

ANTENNA SPECIFICATION

Customer Name:		Project Name:	
Operating Frequency: 600-6000 MHz			
Hardware Version: V0.1			

Material Specification

Specification Model	Part Number	Customer Part Number
FPC Antenna	itp024005-EX5G0-1	

Revision History

Date	Description of Change	Changed By	Version

Internal Sign-off

R&D				QA Engineer:			Approved:
Mechanical:		Reviewed:		QA Engineer:			Approved:
RF:		Reviewed:					

Customer Sign-off

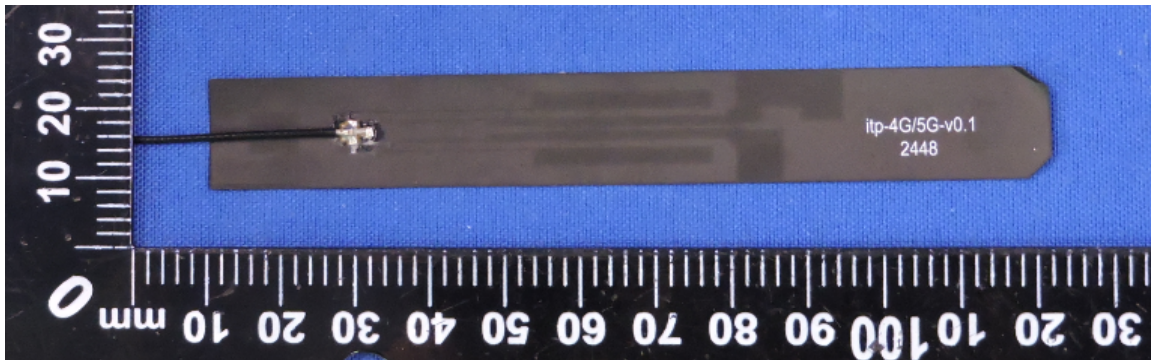
Electronic Engineer		Project Manager		Mechanical Engineer		QA Engineer	

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1. Project Information

Antenna Image



2. Antenna Matching Circuit

The antenna is screwed onto the SMA connector on the main board. No additional matching circuit has been added.

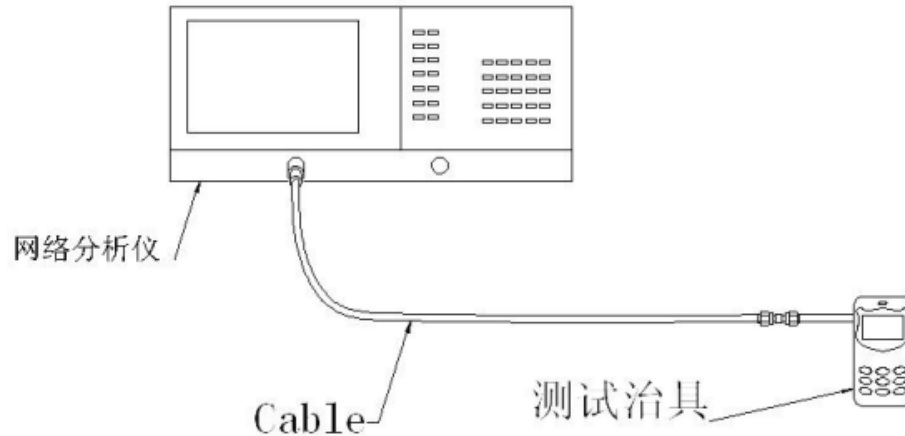
3. Device Test Data

3.1 S11 Test Method Description

Test Equipment: Network Analyzer (Agilent E5071C)

Test Method: A 50-ohm cable is connected from the instrument test port. After calibration with a calibration kit, the cable is connected to the SMA connector of the test fixture. The return loss and VSWR at the corresponding frequency points are recorded.

