外置天线天线规格承认书
Product Specifications for Approval

material number: SDC-2458-2DB
SDC-SMAF10-140IP

customer name:Qiu YU　　models:

Antenna band:WIFI2.4G/5.8G

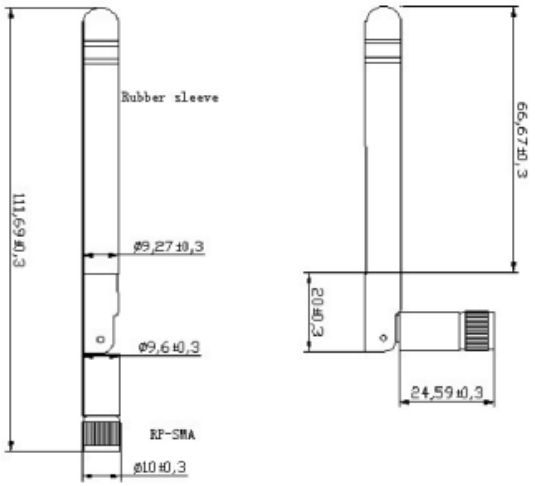
version: R-A　　Production date: 2022-09-13

Shun Reach technology Co., LTD			
structure:	Chen Wei	Radio frequency (rf):	Yang Yonghui
audit:	Zeng Liwen	approval:	Chen huaqian
Our client's confirmation			
Customer audit:	Zeng Liwen	Customer approval:	Chen huaqian

Company address: 4th Floor, Building B5, Xinfu Industrial Park, Chongqing Road, Fuyong Town, Baoan District, Shenzhen

phone:0755-27211658　　fax:0755-29485750

MECHANICAL DRAWING



UNIT: mm

2.4GHz SMA High Gain Antenna Measurement and Performance Report

Summary:

This report is to account for the measurement setup and results of 2.4GHz SMA High Gain Antenna.

1. The measurement setup includes reflection coefficient, pattern, and gain measurements.
2. The measured data for 2.4GHz SMA High Gain Antenna are presented and analysis.

I. Measurement Setup:

A. Reflection Coefficient Measurement:

(a) Instrument: Network Analyzer.

(b) Setup:

(1) Calibrate the Network Analyzer by one port calibration using O.S.L .calibration kits .

(2) Connect the antenna under test to the Network Analyzer.

(3) Measure the S11(reflection coefficient) shown in Fig. 1.

(4) Generally, the S11 is less than –10dB to ensure the 90% power into antenna and only less than 10% power back to system.

