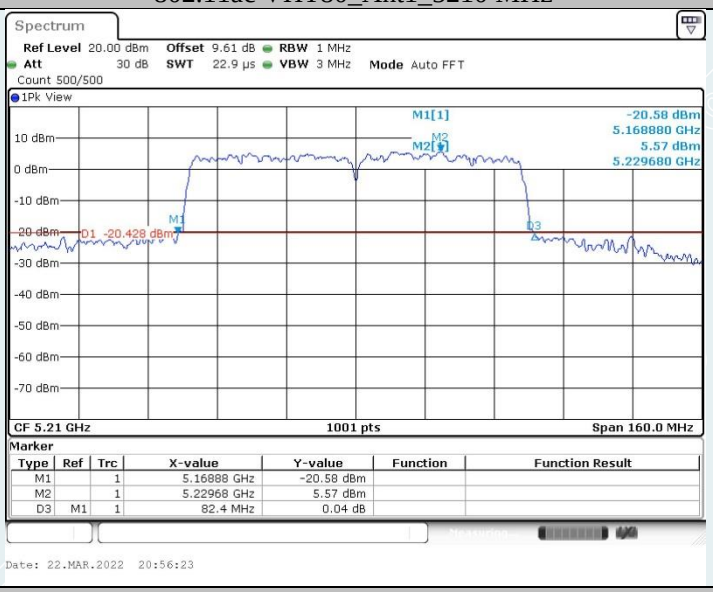
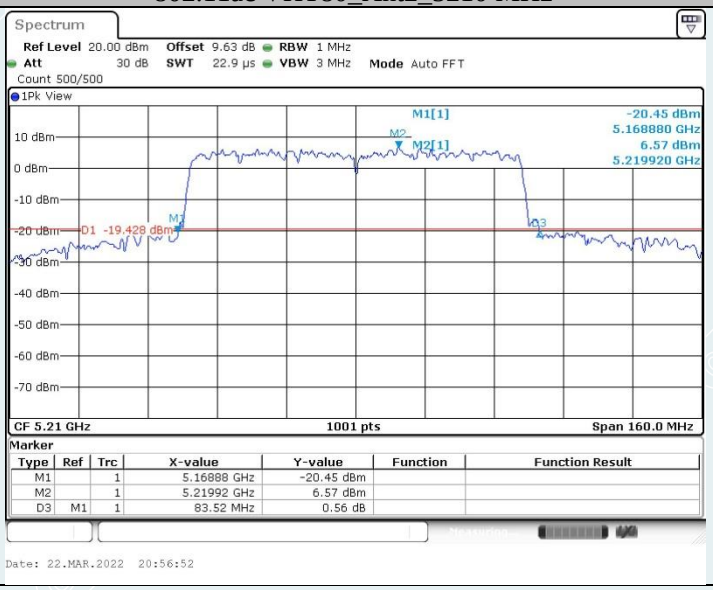
802.11ac VHT80_Ant1_5210 MHz

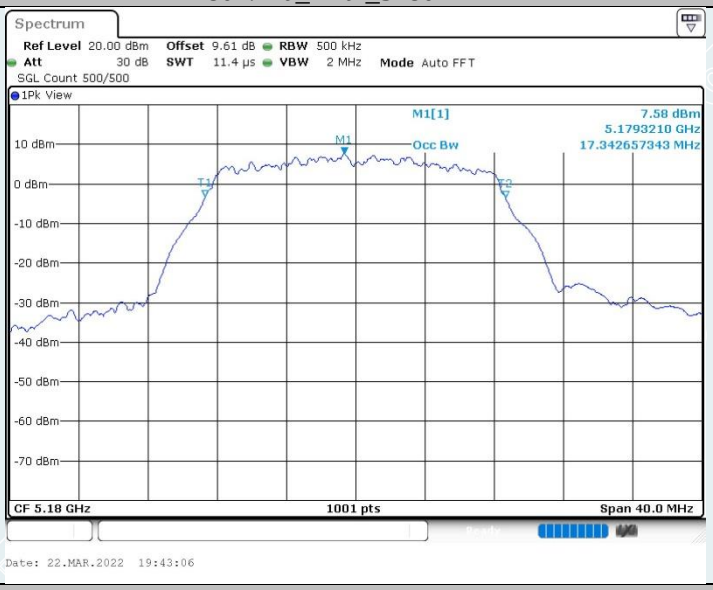


802.11ac VHT80_Ant2_5210 MHz



99% OCCUPIED BANDWIDTH

802.11a_Ant1_5180 MHz



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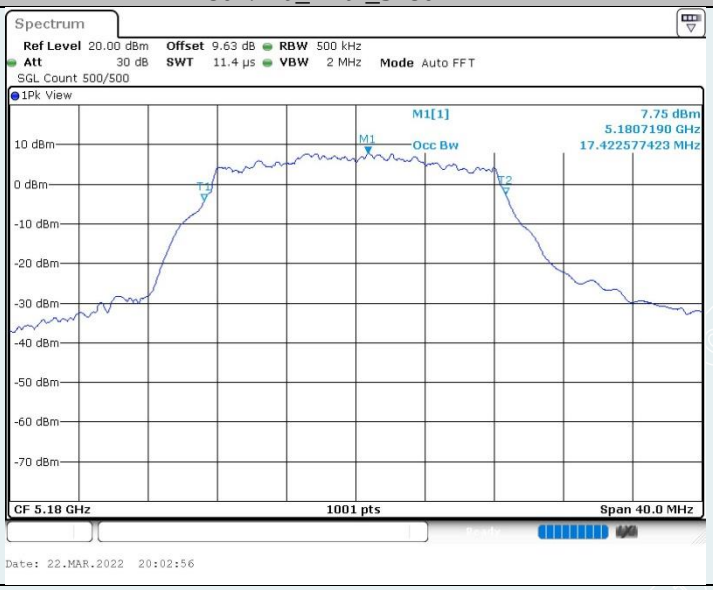

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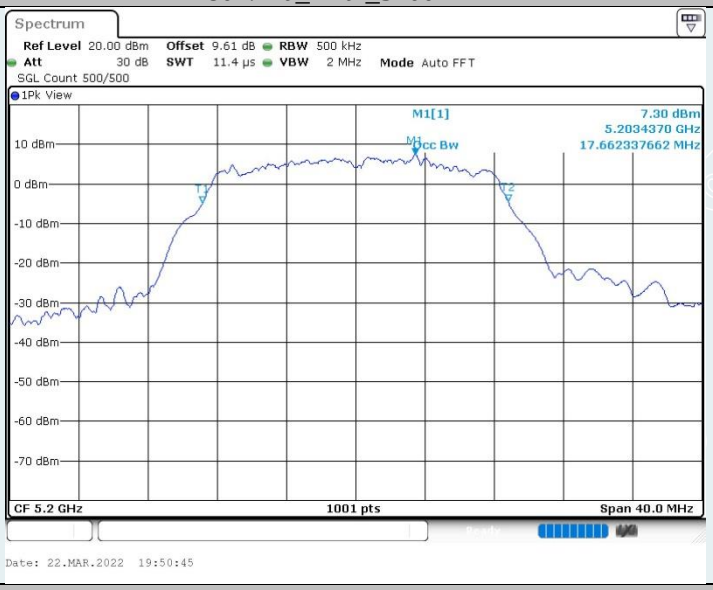

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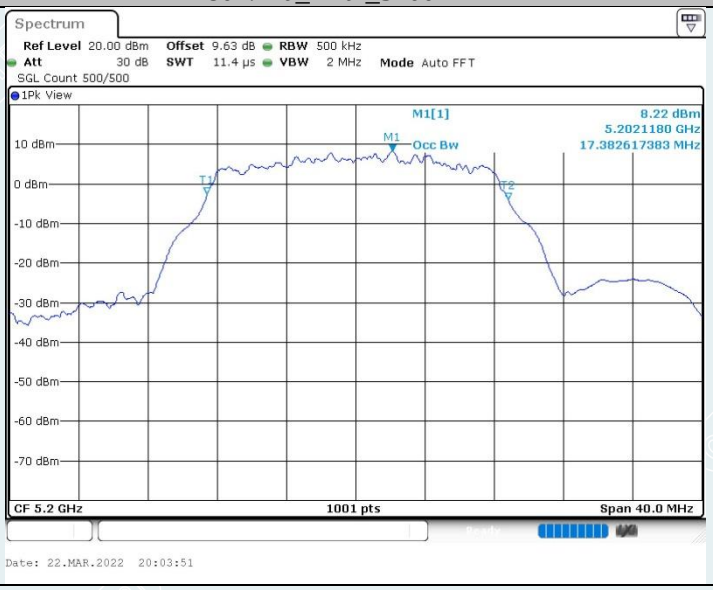

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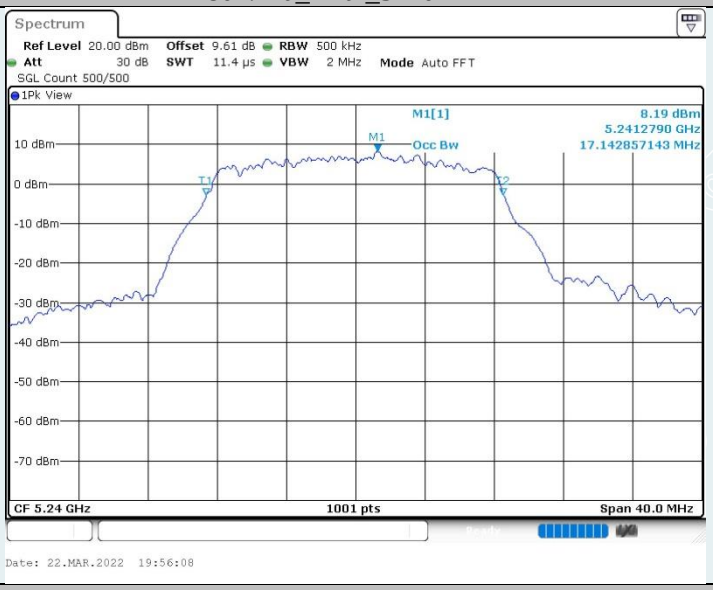

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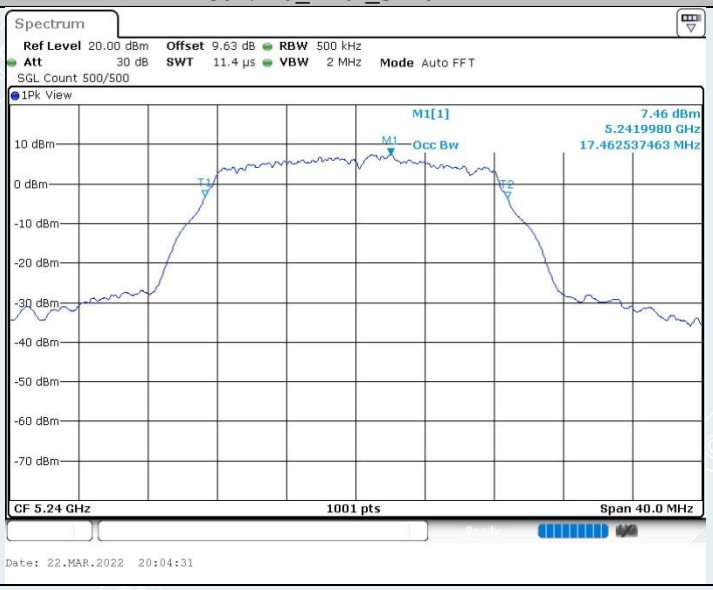
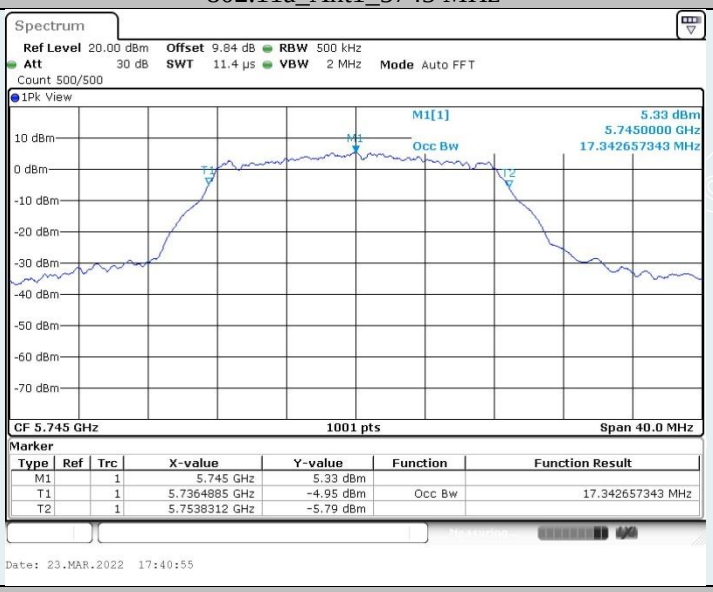


