							
28									L	L	L	L	365	L	L	L	L							
29									L	L	380	385	L	390	L	L	L							
30									L	L	L	L	390L	360L	L	L								
31																								
	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	6	14	19	21	22	22	15	7	5							
MED								325L	355	362	370	360	365	355	350	350	335L							
UQ								338	355L	380	375	370	375	365	360	362	350L							
LQ								322L	345	355	362	350	360L	345	340	348	335L							

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

IONOSPHERIC DATA

SEP. 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								330	295	310	380	I A 385	360	380	C	340	315	300						
2							270	260	320	A	360	450	I A 350	340	A	330	300	295						
3								255	280	275	290	310	340	310	315	310	270	270						
4								255	250	280	290	265	305	325	310	320	290	270						
5								250	260	290	275	305	305	325	315	300	310	300						
6								250	265	A 320	300	300	320	310	305	305	280	280						
7								235	290	265	300	300	300	280	330	310	280	265						
8								260	280	270	255	280	295	350	300	270	300	290						
9								320	325	295	290	330	290	300	275	300	295							
10								265	250	295	270	280	305	300	290	290	270							
11								250	250	280	300	275	290	310	290	295	270							
12								235	245	260	285	315	290	H 270	320	315	290							
13									230	255	260	310	290	315	280	285	270							
14								300	320	330	400	370	420	450	380	340	295	275						
15								300	290	300	290	345	320	315	305	275	285	A						
16								245	255	270	300	300	290	285	300	290	295							
17								240	240	265	285	300	H 280	330	300	280	285							
18								240	250	270	275	280	290	290	290	280	270							
19									250	250	275	270	280	300	275	280	280							
20								255	250	255	260	280	290	305	280	290	270							
21								255	255	270	275	280	270	275	280	260	280							
22								255	275	270	C	C	C	280	285	295	300							
23									255	255	250	310	280	300	275	270	270							
24									245	250	260	280	290	290	270	270	260							
25									245	245	250	255	280	275	265	290	265							
26									255	230	250	270	255	270	275	285	260							
27									250	245	250	280	290	265	280	270	270							
28									240	255	255	270	280	275	260	260	255							
29									240	245	255	250	250	255	270	260	250							
30									250	255	250	240	245	300	265	260								
31																								
	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	20	30	29	29	29	29	30	28	30	29	9						
MED							270	255	252	270	275	280	290	300	288	290	280	280						
UQ								262	280	280	290	310	305	315	305	305	295	295						
LQ								248	250	255	255	275	280	280	275	270	270	270						

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SEP. 1970 | H'F2 (KM)

IONOSPHERIC DATA

SEP. 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	290	305	295	315	320	310	360	240	I240	240	I240	I230	I225	220	I225	230	240	250	275	295	320	265	235	240
2	300	315	375	355	I345	300	250	255	240	A	A	A	A	A	A	A	A	A	270	300	285	I290	I315	310
3	305	310	315	295	305	310	250	230	230	240	210	215	230	230	225	A	A	A	250	245	255	280	300	290
4	270	260	280	335	290	255	250	245	230	205	230	190	220	240	225	I240	240	I260	290	245	240	255	270	310
5	275	285	305	330	300	285	240	A	A	A	220	200	190	210	I220	240	250	I250	240	235	245	250	I330	I325
6	330	I320	350	340	300	270	235	I230	I235	I235	I240	A	A	230	A	A	A	A	A	270	295	295	285	285
7	285	270	300	270	280	280	250	235	220	215	240	220	A	A	240	I235	240	I265	250	265	245	245	250	240
8	270	270	290	290	290	260	245	230	230	230	210	210	220	210	220	195	240	265	265	240	235	245	240	290
9	290	340	320	290	290	295	255	240	230	I240	215	200	215	220	I235	I245	260	265	250	240	290	270	285	305
10	290	275	280	260	240	265	230	240	235	230	230	I230	230	I225	210	255	240	240	240	235	240	255	290	270
11	310	330	285	270	270	265	230	230	235	220	230	210	230	230	215	240	240	245	240	255	270	I250	280	290
12	290	270	255	260	250	245	230	215	220	205	200	230	220	225	220	A	A	265	250	240	240	220	245	280
13	290	290	285	265	285	290	235	235	220	215	210	215	230	215	220	245	250	260	260	230	220	270	295	325
14	270	240	280	285	310	275	255	245	240	230	220	215	230	250	240	240	245	270	250	250	275	255	300	350
15	340	330	340	290	260	270	250	240	230	215	195	200	235	235	240	245	I260	I260	245	265	265	255	295	305
16	295	280	270	260	280	320	245	240	200	210	200	200	205	230	240	I255	245	250	240	230	270	255	270	275
17	290	280	275	275	260	295	250	240	235	220	205	200	235	235	240	A	A	255	240	240	220	265	300	285
18	285	300	300	290	300	300	255	I240	I230	I210	195	215	I220	205	230	240	250	255	230	240	300	260	260	270
19	285	300	305	270	240	295	230	230	230	205	205	230	225	215	220	215	250	260	240	225	235	280	350	295
20	300	310	300	260	250	290	250	240	240	225	215	200	240	215	230	240	250	250	230	235	230	270	330	330
21	310	325	315	305	265	215	240	I250	A	A	A	A	I225	220	240	I240	I250	265	260	255	275	300	245	255
22	370	360	370	295	255	300	240	240	230	A	C	C	C	A	A	A	A	270	245	255	255	270	260	290
23	290	280	290	290	320	320	245	245	A	A	A	I240	240	230	230	240	240	245	240	230	245	260	295	290
24	290	290	270	290	270	280	235	235	I230	I230	200	225	225	220	235	240	240	255	230	240	260	270	275	270
25	270	300	290	270	265	290	240	240	230	I230	230	205	230	230	240	240	250	255	240	220	255	290	295	300
26	290	295	300	245	240	290	240	235	230	230	A	A	A	250	235	245	245	245	230	215	280	290	290	285
27	265	240	240	275	265	290	240	230	235	230	210	200	205	200	240	245	245	250	235	240	240	280	275	265
28	270	285	320	290	290	320	240	230	230	225	230	230	215	240	240	245	245	255	235	235	240	245	290	295
29	295	280	250	260	255	255	230	235	225	225	210	205	190	205	230	235	240	235	240	245	255	245	250	280
30	305	280	250	260	225	265	235	235	230	240	225	215	195	195	240	250	240	240	235	230	245	270	305	290
31																								
	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	30	30	30	29	27	25	25	25	25	27	27	24	24	27	29	30	30	30	30	30
MED	290	290	292	288	275	290	240	240	230	225	215	215	225	245	230	240	245	255	240	240	255	265	288	290
UQ	300	310	315	295	300	300	250	240	235	230	230	225	230	230	240	245	250	262	250	255	275	280	300	305
LQ	285	280	280	265	255	265	235	230	230	215	205	200	215	215	222	240	240	250	240	235	240	255	260	275

SEP. 1970 | H'F (KM)

IONOSPHERIC DATA

SEP. 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	105	S	S	S	115	S	G	140	125	120	115	110	105	105	C	105	100	105	G	S	125	120	120	105
2	100	100	105	105	110	110	115	130	120	115	115	115	115	110	110	110	105	100	100	100	100	100	110	110
3	105	105	105	105	105	100	105	140	125	115	115	115	115	115	115	110	105	105	105	105	S	S	S	S
4	S	S	110	110	105	110	105	105	140	130	130	130	140	130	105	130	130	120	110	110	S	S	S	S
5	S	S	S	S	S	S	120	115	110	110	110	115	110	105	110	G	140	115	115	100	105	S	110	110
6	110	105	105	105	105	S	G	120	120	115	115	115	115	110	105	105	105	105	105	105	105	105	105	120
7	110	105	105	105	100	105	G	120	120	125	115	110	120	115	120	110	105	100	100	105	110	100	100	S
8	S	S	S	100	100	105	105	130	115	115	120	120	120	105	120	115	150	135	115	110	100	100	S	S
9	110	105	105	E	S	110	140	140	130	125	120	130	G	110	130	140	130	105	100	105	105	110	S	105
10	110	105	105	105	115	110	150	130	130	115	115	110	105	110	105	105	110	110	100	S	E	110	115	110
11	105	105	105	105	105	100	105	140	140	130	120	115	115	G	115	115	110	105	105	105	105	C	105	105
12	105	S	100	100	S	S	G	G	G	110	105	105	100	105	130	150	140	135	105	105	S	S	S	105
13	S	S	S	S	S	E	145	135	130	135	G	G	G	115	G	G	G	135	120	115	110	110	105	105
14	105	100	100	105	E	E	G	120	115	120	G	110	115	150	145	145	135	120	115	110	110	S	S	S
15	S	S	S	S	S	130	125	120	120	110	G	G	G	G	G	140	130	120	115	110	110	105	S	S
16	S	S	S	105	135	S	125	120	110	115	110	G	G	G	G	140	140	130	120	115	110	S	S	S
17	S	S	105	100	100	S	120	120	115	G	G	G	G	120	145	140	135	130	115	115	115	110	110	105
18	105	100	100	100	S	S	120	120	120	115	110	110	105	110	130	120	120	130	115	110	105	110	110	S
19	S	S	S	S	S	S	G	115	115	115	110	110	110	G	110	105	105	100	100	100	100	100	110	105
20	105	110	S	S	S	100	G	130	130	120	G	G	120	115	G	G	145	120	115	105	110	110	105	105
21	105	105	105	105	105	S	130	120	115	115	110	110	110	110	110	130	125	120	110	105	105	110	110	110
22	105	105	100	100	105	100	S	140	130	120	C	C	C	105	105	105	105	100	100	100	105	105	S	100
23	100	S	S	110	110	110	155	130	130	115	115	115	120	130	130	105	150	110	100	110	105	S	105	105
24	105	105	105	S	S	S	140	140	115	115	110	110	G	G	100	115	120	115	110	110	105	105	S	S
25	100	S	S	S	S	S	G	G	G	115	115	110	105	G	G	130	120	G	S	S	105	105	105	105
26	105	105	S	S	S	S	105	G	150	140	120	115	115	G	115	140	115	105	105	105	105	105	105	S
27	S	S	S	S	E	S	155	160	G	G	G	G	G	G	G	G	G	G	105	S	S	S	S	S
28	S	S	S	S	S	S	G	G	G	140	130	135	125	115	115	115	145	155	105	S	105	105	105	105
29	S	S	S	S	S	S	G	G	140	130	120	120	115	110	110	110	105	105	105	105	100	100	S	S
30	S	S	S	S	E	S	G	G	G	140	135	140	130	130	130	130	120	110	105	110	110	S	S	105
31																								
	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	18	14	15	16	14	12	18	24	25	28	23	23	22	22	23	26	28	28	28	25	25	20	17	18
MED	105	105	105	105	105	108	122	130	120	115	115	115	115	110	115	115	120	112	105	105	105	105	105	105
UQ	105	105	105	105	110	110	140	140	130	128	120	118	120	115	130	140	138	125	115	110	110	110	110	110
LQ	105	105	102	100	105	100	105	120	115	115	110	110	110	110	110	110	105	105	102	105	105	102	105	105

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IONOSPHERIC DATA

SEP. 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

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	F1				F1			H2	H2	C1	C2	1	1	1		1	1	1			F1	F1	F1	F1
2	F2	F2	F1	F1	F2	1	C2	H2	C2	C2	C2	C1	C2	1	1	1	1	1	1	F3	F3	F2	F3	F2
3	F2	F3	F2	F4	F2	1	1	HL11	H2	C2	C1	C1	C2	C1	C1	1	1	1	1	F1				
4			F1	F2	F1	1	1	1	H1	H1	H1	H1	H1	H1	1	HL22	HL11	C2	1	F2				
5							C3	C2	1	1	1	C1	1	1	1		H1	C3	C13	F3	F2		F4	F3
6	F2	F4	F4	F4	F2			C2	C3	C2	C2	C2	C2	1	1	1	1	1	1	F2	F3	F2	F2	F1
7	F1	F2	F2	F2	F2	1		C2	C2	H1	C1	1	C2	C2	C2	1	1	H22	1	F3	F2	F2	F1	
8				F2	F2	1	1	H1	C1	C1	C1	C1	C1	1	C1	C1	H1	HL23	C3	F1	F2	F2		
9	F2	F3	F2			1	H2	H2	H2	H2	C1	H1		1	HL12	HL22	HL22	1	1	F3	F3	F1		F1
10	F1	F3	F2	F1	F1	1	H1	H1	H2	C1	C2	1	1	1	1	1	1	1	1			F1	F2	F1
11	F2	F3	F2	F2	F2	1	1	H1	H1	H1	C1	C1	C1		C1	C1	1	1	1	F3	F3		F2	F1
12	F1		F2	F2						H1	1	1	1	1	H1	H1	H2	H2	1	F1				F1
13							H2	H2	H1	H1				C1				H2	C2	F1	F1	F2	F1	F1
14	F1	F2	F1	F1				C2	C1	H2		C1	C1	H1	H1	H1	H2	C3	C3	F3	F2			
15						H2	H2	C2	C2	C1						H1	H3	C2	C5	F3	F2	F1		
16				F1	F1		H1	C1	C2	C2	C2					H2	H2	H2	C3	F1	F2			
17			F1	F2	F1		C1	C2	C2					C1	H1	H2	H2	H2	C2	F3	F2	F3	F3	F1
18	F1	F1	F1	F1			C2	C2	C2	C2	1	1	1	1	H2	C1	C2	H2	C2	F2	F3	F3	F1	
19								C3	C2	C1	1	1	1		1	1	1	1	1	F1	F1	F1	F2	F2
20	F1	F1				F1		H2	H1	C1			C1	C1			H1	C2	C3	F2	F1	F1	F2	F3
21	F4	F4	F2	F2	F1		H2	C3	C2	C2	1	1	1	1	1	H1	H2	C3	1	F2	F3	F2	F2	F2
22	F4	F4	F4	F4	F2	F2		H1	H2	C2				1	1	1	1	1	1	F6	F2	F1		F2
23	F1			F2	F2	F3	H1	H2	H2	C2	C2	C2	C1	H1	H2	1	1	1	1	F2	F2		F2	F1
24	F1	F1	F1				H1	H1	C2	C2	1	1			1	C1	C2	C2	1	F2	F2	F2		
25	F1									C2	C2	1	1			H1	C1				F3	F3	F2	F2
26	F3	F2					1		H1	H1	C1	C1	C1		C1	H1	C2	1	1	F1	F2	F2	F2	
27							H2	H1											1					
28										H1	H1	H1	H1	C1	C1	C2	HL22	H2	1		F1	F1	F1	F1
29									H1	H1	C1	C1	C1	1	1	1	1	1	1	F3	F2	F1		
30										H1	H1	H1	H1	H1	H2	H1	C1	1	1	F1	F1			F1
31																								
	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

SEP. 1970 | TYPES OF ES

IONOSPHERIC DATA

SEP. 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

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	60	57	55	54	52	55	64	78	68	74	75	76	78	75	73	78	J75R	76	73	78	72	U74S	68	48
2	51	43	41	43	43	45	78	77	74	72H	68	71	73	I75A	79	79	77	I78C	78	75	66	58	58	58
3	62	58	54	53	47	45	72	86	80	80	83	88	86	92	98	98	J101R	99	94	80	68	67	66	63
4	66	67	58	55	57	64	88	88	87	83	93	101	95	96	98	98	96	96	100	90	73	66	70	61
5	68	65	60	58	59	60	84	95	95	106	108	114	113	117	124	116	113	111	98	74	67	U65R	68	65
6	66	67F	63	58F	60F	58F	76	J75R	J84R	88	86	94	97	95	97	A	95	85	78	70	70	72	74	J78S
7	73	68	64	59	59	59	79	90	91	88	93	95	94	97	90	95	98	96	A	87	87	85	84	I78R
8	70	68	65	62	63	63	83	95	91	110	95	93	89	95	96	93	92	98	A	A	I92R	85	65	65
9	68	61	60	60	60	60	J78R	76	79	78	79	90	102	98	94	95	97	100	99	J79R	73	75	73	72
10	71	I68R	66	59	53	55	73	86	95	87	99	105	105	116	119	120	119	116	108	91	85	79	81	I80R
11	I76R	70	67	61	56	58	68	90	86	96	95	97	101	105	111	116	113	114	106	96	87	77	79	81
12	84	J81R	J80R	69	59	55	75	87	84	84	89	97	92	97	J102R	109	110	115	112	96	85	69	59	58
13	59	58	58	55	50	56	89	99	86	88	C	C	C	C	C	C	124	117	119	109	74	57	56	55
14	59	55	44	42	41	47	74	86	86	80	75	72	68	70	71	73	77	75	75	65	60	57	50	50
15	50	50	48	50	41	45	61	81	88	101	96	91	103	105	100	93	85	90	88	70	C	C	56	55
16	55	55	51	49	40	40	J79R	81	89	81	81	91	99	91	J89R	91	98	101	J87R	70	65	60	61	60
17	59	57	59	56	53	46	71	96	96	94	90	86	96	103	113	111	109	113	111	I89R	60	55	J55R	55
18	51	53	48	49	46	45	73	97	96	96	99	100	112	115	116	118	123	113	102	70	I66A	R	F	F
19	60	60	54	50	43	46	R	91	95	94	105	108	101	100	103	107	106	111	108	J86R	54	54	53	56
20	55	52	54	54	47	43	69	101	110	113	111	111	114	116	118	129	132	116	109	J86R	61	58	59	60
21	58	56	55	57	50	50	73	116	110	101	111	116	121	123	114	101	96	I102A	J103R	A	A	71	61	49
22	49	50	50	50	46	46	71	J93R	93	93	100	114	115	113	108	111	113	112	102	75	73	69	66	62
23	61	56	58	52	46	50	J75R	100	J104R	114	100	104	126	121	119	120	121	120	115	91	J69R	59	61	64
24	60	57	52	50	49	50	93	91	94	96	99	106	116	118	I114C	109	106	J103R	J99R	70	65	65	66	65
25	58	55	55	56	55	51	81	J107R	110	107	96	110	123	126	125	119	120	122	123	96	J77R	I71R	70	I70R
26	69	63	59	60	50	49	80	J102R	102	100	91	104	112	117	115	115	111	111	100	76	66	70	69	69
27	66	61	57	48	50	49	77	108	107	111	105	109	115	120	124	122	114	114	99	76	69	69	70	68
28	64	59	58	60	54	56	81	113	107	J106R	110	118	127	121	117	103	102	111	J103R	J79R	67	61	61	60
29	60	59	57	56	50	47	73	89	J104R	110	105	107	110	117	117	116	110	106	100	85	80	68	61	59
30	60	58	55	58	46	43	75	98	101	101	105	106	116	120	125	119	111	105	J103R	80	66	60	60	62
31																								
	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	30	30	29	30	30	30	29	29	29	29	29	28	30	30	28	28	28	28	29	29
MED	60	58	57	56	50	50	75	91	94	95	96	101	103	105	111	109	108	108	101	80	69	68	65	62
UQ	68	65	60	59	56	56	80	99	102	106	105	108	115	117	117	117	113	114	108	90	76	72	70	68
LQ	58	55	54	50	46	46	73	86	86	84	89	91	95	96	97	95	96	98	96	74	66	60	59	58

SEP. 1970 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 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								L	500 L	490	L	A	L	510 L	510	L	L	L						
2									L	A	A	540 L	A	A	A	L	L	C						
3								A	L	520 L	L	530 L	L	560	L	530 L	L							
4								L	L	L	510 L	510	510 L	530 L	A	A	L	A						
5								L	L	L	L	520 L	L	530	A	530 L	L	A						
6								L	L	L	L	580 L	A	A	A	A	A	A						
7									L	L	510 L	560 L	L	550 L	L	L	410 L	A	A					
8									L	L	L	L	L	510 L	L	L	L	A	A					
9								L	L	A	L	L	540 L	L	L	L	L							
10								L	L	L	L	L	L	L	L	L	L							
11								L	L	L	L	L	L	510 L	L	L	L							
12								L	L	L	L	L	L	L	L	L	L	L						
13								L	L	L	C	C	C	C	C	C	L							
14									460	450	490	490	R	A	A	A	L							
15								L	L	490 L	490	480	490 L	L	500 L	L								
16								L	L	510 L	L	L	L	490 L	490 L	L	A	A						
17								L	L	L	L	L	A	L	490 L	L	L							
18								L	A	L	L	L	L	A	L	L	L							
19							L	L	430 L	L	L	L		L	L	L	L							
20								L	L	L	L	L	L		L	L	L							
21								L	A	A	L	A	510 L	L	L	A	A							
22									L	L	L	L	L	L	L	L	L							
23								L	L	A	A	A	A	L	L	L	L							
24									L	L	L	L	L	L	C	L	L							
25								L	L	L	L	L	L	L	L	L	L							
26									L	L	L	L	L	L		L	L							
27									L	L	L	L	L	L	L									
28										L	L	L	A	L	L	L	L							
29									L	L	L	L	L	L	L	L	L							
30									L	L	L	L	L	460 L	L	L	L							
31																								
	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	5	4	8	4	9	4	2	1							
MED									460	490	500	525	510	510	495	530	410							
UQ									480	510	510	550	525	530	505									
LQ									445 L	490	490	500	500	510	490									

The Radio Research Laboratories, Japan

SEP. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

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

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						B	205	280	320	340	A	A	A	A	R	340	310	245	A					
2						B	A	280	A	350	A	A	I A 360	A	A	355	300	C	A					
3						B	215	A	320	355	A	A	370	370	A	A	A	A	A					
4						A	230	I A 280	320	340	I A 350	365	I A 375	I B 370	I R 370	I B 350	310	A	A					
5						B	A	A	A	350	355	A	A	A	A	A	310	245	A					
6						A	A	275	310	345	I A 355	I B 360	I B 370	A	A	A	A	A	A					
7						B	220	275	A	A	A	R	R 395	I A 395	A	A	A	A	A					
8						B	A	A	A	350	A	A	A	A	A	A	310	A	A					
9						B	230	290	315	340	A	A	A	A	A	330	A	A	A					
10						B	230	290	A	R 340	A	A	A	A	A	A	A	A	A					
11						A	210	I B 295	330	R 340	I A 365	R	A	A	A	A	A	A	A					
12						B	R	A	A	330	370	380	I A 380	370	R 350	325	290	A	B					
13						B	190	I R 275	315	R 345	C	C	C	C	C	C	275	205	B					
14						B	200	A	A	R	A	A	A	R 375	350	330	270	A	A					
15						A	A	A	A	A	A	A	R	R	A	A	A	A	A					
16						B	A	A	A	A	A	R 360	R 360	A	I A 350	325	A	A	A					
17						A	R	A	A	A	A	A	A	355	355	R	A	A	A					
18						B	R	A	A	A	A	A	A	A	A	A	A	A	A					
19						B	A	A	A	A	A	A	A	A	355	325	280	A	A					
20							205	275	320	340	I R 360	R	A	365	350	320	275	210	B					
21							220	260	300	A	A	A	A	A	R	A	I A 285	A	A					
22							210	280	310	340	A	A	A	A	A	A	A	A	A					
23						B	180	275	I A 310	340	I A 350	I A 360	A	A	350	A	A	R	A					
24						B	A	270	A	A	A	R	360	A	C	A	280	A	A					
25						B	A	A	A	340	I R 355	I B 360	380	R	A	A	A	210	A					
26						B	200	I A 280	320	345	375	375	370	370	360	330	285	190						
27							185	I A 270	315	355	365	370	375	I R 360	340	320	275	190						
28							A	275	320	340	I A 360	I A 360	I A 360	360	345	325	A	A	A					
29						B	165	I R 270	I A 320	345	I A 350	A	A	A	A	A	A	200	A					
30						B	I A 220	260	310	335	350	350	350	350	I R 355	A	280	A	A					
31																								
	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							17	19	16	21	13	10	13	11	12	12	15	8						
MED							210	275	318	340	I 355	360	370	370	350	328	285	208						
UQ							220	280	320	345	365	370	375	370	355	335	305	228						
LQ							200	272	310	340	I A 350	I 360	360	360	350	325	278	195						

SEP. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

SEP. 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	JX 20	19	19M	19M	18M	18	27	32	38	42	41	73	JX 51	JX 50	G 35	JX 40	JG 26	G 21	JX 53	JX 28	JX 18	JX 84	JX 62	JX 30
2	JX 40	JX 26	JX 24	JX 28	JX 28	JX 21	JX 30	JX 40	JX 63	JX 60	JX 69	45	JX 61	JX 83	JX 66	43	JX 30	C	JX 29	JX 30	JX 36	JX 28	22	JX 36
3	JX 32	20	JX 22	JX 16	JX 24	JX 16	G 19	JX 68	JX 48	41	JX 52	44	43	44	44	37	JX 43	JX 42	JX 43	JX 50	JX 38	JX 18	EB 14	18
4	EB 14	17	JX 17	JX 16	JX 19	JX 18	JG 23	JX 31	35	37	42	42	43	EB 43	JX 59	JX 54	42	JX 51	JX 41	JX 51	JX 84	JX 35	JX 35	ES 15
5	20	20	20	20	ES 15	EB 15	25	39	36	JX 49	JX 75	JX 105	JX 65	JX 56	JX 79	JX 48	36	JX 45	JX 74	JX 74	JX 83	JX 42	JX 37	JX 41
6	JX 61	20	JX 49	JX 62	JX 71	JX 49	JX 29	33	43	46	48	51	JX 52	80	JX 88	JX 174	JX 138	JX 84	JX 31	JX 84	JX 54	JX 54	JX 25	JX 27
7	JX 89	JX 30	JX 16	JX 18	JX 24	JX 23	JX 25	32	37	41	JX 41	G	49	47	JX 55	JX 107	JX 74	JX 104	JX 144	JX 88	JX 44	JX 29	JX 24	22
8	EB 14	JX 24	19	EB 14	20	21	25	JX 35	JX 41	45	JX 49	JX 51	44	42	JX 61	JX 41	JX 43	JX 70	JX 117	JX 109	JX 54	JX 24	20	20
9	ES 15	JX 29	EB 13	JX 25	23	20	JX 25	37	JX 49	JX 54	JX 51	JX 54	52	JX 56	JX 50	38	JX 36	JX 39	JX 51	JX 42	JX 27	JX 24	20	JX 21
10	20	20	22	JX 21	JX 39	18	26	G	36	42	46	42	45	JX 48	JX 48	JX 42	JX 31	JX 29	19	20	ES 15	ES 15	JX 28	35
11	JX 29	JX 35	JX 29	JX 35	JX 24	JX 24	G	EB 32	G	G	40	G	41	JX 41	JX 41	JX 35	JX 31	JX 31	JX 29	JX 38	JX 34	JX 21	JX 24	19
12	JX 24	21	19	21	20	19	G	35	35	G	G 32	G 33	44	50	JG 34	JG 27	G 23	JX 30	JX 54	JX 25	M 21	ES 15	JX 18	20
13	ES 15	EB 13	ES 15	18	EB 13	EB 14	24	G	G 30	G	C	C	C	C	C	C	41	JX 38	JX 30	JX 38	JX 37	JX 30	JX 26	JX 25
14	JX 19	24	M 20	JX 16	JX 19	EB 13	JX 30	JX 41	JX 50	37	JX 42	JX 42	48	48	JX 54	JX 55	35	JX 41	JX 29	JX 54	JX 44	JX 24	JX 35	23
15	20	ES 15	20	20	JX 21	JX 25	26	JX 41	36	JX 41	JX 41	42	G	G	JX 42	39	JX 44	JX 49	JX 28	JX 21	C	C	23	ES 15
16	ES 15	20	ES 15	12	20	JX 23	JX 25	33	34	JX 37	37	G	G	JX 41	37	39	JX 74	JX 63	JX 39	JX 37	JX 25	JX 26	ES 15	ES 15
17	JX 28	JX 22	JX 21	JX 24	JX 24	JX 21	G	JX 39	JX 35	JX 49	43	42	JX 49	G	38	G	35	JX 29	JX 54	JX 64	JX 39	JX 35	JX 30	JX 24
18	JX 21	JX 21	JX 24	23	23	EB 15	G	JX 34	46	JX 36	JX 55	JX 41	JX 41	JX 55	JX 54	JX 35	JX 51	JX 32	20	19	JX 71	JX 50	JX 25	20
19	18	20	EB 12	EB 13	ES 15	EB 15	26	32	JX 36	35	37	39	46	JX 39	G 34	JG 30	JG 28	JX 30	JX 30	JX 27	22	20	18	19
20	20	EB 12	EB 14	EB 14	EB 14	20	G	30	33	37	G	G	41	G	G	G	33	25	JX 24	JX 36	JX 30	JX 22	JX 22	ES 15
21	JX 20	JX 23	JX 25	JX 23	21M	ES 15	G	JX 41	JX 54	JX 61	45	JX 51	44	JX 59	G	JX 51	JX 60	JX 191	JX 170	JX 139	JX 138	JX 49	JX 61	JX 39
22	JX 29	23	21	20	20	20	G	30	39	41	48	JX 51	44	45	JX 42	JX 38	JX 41	JX 35	JX 22	JX 28	JX 24	JX 24	JX 29	20
23	20	20	ES 15	20	ES 15	19	22	G	43	JX 70	JX 71	JX 81	JX 69	JX 71	JX 59	JX 44	JX 44	G	JX 42	JX 29	JX 29	JX 29	23	21
24	ES 15	EB 13	ES 15	ES 15	EB 13	EB 15	24	31	39	39	38	G	G	JX 46	C	JX 39	36	JX 41	22	ES 15	23	22	ES 15	ES 15
25	ES 15	ES 15	ES 15	EB 13	EB 13	EB 13	JX 25	32	36	38	G	EB 40	G	G	40	JX 41	35	G	JX 18	JX 20	20	23	JX 54	JX 25
26	ES 15	20	20	EB 13	ES 15	EB 13	24	34	36	46	47	44	43	40	45	37	G	G	EB 14	JX 25	JX 28	JX 23	JX 25	21M
27	EB 13	JX 17	EB 14	EB 14	19	JX 13	29	JX 34	36	G	G	G	G	G	G	G	G 17	23	JX 20	20	EB 13	ES 15	M 20	EB 13
28	EB 14	JX 15	JX 14	JX 16	JX 18	EB 12	25	31	37	41	45	45	JX 54	41	G	G	JX 31	JX 35	JX 27	20	JX 30	20	JX 21	20
29	20	12	20	20	19	21	G	G	36	41	41	JX 44	41	JX 41	37	35	31	G	JX 25	JX 21	20	EB 13	20	ES 15
30	ES 15	ES 15	EB 13	EB 13	EB 13	21	24	30	36	38	40	41	41	39	G	37	32	31	JX 24	JX 29	JX 25	JX 24	20	ES 15
31																								
	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	30	30	30	30	30	30	29	29	29	29	28	29	30	29	30	30	29	29	30	30
MED	20	20	19	18	20	18	24	32	36	41	42	42	44	44	J 42	JX 39	JX 36	JX 35	JX 30	JX 30	JX 30	JX 24	JX 24	20
UQ	JX 24	JX 23	21	21	JX 23	21	26	JX 37	43	46	48	51	49	JX 50	JX 54	JX 43	JX 43	JX 45	JX 51	JX 51	JX 44	JX 30	JX 29	JX 25
LQ	E 15	15	E 15	ES 14	E 15	EB 15	G	30	36	37	40	36	41	40	G 34	35	31	29	JX 24	JX 21	JX 23	21	20	E 15

The Radio Research Laboratories, Japan

SEP. 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

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

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	16	E	E	E	E	G	25	31	37	42	41	66	49	40	G 34	30	G 26	G 21	20	25	15	26	28	16
2	24	14	E	16	20	17	29	26	35	57	58	40	59	A	65	31	28	C	26	24	22	15	E	25
3	25	E	E	E	E	G	G 17	65	38	40	40	43	43	42	44	37	40	38	27	29	33	16	E B 14	E
4	E B 14	E	E	E	E	14	G 18	30	35	37	39	40	42	E B 43	53	51	39	50	35	45	41	32	25	E S 15
5	E	E	E	E	E S 15	E B 15	23	35	34	45	47	43	53	41	76	35	34	44	34	42	26	42	20	19
6	41	E	25	34	41	22	26	33	43	45	47	51	51	77	70	A	69	65	25	55	46	28	16	27
7	27	16	E	15	15	16	17	30	37	40	40	G	48	41	51	44	34	60	A	50	25	19	20	E
8	E B 14	E	E	E B 14	E	G	24	35	40	43	46	50	43	40	53	40	40	70	A	A	25	18	E	E
9	E S 15	E	E B 13	25	15	G	G	35	48	52	50	50	45	50	50	35	36	38	24	42	25	18	17	15
10	E	E	E	15	16	G	24	G	35	41	42	41	42	45	45	40	31	20	16	E	E S 15	E S 15	16	25
11	25	25	25	25	15	17	G	E B 32	G	G	40	G	40	40	40	35	30	18	19	25	28	18	16	E
12	19	E	E	E	E	G	G	34	35	G	G 32	G 33	42	50	G 32	G 26	G 22	29	46	17	16	E S 15	E	E
13	E S 15	E B 13	E S 15	E	E B 13	E B 14	24	G	G 30	G	C	C	C	C	C	C	39	37	25	37	29	17	E	16
14	16	15	E	E	E	E B 13	25	35	43	35	38	40	E R 48	47	54	55	34	35	25	25	24	17	E	E
15	E	E S 15	E	E	17	19	22	35	35	38	38	40	G	G	40	38	40	43	25	15	C	C	E	E S 15
16	E S 15	E	E S 15	E	E	G	25	29	34	36	35	G	G	40	37	27	65	59	22	32	25	E	E S 15	E S 15
17	25	22	E	E	20	20	G	39	35	37	43	40	49	G	37	G	34	26	44	A	28	21	20	E
18	E	E	E	E	E	E B 15	G	26	45	35	45	40	41	54	45	35	30	28	G	E	A	28	E	E
19	E	E	E B 12	E B 13	E S 15	E B 15	24	30	35	35	E R 37	E R 39	45	39	G 30	G 26	G 26	26	17	24	17	20	16	E
20	E	E B 12	E B 14	E B 14	E B 14	E	G	30	33	37	G	G	41	G	G	G	33	25	20	28	20	16	E	E S 15
21	17	20	22	15	E	E S 15	G	40	50	60	41	50	41	45	G	50	54	52	40	A	A	29	25	19
22	27	16	15	E	E	E	G	19	38	40	47	50	42	44	38	35	29	25	17	23	16	20	29	E
23	E	E	E S 15	E	E S 15	G	22	G	40	69	70	79	69	42	44	42	39	G	G	24	25	20	E	E
24	E S 15	E B 13	E S 15	E S 15	E B 13	E B 15	22	28	38	38	38	G	G	45	C	39	31	40	16	E S 15	E	E	E S 15	E S 15
25	E S 15	E S 15	E S 15	E B 13	E B 13	E B 13	23	29	35	36	G	E B 40	G	G	40	35	30	G	15	E	E	17	25	E
26	E S 15	E	E	E B 13	E S 15	E B 13	24	32	35	40	46	41	43	40	40	37	G	G	E B 14	16	18	17	19	E
27	E B 13	E	E B 14	E B 14	E	E	26	31	36	G	G	G	G	G	G	G	G 17	22	17	E	E B 13	E S 15	E	E B 13
28	E B 14	E	E	E	E	E B 12	23	30	37	40	43	41	54	40	G	G	29	25	E	E	E	E	E	E
29	E	E	E	E	E	G	G	G	35	40	40	40	40	40	37	35	30	G	20	E	E	E B 13	E	E S 15
30	E S 15	E S 15	E B 13	E B 13	E B 13	G	23	27	35	38	38	40	40	38	G	36	30	24	19	20	20	20	E	E S 15
31																								
	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	30	30	30	30	30	30	29	29	29	29	28	29	30	29	30	30	29	29	30	30
MED	15	E	E	E 13	E 13	E G 13	22	30	35	39	40	40	42	40	40	35	32	28	21	24	24	18	15	E S 14
UQ	19	15	E 15	E 15	15	E 15	24	35	38	42	46	43	48	45	50	40	39	43	27	42	28	20	20	15
LQ	E	E	E	E	E	G	G	27	35	36	38	E G 39	40	40	G 33	30	29	22	17	15	16	15	E	E

