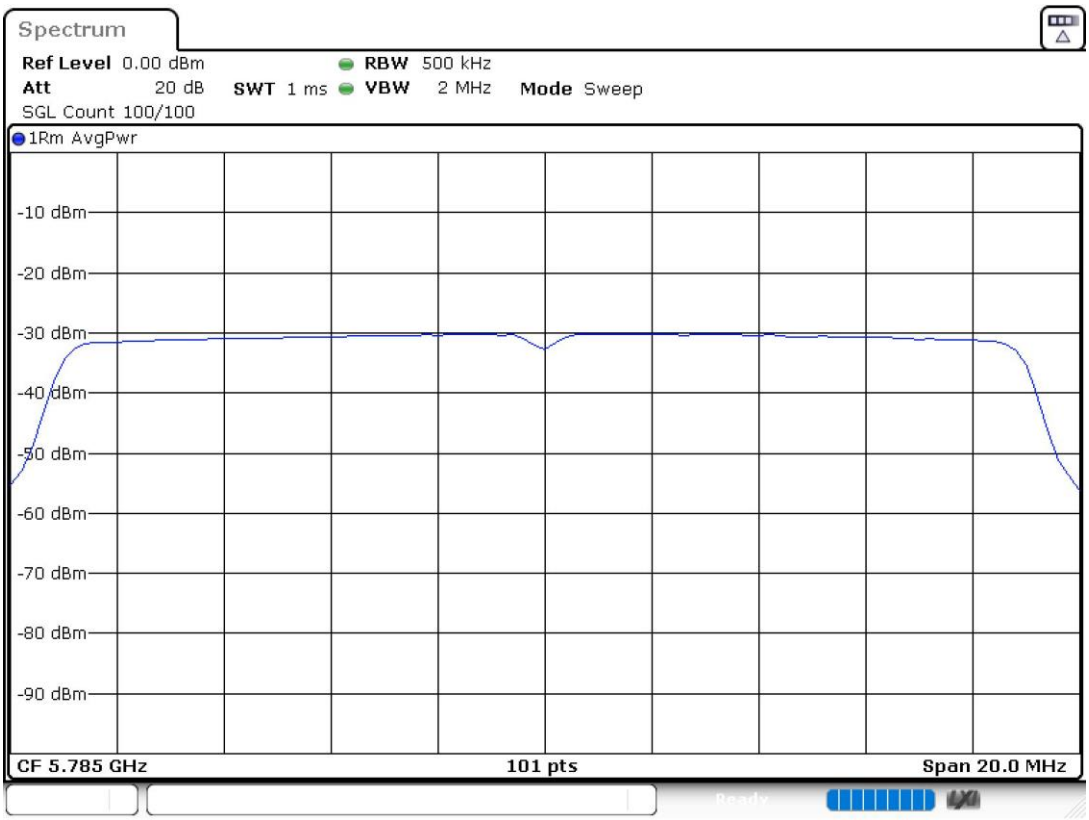
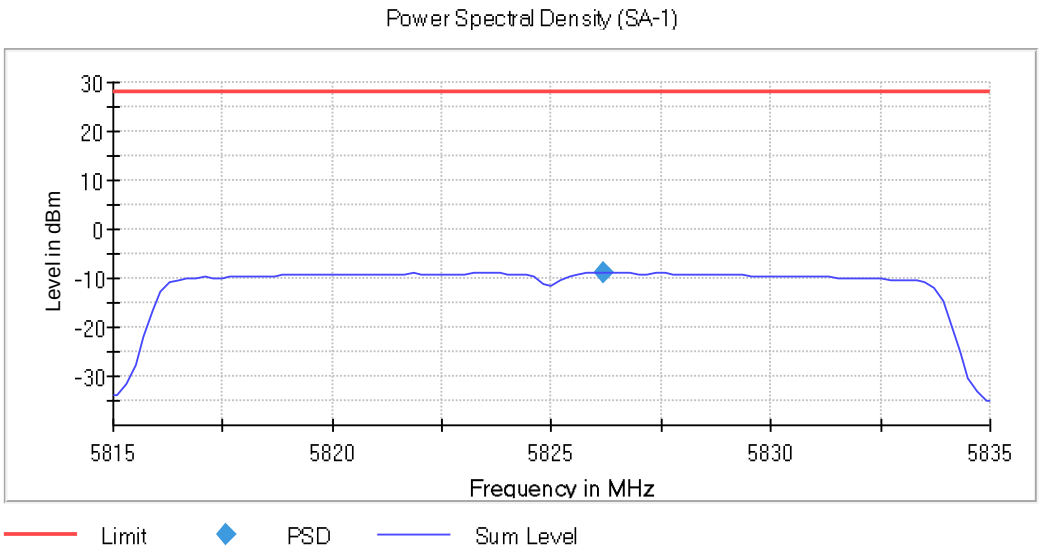
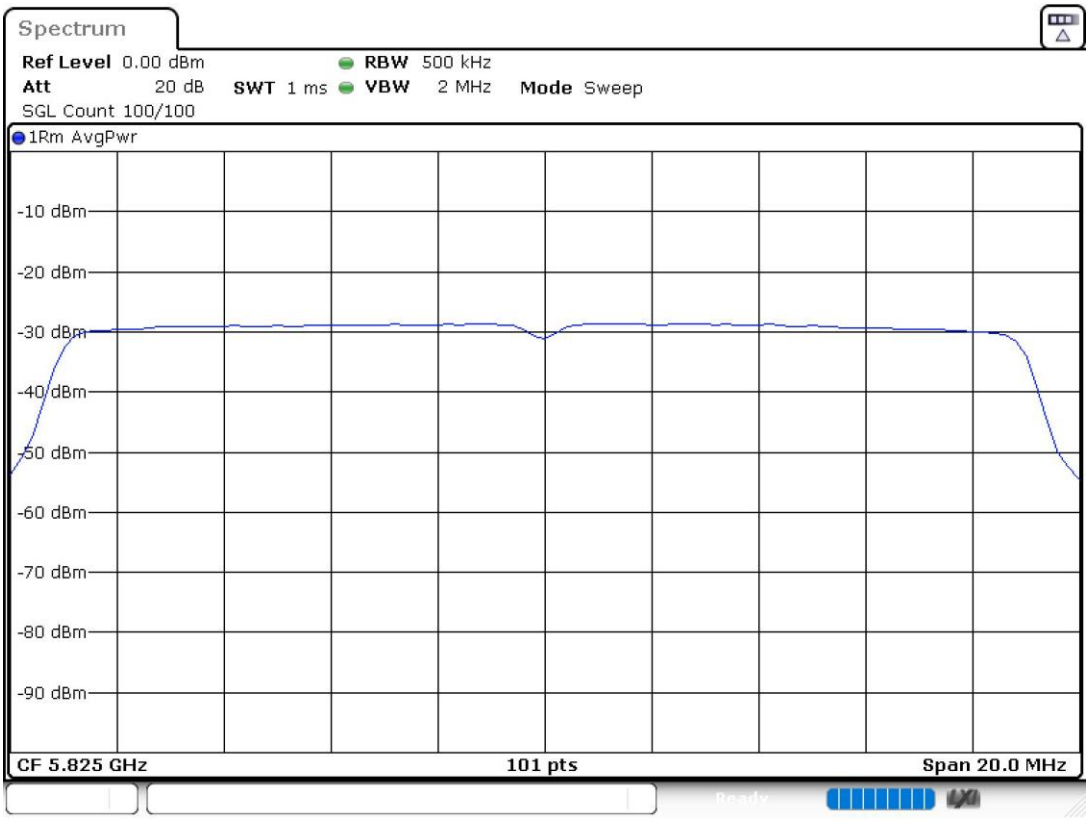

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.785 GHz
101 pts
Span 20.0 MHz

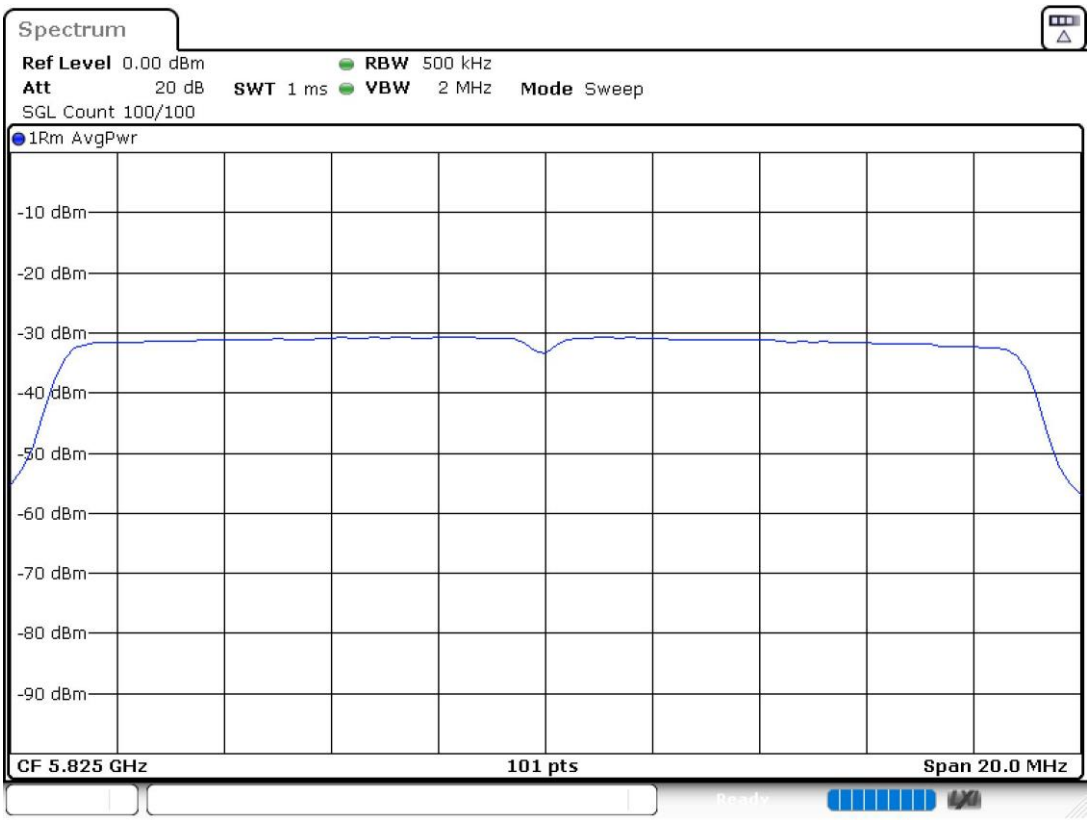
PSD Chain 0

- High Channel 165 (5825 MHz):





PSD Chain 1

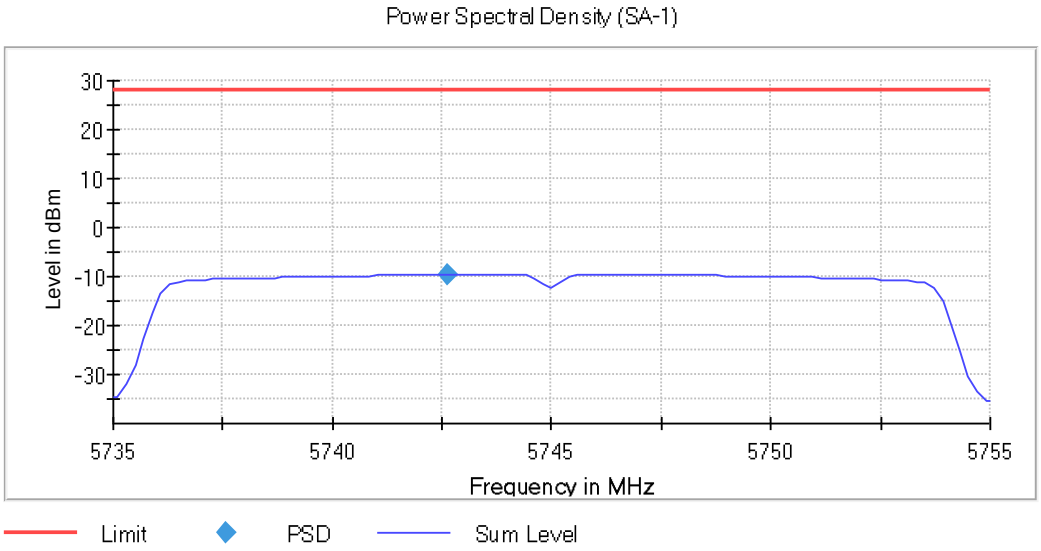

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.825 GHz
101 pts
Span 20.0 MHz

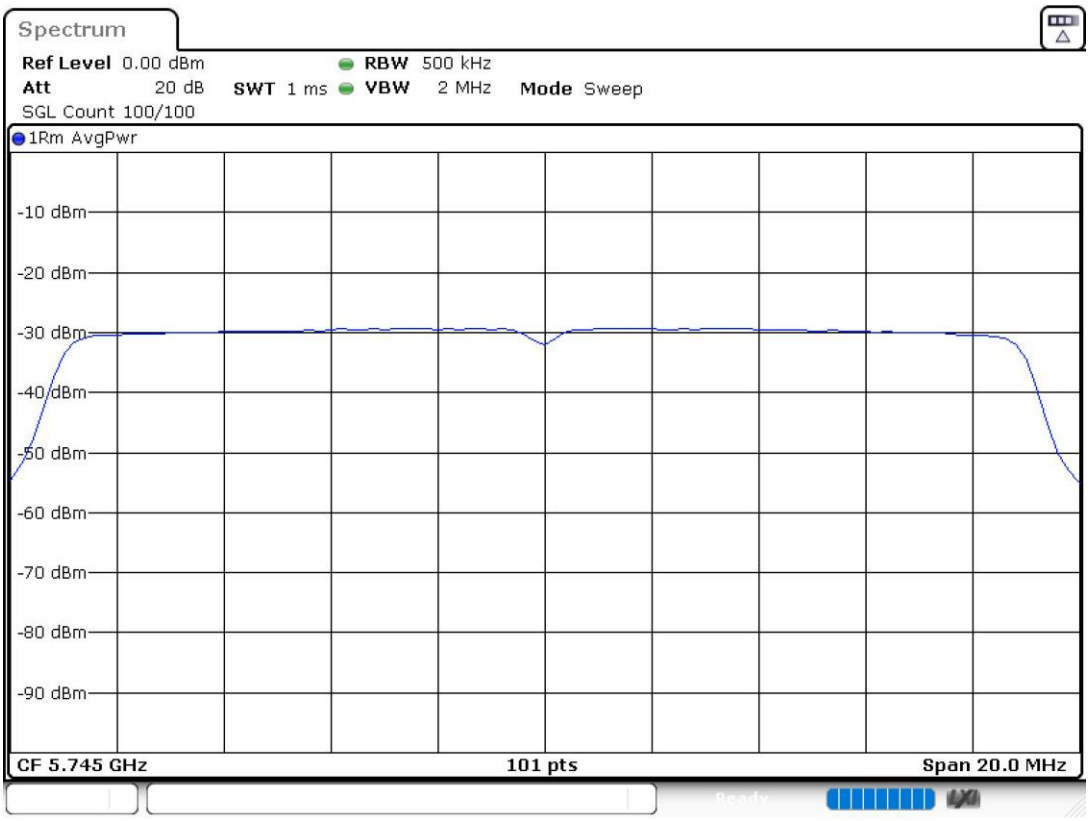
PSD Chain 0

MIMO 802.11 ac20 (VHT20):

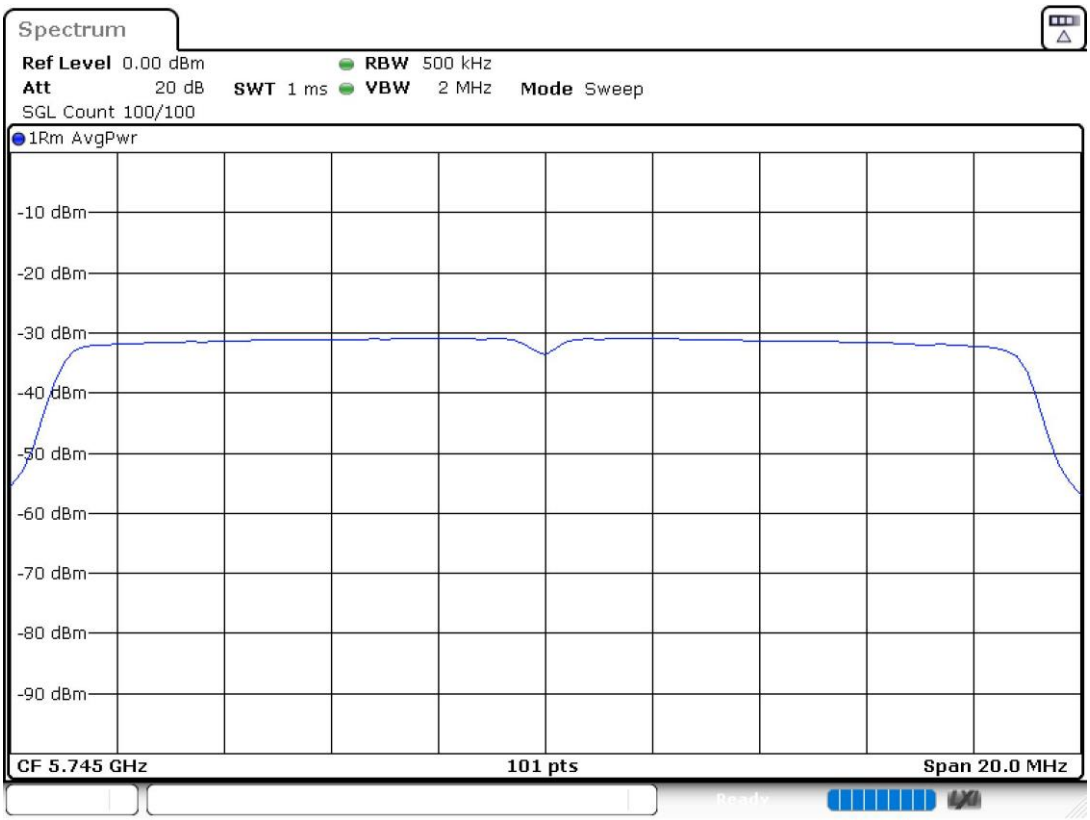
U-NII-3 (5725-5850 MHz)

- Low Channel 149 (5745 MHz):



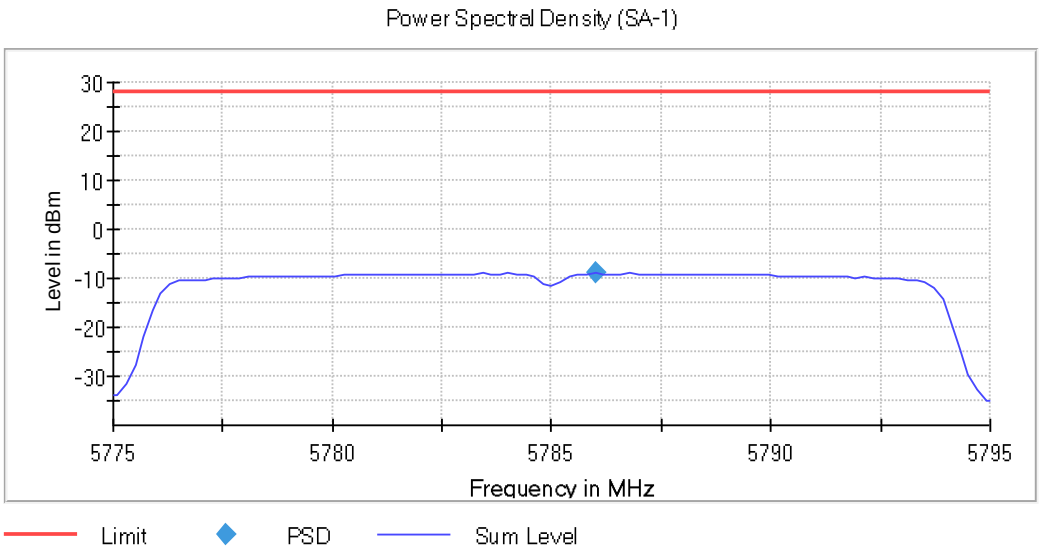


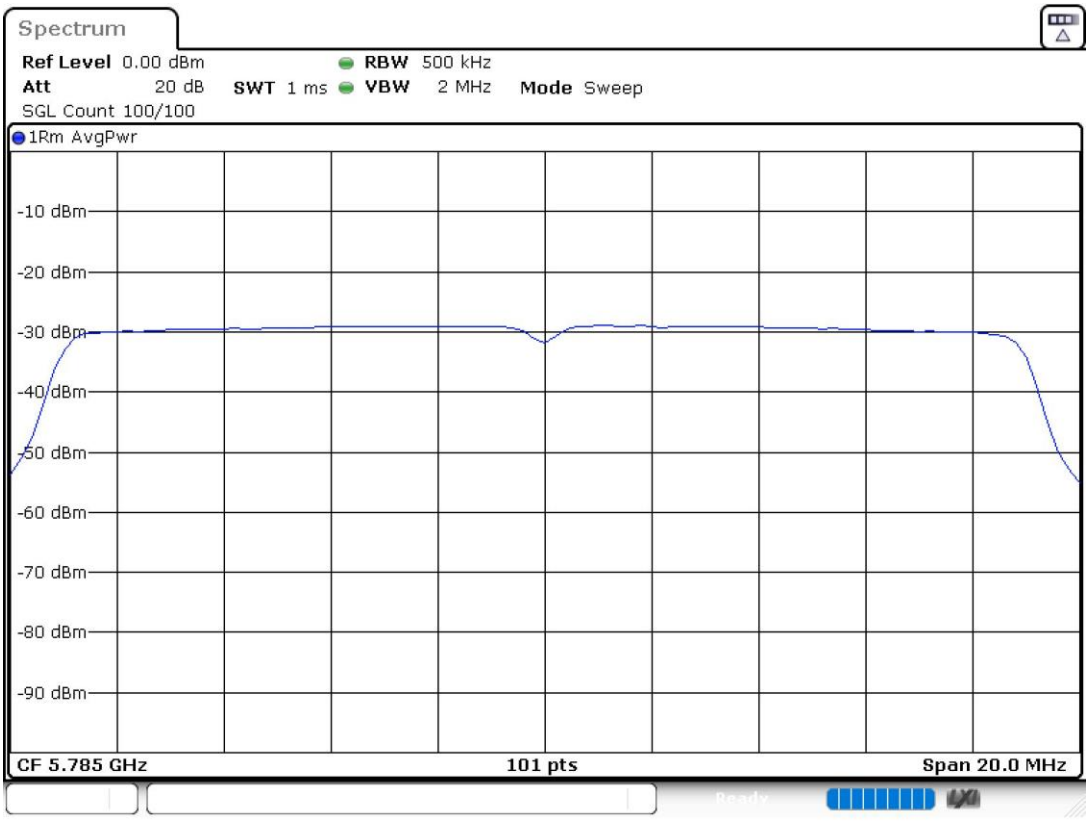
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.745 GHz
101 pts
Span 20.0 MHz
Ready

