

**802.11n HT20 mode/5745MHz**

Environment: 23.5°C/50%RH/101.0kPa

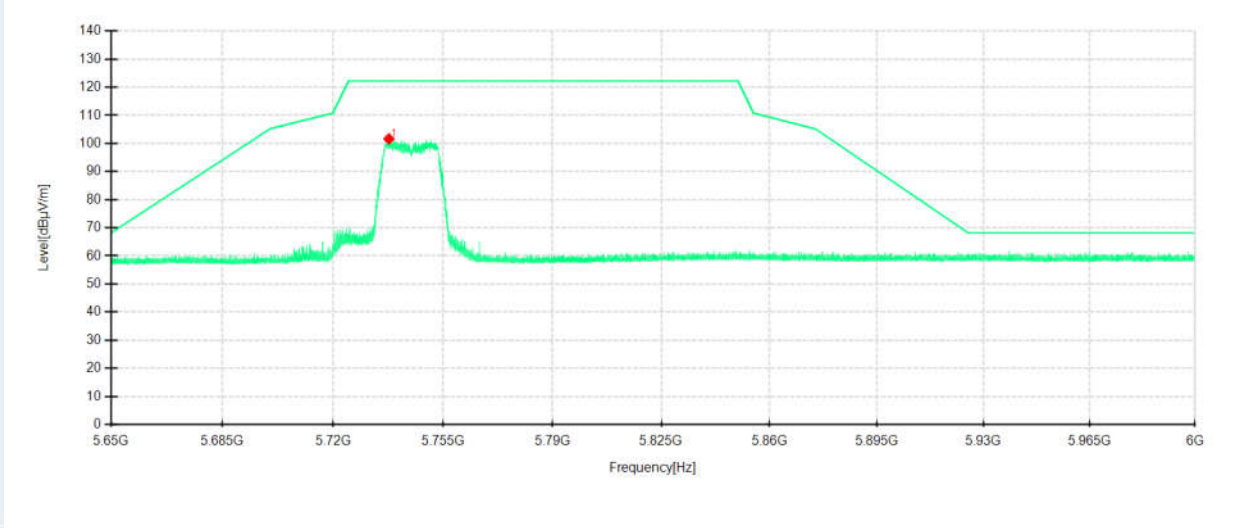
Engineer: Zhang Zishan

Detector mode: Peak

Voltage: DC 12V

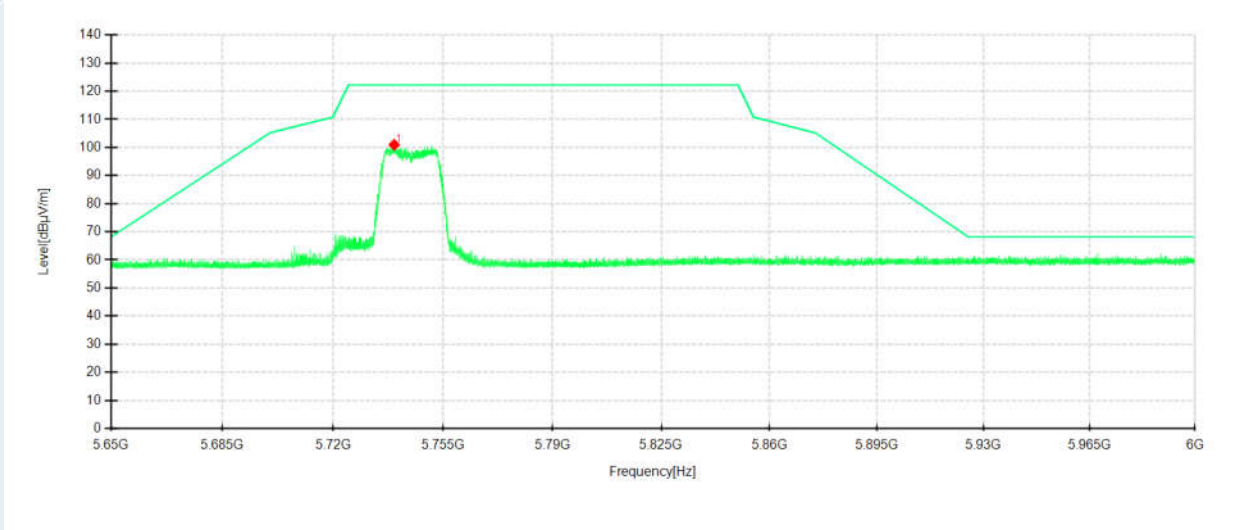
Data: 2022-12-09

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole
1	5737.7275	81.51	101.61	20.10	122.20	20.59	200	199	Horizontal
1	5739.39	80.97	100.95	19.98	122.20	21.25	100	165	Vertical

**802.11n HT20 mode/5825MHz**

Environment: 23.5°C/50%RH/101.0kPa

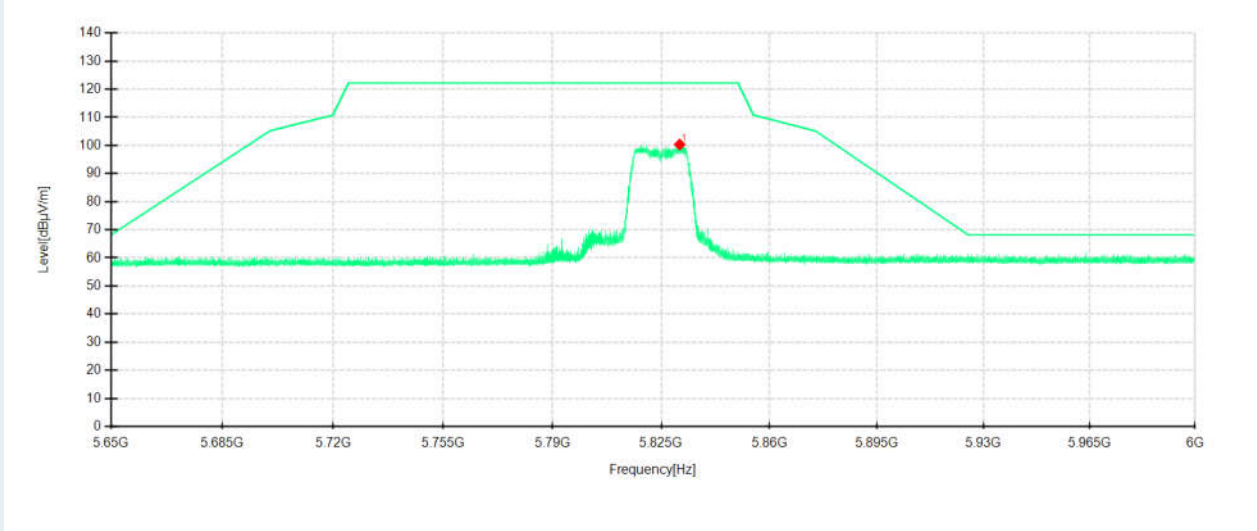
Engineer: Zhang Zishan

Detector mode: Peak

Voltage: DC 12V

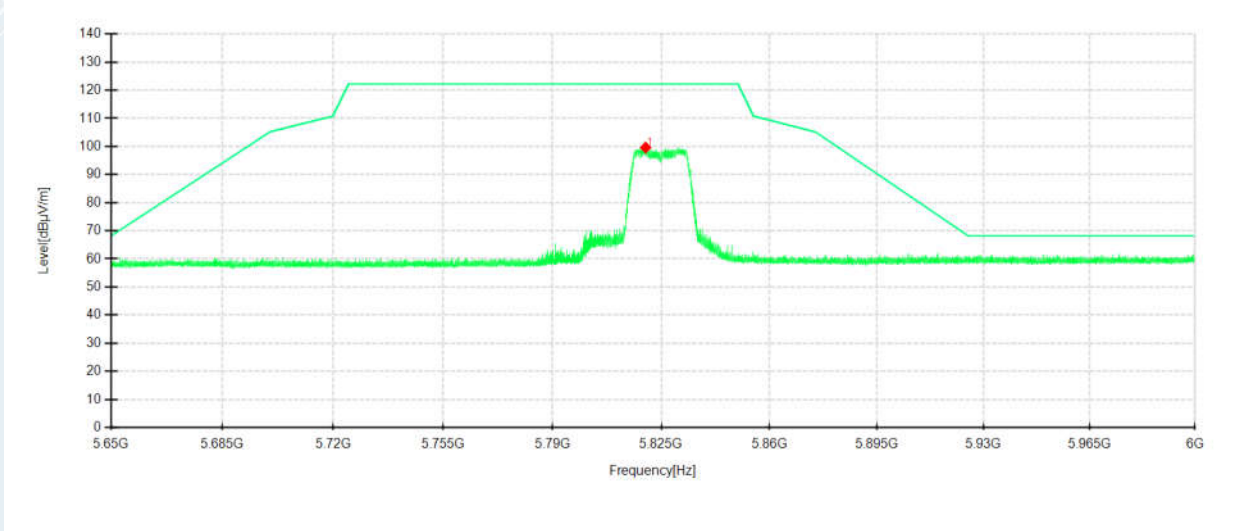
Data: 2022-12-09

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole
1	5830.9675	79.09	100.33	21.24	122.20	21.87	200	213	Horizontal
1	5819.9775	78.89	99.61	20.72	122.20	22.59	200	207	Vertical

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**802.11n HT40 mode/5755MHz**

Environment: 23.5°C/50%RH/101.0kPa

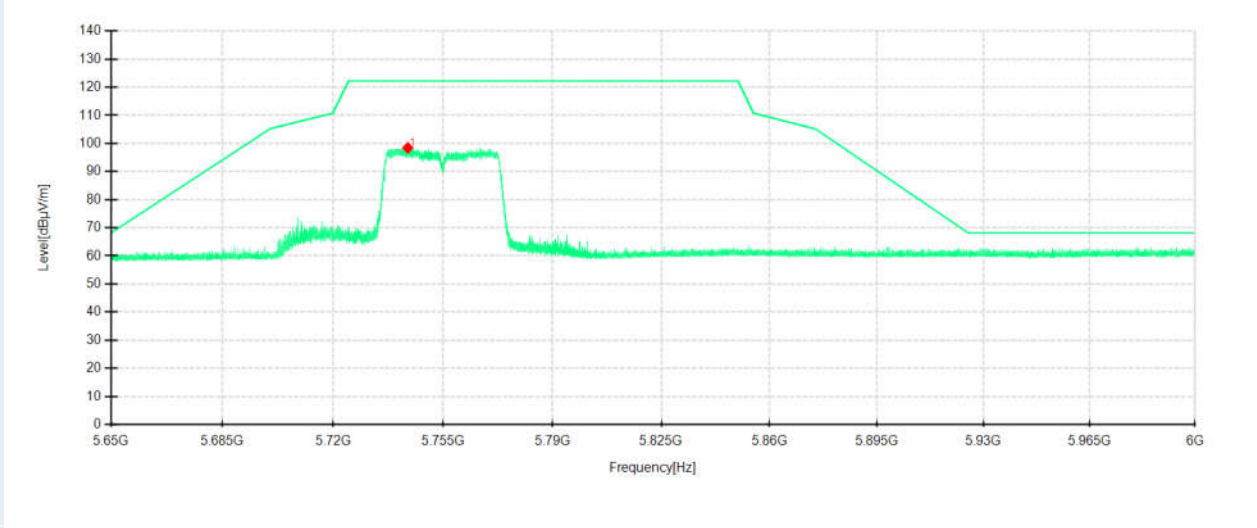
Engineer: Zhang Zishan

Detector mode: Peak

Voltage: DC 12V

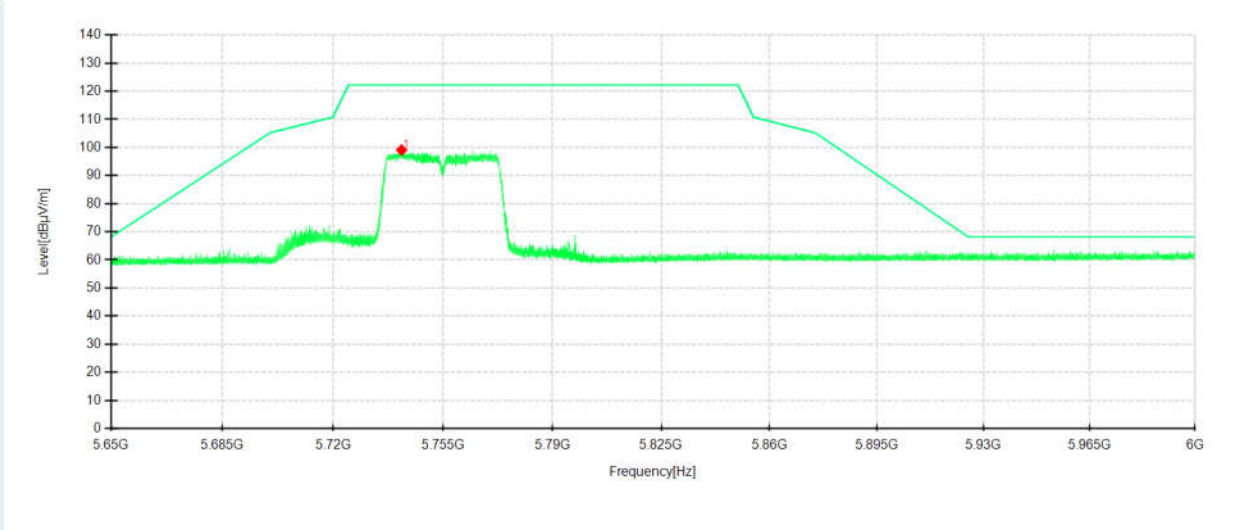
Data: 2022-12-07

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole
1	5743.7125	78.29	98.40	20.11	122.20	23.80	200	23	Horizontal
1	5741.735	79.10	99.09	19.99	122.20	23.11	100	344	Vertical

