



Solutions

TEST REPORT

Test Report No. : UL-RPT-RP-14067528-216-FCC

Applicant * : EVBox North America Inc
Model No. * : L24871NAC00
FCC ID * : Contains FCC ID: 2A3C7-WIFIG5P
Technology * : WLAN 5 GHz (802.11 a, n)
Test Standard(s) : **FCC Parts 15.207, 15.209(a) & 15.407**

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 1.1 supersede Version 1.0 with immediate effect**
Test Report No. UL-RPT-RP-14067528-216-FCC Version 1.1, Issue Date 03 April 2023 replaces
Test Report No. UL-RPT-RP-14067528-216-FCC Version 1.0, Issue Date 01 September 2022, which is no longer valid
5. Result of the tested sample: **PASS**
6. All information marked with a (*) were provided by customer / applicant or authorized representative

Prepared by: Muhammad Faiq Khan
Title: Project Engineer
Date: 03 April 2023

Approved by: Rachid Acharkaoui
Title: Operations Manager
Date: 03 April 2023



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The tests reported herein have been performed in
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1. Customer Information *

1.1. Applicant Information

Company Name:	EVBox North America Inc
Company Address:	1930 Innovation Way, Suite 200, Illinois, Libertyville, USA
Contact Person:	Susan Eckman
Contact E-Mail Address:	susan.eckman@evbox.com
Contact Phone No.:	+1 630 209 9060

1.2. Manufacturer Information

Company Name:	EVBox BV
Company Address:	Kabelweg 47 1014 BA Amsterdam The Netherlands
Contact Person:	Marco Farina
Contact E-Mail Address:	marco.farina@evbox.com
Contact Phone No.:	+31620549130

2. Summary of Testing

2.1. General Information

Applied Standards

Specification Reference:	47CFR15.407
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart E (Unlicensed National Information Infrastructure Devices) – Section 15.407
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:	27 October 2022
EUT Arrived:	07 July 2022
Test Dates:	13 July 2022 to 22 July 2022
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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Part 15.403(i)	Transmitter 26 dB Emission Bandwidth ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(e)	Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.35(c)	Transmitter Duty Cycle ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(a)(1)(iv)	Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(a)(2)	Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(a)(3)	Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(a)(1)(iv)	Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(a)(2)	Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(a)(3)	Transmitter Peak Power Spectral Density (5.725-5.85 GHz band) ⁽¹⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(b)/15.209(a)	Transmitter Out of Band Radiated Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Part 15.407(b)/15.209(a)	Transmitter Band Edge Radiated Emission	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Part 15.407(g)	Transmitter Frequency Stability (Temperature & Voltage Variation) ⁽²⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Part 15.407(h)(1)	Transmitter Power Control ⁽³⁾	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Decision rule: If the decision rule is not included in the applied customer specification or testing standard, the binary statement for simple acceptance, as defined in ILAC G8: 2019 Section 4.2.1, is applied as the decision rule for a pass/ fail statement. If the measured value is on the limit, the result is defined as a pass. In this case the risk of a false positive is 50%. For further information regarding risk assessment refer to ILAC G8: 2019.					

Note(s):

- As per applicant's declaration, the EUT is a host product integrating FCC pre-certified radio module (FCC ID: 2A3C7-WIFIG5P). Therefore, only partial testing is performed.
- For further details refer applicant's Frequency stability declaration which ensures that the signal remains the allocated bands under all operational conditions stated in the user manual.
- For further details refer applicant's declaration.

2.3. Methods and Procedures

Reference:	ANSI C63.10-2013
Title:	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
Reference:	FCC KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 December 14, 2017
Title:	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E
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:	EVBox
Model Name or Number:	L24871NAC00
Test Sample Serial Number:	FCC / AT&T Sample 1
Hardware Version Number:	Com board Rev. G, US Power board Rev. F, HMI board Rev. E
Firmware Version Number:	Com board diagnostic image FW V5.0.1, HMI V1.1.0, Power v1.4.0, Safety 1.1.3
FCC ID:	Contains FCC ID: 2A3C7-WIFIG5P

3.2. Description of EUT *

The equipment under test was a stationary Level 2 Electric Vehicle Supply Equipment with Model Number: L24871NAC00, Contains FCC ID: 2A3C7-WIFIG5P, FCC ID: 2A3C7-HMIG5P and FCC ID: N7NHL78 supporting NFC 13.56 MHz, Bluetooth, Bluetooth LE, WLAN 2.4 GHz, WLAN 5 GHz and Cellular technologies.

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 802.11a / ac) / U-NII – 1 / 2A / 2C / 3			
Type of Unit:	Transceiver			
Modulation:	BPSK, QPSK, 16QAM & 64QAM			
Data rates:	802.11a	6 Mbps (Note 1)		
	802.11n	MCS0 (Note 1)		
Power Supply Requirement(s):	Nominal	240V (V) L1-L2-PE US Splitted phase		
Declared Antenna Gain:	Printed board antenna			
Antenna Type:	Custom printed board antenna, not removable			
Antenna Details:	5150-5250 <0.0 dBi 5470-5835 <2.0 dBi			
Maximum Average Conducted Power:	14.82 dBm (Note 1)			
Channel Spacing:	20 MHz			
Transmit Frequency Band:	5150 MHz to 5250 MHz [U-NII-1]			
Transmit Channels Tested:	Data rate	Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)
	802.11a	20	36	5180
	802.11a	20	44	5220
	802.11a	20	48	5240
Transmit Frequency Band:	5735 MHz to 5835 MHz [U-NII-3]			
Transmit Channels Tested:	Data rate	Bandwidth (MHz)	Channel Number	Channel Frequency (MHz)
	802.11n	20	149	5745
	802.11n	20	157	5785
	802.11n	20	165	5825
Highest internally generated clock and/ or oscillator frequency:	Wi-Fi ref. clock 37.4 MHz (internal to the module) Oscillator freq. of NFC module of HMI board: 27.120 MHz LTE module: 32.768 KHz, 26MHz (internal to the module) Different other oscillator clocks are included for internal functionality e.g. bus/ CPU clock are present in the circuits: 32.768 KHz, 16 MHz, 24 MHz, 25 MHz 26 MHz			
(Note 1) In accordance with FCC KDB 996369 D04 Section 3.4 (b) the Host Product testing has been performed on unwanted (spurious) radiated emissions on the worst-case modulation and channel per frequency range as shown in original filing (FCC ID: 2A3C7-WIFIG5P / VPYLBEE5HY1MW).				
(Note 2) As per applicant's declaration, the EUT is a host product integrating FCC pre-certified radio module (FCC ID: 2A3C7-WIFIG5P / VPYLBEE5HY1MW). Therefore, only partial testing is performed.				

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	-/-	-/-	-/-	-/-

B. Support Equipment (Manufacturer supplied)

Item	Description	Brand Name	Model Name or Number	Serial Number
1	Raspberry PI	N/A	N/A	W65
2	Ethernet Switch	D-Link	EES105E C2E	QS3P111000361
3	EVBox Certification team Windows Laptop	Dell	N/A	EVB17001260

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes / Worst Case Identification

The EUT was tested in the following operating mode(s):

- ☒ Transmitter / Modulated Carrier Continuous Transmissions Mode WLAN 5 GHz, Worst Cases*:
802.11a | 6 Mbps: | UNII-1 | 20 MHz | Power Level 12
802.11n | MCS0: | UNII-3 | 20 MHz | Power Level 12

* These worst-case data rates are taken from FCC pre-approved radio module's (FCC ID: 2A3C7-WIFIG5P / VPYLBEE5HY1MW) report.

4.2. Configuration and Peripherals

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

- The applicant or manufacturer supplied test setup instructions
"DUT and testing - Board configuration and setting Quickguide Rev1.pdf" issued on 30/06/2022 was used to configure the EUT.

EUT Power Supply:

- The EUT was powered with 240V AC / 60 Hz split phase.

Test Mode Activation:

- The EUT can be connected with the Test laptop via Ethernet switch and ethernet cables supplied by the customer. The cable was used only for configuration and was removed during the measurement.
- The test modes were activated by the terminal software "radio_cert_v12". The commands to setup the respective modes and power were defined by the customer in the setup instructions.
- NFC was also active all the time and we cannot de-activate it

AC Conducted Emissions Measurements:

- The measurements were carried out with 240 VAC/60Hz.
- The Toyo EMI Software EP5/CE Ver 4.0.1. was used for these measurements.

Radiated Measurements:

- The EUT needs to use in standing position as a used case. Therefore, this report includes relevant results.
- The position of the Antenna was 90° vertical in the z-axis from the EUT.
- Radiated measurements below 30 MHz were performed with the EUT positioned on the turn table and rotating 360 degrees while the loop antenna height was set at 100 cm.
- Radiated measurements above 30 MHz were performed with the EUT positioned on the turn table and rotating 360° while the antenna height varies from 1 to 4 m over the measurement frequency range.
- R&S® EMC32 V11.30 Software was used for the Radiated spurious emission measurements.

Duty Cycle Correction Details:

- As the continuous transmission of the EUT ($D \geq 98\%$) can be achieved and EUT was transmitting continuously at Duty Cycles of $>98\%$ (duty cycle variations are less than $\pm 2\%$ at the respective data rate). Therefore, Duty Cycle Correction Factor was not added to all average measurements, to compute the corrected average values of the emissions that would have been measured had the test been performed at 100% Duty Cycle.

