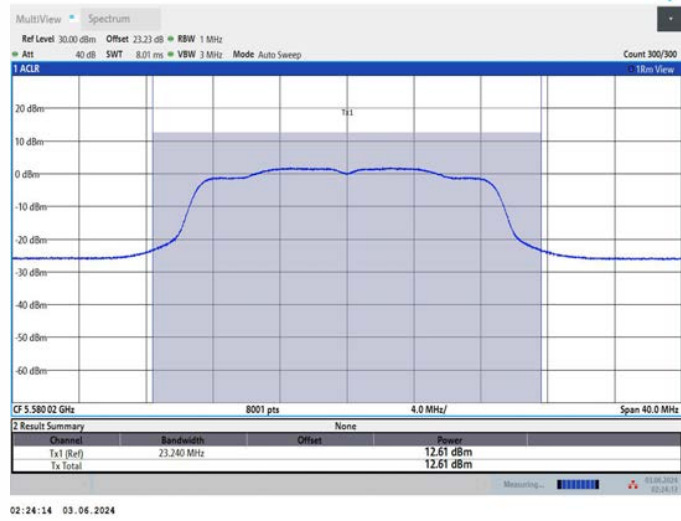
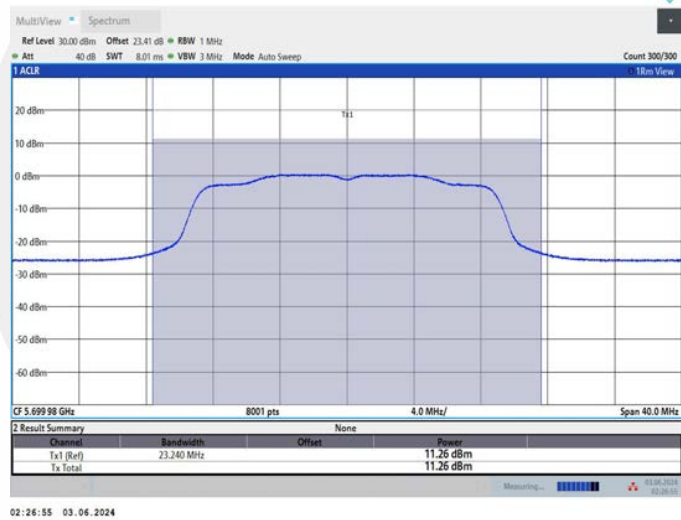


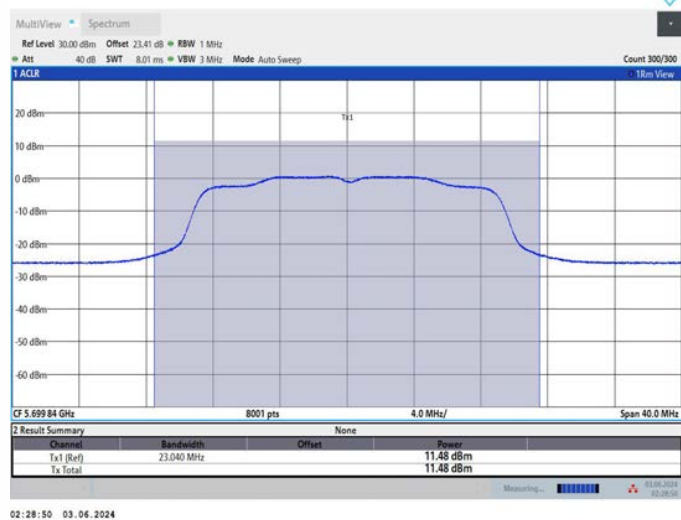
11AC20MIMO_Ant2_5580



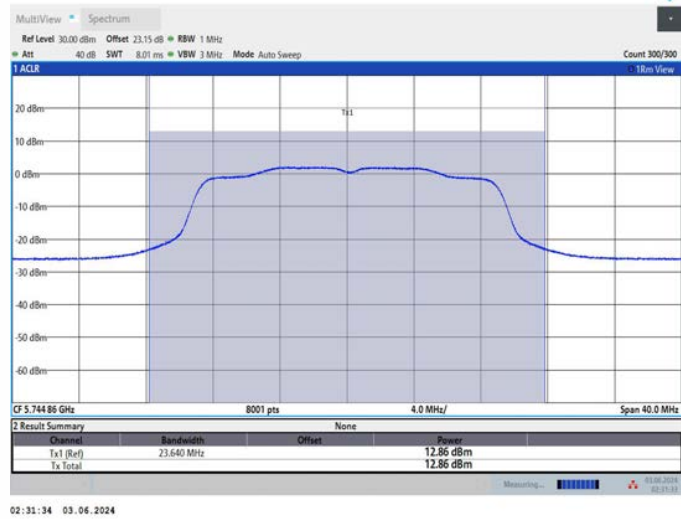
11AC20MIMO_Ant1_5700



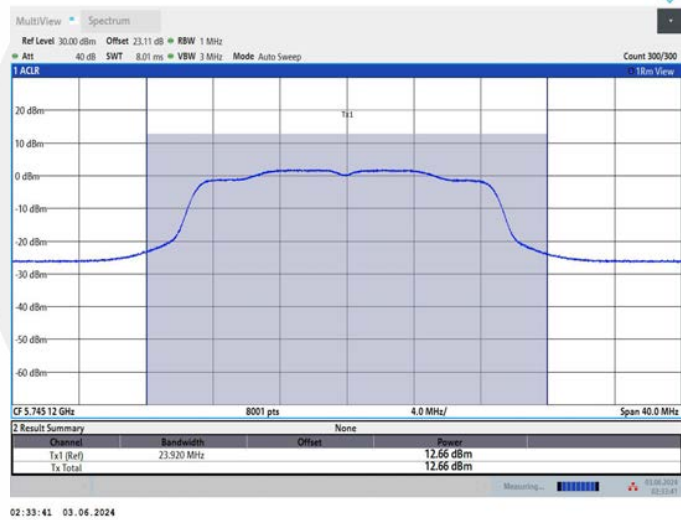
11AC20MIMO_Ant2_5700



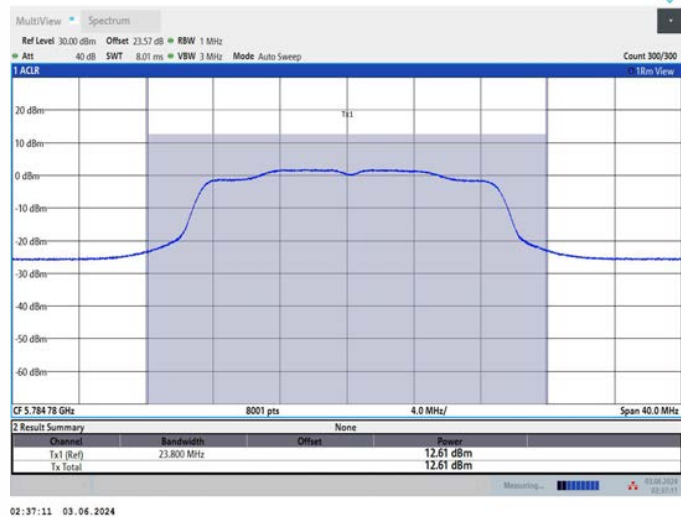
11AC20MIMO_Ant1_5745



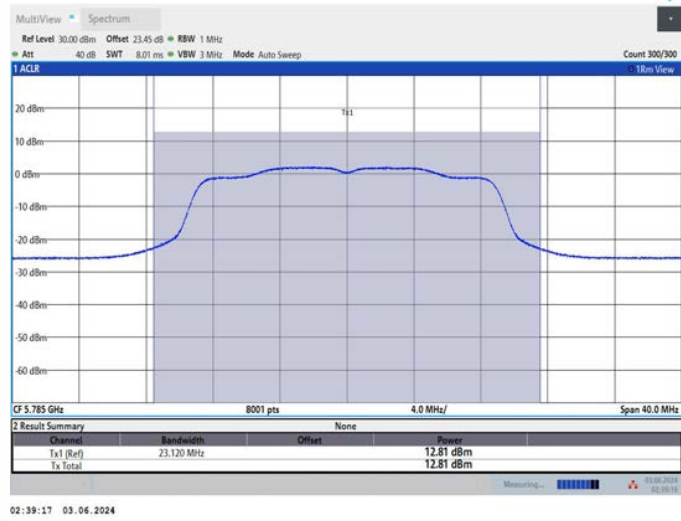
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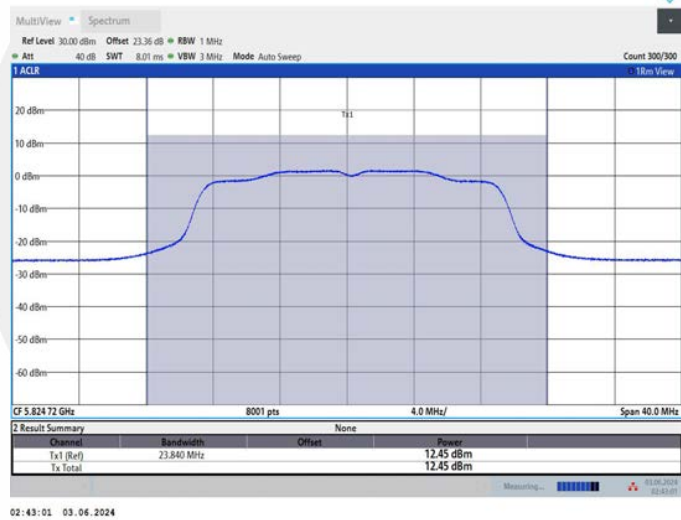
11AC20MIMO_Ant1_5785



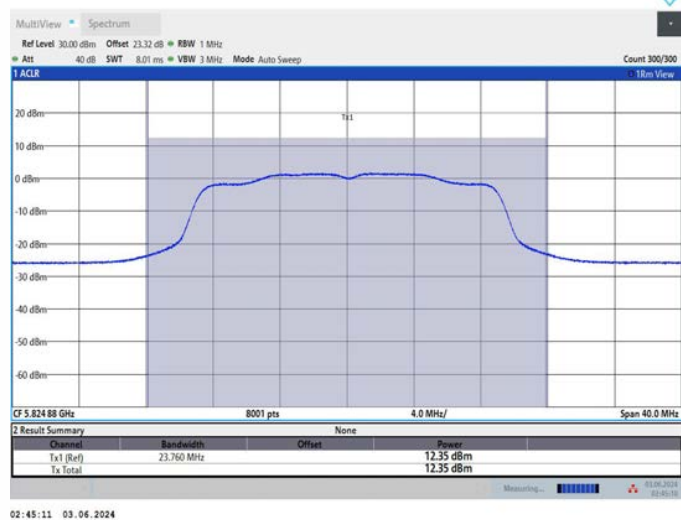
11AC20MIMO_Ant2_5785



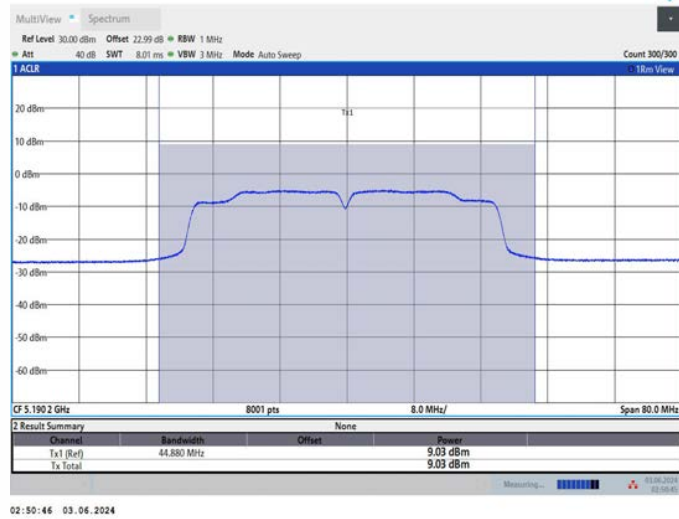
11AC20MIMO_Ant1_5825



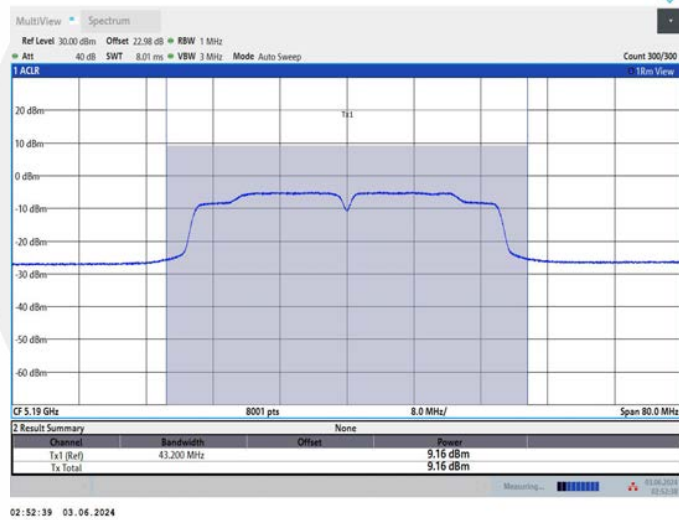
11AC20MIMO_Ant2_5825



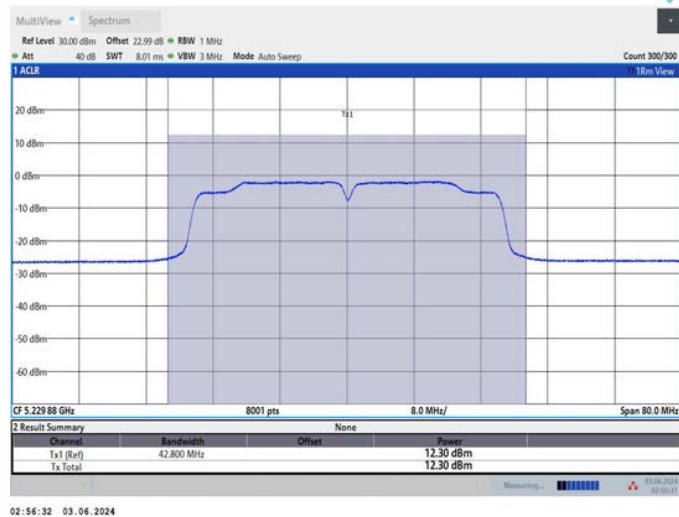
11AC40MIMO_Ant1_5190



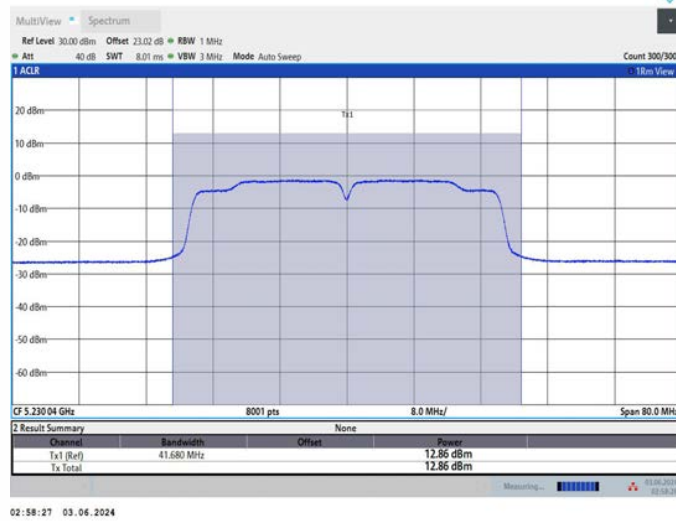
11AC40MIMO_Ant2_5190



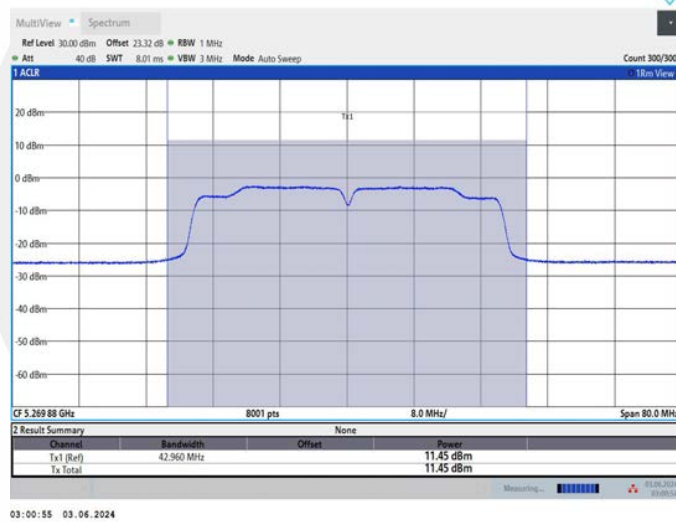
11AC40MIMO_Ant1_5230



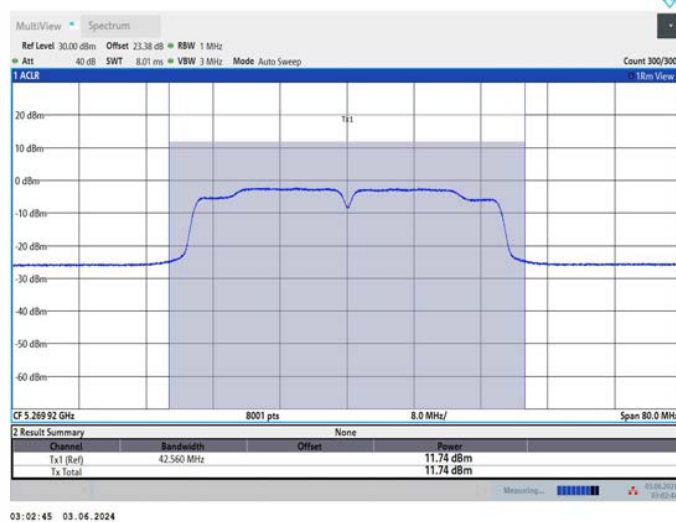
11AC40MIMO_Ant2_5230



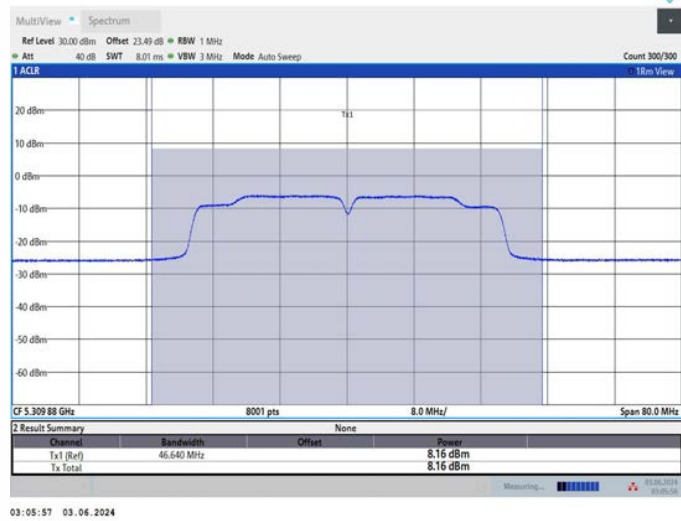
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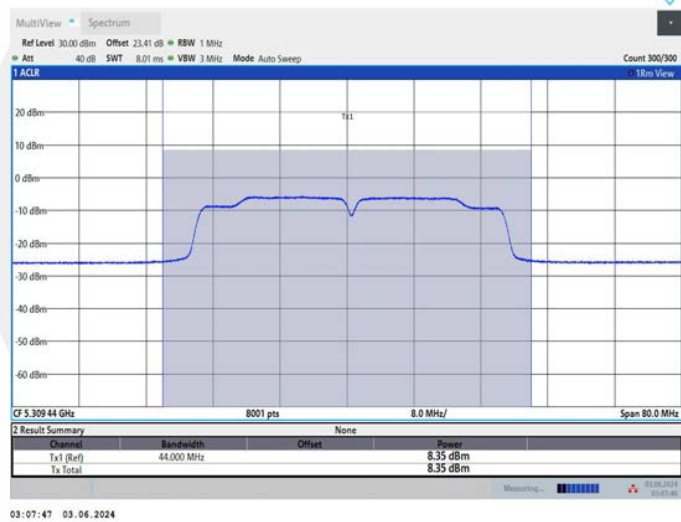
11AC40MIMO_Ant2_5270