**802.11n HT40 mode/5795MHz**

Environment: 23.5°C/50%RH/101.0kPa

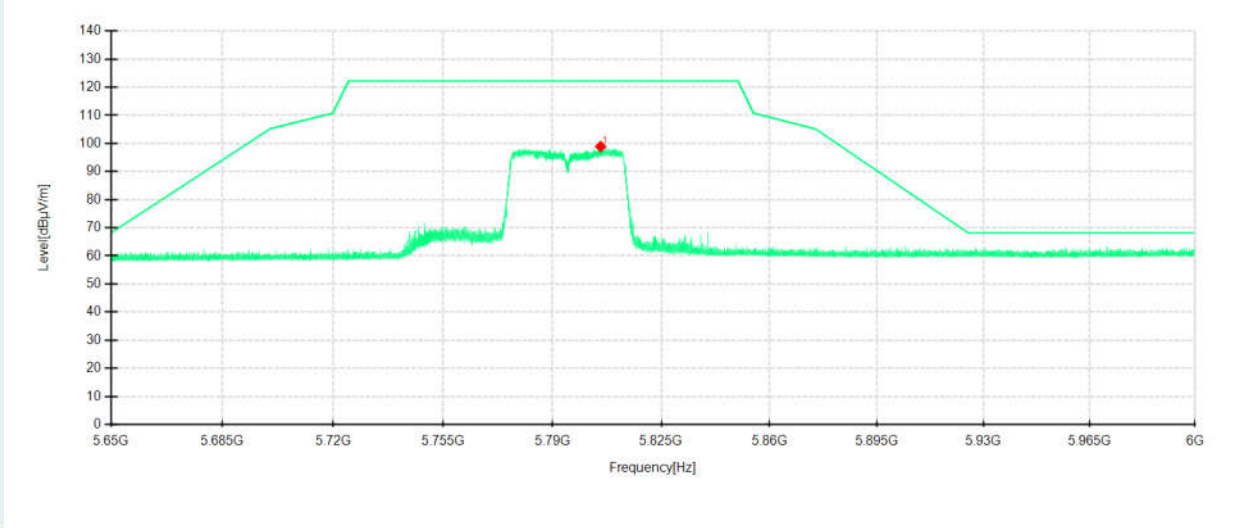
Engineer: Zhang Zishan

Detector mode: Peak

Voltage: DC 12V

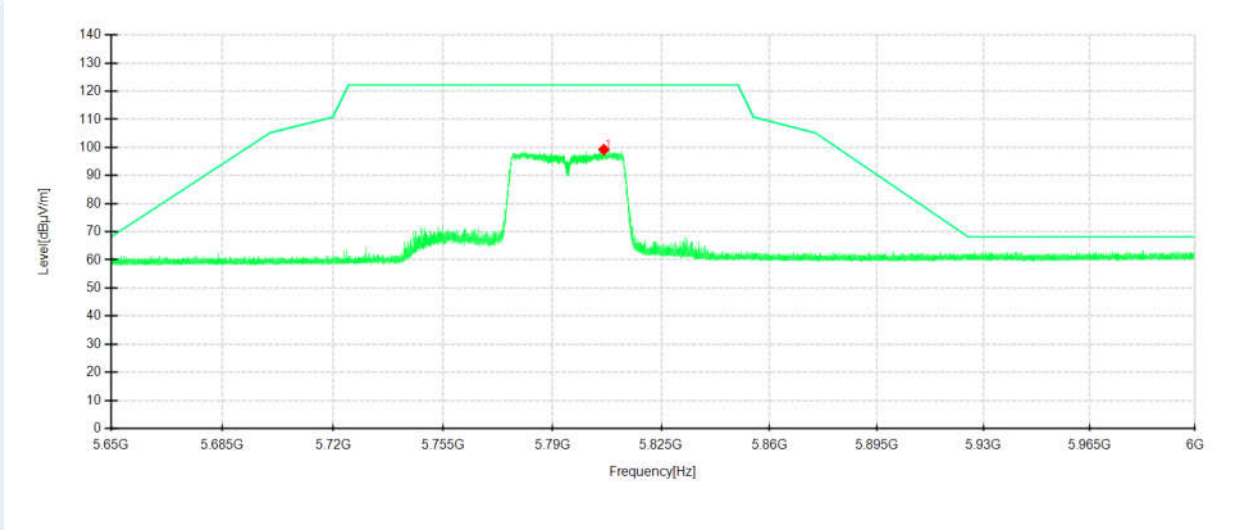
Data: 2022-12-07

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole
1	5805.4525	78.37	98.87	20.50	122.20	23.33	200	24	Horizontal
1	5806.5025	78.89	99.23	20.34	122.20	22.97	100	344	Vertical

**802.11ac VHT20 mode/5745MHz**

Environment: 23.5°C/50%RH/101.0kPa

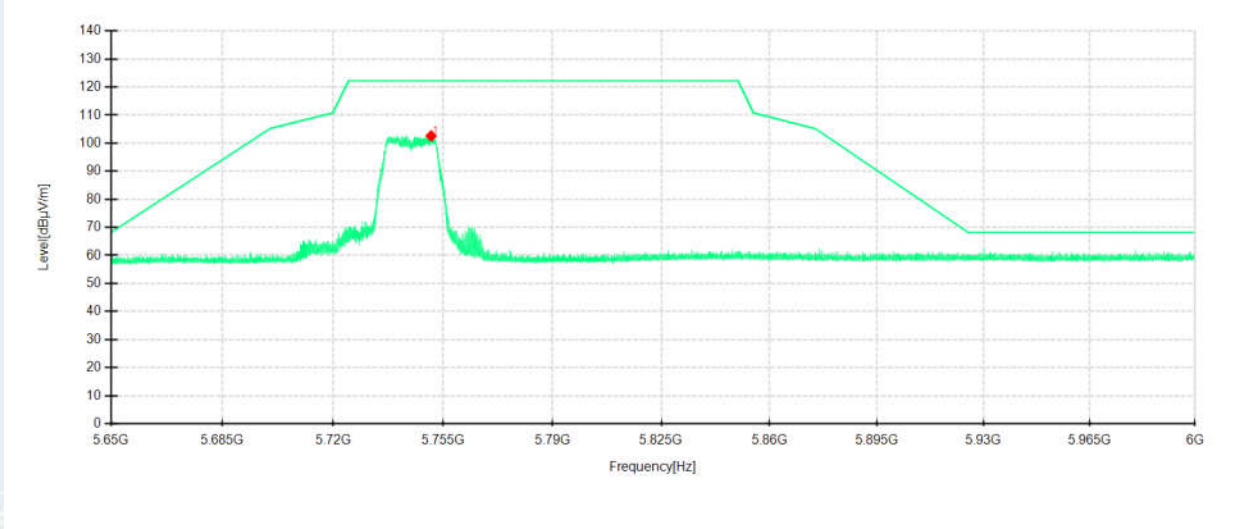
Engineer: Zhang Zishan

Detector mode: Peak

Voltage: DC 12V

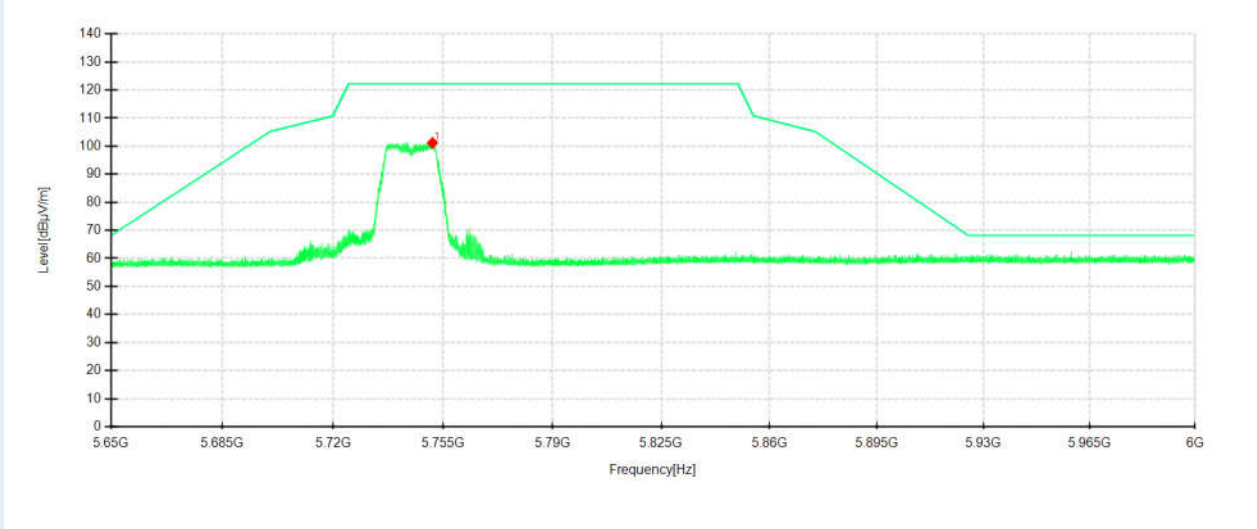
Data: 2022-12-09

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole
1	5751.15	82.45	102.58	20.13	122.20	19.62	200	201	Horizontal
1	5751.5875	81.16	101.19	20.03	122.20	21.01	100	178	Vertical

