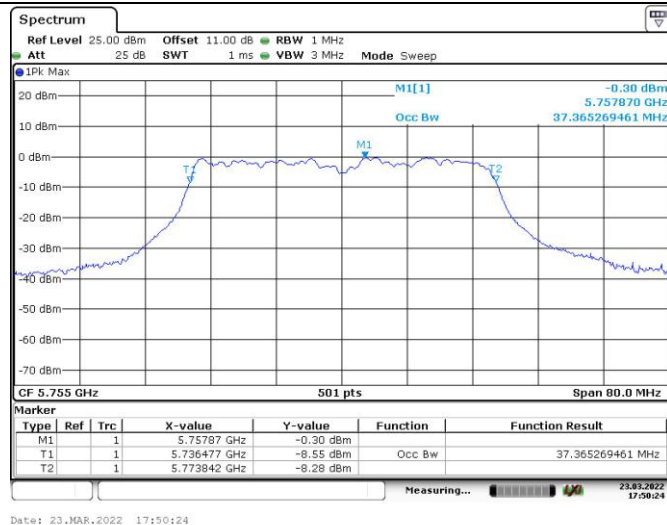
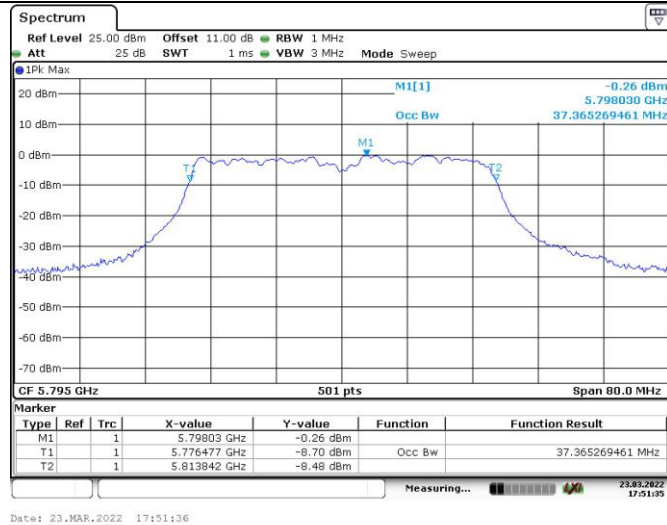
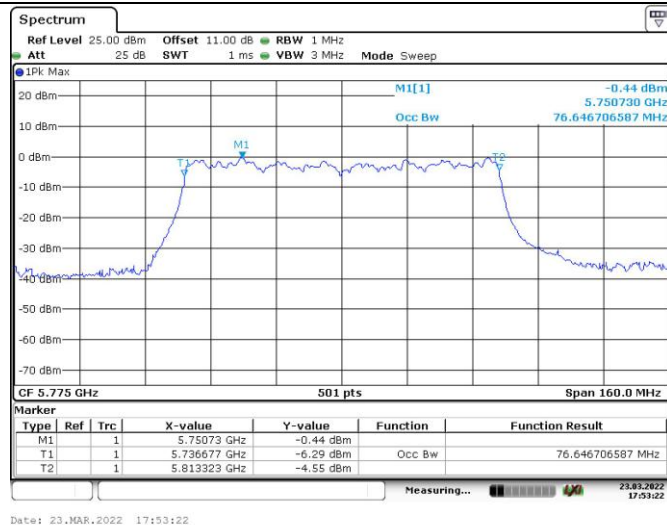
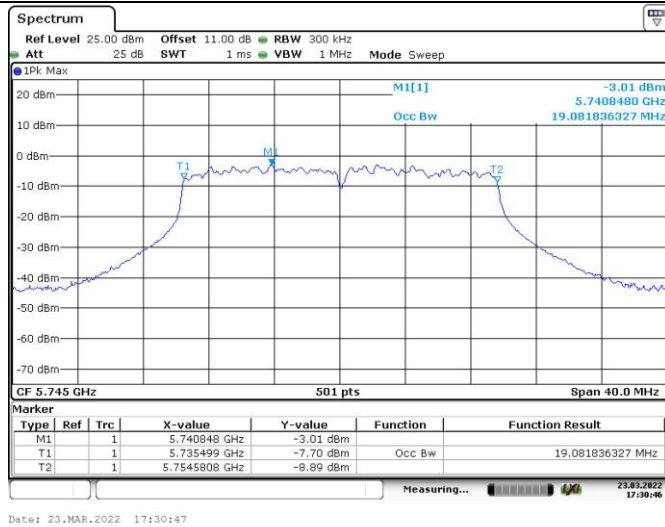
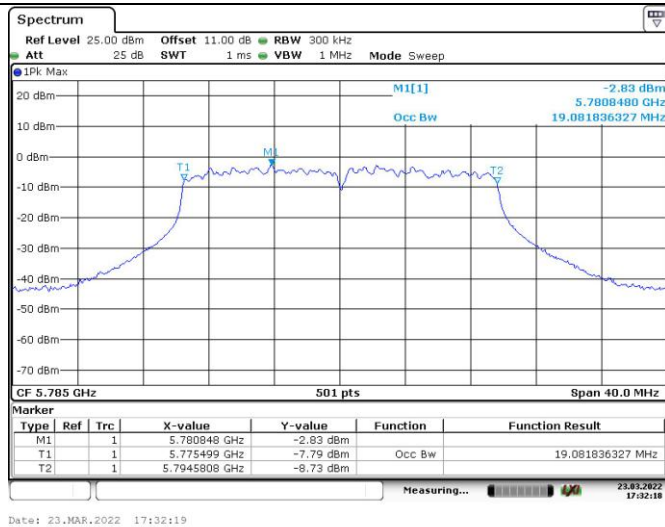
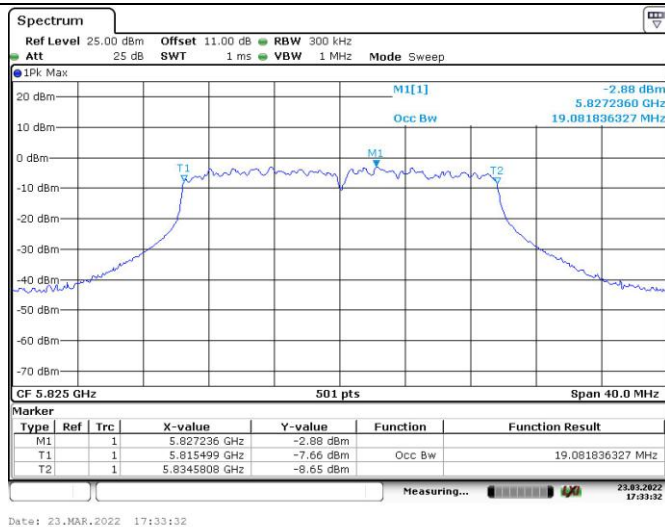


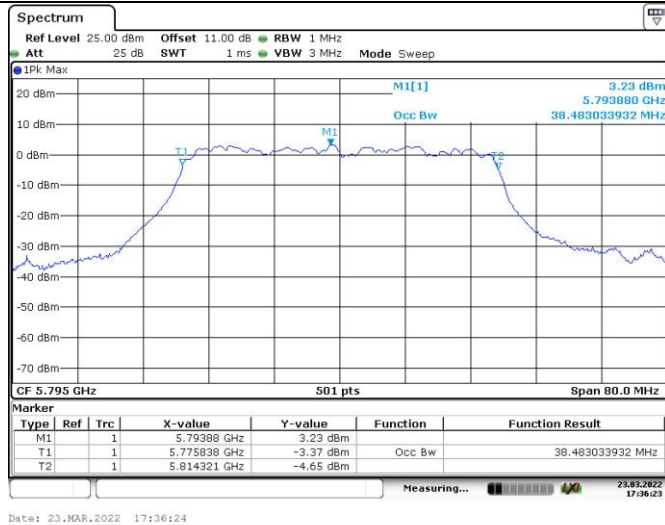
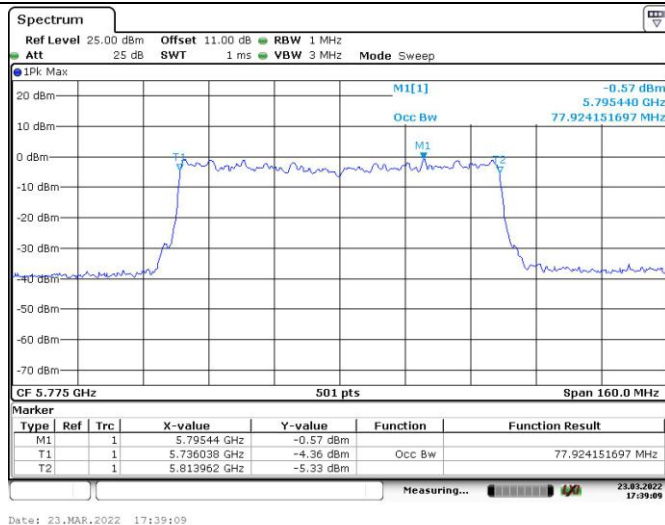
99% Occupied Bandwidth

802.11ac vht40
Lowest Channel802.11ac vht40
Highest Channel802.11ac vht80
Middle Channel

99% Occupied Bandwidth

802.11ax hew20
Lowest Channel802.11ax hew20
Middle Channel802.11ax hew20
Highest Channel

99% Occupied Bandwidth

802.11ax hew40
Lowest Channel802.11ax hew40
Highest Channel802.11ax hew80
Middle Channel

4.4 Maximum Conducted Output Power:

Serial Number:	CR22010043-RF-S1	Test Date:	2022-03-22
Test Site:	RF	Test Mode:	Transmitting
Tester:	Carl Liang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.5	Relative Humidity: (%)	50	ATM Pressure: (kPa)	100.5
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	USB Wideband Power Sensor	U2021XA	MY54080015	2021-07-22	2022-07-21
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

5150-5250 MHz:

Mode	Frequency (MHz)	Conducted Average Output Power (dBm)			Limit For Non-beamforming (dBm)	Limit For Beamforming (dBm)
		Chain 0	Chain 1	Total		
802.11a	5180	10.42	8.67	/	≤24	/
	5200	10.41	8.59	/	≤24	/
	5240	10.38	8.05	/	≤24	/
802.11n ht20	5180	10.14	8.04	12.23	≤24	≤23.7
	5200	10.23	7.68	12.15	≤24	≤23.7
	5240	9.84	7.55	11.85	≤24	≤23.7
802.11n ht40	5190	10.36	7.98	12.34	≤24	≤23.7
	5230	10.31	7.72	12.22	≤24	≤23.7
802.11ac vht20	5180	9.92	7.92	12.04	≤24	≤23.7
	5200	9.93	7.51	11.90	≤24	≤23.7
	5240	9.84	7.73	11.92	≤24	≤23.7
802.11ac vht40	5190	10.11	7.76	12.10	≤24	≤23.7
	5230	9.99	7.9	12.08	≤24	≤23.7
802.11ac vht80	5210	9.91	7.51	11.88	≤24	≤23.7
802.11ax hew20	5180	9.93	7.74	11.98	≤24	≤23.7
	5200	10.26	7.72	12.18	≤24	≤23.7
	5240	10.24	7.87	12.23	≤24	≤23.7
802.11ax hew40	5190	10.15	7.11	11.90	≤24	≤23.7
	5230	10.32	7.73	12.23	≤24	≤23.7
802.11ax hew80	5210	9.87	7.99	12.04	≤24	≤23.7

Note:

The device is a Client unit.

The maximum antenna gain is 3.3dBi in 5GHz band. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

So:

For Non-beamforming mode:

Directional gain = 3.3dBi

For Beamforming mode:

Directional gain = 3.3+3 = 6.3 dBi

5725-5850 MHz:

Mode	Frequency (MHz)	Conducted Average Output Power (dBm)			Limit For Non-beamforming (dBm)	Limit For Beamforming (dBm)
		Chain 0	Chain 1	Total		
802.11a	5745	7.02	7.91	/	≤30	/
	5785	7.01	8.22	/	≤30	/
	5825	7.11	8.25	/	≤30	/
802.11n ht20	5745	6.56	7.67	10.16	≤30	≤29.7
	5785	6.59	7.61	10.14	≤30	≤29.7
	5825	6.53	7.62	10.12	≤30	≤29.7
802.11n ht40	5755	6.84	7.83	10.37	≤30	≤29.7
	5795	6.88	7.91	10.44	≤30	≤29.7
802.11ac vht20	5745	6.23	7.17	9.74	≤30	≤29.7
	5785	6.55	7.63	10.13	≤30	≤29.7
	5825	6.91	7.62	10.29	≤30	≤29.7
802.11ac vht40	5755	6.93	7.36	10.16	≤30	≤29.7
	5795	6.76	7.62	10.22	≤30	≤29.7
802.11ac vht80	5775	6.79	6.93	9.87	≤30	≤29.7
802.11ax hew20	5745	6.57	7.21	9.91	≤30	≤29.7
	5785	6.38	7.47	9.97	≤30	≤29.7
	5825	6.48	7.49	10.02	≤30	≤29.7
802.11ax hew40	5755	6.47	7.61	10.09	≤30	≤29.7
	5795	6.61	7.66	10.18	≤30	≤29.7
802.11ax hew80	5775	6.12	7.71	10.00	≤30	≤29.7

Note:

The maximum antenna gain is 3.3dBi in 5GHz band. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

So:

For Non-beamforming mode:

Directional gain = 3.3dBi

For Beamforming mode:

Directional gain = 3.3+3 = 6.3 dBi

4.5 Maximum power spectral density:

Serial Number:	CR22010043-RF-S1	Test Date:	2022-03-23
Test Site:	RF	Test Mode:	Transmitting
Tester:	Carl Liang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	18.5	Relative Humidity: (%)	53	ATM Pressure: (kPa)	101.1
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2021-10-10	2022-10-09
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

5150-5250 MHz:

Test Modes	Test Frequency (MHz)	Maximum Power Spectral Density (dBm/MHz)			
		Chain 0	Chain 1	Total	Limit
802.11a	5180	-0.81	-2.78	/	≤11.00
	5200	-0.89	-2.87	/	≤11.00
	5240	-1.16	-2.83	/	≤11.00
802.11n ht20	5180	-1.26	-3.82	0.66	≤7.70
	5200	-1.33	-3.78	0.63	≤7.70
	5240	-1.47	-3.38	0.69	≤7.70
802.11n ht40	5190	-4.02	-6.80	-2.18	≤7.70
	5230	-4.14	-6.74	-2.24	≤7.70
802.11ac vht20	5180	-0.01	-0.87	2.59	≤7.70
	5200	-0.04	-1.16	2.45	≤7.70
	5240	-0.31	-0.56	2.58	≤7.70
802.11ac vht40	5190	-2.13	-2.65	0.63	≤7.70
	5230	-2.25	-2.10	0.84	≤7.70
802.11ac vht80	5210	-4.34	-3.72	-1.01	≤7.70
802.11ax vht20	5180	-0.30	-1.25	2.26	≤7.70
	5200	0.09	-0.94	2.62	≤7.70
	5240	-0.20	-0.36	2.73	≤7.70
802.11ax vht40	5190	-2.00	-1.81	1.11	≤7.70
	5230	-2.09	-2.67	0.64	≤7.70
802.11ax vht80	5210	-5.48	-4.50	-1.95	≤7.70

Note:

The maximum antenna gain is 3.3 dBi. And beamforming gain is 3dBi. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

$$\text{Array Gain} = 10 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB.}$$

So:

Directional gain = $G_{\text{ANT}} + \text{Array Gain} = 3.3 + 10 \cdot \log(2/1) = 6.3 \text{ dBi}$ for Non-beamforming mode

Directional gain = $G_{\text{ANT}} + \text{Array Gain} = 3.3 + 3 + 10 \cdot \log(2/1) = 9.3 \text{ dBi}$ for Beamforming mode

The worst limit Beamforming mode was used in the table.