SEP. 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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	12	14	E S 15	E S 15	14	14	15	15	15	25	15	15	21	15	15	15	15	14	14	13	13	13	13	12
2	13	12	13	13	13	12	14	14	15	15	15	26	26	26	16	25	15	C	14	14	14	13	E S 15	14
3	13	14	14	14	13	13	14	14	15	15	15	25	17	29	25	15	15	14	13	13	14	12	14	14
4	14	14	13	12	12	12	14	14	14	15	15	15	29	43	15	33	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15
5	E S 15	14	E S 15	E S 15	E S 15	15	15	15	15	16	16	16	28	23	15	15	15	14	14	14	13	14	E S 15	E S 15
6	E S 15	14	13	13	14	13	15	15	15	14	26	36	38	18	16	15	14	15	14	E S 15	13	12	13	14
7	13	14	E S 15	12	13	13	14	14	16	24	25	20	30	30	29	15	15	15	15	13	13	13	13	E S 15
8	14	14	E S 15	14	E S 15	15	15	15	15	25	28	30	28	25	25	15	15	13	15	E S 15	E S 15	E S 15	E S 15	E S 15
9	E S 15	E S 15	13	14	13	15	15	15	15	11	26	25	25	28	15	15	15	15	13	E S 15	E S 15	14	13	13
10	E S 15	14	E S 15	12	13	C	15	15	15	20	28	15	33	25	25	25	15	15	13	E S 15	E S 15	E S 15	13	14
11	14	14	13	14	14	15	15	32	17	28	25	25	28	25	25	20	15	15	15	E S 15	13	13	13	E S 15
12	E S 15	13	E S 15	E S 15	E S 15	15	15	15	16	17	26	18	26	25	22	16	14	13	12	12	12	E S 15	12	E S 15
13	E S 15	13	E S 15	E S 15	13	14	14	14	14	19	C	C	C	C	C	C	14	14	12	12	12	E S 15	E S 15	13
14	14	12	E S 15	13	14	13	14	15	15	15	26	25	28	28	23	25	15	13	14	13	E S 15	E S 15	14	E S 15
15	E S 15	E S 15	E S 15	E S 15	E S 15	14	14	15	15	15	15	25	15	20	15	15	15	15	13	12	C	C	E S 15	E S 15
16	E S 15	E S 15	E S 15	E S 15	E S 15	14	15	15	23	15	24	25	25	20	15	15	15	14	15	E S 15	E S 15	E S 15	E S 15	E S 15
17	E S 15	E S 15	E S 15	E S 15	E S 15	15	15	15	15	15	24	24	25	25	25	25	19	15	15	E S 15	E S 15	E S 15	E S 15	E S 15
18	E S 15	E S 15	E S 15	E S 15	E S 15	15	15	15	19	24	25	25	25	24	18	15	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15
19	E S 15	E S 15	12	13	E S 15	15	14	15	15	16	26	26	29	25	25	15	14	12	13	13	14	E S 15	E S 15	E S 15
20	14	12	14	14	14	14	15	14	15	16	31	26	26	26	26	15	15	16	16	E S 15	13	E S 15	E S 15	E S 15
21	E S 15	13	12	12	12	E S 15	15	15	16	26	24	25	25	25	25	23	15	15	14	E S 15	E S 15	E S 15	E S 15	E S 15
22	12	12	12	E S 15	E S 15	E S 15	14	18	15	25	25	28	28	25	25	24	15	15	14	13	12	12	E S 15	E S 15
23	E S 15	13	E S 15	12	E S 15	15	14	15	15	15	20	20	25	15	15	14	15	15	15	E S 15	13	E S 15	E S 15	E S 15
24	E S 15	13	E S 15	E S 15	13	15	15	15	14	24	26	28	19	19	C	15	15	15	13	E S 15	E S 15	E S 15	E S 15	E S 15
25	E S 15	E S 15	E S 15	13	13	13	15	15	15	16	15	40	15	25	25	15	15	15	12	E S 15	E S 15	14	E S 15	E S 15
26	E S 15	E S 15	E S 15	13	E S 15	13	15	15	15	15	15	16	26	26	15	15	15	14	14	13	13	13	14	E S 15
27	13	13	14	14	13	14	14	14	14	15	20	16	26	26	23	15	14	14	E S 15	E S 15	13	E S 15	E S 15	13
28	14	14	14	12	13	12	14	16	15	15	25	23	15	15	25	15	15	14	15	E S 15	E S 15	E S 15	E S 15	E S 15
29	E S 15	14	E S 15	E S 15	13	15	15	15	15	26	19	25	25	25	15	15	15	14	15	E S 15	13	13	E S 15	E S 15
30	E S 15	E S 15	13	13	13	15	15	15	15	15	15	15	19	25	16	15	15	14	13	13	E S 15	13	13	E S 15
31																								
	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	30	29	30	30	30	30	29	29	29	29	28	29	30	29	30	30	29	29	30	30
MED	E S 15	14	E S 15	13	14	14	15	15	15	16	24	25	26	25	22	15	15	15	14	E S 15	13	E S 15	E S 15	E S 15
UQ	E S 15	E S 15	E S 15	E S 15	E S 15	15	15	15	15	24	26	26	28	26	25	20	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15
LQ	14	13	13	13	13	13	14	15	15	15	15	18	25	23	15	15	15	14	13	13	13	13	13	13

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SEP. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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	275	265	265	260	260	275	315	320	305	310	320	295	295	300	295	300	300	305	290	270	290	285	320	270
2	295	280	270	265	260	290	325	355	310	310	290	285	295	295	300	300	305	310	305	300	295	265	255	260
3	275	285	270	290	275	265	320	340	340	310	310	305	290	285	290	295	300	315	315	305	280	265	265	270
4	275	305	280	255	280	300	340	340	345	295	290	300	295	300	295	300	300	300	310	315	295	270	275	265
5	270	285	265	250	260	270	300	320	315	300	300	300	285	280	275	295	305	315	325	305	260	285	280	275
6	255	270	290	260	275	295	335	340	310	315	305	290	290	285	290	A	305	310	305	290	270	275	275	285
7	290	285	280	290	290	290	305	320	330	305	300	305	285	290	290	300	305	315	A	285	290	275	290	290
8	250	270	275	275	275	285	315	335	320	310	320	305	280	300	300	290	290	300	A	A	310	285	265	265
9	280	265	280	255	270	280	330	315	330	320	305	300	315	295	300	305	310	310	320	305	285	290	275	270
10	290	280	305	275	285	290	340	325	325	310	305	300	290	275	275	285	295	310	315	310	295	280	285	280
11	270	285	290	310	300	310	340	335	315	315	320	310	295	290	285	295	305	310	315	315	300	285	275	285
12	280	300	295	305	305	310	345	345	335	320	305	310	285	290	285	295	300	315	325	320	305	300	280	275
13	280	285	285	300	280	285	345	365	350	305	C	C	C	C	C	C	305	310	310	330	335	265	265	265
14	300	295	280	285	270	300	325	305	300	295	270	290	300	270	280	290	305	310	310	310	275	280	270	260
15	270	270	250	295	290	275	300	315	290	305	290	285	285	290	300	315	320	320	330	300	C	C	250	270
16	275	275	300	315	275	260	320	310	345	320	295	300	295	310	290	300	310	330	320	305	285	290	270	265
17	270	280	270	305	290	290	325	335	325	325	320	285	295	280	295	300	285	320	325	330	325	265	275	275
18	280	285	280	275	270	270	315	330	315	315	305	285	305	295	295	305	310	320	335	315	270	R	F	F
19	275	280	280	310	305	290	R	340	315	320	305	305	305	300	295	300	300	315	330	320	295	265	260	270
20	280	265	285	300	300	265	315	325	325	325	305	290	290	285	290	300	325	330	330	320	300	270	270	275
21	280	265	265	270	290	270	310	245	335	305	310	295	290	295	305	305	315	310	315	A	A	295	285	285
22	250	260	270	280	285	270	315	320	325	305	300	295	295	300	295	300	310	320	315	305	290	275	290	280
23	280	285	285	285	270	260	310	340	315	325	305	285	300	290	285	300	300	315	330	320	280	270	280	265
24	285	280	270	280	265	310	335	350	330	325	305	290	310	290	300	315	320	315	330	315	280	280	290	300
25	285	260	275	275	295	275	320	320	335	335	290	295	290	295	290	295	300	305	320	330	295	285	275	290
26	280	275	270	285	300	275	325	345	340	350	310	300	295	300	290	295	315	325	330	305	275	285	290	290
27	310	305	310	285	280	280	335	335	335	330	310	295	285	285	285	295	300	315	310	310	285	280	290	295
28	290	285	265	285	265	260	315	335	325	315	290	290	260	300	300	310	315	320	315	315	290	280	285	285
29	270	270	280	305	300	300	335	335	335	325	325	290	295	290	300	295	310	320	330	320	295	295	280	275
30	270	280	305	310	290	285	335	340	340	335	315	300	285	280	290	300	290	310	315	325	305	270	270	275
31																								
	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	30	30	29	30	30	30	29	29	29	29	29	28	30	30	28	28	28	28	29	29
MED	280	280	280	285	280	282	325	335	325	315	305	295	295	290	290	300	305	315	318	312	290	280	275	275
UQ	285	285	285	300	290	290	335	340	335	325	310	300	295	300	300	300	310	320	330	320	298	285	285	285
LQ	270	270	270	275	270	270	315	320	315	305	300	290	285	285	290	295	300	310	312	305	280	270	270	270

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IONOSPHERIC DATA

SEP. 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 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	360	365	L	A	L	355	380	L	L	L						
2									L	A	A	350	A	A	A	L	L	C						
3								A	L	365	L	360	L	340	L	340	L							
4								L	L	L	375	395	380	360	A	A	L	A						
5								L	L	L	L	385	L	375	A	360	L	A						
6								L	L	L	L	345	A	A	A	A	A	A						
7									L	L	395	365	L	345	L	L	375	A	A					
8									L	L	L	L	L	370	L	L	L	A	A					
9								L	L	A	L	L	355	L	L	L	L							
10								L	L	L	L	L	L	L	L	L	L							
11								L	L	L	L	L	L	380	L	L	L							
12								L	L	L	L	L	L	L	L	L	L	L						
13								L	L	L	C	C	C	C	C	C	L							
14									A	375	370	370	R	A	A	A	L							
15								L	L	370	380	375	370	L	360	L								
16								L	L	390	L	L	L	390	370	L	A	A						
17								L	L	L	L	L	A	L	365	L	L							
18								L	A	L	L	L	L	A	L	L	L							
19							L	L	375	L	L	L		L	L	L	L							
20								L	L	L	L	L	L		L	L	L							
21								L	A	A	L	A	375	L	L	A	A							
22									L	L	L	L	L	L	L	L	L							
23								L	L	A	A	A	A	L	L	L	L							
24									L	L	L	L	L	L	C	L	L							
25								L	L	L	L	L	L	L	L	L	L							
26									L	L	L	L	L	L		L	L							
27									L	L	L	L	L	L	L									
28										L	L	L	A	L	L	L	L							
29									L	L	L	L	L	L	L	L	L							
30									L	L	L	L	L	390	L	L	L							
31																								
	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	5	4	8	4	9	4	2	1							
MED									368	370	378	368	372	370	368	350	375							
UQ										375	388	380	378	380	375									
LQ										365	372	355	362	355	362									

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

IONOSPHERIC DATA

SEP. 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								280	300	280	300	I A 310	350	300	330	320	310	280						
2									300	270 H	375	350	350	I A 350	330	280	280	I C 260						
3								270 A	250	275	280	285	310	345	310	300	280							
4								240	240	240	280	280	305	305	300	300	280	275						
5								250	350	275	280	280	300	300	320	290	275	255						
6								250	245	275	280	340	285	I A 325	330	A	290 A	290 A						
7									255	255	290	300	300	310	310	290	290	290	A					
8									250	270	255	295	290	295	305	280	280	320	A					
9								275	270	250	290	320	285	310	290	295	275							
10								250	250	250	290	280	290	320	280	280	260							
11								250	240	245	255	295	270	295	285	285	255							
12								250	245	235	260	280	310	300	310	290	275	260						
13								230	230	245	C	C	C	C	C	C	255							
14									280	300	365	340	340	390	365	340	300							
15								280	290	290	300	285	310	300	300	290								
16								250	240	275	265	280	290	275	300	295	300	250						
17								250	245	265	250	340	300	270	300	290	260							
18								250	240	250	280	270	290	300	290	290	265							
19							240	250	240	250	280	275		300	290	290	275							
20								240	240	255	280	270	275		300	290	260							
21								240	235	275	265	270	300	280	270	275	275							
22									245	250	265	275	265	270	290	260	270							
23								245	250	260	260	350	300	265	300	280	260							
24									250	250	240	250	290	290	I C 280	260	255							
25								245	250	245	240	280	290	260	260	255	255							
26									245	230	240	250	260	290		275	255							
27									230	245	250	260	275	280	295									
28										250	250	260	260	260	290	250	250							
29									245	250	240	250	260	260	260	255	250							
30									250	250	250	245	255	260	270	270	250							
31																								
	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	19	29	30	29	29	28	28	28	27	28	9						
MED							240	250	245	250	265	280	290	298	300	290	272	275						
UQ								250	250	275	280	300	302	308	310	290	280	290						
LQ								245	240	250	250	270	275	272	288	275	255	260						

SEP. 1970 | H'F2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 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

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	280	290	295	300	310	305	245	205H	220	230	200H	I 225	270A	220	200	210H	230	245	260	290	260	280	230	270
2	275	260	320	345	320	280	255	240	230	A	A	225	A	A	A	230	225	I 240C	250	255	250	260	320	350
3	300	270	280	250	250	310	245	I 230A	225	210	240	220	215	225	255	225	250A	270A	240	250	280	290	290	280
4	280	255	250	310	290	260	240	230	210	215	210	200	240	240	I 285A	I 265A	255	A	255	250	270	300	300	305
5	290	290	295	340	295	290	245	240	220	230	245	210	A	220	I 255A	230	240	I 240A	230	250A	280A	320A	280	300
6	370A	275	280	350A	350A	270	240	225	225	240	A	A	A	A	A	A	A	I 250A	240	A	330A	300	290	285
7	290	255	275	250	255	270	240	230	225	240	240	240	270	210	270	260	240	A	A	300	260	250	250	250
8	275	275	285	275	265	250	245	240	240	240	240	260	240	210	260	240	260	A	A	A	245	240	245	300
9	290	300	315	300	290	300	245	240	260	I 255A	260	280	260	260	270	240	250	265	245	260	290	275	280	295
10	270	270	250	245	250	260	240	240	240	240	250	220	240	240	250	240	240	240	245	240	240	245	275	270
11	300	300	280	260	245	245	215	240	210	205	210	200	240	210	210	240	240	245	240	245	240	240	260	290
12	275	245	245	240	240	240	230	230	205	205	195H	180H	220	I 250A	220	220	230	255	240	230	220	220	230	275
13	285	275	275	245	260	280	230	225	205	200	C	C	C	C	C	C	I 240A	245	245	220	200	260	300	305
14	260	240	250	270	310	255	220	250	I 265A	240	215	205	I 255A	I 295A	I 300A	A	240	260	240	245	280	260	300	360
15	340	340	345	260	250	290	245	250	240	240	200	200	200	240	240	240	250	260	240	220	C	C	300	300
16	300	275	255	245	240	340	245	240	200	200	195	210	220	210	230	240	A	A	240	250	250	260	290	295
17	300	300	290	245	245	290	240	240	240	200	240	200H	I 275A	200	210	240	250	260	240	I 250A	230	315	300	295
18	300	290	280	285	300	305	240	240	I 230A	200	240	205	250	I 250A	260	240	240	240	220	200	I 305A	300	265	260
19	290	295	290	240	245	290	220	240	200	210	220	210	250A	210	210	220	230	260	220	210	220	300	330	295
20	270	310	275	255	240	300	240	230	230	210	205	210	210	240	225	220H	245	245	225	230	220	270	310	290
21	290	300	320	295	250	260	240	240	A	A	220	I 250A	210	250	240	A	A	260	240	I 270A	I 300A	240	240	290
22	390	325	300	245	240	295	240	240	240	210	250	250	220	240	220	240	240	245	240	210	240	260	290	270
23	260	250	260	260	300	310	240	240	240	A	A	A	A	240	240	260	245	250	240	245	240	295	295	290
24	260	290	250	260	295	270	240	220	250	200	200	220	215	250	I 240C	240	250	250	240	210	240	265	285	250
25	250	300	300	260	240	290	250	230	240	210	200	200	200	220	240	240	240	255	240	200	240	270	300	290
26	265	265	295	250	240	290	240	240	240	215	225	200	225	205	240	240	240	245	220	210	280	280	280	260
27	240	230	240	255	265	275	230	235	225	220	205	200	205	205	200H	230	245	240	220	230	240	260	275	260
28	250	260	300	270	260	310	230	235	220	230	220	200	I 240A	205	240	220	240	240	240	215	240	250	275	290
29	295	260	250	245	240	245	220	230	240	240	200	240	200	210	240	240	240	240	240	240	240	230	255	290
30	300	260	250	240	210	260	240	240	240	210	200	200	200	200	240	240	240	245	230	230	240	280	300	295
31																								
	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	30	30	30	30	29	27	26	27	25	27	27	26	27	26	28	28	29	29	30	30
MED	288	275	280	260	252	285	240	240	230	215	218	210	225	220	240	240	240	245	240	240	240	265	288	290
UQ	300	300	295	285	295	300	245	240	240	240	240	225	250	240	255	240	248	260	240	250	280	290	300	295
LQ	270	260	250	245	240	260	230	230	220	208	200	200	210	210	222	230	240	240	235	218	240	250	265	270

SEP. 1970 | H'F (KM)

IONOSPHERIC DATA

SEP. 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

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	100	100	100	100	100	100	130	130	125	110	110	110	105	105	100	100	100	100	100	100	100	105	100	100
2	100	100	100	100	100	110	110	115	105	110	110	110	110	105	105	100	105	C	100	100	100	100	105	105
3	100	100	105	100	100	100	100	100	115	125	100	125	115	115	110	110	105	105	100	100	100	100	B	100
4	B	100	110	105	105	105	100	100	130	130	100	140	130	B	145	135	140	120	110	110	100	100	100	S
5	100	100	100	100	S	B	135	130	115	110	110	105	105	110	105	115	130	115	105	105	120	100	100	105
6	105	100	100	100	100	100	100	125	115	115	110	110	110	110	105	105	105	110	110	105	105	105	100	100
7	100	100	100	100	100	100	100	110	115	110	110	G	120	145	110	110	110	120	110	110	110	100	100	100
8	B	105	100	B	100	100	130	100	115	120	110	110	110	110	130	100	150	120	115	115	115	100	100	100
9	S	100	B	100	100	100	100	130	115	110	110	110	110	120	100	100	100	120	120	110	100	100	100	100
10	100	100	100	100	100	100	160	G	140	120	110	110	110	110	110	110	110	105	100	100	S	S	100	100
11	100	100	100	100	100	100	G	B	G	G	120	G	115	110	110	105	105	100	100	100	100	100	100	100
12	100	100	100	100	100	100	G	110	110	G	105	100	100	130	100	100	100	100	110	100	100	S	105	105
13	S	B	S	100	B	B	145	G	105	G	C	C	C	C	C	C	125	115	110	105	105	100	105	95
14	100	100	95	100	100	B	120	110	110	110	110	110	140	140	140	130	140	110	110	105	100	100	100	100
15	100	S	100	100	100	110	120	110	110	110	110	105	G	G	120	150	125	110	105	100	C	C	100	S
16	S	100	S	115	110	110	110	110	110	110	105	G	G	100	160	145	130	120	110	110	105	100	S	S
17	100	100	100	100	100	100	G	110	110	105	105	105	110	G	130	G	140	110	105	105	100	100	100	100
18	100	100	100	100	100	B	G	110	110	110	105	100	100	100	100	100	110	110	100	105	100	100	100	100
19	100	110	B	B	S	B	140	120	110	115	110	110	105	105	105	105	100	100	100	100	100	100	100	100
20	100	B	B	B	B	100	G	150	130	125	G	G	110	G	G	G	140	130	110	100	105	100	105	S
21	100	100	100	100	100	S	G	115	110	110	105	105	110	110	G	140	120	110	110	105	110	100	100	100
22	100	100	100	100	100	100	G	145	140	130	110	110	110	105	105	105	105	105	105	100	100	100	100	100
23	100	100	S	100	S	105	190	G	130	110	105	110	110	105	110	110	110	G	100	100	100	100	100	100
24	S	B	S	S	B	B	140	130	120	110	110	G	G	105	C	110	130	110	110	S	100	100	S	S
25	S	S	S	B	B	B	110	150	120	120	G	B	G	G	115	110	110	G	105	100	100	100	100	100
26	S	100	100	B	S	B	150	150	140	125	125	115	115	130	125	125	G	G	B	100	100	100	100	100
27	B	100	B	B	115	110	145	105	140	G	G	G	G	G	G	G	100	150	100	100	B	S	100	B
28	B	100	100	110	110	B	140	140	130	130	120	115	110	130	G	G	110	100	100	100	100	100	100	100
29	100	100	100	100	100	100	G	G	150	120	115	110	110	110	110	110	105	G	100	100	100	B	100	S
30	S	S	B	B	B	100	150	150	140	140	120	120	120	125	G	150	150	150	100	100	100	100	100	S
31																								
	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	19	24	20	22	21	20	22	25	29	26	26	22	24	23	23	25	29	25	29	29	27	25	27	22
MED	100	100	100	100	100	100	130	115	115	112	110	110	110	110	110	110	110	110	105	100	100	100	100	100
UQ	100	100	100	100	100	105	145	130	130	125	110	110	115	122	122	125	130	120	110	105	105	100	100	100
LQ	100	100	100	100	100	100	110	110	110	110	105	105	110	105	105	105	105	105	100	100	100	100	100	100

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IONOSPHERIC DATA

SEP. 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

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	F4	F2	F2	F3	F2	L2	H1	H1	H2	C2	C2	C2	C2	C1	L1	L1	L1	L1	L2	F3	F1	F3	F3	F3
2	F3	F3	F1	F2	F3	C3	C3	C2	C2	C3	C2	C1	C2	C2	C2	L2	L2		L3	F6	F5	F3	F2	F5
3	F4	F1	F3	F1	F2	L3	L2	L4	HL 23	HL 12	L3	HL 11	CL 11	C1	C1	C2	L3	L4	L5	F5	F4	F2		F1
4		F1	F1	F2	F2	L2	L2	L4	HL 12	HL 11	L1	H1	H1		H2	H2	H1	H2	L3	F3	F5	F4	F3	
5	F1	F1	F1	F2			H1	H2	C1	C1	C2	C1	C2	C1	L3	C1	H2	C3	C4	F4	FF 23	F4	F2	F3
6	F4	F2	F4	F4	F4	L3	L2	HL 22	C2	CL 22	CL 21	C1	C1	C2	C3	C4	C3	C2	L3	F3	F6	F3	F3	F3
7	F3	F2	F1	F2	F2	L2	L3	C1	C2	C1	C1		H1	H1	C2	C2	C1	H2	L3	F3	F2	F2	F3	F2
8		F1	F1		F1	L1	H1	L2	C1	H1	C2	C1	C1	C1	H1	L2	HL 11	HL 22	HL 32	FF 23	FF 23	F1	F2	F2
9		F2		F3	F2	L1	L1	H1	C2	C2	C1	C2	C2	HL 11	C1	LH 11	L1	HL 22	HL 22	F3	F4	F2	F2	F2
10	F1	F1	F2	F2	F2	L1	H1		H1	H1	C1	C1	C1	C1	C2	C1	C2	L2	L2	F1			F2	F4
11	F4	F4	F3	F4	F2	L1					H1		C1	C1	C2	C2	L2	L2	L2	F2	F3	F2	F2	F1
12	F3	F2	F1	F1	F1	L1		C1	C1		L1	L1	L2	HL 22	L2	L1	L1	L4	CL 43	F2	F1		F2	F1
13				F1			H1		L1								H2	C4	C5	F6	F4	F3	F1	F4
14	F2	F2	F2	F1	F1		C2	C2	C2	C2	C1	C1	H1	H2	H2	H2	H2	C3	L3	F3	F3	F2	F2	F2
15	F1		F1	F1	F2	L2	H1	C2	C2	C2	C1	C1			H1	H1	H2	C4	L3	F1			F1	
16		F1		F1	F1	L2	L2	C1	C1	C2	C1			L1	H1	HL 11	HL 21	H3	L2	F3	F2	F1		
17	F3	F4	F2	F2	F2	L2		C2	C2	C1	L1	C1	C2		H1		H1	C2	L3	F4	F2	F3	F2	F2
18	F2	F2	F2	F1	F2			C1	C2	C2	C1	L2	L2	L2	L2	L1	C1	C1	L1	F1	F3	F3	F1	F1
19	F1	F1					H1	H1	C1	C1	C1	C1	C1	C2	L1	L1	L2	L2	L2	F3	F2	F1	F2	F1
20	F1					F1		H1	H1	H1			C1				H2	H1	C3	F4	F3	F2	F2	
21	F4	F4	F4	F2	F1			C2	C2	C2	C1	C2	C1	C1		H2	H2	C3	L3	F3	F3	F3	F3	F3
22	F5	F2	F2	F1	F2	F1		H1	H1	H1	C2	C1	C1	C1	C1	C2	L2	L1	F2	F2	F2	F2	F5	F1
23	F1	F1		F1		L1	HL 11		H1	C3	C2	C2	C2	C2	C2	C2	C1		L2	F2	F4	F4	F2	F1
24							H1	H1	H1	C1	C1			C2		C2	H1	C3	L1		F2	F1		
25							L1	H1	H1	H1					C1	C2	C1		L1	F1	F1	F2	F2	F2
26		F1	F1				H1	H1	H1	H2	HL 11	C1	C1	H1	HL 11	H2				F3	F3	F2	F3	F2
27		F1			F1	F1	H3	LH 22	HL 12								L1	HL 12	F4	F1			F1	
28		F1	F1	F1	F1		H2	H1	H1	H1	H1	C1	C2	H1			L2	L2	L1	F1	F2	F1	F1	F1
29	F1	F1	F2	F2	F1	L1			H1	H1	C1	C1	C1	C2	C1	C1	L1		L4	F2	F1		F1	
30						L1	H1	H1	H1	H1	H1	H1	H1	H1		H1	H1	HL 11	L3	F3	F3	F2	F1	
31																								

	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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SEP. 1970 | TYPES OF ES

IONOSPHERIC DATA

SEP. 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 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	370	380	395	395	400	370	280	290	300	310	305	325	355	325	345	325	320	310	325	375	350	350	280	395
2	325	350	400	415	400	345	290	250	310	300	375	350	350	355	330	300	310	310	305	315	325	395	415	410
3	380	320	380	330	350	380	285	270	260	305	300	310	350	355	350	330	330	305	300	300	350	395	400	380
4	370	320	350	400	370	315	270	260	255	340	350	345	350	340	350	350	350	340	310	300	360	400	390	400
5	390	380	400	410	400	390	330	300	300	300	310	315	340	350	360	340	310	305	280	310	380	350	350	375
6	405	370	330	390	380	320	255	250	295	295	305	350	330	350	350	A	310	300	300	345	380	370	370	355
7	350	350	355	350	330	330	290	285	275	315	340	350	350	350	350	350	340	300	A	360	340	390	370	370
8	390	390	400	390	390	360	300	290	300	300	300	325	380	350	350	350	350	350	A	A	310	380	400	400
9	390	400	410	400	400	350	280	300	290	280	350	340	300	350	350	350	340	300	300	340	400	370	400	400
10	370	395	340	390	390	370	380	300	300	320	340	310	370	400	390	360	370	310	300	330	360	350	350	355
11	380	380	370	330	350	300	260	290	300	300	300	350	350	360	350	350	340	310	300	300	310	390	395	350
12	350	340	340	350	300	300	250	250	280	280	310	310	360	340	360	320	320	300	290	300	305	305	350	355
13	355	355	340	310	355	350	250	255	255	310	C	C	C	C	C	C	300	300	300	280	250	380	395	390
14	325	315	350	345	390	320	280	310	315	360	400	350	350	400	390	370	340	300	300	330	360	350	400	450
15	410	410	440	350	370	390	310	300	350	330	350	350	350	350	330	300	300	300	290	340	C	C	400	400
16	400	390	350	300	340	400	290	300	260	300	310	310	350	300	350	310	340	290	295	310	360	350	400	400
17	390	390	360	310	310	380	290	290	290	300	300	380	350	390	340	320	350	300	300	290	300	400	400	400
18	390	380	370	380	390	400	290	290	300	300	300	350	310	350	350	350	300	300	280	300	400	R	F	F
19	390	400	400	300	300	360	R	250	300	290	315	305	310	330	330	330	325	300	290	290	305	390	415	390
20	360	400	350	330	300	390	300	280	290	280	310	330	345	350	350	330	295	280	260	295	300	375	390	375
21	370	395	400	370	330	375	300	260	260	300	300	350	350	340	340	340	300	300	300	A	A	310	350	370
22	400	400	390	350	350	390	300	290	295	300	340	350	350	340	350	330	302	300	300	300	350	390	360	390
23	350	350	350	380	400	400	300	280	300	300	340	360	335	350	360	350	310	300	290	300	350	390	350	390
24	350	360	390	350	390	350	280	250	260	295	300	350	310	350	350	310	300	310	290	300	350	360	350	350
25	350	400	390	360	310	390	300	280	290	290	350	350	350	350	350	360	350	310	300	280	350	355	390	355
26	390	380	390	350	350	400	290	270	280	255	300	330	340	320	350	315	300	295	280	300	385	360	355	335
27	310	315	300	350	360	355	275	270	265	270	305	320	350	350	350	340	320	295	300	305	355	360	355	350
28	345	350	400	360	390	405	290	270	280	300	350	350	350	310	350	300	300	300	300	300	350	350	350	350
29	400	350	350	300	310	340	290	290	280	290	290	350	350	350	350	350	300	300	290	300	300	350	350	390
30	390	350	340	300	300	360	270	280	270	280	300	330	360	360	350	350	350	310	300	300	340	370	400	400
31																								
	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	30	30	29	30	30	30	29	29	29	29	29	28	30	30	28	28	28	28	29	29
MED	375	380	370	350	358	365	290	280	290	300	310	350	350	350	350	340	320	300	300	300	350	370	390	390
UQ	390	395	400	390	390	390	300	290	300	305	340	350	350	350	350	350	340	310	300	322	360	390	400	400
LQ	350	350	350	330	330	345	280	260	270	290	300	325	340	340	350	320	300	300	290	300	310	350	350	355

The Radio Research Laboratories, Japan

SEP. 1970 | HPF2 (KM)

IONOSPHERIC DATA

SEP. 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	100	120	80	105	100	90	115	60	100	60	65	I A 110	90	80	75	75	J R 80	100	120	80	60	U S 95	80	105
2	75	100	95	95	100	65	60	50	85	145	70	100	65	I A 60	65	100	90	I C 80	90	85	100	100	85	90
3	70	100	90	80	120	90	65	55	60	75	100	95	95	90	95	80	J R 80	65	70	95	120	105	100	110
4	90	80	100	100	80	85	50	70	75	100	90	95	90	100	100	90	90	100	90	100	120	100	100	100
5	100	100	100	110	100	110	100	110	100	105	85	90	115	100	110	90	110	90	70	90	120	U R 65	100	75
6	95	E 100	70	E 105	E 80	E 80	70	J R 60	Y R 100	65	110	95	130	95	95	A	90	75	95	85	120	100	80	J S 90
7	70	95	90	70	115	80	65	90	75	95	100	90	100	100	100	90	100	100	A	90	100	100	110	I R 100
8	100	100	90	120	110	100	100	100	100	100	100	85	110	100	90	100	100	130	A	A	I R 100	110	100	100
9	110	100	90	100	100	100	J R 100	100	110	120	90	100	100	100	90	90	90	100	100	J R 100	100	120	100	100
10	110	I R 100	100	100	100	110	100	90	100	90	110	110	120	100	100	100	120	90	100	110	110	100	100	I R 95
11	I R 100	110	110	120	100	100	100	100	100	100	100	90	90	110	100	100	100	130	100	100	90	100	95	100
12	110	Y R 110	Y R 100	100	100	100	100	100	80	90	85	90	85	105	J R 90	95	90	60	65	60	95	95	100	95
13	90	85	80	85	90	100	50	45	65	90	C	C	C	C	C	C	80	80	70	65	65	120	105	110
14	75	85	95	70	105	90	65	85	130	100	100	100	90	100	110	110	100	100	100	110	100	100	100	100
15	90	90	100	100	130	100	130	100	100	110	90	100	100	100	100	100	100	100	110	100	C	C	100	100
16	100	100	100	100	110	100	J R 90	100	120	90	90	90	100	100	Y R 100	100	100	100	Y R 105	130	100	100	100	100
17	100	100	100	100	130	100	110	100	100	100	100	120	100	100	100	90	100	100	100	I R 105	100	100	Y R 100	100
18	110	110	110	110	100	100	110	100	100	100	100	100	90	90	90	90	100	100	80	100	I A 100	R	F	F
19	100	90	100	100	100	100	R	100	100	70	80	90	90	80	115	85	90	70	65	J R 65	115	105	85	105
20	90	100	70	70	100	100	60	70	60	70	90	110	100	95	75	70	70	70	80	J R 65	100	100	65	100
21	85	100	90	100	85	120	85	60	90	100	100	90	90	100	100	100	100	I A 100	Y R 100	A	A	90	100	120
22	100	100	110	100	100	100	100	J R 110	95	100	100	90	90	100	90	70	100	100	100	100	100	100	100	100
23	100	100	100	100	100	100	Y R 100	80	Y R 100	100	100	90	75	100	100	100	90	100	90	100	Y R 100	100	100	100
24	100	100	100	100	100	100	110	100	100	95	100	100	90	100	I C 90	90	100	J R 90	Y R 100	100	100	100	100	100
25	100	100	100	90	100	100	90	J R 100	100	110	100	100	100	100	100	100	100	100	90	100	Y R 100	I R 100	100	I R 100
26	100	100	100	100	90	90	90	J R 80	100	70	115	80	75	100	100	90	95	60	70	95	110	90	85	85
27	80	85	100	100	100	95	70	55	85	75	95	90	100	110	90	80	95	75	95	75	90	90	90	75
28	80	70	100	90	105	100	80	55	75	J R 90	100	100	100	90	90	90	100	100	Y R 100	Y R 100	100	100	100	100
29	90	100	100	100	100	100	90	100	Y R 100	110	110	90	100	100	100	90	100	100	100	100	100	100	100	100
30	100	100	100	100	100	90	120	100	90	90	100	80	100	100	100	100	100	100	Y R 100	80	110	80	90	90
31																								
	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	30	30	29	30	30	30	29	29	29	29	29	28	30	30	28	28	28	28	29	29
MED	100	100	100	100	100	100	90	95	100	98	100	95	100	100	100	90	100	100	98	100	100	100	100	100
UQ	100	100	100	100	105	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	110	100	100	100
LQ	90	95	90	95	100	90	70	60	85	90	90	90	90	95	90	90	90	80	80	82	100	98	90	95

SEP. 1970 | YPF2 (KM)

IONOSPHERIC DATA

SEP. 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	S 61	S 59	56	54	50	52	S 64	85	76	82	79	R 85	96	100	92	97	103	102	97	S 91	S 95	S 90	69	56
2	56	54	46	45	44	46	J S 64	J S 79	74	77	78	86	95	93	96	100	98	98	96	S 92	I S 78	S 75	S 77	S 74
3	S 72	75	65	60	48	S 45	60	82	70	74	84	82	86	96	101	107	114	113	107	S 87	66	S 65	65	S 67
4	67	73	68	55	58	59	S 72	S 80	88	84	88	109	110	110	114	111	111	110	108	I S 105	S 75	S 70	71	S 63
5	65	68	I S 66	S 60	63	U S 67	70	88	I S 104	109	106	107	112	127	148	J S 160	164	S 151	132	S	S 79	69	S 70	73
6	S 67	S 61	S 63	55	53	54	J S 66	S 80	S 85	84	H 81	91	102	107	S 116	123	122	110	J S 100	88	75	76	81	S 84
7	77	J S 75	65	56	53	50	61	84	83	84	R 89	90	100	104	91	97	105	99	J S 102	J S 99	I S 98	S	S	J S 84
8	71	70	70	68	66	67	S 76	U S 95	83	98	95	U R 90	95	102	102	108	111	115	U S 120	U S 114	J S 108	81	76	72
9	79	77	I S 74	77	I S 74	I S 75	U S 88	107	84	82	78	95	103	98	I A 100	111	113	105	108	J S 103	S 86	83	77	I S 71
10	70	J S 66	J S 62	60	54	53	U S 64	U S 83	95	93	92	101	U R 111	J S 125	129	S 147	S 158	148	S 147	I S 140	I S 134	S	S	S
11	J S 88	S 73	S 71	69	60	51	58	76	U S 85	88	94	92	111	112	124	132	U S 138	136	136	J S 127	U S 116	S	S	S
12	S	S	S	S	J S 64	U S 46	57	76	85	C	C	C	C	107	116	J S 121	127	J S 124	J S 120	U S 103	J S 87	71	S 69	S 68
13	71	S 69	67	C	C	C	61	80	92	84	89	109	114	115	J S 123	129	136	133	J S 128	J S 125	U S 102	U S 74	67	S 69
14	U S 74	U S 73	C	C	I C 40	U C 40	J C 53	80	94	114	109	110	112	115	109	109	104	S 101	109	S 88	S 78	S 79	I S 82	S 78
15	67	S 71	65	68	C 45	S 38	56	80	94	S 95	93	108	119	128	124	112	107	108	113	S	70	S 60	60	62
16	67	68	69	62	48	35	S 46	78	S 98	82	77	96	103	97	97	109	115	111	102	82	58	55	55	56
17	55	57	57	59	50	33	S 47	79	S 98	93	83	96	111	114	126	131	141	S 153	144	115	I S 91	I S 68	S 61	57
18	56	55	56	54	48	47	53	83	103	91	88	100	114	126	136	147	J S 164	S 168	S 154	J S 132	S	94	S 84	75
19	S 80	I S 73	61	65	60	35	49	83	89	88	97	S 118	107	C 112	C 121	I C 122	I C 119	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	101	103	101	110	124	125	141	142	140	140	J S 131	S	J S 88	S 65	S 65
21	67	S 61	55	56	52	53	68	I S 103	S 101	94	103	116	U S 122	133	134	133	130	S 127	J S 125	I S 114	76	64	S 59	57
22	J S 53	F	56	57	48	44	J S 51	U S 90	S 95	88	103	S 128	138	127	129	133	144	J S 153	J S 154	I S 151	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	144	138	144	U S 153	147	J S 151	U S 148	S	S	S	S
24	S	S	U S 86	I S 72	S 50	U S 49	U S 61	87	96	95	103	128	134	133	132	127	J S 123	112	113	J S 107	U S 79	U S 71	C	C
25	C	C	C	C	C	C	C	C	C	S 100	94	116	U S 136	142	140	141	U S 138	141	141	J S 127	S 84	U S 84	I S 78	J S 75
26	U S 73	S 61	57	59	53	42	J S 51	I S 92	89	89	90	100	117	124	130	128	126	J S 121	S 120	S 99	S 84	83	I S 84	S 85
27	S 75	J S 74	67	54	49	49	58	I S 94	108	113	111	S 117	127	142	145	150	145	U S 138	J S 123	S 103	I S 99	J S 89	S 83	86
28	79	I S 73	62	59	56	56	U S 65	I S 96	S 105	100	108	124	125	127	124	123	S 125	127	S 119	101	S 83	S 83	J S 90	I S 80
29	S 74	J S 76	S 70	66	S 48	42	48	83	I S 102	116	101	107	123	142	146	143	S 137	J S 138	135	S 126	97	I S 92	S 84	S 71
30	68	S 74	73	67	54	40	J S 52	S 85	S	97	102	115	135	146	147	144	137	127	126	S 107	J S 84	74	69	S 72
31																								
	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	25	24	25	24	26	26	27	27	26	28	28	28	28	30	30	30	30	29	29	27	25	24	23	24
MED	70	S 70	65	60	52	48	S 60	83	93	92	94	104	112	120	124	128	126	127	120	S 107	S 84	S 76	S 71	S 72
UQ	S 74	S 74	69	66	58	53	S 64	S 89	S 96	99	103	116	122	128	134	141	141	140	S 136	S 126	S 96	S 84	S 82	S 76
LQ	67	61	57	56	48	42	52	80	85	84	86	94	103	107	109	111	113	110	108	S 99	S 78	S 70	66	S 64

