

Logitech

Antenna Under Test (AUT)

Report

Model Name: YR0092

Equipment Type: Wireless Keyboard

Manufacturer: Logitech Technology (Suzhou) Co., Ltd

Test Location: Suzhou, China No.3 Song Shan Road, New District

Tested by: Ketty WU

Report Date: 2022.12.16

Report Release History

Report version	Description	Date Issued
YR0092 AUT Report	Original release	2022/12/16

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1. EUT Antenna Information

- 1) Antenna Material : PCB on board
- 2) Antenna Type : Printed monopole antenna
- 3) Antenna Dimension: 26 x 3 mm
- 4) Operating Frequency : 2.4 GHz - 2.4835 GHz
- 5) Input Impedance : 50 Ω
- 6) Standing-Wave Ratio : 2:1

2. Measured Values and Calculation of Antenna Gains

Measure peak horizontal/vertical EIRP on each x-y, y-z, x-z plane. The highest measured values will be used to calculate the antenna peak gain.

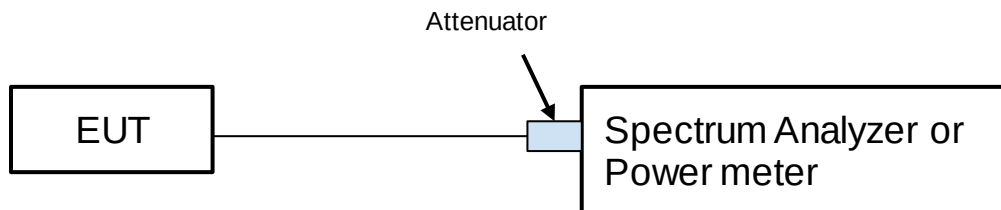
$$\text{Antenna Peak Gain (dBi)} = \text{Max EIRP(dBm)} - \text{Conducted Power (dBm)}$$

Frequency	X-Y Plane		X-Z Plane		Y-Z Plane		Max Peak EIRP (dBm)	Conducted Power (dBm)	Antenna Peak Gain (dBi)
	Ver. Peak EIRP (dBm)	Hori. Peak EIRP (dBm)	Ver. Peak EIRP (dBm)	Hori. Peak EIRP (dBm)	Ver. Peak EIRP (dBm)	Hori. Peak EIRP (dBm)			
2402	-12.06	7.75	6.18	-2.11	2.12	3.93	7.75	3.813	3.937
2440	-10.49	7.82	6.47	-0.78	2.58	3.17	7.82	3.965	3.855
2480	-10.48	7.27	6.01	-0.51	0.44	2.69	7.27	4.073	3.197

Test Date: 2022.12.12

3. Conducted Power Measurement

3.1 Test Setup



3.2 Test Instruments

Description	Model No.	Serial No.	Last Calibration
Spectrum Analyzer Keysight	N9020B	MY62260186 (Logitech: 1ZGSA17)	2022.07.12

Note: The calibration interval of the above test instruments is 12 months

3.3 Test Procedure

A spectrum analyzer was used to perform output power measurement, setting the detector to normal and configuring EUT continuously transmitting power(100% duty cycle).