Method SA-3 in KDB 789033 D02 General UNII Test Procedures New Rules v02r01 was used for PSD test.

5725-5850 MHz:

Test Modes	Test Frequency (MHz)	Reading (dBm/300kHz)		Maximum Power Spectral Density (dBm/500kHz)			
		Chain 0	Chain 1	Chain 0	Chain 1	Total	Limit
802.11a	5745	-7.01	-5.62	-4.79	-3.4	/	≤30.00
	5785	-6.72	-4.89	-4.5	-2.67	/	≤30.00
	5825	-6.74	-5.34	-4.52	-3.12	/	≤30.00
802.11n ht20	5745	-6.90	-5.96	-4.68	-3.74	-1.17	≤26.70
	5785	-6.82	-8.27	-4.6	-6.05	-2.25	≤26.70
	5825	-6.77	-9.45	-4.55	-7.23	-2.68	≤26.70
802.11n ht40	5755	-9.83	-11.40	-7.61	-9.18	-5.31	≤26.70
	5795	-9.86	-12.83	-7.64	-10.61	-5.87	≤26.70
802.11ac vht20	5745	-5.67	-7.15	-3.45	-4.93	-1.12	≤26.70
	5785	-5.67	-8.46	-3.45	-6.24	-1.61	≤26.70
	5825	-5.63	-9.81	-3.41	-7.59	-2.01	≤26.70
802.11ac vht40	5755	-10.21	-11.06	-7.99	-8.84	-5.38	≤26.70
	5795	-9.95	-12.17	-7.73	-9.95	-5.69	≤26.70
802.11ac vht80	5775	-10.63	-11.46	-8.41	-9.24	-5.79	≤26.70
802.11ax vht20	5745	-7.13	-6.81	-4.91	-4.59	-1.74	≤26.70
	5785	-6.98	-4.95	-4.76	-2.73	-0.62	≤26.70
	5825	-6.87	-5.06	-4.65	-2.84	-0.64	≤26.70
802.11ax vht40	5755	-7.00	-5.15	-4.78	-2.93	-0.75	≤26.70
	5795	-6.92	-10.77	-4.7	-8.55	-3.20	≤26.70
802.11ax vht80	5775	-11.48	-13.93	-9.26	-11.71	-7.30	≤26.70

Note:

The maximum antenna gain is 3.3 dBi. And beamforming gain is 3dBi. The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

$$\text{Array Gain} = 10 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dB.}$$

So:

Directional gain = $G_{\text{ANT}} + \text{Array Gain} = 3.3 + 10 \cdot \log(2/1) = 6.3 \text{ dBi}$ for Non-beamforming mode

Directional gain = $G_{\text{ANT}} + \text{Array Gain} = 3.3 + 3 + 10 \cdot \log(2/1) = 9.3 \text{ dBi}$ for Beamforming mode

The worst limit Beamforming mode was used in the table.

Method SA-3 in KDB 789033 D02 General UNII Test Procedures New Rules v02r01 was used for PSD test.

If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log(500 \text{ kHz} / \text{RBW})$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement

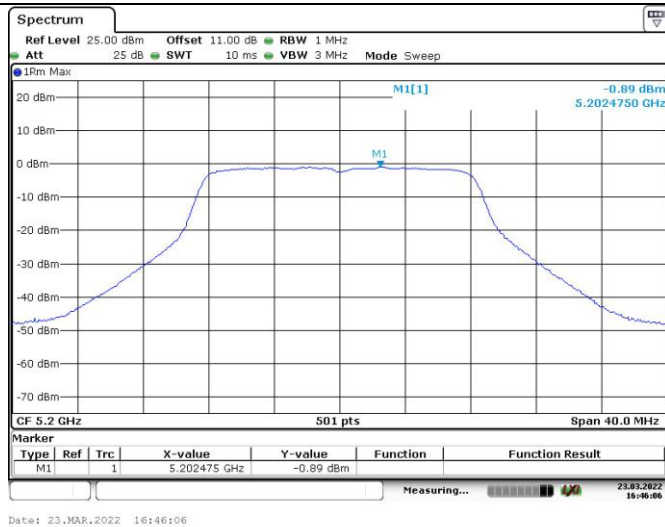
5150-5250MHz:
Chain 0:

Maximum power spectral density

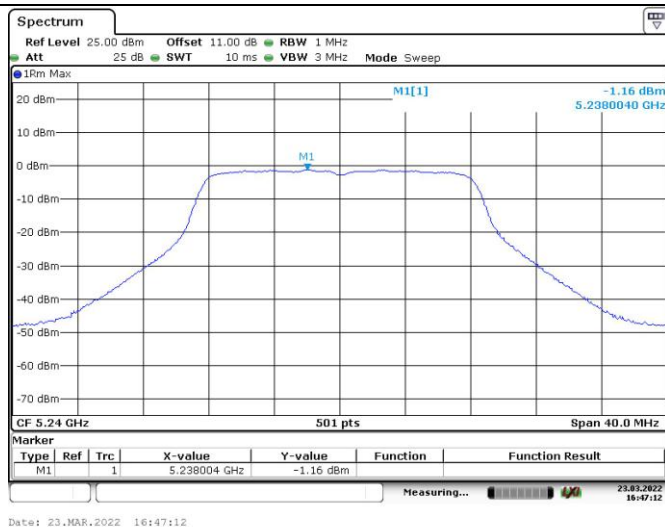
802.11a
Lowest Channel



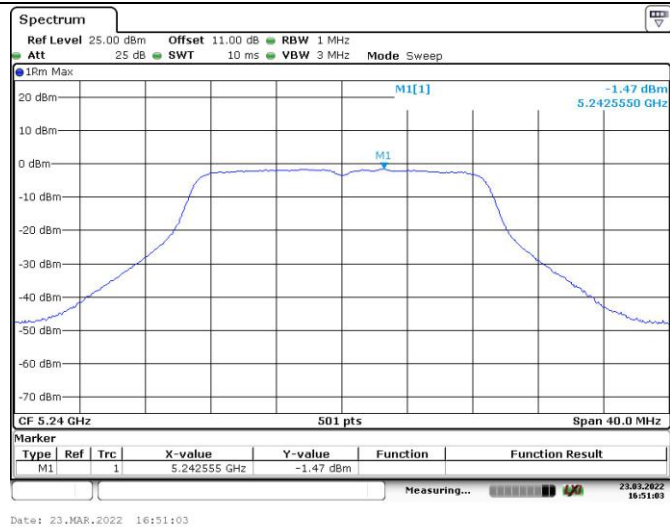
802.11a
Middle Channel



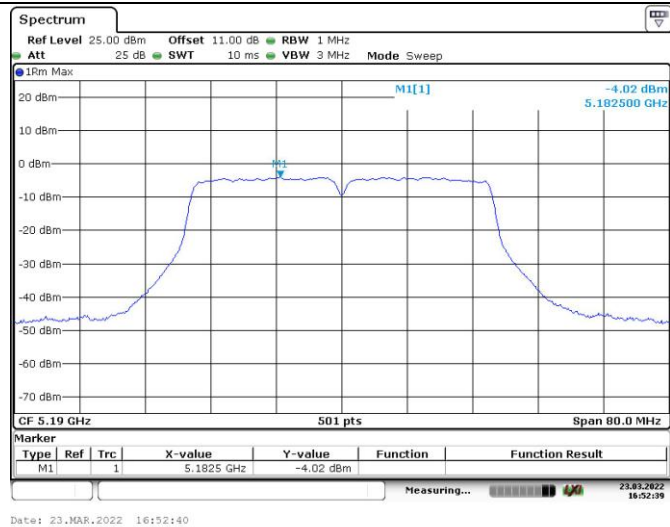
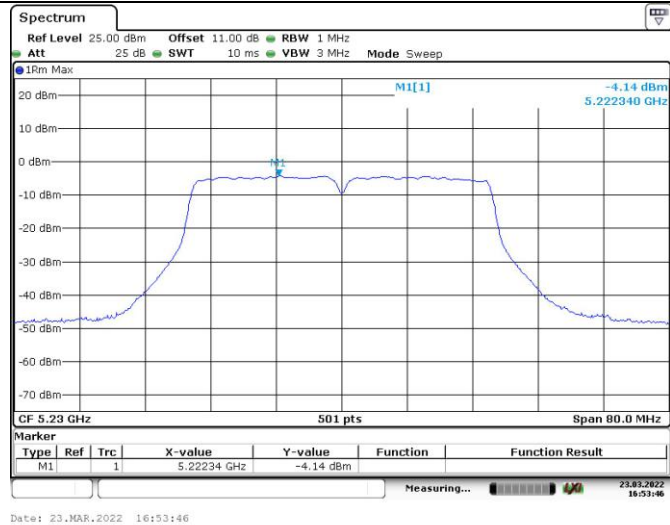
802.11a
Highest Channel



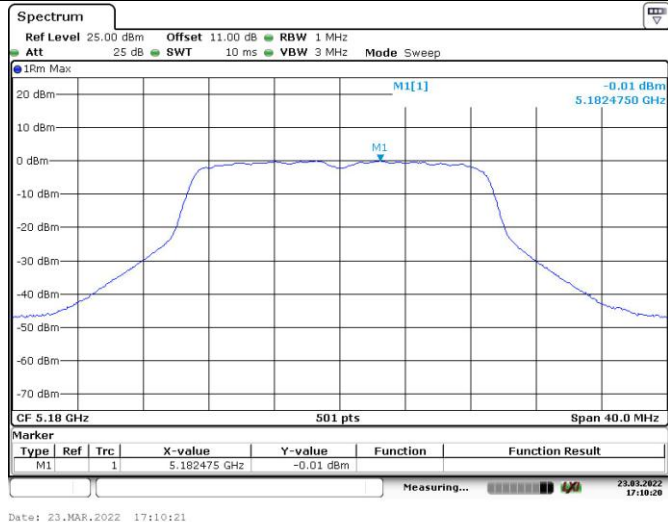
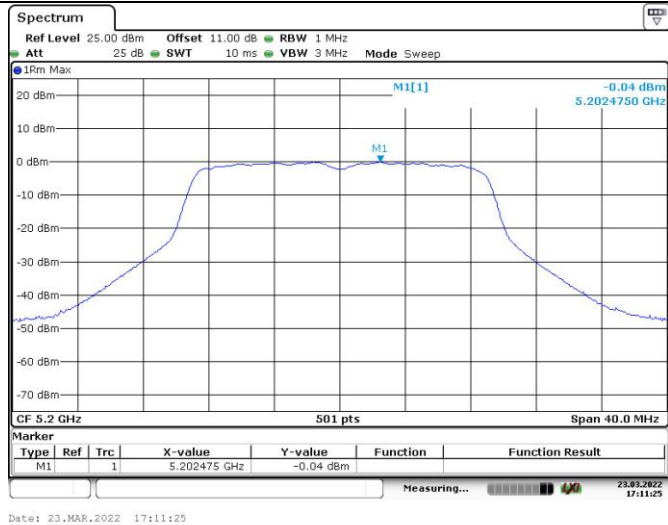
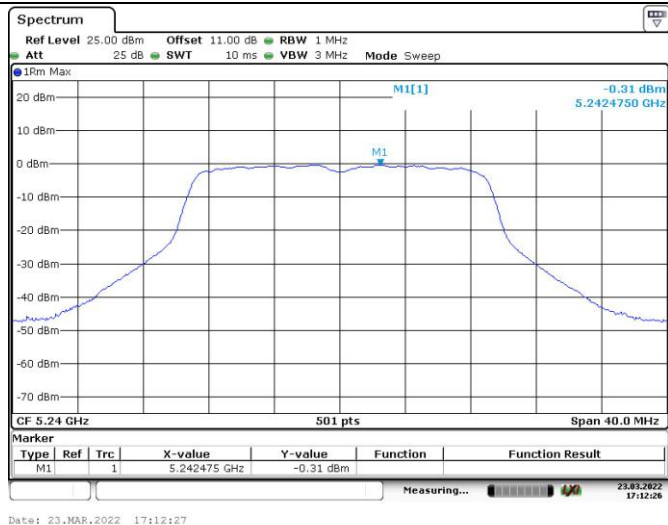
Maximum power spectral density

802.11n ht20
Lowest Channel802.11n ht20
Middle Channel802.11n ht20
Highest Channel

