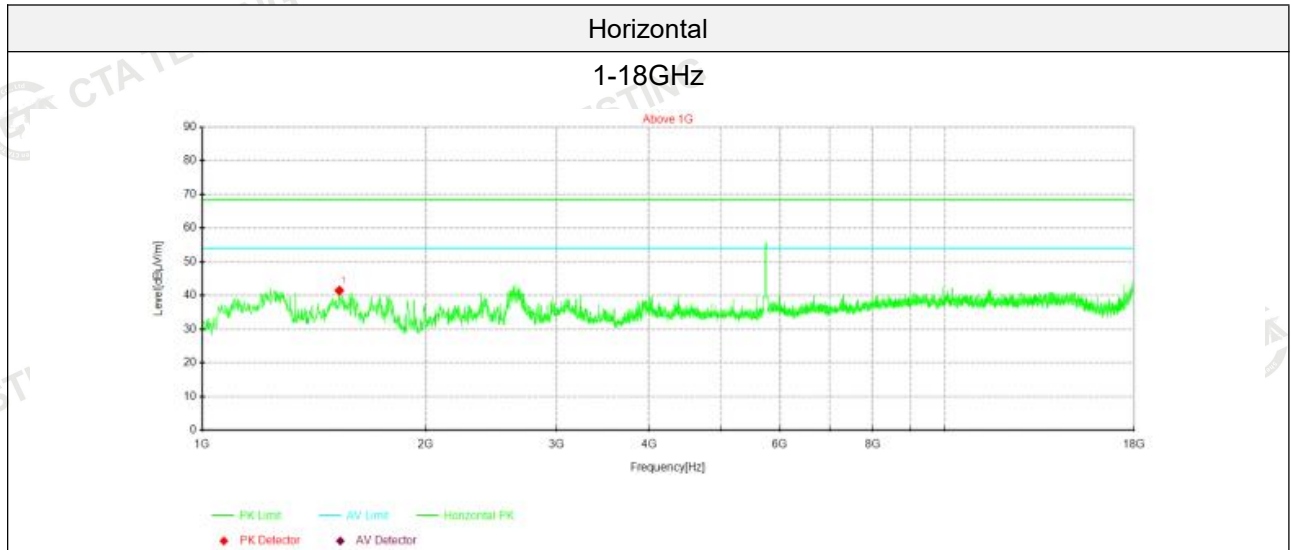
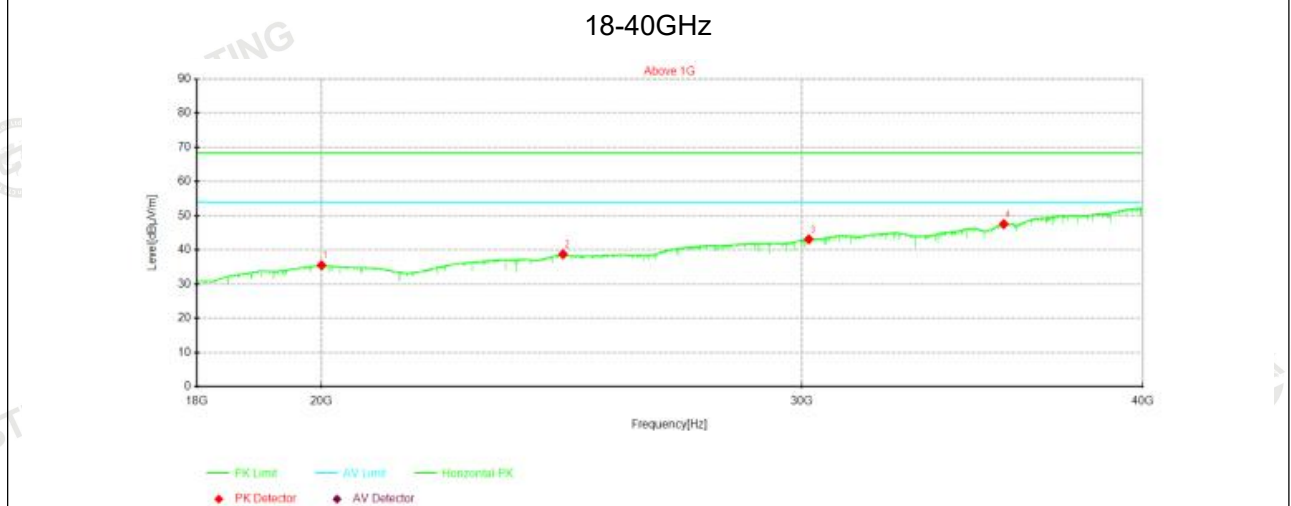


5745MHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1530.45	65.80	41.46	-24.34	68.30	26.84	150	196	Horizontal
					54.00	12.54			Horizontal



Suspected Data List

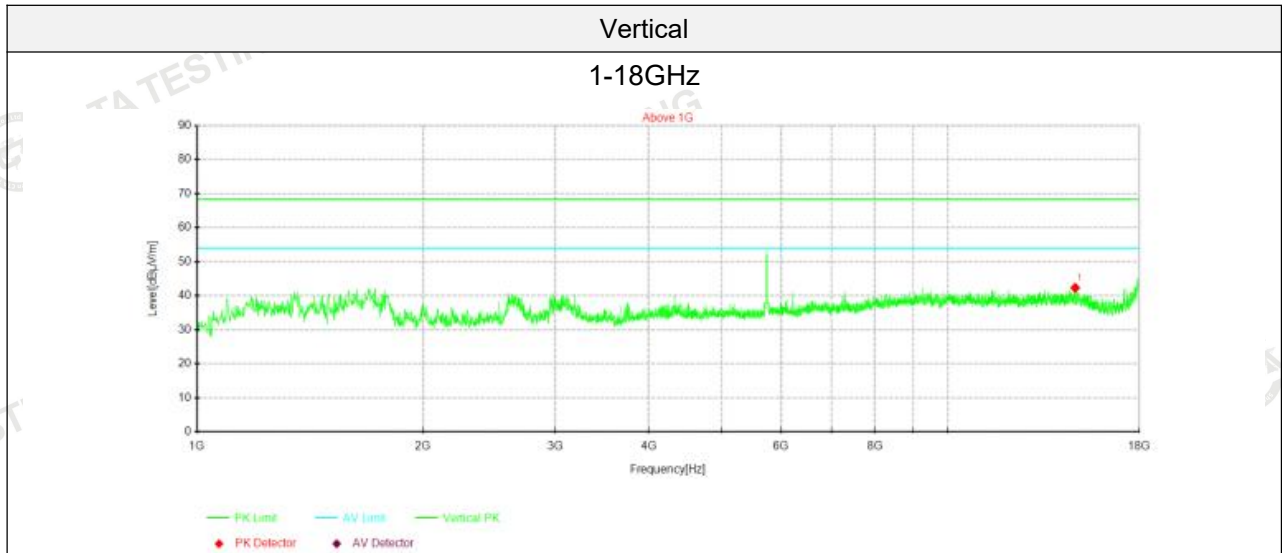
NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	19999.8	24.97	35.53	10.56	68.30	32.77	100	50	Horizontal
2	24520.8	24.98	38.73	13.75	68.30	29.57	100	20	Horizontal
3	30172.6	24.97	43.12	18.15	68.30	25.18	100	230	Horizontal
4	35569.2	24.99	47.56	22.57	68.30	20.74	100	90	Horizontal

Note: 1). Level (dBμV/m) = Reading (dBμV) + Factor (dB/m)

2). Factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin (dB) = Limit (dBμV/m) - Level (dBμV/m)

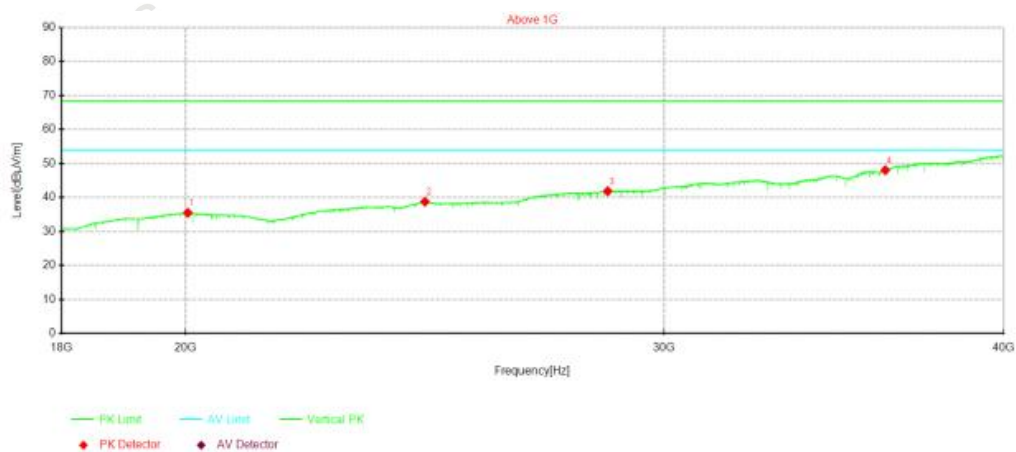
5745MHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	14786.6	45.13	42.33	-2.80	68.30	25.97	150	340	Vertical
					54.00	11.67			Vertical