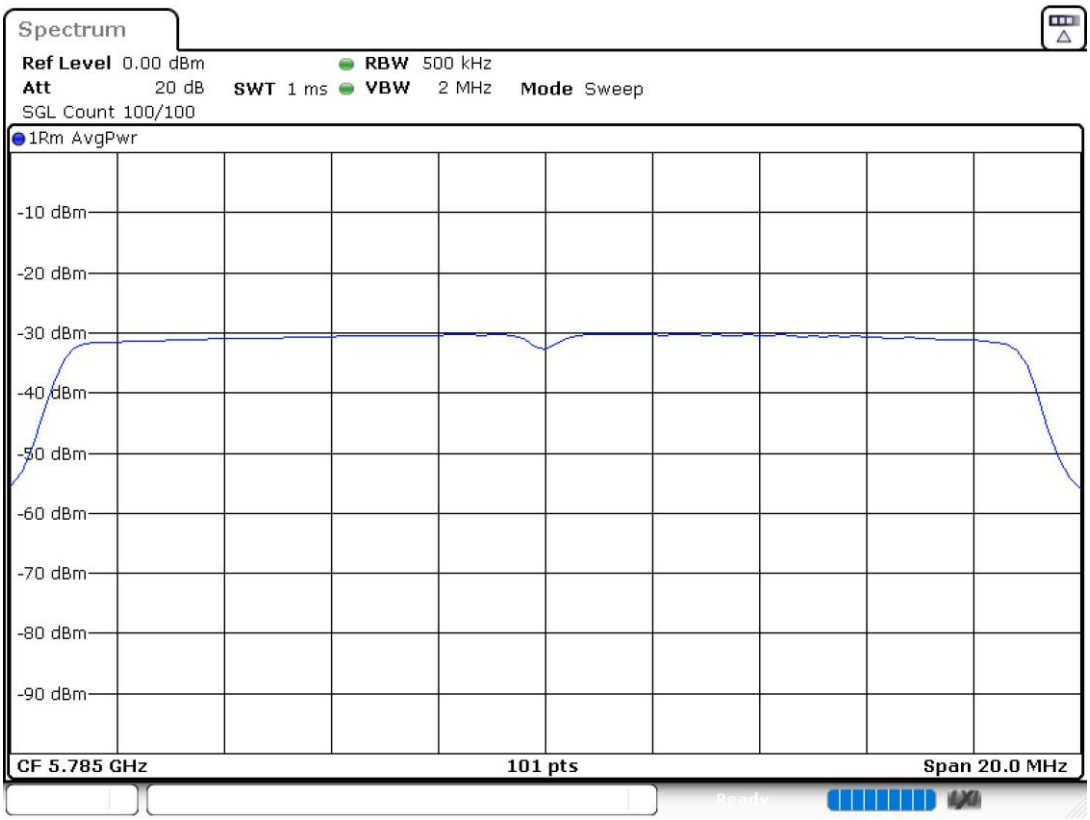
PSD Chain 0

- Middle Channel 157 (5785 MHz):



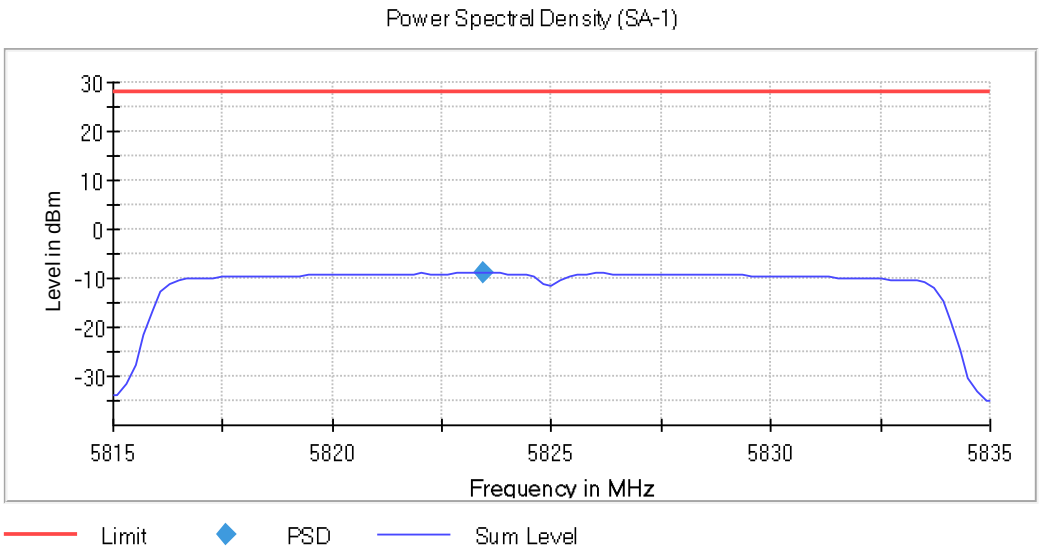


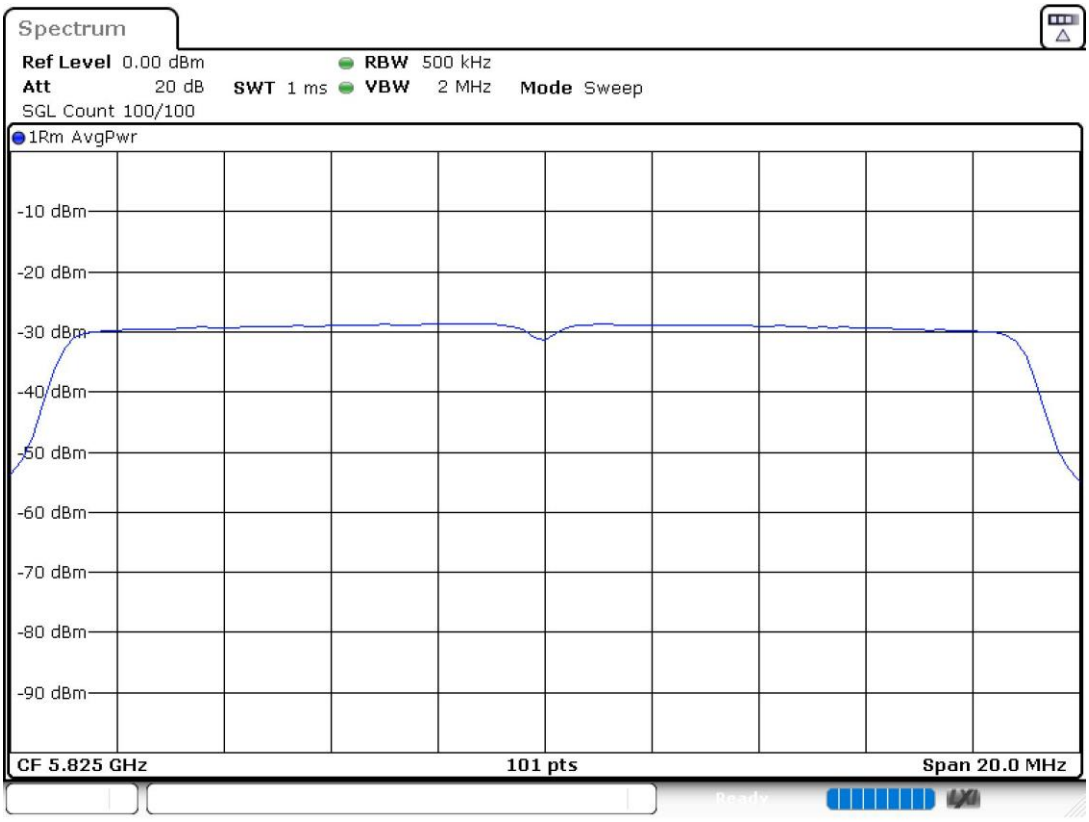
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.785 GHz
101 pts
Span 20.0 MHz

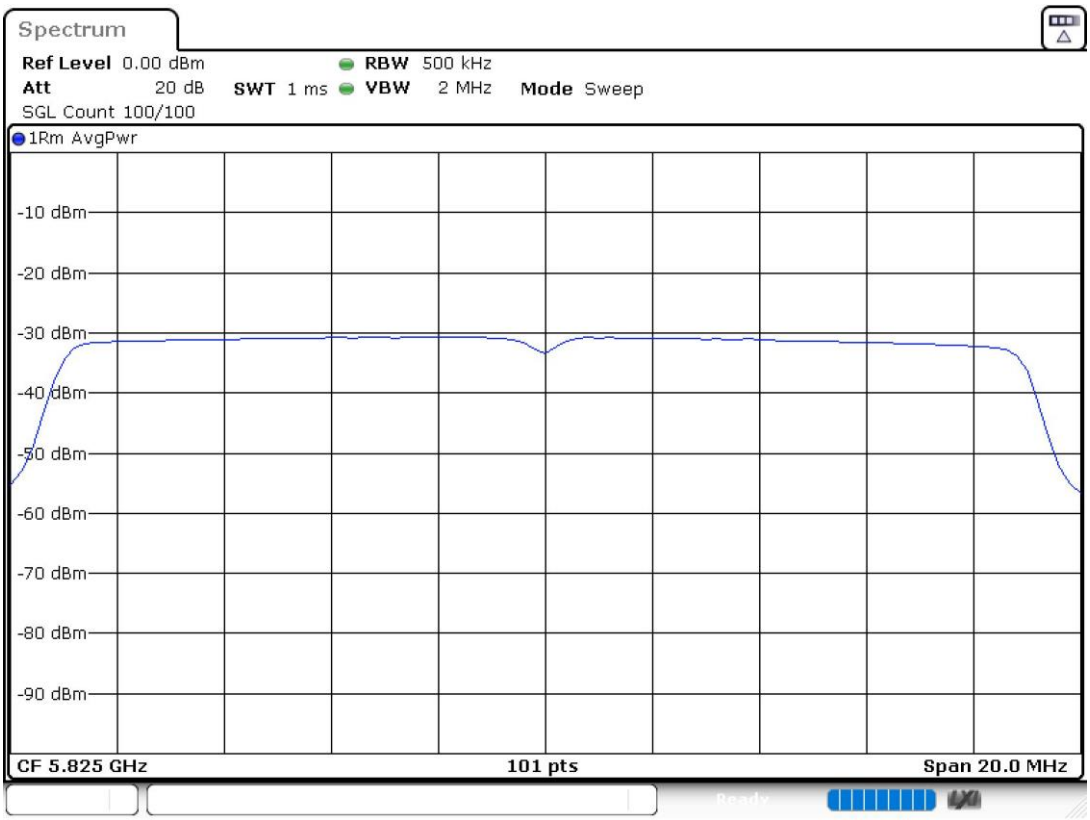
PSD Chain 0

- High Channel 165 (5825 MHz):





PSD Chain 1

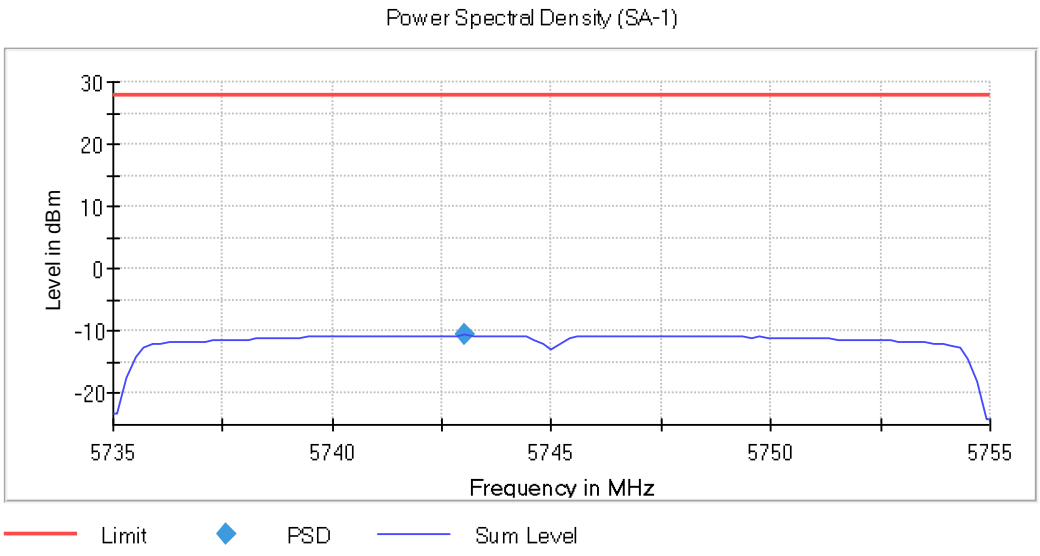

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.825 GHz
101 pts
Span 20.0 MHz

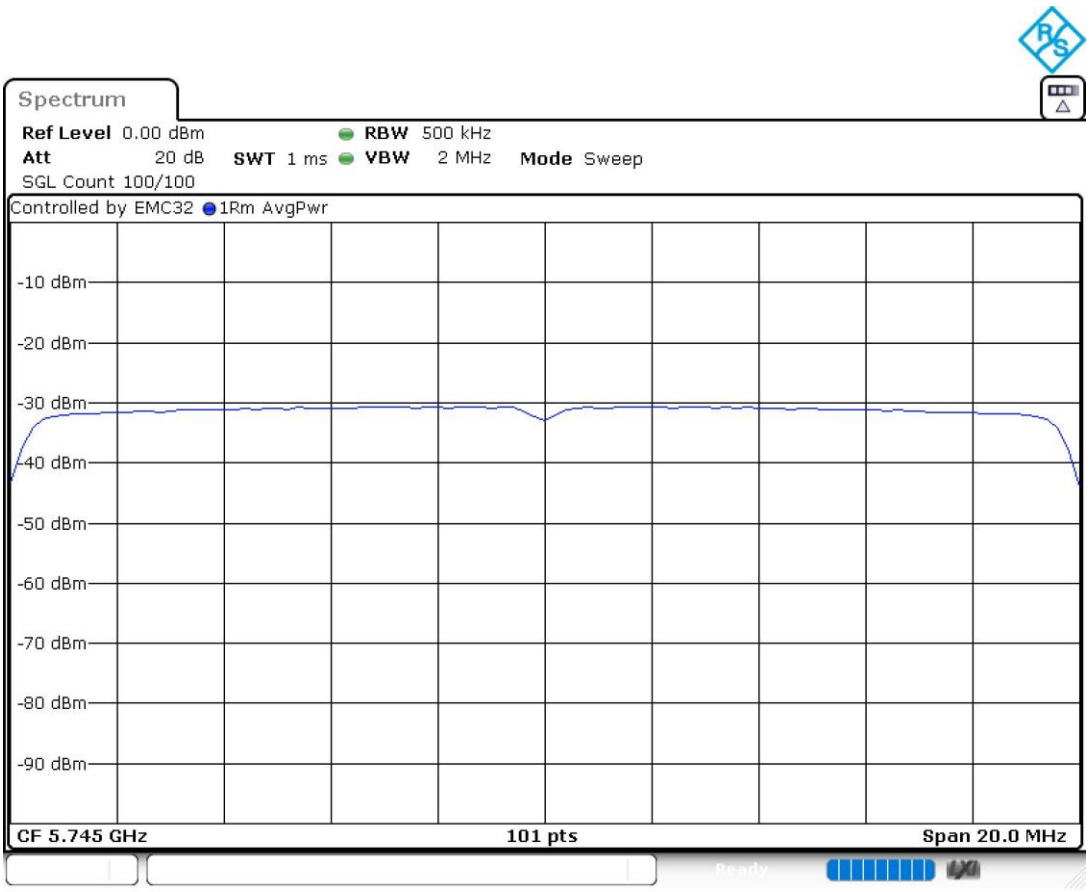
PSD Chain 0

MIMO 802.11 ax20 (HE20) – SU Full channel allocation:

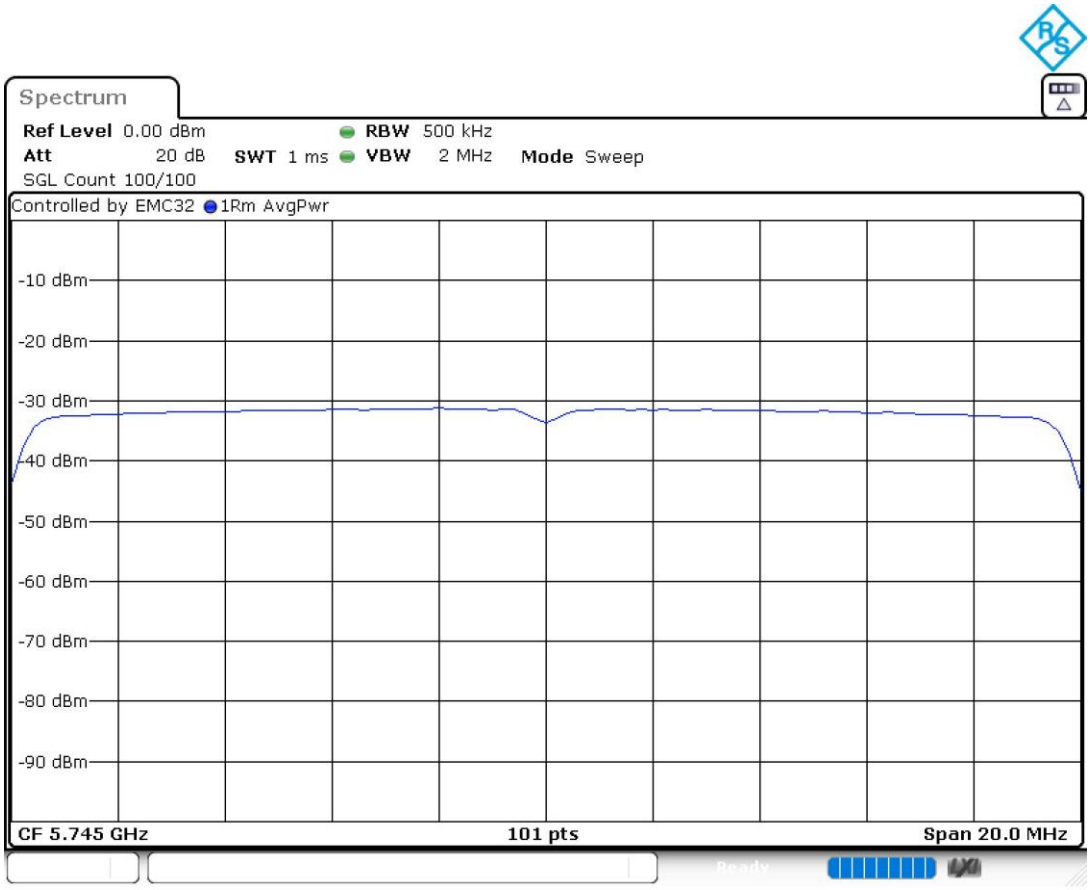
U-NII-3 (5725-5850 MHz)

- Low Channel 149 (5745 MHz):



