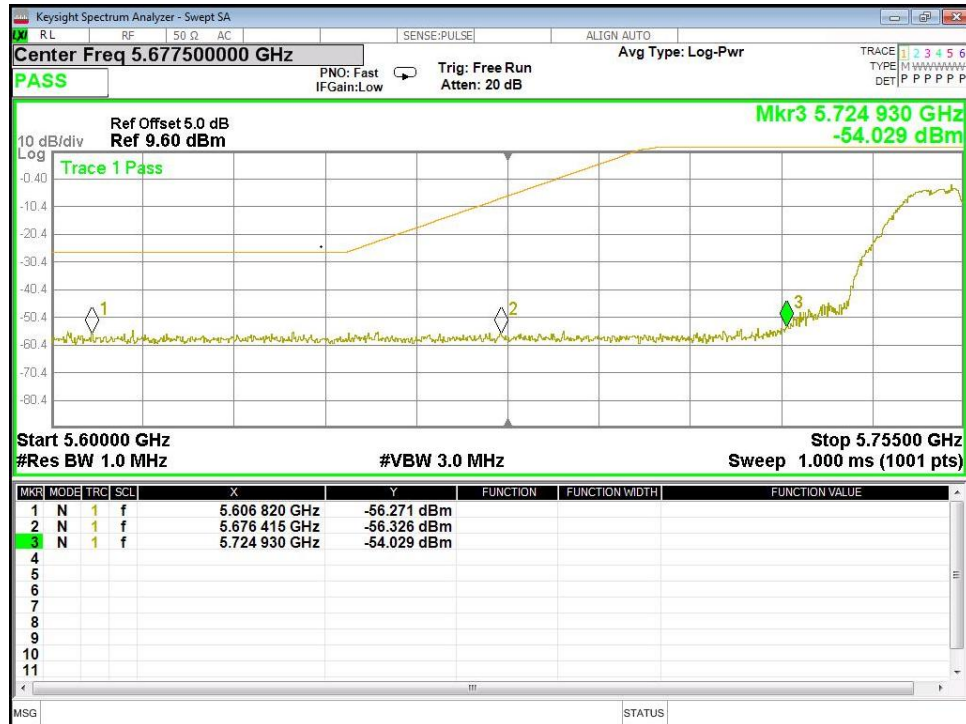
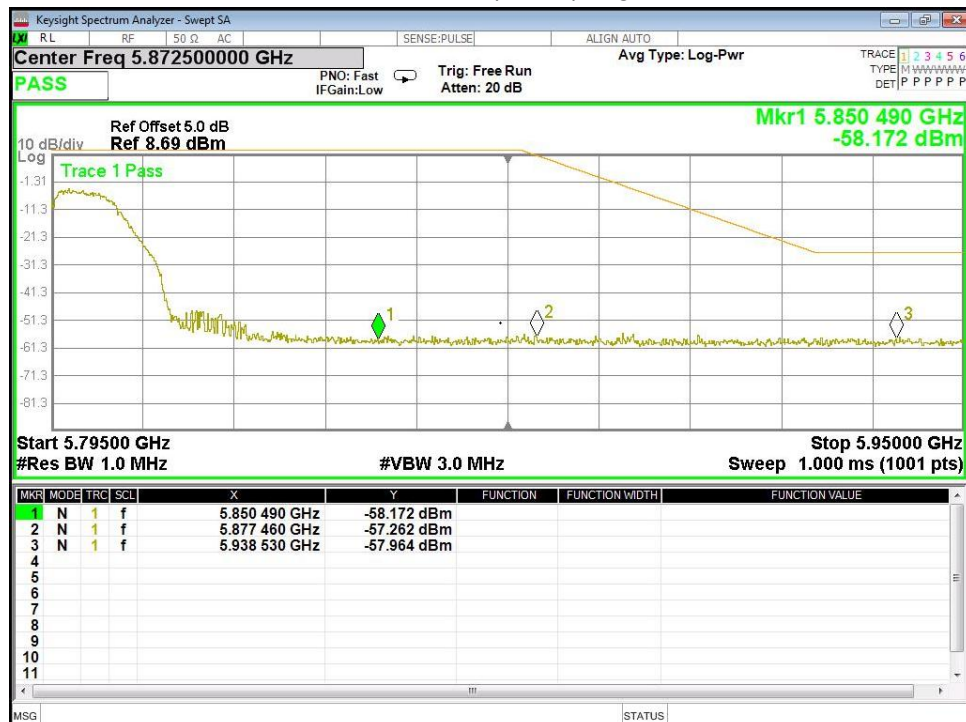


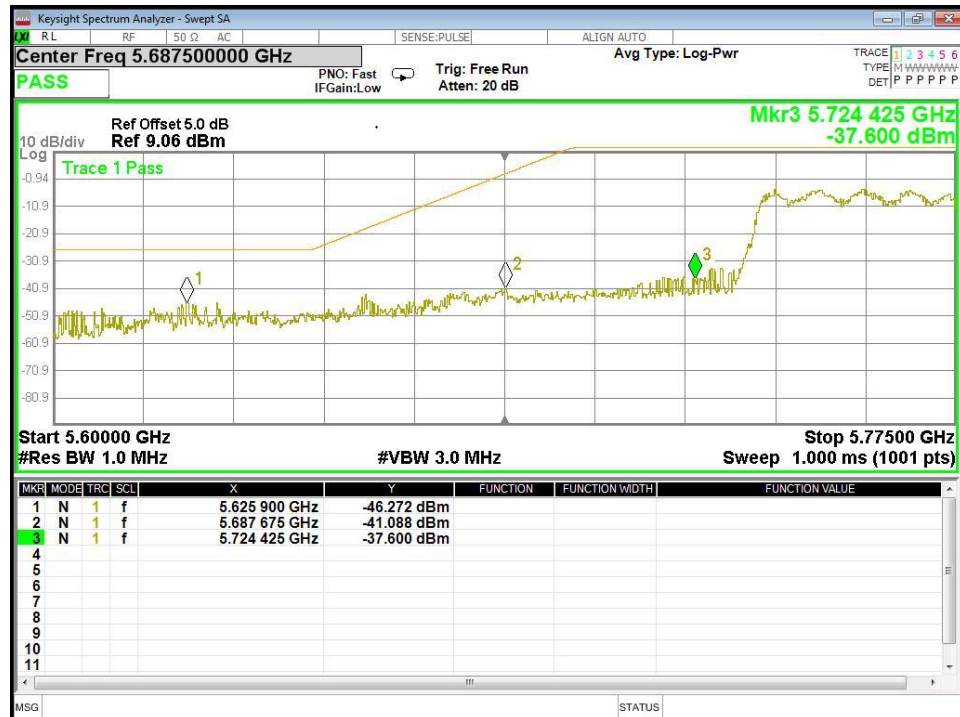
U-NII-3 802.11ac(HT40) left side



U-NII-3 802.11ac(HT40) Right side



U-NII-3 802.11ac(HT80) left side

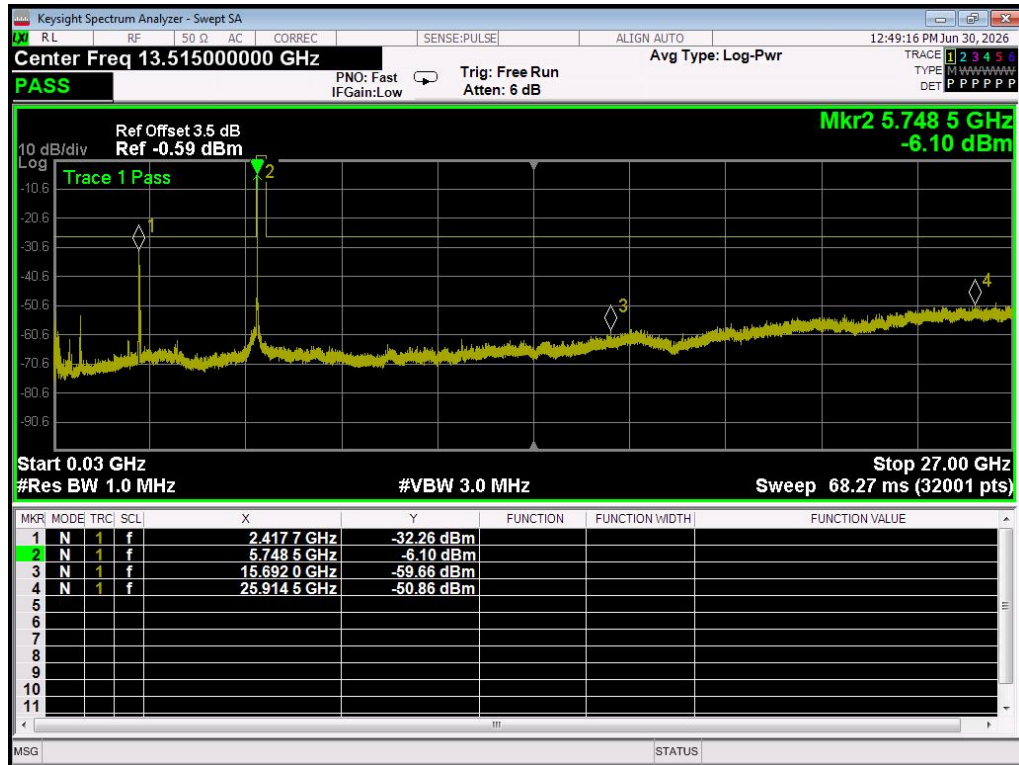


U-NII-3 802.11ac(HT80) Right side

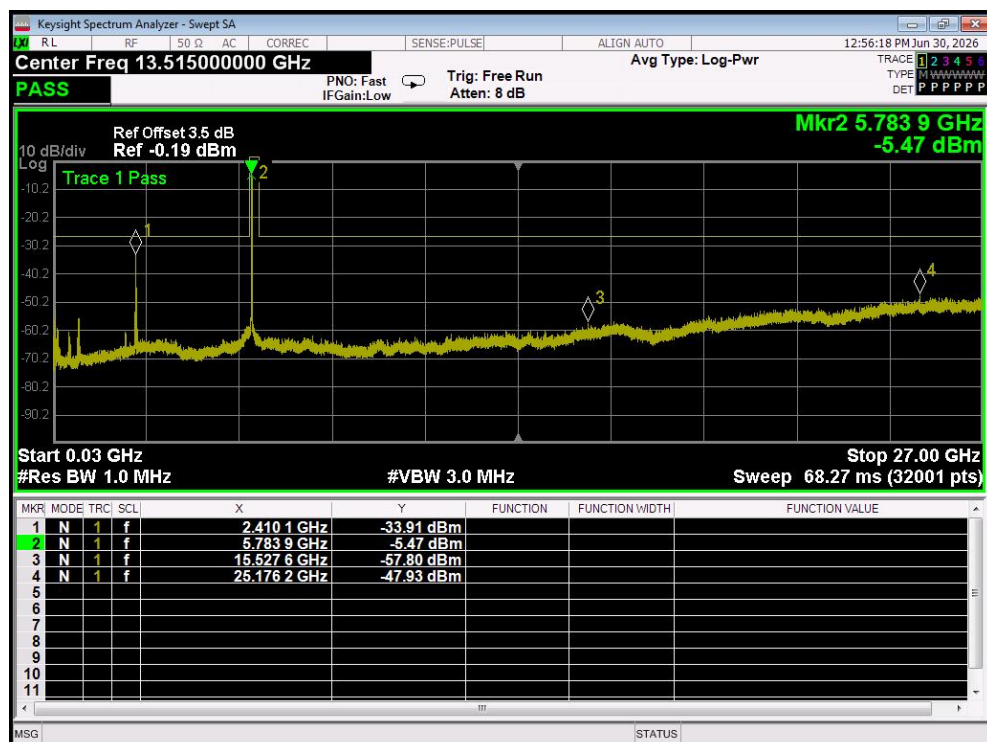


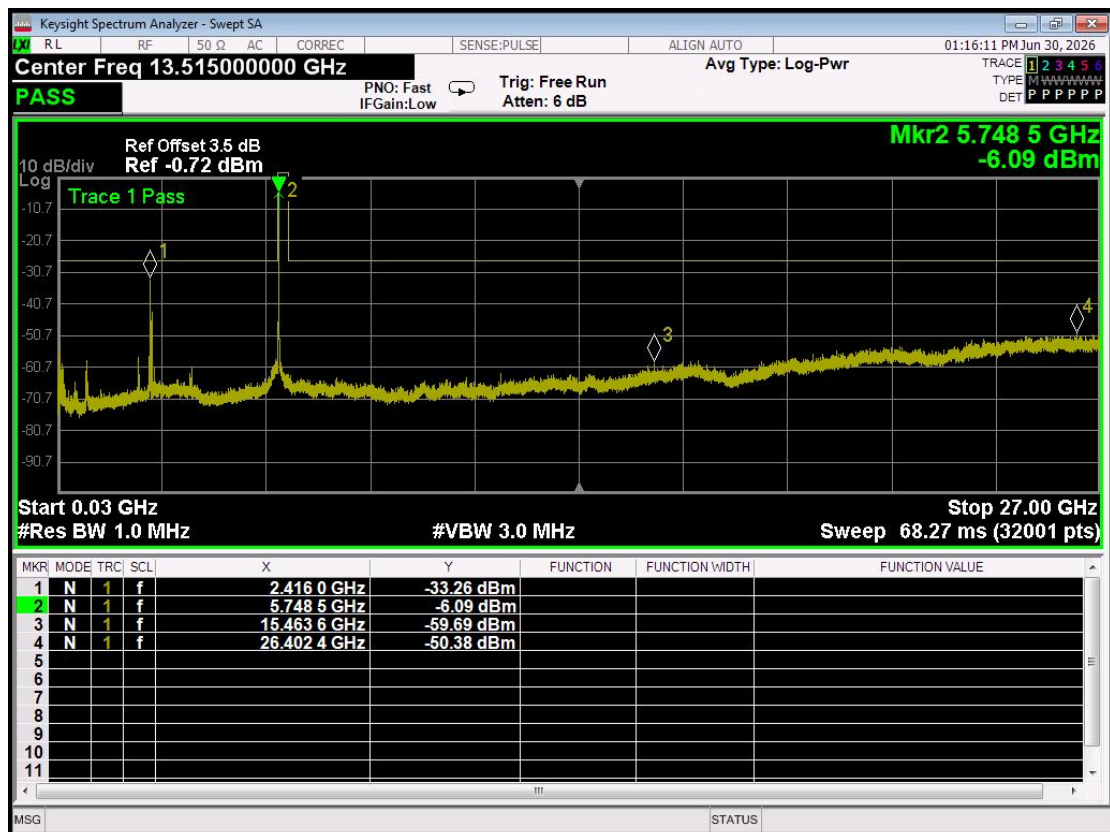
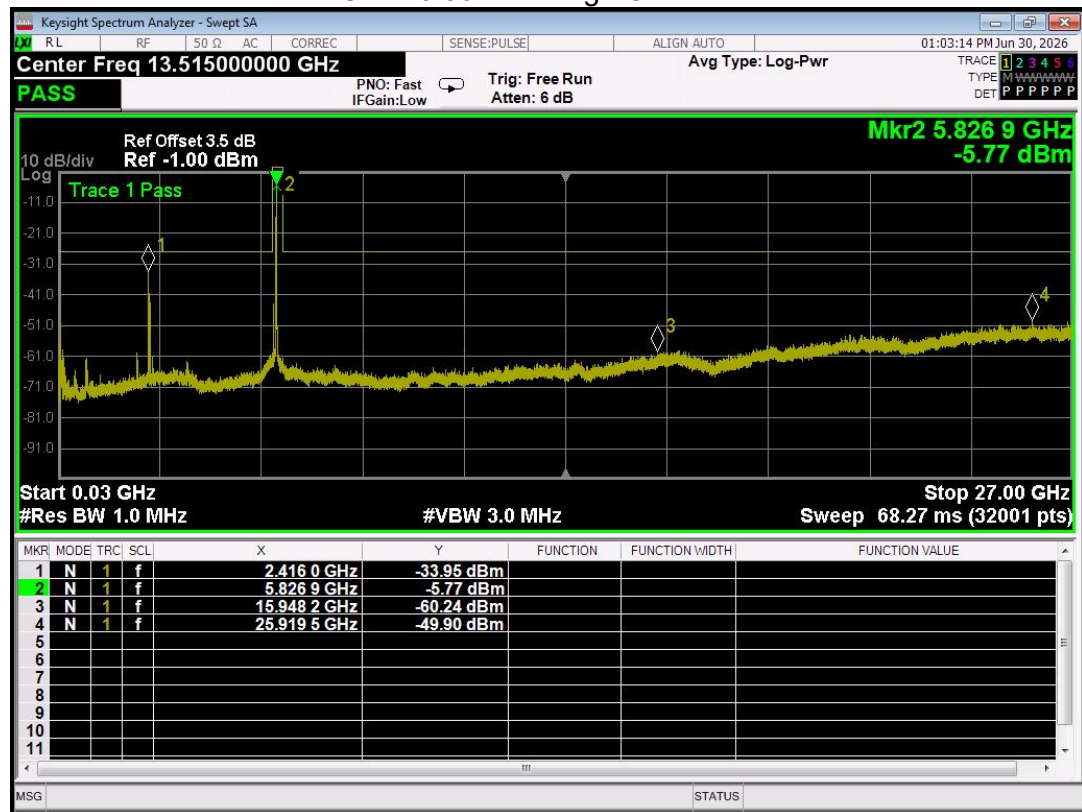
conducted spurious

U-NII-3 802.11a Low CH

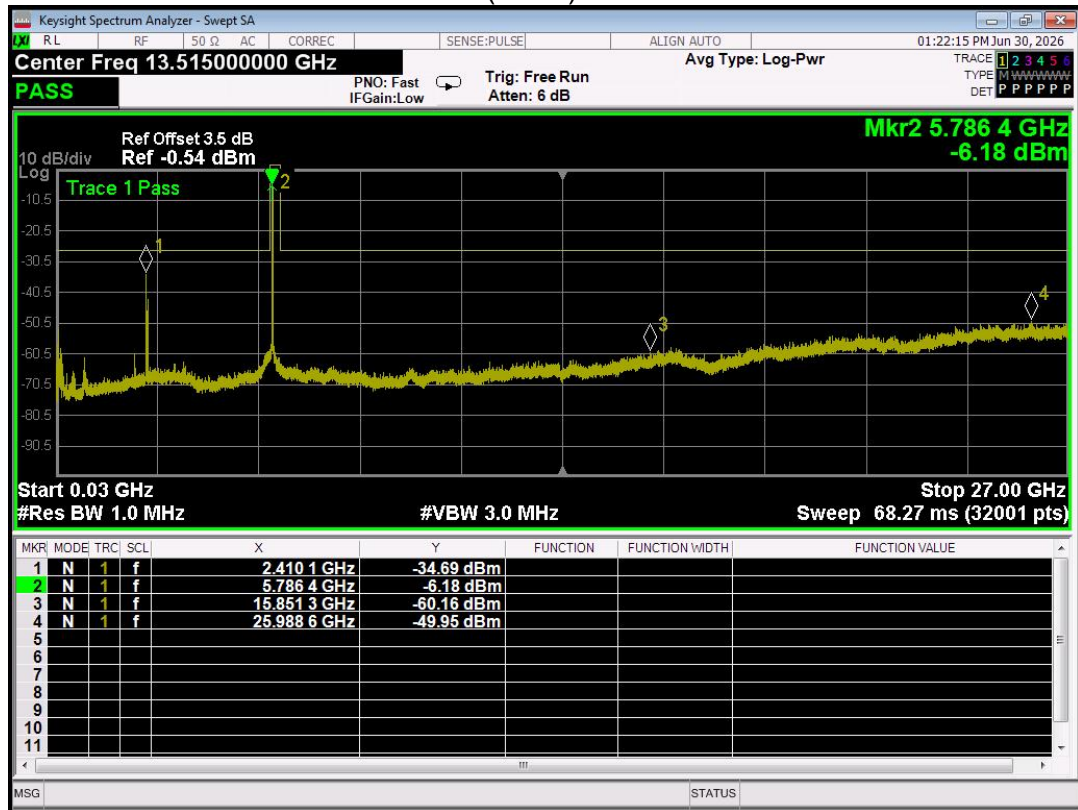


U-NII-3 802.11a Middle CH

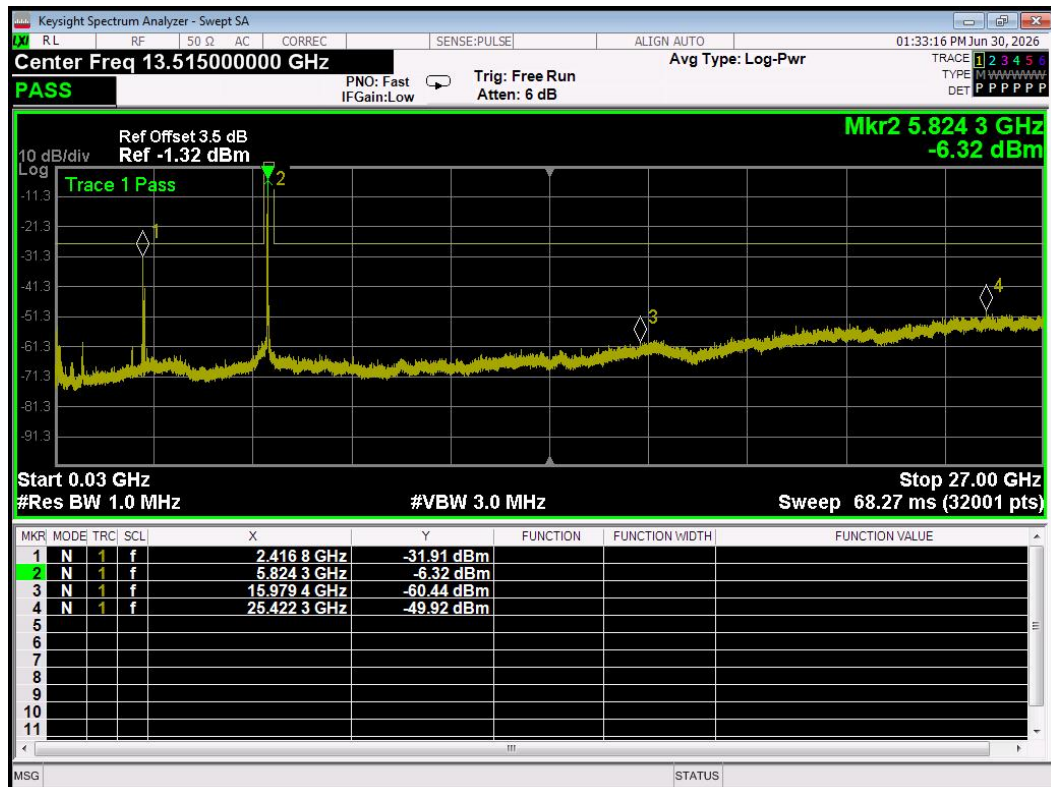




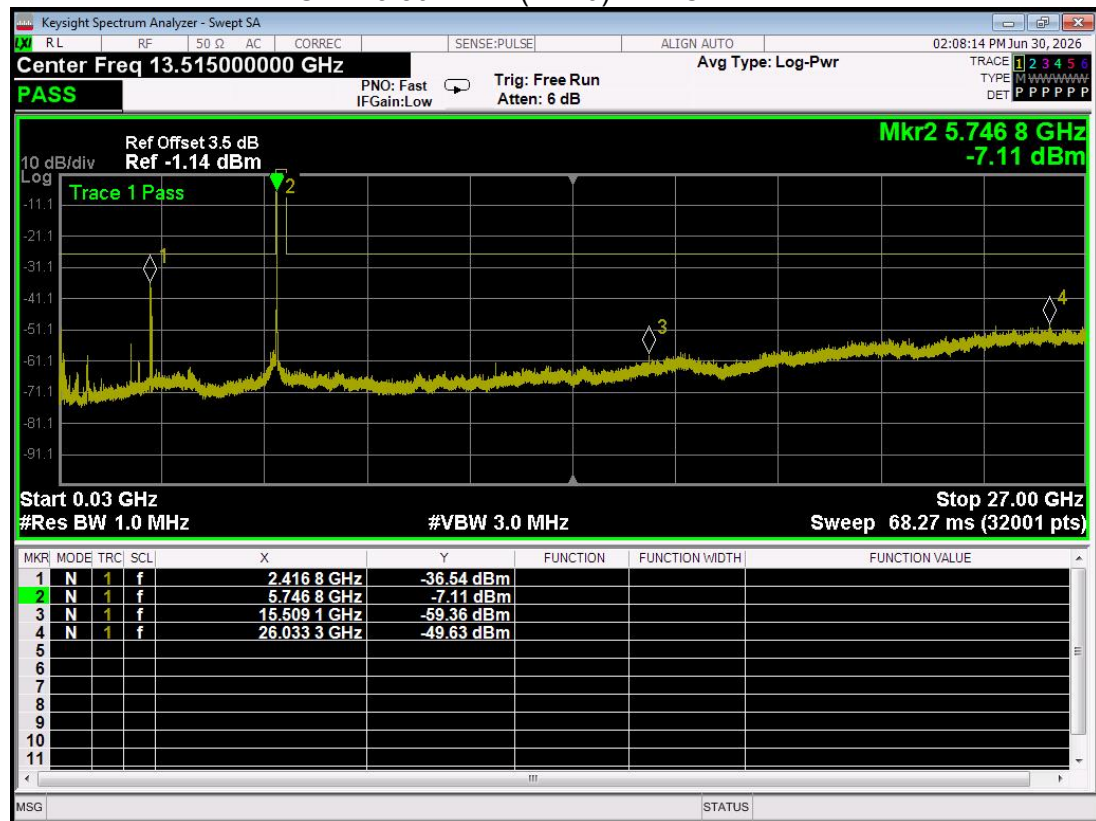
U-NII-3 802.11n(HT20) Middle CH



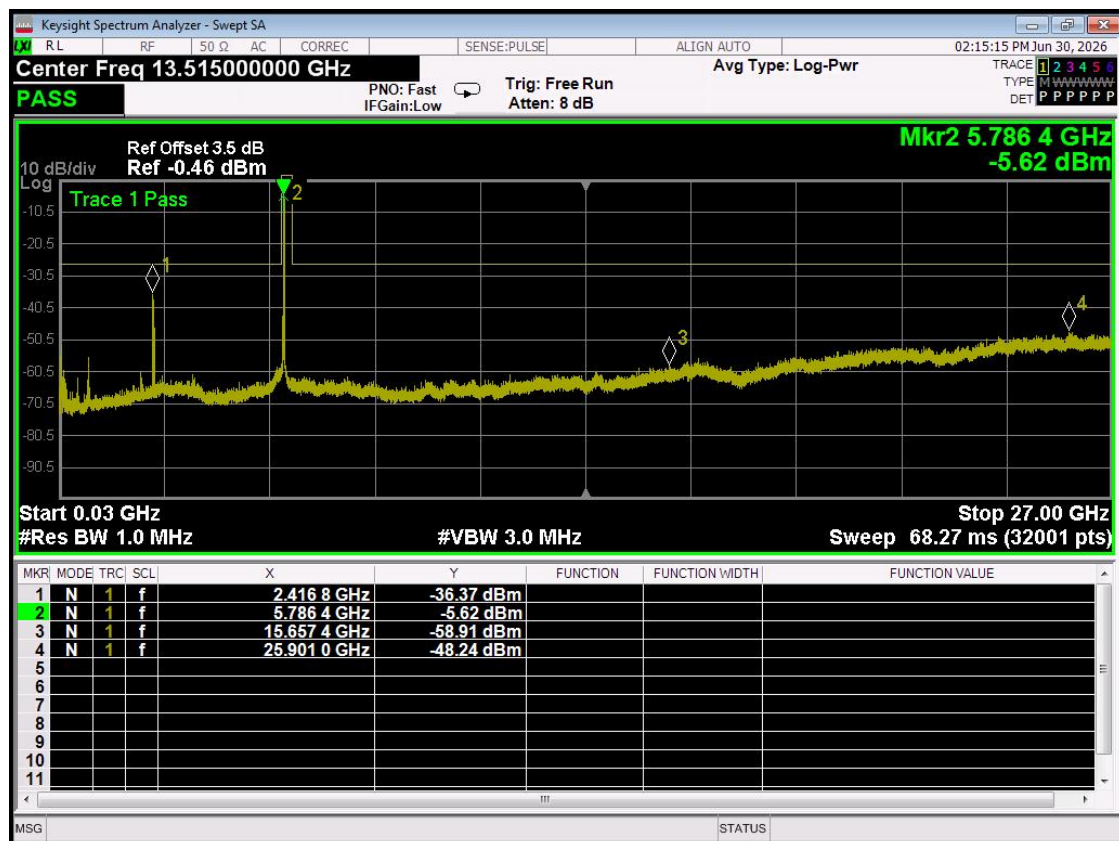
U-NII-3 802.11n(HT20) High CH



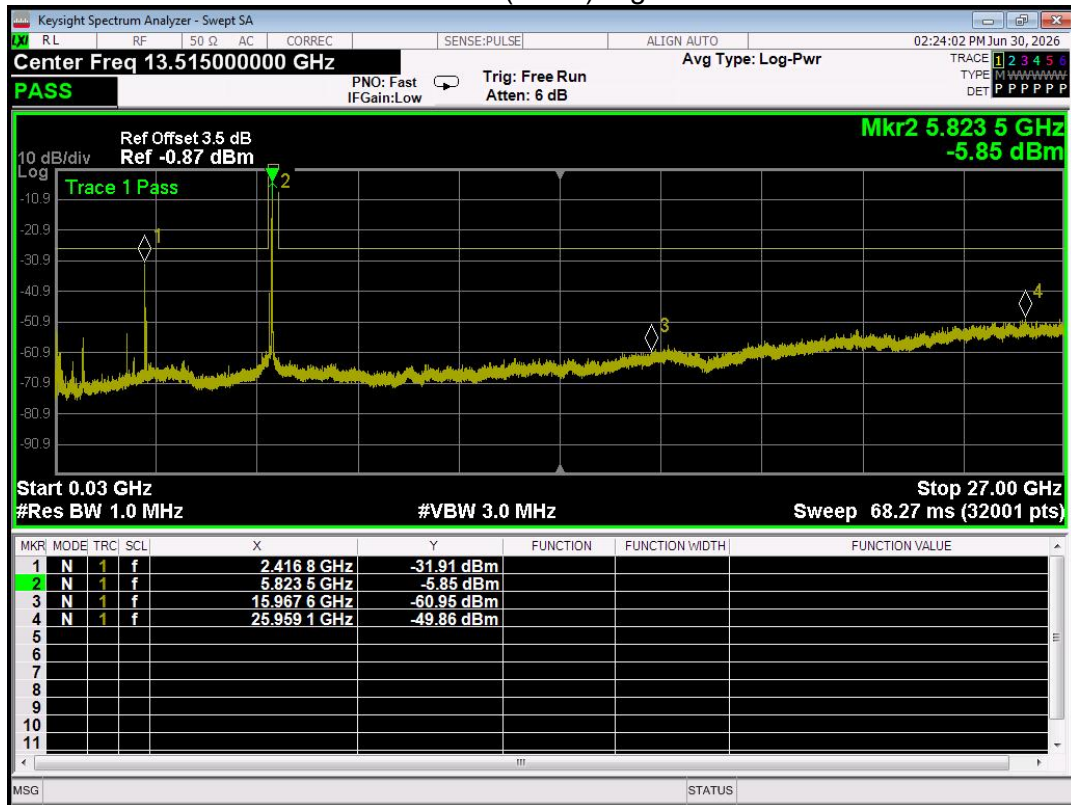
U-NII-3 802.11ac(HT20) Low CH



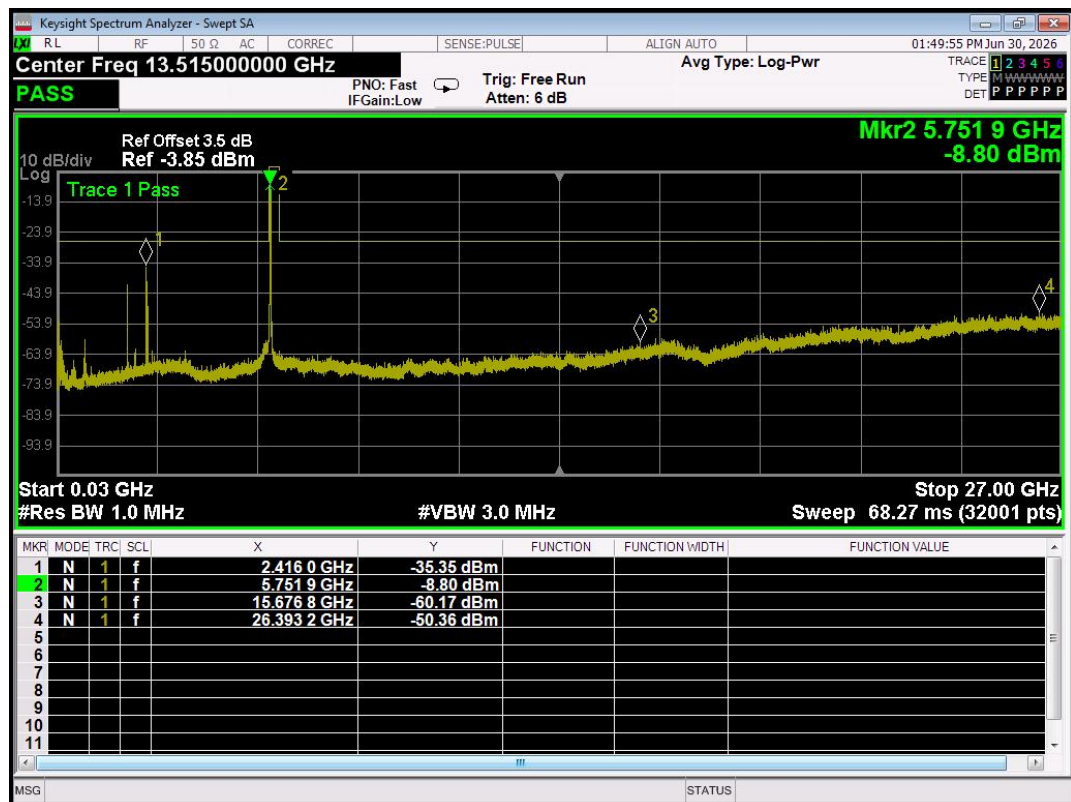
U-NII-3 802.11ac(HT20) Middle CH



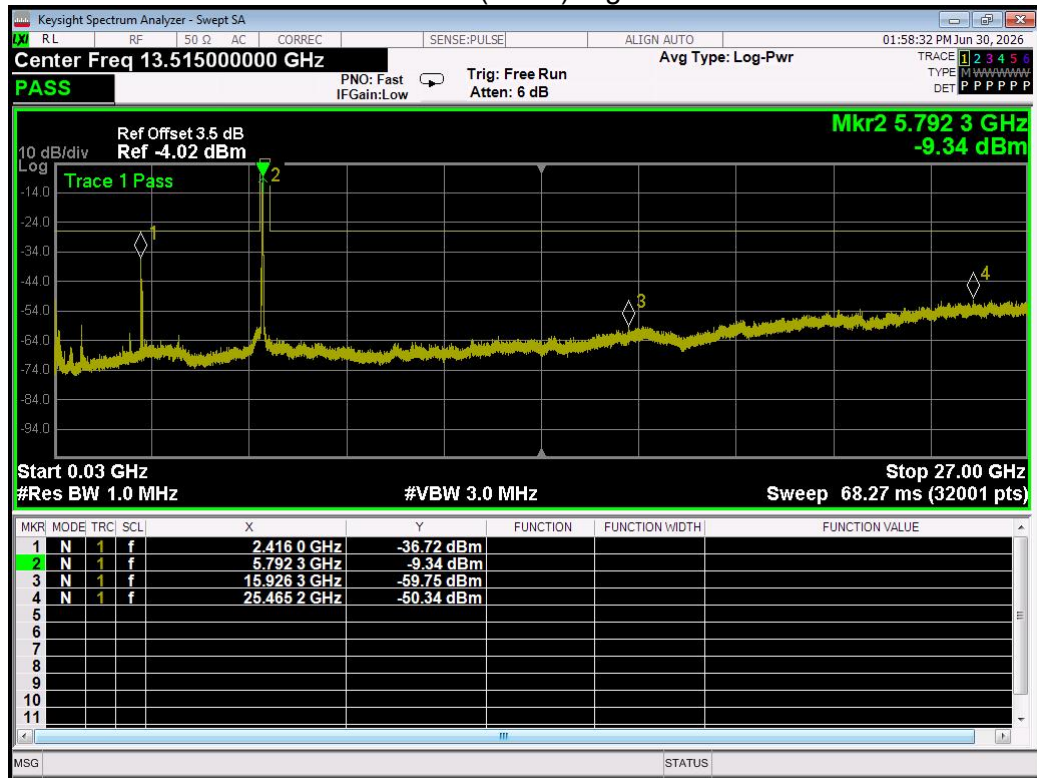
U-NII-3 802.11ac(HT20) High CH



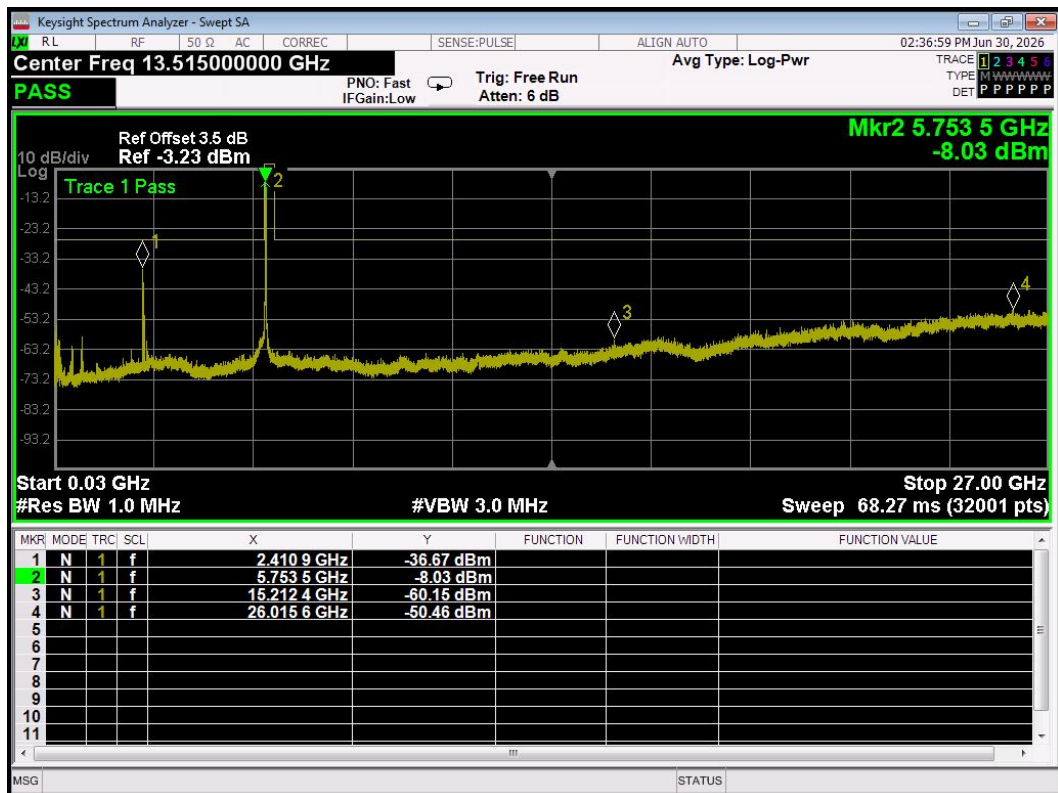
U-NII-3 802.11n(HT40) Low CH



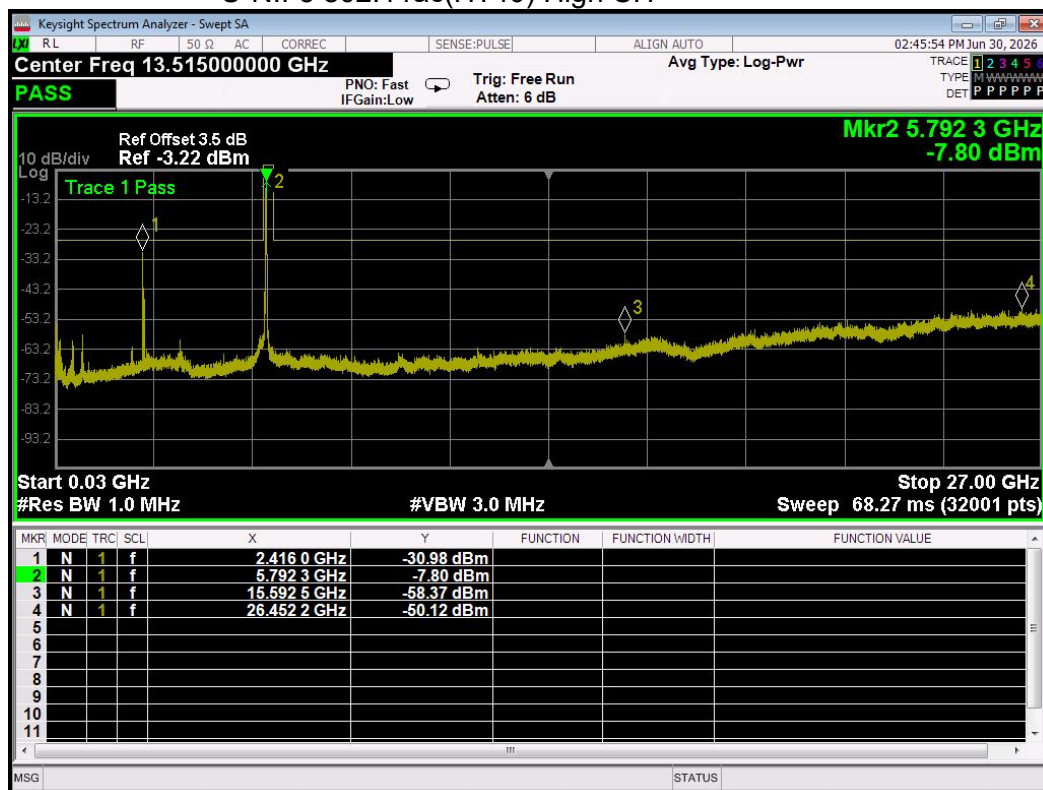
U-NII-3 802.11n(HT40) High CH



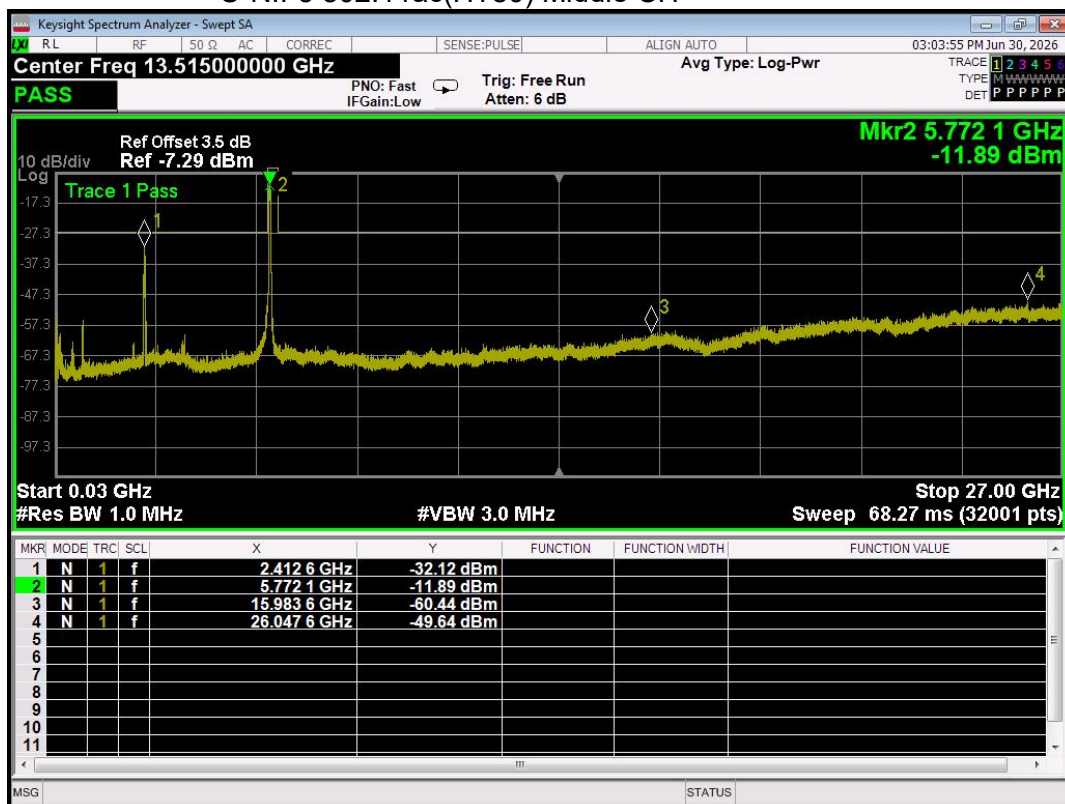
U-NII-3 802.11ac(HT40) Low CH



U-NII-3 802.11ac(HT40) High CH



U-NII-3 802.11ac(HT80) Middle CH



Note:1.The emission levels of other frequencies were less than 20dB margin against the limit.
2.Max Value (dBm) is added antenna gain.

8. Duty Cycle

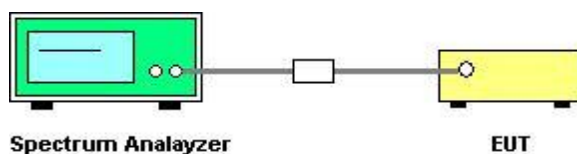
8.1 TEST REQUIREMENT

47 CFR Part 15C 15.407 and 789033 D02 General UNII Test
Procedures New Rules v02r01(December 14, 2017), Section (B)
ANSI C63.10:2020+Cor.1-2023

8.2 TEST PROCEDURE

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

8.3 TEST SETUP

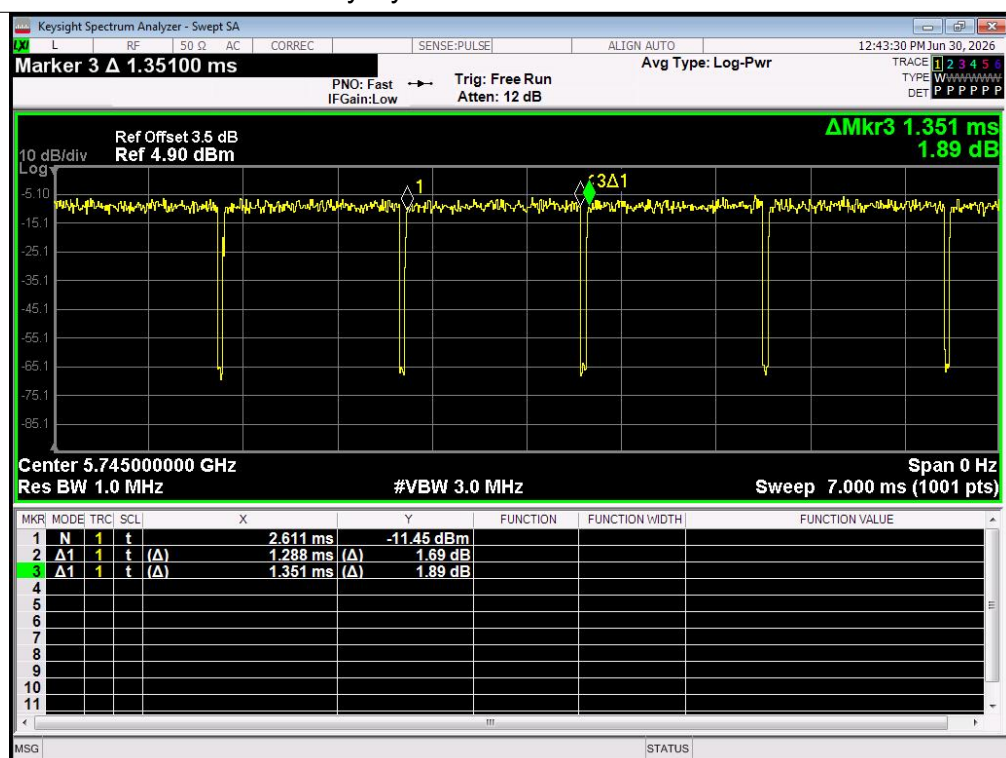


8.4 TEST RESULTS

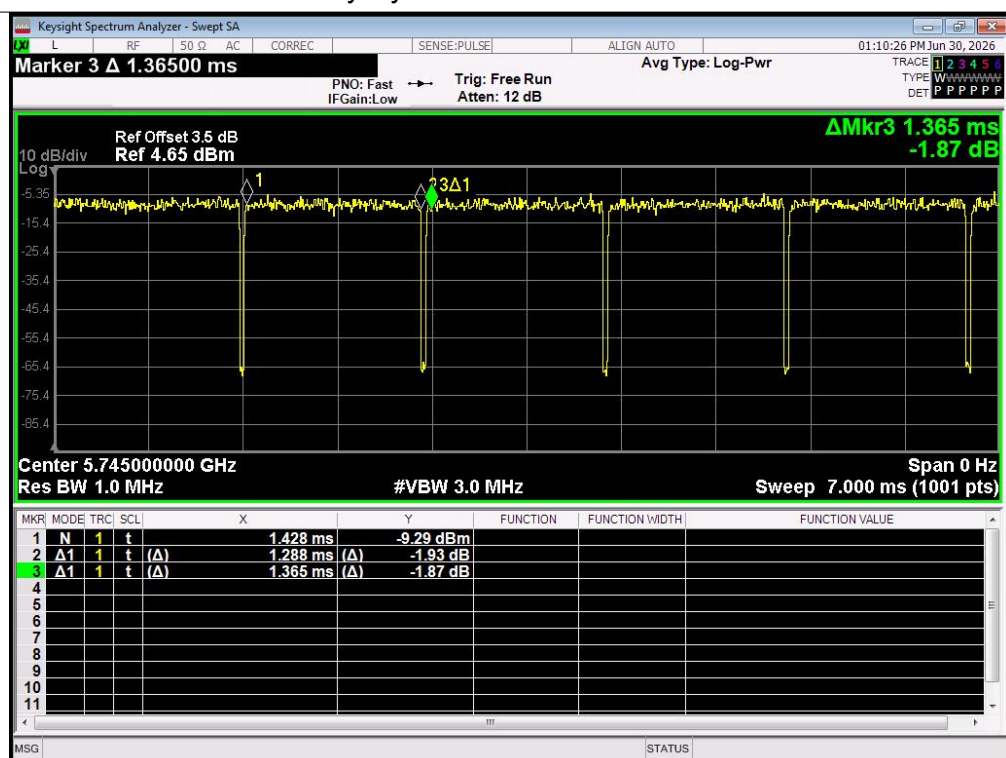
Duty Cycle

mode	On time(ms)	Period(ms)	Duty Cycle(%)
802.11a 5745	1.288	1.351	0.953
802.11n20 5745	1.288	1.365	0.944
802.11n40 5755	1.207	1.292	0.934
802.11ac20 5745	1.295	1.365	0.949
802.11ac40 5755	1.224	1.308	0.936
802.11ac80 5775	1.567	0.652	2.403

Duty Cycle NVNT a20 5745MHz

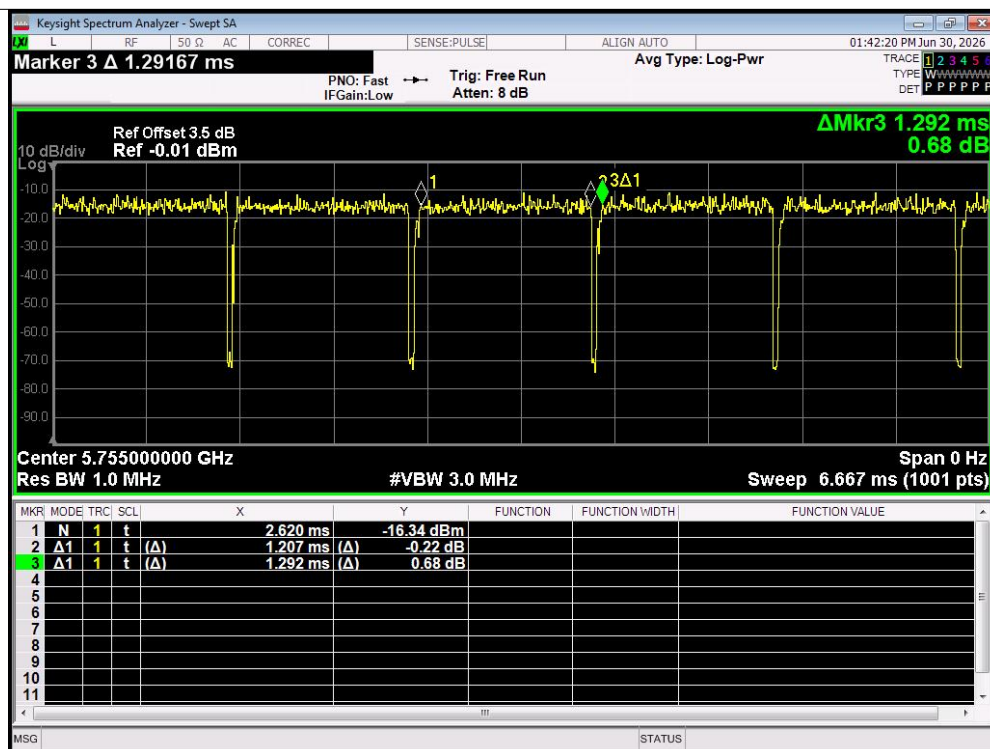


Duty Cycle NVNT n20 5745MHz

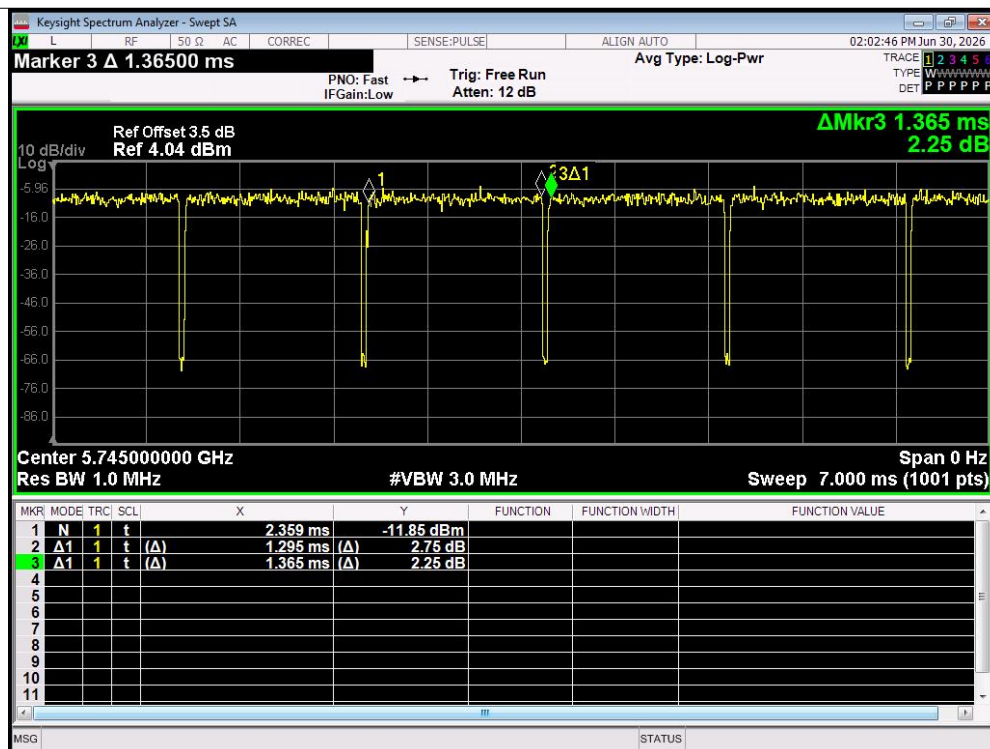


Duty Cycle NVNT a 5825MHz

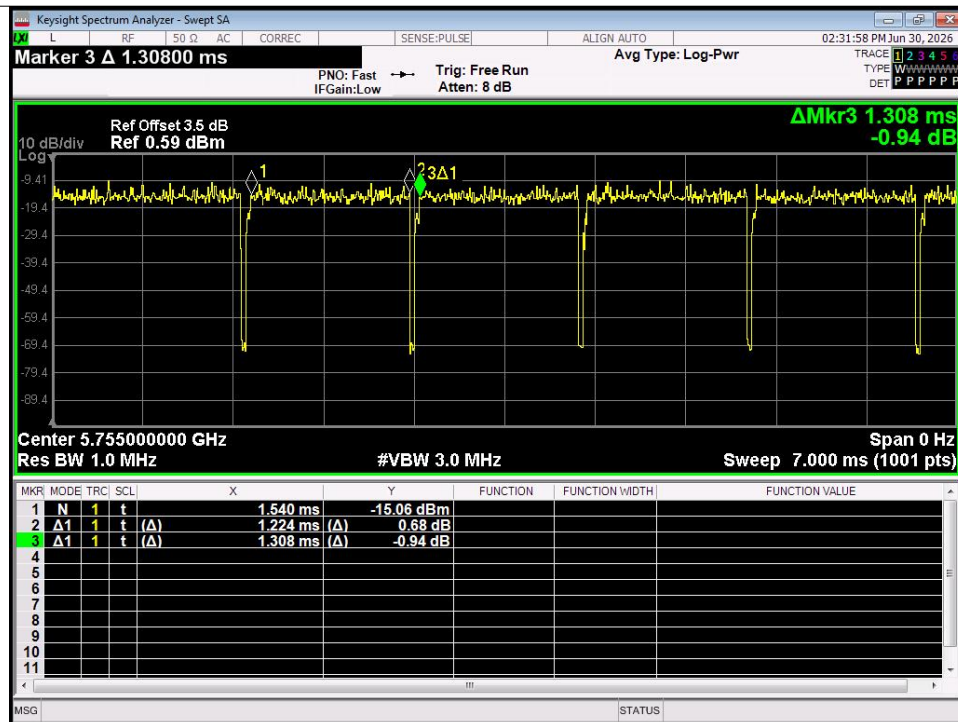
Duty Cycle NVNT n40 5755MHz



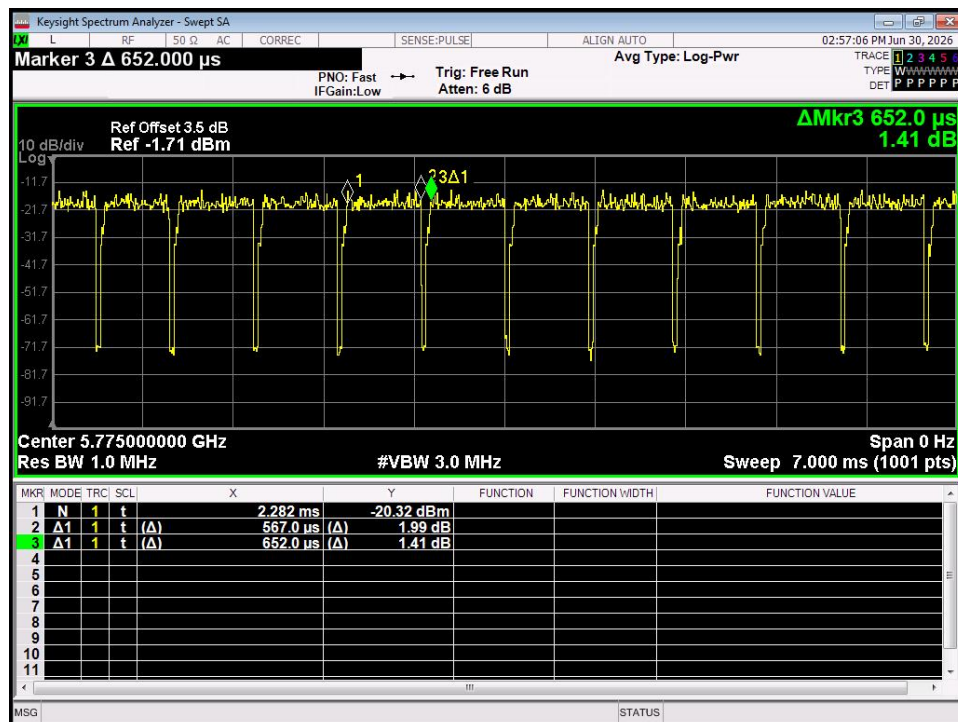
Duty Cycle NVNT ac 20 5745MHz



Duty Cycle NVNT ac 40 5755MHz



Duty Cycle NVNT ac 80 5775MHz



9 RADIATED EMISSION MEASUREMENT

9.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10:2020+Cor.1-2023 below has to be followed

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/AV
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted band)	PK=1MHz / 1MHz, AV=1 MHz /10 Hz

9.2 TEST PROCEDURE

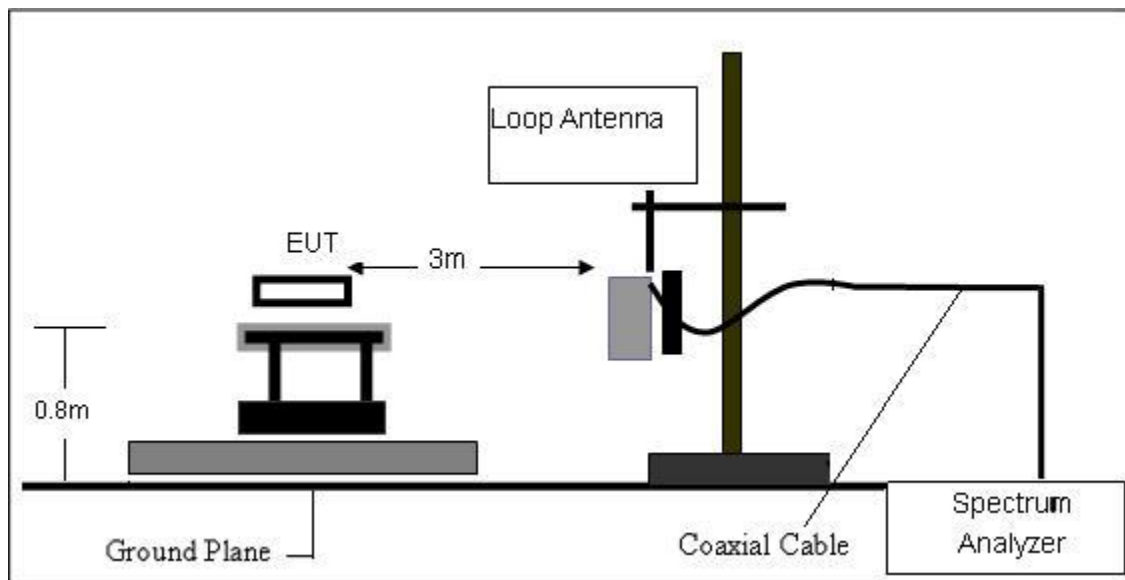
- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meters (above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then QuasiPeak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

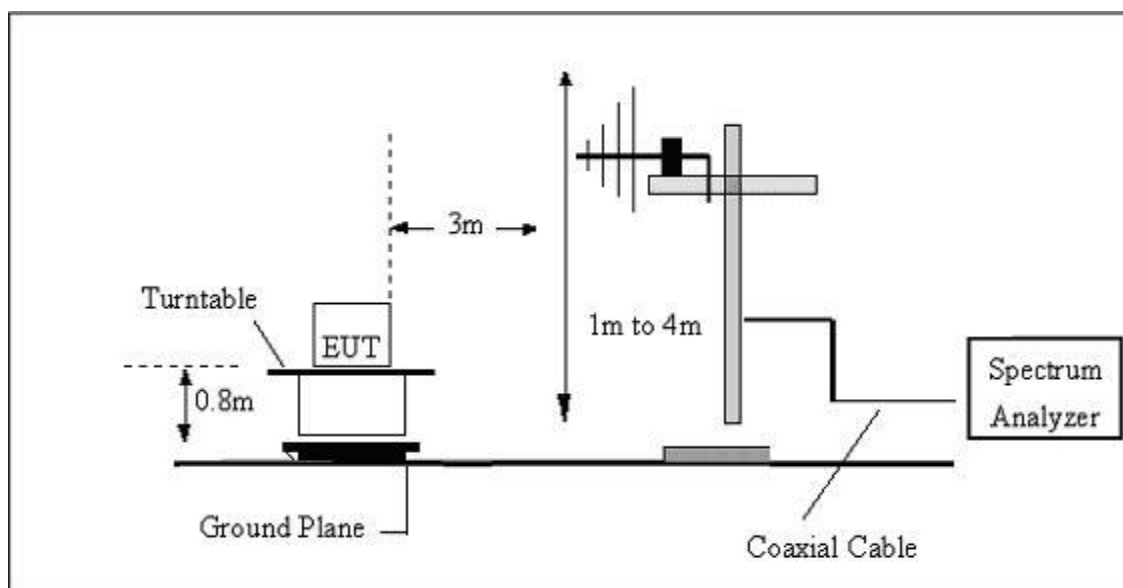
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

9.3 TESTSETUP

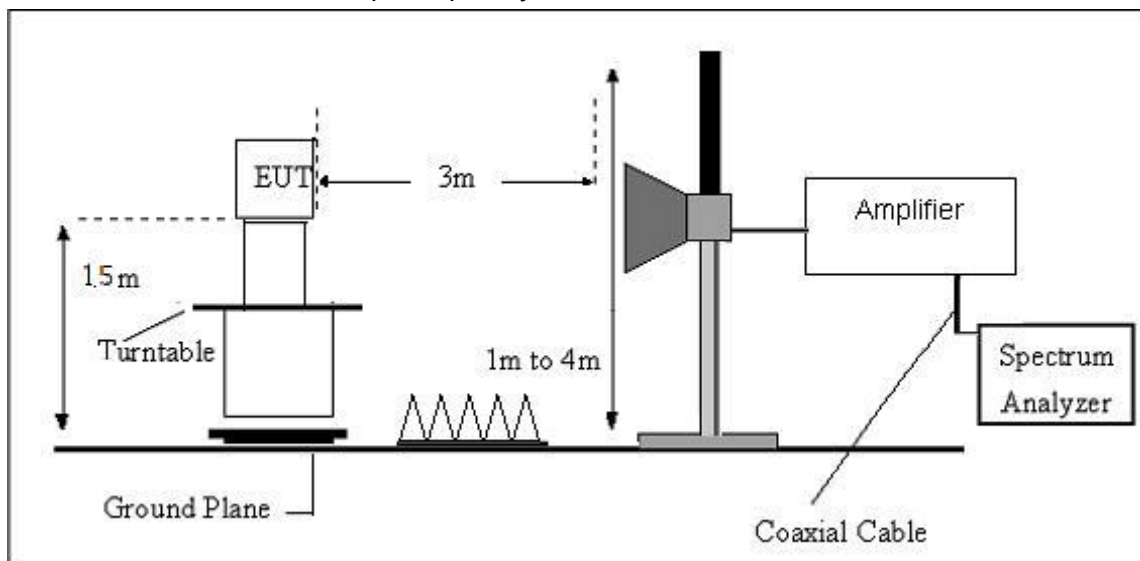
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



9.4. TEST RESULTS

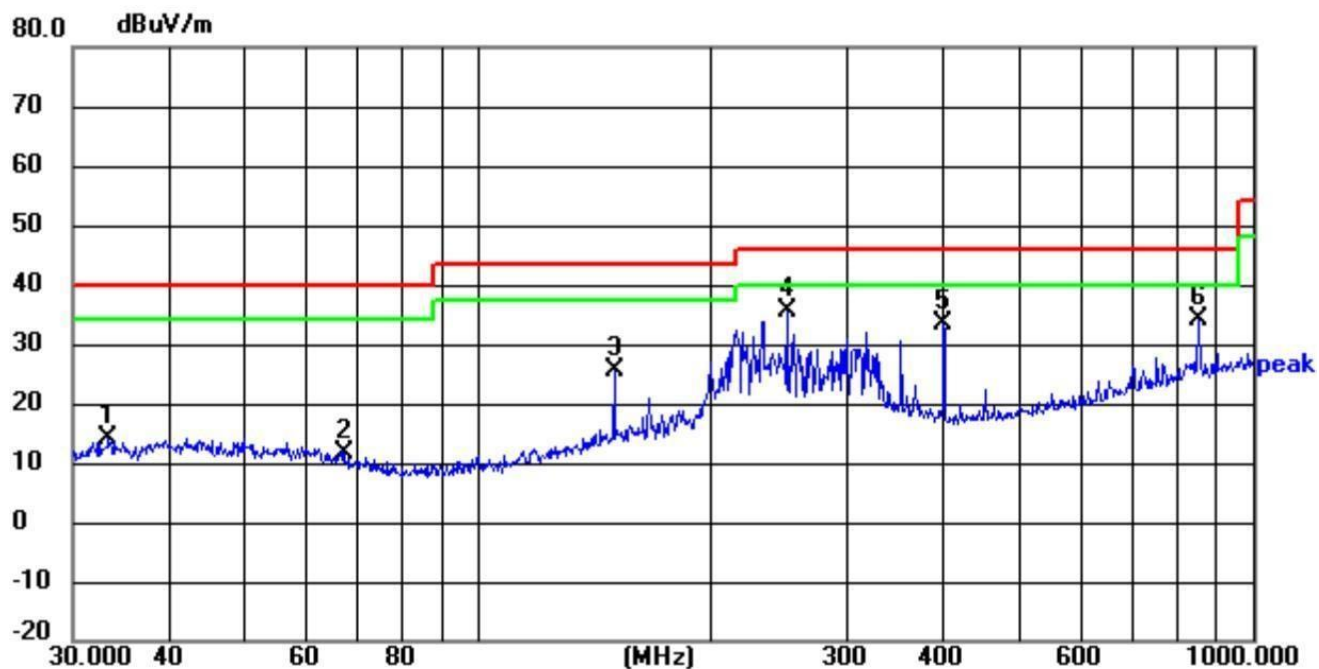
(9KHz-30MHz)

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported..

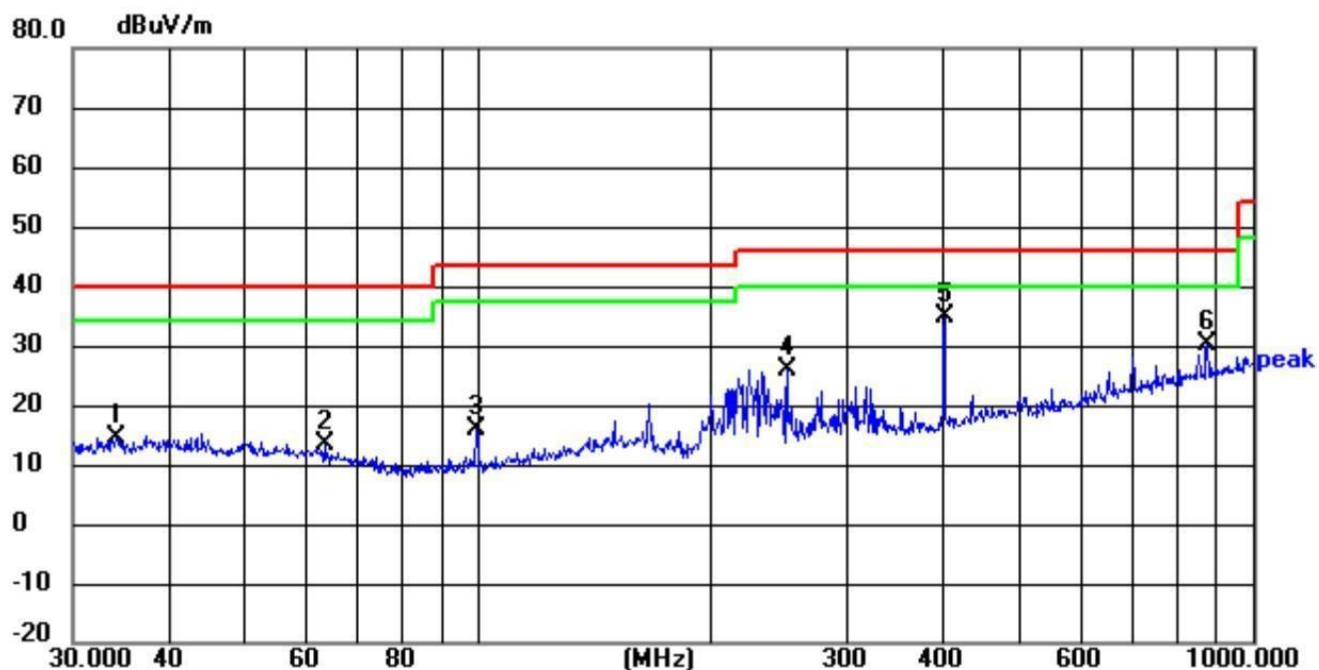
(30MHz-1000MHz)

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	33.2112	26.33	-12.26	14.07	40.00	-25.93	QP
2	67.2022	26.08	-14.37	11.71	40.00	-28.29	QP
3	150.0108	37.01	-11.40	25.61	43.50	-17.89	QP
4	250.3012	48.81	-13.12	35.69	46.00	-10.31	QP
5	399.0302	42.85	-9.61	33.24	46.00	-12.76	QP
6	851.0353	34.79	-0.77	34.02	46.00	-11.98	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	34.1560	26.39	-12.10	14.29	40.00	-25.71	QP
2	63.3132	27.01	-13.63	13.38	40.00	-26.62	QP
3	99.5281	31.42	-15.68	15.74	43.50	-27.76	QP
4	250.3011	39.07	-13.12	25.95	46.00	-20.05	QP
5	400.4318	44.31	-9.58	34.73	46.00	-11.27	QP
6	872.1832	30.81	-0.57	30.24	46.00	-15.76	QP

Remarks:

1. Margin = Result (Result = Reading + Factor) - Limit

(1GHz~40GHz) Restricted band and Spurious emission Requirements

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-3 Low Channel 5745MHz									
4504.10	42.14	PK	114	1.3	H	-2.06	57.14	74	-16.86
4504.10	20.9	Ave	114	1.3	H	-2.06	35.9	54	-18.1
11490.00	38.04	PK	327	1.5	H	5.93	56.84	68.2	-11.36
11490.00	37.77	Ave	327	1.5	H	5.93	39.73	54	-14.27
17239	16.03	PK	114	1.3	H	5.93	58.39	74	-15.61
17239	18.99	Ave	114	1.3	H	-2.06	38.15	54	-15.85
22980	36.55	PK	327	1.3	H	-2.06	57.19	68.2	-11.01
22980	17.07	Ave	327	1.5	H	5.93	37.71	54	-16.29
28736	37.77	PK	114	1.5	H	5.93	57.82	74	-16.18
28736	16.03	Ave	114	1.3	H	5.93	36.39	54	-17.61
34478	*	PK	*	*	*	*	*	*	*
34478	*	Ave	*	*	*	*	*	*	*
802.11a U-NII-3 Middle channel 5785MHz									
4505.68	49.64	PK	301	1.1	H	-2.03	47.61	74.00	-26.39
4505.68	44.19	Ave	301	1.1	H	-2.03	42.16	54.00	-11.84
11570.00	42.39	PK	67	1.2	H	5.81	48.20	74.00	-25.80
11570.00	37.03	Ave	67	1.2	H	5.81	42.84	54.00	-11.16
17355	37.48	PK	301	301	H	H	57.08	74	-16.92
17355	19.25	Ave	301	301	H	H	54.8	68.2	-13.4
23140	35.93	PK	67	67	H	H	56.32	68.2	-11.88
23140	36.06	Ave	67	67	H	H	56.32	68.2	-11.88
28925	15.95	PK	301	301	H	H	55.3	68.2	-12.9
28925	16.09	Ave	301	301	H	H	55.13	68.2	-13.07
34710	*	PK	*	*	*	*	*	*	*
34710	*	Ave	*	*	*	*	*	*	*

802.11a U-NII-3 High channel 5825MHz									
4506.47	49.90	PK	27	1.2	H	-1.84	48.06	74.00	-25.94
4506.47	45.26	Ave	27	1.2	H	-1.84	43.42	54.00	-10.58
11650.00	40.65	PK	188	1.5	H	5.84	46.49	74.00	-27.51
11650.00	36.39	Ave	188	1.5	H	5.84	42.23	54.00	-11.77
17470	44.54	PK	27	1.2	H	-1.84	59.78	74	-14.22
17470	30.48	Ave	27	1.2	H	-1.84	59.78	74	-14.22
23356	44.08	PK	188	1.5	H	5.84	59.77	74	-14.23
23356	27.3	Ave	188	1.5	H	5.84	45.71	54	-8.29
29136	44.31	PK	27	1.2	H	-1.84	45.71	54	-8.29
29136	23.8	Ave	27	1.2	H	-1.84	62.11	68.2	-6.09
34946	*	PK	*	*	*	*	*	*	*
34946	*	Ave	*	*	*	*	*	*	*

Note:

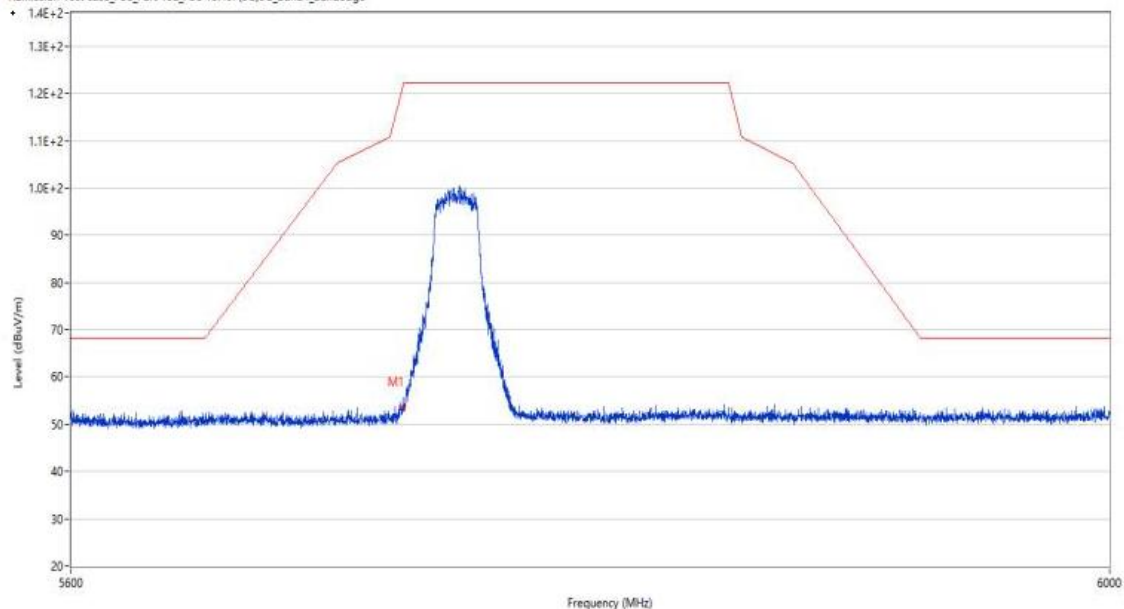
All other emissions are attenuated 20dB below the limits, so it does not reported in the report.

All modes are tested, with the worst mode being 80211a(HT20)

Radiated Band Edge data

B4-11a -LOW : Horizontal

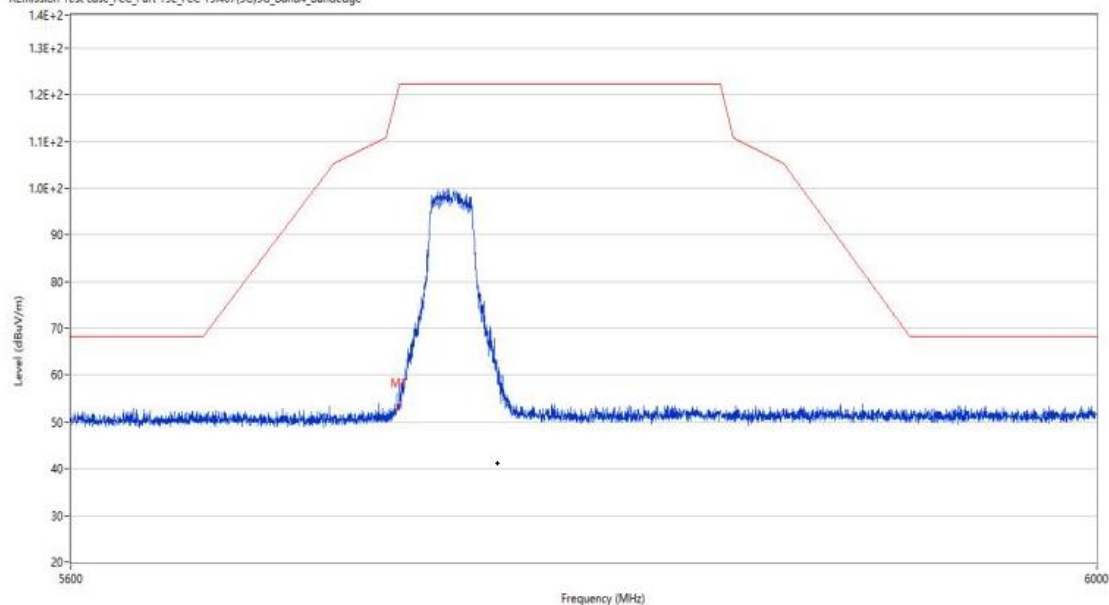
REmission Test case_FCC_Part 15E_FCC 15.407(5G)5G_Band4_Bandedge



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5725.000	53.77	0.70	122.2	68.43	Peak	136.23	100	Horizontal	Pass

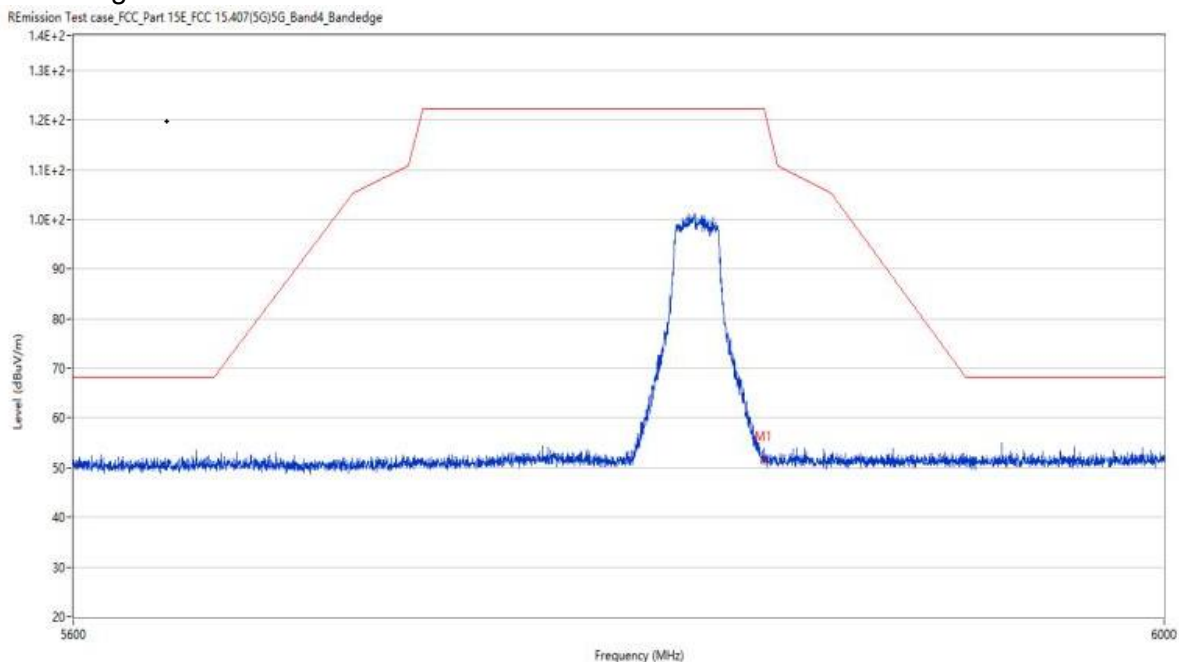
B4-11a -LOW : Vertical

REmission Test case_FCC_Part 15E_FCC 15.407(5G)5G_Band4_Bandedge



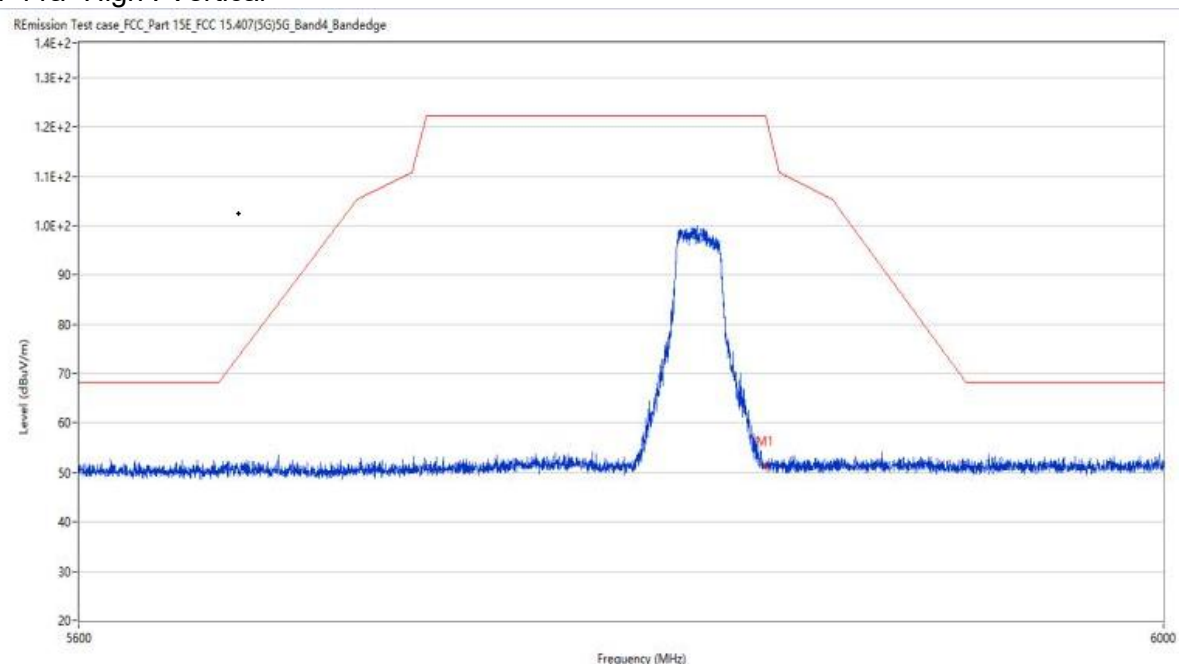
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5725.000	53.28	0.70	122.2	68.92	Peak	198.30	100	Vertical	Pass

B4-11a -High : Horizontal



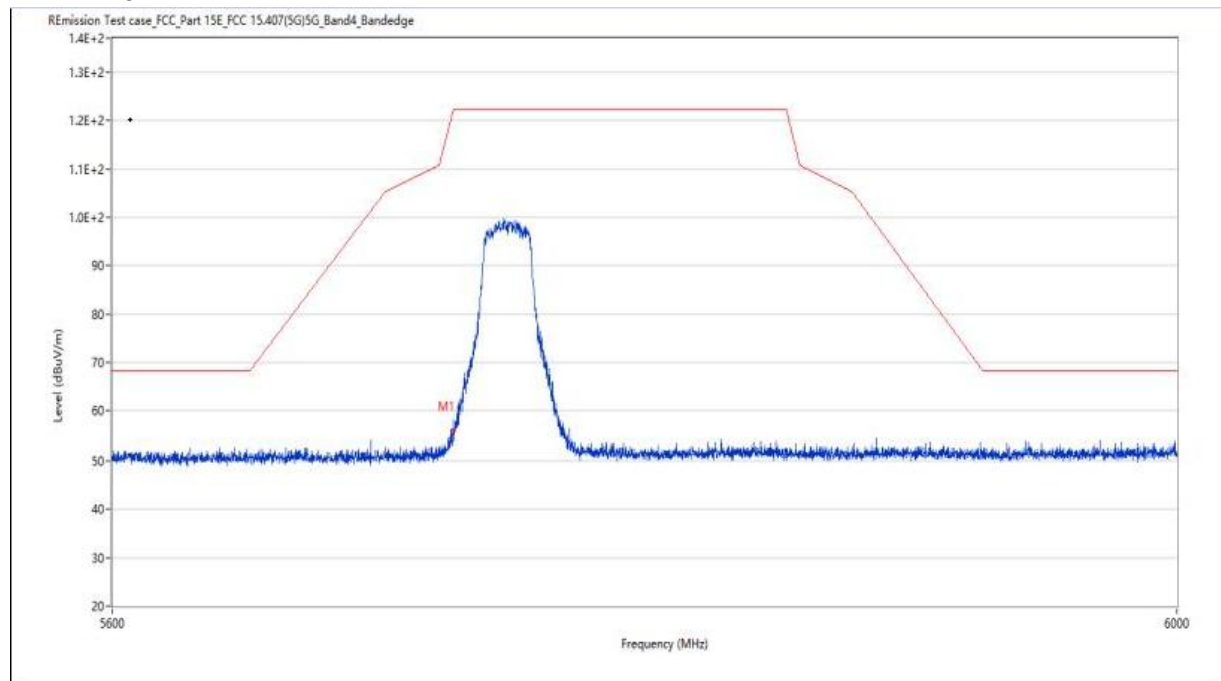
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5850.000	51.41	1.34	122.2	70.79	Peak	287.64	100	Horizontal	Pass

B4-11a -High : Vertical



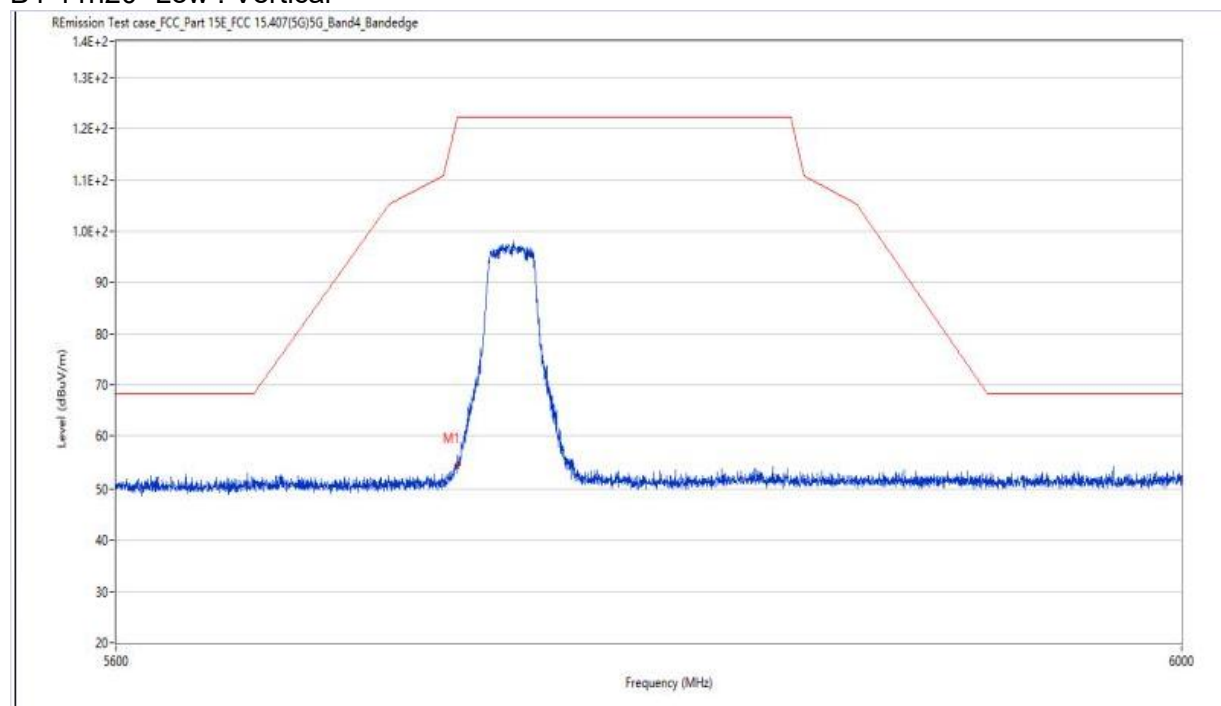
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5850.000	51.36	1.34	122.2	70.84	Peak	195.78	100	Vertical	Pass

B4-11n20 -Low: Horizontal



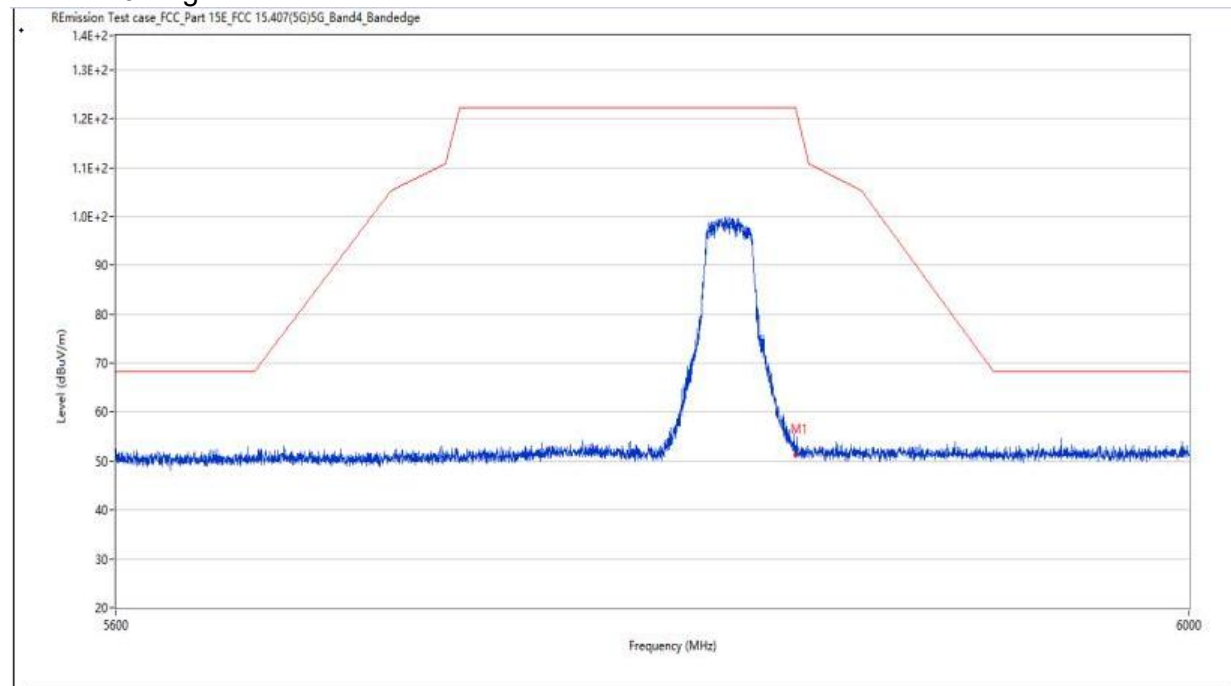
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5725.000	55.93	0.70	122.2	66.27	Peak	217.00	100	Horizontal	Pass

B4-11n20 -Low : Vertical



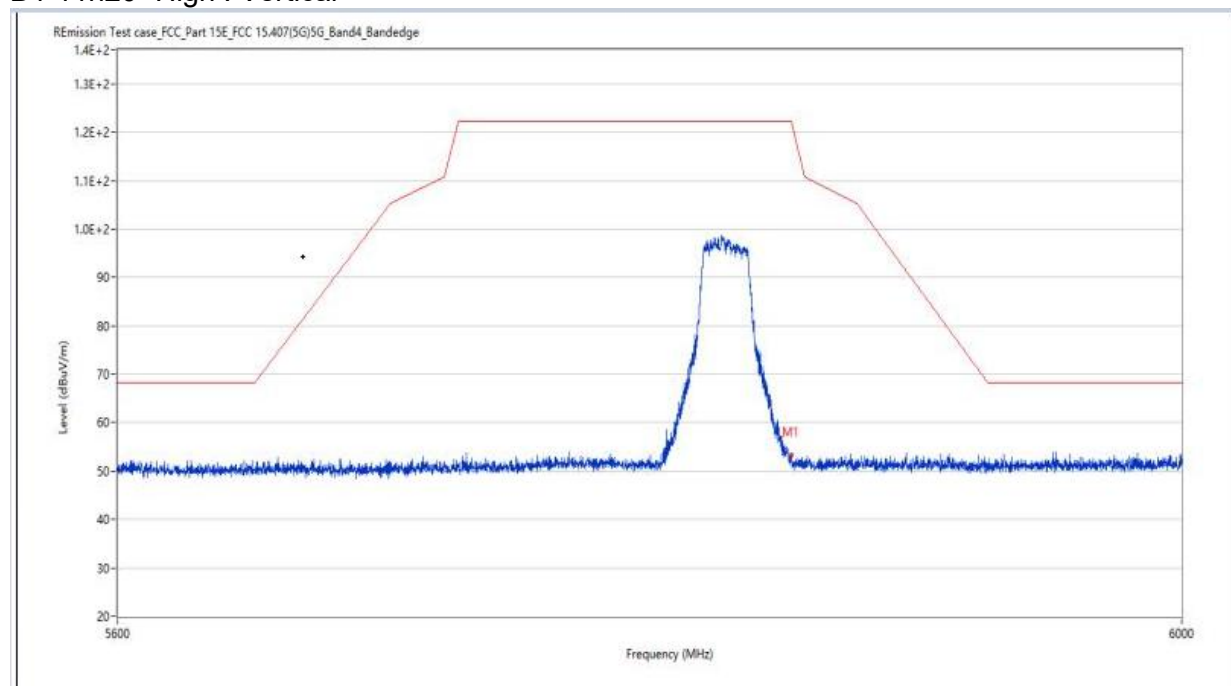
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5725.000	54.80	0.70	122.2	67.40	Peak	148.05	100	Vertical	Pass

B4-11n20 -High : Horizontal



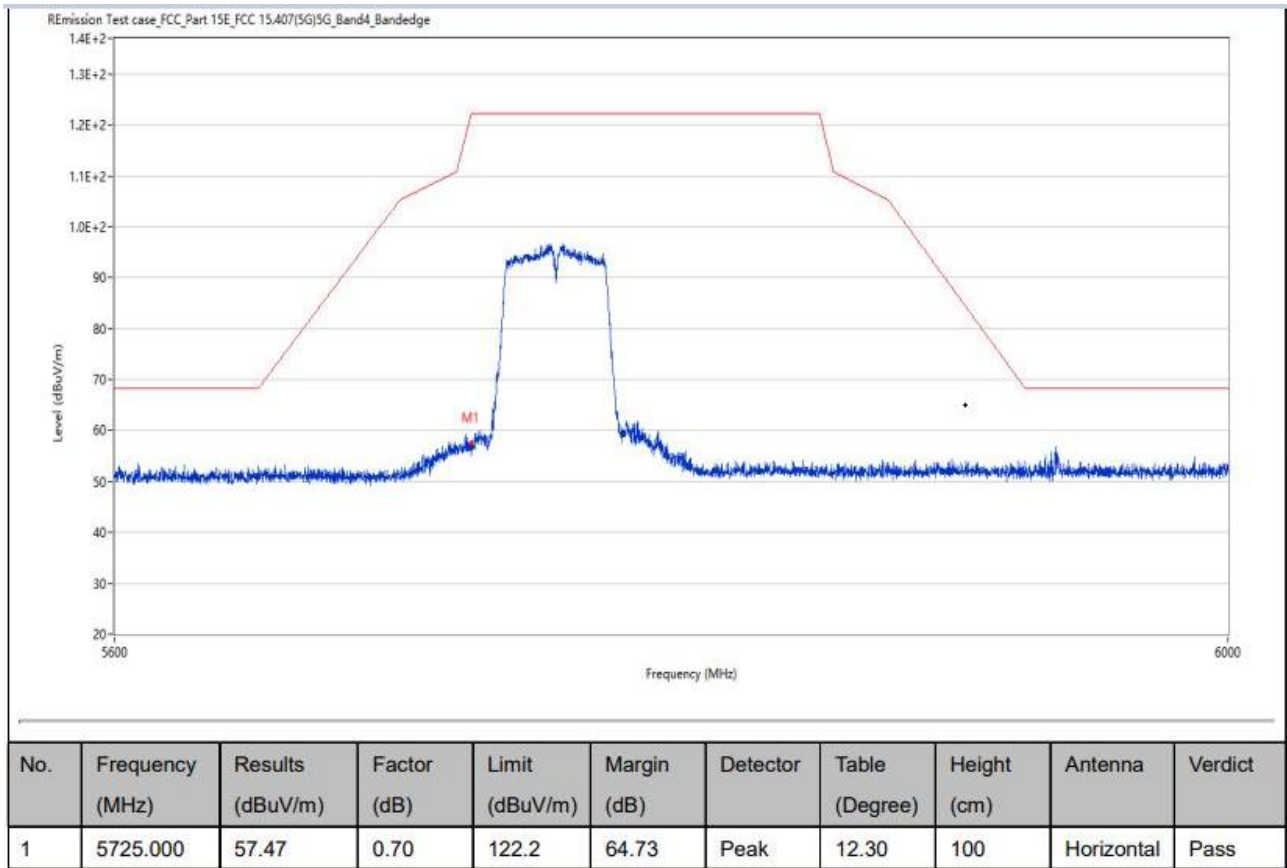
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5850.000	51.32	1.34	122.2	70.88	Peak	78.15	100	Horizontal	Pass

B4-11n20 -High : Vertical

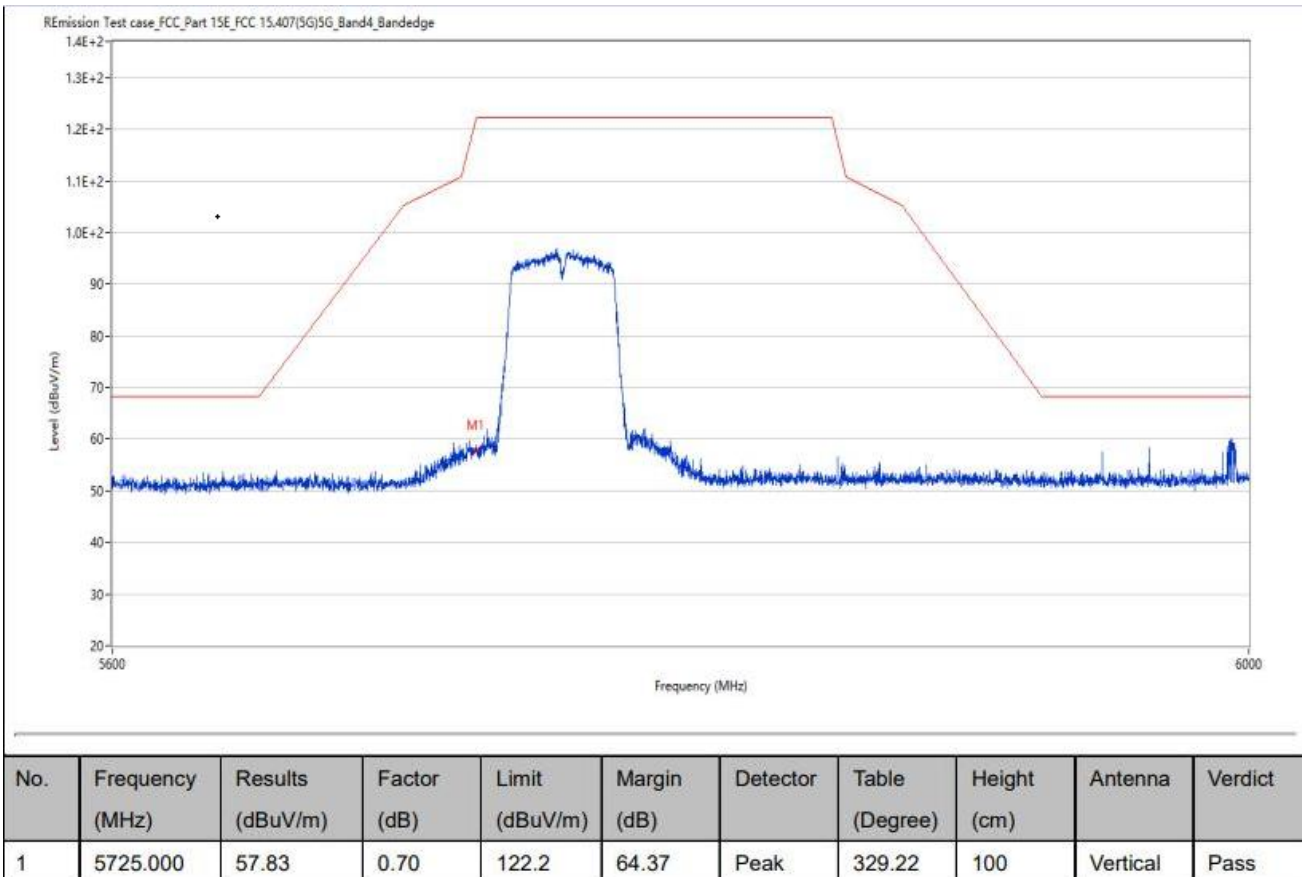


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5850.000	53.22	1.34	122.2	68.98	Peak	190.30	100	Vertical	Pass

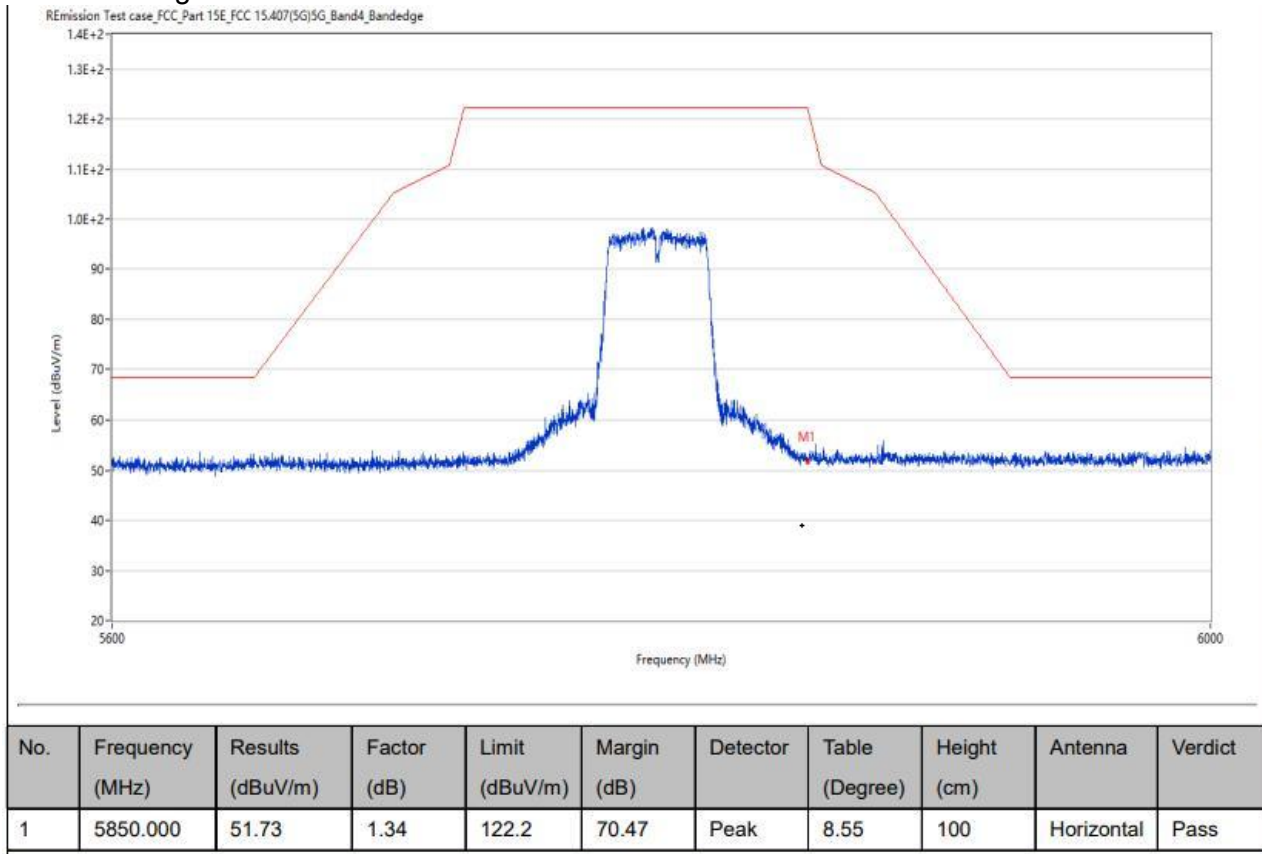
B4-11n40 -Low: Horizontal



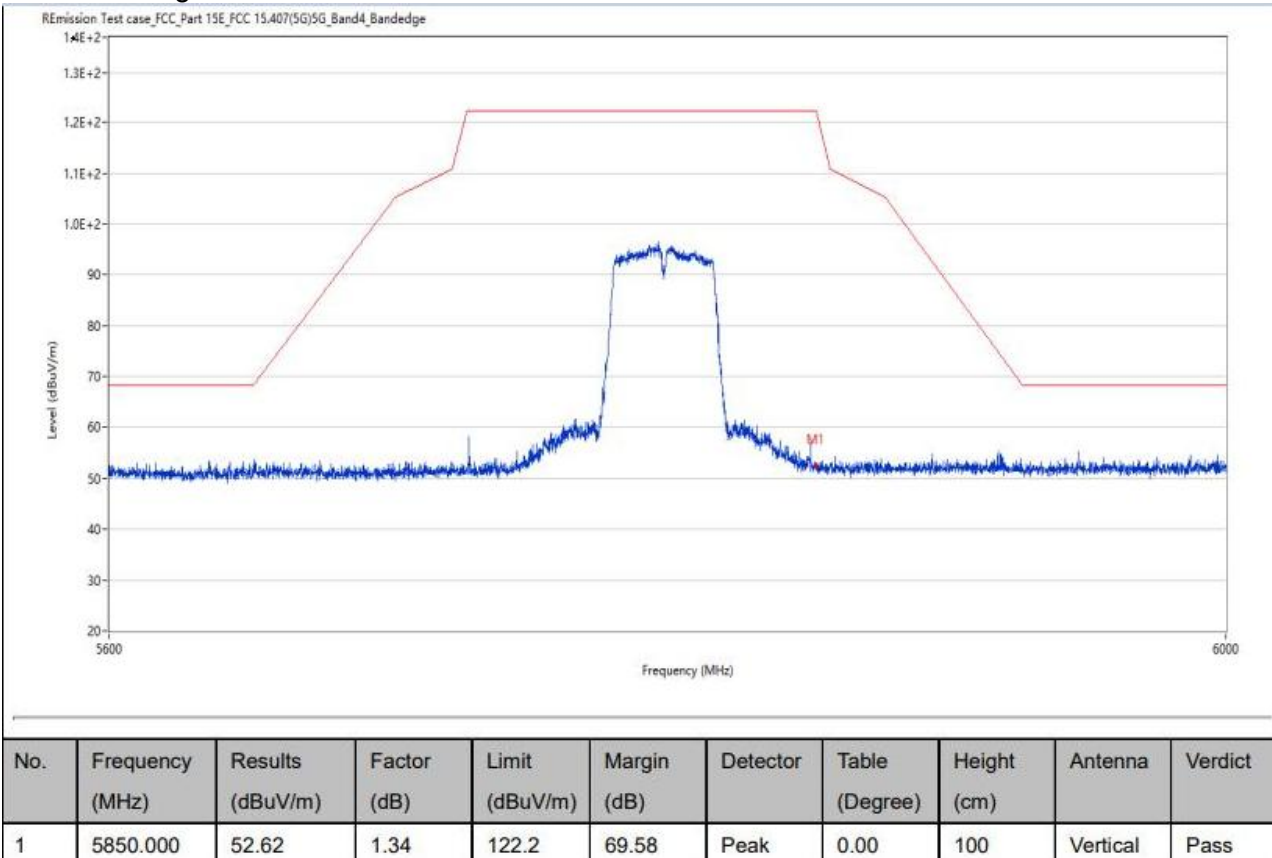
B4-11n40 -Low: Vertical



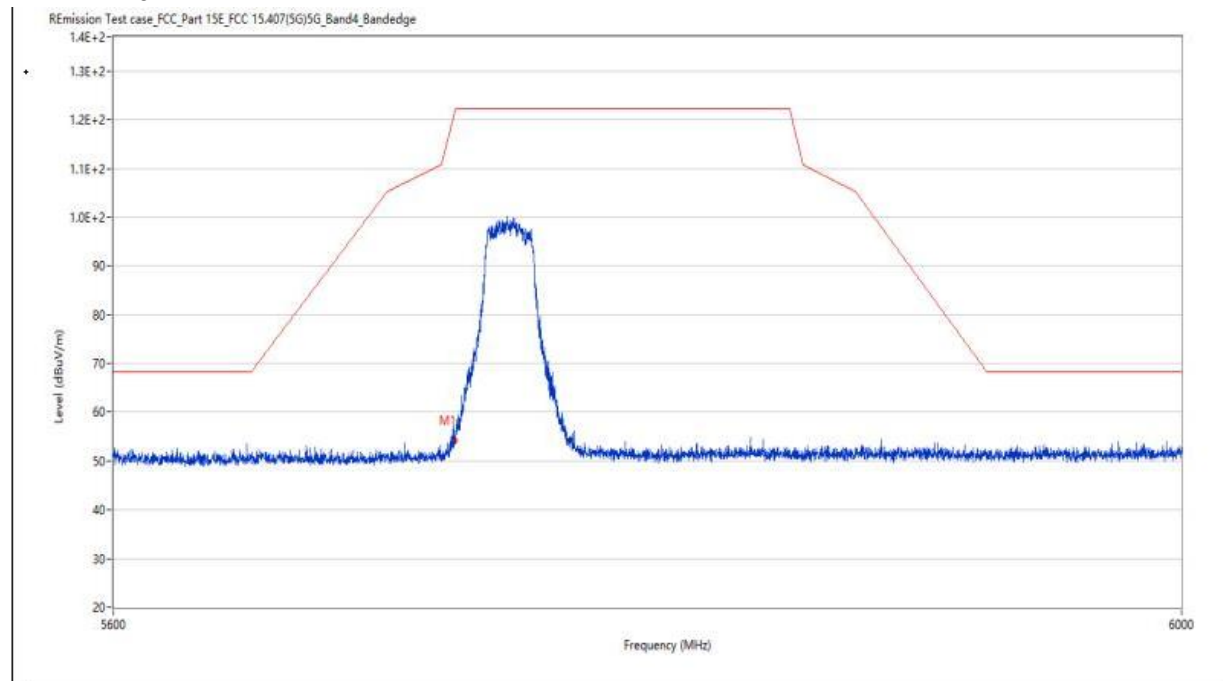
B4-11n40 -High : Horizontal



B4-11n40 -High: Vertical

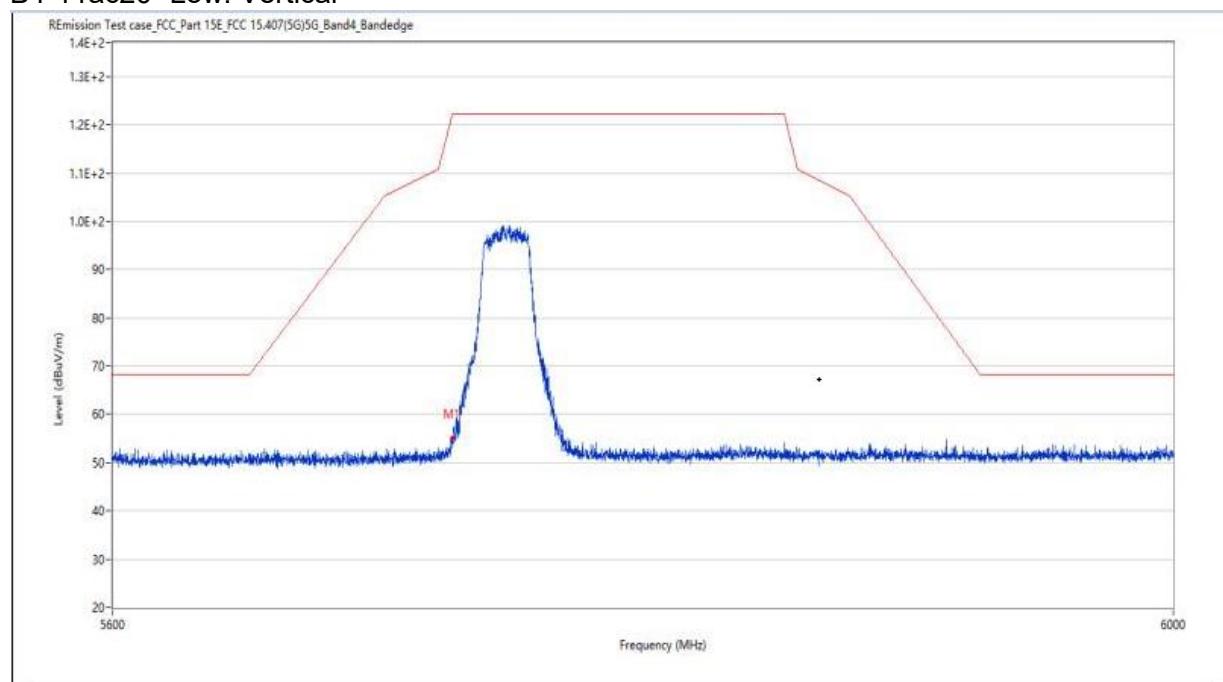


B4-11ac20 -Low: Horizontal



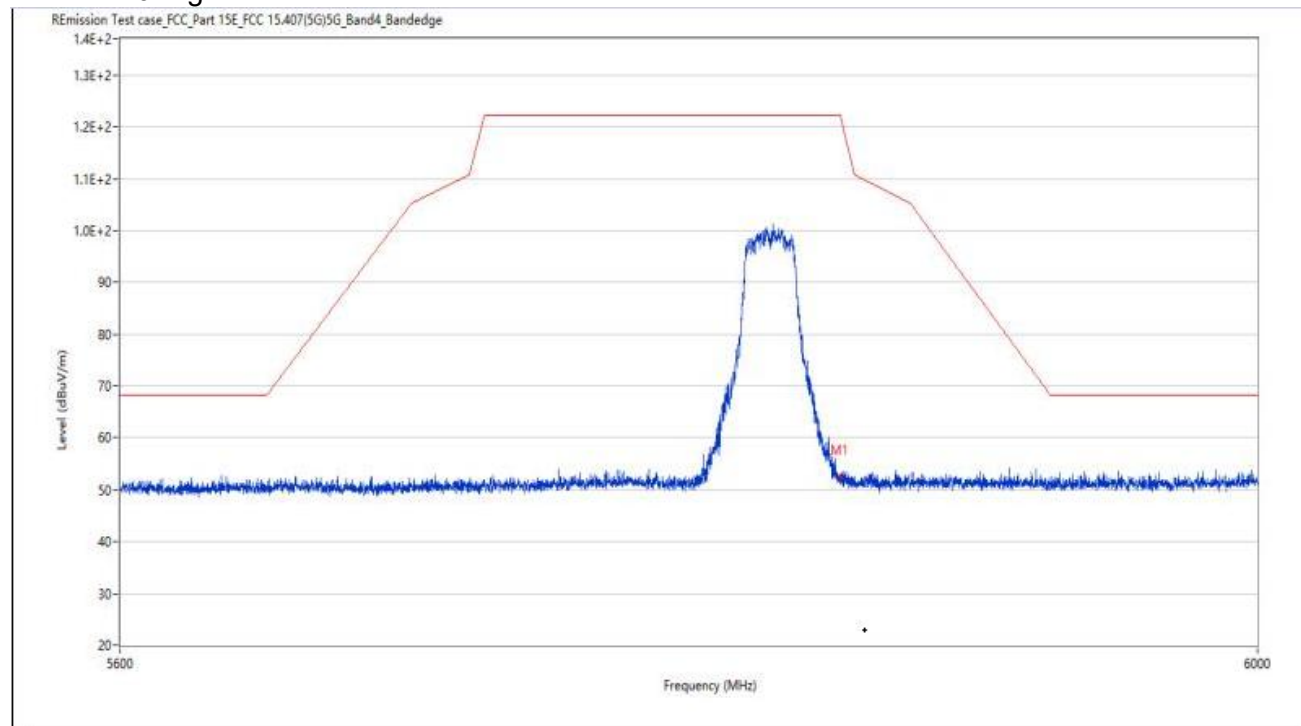
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5725.000	54.13	0.70	122.2	68.07	Peak	204.80	100	Horizontal	Pass

B4-11ac20 -Low: Vertical



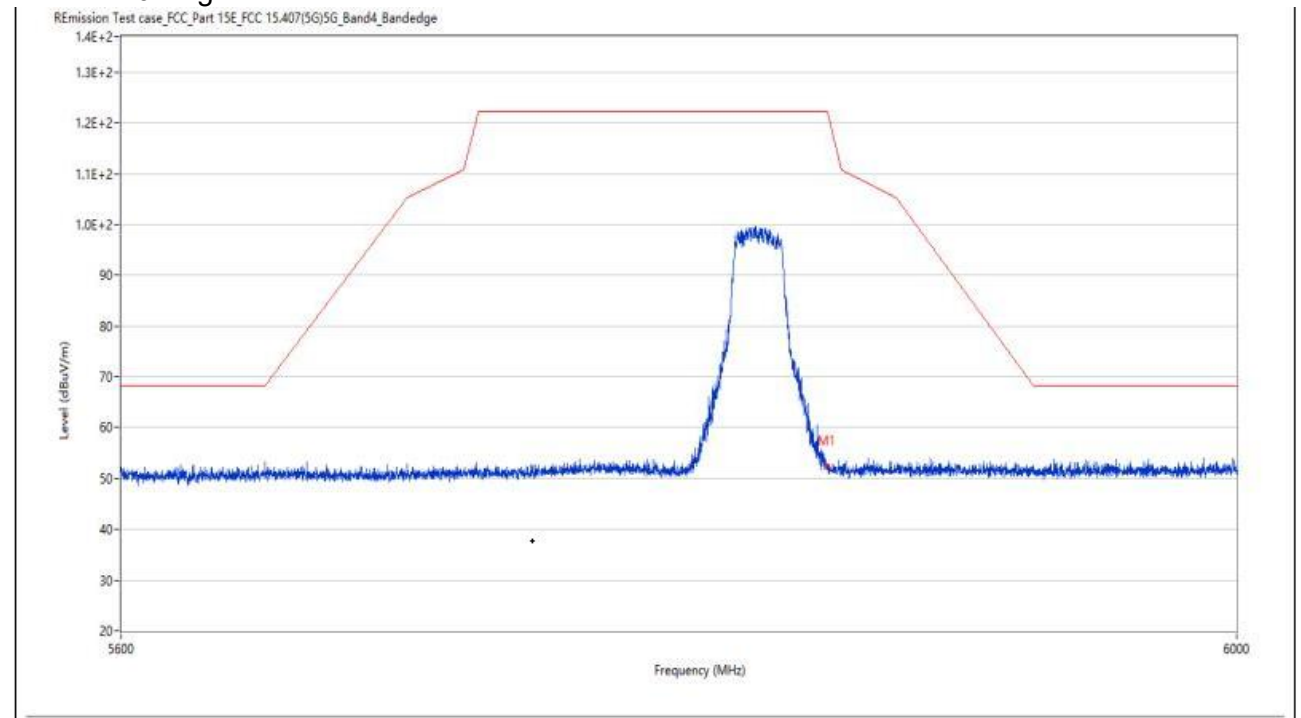
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5725.000	55.14	0.70	122.2	67.06	Peak	145.30	100	Vertical	Pass

B4-11ac20 High : Horizontal



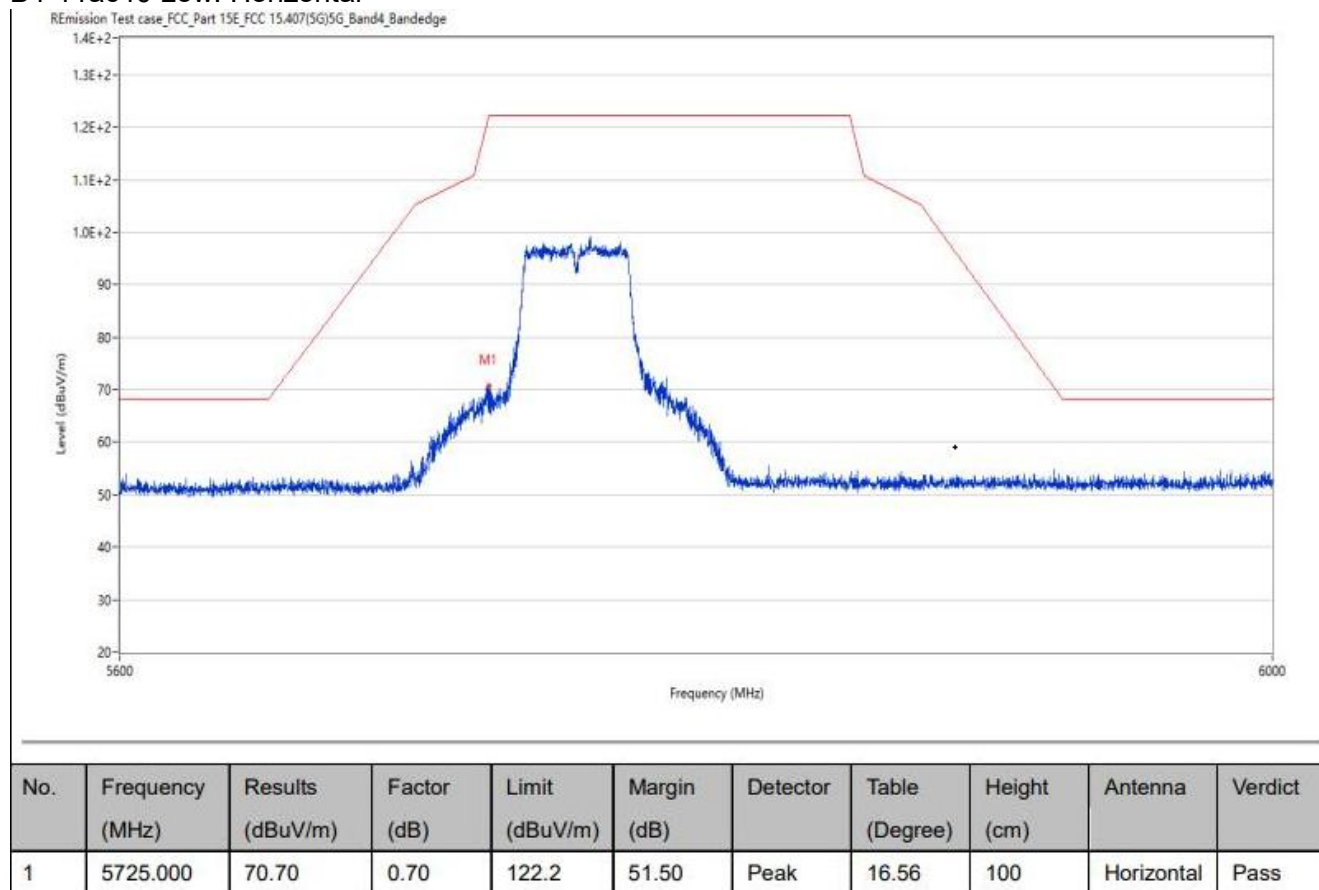
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5850.000	52.69	1.34	122.2	69.51	Peak	131.30	100	Horizontal	Pass

B4-11ac20 -High : Vertical

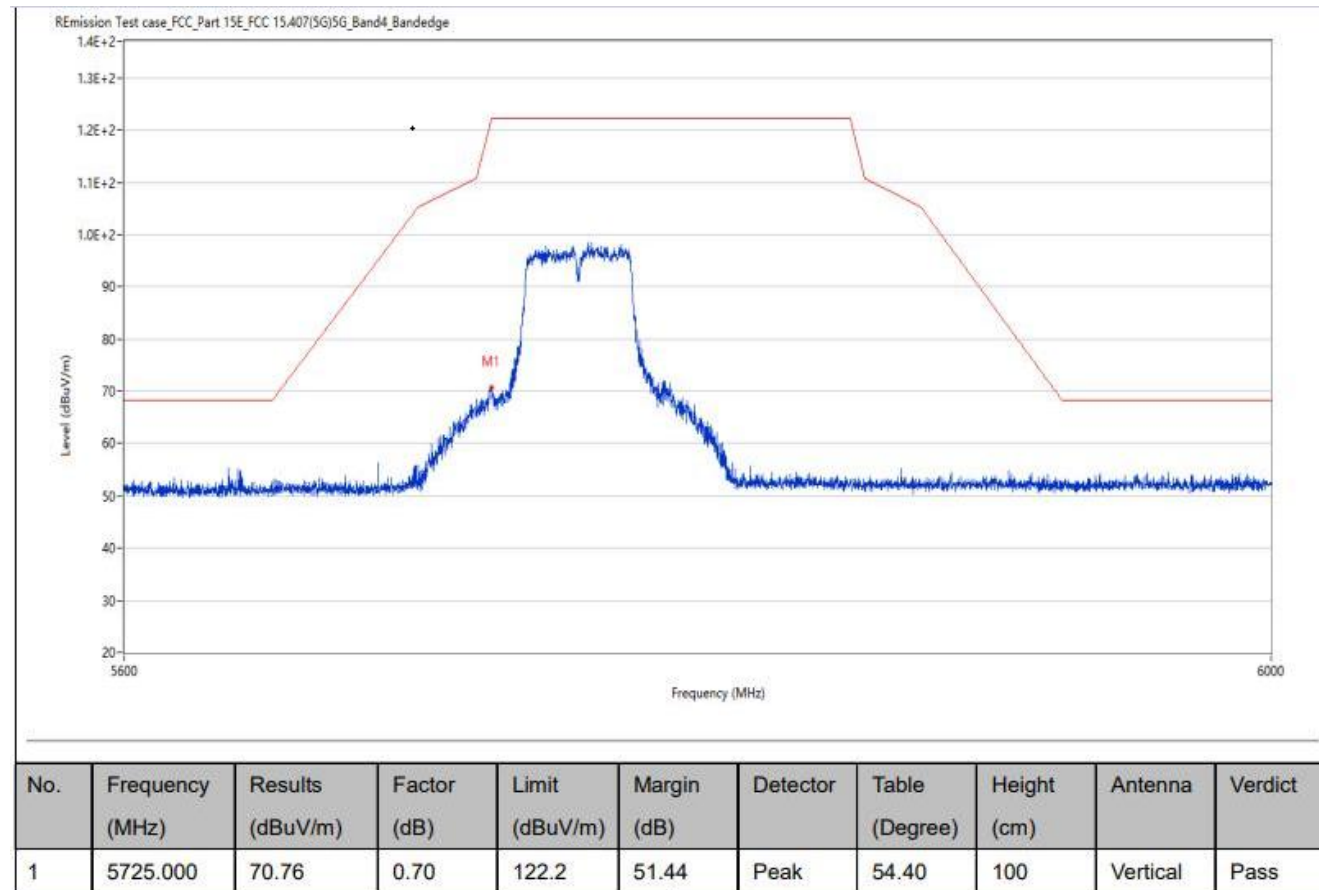


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5850.000	52.47	1.34	122.2	69.73	Peak	202.70	100	Vertical	Pass

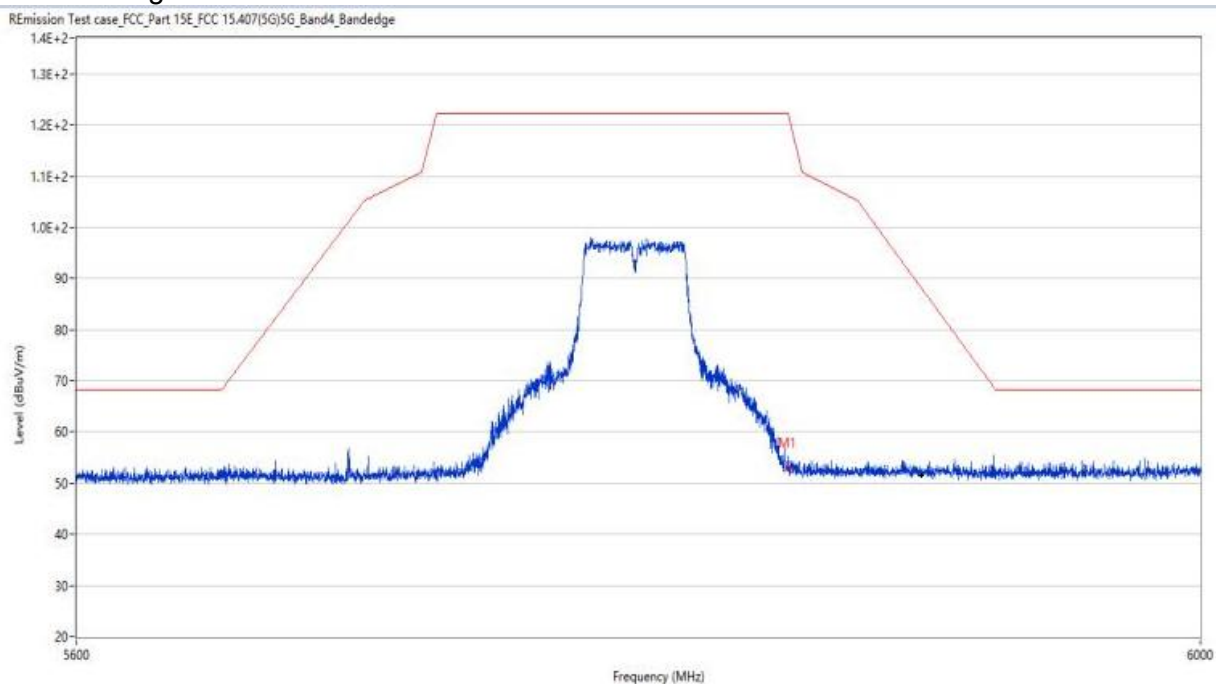
B4-11ac40 Low: Horizontal



B4-11ac40 Low: Vertical

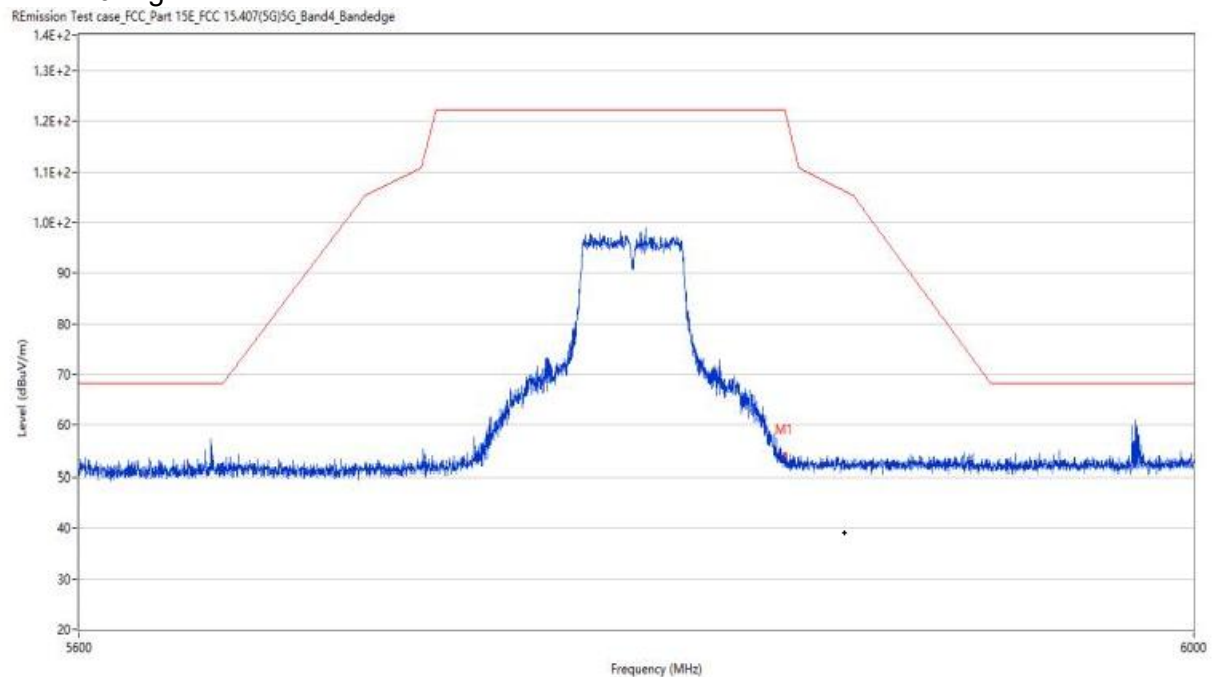


B4-11ac40 High : Horizontal



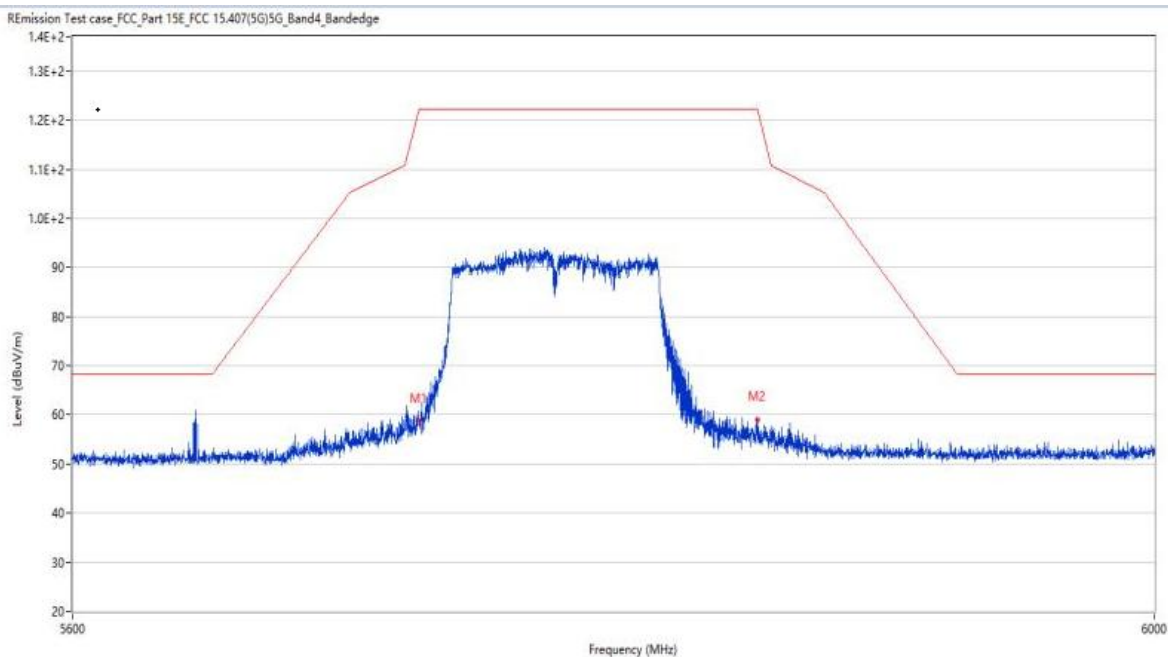
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5850.000	52.90	1.34	122.2	69.30	Peak	65.72	100	Horizontal	Pass

B4-11ac40 High : Vertical



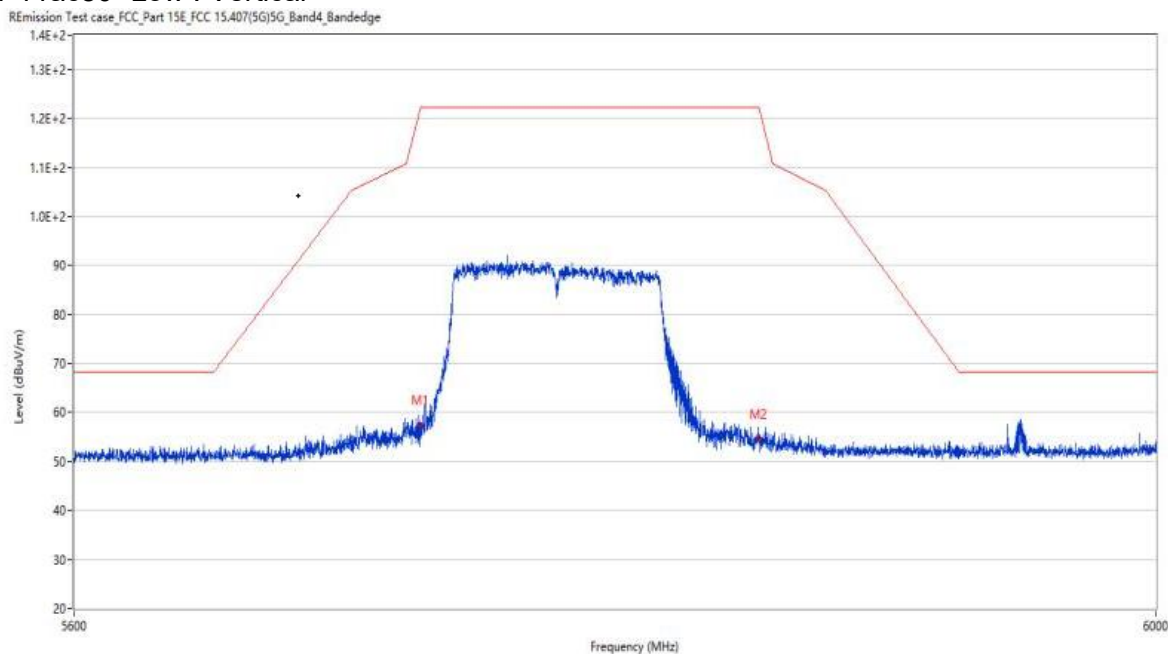
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5850.000	54.12	1.34	122.2	68.08	Peak	34.32	100	Vertical	Pass

B4-11ac80 -Low : Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5725.000	58.46	0.70	122.2	63.74	Peak	53.26	100	Horizontal	Pass
2	5850.000	58.91	1.34	122.2	63.29	Peak	347.47	100	Horizontal	Pass

B4-11ac80 -Low : Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	5725.000	57.54	0.70	122.2	64.66	Peak	359.55	100	Vertical	Pass
2	5850.000	54.67	1.34	122.2	67.53	Peak	331.90	100	Vertical	Pass

10 CONDUCTED EMISSION TEST

10.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 207(a) limit in the table below has to be followed.

FREQUENCY (MHz)	Conducted Emission limit (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

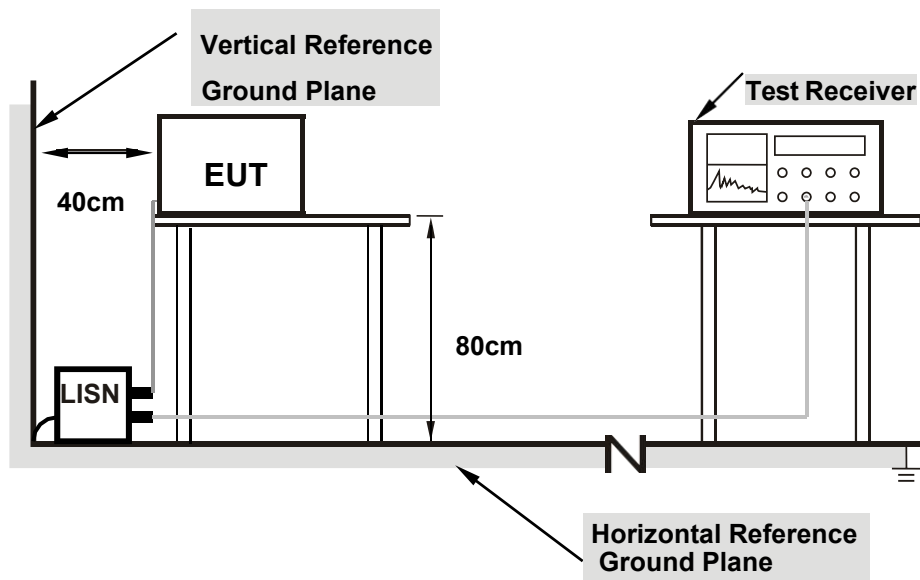
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

10.2 TEST PROCEDURE

- The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

10.3 TEST SETUP



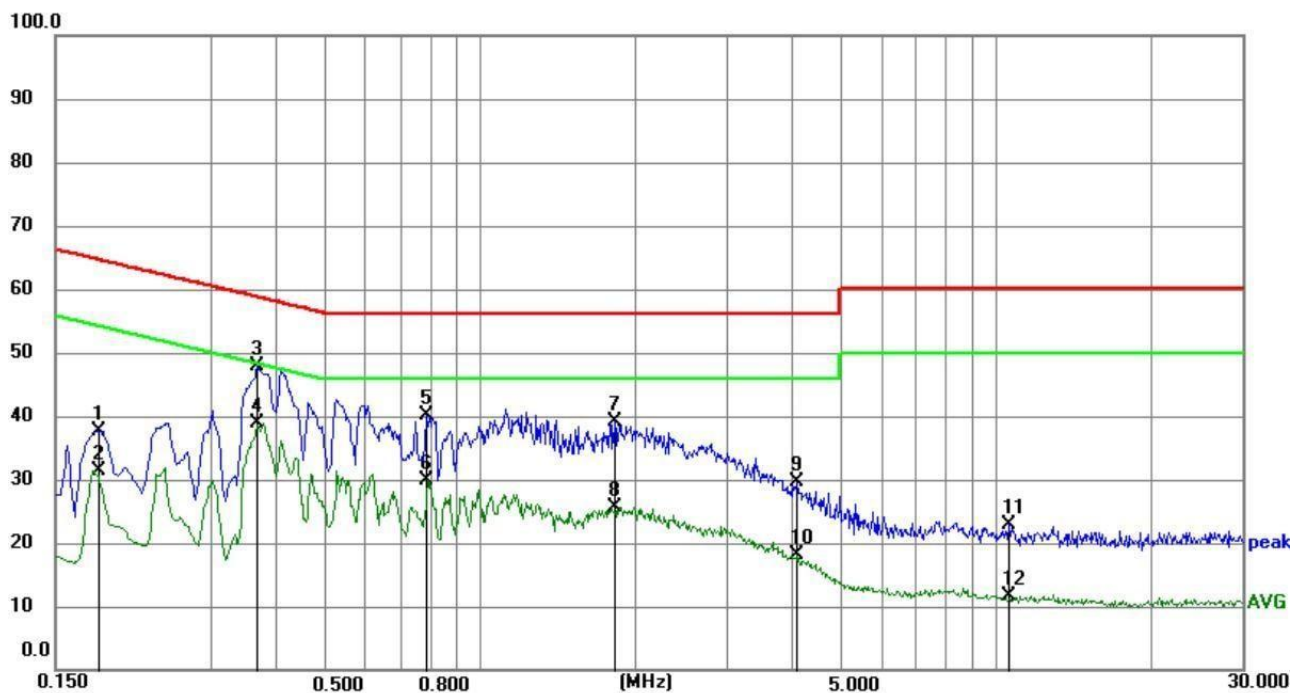
Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

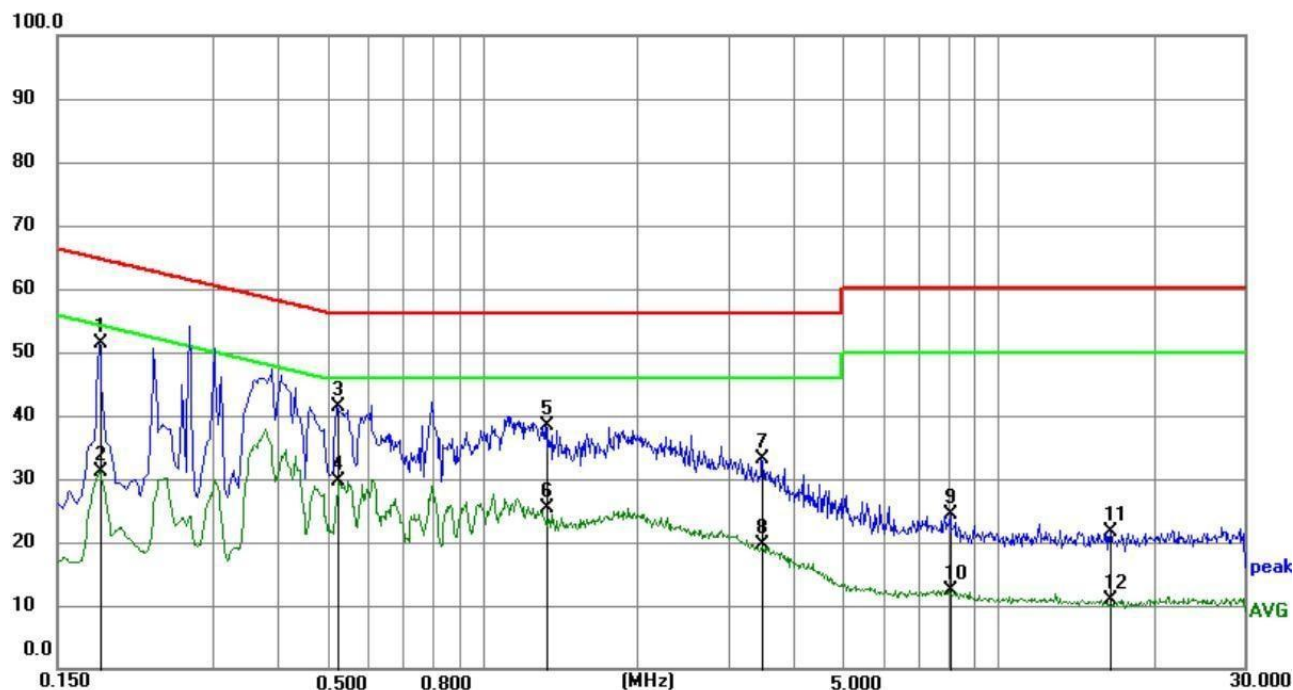
10.4 TEST RESULT

Temperature:	22.1 °C	Relative Humidity:	56%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1815	27.80	9.85	37.65	64.42	26.77	QP
2	0.1815	21.58	9.85	31.43	54.42	22.99	AVG
3	0.3704	38.04	9.89	47.93	58.49	10.56	QP
4	0.3704	28.92	9.89	38.81	48.49	9.68	AVG
5	0.7844	30.15	9.96	40.11	56.00	15.89	QP
6	0.7844	19.99	9.96	29.95	46.00	16.05	AVG
7	1.8284	29.12	10.03	39.15	56.00	16.85	QP
8	1.8284	15.63	10.03	25.66	46.00	20.34	AVG
9	4.1280	19.55	10.05	29.60	56.00	26.40	QP
10	4.1280	8.02	10.05	18.07	46.00	27.93	AVG
11	10.6125	12.63	10.19	22.82	60.00	37.18	QP
12	10.6125	1.53	10.19	11.72	50.00	38.28	AVG



Temperature:	22.1 °C	Relative Humidity:	56%
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 1		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1806	41.55	9.92	51.47	64.46	12.99	QP
2	0.1806	21.23	9.92	31.15	54.46	23.31	AVG
3	0.5210	31.35	9.93	41.28	56.00	14.72	QP
4	0.5210	19.78	9.93	29.71	46.00	16.29	AVG
5	1.3238	28.37	10.01	38.38	56.00	17.62	QP
6	1.3238	15.33	10.01	25.34	46.00	20.66	AVG
7	3.4722	23.08	10.06	33.14	56.00	22.86	QP
8	3.4722	9.59	10.06	19.65	46.00	26.35	AVG
9	8.0624	14.42	10.08	24.50	60.00	35.50	QP
10	8.0624	2.29	10.08	12.37	50.00	37.63	AVG
11	16.4856	11.56	10.19	21.75	60.00	38.25	QP
12	16.4856	0.78	10.19	10.97	50.00	39.03	AVG



11. ANTENNA REQUIREMENT

11.1 STANDARD REQUIREMENT

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.

11.2 RESULT

The antennas used for this product are PCB antenna and other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 5.07 dBi.

*****END OF THE REPORT*****