18-40GHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20035	24.99	35.51	10.52	68.30	32.79	100	90	Vertical
2	24494.4	24.98	38.76	13.78	68.30	29.54	100	220	Vertical
3	28597.4	24.98	41.85	16.87	68.30	26.45	100	260	Vertical
4	36180.8	24.96	48.04	23.08	68.30	20.26	100	210	Vertical

Note: 1). Level (dBμV/m) = Reading (dBμV) + Factor (dB/m)

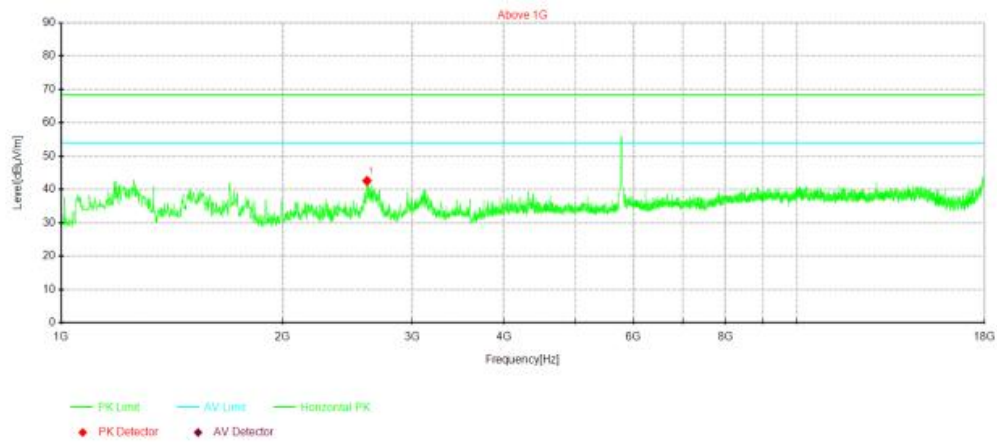
2). Factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin (dB) = Limit (dBμV/m) - Level (dBμV/m)

5785MHz

Horizontal

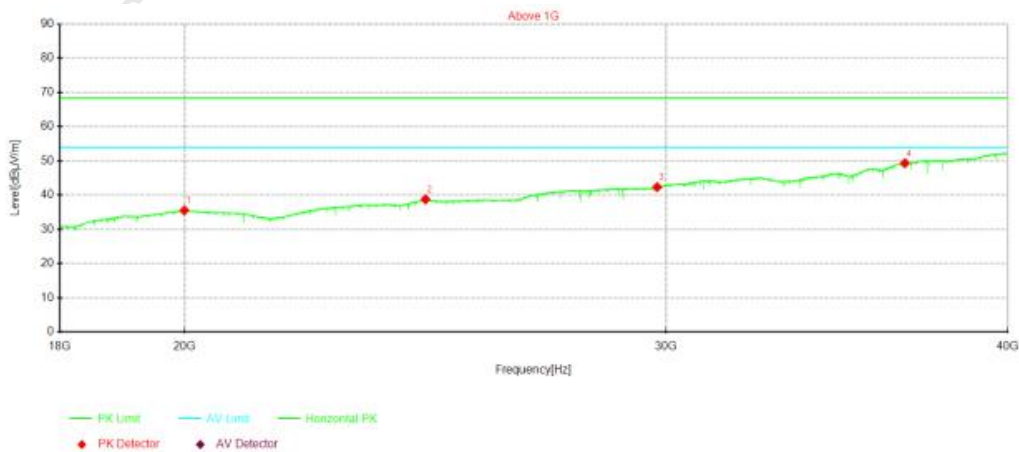
1-18GHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2604.96	63.30	42.59	-20.71	68.30	25.71	150	195	Horizontal
					54.00	11.41			Horizontal

18-40GHz



Suspected Data List

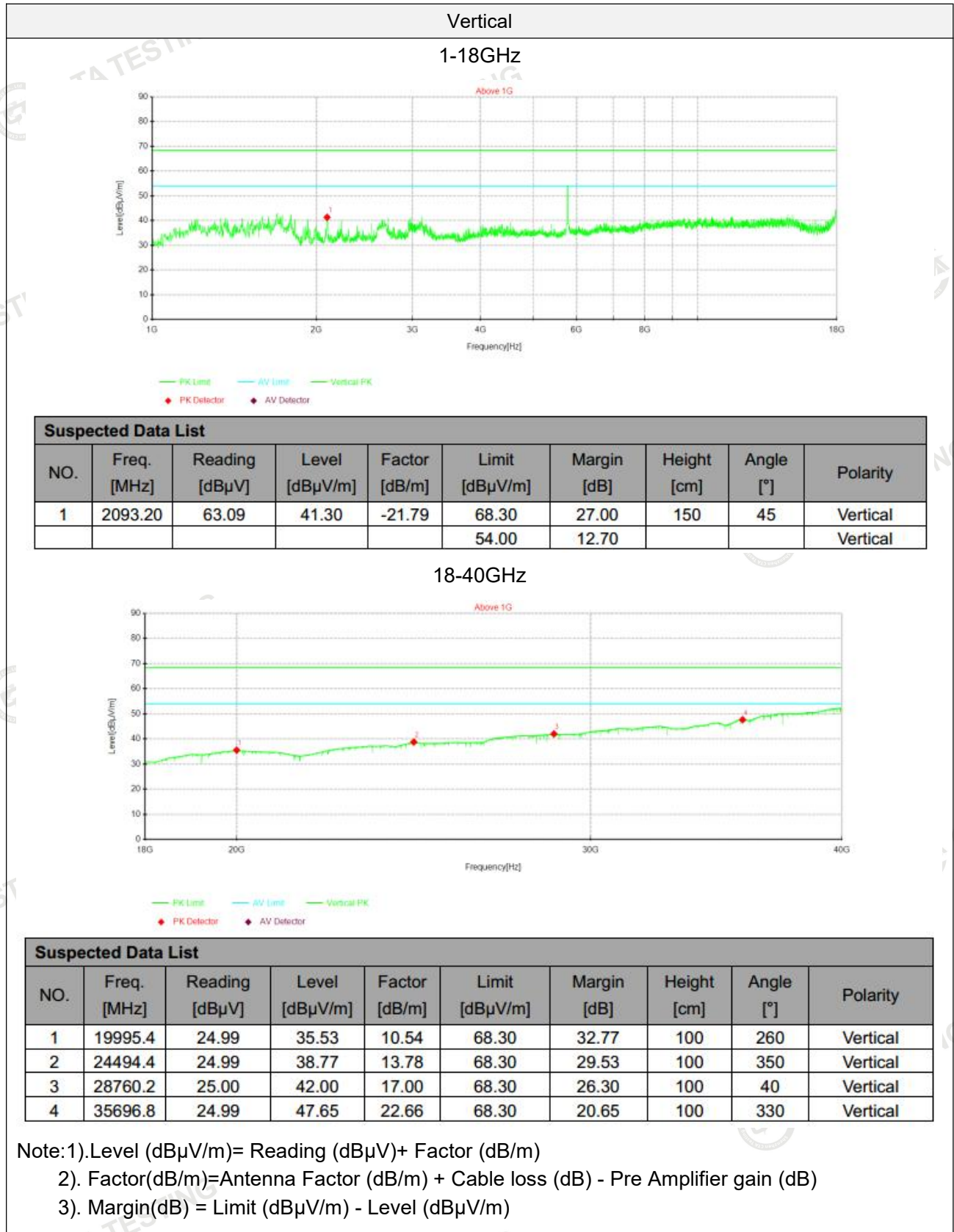
NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	19993.2	24.99	35.53	10.54	68.30	32.77	100	250	Horizontal
2	24494.4	24.99	38.77	13.78	68.30	29.53	100	310	Horizontal
3	29772.2	24.98	42.34	17.36	68.30	25.96	100	230	Horizontal
4	36680.2	24.99	49.32	24.33	68.30	18.98	100	30	Horizontal

Note: 1). Level (dBμV/m) = Reading (dBμV) + Factor (dB/m)

2). Factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin (dB) = Limit (dBμV/m) - Level (dBμV/m)

