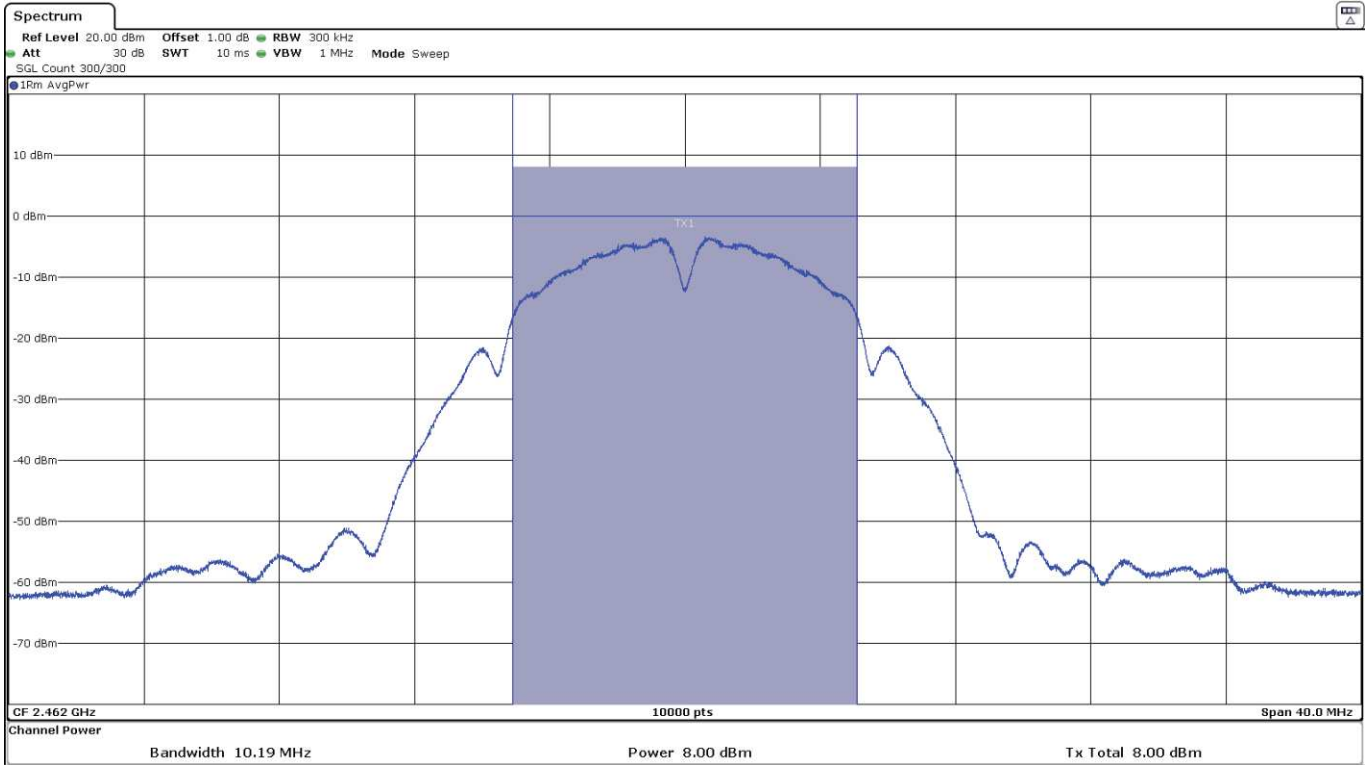
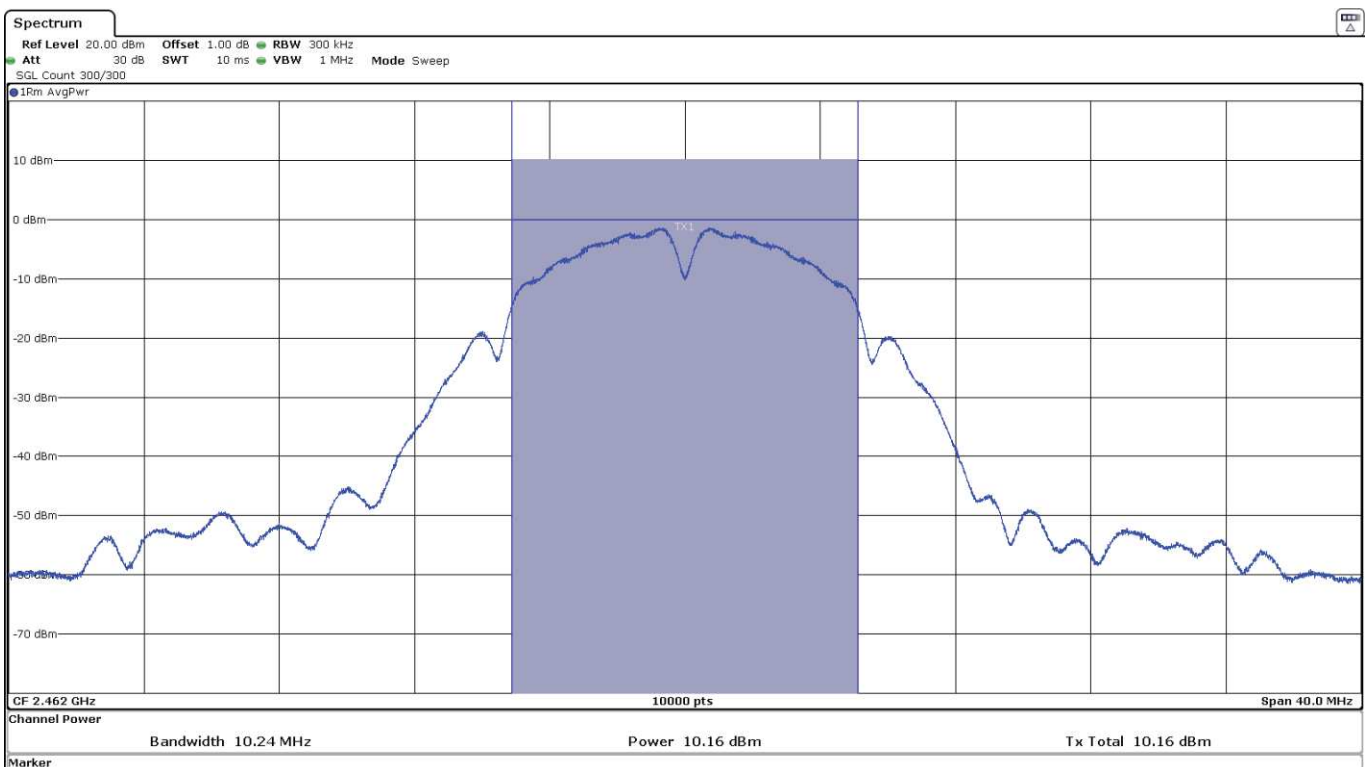


- High Channel:

CORE1\_Port4



CORE0\_Port2

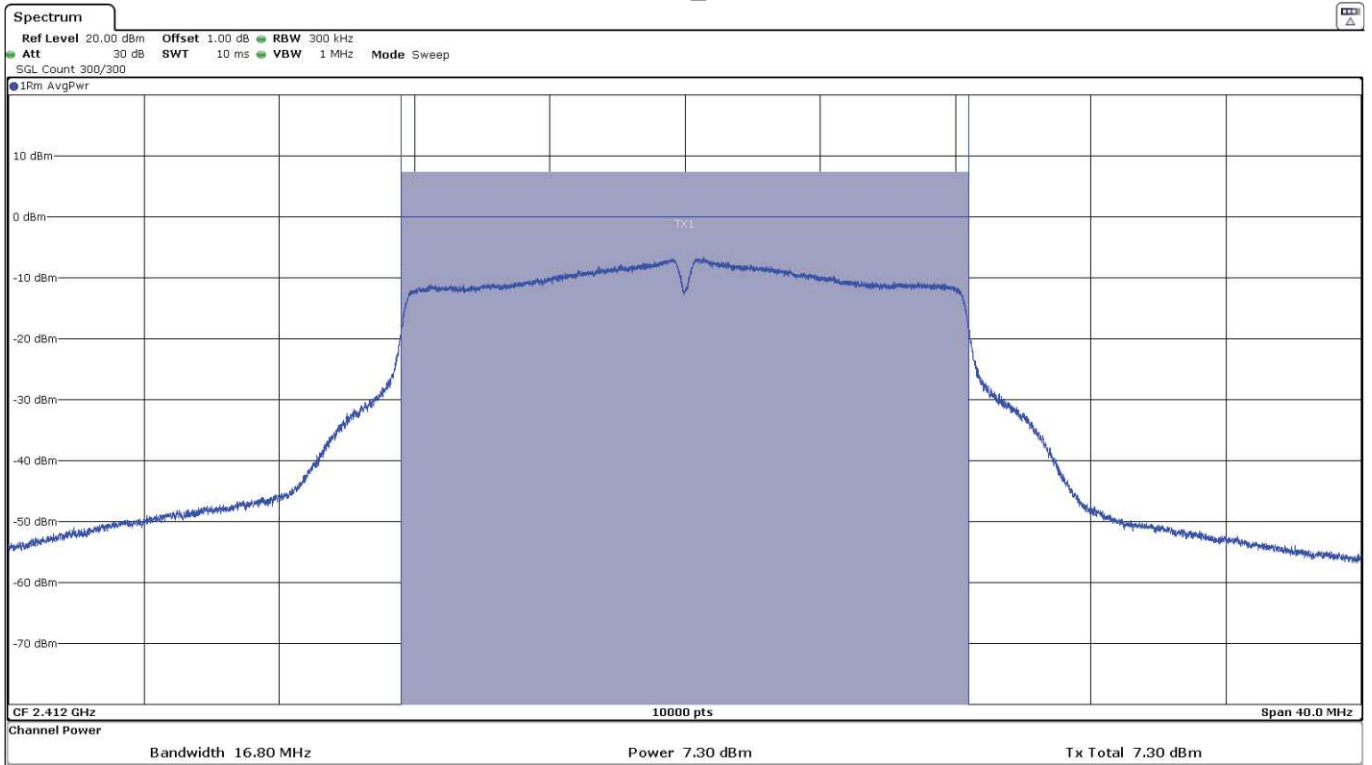


### MIMO – CORE1\_Port4 Antenna & CORE0\_Port2 Antenna:

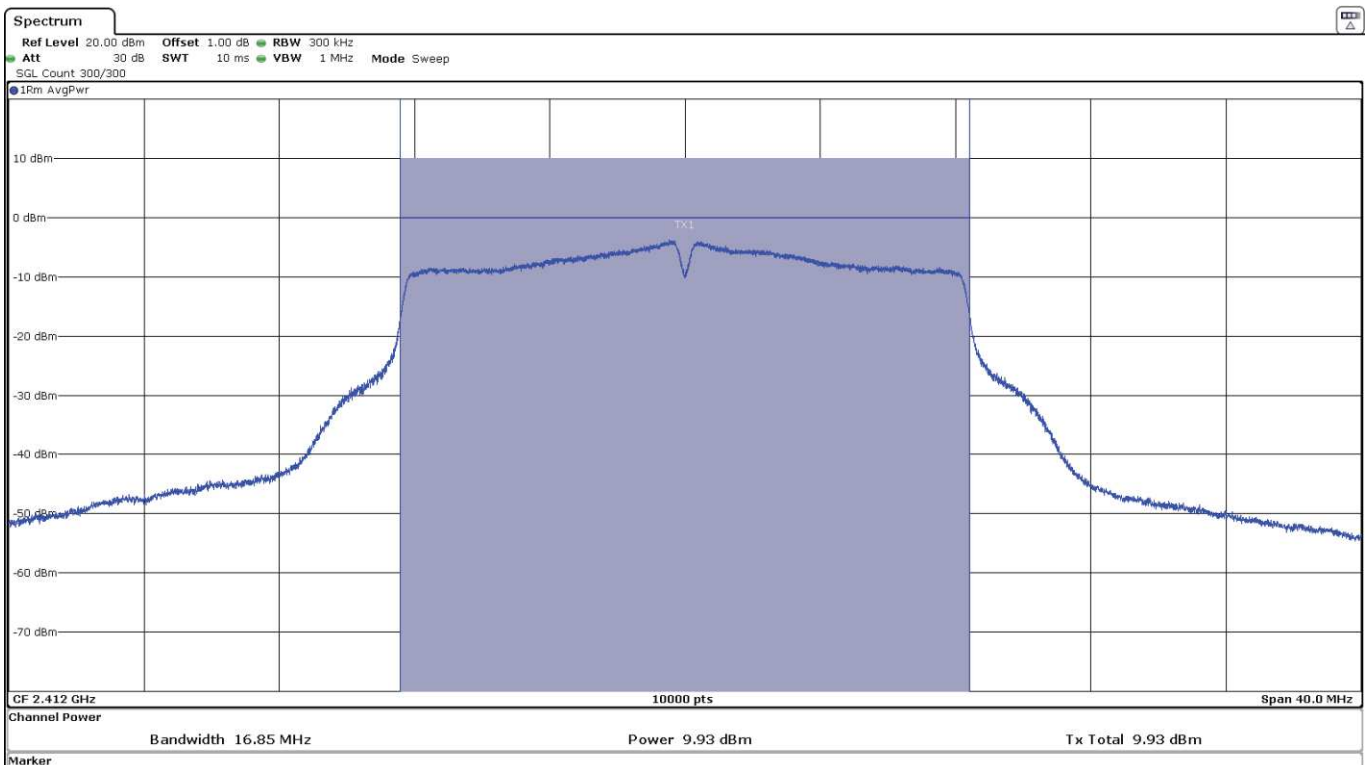
- Mode 802.11 g

- Low Channel:

CORE1\_Port4

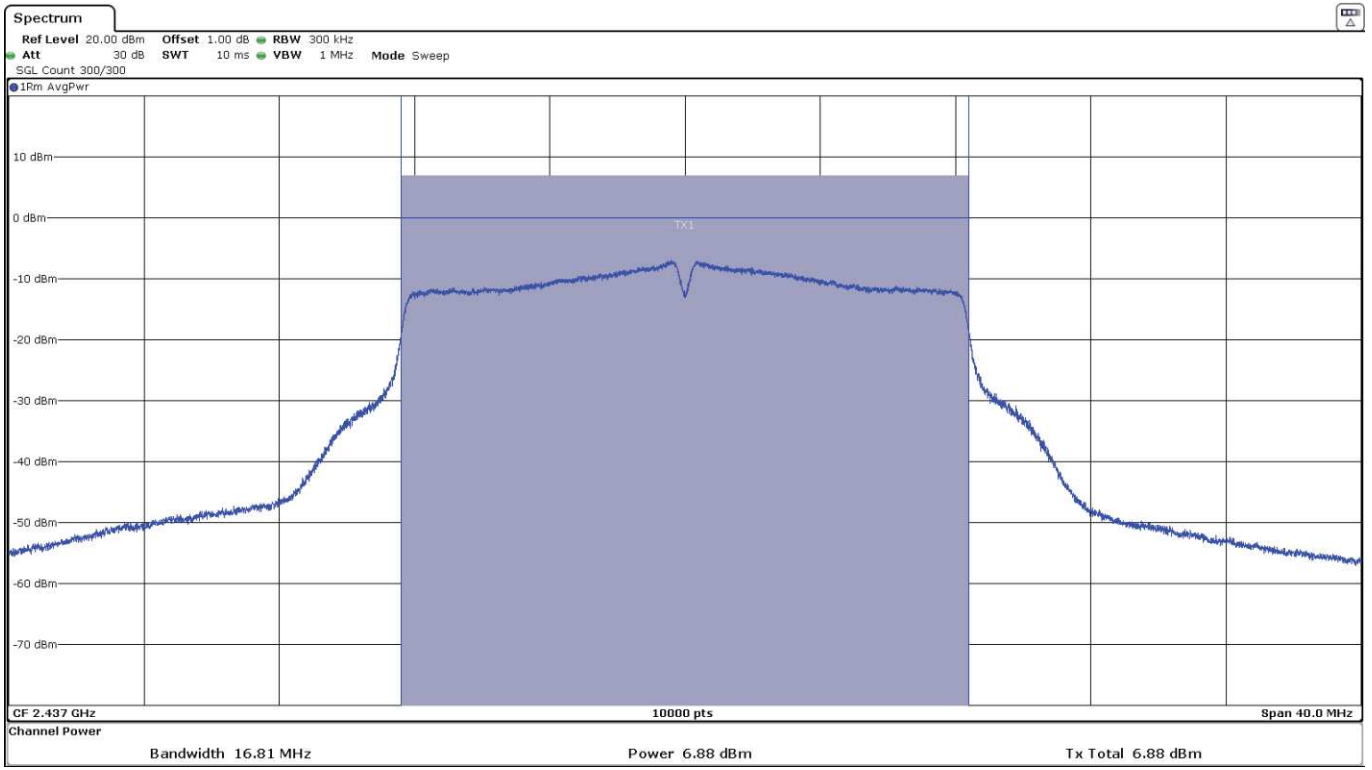


CORE0\_Port2

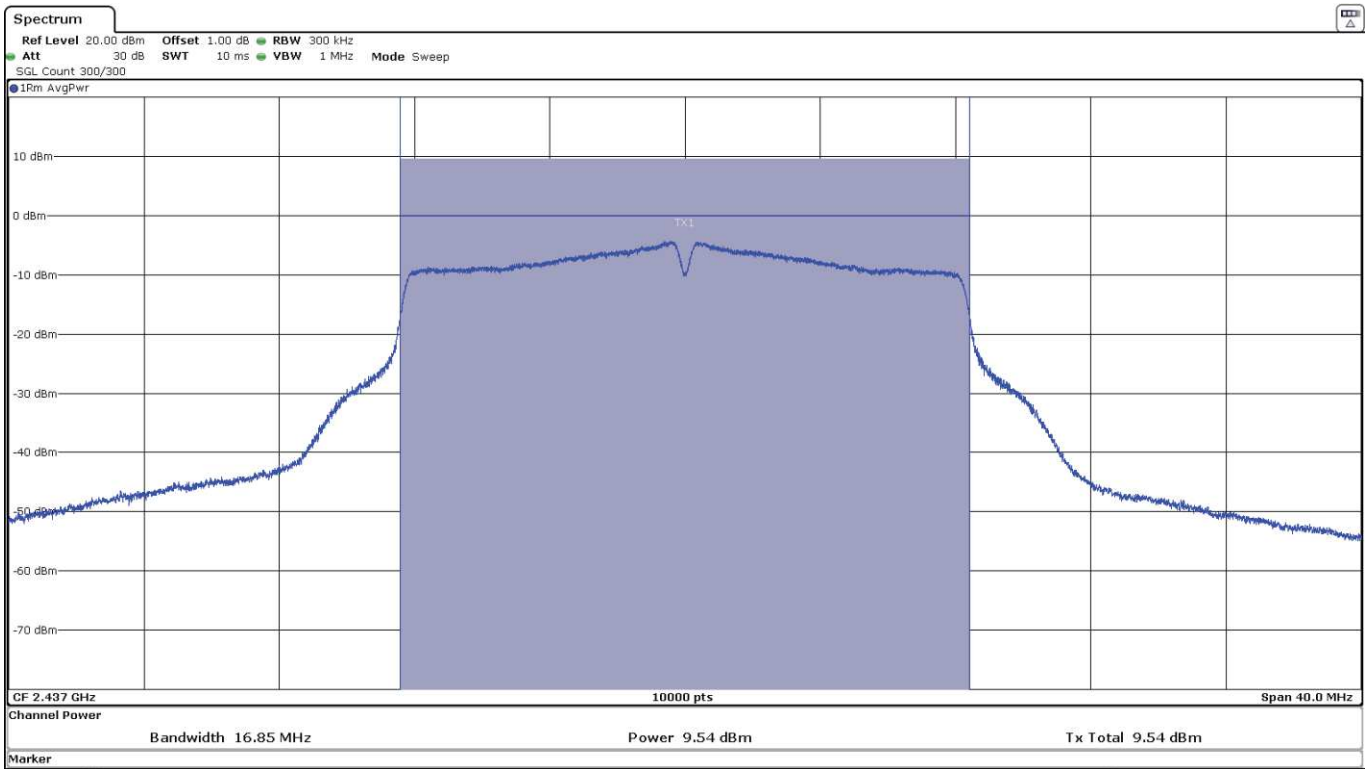


- Middle Channel:

CORE1\_Port4

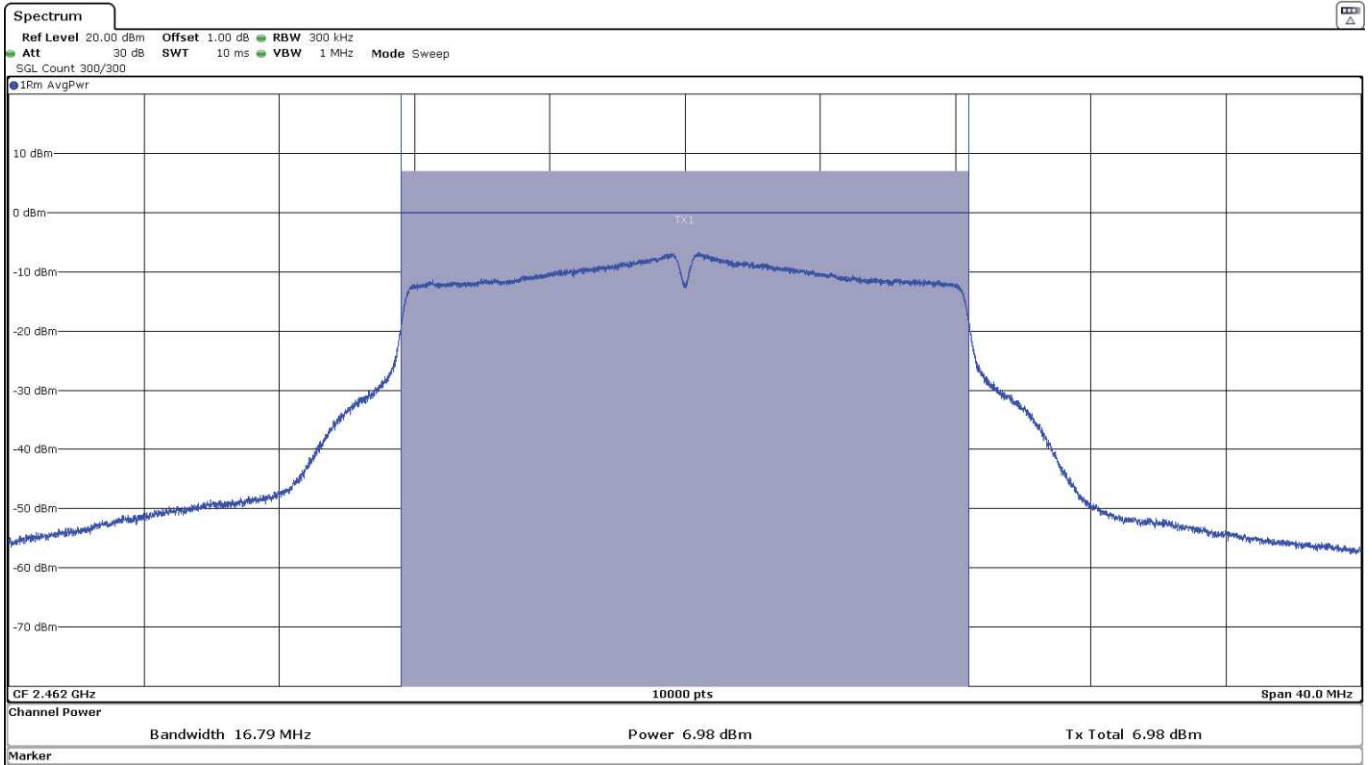


CORE0\_Port2

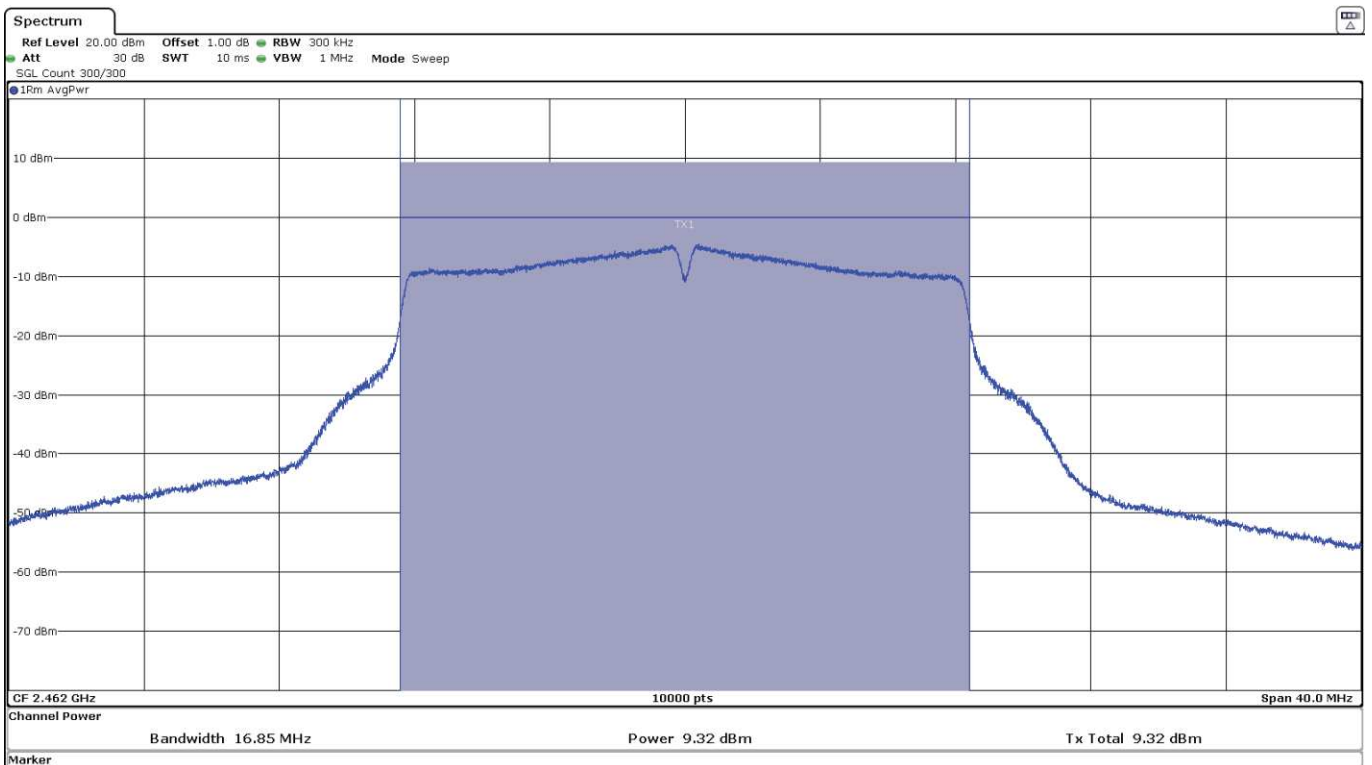


- High Channel:

CORE1\_Port4



CORE0\_Port2

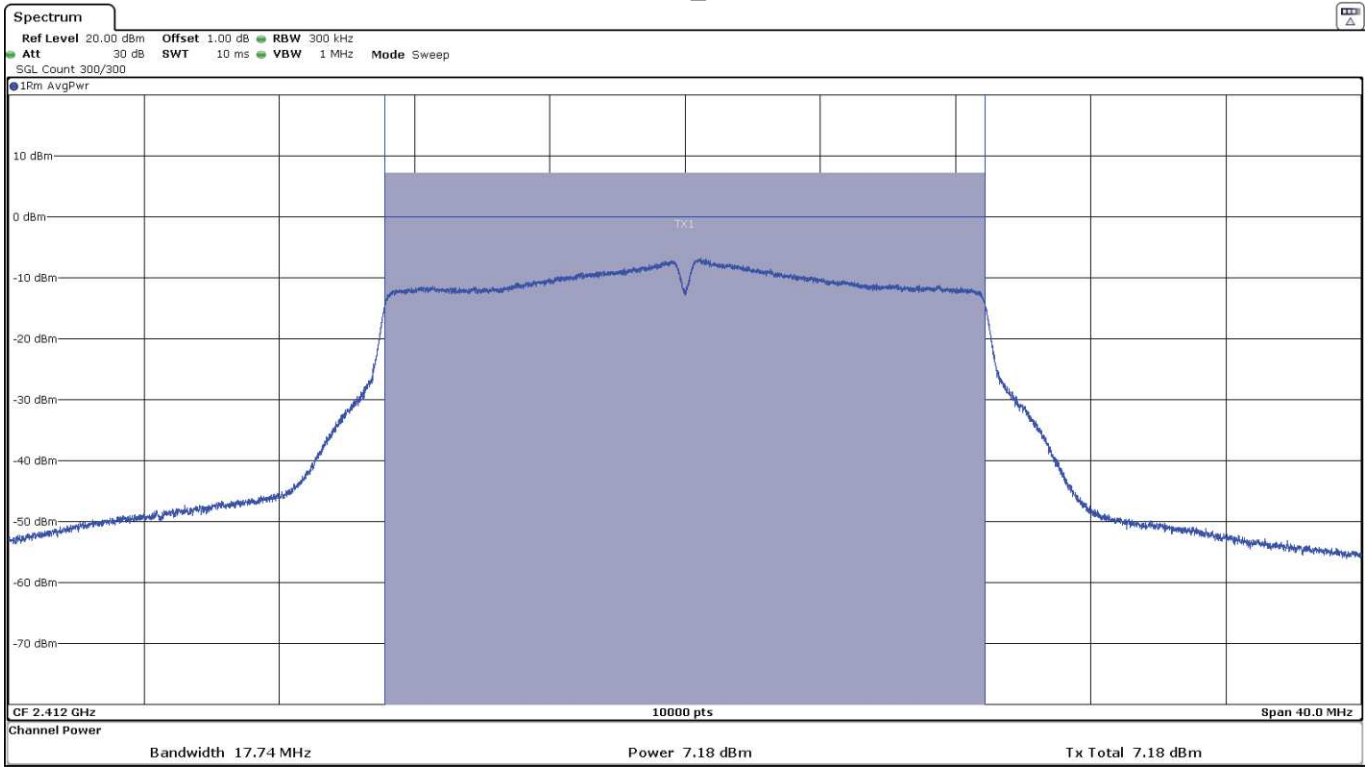


**MIMO – CORE1\_Port4 Antenna & CORE0\_Port2 Antenna:**

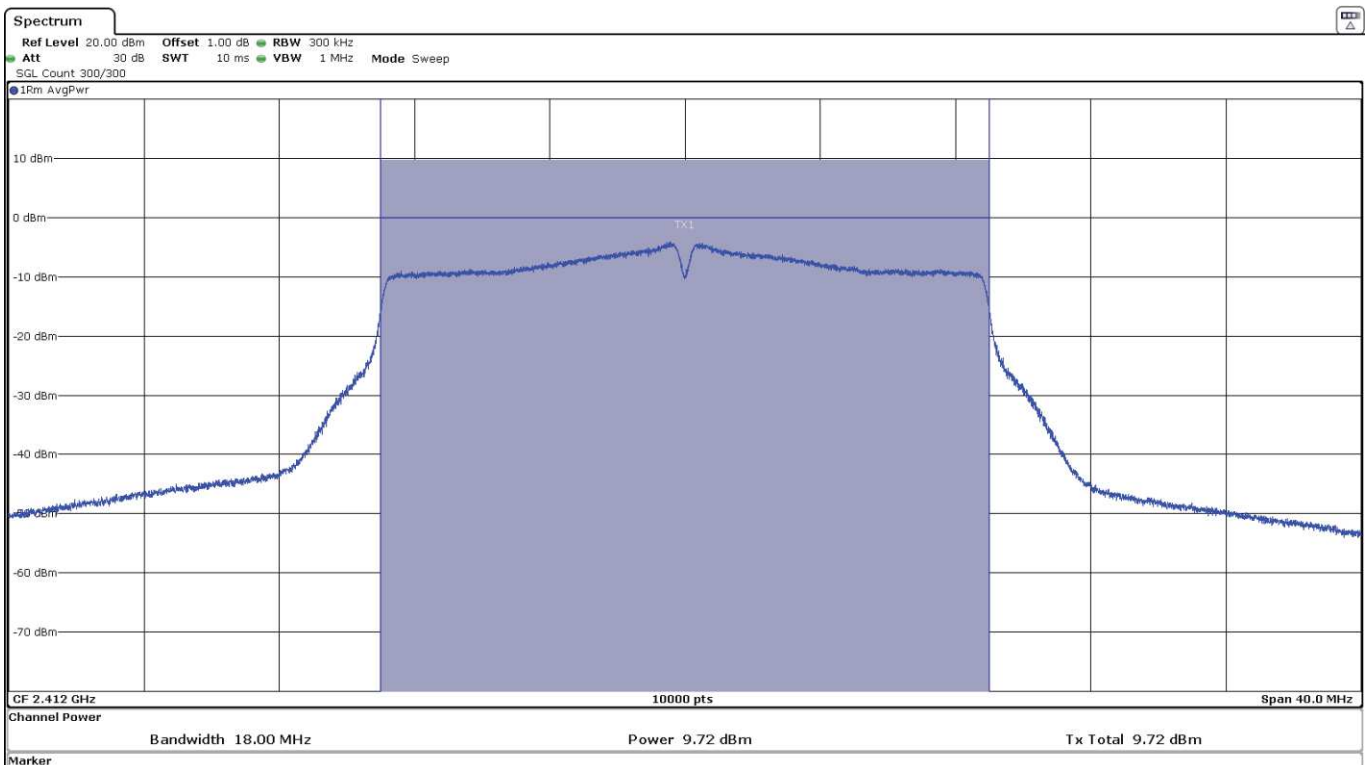
- **Mode 802.11 n20**

- Low Channel:

CORE1\_Port4

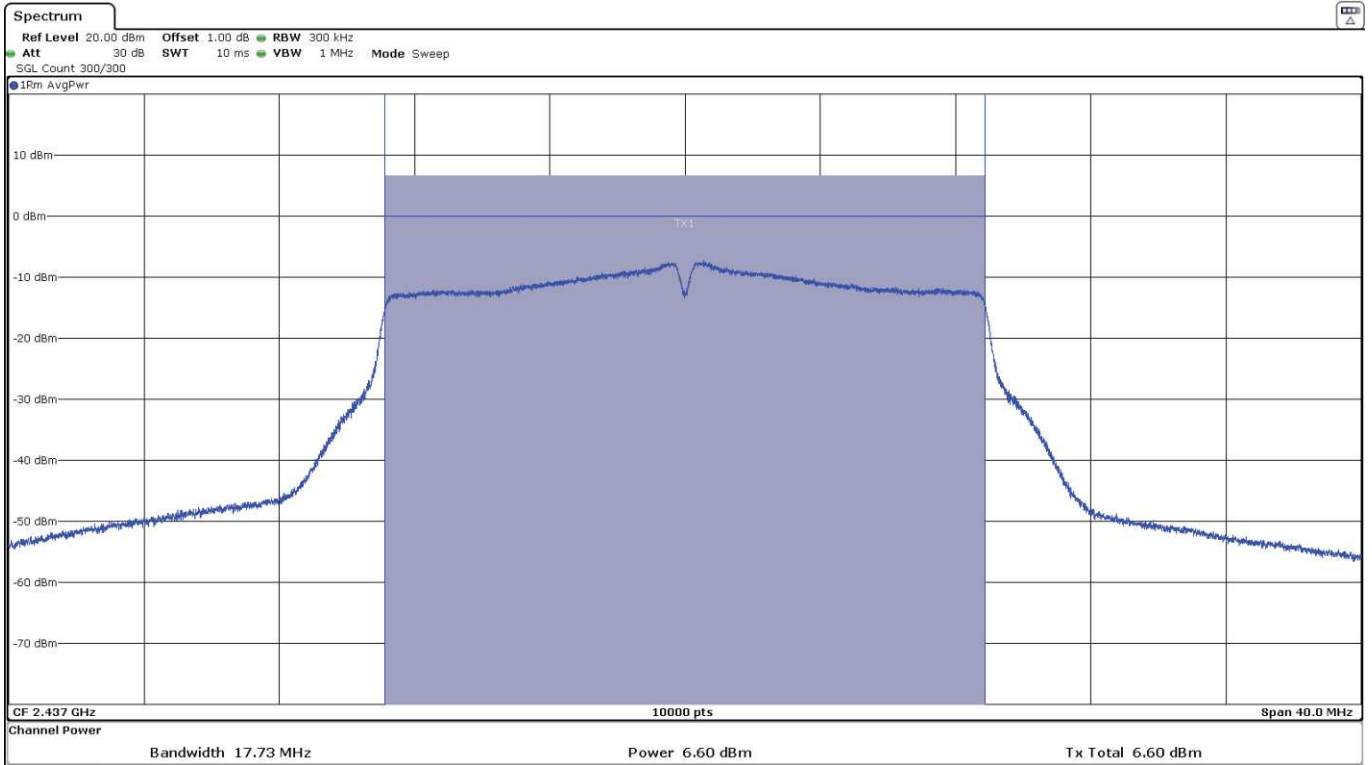


CORE0\_Port2

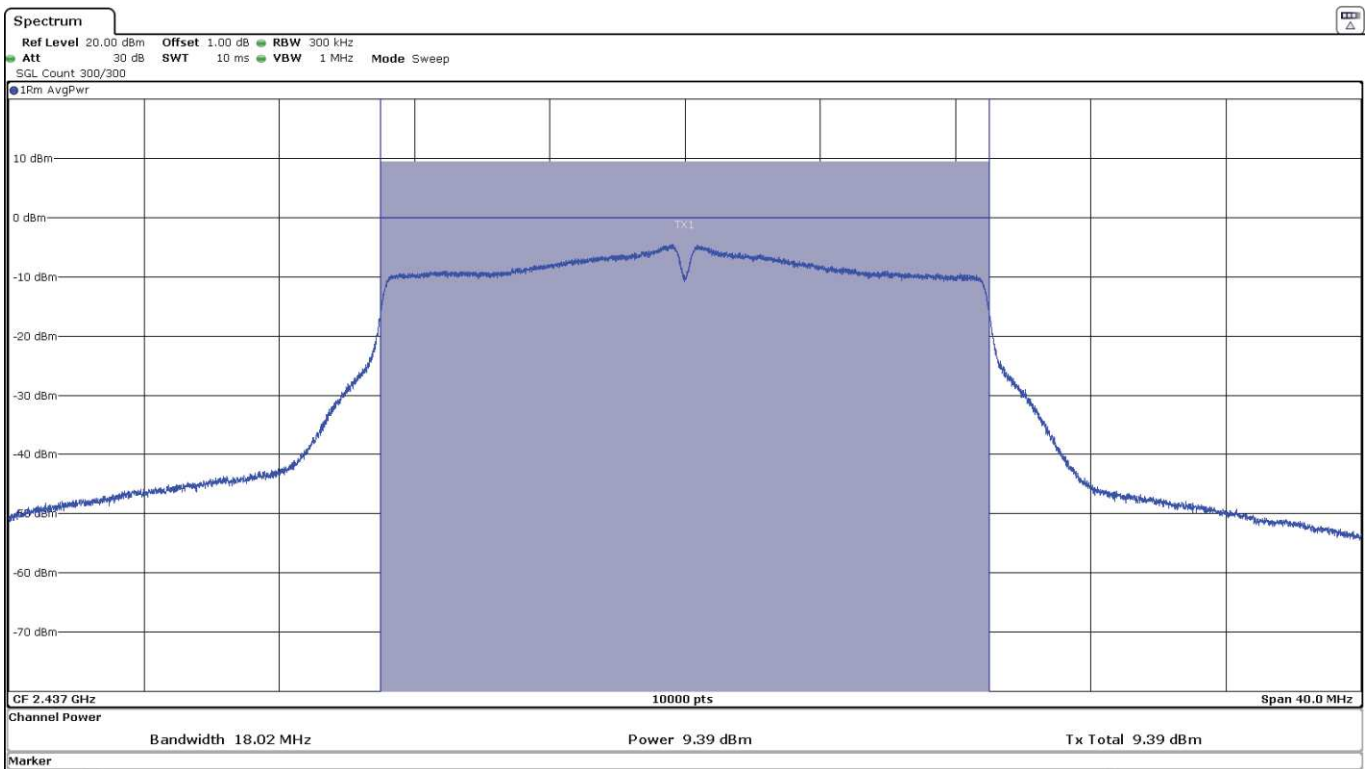


- Middle Channel:

CORE1\_Port4

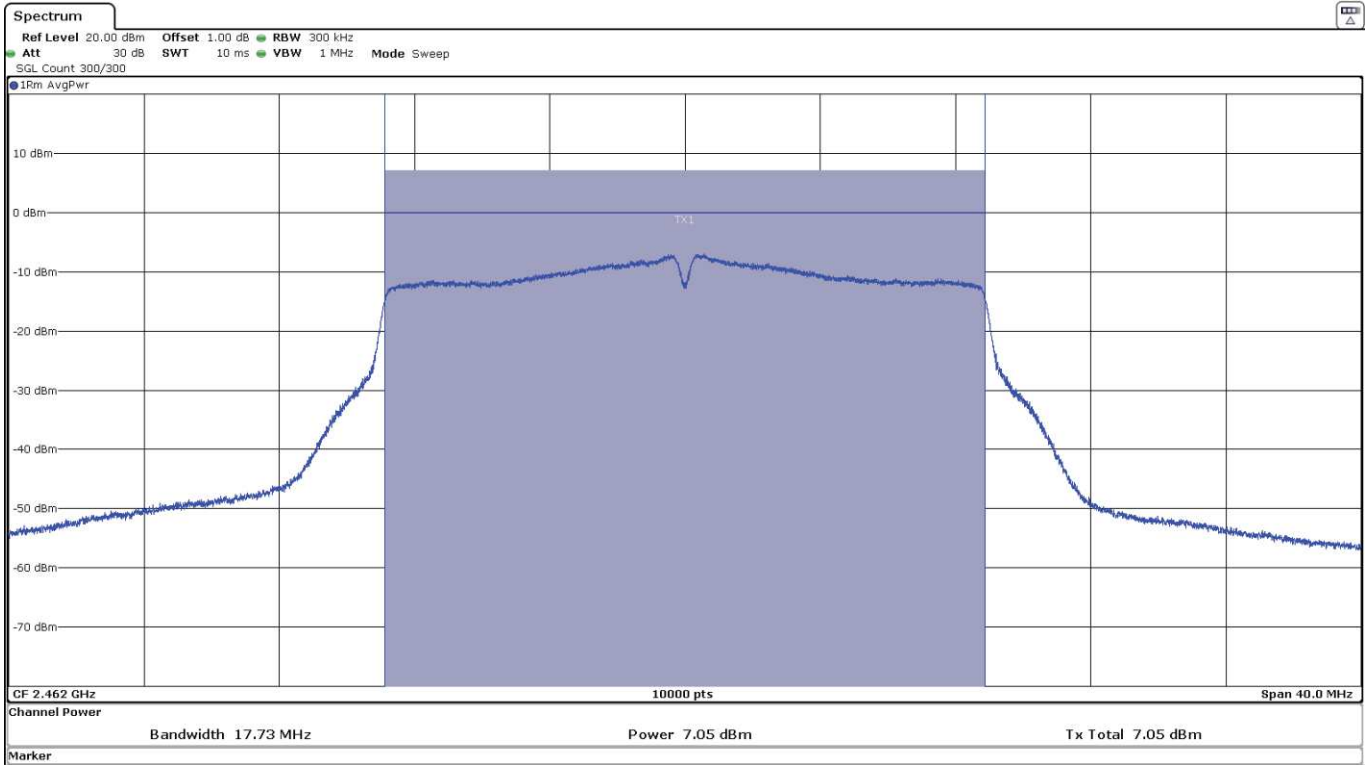


CORE0\_Port2

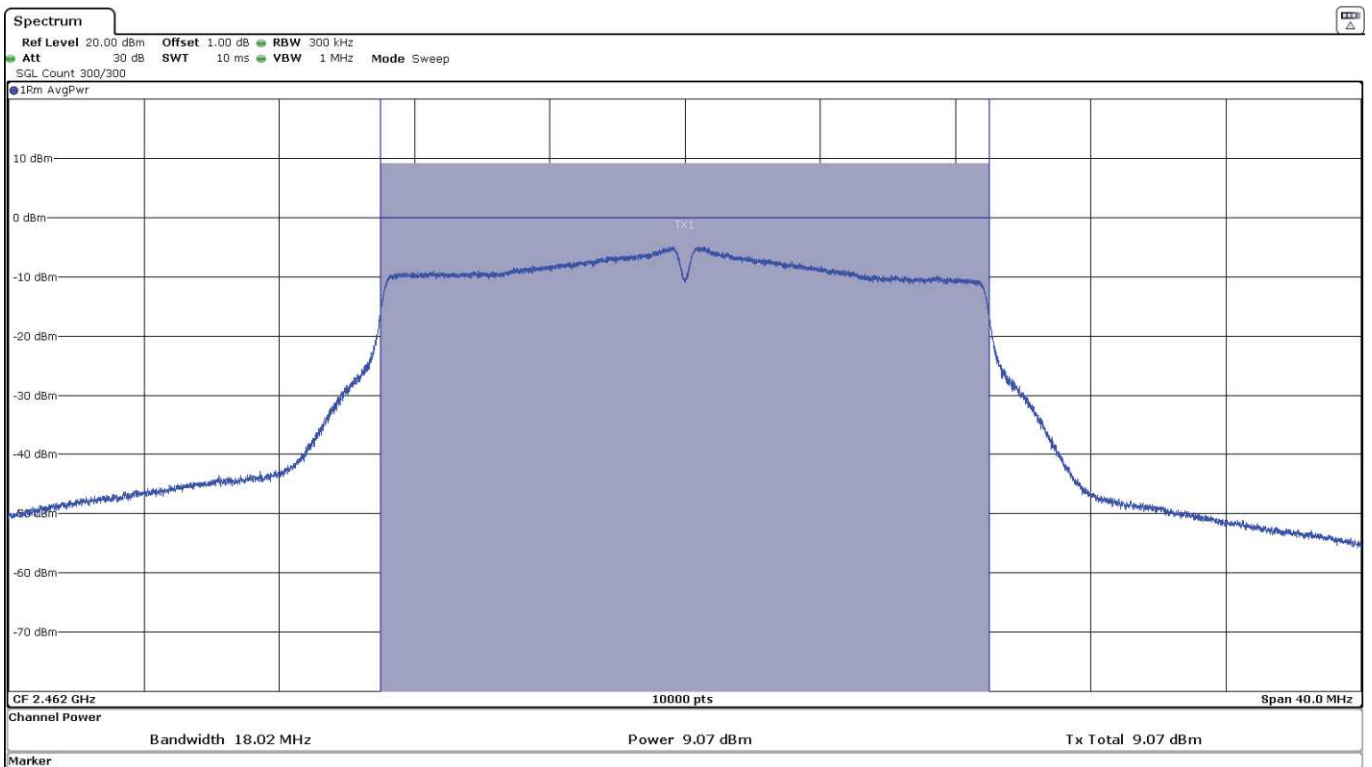


- High Channel:

CORE1\_Port4



CORE0\_Port2



## FCC 15.247 (d) / RSS-247 5.5. Emission limitations radiated (Transmitter)

### SPECIFICATION:

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) / RSS-Gen):

Frequency Range (MHz)	Field strength ( $\mu\text{V/m}$ )	Field strength (dB $\mu\text{V/m}$ )	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 - 25000	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 situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° 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 3 m for the frequency range 30 MHz-17 GHz and at distance of 1m for the frequency range 17 GHz-26 GHz.

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.



**SISO – WLAN0\_CORE1\_Port4 Antenna (Worst case in Antenna Gain):**

**Frequency range 30 MHz - 1 GHz:**

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

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
741.7375	29.20	46	V	Quasi peak	<± 5.08
890.099	26.36	46	V	Quasi peak	<± 5.08

- **Mode 802.11 b**

**Frequency range 1 - 26 GHz:**

The results in the next tables show the maximum measured levels in the 1-26 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

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

- LOW CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
4.824	43.26	74	H	Peak	<±5.13

- MIDDLE CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
4.874	42.35	74	H	Peak	<±5.13

- HIGH CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
4.924	41.18	74	H	Peak	<±5.13

- RESTRICTED BANDS. Spurious frequencies closest to the limit:

Restricted Band	Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
(2.31-2.39 GHz)	2.38933	56.84	74	V	Peak	<±4.11
		43.70	54		Average	<±4.11
(2.4835-2.5 GHz)	2.4846	56.62	74	V	Peak	<±4.11
		43.90	54		Average	<±4.11

Verdict: PASS

OFDM modes:

For spurious emissions in the range 30 MHz - 26 GHz (except field strength at the band edges that was performed for all modes) a preliminary scan was performed to determine the worst case mode.

Herein the results for the worst case mode: 802.11 n20.

Spurious emissions in the Restricted Bands 2.31-2.39 GHz and 2.4835-2.5 GHz are measured for all modes.

- **Mode 802.11 n20 (OFDM worst case for spurious emissions)**

**Frequency range 1 - 26 GHz:**

The results in the next tables show the maximum measured levels in the 1-26 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

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

- LOW CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.9995	40.84	74	H	Peak	<±5.13

- MIDDLE CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.7315	41.71	74	V	Peak	<±5.13
6	42.73	74	H	Peak	<±5.13

- HIGH CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
5.731	42.37	74	V	Peak	<±5.13
6	42.80	74	V	Peak	<±5.13

- RESTRICTED BANDS. Spurious frequencies closest to the limit:

Restricted Band	Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
(2.31-2.39 GHz)	2.389733	63.48	74	V	Peak	<±4.11
		46.43	54		Average	
(2.4835-2.5 GHz)	2.484267	65.73	74	V	Peak	<±4.11
		45.66	54		Average	

Verdict: PASS

- **Mode 802.11 g**

The results in the next tables show the maximum measured levels in the Restricted Bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

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

- RESTRICTED BANDS. Spurious frequencies closest to the limit:

Restricted Band	Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
(2.31-2.39 GHz)	2.3894	61.31	74	H	Peak	<±4.11
		46.08	54		Average	
(2.4835-2.5GHz)	2.48373	62.14	74	V	Peak	<±4.11
		45.61	54		Average	

Verdict: PASS

**MIMO – WLAN0\_CORE1\_Port4 & CORE0\_Port2 Antennas:**

**Frequency range 30 MHz - 1 GHz:**

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

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
741.7375	29.03	46	V	Quasi peak	<± 5.08
890.099	27.15	46	H	Quasi peak	<± 5.08

- **Mode 802.11 b**

**Frequency range 1 - 26 GHz:**

The results in the next tables show the maximum measured levels in the 1-26 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

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

- LOW CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
2.3906	56.92	74	V	Peak	<±4.11
	43.55	54		Average	<±4.11
4.748	39.64	74	V	Peak	<±5.13

- MIDDLE CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
4.874	45.33	74	V	Peak	<±5.13

- HIGH CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
4.924	46.39	74	V	Peak	<±5.13

- RESTRICTED BANDS. Spurious frequencies closest to the limit:

Restricted Band	Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
(2.31-2.39 GHz)	None.					
(2.4835-2.5 GHz)	2.49093	57.58	74	V	Peak	<±4.11
		43.89	54		Average	

Verdict: PASS

OFDM modes:

For spurious emissions in the range 30 MHz - 26 GHz (except field strength at the band edges that was performed for all modes) a preliminary scan was performed to determine the worst case mode.

Herein the results for the worst case mode: 802.11 n20.

Spurious emissions in the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz are measured for all modes.

- **Mode 802.11 n20 (OFDM worst case for spurious emissions)**

**Frequency range 1 - 26 GHz:**

The results in the next tables show the maximum measured levels in the 1-26 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

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

- LOW CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
4.8225	45.97	74	V	Peak	<±5.13

- MIDDLE CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
4.875	44.78	74	V	Peak	<±5.13

- HIGH CHANNEL. Spurious frequencies closest to the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
4.922	45.93	74	V	Peak	<±5.13

- RESTRICTED BANDS. Spurious frequencies closest to the limit:

Restricted Band	Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
(2.31-2.39 GHz)	2.3876	62.03	74	V	Peak	<±4.11
		45.61	54		Average	
(2.4835-2.5 GHz)	2.48493	57.74	74	H	Peak	<±4.11
		44.19	54		Average	

Verdict: PASS

- **Mode 802.11 g**

The results in the next tables show the maximum measured levels in the Restricted Bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

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

- RESTRICTED BANDS. Spurious frequencies detected at less than 20 dB below the limit:

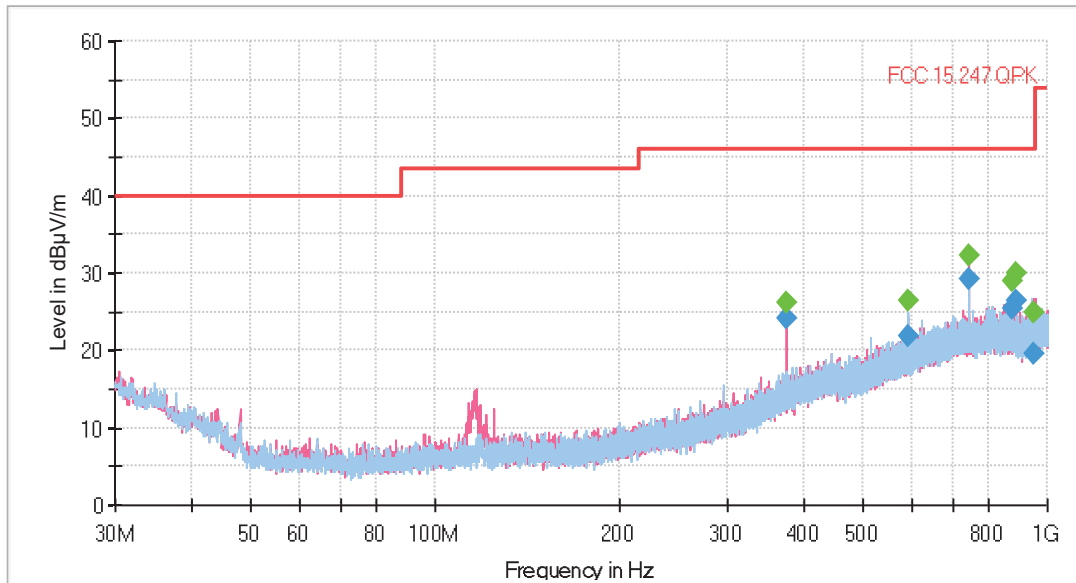
Restricted Band	Spurious frequency (GHz)	Emission Level (dBµV/m)	Limit (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
(2.31-2.39 GHz)	2.3888	57.14	74	H	Peak	<±4.11
		43.74	54		Average	
(2.4835-2.5 GHz)	2.48473	58.81	74	H	Peak	<±4.11
		45.27	54		Average	

Verdict: PASS

**SISO – WLAN0\_CORE1\_Port4 Antenna:**

**FREQUENCY RANGE 30 MHz - 1 GHz:**

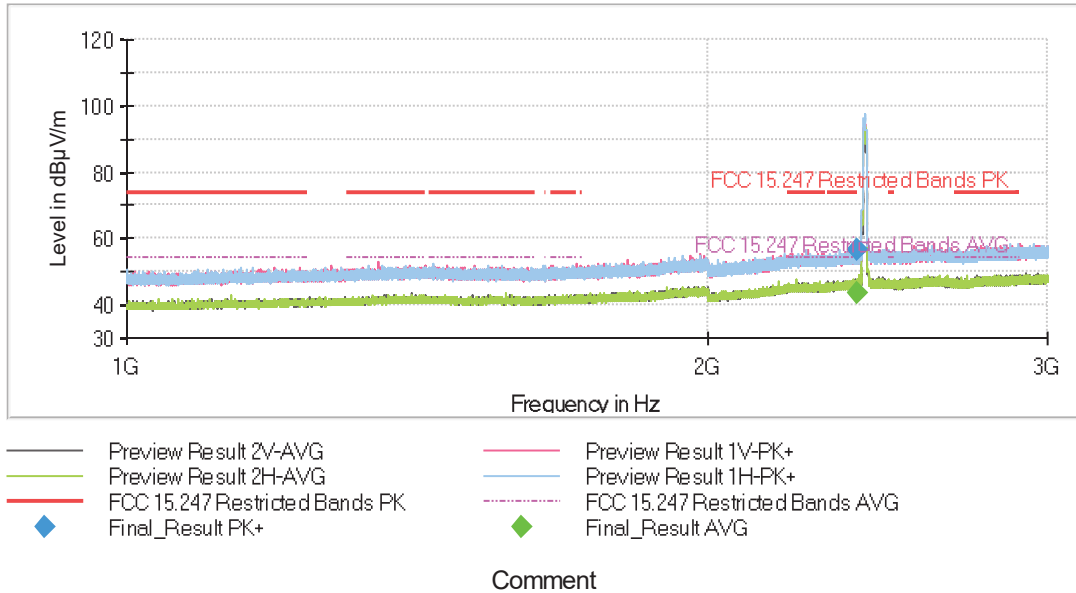
The spurious signals detected do not depend neither on the operating channel nor the modulation mode.



- **Mode 802.11 b**

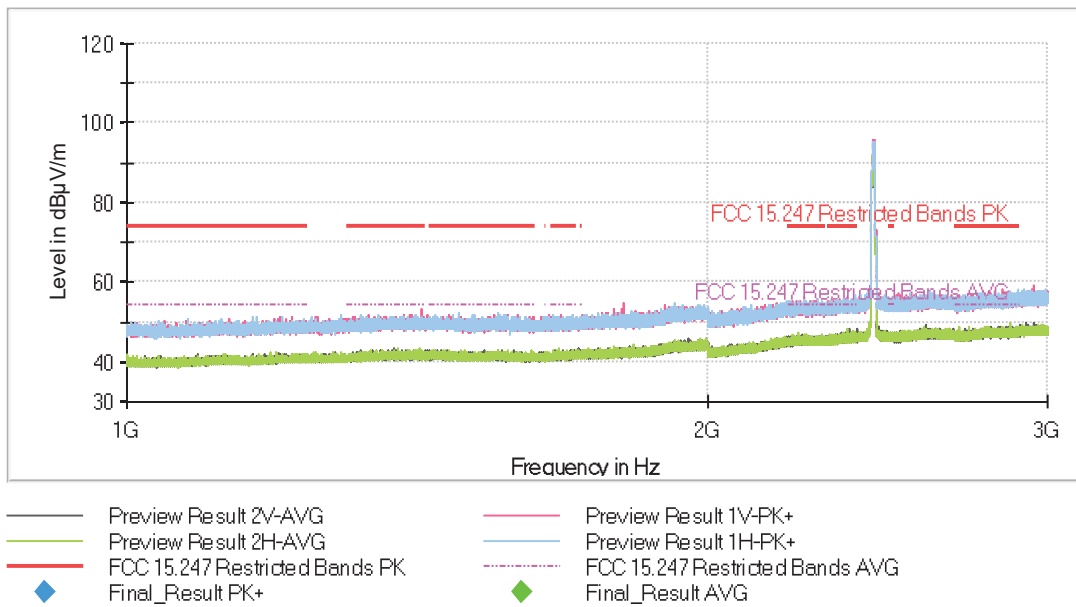
**FREQUENCY RANGE 1 - 3 GHz:**

- Low Channel:



The peak above the limit is the carrier frequency.

- Middle Channel:



The peak above the limit is the carrier frequency.