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:	Tobias Koch	Test Date:	22 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
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:

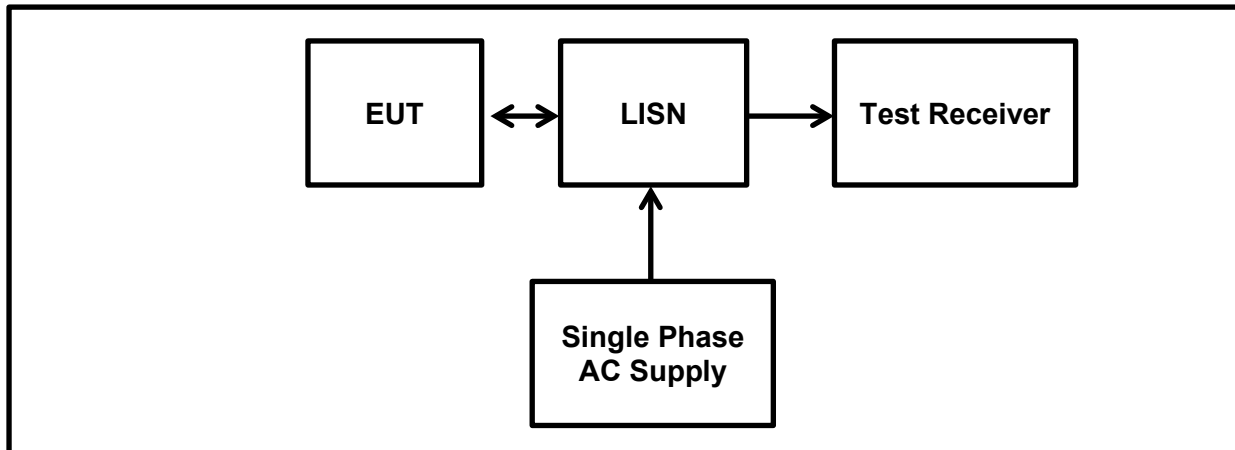
Temperature (°C):	20
Relative Humidity (%):	33

Settings of the Instrument

Detector	Quasi Peak/ Average Peak
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Note(s):

1. The EUT was powered via AC/DC power supply which was connected with the LISN during the measurement.
2. EUT can only be powered via 240 VAC split phase.
3. The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
 - 802.11a | 20 MHz | 6 Mbps | Middle Channel | PWR 12
4. Pre-scans were performed, and markers placed on the highest L1 and L2 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 in a 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: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps****Results: L1 / Quasi Peak / 240 VAC 60 Hz**

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.154440	L1	51.30	65.80	14.50	Complied
0.171500	L1	48.20	64.90	16.70	Complied
0.215690	L1	40.60	63.00	22.40	Complied
4.030330	L1	32.10	56.00	23.90	Complied
4.932270	L1	32.50	56.00	23.50	Complied
13.560170	L1	43.90	60.00	16.10	Complied
23.128700	L1	45.70	60.00	14.30	Complied

Results: L1 / Average / 240 VAC 60 Hz

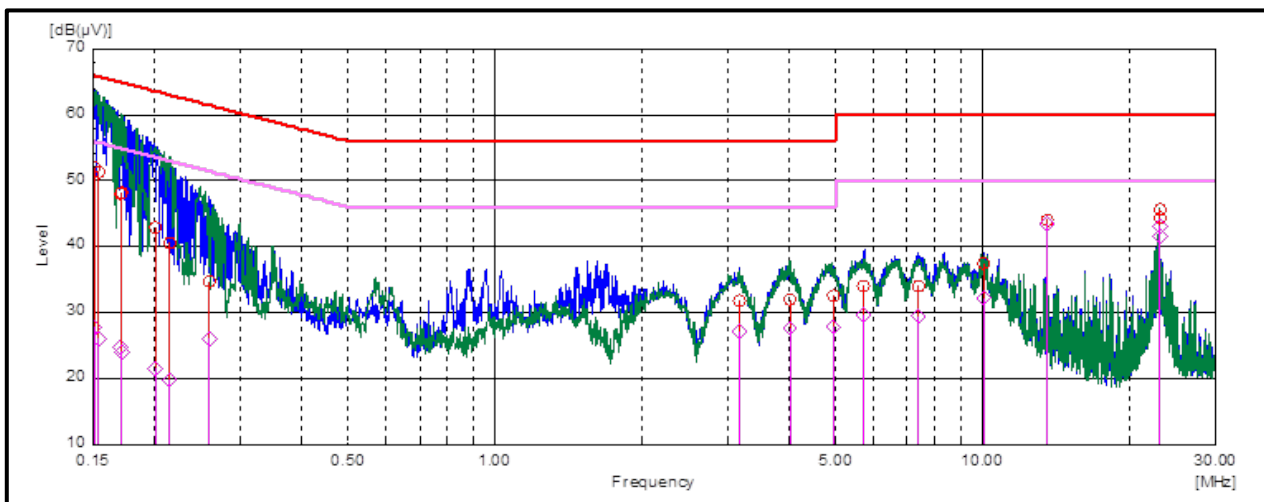
Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.154440	L1	26.10	55.80	29.70	Complied
0.171500	L1	24.00	54.90	30.90	Complied
0.215690	L1	19.80	53.00	33.20	Complied
4.030330	L1	27.70	46.00	18.30	Complied
4.932270	L1	27.90	46.00	18.10	Complied
13.560170	L1	43.50	50.00	6.50	Complied
23.128700	L1	43.00	50.00	7.00	Complied

Results: 2 / Quasi Peak / 240 VAC 60 Hz

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.151000	L2	52.10	65.90	13.80	Complied
0.170930	L2	48.10	64.90	16.80	Complied
0.201280	L2	42.90	63.60	20.70	Complied
0.259660	L2	34.80	61.40	26.60	Complied
3.171480	L2	31.90	56.00	24.10	Complied
5.705850	L2	34.10	60.00	25.90	Complied
7.397840	L2	34.00	60.00	26.00	Complied
10.060080	L2	37.40	60.00	22.60	Complied
23.130110	L2	44.50	60.00	15.50	Complied

Transmitter AC Conducted Spurious Emissions (continued)**Results: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps****Results: L2 / Average / 240 VAC 60 Hz**

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.151000	L2	27.80	55.90	28.10	Complied
0.170930	L2	24.60	54.90	30.30	Complied
0.201280	L2	21.50	53.60	32.10	Complied
0.259660	L2	25.90	51.40	25.50	Complied
3.171480	L2	27.10	46.00	18.90	Complied
5.705850	L2	29.60	50.00	20.40	Complied
7.397840	L2	29.50	50.00	20.50	Complied
10.060080	L2	32.10	50.00	17.90	Complied
23.130110	L2	41.50	50.00	8.50	Complied

Result: Pass**Plot: L1 and L2 Line / 240 VAC 60 Hz**

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

Transmitter Out of Band Radiated Emissions**5.2.2. Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation)****Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	13 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
Test Site Identification	SR 1/2		

FCC Reference:	Parts 15.407(b)(1), (9) & 15.209(a)
Test Method Used:	FCC KDB 789033 II.G.1, II.G.2, II.G.3 & II.G.4. & ANSI C63.10 Sections 6.3 and 6.4
Frequency Range:	9 kHz to 30 MHz

Environmental Conditions:

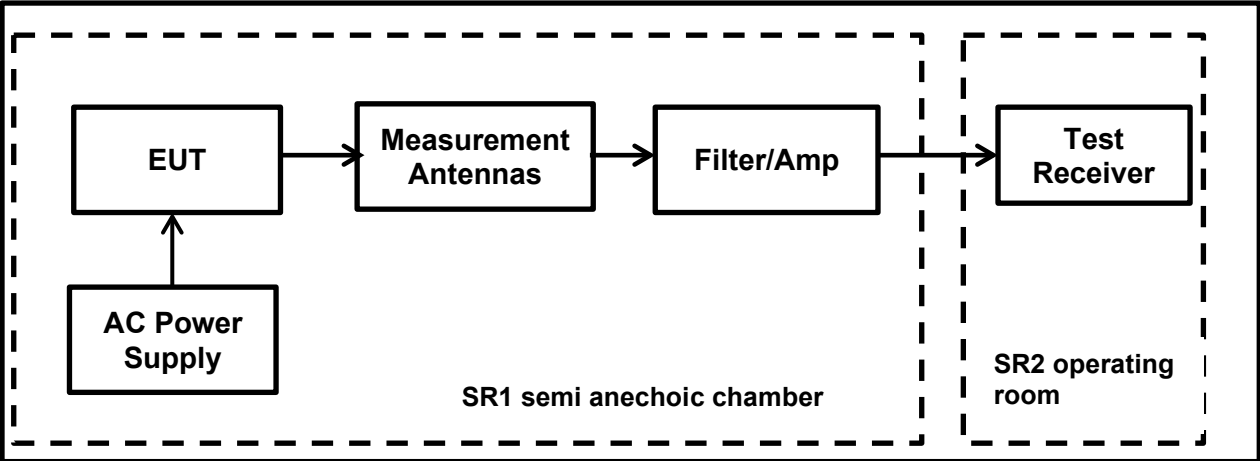
Temperature (°C):	22.3
Relative Humidity (%):	46.4

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 /decade.
- Pre-scans with the EUT transmitting were measured according to FCC Part 15.407(b)(1) which states for transmitters operating in the band 5.15 to 5.25 GHz: all emissions outside of the band 5.15-5.35 GHz band shall not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply, e.g. restricted bands of operation.
- The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
 - 802.11a | 20 MHz | 6 Mbps | Middle Channel | PWR 12
- The preliminary scans showed similar emission levels below 30 MHz, for each channel of operation. Therefore, final radiated emissions measurements were performed with the EUT set to the middle channel only.
- The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss. All other emissions shown on the pre-scan plots were found to be below the measurement system noise floor or ambient, therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
- 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 100 cm above the reference ground plane in the centre of the chamber turntable. The measurement loop antenna height was 100 cm.