SEP. 1970 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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 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		A	A	A	U L 540	A	550	L 530	L 510	L	A					
2								L	L	L	L	L 560	A	H 530	L	L 550	L 490	L						
3									L	L	L	L	L	L 580	L 520	A	A	A	A					
4								L	370	L	L	L 570	530	560	550	A	A	A	A					
5								L	L	L	L 500	L	L 500	H 540	A	A	L	L	L					
6									A	L	440	L	550	A	A	L	L	L 440	L 340					
7									L	L	A	L	L 550	L	L	L 550	L	A						
8									L	A	U L 500	L 530	L	L	L	L	L	L						
9									L	L	L	L 590	U L 560	L	A	L 560	L	A						
10										L	A	L	L	A	L	L	L	L						
11									L	L	L	L	A	A	L 590	A	L	A						
12									L	C	C	C	C	L	560	L	L	L						
13									L	L	L	C	C	C	C	C 500	L							
14										C	C	L	A	L 540	520	L	L	A						
15								L	L	L	L	L	A	520	500	L	L	L						
16									L	A	L	L 530	540	540	L	L 520	490	A						
17								L 330	L	L 400	L	L	L	L	530	L	L	L						
18									L	L	L	L	L 540	L 500	L	L	L	L						
19									A	L	L	L	L	L 590	L	C	C	C						
20								C	C		L	L	L	L 570	L	L 520	L	L						
21									L	L	L	U L 560	L	L 590	A	L	L							
22										L	L	U L 570	L	L	L	A	L							
23								C	C	C	C	C	C	L	L	L	A							
24										L	A	A	L	L	L	L	L							
25								C	C	L	L	U L 510	L	L	L	L	L	L						
26										L	L	L	L	A	L	L	L							
27									L	L	L	L	L	L	L	L	L							
28										L	L	L	L	L 520	L	L	L	L						
29									L	L	L	L	L	L 560	L	L	L	L						
30									L	L	L	L	L	L 530	L	L	L							
31																								
	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	1	3	8	8	14	8	7	3	1	1					
MED								330	370	400	500	560	540	540	540	530	490	440	340					
UQ											500	570	550	570	555	550	500							
LQ											470	530	535	530	520	520	490							

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SEP. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

SEP. 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 250	300	335	350	365	365	A	A	A	330	295	A						
2							S A 290	325	350	355	A	R	I A 375	I A 360	330 H	290	A							
3							S 250	300	330	350	375	370	A	A	A	A	A	A						
4							S A 290	325	345	370	370	R 390	370	350	320	280	200							
5							B 220	290	320	350	360	A	A	A	A	330	270	A						
6							A A	A 330	I A 345	A	A	R 370	350	340	325	290	A							
7							S 250	310	330	A	A	A	A	365	350	330	300	A						
8							S 250	305	335	365	I A 375	385	390	365	360	330	I A 285	205						
9							S 230	310	335	355	370	370	360	A	A	A	A	A						
10							S 230	300	I C 335	360	365	360	I A 360	355	340	A	A	A						
11							S A	300	R 325	360	350	355	355	A	A	A	A	A						
12							S 260	280	C	C	C	C	A	A	340	A	A	A						
13							C 250	300	A	C	C	C	C	C	A	C	250	C						
14							C C	A	A	C	C	A	380	360	340	310	255	160						
15							S A	A	A	A	A	A	A	A	A	310	250	A						
16							S 230	A	A	A	A	350	360	I A 355	I A 335	310	260	A						
17							S 200	265	290	300	A	A	I A 355	350	340	300	250	A						
18							S 230	270	295	A	A	A	370	I A 355	340	I A 295	I A 240	170						
19							S 250	300	330	350	365	355	I A 360	A	C	C	C	C						
20							C C	C	330	340	360	370	360	350	I A 335	300	250	A						
21							S 220	270	320	335	355	350	340	360	350	310	260	S						
22							S 200	290	335	350	365	380	380	360	325	I A 295	250	A						
23							C C	C	C	C	C	C	380	370	340	290	A	A						
24							S 230	300	330	340	345	I R 370	I A 370	360	345	310	250	A						
25							C C	C	315	I A 350	I R 370	380	I A 380	365	350	300	A	A						
26							S 240	295	I C 330	350	370	380	370	365	340	A	A	A						
27							S 230 H	290 H	330	355	370	375	375	360	340	300	240	S						
28							S 250	305	340	355	365	365	360	350	330	300 H	250 H	S						
29							S 210	300	330	350	370 H	A	A	R	330	I A 305	250	A						
30							S 220	290	320 H	340	350	360	360	350	335	290 H	250 H	A						
31																								
	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	23	24	22	20	18	21	20	22	22	21	4					
MED								230	300	330	350	365	370	370	360	340	310	250	185					
UQ								250	300	332	355	370	375	380	365	350	325	280	202					
LQ								220	290	322	345	358	360	360	352	335	300	250	165					

SEP. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

SEP. 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

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 31	J X 24	24	17	E	E S 15	21	32	40	49	J X 60	J X 65	45	J X 94	J X 50	J X 39	G 28	J X 30	J X 66	J X 60	J X 80	J X 30	J X 27	E S 15
2	E S 15	J X 23	J X 23	25	J X 22	E S 15	16	25	40	J X 55	42	46	J X 62	G 38	42	42	G 29	G 24	24	J X 25	J X 29	J X 29	J X 25	25
3	J X 39	J X 30	J X 29	J X 38	J X 29	J X 21	J X 22	J X 29	33	35	40	50	46	50	J X 52	J X 71	M 69	J X 57	J X 45	J X 51	J X 61	J X 30	J X 30	J X 24
4	J X 23	E S 14	E S 15	E B 13	E	E S 15	J X 33	J X 32	32	36	42	46	J X 61	46	49	J X 66	J X 55	J X 56	J X 69	J X 49	J X 48	J X 82	J X 41	J X 61
5	J X 47	J X 29	J X 31	J X 24	19	E B 15	E B 15	28	J X 42	46	49	56	J X 64	45	J X 69	J X 91	G	G 20	J X 25	18	J X 32	J X 26	J X 40	J X 27
6	J X 53	J X 61	J X 77	J X 39	J X 39	J X 34	J X 26	J X 37	J X 88	37	J X 42	J X 51	50	90	74	83	J X 60	G 18	J X 23	J X 64	J X 54	J X 29	J X 24	19
7	J X 19	E S 16	E S 15	J X 24	E B 11	E S 15	19	31	G 27	41	52	J X 59	J X 52	46	39	39	39	J X 51	49	20	J X 61	J X 34	J X 36	J X 30
8	J X 24	23	E S 15	E B 15	E B 12	E S 14	19	27	32	J X 61	40	47	J X 62	50	J X 93	G 33	G	J X 30	23	J X 35	J X 64	J X 61	J X 75	J X 39
9	J X 39	J X 24	J X 24	J X 26	J X 24	E B 11	19	29	34	35	43	41	38	J X 46	J X 112	J X 66	J X 46	J X 49	J X 51	J X 32	J X 35	J X 25	E S 15	25
10	E S 15	E S 13	E B 11	E B 11	E B 11	E S 12	J X 20	29	36	45	J X 58	J X 74	J X 69	J X 62	49	40	J X 54	31	26	J X 24	J X 36	J X 36	J X 25	J X 19
11	E S 15	E S 15	E B 15	E B 13	J X 26	J X 33	J X 37	J X 37	J X 34	G 28	G	47	J X 70	J X 63	J X 68	J X 74	J X 48	J X 73	J X 63	J X 36	J X 30	J X 38	J X 26	J X 42
12	J X 50	25	E	E	E B 11	E S 15	E S 15	J G 25	33	C	C	C	C	J X 41	J X 42	35	J X 43	J X 37	J X 37	J X 36	J X 33	25	25	E C 28
13	E C 24	E C 23	E C 23	E C 24	E C 22	E C 22	E C 17	G	G	40	E C 54	E C 60	E C 60	E C 60	E C 60	J X 35	E C 27	J X 37	J X 38	E C 24	E C 22	25	J X 38	J X 29
14	E C 23	E C 23	E C 27	E C 29	E C 23	E C 26	E C 23	25	32	34	E C 59	J X 91	86	42	G 29	G	G	J X 64	J X 50	J X 45	J X 41	J X 31	J X 50	J X 29
15	J X 22	J X 24	E S 15	E	E S 15	14	J X 24	J X 33	34	M 35	J X 50	G 36	185	39	J X 62	J X 42	J G 29	36	J X 38	71	J X 88	80	J X 51	J X 29
16	J X 22	E S 15	E S 13	18	E B 11	E S 15	19	27	32	J X 59	37	J X 46	G 35	G 32	J X 37	J X 44	38	J X 74	26	J X 33	J X 51	J X 43	J X 29	J X 21
17	J X 33	J X 31	E S 15	E B 11	J X 21	E B 13	E S 15	G	30	32	32	37	50	49	39	35	34	36	J X 33	J X 29	J X 25	M 43	J X 41	J X 36
18	J X 33	J X 31	J X 24	J X 19	E S 13	E S 15	E S 14	G	33	36	42	95	41	42	39	42	J X 60	J X 35	G 15	E S 15	18	E S 15	J X 64	J X 54
19	J X 62	J X 27	J X 30	J X 21	E B 11	E S 15	27	34	40	42	40	42	39	J C 41	J C 44	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	37	37	G 36	J G 35	40	43	J X 36	J X 31	J X 30	J X 34	J X 25	E S 15	J X 41	J X 28	J X 22
21	E S 16	E S 15	J X 24	J X 27	18	18	20	30	J X 49	40	67	38	39	49	J X 59	G	42	J X 61	J X 25	J X 37	J X 39	J X 51	J X 27	J X 83
22	J X 75	J X 32	E B 11	18	19	23	22	26	31	35	42	43	43	46	J X 49	J X 62	J X 44	J X 40	J X 29	J X 36	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	42	39	44	J X 54	J X 59	J X 50	J X 83	J X 36	J X 21	J X 29	J X 26
24	J X 31	J X 26	J X 21	20	E B 11	E S 15	18	27	37	38	J X 67	J X 55	43	39	40	43	J X 45	J X 37	J X 43	J X 43	J X 36	J X 25	C	C
25	C	C	C	C	C	C	C	C	C	37	J X 38	G 37	G	40	40	G	36	J X 37	22	J X 27	E S 15	24	E S 14	E S 11
26	J X 23	J X 24	J X 20	J X 19	J X 20	E S 15	E S 13	29	35	43	48	56	47	61	45	39	J X 39	J X 37	J X 39	J X 39	J X 39	25	J X 21	25
27	E S 15	E S 15	E B 11	E	E	19	J X 25	34	34	36	39	G 32	40	40	G	G 26	G	32	20	E S 15	E S 15	E S 11	E S 15	E S 11
28	E S 15	E S 15	E B 11	E	E B 11	E S 15	E S 13	29	G	J X 54	46	40	45	41	40	J G 24	G	30	21	M 57	J X 36	J X 35	E S 15	J X 19
29	E S 15	E S 15	E S 15	E S 12	E	E S 14	E S 15	G	G	36	38	G	41	38	G 35	J X 37	J X 43	J X 43	J X 35	J X 41	J X 31	J X 36	J X 26	E S 17
30	E S 15	E S 13	E B 11	E	E	E S 11	J X 26	J X 25	31	34	40	42	42	G	G	G 23	G 18	G 17	J X 24	J X 31	J X 21	25	E S 13	23
31																								
	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	27	27	27	27	27	27	27	27	28	28	28	28	30	30	29	29	29	29	29	28	28	27	27
MED	J X 23	23	E S 15	18	E S 13	E S 15	19	29	33	37	42	46	46	43	43	39	39	J X 37	J X 34	J X 36	J X 36	J X 30	J X 27	J X 25
UQ	J X 36	J X 26	J X 24	J X 23	21	E E 18	J X 29	32	36	44	50	56	62	50	J X 56	J X 44	J X 46	J X 51	J X 45	J X 45	J X 50	J X 40	J X 39	J X 30
LQ	E S 16	E S 15	E S 14	E S 12	E B 11	E S 14	E E 16	25	32	35	40	39	40	40	39	35	G 28	30	24	J X 25	J X 27	25	J X 24	20

SEP. 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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 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	17	19	16	E	E	E_{15}^{S}	18	28	37	48	58	61	E_{45}^{R}	88	50	39	$^{G}28$	21	63	31	60	20	E	E_{15}^{S}
2	E_{15}^{S}	E	E	E	14	E_{15}^{S}	S	25	39	50	42	46	56	E_{38}^{R}	41	42	$^{G}28$	$^{G}24$	22	E	25	21	25	E
3	25	30	28	25	19	18	18	15	G	G	40	50	44	49	48	63	54	51	42	35	51	30	19	16
4	19	E_{14}^{S}	E_{15}^{S}	E_{13}^{B}	E	E_{15}^{S}	18	26	G	35	40	44	50	46	49	64	50	44	50	46	22	24	40	49
5	19	16	22	14	E	E_{15}^{B}	E_{15}^{B}	G	32	42	47	47	44	44	61	58	G	$^{G}20$	20	E	25	19	37	20
6	22	43	49	20	30	30	18	33	42	36	40	50	50	83	72	49	41	$^{G}16$	21	25	20	E	19	E
7	E	E_{16}^{S}	E_{15}^{S}	17	E_{11}^{B}	E_{15}^{S}	18	G	$^{G}26$	39	52	59	50	45	39	E_{39}^{R}	36	46	41	19	14	27	33	25
8	19	20	E_{15}^{S}	E_{15}^{B}	E_{12}^{B}	E_{14}^{S}	S	G	G	61	39	45	44	E_{50}^{R}	51	$^{G}33$	G	29	G	23	40	53	24	38
9	29	15	21	20	22	E_{11}^{B}	S	G	G	G	42	41	E_{38}^{R}	45	A	47	40	42	33	25	23	21	E_{15}^{S}	17
10	E_{15}^{S}	E_{13}^{S}	E_{11}^{B}	E_{11}^{B}	E_{11}^{B}	E_{12}^{S}	S	26	35	36	58	48	54	56	47	40	53	29	23	15	23	21	20	E
11	E_{15}^{S}	E_{15}^{S}	E_{15}^{B}	E_{13}^{B}	20	26	30	28	23	$^{G}27$	G	47	62	63	50	60	41	50	52	30	20	34	24	38
12	45	E	E	E	E_{11}^{B}	E_{15}^{S}	E_{15}^{S}	$^{G}24$	G	C	C	C	C	41	42	32	40	E_{37}^{R}	E_{37}^{C}	E_{36}^{C}	E_{33}^{C}	E_{25}^{C}	E_{25}^{C}	E_{28}^{C}
13	E_{24}^{C}	E_{23}^{C}	E_{23}^{C}	E_{24}^{C}	E_{22}^{C}	E_{22}^{C}	E_{17}^{C}	G	G	40	E_{54}^{C}	E_{60}^{C}	E_{60}^{C}	E_{60}^{C}	E_{60}^{C}	E_{35}^{C}	E_{27}^{C}	E_{37}^{C}	E_{38}^{C}	E_{24}^{C}	E_{22}^{C}	E_{25}^{C}	E_{38}^{C}	26
14	E_{23}^{C}	E_{23}^{C}	E_{27}^{C}	E_{29}^{C}	E_{23}^{C}	E_{26}^{C}	E_{23}^{C}	E_{25}^{C}	E_{32}^{C}	E_{34}^{C}	E_{59}^{C}	60	60	42	$^{G}29$	G	G	45	25	32	24	19	26	24
15	E	15	E_{15}^{S}	E	E_{15}^{S}	14	16	26	32	32	36	E_{36}^{R}	61	E_{39}^{R}	49	38	$^{G}22$	G	26	47	50	50	32	22
16	18	E_{15}^{S}	E_{13}^{S}	E	E_{11}^{B}	E_{15}^{S}	S	G	30	51	36	44	$^{G}33$	$^{G}32$	36	40	37	42	23	30	36	34	20	E
17	25	E	E_{15}^{S}	E_{11}^{B}	15	E_{13}^{B}	E_{15}^{S}	G	G	G	E_{32}^{R}	37	40	48	39	32	33	32	33	23	19	22	21	19
18	25	27	19	E	E_{13}^{S}	E_{15}^{S}	E_{14}^{S}	G	31	35	41	43	39	39	39	40	30	25	$^{G}15$	E_{15}^{S}	E	E_{15}^{S}	35	24
19	42	17	25	15	E_{11}^{B}	E_{15}^{S}	S	G	37	37	40	41	E_{39}^{R}	$^{C}41$	$^{C}42$	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	36	37	$^{G}27$	$^{G}30$	40	39	34	25	19	25	E	E_{15}^{S}	23	21	19
21	E_{16}^{S}	E_{15}^{S}	E	E	E	E	S	G	31	35	42	E_{38}^{R}	E_{39}^{R}	49	48	G	41	60	21	35	37	29	15	54
22	38	26	E_{11}^{B}	E	E	13	S	25	G	G	41	42	43	45	45	60	35	23	23	25	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	41	39	42	48	40	25	51	24	E	21	19
24	24	22	16	E	E_{11}^{B}	E_{15}^{S}	S	25	35	37	64	54	43	E_{39}^{R}	40	41	42	33	43	41	30	20	C	C
25	C	C	C	C	C	C	C	C	C	36	E_{38}^{R}	$^{G}34$	G	39	39	G	33	28	20	17	E_{15}^{S}	E	E_{14}^{S}	E_{11}^{S}
26	E	E	E	E	E	E_{15}^{S}	E_{13}^{S}	G	G	40	45	50	46	60	42	37	34	33	E_{39}^{S}	22	21	E	E	E
27	E_{15}^{S}	E_{15}^{S}	E_{11}^{B}	E	E	E	16	32	G	36	38	$^{G}29$	E_{40}^{R}	40	G	$^{G}26$	G	32	20	E_{15}^{S}	E_{15}^{S}	E_{11}^{S}	E_{15}^{S}	E_{11}^{S}
28	E_{15}^{S}	E_{15}^{S}	E_{11}^{B}	E	E_{11}^{B}	E_{15}^{S}	E_{13}^{S}	27	G	41	45	40	44	41	39	$^{G}20$	G	G	17	28	25	22	E_{15}^{S}	E
29	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}	E	E_{14}^{S}	E_{15}^{S}	G	G	G	G	G	41	38	E_{35}^{R}	31	39	22	23	20	25	29	22	E_{17}^{S}
30	E_{15}^{S}	E_{13}^{S}	E_{11}^{B}	E	E	E_{11}^{S}	26	20	G	G	38	42	40	G	G	$^{G}23$	$^{G}18$	$^{G}15$	20	E	E	E	E_{15}^{S}	E
31																								
	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	27	27	27	27	27	18	27	27	28	28	28	28	30	30	29	29	29	29	29	28	28	27	27
MED	18	E_{15}^{S}	E_{15}^{E}	E_{11}^{E}	E_{11}^{B}	E_{15}^{S}	16	18	E_{23}^{G}	36	40	44	44	42	42	39	34	30	24	24	24	22	20	18
UQ	24	20	18	E_{15}^{E}	E_{15}^{E}	E_{15}^{S}	18	26	32	40	45	50	50	48	49	42	41	42	36	32	30	28	26	24
LQ	E_{15}^{S}	E_{14}^{S}	E_{11}^{E}	E	E	E_{14}^{S}	E_{15}^{S}	G	G	28	38	39	40	39	39	29	$^{G}24$	22	21	16	18	17	15	E_{11}^{E}

SEP. 1970 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

SEP. 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

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 S 15	13	E S 15	E	E S 15	E S 15	E S 15	15	16	20	20	20	20	20	16	14	11	14	E S 13	E S 14	E S 15	E S 15	E S 15
2	E S 15	E S 11	11	14	E	E S 15	E S 15	E S 15	15	16	21	21	20	21	24	21	16	15	14	E S 14	E S 15	E S 15	E S 13	E S 15
3	E S 15	12	E	E	E	E S 15	E S 15	11	15	15	15	16	21	25	23	20	16	11	11	E S 15	E S 14	E S 15	E S 15	E S 14
4	E S 15	E S 14	E S 15	13	E	E S 15	E S 15	E S 14	15	15	15	20	20	20	20	15	15	11	15	11	12	E S 15	E S 13	E S 13
5	E S 13	E S 14	11	11	14	15	15	E S 14	15	20	20	20	22	21	24	23	17	16	11	E S 15	E S 15	E S 15	E S 15	E S 14
6	E S 15	E S 13	E	E	14	E	E S 11	13	15	17	20	20	23	23	21	20	16	11	E	E S 11	E S 15	E S 15	E S 15	E S 15
7	E S 15	E S 16	E S 15	11	11	E S 15	E S 14	E S 15	14	20	20	22	22	23	23	20	20	11	14	11	E S 11	E S 14	E S 15	E S 15
8	E S 15	E S 15	E S 15	15	12	E S 14	E S 15	E S 15	15	17	21	22	23	23	21	20	18	11	11	E	E S 11	E S 11	E S 15	E S 15
9	E S 15	E S 13	E S 15	E S 12	11	11	E S 15	E S 15	11	11	18	20	22	22	23	20	16	11	E S 15	E S 13	E S 13	E S 13	E S 15	E S 15
10	E S 15	E S 13	11	11	11	E S 12	E S 15	E S 15	11	E C 34	18	21	21	22	20	16	15	11	E S 14	E S 11	E S 15	E S 15	E S 15	E S 15
11	E S 15	E S 15	15	13	11	E S 15	E S 15	11	11	15	20	21	22	22	22	20	20	14	11	E S 15	E S 13	E S 15	E S 15	E S 15
12	E S 15	E S 15	E	E	11	E S 15	E S 15	E S 15	16	C	C	C	C	23	21	17	15	17	E C 22	E C 17	E C 23	E C 17	E C 22	E C 28
13	E C 24	E C 23	E C 23	E C 24	E C 22	E C 22	E C 17	E C 21	E C 27	E C 25	E C 54	E C 60	E C 60	E C 60	E C 60	E C 27	E C 27	E C 23	E C 24	E C 24	E C 22	E C 23	E C 22	E C 22
14	E C 23	E C 23	E C 27	E C 29	E C 23	E C 26	E C 23	E C 22	E C 25	E C 22	E C 59	E C 36	19	20	20	16	15	15	E S 15	E S 12	E S 14	E S 13	E S 15	E S 15
15	E S 15	E S 11	E S 15	E	E S 15	E S 11	E S 15	E S 15	15	E C 17	20	20	22	20	20	15	15	11	13	E S 15	E S 14	E S 15	E S 15	E S 15
16	E S 15	E S 15	E S 13	E	11	E S 15	E S 15	E S 15	14	16	20	24	21	17	19	19	14	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
17	E S 15	E S 14	E S 15	11	E	13	E S 15	E S 15	11	15	15	16	17	20	16	15	15	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
18	E S 15	E S 15	E S 15	E S 15	E S 13	E S 15	E S 14	E S 13	15	15	20	19	19	19	19	15	15	14	11	E S 15	E S 15	E S 15	E S 15	E S 15
19	E S 15	E S 12	11	E	11	E S 15	E S 15	E S 15	15	16	20	20	20	C 19	C 17	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	17	15	18	19	E S 24	19	16	11	11	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
21	E S 16	E S 15	E S 14	E	E	E S 15	E S 15	E S 14	14	E C 26	16	19	20	20	20	16	15	11	E S 15	E S 15	E S 11	E S 15	E S 12	E S 15
22	E S 15	E S 15	11	E S 15	11	11	E S 15	E S 15	11	15	17	20	22	20	17	16	11	11	E S 12	E S 15	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	17	19	15	14	11	11	E S 15	E S 15	E S 15	E S 15	E S 15
24	E S 15	E S 11	11	11	11	E S 15	E S 15	E S 15	F S 15	20	20	19	18	16	16	15	11	E S 15	E S 15	E S 15	E S 15	E S 15	C	C
25	C	C	C	C	C	C	C	C	C	15	16	16	19	18	20	16	16	11	E S 14	E S 12	E S 15	E S 15	E S 14	E S 11
26	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 13	E S 15	11	E C 36	16	19	20	20	20	15	16	15	E	E S 14	E S 15	E S 15	E S 15	E S 15
27	E S 15	E S 15	11	E	E	E S 11	E S 15	11	15	19	16	20	20	20	19	15	15	12	E S 15	E S 15	E S 15	E S 15	S E 15	E S 11
28	E S 15	E S 15	11	E	11	E S 15	E S 13	E S 15	E S 15	15	17	19	17	17	20	16	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
29	E S 15	E S 15	E S 15	E S 12	E	E S 14	E S 15	E S 15	15	17	20	20	20	20	17	16	15	E S 15	11	E S 15	E S 11	E S 14	E S 13	E S 17
30	E S 15	E S 13	11	E	E	E S 11	E S 15	E S 15	11	15	16	19	20	23	20	19	15	11	11	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
31																								
	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	27	27	27	27	27	27	27	27	28	28	28	28	30	30	29	29	29	29	29	28	28	27	27
MED	E S 15	E S 15	E E 13	E E 11	E E 11	E S 15	E S 15	E S 15	14	16	19	20	20	20	20	16	15	11	E E 14	E S 15	E S 15	E S 15	E S 15	E S 15
UQ	E S 15	E S 15	E S 15	E E 14	12	E S 15	E S 15	E S 15	15	18	20	20	22	22	21	20	16	14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
LQ	E S 15	E S 13	11	E	E	E S 12	E S 15	E S 14	12	15	16	19	20	20	19	15	15	11	11	E S 13	E S 14	E S 15	E S 15	E S 15

SEP. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

SEP. 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	270 S	255 S	260	260	260	270	300 S	340	320	305	315	290 B	290	290	280	280	280	295	280	285 S	285 S	300 S	305	270
2	275	275	265	255	260	275	J S 310	J S 330	310	300	285	285	285	295	280	280	290	295	300	305 S	I S 285	265 S	255 S	265 S
3	265 S	280	280	285	260	260 S	315	355	330	310	320	295	285	270	280	280	290	310	305	320 S	275	250 S	245	245 S
4	260	295	310	265	275	300	330 S	325 S	330	315	285	285	285	290	290	290	290	305	295	I S 305	295 S	260 S	275	255 S
5	265	285	I S 270	265 S	270	U S 285 S	315	320	I S 315 S	310	295	280	265	275	275	J S 280	290	315 S	285	S	255 S	265	270 S	275
6	285 S	280 S	290 S	290	275	295	J S 310 S	350 S	330 S	325	295 H	290	280	275	275 S	280	285	300	J S 300	295	280	265	270	285 S
7	285	J S 280	290	285	285	285	310	345	335	320	305 B	280	295	290	295	285	305	295	J S 300	U S 305 S	I S 290	S	S	J S 295 S
8	285	280	275	280	285	300	315 S	U S 345	330	320	315	U B 300	290	295	280	285	290	290	U S 290	U S 320	J S 300	295	275	270
9	280	275	I S 265	265	I S 285	I S 290	U S 320	345	340	350	300	295	295	295	I A 285	290	305	300	305	J S 310	300 S	290	285	I S 280
10	285	J S 285	J S 295 S	290	270	285	U S 315	U S 340	325	325	290	290	U B 275	J S 275	275	285 S	295 S	285	300 S	I S 290	I S 285	S	S	S
11	J S 285 S	270 S	275 S	300	305	325	330	335	U S 345 S	315	310	285	290	280	285	295	U S 295 S	300	305	J S 305 S	U S 305 S	S	S	S
12	S	S	S	S	J S 290	U S 315	330	340	345	C	C	C	C	270	285	J S 290	295	J S 315	J S 320	U S 310	J S 305 S	285	280 S	280 S
13	285	305 S	310	C	C	C	330	345	345	335	285	290	285	280	J S 295 S	300	300	310	J S 300	J S 315	U S 325	U S 255	255	270 S
14	U S 290	U S 300	C	C	I C 265	U C 265	J C 300	325	300	305	295	285	290	295	280	295	295	315 S	320	305 S	285 S	270 S	I S 270	250 S
15	250	250 S	245	305	C	265 S	285	315	320	295 S	270	280	280	295	300	295	290	310	315	S	275	265 S	265	260
16	270	280	305	305	310	255	295 S	325	355 S	330	285	300	300	300	280	285	305	325	325	315	295	275	275	270
17	270	285	300	330	320	265	295 S	335	330 S	320	315	270	285	280	285	290	290	305 S	325	325	I S 300	I S 270	265 S	265
18	285	275	285	295	270	275	300	325	330	325	320	285	285	285	285	290	J S 300	310 S	315 S	J S 320	S	285	285 S	275
19	280 S	I S 280	265	280	315	255	285	C	350	320	300	305 C	290	285 C	280 C	I C 290	I C 295	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	320	310	285	275	280	280	290	295	305	315	J S 295	S	J S 250	255 S	265 S
21	270	270 S	260	280	275	285	295	I S 340	325 S	315	295	300	U S 285 S	290	295	295	300	310 S	J S 310	I S 330	310	290	275 S	280
22	J S 245 S	F	285	295	280	295	J S 300	U S 355	340 S	320	290	300 S	310	295	285	285	295	J S 305	J S 310	I S 310	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	295	285	285	U S 290	305	J S 305	U S 315	S	S	S	S
24	S	S	U S 285	I S 285	270 S	U S 295	U S 325	340	325	330	285	295	295	295	295	290	J C 300	315 C	315	J C 310	U C 305	U C 290	C	C
25	C	C	C	C	C	C	C	C	C	345 S	295	290	U S 295	295	290	285	U S 285 S	300	310	J S 325	285 S	U S 255	I S 290	J S 285
26	U S 305 S	300 S	275	290	315	300	J S 295	I S 350 S	350	335	310	280	280	290	285	290	300	J S 305 S	325 S	305 S	285 S	275	I S 285	295 S
27	295 S	J S 300	290	285	280	285	295	I S 330	335	325	315	290 S	285	285	280	290	295	U S 300	J S 315	295 S	I S 295	J S 275	275 S	285
28	290	I S 290	275	275	275	265	U S 275	I S 325	335 S	310	295	290	280	290	290	295	300 S	310	315 S	325	290 S	275 S	J S 270	I S 275
29	270 S	J S 265	270 S	315	315 S	295	310	345	I S 330 S	325	315	285	280	290	290	285	285 S	J S 300	310	310 S	305	I S 270	260 S	265 S
30	265	290 S	300	320	325	285	J S 305 S	330 S	S	320	295	280	285	285	280	290	290	290	315	325 S	J S 300	285	265	270 S
31																								
	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	25	24	25	24	25	26	27	26	26	28	28	28	28	30	30	30	30	29	29	27	25	24	23	24
MED	280	280 S	280	285	280	285	310 S	340	330	320	295	290	285	290	285	290	295	305	310	310 S	295 S	272 S	270 S	270 S
UQ	285	290 S	290	298	305	295	315	345	340	325	312	295	290	295	290	290	300	310	315	320 S	300 S	285	278 S	280 S
LQ	270	275 S	270	278	270	265	295	325	325	312	290	285	280	280	280	285	290	300	300	305 S	285 S	265 S	265 S	265 S

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

IONOSPHERIC DATA

SEP. 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		A	A	A	U L 350	A	A	L 340	L 335	L	A					
2								L	L	L	L	L 340	A	H 355	L	L 330	L 345	L						
3									L	L	L	L	L	L 335	A	A	A	A	A					
4								L	395	L	L	L 345	A	355	345	A	A	A	A					
5								L	L	L	A	L	L H 400 370		A	A	L	L	L					
6									A	L	410	L	A	A	A	L	L	L 385	395					
7									L	L	A	L	L 345	L	L	L 330	L	A						
8									L	A	U L 375	L 375	L	L	L	L	L	L						
9									L	L	L	L 340	U L 350	L	A	A	L	A						
10										L	A	L	L	A	L	L	L	L						
11									L	L	L	L	A	A	A	A	L	A						
12									L	C	C	C	C	L	345	L	L	L						
13									L	L	L	C	C	C	C	C 380	L							
14										C	C	L	A	L 340	355	L	L	A						
15								L	L	L	L	L	A	350	A	L	L	L						
16									L	A	L	L 360	L 350	L 350	L	L 340	L 345	A						
17								L 395	L	L 425	L	L	L	L	345	L	L	L						
18									L	L	L	L	L 350	L 360	L	L	L	L						
19									A	L	L	L	L	C 340	L	C	C	C						
20								C	C		L	L	L	L 330	L	L 325	L	L						
21									L	L	L	U L 355	L	L 355	A	L	L							
22										L	L	U L 360	L	L	L	A	L							
23								C	C	C	C	C	C	L	L	L	A							
24										L	A	A	L	L	L	L	L							
25								C	C	L	L	U L 390	L	L	L	L	L	L						
26										L	L	L	L	A	L	L	L							
27									L	L	L	L	L	L	L	L	L							
28										L	L	L	L	L 375	L	L	L	L						
29									L	L	L	L	L	L 340	L	L	L	L						
30									L	L	L	L	L	L 360	L	L	L							
31																								
	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	1	2	8	6	14	4	6	3	1	1					
MED								L 395	395	L 425	392	L 358	L 350	L 352	345	L 335	L 345	L 385	L 395					
UQ												L 368	U L 350	L 360	350	L 340	L 345							
LQ												L 342	L 350	L 340	345	L 330	L 340							

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

IONOSPHERIC DATA

SEP. 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 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								240		250	285	300	310	E A 350	340	330	305	275	E A 300					
2								240	245	280	345	340	325	310	325	320	300	270						
3									245	250	295	340	325	340	315	315	295	260	250					
4								230	235	250	290	330	290	320	305	300	300	275	275					
5								245	240	270	260	290	265	335	345	295	280	255	225					
6									250	240	245	320	310	350	340	320	280	270	250					
7									235	255	270	350	305	290	290	330	285	270						
8									240	270	260	270	330	305	315	315	290	290						
9									215	235	330	330	300	300	A	315	280	270						
10										250	270	300	300	330	305	310	290	260						
11									240	230	250	260	330	300	320	300	290	255						
12									230	C	C	C	C	340	315	290	290	260						
13									250	250	310	300	290	305	305	300	280							
14										265	250	320	305	295	300	295	290	270						
15								260	255	255	345	300	325	295	290	295	275	275						
16									235	240	340	295	295	290	340	305	280	250						
17								230	245	240	250	330	305	300	310	300	295	270						
18									245	245	250	320	295	300	300	300	275	250						
19									230	240	C 255	C 270	260	C 305	C 305	C I C 285	I C 280	C						
20								C	C		250	325	300	300	315	295	275	260						
21									225	230	270	290	300	305	270	280	285							
22										230	300	290	275	285	300	300	285							
23								C	C	C	C	C	C	300	290	300	275							
24										230	275	300	280	295	290	295	C 260							
25								C	C	225	250	260	290	275	285	300	280	260						
26										225	240	310	300	300	295	280	255							
27									240	250	250	250	255	300	310	280	270							
28										280	260	280	275	280	295	275	280	250						
29									240	245	230	280	290	295	280	280	275	260						
30									225	245	255	280	290	280	300	280	275							
31																								
	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								6	20	27	28	28	28	30	29	30	30	21	5					
MED								240	240	245	260	300	300	300	305	300	280	260	250					
UQ								245	245	252	292	322	308	308	315	310	290	270	262					
LQ								230	232	238	250	280	290	295	295	290	275	260	250					

