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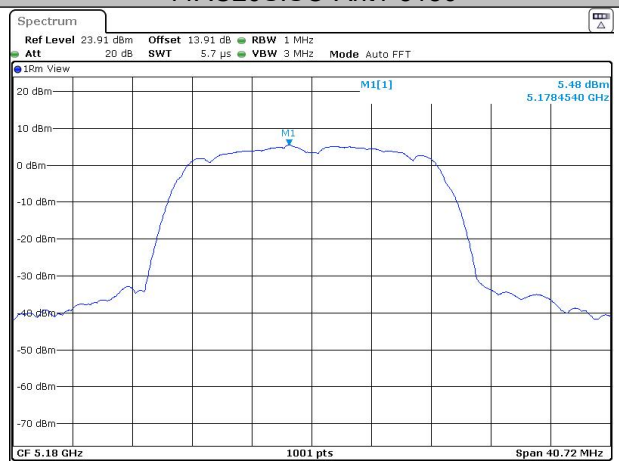

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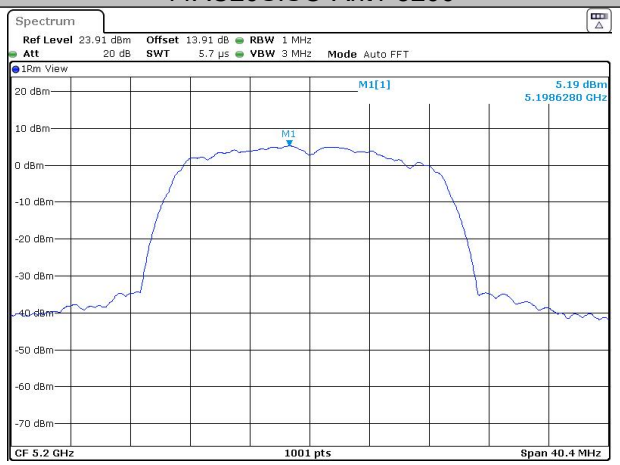

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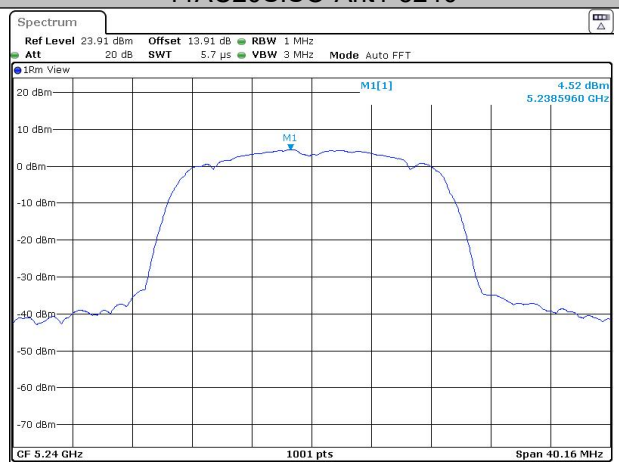

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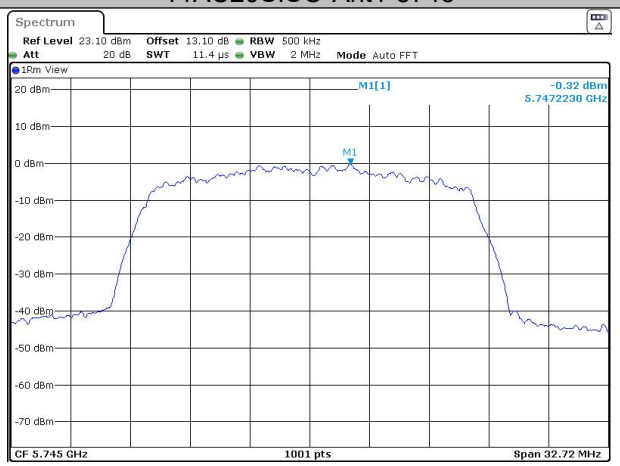

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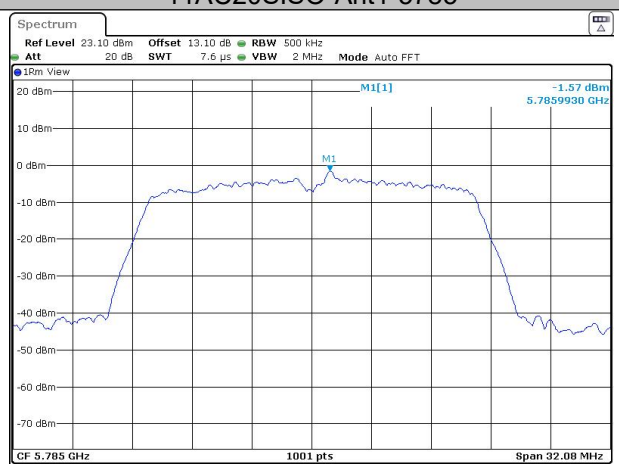

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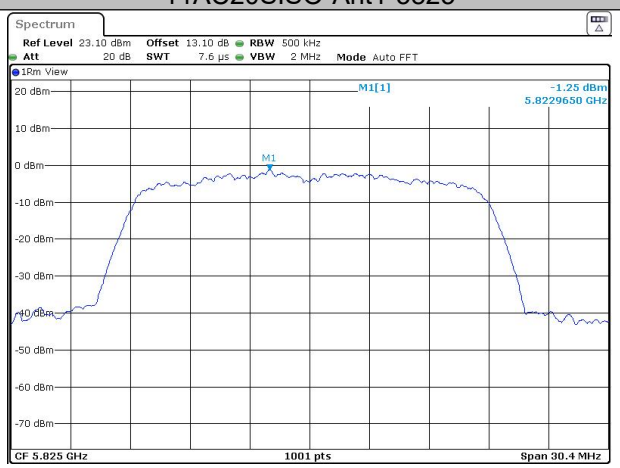

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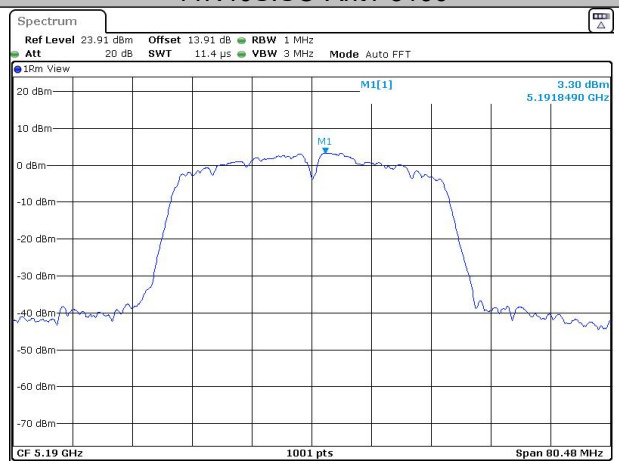

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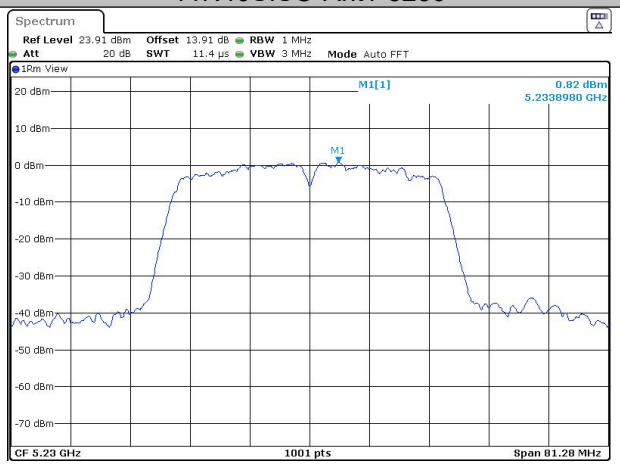

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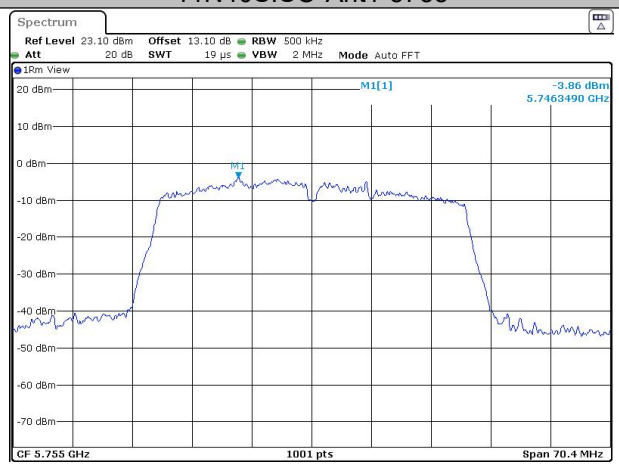

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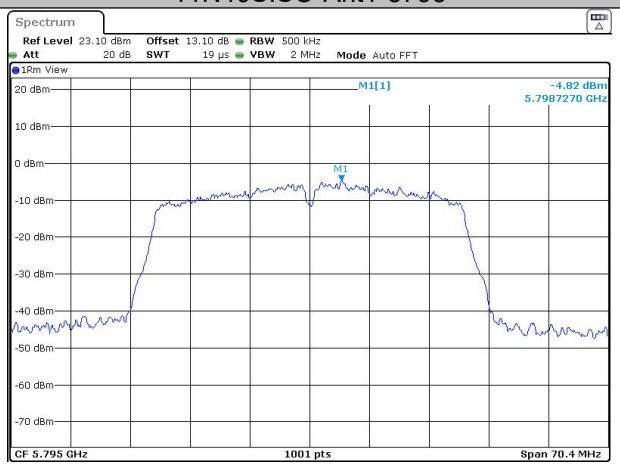

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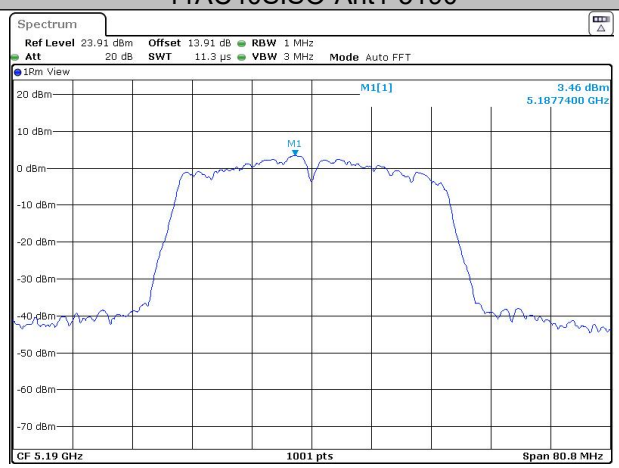

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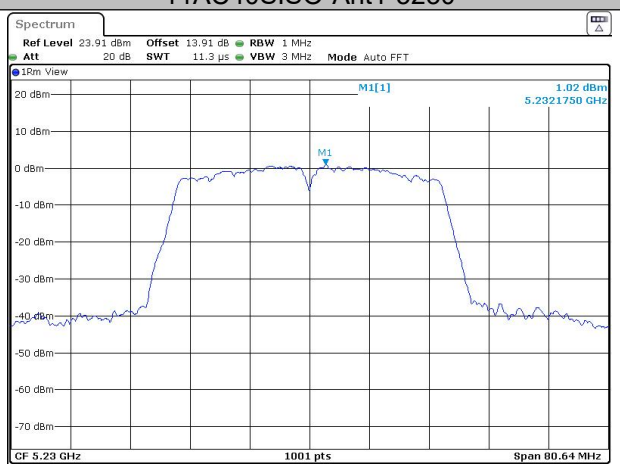

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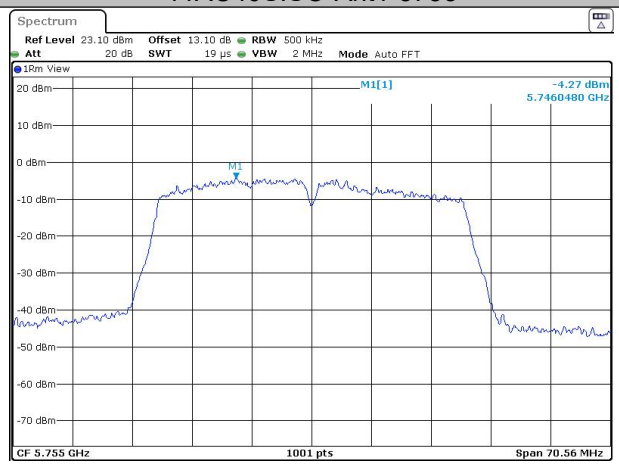	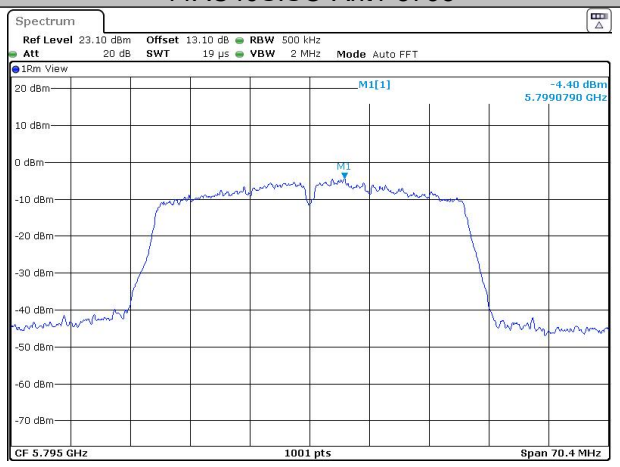
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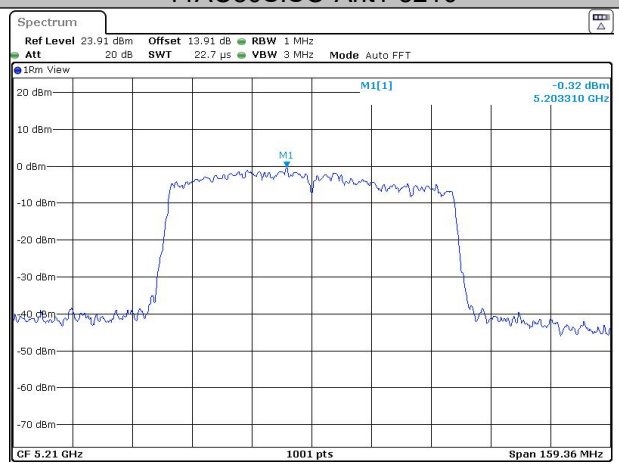
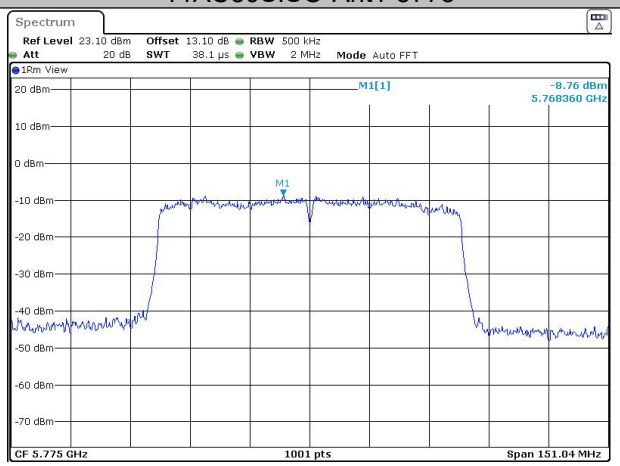
	

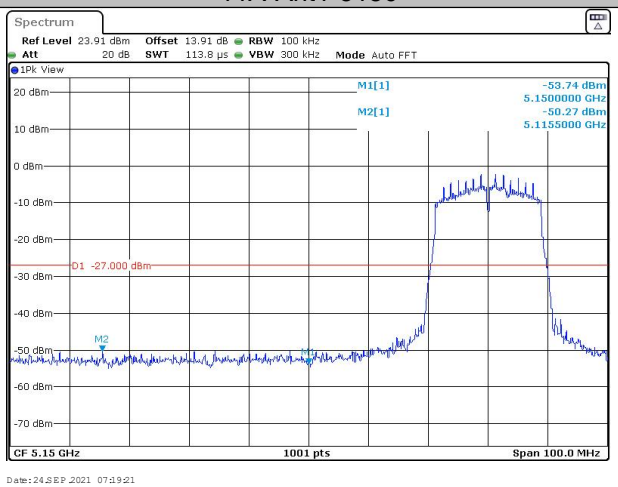
Appendix D): Band Edge Measurements

Result Table

Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
11A	Ant1	5180	-50.27		PASS
11A	Ant1	5240	-50.15		PASS
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			Below 5715	5715-5725	
11A	Ant1	5745	-51.41	-51.17	PASS
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			5850-5860	Above 5860	
11A	Ant1	5825	-51.17	-50.47	PASS
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
11N20	Ant1	5180	-49.47		PASS
11N20	Ant1	5240	-50.70		PASS
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			Below 5715	5715-5725	
11N20	Ant1	5745	-50.23	-51.05	PASS
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			5850-5860	Above 5860	
11N20	Ant1	5825	-49.75	-50.42	PASS
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
11N40	Ant1	5190	-48.28		PASS
11N40	Ant1	5230	-51.19		PASS
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			Below 5715	5715-5725	
11N40	Ant1	5755	-50.23	-51.05	PASS
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			5850-5860	Above 5860	
11N40	Ant1	5795	-49.75	-50.42	PASS

Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
11AC20	Ant1	5180	-50.41		PASS
11AC20	Ant1	5240	-51.31		PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			Below 5715	**5715-5725**	
11AC20	Ant1	5745	-51.17	-50.63	PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			5850-5860	**Above 5860**	
11AC20	Ant1	5825	-50.50	-50.52	PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
11AC40	Ant1	5190	-48.28		PASS
11AC40	Ant1	5230	-51.19		PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			Below 5715	**5715-5725**	
11AC40	Ant1	5755	-47.92	-50.32	PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			5850-5860	**Above 5860**	
11AC40	Ant1	5795	-50.09	-50.43	PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
11AC80	Ant1	5210	-48.95		PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			Below 5715	**5715-5725**	
11AC80	Ant1	5775	-50.27	-50.12	PASS

11A-Ant1-5180



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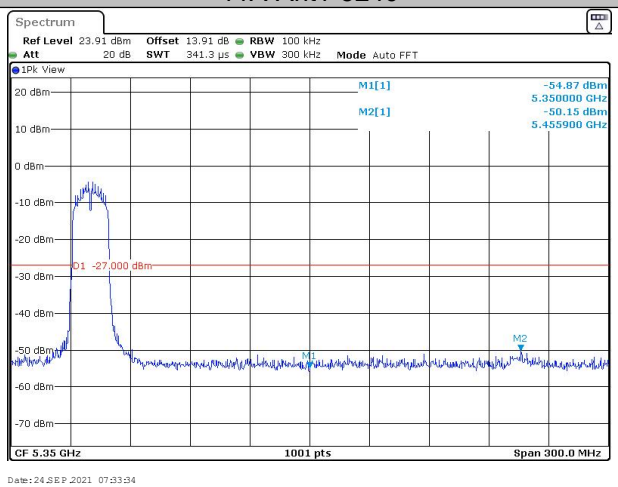

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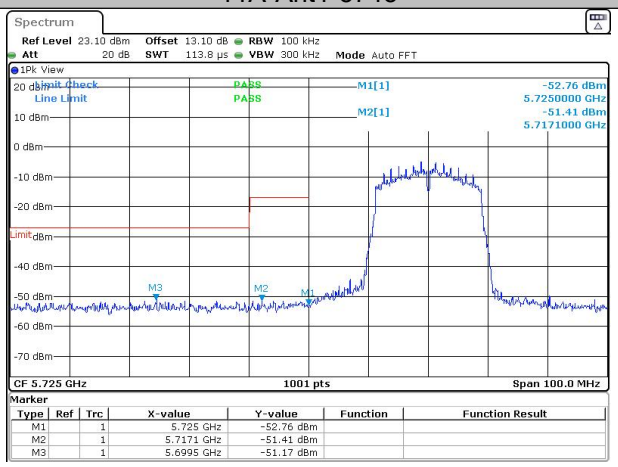

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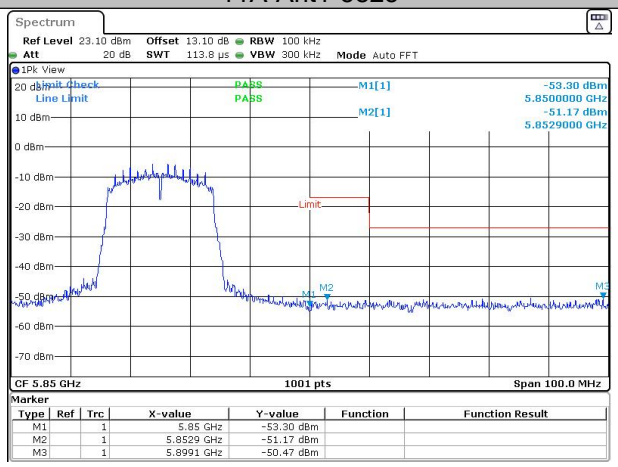

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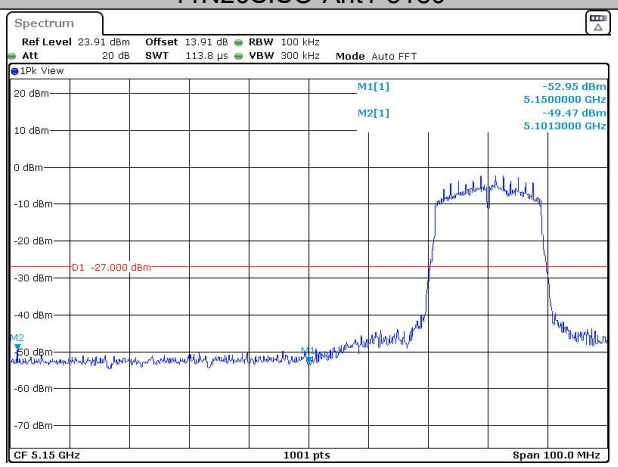

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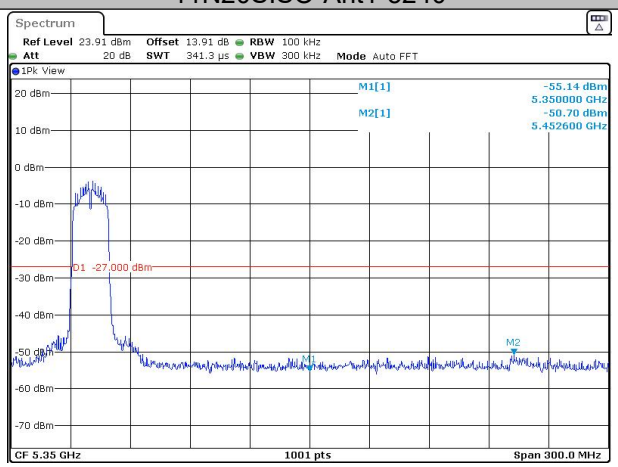

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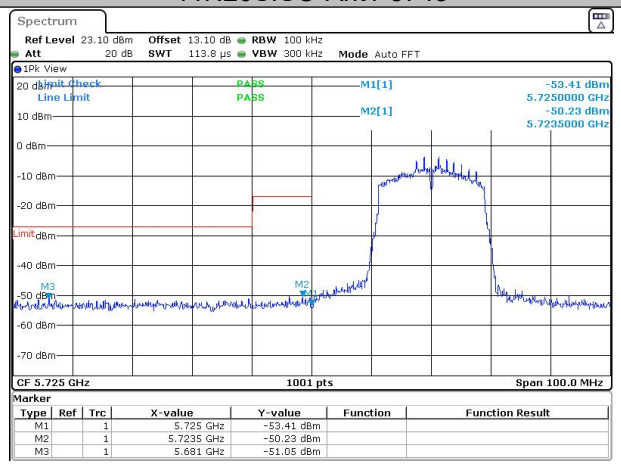

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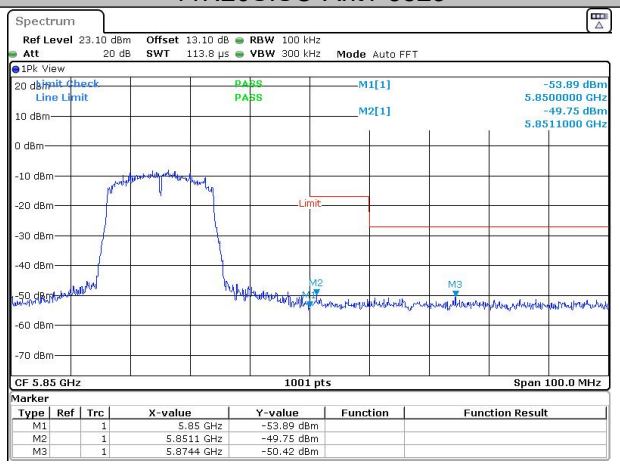

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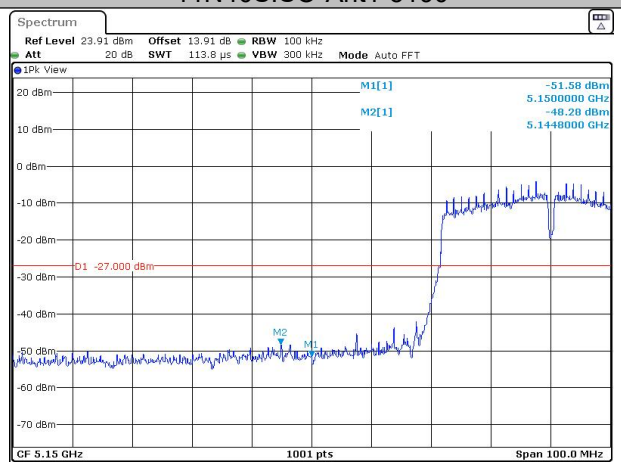

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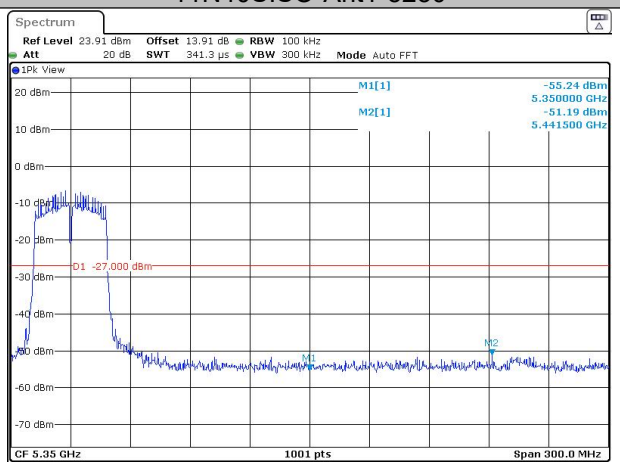

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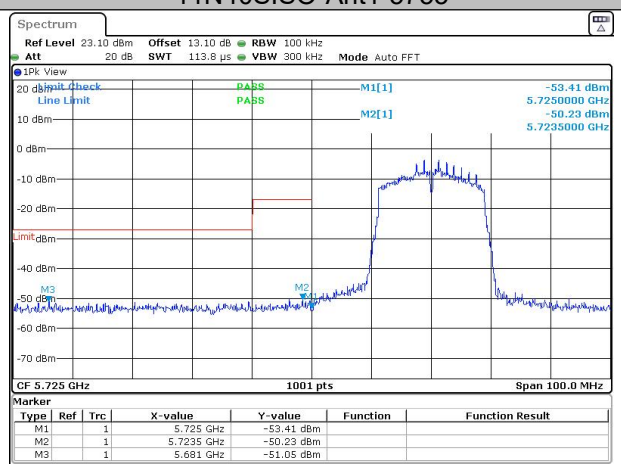

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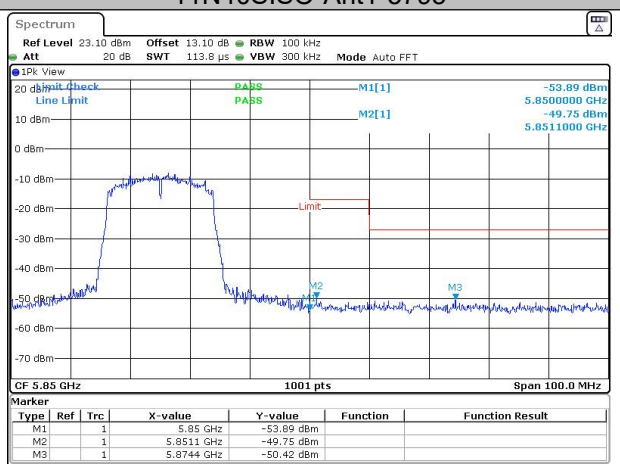

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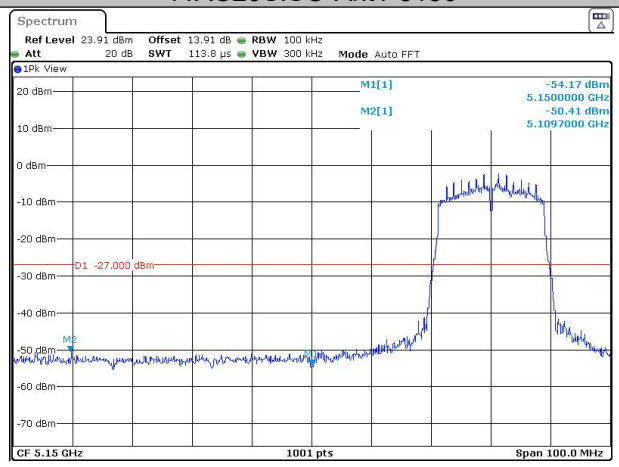

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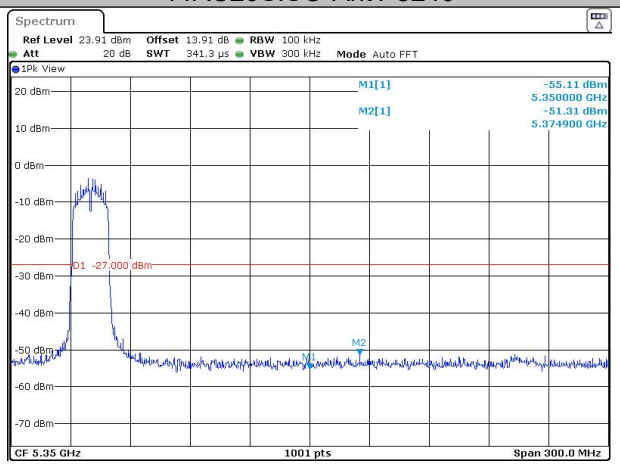

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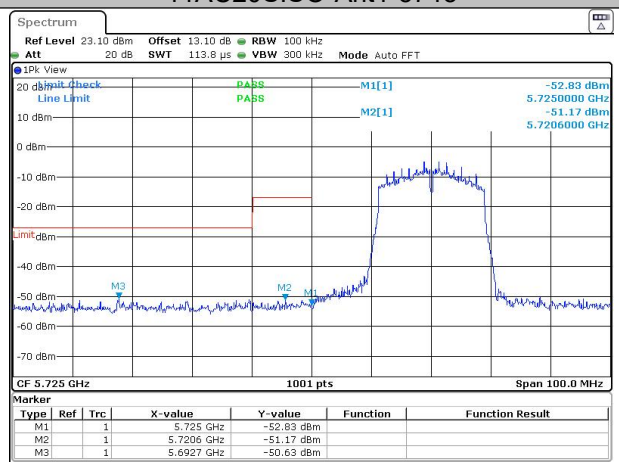

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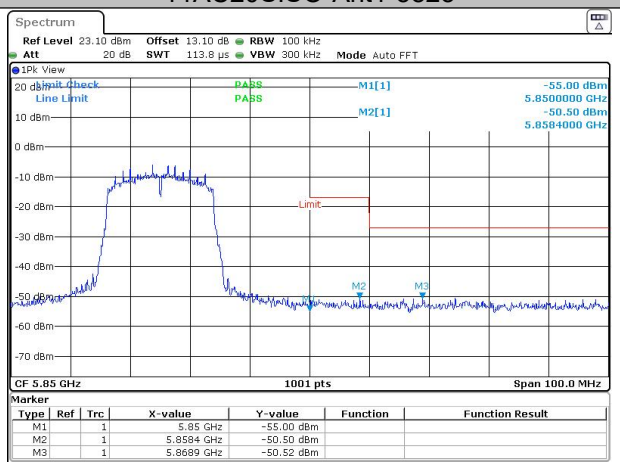

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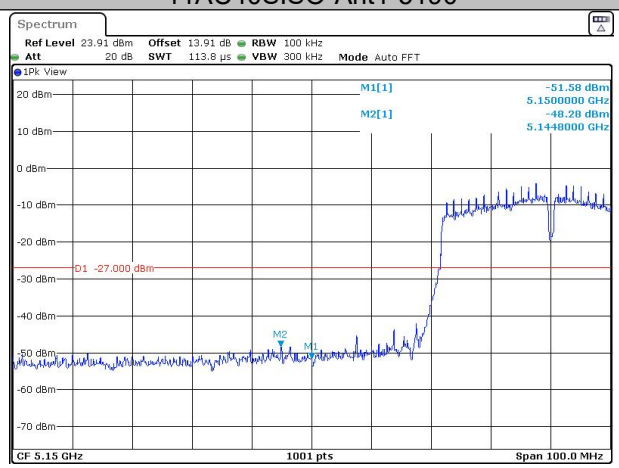

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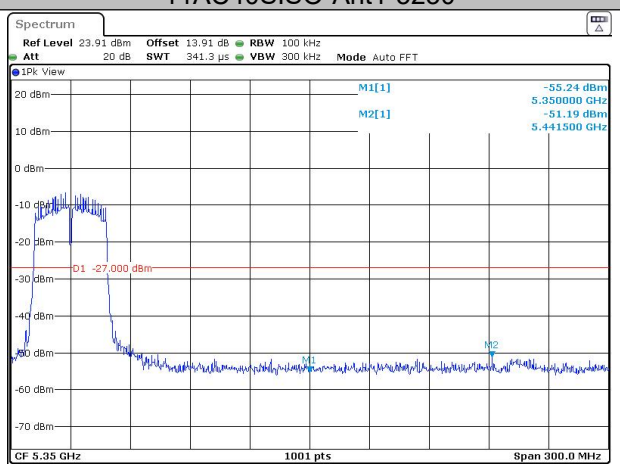

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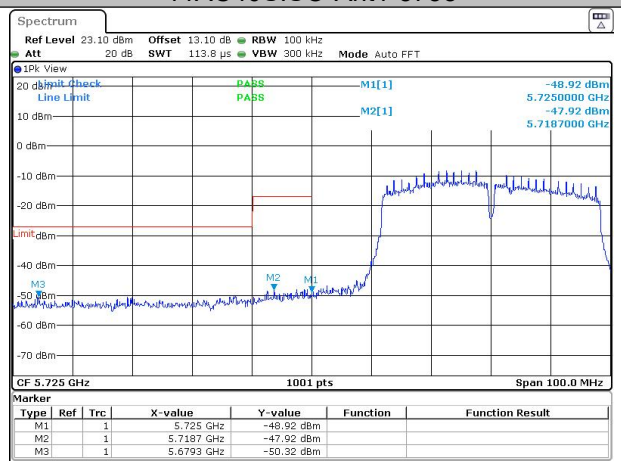	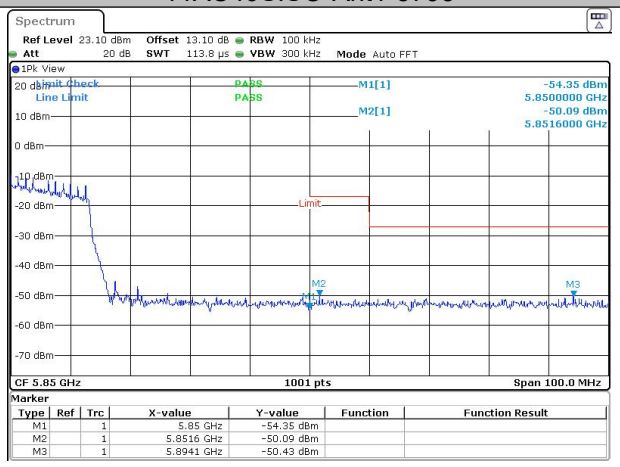
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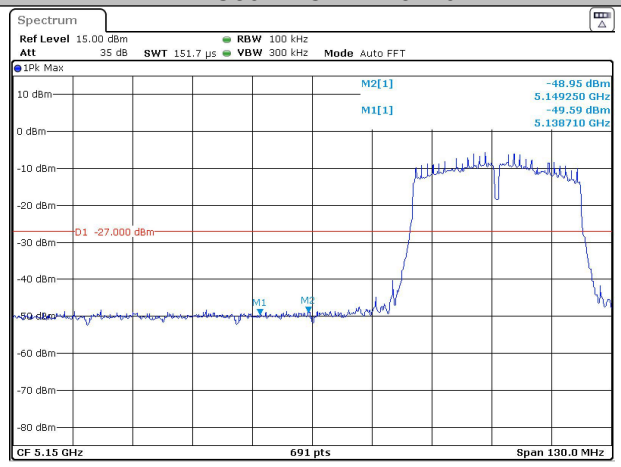
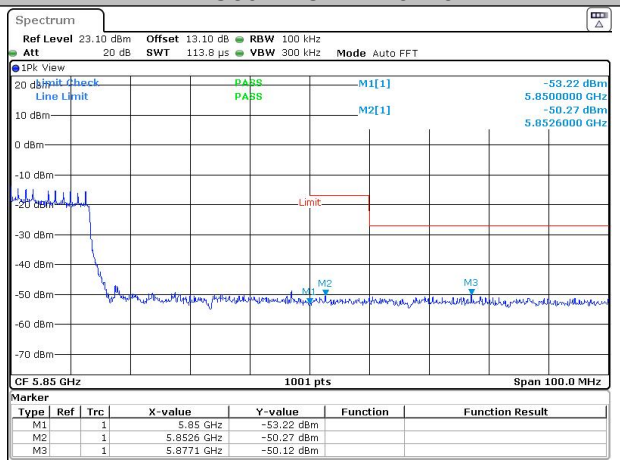
	

Appendix E): Frequency Stability

Measurement Data

Frequency Stability Versus Temp.			
Operating Frequency: 5240 MHz			
Temp (℃)	Volta ge	Measured Frequency (MHz)	Frequency Drift (ppm)
50	VN	5240.03	5.72519
40		5240.02	3.81679
30		5240.01	1.90840
20		5240.02	3.81679
10		5240.02	3.81679
0		5240.01	1.90840
-10		5240.02	3.81679
-20		5240.03	5.72519

Frequency Stability Versus Temp.			
Operating Frequency: 5210 MHz			
Temp.	Volta ge	Measured Frequency (MHz)	Frequency Drift (ppm)
TN	VL	5210.00	0.00000
	VN	5210.03	5.75816
	VH	5210.02	3.83877

Note: All the modulation and channels had been tested, but only the worst data recorded in the report.

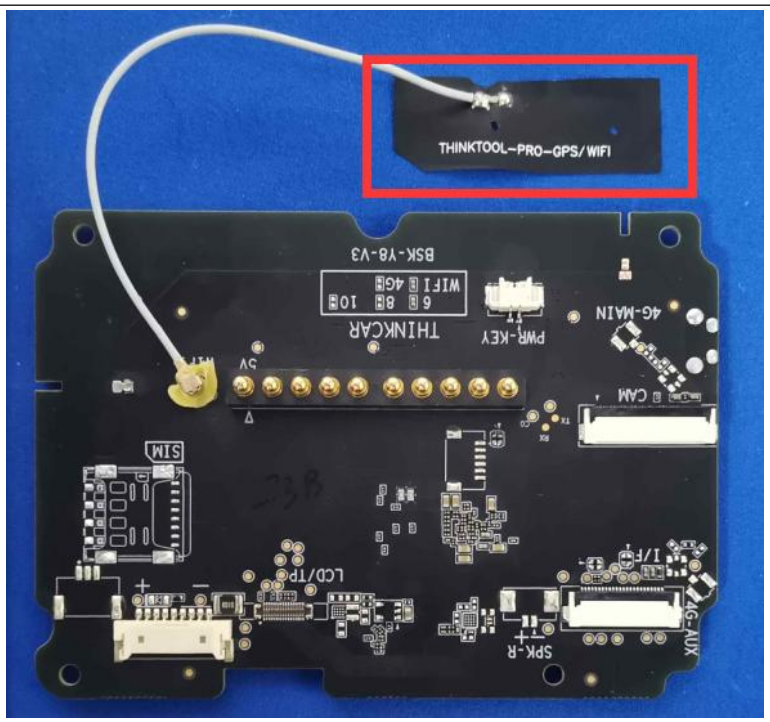
Appendix F): Antenna Requirement

15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.407(a)(1) (2) requirement:

The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:	
The antenna is internal antenna with ipex connector.The best case gain of the 5G WiFi antenna is 1.52dBi@Band 1, 2.05dBi@Band 4.	

Appendix G): Operation in the absence of information to the transmit

15.407(c) requirement: The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.
Operation in the absence of information to the transmit
While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (manufacturer declare)

Appendix H): AC Power Line Conducted Emission

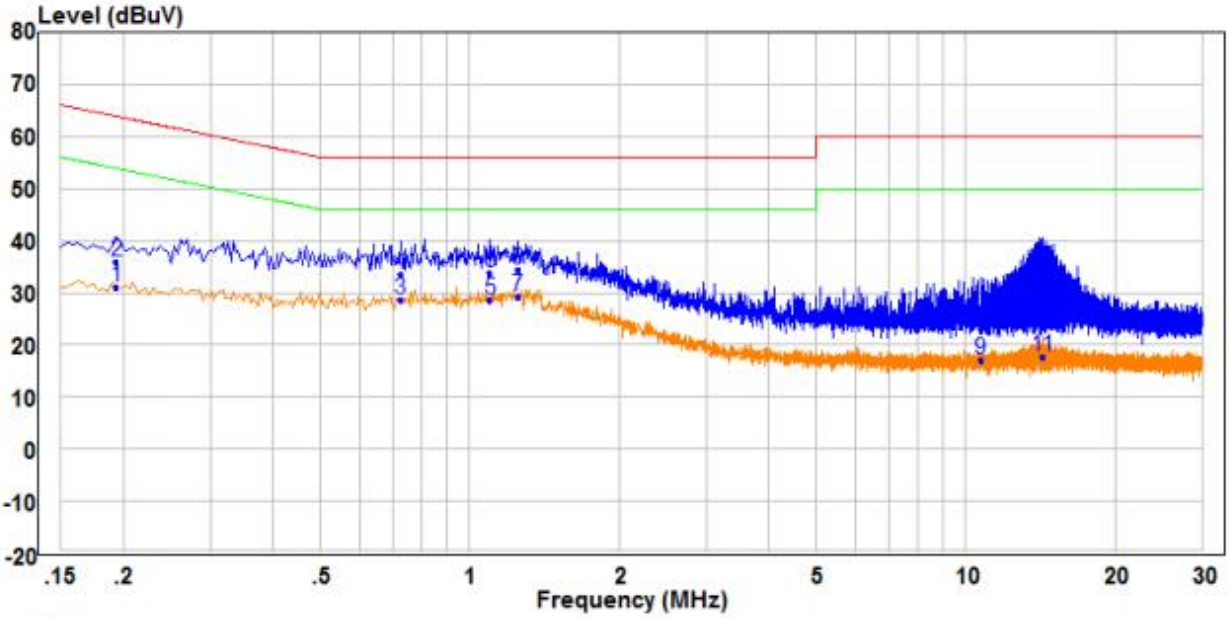
<table>
<tr><td>Test Procedure:</td><td>Test frequency range :150KHz-30MHz
1)The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr>
<tr><th>Quasi-peak</th><th>Average</th></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.
NOTE : The lower limit is applicable at the transition frequency</td></tr>
</table>

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

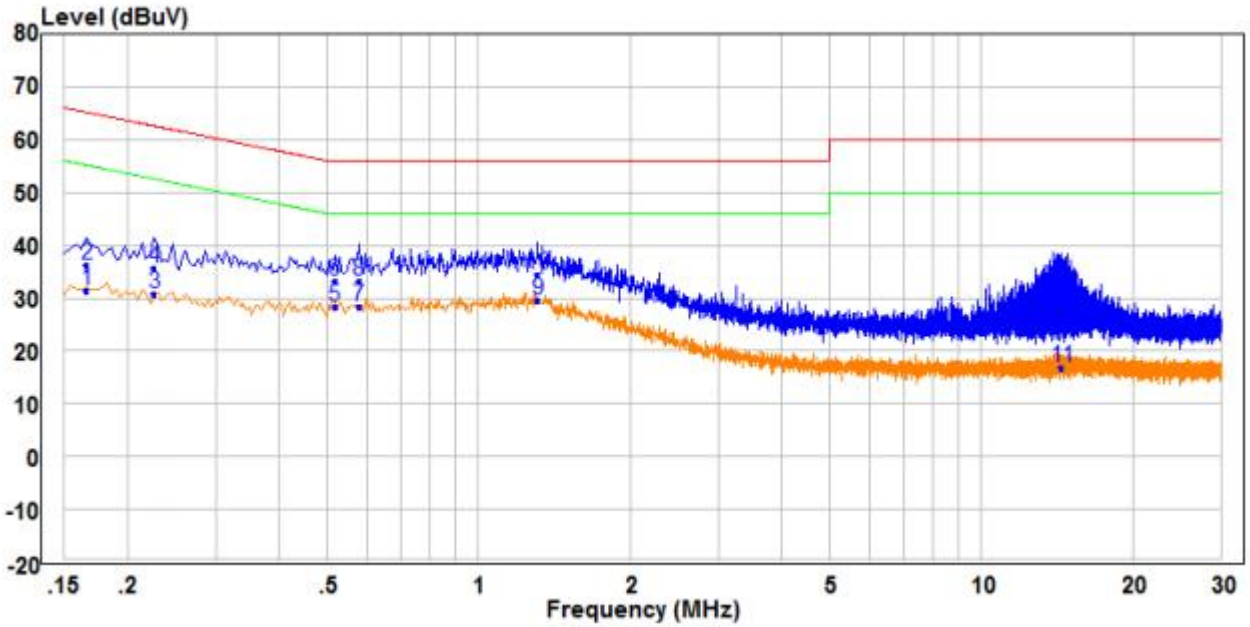
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.194	21.53	9.49	31.02	53.86	-22.84	Average	Line
2		0.194	26.39	9.49	35.88	63.86	-27.98	QP	Line
3		0.726	18.78	9.84	28.62	46.00	-17.38	Average	Line
4		0.726	23.80	9.84	33.64	56.00	-22.36	QP	Line
5		1.098	19.27	9.52	28.79	46.00	-17.21	Average	Line
6		1.098	24.38	9.52	33.90	56.00	-22.10	QP	Line
7	PP	1.250	19.68	9.52	29.20	46.00	-16.80	Average	Line
8	QP	1.250	24.87	9.52	34.39	56.00	-21.61	QP	Line
9		10.721	7.20	9.83	17.03	50.00	-32.97	Average	Line
10		10.721	13.17	9.83	23.00	60.00	-37.00	QP	Line
11		14.281	7.76	9.88	17.64	50.00	-32.36	Average	Line
12		14.281	20.80	9.88	30.68	60.00	-29.32	QP	Line

Neutral line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.166	22.03	9.48	31.51	55.16	-23.65	Average	Neutral
2		0.166	26.74	9.48	36.22	65.16	-28.94	QP	Neutral
3		0.226	21.19	9.48	30.67	52.60	-21.93	Average	Neutral
4		0.226	26.18	9.48	35.66	62.60	-26.94	QP	Neutral
5		0.518	18.78	9.61	28.39	46.00	-17.61	Average	Neutral
6		0.518	23.59	9.61	33.20	56.00	-22.80	QP	Neutral
7		0.578	18.61	9.69	28.30	46.00	-17.70	Average	Neutral
8		0.578	23.52	9.69	33.21	56.00	-22.79	QP	Neutral
9	PP	1.310	19.90	9.72	29.62	46.00	-16.38	Average	Neutral
10	QP	1.310	24.70	9.72	34.42	56.00	-21.58	QP	Neutral
11		14.437	6.99	9.93	16.92	50.00	-33.08	Average	Neutral
12		14.437	17.76	9.93	27.69	60.00	-32.31	QP	Neutral

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. The 6Mbps of rate of 802.11A_5240 is the worst case, only the worst data recorded in the report.

Appendix I): Restricted bands around fundamental frequency (Radiated Emission)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel , the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
j. Repeat above procedures until all frequencies measured was complete.

Limit:

Frequency	Limit (dBμV/m @3cm)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test plot as follows:

Worse case mode:		802.11a(6Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	56.61	-3.63	52.98	74	-21.02	peak	H
5150.00	42.63	-3.63	39.00	54	-15.00	AVG	H
5150.00	56.91	-3.63	53.28	74	-20.72	peak	V
5150.00	43.79	-3.63	40.16	54	-13.84	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	58.62	-3.59	55.03	74	-18.97	peak	H
5350.00	41.76	-3.59	38.17	54	-15.83	AVG	H
5350.00	57.20	-3.59	53.61	74	-20.39	peak	V
5350.00	44.31	-3.59	40.72	54	-13.28	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	56.50	-3.46	53.04	68.2	-15.16	peak	H
5738.38	92.93	-3.44	89.49	122.2	-32.71	peak	H
5650	56.66	-3.46	53.20	68.2	-15.00	peak	V
5742.65	94.20	-3.44	90.76	122.2	-31.44	peak	V

Worse case mode:		802.11a(6Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5824.10	93.80	-3.42	90.38	122.2	-31.82	peak	H
5925	42.03	-3.41	38.62	68.2	-29.58	peak	H
5827.03	92.96	-3.42	89.54	122.2	-32.66	peak	V
5925	44.11	-3.41	40.70	68.2	-27.50	peak	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	57.58	-3.63	53.95	74	-20.05	peak	H
5150.00	42.07	-3.63	38.44	54	-15.56	AVG	H
5150.00	57.34	-3.63	53.71	74	-20.29	peak	V
5150.00	42.12	-3.63	38.49	54	-15.51	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	55.84	-3.59	52.25	74	-21.75	peak	H
5350.00	43.90	-3.59	40.31	54	-13.69	AVG	H
5350.00	57.99	-3.59	54.40	74	-19.60	peak	V
5350.00	43.13	-3.59	39.54	54	-14.46	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	55.86	-3.46	52.40	68.2	-15.80	peak	H
5738.25	95.19	-3.44	91.75	122.2	-30.45	peak	H
5650	58.29	-3.46	54.83	68.2	-13.37	peak	V
5742.95	93.15	-3.44	89.71	122.2	-32.49	peak	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5823.48	94.28	-3.42	90.86	122.2	-31.34	peak	H
5925	44.36	-3.41	40.95	68.2	-27.25	peak	H
5820.43	93.88	-3.42	90.46	122.2	-31.74	peak	V
5925	44.45	-3.41	41.04	68.2	-27.16	peak	V

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		38	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150	58.51	-3.63	54.88	74	-19.12	peak	H
5150	41.73	-3.63	38.10	54	-15.90	AVG	H
5150	56.04	-3.63	52.41	74	-21.59	peak	V
5150	44.04	-3.63	40.41	54	-13.59	AVG	V

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		46	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	57.27	-3.59	53.68	74	-20.32	peak	H
5350.00	44.11	-3.59	40.52	54	-13.48	AVG	H
5350.00	55.79	-3.59	52.20	74	-21.80	peak	V
5350.00	41.99	-3.59	38.40	54	-15.60	AVG	V

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		151	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	55.89	-3.46	52.43	68.2	-15.77	peak	H
5757.68	93.52	-3.44	90.08	122.2	-32.12	peak	H
5650	57.35	-3.46	53.89	68.2	-14.31	peak	V
5750.47	94.70	-3.44	91.26	122.2	-30.94	peak	V

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		159	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5786.79	94.21	-3.42	90.79	122.2	-31.41	peak	H
5925	42.89	-3.41	39.48	68.2	-28.72	peak	H
5786.23	93.12	-3.42	89.70	122.2	-32.50	peak	V
5925	43.18	-3.41	39.77	68.2	-28.43	peak	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	56.70	-3.63	53.07	74	-20.93	peak	H
5150.00	44.17	-3.63	40.54	54	-13.46	AVG	H
5150.00	58.57	-3.63	54.94	74	-19.06	peak	V
5150.00	44.64	-3.63	41.01	54	-12.99	AVG	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	56.20	-3.59	52.61	74	-21.39	peak	H
5350.00	43.43	-3.59	39.84	54	-14.16	AVG	H
5350.00	57.43	-3.59	53.84	74	-20.16	peak	V
5350.00	44.46	-3.59	40.87	54	-13.13	AVG	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	56.25	-3.46	52.79	68.2	-15.41	peak	H
5738.69	94.76	-3.44	91.32	122.2	-30.88	peak	H
5650	58.40	-3.46	54.94	68.2	-13.26	peak	V
5743.37	94.21	-3.44	90.77	122.2	-31.43	peak	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5820.70	94.16	-3.42	90.74	122.2	-31.46	peak	H
5925	43.02	-3.41	39.61	68.2	-28.59	peak	H
5827.28	93.36	-3.42	89.94	122.2	-32.26	peak	V
5925	42.31	-3.41	38.90	68.2	-29.30	peak	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		38	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	56.00	-3.63	52.37	74	-21.63	peak	H
5150.00	44.50	-3.63	40.87	54	-13.13	AVG	H
5150.00	56.97	-3.63	53.34	74	-20.66	peak	V
5150.00	43.52	-3.63	39.89	54	-14.11	AVG	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		46	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	58.65	-3.59	55.06	74	-18.94	peak	H
5350.00	44.57	-3.59	40.98	54	-13.02	AVG	H
5350.00	56.40	-3.59	52.81	74	-21.19	peak	V
5350.00	42.38	-3.59	38.79	54	-15.21	AVG	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		151	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	55.80	-3.46	52.34	68.2	-15.86	peak	H
5750.13	94.61	-3.44	91.17	122.2	-31.03	peak	H
5650	55.74	-3.46	52.28	68.2	-15.92	peak	V
5751.61	93.54	-3.44	90.10	122.2	-32.10	peak	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		159	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5793.85	94.55	-3.42	91.13	122.2	-31.07	peak	H
5925	43.46	-3.41	40.05	68.2	-28.15	peak	H
5794.14	94.34	-3.42	90.92	122.2	-31.28	peak	V
5925	43.94	-3.41	40.53	68.2	-27.67	peak	V

Worse case mode:		802.11ac(VHT80)(29.3Mbps)		Test channel:		42	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	58.63	-3.63	55.00	74	-19.00	peak	H
5150.00	43.71	-3.63	40.08	54	-13.92	AVG	H
5150.00	56.98	-3.63	53.35	74	-20.65	peak	V
5150.00	41.82	-3.63	38.19	54	-15.81	AVG	V
5350.00	56.44	-3.59	52.85	74	-21.15	peak	H
5350.00	42.82	-3.59	39.23	54	-14.77	AVG	H
5350.00	57.55	-3.59	53.96	74	-20.04	peak	V
5350.00	44.16	-3.59	40.57	54	-13.43	AVG	V

Worse case mode:		802.11ac(VHT80)(29.3Mbps)		Test channel:		155	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	56.06	-3.46	52.60	68.2	-15.60	peak	H
5773.45	92.59	-3.44	89.15	122.2	-33.05	peak	H
5925	57.54	-3.46	54.08	68.2	-14.12	peak	H
5650	56.63	-3.41	53.22	68.2	-14.98	peak	V
5774.91	93.74	-3.42	90.32	122.2	-31.88	peak	V
5925	42.85	-3.41	39.44	68.2	-28.76	peak	V

Note:
1) Through Pre-scan transmitting mode with all kind of modulation and data rate, find the 6Mbps is the worst case of 802.11a; MCS0 is the worst case of 802.11n(20M)(40M); MCS0 is the worst case of 802.11ac(20M)(40M)(80M); and then Only the worst case is recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading - Correct Factor
Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix J): Radiated Spurious Emissions

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre)
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
j. Repeat above procedures until all frequencies measured was complete.

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBμV/cm)	Remark	Measurement distance (cm)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

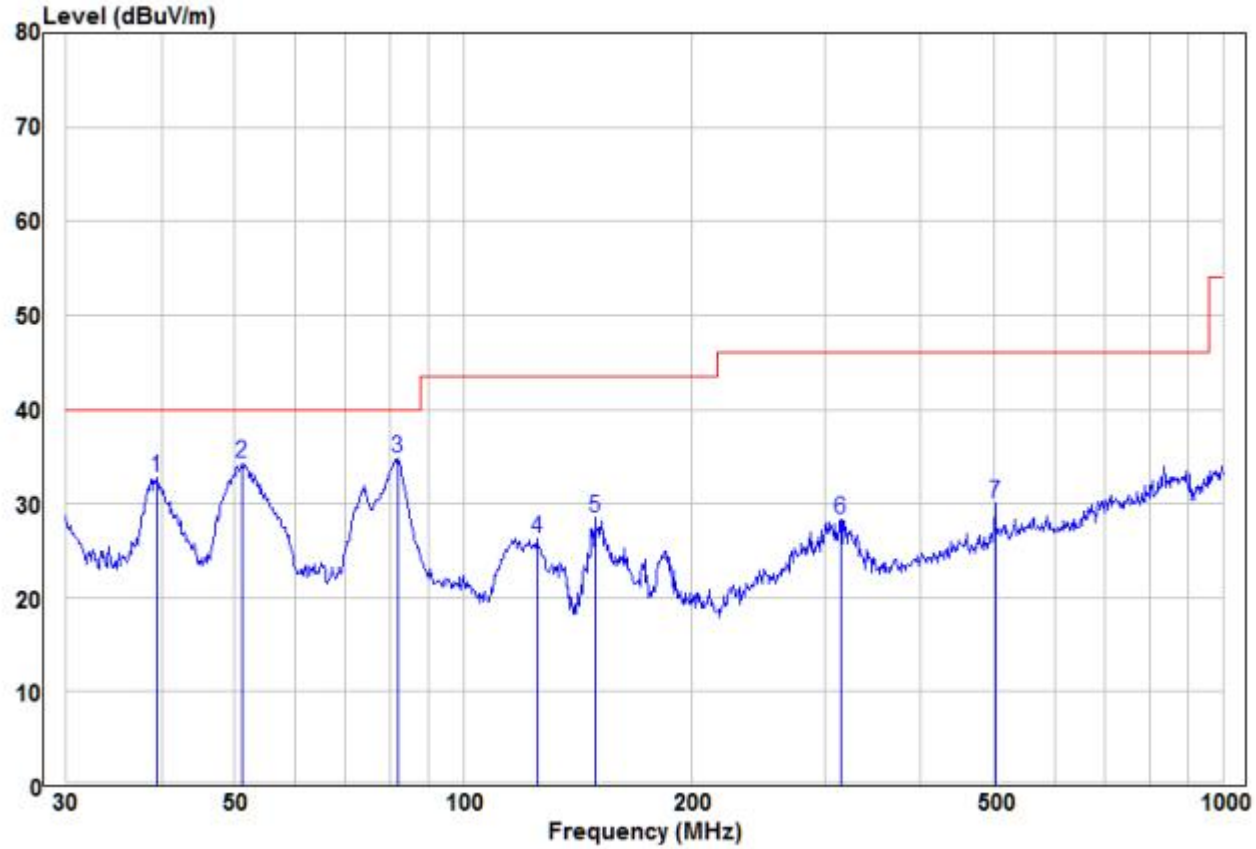
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test result: PASS

Test Data:

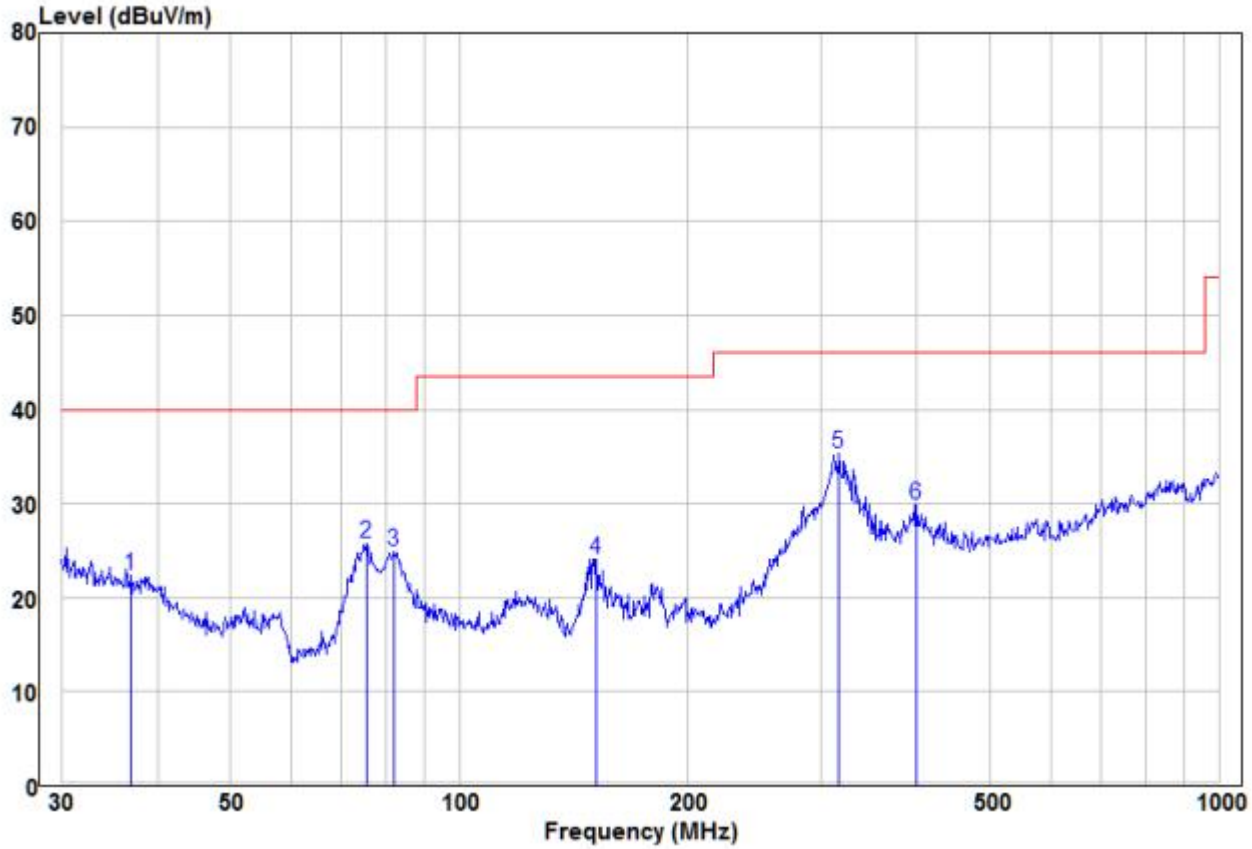
Radiated Emission below 1GHz

30MHz~1GHz		
Test mode:	Transmitting	Vertical



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	39.58	19.76	12.95	32.71	40.00	-7.29	Peak	VERTICAL
2	51.12	26.43	7.85	34.28	40.00	-5.72	Peak	VERTICAL
3 pp	82.07	25.03	9.83	34.86	40.00	-5.14	Peak	VERTICAL
4	125.01	15.77	10.51	26.28	43.50	-17.22	Peak	VERTICAL
5	148.96	19.99	8.43	28.42	43.50	-15.08	Peak	VERTICAL
6	314.38	14.28	14.08	28.36	46.00	-17.64	Peak	VERTICAL
7	501.18	11.66	18.29	29.95	46.00	-16.05	Peak	VERTICAL

Test mode:	Transmitting	Horizontal



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	36.90	8.37	13.92	22.29	40.00	-17.71	Peak	HORIZONTAL
2	75.45	16.72	9.04	25.76	40.00	-14.24	Peak	HORIZONTAL
3	82.07	15.14	9.83	24.97	40.00	-15.03	Peak	HORIZONTAL
4	151.60	15.72	8.36	24.08	43.50	-19.42	Peak	HORIZONTAL
5 pp	316.59	21.20	14.13	35.33	46.00	-10.67	Peak	HORIZONTAL
6	399.03	14.74	15.13	29.87	46.00	-16.13	Peak	HORIZONTAL

Transmitter Emission above 1GHz

Test mode:	802.11a(6Mbps)			Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
10480	50.24	2.31	52.55	74	-21.45	peak	H
10480	30.08	2.31	32.39	54	-21.61	AVG	H
15720	49.92	3.79	53.71	74	-20.29	peak	H
15720	29.58	3.79	33.37	54	-20.63	AVG	H
10480	48.97	2.31	51.28	74	-22.72	peak	V
10480	30.81	2.31	33.12	54	-20.88	AVG	V
15720	50.49	3.79	54.28	74	-19.72	peak	V
15720	30.51	3.79	34.30	54	-19.70	AVG	V

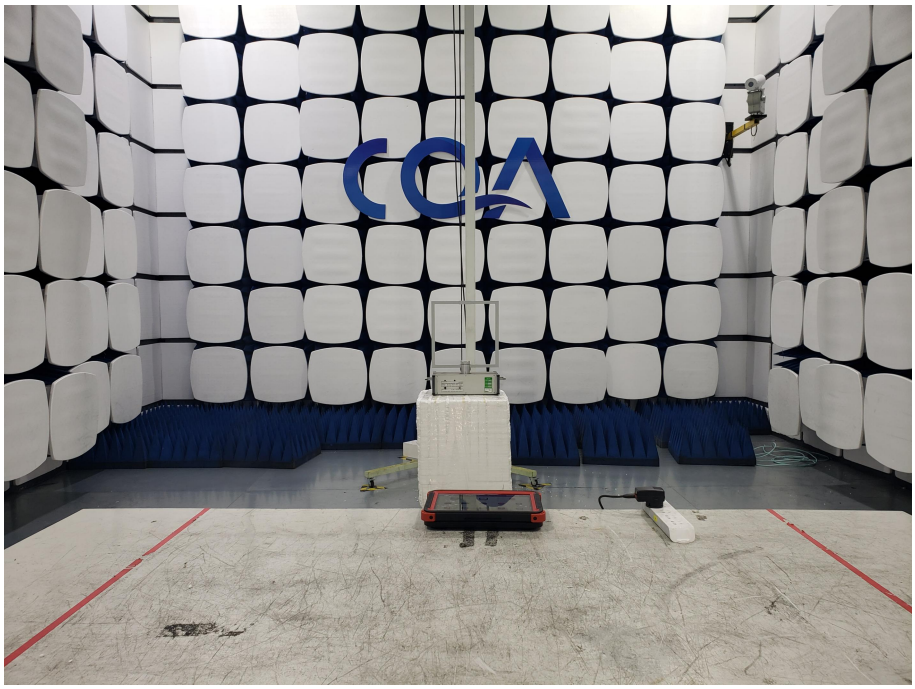
Remark:

1) The 6Mbps of rate of 802.11a at 48 channel is the worst case, only the worst data recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
3) Scan from 9kHz to 40GHz,The disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

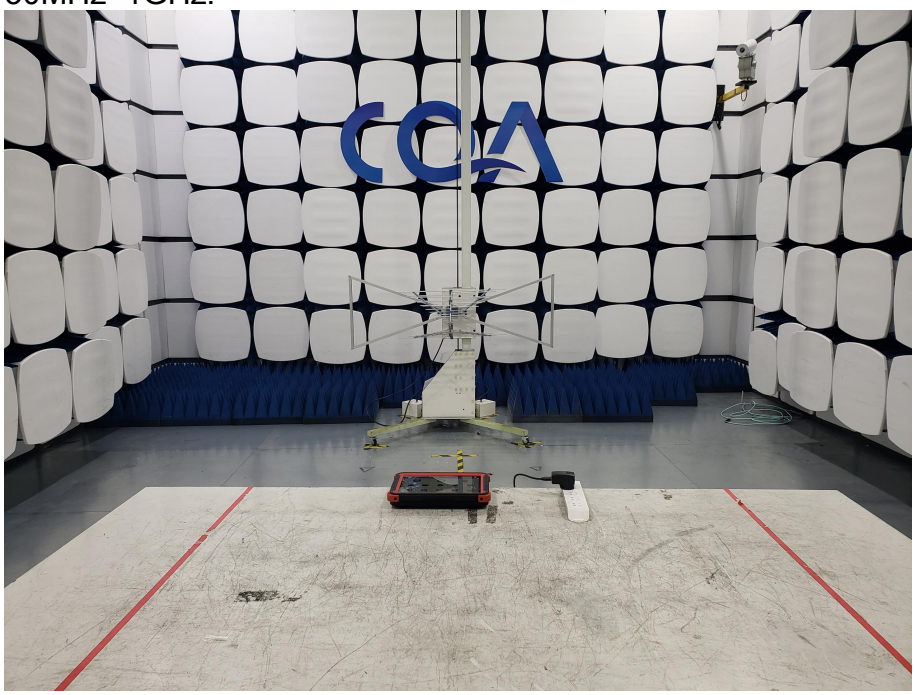
7 Photographs - EUT Test Setup

7.1 Radiated Spurious Emission

9kHz~30MHz:

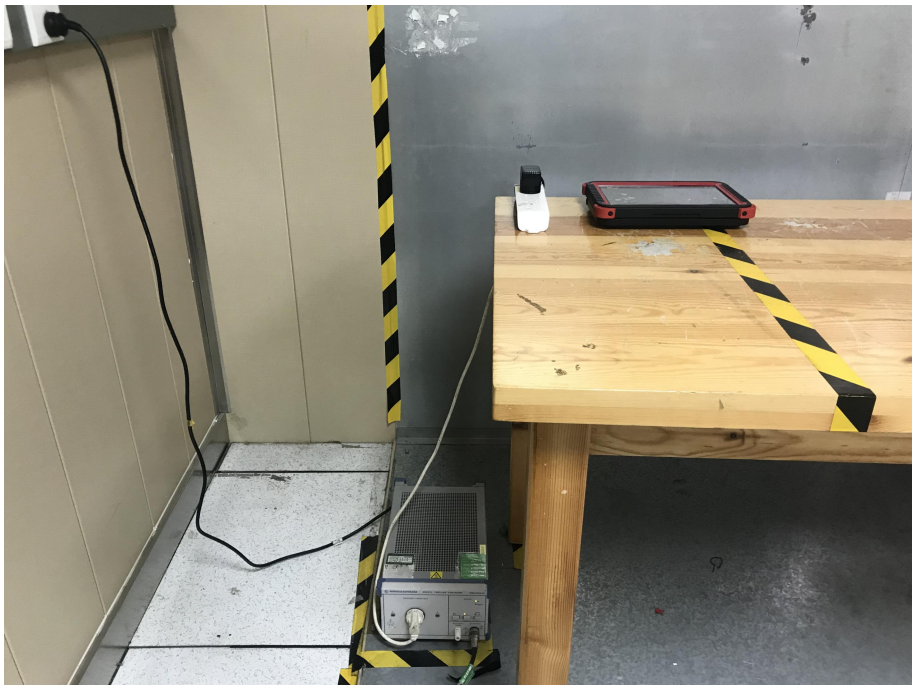


30MHz~1GHz:



Above 1GHz:

7.2 Conducted Emission



8 Photographs - EUT Constructional Details

Refer to PHOTOGRAPHS OF EUT for CQASZ20240801587E-01.

*** End of Report ***