802.11a_Ant1_5745 MHz



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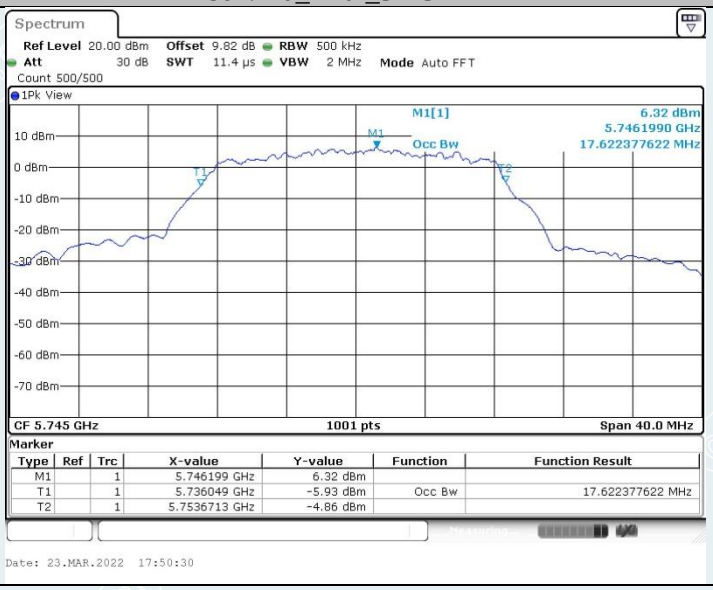
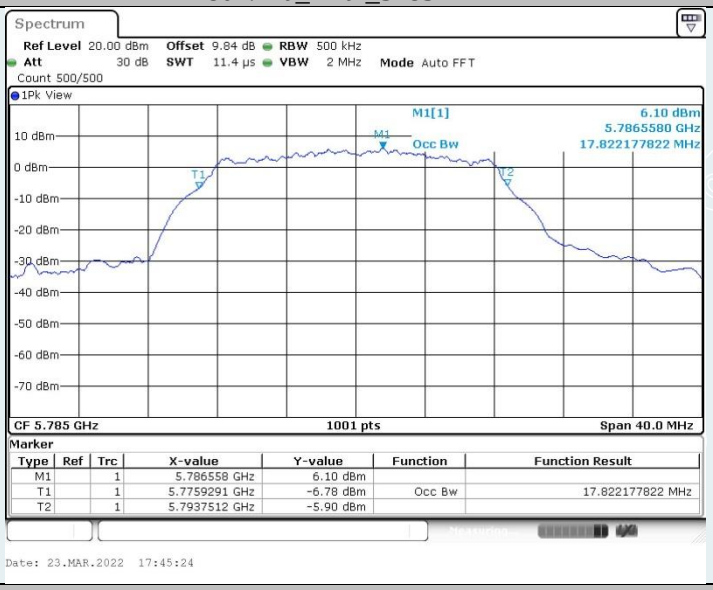


802.11a_Ant1_5785 MHz



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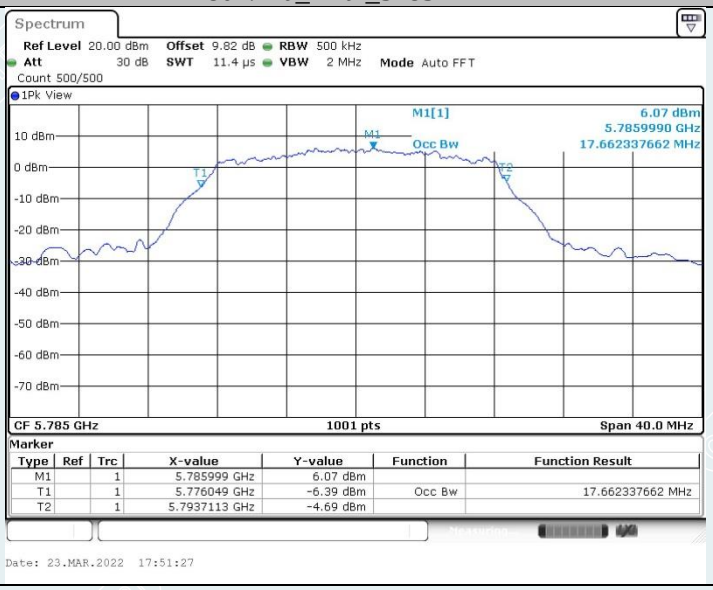

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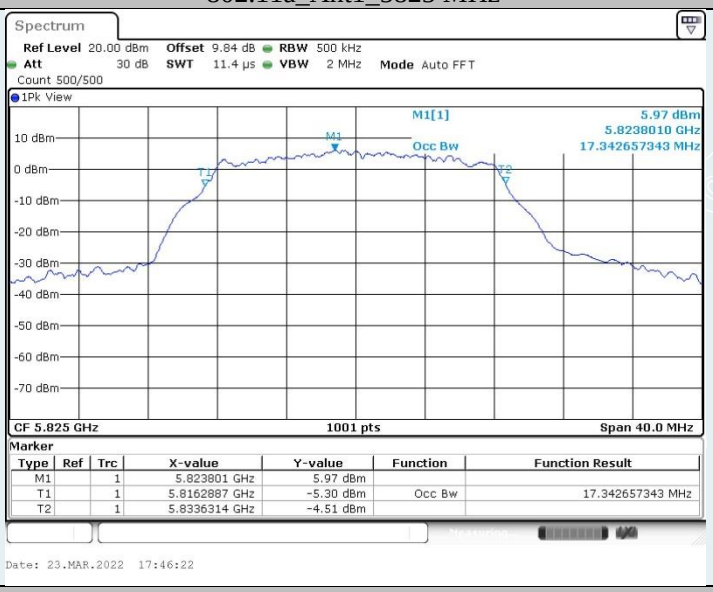

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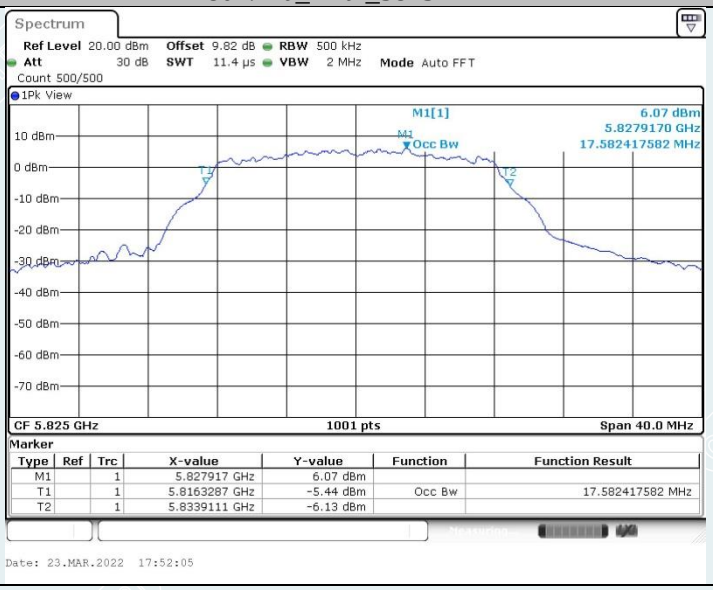
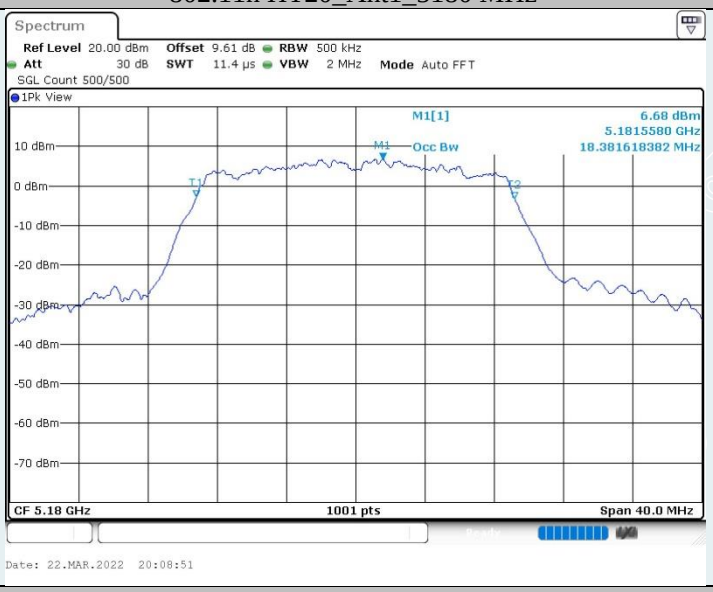


802.11n HT20_Ant1_5180 MHz



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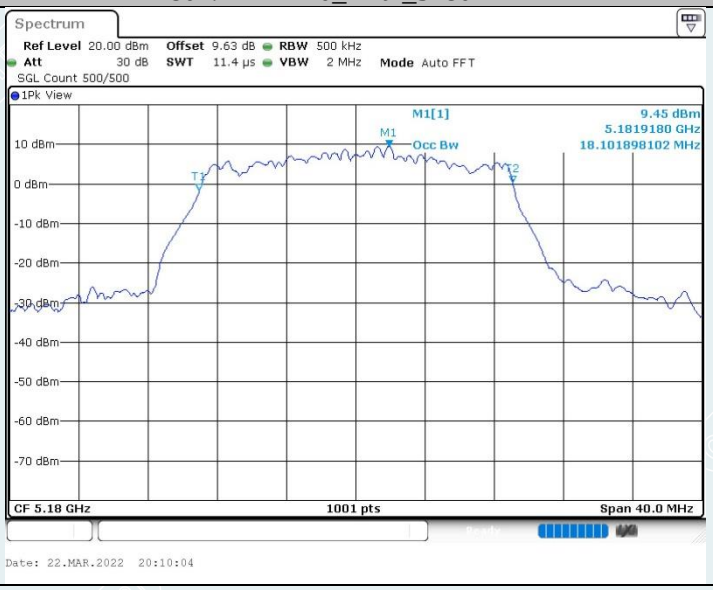
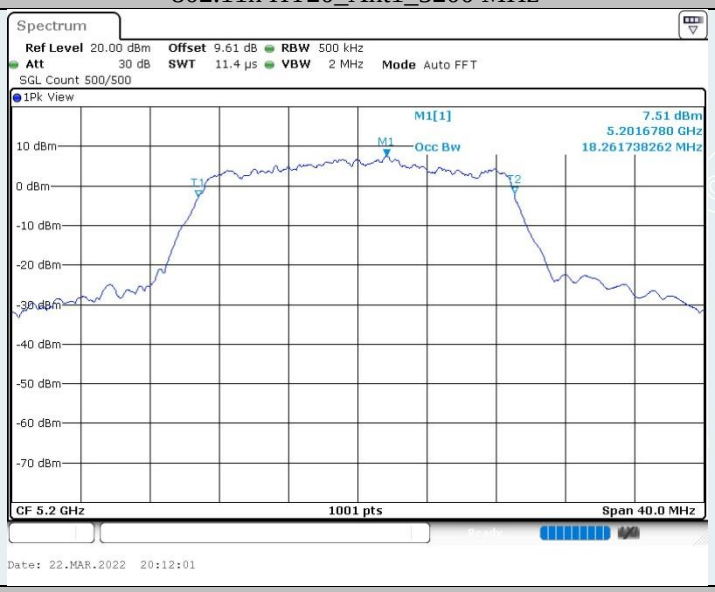