**802.11ac VHT20 mode/5825MHz**

Environment: 23.5°C/50%RH/101.0kPa

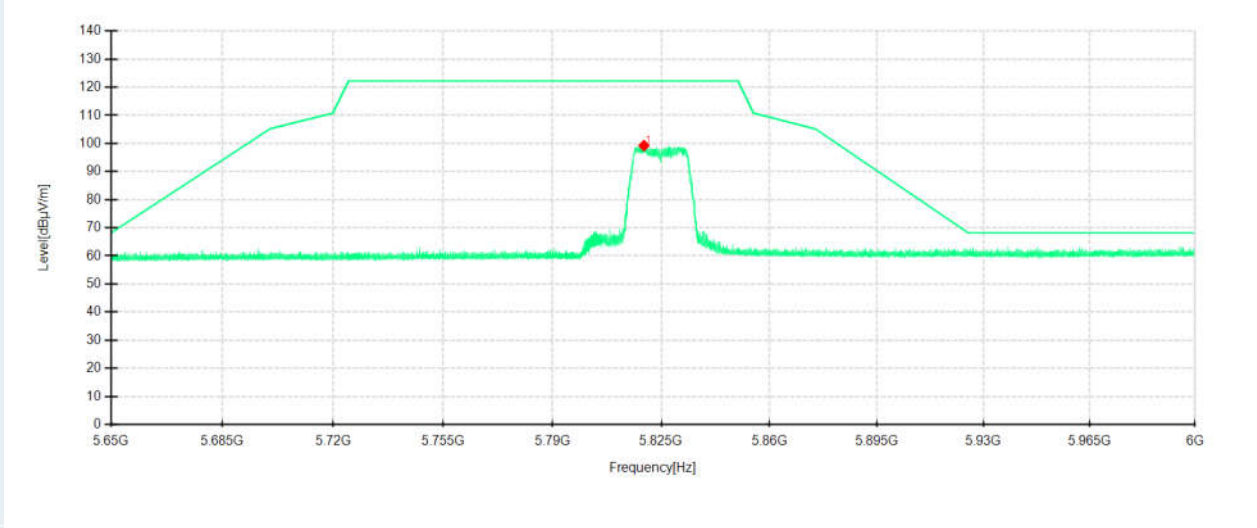
Engineer: Zhang Zishan

Detector mode: Peak

Voltage: DC 12V

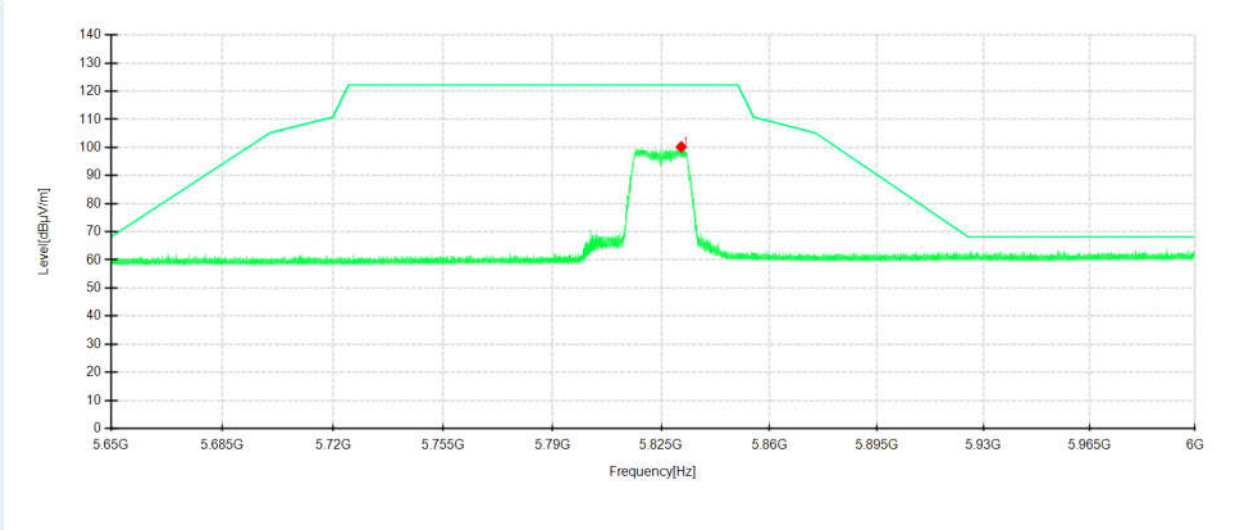
Data: 2022-12-07

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole
1	5819.4175	78.33	99.24	20.91	122.20	22.96	200	36	Horizontal
1	5831.475	79.15	100.20	21.05	122.20	22.00	100	345	Vertical

**802.11ac VHT40 mode/5755MHz**

Environment: 23.5°C/50%RH/101.0kPa

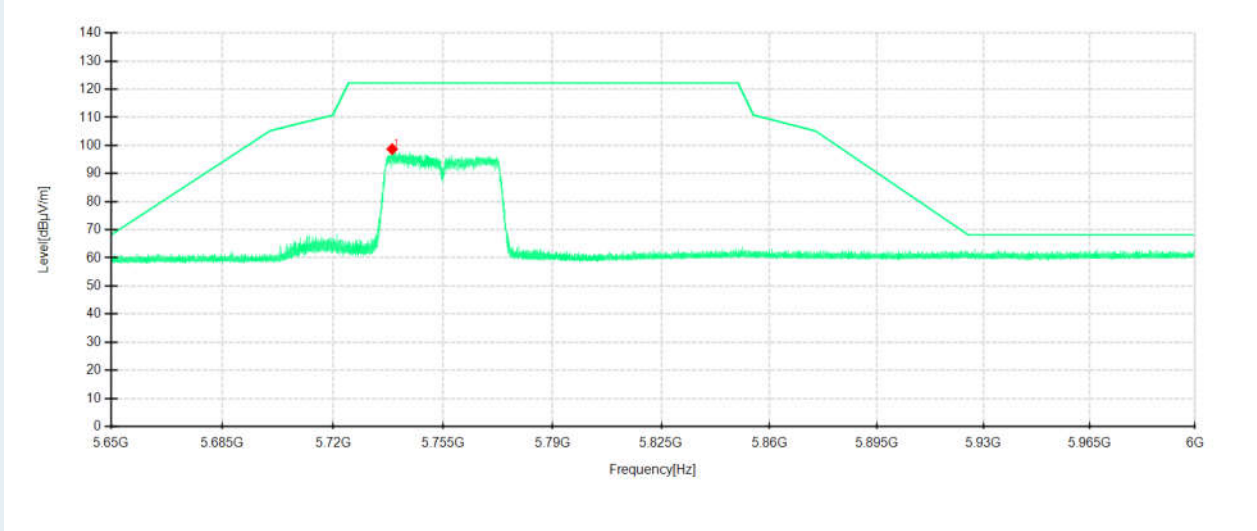
Engineer: Chen Xiacong

Detector mode: Peak

Voltage: DC 12V

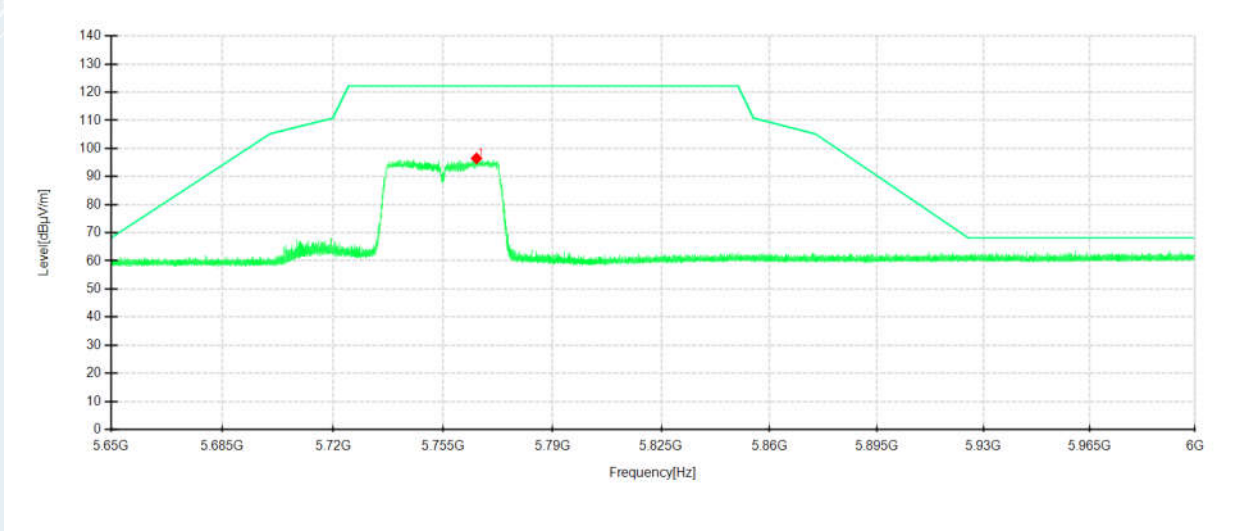
Data: 2022-12-07

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole
1	5738.725	78.60	98.70	20.10	122.20	23.50	200	24	Horizontal
1	5765.6575	76.41	96.48	20.07	122.20	25.72	100	1	Vertical

**802.11ac VHT40 mode/5795MHz**

Environment: 23.5°C/50%RH/101.0kPa

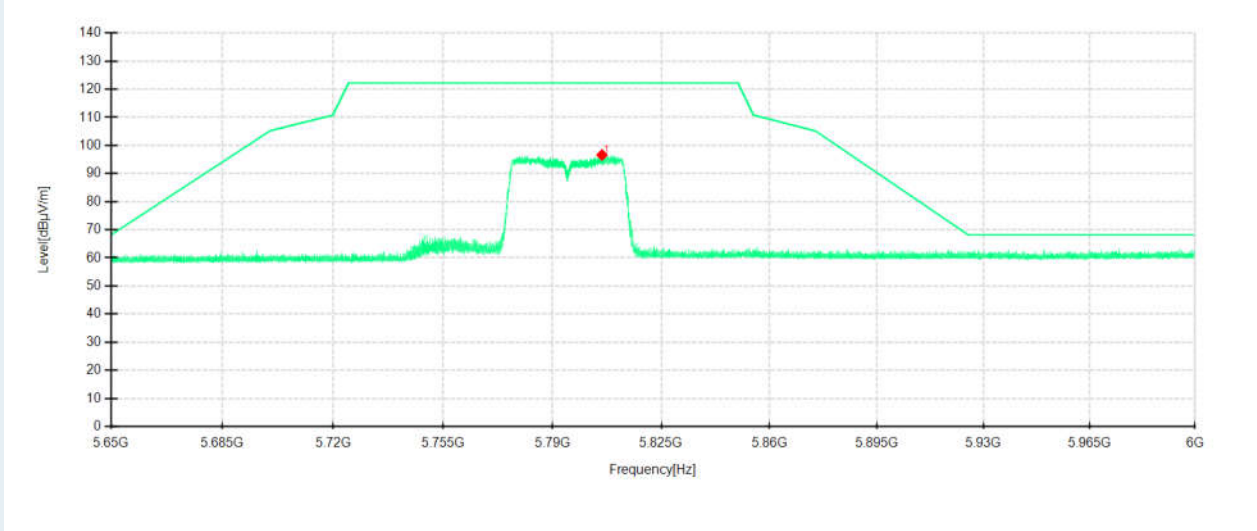
Engineer: Chen Xiacong

Detector mode: Peak

Voltage: DC 12V

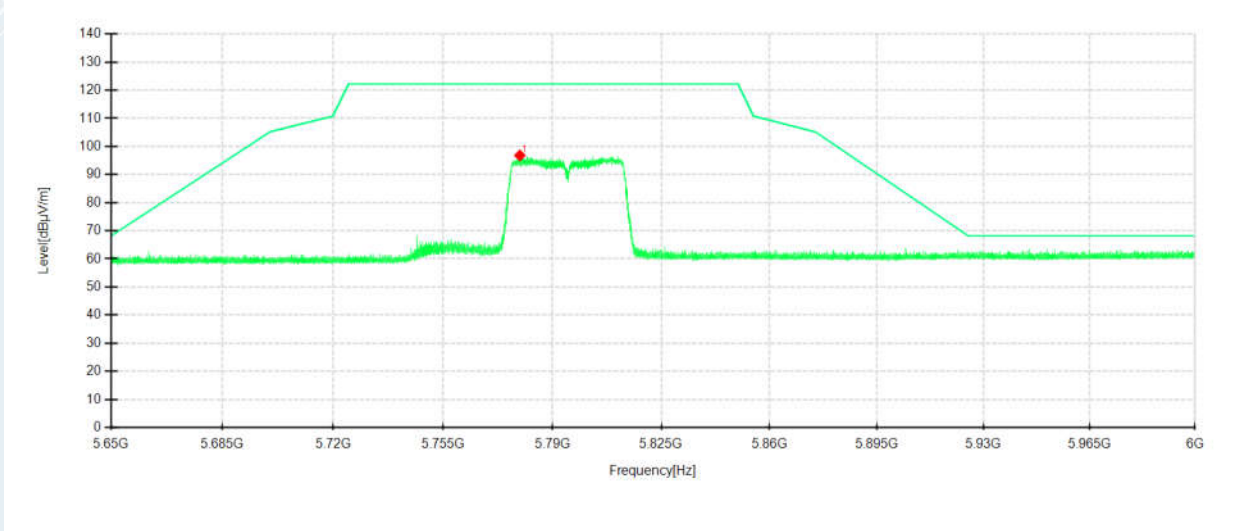
Data: 2022-12-07

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole
1	5805.9075	76.08	96.60	20.52	122.20	25.60	200	36	Horizontal
1	5779.5175	76.69	96.79	20.10	122.20	25.41	100	345	Vertical



