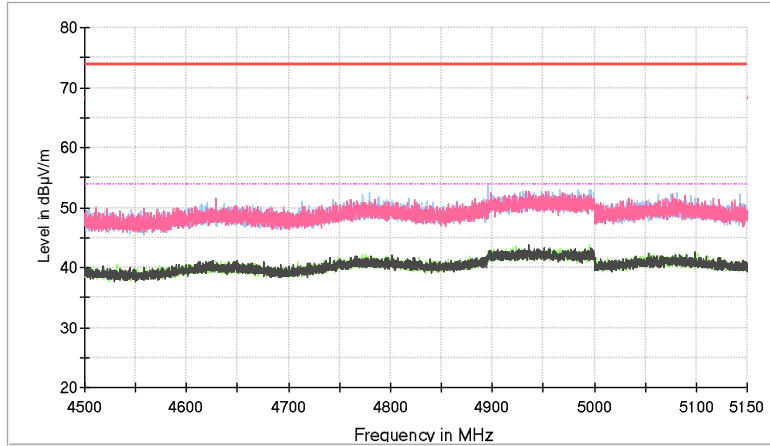
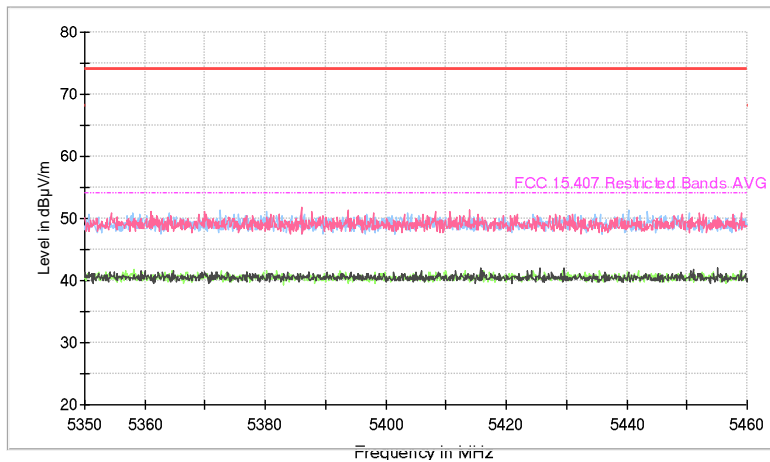


• **MIMO 802.11 he20 – RU Subcarrier allocation (RU26):**

- Lower Band Edge and Upper Band Edge – Low Channel (Restricted Bands) / RU26 Offset 0

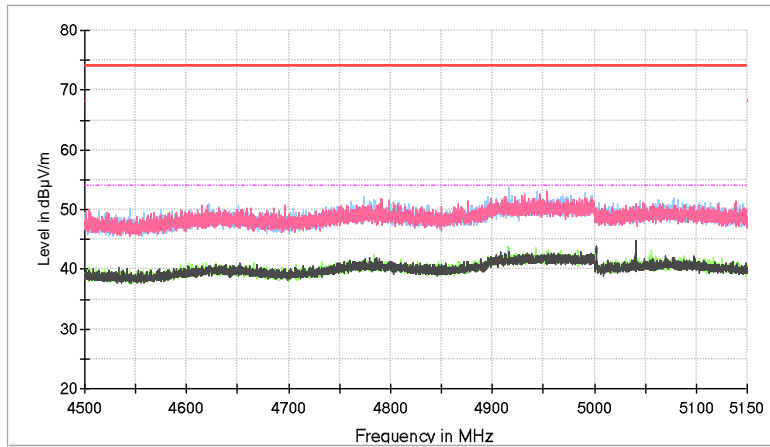


— Preview Result 2H-AVG
— Preview Result 1H-PK+
— Preview Result 2V-AVG
— Preview Result 1V-PK+
— FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- - - FCC 15.407 Restricted Bands AVG
◆ Final_Result PK+
◆ Final_Result AVG

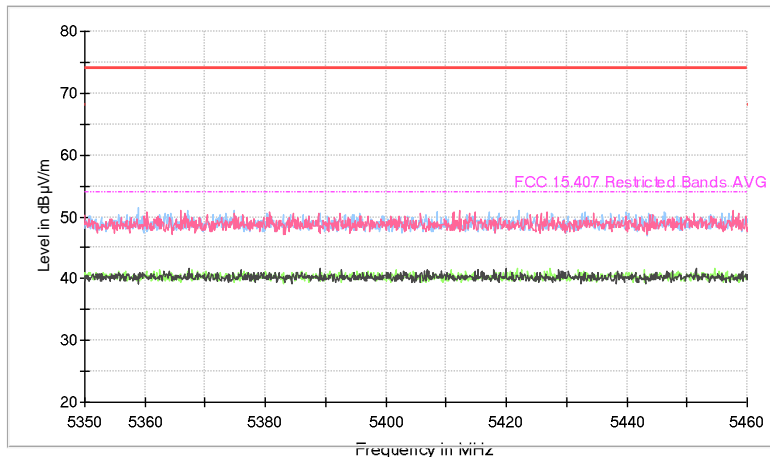


— Preview Result 2H-AVG
— Preview Result 1H-PK+
— Preview Result 2V-AVG
— Preview Result 1V-PK+
— FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- - - FCC 15.407 Restricted Bands AVG
◆ Final_Result PK+
◆ Final_Result AVG

- Lower Band Edge and Upper Band Edge – High Channel (Restricted Bands) / RU 26 Offset 8



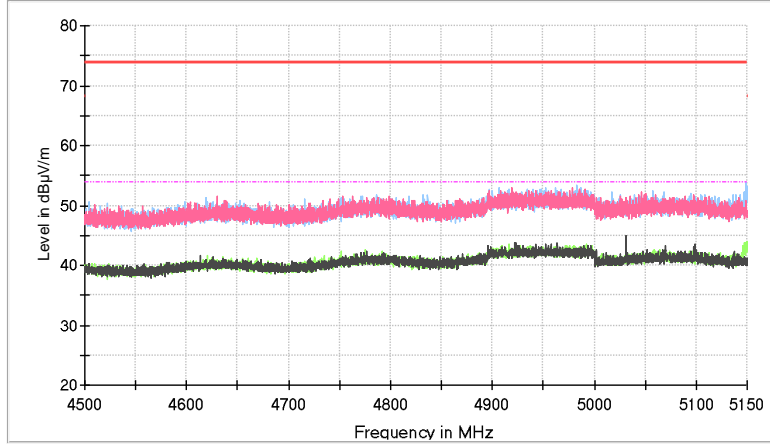
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG



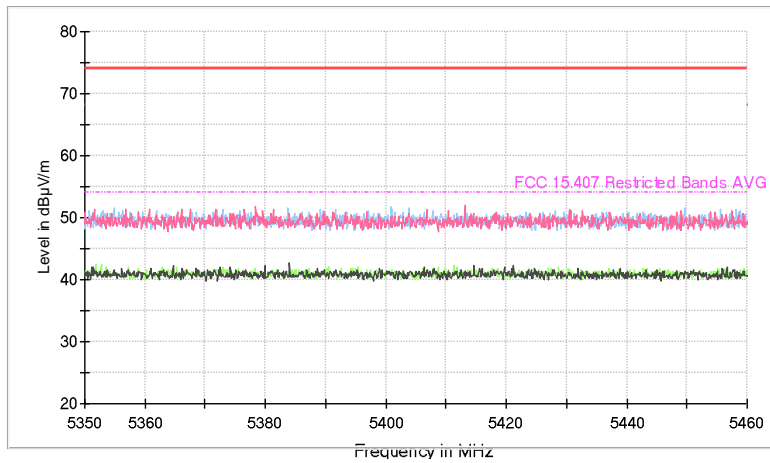
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

• **MIMO 802.11 n40:**

- Lower Band Edge and Upper Band Edge – Low Channel (Restricted Bands)

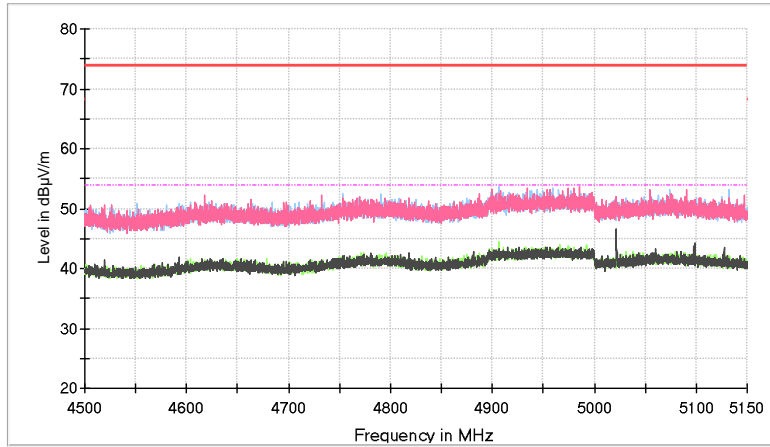


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

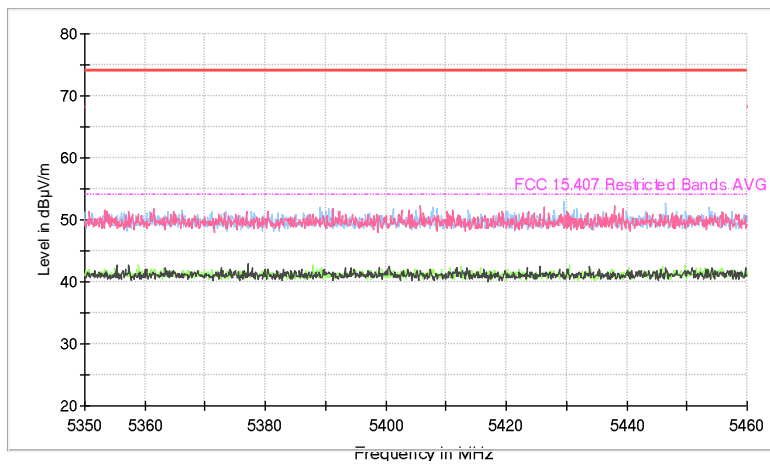


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

- Lower Band Edge and Upper Band Edge – High Channel (Restricted Bands)



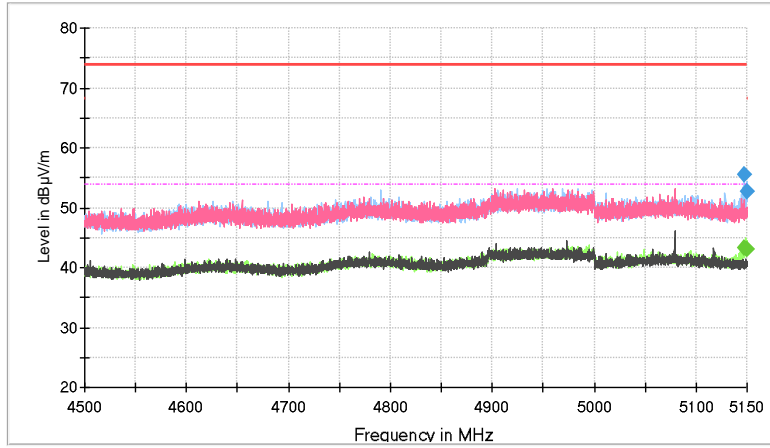
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG



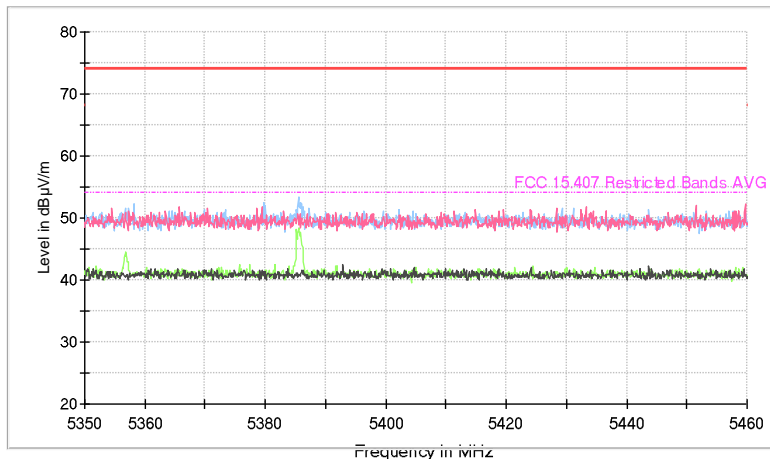
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

• MIMO 802.11 ac40:

- Lower Band Edge and Upper Band Edge – Low Channel (Restricted Bands)

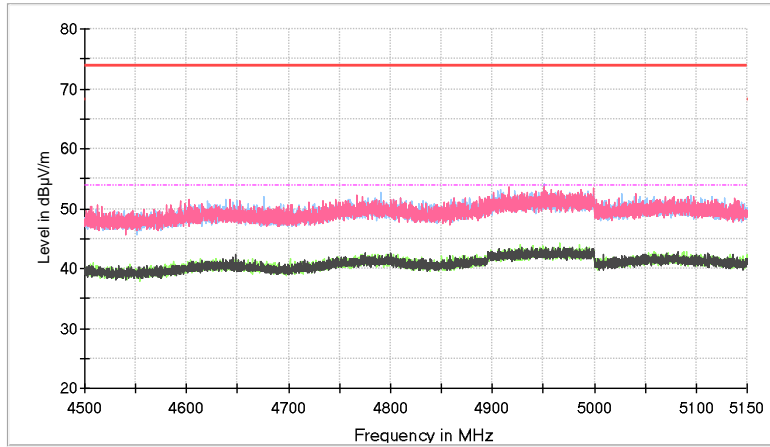


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

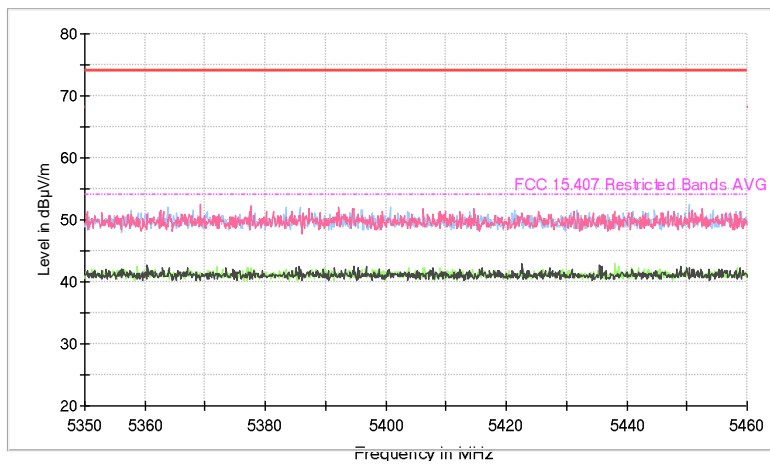


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

- Lower Band Edge and Upper Band Edge – High Channel (Restricted Bands)



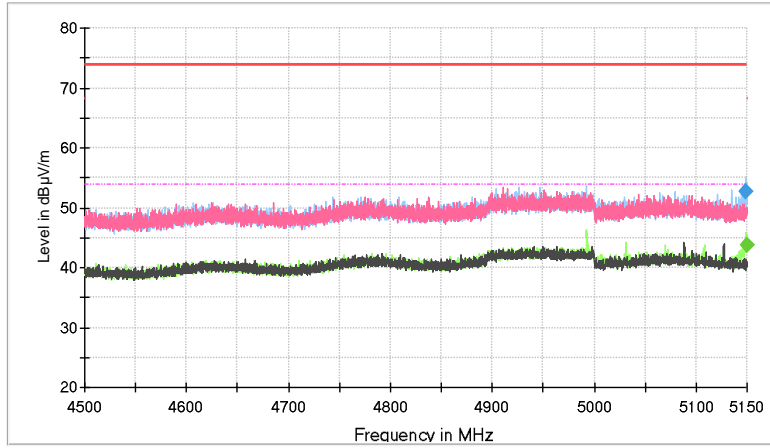
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG



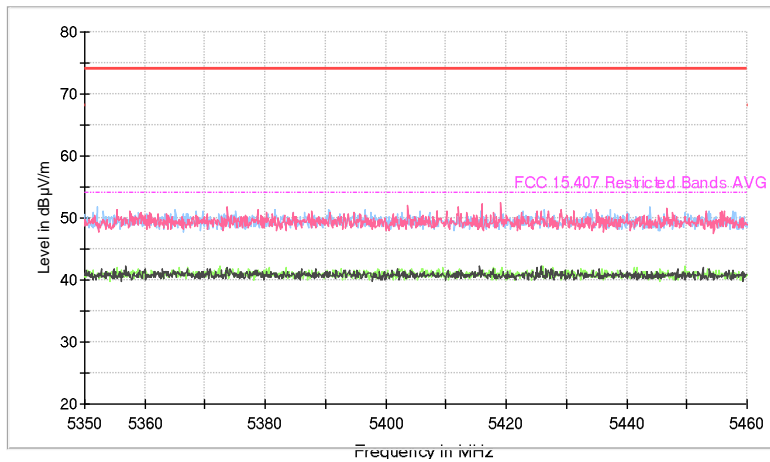
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

• MIMO 802.11 he40 – SU Full channel allocation:

- Lower Band Edge and Upper Band Edge – Low Channel (Restricted Bands)

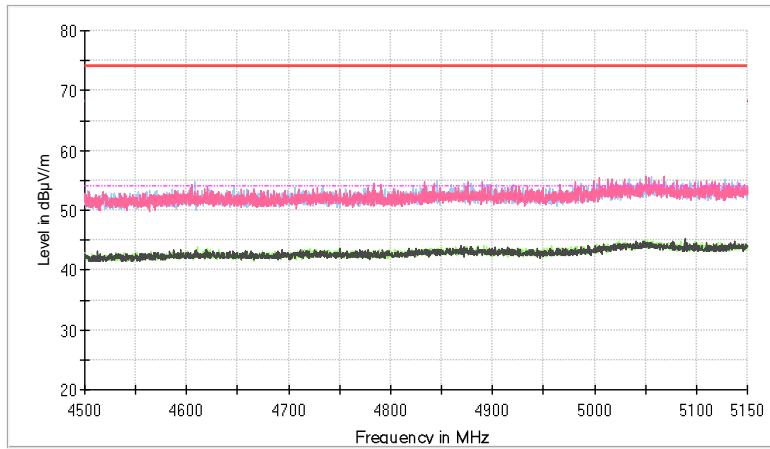


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

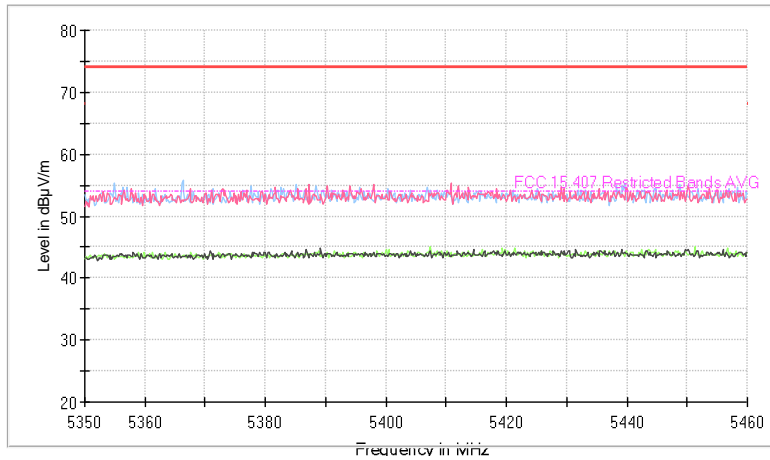


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

- Lower Band Edge and Upper Band Edge – High Channel (Restricted Bands)



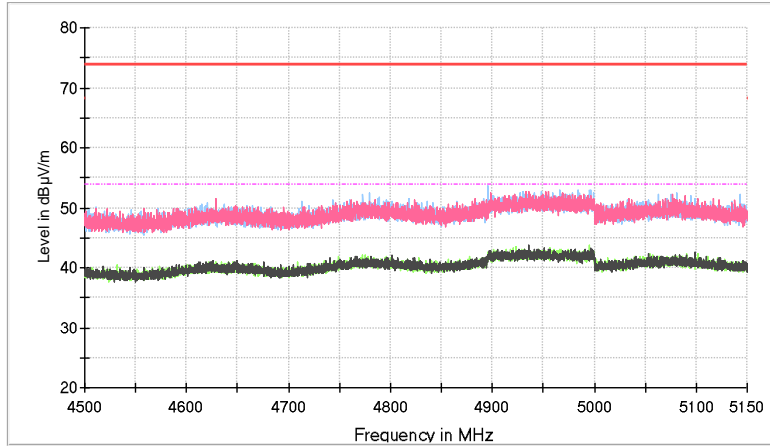
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG



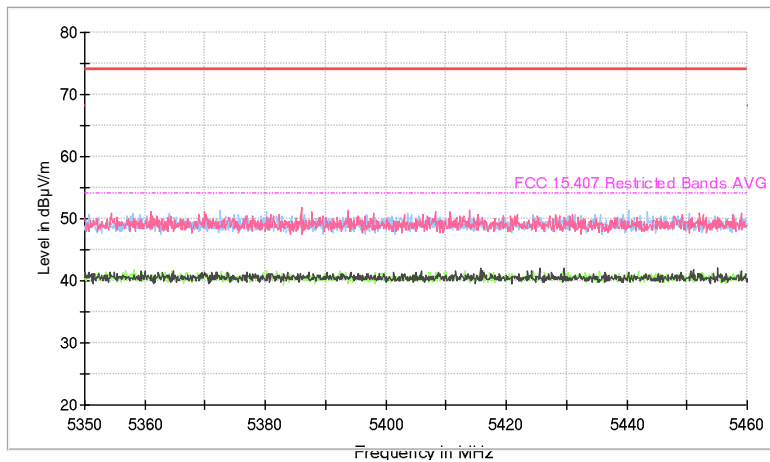
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

• **MIMO 802.11 he40 – RU Subcarrier allocation (RU26):**

- Lower Band Edge and Upper Band Edge – Low Channel (Restricted Bands) / RU 26 Offset 0

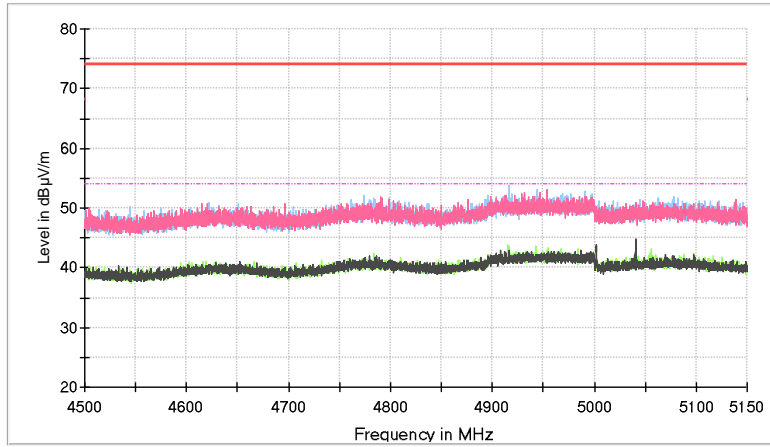


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

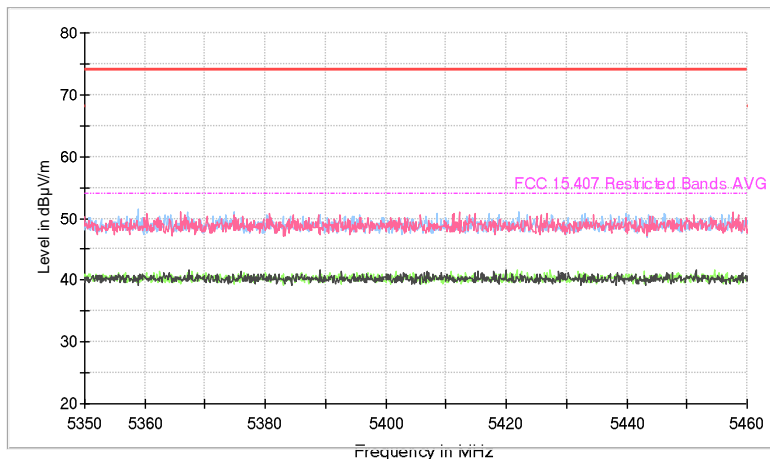


- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

- Lower Band Edge and Upper Band Edge – High Channel (Restricted Bands) / RU 26 Offset 17



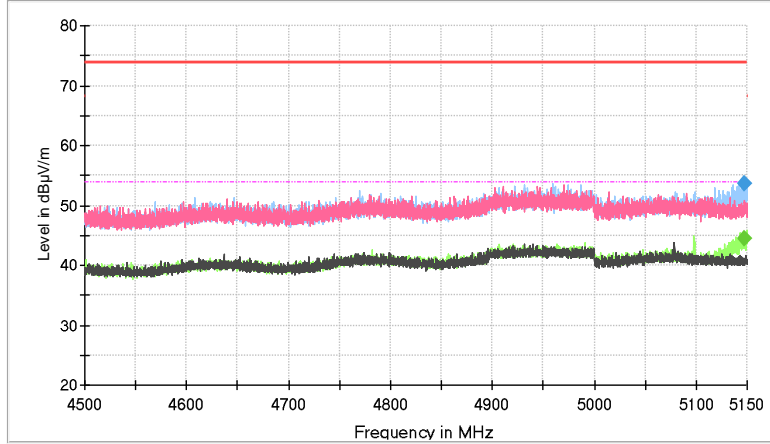
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG



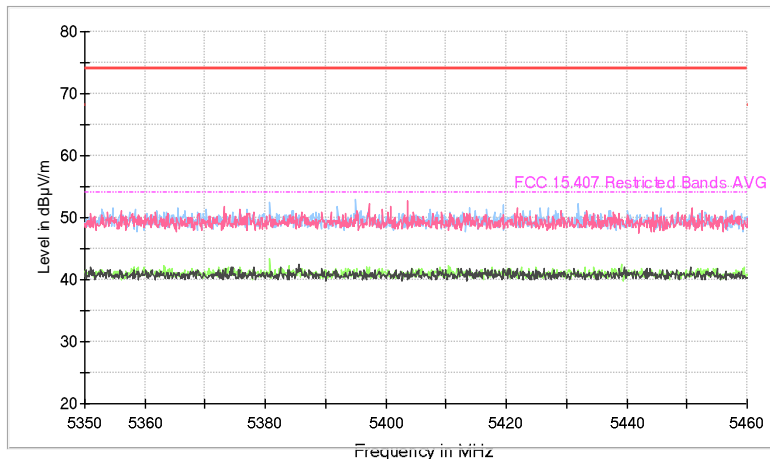
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

• **MIMO 802.11 ac80:**

- Lower Band Edge and Upper Band Edge – Single Channel (Restricted Bands)



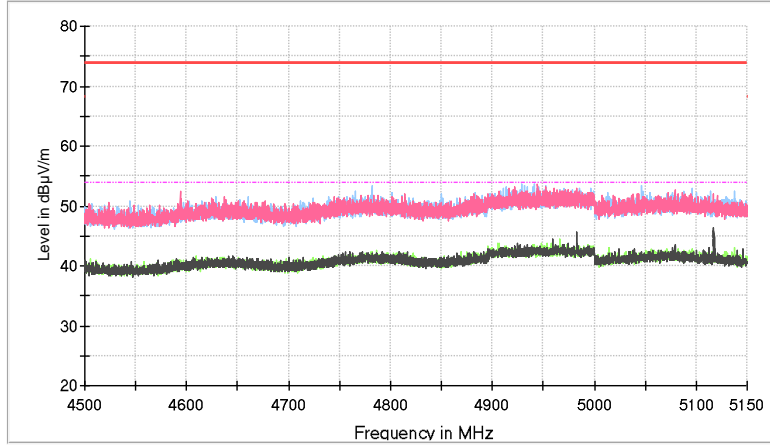
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG



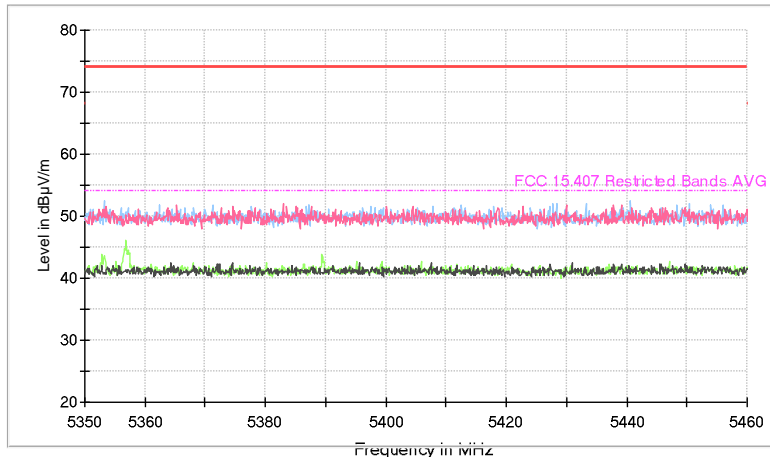
- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- FCC 15.407 Restricted Bands AVG
- Final_Result PK+
- Final_Result AVG

MIMO 802.11 he80 – SU Full channel allocation:

- Lower Band Edge and Upper Band Edge –Single Channel (Restricted Bands)



- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- - - - - FCC 15.407 Restricted Bands AVG
- ◆ Final_Result PK+
- ◆ Final_Result AVG



- Preview Result 2H-AVG
- Preview Result 1H-PK+
- Preview Result 2V-AVG
- Preview Result 1V-PK+
- FCC 15.407 Restricted Bands PK UNII-1 and UNII-2
- - - - - FCC 15.407 Restricted Bands AVG
- ◆ Final_Result PK+
- ◆ Final_Result AVG

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

INDEX

TEST CONDITIONS	405
FCC 15.407 (e) 6 dB Bandwidth	411
FCC 15.407 (a)(3)(i) Transmitter Maximum Conducted Output Power	467
FCC 15.407 (a)(3)(i) Transmitter Maximum Power Spectral Density	475
FCC 15.407(b)(4) Transmitter Out of Band Radiated Emissions and Transmitter Band Edge Radiated Emissions.	557

TEST CONDITIONS

(*) Declared by the Client.

POWER SUPPLY (*):

Vnominal:	12 Vdc
Type of Power Supply:	External DC (Vehicle Battery).

ANTENNA (*):

Type of Antennas:	External.
-------------------	-----------

Maximum Declared Antenna Gain Chain 0 U-NII-1:	+5 dBi
Maximum Declared Antenna Gain Chain 0 U-NII-3:	+5 dBi
Antenna cable loss for 0.45m cable length:	-0.54 dB
Effective Antenna Gain Chain 0 U-NII-1:	+4.46 dBi
Effective Antenna Gain Chain 0 U-NII-3:	+4.46 dBi

Maximum Declared Antenna Gain Chain 1 U-NII-1:	+5 dBi
Maximum Declared Antenna Gain Chain 1 U-NII-3:	+5 dBi
Antenna cable loss for 0.45m cable length:	-0.54 dB
Effective Antenna Gain Chain 1 U-NII-1:	+4.46 dBi
Effective Antenna Gain Chain 1 U-NII-3:	+4.46 dBi

Directional Antenna Gain Calculations for CDD MIMO In-Band Measurements:

U-NII-1 & U-NII-3:

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

- For power spectral density (PSD) measurements:

$$\text{Directional gain}_{\text{PSD}} = G_{\text{ANT}} + 10 \log(N_{\text{ANT}}/N_{\text{SS}}) \text{ dBi}$$

$$N_{\text{SS}} = 1 \text{ (worst case)}, \quad N_{\text{ANT}} = 2, \quad G_{\text{ANT}} = +4.46 \text{ dBi}$$

$$\text{Directional gain}_{\text{PSD}} = 4.46 + 10 \log(2/1) = 4.46 + 10 \log(2) = 4.46 + 3.01 = 7.47 \text{ dBi}$$

$$\text{PSD Antenna Gain MIMO Chain 0 \& 1:} \quad + 7.47 \text{ dBi}$$

- For power measurements:

$$\text{Directional gain}_{\text{POWER}} = G_{\text{ANT}} \text{ dBi} \quad (N_{\text{ANT}} < 4)$$

$$\text{Directional gain}_{\text{POWER}} = G_{\text{ANT}} = 4.46 \text{ dBi}$$

$$\text{Power Antenna Gain MIMO Chain 0 \& 1:} \quad + 4.46 \text{ dBi}$$

TEST FREQUENCIES (*):

Band U-NII-3:

Technology Tested:	WLAN (IEEE 802.11 a20 / n2040 / ac204080 / ax204080 2x2)	
Modes:	802.11a: 6, 9, 12, 18, 24, 36, 48 & 54 Mbps (SISO, or MIMO with CDD)	
	802.11n HT20: MCS0 to MCS23 (1 or 2 spatial stream with either SISO or 2 chain MIMO CDD)	
	802.11n HT40: MCS0 to MCS23 (1 or 2 spatial stream with either SISO or 2 chain MIMO CDD)	
	802.11ac VHT20: MCS0 to MCS9 (1 or 2 spatial stream) (SISO, or MIMO with CDD without TxBF)	
	802.11ac VHT40: MCS0 to MCS9 (1 or 2 spatial stream) (SISO, or MIMO with CDD without TxBF)	
	802.11ac VHT80: MCS0 to MCS9 (1 or 2 spatial stream) (SISO, or MIMO with CDD without TxBF)	
	802.11ax HE20: MCS0 to MCS9 (1 or 2 spatial stream) (SISO, or MIMO with CDD without TxBF).	
	802.11ax HE40: MCS0 to MCS9 (1 or 2 spatial stream) (SISO, or MIMO with CDD without TxBF).	
	802.11ax HE80: MCS0 to MCS9 (1 or 2 spatial stream) (SISO, or MIMO with CDD without TxBF).	
Setting of cores / ports:	Chain 0, Chain 1, Chain 0 & 1	
Beamforming:	No.	
Frequency Range:	5725 MHz to 5850 MHz	
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

POWER SETTINGS (*):

U-NII-3. FCC:

Chain 0

Channel	Frequency	a	n	ac	he
36	5180 MHz	9	9	9	9
44	5220 MHz	9	9	9	9
48	5240 MHz	9	9	9	9
38	5190 MHz		9	9	9
46	5230 MHz		9	9	9
42	5210 MHz			9	9

Chain 1

Channel	Frequency	a	n	ac	he
36	5180 MHz	9	9	9	9
44	5220 MHz	9	9	9	9
48	5240 MHz	9	9	9	9
38	5190 MHz		9	9	9
46	5230 MHz		9	9	9
42	5210 MHz			9	9

Chain 0 & 1

Channel	Frequency	a	n	ac	he
36	5180 MHz	6	6	6	6
44	5220 MHz	6	6	6	6
48	5240 MHz	6	6	6	6
38	5190 MHz		6	6	6
46	5230 MHz		6	6	6
42	5210 MHz			6	6

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 on 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.

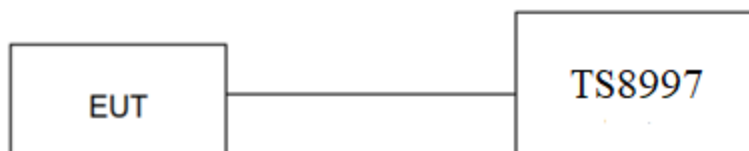
The worst cases for testing were identified for output power and spurious levels at the band edges which were selected based on preliminary testing. They correspond to the next data rates:

- 802.11a: 6 Mbps SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.
- 802.11n HT20: MCS0 SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.
- 802.11n HT40: MCS0 SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.
- 802.11ac VHT20: MCS0 SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.
- 802.11ac VHT40: MCS0 SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.
- 802.11ac VHT80: MCS0 SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.
- 802.11ax HE20: MCS0 SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.
- 802.11ax HE40: MCS0 SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.
- 802.11ax HE80: MCS0 SISO 1Tx on Chain 0 and 1Tx on Chain 1 / MIMO 2Tx on Chain 0 & 1.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and connected to the spectrum analyzer using a low-loss RF cable. The reading in the spectrum analyzer is corrected taking into account the internal and external RF cable loss.

For all modes:



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-18 GHz Double ridge horn antenna is situated at a distance of 3 m and a distance of 1.5 m for the frequency range 17 GHz-40 GHz (18 GHz-40 GHz horn antenna).

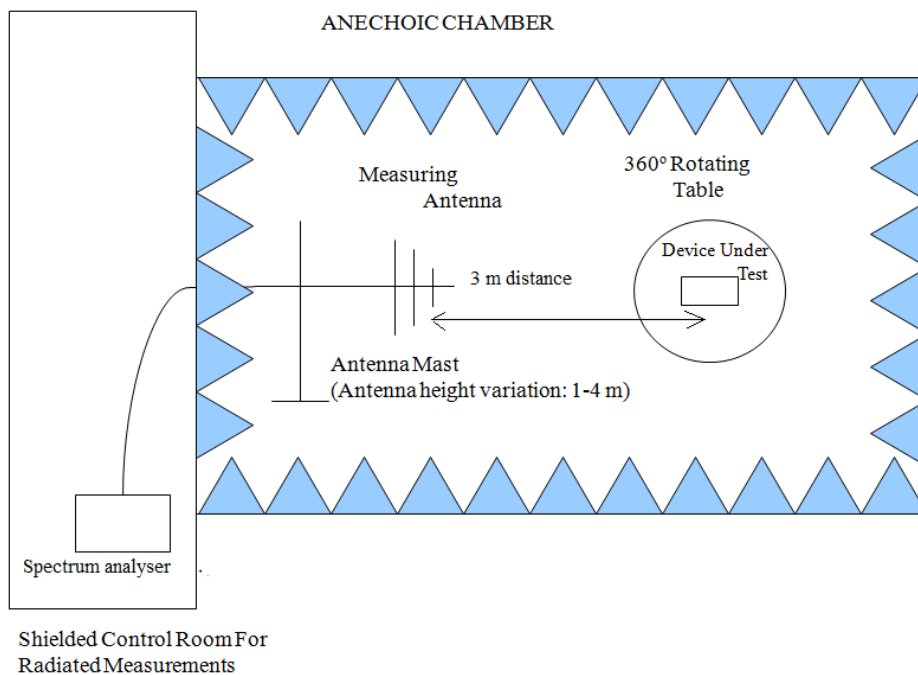
For radiated emissions in the range 17 GHz-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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.

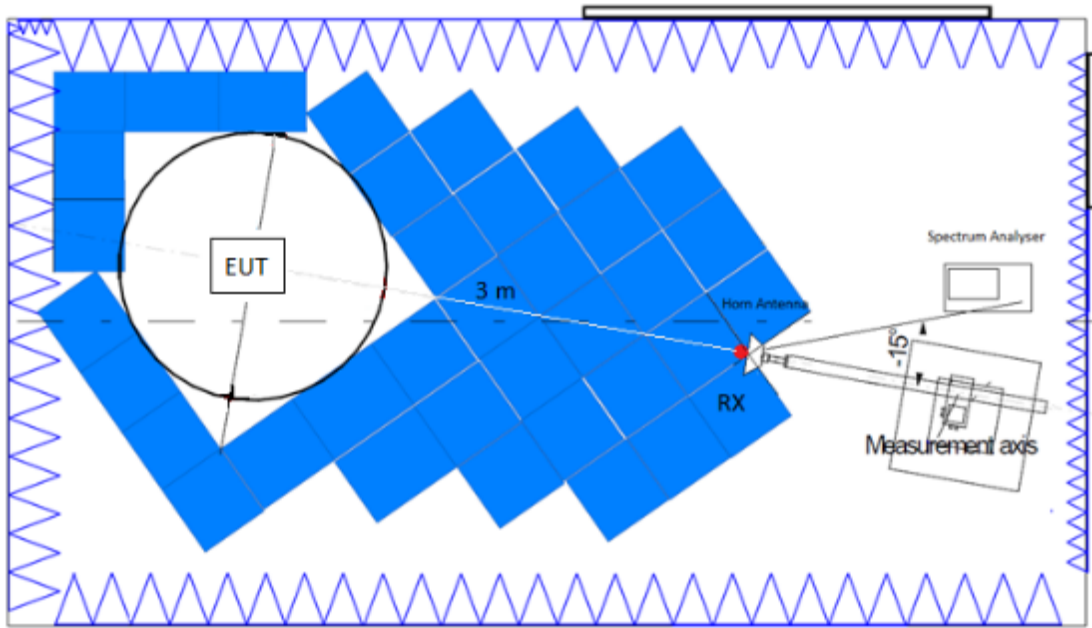
Measurements were made in both horizontal and vertical planes of polarization.

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

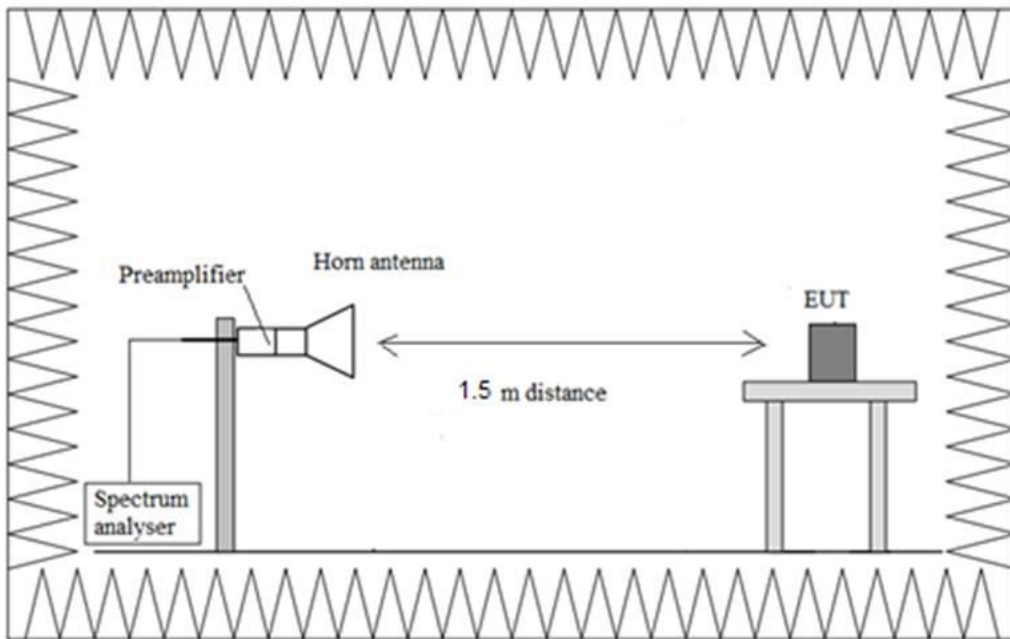
Radiated measurements setup $f < 1$ GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



FCC 15.407 (e) 6 dB Bandwidth

SPECIFICATION:

The minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

RESULTS:

Preliminary tests determined the SISO worst case: Chain 1.
 Preliminary tests determined the MIMO worst case: Chain 1.

SISO worst case

SISO 802.11 a20:

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	16.350000	16.350000	16.350000
Measurement uncertainty (kHz)	< ±23.02		

SISO 802.11 n20 (HT20):

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	17.600000	17.600000	17.600000
Measurement uncertainty (kHz)	< ±23.02		

SISO 802.11 ac20 (VHT20):

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	17.600000	17.650000	17.650000
Measurement uncertainty (kHz)	< ±23.02		

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

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	19.000000	18.950000	19.000000
Measurement uncertainty (kHz)	< ±23.02		

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

The next RU combinations were tested as worst cases:

Low Channel: RU26 Offset 0
 Middle Channel: RU26 Offset 4
 High Channel: RU26 Offset 8

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	2.200000	2.750000	2.200000
Measurement uncertainty (kHz)	< ±23.02		

SISO 802.11 n40 (HT40):

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	36.000000	36.100000
Measurement uncertainty (kHz)	< ±53.05	

SISO 802.11 ac40 (VHT40):

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	36.000000	36.000000
Measurement uncertainty (kHz)	< ±53.05	

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

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	38.050000	38.050000
Measurement uncertainty (kHz)	< ±53.05	

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

The next RU combinations were tested as worst cases:

Low Channel: RU26 Offset 0
 High Channel: RU26 Offset 17

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	2.150000	2.150000
Measurement uncertainty (kHz)	< ±53.05	

SISO 802.11 ac80 (VHT80):

U-NII-3 (5725-5850 MHz):

Channel	Single Channel 155 (5775 MHz)
6 dB Bandwidth (MHz)	76.000000
Measurement uncertainty (kHz)	< ±103.10

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

U-NII-3 (5725-5850 MHz):

Channel	Single Channel 155 (5775 MHz)
6 dB Bandwidth (MHz)	77.850000
Measurement uncertainty (kHz)	< ±103.10

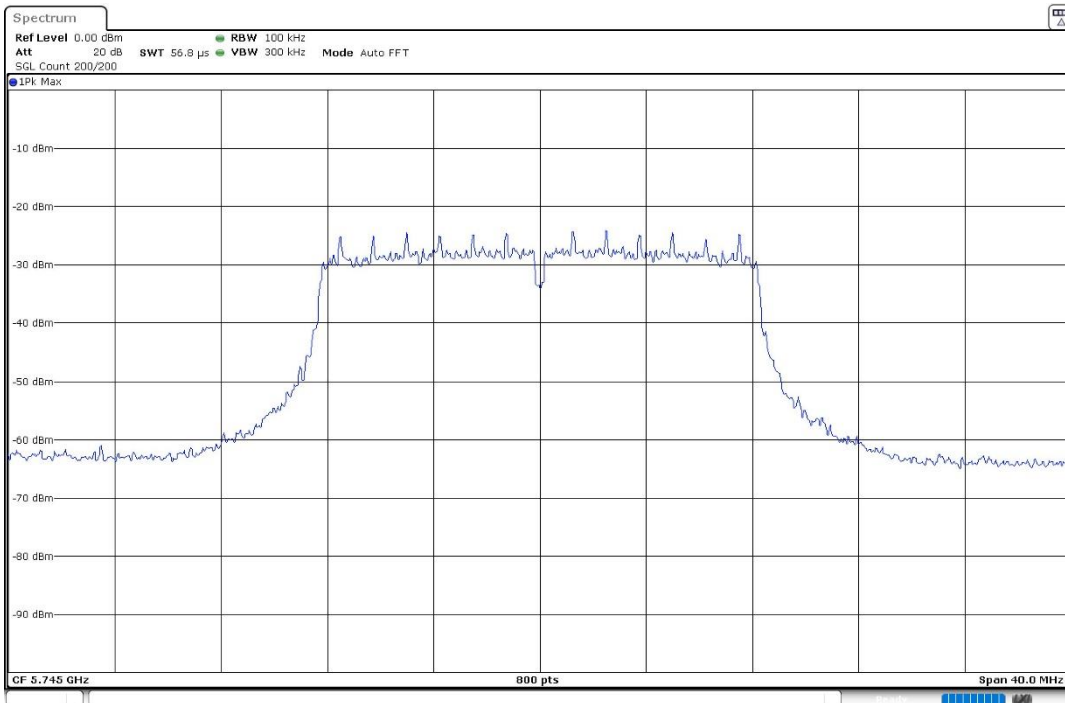
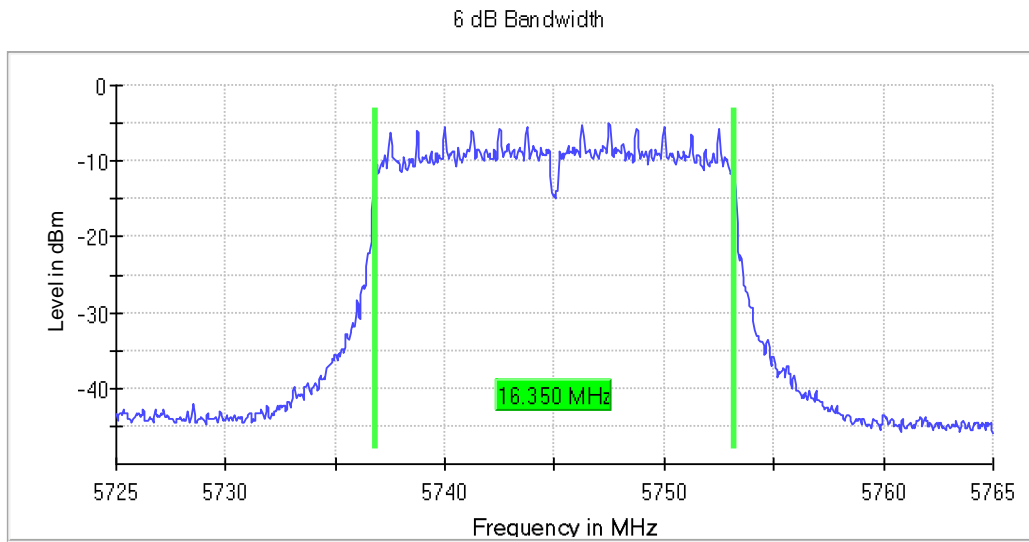
Verdict: PASS

SISO worst case

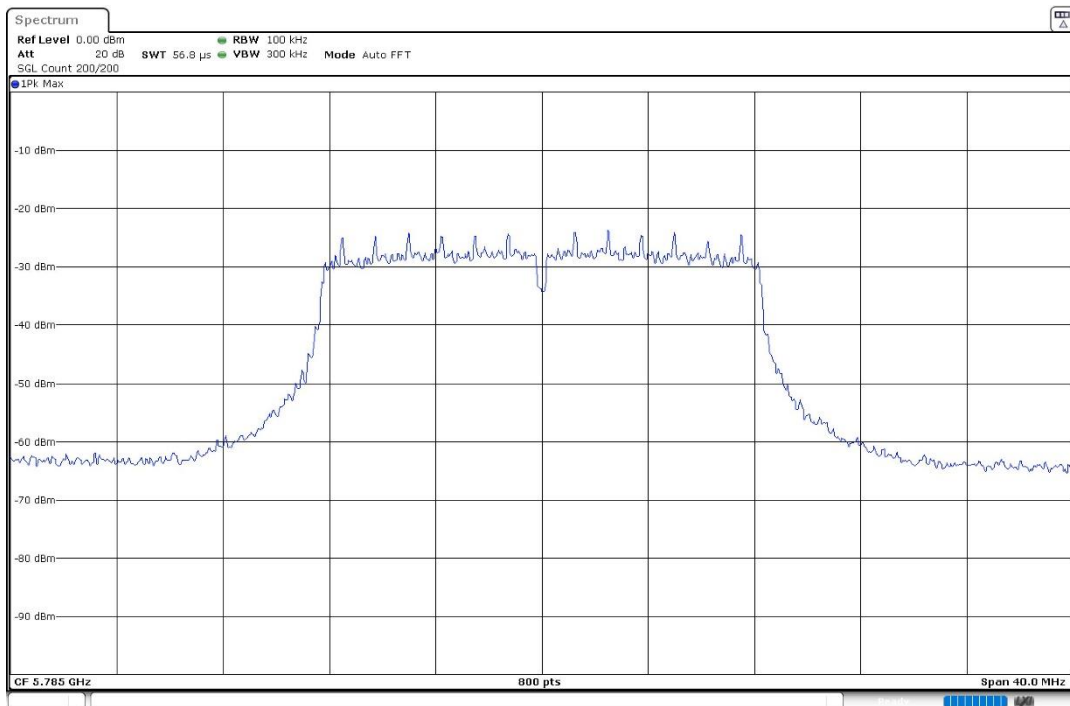
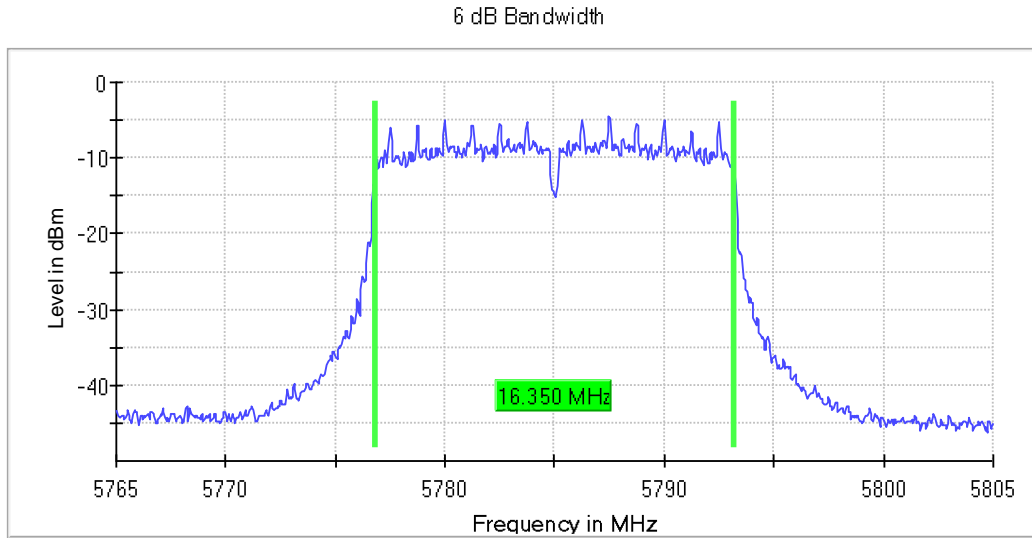
SISO 802.11 a20:

U-NII-3 (5725-5850 MHz)

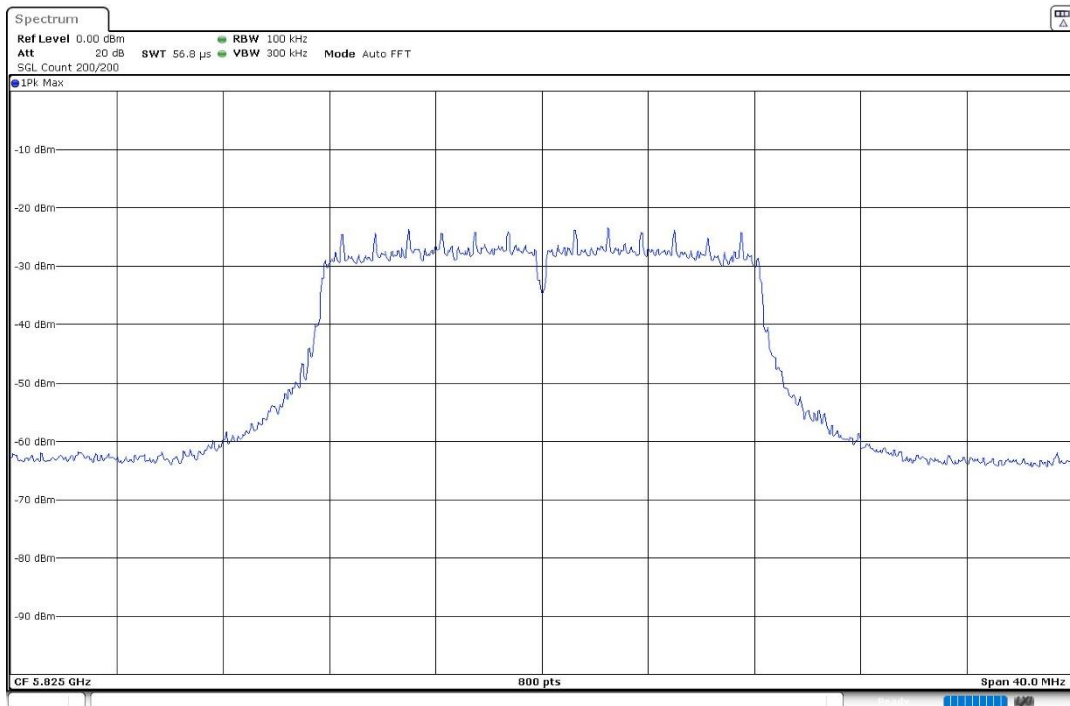
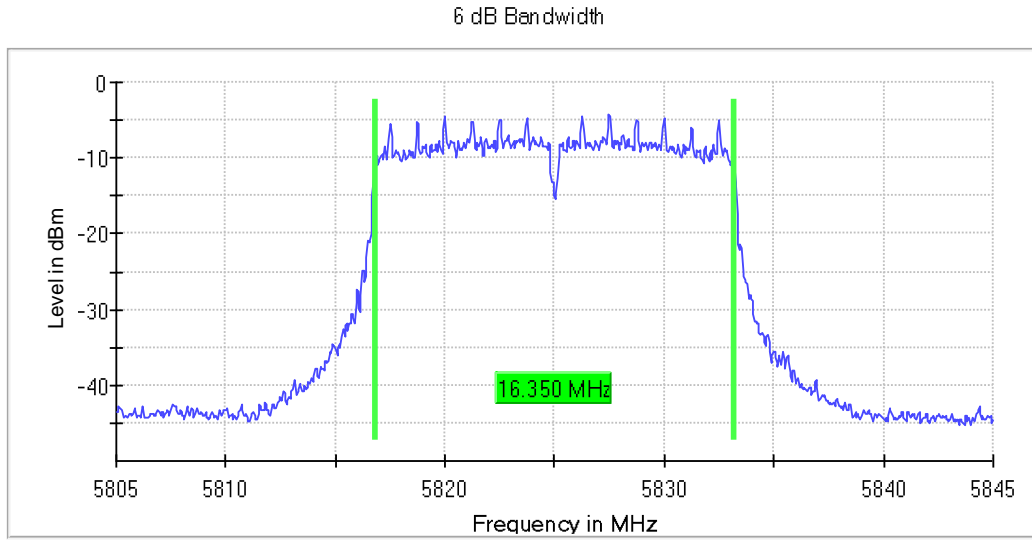
- Low Channel 149 (5745 MHz):



- Middle Channel 157 (5785 MHz):



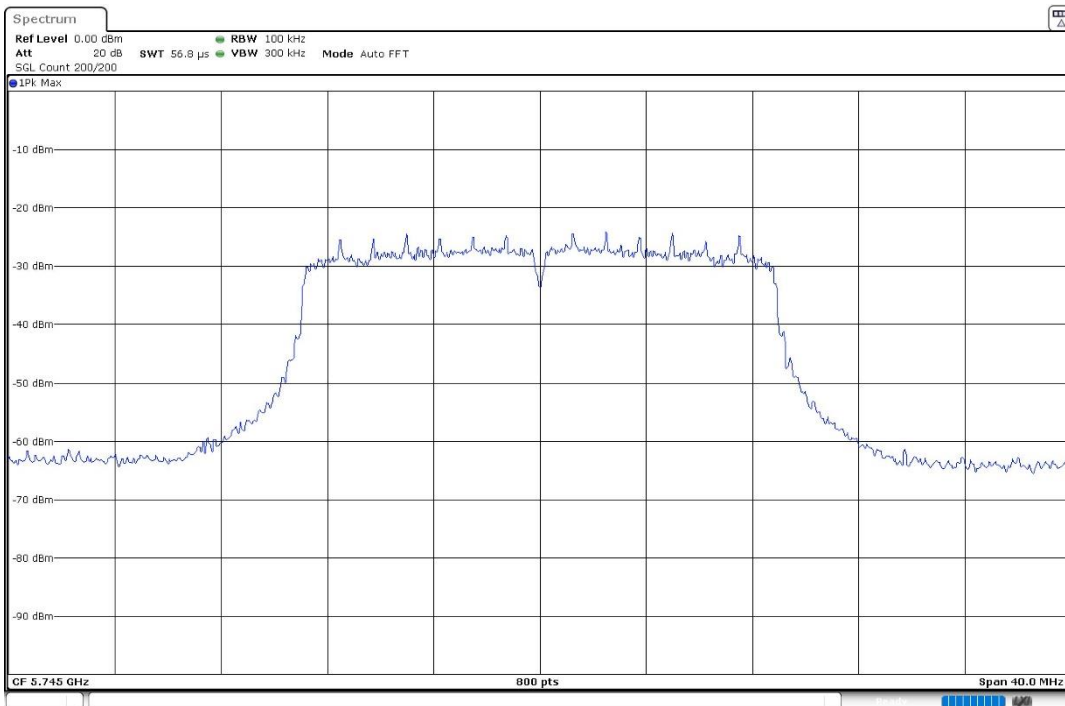
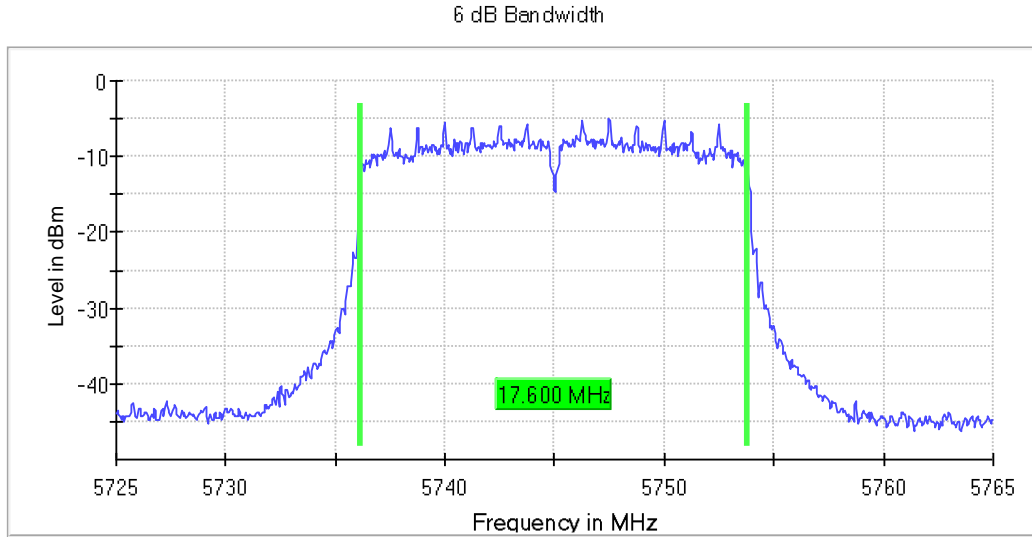
- High Channel 165 (5825 MHz):



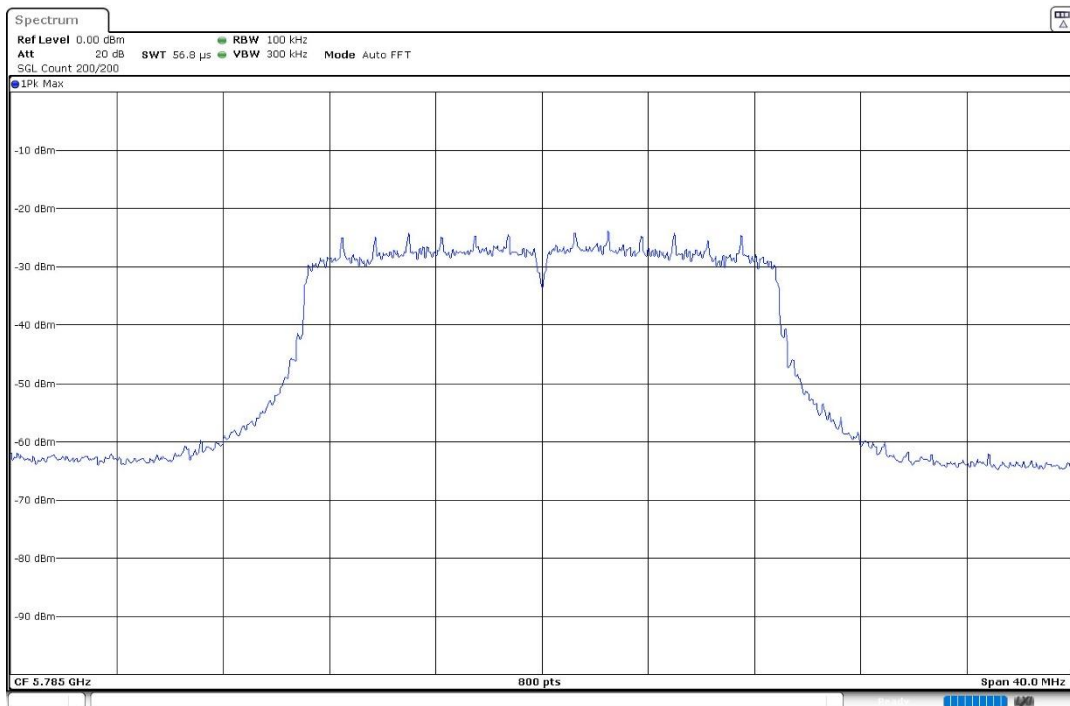
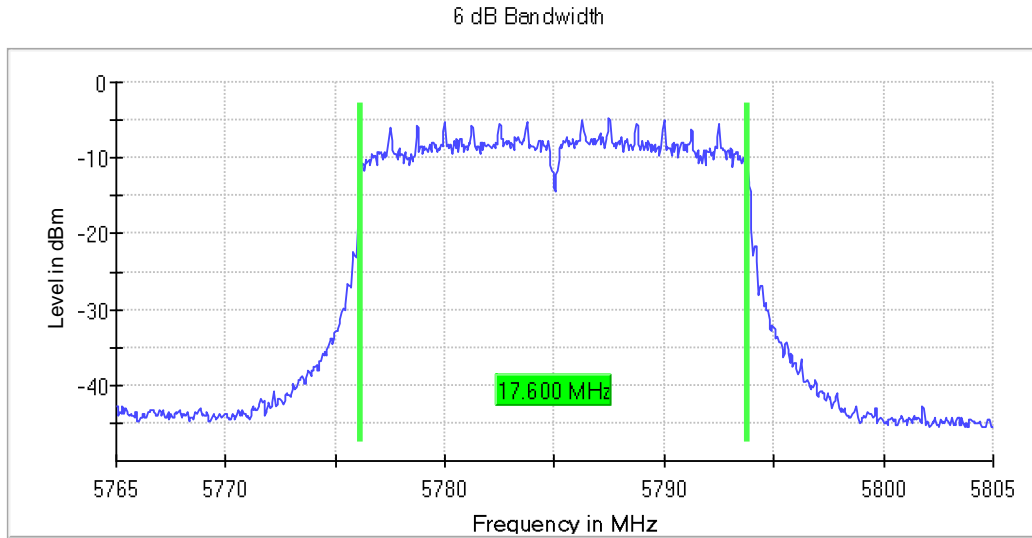
SISO 802.11 n20 (HT20):

U-NII-3 (5725-5850 MHz)

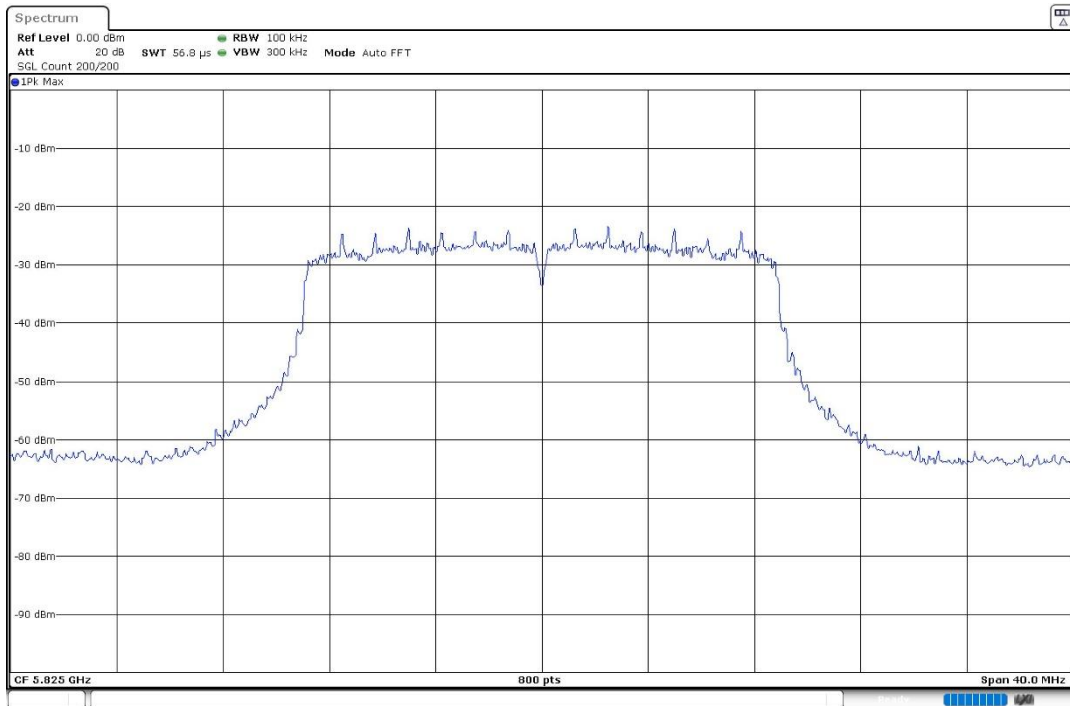
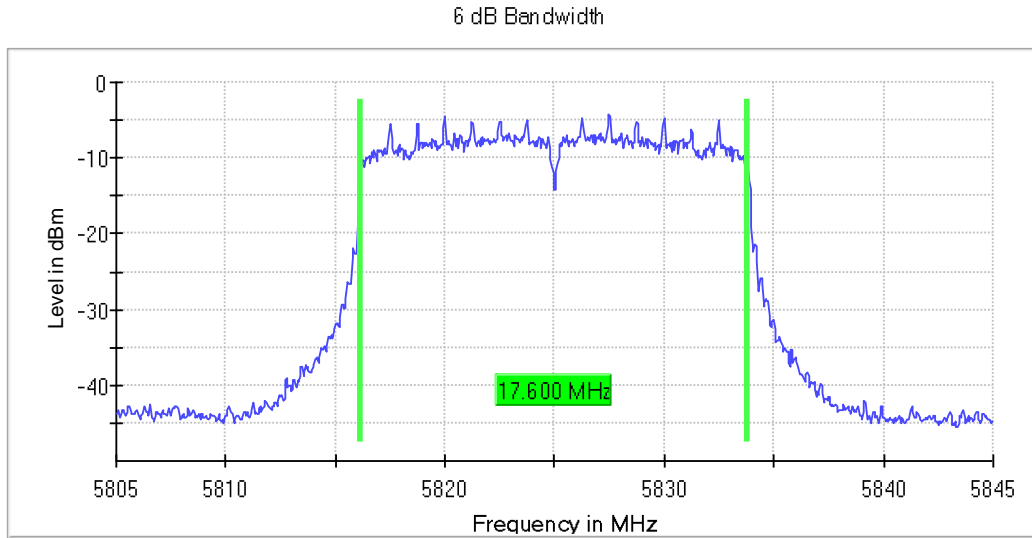
- Low Channel 149 (5745 MHz):



- Middle Channel 157 (5785 MHz):



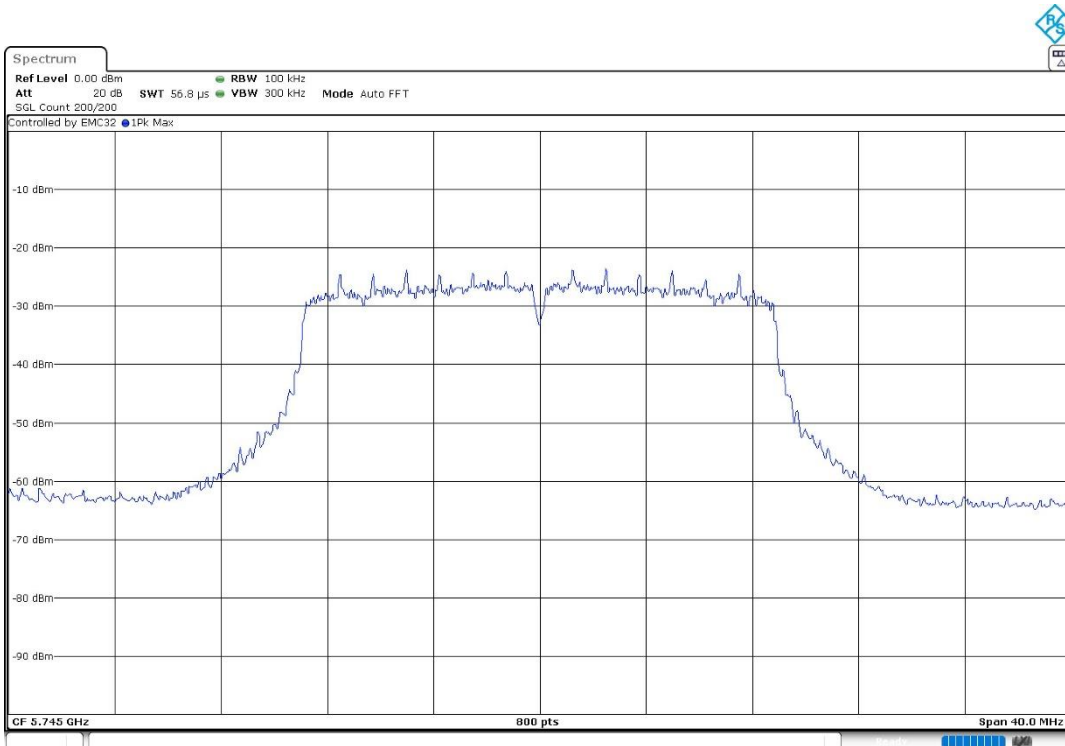
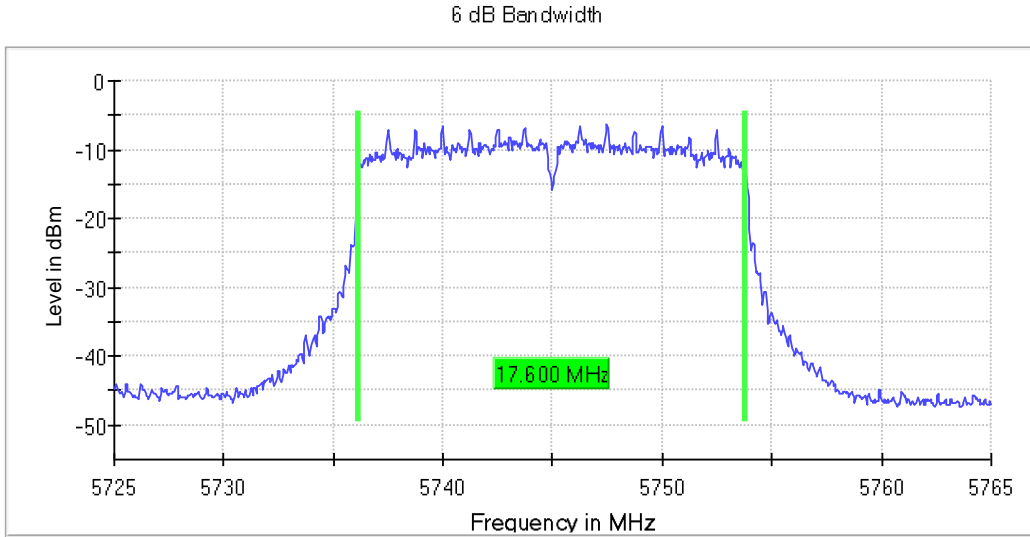
- High Channel 165 (5825 MHz):



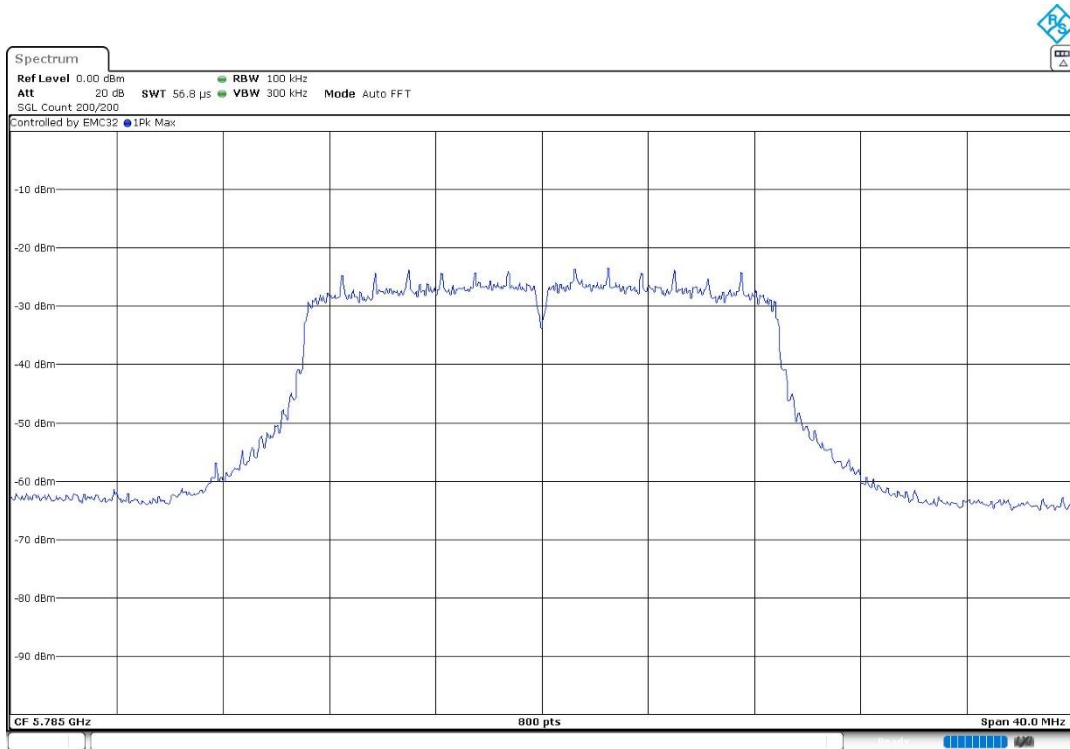
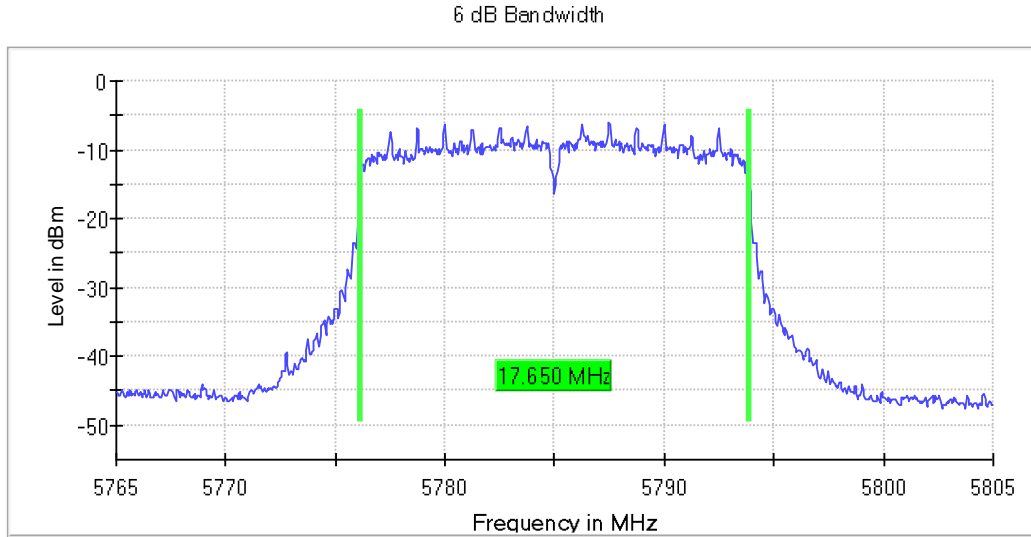
SISO 802.11 ac20 (VHT20):