3.4 Test Result of RF conducted Power

Frequency	Conducted Power (dBm)
2402	3.813
2440	3.965
2480	4.073

Test Date: 2022.12.12

4. 2D Radiation Pattern Measurement

4.1 Test Location

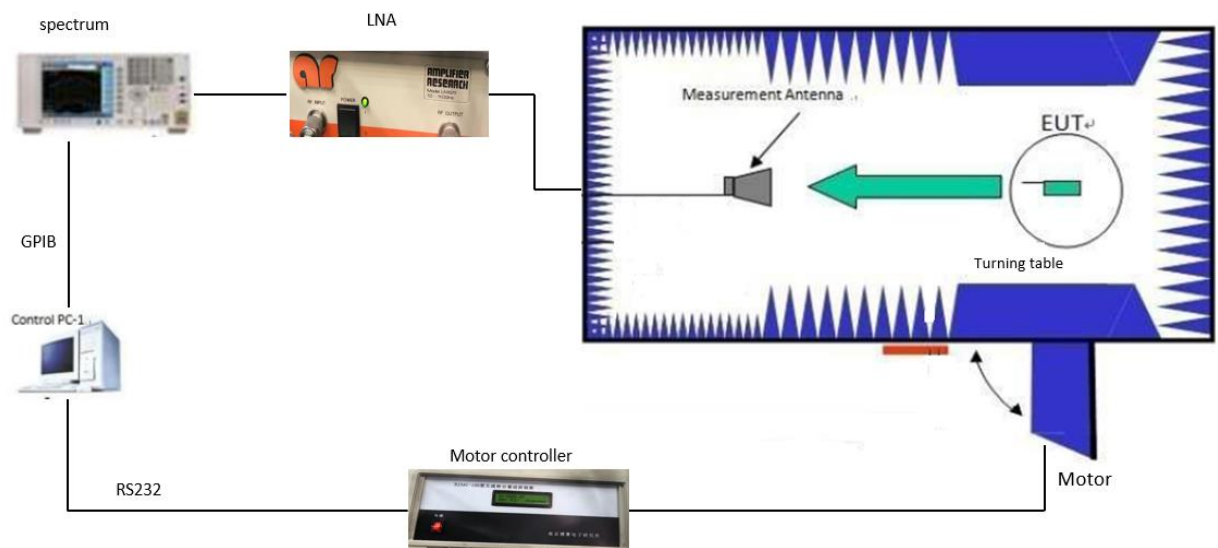
2D radiation pattern measurement in China SZ 2.4GHz FAC anechoic chamber.

4.2 Description of the anechoic chamber

Length: 5.0m

Width: 2.8m

Height: 2.8m



4.3 Test Instruments

Description	Model No.	Serial No.	Last Calibration
Spectrum Analyzer Keysight	N9010A	N/A	2022.7.14
Horn Antenna ETS	N/A	N/A	2022.8.1
RF signal cable	SUCOFLEX104	SN293270/4	2022.8.1

Software	N/A	N/A	2022.8.1
Turntable controller	BJ3AC-100	N/A	2022.8.1
Chamber	N/A	N/A	2022.8.1
Absorber 30MHz~40GHz	N/A	N/A	2022.8.1
LNA	LN1G11	N/A	2022.8.1

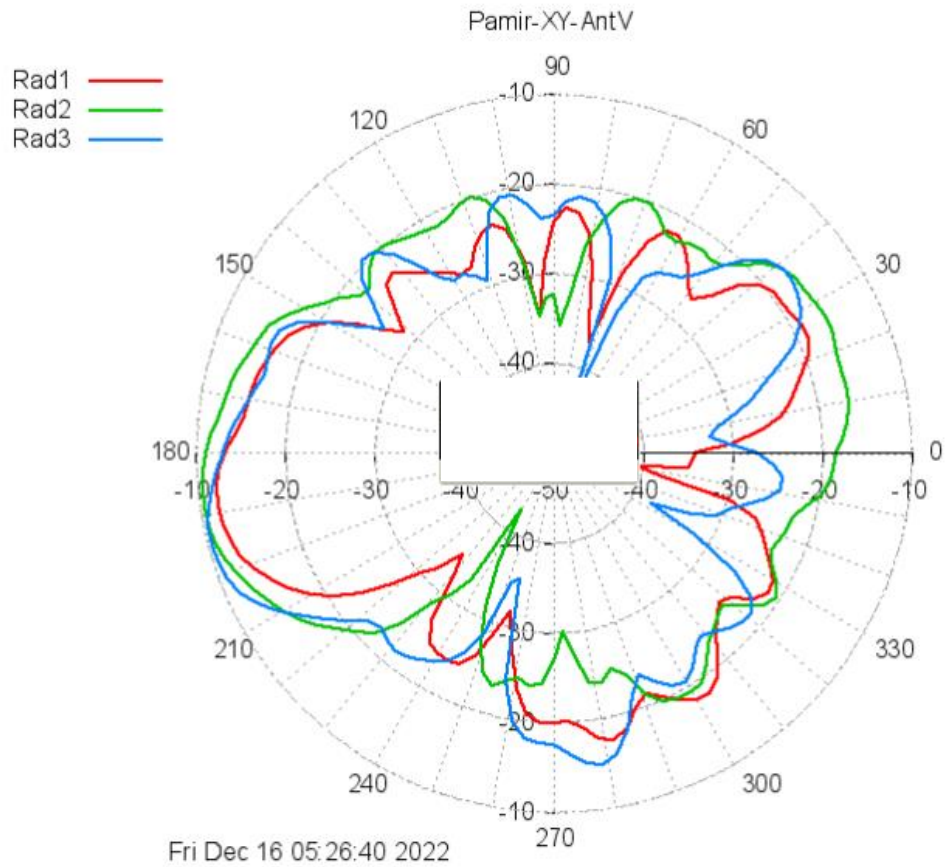
Note: The calibration interval of the above test instruments is 12 months