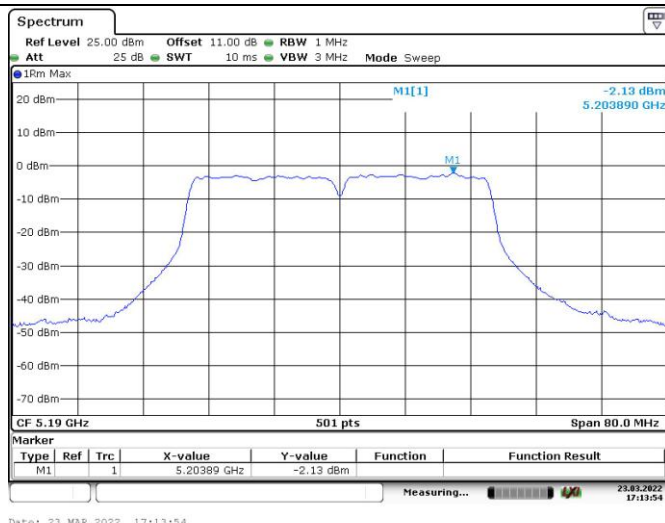
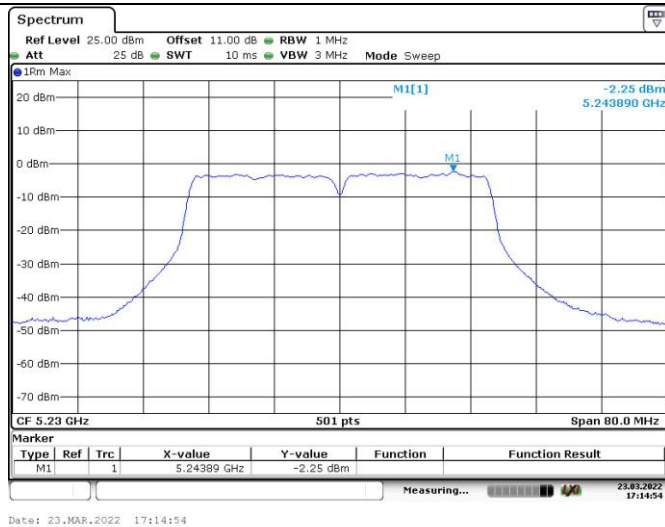
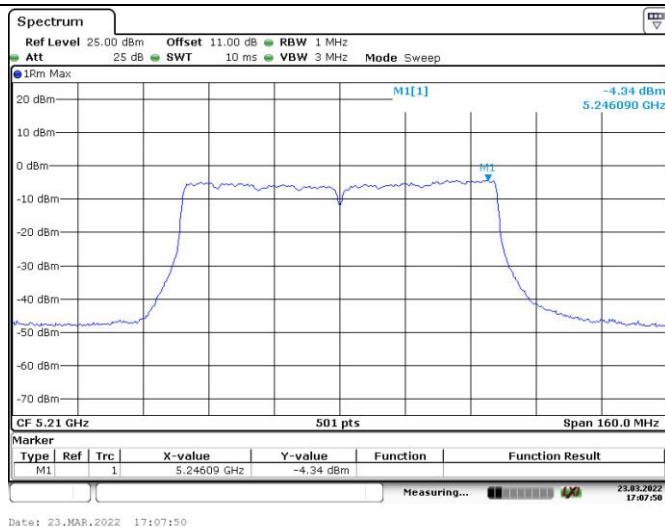
Maximum power spectral density

802.11n ht40
Lowest Channel802.11n ht40
Highest Channel

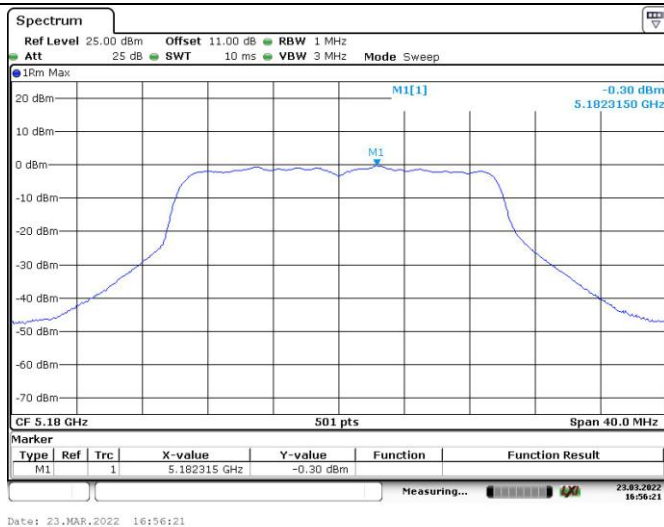
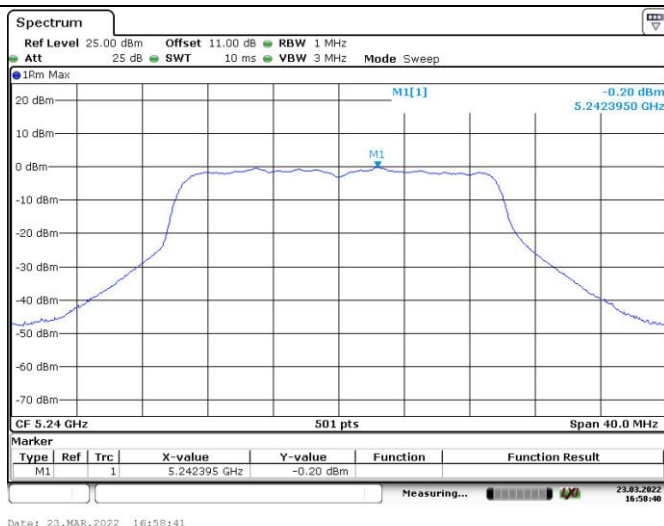
Maximum power spectral density

802.11ac vht20
Lowest Channel802.11ac vht20
Middle Channel802.11ac vht20
Highest Channel

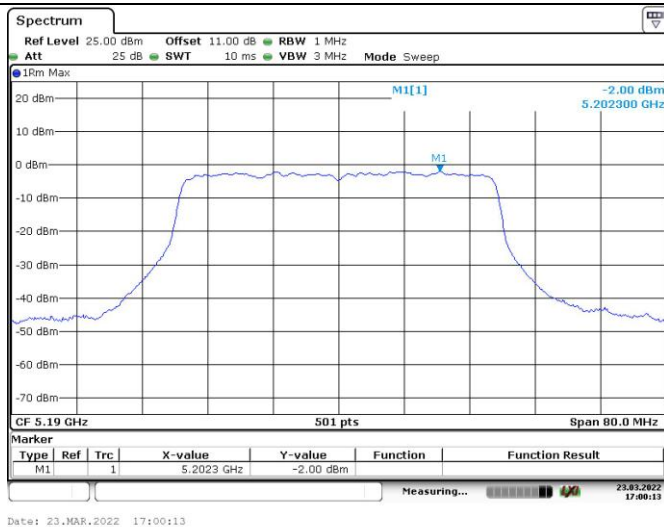
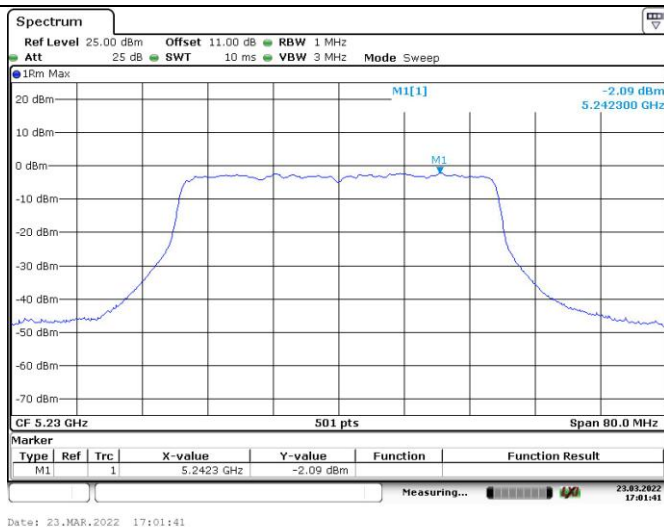
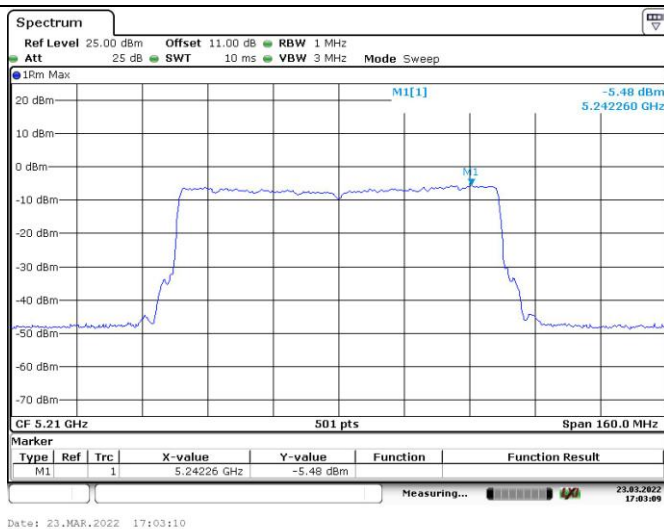
Maximum power spectral density

802.11ac vht40
Lowest Channel802.11ac vht40
Highest Channel802.11ac vht80
Middle Channel

Maximum power spectral density

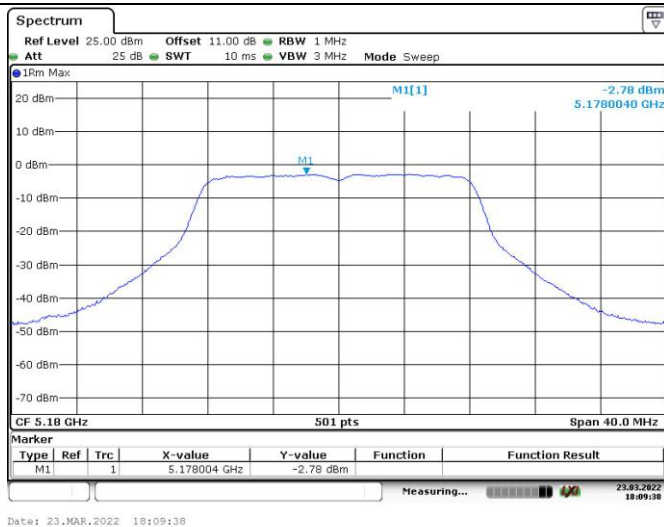
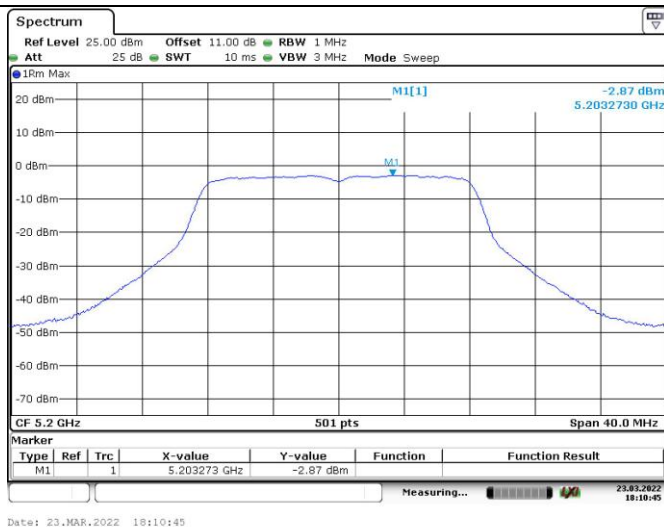
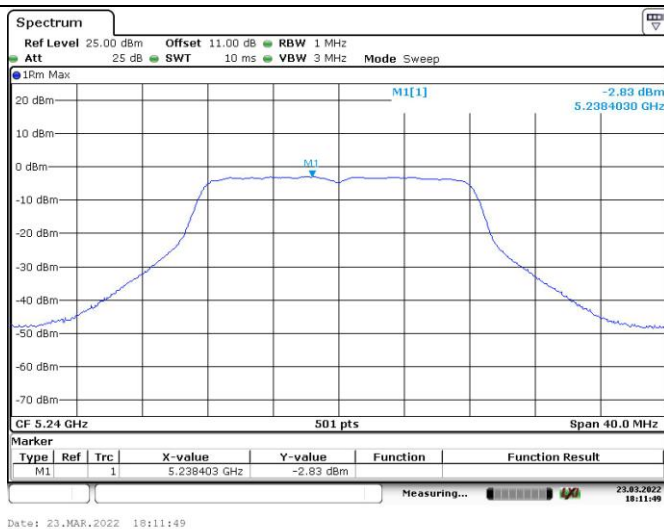
802.11ax hew20
Lowest Channel802.11ax hew20
Middle Channel802.11ax hew20
Highest Channel

Maximum power spectral density

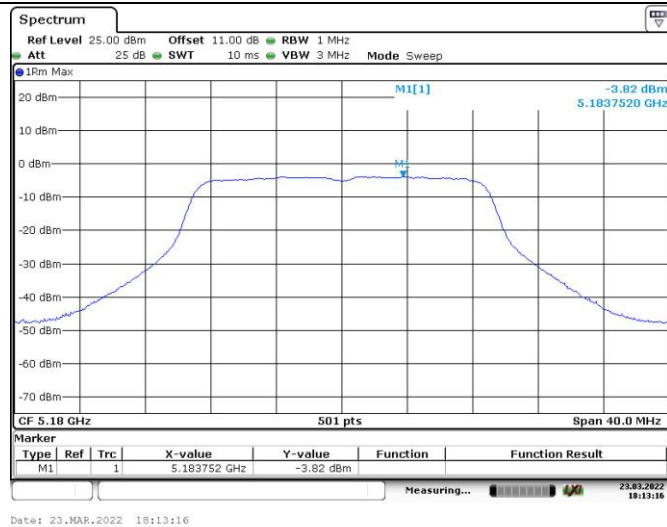
802.11ax hew40
Lowest Channel802.11ax hew40
Highest Channel802.11ax hew80
Middle Channel

Chain 1:

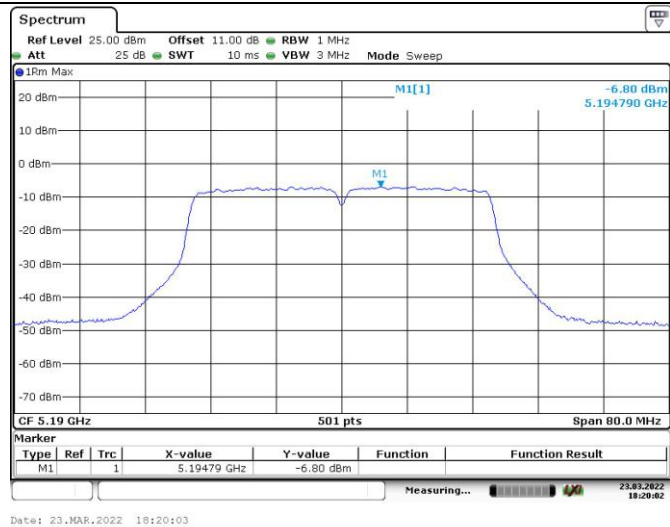
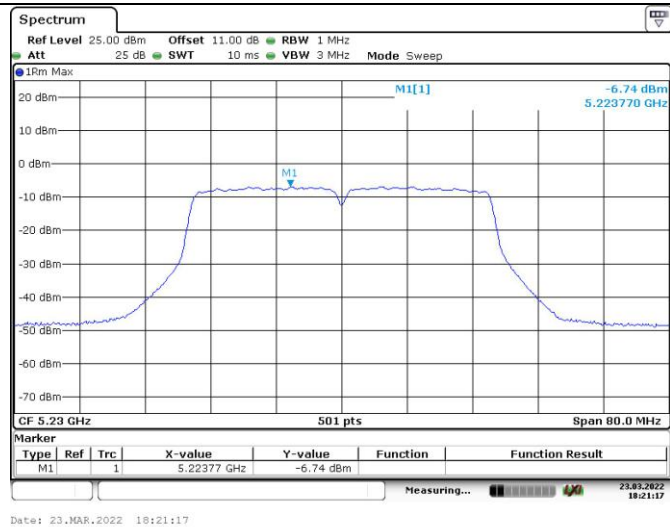
Maximum power spectral density

802.11a
Lowest Channel802.11a
Middle Channel802.11a
Highest Channel

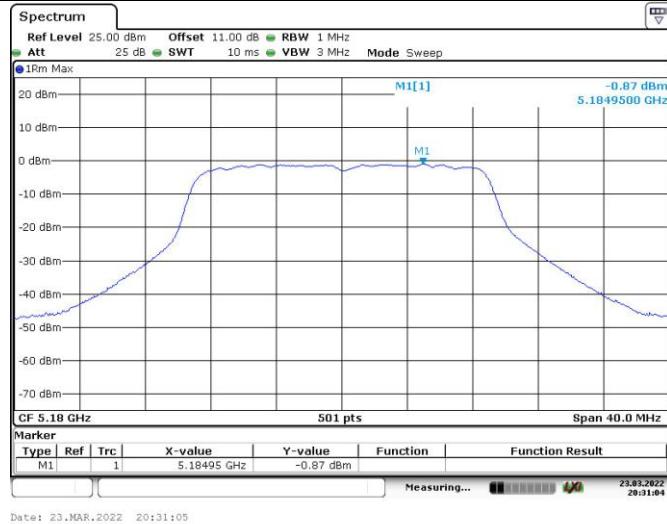
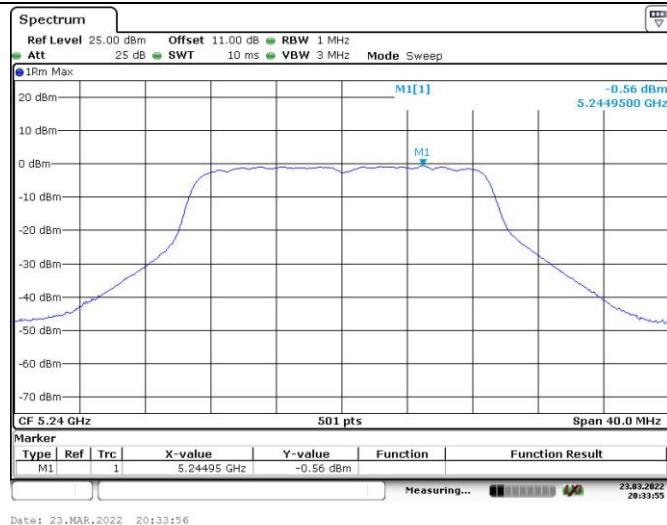
Maximum power spectral density

802.11n ht20
Lowest Channel802.11n ht20
Middle Channel802.11n ht20
Highest Channel

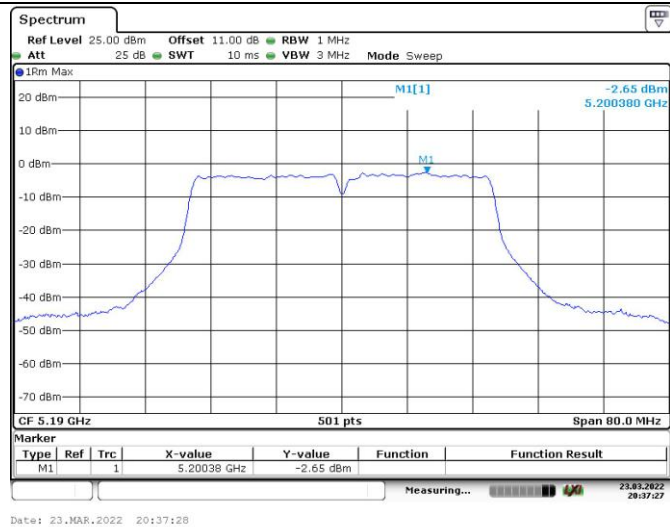
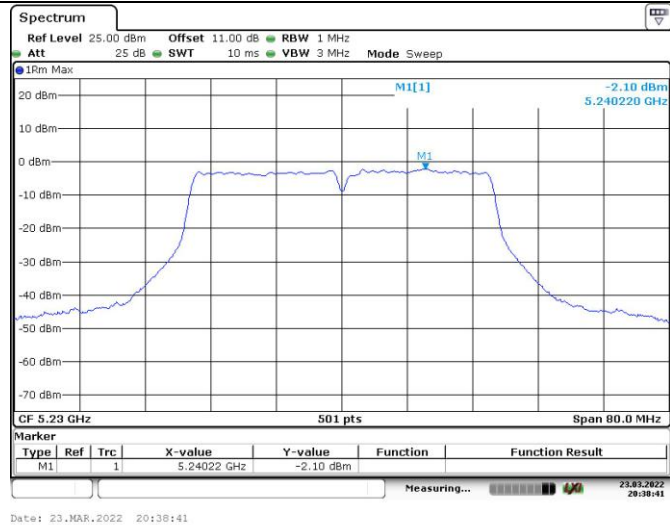
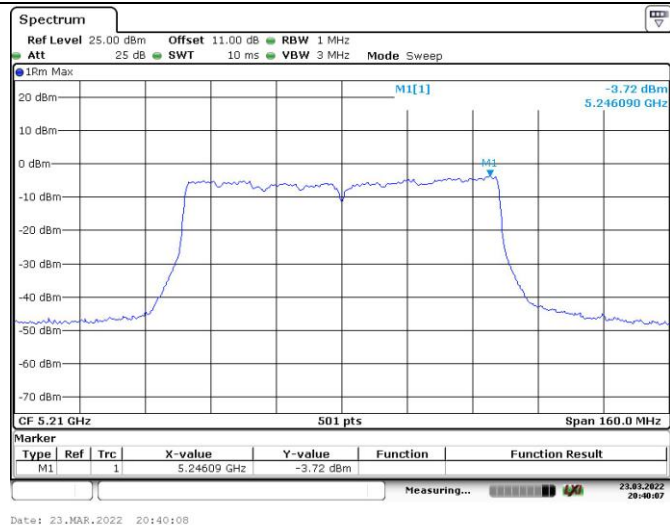
Maximum power spectral density

802.11n ht40
Lowest Channel802.11n ht40
Highest Channel

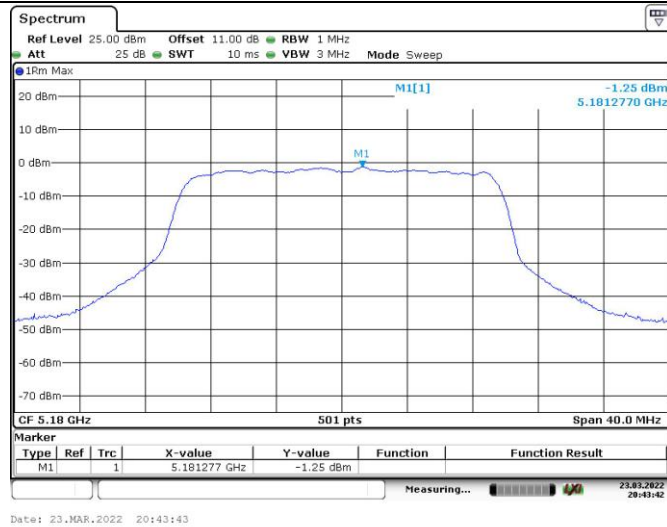
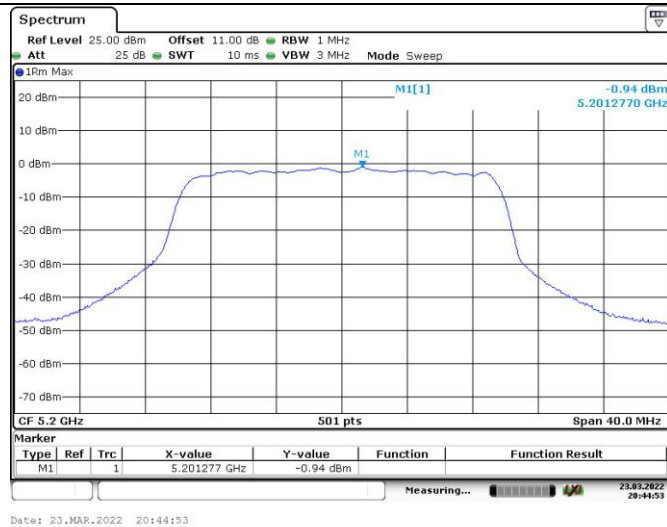
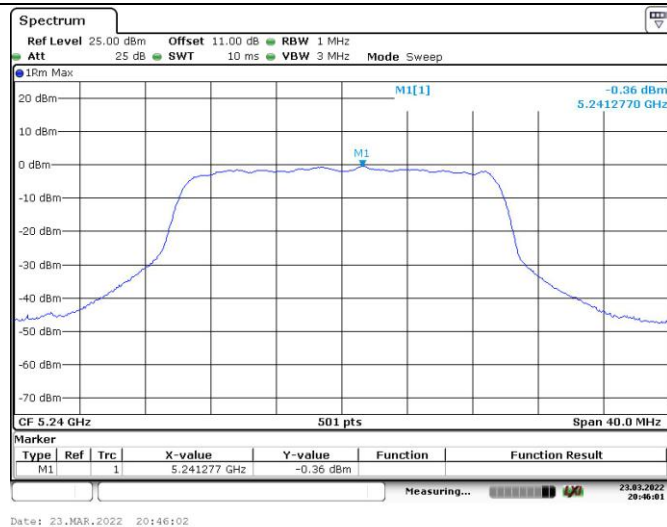
Maximum power spectral density

802.11ac vht20
Lowest Channel802.11ac vht20
Middle Channel802.11ac vht20
Highest Channel

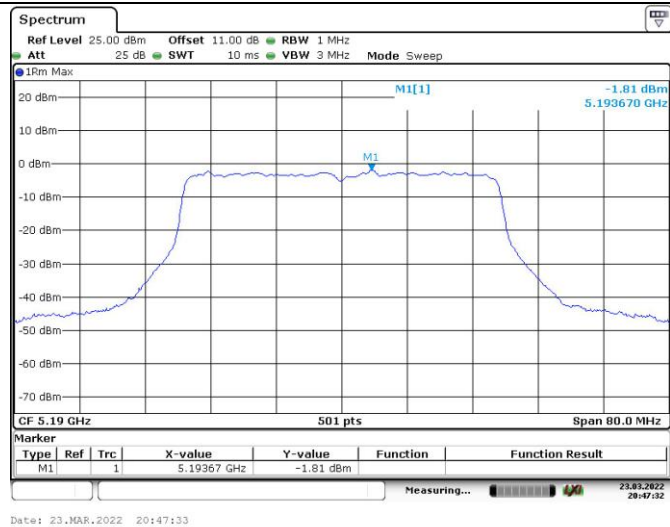
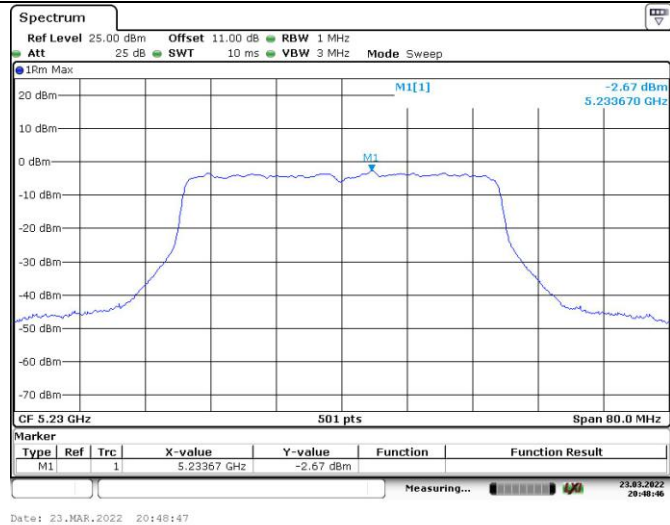
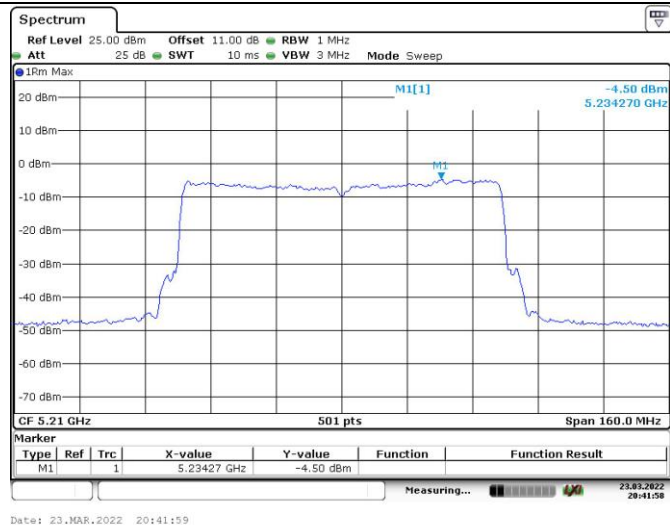
Maximum power spectral density

802.11ac vht40
Lowest Channel802.11ac vht40
Highest Channel802.11ac vht80
Middle Channel

Maximum power spectral density

802.11ax hew20
Lowest Channel802.11ax hew20
Middle Channel802.11ax hew20
Highest Channel

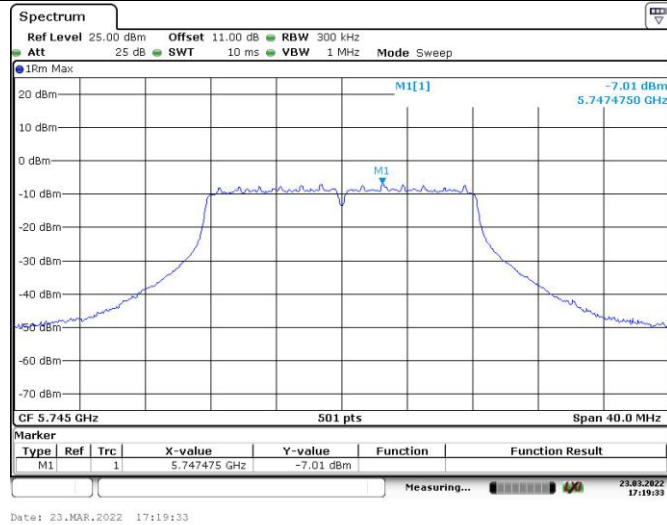
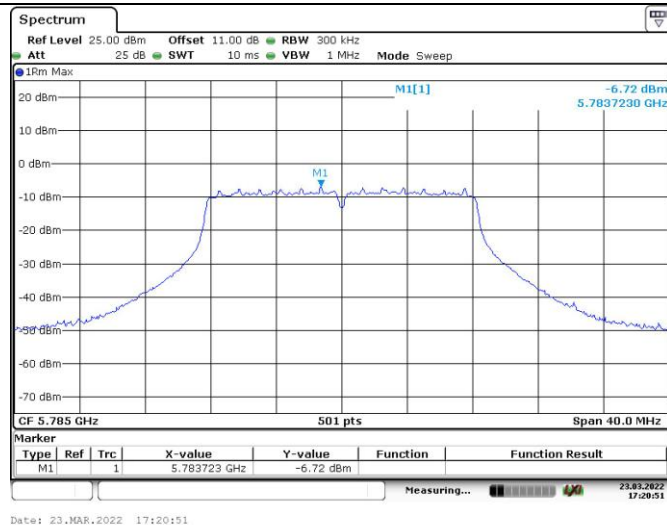
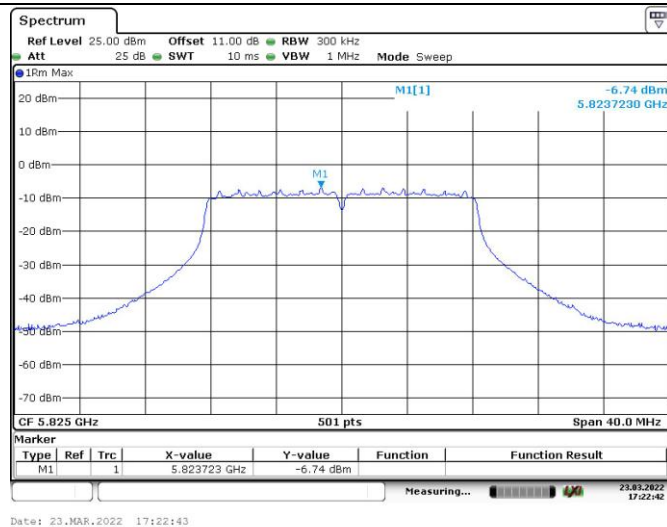
Maximum power spectral density

802.11ax hew40
Lowest Channel802.11ax hew40
Highest Channel802.11ax hew80
Middle Channel

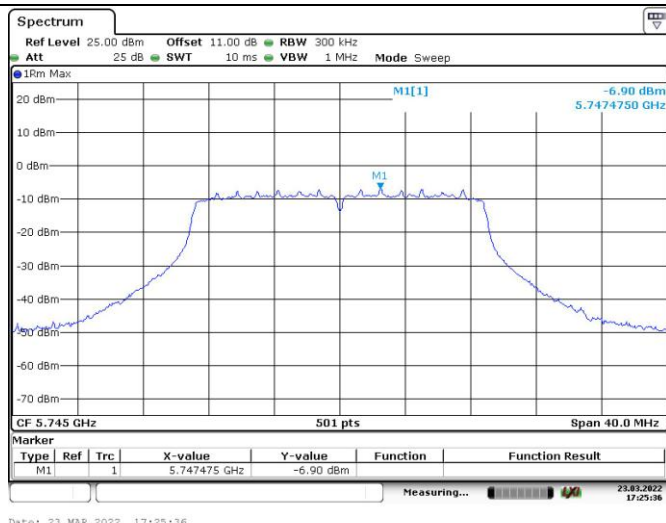
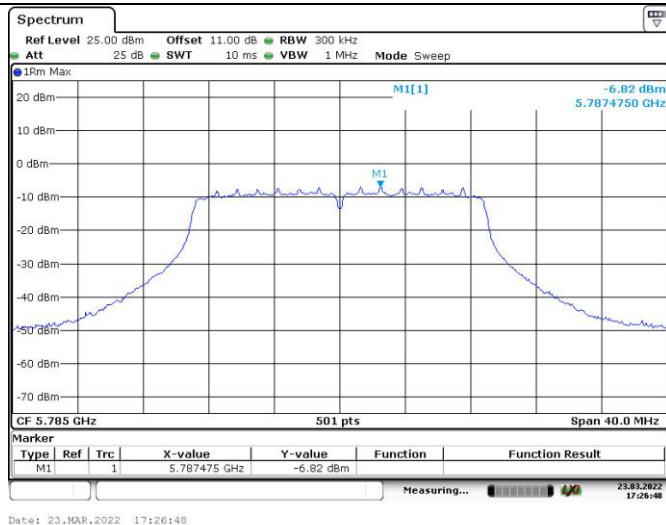
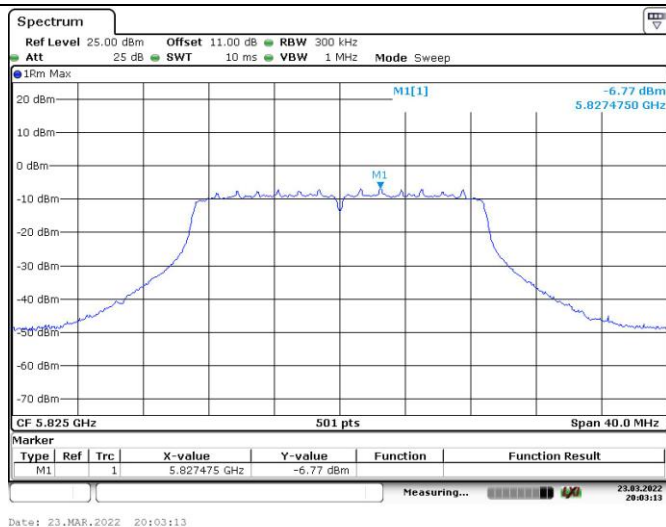
5725-5850MHz

Chain 0:

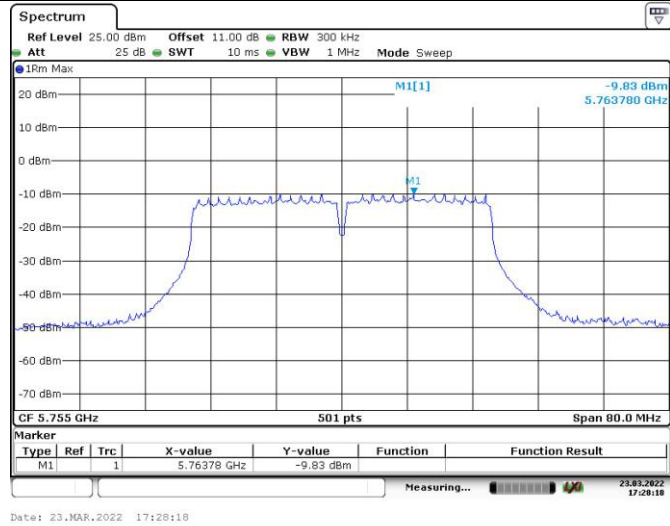
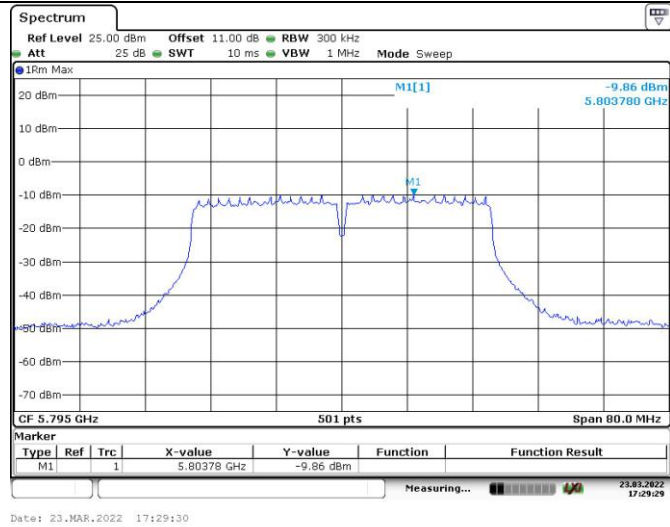
Maximum power spectral density

802.11a
Lowest Channel802.11a
Middle Channel802.11a
Highest Channel

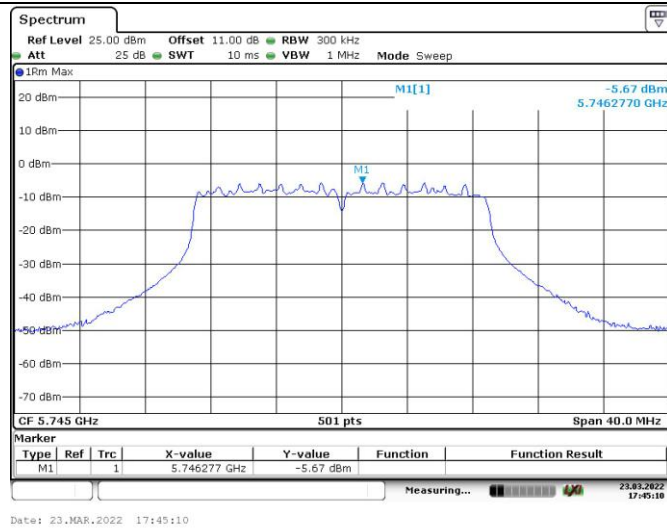
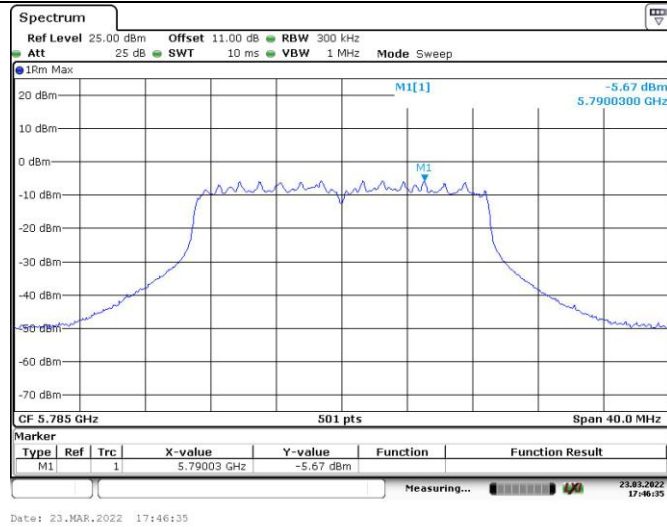
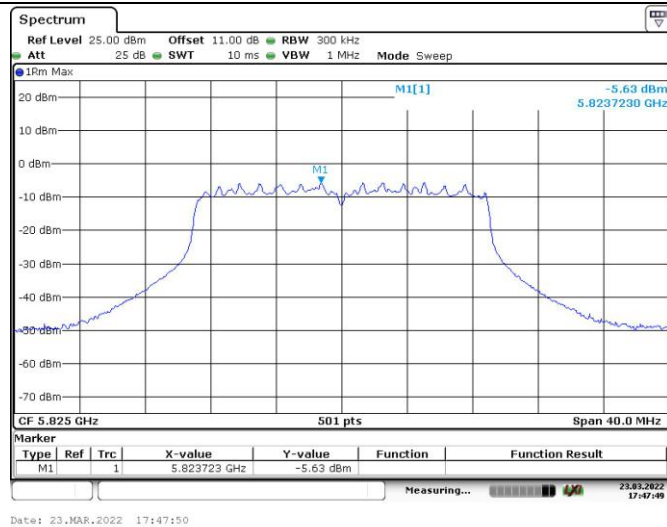
Maximum power spectral density

802.11n ht20
Lowest Channel802.11n ht20
Middle Channel802.11n ht20
Highest Channel

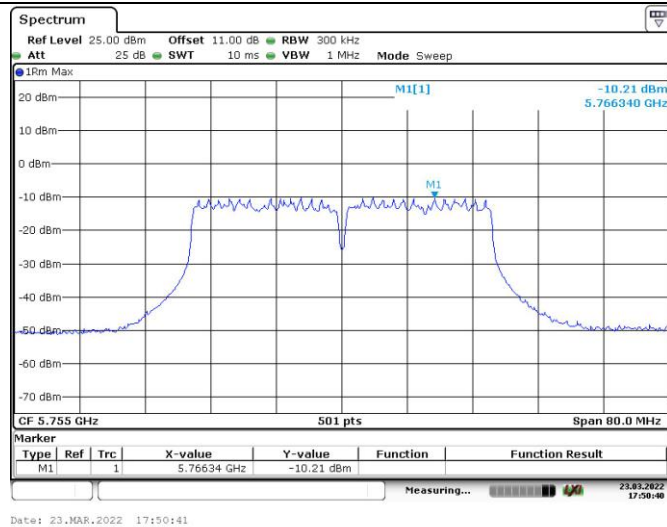
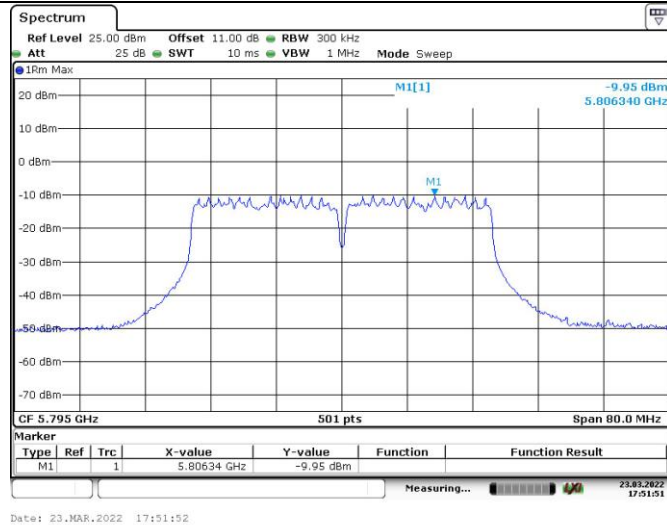
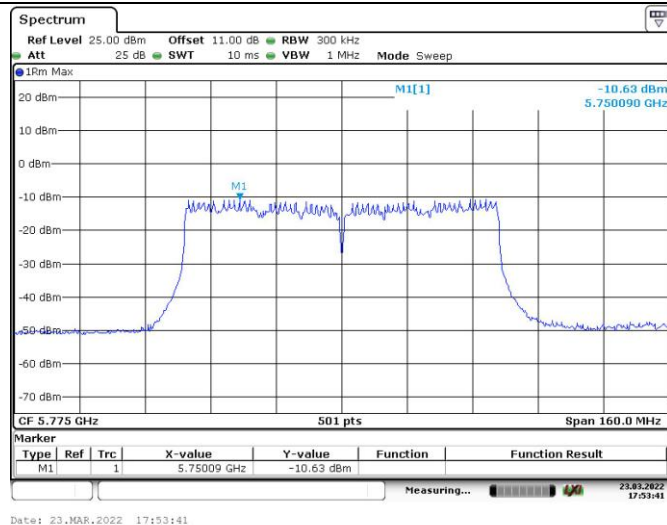
Maximum power spectral density