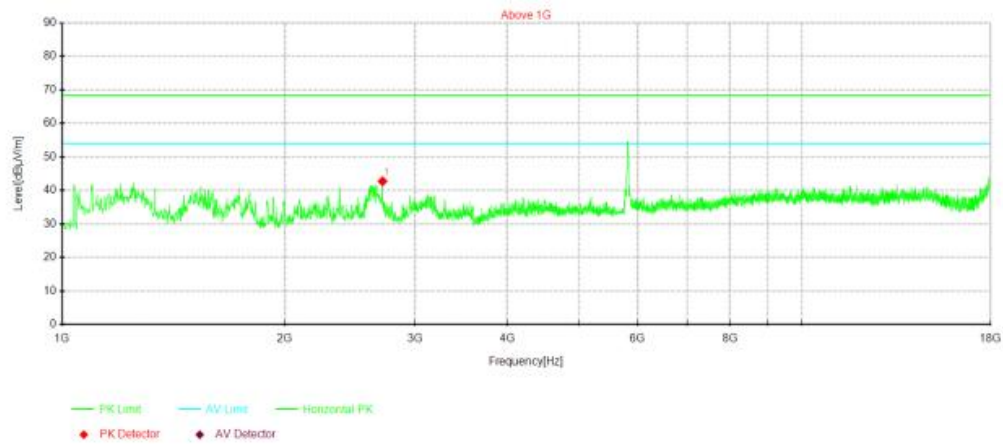
5785MHz



5825MHz

Horizontal

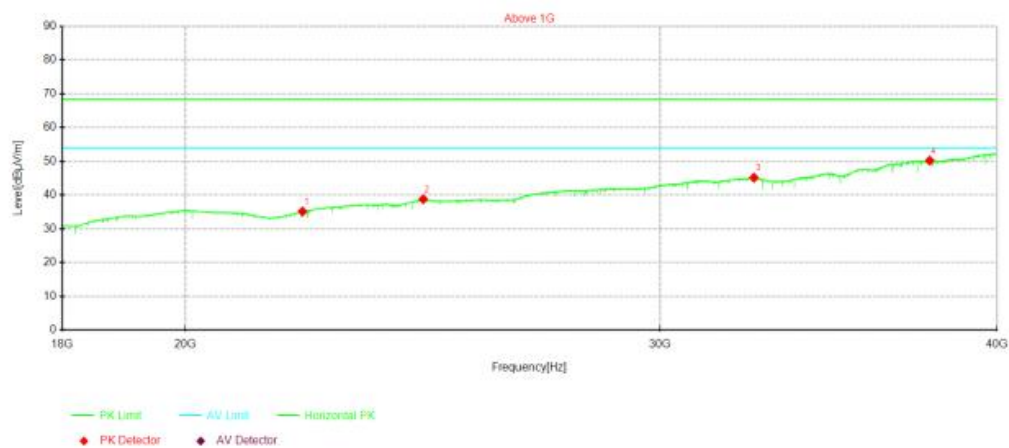
1-18GHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2712.07	63.08	42.73	-20.35	68.30	25.57	150	208	Horizontal
					54.00	11.27			Horizontal

18-40GHz



Suspected Data List

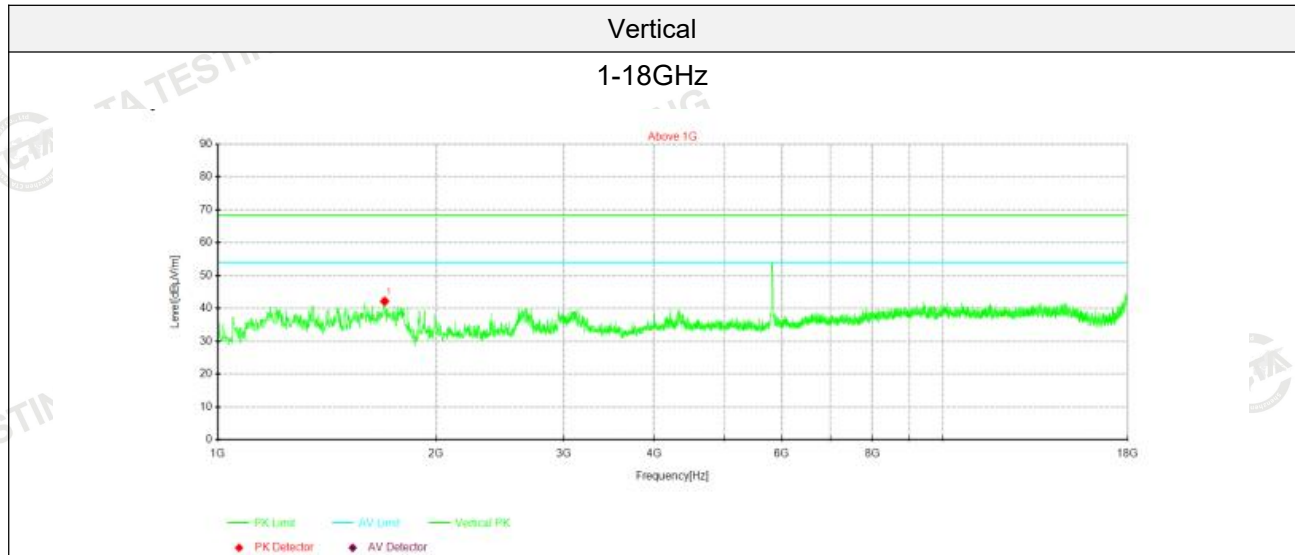
NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	22103	25.00	35.14	10.14	68.30	33.16	100	210	Horizontal
2	24503.2	24.99	38.78	13.79	68.30	29.52	100	120	Horizontal
3	32500.2	24.98	45.16	20.18	68.30	23.14	100	290	Horizontal
4	37762.6	25.00	50.21	25.21	68.30	18.09	100	10	Horizontal

Note:1). Level (dBμV/m) = Reading (dBμV) + Factor (dB/m)

2). Factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin (dB) = Limit (dBμV/m) - Level (dBμV/m)

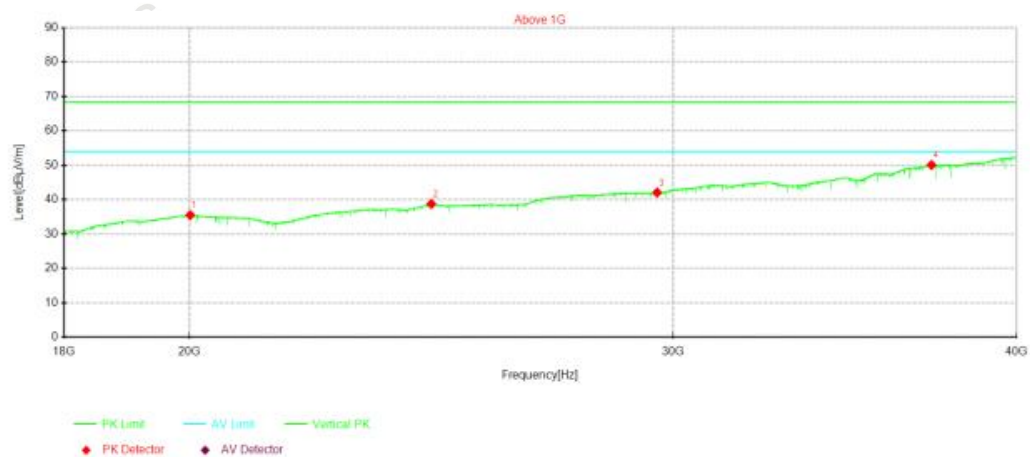
5825MHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1698.76	66.74	42.16	-24.58	68.30	26.14	150	47	Vertical
					54.00	11.84			Vertical

18-40GHz



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20010.8	24.97	35.52	10.55	68.30	32.78	100	80	Vertical
2	24492.2	25.00	38.76	13.76	68.30	29.54	100	140	Vertical
3	29594	25.00	42.08	17.08	68.30	26.22	100	190	Vertical
4	37247.8	24.99	50.09	25.10	68.30	18.21	100	190	Vertical

Note:1).Level (dBμV/m)= Reading (dBμV)+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

4.3. Maximum Conducted Average Output Power

Limit

According to §15.407(a): The maximum output power should be not exceed follow:

Frequency Range (MHz)	Limit
5150-5250	Fixed: 1 Watt (30dBm) Mobile and portable: 250mW (24dBm)
5250-5350	250mW (24dBm)
5470-5725	250mW (24dBm)
5725-5850	1 Watt (30dBm)
Note: The maximum e.i.r.p at any elevation angle above 30 degrees as measured from the horizon must not exceed 125mW(21dBm)	

For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.

Method PM is Measurement using an RF average power sensor. The procedure for this method is as follows:

1. The testing follows the ANSI C63.10 Section 12.4.3
2. The maximum average conducted output power may be measured using a broadband average RF power sensor.
3. The power sensor shall have a video bandwidth that is greater than or equal to the OBW bandwidth and shall use a fast-responding diode detector.

Test Configuration



TEST RESULTS

FCC Appendix RF Test Data for 5GWIFI.

Total Output Average power(dBm)= Output Average power(dBm)+ Duty Factor(dB)

4.4. Power Spectral Density

Limit

(1) For the band 5.15 - 5.25 GHz.

(i) For an outdoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. ^{note1}

(ii) For an indoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. ^{note1}

(iii) For fixed point-to-point access points operating in the band 5.15 - 5.25 GHz, transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.

(iv) For mobile and portable client devices in the 5.15 - 5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band. ^{note1}

(2) For the 5.25 - 5.35 GHz and 5.47 - 5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. ^{note1}

(3) For the band 5.725 - 5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band. ^{note1, note2}

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note2: Fixed point - to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 1MHz for U-NII 1, U-NII 2A, U-NII C band and 500KHz for U-NII 3 band.
3. Set the VBW $\geq 3 \times$ RBW.
4. Set the span to encompass the entire EBW.
5. Detector = Average.
6. Sweep time = auto couple.
7. Trace mode = Average hold.
8. Allow trace to fully stabilize.

