Logitech
Antenna Under Test (AUT)
Report

Model Name: YR0091

Equipment Type: Keyboard

Manufacturer: Logitech Far East LTD.

Test Location: #2, Creation Rd. 4, Science-based Ind. Park Hsinchu Taiwan, R.O.C

Tested by: Jin Cui

Report Date: 2022.12.14

Report Release History

Report version	Description	Date Issued
YR0091 AUT Report	Original release	2022/12/14

Table of Contents

1. EUT Antenna Information

1) Antenna Material : PCB on board
2) Antenna Type : Reverted F
3) Antenna Dimension: 20 x 8 mm
4) Operating Frequency : 2.4GHz-2.5GHz
5) Input Impedance : 50Ω
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.

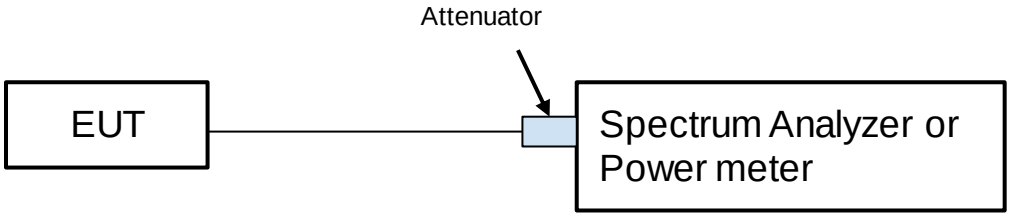
Antenna Peak Gain (dBi) = Max EIRP(dBm) - Conducted Power (dBm)

Frequency	X-Y Plane (ø=156 deg@max EIRP)		X-Z Plane (ø=-69 deg@max EIRP)		Y-Z Plane (ø=-114 deg@max EIRP)		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	-13.86	7.56	4.27	5.46	2.17	-5.21	7.56	4.03	3.53
2440	-11.20	7.46	5.35	5.22	2.65	-2.88	7.46	3.86	**3.60**
2480	-10.47	6.64	5.85	5.85	1.17	-2.71	6.64	3.96	2.68

Test Date: 2022.12.14

3. Conducted Power Measurement

3.1 Test Setup



3.2 Test Instruments

Description	Model No.	Serial No.	Last Calibration
Spectrum Analyzer Keysight	N9020B	N/A	2022.7.14

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.

