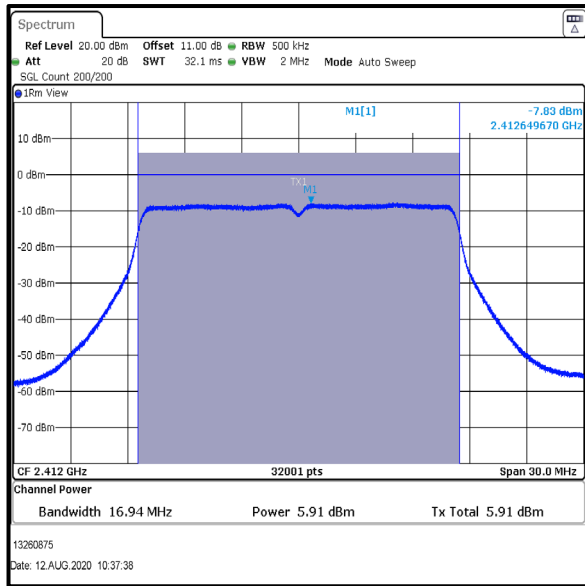
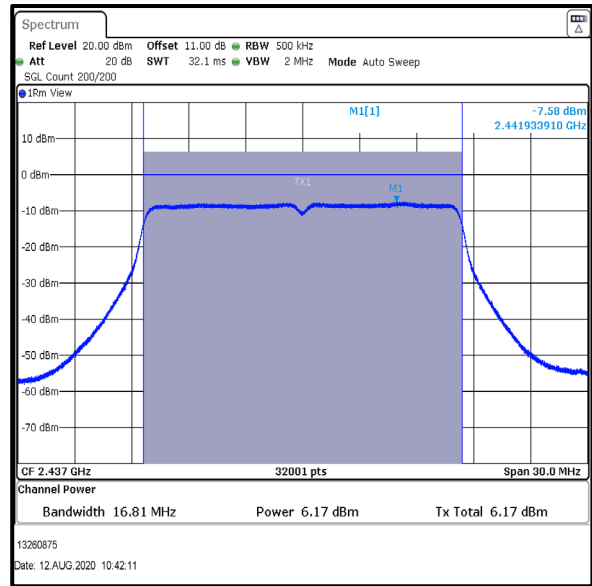


Transmitter Maximum (Average) Output Power (continued)

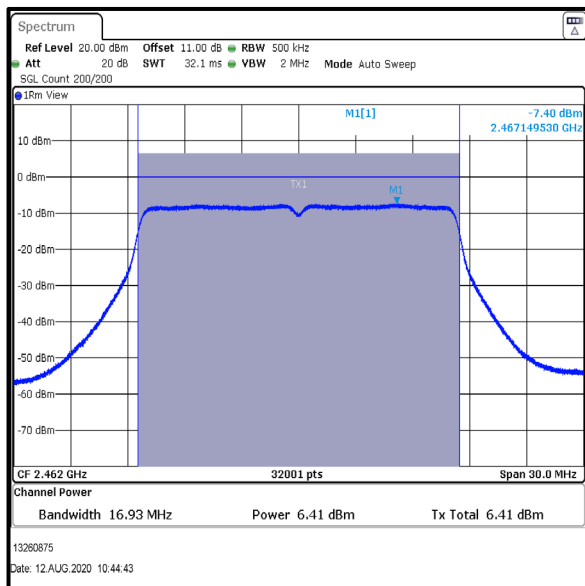
Results: 802.11g / 20 MHz / 12 Mbps / PWR 44



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum (Average) Output Power (continued)**Results: 802.11n / 20 MHz / MCS0 / PWR 44****Conducted Power Limit Comparison**

Channel	Conducted Average Power (dBm)	Conducted Power Limit (dBm)	Margin (dB)	Result
Bottom	5.28	30.0	24.72	Complied
Middle	5.56	30.0	24.44	Complied
Top	5.85	30.0	24.15	Complied

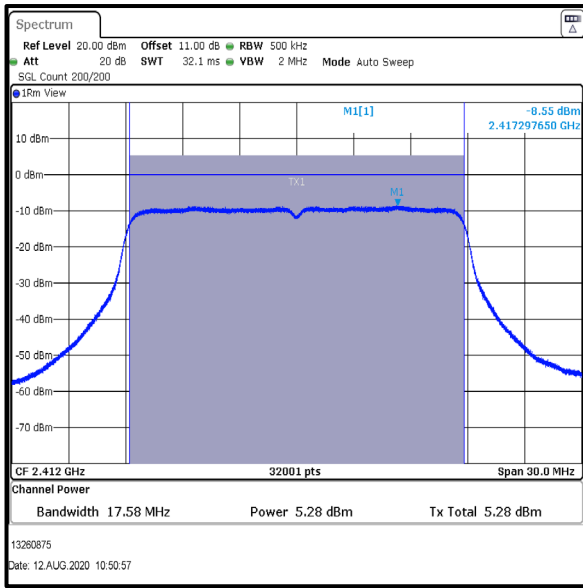
De Facto EIRP Limit Comparison

Channel	Conducted Average Power (dBm)	Declared Antenna Gain (dBi)	Average EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	5.28	4.9	10.18	36.0	25.82	Complied
Middle	5.56	4.9	10.46	36.0	25.54	Complied
Top	5.85	4.9	10.75	36.0	25.25	Complied

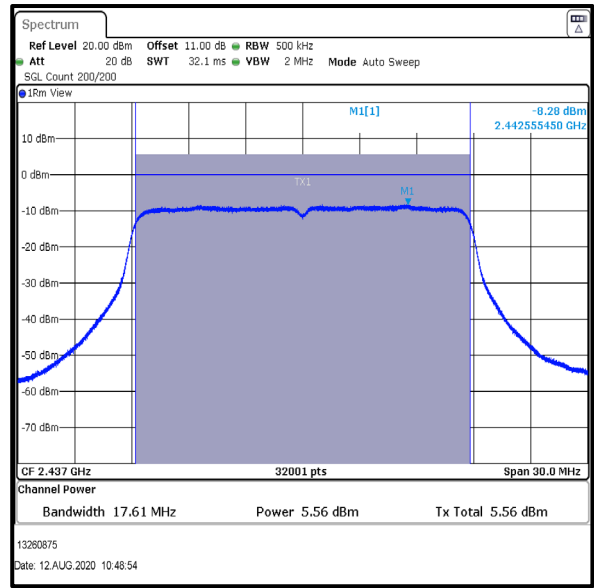
Result: Pass

Transmitter Maximum (Average) Output Power (continued)

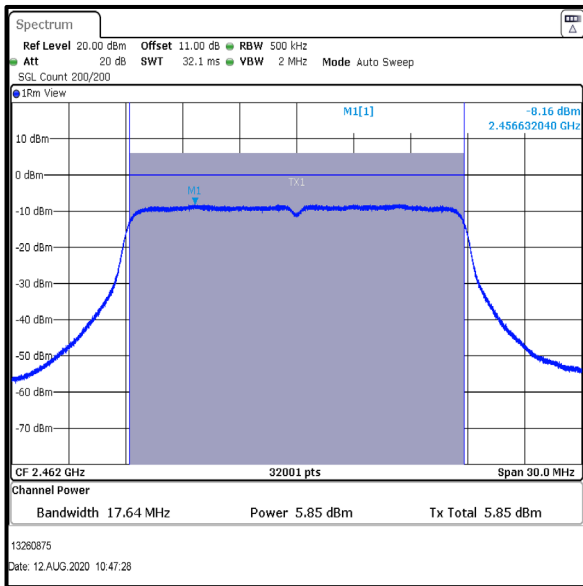
Results: 802.11n / 20 MHz / MCS0 / PWR 44



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum (Average) Output Power (continued)**Results: 802.11n / 40 MHz / MCS0 / PWR 44****Conducted Power Limit Comparison**

Channel	Conducted Average Power (dBm)	Conducted Power Limit (dBm)	Margin (dB)	Result
Bottom	5.71	30.0	24.29	Complied
Middle	5.71	30.0	24.29	Complied
Top	6.05	30.0	23.95	Complied

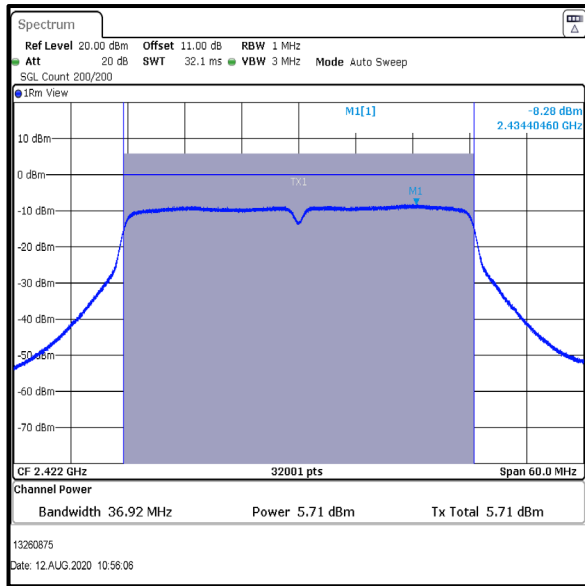
De Facto EIRP Limit Comparison

Channel	Conducted Average Power (dBm)	Declared Antenna Gain (dBi)	Average EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	5.71	4.9	10.61	36.0	25.39	Complied
Middle	5.71	4.9	10.61	36.0	25.39	Complied
Top	6.05	4.9	10.95	36.0	25.05	Complied

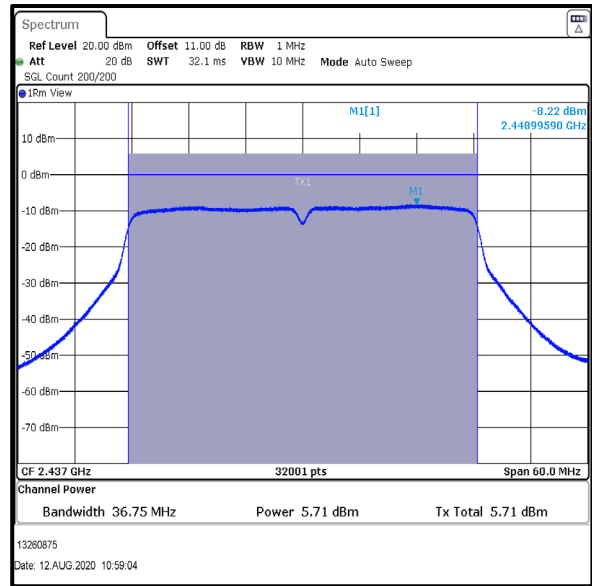
Result: Pass

Transmitter Maximum (Average) Output Power (continued)

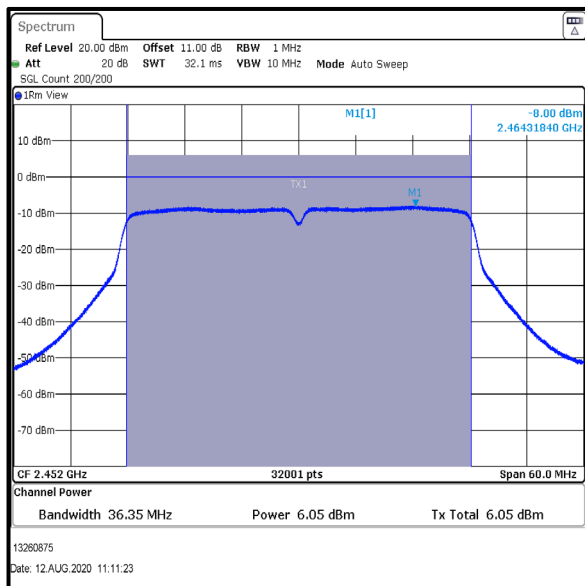
Results: 802.11n / 40 MHz / MCS0 / PWR 44



Bottom Channel



Middle Channel



Top Channel

5.2.6. Transmitter Radiated Emissions**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	08 June 2020
Test Sample Serial Number:	EUT1 (Radiated Test Sample)		
Test Site Identification	SR 1/2		

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 11.11 and 11.12 ANSI C63.10:2013 Sections 6.3 and 6.4
Frequency Range	9 kHz to 30 MHz

Environmental Conditions:

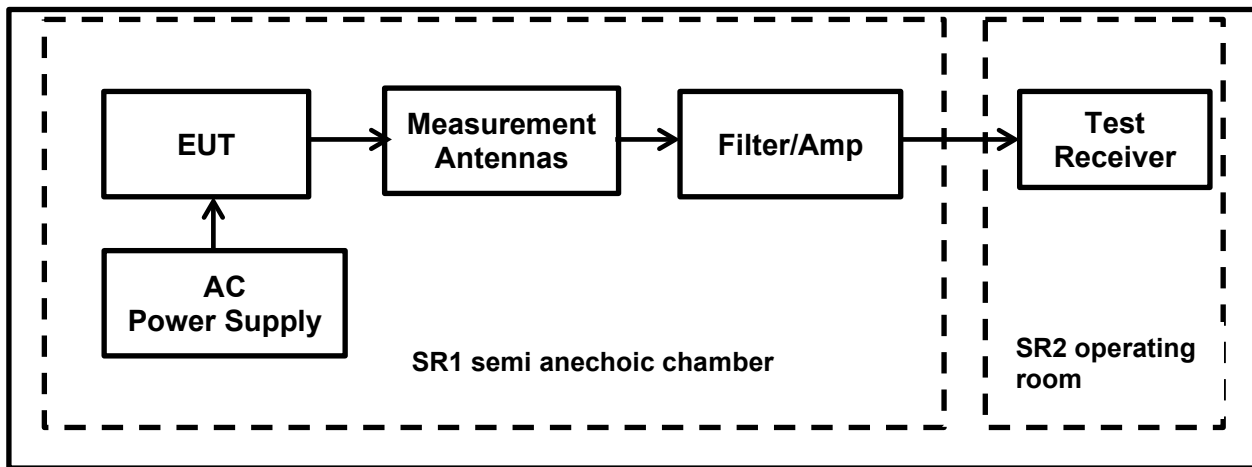
Temperature (°C):	22
Relative Humidity (%):	50

Note(s):

- In accordance with FCC KDB 414788 D01 Radiated Test Site & ANSI C63.10 clause 5.2 an alternative test site that can demonstrate equivalence to a open area test site may be used. Therefore, the measurement was performed in a Semi Anechoic Chamber. (The OATS / SAC comparison data is available upon request).
- The limits are specified at a test distances of 30 and 300 metres. However, as specified in FCC Section 15.31 (f)(2) & ANSI C63.10 clause 6.4.3, measurements may be performed at a closer distance and the measured level extrapolated to the specified measurement distance using the method described in clauses 6.4.4, specifically sub-clause 6.4.4.1 which specifies that the measured level shall be extrapolated to the specified distance by conservatively presuming that the field strength decays at 40 dB/decade.
- Therefore, the limit values are extrapolated to a measurement distance of 3 m.
 - 9 kHz- 490 kHz: limits extrapolated from 300 m to 3 m by adding 80 dB at 40 dB /decade.
 - 490 kHz-1705 kHz: limits extrapolated from 30 m to 3 m by adding 40 dB at 40 dB /decade.
- Measurements below 30 MHz were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) at a distance of 3 m. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. The measurement loop antenna height was 80 cm.
- The preliminary scans showed similar emission levels below 30 MHz, for each channel & modes of operation. Therefore, final radiated emissions measurements were performed with the EUT set to the following worst case modes :
 - 802.11b: 1 Mbit/s | Power Settings : PWR 44 | Bottom Channel
 - 802.11g: 12 Mbit/s | Power Settings : PWR 44 | Bottom Channel
 - 802.11n HT20: MCS0 | Power Settings : PWR 44 | Top Channel
 - 802.11n HT40: MCS0 | Power Settings : PWR 44 | Middle Channel
- All emissions shown on the pre-scan plots were investigated and found to be below system noise floor.