Use the peak marker function to determine the maximum power level.

TEST CONFIGURATION



TEST RESULTS

FCC Appendix RF Test Data for 5GWIFI.

Total Power Spectral Density (dBm/MHz) = Power Spectral Density (dBm/MHz) + Duty Factor (dB)

Remark: P.S.D(dBm/500KHz) = P.S.D(dBm/300KHz) + 10 log (500 kHz/300KHz).

RBW factor = 10 log (500 KHz / 300 KHz) = 2.22 dB

4.5. 6dB Bandwidth

Limit

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

The following procedure shall be used for measuring this bandwidth:

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- Detector = Peak.
- Trace mode = max-hold.
- Sweep = No faster than coupled (auto) time.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Configuration



TEST RESULTS

FCC Appendix RF Test Data for 5GWIFI.

4.6. 26dB Bandwidth

Limit

No Limits for 26dBc Bandwidth

Test Procedure

The procedure for this method is as follows:

- Set RBW = shall be in the range of 1% to 5% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = peak.
- Trace mode = max-hold.
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is in the range of 1% to 5%.

Test Configuration



TEST RESULTS

FCC Appendix RF Test Data for 5GWIFI.

4.7. On Time and Duty Cycle

TEST CONFIGURATION



Test Procedures

- 1). Set the Centre frequency of the spectrum analyzer to the transmitting frequency;
- 2). Set the span=0MHz, RBW=8MHz, VBW=8MHz, Sweep time=Auto;
- 3). Detector = peak;
- 4). Trace mode = Single hold.

TEST RESULTS

FCC Appendix RF Test Data for 5GWIFI.

4.8. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Antenna Information

Test Result:

The FPC antenna maximum gain of antenna was 3.8 dBi.

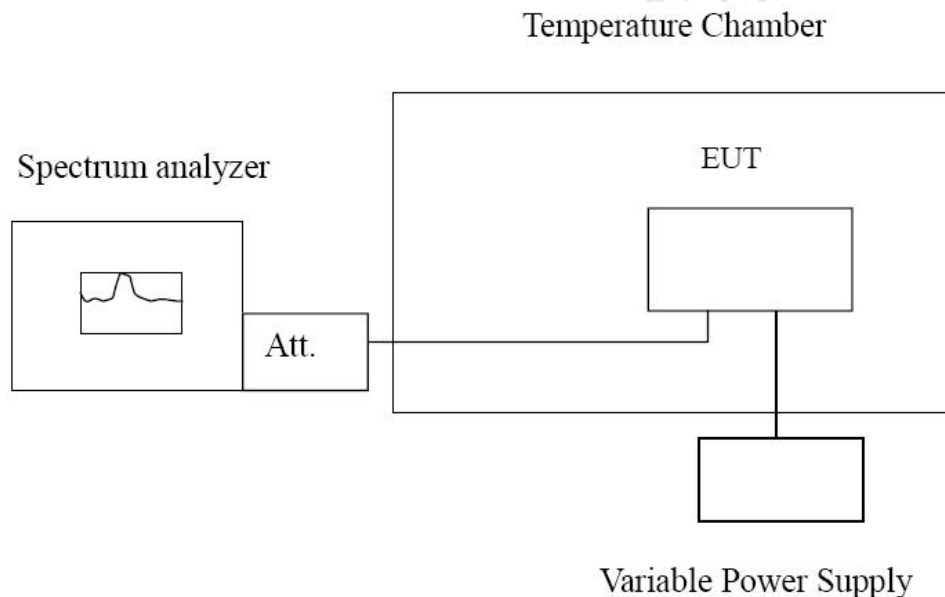
Remark: The antenna gain is provided by the customer, if the data provided by the customer is not accurate, Shenzhen CTA Testing Technology Co., Ltd. does not assume any responsibility.

4.9. Frequency Stability

LIMIT

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

TEST CONFIGURATION



TEST PROCEDURE

Frequency Stability under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

TEST RESULTS

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 3.3	-30	141.06	0.027231	Within the band of operation	Pass
	-20	97.24	0.018772		
	-10	162.09	0.031292		
	0	149.99	0.028956		
	10	104.16	0.020109		
	20	159.16	0.030726		
	30	150.00	0.028957		
	40	149.21	0.028806		
	50	114.14	0.022035		
DC 3.63	25	118.08	0.022795	Within the band of operation	Pass
DC 2.97	25	150.07	0.028972		

Reference Frequency: 802.11ac channel=52 frequency=5260MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 3.3	-30	138.17	0.026268	Within the band of operation	Pass
	-20	118.11	0.022455		
	-10	132.18	0.025129		
	0	164.06	0.031190		
	10	108.07	0.020546		
	20	119.28	0.022677		
	30	163.10	0.031007		
	40	124.11	0.023596		
	50	175.07	0.033282		
DC 3.63	25	113.16	0.021513	Within the band of operation	Pass
DC 2.97	25	95.18	0.018096		

Reference Frequency: 802.11ac channel=100 frequency=5500MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 3.3	-30	121.05	0.022009	Within the band of operation	Pass
	-20	118.05	0.021464		
	-10	142.98	0.025997		
	0	118.15	0.021482		
	10	156.09	0.028380		
	20	128.05	0.023282		
	30	154.98	0.028179		
	40	168.17	0.030577		
	50	100.05	0.018191		
DC 3.63	25	132.98	0.024178	Within the band of operation	Pass
DC 2.97	25	157.27	0.028594		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 3.3	-30	160.06	0.027861	Within the band of operation	Pass
	-20	102.03	0.017760		
	-10	146.07	0.025426		
	0	135.26	0.023545		
	10	141.22	0.024581		
	20	159.14	0.027700		
	30	129.96	0.022622		
	40	144.90	0.025222		
	50	158.12	0.027523		
DC 3.63	25	112.27	0.019542	Within the band of operation	Pass
DC 2.97	25	156.98	0.027324		

4.10. Emissions at Restricted Band

Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST CONFIGURATION



Test Procedures

According to ANSI C63.10 Field Strength Approach (linear terms):

$$E = \text{EIRP} - 20 \log d + 104.8$$

Where:

E is the electric field strength in dBuV/m

EIRP is the equivalent isotropically radiated power in dBm

d is the specified measurement distance in m

f) Compare the resultant electric field strength level with the applicable regulatory limit.

g) Perform the radiated spurious emission test.

Where all terms are as previously defined.

- 1). Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2). Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to an EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
- 3). Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=3MHz for RMS detector, Max Hold=Average, Trace=100times for AV test.
- 4). Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5). Repeat above procedures until all measured frequencies were complete.
- 6). Measure the conducted output power (in dBm) using the detector specified by the appropriate regulatory agency for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- 7). Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)
- 8). Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
- 9). For devices with multiple antenna-ports, measure the power of each individual chain and sum

the EIRP of all chains in linear terms (e.g., Watts, mW).

10). Compare the resultant electric field strength level to the applicable regulatory limit.

11). Perform radiated spurious emission test duress until all measured frequencies were complete.

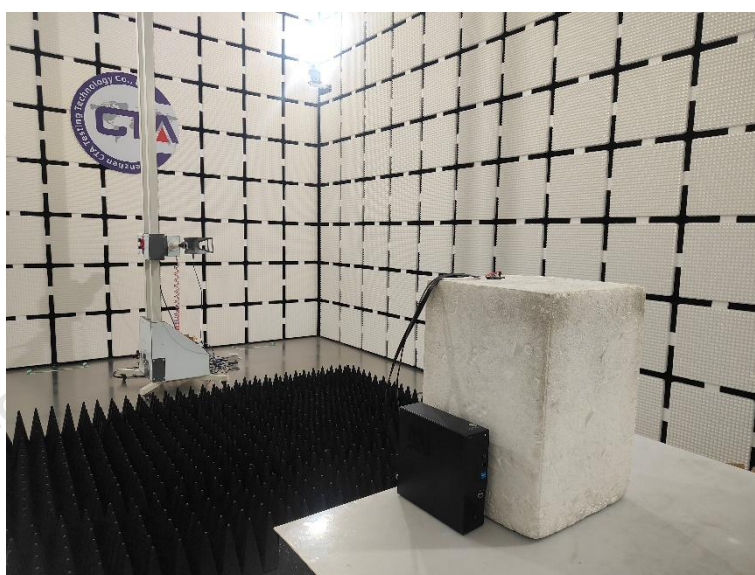
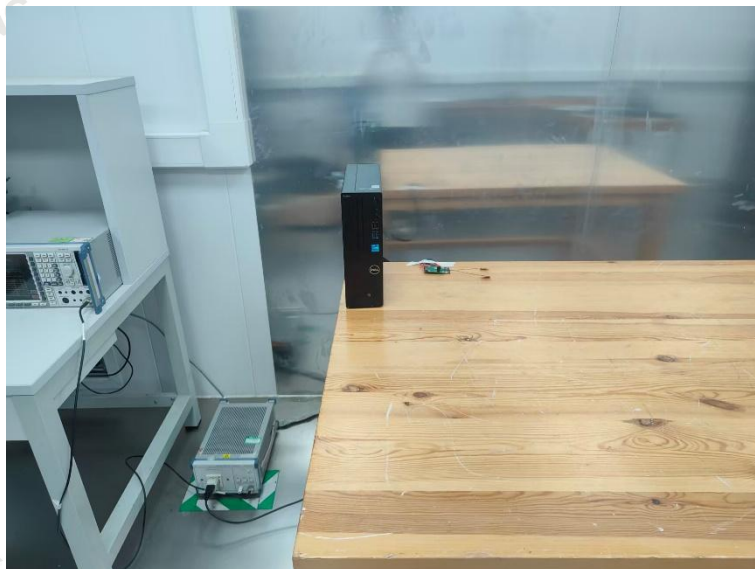
Test Results