3.4 Test Result of RF conducted Power

Frequency	Conducted Power (dBm)
2402	4.03
2440	3.86
2480	3.96

Test Date: 2022.12.12

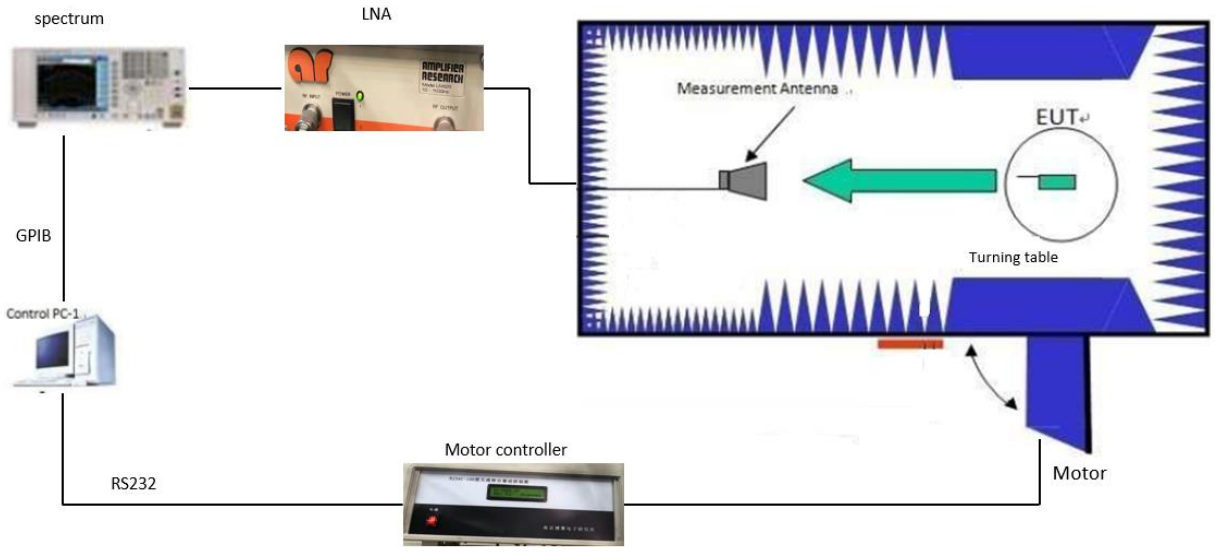
4. 2D Radiation Pattern Measurement

4.1 Test Location

Song shan Rd. 3, New district, Logi company Ltd. Suzhou, China

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	N/A

RF signal cable	SUCOFLEX104	SN293270/4	N/A
Software	N/A	N/A	N/A
Turntable controller	BJ3AC-100	N/A	N/A
Chamber	N/A	N/A	N/A
Absorber 30MHz~40GHz	N/A	N/A	N/A
LNA	LN1G11	N/A	N/A

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

4.4 Test Procedure

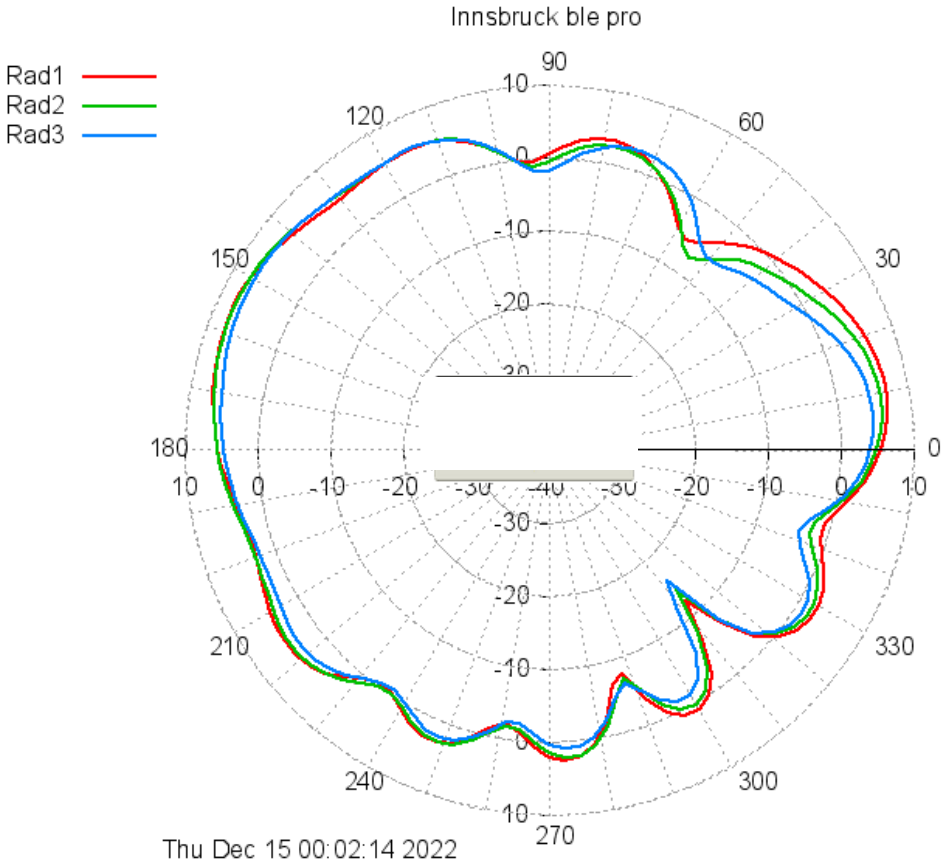
i. Connect the EUT to Spectrum Analyzer and record the power setting of EUT and the measured conducted power.
ii. Fasten the EUT in the center of the turntable, record the coordinates and take pictures.
iii. Configuring EUT continuously transmitting power(100% duty cycle).
iv. Make sure the transmit 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 3-degree increments.
    2. Data is recorded using the spectrum analyzer 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. Antenna Peak Gain (dBi) = Max EIRP(dBm) - Conducted Power (dBm)