802.11n HT20_Ant1_5200 MHz



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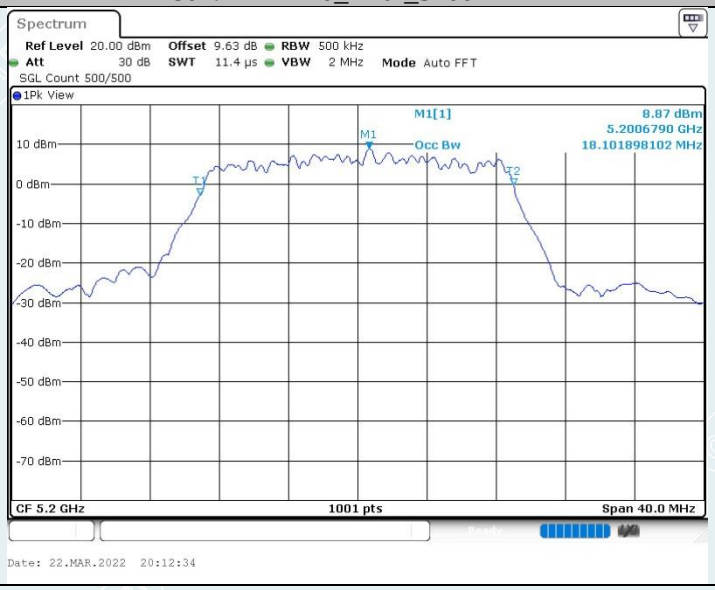
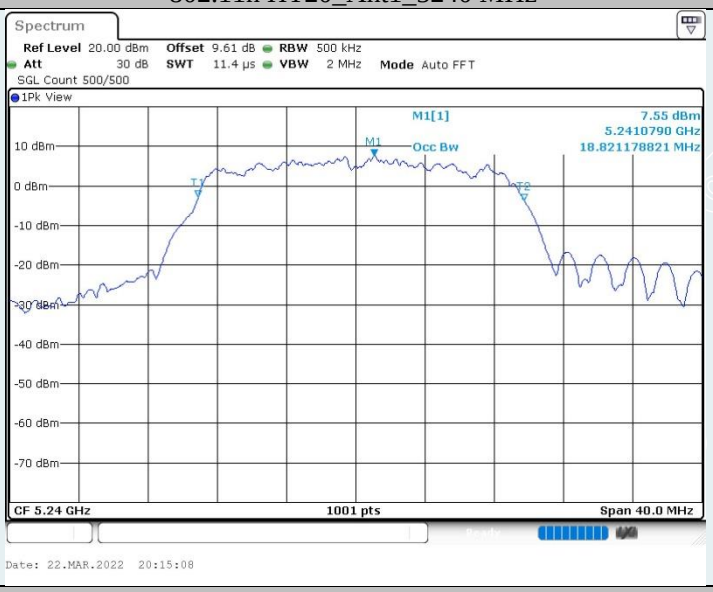


802.11n HT20_Ant1_5240 MHz



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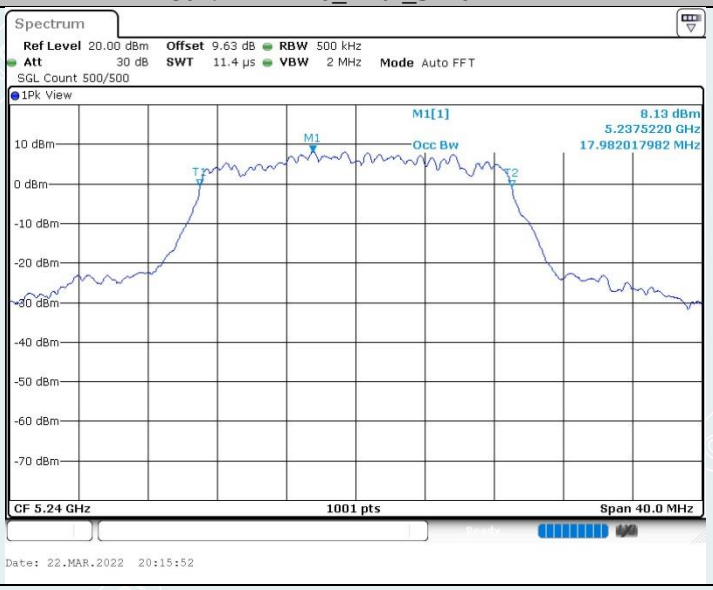

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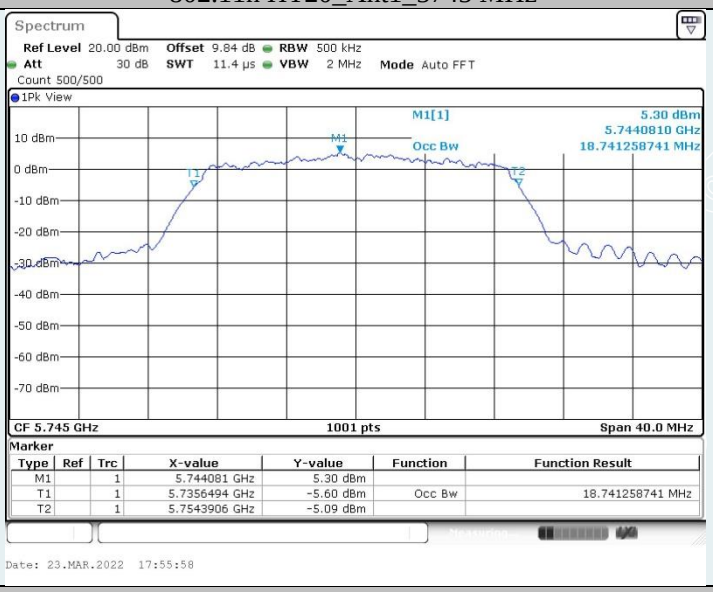

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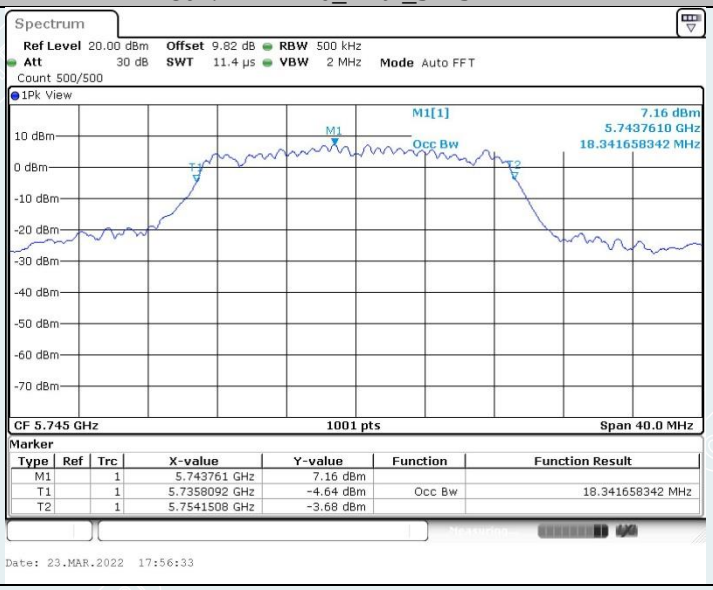

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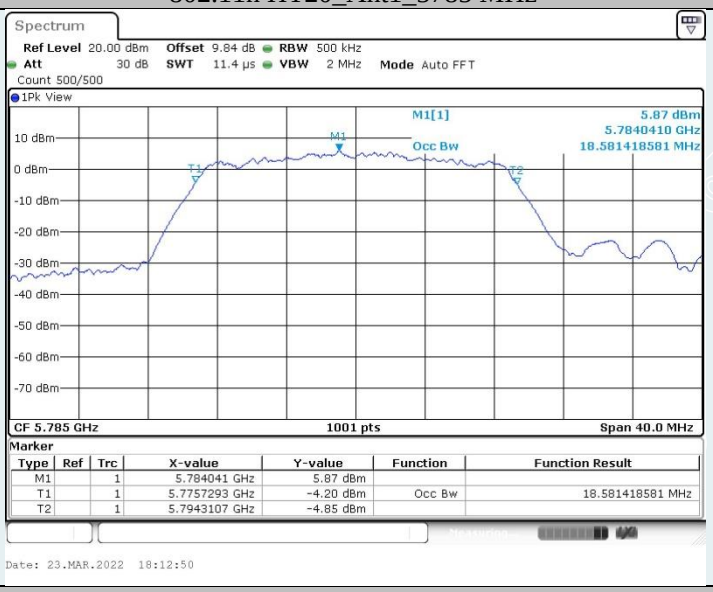

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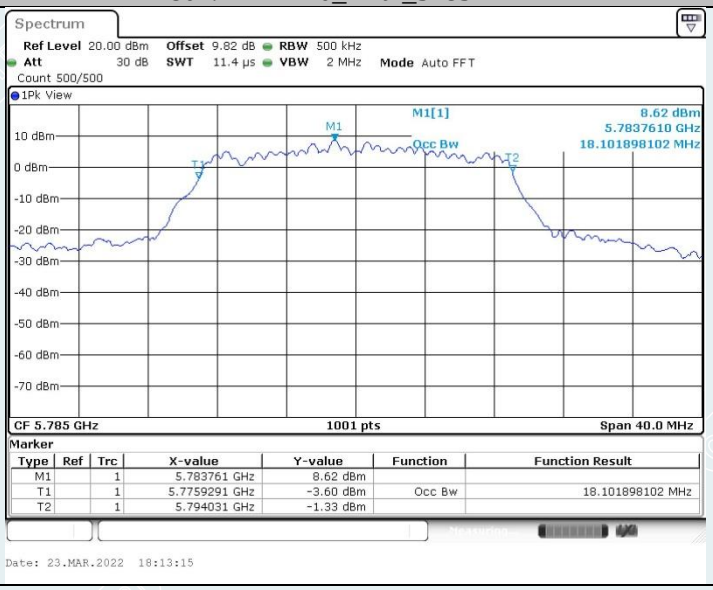
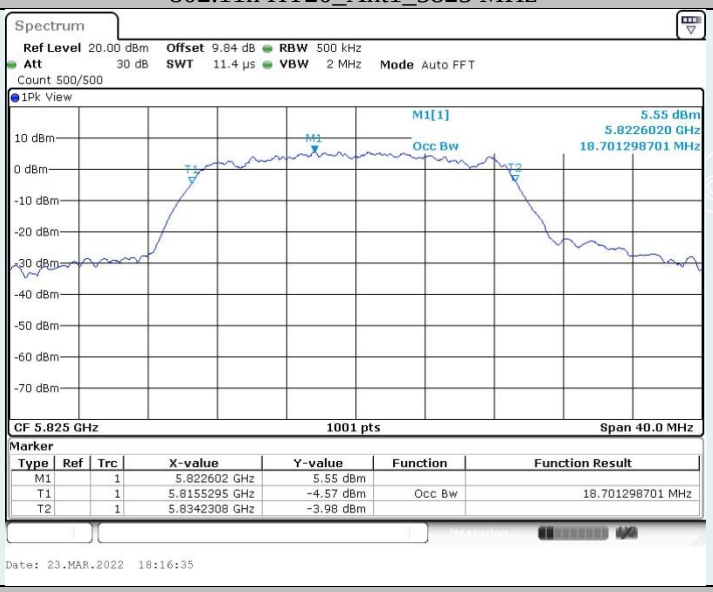


