



Report No.: PTC22102405901E-FC01

FCC TEST REPORT

FCC ID: 2A9QY-W1000S

Product	:	Wireless Video Transmission System
Model Name	:	W1000S,W1000H,W1000SP,W1000HP,W1500,W2000,FT6P,FR6P, FRT6P, FRT6U
Brand	:	N/A
Report No.	:	PTC22102405901E-FC01
Prepared for		
ZHANGZHOU LAISHIKE ELECTRONIC TECHNOLOGY CO.,LTD		
3#B503 GREEN LAKE PLAZA , No.1 HUBIN ROAD, LONGWEN DISTRICT, ZHANGZHOU, FUJIAN		
Prepared by		
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1 TEST RESULT CERTIFICATION

Applicant's name : ZHANGZHOU LAISHIKE ELECTRONIC TECHNOLOGY CO.,LTD

Address : 3#B503 GREEN LAKE PLAZA , No.1 HUBIN ROAD, LONGWEN DISTRICT, ZHANGZHOU, FUJIAN

Manufacture's name : ZHANGZHOU SEETEC OPTOELECTRONICS TECHNOLOGY CO., LTD

Address : NO.9A, Fuxing Industrial Zone, NO.9, Jinmin Road, Jinfeng Development Zone, Zhangzhou, Fujian

Product name : Wireless Video Transmission System

Model name : W1000S,W1000H,W1000SP,W1000HP,W1500,W2000,FT6P,FR6P, FRT6P,FRT6U

Standards : FCC CFR47 Part 15 Section 15.407

Test procedure : ANSI C63.10:2013

Test Date : Nov. 07, 2022 to Dec. 12, 2022

Date of Issue : Dec. 30, 2022

Test Result : Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Test Engineer:

A handwritten signature in black ink that reads "Simon Pu".

Simon Pu / Engineer

Technical Manager:

A handwritten signature in black ink that reads "Ronnie Liu".

Ronnie Liu / Manager



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2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	15.207	PASS
Radiated Spurious Emissions	15.205(a) 15.209 15.407(b)	PASS
Emission and Occupied Bandwidth	15.407(a)(e)	PASS
Maximum Peak Output Power	15.407(a)	PASS
Power Spectral Density	15.407(a)	PASS
Frequency stability	15.407 (g)	PASS
Antenna Requirement	15.203	PASS



3 General Information

3.1 General Description of E.U.T.

Product Name	:	Wireless Video Transmission System
Model Name	:	W1000S
Additional model	:	W1000H,W1000SP,W1000HP,W1500,W2000,FT6P,FR6P,FRT6P,FRT6U
Specification	:	802.11a
Operation Frequency	:	5G Wifi:5150-5250 MHz 5.8G Wifi:5725MHz~5850MHz
Number of Channel	:	4 channels for 802.11a 5150-5250 MHz 5 channels for 802.11a 20 5725MHz~5850MHz
Type of Modulation	:	OFDM with BPSK/QPSK/16QAM/64QAM for 802.11 a
Antenna installation	:	Directly connected external Antenna
Antenna Gain	:	Antenna1:5.18 dBi Antenna2:5.18 dBi
Power supply	:	Adapter: Model: FJ-SW1261201000DN Input: 100-240V~50/60Hz 0.4A Output:DC12.0V,1.0A 12.0W
Hardware Version	:	N/A
Software Version	:	V1.2.2

Model difference:

W1000S,W1000H,W1000SP,W1000HP,W1500, W2000, FT6P, FR6P, FRT6P, FRT6U the model name is different and the appearance color is different. the main test model is W1000S.



3.2 Channel List

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates(802.11a) were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Frequency and Channel list for 802.11 a

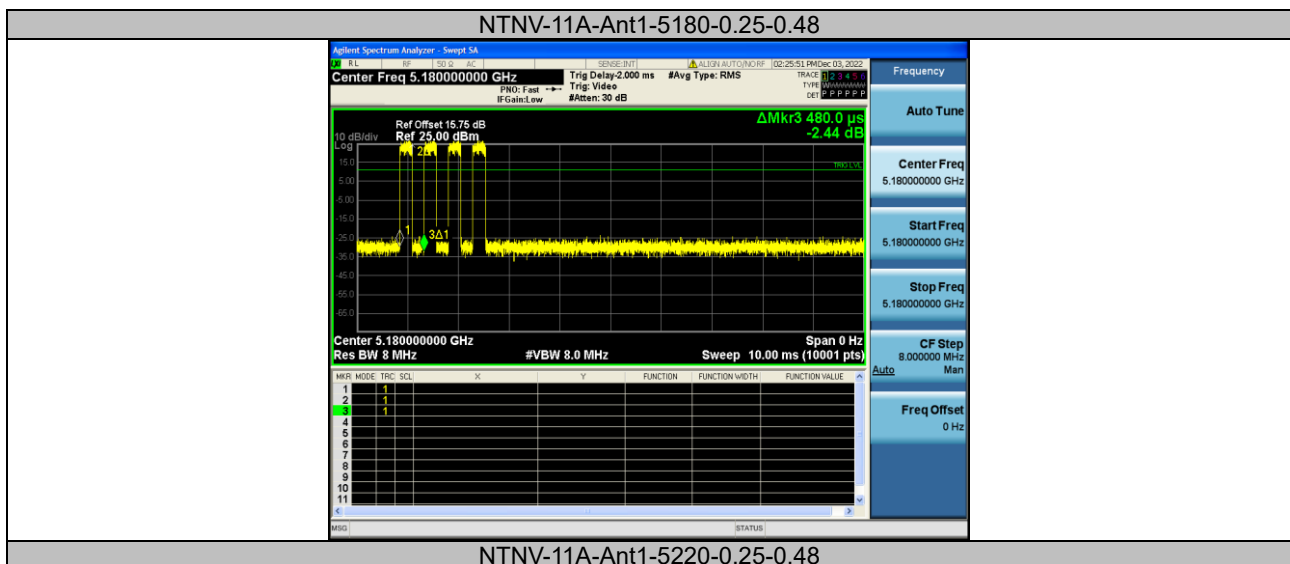
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	46	5230	153	5765
38	5190	48	5240	157	5785
40	5200	149	5745	159	5795
44	5220	151	5755	161	5805
				165	5825

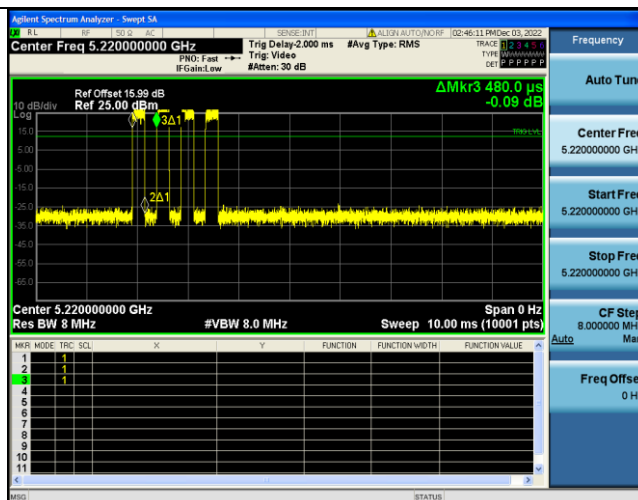


The maximum duty cycle as following table:

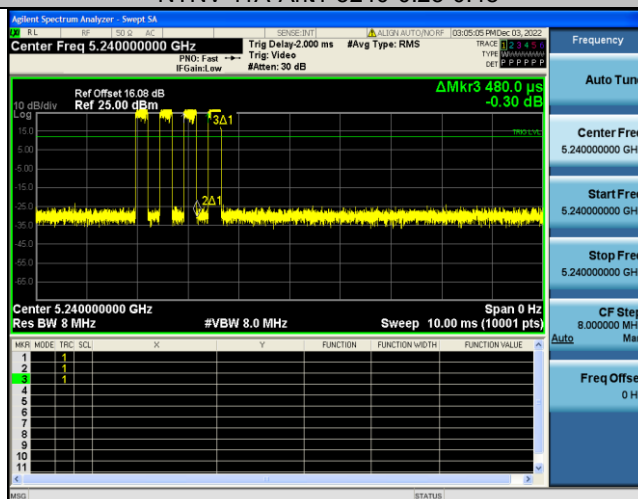
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5180	0.25	0.48	52.08
11A	Ant1	5220	0.25	0.48	52.08
11A	Ant1	5240	0.25	0.48	52.08
11A	Ant1	5745	0.25	0.48	52.08
11A	Ant1	5785	0.25	0.48	52.08
11A	Ant1	5825	0.25	0.48	52.08
11A	Ant2	5180	0.00	0.00	100
11A	Ant2	5220	0.25	0.48	52.08
11A	Ant2	5240	0.25	0.48	52.08
11A	Ant2	5785	0.25	0.48	52.08
11A	Ant2	5745	0.25	0.48	52.08
11A	Ant2	5825	0.25	0.48	52.08

Test graphs:

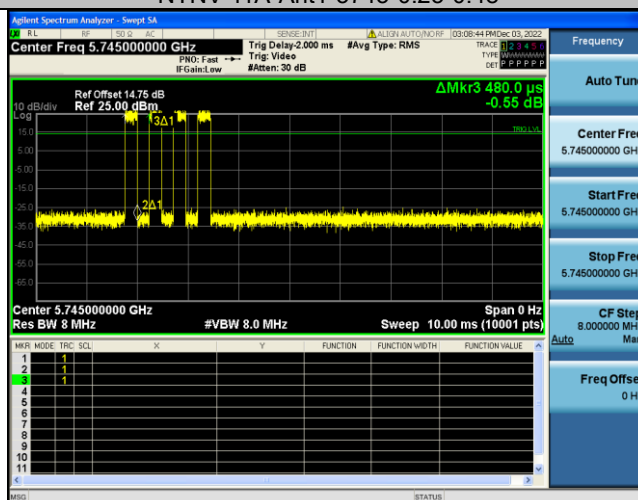




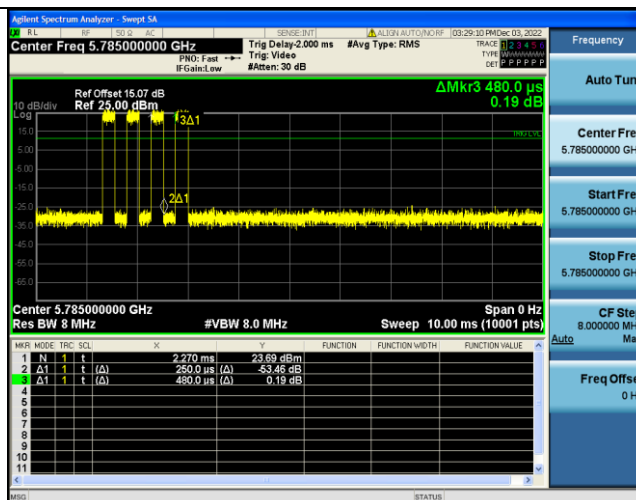
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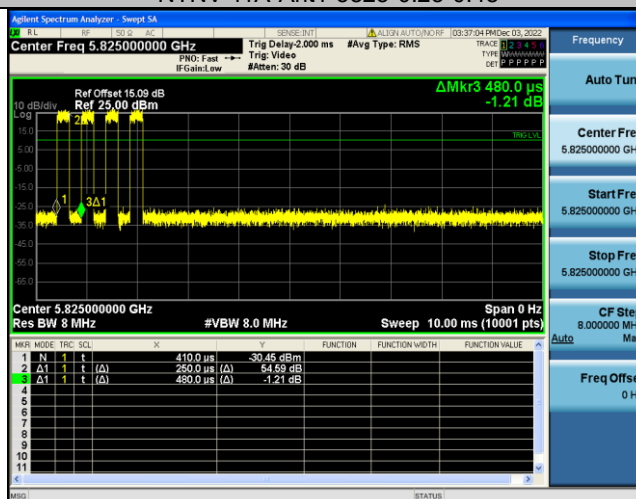
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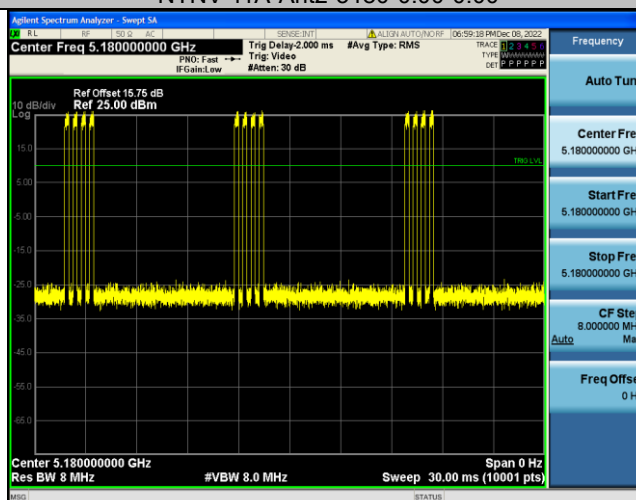
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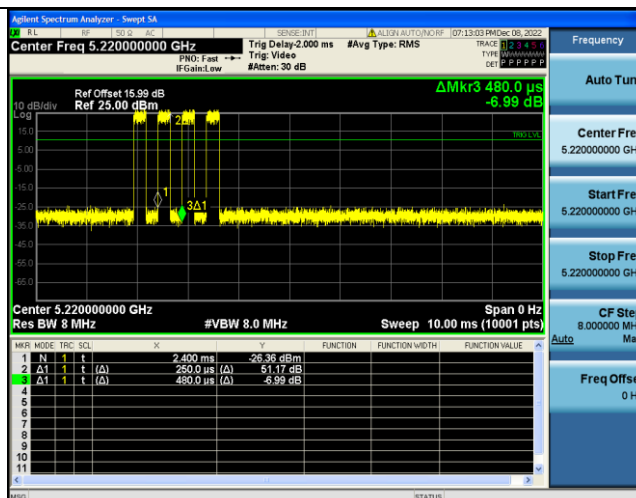
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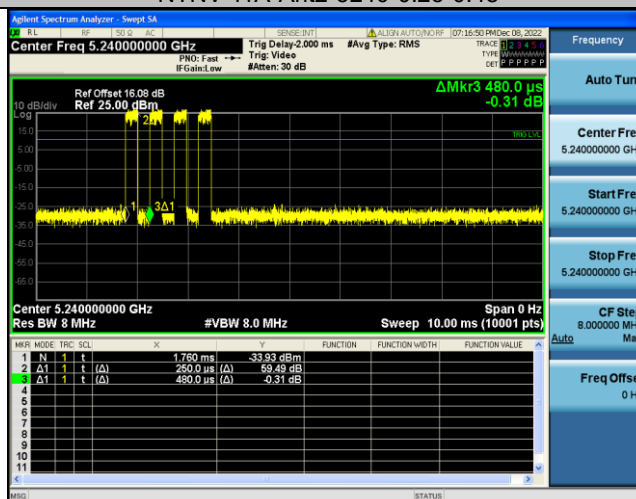
NTNV-11A-Ant2-5180-0.00-0.00



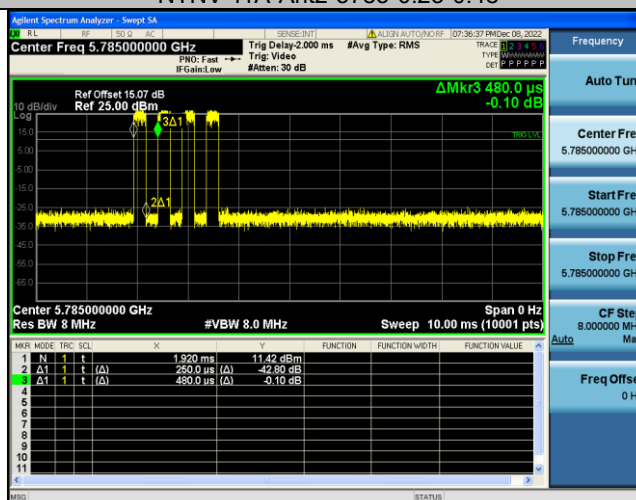
NTNV-11A-Ant2-5220-0.25-0.48



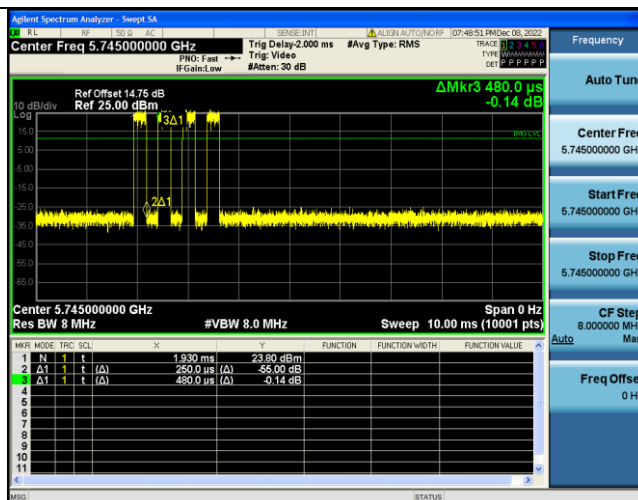
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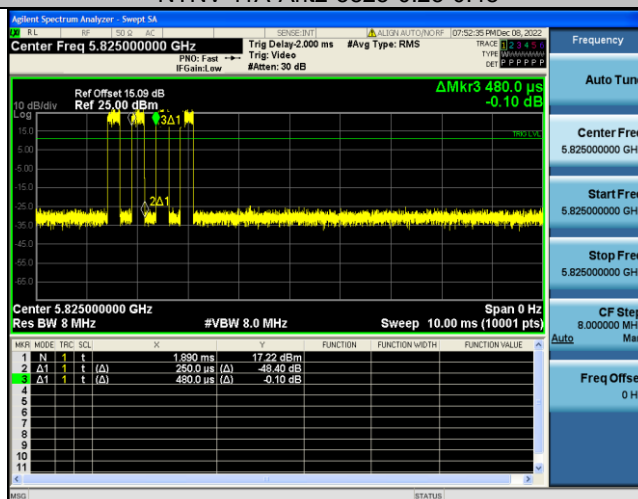
NTNV-11A-Ant2-5785-0.25-0.48



NTNV-11A-Ant2-5745-0.25-0.48



NTNV-11A-Ant2-5825-0.25-0.48





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3.3 Test Site

Precise Testing & Certification Co., Ltd

Address: Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A



4 Equipment During Test

4.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due	Calibration period
MXG Signal Analyzer	Agilent	N9020A	SER MY5111038	10Hz-30GHz	Aug. 21, 2023	1 year
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	Aug. 21, 2023	1 year
Power Meter	Anritsu	ML2495A	0949003	300MHz-40GHz	Aug. 21, 2023	1 year
Power Sensor	Anritsu	MA2411B	0917017	300MHz-40GHz	Aug. 21, 2023	1 year
Signal Analyzer 40GHz	Rohde&Schwarz	FSV40	101456	10Hz-40GHz	Aug. 21, 2023	1 year

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 21, 2023	1 year
Loop Antenna	Schwarzbeck	FMZB 1519	012	9 KHz -30MHz	Aug. 21, 2023	1 year
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	25MHz-2GHz	Aug. 21, 2023	1 year
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	1MHz-1GHz	Aug. 21, 2023	1 year
Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	Aug. 21, 2023	1 year
Spectrum Analyzer	Agilent	E4407B	MY45109572	9KHz-40GHz	Aug. 21, 2023	1 year
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	1GHz-18GHz	Aug. 21, 2023	1 year
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	1GHz-26.5GHz	Aug. 21, 2023	1 year



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Horn Antenna	SCHWARZBEC K	BBHA 9170	9170-181	14GHz- 40GHz	Aug. 21, 2023	1 year
Amplifier	SCHWARZBEC K	BBV 9721	9721-205	18GHz- 40GHz	Aug. 21, 2023	1 year
Cable	H+S	CBL-26	N/A	1GHz- 26.5GHz	Aug. 21, 2023	1 year
RF Cable	R&S	R204	R21X	1GHz-40GHz	Aug. 21, 2023	1 year

Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due	Calibration period
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 21, 2023	1 year
Artificial Mains Network	Rohde&Schwarz	ENV216	102453	9KHz-300MHz	Aug. 21, 2023	1 year
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	9KHz-300MHz	Aug. 21, 2023	1 year



4.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Time	$\pm 2\%$
Duty Cycle	$\pm 2\%$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions (150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(9kHz~30MHz)	$\pm 3.15\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~18GHz)	$\pm 4.74\text{dB}$
Radiated Emission(18GHz~40GHz)	$\pm 3.20\text{dB}$



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4.3 Description of Support Units

Equipment	Model No.	Series No.
Notebook	TPN-C126	N/A
43 inch LCD TV	JZT-AC-A-TV-001	N/A

5 Conducted Emission

Test Requirement:	: FCC CFR 47 Part 15 Section 15.207
Test Method	: ANSI C63.10: 2013
Test Result	: PASS
Frequency Range	: 150kHz to 30MHz
Class/Severity	: Class B