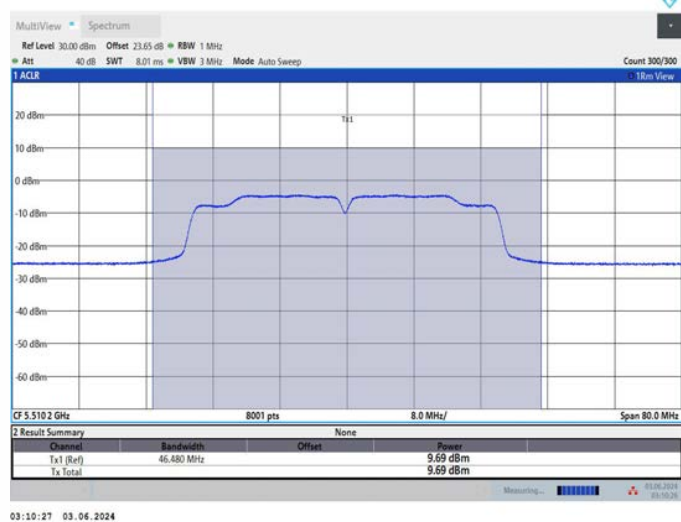
11AC40MIMO_Ant1_5310



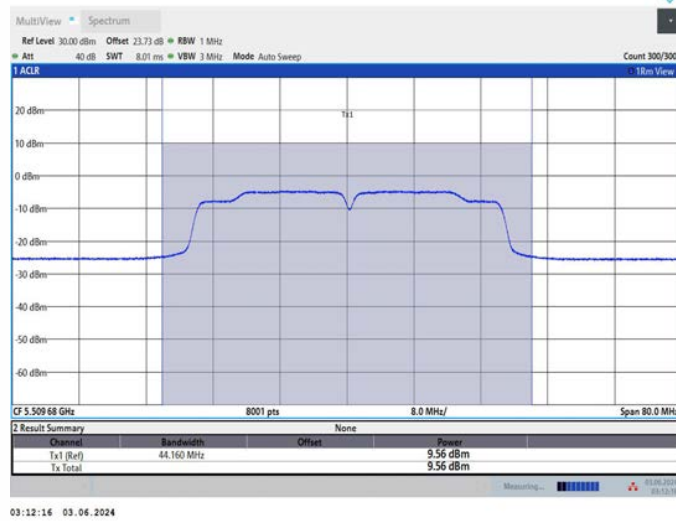
11AC40MIMO_Ant2_5310



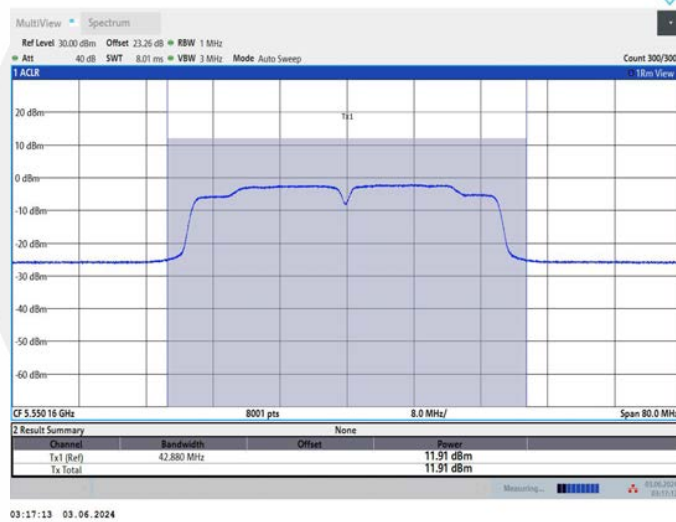
11AC40MIMO_Ant1_5510



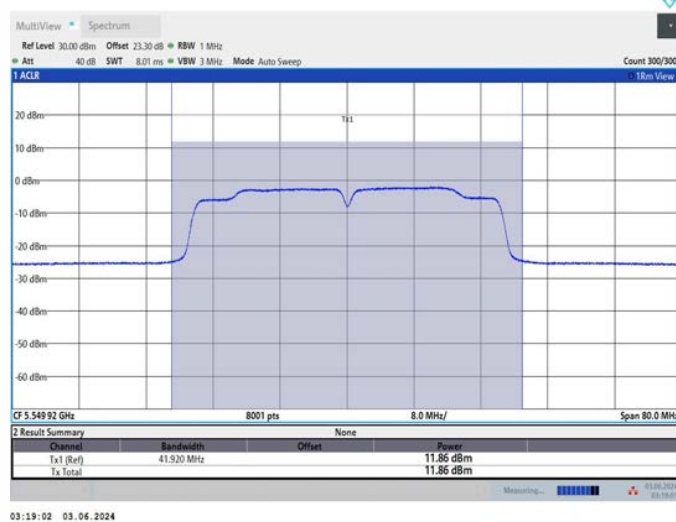
11AC40MIMO_Ant2_5510



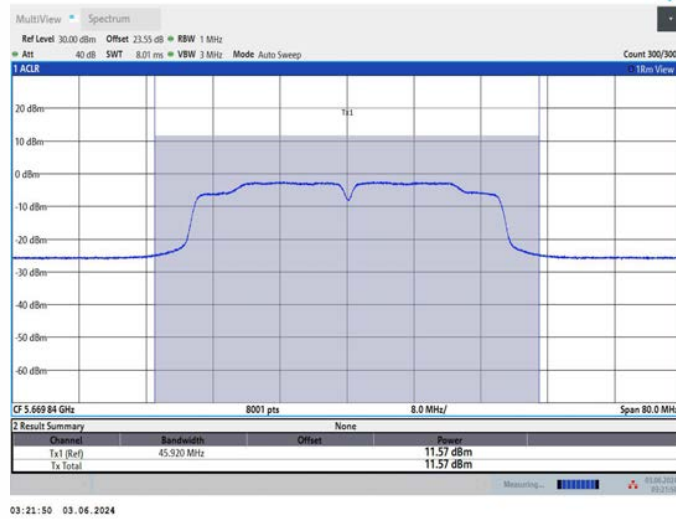
11AC40MIMO_Ant1_5550



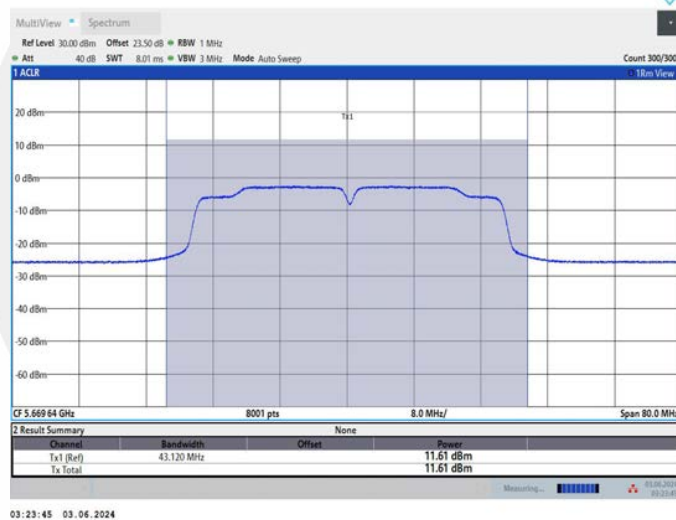
11AC40MIMO_Ant2_5550



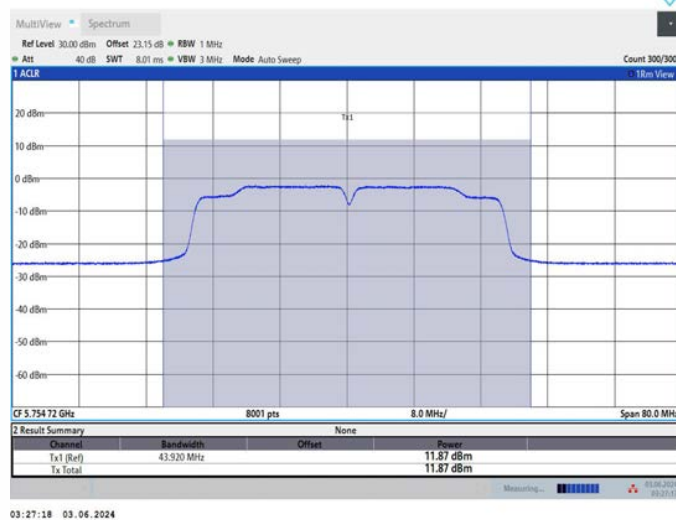
11AC40MIMO_Ant1_5670



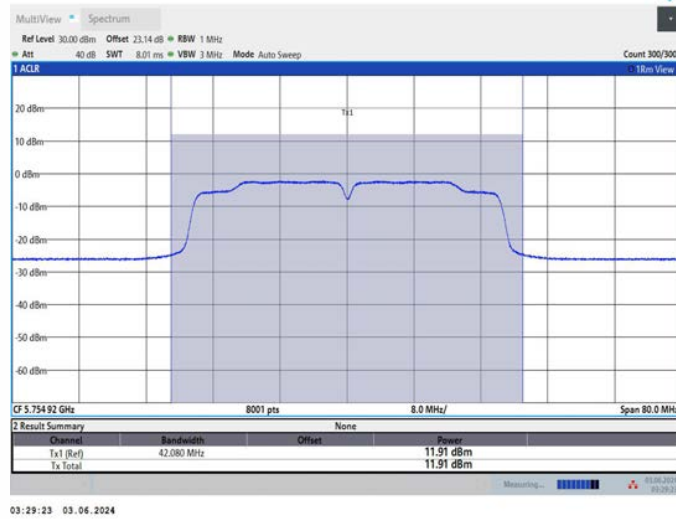
11AC40MIMO_Ant2_5670



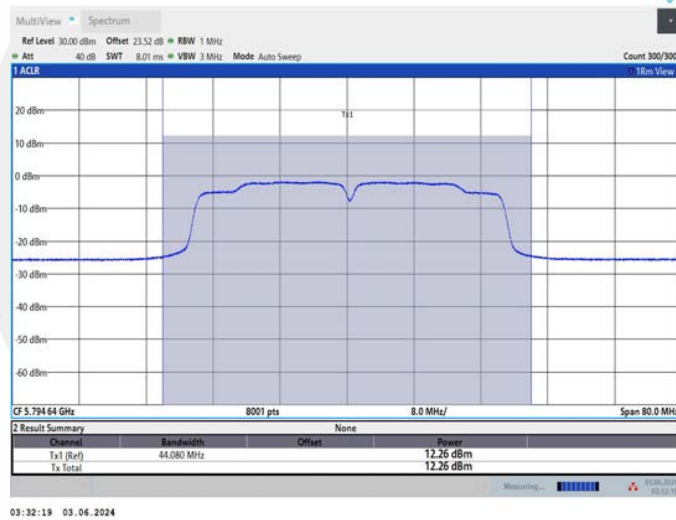
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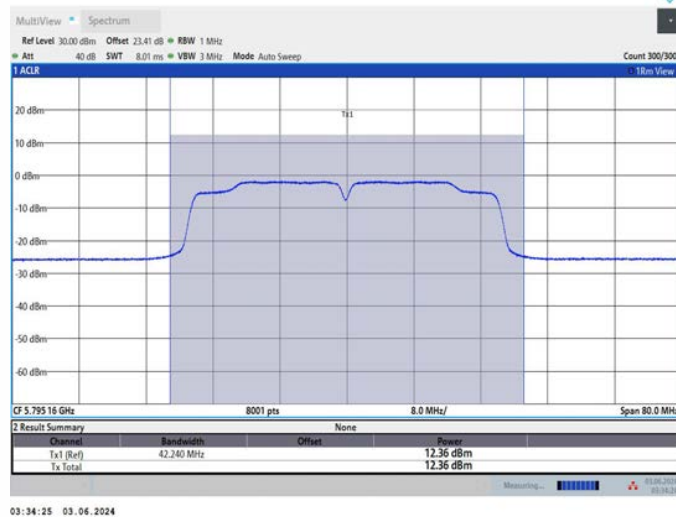
11AC40MIMO_Ant2_5755



11AC40MIMO_Ant1_5795



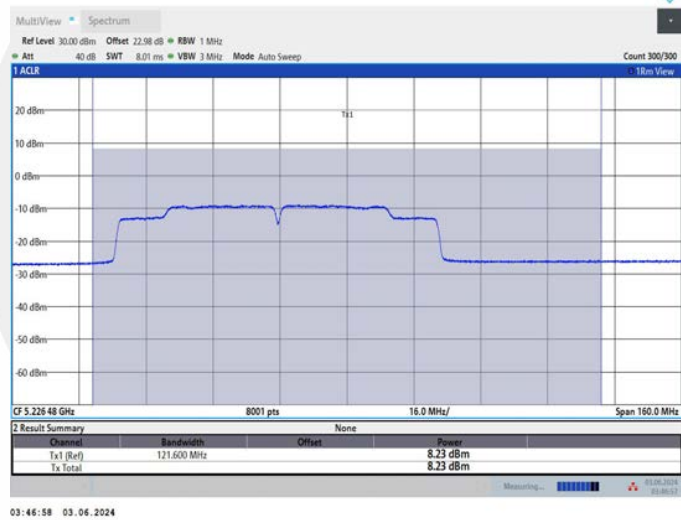
11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5210



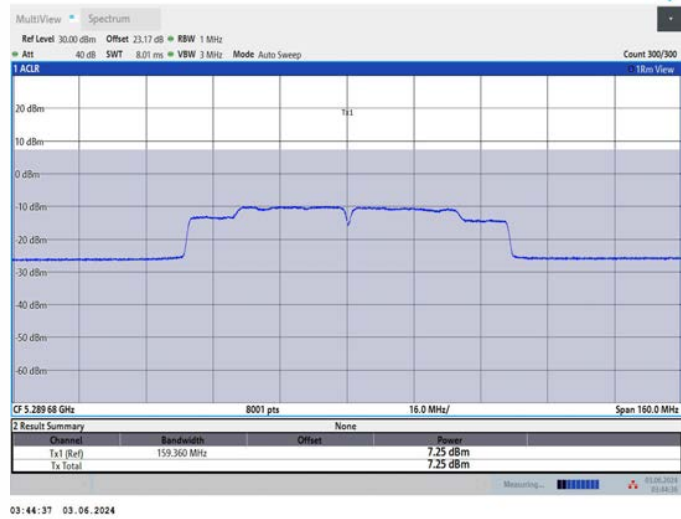
11AC80MIMO_Ant2_5210



11AC80MIMO_Ant1_5290



11AC80MIMO_Ant2_5290



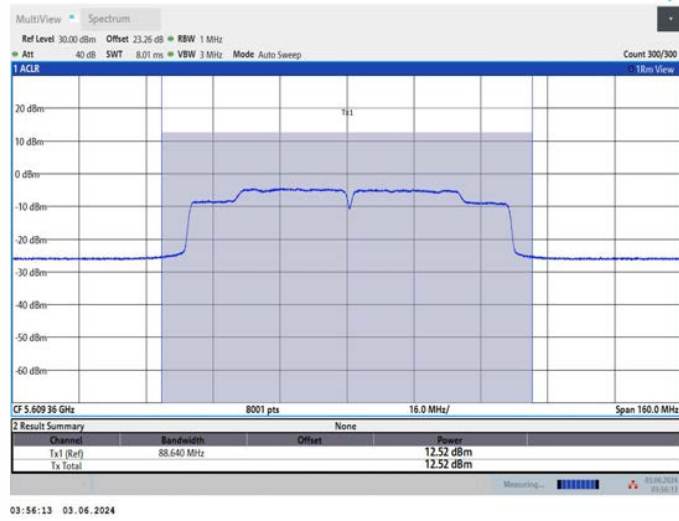
11AC80MIMO_Ant1_5530



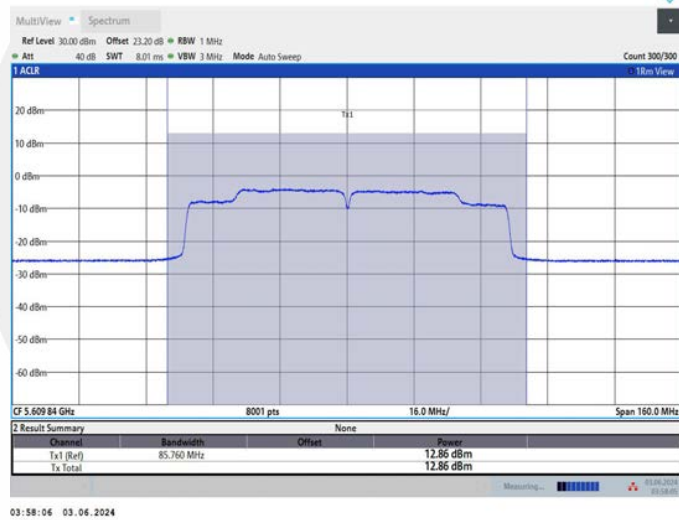
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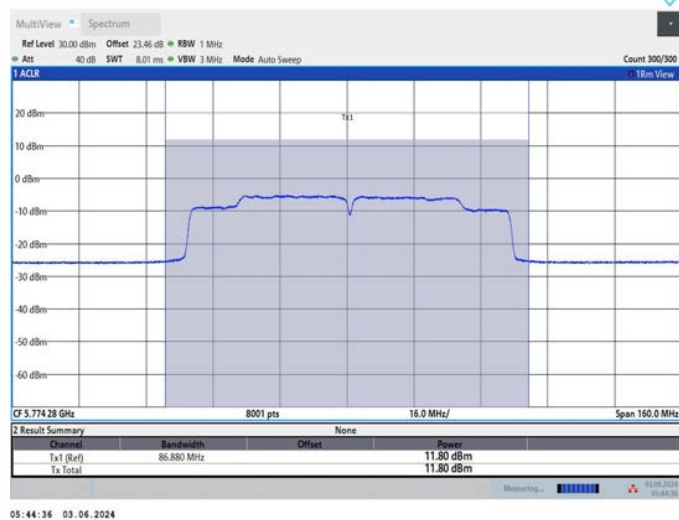
11AC80MIMO_Ant1_5610



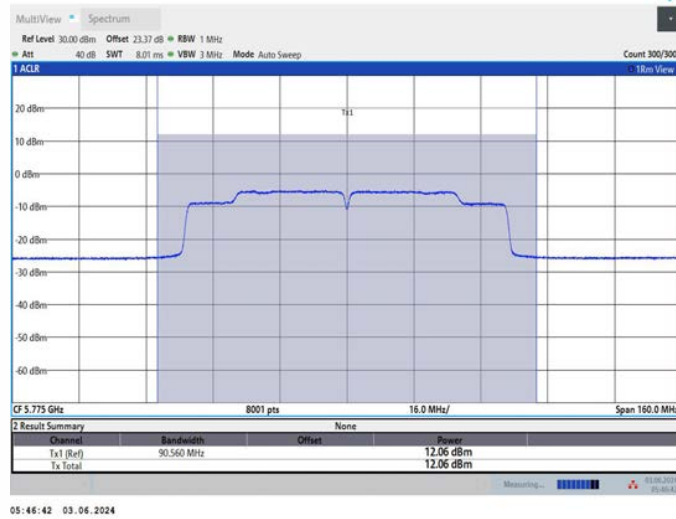
11AC80MIMO_Ant2_5610



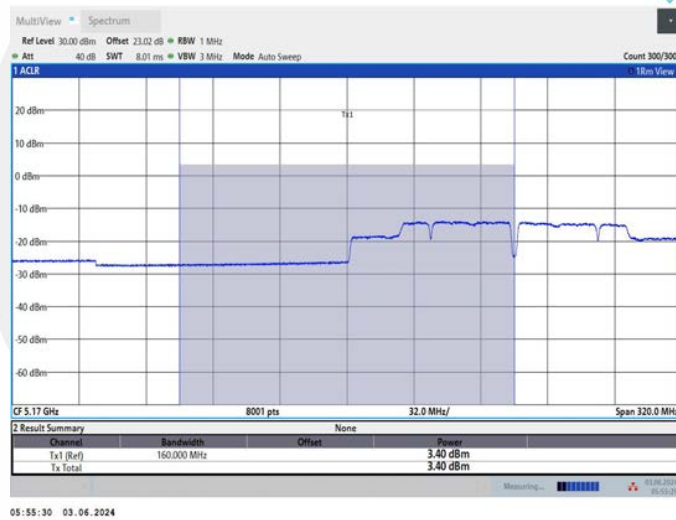
11AC80MIMO_Ant1_5775



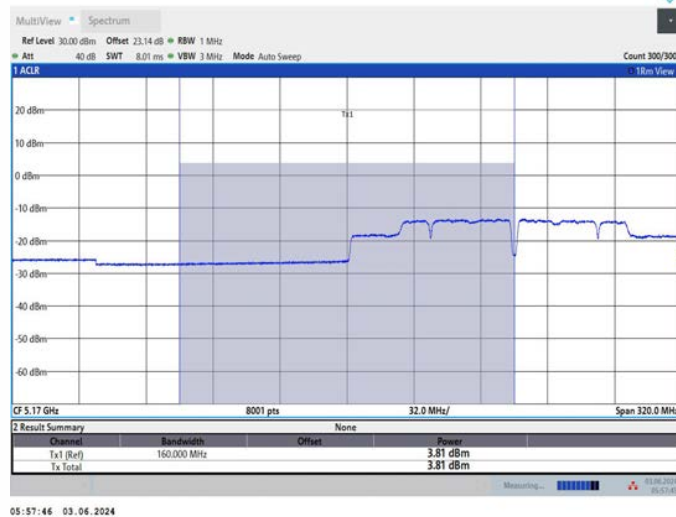
11AC80MIMO_Ant2_5775



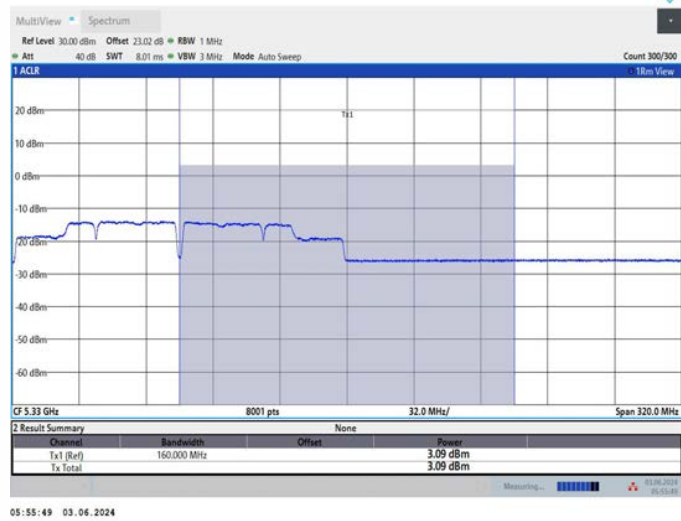
11AC160MIMO_Ant1_5250_UNII-1



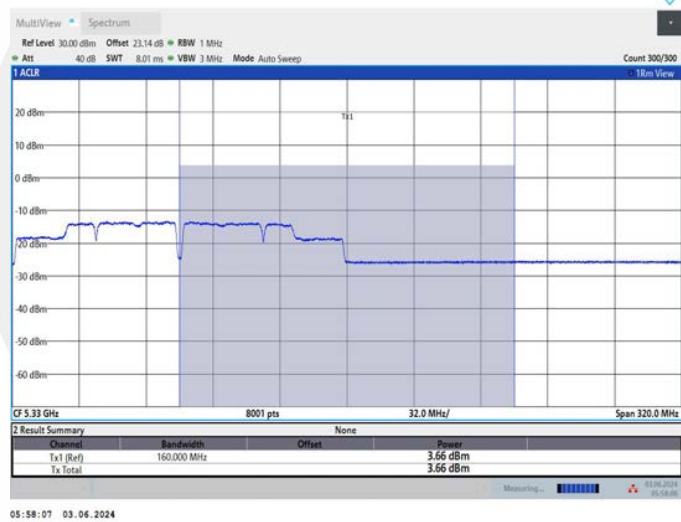
11AC160MIMO_Ant2_5250_UNII-1



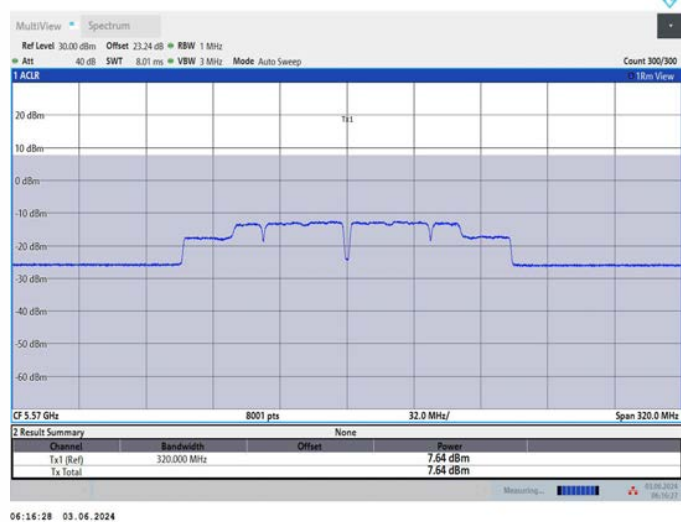
11AC160MIMO_Ant1_5250_UNII-2A

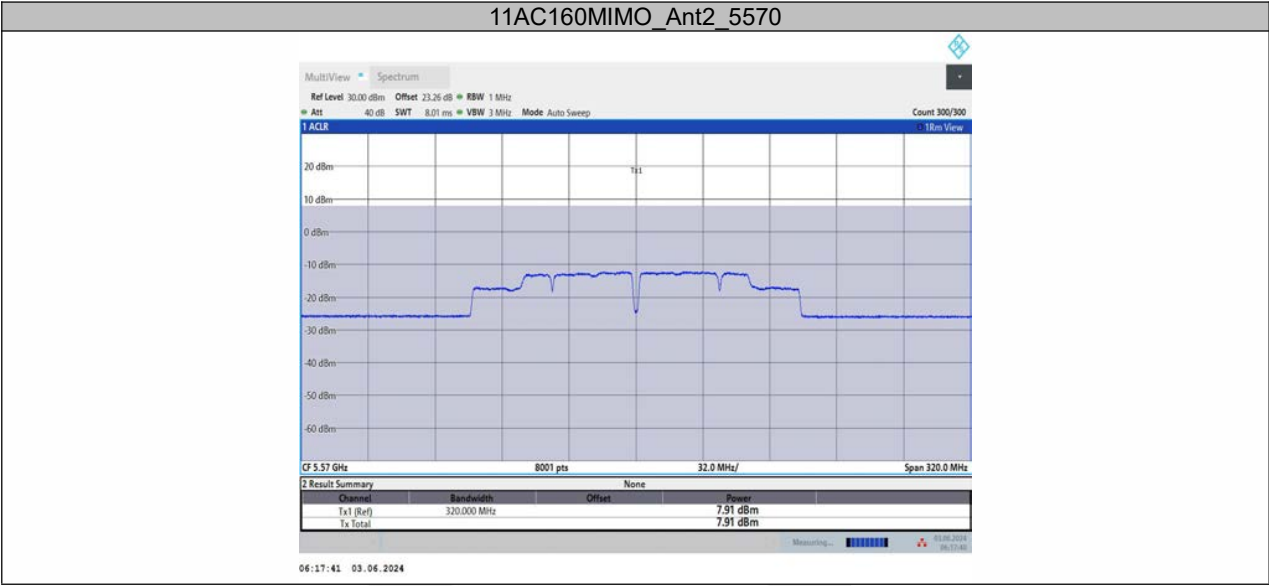


11AC160MIMO_Ant2_5250_UNII-2A



11AC160MIMO_Ant1_5570





8.3 MAXIMUM PEAK POWER DENSITY

8.3.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(F)
According to RSS 247, 6.2

8.3.2 Conformance Limit

FCC Limit:

■ For the band 5.15-5.25 GHz,

(a)(1) (i) For an outdoor access point, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(a) (1) (ii) For an indoor access point, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(a) (1) (iii) For fixed point-to-point access points, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(a) (1) (iv) For client devices, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(b) (2) The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the band 5.725-5.85 GHz

(a) (3) The maximum power spectral density shall not exceed 30 dBm in any 500-kHz band provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations

IC Limit:

- Frequency band 5150-5250 MHz
The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
- Frequency band 5250-5350 MHz
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
- Frequency bands 5470-5600 MHz and 5650-5725 MHz
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
- Frequency band 5725-5850 MHz

The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

8.3.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.3.4 Test Procedure

Methods refer to FCC KDB 789033

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

8.3.5 Test Results

Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Note: N/A

TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	2.36	≤11.00	PASS
	Ant2	5180	2.20	≤11.00	PASS
	Ant1	5200	4.25	≤11.00	PASS
	Ant2	5200	4.59	≤11.00	PASS
	Ant1	5240	4.91	≤11.00	PASS
	Ant2	5240	4.59	≤11.00	PASS
	Ant1	5260	4.75	≤11.00	PASS
	Ant2	5260	5.21	≤11.00	PASS
	Ant1	5280	4.21	≤11.00	PASS
	Ant2	5280	5.01	≤11.00	PASS
	Ant1	5320	0.31	≤11.00	PASS
	Ant2	5320	0.48	≤11.00	PASS
	Ant1	5500	2.99	≤11.00	PASS
	Ant2	5500	1.89	≤11.00	PASS
	Ant1	5580	3.86	≤11.00	PASS
	Ant2	5580	3.71	≤11.00	PASS
	Ant1	5700	2.17	≤11.00	PASS
	Ant2	5700	2.44	≤11.00	PASS
	Ant1	5745	1.44	≤30.00	PASS
	Ant2	5745	1.10	≤30.00	PASS
	Ant1	5785	1.47	≤30.00	PASS
	Ant2	5785	1.63	≤30.00	PASS
	Ant1	5825	1.49	≤30.00	PASS
	Ant2	5825	0.49	≤30.00	PASS
11N20MIMO	Ant1	5180	-0.23	≤11.00	PASS
	Ant2	5180	-0.13	≤11.00	PASS
	total	5180	2.83	≤11.00	PASS
	Ant1	5200	2.93	≤11.00	PASS
	Ant2	5200	2.71	≤11.00	PASS
	total	5200	5.83	≤11.00	PASS
	Ant1	5240	2.41	≤11.00	PASS
	Ant2	5240	3.30	≤11.00	PASS
	total	5240	5.89	≤11.00	PASS
	Ant1	5260	2.91	≤11.00	PASS
	Ant2	5260	2.89	≤11.00	PASS
	total	5260	5.91	≤11.00	PASS
	Ant1	5280	2.80	≤11.00	PASS
	Ant2	5280	2.95	≤11.00	PASS
	total	5280	5.89	≤11.00	PASS
	Ant1	5320	-0.26	≤11.00	PASS
	Ant2	5320	-0.22	≤11.00	PASS
	total	5320	2.77	≤11.00	PASS
	Ant1	5500	-1.09	≤11.00	PASS

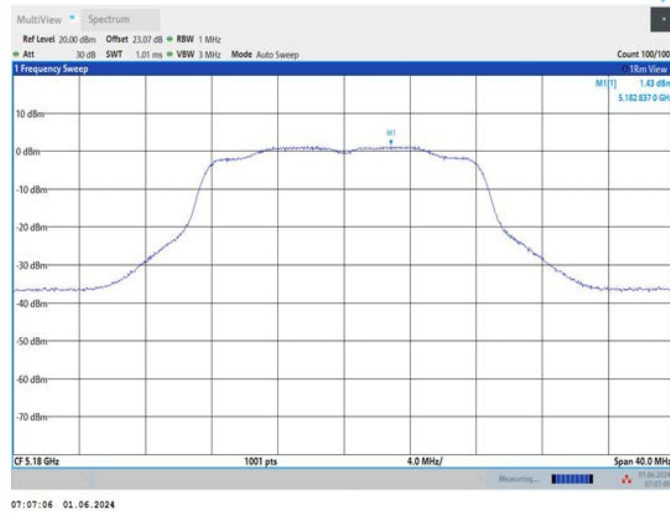
	Ant2	5500	-1.47	≤11.00	PASS
	total	5500	1.73	≤11.00	PASS
	Ant1	5580	1.77	≤11.00	PASS
	Ant2	5580	2.38	≤11.00	PASS
	total	5580	5.10	≤11.00	PASS
	Ant1	5700	1.41	≤11.00	PASS
	Ant2	5700	1.47	≤11.00	PASS
	total	5700	4.45	≤11.00	PASS
	Ant1	5745	-0.19	≤30.00	PASS
	Ant2	5745	-0.21	≤30.00	PASS
	total	5745	2.81	≤30.00	PASS
	Ant1	5785	-0.15	≤30.00	PASS
	Ant2	5785	-0.43	≤30.00	PASS
	total	5785	2.72	≤30.00	PASS
	Ant1	5825	-0.58	≤30.00	PASS
	Ant2	5825	-1.37	≤30.00	PASS
	total	5825	2.05	≤30.00	PASS
11N40MIMO	Ant1	5190	-4.04	≤11.00	PASS
	Ant2	5190	-3.73	≤11.00	PASS
	total	5190	-0.87	≤11.00	PASS
	Ant1	5230	-0.75	≤11.00	PASS
	Ant2	5230	-0.45	≤11.00	PASS
	total	5230	2.41	≤11.00	PASS
	Ant1	5270	-1.39	≤11.00	PASS
	Ant2	5270	-0.94	≤11.00	PASS
	total	5270	1.85	≤11.00	PASS
	Ant1	5310	-4.65	≤11.00	PASS
	Ant2	5310	-4.78	≤11.00	PASS
	total	5310	-1.70	≤11.00	PASS
	Ant1	5510	-3.50	≤11.00	PASS
	Ant2	5510	-3.85	≤11.00	PASS
	total	5510	-0.66	≤11.00	PASS
	Ant1	5550	-0.78	≤11.00	PASS
	Ant2	5550	-1.02	≤11.00	PASS
	total	5550	2.11	≤11.00	PASS
	Ant1	5670	-1.19	≤11.00	PASS
	Ant2	5670	-1.24	≤11.00	PASS
	total	5670	1.80	≤11.00	PASS
	Ant1	5755	-3.74	≤30.00	PASS
	Ant2	5755	-4.17	≤30.00	PASS
	total	5755	-0.94	≤30.00	PASS
	Ant1	5795	-3.58	≤30.00	PASS
	Ant2	5795	-3.22	≤30.00	PASS
	total	5795	-0.39	≤30.00	PASS
11AC20MIMO	Ant1	5180	-0.77	≤11.00	PASS
	Ant2	5180	0.00	≤11.00	PASS
	total	5180	2.64	≤11.00	PASS
	Ant1	5200	2.49	≤11.00	PASS
	Ant2	5200	2.63	≤11.00	PASS
	total	5200	5.57	≤11.00	PASS
	Ant1	5240	2.72	≤11.00	PASS
	Ant2	5240	3.08	≤11.00	PASS
	total	5240	5.91	≤11.00	PASS
	Ant1	5260	2.88	≤11.00	PASS
	Ant2	5260	3.02	≤11.00	PASS

	total	5260	5.96	≤11.00	PASS
	Ant1	5280	2.65	≤11.00	PASS
	Ant2	5280	2.84	≤11.00	PASS
	total	5280	5.76	≤11.00	PASS
	Ant1	5320	-0.46	≤11.00	PASS
	Ant2	5320	-0.25	≤11.00	PASS
	total	5320	2.66	≤11.00	PASS
	Ant1	5500	-0.94	≤11.00	PASS
	Ant2	5500	-0.97	≤11.00	PASS
	total	5500	2.06	≤11.00	PASS
	Ant1	5580	1.97	≤11.00	PASS
	Ant2	5580	2.51	≤11.00	PASS
	total	5580	5.26	≤11.00	PASS
	Ant1	5700	1.08	≤11.00	PASS
	Ant2	5700	1.38	≤11.00	PASS
	total	5700	4.24	≤11.00	PASS
	Ant1	5745	-0.11	≤30.00	PASS
	Ant2	5745	-0.32	≤30.00	PASS
	total	5745	2.80	≤30.00	PASS
	Ant1	5785	-0.32	≤30.00	PASS
	Ant2	5785	-0.30	≤30.00	PASS
	total	5785	2.70	≤30.00	PASS
	Ant1	5825	-0.30	≤30.00	PASS
	Ant2	5825	-0.56	≤30.00	PASS
	total	5825	2.58	≤30.00	PASS
11AC40MIMO	Ant1	5190	-4.12	≤11.00	PASS
	Ant2	5190	-3.91	≤11.00	PASS
	total	5190	-1.00	≤11.00	PASS
	Ant1	5230	-0.74	≤11.00	PASS
	Ant2	5230	-0.24	≤11.00	PASS
	total	5230	2.53	≤11.00	PASS
	Ant1	5270	-1.46	≤11.00	PASS
	Ant2	5270	-1.04	≤11.00	PASS
	total	5270	1.77	≤11.00	PASS
	Ant1	5310	-4.80	≤11.00	PASS
	Ant2	5310	-4.70	≤11.00	PASS
	total	5310	-1.74	≤11.00	PASS
	Ant1	5510	-3.46	≤11.00	PASS
	Ant2	5510	-3.53	≤11.00	PASS
	total	5510	-0.48	≤11.00	PASS
	Ant1	5550	-1.02	≤11.00	PASS
	Ant2	5550	-0.86	≤11.00	PASS
	total	5550	2.07	≤11.00	PASS
	Ant1	5670	-1.30	≤11.00	PASS
	Ant2	5670	-1.38	≤11.00	PASS
	total	5670	1.67	≤11.00	PASS
	Ant1	5755	-4.12	≤30.00	PASS
	Ant2	5755	-4.27	≤30.00	PASS
	total	5755	-1.18	≤30.00	PASS
	Ant1	5795	-3.73	≤30.00	PASS
	Ant2	5795	-3.53	≤30.00	PASS
	total	5795	-0.62	≤30.00	PASS
11AC80MIMO	Ant1	5210	-8.87	≤11.00	PASS
	Ant2	5210	-8.04	≤11.00	PASS
	total	5210	-5.42	≤11.00	PASS