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IONOSPHERIC DATA

SEP. 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	300	300	300	295	295	250	240	240	A	A	A	E 250 A	I 245 A	I 210 A	205 H	225 H	240	A	265	E 300 A	245	225	280
2	280	270	280	330	305	275	255	240	240	E 250 A	200 H	E 250 A	A	225 H	225 H	235	230	225	250	250	250	255	300	295
3	300	275	290	250	255	330	250	235	225	220	230	E 250 A	235 H	E 260 A	E 265 A	A	A	A	A	230	A	E 350 A	340	300
4	310	265	240	280	275	250	240	230	220	210 H	205 H	E 240 A	A	E 245 A	270	A	A	A	A	250	230	290	300	A
5	340	290	300	305	285	250	245	235	225	225 H	I 200 A	225 H	220	200 H	A	A	230 H	230	230	210	250	290	320	295
6	290	E 340 A	E 320 A	255	E 300 A	280	245	225	I 235 A	220	200	I 200 A	A	A	A	A	250	225	235	250	260	300	295	265
7	250	260	250	250	250	255	255	230	225	230	A	A	E 270 A	230	200	225	240 H	I 255 A	260	245	250	250	275	260
8	265	300	290	270	265	250	250	225	210	I 220 A	205	210	E 250 A	A	A	210	220 H	225	260	250	250	E 260 A	270	330
9	305	300	325	290	275	260	250	230	220	205	200 H	200	215	230	A	E 270 A	250	I 250 A	255	240	250	250	255	285
10	270	280	250	255	225	255	250	225	230	230	A	E 260 A	A	A	E 250 A	220	E 265 A	235	250	225	240	240	250	255
11	265	290	290	255	240	240	230	210	220	205	220	230	A	A	A	A	E 250 A	A	250	240	225	240	260	270
12	290	260	250	230	200	225	225	215	220	C	C	C	C	230	220	195 H	E 250 A	255	250	255	E 270 C	225	I 275 C	300
13	280	250	255	240	290	275	240	225	240	220	E 270 C	C	C	C	C	230	240	255	250	240	205	275	I 325 C	325
14	265	250	255	250	340	300	260	250	250	225	C	A	A	230	215	220 H	230 H	I 235 A	250	245	245	245	270	320
15	320	320	300	245	240 H	300	280	240	230	200	195 H	195 H	A	215	A	220 H	230	240	250	240	E 300 A	A	330	330
16	295	275	245	210	230	290	250	225	210	I 200 A	190 H	230	225	220	200 H	235	245	I 230 A	240	230	E 250 A	E 305 A	300	300
17	300	290	250	230	205	E 245 B	255	205	205 H	190	195 H	195 H	225 H	A	225	220 H	225 H	245	235	225	205	250	290	300
18	300	300	290	250	265	295	260	220	200 H	200 H	220	220 H	200	205	210 H	E 240 A	230 H	245	225	205	200	235	250	285
19	300	270	300	250	205	270	260	230 C	I 220 A	225 H	200 C	210 C	200	200 C	200 C	I 215 C	I 235 C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	235	200 H	190 H	210 H	205	220 H	230	225 H	230	240	220	200	250	305	300
21	295	290	310	270	250	255	260	225	230	205	200 H	200 H	200 H	E 250 A	I 225 A	225	E 250 A	255	250	225	240	250	255	A
22	E 400 A	350	290	250	220	265	265	210	220	205	E 225 A	215	210	245	E 250 A	A	E 240 A	250	235	220	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	205	220 H	230	A	255	240	240	210	230	275	270
24	250	240	245	220	240	260	250	230	225	215	A	A	230 H	230	230	250	255 C	240 C	250 C	240 C	250 C	255 C	C	C
25	C	C	C	C	C	C	C	C	C	215	205	190	195 H	190 H	225	220	225	250	250	215	200	260	255	260
26	255	240	280	260	220	255	280	215	215	205	225	245	240	I 235 A	230	240	225	245	245	215	250	280	270	255
27	245	245	230	200	250	255	255	235	225	220	220	205	210	205	200 H	200 H	245	250	235	240	220	230	285	260
28	255	250	275	280	250	300	290	230	225	225 H	235	225 H	230 H	205	200 H	235 H	240	240	230	230	230	250	250	255
29	270	265	250	230	200	240	250	225	225	225	215	205 H	195 H	200	195 H	220 H	250	250	240	220	225	245	250	275
30	295	275	245	230	205	245	250	225	225	210	200 H	200 H	190 H	190 H	185 H	230 H	230	245	240	220	210	245	275	290
31																								
	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	27	27	27	27	27	27	27	27	27	23	23	20	24	23	24	27	26	26	29	27	27	27	25
MED	290	275	278	250	250	260	250	225	225	218	202	205	214	214	215	222	235	245	248	240	232	250	275	285
UQ	300	292	292	270	272	285	260	232	230	225	219	224	228	230	226	232	245	250	250	245	250	262	300	300
LQ	265	255	250	235	222	250	250	225	220	205	200 H	200	200	205	202 H	220 H	229	235	235	220	215	245	255	265

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SEP. 1970 | H'F (KM)

IONOSPHERIC DATA

SEP. 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 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	100	100	100	100	E	S	140	125	125	120	120	110	110	105	105	100	100	100	100	100	100	100	100	S
2	S	105	100	100	100	S	125	110	110	110	115	110	105	105	105	105	105	100	100	100	100	100	100	100
3	100	100	100	100	100	95	100	100	150	150	125	115	110	105	105	105	100	105	100	100	100	100	100	95
4	95	S	S	B	E	S	100	100	145	130	125	115	115	150	145	125	125	125	120	115	110	105	100	100
5	100	100	100	100	100	B	B	120	125	115	115	110	105	100	100	100	G	100	100	100	100	100	100	105
6	105	105	100	100	100	100	100	100	100	130	120	100	120	110	110	115	120	100	100	105	105	100	95	95
7	95	S	S	100	B	S	155	150	100	120	115	115	110	110	125	125	130	115	110	105	100	100	100	100
8	100	100	S	B	B	S	100	145	150	115	120	105	125	115	115	105	G	105	160	120	105	105	105	105
9	100	100	100	100	115	B	100	150	150	130	125	130	140	110	105	105	100	100	100	100	100	100	S	100
10	S	S	B	B	B	S	105	125	120	115	110	110	105	105	110	110	105	105	110	100	100	100	100	100
11	S	S	B	B	100	100	100	95	100	100	G	110	105	105	105	100	105	100	100	100	100	100	100	100
12	100	100	E	E	B	S	S	110	110	C	C	C	C	105	100	100	100	100	100	100	100	100	100	C
13	C	C	C	C	C	C	C	G	G	110	C	C	C	C	C	110	C	120	120	C	C	105	105	105
14	C	C	C	C	C	C	C	130	120	115	C	100	100	150	100	G	G	115	110	105	100	100	100	100
15	100	100	S	E	S	120	120	115	110	100	100	100	100	100	100	100	100	140	125	100	100	100	100	100
16	95	S	S	120	B	S	120	165	110	105	105	100	100	100	100	100	140	120	115	105	100	100	100	100
17	100	105	S	B	100	B	S	G	125	120	115	100	110	110	125	100	150	135	100	95	95	100	115	110
18	100	95	95	100	S	S	S	G	115	110	105	110	115	125	120	115	110	110	105	S	100	S	100	100
19	100	100	100	100	B	S	100	C 125	125	125	C 120	C 120	120	C 105	C 105	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	120	125	100	100	120	120	100	100	100	95	95	S	100	95	100
21	S	S	100	100	100	100	140	125	125	115	115	120	110	130	115	G	135	120	110	100	100	100	100	105
22	100	100	B	100	100	95	100	125	125	120	115	115	115	110	110	105	110	105	105	105	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	120	120	115	110	105	105	105	105	100	100	100
24	100	100	100	100	B	S	105	125	120	120	110	110	165	110	140	125	C 120	C 110	C 105	C 100	C 100	C	C	C
25	C	C	C	C	C	C	C	C	C	115	105	100	G	100	115	G	115	105	105	100	S	100	S	S
26	100	100	100	100	100	S	S	140	140	115	115	110	110	105	105	110	105	100	100	100	100	100	100	100
27	S	S	B	E	E	105	100	130	135	140	135	100	140	140	G	100	G	150	130	S	S	S	S	S
28	S	S	B	E	B	S	S	150	G	115	110	115	110	110	110	100	G	145	125	100	100	100	S	100
29	S	S	S	S	E	S	S	G	G	125	125	G	110	110	105	100	100	100	100	100	100	95	95	S
30	S	S	B	E	E	S	100	100	145	130	125	120	120	G	G	105	100	100	125	100	100	100	S	100
31																								
	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	17	15	11	14	10	7	18	23	24	28	25	26	26	28	27	26	23	29	29	26	24	26	22	22
MED	100	100	100	100	100	100	100	125	125	118	115	110	110	110	110	105	105	105	105	100	100	100	100	100
UQ	100	100	100	100	100	102	120	135	138	125	125	115	120	118	118	110	120	120	115	105	100	100	100	100
LQ	100	100	100	100	100	98	100	110	110	115	110	100	105	105	105	100	100	100	100	100	100	100	100	100

The Radio Research Laboratories, Japan

SEP. 1970 | H'ES (KM)

IONOSPHERIC DATA

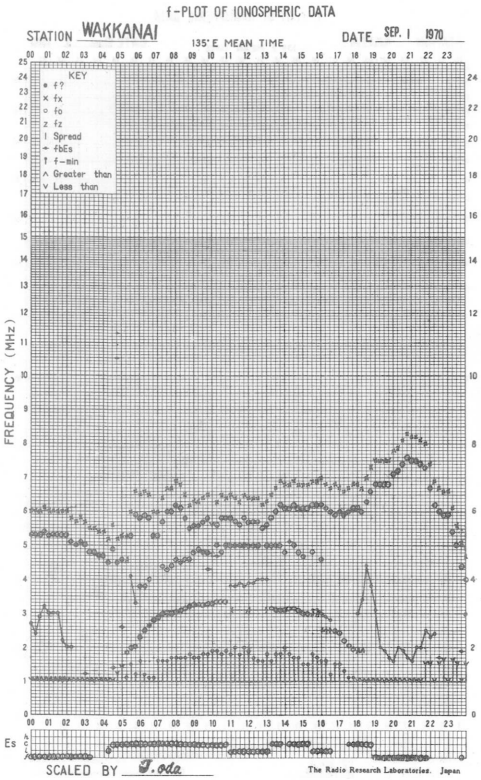
SEP. 1970 | TYPES OF ES | 135° E Mean Time (G. M. T.+ 9h)

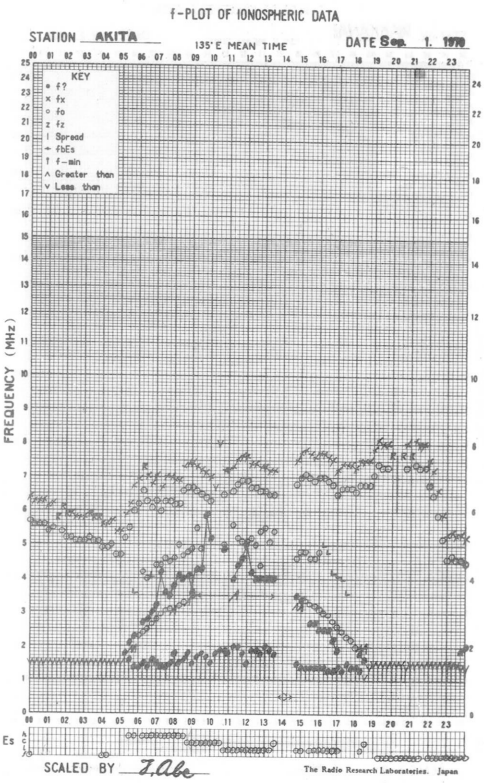
Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

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	F2	F2	F3	F1			H4	H3	H3	C2	C4	CL21	CL11	C2	L121	L2	L2	L2	L5	F3	F3	F2	F1	
2		F1	F1	F2	F1		H1	C3	C2	C4	C1	C2	C3	L1	L1	L2	L1	L1	L1	F2	F8	F5	F6	F1
3	F7	F5	F7	F4	F2	F5	L3	L1	H1	H1	HL11	CL11	CL11	C1	C2	C3	L5	L6	L4	F6	F6	F4	F2	F2
4	F2						L3	L5	H1	H1	HL11	CL11	CL21	HL11	H1	H2	H2	HL31	C4	FF72	F4	F5	F5	F5
5	F3	F1	F4	F1	F1			H2	H2	C1	C2	CL21	CL11	L2	L3	L4		L1	L2	F1	F5	F2	F6	FF21
6	FF24	FF42	FF33	FF33	F5	F8	L4	L7	L2	HL12	CL11	L2	CL11	C2	C3	C2	C2	L1	L2	FF21	F2	FF11	F2	F1
7	F1			F1			H1	H3	L2	CL12	CL11	CL21	C1	C1	H1	H1	H1	C2	L3	F2	F2	F4	F3	F6
8	F1	F1					L1	H1	HL11	C2	C1	L1	H2	C1	C2	L1		L1	H1	FF31	F3	F3	F3	F5
9	F3	F1	F2	F2	F3		L1	HL21	H1	H1	H1	H1	H1	C1	C5	L2	L3	L3	L2	F4	F2	F2		F1
10							L1	HL11	C2	C1	C1	C2	C2	C2	C1	C2	L3	L2	L1	F1	F3	F2	F1	F1
11					F2	F6	L3	L4	L3	L2		C1	C2	C2	L2	L3	L2	L3	L3	F2	F3	F3	F2	F4
12	F5	F2						L1	C2					L2	L2	L2	L3	L1	L1	F1	F1	F1	F1	
13										L1						L1		C1	C1			F2	F2	F2
14								H1	C1	C1		L2	L3	HL11	L1			C4	C6	F4	F4	F3	F4	F3
15	F1	F2				F1	CL41	C4	C3	L2	L1	L1	L3	L1	L2	L2	L2	HL32	HL43	F4	F4	F6	F5	F4
16	F2			F1			C4	HL22	C3	L3	L2	L2	L1	L2	L21	L3	H1	C3	C5	F7	F6	F3	F1	F1
17	F5	F2			F1				HL21	C1	C1	L1	CL11	CL11	H1	L1	HL12	HL23	LH22	F5	F2	F2	FF12	FF22
18	F4	F4	F2	F1					C2	CL21	CL21	CL11	CL11	HL11	CL11	CL21	C1	L3	L1		F1		F3	F3
19	F5	F4	F6	F1			L1	H2	H2	H2	C1	C1	C1	L1	L2									
20										CL22	HL12	L1	L1	CL11	CL12	L3	L3	L3	L4	F2		FF23	F2	F2
21			F2	F1	F1	F1	H1	H2	H3	C1	C1	C1	C1	HC11	C2		H2	C4	C3	F7	F5	F7	F3	F4
22	F4	F6		F1	F2	F2	L1	HL21	H1	C1	C2	C1	C1	C2	C2	C3	C2	L4	L3	F3				
23														CL12	C1	C2	C4	L3	L3	F3	F3	F1	F2	F2
24	F3	F4	F3	F1			L1	H2	C2	C2	C3	C2	HL11	CL11	HL11	HL11	CL21	C3	L4	F5	F4	F2		
25										C1	L1	L1		L1	C1		C1	L3	L3	F4		F1		
26	F1	F1	F1	F1	F1			H2	H2	C1	CL11	CL31	CL11	CL21	CL11	CL11	C2	L5	L6	F6	F2	F1	F1	F1
27						F1	L4	HL32	H2	H1	HL12	L2	HL12	HL11		L1		H2	H2					
28								H2		C3	C2	CL11	CL11	CL11	CL11	L1		H1	H1	F5	F7	F6		F1
29										H1	H1		C2	C1	L1	L1	L3	L3	L4	F3	F4	F3	F4	
30							L6	LH12	HL11	H1	H1	CL11	C1			L1	L1	L1	HL23	F1	F1	F2		F1
31																								
	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

SEP. 1970 | TYPES OF ES


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE SEP. 1 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE Sep. 1. 1970
KEY
FREQUENCY (MHz)
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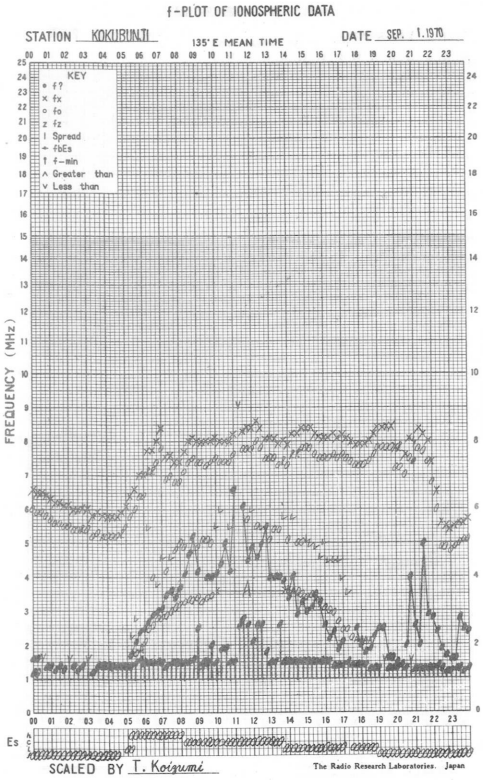
SCALED BY T. Abe
The Radio Research Laboratories. Japan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DATE SEP. 1. 1970
KEY
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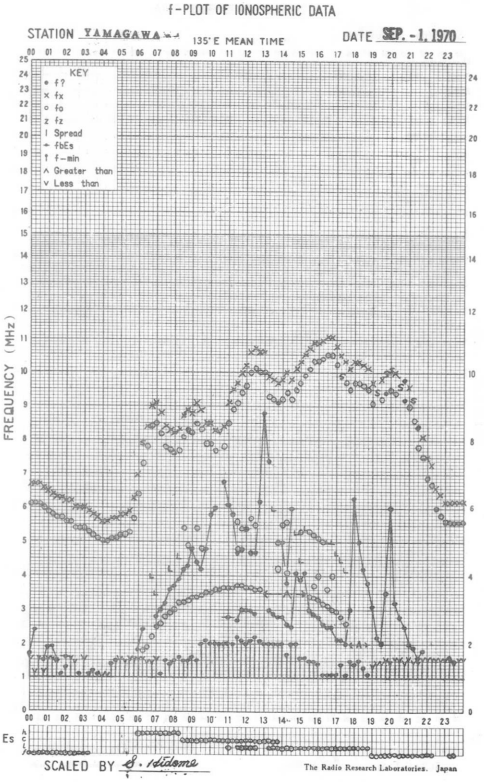
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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DATE SEP. 1. 1970
KEY
FREQUENCY (MHz)
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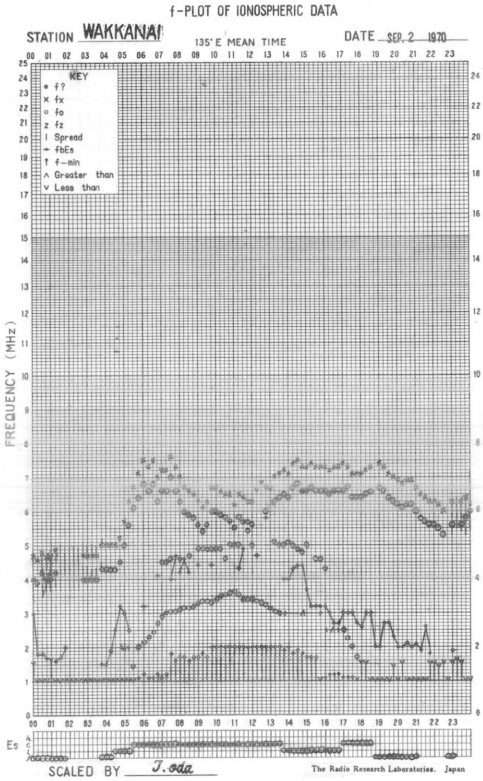
SCALED BY S. Ishioma
The Radio Research Laboratories. Japan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STATION WAKKANAI
135° E MEAN TIME
DATE SEP. 2 1970
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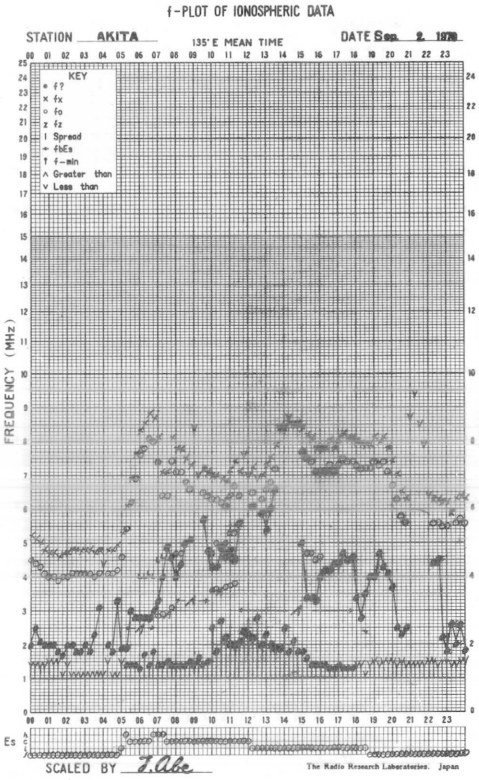
FREQUENCY (MHz)
Es
SCALED BY J. oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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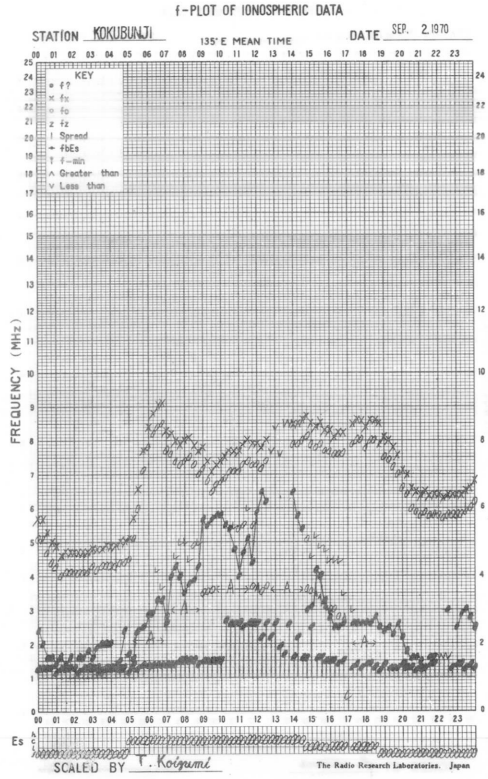
SCALED BY T. Abe
The Radio Research Laboratories. Japan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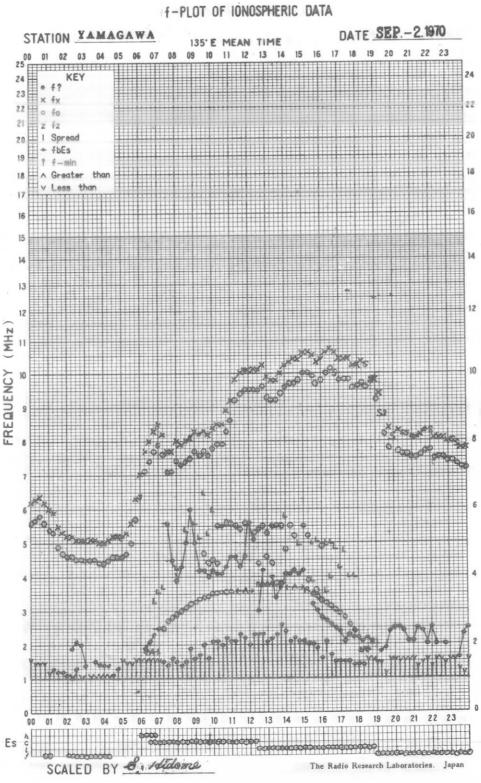
SCALED BY T. Koigumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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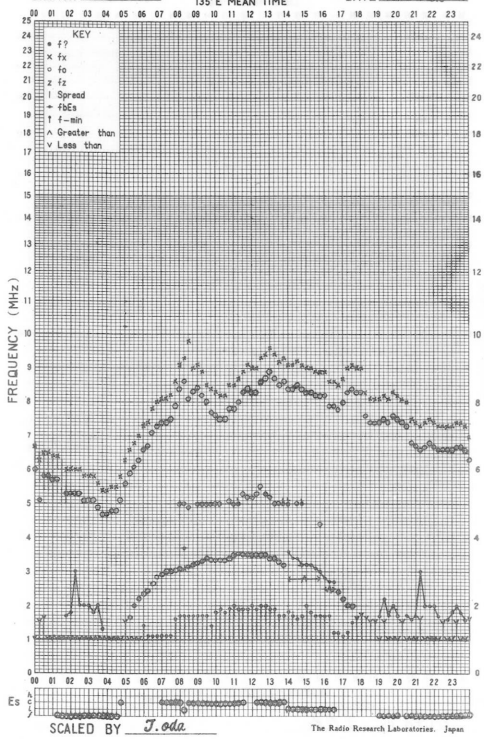
SCALED BY S. Akiama
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE SEP. 3 1970



SCALED BY T. oda

The Radio Research Laboratories. Japan

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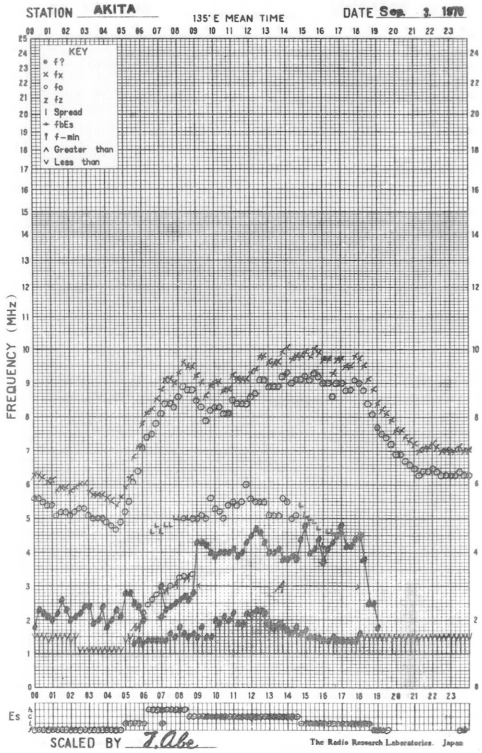
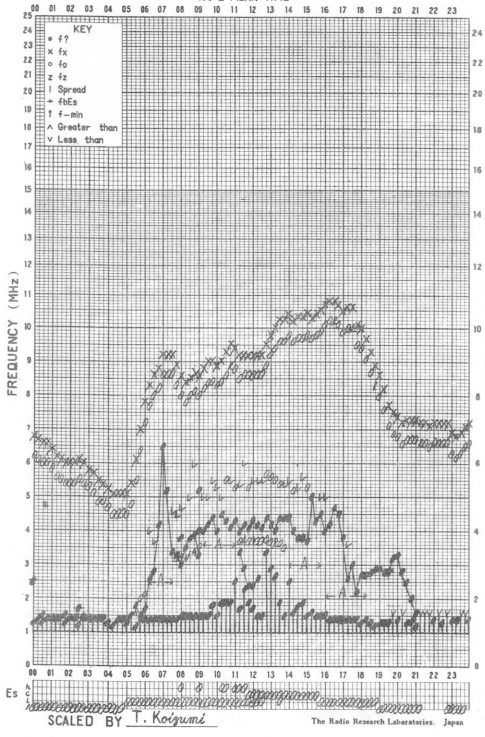


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE SEP. 3.1970

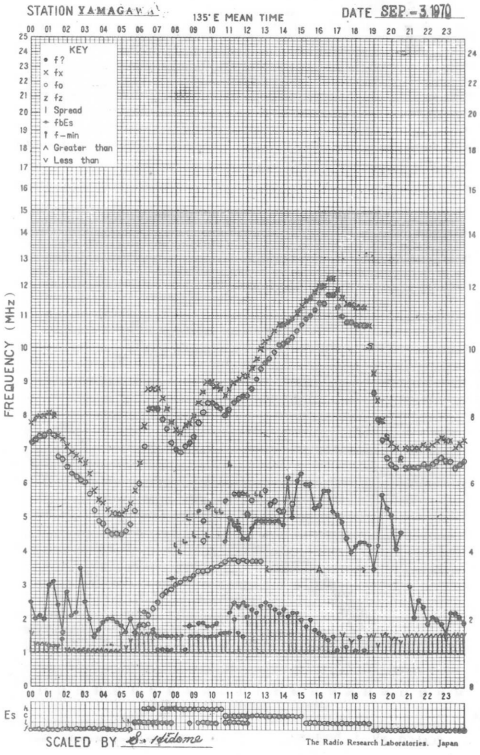


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

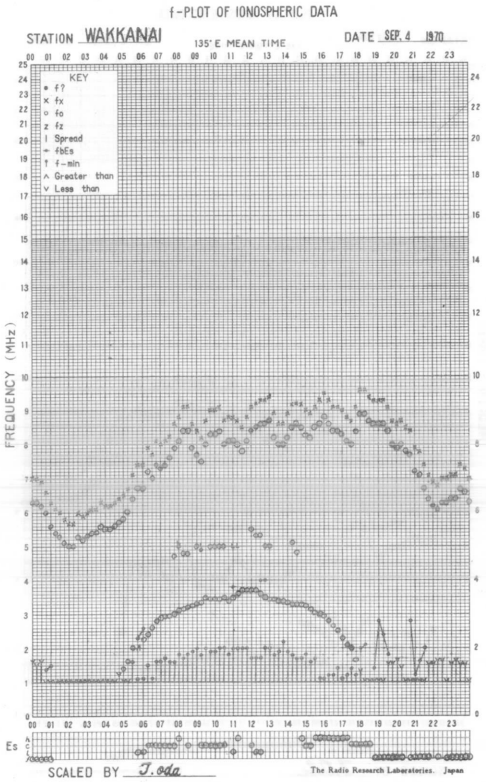
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE SEP. 3.1970