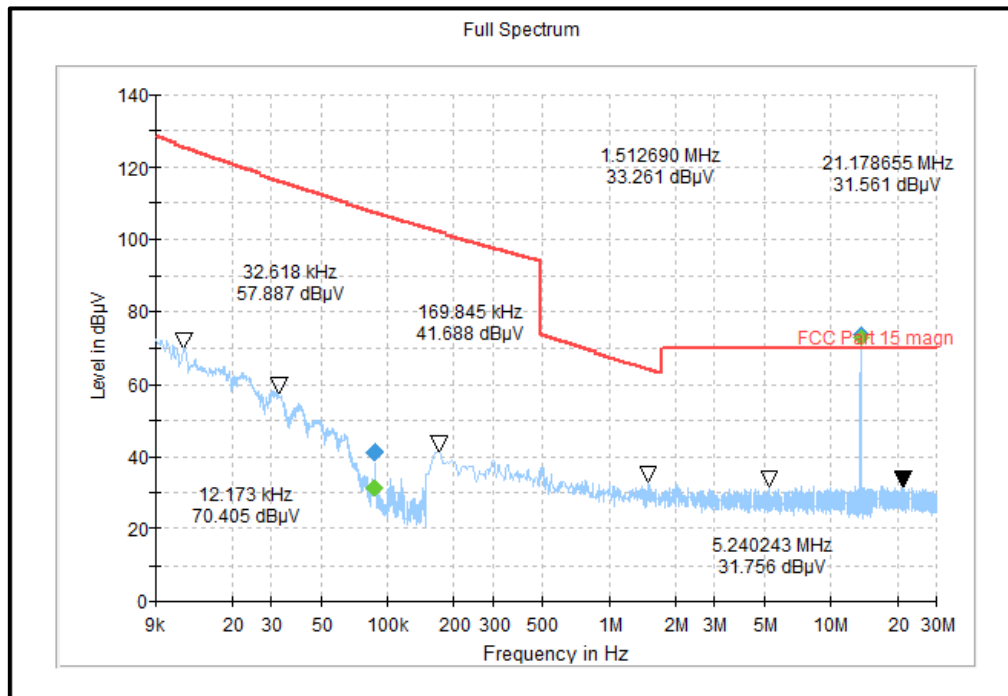
Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Test Setup:



Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)**Results: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps**

Frequency (MHz)	Antenna Polarization	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
0.09	Horizontal	41.25	107.43	66.18	Complied

Plot: 9 kHz – 30 MHz: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps

Note: The emission at 13.56 MHz is from NFC and we cannot de-activate it during the measurement.

Result: **Pass**

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	12 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
Test Site Identification	SR 1/2		

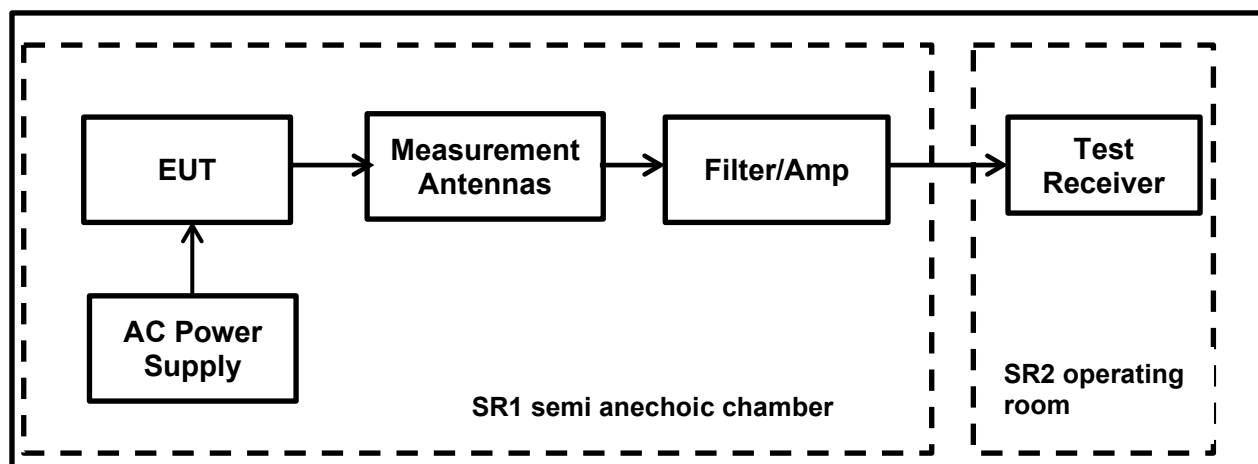
FCC Reference:	Parts 15.407(b)(1),(9) & 15.209(a)
Test Method Used:	FCC KDB 789033 II .G.1, II .G.2, II .G.3 & II .G.4 & ANSI C63.10 Sections 6.3 and 6.5
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	22.6
Relative Humidity (%):	46.7

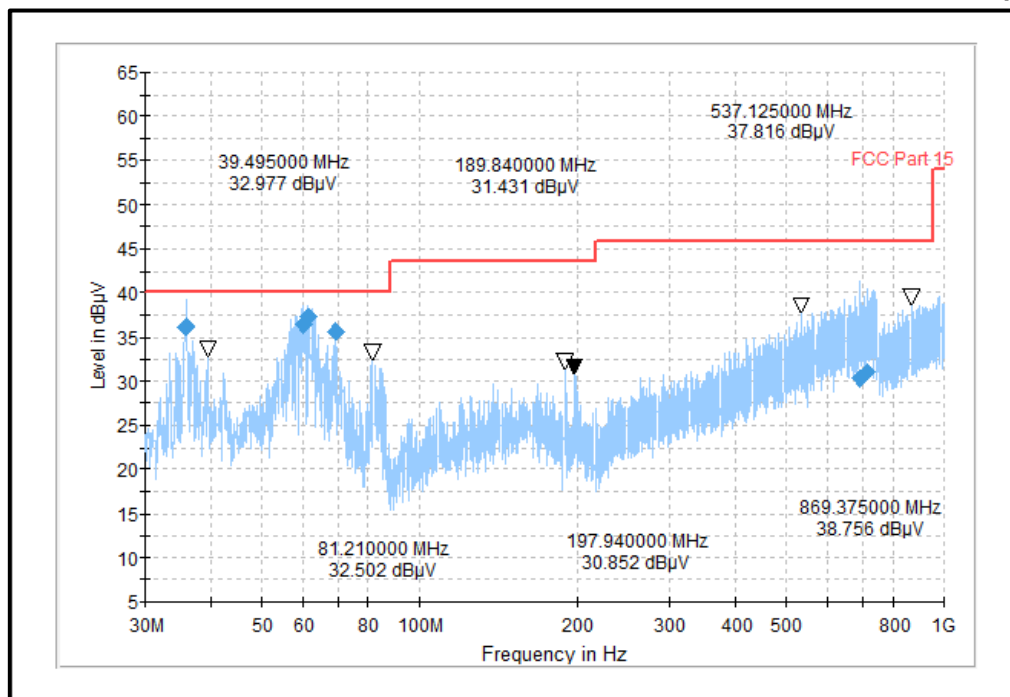
Note(s):

- The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore, final radiated emissions measurements were performed with the EUT set to the middle channel only.
- 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.
- The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
 - 802.11a | 20 MHz | 6 Mbps | Middle Channel | PWR 12
- All emissions shown on the pre-scan plots were investigated and found to be below system noise floor.
- The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
- Pre-scans with the EUT transmitting were measured according to FCC Part 15.407(b)(1) which states for transmitters operating in the band 5.15 to 5.25 GHz: all emissions outside of the band 5.15-5.35 GHz band shall not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply, e.g. restricted bands of operation.

Test Setup:

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)**Results: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps**

Frequency (MHz)	Antenna Polarization	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
35.81	Vertical	36.23	40.00	3.77	Complied
59.88	Vertical	36.38	40.00	3.62	Complied
61.37	Vertical	37.30	40.00	2.70	Complied
69.15	Vertical	35.60	40.00	4.40	Complied
692.71	Horizontal	30.38	46.00	15.62	Complied
715.71	Horizontal	31.05	46.00	14.95	Complied

Plot: 30 MHz – 1GHz: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps**Result: Pass with measurement uncertainty**

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	14 & 15 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
Test Site Identification	SR 1/2		

FCC Reference:	Parts 15.407(b)(1),(8) & 15.209(a)
Test Method Used:	FCC KDB 789033 II .G.1, II .G.2, II .G.3, II .G.5 &, II .G.6 ANSI C63.10:2013 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