Test setup diagram is shown below:



3.2 Test Environment

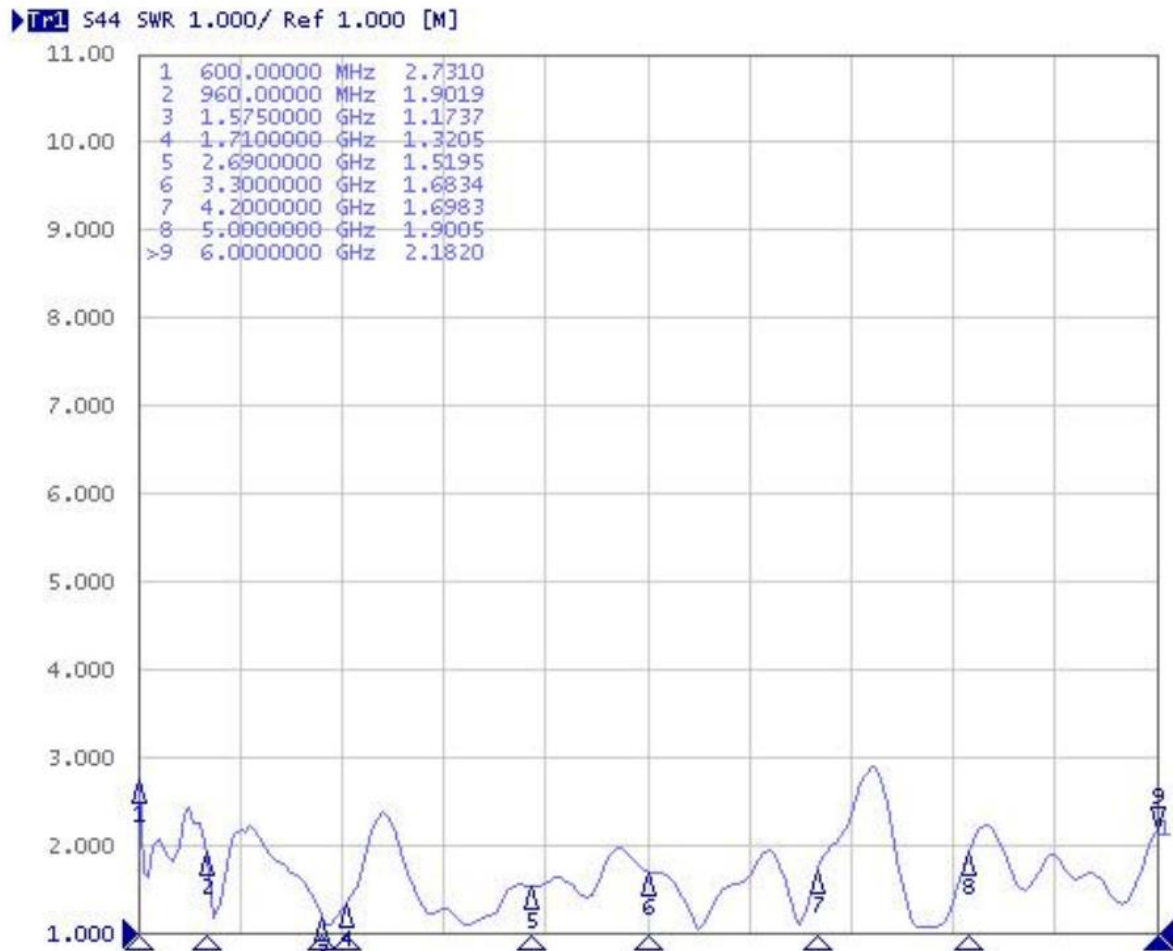
Test System	RTS100 24-probe OTA Measurement System
Test Environment	Temperature: 22°C ± 3°C, Humidity: 50% ± 15%
Test Equipment (Passive)	Network Analyzer E5071C
Test Equipment (Active)	Comprehensive Tester CMW500

RTS-100 Test System Capabilities:

- Suitable for: mobile phones, smart watches, tablet PCs, laptops, Bluetooth headsets, routers, GPS antennas, small drones, smart door locks, and other small/medium wireless terminals and modules
- Supported Frequencies: 600 MHz - 8 GHz
- Supported Polarizations: Linear, Circular, Elliptical
- Passive Test Items: Gain, Efficiency, 2D Pattern, 3D Pattern, Roundness, Axial Ratio, etc.
- Active Test Items: Overall TRP, TIS, EIRP, EIS
- Supported Standards: 2G/3G/4G/5G, Wi-Fi b/g/n/a/ac/ax, Bluetooth, NB-IoT, Cat-M (eMTC), GPS/BEIDOU/GLONASS, ZigBee, LoRa (non-signaling)