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

7. Pre-scans were performed and markers placed on the highest measured levels. The test receiver was set to:
- Frequency range: 9 kHz-150 kHz : RBW: 1 kHz /VBW: 3 kHz
 - Frequency range: 150 kHz – 30 MHz: RBW: 10 kHz /VBW: 30 kHz
 - Detector: Max-Peak detector
 - Trace Mode: Max Hold

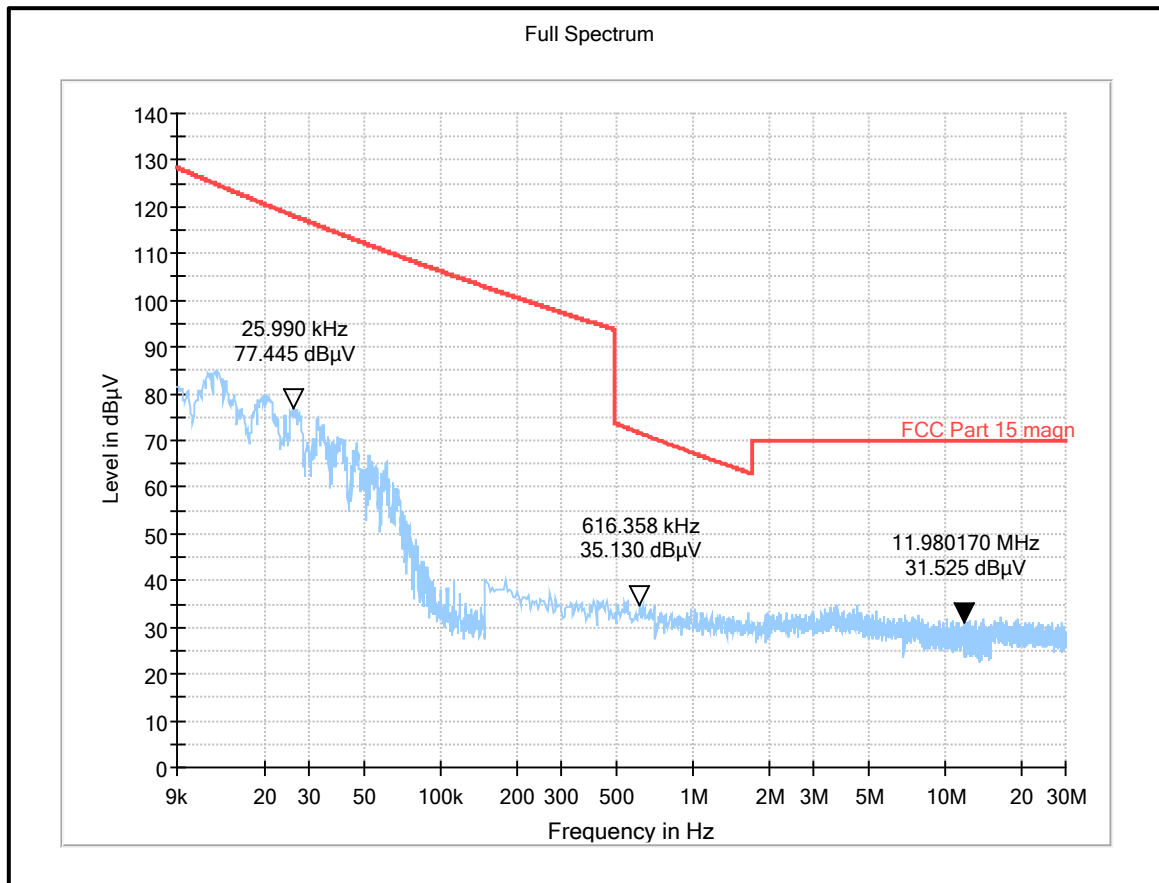
Test Setup:

Transmitter Radiated Emissions (continued)

Results: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 9 kHz – 30 MHz: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Bottom Channel



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

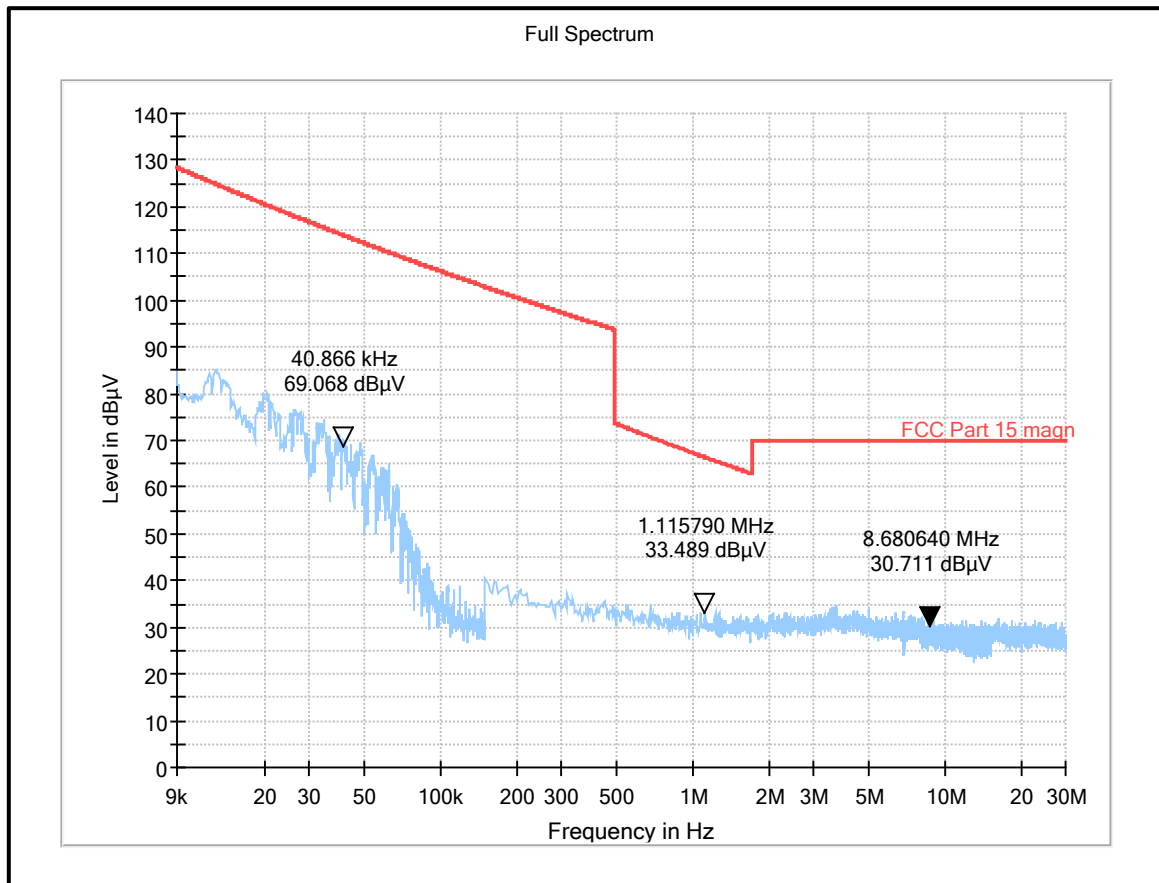
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 9 kHz – 30 MHz: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Bottom Channel



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

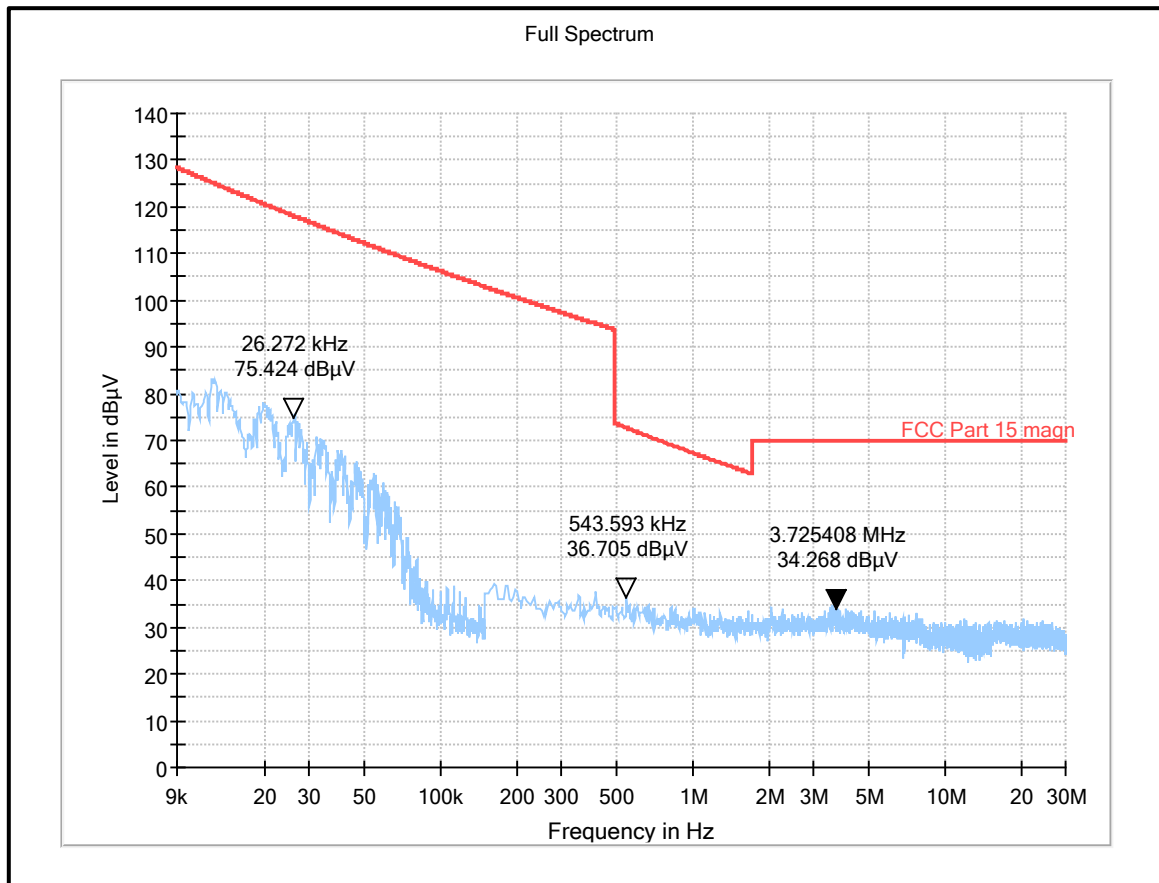
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 20 MHz / MCS0 / PWR 44 / Top Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 9 kHz – 30 MHz: 802.11n / 20 MHz / MCS0 / PWR 44 / Top Channel



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

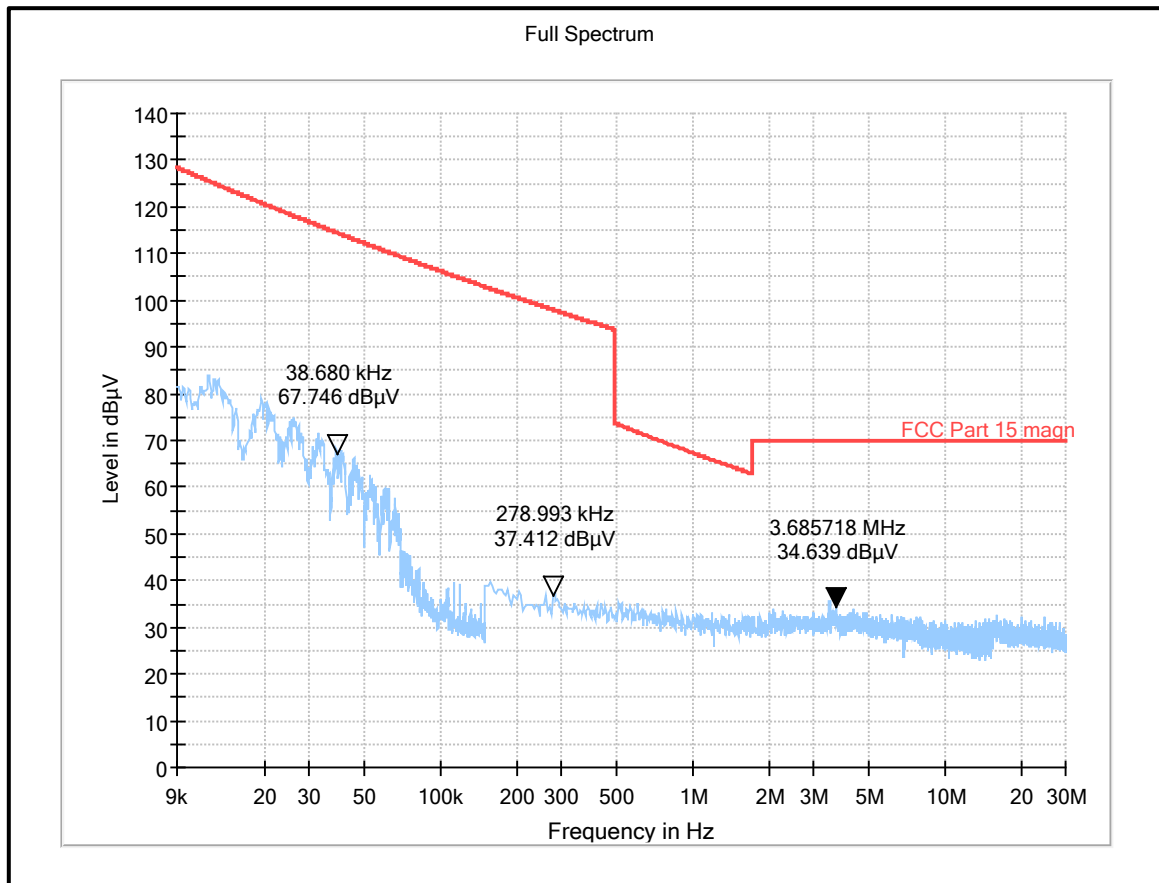
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 40 MHz / MCS0 / PWR 44 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 9 kHz – 30 MHz: 802.11n / 40 MHz / MCS0 / PWR 44 / Middle Channel



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

Result: Pass

Transmitter Radiated Emissions (continued)**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	08 June 2020
Test Sample Serial Number:	EUT1 (Radiated Test Sample)		
Test Site Identification	SR 1/2		

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 11.11 and 11.12 ANSI C63.10:2013 Sections 6.3 and 6.5
Frequency Range	30 MHz to 1000 MHz

Environmental Conditions:

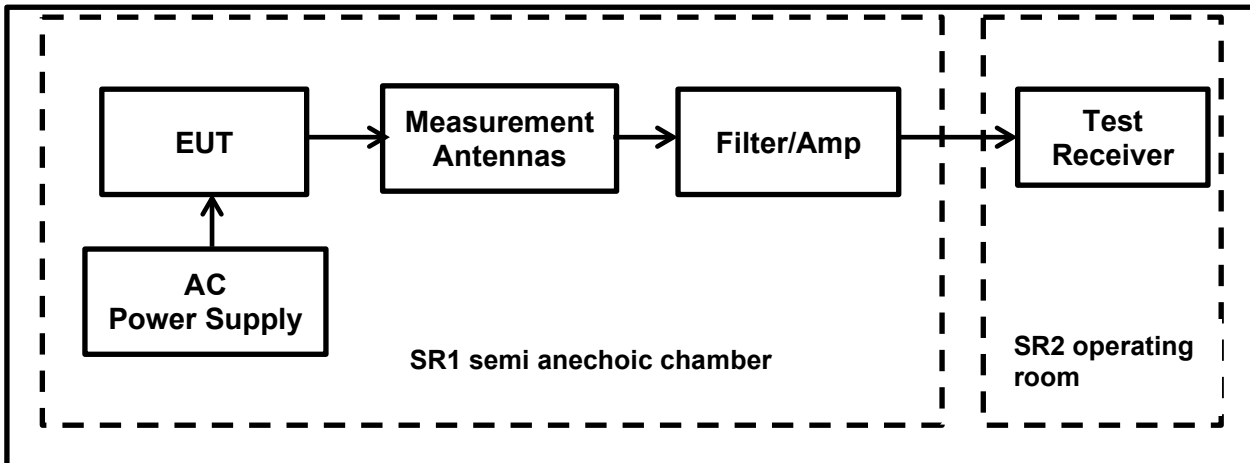
Temperature (°C):	22
Relative Humidity (%):	42

Note(s):

- Measurements below 1 GHz were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) at a distance of 3 m. 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 m to 4 m.
- The preliminary scans showed similar emission levels below 1 GHz, for each channel & modes of operation. Therefore, final radiated emissions measurements were performed with the EUT set to the following worst case modes :
 - 802.11b: 1 Mbit/s | Power Settings : PWR 44 | Bottom Channel
 - 802.11g: 12 Mbit/s | Power Settings : PWR 44 | Bottom Channel
 - 802.11n HT20: MCS0 | Power Settings : PWR 44 | Top Channel
 - 802.11n HT40: MCS0 | Power Settings : PWR 44 | Middle Channel
- Pre-scans were performed and markers placed on the highest measured levels. 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.
- Final measurements were performed with peak detector and the results entered into the table below. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
- All other emissions shown on the pre-scans were investigated and found to be > 20 dB below the applicable limits.