4.5 Test Setup photos

confidentiality

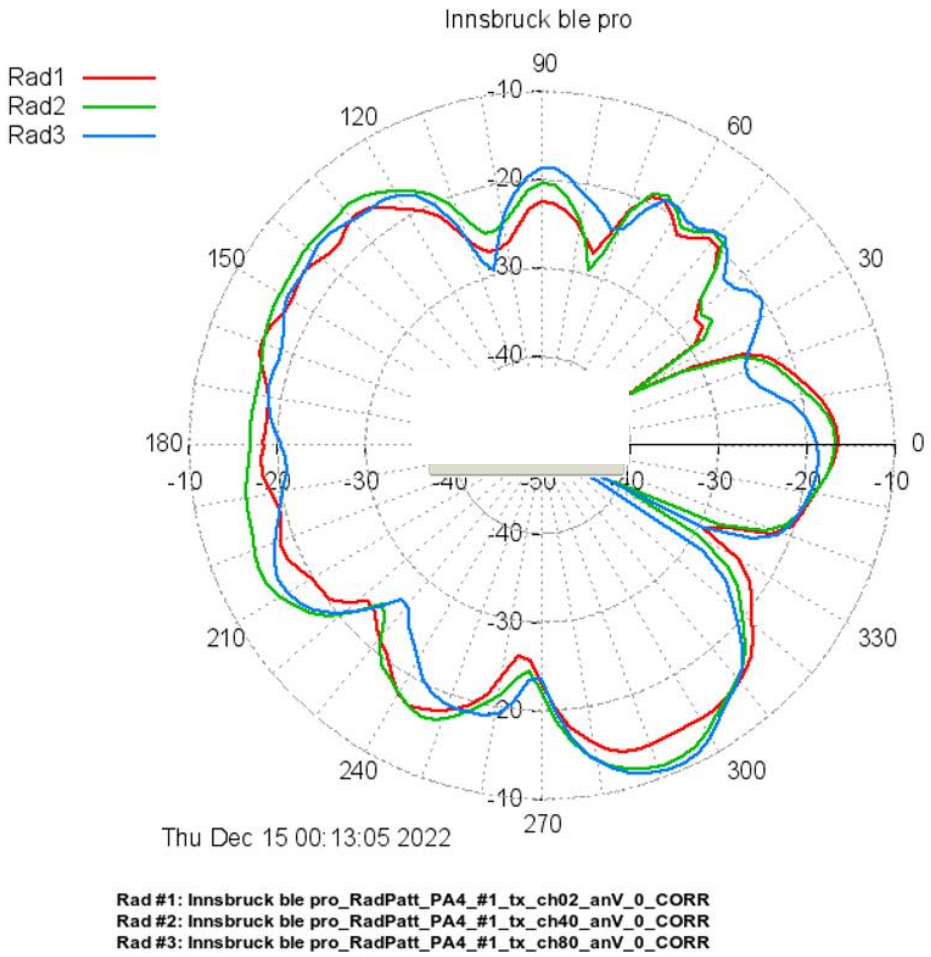
4.6 2D Pattern Test Plot

Test antenna_Horizontal (XY plane)