802.11n ht40
Lowest Channel802.11n ht40
Highest Channel

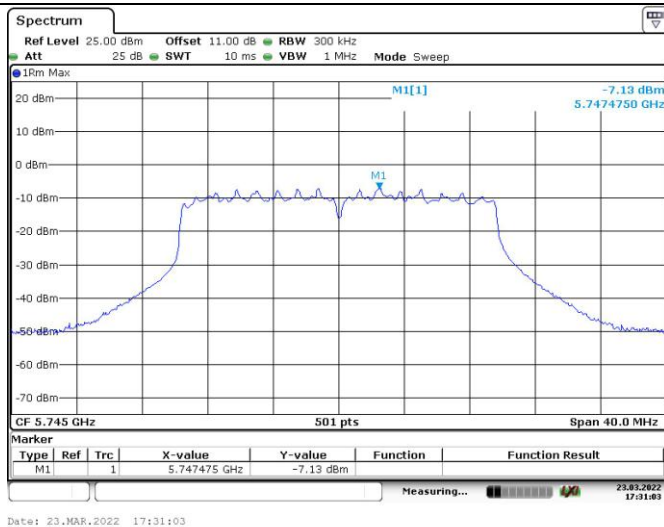
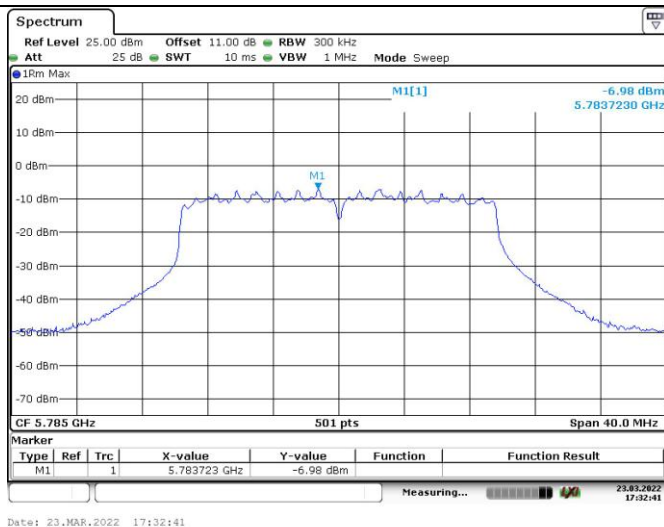
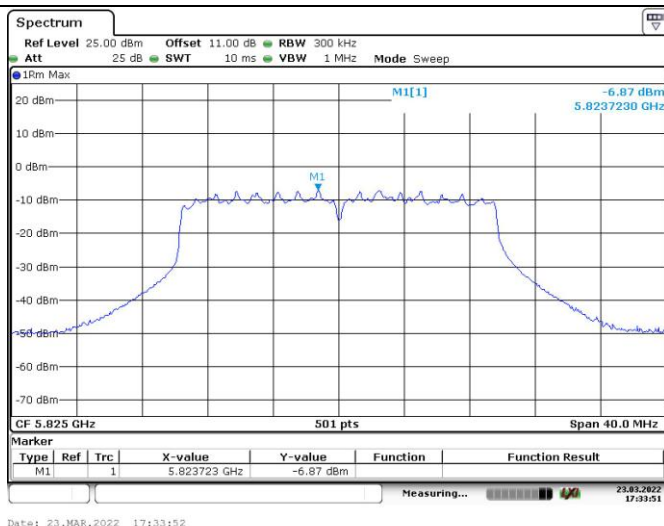
Maximum power spectral density

802.11ac vht20
Lowest Channel802.11ac vht20
Middle Channel802.11ac vht20
Highest Channel

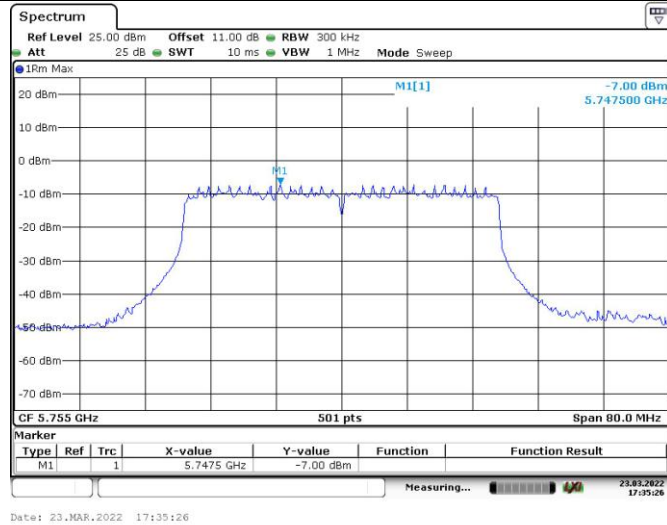
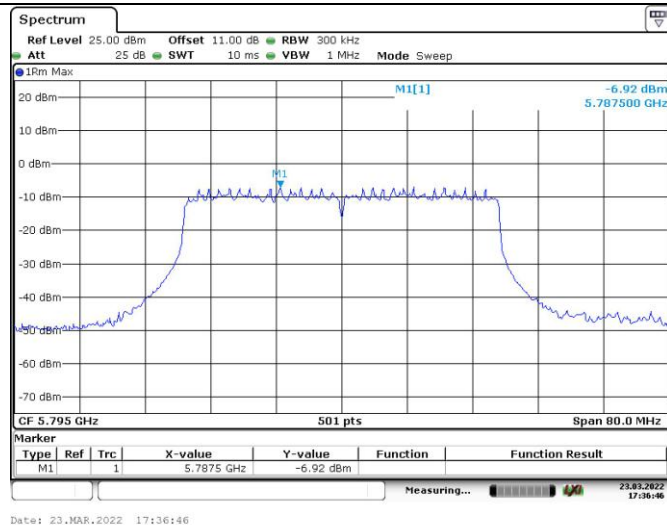
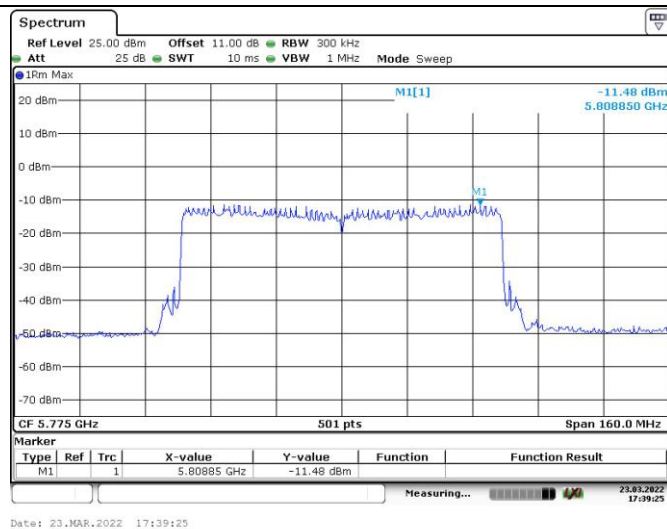
Maximum power spectral density

802.11ac vht40
Lowest Channel802.11ac vht40
Highest Channel802.11ac vht80
Middle Channel

Maximum power spectral density

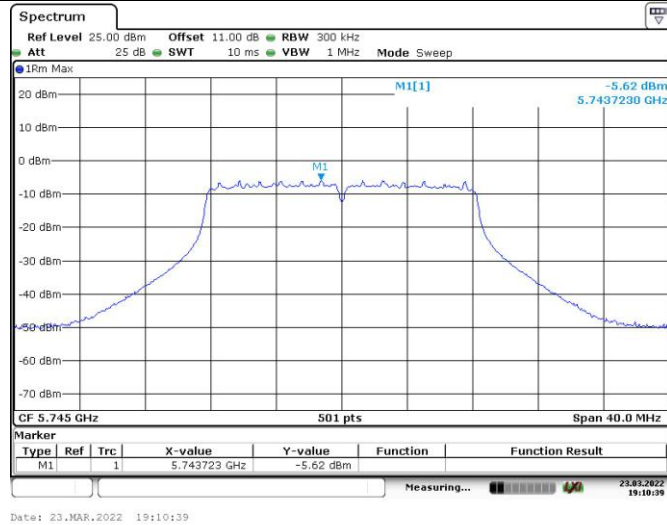
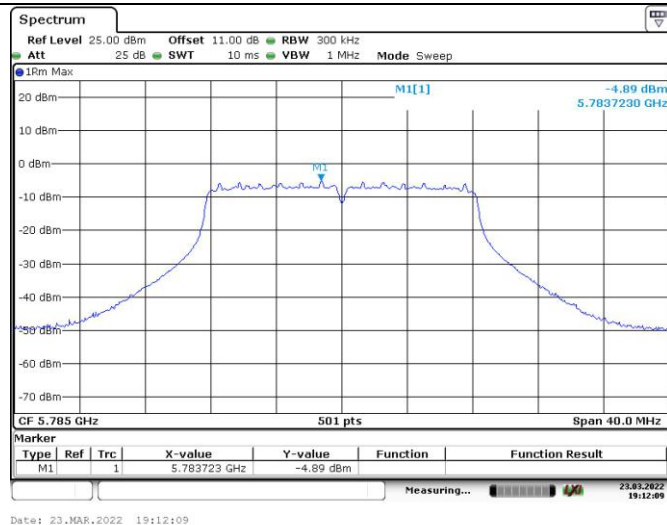
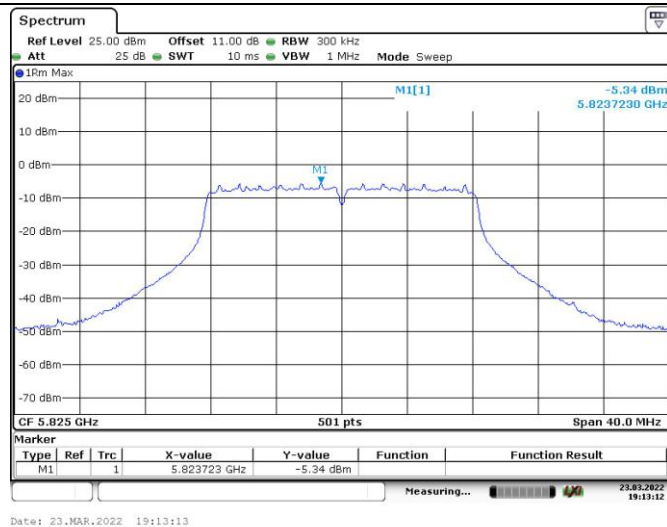
802.11ax hew20
Lowest Channel802.11ax hew20
Middle Channel802.11ax hew20
Highest Channel

Maximum power spectral density

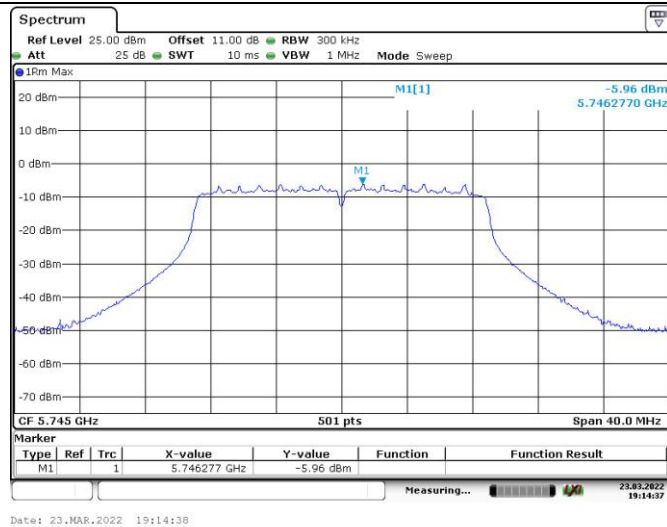
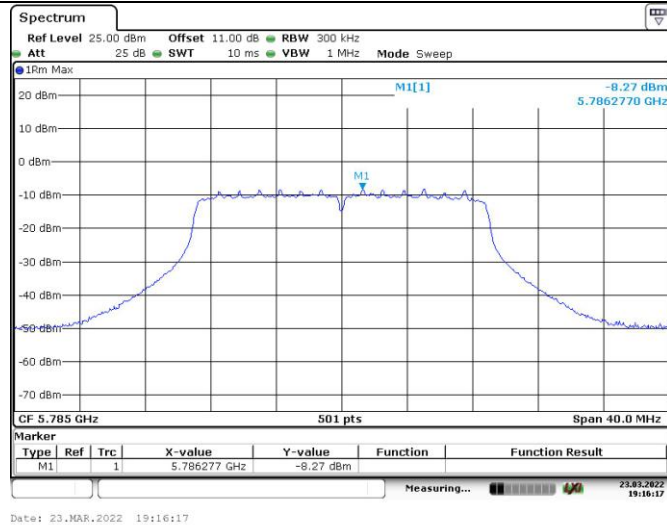
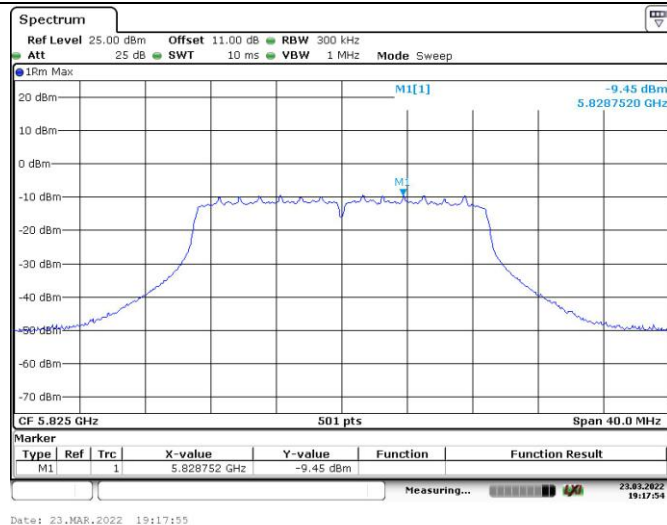
802.11ax hew40
Lowest Channel802.11ax hew40
Highest Channel802.11ax hew80
Middle Channel