SCALED BY S. Ashizawa

The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE SEP. 4 1970
KEY
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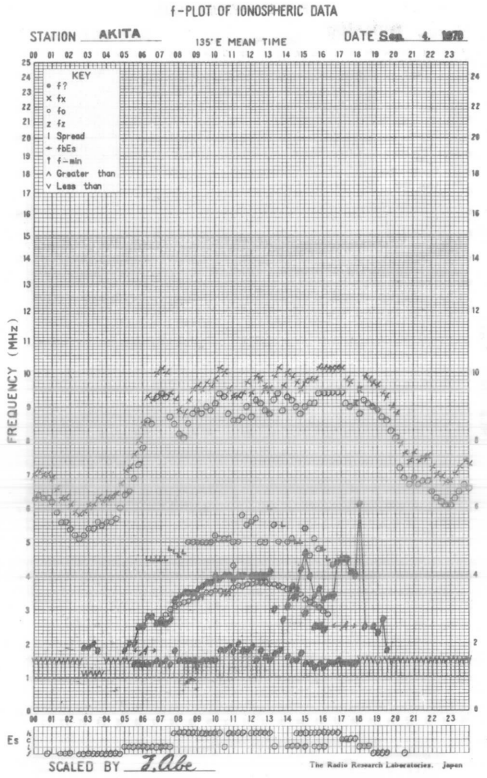
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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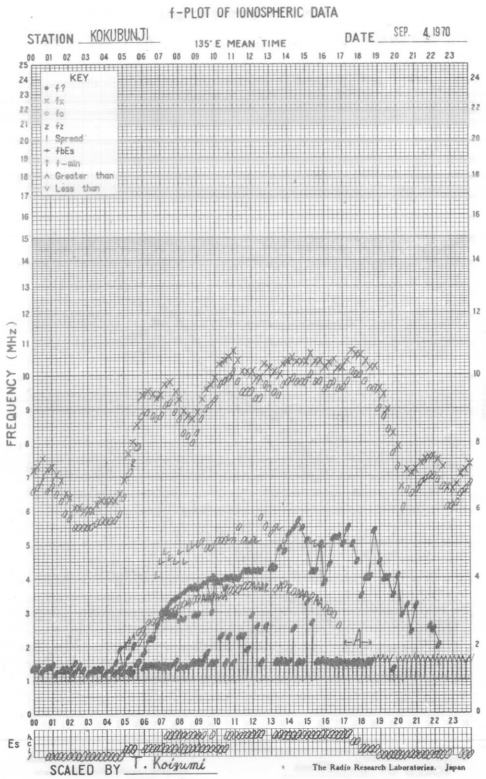
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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135°E MEAN TIME
DATE SEP. 4, 1970
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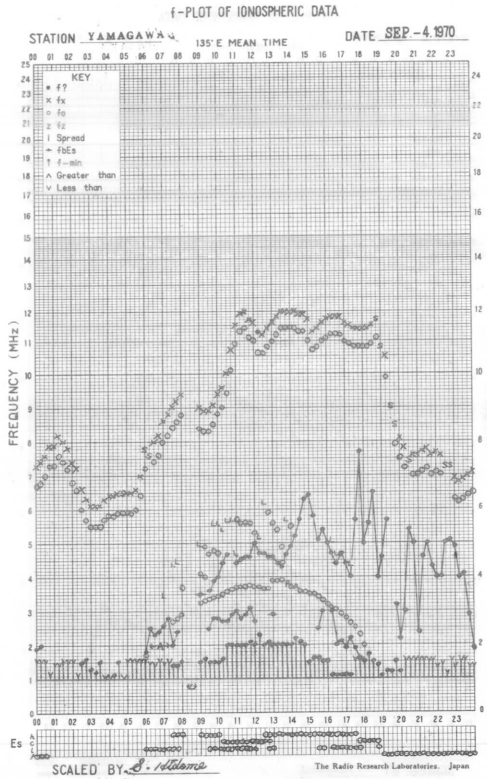
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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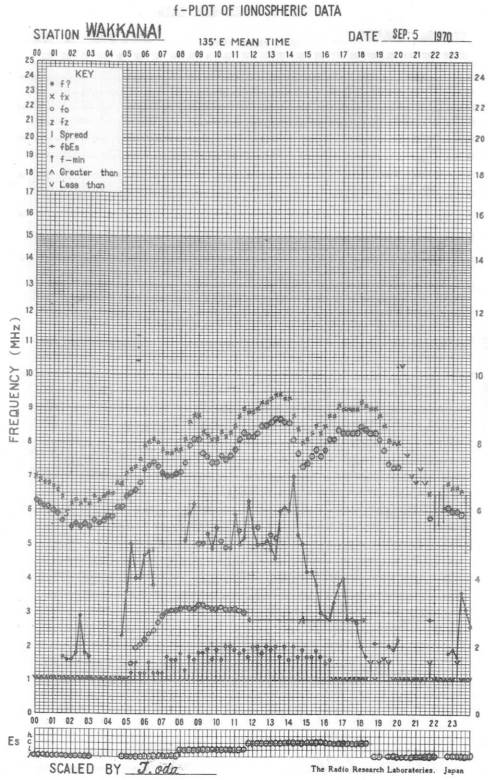
SCALED BY S. Hidema
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE SEP. 5 1970
KEY
* f?
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⌁ fbEs
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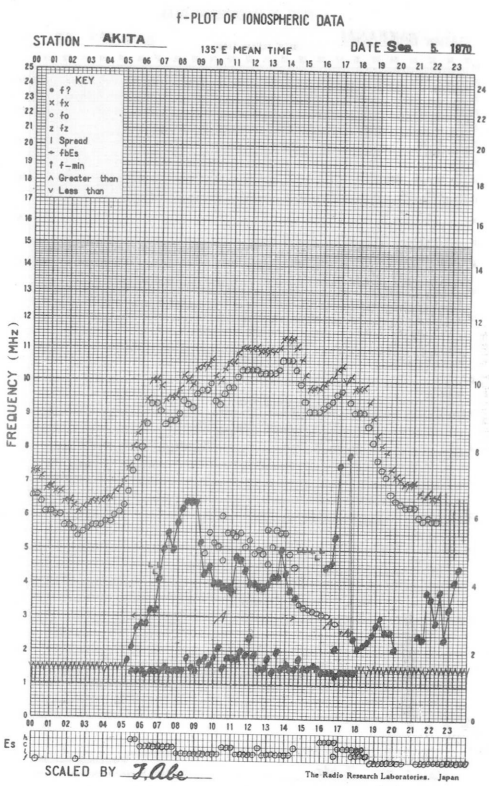
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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STATION AKITA
135°E MEAN TIME
DATE Sep. 5. 1970
KEY
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I Spread
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↑ f-min
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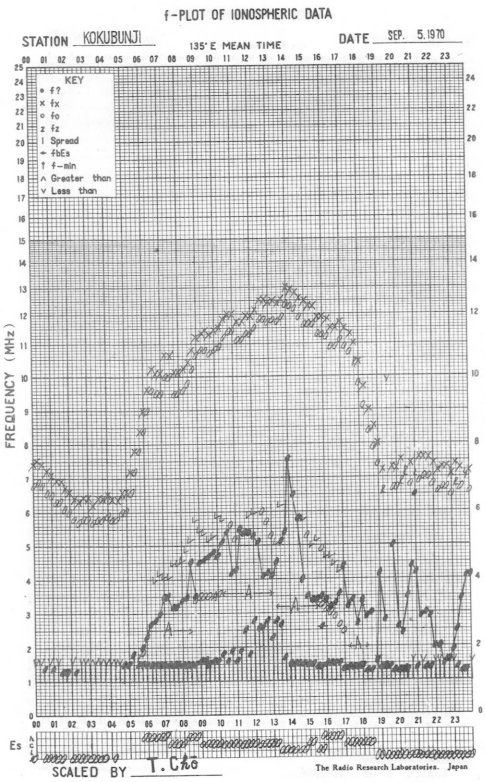
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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STATION KOKUBUNJI
135°E MEAN TIME
DATE SEP. 5.1970
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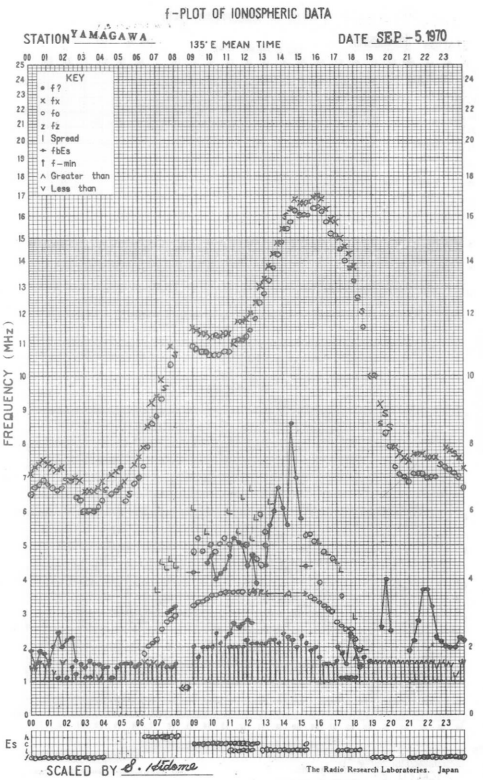
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE SEP.-5.1970
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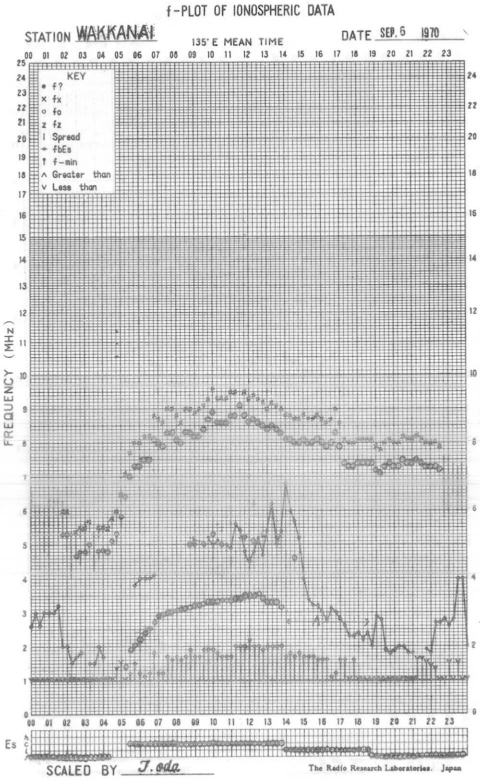
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Hidema
The Radio Research Laboratories. Japan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STATION WAKKANAI
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DATE SEP. 6 1970
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○ fo
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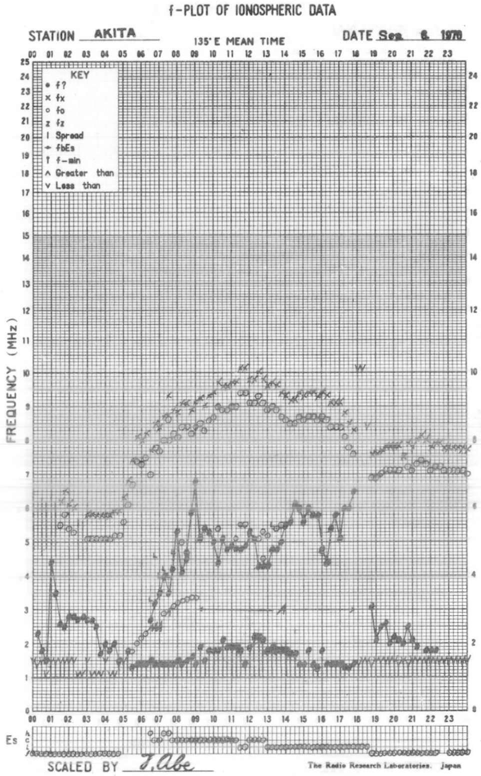
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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DATE Sep. 6. 1970
KEY
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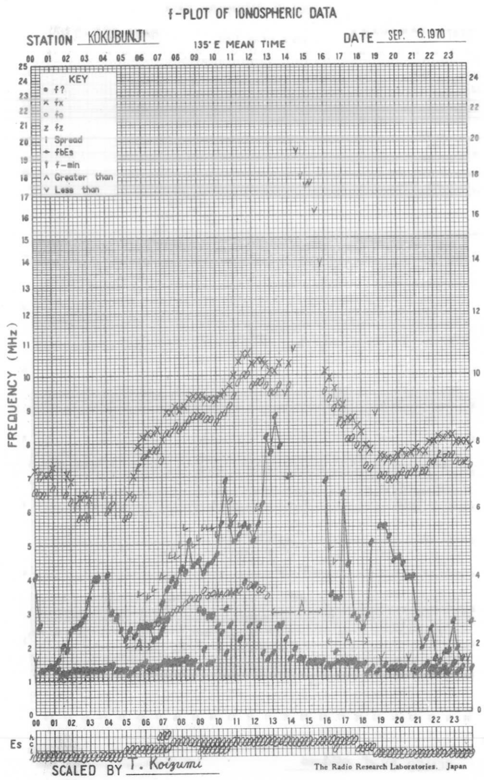
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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135° E MEAN TIME
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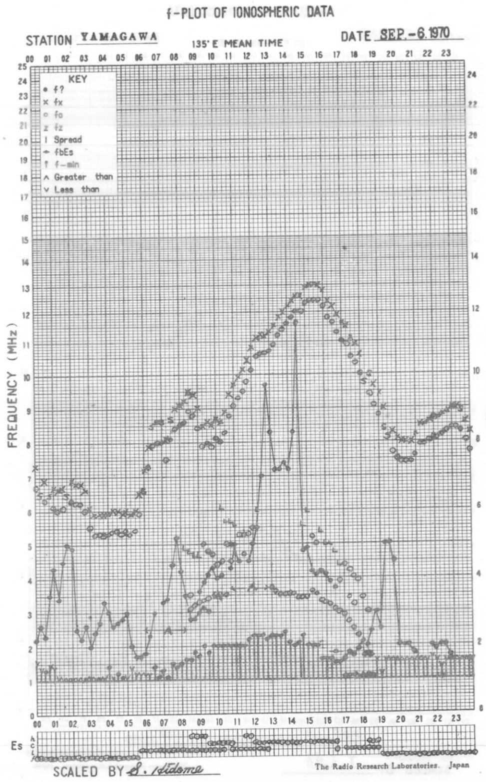
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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DATE SEP.-6. 1970
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∧ Greater than
∨ Less than
FREQUENCY (MHz)
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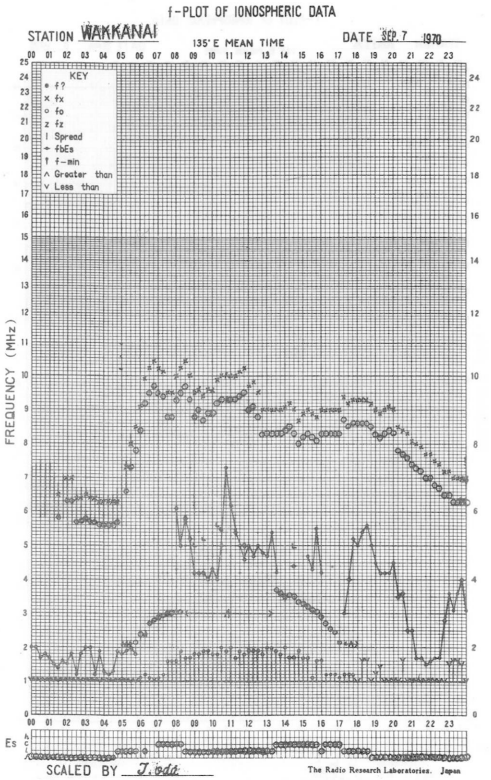
SCALED BY S. Hidome
The Radio Research Laboratories. Japan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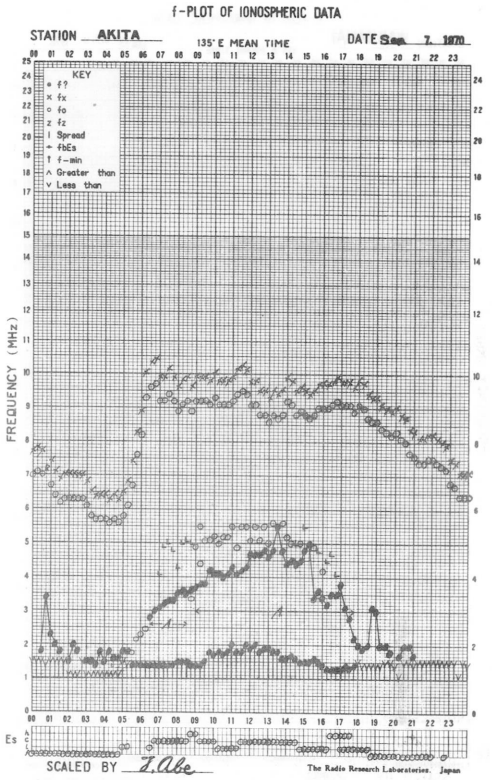
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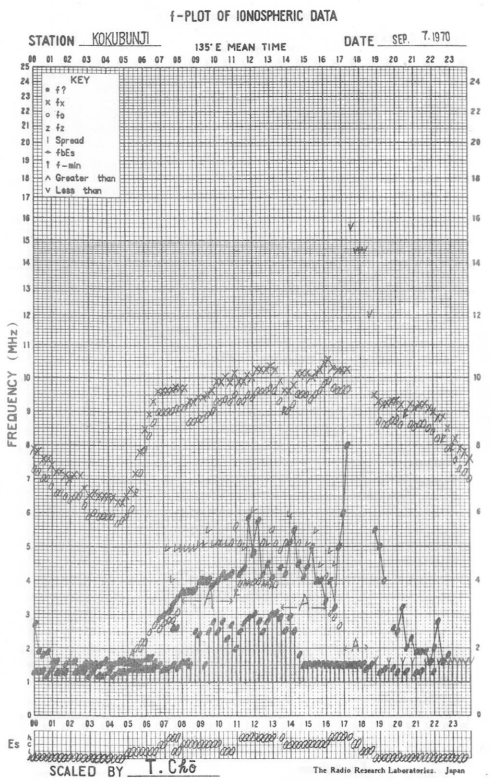
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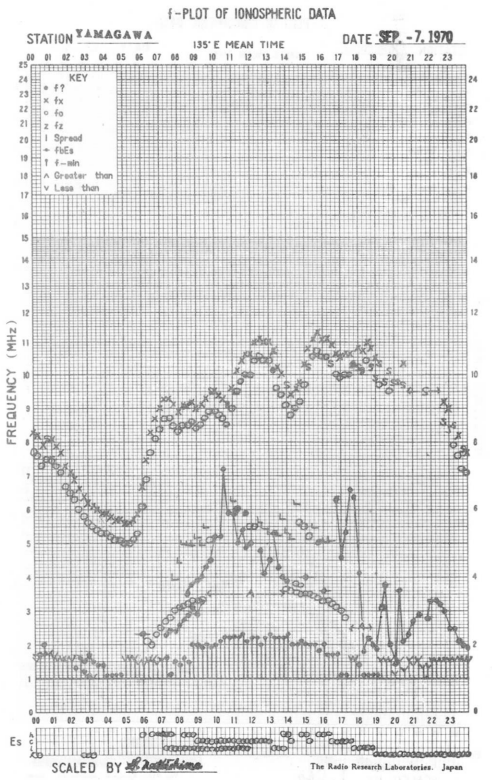
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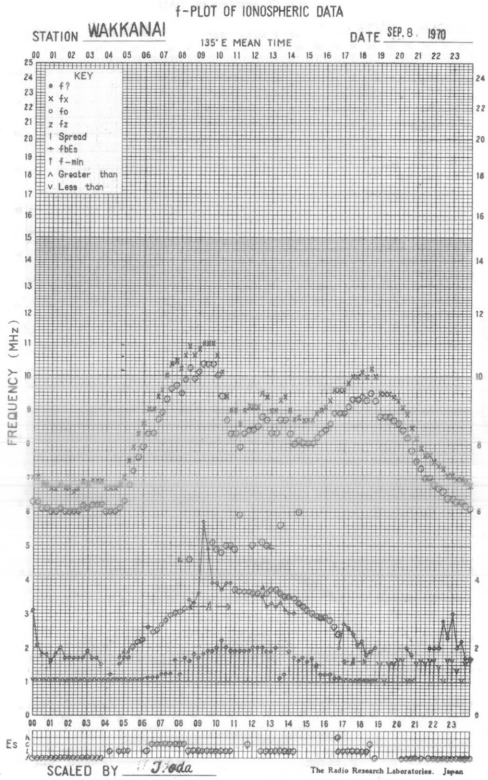
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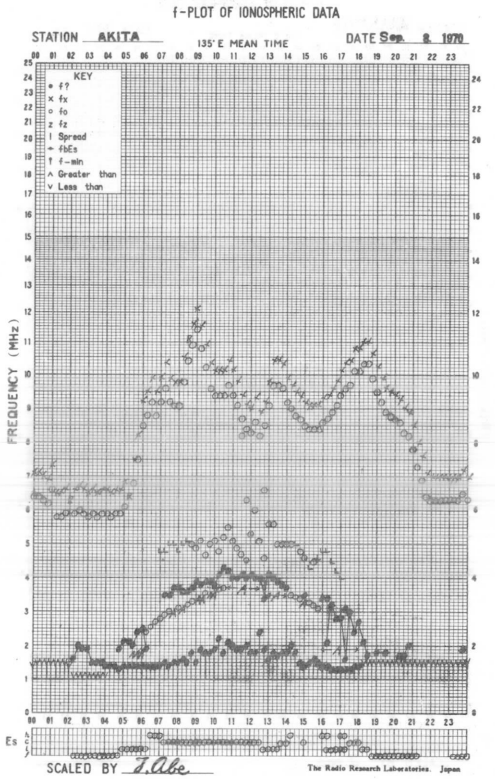
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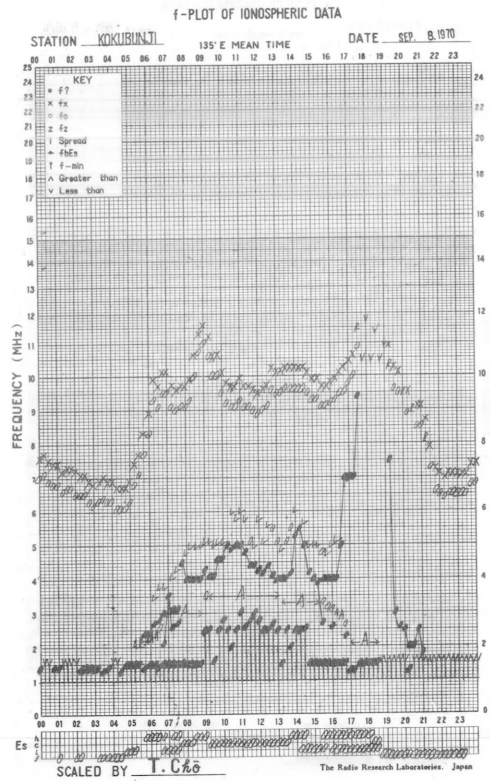
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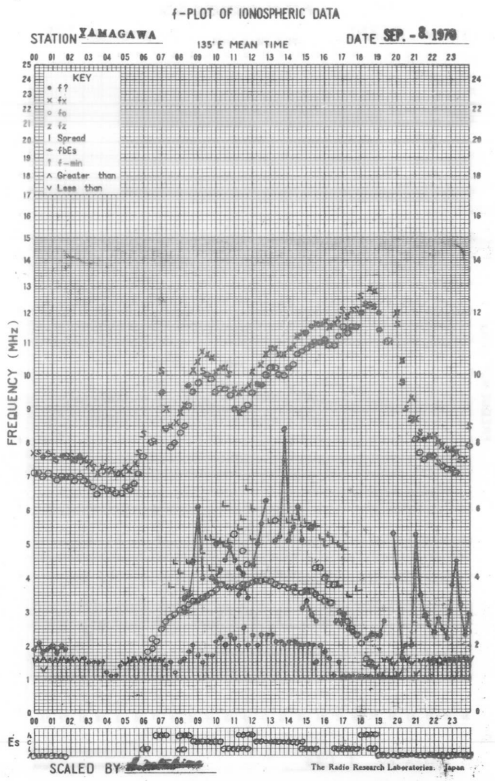
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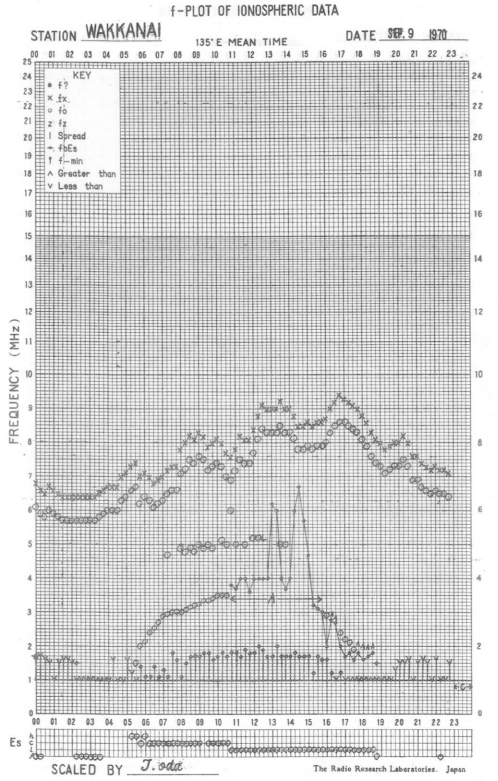
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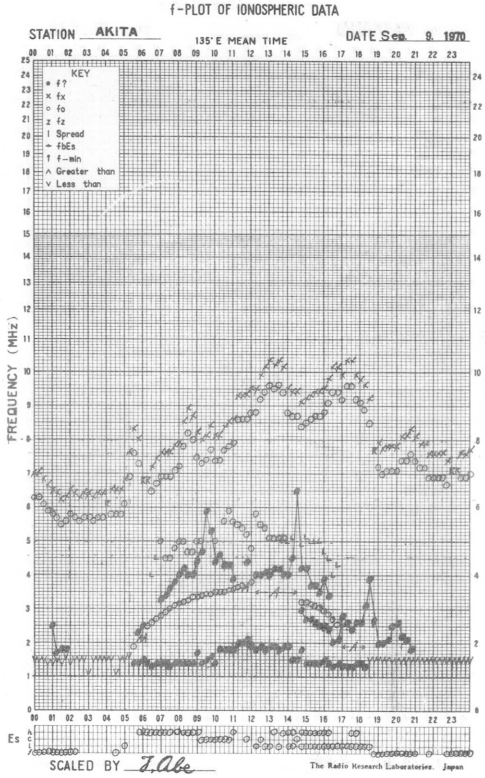
SCALED BY T. Oda
The Radio Research Laboratories. Japan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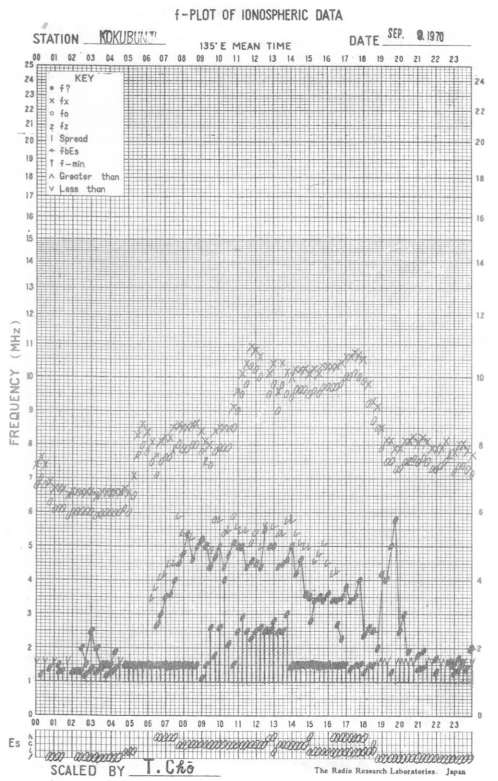
The Radio Research Laboratories. Japan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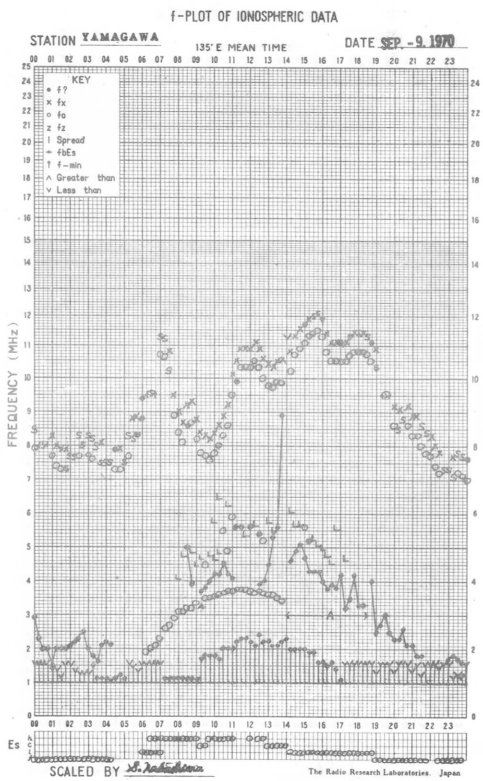
The Radio Research Laboratories. Japan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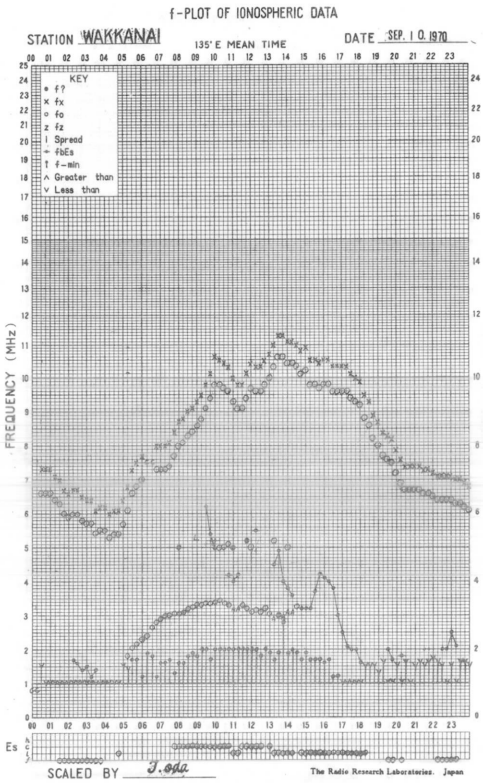
The Radio Research Laboratories. Japan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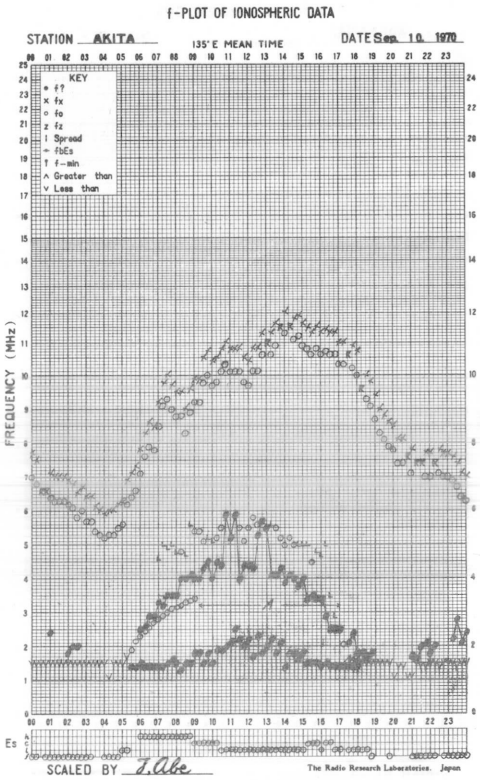
The Radio Research Laboratories. Japan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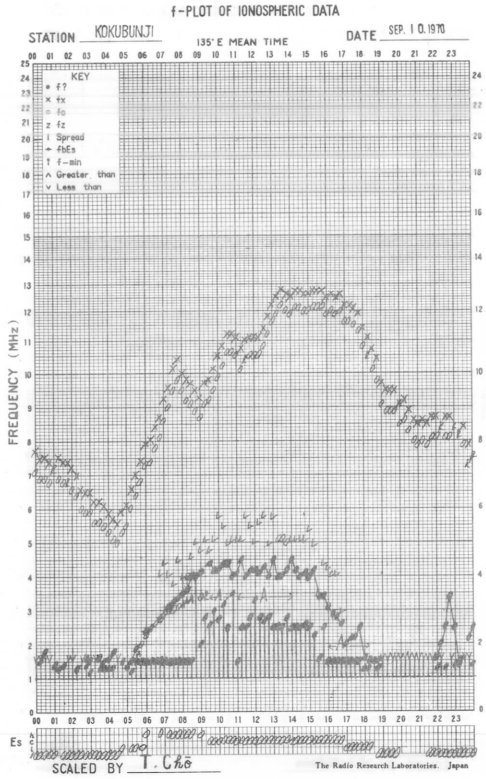
The Radio Research Laboratories. Japan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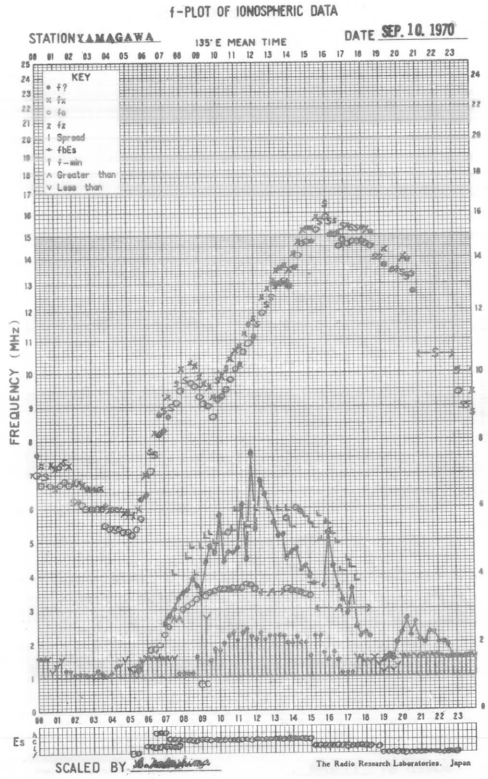
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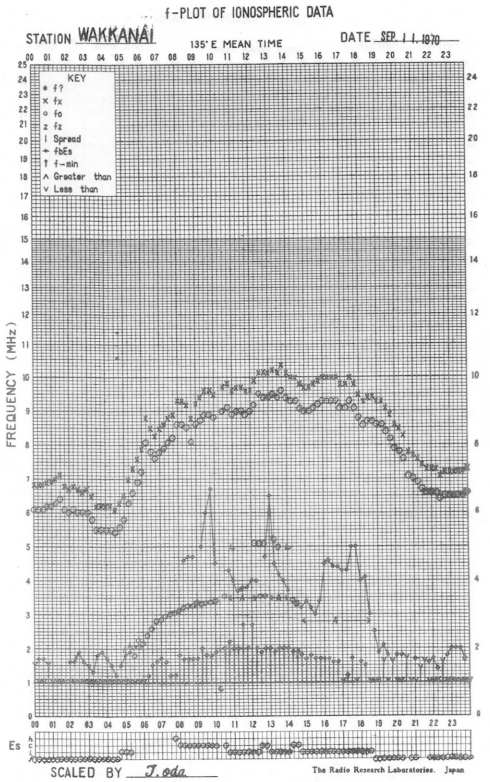
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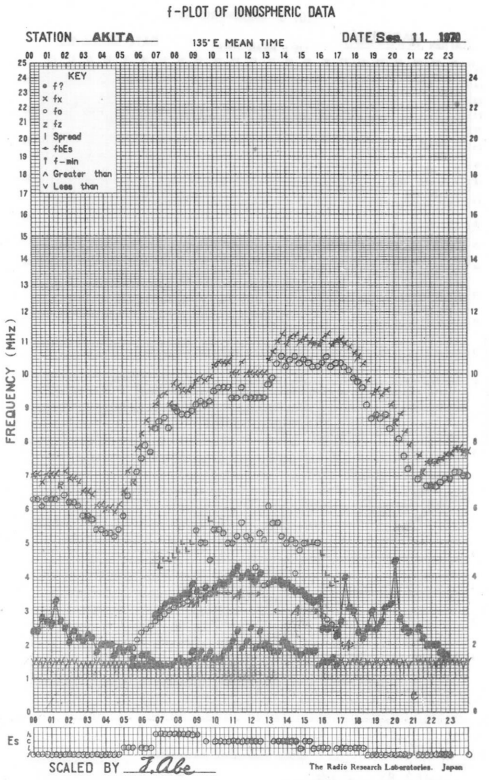
The Radio Research Laboratories. Japan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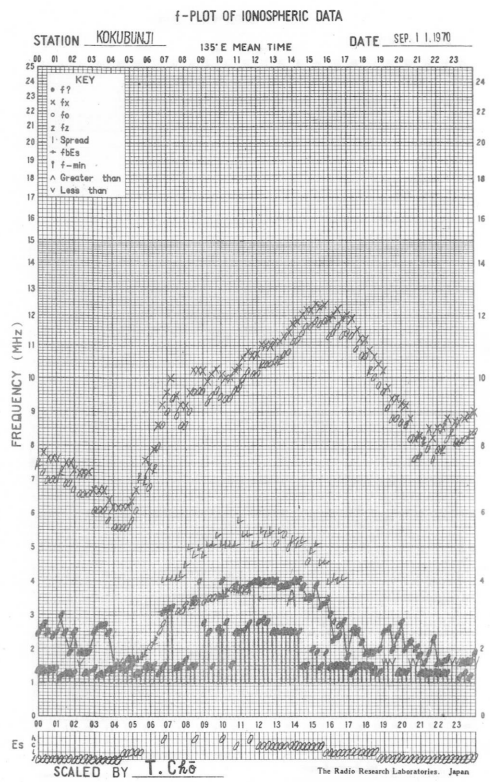
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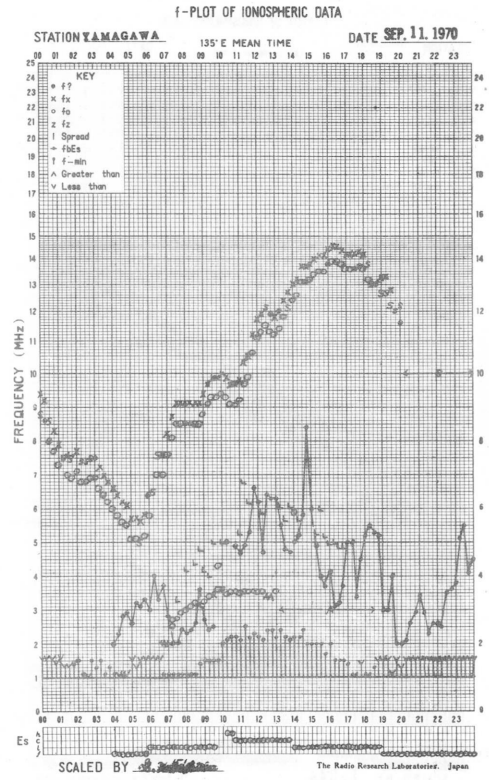
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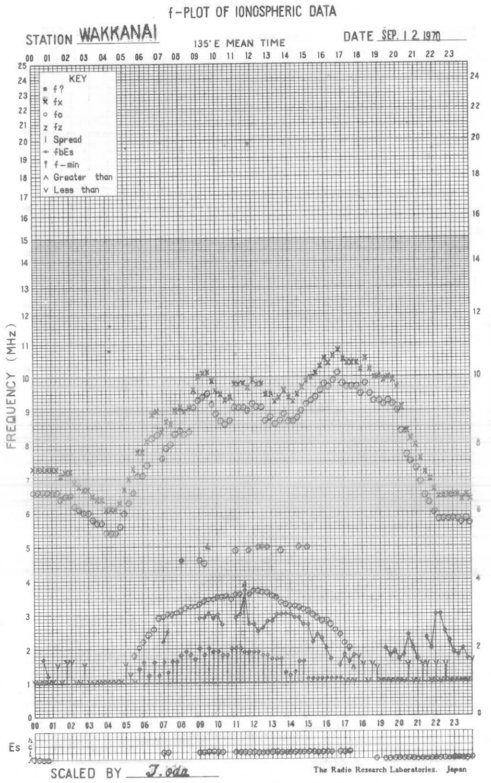
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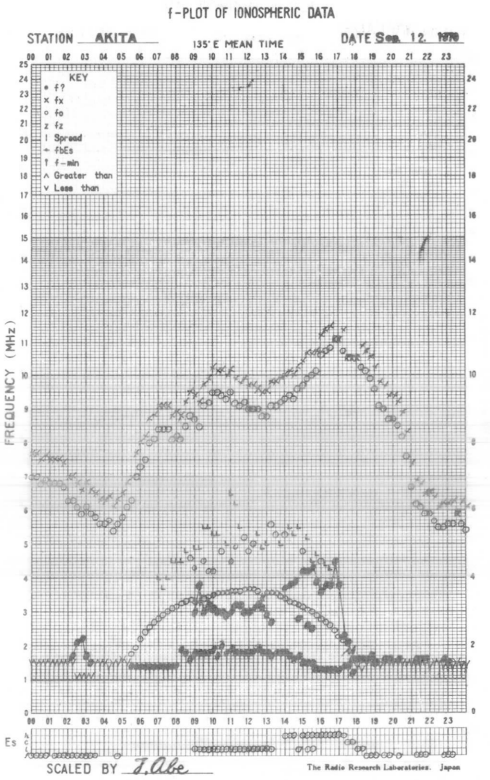
The Radio Research Laboratories. Japan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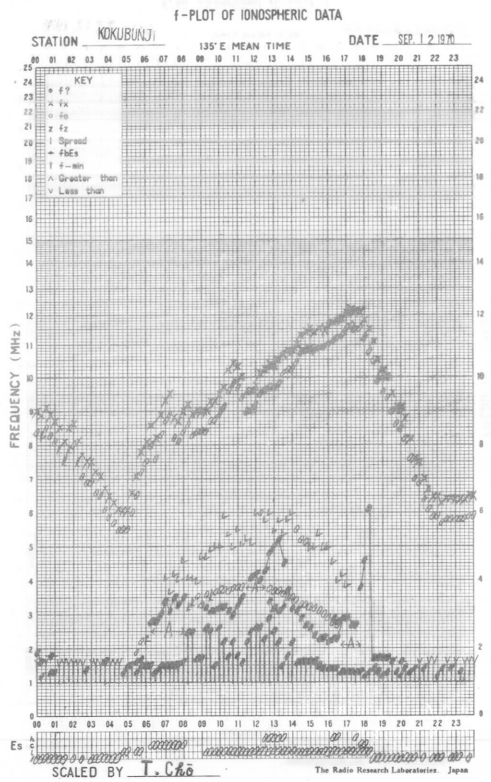
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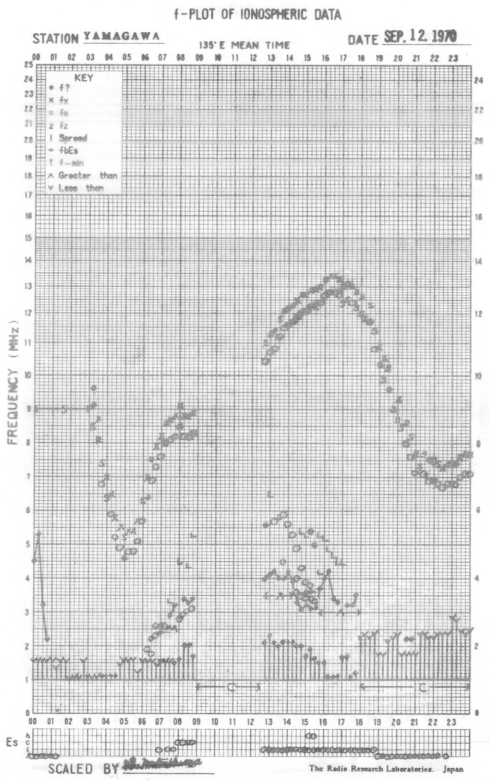
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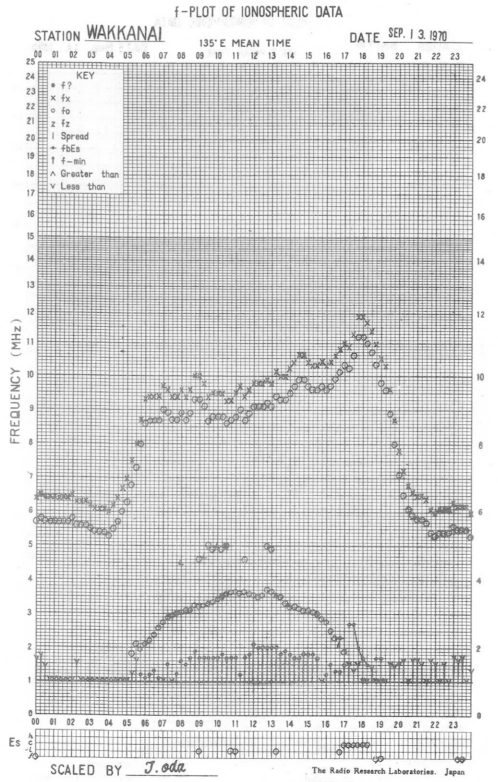
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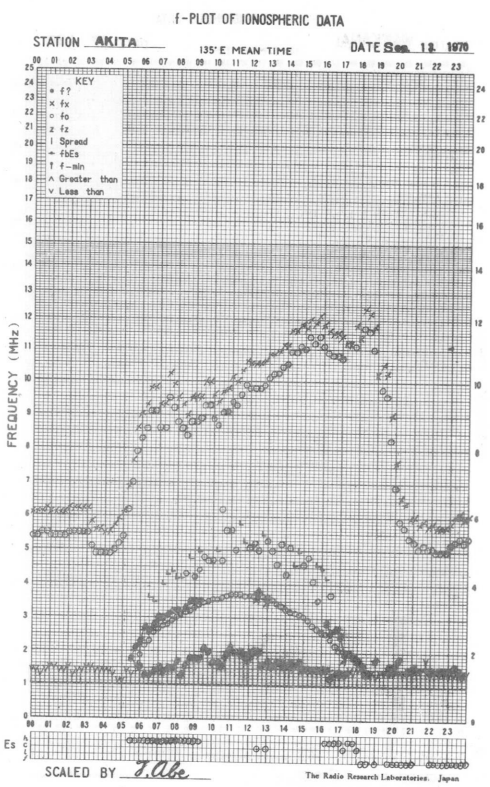
The Radio Research Laboratories. Japan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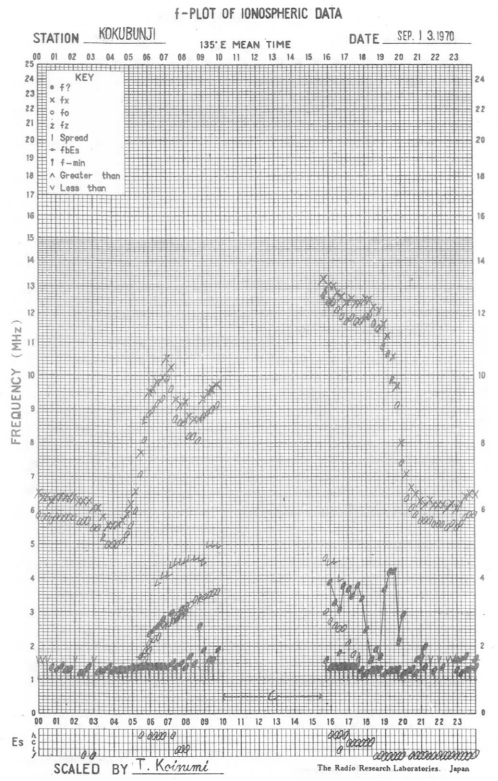
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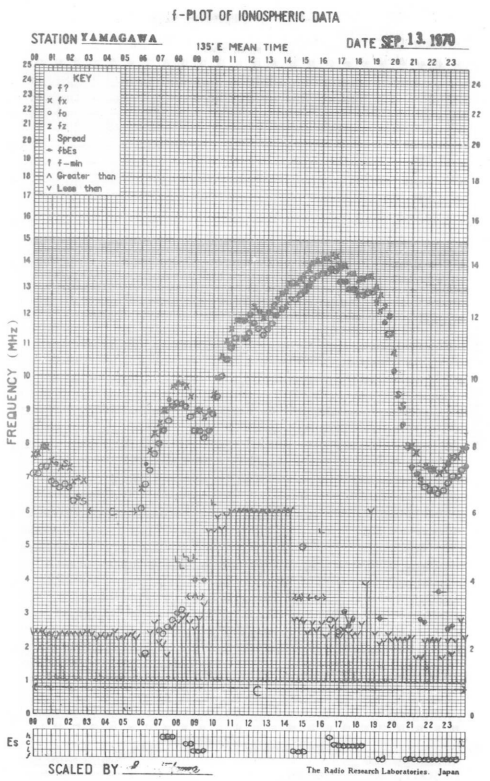
The Radio Research Laboratories. Japan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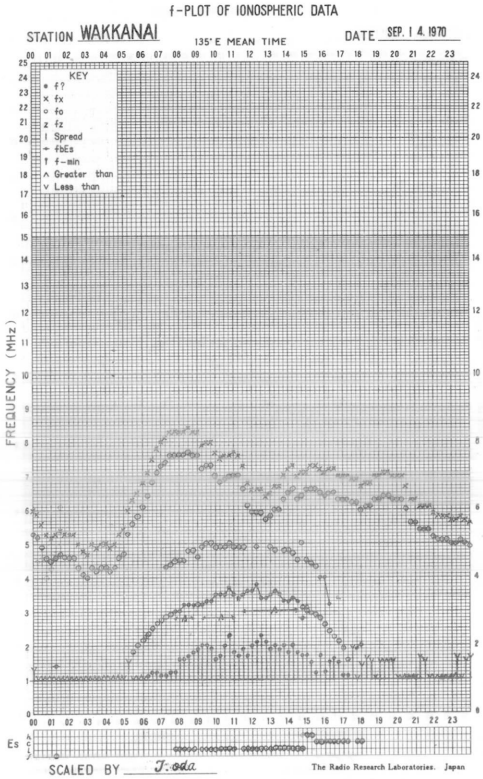
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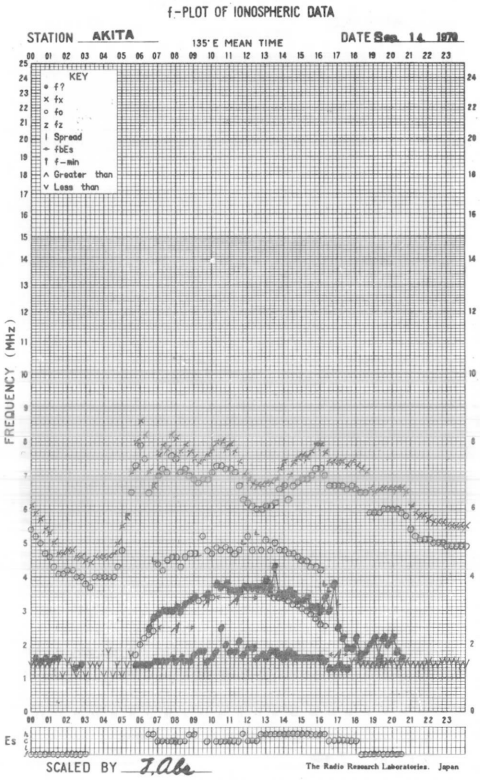
The Radio Research Laboratories. Japan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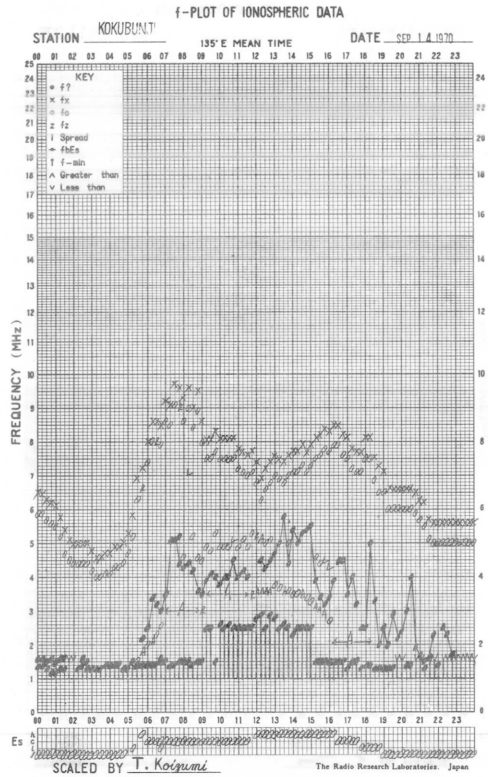
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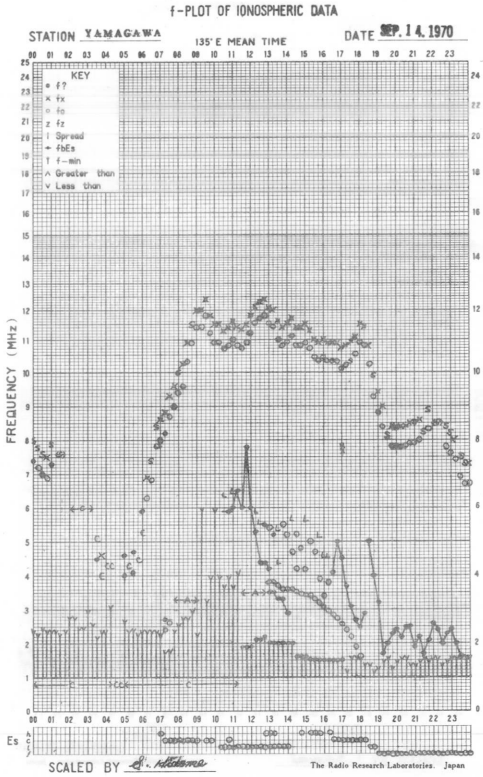
The Radio Research Laboratories. Japan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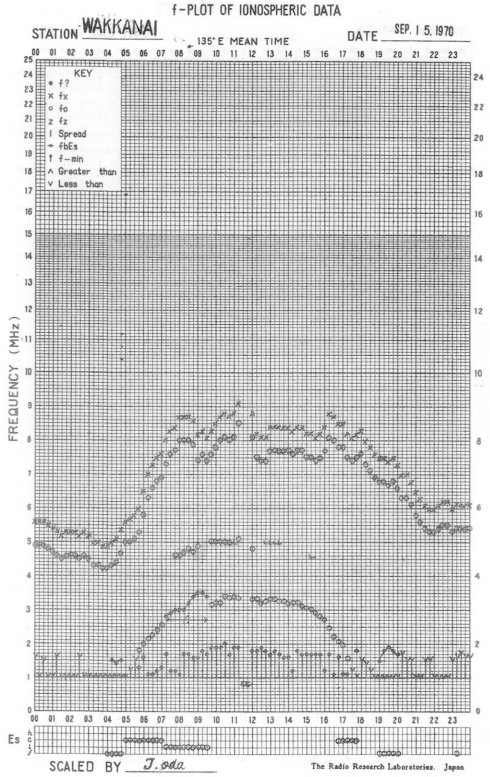
The Radio Research Laboratories. Japan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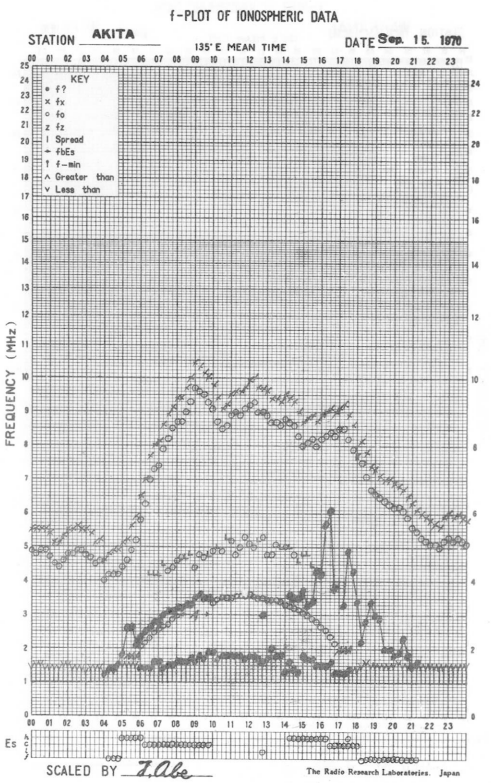
The Radio Research Laboratories. Japan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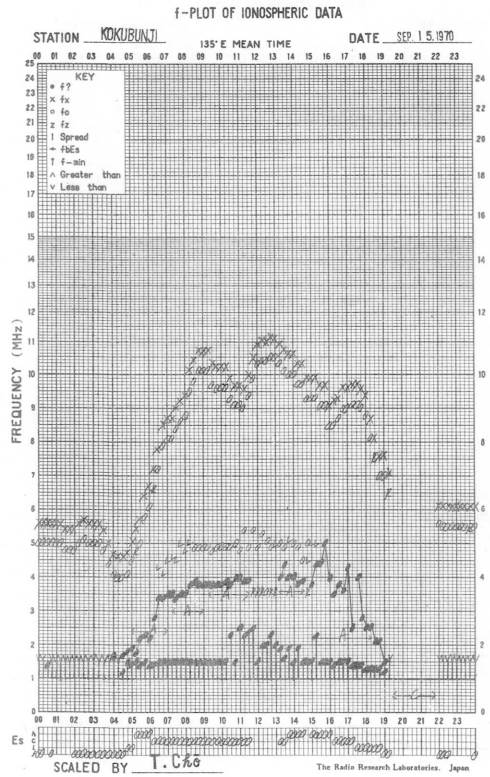
SCALED BY T. Abe
The Radio Research Laboratories. Japan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∨ Less than
FREQUENCY (MHz)
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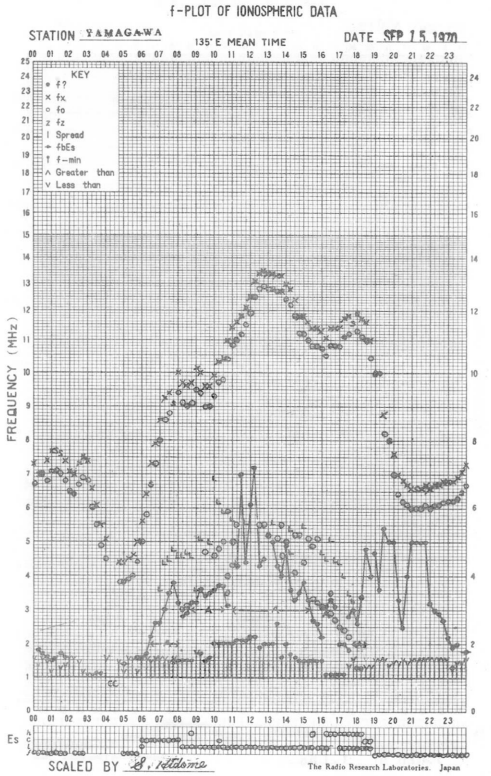
SCALED BY T. Cho
The Radio Research Laboratories. Japan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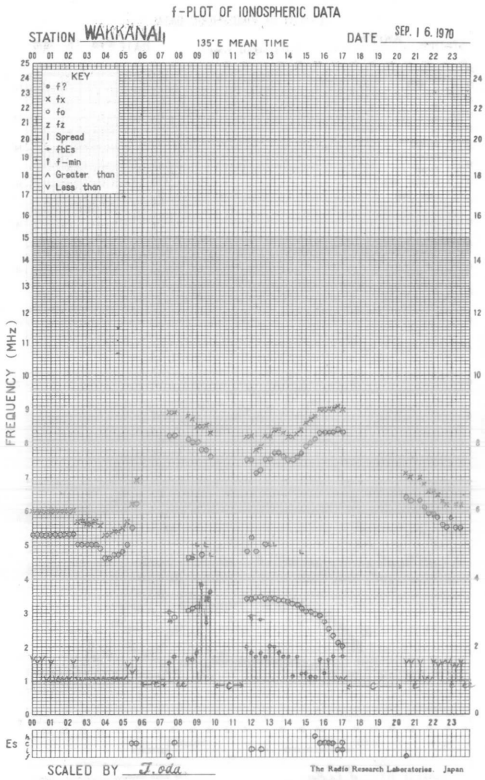
The Radio Research Laboratories. Japan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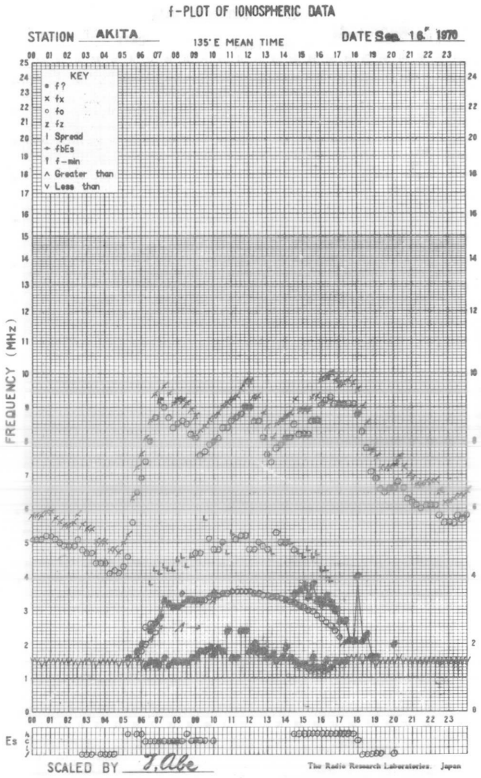
The Radio Research Laboratories. Japan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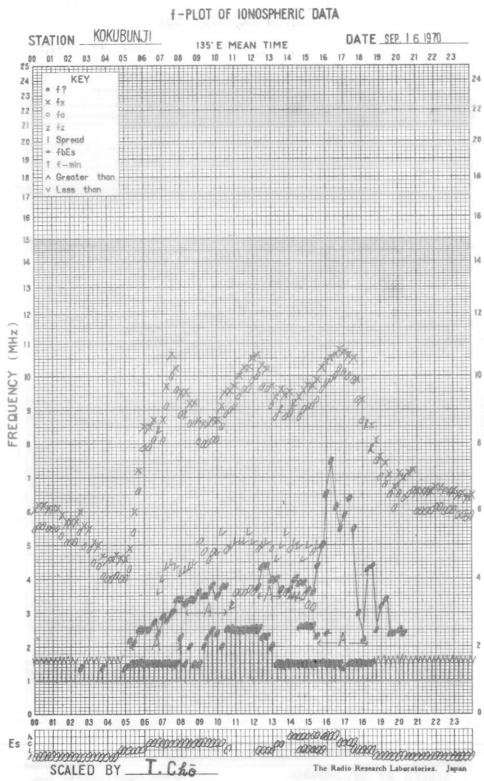
The Radio Research Laboratories. Japan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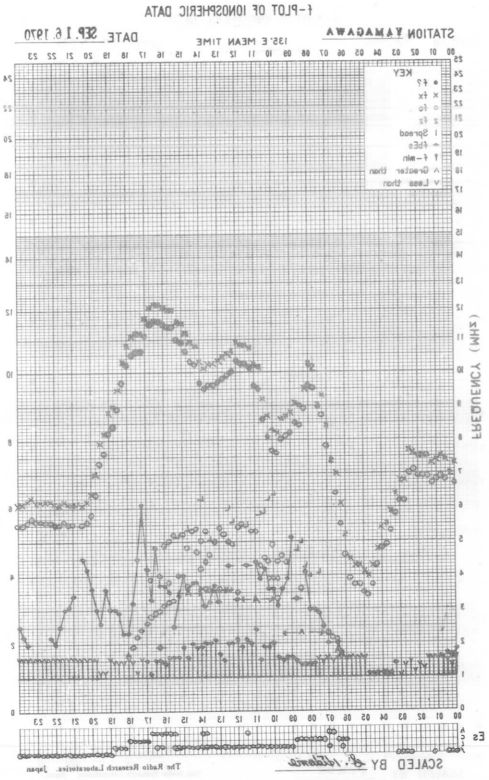
The Radio Research Laboratories. Japan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The Radio Research Laboratories. Japan