3.3 S11 Test Parameters

Antenna VSWR (Voltage Standing Wave Ratio)



3.4 Passive Data

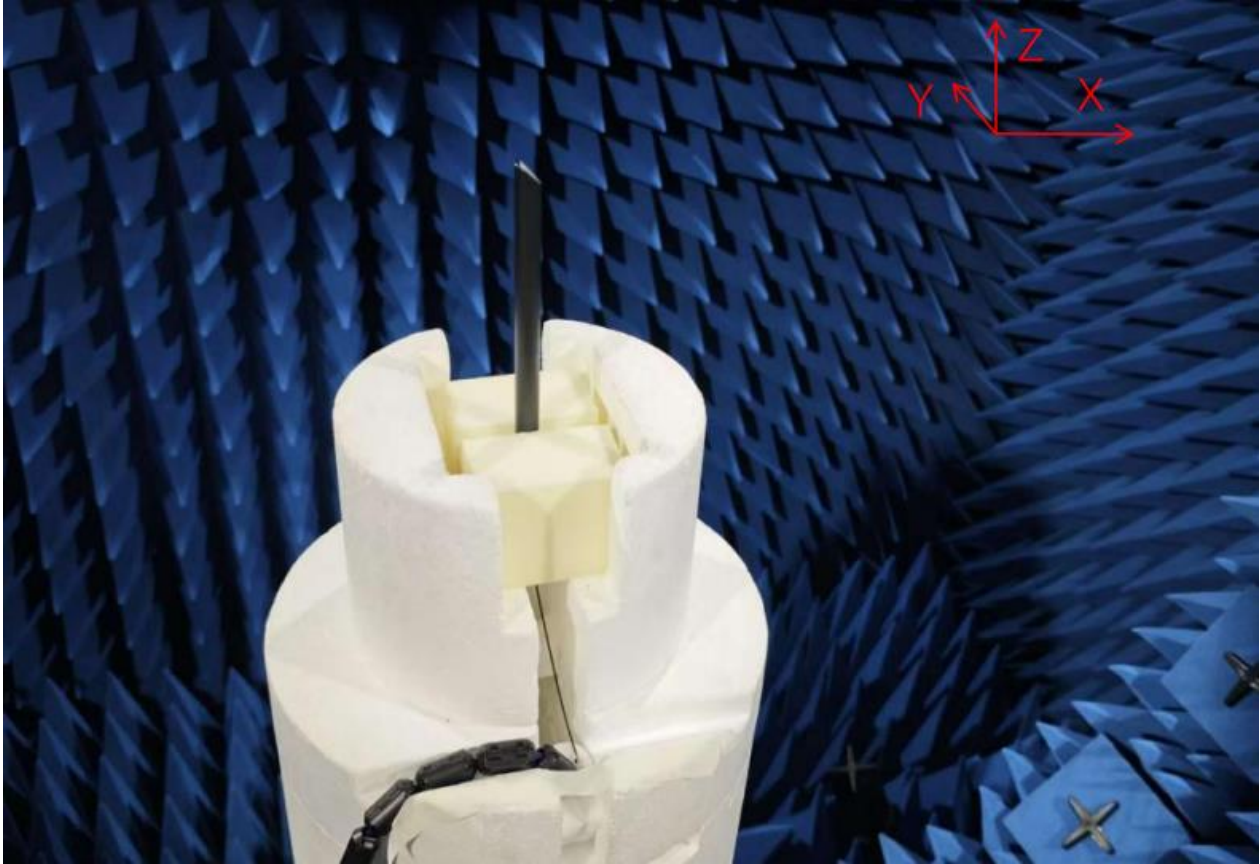
3.4.1 Antenna Passive Efficiency and Gain