Chain 1:

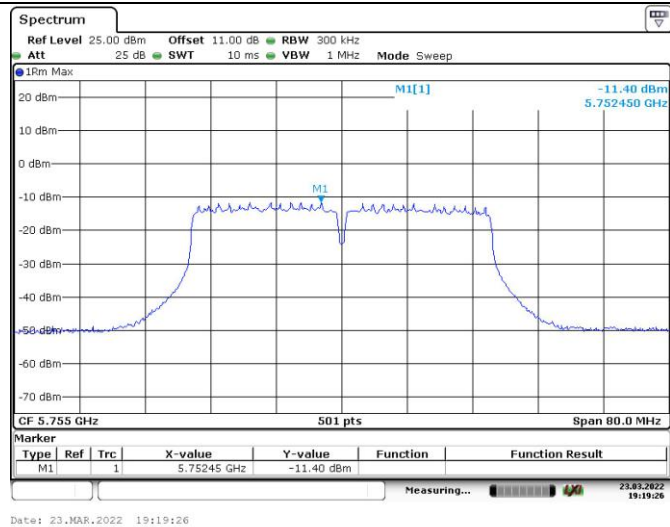
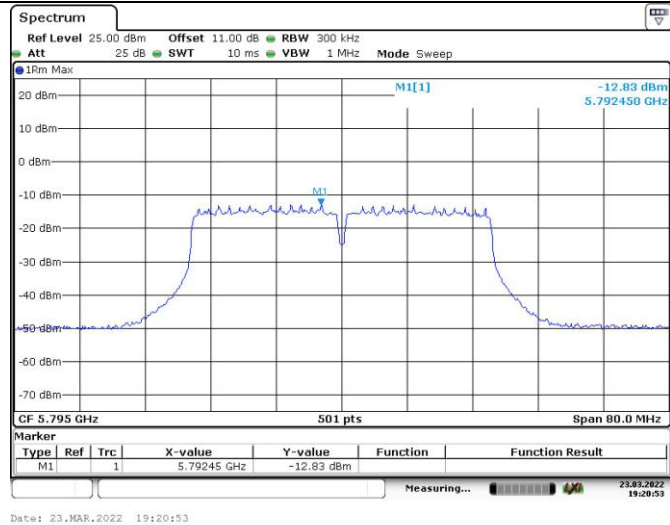
Maximum power spectral density

802.11a
Lowest Channel802.11a
Middle Channel802.11a
Highest Channel

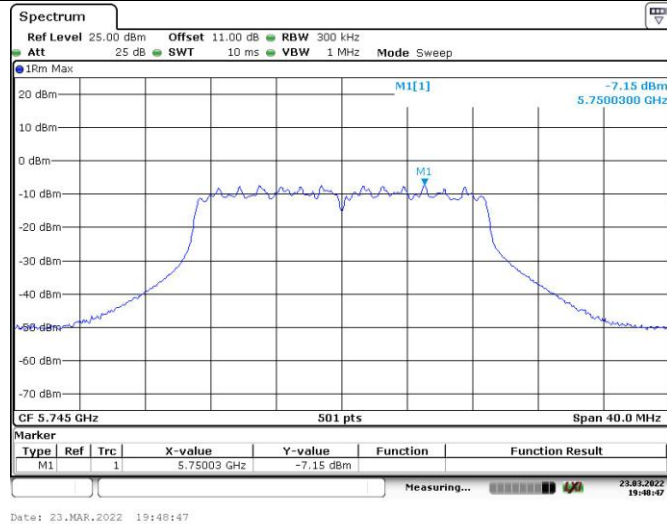
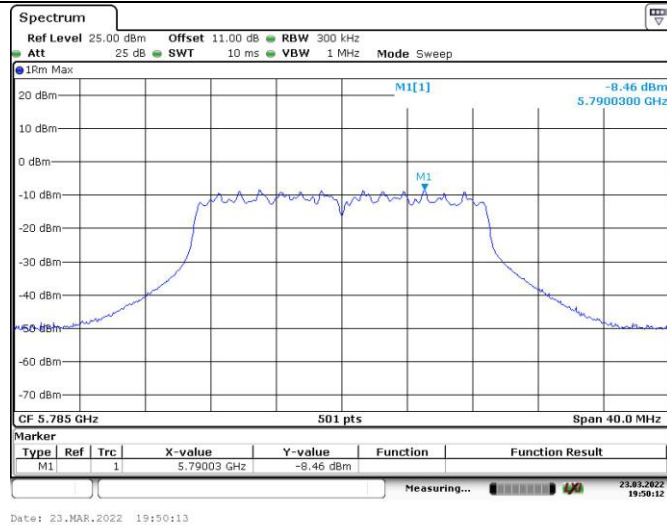
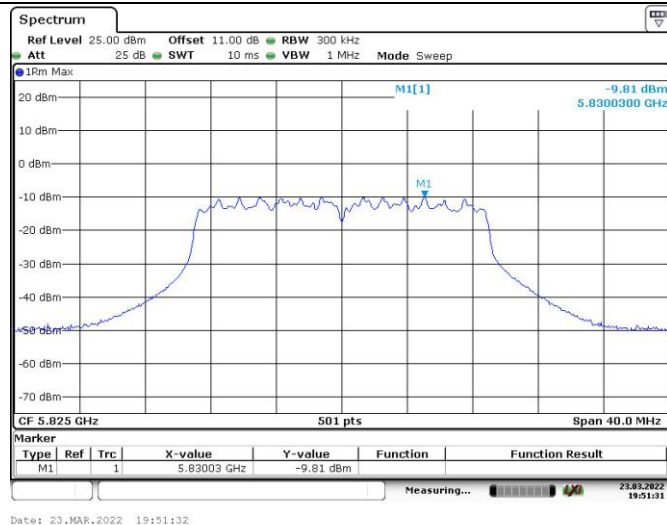
Maximum power spectral density

802.11n ht20
Lowest Channel802.11n ht20
Middle Channel802.11n ht20
Highest Channel

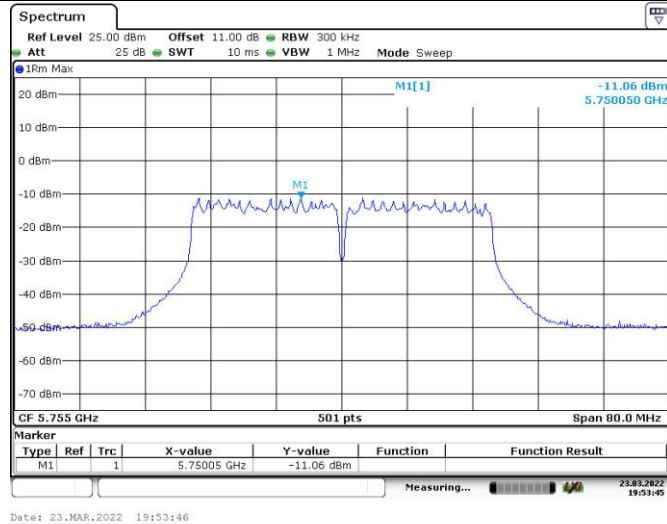
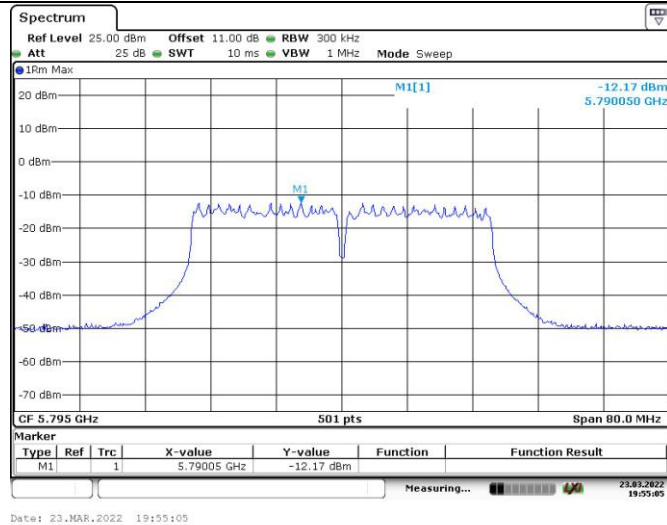
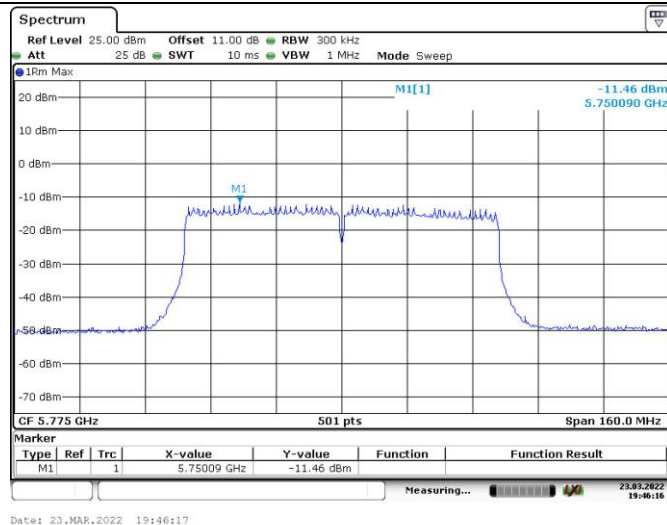
Maximum power spectral density

802.11n ht40
Lowest Channel802.11n ht40
Highest Channel

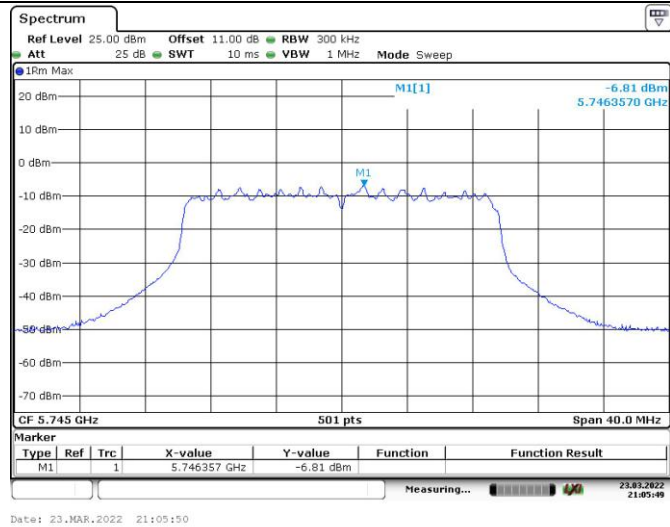
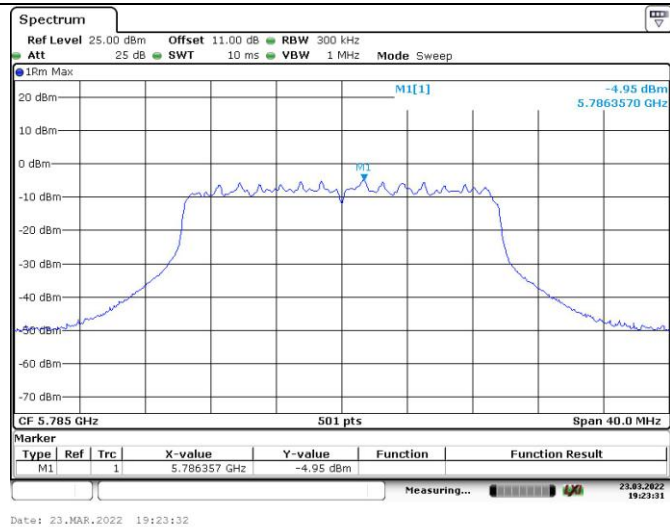
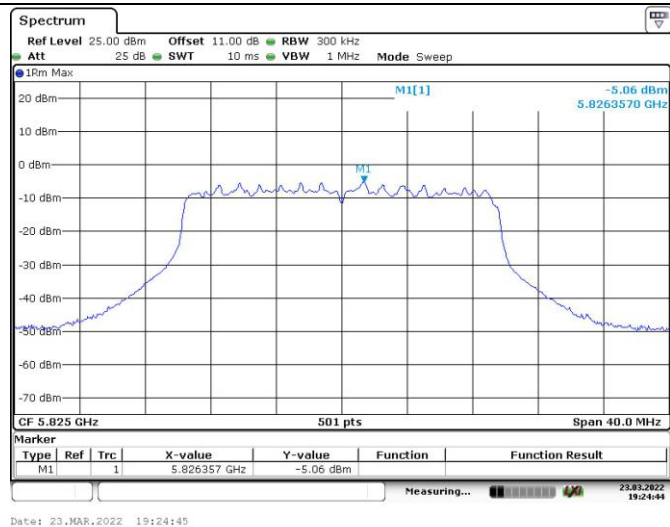
Maximum power spectral density

802.11ac vht20
Lowest Channel802.11ac vht20
Middle Channel802.11ac vht20
Highest Channel