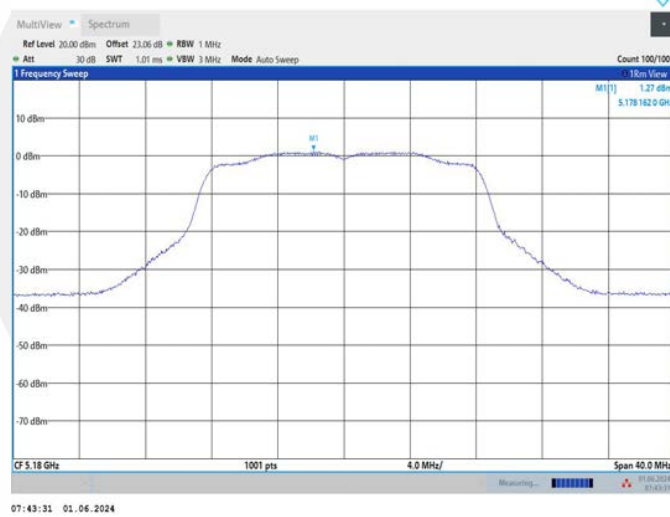
	Ant1	5290	-10.05	≤ 11.00	PASS
	Ant2	5290	-9.31	≤ 11.00	PASS
	total	5290	-6.65	≤ 11.00	PASS
	Ant1	5530	-7.17	≤ 11.00	PASS
	Ant2	5530	-7.45	≤ 11.00	PASS
	total	5530	-4.30	≤ 11.00	PASS
	Ant1	5610	-3.63	≤ 11.00	PASS
	Ant2	5610	-3.39	≤ 11.00	PASS
	total	5610	-0.50	≤ 11.00	PASS
	Ant1	5775	-7.48	≤ 30.00	PASS
	Ant2	5775	-7.33	≤ 30.00	PASS
	total	5775	-4.39	≤ 30.00	PASS
11AC160MIMO	Ant1	5250 UNII-1	-13.66	≤ 11.00	PASS
	Ant2	5250 UNII-1	-7.19	≤ 11.00	PASS
	total	5250 UNII-1	-6.31	≤ 11.00	PASS
	Ant1	5250 UNII-2A	-14.07	≤ 11.00	PASS
	Ant2	5250 UNII-2A	-7.41	≤ 11.00	PASS
	total	5250 UNII-2A	-6.56	≤ 11.00	PASS
	Ant1	5570	-12.76	≤ 11.00	PASS
	Ant2	5570	-12.11	≤ 11.00	PASS
	total	5570	-9.41	≤ 11.00	PASS

Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

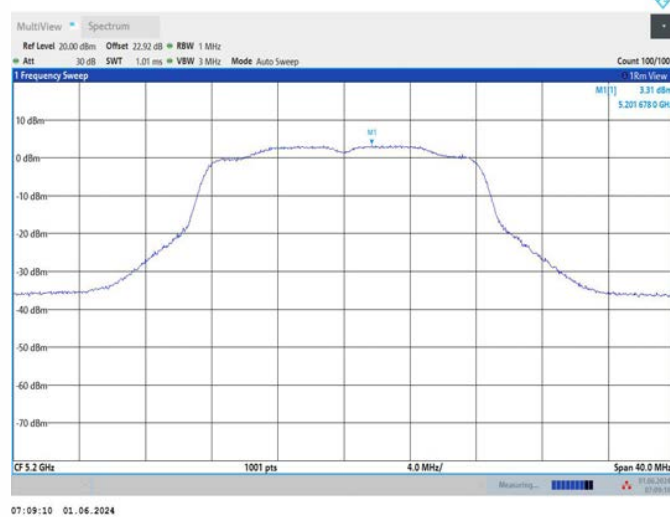
11A_Ant1_5180



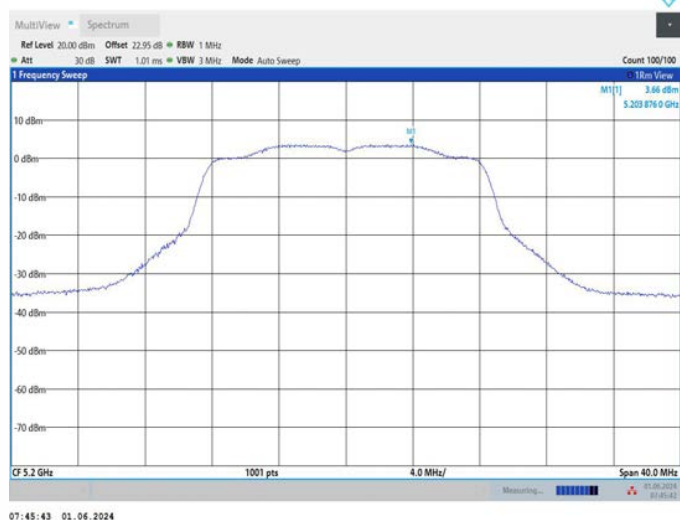
11A_Ant2_5180



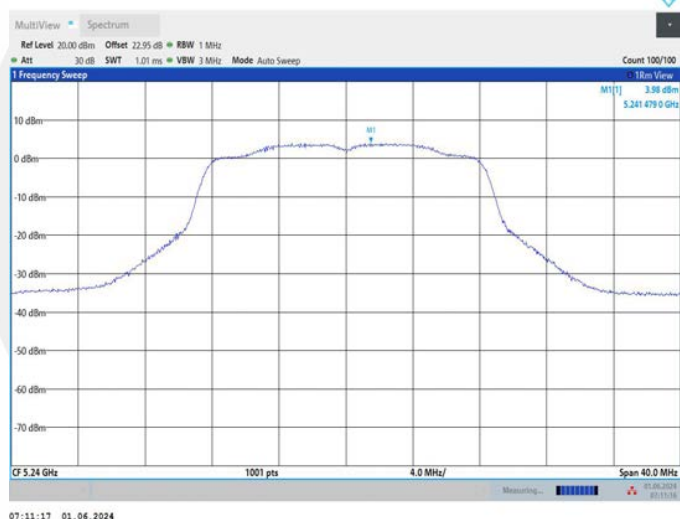
11A_Ant1_5200



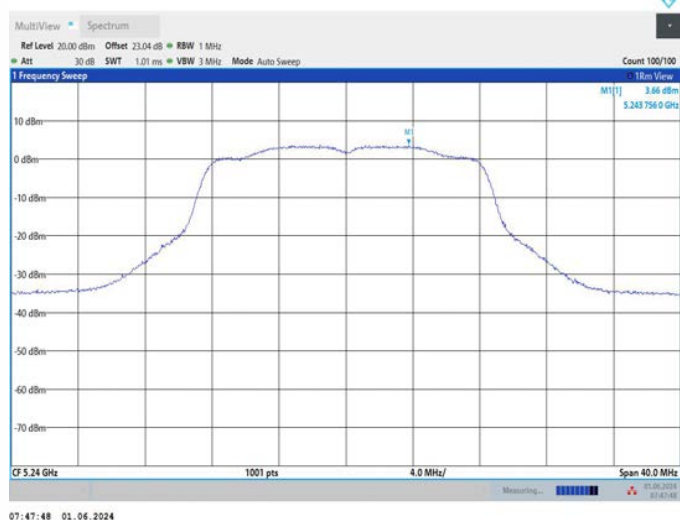
11A_Ant2_5200



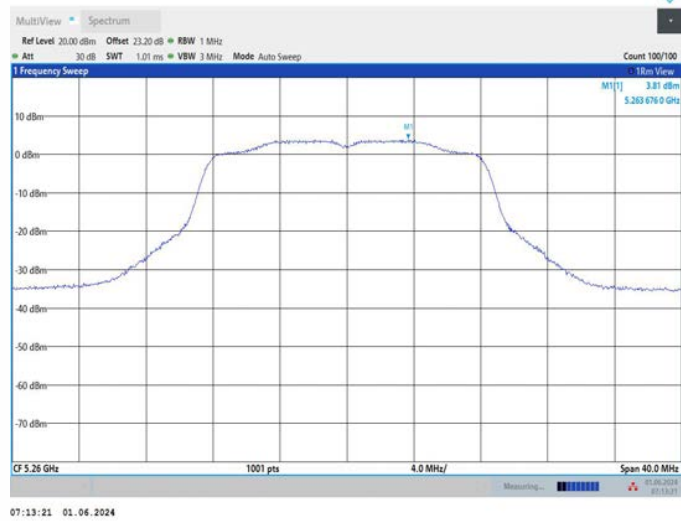
11A_Ant1_5240



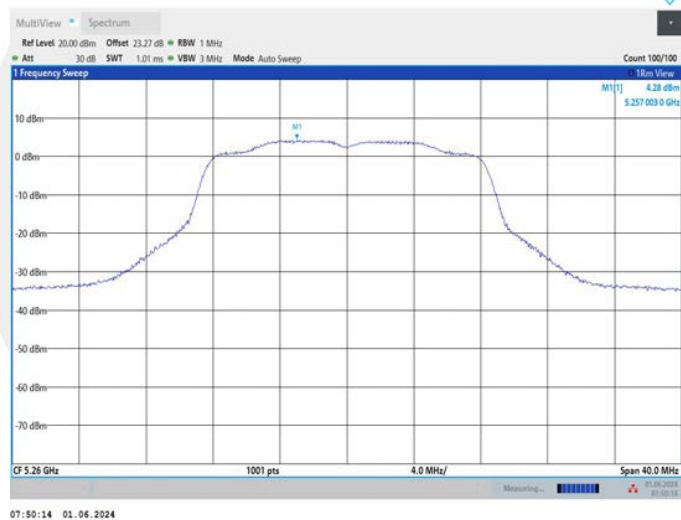
11A_Ant2_5240



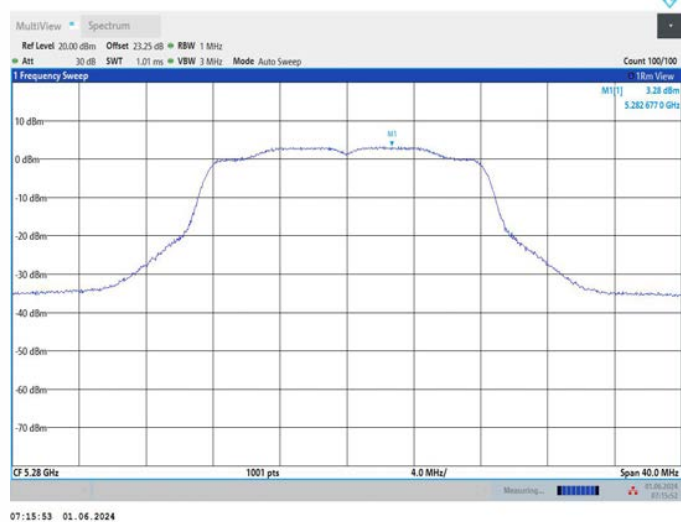
11A_Ant1_5260



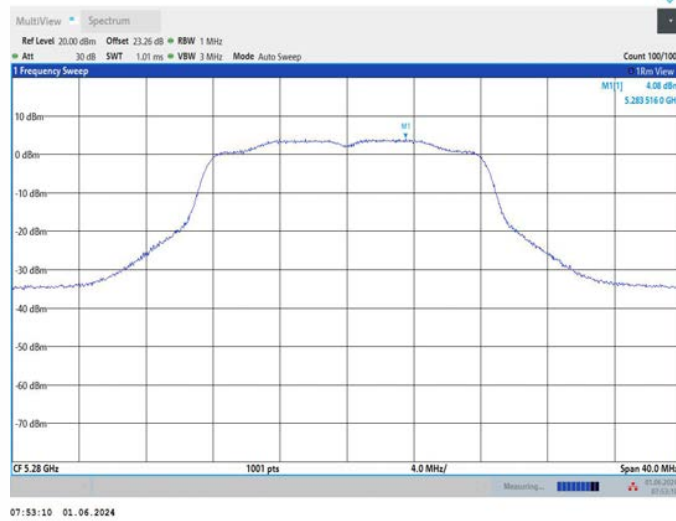
11A_Ant2_5260



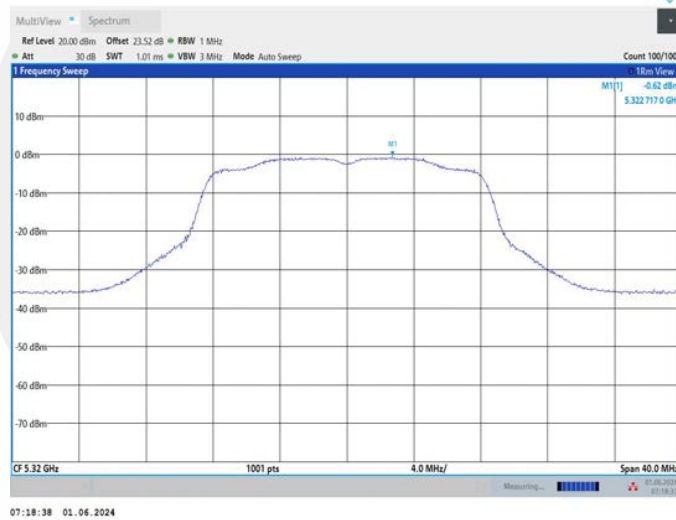
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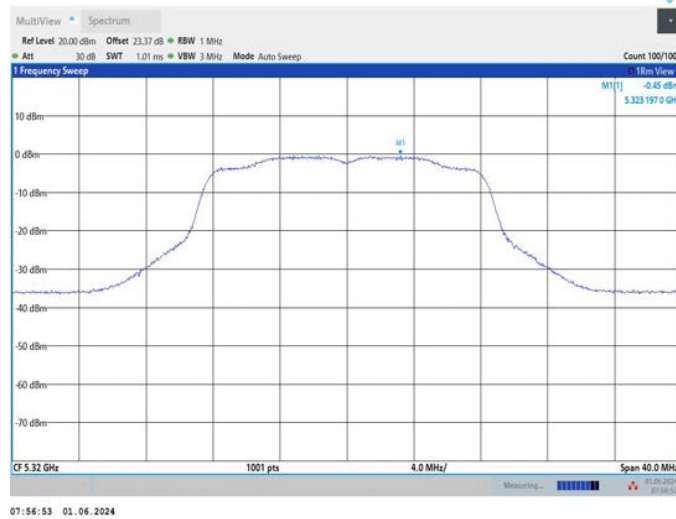
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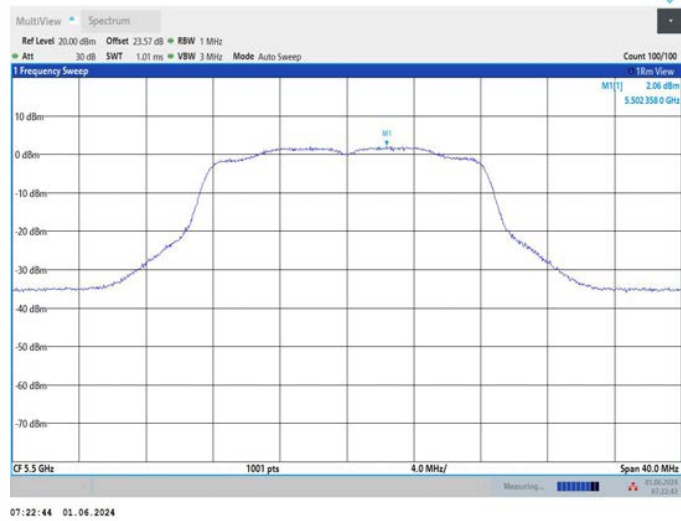
11A_Ant1_5320



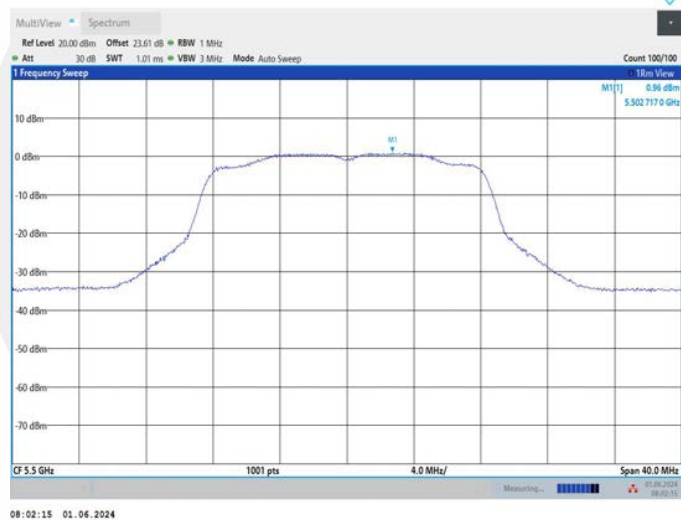
11A_Ant2_5320



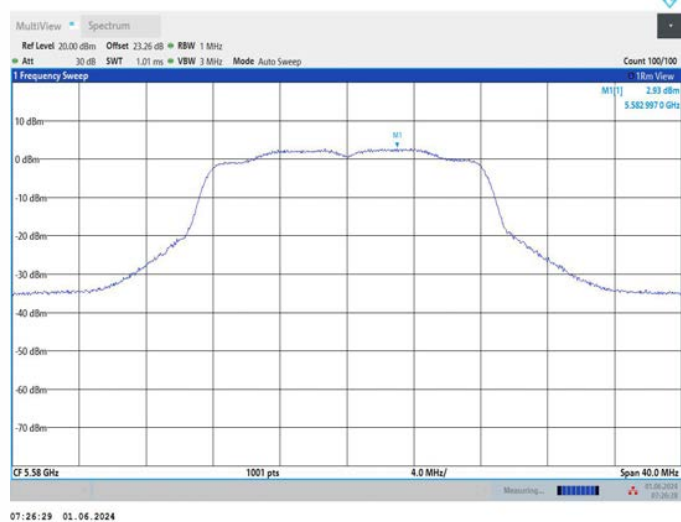
11A_Ant1_5500



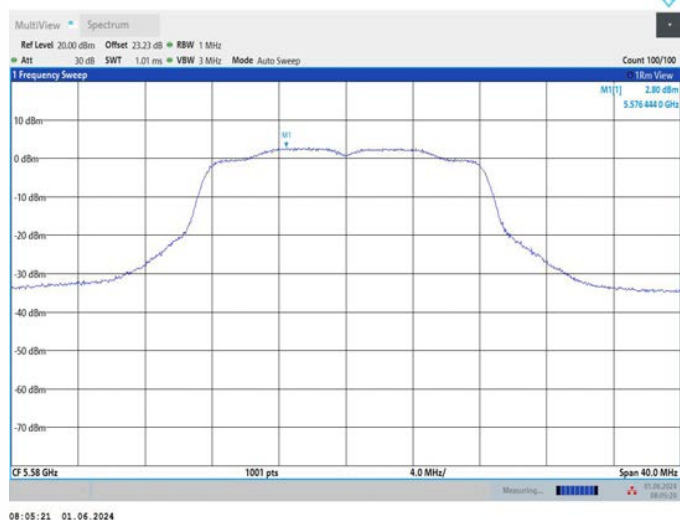
11A_Ant2_5500



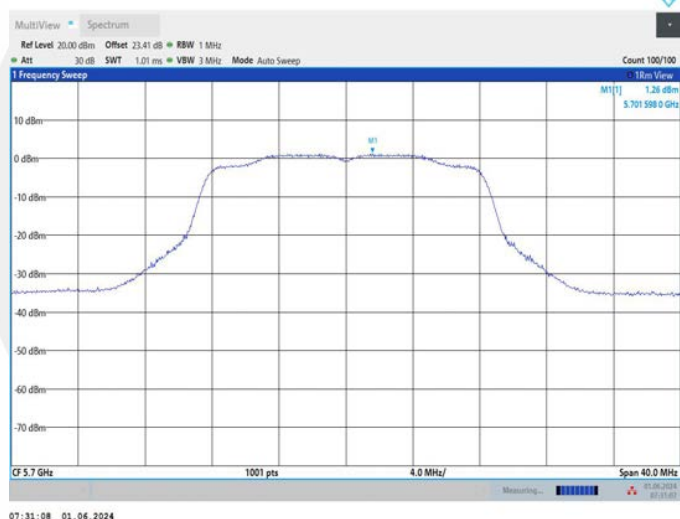
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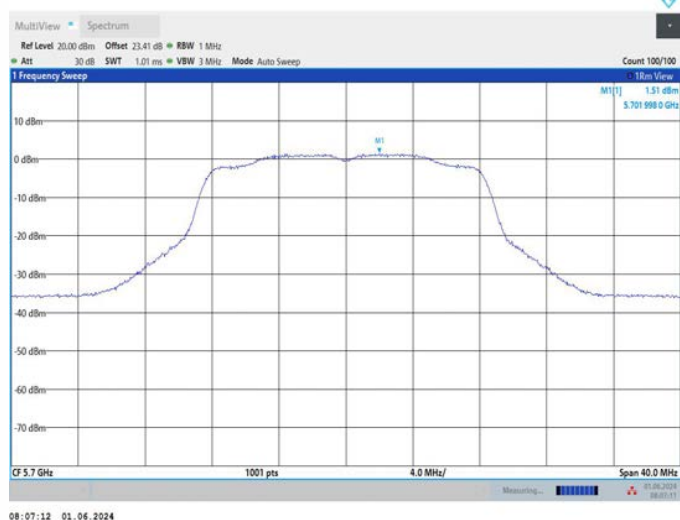
11A_Ant2_5580



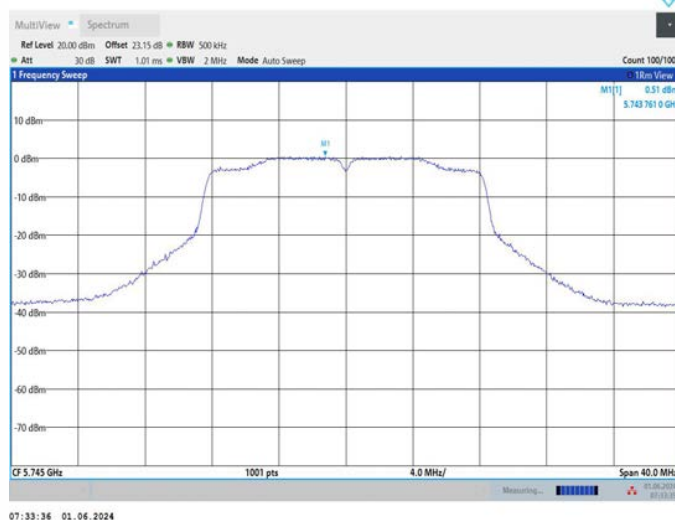
11A_Ant1_5700



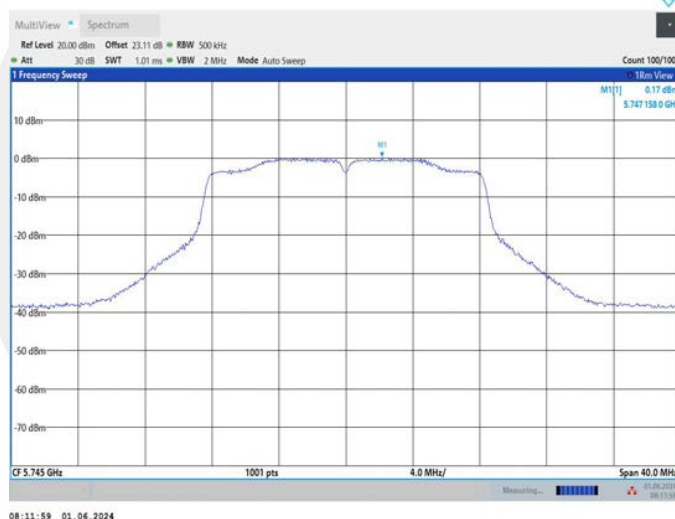
11A_Ant2_5700



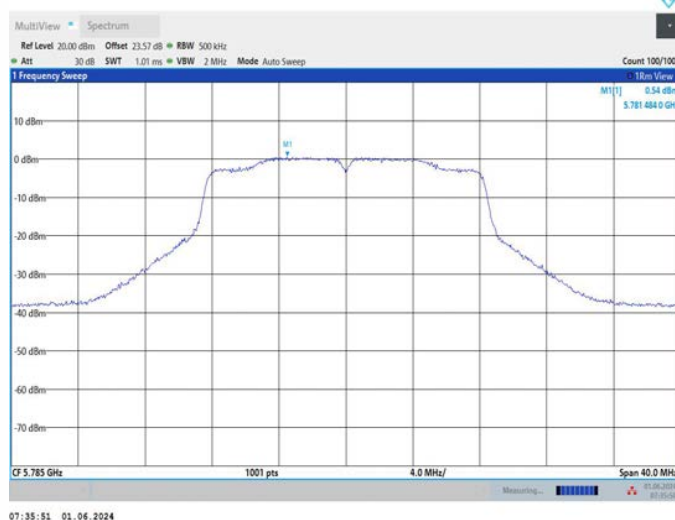
11A_Ant1_5745



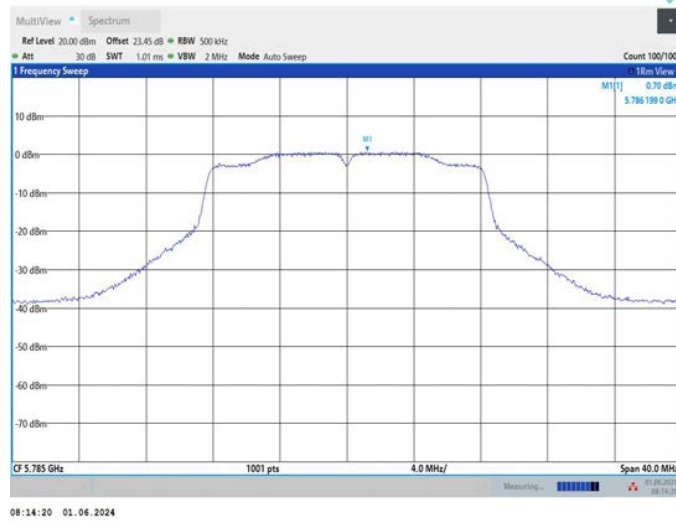
11A_Ant2_5745



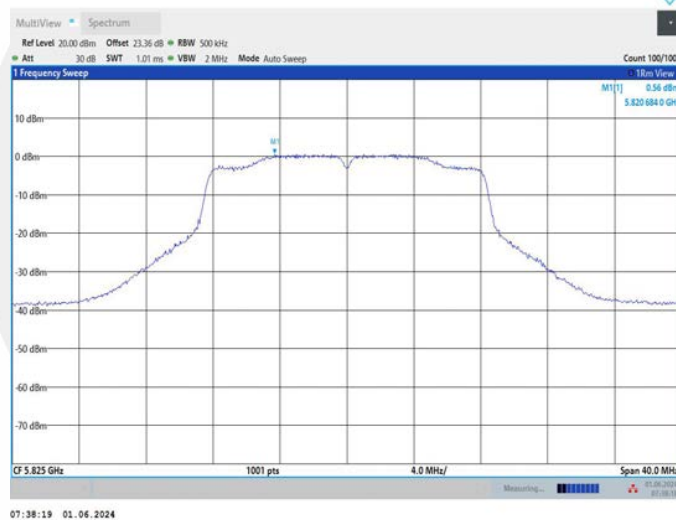
11A_Ant1_5785



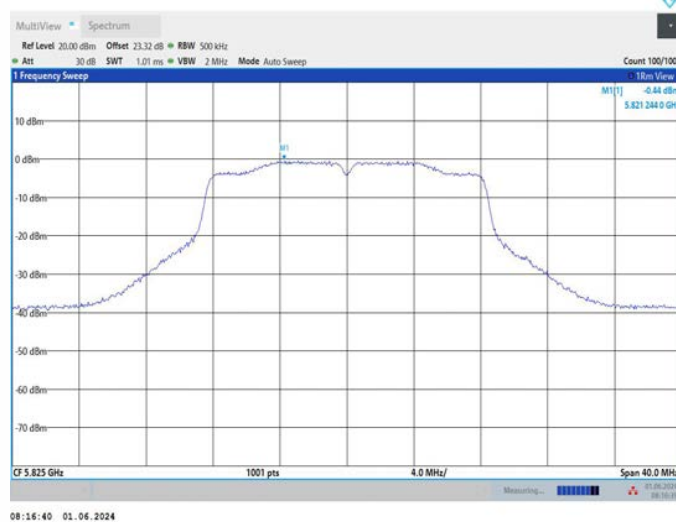
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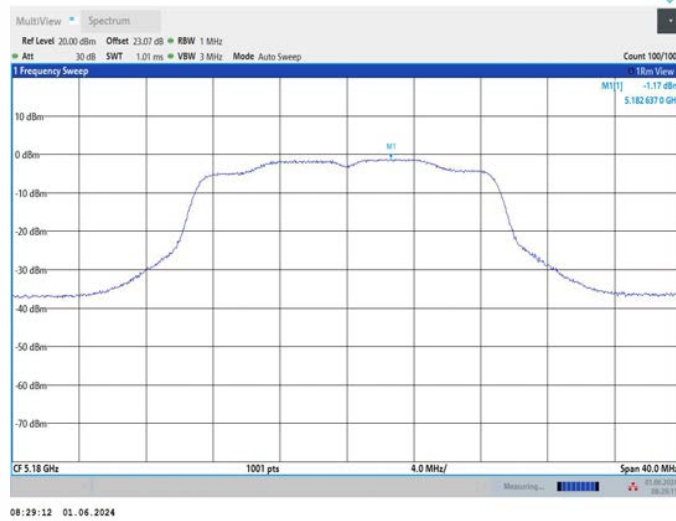
11A_Ant1_5825



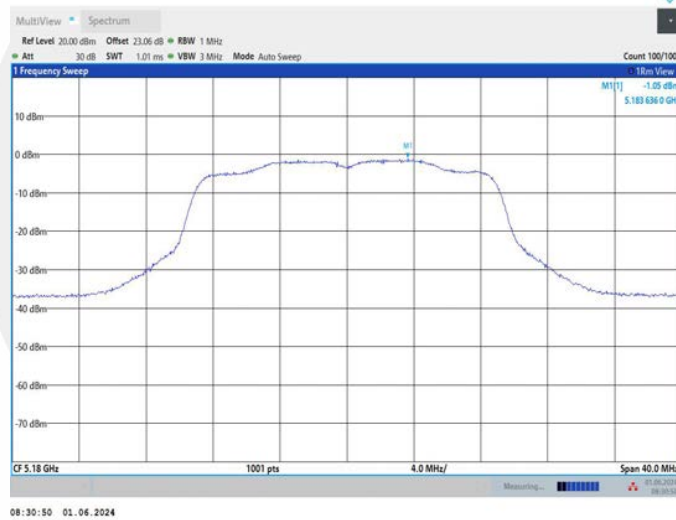
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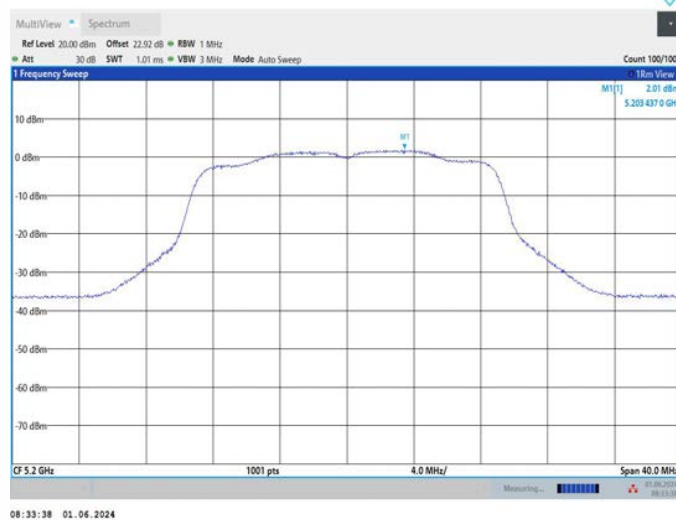
11N20MIMO_Ant1_5180



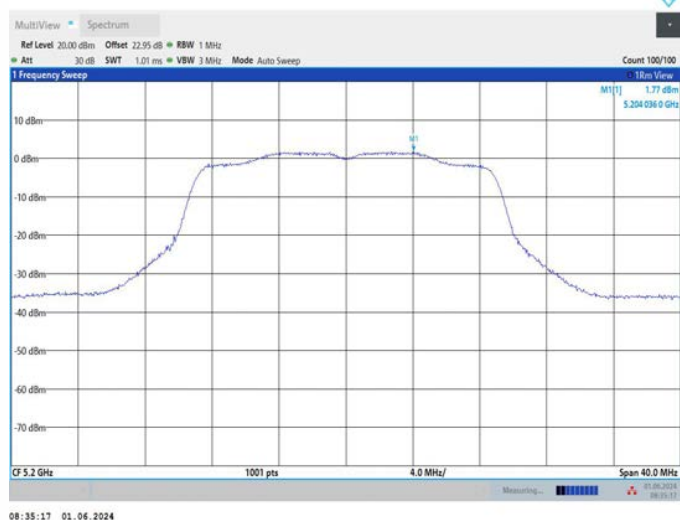
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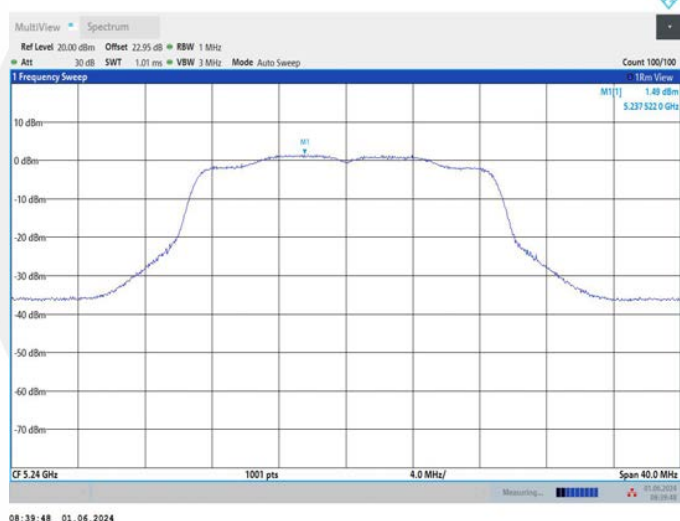
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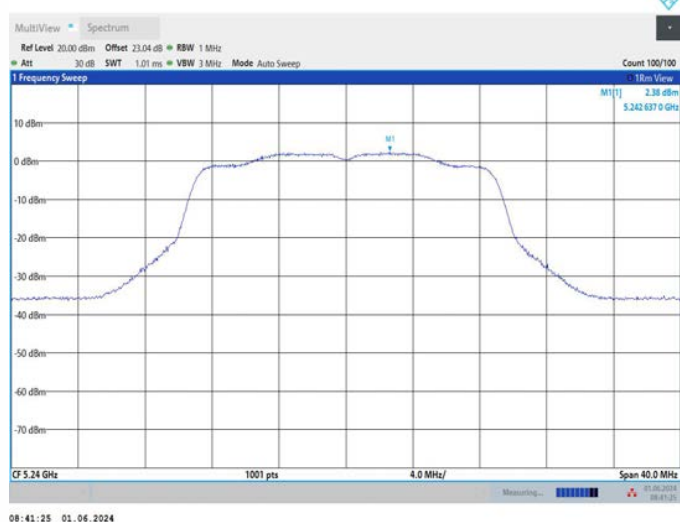
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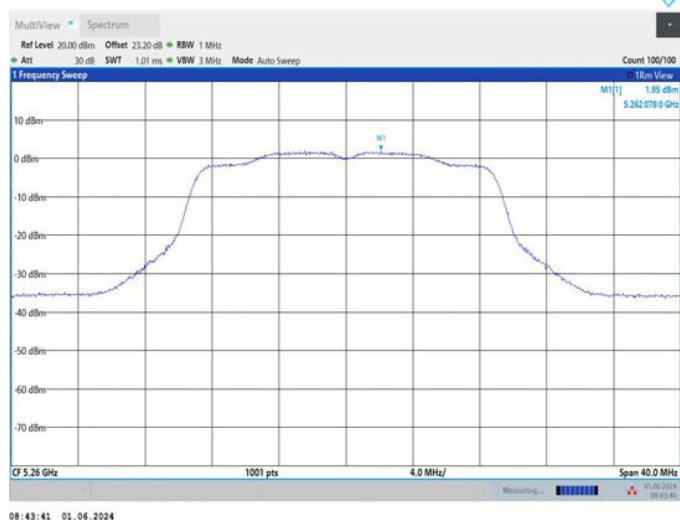
11N20MIMO_Ant1_5240



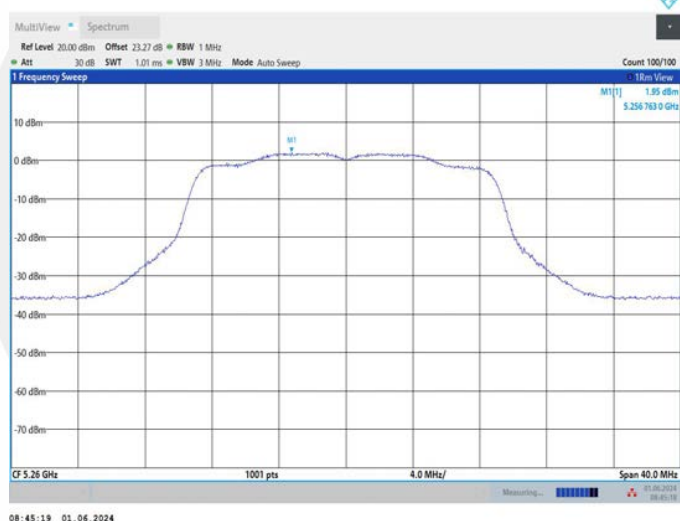
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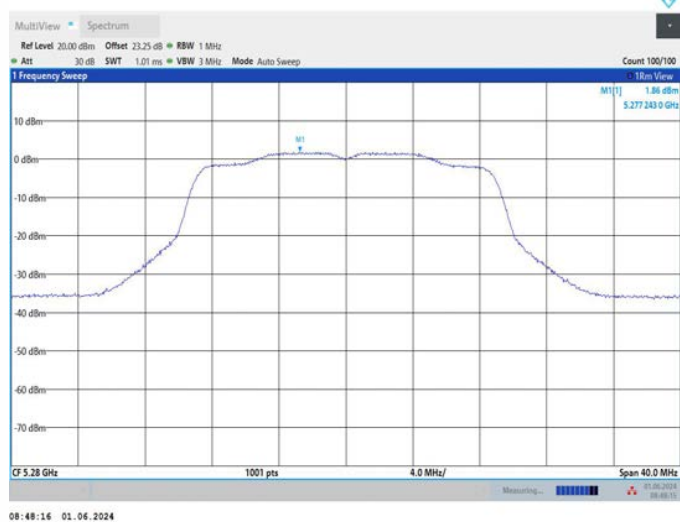
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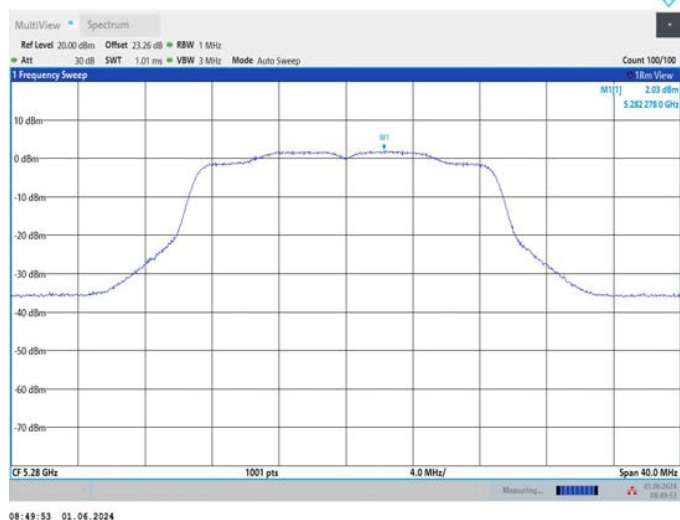
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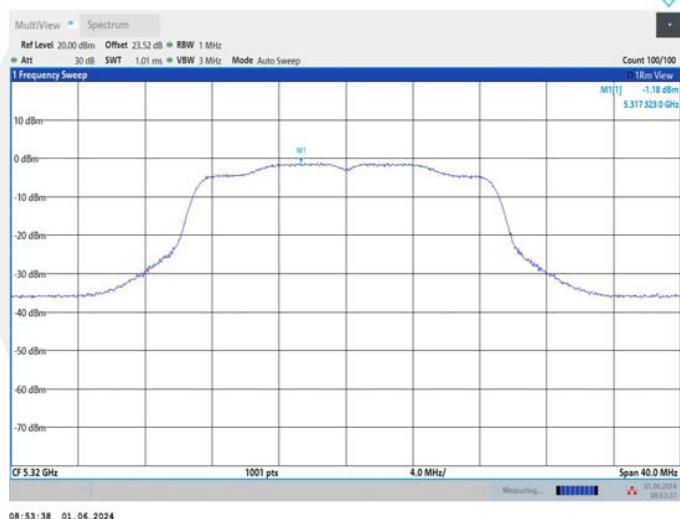
11N20MIMO_Ant1_5280



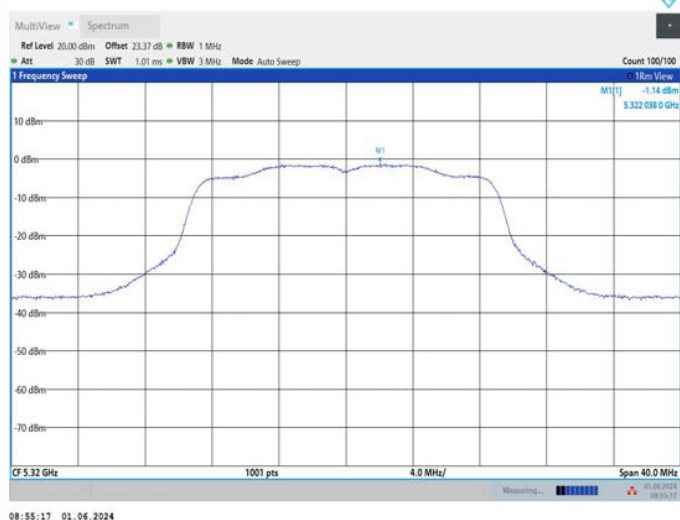
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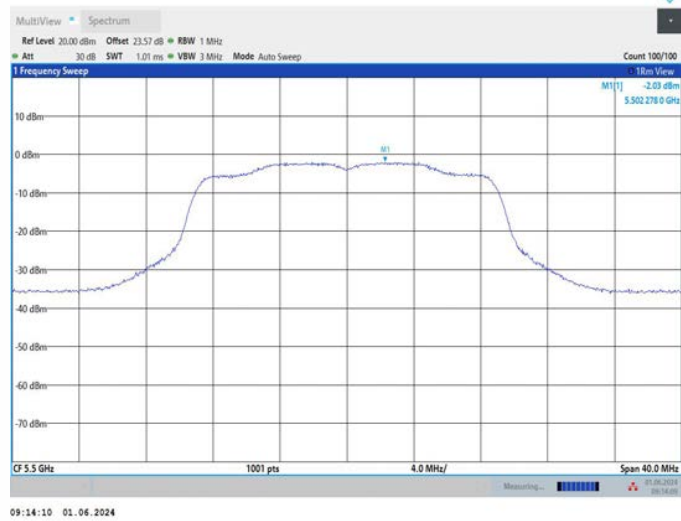
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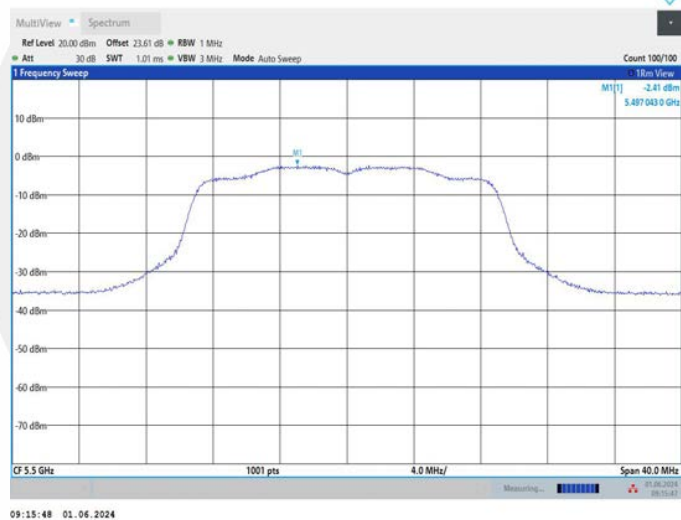
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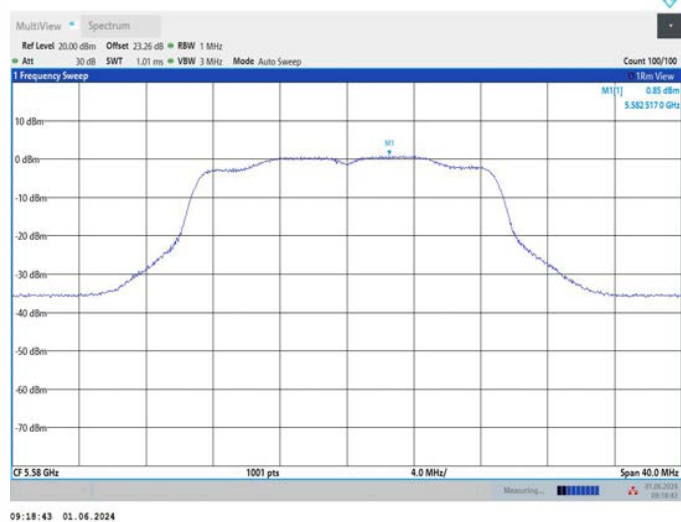
11N20MIMO_Ant1_5500



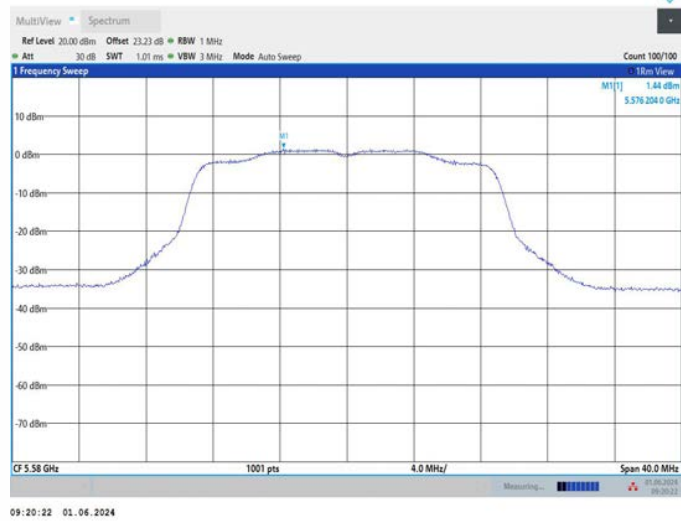
11N20MIMO_Ant2_5500



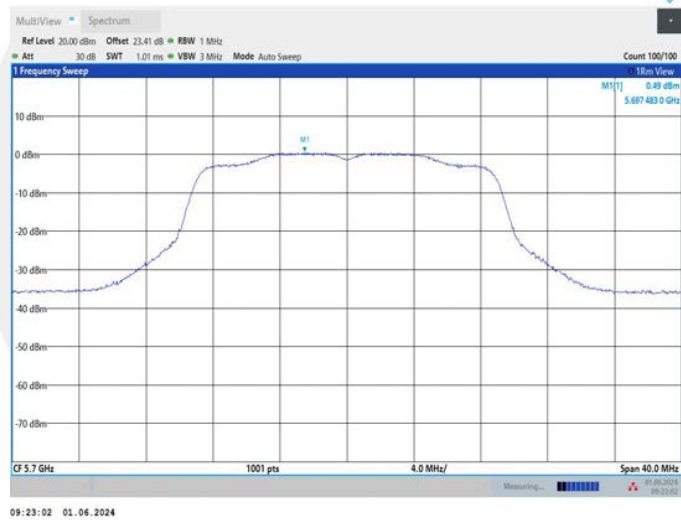
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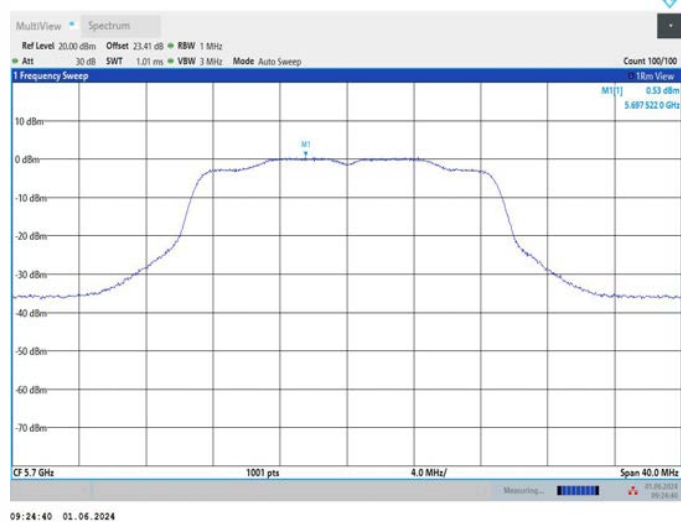
11N20MIMO_Ant2_5580



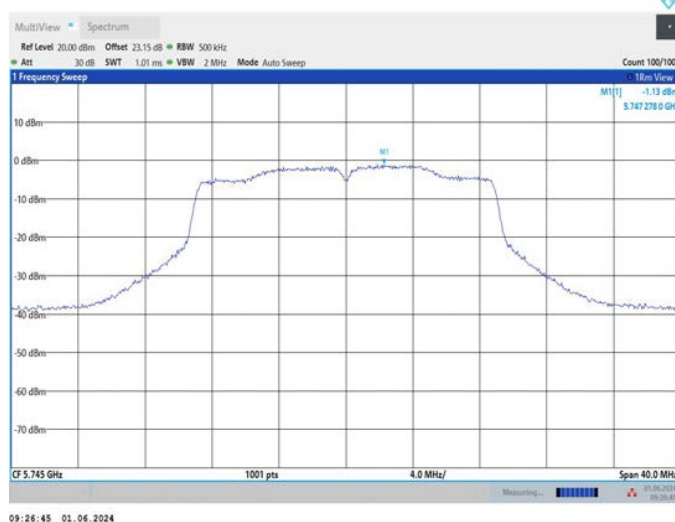
11N20MIMO_Ant1_5700



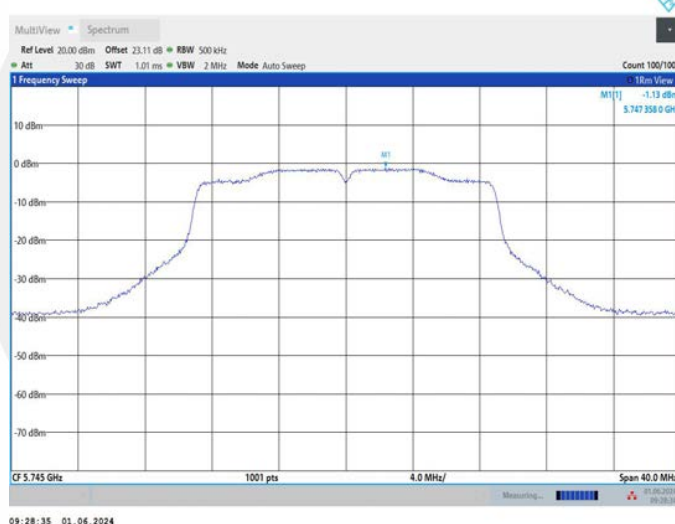
11N20MIMO_Ant2_5700



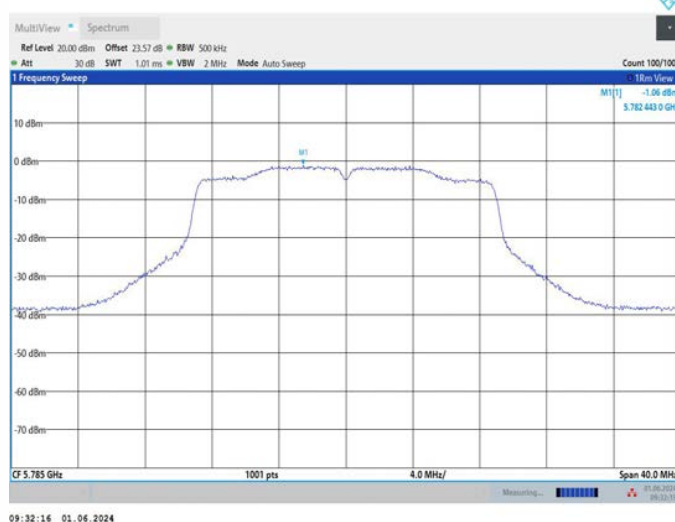
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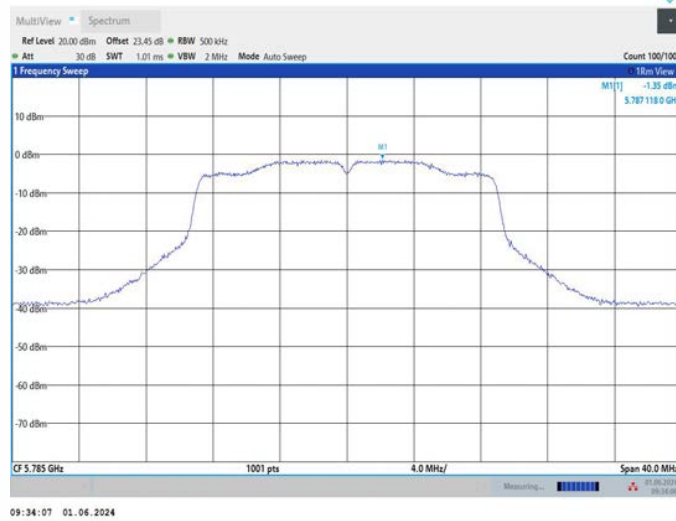
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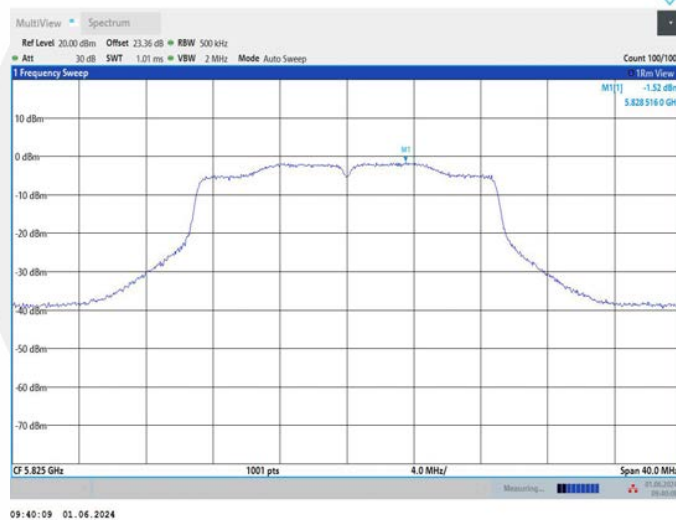
11N20MIMO_Ant1_5785



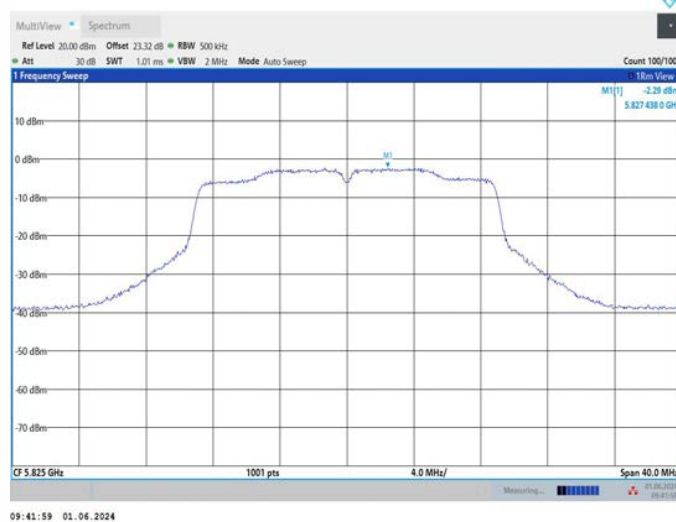
11N20MIMO_Ant2_5785



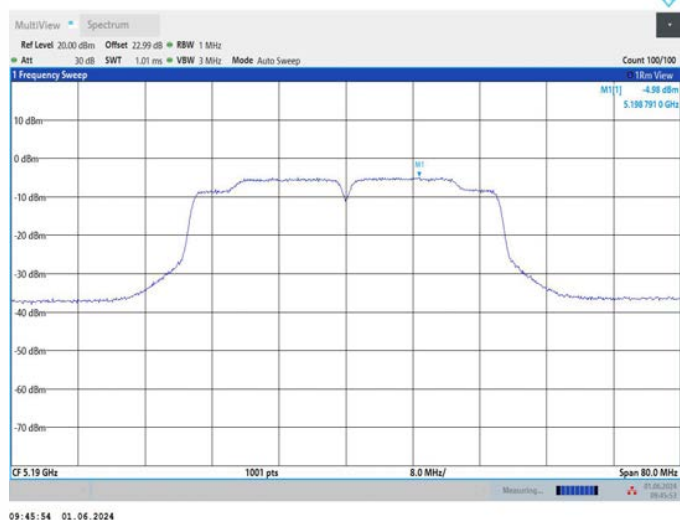
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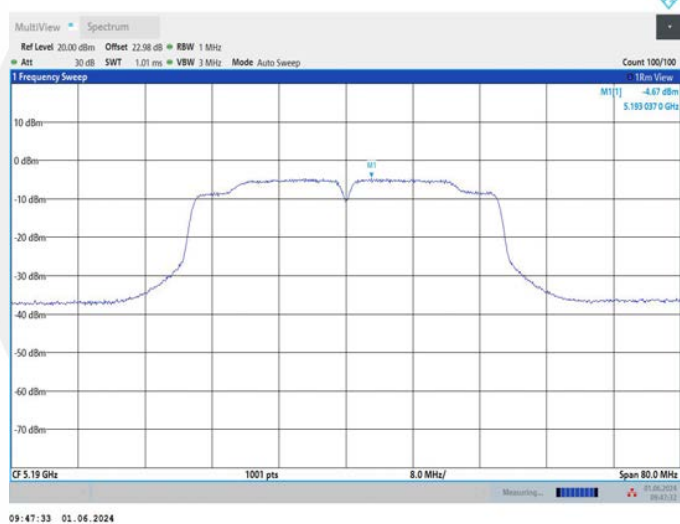
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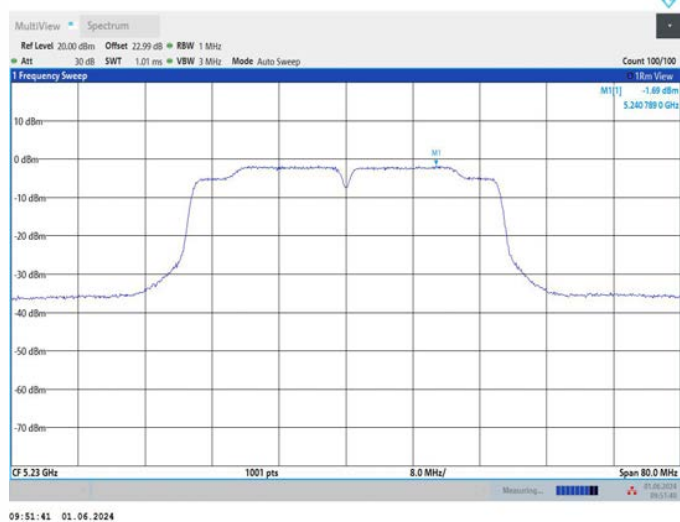
11N40MIMO_Ant1_5190



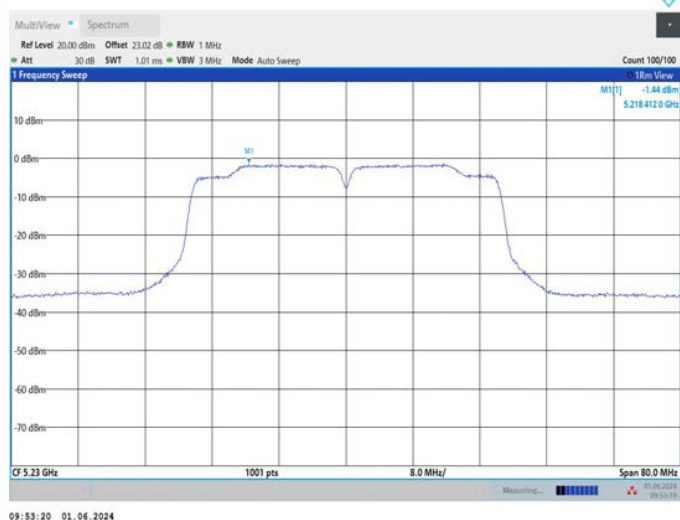
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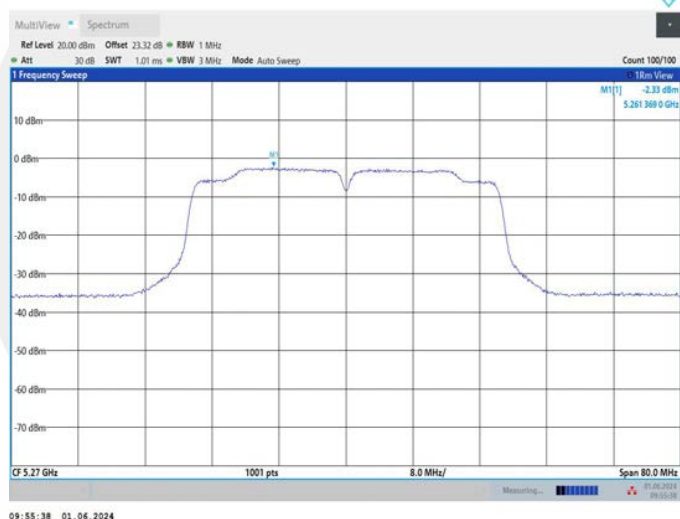
11N40MIMO_Ant1_5230



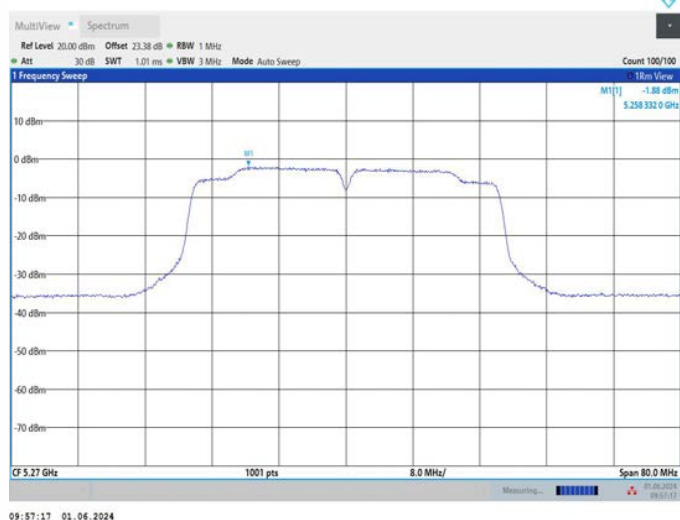
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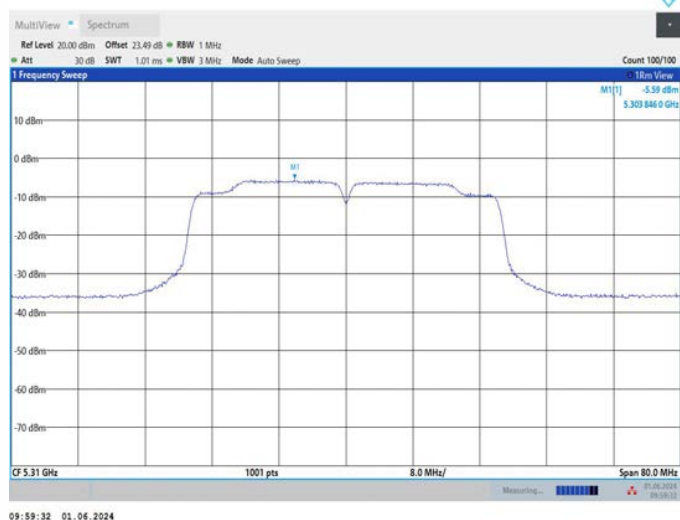
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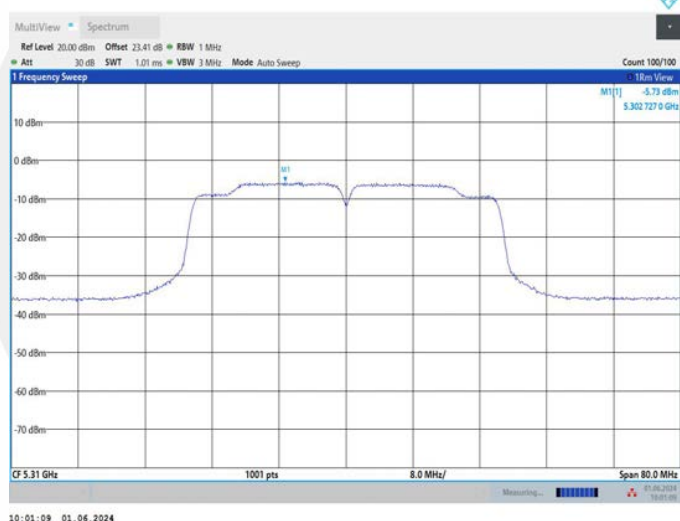
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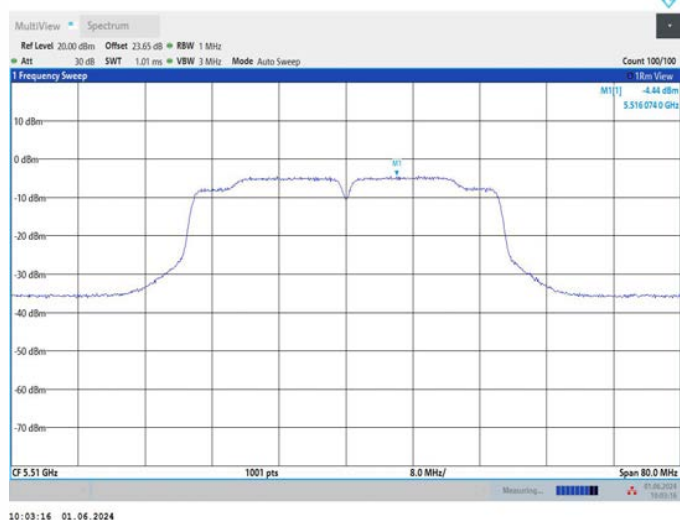
11N40MIMO_Ant1_5310



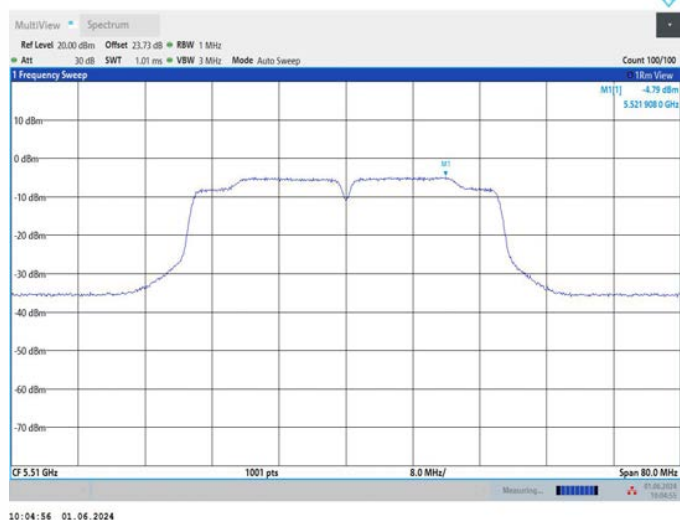
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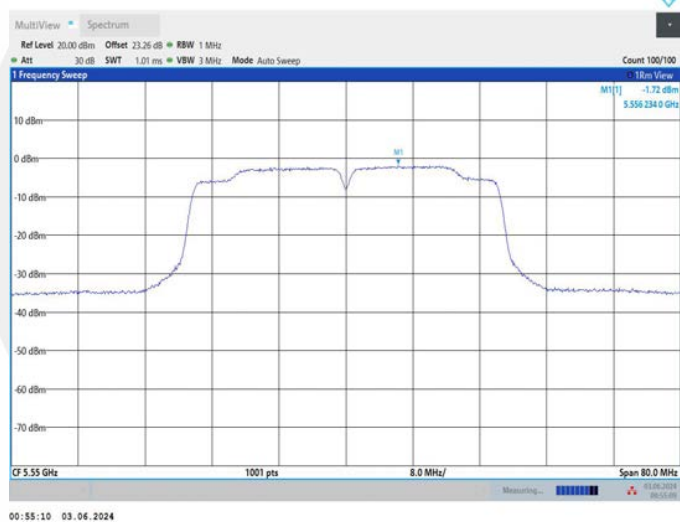
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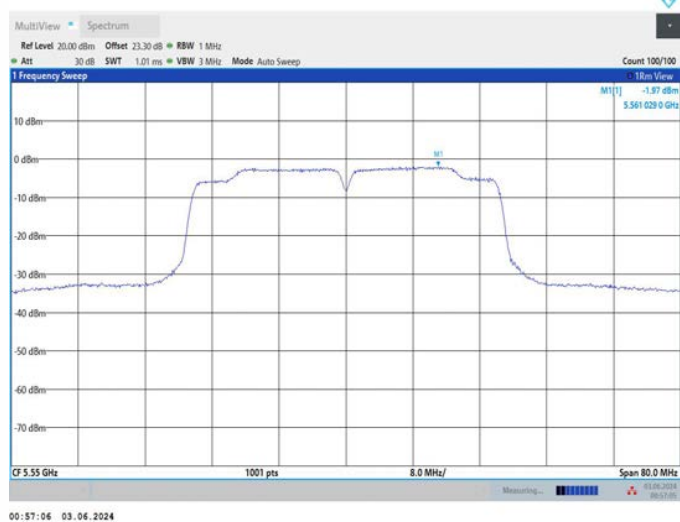
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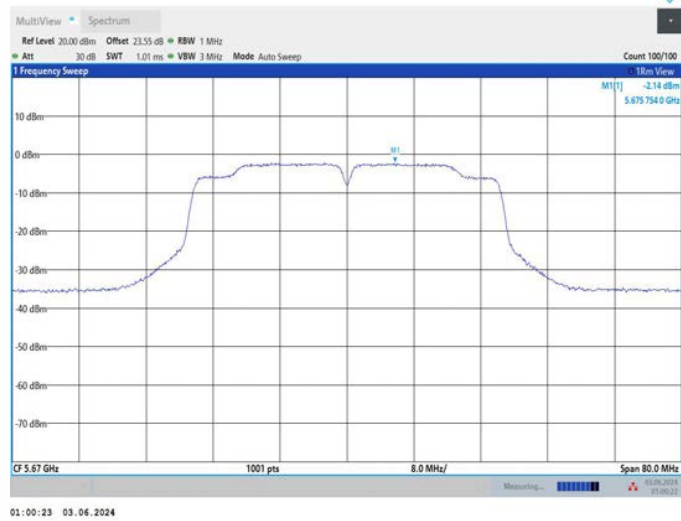
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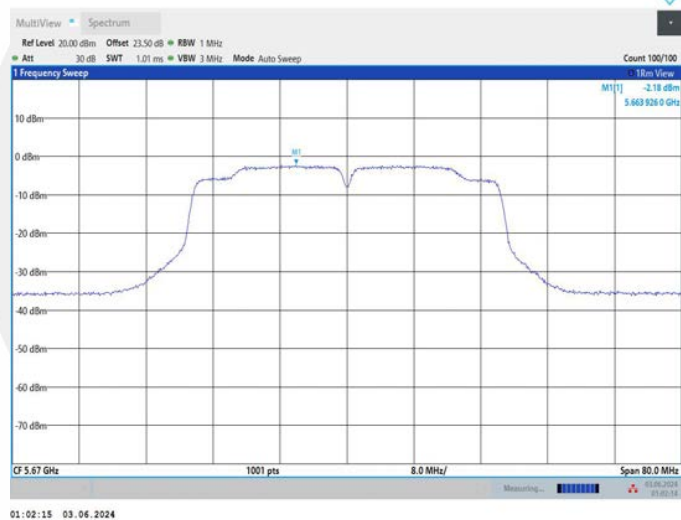
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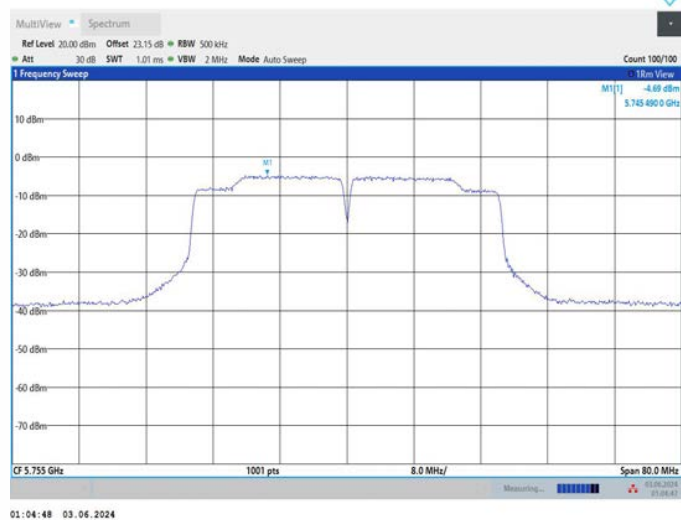
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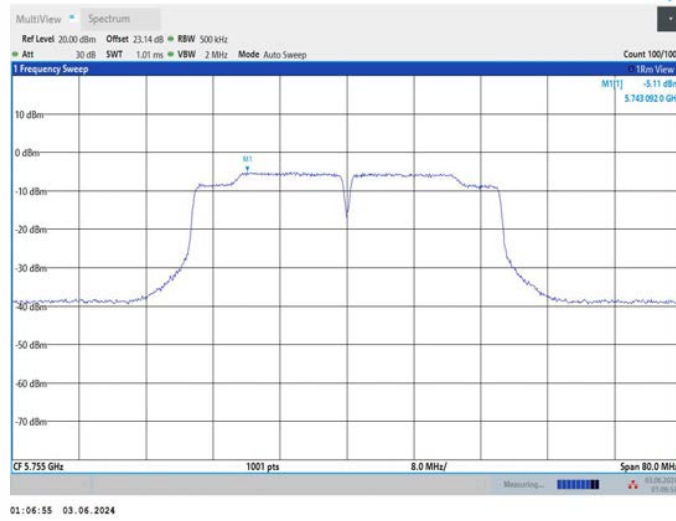
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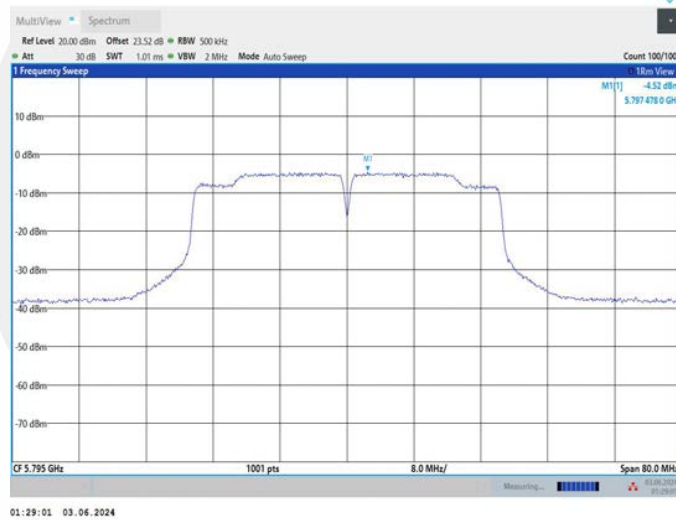
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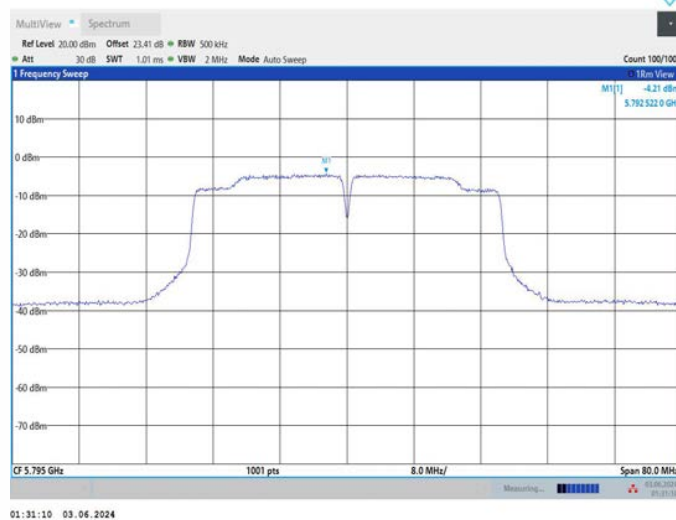
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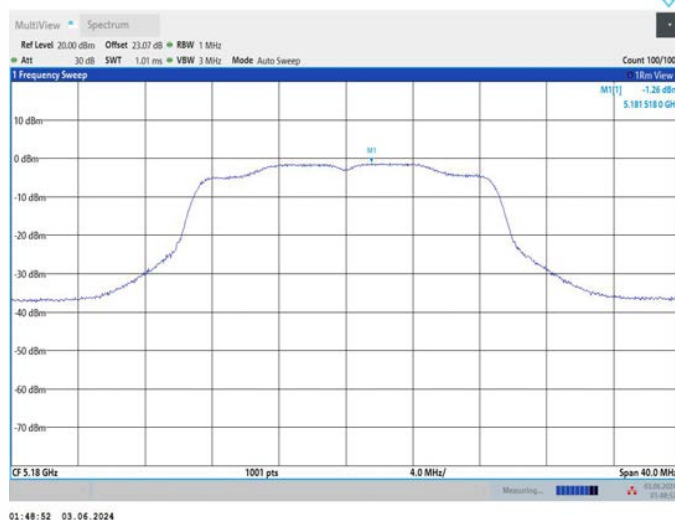
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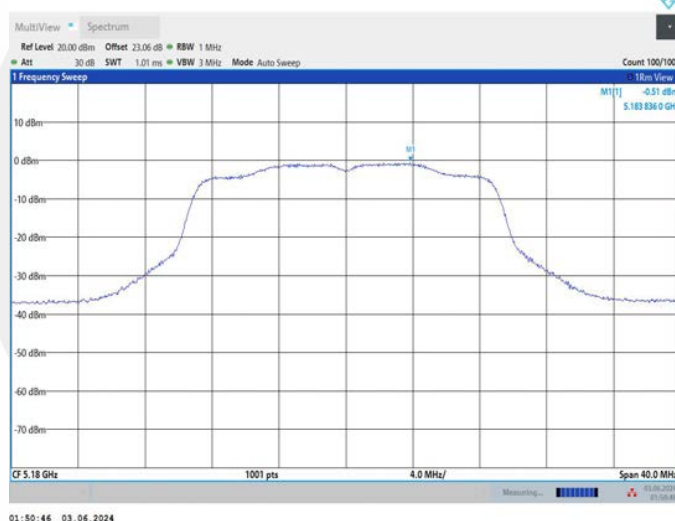
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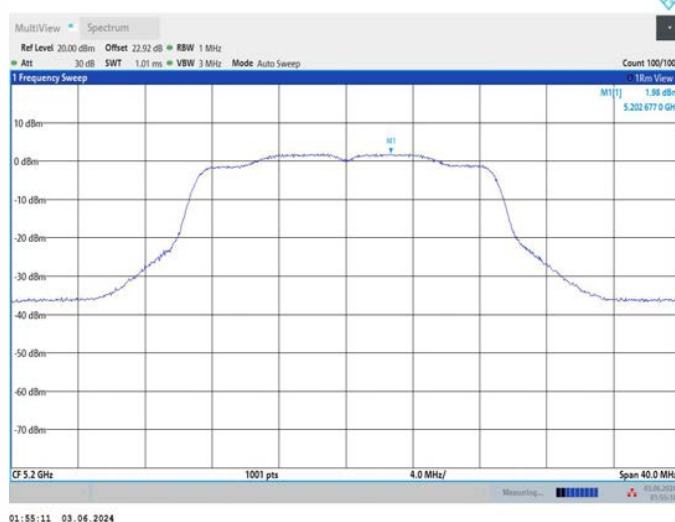
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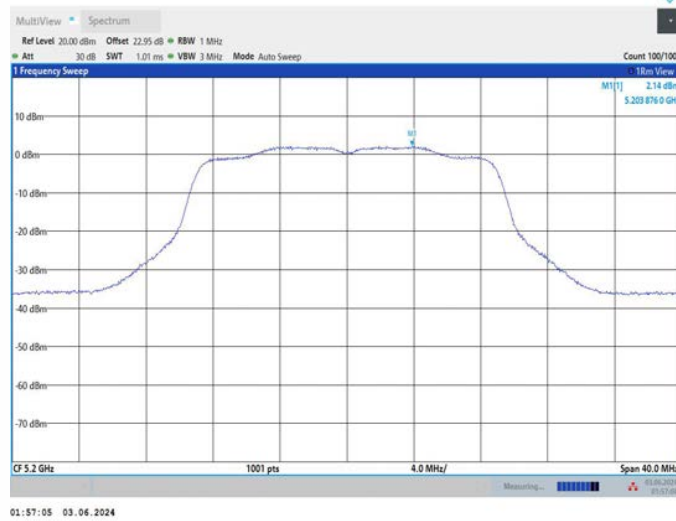
11AC20MIMO_Ant2_5180



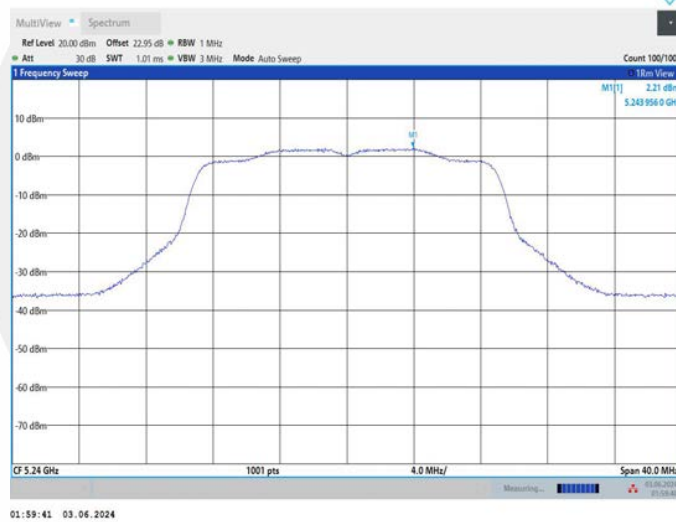
11AC20MIMO_Ant1_5200



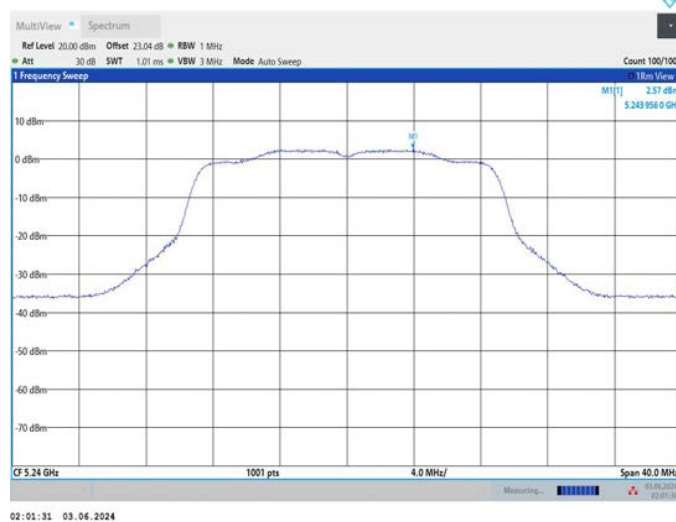
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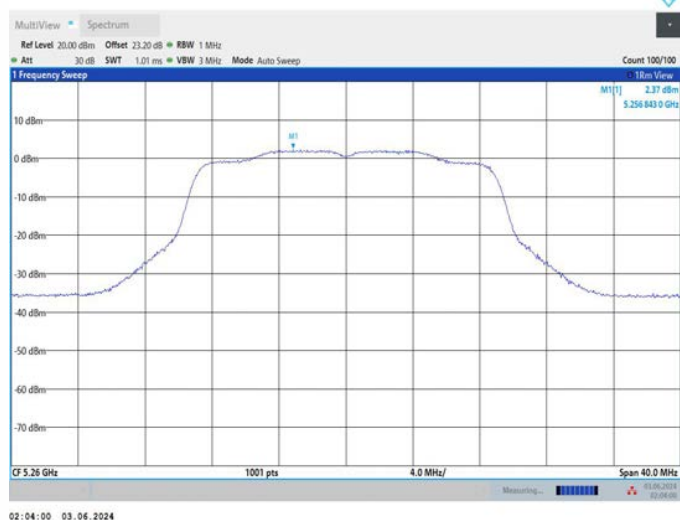
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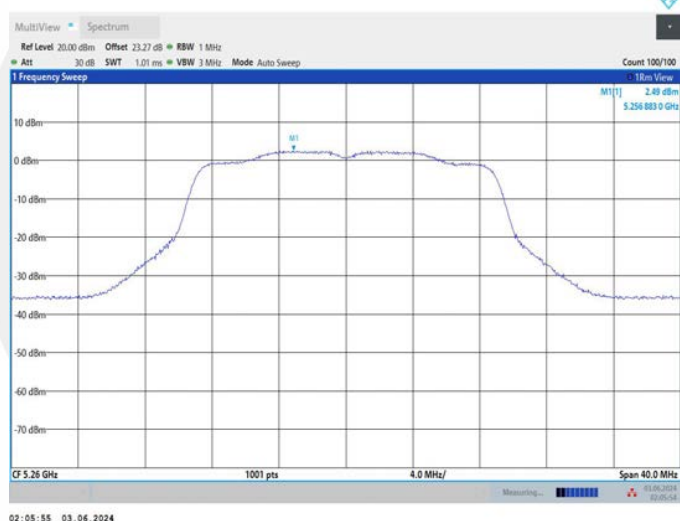
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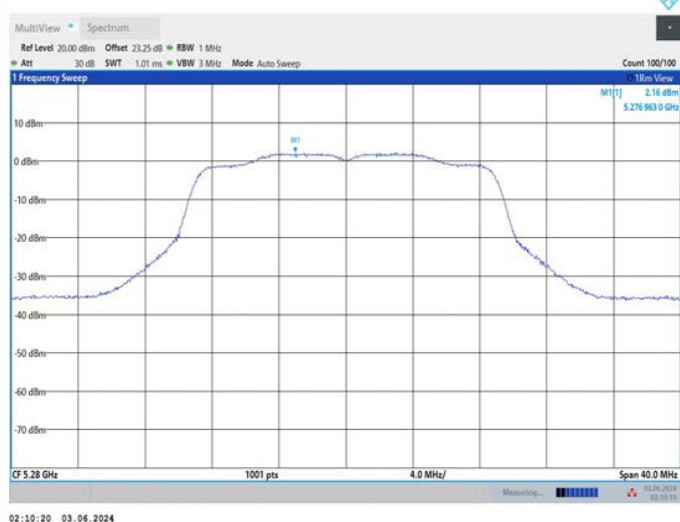
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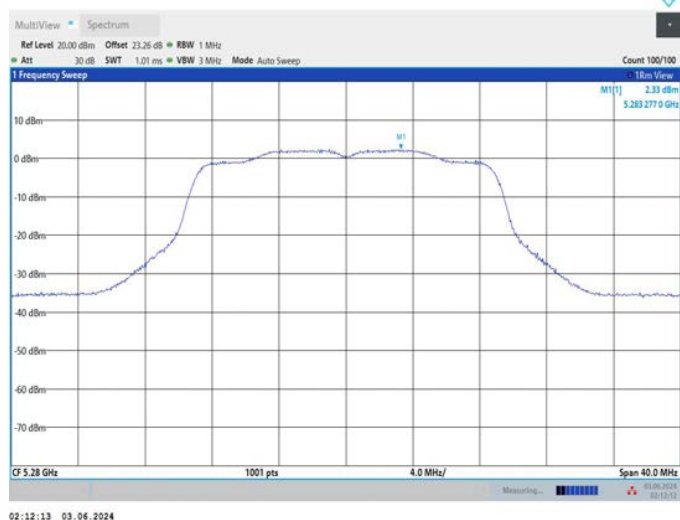
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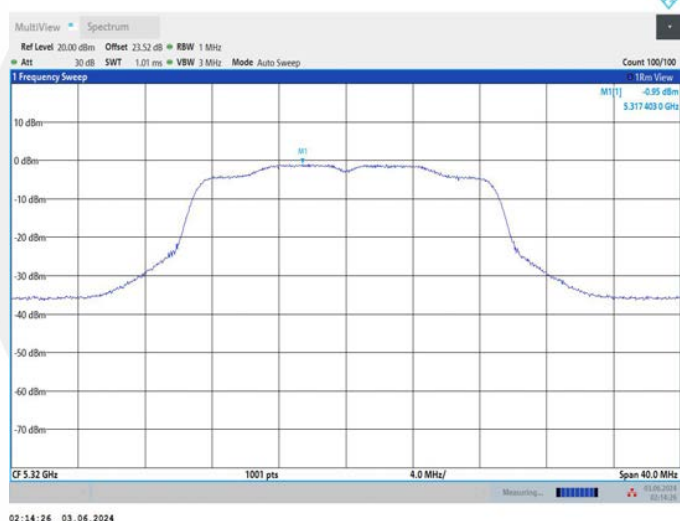
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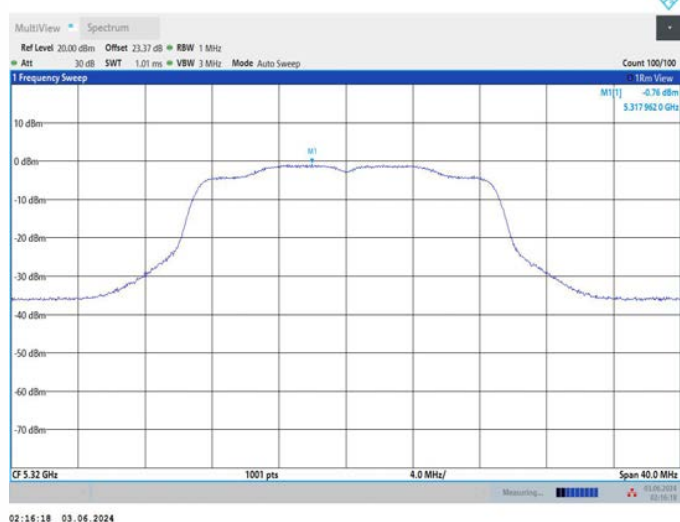
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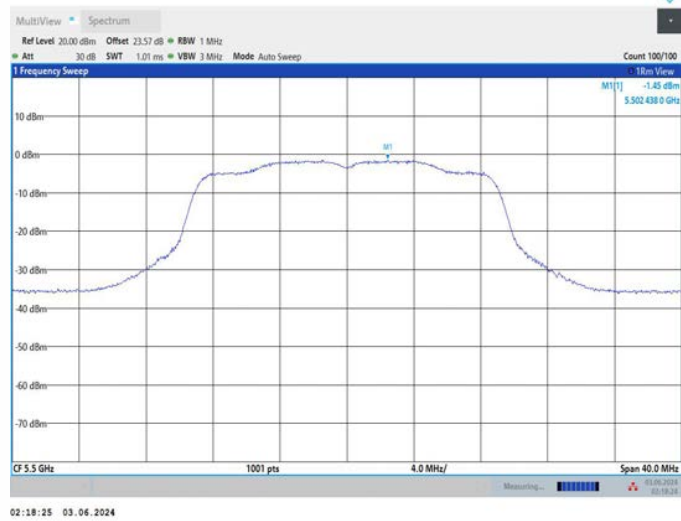
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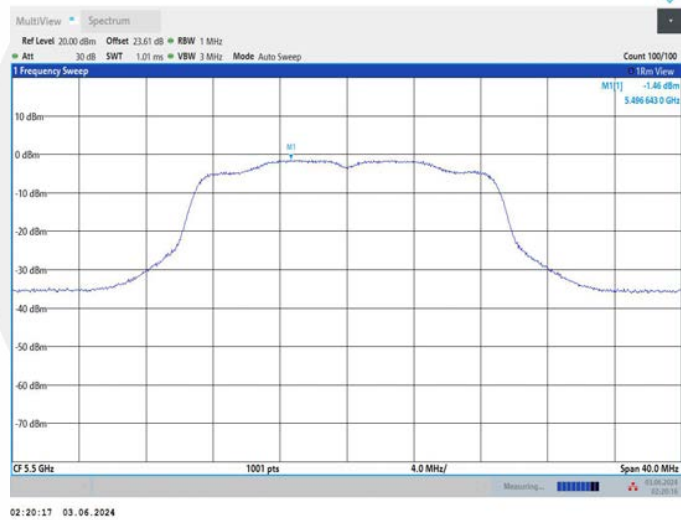
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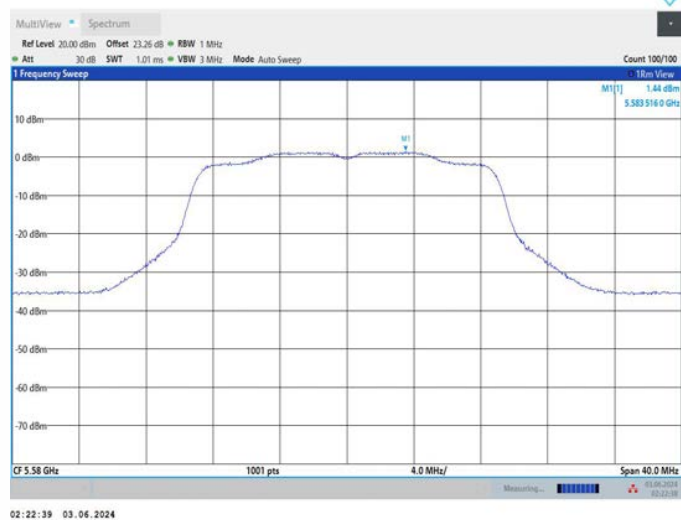
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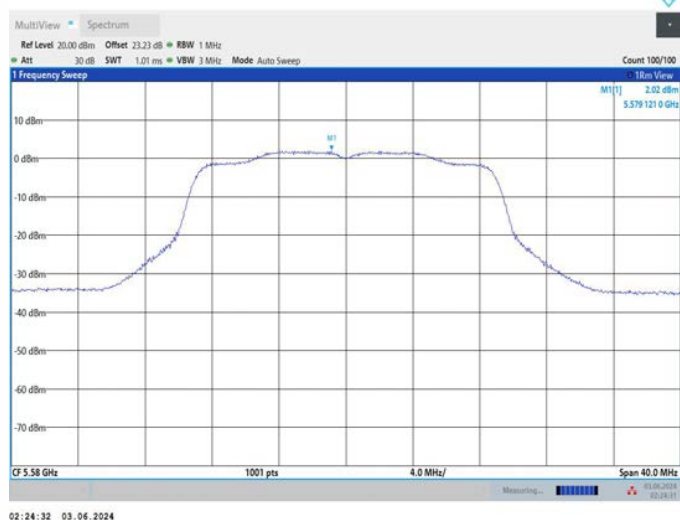
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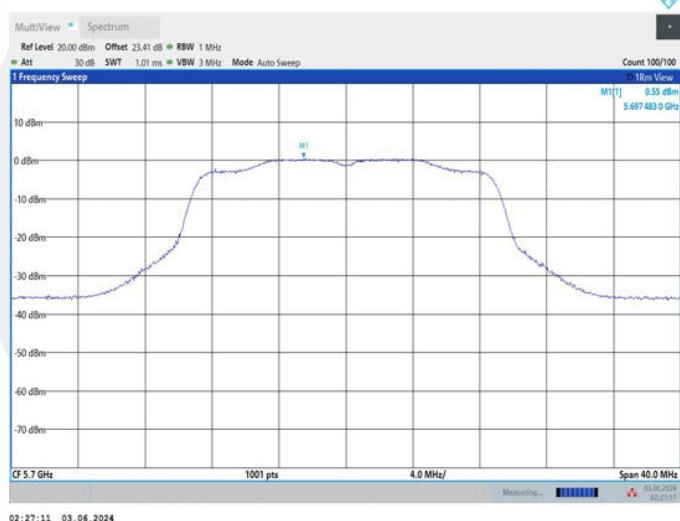
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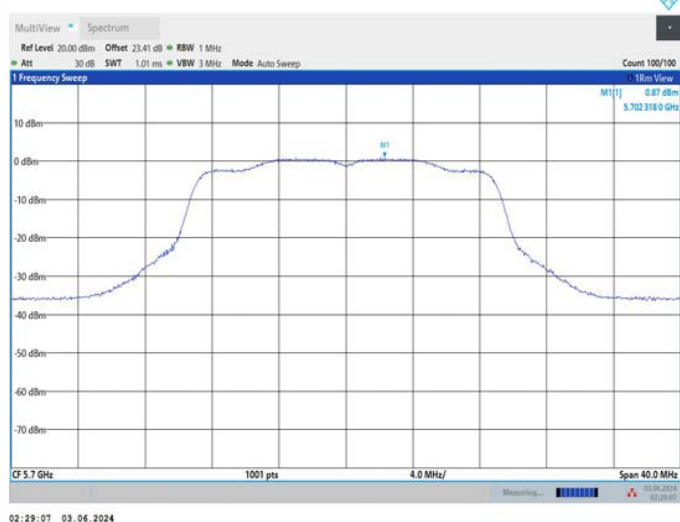
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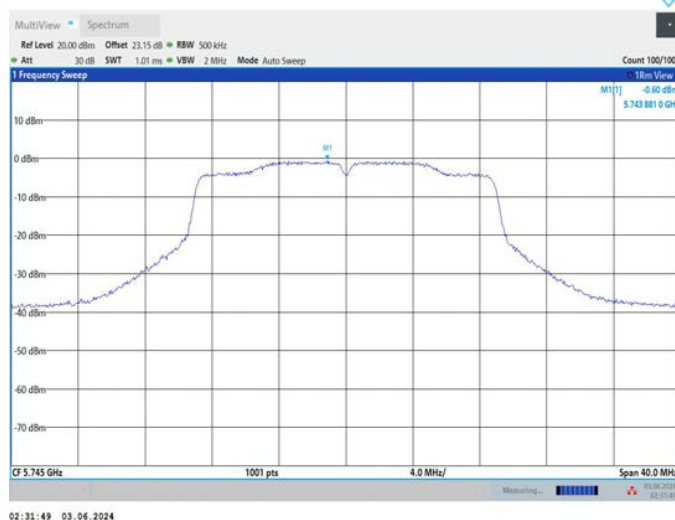
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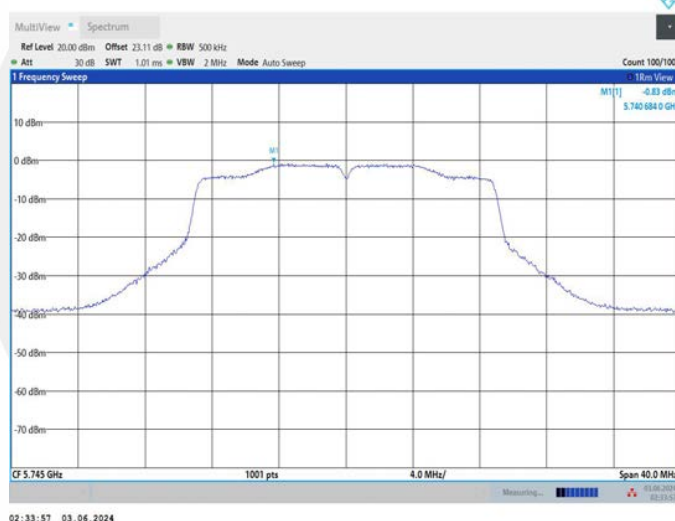
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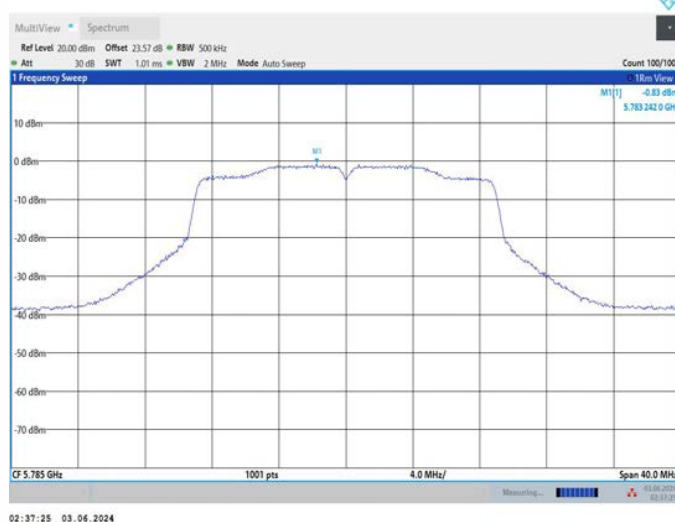
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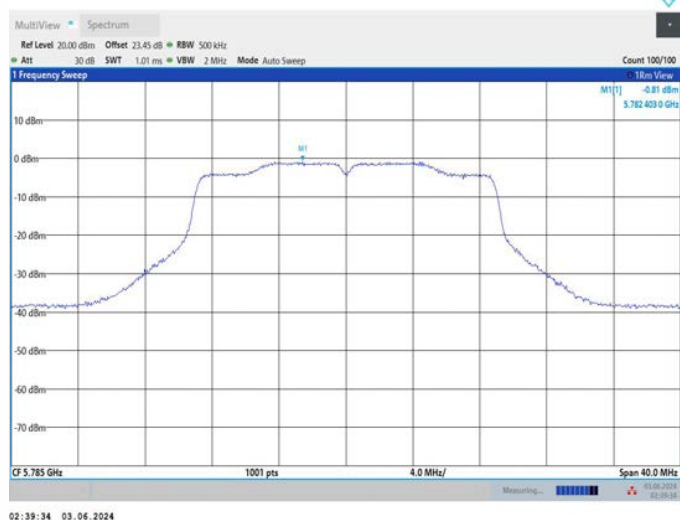
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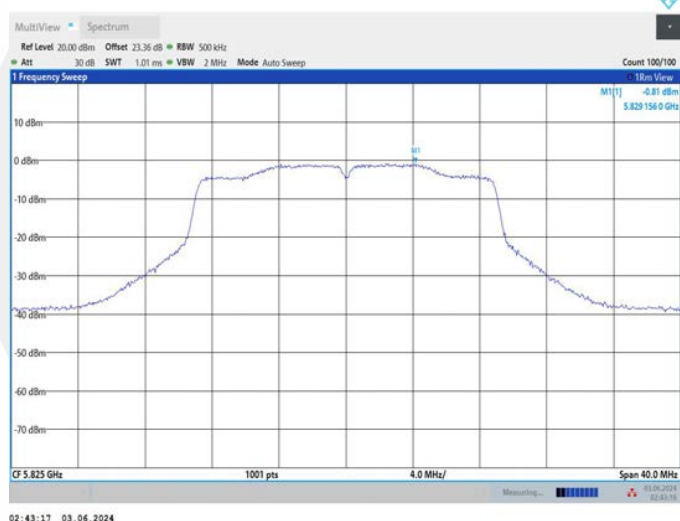
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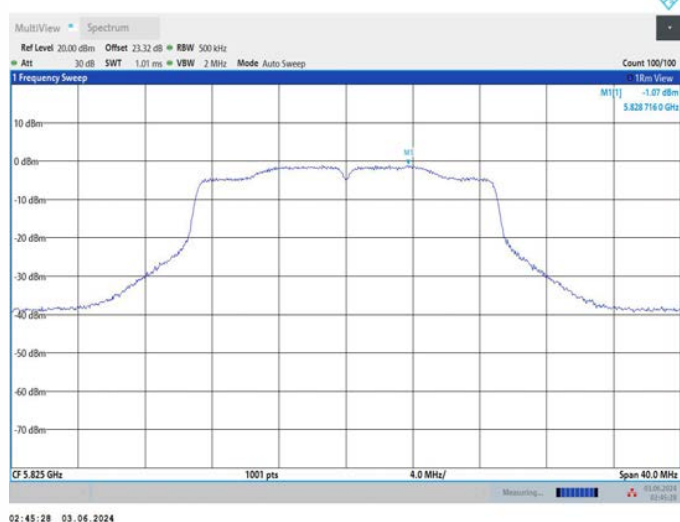
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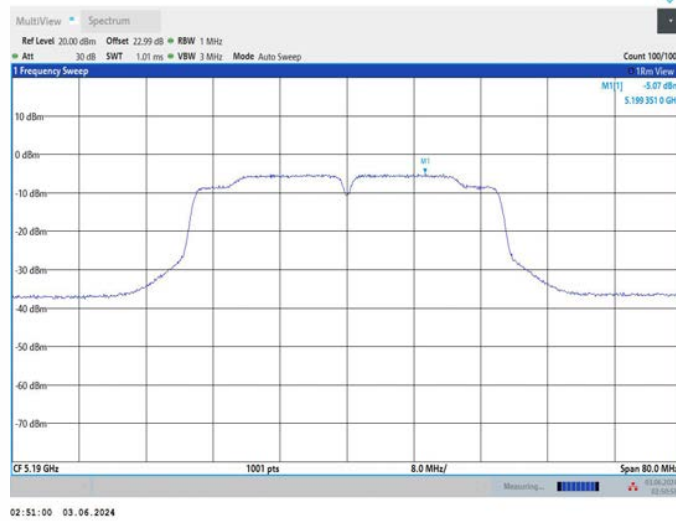
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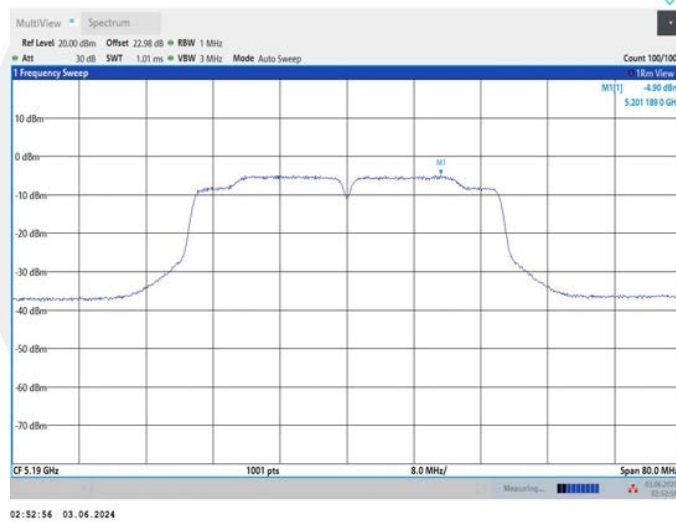
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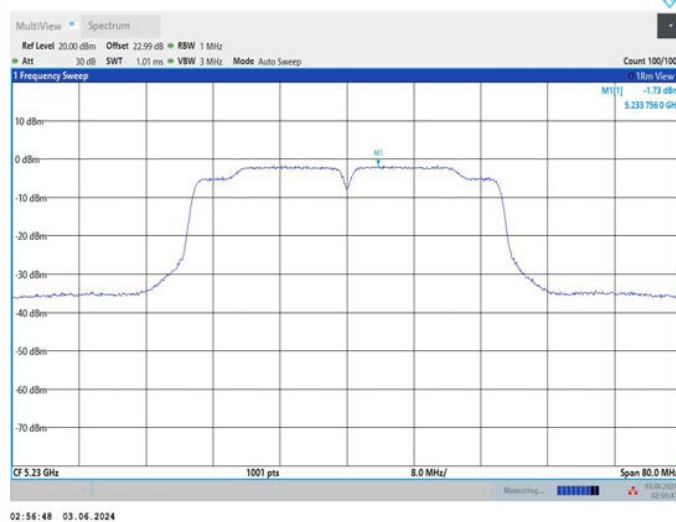
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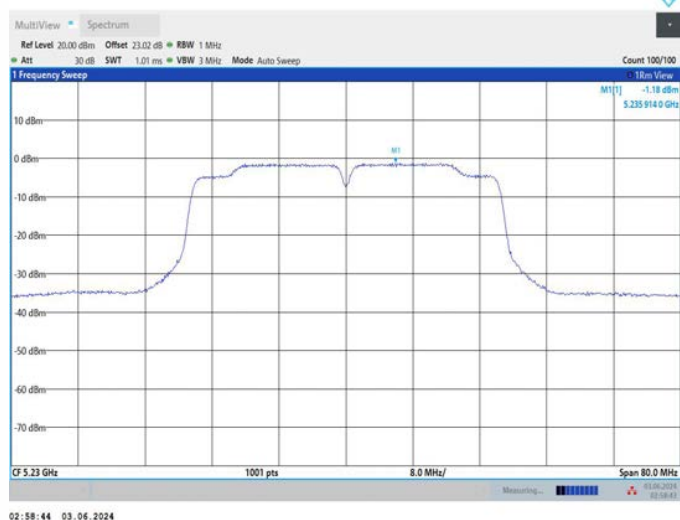
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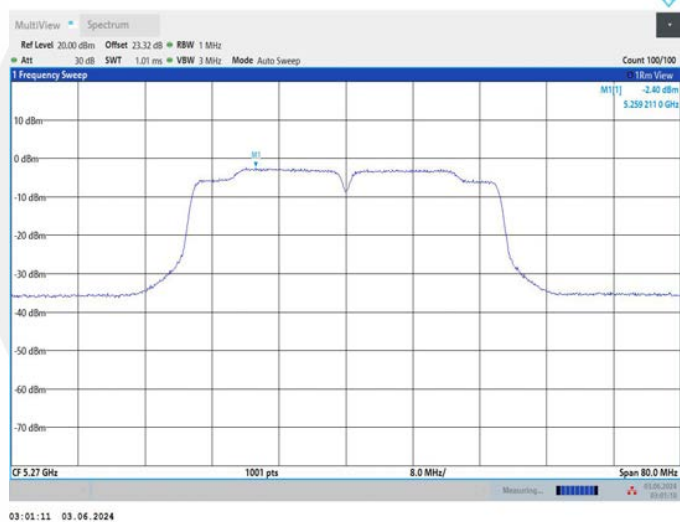
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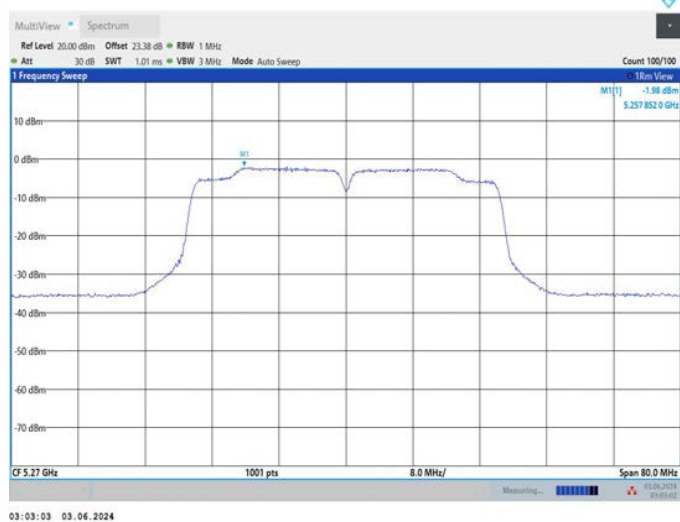
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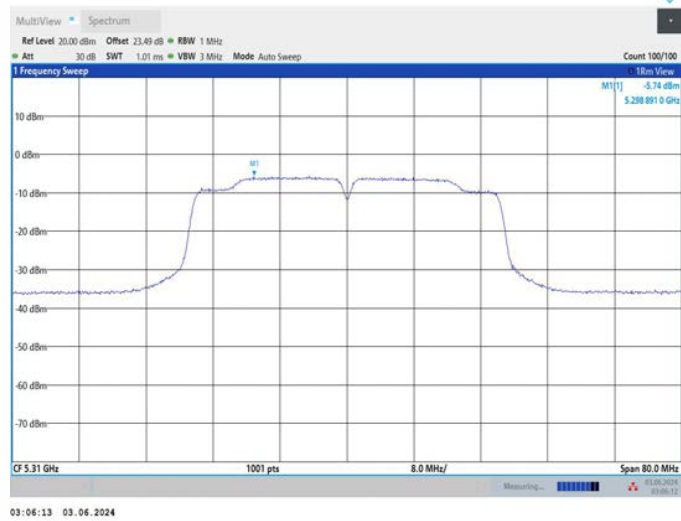
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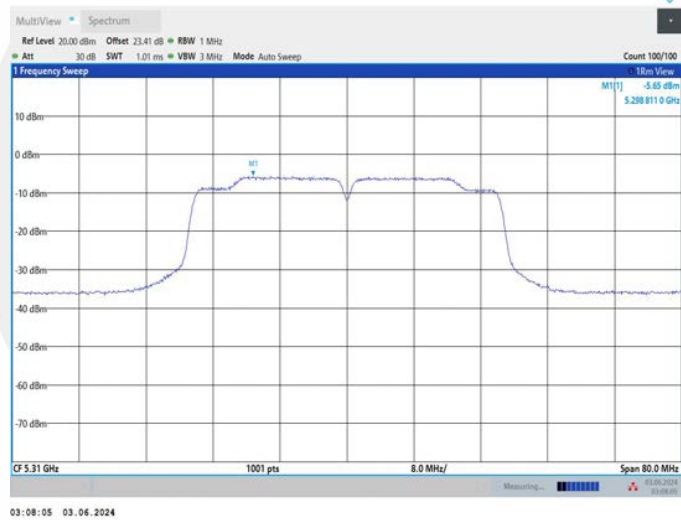