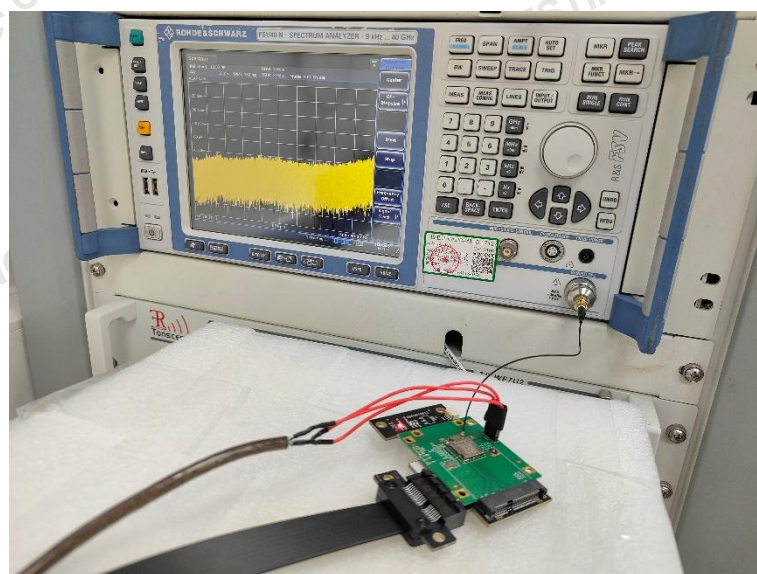
Please refer to FCC Appendix RF Test Data for 5GWIFI.

Remark:

- 1). Test results including cable loss;
- 2). Measured at difference Packet Type for each mode and recorded worst case for each mode.
- 3). "----" means that the fundamental frequency not for 15.209 limits requirement.
- 4). Measured at Hopping and Non-Hopping mode, recorded worst at Non-Hopping mode.
- 5). The other emission levels were very low against the limit.
- 6). The average measurement was not performed when the peak measured data under the limit of average detection.
- 7). Detector AV is setting spectrum/receiver. RBW=1MHz/VBW=3MHz/Sweep time=Auto/Detector=RMS, Max Hold=Average, Trace=100times.
- 8). Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