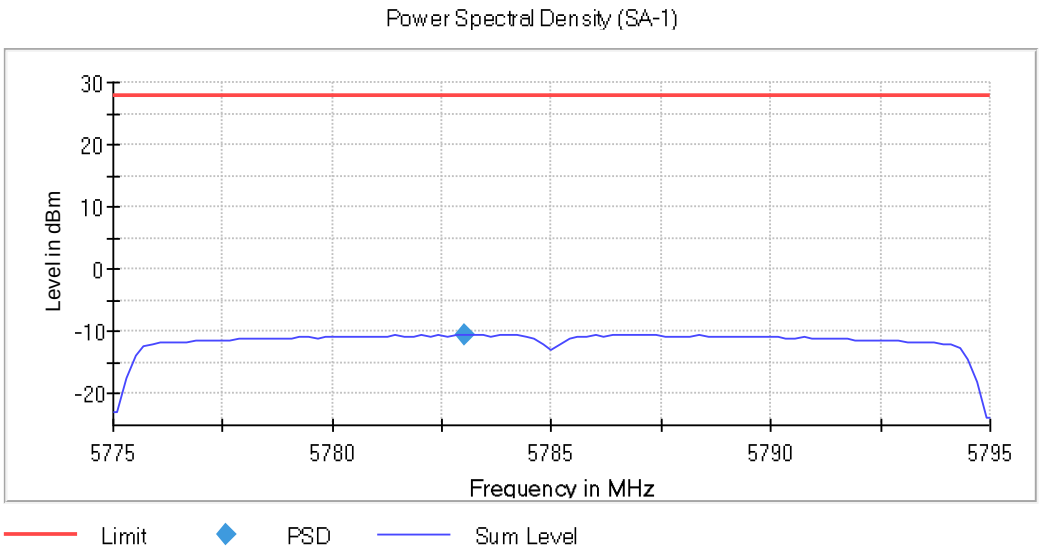


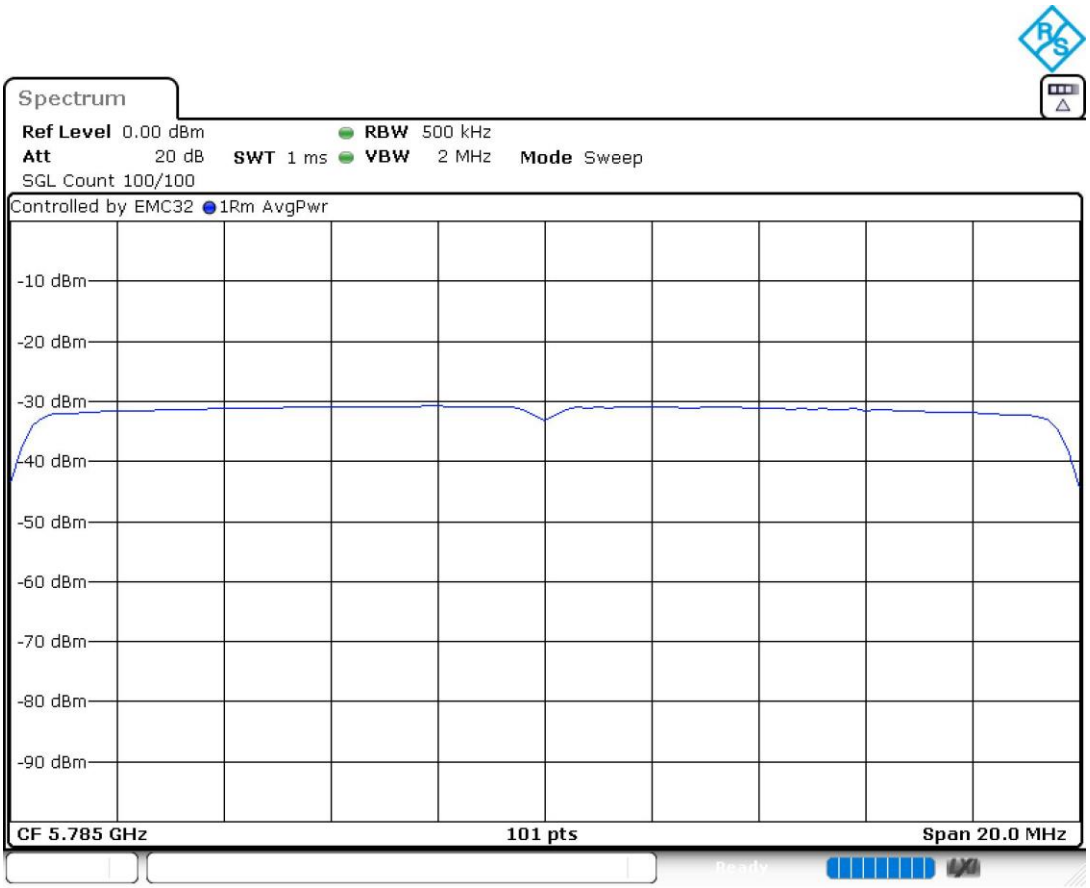
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
Controlled by EMC32
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.745 GHz
101 pts
Span 20.0 MHz

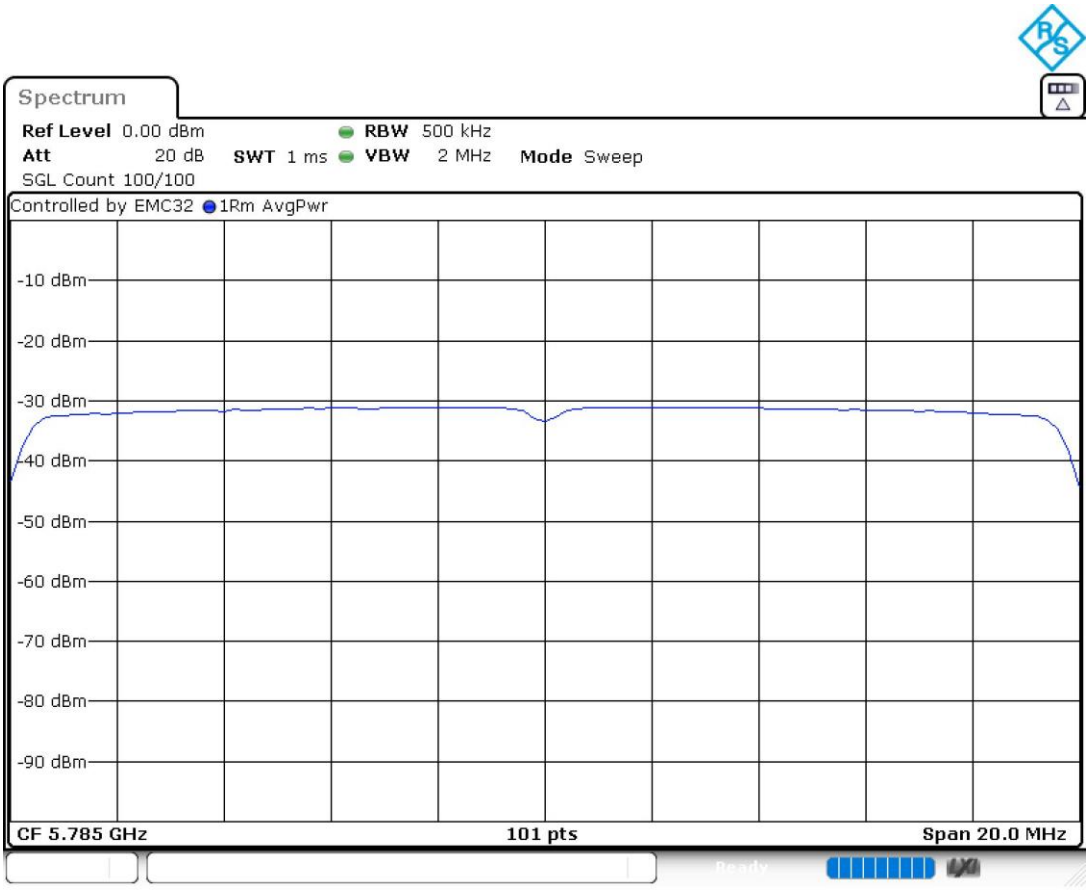
PSD Chain 0

- Middle Channel 157 (5785 MHz):



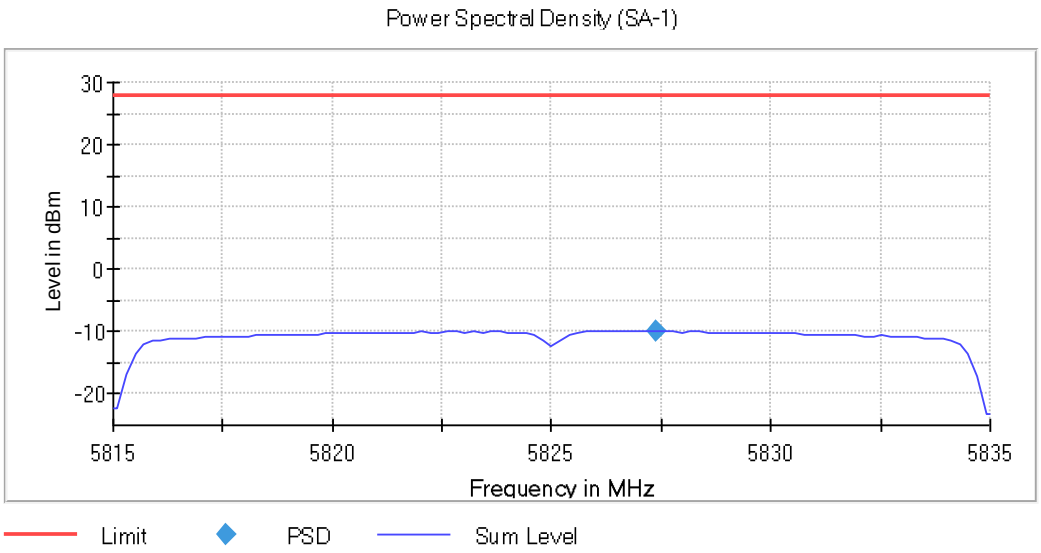


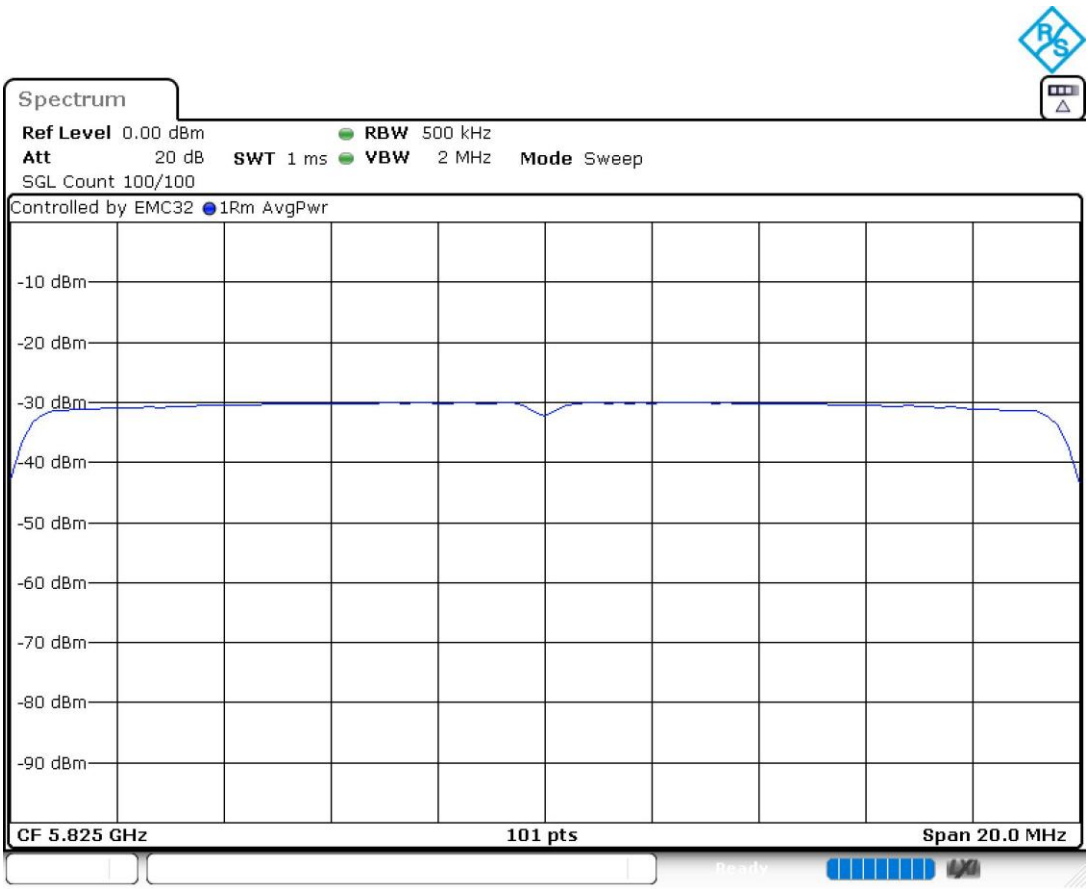
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
Controlled by EMC32
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.785 GHz
101 pts
Span 20.0 MHz
Ready

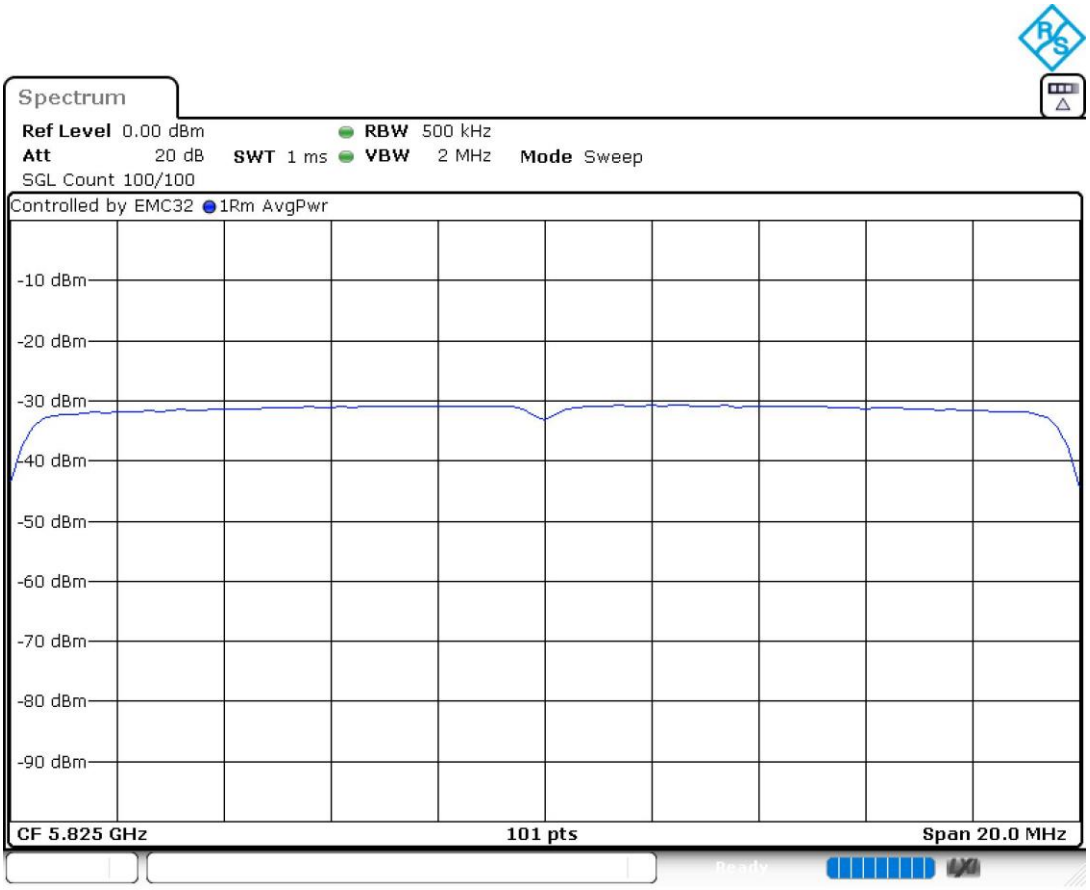
PSD Chain 0

- High Channel 165 (5825 MHz):





PSD Chain 1

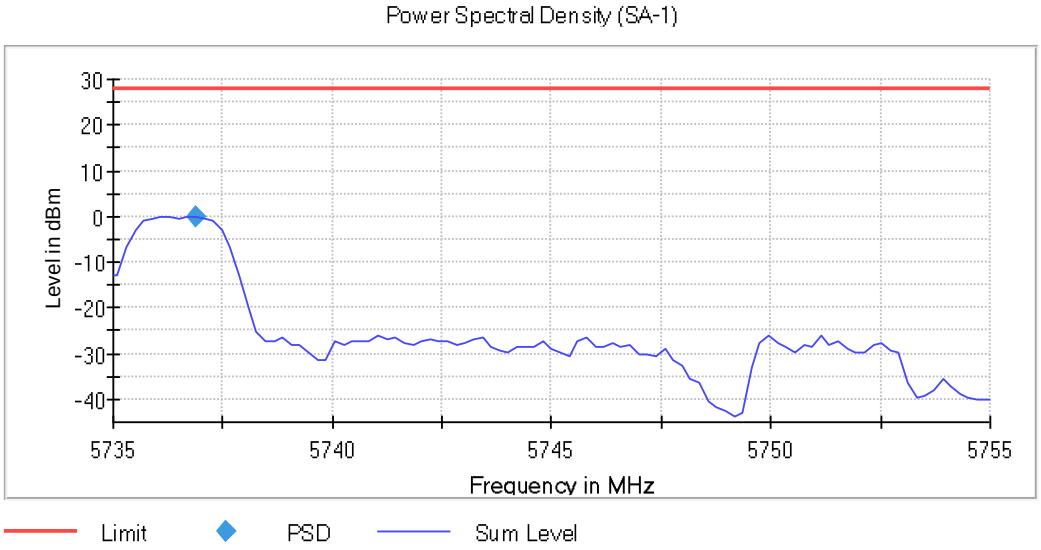

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
Controlled by EMC32
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.825 GHz
101 pts
Span 20.0 MHz
Ready

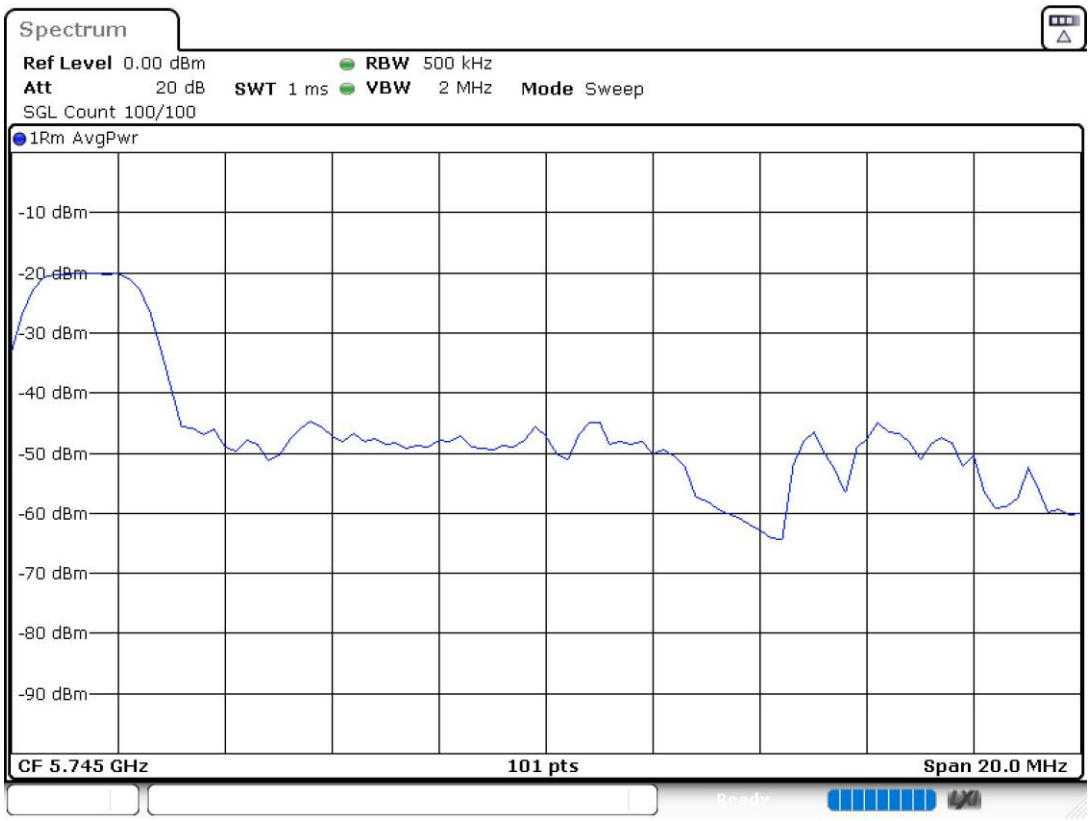
PSD Chain 0

MIMO 802.11 ax20 (HE20) – RU Subcarrier allocation (RU26):

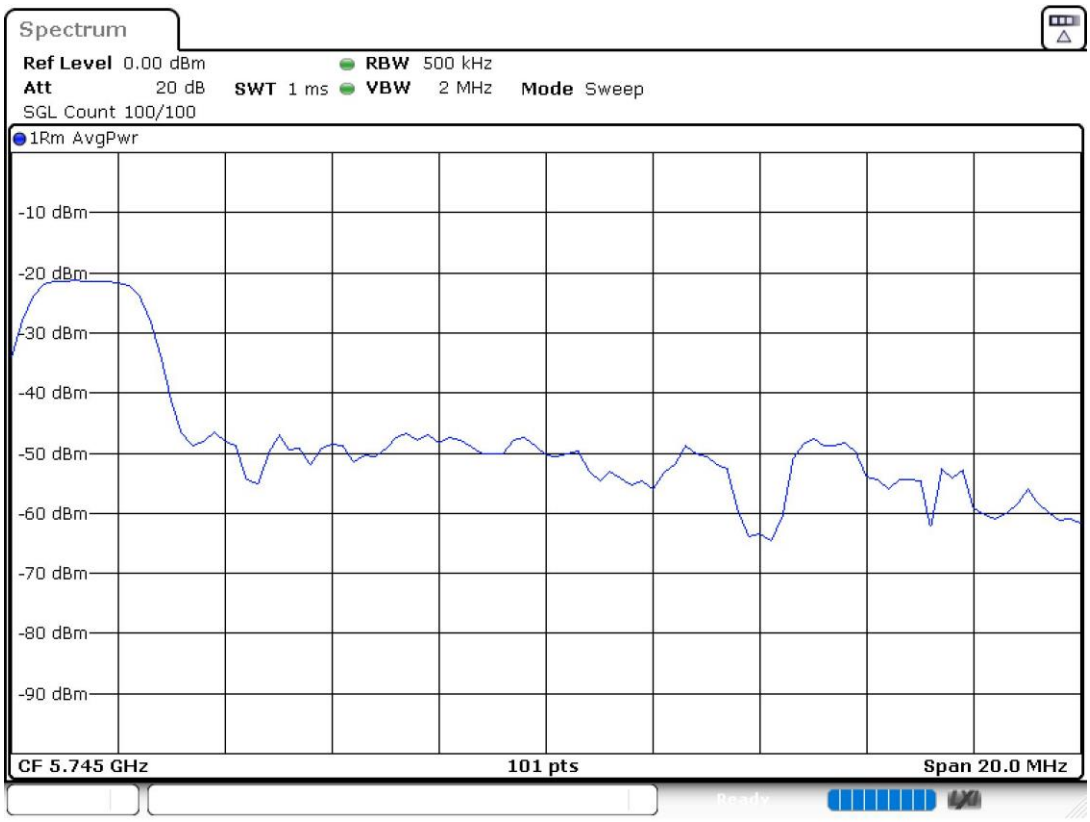
U-NII-3 (5725-5850 MHz)