Transmitter Radiated Emissions (continued)

Test Setup:

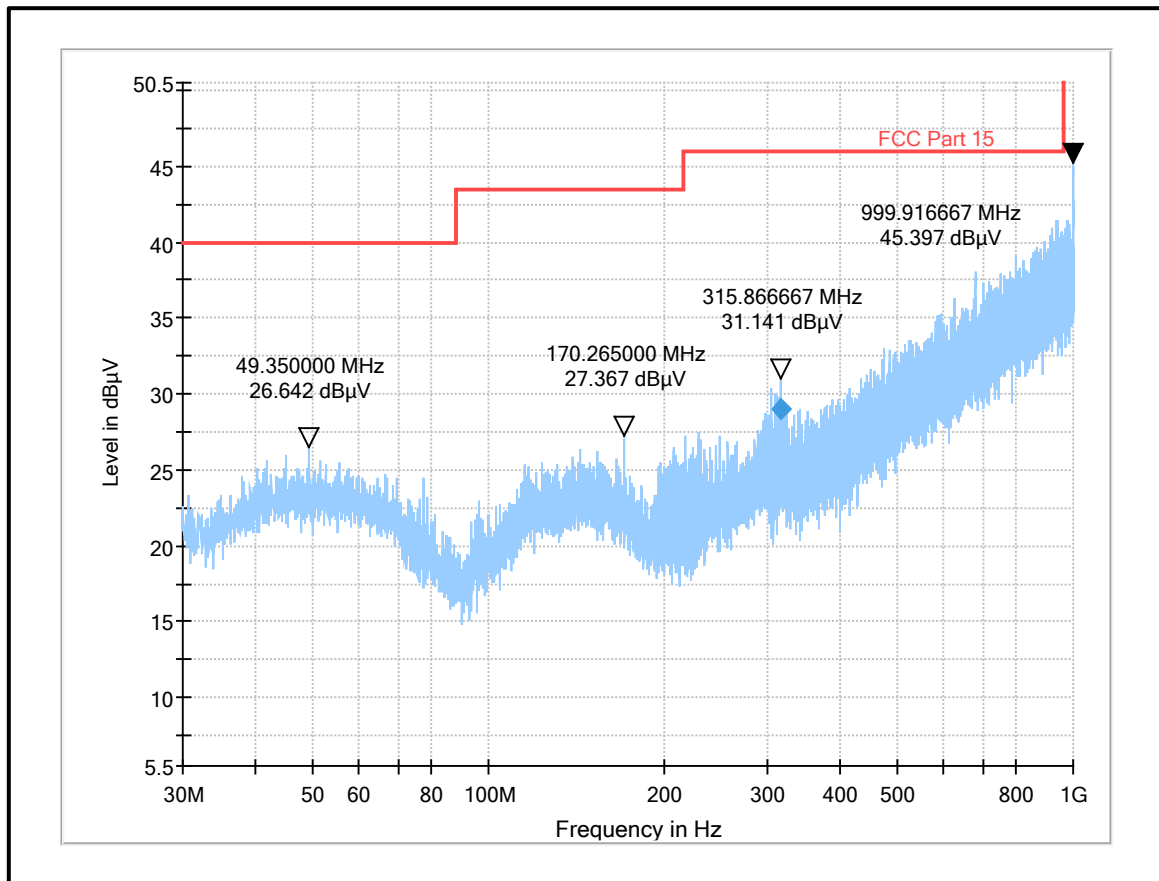


Transmitter Radiated Emissions (continued)

Results: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
315.867	Horizontal	28.99	46.00	17.01	Complied

Plot: 30 MHz – 1 GHz: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Bottom Channel



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

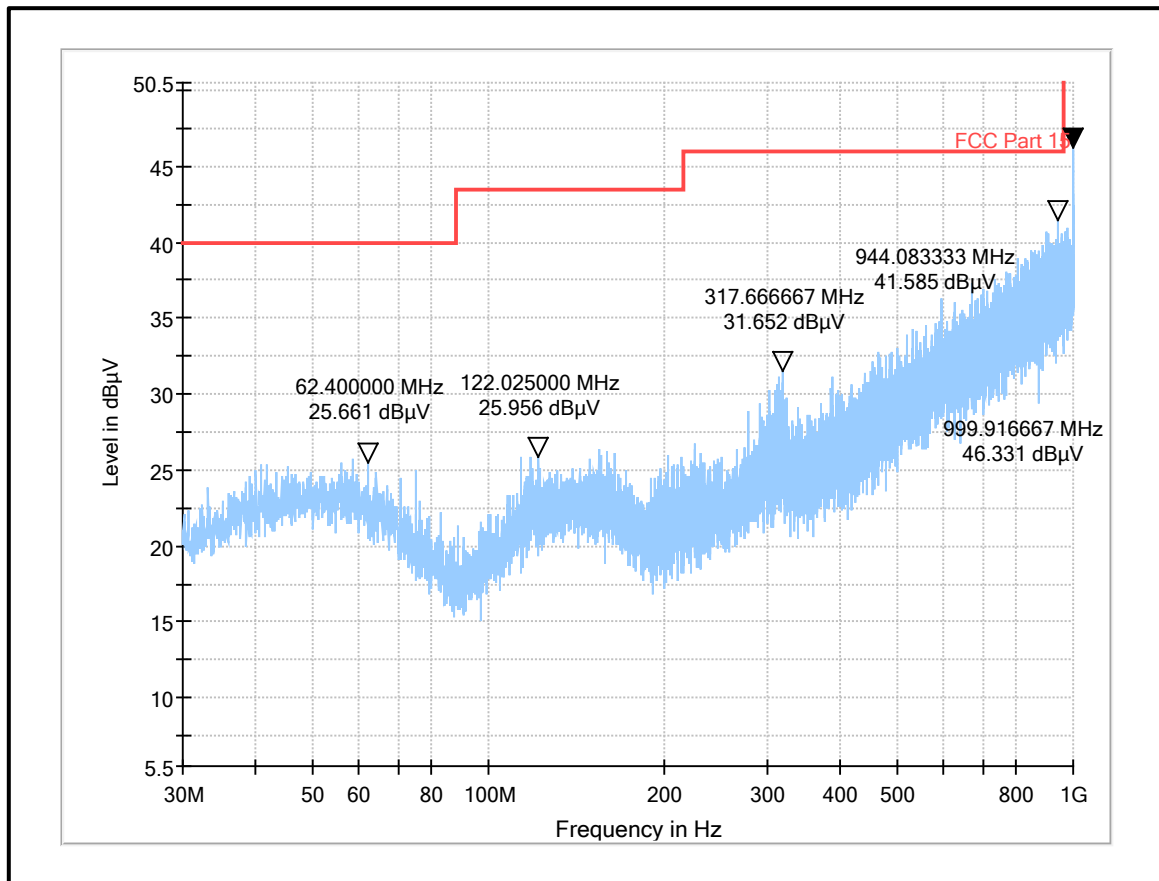
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 30 MHz – 1 GHz: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Bottom Channel



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

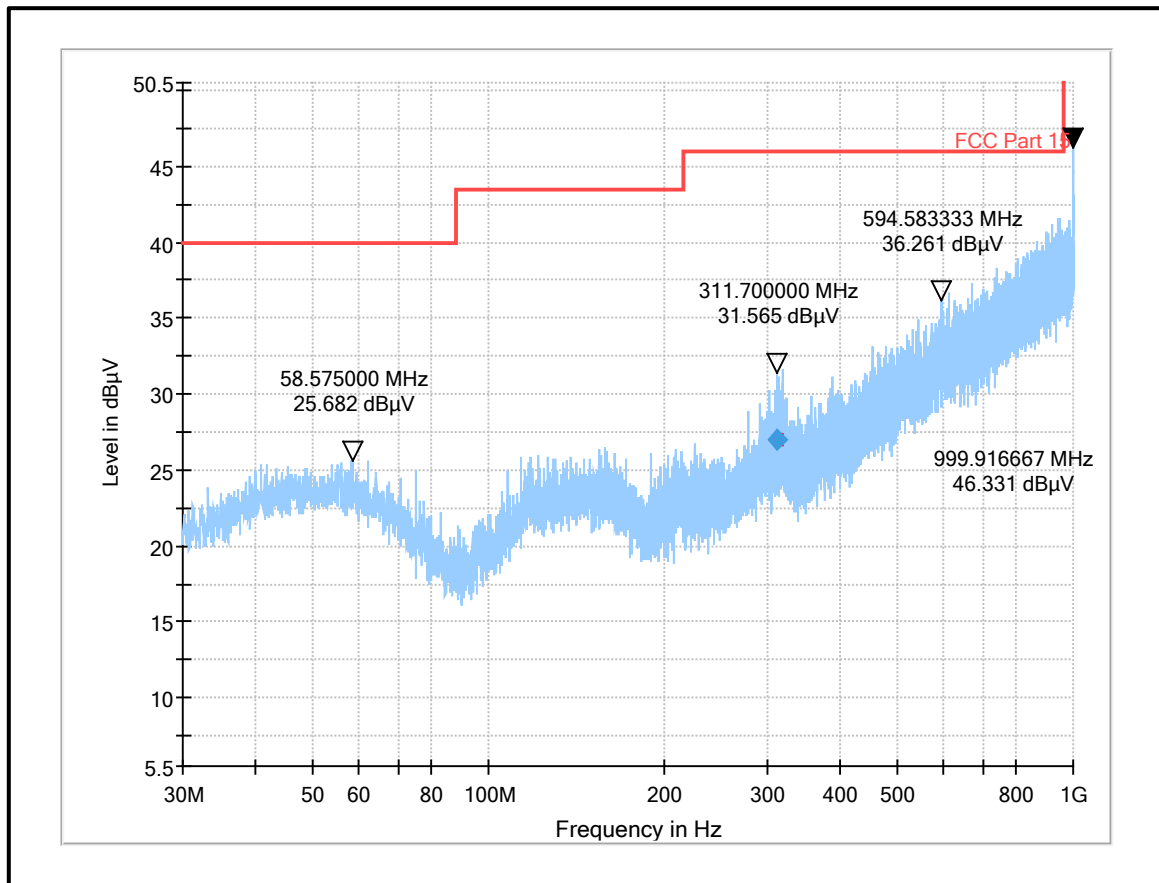
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 20 MHz / MCS0 / PWR 44 / Top Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
311.700	Horizontal	27.00	46.00	19.00	Complied

Plot: 30 MHz – 1 GHz: 802.11n / 20 MHz / MCS0 / PWR 44 / Top Channel



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

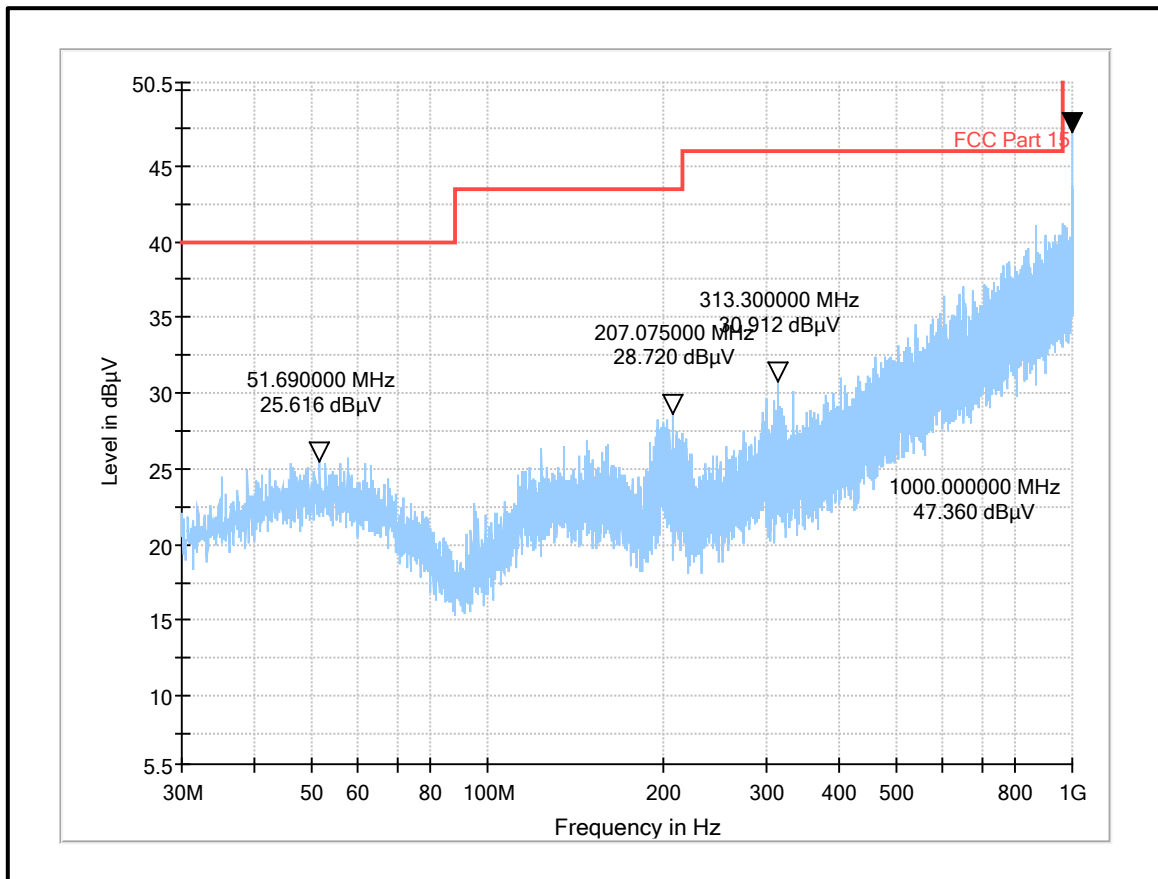
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 40 MHz / MCS0 / PWR 44 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 30 MHz – 1 GHz: 802.11n / 40 MHz / MCS0 / PWR 44 / Middle Channel



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

Result: Pass

Transmitter Radiated Emissions (continued)**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	29 April 2020 & 08 June 2020
Test Sample Serial Number:	EUT1 (Radiated Test Sample)		
Test Site Identification	SR 1/2		

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 11.11 and 11.12 ANSI C63.10:2013 Sections 6.3 and 6.6
Frequency Range	1 GHz to 25 GHz

Environmental Conditions:

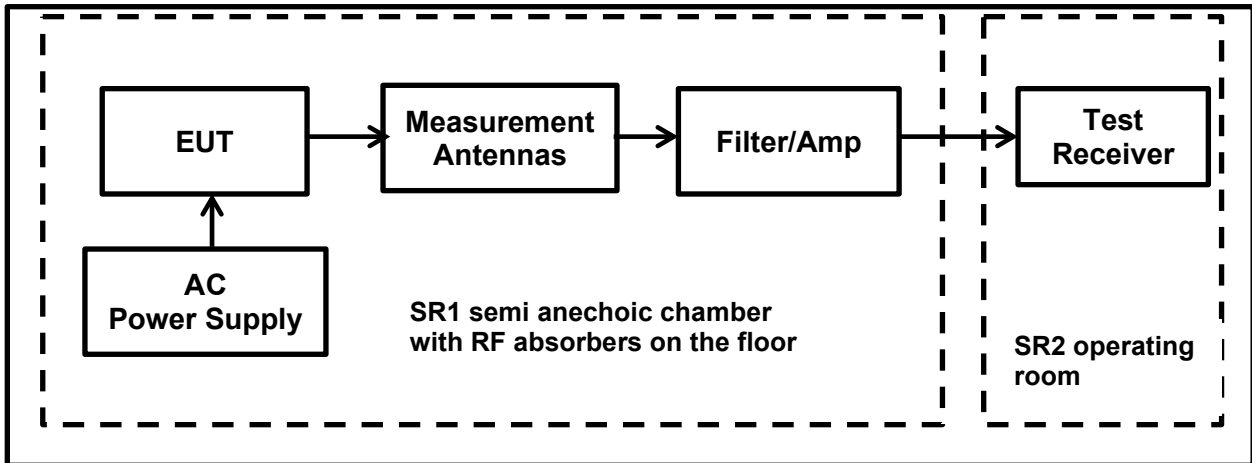
Temperature (°C):	24
Relative Humidity (%):	55

Note(s):

- Pre-scans above 1 GHz were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) with RF absorbers on the floor at a distance of 3 m. The EUT was placed at a height of 1.5 m above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 m above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) with absorber on the floor at a distance of 3 m. 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 m to 4 m.
- 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.
- The emissions shown at frequencies approximately 2.4 GHz to 2.4835 GHz on the 1 GHz to 18 GHz plots are the EUT fundamental for the tested channel.
- No spurious emissions were detected.
- The preliminary scans showed similar emission levels above 18 GHz, for each channel & modes of operation. Therefore, final radiated emissions measurements were performed with the EUT set to the following worst case modes :
 - 802.11b: 1 Mbit/s | Power Settings : PWR 44 | Bottom Channel
 - 802.11g: 12 Mbit/s | Power Settings : PWR 44 | Bottom Channel
 - 802.11n HT20: MCS0 | Power Settings : PWR 44 | Top Channel
 - 802.11n HT40: MCS0 | Power Settings : PWR 44 | Middle Channel
- For frequency range between 18 GHz and 25 GHz, no critical emissions were found. All emissions shown on the pre-scans were investigated and found to be below the noise floor of the measurement system.

