TEST REPORT

Test Report No. : UL-RPT-RP-12947326-1316-FCC

Applicant	:	Boxine GmbH
Model No.	:	03-xxxx (colour coding)
FCC ID	:	2AU47-00001
Technology	:	WLAN (802.11 b)
Test Standard(s)	:	FCC Parts 15.207, 15.209(a) & 15.247
		For details of applied tests refer to test result summary

1. This test report shall not be reproduced in full or partial, without the written approval of UL International Germany GmbH.
2. The results in this report apply only to the sample tested.
3. The test results in this report are traceable to the national or international standards.
4. **Test Report Version 1.2 supersede Version 1.1 with immediate effect**
   Test Report No. UL-RPT-RP-12947326-1316-FCC Version 1.2, Issue Date 20 AUGUST 2020 replaces
   Test Report No. UL-RPT-RP-12947326-1316-FCC Version 1.1, Issue Date 18 AUGUST 2020, which is no longer valid.
5. Result of the tested sample: **PASS**

Prepared by: Sercan, Usta
Title: Laboratory Engineer
Date: 20 August 2020

Approved by: Ajit, Phadtare
Title: Lead Test Engineer
Date: 20 August 2020

Deutsche Akkreditierungsstelle D-PL-19381-02-00

This laboratory is accredited by DAkkS.
The tests reported herein have been performed in accordance with its' terms of accreditation.

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1. Customer Information

1.1.Applicant Information

Company Name:	Boxine GmbH
Company Address:	Am Wehrhahn 50, 40211 Düsseldorf, GERMANY
Contact Person:	Mr. Klaus Raske
Contact E-Mail Address:	klaus.raske@boxine.de
Contact Phone No.:	+49 211 54254049 / +49 176 80703188

1.2.Manufacturer Information

Company Name:	Boxine GmbH
Company Address:	Grafenberger Allee 120, 40237 Düsseldorf, GERMANY
Contact Person:	Mr. Jürgen Popp
Contact E-Mail Address:	juergen.popp@boxine.de
Contact Phone No.:	+49 160 91682699

2. Summary of Testing

2.1. General Information

Applied Standards

Specification Reference:	47CFR15.247
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Section 15.247
Specification Reference:	47CFR15.207 and 47CFR15.209
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) - Sections 15.207 and 15.209

Location

Location of Testing:	UL International Germany GmbH Hedelfinger Str. 61 70327 Stuttgart Germany
Test Firm Registration:	399704

Date information

Order Date:	23 July 2019
EUT arrived:	12 August 2019 & 29 October 2019
Test Dates:	17 March 2020 to 13 May 2020
EUT returned:	-/-

2.2. Summary of Test Results

Clause	Measurement	Complied	Did not comply	Not performed	Not applicable
Part 15.207	Transmitter AC Conducted Emissions	☒	☐	☐	☐
Part 15.247(a)(2)	Transmitter Minimum 6 dB Bandwidth	☒	☐	☐	☐
Part 15.35(c)	Transmitter Duty Cycle(1)	☒	☐	☐	☐
Part 15.247(e)	Transmitter Power Spectral Density	☒	☐	☐	☐
Part 15.247(b)(3)	Transmitter Maximum (Average) Output Power	☒	☐	☐	☐
Part 15.247(d) & 15.209(a)	Transmitter Radiated Emissions	☒	☐	☐	☐
Part 15.247(d) & 15.209(a)	Transmitter Band Edge Radiated Emissions	☒	☐	☐	☐

Note(s):

1. The measurement was performed to assist in the calculation of the level of maximum conducted output power, power spectral density and emissions.

2.3. Methods and Procedures

Reference:	ANSI C63.10-2013
Title:	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
Reference:	KDB 558074 D01 15.247 Meas Guidance v05r02 April 2, 2019
Title:	Guidance for compliance measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 of the FCC rules
Reference:	KDB 174176 D01 Line Conducted FAQ v01r01 June 3, 2015
Title:	AC Power-Line Conducted Emissions Frequently Asked Questions

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Toniebox Starterset
Model Name or Number:	03-xxxx (colour coding)
Serial Number:	TB1.2 PROT2 B *(Radiated RF Sample)*
MAC ID:	50:F1:4A:7C:E4:BF
Hardware Version Number:	1.2
Firmware Version Number:	EU 3.0.4
FCC ID:	2AU47-00001

Brand Name:	Toniebox Starterset
Model Name or Number:	03-xxxx (colour coding)
Serial Number:	TB1.2 PROT2 D *(Conducted RF Sample)*
MAC ID:	50:F1:4A:7C:E2:B3
Hardware Version Number:	1.2
Firmware Version Number:	EU 3.0.4
FCC ID:	2AU47-00001

Brand Name:	Tonies
Model Name or Number:	DYS-618-090150W
Serial Number:	DY618-090150-16525B
Hardware Version Number:	Not Stated
Firmware Version Number:	Not Stated
Additional Details:	AC-DC Adapter- Switching Mode Power Supply
	100-240 V AC / 0.5 A / 50 Hz to 9 V DC / 1.5 A

3.2. Description of EUT

The equipment under test was a Toniebox Starterset consists of the Toniebox itself, a power supply including docking station DYS 619 and Tonie Lauscher (headset). Toniebox Starterset is an Audio system for children. Tonie figures to be purchased separately are placed on the Toniebox (TB).

An RFID receiver in the Toniebox reads the product ID from the figure (passive RFID chip in the Tonie figure). Via the WLAN module in the TB, the audio content is downloaded from the Boxine-Tonie cloud to the TB's internal memory (flash drive) via the Internet and played back via the TB speaker or Headphone.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	WLAN (IEEE 802.11b) / Digital Transmission System	
Type of Unit:	Transceiver	
Modulation Type:	DBPSK, DQPSK, DSSS, CCK	
Data Rates:	802.11b	1, 2, 5.5 & 11 Mbps
Power Supply Type 1:	AC-DC Adapter- Switching Mode Power Supply	
Power Supply Requirement(s):	100-240 V AC / 0.5 A / 50 Hz to 9 V DC / 1.5 A	
Power Supply Type 2:	Internal Rechargeable Battery via AC /DC Adapter	
Power Supply Requirement(s):	3.6 V DC / 0.1 A	
Measured Maximum Conducted Output Power:	16.48 dBm	
Declared Antenna Gain:	2.0 dBi	
Channel Spacing:	20 MHz	
Transmit Frequency Range:	2412 MHz to 2462 MHz	
Transmit Channels Tested:	**Channel Number**	**Channel Frequency (MHz)**
	1	2412
	6	2437
	11	2462

3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

A. Support Equipment (In-house)

Item	Description	Brand Name	Model Name or Number	Serial Number
1	Laptop	Lenovo	L560	MP-16X73B 16/11

B. Support Equipment (Manufacturer supplied)

Item	Description	Brand Name	Model Name or Number	Serial Number
1	Programming PCB	Boxine	Debug Board 1.0	N/A
2	USB Cable	N/A	N/A	N/A

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):
☒ Continuously transmitting modulated carrier with combination of Maximum Power Settings : PWR 0 | Worst Case Mode: 802.11b: 11 Mbit/s*
* As per applicant's declaration the EUT implement only 802.11b mode. *Multiple supported modulation schemes, nominal channel bandwidths were initially investigated to determine the above mentioned worst case data rates.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

EUT Power Supply:

- The EUT can powered via either with AC/DC power adapter or charged internal battery.
- The critical tests (RF output power, power spectral density, occupied bandwidth) were performed once with AC/DC power adapter and also with fully charged internal battery.
- The results from AC/DC power adapter found to be worst case (maximum power); therefore radiated spurious emissions have been performed only with EUT powered via AC/DC power adapter.
- For AC conducted line emissions measurement the EUT was powered via AC/DC power adapter. The measurments were carried out with 120 VAC /60 Hz & 240 VAC/60 Hz.

Test Mode Activation:

- The EUT programmed via programming PCB which supplied by customer.
- The EUT was controlled using a software application named CC3100 & CC3200 Radio Tool supplied by the customer. The application was used to enable continuous transmission and to select the test channels as required.
- The transmitter test modes were configured to maximum supported power settings (PWR 0).

Conducted Measurements:

- All conducted measurements were carried out by using conducted samples U.FL to SMA (Female) RF Cable soldered on PCB by the customer. The maximum attenuation of 0.60 dB at the tested frequencies was added to a reference level offset to each of the conducted plots.

Radiated Measurements:

- In accordance with ANSI C63.10 section 5.10.7, the EUT allows for the connection of external accessories, including external electrical control signals. Hence emission tests shall be performed with the EUT and accessories configured in a manner that tends to produce maximum emissions; therefore, all radiated tests were with EUT powered via AC/DC power adapter120 VAC / 60 Hz.
- Before starting final radiated spurious emission measurements "worst case verification" with the EUT in Standing-position & Laying-position was performed by Lab.
- The EUT in Laying-position was found to be the worst case therefore this report includes relevant results.
- Radiated spurious emissions were performed with the EUT positioned on the turn table and rotating 360 degrees while the antenna height varies from 1 to 4 m over the measurement frequency range. EMC32 V10.1.0 Software was used for the Radiated spurious emission measurements.

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to Section 6 *Measurement Uncertainty* for details.

In accordance with DAkkS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

5.2. Test Results

5.2.1. Transmitter AC Conducted Spurious Emissions

Test Summary:

Test Engineer:	Devang Chauhan	**Test Date:**	17 March 2020
Test Sample Serial Number:	TB1.2 PROT2 B *(Radiated RF Sample)*		
Test Site Identification	SR 7/8		

FCC Reference:	Part 15.207
Test Method Used:	ANSI C63.10 Section 6.2 / FCC KDB 174176 and notes below

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	35

Settings of the Instrument

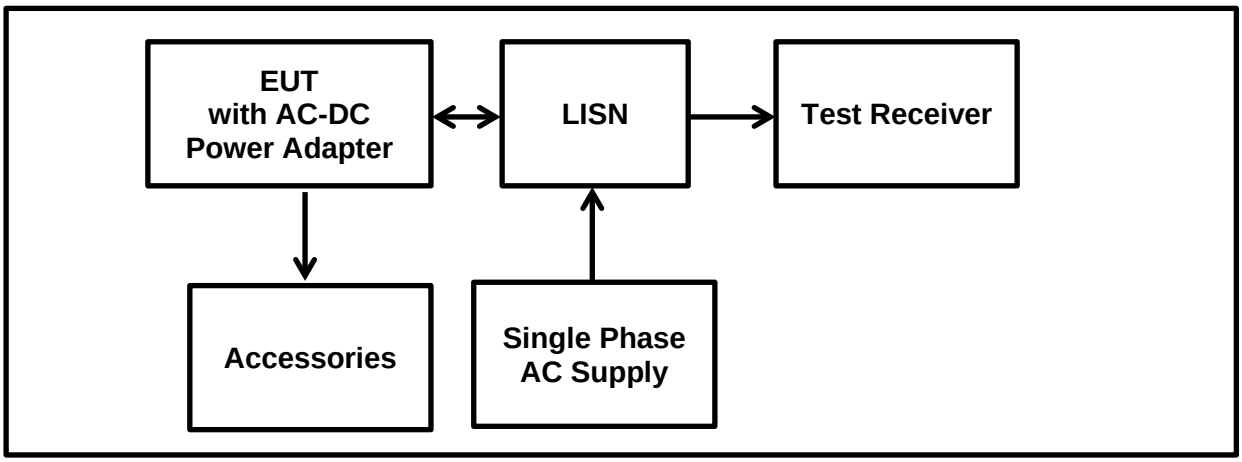
Detector	Quasi Peak/ Average Peak

Note(s):

1. The EUT was plugged into a AC/DC Power Supply. The Power Supply was connected to 120 VAC / 60 Hz single phase supply via a LISN.
2. In accordance with FCC KDB 174176 Q4, tests were performed with a 240 VAC 60 Hz single phase supply as this was within the voltage range marked on the 100-240 VAC~50/60 Hz power supply.
3. The EUT was configured on Middle Channel | 802.11b – 11 Mbps | Power Level: 0
4. Pre-scans were performed and markers placed on the highest live and neutral measured levels. Final measurements were performed on the marker frequencies and the results entered into the tables below.
5. The final measured value, for the given emission, in the table below incorporates the cable loss.
6. All other emissions shown on the pre-scan plot were investigated. Only the highest 6 emissions have been reported in the tables below in accordance with ANSI C63.10 section 6.2.5.
7. Measurements were performed in shielded room (SR7/ 8 Asset Number 1603671). The EUT was placed at a height of 80 cm above the reference ground plane and at distance of 40 cm from the vertical ground plane at the edge of the table.
8. Measurement software used: Toyo EMI Software; CE measurement software EP5/CE Ver 4.0.1.

Transmitter AC Conducted Spurious Emissions (continued)

Test setup:



Transmitter AC Conducted Spurious Emissions (continued)

Results: Live / Quasi Peak / 120 VAC 60 Hz

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.155	Live	53.70	65.70	12.00	Complied
0.223	Live	40.10	62.70	22.60	Complied
0.281	Live	41.10	60.80	19.70	Complied
0.399	Live	27.20	57.90	30.70	Complied
2.260	Live	23.20	56.00	32.80	Complied
10.398	Live	19.20	60.00	40.80	Complied

Results: Live / Average / 120 VAC 60 Hz

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.155	Live	34.00	55.70	21.70	Complied
0.223	Live	23.70	52.70	29.00	Complied
0.281	Live	29.30	50.80	21.50	Complied
0.399	Live	15.20	47.90	32.70	Complied
2.260	Live	15.00	46.00	31.00	Complied
10.398	Live	13.10	50.00	36.90	Complied

Results: Neutral / Quasi Peak / 120 VAC 60 Hz

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.152	Neutral	58.60	65.90	7.30	Complied
0.216	Neutral	47.20	63.00	15.80	Complied
0.273	Neutral	43.30	61.00	17.70	Complied
2.242	Neutral	33.90	56.00	22.10	Complied
3.797	Neutral	18.80	56.00	37.20	Complied
12.294	Neutral	16.10	60.00	43.90	Complied

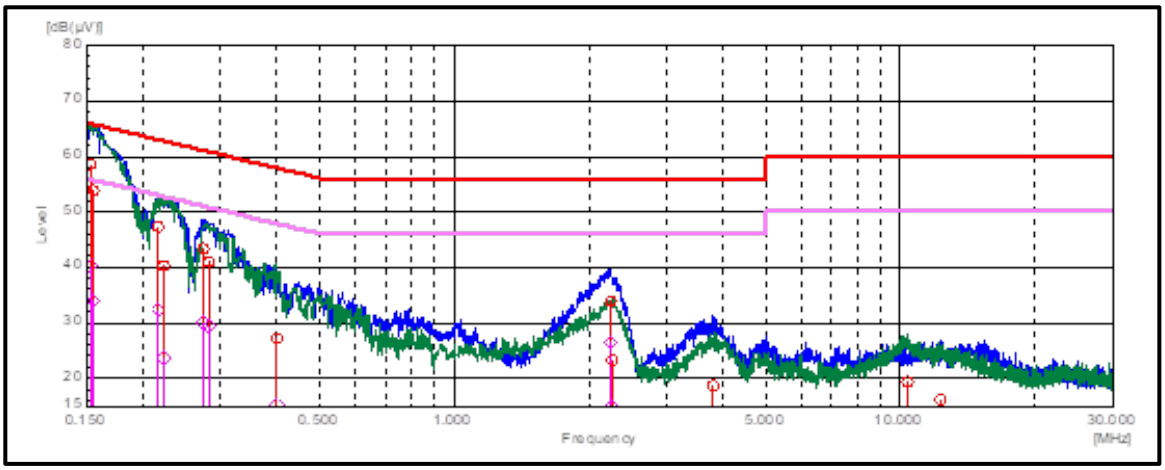
Results: Neutral / Average / 120 VAC 60 Hz

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.152	Neutral	40.30	55.90	15.60	Complied
0.216	Neutral	32.40	53.00	20.60	Complied
0.273	Neutral	30.00	51.00	21.00	Complied
2.242	Neutral	26.30	46.00	19.70	Complied
3.797	Neutral	11.20	46.00	34.80	Complied
12.294	Neutral	10.60	50.00	39.40	Complied

Result: Pass

Transmitter AC Conducted Spurious Emissions (continued)

Plot: Live and Neutral Line / 120 VAC 60 Hz



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

Transmitter AC Conducted Spurious Emissions (continued)

Results: Live / Quasi Peak / 240 VAC 60 Hz

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.163	Live	47.50	65.30	17.80	Complied
0.193	Live	48.40	63.90	15.50	Complied
0.255	Live	44.50	61.60	17.10	Complied
0.363	Live	29.00	58.70	29.70	Complied
2.280	Live	27.80	56.00	28.20	Complied
10.348	Live	21.00	60.00	39.00	Complied

Results: Live / Average / 240 VAC 60 Hz

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.163	Live	31.80	55.30	23.50	Complied
0.193	Live	36.90	53.90	17.00	Complied
0.255	Live	33.10	51.60	18.50	Complied
0.363	Live	18.90	48.70	29.80	Complied
2.280	Live	19.10	46.00	26.90	Complied
10.348	Live	14.30	50.00	35.70	Complied

Results: Neutral / Quasi Peak / 240 VAC 60 Hz

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.152	Neutral	55.50	65.90	10.40	Complied
0.205	Neutral	47.50	63.40	15.90	Complied
0.264	Neutral	44.10	61.30	17.20	Complied
0.595	Neutral	33.20	56.00	22.80	Complied
2.109	Neutral	34.30	56.00	21.70	Complied
4.767	Neutral	25.00	56.00	31.00	Complied

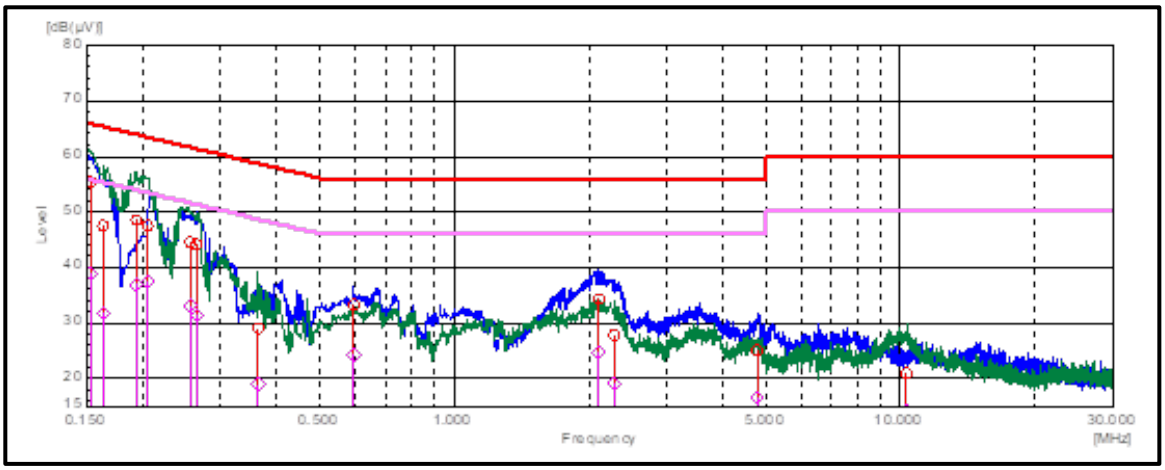
Results: Neutral / Average / 240 VAC 60 Hz

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.152	Neutral	38.90	55.90	17.00	Complied
0.205	Neutral	37.40	53.40	16.00	Complied
0.264	Neutral	31.40	51.30	19.90	Complied
0.595	Neutral	24.30	46.00	21.70	Complied
2.109	Neutral	24.70	46.00	21.30	Complied
4.767	Neutral	16.60	46.00	29.40	Complied

Result: Pass

Transmitter AC Conducted Spurious Emissions (continued)

Plot: Live and Neutral Line / 240 VAC 60 Hz



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

5.2.2. Transmitter Minimum 6 dB Bandwidth

Test Summary:

Test Engineer:	Krume Ivanov	**Test Date:**	17 March 2020
Test Sample Serial Number:	TB1.2 PROT2 D *(Conducted RF Sample)*		
Test Site Identification	SR 9		

FCC Reference:	Part 15.247(a)(2)
Test Method Used:	FCC KDB 558074 Section 8.2 referencing ANSI C63.10:2013 Section 11.8.1 Option 1

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	36

Notes:

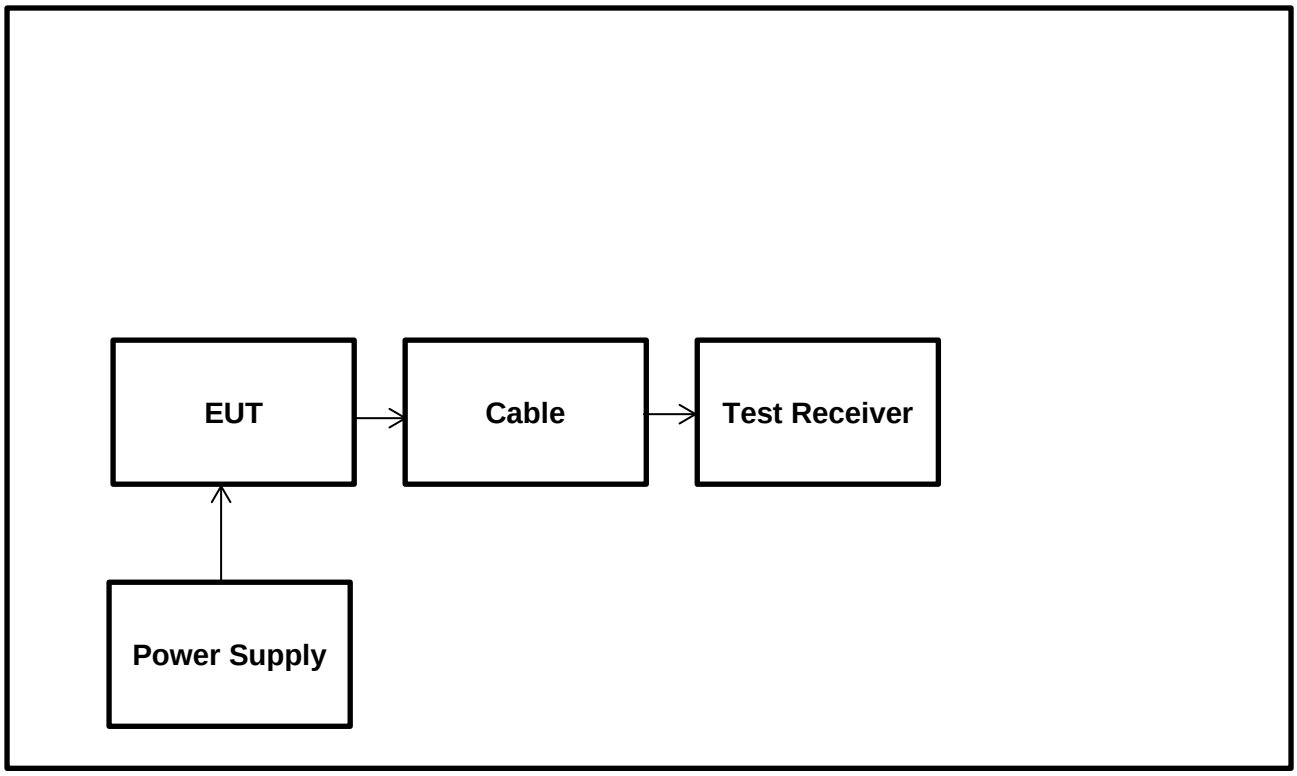
1. The measurements were performed using the above configurations on the bottom, middle and top channels in accordance FCC KDB 558074 Section 8.2 referencing ANSI C63.10 Section 11.8 (11.8.1 Option 1 measurement procedure).

2. The spectrum analyser resolution bandwidth was set to 100 kHz and video bandwidth 300 kHz. A peak detector was used, sweep time was set to auto and the trace mode was Max Hold. The DTS bandwidth was measured at 6 dB down from the peak of the signal.

3. The RF port on the EUT was connected to the spectrum analyser using suitable attenuation and RF cable. The measured values take into consideration the external attenuation correction factors.
    - The SMA (Female) RF Cable soldered on PCB with maximum attenuation of 0.6 dB at the tested frequencies.
    - The RF cable from the EUT to Analyzer with maximum attenuation of 1.4 dB at the tested frequencies including the 10 dB attenuator at the input of Spectrum Analyzer

    Therefore, total a reference level offset 12.0 dB was added to each of the at the tested frequencies conducted plots.

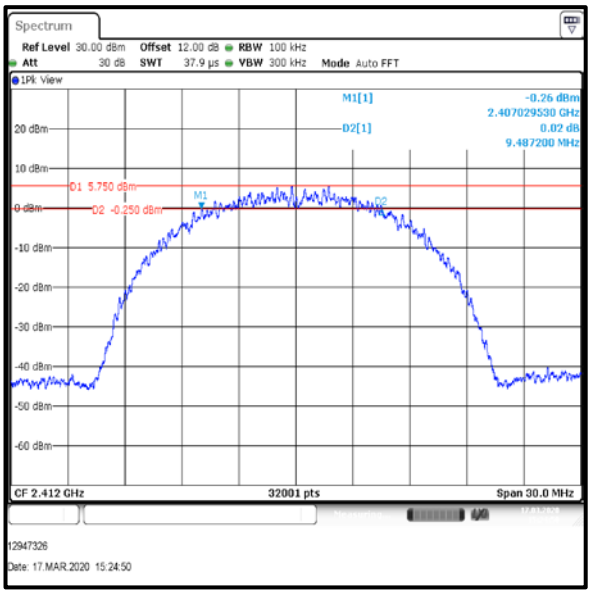
Test Setup:



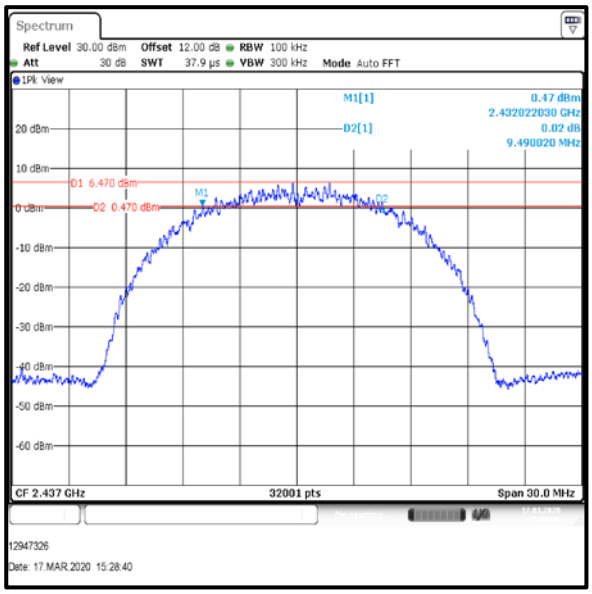
Transmitter Minimum 6 dB Bandwidth (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0

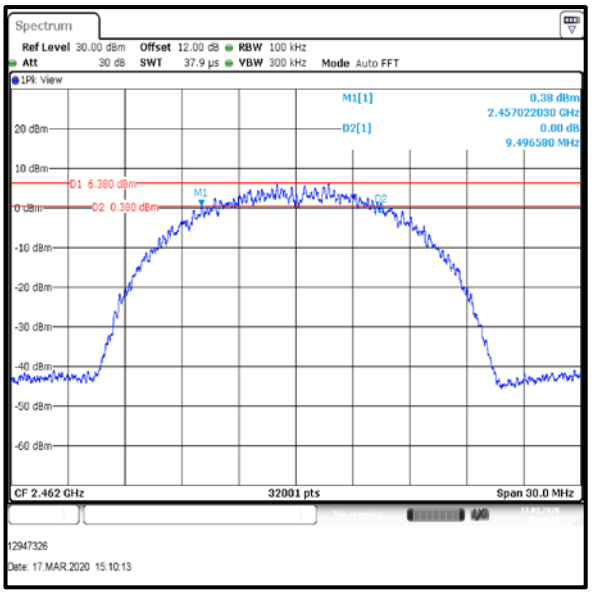
Channel	6 dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)	Result
Bottom	9487.200	≥500	8987.200	Complied
Middle	9490.020	≥500	8990.020	Complied
Top	9496.580	≥500	8996.580	Complied



Bottom Channel



Middle Channel



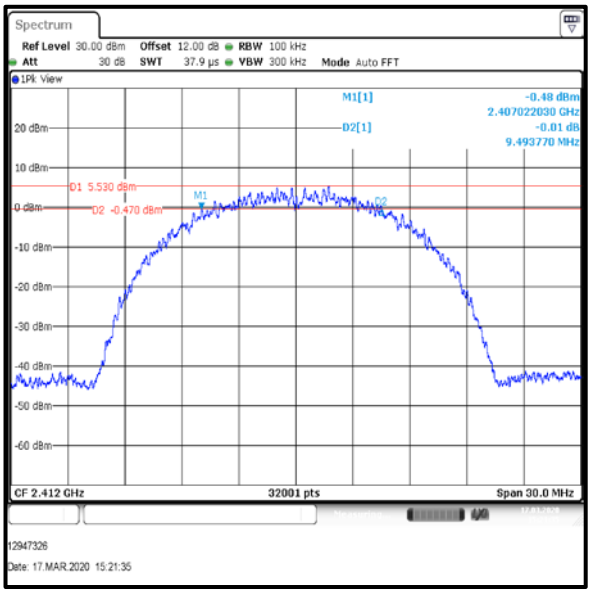
Top Channel

Result: Pass

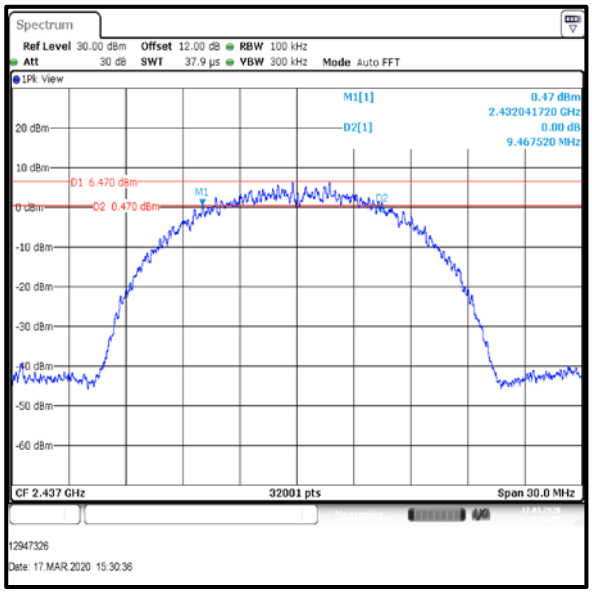
Transmitter Minimum 6 dB Bandwidth (continued)

Results: Fully Charged Internal Battery / 802.11b / 20 MHz / 11 Mbps / PWR 0

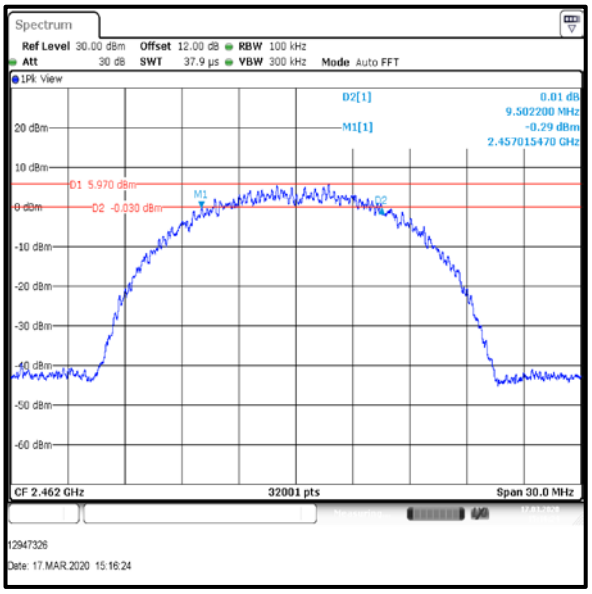
Channel	6 dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)	Result
Bottom	9493.770	≥500	8993.770	Complied
Middle	9467.520	≥500	8967.520	Complied
Top	9502.200	≥500	9002.200	Complied



Bottom Channel



Middle Channel



Top Channel

Result: Pass

5.2.3. Transmitter Duty Cycle

Test Summary:

Test Engineer:	Krume Ivanov	**Test Date:**	17 March 2020
Test Sample Serial Number:	TB1.2 PROT2 D *(Conducted RF Sample)*		
Test Site Identification	SR 9		

FCC Reference:	Part 15.35(c)
Test Method Used:	FCC KDB 558074 Section 6.0

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	36

Notes:

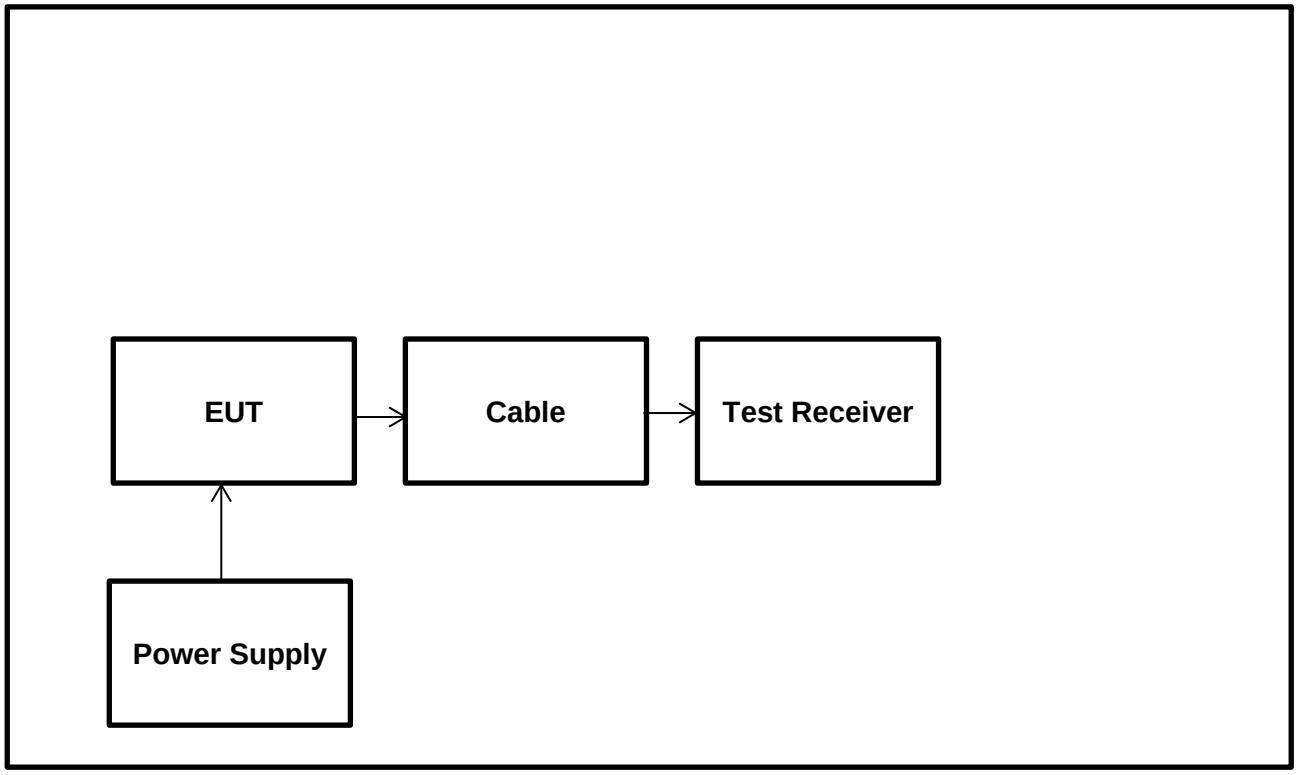
1. The transmitter duty cycle was measured using a spectrum analyser in the time domain and calculated by using the following calculation:

   Duty Cycle (%) = 100 X [On Time (T_{ON})] / [Period(T_{ON}+ T_{OFF}) or 100ms whichever is the lesser]

   Duty Cycle Correction Factor= 10 log 1 / [On Time (T_{ON})] / [Period(T_{ON}+ T_{OFF}) or 100ms whichever is the lesser]

2. The RF port on the EUT was connected to the spectrum analyser using suitable attenuation and RF cable. The measured values take into consideration the external attenuation correction factors.
   - The SMA (Female) RF Cable soldered on PCB with maximum attenuation of 0.6 dB at the tested frequencies.
   - The RF cable from the EUT to Analyzer with maximum attenuation of 1.4 dB at the tested frequencies including the 10 dB attenuator at the input of Spectrum Analyzer
3. Therefore, total a reference level offset 12.0 dB was added to each of the at the tested frequencies conducted plots. The duty cycle measurment was performed with EUT powered via AC-DC adapter. However relevant results are also valid for EUT powered via fully charged internal battery.

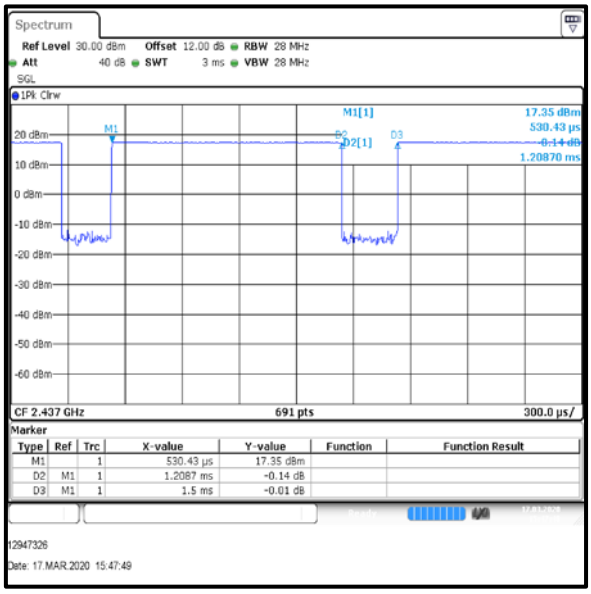
Test setup:



Transmitter Duty Cycle (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0

Pulse On Time (T_{ON}) (ms)	Pulse Period (T_{ON} +T_{OFF}) (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
1.2087	1.5	80.58	0.94



Result: Pass

5.2.4. Transmitter Power Spectral Density

Test Summary:

Test Engineer:	Krume Ivanov	**Test Date:**	17 & 20 March 2020
Test Sample Serial Number:	TB1.2 PROT2 D *(Conducted RF Sample)*		
Test Site Identification	SR 9		

FCC Reference:	Part 15.247(e)
Test Method Used:	FCC KDB 558074 Section 8.4 referencing ANSI C63.10 Sections 11.10.5

Environmental Conditions:

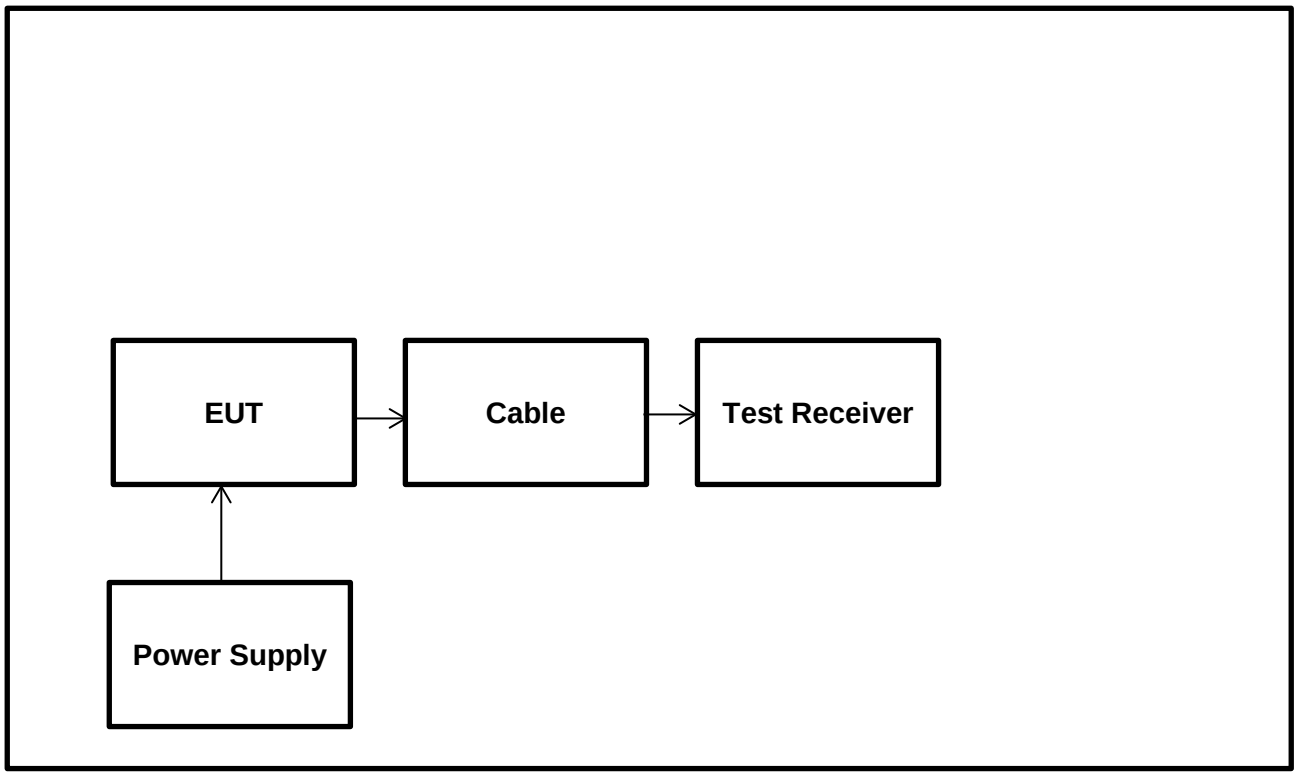
Temperature (°C):	22 & 26
Relative Humidity (%):	36 & 42

Notes:

1. Final measurements were performed using the above configurations on the bottom, middle and top channels.
2. For 802.11b, the EUT was transmitting at <98% duty cycle and testing was performed in accordance with ANSI C63.10 Section 11.10.5 Method AVGPSD-2. The signal analyser resolution bandwidth was set to 3 kHz and video bandwidth 10 kHz. An RMS detector was used and sweep time was set to Auto to perform power averaging over 300 traces. The span was set to >1.5 times the 99% occupied emission bandwidth. The highest peak of the measured signal was recorded.
3. The calculated duty cycle in section 5.2.3 was added to the measured average power spectral density in order to compute the average power spectral density during the actual transmission time.
4. The RF port on the EUT was connected to the spectrum analyser using suitable attenuation and RF cable. The measured values take into consideration the external attenuation correction factors.
    - The SMA (Female) RF Cable soldered on PCB with maximum attenuation of 0.6 dB at the tested frequencies.
    - The RF cable from the EUT to Analyzer with maximum attenuation of 1.4 dB at the tested frequencies including the 10 dB attenuator at the input of Spectrum Analyzer

    Therefore, total a reference level offset 12.0 dB was added to each of the at the tested frequencies conducted plots.

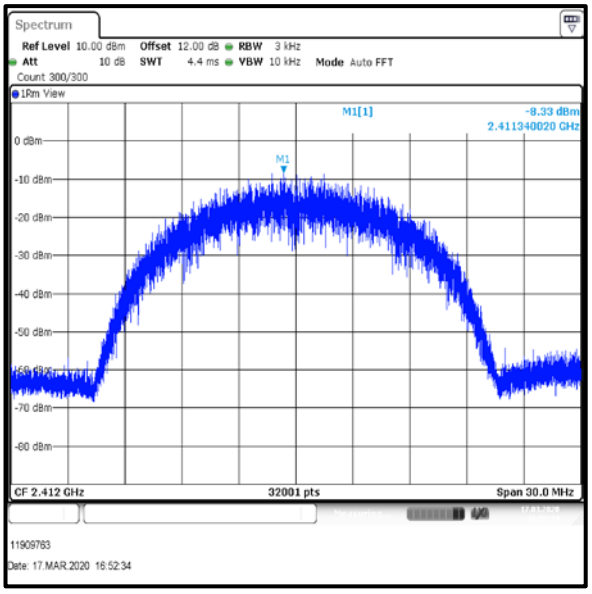
Test setup:



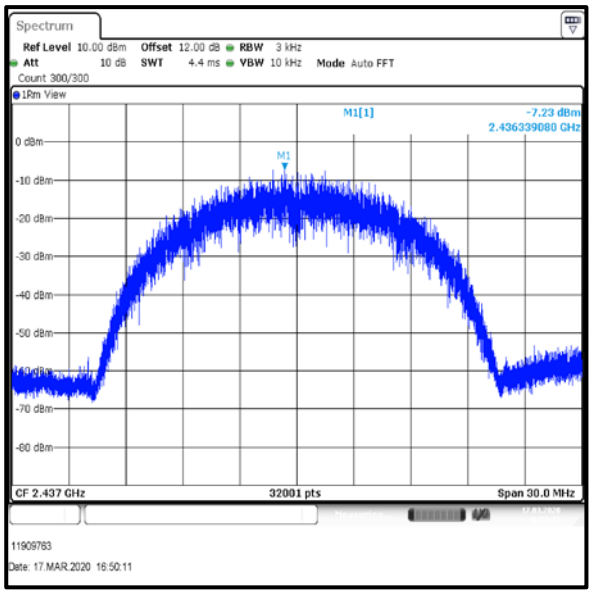
Transmitter Power Spectral Density (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0

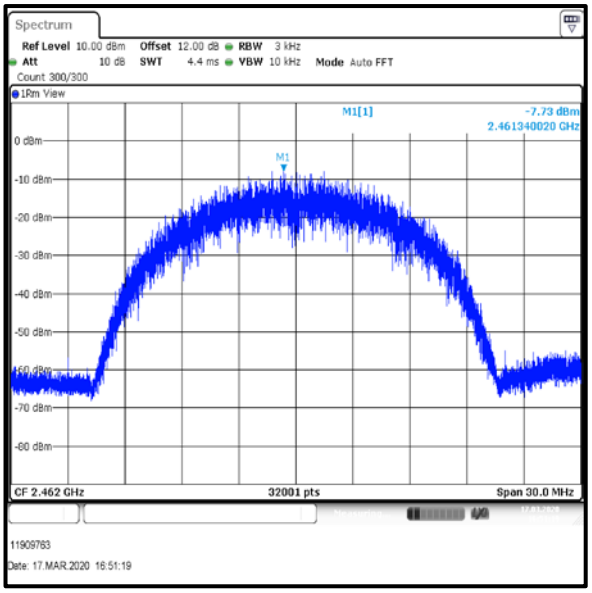
Channel	Output Power (dBm/3 kHz)	Duty Cycle Correction (dB)	Corrected Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-8.33	0.94	-7.39	8.0	15.39	Complied
Middle	-7.23	0.94	-6.29	8.0	14.29	Complied
Top	-7.73	0.94	-6.79	8.0	14.79	Complied



Bottom Channel



Middle Channel



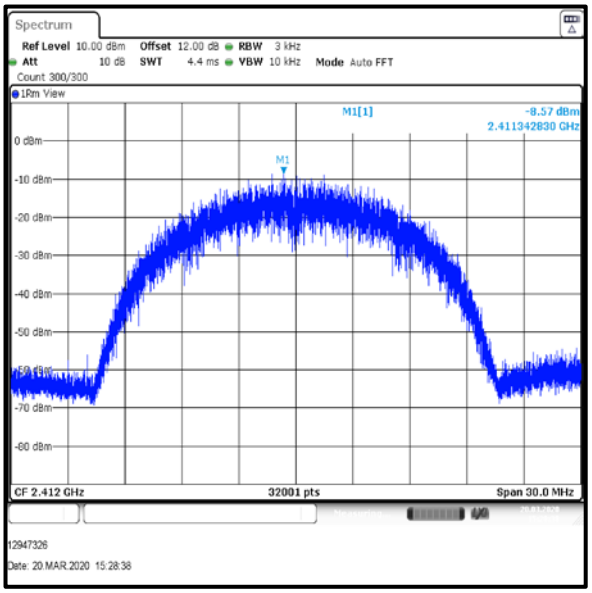
Top Channel

Result: Pass

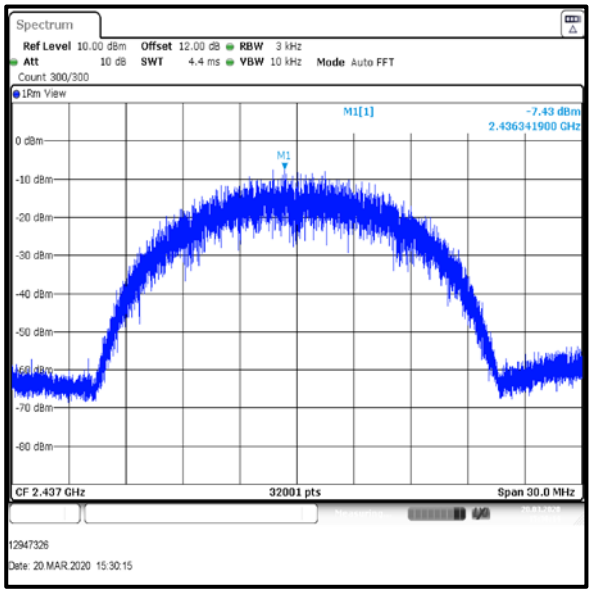
Transmitter Power Spectral Density (continued)

Results: Fully Charged Internal Battery / 802.11b / 20 MHz / 11 Mbps / PWR 0

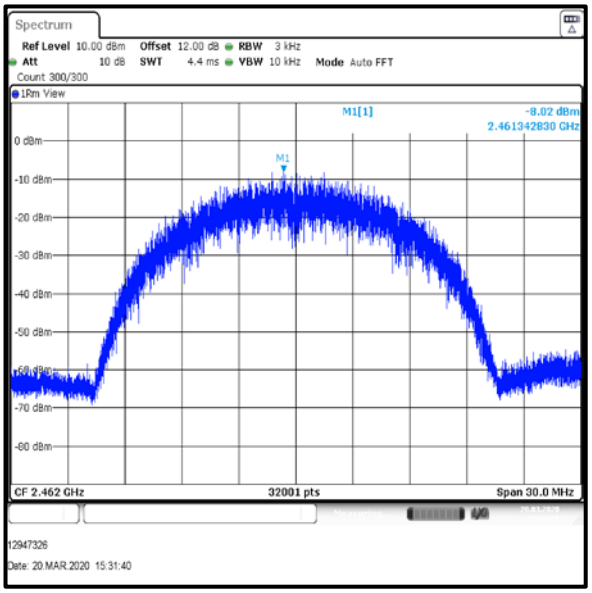
Channel	Output Power (dBm/3 kHz)	Duty Cycle Correction (dB)	Corrected Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-8.57	0.94	-7.63	8.0	15.63	Complied
Middle	-7.43	0.94	-6.49	8.0	14.49	Complied
Top	-8.02	0.94	-7.08	8.0	15.08	Complied



Bottom Channel



Middle Channel



Top Channel

Result: Pass

5.2.5. Transmitter Maximum (Average) Output Power

Test Summary:

Test Engineer:	Krume Ivanov	**Test Date:**	13 May 2020
Test Sample Serial Number:	TB1.2 PROT2 D *(Conducted RF Sample)*		
Test Site Identification	SR 9		

FCC Reference:	Part 15.247(b)(3)
Test Method Used:	FCC KDB 558074 Section 8.3.2.2 referencing ANSI C63.10 Sections 11.9.2.2.4

Environmental Conditions:

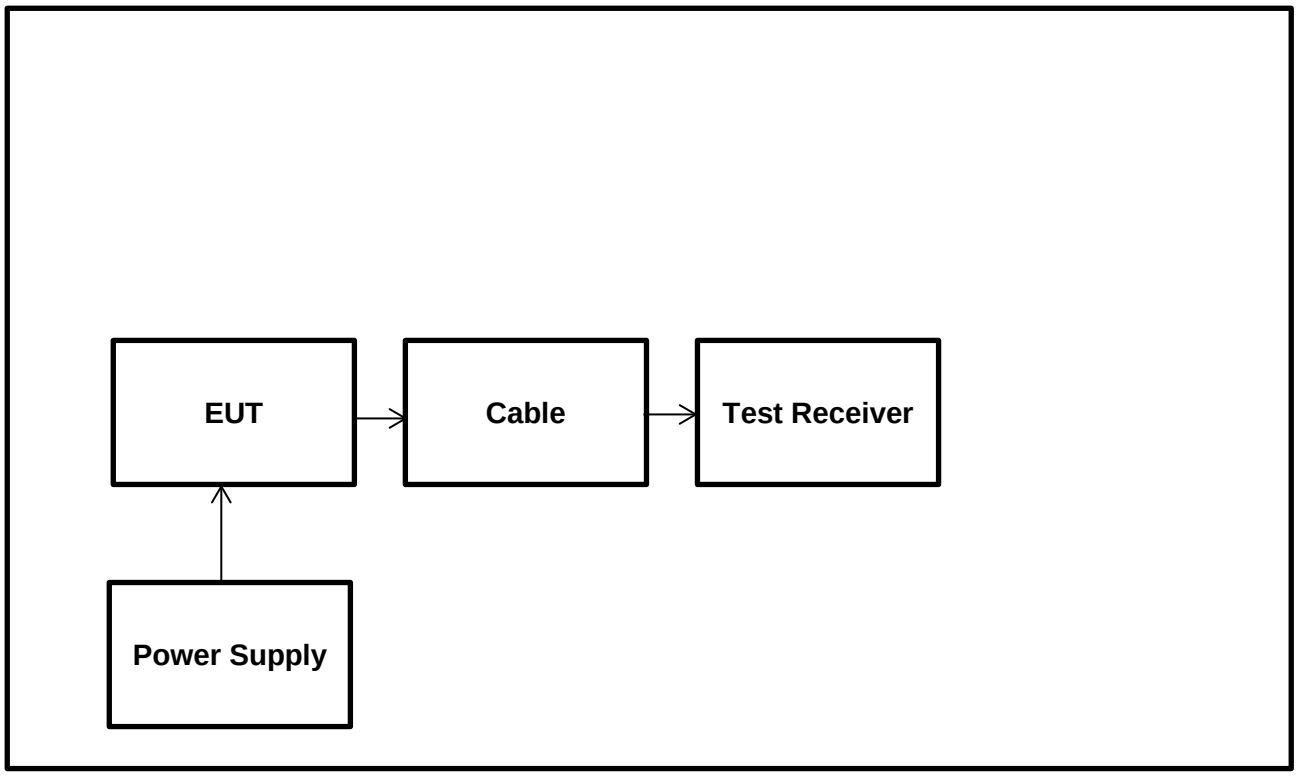
Temperature (°C):	22 & 26
Relative Humidity (%):	36 & 42

Notes:

1. Final measurements were performed using the below configurations on the bottom, middle and top channels. The power has been integrated over the 99% emission bandwidth. Plots for the occupied bandwidth are archived on the company server and available for inspection upon request.
2. For 802.11b, the EUT was transmitting at <98% duty cycle and testing was performed in accordance with ANSI C63.10 Sections 11.9.2.2.4 Method AVGSA-2. The signal analyser's integration function was used to integrate across the 99% occupied bandwidth. The signal analyser resolution bandwidth was set to 300 kHz and video bandwidth 1 MHz. An RMS detector was used and sweep time was set to manual mode (but this did not alter the test result as the time had not been altered from the time set with sweep time set to Auto) to perform power averaging over 300 traces. The span was set to > 1.5 times the 99% occupied emission bandwidth.
3. The calculated duty cycle in section 5.2.3 was added to the measured power in order to compute the average power during the actual transmission time.
4. The RF port on the EUT was connected to the spectrum analyser using suitable attenuation and RF cable. The measured values take into consideration the external attenuation correction factors.
   - The SMA (Female) RF Cable soldered on PCB with maximum attenuation of 0.6 dB at the tested frequencies.
   - The RF cable from the EUT to Analyzer with maximum attenuation of 1.4 dB at the tested frequencies including the 10 dB attenuator at the input of Spectrum Analyzer

   Therefore, total a reference level offset 12.0 dB was added to each of the at the tested frequencies conducted plots.

Test setup



Transmitter Maximum (Average) Output Power (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0

Conducted Power Limit Comparison

Channel	Conducted Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Power (dBm)	Conducted Power Limit (dBm)	Margin (dB)	Result
Bottom	13.94	0.94	14.88	30.0	15.12	Complied
Middle	15.13	0.94	16.07	30.0	13.93	Complied
Top	15.01	0.94	15.95	30.0	14.05	Complied

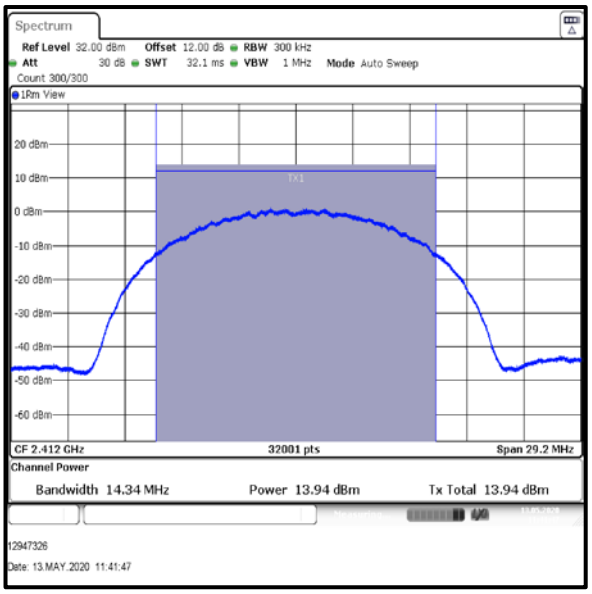
De Facto EIRP Limit Comparison

Channel	Conducted Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	14.88	2.0	16.88	36.0	19.12	Complied
Middle	16.07	2.0	18.07	36.0	17.93	Complied
Top	15.95	2.0	17.95	36.0	18.05	Complied

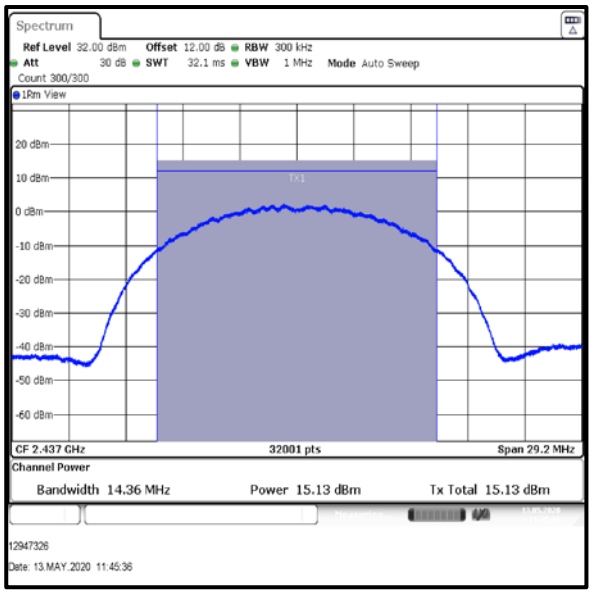
Result: Pass

Transmitter Maximum (Average) Output Power (continued)

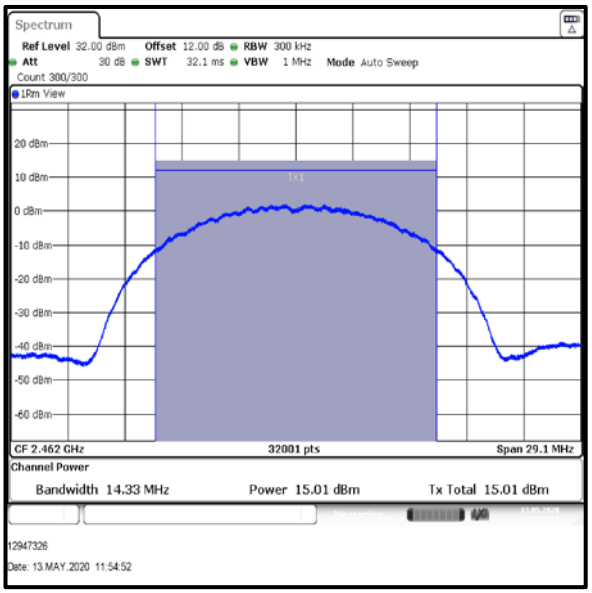
Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum (Average) Output Power (continued)

Conducted Power Limit Comparison

Channel	Conducted Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Power (dBm)	Conducted Power Limit (dBm)	Margin (dB)	Result
Bottom	14.38	0.94	15.32	30.0	14.68	Complied
Middle	15.54	0.94	16.48	30.0	13.52	Complied
Top	15.35	0.94	16.29	30.0	13.71	Complied

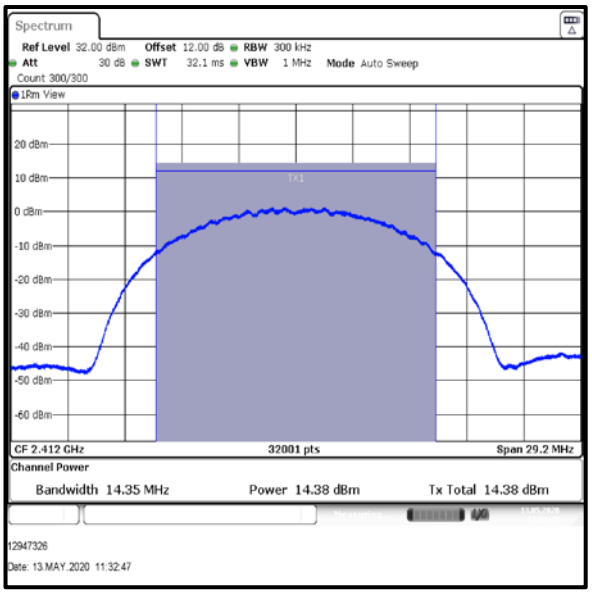
De Facto EIRP Limit Comparison

Channel	Conducted Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	15.32	2.0	17.32	36.0	18.68	Complied
Middle	16.48	2.0	18.48	36.0	17.52	Complied
Top	16.29	2.0	18.29	36.0	17.71	Complied

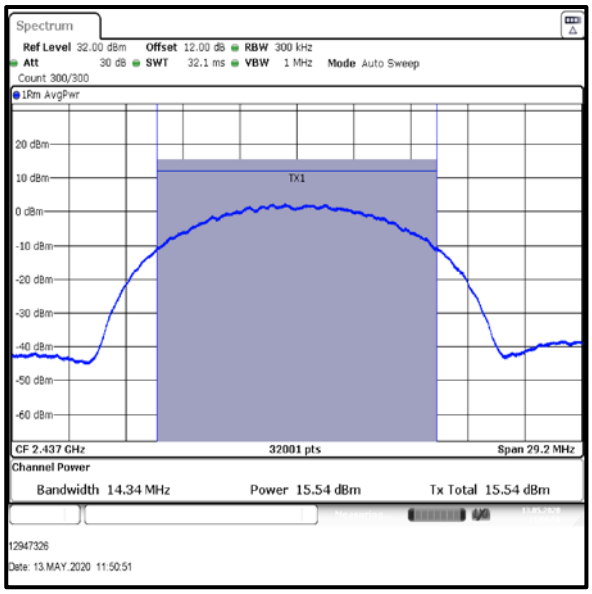
Result: Pass

Transmitter Maximum (Average) Output Power (continued)

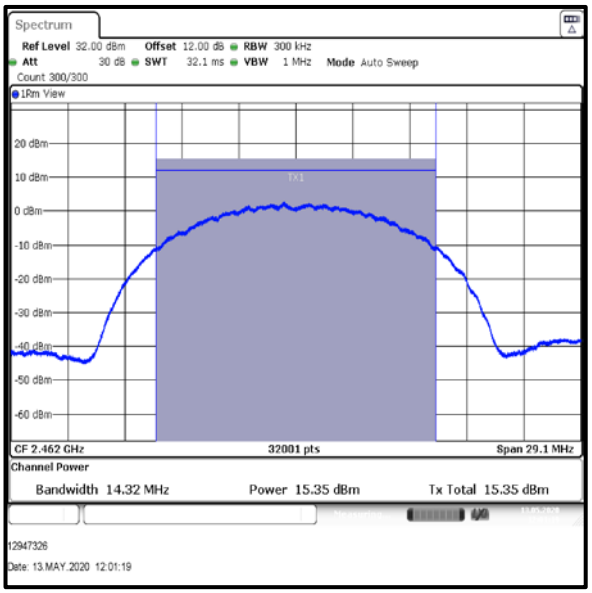
Results: Fully Charged Internal Battery / 802.11b / 20 MHz / 11 Mbps / PWR 0



Bottom Channel



Middle Channel



Top Channel

5.2.6. Transmitter Radiated Emissions

Test Summary:

Test Engineer:	Krume Ivanov	**Test Date:**	17 March 2020
Test Sample Serial Number:	TB1.2 PROT2 B *(Radiated RF 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:

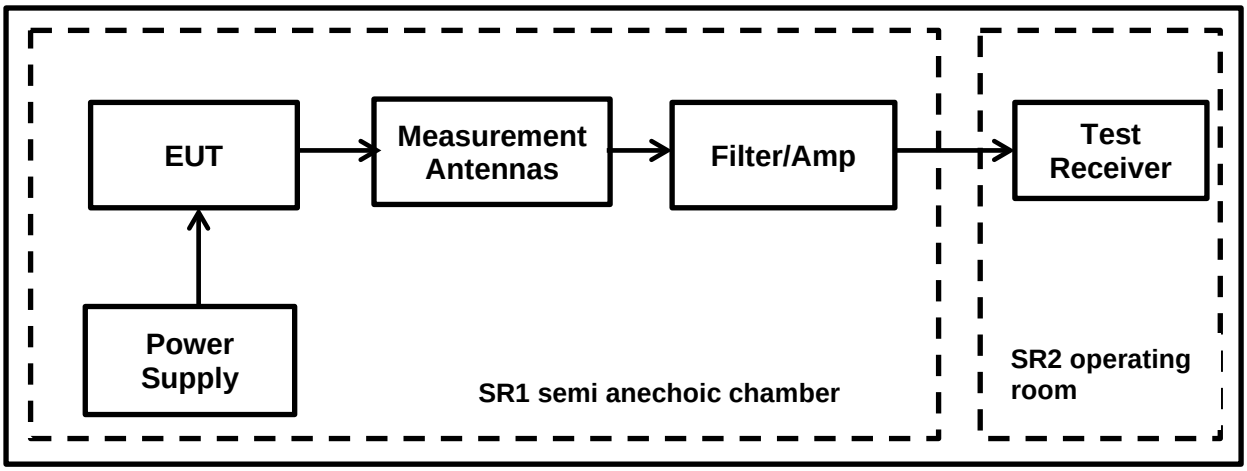
Temperature (°C):	22
Relative Humidity (%):	42

Note(s):

1. In accordance with FCC KDB 414788, an alternative test site may be used for the measurement below 30 MHz (The OATS / SAC comparison data is available upon request). Therefore, the result from the semi-anechoic chamber tests is shown in this section of the test report.
2. The limits are specified at a test distance of 30 meters & 300 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor.
3. Therefore the limit values are extrapolated to a measurement distance of 3 m where field strength of X dBuV/m was measured.
    - 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.
4. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
5. 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 middle channel only.
6. All emissions shown on the pre-scan plots were investigated and found to be below system noise floor.
7. 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.
8. 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: 300 Hz /VBW: 1 kHz
    - Frequency range: 150 kHz – 30 MHz: RBW: 10 kHz /VBW: 30 kHz
    - Detector: Max-Peak detector
    - Trace Mode: Max Hold

Transmitter Radiated Emissions (continued)

Test Setup:

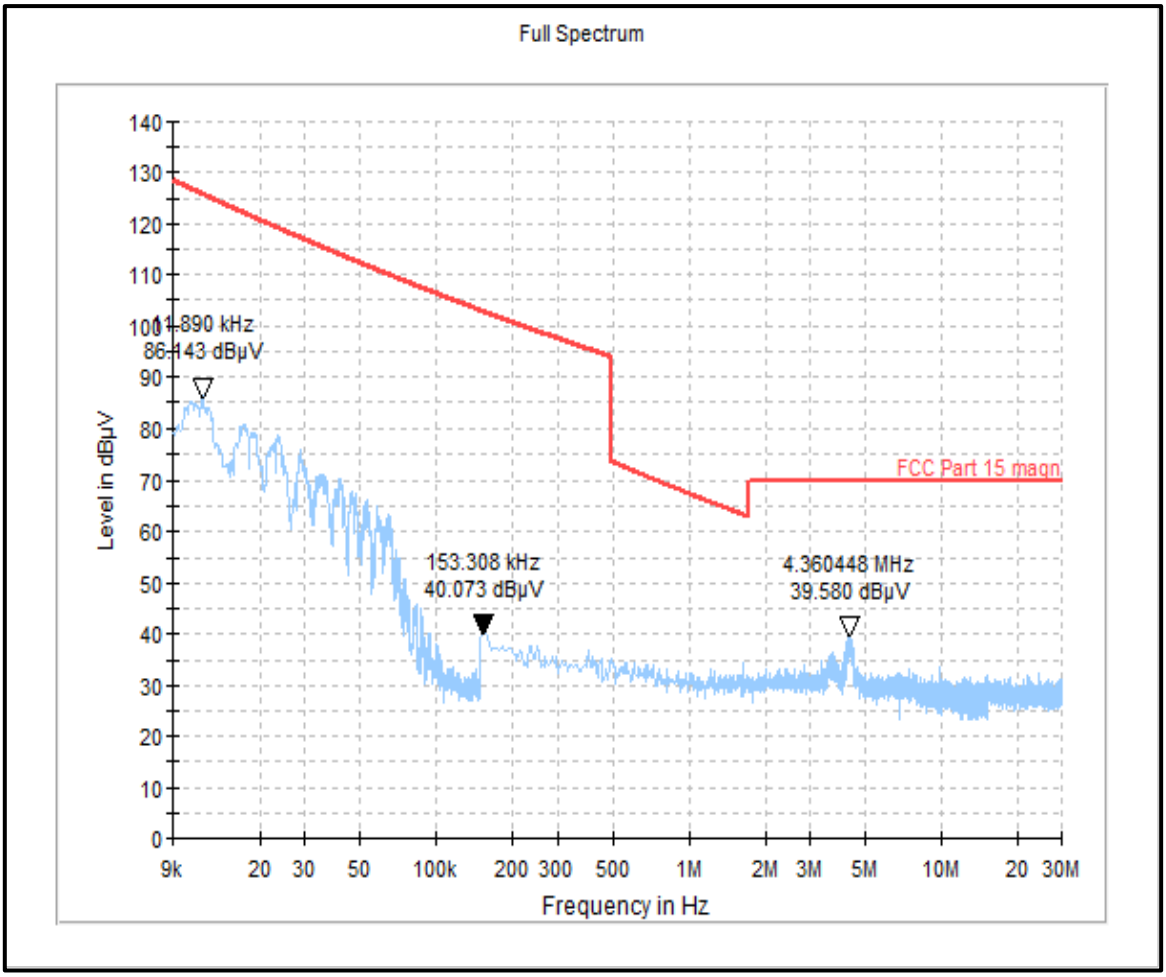


Transmitter Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0 / Middle Channel

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

Plot: Radiated Transmitter spurious emission from 9 kHz – 30 MHz



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:	Krume Ivanov	**Test Date:**	17 March 2020
Test Sample Serial Number:	TB1.2 PROT2 B *(Radiated RF 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:

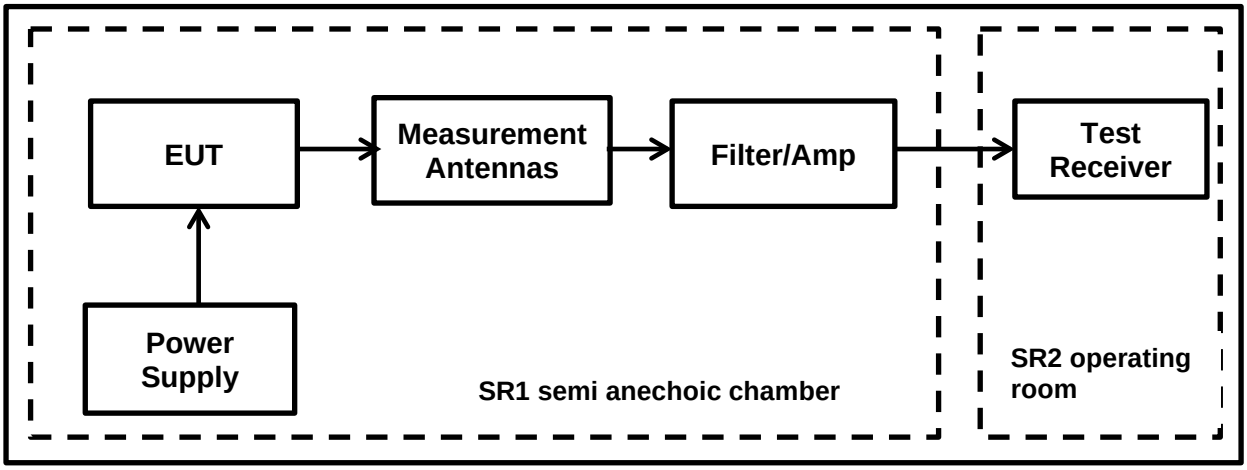
Temperature (°C):	22
Relative Humidity (%):	42

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. 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.
3. 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.
4. Final measurements were performed and the results entered into the table below.

Transmitter Radiated Emissions (continued)

Test Setup:

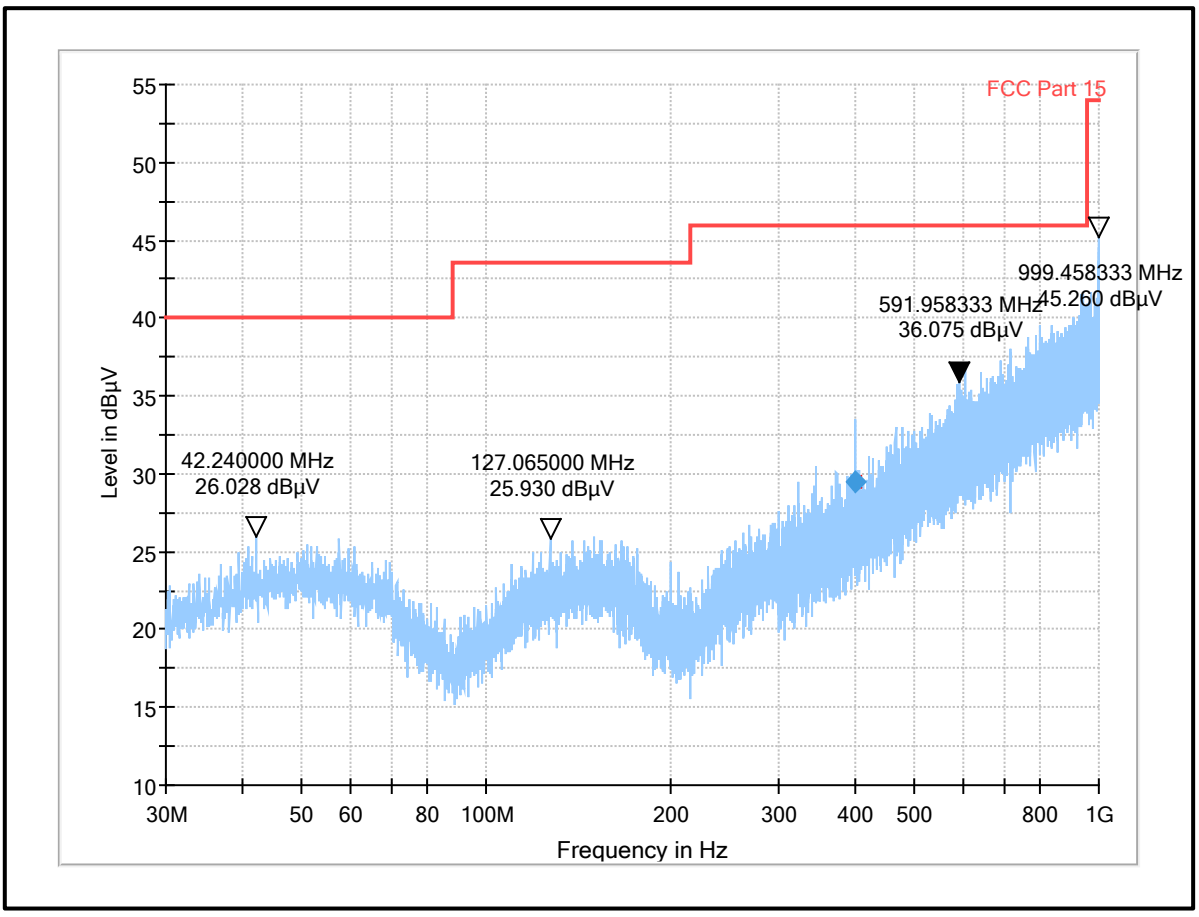


Transmitter Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
399.966	Vertical	29.50	46.00	16.50	Complied

Plot: Radiated Transmitter spurious emission from 30 MHz – 1 GHz



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

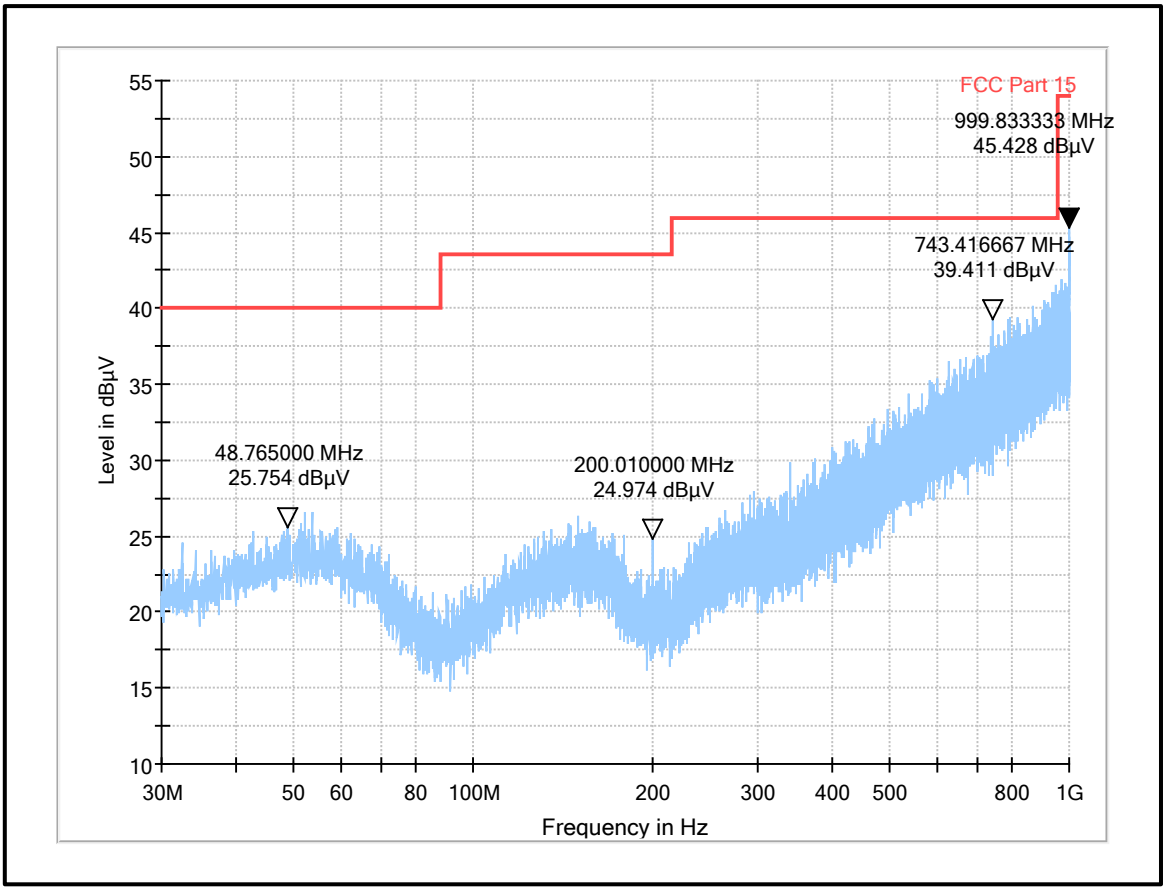
Result: Pass

Transmitter Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0 / Middle Channel

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

Plot: Radiated Transmitter spurious emission from 30 MHz – 1 GHz



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

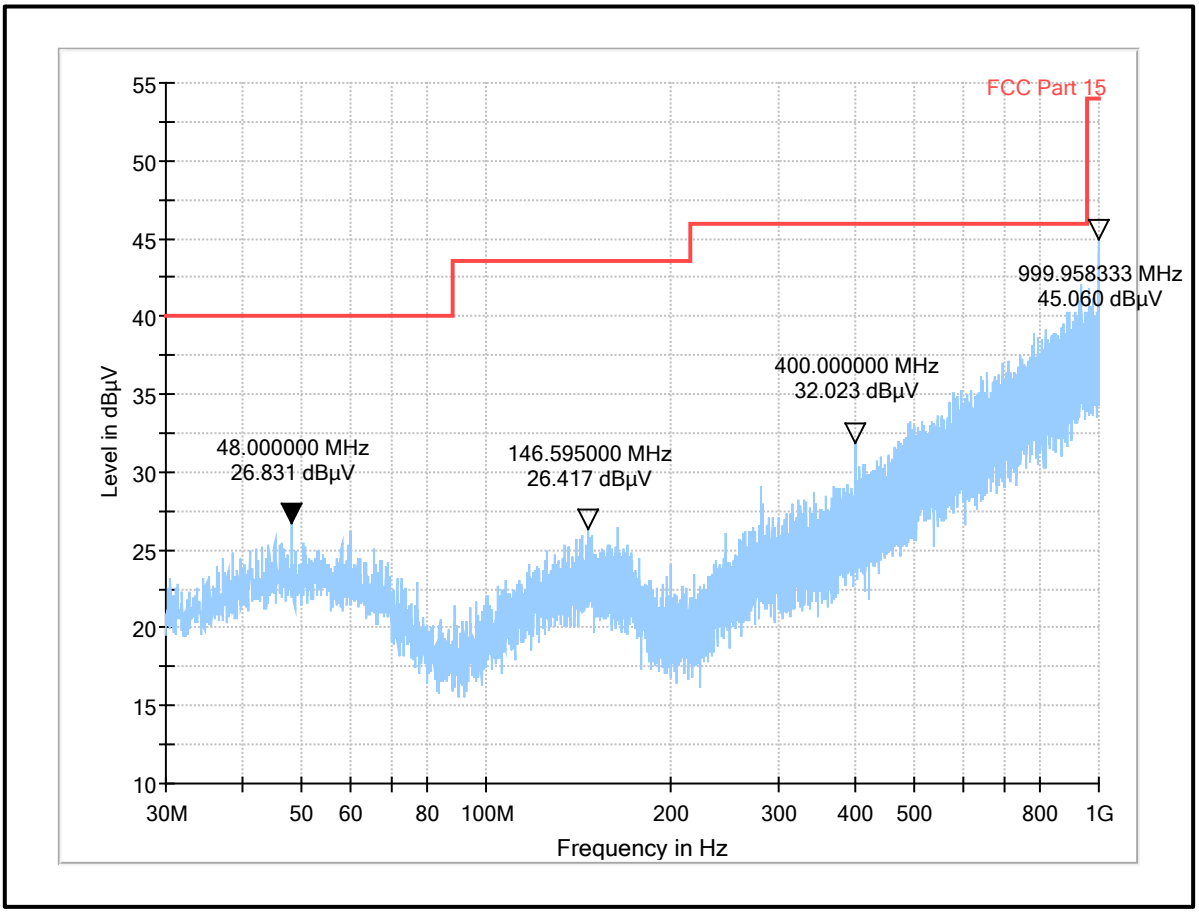
Result: Pass

Transmitter Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0 / Top Channel

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

Plot: Radiated Transmitter spurious emission from 30 MHz – 1 GHz



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:	Krume Ivanov	**Test Date:**	20 & 23 March 2020
Test Sample Serial Number:	TB1.2 PROT2 B *(Radiated RF 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:

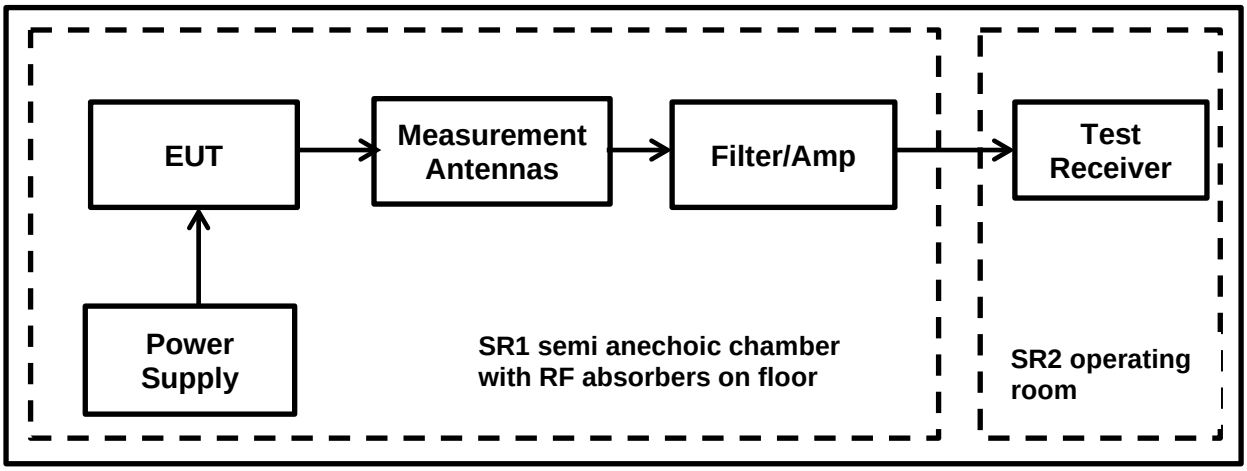
Temperature (°C):	22 & 24
Relative Humidity (%):	27 & 42

Note(s):

1. 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.
2. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
3. The emissions shown on middle & top channel at frequencies approximately 2.5 GHz & 6.5 GHz are in non-restricted bands with margin greater than 20 dB from applicable limits.
4. All other emissions within 20 dB of the applicable limits on the pre-scan plot were investigated and are reported in result table.
5. Pre-scans 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 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.
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.
7. *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.
8. 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 middle channel only.

Transmitter Radiated Emissions (continued)

Test Setup:

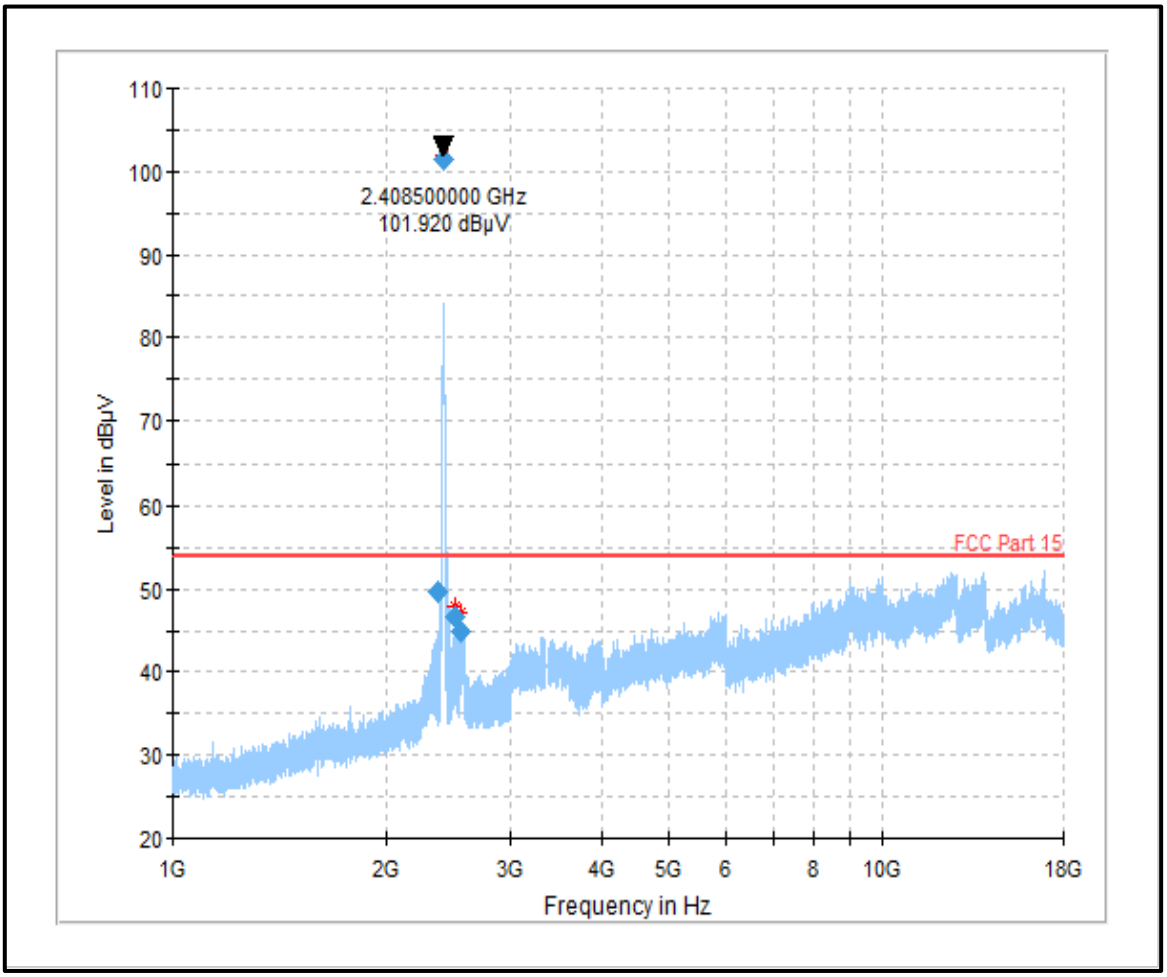


Transmitter Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0 / Bottom Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
2371.400	Vertical	49.73	54.00*	4.27	Complied
2509.766	Vertical	46.64	54.00*	7.36	Complied
2545.116	Vertical	44.92	54.00*	9.08	Complied

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



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

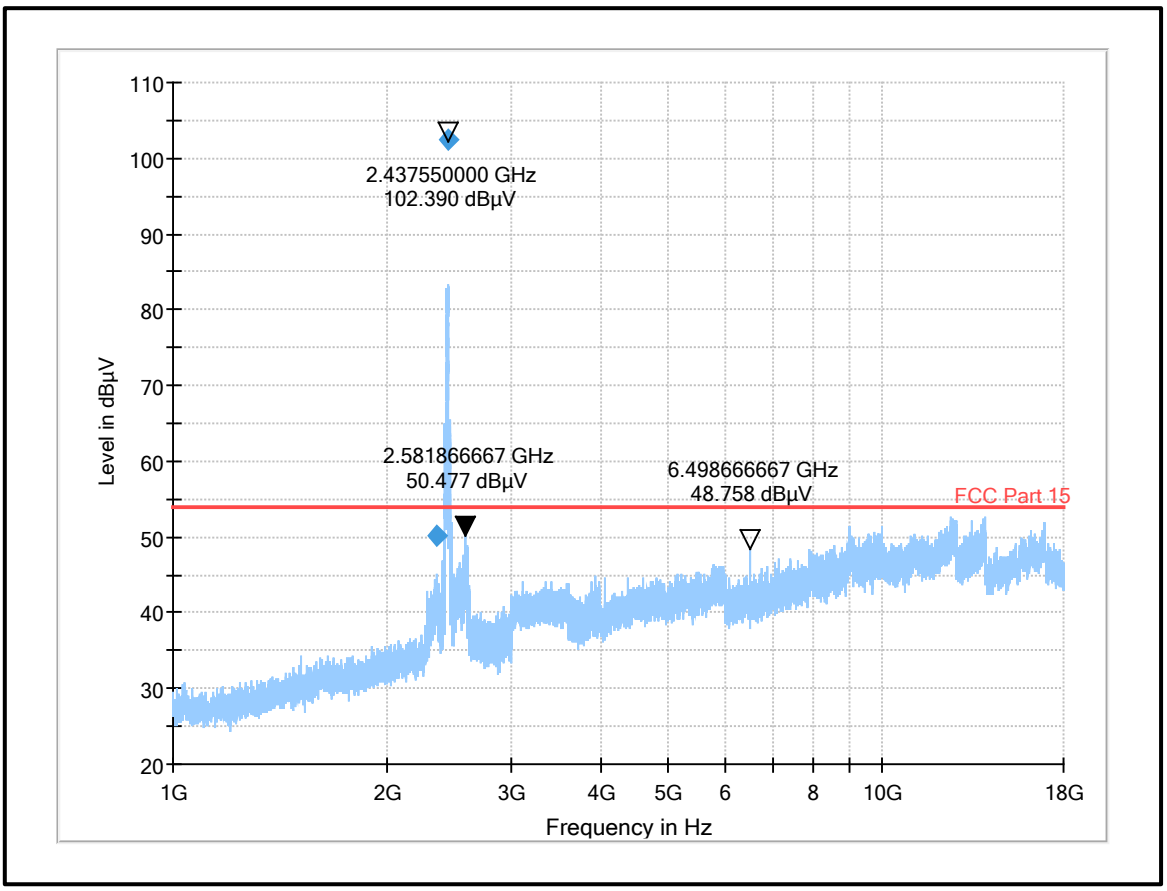
Result: Pass

Transmitter Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
2357.516	Horizontal	50.13	54.00*	3.87	Complied

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



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

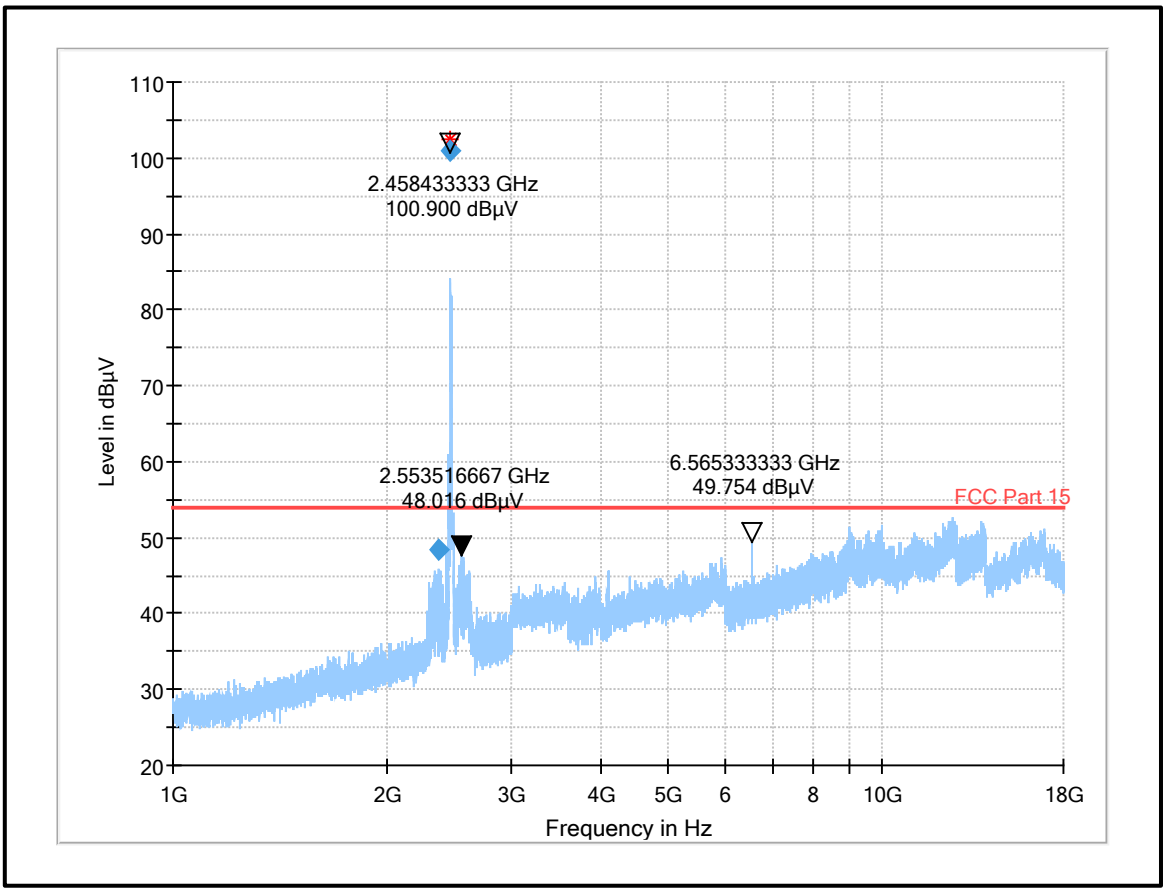
Result: Pass

Transmitter Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0 / Top Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
2373.266	Horizontal	48.41	54.00*	5.59	Complied

Plot: Radiated Transmitter spurious emission from 1 GHz – 18 GHz



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

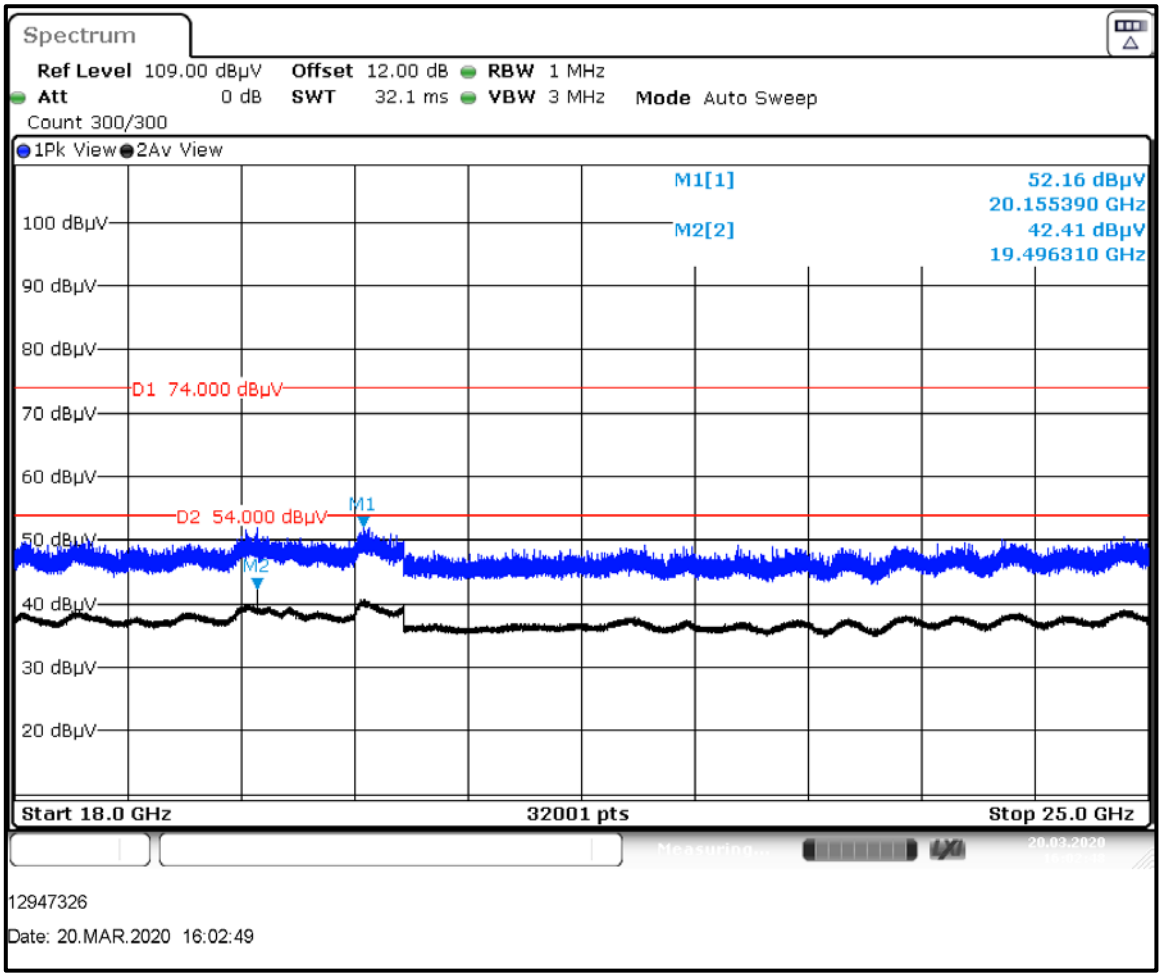
Result: Pass

Transmitter Radiated Emissions (continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0 / Middle Channel

Frequency (MHz)	Antenna Polarization	MaxPeak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
No critical spurious was found					

Plot: Radiated Transmitter spurious emission from 18 GHz – 25 GHz



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:	Krume Ivanov	**Test Date:**	20 & 23 March 2020
Test Sample Serial Number:	TB1.2 PROT2 B *(Radiated RF Sample)*		
Test Site Identification	SR 1/2		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Test Method Used:	FCC KDB 558074 Sections 8.7 referencing ANSI C63.10:2013 Sections 6.10.4, 6.10.5 & 11.11, 11.12 ,11.13

Environmental Conditions:

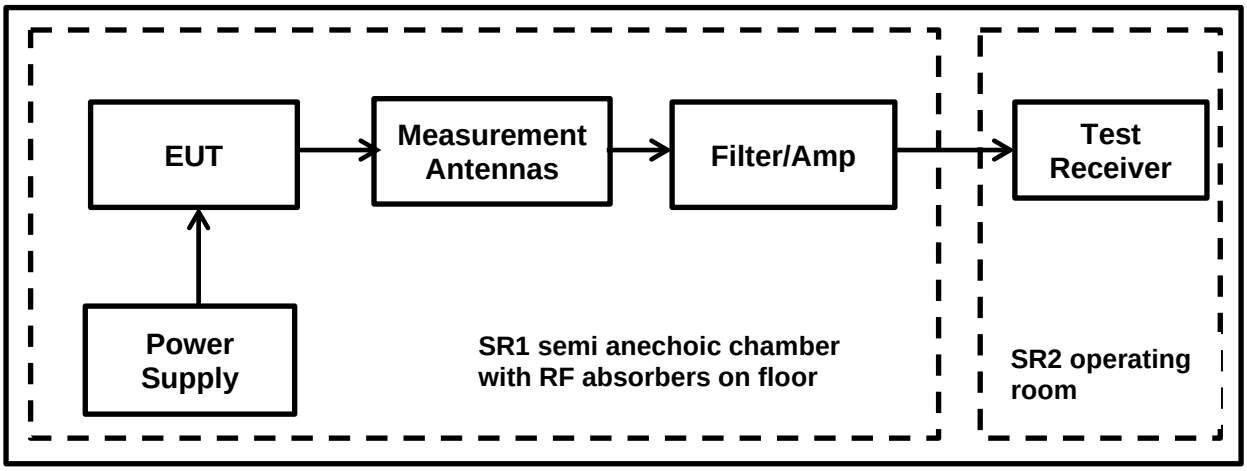
Temperature (°C):	23 & 25
Relative Humidity (%):	40 & 42

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 measurments were 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 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.
3. Since maximum conducted (average) output power was previously measured. In accordance with FCC KDB 558074 Section 8.7 lower band edge measurement was performed with a peak detector and the -30 dBc limit applied.
4. 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.
5. 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.
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.
7. A Duty Cycle Correction factor of 0.94 dB was added to all average measurements.

Transmitter Band Edge Radiated Emissions (Continued)

Test Setup:



Transmitter Band Edge Radiated Emissions (Continued)

Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0

Results: Lower Band Edge / Peak

Frequency (MHz)	Peak Level (dBµV/m)	-30 dBc Limit (dBµV/m)	Margin (dB)	Result
2397.00	60.63	71.81	11.18	Complied
2400.00	57.81	71.81	14.0	Complied

Results: *2310 to 2390 MHz Restricted Band* / Peak

Frequency (MHz)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)	Margin (dB)	Result
2332.43	63.33	74.00	10.67	Complied

Results: *2310 to 2390 MHz Restricted Band* / Average

Frequency (MHz)	Average Level (dBµV/m)	Duty Cycle Correction (dB)	Corrected Average Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
2335.00	51.51	0.94	52.45	54.00	1.55	Complied

Results: Upper Band Edge / Peak

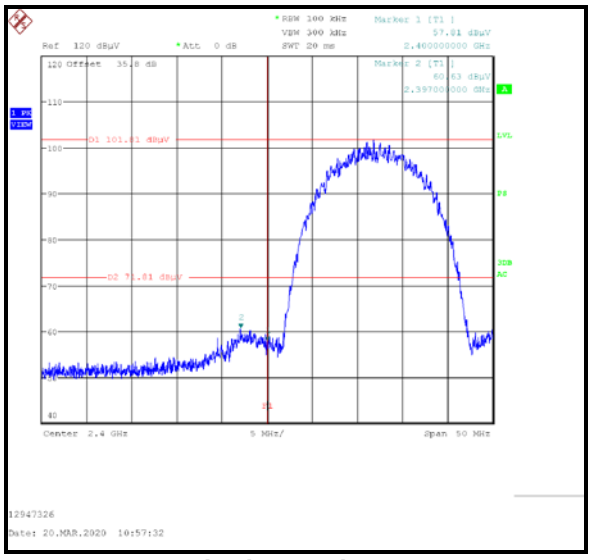
Frequency (MHz)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)	Margin (dB)	Result
2483.50	61.07	74.00	12.93	Complied
2492.17	62.29	74.00	11.71	Complied

Results: Upper Band Edge / Average

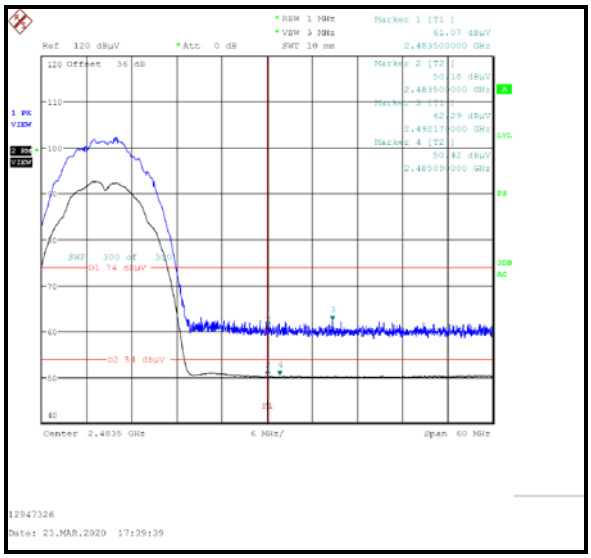
Frequency (MHz)	Average Level (dBµV/m)	Duty Cycle Correction (dB)	Corrected Average Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
2483.50	50.18	0.94	51.12	54.00	2.88	Complied
2485.09	50.42	0.94	51.36	54.00	2.64	Complied

Transmitter Band Edge Radiated Emissions (Continued)

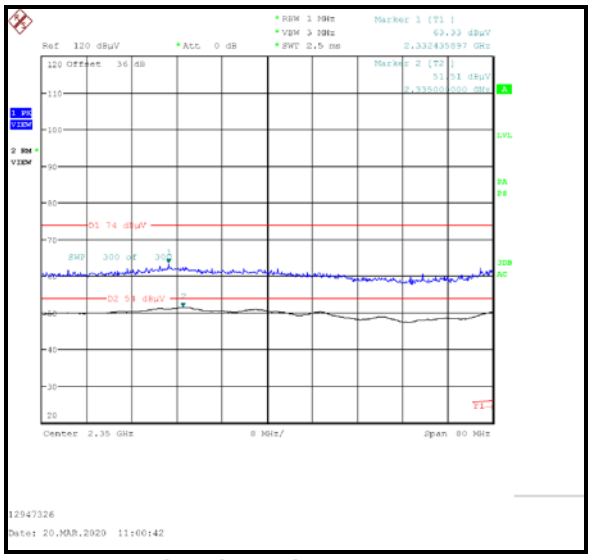
Results: AC-DC Power Supply / 802.11b / 20 MHz / 11 Mbps / PWR 0



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	09/07/2019	12
28	Rohde & Schwarz	Passive Probe	ESH2-Z3	none	11/07/2019	12
215	Rohde & Schwarz	Artificial Mains Network	ESH2-Z5	879675/002	05/07/2019	12
349	Rohde & Schwarz	Receiver, EMI Test	ESIB7	836697/009	10/07/2019	12
351	Rohde & Schwarz	network, Artificial Mains	ESH3-Z5	862770/018	08/07/2019	12
564	Teseq	Impedance stabilisation network (ISN)	ISN T800	26076	08/07/2019	24
616	Rohde & Schwarz	ISN	ENY81-CA6	101656	09/07/2019	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)
423	Bonn Elektronik	Amplifier, Low Noise Pre	BLMA 1840-1A	55929	16/07/2019	12
445	Huber & Suhner	RF Attenuator (10dB)	6810.17.AC	--	lab verification	12
621	Ahlborn-Almemo	Temperatur-/ Feuchtemessgerät	MA2470-S2	H16080099	15/03/2019	12
637	Rohde & Schwarz	Spectrum Analyzer	FSV40	101587	11/07/2019	12
-/-	Testo	Thermo-Hygrometer	608-H1	07	lab verification	n/a
-/-	Huber & Suhner	RF Cable (upto 18GHz)	-/-	-/-	lab verification	n/a
327	SPS	AC/DC power distribution system	PAS 5000	A2464 00/1 0200	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
Test Report Version 1.1 supersede Version 1.0 with immediate effect Test Report No. UL-RPT-RP-12947326-1316-FCC Version 1.1, Issue Date 18 AUGUST 2020 replaces Test Report No. UL-RPT-RP-12947326-1316-FCC Version 1.0, Issue Date 28 JULY 2020, which is no longer valid.			
1.1	as below	as below	
	5	2	Formatting updated
	9	4.1	Spelling mistakes corrected
	11	5.2.1	Note 2 & Note 6 wording updated
	14	5.2.1	Blank page removed
	18	5.2.3	Note 3 wording updated
	25	5.2.4	Note 2 & Note 3 wording updated
	29	5.2.5	Note 2 to Note 4 wording updated
	35	5.2.6	Note 2 spelling mistakes corrected Note 3 wording corrected
	38	5.2.6	Notes section updated
	39,40,41	5.2.6	Plots updated with marker at 1 GHz
	42	5.2.6	Notes section updated
	45,46	5.2.6	Plots updated with markers at 2.5 GHz & 6.5 GHz emissions
	48	5.2.7	Test method reference typo corrected & notes section updated
	50,51	5.2.7	Result tables updated in accordance with new plots
Test Report Version 1.2 supersede Version 1.1 with immediate effect Test Report No. UL-RPT-RP-12947326-1316-FCC Version 1.2, Issue Date 20 AUGUST 2020 replaces Test Report No. UL-RPT-RP-12947326-1316-FCC Version 1.1, Issue Date 18 AUGUST 2020, which is no longer valid.			
1.2	as below	as below	Current Version
	39,41	5.2.6	Plots updated with marker at 1 GHz