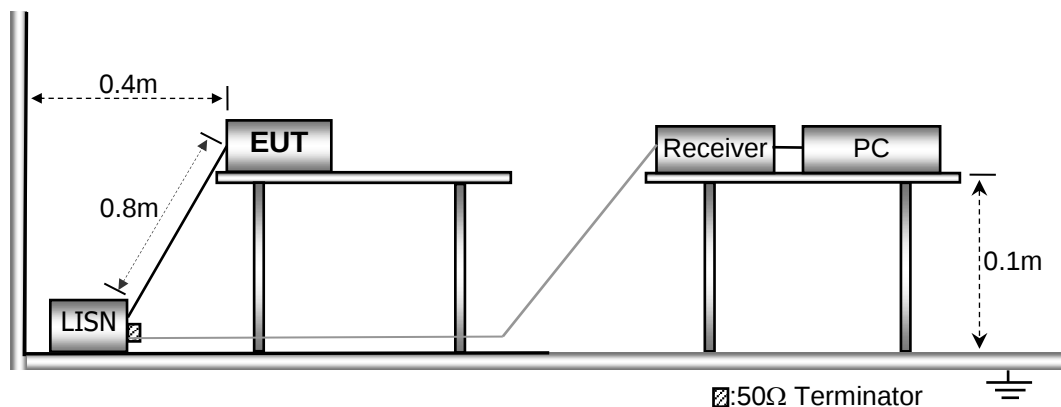
5.1 E.U.T. Operation

Operating Environment :

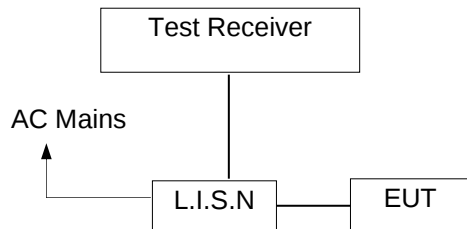
Temperature	: 23.9 °C
Humidity	: 51.4 % RH
Atmospheric Pressure	: 101.21kPa

5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



5.3 Test SET-UP (Block Diagram of Configuration)



5.4 Measurement Procedure

1. The EUT was placed on a table, which is 0.1m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

5.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

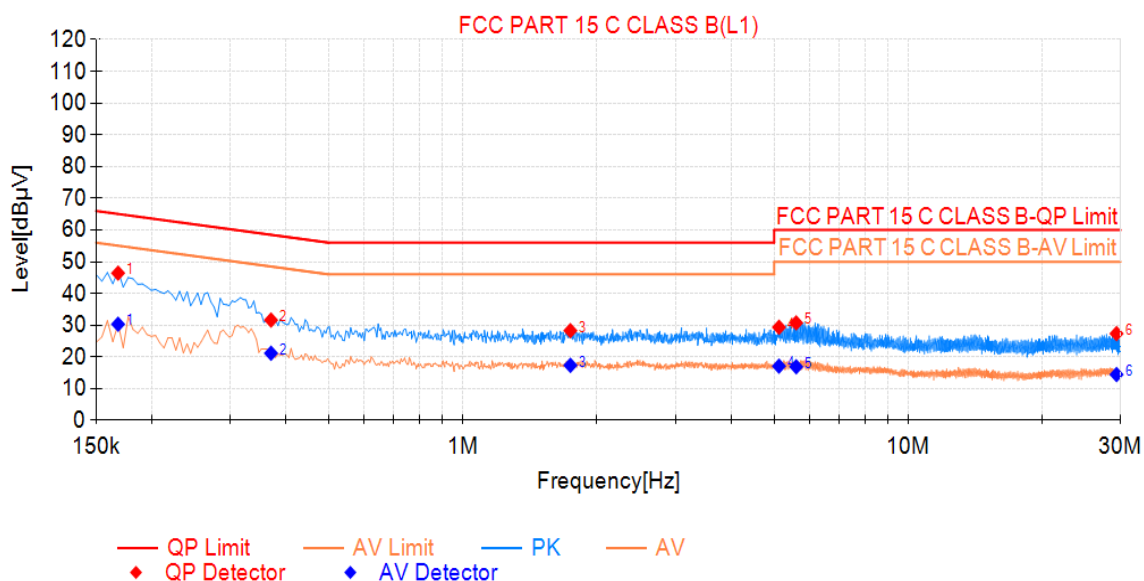
5.7 Conducted Emission Test Result

Pass.

All the modulation modes were tested the data of the worst mode (AC 120V/60Hz, TX 5180MHz) are recorded in the following pages and the others modulation methods do not exceed the limits.



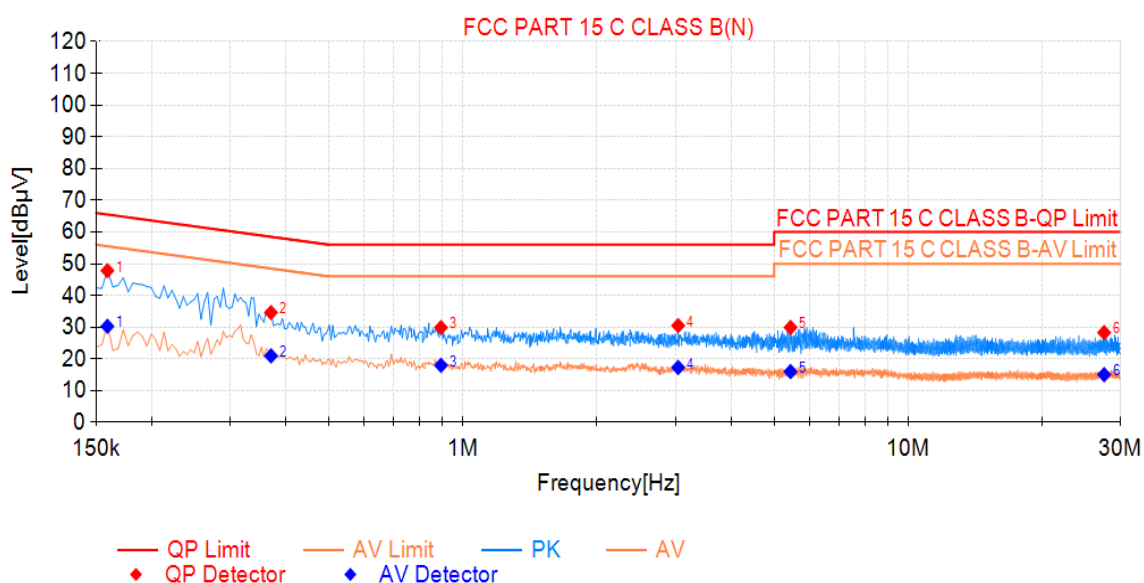
Line-AC 120V/60Hz



Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.168	46.42	65.06	18.64	30.30	55.06	24.76	PASS
2	0.371	31.62	58.49	26.87	21.15	48.49	27.34	PASS
3	1.743	28.28	56.00	27.72	17.34	46.00	28.66	PASS
4	5.127	29.35	60.00	30.65	17.09	50.00	32.91	PASS
5	5.604	30.73	60.00	29.27	16.90	50.00	33.10	PASS
6	29.382	27.33	60.00	32.67	14.44	50.00	35.56	PASS

Neutral-AC 120V/60Hz



Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.159	47.82	65.52	17.70	30.26	55.52	25.26	PASS
2	0.371	34.61	58.49	23.88	20.95	48.49	27.54	PASS
3	0.893	29.87	56.00	26.13	17.98	46.00	28.02	PASS
4	3.044	30.48	56.00	25.52	17.29	46.00	28.71	PASS
5	5.442	29.92	60.00	30.08	16.00	50.00	34.00	PASS
6	27.555	28.30	60.00	31.70	15.04	50.00	34.96	PASS



6 Radiated Spurious Emissions

Test Requirement	:	FCC CFR47 Part 15 Section 15.209 & 15.407(b)
Test Method	:	ANSI C63.10:2013
Test Result	:	PASS
Measurement Distance	:	3m

Limit

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

Further.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits. As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1MHz



As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

6.1 EUT Operation

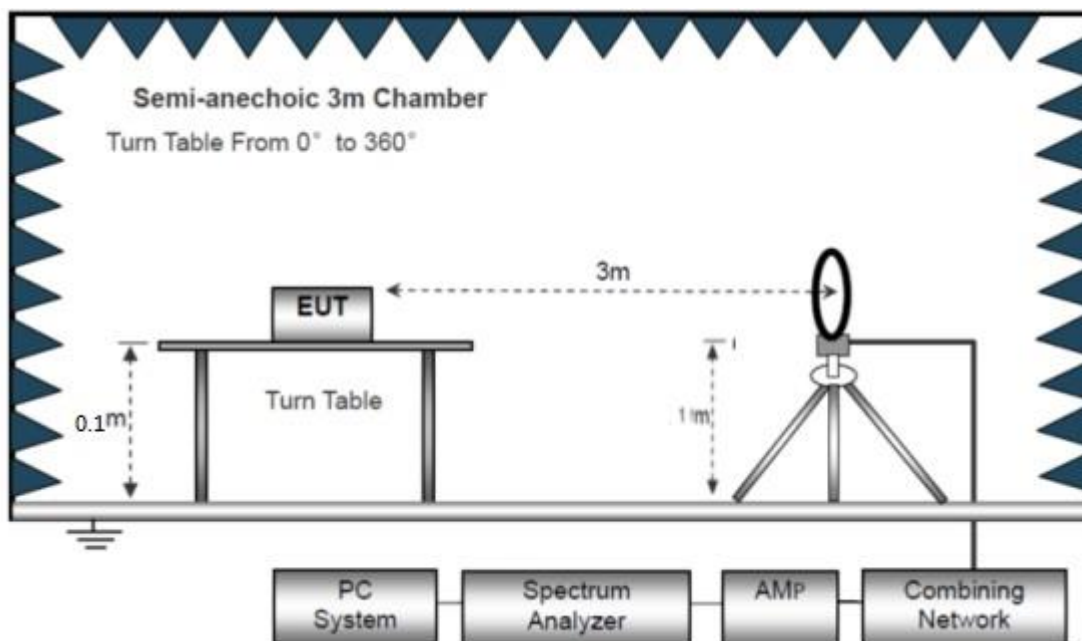
Operating Environment :

Temperature:	:	24.5 °C
Humidity:	:	52 % RH
Atmospheric Pressure:	:	101.3kPa
Test Voltage	:	AC 120V 60Hz