802.11n HT20_Ant1_5825 MHz



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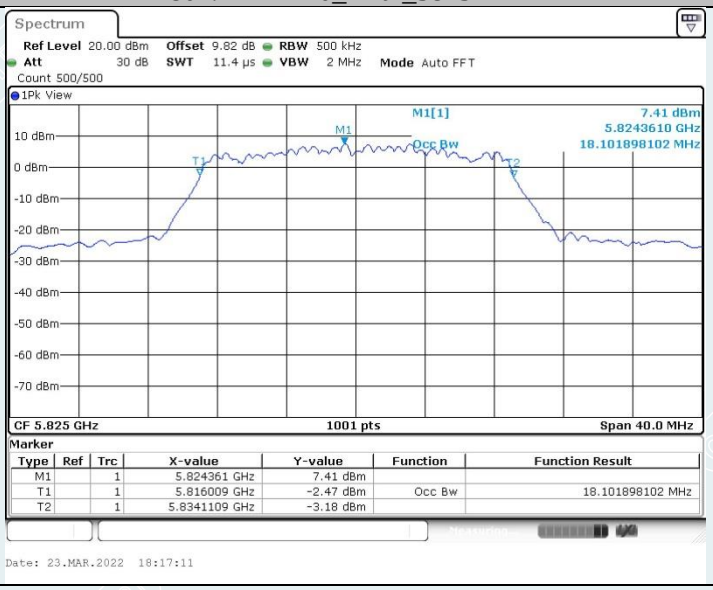
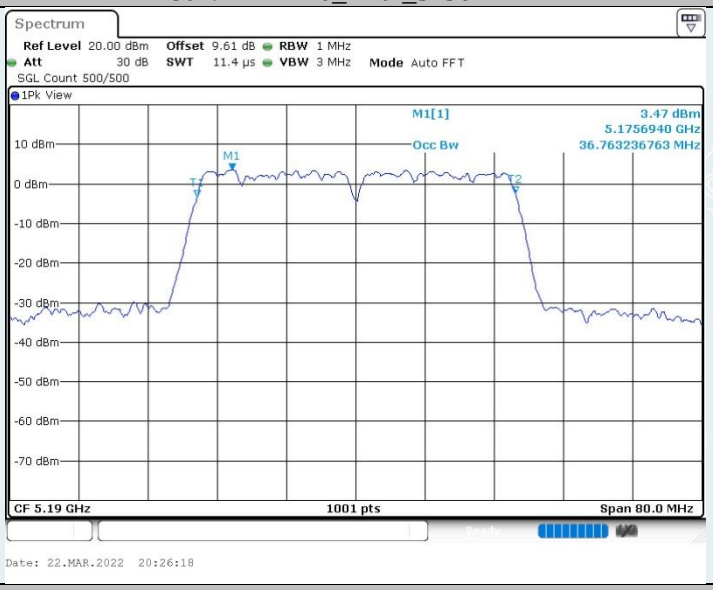


802.11n HT40_Ant1_5190 MHz



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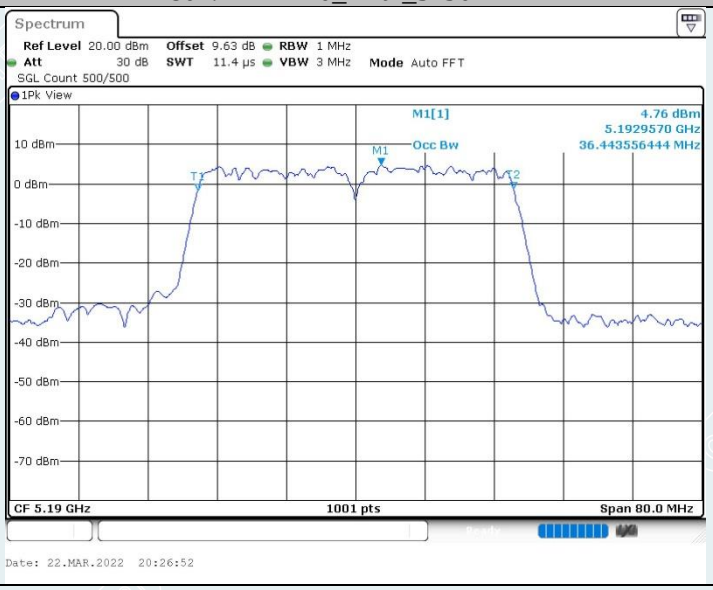
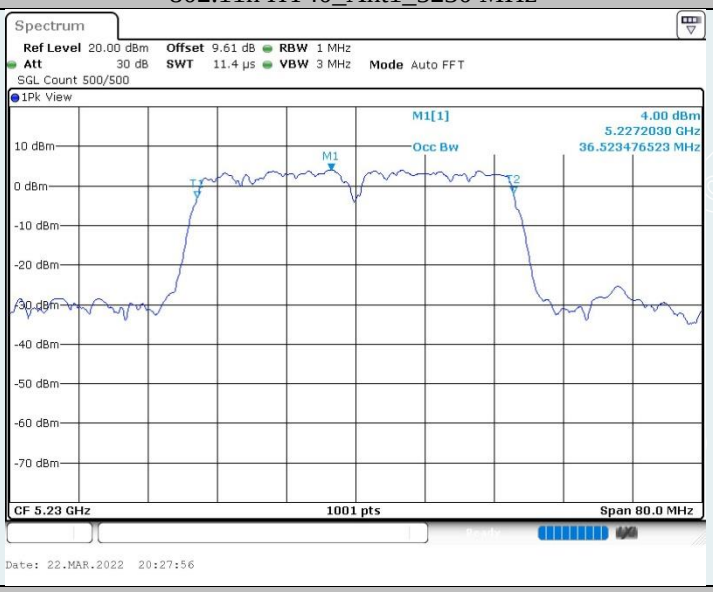


802.11n HT40_Ant1_5230 MHz



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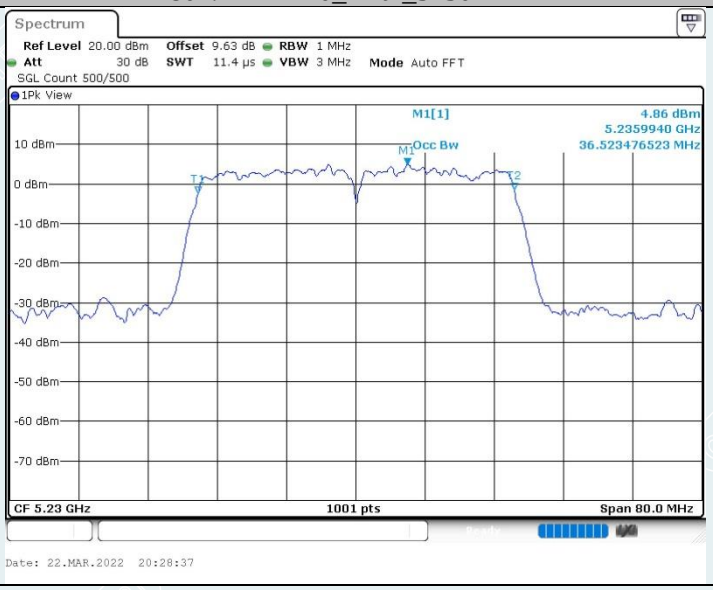

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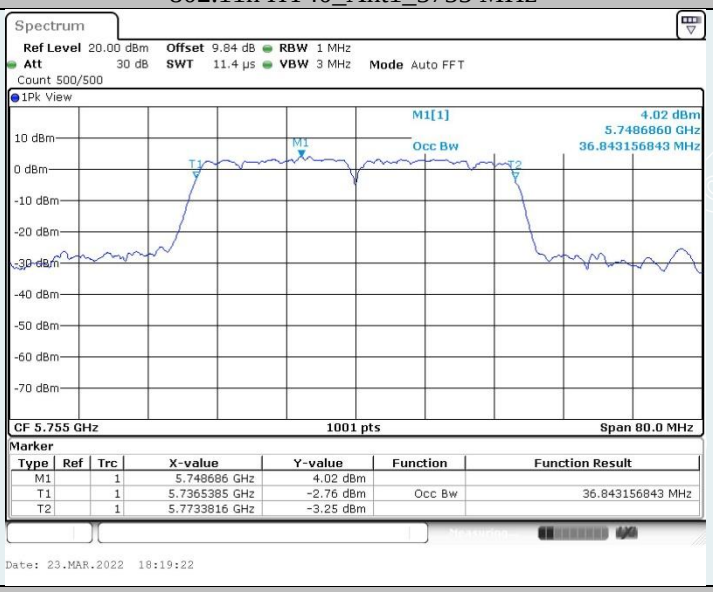

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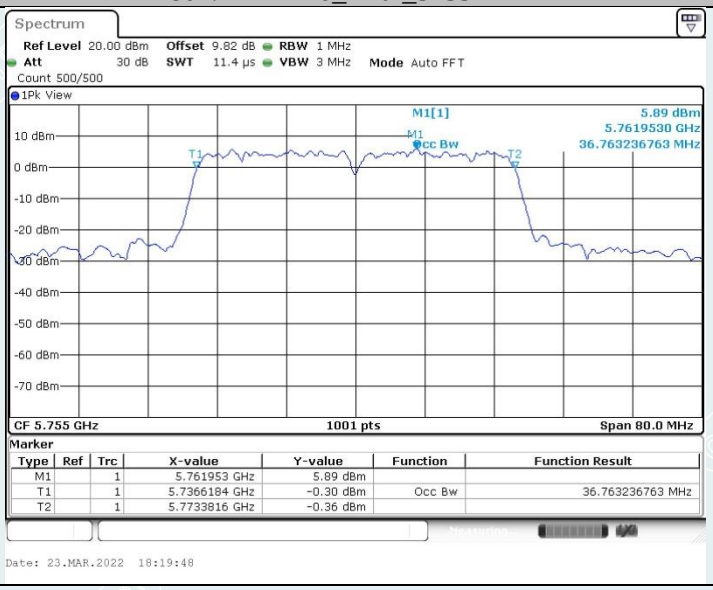

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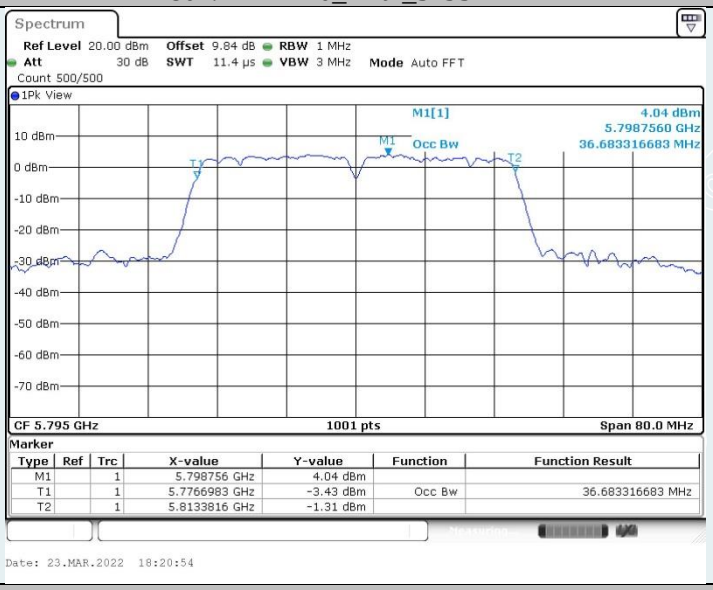