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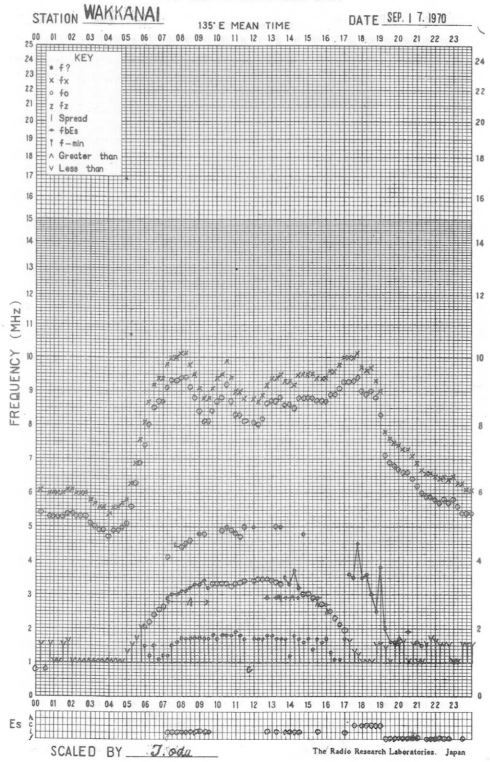

SCALED BY T. Oda

The Radio Research Laboratories. Japan

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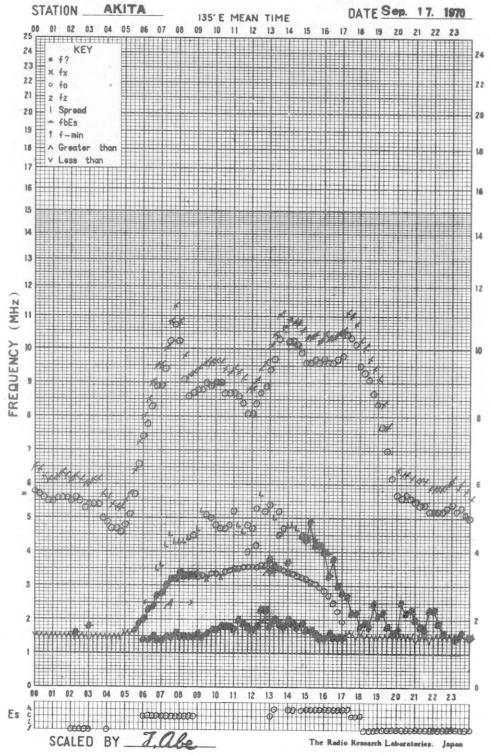

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The Radio Research Laboratories. Japan

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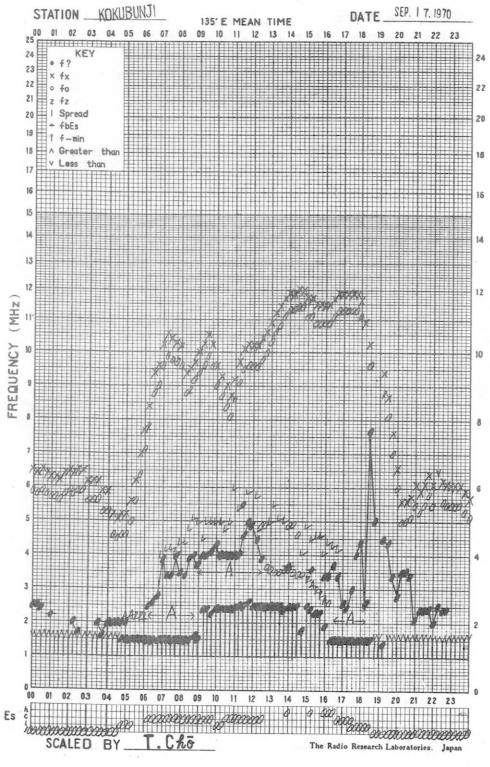

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The Radio Research Laboratories. Japan

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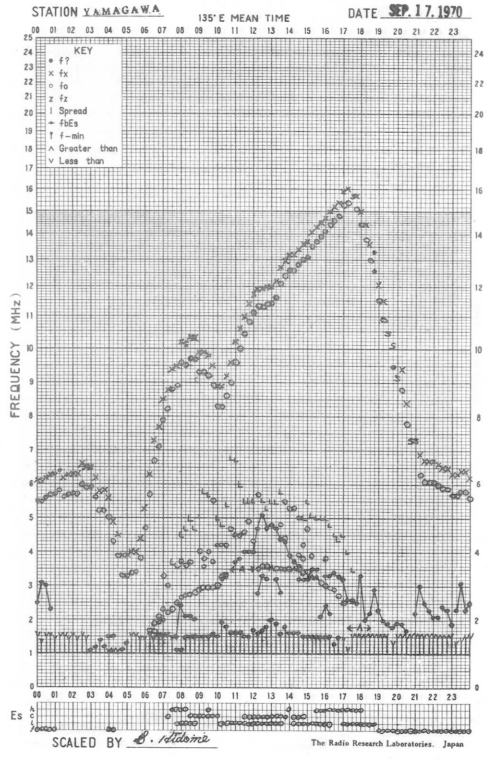
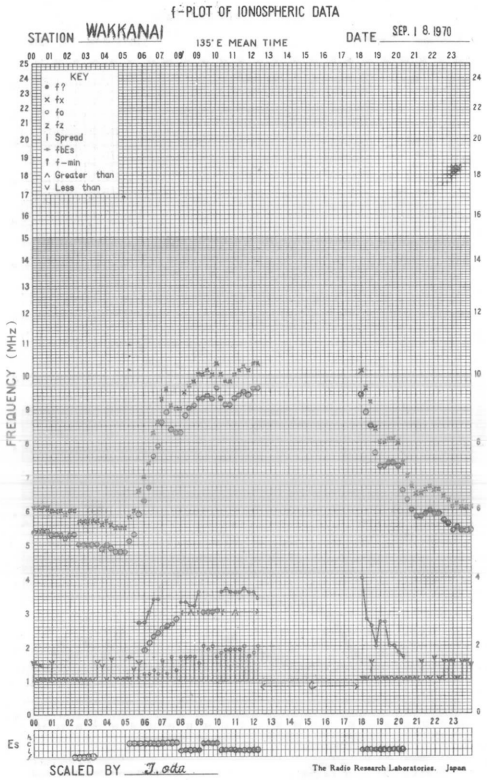