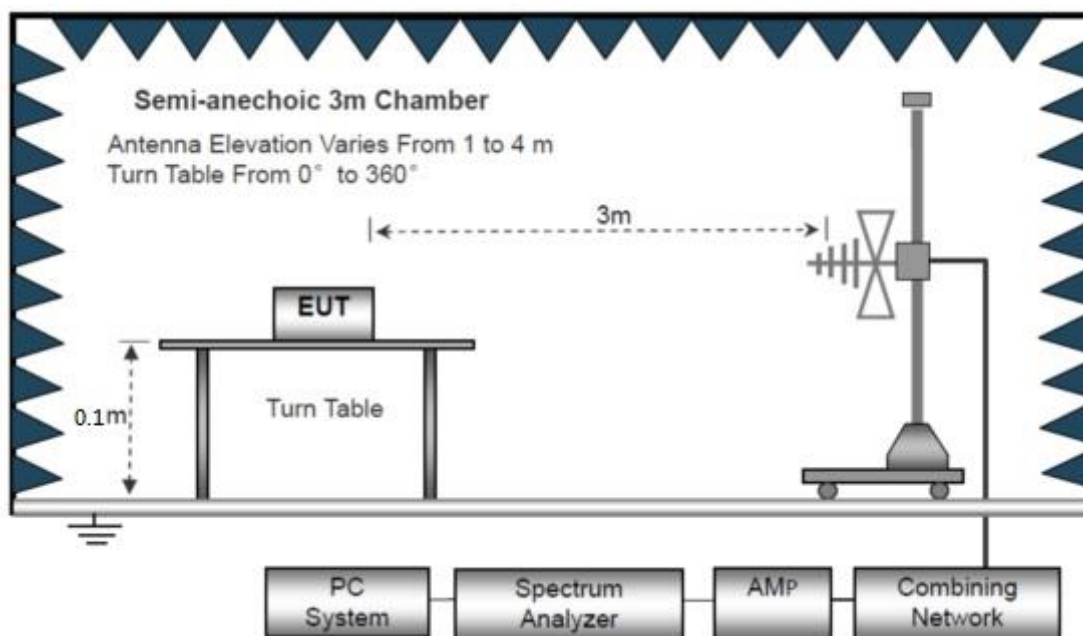
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

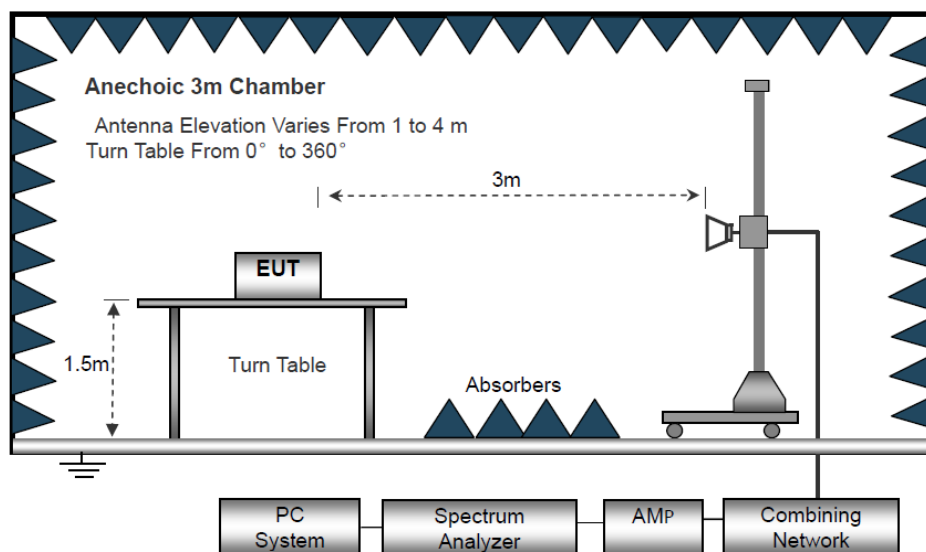
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



6.3 Spectrum Analyzer Setup

Receiver Setup	Frequency	Detector	RBW	VBW	Remark
	Below 30MHz	--	10kHz	10kHz	--
	30MHz ~ 1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value



6.4 Test Procedure

1. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane, And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room



6.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits (dBuV) + distance extrapolation factor.

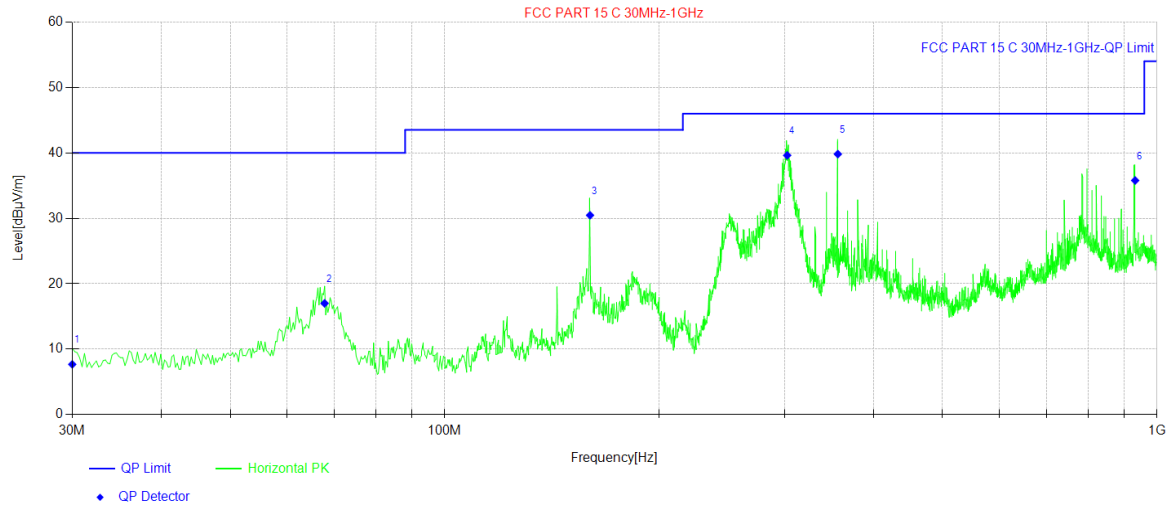
Test Frequency: 30MHz ~ 1GHz

All the modulation modes were tested the data of the worst mode (TX 802.11a Channel 36 ANT 1) are recorded in the following pages and the others modulation methods do not exceed the limits.

Please refer to the following test plots:



Antenna Polarization: Horizontal(CH36):

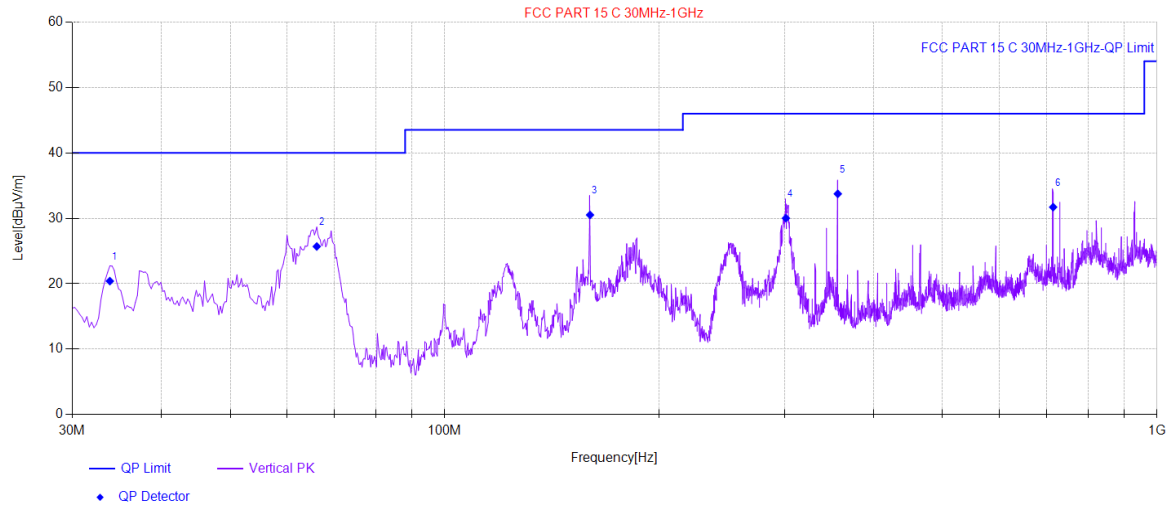


Final Data List[QP]							
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Polarity
1	30.00	26.04	-18.35	7.69	40.00	32.31	Horizontal
2	67.83	35.94	-18.93	17.01	40.00	22.99	Horizontal
3	159.98	46.32	-15.85	30.47	43.50	13.03	Horizontal
4	302.57	54.99	-15.37	39.62	46.00	6.38	Horizontal
5	356.41	53.97	-14.16	39.81	46.00	6.19	Horizontal
6	931.86	38.25	-2.46	35.79	46.00	10.21	Horizontal

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor



Antenna Polarization: Vertical (CH36)



Final Data List[QP]							
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Polarity
1	33.88	38.53	-18.12	20.41	40.00	19.59	Vertical
2	66.13	44.41	-18.71	25.70	40.00	14.30	Vertical
3	159.98	46.37	-15.85	30.52	43.50	12.98	Vertical
4	301.36	45.43	-15.41	30.02	46.00	15.98	Vertical
5	356.41	47.9	-14.16	33.74	46.00	12.26	Vertical
6	714.82	38.01	-6.30	31.71	46.00	14.29	Vertical

Remark: Emission Level = Reading + Cable Loss + ANT Factor - AMP Factor
 Note: only the worst case recorded in the report.



Test Frequency: From 1GHz to 40GHz

Pre-scan all test modes

Only the worst case Main test data ANT1.

802.11a

Test Mode: 5180					Test channel: Lowest			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10360	47.14	35.22	5.36	31.25	56.47	68.2	-11.73	V
15540	42.38	35.96	7.85	30.63	55.56	68.2	-12.64	V
20720	43.06	39.12	8.56	34.95	55.79	68.2	-12.41	V
10360	48.40	34.12	5.36	31.25	56.63	68.2	-11.57	H
15540	42.43	36.52	7.85	30.63	56.17	68.2	-12.03	H
20720	42.63	40.01	8.56	34.95	56.25	68.2	-11.95	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10360	33.05	35.22	5.36	31.25	42.38	54	-11.62	V
15540	30.45	35.96	7.85	30.63	43.63	54	-10.37	V
20720	27.88	39.12	8.56	34.95	40.61	54	-13.39	V
10360	32.89	34.12	5.36	31.25	41.12	54	-12.88	H
15540	24.78	36.52	7.85	30.63	38.52	54	-15.48	H
20720	27.19	40.01	8.56	34.95	40.81	54	-13.19	H



802.11a

Test Mode:5200					Test channel: Middle			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10400	48.02	35.63	5.36	31.25	57.76	68.2	-10.44	V
15600	43.34	35.91	7.85	30.63	56.47	68.2	-11.73	V
20800	44.58	39.67	8.56	34.95	57.86	68.2	-10.34	V
10400	46.83	34.25	5.36	31.25	55.19	68.2	-13.01	H
15600	42.16	37.02	7.85	30.63	56.40	68.2	-11.80	H
20800	43.16	38.88	8.56	34.95	55.65	68.2	-12.55	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10400	33.89	35.63	5.36	31.25	43.63	54	-10.37	V
15600	28.95	35.91	7.85	30.63	42.08	54	-11.92	V
20800	29.41	39.67	8.56	34.95	42.69	54	-11.31	V
10400	33.23	34.25	5.36	31.25	41.59	54	-12.41	H
15600	29.12	37.02	7.85	30.63	43.36	54	-10.64	H
20800	30.15	38.88	8.56	34.95	42.64	54	-11.36	H



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Test Mode:5240					Test channel: High			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10480	45.71	34.68	5.36	31.25	54.50	68.2	-13.70	V
17520	43.23	36.52	7.85	30.63	56.97	68.2	-11.23	V
20960	44.28	38.77	8.56	34.95	56.66	68.2	-11.54	V
10480	46.64	33.99	5.36	31.25	54.74	68.2	-13.46	H
17520	45.37	36.84	7.85	30.63	59.43	68.2	-8.77	H
20960	46.04	39.93	8.56	34.95	59.58	68.2	-8.62	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
10480	33.16	34.68	5.36	31.25	41.95	54	-12.05	V
17520	29.06	36.52	7.85	30.63	42.80	54	-11.20	V
20960	30.10	38.77	8.56	34.95	42.48	54	-11.52	V
10480	32.04	33.99	5.36	31.25	40.14	54	-13.86	H
17520	26.99	36.84	7.85	30.63	41.05	54	-12.95	H
20960	29.15	39.93	8.56	34.95	42.69	54	-11.31	H



802.11a

Test Mode: 5745					Test channel: Lowest			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11490	47.52	35.26	5.42	31.75	56.45	68.23	-11.78	V
17235	42.25	36.88	7.32	30.96	55.49	68.23	-12.74	V
22980	43.95	39.14	8.85	35.25	56.69	68.23	-11.54	V
11490	49.49	34.21	5.42	31.75	57.37	68.23	-10.86	H
17235	44.00	37.52	7.32	30.96	57.88	68.23	-10.35	H
22980	44.06	39.88	8.85	35.25	57.54	68.23	-10.69	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11490	32.27	35.26	5.42	31.75	41.20	54	-12.80	V
17235	30.12	36.88	7.32	30.96	43.36	54	-10.64	V
22980	29.69	39.14	8.85	35.25	42.43	54	-11.57	V
11490	31.43	34.21	5.42	31.75	39.31	54	-14.69	H
17235	28.80	37.52	7.32	30.96	42.68	54	-11.32	H
22980	29.00	39.88	8.85	35.25	42.48	54	-11.52	H



802.11a

Test Mode:5785					Test channel: Middle			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11570	48.40	35.26	5.42	31.75	57.33	68.23	-10.90	V
17355	44.44	36.88	7.32	30.96	57.68	68.23	-10.55	V
23140	45.54	39.14	8.85	35.25	58.28	68.23	-9.95	V
11570	48.64	34.21	5.42	31.75	56.52	68.23	-11.71	H
17355	42.52	37.52	7.32	30.96	56.40	68.23	-11.83	H
23140	43.58	39.88	8.85	35.25	57.06	68.23	-11.17	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11570	33.28	35.26	5.42	31.75	42.21	54	-11.79	V
17355	29.74	36.88	7.32	30.96	42.98	54	-11.02	V
23140	28.50	39.14	8.85	35.25	41.24	54	-12.76	V
11570	34.36	34.21	5.42	31.75	42.24	54	-11.76	H
17355	29.31	37.52	7.32	30.96	43.19	54	-10.81	H
23140	29.51	39.88	8.85	35.25	42.99	54	-11.01	H



802.11a

Test Mode:5825					Test channel: High			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11650	48.66	35.26	5.42	31.75	57.59	68.23	-10.64	V
17475	44.81	36.88	7.32	30.96	58.05	68.23	-10.18	V
23300	45.51	39.14	8.85	35.25	58.25	68.23	-9.98	V
11650	49.60	34.21	5.42	31.75	57.48	68.23	-10.75	H
17475	44.25	37.52	7.32	30.96	58.13	68.23	-10.10	H
23300	44.92	39.88	8.85	35.25	58.40	68.23	-9.83	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
11650	34.69	34.96	5.42	31.75	43.32	54	-10.68	V
17475	28.79	36.74	7.32	30.96	41.89	54	-12.11	V
23300	30.08	39.14	8.85	35.25	42.82	54	-11.18	V
11650	33.42	34.02	5.42	31.75	41.11	54	-12.89	H
17475	28.75	36.57	7.32	30.96	41.68	54	-12.32	H
23300	28.24	39.88	8.85	35.25	41.72	54	-12.28	H

Note:

1. All other emissions more than 30dB below the limit.
2. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit
3. X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.

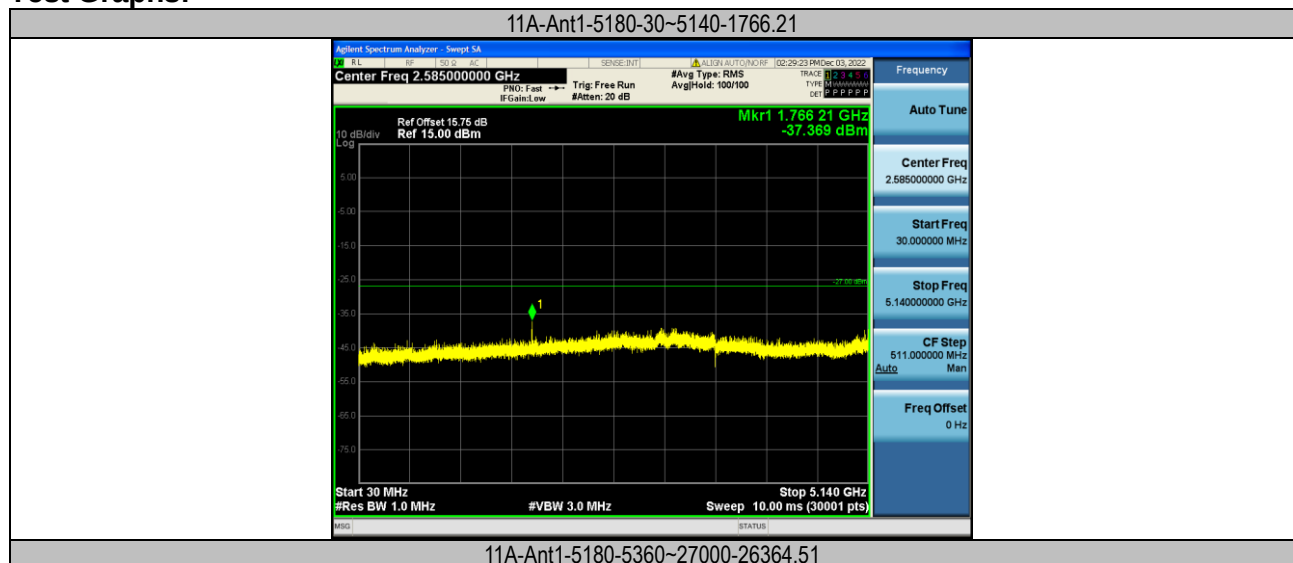


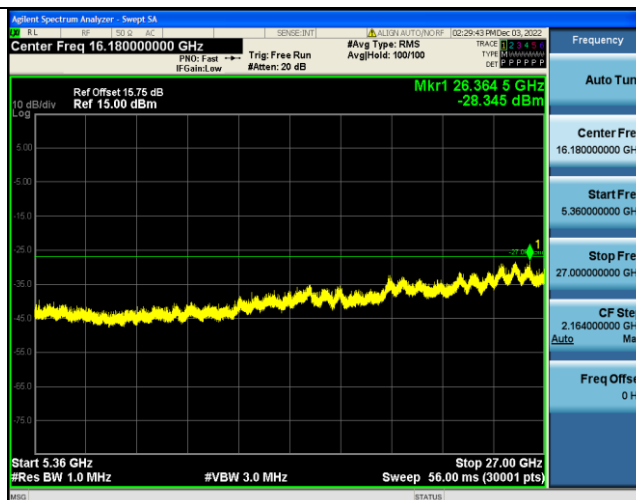
Undesirable emission

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	Max. Fre [MHz]	Max. Level [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	30~5140	1766.21	-37.37	≤-27	PASS
11A	Ant1	5180	5360~27000	26364.51	-28.35	≤-27	PASS
11A	Ant1	5220	30~5140	1783.92	-37.83	≤-27	PASS
11A	Ant1	5220	5360~27000	25132.47	-28.34	≤-27	PASS
11A	Ant1	5240	30~5140	3048.65	-39.12	≤-27	PASS
11A	Ant1	5240	5360~27000	25672.75	-28.31	≤-27	PASS
11A	Ant1	5745	30~5650	3188.07	-34.84	≤-27	PASS
11A	Ant1	5745	5925~27000	25715.00	-33.32	≤-27	PASS
11A	Ant1	5785	30~5650	3082.6	-34.23	≤-27	PASS
11A	Ant1	5785	5925~27000	25702.48	-23.87	≤-27	PASS
11A	Ant1	5825	30~5650	3200.99	-33.65	≤-27	PASS
11A	Ant1	5825	5925~27000	25757.00	-33.68	≤-27	PASS
11A	Ant2	5180	30~5140	5091.97	-38.25	≤-27	PASS
11A	Ant2	5180	5360~27000	25745.6	-27.84	≤-27	PASS
11A	Ant2	5220	30~5140	5094.86	-37.97	≤-27	PASS
11A	Ant2	5220	5360~27000	25721.08	-27.85	≤-27	PASS
11A	Ant2	5240	30~5140	5104.23	-37.81	≤-27	PASS
11A	Ant2	5240	5360~27000	25762.91	-28.1	≤-27	PASS
11A	Ant2	5785	30~5650	5141.2	-29.7	≤-27	PASS
11A	Ant2	5785	5925~27000	25757.00	-34.40	≤-27	PASS
11A	Ant2	5745	30~5650	5218.2	-27.15	≤-27	PASS
11A	Ant2	5745	5925~27000	26305.00	-33.97	≤-27	PASS
11A	Ant2	5825	30~5650	2929.17	-34.31	≤-27	PASS
11A	Ant2	5825	5925~27000	25083.00	-33.58	≤-27	PASS

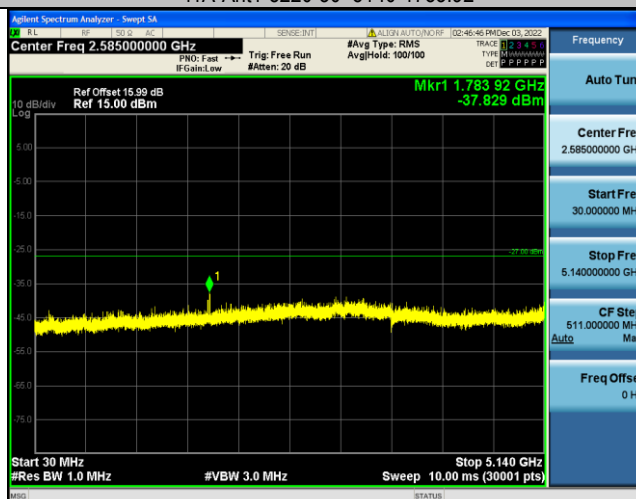
Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. And above 27GHz of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data.

Test Graphs:

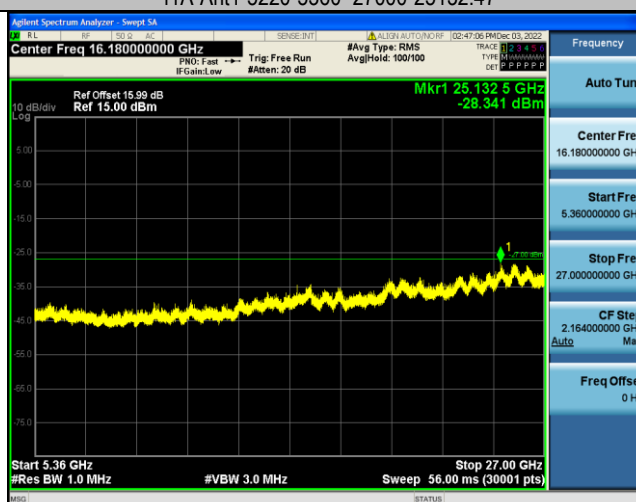




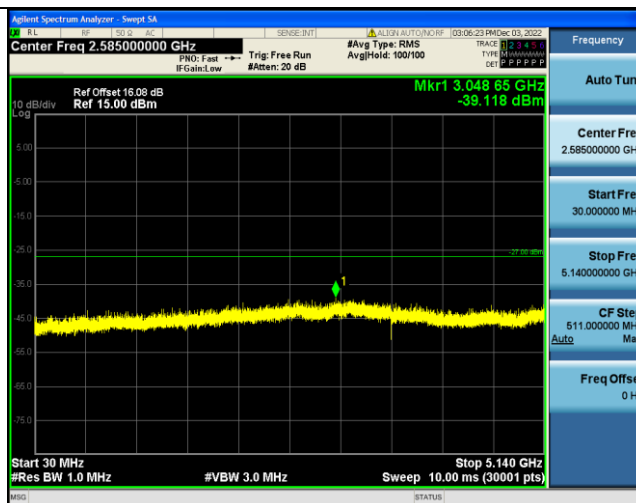
11A-Ant1-5220-30~5140-1783.92



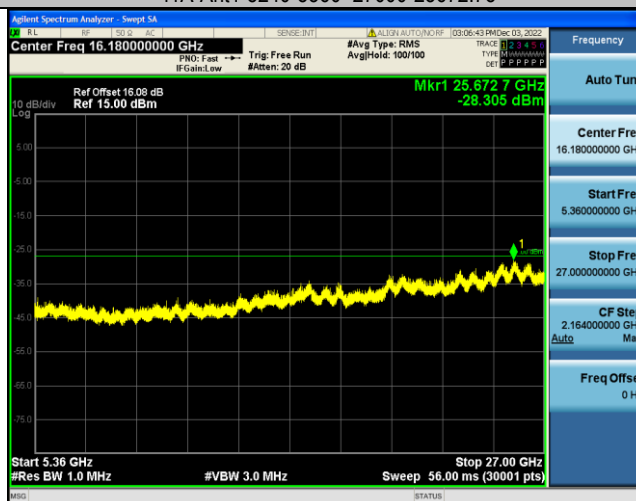
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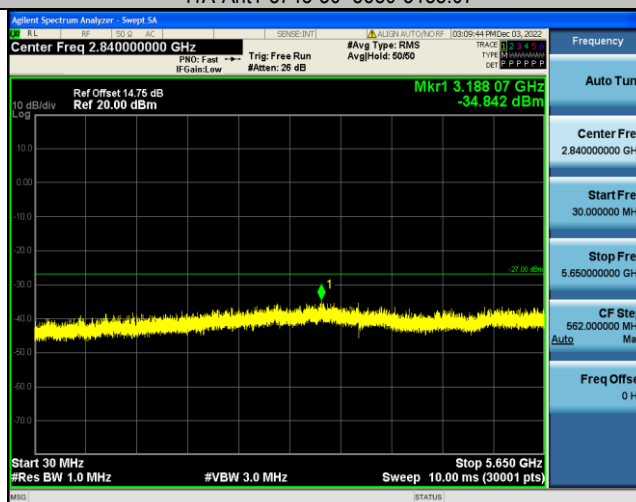
11A-Ant1-5240-30~5140-3048.65



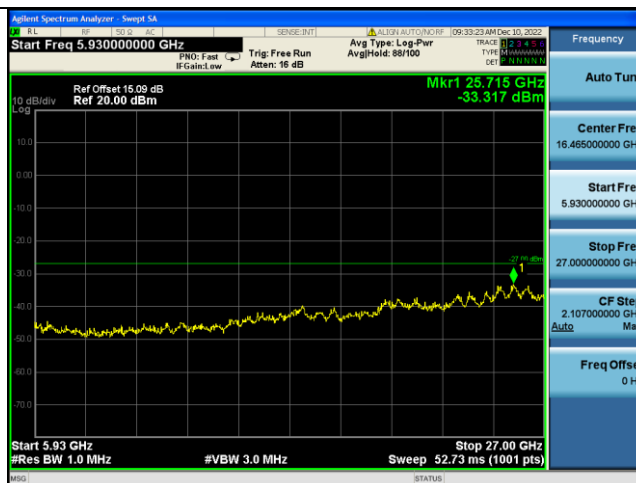
11A-Ant1-5240-5360~27000-25672.75



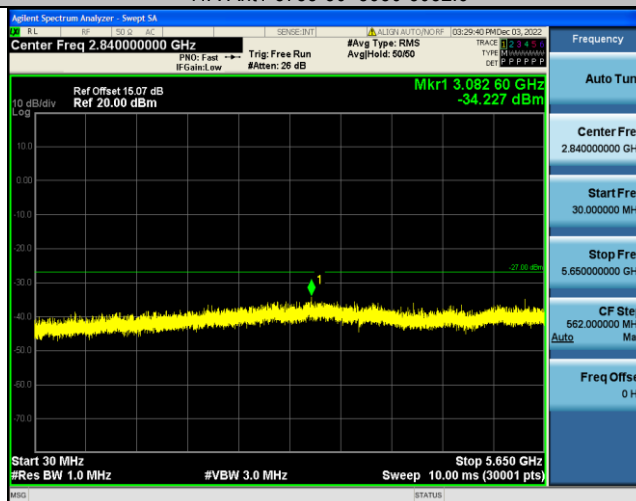
11A-Ant1-5745-30~5650-3188.07



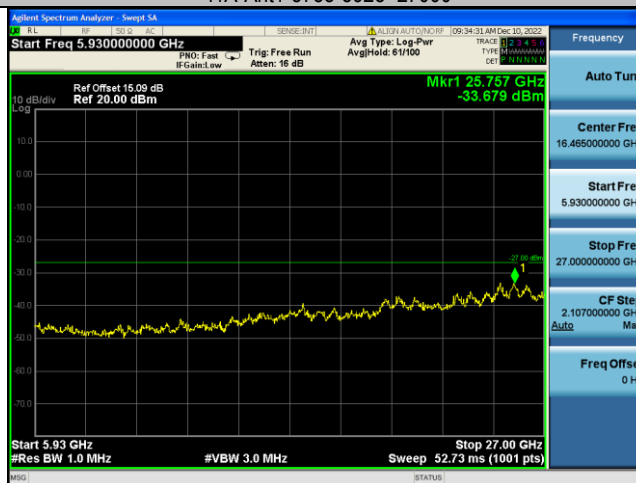
11A-Ant1-5745-5925~27000



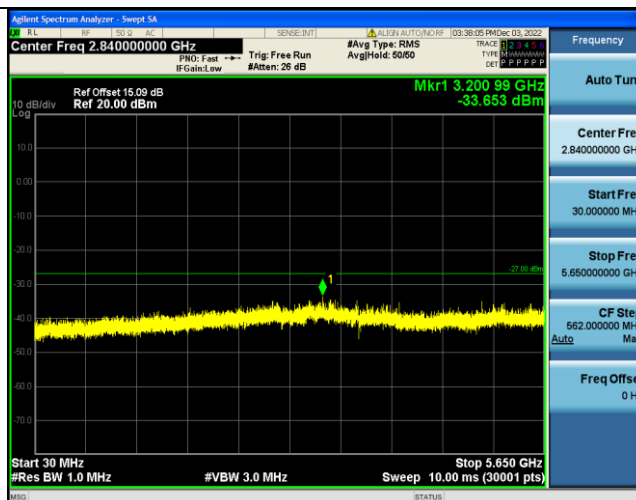
11A-Ant1-5785-30~5650-3082.6



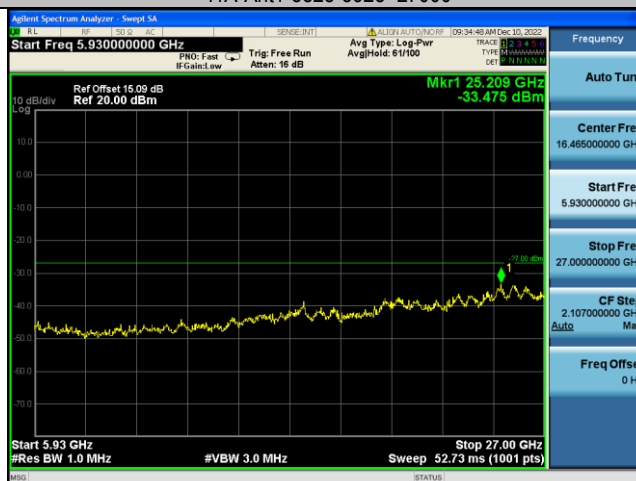
11A-Ant1-5785-5925~27000



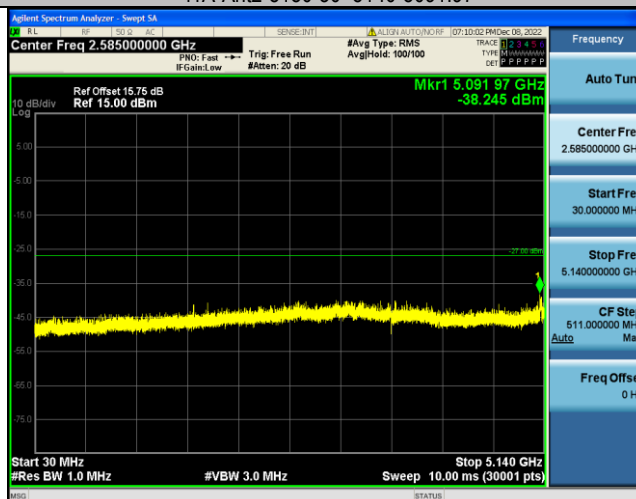
11A-Ant1-5825-30~5650-3200.99



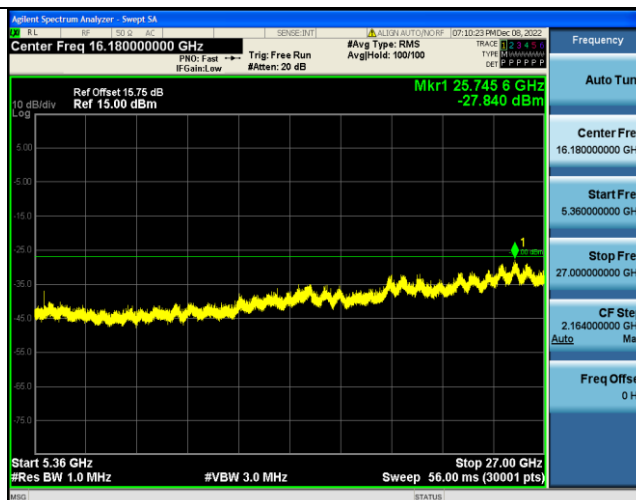
11A-Ant1-5825-5925-27000



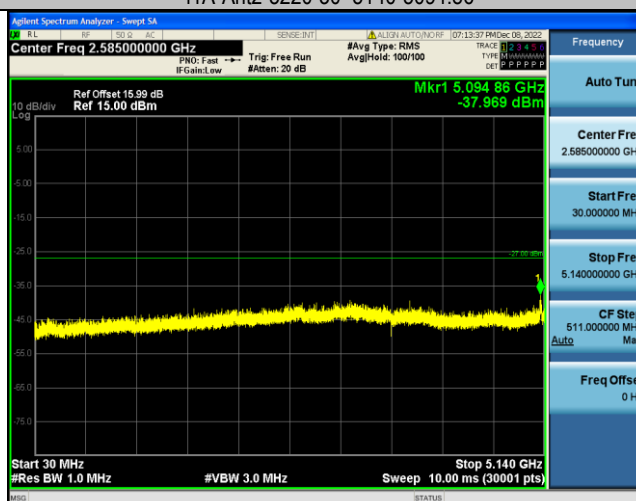
11A-Ant2-5180-30~5140-5091.97



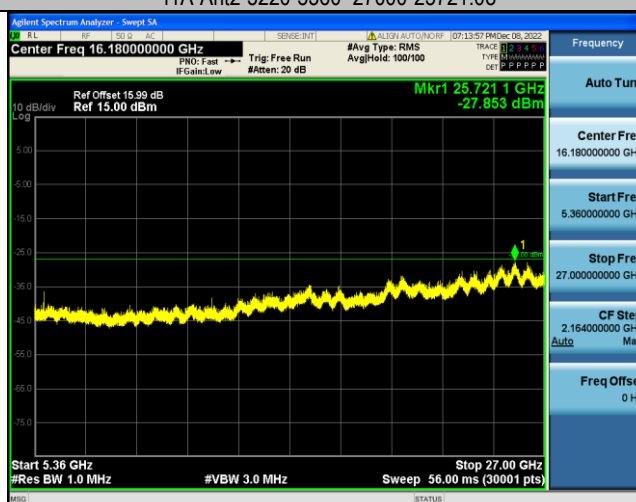
11A-Ant2-5180-5360~27000-25745.6



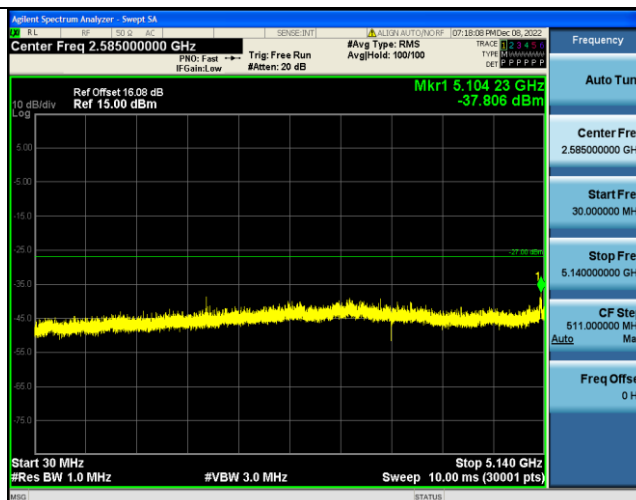
11A-Ant2-5220-30~5140-5094.86



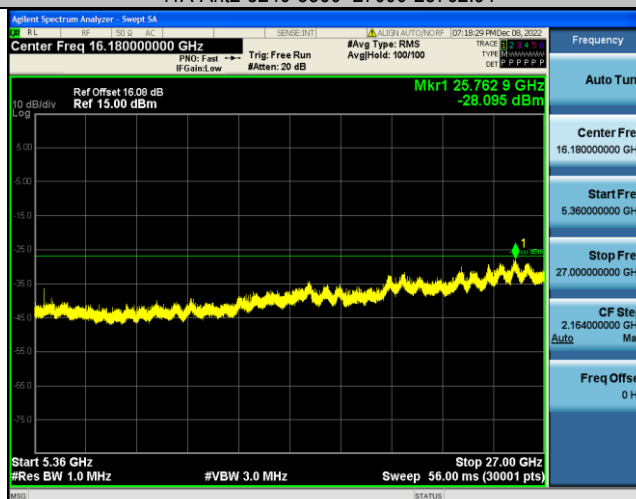
11A-Ant2-5220-5360~27000-25721.08



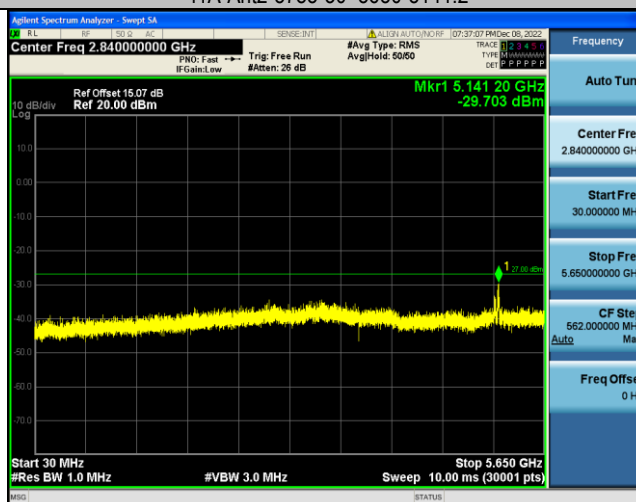
11A-Ant2-5240-30~5140-5104.23



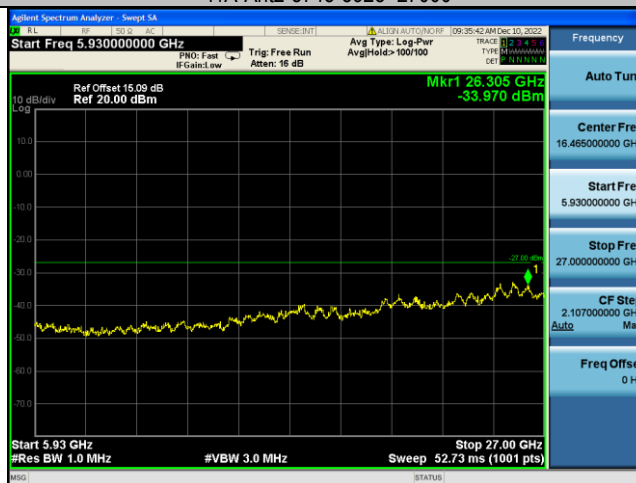
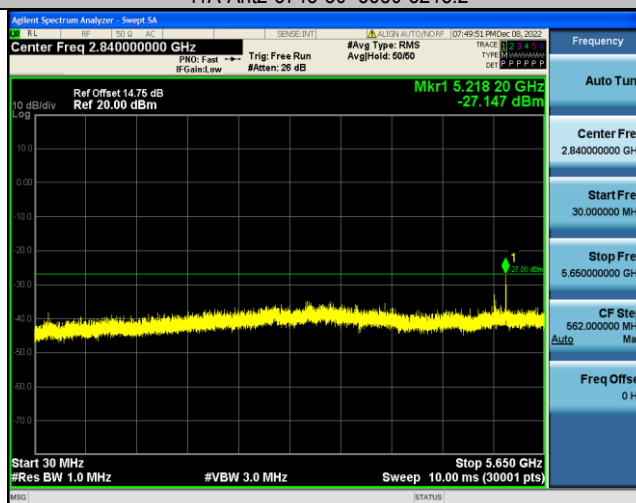
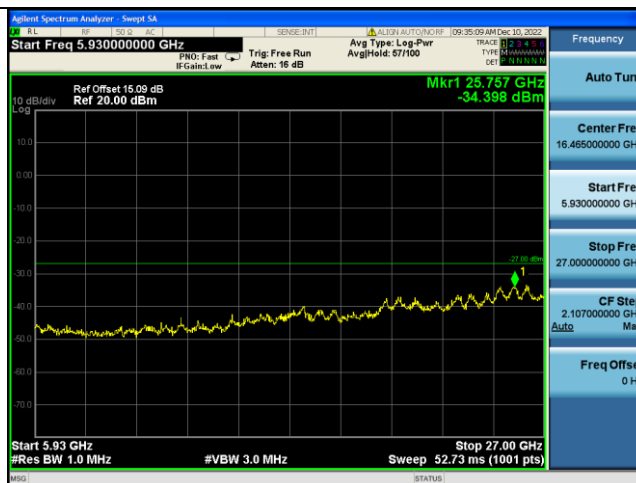
11A-Ant2-5240-5360~27000-25762.91