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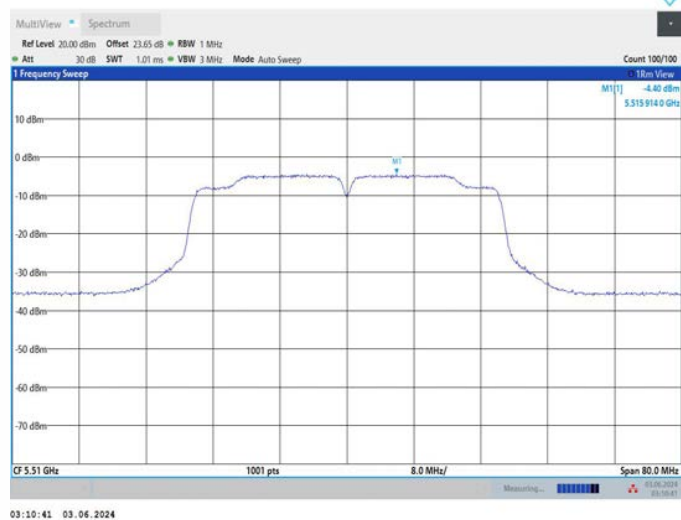
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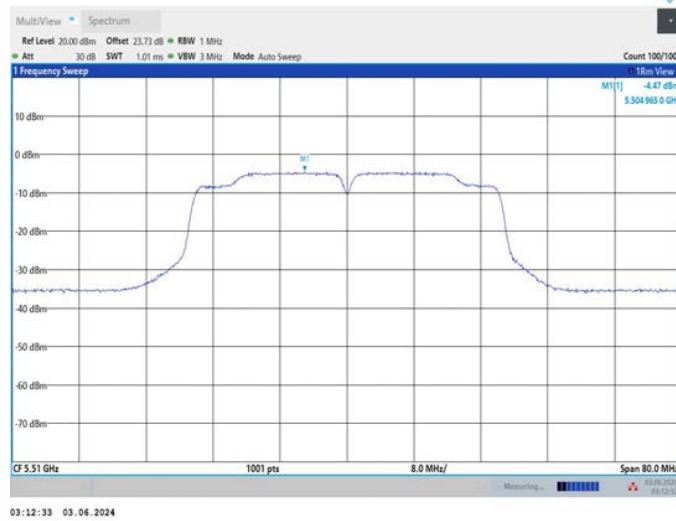
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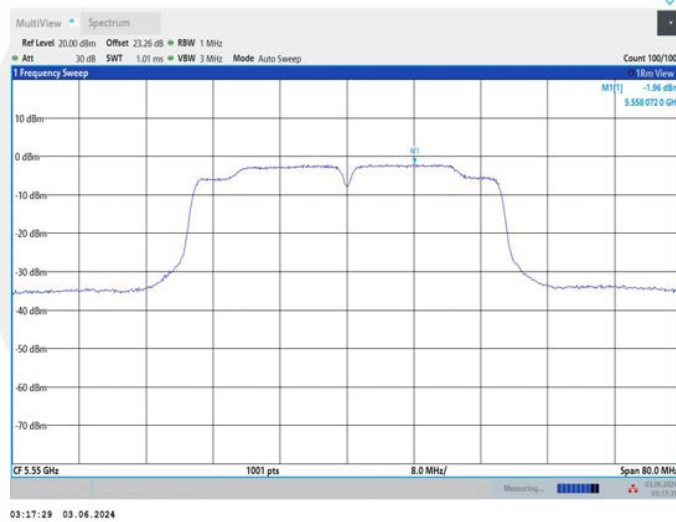
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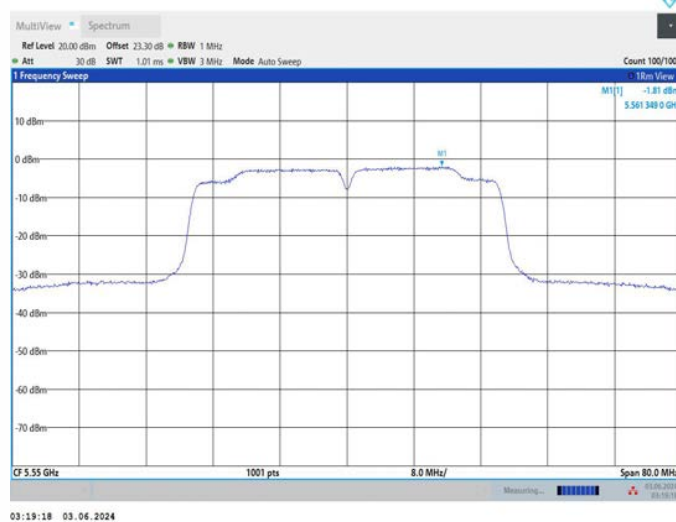
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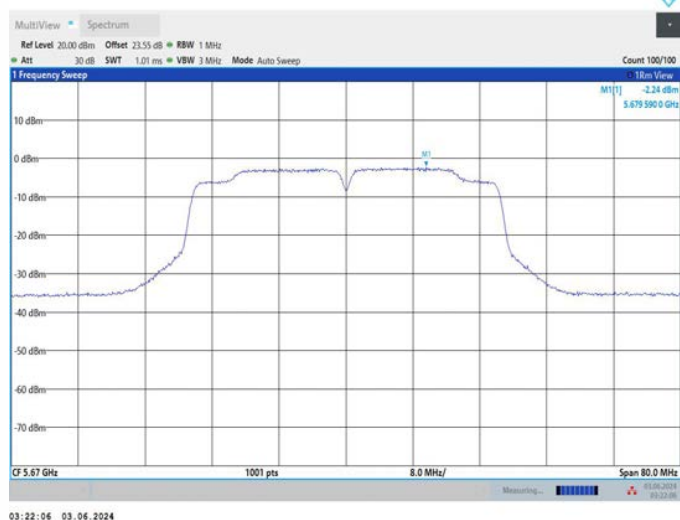
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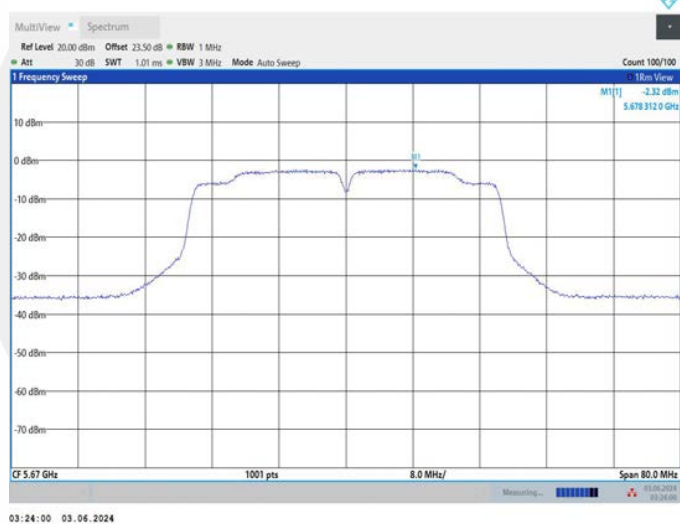
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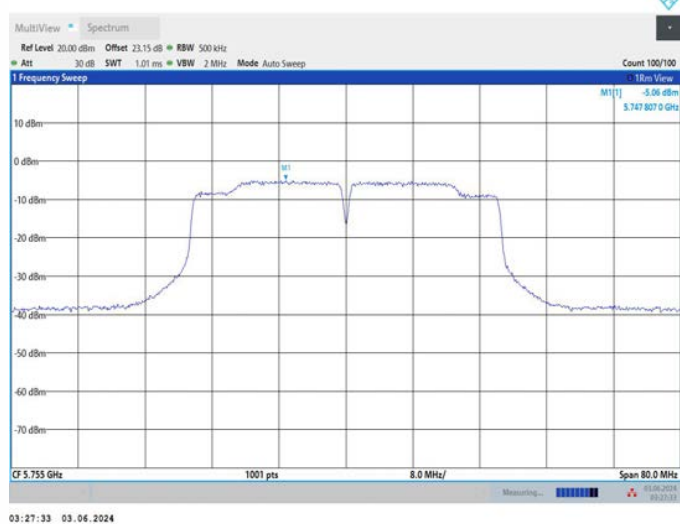
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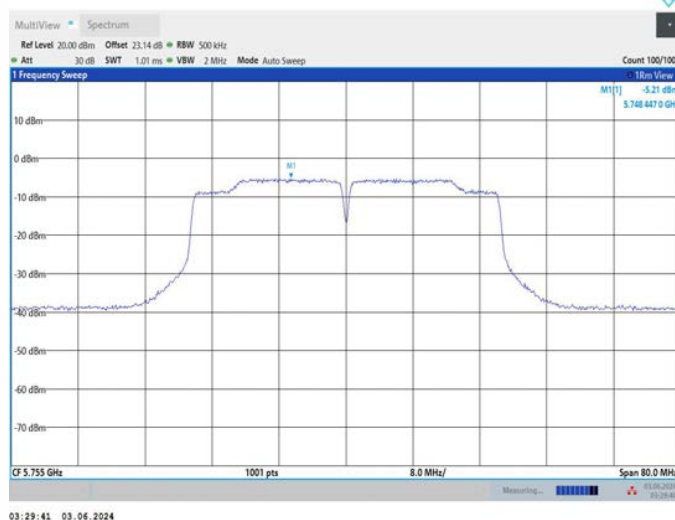
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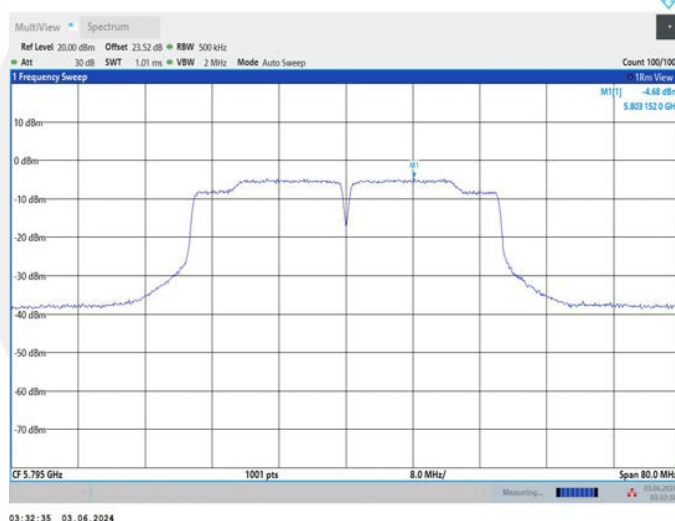
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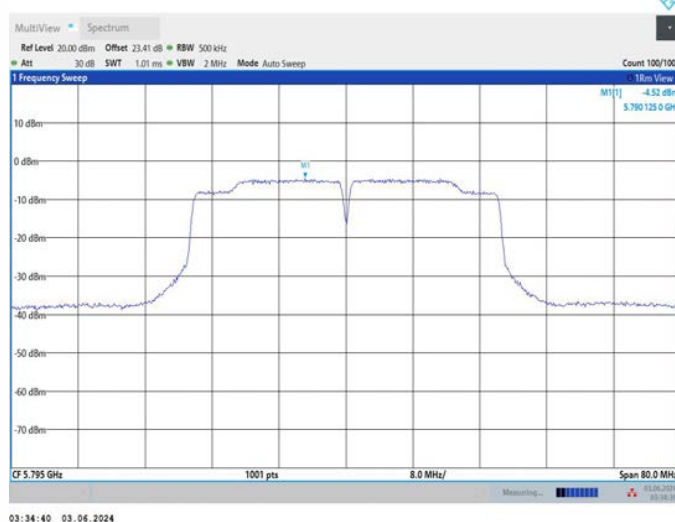
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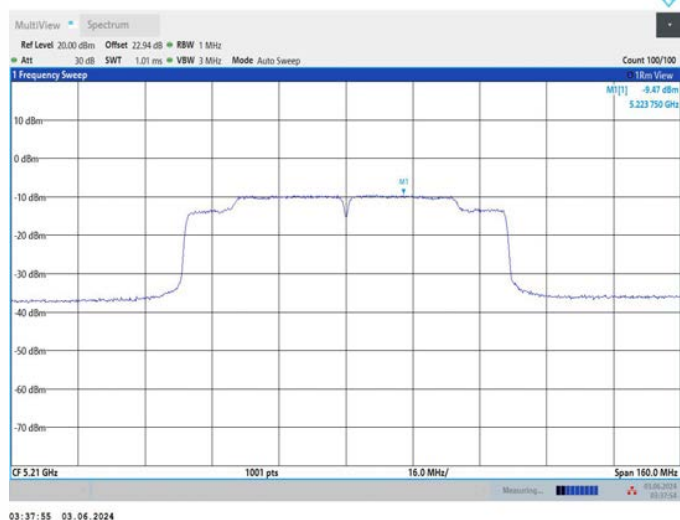
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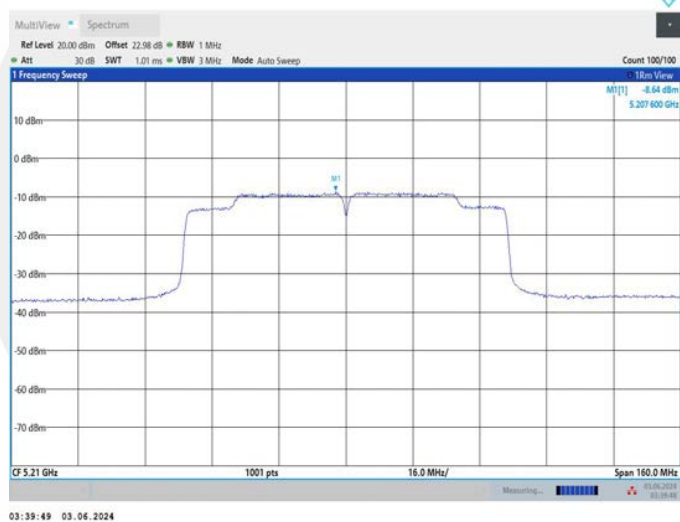
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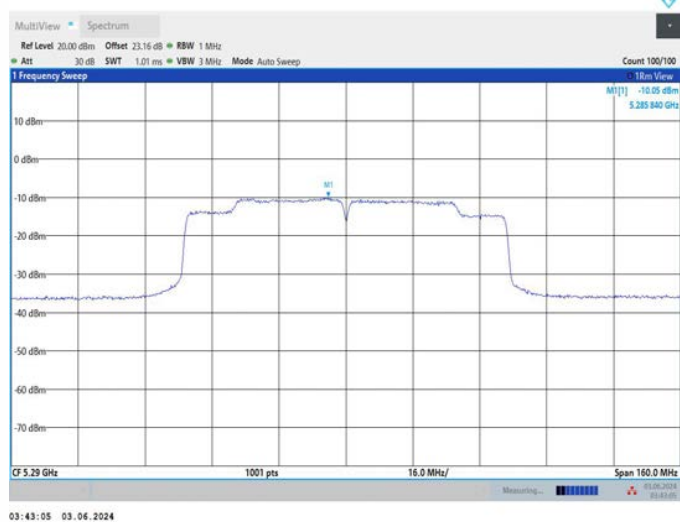
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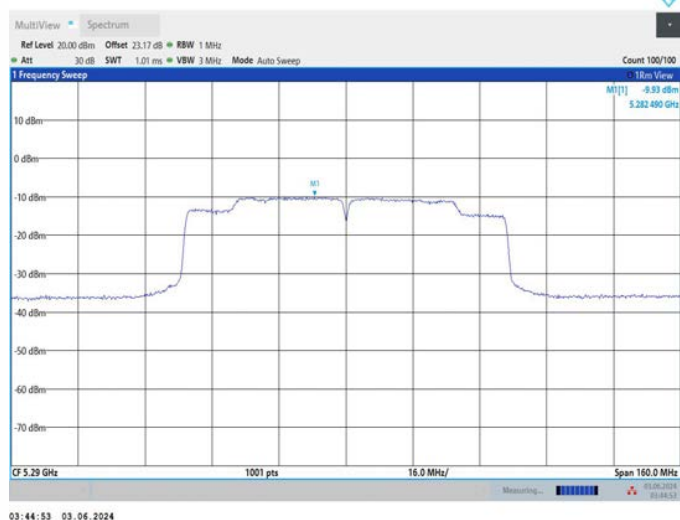
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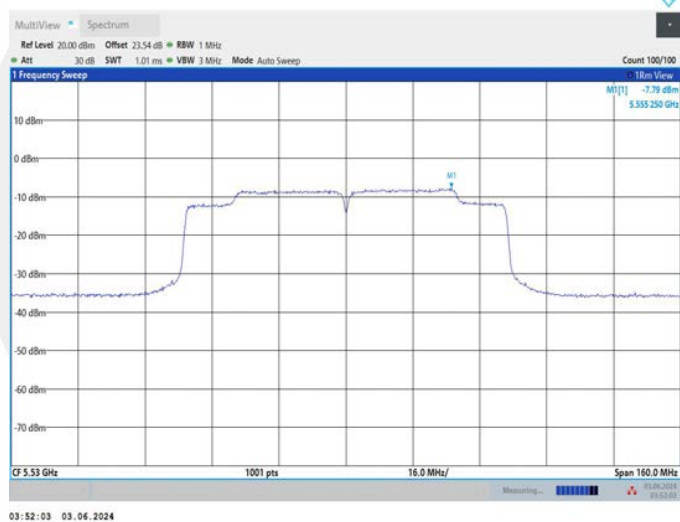
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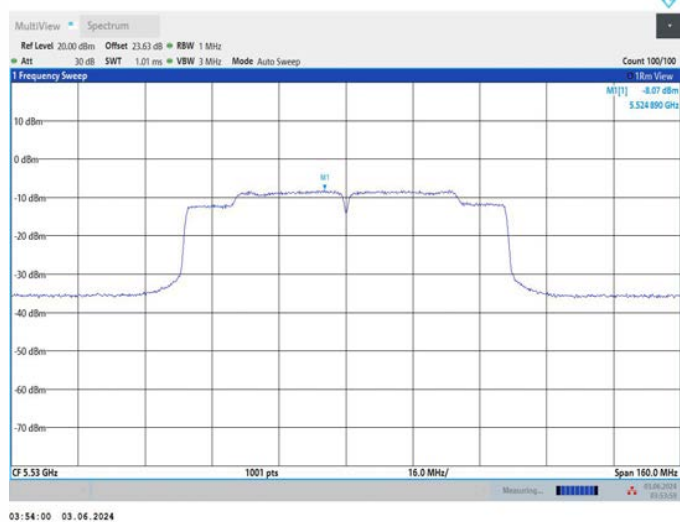
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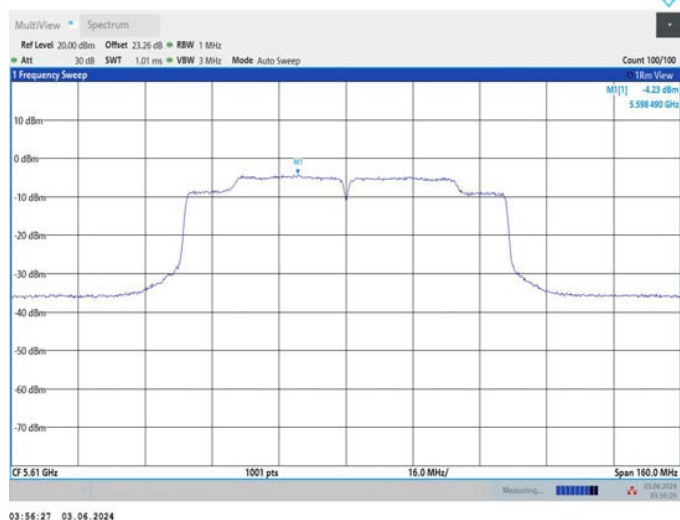
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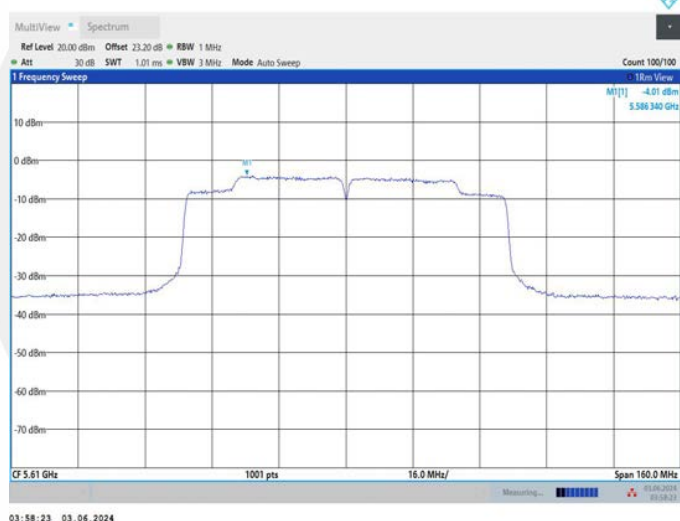
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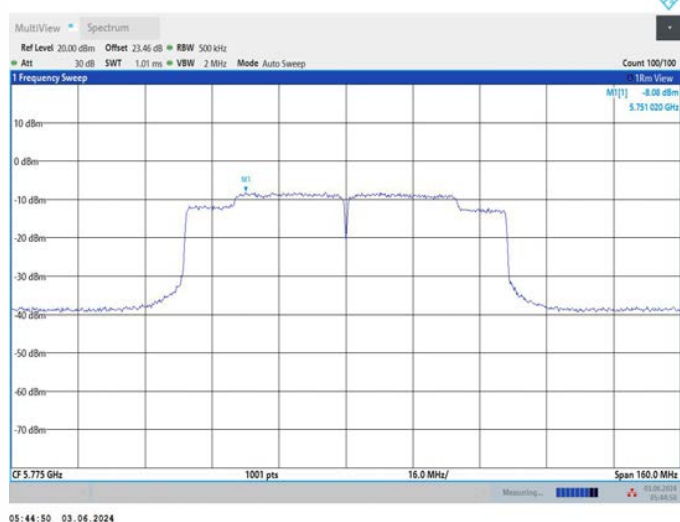
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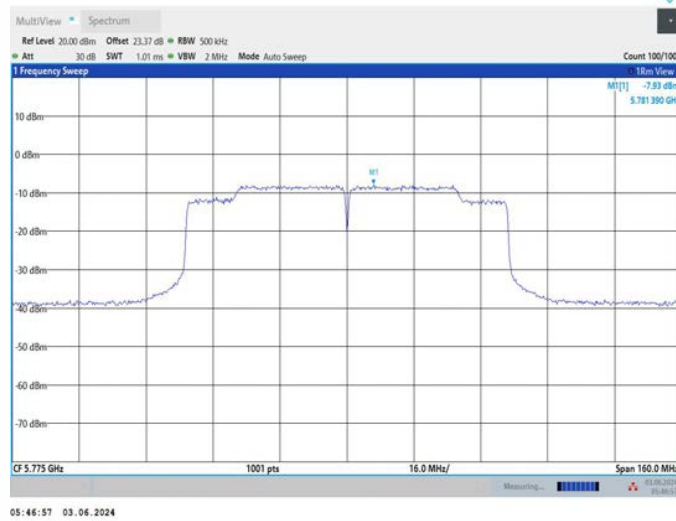
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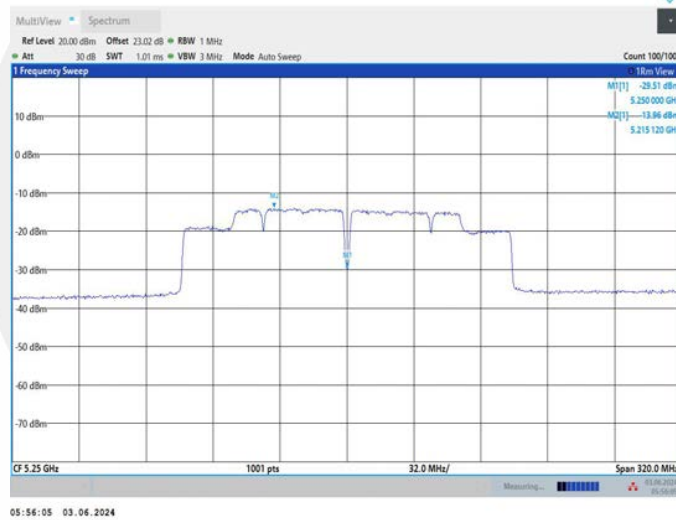
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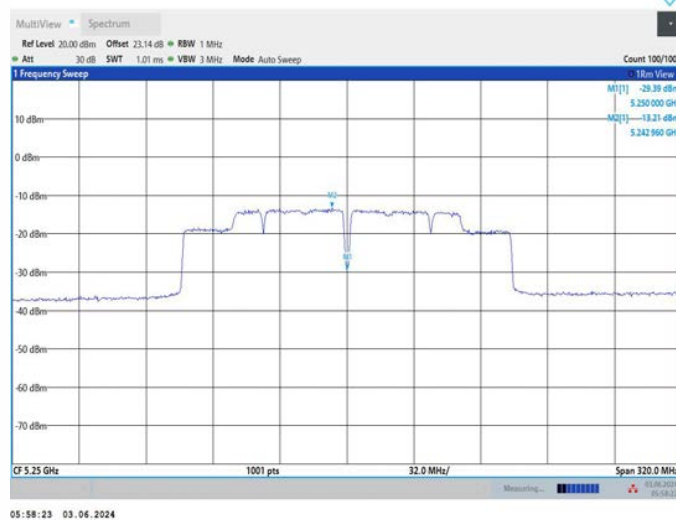
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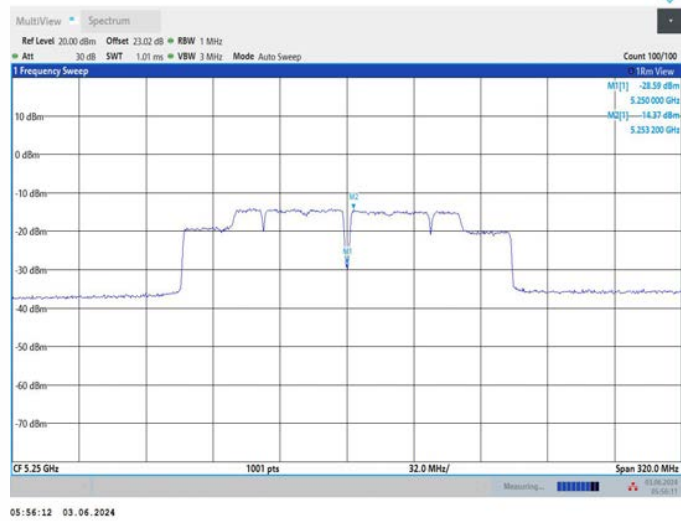
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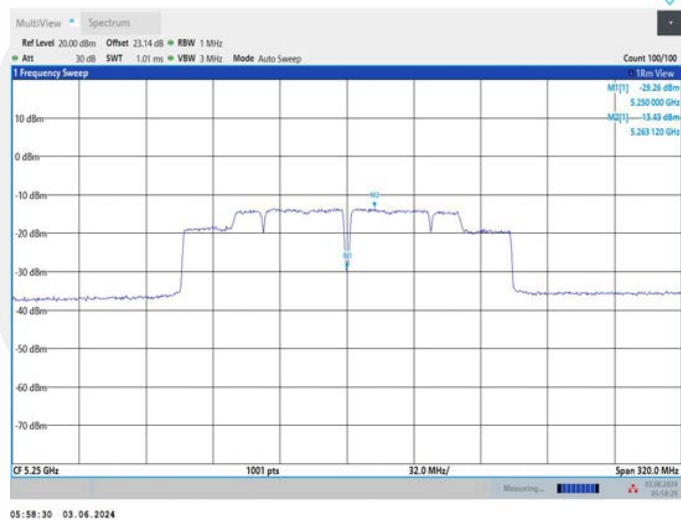
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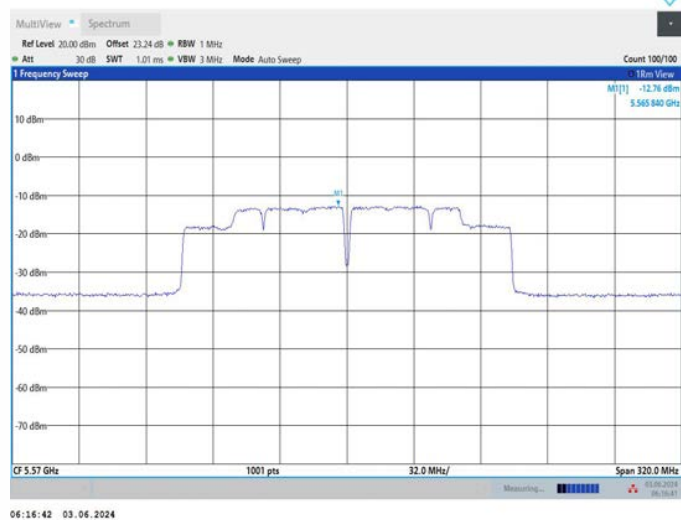
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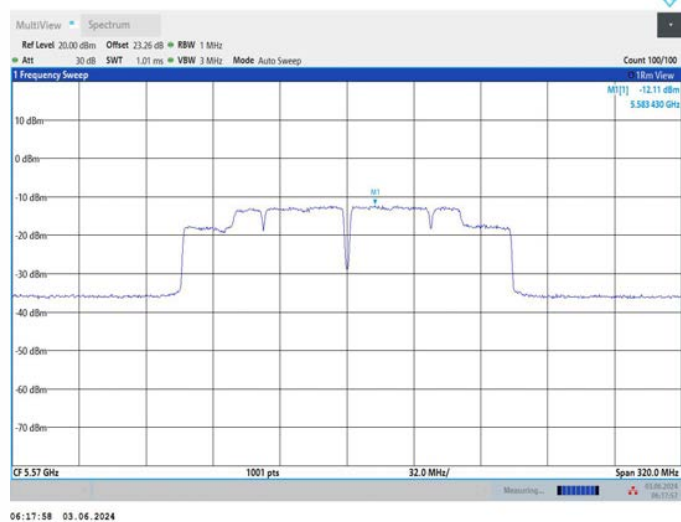
11AC160MIMO_Ant2_5250_UNII-2A