5. Test Setup Photos of the EUT





6. External and Internal Photos of the EUT

External Photos

Photo 1

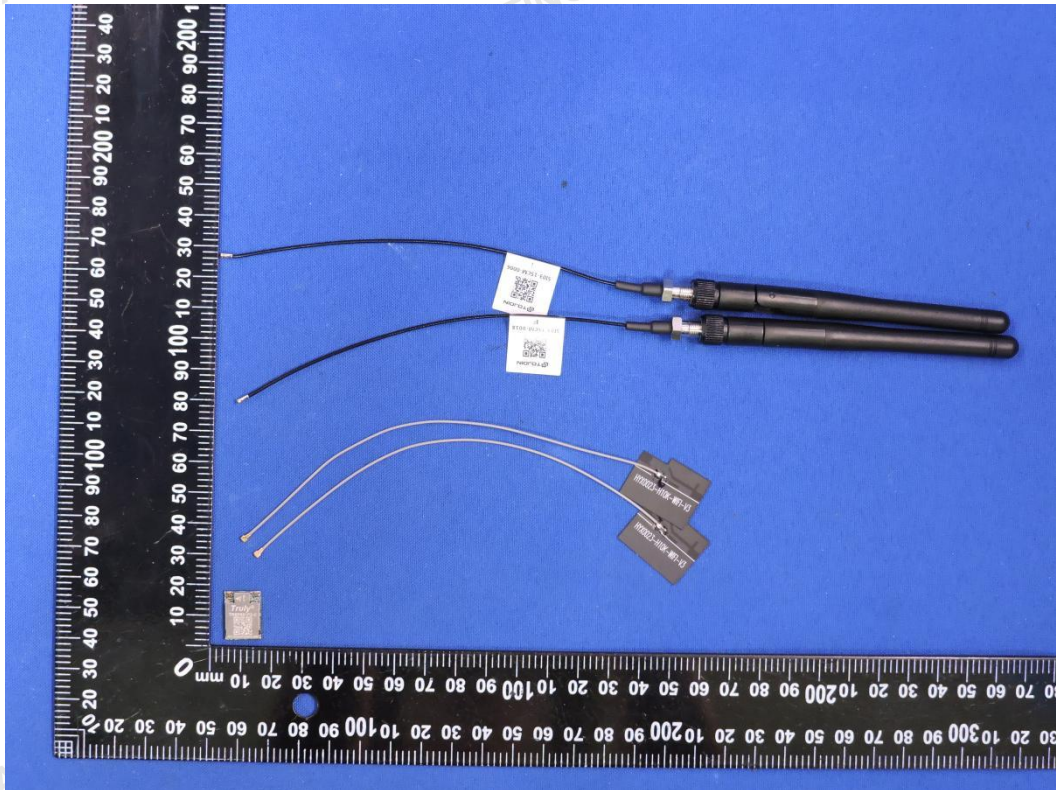


Photo 2

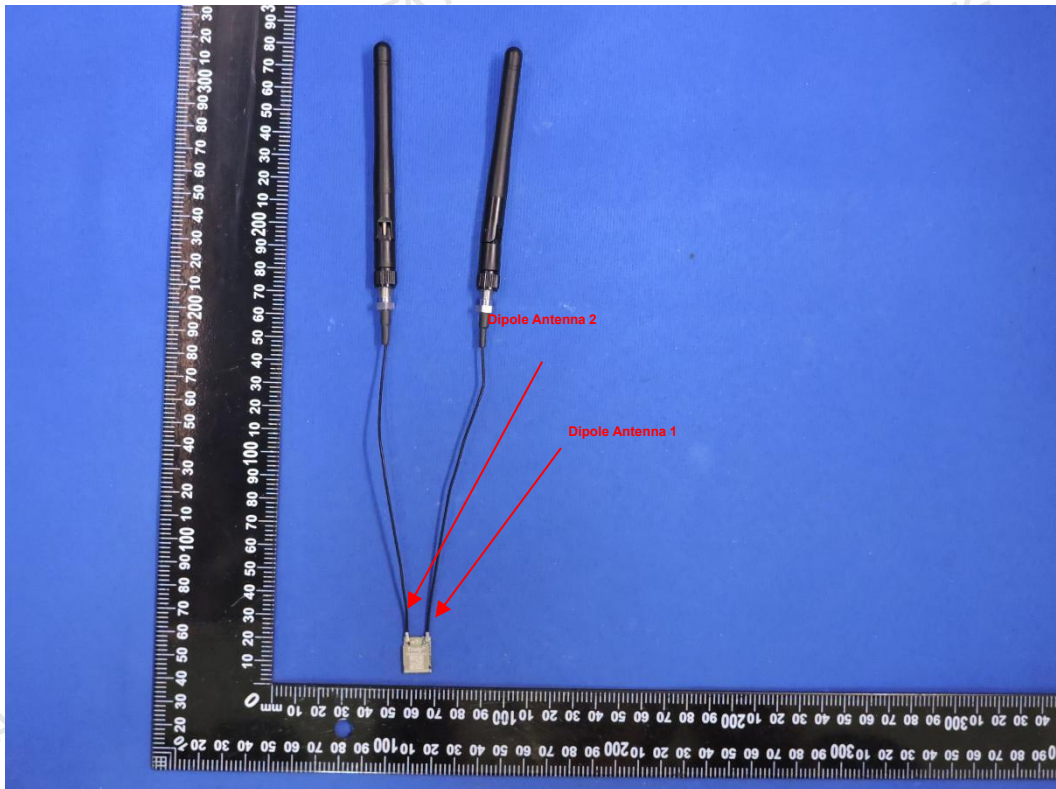


Photo 3

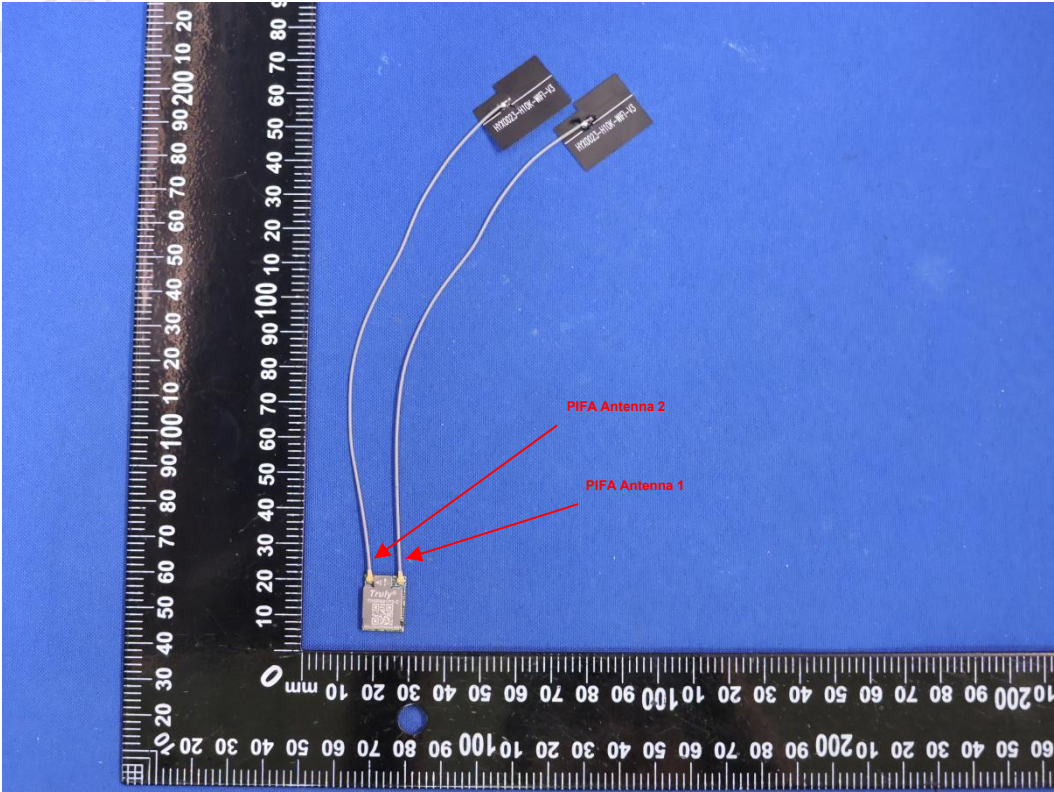


Photo 4