Transmitter Radiated Emissions (continued)

Test Setup:

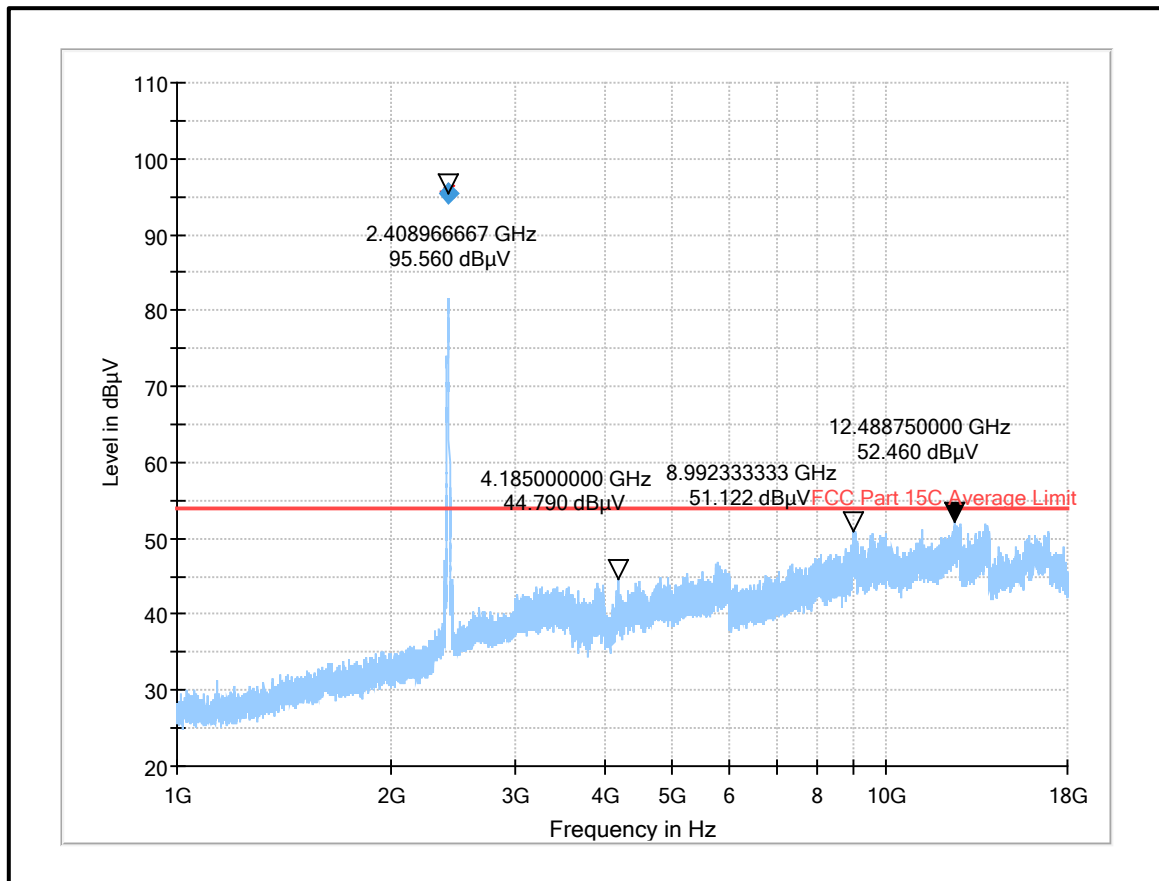


Transmitter Radiated Emissions (continued)

Results: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Bottom Channel



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

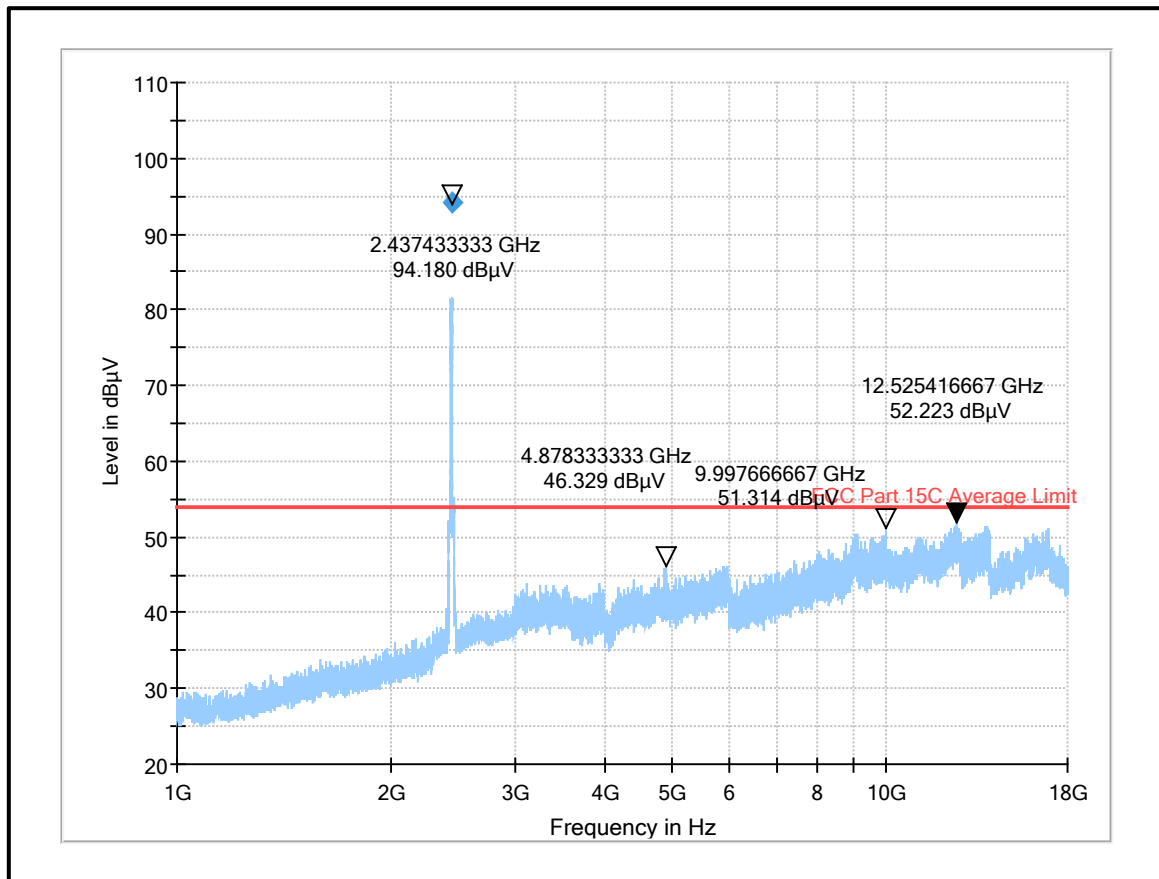
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Middle Channel



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

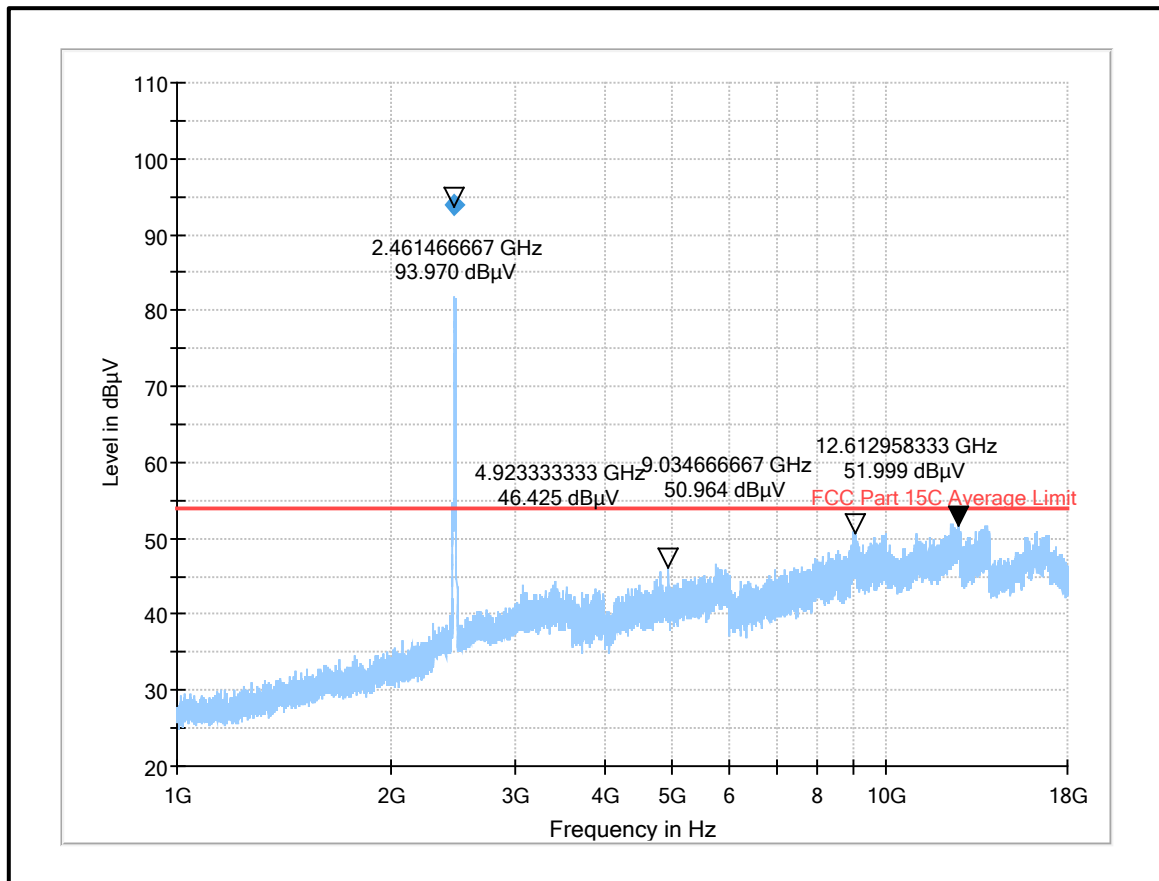
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Top Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Top Channel



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

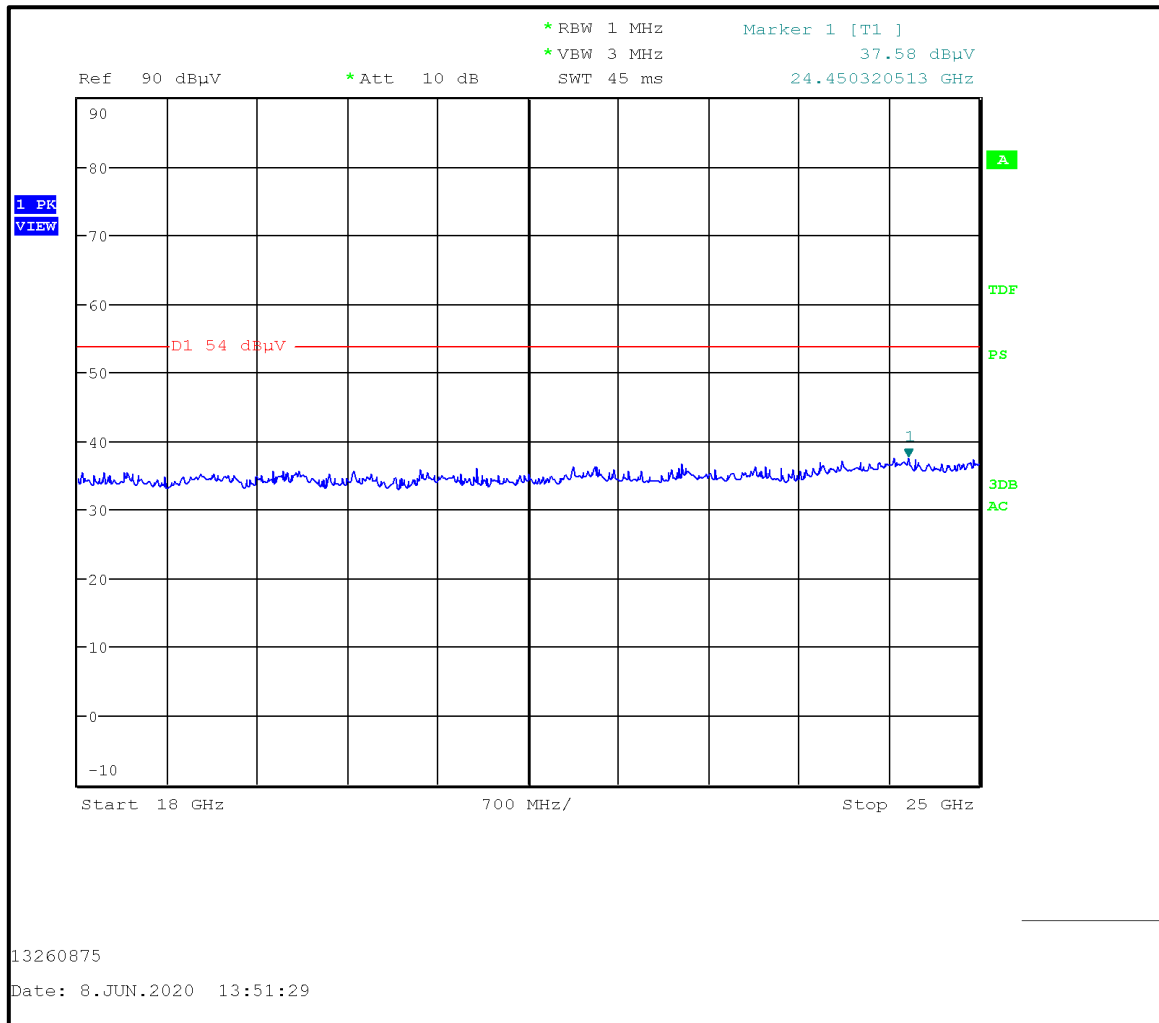
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11b /20 MHz / 1 Mbps / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 18 GHz – 25 GHz: 802.11b / 20 MHz / 1 Mbps / PWR 44 / Bottom Channel



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

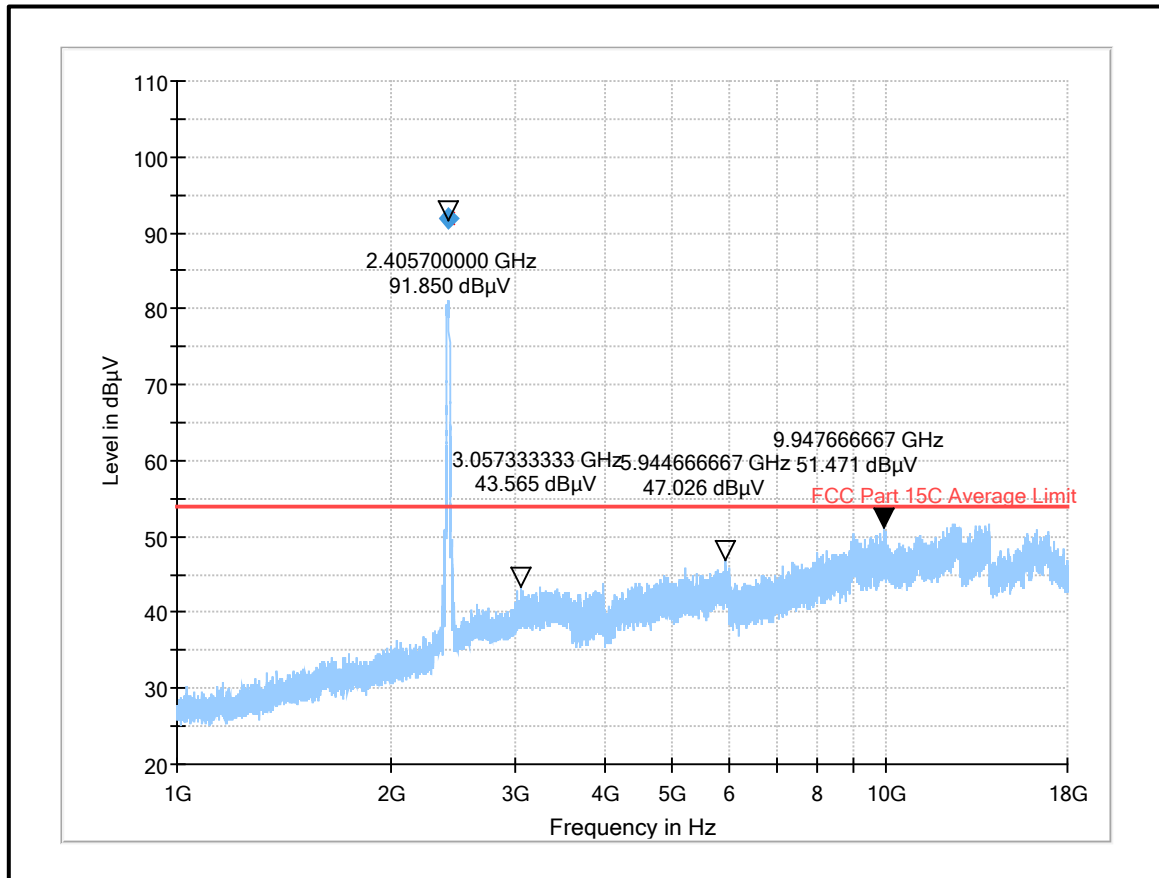
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Bottom Channel



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

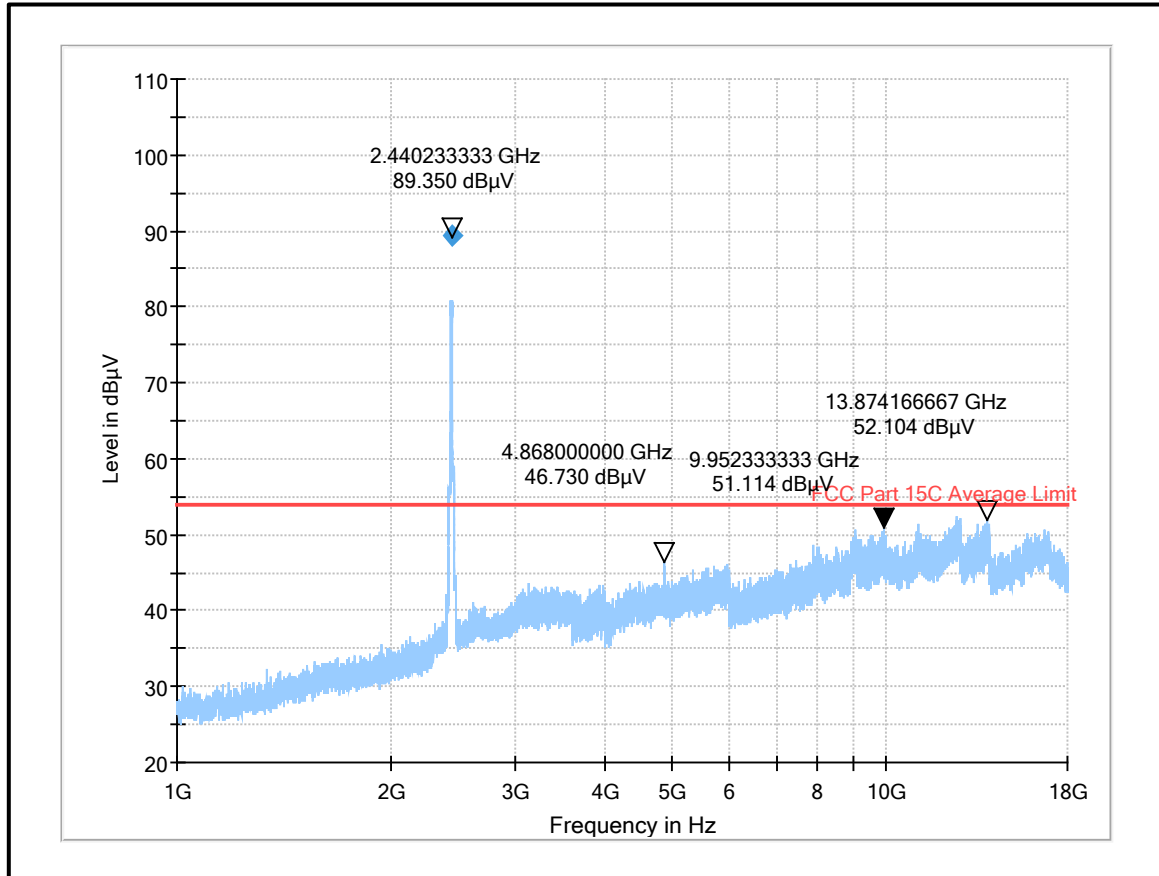
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Middle Channel



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

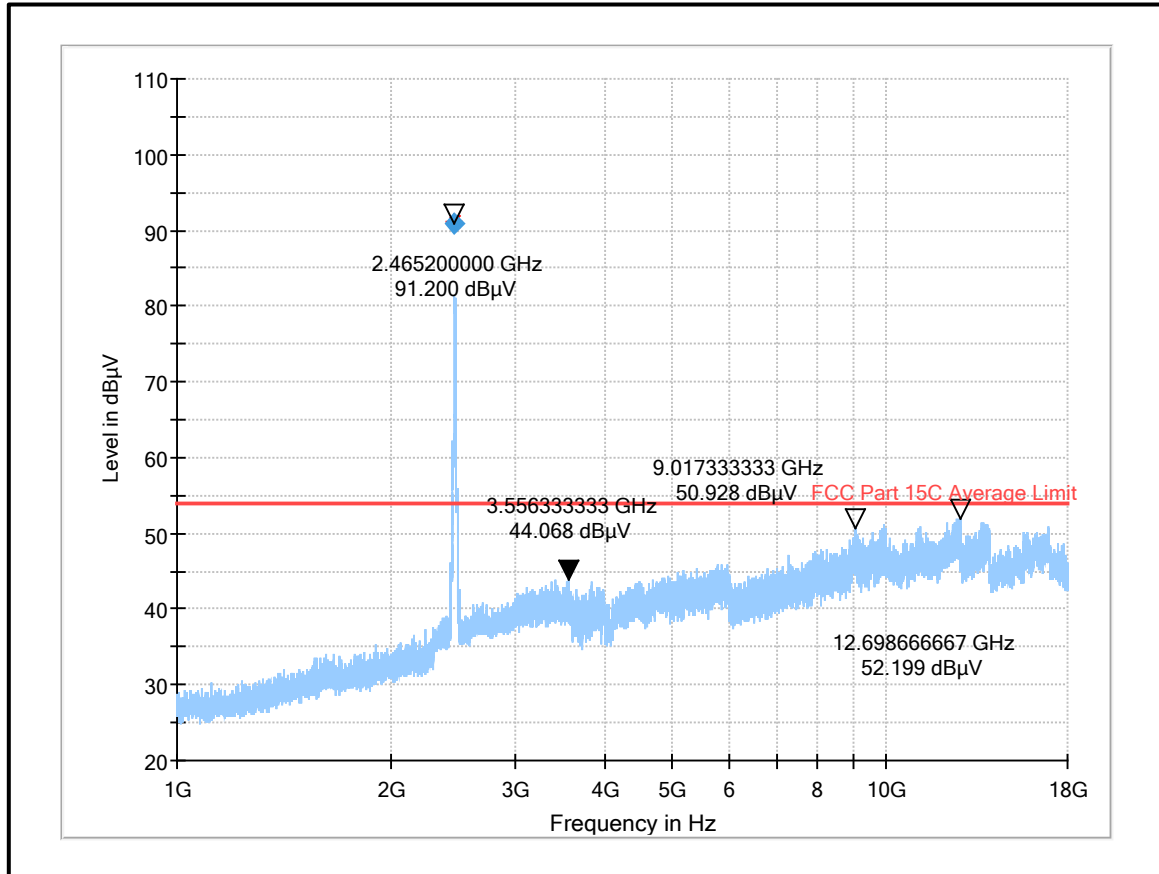
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Top Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Top Channel



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

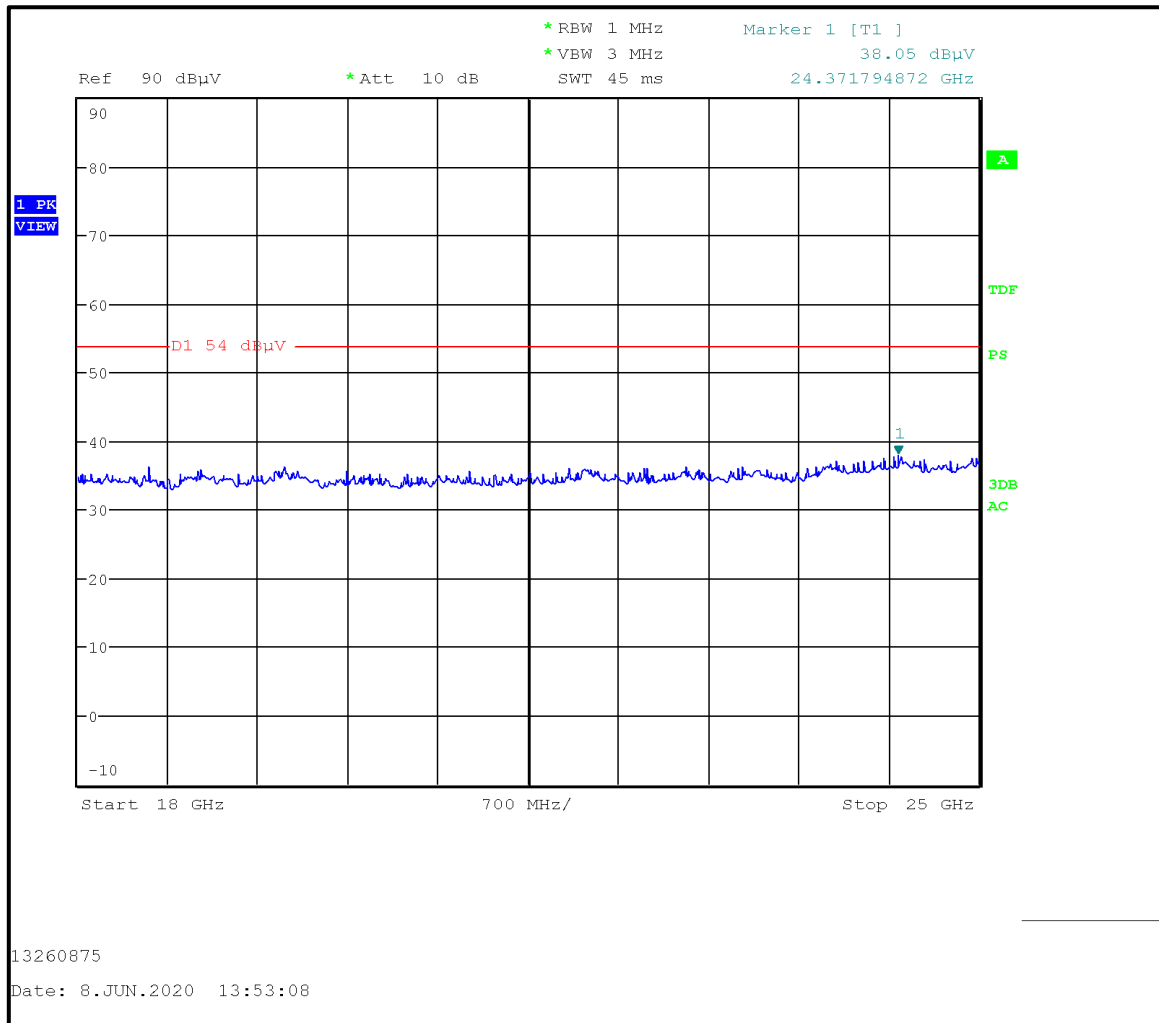
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11g /20 MHz / 12 Mbps / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 18 GHz – 25 GHz: 802.11g / 20 MHz / 12 Mbps / PWR 44 / Bottom Channel



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

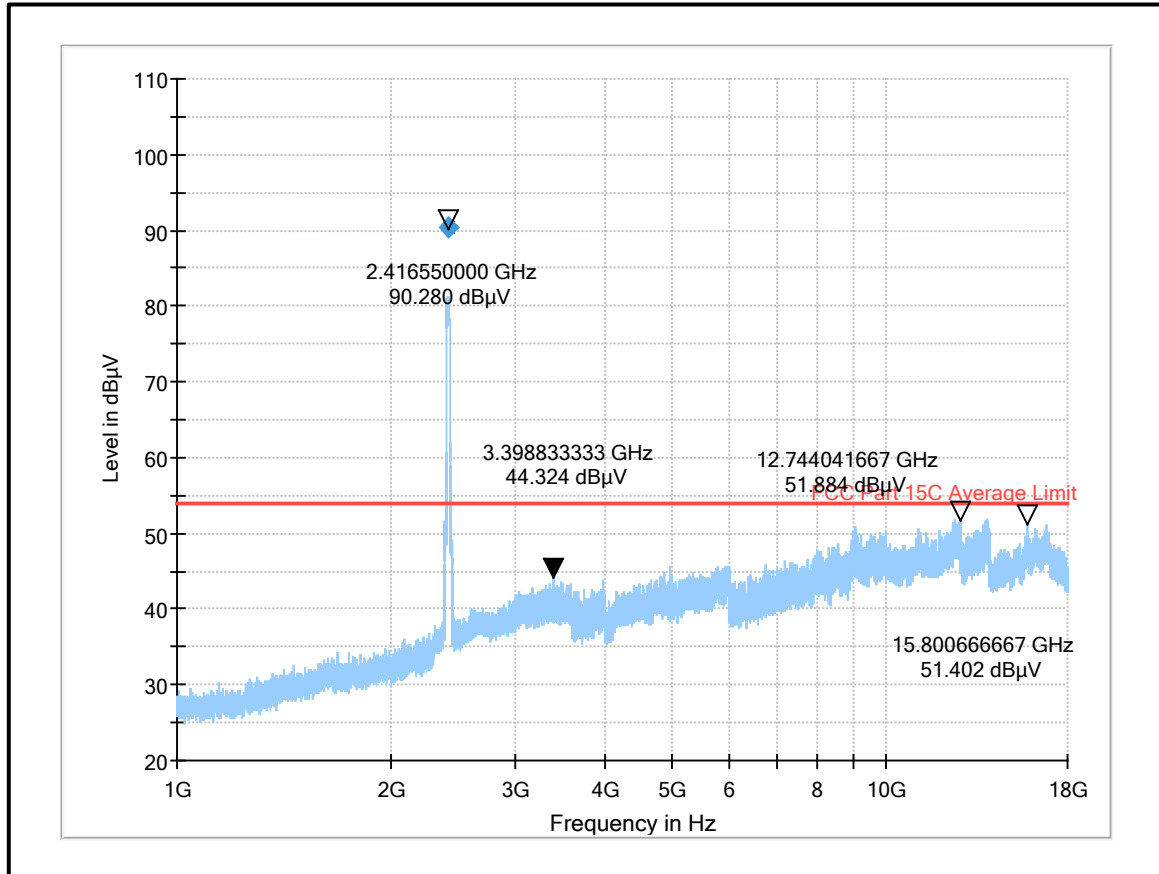
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 20 MHz / MCS0 / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11n / 20 MHz / MCS0 / PWR 44 / Bottom Channel



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

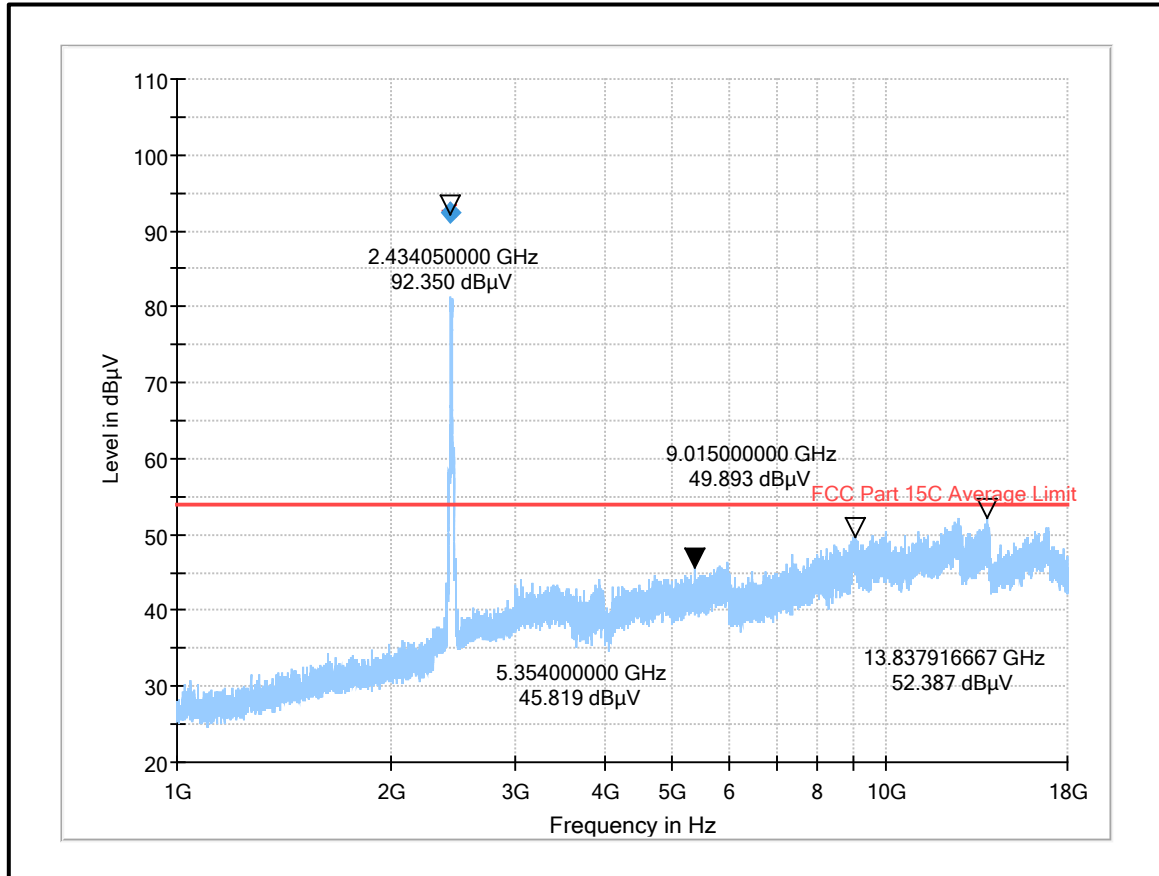
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 20 MHz / MCS0 / PWR 44 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11n / 20 MHz / MCS0 / PWR 44 / Middle Channel



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

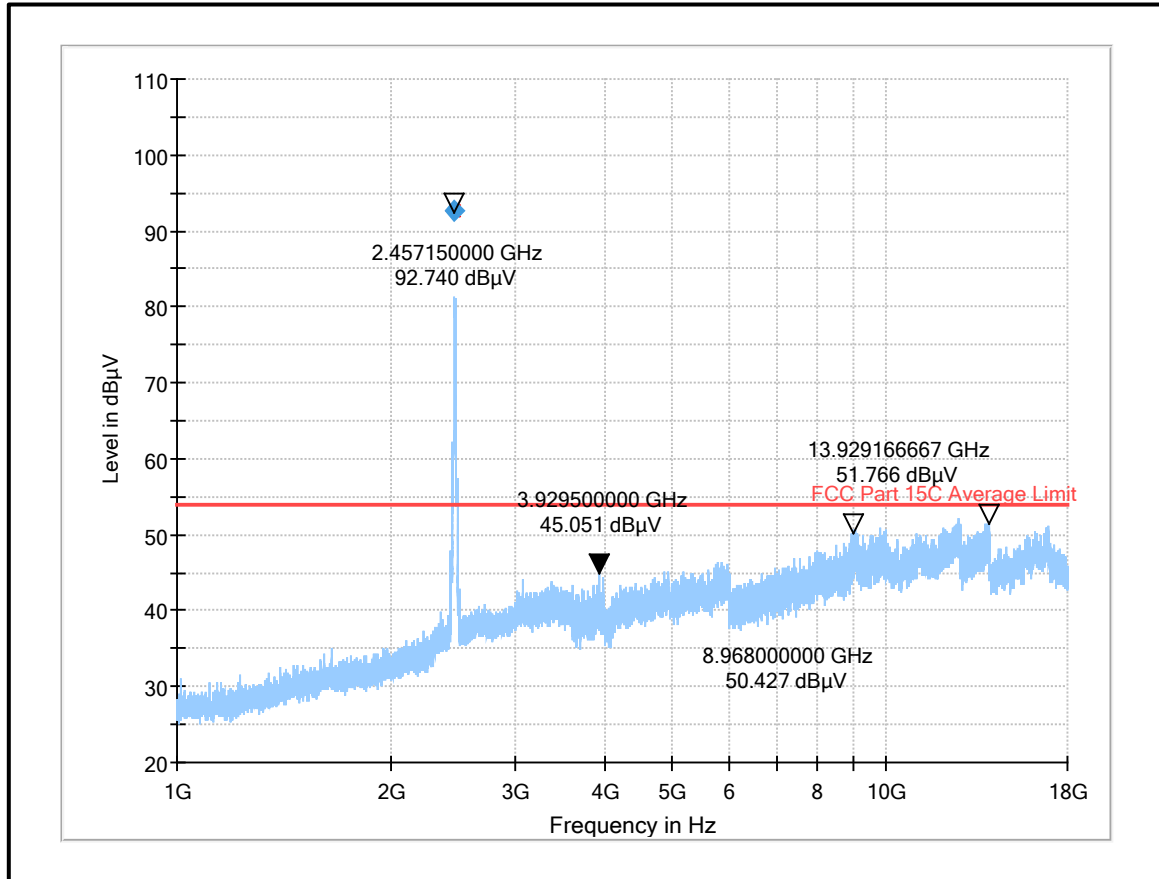
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 20 MHz / MCS0 / PWR 44 / Top Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11n / 20 MHz / MCS0 / PWR 44 / Top Channel



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

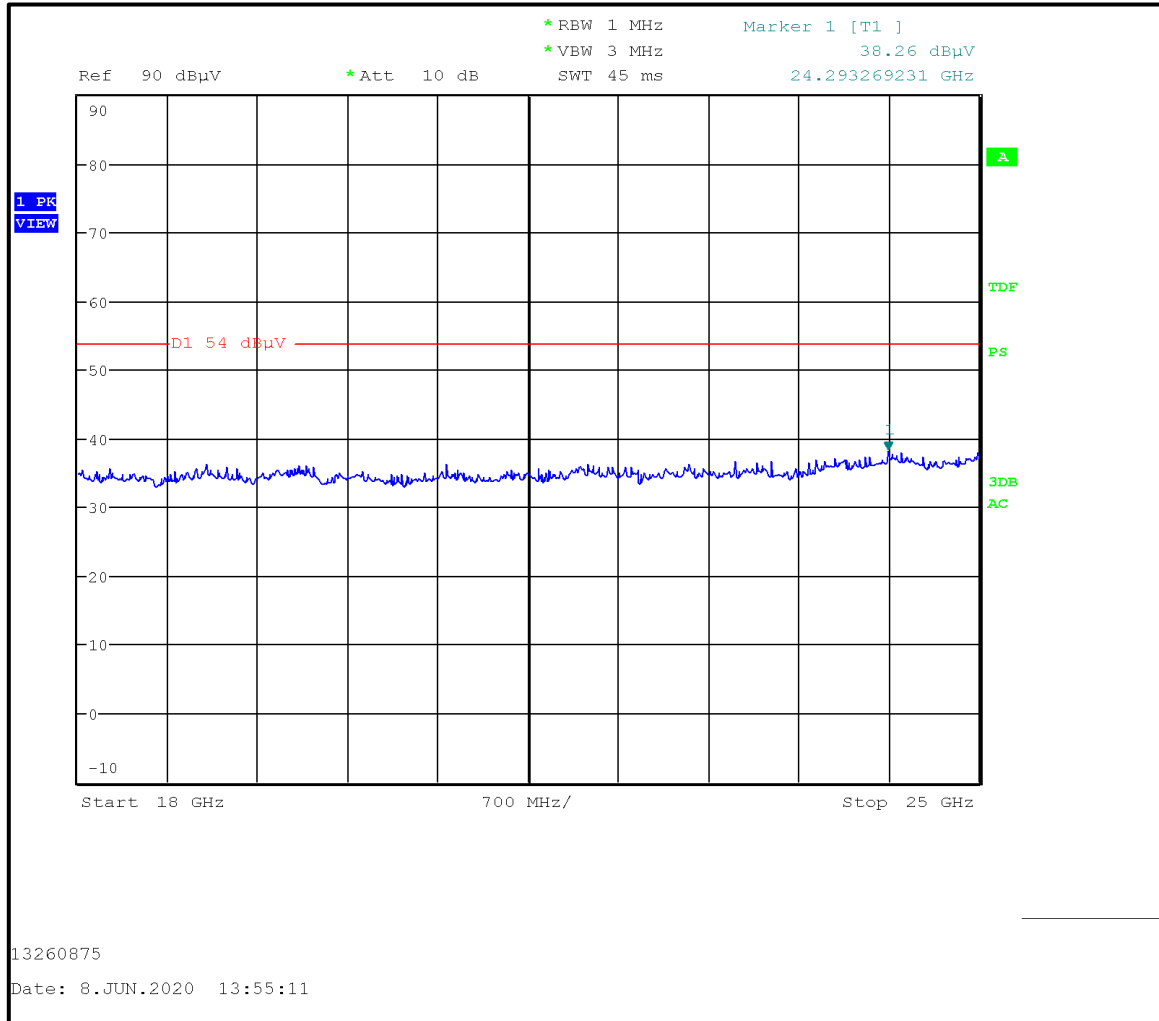
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 20 MHz / MCS0 / PWR 44 / Top Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 18 GHz – 25 GHz: 802.11n / 20 MHz / MCS0 / PWR 44 / Top Channel



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

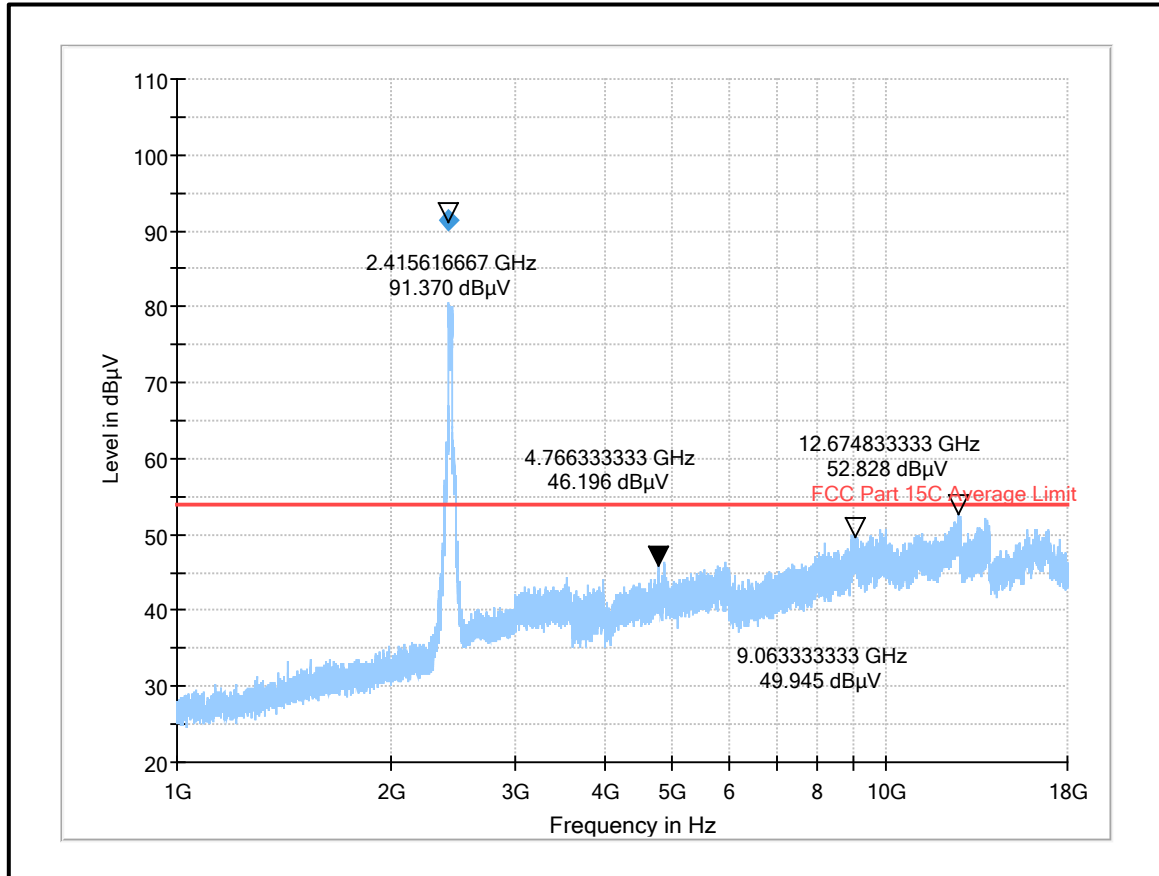
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 40 MHz / MCS0 / PWR 44 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11n / 40 MHz / MCS0 / PWR 44 / Bottom Channel



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

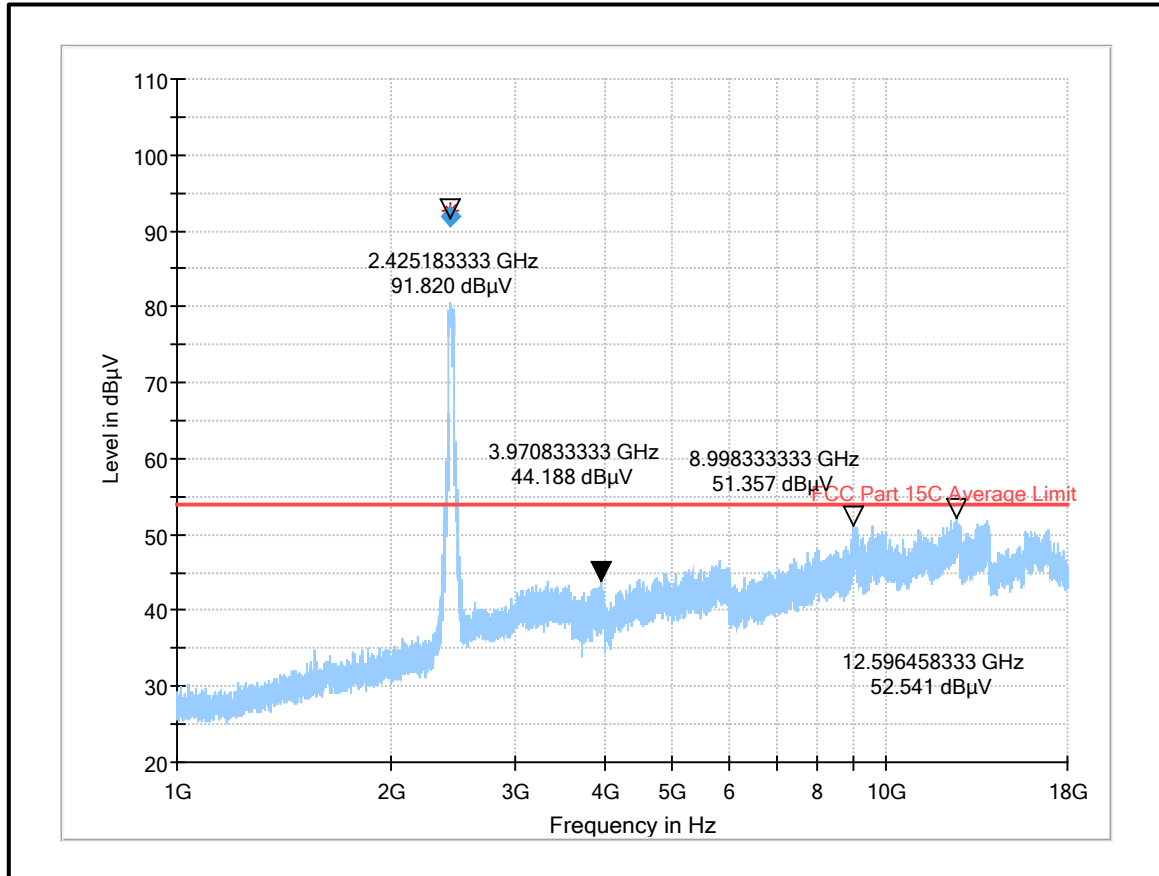
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 40 MHz / MCS0 / PWR 44 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11n / 40 MHz / MCS0 / PWR 44 / Middle Channel



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

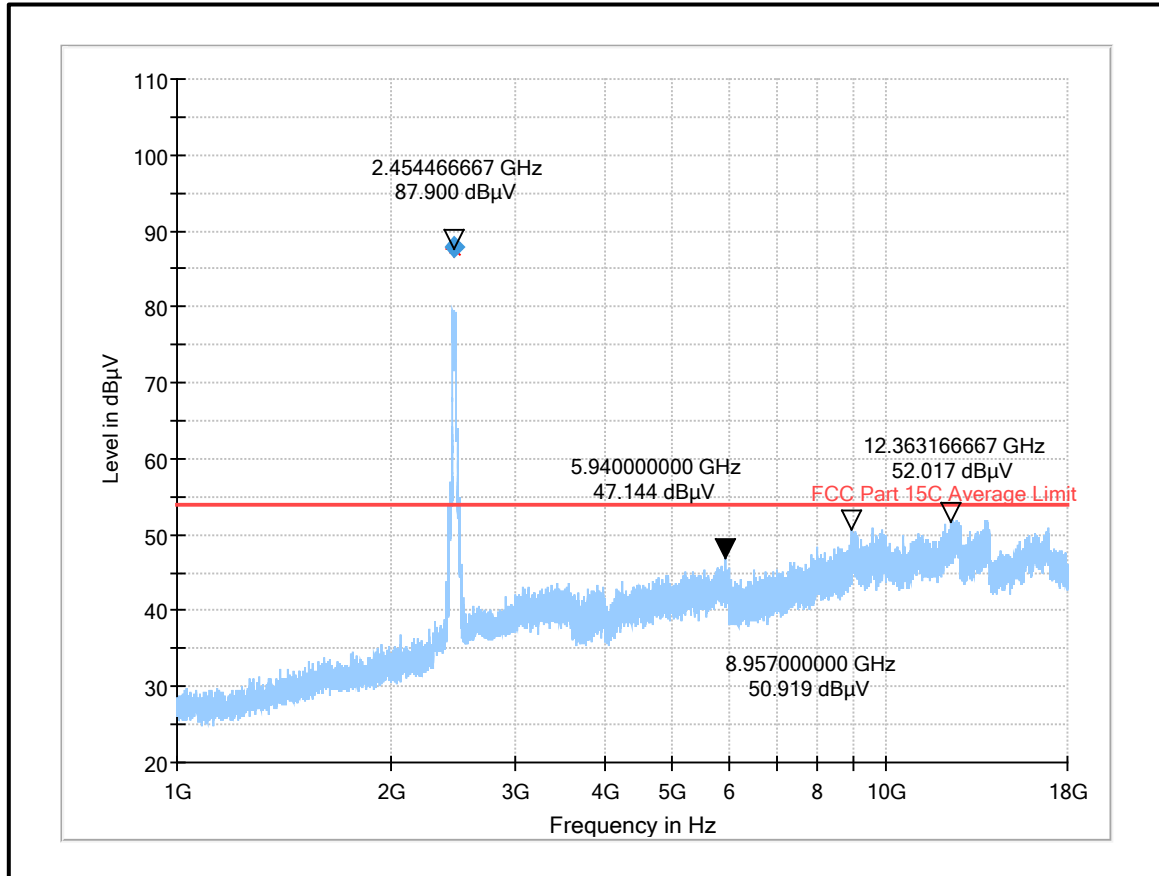
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 40 MHz / MCS0 / PWR 44 / Top Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 1 GHz – 18 GHz: 802.11n / 40 MHz / MCS0 / PWR 44 / Top Channel



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

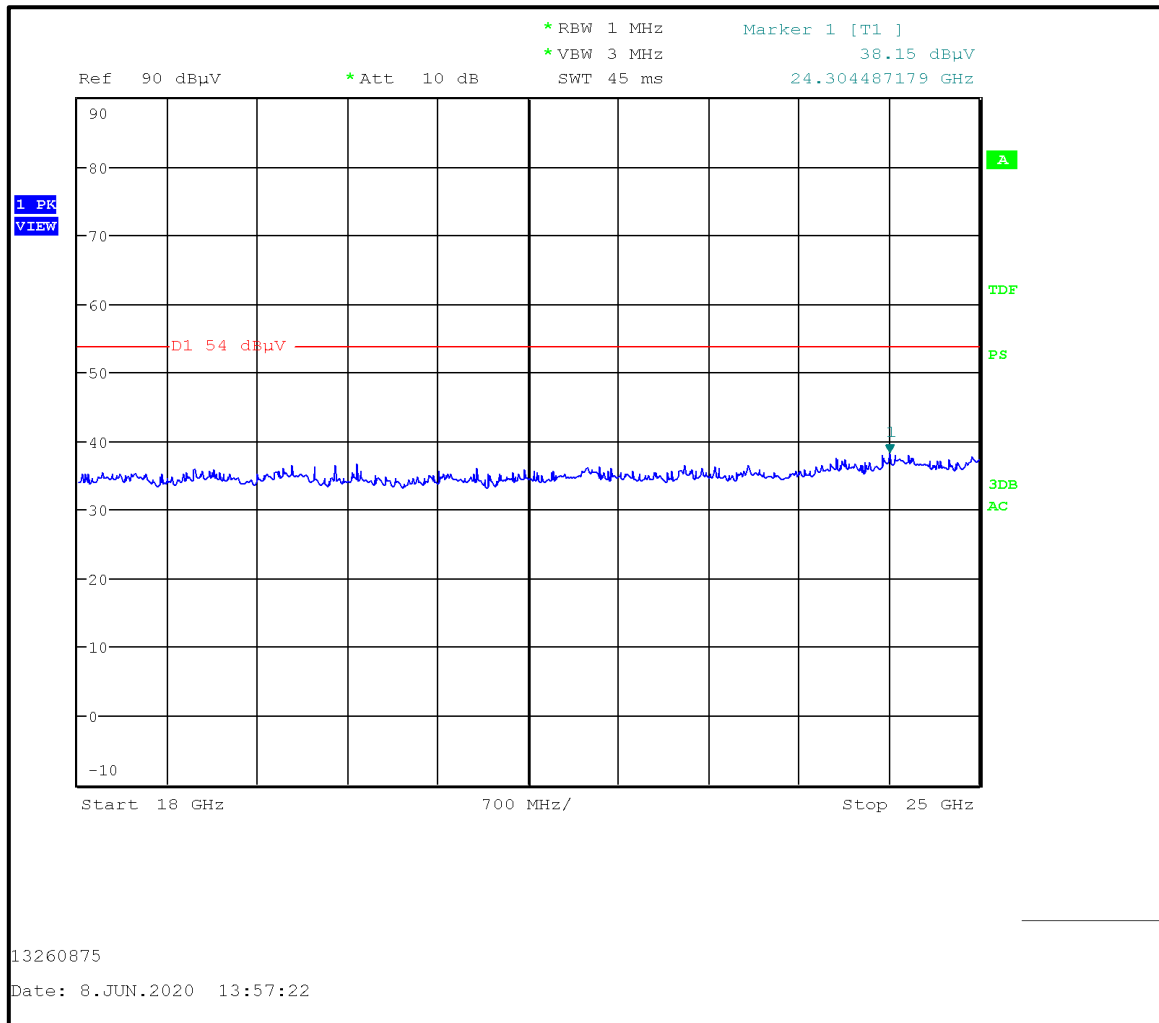
Result: Pass

Transmitter Radiated Emissions (continued)

Results: 802.11n / 40 MHz / MCS0 / PWR 44 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
No critical spurious emissions were detected					

Plot: 18 GHz – 25 GHz: 802.11n / 40 MHz / MCS0 / PWR 44 / Middle Channel



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

Result: Pass

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

Test Engineer:	Sercan Usta	Test Date:	05 June 2020
Test Sample Serial Number:	EUT1 (Radiated Test Sample)		
Test Site Identification	SR 1/2		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	DTS emissions in non-restricted frequency bands: FCC KDB 558074 Section 8.5 referencing ANSI C63.10:2013 Sections 11.11
	DTS emissions in restricted frequency bands: FCC KDB 558074 Section 8.6 referencing ANSI C63.10:2013 Sections 11.12
	ANSI C63.10:2013 Sections 6.10.4, 6.10.5

Environmental Conditions:

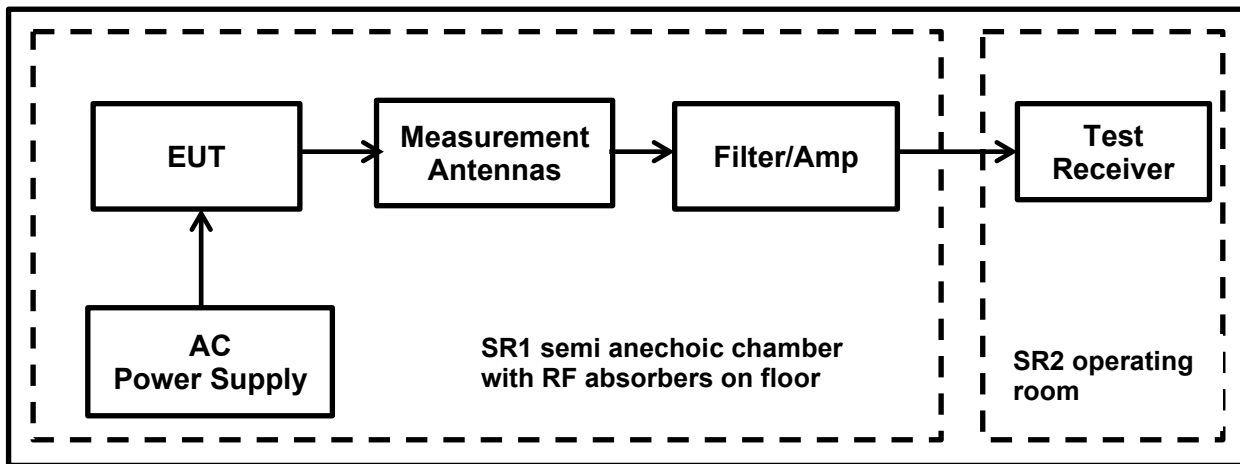
Temperature (°C):	23
Relative Humidity (%):	40

Note(s):

- The measurements were in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) with RF absorbers on the floor at a distance of 3 m. The EUT was placed at a height of 1.5 m above the test chamber floor in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 m to 4 m
- As the lower band edge falls within a non-restricted band, measurements were performed in accordance with FCC KDB 558074 Section 8.5 referencing ANSI C63.10 Section 11.11. Since maximum conducted (average) output power was previously measured. In accordance with ANSI C63.10 Section 11.11.1(b) lower band edge measurement was performed with a peak detector and the -30 dBc limit applied.
- As the lower band edge falls within a non-restricted band, only peak measurements are required. 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. Marker frequencies and levels were recorded.
- The restricted band peak measurements were performed in accordance with ANSI C63.10 Section 11.12.2.4.
- As the EUT continuous transmission of the EUT ($D \geq 98\%$) can be achieved, the restricted band average measurements were performed in accordance with ANSI C63.10 Section 11.12.2.5.1.
- As the upper band edge falls within 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. A RMS detector in power averaging mode was used. 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 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.

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

7. 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.
8. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
9. **As the EUT was transmitting continuously with a Duty Cycle of $\geq 98\%$, no Duty Cycle Correction Factor is required for average measurements.

Test Setup:

Transmitter Band Edge Radiated Emissions (Continued)**Results: 802.11b / 20 MHz / 1 Mbps / PWR 44****Results: Lower Band Edge / Peak**

Frequency (MHz)	Peak Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2399.97	39.83	61.01	21.18	Complied
2400.00	39.49	61.01	21.52	Complied

Results: 2310 to 2390 MHz Restricted Band / Peak

Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2387.69	47.78	74.00	26.22	Complied

Results: 2310 to 2390 MHz Restricted Band / Average

Frequency (MHz)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2389.35	34.29	54.00	19.71	Complied

Results: Upper Band Edge / Peak

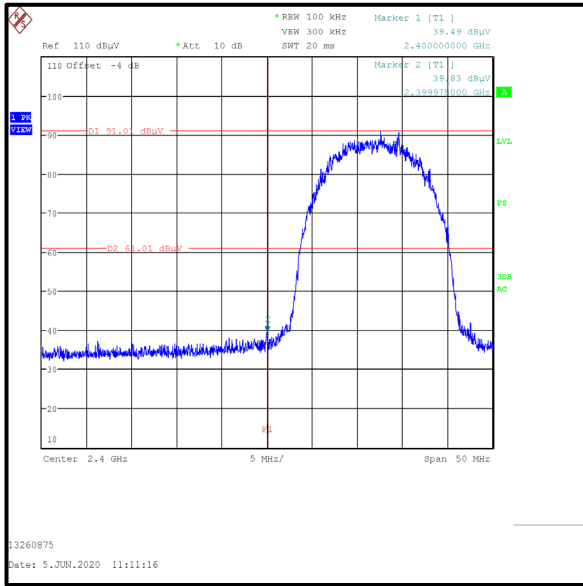
Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2483.50	43.67	74.00	30.33	Complied
2506.93	46.10	74.00	27.90	Complied

Results: Upper Band Edge / Average

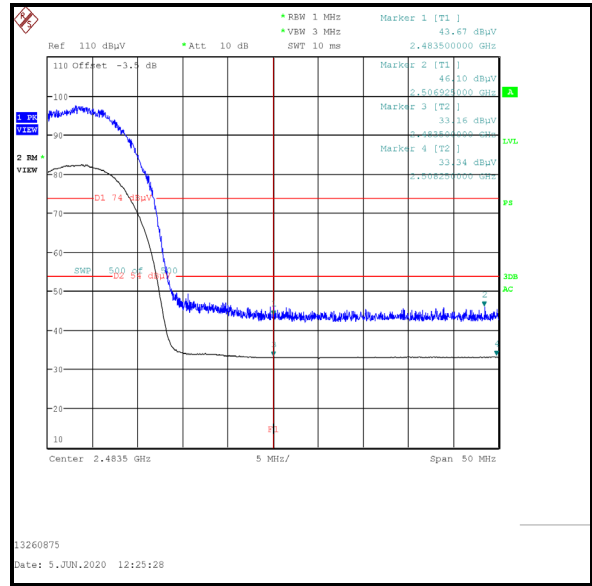
Frequency (MHz)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2483.50	33.16	54.00	20.84	Complied
2508.25	33.34	54.00	20.66	Complied

Transmitter Band Edge Radiated Emissions (Continued)

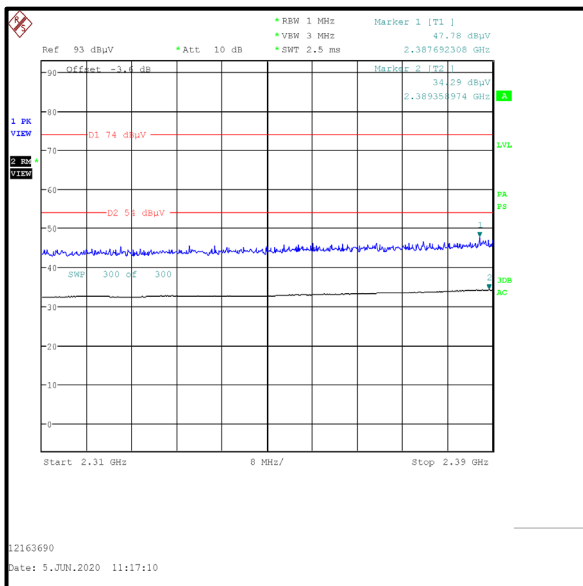
Results: 802.11b / 20 MHz / 1 Mbps / PWR 44



Lower Band Edge Peak Measurement



Upper Band Edge Peak & Average Measurement



Restricted Band 2310-2390 MHz

Result: **Pass**

Transmitter Band Edge Radiated Emissions (Continued)**Results: 802.11g / 20 MHz / 12 Mbps / PWR 44****Results: Lower Band Edge / Peak**

Frequency (MHz)	Peak Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2397.00	43.94	55.21	11.27	Complied
2400.00	44.12	55.21	11.09	Complied

Results: 2310 to 2390 MHz Restricted Band / Peak

Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2390.00	48.92	74.00	25.08	Complied

Results: 2310 to 2390 MHz Restricted Band / Average

Frequency (MHz)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2390.00	34.65	54.00	19.35	Complied

Results: Upper Band Edge / Peak

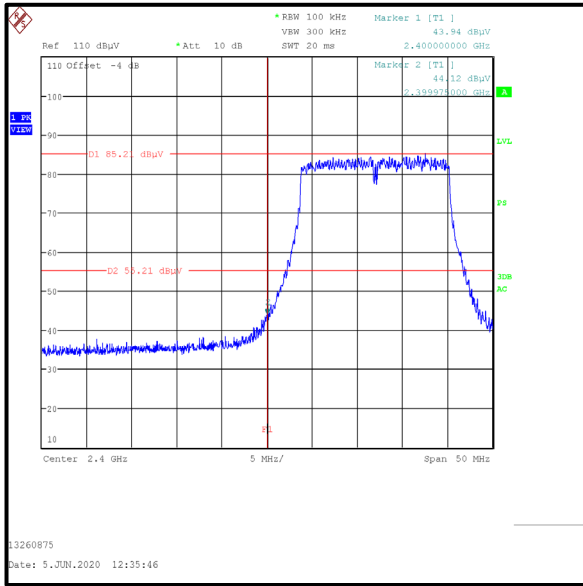
Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2483.50	44.88	74.00	29.12	Complied
2490.93	46.02	74.00	27.98	Complied

Results: Upper Band Edge / Average

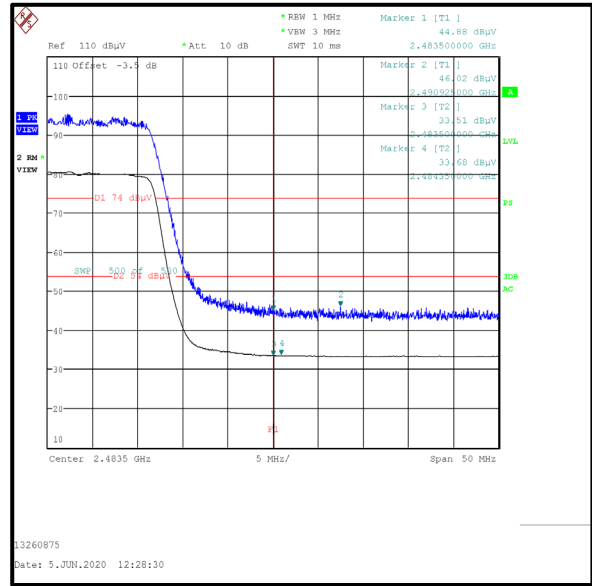
Frequency (MHz)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2483.50	33.51	54.00	20.49	Complied
2484.35	33.68	54.00	20.32	Complied

Transmitter Band Edge Radiated Emissions (Continued)

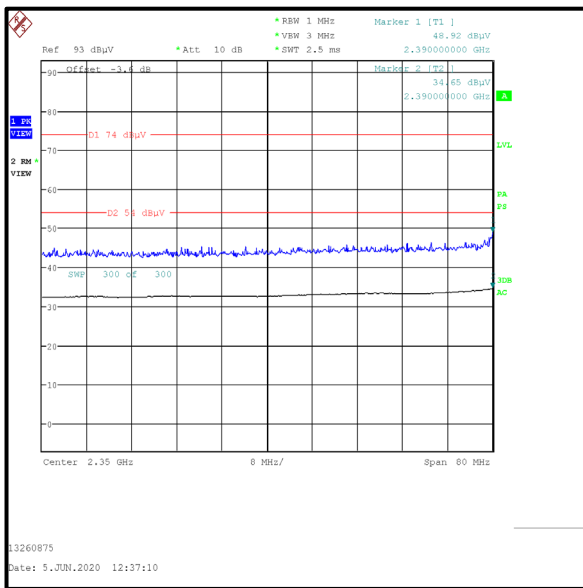
Results: 802.11g / 20 MHz / 12 Mbps / PWR 44



Lower Band Edge Peak Measurement



Upper Band Edge Peak & Average Measurement



Restricted Band 2310-2390 MHz

Result: Pass

Transmitter Band Edge Radiated Emissions (Continued)**Results: 802.11n / 20 MHz / MCS0 / PWR 44****Results: Lower Band Edge / Peak**

Frequency (MHz)	Peak Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2399.85	45.08	55.17	10.09	Complied
2400.00	42.64	55.17	12.53	Complied

Results: 2310 to 2390 MHz Restricted Band / Peak

Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2390.00	34.75	74.00	39.25	Complied

Results: 2310 to 2390 MHz Restricted Band / Average

Frequency (MHz)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2390.00	50.30	54.00	3.70	Complied

Results: Upper Band Edge / Peak

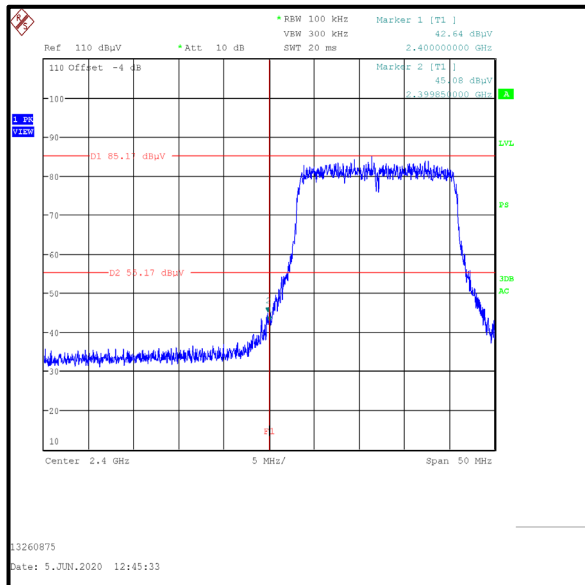
Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2483.50	43.81	74.00	30.19	Complied
2495.00	46.84	74.00	27.16	Complied

Results: Upper Band Edge / Average

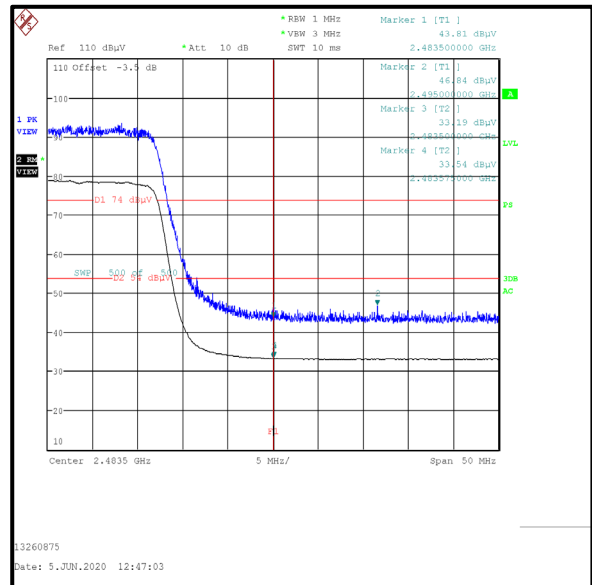
Frequency (MHz)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2483.50	33.19	54.00	20.81	Complied
2483.58	33.54	54.00	20.46	Complied

Transmitter Band Edge Radiated Emissions (Continued)

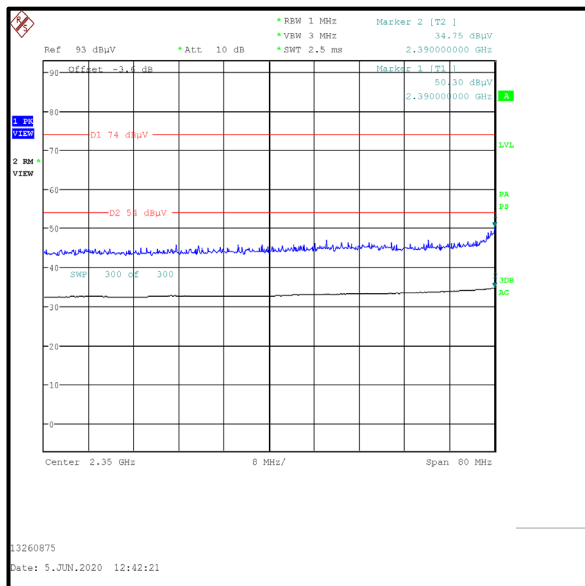
Results: 802.11n / 20 MHz / MCS0 / PWR 44



Lower Band Edge Peak Measurement



Upper Band Edge Peak & Average Measurement



Restricted Band 2310-2390 MHz

Result: **Pass**

Transmitter Band Edge Radiated Emissions (Continued)**Results: 802.11n / 40 MHz / MCS0 / PWR 44****Results: Lower Band Edge / Peak**

Frequency (MHz)	Peak Level (dB μ V/m)	-30 dBc Limit (dB μ V/m)	Margin (dB)	Result
2399.78	43.60	53.20	9.60	Complied
2400.00	41.95	53.20	11.25	Complied

Results: 2310 to 2390 MHz Restricted Band / Peak

Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2385.00	49.56	74.00	24.44	Complied

Results: 2310 to 2390 MHz Restricted Band / Average

Frequency (MHz)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2390.00	35.64	54.00	18.36	Complied

Results: Upper Band Edge / Peak

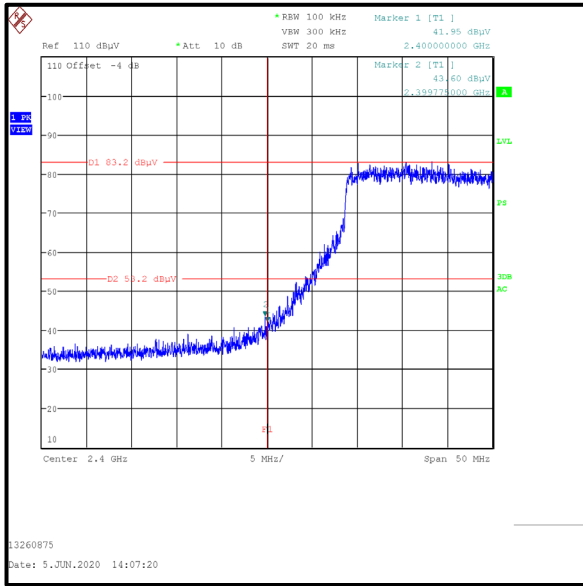
Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2483.50	45.33	74.00	28.67	Complied
2484.08	47.38	74.00	26.62	Complied

Results: Upper Band Edge / Average

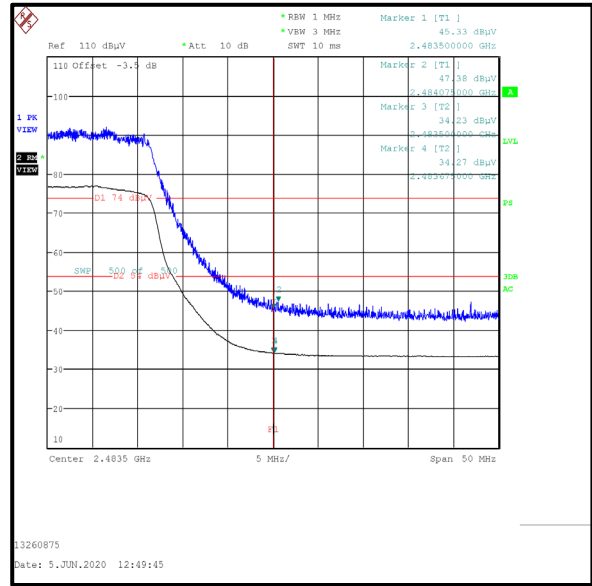
Frequency (MHz)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2483.50	34.23	54.00	19.77	Complied
2483.68	34.27	54.00	19.73	Complied

Transmitter Band Edge Radiated Emissions (Continued)

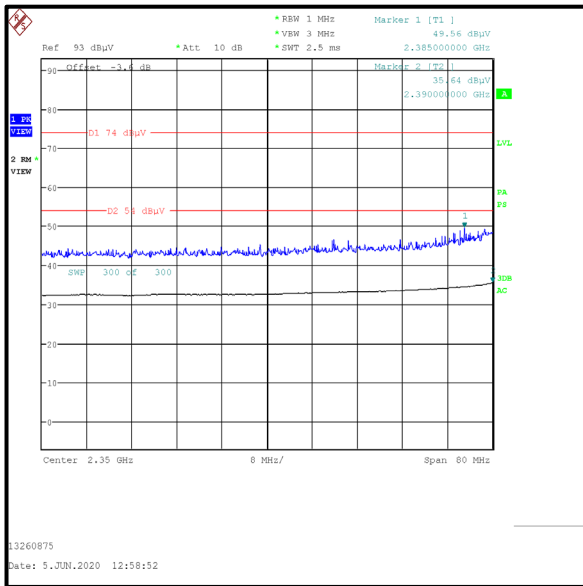
Results: 802.11n / 40 MHz / MCS0 / PWR 44



Lower Band Edge Peak Measurement



Upper Band Edge Peak & Average Measurement



Restricted Band 2310-2390 MHz

Result: **Pass**

6. Measurement Uncertainty

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	95%	±2.49 dB
Conducted Maximum Peak Output Power	95%	±0.59 dB
Radiated Spurious Emissions	95%	±3.10 dB
Band Edge Radiated Emissions	95%	±3.10 dB
Transmitter Duty Cycle	95%	±3.4%
Minimum 6 dB Bandwidth	95%	±0.87 %
Spectral Power Density	95%	±0.59 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

7. Used equipment

Test site: SR 1/2

ID	Manufacturer	Type	Model	Serial	Calibration Date	Cal. Cycle (months)
1	Rohde & Schwarz	Antenna, Loop	HFH2-Z2	831247/012	11/07/2019	36
377	BONN Elektronik	Amplifier, Low Noise Pre	BLMA 0118-1A	025294B	10/07/2019	12
423	Bonn Elektronik	Amplifier, Low Noise Pre	BLMA 1840-1A	55929	16/07/2019	12
460	Deisl	Turntable	DT 4250 S	n/a	n/a	n/a
465	Schwarzbeck	Antenna, Trilog Broadband	VULB 9168	9168-240	20/03/2019	24
496	Rohde & Schwarz	Antenna, log. - periodical	HL050	100297	19/02/2019	36
607	Schwarzbeck	Antenna broadband horn antenna	BBHA 9170	9170-561	15/10/2019	24
587	Maturo	antenna mast, tilting	TAM 4.0-E	011/7180311	n/a	n/a
588	Maturo	Controller	NCD	029/7180311	n/a	n/a
591	Rohde & Schwarz	Receiver	ESU 40	100244/040	09/07/2019	12
608	Rohde & Schwarz	Switch Matrix	OSP 120	101227	lab verification	n/a
628	Maturo	Antenna mast	CAM 4.0-P	224/19590716	n/a	n/a
629	Maturo	Kippeinrichtung	KE 2.5-R-M	MAT002	n/a	n/a
-/	Testo	Thermo-Hygrometer	608-H1	01	lab verification	n/a
328	SPS	AC/DC power distribution system	PAS 5000	A2464 00/2 0200	lab verification	n/a
1603665	Siemens Matsushita Components	semi-anechoic chamber SR1/ 2		B83117-A1421-T161	n/a	n/a

Test site: SR 7/8

ID	Manufacturer	Type	Model	Serial	Calibration Date	Cal. Cycle (months)
23	Rohde & Schwarz	Artificial Mains	ESH3-Z5	831767/013	07/07/2020	12
28	Rohde & Schwarz	Passive Probe	ESH2-Z3	none	11/07/2020	12
349	Rohde & Schwarz	Receiver, EMI Test	ESIB7	836697/009	09/07/2020	12
351	Rohde & Schwarz	network, Artificial Mains	ESH3-Z5	862770/018	07/07/2020	12
564	Teseq	Impedance stabilisation network (ISN)	ISN T800	26076	07/07/2020	24
616	Rohde & Schwarz	ISN	ENY81-CA6	101656	07/07/2020	12
-/	Testo	Thermo-Hygrometer	608-H1	08	lab verification	n/a
327	SPS	AC/DC power distribution system	PAS 5000	A2464 00/1 0200	lab verification	n/a

Test site: SR 9

ID	Manufacturer	Type	Model	Serial	Calibration Date	Cal. Cycle (months)
445	Huber & Suhner	RF Attenuator (10dB)	6810.17.AC	--	lab verification	12
637	Rohde & Schwarz	Spectrum Analyzer	FSV40	101587	08/07/2020	12
-/	Testo	Thermo-Hygrometer	608-H1	07	lab verification	n/a
-/	Huber & Suhner	RF Cable (upto 18GHz)	-/	-/	lab verification	n/a
1603668	Siemens Matsushita Components	shielded room		B83117-B1422-T161	n/a	n/a

8. Report Revision History

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version
<p>Test Report Version 1.1 supersede Version 1.0 with immediate effect Test Report No. UL-RPT-RP-13260875-616-FCC Version 1.1, Issue Date 09 APRIL 2021 replaces Test Report No. UL-RPT-RP-13260875-616-FCC Version 1.0, Issue Date 06 APRIL 2021, which is no longer valid.</p>			
1.1	as below	as below	Current Version
	48	5.2.6	Note 5 corrected to all emissions were > 20 dB
	54	5.2.6	Note 4 corrected to no spurious emissions were detected
	72	5.2.7	Test Method Used section is updated Note 2 reference added to ANSI C63.10 Section 11.11.1(b) Note 4 new note inserted with reference to restricted band peak measurements Note 5 new note inserted with reference to restricted band average measurements