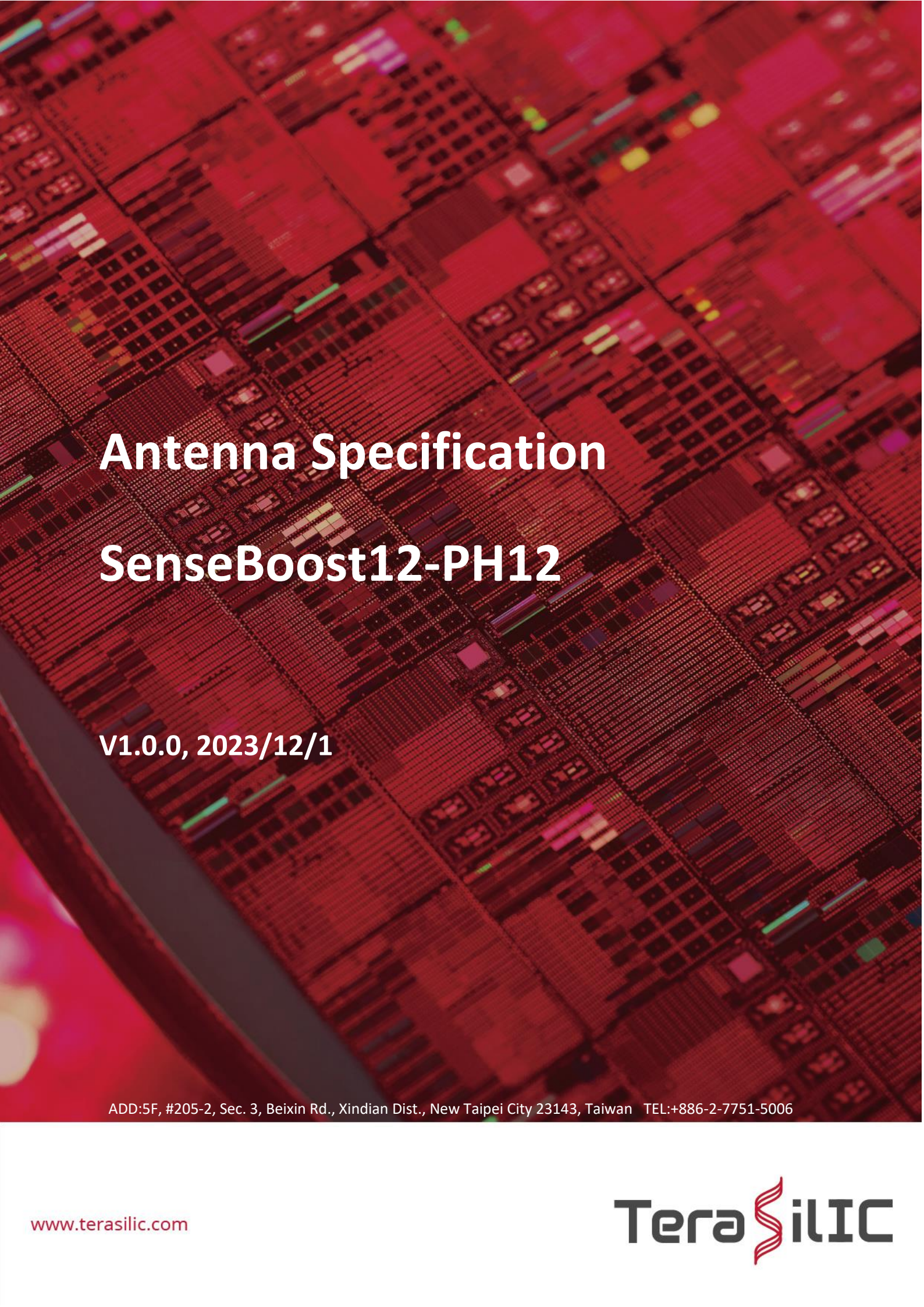


A detailed, high-magnification image of a microchip, showing a complex grid of circuitry and various colored components. The image is tinted with a red overlay.