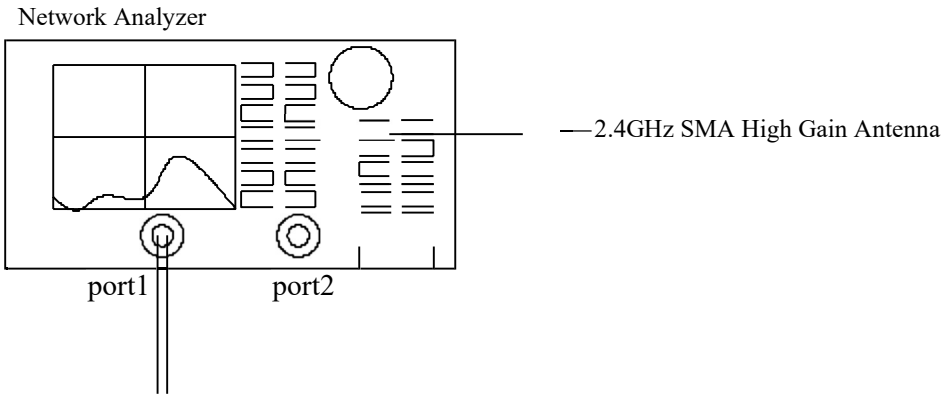


Fig.1 2.4GHz SMA High Gain Antenna measured in Network Analyzer

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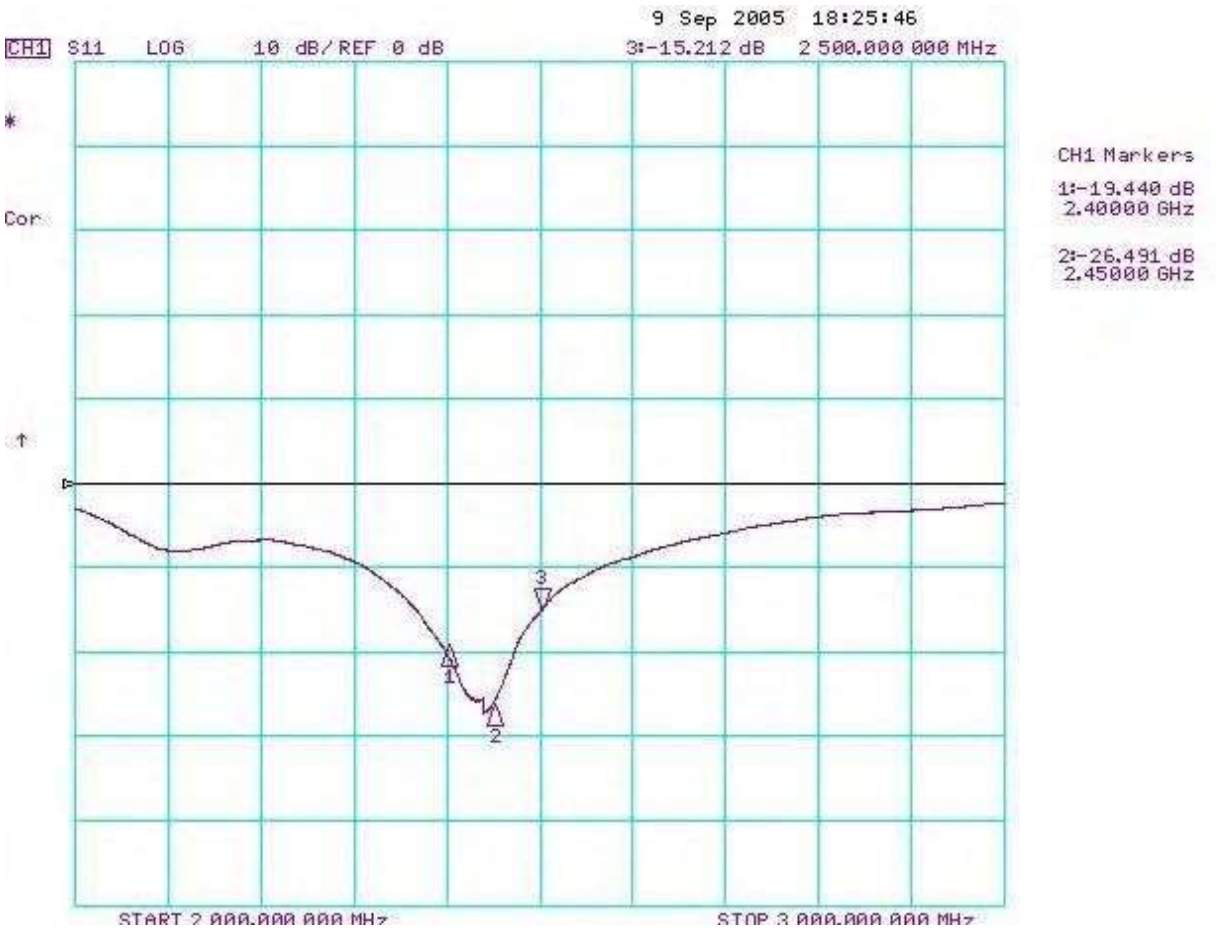
MEASUREMENT AND PERFORMANCE REPORT

TYPE OF PRODUCT 2.4GHz SMA High Gain Antenna **PAGE : 2/3** **B. S11 TEST**	

(a) Return Loss

Frequency(GHz) / SAMPLE	2.4	2.45	2.5
1	-20.450	-25.754	-14.621
2	-14.496	-24.103	-20.012
3	-19.440	-26.491	-15.212



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SPECIFICATION AND PERFORMANCE

