

AU05 Antenna Test Report

Test Items & Equipment System

Test Items

1. S-parameters

2. Passive Test

Test Parameters

VSWR; Smith;

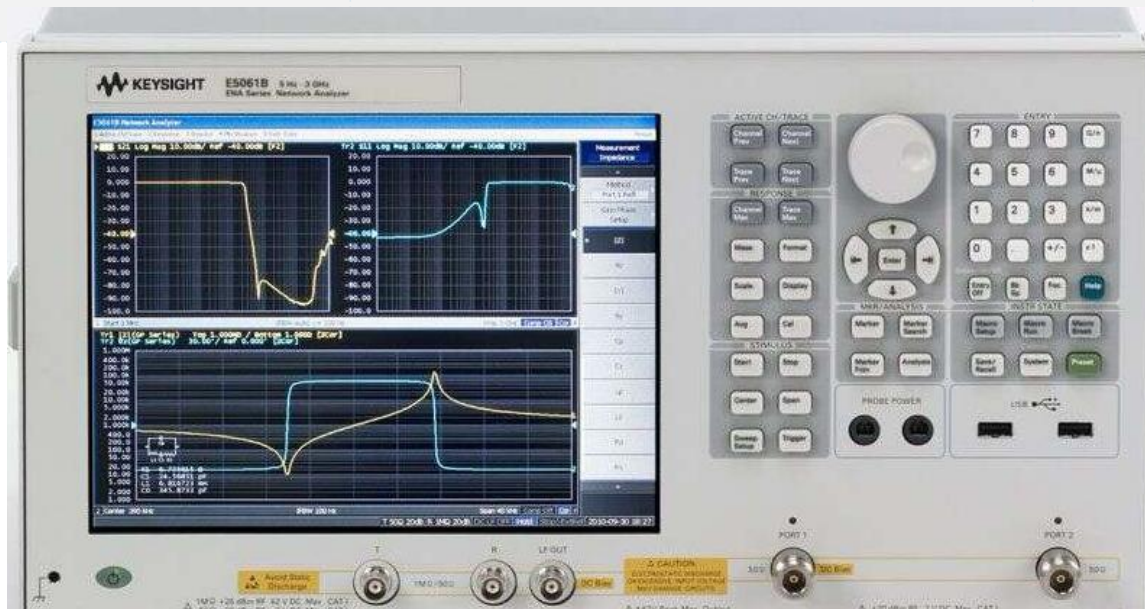
Efficiency

Test Equipment

Network Analyzer: Agilent 5071B

Comprehensive Test Set: Network Analyzer: Agilent 5071B

Anechoic Chamber: GTS Chamber



Key Terms:

VSWR: It is short for Voltage Standing Wave Ratio, referring to the ratio of the reflected wave amplitude to the incident wave amplitude. When the impedance is perfectly matched under ideal conditions in engineering, reflections inevitably exist, and VSWR is greater than 1; the larger the reflection, the larger the VSWR. Therefore, for the VSWR parameter, the lower the value, the closer to 1, the better.

Return Loss: Return Loss (RL) refers to the ratio of the RF input signal power reflected back to the input signal power. It is expressed in dB and is a negative number. Under the ideal matched condition, the antenna and RF circuit impedance are perfectly matched with no reflected power, then the return loss is infinitely small. However, in engineering, impedance cannot be completely matched, therefore reflected power will always exist. In the worst case, the input power is completely reflected, and the return loss is 0. Therefore, for the return loss parameter, the lower the value, the better the antenna performance.

Efficiency: Efficiency refers to the ratio of the power radiated by the antenna (i.e., the power effectively converted into electromagnetic waves) to the power input to the antenna. It is always a value between 0 and 1.

Gain: Antenna gain refers to the ratio of the signal power density produced at the same point in space by the actual antenna versus an ideal radiating element under equal input power. It quantitatively describes the degree to which an antenna concentrates input power into radiation. It is generally expressed in dBi.

Smith Chart: The Smith Chart is a graphical tool that uses the one-to-one correspondence between normalized impedance and reflection coefficient, representing the normalized impedance as a point on the chart.

TRP: Total Radiated Power (TRP) is the spherical surface integral (spherical average) of the Effective Isotropic Radiated Power (EIRP) of the mobile station in three-dimensional space, reflecting the transmit characteristics of the mobile station in all directions.

TIS: Total Isotropic Sensitivity (TIS) is the spherical surface integral of the Effective Isotropic Sensitivity (EIS) of the mobile station in three-dimensional space, (spherical average), reflecting the receive characteristics of the mobile station in all directions.

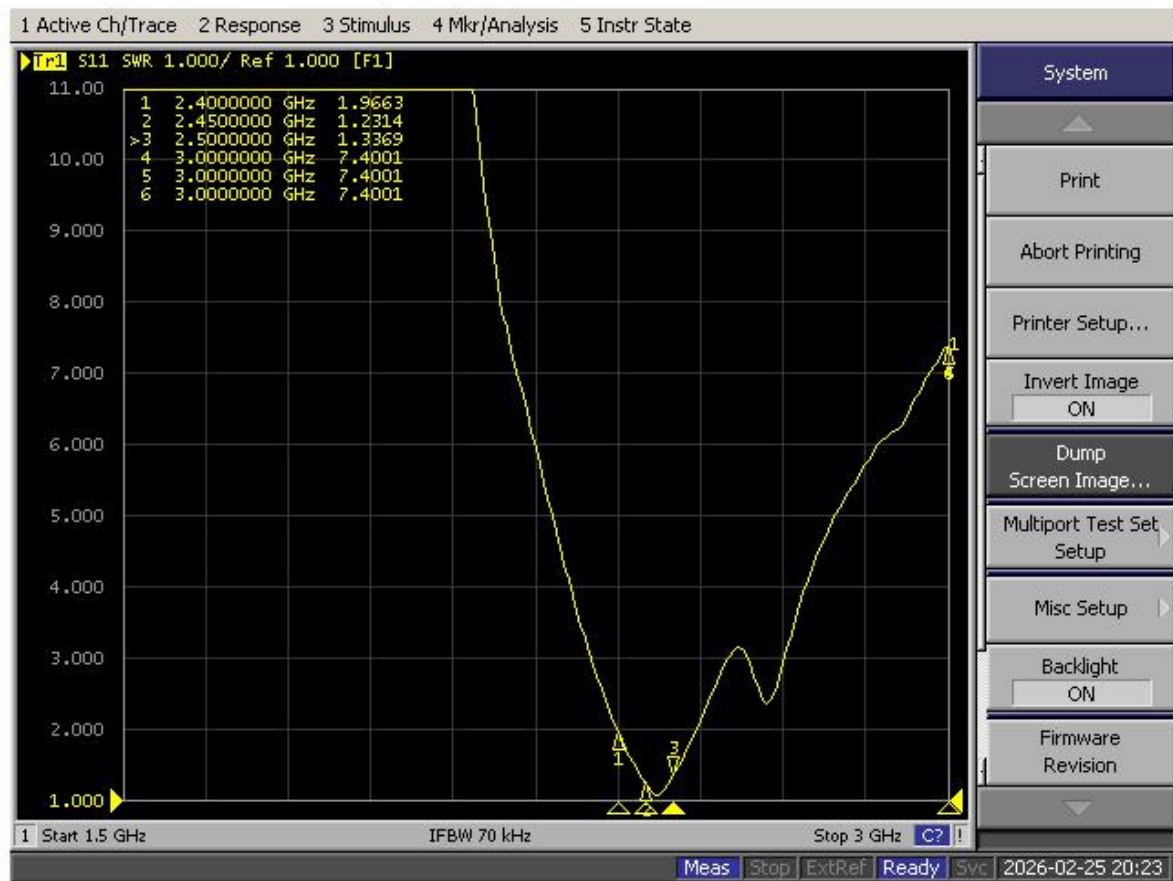


Complete Unit Schematic

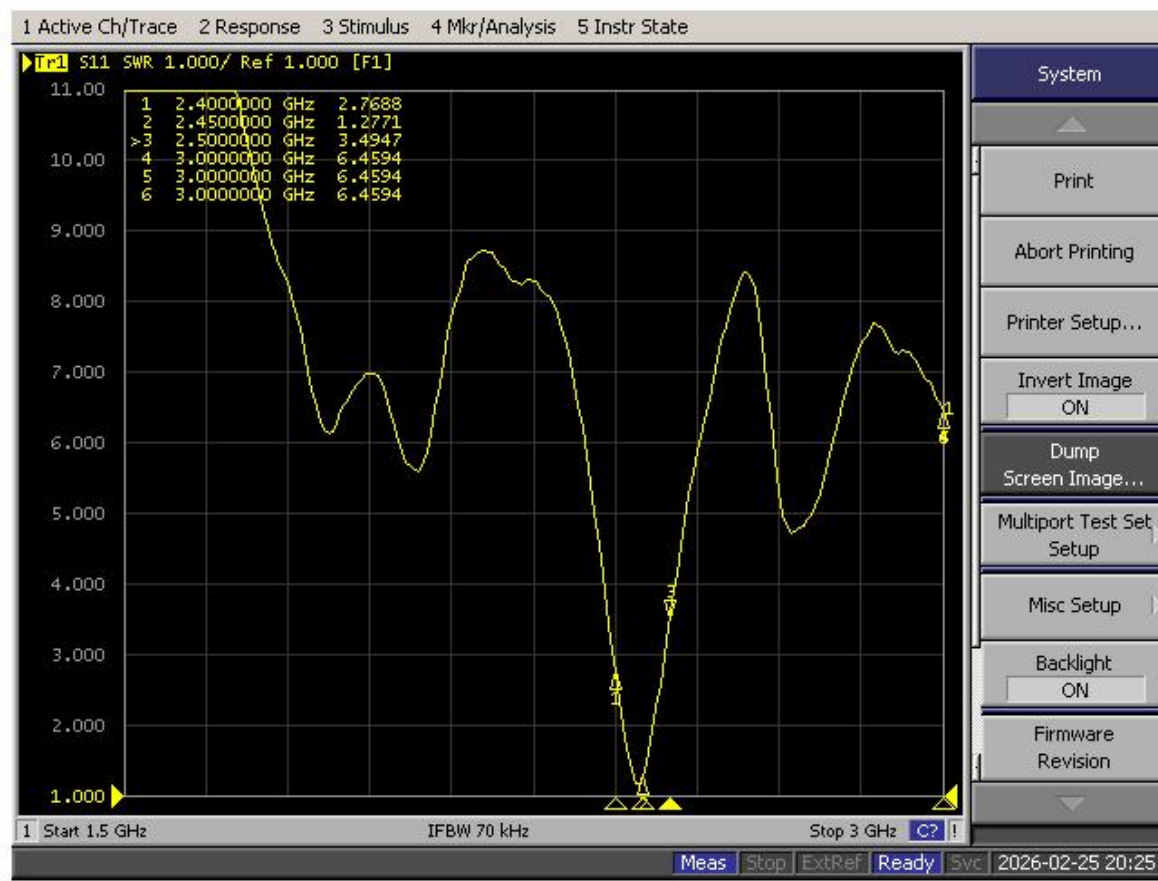


Antenna

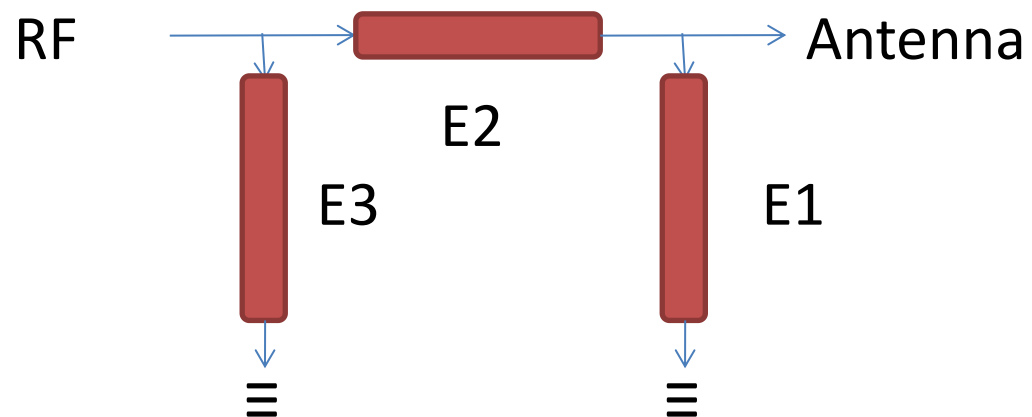
On-board End



Through-board End



E1	E2	E3
NC	0 Ohms	NC



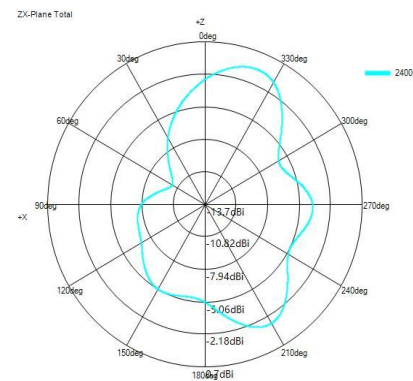
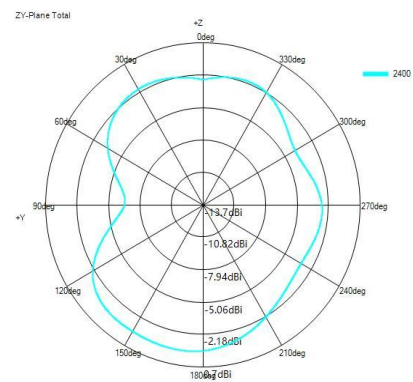
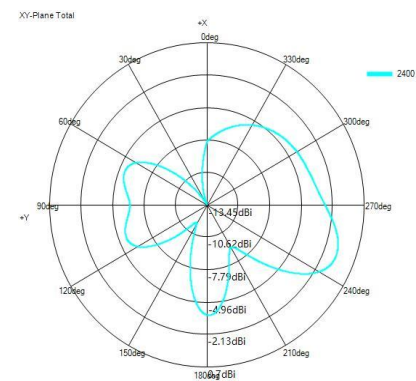
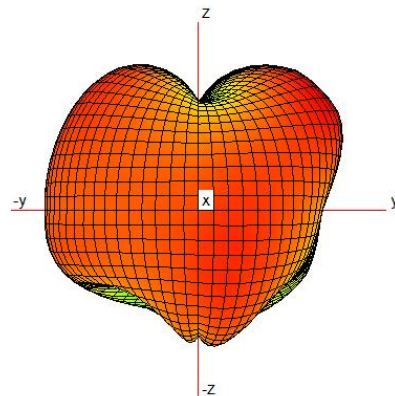
Note: No antenna matching modification.

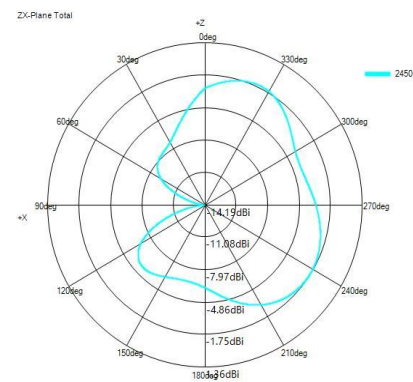
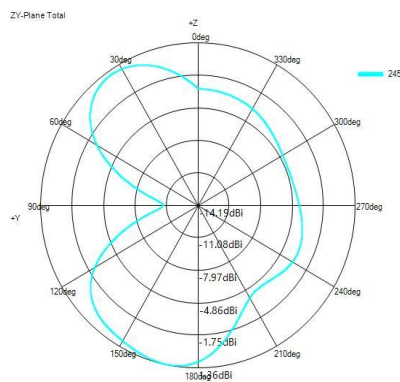
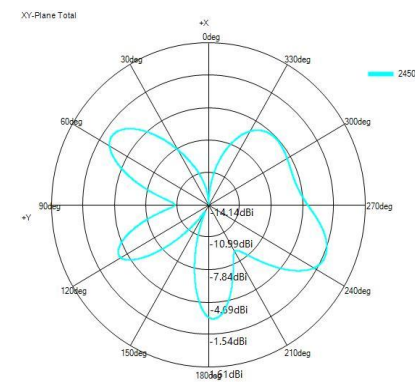
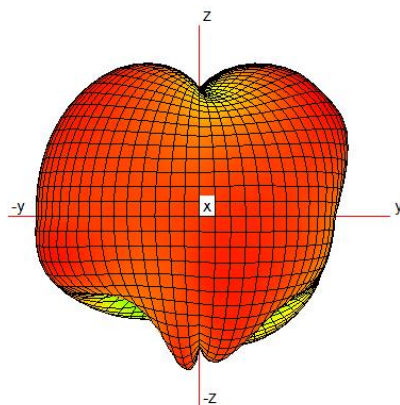
On-board End

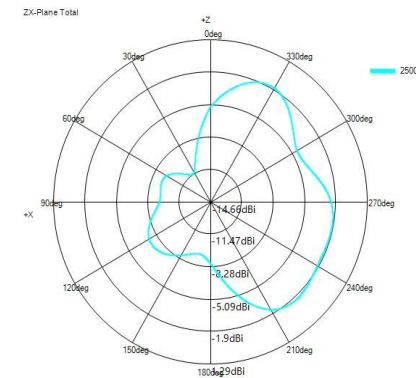
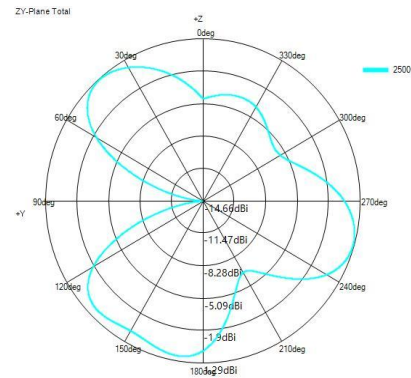
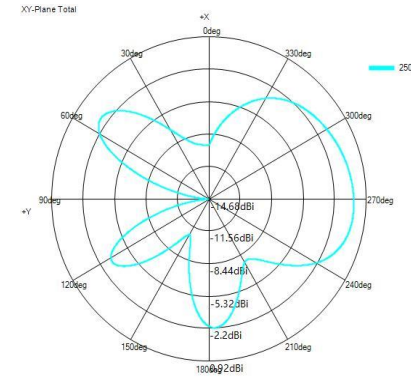
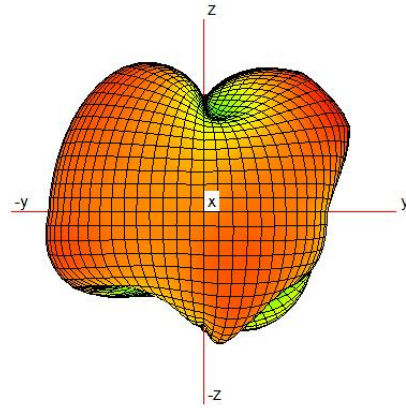
Freq (MHz)	Gain (dBi)	Efficiency (%)
2400	0.66	33.43
2410	0.01	32.63
2420	0.04	32.03
2430	0.24	32.54
2440	0.73	33.28
2450	0.93	31.02
2460	0.62	31.50
2470	0.73	33.29
2480	0.68	34.04
2490	0.84	30.74
2500	0.55	31.45

Through-board End

Freq (MHz)	Gain (dBi)	Efficiency (%)
2400	-2.09	24.92
2410	-1.84	26.35
2420	-2.05	26.67
2430	-2.27	27.03
2440	-2.30	26.85
2450	-2.00	27.93
2460	-1.93	28.55
2470	-2.01	28.99
2480	-1.99	28.24
2490	-1.79	27.99
2500	-1.78	27.51







1 the above is the 2.4G passive test data

2 Please take note of the above; if you have any questions, please contact us. Thank you!



THANKS FOR YOU