11AC160MIMO_Ant1_5570



11AC160MIMO_Ant2_5570



8.4 UNDESIRABLE RADIATED SPURIOUS EMISSION

8.4.1 Applicable Standard

According to FCC Part 15.407 (b), 15.209, 15.205

According to 789033 D02 SectionII(G)

According to RSS-GEN 8.9, 8.10 and 6.13

8.4.2 Conformance Limit

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

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

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

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

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

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	24000/F(KHz)	20 log (uV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

The provisions of §15.205 apply to intentional radiators operating under this section, 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

- Remark:
1. Emission level in dBuV/m = $20 \log (\mu\text{V/m})$
 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

8.4.3 Test Configuration

Test according to clause 6.2 radio frequency test setup

8.4.4 Test Procedure

■ Unwanted Emissions Measurements below 1000 MHz

Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

The EUT was placed on a turn table which is 0.8m above ground plane.

And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Repeat above procedures until all frequency measured was complete.

We use software control the EUT, Let EUT hopping on and transmit with highest power, All the modes have been tested and the worst result was reported.

Use the following spectrum analyzer settings:

Set RBW = 120kHz for $f < 1 \text{ GHz}$ (30MHz to 1GHz), 200Hz for $f < 150\text{KHz}$ (9KHz to 150KHz), 9KHz for $f > 150\text{KHz}$ (150KHz to 30KHz).

Set the VBW > RBW.

Detector = Peak.

Trace mode = max hold.

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Repeat above procedures until all frequency measured was complete.

■ Unwanted Maximumpeak Emissions Measurements above 1000 MHz

Maximum emission levels are measured by setting the analyzer as follows:

RBW = 1 MHz.

VBW $\geq$ 3 MHz.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately $1/x$, where x is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

■ Unwanted Average Emissions Measurements above 1000 MHz

Method VB (Averaging using reduced video bandwidth): Alternative method.

RBW = 1 MHz.

Video bandwidth. • If the EUT is configured to transmit with duty cycle ≥ 98 percent, set $\text{VBW} \leq \text{RBW}/100$ (i.e., 10 kHz) but not less than 10 Hz.

• If the EUT duty cycle is < 98 percent, set $\text{VBW} \geq 1/T$, where T is defined in section II.B.1.a).

Video bandwidth mode or display mode • The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS and setting the Average-VBW Type to Power (RMS).

• As an alternative, the analyzer may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some analyzers require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of $1/x$, where x is the duty cycle. For example, use at least 200 traces if the duty cycle is 25 percent. (If a specific emission is demonstrated to be continuous—i.e., 100 percent duty cycle—rather than turning on and off with the transmit cycle, at least 50 traces shall be averaged.)

■ Band edge measurements.

Unwanted band-edge emissions may be measured using either of the special band-edge measurement techniques (the marker-delta or integration methods) described below. Note that the marker-delta method is primarily a radiated measurement technique that requires the 99% occupied bandwidth edge to be within 2 MHz of the authorized band edge, whereas the integration method can be used in either a radiated or conducted measurement without any special requirement with regards to the displacement of the unwanted emission(s) relative to the authorized bandwidth.

Marker-Delta Method.

The marker-delta method, as described in ANSI C63.10, can be used to perform measurements of the radiated unwanted emissions level of emissions provided that the 99% occupied bandwidth of the fundamental is within 2 MHz of the authorized band-edge.

8.4.5 Test Results

Temperature:	22° C
Relative Humidity:	43%
ATM Pressure:	1011 mbar

■ Spurious Emission below 30MHz(9KHz to 30MHz)

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

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

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

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

■ For Undesirable radiated Spurious Emission in U-NII - 1

● Undesirable radiated Spurious Emission Above 1GHz(1GHz to 40GHz)

All the antenna(Antenna 1&2) and modes(802.11a/n/ac) has been tested and the worst(Antenna 1,802.11a) result recorded was report as below:

Test mode: 802.11a Frequency: Channel 36: 5180MHz

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
9606.30	V	58.23	-37	-27	10
11528.2	V	59.94	-35.29	-27	8.29
17523.7	V	65.88	-29.35	-27	2.35
8194.59	H	56.94	-38.29	-27	11.29
11468.7	H	59.90	-35.33	-27	8.33
17489.7	H	66.12	-29.11	-27	2.11

Test mode: 802.11a Frequency: Channel 40: 5200MHz

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8832.41	V	57.60	-37.63	-27	10.63
11664.3	V	60.10	-35.13	-27	8.13
17489.7	V	65.81	-29.42	-27	2.42
8832.41	H	57.55	-37.68	-27	10.68
12055.5	H	59.50	-35.73	-27	8.73
17498.2	H	67.22	-28.01	-27	1.01

Test mode: 802.11a Frequency: Channel 48: 5240MHz

Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8934.46	V	56.82	-38.41	-27	11.41
11536.7	V	60.00	-35.23	-27	8.23
17481.2	V	67.25	-27.98	-27	0.98
8934.46	H	57.35	-37.88	-27	10.88
11485.7	H	60.46	-34.77	-27	7.77
17506.7	H	66.11	-29.12	-27	2.12

Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value(VBW=10Hz).
 (2) Emission Level= Reading Level+Probe Factor +Cable Loss.
 (3) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77
 d is the measurement distance in 3 meters

Test mode: 802.11a Frequency: Channel 36: 5180MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
9606.30	V	58.23	38.92	74	54	15.77	15.08
11528.2	V	59.94	37.92	74	54	14.06	16.08
17523.7	V	65.88	42.92	74	54	8.12	11.08
8194.59	H	56.94	36.48	74	54	17.06	17.52
11468.7	H	59.90	37.74	74	54	14.10	16.26
17489.7	H	66.12	43.44	74	54	7.88	10.56

Test mode: 802.11a Frequency: Channel 40: 5200MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
8832.41	V	57.60	37.40	74	54	16.40	16.60
11664.3	V	60.10	37.56	74	54	13.90	16.44
17489.7	V	65.81	43.92	74	54	8.19	10.08
8832.41	H	57.55	37.54	74	54	16.45	16.46
12055.5	H	59.50	37.72	74	54	14.50	16.28
17498.2	H	67.22	43.72	74	54	6.78	10.28

Test mode: 802.11a Frequency: Channel 48: 5240MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
8934.46	V	56.82	37.91	74	54	17.18	16.09
11536.7	V	60.00	37.85	74	54	14.00	16.15
17481.2	V	67.25	43.59	74	54	6.75	10.41
8934.46	H	57.35	38.06	74	54	16.65	15.94
11485.7	H	60.46	37.90	74	54	13.54	16.10
17506.7	H	66.11	44.16	74	54	7.89	9.84

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

●Undesirable radiated Undesirable radiatedSpurious Emission in Band Edge

All the antenna(Antenna 1&2) and modes(802.11a/n/ac) has been tested and the worst(Antenna 1,802.11ac(VHT20)) result recorded was report as below:

Test mode:		802.11ac(VHT20)		Frequency:		Channel 36: 5180MHz	
Freq. (MHz)	Ant.Pol.	Field Strength (RBW=100KHz) (dBuV/m)		E.I.R.P (dBm)		Limit (dBm)	Verdict
5097.02	H	52.83		-42.40		-27	Pass
5070.78	V	54.07		-41.16		-27	Pass

Test mode:		802.11ac(VHT20)		Frequency:		Channel 48: 5240MHz	
Freq. (MHz)	Ant.Pol.	Field Strength (RBW=100KHz) (dBuV/m)		E.I.R.P (dBm)		Limit (dBm)	Verdict
5350.66	H	54.37		-40.86		-27	Pass
5364.23	V	54.05		-41.18		-27	Pass

Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value(VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3)EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters

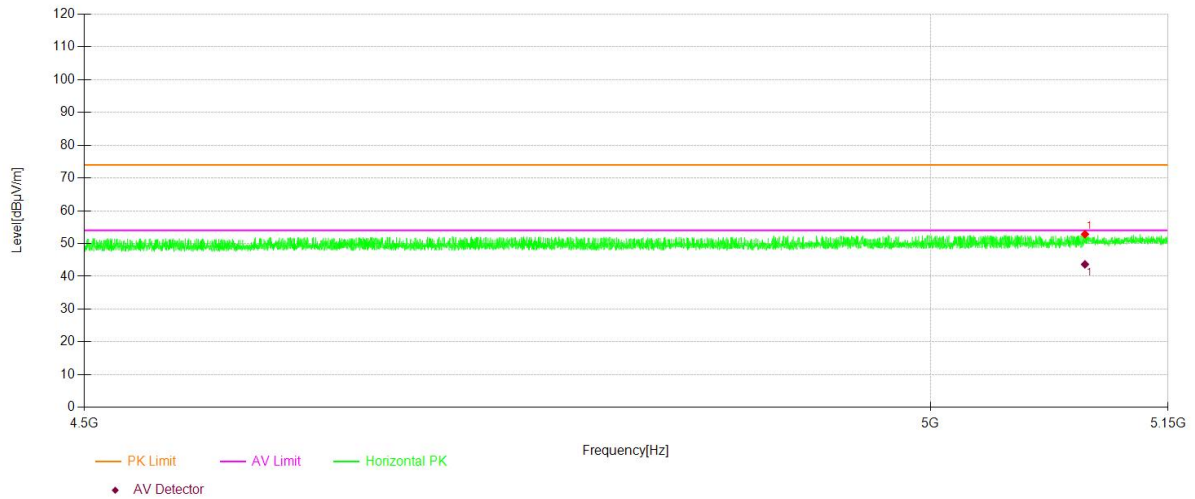
Test mode:		802.11ac(VHT20)		Frequency:		Channel 36: 5180MHz	
Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	Over(dB)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	Over(dB)
5097.02	H	52.83	74.00	21.17	43.66	54.00	10.34
5070.78	V	54.07	74.00	19.93	44.34	54.00	9.66

Test mode:		802.11ac(VHT20)		Frequency:		Channel 48: 5240MHz	
Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	Over(dB)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	Over(dB)
5350.66	H	54.37	74.00	19.63	44.40	54.00	9.60
5364.23	V	54.05	74.00	19.95	44.31	54.00	9.69

Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

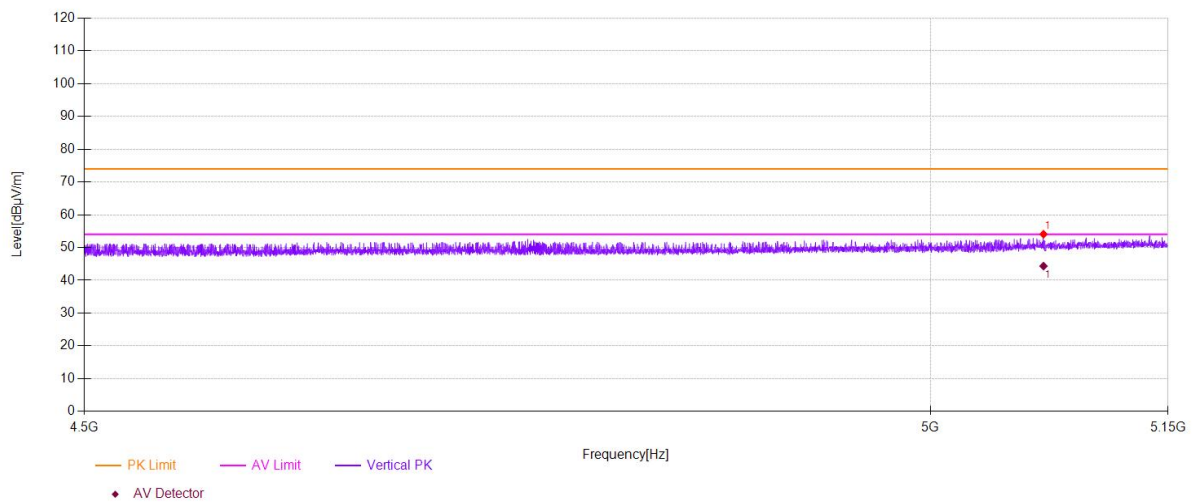
U-NII - 1

Test Model	Undesirable radiated	Undesirable radiated	Spurious Emission in Band Edge	
	802.11ac(VHT20)	Channel 36: 5180MHz	Ant.Pol	H

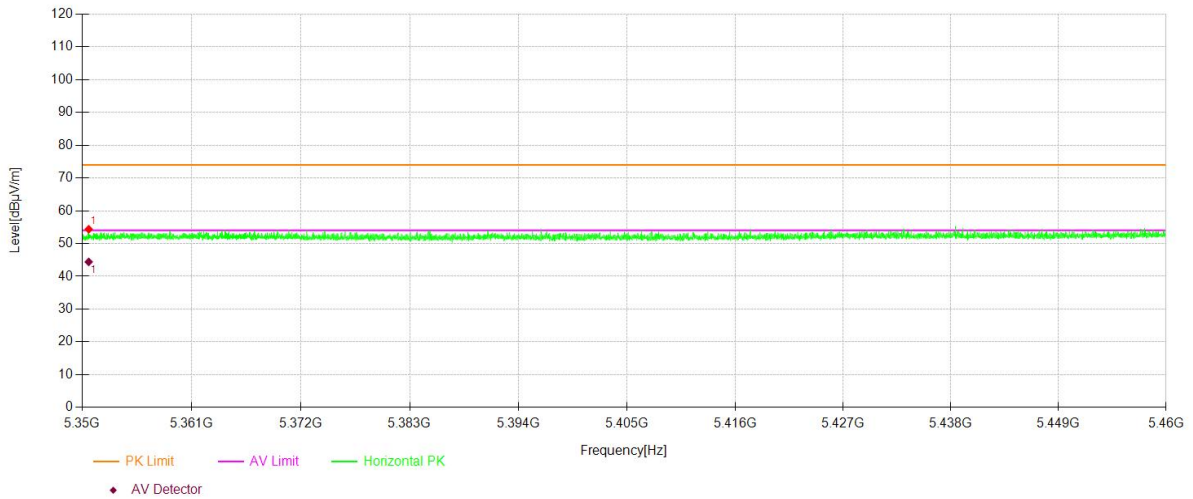


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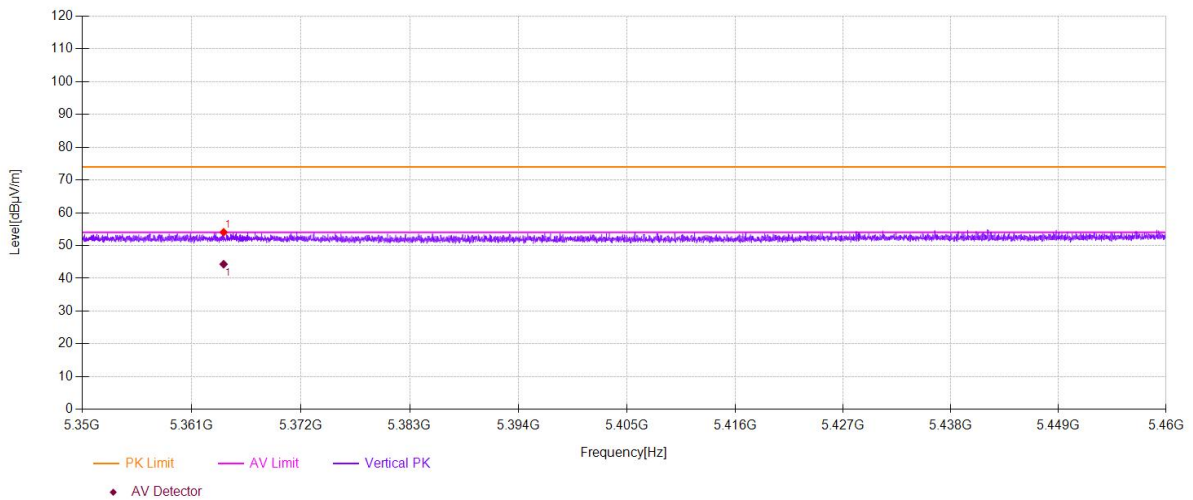
Test Model	Undesirable radiated	Undesirable radiated	Spurious Emission in Band Edge	
	802.11ac(VHT20)	Channel 36: 5180MHz	Ant.Pol	V



U-NII - 1				
Test Model	Undesirable radiated	Undesirable radiated	Spurious Emission in Band Edge	
	802.11ac(VHT20)	Channel 48: 5240MHz	Ant.Pol	H



U-NII - 1				
Test Model	Undesirable radiated	Undesirable radiated	Spurious Emission in Band Edge	
	802.11ac(VHT20)	Channel 48: 5240MHz	Ant.Pol	V



■ For Undesirable Radiated Spurious Emission in U-NII -2A

● Undesirable radiated Spurious Emission Above 1GHz(1GHz to 40GHz)

All the antenna(Antenna 1&2) and modes(802.11a/n/ac) has been tested and the worst(Antenna 1,802.11a) result recorded was report as below:

Test mode:		802.11a		Frequency:	Channel 52: 5260MHz
Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8169.08	V	56.41	-38.82	-27	11.82
10091.0	V	60.45	-34.78	-27	7.78
17506.7	V	65.90	-29.33	-27	2.33
8169.08	H	56.89	-38.34	-27	11.34
11511.2	H	59.95	-35.28	-27	8.28
17506.7	H	65.81	-29.42	-27	2.42

Test mode:		802.11a		Frequency:	Channel 56: 5280MHz
Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8917.45	V	57.44	-37.79	-27	10.79
11494.2	V	60.98	-34.25	-27	7.25
17498.2	V	65.60	-29.63	-27	2.63
8934.46	H	57.49	-37.74	-27	10.74
11494.2	H	60.10	-35.13	-27	8.13
17506.7	H	66.31	-28.92	-27	1.92

Test mode:		802.11a		Frequency:	Channel 64: 5320MHz
Freq. (MHz)	Ant.Pol.	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
8857.92	V	57.40	-37.83	-27	10.83
11375.1	V	60.01	-35.22	-27	8.22
17498.2	V	65.76	-29.47	-27	2.47
8237.11	H	56.65	-38.58	-27	11.58
11485.7	H	60.77	-34.46	-27	7.46
17498.2	H	66.34	-28.89	-27	1.89

Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value(VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) EIRP[dBm] = E[dBuV/m] + 20 log(d[meters]) - 104.77
d is the measurement distance in 3 meters