TYPE OF PRODUCT 2.4GHz SMA High Gain Antenna

II. Test Report and Requirement:

Environment Performance

	Test Item	Test Method & Condition	Apparatus	Test Result
1	Humidity Life (Temperature Cycling)	***Refer To EIA 364-31 Method III Test Condition A*** The object of this test procedure is to detail a standard test method for the evaluation of the properties of materials used in connectors as they influenced by the effects of high humidity and heat . ***Requirement :*** Temperature : 80℃ Humidity : 90~95% (R.H) Time : 88 hours	**K.SON INS** **THS-A4L-150**	PASSED
2	Temperature Life	***Refer to wieson test specification*** The prepared sample shall be placed in a chamber , the temperature of which shall be -40˚C. ***Requirement :*** 24 Hours minimum .	**K.SON INS** **THS-A4L-150**	*PASSED*
3	Temperature Life	***Refer to wieson test specification*** The prepared sample shall be placed in a chamber , the temperature of which shall be 80˚C. ***Requirement :*** 24 Hours minimum .	**K.SON INS** **THS-A4L-150**	*PASSED*
4	Thermal Shock	***Refer to wieson test specification*** The prepared sample shall be placed in a chamber , the temperature of which shall be –40 ~ 85˚C. ***Requirement :*** 12 Hours minimum .(30minutes/cycle，24cycle)	**K.SON INS** **THS-A4L-150**	*PASSED*

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TEST METHODS OF THE CHAMBER

I. Pattern Measurement：

(a) Instruments：anechoic chamber, network analyzer, standard gain antenna.

(b) chamber description：

(1) The anechoic chamber is a far-field measurement system with size of 3.25M*2.84M*6.4M. The quiet zone region is 44cm*44cm*44cm at frequency range of 2.4GHz in the center of the rotator.

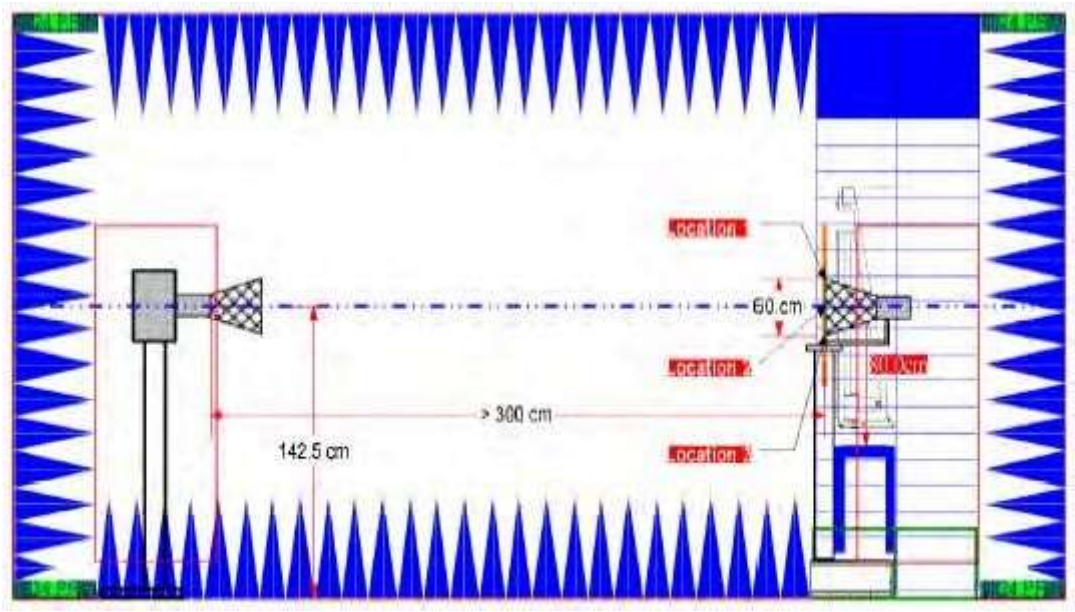


Fig.1. The interior components of the anechoic

(2) Fig. 1. shows the interior components of the anechoic chamber. The antenna standard antenna as probe and antenna under test is 3M. The antenna under test is fixed on a step rotator. We can control the rotating angle for accurate or rough measurement.

(3) While we measure the radiation patterns by rotating AUT with 360 degrees and repeat again by replacing the AUT with the standard gain antenna under test, we compare both data and using a formula to obtain the

$$G_{AUT} = G_{stand} + P_{AUT} - P_{stand}$$

G_{AUT}：Gain of AUT

G_{stand}：Gain of Standard Gain Antenna

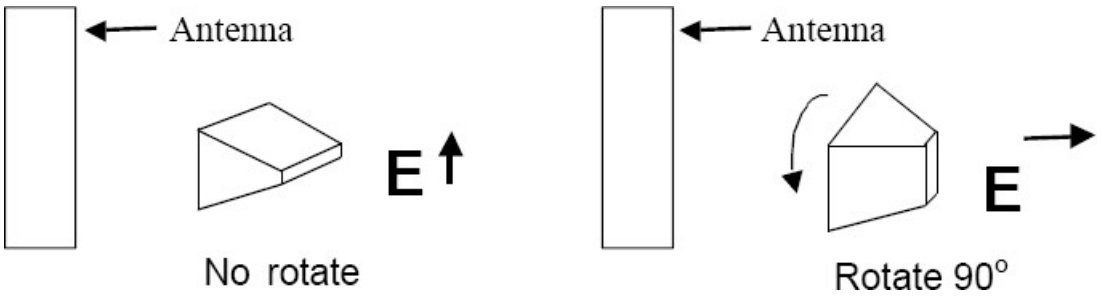
P_{AUT}：Measured Power of AUT

P_{stand}：Measured Power of Standard Gain Antenna

(4) Gain of AUT. The standard gain antenna is a gain horn(SG-430 1.7GHz ~ 2.6GHz).

(5) The planes defined in the Fig. 4 which we want to measure are H(X-Y) and E(X-Z) planes. The vertical or horizontal polarization's power is measured by rotating the antenna probe to 0 degree or to 90 degree shown in Fig. 3, respectively. While we combine both vertical and horizontal power, we obtain total power.

(6) From the total power in three basic planes(H, and E), we can analyze the performance of the antenna is good or not.



(a) Antenna Probe at 0 degree as a vertical polarization.

(b) Antenna Probe at 90 degree as a horizontal polarization.

Fig. 3. The definition of vertical and horizontal polarization.