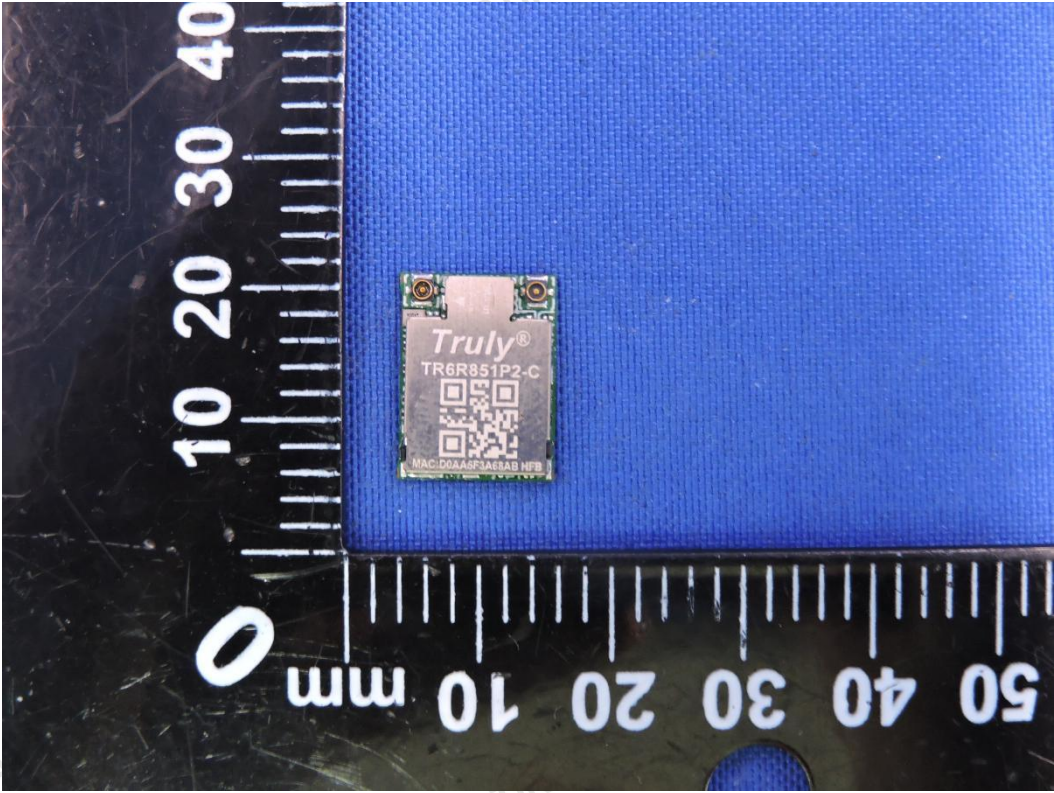


Photo 5

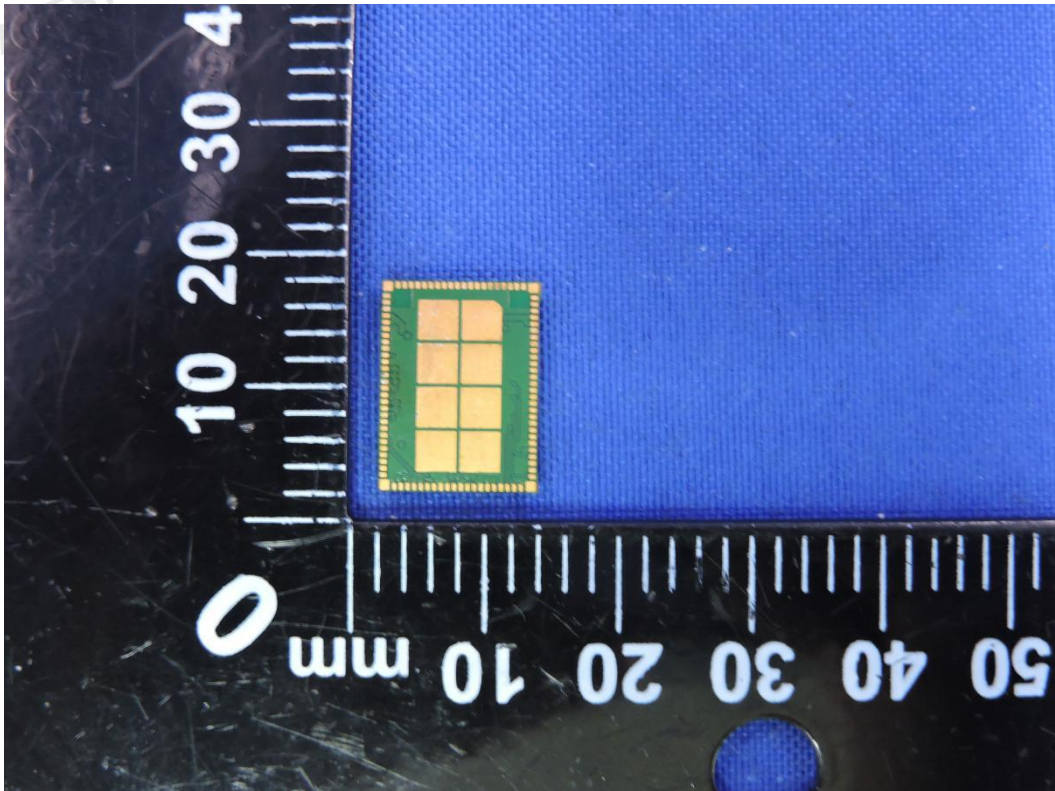


Photo 6

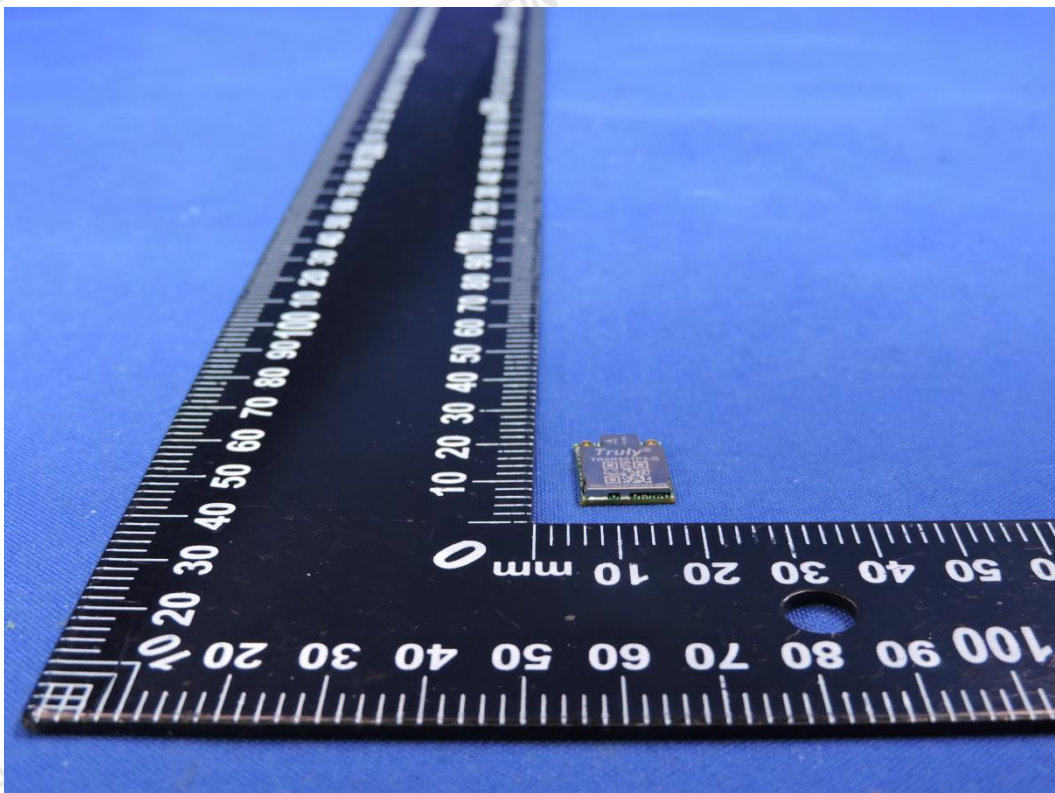


Photo 7

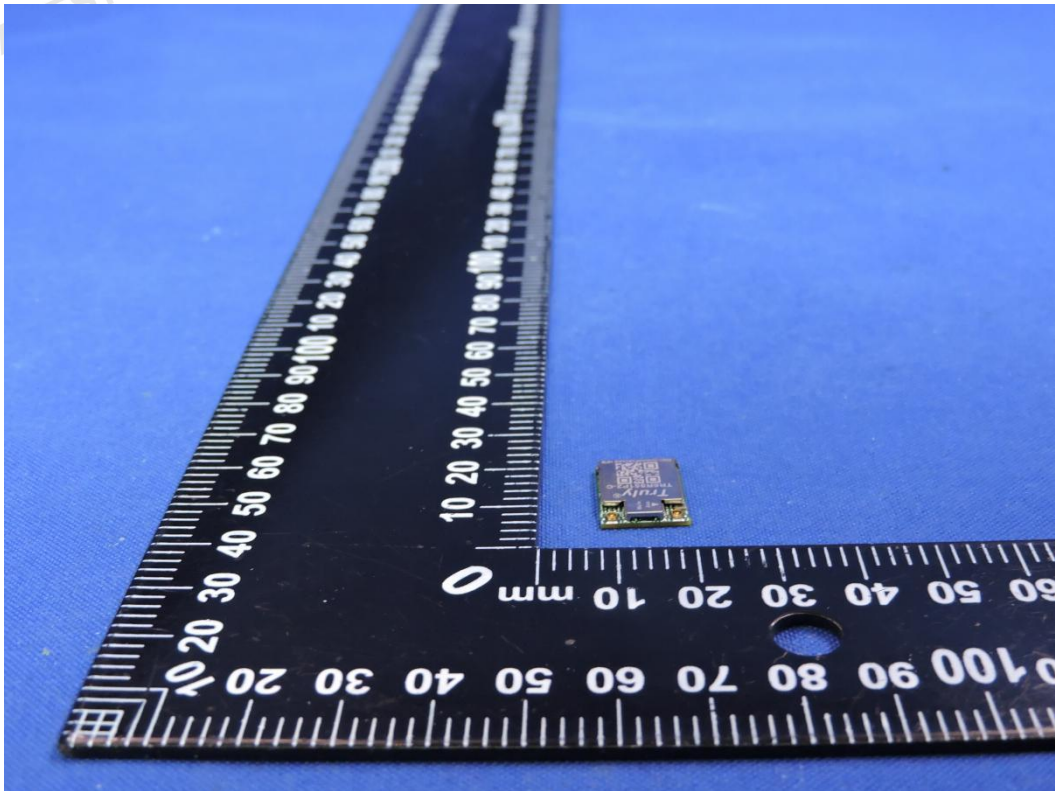


Photo 8

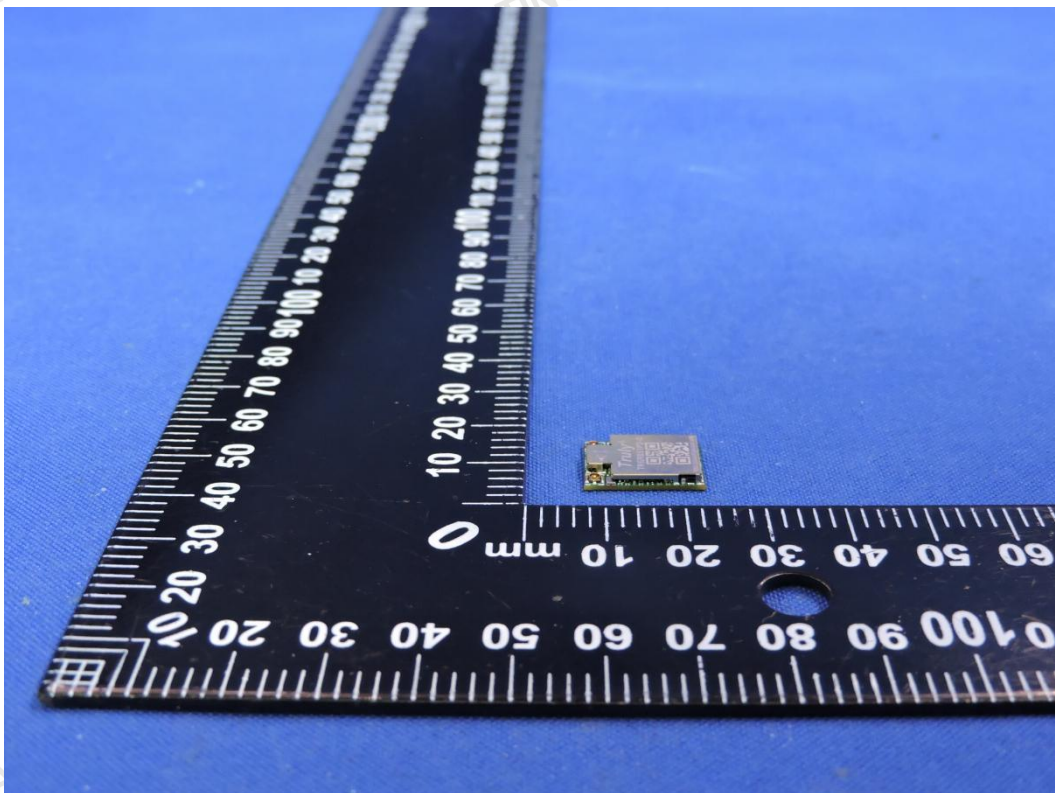
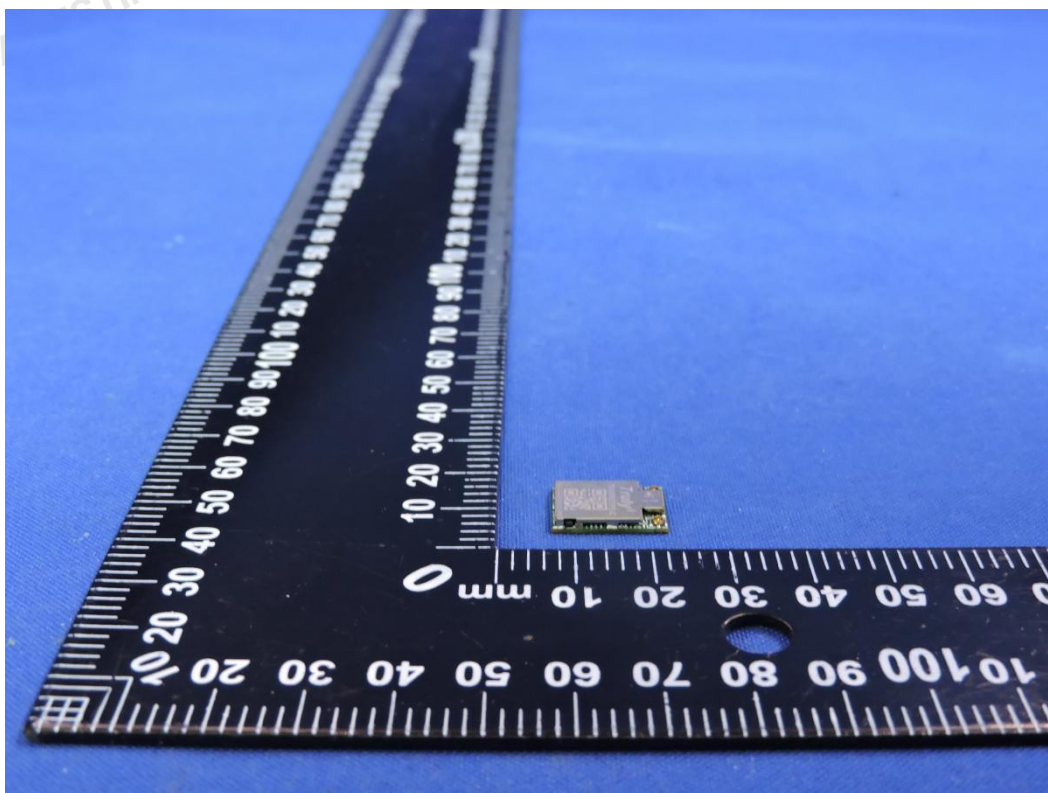


Photo 9



Internal Photos

Photo 1

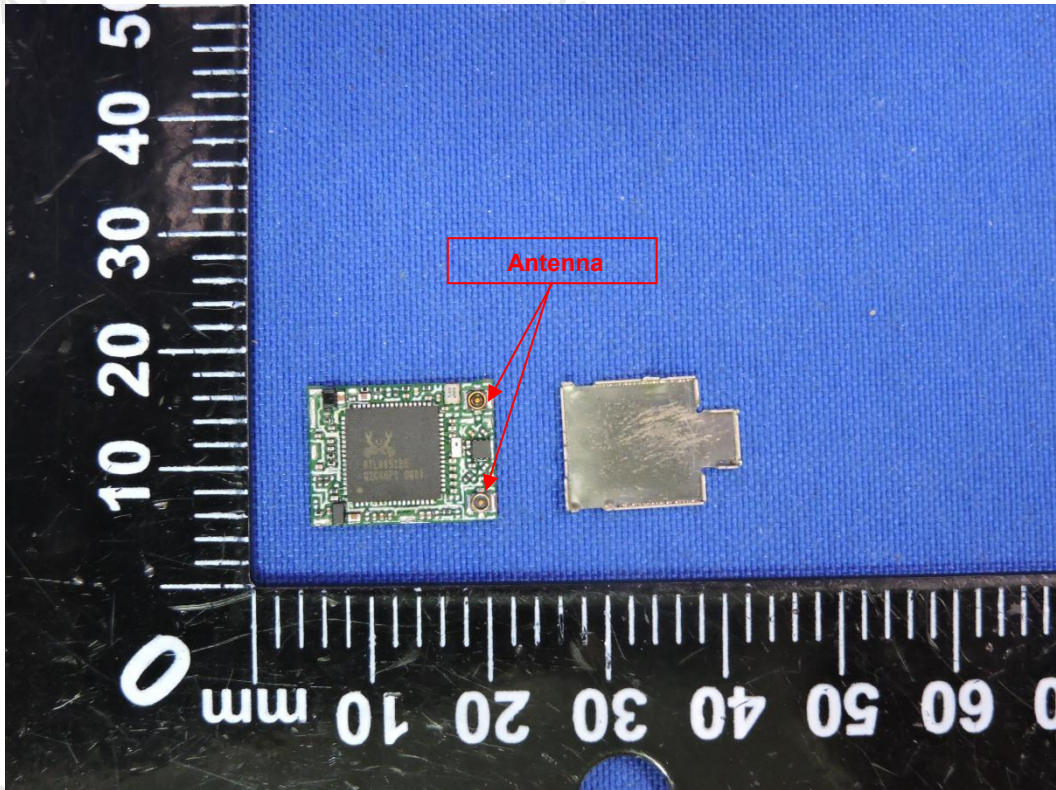


Photo 2

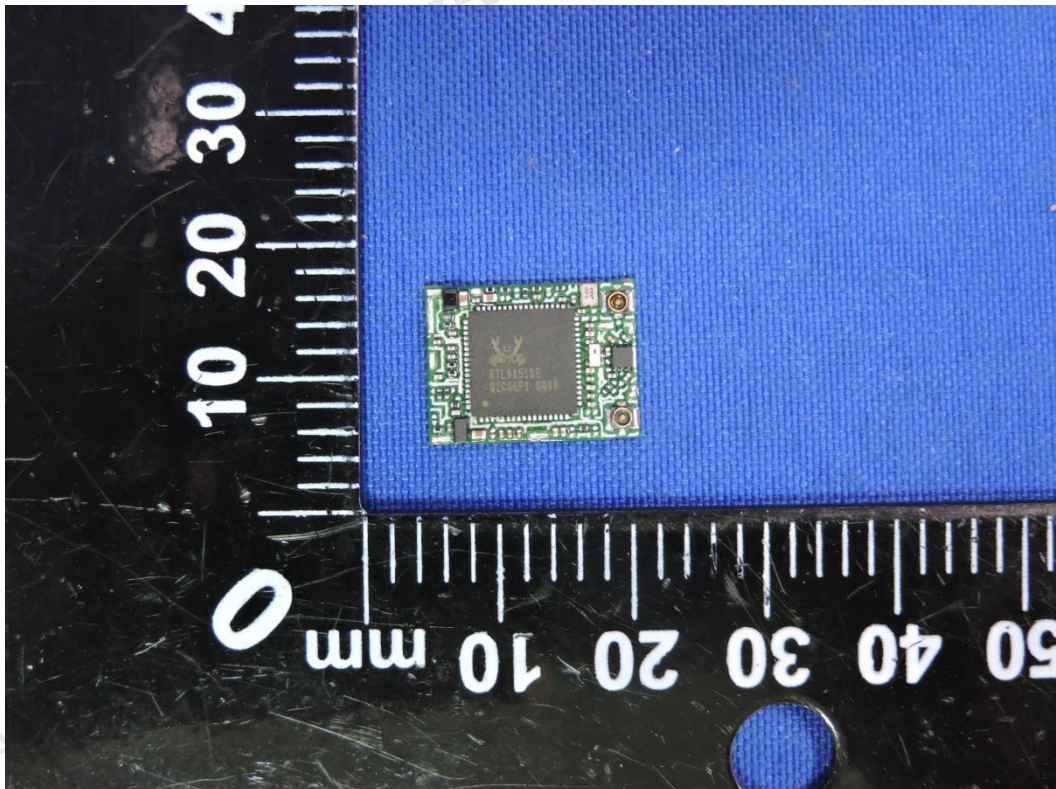
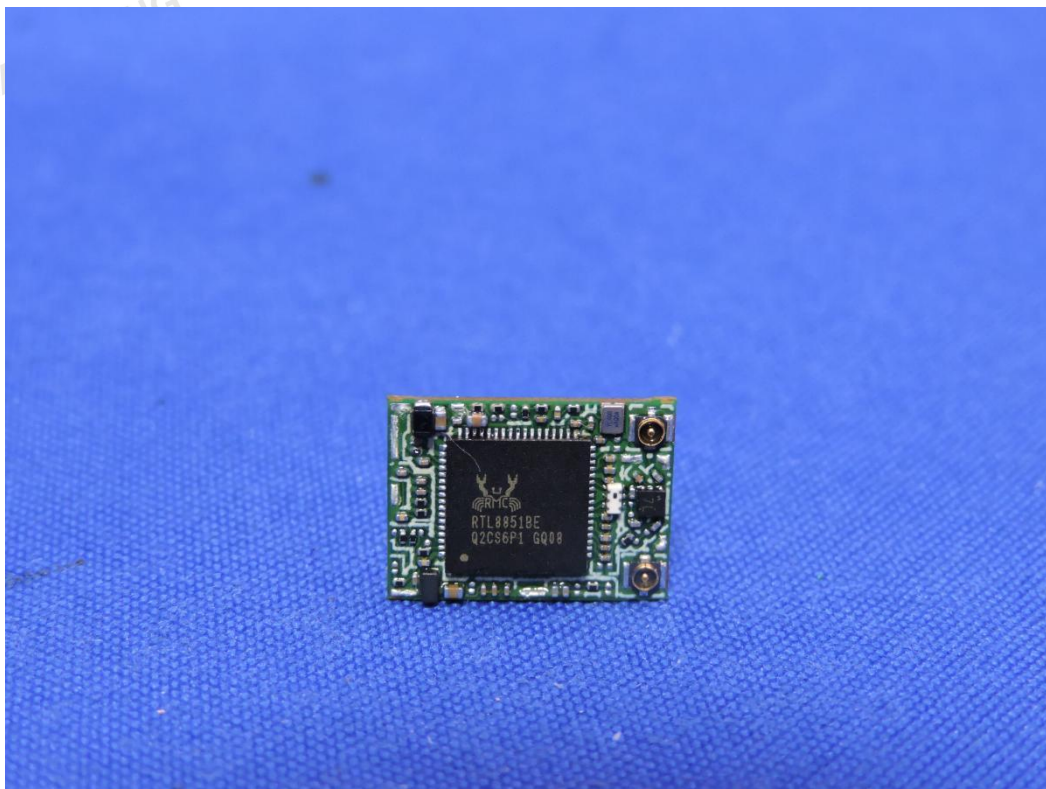


Photo 3



.....End of Report.....