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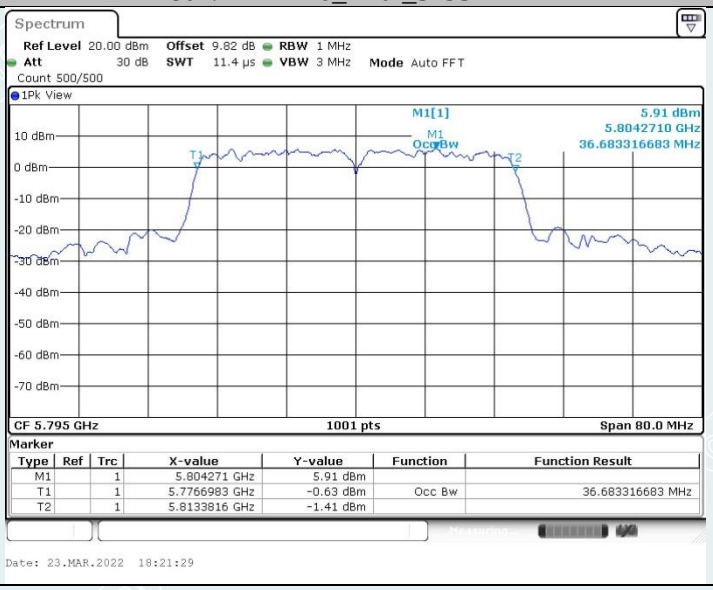

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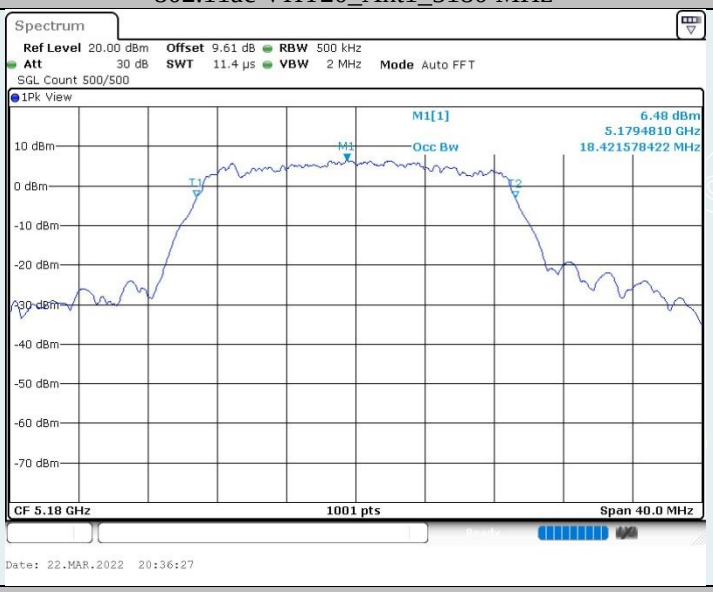

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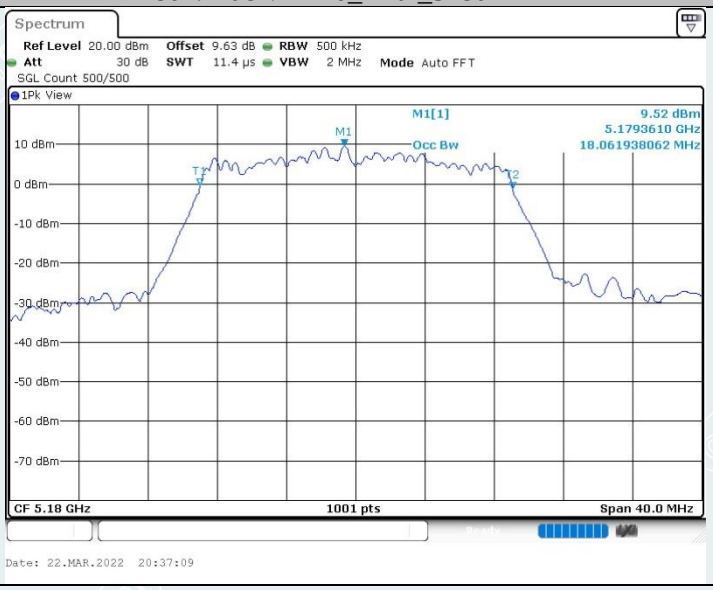

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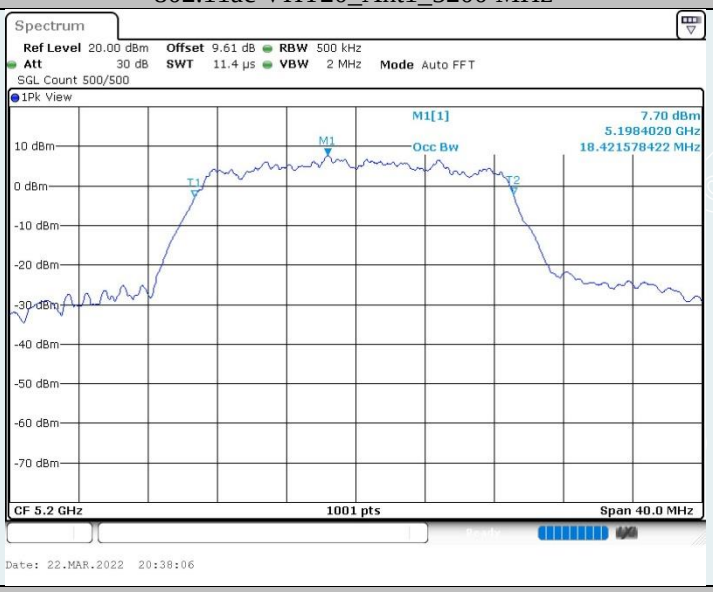

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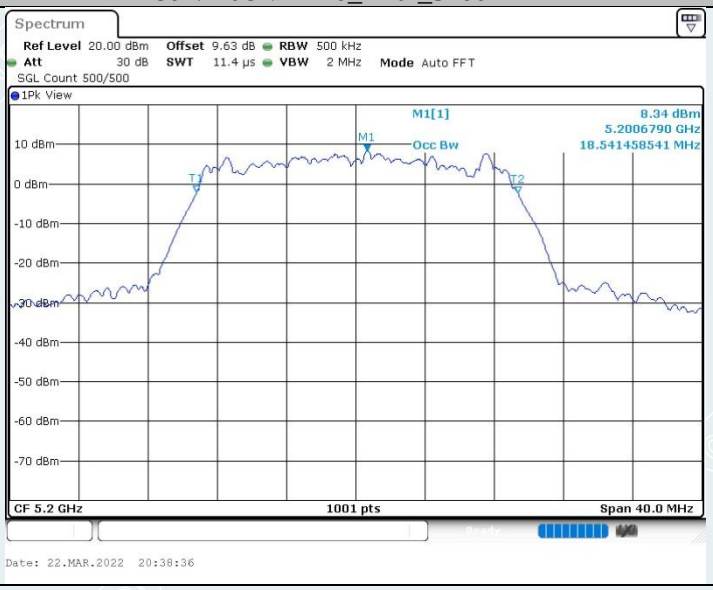

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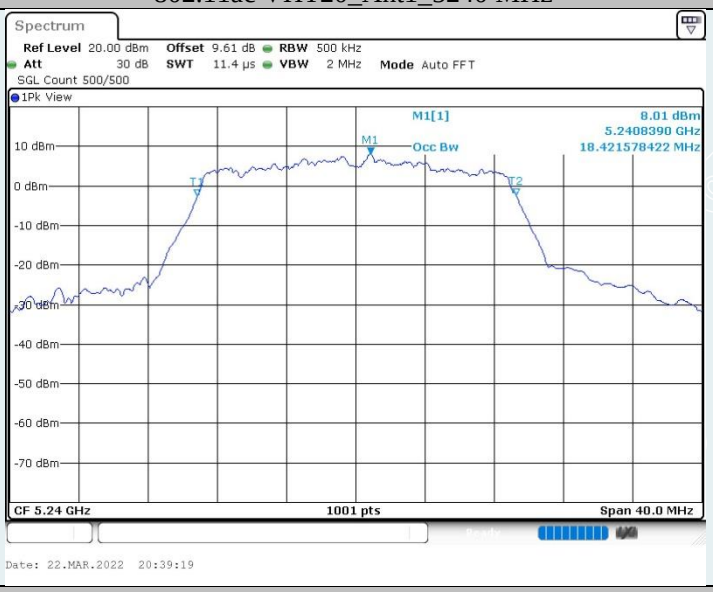

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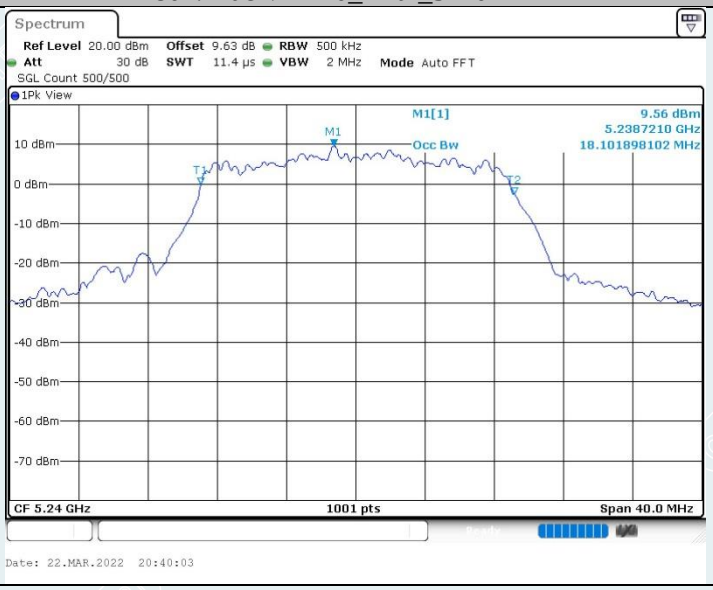
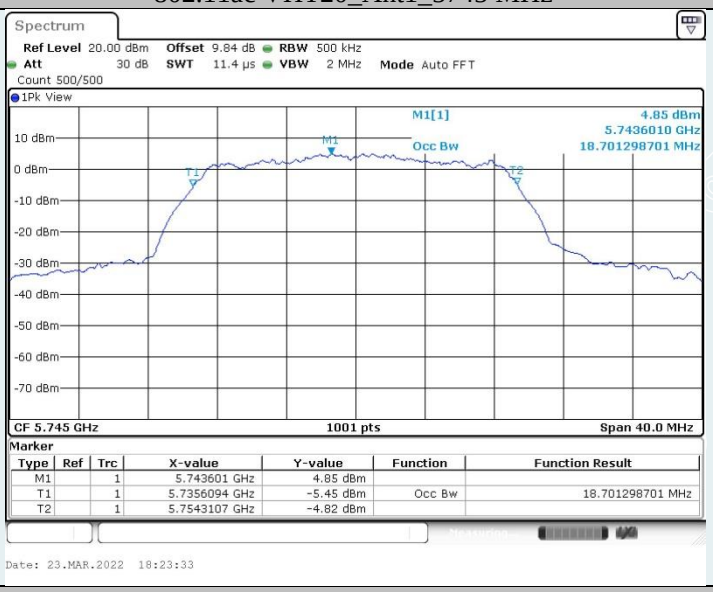


802.11ac VHT20_Ant1_5745 MHz



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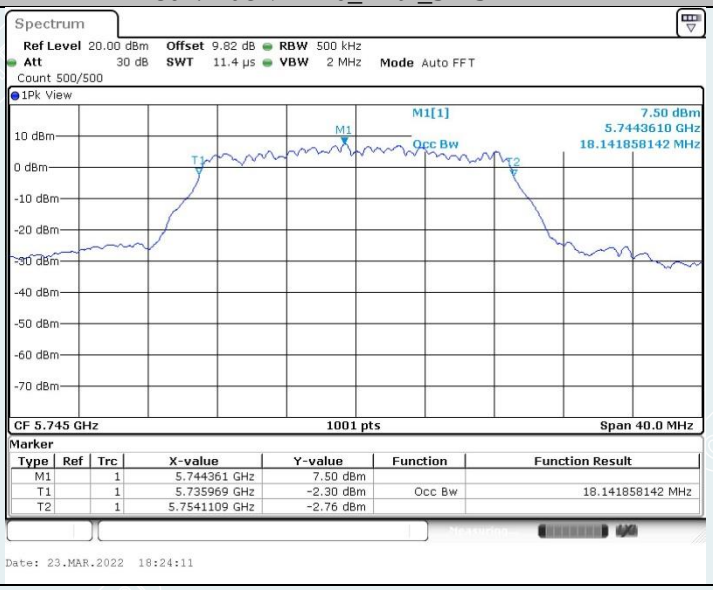