(c) Plane definition：

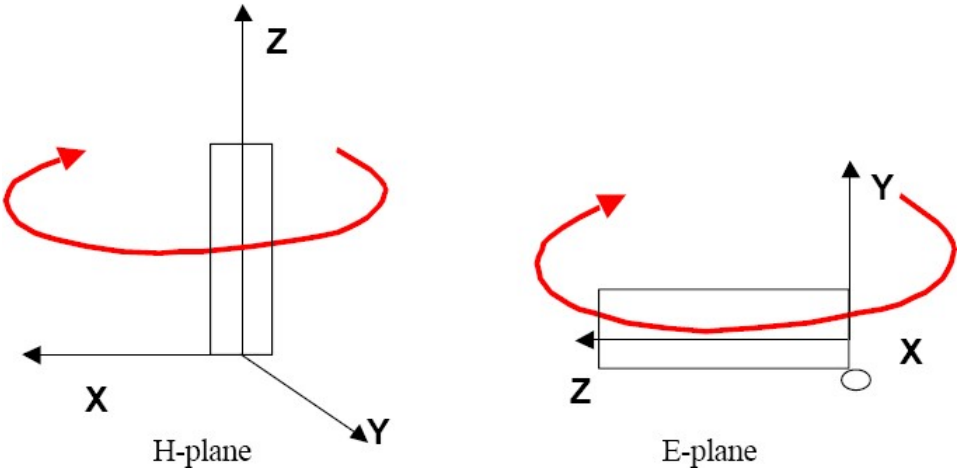


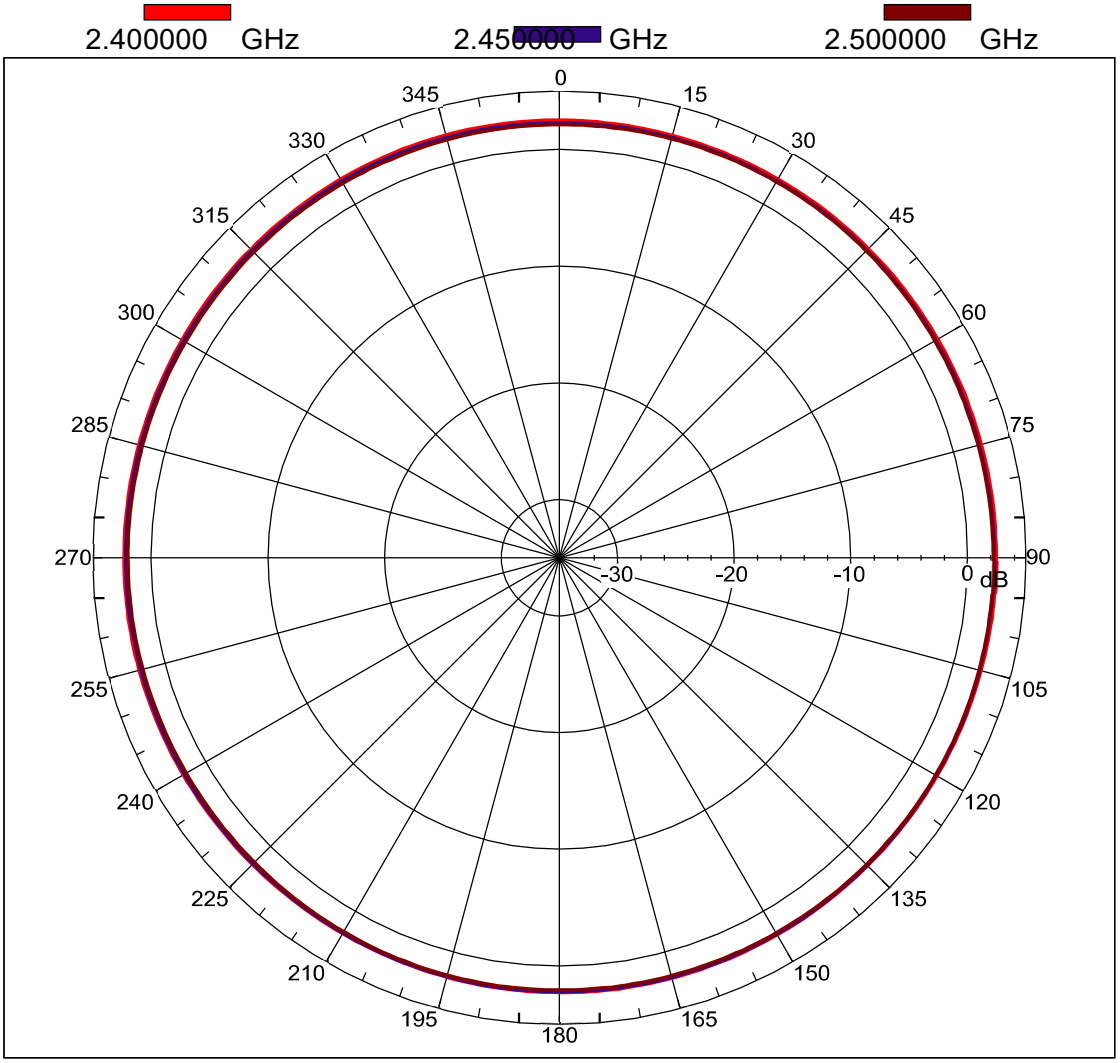
Fig. 4. The plane definition：H-Planes and E-Planes.

II. Gain and Radiation Pattern：

Gain

Frequency(GHz) / Gain(dBi)	2.40	2.45	2.50
Gain	2.50413	2.31251	2.2523

Radiation Pattern



Radiation Pattern