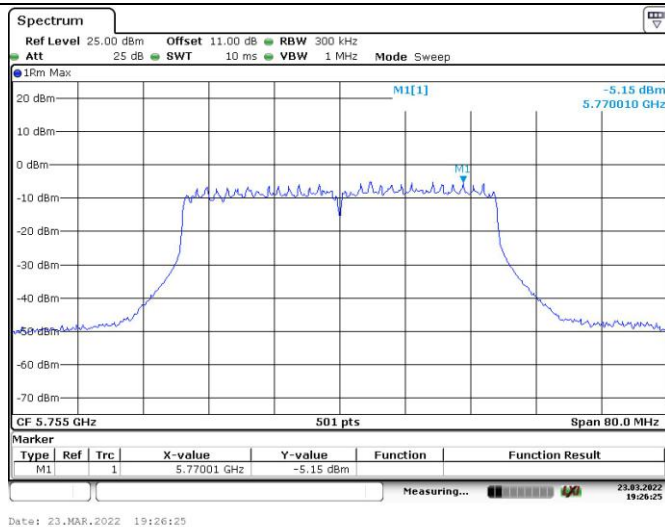
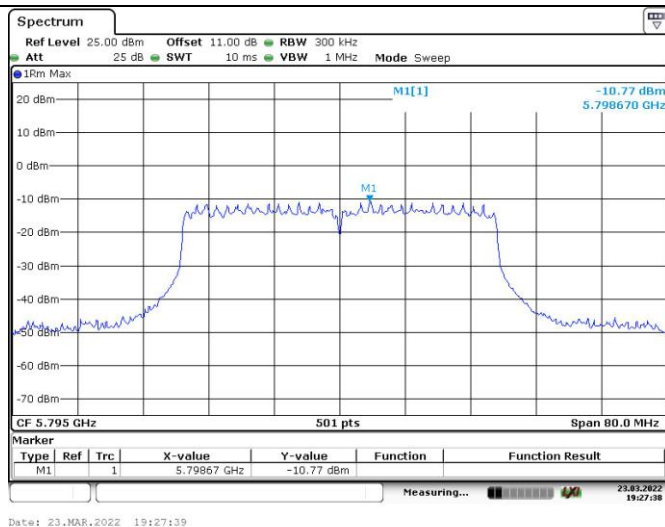
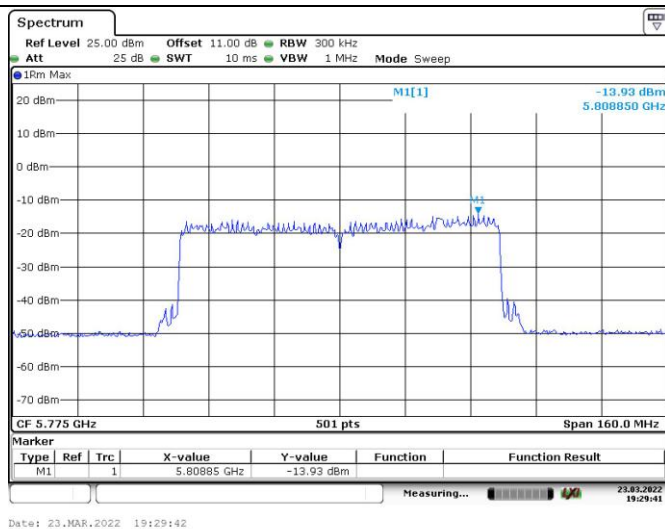
Maximum power spectral density

802.11ac vht40
Lowest Channel802.11ac vht40
Highest Channel802.11ac vht80
Middle Channel

Maximum power spectral density

802.11ax hew20
Lowest Channel802.11ax hew20
Middle Channel802.11ax hew20
Highest Channel

Maximum power spectral density

802.11ax hew40
Lowest Channel802.11ax hew40
Highest Channel802.11ax hew80
Middle Channel

4.6 Duty Cycle:

Serial Number:	CR22010043-RF-S1	Test Date:	2022-03-23
Test Site:	RF	Test Mode:	Transmitting
Tester:	Carl Liang	Test Result:	N/A

Environmental Conditions:

Temperature: (°C)	24.9	Relative Humidity: (%)	54	ATM Pressure: (kPa)	101.1
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2021-10-10	2022-10-09
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	2021-08-08	2022-08-07
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	44416	44780

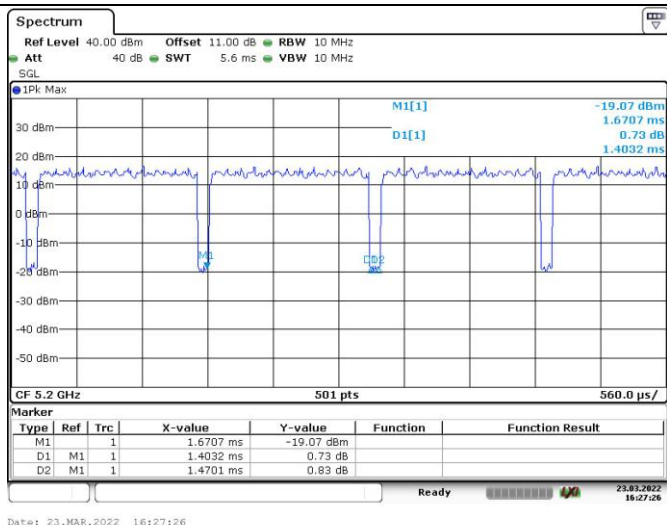
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

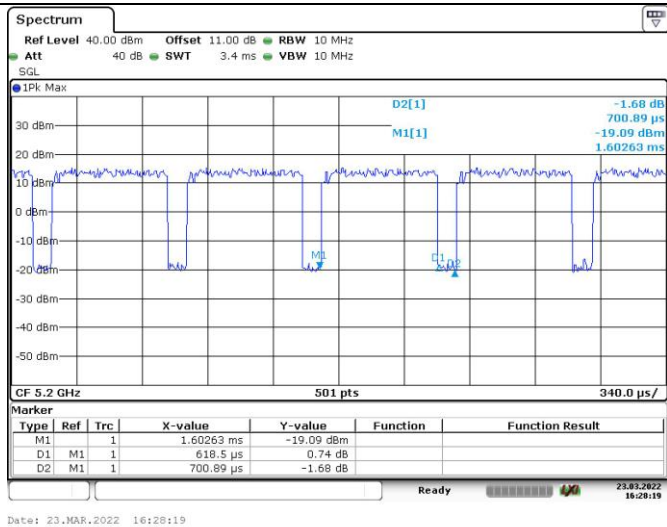
Test Modes	Ton (ms)	Ton+off (ms)	Duty Cycle (%)
802.11a	1.403	1.47	95.44
802.11n ht20	0.619	0.701	88.30
802.11n ht40	0.324	0.416	77.88
802.11ac vht20	0.099	0.195	50.77
802.11ac vht40	0.073	0.172	42.44
802.11ac vht80	0.059	0.159	37.11
802.11ax vht20	0.107	0.203	52.71
802.11ax vht40	0.084	0.184	45.65
802.11ax vht80	0.075	0.171	43.86

Duty Cycle

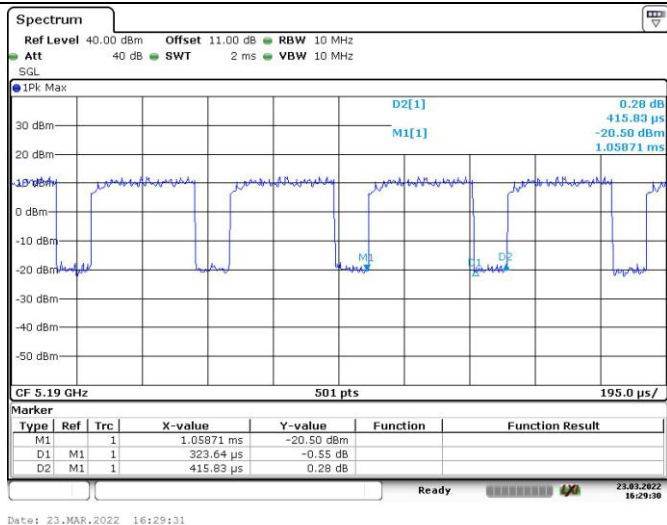
802.11a



802.11n ht20

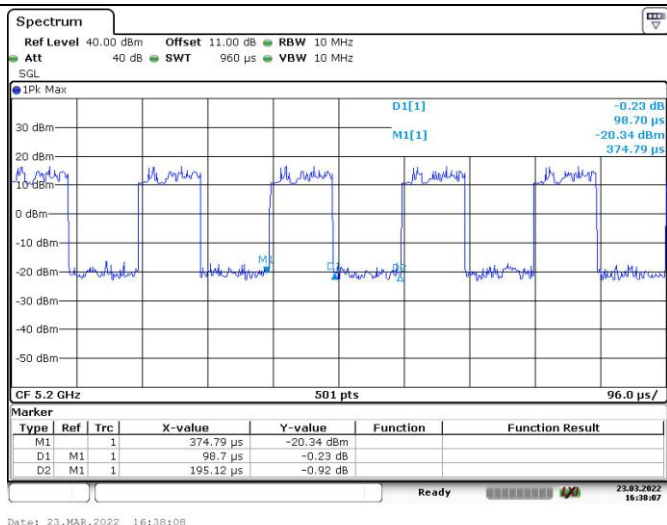


802.11n ht40

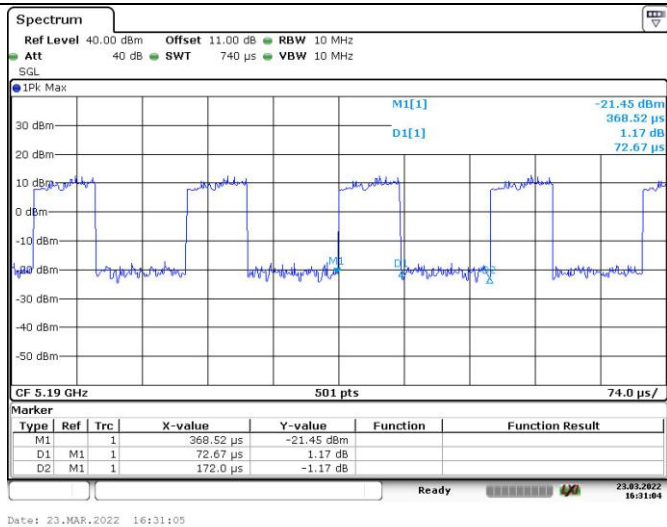


Duty Cycle

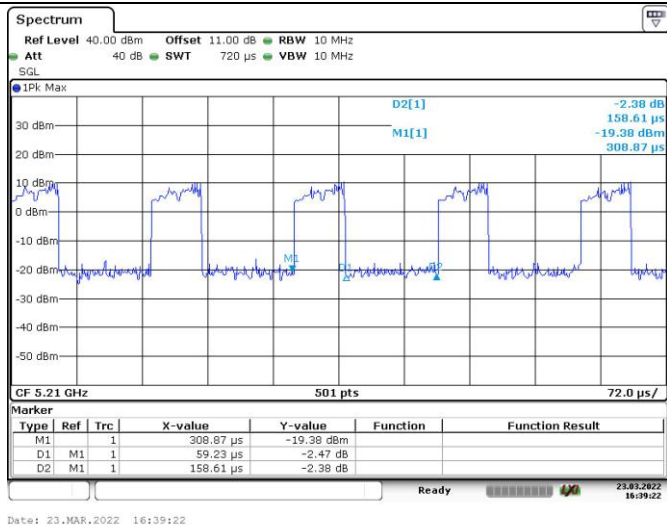
802.11ac vht20



802.11ac vht40

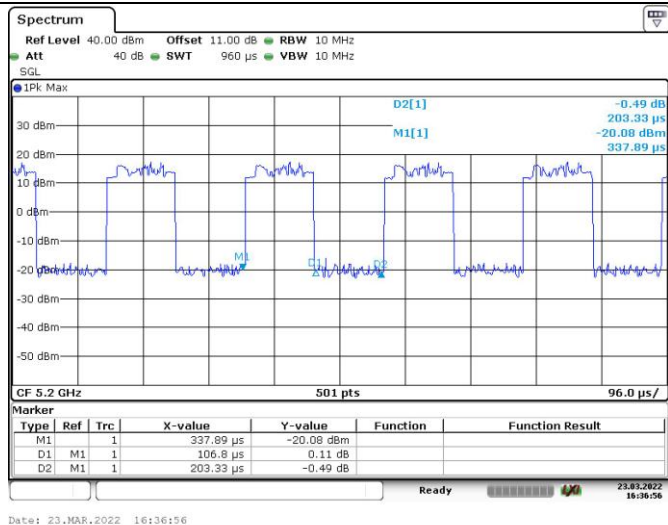


802.11ac vht80

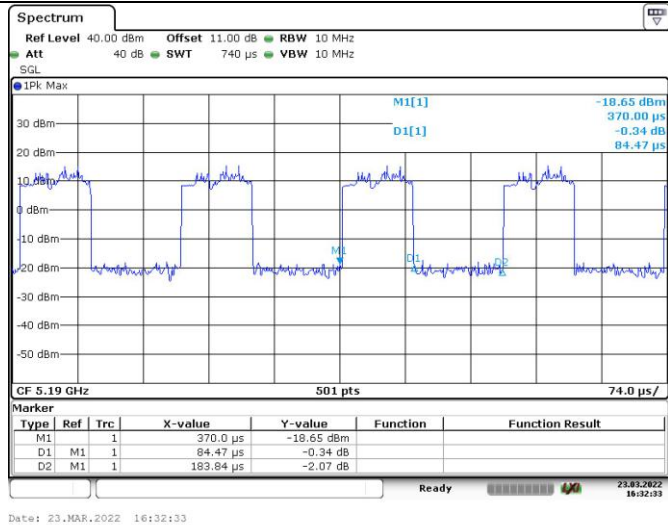


Duty Cycle

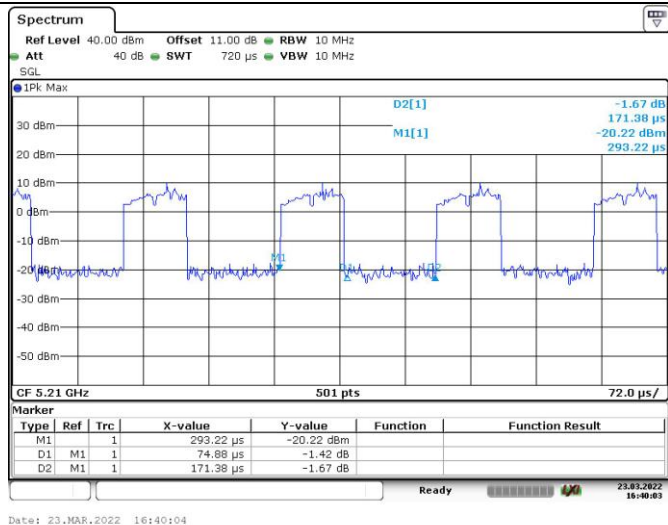
802.11ax hew20



802.11ax hew40



802.11ax hew80



==== END OF REPORT ====