**802.11ac VHT80 mode/5775MHz**

Environment: 23.5°C/50%RH/101.0kPa

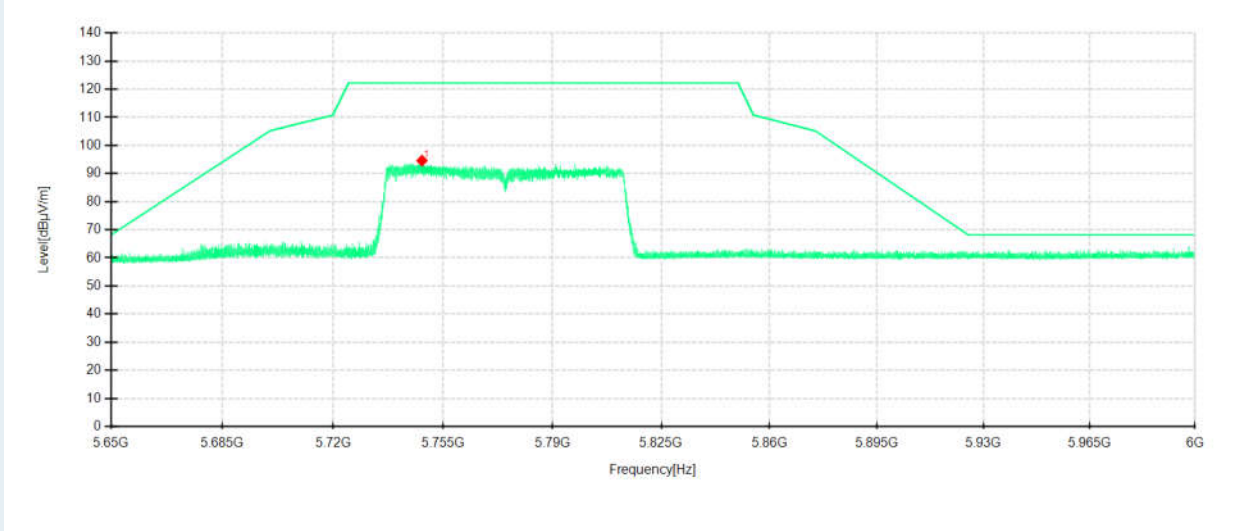
Engineer: Zhang Zishan

Detector mode: Peak

Voltage: DC 12V

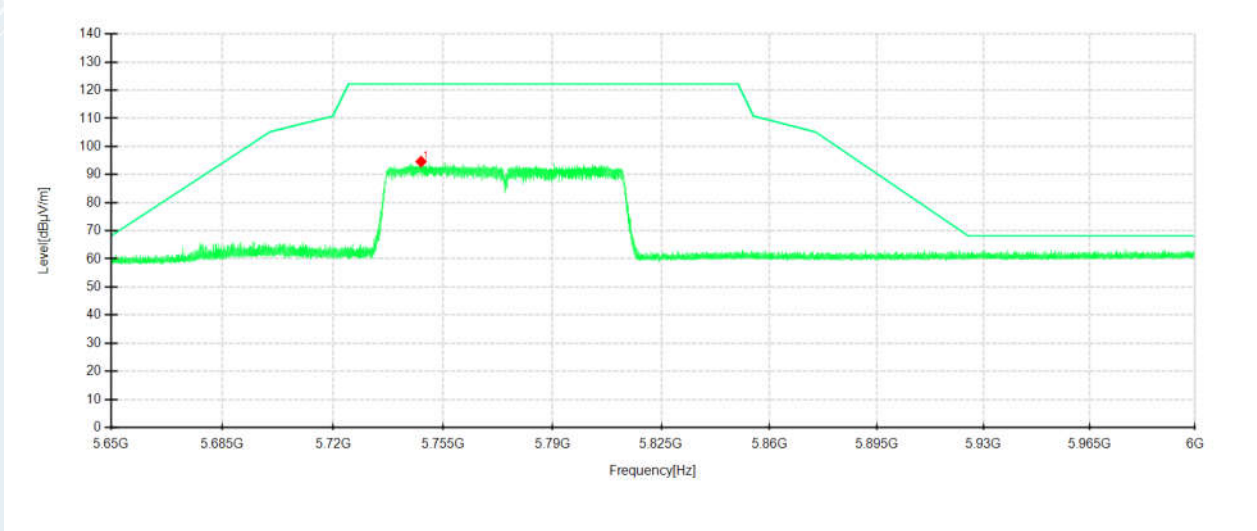
Data: 2022-12-07

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole
1	5748.2275	74.46	94.59	20.13	122.20	27.61	200	24	Horizontal
1	5747.9475	74.58	94.60	20.02	122.20	27.60	100	343	Vertical

## 7. 6dB BANDWIDTH & 26dB BANDWIDTH & 99% OCCUPIED BANDWIDTH

### 7.1 LIMITS

Band	Frequency (MHz)	Test Item	Limit
U-NII-1	5150-5250	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-3	5725-5850	6dB Bandwidth&99% Occupied Bandwidth	6dB Bandwidth $\geq$ 500KHz

### 7.2 TEST PROCEDURES

#### For 26dB Bandwidth Measurement :

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with table 1.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurements as needed until the RBW/EBW ratio is approximately 1%.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

#### For 6dB Bandwidth Measurement :

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with table 2.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

#### For 99% Occupied Bandwidth Measurement :

- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with table 3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, use the 99% power bandwidth function to measure bandwidth.
- Repeat above procedures until all modes and channels were measured.

Record the results in the test report.

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Table 1:

26dB Bandwidth	
Spectrum Parameters	Setting
RBW	approximately 1% of the emission bandwidth
VBW	> RBW
Span	40MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

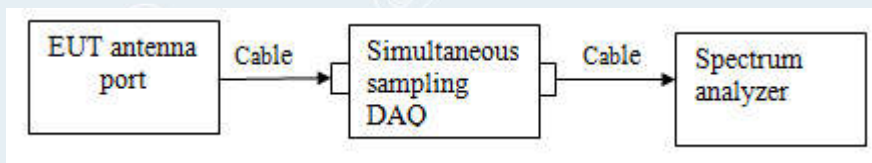
Table 2:

6dB Bandwidth	
Spectrum Parameters	Setting
RBW	100KHz
VBW	300KHz
Span	40MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

Table 3:

99% Occupied Bandwidth	
Spectrum Parameters	Setting
RBW	1% to 5% of the OBW
VBW	approximately three times the RBW
Span	between 1.5 times and 5.0 times the OBW
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

7.3 TEST SETUP



## 7.4 TEST RESULTS

<b>Environmental Conditions</b>	24.2°C/49%RH/101.0kPa	<b>Test Voltage</b>	DC 12V
<b>Tested By</b>	Yang Zhaoyun	<b>Tested Date</b>	2022-11-22

## 6dB BANDWIDTH

Test Mode	Antenna	Frequency [MHz]	6dB EBW [MHz]	F <sub>L</sub> [MHz]	F <sub>H</sub> [MHz]	Limit[MHz]	Verdict
802.11a	Ant1	5745	16.36	5736.76	5753.12	≥0.5	PASS
		5785	16.36	5776.76	5793.12	≥0.5	PASS
		5825	16.36	5816.76	5833.12	≥0.5	PASS
802.11n HT20	Ant1	5745	17.60	5736.16	5753.76	≥0.5	PASS
		5785	17.56	5776.16	5793.72	≥0.5	PASS
		5825	17.60	5816.16	5833.76	≥0.5	PASS
802.11n HT40	Ant1	5755	36.40	5736.76	5773.16	≥0.5	PASS
		5795	36.40	5776.76	5813.16	≥0.5	PASS
802.11ac VHT20	Ant1	5745	17.56	5736.16	5753.72	≥0.5	PASS
		5785	17.60	5776.16	5793.76	≥0.5	PASS
		5825	17.60	5816.16	5833.76	≥0.5	PASS
802.11ac VHT40	Ant1	5755	36.40	5736.76	5773.16	≥0.5	PASS
		5795	36.40	5776.76	5813.16	≥0.5	PASS
802.11ac VHT80	Ant1	5775	75.52	5737.08	5812.60	≥0.5	PASS

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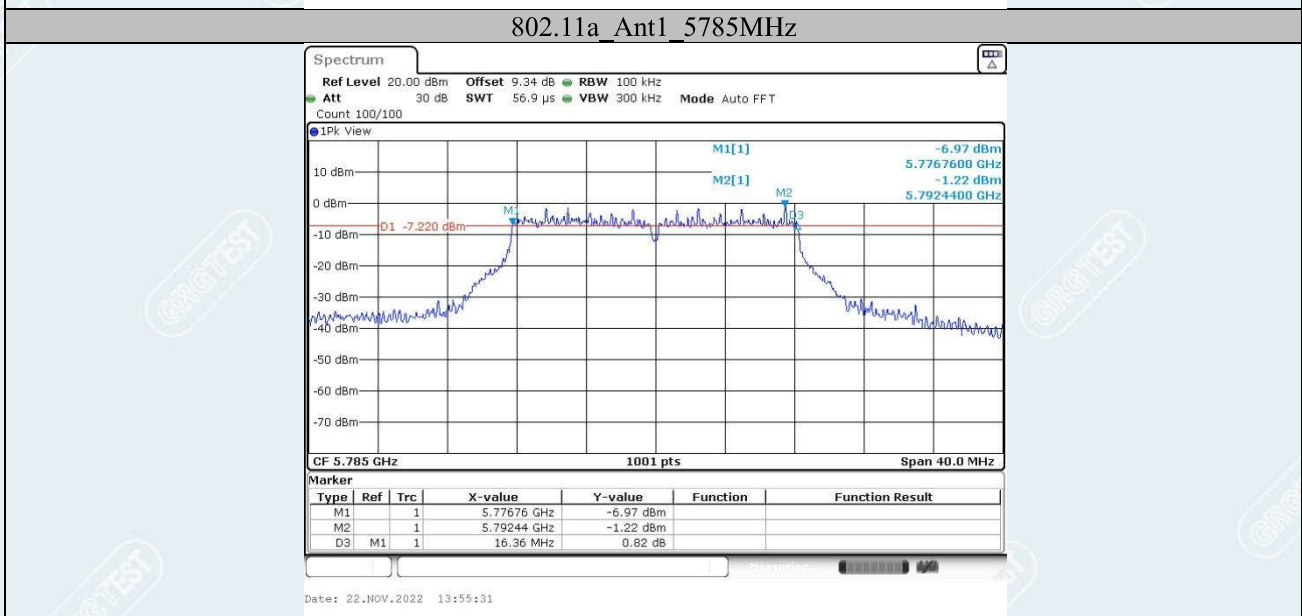
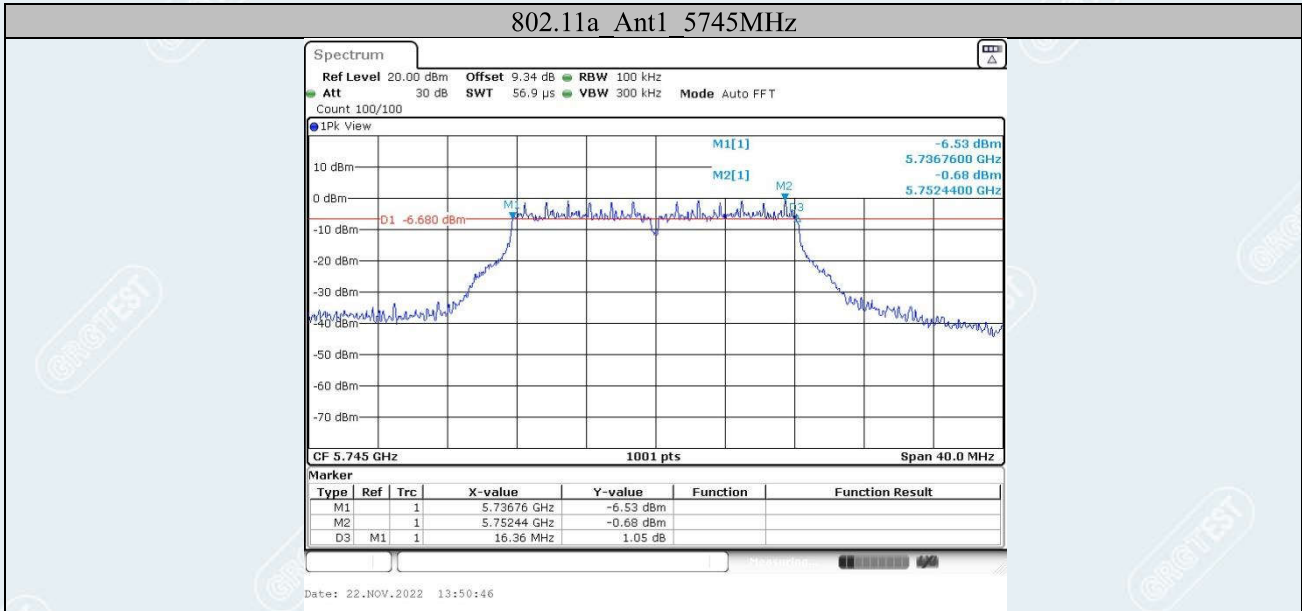
**26dB BANDWIDTH**