- Low Channel 149 (5745 MHz) / RU26 Offset 0:



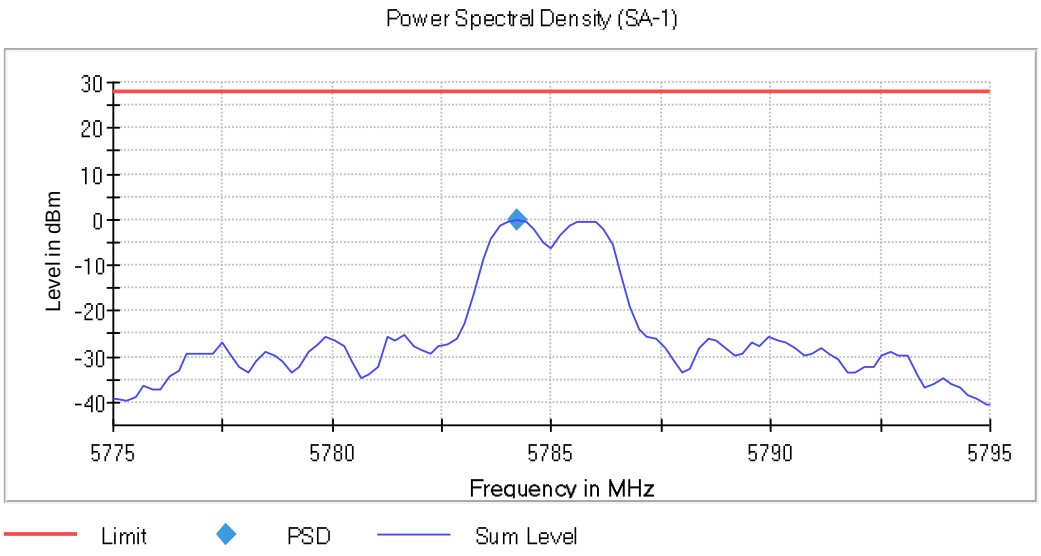


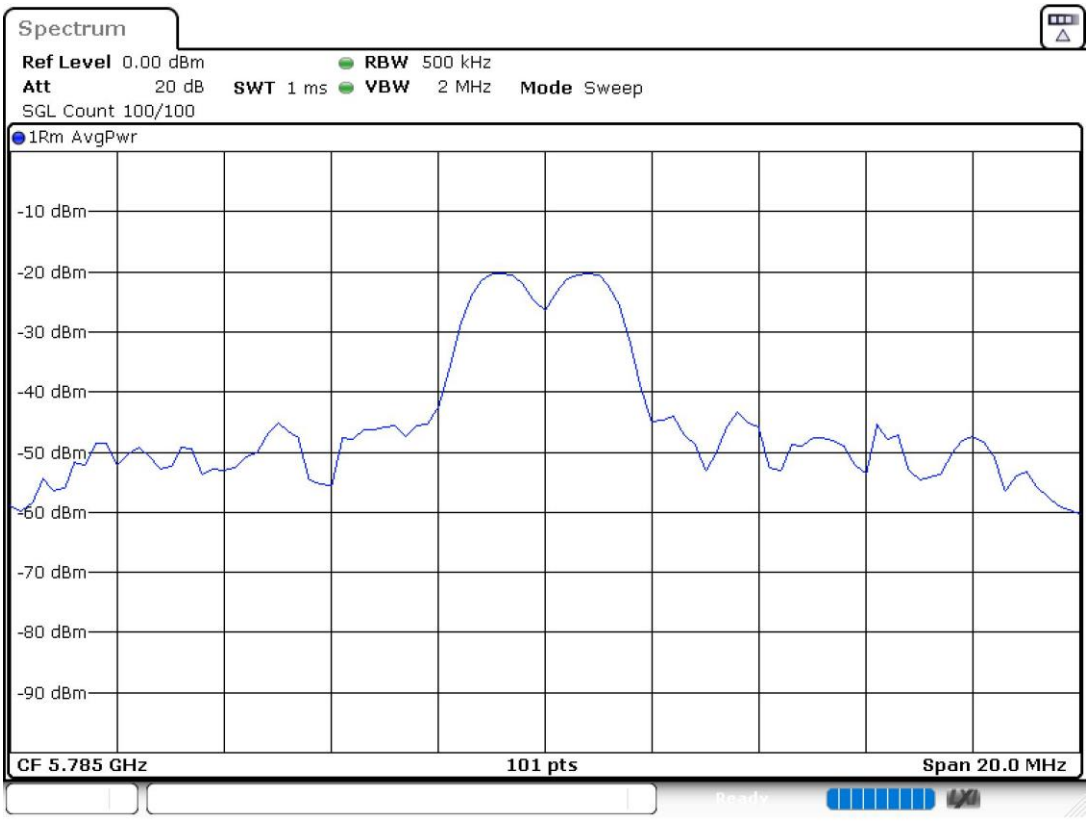
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.745 GHz
101 pts
Span 20.0 MHz

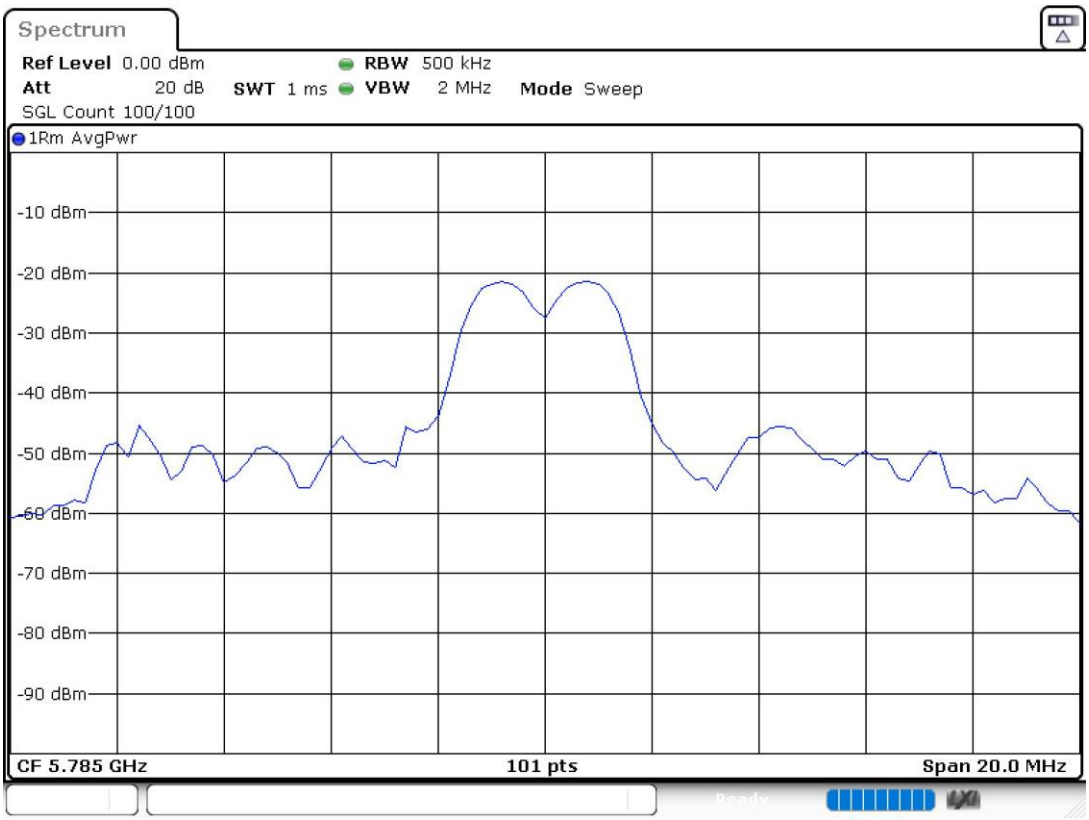
PSD Chain 0

- Middle Channel 157 (5785 MHz) / RU26 Offset 4:



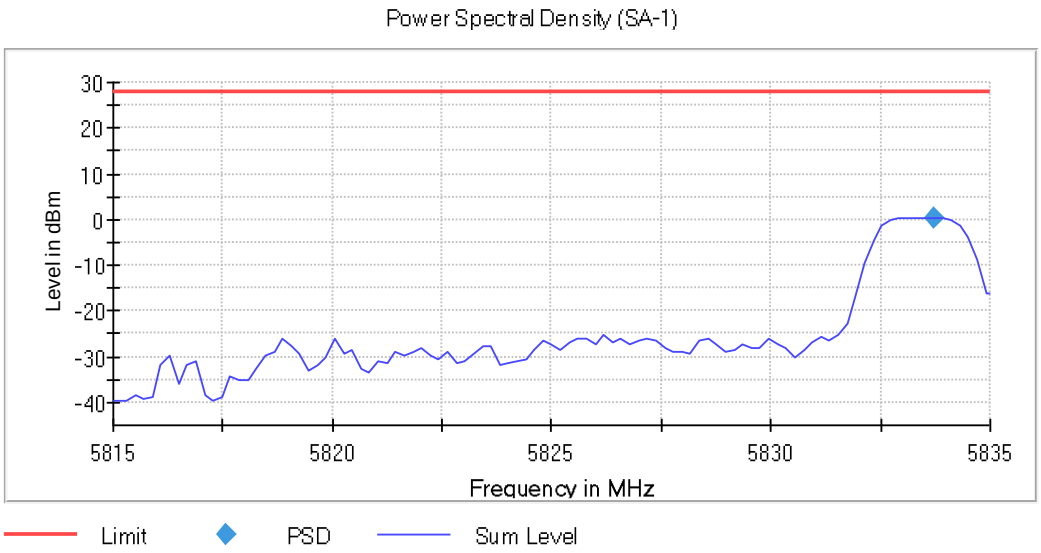


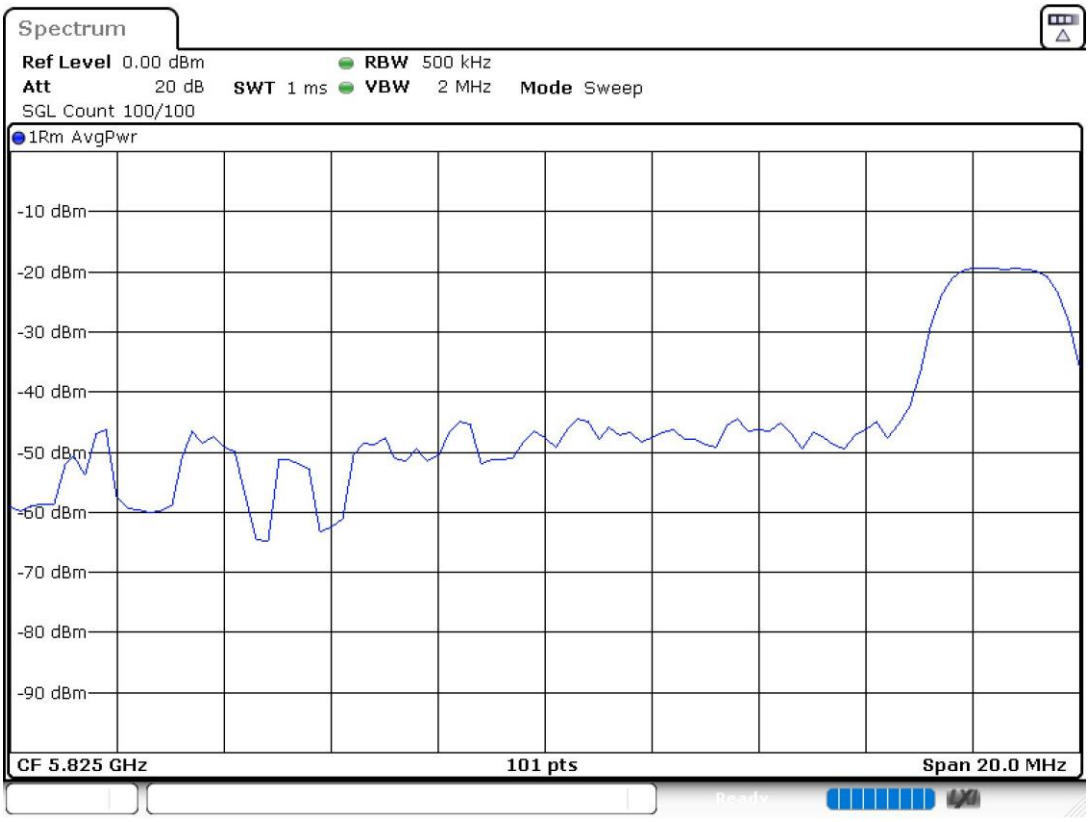
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.785 GHz
101 pts
Span 20.0 MHz

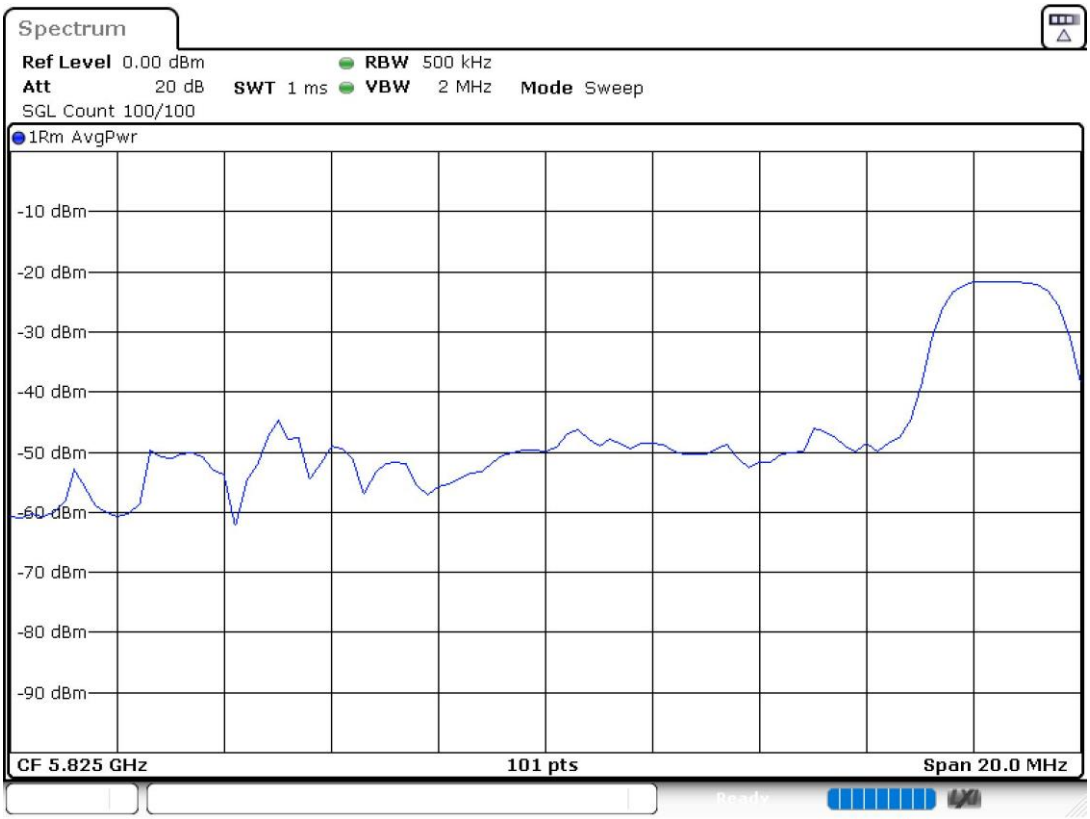
PSD Chain 0

- High Channel 165 (5825 MHz) / RU26 Offset 8:





PSD Chain 1

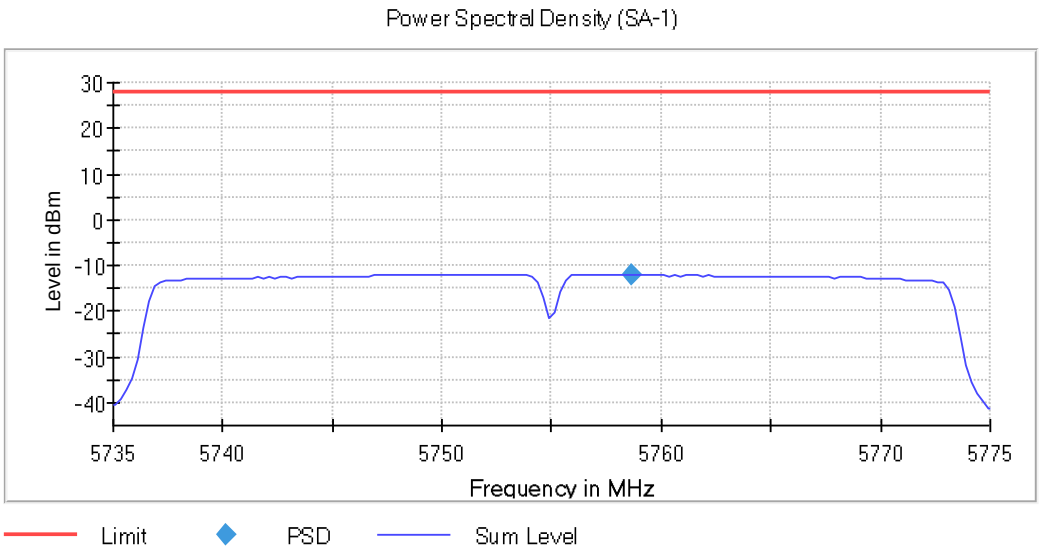

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.825 GHz
101 pts
Span 20.0 MHz

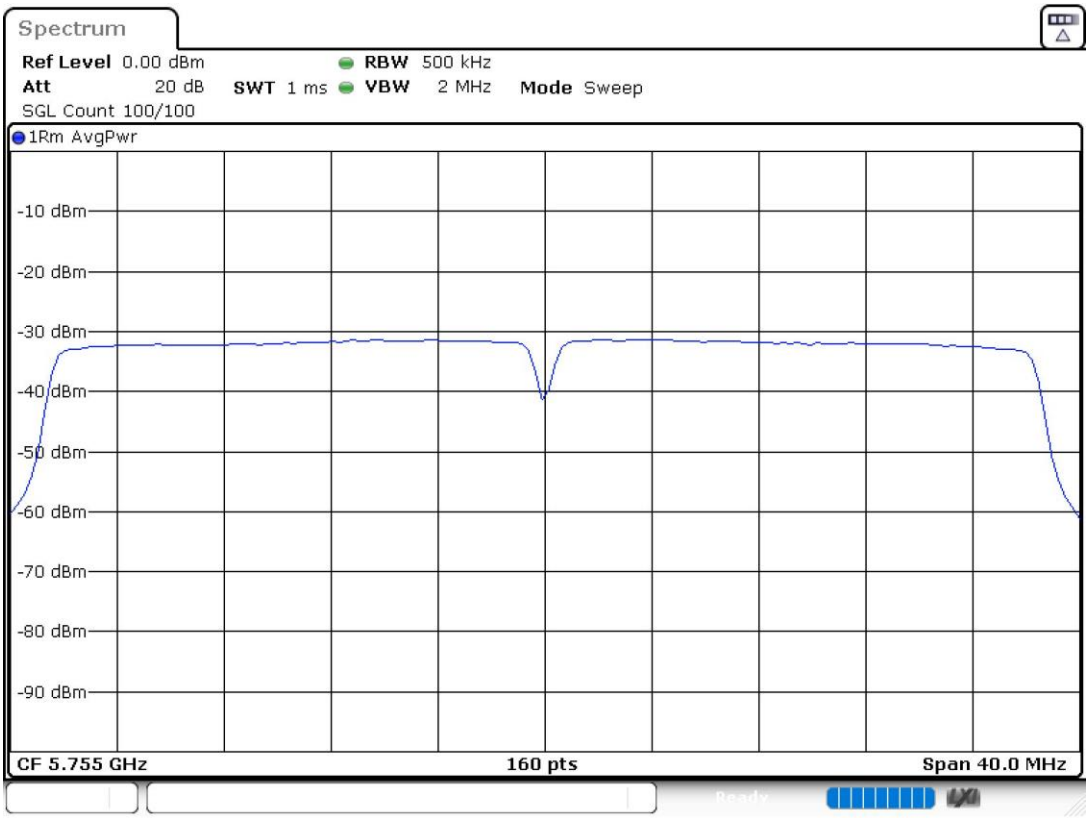
PSD Chain 0

MIMO 802.11 n40 (HT40):

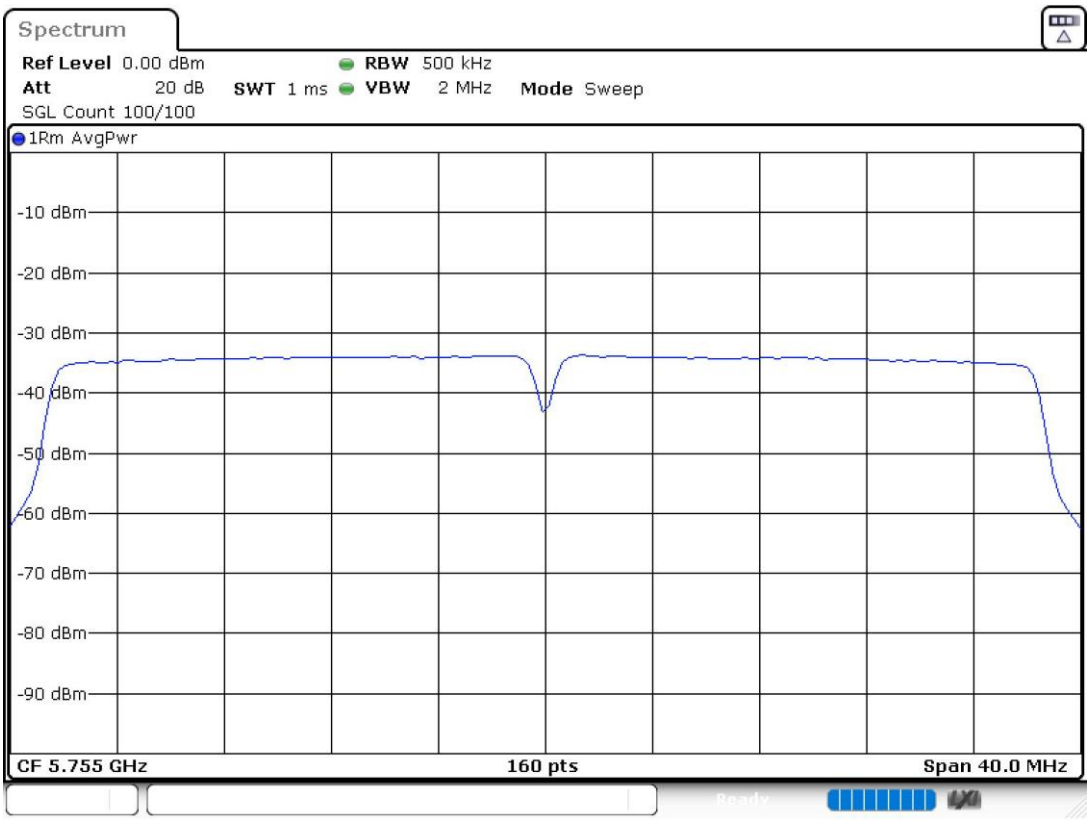
U-NII-3 (5725-5850 MHz)

- Low Channel 151 (5755 MHz):



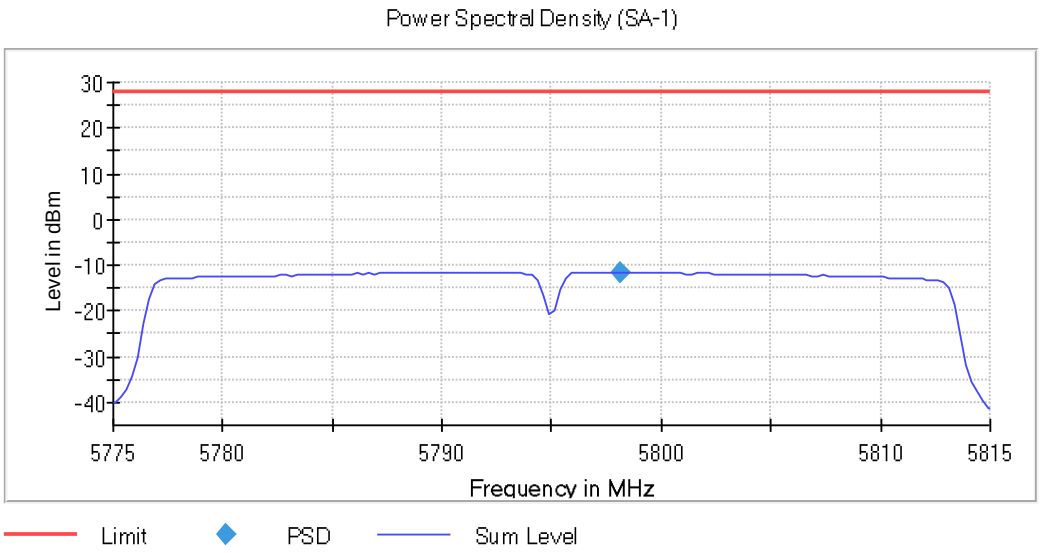


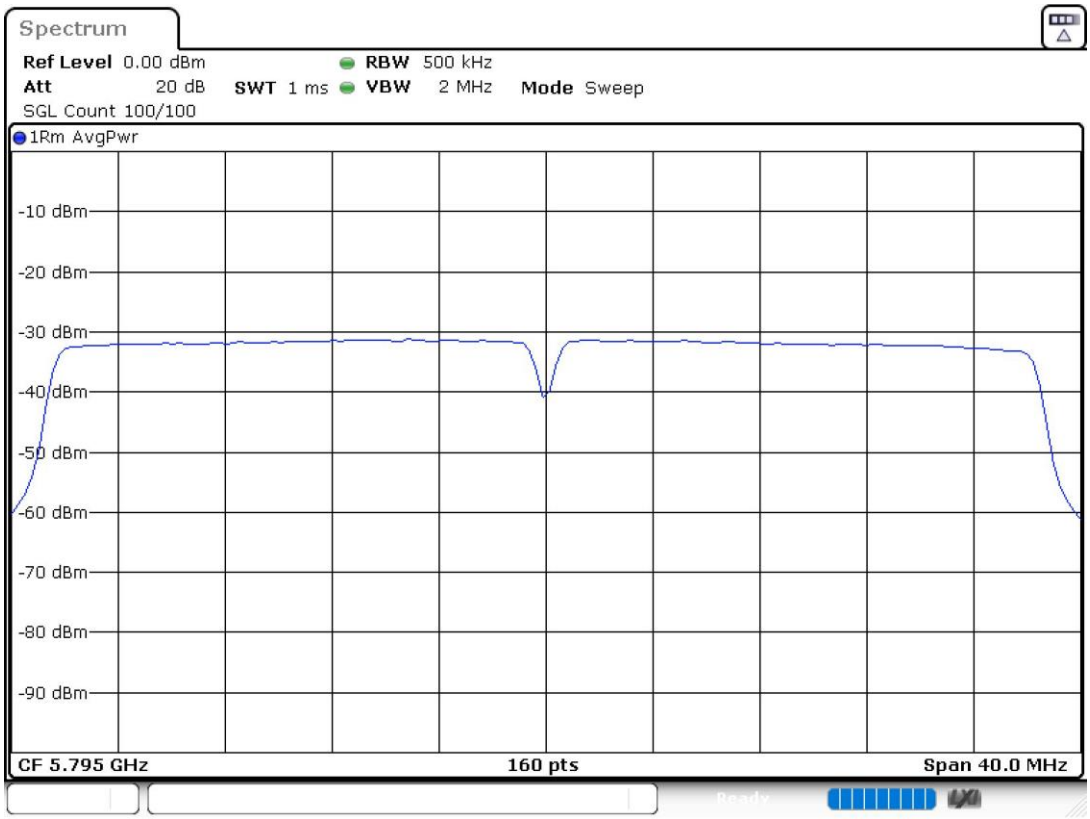
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.755 GHz
160 pts
Span 40.0 MHz

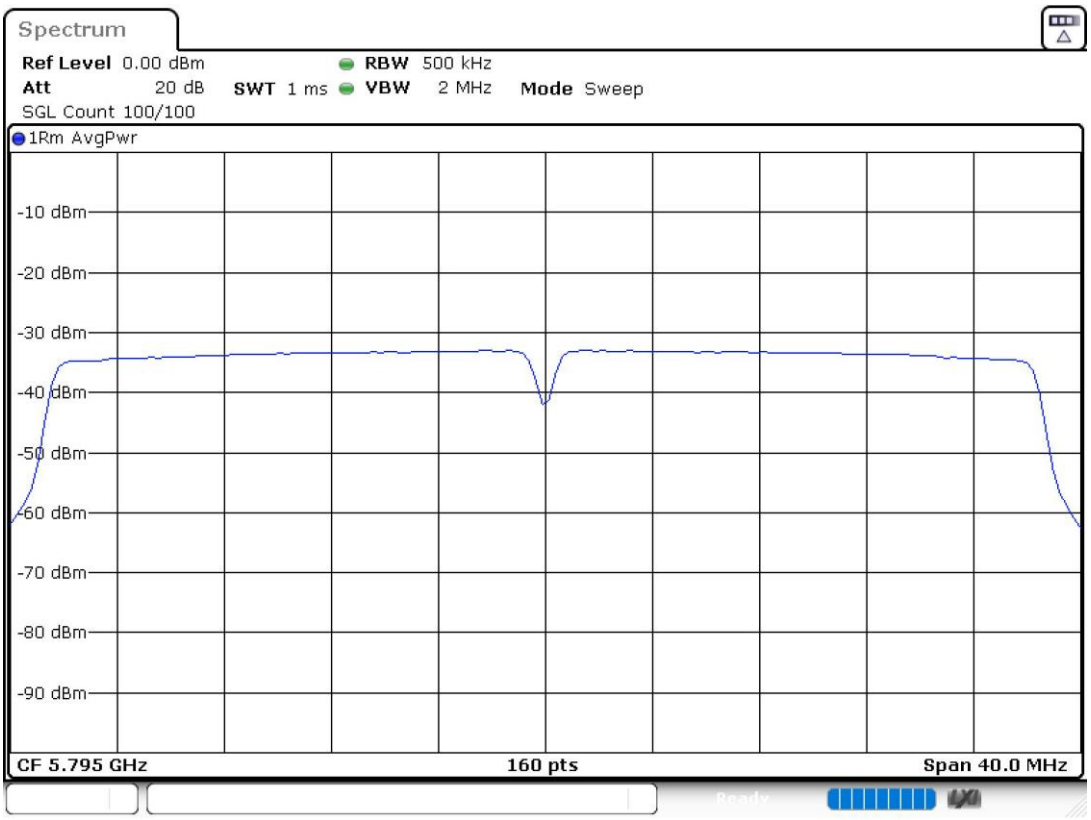
PSD Chain 0

- High Channel 159 (5795 MHz):





PSD Chain 1

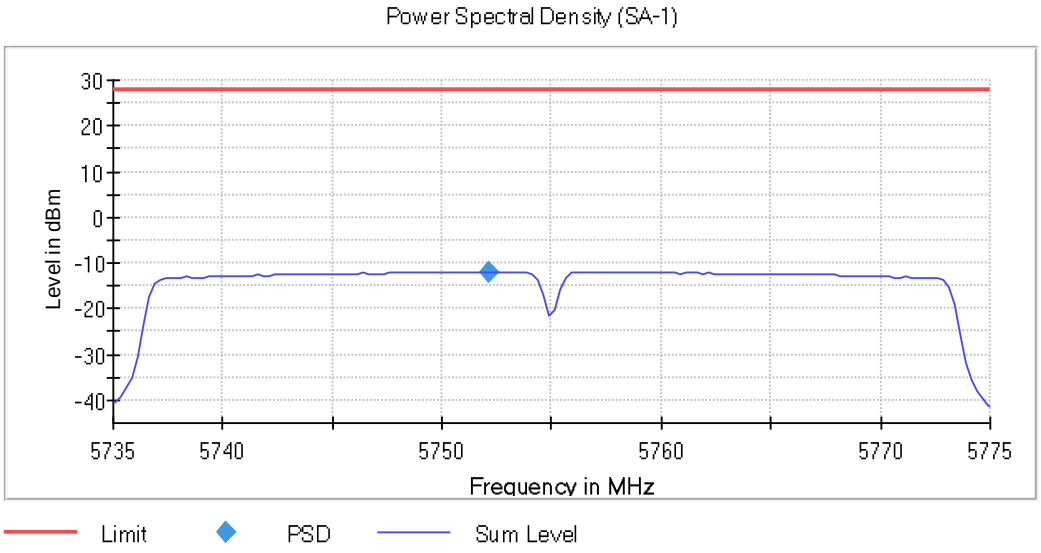

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.795 GHz
160 pts
Span 40.0 MHz

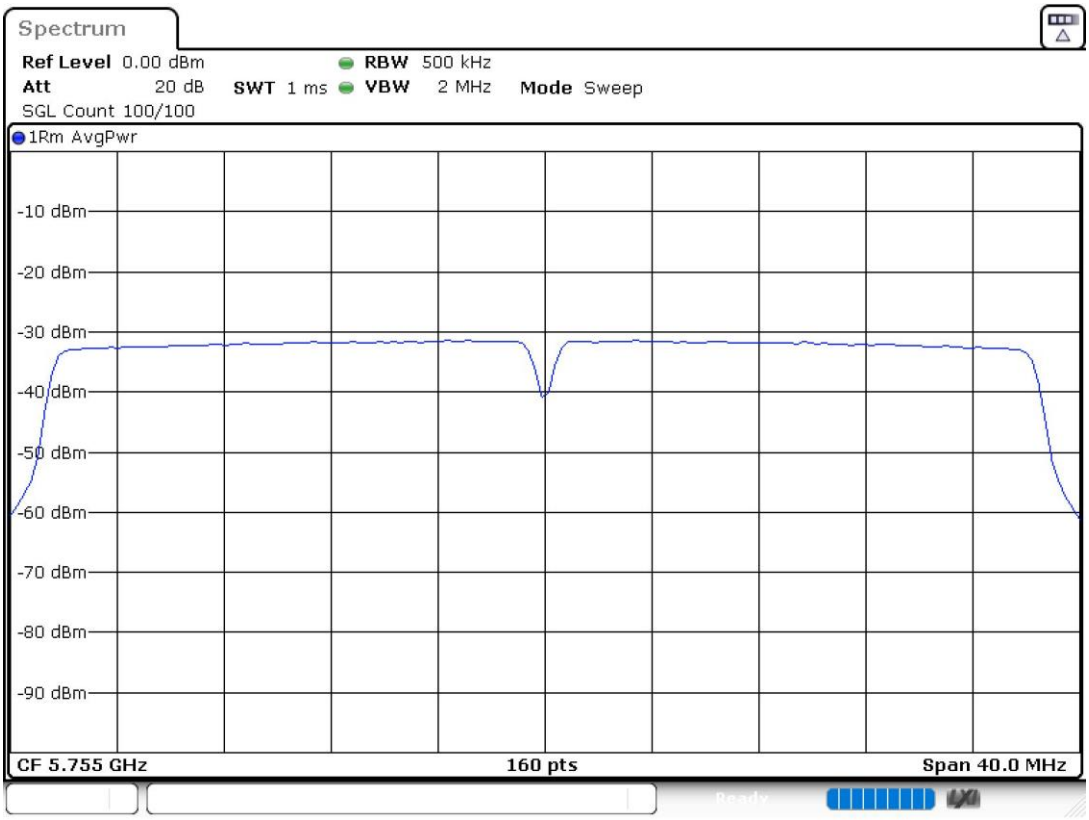
PSD Chain 0

MIMO 802.11 ac40 (VHT40):

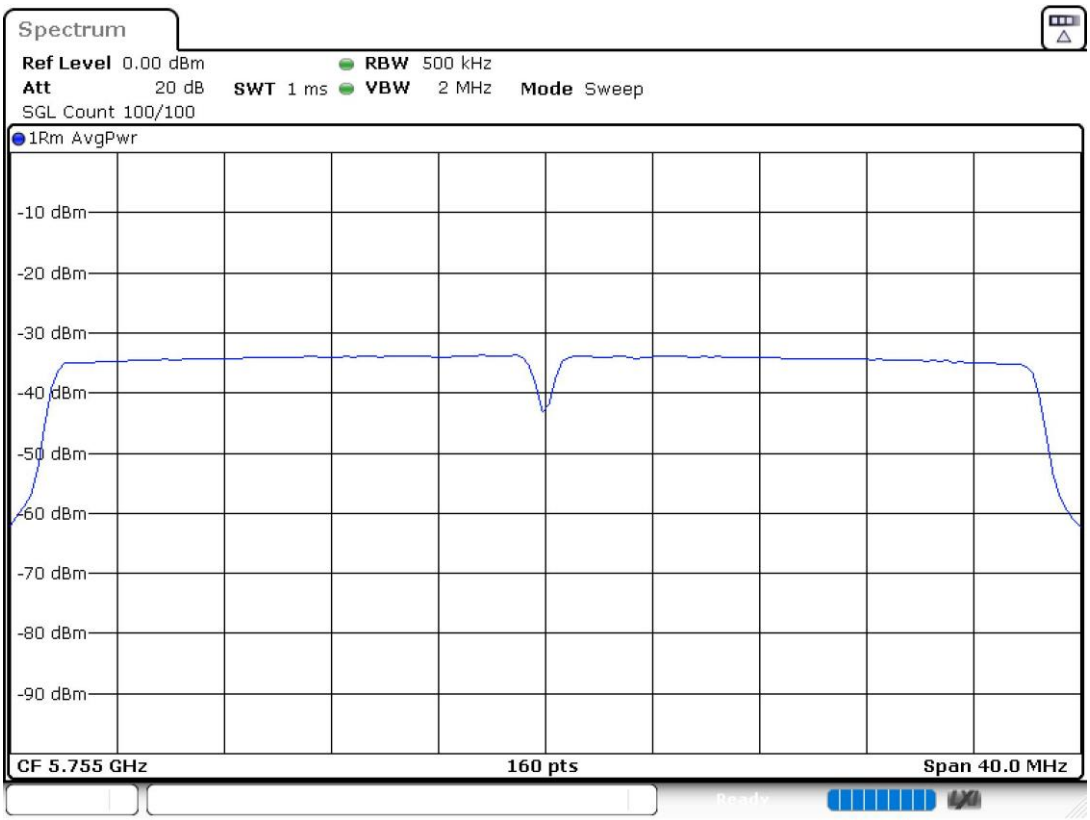
U-NII-3 (5725-5850 MHz)

- Low Channel 151 (5755 MHz):



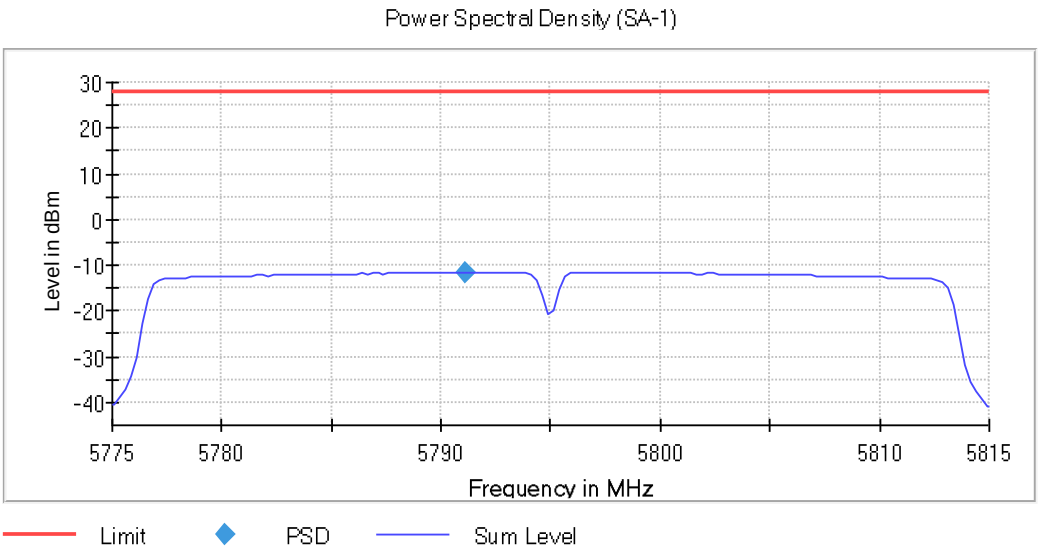


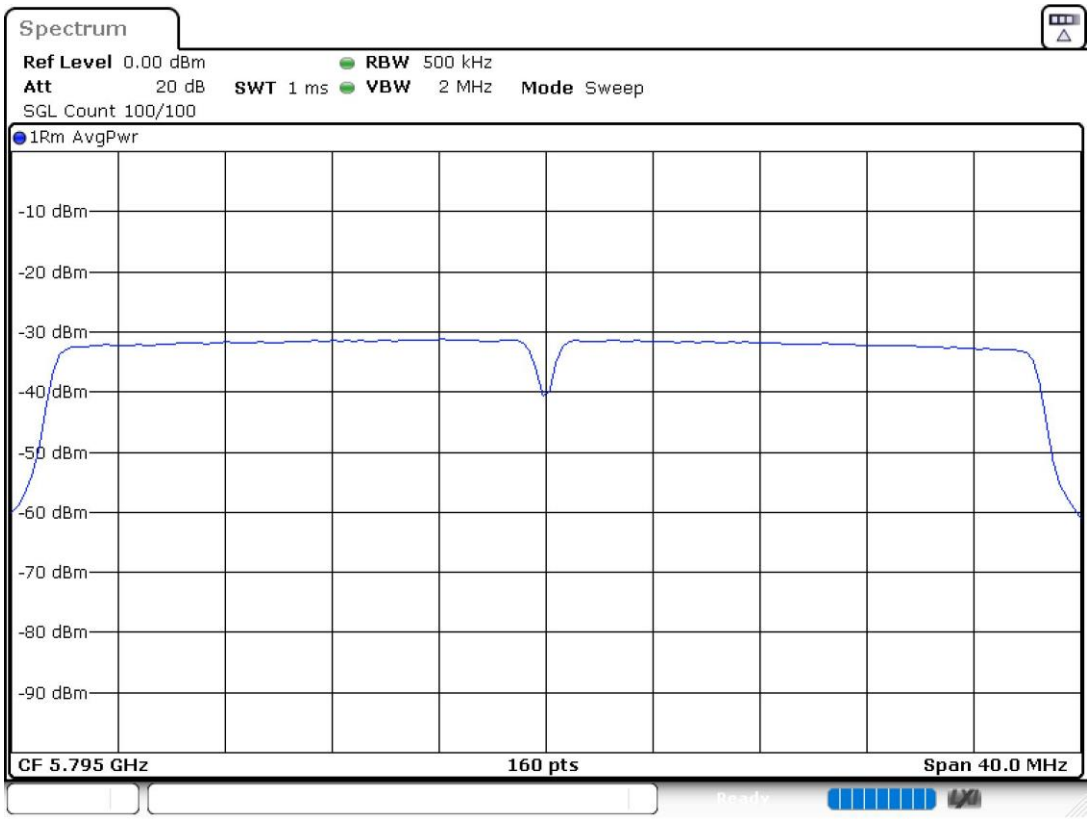
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.755 GHz
160 pts
Span 40.0 MHz

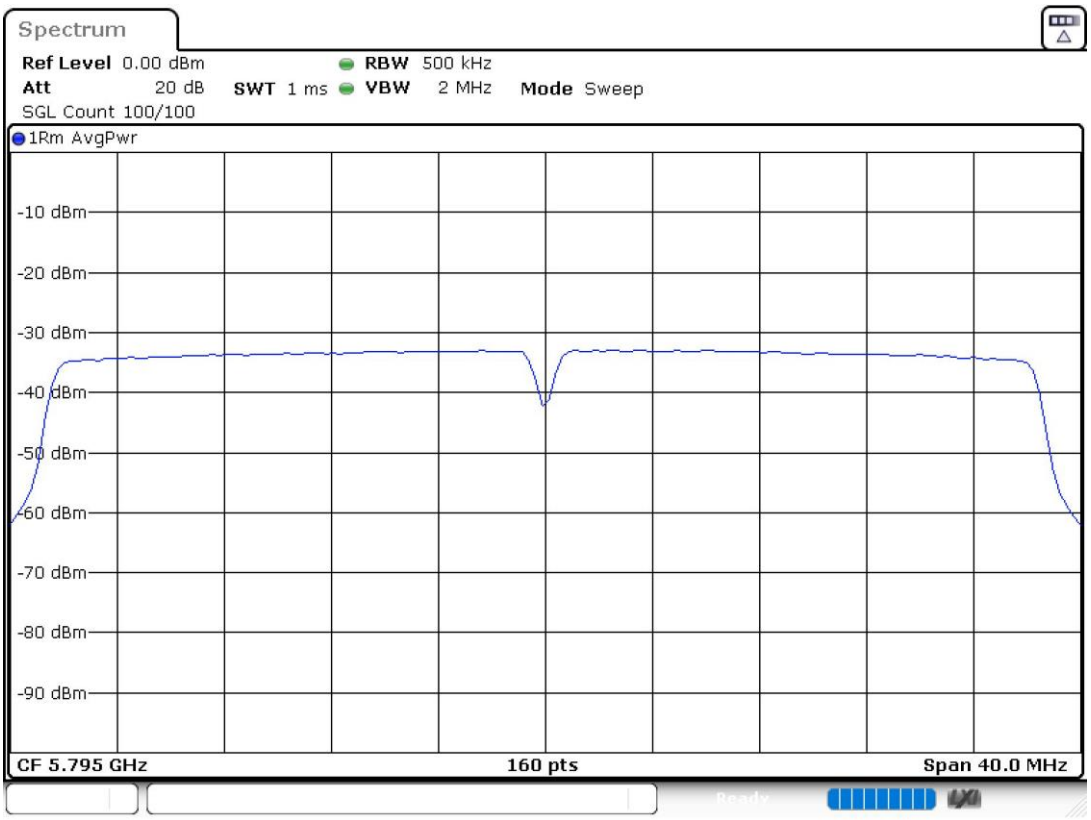
PSD Chain 0

- High Channel 159 (5795 MHz):





PSD Chain 1

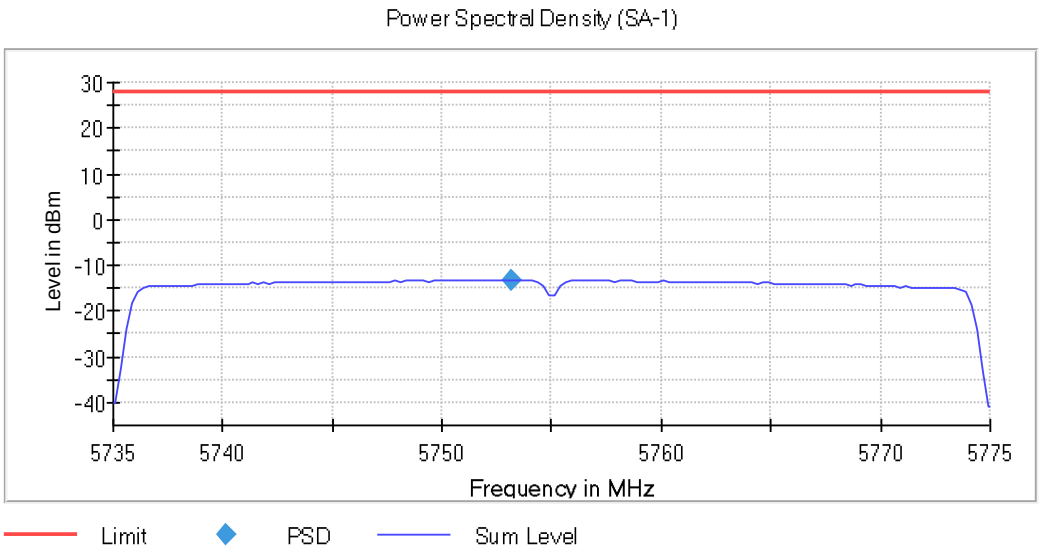

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.795 GHz
160 pts
Span 40.0 MHz

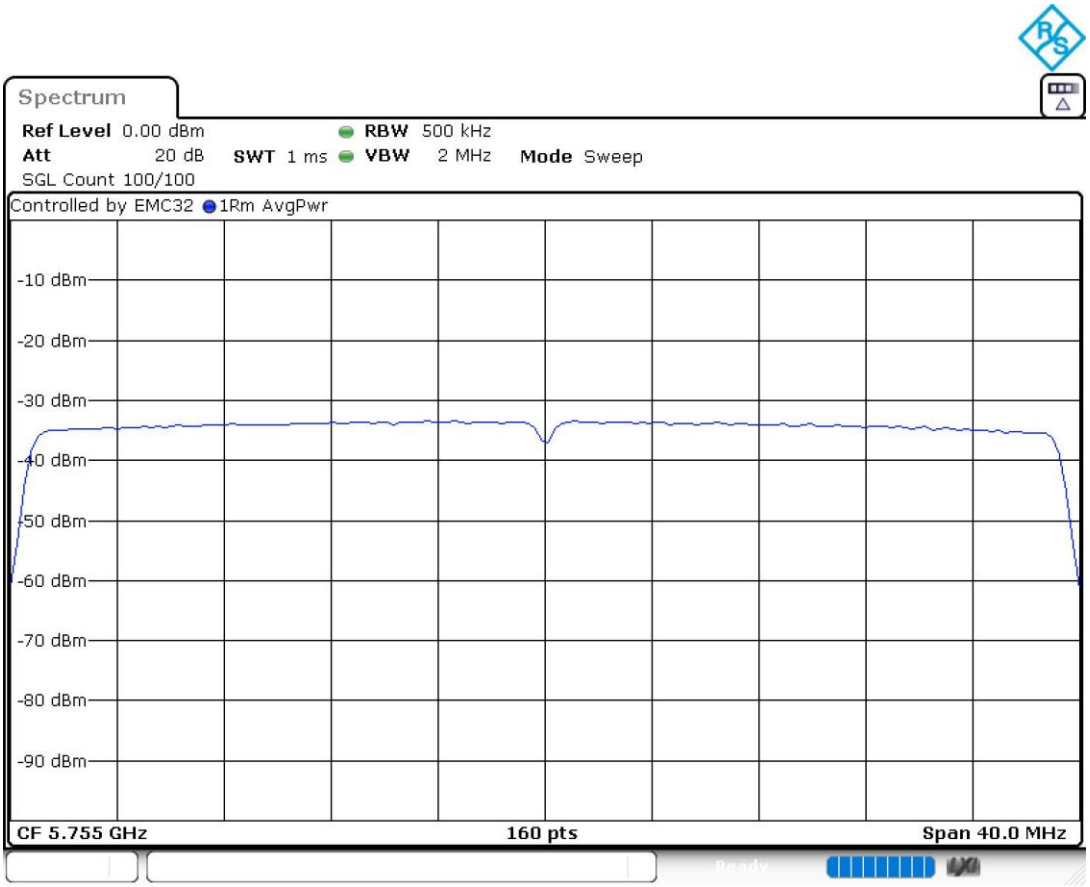
PSD Chain 0

MIMO 802.11 ax40 (HE40) – SU Full channel allocation:

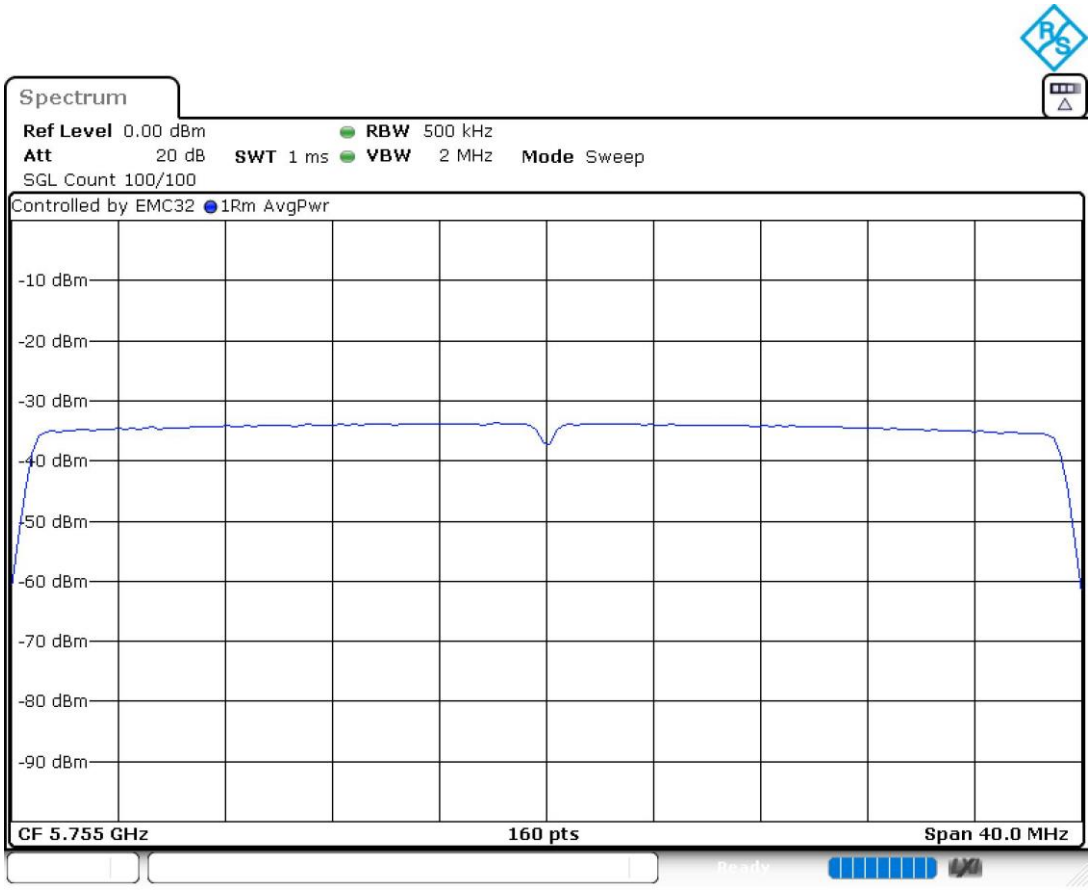
U-NII-3 (5725-5850 MHz)

- Low Channel 151 (5755 MHz):



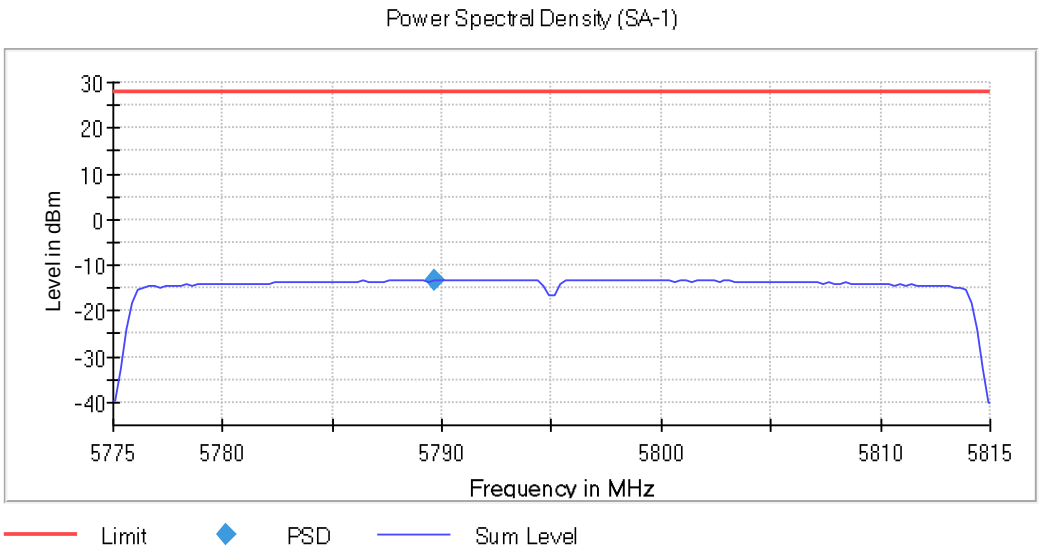


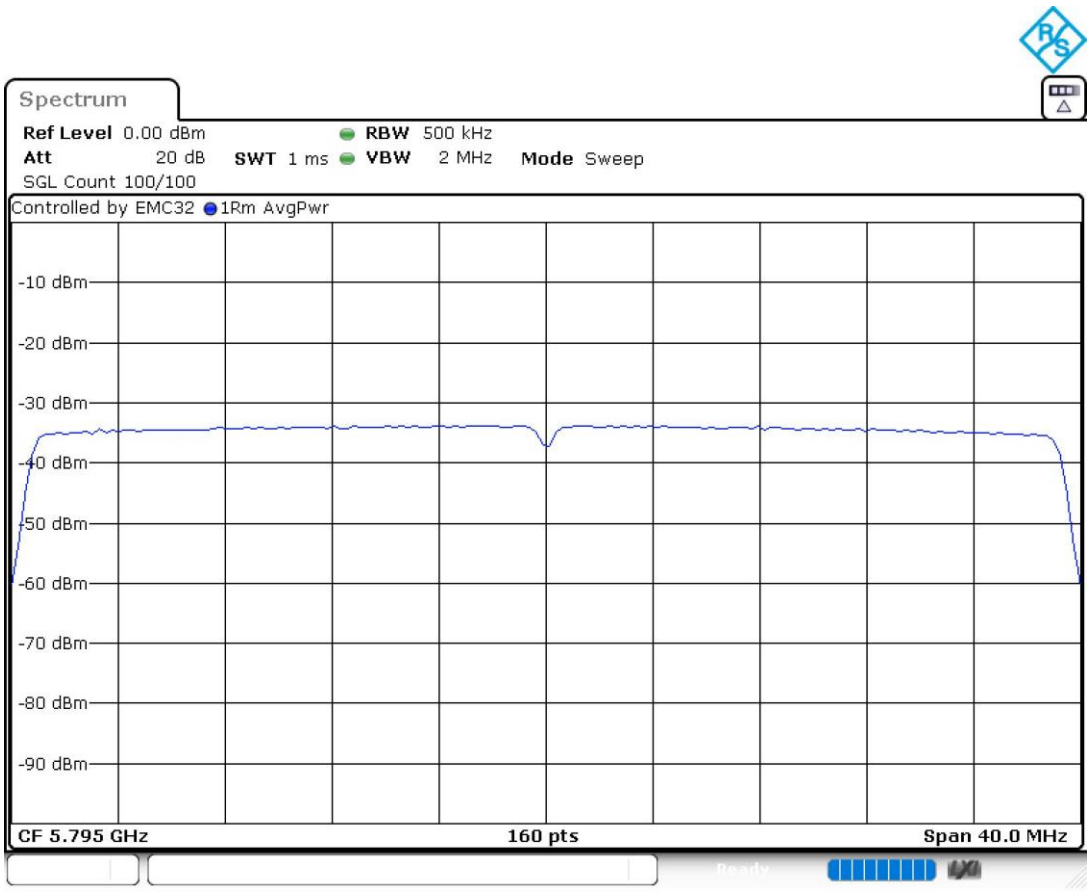
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
Controlled by EMC32
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.755 GHz
160 pts
Span 40.0 MHz
Ready

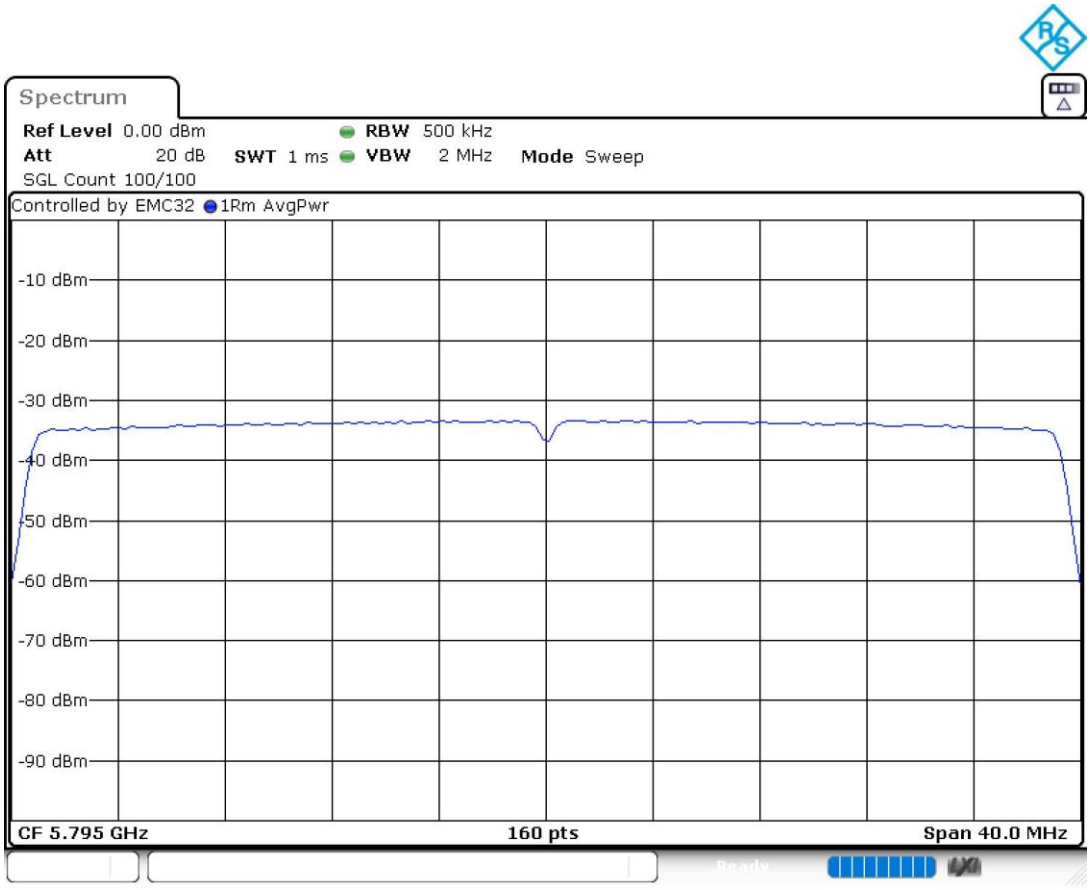
PSD Chain 0

- High Channel 159 (5795 MHz):