U-NII-3 (5725-5850 MHz)

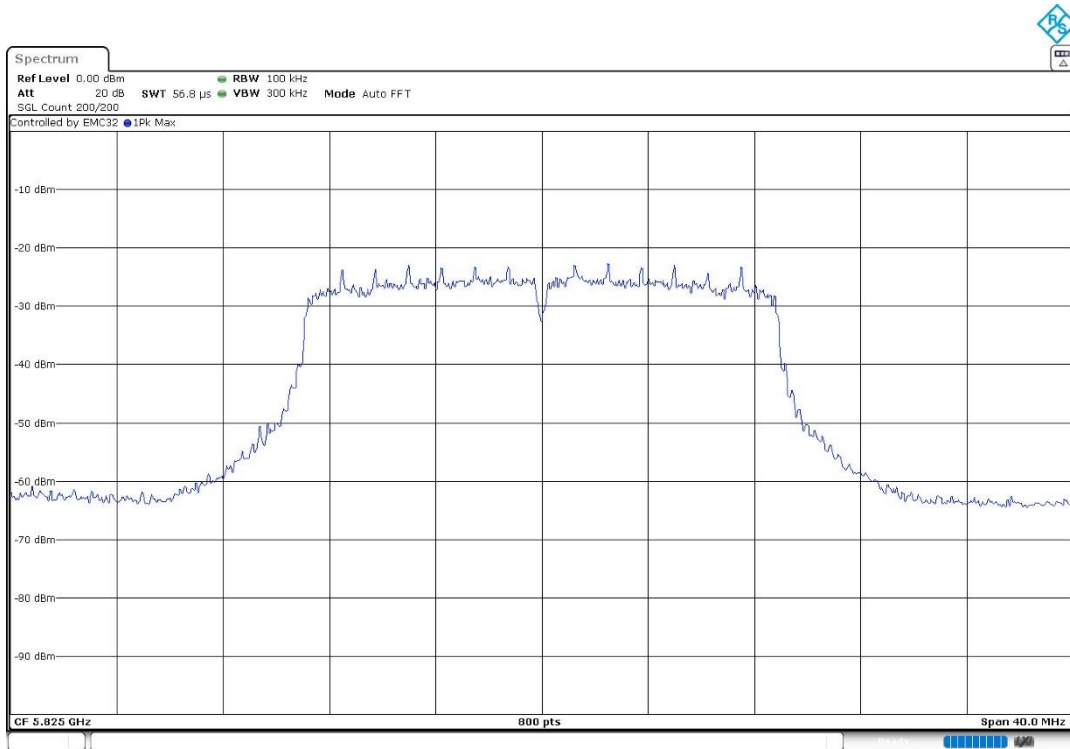
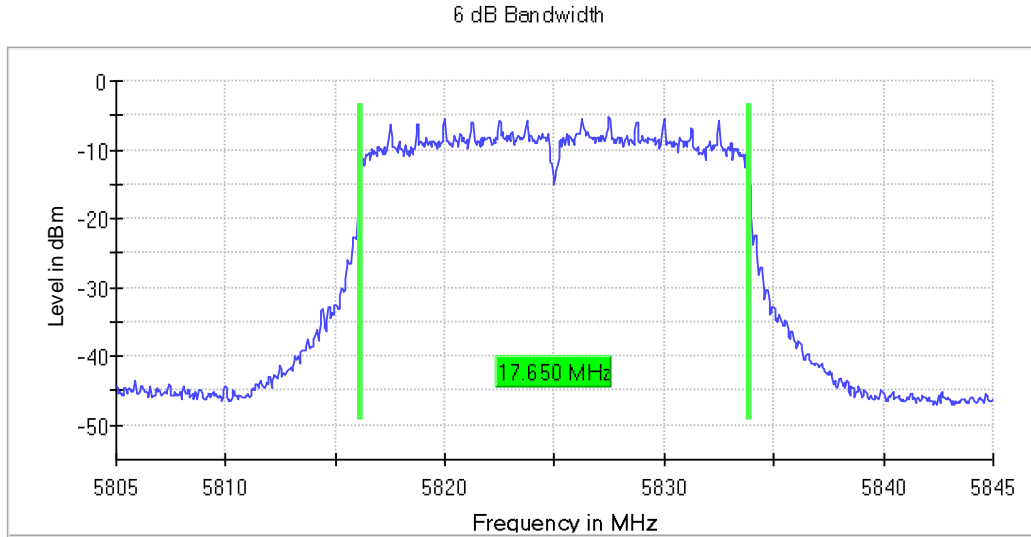
- Low Channel 149 (5745 MHz):



- Middle Channel 157 (5785 MHz):



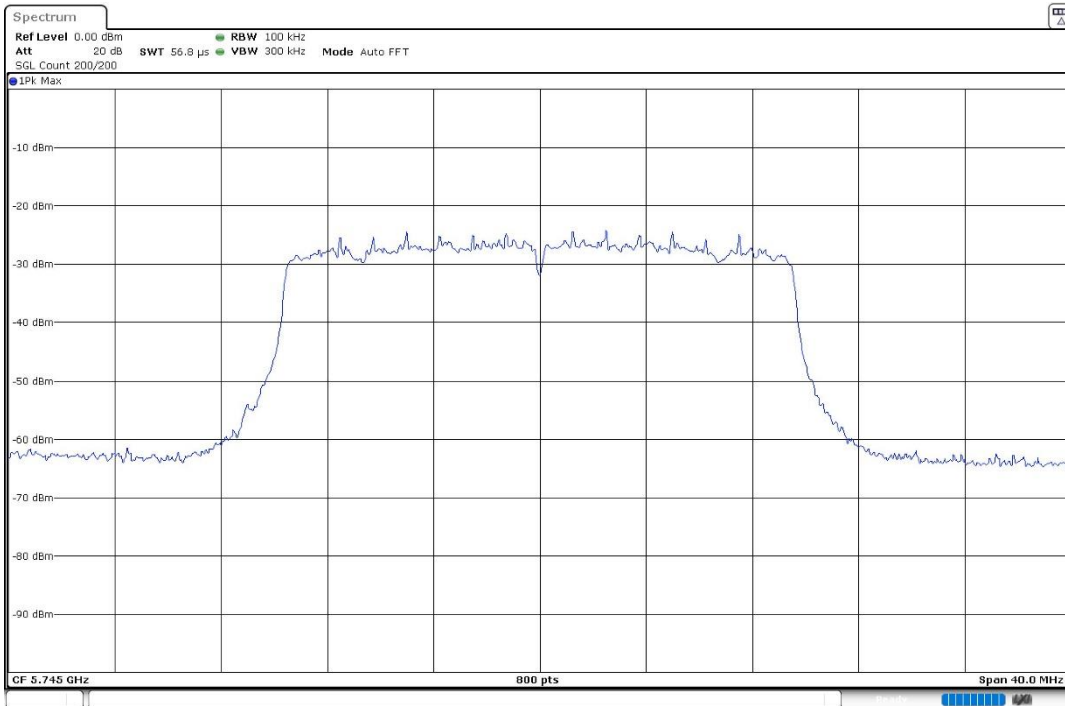
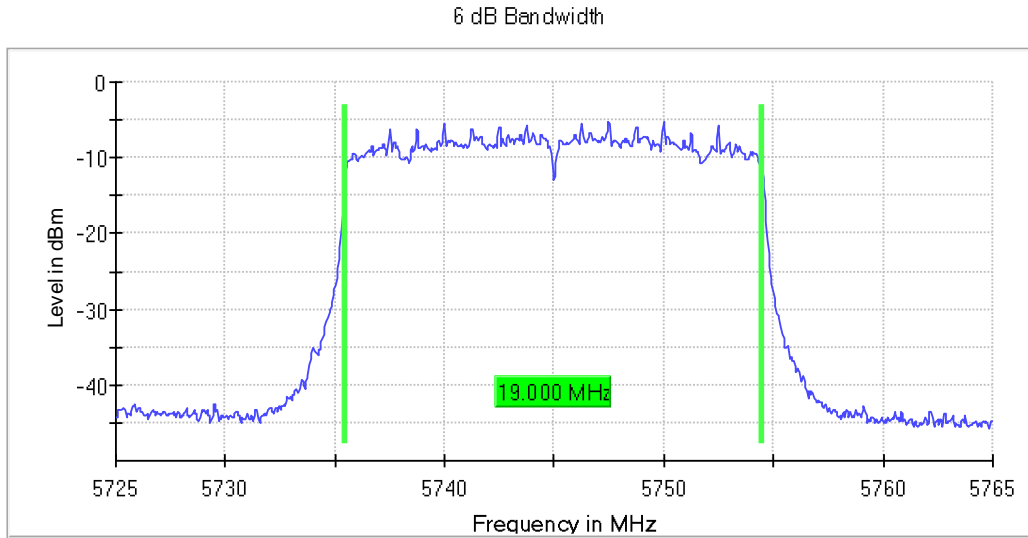
- High Channel 165 (5825 MHz):



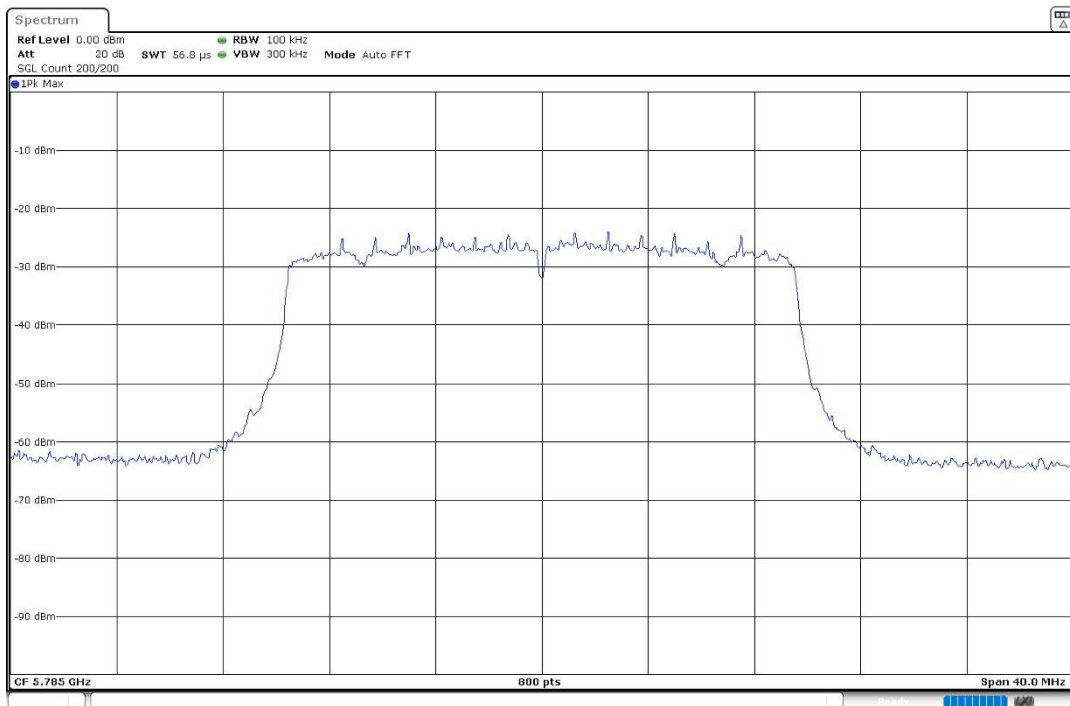
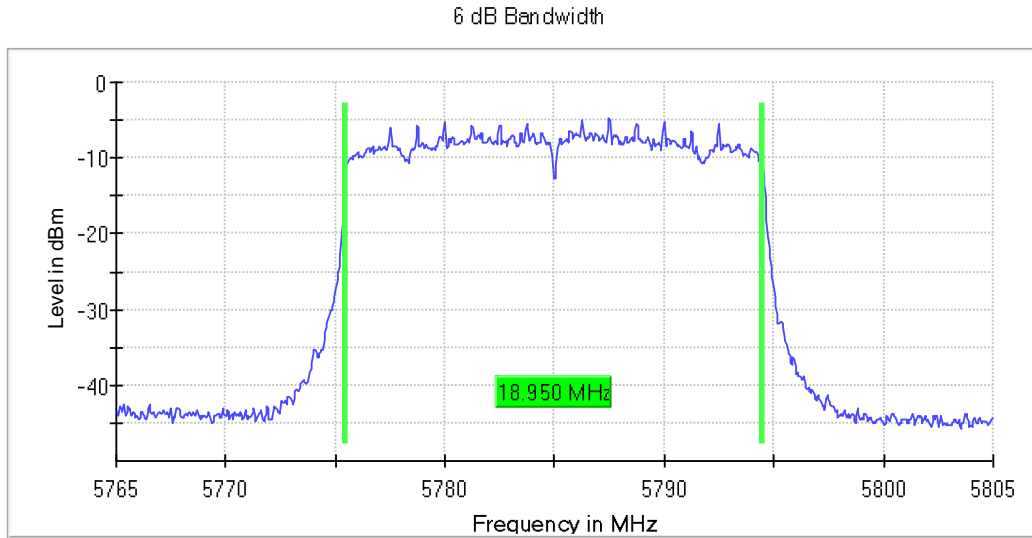
SISO 802.11 ax20 (HE20) – SU Full channel allocation:

U-NII-3 (5725-5850 MHz)

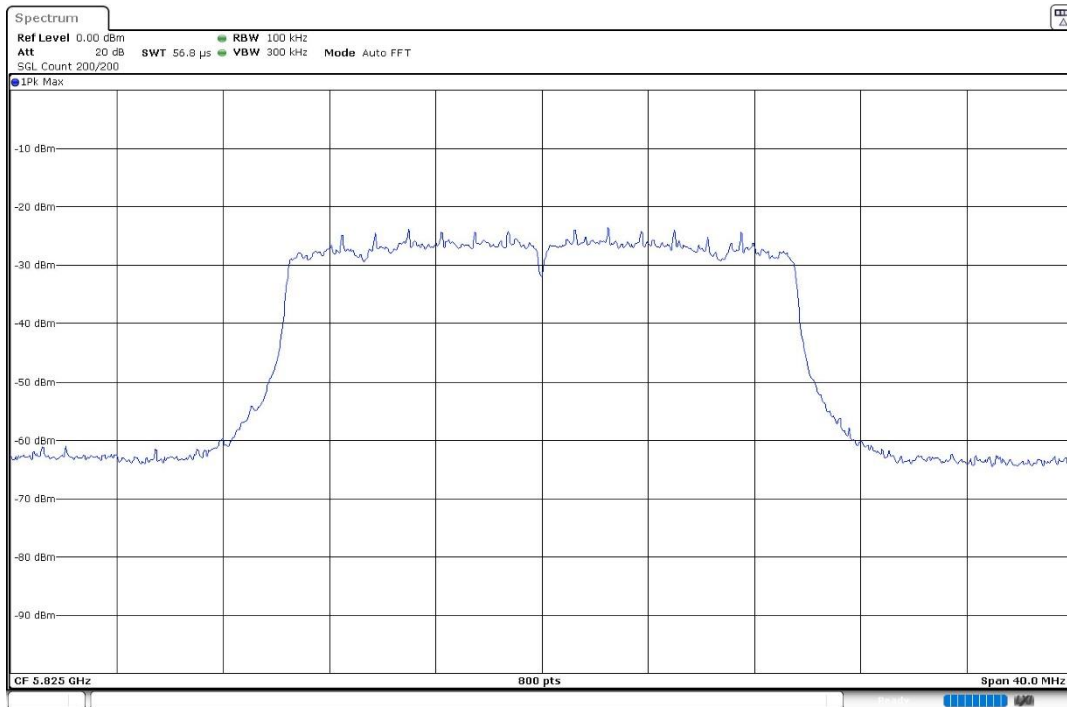
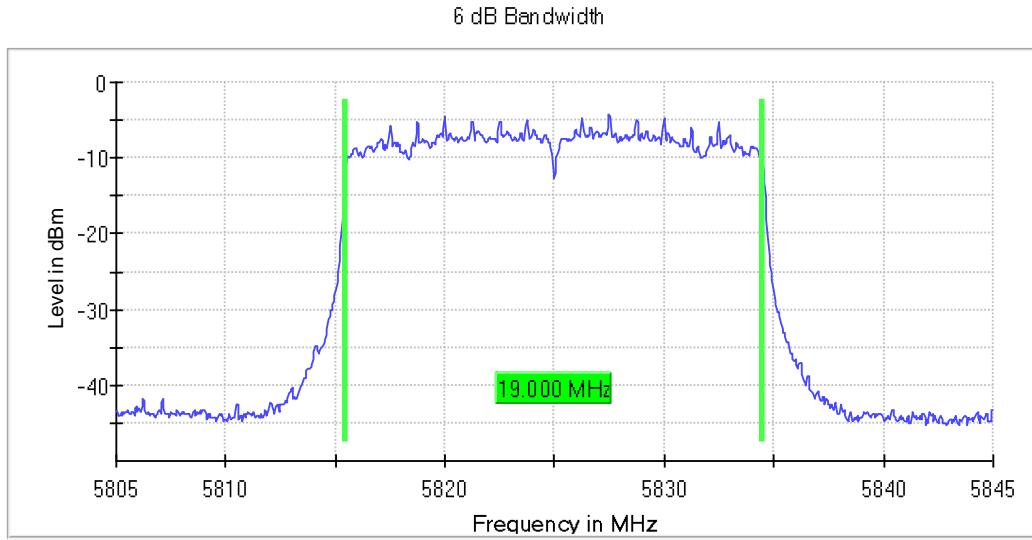
- Low Channel 149 (5745 MHz):



- Middle Channel 157 (5785 MHz):



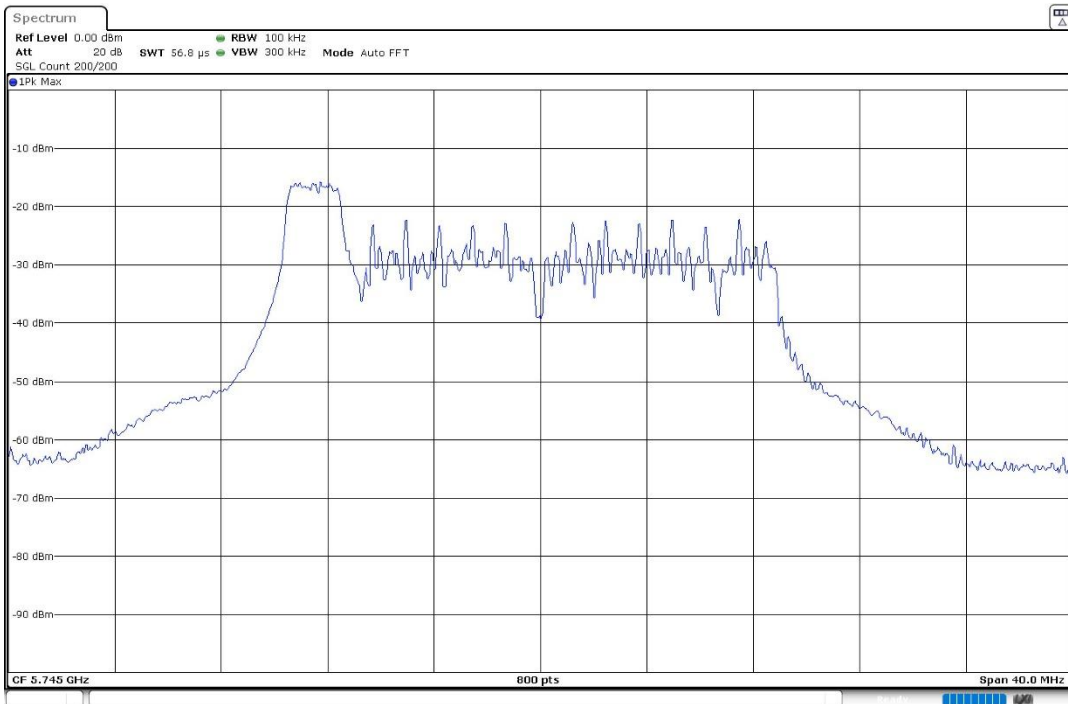
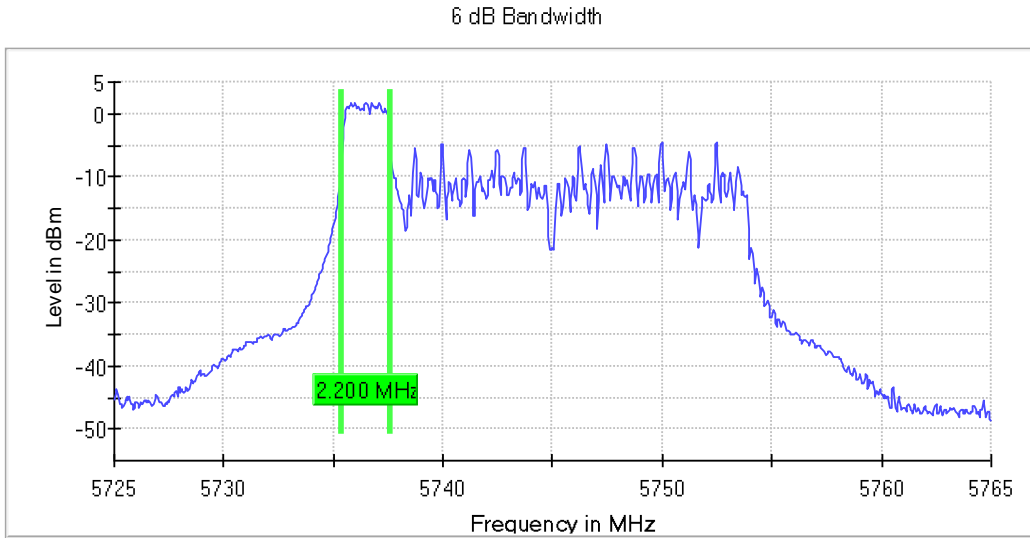
- High Channel 165 (5825 MHz):