Test Mode	Antenna	Frequency[MHz]	26dB EBW [MHz]	F <sub>L</sub> [MHz]	F <sub>H</sub> [MHz]	Limit[MHz]	Verdict
802.11a	Ant1	5180	21.52	5169.20	5190.72	---	PASS
		5200	21.48	5189.24	5210.72	---	PASS
		5240	21.44	5229.24	5250.68	---	PASS
802.11n HT20	Ant1	5180	21.76	5169.08	5190.84	---	PASS
		5200	21.60	5189.16	5210.76	---	PASS
		5240	21.68	5229.08	5250.76	---	PASS
802.11n HT40	Ant1	5190	40.40	5169.76	5210.16	---	PASS
		5230	40.32	5209.76	5250.08	---	PASS
802.11ac VHT20	Ant1	5180	21.68	5169.12	5190.80	---	PASS
		5200	21.64	5189.16	5210.80	---	PASS
		5240	21.76	5229.08	5250.84	---	PASS
802.11ac VHT40	Ant1	5190	40.64	5169.68	5210.32	---	PASS
		5230	40.48	5209.76	5250.24	---	PASS
802.11ac VHT80	Ant1	5210	82.08	5169.04	5251.12	---	PASS

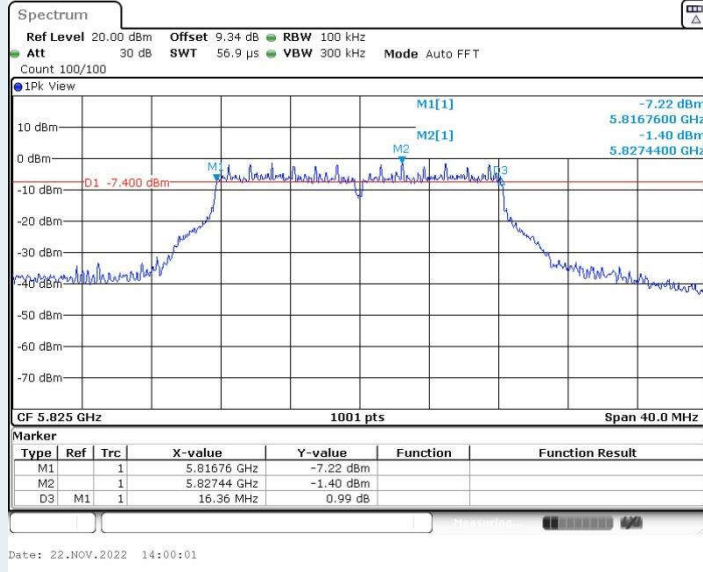
**99% OCCUPIED BANDWIDTH**

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	F <sub>L</sub> [MHz]	F <sub>H</sub> [MHz]	Limit[MHz]	Verdict
802.11a	Ant1	5180	17.902	5170.9291	5188.8312	---	PASS
		5200	17.702	5190.9291	5208.6314	---	PASS
		5240	17.902	5231.0490	5248.9510	---	PASS
		5745	17.782	5736.1289	5753.9111	---	PASS
		5785	18.262	5775.7692	5794.0310	---	PASS
		5825	17.982	5815.8492	5833.8312	---	PASS
802.11n HT20	Ant1	5180	18.541	5170.6893	5189.2308	---	PASS
		5200	18.741	5190.6494	5209.3906	---	PASS
		5240	18.581	5230.6893	5249.2707	---	PASS
		5745	18.701	5735.6094	5754.3107	---	PASS
		5785	18.941	5775.5694	5794.5105	---	PASS
		5825	18.741	5815.4895	5834.2308	---	PASS
802.11n HT40	Ant1	5190	36.683	5171.5385	5208.2218	---	PASS
		5230	36.603	5211.6983	5248.3017	---	PASS
		5755	36.843	5736.5385	5773.3816	---	PASS
		5795	36.843	5776.5385	5813.3816	---	PASS
802.11ac VHT20	Ant1	5180	18.501	5170.6494	5189.1508	---	PASS
		5200	18.861	5190.5295	5209.3906	---	PASS
		5240	18.581	5230.5295	5249.1109	---	PASS
		5745	18.981	5735.5694	5754.5504	---	PASS
		5785	19.141	5775.2098	5794.3506	---	PASS
		5825	18.581	5815.6893	5834.2707	---	PASS
802.11ac VHT40	Ant1	5190	36.603	5171.6983	5208.3017	---	PASS
		5230	36.603	5211.6983	5248.3017	---	PASS
		5755	37.003	5736.5385	5773.5415	---	PASS
		5795	36.683	5776.5385	5813.2218	---	PASS
802.11ac VHT80	Ant1	5210	76.244	5171.9580	5248.2018	---	PASS
		5775	76.404	5736.6384	5813.0420	---	PASS

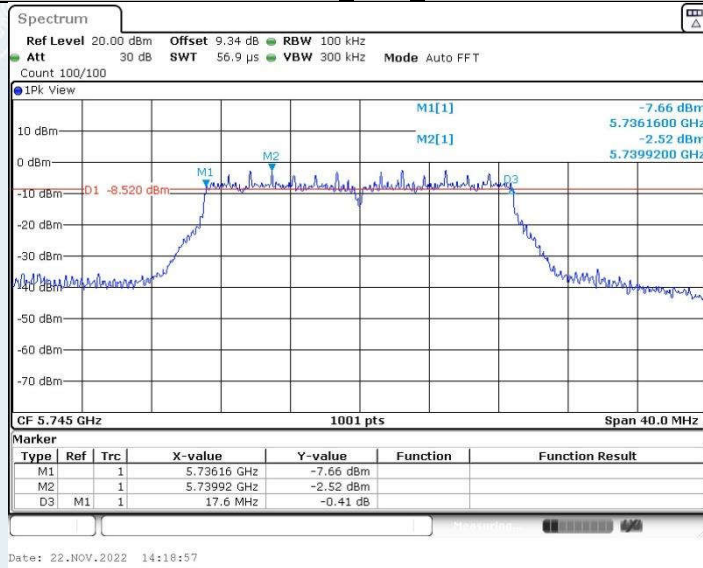
6dB BANDWIDTH



### 802.11a Ant1 5825MHz

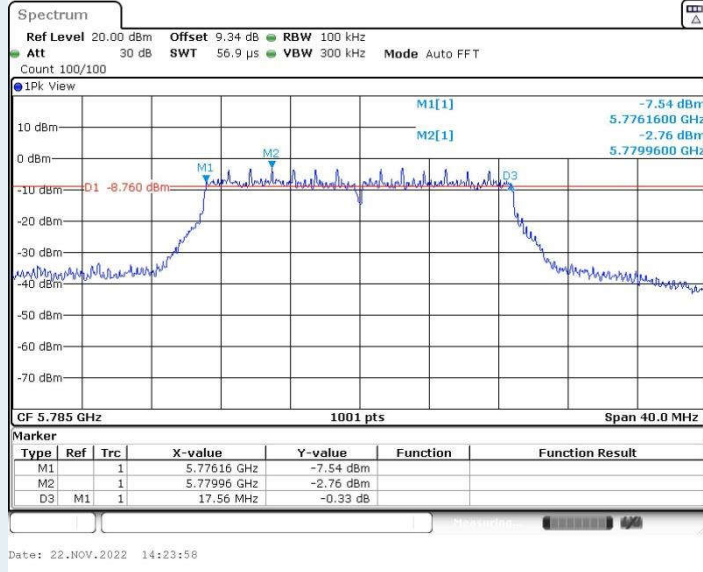


### 802.11n HT20 Ant1 5745MHz

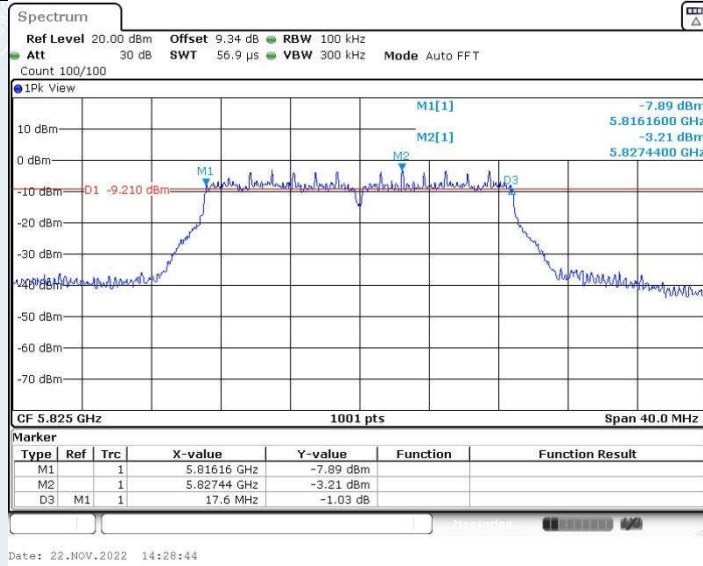


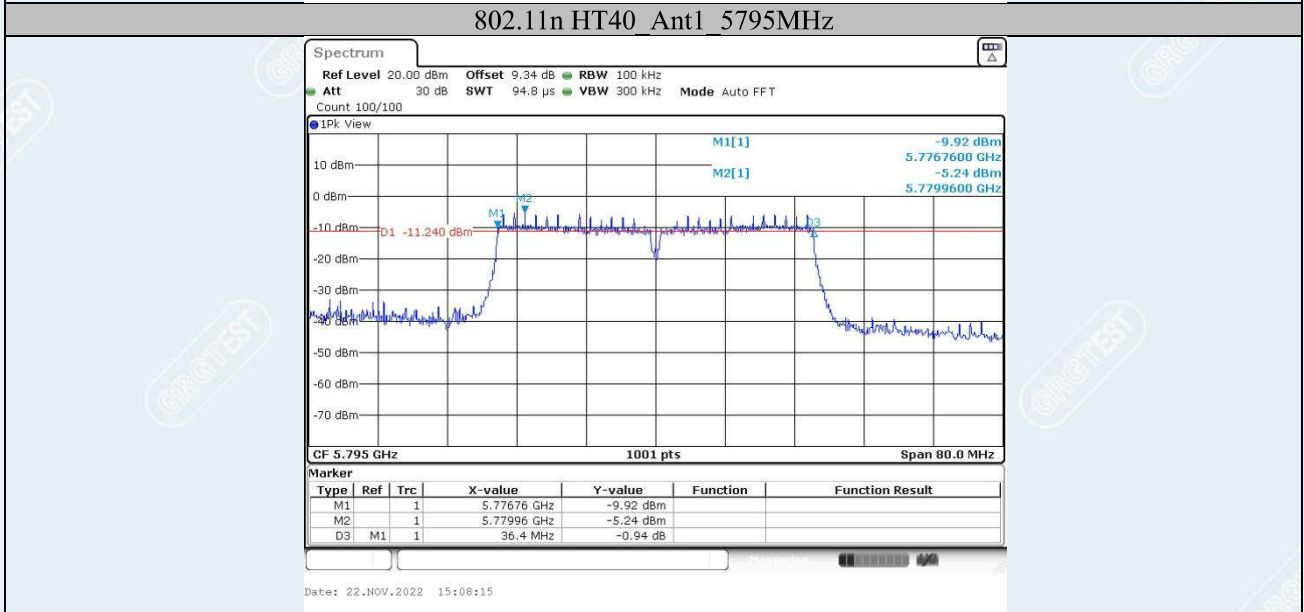
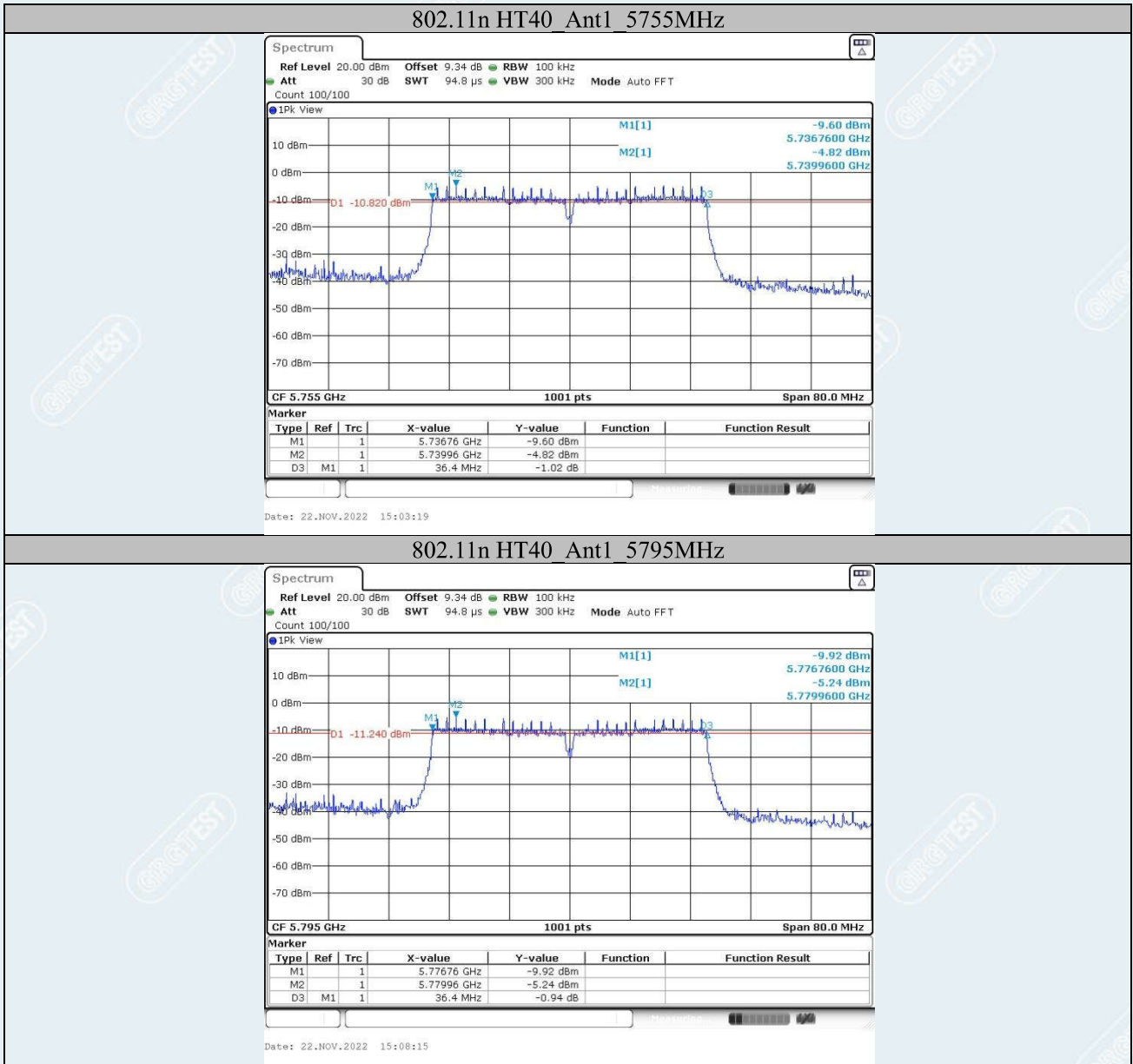


802.11n HT20 Ant1 5785MHz

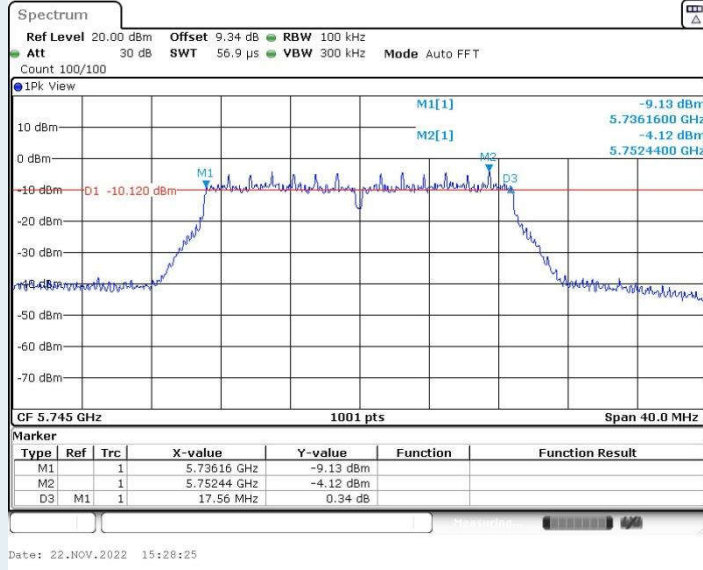


802.11n HT20 Ant1 5825MHz

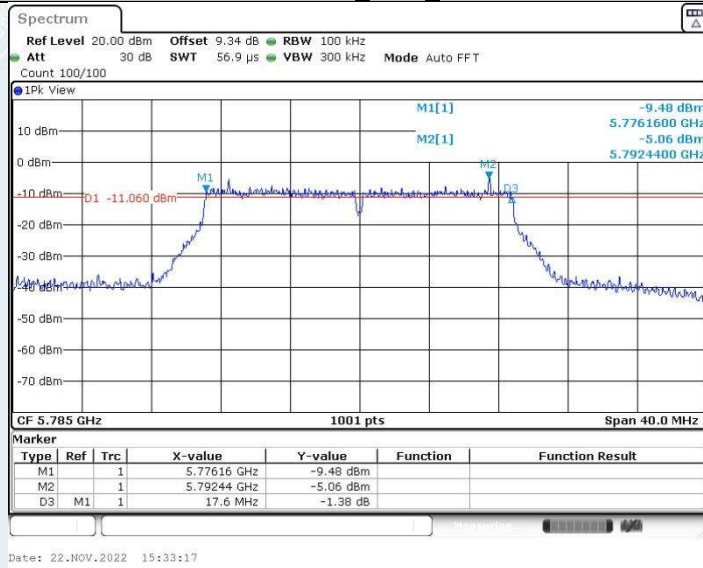




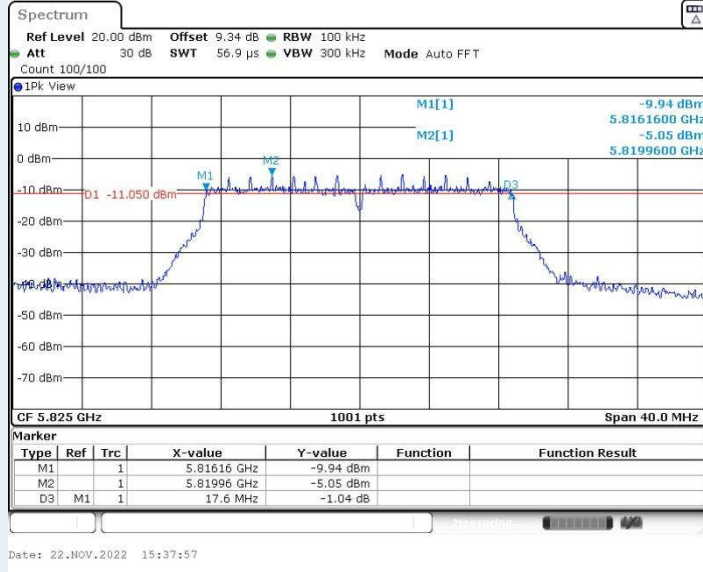
### 802.11ac VHT20 Ant1 5745MHz



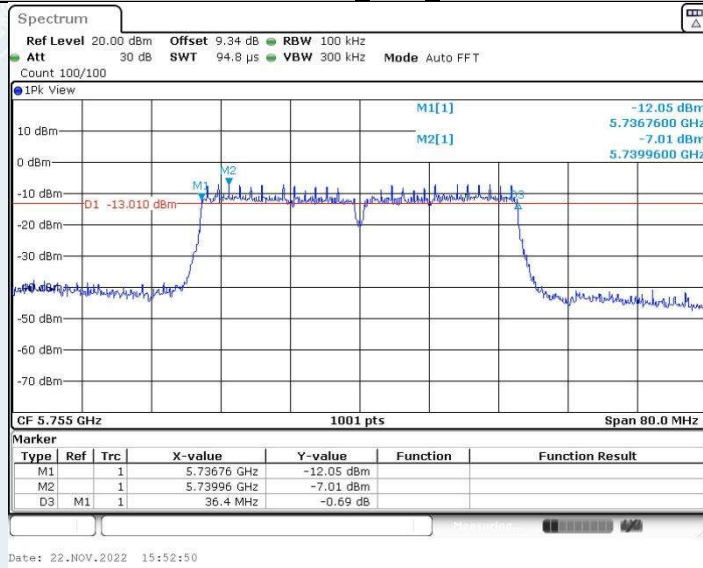
### 802.11ac VHT20 Ant1 5785MHz



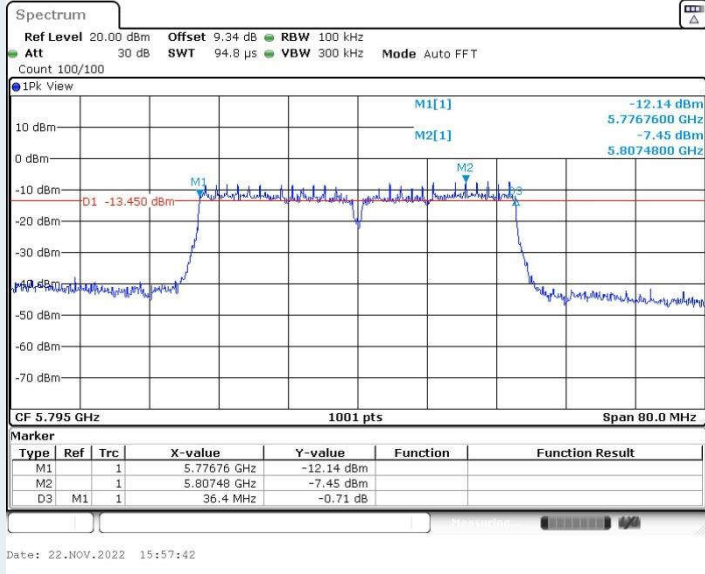
### 802.11ac VHT20 Ant1 5825MHz



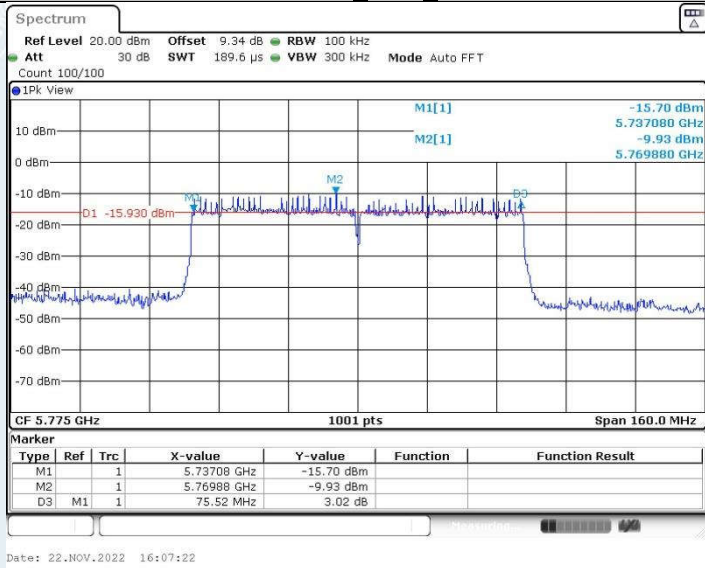
### 802.11ac VHT40 Ant1 5755MHz



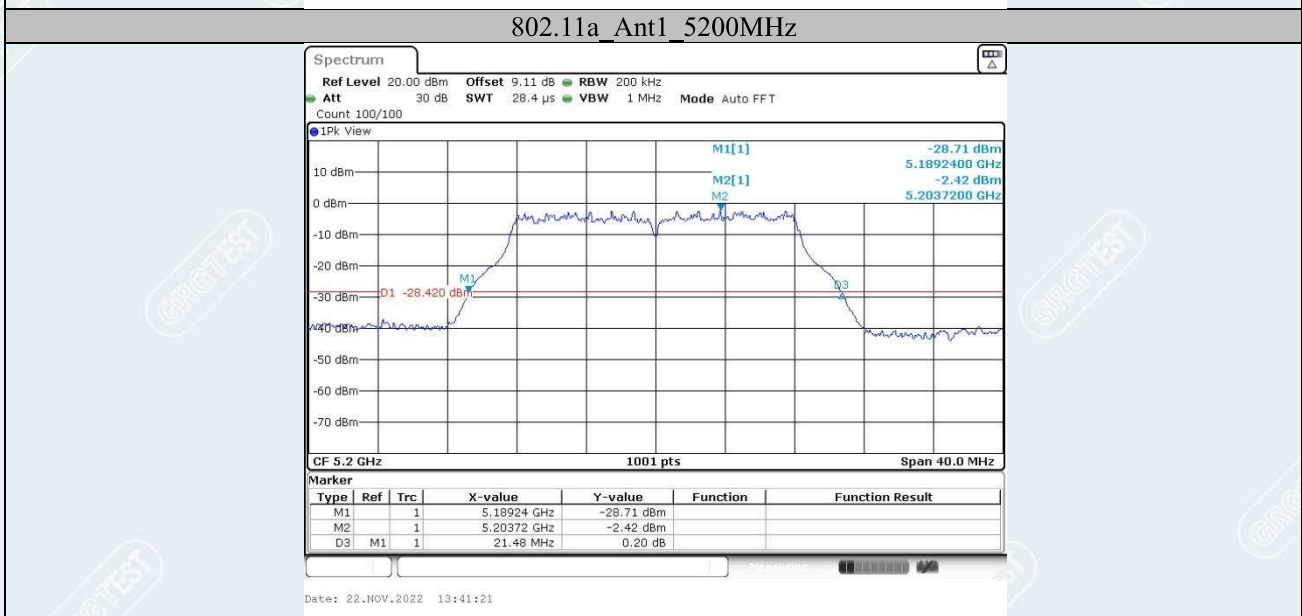
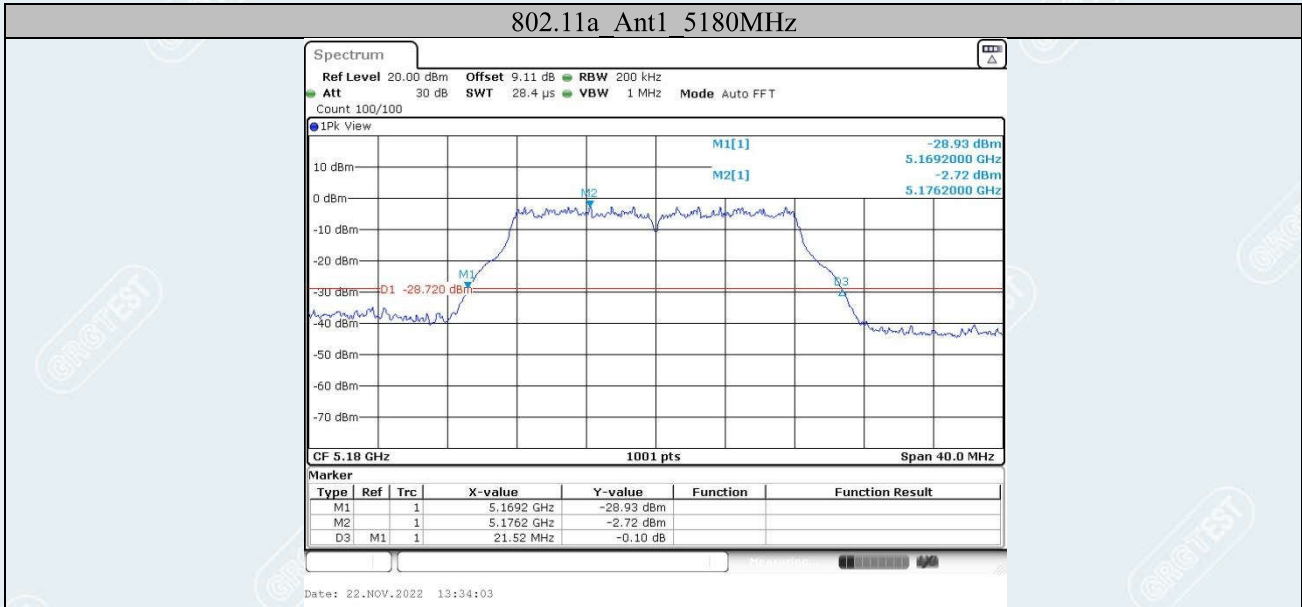
### 802.11ac VHT40 Ant1 5795MHz