PSD Chain 1

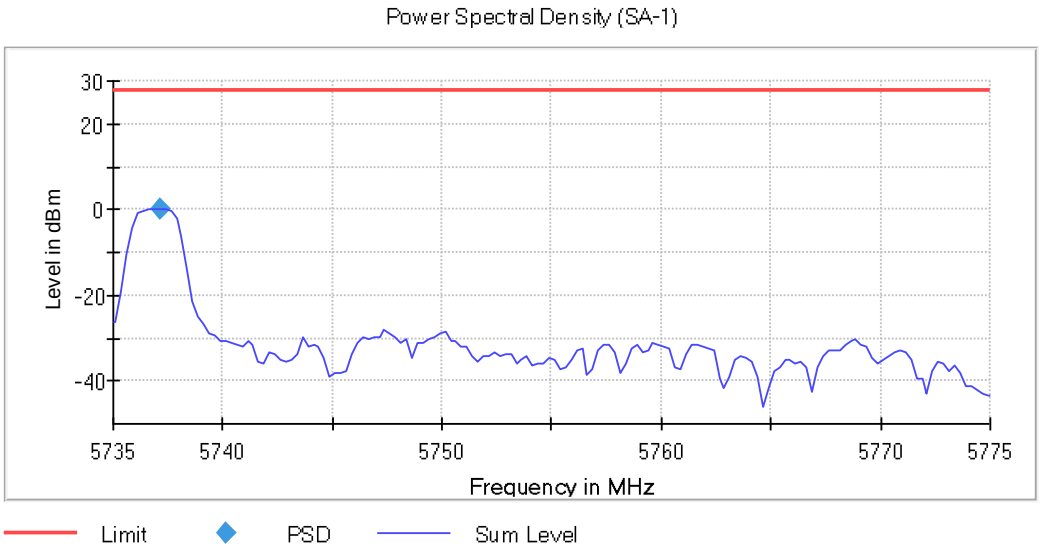

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
Controlled by EMC32
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.795 GHz
160 pts
Span 40.0 MHz

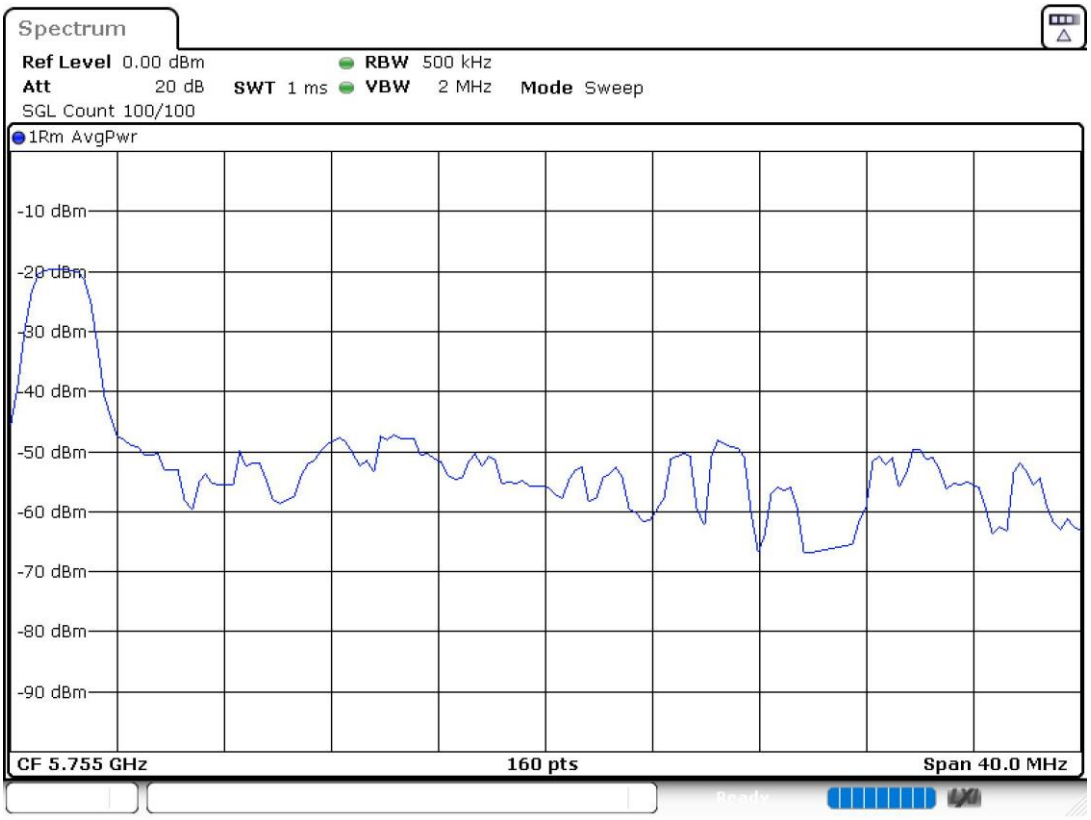
PSD Chain 0

MIMO 802.11 ax40 (HE40) – RU Subcarrier allocation (RU26):

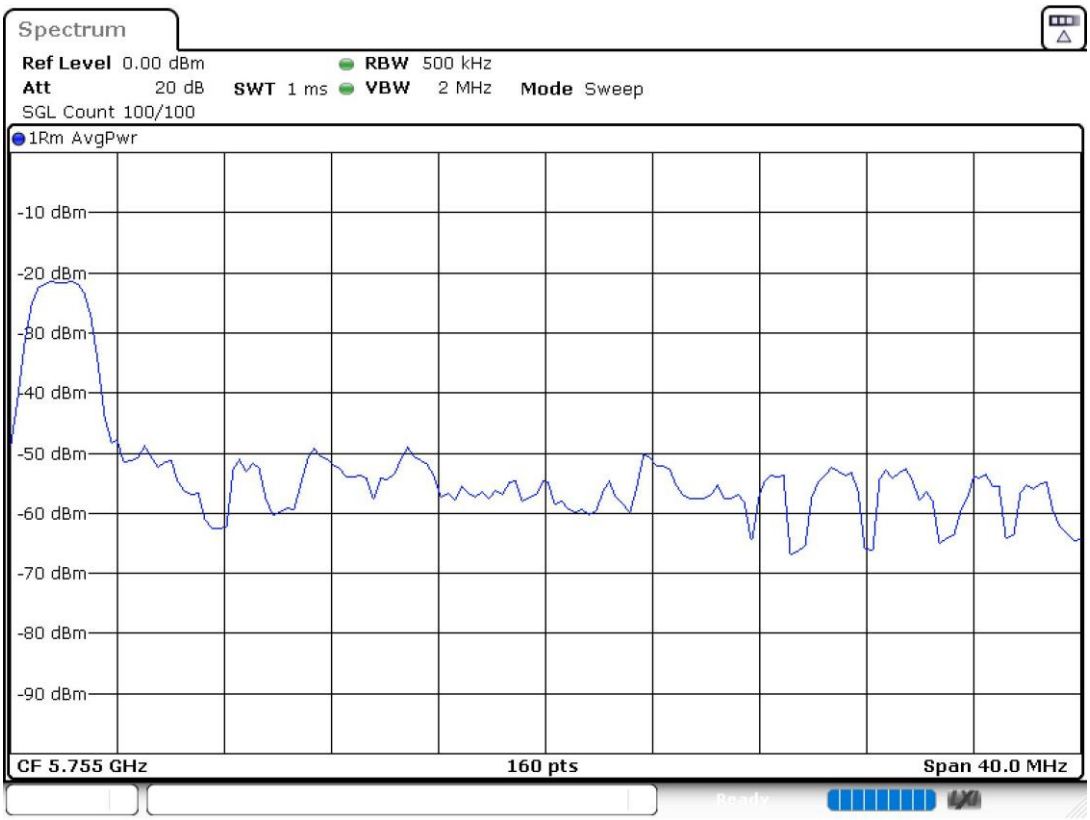
U-NII-3 (5725-5850 MHz)

- Low Channel 151 (5755 MHz) / RU26 Offset 0:



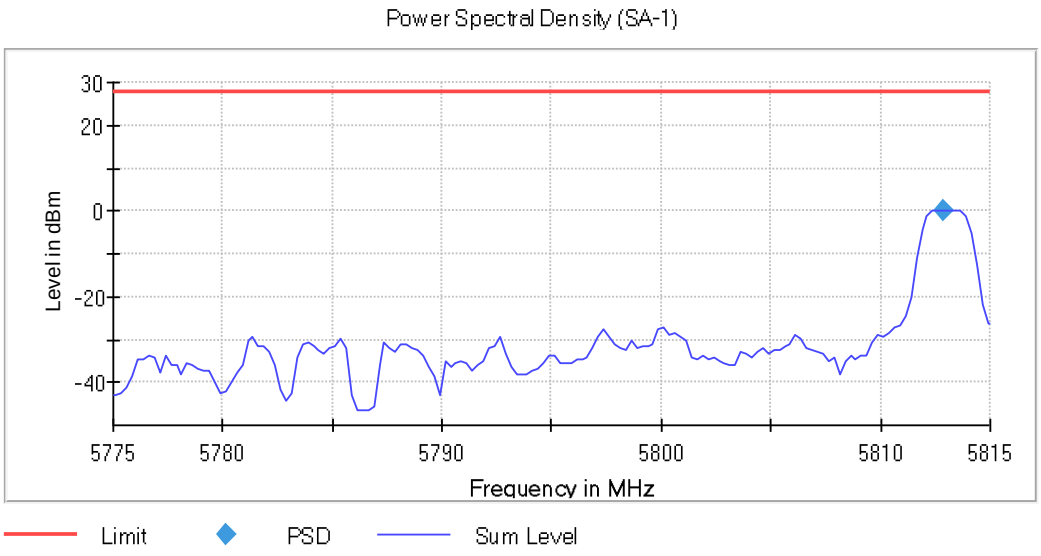


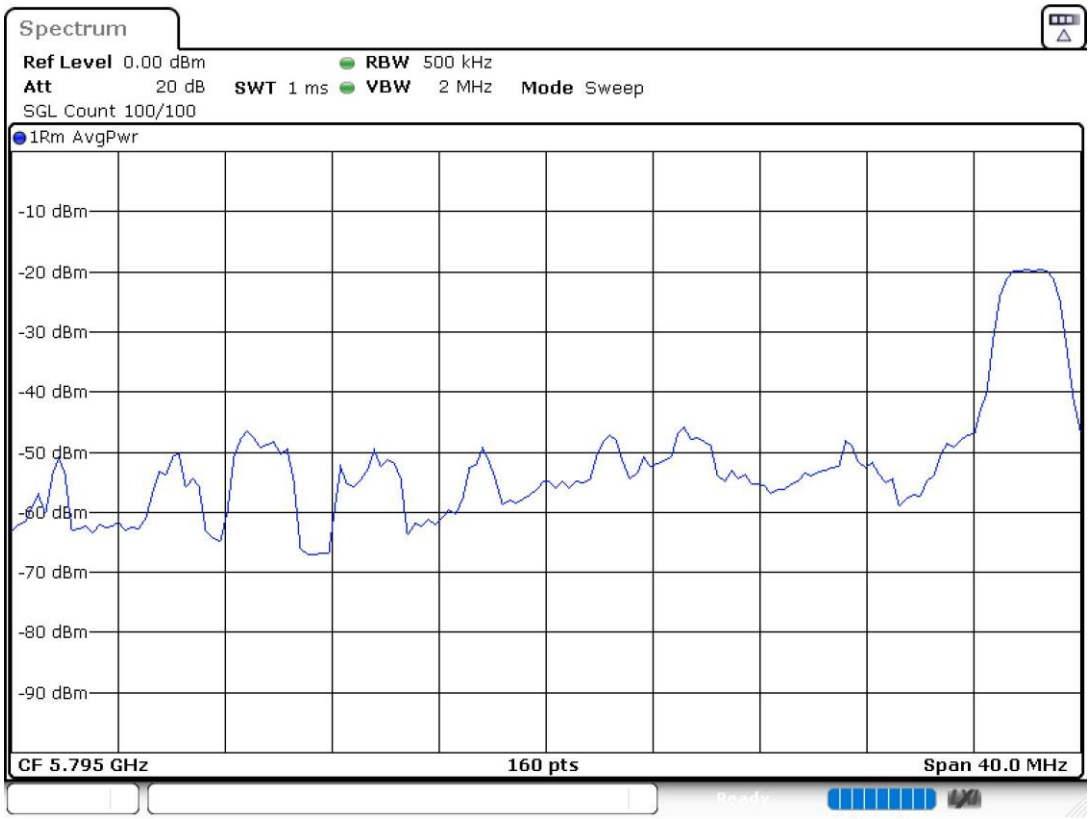
PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.755 GHz
160 pts
Span 40.0 MHz

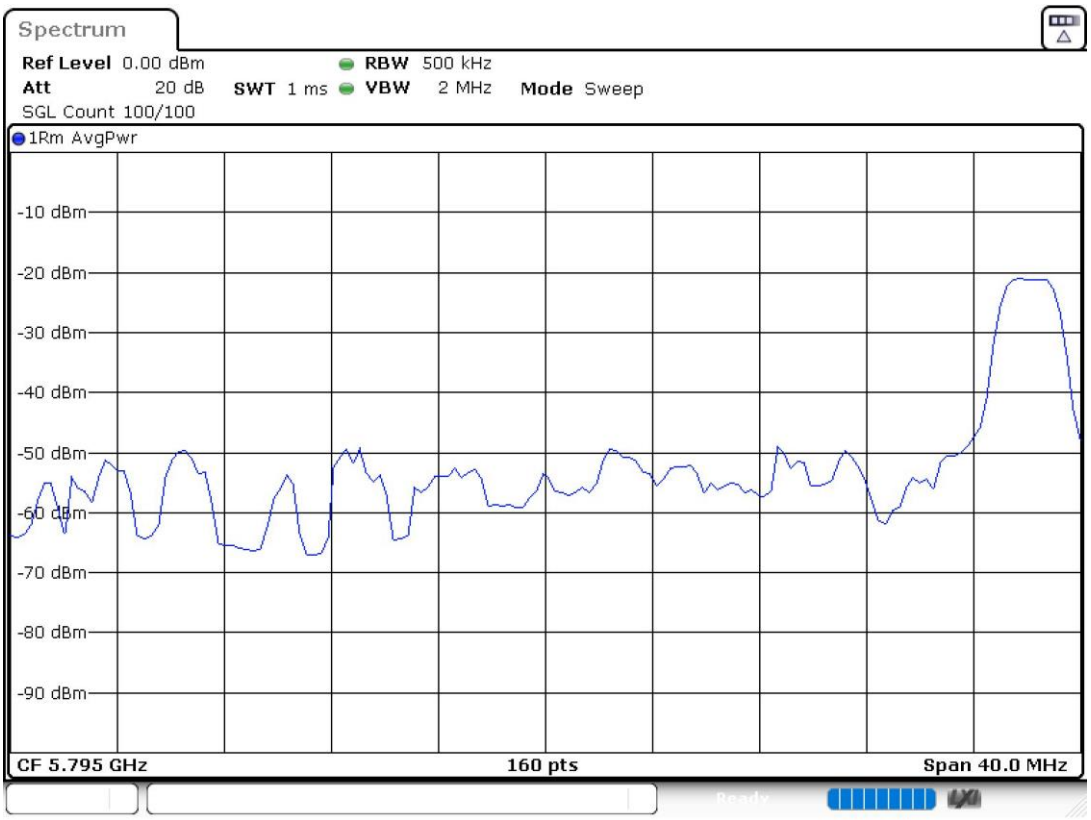
PSD Chain 0

- High Channel 159 (5795 MHz) / RU26 Offset 17:





PSD Chain 1

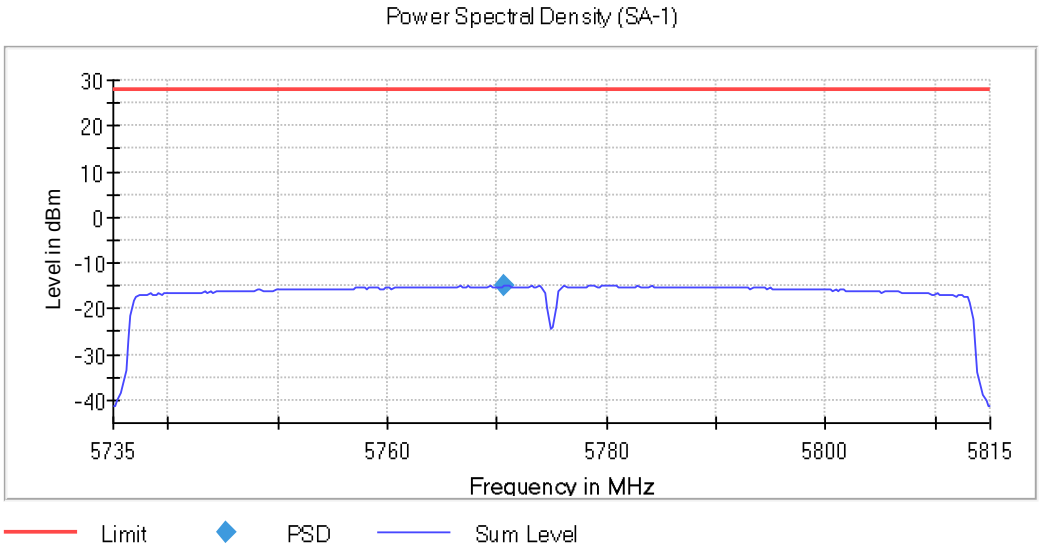

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.795 GHz
160 pts
Span 40.0 MHz

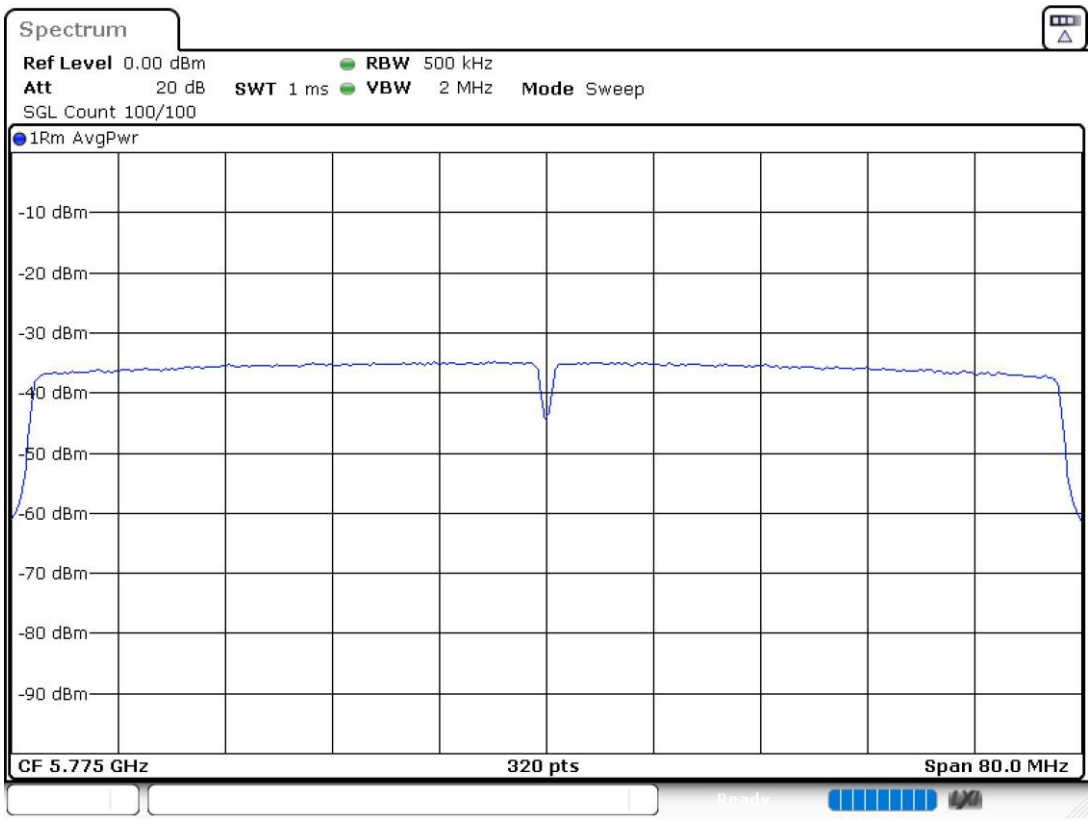
PSD Chain 0

MIMO 802.11 ac80 (VHT80):

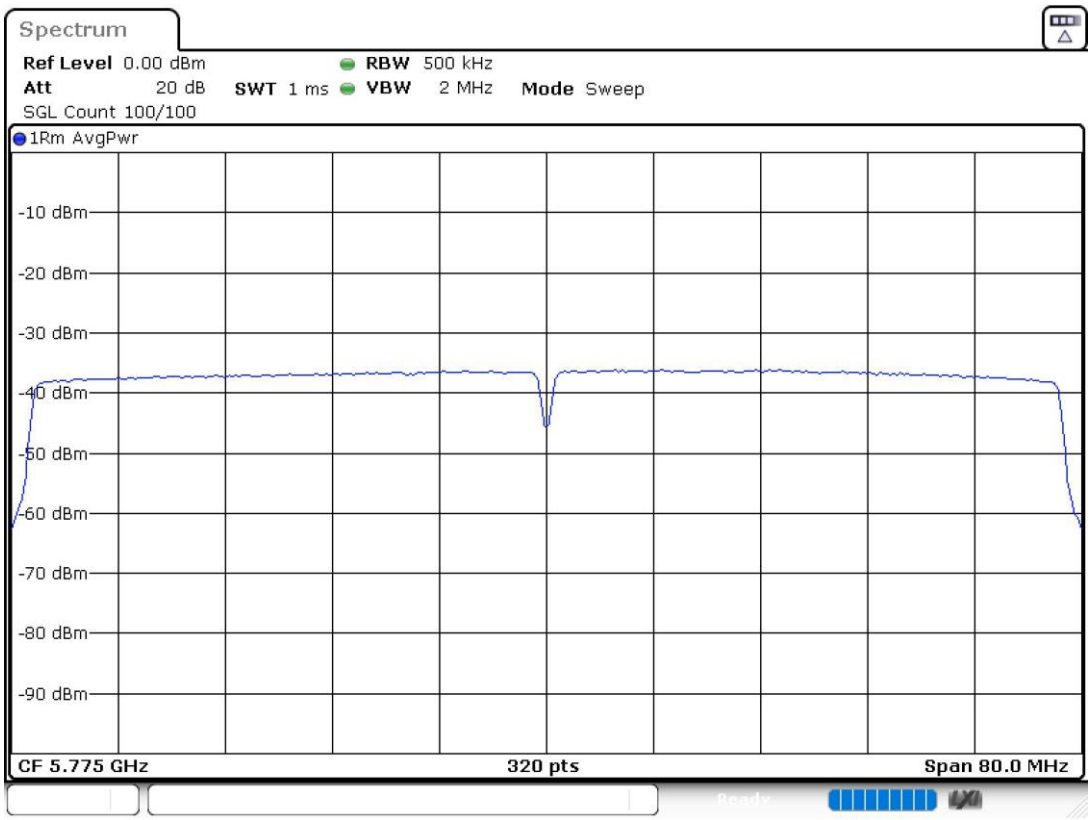
U-NII-3 (5725-5850 MHz)