4.4 Test Procedure

- i. Connect the EUT to Spectrum Analyzer and record the power setting of EUT and the measured conducted power.
- ii. Fasten the EUT in the center of the turntable, record the coordinates and take pictures.
- iii. Configuring EUT continuously transmitting power(100% duty cycle).
- iv. Make sure the transmit signal is stable and at the maximum RF power level.
- v. Setup the channel power function by spectrum analyzer.
- vi. Read the channel power level on the spectrum analyzer and record in the following positions.
 1. The turntable is then stepped between 0 to 360 degrees along the horizontal plane in 15-degree increments.
 2. Data is recorded using the spectrum analyzer for both theta and phi polarizations at each position.
- vii. Rotate the EUT with 90 degrees and repeat step f.1 and step f.2 until all 3 planes(X-Y,X-Z,Y-Z) were measured.
- viii. $\text{Antenna Peak Gain (dBi)} = \text{Max EIRP(dBm)} - \text{Conducted Power (dBm)}$

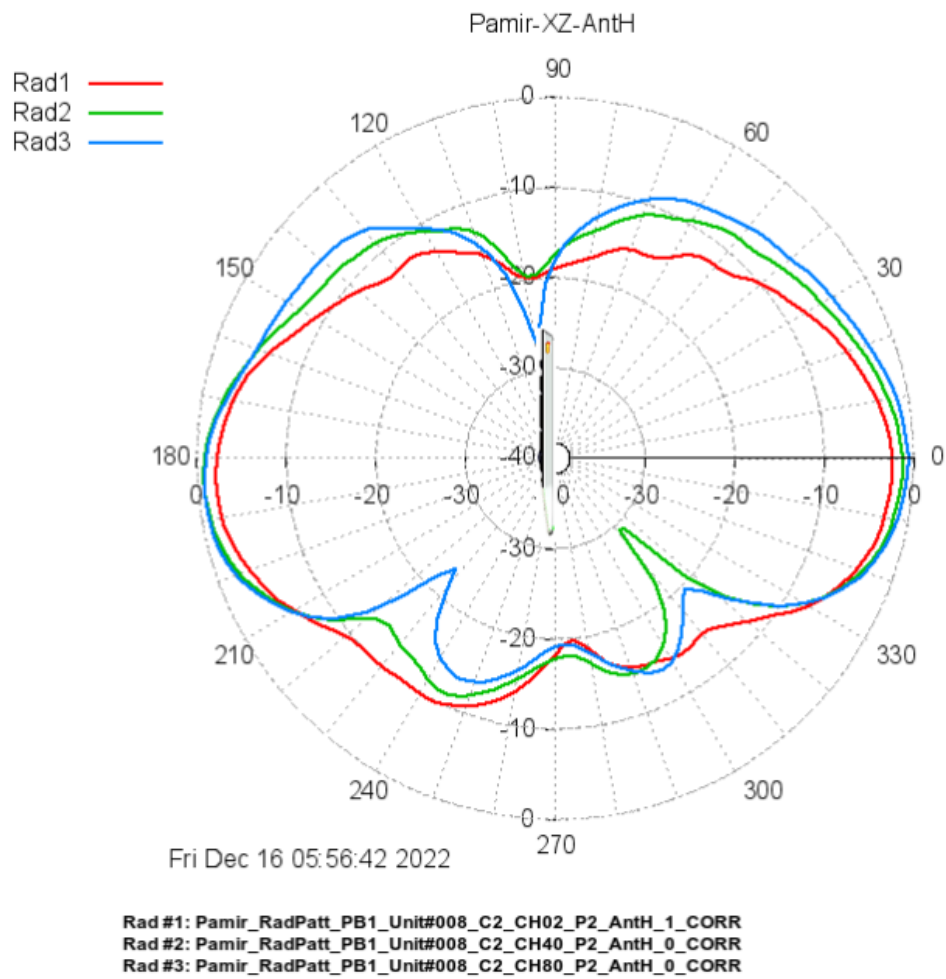
4.5 Test Setup photos

Confidentiality

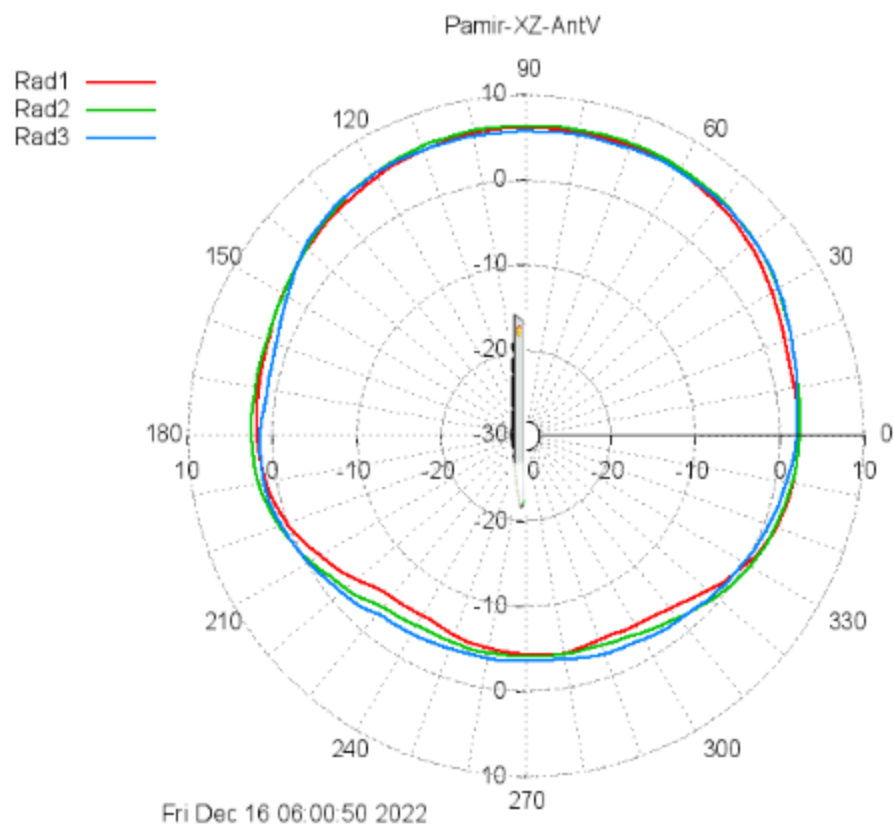


Rad #1: Pamir_RadPatt_PB1_Unit#008_C2_CH02_AntV_0_CORR
 Rad #2: Pamir_RadPatt_PB1_Unit#008_C2_CH40_AntV_0_CORR
 Rad #3: Pamir_RadPatt_PB1_Unit#008_C2_CH80_AntV_0_CORR

X-Z Plane: Horizontal

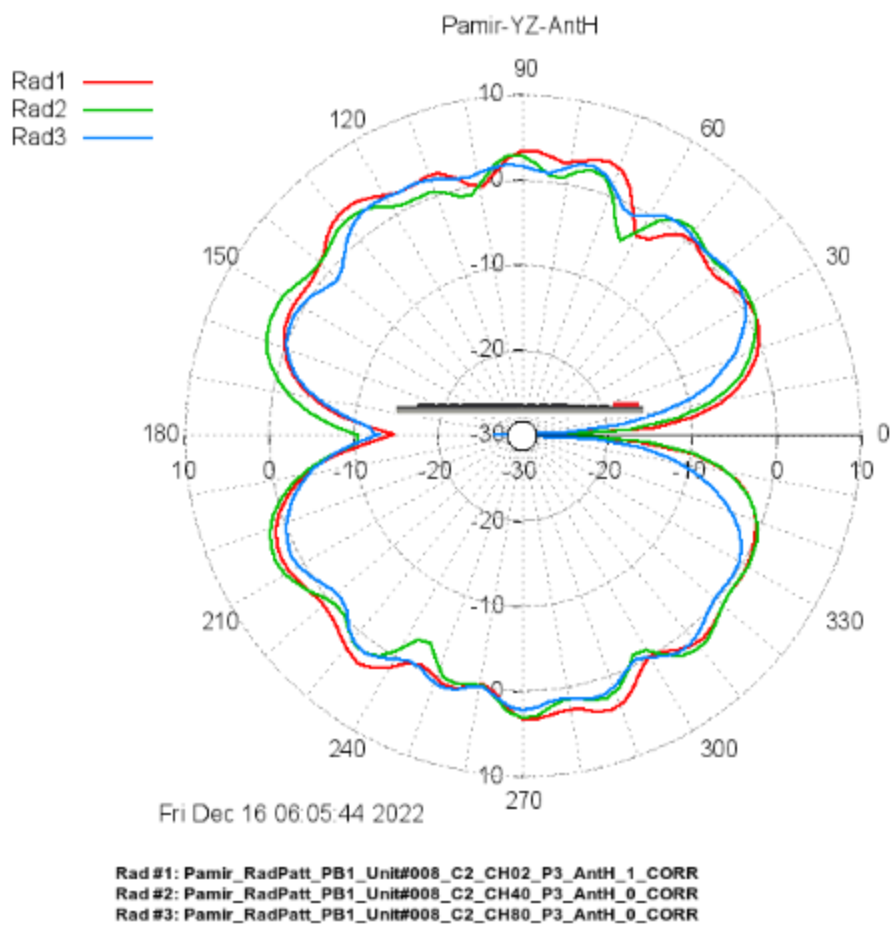


X-Z Plane: Vertical

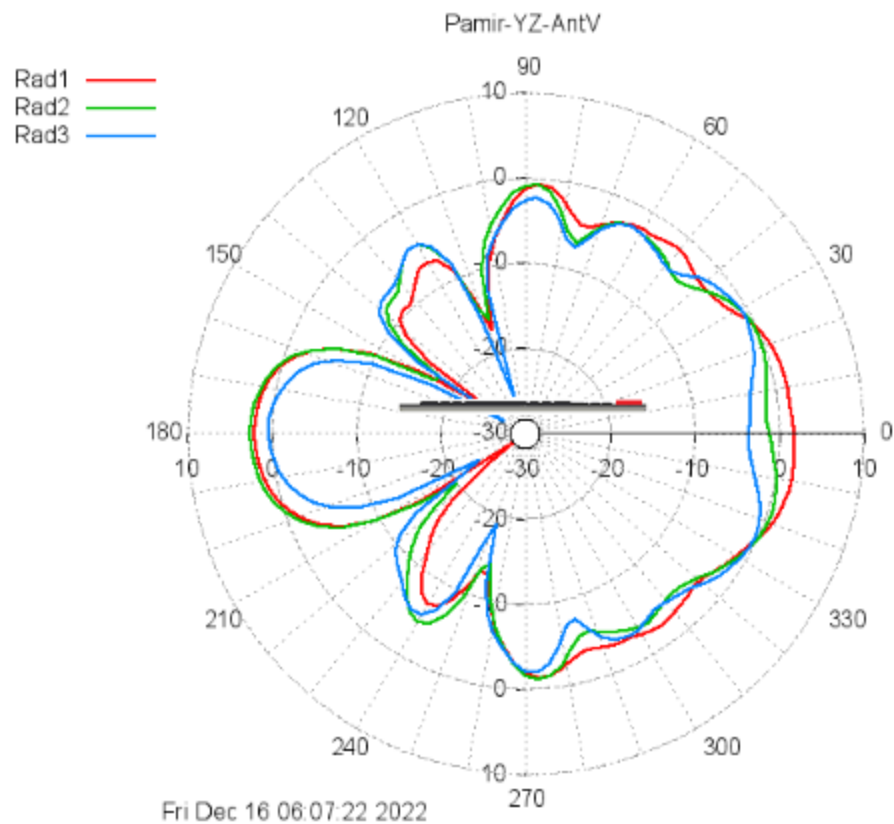


Rad #1: Pamir_RadPatt_PB1_Unit#008_C2_CH02_P2_AntV_0_CORR
 Rad #2: Pamir_RadPatt_PB1_Unit#008_C2_CH40_P2_AntV_0_CORR
 Rad #3: Pamir_RadPatt_PB1_Unit#008_C2_CH80_P2_AntV_0_CORR

Y-Z Plane: Horizontal



Y-Z Plane: Vertical



Rad #1: Pamir_RadPatt_PB1_Unit#008_C2_CH02_P3_AntV_0_CORR
Rad #2: Pamir_RadPatt_PB1_Unit#008_C2_CH40_P3_AntV_0_CORR
Rad #3: Pamir_RadPatt_PB1_Unit#008_C2_CH80_P3_AntV_0_CORR

5. Appendix for Logi internal reference

[FCC Antenna Report - 2022 by Frederic](#)