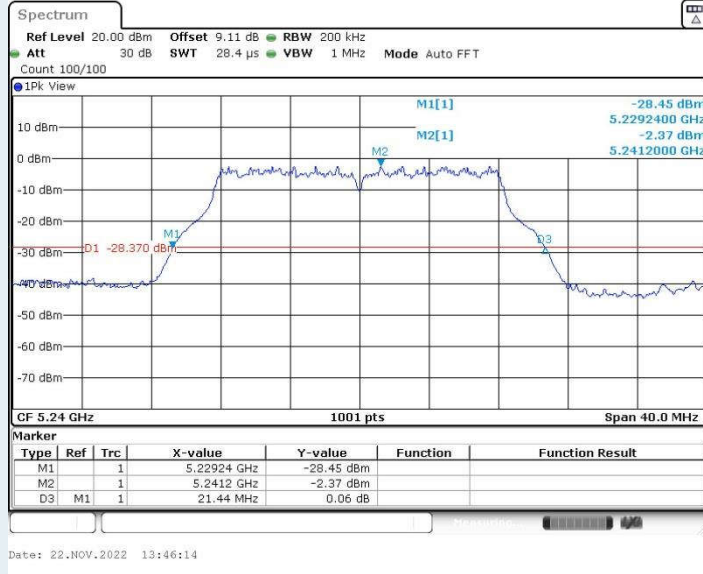
### 802.11ac VHT80 Ant1 5775MHz



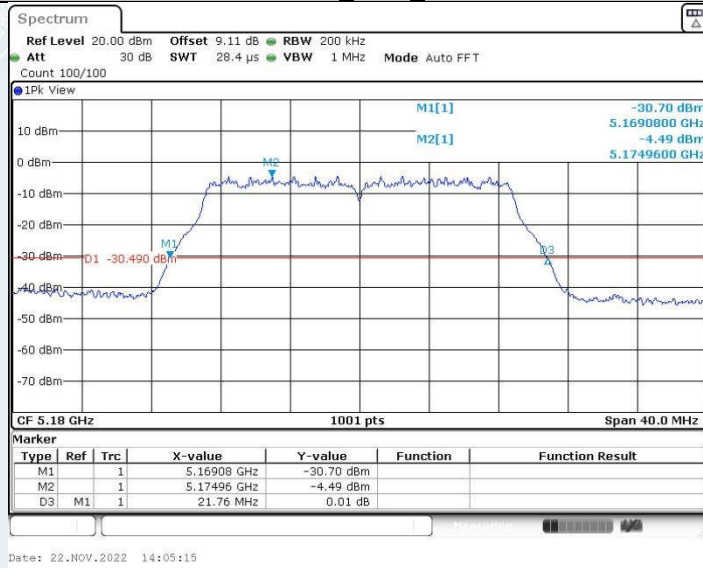
26dB BANDWIDTH



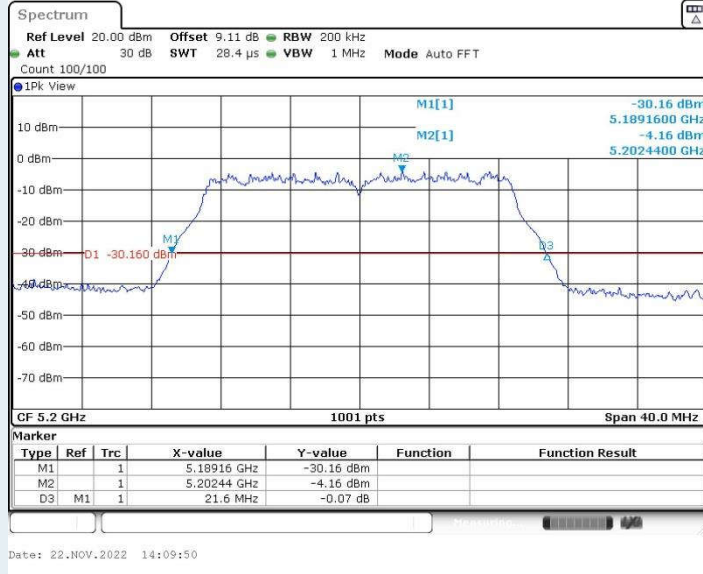
### 802.11a Ant1 5240MHz



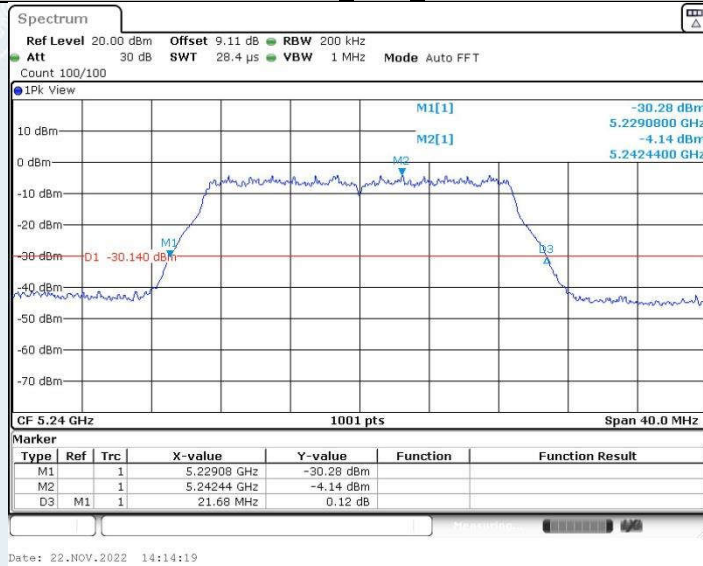
### 802.11n HT20 Ant1 5180MHz



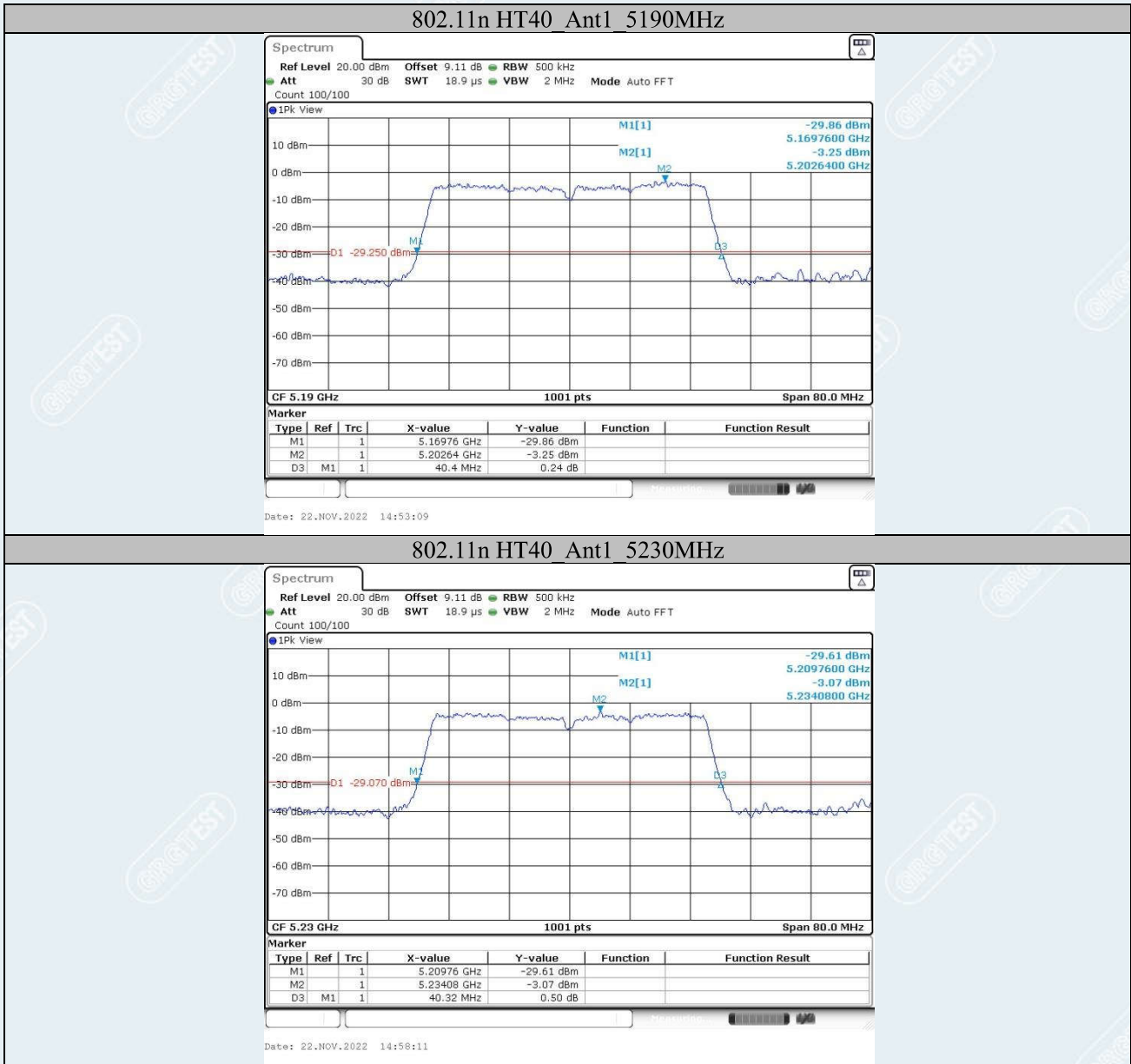
### 802.11n HT20 Ant1 5200MHz



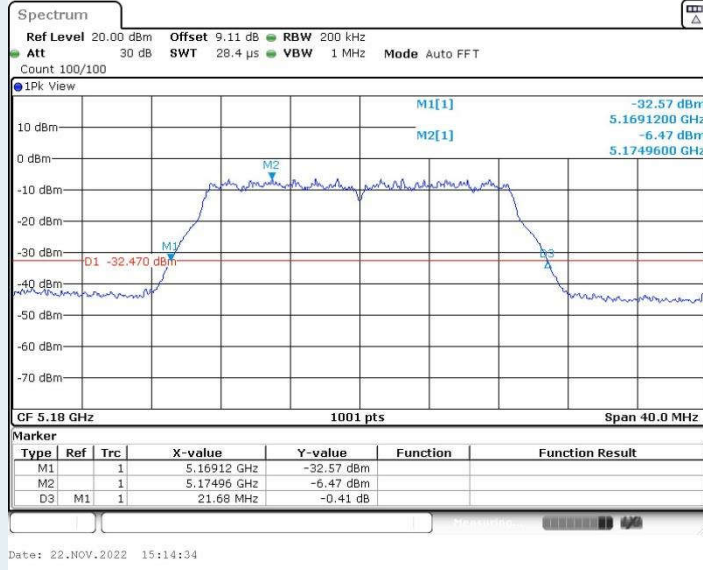
### 802.11n HT20 Ant1 5240MHz



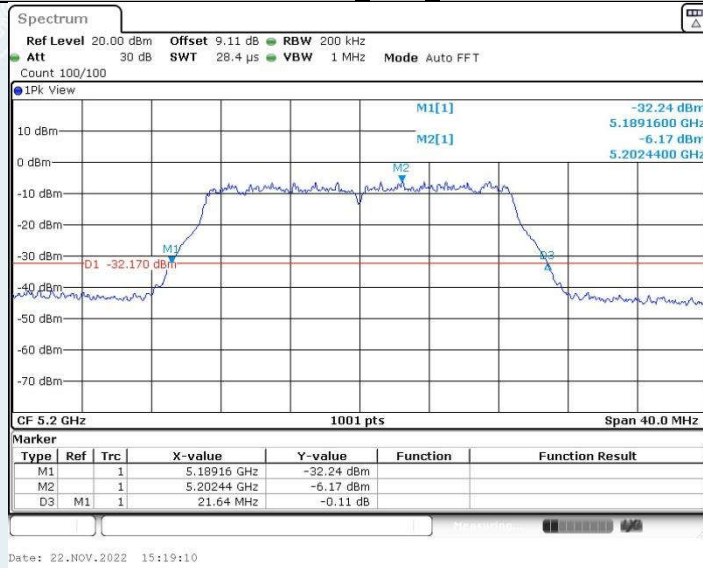




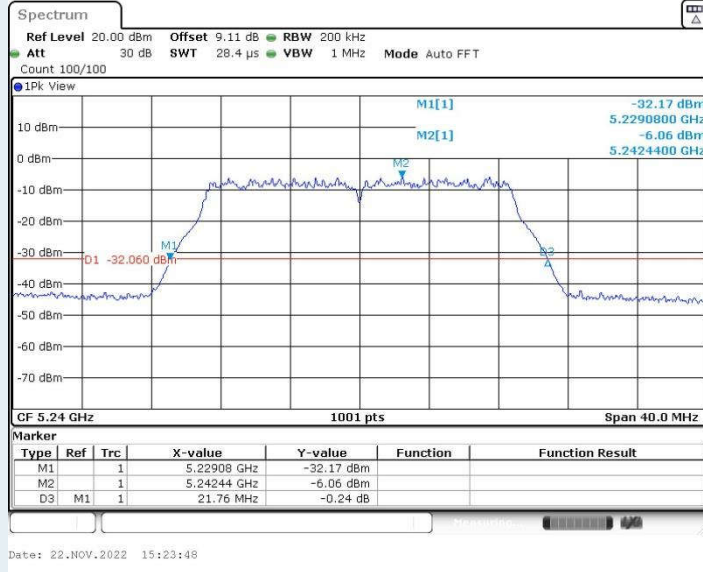
### 802.11ac VHT20 Ant1 5180MHz



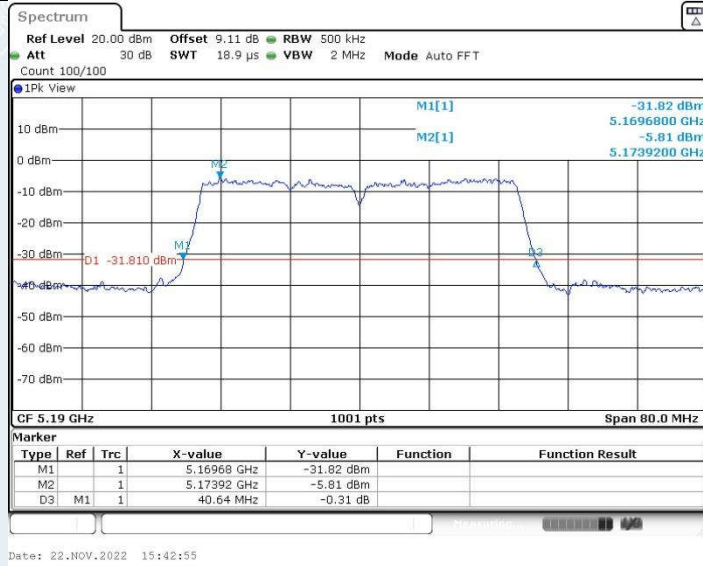
### 802.11ac VHT20 Ant1 5200MHz



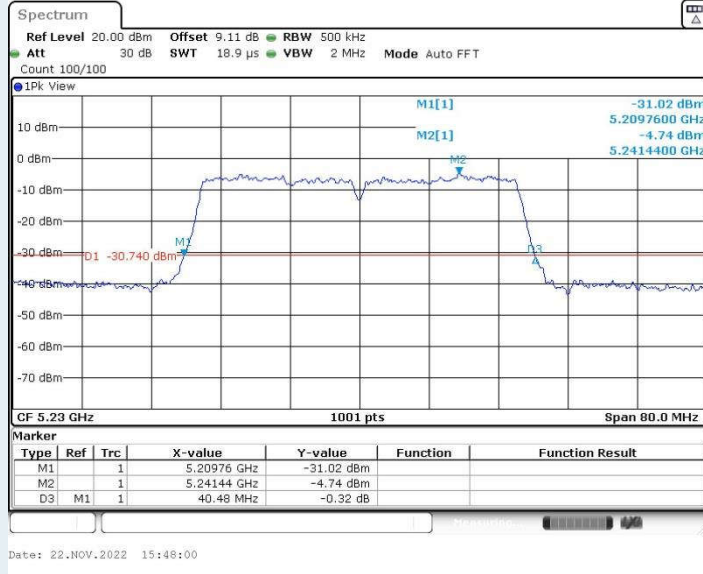
### 802.11ac VHT20 Ant1 5240MHz



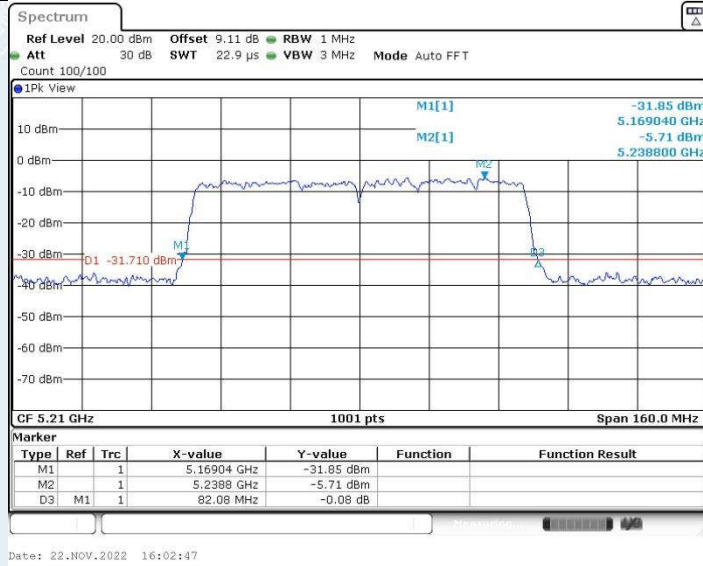
### 802.11ac VHT40 Ant1 5190MHz



### 802.11ac VHT40 Ant1 5230MHz



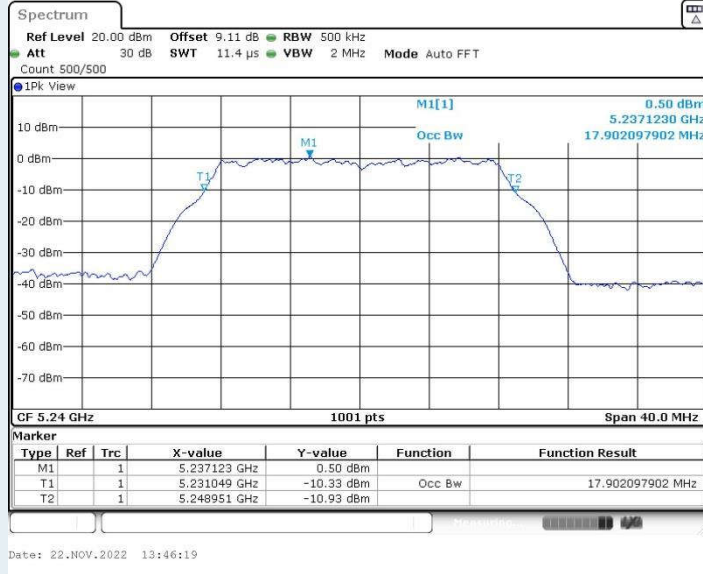
### 802.11ac VHT80 Ant1 5210MHz



**99% OCCUPIED BANDWIDTH**



### 802.11a Ant1 5240MHz



### 802.11a Ant1 5745MHz