- Single Channel 155 (5775 MHz):





PSD Chain 1

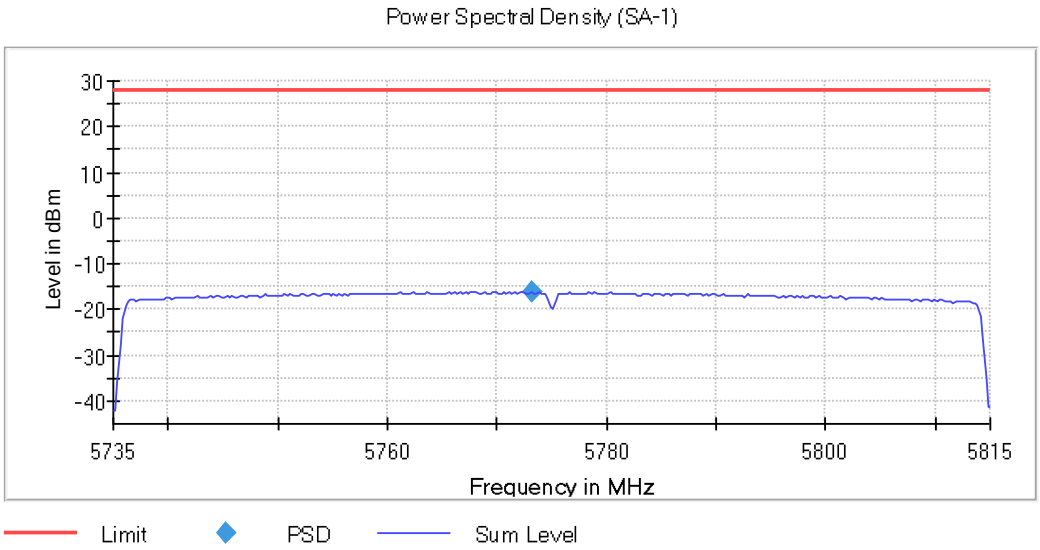

Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.775 GHz
320 pts
Span 80.0 MHz

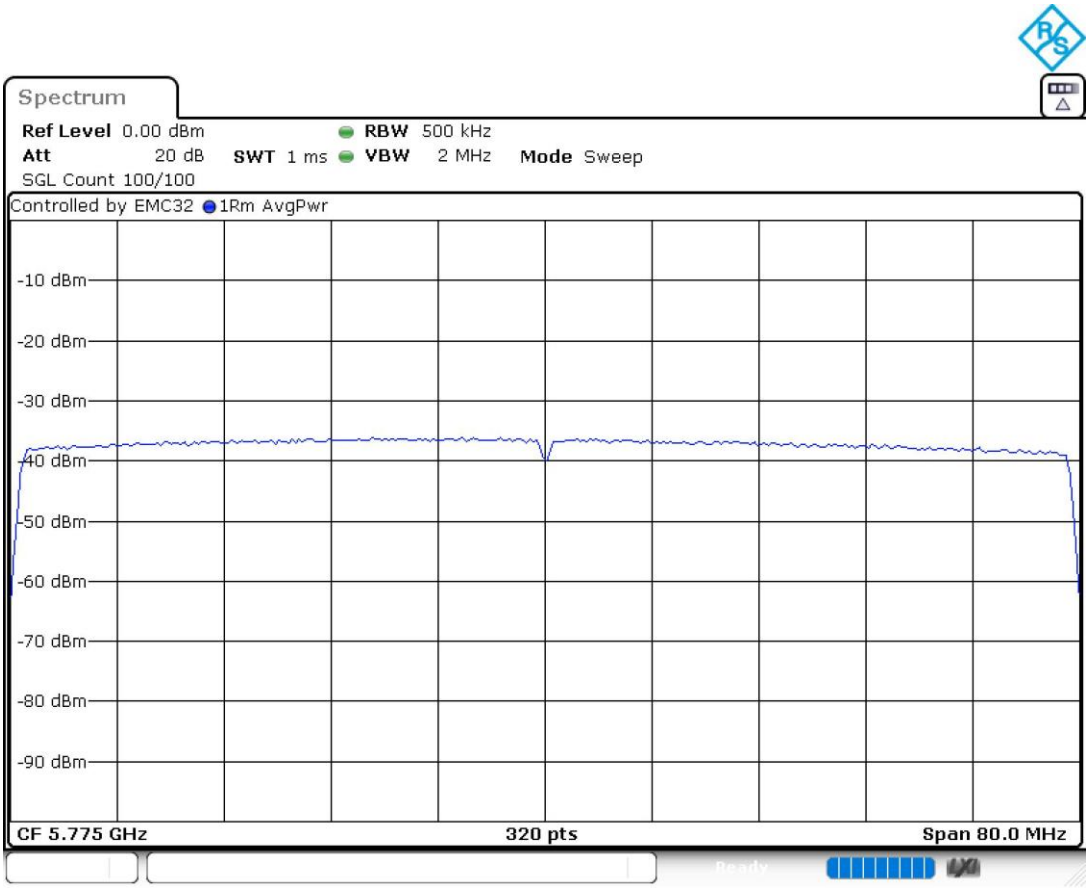
PSD Chain 0

MIMO 802.11 ax80 (HE80) – SU Full channel allocation:

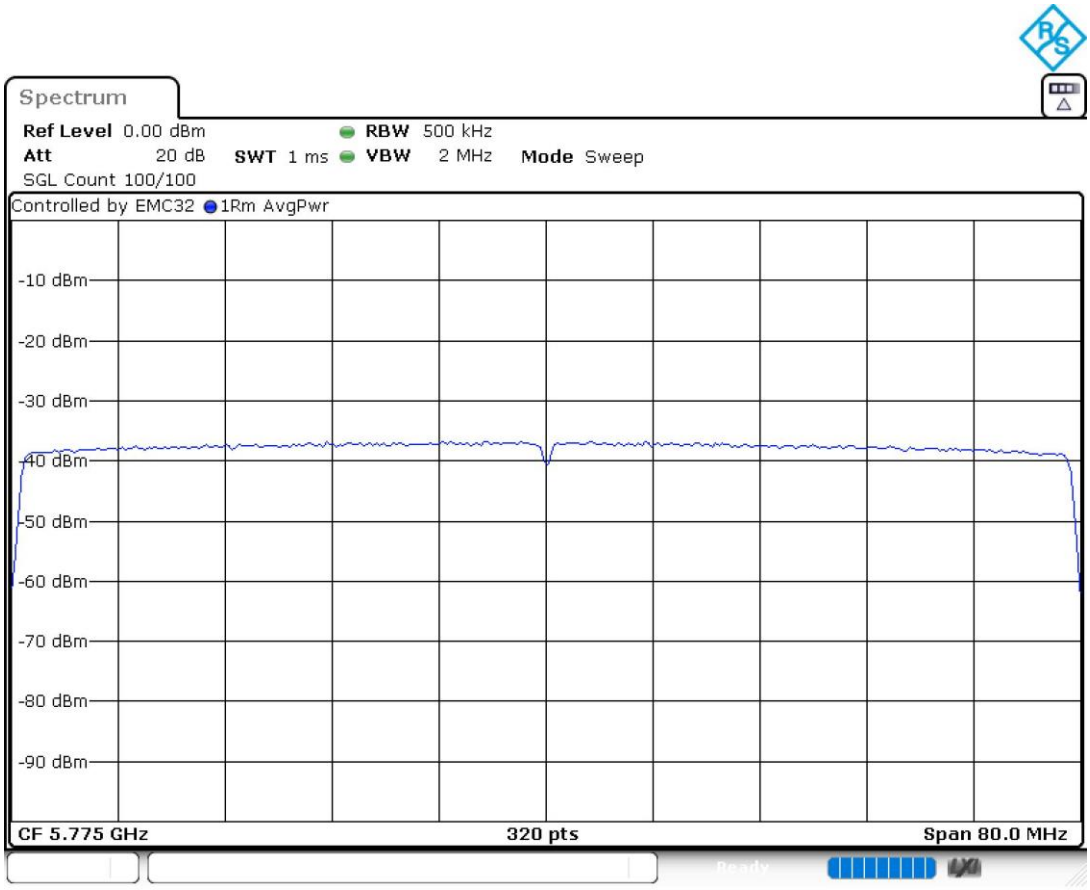
U-NII-3 (5725-5850 MHz)

- Single Channel 155 (5775 MHz):





PSD Chain 1


Spectrum
Ref Level 0.00 dBm
RBW 500 kHz
Att 20 dB
SWT 1 ms
VBW 2 MHz
Mode Sweep
SGL Count 100/100
Controlled by EMC32
1Rm AvgPwr
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 5.775 GHz
320 pts
Span 80.0 MHz

PSD Chain 0

FCC 15.407(b)(4) Transmitter Out of Band Radiated Emissions and Transmitter Band Edge Radiated Emissions.

SPECIFICATION:

For transmitters operating in the 5.725–5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz (68.23 dBµV/m at 3 m distance) at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 40000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table, specified when measuring with peak detector function.

RESULTS:

The situation and orientation of the equipment under test were varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

All tests were performed in a semi-anechoic chamber at a distance of 1.5 m for the frequency range 1 GHz-40 GHz and a distance of 3 m for frequency range 30MHz-1GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyser. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Preliminary tests determined the SISO worst case: Chain 1.

OUT OF BAND EMISSIONS: For spurious emissions outside of the U-NII-3 band edge mask of 5.65-5.925 GHz, the worst-case mode was determined after preliminary measurements of the E.I.R.P. density (radiated). This worst-case mode is reported below.

SISO worst case: **802.11 ax20 (HE20) – RU Subcarrier allocation, RU26.**

Frequency range 30 MHz - 1 GHz

The spurious emissions below 1 GHz do not depend either on the operating channel or the modulation mode selected in the EUT.

Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBµV/m)	Polarization	Detector
599.996250	30.35	V	Quasi-Peak
875.021563	33.29	H	Quasi-Peak

Measurement Uncertainty (dB) < ± 5.1

Frequency range 1 - 40 GHz

The results in the next tables show the maximum measured levels in the 1-40 GHz range except the 5.65-5.725 GHz and 5.85-5.925GHz adjacent bands. The results in the adjacent bands are reported in the next section.

Spurious frequencies with peak levels above the average limit (54 dBµV/m at 3 m) are measured with an average detector for checking compliance with the average limit.

- Low Channel. RU26 Offset 0.

  Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector
1.375000	41.07	V	Peak
1.625300	43.02	V	Peak
1.687600	42.42	H	Peak

- Middle Channel. RU26 Offset 4.

  Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector
1.375100	40.78	H	Peak
1.624800	42.97	V	Peak
1.687500	42.14	H	Peak
4.901700	53.94	H	Peak
4.984000	53.77	V	Peak

- High Channel. RU26 Offset 8.

  Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector
1.375000	40.64	V	Peak
1.624900	42.80	V	Peak
1.687600	41.99	H	Peak
5.103400	52.95	V	Peak

Measurement Uncertainty (dB): 1 GHz – 6.5 GHz < ±4.11
6.5 GHz – 17 GHz < ±4.32
17 GHz – 40 GHz < ±4.75

Verdict: PASS

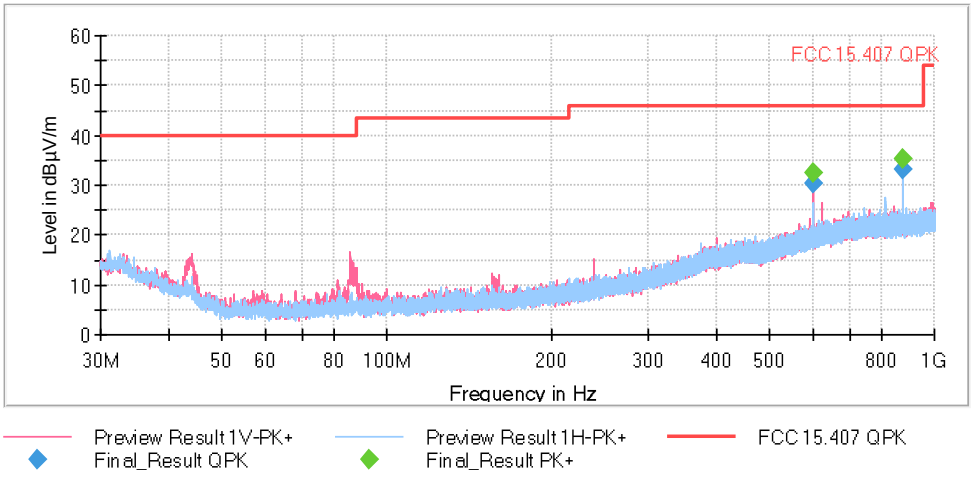
The measurement settings for each range of frequency is as follows:

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESW 44]					
30 MHz - 1 GHz	30,312 kHz	PK+	100 kHz	1 s	0 dB
Subrange	**Step Size**	**Detectors**	**Bandwidth**	**Sweep Time**	**Preamp**
Receiver: [ESW 44]					
1 GHz - 6,5 GHz	100 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
Subrange	**Step Size**	**Detectors**	**Bandwidth**	**Sweep Time**	**Preamp**
Receiver: [ESW 44]					
6,5 GHz - 17 GHz	105 kHz	PK+ ; AVG	1 MHz	1 s	30 dB
Subrange	**Step Size**	**Detectors**	**Bandwidth**	**Sweep Time**	**Preamp**
Receiver: [ESW 44]					
17 GHz - 40 GHz	766,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

SISO worst case

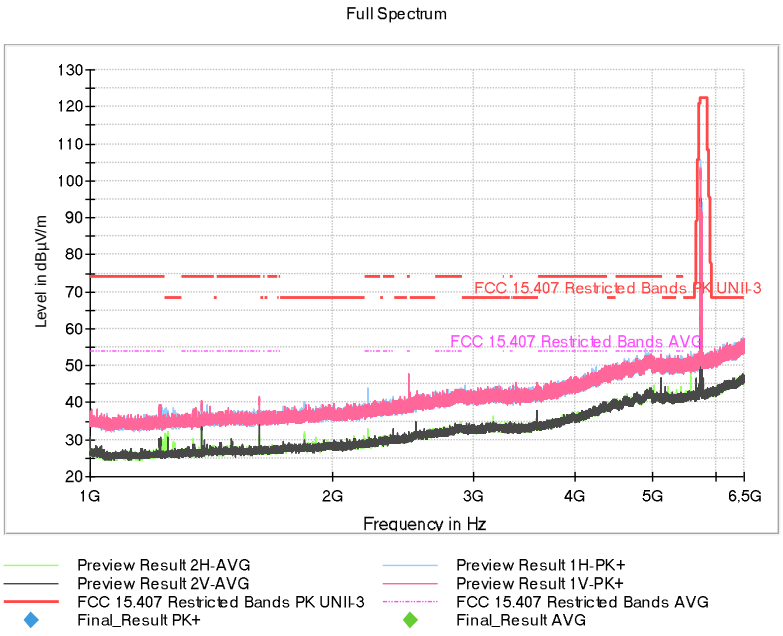
FREQUENCY RANGE 30 MHz - 1 GHz:

This plot is valid for Low, Middle and High channels.



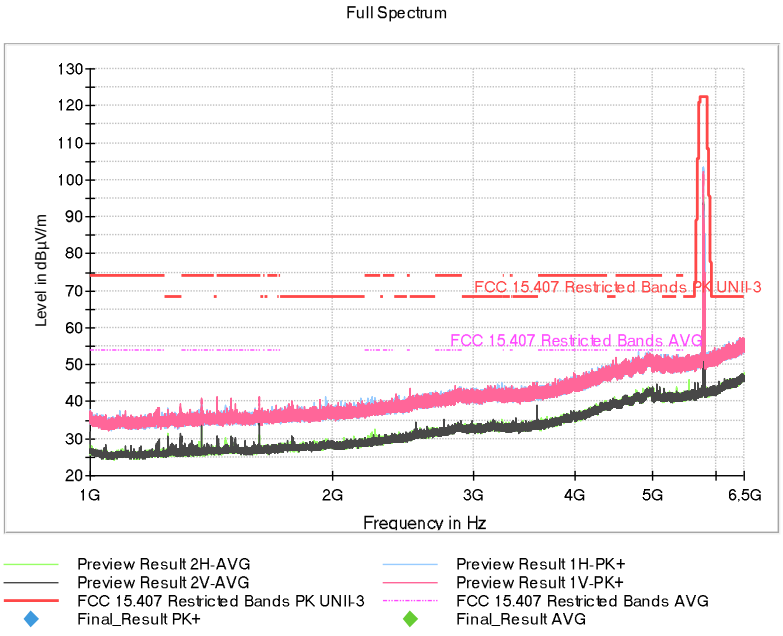
FREQUENCY RANGE 1 - 6.5 GHz:

- Low Channel 149 (5745 MHz) / RU26 Offset 0:



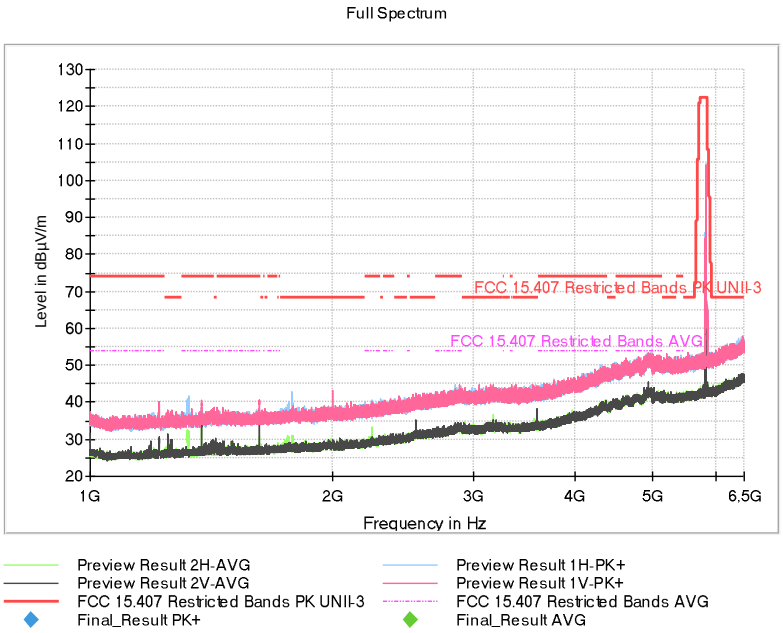
Note: The highest peak is the carrier frequency.

- Middle Channel 157 (5785 MHz) / RU26 Offset 4:



Note: The highest peak is the carrier frequency.

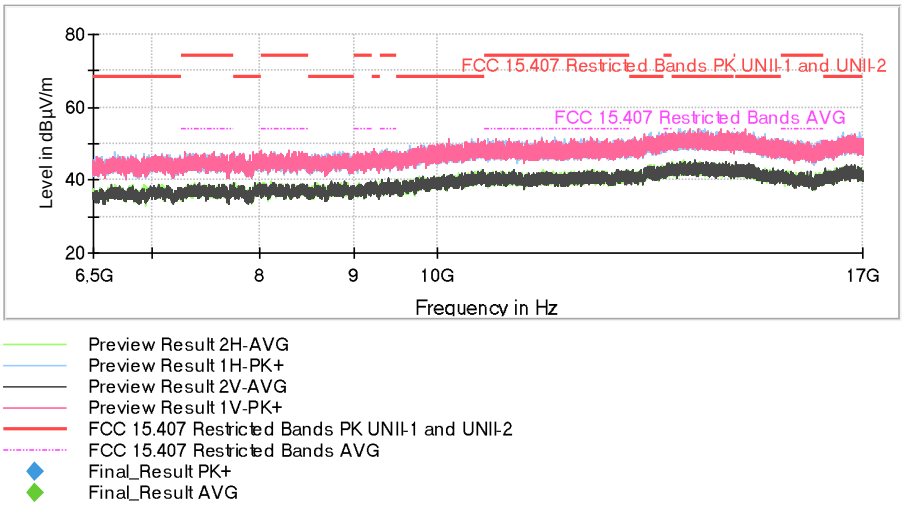
- High Channel 165 (5825 MHz) / RU26 Offset 8:



Note: The highest peak is the carrier frequency.

FREQUENCY RANGE 6.5 - 17 GHz:

- Low Channel 149 (5745 MHz) / RU26 Offset 0:



- Middle Channel 157 (5785 MHz) / RU26 Offset 4: