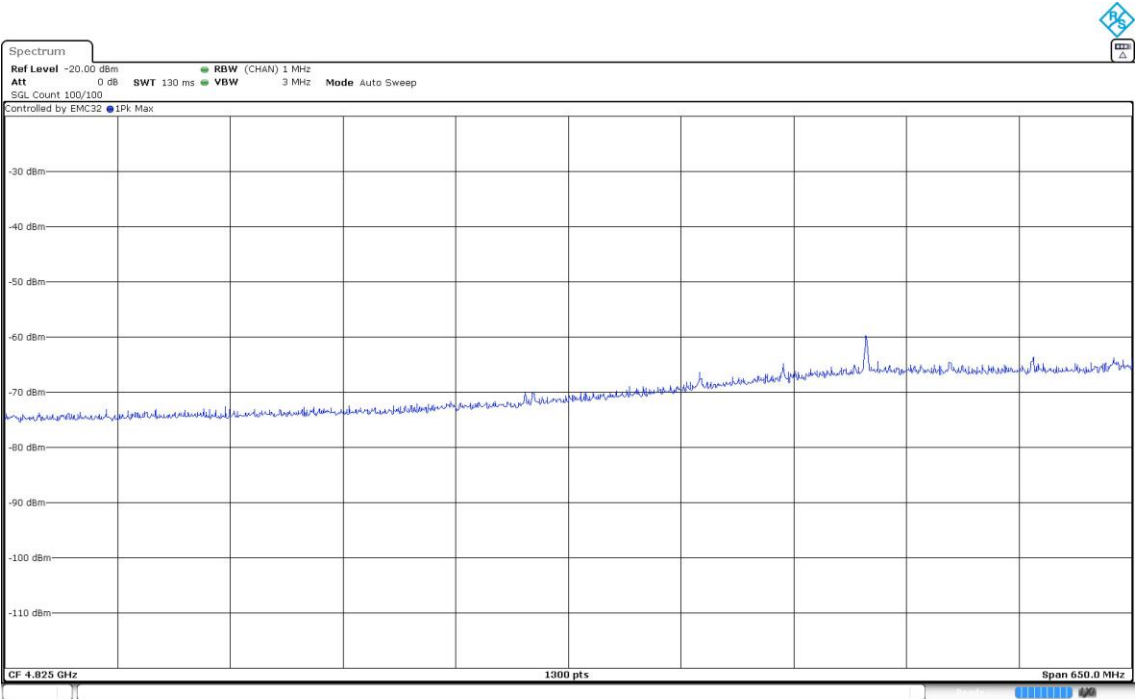
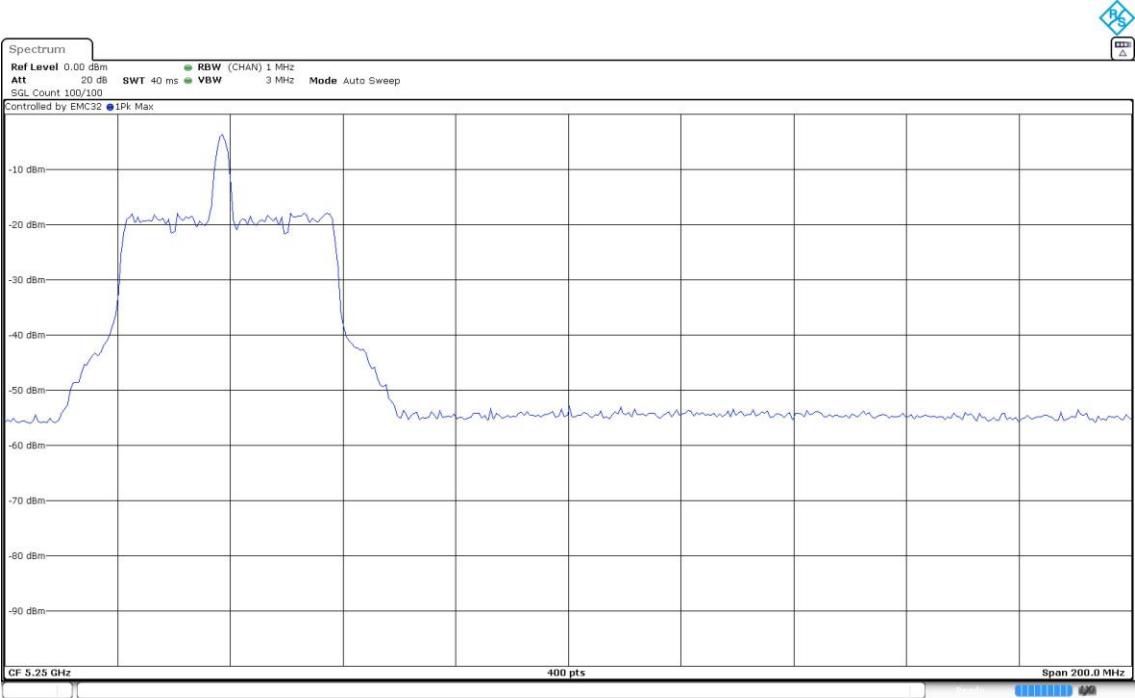
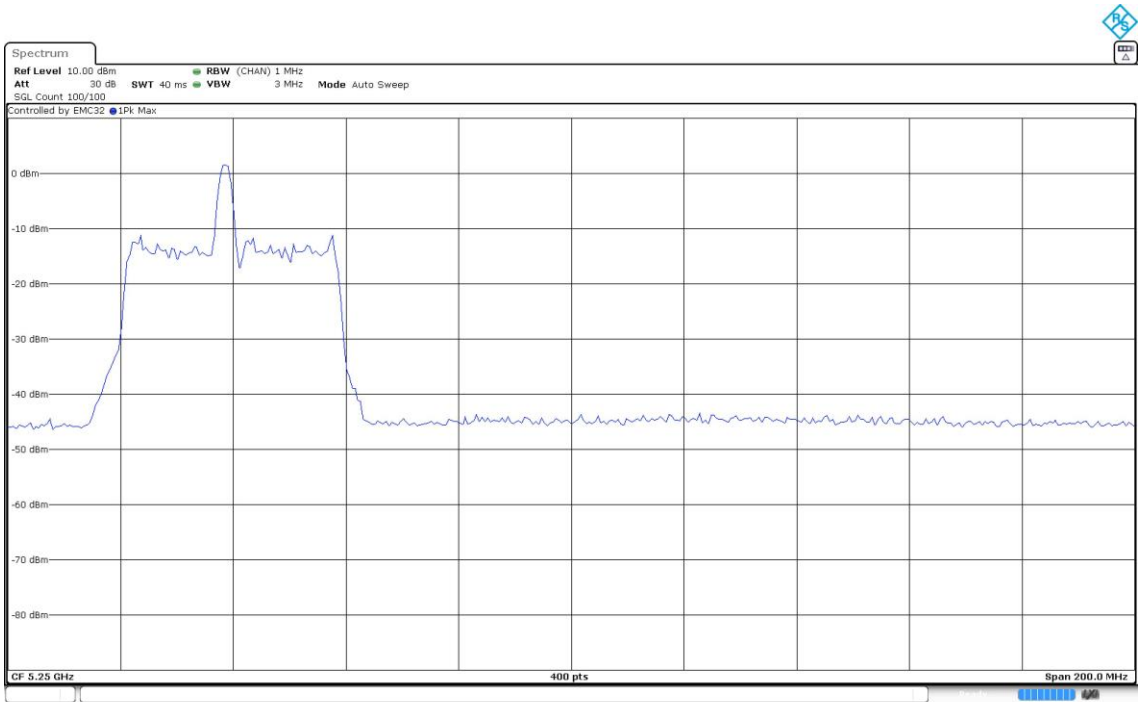




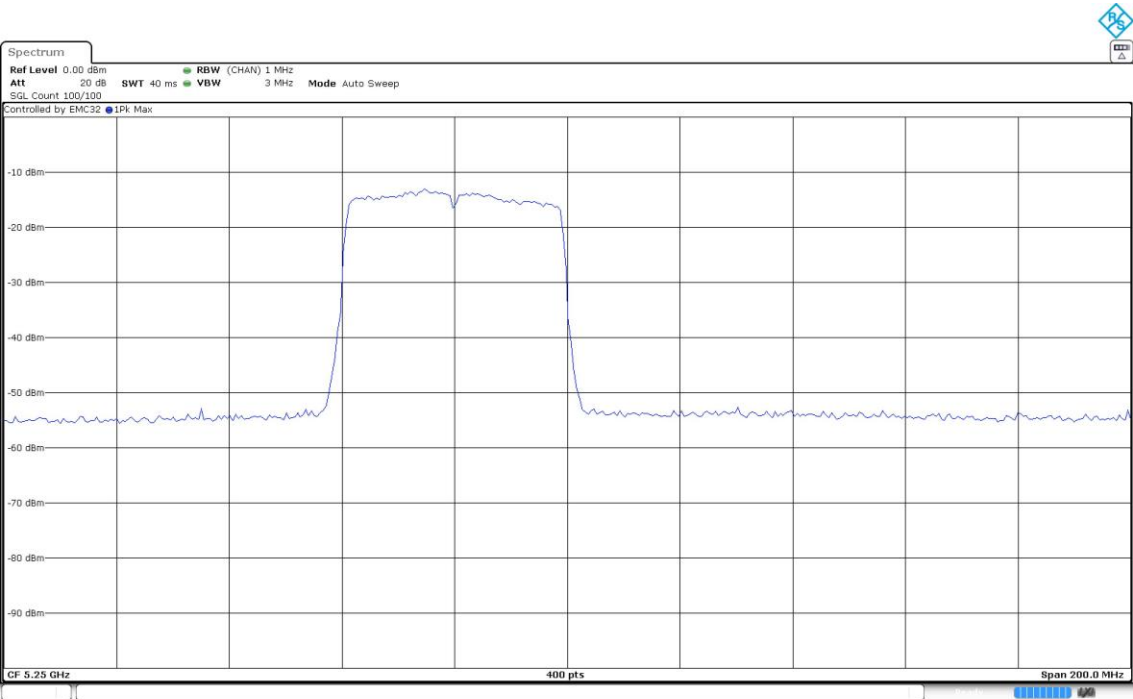
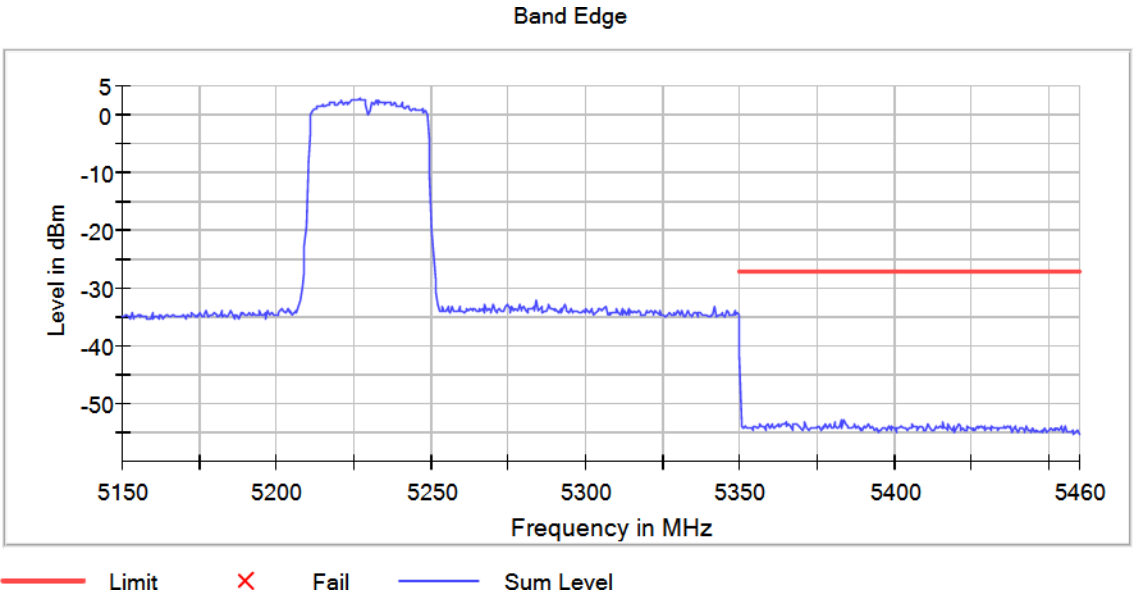


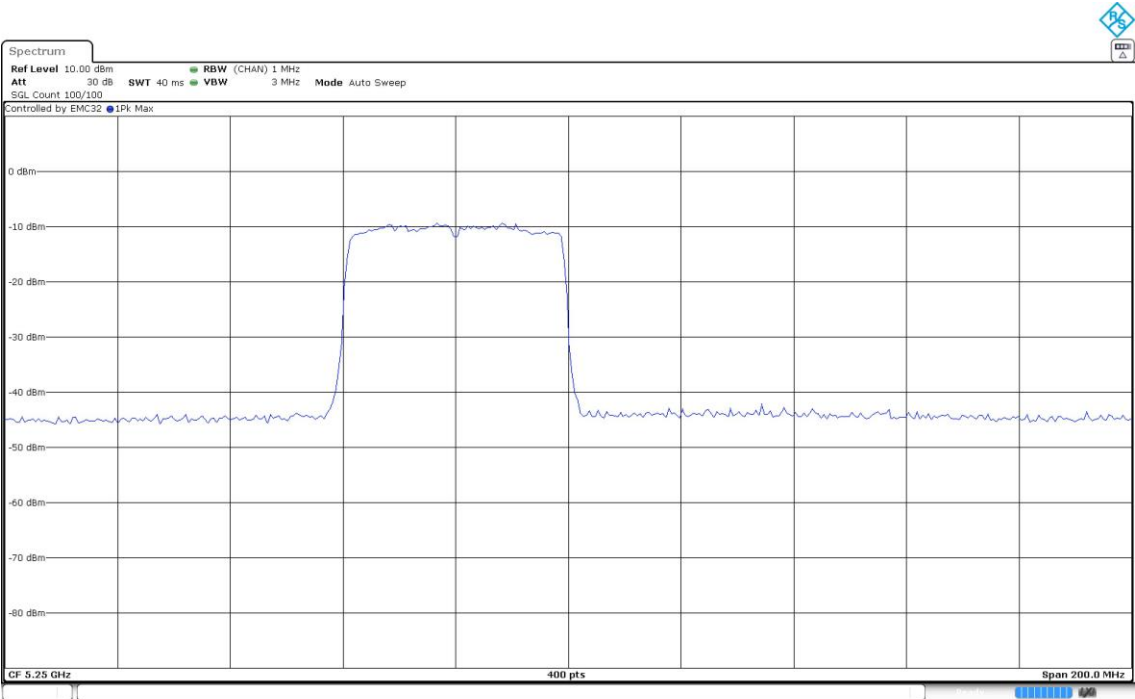
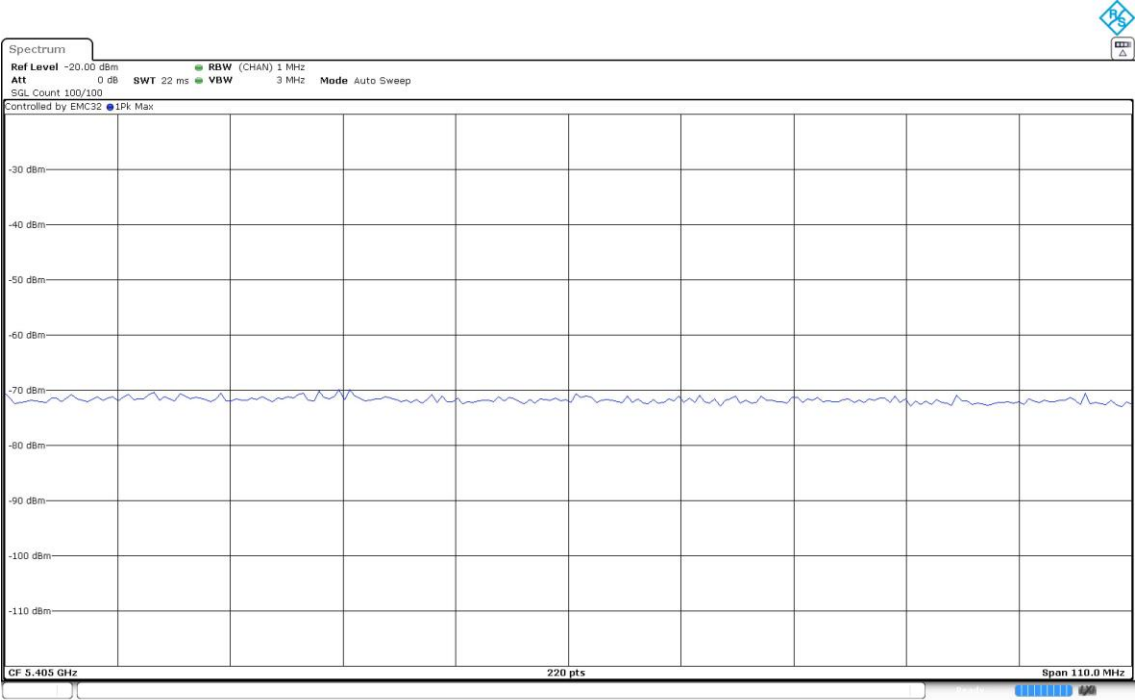
Tables:
Spectrum Analyzer Parameters

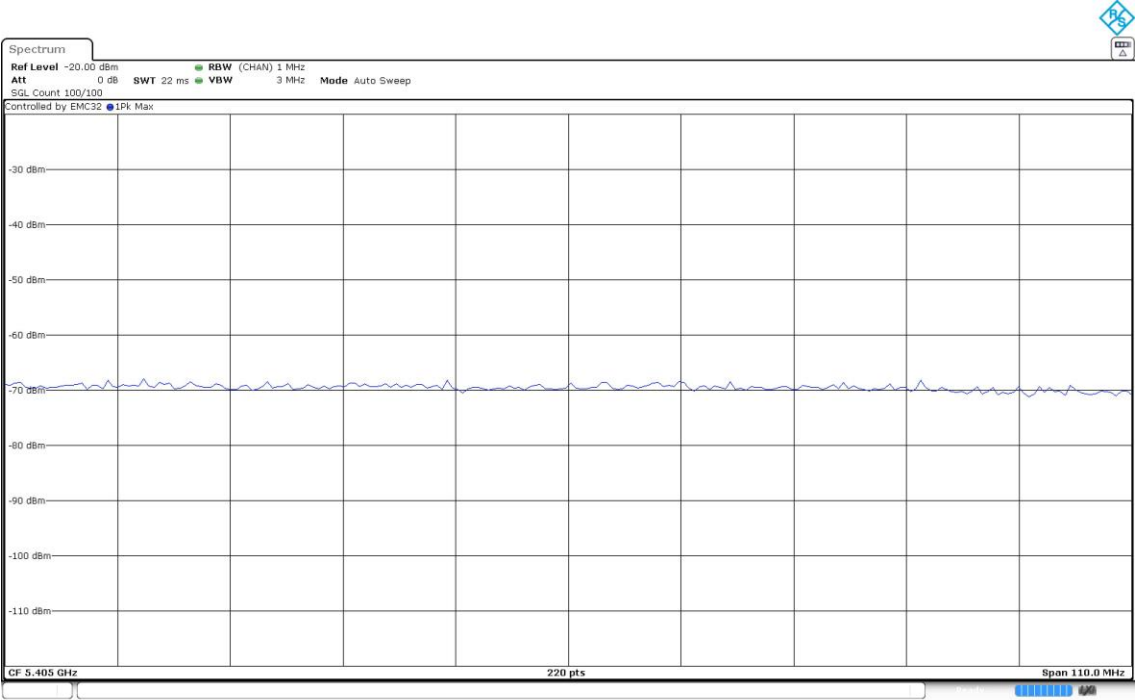
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
4996.250000	-46.529	19.5	-27.000	PASS
4996.750000	-46.842	19.8	-27.000	PASS
4997.250000	-47.207	20.2	-27.000	PASS
4997.750000	-48.474	21.5	-27.000	PASS
4995.750000	-48.727	21.7	-27.000	PASS
5093.250000	-50.336	23.3	-27.000	PASS
5092.750000	-50.500	23.5	-27.000	PASS
5092.250000	-50.649	23.6	-27.000	PASS
5149.750000	-50.747	23.7	-27.000	PASS
4995.250000	-50.800	23.8	-27.000	PASS
5044.250000	-50.989	24.0	-27.000	PASS
5140.250000	-50.993	24.0	-27.000	PASS
5147.750000	-51.014	24.0	-27.000	PASS
5091.750000	-51.097	24.1	-27.000	PASS
5139.250000	-51.125	24.1	-27.000	PASS

Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5230.00000 Modulation = 802.11ax HE40 (OFDMA MCS0)
Subcarrier Mode = SU

Images:





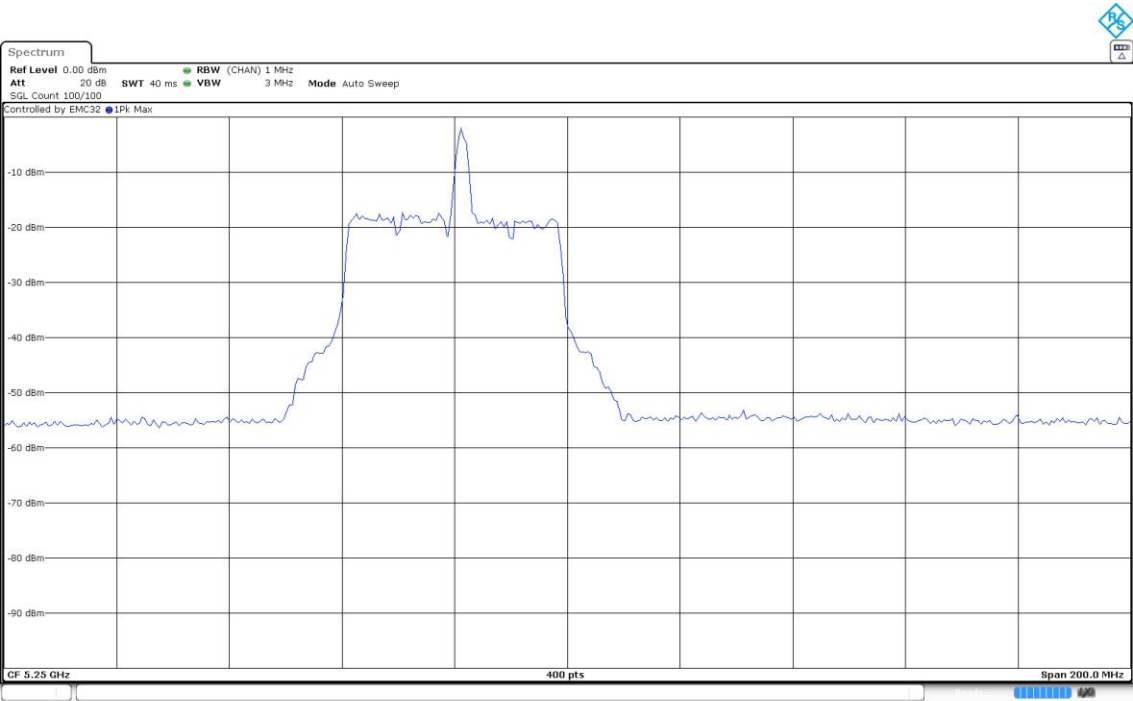
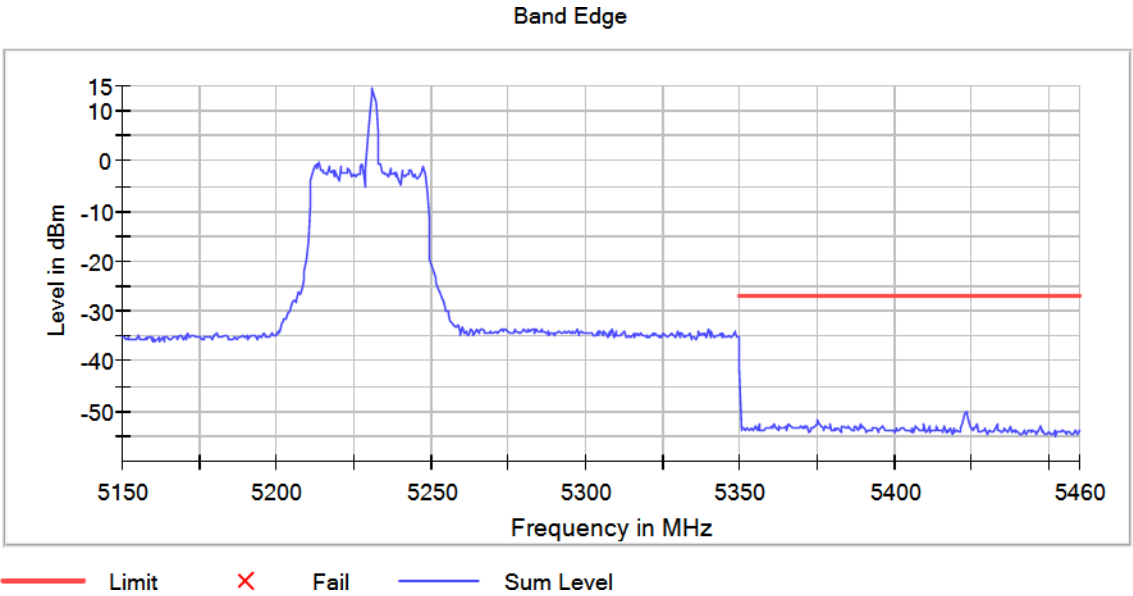


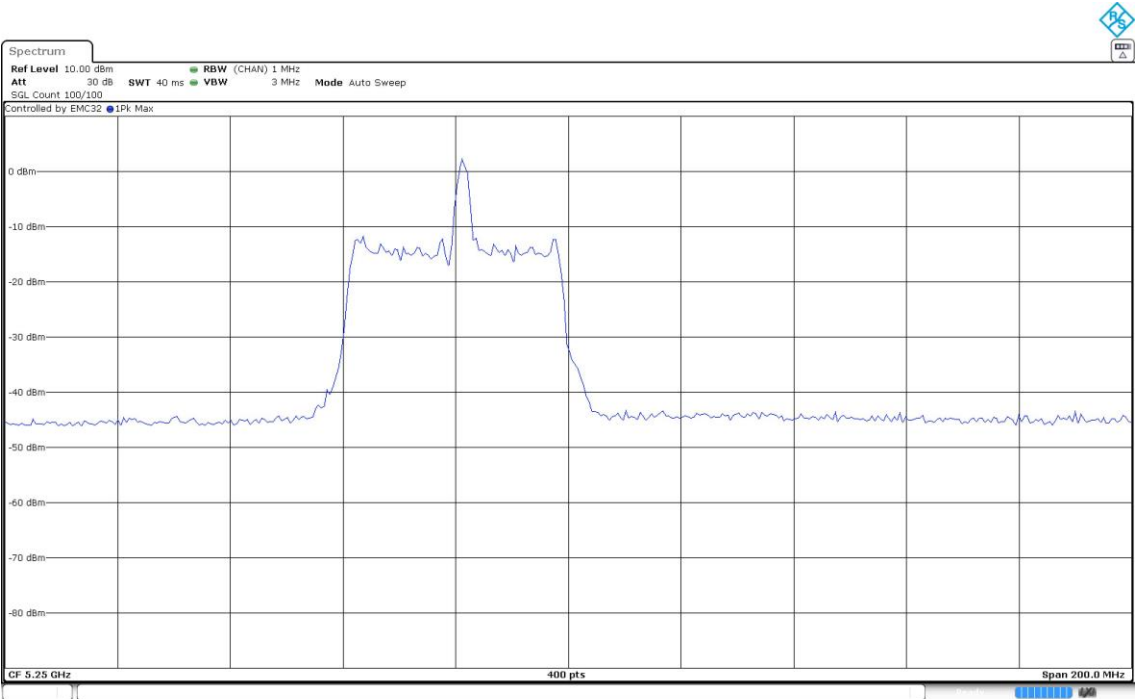
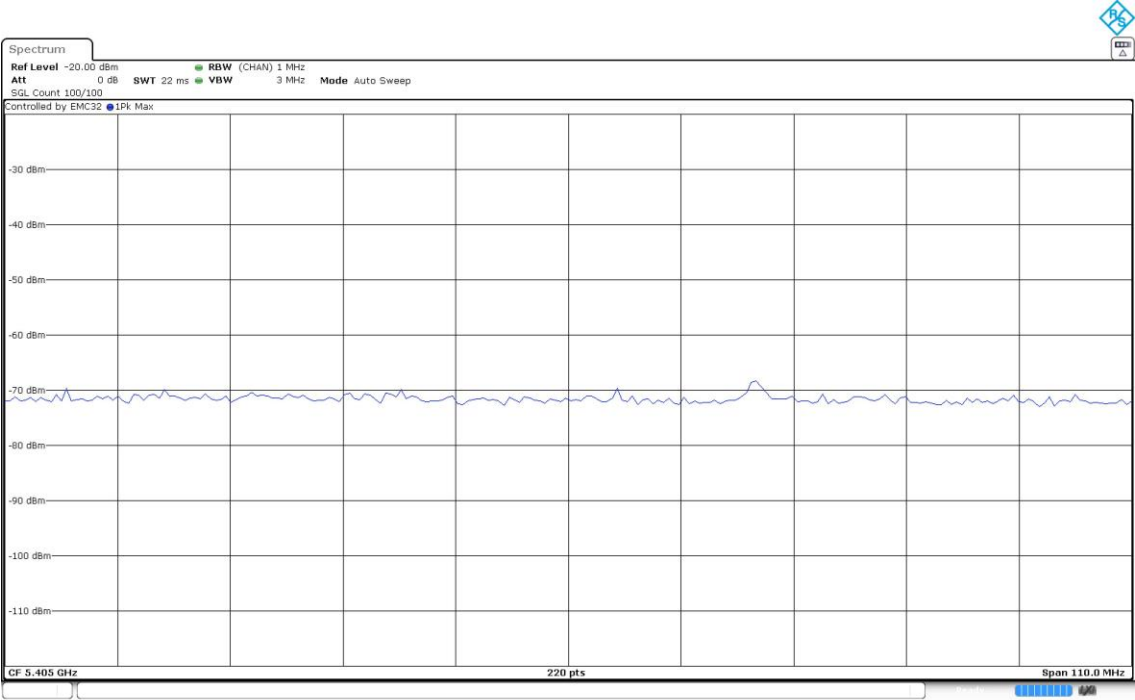
Tables:
Spectrum Analyzer Parameters

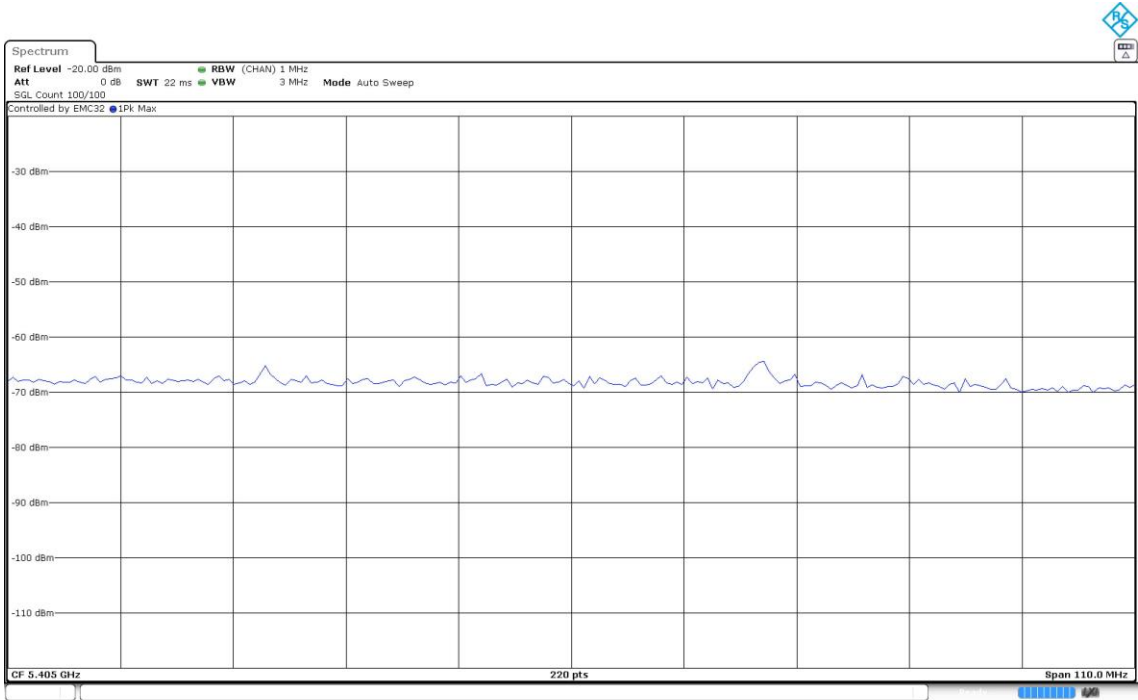
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5383.750000	-52.761	25.8	-27.000	PASS
5382.750000	-52.938	25.9	-27.000	PASS
5350.250000	-53.280	26.3	-27.000	PASS
5380.750000	-53.329	26.3	-27.000	PASS
5371.250000	-53.337	26.3	-27.000	PASS
5364.750000	-53.360	26.4	-27.000	PASS
5415.750000	-53.389	26.4	-27.000	PASS
5363.750000	-53.432	26.4	-27.000	PASS
5356.750000	-53.471	26.5	-27.000	PASS
5362.250000	-53.536	26.5	-27.000	PASS
5360.250000	-53.540	26.5	-27.000	PASS
5384.250000	-53.554	26.6	-27.000	PASS
5379.250000	-53.564	26.6	-27.000	PASS
5391.750000	-53.587	26.6	-27.000	PASS
5364.250000	-53.598	26.6	-27.000	PASS

Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5230.00000 Modulation = 802.11ax HE40 (OFDMA MCS0)
Subcarrier Mode = RU

Images:







Tables:
Spectrum Analyzer Parameters

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5423.250000	-50.192	23.2	-27.000	PASS
5423.750000	-50.625	23.6	-27.000	PASS
5422.750000	-50.653	23.7	-27.000	PASS
5375.250000	-51.803	24.8	-27.000	PASS
5424.250000	-52.075	25.1	-27.000	PASS
5422.250000	-52.168	25.2	-27.000	PASS
5365.750000	-52.413	25.4	-27.000	PASS
5356.250000	-52.456	25.5	-27.000	PASS
5388.750000	-52.492	25.5	-27.000	PASS
5409.750000	-52.494	25.5	-27.000	PASS
5433.250000	-52.641	25.6	-27.000	PASS
5426.750000	-52.650	25.6	-27.000	PASS
5375.750000	-52.693	25.7	-27.000	PASS
5374.750000	-52.700	25.7	-27.000	PASS
5379.250000	-52.726	25.7	-27.000	PASS

Modulation: 802.11ax HE80 (OFDMA MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	Antenna configuration	Subcarrier Mode	Freq (MHz)	Lvl (dBm)
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5148.250000	-49.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5149.750000	-49.4
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5376.750000	-53.0
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5366.250000	-53.3
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5146.750000	-49.6
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5144.250000	-49.7
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5384.250000	-53.5
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5149.250000	-49.8
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5381.750000	-53.6
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5139.750000	-49.8
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5385.750000	-53.6
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5145.250000	-49.8
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5383.750000	-53.7
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5386.250000	-53.8
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5134.750000	-49.9
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5147.750000	-49.9
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5377.250000	-53.8
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5356.750000	-53.9
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5147.250000	-50.0
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5141.750000	-50.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5391.250000	-53.9
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5148.750000	-50.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5362.250000	-53.9

Operation Band (MHz)	Port	Freq (MHz)	Antenna configuration	Subcarrier Mode	Freq (MHz)	Lvl (dBm)
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5145.750000	-50.2
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5387.250000	-53.9
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5370.250000	-53.9
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5141.250000	-50.3
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5146.250000	-50.3
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5401.250000	-53.9
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	SU	5364.250000	-54.0
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5145.750000	-45.6
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5144.250000	-46.0
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5381.250000	-53.3
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5148.750000	-46.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5365.750000	-53.7
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5366.250000	-53.8
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5141.250000	-46.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5353.750000	-53.8
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5149.750000	-46.2
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5141.750000	-46.4
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5359.250000	-53.9
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5143.750000	-46.4
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5373.250000	-54.0
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5380.750000	-54.0
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5144.750000	-46.5
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5142.750000	-46.8
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5423.750000	-54.0
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5148.250000	-46.9

Operation Band (MHz)	Port	Freq (MHz)	Antenna configuration	Subcarrier Mode	Freq (MHz)	Lvl (dBm)
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5406.750000	-54.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5149.250000	-47.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5395.250000	-54.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5147.250000	-47.4
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5378.750000	-54.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5401.750000	-54.1
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5140.750000	-47.5
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5145.250000	-47.5
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5371.750000	-54.2
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5355.750000	-54.2
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5121.250000	-47.5
[5150, 5250]	2+3	5210.00000	MIMO CDD Mode 2x2	RU	5369.250000	-54.2

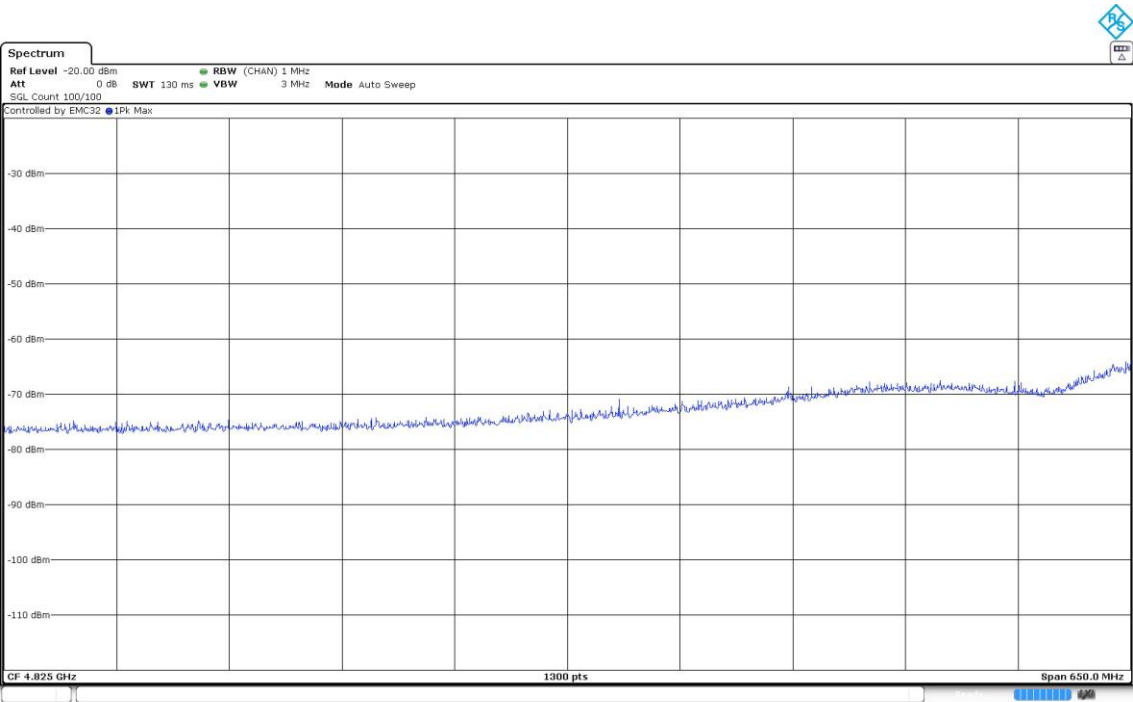
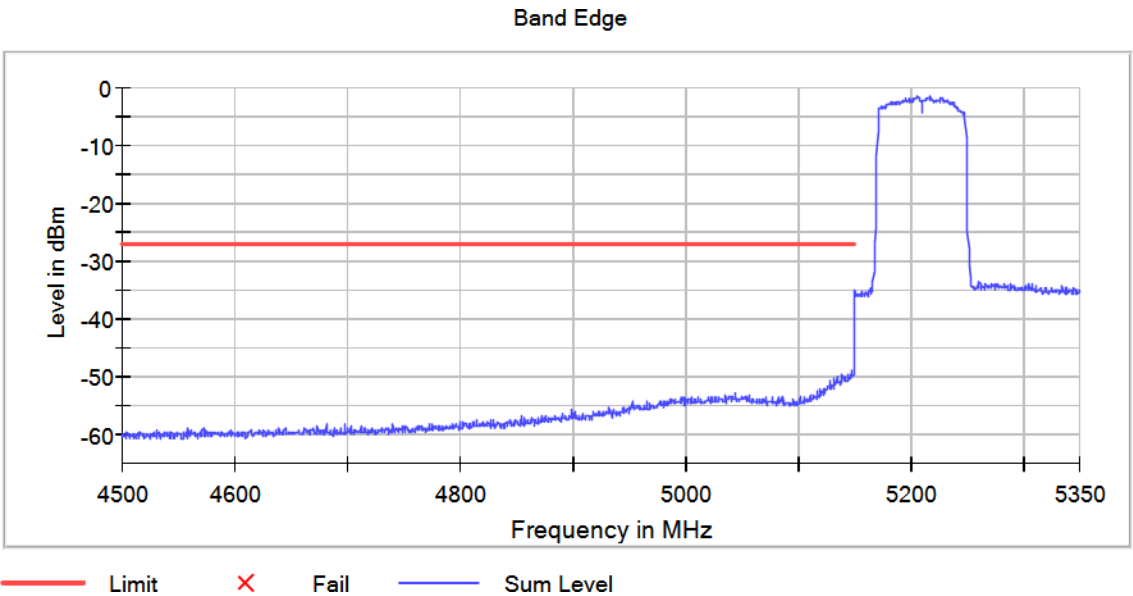
Verdict

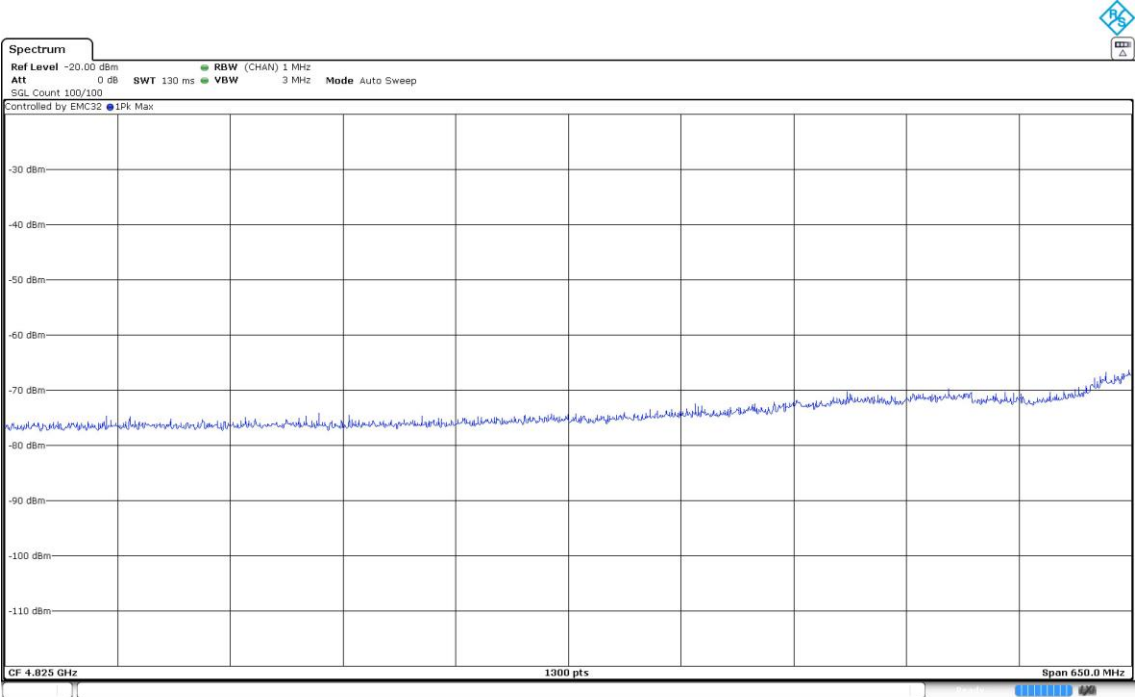
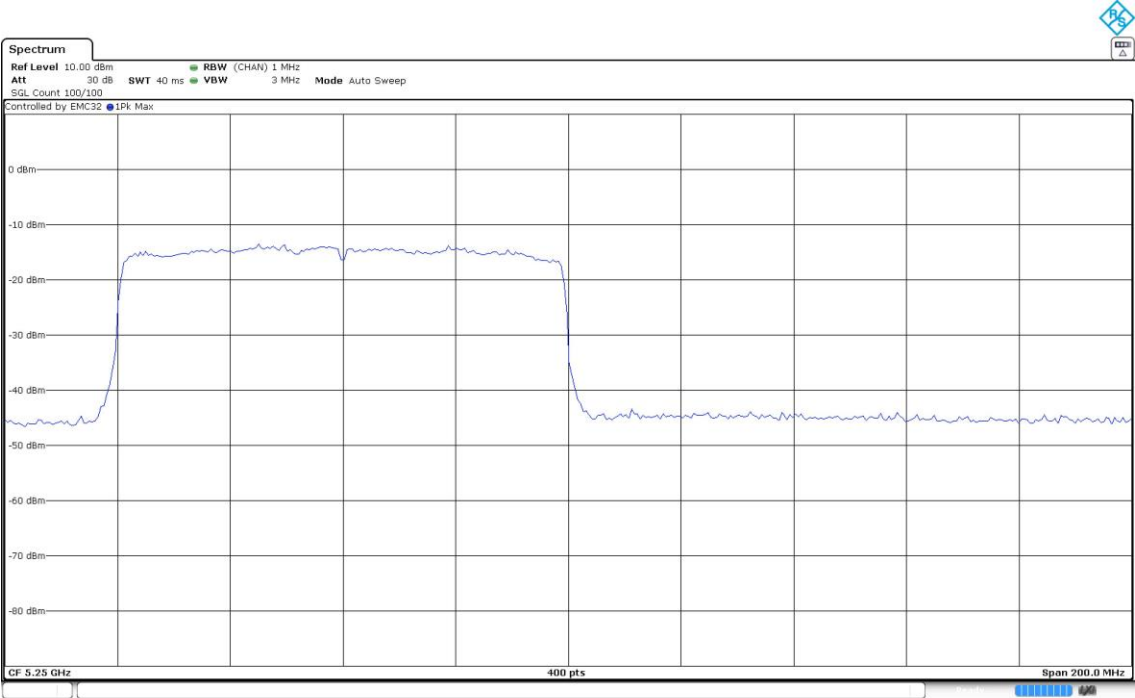
Pass

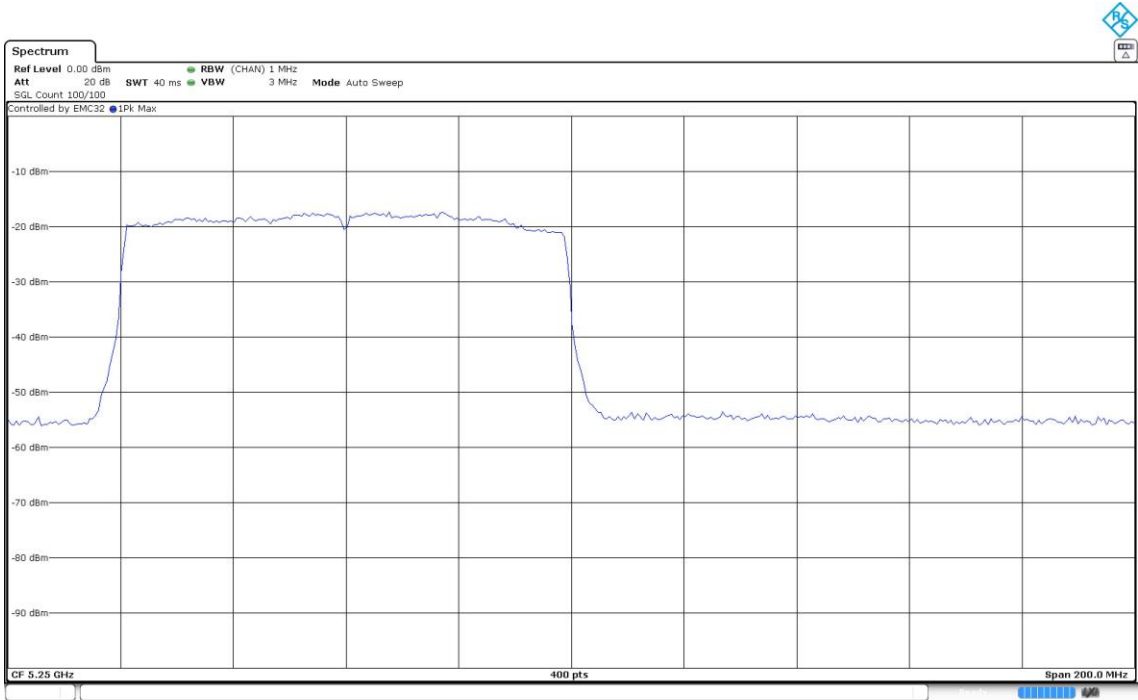
Attachments

Operation Band MHz = [5150, 5250] Active Port = 2+3
Frequency MHz = 5210.00000 Modulation = 802.11ax HE80 (OFDMA MCS0)
Antenna configuration = MIMO CDD Mode 2x2 Subcarrier Mode = SU

Images:







Tables:
Spectrum Analyzer Parameters

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5148.250000	-49.080	22.1	-27.000	PASS
5149.750000	-49.382	22.4	-27.000	PASS
5146.750000	-49.576	22.6	-27.000	PASS
5144.250000	-49.743	22.7	-27.000	PASS
5149.250000	-49.756	22.8	-27.000	PASS
5139.750000	-49.805	22.8	-27.000	PASS
5145.250000	-49.832	22.8	-27.000	PASS
5134.750000	-49.865	22.9	-27.000	PASS
5147.750000	-49.942	22.9	-27.000	PASS
5147.250000	-49.979	23.0	-27.000	PASS
5141.750000	-50.102	23.1	-27.000	PASS
5148.750000	-50.126	23.1	-27.000	PASS
5145.750000	-50.158	23.2	-27.000	PASS
5141.250000	-50.294	23.3	-27.000	PASS
5146.250000	-50.335	23.3	-27.000	PASS

Operation Band MHz = [5150, 5250]

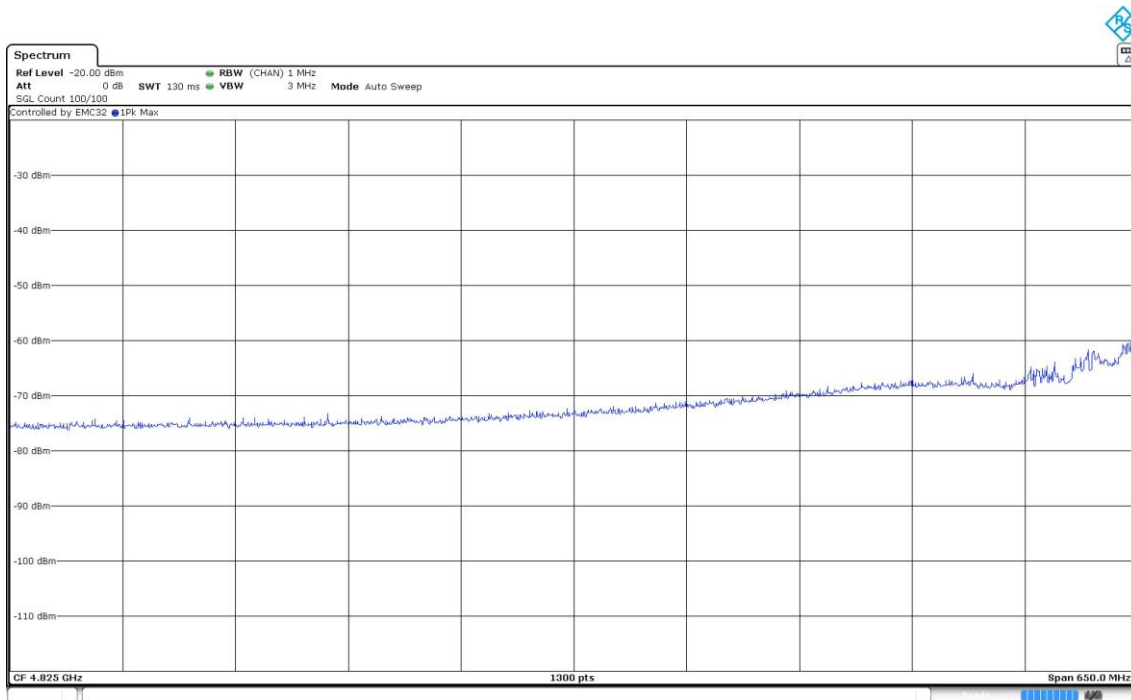
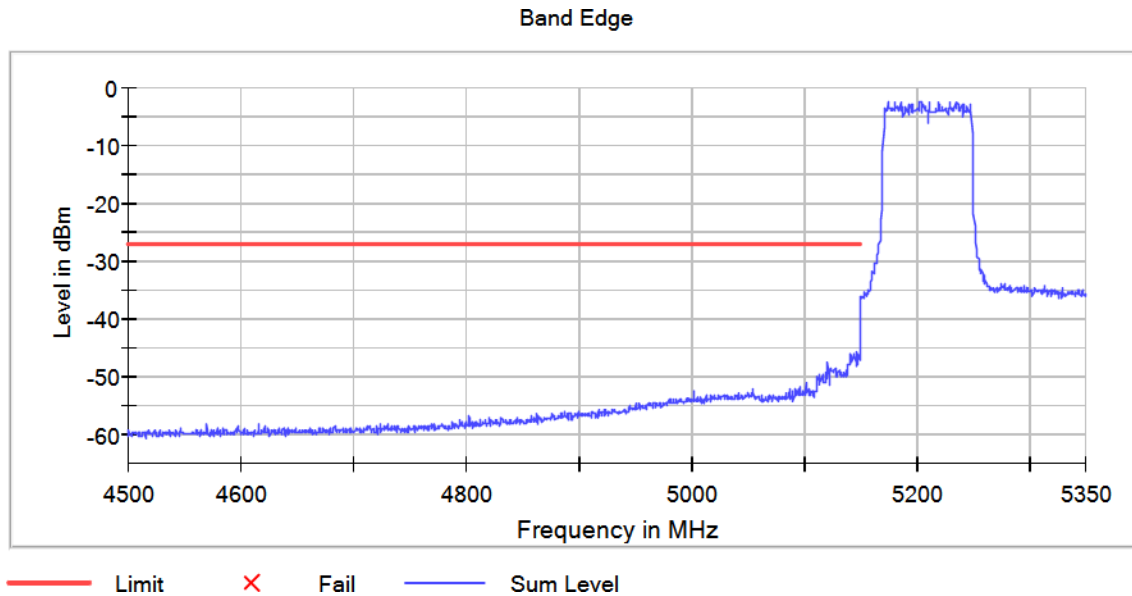
Active Port = 2+3

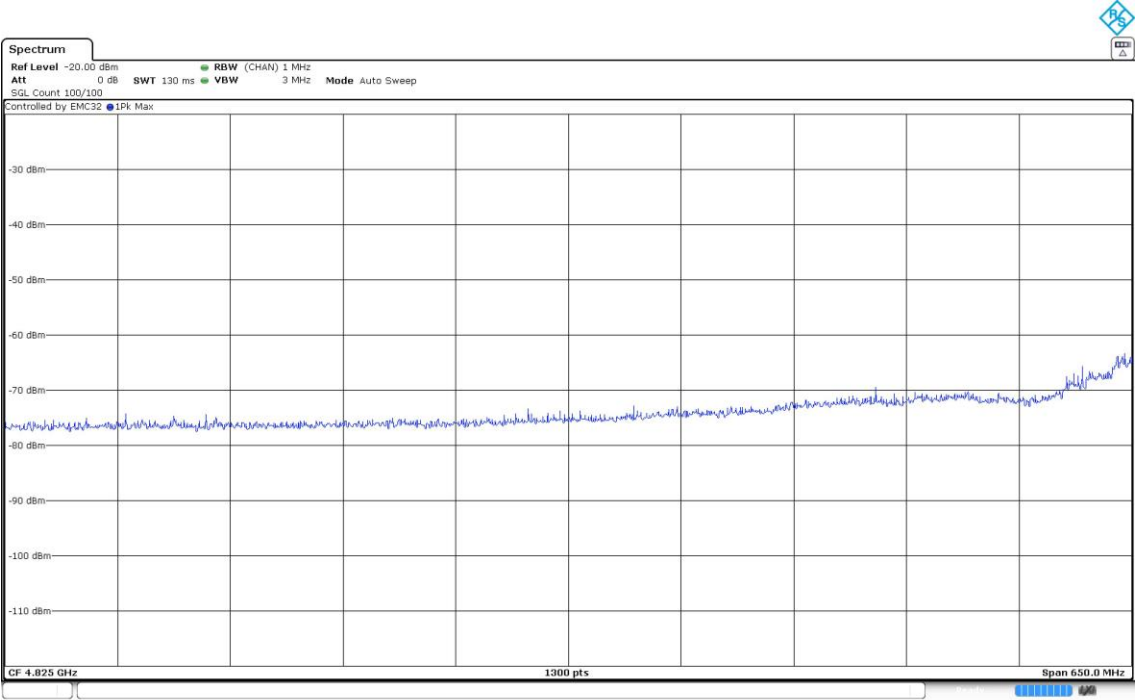
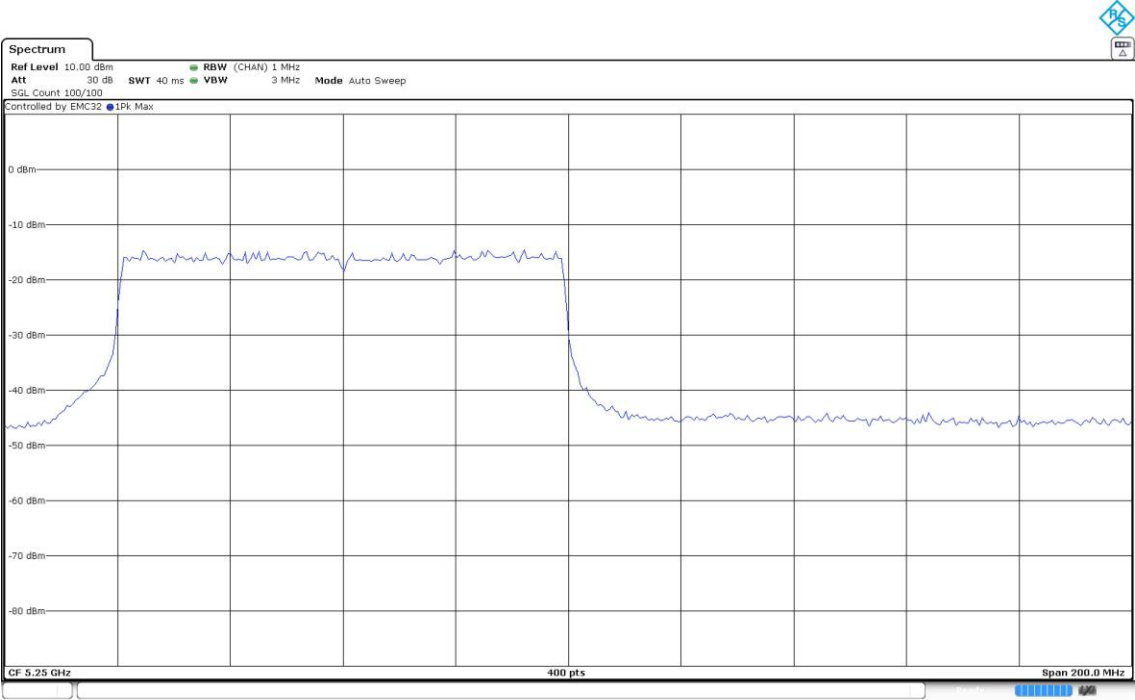
Frequency MHz = 5210.00000

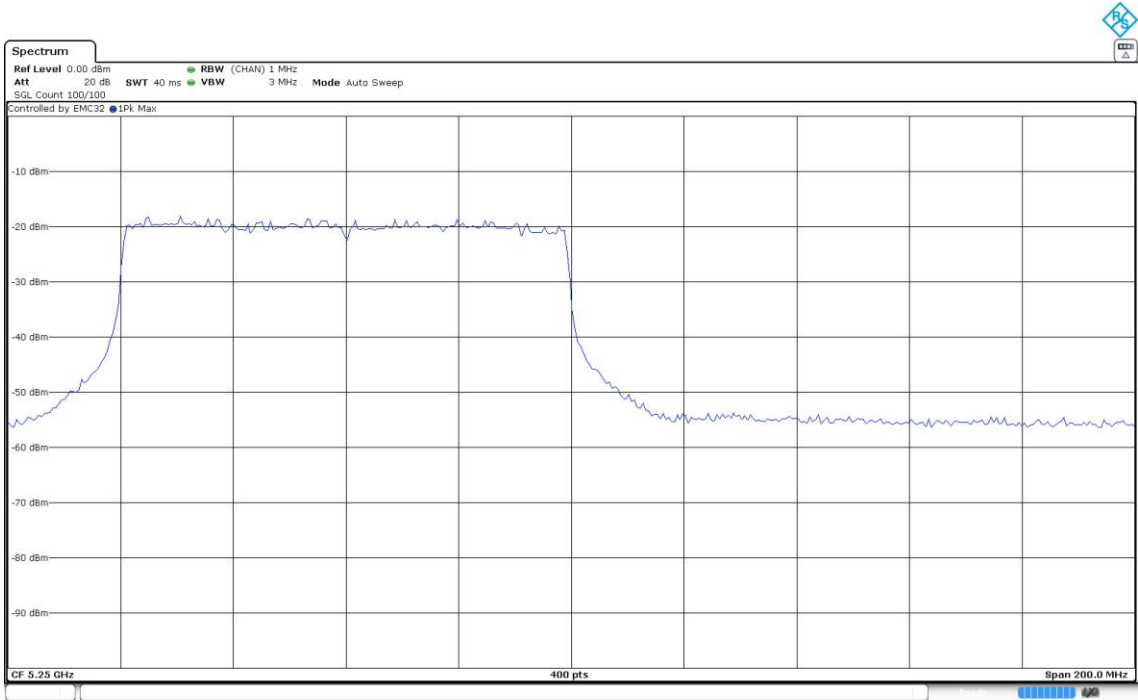
Modulation = 802.11ax HE80 (OFDMA MCS0)

Antenna configuration = MIMO CDD Mode 2x2 Subcarrier Mode = RU

Images:







Tables:
Spectrum Analyzer Parameters

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5145.750000	-45.609	18.6	-27.000	PASS
5144.250000	-46.009	19.0	-27.000	PASS
5148.750000	-46.142	19.1	-27.000	PASS
5141.250000	-46.149	19.1	-27.000	PASS
5149.750000	-46.236	19.2	-27.000	PASS
5141.750000	-46.385	19.4	-27.000	PASS
5143.750000	-46.442	19.4	-27.000	PASS
5144.750000	-46.503	19.5	-27.000	PASS
5142.750000	-46.786	19.8	-27.000	PASS
5148.250000	-46.883	19.9	-27.000	PASS
5149.250000	-47.110	20.1	-27.000	PASS
5147.250000	-47.428	20.4	-27.000	PASS
5140.750000	-47.473	20.5	-27.000	PASS
5145.250000	-47.501	20.5	-27.000	PASS
5121.250000	-47.510	20.5	-27.000	PASS

Appendix C: Tests results for the U-NII-3 Band 5.725–5.85 GHz

INDEX

TEST CONDITIONS356

 RSS-247 6.2.4.1 / FCC 15.407 (a) (3) [Avcp] Maximum Conducted output power UNII-3362

 RSS-247 6.2.4.1 / FCC 15.407 (a) (3) [Psd] Transmitter Maximum Power Spectral Density UNII-3365

 RSS-247 6.2.4.1 / FCC 15.407 (e) [6dBw] 6 dB Emission Bandwidth434

 RSS-247 6.2.4.2 / FCC 15.407 (b) (4) (6) [Rse] Transmitter Out of Band Radiated Emissions For transmitters
operating solely in the 5.725-5.850 GHz band473

 RSS-247 6.2.4.2 / FCC 15.407 (b) (4) [Bndedge] Transmitter Band Edge Radiated Emissions for UNII-3501

TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 12 Vdc
Type of Power Supply: Vehicle battery

ANTENNA (*):

Type of Antenna: External
Antenna Gain: 5.1 dBi (both ports)

Directional Antenna Gain Calculations for CDD MIMO In-Band Measurements (for PSD test):

For 2Tx CDD MIMO modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) y F)2)e)ii), directional gain, directional gain was calculated as follows:

$$\begin{aligned}
 N_{SS} &= 1, N_{ANT} = 2, G_{ANT0} = 5.1, G_{ANT1} = 5.1 \\
 \text{Directional Gain} &= 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right] = 10 \log \left[\frac{\sum_{j=1}^1 \left(\sum_{k=1}^2 g_{j,k} \right)^2}{2} \right] \\
 &= 10 \log \left[\frac{(g_{1,1} + g_{1,2})^2}{2} \right] = 10 \log \left[\frac{(10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}})^2}{2} \right] = 10 \log \left[\frac{(10^{\frac{5.1}{10}} + 10^{\frac{5.1}{10}})^2}{2} \right] = 8.11 \text{ dBi}
 \end{aligned}$$

TEST FREQUENCIES (*):

Technology Tested:	WLAN (IEEE 802.11 a,n,ac,ax) 2x2 / U-NII-3	
	802.11a OFDM 6 Mbit/s (MIMO 2x2)	
	802.11 n HT20: MCS0 to MCS23 (MIMO 2x2)	
	802.11 n HT40: MCS0 to MCS23 (MIMO 2x2)	
	802.11 ac VHT20: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ac VHT40: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ac VHT80: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ax HE20: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
	802.11 ax HE40: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
	802.11 ax HE80: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
Setting of cores / ports:	2+3	
Beamforming:	No.	
	5725 MHz to 5850 MHz	
Power Settings:	13 dBm	
Operating Channel Bandwidth:	20 MHz	
Transmission Channels:	Channel	Channel Frequency (MHz)
	Low (149)	5745
	Middle (157)	5785
	High (165)	5825
Operating Channel Bandwidth:	40 MHz	
Transmission Channels:	Channel	Channel Frequency (MHz)
	Low (151)	5755
	High (159)	5795
Operating Channel Bandwidth:	80 MHz	
Transmission Channels:	Single (155)	5775

* The EUT does not support the Middle Channel of 802.11ax HE20 (OFDMA MCS0) SU modulation.

The test set-up was made in accordance to the general provisions of FCC Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017.

The EUT was tested in the following operating mode:

- Continuously transmitting with a modulated carrier at maximum power in all required channels using the supported data rates/modulations types.

The field strength at the band edges was evaluated for each mode on the lowest and highest channels at the rated power for the channel under test.

For all modes, the EUT was configured in test mode using a software application. The application was used to enable a continuous transmission and to select the test channels as required. The client supplied instructions to configure the EUT. The customer supplied a document containing the setup instructions.

The worst cases for testing were identified for output power and spurious levels at the band edges which were selected based on preliminary testing that correspond to next data rates:

- 802.11a OFDM 6 Mbit/s
- 802.11 n HT20: MCS0
- 802.11 n HT40: MCS0
- 802.11 ac VHT20: MCS0
- 802.11 ac VHT40: MCS0
- 802.11 ac VHT80: MCS0
- 802.11 ax HE20: MCS0
- 802.11 ax HE40: MCS0
- 802.11 ax HE80: MCS0

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

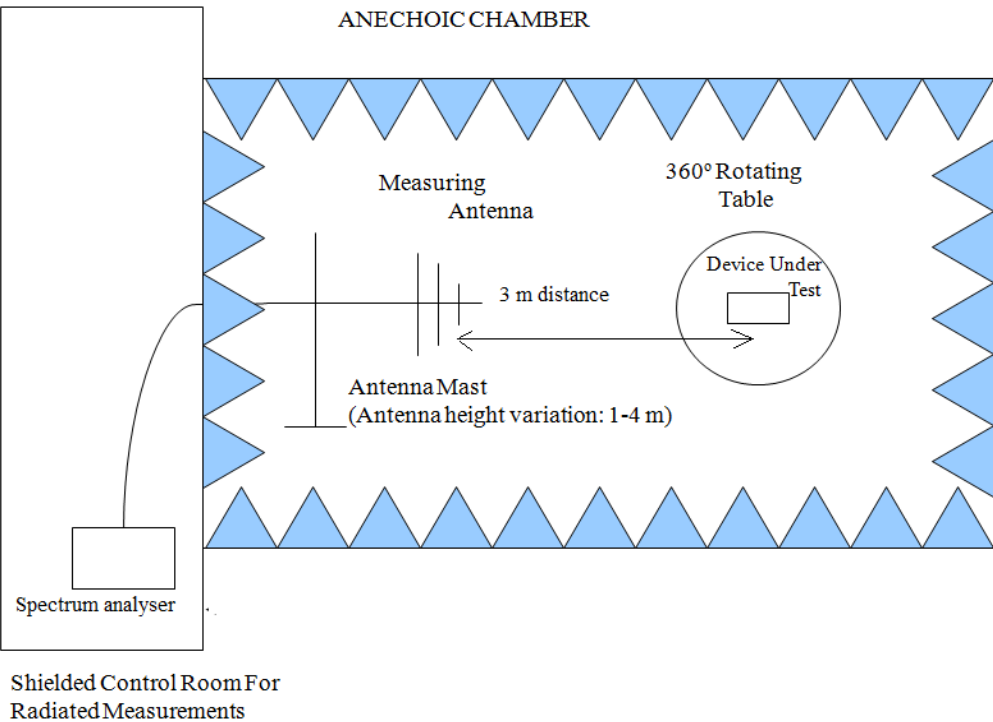
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

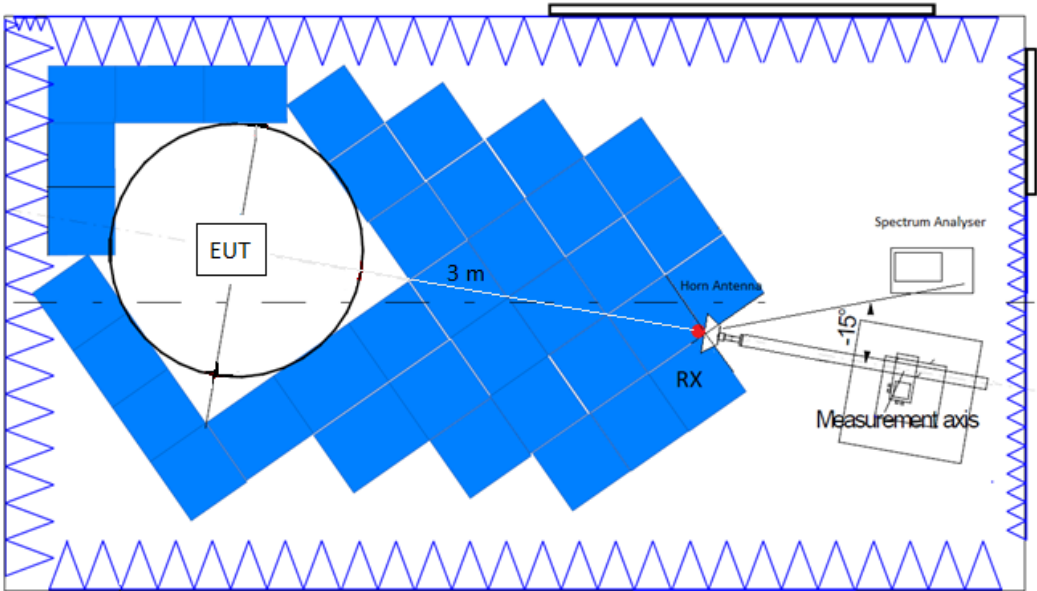
The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.

A resolution bandwidth/video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

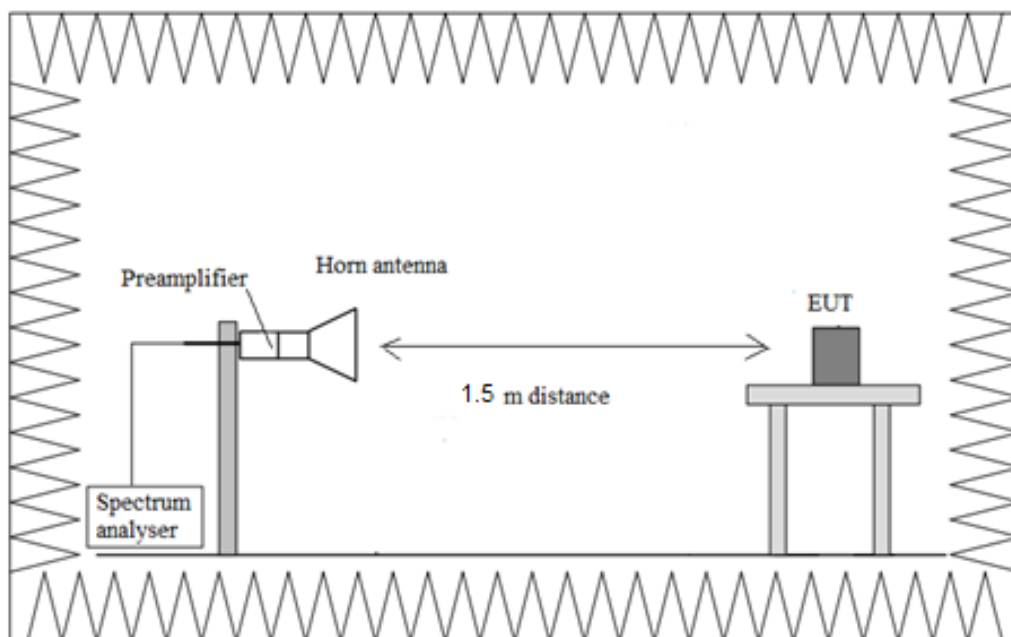
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



RSS-247 6.2.4.1 / FCC 15.407 (a) (3) [Avcp] Maximum Conducted output power UNII-3

Limits

* **FCC 15.407:** For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum 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, 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. 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.

RSS-247: The maximum conducted output power shall not exceed 1 W.

Modulation: 802.11n HT20 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5745.00000	No	9.56	4.46
		5785.00000		10.17	5.07
		5825.00000		9.95	4.85

Verdict

Pass

Modulation: 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5755.00000	No	8.68	3.58
		5795.00000		9.28	4.18

Verdict

Pass

Modulation: 802.11a (OFDM 6 Mbit/s)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5745.00000	No	9.58	4.48
		5785.00000		10.36	5.26
		5825.00000		10.05	4.95

Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5745.00000	No	9.70	4.60
		5785.00000		10.23	5.13
		5825.00000		10.03	4.93

Modulation: 802.11ac VHT40 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5755.00000	No	8.75	3.65
		5795.00000		9.15	4.05

Modulation: 802.11ac VHT80 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5775.00000	No	9.39	4.29

Modulation: 802.11ax HE20 (OFDMA MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Antenna configuration	Subcarrier Mode	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5745.00000	No	MIMO CDD Mode 2x2	SU	8.21	3.11
					RU	9.40	4.30
		5785.00000			SU	8.87	3.77
					RU	9.48	4.38
		5825.00000			SU	8.76	3.66
					RU	9.87	4.77

Modulation: 802.11ax HE40 (OFDMA MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Antenna configuration	Subcarrier Mode	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5755.00000	No	MIMO CDD Mode 2x2	SU	9.76	4.66
					RU	9.07	3.97
		5795.00000			SU	10.33	5.23
					RU	9.50	4.40

Modulation: 802.11ax HE80 (OFDMA MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Antenna configuration	Subcarrier Mode	Max EIRP (dBm)	Avg Power (dBm)
[5725, 5850]	2+3	5775.00000	No	MIMO CDD Mode 2x2	SU	10.05	4.95
					RU	10.15	5.05

Verdict

Pass

RSS-247 6.2.4.1 / FCC 15.407 (a) (3) [Psd] Transmitter Maximum Power Spectral Density UNII-3

Limits

* FCC 15.407: For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum 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, 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. 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.

Antenna Gain for MIMO PSD:

$$\begin{aligned} \text{Directional Gain} &= 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} (\sum_{k=1}^{N_{ANT}} g_{j,k})^2}{N_{ANT}} \right] = 10 \log \left[\frac{\sum_{j=1}^1 (\sum_{k=1}^2 g_{j,k})^2}{2} \right] \\ &= 10 \log \left[\frac{(g_{1,1} + g_{1,2})^2}{2} \right] = 10 \log \left[\frac{(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}})^2}{2} \right] = 10 \log \left[\frac{(10^{\frac{5.1}{20}} + 10^{\frac{5.1}{20}})^2}{2} \right] = 8.11 \text{ dBi} \end{aligned}$$

Results

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	2+3	5745.00000	No	5743.613861	-11.40
		5785.00000		5783.613861	-10.46
		5825.00000		5823.613861	-10.82

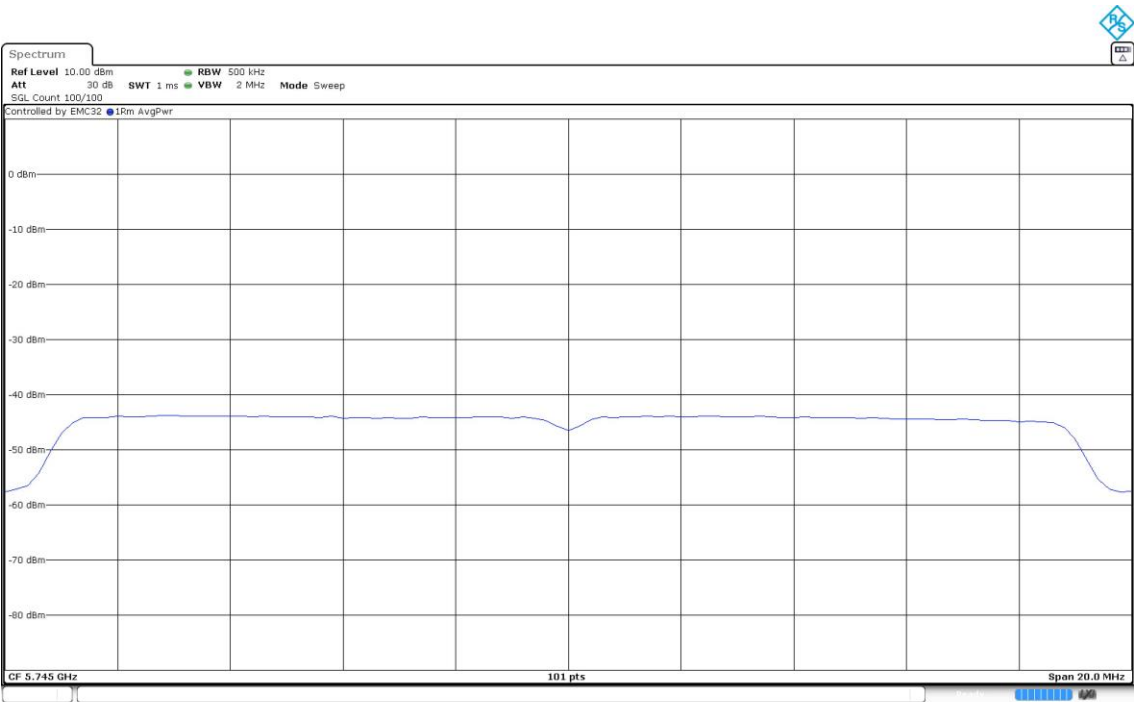
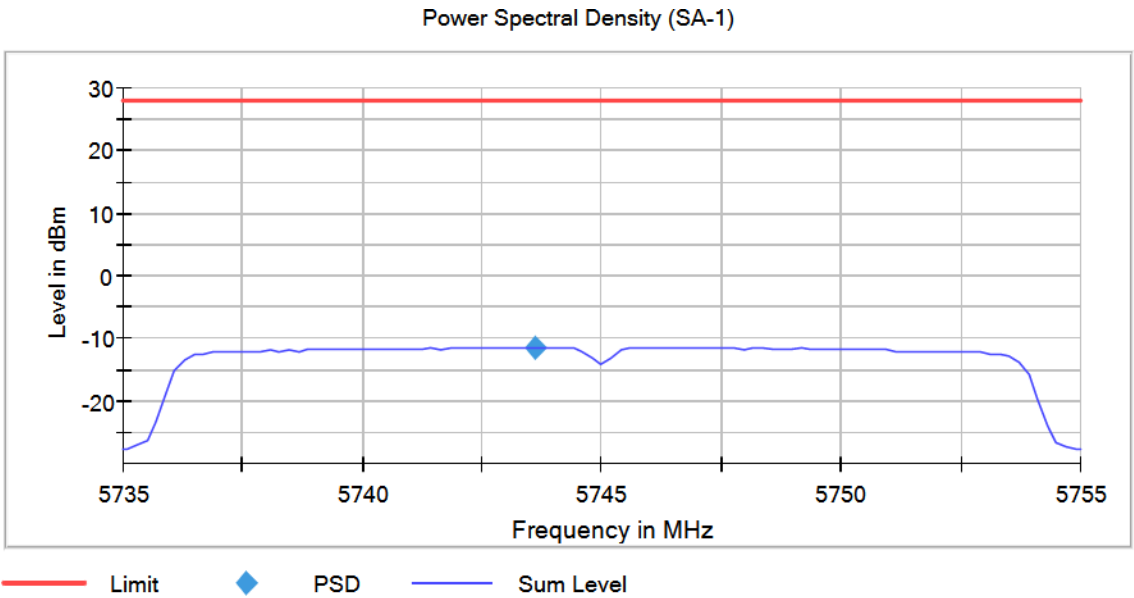
Verdict

Pass

Attachments

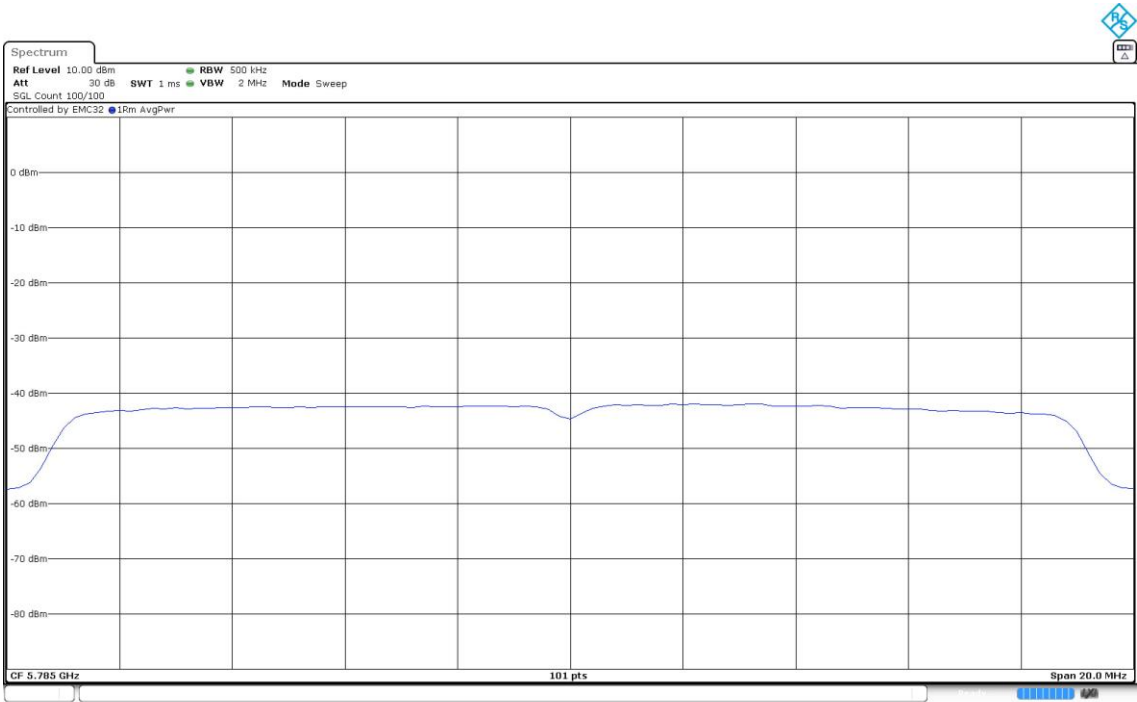
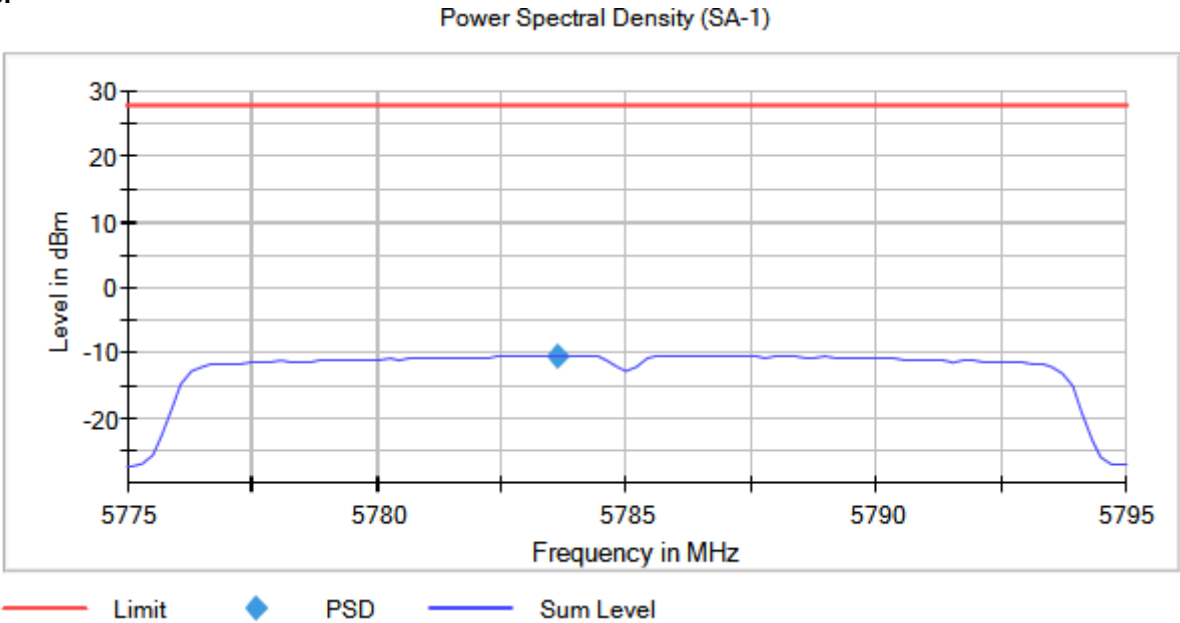
Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5745.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No

Images:



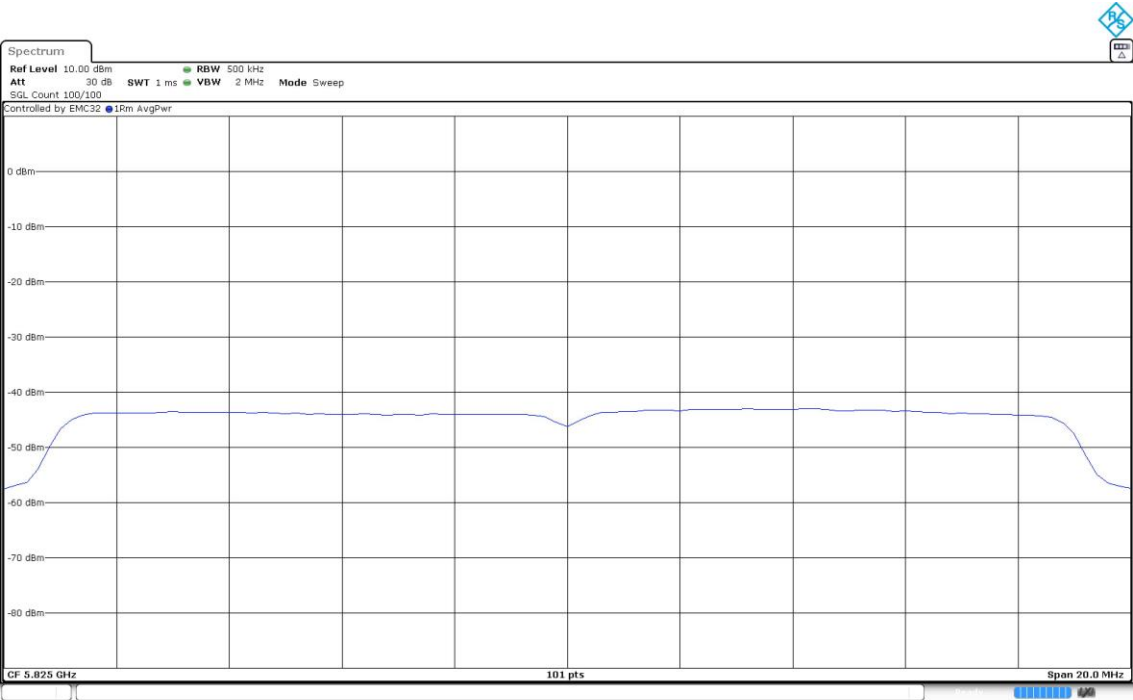
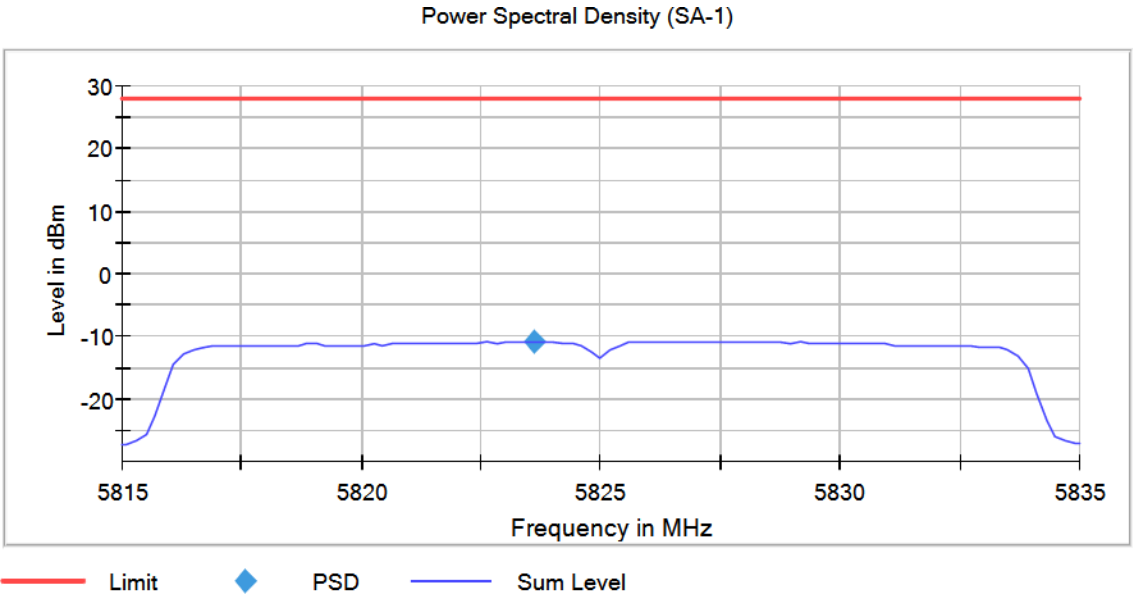
Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5785.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No

Images:



Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5825.00000 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
TPC = No

Images:



Modulation: 802.11n HT40 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	2+3	5755.00000	No	5753.625000	-14.05
		5795.00000		5796.375000	-13.43

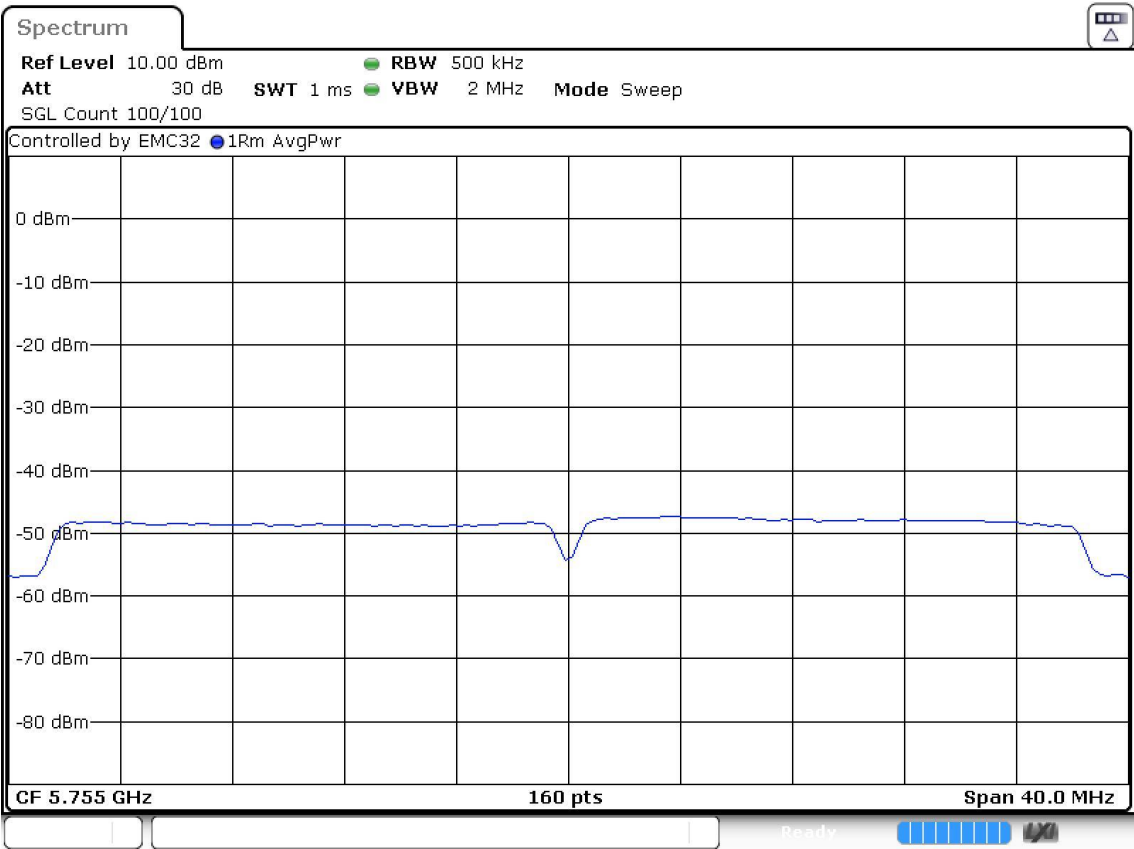
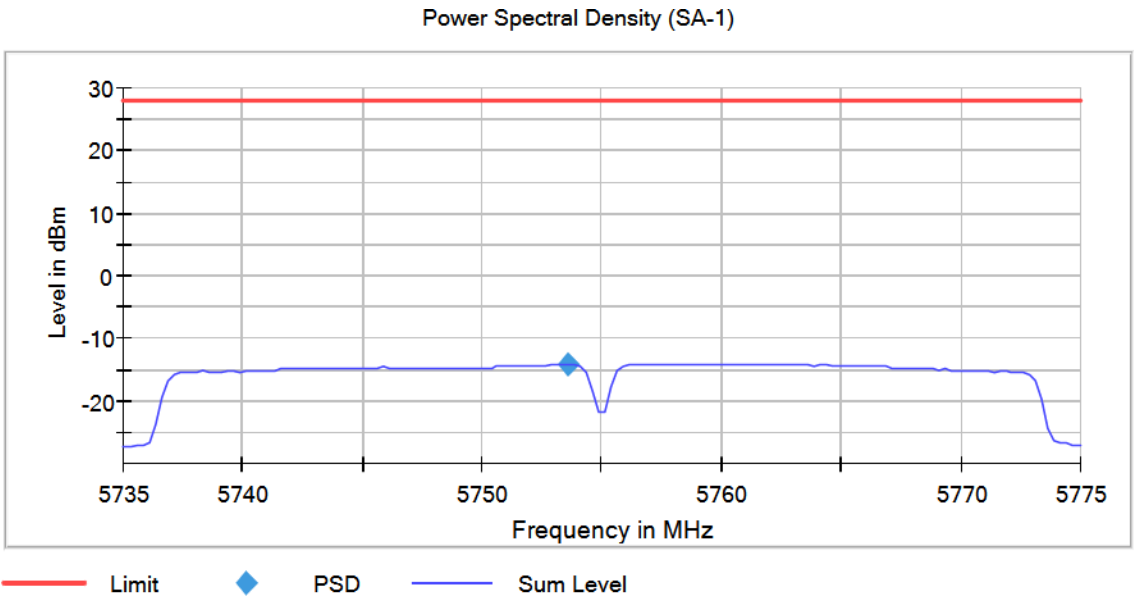
Verdict

Pass

Attachments

Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5755.00000 Modulation = 802.11n HT40 (OFDM MCS0)
TPC = No

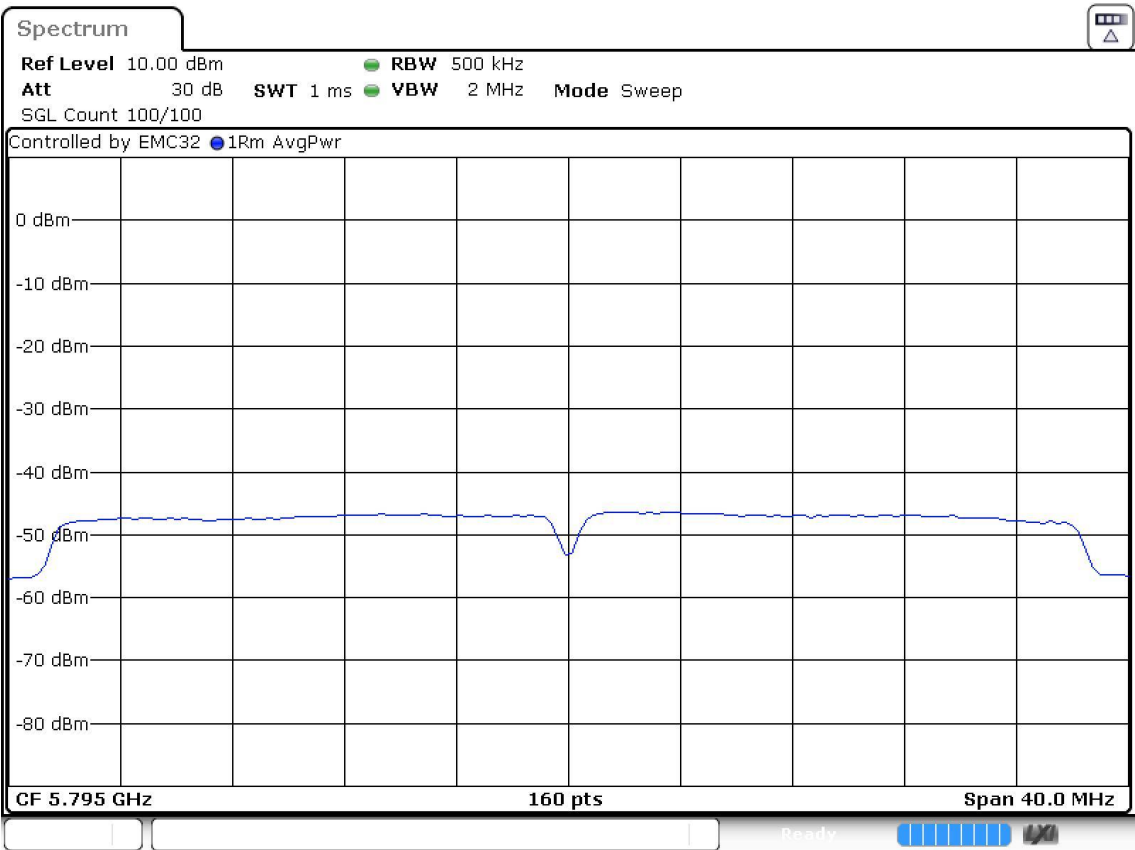
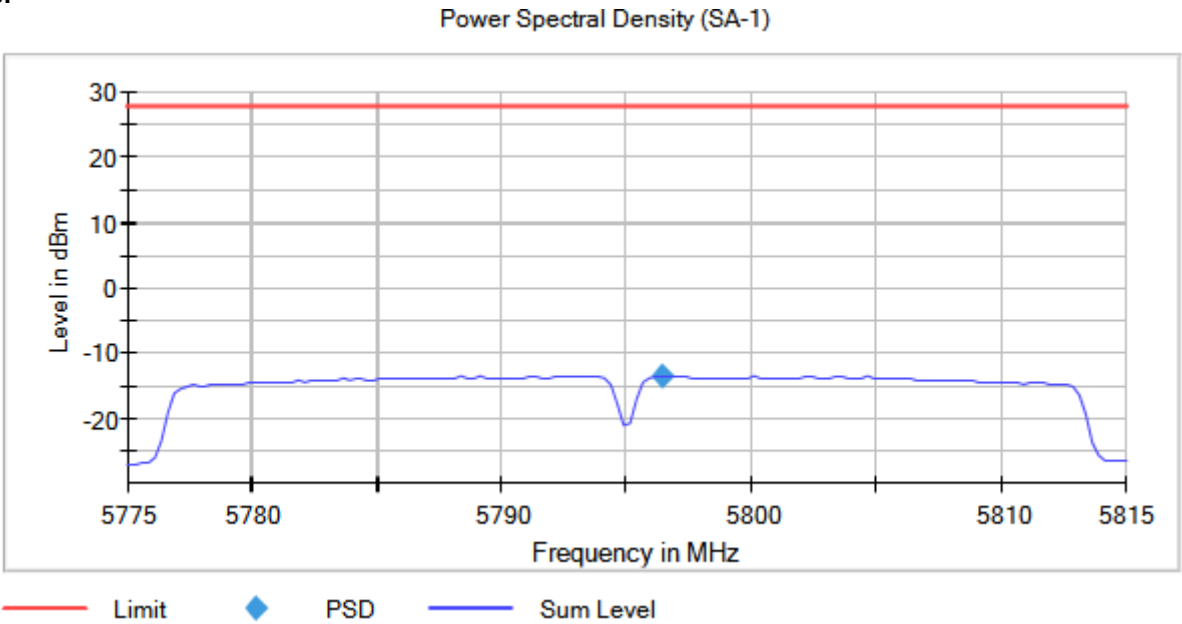
Images:



Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5795.00000 Modulation = 802.11n HT40 (OFDM MCS0)

TPC = No

Images:



Modulation: 802.11ac VHT20 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	2+3	5745.00000	No	5743.217822	-11.54

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
		5785.00000		5786.386139	-10.55
		5825.00000		5828.366337	-10.94

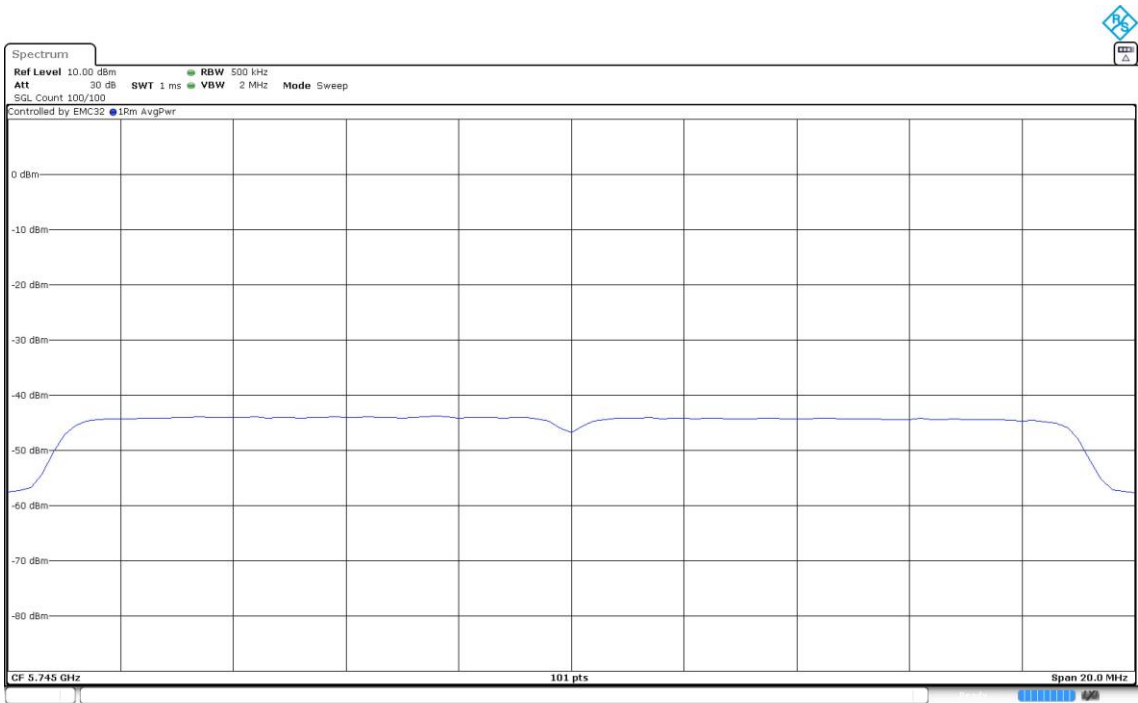
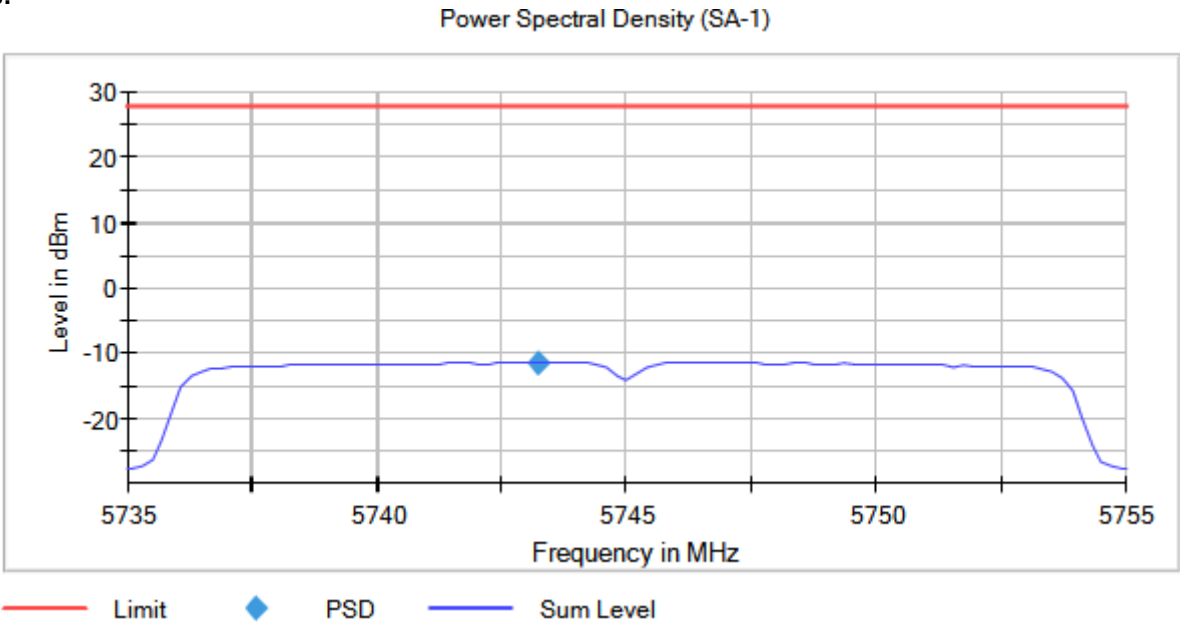
Verdict

Pass

Attachments

Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5745.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No

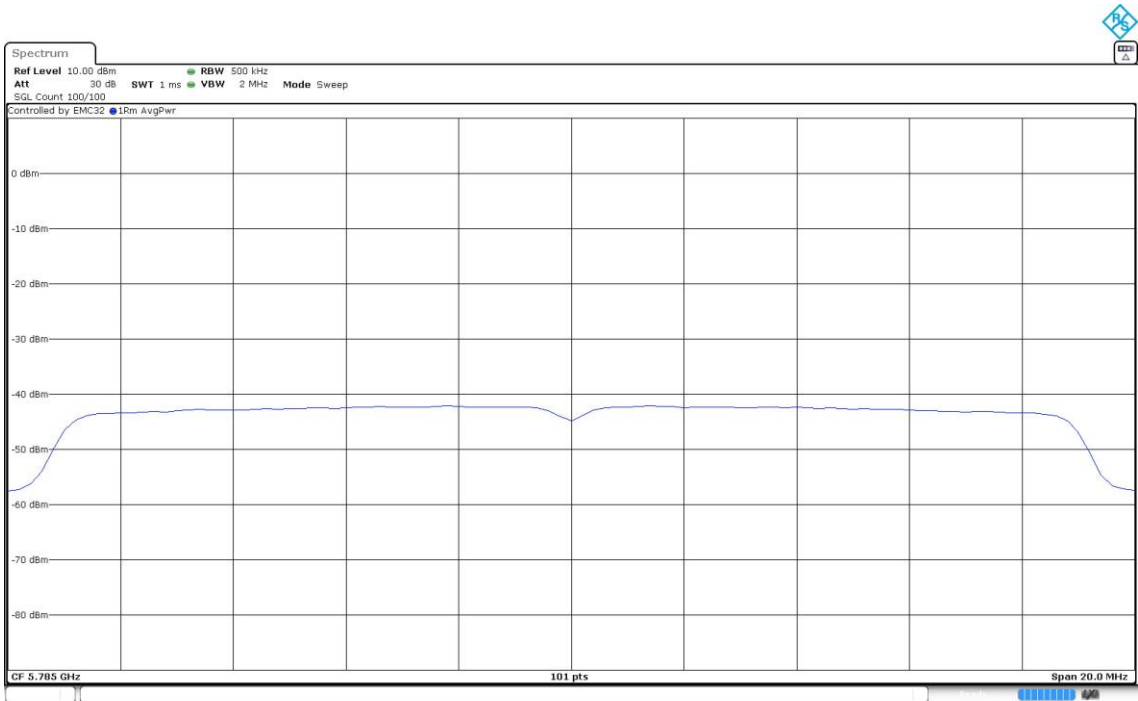
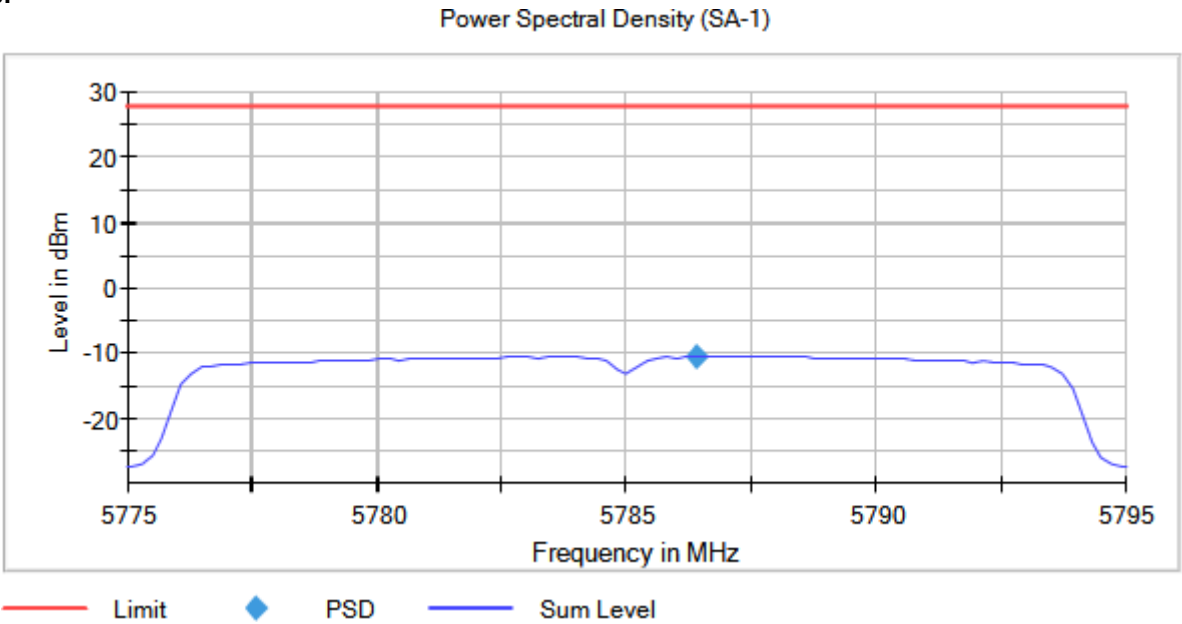
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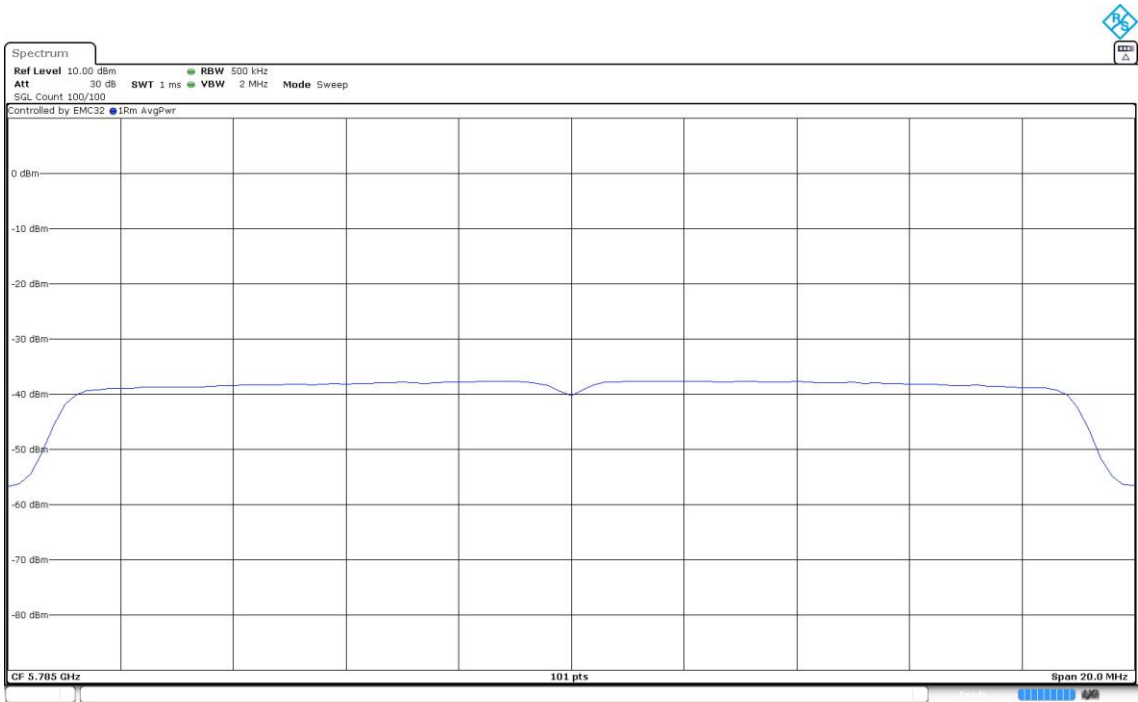


Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5785.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)

TPC = No

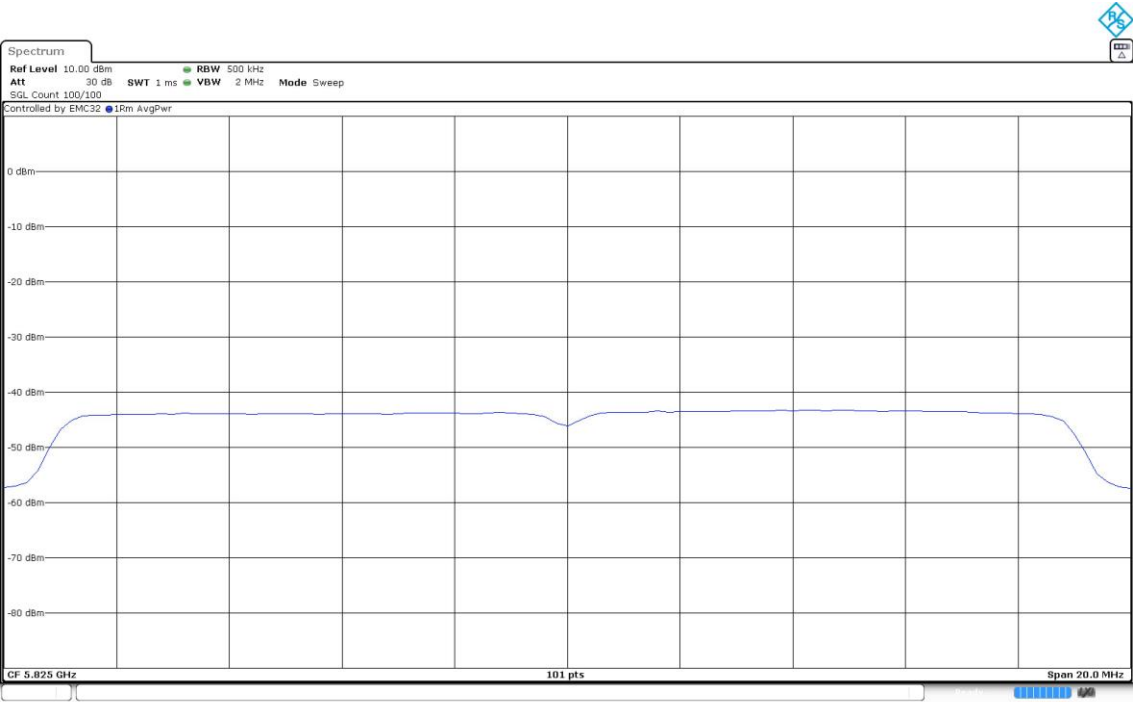
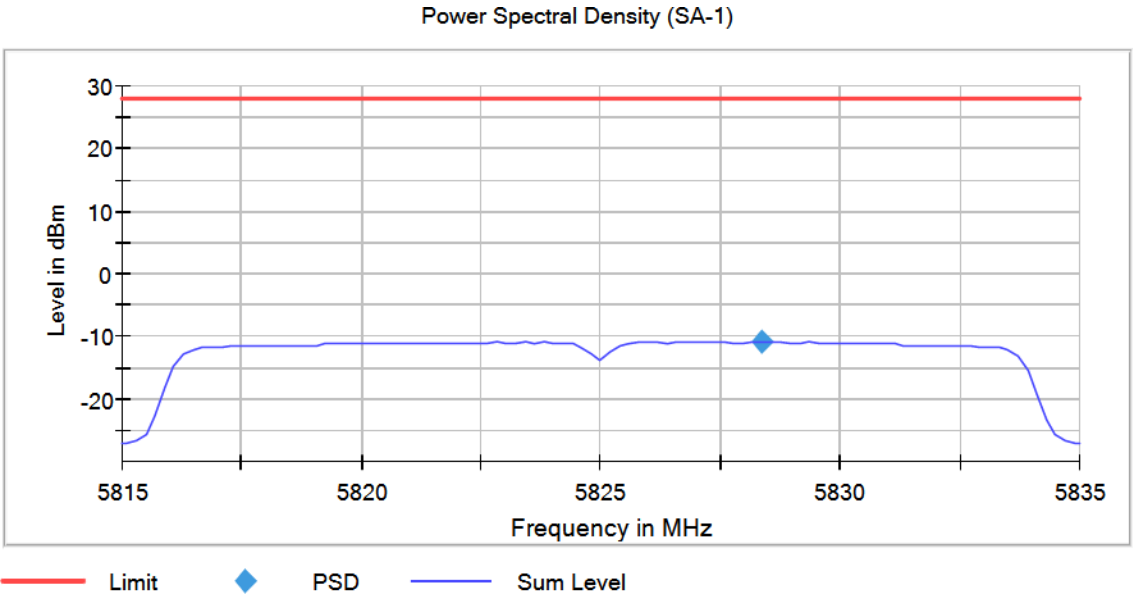
Images:





Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5825.00000 Modulation = 802.11ac VHT20 (OFDM MCS0)
TPC = No

Images:



Modulation: 802.11ac VHT40 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	2+3	5755.00000	No	5757.875000	-14.10
		5795.00000		5792.375000	-13.48

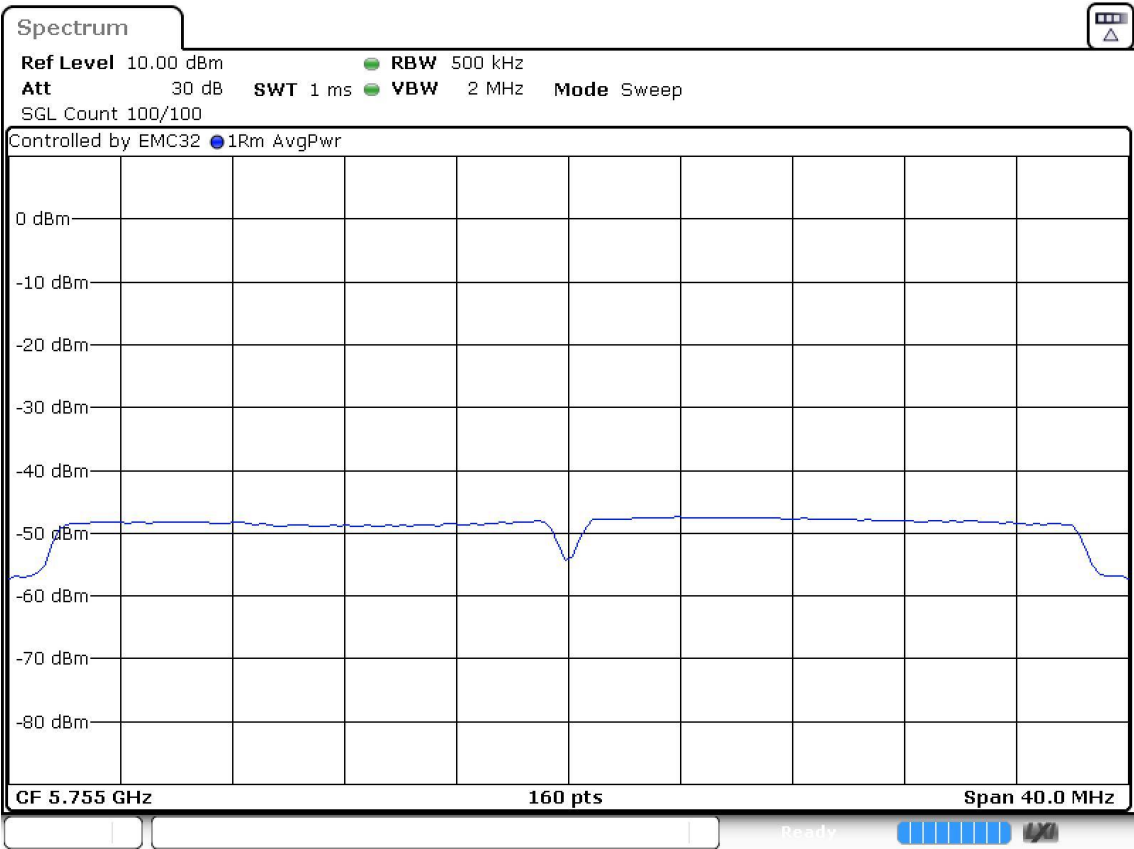
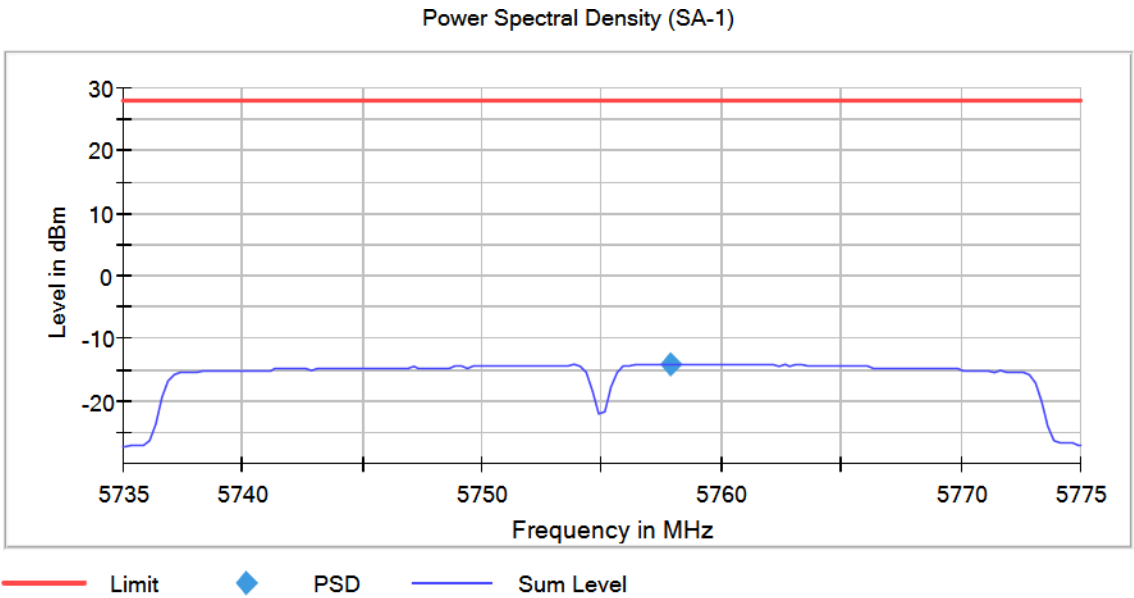
Verdict

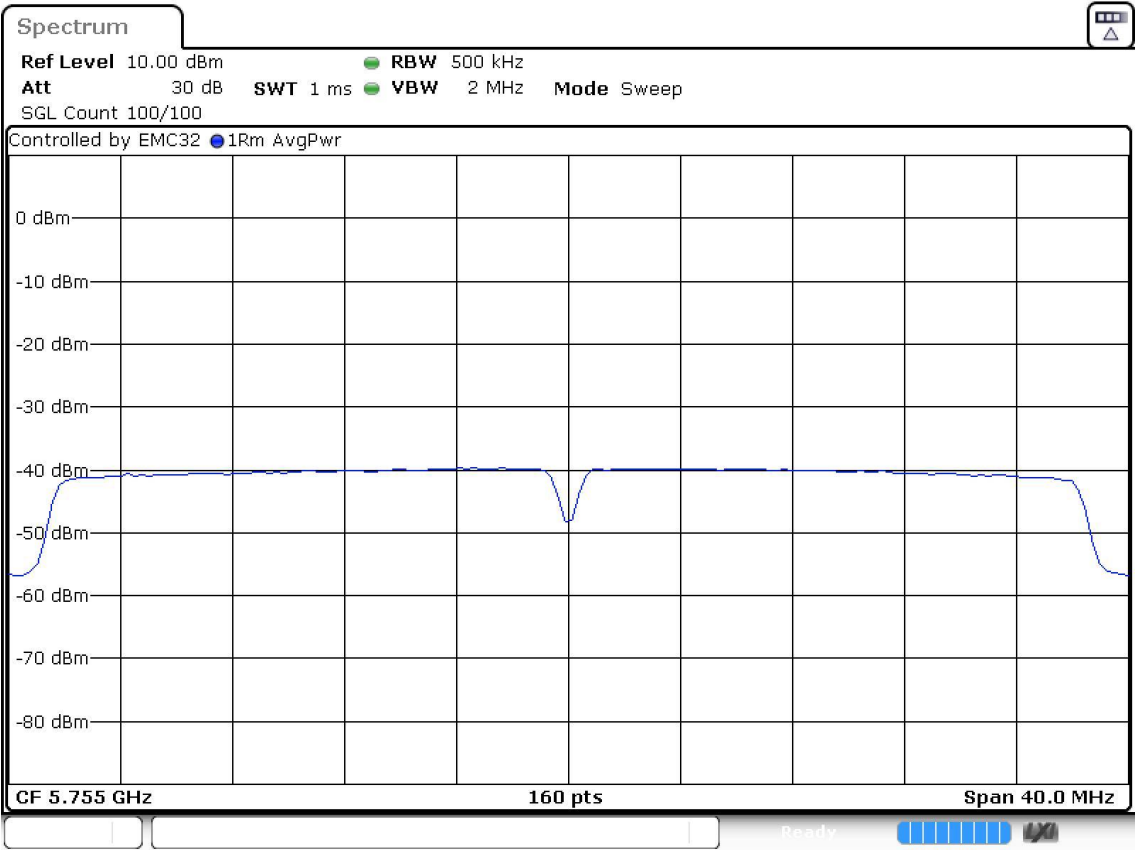
Pass

Attachments

Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5755.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No

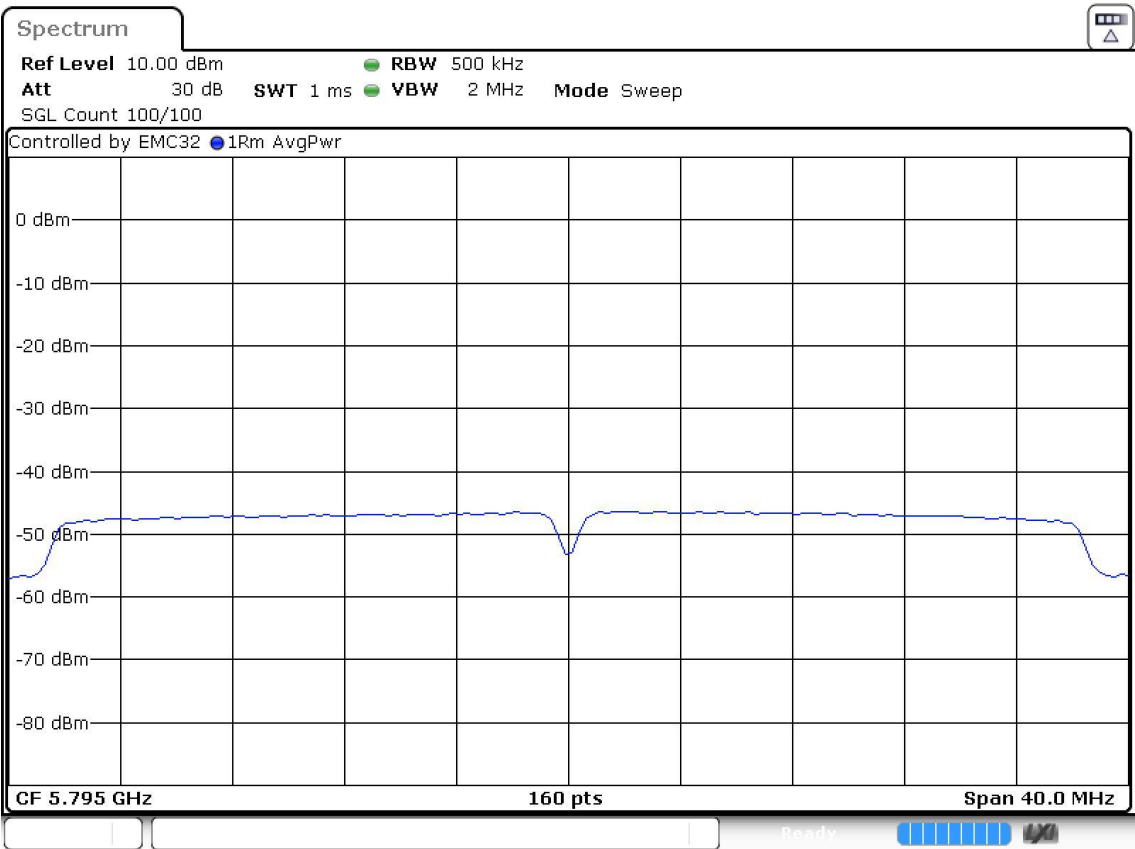
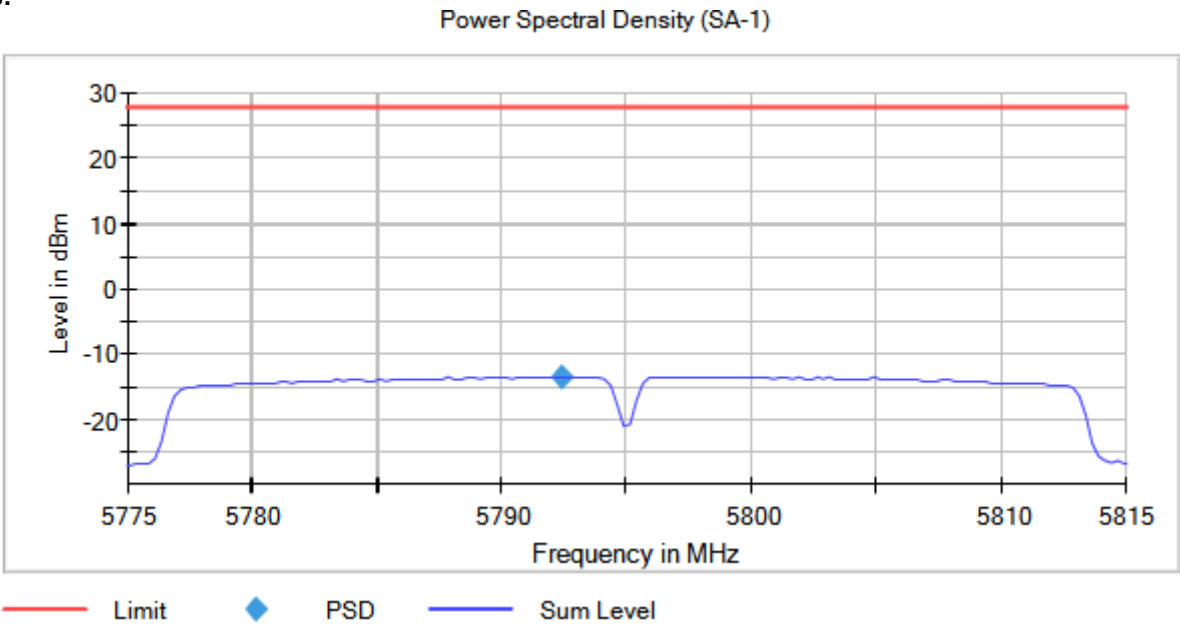
Images:





Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5795.00000 Modulation = 802.11ac VHT40 (OFDM MCS0)
TPC = No

Images:



Modulation: 802.11ac VHT80 (OFDM MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Freq (MHz)	PSD (dBm)
[5725, 5850]	2+3	5775.00000	No	5780.125000	-15.62

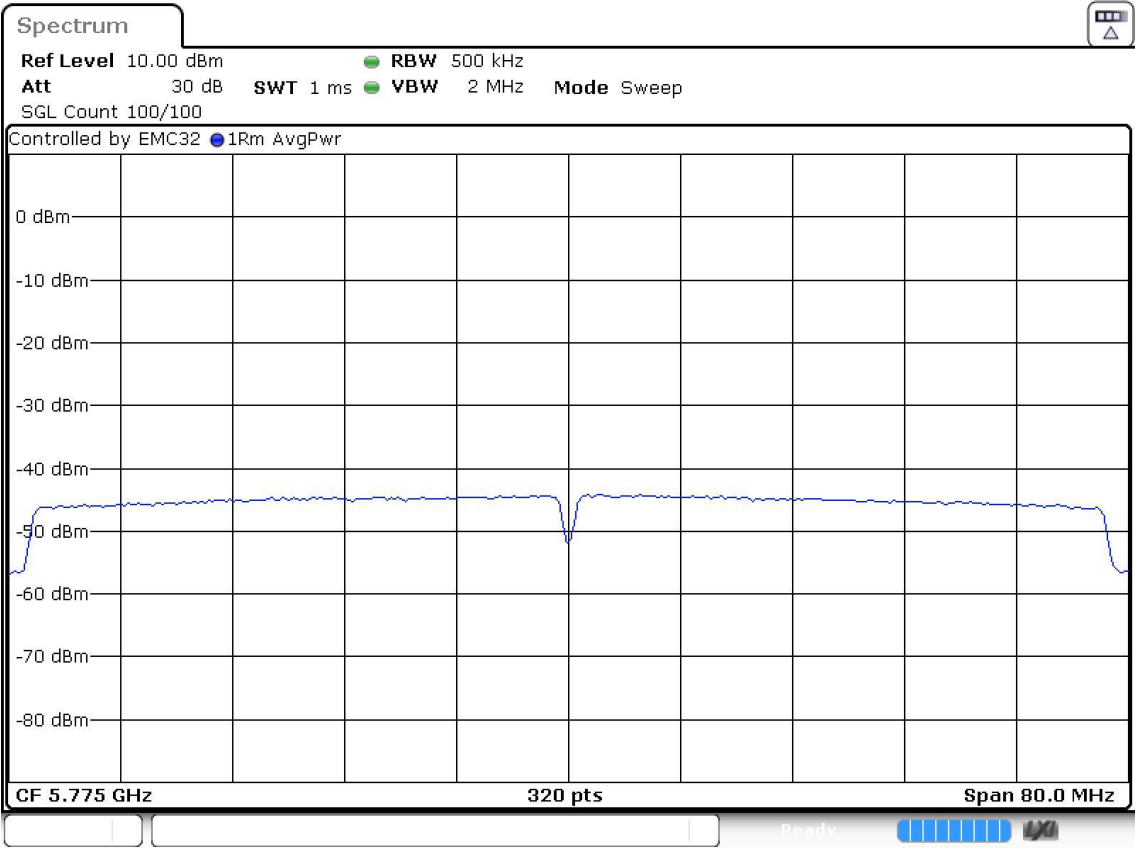
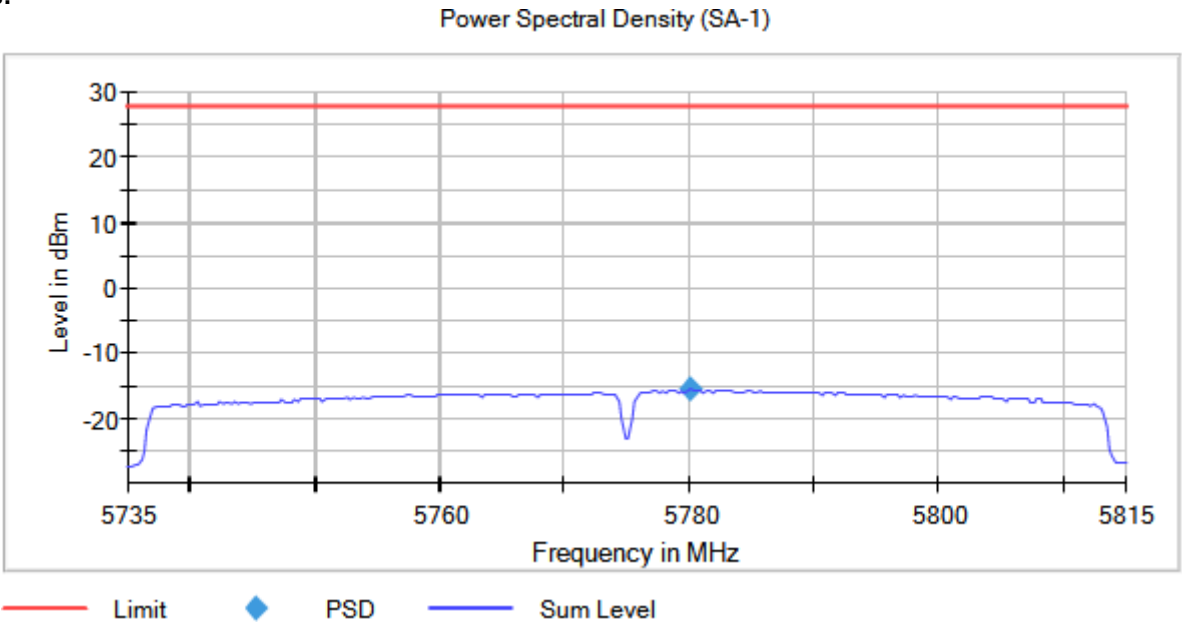
Verdict

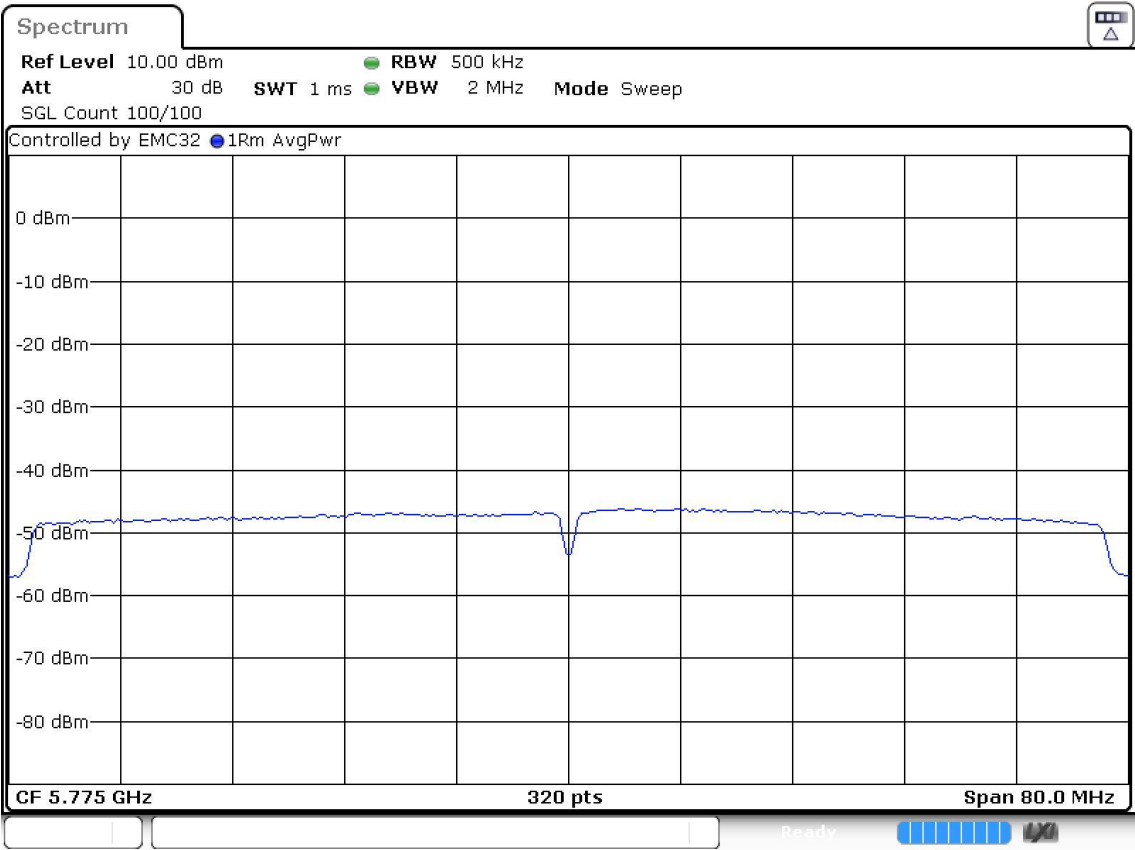
Pass

Attachments

Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5775.00000 Modulation = 802.11ac VHT80 (OFDM MCS0)
TPC = No

Images:





Modulation: 802.11ax HE20 (OFDMA MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Subcarrier Mode	Freq (MHz)	PSD (dBm)
[5725, 5850]	2+3	5745.00000	No	SU	5742.425743	-7.79
					5742.425743	-7.79
				RU	5736.089109	5.29
					5736.089109	5.29
		5785.00000		SU	5786.386139	-6.67
					5786.386139	-6.67
				RU	5785.792079	5.32
					5785.792079	5.32
		5825.00000		SU	5826.188119	-7.08
					5826.188119	-7.08
				RU	5833.910891	5.84
					5833.910891	5.84

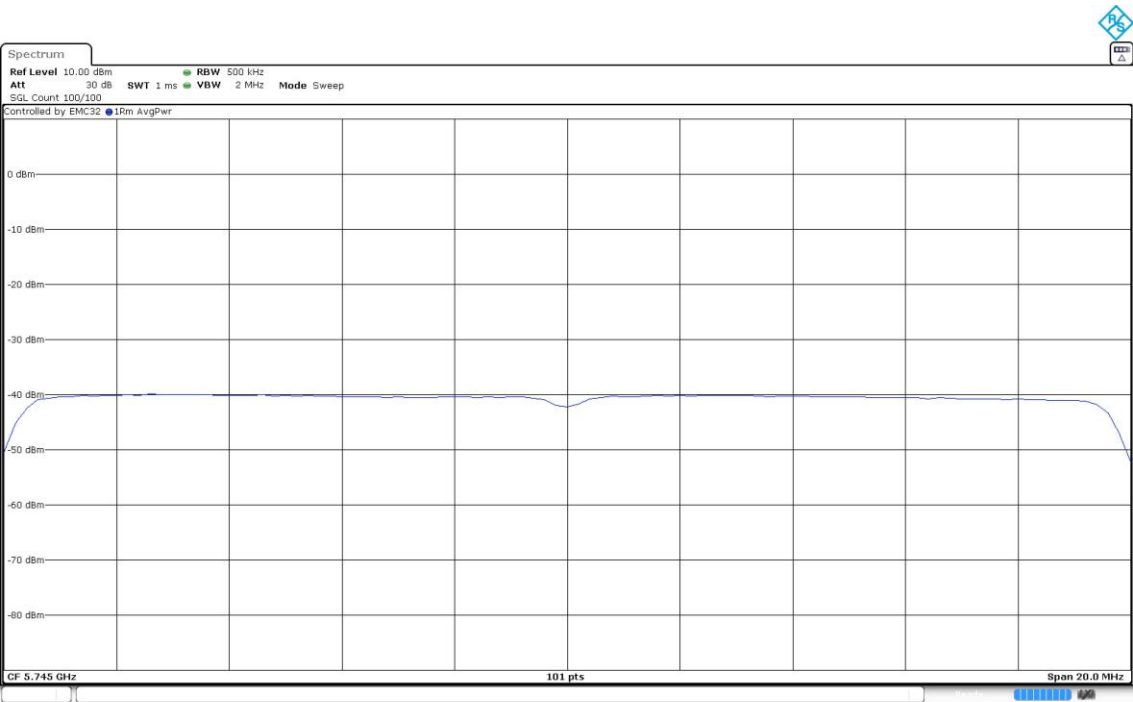
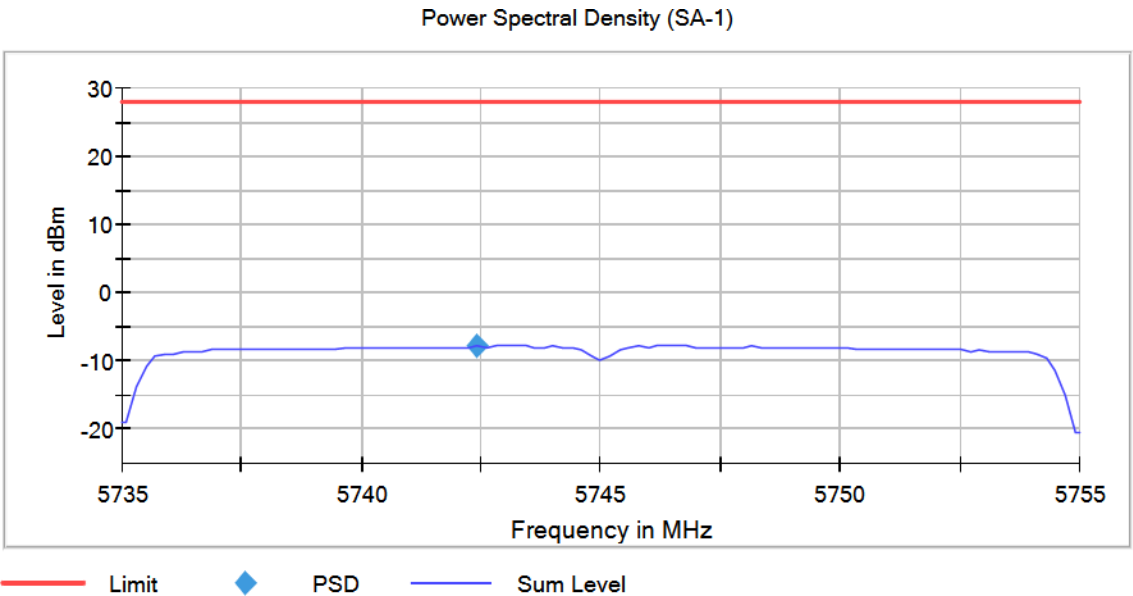
Verdict

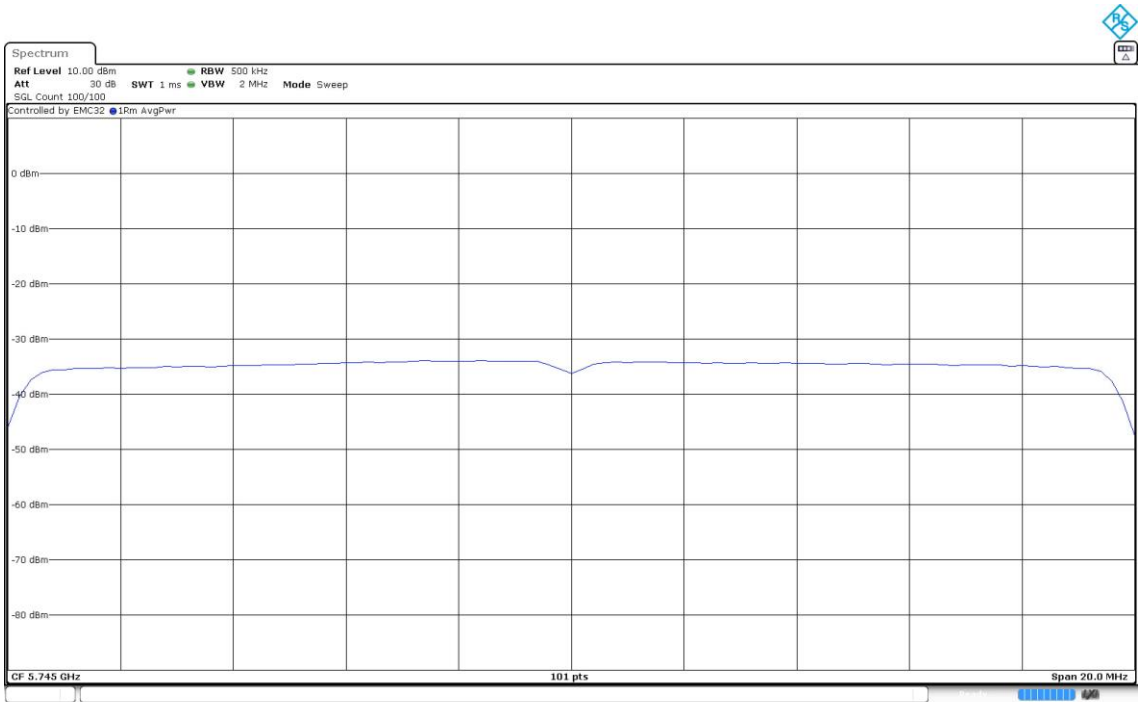
Pass

Attachments

Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5745.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = SU

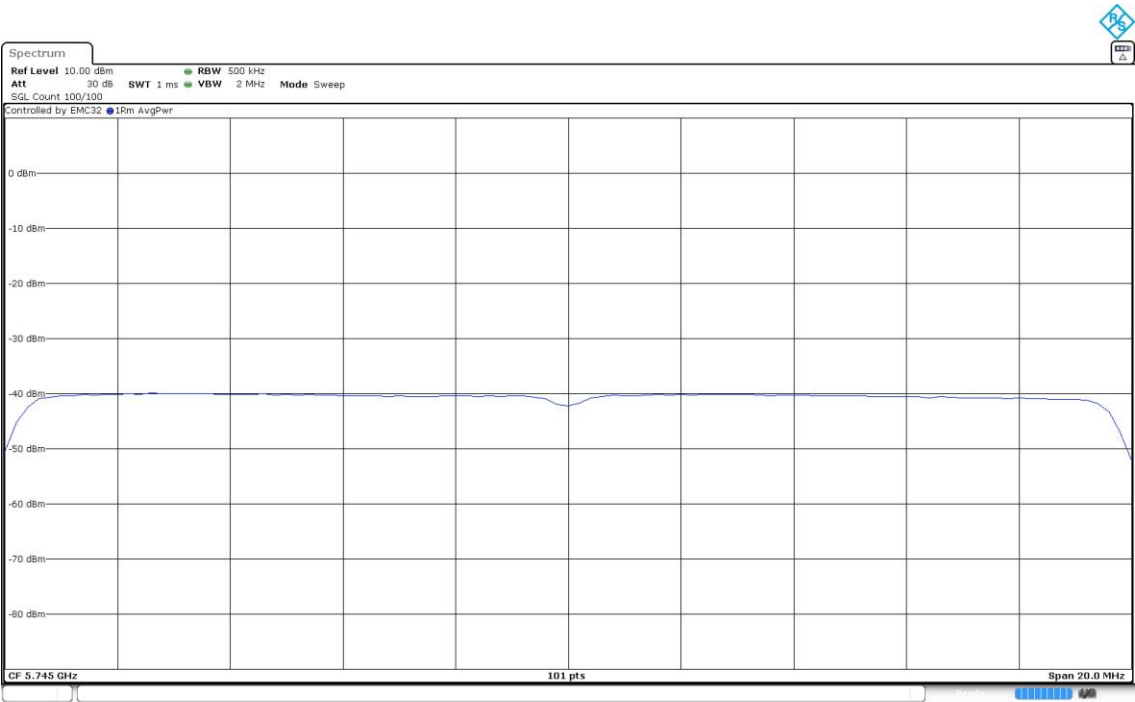
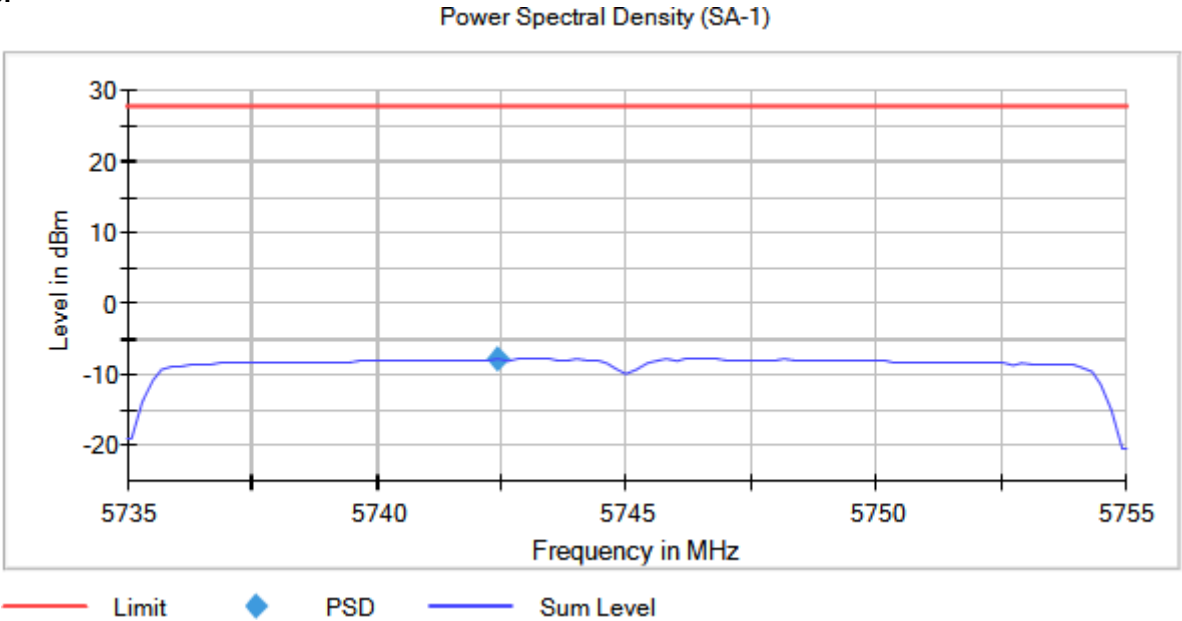
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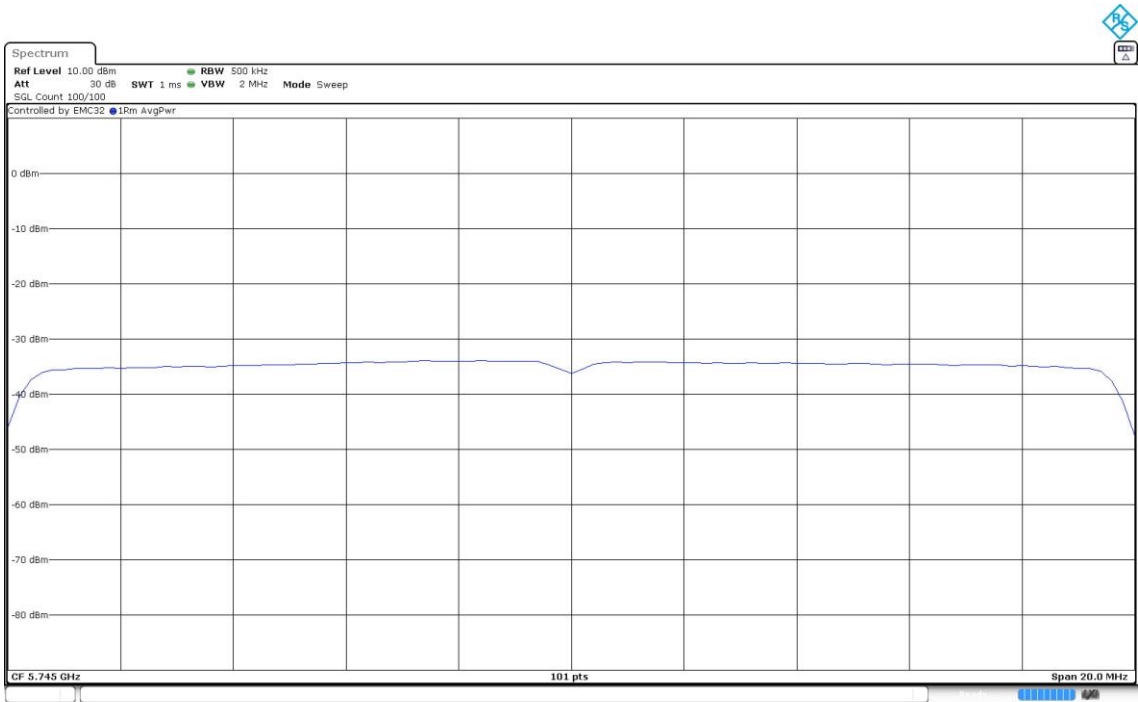




Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5745.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = SU

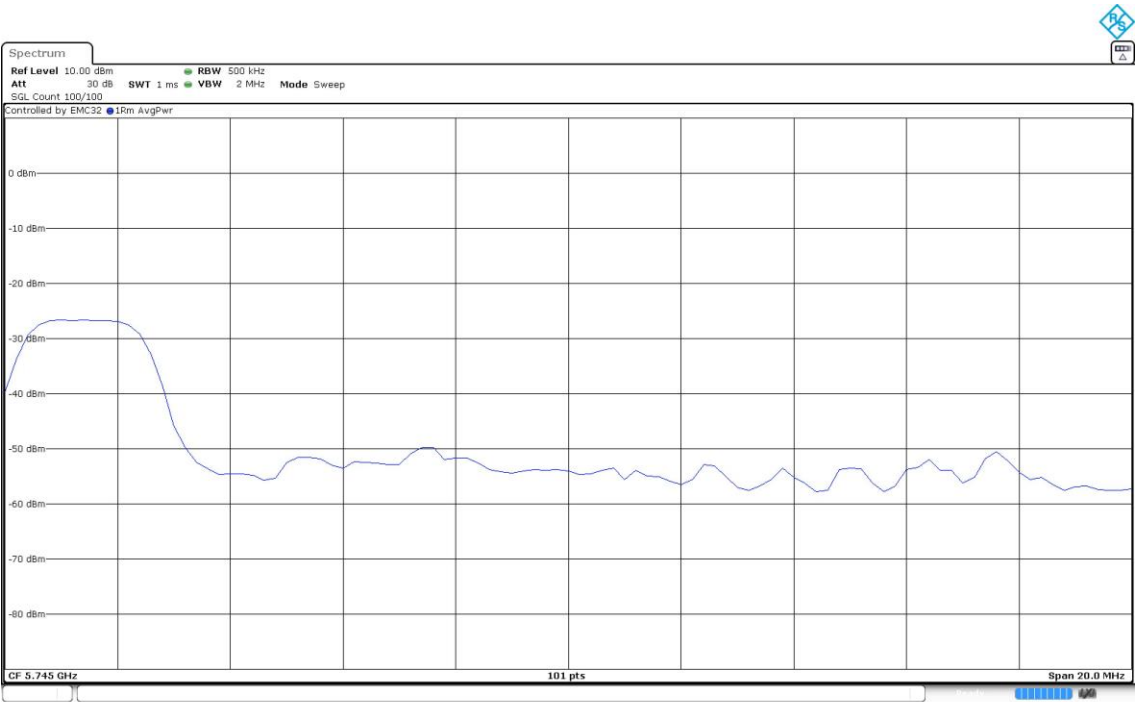
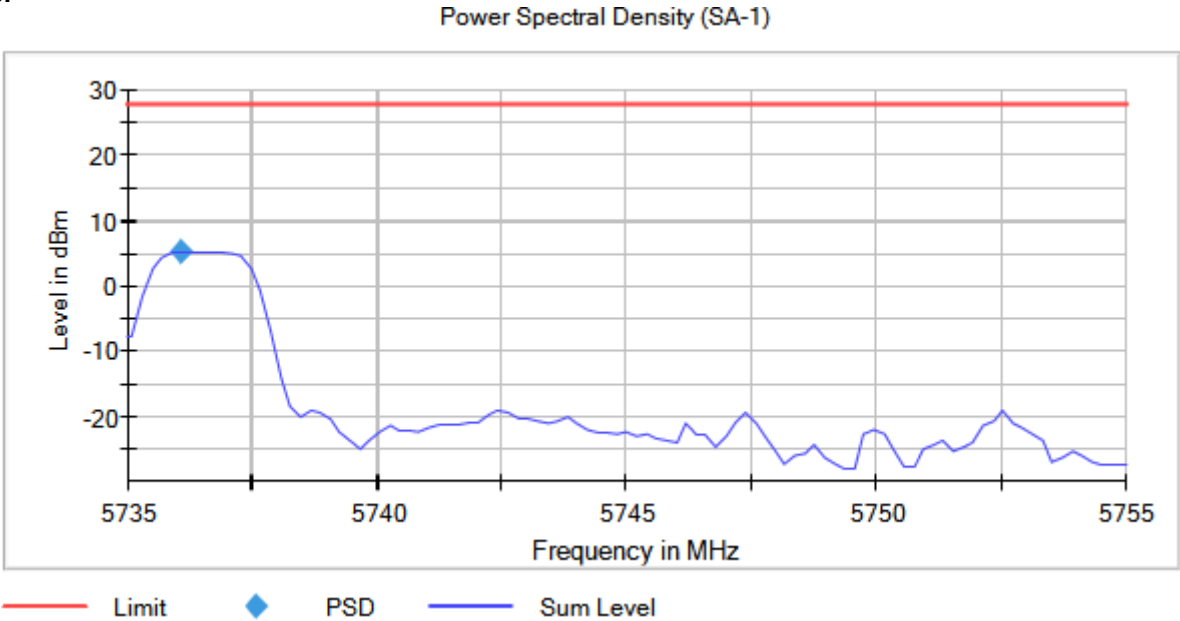
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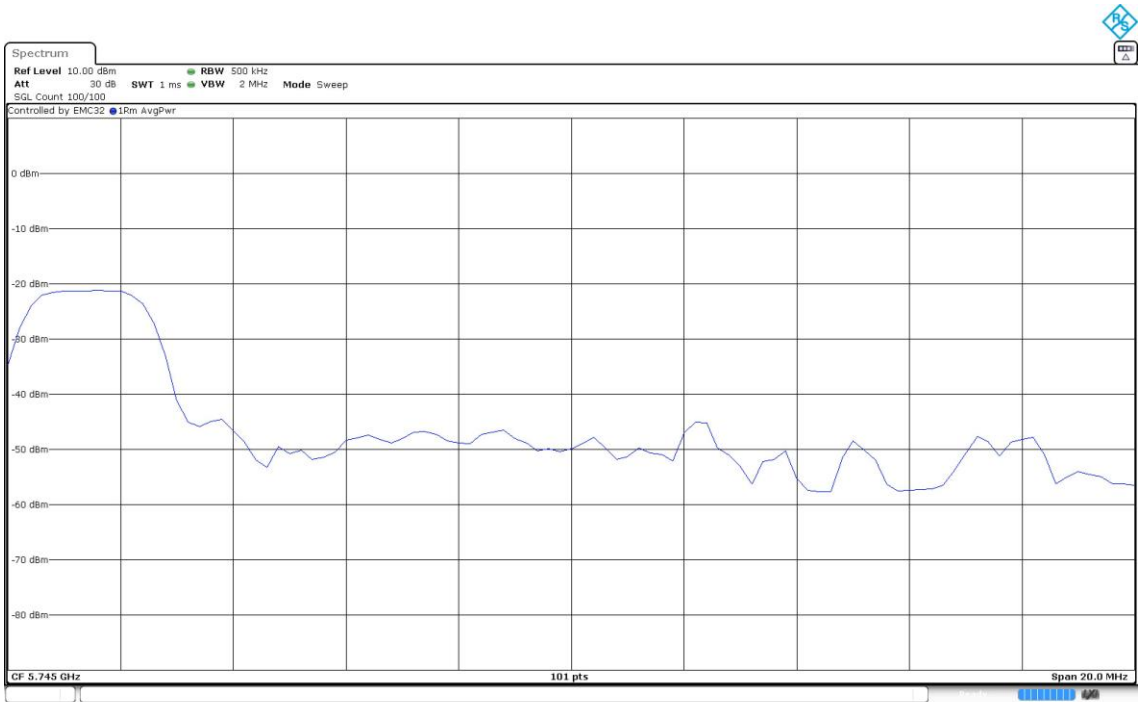




Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5745.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = RU

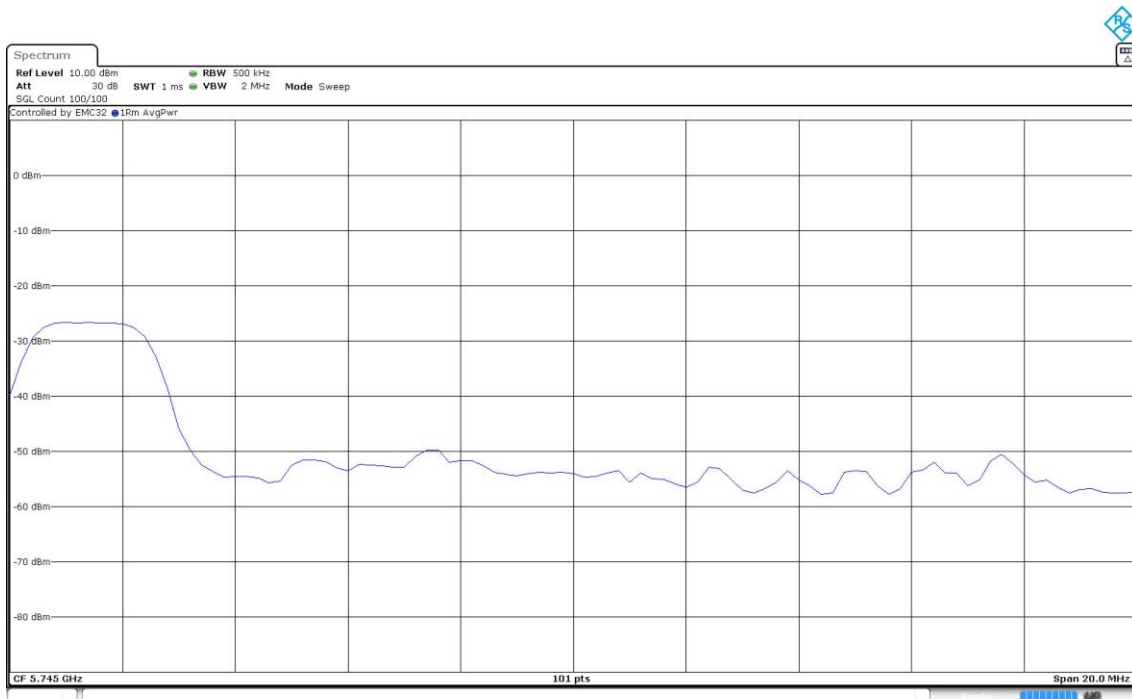
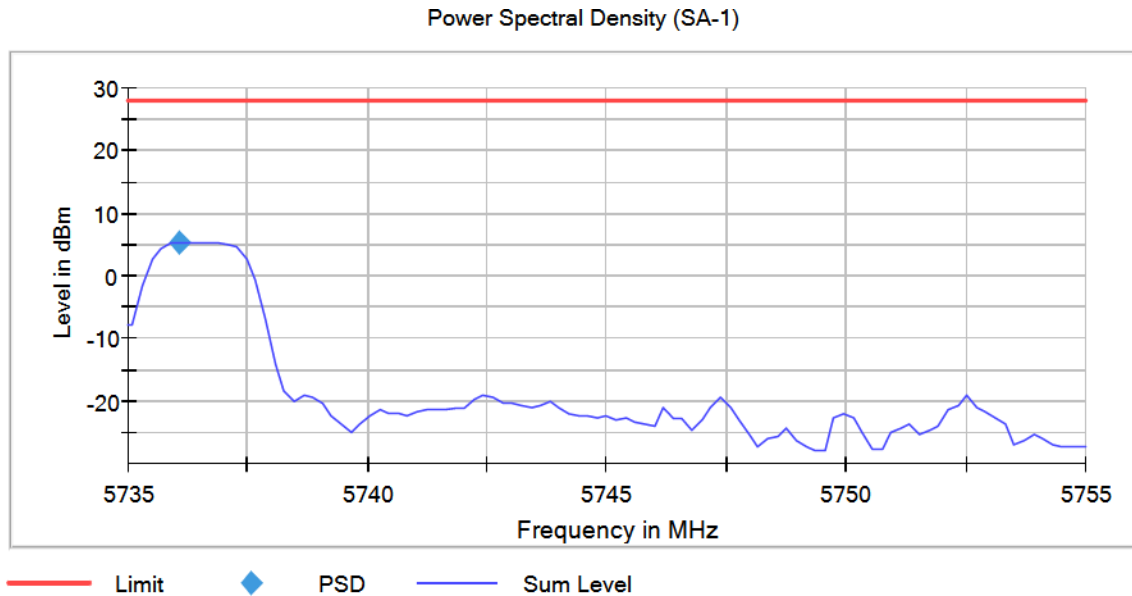
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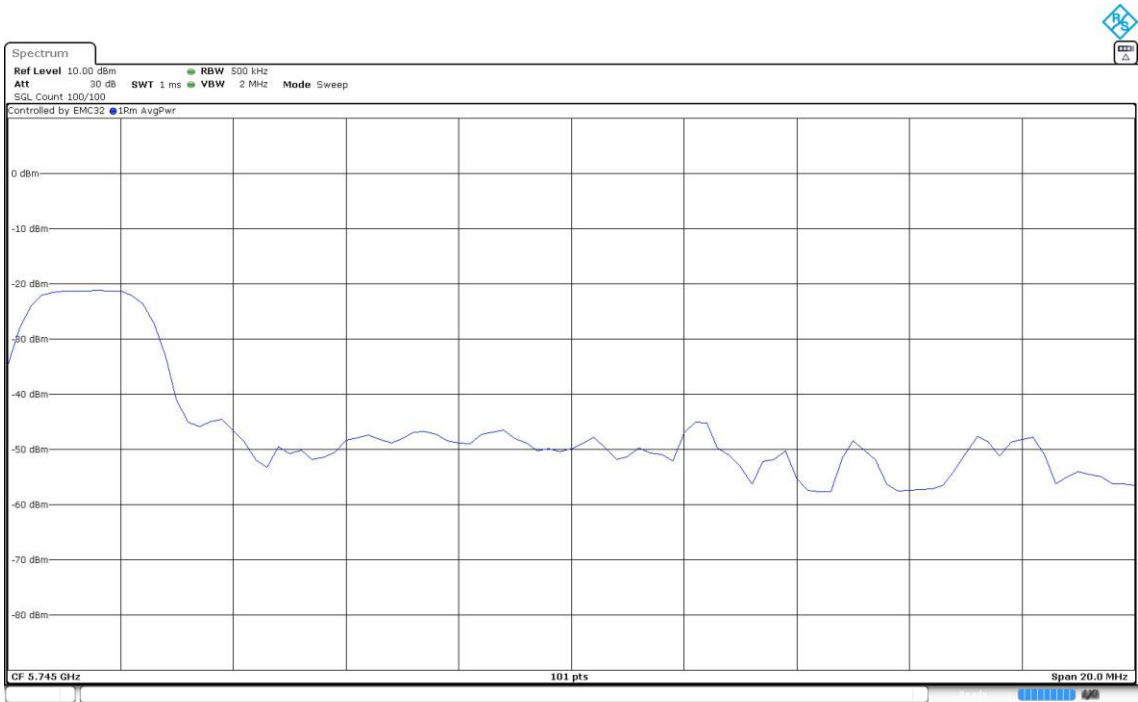




Operation Band MHz = [5725, 5850] Active Port = 2+3
 Frequency MHz = 5745.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
 TPC = No Subcarrier Mode = RU

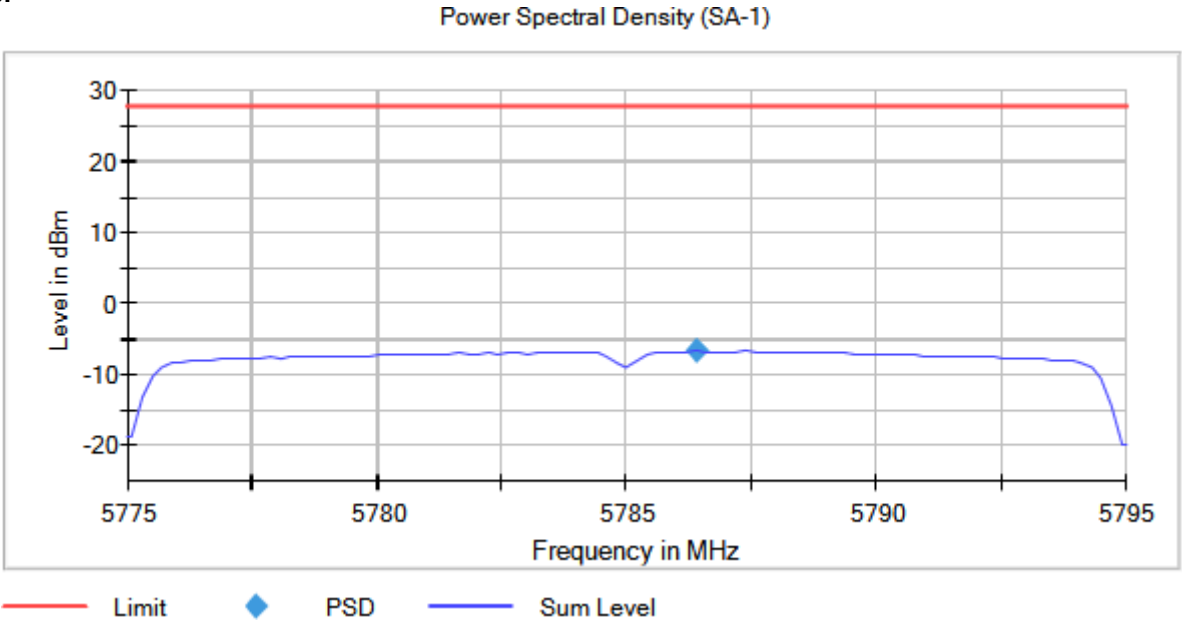
Images:

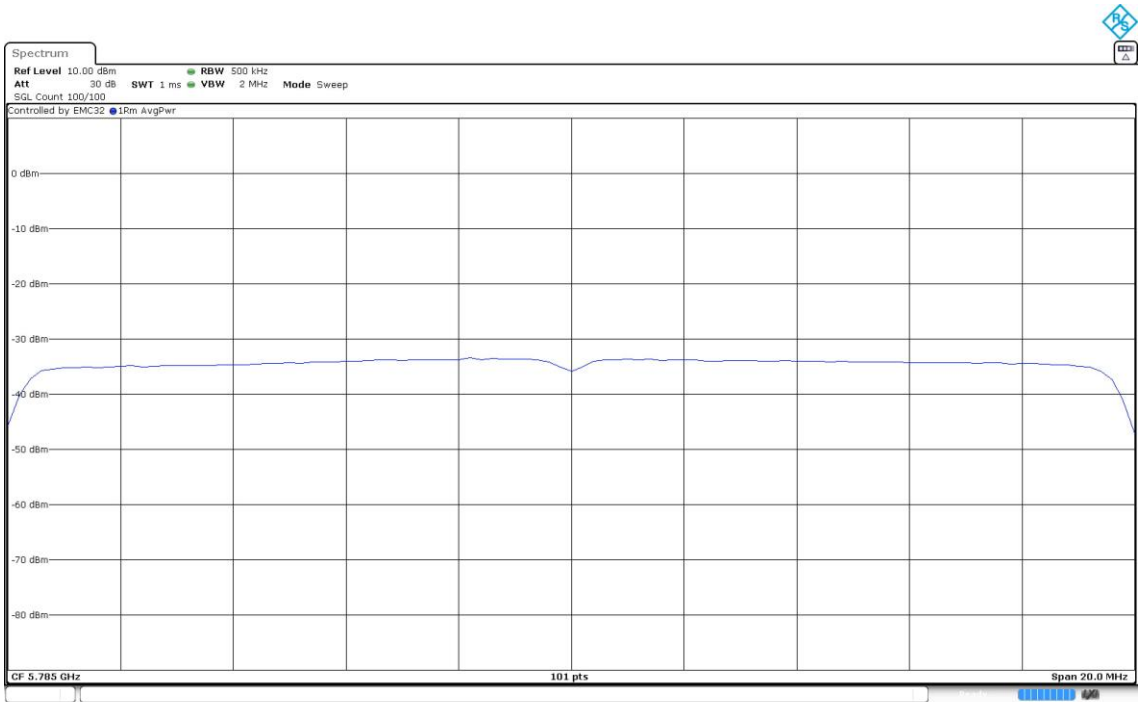




Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5785.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = SU

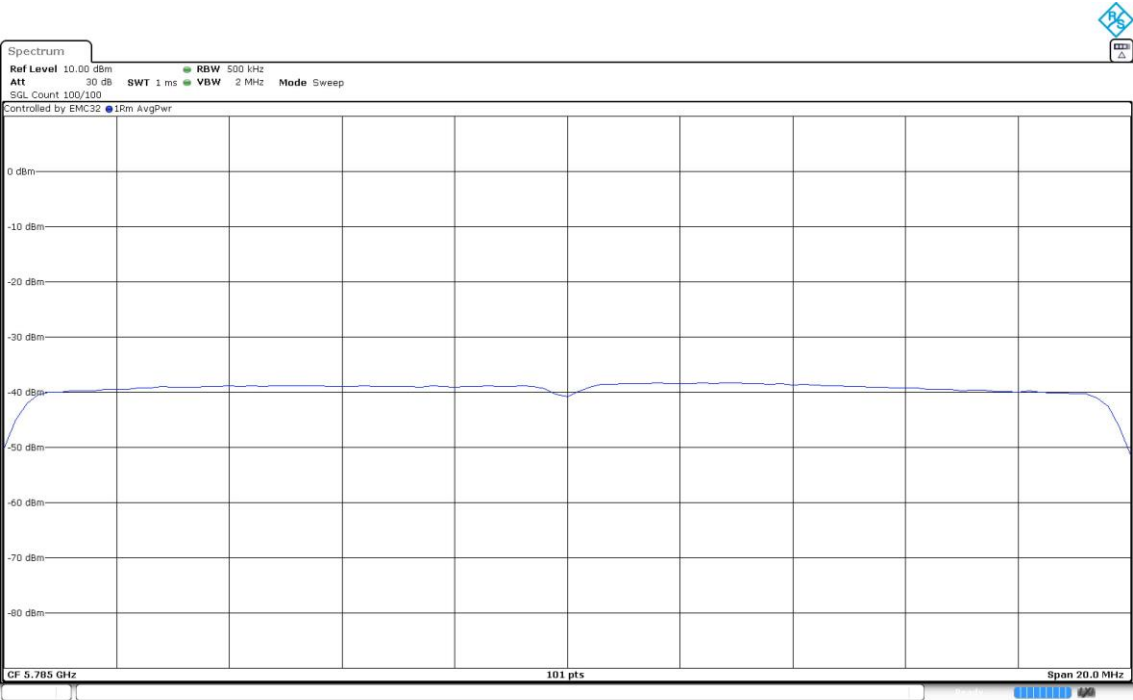
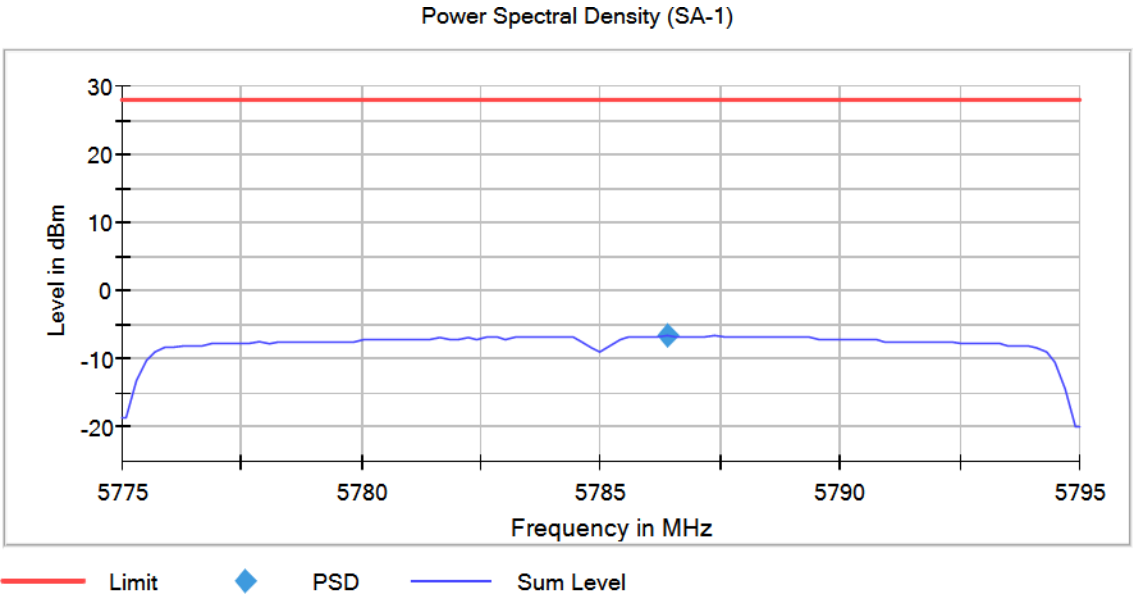
Images:

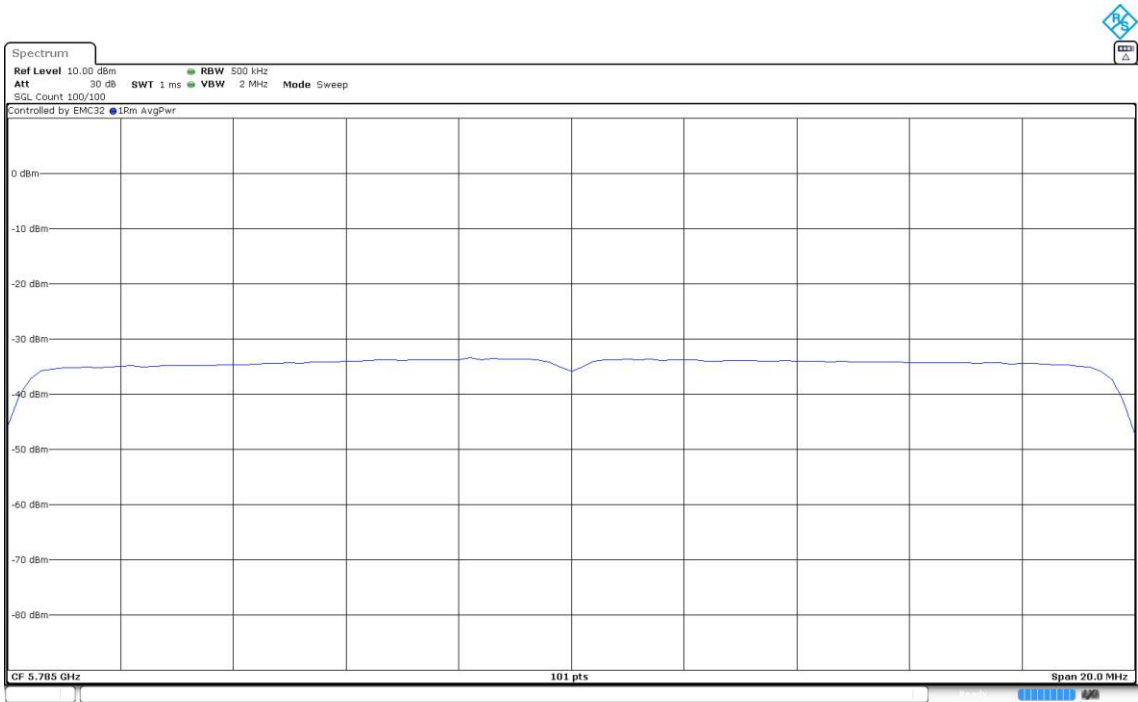




Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5785.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = SU

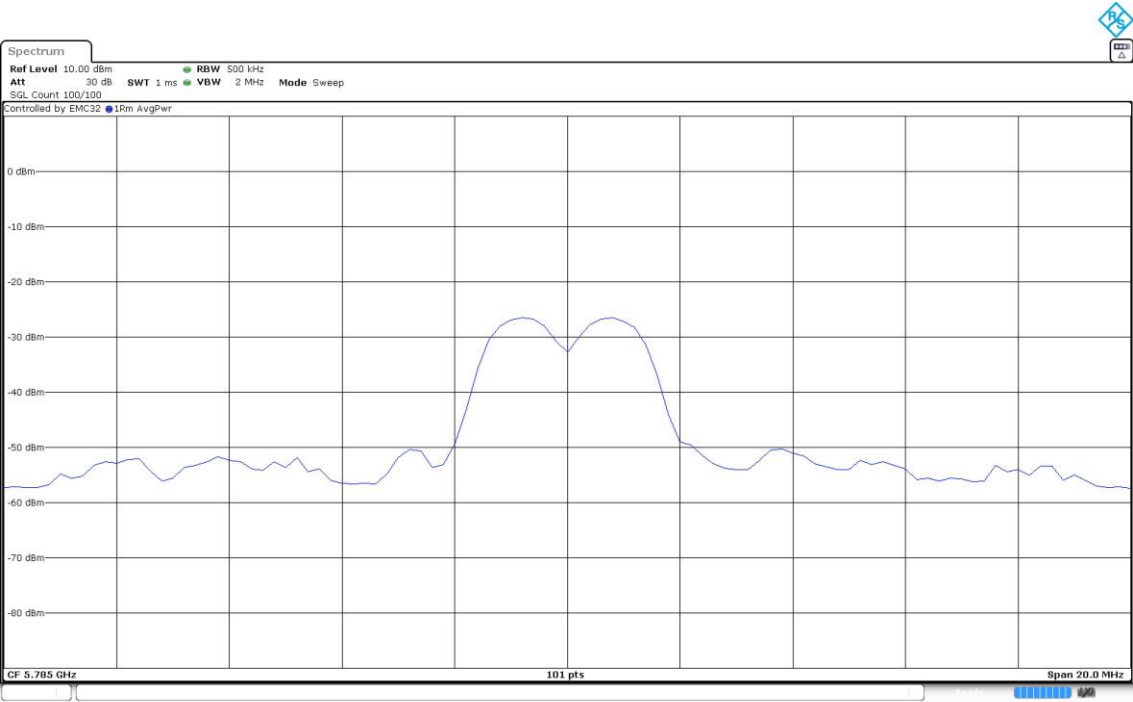
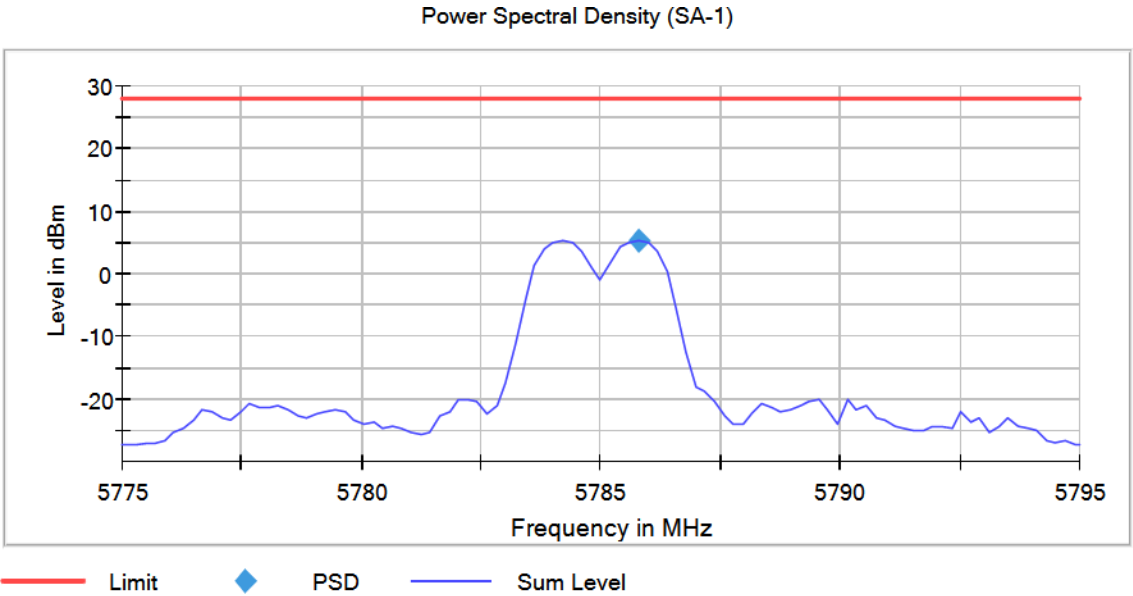
Images:

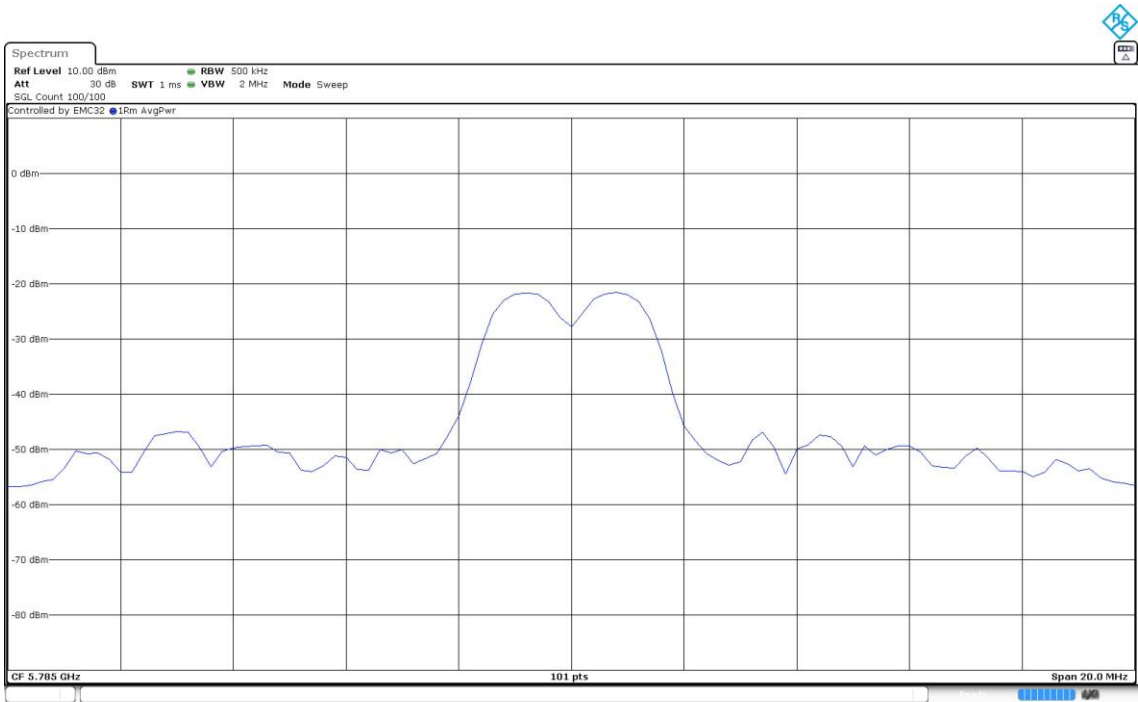




Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5785.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = RU

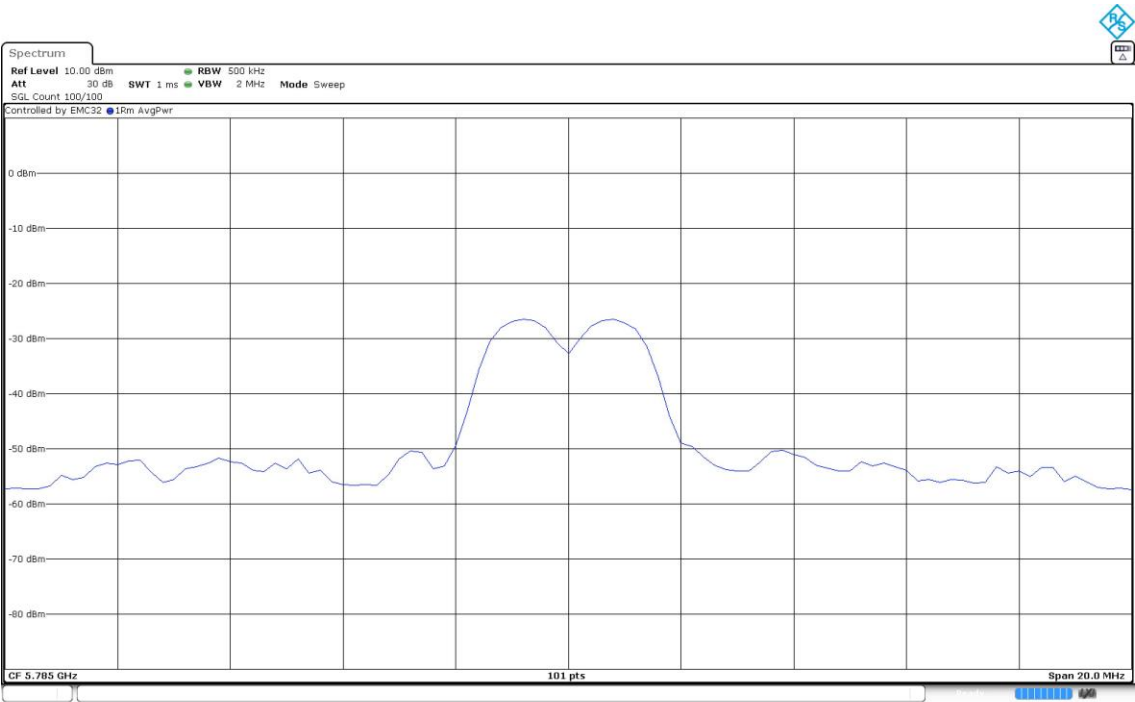
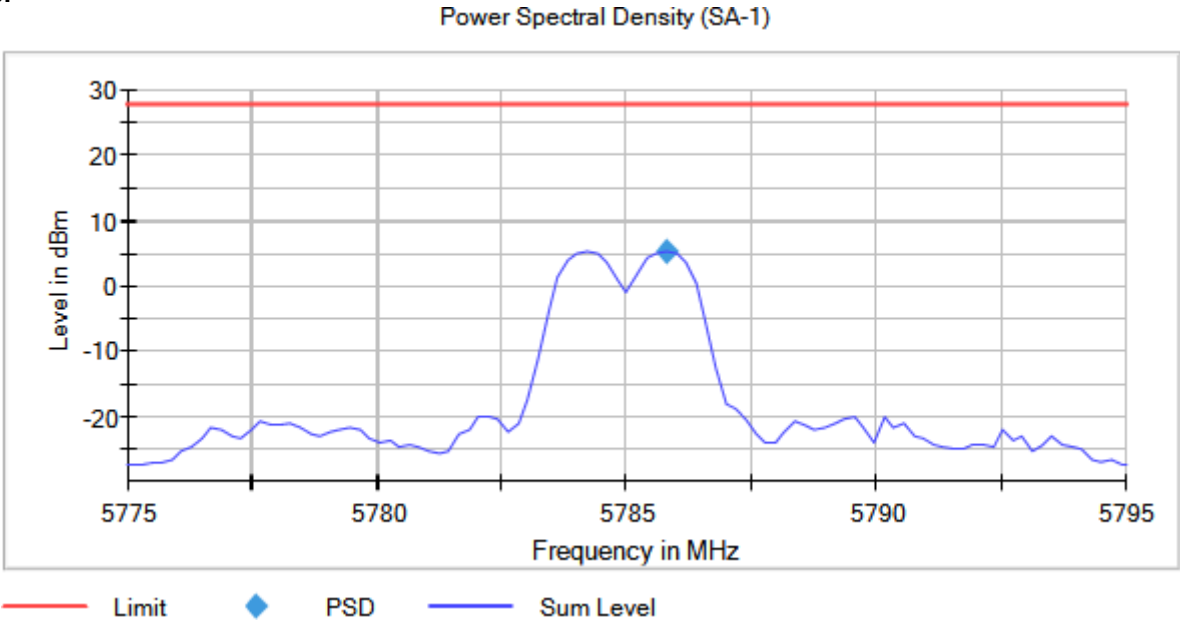
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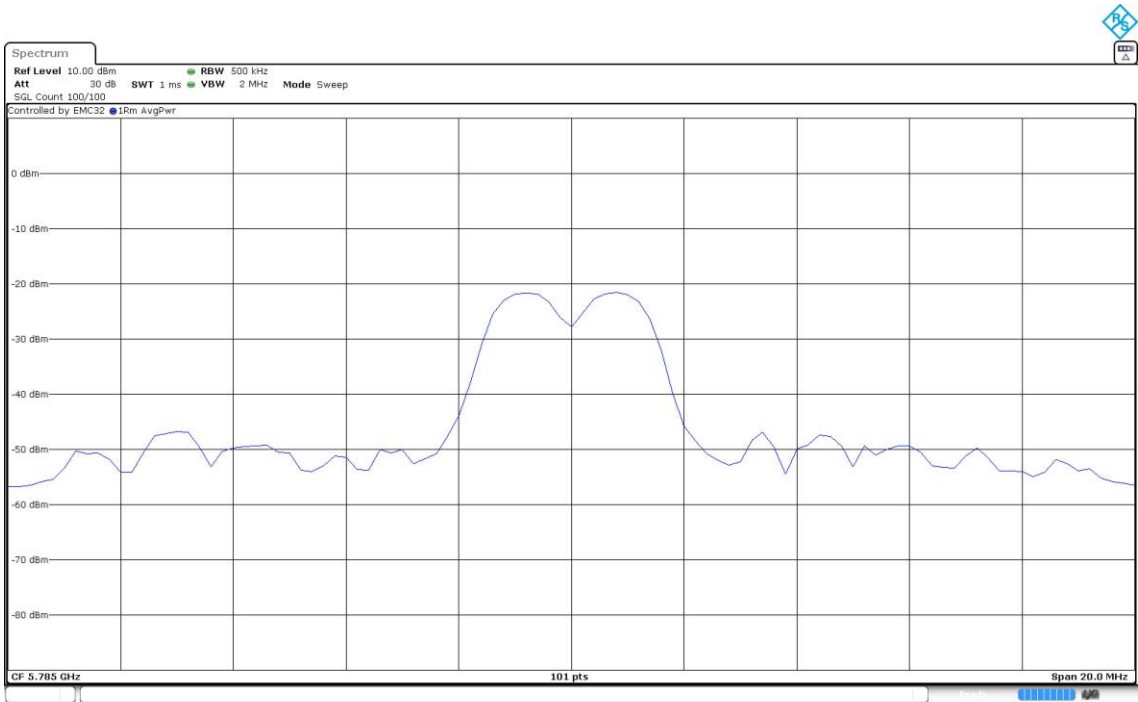




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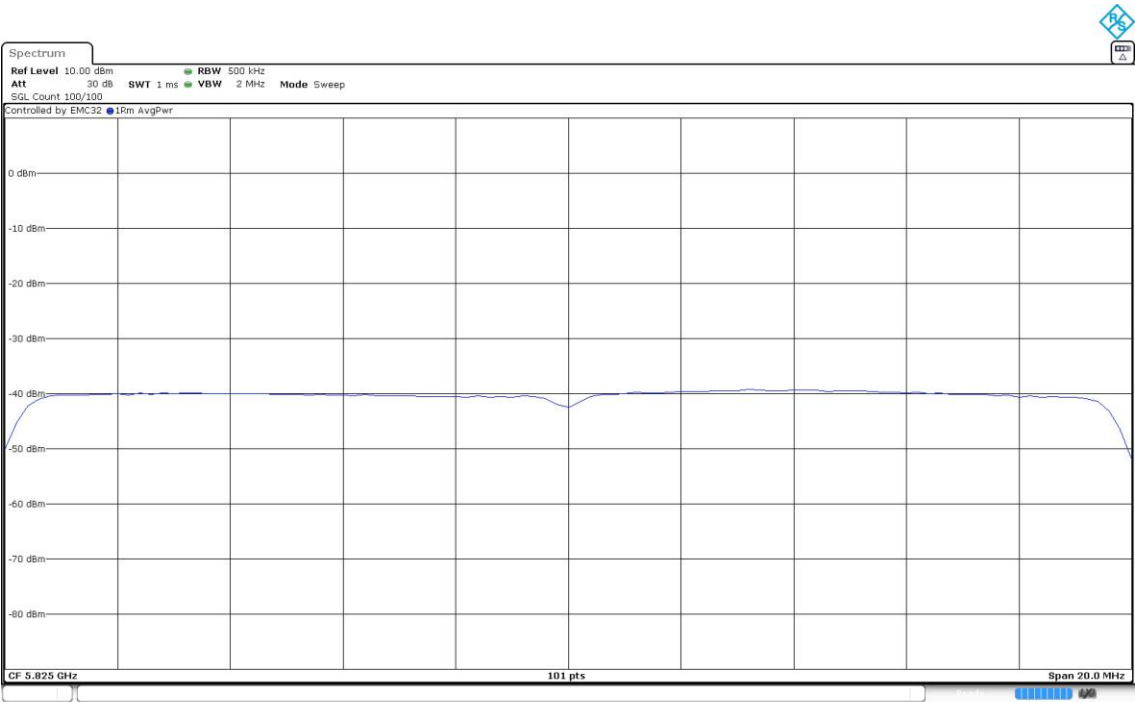
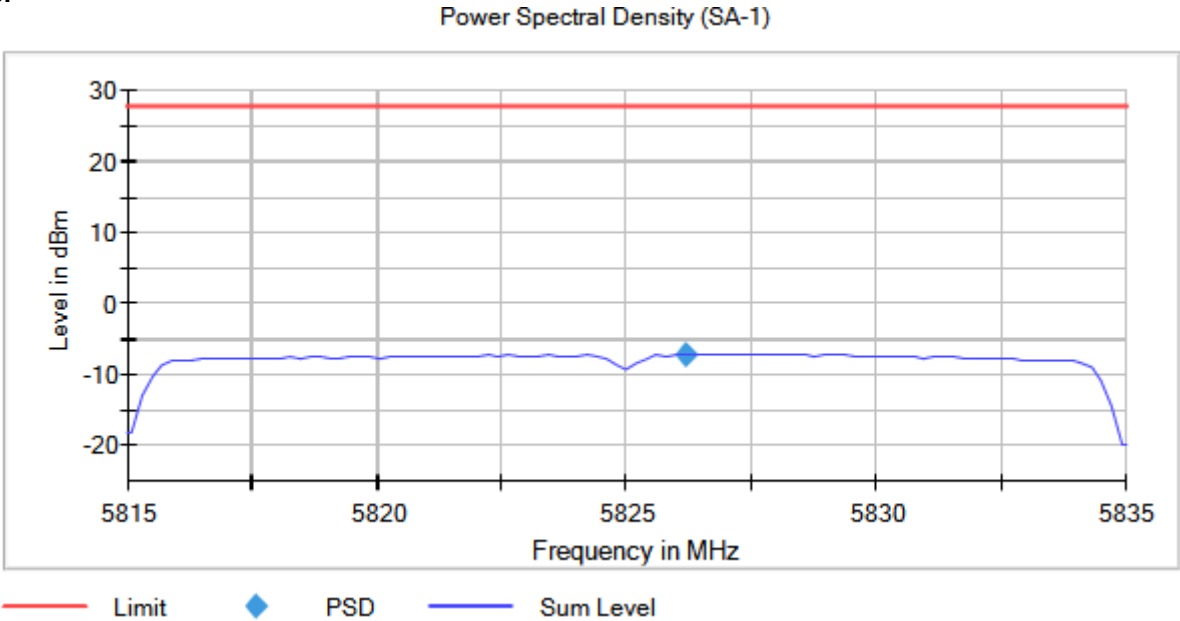
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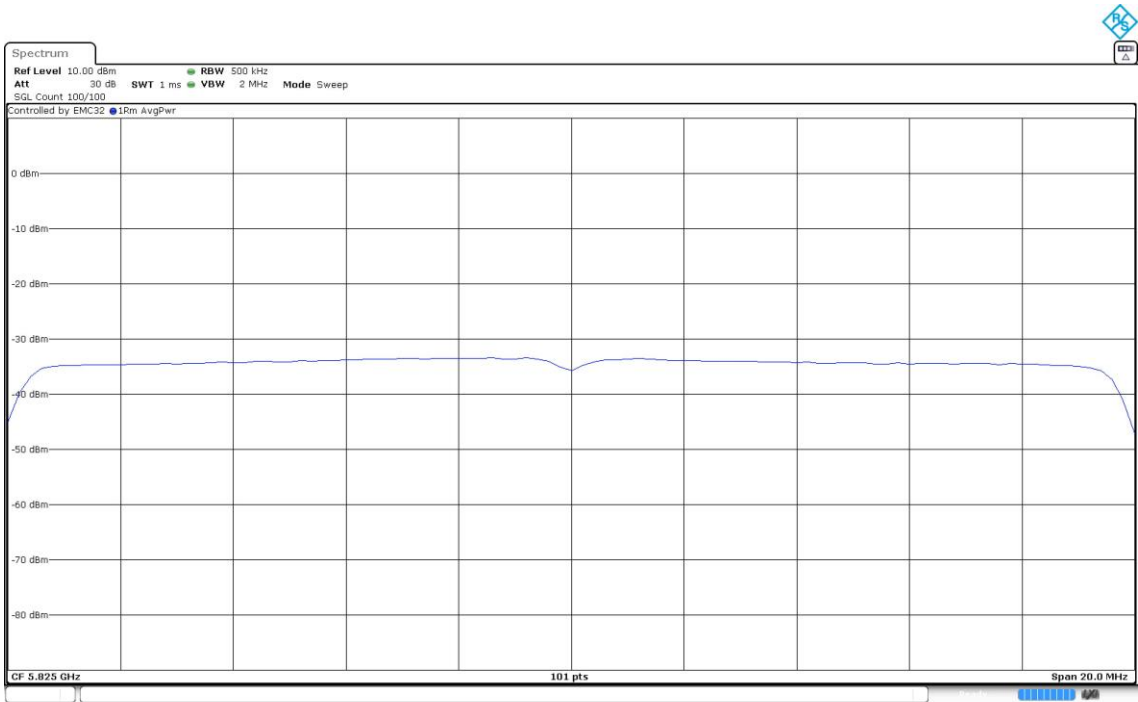




Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5825.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = SU

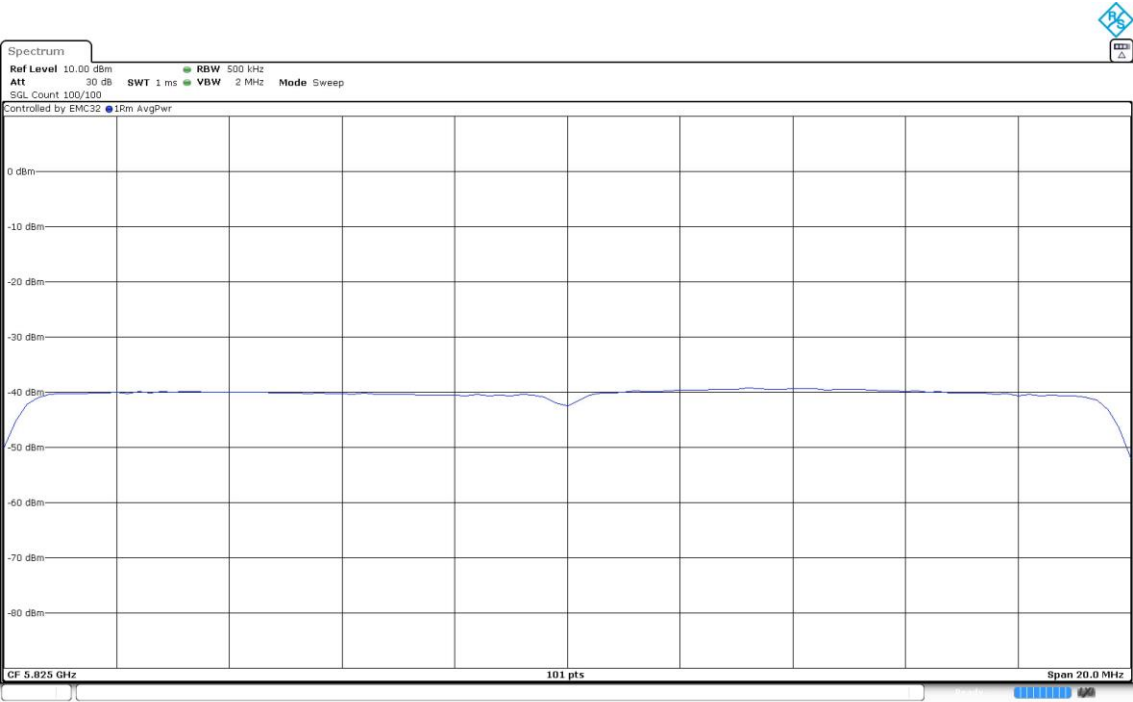
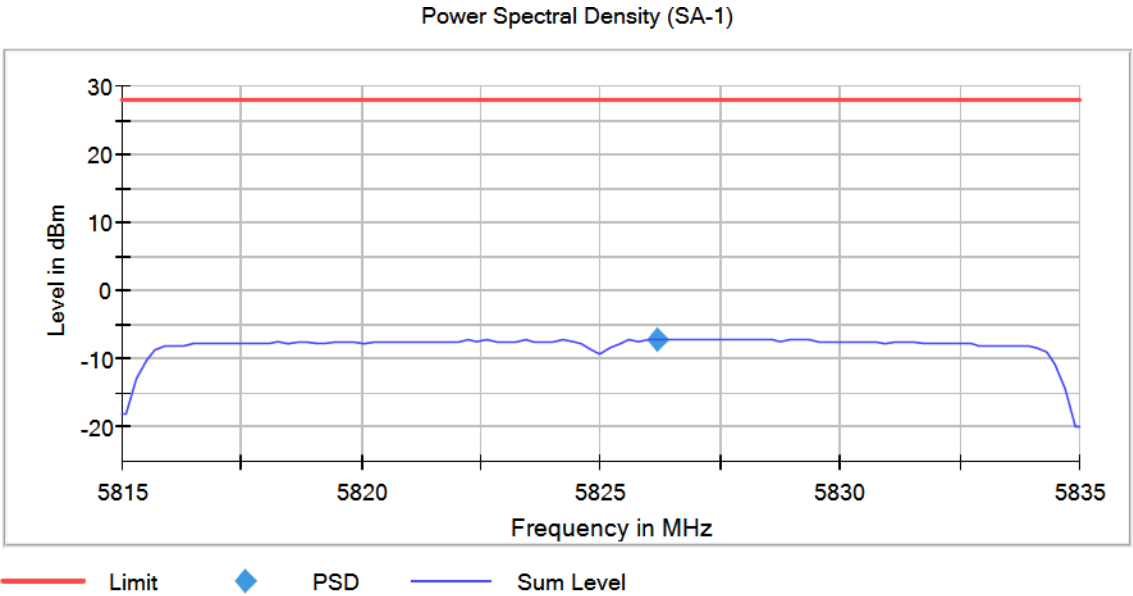
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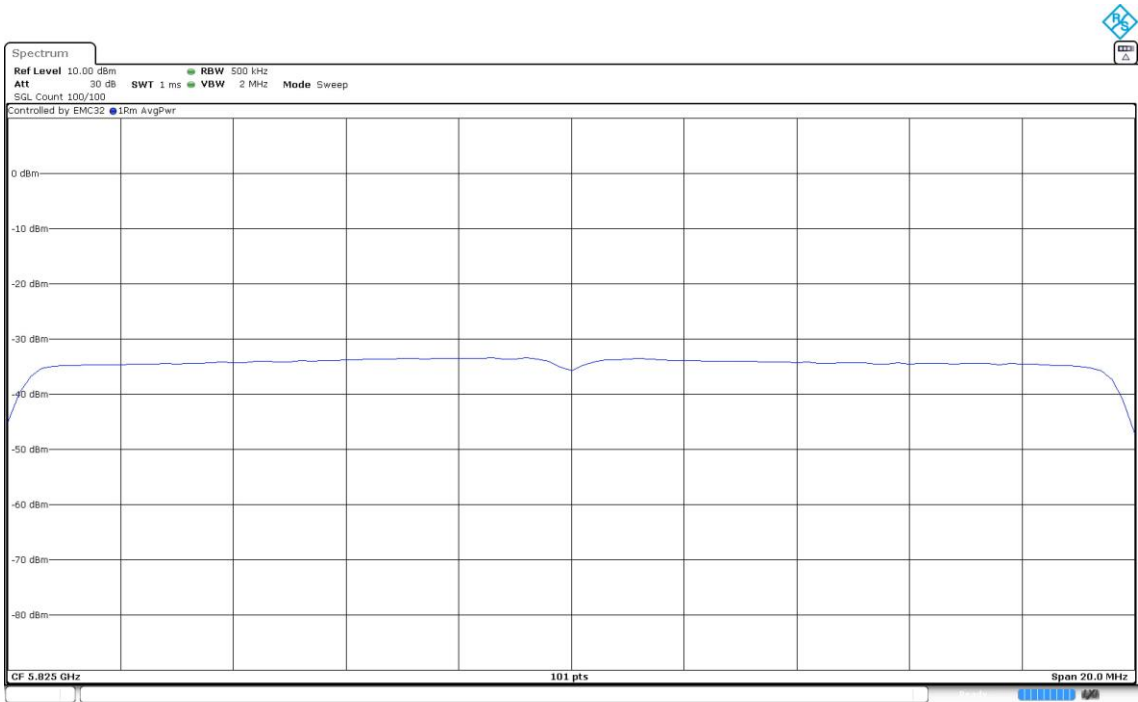




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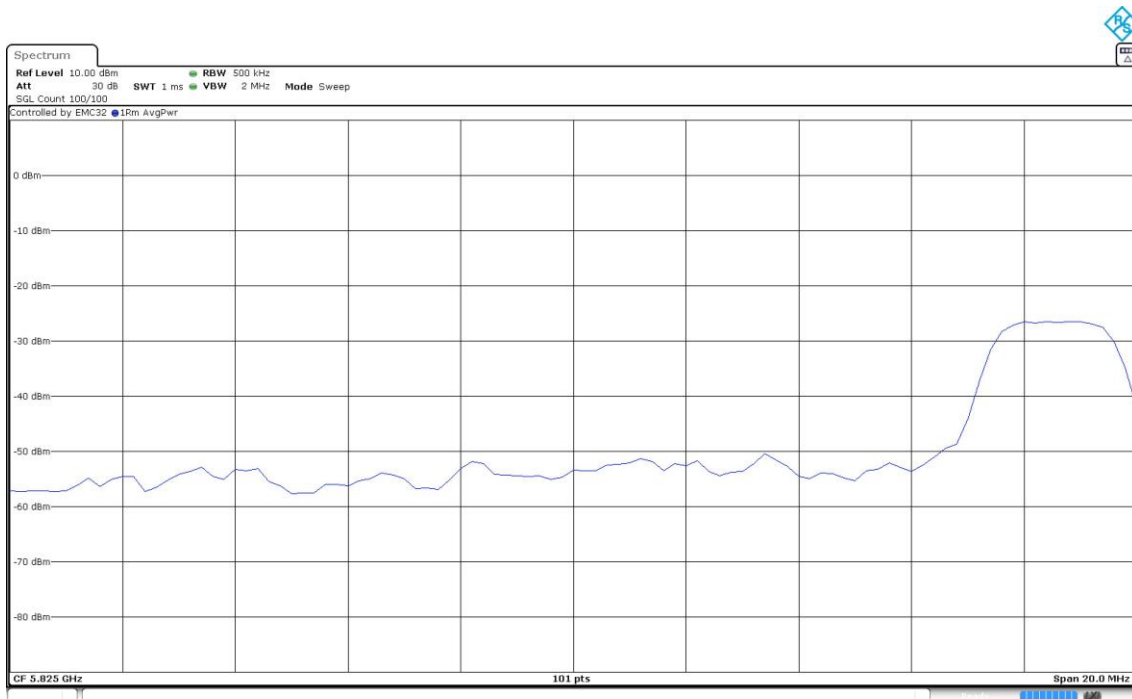
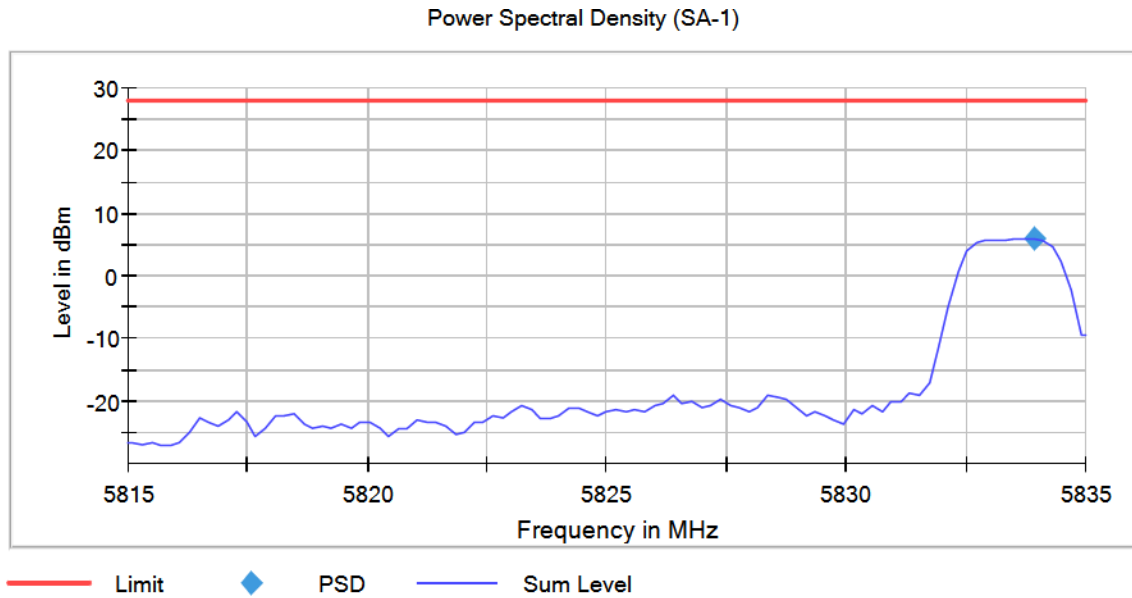
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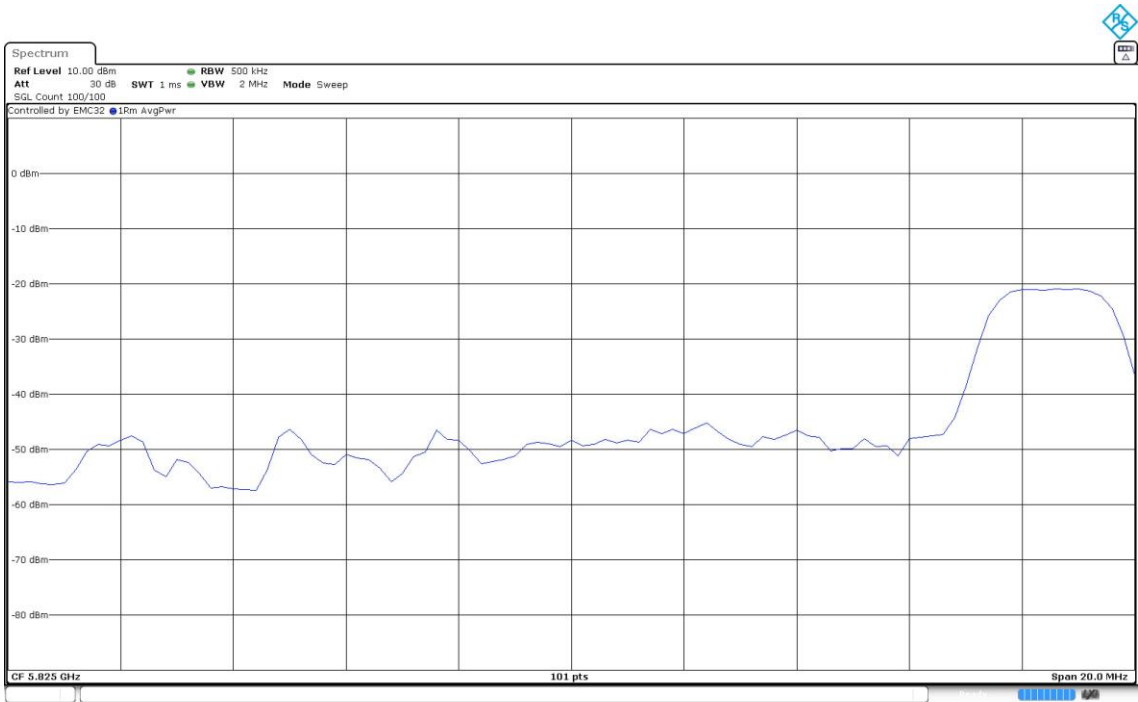




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Frequency MHz = 5825.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = RU

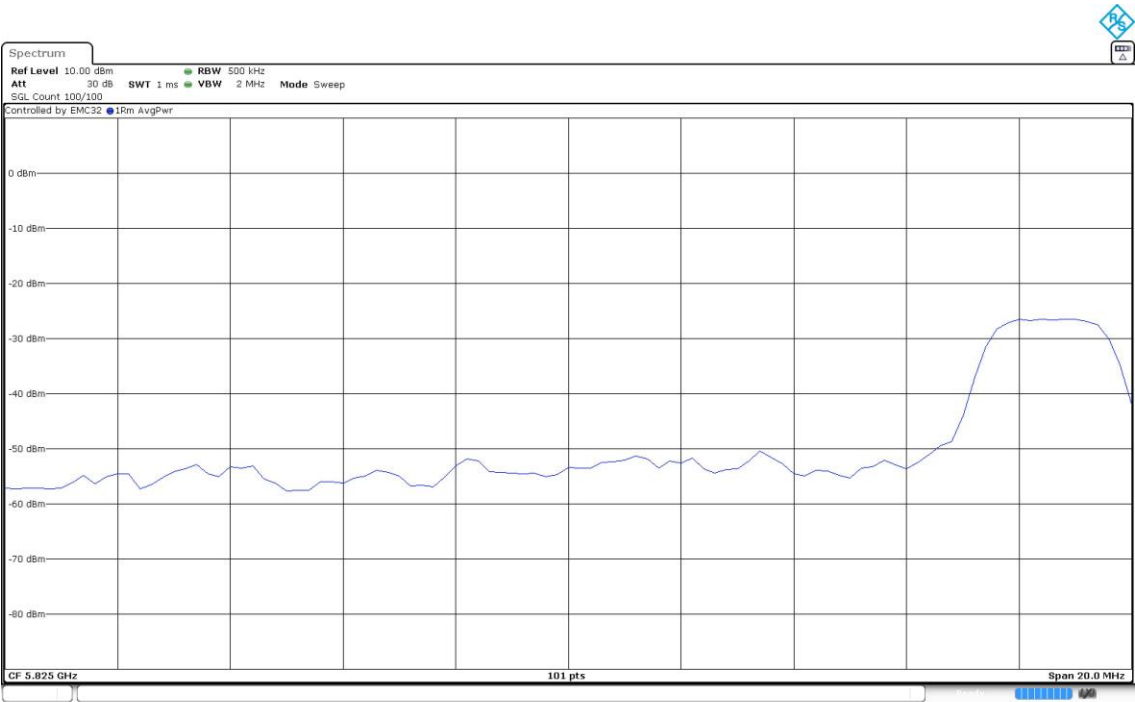
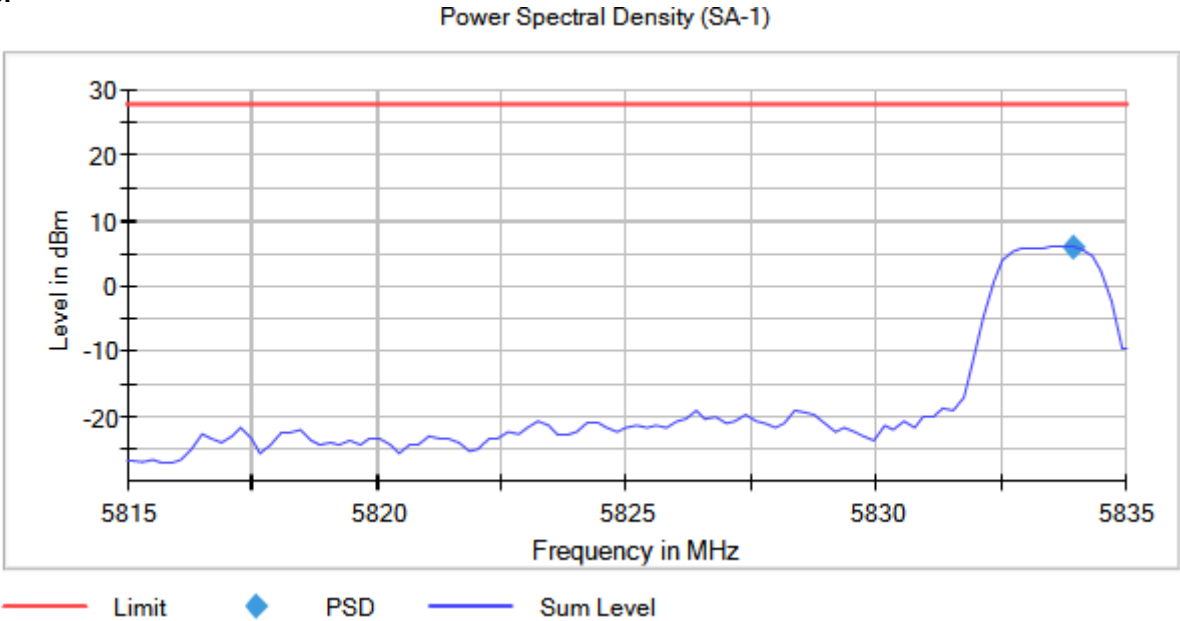
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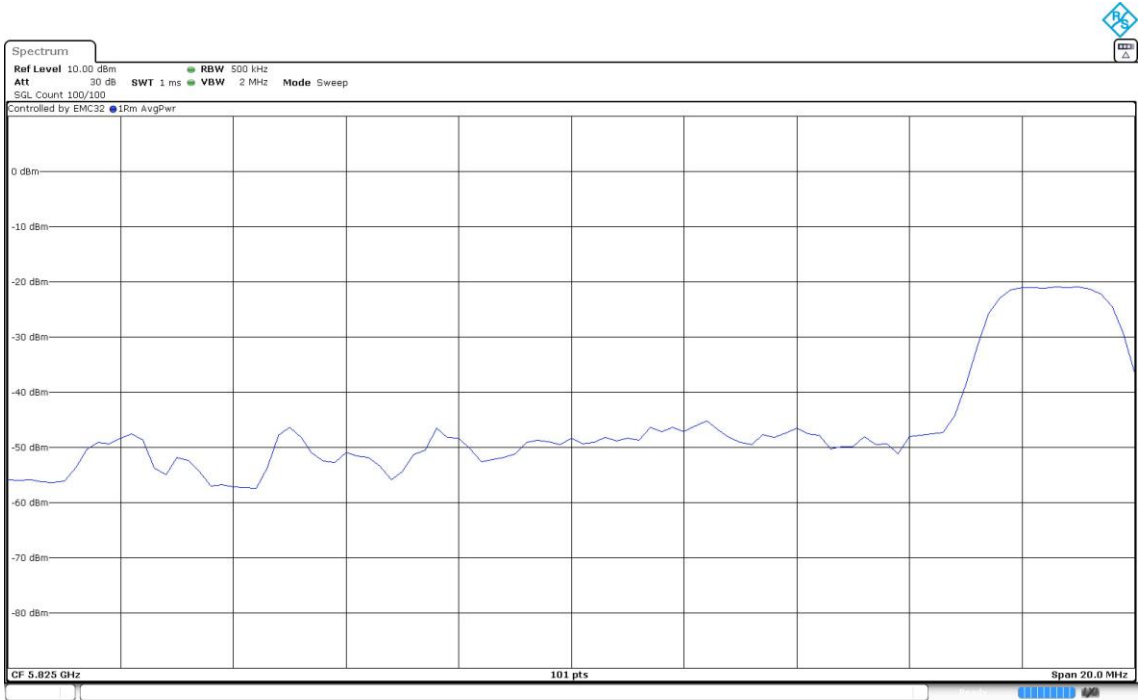




Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5825.00000 Modulation = 802.11ax HE20 (OFDMA MCS0)
TPC = No Subcarrier Mode = RU

Images:





Modulation: 802.11ax HE40 (OFDMA MCS0)

Results

Operation Band (MHz)	Port	Freq (MHz)	TPC	Subcarrier Mode	Freq (MHz)	PSD (dBm)
[5725, 5850]	2+3	5755.00000	No	SU	5758.375000	-13.70
					5758.375000	-13.70
				RU	5754.125000	-1.83
					5754.125000	-1.83
		5795.00000		SU	5796.875000	-12.39
					5796.875000	-12.39
				RU	5796.375000	-1.23
					5796.375000	-1.23

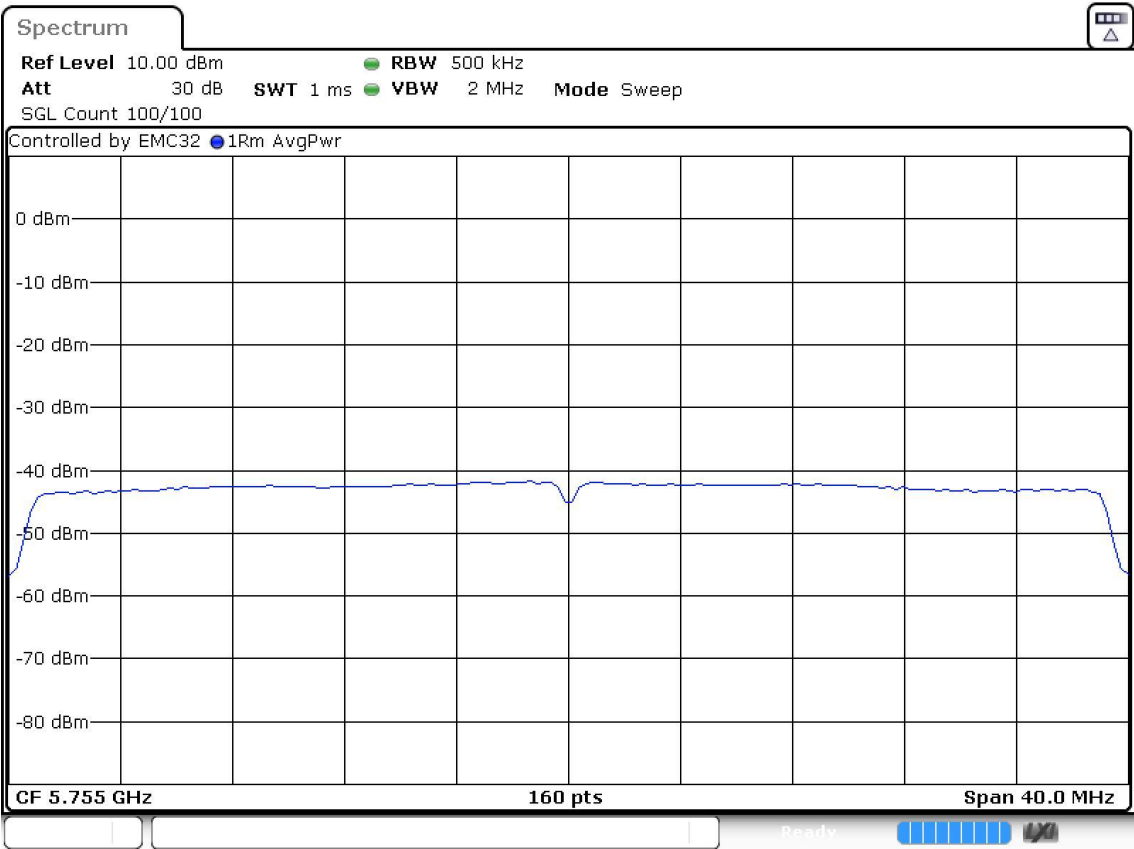
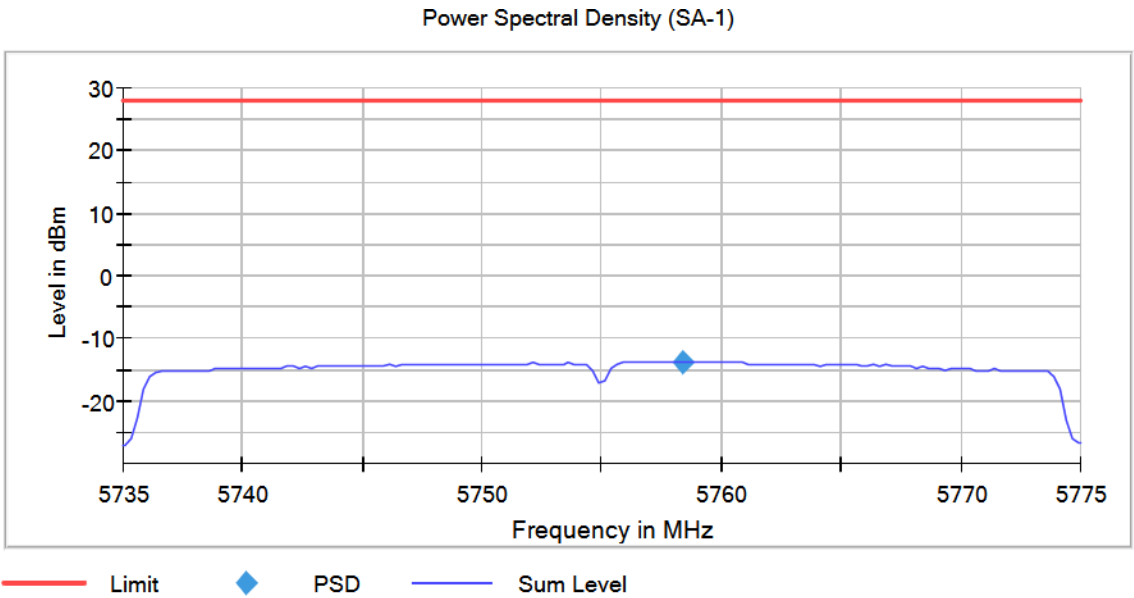
Verdict

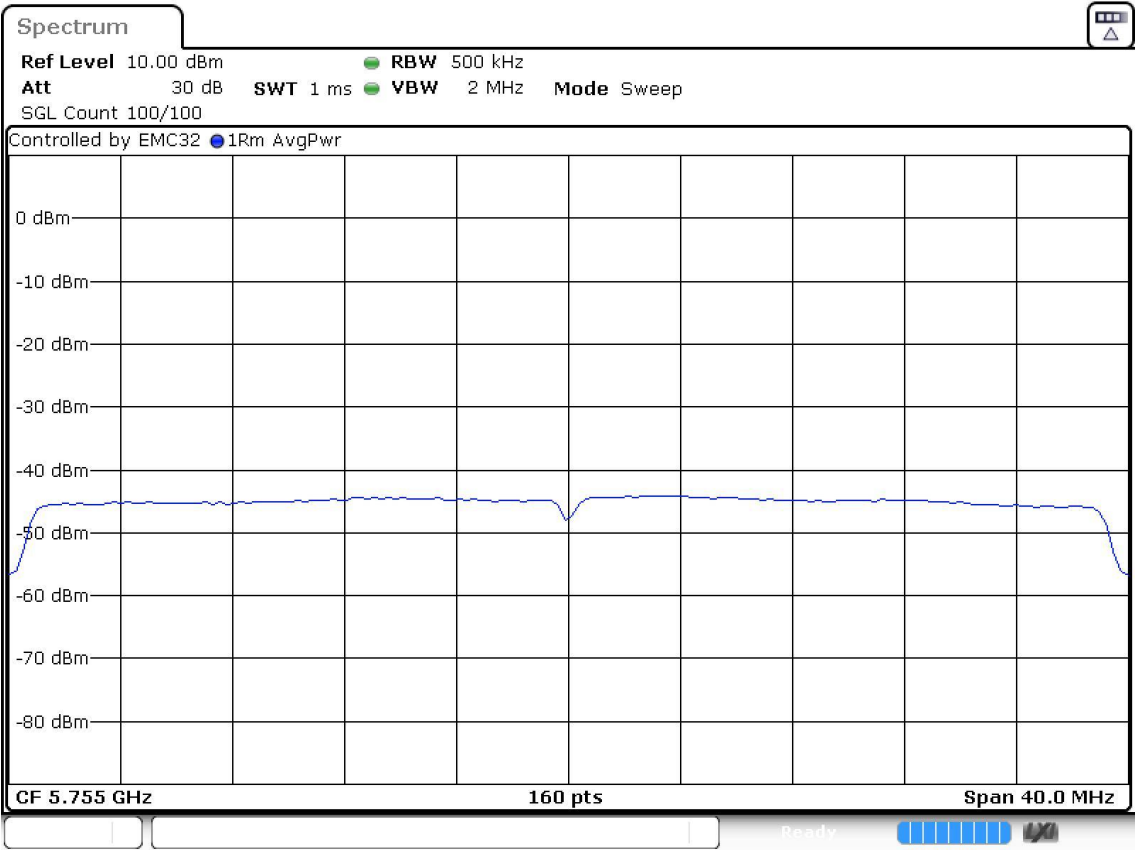
Pass

Attachments

Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5755.00000 Modulation = 802.11ax HE40 (OFDMA MCS0)
TPC = No Subcarrier Mode = SU

Images:





Operation Band MHz = [5725, 5850] Active Port = 2+3
Frequency MHz = 5755.00000 Modulation = 802.11ax HE40 (OFDMA MCS0)
TPC = No Subcarrier Mode = SU

Images:

