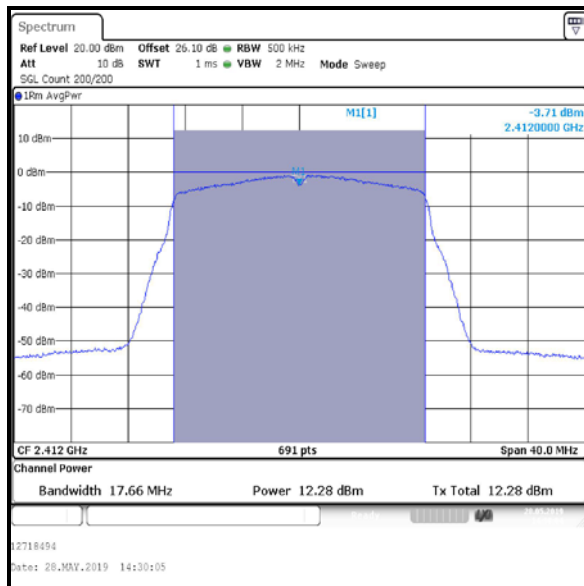
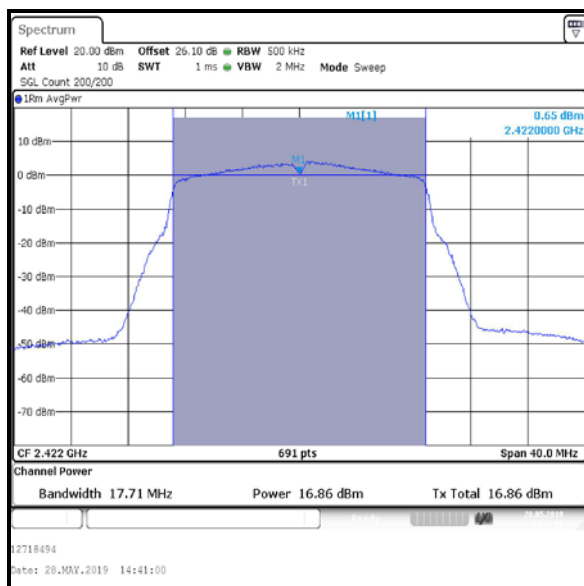


Transmitter Maximum (Average) Output Power (continued)**Results: 802.11n / HT20 / MIMO / 3Tx TxBF / BPSK / MCS0 / Core 0**

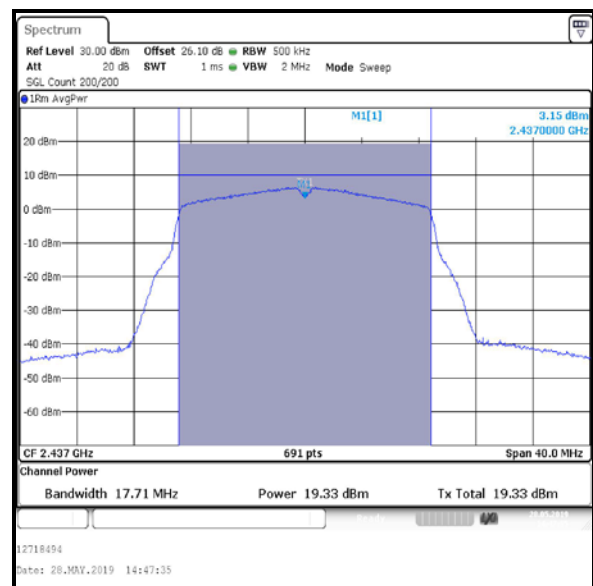
Channel 1



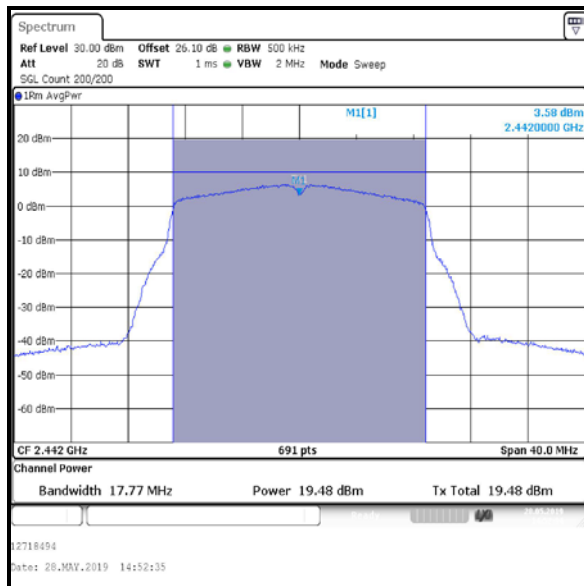
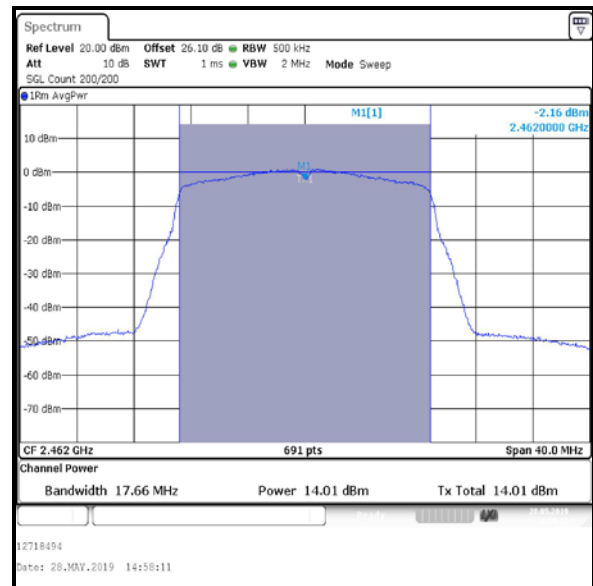
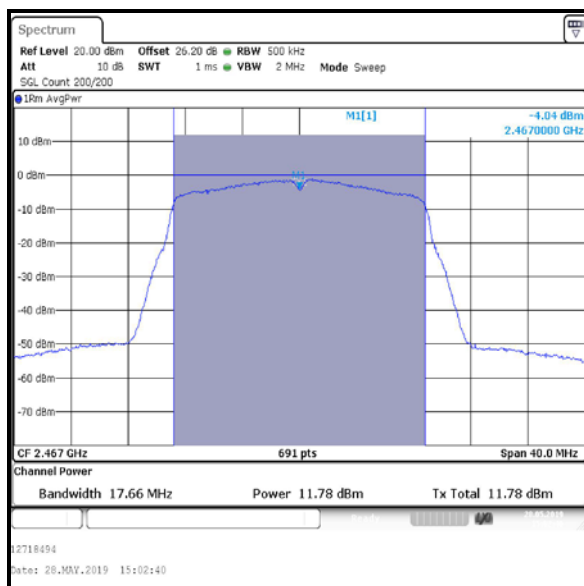
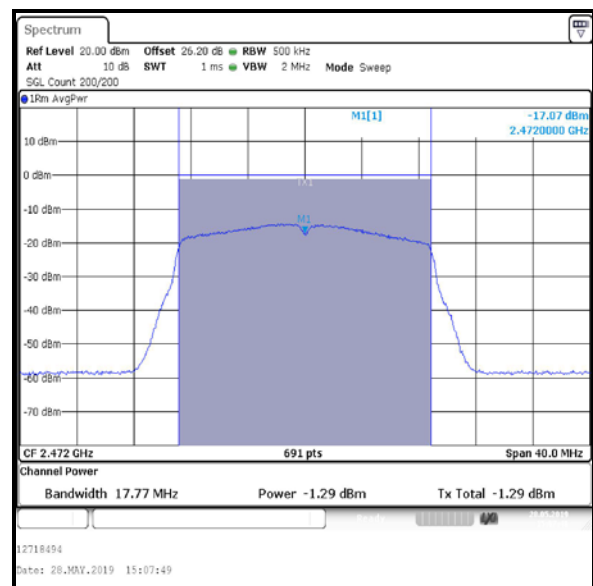
Channel 2

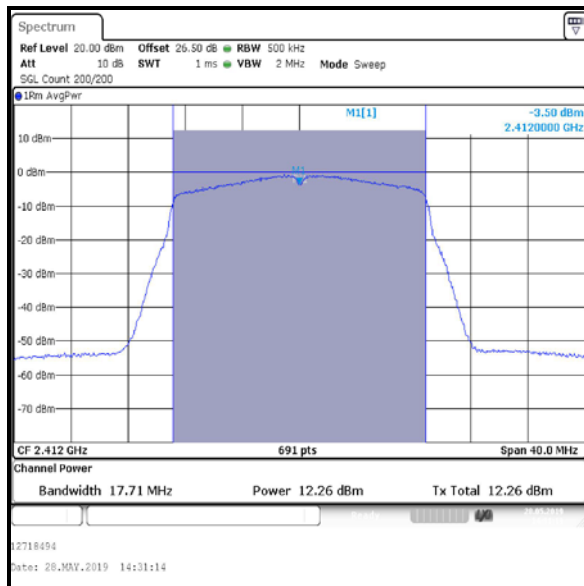


Channel 3

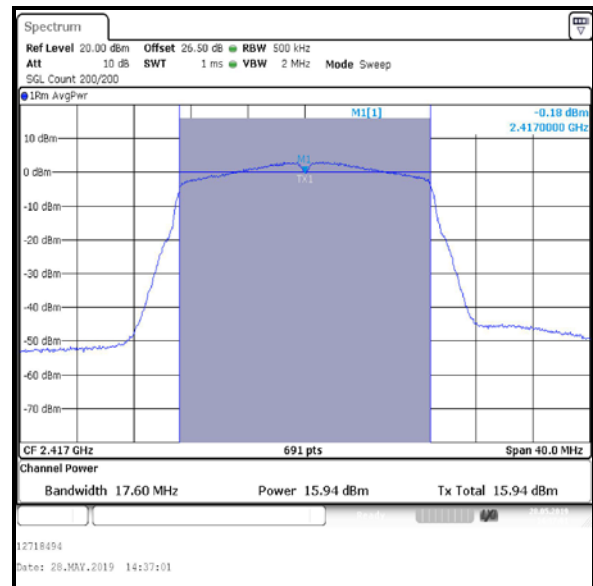


Channel 6

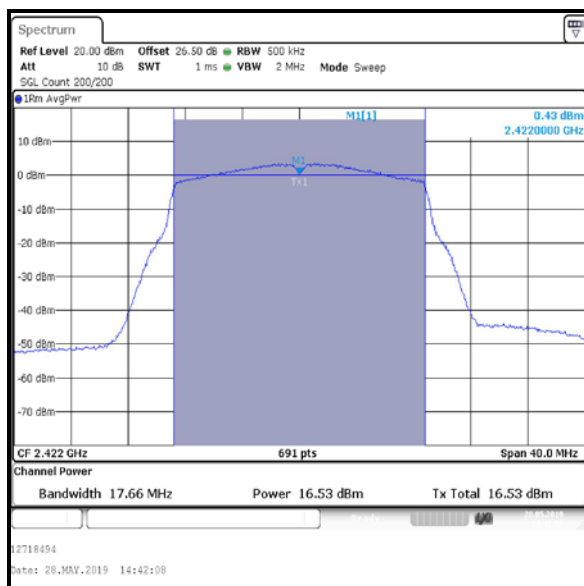
Transmitter Maximum (Average) Output Power (continued)**Results: 802.11n / HT20 / MIMO / 3Tx TxBF / BPSK / MCS0 / Core 0****Channel 7****Channel 11****Channel 12****Channel 13**

Transmitter Maximum (Average) Output Power (continued)**Results: 802.11n / HT20 / MIMO / 3Tx TxBF / BPSK / MCS0 / Core 1**

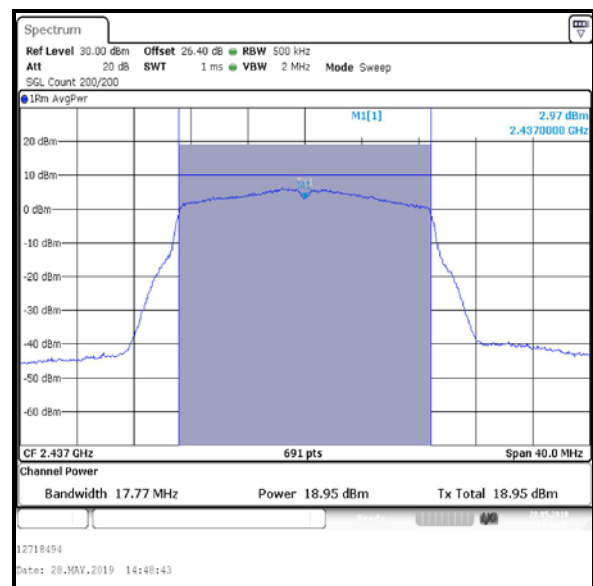
Channel 1



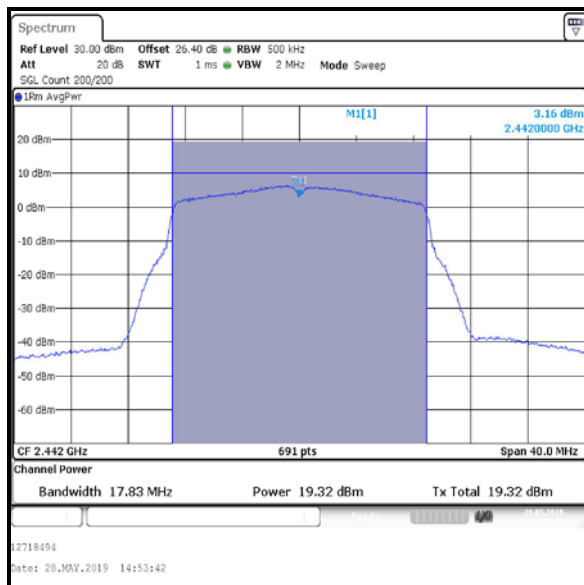
Channel 2



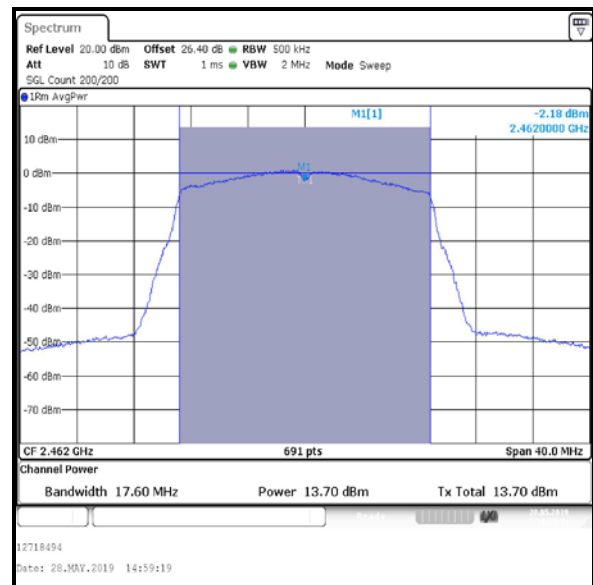
Channel 3



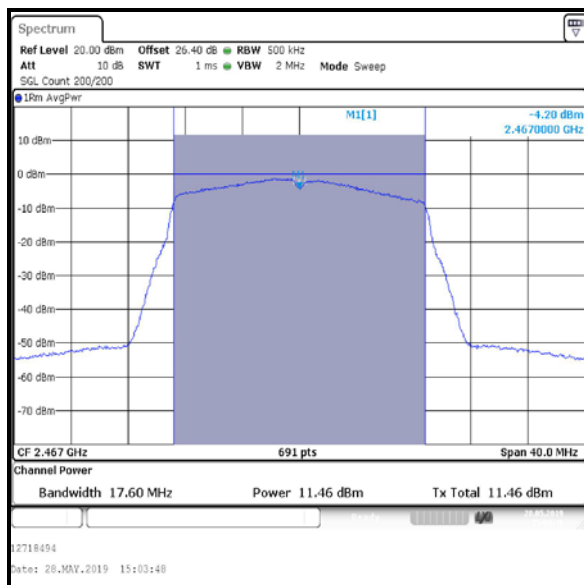
Channel 6

Transmitter Maximum (Average) Output Power (continued)**Results: 802.11n / HT20 / MIMO / 3Tx TxBF / BPSK / MCS0 / Core 1**

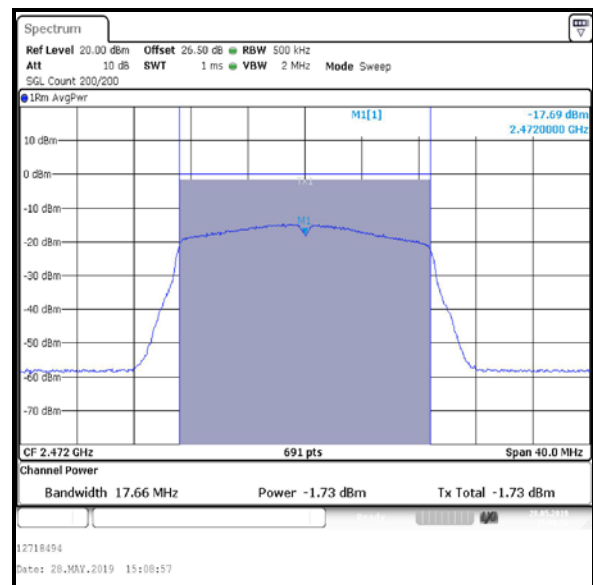
Channel 7



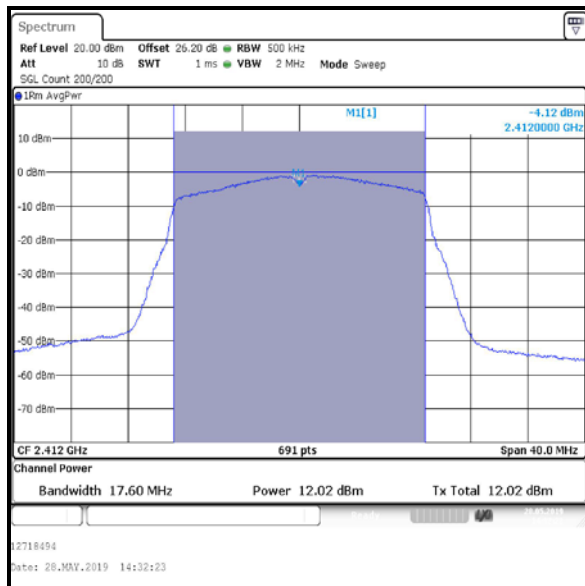
Channel 11



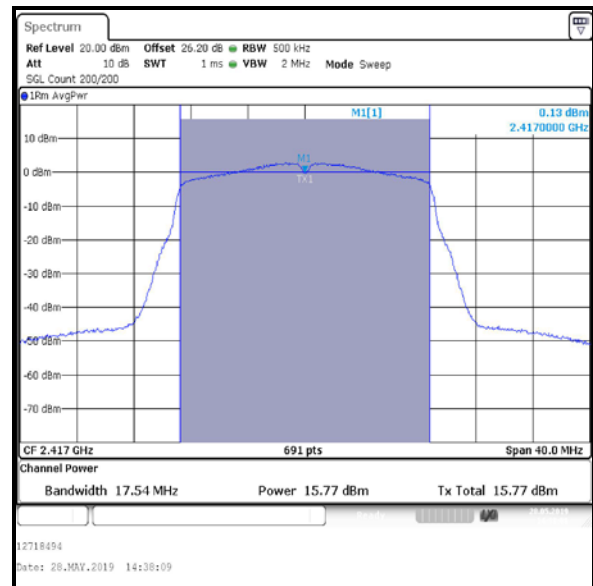
Channel 12



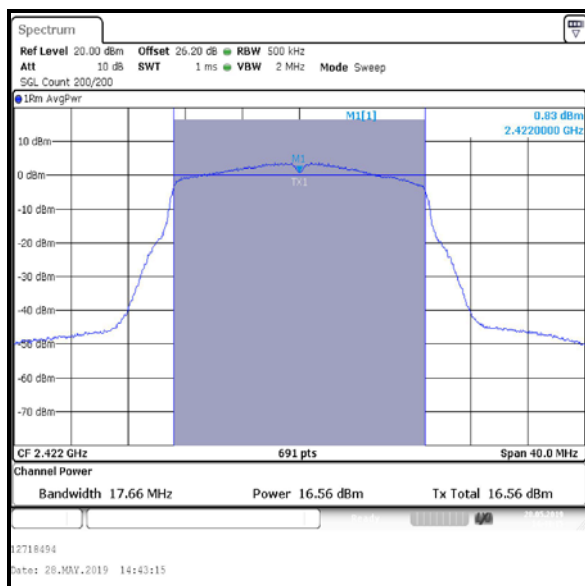
Channel 13

Transmitter Maximum (Average) Output Power (continued)**Results: 802.11n / HT20 / MIMO / 3Tx TxBF / BPSK / MCS0 / Core 2**

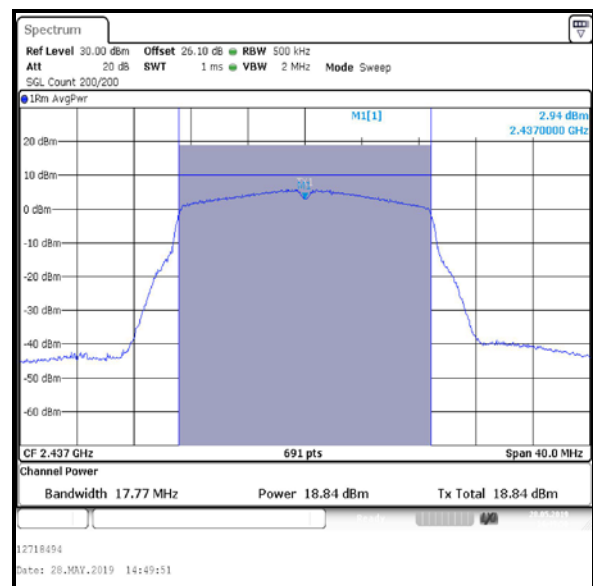
Channel 1



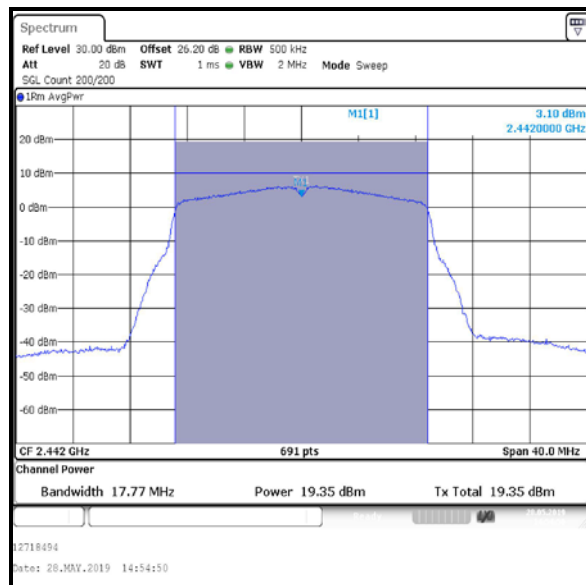
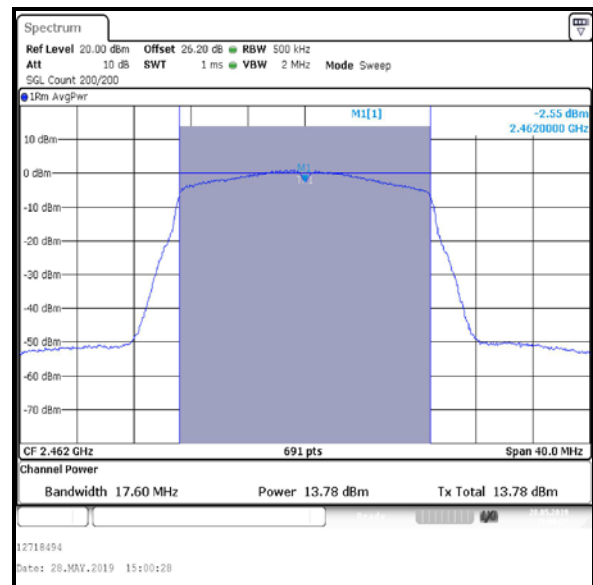
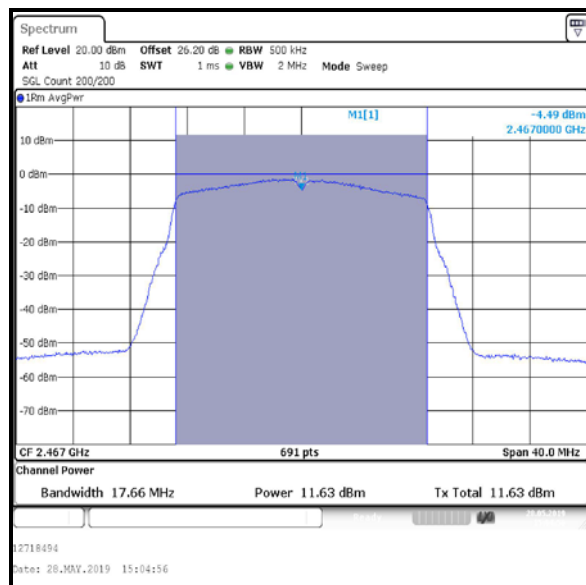
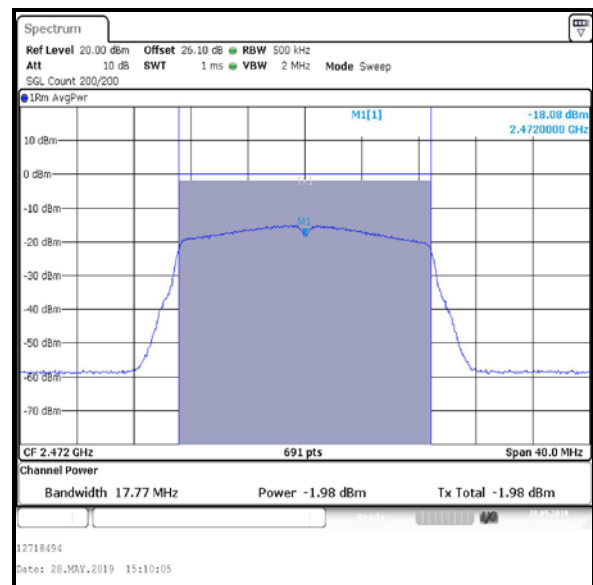
Channel 2



Channel 3



Channel 6

Transmitter Maximum (Average) Output Power (continued)**Results: 802.11n / HT20 / MIMO / 3Tx TxBF / BPSK / MCS0 / Core 2****Channel 7****Channel 11****Channel 12****Channel 13**

5. Radiated Test Results

5.1. Transmitter Radiated Emissions <1 GHz

Test Summary:

Test Engineers:	Mohamed Toubella & Andrew Harding	Test Date:	24 May 2019
Test Sample Serial Number:	C02YD006MFLQ		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	ANSI C63.10 Sections 6.3 and 6.5
Frequency Range	30 MHz to 1000 MHz

Environmental Conditions:

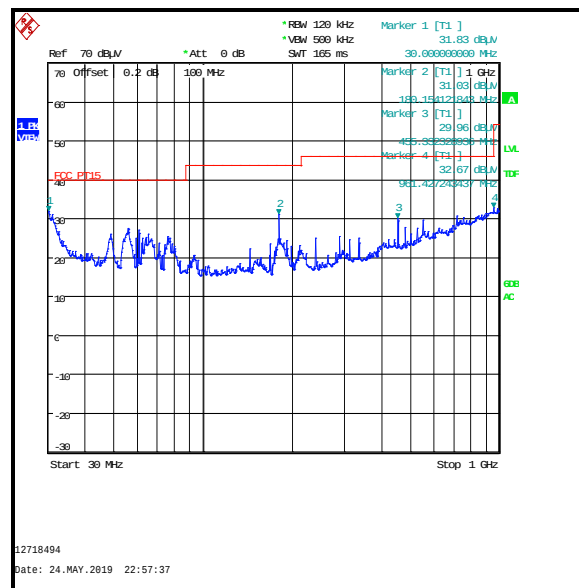
Temperature (°C):	21
Relative Humidity (%):	35

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the middle channel only.
3. The emissions stated below were found to be independent of wireless technology.
4. All other emissions shown on the pre-scan plots were investigated and found to be ambient, or >20 dB below the applicable limit or below the measurement system noise floor and therefore not recorded.
5. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
6. Pre-scans were performed and markers placed on the highest measured levels. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth 500 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold.
7. Final measurements were performed on the marker frequencies and the results entered into the table below. The test receiver resolution bandwidth was set to 120 kHz, using a peak detector with max hold enabled. Span was wide enough to see the whole emission.

Transmitter Radiated Emissions (continued)**Results: Peak / Middle Channel / 802.11b / 1 Mbps / MIMO / 3Tx CDD**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
74.390	Horizontal	28.4	40.0	11.6	Complied
167.981	Horizontal	26.1	43.5	17.4	Complied
240.005	Horizontal	31.0	46.0	15.0	Complied
263.949	Horizontal	26.6	46.0	19.4	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

5.2. Transmitter Radiated Emissions >1 GHz

Test Summary:

Test Engineers:	Mark Perry, Nick Steele & Andrew Harding	Test Dates:	10 May 2019 to 21 May 2019
Test Sample Serial Numbers:	C02YD006MFLQ & C02YF00CMFLF		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	FCC KDB 558074 Sections 8.5 & 8.6 referencing ANSI C63.10 Sections 6.3, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.2
Frequency Range	1 GHz to 25 GHz

Environmental Conditions:

Temperature (°C):	21 to 24
Relative Humidity (%):	38 to 47

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the appropriate limit or below the measurement system noise floor.
3. The emission shown approximately at 2437 MHz on the 1 GHz to 3 GHz plot is the EUT fundamental.
4. *In accordance with ANSI C63.10 Section 6.6.4.3 (Note 1), if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.
5. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 or K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (Asset Number K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 m above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
6. Pre-scans were performed and a marker placed on the highest measured level of the appropriate plot. The test receiver resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. The sweep time was set to auto.

Transmitter Radiated Emissions (continued)**Results: Bottom Channel / Field Strength / Peak**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
4823.768	Vertical	46.7*	54.0	7.3	Complied
15923.462	Vertical	57.2	74.0	16.8	Complied
23819.000	Vertical	51.5*	54.0	2.5	Complied

Results: Bottom Channel / Field Strength / Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
15997.500	Vertical	38.6	54.0	15.4	Complied

Results: Middle Channel / Field Strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
4884.104	Vertical	49.0*	54.0	5.0	Complied
15923.462	Vertical	57.2	74.0	16.8	Complied
23819.000	Vertical	51.5*	54.0	2.5	Complied

Results: Middle Channel / Field Strength / Average

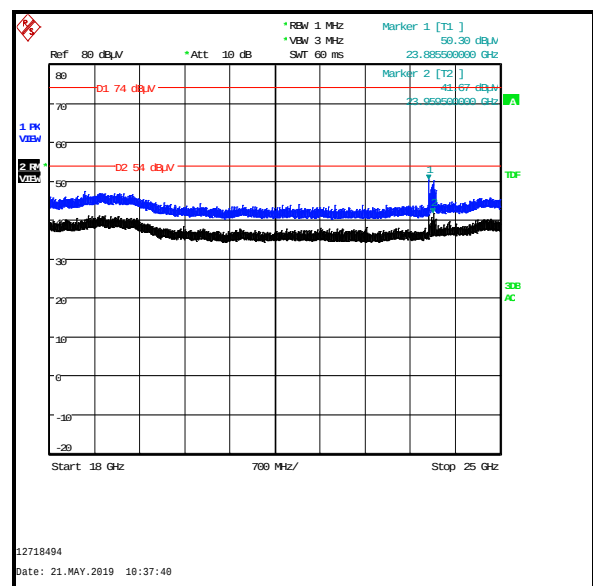
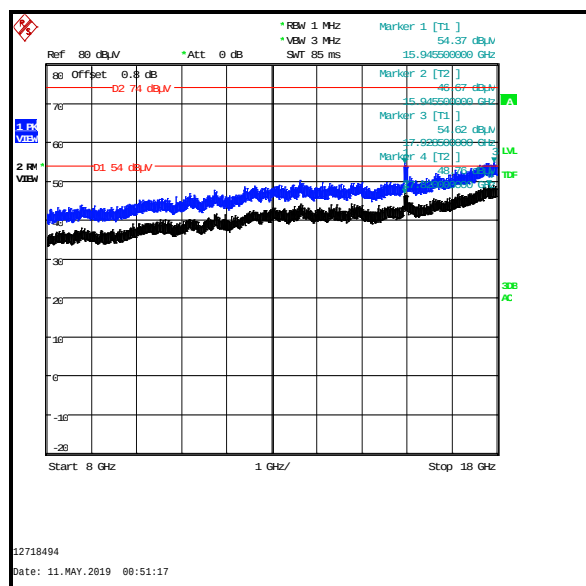
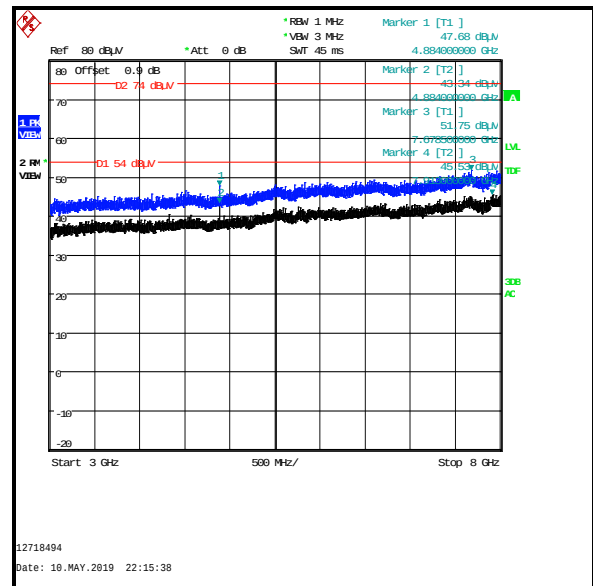
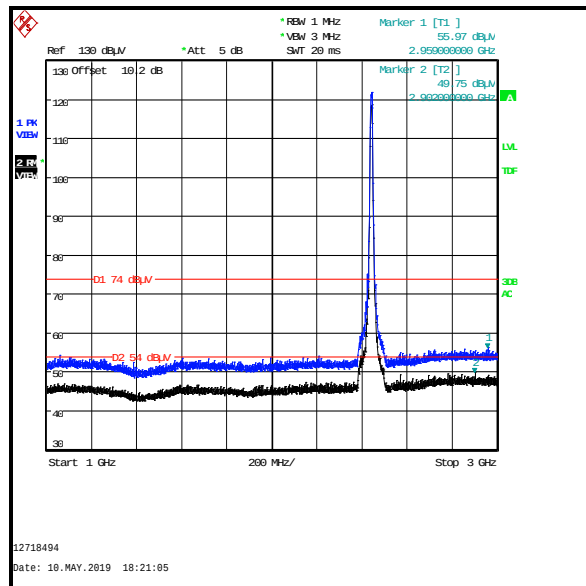
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
15997.500	Vertical	38.6	54.0	15.4	Complied

Results: Top Channel / Field Strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
4944.216	Vertical	47.2*	54.0	6.8	Complied
15923.462	Vertical	57.2	74.0	16.8	Complied
23819.000	Vertical	51.5*	54.0	2.5	Complied

Results: Top Channel / Field Strength / Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
15997.500	Vertical	38.6	54.0	15.4	Complied

Transmitter Radiated Emissions (continued)

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

5.3. Transmitter Band Edge Radiated Emissions**Test Summary:**

Test Engineers:	James O'Reily, Mohamed Toubella Marco Zunarelli John Ferdinard & Andrew Harding	Test Dates:	16 April 2019 to 08 May 2019
Test Sample Serial Numbers:	C02YD006MFLQ & C02YF00CMFLF		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	KDB 558074 Section 8.7 referencing ANSI C63.10 Sections 6.10, 11.11, 11.12 & 11.13

Environmental Conditions:

Temperature (°C):	21 to 25
Relative Humidity (%):	36 to 45

Transmitter Band Edge Radiated Emissions (continued)**Note(s):**

1. The customer declared the following data rates to be used for all measurements as:
 - o 802.11b / DBPSK / 1 Mbps / SISO / Core 0
 - o 802.11g / BPSK / 6 Mbps / SISO / Core 0
 - o 802.11n HT20 / BPSK / MCS0 / SISO / Core 0
 - o 802.11b / DBPSK / 1 Mbps / MIMO / 2Tx CDD / Core 0 & Core 2
 - o 802.11b / DBPSK / 1 Mbps / MIMO / 3Tx CDD / Core 0, Core 1 & Core 2
 - o 802.11n HT20 / BPSK / MCS0 / MIMO / 2Tx CDD / Core 0 & Core 2
 - o 802.11n HT20 / BPSK / MCS0 / MIMO / 3Tx CDD / Core 0, Core 1 & Core 2
 - o 802.11n HT20 / BPSK / MCS0 / MIMO / 2Tx TxBF / Core 0 & Core 2
 - o 802.11n HT20 / BPSK / MCS0 / MIMO / 3Tx TxBF / Core 0, Core 1 & Core 2

Final measurements were performed with the above configurations.

2. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
3. The maximum conducted (average) output power was previously measured. In accordance with ANSI C63.10 Section 11.11.1(b), the lower band edge measurement should be performed with a peak detector and the -30 dBc limit applied.
4. As the lower band edge is adjacent to a non-restricted band, only peak measurements are required. In accordance with ANSI C63.10 Section 11.11.1, the test method in Section 11.11.3 was followed: the test receiver resolution bandwidth was set to 100 kHz and video bandwidth 300 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. The test receiver was left to sweep for a sufficient length of time in order to maximise the carrier level and out-of-band emissions. A marker and corresponding reference level line were placed on the peak of the carrier. As the maximum conducted (average) output power was measured using an RMS detector in accordance with ANSI C63.10 Section 11.9.2.2.2 or 11.9.2.2.4 an out-of-band limit line was placed 30 dB (ANSI C63.10 Section 11.11.1(b)) below the peak level. A marker was placed on the band edge spot frequencies and a second marker placed on the highest emission level in the adjacent non-restricted band of operation (where a higher level emission was present). Marker frequencies and levels were recorded.
5. As the upper band edge is adjacent to a restricted band both peak and average measurements were recorded by placing a marker at the edge of the band. For peak measurements the test receiver resolution bandwidth was set to 1 MHz and the video bandwidth 3 MHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. For average measurements the test receiver resolution bandwidth was set to 1 MHz and the video bandwidth 3 MHz. An RMS detector was used, sweep time was set to auto and trace mode was trace averaging over 300 sweeps. A marker was placed on the band edge spot frequencies and a second marker placed on the highest emission level in the adjacent restricted band of operation (where a higher level emission was present). Marker frequencies and levels were recorded.
6. There is a restricted band 10 MHz below the lower band edge. The test receiver was set up as follows: the RBW set to 1 MHz, the VBW set to 3 MHz, with the sweep time set to auto couple. Peak and average measurements were performed with their respective detectors. Markers were placed on the highest point on each trace.

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / DBPSK / 1 Mbps / Core 0****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	-30 dBc Limit (dBμV/m)	Margin (dB)	Result
2400	Vertical	71.6	81.2	9.6	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2483.5	Vertical	58.5	74.0	15.5	Complied
2487.651	Vertical	59.3	74.0	14.7	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2483.5	Vertical	49.4	54.0	4.6	Complied
2486.978	Vertical	50.4	54.0	3.6	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2483.5	Vertical	58.7	74.0	15.3	Complied
2483.596	Vertical	59.6	74.0	14.4	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2483.5	Vertical	48.7	54.0	5.3	Complied
2484.462	Vertical	50.6	54.0	3.4	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2483.5	Vertical	57.5	74.0	16.5	Complied
2487.346	Vertical	59.1	74.0	14.9	Complied

Results: Upper Band Edge / Average / Channel 13

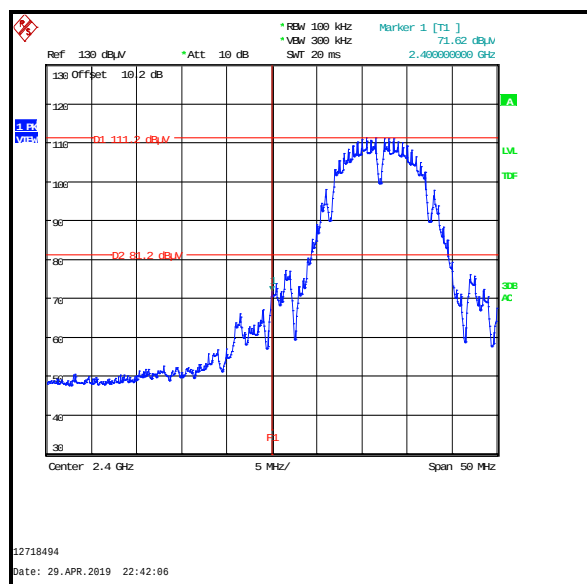
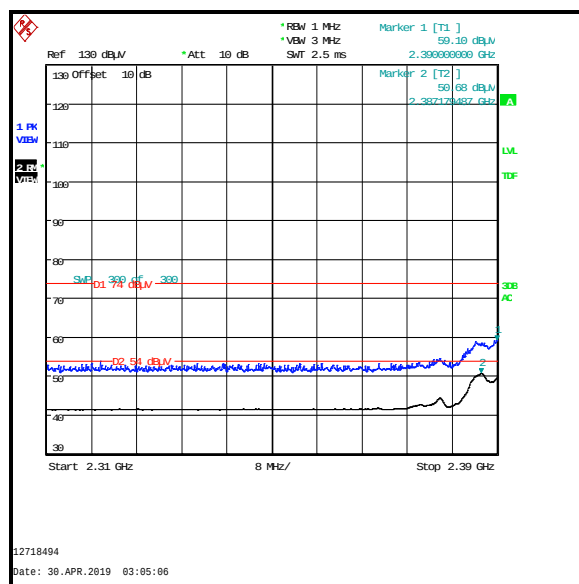
Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2483.5	Vertical	47.5	54.0	6.8	Complied
2487.426	Vertical	50.7	54.0	3.3	Complied

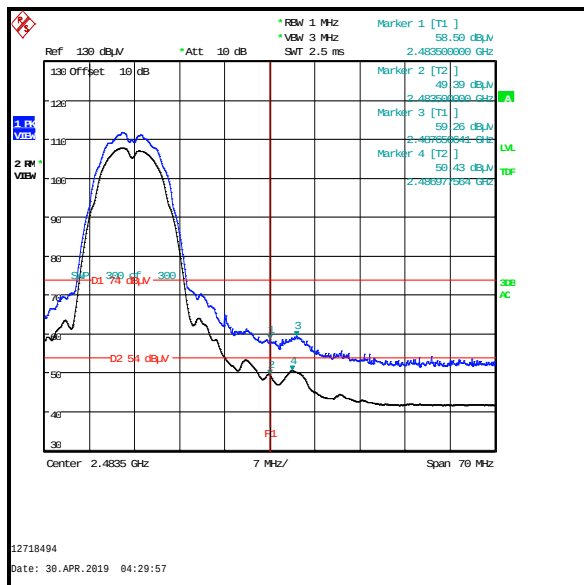
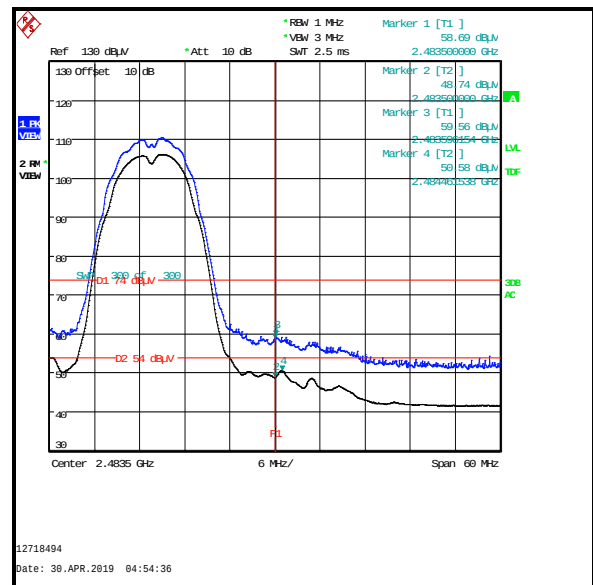
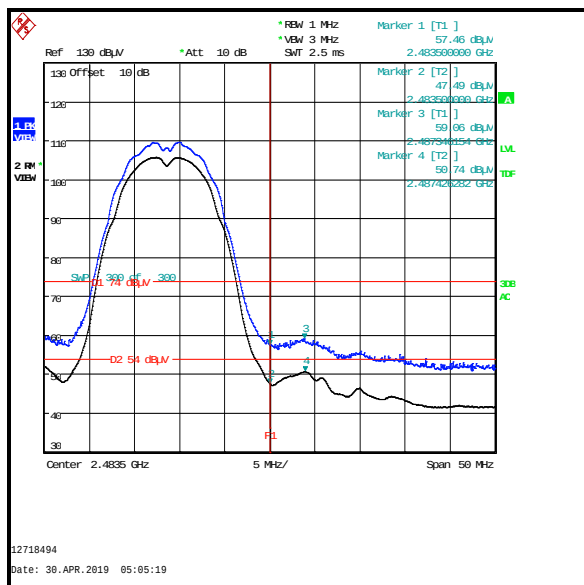
Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / DBPSK / 1 Mbps / Core 0****Results: 2310 MHz to 2390 MHz Restricted Band / Peak**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2390.000	Vertical	59.1	74.0	14.9	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2387.179	Vertical	50.7	54.0	3.3	Complied

**Lower Band Edge
Channel 1****2310 MHz to 2390 MHz Restricted Band**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / DBPSK / 1 Mbps / Core 0****Upper Band Edge
Channel 11****Upper Band Edge
Channel 12****Upper Band Edge
Channel 13**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11g / 20 MHz / BPSK / 6 Mbps / Core 0****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2399.199	Vertical	61.9	74.0	12.1	Complied
2400	Vertical	57.1	74.0	16.9	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	64.9	74.0	9.1	Complied
2483.837	Vertical	65.1	74.0	8.9	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	51.1	54.0	2.9	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	61.5	74.0	12.5	Complied
2484.077	Vertical	62.5	74.0	11.5	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	51.0	54.0	3.0	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	64.8	74.0	9.2	Complied

Results: Upper Band Edge / Average / Channel 13

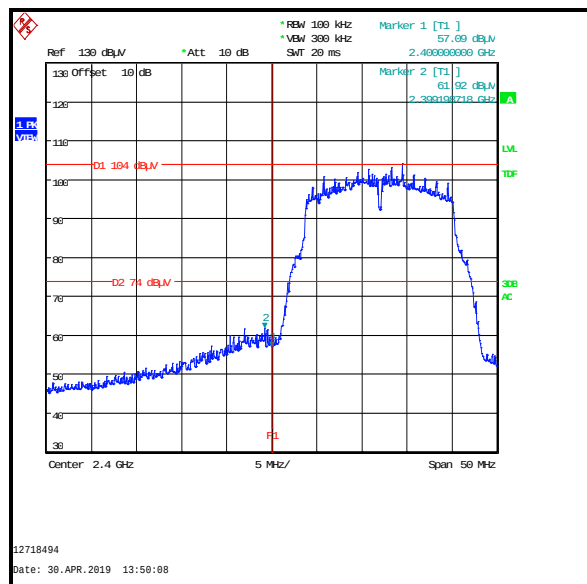
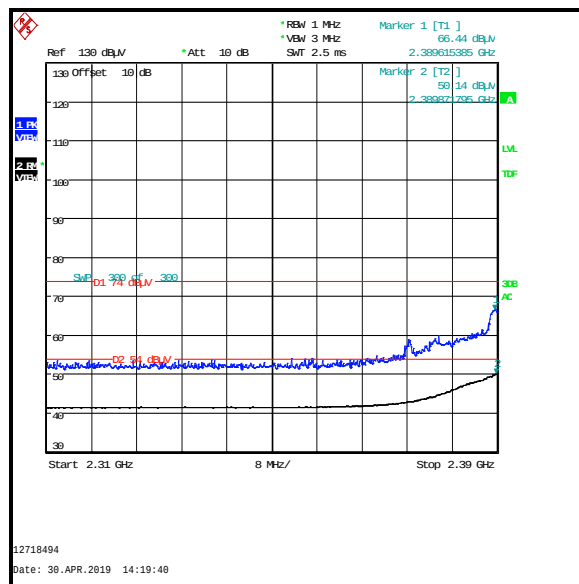
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.2	54.0	3.8	Complied

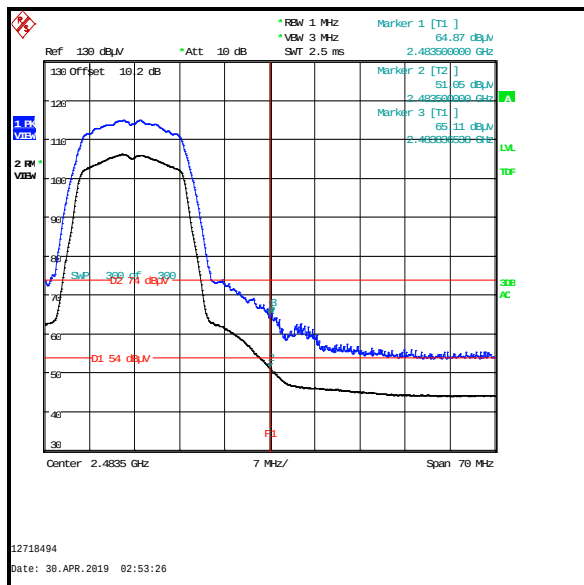
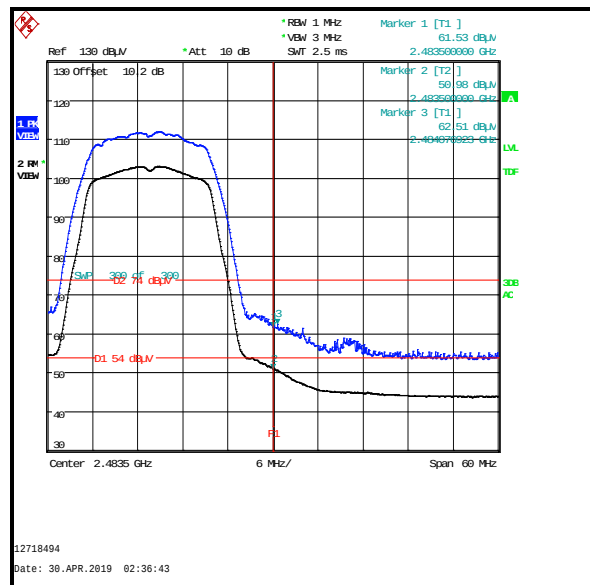
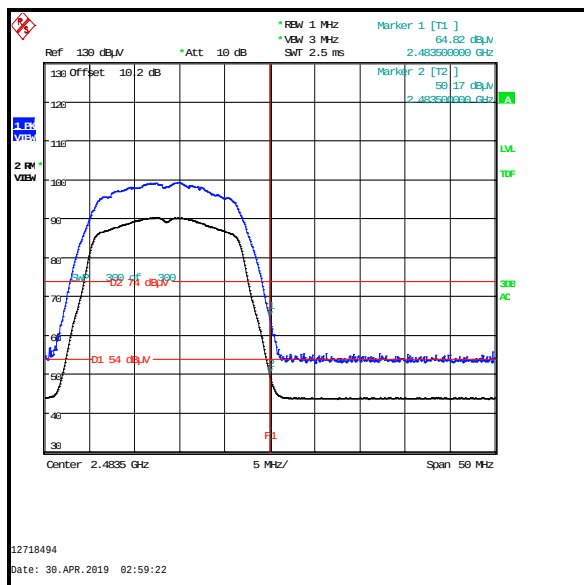
Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11g / 20 MHz / BPSK / 6 Mbps / Core 0****Results: 2310 MHz to 2390 MHz Restricted Band / Peak**

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2389.615	Vertical	66.4	74.0	7.6	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2389.872	Vertical	50.1	54.0	3.9	Complied

**Lower Band Edge
Channel 1****2310 MHz to 2390 MHz Restricted Band**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11g / 20 MHz / BPSK / 6 Mbps / Core 0****Upper Band Edge
Channel 11****Upper Band Edge
Channel 12****Upper Band Edge
Channel 13**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / SISO / BPSK / MCS0 / Core 0****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2396.955	Vertical	61.3	74.1	12.8	Complied
2400	Vertical	57.5	74.1	16.6	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	65.6	74.0	8.4	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	51.0	54.0	3.0	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	63.6	74.0	10.4	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	51.0	54.0	3.0	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	66.5	74.0	7.5	Complied

Results: Upper Band Edge / Average / Channel 13

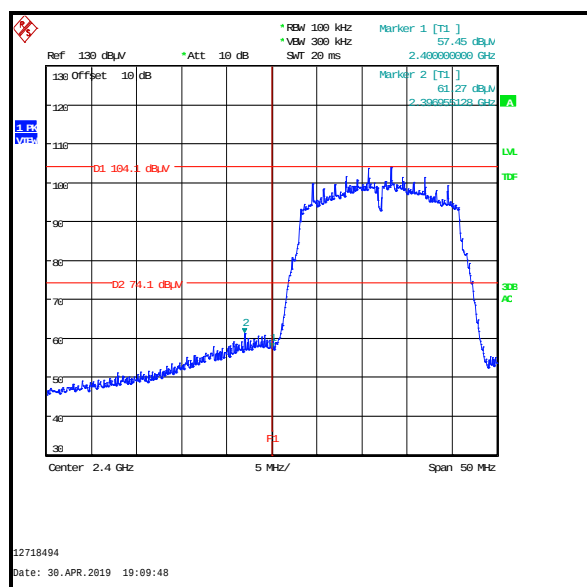
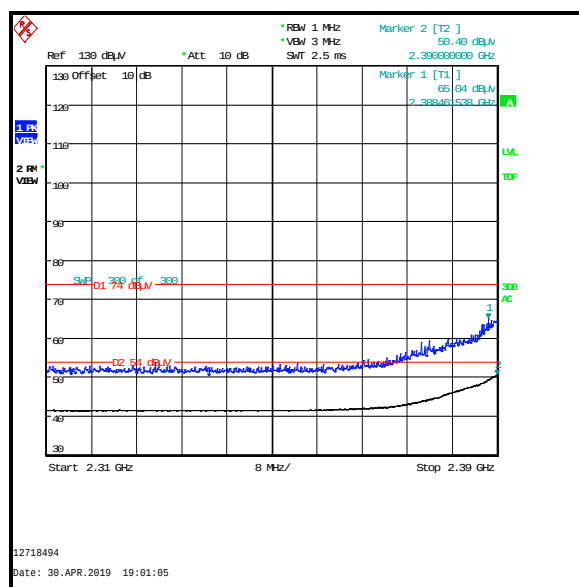
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.4	54.0	3.6	Complied

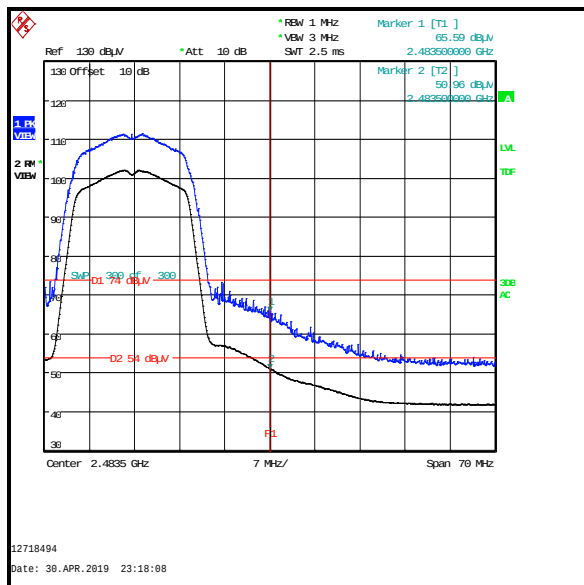
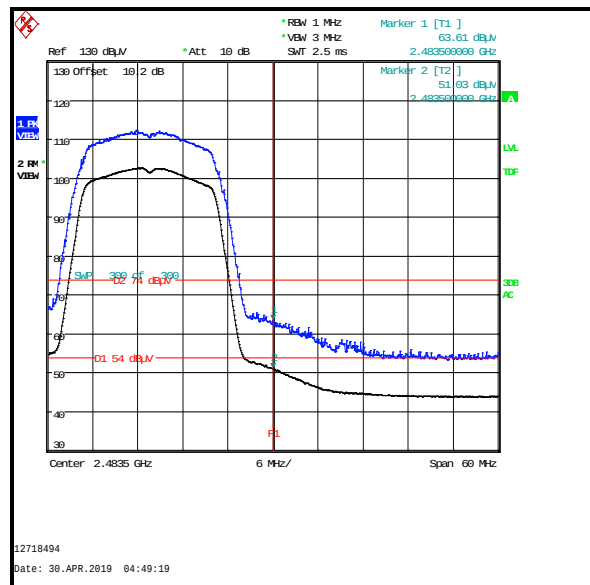
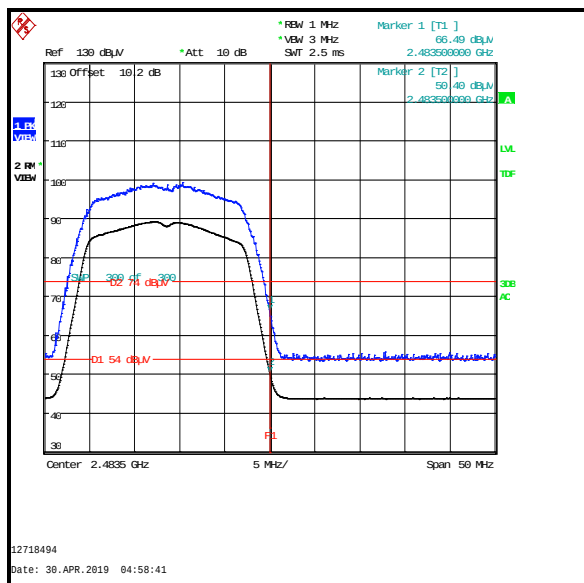
Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / SISO / BPSK / MCS0 / Core 0****Results: 2310 MHz to 2390 MHz Restricted Band / Peak**

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2388.462	Vertical	65.0	74.0	9.0	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2390.000	Vertical	50.4	54.0	3.6	Complied

**Lower Band Edge
Channel 1****2310 MHz to 2390 MHz Restricted Band**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / SISO / BPSK / MCS0 / Core 0****Upper Band Edge
Channel 11****Upper Band Edge
Channel 12****Upper Band Edge
Channel 13**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / MIMO / 2Tx CDD / 1 Mbps / Core 0 & Core 2****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2396.955	Vertical	60.2	79.8	19.6	Complied
2400	Vertical	50.8	79.8	29.0	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	59.4	74.0	14.6	Complied
2483.949	Vertical	59.9	74.0	14.1	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.2	54.0	3.8	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	58.9	74.0	15.1	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	48.5	54.0	5.5	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	56.7	74.0	17.3	Complied
2486.785	Vertical	56.8	74.0	17.2	Complied

Results: Upper Band Edge / Average / Channel 13

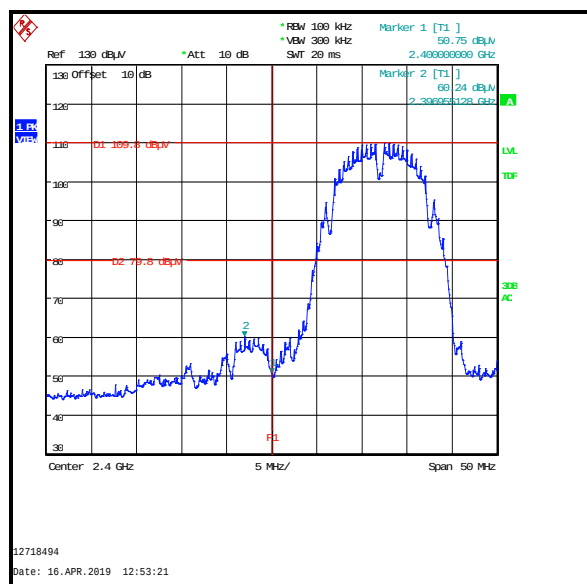
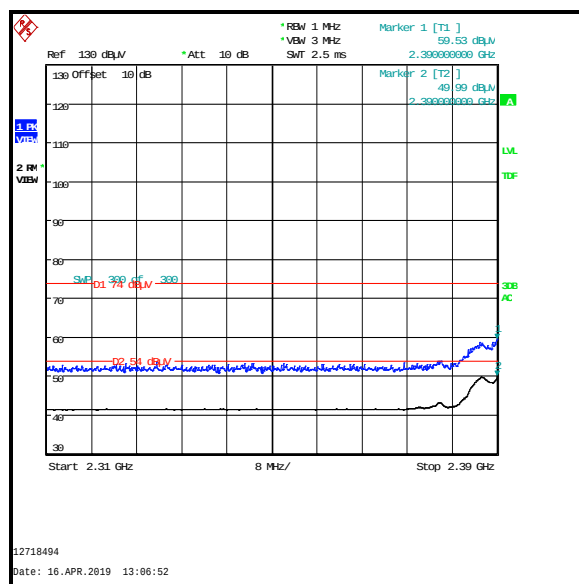
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	43.6	54.0	10.4	Complied
2486.064	Vertical	46.1	54.0	7.9	Complied

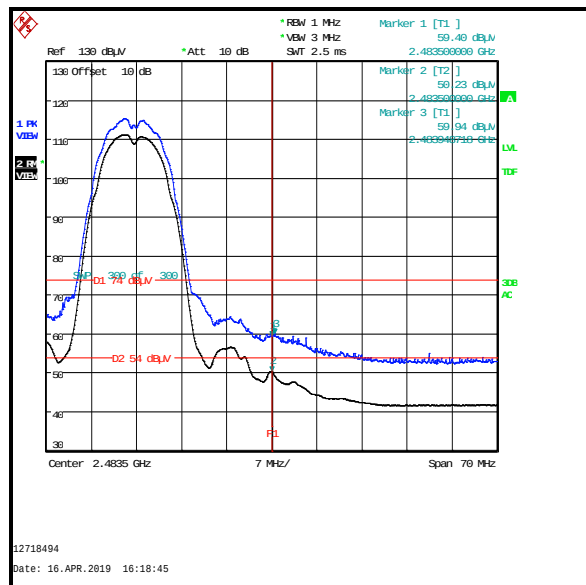
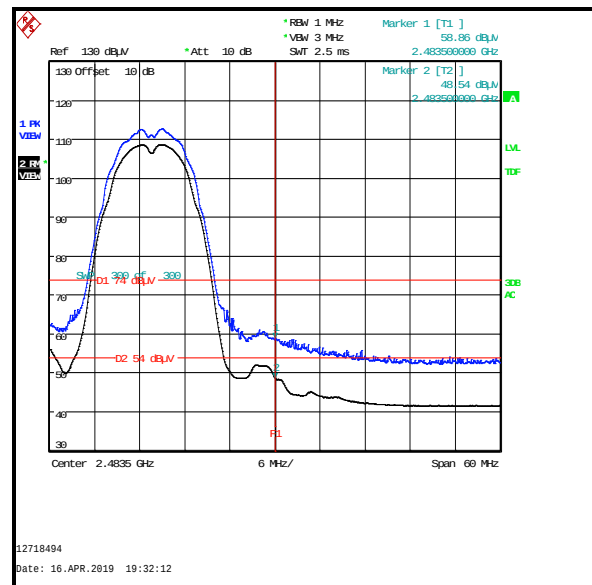
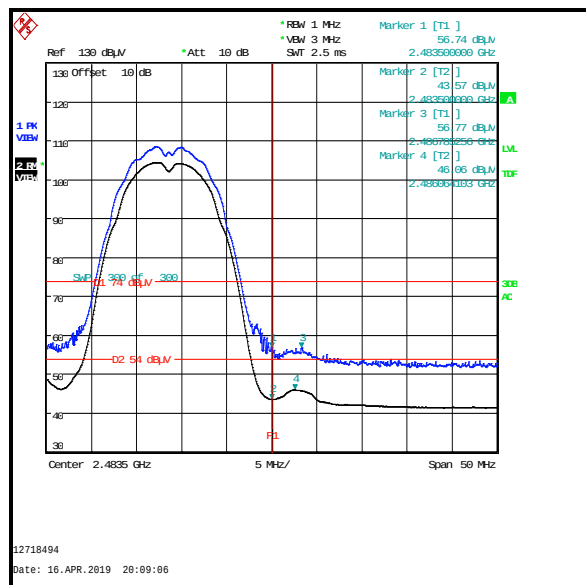
Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / MIMO / 2Tx CDD / 1 Mbps / Core 0 & Core 2****Results: 2310 MHz to 2390 MHz Restricted Band / Peak**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2390.000	Vertical	59.5	74.0	14.5	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2390.000	Vertical	50.0	54.0	4.0	Complied

**Lower Band Edge
Channel 1****2310 MHz to 2390 MHz Restricted Band**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / MIMO / 2Tx CDD / 1 Mbps / Core 0 & Core 2****Upper Band Edge
Channel 11****Upper Band Edge
Channel 12****Upper Band Edge
Channel 13**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / MIMO / 3Tx CDD / 1Mbps / Core 0, Core 1 & Core 2****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2396.955	Vertical	54.0	81.2	27.2	Complied
2400	Vertical	62.9	81.2	18.3	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	60.3	74.0	13.7	Complied
2486.192	Vertical	61.3	74.0	12.7	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.9	54.0	3.1	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	60.7	74.0	13.3	Complied
2486.192	Vertical	62.1	74.0	11.9	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.8	54.0	3.2	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	65.5	74.0	8.5	Complied

Results: Upper Band Edge / Average / Channel 13

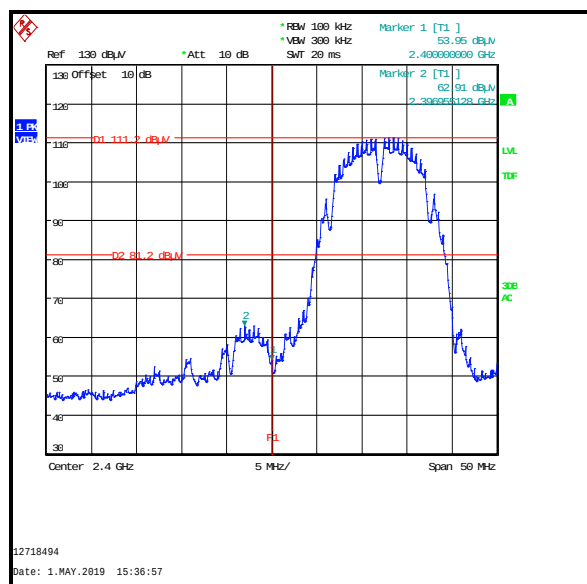
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.6	54.0	3.4	Complied

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / MIMO / 3Tx CDD / 1Mbps / Core 0, Core 1 & Core 2****Results: 2310 MHz to 2390 MHz Restricted Band / Peak**

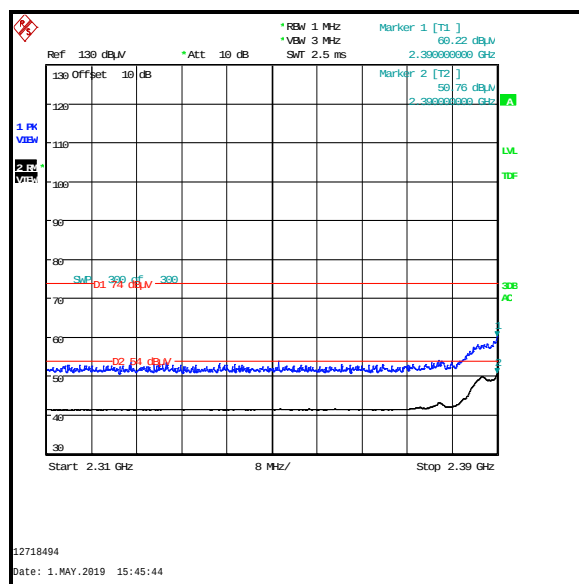
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2390.000	Vertical	60.2	74.0	13.8	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

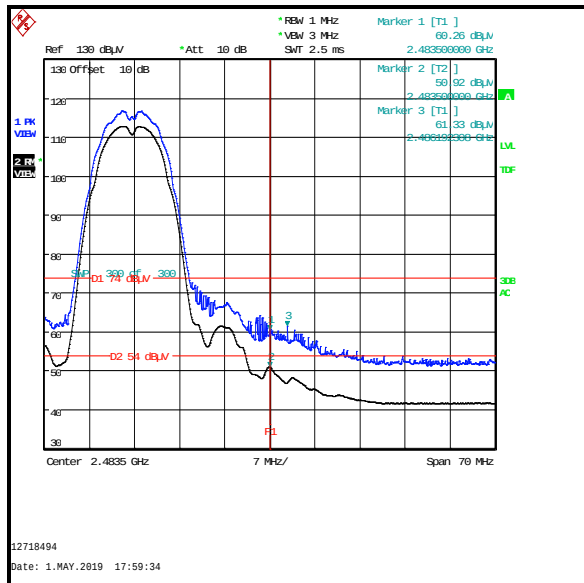
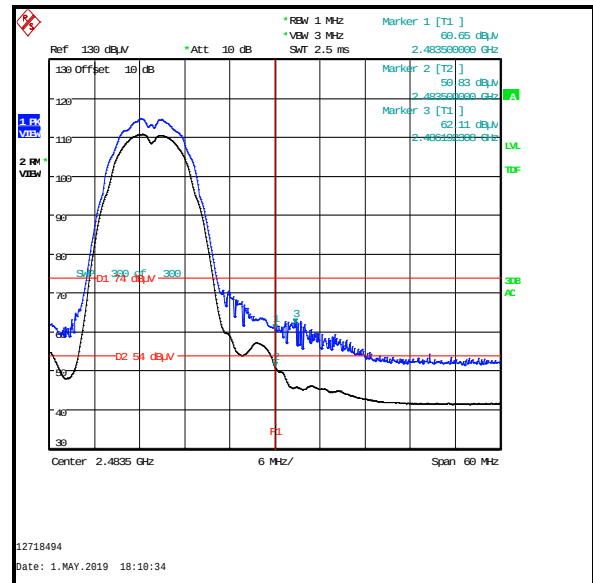
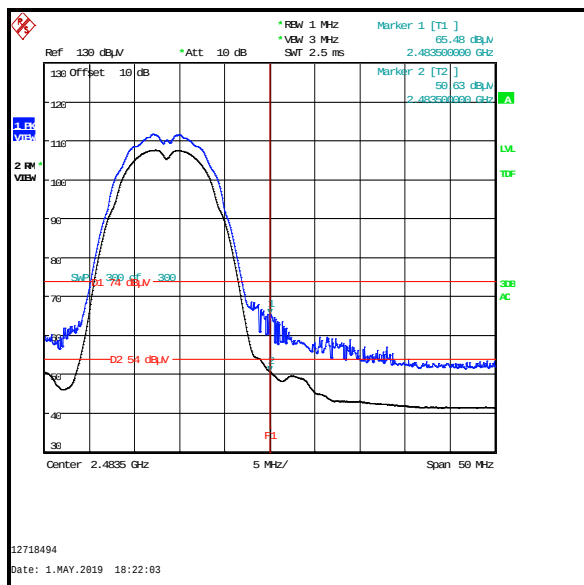
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2390.000	Vertical	50.8	54.0	3.2	Complied



**Lower Band Edge
Channel 1**



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11b / 20 MHz / MIMO / 3Tx CDD / 1Mbps / Core 0, Core 1 & Core 2****Upper Band Edge
Channel 11****Upper Band Edge
Channel 12****Upper Band Edge
Channel 13**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 2Tx CDD / BPSK / MCS0 / Core 0 & Core 2****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2397.917	Vertical	58.3	73.5	15.2	Complied
2400	Vertical	55.1	73.5	18.4	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	59.9	74.0	14.1	Complied
2486.192	Vertical	61.5	74.0	12.5	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	45.5	54.0	8.5	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	55.6	74.0	18.4	Complied
2488.404	Vertical	58.1	74.0	15.9	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	44.5	54.0	9.5	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	64.7	74.0	9.3	Complied

Results: Upper Band Edge / Average / Channel 13

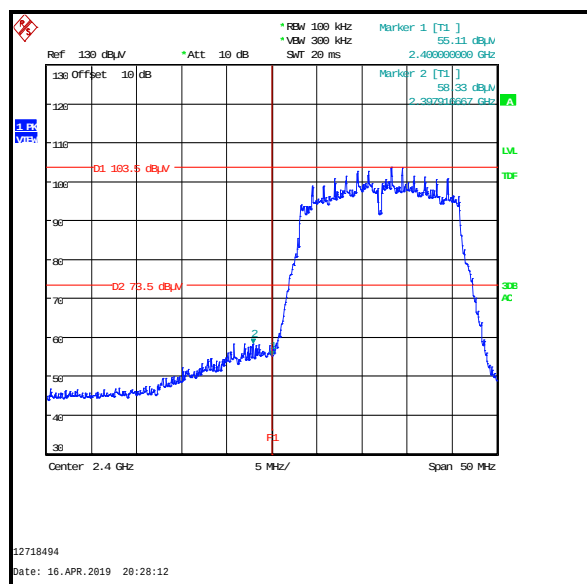
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	49.4	54.0	4.6	Complied

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 2Tx CDD / BPSK / MCS0 / Core 0 & Core 2****Results: 2310 MHz to 2390 MHz Restricted Band / Peak**

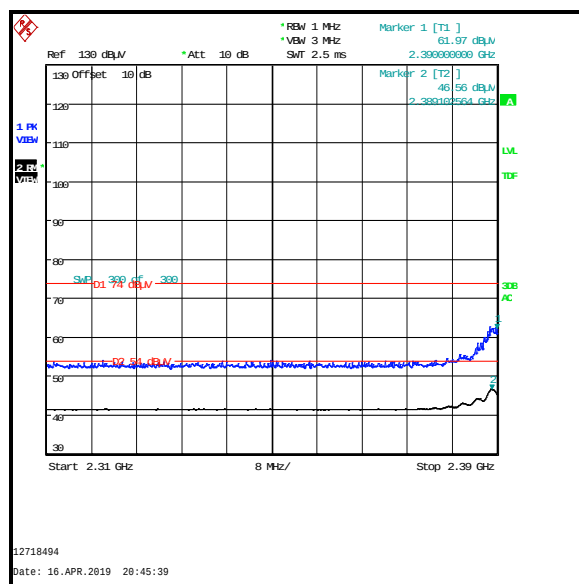
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2390.000	Vertical	62.0	74.0	12.0	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

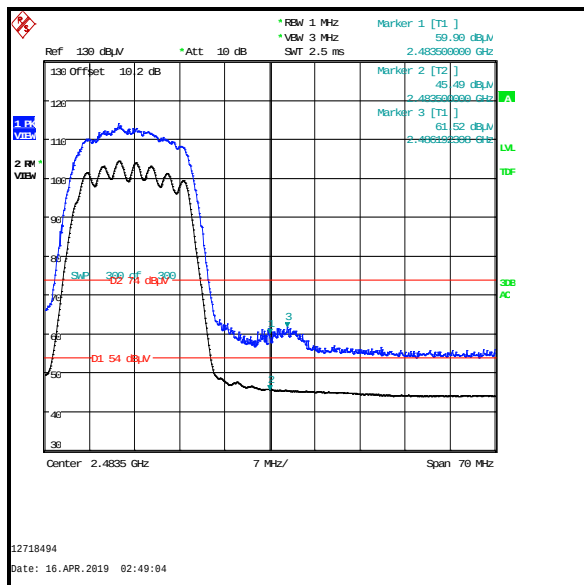
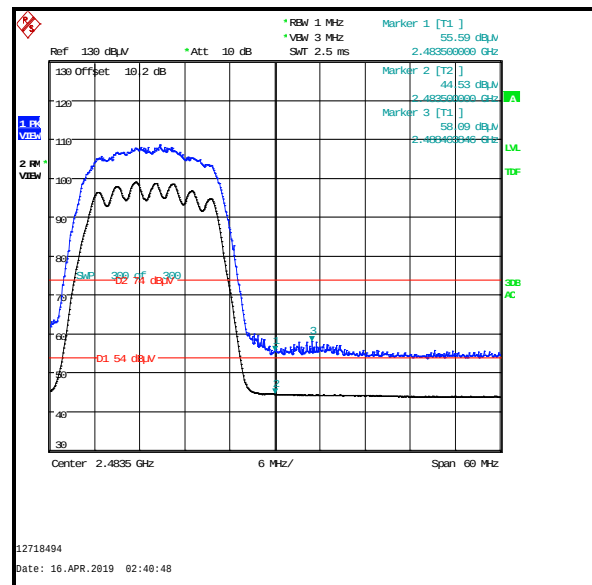
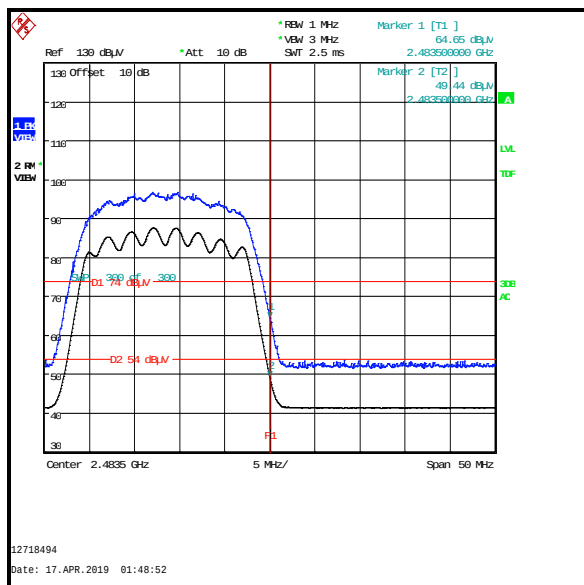
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2389.103	Vertical	46.6	54.0	7.4	Complied



**Lower Band Edge
Channel 1**



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 2Tx CDD / BPSK / MCS0 / Core 0 & Core 2****Upper Band Edge
Channel 11****Upper Band Edge
Channel 12****Upper Band Edge
Channel 13**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 3Tx CDD / BPSK / MCS0 / Core 0, Core 1 & Core 2****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2397.596	Vertical	63.9	77.9	14.0	Complied
2400	Vertical	59.3	77.9	18.6	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	63.0	74.0	11.0	Complied
2483.949	Vertical	64.4	74.0	9.6	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.9	54.0	3.1	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	62.5	74.0	11.5	Complied
2483.788	Vertical	63.4	74.0	10.6	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.9	54.0	3.1	Complied
2483.692	Vertical	51.0	54.0	3.0	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	65.9	74.0	8.1	Complied

Results: Upper Band Edge / Average / Channel 13

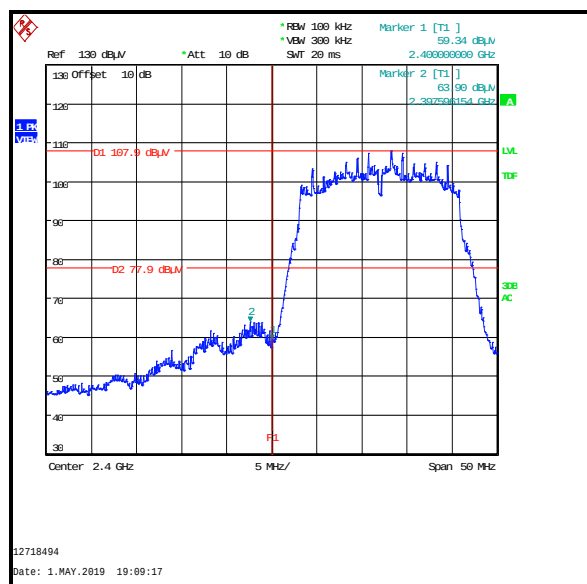
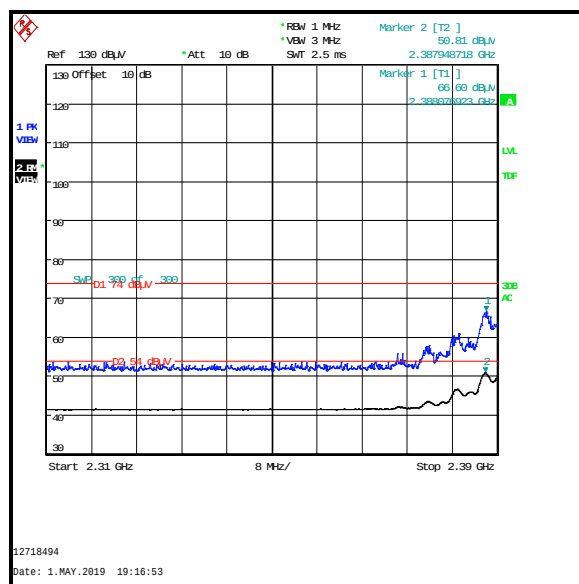
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	49.9	54.0	4.1	Complied

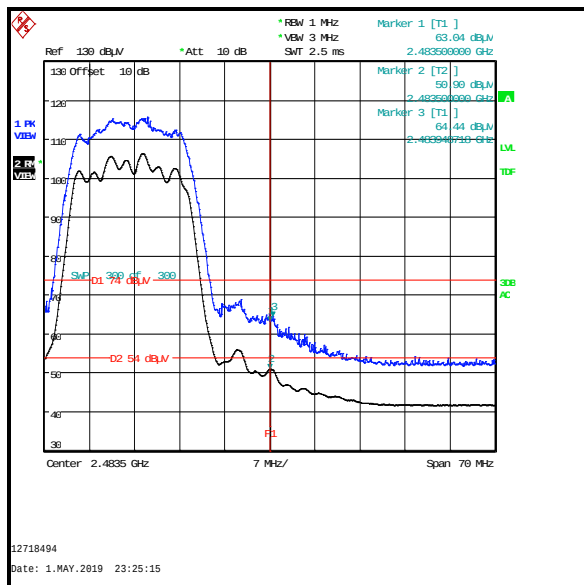
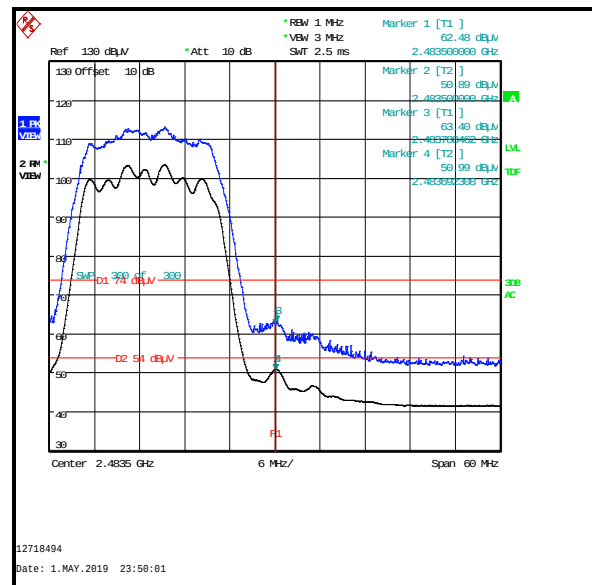
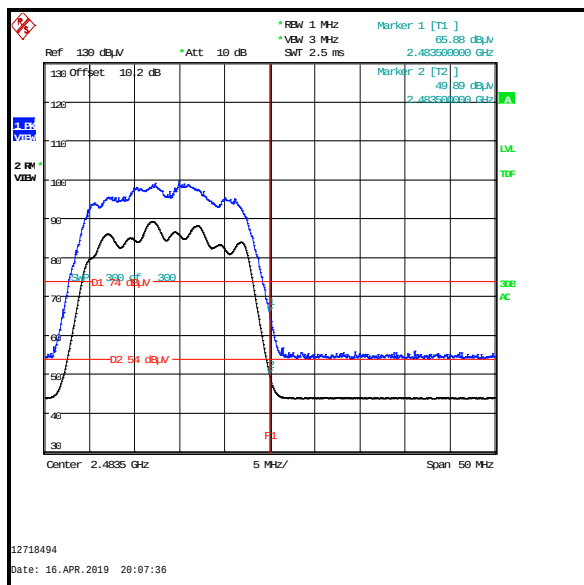
Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 3Tx CDD / BPSK / MCS0 / Core 0, Core 1 & Core 2****Results: 2310 MHz to 2390 MHz Restricted Band / Peak**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2388.077	Vertical	66.6	74.0	7.4	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2387.949	Vertical	50.8	54.0	3.2	Complied

**Lower Band Edge
Channel 1****2310 MHz to 2390 MHz Restricted Band**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 3Tx CDD / BPSK / MCS0 / Core 0, Core 1 & Core 2****Upper Band Edge
Channel 11****Upper Band Edge
Channel 12****Upper Band Edge
Channel 13**

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 2Tx TxBF / MCS0 / Core 0 & Core 2****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2398.237	Vertical	60.8	77.3	16.5	Complied
2400	Vertical	57.9	77.3	19.4	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	61.7	74.0	12.3	Complied
2483.949	Vertical	62.4	74.0	11.6	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Duty Cycle correction factor (dB)	Corrected Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	48.4	0.1	48.5	54.0	5.5	Complied
2483.837	Vertical	48.5	0.1	48.6	54.0	5.4	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	63.1	74.0	10.9	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Duty Cycle correction factor (dB)	Corrected Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.5	0.1	50.6	54.0	3.4	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	67.5	74.0	6.5	Complied

Results: Upper Band Edge / Average / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Duty Cycle correction factor (dB)	Corrected Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	51.0	0.1	51.1	54.0	2.9	Complied

Transmitter Band Edge Radiated Emissions (continued)

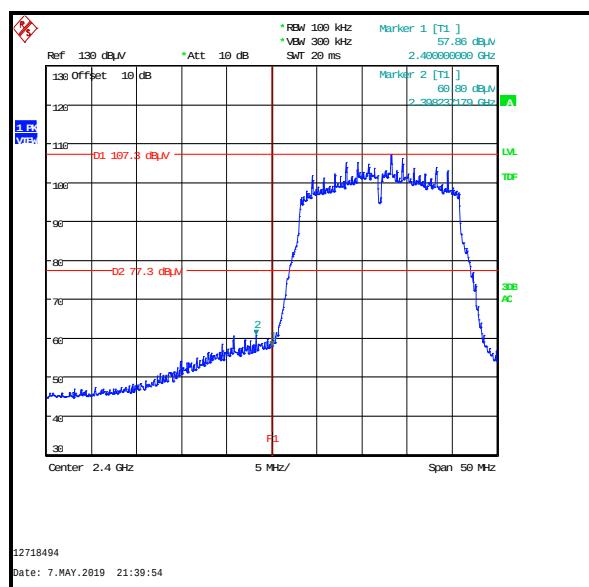
Results: 802.11n HT20 / MIMO / 2Tx TxBF / MCS0 / Core 0 & Core 2

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

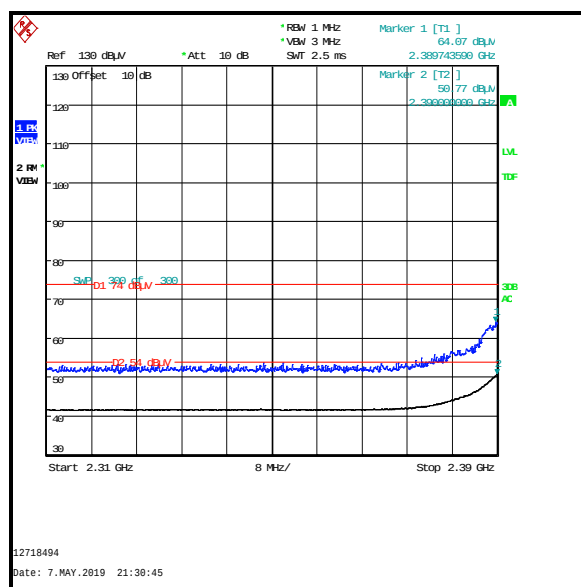
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2389.744	Vertical	64.1	74.0	9.9	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Duty Cycle correction factor (dB)	Corrected Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2390.000	Vertical	50.8	0.1	50.9	54.0	3.1	Complied



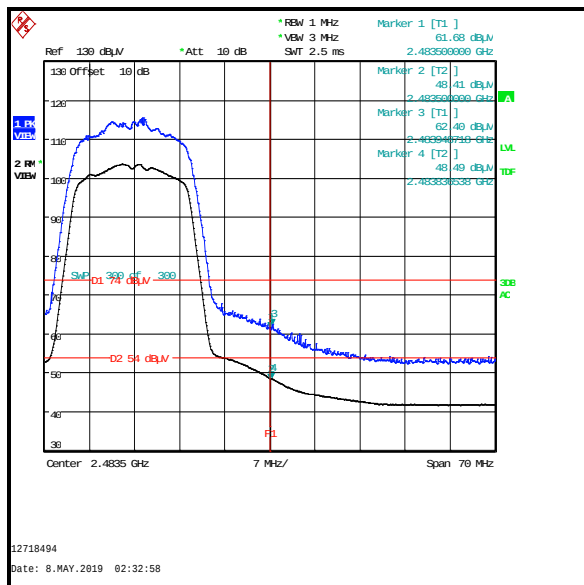
Lower Band Edge Channel 1



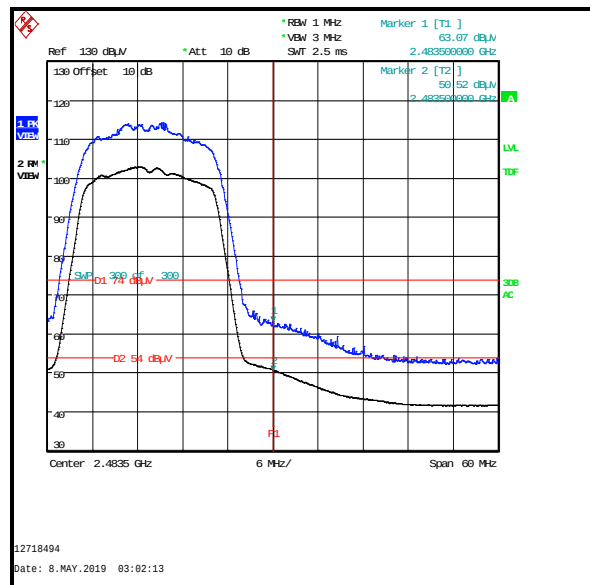
2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)

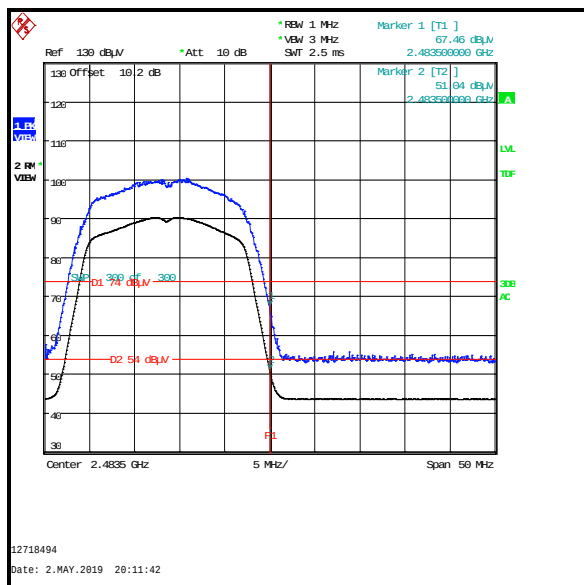
Results: 802.11n HT20 / MIMO / 2Tx TxBF / MCS0 / Core 0 & Core 2



Upper Band Edge Channel 11



Upper Band Edge
Channel 12

Upper Band Edge
Channel 13

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 3Tx TxBF / MCS0 / Core 0, Core 1 & Core 2****Results: Lower Band Edge / Channel 1**

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2398.878	Vertical	62.7	76.1	13.4	Complied
2400	Vertical	58.1	76.1	18.0	Complied

Results: Upper Band Edge / Peak / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	63.8	74.0	10.2	Complied
2483.612	Vertical	66.6	74.0	7.4	Complied

Results: Upper Band Edge / Average / Channel 11

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Duty Cycle correction factor (dB)	Corrected Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	50.5	0.1	50.6	54.0	3.4	Complied

Results: Upper Band Edge / Peak / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	62.7	74.0	11.3	Complied
2484.462	Vertical	62.9	74.0	11.1	Complied

Results: Upper Band Edge / Average / Channel 12

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Duty Cycle correction factor (dB)	Corrected Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	51.4	0.1	51.5	54.0	2.5	Complied

Results: Upper Band Edge / Peak / Channel 13

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	64.5	74.0	9.5	Complied

Results: Upper Band Edge / Average / Channel 13

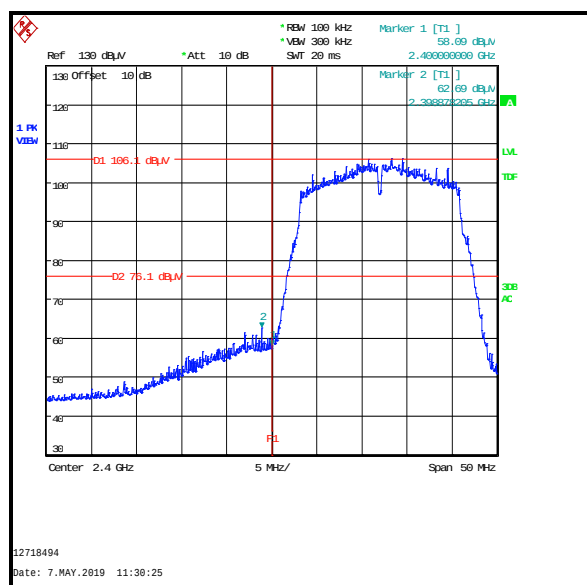
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Duty Cycle correction factor (dB)	Corrected Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	49.3	0.1	49.4	54.0	4.6	Complied

Transmitter Band Edge Radiated Emissions (continued)**Results: 802.11n HT20 / MIMO / 3Tx TxBF / MCS0 / Core 0, Core 1 & Core 2****Results: 2310 MHz to 2390 MHz Restricted Band / Peak**

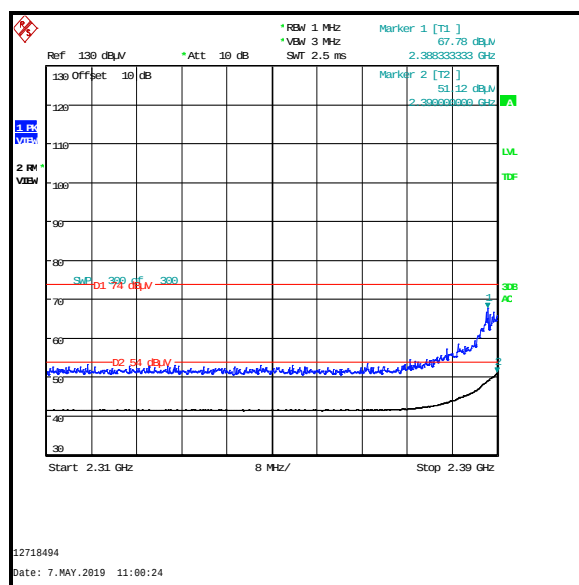
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2388.333	Vertical	67.8	74.0	6.2	Complied

Results: 2310 MHz to 2390 MHz Restricted Band / Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Duty Cycle correction factor (dB)	Corrected Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2390.000	Vertical	51.1	0.1	51.2	54.0	2.8	Complied



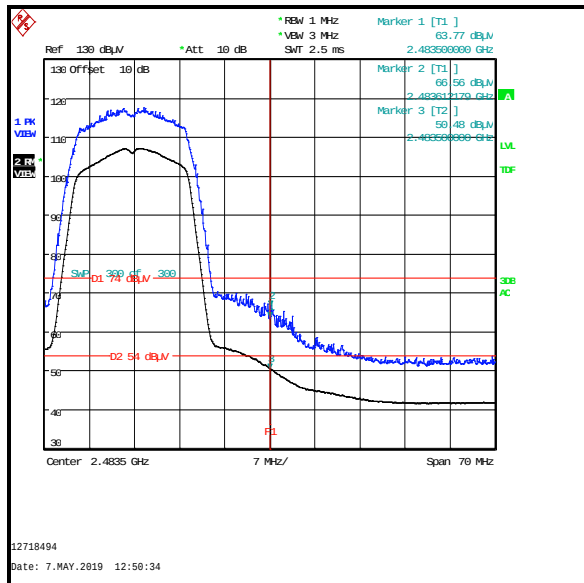
**Lower Band Edge
Channel 1**



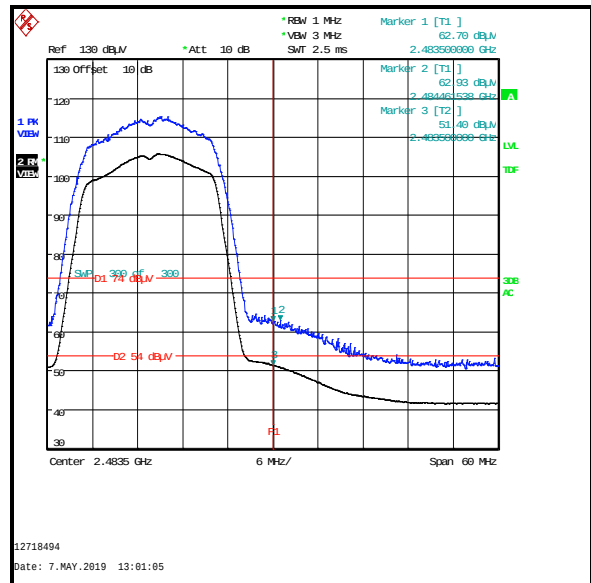
2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)

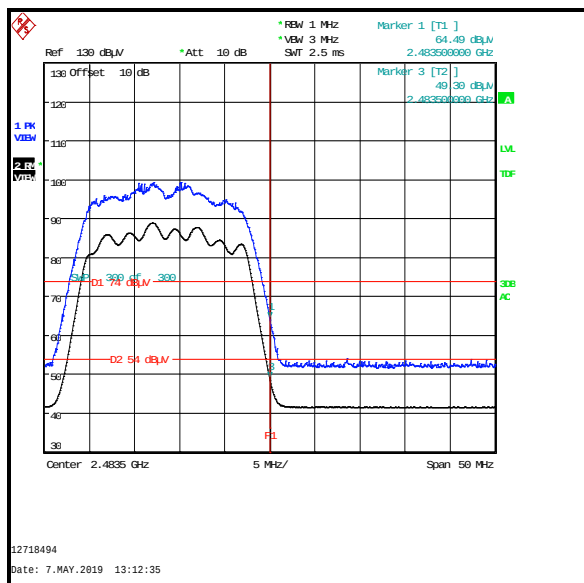
Results: 802.11n HT20 / MIMO / 3Tx TxBF / MCS0 / Core 0, Core 1 & Core 2



Upper Band Edge Channel 11



Upper Band Edge
Channel 12

Upper Band Edge
Channel 13

Appendix 1

Directional Antenna Gain Calculations for CDD MIMO

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for $N_{ANT}=2$:

$$\text{Directional gain} = G_{ANT} + \text{Array Gain} = 4.6 \text{ dBi} + 0 \text{ dB} = 4.6 \text{ dBi}$$

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for $N_{ANT}=3$:

$$\text{Directional gain} = G_{ANT} + \text{Array Gain} = 4.6 \text{ dBi} + 0 \text{ dB} = 4.6 \text{ dBi}$$

Directional Antenna Gain Calculations for TxBF MIMO

For 2Tx TxBF MIMO modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i), directional gain was calculated as:

- $N_{ANT} = 2$, $G_{Core1} = 4.6 \text{ dBi}$, $G_{Core2} = 4.5 \text{ dBi}$

$$\begin{aligned} \text{Directional Gain} &= 10 \log \left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \dots + 10^{\frac{G_N}{20}} \right)^2}{N_{ANT}} \right] = 10 \log \left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} \right)^2}{2} \right] \\ &= 10 \log \left[\frac{\left(10^{\frac{4.6}{20}} + 10^{\frac{4.5}{20}} \right)^2}{2} \right] = 7.6 \text{ dBi} \end{aligned}$$

For 3Tx TxBF MIMO modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i), directional gain was calculated as:

- $N_{ANT} = 3$, $G_{Core0} = 4.6 \text{ dBi}$, $G_{Core1} = 4.3 \text{ dBi}$, $G_{Core2} = 4.5 \text{ dBi}$

$$\begin{aligned} \text{Directional Gain} &= 10 \log \left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \dots + 10^{\frac{G_N}{20}} \right)^2}{N_{ANT}} \right] = 10 \log \left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + 10^{\frac{G_3}{20}} \right)^2}{3} \right] = \\ &= 10 \log \left[\frac{\left(10^{\frac{4.6}{20}} + 10^{\frac{4.3}{20}} + 10^{\frac{4.5}{20}} \right)^2}{3} \right] = 9.2 \text{ dBi} \end{aligned}$$

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