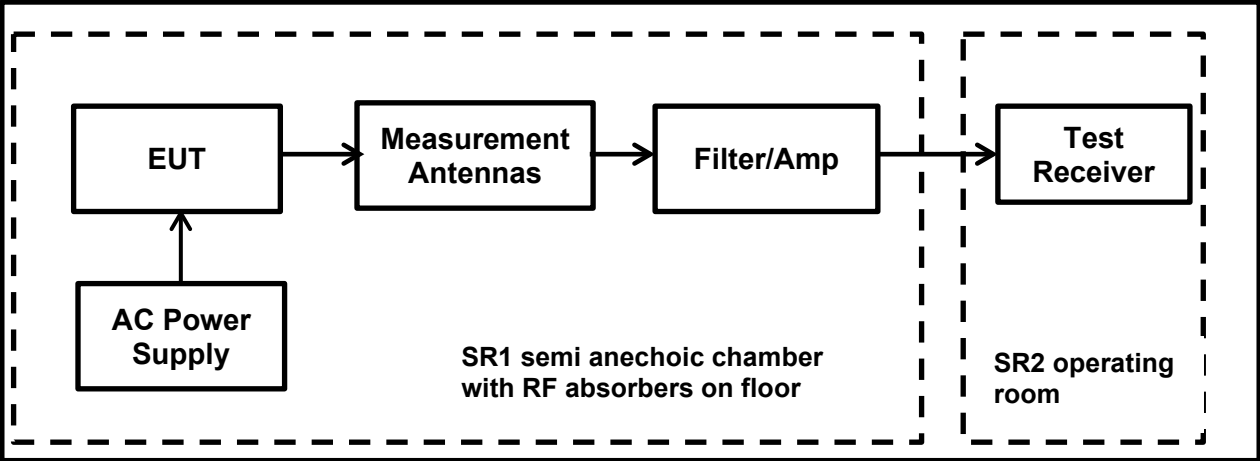
Temperature (°C):	22.6
Relative Humidity (%):	46.7

Note(s):

- The emissions shown at frequencies approximately 5.15-5.25 GHz on the 1 GHz to 18 GHz plots are the EUT fundamental for the tested channel.
- Pre-scans with the EUT transmitting were measured according to FCC Part 15.407(b)(1) which states for transmitters operating in the band 5.15 to 5.25 GHz: all emissions outside of the band 5.15-5.35 GHz band shall not exceed -27 dBm/MHz Part(b)(7) states the provisions of 15.205 apply, e.g., restricted bands of operation.
- The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
- All other emissions shown on the pre-scan plots were found to be below the measurement system noise floor or ambient, therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
- Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 1.5 m above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
- The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
 - 802.11a | 20 MHz | 6 Mbps | Middle Channel | PWR 12
- For unwanted emissions measured with Peak detector there are two limit possibilities:
 - According to FCC 15.209
 - peak limit (above 1 GHz) is 74 dBµV/m (restricted band limit)
 - average limit (above 1 GHz) is 54 dBµV/m (restricted band limit)
 - According to FCC 15.407(b)(1) peak limit is 68.2 dBµV/m (non-restricted band limit)
- Therefore, unwanted emissions in restricted as well non restricted bands, measured with Peak detector & lowest average limit (above 1 GHz) is 54 dBµV/m (restricted band limit) has been applied.
- * In accordance with KDB 789033 Section II.G.1.c) If all peak measurements satisfy the average limit, then average measurements are not required.

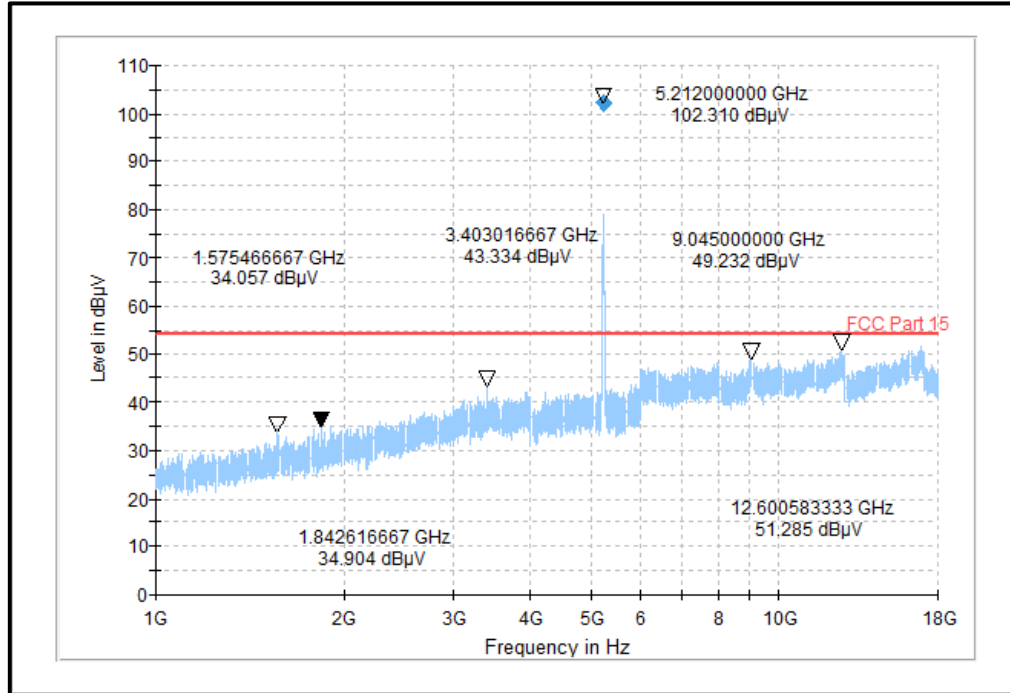
Transmitter Out of Band Radiated Emissions Test setup

Test Setup:



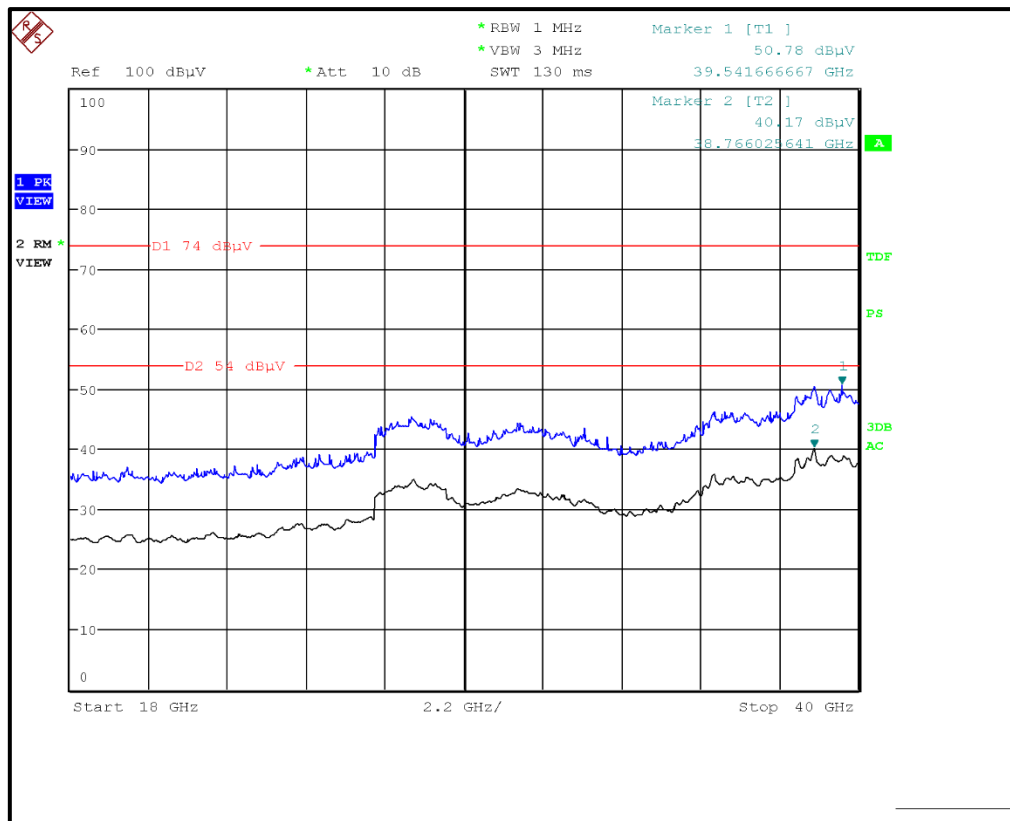
Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)**Results: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps**

Frequency (MHz)	Antenna Polarization	Peak Level (dB μ V/m)	Limit* (dB μ V/m)	Margin (dB)	Result
No spurious emissions were found					

Plot: 1 GHz – 18 GHz: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps**Result: Pass**

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)**Results: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps**

Frequency (MHz)	Antenna Polarization	Peak Level (dB μ V/m)	Limit* (dB μ V/m)	Margin (dB)	Result
No spurious emissions were found					

Plot: 18 GHz – 40 GHz: UNII-1 / 802.11a / 20 MHz / PWR 12 / Middle Channel / 6 Mbps**Result: Pass**

5.2.3. Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation)**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	13 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
Test Site Identification	SR 1/2		

FCC Reference:	Parts 15.407(b)(1), (9) & 15.209(a)
Test Method Used:	FCC KDB 789033 II.G.1, II.G.2, II G.3 & II.G.4. & ANSI C63.10 Sections 6.3 and 6.4
Frequency Range:	9 kHz to 30 MHz

Environmental Conditions:

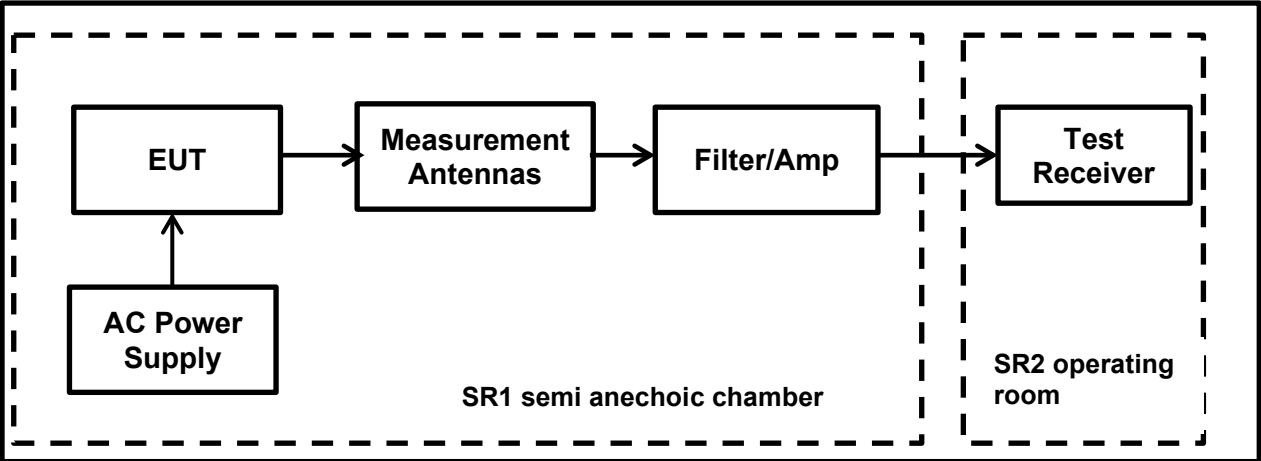
Temperature (°C):	22.3
Relative Humidity (%):	46.4

Note(s):

9. 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).
10. 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.
11. 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 /decade.
12. Pre-scans with the EUT transmitting were measured according to FCC Part 15.407(b)(1) which states for transmitters operating in the band 5.15 to 5.25 GHz: all emissions outside of the band 5.15-5.35 GHz band shall not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply, e.g. restricted bands of operation.
13. The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
 - 802.11n | 20 MHz | MCS0 | Middle Channel | PWR 12
14. The preliminary scans showed similar emission levels below 30 MHz, for each channel of operation. Therefore, final radiated emissions measurements were performed with the EUT set to the middle channel only.
15. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss. All other emissions shown on the pre-scan plots were found to be below the measurement system noise floor or ambient, therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
16. 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 100 cm above the reference ground plane in the centre of the chamber turntable. The measurement loop antenna height was 100 cm.

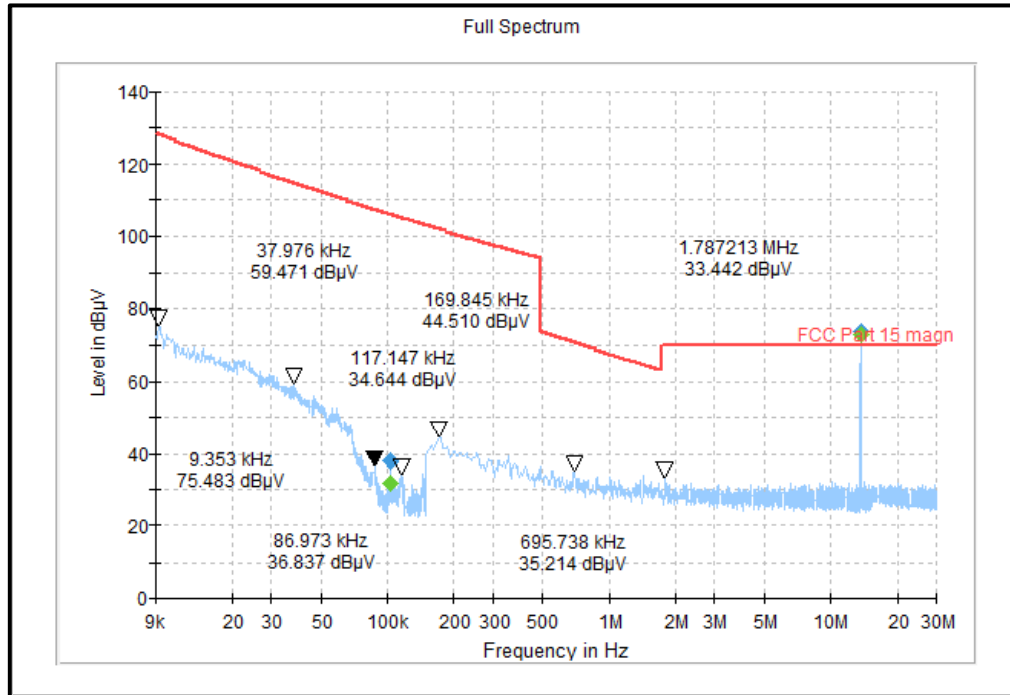
Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)

Test Setup:



Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)**Results: UNII-3 / 802.11n / 20 MHz / PWR 12 / Middle Channel / MCS0**

Frequency (MHz)	Antenna Polarization	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
0.104	Horizontal	38.13	105.97	67.84	Complied

Plot: 9 kHz – 30 MHz: UNII-3 / 802.11n / 20 MHz / PWR 12 / Middle Channel / MCS0

Note: The emission at 13.56 MHz is from NFC and we cannot de-activate it during the measurement.

Result: **Pass**

Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	12 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
Test Site Identification	SR 1/2		

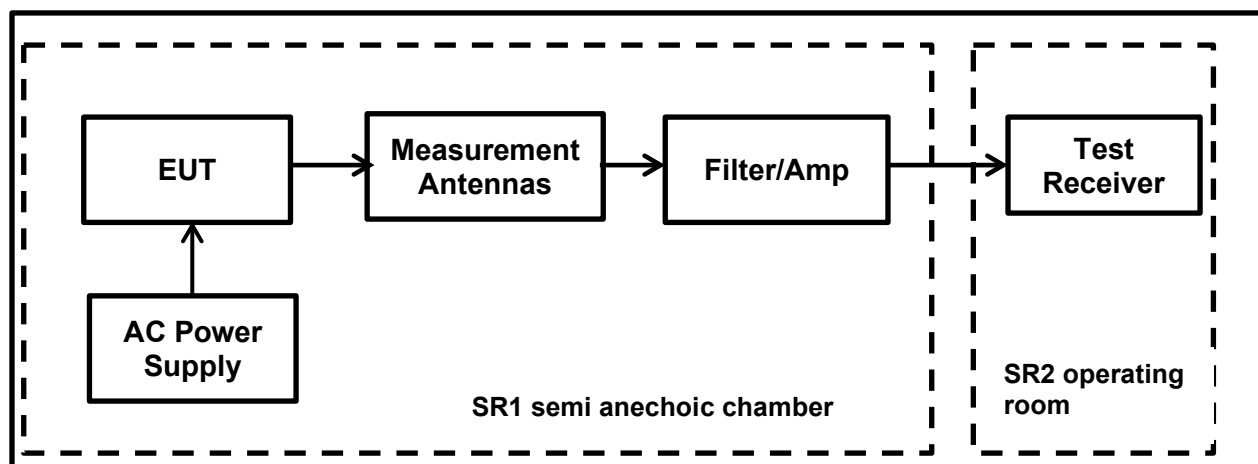
FCC Reference:	Parts 15.407(b)(1),(9) & 15.209(a)
Test Method Used:	FCC KDB 789033 II .G.1, II .G.2, II .G.3 & II .G.4 & ANSI C63.10 Sections 6.3 and 6.5
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	22.6
Relative Humidity (%):	46.7

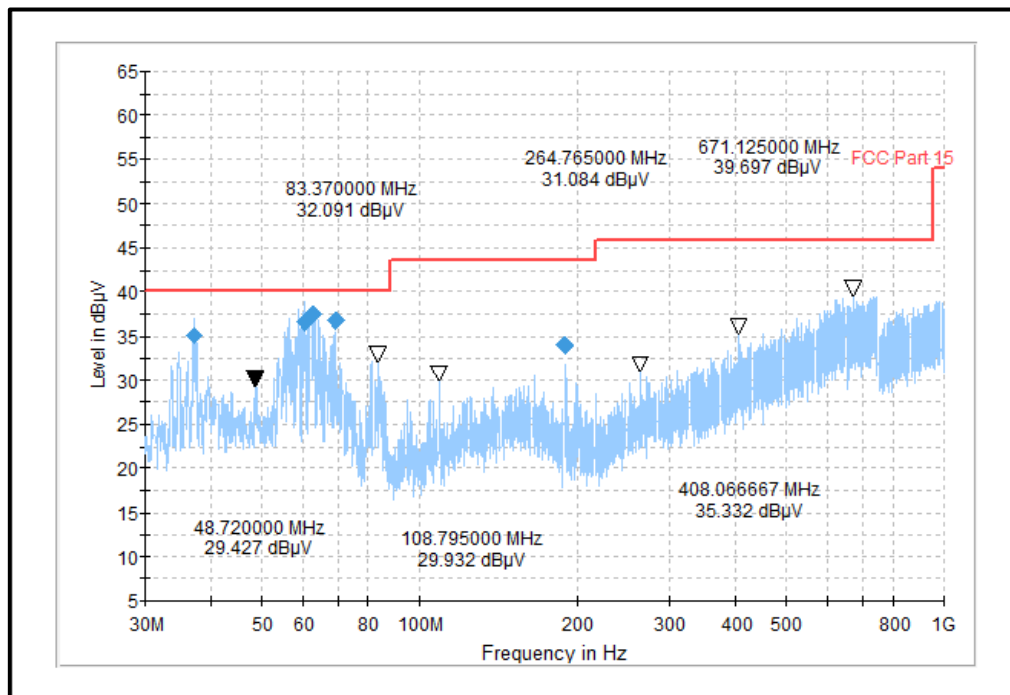
Note(s):

- The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore, final radiated emissions measurements were performed with the EUT set to the middle channel only.
- 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.
- The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
 - 802.11n | 20 MHz | MCS0 | Middle Channel | PWR 12
- All emissions shown on the pre-scan plots were investigated and found to be below system noise floor.
- The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
- Pre-scans with the EUT transmitting were measured according to FCC Part 15.407(b)(1) which states for transmitters operating in the band 5.15 to 5.25 GHz: all emissions outside of the band 5.15-5.35 GHz band shall not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply, e.g. restricted bands of operation.

Test Setup:

Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)**Results: UNII-3 / 802.11n / 20 MHz / PWR 12 / Middle Channel / MCS0**

Frequency (MHz)	Antenna Polarization	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
37.16	Vertical	35.17	40.00	4.83	Complied
60.42	Vertical	36.64	40.00	3.36	Complied
62.67	Vertical	37.49	40.00	2.51	Complied
68.97	Vertical	36.67	40.00	3.33	Complied
189.84	Horizontal	33.96	43.50	9.54	Complied

Plot: 30 MHz – 1GHz: UNII-3 / 802.11n / 20 MHz / PWR 12 / Middle Channel / MCS0**Result: Pass with measurement uncertainty**

Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	15 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
Test Site Identification	SR 1/2		

FCC Reference:	Parts 15.407(b)(4),(8) & 15.209(a)
Test Method Used:	FCC KDB 789033 II .G.1, II .G.2, II .G.3, II .G.5 &, II .G.6 ANSI C63.10:2013 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

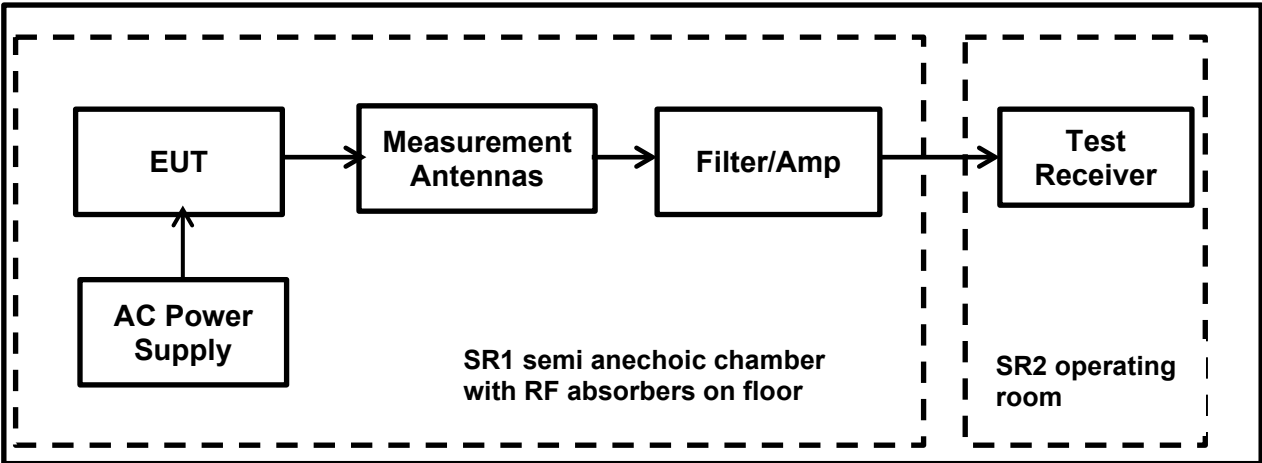
Temperature (°C):	22.6
Relative Humidity (%):	46.7

Note(s):

- The emissions shown at frequencies approximately 5.725-5.85 GHz on the 1 GHz to 18 GHz plots are the EUT fundamental for the tested channel.
- Pre-scans with the EUT transmitting were measured according to FCC Part 15.407(b)(4) which states for transmitters operating in the band 5.725 to 5.85 GHz: all emissions outside of the band 5.725 to 5.85 GHz band shall not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply, e.g. restricted bands of operation.
- The preliminary scans showed similar emission levels above 1 GHz, for each channel of operation. Therefore, final radiated emissions measurements were performed with the EUT set to the middle channel only.
- The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
- All other emissions shown on the pre-scan plots were found to be below the measurement system noise floor or ambient, therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
- Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 1.5 m above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
- The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
 - 802.11n | 20 MHz | MCS0 | Middle Channel | PWR 12
- For unwanted emissions measured with Peak detector there are two limit possibilities:
 - According to FCC 15.209
 - peak limit (above 1 GHz) is 74 dBµV/m (restricted band limit)
 - average limit (above 1 GHz) is 54 dBµV/m (restricted band limit)
 - According to FCC 15.407(b)(3) peak limit is 68.2 dBµV/m (non-restricted band limit)
- Therefore, unwanted emissions in restricted as well non restricted bands, measured with Peak detector & lowest average limit (above 1 GHz) is 54 dBµV/m (restricted band limit) has been applied.

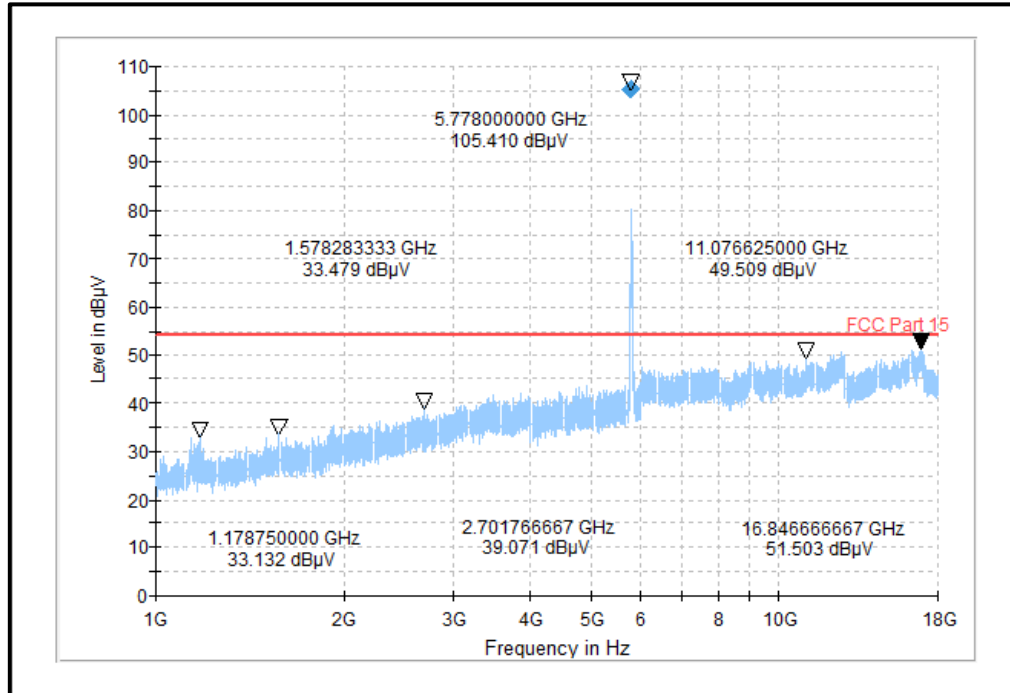
Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)

Test Setup:



Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)**Results: UNII-3 / 802.11n / 20 MHz / PWR 12 / Middle Channel / MCS0**

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

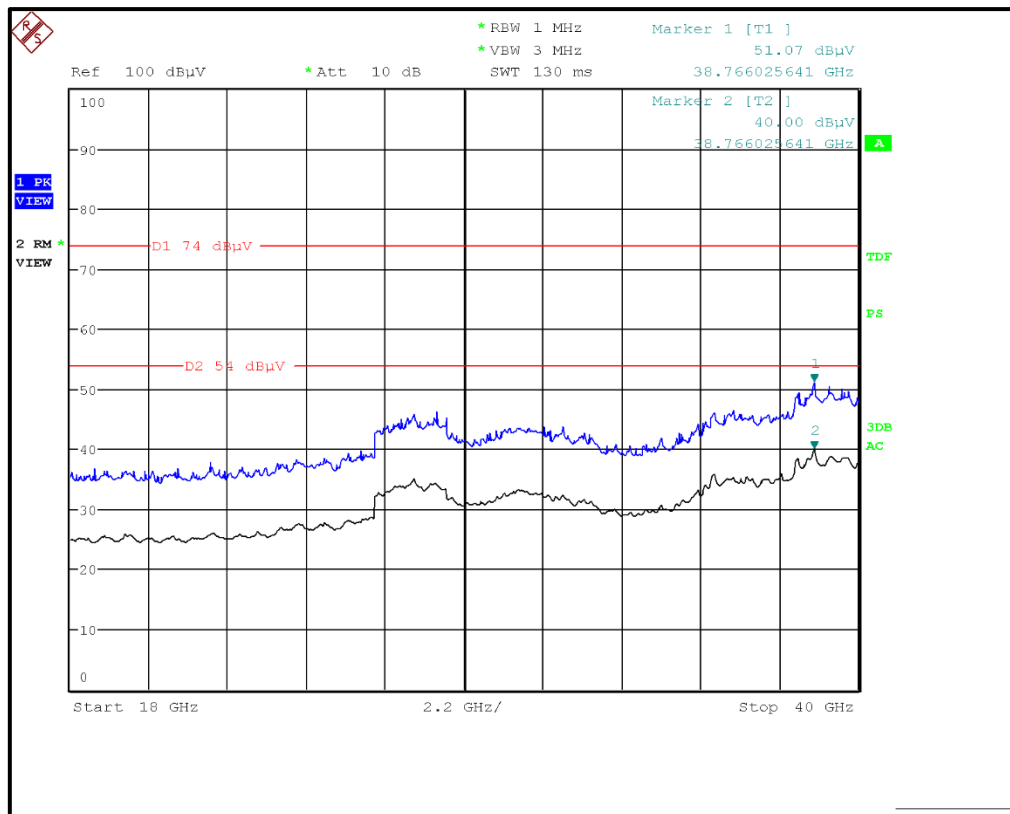
Plot: 1 GHz – 18 GHz: UNII-3 / 802.11ac / 20 MHz / MCS0 / PWR 35 / Bottom Channel

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

Result: **Pass**

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)**Results: UNII-3 / 802.11n / 20 MHz / PWR 12 / Middle Channel / MCS0**

Frequency (MHz)	Antenna Polarization	Peak Level (dB μ V/m)	Limit* (dB μ V/m)	Margin (dB)	Result
No spurious emissions were found					

Plot: 18 GHz – 40 GHz: UNII-3 / 802.11n / 20 MHz / PWR 12 / Middle Channel / MCS0**Result: Pass**

Transmitter Band Edge Radiated Emissions**5.2.4. Transmitter Band Edge Radiated Emissions(5.15-5.25 GHz band operation)****Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	18 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
Test Site Identification	SR 1/2		

FCC Reference:	Parts 15.407(b)(1),(8) & 15.209(a)
Test Method Used:	FCC KDB 789033 II .G.1, II .G.2, II .G.3, II .G.5 &, II .G.6 ANSI C63.10:2013 Sections 6.3 and 6.6

Environmental Conditions:

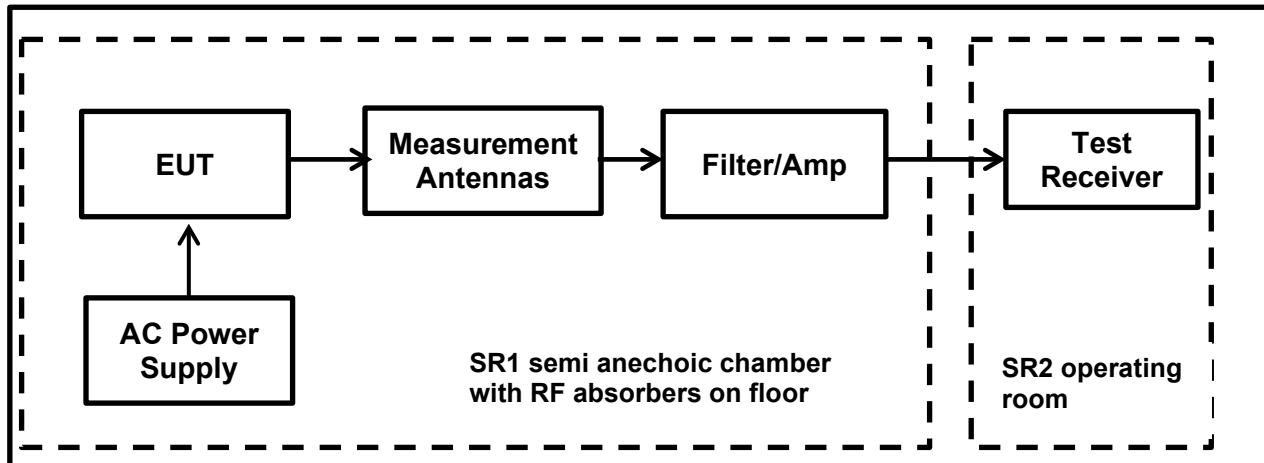
Temperature (°C):	21.6
Relative Humidity (%):	48.3

Note(s):

1. According to FCC KDB 789033 D02 Section II.G.5 & II.G.6 Transmitter Band Edge Radiated Emissions were performed.
2. The test receiver was set to RBW: 1 MHz | VBW: 3 MHz | Sweep time: Auto | Trace mode: max hold | Span: large enough to capture unwanted band edge emissions with trace stabilizations.
3. In accordance with KDB 789033 Section II.D.v), Method AD (vi), the average measurements were performed using an increased number of sweeps A value of 300 was used for all measurements as this number ensured that the requirement $\text{Sweep} \geq 2 \times \text{Span} / \text{RBW}$ is met.
4. Transmitter Band Edge Radiated Emissions were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) with absorbers on the ground at a distance of 3 meters. The EUT was a floor standing equipment which 120 cm height. EUT was placed in the centre of the chamber turntable on 30 cm non-conductive material The EUT was a floor standing equipment which 120 cm height. EUT was placed in the centre of the chamber turntable on 30 cm non-conductive material. Maximum emission levels were determined by height searching the measurement antenna with tilting function enabled over the range 1 meter to 4 meters above the test chamber floor, in line with the EUT.
5. The maximum emissions around band edges were searched & are indicated with a marker placed on them. For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also above the upper band edge at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply.
6. As all radiated band edge measurements have been performed with R.B.W. 1 MHz; the limits in dBm / MHz can be converted to dBµV/m by adding a conversion factor of 95.2 (in accordance with KDB 789033 G.2.d)(iii)).
7. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz.
8. In accordance with KDB 789033 Section II.G.1.c) If all peak measurements satisfy the average limit, then average measurements are not required.
9. For unwanted emissions measured with Peak detector there are two limit possibilities:
 - According to FCC 15.209 peak limit (above 1 GHz) is 74 dBµV/m (restricted band limit)
 - According to FCC 15.407(b)(1) peak limit is 68.2 dBµV/m (non-restricted band limit)
10. Therefore, unwanted emissions in restricted as well non restricted bands, measured with Peak detector lowest limit 68.2 dBµV/m has been applied.

Transmitter Band Edge Radiated Emissions(5.15-5.25 GHz band operation) (continued)

11. The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
 - 802.11n | 20 MHz | MCS0 | Middle Channel | PWR 12
12. As the continuous transmission of the EUT ($D \geq 98\%$) can be achieved and EUT was transmitting continuously at Duty Cycles of $>98\%$ (duty cycle variations are less than $\pm 2\%$ at the respective data rate). Therefore, Duty Cycle Correction Factor was not added to all average measurements, to compute the corrected average values of the emissions that would have been measured had the test been performed at 100% Duty Cycle.

Test Setup:

Results: UNII-1 / SISO / 802.11a / 20 MHz / 6 Mbps**Results: Lower Band Edge / Peak / Bottom Channel / PWR 12**

Frequency (MHz)	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
5149.76	58.90	68.20	9.30	Complied
5150.00	57.52	68.20	10.68	Complied

Results: Lower Band Edge / Average / Bottom Channel / PWR 12

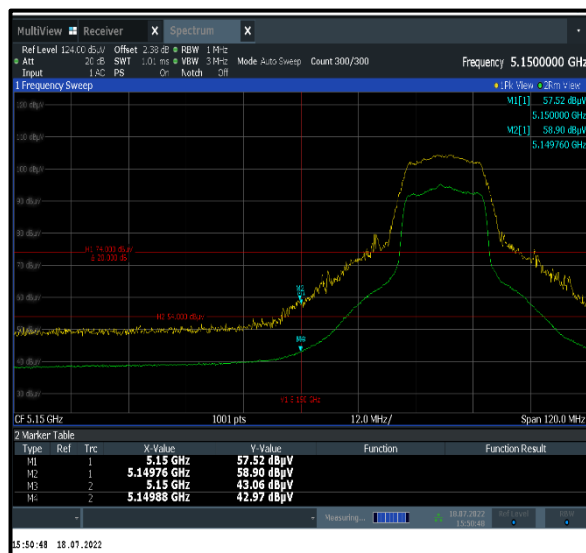
Frequency (MHz)	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
5149.88	42.97	54.00	11.03	Complied
5150.00	43.06	54.00	10.94	Complied

Results: Upper Band Edge / Peak / Top Channel / PWR 12

Frequency (MHz)	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
5350.00	50.35	68.20	17.85	Complied
5356.47	52.08	68.20	16.12	Complied

Results: Upper Band Edge / Average / Top Channel / PWR 12

Frequency (MHz)	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
5350.00	39.47	54.00	14.53	Complied
5358.87	39.77	54.00	14.23	Complied

Plots:**Lower Band Edge Measurement-Bottom****Upper Band Edge Measurement-Top****Result: Pass**

5.2.5. Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation)**Test Summary:**

Test Engineer:	Sercan Usta	Test Date:	18 July 2022
Test Sample Serial Number:	FCC / AT&T Sample 1		
Test Site Identification	SR 1/2		

FCC Reference:	Parts 15.407(b)(4),(8) & 15.209(a)
Test Method Used:	FCC KDB 789033 II .G.1, II .G.2, II .G.3, II .G.5 & II .G.6 ANSI C63.10:2013 Sections 6.3 and 6.6.

