

11. ADJUSTMENT PROCEDURES

5-1 PREPARATION

■ REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 11–40 V DC Current capacity : 5 A or more	Oscilloscope	Frequency range : DC–100 MHz Measuring range : 0.01–10 V
Frequency counter	Frequency range : 0.1–200 kHz Frequency accuracy : ± 1 ppm or better Sensitivity : 100 mV or better	Terminator	Resistance : 50 Ω Peak power level : At least 6 kW Average power level: At least 5 W
Crystal detector	Input frequency : At least 10 GHz Peak input level : At least 1 W Average input level : At least 100 mW	Attenuator	Power attenuation : 20, 23 and 50 dB Peak power level : At least 100 W Average power level: At least 5 W
Standard signal generator (SSG)	Frequency range : 10 kHz–10 GHz Output level : 0.1 μ V–32 mV (–127 to –17 dBm)	Spectrum analyzer	Frequency range : At least 10 GHz Spectrum bandwidth: ± 100 kHz or more
Directional coupler	Power attenuation : 20 dB	DC voltmeter	Input impedance : 50 k Ω /V DC or better
		DC ammeter	Measurement capability: 5 A

5-2 ANTENNA ADJUSTMENT

5-2-1 PROOFREADING OF TEST EQUIPMENT

- ① Connect a spectrum analyzer, standard signal generator and 100% reflective metal plate instead of antenna to the directional coupler as shown below.
- ② Adjustment condition
 - Set the SSG as:
 - Frequency : 9.41 GHz
 - Set the spectrum analyzer as:
 - Center frequency : 9.41 GHz
 - Frequency span : 200 MHz
- ③ Preset the spectrum waveform to 0 dB adjusting by the SSG output level.

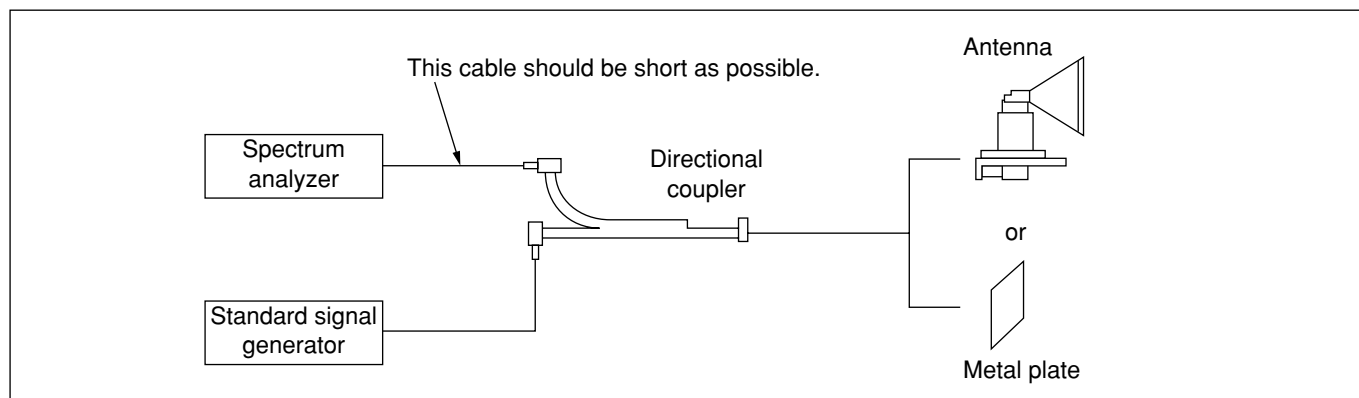
VALUE	ADJUSTMENT POINT
0 dB	SSG output level

5-2-2 ADJUSTMENT OF ANT UNIT

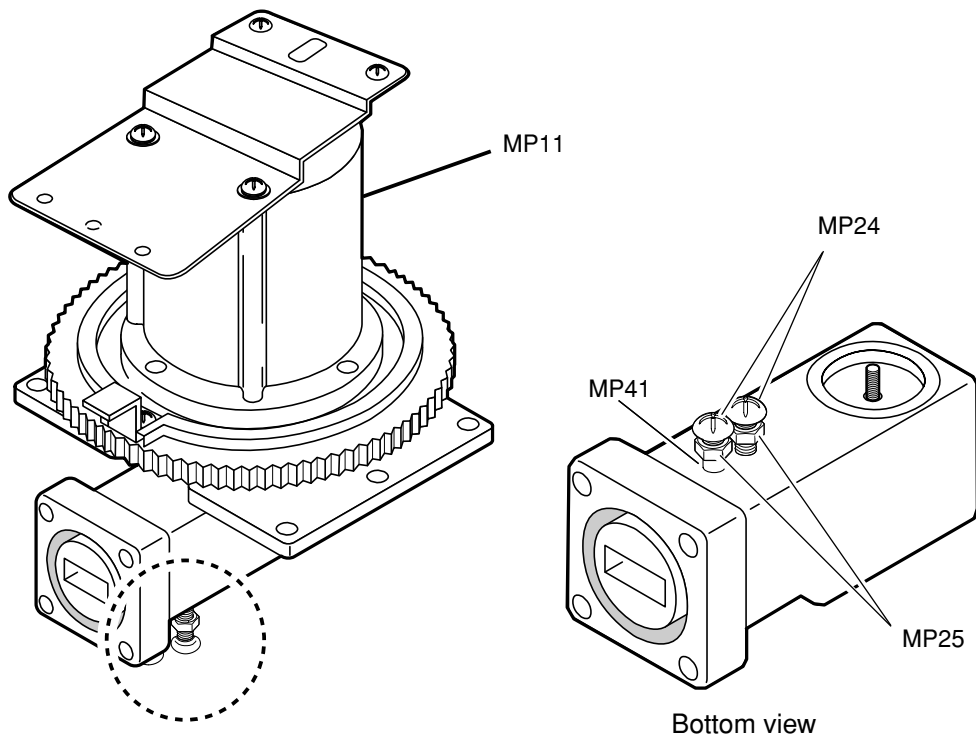
- ① Remove the metal plate and replace the antenna, and connect to the directional coupler.