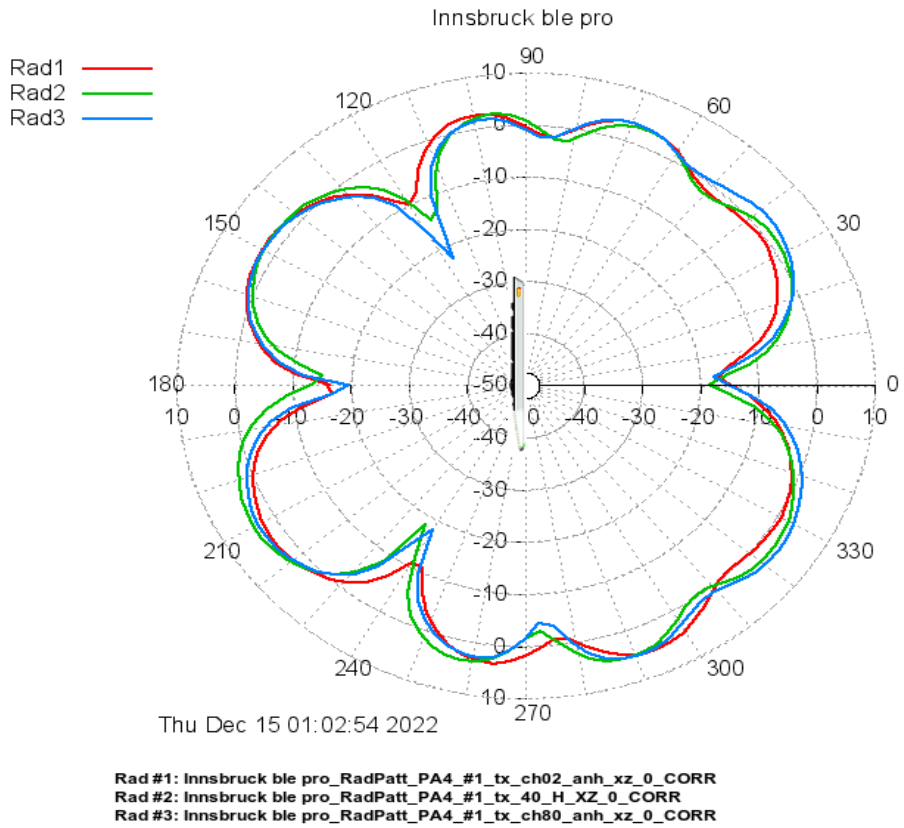


Rad #1: Innsbruck ble pro_RadPatt_PA4_#1_ch02_anh_9.29_0_CORR
Rad #2: Innsbruck ble pro_RadPatt_PA4_#1_ch40_anh_9.29_0_CORR
Rad #3: Innsbruck ble pro_RadPatt_PA4_#1_ch80_anh_9.29_0_CORR

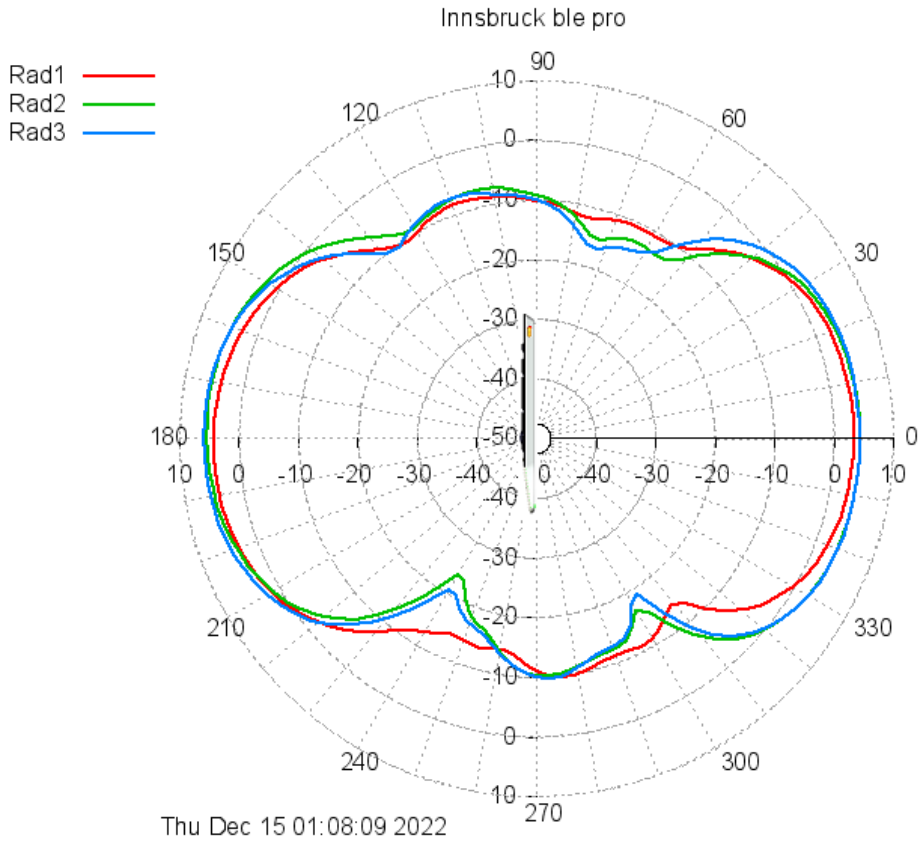
Test antenna_Vertical (XY plane)