Environmental Conditions:

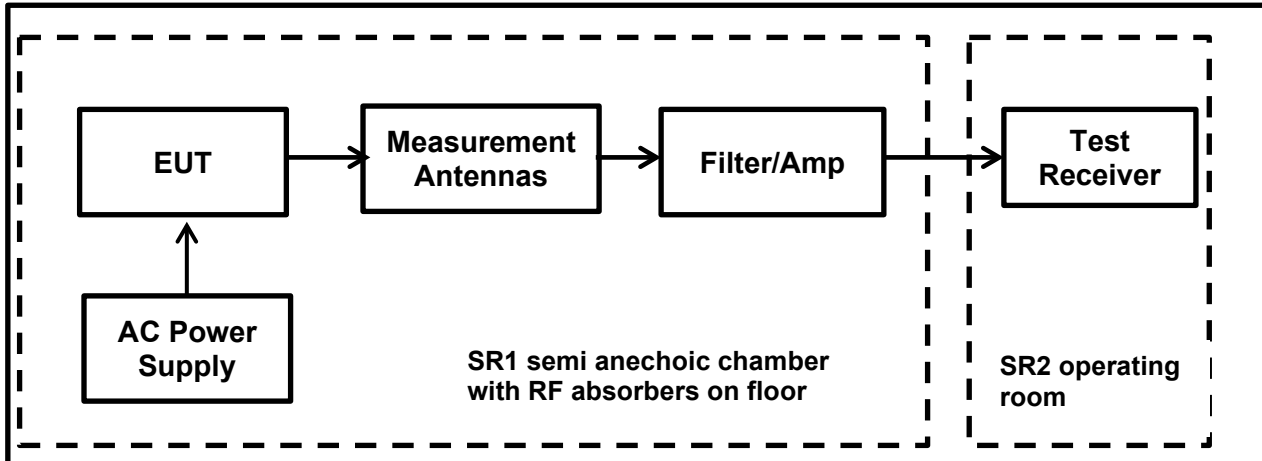
Temperature (°C):	21.6
Relative Humidity (%):	48.3

Note(s):

- According to FCC KDB 789033 D02 Section II.G.5 & II.G.6 Transmitter Band Edge Radiated Emissions were performed.
- The test receiver was set to RBW: 1 MHz | VBW: 3 MHz | Sweep time: Auto | Trace mode: max hold | Span: large enough to capture unwanted band edge emissions with trace stabilizations.
- In accordance with KDB 789033 Section II.D.v), Method AD (vi), the average measurements were performed using an increased number of sweeps A value of 300 was used for all measurements as this number ensured that the requirement $\text{Sweep} \geq 2 \times \text{Span} / \text{RBW}$ is met.
- Transmitter Band Edge Radiated Emissions were performed in a semi-anechoic chamber SR1/ 2 (Asset Number 1603665) with absorbers on the ground at a distance of 3 meters. The EUT was a floor standing equipment which 120 cm height. EUT was placed in the centre of the chamber turntable on 30 cm non-conductive material The EUT was a floor standing equipment which 120 cm height. EUT was placed in the centre of the chamber turntable on 30 cm non-conductive material. Maximum emission levels were determined by height searching the measurement antenna with tilting function enabled over the range 1 meter to 4 meters above the test chamber floor, in line with the EUT.
- The maximum emissions around band edges were searched & are indicated with a marker placed on them. For transmitters operating in the 5.725 -5.85 GHz band: all emissions outside of the 5.725 - 5.85 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply. Tests were performed in these restricted bands of operation with the EUT transmitting on the bottom and top channels within 5.47-5.725 GHz band, the results are included in the transmitter 5.25-5.35 GHz band radiated spurious emissions section of this test report.
- As all radiated band edge measurements have been performed with R.B.W. 1 MHz; the limits in dBm / MHz can be converted to dBµV/m by adding a conversion factor of 95.2 (in accordance with KDB 789033 G.2.d)(iii)).
- Field strength measurements using peak and average detectors were performed in the restricted bands below 5.725 GHz and above 5.85 GHz.
- In accordance with KDB 789033 Section II.G.1.c) If all peak measurements satisfy the average limit, then average measurements are not required.
- For unwanted emissions measured with Peak detector there are two limit possibilities:
 - According to FCC 15.209 peak limit (above 1 GHz) is 74 dBµV/m (restricted band limit)
 - According to FCC 15.407(b)(3) peak limit is 68.2 dBµV/m (non-restricted band limit)
- Therefore, unwanted emissions in restricted as well non restricted bands, measured with Peak detector lowest limit 68.2 dBµV/m has been applied.

Transmitter Band Edge Radiated Emissions(5.725-5.85 GHz band operation) (continued)

13. The radiated emissions measurements were performed with the EUT set to the following worst-case mode.
- 802.11n | 20 MHz | MCS0 | Middle Channel | PWR 12
14. As the continuous transmission of the EUT ($D \geq 98\%$) can be achieved and EUT was transmitting continuously at Duty Cycles of $>98\%$ (duty cycle variations are less than $\pm 2\%$ at the respective data rate). Therefore, Duty Cycle Correction Factor was not added to all average measurements, to compute the corrected average values of the emissions that would have been measured had the test been performed at 100% Duty Cycle.

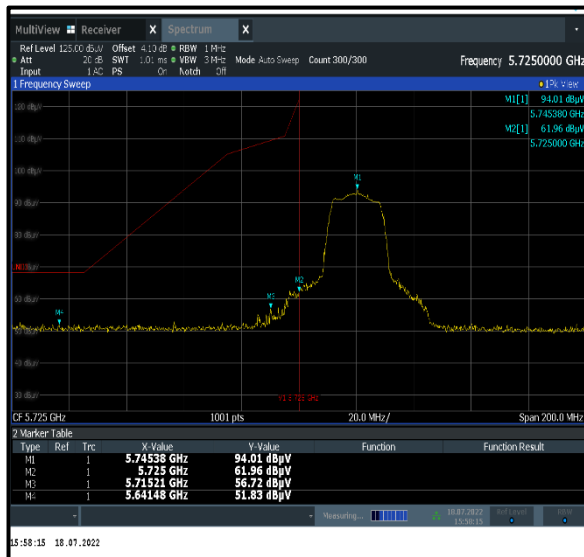
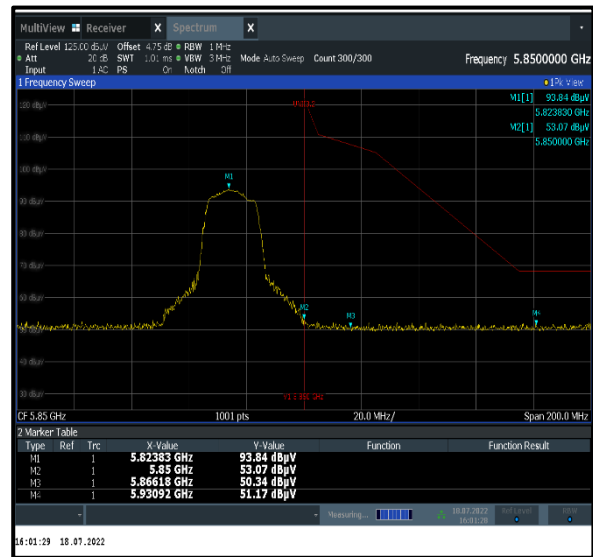
Test Setup:

Results: UNII-3 / SISO / 802.11a / 20 MHz / 6 Mbps**Results: Lower Band Edge / Peak / Bottom Channel / PWR 12**

Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
5725.00	61.96	122.23	60.27	Complied

Results: Upper Band Edge / Peak / Top Channel / PWR 12

Frequency (MHz)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
5850.00	53.07	122.23	69.16	Complied

Plots:**Lower Band Edge Measurement-Bottom****Upper Band Edge Measurement-Top****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
Radiated Spurious Emissions	95%	± 3.10 dB
Band Edge Radiated Emissions	95%	± 3.10 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	10/07/2020	36
377	BONN Elektronik	Amplifier, Low Noise Pre	BLMA 0118-1A	025294B	13/07/2022	12
423	Bonn Elektronik	Amplifier, Low Noise Pre	BLMA 1840-1A	55929	13/07/2022	12
460	Deisel	Turntable	DT 4250 S	n/a	n/a	n/a
452	Schwarzbeck	Antenna, Trilog Broadband	VULB 9168	9168-240	02/09/2020	36
495	Rohde & Schwarz	Antenna, log. - periodical	HL050	100296	06/08/2021	24
496	Rohde & Schwarz	Antenna, log. - periodical	HL050	100297	22/08/2022	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	13/07/2022	12
669	Rohde & Schwarz	EMI Test Receiver	ESW 44	103087	03/02/2022	18
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	11/07/2022	12
28	Rohde & Schwarz	Passive Probe	ESH2-Z3	none	12/07/2022	36
349	Rohde & Schwarz	Receiver, EMI Test	ESIB7	836697/009	12/07/2022	12
351	Rohde & Schwarz	network, Artificial Mains	ESH3-Z5	862770/018	11/07/2022	12
564	Teseq	Impedance stabilisation network (ISN)	ISN T800	26076	14/07/2021	24
616	Rohde & Schwarz	ISN	ENY81-CA6	101656	07/07/2020	36
-/-	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

8. Report Revision History

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	44	-	Initial Version
Test Report Version 1.1 supersede Version 1.0 with immediate effect Test Report No. UL-RPT-RP-14067528-216-FCC Version 1.1, Issue Date 03 April 2023 replaces Test Report No. UL-RPT-RP-14067528-216-FCC Version 1.0, Issue Date 01 September 2022, which is no longer valid.			
1.1	as below	as below	Current Version
	-	-	Report template updated
	1	-	Model no. and FCC ID updated
	4	1.2	Manufacturer name updated
	6	2.2	Table and notes updated
	8	3.1	Identification of EUT updated
	8	3.2	Description of EUT updated
	9	3.4	Notes updated
	10	3.5	Support equipment table updated
	15 & 16	5.2.1	Tables updated
	42	7	Used equipment list updated

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