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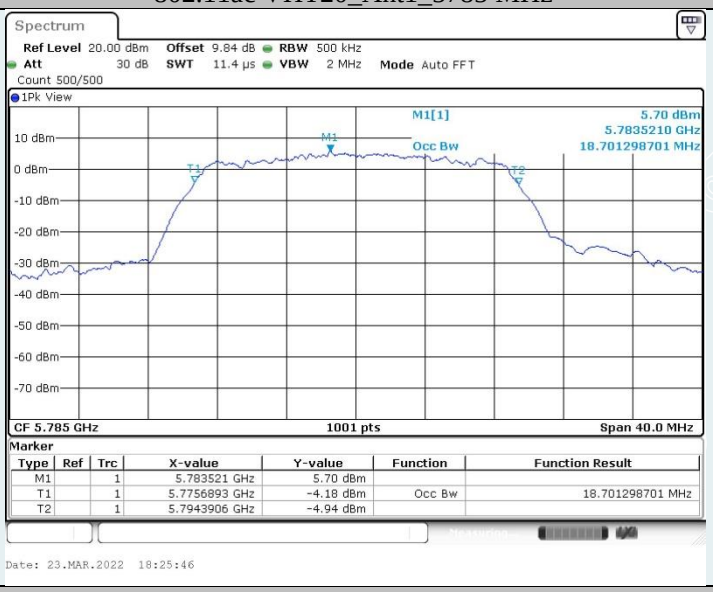

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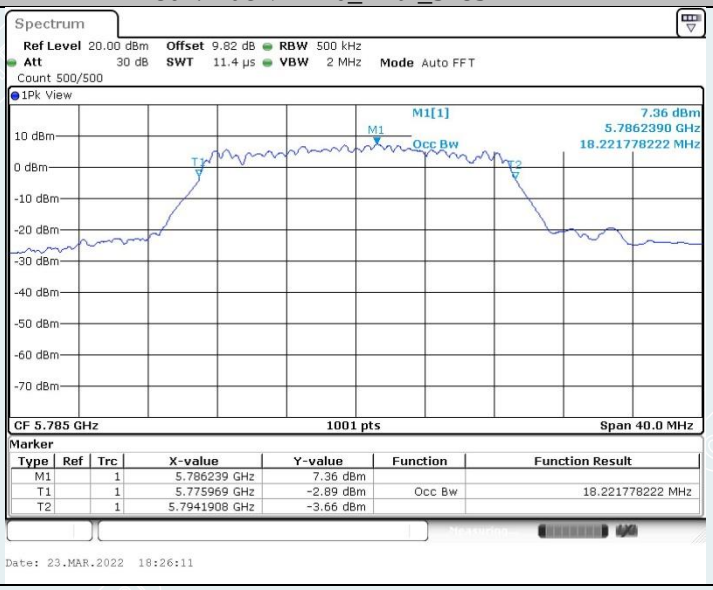
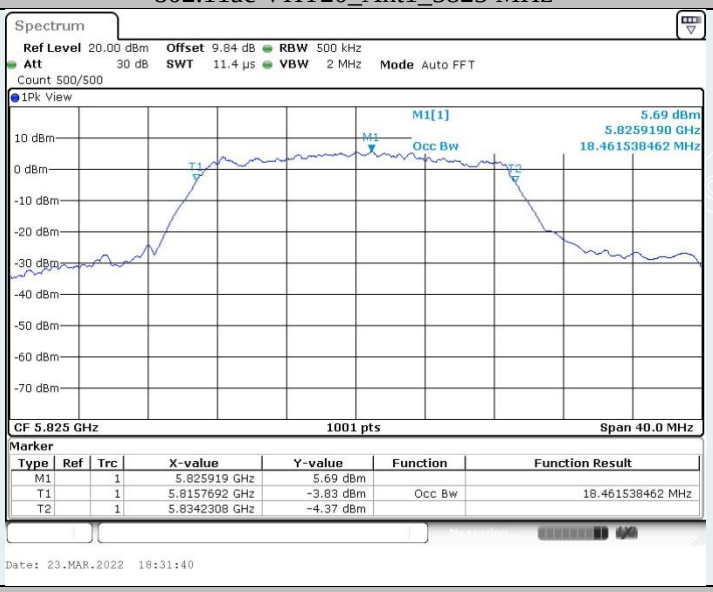


802.11ac VHT20_Ant1_5825 MHz



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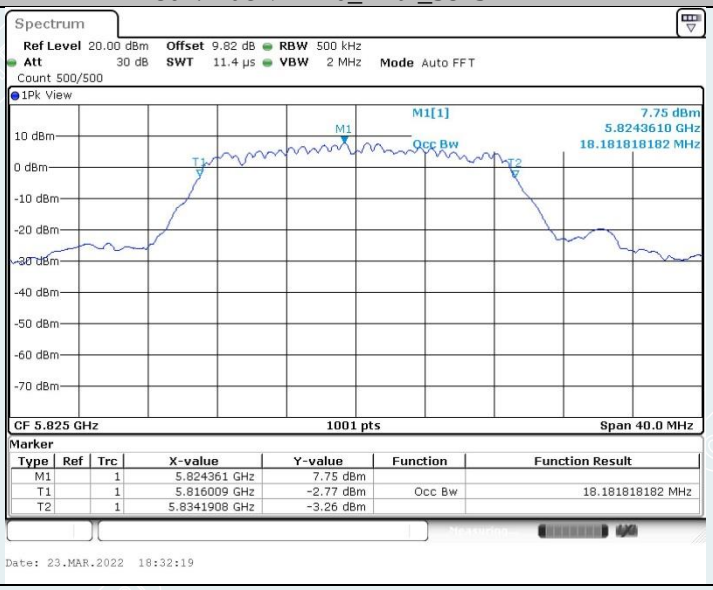

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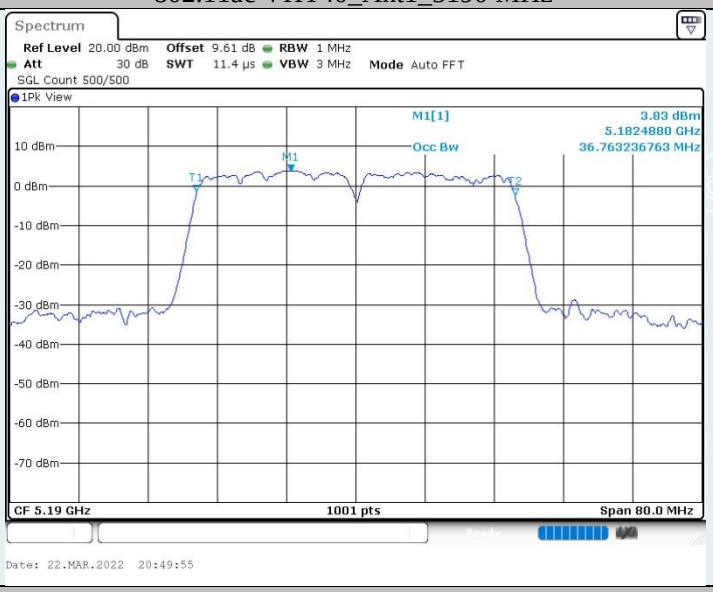

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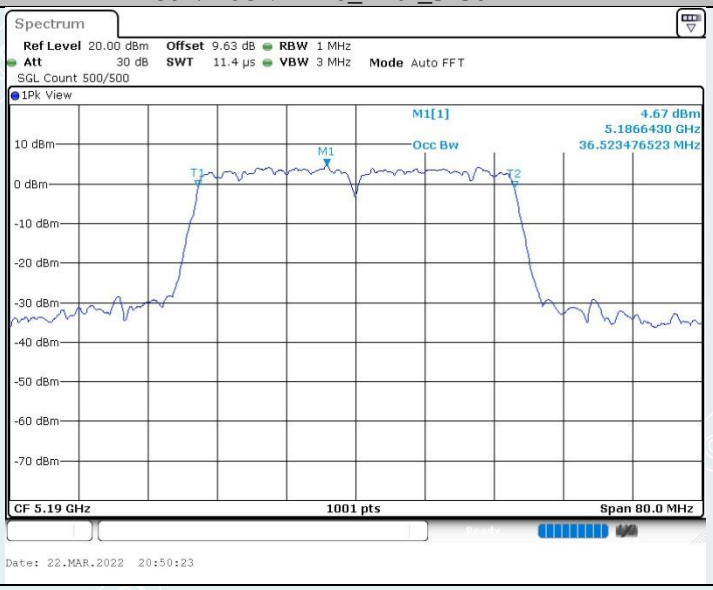

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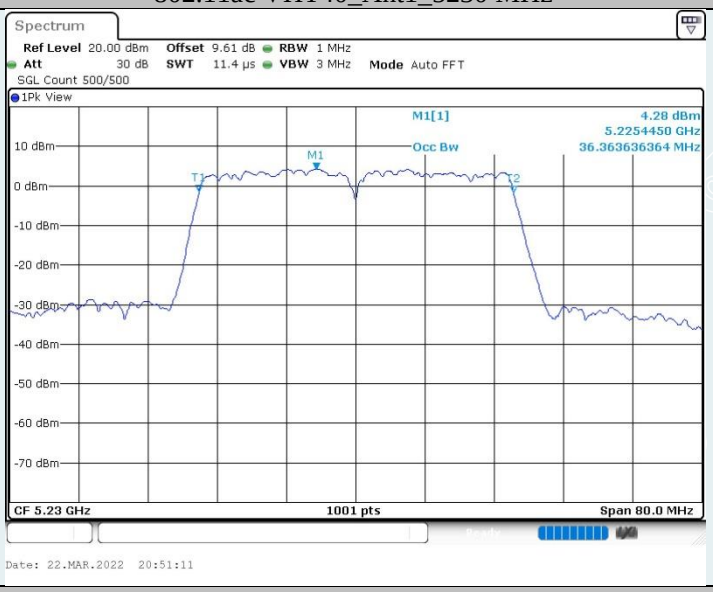

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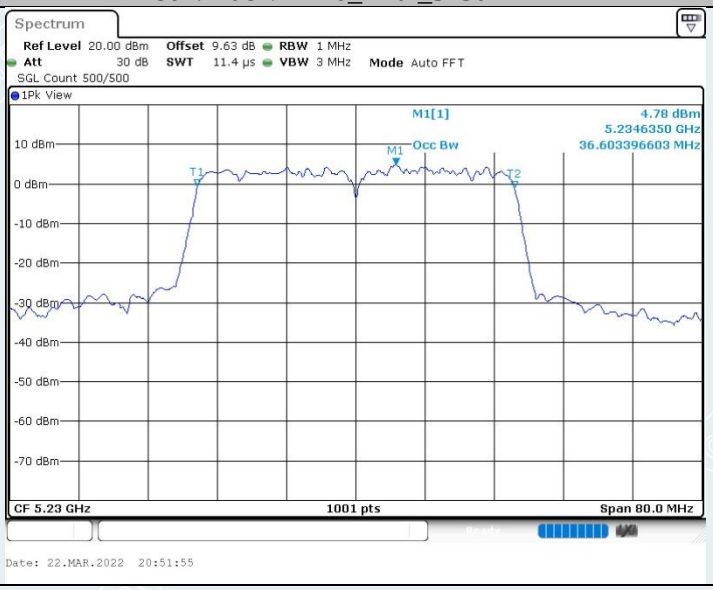