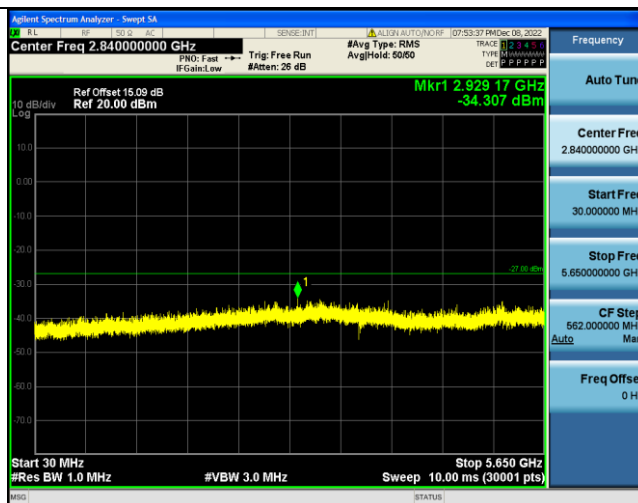


11A-Ant2-5785-30~5650-5141.2



11A-Ant2-5785-5925~27000





11A-Ant2-5825-5925-27000





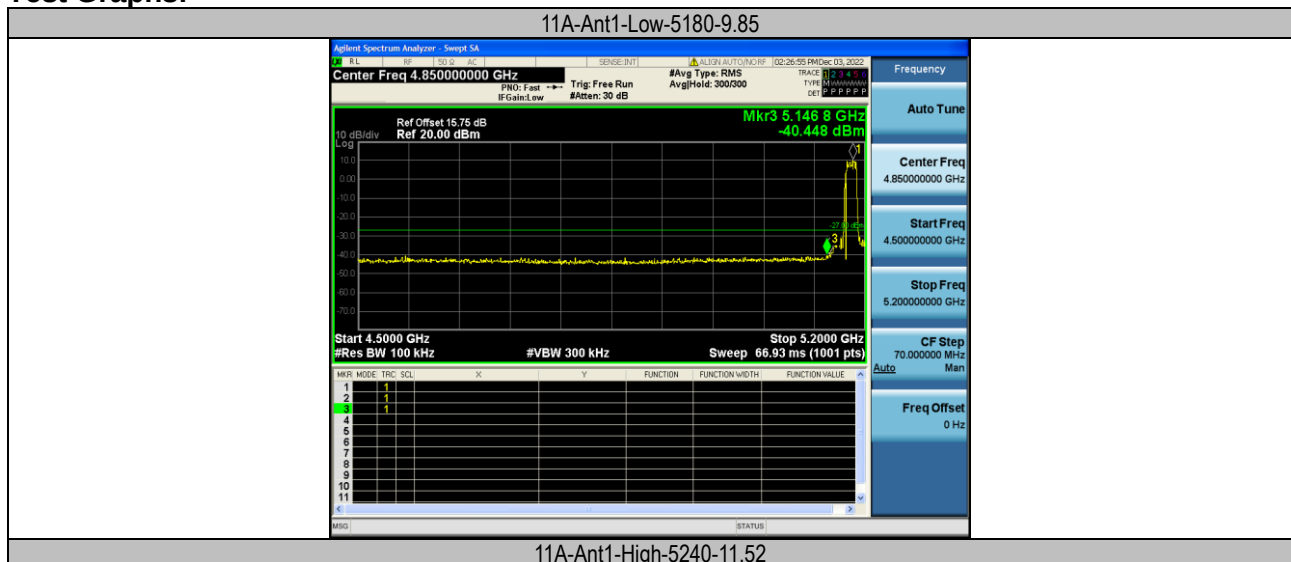
6.6 Band edge measurements

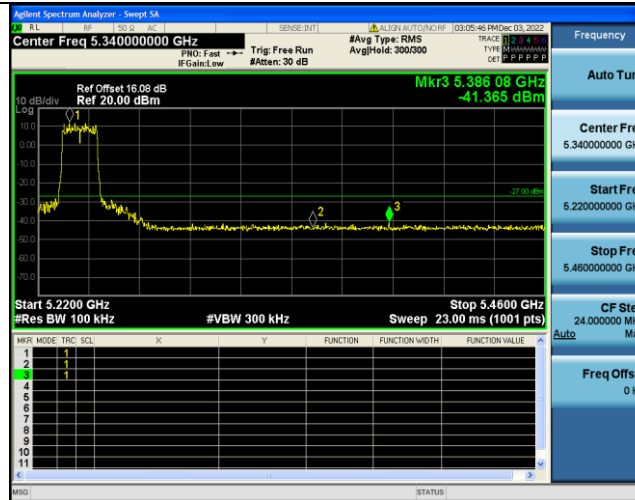
Test Result:

TestMode	Antenna	ChName	Frequency[MHz]	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	Low	5180	-40.45	≤-27	PASS
11A	Ant1	High	5240	-41.37	≤-27	PASS
11A	Ant2	Low	5180	-36.05	≤-27	PASS
11A	Ant2	High	5240	-41.38	≤-27	PASS

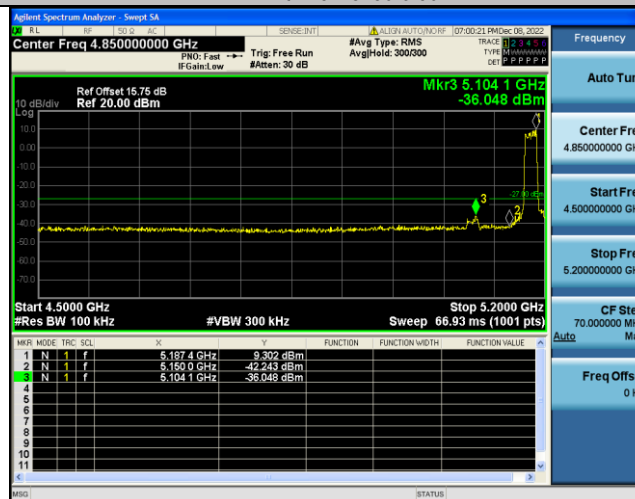
TestMode	Antenna	ChName	Frequency[M Hz]	FreqRange [MHz]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	Low	5745	5720~5725	-28.35	≤26.83	PASS
11A	Ant1	Low	5745	5700~5720	-33.12	≤15.50	PASS
11A	Ant1	Low	5745	5650~5700	-42.78	≤-18.79	PASS
11A	Ant1	Low	5745	5760~5650	-44.65	≤-27	PASS
11A	Ant1	High	5825	5850~5855	-34.58	≤17.64	PASS
11A	Ant1	High	5825	5855~5875	-37.8	≤10.02	PASS
11A	Ant1	High	5825	5875~5925	-41.69	≤-1.98	PASS
11A	Ant1	High	5825	5925~5935	-42.72	≤-27	PASS
11A	Ant2	Low	5745	5720~5725	-31.5	≤26.83	PASS
11A	Ant2	Low	5745	5700~5720	-36.63	≤15.59	PASS
11A	Ant2	Low	5745	5650~5700	-43.25	≤-21.42	PASS
11A	Ant2	Low	5745	5760~5650	-42.87	≤-27	PASS
11A	Ant2	High	5825	5850~5855	-35.43	≤17.03	PASS
11A	Ant2	High	5825	5855~5875	-40.73	≤12.25	PASS
11A	Ant2	High	5825	5875~5925	-41.72	≤-16.67	PASS
11A	Ant2	High	5825	5925~5935	-42.63	≤-27	PASS

Test Graphs:





11A-Ant2-Low-5180-9.30



11A-Ant2-High-5240-10.38



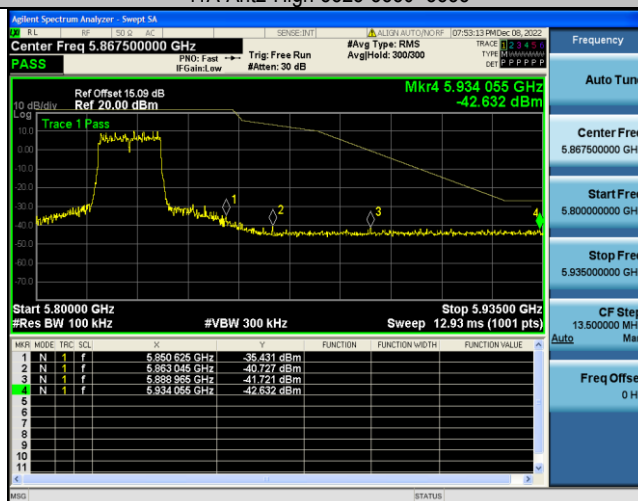


Test plots B4:





11A-Ant2-High-5825-5850~5855





6.7 Restricted Band

Test Requirement : FCC Part15 E Section 15.407(b)

Test site : Measurement Distance: 3m

Test Limit :

Frequency	Limit (dBuV/m @3m)	Remark
Above 1GHz	74	Peak Value
	54	Average Value

Test Procedure:

1. The EUT was placed on a styrofoam table which is 1.5m above ground plane.
2. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room



Test Result:

The worst case data ANT 1:

Worst case mode:		802.11a(6Mbps)		Test channel:		36		
NO.	Freq. [MHz]	level [dBμV/m]	Factor [dB]	Emission level [dBμV/m]	Limit [dBμV/m]	Over [dB]	Polarity	Detector Type
1	5150	50.95	6.53	57.48	74	-16.52	H	Peak
2	5150	40.6	6.53	47.13	54	-6.87	H	Average
3	5150	49.17	6.53	55.7	74	-18.3	V	Peak
4	5150	40.29	6.53	46.82	54	-7.18	V	Average

Worst case mode:		802.11a(6Mbps)		Test channel:		48		
NO.	Freq. [MHz]	level [dBμV/m]	Factor [dB]	Emission level [dBμV/m]	Limit [dBμV/m]	Over [dB]	Polarity	Detector Type
1	5250	51.28	6.56	57.84	74	-16.16	H	Peak
2	5250	41.11	6.56	47.67	54	-6.33	H	Average
3	5250	52.34	6.56	58.9	74	-15.1	V	Peak
4	5250	40.24	6.56	46.8	54	-7.2	V	Average