X-Z Plane: Horizontal

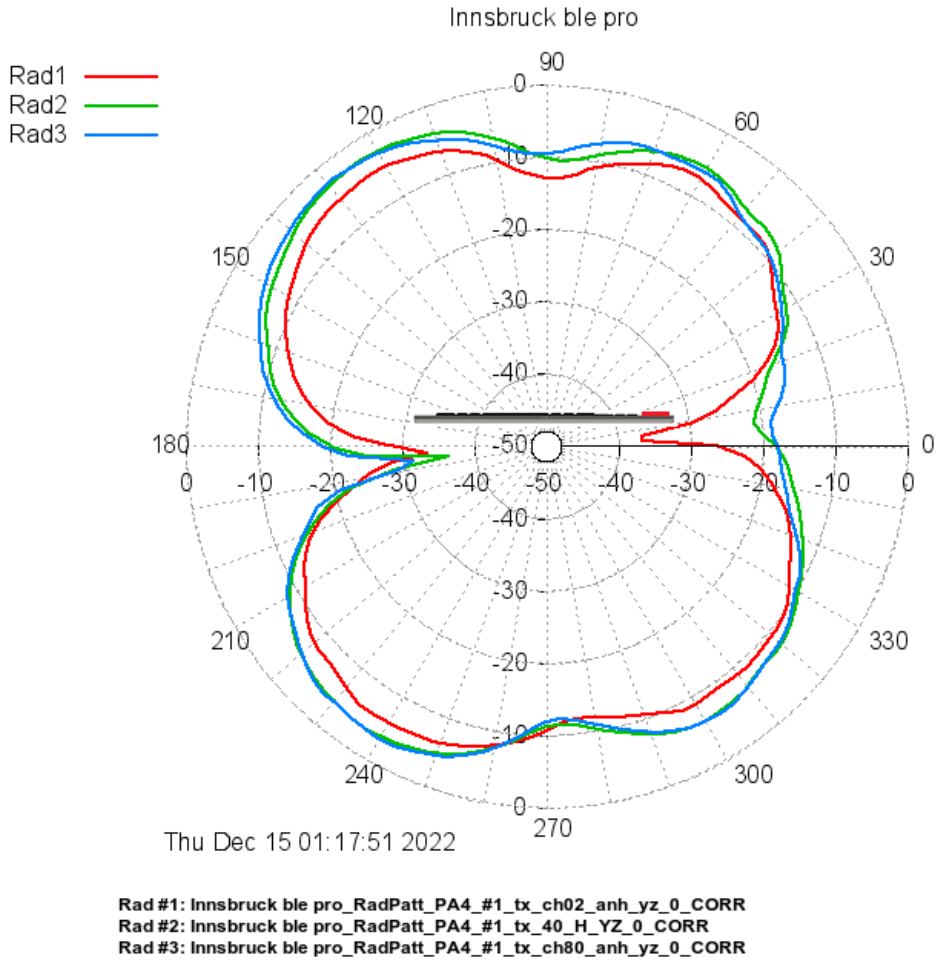


X-Z Plane: Vertical

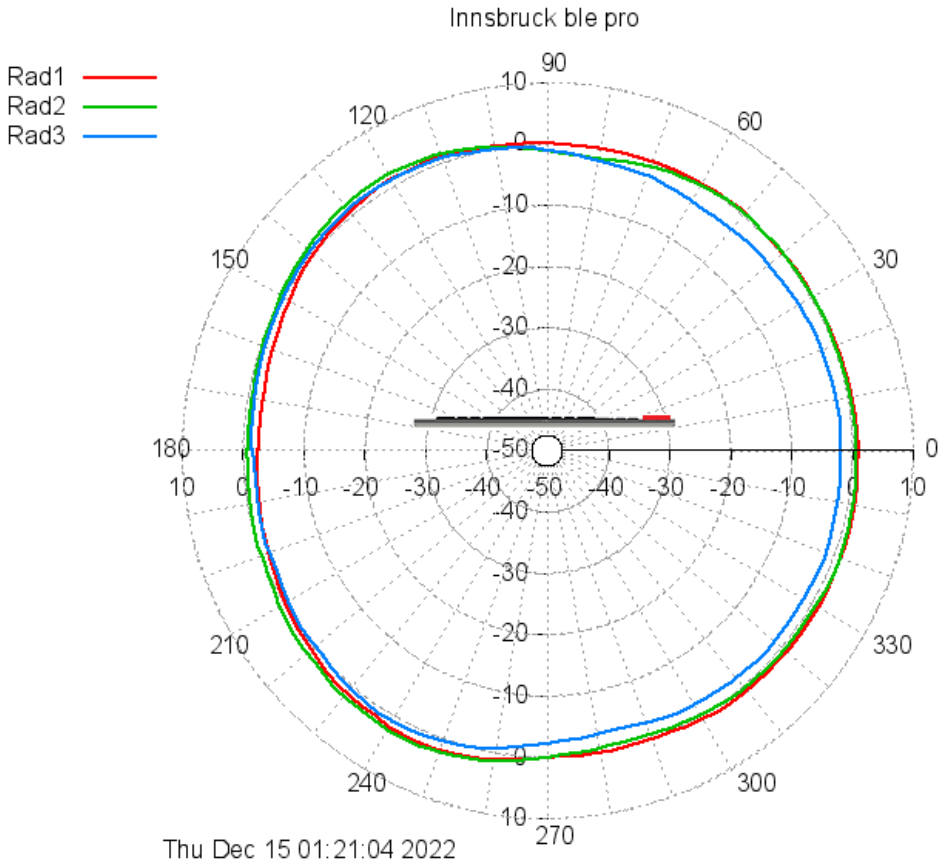


Rad #1: Innsbruck ble pro_RadPatt_PA4_#1_tx_ch02_anv_xz_0_CORR
Rad #2: Innsbruck ble pro_RadPatt_PA4_#1_tx_40_XZ_V_0_CORR
Rad #3: Innsbruck ble pro_RadPatt_PA4_#1_tx_ch80_anv_xz_0_CORR

Y-Z Plane: Horizontal



Y-Z Plane: Vertical



Rad #1: Innsbruck ble pro_RadPatt_PA4_#1_tx_ch02_anv_yz_0_CORR
Rad #2: Innsbruck ble pro_RadPatt_PA4_#1_tx_40_YZ_V_0_CORR
Rad #3: Innsbruck ble pro_RadPatt_PA4_#1_tx_ch80_anv_yz_1_CORR

5. Appendix for Logi internal reference