SCALED BY S. Ishikawa

The Radio Research Laboratories. Japan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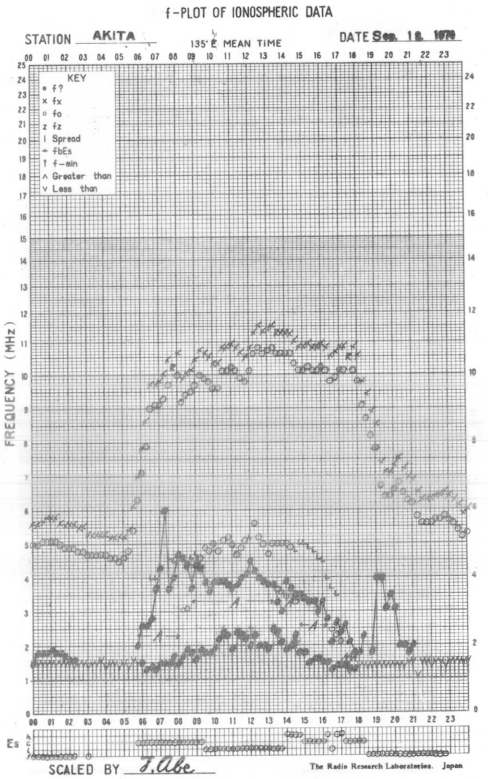
The Radio Research Laboratories. Japan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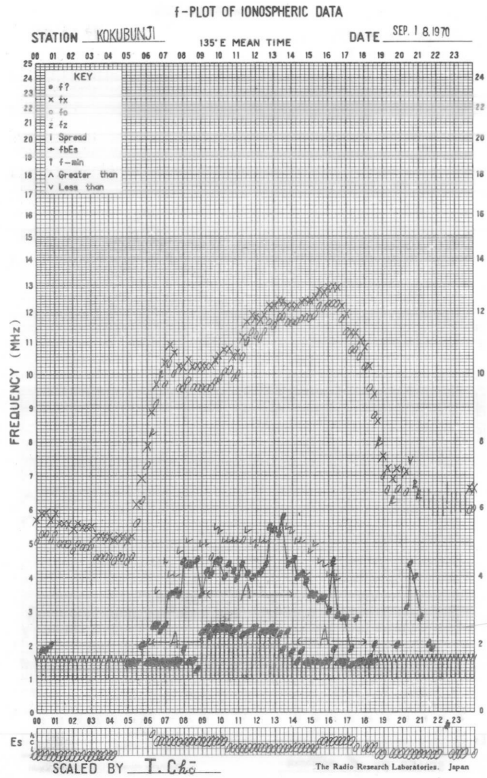
The Radio Research Laboratories. Japan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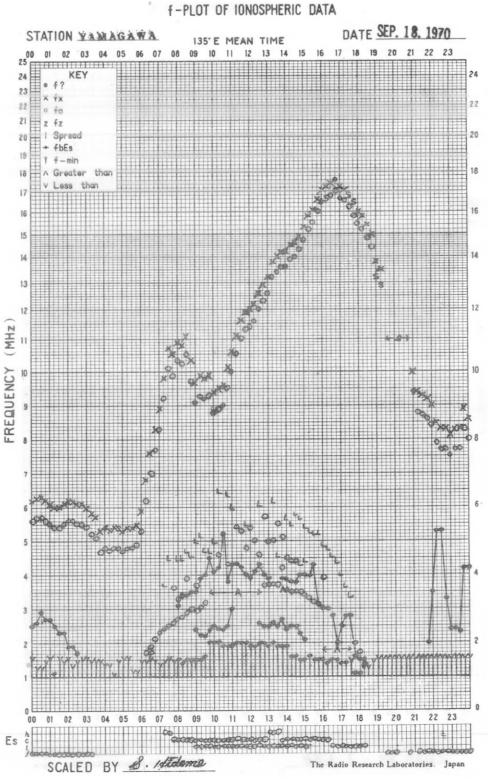
The Radio Research Laboratories. Japan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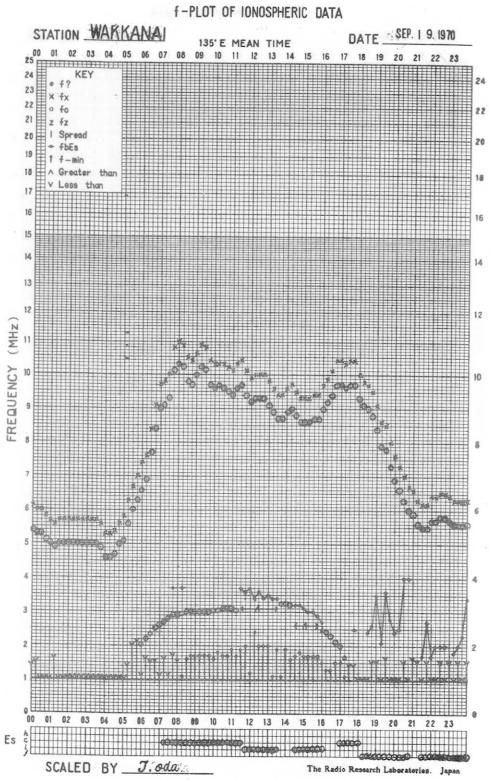
The Radio Research Laboratories. Japan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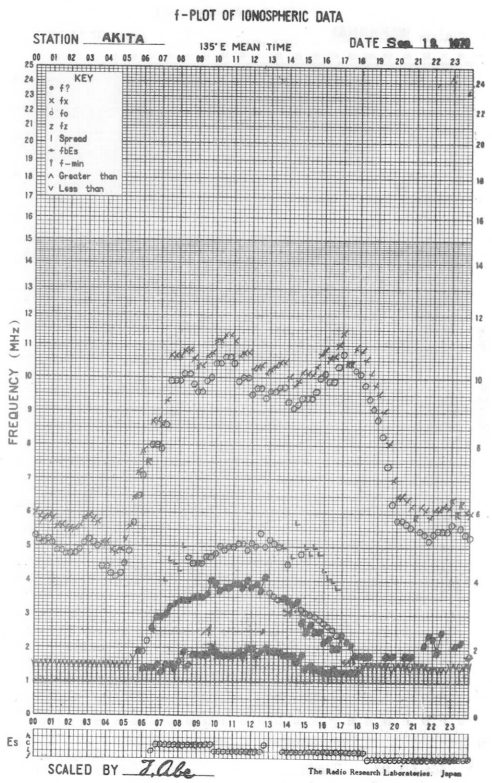
SCALED BY T. oda
The Radio Research Laboratories. Japan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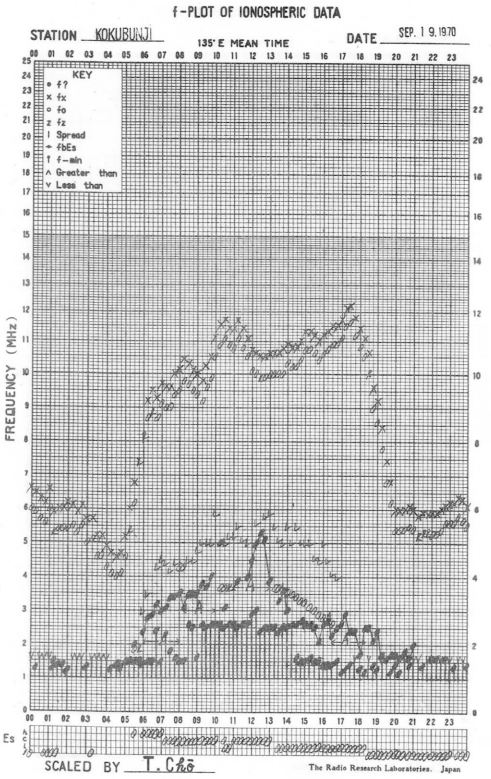
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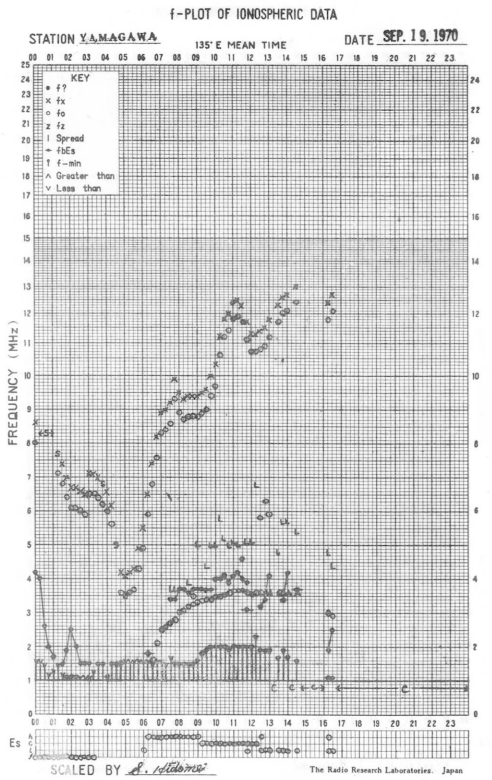
The Radio Research Laboratories. Japan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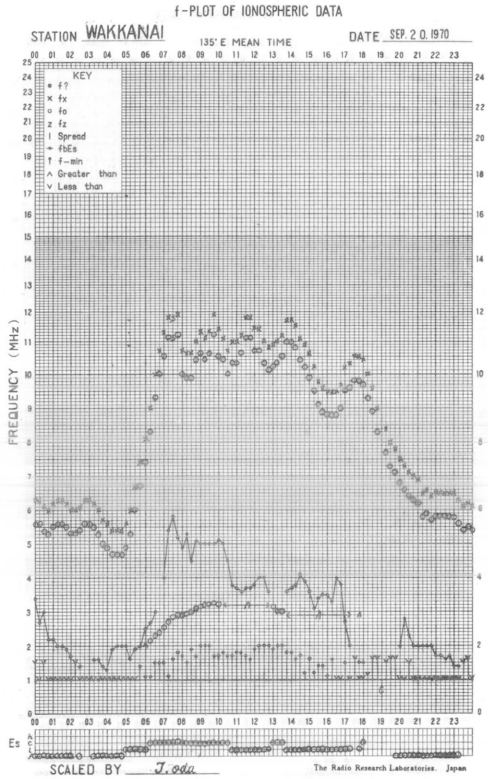
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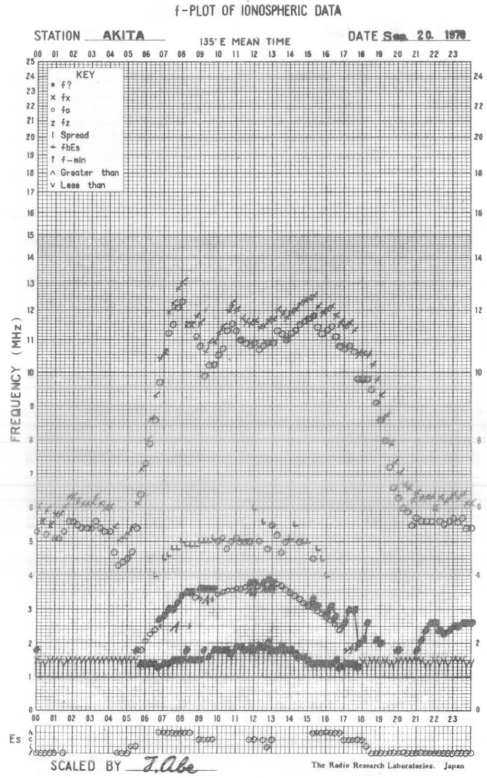
The Radio Research Laboratories. Japan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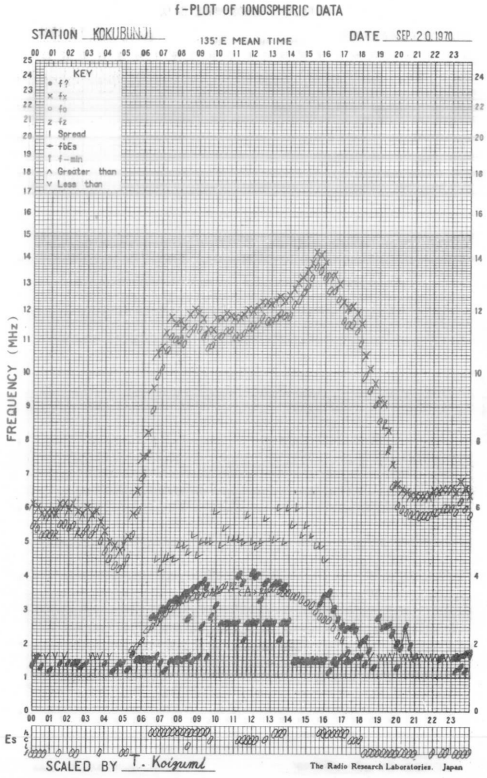
The Radio Research Laboratories. Japan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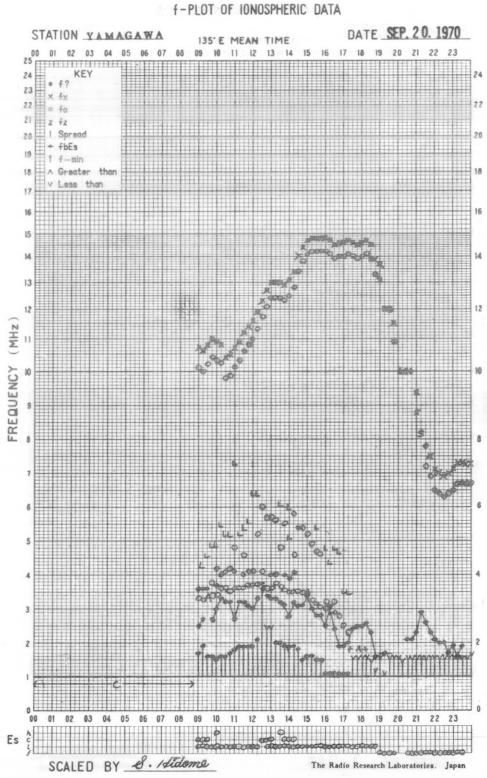
The Radio Research Laboratories. Japan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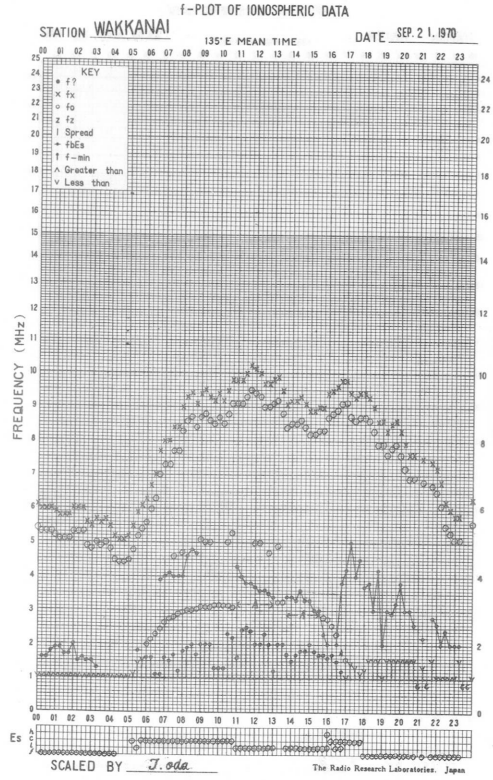
The Radio Research Laboratories. Japan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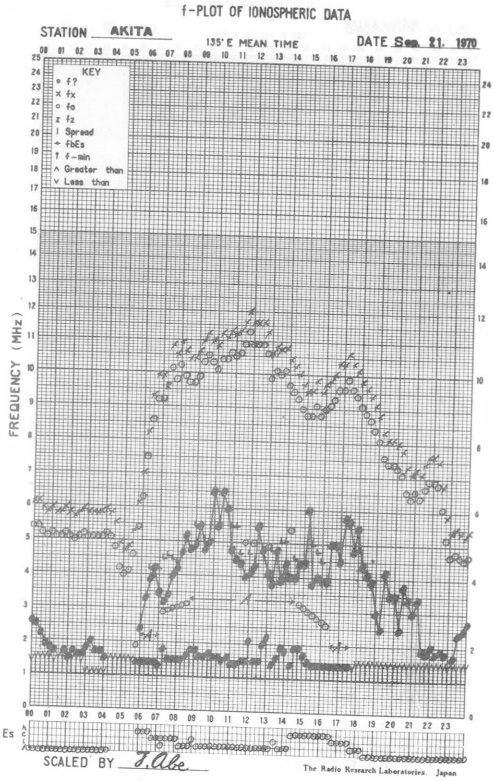
The Radio Research Laboratories. Japan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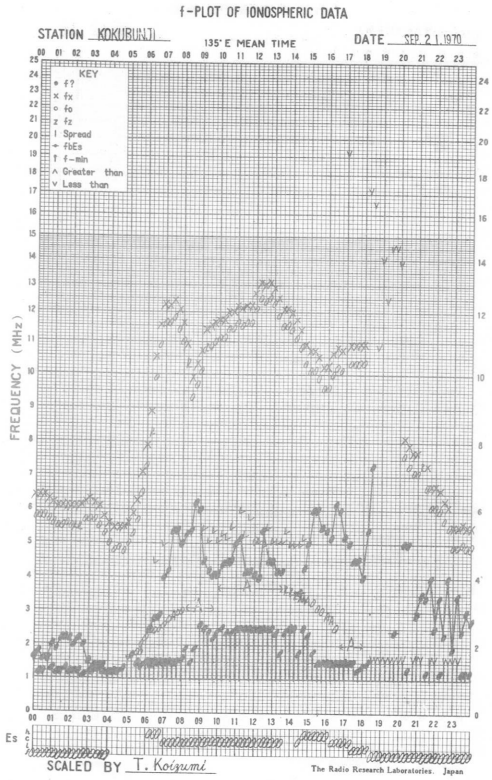
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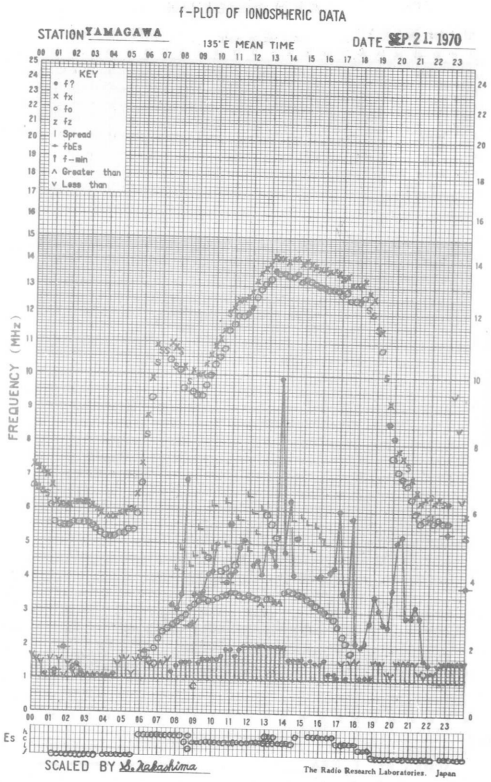
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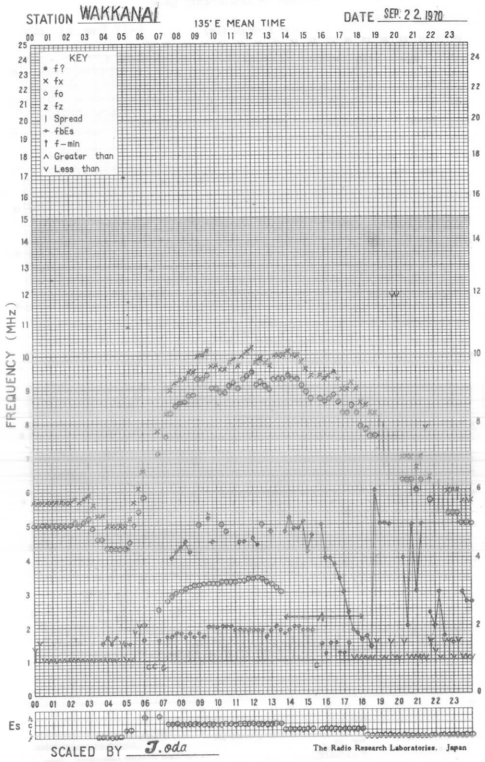
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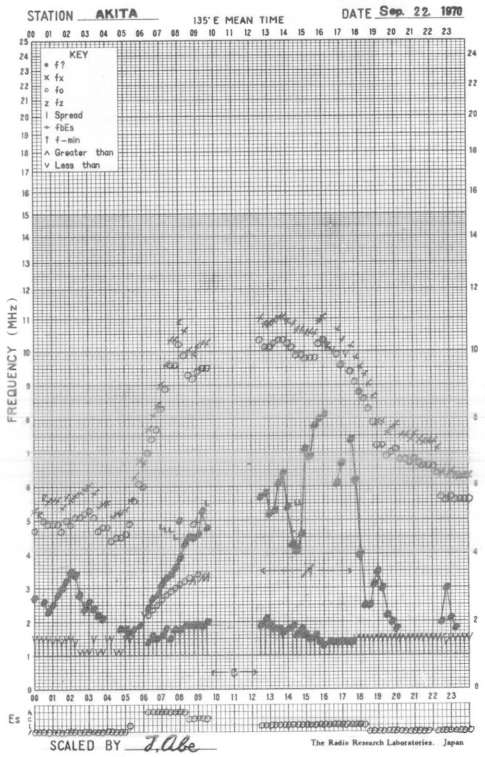
The Radio Research Laboratories. Japan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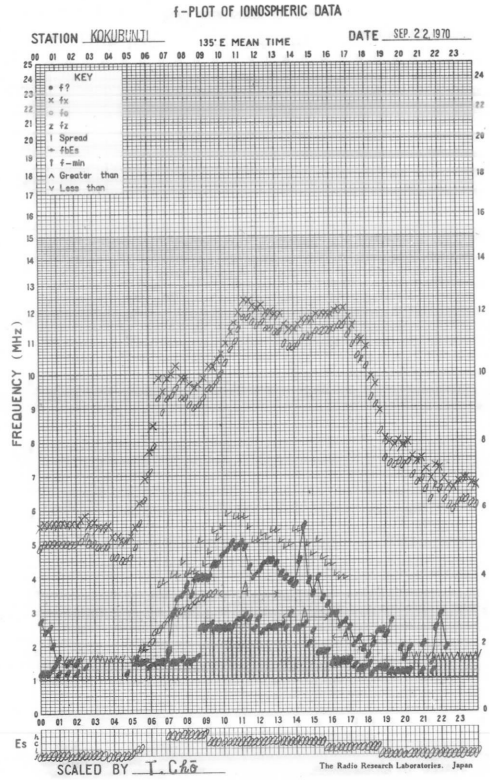
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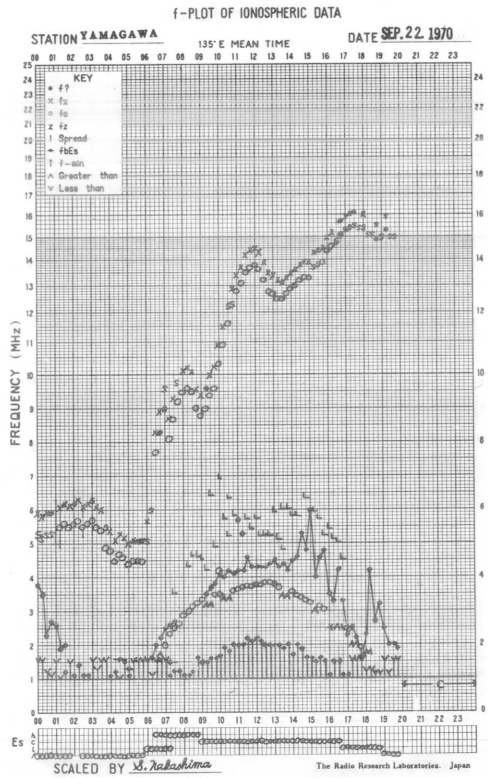
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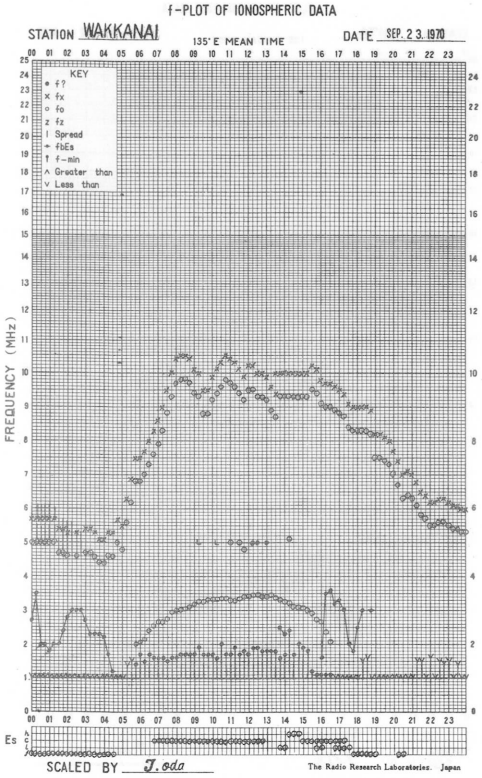
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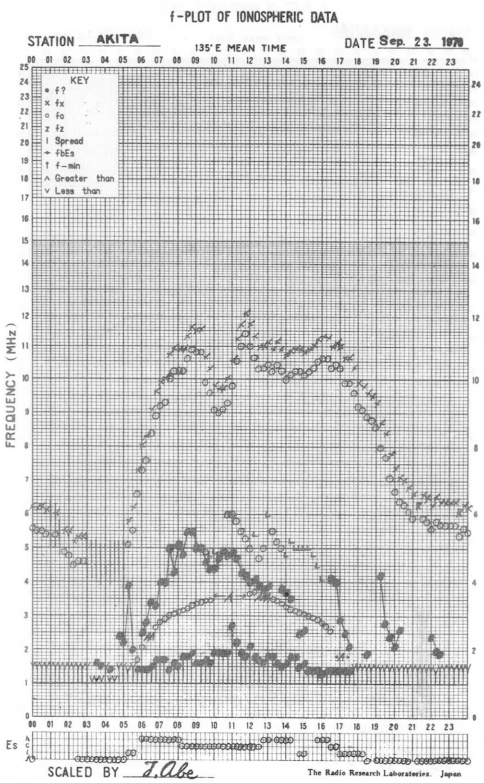
The Radio Research Laboratories. Japan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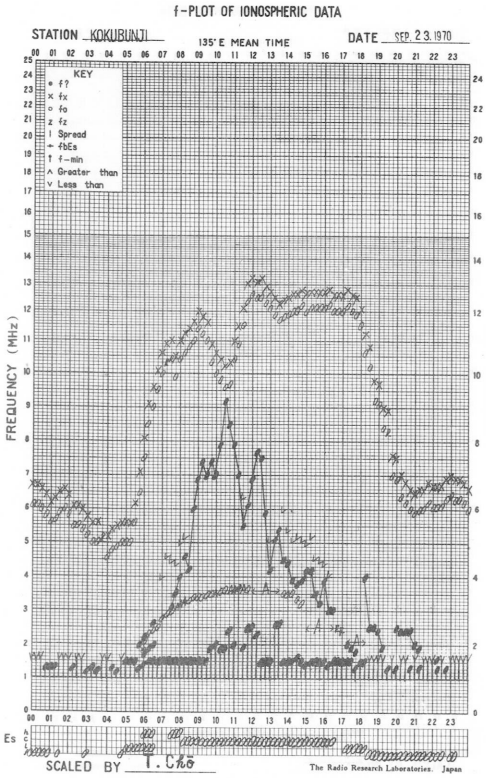
The Radio Research Laboratories. Japan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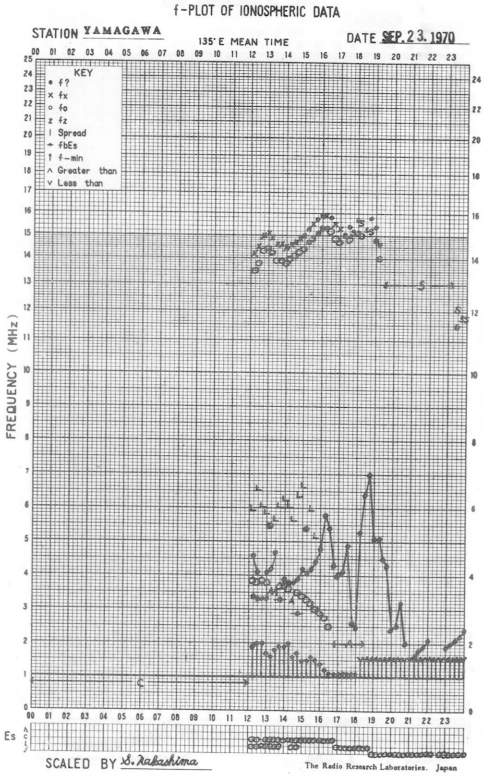
The Radio Research Laboratories. Japan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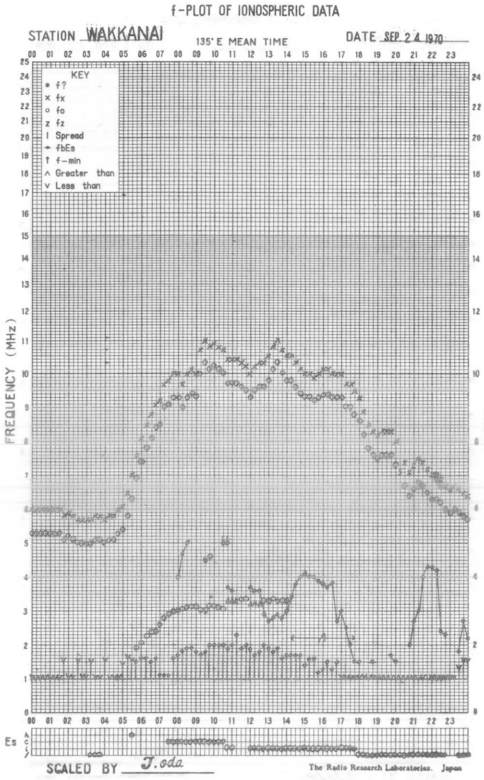
The Radio Research Laboratories. Japan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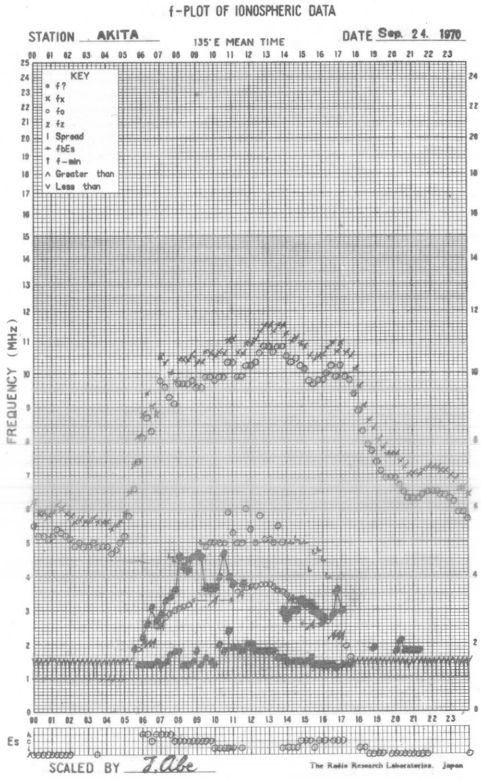
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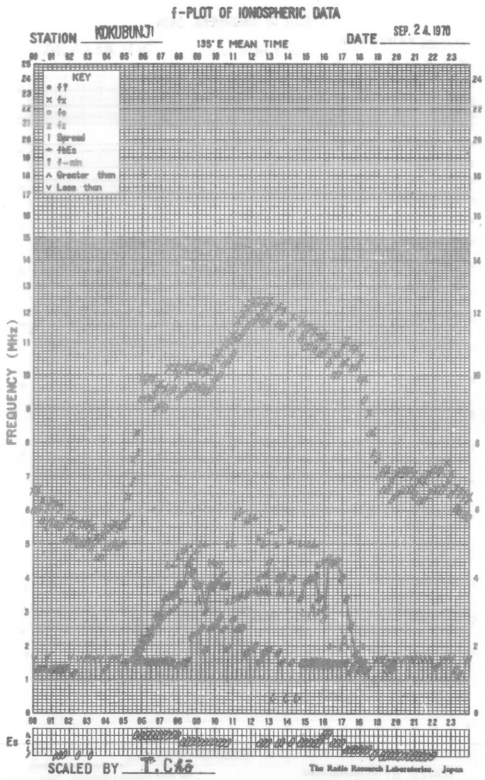
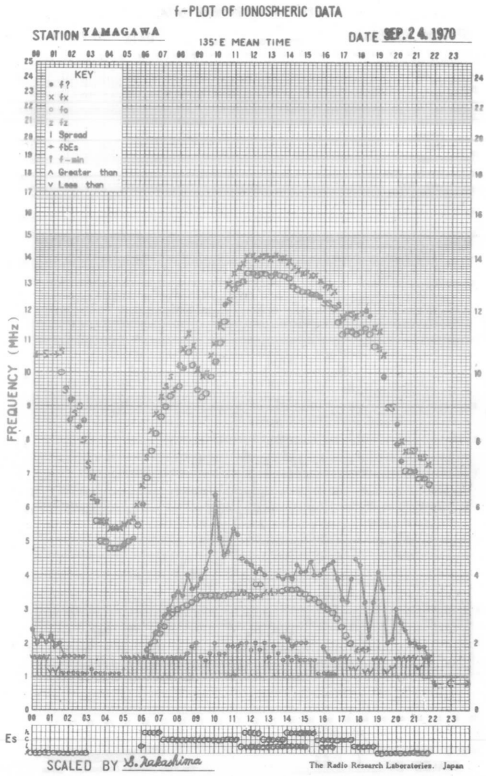
SCALED BY I. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE SEP. 24. 1970
KEY
FREQUENCY (MHz)
SCALED BY T. Gas
The Radio Research Laboratories. Japan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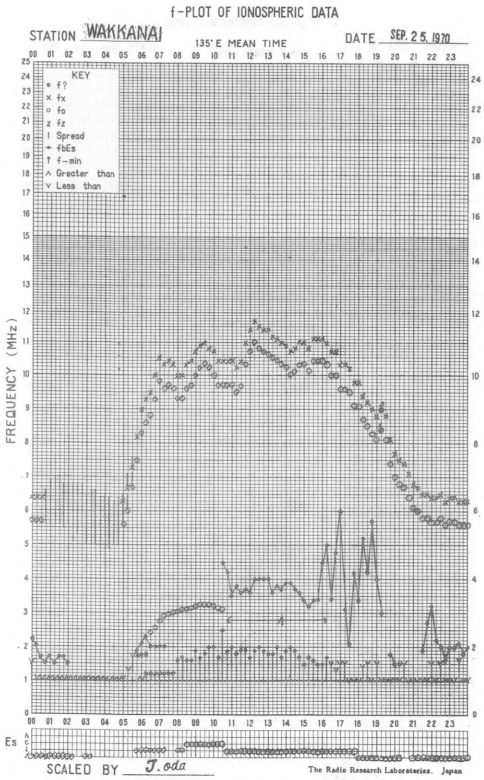
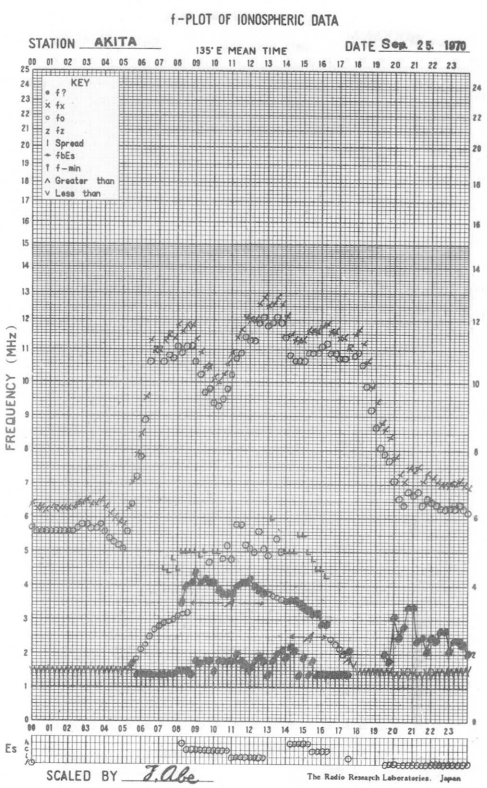
DATE SEP. 24. 1970
KEY
FREQUENCY (MHz)
SCALED BY S. Sakashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE SEP. 25, 1970
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
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DATE Sep. 25, 1970
KEY
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○ fo
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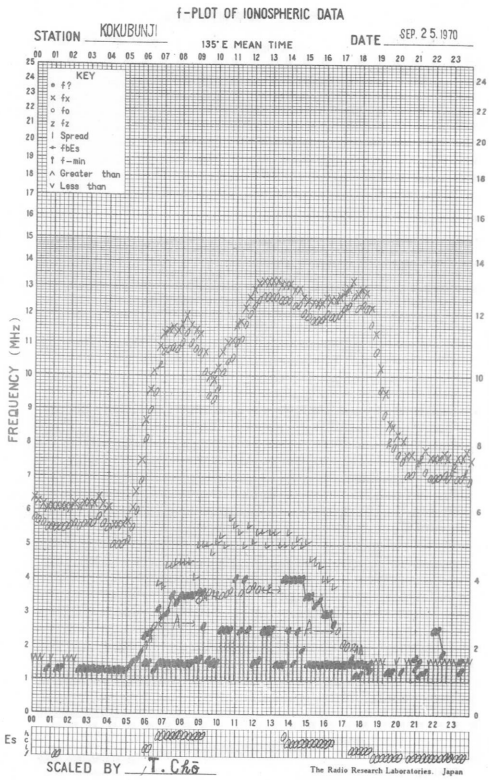
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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z fz
| Spread
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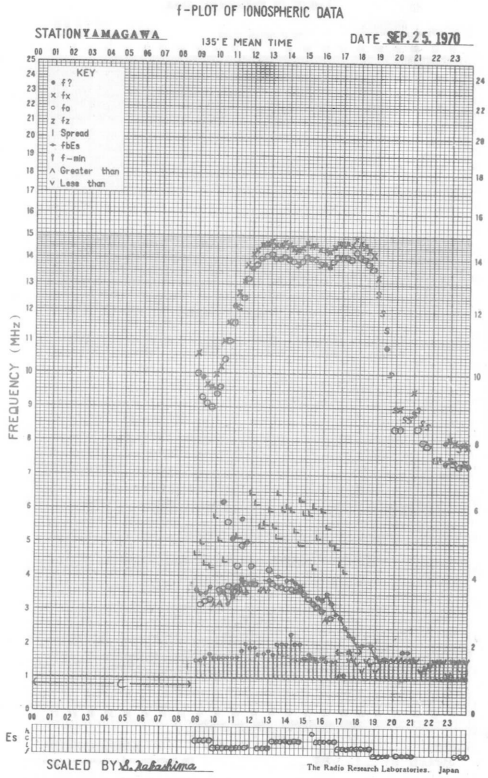
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Obi
The Radio Research Laboratories. Japan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STATION YAMAGAWA
135° E MEAN TIME
DATE SEP. 25, 1970
KEY
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○ fo
z fz
| Spread
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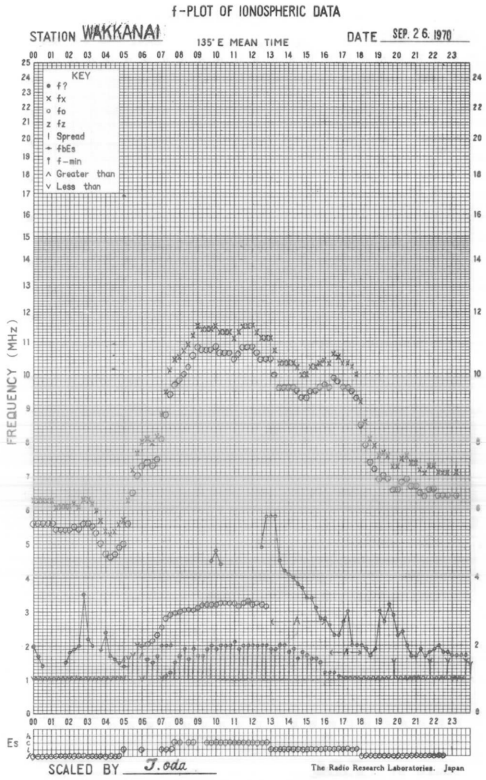
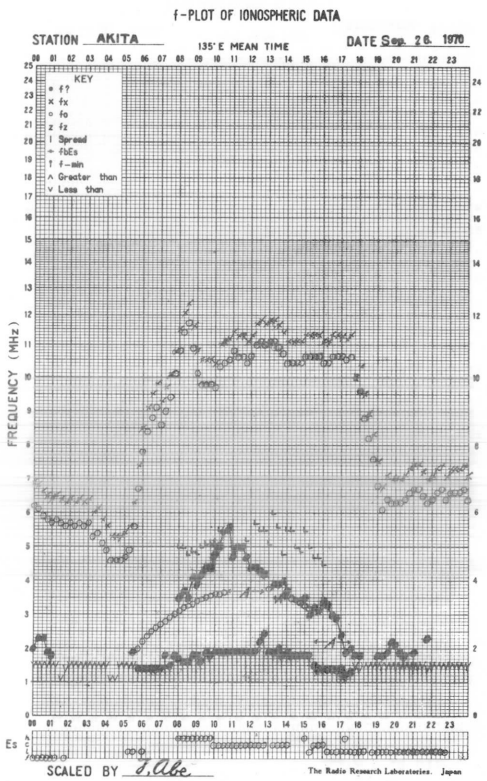
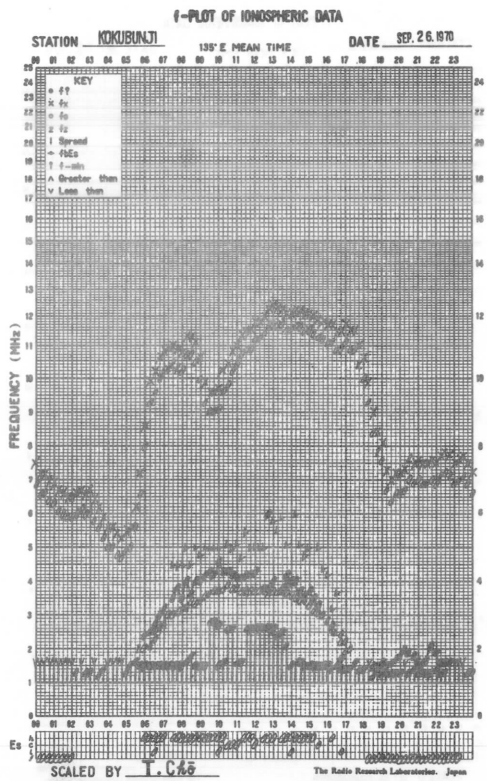
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE SEP. 26. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Sep. 26. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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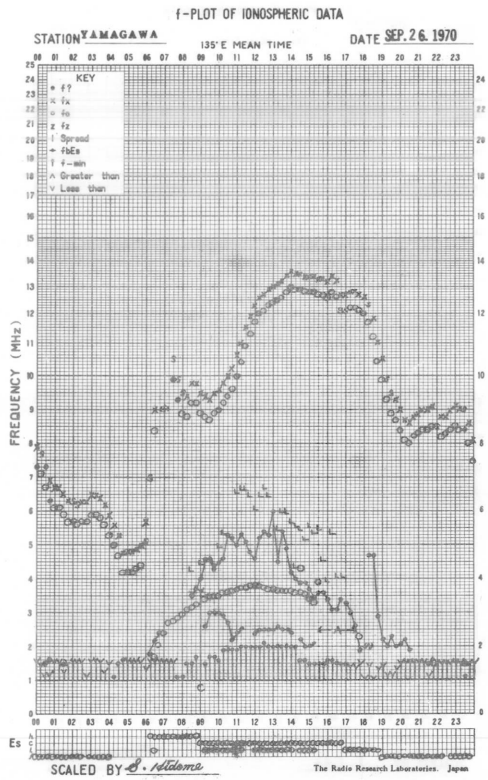
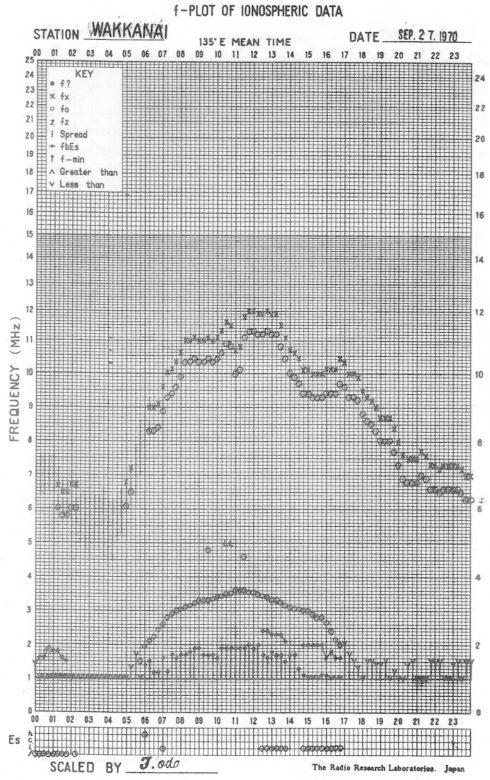
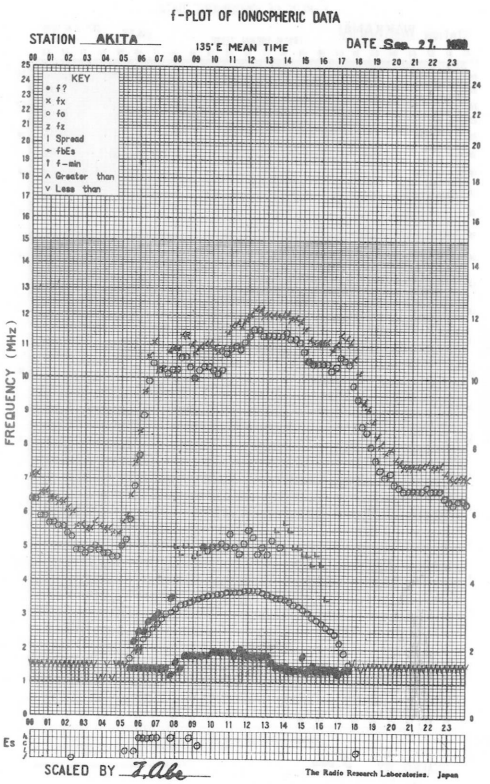
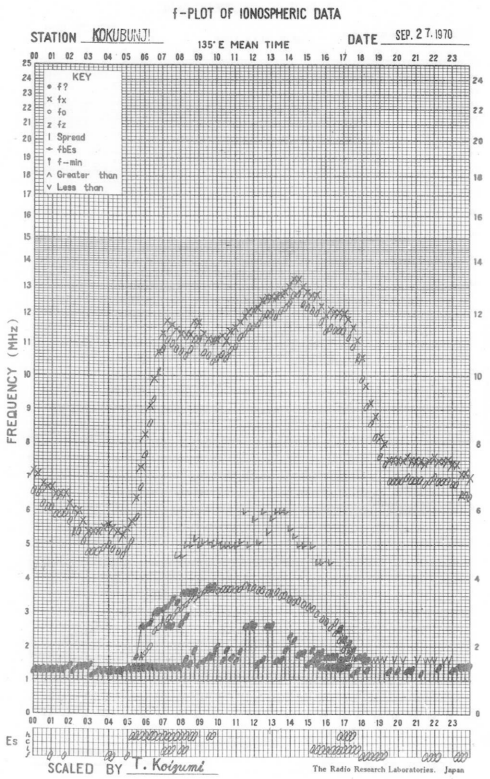
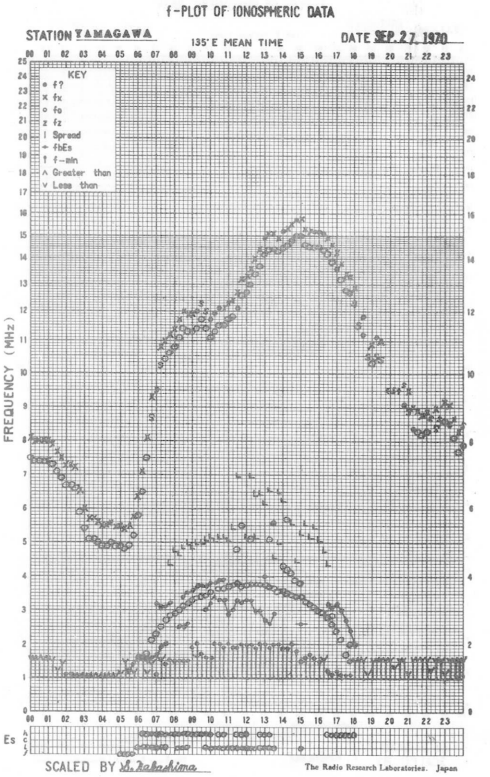
STATION KOKUBUNJI
135°E MEAN TIME
DATE SEP. 26. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ch6
The Radio Research Laboratories. Japan

