

TEST DATA OF JMA-3910

Type	JMA-3910	Ser.No. LS54966
Scanner Unit	NKE-1055	Ser.No. LS35135
Display Unit	NCD-3780	Ser.No. LS24966
Ship's Main	DC24V	

Date OCT. 28. 1998

Section Chief

M. Sudoh

Inspector

K. Guasa

1 Mechanical Tests

Apperance and Structure

Scanner Unit	Good
Display Unit	Good

2 Electrical Tests

2.1 Working of each operation unit

Scanner Unit	Good
Display Unit	

(1) By Knob

EBL/VRM	Good
SEA CLUTTER	Good
RAIN CLUTTER	Good
GAIN	Good
TUNE	Good
BRILL	Good
POWER SUPPLY	Good

(2) By Switches

MAIN MENU	Good
SUB MENU	Good
ENT	Good
RANGE $\triangle$	Good
RANGE ∇	Good
PANEL DIM	Good
DAY/NIGHT	Good
RANGE RINGS	Good
BEARING	Good
PULSE WIDTH	Good
TM RESET	Good
TM/RM	Good
OFFCENT	Good
SHM	Good
ACK	Good
VRM/VRM OFF	Good
EBL/EBL OFF	Good
FUNC	Good
ALARM	Good
TX/ST-BY	Good
TEN KEY (0 ~ 9)	Good
CLR	Good
ReverseKey	Good
DATE READ	Good
ACQ	Good

(3) Special keys

FEBL	Good
VECT +	Good
VECT -	Good
VECT	Good
Enlarging/Reducing Key	Good
DEST	Good
MAKER Key	Good
TRACK	Good
Starting Point Key	Good
End Point Key	Good
CANCEL TARGET	Good
MARK	Good
OWN TRACK	Good

2.2 Scanner unit

VSWR	frequency (MHz)	VSWR
	9380	1.35
	9410	1.15
	9440	1.40
Scanner Rotation Speed		20 rpm

2.3 Transmitter

Magnetron Ser. No.	C0096B
Operating Frequency (at 0.5 n.m.)	9402 MHz
(at 1.5 n.m.)	9402 MHz
(at 3 n.m.)	9400 MHz
(at 6 n.m.)	9400 MHz
(at 24 n.m.)	9400 MHz
Peak Output Power (at 0.5 n.m.)	9.88 KW
(at 1.5 n.m.)	8.99 KW
(at 3 n.m.)	9.60 KW
(at 6 n.m.)	9.54 KW
(at 24 n.m.)	9.60 KW
Pulse Length (at 0.5 n.m.)	0.12 μ S
(at 1.5 n.m.)	0.22 μ S
(at 3 n.m.)	0.40 μ S
(at 6 n.m.)	0.82 μ S
(at 24 n.m.)	1.16 μ S
Diode limiter Ser. No.	B0702A

2.4 Receiver

MIC Frontend Ser. No.	D0606A
IF Center Frequency	60 MHz
IF Band Width	20 MHz/ 6 MHz/ 3 MHz

2.5 Display

Input Voltage and Current

(at 0.5 n.m.)	24V 2.3A
(at 1.5 n.m.)	24V 2.4A
(at 3 n.m.)	24V 2.5A
(at 6 n.m.)	24V 2.5A
(at 24 n.m.)	24V 2.5A

Repetition Frequency

(at 0.5 n.m.)	2083 Hz
(at 1.5 n.m.)	2083 Hz
(at 3 n.m.)	1562 Hz
(at 6 n.m.)	781 Hz
(at 24 n.m.)	521 Hz

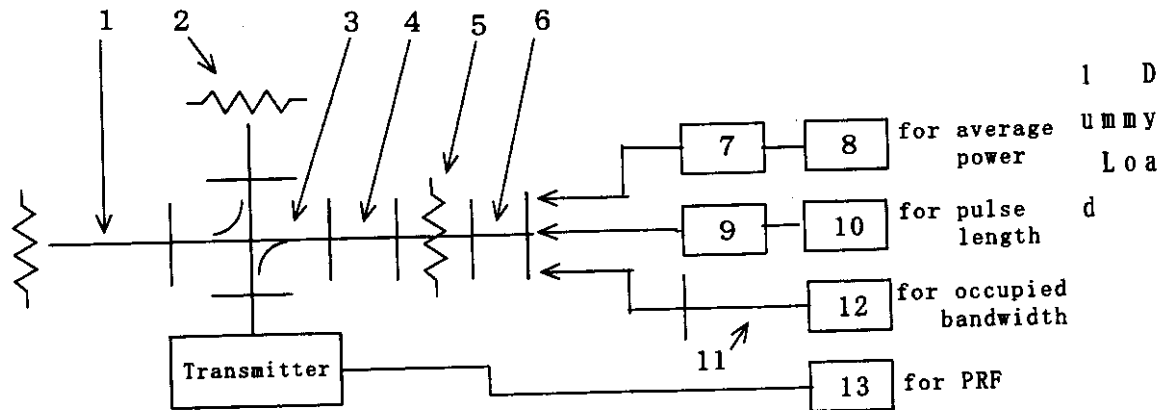
3 Overall Tests

Working time of Timer	3 min
Input Variation (21.6 V dc - 26.4 V dc)	Good
Overall Sensitivity	Good
Minimum Range	Good
Bearing Accuracy	Good
Mechanical Noise	Good

TEST INSTRUMENTATION LIST

Dummy Load	X910B	HP
High power Dummy Load	4D371A	Shimada
Directional Coupler -1	R11421 Coupling 30dB Directivity 30dB	Shimada
Directional Coupler -2	5D351 Coupling 20dB Directivity 20db	Shimada
Adaptor	X281A	HP
Attenuator	X382A	HP
Tapered W/G -1	195X KU	AIRCOM
Tapered W/G -2	11818A	HP
Tapered W/G -3	11519A	HP
Tapered W/G -4	11520A	HP
External Mixer	11517A	HP
Coaxial Cable-1	10503A	HP
Coaxial Cable-2	MI 04	Takeda Riken
Spectrum Analyzer -1	TR4133B	TAKeda Riken
Spectrum Analyzer -2	8563E	Hewlett Packard
Oscilloscope	465B	SONY/Tectronix
Frequency Counter	5300A	HP
Crystal Detector	423B	HP
Frequency Meter	X532B	HP
Power Meter	435A	HP
Power Sensor	8481A	HP
Signal Generator	TR4511	ADVANTEST
Test Antenna -1	1/2 Coaxial(Untuued)	
Test Antenna -2	AILTECH 94612-1	Log Peliodic
Test Antenna -3	AILTECH 94626-1	HP-11519A
Test Antenna -4	AILTECH 94627-1	HP-11519A
Temperature Chamber	-30 °C ~ +80 °C	Onisi Netugaku
Chield Room	31040/SIT1300F2	TDK

- 1.3 Load Impedance
 (Sec. 2.985) 1.0 RF Power Output
 (Sec. 2.989) 2.0 Occupied Bandwidth



X910B	HP		
2 high power Dummy Load	4D371A	Shimada	
3 Directional Coupler	5D351	Shimada	
Coupling			30 dB
Directivity			30 dB
4 Frequency Meter	X532B	HP	
5 Attenuator	X382A	HP	
6 Adaptor	X281A	HP	
7 Power Sensor	8481A	HP	
8 Power Meter	435A	HP	
9 Crystal Detector	423B	HP	
10 Oscilloscope	465B	SONY/Tectronix	
11 Coaxial Cable	MI-04	Takeda Riken	
12 Spectrum Analyzer	8563A	Hewlett Packard	
13 Frequency Counter	5300A	HP	

Measurement Point ; Transmitter Output

FCC Submittal Material Data

(Sec. 2.985)

1.0 RF Power Output

1.1 Peak Power

(at 0.5 n.m.)	9.88 KW
(at 1.5 n.m.)	8.99 KW
(at 3.0 n.m.)	9.60 KW
(at 6.0 n.m.)	9.54 KW
(at 24 n.m.)	9.60 KW

1.2 Average Power

(at 0.25 n.m.)	2.47 W
(at 1.5 n.m.)	4.12 W
(at 3.0 n.m.)	6.00 W
(at 6.0 n.m.)	6.10 W
(at 24 n.m.)	5.80 W

Type

VSWR 1.05 at 9.4 - 9.5 GHz

4D371A (Shimada co.)

(Sec. 2.989)

2.0 Occupied Bandwidth

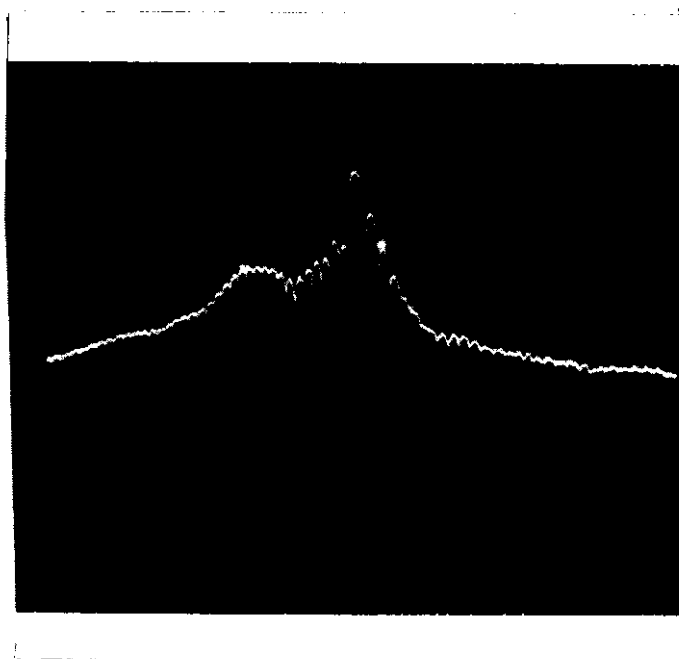
2.1 Short Pulse PRF

2083 Hz

Short Pulse Length

0.12 μ S

Scale
10dB/Div



RF Spectrum
Short Pulse

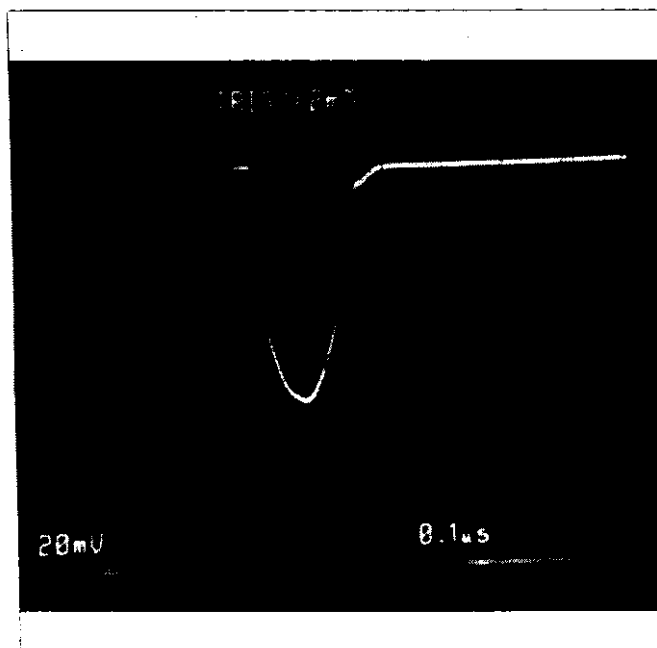
OBW=89.3 MHz

Scale 40 MHz/ Div

Center Frequency 9402 MHz

(Sec. 2.987)

Scale
20mV/Div



← 3dB

Detected RF
Pulse

Short Pulse

Scale 100nS/Div

(Sec. 2.989)

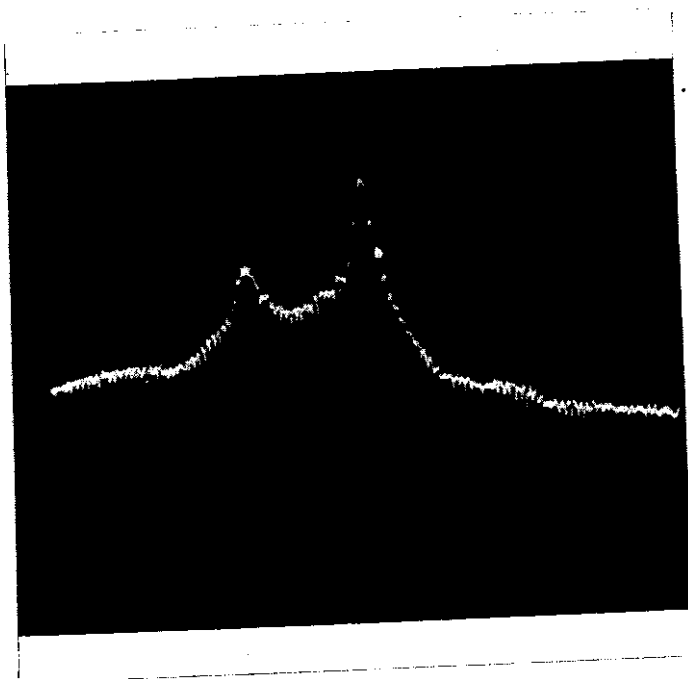
2.2 ShortMedium Pulse PRF

2083 Hz

ShortMedium Pulse Length

0.22 μ S

Scale
10dB/Div



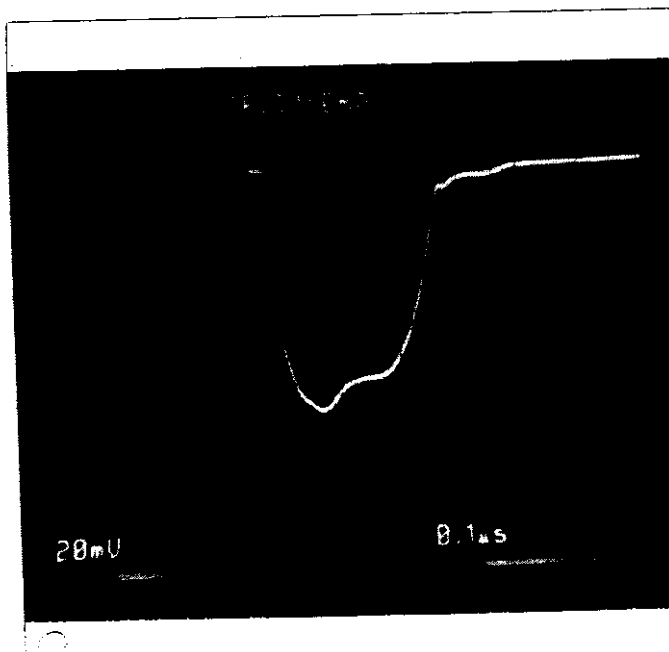
RF Spectrum
ShortMedium Pulse

OBW=36.7 MHz

Scale 40 MHz/ Div
Center Frequency 9402 MHz

(Sec. 2.987)

Scale
20mV/Div



← 3dB

Detected RF
Pulse

Short Medium Pulse

Scale 100nS/Div

(Sec. 2.989)

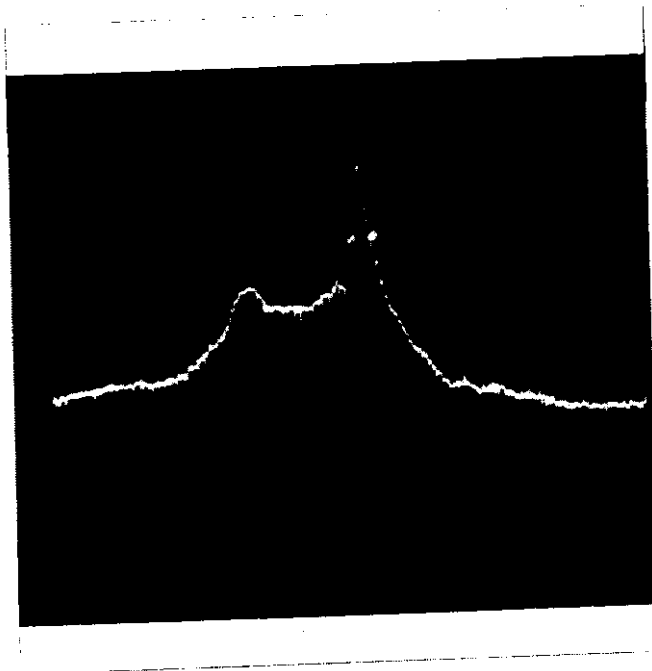
2.2 Medium Pulse PRF

1562 Hz

Medium Pulse Length

0.40 μ S

Scale
10dB/Div



RF Spectrum
Medium Pulse

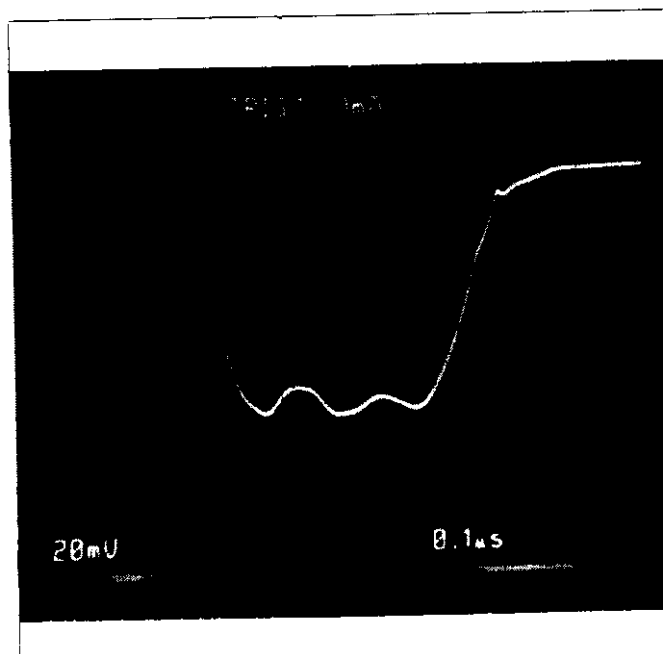
OBW=22.0 MHz

Scale 40 MHz/ Div

Center Frequency 9400 MHz

(Sec. 2.987)

Scale
20mV/Div



← 3dB

Detected RF
Pulse

Medium Pulse

Scale 100nS/Div

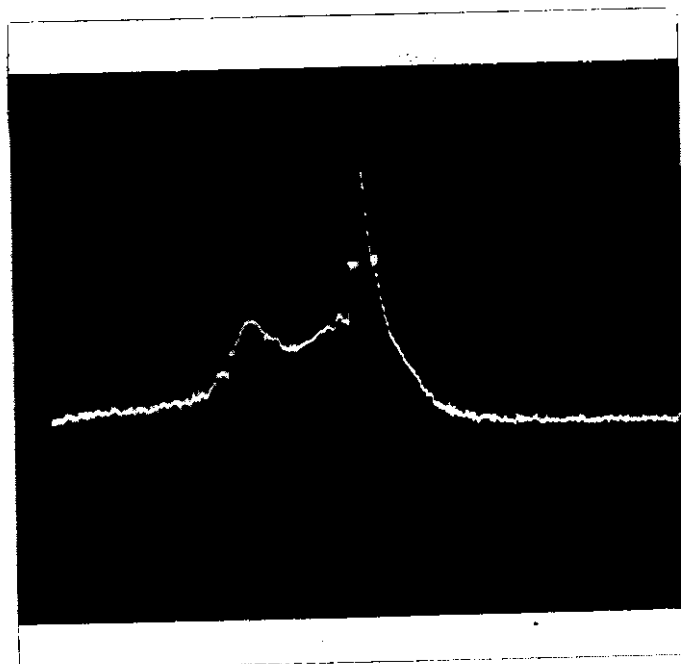
(Sec. 2.989)

2.3 Long Medium Pulse PRF
Long Medium Pulse Length

781 Hz

0.82 μ S

Scale
10dB/Div



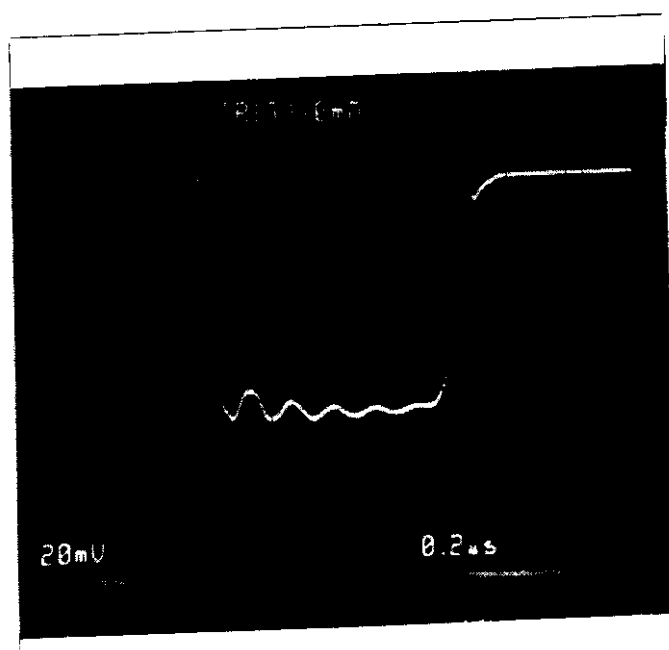
RF Spectrum
Long Medium Pulse

OBW=12.7 MHz

Scale 40 MHz/ Div
Center Frequency 9400 MHz

(Sec. 2.987)

Scale
20mV/Div



← 3dB

Detected RF
Pulse

Long Medium Pulse

Scale 200 nS/Div

(Sec. 2.989)

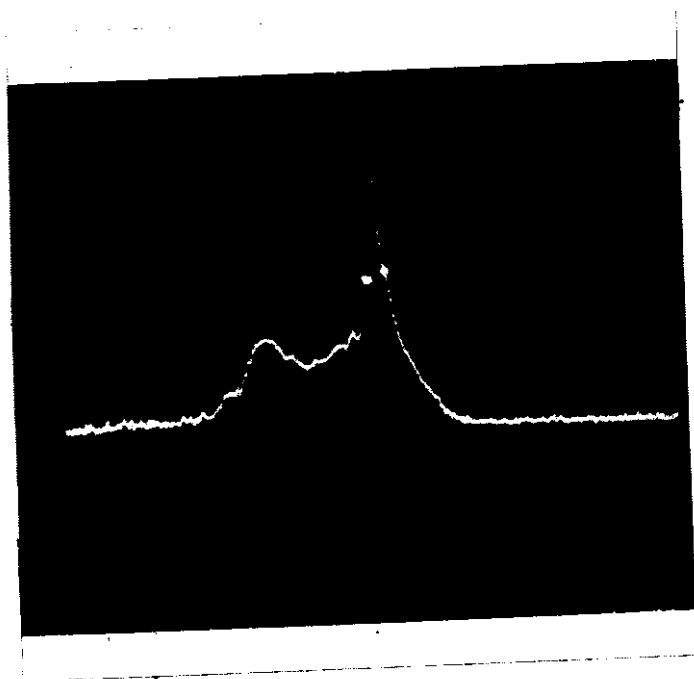
2.2 Long Pulse PRF

521 Hz

Long Pulse Length

1.16 μ S

Scale
10dB/Div



RF Spectrum
Long Pulse

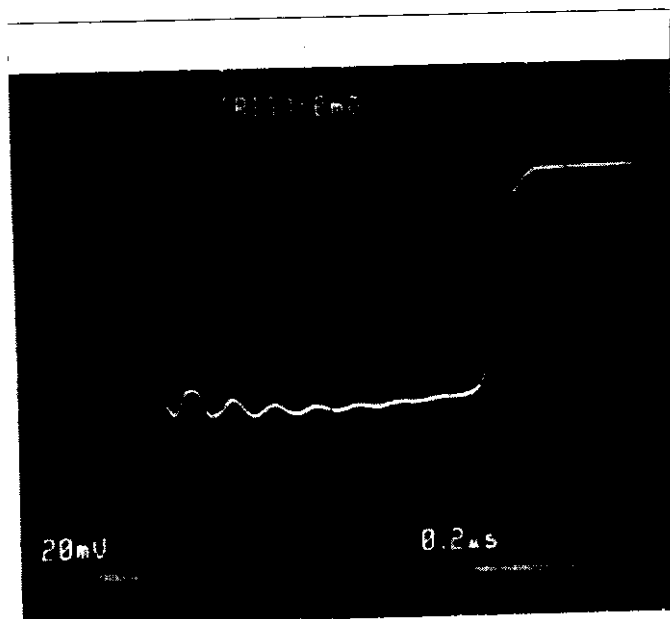
OBW=8.0 MHz

Scale 40 MHz/ Div

Center Frequency 9400 MHz

(Sec. 2.987)

Scale
20mV/Div



← 3dB

Detected RF
Pulse

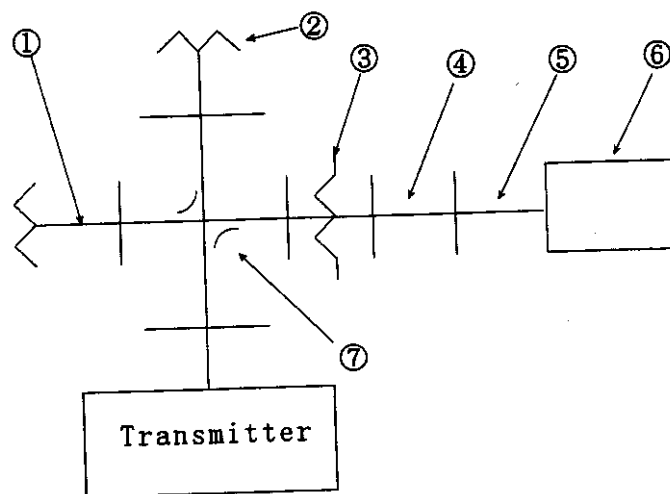
Long Pulse

Scale 200nS/Div

(Sec. 2. 991)

3.0 Spurious signals at antenna port

Condition 1; 0 to 20 GHz



- 1 Dummy Load
- 2 High power Dummy Load
- 3 Attenuator
- 4 Adaptor
- 5 Coaxial Cable
- 6 Spectrum Analyzer
- 7 Directional Coupler

Coupling 30 dB
Directivity 30 dB

★ Attenuation 3 ; 25dB

★ Measurement Point; Rotary Joint Output

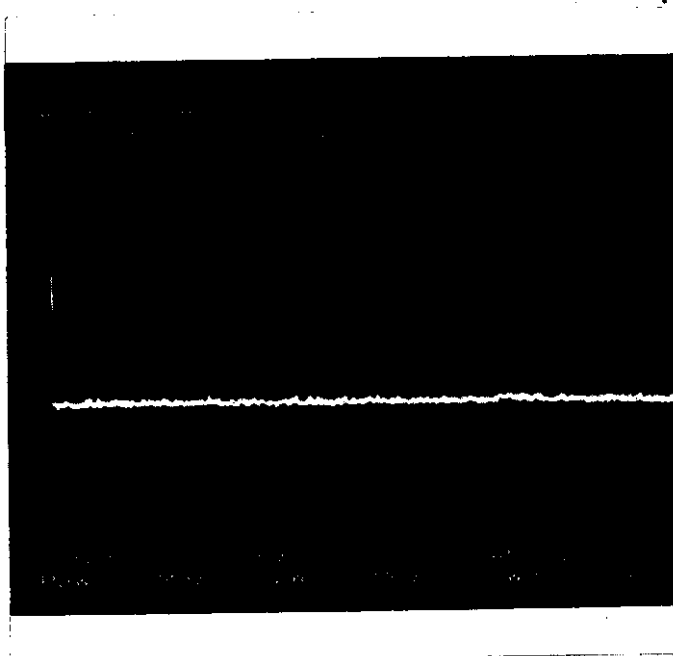
X910B	HP
4D371A	Shimada
X382A	HP
X281A	HP
MI-04	Takeda Riken
8563E	HP
R11421	Shimada

(Sec. 2.991)

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

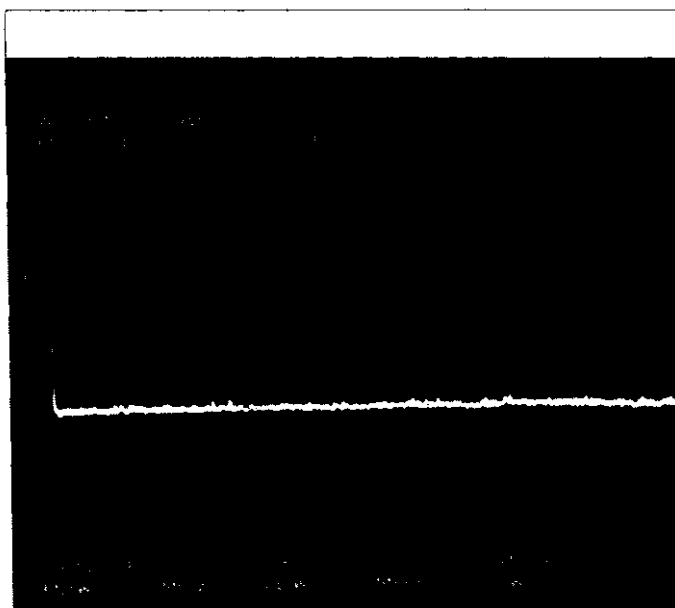
OFF

0 to 3.6 GHz

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

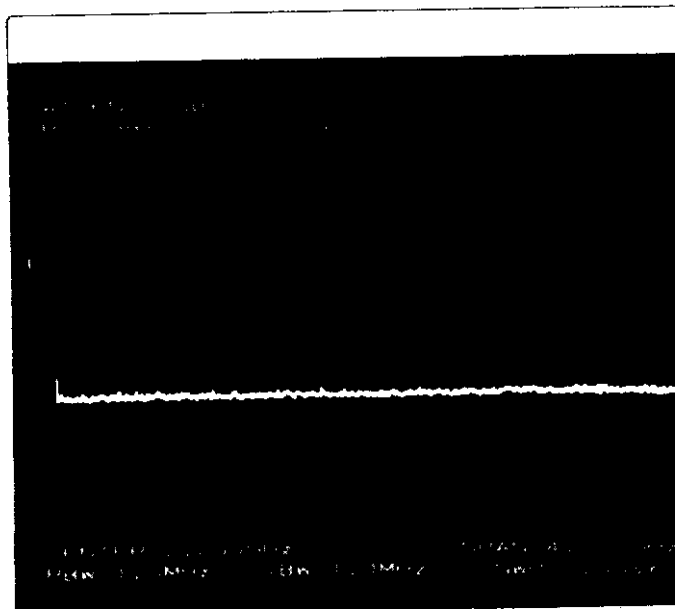
Stand-By

0 to 3.6 GHz

Scale

↑ 10dB/Div

→ 400 MHz
/Div



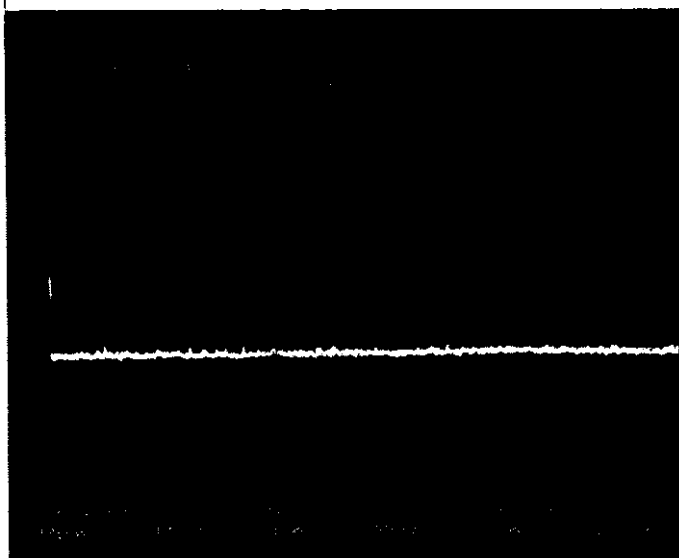
Spurious
Signals

Short Pulse

0 to 3.6 GHz

(Sec. 2.991)

Scale
↑ 10dB/Div
→ 400 MHz
/Div

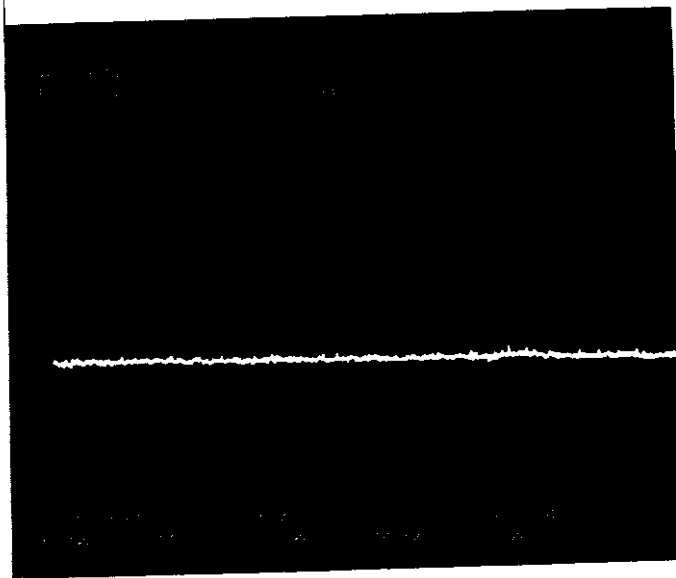


Spurious
Signals

Short Medium
Pulse

0 to 3.6 GHz

Scale
↑ 10dB/Div
→ 400 MHz
/Div

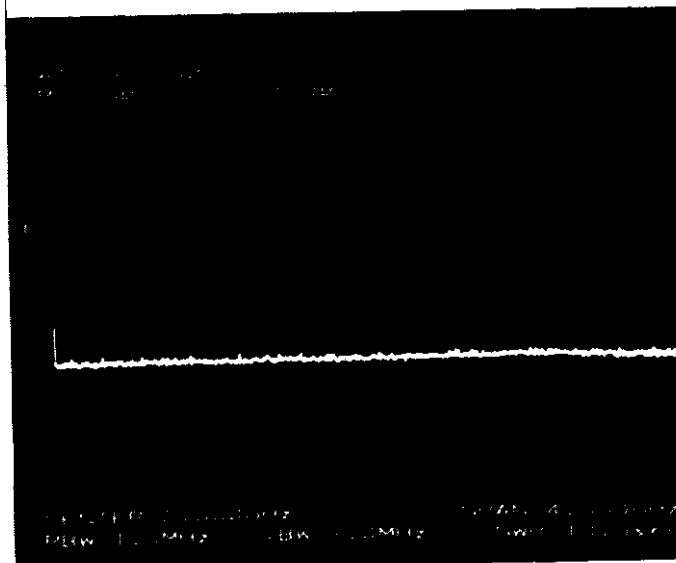


Spurious
Signals

Medium Pulse

0 to 3.6 GHz

Scale
↑ 10dB/Div
→ 400 MHz
/Div



Spurious
Signals

Long Medium Pulse

0 to 3.6 GHz

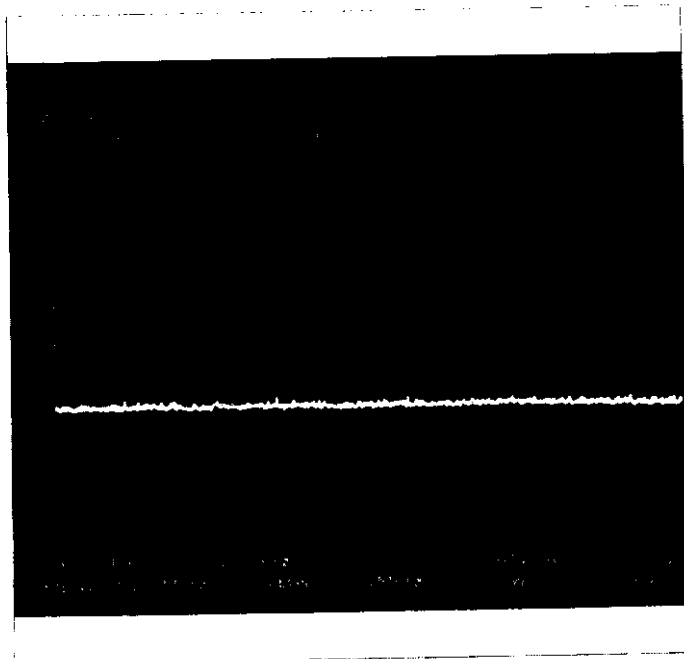
(Sec. 2.991)

Scale

↑ 10dB/Div

→ 400 MHz

/Div



Spurious
Signals

Long Pulse

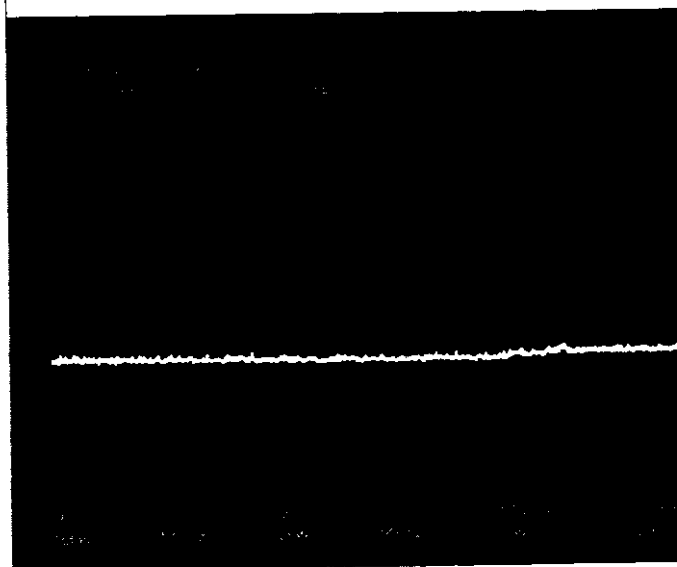
0 to 3.6 GHz

(Sec. 2.991)

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

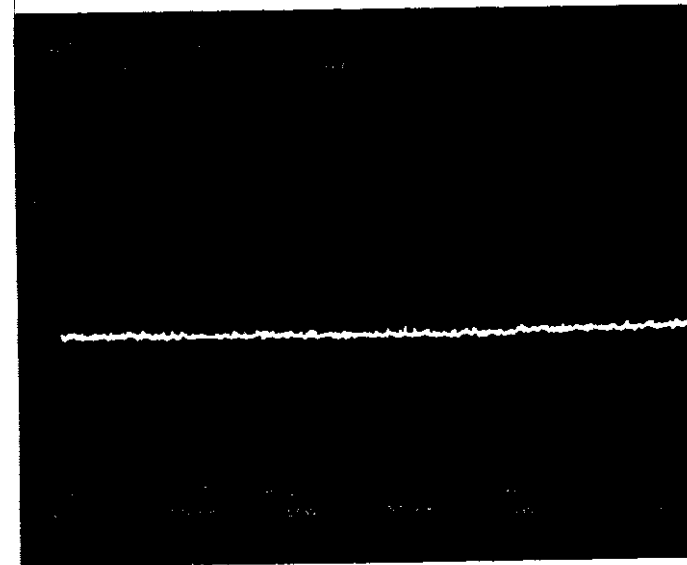
OFF

3.5 to 7.5 GHz

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

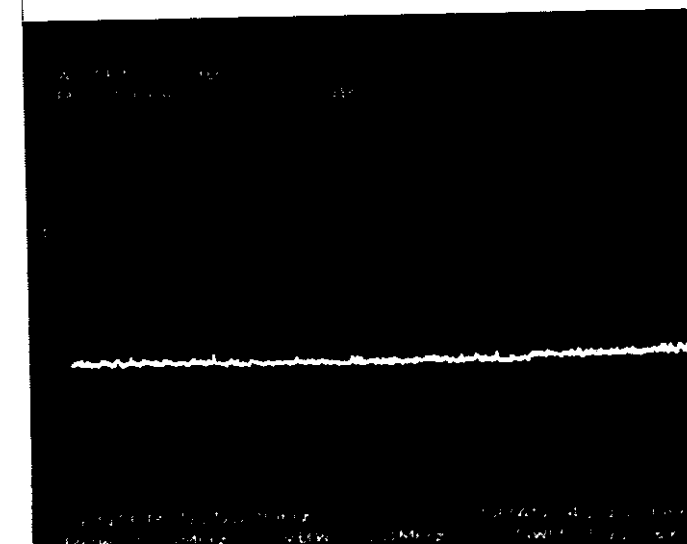
Stand-By

3.5 to 7.5 GHz

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

Short Pulse

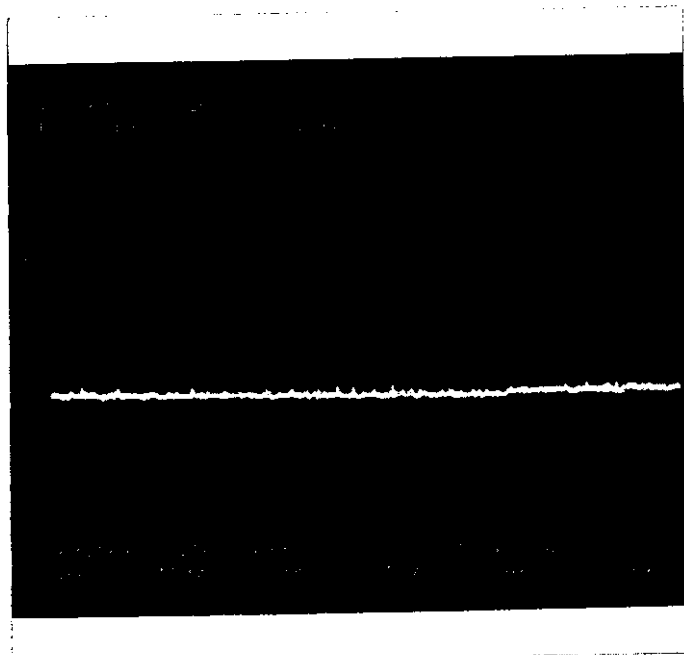
3.5 to 7.5 GHz

(Sec. 2.991)

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

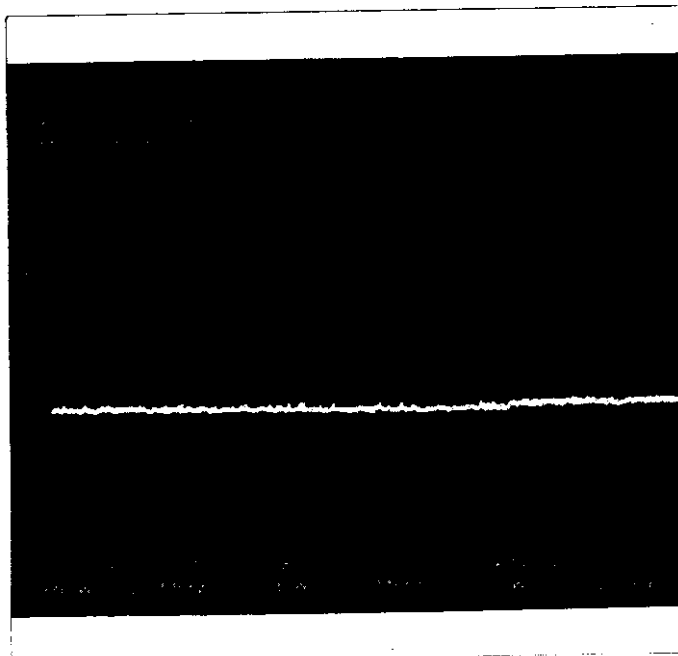
Short Medium
Pulse

3.5 to 7.5 GHz

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

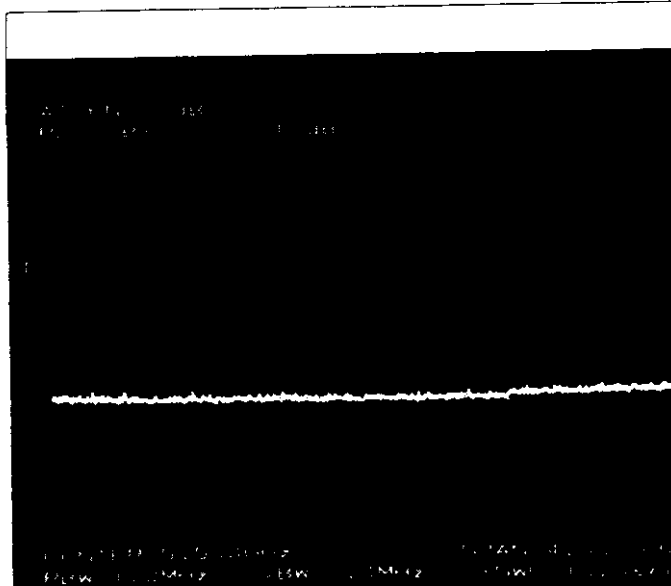
Medium Pulse

3.5 to 7.5 GHz

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

Long Medium Pulse

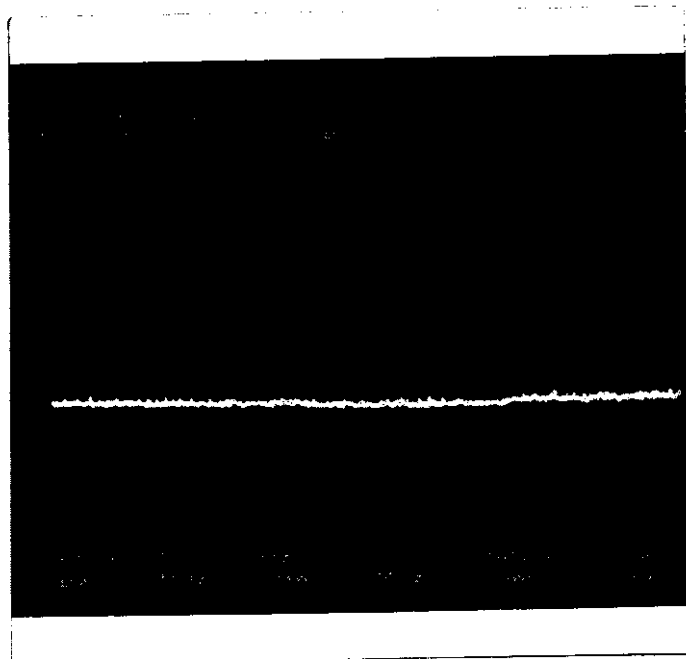
3.5 to 7.5 GHz

(Sec. 2.991)

Scale

↑ 10dB/Div

→ 400 MHz
/Div



Spurious
Signals

Long Pulse

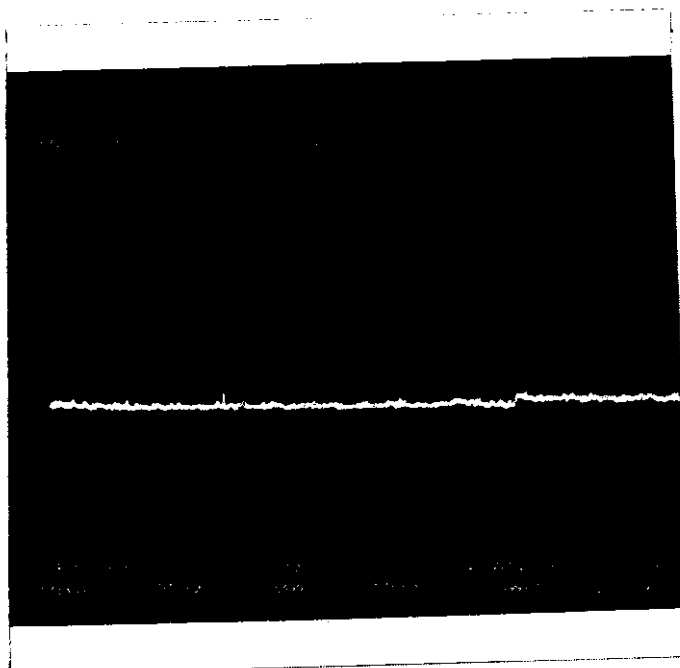
3.5 to 7.5 GHz

(Sec. 2.991)

Scale

↑ 10dB/Div

→ 800 MHz
/Div



Spurious
Signals

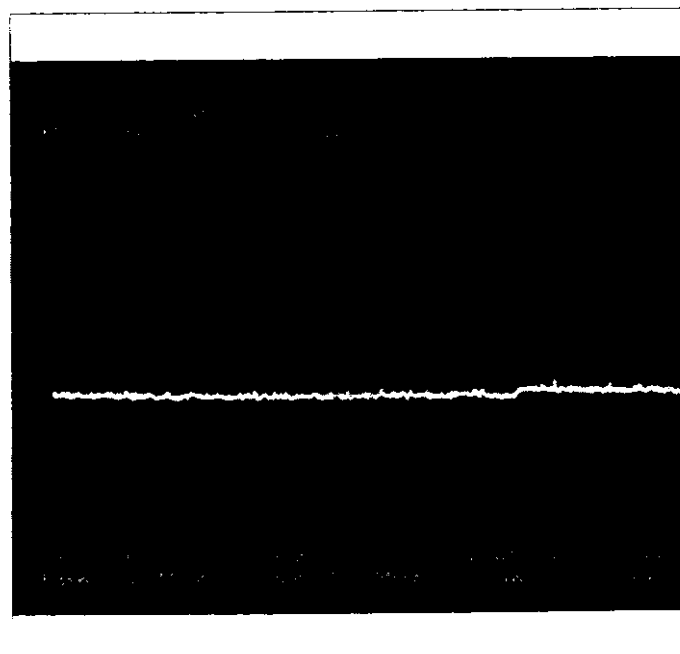
OFF

7.2 to 15.2 GHz

Scale

↑ 10dB/Div

→ 800 MHz
/Div



Spurious
Signals

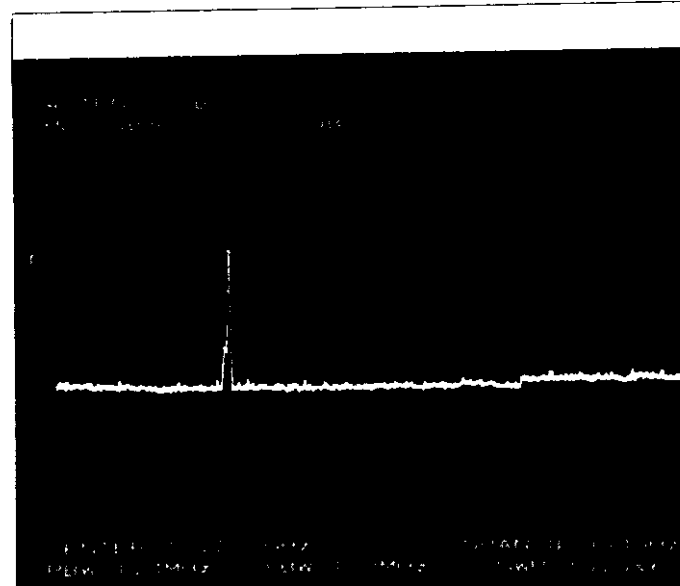
Stand-By

7.2 to 15.2 GHz

Scale

↑ 10dB/Div

→ 800 MHz
/Div



Spurious
Signals

Short Pulse

7.2 to 15.2 GHz

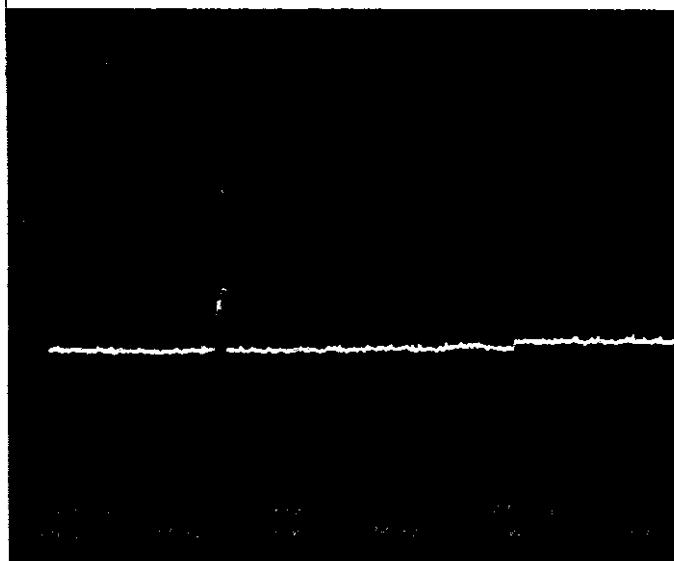
(Sec. 2.991)

Scale

↑ 10dB/Div

→ 800 MHz

/Div



Spurious
Signals

Short Medium
Pulse

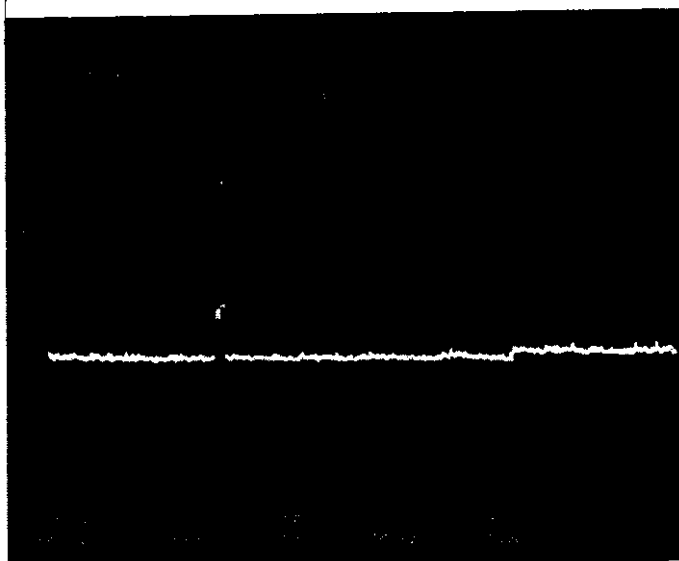
7.2 to 15.2 GHz

Scale

↑ 10dB/Div

→ 800 MHz

/Div



Spurious
Signals

Medium Pulse

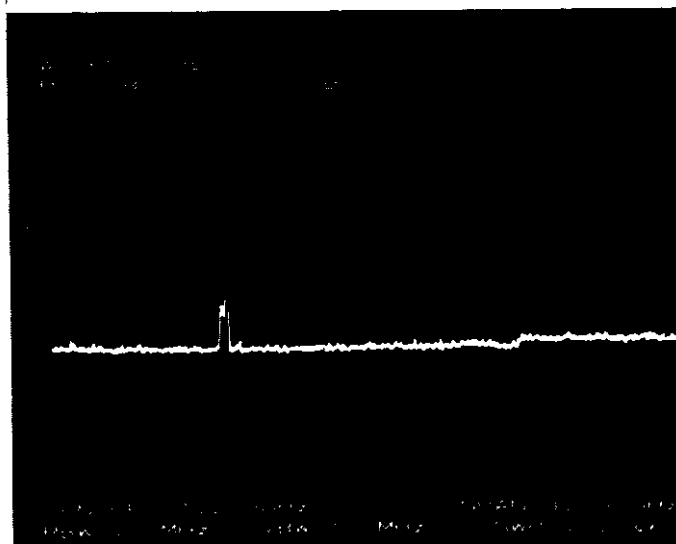
7.2 to 15.2 GHz

Scale

↑ 10dB/Div

→ 800 MHz

/Div



Spurious
Signals

Long Medium Pulse

7.2 to 15.2 GHz

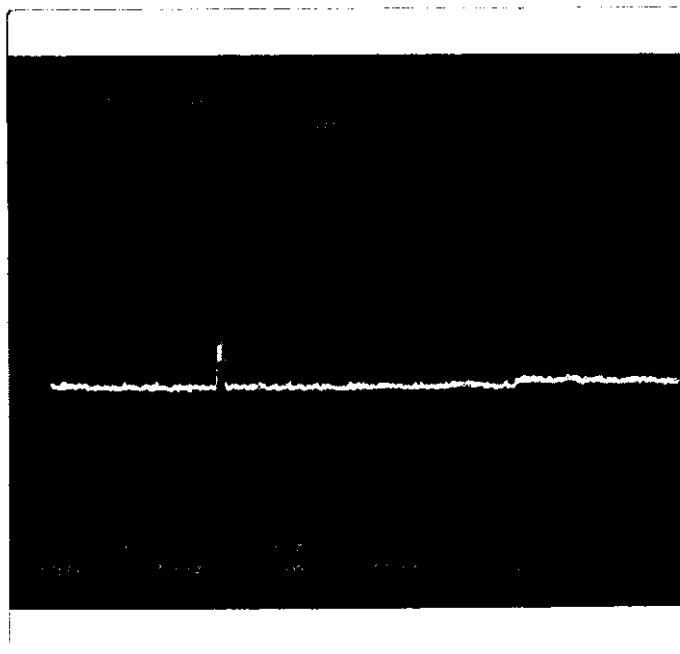
(Sec. 2.991)

Scale

↑ 10dB/Div

→ 400 MHz

/Div



Spurious
Signals

Long Pulse

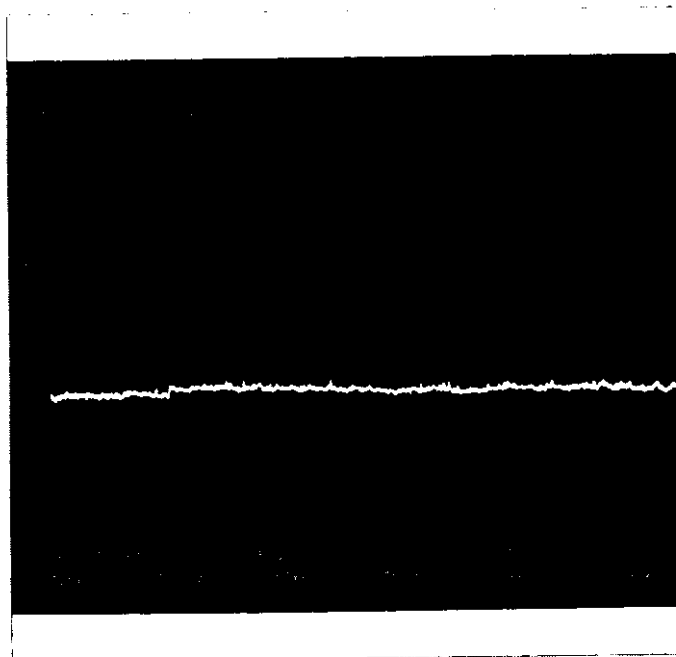
7.2 to 15.2 GHz

(Sec. 2.991)

Scale

↑ 10dB/Div

→ 1.2 GHz
/Div



Spurious
Signals

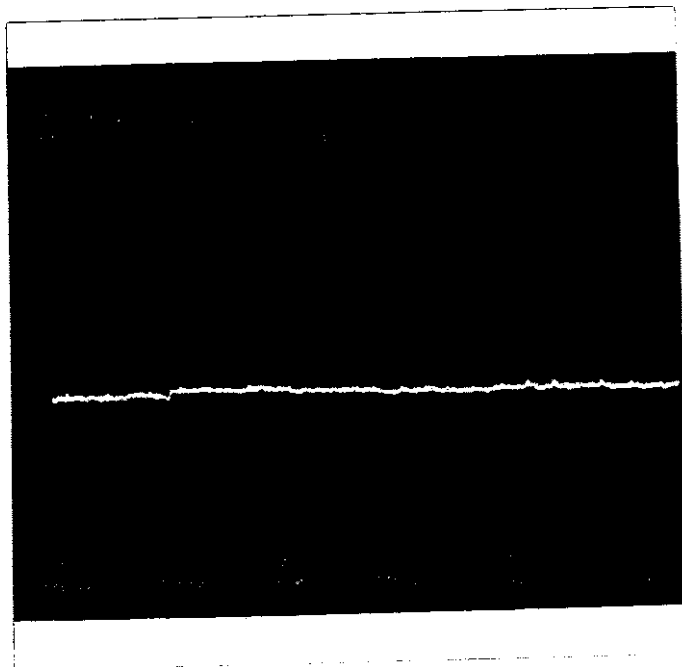
OFF

10.9 to 20 GHz

Scale

↑ 10dB/Div

→ 1.2 GHz
/Div



Spurious
Signals

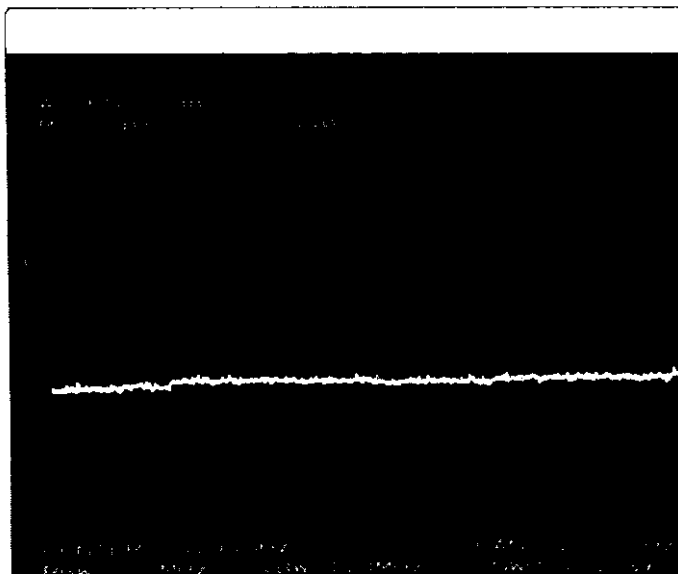
Stand-By

10.9 to 20 GHz

Scale

↑ 10dB/Div

→ 1.2 GHz
/Div



Spurious
Signals

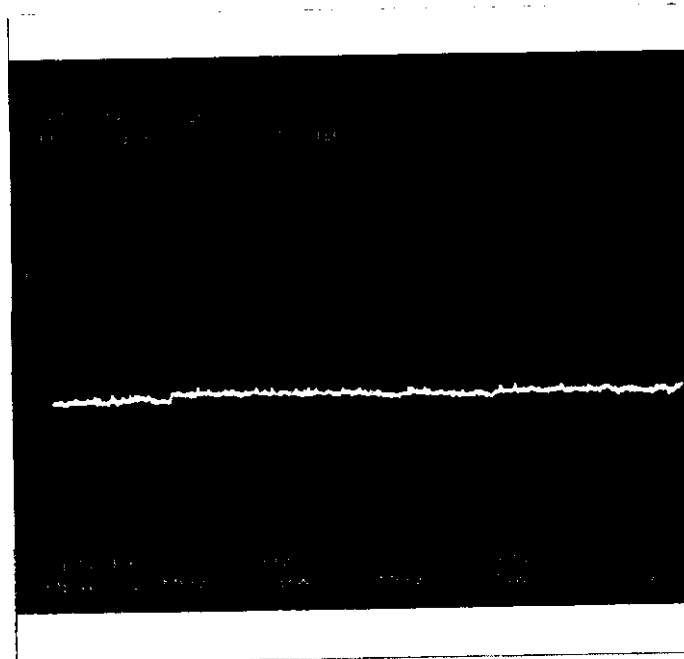
Short Pulse

10.9 to 20 GHz

(Sec. 2.991)

Scale
↑ 10dB/Div

→ 1.2 GHz
/Div



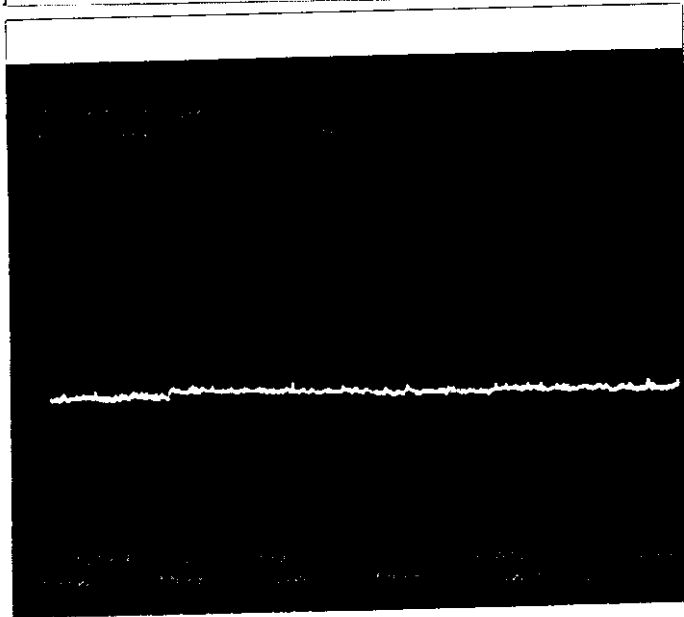
Spurious
Signals

Short Medium
Pulse

10.9 to 20 GHz

Scale
↑ 10dB/Div

→ 1.2 GHz
/Div



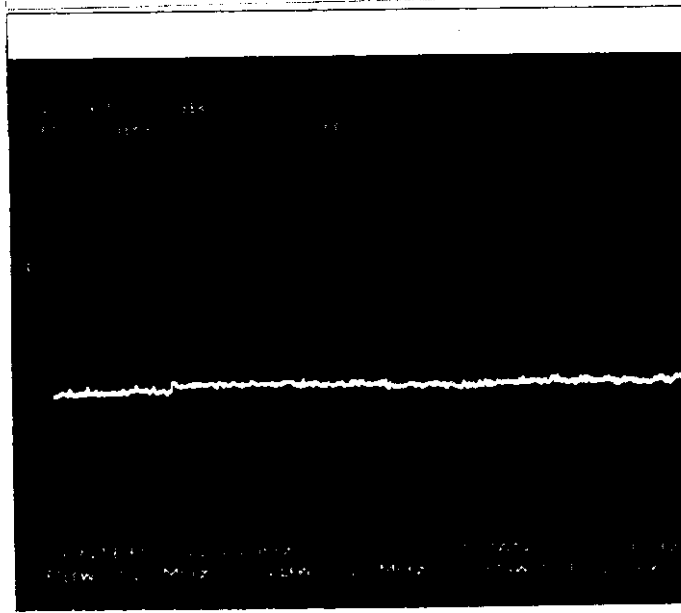
Spurious
Signals

Medium
Pulse

10.9 to 20 GHz

Scale
↑ 10dB/Div

→ 1.2 GHz
/Div



Spurious
Signals

Long Medium Pulse

10.9 to 20 GHz

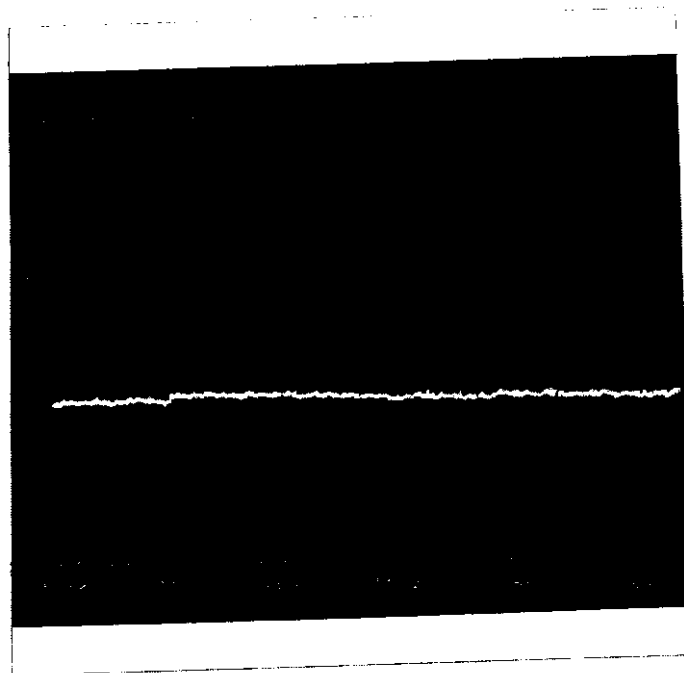
(Sec. 2.991)

Scale

↑ 10dB/Div

→ 400 MHz

/Div



Spurious
Signals

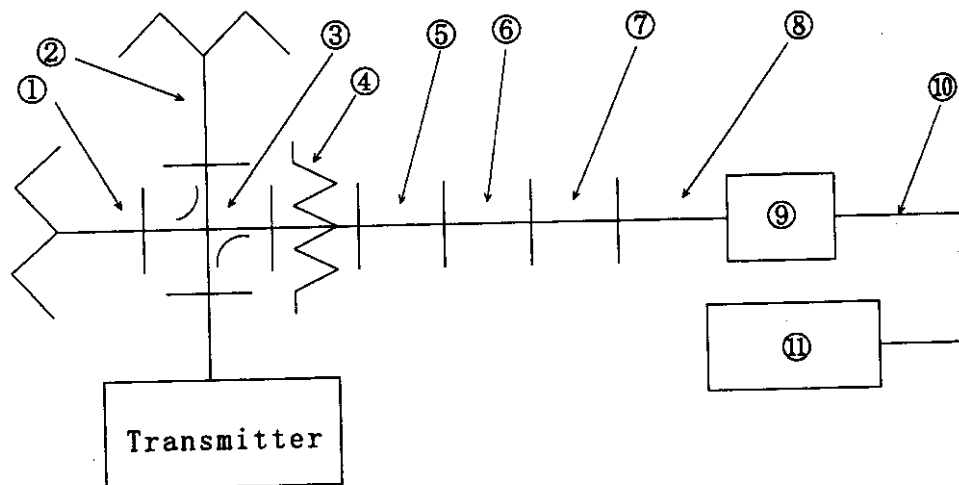
Long Pulse

10.9 to 20 GHz

(Sec. 2. 991)

3.0 Spurious signals at antenna port

Condition 2; 12.4 to 40 GHz



1	Dummy Load	X910B	HP
2	High power Dummy Load	4D371A	Shimada
3	Directional Coupler	R11421	Shimada
	Coupling	30 dB	
	Directivity	30 dB	
4	Attenuator	X382A	HP
5	Tapered W/G	195-X KU	AIRCOM
6	Tapered W/G	11818A	HP
7	Tapered W/G	11519A	HP
8	Tapered W/G	11520A	HP
9	External Mixer	11517A	HP
10	Coaxial Cable	10503A	HP
11	Spectrum Analyzer	TR4133B	Takeda Riken

★ Attenuation on ATT4 ; 50dB

★ Measurement Point ; Rotary Joint Output

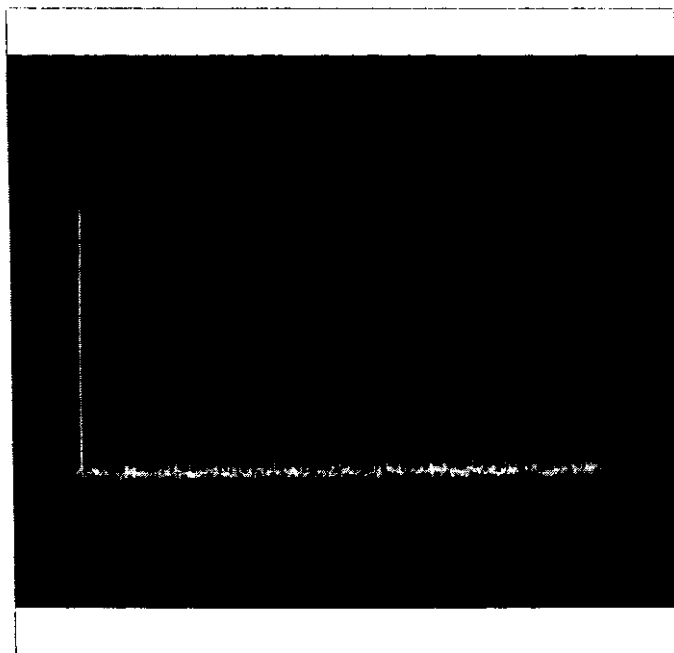
(Sec. 2.991)

Scale

↑ 10dB/Div

→ 1.6 GHz

/Div



Spurious
Signals

OFF

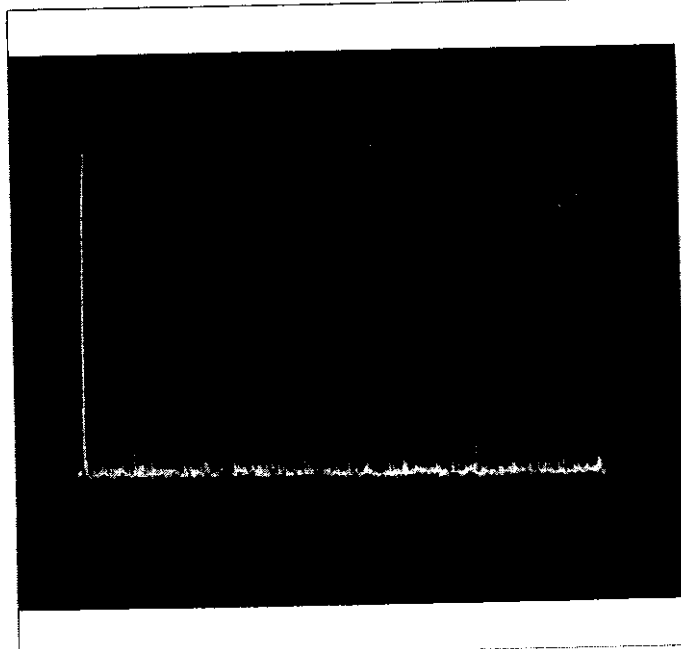
12.4 to 28 GHz

Scale

↑ 10dB/Div

→ 1.6 GHz

/Div



Spurious
Signals

Stand-By

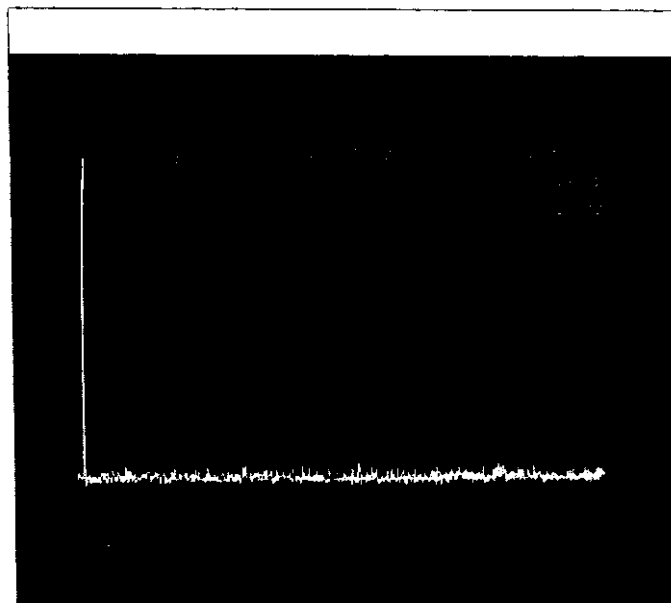
12.4 to 28 GHz

Scale

↑ 10dB/Div

→ 1.6 GHz

/Div



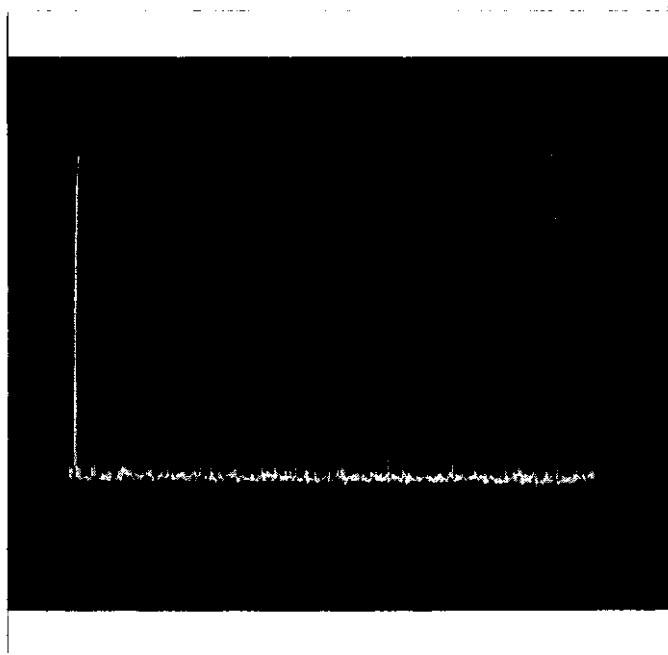
Spurious
Signals

Short Pulse

12.4 to 28 GHz

(Sec. 2.991)

Scale
↑ 10dB/Div
→ 1.6 GHz
/Div

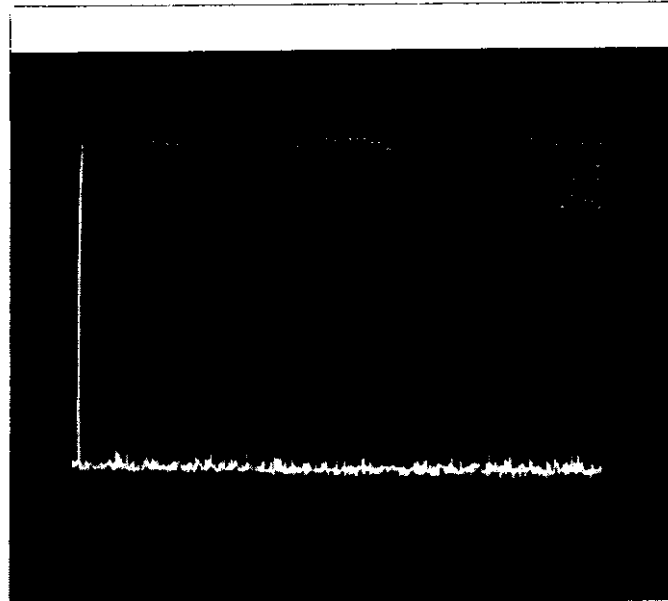


Spurious
Signals

Short Medium
Pulse

12.4 to 28 GHz

Scale
↑ 10dB/Div
→ 1.6 GHz
/Div

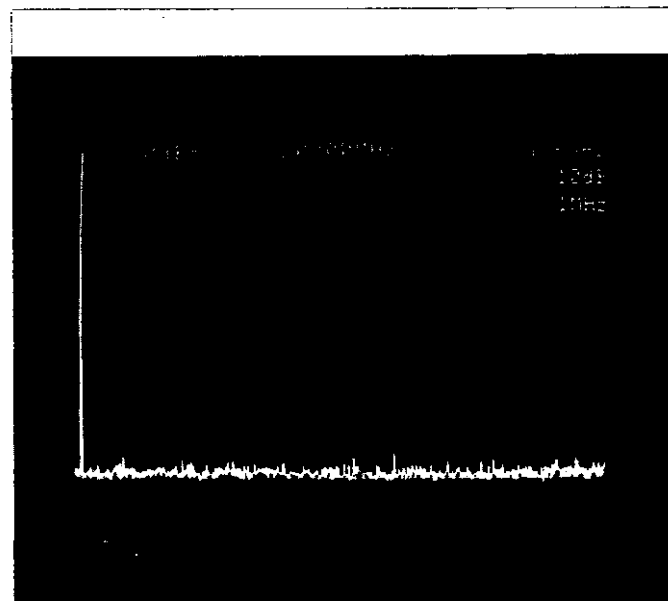


Spurious
Signals

Medium Pulse

12.4 to 28 GHz

Scale
↑ 10dB/Div
→ 1.6 GHz
/Div



Spurious
Signals

Long Medium Pulse

12.4 to 28 GHz

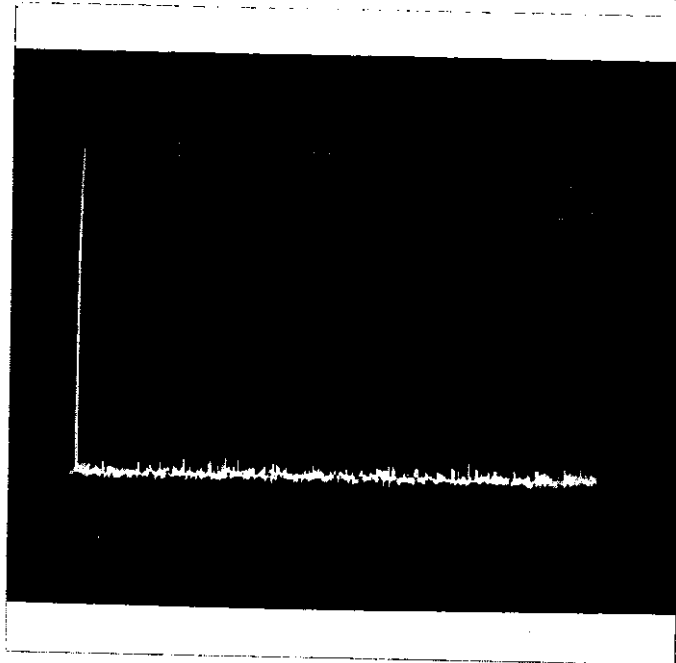
(Sec. 2. 991)

Scale

↑ 10dB/Div

→ 400 MHz

/Div



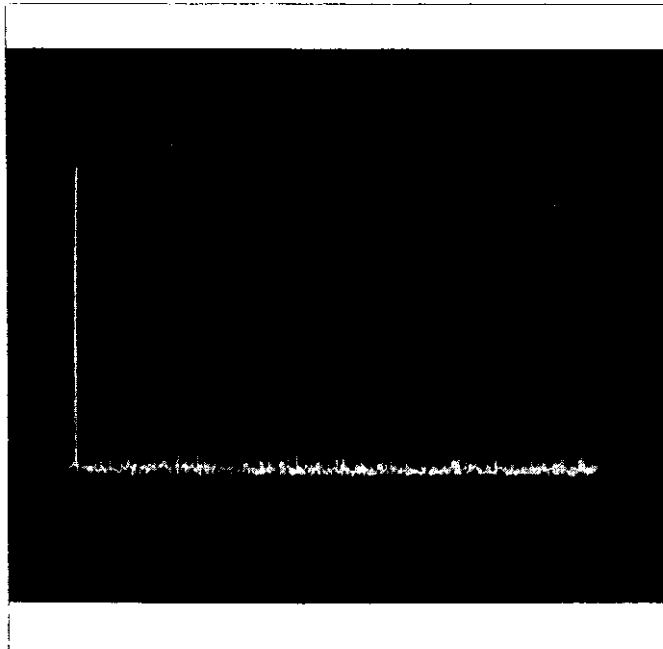
Spurious
Signals

Long Pulse

12.4 to 28 GHz

(Sec. 2.991)

Scale
↑ 10dB/Div
→ 3.2 GHz
/Div

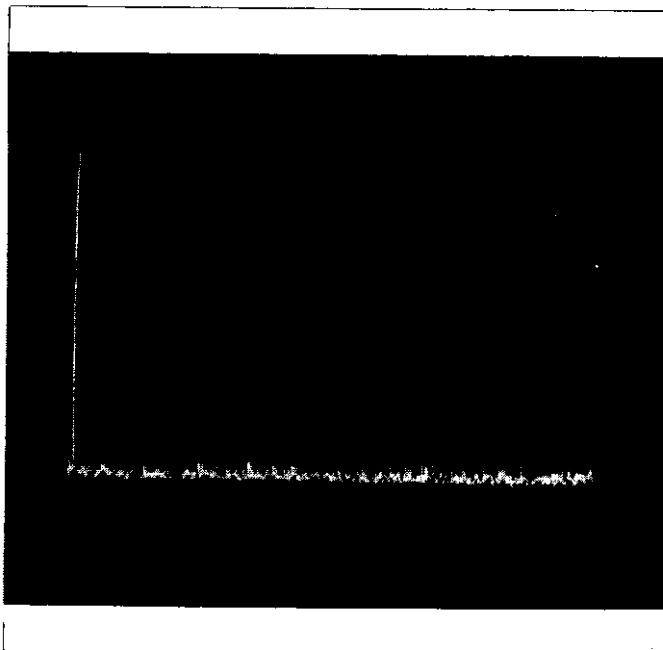


Spurious
Signals

OFF

28 to 60 GHz

Scale
↑ 10dB/Div
→ 3.2 GHz
/Div

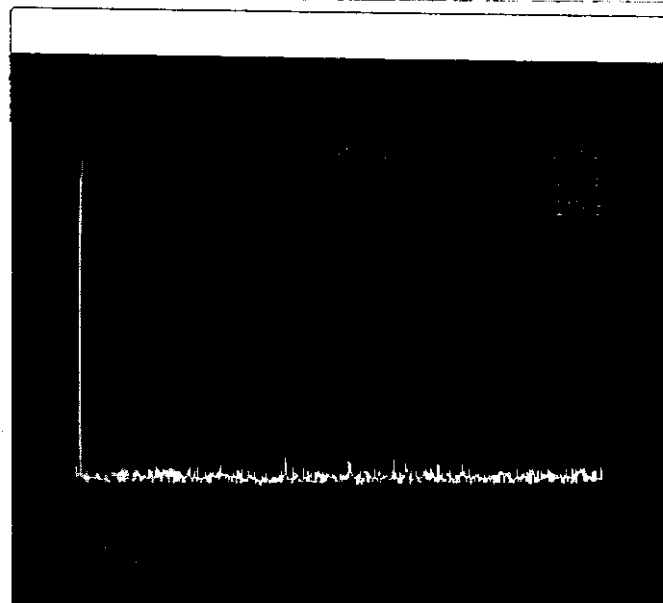


Spurious
Signals

Stand-By

28 to 60 GHz

Scale
↑ 10dB/Div
→ 3.2 GHz
/Div



Spurious
Signals

Short Pulse

28 to 60 GHz

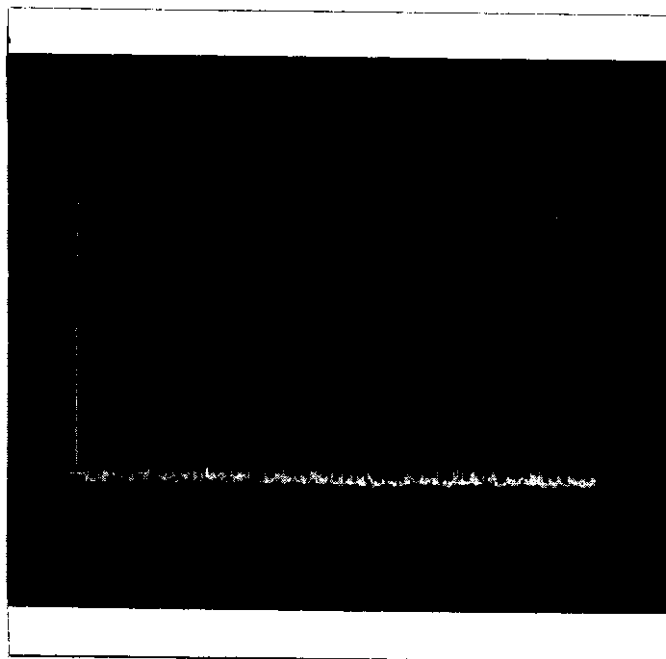
(Sec. 2. 991)

Scale

↑ 10dB/Div

→ 3. 2 GHz

/Div



Spurious
Signals

Short Medium Pulse

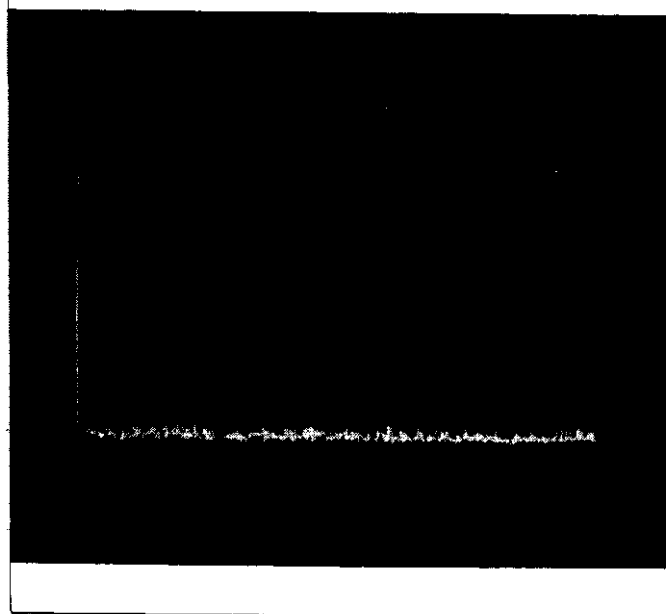
28 to 60 GHz

Scale

↑ 10dB/Div

→ 3. 2 GHz

/Div



Spurious
Signals

Medium Pulse

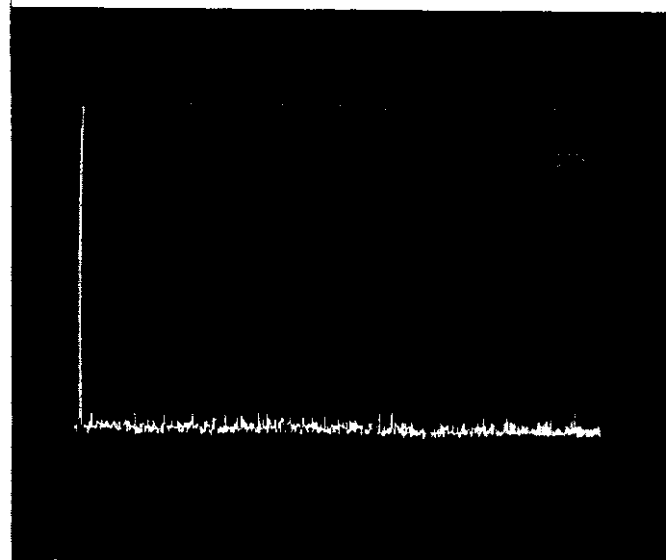
28 to 60 GHz

Scale

↑ 10dB/Div

→ 3. 2 GHz

/Div



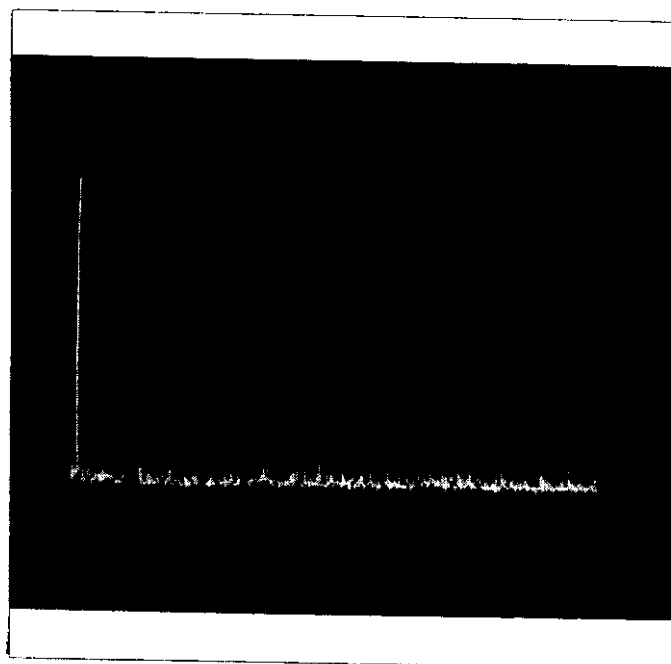
Spurious
Signals

Long Medium Pulse

28 to 60 GHz

(Sec. 2.991)

Scale
↑ 10dB/Div
→ 3.2 GHz
/Div



Spurious
Signals

Long Pulse

28 to 60 GHz