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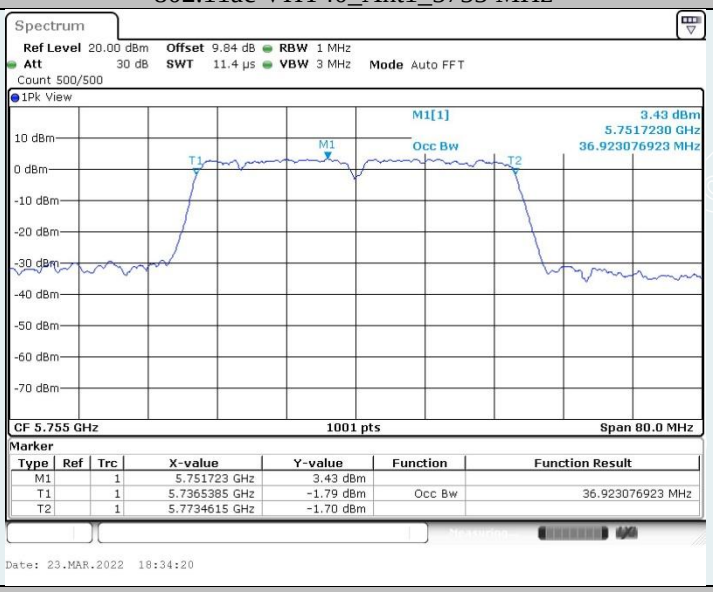

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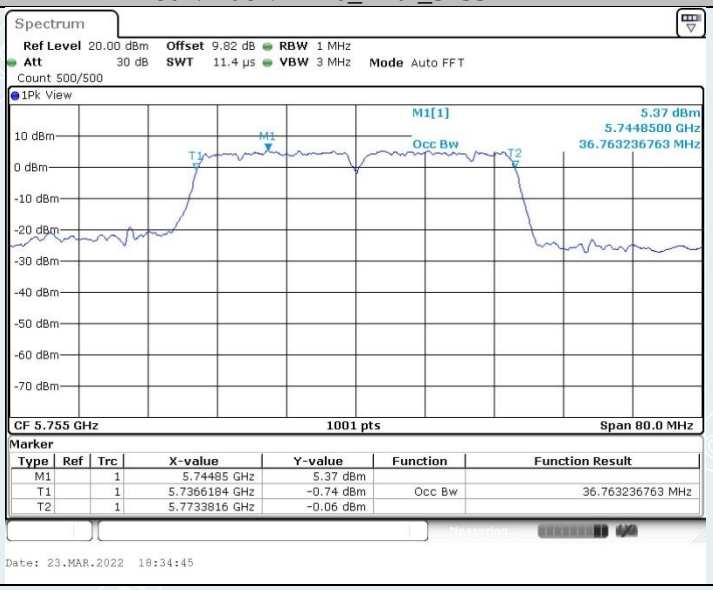
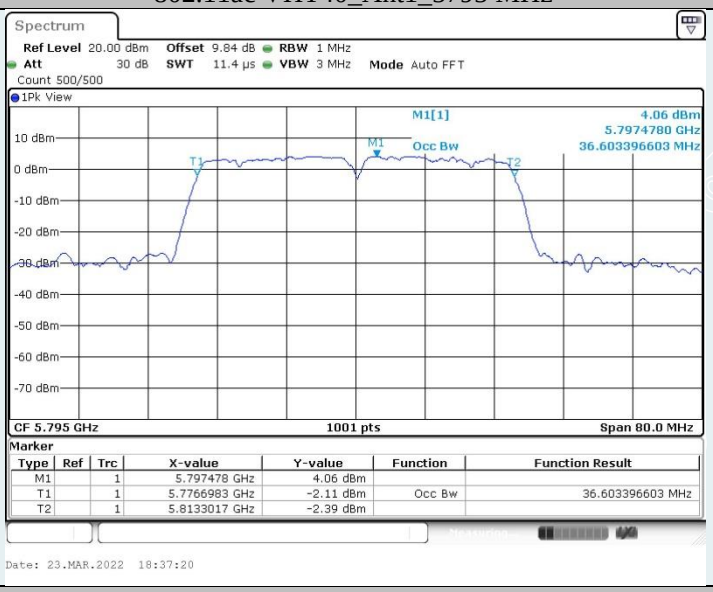
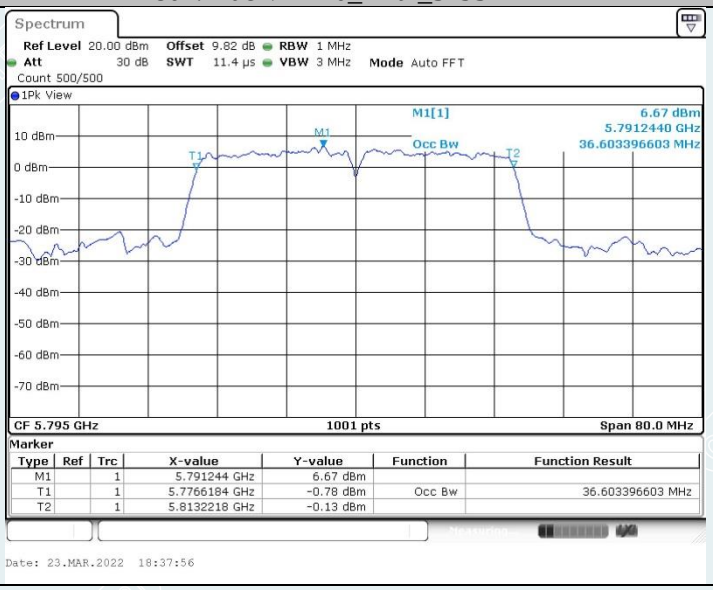


802.11ac VHT40_Ant1_5795 MHz



802.11ac VHT40_Ant2_5795 MHz



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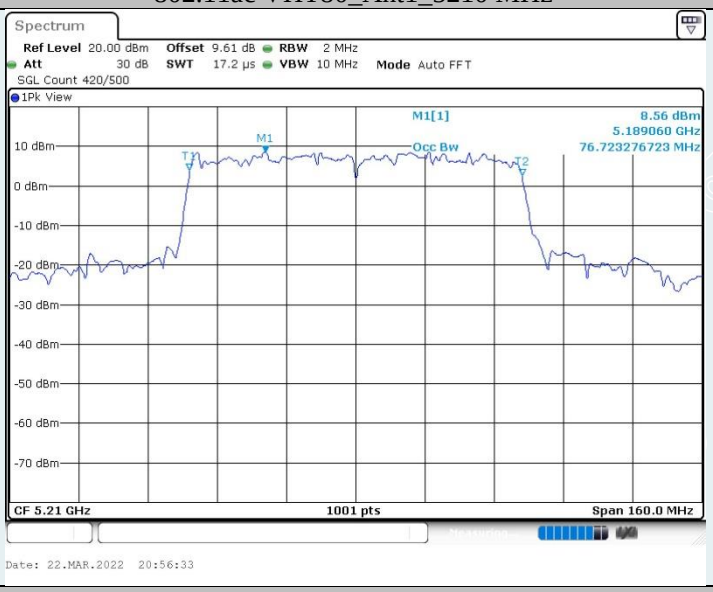

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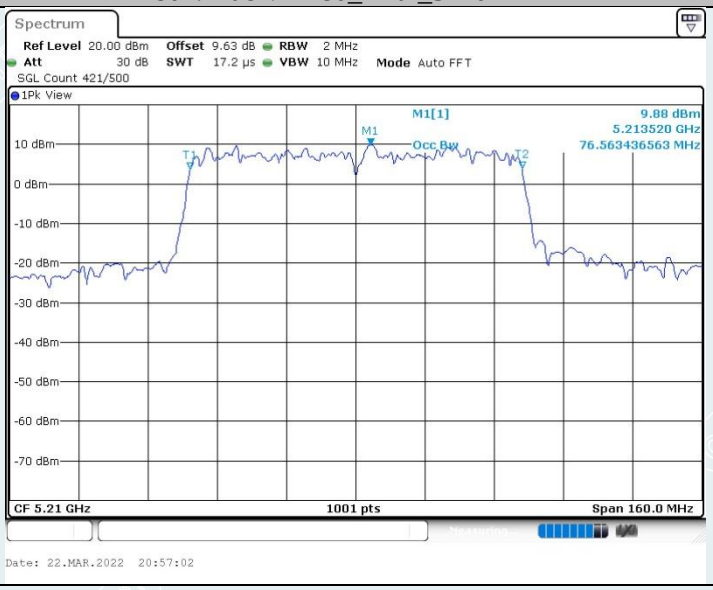
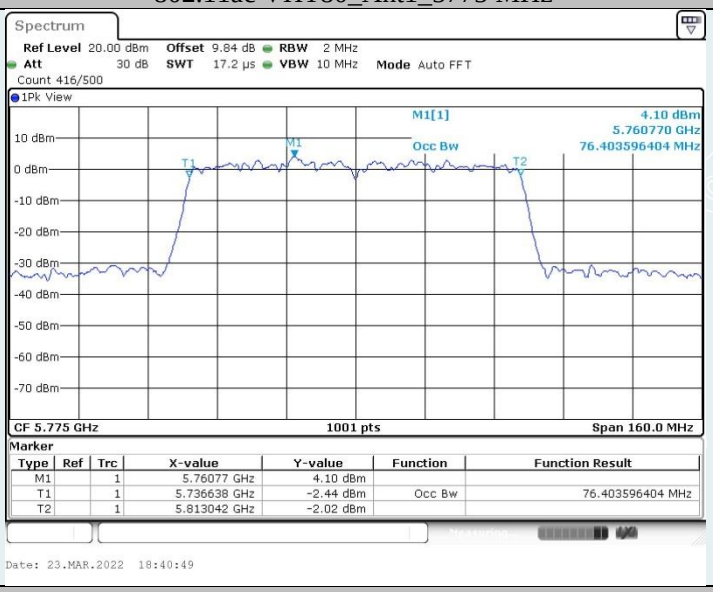
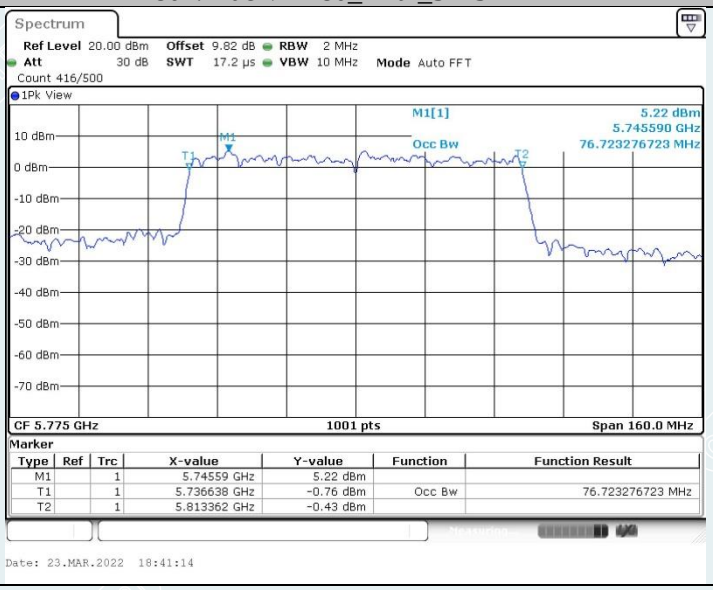


802.11ac VHT80_Ant1_5775 MHz



802.11ac VHT80_Ant2_5775 MHz



9. OUTPUT POWER

9.1. LIMITS

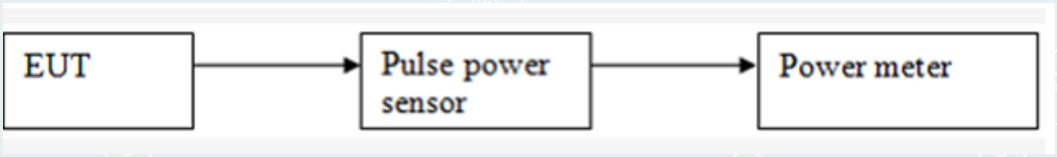
The FCC 15.407(a),The maximum conducted output power should not exceed:

Band	EUT Type	Limit
U-NII-1	Outdoor Access Point	1W(30dBm) (Max. e.i.r.p≦125mW at any elevation angle above 30 degrees as measured from the horizon)
	Indoor Access Point	1W(30dBm)
	Fixed point-to-point Access Point	1W(30dBm)
	Mobile and Portable Client Device	250mW(23.98dBm)
U-NII-3	All Device	1W(30dBm)

9.2. TEST PROCEDURES

1) The RF output of EUT was connected to the broadband average RF power meter by RF cable. The path loss was compensated to the results for each measurement.
2) Set to the maximum power setting and enable the EUT transmit continuously.
3) Measure the conducted output power and record the results in the test report.