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

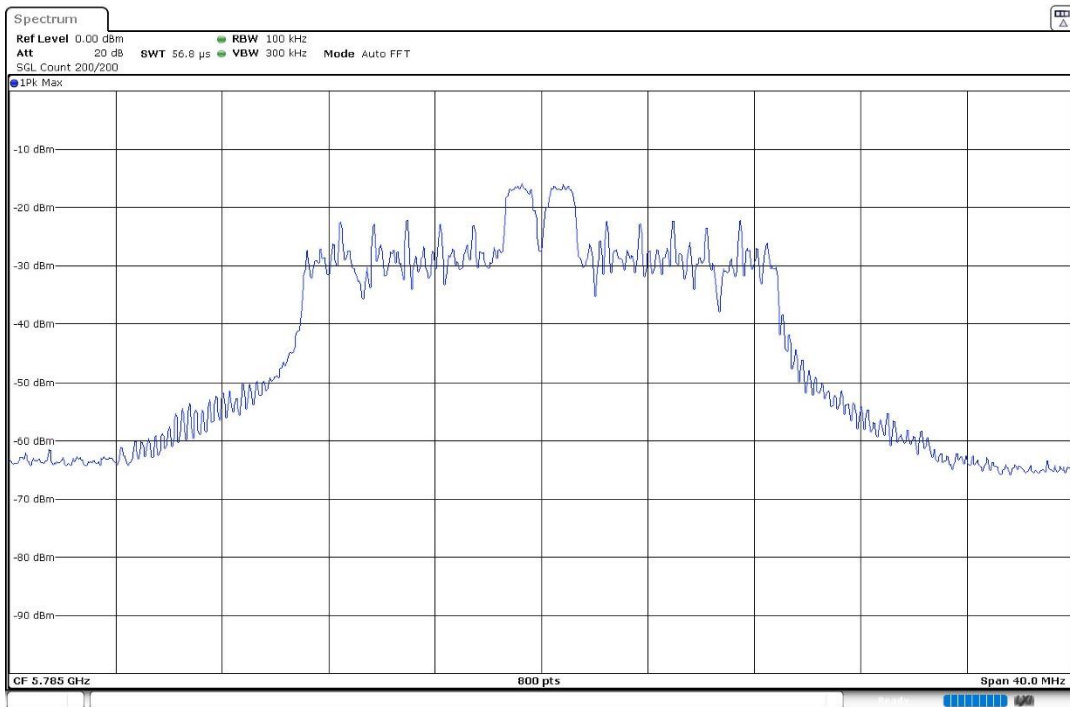
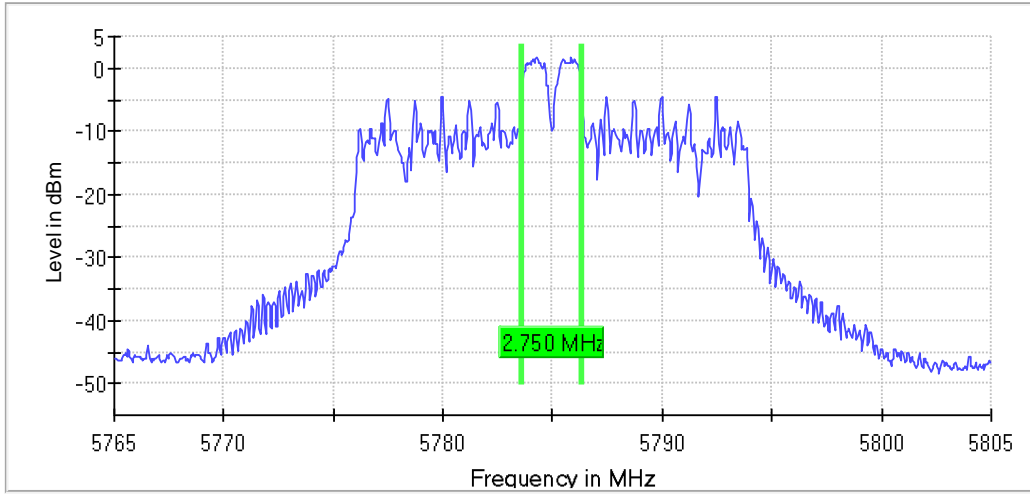
U-NII-3 (5725-5850 MHz)

- Low Channel 149 (5745 MHz) / RU 26 Offset 0:

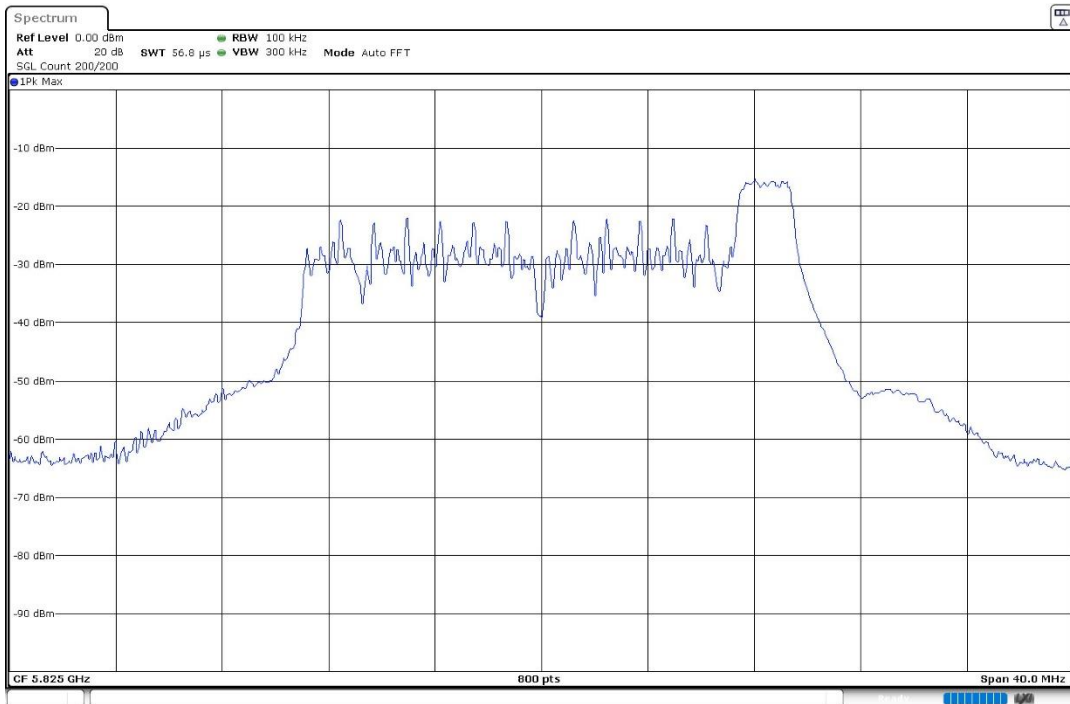
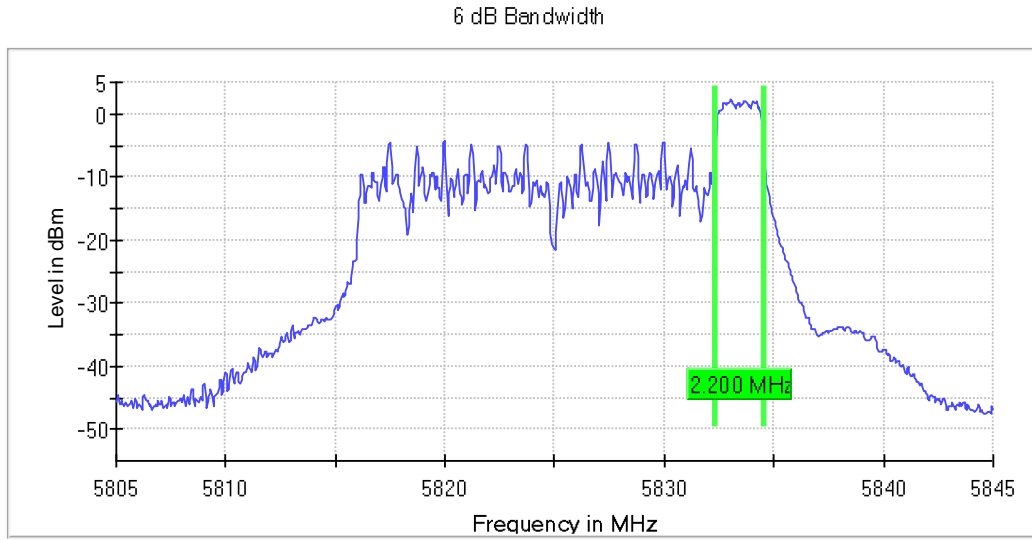


- Middle Channel 157 (5785 MHz):

6 dB Bandwidth



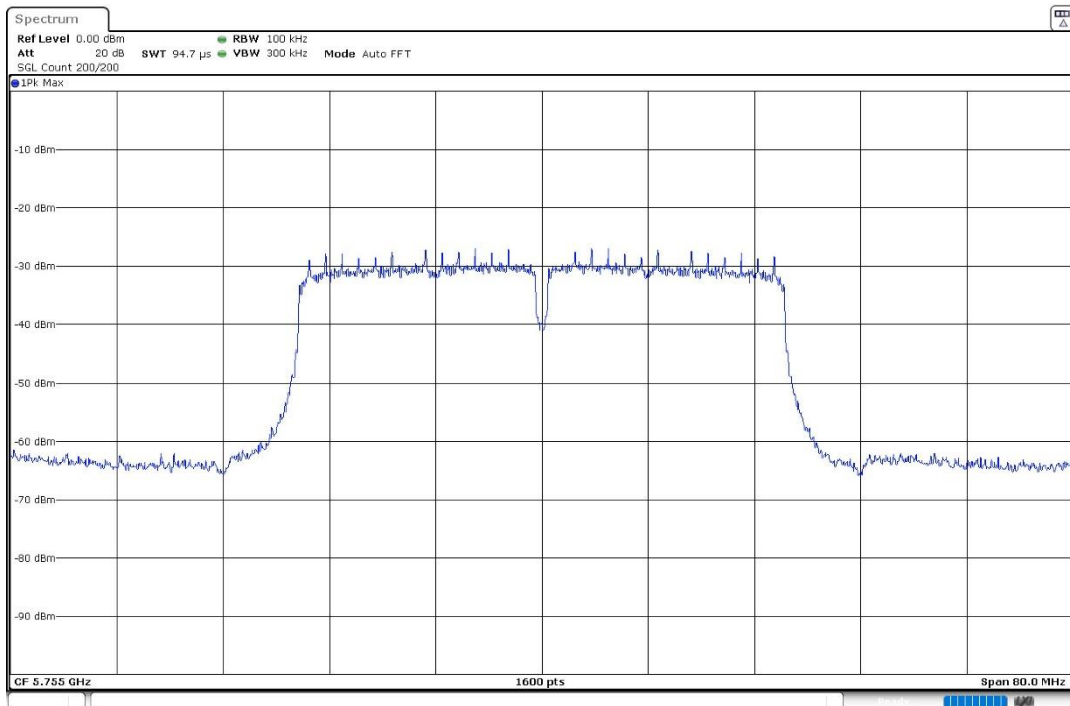
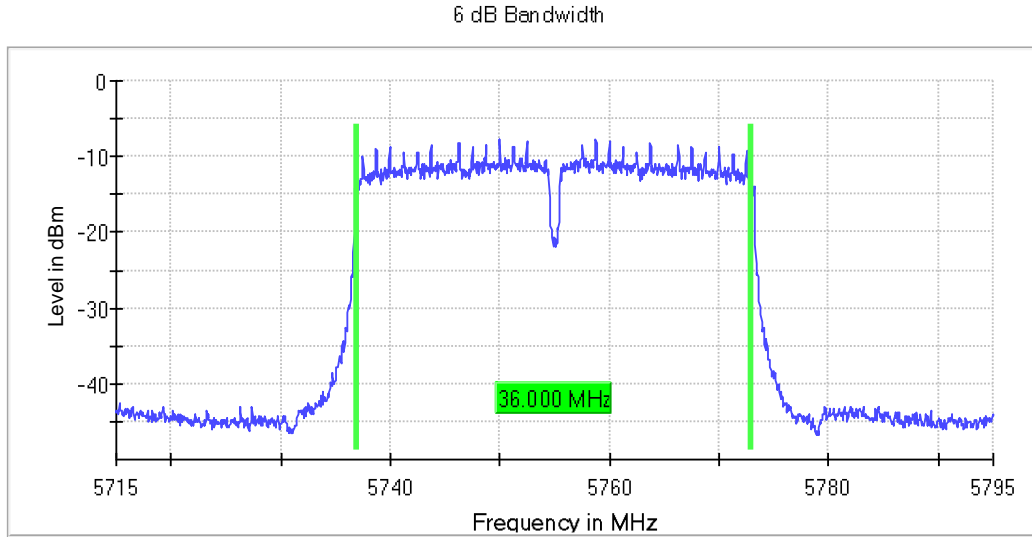
- High Channel 165 (5825 MHz):



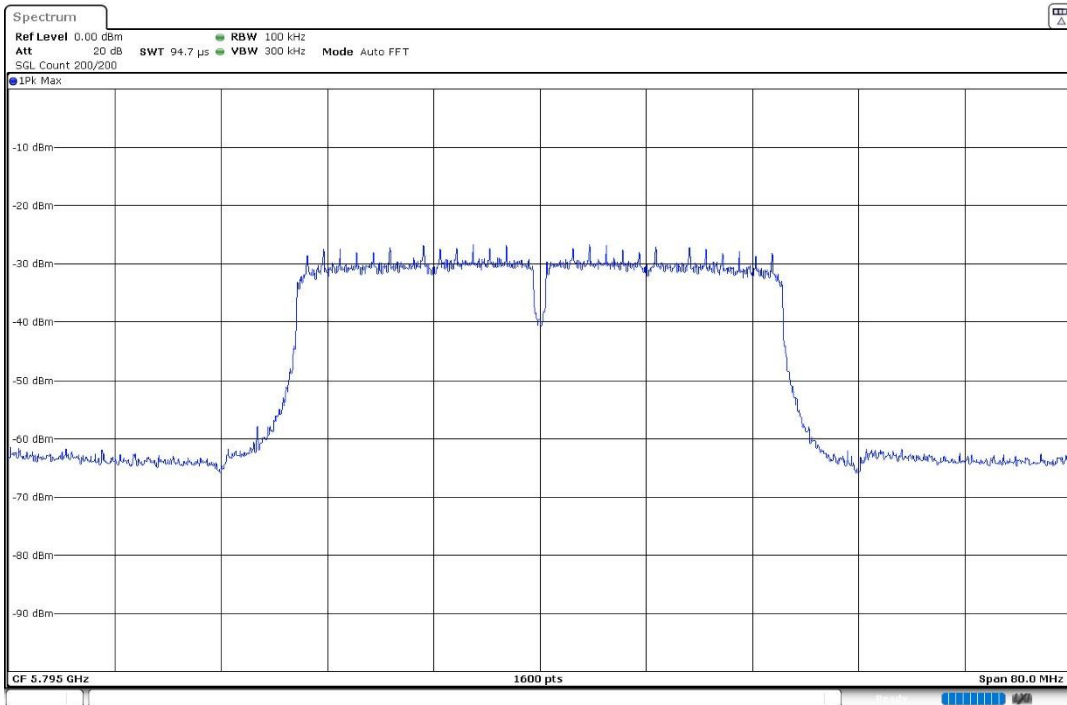
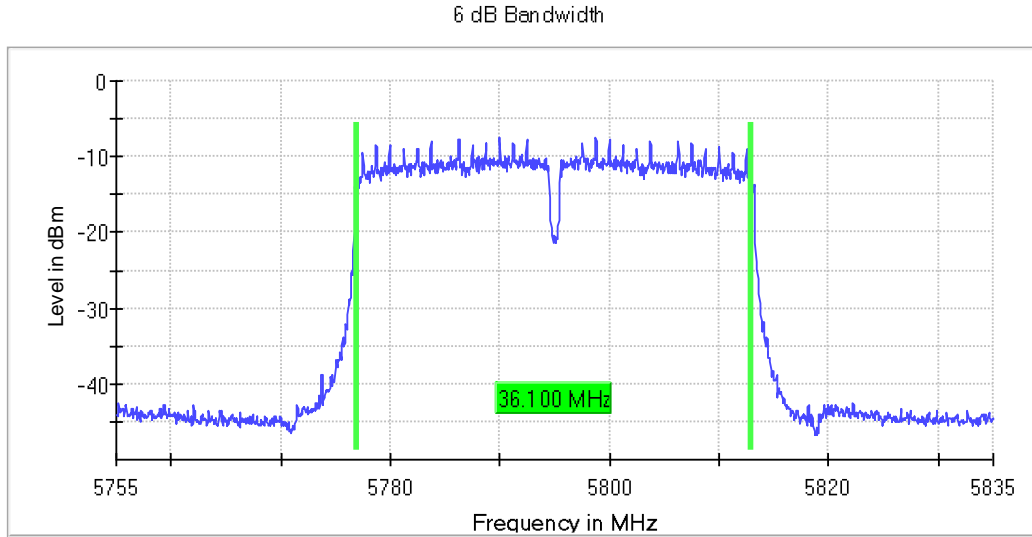
SISO 802.11 n40 (HT40):

U-NII-3 (5725-5850 MHz)

- Low Channel 151 (5755 MHz):



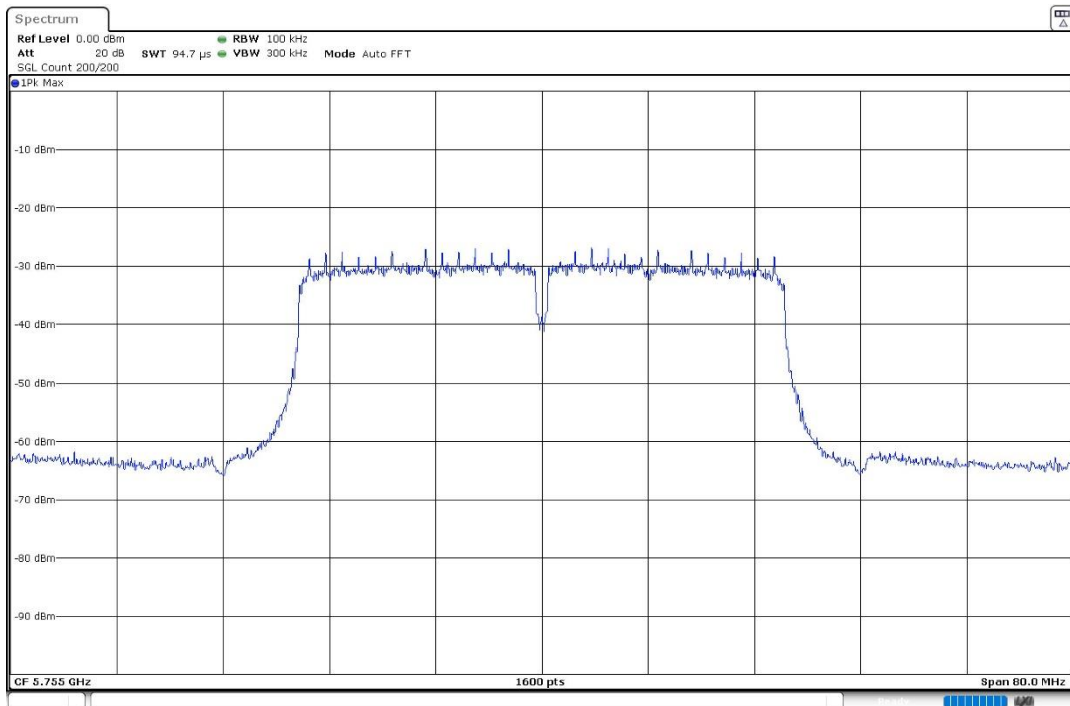
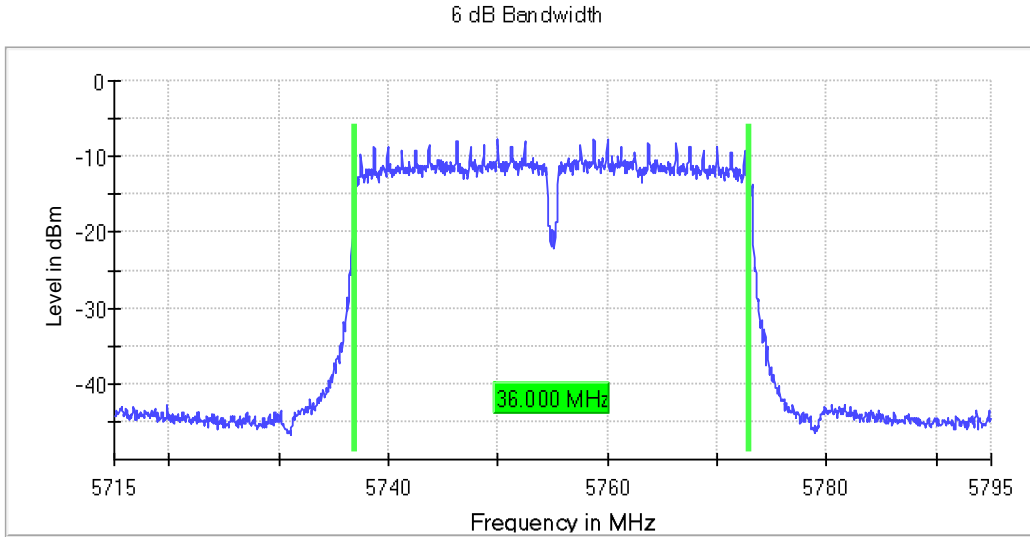
- High Channel 159 (5795 MHz):



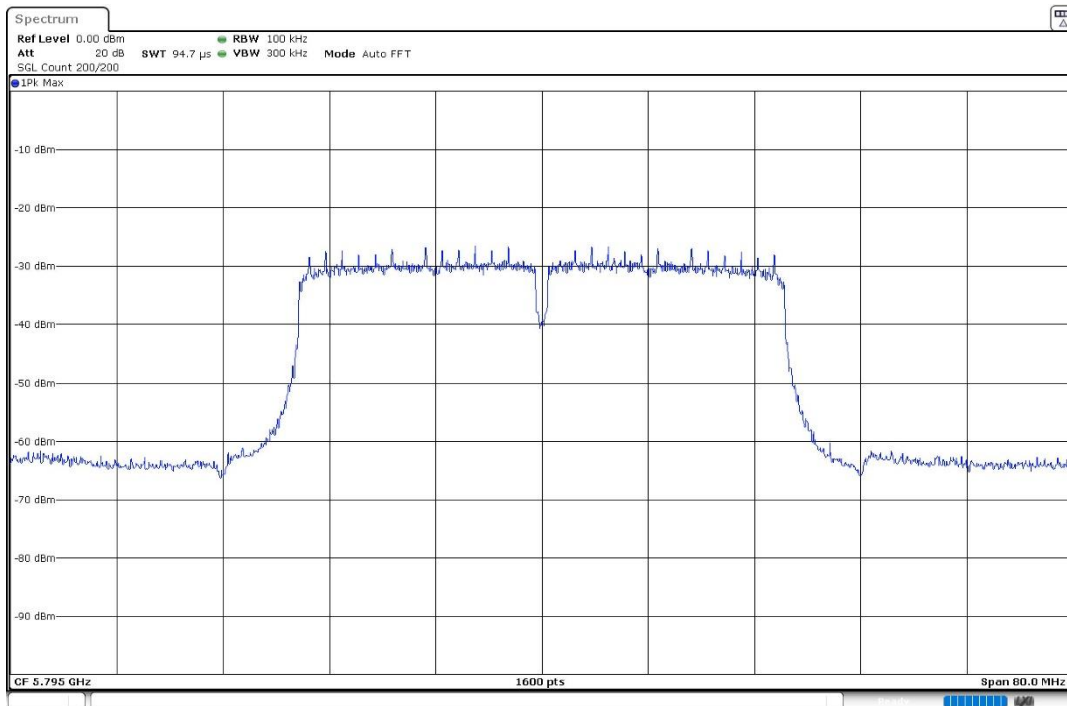
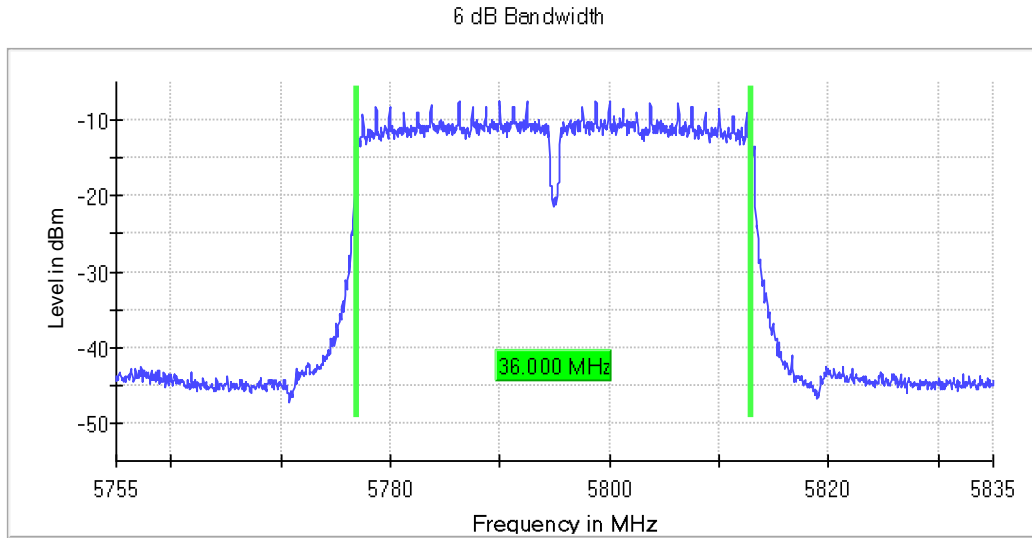
SISO 802.11 ac40 (VHT40):

U-NII-3 (5725-5850 MHz)

- Low Channel 151 (5755 MHz):



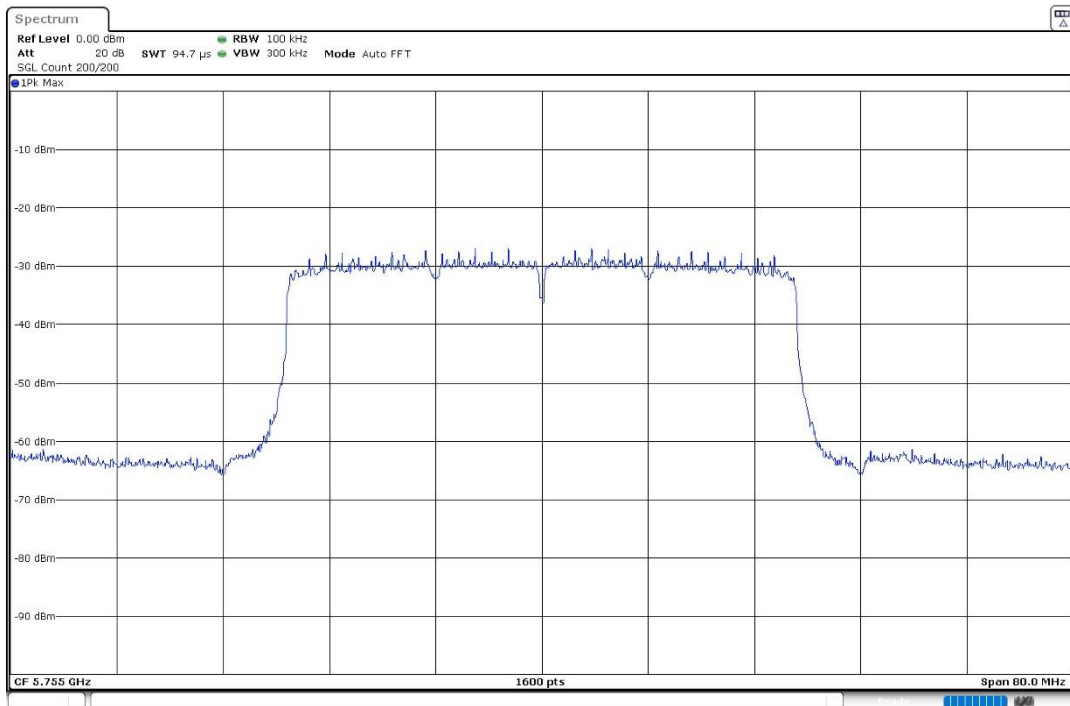
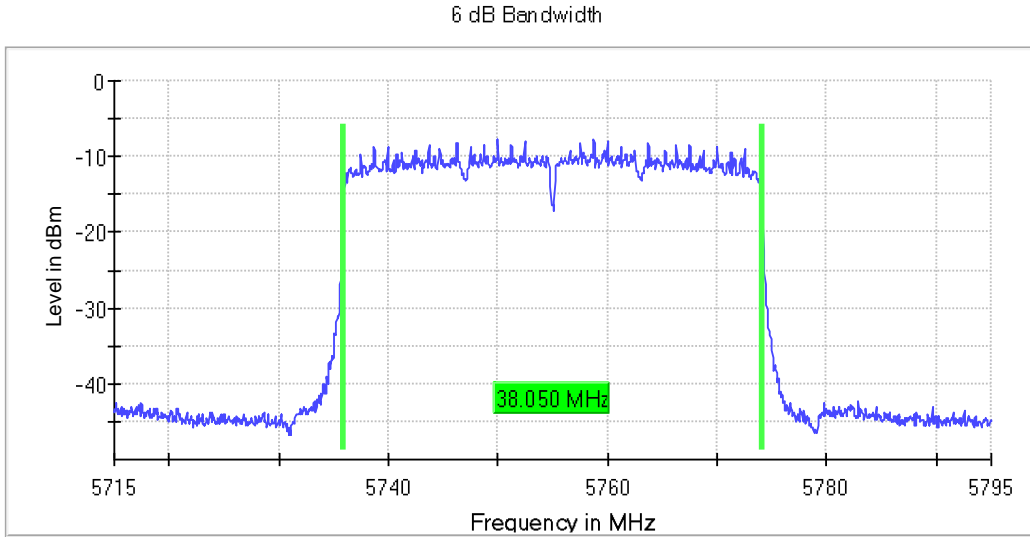
- High Channel 159 (5795 MHz):



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

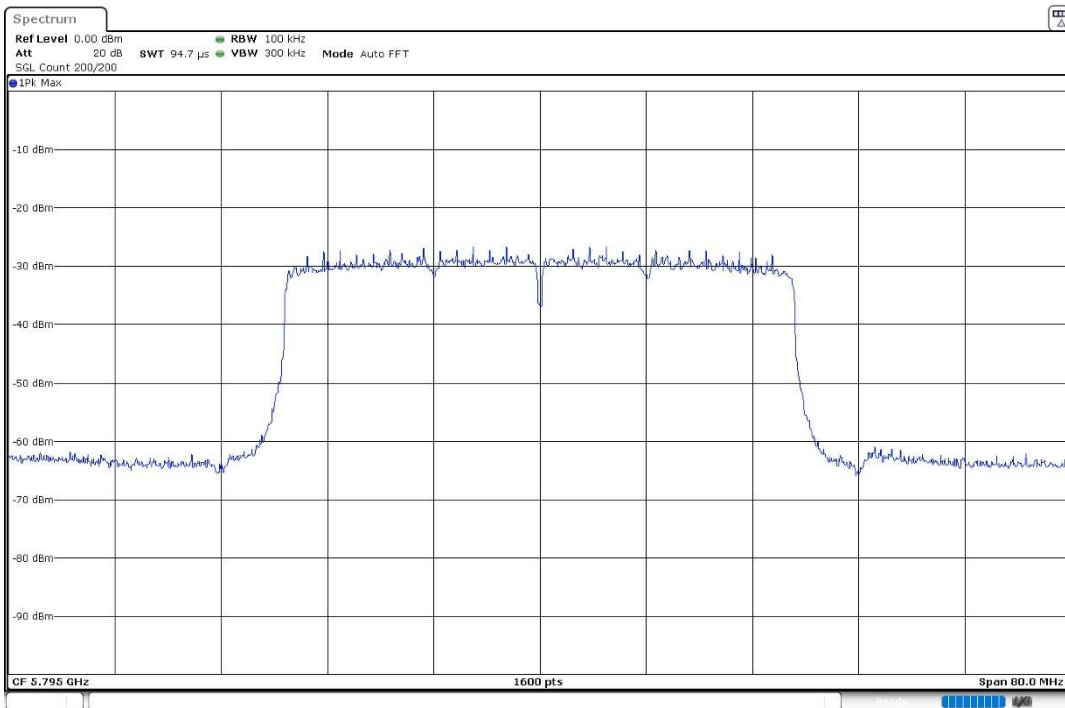
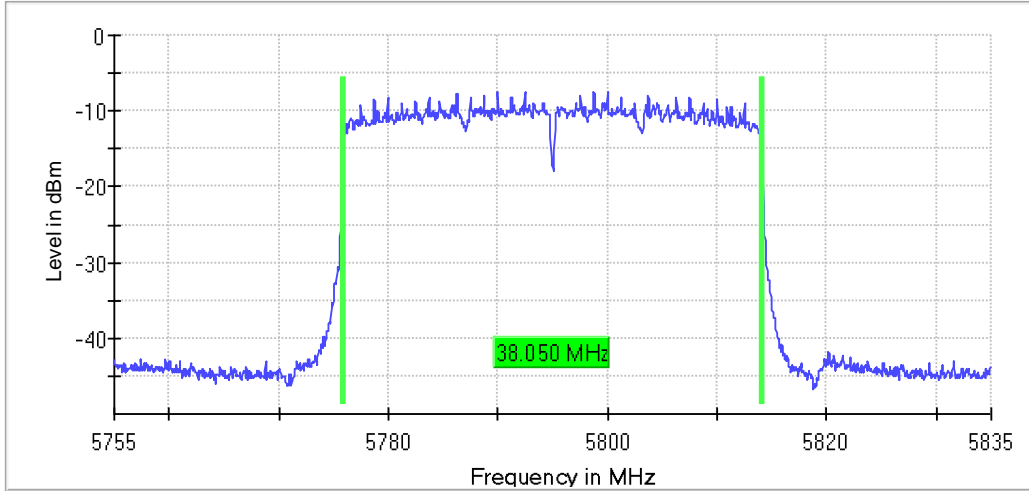
U-NII-3 (5725-5850 MHz)

- Low Channel 151 (5755 MHz):



- High Channel 159 (5795 MHz):

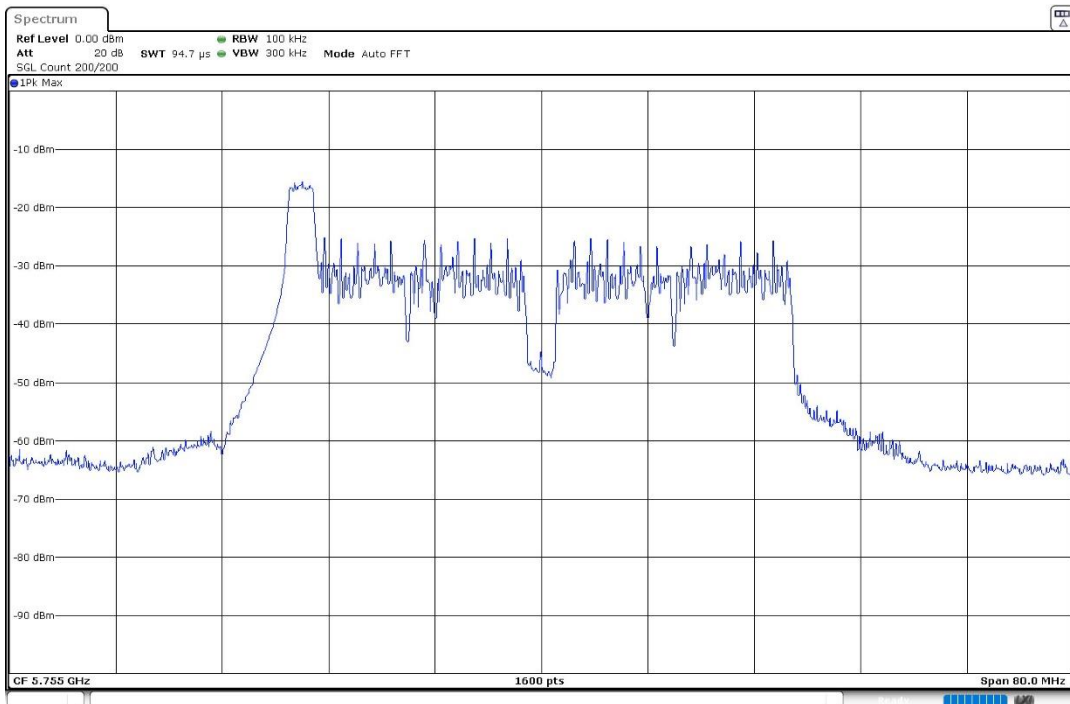
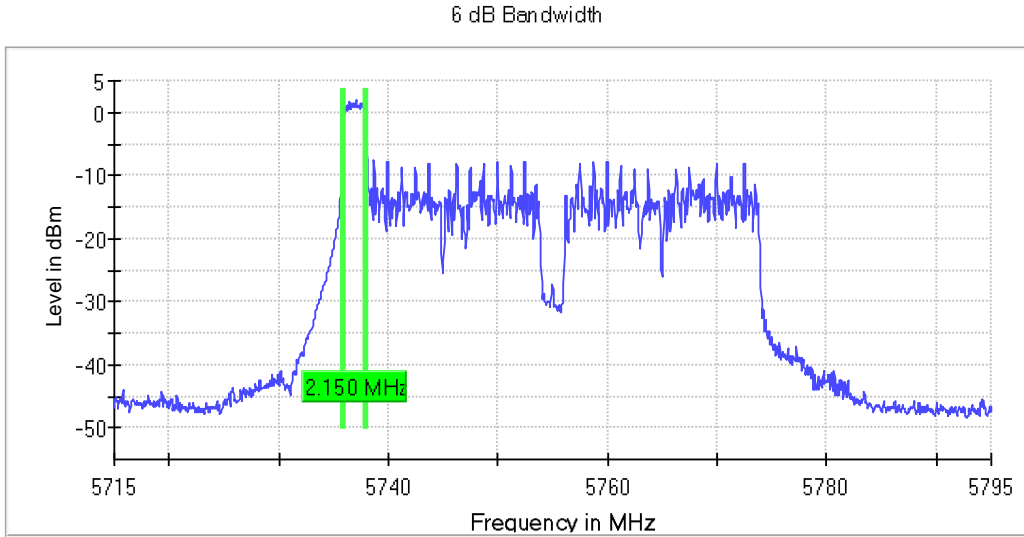
6 dB Bandwidth



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

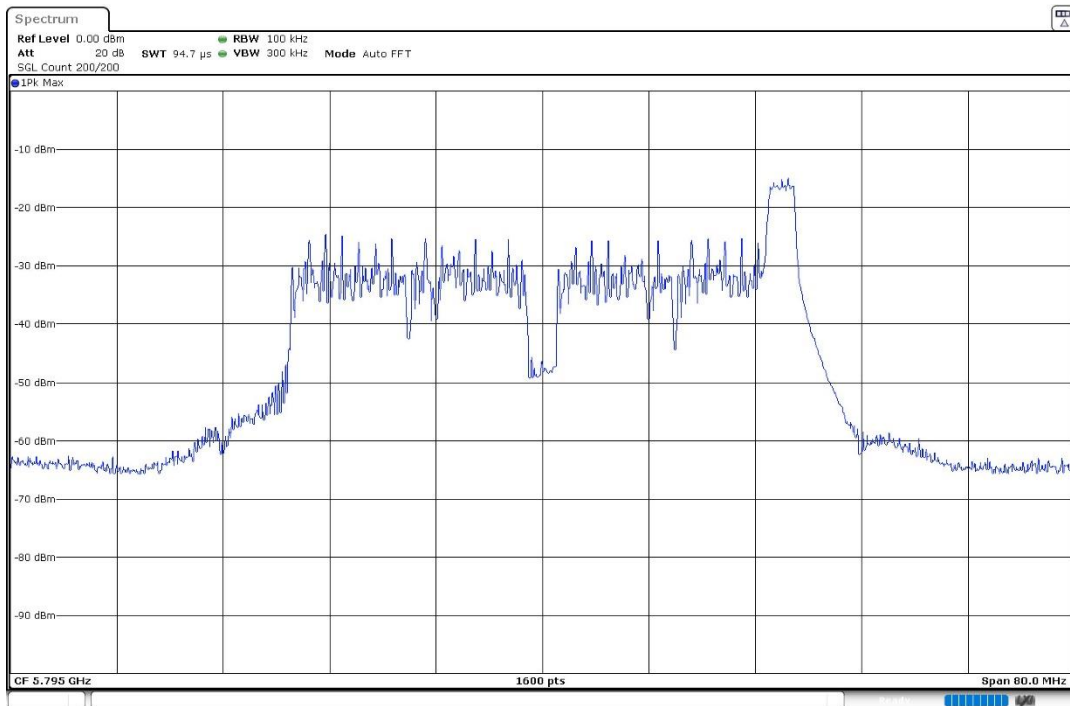
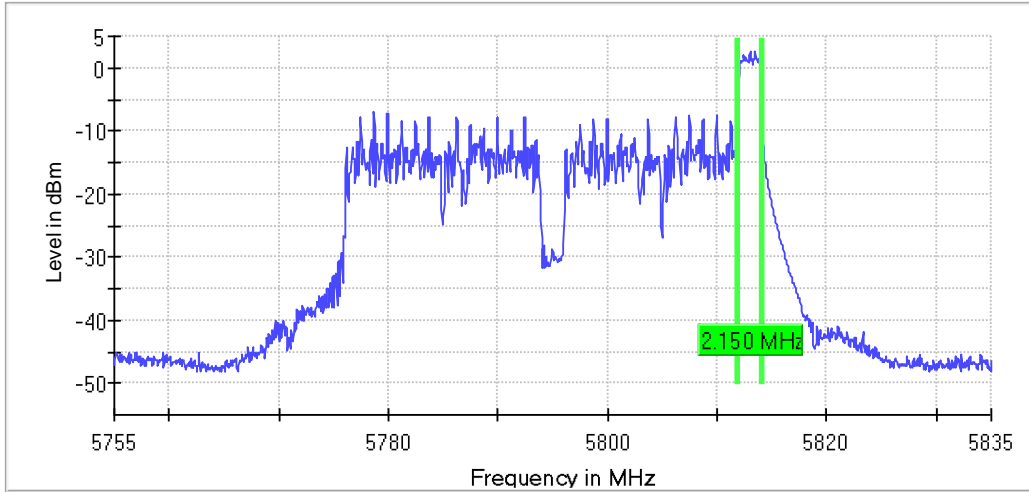
U-NII-3 (5725-5850 MHz)

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



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

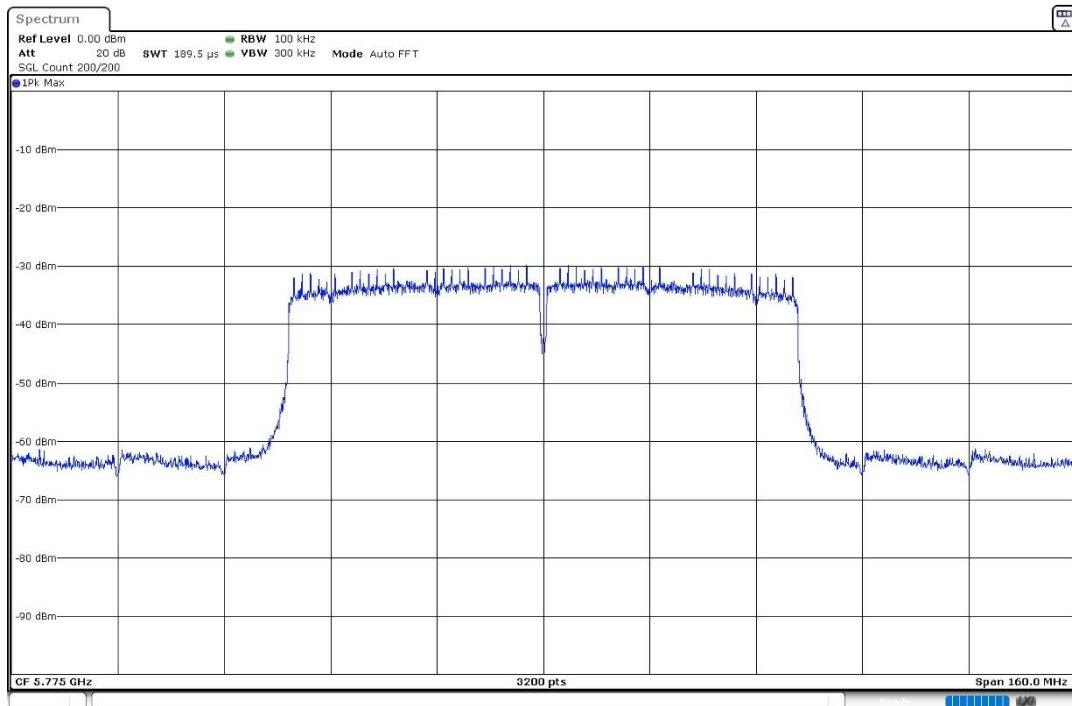
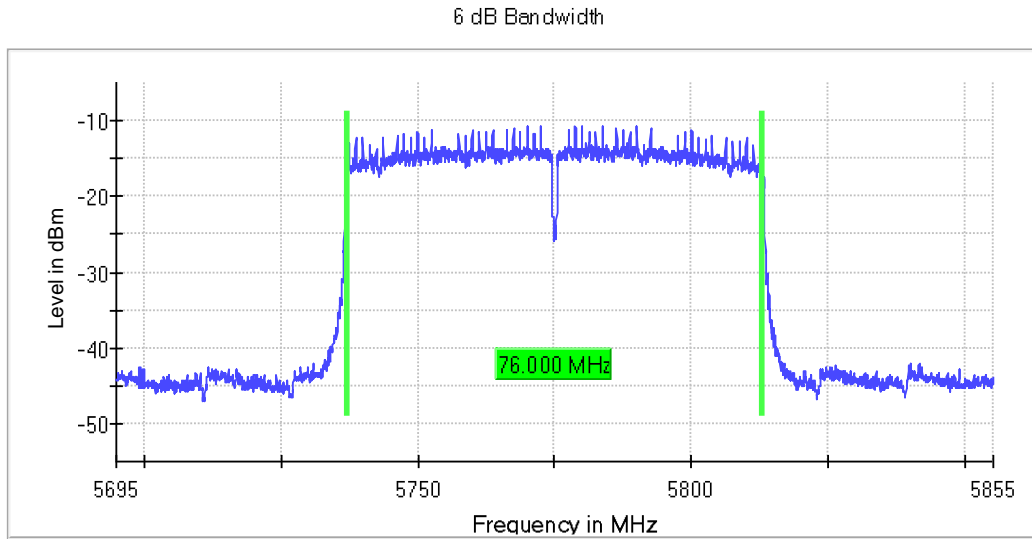
6 dB Bandwidth



SISO 802.11 ac80 (VHT80):

U-NII-3 (5725-5850 MHz)

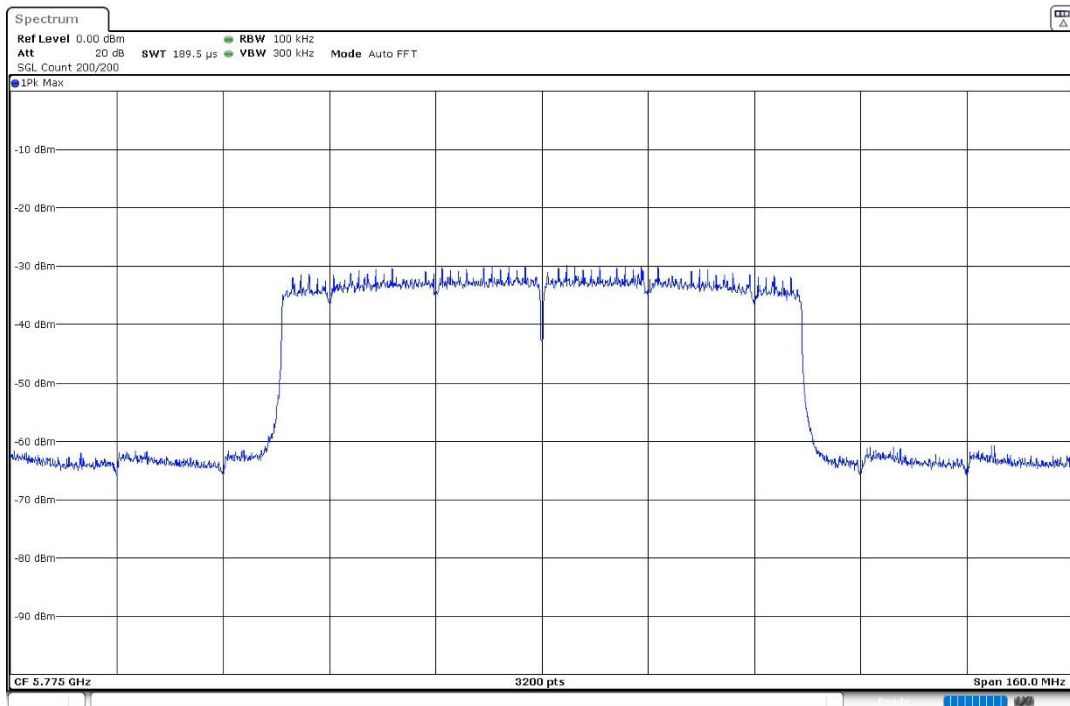
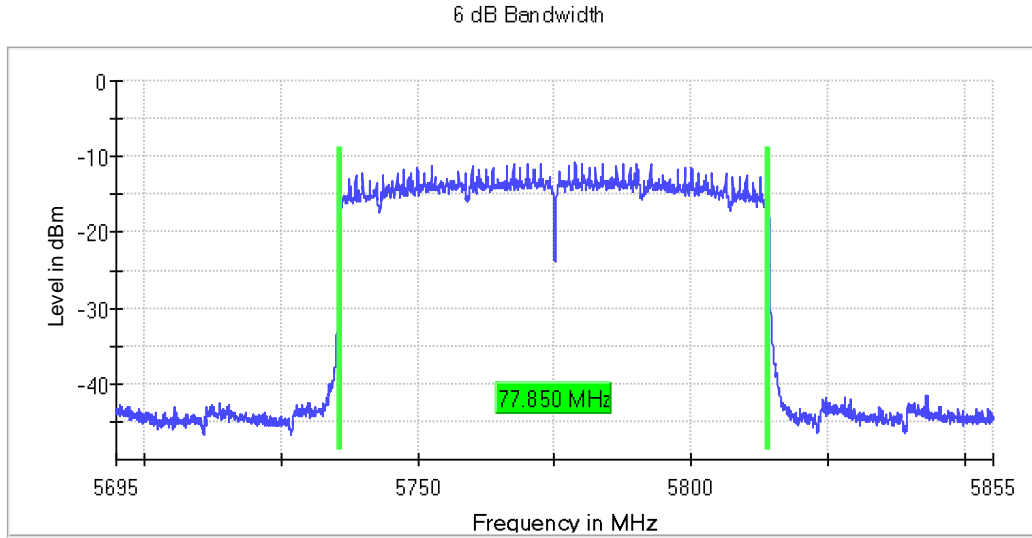
- Single Channel 155 (5775 MHz):



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

U-NII-3 (5725-5850 MHz)

- Single Channel 155 (5775 MHz):



MIMO worst case

MIMO 802.11 a20:

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	15.800000	15.800000	15.800000
Measurement uncertainty (kHz)	< ±23.02		

MIMO 802.11 n20 (HT20):

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	16.400000	16.400000	16.400000
Measurement uncertainty (kHz)	< ±23.02		

MIMO 802.11 ac20 (VHT20):

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	17.500000	17.500000	17.500000
Measurement uncertainty (kHz)	< ±23.02		

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

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	18.850000	18.950000	18.850000
Measurement uncertainty (kHz)	< ±23.02		

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

The next RU combinations were tested as worst cases:

Low Channel: RU26 Offset 0
 Middle Channel: RU26 Offset 4
 High Channel: RU26 Offset 8

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	2.200000	8.900000	2.200000
Measurement uncertainty (kHz)	< ±23.02		

MIMO 802.11 n40 (HT40):

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	35.700000	35.700000
Measurement uncertainty (kHz)	< ±53.05	

MIMO 802.11 ac40 (VHT40):

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	35.700000	35.900000
Measurement uncertainty (kHz)	< ±53.05	

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

U-NII-3 (5725-5850 MHz):

Channels	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	37.250000	37.550000
Measurement uncertainty (kHz)	< ±53.05	

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

U-NII-3 (5725-5850 MHz):

The next RU combinations were tested as worst cases:

Low Channel: RU26 Offset 0
 High Channel: RU26 Offset 17

Channels	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	2.150000	2.100000
Measurement uncertainty (kHz)	< ±53.05	

MIMO 802.11 ac80 (VHT80):

U-NII-3 (5725-5850 MHz):

Channel	Single Channel 155 (5775 MHz)
6 dB Bandwidth (MHz)	76.000000
Measurement uncertainty (kHz)	< ±103.10

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

U-NII-3 (5725-5850 MHz):

Channel	Single Channel 155 (5775 MHz)
6 dB Bandwidth (MHz)	77.100000
Measurement uncertainty (kHz)	< ±103.10

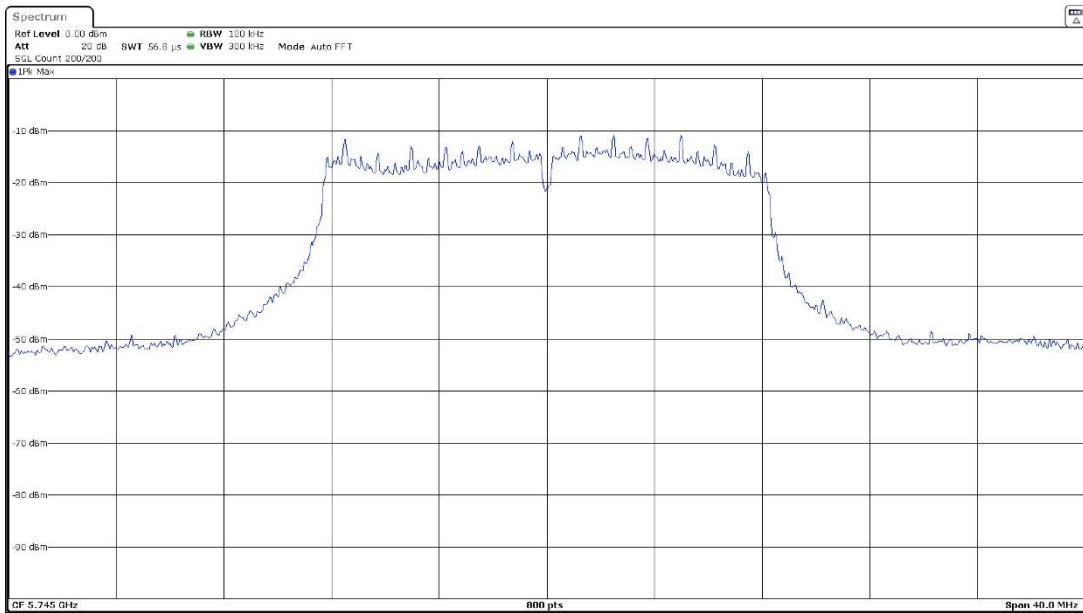
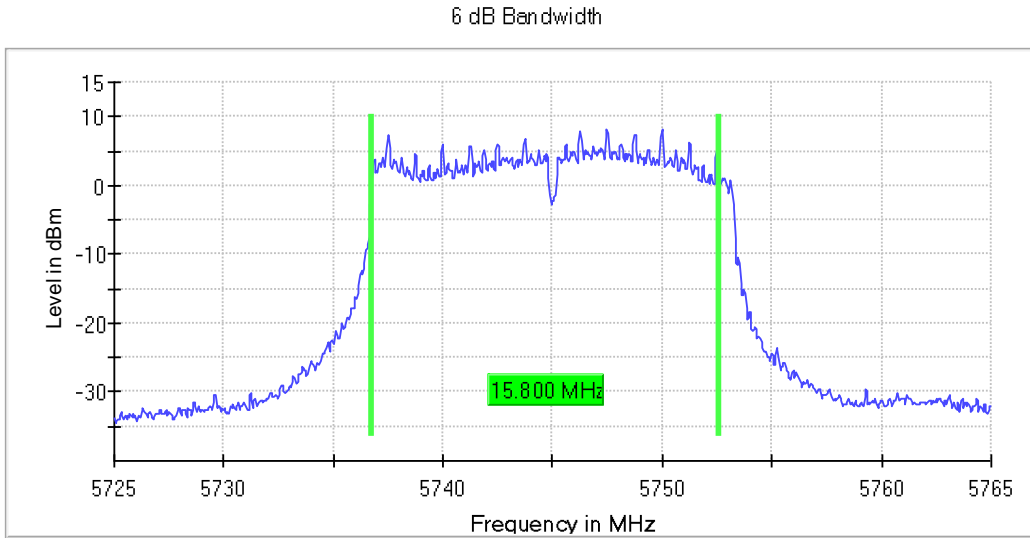
Verdict: PASS

MIMO worst case

MIMO 802.11 a20:

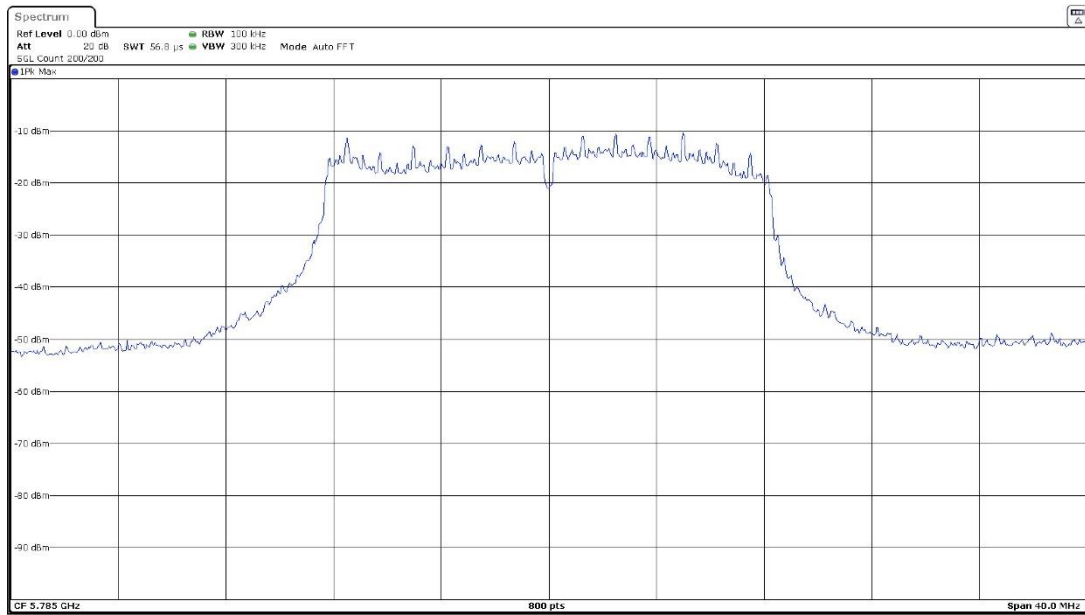
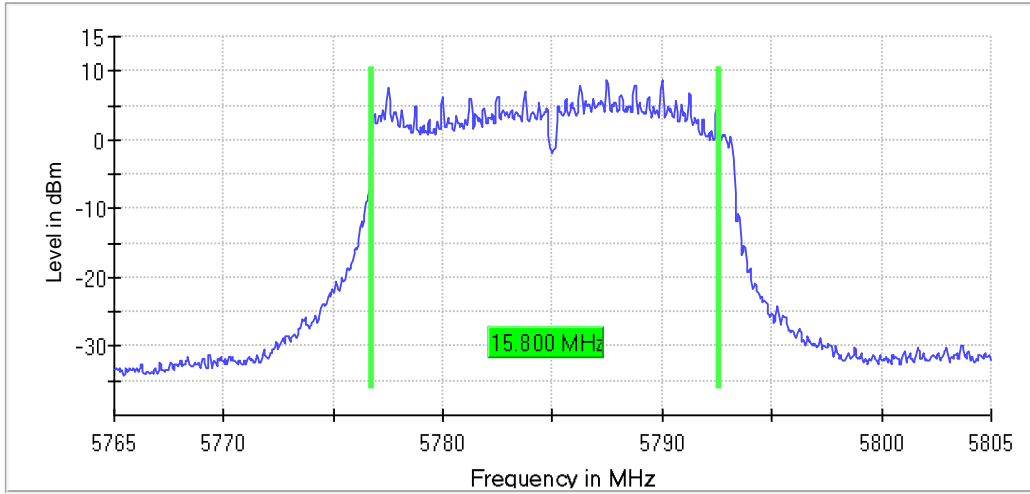
U-NII-3 (5725-5850 MHz)

- Low Channel 149 (5745 MHz):



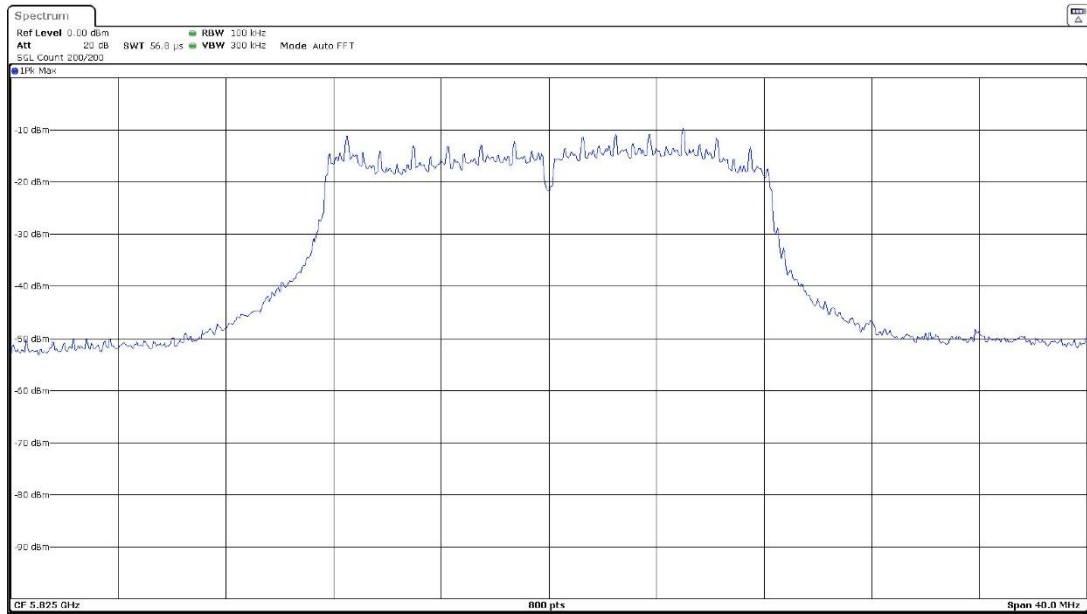
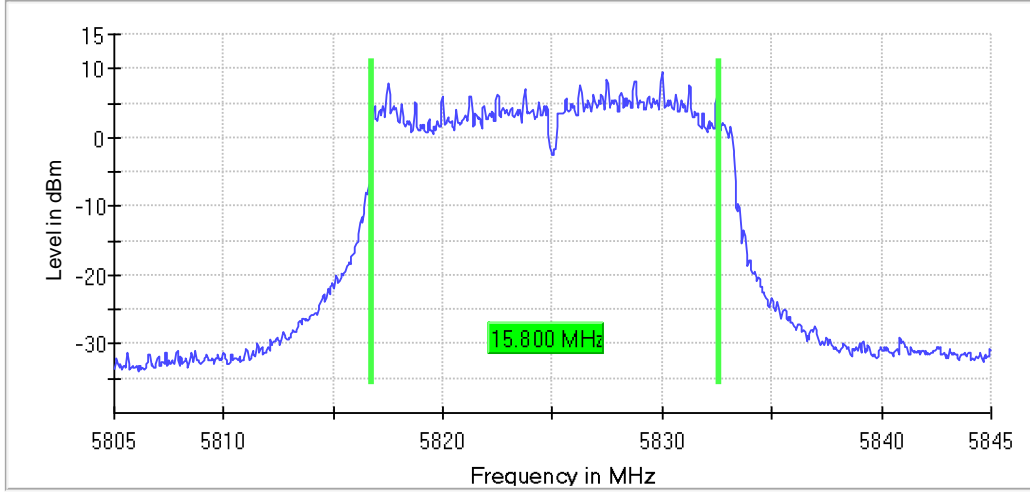
- Middle Channel 157 (5785 MHz):

6 dB Bandwidth



- High Channel 165 (5825 MHz):

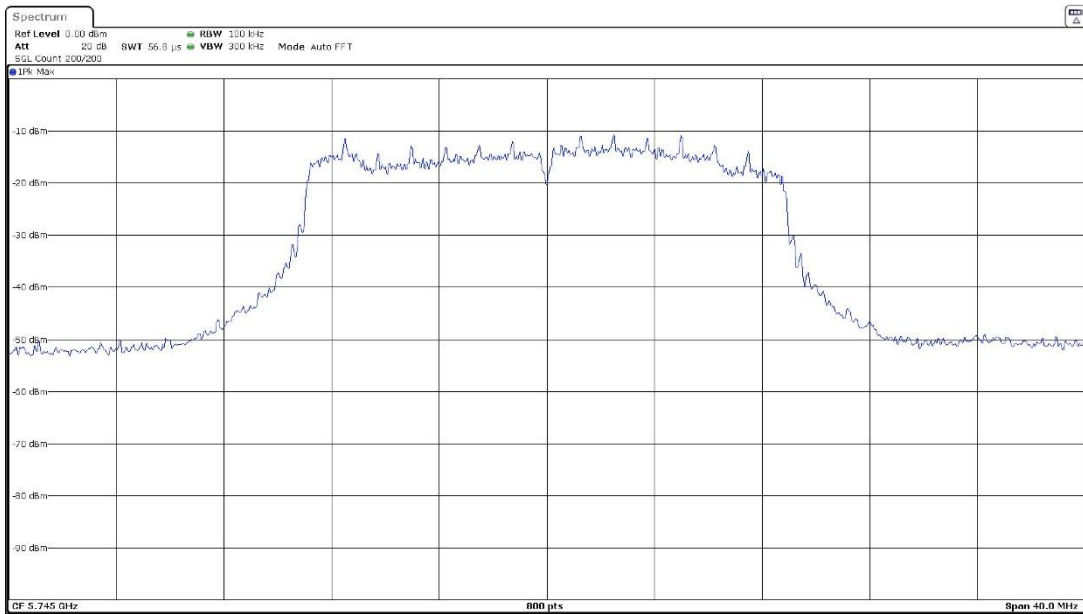
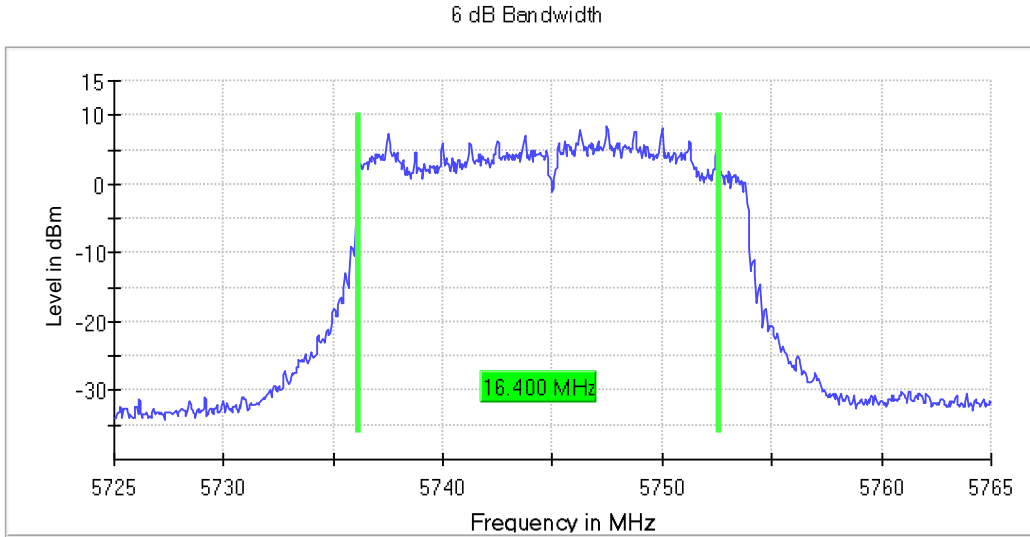
6 dB Bandwidth



MIMO 802.11 n20 (HT20):

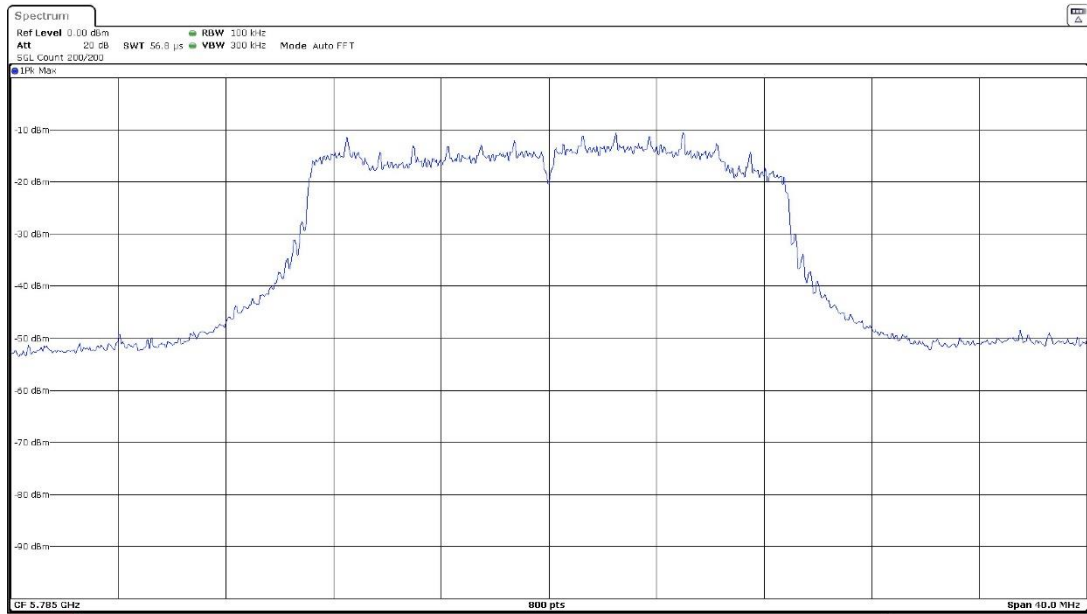
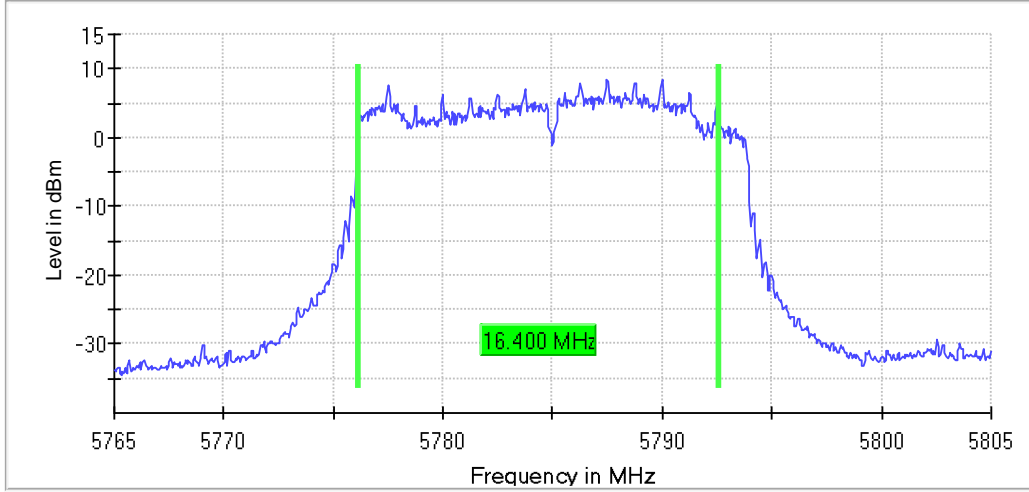
U-NII-3 (5725-5850 MHz)

- Low Channel 149 (5745 MHz):



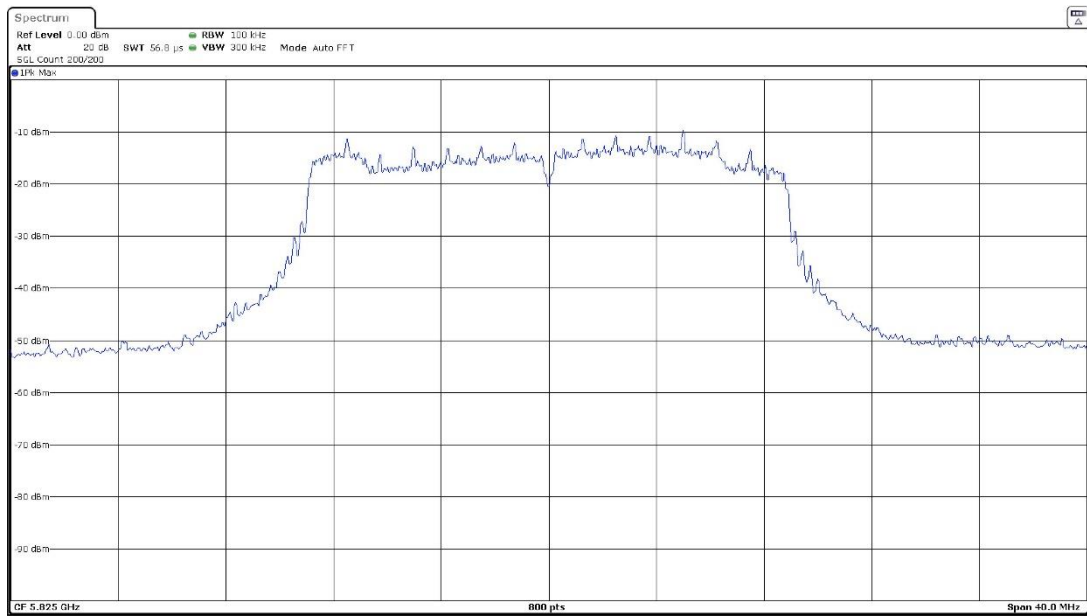
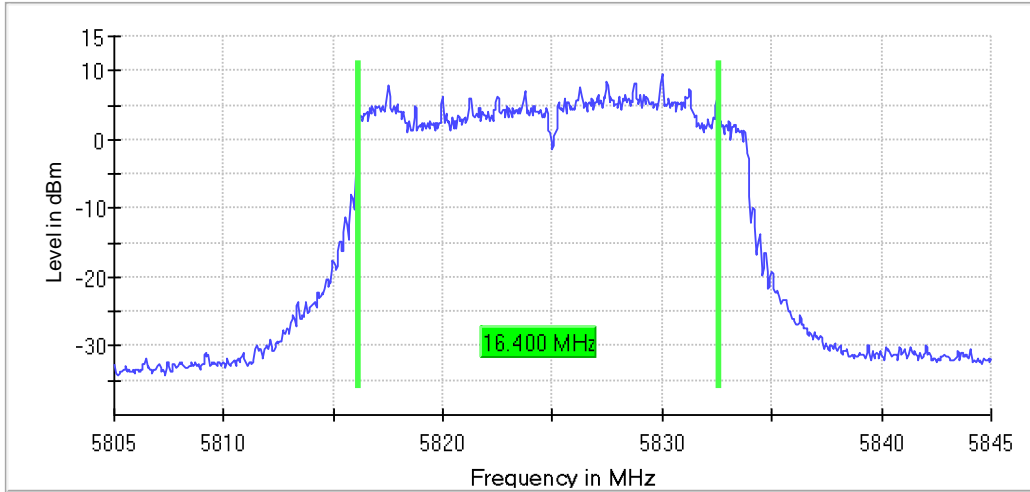
- Middle Channel 157 (5785 MHz):

6 dB Bandwidth



- High Channel 165 (5825 MHz):

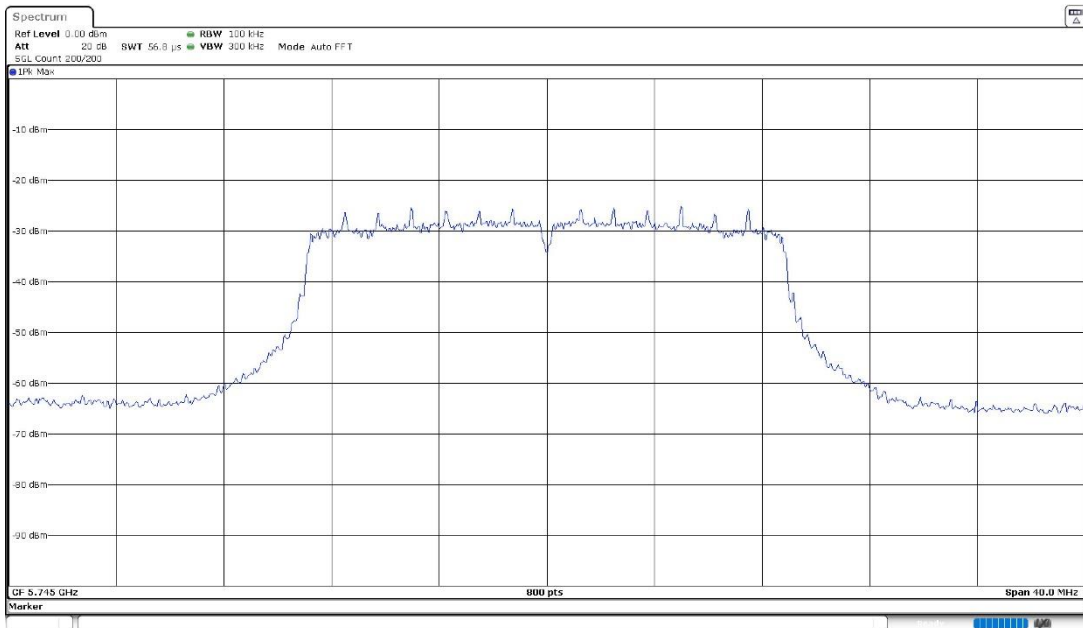
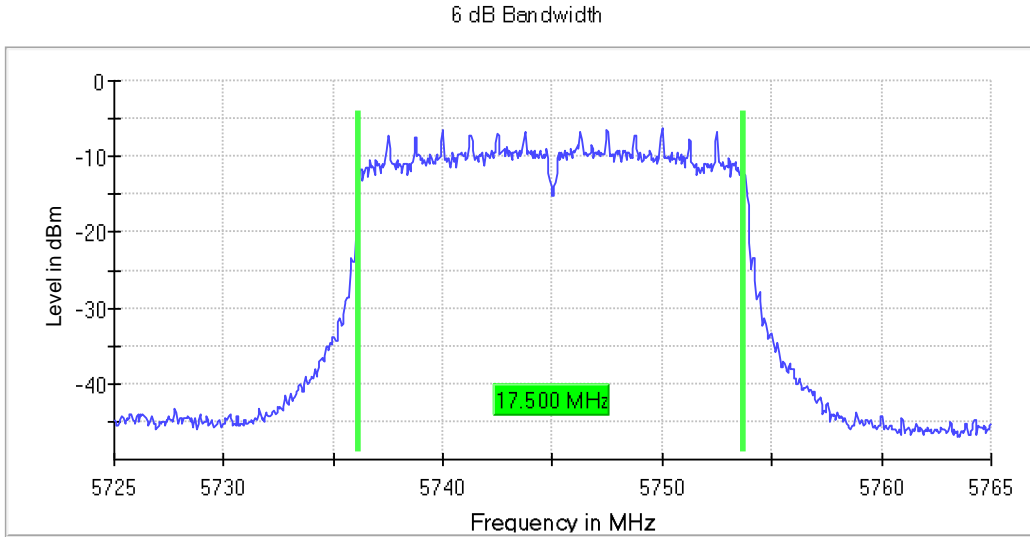
6 dB Bandwidth



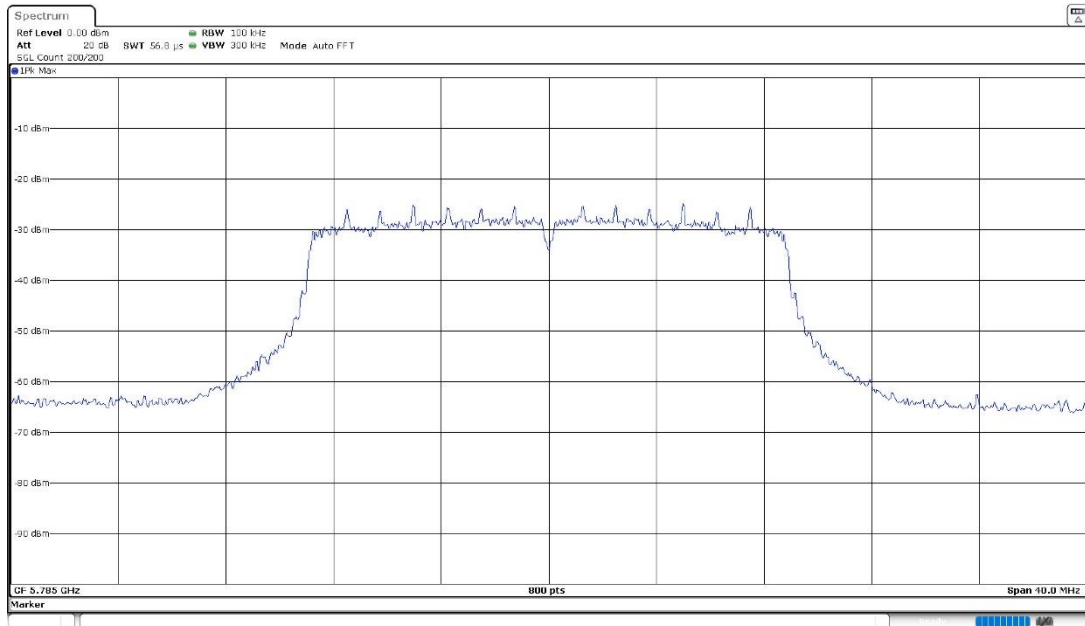
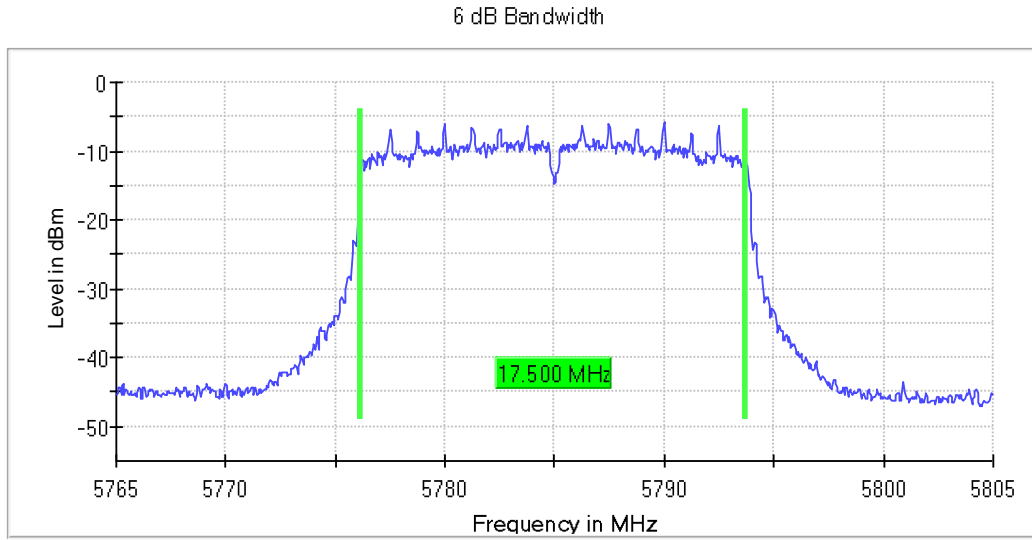
MIMO 802.11 ac20 (VHT20):

U-NII-3 (5725-5850 MHz)

- Low Channel 149 (5745 MHz):

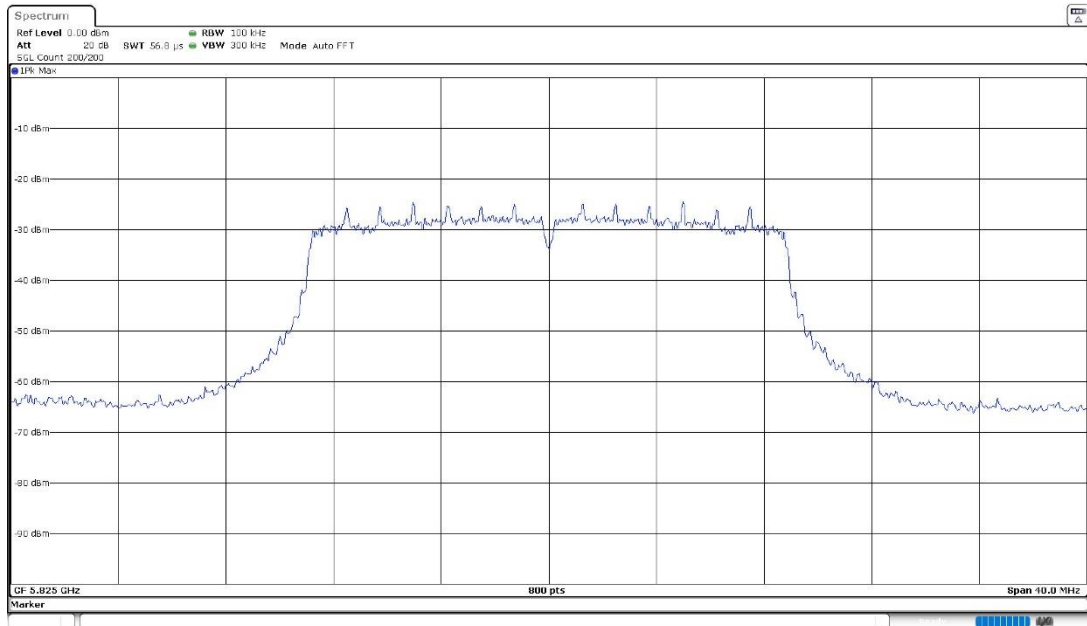
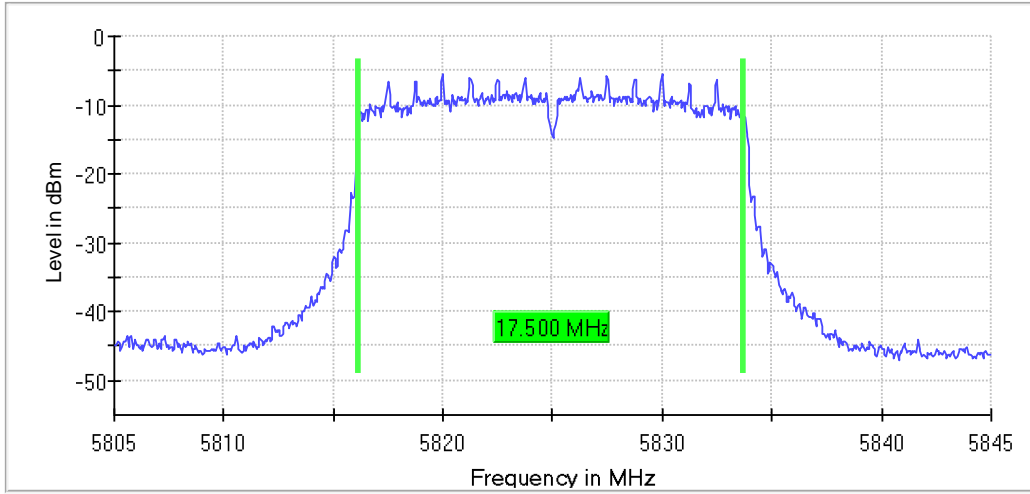


- Middle Channel 157 (5785 MHz):



- High Channel 165 (5825 MHz):

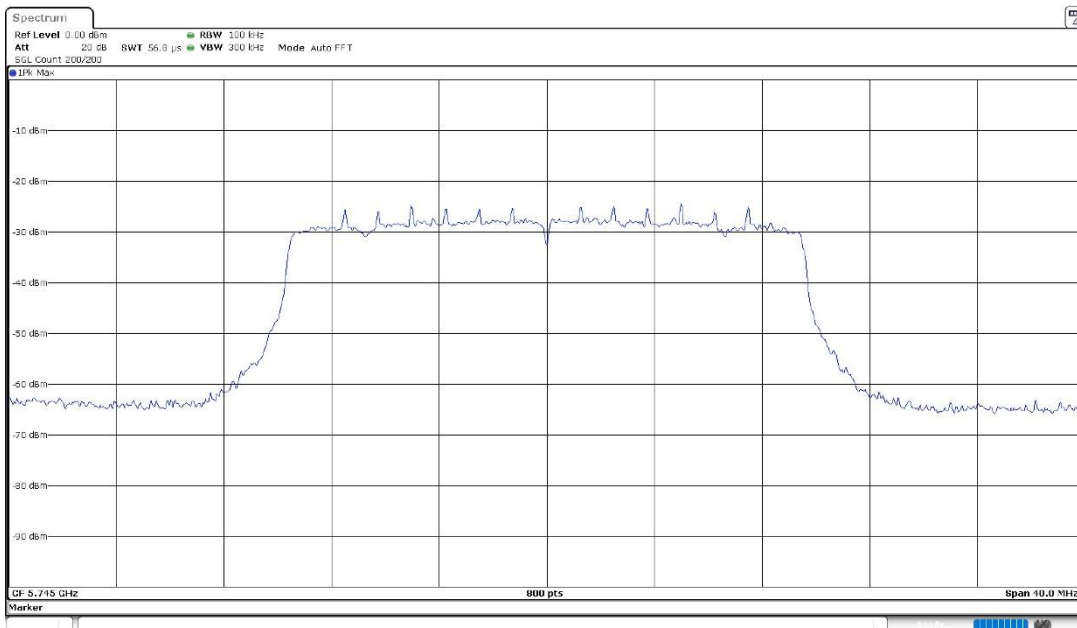
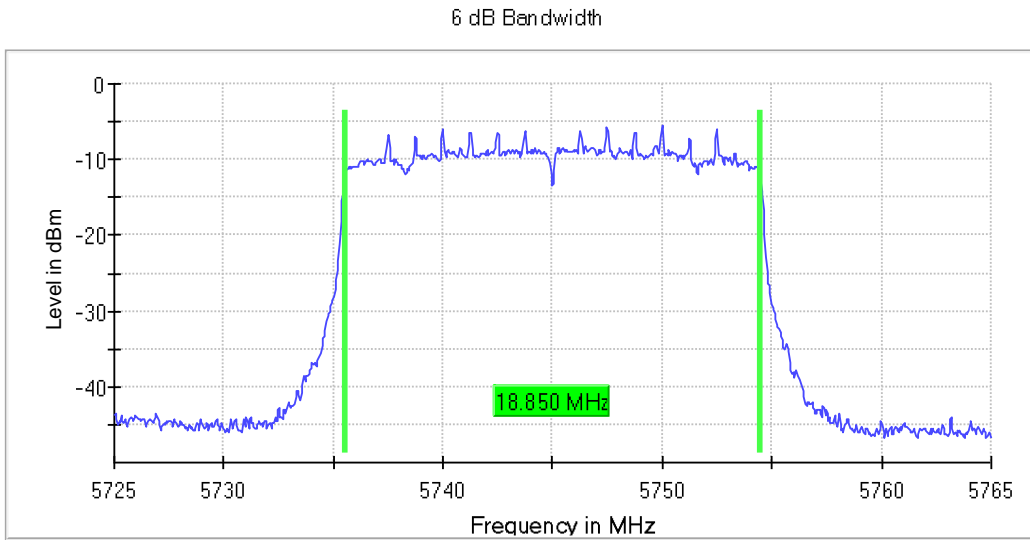
6 dB Bandwidth



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

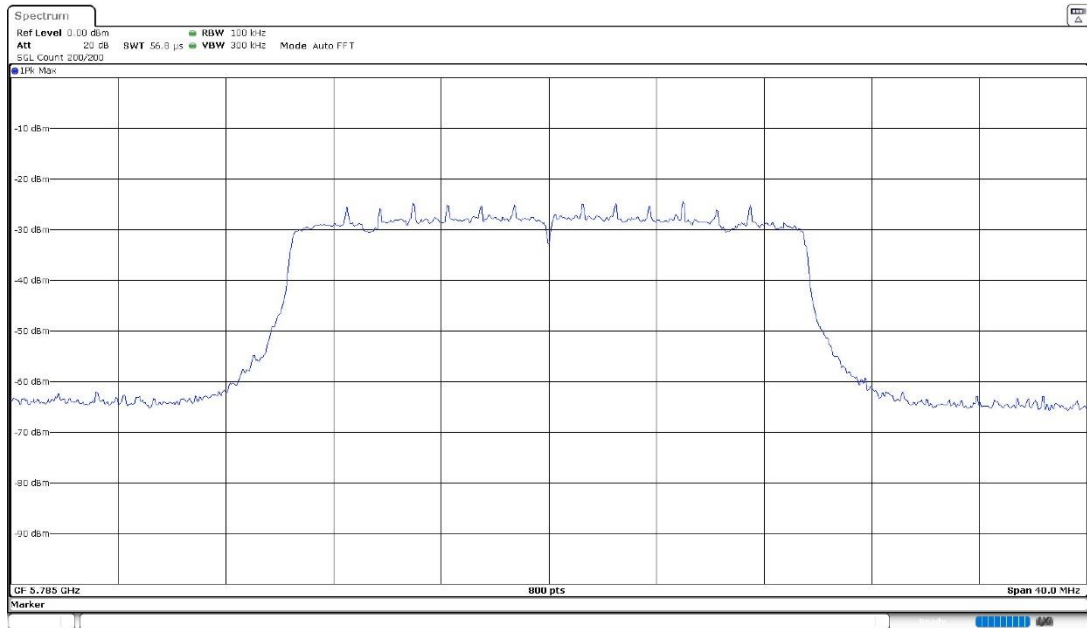
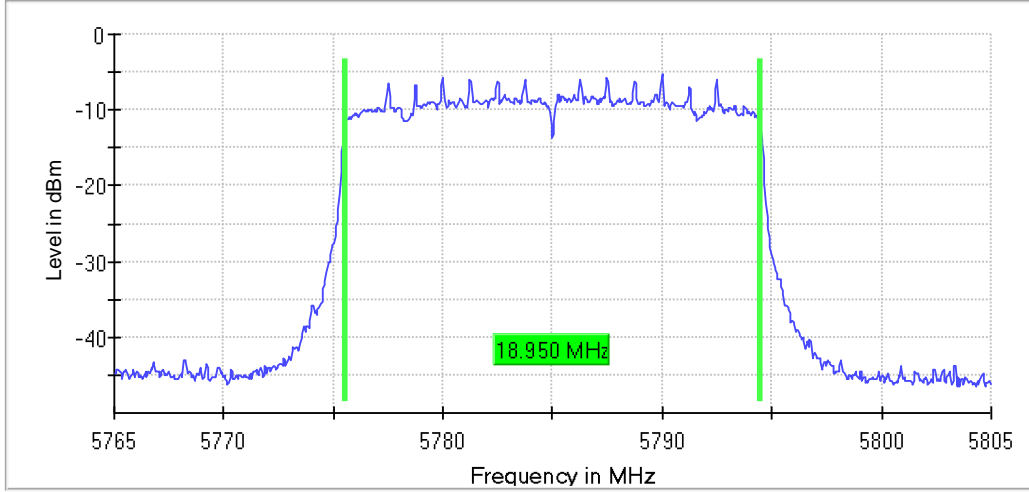
U-NII-3 (5725-5850 MHz)

- Low Channel 149 (5745 MHz):



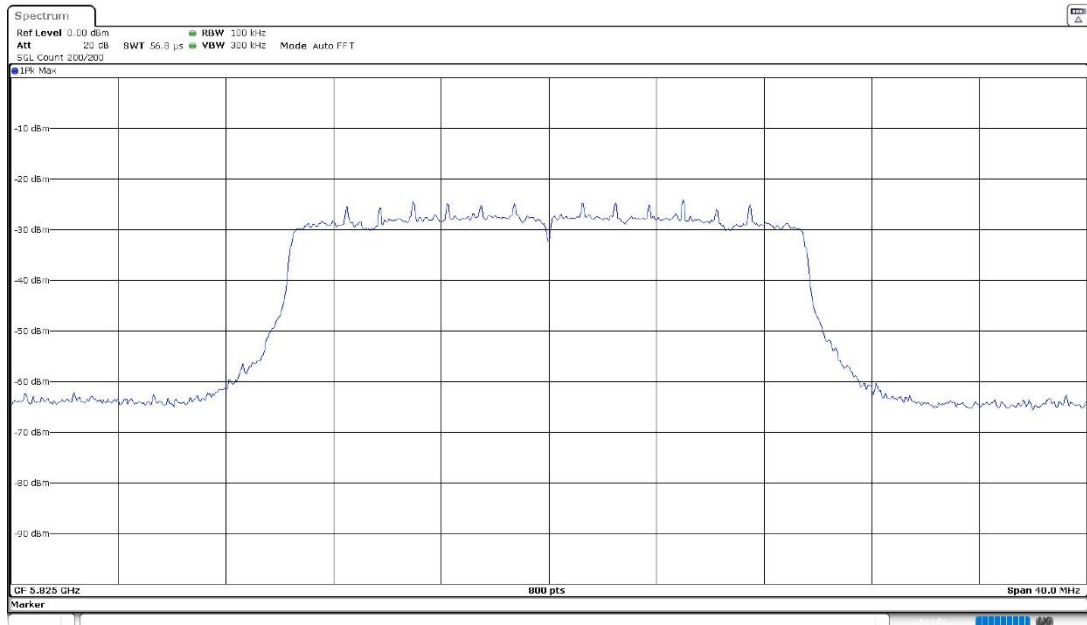
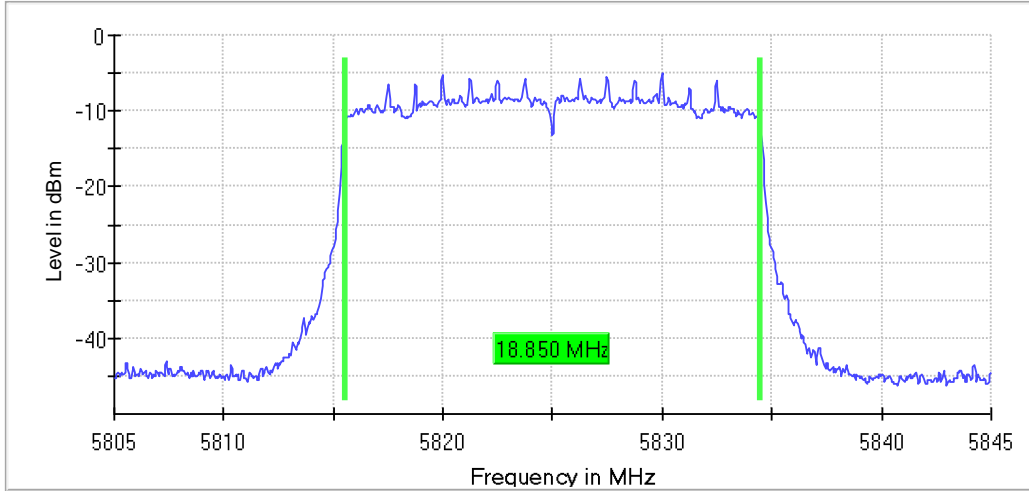
- Middle Channel 157 (5785 MHz):

6 dB Bandwidth



- High Channel 165 (5825 MHz):

6 dB Bandwidth

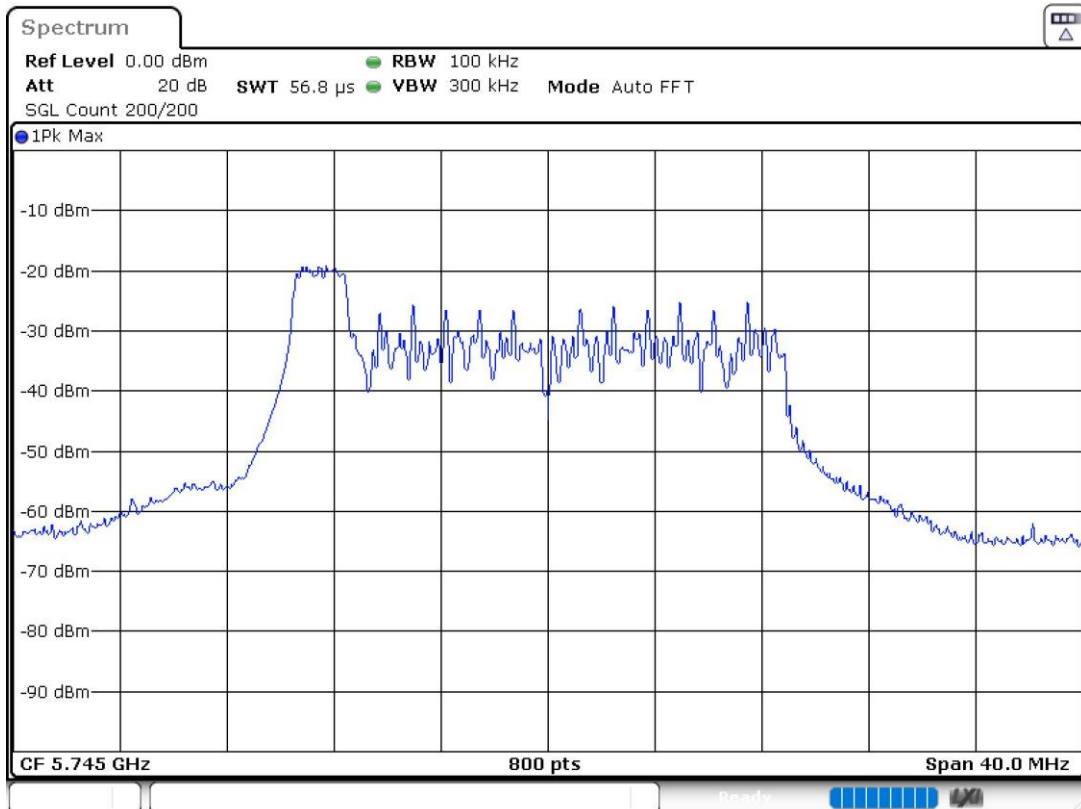
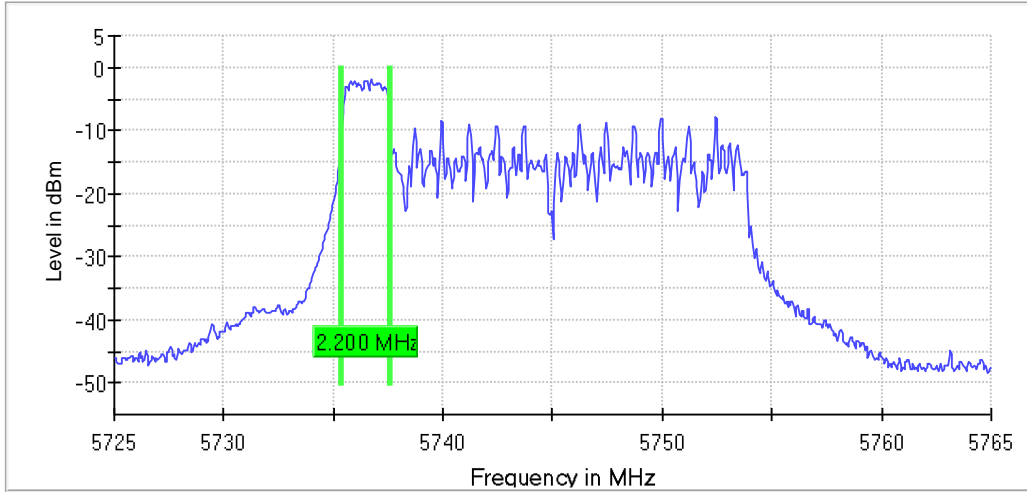


MIMO 802.11 ax20 (HE20) – RU Subcarrier allocation (RU26):

U-NII-3 (5725-5850 MHz)

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

6 dB Bandwidth



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