Antenna Specification

SenseBoost12-PH12

V1.0.0, 2023/12/1

ADD:5F, #205-2, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 23143, Taiwan TEL:+886-2-7751-5006

Revision History

Rev	Date	Description of Changes	Author
1.0.0	2023/12/1	Original release	Virkin Lin

Table of Contents

Revision History	i
Table of Contents	ii
1. EUT Antenna Information	1
2. Antenna gain and Simulation data	2
3. Pre-Test Report.....	4
3.1 Test Environment	4
3.2 Test Procedure.....	7
3.3 Test data	8
4. Appendix reference	9

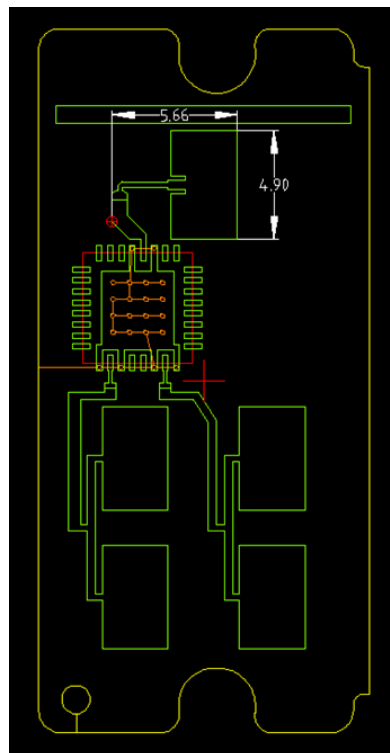
1. EUT Antenna Information

The PH12 patch antenna is as below.

There is only one transmitting patch.

The Antenna patch length is 5.66mm and the width is 4.9mm.

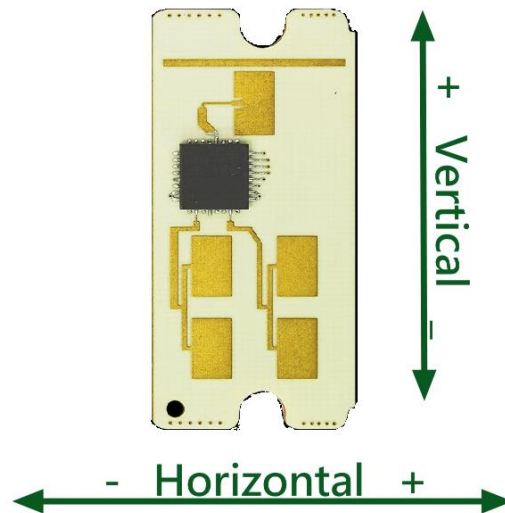
- 1) Antenna Material: PCB on board
- 2) Antenna Type: Patch antenna
- 3) Antenna Dimension: 5.66 x 4.9 mm
- 3) Operating Frequency: 24.05 GHz – 24.25 GHz
- 4) Peak Gain : 6.6dBi
- 5) Return Loss : 10dBm
- 6) Polarization : One-way



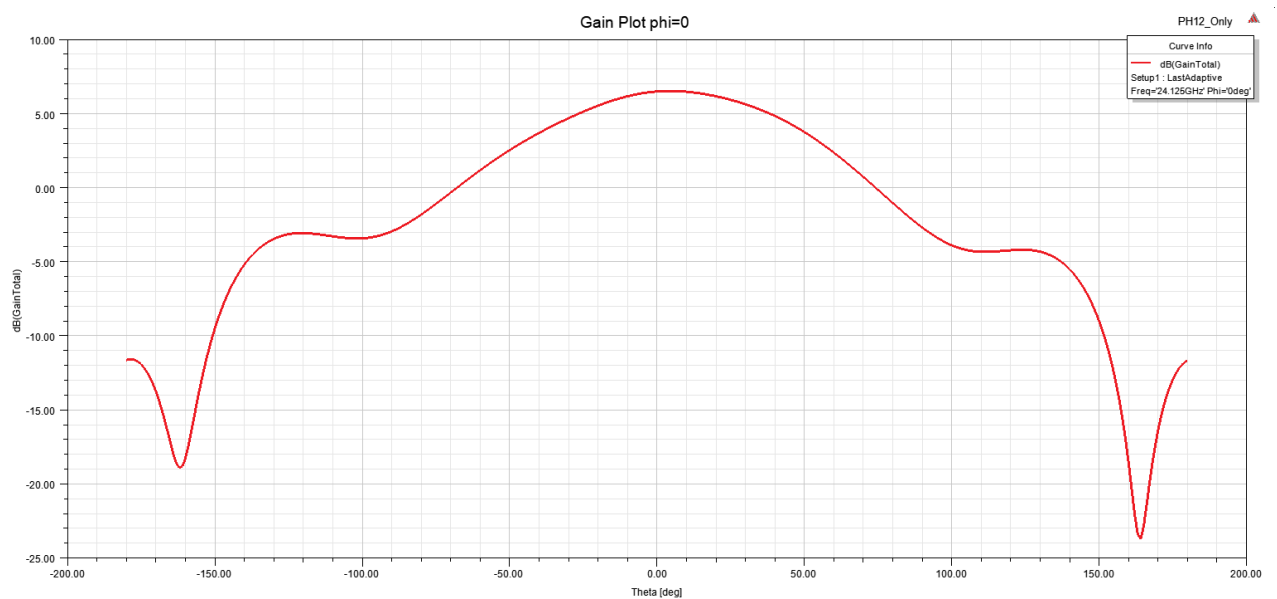
2. Antenna gain and Simulation data

The picture below is the physical diagram of PH12.

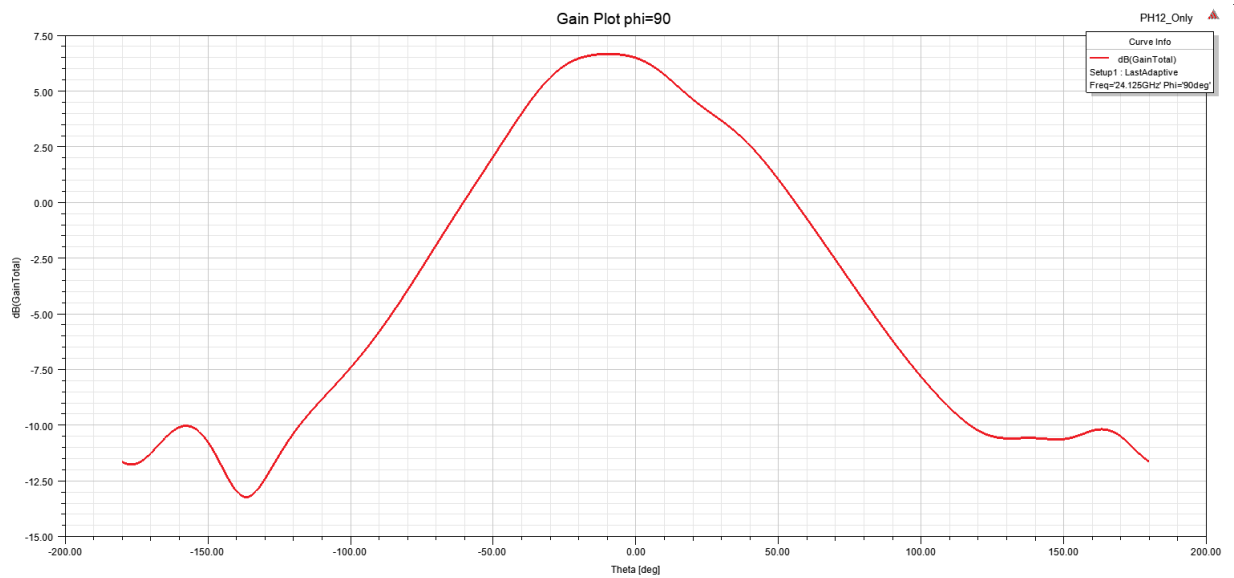
The [Horizontal] and [Vertical] angle show as below:



The Antenna of [Horizontal] show as below:

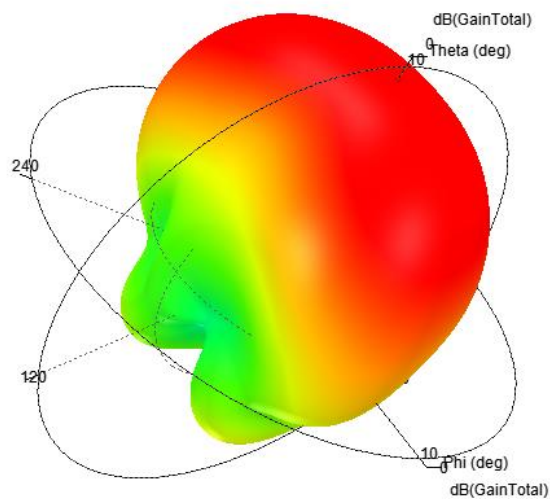


The Antenna of [Vertical] show as below:



The Antenna of 3D emission diagram show as below:

3D Gain



3. Pre-Test Report

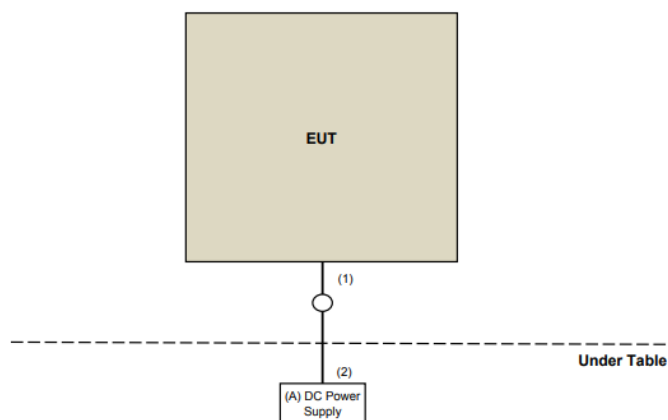
3.1 Test Environment

3.1.1 Equipment Under Test (EUT):

Product Name	SenseBoost12-PH12
DC Power Voltage	5 Vdc
Frequency Modulation	CW mode
Testing Frequency	CW : 24.153GHz
RFIC Gain Setting	TX Level : 10, RX Level : 8

3.1.2 EUT Setting

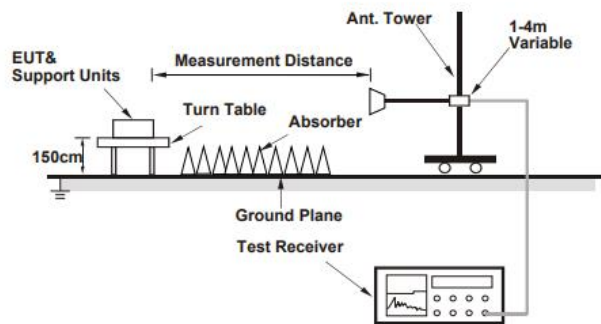
EUT PH12 is independently powered and put on the turntable:



3.1.3 Test Environment

EUT PH12 of distance between measurement antenna is 1M:

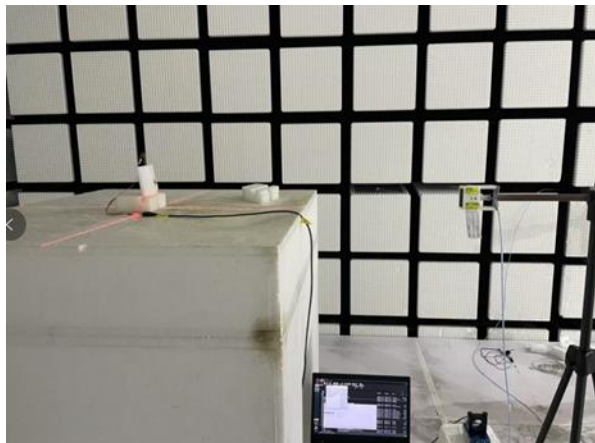
< Frequency Range 1GHz ~ 50GHz >



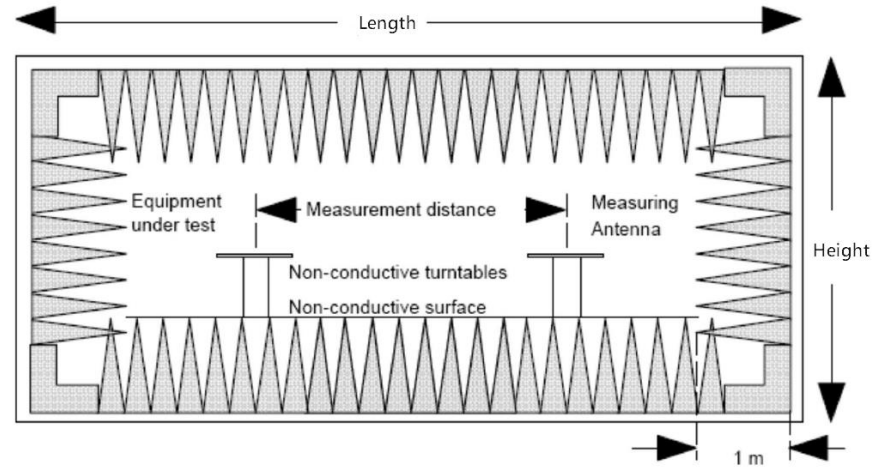
3.1.4 Test Picture

The test in the fully chamber laboratory,

The distance between the EUT PH12 and the Receiving antenna was 1M



3.1.5 Environmental parameters



Environmental Parameters	Specification	Last Calibration
Chamber Length	9.10M	2023/11/12
Chamber Width	6.10M	2023/11/12
Chamber Height	6.40M	2023/11/12
Spectrum Analyzer	Keysight N9030A	2024/2/29
Testing Cable	EMC101G-KM-KM-5000	2024/1/15
Measuring Antenna	BBHA 9170	2024/11/10

3.2 Test Procedure

- i. Calibrate the spectrum analyzer and setting "1M" test parameters.
- ii. Fasten the EUT in the center of the turntable, and supply independent power.
- iii. Setting the EUT continuously transmitting power, CW mode(100% duty cycle).
- iv. Setting the EUT maximum transmit power, Tx Level = 10.
 - v. Read the power level on the spectrum analyzer and record in the following test data.
 - vi. Rotated the turntable and moved the receiving antenna to find the maximum radiation power. - Verticalc Power.
 - vii. Rotating measuring antenna to change polarization direction.
 - viii. vi. Rotated the turntable and moved the receiving antenna to find the maximum radiation power. - Horizontal Power.

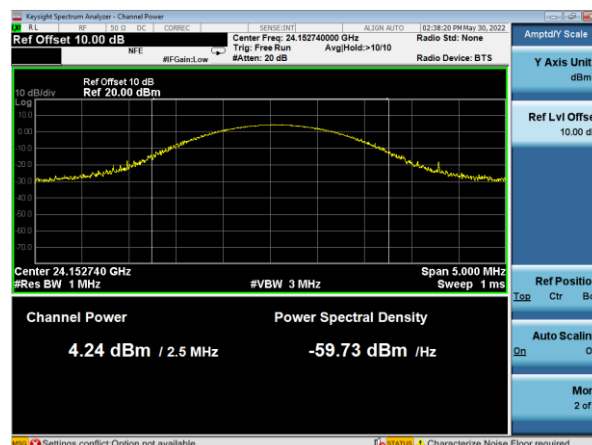
The spectrum analyzer has set 1M test parameters, and the reading is the Tx emission intensity, no need conversion.

3.3 Test data

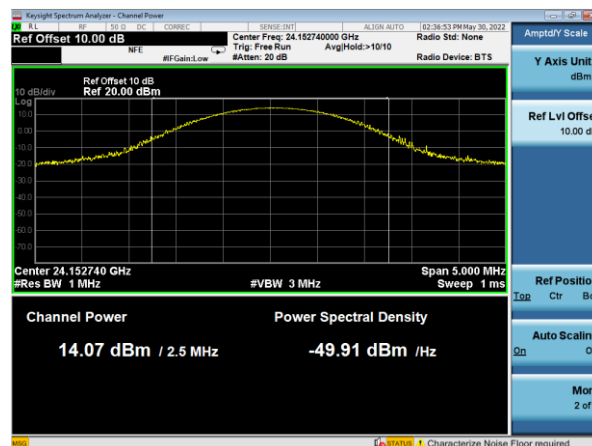
Operation Mode	Emission	Modulation	CW
Frequency	24.153Ghz	Power Level	Tx Level 10 (Max)
Temperature	25°C	Humidity	68%

Vertical	4.24dBm
Horizontal	14.07dBm

Vertical = 4.24dBm



Horizontal = 14.07dBm



4. Appendix reference

PH12 pre-test report:

1. QMD-E06-SenseBoost12-PH12 EN(SRD) Pre-Test Report-1.0.0.pdf

-Tested on 17/Jun/2022