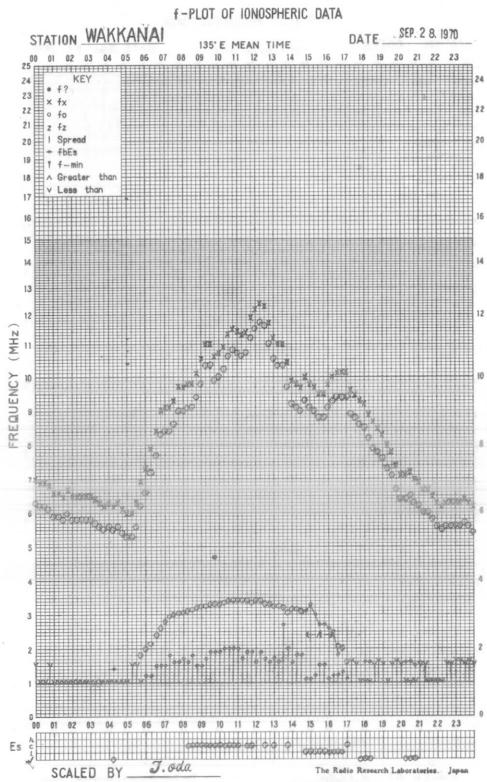

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE SEP. 26. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nitdema
The Radio Research Laboratories. Japan

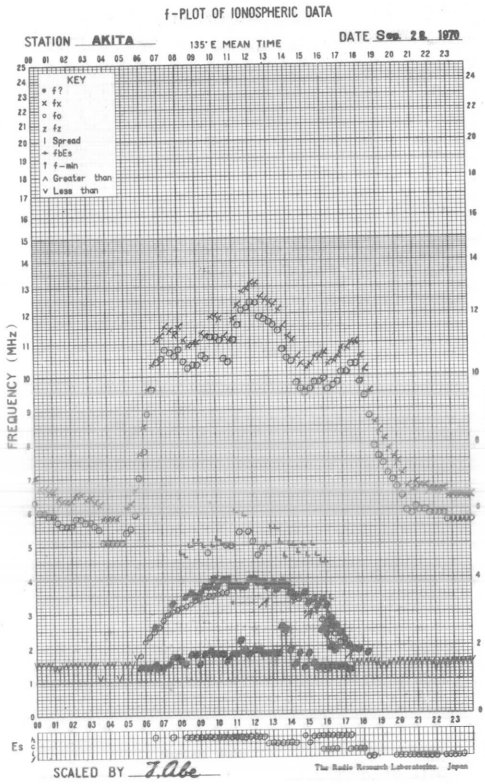

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE SEP. 27. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

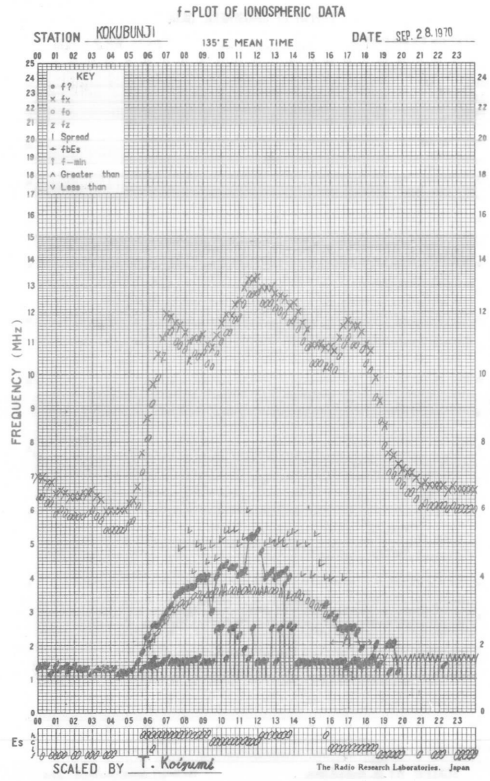

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Sep. 27. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan

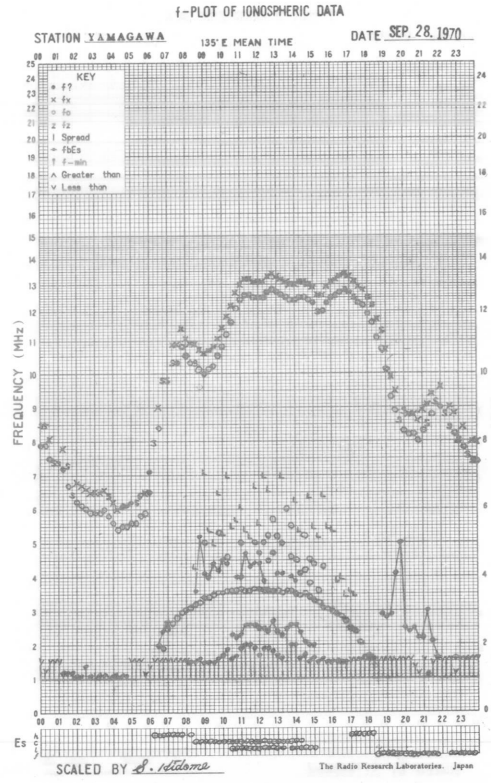

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE SEP. 27. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan

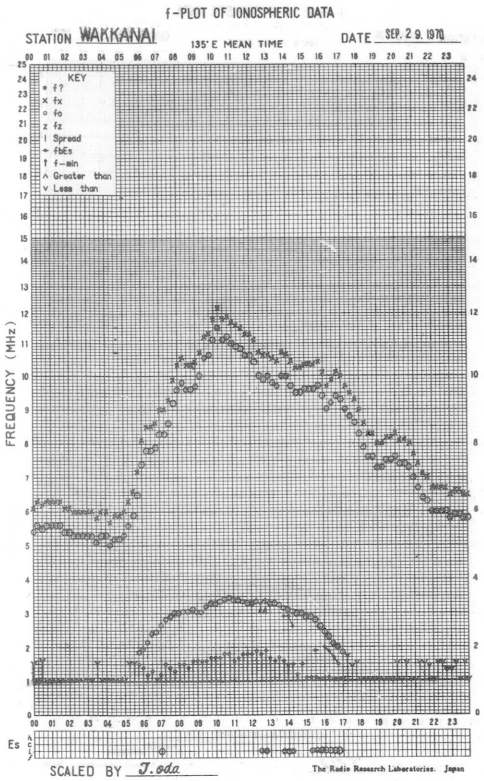

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE SEP. 27. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY H. Takashima
The Radio Research Laboratories. Japan

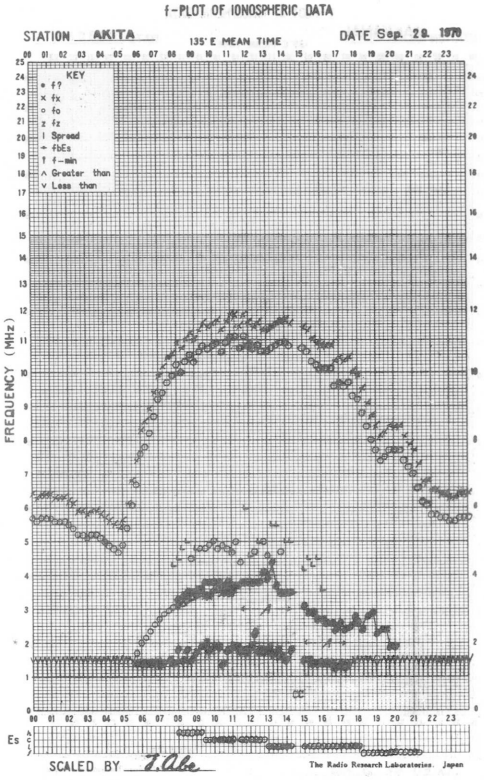

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE SEP. 28. 1970
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

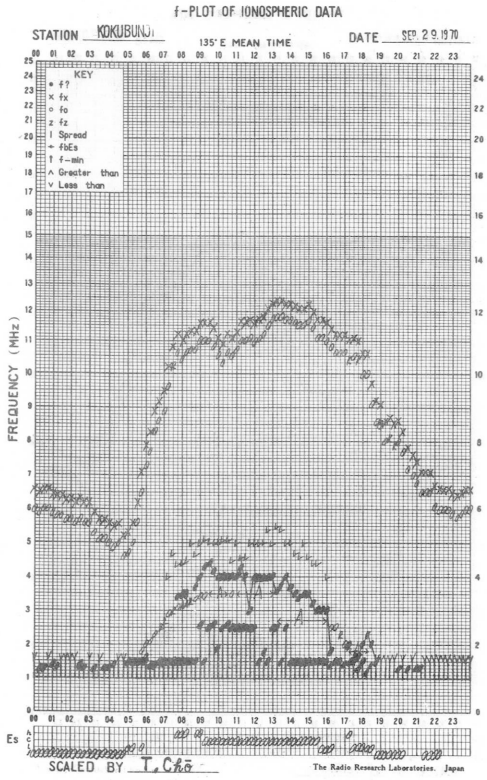

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Sep. 28. 1970
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE SEP. 28. 1970
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE SEP. 28. 1970
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Kitamura
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE SEP. 29. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
~ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY J. oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Sep. 29. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
~ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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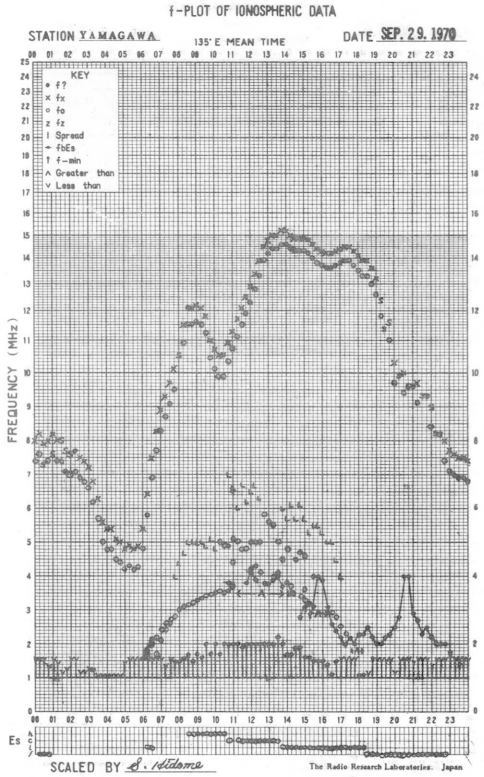
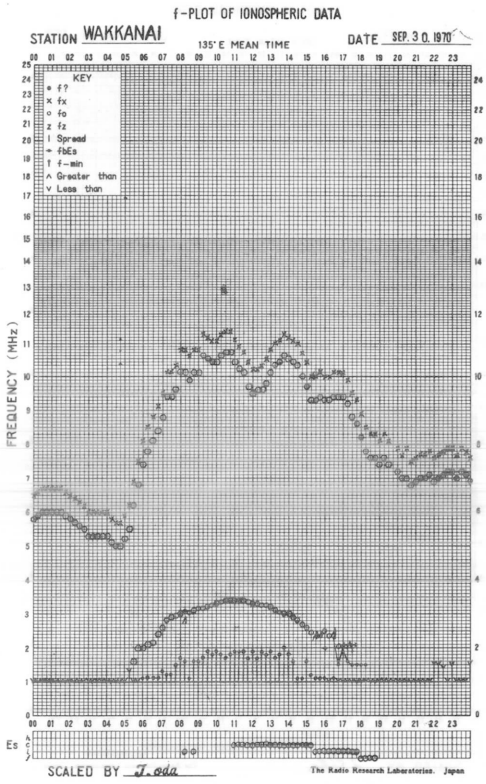
STATION KOKUBUNJI
135° E MEAN TIME
DATE SEP. 29. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
~ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE SEP. 29. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
~ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Hidoma
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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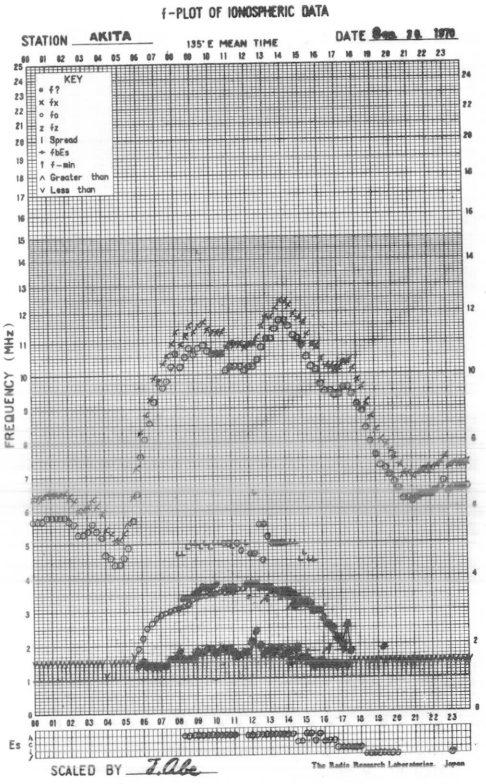
135°E MEAN TIME
DATE SEP. 30. 1970
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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○ fo
z fz
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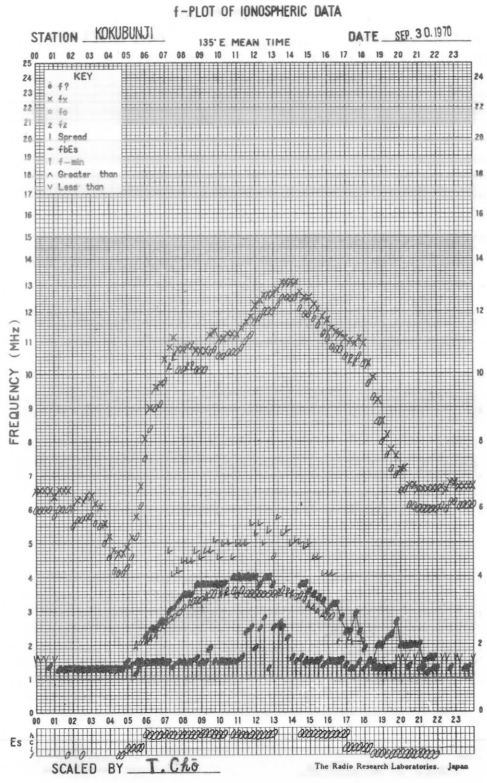
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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DATE SEP. 30. 1970
KEY
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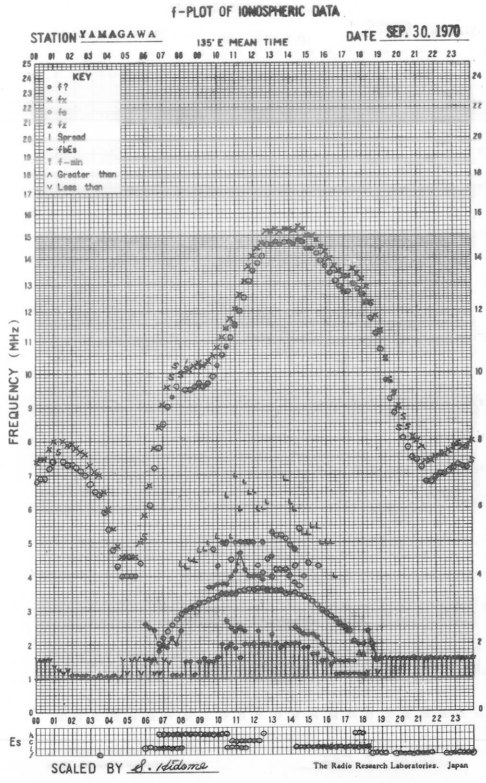
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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DATE SEP. 30. 1970
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY A. Hidama
The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

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

	Flux density 10^{-22} Wm^{-2}(Hz)$^{-1}$					Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	5	5	5	4	5	0	0	0	0	0
2	6	6	7	5	6	0	0	0	0	0
3	5	5	6	36	5	0	0	0	0	0
4	65	69	59	-	66	0	0	0	-	0
5	168	147	91	44	141	0	0	0	0	0
6	43	50	62	27	49	0	1	1	1	0
7	28	20	19	18	24	1	1	1	1	1
8	15	15	15	7	16	1	1	0	0	1
9	6	7	6	6	7	1	0	0	0	0
10	4	5	6	5	5	0	0	0	0	0
11	6	7	6	7	6	0	0	0	0	0
12	7	6	6	6	7	0	0	0	0	0
13	5	5	6	-	5	1	0	0	-	0
14	q	6	7	6	6	0	0	0	0	0
15	6	7	7	6	6	0	0	0	0	0
16	5	6	7	8	6	0	0	0	0	0
17	10	9	8	9	9	0	0	0	0	0
18	9	8	9	7	9	0	0	0	0	0
19	9	10	8	12	9	0	0	0	0	0
20	10	11	11	10	11	0	0	0	0	0
21	8	8	7	7	9	0	0	0	0	0
22	7	6	6	6	7	0	0	0	0	0
23	7	8	11	18	8	0	0	1	1	0
24	13	17	16	-	16	1	1	1	-	1
25	-	(26)	43	6	(38)	-	(1)	1	0	(1)
26	9	8	9	10	8	1	1	1	1	1
27	10	7	5	8	8	1	0	0	1	1
28	(8)	-	-	-	(8)	(0)	-	-	-	(1)
29	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-

Note No observations during the following periods:

4th 2020- 2400 24th 2020- 25th 0510
13th 2020- 14th 0140 28th 0115- 30th 2400

q: quiet level, when radiometer is unstable.

SOLAR RADIO EMISSION

Flux Density

Month: September 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	(25)	25	25	25	25
2	26	26	26	27	26
3	27	28	27	28	27
4	27	27	27	28	27
5	28	28	28	26	28
6	27	27	26	26	27
7	-	27	27	25	27
8	(23)	23	22	24	24
9	24	24	23	24	24
10	23	22	22	24	23
11	27	25	25	28	25
12	27	26	24	26	26
13	26	25	25	-	25
14	(27)	26	27	24	27
15	24	25	24	25	24
16	25	24	25	23	25
17	23	24	24	22	23
18	23	23	24	24	23
19	24	24	25	24	24
20	25	25	25	25	25
21	26	26	26	23	25
22	25	26	26	26	25
23	27	27	28	(25)	27
24	28	27	27	-	27
25	30	30	-	-	(30)
26	-	29	29	25	(29)
27	26	24	26	26	25
28	26	25	24	26	25
29	27	25	24	24	26
30	25	26	24	-	25

Note No observations during the following periods:

1st	0125-		0300	12th	0055-		0145
5th	0300-		0345	13th	2020-	14th	0200
5th	2230-	6th	0030	23rd	2235-	24th	0005
7th	0020-		0310	24th	2020-	25th	0015
7th	2020-		2150	25th	0500-	26th	0300
8th	0015		0210	30th	2020-		2400

Distinctive Events

(single-frequency observations)

Month: September 1970
Observing station: Hiraiso
Normal observing period: 2020 - 0850 (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	
1	200	2228.0	2231.0	4.5	C	90	10	
2	200	0838.5	0839.5	2.0	C	120	40	
3	200	0144.0	0145.0	2.5	C	360	70	
	500	0342.7	0342.8	0.8	C	340	180	
	200	0343.0	0343.5	1.0	C	1800	290	
	500	2215.3	2215.5	0.7	C	550	310	
	200	2215.5	2215.5	1.5	C	180	35	
4	500	0642.5	0643.5	1.5	C	140	65	
5	500	2048.5	2049.3	4.0	C	150	40	
6	500	0100	0102.2	5.0	C	480	150	* 0100 - 00.5
		0216.8	0219.5	8.2	C	70	40	
		0412.2	0412.8	6.3	C	380	70	
		2210.0	2210.2	1.5	C	270	120	
9	500	0349.5	0351.5	4.5	C	50	30	
10	500	2129.0	2129.6	1.0	C	80	40	
	200	2129.8	2130.0	0.7	C	160	70	
11	200	2308.0	2308.0	0.5	C	320	140	
		2315.0	2315.2	1.0	C	690	140	
13	200	0015.8	0016.0	3.5	C	180	20	
23	200	0653.0	0654.0	2.0	C	380	40	
26	200	0020.0	0020.0	2.0	C	800	20	
28	500	0418.5	0421.7	4.9	C	40	5	

* Interrupted by calibration.

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

SEP 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	-14	-3	-4	2	9	6	-4	-18	-21	ES -23	ES -18	ES -4	-18	8	-6	-22	ES -26	ES -26	ES -25	-22	4	ES -8	-1	-12
2	-6	-8	-3	-2	2	5	2	8	0	-10	-16	ES -4	-16	-15	1	-1	-8	-3	-6	-6	-2	0	-5	-8
3	-3	2	-4	0	-12	C	ES -12	-2	-9	ES -9	-14	-1	-3	7	-6	-12	12	ES -12	ES -27	-3	4	-7	-5	-4
4	-8	-5	-5	4	6	6	-15	-13	-13	-17	-15	ES -1	ES -20	-6	-12	1	2	-4	ES -25	-11	-4	-7	-16	-10
5	-10	-5	-6	-3	8	9	4	2	-3	ES -18	ES -21	ES 0	ES -27	0	-10	-2	0	-5	-14	-8	ES -1	-6	-5	-6
6	-5	-8	-5	0	10	10	-7	ES -15	-14	-14	ES -14	ES 0	ES -4	3	-1	0	-1	-4	-1	-7	-3	-6	-6	-9
7	-7	-3	-2	0	13	10	18	3	-12	ES -12	ES -10	ES 1	-16	5	1	1	-4	-3	0	-4	-5	-4	-7	-8
8	-7	-7	-5	2	3	4	5	-11	-17	-9	-6	-8	-7	15	7	2	5	2	-1	-10	-10	-6	-8	-5
9	0	-4	-3	8	5	11	0	-12	-7	-7	-12	-16	ES -15	-8	-4	-1	-3	-4	-8	-6	-3	C	C	C
10	-7	-1	-1	-1	5	7	-15	-9	-4	-5	-8	ES 6	ES -10	ES -10	6	1	3	-1	0	-6	1	-3	-6	-6
11	-5	0	-2	7	7	12	19	14	-9	-16	ES -16	ES 0	ES -7	6	ES -9	-6	-3	-1	-4	-4	-3	-4	-7	-16
12	-2	S	-1	3	4	19	6	-2	-7	-9	0	-6	ES -4	-9	-8	-2	4	-1	-15	-10	-2	-2	-5	-4
13	-4	-3	-3	6	11	8	ES -15	ES -14	-2	-1	1	ES 11	ES -27	-15	7	-2	C	C	C	C	C	C	C	C
14	C	C	C	-13	-11	ES -21	ES -25	-19	ES -15	ES -24	ES -24	ES -24	ES -22	ES -22	ES -22	C	C	C	C	C	C	C	C	C
15	2	2	2	0	-4	ES -16	-16	-12	ES -8	ES -14	ES -14	ES -3	ES -17	ES -17	-26	ES -26	-7	ES -26	ES -13	ES -26	-11	-3	-7	-6
16	-4	3	2	0	2	12	-5	ES -6	ES -9	ES -11	ES -14	ES 1	ES -19	ES -22	-7	ES -27	-1	9	-3	ES -27	-9	-7	-8	-5
17	-3	-4	-1	8	6	4	ES -4	ES -12	ES -3	ES -8	ES -6	ES -3	ES -20	ES -18	-16	-12	0	-12	-15	ES -27	-6	-4	1	-5
18	-2	-1	6	8	-6	-3	-14	ES -16	ES -9	ES -23	ES -23	-1	-12	-18	-12	S	S	S	-13	ES -26	-6	-9	S	S
19	S	-3	5	5	12	ES -16	ES -15	-16	ES -16	-8	S	-8	S	S	-4	-19	-1	1	-1	ES -28	-4	-4	-4	-4
20	-6	3	2	10	4	ES -16	ES -14	ES -14	ES -12	ES -10	ES -10	ES 0	ES -11	ES -12	-6	ES -26	ES -26	ES -26	ES -26	ES -26	-7	ES -11	-7	-3
21	-3	-3	1	2	9	ES -17	ES -9	ES -9	ES -13	ES -5	-10	ES 0	ES -9	S	ES -24	ES -24	ES -24	ES -24	-6	ES -24	ES -22	ES -22	-10	1
22	-3	-1	3	12	4	ES -13	ES -13	ES -13	ES -15	ES -15	ES -12	ES -6	ES -7	ES -8	-1	-10	1	ES -22	-7	ES -22	-7	-7	-4	-7
23	-7	-1	2	3	9	-2	ES -13	ES -10	ES -13	ES -13	ES -13	ES 2	ES -13	-9	-7	ES -9	0	0	ES -22	-7	-4	-3	-7	-3
24	-7	-2	0	3	9	6	ES -14	ES -14	ES -14	ES -12	ES -15	ES 0	ES -11	ES -11	0	-2	2	0	-4	ES -24	-2	-1	-2	-1
25	-1	-3	0	8	10	0	ES -13	ES -10	ES -6	ES -7	ES -3	ES 5	ES -4	ES -9	-4	-6	-2	1	2	ES -26	-5	-3	-4	-1
26	-3	-2	3	9	5	0	-14	ES -14	ES -11	ES -13	ES -14	ES 3	ES -12	ES -12	0	0	-4	-1	-7	ES -25	-4	-4	-3	-2
27	-2	-2	-1	1	11	4	ES -16	ES -11	-8	ES 3	6	ES 3	ES -12	ES -10	-3	-7	-6	8	-4	ES -25	-5	-2	-4	0
28	1	0	4	6	7	-13	-10	ES -8	ES -10	-11	ES -12	ES -1	ES -16	ES -14	-11	4	4	3	ES -25	ES -25	-4	-1	-1	-1
29	-2	1	3	17	15	8	3	-8	-5	-11	ES -8	ES 4	ES -9	-14	-11	-9	-3	3	-2	-2	-4	-3	-7	C
30	-1	1	4	10	10	10	-8	-5	-4	-5	-11	ES -2	S	ES -11	-6	-7	5	5	8	-2	-2	0	7	1
CNT	28	28	29	30	30	29	30	30	30	30	29	30	28	28	30	28	27	27	28	28	28	27	26	25
MED	-4	-2	-1	3	6	5	ES -11	ES -11	ES -9	ES -11	ES -12	ES 0	ES -12	ES -10	-6	-6	-1	-1	-6	-16	US -4	-4	-5	-5
UD	0	2	4	10	12	12	6	3	-3	ES -5	0	ES 5	ES -4	7	6	1	5	5	0	-3	1	-1	-1	0
LD	-8	-7	-5	-2	-6	ES -16	ES -16	ES -18	ES -16	ES -23	ES -21	ES -8	ES -22	ES -18	ES -22	ES -26	ES -24	ES -26	ES -25	ES -27	ES -10	ES -9	-8	-10

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

SEP 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	-16	-14	-5	ES 15	ES 19	8	4	10	-7	7	10	12	9	4	-14	ES -26	ES -26	-15	ES -26	-5	3	-7	-20	-6
2	ES -27	-18	-12	-2	7	9	10	21	0	1	16	ES -6	ES -7	-12	5	3	-18	-10	-2	-5	1	-9	-11	-14
3	-12	-11	-6	-5	-2	9	12	15	18	14	-4	-1	-6	-7	1	19	15	-12	ES -27	-1	4	-4	-2	-13
4	-16	-9	-9	4	7	11	9	18	11	13	12	4	9	-11	6	10	3	2	ES -25	0	ES 3	-8	-6	-12
5	-17	-16	-6	1	3	9	11	16	16	14	14	9	8	4	-10	ES -10	6	-2	-18	-5	ES 1	-6	-13	-9
6	-15	-11	-8	-4	2	8	12	16	19	13	10	7	4	1	4	6	-3	8	-1	0	ES 4	-7	-9	-15
7	-18	-9	-9	-3	1	6	13	11	22	15	17	9	7	16	-2	-3	-8	6	1	1	-1	-4	-6	-14
8	-15	-15	-10	-5	1	6	10	18	20	10	13	21	7	ES -23	ES -12	ES -23	-16	1	ES -27	-10	-6	-12	-7	-12
9	-8	-18	-3	-2	6	7	13	17	19	15	18	14	9	1	3	16	-3	11	2	-7	C	C	C	-13
10	-10	-16	-6	-3	2	5	11	6	8	14	14	15	ES 4	1	-2	0	16	11	-8	0	ES 7	-3	ES 8	-15
11	-7	-5	-2	3	9	14	18	18	24	18	19	2	ES 0	-12	ES -7	ES 4	9	8	7	-2	1	-4	-9	-7
12	-12	S	-5	4	9	15	18	21	22	19	21	24	-1	-12	-18	ES -18	-15	0	ES -27	5	5	-3	-5	-6
13	-8	-14	-4	4	8	11	18	21	24	24	20	ES 9	-5	6	14	C	C	C	C	C	C	C	C	C
14	C	C	C	0	6	10	11	12	12	-11	ES -24	ES -24	ES -22	ES -22	ES -22	C	C	C	C	C	C	C	C	C
15	-6	-7	-4	2	9	19	17	17	3	22	1	ES -6	-9	ES -17	ES -26	ES -26	ES -26	ES -15	ES -26	0	3	-3	-11	-8
16	-4	-5	-3	2	14	15	17	18	5	13	9	10	1	ES -28	ES -28	ES -27	ES -27	-3	-6	-2	-1	-6	-6	-9
17	-5	-6	-5	5	11	17	18	19	16	22	16	13	12	ES -14	-24	ES -27	-16	16	ES -27	-2	4	-5	-9	-9
18	-9	-2	-2	6	9	11	14	16	16	20	23	11	14	ES -12	S	S	S	-5	ES -27	-3	0	S	S	S
19	S	-7	-5	3	9	16	17	18	24	S	S	-7	-11	ES -19	ES -28	ES -16	ES -28	-15	ES -28	1	1	-4	-7	-6
20	-10	-4	-1	12	5	13	15	12	17	17	6	-3	ES -11	ES -17	ES -17	ES -26	ES -26	ES -26	ES -26	-2	0	-3	-5	-9
21	-9	-5	-3	5	6	7	13	13	19	15	7	ES 6	ES -1	S	ES -24	ES -24	ES -24	ES -24	-12	-1	-1	-7	-2	-8
22	-4	-7	-4	3	6	15	14	12	19	10	ES -4	ES -7	-2	ES -7	ES -10	ES -13	9	4	-4	ES -22	ES 2	-8	-10	ES -22
23	ES -22	ES -22	-3	8	7	10	14	14	14	9	14	ES 2	-4	ES -7	ES -9	ES -5	ES -8	ES -13	ES -22	1	7	-13	-8	ES -10
24	-7	-12	1	3	6	13	17	-2	17	2	1	ES -5	14	ES -3	ES -15	ES -24	ES -24	3	ES -24	-4	5	-1	-11	-9
25	ES -15	ES -12	-13	5	11	16	17	18	20	20	16	ES 3	ES -4	ES -11	ES -8	-13	ES -17	5	10	3	-2	-3	-8	-12
26	-14	1	1	1	12	14	17	16	7	11	10	ES 1	14	ES -16	ES -12	-10	ES -25	ES -25	ES -25	-4	4	-6	-11	-10
27	-11	-8	1	6	13	13	19	17	18	21	14	18	10	-8	-12	ES -10	ES -13	-6	ES -25	ES -25	4	ES -16	ES -16	-7
28	-6	-3	-6	2	8	18	18	16	20	21	12	ES -1	ES -7	ES -13	ES -14	ES -25	-3	6	-10	-3	0	-1	-7	-10
29	-11	-2	1	5	9	15	17	17	20	9	7	21	-7	ES -11	ES -26	ES -17	ES -17	19	ES -17	ES -17	-2	C	C	C
30	-5	-8	-1	3	9	20	20	11	22	13	ES -4	ES -2	ES -8	ES -6	ES -26	ES -8	ES -11	8	ES -13	-1	4	-5	-4	-1
CNT	28	28	29	30	30	30	30	30	30	29	29	30	30	29	29	27	27	28	28	28	27	25	25	26
MED	-10	-8	-4	US 3	US 8	12	14	16	18	14	12	US 5	US 0	ES -11	ES -12	ES -13	ES -15	0	ES -20	-2	ES 2	-5	US -8	-10
UD	-5	-2	1	ES 8	ES 13	18	18	21	24	22	20	21	14	4	5	10	9	11	2	1	ES 5	-3	ES -2	-6
LD	ES -18	ES -18	-10	ES -4	ES 1	6	10	10	3	2	ES -4	ES -7	ES -11	ES -22	ES -26	ES -26	ES -26	ES -24	ES -27	ES -17	ES -2	-12	ES -13	ES -15

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Sept. 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	3°		(3)(3) 2 2	4 4 - 2	4 3 (4) 4	N N N N	04.3	24××	85γ
2	4-		(3)(5) 4 3	4 4 - 3	3 3 (4) 4	N N N N			
3	4-		(2)(4) 4 3	4 4 - 4	4 4 5 4	N N N N			
4	4-		(4)(3) 3 3	5 4 - 4	4 4 5 4	N N N N			
5	4°		(4)(4) 4 4	5 4 - -	4 4 (5) 4	N N N N			
6	4+		(4)(4) 5 4	4 - - -	4 4 5 4	N N N N			
7	4°		(5)(5) 5 5	4 2 - 3	3 4 5 4	N N N N			
8	4°		(5)(4) 5 4	4 (3) - C	4 4 (4) 4	N N N N			
9	4°		(5)(4) 5 4	3 3 - 3	4 4 5 5	N N N N			
10	4+		(4)(5) 5 5	3 4 - 4	4 4 (5) 3	N N N N			
11	5-		(5)(5) 5 (5)	4 4 - 4	4 4 (5) 5	N N N N			
12	5-		(5)(5) 4 (5)	4 4 - -	4 5 (4) 4	N N N N			
13	4°		(4)(5) 4 C	(3) - - -	4 5 (5) C	N N N N	02.3	---	87γ
14	2-		(1)(1) 1 (2)	C 4 - 2	(4) 3 (2) C	N U U U	---	01××	
[15]	3°		3 (3) 1 (3)	4 4 - 4	4 3 (3) 4	N N N N			
[16]	4-		4 (4) 3 (3)	4 4 - 4	4 4 (3) 4	N N N N			
[17]	3+		3 (4) 3 3	4 3 - 4	4 4 (4) 4	N N N N			
18	3+		(3)(3) 3 (3)	4 4 - 4	4 4 (4) 4	N N N N			
19	3+		(3)(3) 4 (3)	4 3 - -	4 4 (3) 4	N N N N			
20	3-		4 (4) 1 (2)	(3) - - -	4 4 (3) 4	N N N N			
21	3+		4 (4) 1 (2)	4 5 - 3	4 4 (3) 4	N N N N			
22	4°		4 (4) 4 4	4 4 - 3	4 4 (4) 4	N N N N			
23	4-		(3)(4) 3 (4)	4 4 - 4	4 4 (4) 4	N N N N			
24	4°		(4)(4) 4 4	4 4 - 5	4 3 (4) 4	N N N N			
25	4+		(4)(5) 5 (4)	4 4 - 4	4 4 (4) 4	N N N N			
26	4°		5 (4) 4 4	4 4 - -	4 4 (4) 4	N N N N			
27	4+		(5)(5) 4 (3)	(5) - - -	4 4 (4) 3	N N N N			
28	5-		5 (4) 4 (5)	5 4 - 5	4 4 (4) 4	N N N N			
29	5-		(5)(5) 4 5	4 5 - 5	4 4 (4) 4	N N N N			
30	5°		(5)(5) 5 (5)	5 4 - 5	4 4 (4) 4	N N N N			

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.

Sept. 1970	S W F								Correspondence		
	Drop-out Intensities (db)					Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
	CO	LM	HA	TO	SH							
1		15				22.30	15	S	1		×	
11	12	10				23.08	45	S	1		×	
28	12'		×			04.19	27	Slow	1	×	×	

I N U B O

1970	S P A								
Sep.	Phase Advance(degrees)					Time (U. T.)			Remarks
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
1		55	27	24	59	2230	2345	2234	×
2		29		8	9	0126	0228	0139	
2				12	7	0354	0417	0359	
2				14		0440	0522	0448	
2				8		0625	0647	0630	
2				8		0841	0907	0845	×
3	22	22	17	48	32	0146	0233	0152	
3				48	30	0344	0455	0349	×
4		—		4	7	0003	0035	0013	
4				32	17	0418	0510	0422	
4			10		17	2203	2240	2212	
6			8	24	13	0417	0454	0423	×
8			19			0431	0505	0439	
10				8	9	0015	0038	0023	
10				10		0242	0310	0247	
10				6		0407	0433	0413	
10		—			7	2132	2156	2139	
10		—		8*	9*	2352	0036	0011	
11		52	15	24	45	2312	0034	2327	×
12				8	6	0247	0306	0250	
26		—		16	9	0020	0036	0024	
26				12		0315	0340	0324	
27					32	2134	2301	2203	×
28		—		—	9	0041	0125	0053	
28		—	14	—	6	0240	0310	0245	

1970	S P A								
Sep.	Phase Advance(degrees)					Time (U. T.)			Remarks
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
28		–	11	56	30	0419	0543	0430	×

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.

IONOSPHERIC DATA IN JAPAN FOR SEPTEMBER 1970

第 22 巻 第 9 号

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