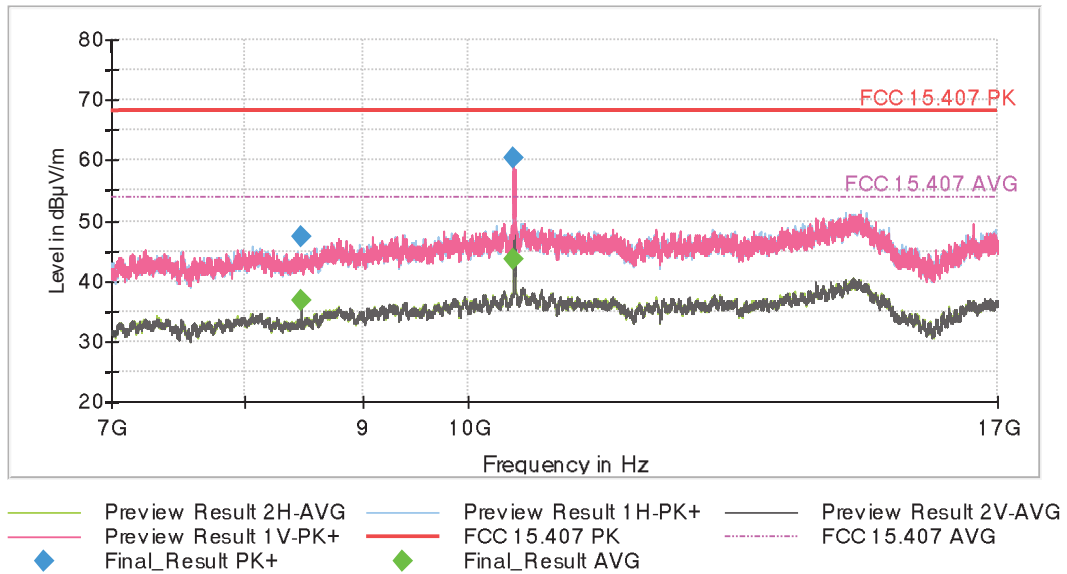
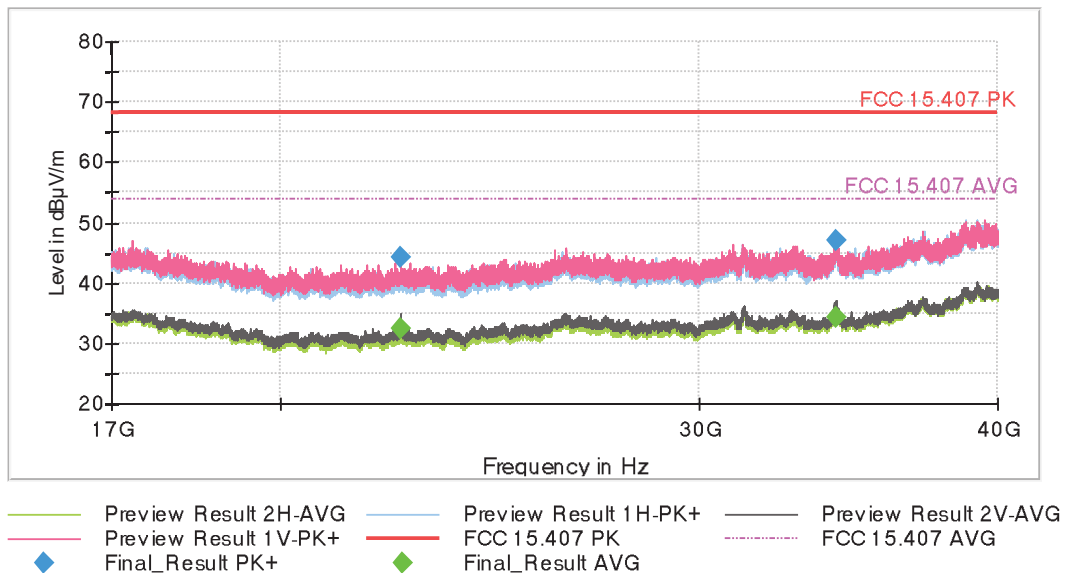


- High Channel:

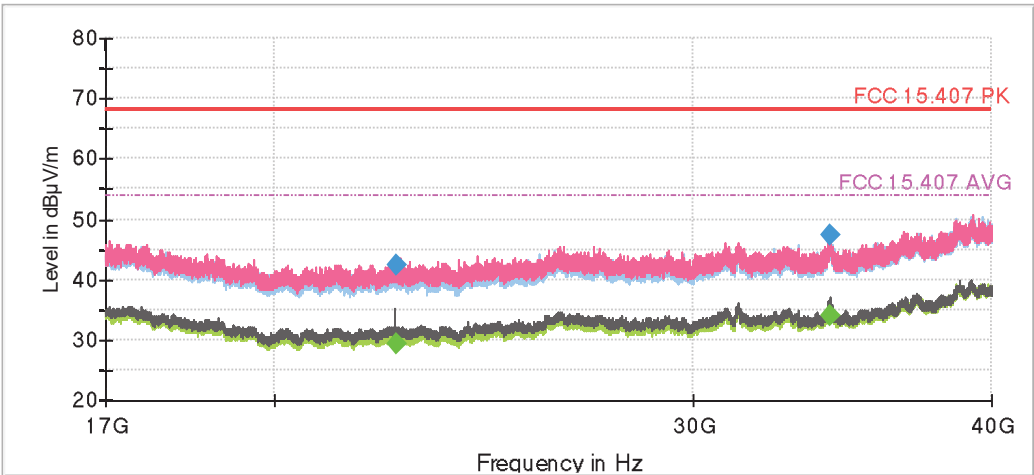


FREQUENCY RANGE 17 - 40 GHz (MIMO worst case):

- Low Channel:

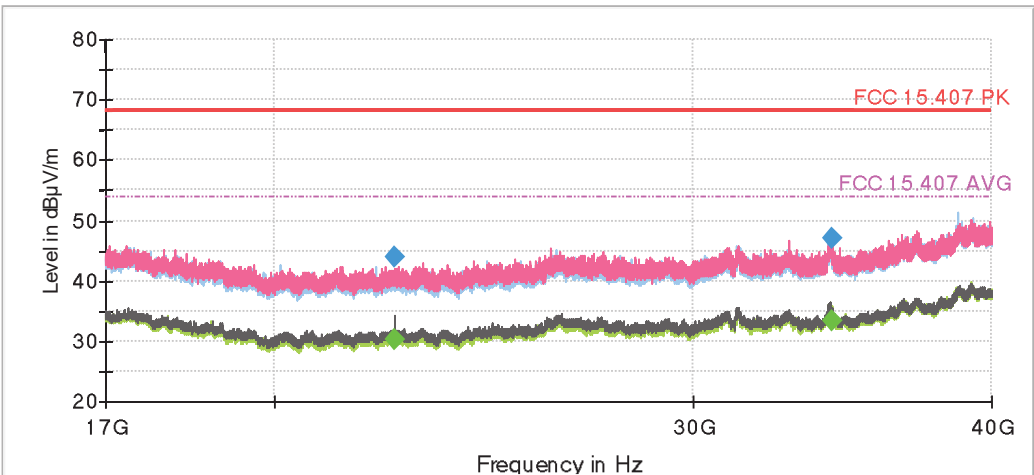


- Middle Channel:



Preview Result 2H-AVG Preview Result 1H-PK+ Preview Result 2V-AVG
Preview Result 1V-PK+ FCC 15.407 PK FCC 15.407 AVG
Final_Result PK+ Final_Result AVG

- High Channel:



Preview Result 2H-AVG Preview Result 1H-PK+ Preview Result 2V-AVG
Preview Result 1V-PK+ FCC 15.407 PK FCC 15.407 AVG
Final_Result PK+ Final_Result AVG

FCC 15.407 (b)(1) / RSS-247 6.2.1.2. Band Edge Radiated Emissions

SPECIFICATION:

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz (68.23 dBμV/m at 3 m distance).

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)	-	300
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 is specified when measuring with peak detector function.

RESULTS:

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

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

All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm/MHz. There are restricted bands of operation below band edge at 4.50-5.15 GHz also above the upper band edge at 5.35-5.46 GHz therefore the provision of FCC Part 15.205 apply.

Field strength measurements using peak and average detector performed in the restricted bands below 5.15 GHz and above 5.35 GHz.

- Preliminary tests determined the SISO worst case: WLAN1_CORE-0_Port3.
- Preliminary tests determined the MIMO worst case: WLAN0_CORE-MIMO_Port1 & Port4.

Test performed on the following worst cases modes in all relevant tests channels for both techniques:

- 802.11a: 6 Mbit/s.
- 802.11n HT20: MCS0.
- 802.11ac VHT20: MCS0.
- 802.11n HT40: MCS0.
- 802.11ac VHT40: MCS0.
- 802.11ac VHT80: MCS0.

BAND EDGE EMISSIONS: For U-NII-1 band edge spurious emissions inside of the Restricted Bands 4.50-5.15 GHz and 5.35-5.46 GHz.

The Lower Band Edge Channel and the Upper Band Edge Channel were tested for all modes.

SISO worst case:

• **SISO 802.11 a20:**

- Lower Band Edge Channel 36 (5180 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.1456	51.73	74	H	Peak	<± 5.13

- Upper Band Edge Channel 48 (5240 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.3742	48.09	74	H	Peak	<± 5.13
5.3880	51.22	74	V	Peak	<± 5.13

• **SISO 802.11 n20:**

- Lower Band Edge Channel 36 (5180 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

No spurious frequencies at less than 20 dB below the limit.

- Upper Band Edge Channel 48 (5240 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

• **SISO 802.11 ac20:**

- Lower Band Edge Channel 36 (5180 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.1448	59.31	74	V	Peak	<± 5.13
	39.80	54		Average	<± 5.13
5.147	58.00	74	H	Peak	<± 5.13
	38.97	54		Average	<± 5.13

- Upper Band Edge Channel 48 (5240 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.391	54.28	74	V	Peak	<± 5.13
	40.20	54		Average	<± 5.13

- **SISO 802.11 n40:**

- Lower Band Edge Channel 38 (5190 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

No spurious frequencies at less than 20 dB below the limit.

- Upper Band Edge Channel 46 (5230 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

- **SISO 802.11 ac40:**

- Lower Band Edge Channel 38 (5190 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.150	54.57	74	H	Peak	<± 5.13
	38.67	54		Average	<± 5.13

- Upper Band Edge Channel 46 (5230 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

- **SISO 802.11 ac80:**

- Lower Band Edge Channel 42 (5210 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.1468	60.32	74	V	Peak	<± 5.13
	42.49	54		Average	<± 5.13
5.1498	62.16	74	V	Peak	<± 5.13
	42.09	54		Average	<± 5.13

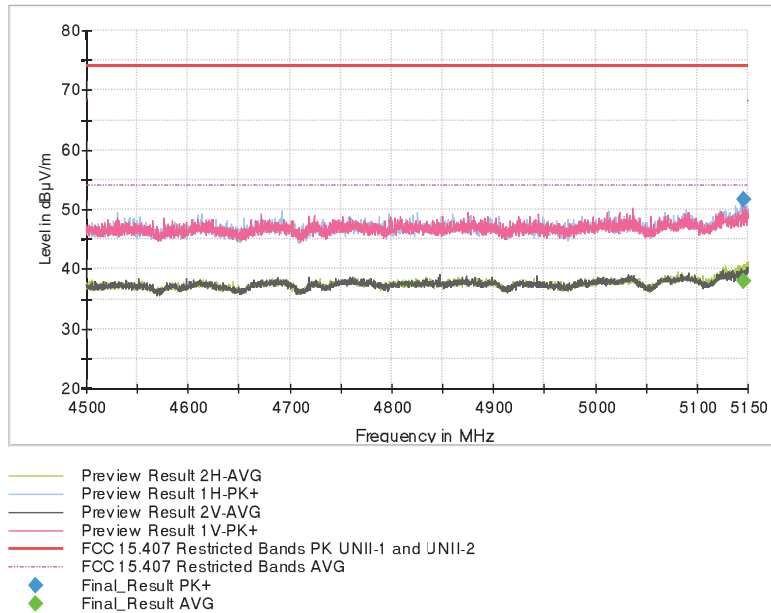
- Upper Band Edge Channel 42 (5210 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

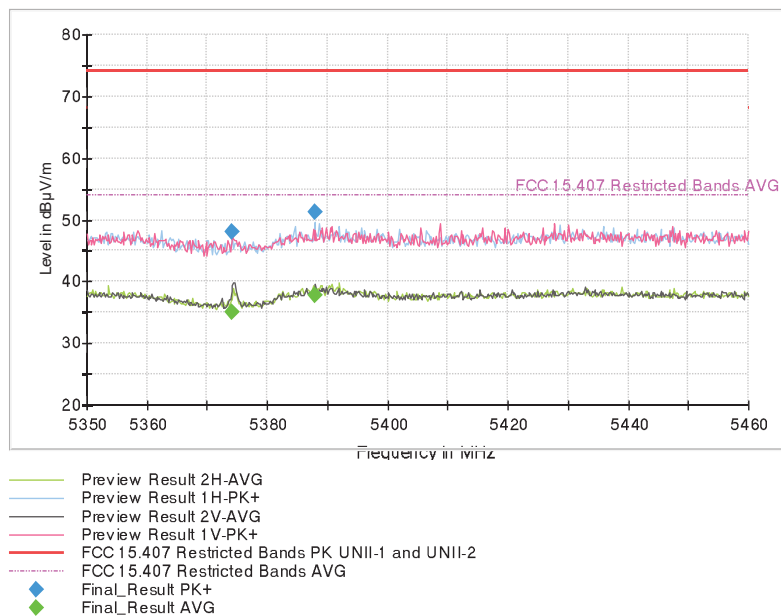
Verdict: PASS

• SISO 802.11 a20:

- Lower Band Edge Channel 36 (Restricted Band 4.50-5.15 GHz)

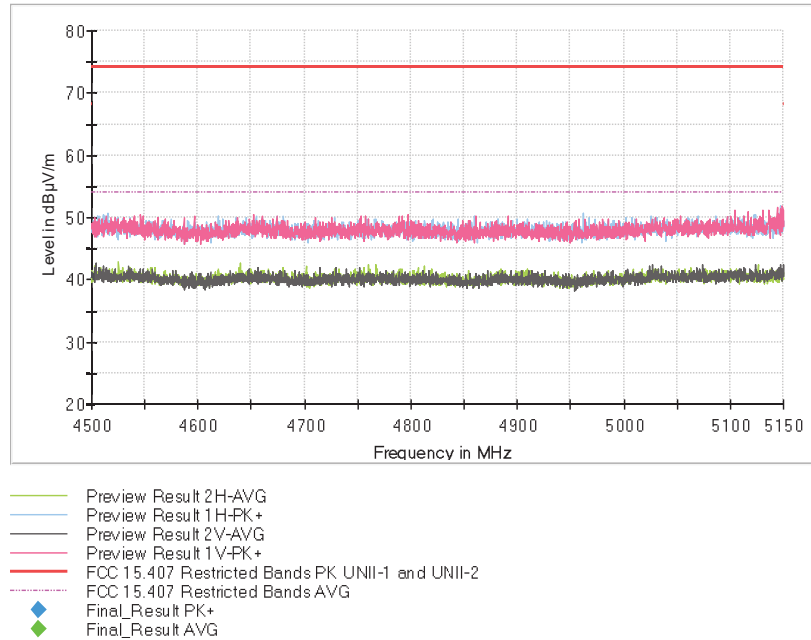


- Upper Band Edge Channel 48 (Restricted Band 5.35-5.46 GHz)

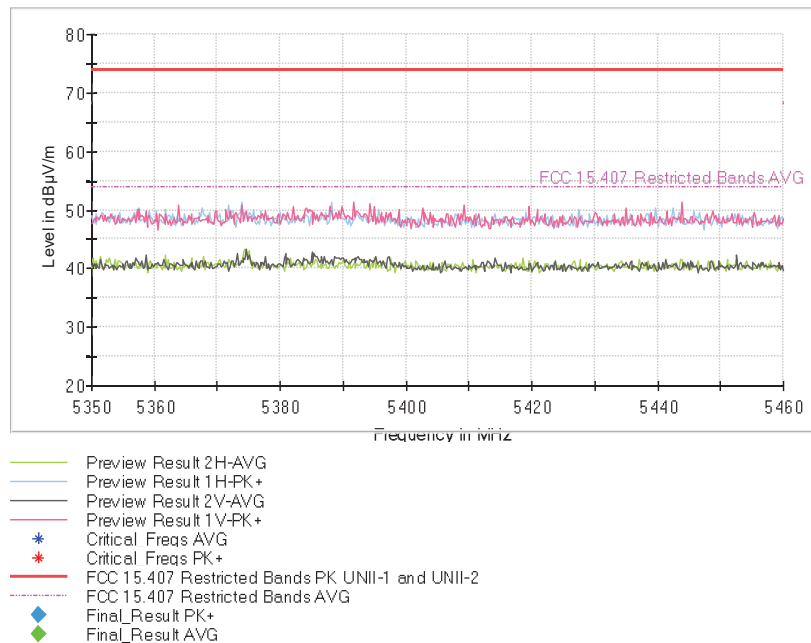


• SISO 802.11 n20:

- Lower Band Edge Channel 36 (Restricted Band 4.50-5.15 GHz)

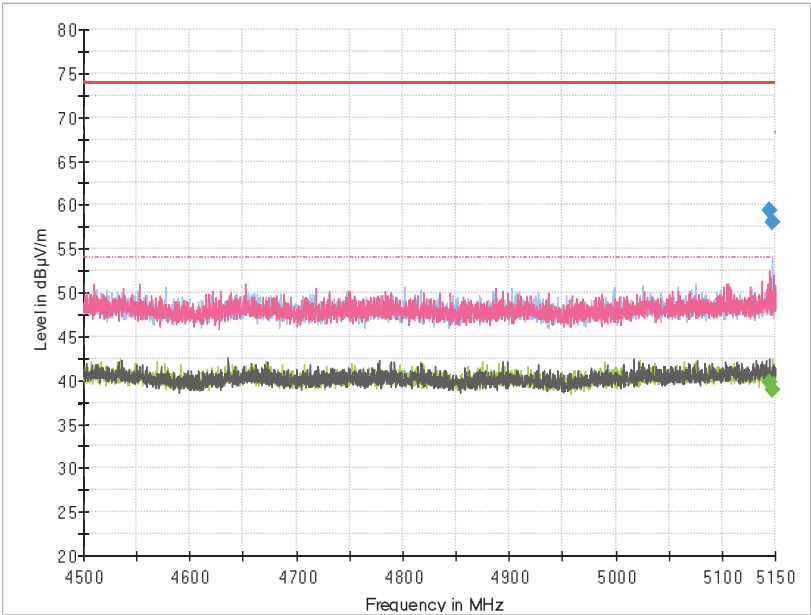


- Upper Band Edge Channel 48 (Restricted Band 5.35-5.46 GHz)

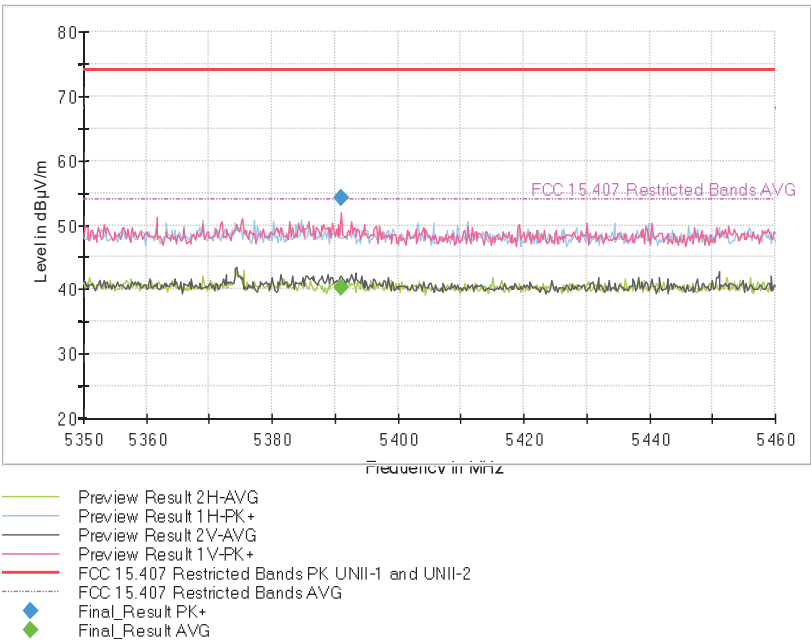


• SISO 802.11 ac20:

- Lower Band Edge Channel 36 (Restricted Band 4.50-5.15 GHz)

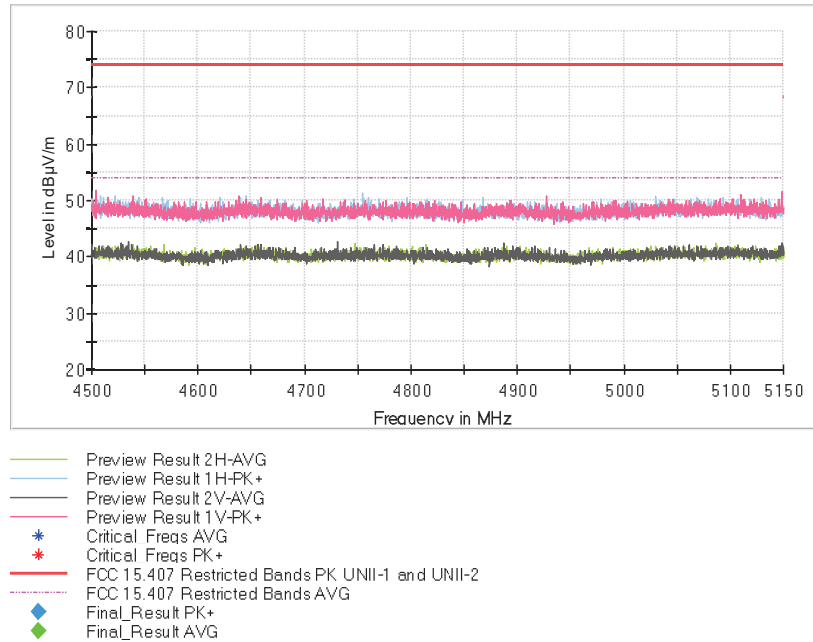


- Upper Band Edge Channel 48 (Restricted Band 5.35-5.46 GHz)

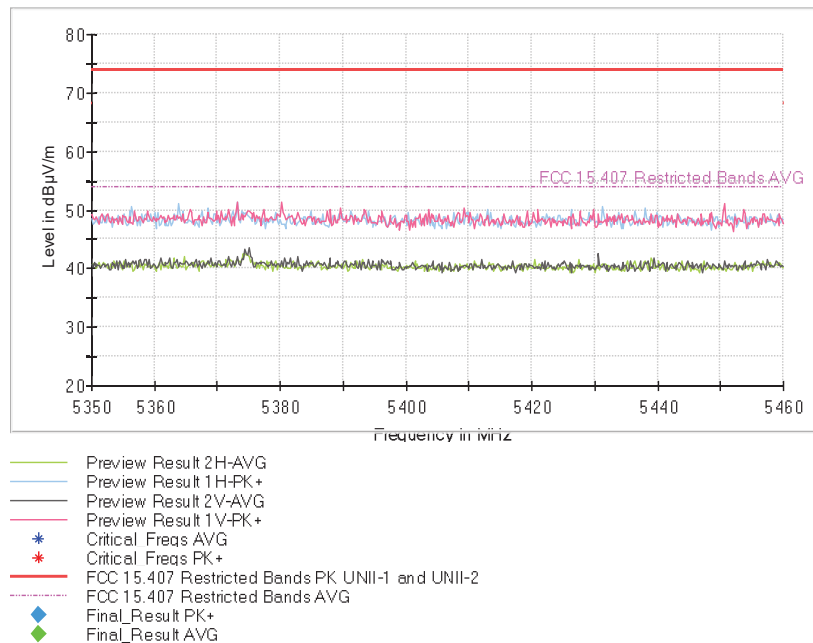


• **SISO 802.11 n40:**

- Lower Band Edge Channel 38 (Restricted Band 4.50-5.15 GHz)

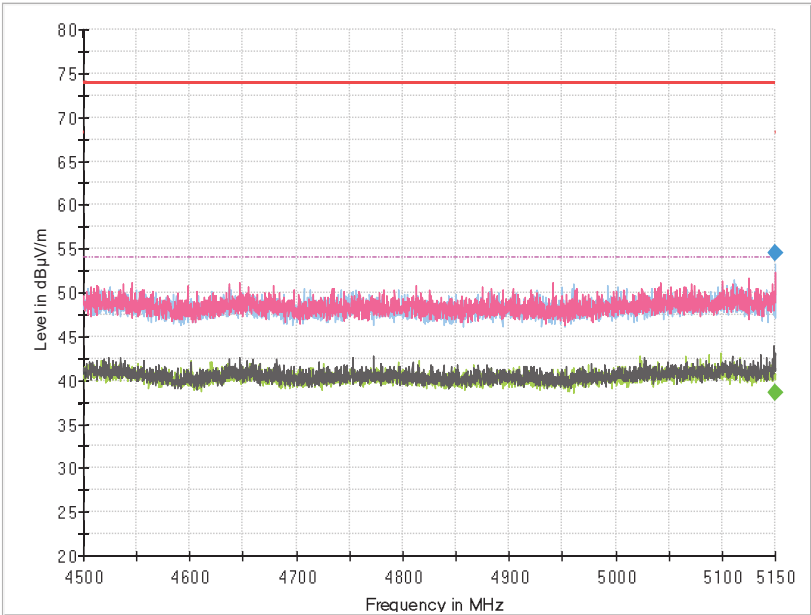


- Upper Band Edge Channel 46 (Restricted Band 5.35-5.46 GHz)

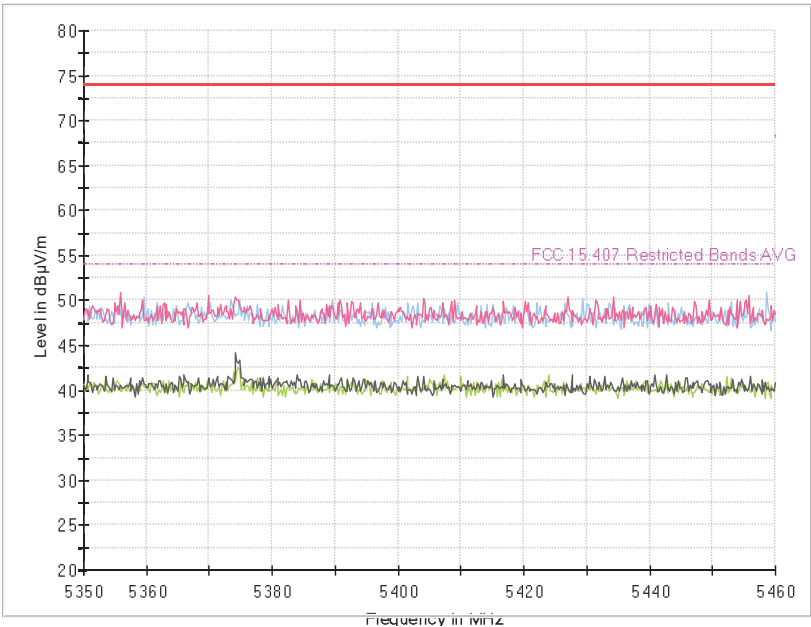


• SISO 802.11 ac40:

- Lower Band Edge Channel 38 (Restricted Band 4.50-5.15 GHz)

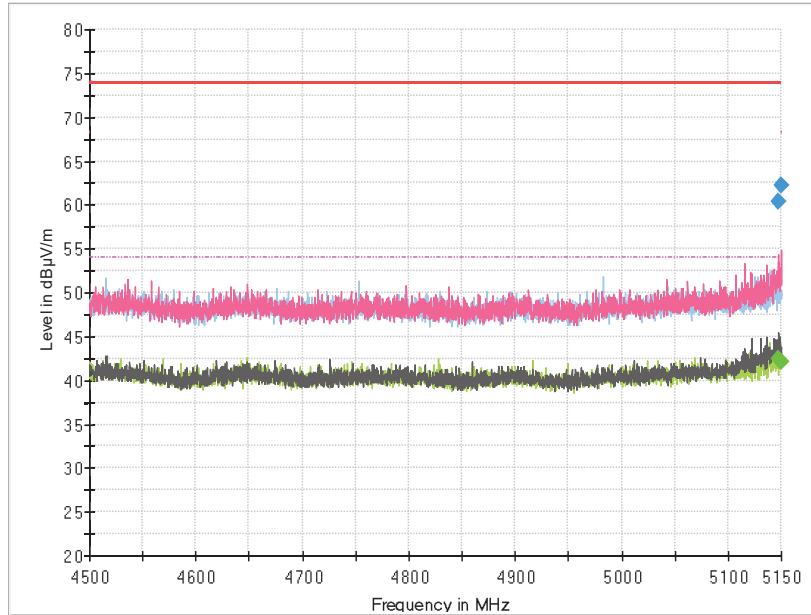


- Upper Band Edge Channel 46 (Restricted Band 5.35-5.46 GHz)

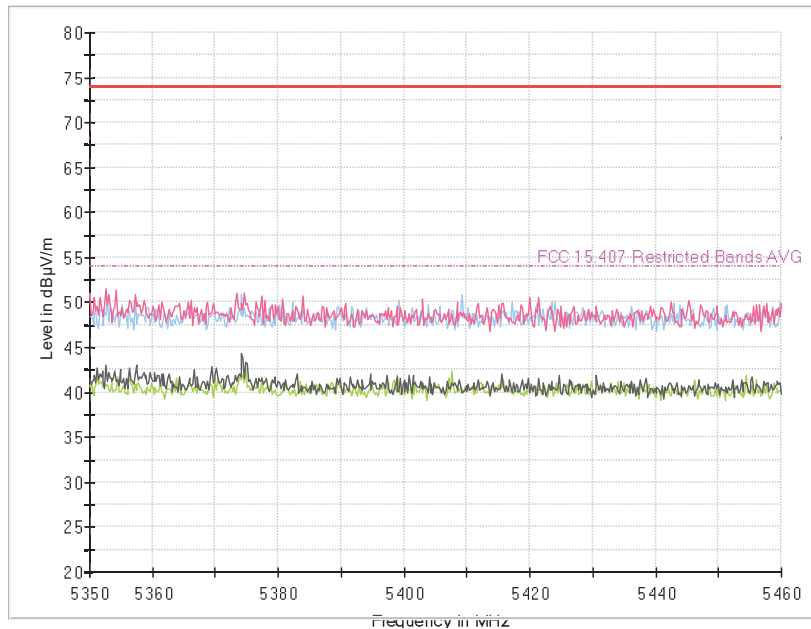


- **SISO 802.11 ac80:**

- Lower Band Edge Channel 42 (Restricted Band 4.50-5.15 GHz)



- Upper Band Edge Channel 42 (Restricted Band 5.35-5.46 GHz)



MIMO worst case:

• MIMO 802.11 a20:

- Lower Band Edge Channel 36 (5180 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

No spurious frequencies at less than 20 dB below the limit.

- Upper Band Edge Channel 48 (5240 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

• MIMO 802.11 n20:

- Lower Band Edge Channel 36 (5180 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.1492	58.09	74	H	Peak	<± 5.13
	38.75	54		Average	<± 5.13

- Upper Band Edge Channel 48 (5240 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

• MIMO 802.11 ac20:

- Lower Band Edge Channel 36 (5180 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

No spurious frequencies at less than 20 dB below the limit.

- Upper Band Edge Channel 48 (5240 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

• MIMO 802.11 n40:

- Lower Band Edge Channel 38 (5190 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.1308	57.33	74	H	Peak	<± 5.13
	39.21	54		Average	<± 5.13
5.1380	60.39	74	H	Peak	<± 5.13
	40.60	54		Average	<± 5.13
5.1480	60.96	74	H	Peak	<± 5.13
	40.60	54		Average	<± 5.13
5.1488	60.95	74	H	Peak	<± 5.13
	40.88	54		Average	<± 5.13

- Upper Band Edge Channel 46 (5230 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

• **MIMO 802.11 ac40:**

- Lower Band Edge Channel 38 (5190 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.1408	60.32	74	H	Peak	<± 5.13
	40.05	54		Average	<± 5.13
5.1440	59.28	74	H	Peak	<± 5.13
	39.97	54		Average	<± 5.13
5.1464	61.13	74	H	Peak	<± 5.13
	40.71	54		Average	<± 5.13
5.1496	63.42	74	H	Peak	<± 5.13
	41.69	54		Average	<± 5.13

- Upper Band Edge Channel 46 (5230 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

• **MIMO 802.11 ac80:**

- Lower Band Edge Channel 42 (5210 MHz). Spurious emissions inside the Restricted Band 4.50-5.15 GHz:

Spurious frequency (GHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.1370	58.92	74	H	Peak	<± 5.13
	41.53	54		Average	<± 5.13
5.1382	57.39	74	H	Peak	<± 5.13
	40.65	54		Average	<± 5.13
5.1464	59.98	74	H	Peak	<± 5.13
	42.20	54		Average	<± 5.13
5.1490	60.88	74	H	Peak	<± 5.13
	42.49	54		Average	<± 5.13
5.1494	61.09	74	H	Peak	<± 5.13
	42.41	54		Average	<± 5.13
5.1498	60.89	74	H	Peak	<± 5.13
	41.90	54		Average	<± 5.13

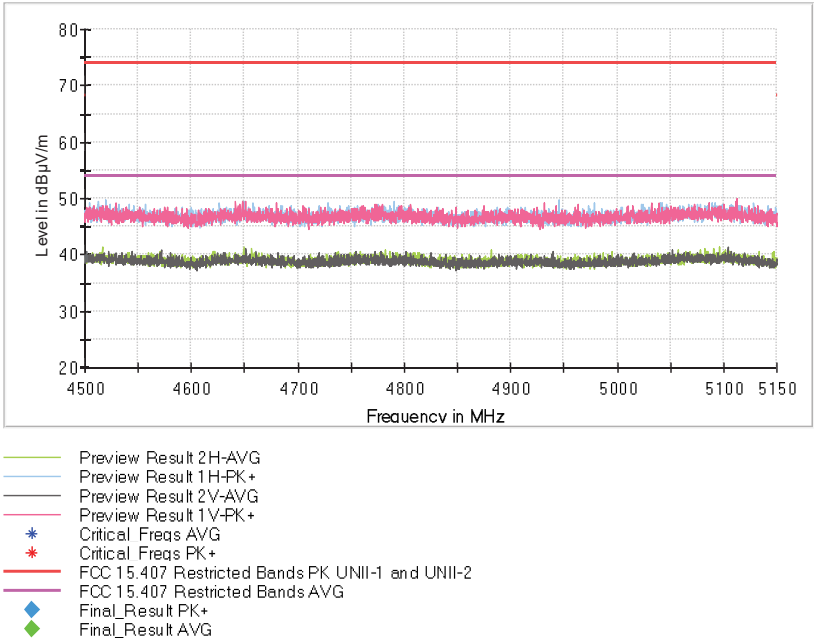
- Upper Band Edge Channel 42 (5210 MHz). Spurious emissions inside the Restricted Band 5.35-5.46 GHz:

No spurious frequencies at less than 20 dB below the limit.

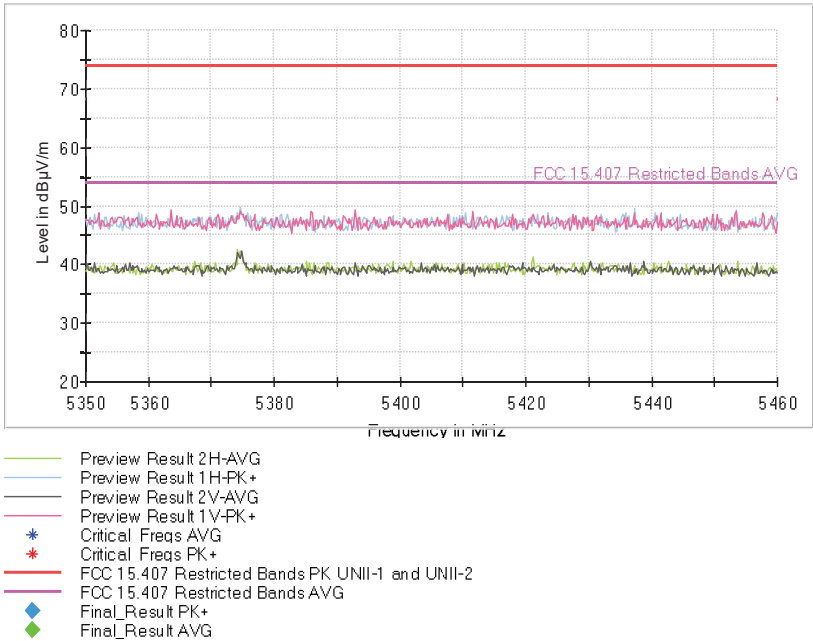
Verdict: PASS

• MIMO 802.11 a20:

- Lower Band Edge Channel 36 (Restricted Band 4.50-5.15 GHz)

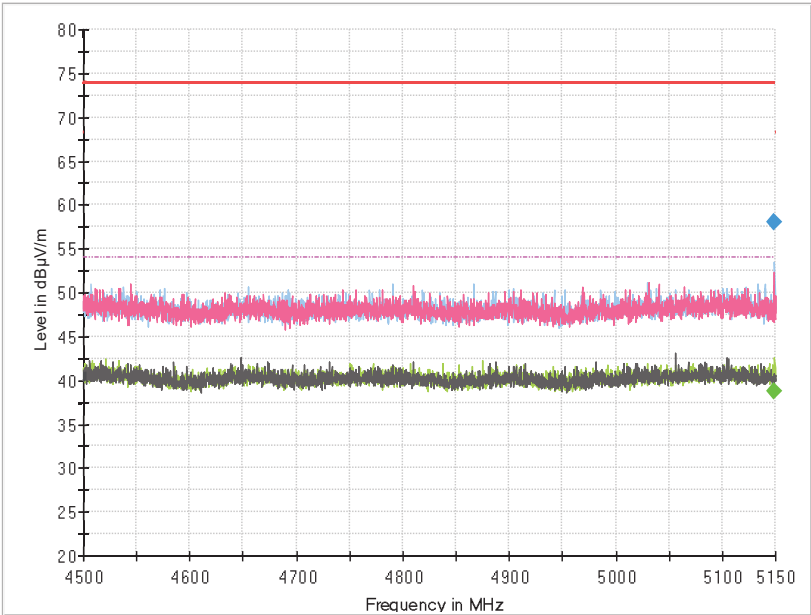


- Upper Band Edge Channel 48 (Restricted Band 5.35-5.46 GHz)

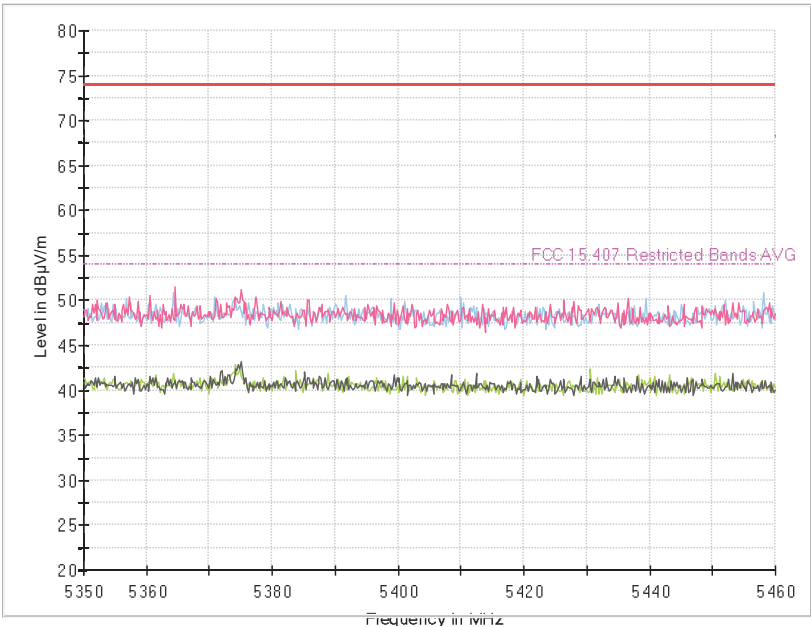


• MIMO 802.11 n20:

- Lower Band Edge Channel 36 (Restricted Band 4.50-5.15 GHz)

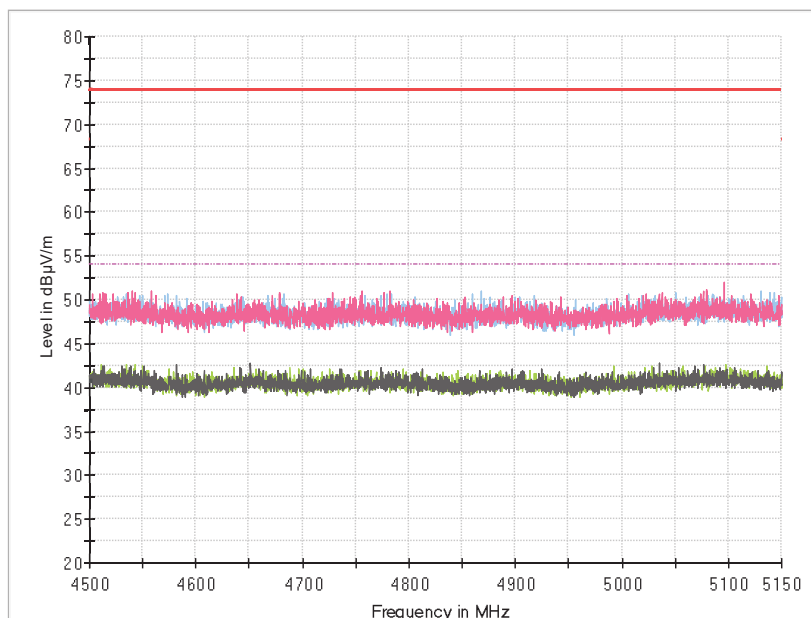


- Upper Band Edge Channel 48 (Restricted Band 5.35-5.46 GHz)

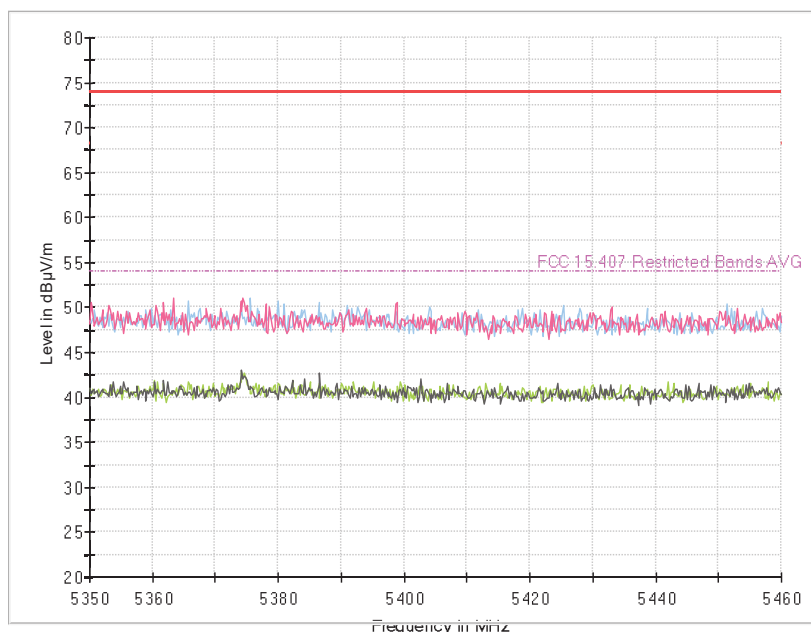


- **MIMO 802.11 ac20:**

- Lower Band Edge Channel 36 (Restricted Band 4.50-5.15 GHz)

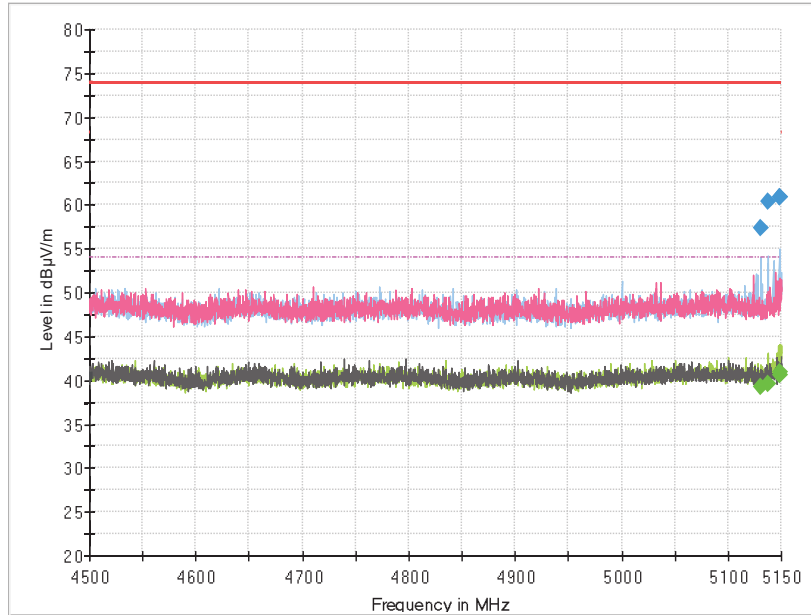


- Upper Band Edge Channel 48 (Restricted Band 5.35-5.46 GHz)



- **MIMO 802.11 n40:**

- Lower Band Edge Channel 38 (Restricted Band 4.50-5.15 GHz)



- Upper Band Edge Channel 46 (Restricted Band 5.35-5.46 GHz)

