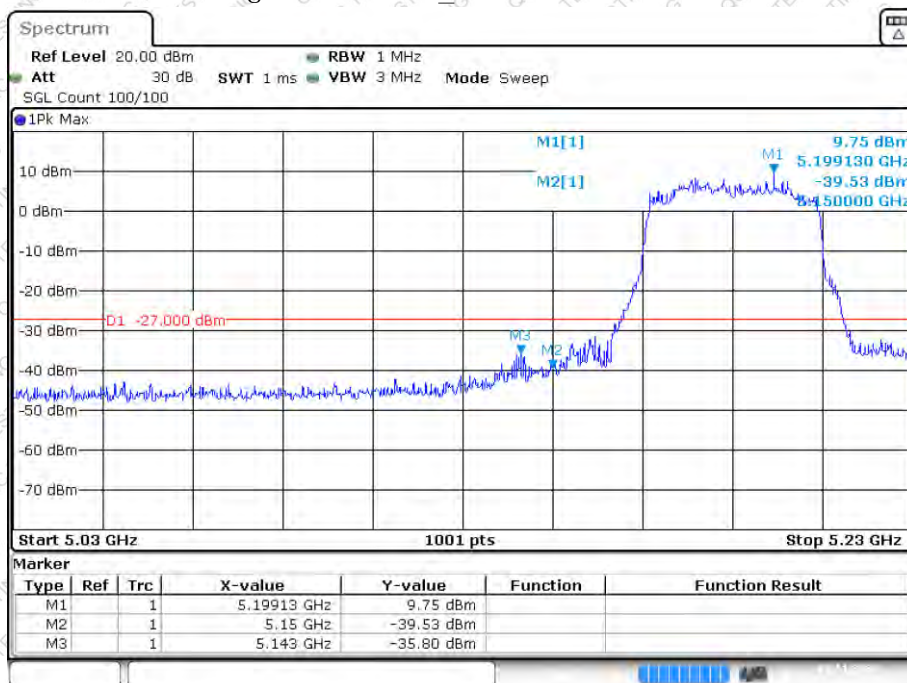


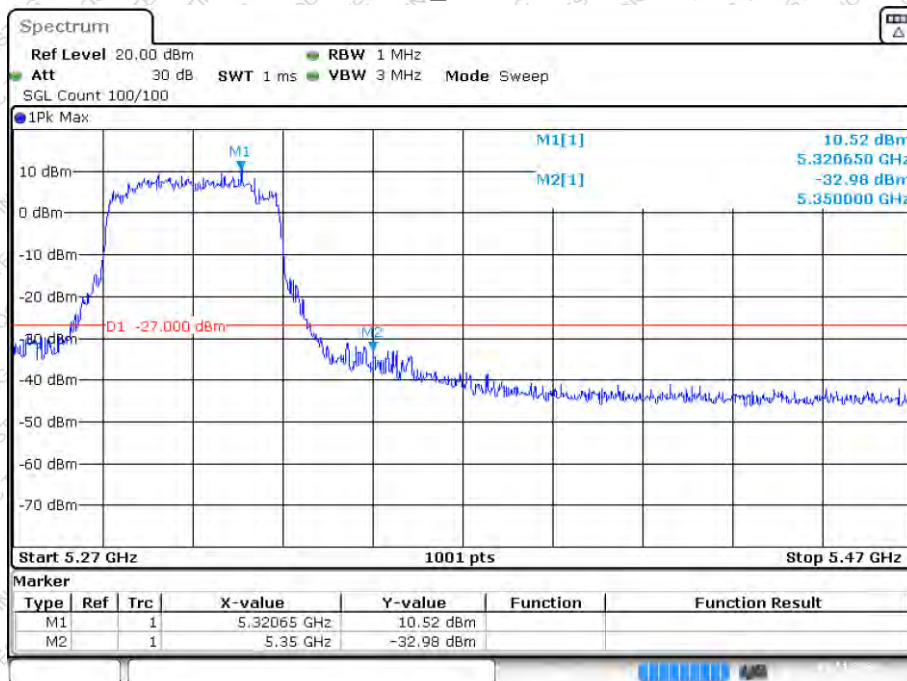


Band Edge NVNT ax40_SISO 5190MHz Low Ant1



Date: 2 NOV 2024 16:04:14

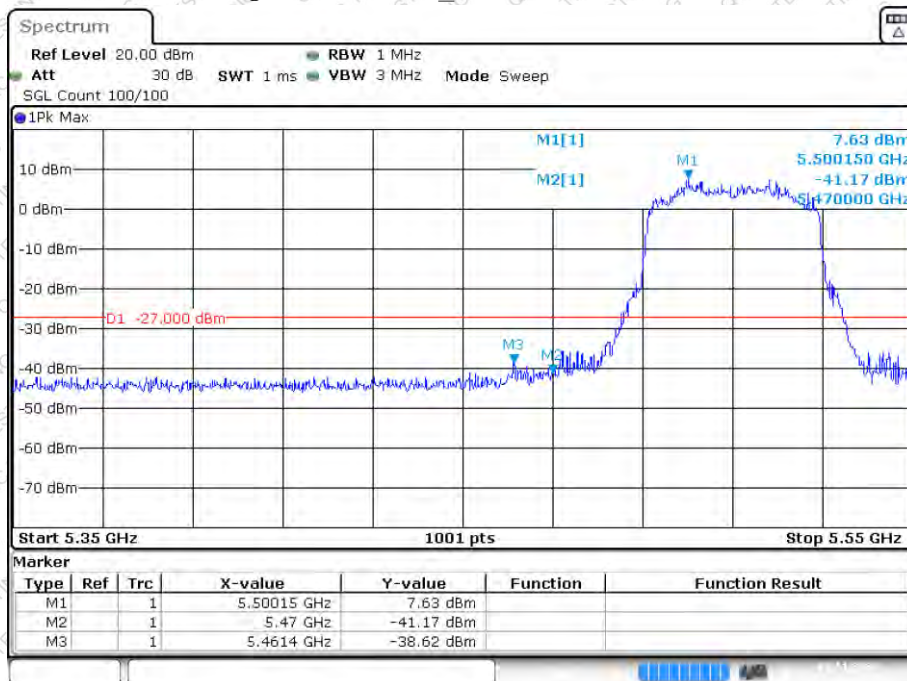
Band Edge NVNT ax40_SISO 5310MHz High Ant1



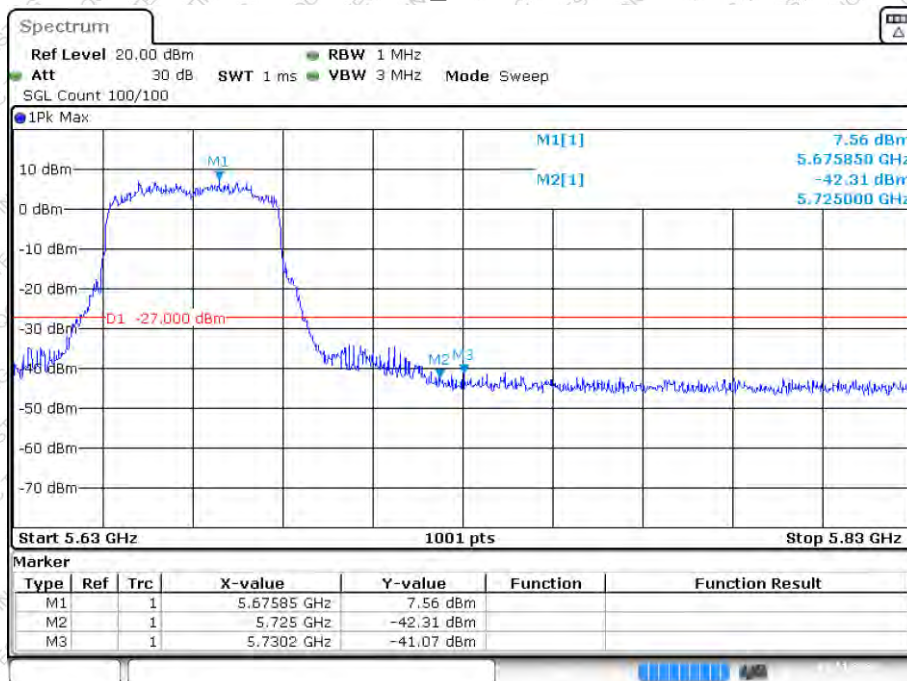
Date: 2 NOV 2024 16:04:33



Band Edge NVNT ax40_SISO 5510MHz Low Ant1

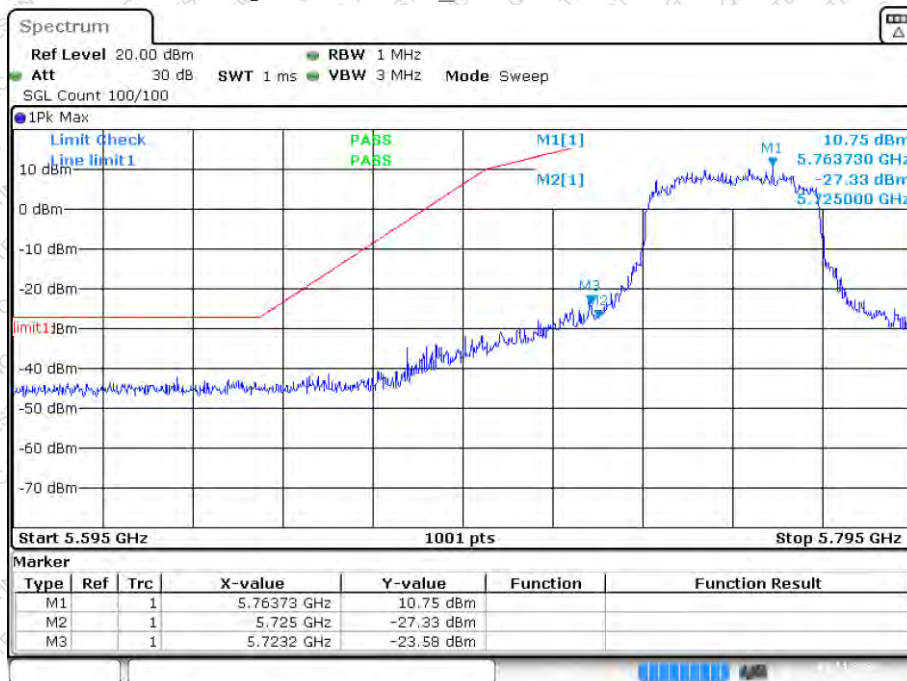


Band Edge NVNT ax40_SISO 5670MHz High Ant1

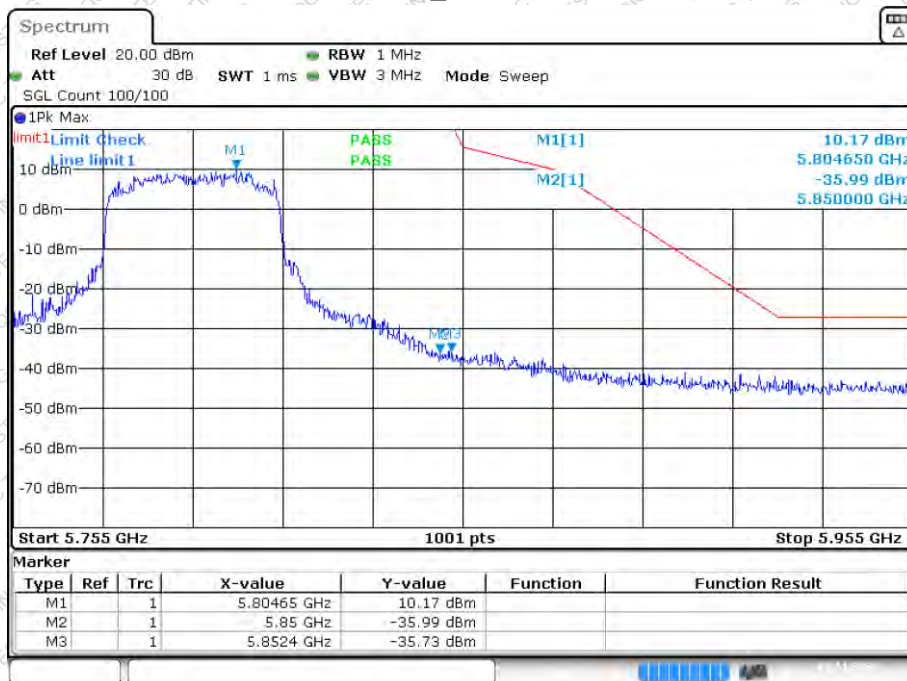




Band Edge NVNT ax40_SISO 5755MHz Low Ant1

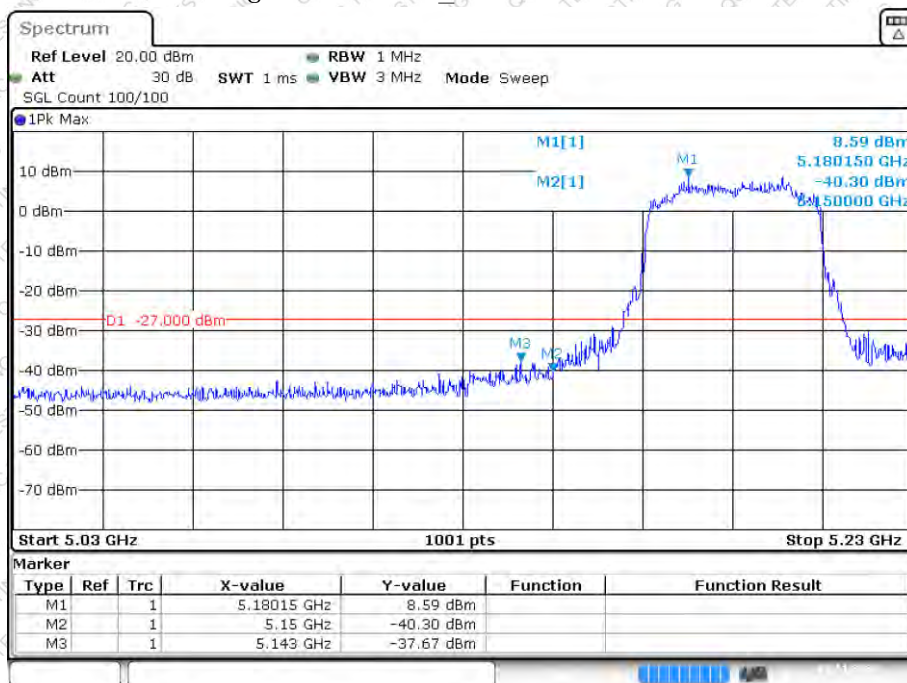


Band Edge NVNT ax40_SISO 5795MHz High Ant1



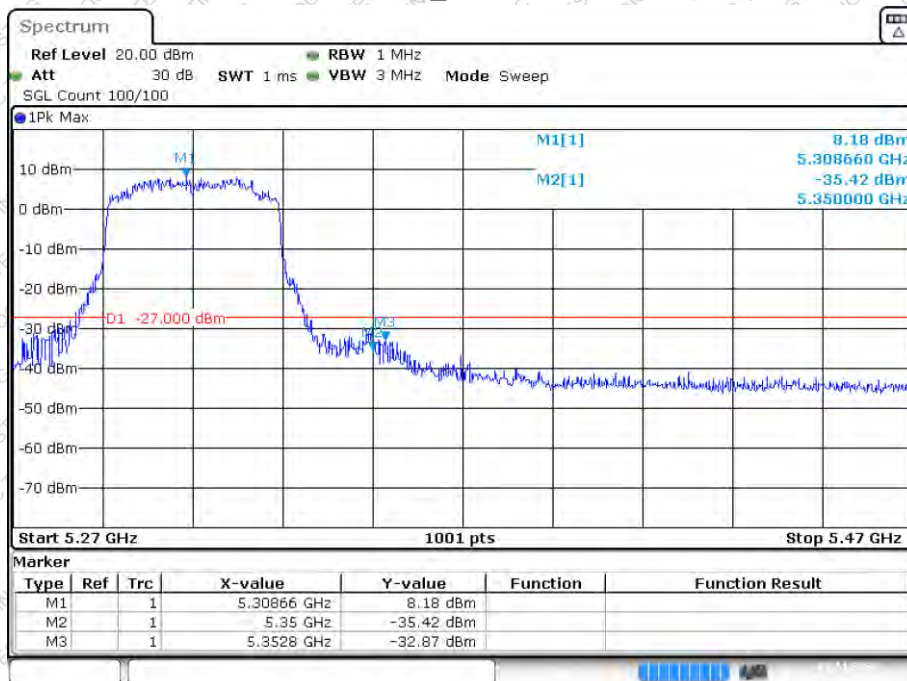


Band Edge NVNT ax40_SISO 5190MHz Low Ant2



Date: 2 NOV 2024 16:15:21

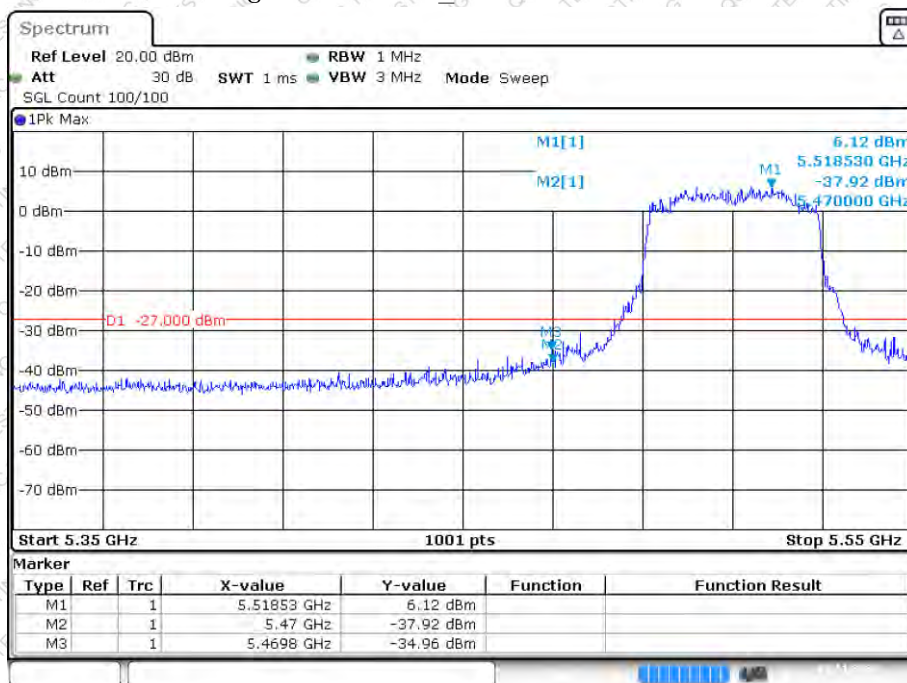
Band Edge NVNT ax40_SISO 5310MHz High Ant2



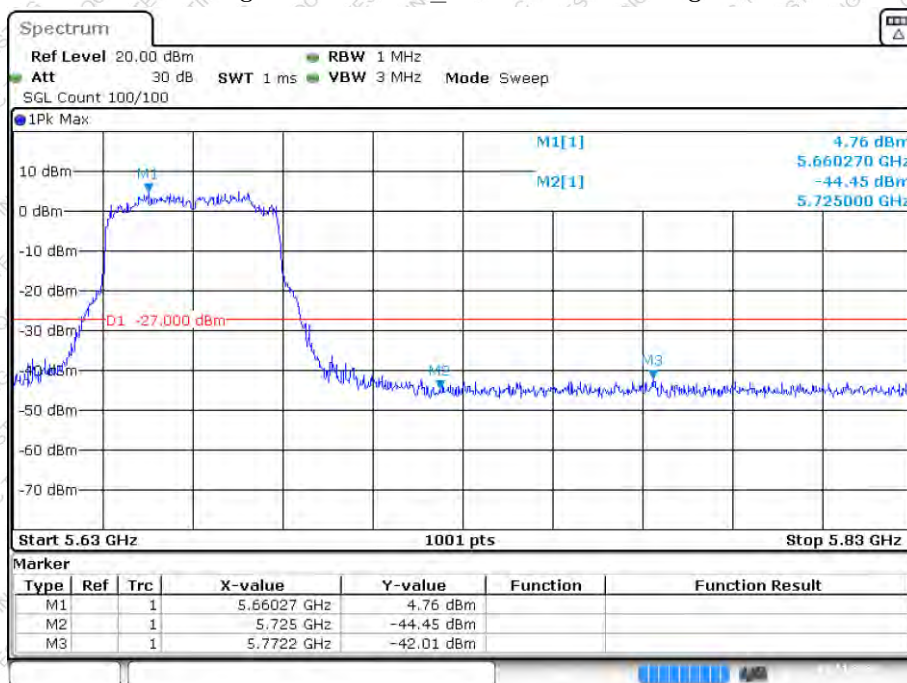
Date: 2 NOV 2024 16:15:33



Band Edge NVNT ax40_SISO 5510MHz Low Ant2

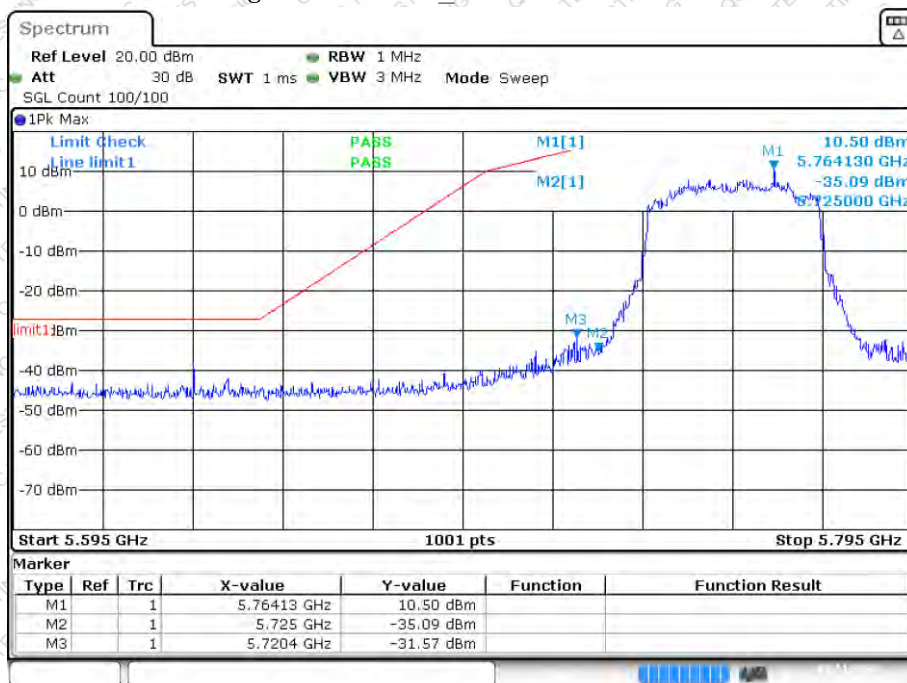


Band Edge NVNT ax40_SISO 5670MHz High Ant2





Band Edge NVNT ax40_SISO 5755MHz Low Ant2

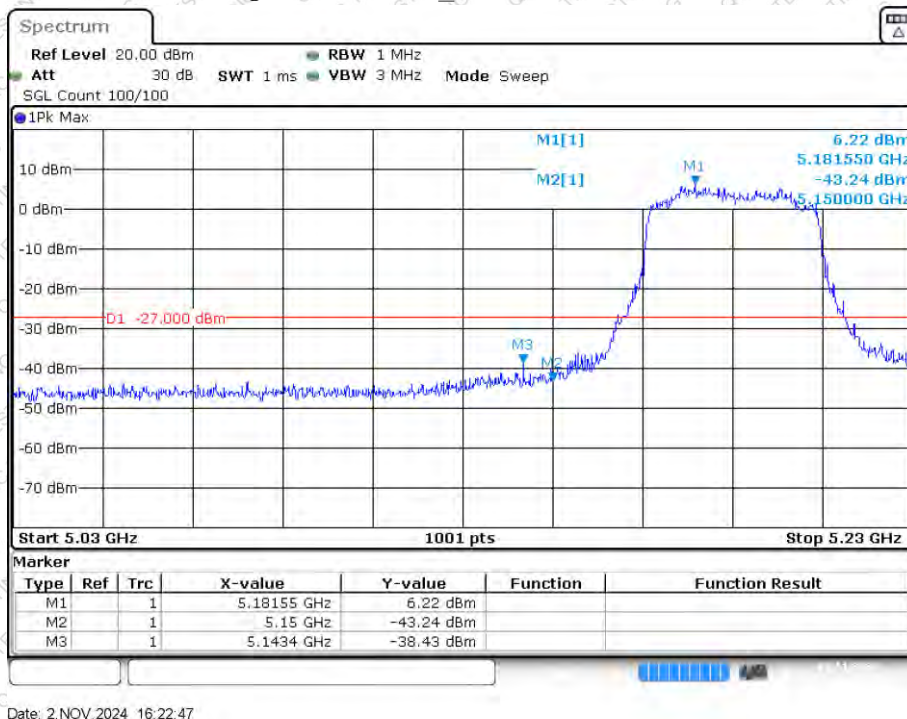


Band Edge NVNT ax40_SISO 5795MHz High Ant2

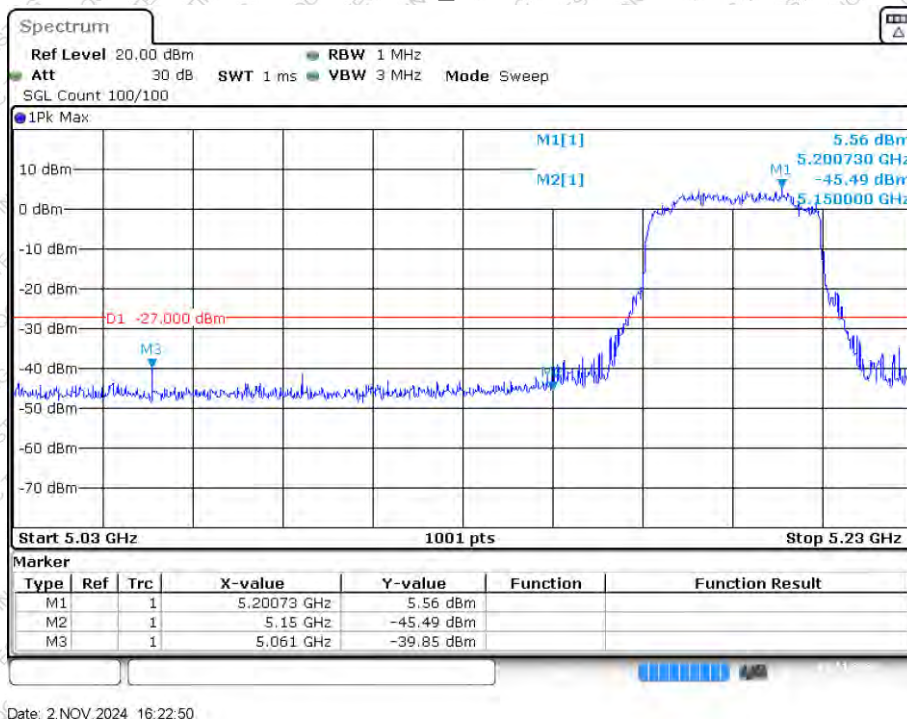




Band Edge NVNT_ax40_MIMO_5190MHz_Low_Ant1

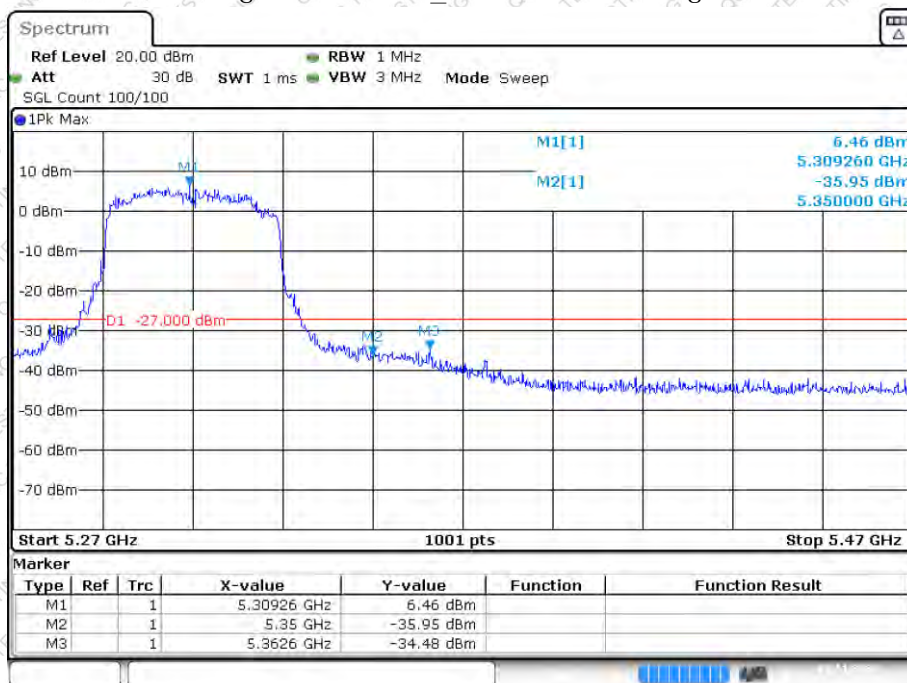


Band Edge NVNT_ax40_MIMO_5190MHz_Low_Ant2



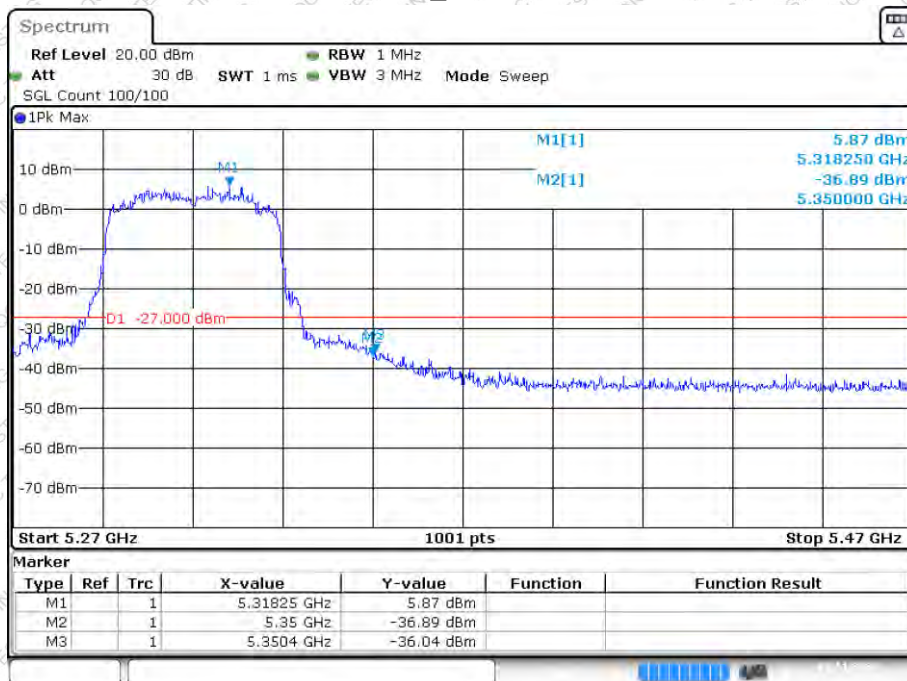


Band Edge NVNT ax40_MIMO 5310MHz High Ant1



Date: 2 NOV 2024 16:23:02

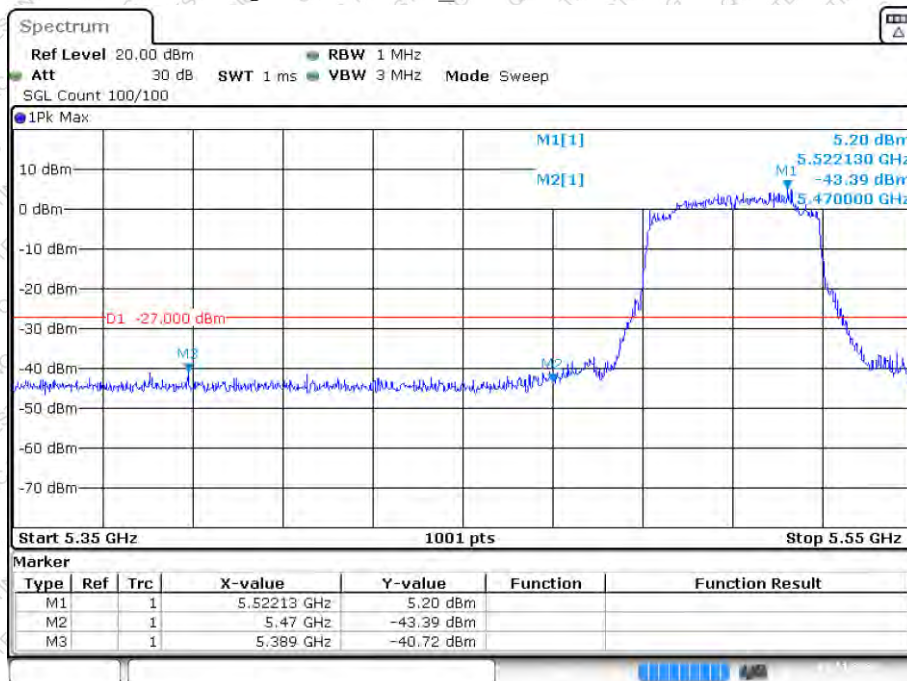
Band Edge NVNT ax40_MIMO 5310MHz High Ant2



Date: 2 NOV 2024 16:23:05

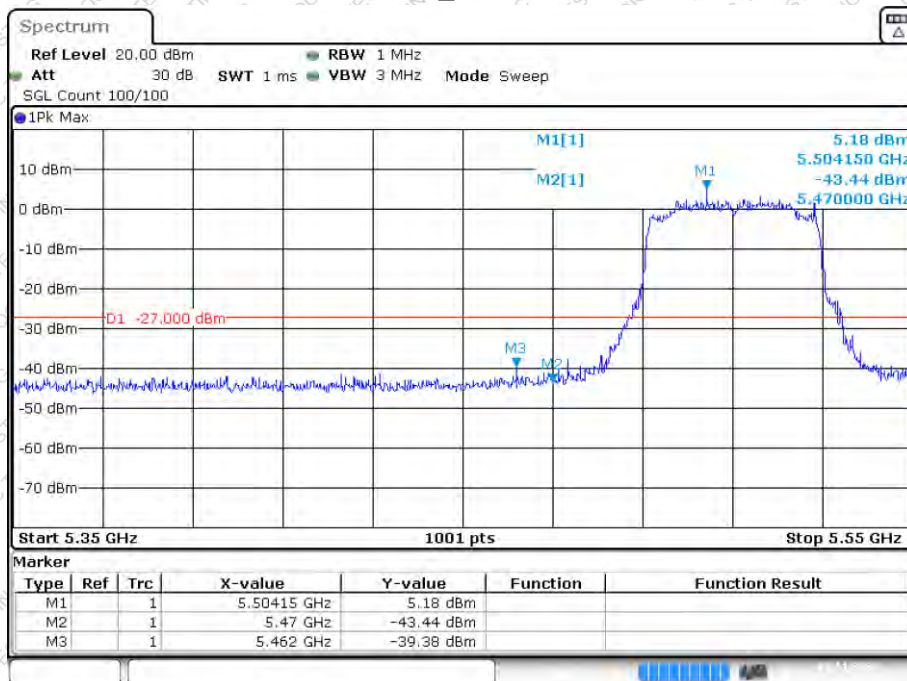


Band Edge NVNT_ax40_MIMO_5510MHz_Low_Ant1



Date: 2 NOV 2024 16:23:18

Band Edge NVNT_ax40_MIMO_5510MHz_Low_Ant2



Date: 2 NOV 2024 16:23:20



Band Edge NVNT ax40_MIMO 5670MHz High Ant1



Date: 2 NOV 2024 16:23:40

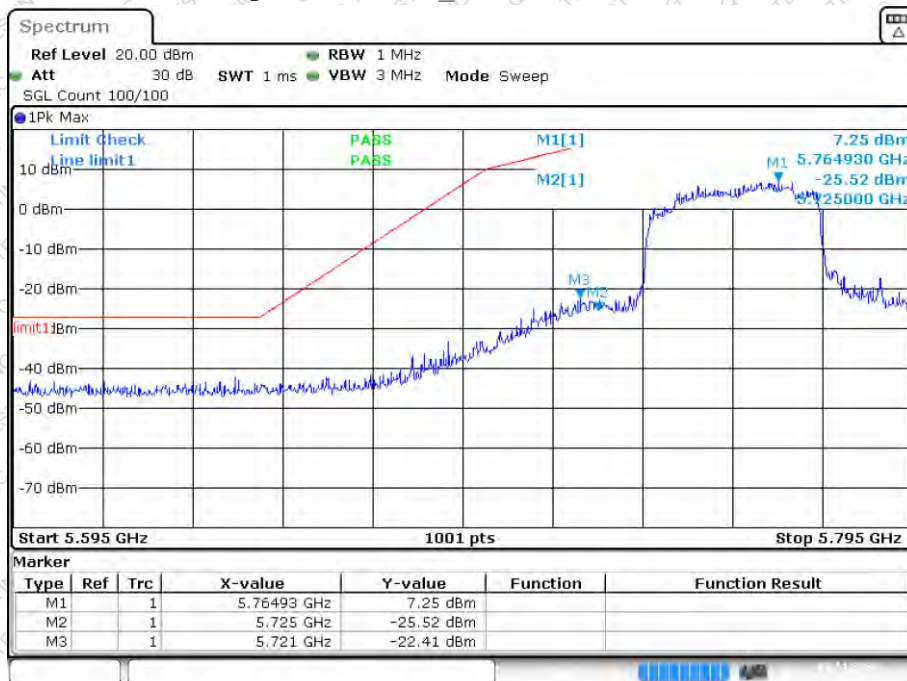
Band Edge NVNT ax40_MIMO 5670MHz High Ant2



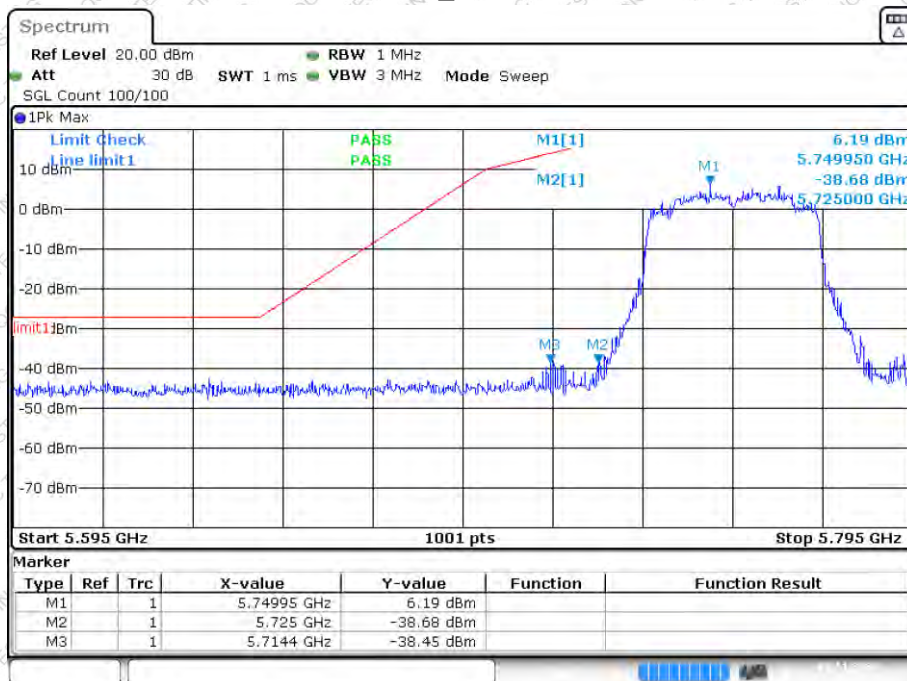
Date: 2 NOV 2024 16:23:42



Band Edge NVNT_ax40_MIMO_5755MHz_Low_Ant1



Band Edge NVNT_ax40_MIMO_5755MHz_Low_Ant2





Band Edge NVNT ax40_MIMO 5795MHz High Ant1

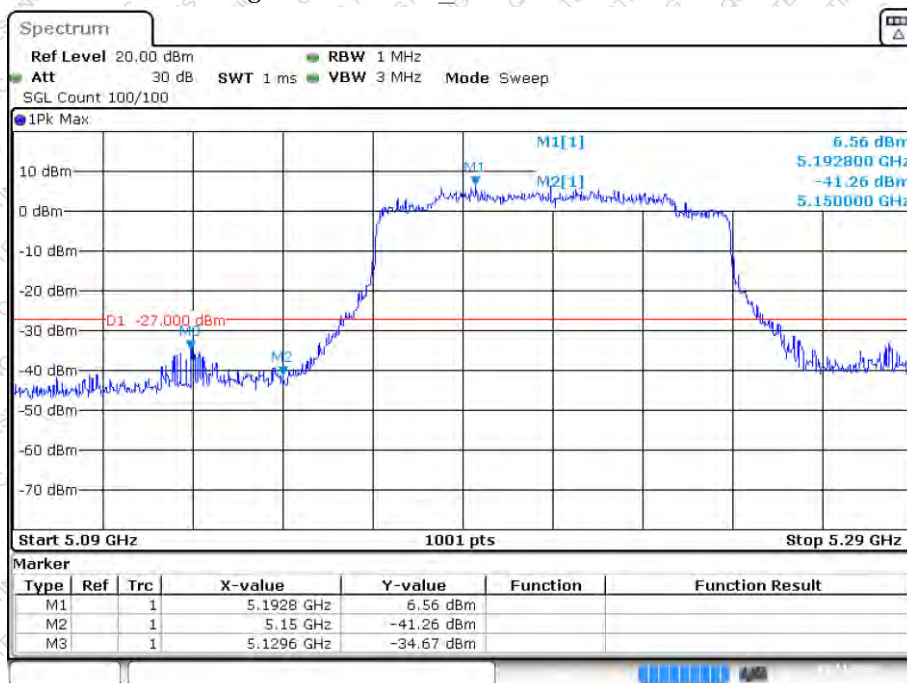


Band Edge NVNT ax40_MIMO 5795MHz High Ant2



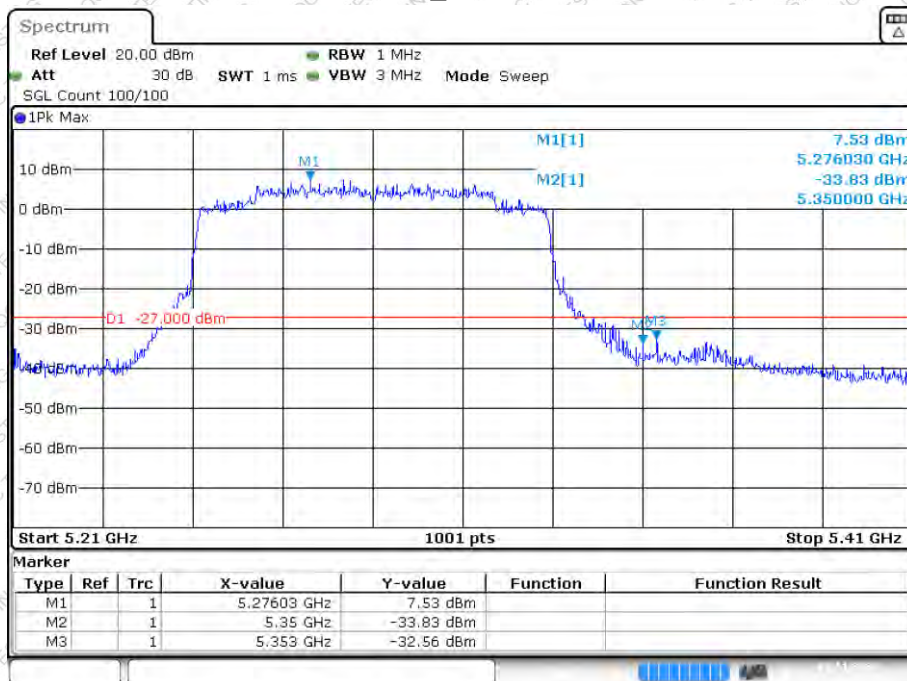


Band Edge NVNT ax80_SISO 5210MHz Low Ant1



Date: 2 NOV 2024 16:28:28

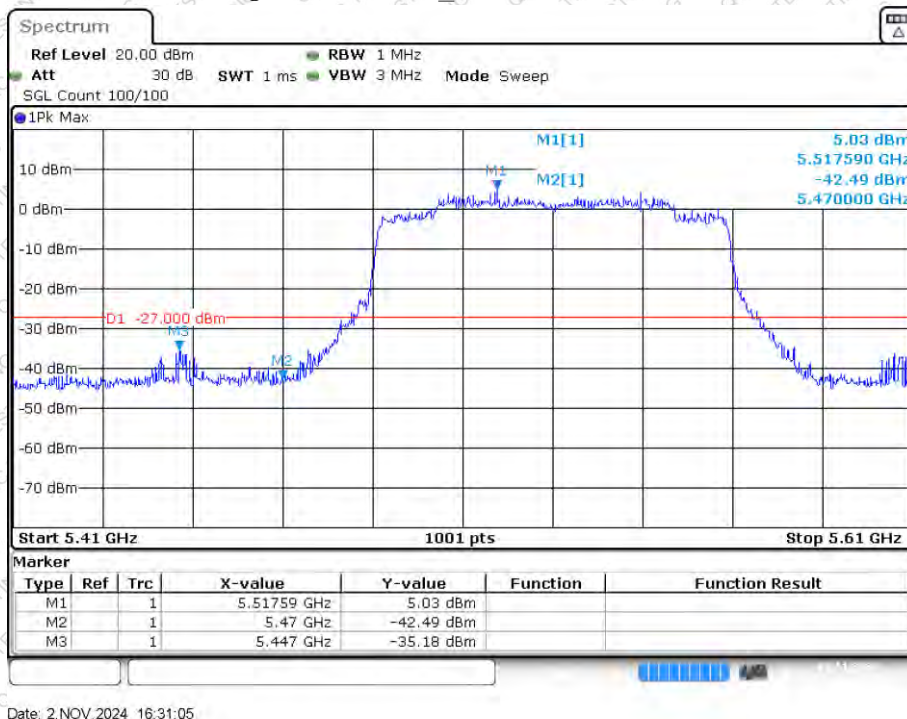
Band Edge NVNT ax80_SISO 5290MHz High Ant1



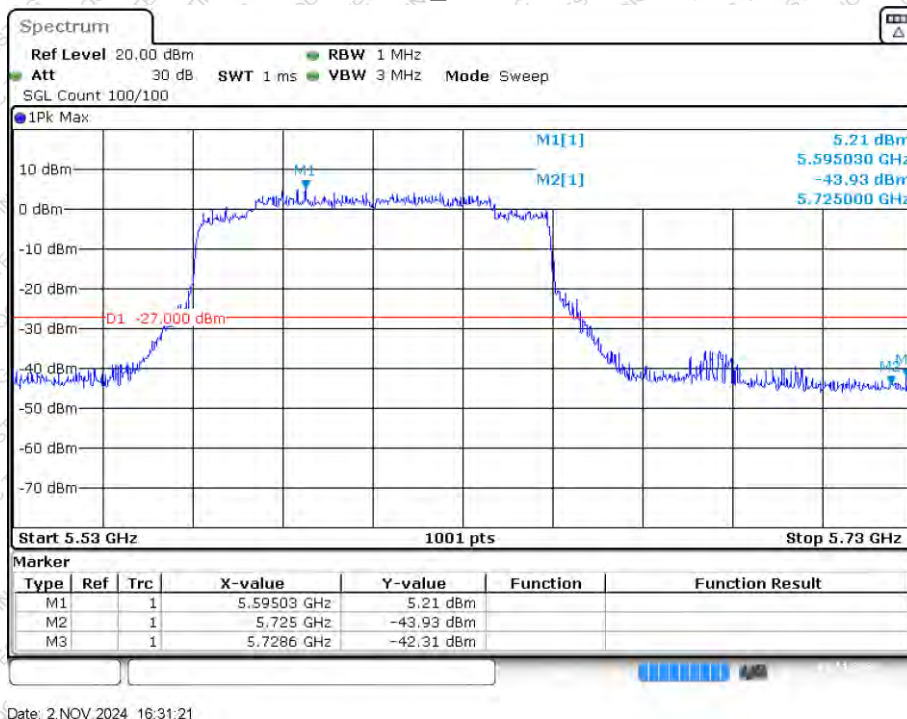
Date: 2 NOV 2024 16:30:53



Band Edge NVNT ax80_SISO 5530MHz Low Ant1

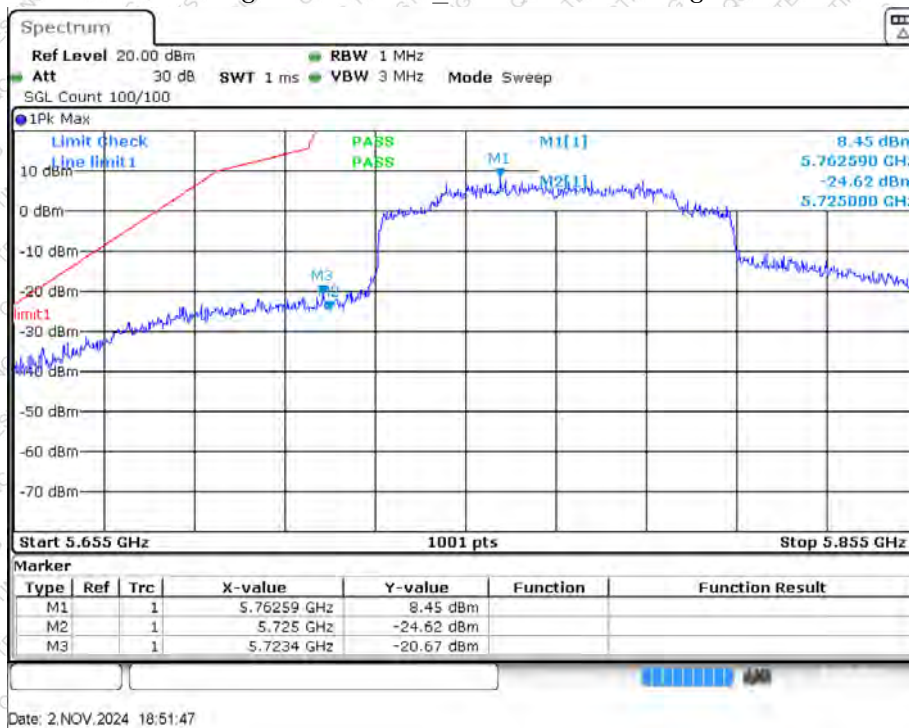


Band Edge NVNT ax80_SISO 5610MHz High Ant1

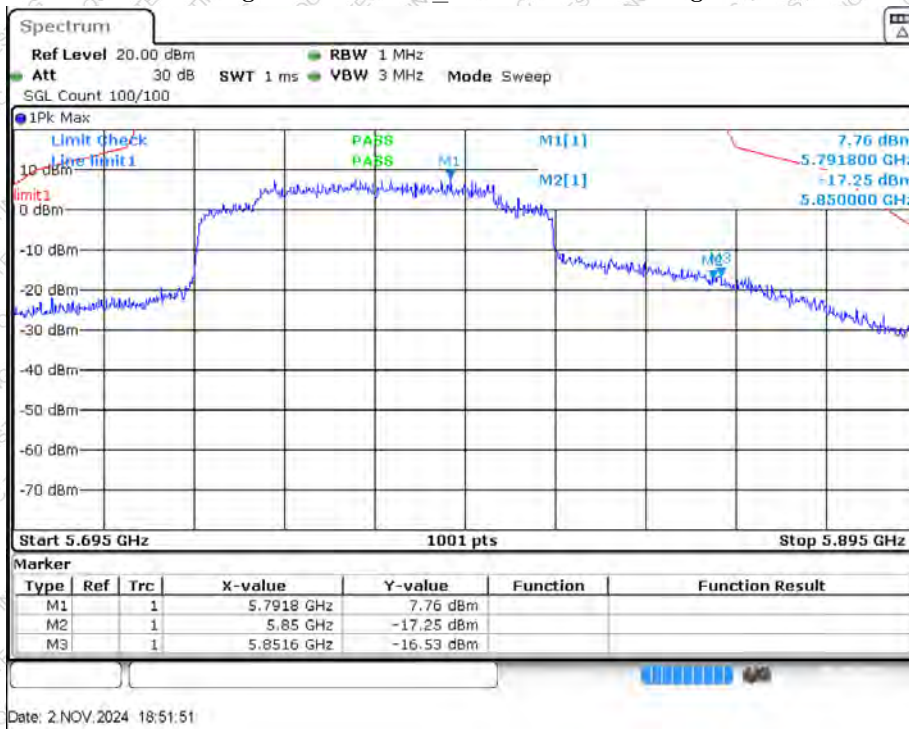




Band Edge NVNT ax80_SISO 5775MHz High Ant1

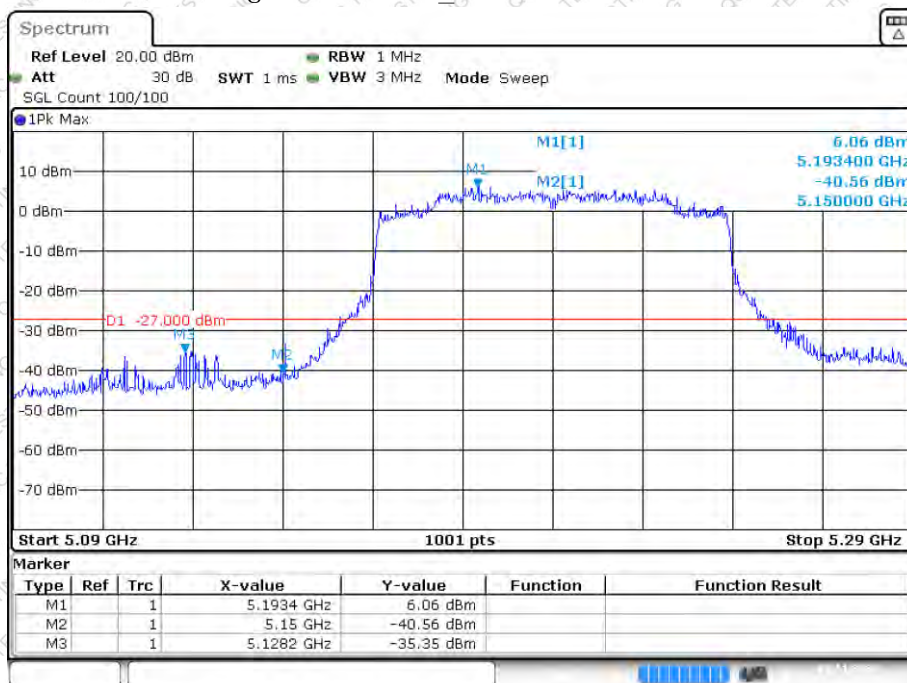


Band Edge NVNT ax80_SISO 5775MHz High Ant1



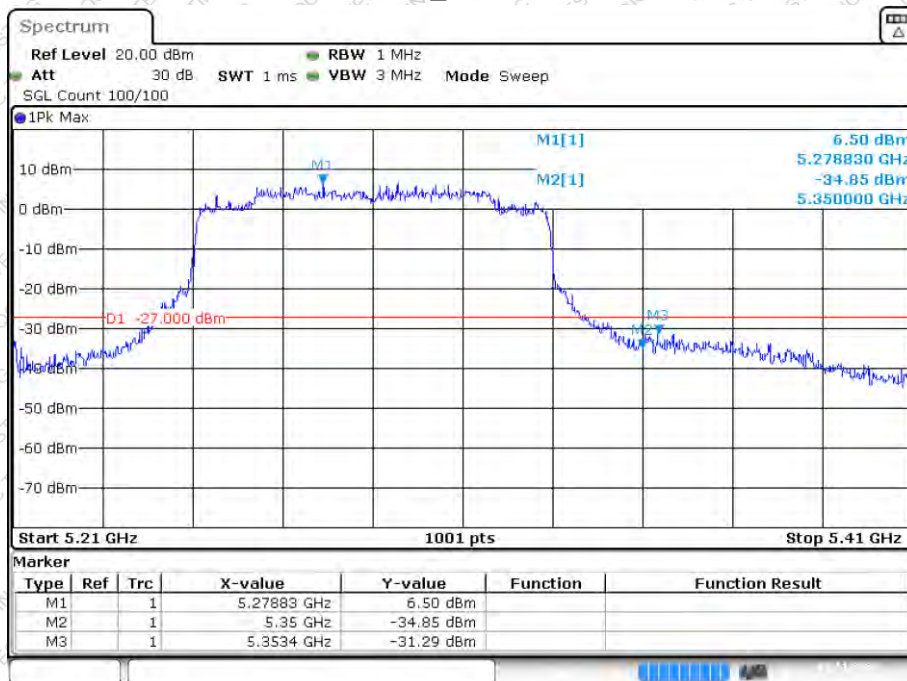


Band Edge NVNT ax80_SISO 5210MHz Low Ant2



Date: 2 NOV 2024 16:35:29

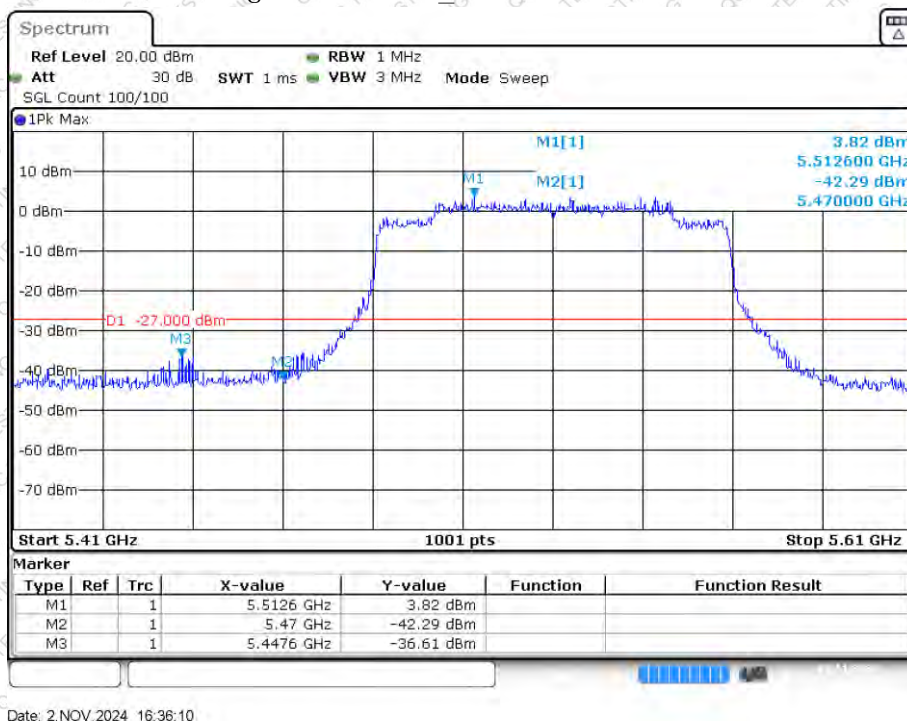
Band Edge NVNT ax80_SISO 5290MHz High Ant2



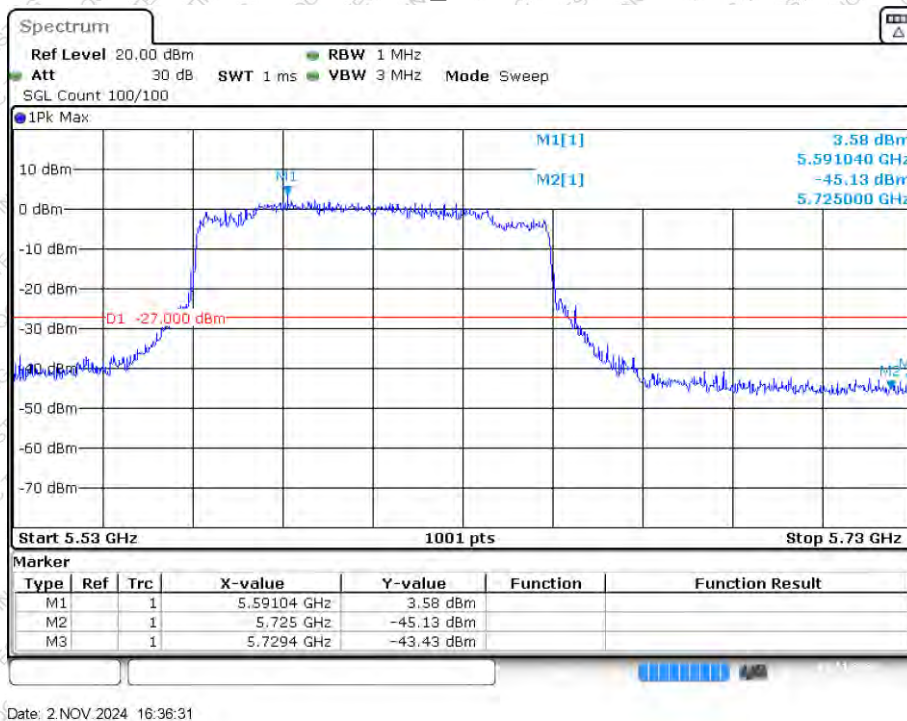
Date: 2 NOV 2024 16:35:51



Band Edge NVNT ax80_SISO 5530MHz Low Ant2

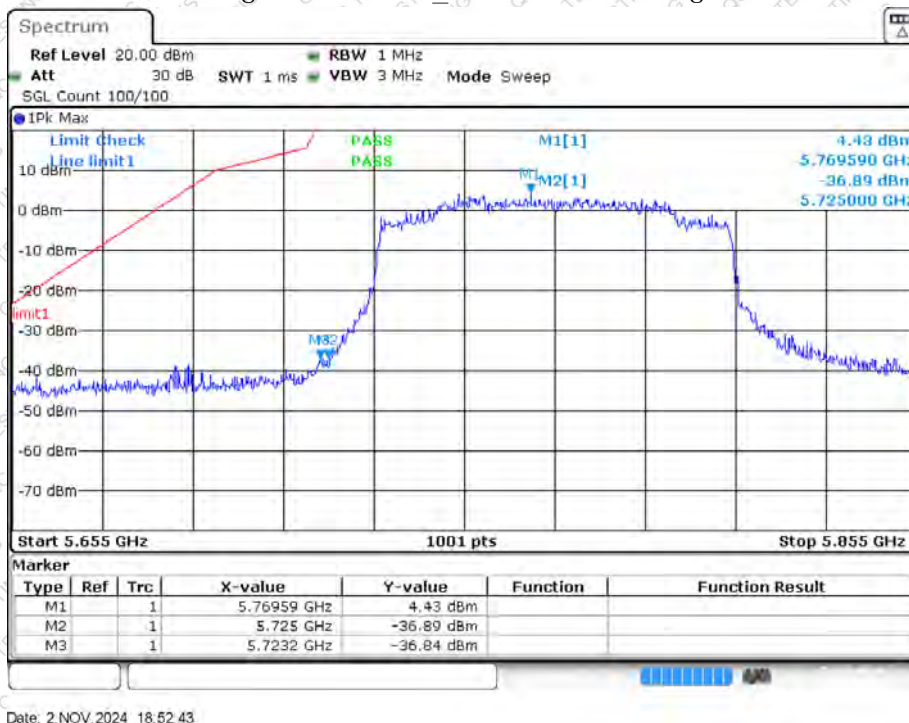


Band Edge NVNT ax80_SISO 5610MHz High Ant2

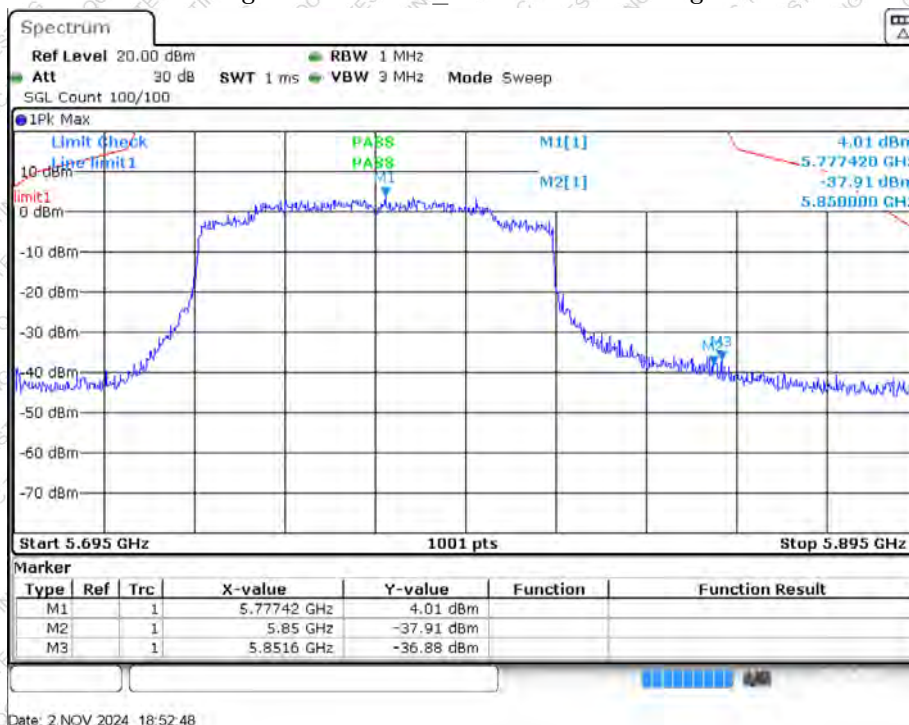




Band Edge NVNT ax80_SISO 5775MHz High Ant2

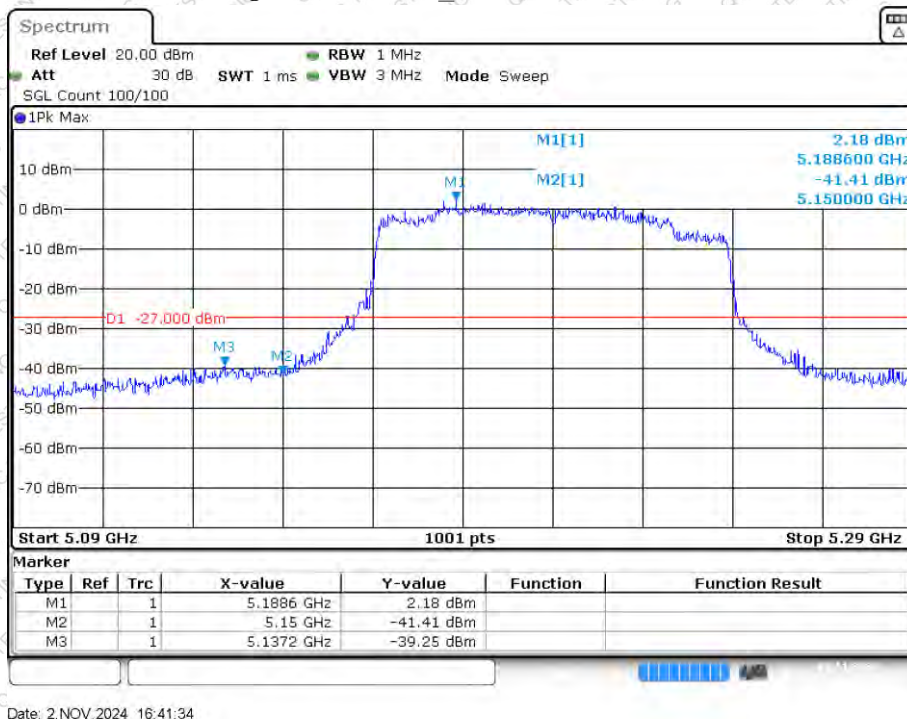


Band Edge NVNT ax80_SISO 5775MHz High Ant2

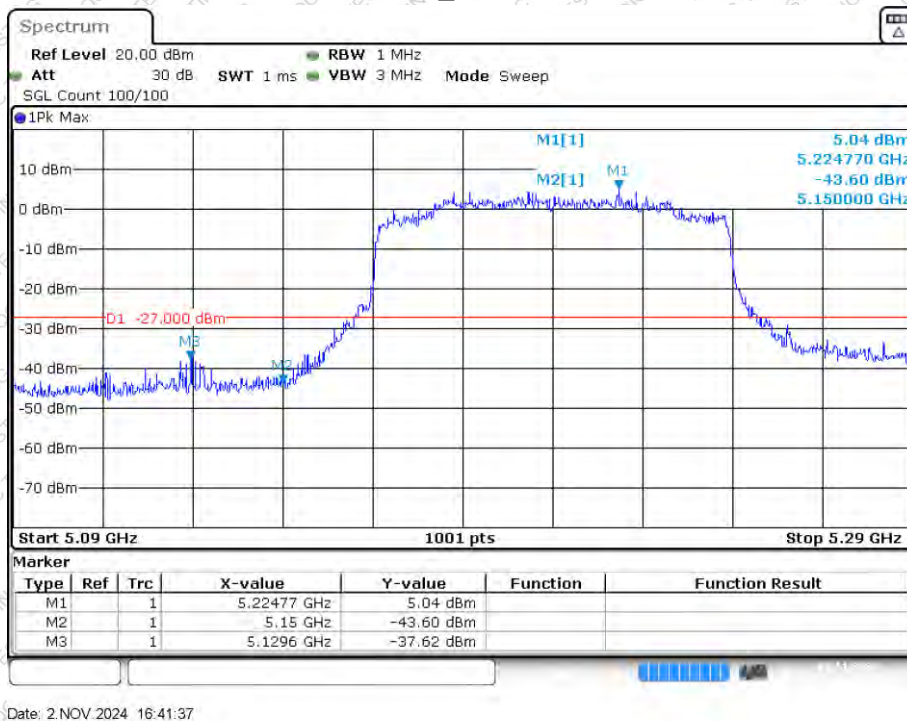




Band Edge NVNT_ax80_MIMO_5210MHz_Low_Ant1

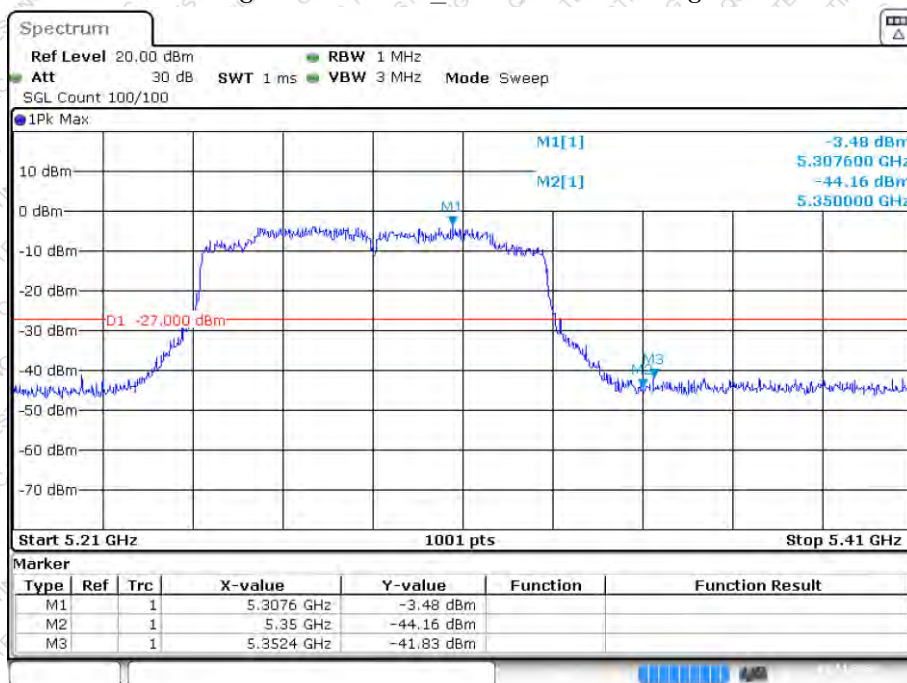


Band Edge NVNT_ax80_MIMO_5210MHz_Low_Ant2



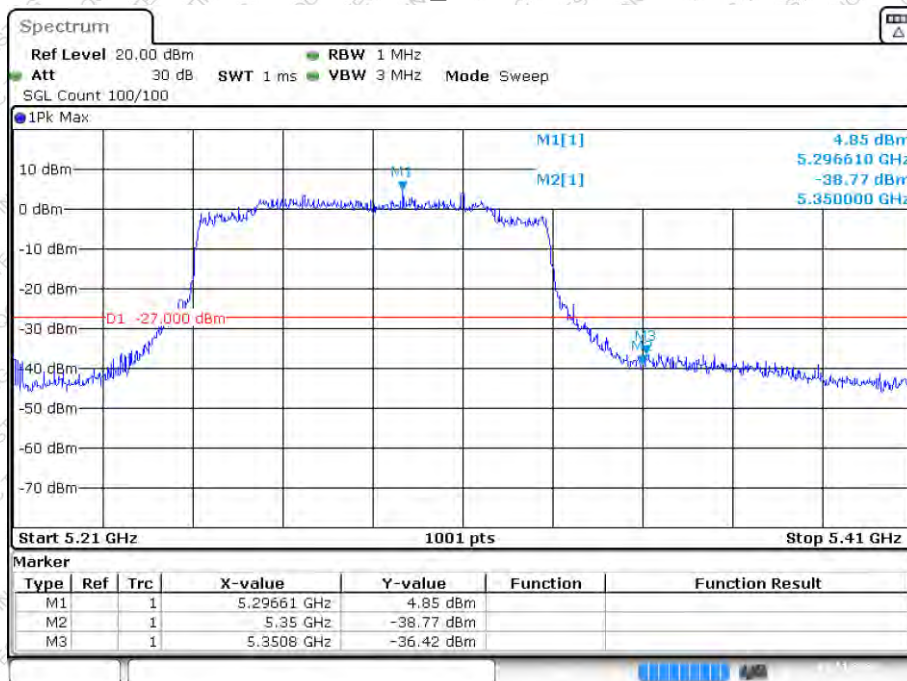


Band Edge NVNT ax80_MIMO 5290MHz High Ant1



Date: 2 NOV 2024 18:41:14

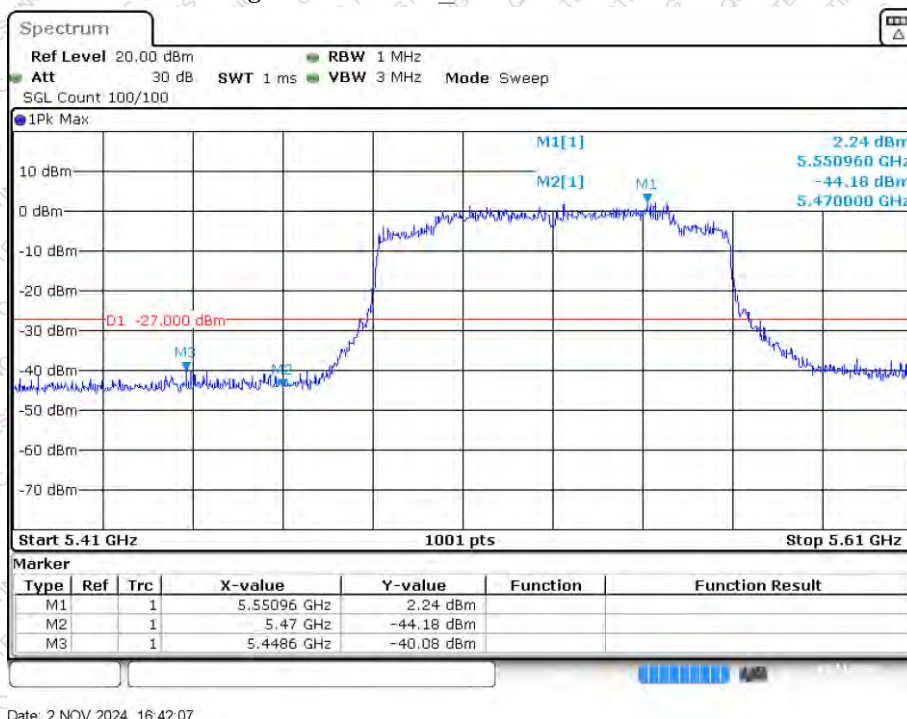
Band Edge NVNT ax80_MIMO 5290MHz High Ant2



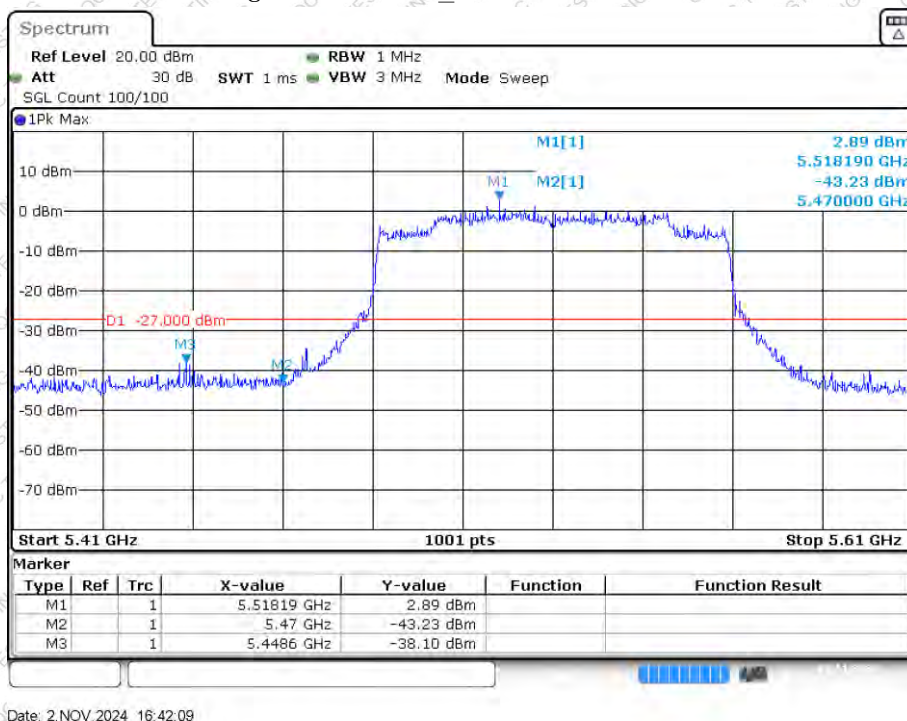
Date: 2 NOV 2024 16:41:53



Band Edge NVNT_ax80_MIMO_5530MHz_Low_Ant1

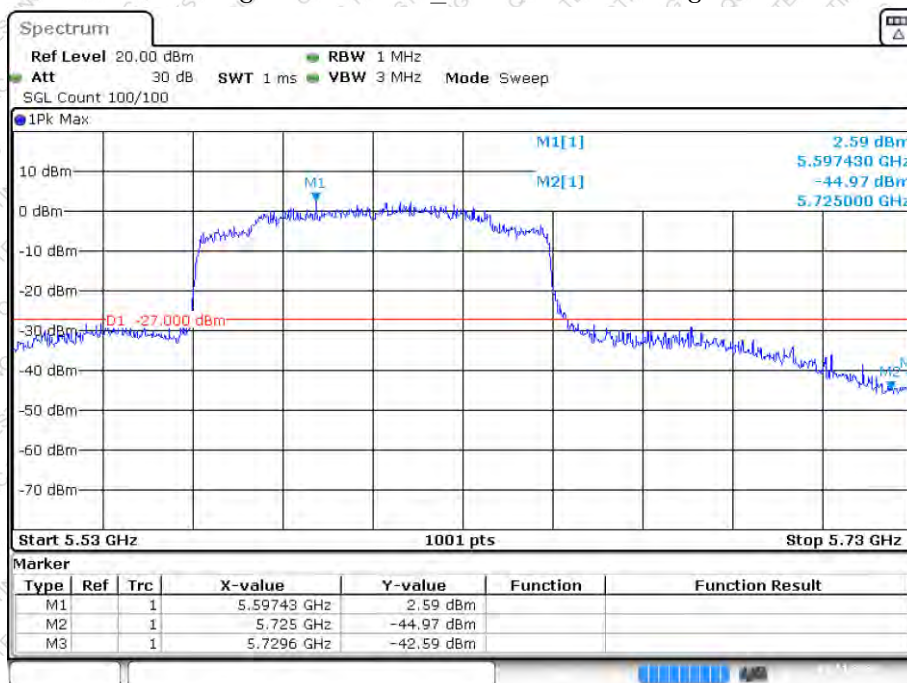


Band Edge NVNT_ax80_MIMO_5530MHz_Low_Ant2



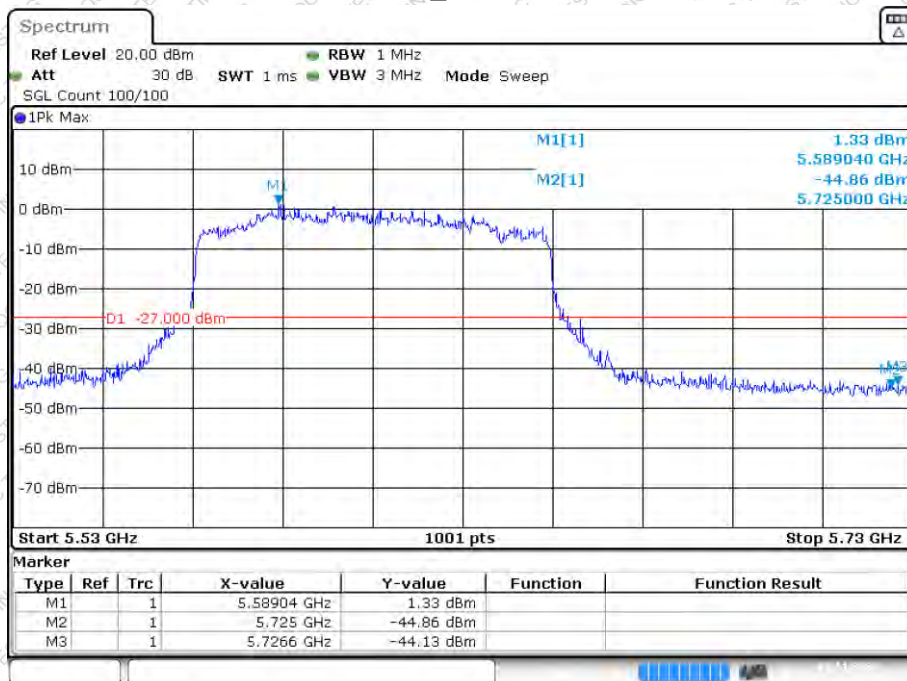


Band Edge NVNT ax80_MIMO 5610MHz High Ant1



Date: 2 NOV 2024 16:42:24

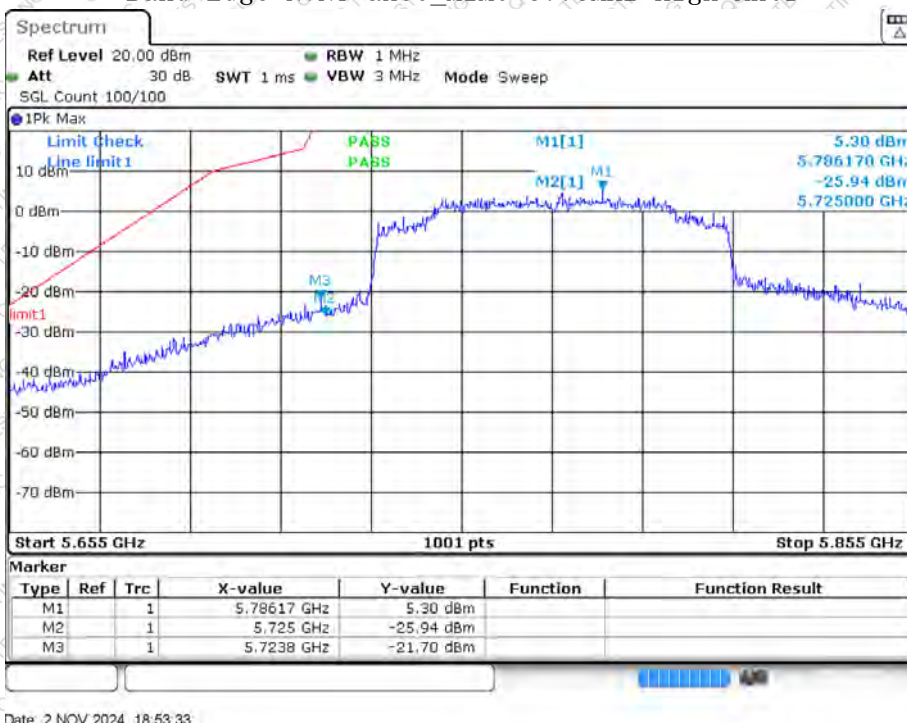
Band Edge NVNT ax80_MIMO 5610MHz High Ant2



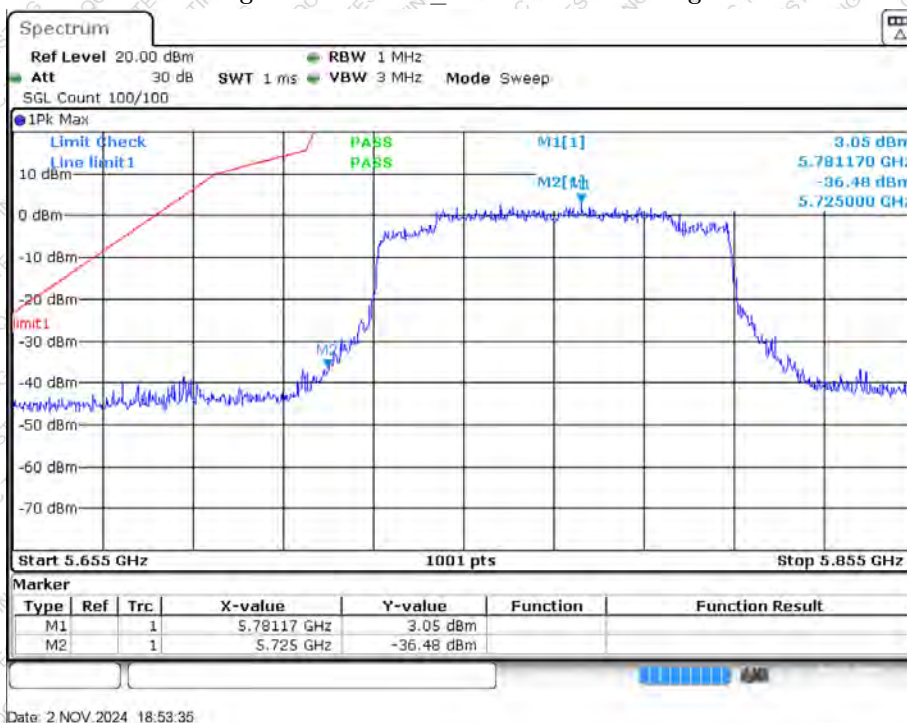
Date: 2 NOV 2024 16:42:26



Band Edge NVNT ax80_MIMO 5775MHz High Ant1

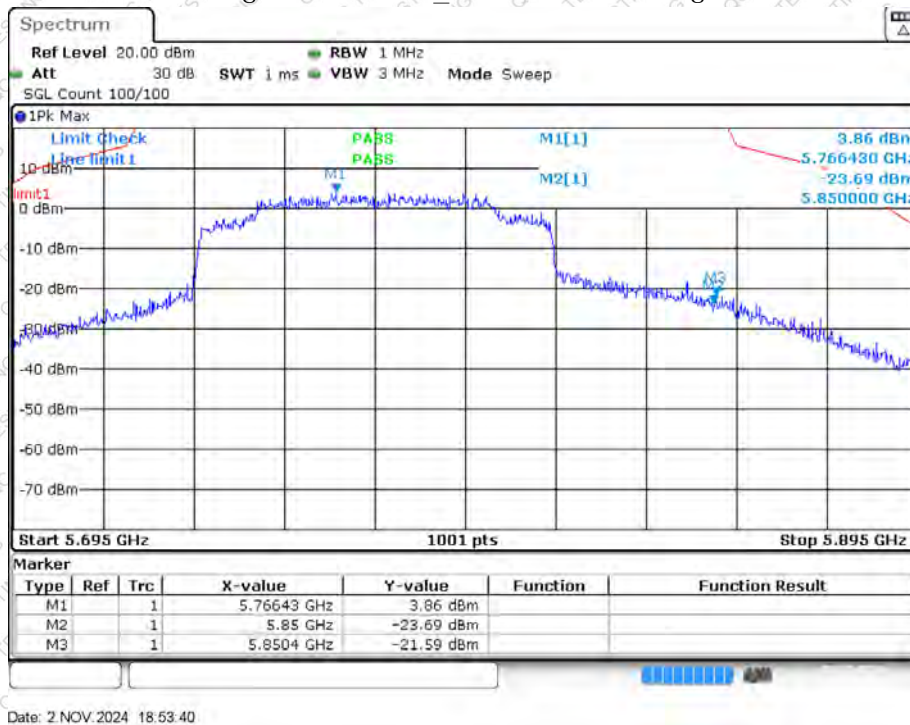


Band Edge NVNT ax80_MIMO 5775MHz High Ant2

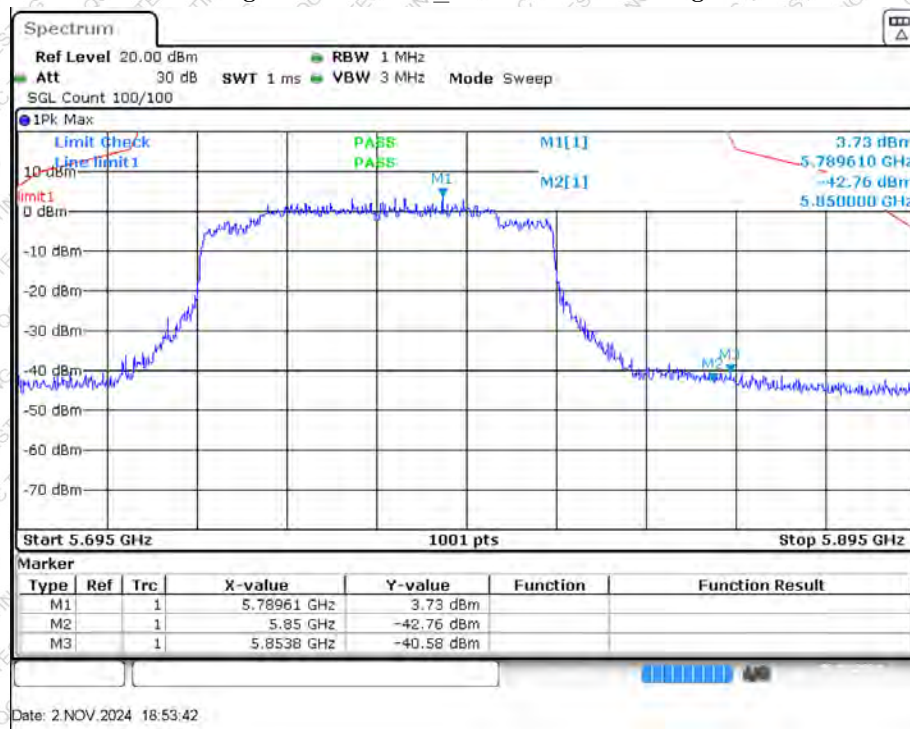




Band Edge NVNT ax80_MIMO 5775MHz High Ant1

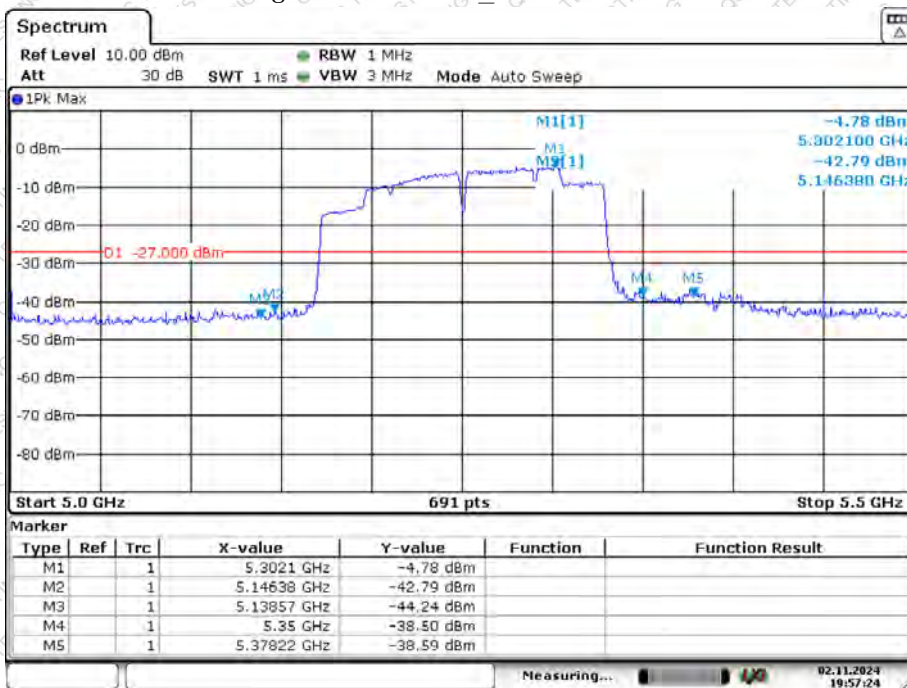


Band Edge NVNT ax80_MIMO 5775MHz High Ant2



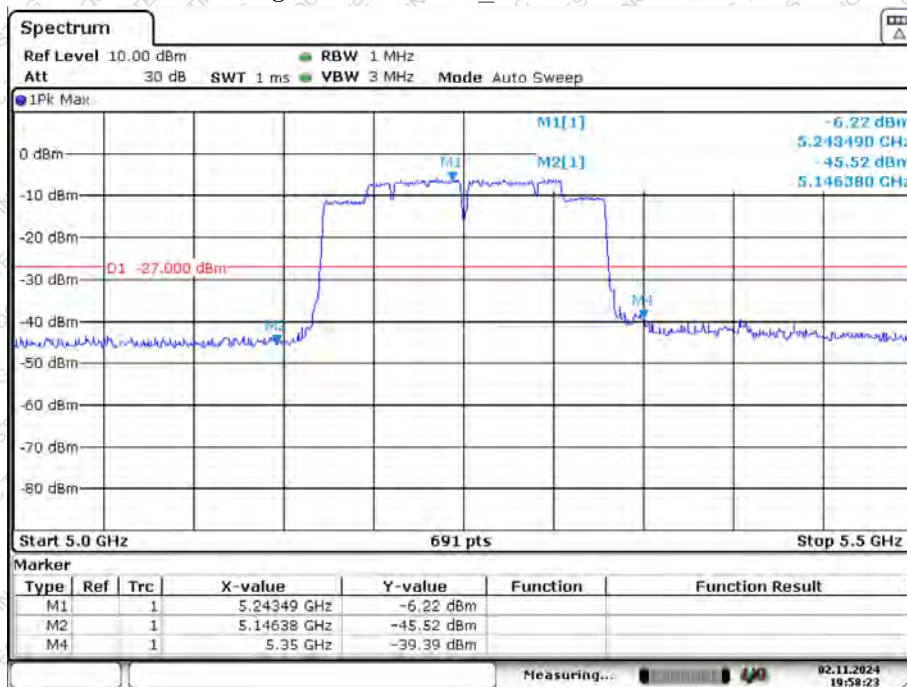


Band Edge NVNT ax160_SISO 5250MHz Ant1



Date: 2 NOV 2024 19:57:24

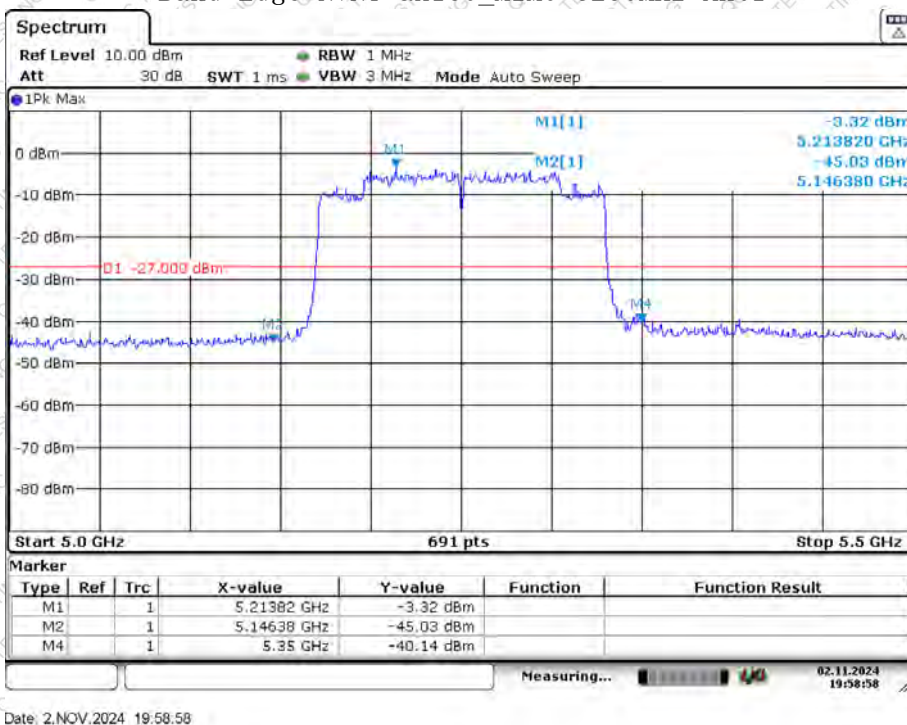
Band Edge NVNT ax160_SISO 5250MHz Ant2



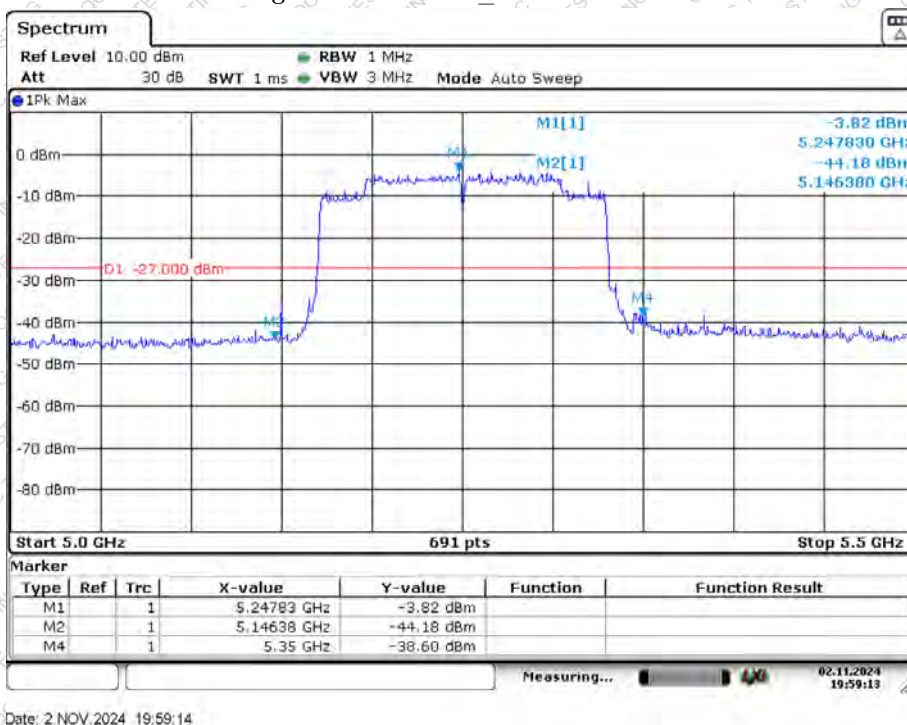
Date: 2 NOV 2024 19:58:23



Band Edge NVNT ax160_MIMO 5250MHz Ant1

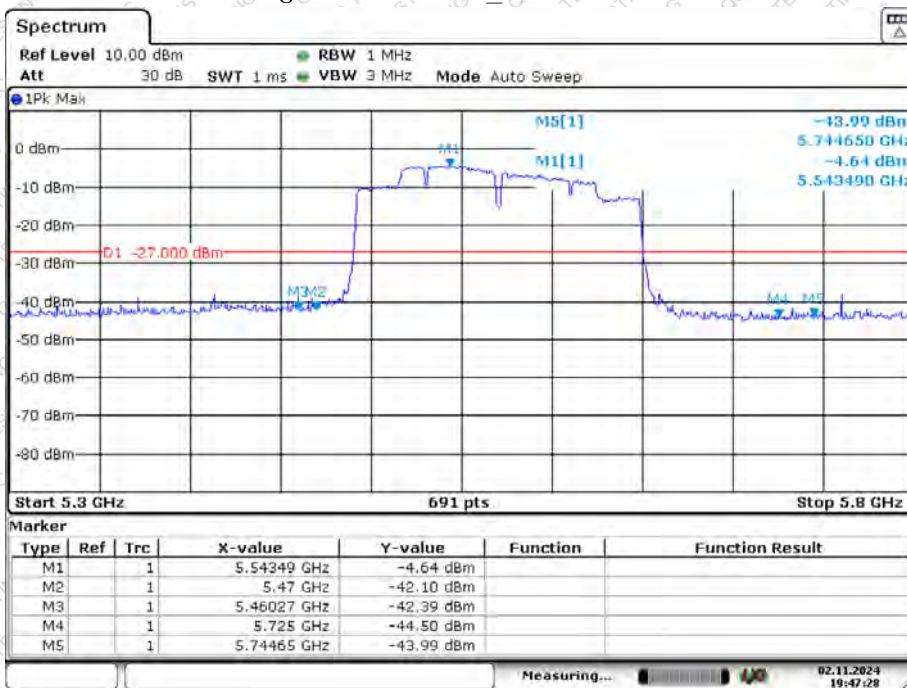


Band Edge NVNT ax160_MIMO 5250MHz Ant2



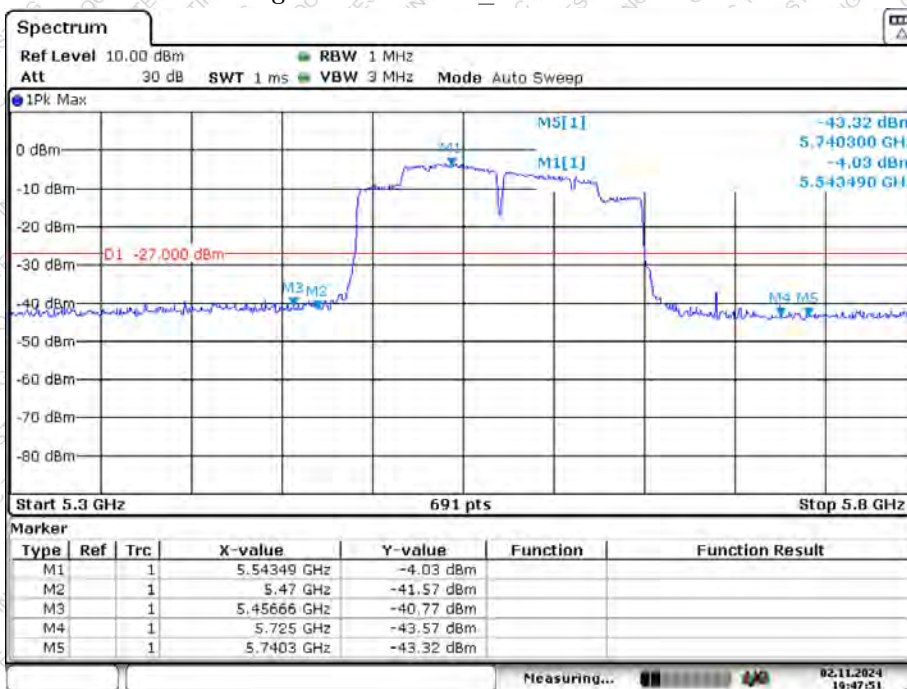


Band Edge NVNT ax160_SISO 5575Hz Ant1



Date: 2 NOV 2024 19:47:28

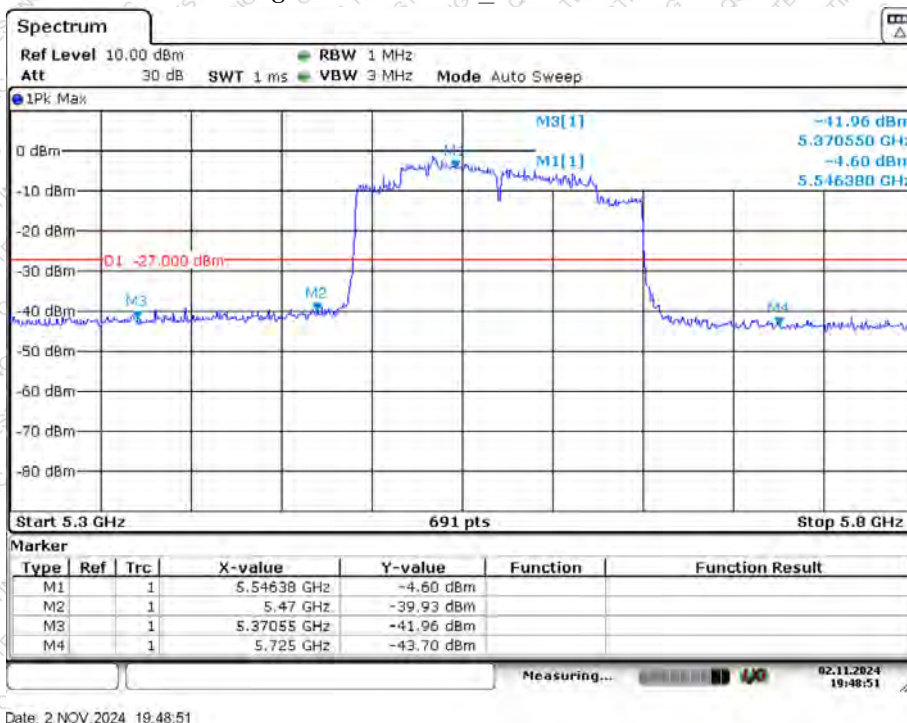
Band Edge NVNT ax160_SISO 5575MHz Ant2



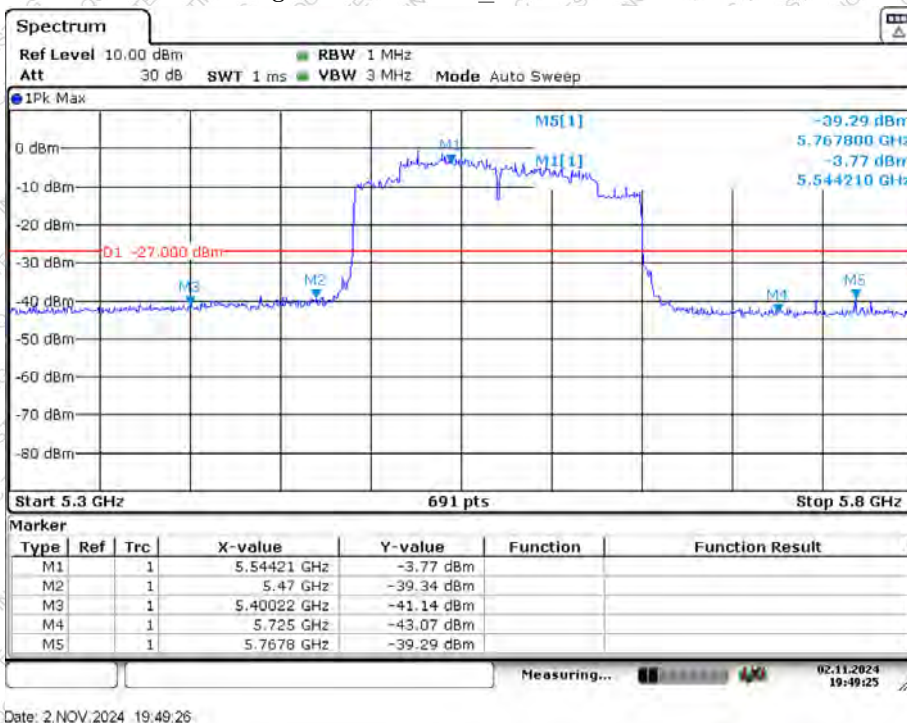
Date: 2 NOV 2024 19:47:51



Band Edge NVNT ax160_MIMO 5575MHz Ant1



Band Edge NVNT ax160_MIMO 5575MHz Ant2



Remark:

1. The MIMO mode still meets the standard limit after adding the combined gain
2. For MIMO devices refer to KDB Publication 662911 D01.

10. Radiated Emission Method

10.1 Applicable Standard

FCC Part15 C Section 15.209, Part 15E Section 15.407(b)(4)

10.2 Limit

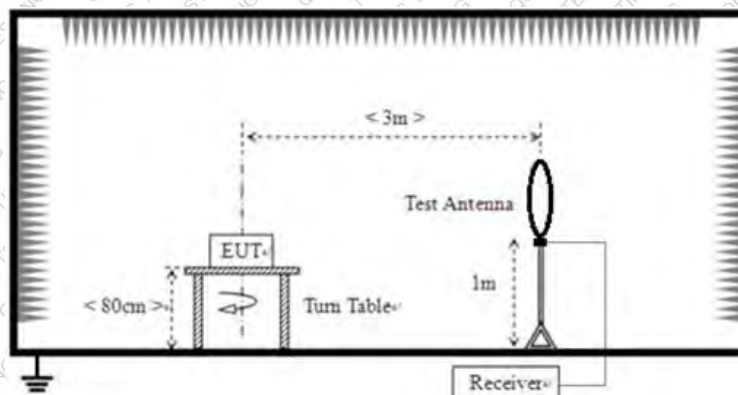
Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	30m
1.705MHz-30MHz	30	QP	30m

Frequency	Field Strengths Limits (uV/m at 3 m)	Field Strengths Limits (dBuV/m at 3 m)	Remark
30 – 88	100	40.0	Quasi-peak
88 – 216	150	43.5	Quasi-peak
216 – 960	200	46.0	Quasi-peak
Above 960	500	54.0	Quasi-peak
Above 1GHz	/	54.0	Peak
		74.0	Average

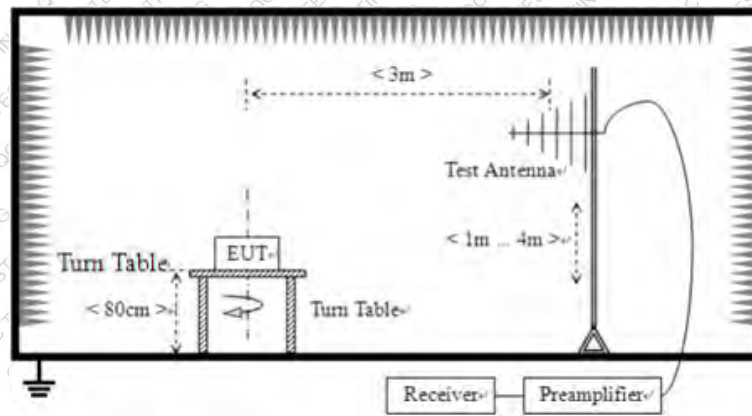
Note: $\text{dBuV/m} = 20\log(\mu\text{V/m})$

10.3 Test setup

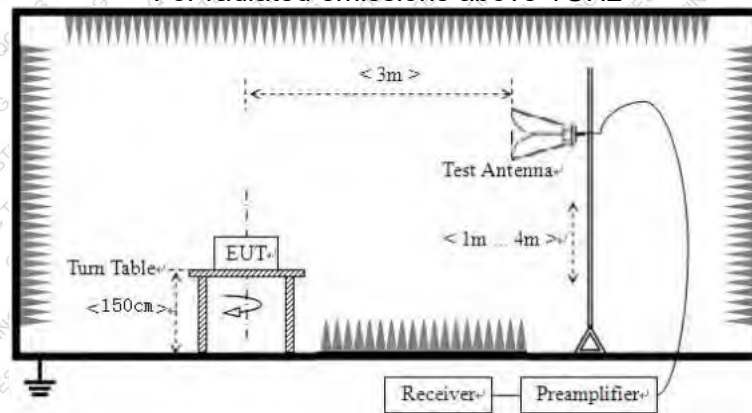
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



10.4 EMI Test Receiver Setup

Frequency	RBW	VBW	IF B/W	Measurement
9KHz-150KHz	200Hz	600Hz	/	QP
150KHz-30MHz	9KHz	30KHz	/	QP
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10 Hz ^{Note 1}	/	Average
1MHz	1MHz	> 1/T ^{Note 2}	/	Average

Note 1: when duty cycle is no less than 98%

Note 2: when duty cycle is less than 98%

Remark: For the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission test in these three bands are based on measurements employing an average detector.

10.5 Test procedure

- The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.



- 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.

10.6 Test Data

Temperature	26 °C	Humidity	54%
ATM Pressure	101.1kPa	Antenna Gain	Ant1: 0.67dBi Ant2: 0.67dBi
Test by	LBi Li	Test result	PASS

Test Voltage: AC 120V/60Hz

Remarks:

- During the test, pre-scan the all modulation, and found the 802.1ac modulation bandwidth is 20MHz which it is worse case.
- Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.
- Data of measurement within frequency range 9kHz-30MHz, 18-40GHz are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.

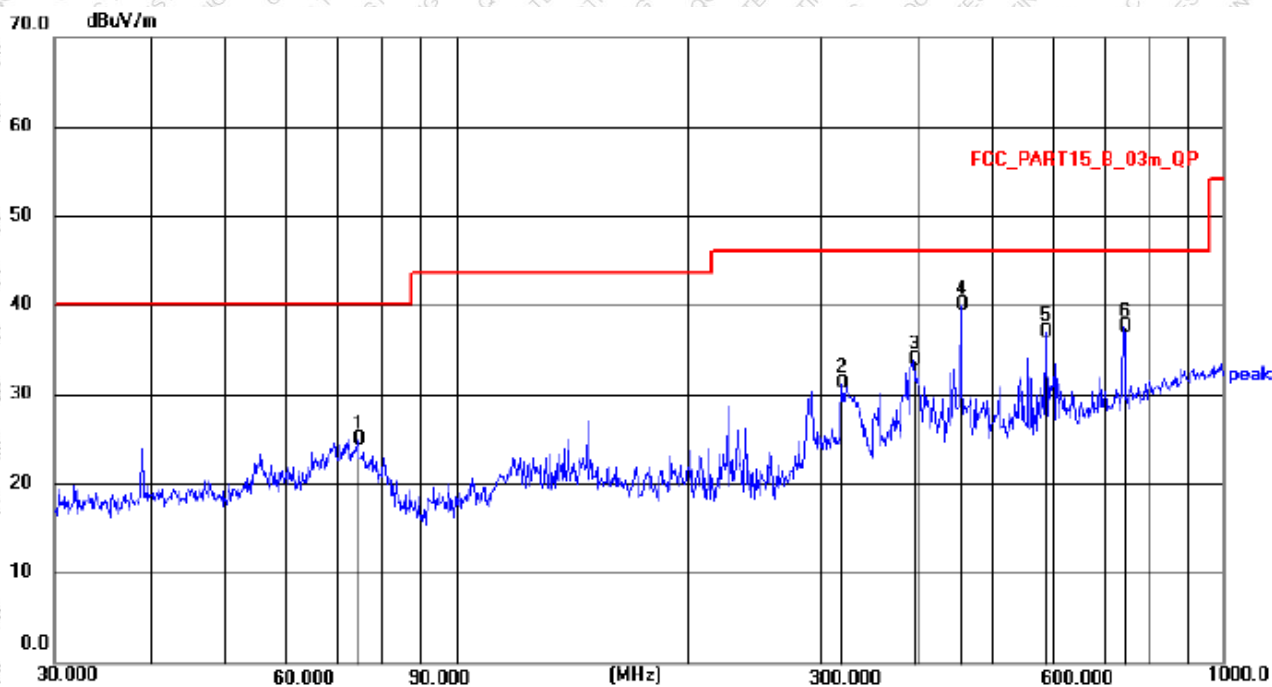


Model:DFR1091

Below 1GHz

Pre-scan all test modes, found worst case at 802.11ac_MIMO mode bandwidth is 20MHz, and so only show the test result of 802.11ac_MIMO mode 5180MHz.

Horizontal:

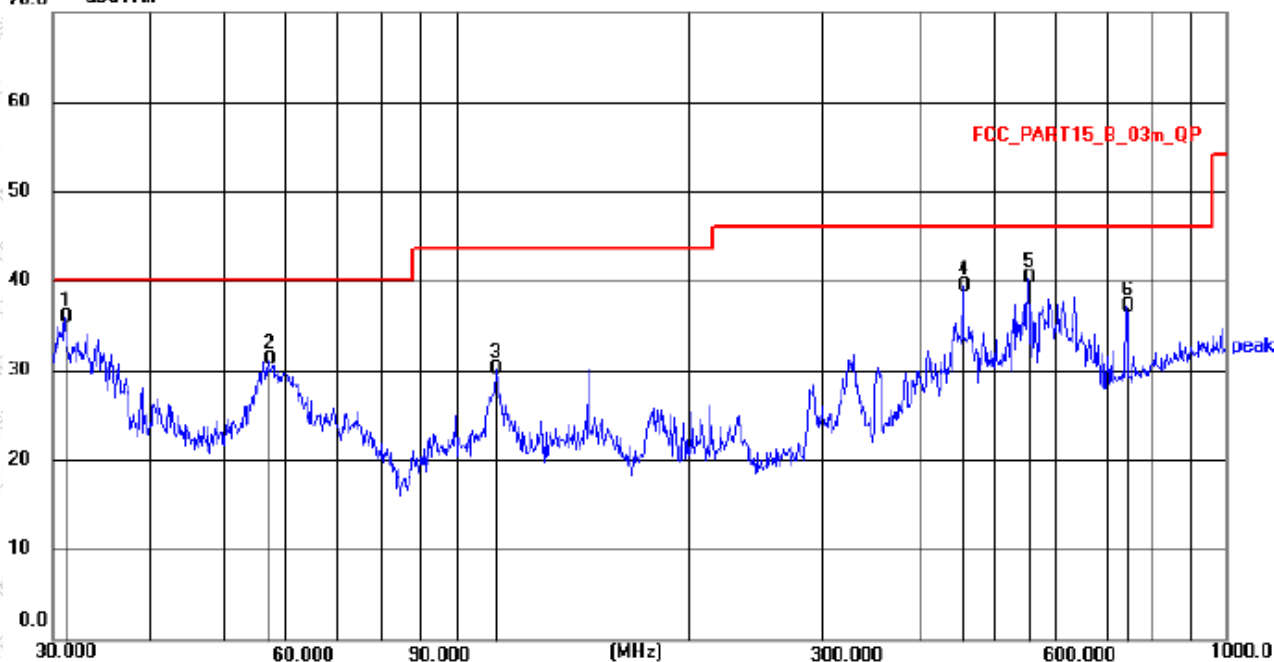


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	74.3955	13.99	10.99	24.98	40.00	15.02	QP
2	318.8170	16.31	14.89	31.20	46.00	14.80	QP
3	394.8545	16.47	17.43	33.90	46.00	12.10	QP
4 *	455.9057	21.37	18.69	40.06	46.00	5.94	QP
5	586.8437	15.93	21.09	37.02	46.00	8.98	QP
6	742.2587	13.94	23.62	37.56	46.00	8.44	QP



Vertical:

70.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	31.0706	22.74	13.17	35.91	40.00	4.09	QP
2	56.9912	17.19	14.12	31.31	40.00	8.69	QP
3	112.9196	17.60	12.61	30.21	43.50	13.29	QP
4	455.9057	20.35	19.06	39.41	46.00	6.59	QP
5	552.8832	19.74	20.67	40.41	46.00	5.59	QP
6	742.2587	13.62	23.61	37.23	46.00	8.77	QP

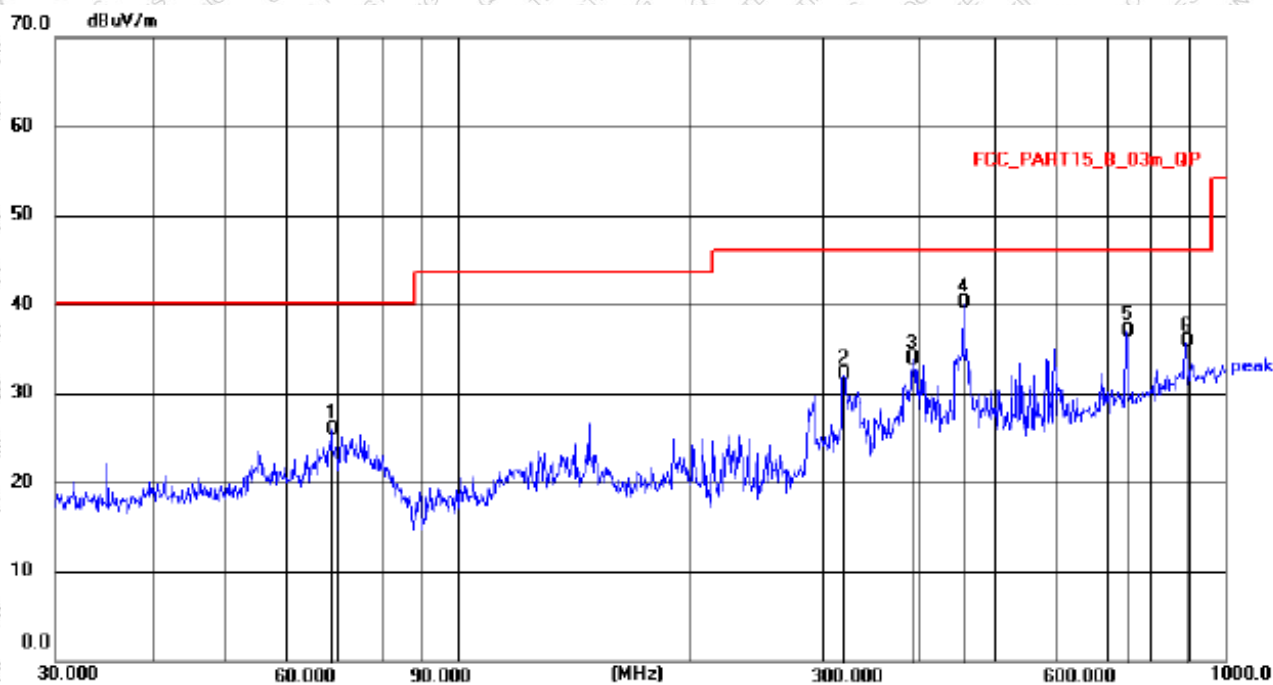


Model:DFR1081

Below 1GHz

Pre-scan all test modes, found worst case at 802.11ac_MIMO mode bandwidth is 20MHz, and so only show the test result of 802.11ac_MIMO mode 5180MHz.

Horizontal:

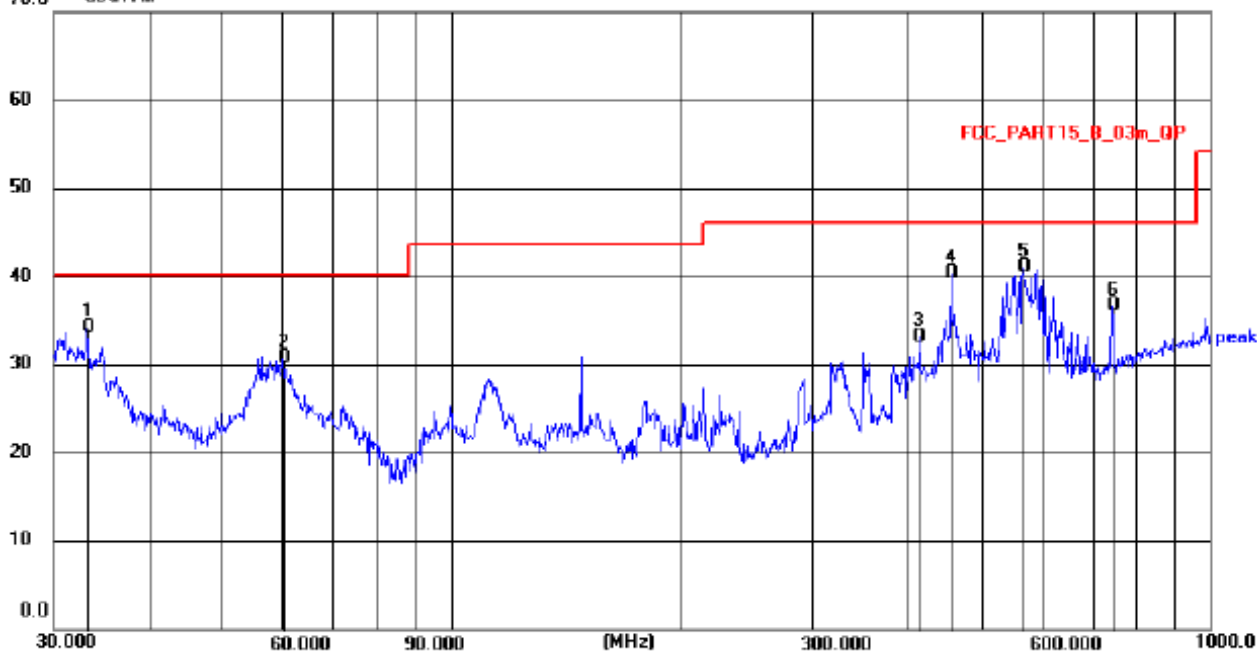


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	68.6310	13.41	12.55	25.96	40.00	14.04	QP
2	318.8170	16.90	15.17	32.07	46.00	13.93	QP
3	390.7226	16.28	17.50	33.78	46.00	12.22	QP
4 *	455.9057	21.17	19.06	40.23	46.00	5.77	QP
5	742.2587	13.43	23.61	37.04	46.00	8.96	QP
6	887.6099	9.56	26.27	35.83	46.00	10.17	QP



Vertical:

70.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.2112	21.15	13.07	34.22	40.00	5.78	QP
2	60.0691	17.14	13.58	30.72	40.00	9.28	QP
3	414.7223	15.28	17.89	33.17	46.00	12.83	QP
4	455.9057	21.58	18.69	40.27	46.00	5.73	QP
5 *	566.6223	20.31	20.73	41.04	46.00	4.96	QP
6	742.2587	12.97	23.62	36.59	46.00	9.41	QP



Above 1GHz

Pre-scan all test modes, found worst case at 802.11ac mode bandwidth is 20MHz, and so only show the test result of 802.11n mode bandwidth is 20MHz.

Frequency (MHz)	Read Level (dBμV)	polarization	Factor (dB/m)	Level (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)	Detector
11ac20 MIMO 5180MHz							
10360	43.10	H	5.15	48.25	68.2	18.53	peak
10360	42.17	V	5.15	47.32	68.2	19.28	peak
11ac20 MIMO 5200MHz							
10400	43.31	H	5.28	48.59	68.2	19.45	peak
10400	42.35	V	5.28	47.63	68.2	19.70	peak
11ac20 MIMO 5240MHz							
10480	43.28	H	5.54	48.82	68.2	19.37	peak
10480	42.10	V	5.54	47.64	68.2	20.04	peak
11ac20 MIMO 5260MHz							
10520	41.89	H	5.69	47.58	68.2	18.03	peak
10520	41.73	V	5.69	47.42	68.2	18.78	peak
11ac20 MIMO 5300MHz							
10600	41.17	H	5.95	47.12	68.2	20.45	peak
10600	42.74	V	5.95	48.69	68.2	20.20	peak
11ac20 MIMO 5320MHz							
10640	41.15	H	6.08	47.23	68.2	20.37	peak
10640	40.91	V	6.08	46.99	68.2	20.54	peak
11ac20 MIMO 550MHz							
11000	41.27	H	7.27	48.54	68.2	18.53	peak
11000	41.09	V	7.27	48.36	68.2	19.28	peak
11ac20 MIMO 5580MHz							
11160	41.28	H	7.38	48.65	68.2	19.45	peak
11160	41.32	V	7.38	48.70	68.2	19.70	peak
11ac20 MIMO 5700MHz							
11400	41.18	H	7.55	48.73	68.2	19.37	peak
11400	41.10	V	7.55	48.65	68.2	20.04	peak
11ac20 MIMO 5720MHz							
11440	40.89	H	7.58	48.47	68.2	18.03	peak
11440	40.07	V	7.58	47.65	68.2	18.78	peak
11ac20 MIMO 5745MHz							
11490	41.13	H	7.62	48.75	68.2	20.45	peak
11490	40.55	V	7.62	48.17	68.2	20.20	peak
11ac20 MIMO 5785MHz							
11570	41.11	H	7.67	48.78	68.2	20.37	peak
11570	40.69	V	7.67	48.36	68.2	20.54	peak
11ac20 MIMO 5825MHz							
11650	40.80	H	7.72	48.52	68.2	20.37	peak
11650	40.01	V	7.72	48.73	68.2	20.54	peak

Remarks:

1. Level = Receiver Read level + Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.



3. If the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.
4. Data of measurement within frequency range 9kHz-30MHz, 18-40GHz are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.
5. For MIMO devices refer to KDB Publication 662911 D01.

11. Frequencies Stability

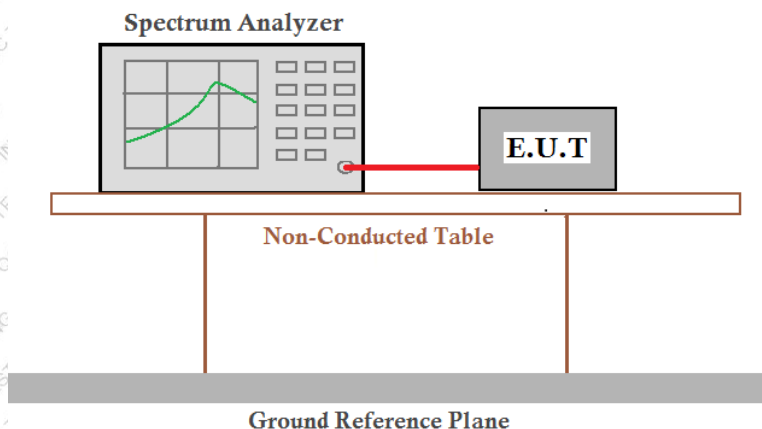
11.1 Applicable Standard

FCC Part15 E Section 15.407(g)

11.2 Limit

It is required that the emissions are maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

11.3 Test setup



11.4 Test Procedure

1. The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set Centre Frequency of the channel under test.
3. Set Detector PEAK
4. Set RBW: 10kHz, VBW: 3RBW
5. Set Span: Encompass the entire emissions bandwidth (EBW) of the signal.
6. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

User manual temperature is -20°C to +40°C, normal Temperature is +25°C.

Manufacturers of UNII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

Test Results (All conditions and all modes were performed, only list Worst-Case in the report)

Remark: NV is normal Voltage: AC 120V, HV is High Voltage: AC 138V, LV is Low Voltage: AC 102V, NT is normal Temperature: +25°C.



11.5 Test Data

Temperature	22 °C	Humidity	50%
ATM Pressure	101.1kPa	Antenna Gain	Ant1: 0.67dBi Ant2: 0.67dBi
Test by	LBi Li	Test result	PASS

Test result as below table

ANT1						
Mode	Frequency (MHz)	Temperature (°C)	Voltage (AC)	Measured Frequency (MHz)	Limit (MHz)	Verdict
802.11ac (VHT20)	5180	25	102	5180.0359	5150 to 5250	PASS
			120	5179.9941	5150 to 5250	PASS
			138	5179.9827	5150 to 5250	PASS
		-20	120	5180.0236	5150 to 5250	PASS
		-10	120	5179.962	5150 to 5250	PASS
		0	120	5179.95	5150 to 5250	PASS
		10	120	5180.023	5150 to 5250	PASS
		30	120	5179.9975	5150 to 5250	PASS
	5200	25	120	5179.98	5150 to 5250	PASS
			120	5200.0095	5150 to 5250	PASS
			120	5199.9915	5150 to 5250	PASS
		-20	120	5199.9825	5150 to 5250	PASS
			120	5200.0208	5150 to 5250	PASS
			120	5199.961	5150 to 5250	PASS
		-10	120	5199.9507	5150 to 5250	PASS
		0	120	5200.0237	5150 to 5250	PASS
	5240	25	120	5200.0237	5150 to 5250	PASS
			120	5199.9988	5150 to 5250	PASS
			120	5199.9753	5150 to 5250	PASS
		-20	120	5240.0126	5150 to 5250	PASS
			120	5239.9871	5150 to 5250	PASS
			120	5239.9834	5150 to 5250	PASS
		-10	120	5240.0172	5150 to 5250	PASS
		0	120	5239.9544	5150 to 5250	PASS
	5260	25	120	5239.9515	5150 to 5250	PASS
			120	5240.0228	5150 to 5250	PASS
			120	5240.0024	5150 to 5250	PASS
		-20	120	5240.0024	5150 to 5250	PASS
			120	5239.9816	5150 to 5250	PASS
			120	5260.0353	5250 to 5350	PASS
		-10	120	5259.9877	5250 to 5350	PASS
			120	5259.9801	5250 to 5350	PASS
	5300	25	120	5260.021	5250 to 5350	PASS
			120	5259.9579	5250 to 5350	PASS
			120	5259.9514	5250 to 5350	PASS
		-20	120	5260.0252	5250 to 5350	PASS
			120	5259.9954	5250 to 5350	PASS
			120	5259.9805	5250 to 5350	PASS
		-10	120	5300.0183	5250 to 5350	PASS
			120	5299.9865	5250 to 5350	PASS
			120	5299.9811	5250 to 5350	PASS
	5300	0	120	5300.0259	5250 to 5350	PASS
			120	5299.9569	5250 to 5350	PASS
	5300	0	120	5299.9507	5250 to 5350	PASS
			120	5299.9507	5250 to 5350	PASS



	5320	10	120	5300.0197	5250 to 5350	PASS
		30	120	5300.0101	5250 to 5350	PASS
		40	120	5299.9776	5250 to 5350	PASS
		25	120	5320.0092	5250 to 5350	PASS
			120	5319.9886	5250 to 5350	PASS
			120	5319.9816	5250 to 5350	PASS
		-20	120	5320.0212	5250 to 5350	PASS
		-10	120	5319.9562	5250 to 5350	PASS
		0	120	5319.9493	5250 to 5350	PASS
		10	120	5320.0238	5250 to 5350	PASS
		30	120	5320.0089	5250 to 5350	PASS
		40	120	5319.981	5250 to 5350	PASS
	5500	25	120	5500.0339	5470 to 5725	PASS
			120	5499.9863	5470 to 5725	PASS
			120	5499.9827	5470 to 5725	PASS
		-20	120	5500.0182	5470 to 5725	PASS
		-10	120	5499.9636	5470 to 5725	PASS
		0	120	5499.9531	5470 to 5725	PASS
		10	120	5500.0221	5470 to 5725	PASS
		30	120	5500.0089	5470 to 5725	PASS
		40	120	5499.9789	5470 to 5725	PASS
		25	120	5580.0296	5470 to 5725	PASS
			120	5579.9859	5470 to 5725	PASS
			120	5579.9792	5470 to 5725	PASS
	5580	-20	120	5580.0246	5470 to 5725	PASS
		-10	120	5579.9608	5470 to 5725	PASS
		0	120	5579.9486	5470 to 5725	PASS
		10	120	5580.0188	5470 to 5725	PASS
		30	120	5580.0016	5470 to 5725	PASS
		40	120	5579.9768	5470 to 5725	PASS
	5700	25	120	5700.0194	5470 to 5725	PASS
			120	5699.9946	5470 to 5725	PASS
			120	5699.9807	5470 to 5725	PASS
		-20	120	5700.0172	5470 to 5725	PASS
		-10	120	5699.9548	5470 to 5725	PASS
		0	120	5699.9486	5470 to 5725	PASS
		10	120	5700.0247	5470 to 5725	PASS
		30	120	5700.0008	5470 to 5725	PASS
		40	120	5699.9824	5470 to 5725	PASS
	5745	25	120	5745.0095	5725 to 5850	PASS
			120	5744.9879	5725 to 5850	PASS
			120	5744.9792	5725 to 5850	PASS
		-20	120	5745.0274	5725 to 5850	PASS
		-10	120	5744.9562	5725 to 5850	PASS
		0	120	5744.945	5725 to 5850	PASS
		10	120	5745.0283	5725 to 5850	PASS
		30	120	5745.01	5725 to 5850	PASS
		40	120	5744.9721	5725 to 5850	PASS
	5785	25	120	5785.0149	5725 to 5850	PASS
			120	5784.9912	5725 to 5850	PASS
			120	5784.9734	5725 to 5850	PASS
		-20	120	5785.0229	5725 to 5850	PASS
		-10	120	5784.9524	5725 to 5850	PASS
		0	120	5784.9459	5725 to 5850	PASS
		10	120	5785.0251	5725 to 5850	PASS
		30	120	5785.0054	5725 to 5850	PASS



802.11ac (VHT40)	5825	40	120	5784.9744	5725 to 5850	PASS
		25	120	5825.0181	5725 to 5850	PASS
			120	5824.9858	5725 to 5850	PASS
			120	5824.9797	5725 to 5850	PASS
			120	5825.0204	5725 to 5850	PASS
			120	5824.957	5725 to 5850	PASS
			120	5824.9454	5725 to 5850	PASS
			120	5825.0206	5725 to 5850	PASS
	5190	30	120	5825.0103	5725 to 5850	PASS
		40	120	5824.9766	5725 to 5850	PASS
		25	120	5190.0246	5150 to 5250	PASS
			120	5189.9948	5150 to 5250	PASS
			120	5189.9784	5150 to 5250	PASS
			120	5190.0228	5150 to 5250	PASS
			120	5189.9549	5150 to 5250	PASS
			120	5189.949	5150 to 5250	PASS
	5230	10	120	5190.0248	5150 to 5250	PASS
		30	120	5190.0102	5150 to 5250	PASS
		40	120	5189.9835	5150 to 5250	PASS
		25	120	5230.0257	5150 to 5250	PASS
			120	5229.9866	5150 to 5250	PASS
			120	5229.9789	5150 to 5250	PASS
			120	5230.0221	5150 to 5250	PASS
			120	5229.9556	5150 to 5250	PASS
	5270	0	120	5229.9527	5150 to 5250	PASS
		10	120	5230.0157	5150 to 5250	PASS
		30	120	5229.9972	5150 to 5250	PASS
		40	120	5229.9828	5150 to 5250	PASS
		25	120	5270.0171	5250 to 5350	PASS
			120	5269.985	5250 to 5350	PASS
			120	5269.9761	5250 to 5350	PASS
			120	5270.0235	5250 to 5350	PASS
	5310	-10	120	5269.963	5250 to 5350	PASS
		0	120	5269.9503	5250 to 5350	PASS
		10	120	5270.0173	5250 to 5350	PASS
		30	120	5270.0008	5250 to 5350	PASS
		40	120	5269.9822	5250 to 5350	PASS
		25	120	5310.0242	5250 to 5350	PASS
			120	5309.9858	5250 to 5350	PASS
			120	5309.9817	5250 to 5350	PASS
	5510	-20	120	5310.0248	5250 to 5350	PASS
		-10	120	5309.9584	5250 to 5350	PASS
		0	120	5309.9471	5250 to 5350	PASS
		10	120	5310.0262	5250 to 5350	PASS
		30	120	5310.009	5250 to 5350	PASS
		40	120	5309.9766	5250 to 5350	PASS
		25	120	5510.0208	5470 to 5725	PASS
			120	5509.9853	5470 to 5725	PASS
			120	5509.9782	5470 to 5725	PASS
	5550	-20	120	5510.0159	5470 to 5725	PASS
		-10	120	5509.9593	5470 to 5725	PASS
		0	120	5509.9491	5470 to 5725	PASS
		10	120	5510.0245	5470 to 5725	PASS
		30	120	5510.0054	5470 to 5725	PASS
		40	120	5509.9806	5470 to 5725	PASS
		25	120	5550.0233	5470 to 5725	PASS
			120	5550.0233	5470 to 5725	PASS



	5670		120	5549.9866	5470 to 5725	PASS
			120	5549.9938	5470 to 5725	PASS
		-20	120	5550.0232	5470 to 5725	PASS
		-10	120	5549.9944	5470 to 5725	PASS
		0	120	5549.9998	5470 to 5725	PASS
		10	120	5550.0019	5470 to 5725	PASS
		30	120	5550.0042	5470 to 5725	PASS
		40	120	5549.9781	5470 to 5725	PASS
		25	120	5670.0203	5470 to 5725	PASS
			120	5669.9845	5470 to 5725	PASS
		-20	120	5669.9789	5470 to 5725	PASS
			120	5670.0232	5470 to 5725	PASS
		-10	120	5669.9628	5470 to 5725	PASS
		0	120	5669.9523	5470 to 5725	PASS
	5755	10	120	5670.0021	5470 to 5725	PASS
		30	120	5670.0094	5470 to 5725	PASS
		40	120	5669.9773	5470 to 5725	PASS
		25	120	5755.0122	5725 to 5850	PASS
			120	5754.985	5725 to 5850	PASS
		-20	120	5754.9762	5725 to 5850	PASS
			120	5755.0232	5725 to 5850	PASS
		-10	120	5754.9561	5725 to 5850	PASS
	5795	0	120	5754.9456	5725 to 5850	PASS
		10	120	5755.0241	5725 to 5850	PASS
		30	120	5755.0036	5725 to 5850	PASS
		40	120	5754.9726	5725 to 5850	PASS
		25	120	5795.0234	5725 to 5850	PASS
			120	5794.9835	5725 to 5850	PASS
		-20	120	5794.982	5725 to 5850	PASS
			120	5795.0232	5725 to 5850	PASS
	5710	-10	120	5794.9482	5725 to 5850	PASS
		0	120	5794.9433	5725 to 5850	PASS
		10	120	5795.0238	5725 to 5850	PASS
		30	120	5794.9998	5725 to 5850	PASS
		40	120	5794.9718	5725 to 5850	PASS
		25	120	5710.0235	5725 to 5850	PASS
			120	5609.9864	5725 to 5850	PASS
		-20	120	5609.9768	5725 to 5850	PASS
			120	5710.0181	5725 to 5850	PASS
802.11ac (VHT80)	5210	-10	120	5609.9569	5725 to 5850	PASS
		0	120	5609.9488	5725 to 5850	PASS
		10	120	5710.0219	5725 to 5850	PASS
		30	120	5710.0009	5725 to 5850	PASS
		40	120	5609.9831	5725 to 5850	PASS
		25	120	5210.0113	5150 to 5250	PASS
			120	5209.9876	5150 to 5250	PASS
		-20	120	5209.9771	5150 to 5250	PASS
			120	5210.0231	5150 to 5250	PASS
	5290	-10	120	5209.9578	5150 to 5250	PASS
		0	120	5209.9519	5150 to 5250	PASS
		10	120	5210.0226	5150 to 5250	PASS
		30	120	5210.0065	5150 to 5250	PASS
		40	120	5209.9746	5150 to 5250	PASS
		25	120	5290.0196	5250 to 5350	PASS
			120	5289.9928	5250 to 5350	PASS
		-20	120	5289.9773	5250 to 5350	PASS
			120	5289.9773	5250 to 5350	PASS



802.11ac (VHT160)	5530	-20	120	5290.016	5250 to 5350	PASS
		-10	120	5289.9547	5250 to 5350	PASS
		0	120	5289.9521	5250 to 5350	PASS
		10	120	5290.0252	5250 to 5350	PASS
		30	120	5289.9948	5250 to 5350	PASS
		40	120	5289.9778	5250 to 5350	PASS
		25	120	5530.0105	5470 to 5725	PASS
			120	5529.9828	5470 to 5725	PASS
			120	5529.9743	5470 to 5725	PASS
		-20	120	5530.0201	5470 to 5725	PASS
		-10	120	5529.9584	5470 to 5725	PASS
		0	120	5529.9473	5470 to 5725	PASS
	5775	10	120	5530.0231	5470 to 5725	PASS
		30	120	5530.0105	5470 to 5725	PASS
		40	120	5529.9762	5470 to 5725	PASS
		25	120	5775.02	5725 to 5850	PASS
			120	5774.9837	5725 to 5850	PASS
			120	5774.9719	5725 to 5850	PASS
		-20	120	5775.0275	5725 to 5850	PASS
		-10	120	5774.956	5725 to 5850	PASS
		0	120	5774.9448	5725 to 5850	PASS
		10	120	5775.025	5725 to 5850	PASS
		30	120	5775.0069	5725 to 5850	PASS
		40	120	5774.9801	5725 to 5850	PASS
	5690	25	120	5690.0259	5725 to 5850	PASS
			120	5589.9905	5725 to 5850	PASS
			120	5589.9813	5725 to 5850	PASS
		-20	120	5690.0225	5725 to 5850	PASS
		-10	120	5589.9629	5725 to 5850	PASS
		0	120	5589.9499	5725 to 5850	PASS
		10	120	5690.0221	5725 to 5850	PASS
		30	120	5589.9991	5725 to 5850	PASS
		40	120	5589.9805	5725 to 5850	PASS
	5250	25	120	5250.0184	5150 to 5350	PASS
			120	5249.9902	5150 to 5350	PASS
			120	5249.9819	5150 to 5350	PASS
		-20	120	5250.0273	5150 to 5350	PASS
		-10	120	5249.9575	5150 to 5350	PASS
		0	120	5249.9422	5150 to 5350	PASS
		10	120	5250.0207	5150 to 5350	PASS
		30	120	5249.9942	5150 to 5350	PASS
		40	120	5249.9749	5150 to 5350	PASS
	5570	25	120	5570.0146	5470 to 5725	PASS
			120	5569.9871	5470 to 5725	PASS
			120	5569.9771	5470 to 5725	PASS
		-20	120	5570.0023	5470 to 5725	PASS
		-10	120	5569.9498	5470 to 5725	PASS
		0	120	5569.9458	5470 to 5725	PASS
		10	120	5570.0257	5470 to 5725	PASS
		30	120	5570.0087	5470 to 5725	PASS
		40	120	5569.9741	5470 to 5725	PASS

12. Dynamic Frequency Selection (DFS)

Table 4 below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating In-Service Monitoring.

Table 4: FS Detection Thresholds for Master Devices and Client Devices with Radar Detection

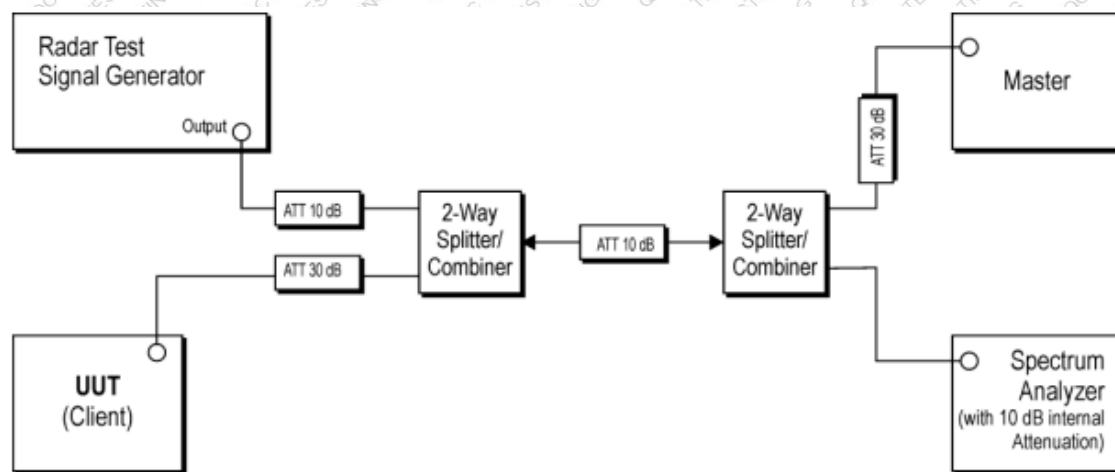
Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP \geq 200 milliwatt	-64 dBm
EIRP $<$ 200 milliwatt and power spectral density $<$ 10 dBm/MHz	-62 dBm
EIRP $<$ 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
 Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.
 Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Test Procedure

The FCC KDB 905462 D02 v02 describes a radiated test setup and a conducted test setup. A conducted test setup was used for this testing. Figure 1 shows the typical test setup. One channel selected between 5260 and 5350 MHz is chosen for the testing.

Figure 1. Test Setup for DFS



Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period.

Block Diagram of test setup test procedure.

- (1) The Radar Pulse generator is setup to provide a pulse at frequency that the master and client are operating, A type 0 radar pulse is used for the testing.
- (2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately 62dBm at the antenna of the master device.
- (3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.



- (4) The Client Device (EUT) is set up per the diagram in Figure 1 and communications between the Master device and the Client is established.
- (5) Iperf software is used to properly load the test channel.
- (6) The real time spectrum analyzer is set to record a 16sec window to any transmissions occurring up to and after 10sec.
- (7) The system is again setup and the monitoring time is shortened in order to capture the Channel Closing Transmission Time. This time is measured to ensure that the Client ceases transmission within 200ms and the aggregate of emissions occurring after 200ms up to 10 sec do not exceed 60ms.(Note: the channel may be different since the Master and Client have changed channels due to the detection of e initial radar pulse.)
- (8) After the initial radar burst the channel is monitored for 30 minutes to ensure no transmissions or beacons occur. A second monitoring setup is used to verify that the Master and Client have both moved to different channels.

Test Result

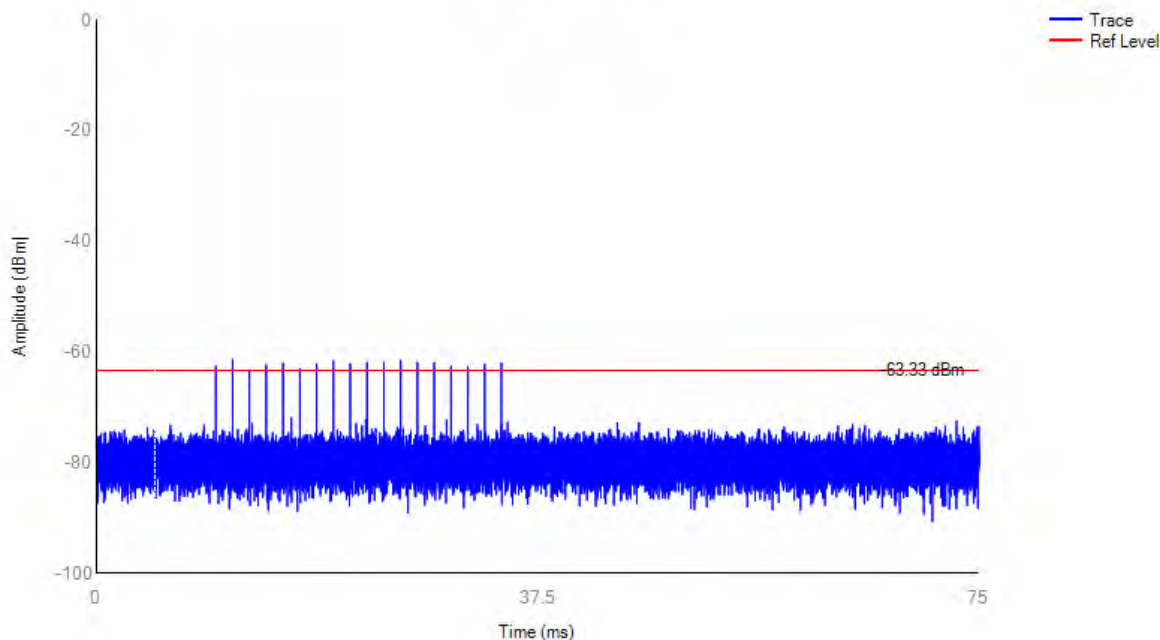
Clause	Test Parameter	Remarks	Pass/Fail
15.407	DFS Detection Threshold	Not Applicable	N/A
15.407	Channel Availability Check time	Not Applicable	N/A
15.407	Channel Move time	Applicable	Pass
15.407	Channel Closing Transmission time	Applicable	Pass
15.407	Non-occupancy Period	Not Applicable	N/A
15.407	Uniform Spreading	Not Applicable	N/A
15.407	UNII Detection Bandwidth	Not Applicable	N/A

Test Mode	Channel	CCT(ms)	Limit(s)	CTT(ms)	Limit(ms)	CMT(ms)	Limit(ms)	Verdict
11A_SISO	5280	0.0556	60	253.6	260	257.3	10000	PASS
	5500	0.0424	60	237.2	260	244.1	10000	PASS
11N40_SISO	5270	0.0316	60	223.2	260	231.3	10000	PASS
	5510	0.0236	60	220	260	223.7	10000	PASS
11AC80_SISO	5290	0.0304	60	129.6	260	231.3	10000	PASS
	5530	0.0036	60	190	260	203.3	10000	PASS



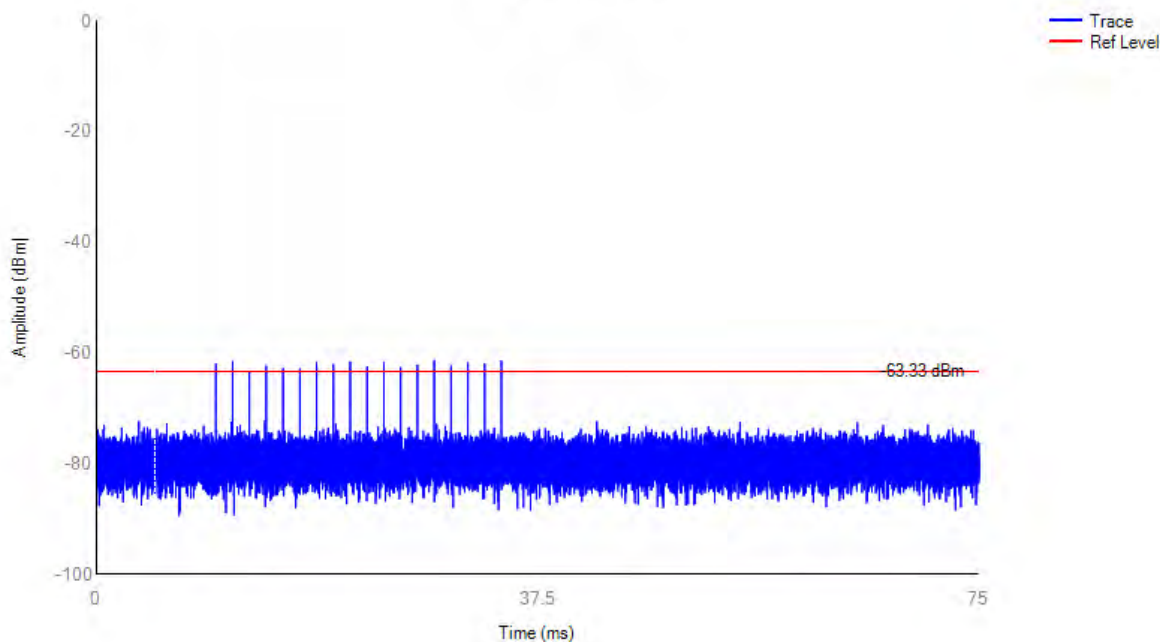
11A_5280_Type0

Radar Calibration



11A_5500_Type0

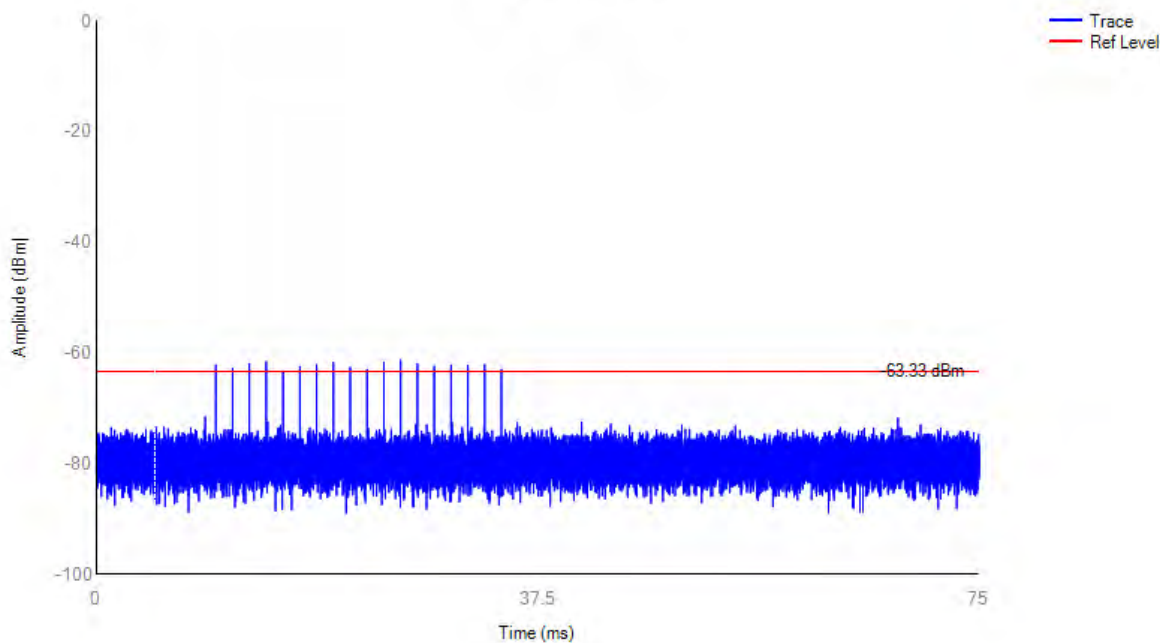
Radar Calibration





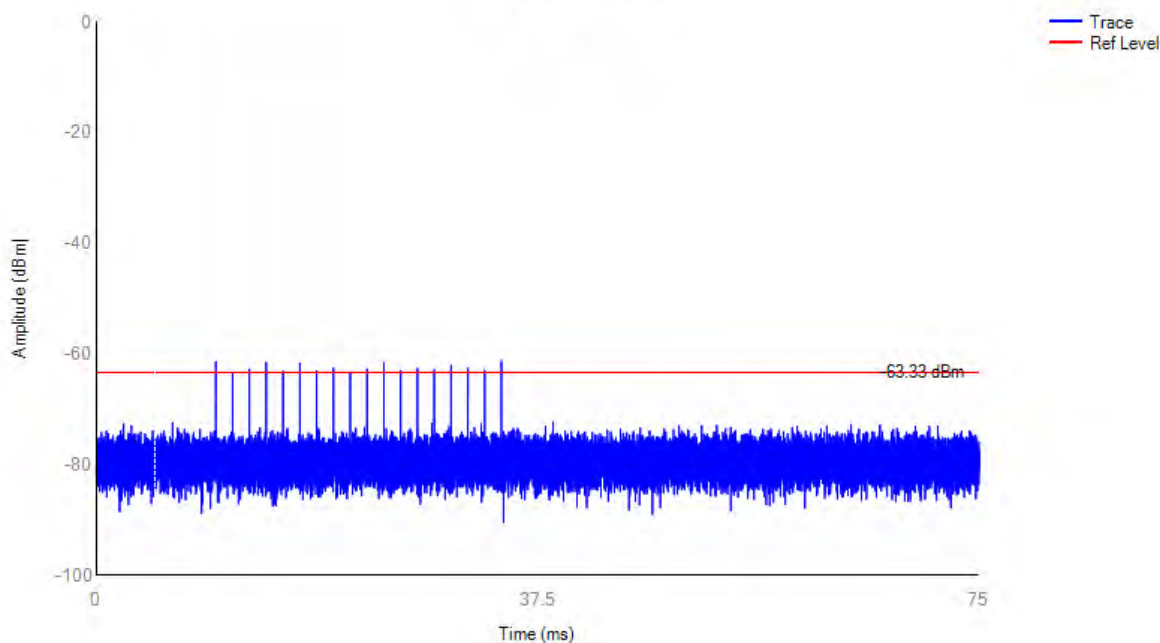
11N40_5270_Type0

Radar Calibration



11N40_5510_Type0

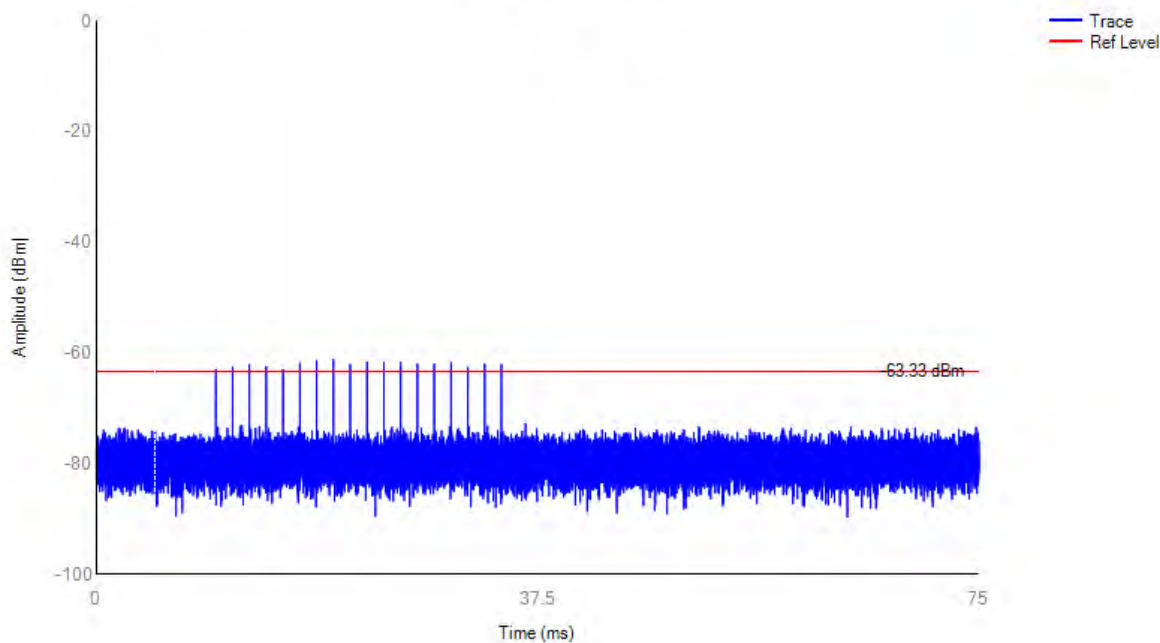
Radar Calibration





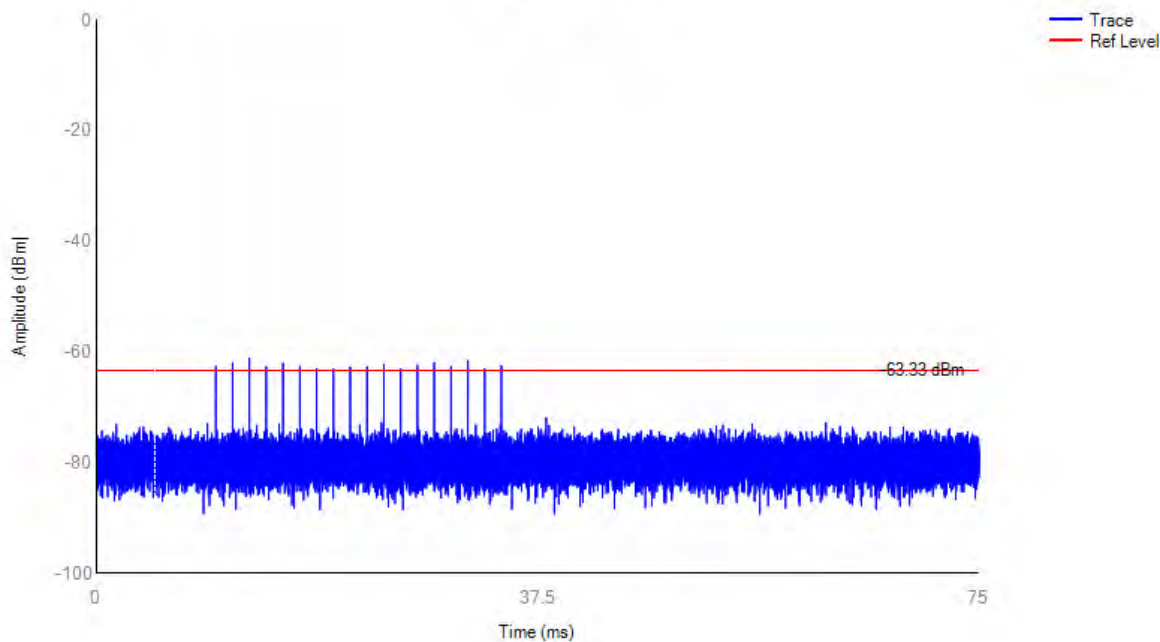
11AC80_5290_Type0

Radar Calibration



11AC80_5530_Type0

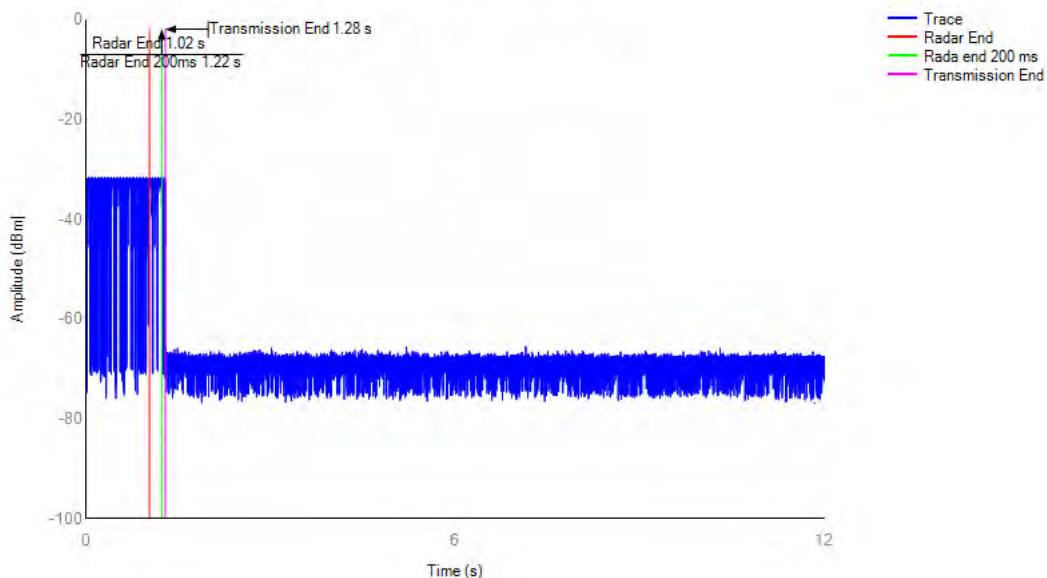
Radar Calibration





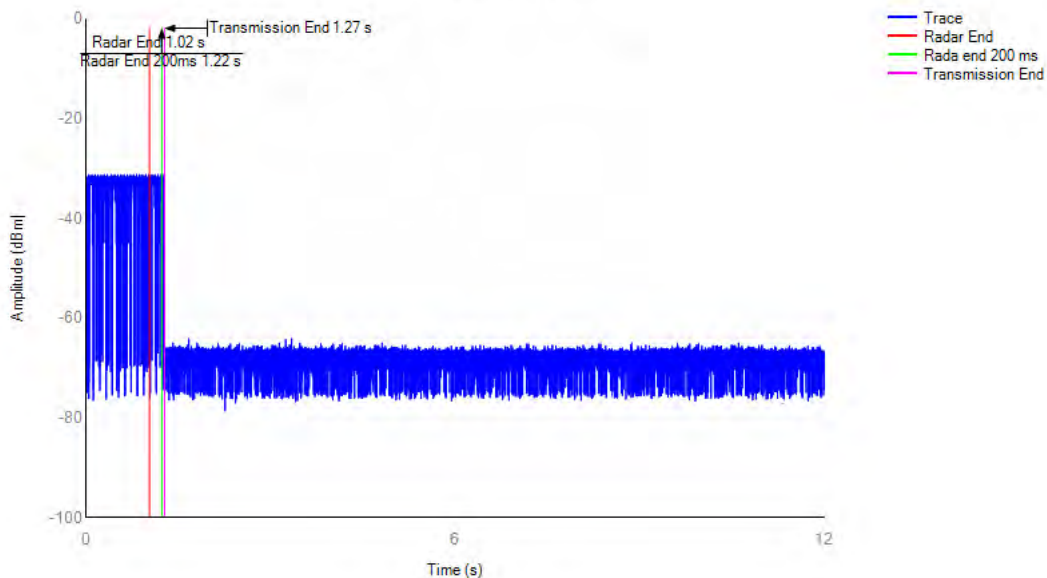
11A_5280

Channel Shutdown



11A_5500

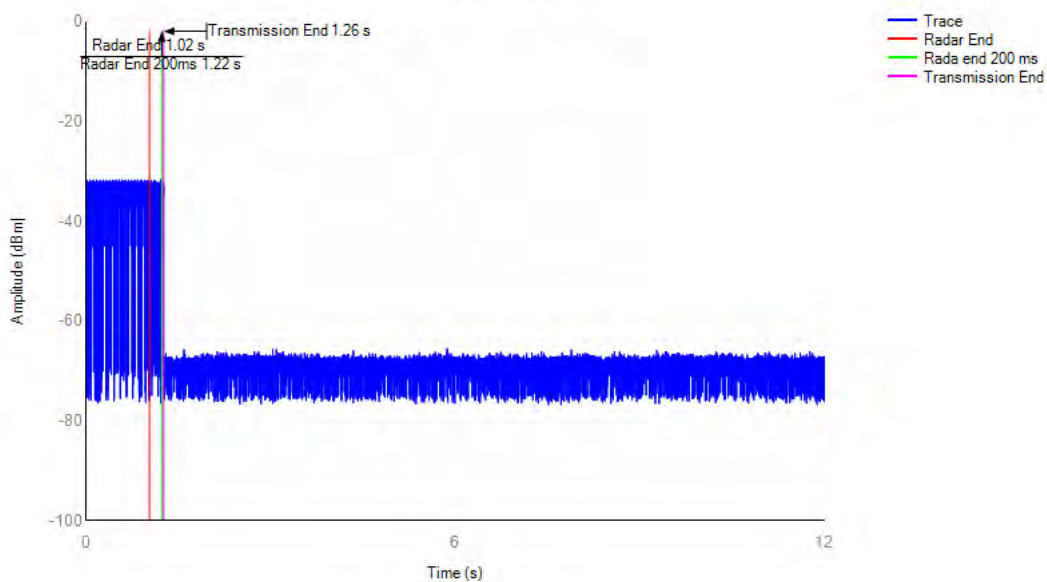
Channel Shutdown





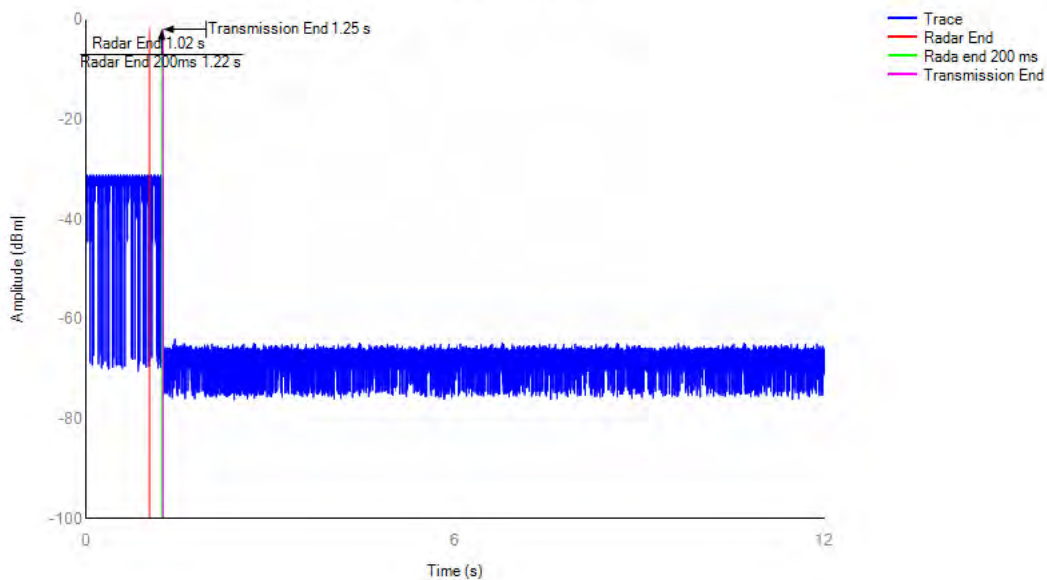
11N40_5270

Channel Shutdown



11N40_5510

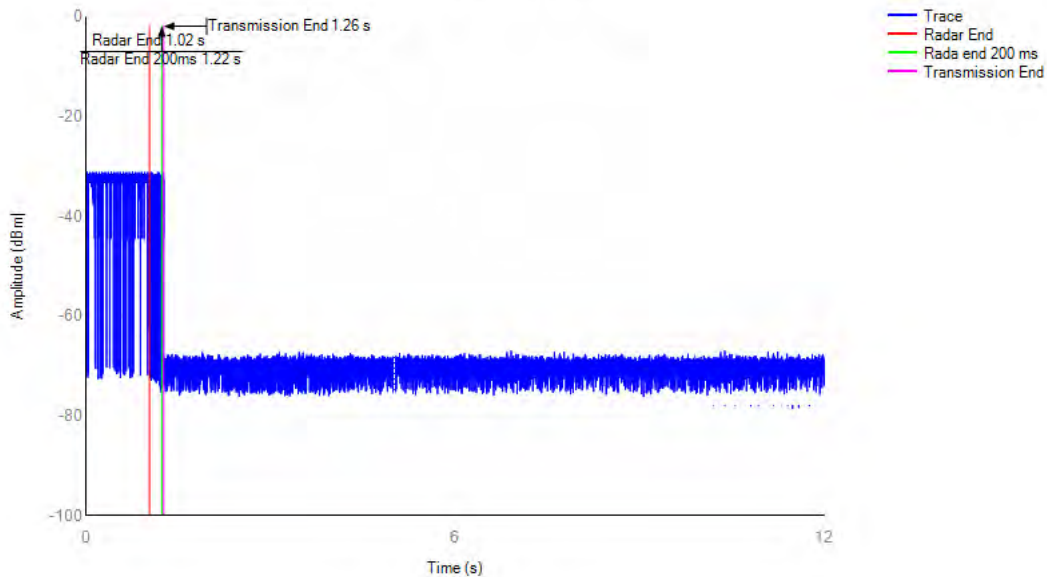
Channel Shutdown





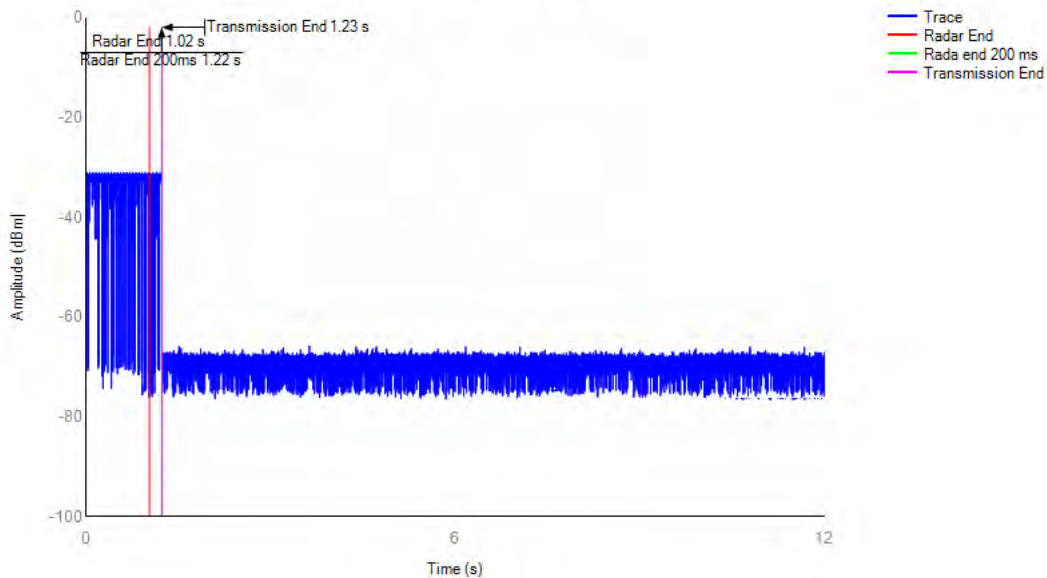
11AC80_5290

Channel Shutdown



11AC80_5530

Channel Shutdown



----- THE END OF TEST REPORT -----