9.3. TEST SETUP



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9.4. TEST RESULTS

Environmental Conditions	23.5℃/48%RH	Test Voltage	DC 3.8V
Tested By	Lu Wei	Tested Date	2022-03-24

802.11a:

Band	Frequency [MHz]	AVG Conducted Output Power with Duty Factor (dBm)		Limit[dBm]	Verdict
		Antenna 1	Antenna 2		
U-NII-1	5180	13.82	14.35	≤23.98	PASS
	5200	13.85	14.23	≤23.98	PASS
	5240	14.13	14.19	≤23.98	PASS
U-NII-3	5745	11.94	13.17	≤30	PASS
	5785	12.29	13.26	≤30	PASS
	5825	12.61	13.22	≤30	PASS

802.11n HT20:

Band	Frequency [MHz]	AVG Conducted Output Power with Duty Factor (dBm)			Limit[dBm]	Verdict
		Antenna 1	Antenna 2	total		
U-NII-1	5180	13.72	14.41	17.09	≤23.98	PASS
	5200	13.72	14.21	16.99	≤23.98	PASS
	5240	13.76	14.12	16.96	≤23.98	PASS
U-NII-3	5745	12.05	13.04	15.59	≤30	PASS
	5785	12.32	13.21	15.80	≤30	PASS
	5825	12.57	13.18	15.90	≤30	PASS

802.11n HT40

Band	Frequency [MHz]	AVG Conducted Output Power with Duty Factor (dBm)			Limit[dBm]	Verdict
		Antenna 1	Antenna 2	total		
U-NII-1	5190	10.67	10.90	13.80	≤23.98	PASS
	5230	10.77	10.81	13.80	≤23.98	PASS
U-NII-3	5755	10.97	12.50	14.81	≤30	PASS
	5795	11.66	12.40	15.06	≤30	PASS

802.11ac VHT20:

Band	Frequency [MHz]	AVG Conducted Output Power with Duty Factor (dBm)			Limit[dBm]	Verdict
		Antenna 1	Antenna 2	total		
U-NII-1	5180	13.74	13.99	16.88	≤23.98	PASS
	5200	13.73	13.98	16.87	≤23.98	PASS
	5240	13.81	13.87	16.85	≤23.98	PASS
U-NII-3	5745	12.05	13.03	15.58	≤30	PASS
	5785	12.38	13.12	15.78	≤30	PASS
	5825	12.53	13.05	15.81	≤30	PASS

802.11ac VHT40

Band	Frequency [MHz]	AVG Conducted Output Power with Duty Factor (dBm)			Limit[dBm]	Verdict
		Antenna 1	Antenna 2	total		
U-NII-1	5190	10.67	10.68	13.69	≤23.98	PASS
	5230	10.87	10.65	13.77	≤23.98	PASS
U-NII-3	5755	10.81	12.58	14.79	≤30	PASS
	5795	10.41	12.56	14.63	≤30	PASS

802.11ac VHT80

Band	Frequency [MHz]	AVG Conducted Output Power with Duty Factor (dBm)			Limit[dBm]	Verdict
		Antenna 1	Antenna 2	total		
U-NII-1	5210	8.76	9.52	12.17	≤23.98	PASS
U-NII-3	5775	9.94	11.45	13.77	≤30	PASS

Note:

1. This EUT supports MIMO 2X2, the antenna gains are not equal and any transmit signals are correlated with each other.
2. For power measurements on 802.11 devices, Directional gain = 10 log[($10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20}$)^2 /$N_{ANT}$] dBi.
   The U-NII-1 Directional gain = 10 log[($10^{4.73/20} + 10^{0.59/20}$)^2 /2]=5.91 dBi, ,Directional gain is not greater than 6dBi and the power limit does not need to be reversed.
   The U-NII-3 Directional gain = 10 log[($10^{2.55/20} + 10^{0.38/20}$)^2 /2]=4.54 dBi, Directional gain is not greater than 6dBi and the power limit does not need to be reversed.

10. POWER SPECTRAL DENSITY

10.1. LIMITS

FCC 15.407(a)
The maximum power spectral density should not exceed:

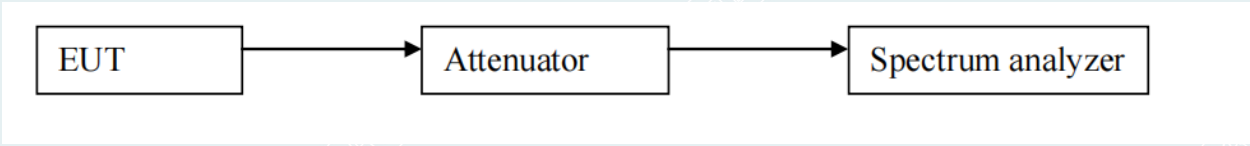
Band	EUT Type	Limit
U-NII-1	Outdoor Access Point	17dBm/MHz
	Indoor Access Point	17dBm/MHz
	Fixed point-to-point Access Point	17dBm/MHz
	Mobile and Portable Client Device	11dBm/MHz
U-NII-3	All Device	30dBm/500kHz

If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

10.2. TEST PROCEDURES

Spectrum Parameters	Setting
RBW	1MHz(For U-NII-1) 500kHz(For U-NII-3)
VBW	3MHz(For U-NII-1) 2MHz(For U-NII-3)
Span	encompass the entire 26 dB EBW or 99% OBW of the signal
Sweep Time	Auto
Number of Sweep Point	≥2×SPAN/RBW
Detector	RMS(power averaging)
Trace Average	≥100 traces

10.3. TEST SETUP



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10.4. TEST RESULTS

Environmental Conditions	23.5℃/48%RH	Test Voltage	DC 3.8V
Tested By	Lu Wei	Tested Date	2022-03-22

U-NII-1:

Test Mode	Antenna	Frequency [MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
802.11a	Ant1	5180	3.43	≤11	PASS
	Ant2	5180	4.03	≤11	PASS
	Ant1	5200	3.4	≤11	PASS
	Ant2	5200	3.76	≤11	PASS
	Ant1	5240	3.85	≤11	PASS
	Ant2	5240	3.55	≤11	PASS
802.11n HT20	Ant1	5180	3.23	≤11	PASS
	Ant2	5180	3.37	≤11	PASS
	total	5180	6.31	≤11	PASS
	Ant1	5200	2.81	≤11	PASS
	Ant2	5200	3.61	≤11	PASS
	total	5200	6.24	≤11	PASS
	Ant1	5240	3.48	≤11	PASS
	Ant2	5240	2.97	≤11	PASS
	total	5240	6.24	≤11	PASS
802.11n HT40	Ant1	5190	-3.37	≤11	PASS
	Ant2	5190	-3.33	≤11	PASS
	total	5190	-0.34	≤11	PASS
	Ant1	5230	-3.28	≤11	PASS
	Ant2	5230	-3.52	≤11	PASS
	total	5230	-0.39	≤11	PASS
802.11ac VHT20	Ant1	5180	3.04	≤11.00	PASS
	Ant2	5180	4.4	≤11.00	PASS
	total	5180	6.78	≤11.00	PASS
	Ant1	5200	3.75	≤11	PASS
	Ant2	5200	2.48	≤11	PASS
	total	5200	6.17	≤11	PASS
	Ant1	5240	3.81	≤11	PASS
	Ant2	5240	2.25	≤11	PASS
	total	5240	6.11	≤11	PASS

802.11ac VHT40	Ant1	5190	-4.01	≤11	PASS
	Ant2	5190	-3.58	≤11	PASS
	total	5190	-0.78	≤11	PASS
	Ant1	5230	-2.22	≤11	PASS
	Ant2	5230	-3.42	≤11	PASS
	total	5230	0.23	≤11	PASS
802.11ac VHT80	Ant1	5210	-2.98	≤11	PASS
	Ant2	5210	-2.07	≤11	PASS
	total	5210	0.51	≤11	PASS

U-NII-3:

Test Mode	Antenna	Frequency [MHz]	Result [dBm/500kHz]	Limit [dBm/500kHz]	Verdict
802.11a	Ant1	5745	-1.73	≤30.00	PASS
	Ant2	5745	-1.21	≤30.00	PASS
	Ant1	5785	-1.5	≤30.00	PASS
	Ant2	5785	-0.8	≤30.00	PASS
	Ant1	5825	-1.15	≤30.00	PASS
	Ant2	5825	-0.68	≤30.00	PASS
802.11n HT20	Ant1	5745	-1.92	≤30.00	PASS
	Ant2	5745	-1.05	≤30.00	PASS
	total	5745	1.55	≤30.00	PASS
	Ant1	5785	-1.23	≤30.00	PASS
	Ant2	5785	-0.99	≤30.00	PASS
	total	5785	1.90	≤30.00	PASS
	Ant1	5825	-1.48	≤30.00	PASS
	Ant2	5825	-1.31	≤30.00	PASS
	total	5825	1.62	≤30.00	PASS
802.11n HT40	Ant1	5755	-7.37	≤30.00	PASS
	Ant2	5755	-5.97	≤30.00	PASS
	total	5755	-3.60	≤30.00	PASS
	Ant1	5795	-6.4	≤30.00	PASS
	Ant2	5795	-5.59	≤30.00	PASS
	total	5795	-2.97	≤30.00	PASS
802.11ac VHT20	Ant1	5745	-2.86	≤30.00	PASS
	Ant2	5745	-0.33	≤30.00	PASS
	total	5745	1.60	≤30.00	PASS
	Ant1	5785	-1.3	≤30.00	PASS
	Ant2	5785	-2.21	≤30.00	PASS
	total	5785	1.28	≤30.00	PASS
	Ant1	5825	-2.4	≤30.00	PASS
	Ant2	5825	-1.43	≤30.00	PASS
	total	5825	1.12	≤30.00	PASS
802.11ac VHT40	Ant1	5755	-7.18	≤30.00	PASS
	Ant2	5755	-4.37	≤30.00	PASS

	total	5755	-2.54	≤30.00	PASS
	Ant1	5795	-6.55	≤30.00	PASS
	Ant2	5795	-6.16	≤30.00	PASS
	total	5795	-3.34	≤30.00	PASS
802.11ac VHT80	Ant1	5775	-11.59	≤30.00	PASS
	Ant2	5775	-7.81	≤30.00	PASS
	total	5775	-6.29	≤30.00	PASS

Note：1. Result already includes duty factor.

2.This EUT supports MIMO 2X2, the antenna gains are not equal and any transmit signals are correlated with each other.

3.For power measurements on 802.11 devices, Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] dBi.

The U-NII-1 Directional gain = 10 log[$(10^{4.73/20} + 10^{0.59/20})^2$ /2]=5.91 dBi, ,Directional gain is not greater than 6dBi and the power limit does not need to be reversed.

The U-NII-3 Directional gain = 10 log[$(10^{2.55/20} + 10^{0.38/20})^2$ /2]=4.54 dBi, Directional gain is not greater than 6dBi and the power limit does not need to be reversed.