NOTE: Do not place any objects within 5 meters. (or if can not remove the object, place a wave absorber on the front of the scanner radiator.)
- ② EX-2714; Radome – Watching the spectrum analyzer, turn MP24 on the ANT unit to minimum spectrum level. After adjustment, lock MP24 tightening MP25.
EX-2780; Open array – Watching the spectrum analyzer, turn MP11 on the CHASSIS unit to minimum spectrum level. After adjustment, lock MP11 tightening MP53.
- ③ Verify the spectrum level is more than –14 dB.

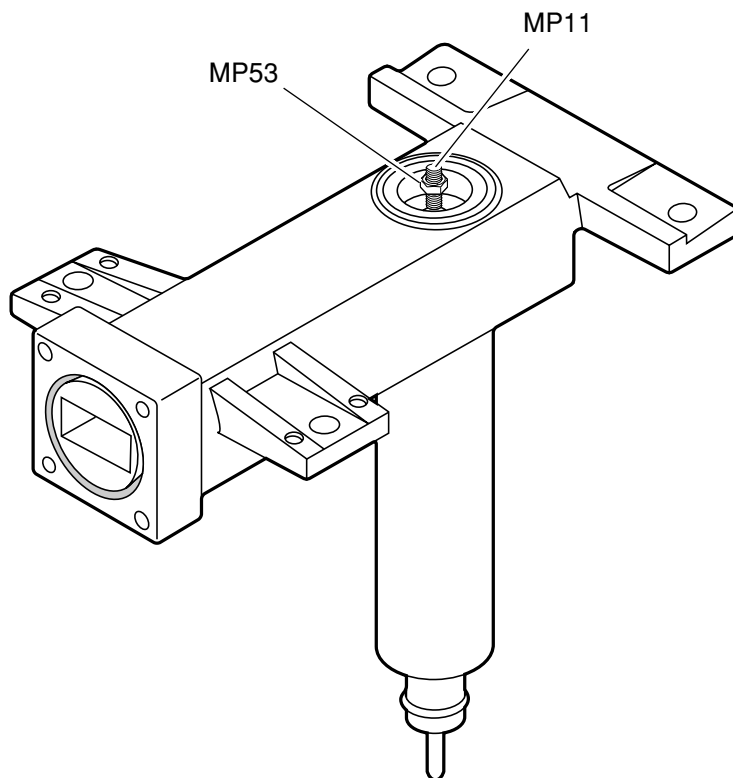
VALUE	ADJUSTMENT POINT
Minimum	MP24 (EX-2714; Radome) MP11 (EX-2780; Open array)
–14 dB	Verify



■ EX-2714 (Radome)



■ EX-2780 (Open array)



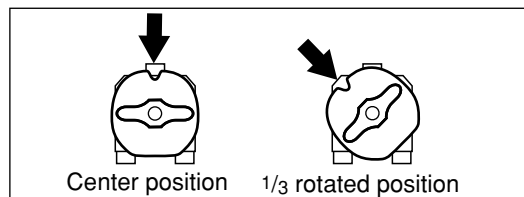
5-3 SCANNER ADJUSTMENT

■ EX-2714 (Radome)

WARNING: Approx 4 kV of high voltages are used in PA unit. **BEWARE** of high voltage when adjusting this unit.

NOTE: Preheating is necessary for magnetron for 90 sec.

- ① Connect the SCANNER UNIT and test equipment as shown below.



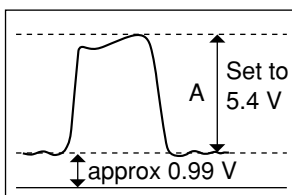
1) PREPARATION BEFORE ADJUSTMENTS

- ① Preset the adjustment points on the PA unit.
R18 : center position
R54, R58, R62, R66: 1/3 rotated position
- ② Connect the DISPLAY UNIT to SCANNER UNIT and turn power ON.
• Verify the voltage at the each check point on the PA unit.
CP8: 10.0 to 11.2 V
CP9: 4.8 to 5.2 V

CK. POINT	VALUE	ADJUSTMENT POINT
CP8	10.0 to 11.2 V	Verify
CP9	4.8 to 5.2 V	Verify

2) MAGNETRON ADJUSTMENT

- ① Connect an oscilloscope to the check point CP11 on the PA unit.
- ② Watching the oscilloscope, adjust R64 on the PA unit while 8 NM transmitting, and set the voltage to 5.4 V at (A) point as illustration at right.



CK. POINT	VALUE	ADJUSTMENT POINT
CP11	5.4 V	R18

3) PULSE WIDTH ADJUSTMENT

- ① Connect an oscilloscope to the directional coupler through the detector.
- ② Watching the oscilloscope, adjust R54 on the PA unit while 8 NM transmitting, and set the pulse width to 900 nS.
- ③ Adjust R58 on the PA unit while 4 NM transmitting, and set the pulse width to 350 nS.
- ④ Adjust R62 on the PA unit while 2 NM transmitting, and set the pulse width to 250 nS.
- ⑤ Adjust R66 on the PA unit while 1 NM transmitting, and set the pulse width to 80 nS.
- ⑥ Verify this adjustment from step ②.

VALUE	ADJUSTMENT POINT
900 nS	R54
350 nS	R58
250 nS	R62
80 nS	R66

NOTE: In this adjustment, pulse width is measured when the detector output voltage is 70% of peak voltage.