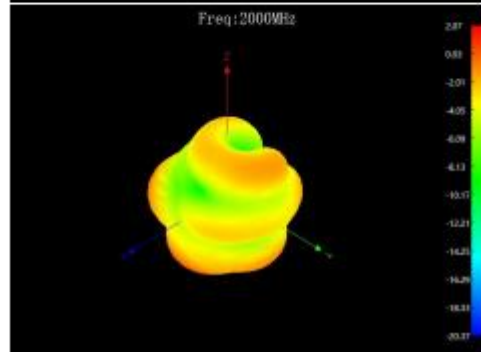
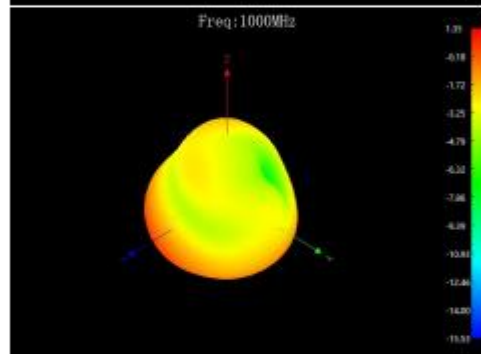
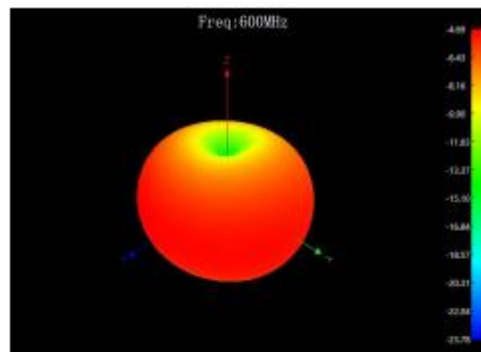
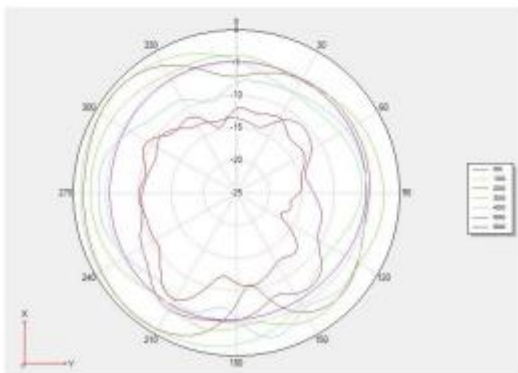
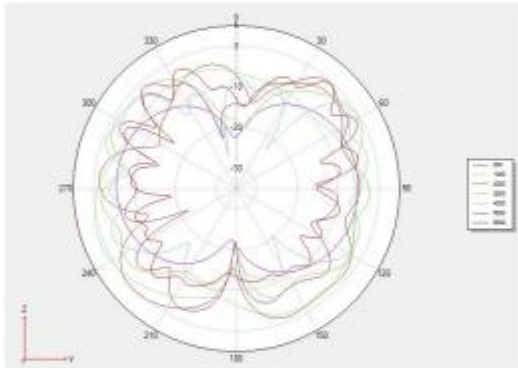
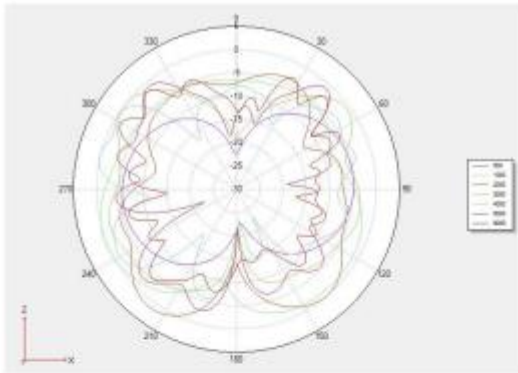
Frequency (MHz)	Max Gain (dBi)	Efficiency (%)
600	-4.69	14.79
650	1.77	47.97
700	2.17	40.64
750	2.15	42.76
800	0.69	37.5
850	1.4	45.19
900	1.17	43.45
950	0.11	35.16
1000	1.35	40.74
1050	1.5	43.25
1100	1.65	37.67
1150	0.85	28.58
1200	-0.24	27.42
1250	-0.36	31.77
1300	-1.38	28.51
1350	-0.16	34.36
1400	0.34	40.27

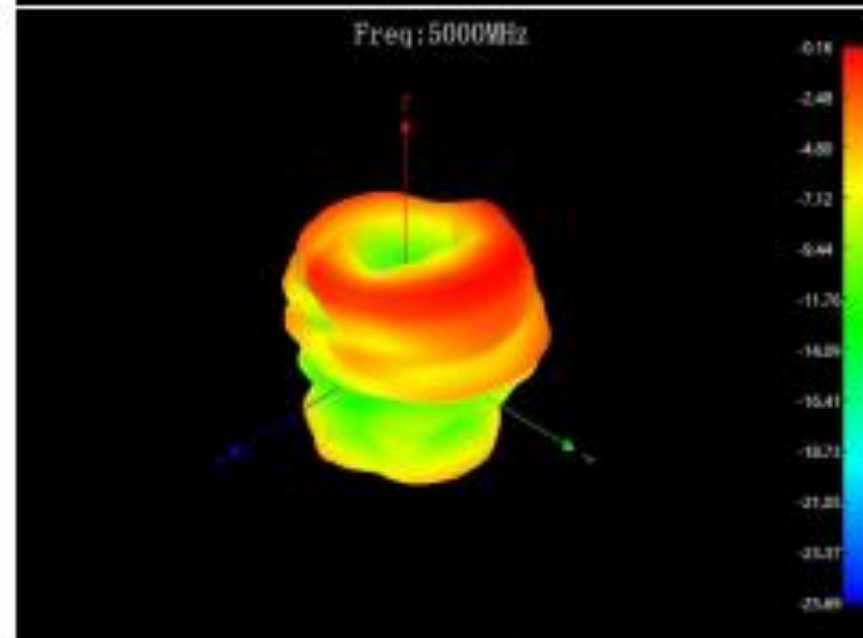
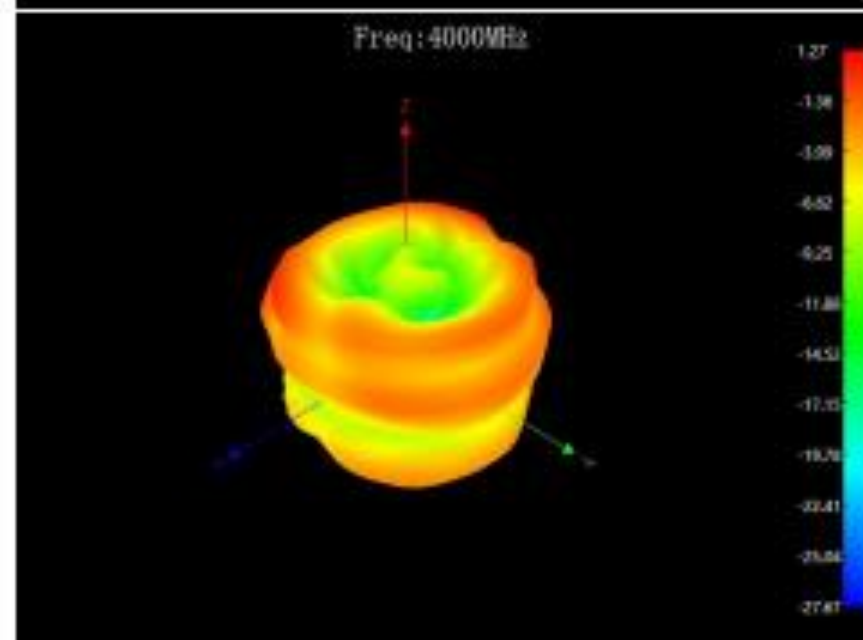
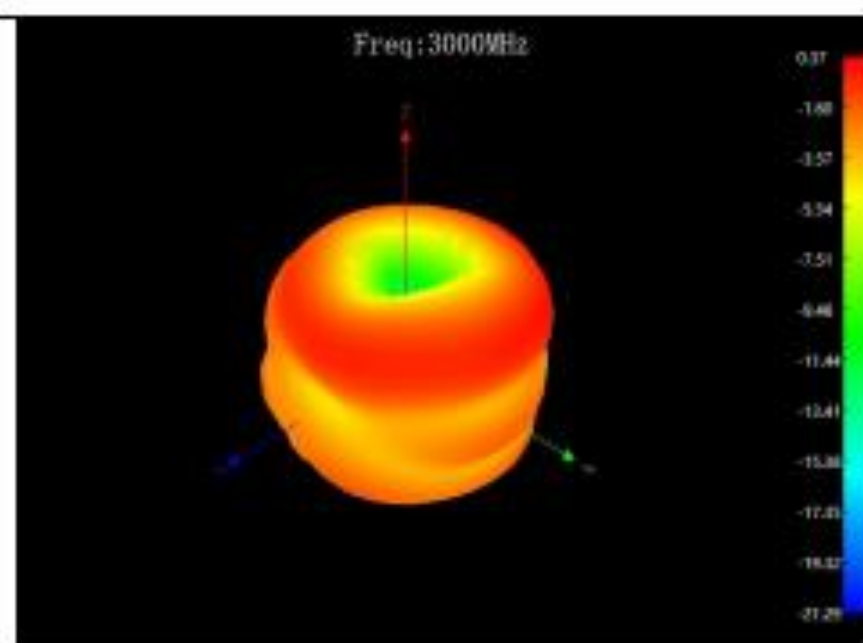
1450	0.07	42.46
1500	1.01	48.53
1550	1.36	46.56
1600	1.87	49.55
1650	2.29	48.87
1700	1.9	45.39
1750	1.71	46.99
1800	0.28	39.26
1850	0.23	33.27
1900	0.35	31.55
1950	0.73	31.77
2000	2.07	36.98
2050	1.82	40.46
2100	1.59	43.35
2150	1.72	47.86
2200	2.37	45.29
2250	1.99	43.05
2300	2.01	45.08
2350	1.79	43.35
2400	2.07	43.55
2450	1.07	40.93
2500	0.75	41.78
2550	0.13	41.88
2600	-0.12	39.9
2650	-0.65	40.93
2700	-0.82	43.15
2750	-1.31	39.26
2800	-0.55	43.85
2850	-0.23	39.9
2900	-0.19	42.07
2950	-0.09	43.45
3000	0.37	40.74
3050	0.56	42.66
3100	0.77	40.09
3150	-0.04	37.33
3200	-0.04	36.98
3250	0.24	37.41
3300	0.54	36.64
3350	0.81	35.4
3400	0.79	40.36
3450	1.53	40.09
3500	1.41	38.64
3550	1.38	42.17
3600	0.56	40.93
3650	0.44	40.09
3700	0.88	39.81
3750	0.88	35.48
3800	0.84	34.28
3850	2.02	38.11
3900	0.82	32.51
3950	0.51	30.76
4000	1.27	33.04
4050	1.65	34.43
4100	0.83	34.75
4150	0.71	32.06

4200	0.2	27.16
4250	0.24	23.88
4300	-0.8	24.49
4350	-0.69	22.44
4400	-0.07	22.91
4450	-0.45	21.18
4500	0.88	22.91
4550	-0.12	22.65
4600	0.64	25.23
4650	1.2	30.55
4700	1.59	32.58
4750	1.37	34.51
4800	1.0	31.41
4850	1.02	31.77
4900	0.5	31.33
4950	-0.54	28.38
5000	-0.16	24.55
5050	-1.45	24.43
5100	0.03	28.18
5150	-0.03	28.71
5200	-0.63	26.49
5250	0.21	24.6
5300	0.33	28.12
5350	0.52	24.21
5400	-0.44	25.82
5450	-0.34	26.73
5500	1.61	24.43
5550	2.59	24.95
5600	1.04	23.5
5650	1.66	25.29
5700	1.14	24.38
5750	0.95	23.33
5800	1.34	21.38
5850	0.78	22.65
5900	0.33	24.43
5950	1.22	21.13
6000	-0.33	20.42

3.4.2 Radiation Pattern







Freq: 6000MHz

3.5 Electrical Performance

Parameter	Specification
Frequency (MHz)	600 - 6000 MHz
Input Impedance	50 Ω
VSWR	< 3
Gain	-4.6 ~ 2.5 dBi
Efficiency	14 ~ 49%
Polarization	Linear
Radiation Pattern	Omni-directional

3.6 Mechanical Performance

Parameter	Specification
Mounting Method	Screw/Bolt
Adhesive Type	None
Connector Type	SMA Male (inner pin replaceable per customer requirements)
Antenna Dimensions (mm)	13.00 mm (diameter) x 201 mm (length)
Material	SMA + Plastic housing + Cable
Cable Length (mm)	No exposed cable
Operating Temperature	-40°C ~ +85°C
Storage Temperature	-40°C ~ +85°C

4. Mass Production Antenna Specifications

During mass production, VSWR is used as the production test standard.

Based on project-specific variations, the following standard applies:

Frequency (MHz)	Mass Production Standard
600 - 6000 MHz	VSWR (production) < VSWR (qualification) + 0.5