

RF TEST REPORT

For

Shenzhen Caravan Eletronics Co.,Ltd

Product Name: Android Rear Seat Entertainment System

Test Model(s): PD1317

Report Reference No. : DACE260106030RL004

FCC ID : 2BUXM-PD1317

Applicant's Name : Shenzhen Caravan Eletronics Co.,Ltd

Address : Caravan Electronics Technology Building,Zerong Industry,Huang Ma Bu,
Xi'xiang ,Bao'an ,Shenzhen,518126,China

Testing Laboratory : Shenzhen DACE Testing Technology Co., Ltd.

Address : 102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park,
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Guangdong, China

Test Specification Standard : 47 CFR Part 15E

Date of Receipt : January 6, 2026

Date of Test : January 6, 2026 to Mar10,2026

Date of Issue : Mar10,2026

Result : Pass

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Apply for company information

Applicant's Name	:	Shenzhen Caravan Eletronics Co.,Ltd
Address	:	Caravan Electronics Technology Building,Zerong Industry,Huang Ma Bu, Xi'xiang ,Bao'an ,Shenzhen,518126,China
Product Name	:	Android Rear Seat Entertainment System
Test Model(s)	:	PD1317
Series Model(s)	:	PD1167, PD1417, PD1277, PD1037, PD1437FL, PD1637FL, PD1597FL, PD1797FL, PD1757FL
Test Specification Standard(s)	:	47 CFR Part 15E

NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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Mar10,2026

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Mar10,2026

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Mar10,2026

Revision History Of Report

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15E: Unlicensed National Information Infrastructure Devices

1.2 Summary of Test Result

Item	Standard	Method	Requirement	Result
Antenna requirement	47 CFR Part 15E		Part 15.203	Pass
Duty Cycle	47 CFR Part 15E	ANSI C63.10-2020 section 12.2 (b)		Pass
Emission bandwidth and occupied bandwidth	47 CFR Part 15E	ANSI C63.10-2020, section 6.9 & 12.5 KDB 789033 D02, Clause C.2	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. 47 CFR Part 15.407(e)	Pass
Maximum conducted output power	47 CFR Part 15E	ANSI C63.10-2020, section 12.4	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(2) 47 CFR Part 15.407(a)(3)(i)	Pass
Power spectral density	47 CFR Part 15E	ANSI C63.10-2020, section 12.6	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(2) 47 CFR Part 15.407(a)(3)(i)	Pass
Frequency stability	47 CFR Part 15E	ANSI C63.10-2020, section 6.8	47 CFR Part 15.407(g)	Pass
Channel Move Time, Channel Closing Transmission Time	47 CFR Part 15E	KDB 905462 D02, Clause 7.8.3	47 CFR Part 15.407(h)(2)(iii)	Pass
Non-Occupancy Period Test	47 CFR Part 15E	KDB 905462 D02, Clause 7.8.3	47 CFR Part 15.407(h)(2)(iv)	Pass
DFS Detection Thresholds	47 CFR Part 15E	KDB 905462 D02, Clause 7.4.1.1	KDB 905462 D02, Clause 5.2 Table 3	Pass
Band edge emissions	47 CFR Part 15E	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(2) 47 CFR Part 15.407(b)(3) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass
Undesirable emission limits (below 1GHz)	47 CFR Part 15E	ANSI C63.10-2020, section 12.7.4, 12.7.5	47 CFR Part 15.407(b)(9)	Pass
Undesirable emission limits (above 1GHz)	47 CFR Part 15E	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(2) 47 CFR Part 15.407(b)(3) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass
Conducted Emission at AC power line	47 CFR Part 15E	ANSI C63.10-2020 section 6.2	47 CFR 15.207(a)	N/A

Note: 1.N/A -this device(EUT) is not applicable to this testing item

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name : Shenzhen Caravan Eletronics Co.,Ltd
Address : Caravan Electronics Technology Building,Zerong Industry,Huang Ma Bu, Xi'xiang ,Bao'an ,Shenzhen,518126,China
Manufacturer : Shenzhen Caravan Eletronics Co.,Ltd
Address : Caravan Electronics Technology Building,Zerong Industry,Huang Ma Bu, Xi'xiang ,Bao'an ,Shenzhen,518126,China

2.2 Description of Device (EUT)

Product Name:	Android Rear Seat Entertainment System
Model/Type reference:	PD1317
Series Model:	PD1167, PD1417, PD1277, PD1037, PD1437FL, PD1637FL, PD1597FL, PD1797FL, PD1757FL
Model Difference:	The product has many models, only the model name and color is different, and the other parts such as the circuit principle, pcb and electrical structure are the same.
Trade Mark:	N/A
Power Supply:	DC9V~32V
Operation Frequency:	802.11a/n(HT20)/ac(HT20): U-NII Band 1: 5180MHz to 5240MHz; U-NII Band 2A: 5260MHz to 5320MHz; U-NII Band 2C: 5500MHz to 5700MHz; U-NII Band 3: 5745MHz to 5825MHz; 802.11n(HT40)/ac(HT40): U-NII Band 1: 5190MHz to 5230MHz; U-NII Band 2A: 5270MHz to 5310MHz; U-NII Band 2C: 5510MHz to 5670MHz; U-NII Band 3: 5755MHz to 5795MHz; 802.11ac(HT80): U-NII Band 1: 5210MHz; U-NII Band 2A: 5290MHz; U-NII Band 2C: 5530MHz to 5610MHz; U-NII Band 3: 5775MHz Note: In Canada, 5600MHz to 5650MHz is not available.
Number of Channels:	802.11a/n(HT20)/ac(HT20): U-NII Band 1: 4; U-NII Band 2A: 4; U-NII Band 2C: 11; U-NII Band 3: 5; 802.11n(HT40)/ac(HT40): U-NII Band 1: 2; U-NII Band 2A: 2; U-NII Band 2C: 5; U-NII Band 3: 2; 802.11ac(HT80): U-NII Band 1: 1; U-NII Band 2A: 1; U-NII Band 2C: 2; U-NII Band 3: 1

Modulation Type:	802.11a: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM);
Antenna Type:	FPC Antenna
Antenna Gain:	5.64dBi
Hardware Version:	V1.0
Software Version:	V1.0

Remark:The Antenna Gain is supplied by the customer.DACE is not responsible for this data and the related calculations associated with it

Remark:The Antenna Gain is supplied by the customer.DACE is not responsible for this data and the related calculations associated with it

Operation Frequency each of channel

802.11a/n(HT20)/ac(HT20)/ax(HT20)

	U-NII Band 1	U-NII Band 2	U-NII Band 3	U-NII Band 4
Channel	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
1	5180	5260	5500	5745
2	5200	5280	5520	5765
3	5220	5300	5540	5785
4	5240	5320	5560	5805
5	/	/	5580	5825
6	/	/	5600	/
7	/	/	5620	/
8	/	/	5640	/
9	/	/	5660	/
10	/	/	5680	/
11	/	/	5700	/

802.11n(HT40)/ac(HT40)/ax(HT40)

	U-NII Band 1	U-NII Band 2	U-NII Band 3	U-NII Band 4
Channel	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
1	5190	5270	5510	5755
2	5230	5310	5550	5795
3	/	/	5590	/
4	/	/	5630	/
5	/	/	5670	/

802.11ac(HT80)/ax(HT80)

	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
Channel	Frequency	Frequency	Frequency	Frequency
1	5210	5290	5530	5775
2	/	/	5610	/
3	/	/	5690	/

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle

frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

802.11a/n(HT20)/ac(HT20)/ax(HT20)				
	U-NII Band 1	U-NII Band 2	U-NII Band 3	U-NII Band 4
Test channel	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
Lowest channel	5180 MHz	5260	5500	5745 MHz
Middle channel	5200 MHz	5300	5600	5785 MHz
Highest channel	5240 MHz	5320	5700	5825 MHz

802.11n(HT40)/ac(HT40)/ax(HT40)				
	U-NII Band 1	U-NII Band 2	U-NII Band 3	U-NII Band 4
Test channel	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
Lowest channel	5190 MHz	5270	5510	5755 MHz
Middle channel	5230 MHz	5310	5590	5795 MHz
Highest channel			5670	

802.11ac(HT80)/ax(HT80)				
	U-NII Band 1	U-NII Band 2	U-NII Band 3	U-NII Band 4
Test channel	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
Lowest channel	5210 MHz	5290	5530	5775 MHz
Middle channel			5610	

2.3 Description of Test Modes

No	Title	Description
TM1	802.11a mode	Keep the EUT in continuously transmitting mode with 802.11a modulation type at lowest, middle and highest channel. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.
TM2	802.11n mode	Keep the EUT in continuously transmitting mode with 802.11n modulation type at lowest, middle and highest channel. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
TM3	802.11ac mode	Keep the EUT in continuously transmitting mode with 802.11ac modulation type at lowest, middle and highest channel. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.
TM4	Normal Operating	Keep the EUT works in normal operating mode and connect to companion device

Remark:were performed with duty cycle above 98%, meet the requirements of KDB789033.Only the data of the worst mode would be recorded in this report.

2.4 Description of Support Units

Title	Manufacturer	Model No.	Serial No.
Battery (DC12V)	Camel	DC12V	
Wireless Router	FiberHome	SR120-A	FCC ID:2AV2N-SR120A

2.5 Equipments Used During The Test

Maximum conducted output power
Power spectral density
Frequency stability
Non-Occupancy Period Test
DFS Detection Thresholds
Channel Move Time, Channel Closing Transmission Time
Band edge emissions (Conducted)
Duty Cycle
Emission bandwidth and occupied bandwidth

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Test Software	Tachoy Information Technology(shenzhen) Co.,Ltd.	RTS-01	V1.0.0	/	/
Power divider	MIDEWEST	PWD-2533	SMA-79	2025-04-18	2026-05-10
RF Sensor Unit	Tachoy Information Technology(shenzhen) Co.,Ltd.	TR1029-2	000001	/	/
Wideband radio communication tester	R&S	CMW500	113410	2025-04-25	2026-04-24
Vector Signal Generator	Keysight	N5181A	MY50143455	2025-12-02	2026-12-01
Signal Generator	Keysight	N5182A	MY48180415	2025-12-02	2026-12-01
Spectrum Analyzer	Keysight	N9020A	MY53420323	2025-12-02	2026-12-01
Power meter	Agilent	E4416	MY48200166	2025-12-06	2026-12-05

Band edge emissions (Radiated)**Undesirable emission limits (below 1GHz)****Undesirable emission limits (above 1GHz)**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test software	Farad	EZ -EMC	V1.1.42	/	/
Positioning Controller	MF	MF-7802	/	/	/
Amplifier(18-40G)	COM-POWER	AH-1840	10100008-1	2024-04-26	2027-04-25
Horn antenna	COM-POWER	AH-1840 (18-40G)	10100008	2024-04-26	2027-04-25
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2025-04-28	2026-04-27
Cable(LF)#2	Schwarzbeck	/	/	2025-04-12	2026-04-11
Cable(LF)#1	Schwarzbeck	/	/	2025-04-17	2026-04-16
Cable(HF)#2	Schwarzbeck	AK9515E	96250	2025-04-25	2026-04-24
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	/	2025-04-25	2026-04-24
Power amplifier(LF)	Schwarzbeck	BBV9743	9743-151	2025-04-29	2026-04-28
Power amplifier(HF)	Schwarzbeck	BBV9718	9718-282	2025-04-29	2026-04-28
Wideband radio communication tester	R&S	CMW500	113410	2025-04-25	2026-04-24
Spectrum Analyzer	R&S	FSP30	1321.3008K40-101729-jR	2025-04-18	2026-04-17
Test Receiver	R&S	ESCI 3	1166.5950K03-101431-Jq	2025-04-18	2026-04-17
Horn Antenna	Sunol Sciences	DRH-118	A091114	2025-04-21	2026-04-20
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2024-09-28	2026-09-27

2.6 Statement Of The Measurement Uncertainty

Test Item	Measurement Uncertainty
Duty cycle	±3.1%
Occupied Bandwidth	±3.63%
RF conducted power	±0.733dB
RF power density	±0.234%
Conducted Spurious emissions	±1.98dB
Radiated Emission (Above 1GHz)	±5.46dB
Radiated Emission (Below 1GHz)	±5.79dB
Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

2.7 Identification of Testing Laboratory

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Community, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

Identification of the Responsible Testing Location

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Community, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252
Designation Number:	CN1342
Test Firm Registration Number:	778666
A2LA Certificate Number:	6270.01

2.8 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by DACE and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

3 DFS Rule Requirements

3.1 Applicability of DFS Requirements

The manufacturer shall state whether the UUT is capable of operating as a Master and/or a Client. If the UUT is capable of operating in more than one operating mode then each operating mode shall be tested separately. See tables 1 and 2 for the applicability of DFS requirements for each of the operational modes.

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Applicability of DFS Requirements during Normal Operation

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

Additional requirements for devices with multiple bandwidth modes	Operational Mode	
	Master or Client With Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required

Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

3.2 Additional DFS Operational Information

The EUT operates as a Client Device in a Wi-Fi system operating in the 5 GHz DFS band. A separate Master Device is used to establish and maintain the wireless communication link and to control data transmission during the DFS test.

(f) Channel Loading Methodology:

Channel loading is achieved using continuous IP-based data streaming from the Master Device to the Client Device. A predefined test file is transmitted repeatedly to ensure sustained traffic and maximum channel occupancy throughout the entire DFS test duration. The system is IP-based, and the talk/listen ratio is not user configurable; it is dynamically managed by the Wi-Fi protocol. Continuous data streaming therefore represents the worst-case operational condition for channel loading and is maintained during all DFS monitoring and radar detection tests.

i) Power-On Cycle Time

The EUT and the associated Master Device complete their power-on and initialization processes within a short and consistent time period. After power is applied, the wireless system initializes and becomes operational, including DFS functionality, within approximately 60 seconds. The DFS function is fully enabled and ready for normal operation once the power-on cycle is completed.

j) Manufacturer Statement Regarding Radar Waveform Information

The manufacturer confirms that information related to the parameters of detected radar waveforms, including but not limited to radar type, pulse width, pulse repetition interval, or detection thresholds, is not available, accessible, or configurable by the end user. Such information is managed internally by the device firmware and is not exposed through any user interface or user-accessible software.

k) Initial Channel Selection and DFS Channel Blocking

The manufacturer permits the selection of the initial operating channel to be handled automatically by the device firmware. Channel selection is performed either randomly or based on internal firmware algorithms, without user intervention. In addition, the manufacturer may block specific DFS channels from use through firmware control in order to comply with regulatory requirements or operational constraints. End users are not provided with the ability to override or modify DFS channel selection or channel blocking behavior.

3.3 Test Limits and Radar Signal Parameter

DETECTION THRESHOLD VALUES

DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection.

Maximum Transmit Power	Value (See Notes 1 , 2 and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm / MHz	-62 dBm
EIRP < 200 milliwatt and that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes.
Channel Availability Check Time	60 seconds.
Channel Move Time	10 seconds. (See Note 1.)
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. (See Notes 1 and 2.)
U-NII Detection Bandwidth	Minimum 100% of the U- NII 99% transmission power bandwidth. (See Note 3.)

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

3.4 Parameters of DFS Test Signals

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

3.4.1 Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note1	See Note1
1		Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A	$\text{Roundup} \left\{ \left\lceil \frac{1}{360} \right\rceil, \left\lceil \frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right\rceil \right\}$	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	1-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

3.4.2 Long Pulse Radar Test Waveform

Radar Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage Of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveform are randomly chosen (The center frequency for each of the 30 trials of the Bin 5 radar shall be randomly selected within 80% of the Occupied Bandwidth.) Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

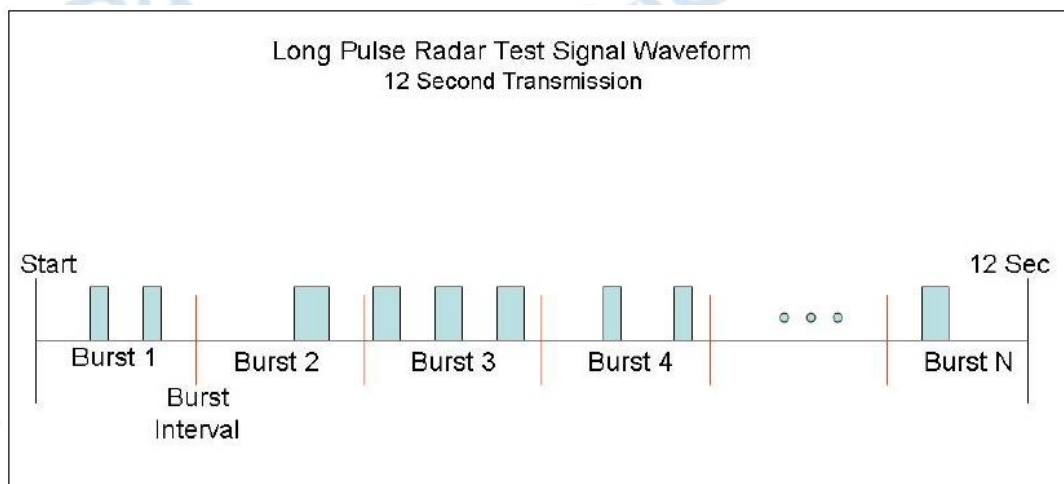
3.4.3 Each waveform is defined as follows:

- 1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
- 2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst Count.
- 3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
- 4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
- 5) Each pulse has a linear frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a transmission period will have the same chirp width. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.
- 6) If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the random time interval between the first and second pulses is chosen independently of the random time interval between the second and third pulses.
- 7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst Count. Each interval is of length $(12,000,000 / \text{Burst Count})$ microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and $[(12,000,000 / \text{Burst Count}) - (\text{Total Burst Length}) + (\text{One Random PRI Interval})]$ microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen randomly.

3.4.4 A representative example of a Long Pulse Radar Type waveform:

- 1) The total test waveform length is 12 seconds.
- 2) Eight (8) Bursts are randomly generated for the Burst Count.
- 3) Burst 1 has 2 randomly generated pulses.
- 4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.
- 5) The PRI is randomly selected to be at 1213 microseconds.
- 6) Bursts 2 through 8 are generated using steps 3 – 5.
- 7) Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical representation of the Long Pulse Radar Test Waveform.



3.4.5 Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (μ sec)	PRI (μ sec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

For the Frequency Hopping Radar Type, the same *Burst* parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely

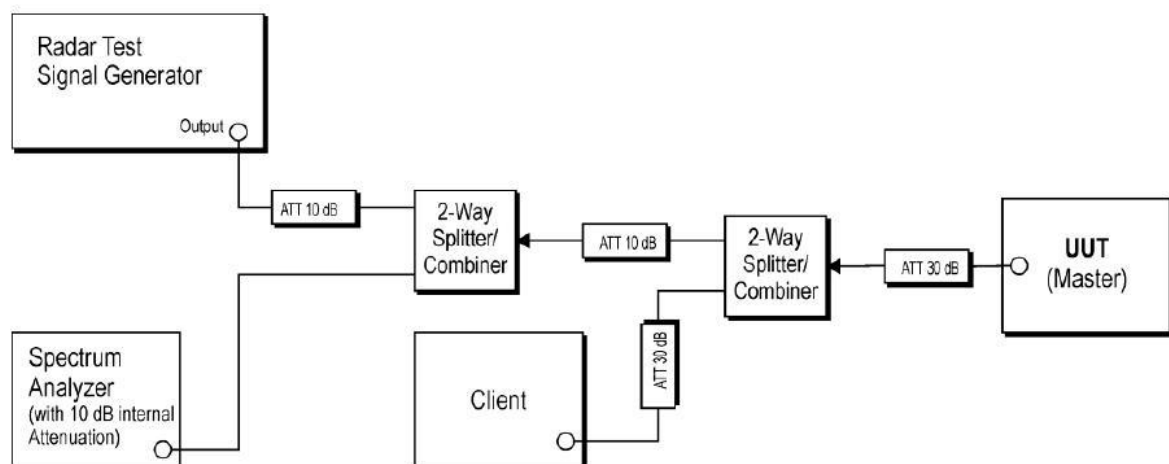
3.4.6 Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted radar waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were replace 50ohm terminal from master and client device and no transmissions by either the master or client device. The spectrum analyzer was switched to the zero span (time domain) at the frequency of the radar waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3MHz and 3 MHz.

The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -61dBm due to the interference threshold level is not required

3.4.7 DFS test setup

Setup for Master with injection at the Master



Conducted Test Setup

3.4.8 Calibration Procedure

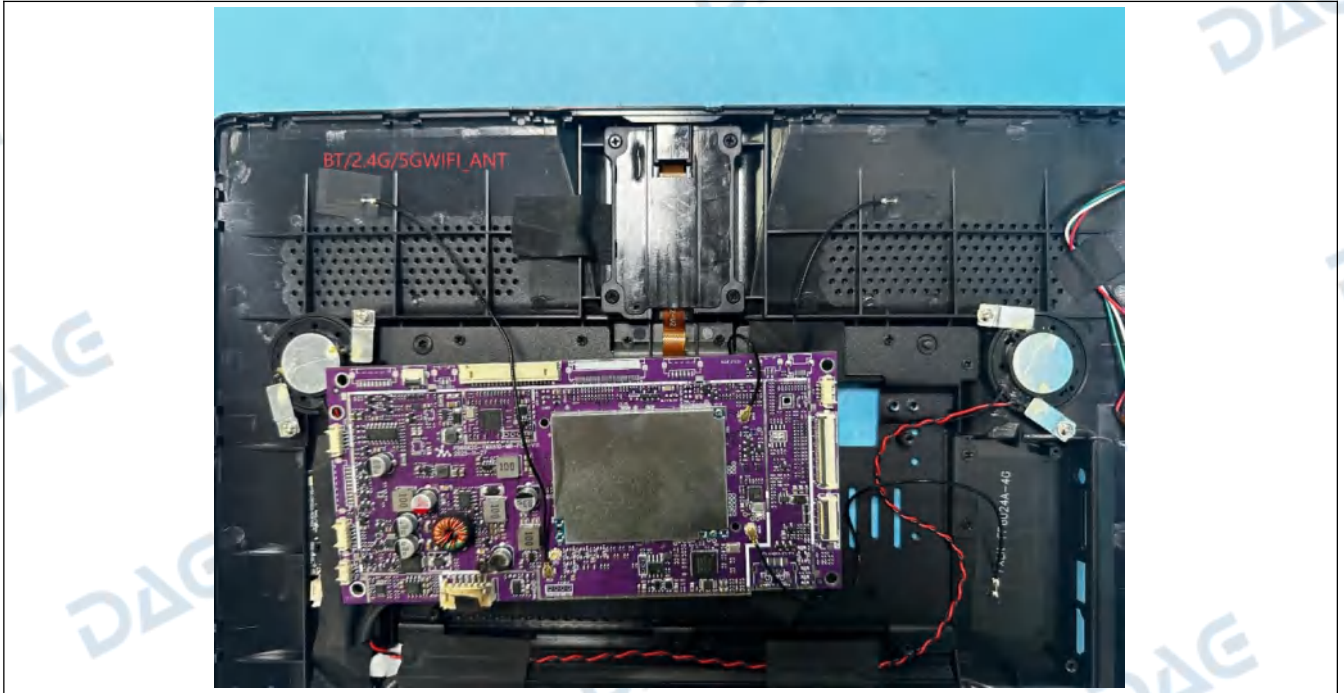
The Interference Radar Detection Threshold Level is $(-64\text{dBm}) + (0) [\text{dBi}] + 1 \text{ dB} = -63 \text{ dBm}$ that had been taken into account the output power range and antenna gain. The above equipment setup was used to calibrate the conducted Radar Waveform. A vector signal generator was utilized to establish the test signal level for each radar type. During this process there were replace 50ohm terminal form Master and Client device and no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) at the frequency of the Radar Waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to at least 3MHz. The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was $(-64\text{dBm}) + (0) [\text{dBi}] + 1 \text{ dB} = -63\text{dBm}$. Capture the spectrum analyzer plots on short pulse radar types, long pulse radar type and hopping radar waveform.

4 Evaluation Results (Evaluation)

4.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
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4.1.1 Conclusion:



5 Radio Spectrum Matter Test Results (RF)

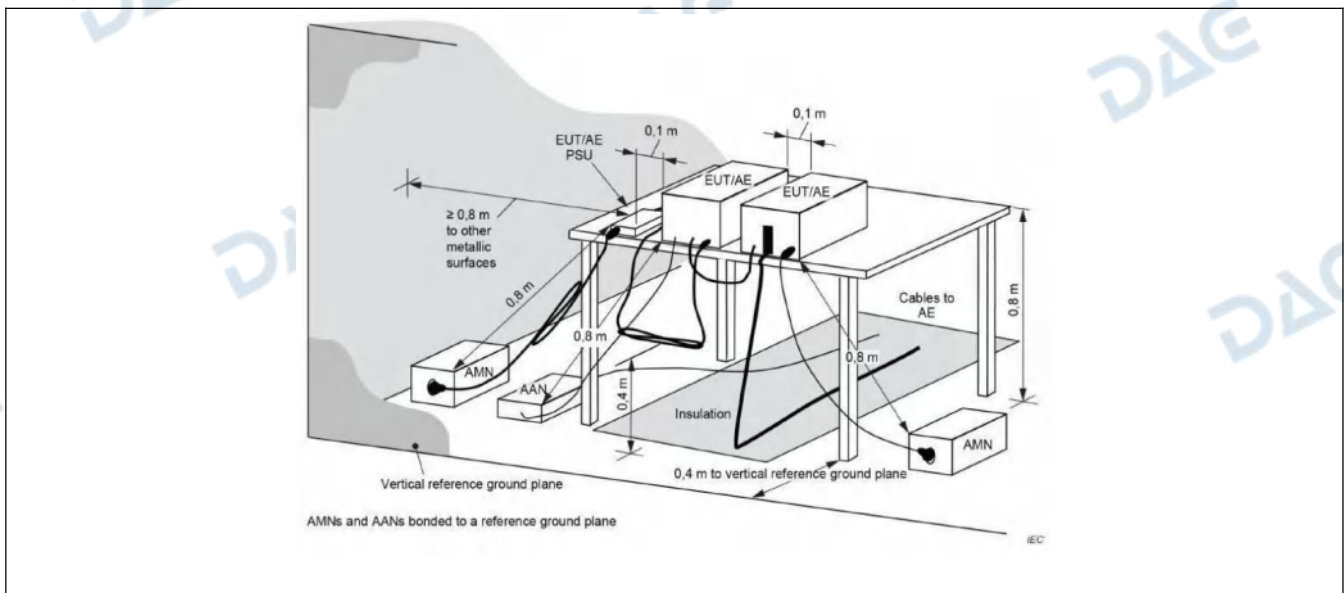
5.1 Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b)and (c)of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dB μ V)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	*Decreases with the logarithm of the frequency.		
Test Method:	ANSI C63.10-2020 section 6.2		
Procedure:	Refer to ANSI C63.10-2020 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices		

5.1.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.3 °C	Humidity:	50 %	Atmospheric Pressure:	102 kPa
Pretest mode:		TM1			
Final test mode:		TM1			

5.1.2 Test Setup Diagram:



5.1.3 Test Data:

N/A (not applicable to this device which power by DC12V battttery)

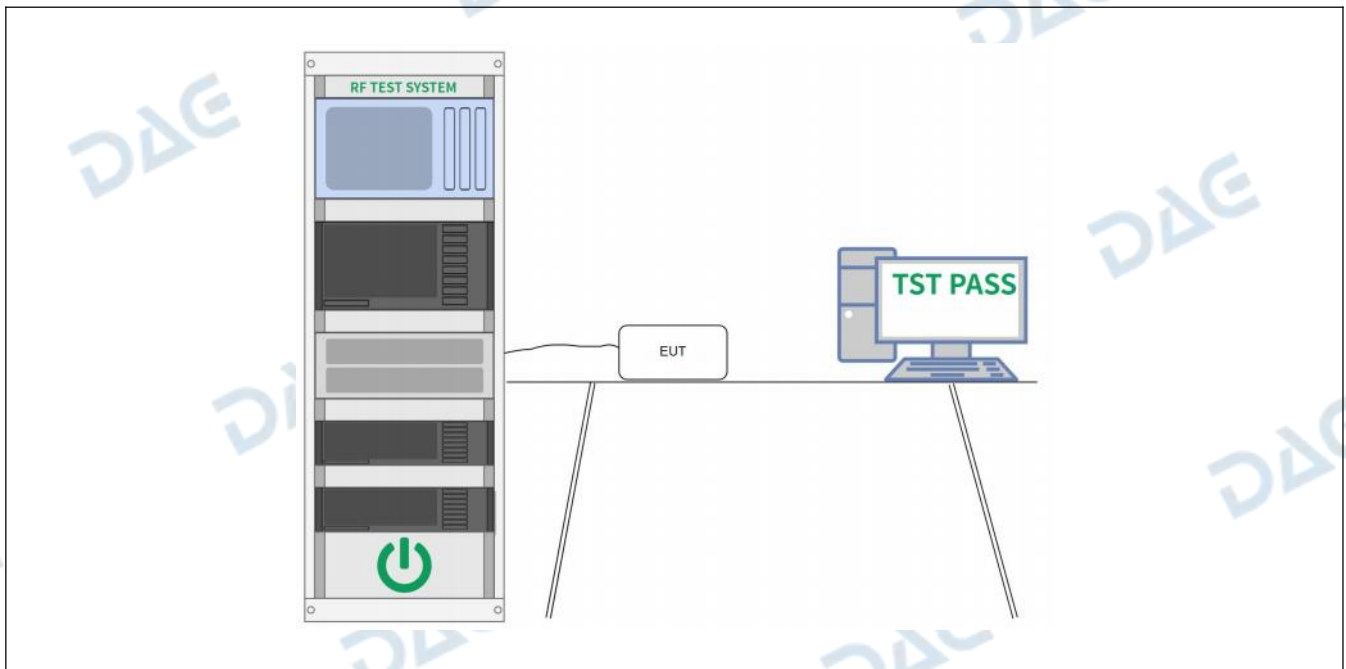
5.2 Duty Cycle

Test Requirement:	All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation.
Test Limit:	No limits, only for report use.
Test Method:	ANSI C63.10-2020 section 12.2 (b)
Procedure:	i) Set the center frequency of the instrument to the center frequency of the transmission. ii) Set RBW $\geq$ EBW if possible; otherwise, set RBW to the largest available value. iii) Set VBW $\geq$ RBW. iv) Set detector = peak. v) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in item a1) of 12.2, and the number of sweep points across duration T exceeds 100.

5.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.5 °C	Humidity:	53 %	Atmospheric Pressure:	101.2 kPa
Pretest mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.2.2 Test Setup Diagram:



5.2.3 Test Data:

Please Refer to Appendix for Details.

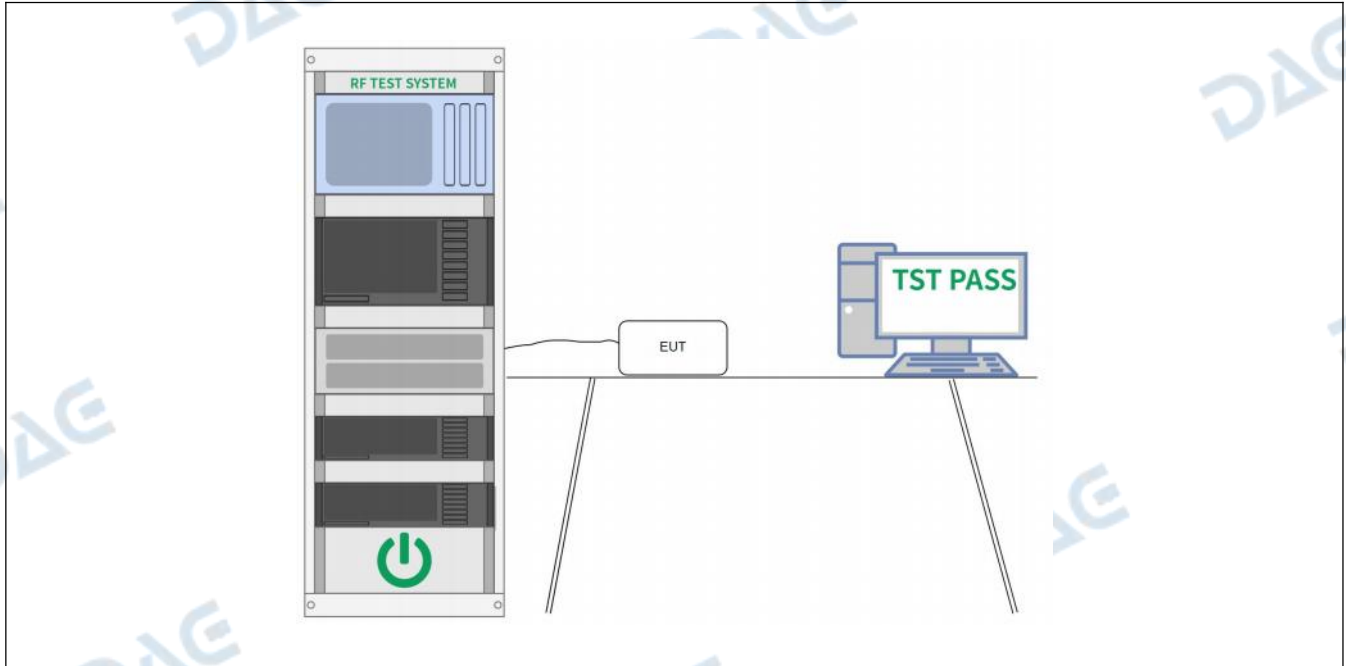
5.3 Emission bandwidth and occupied bandwidth

Test Requirement:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: 47 CFR Part 15.407(e)
Test Limit:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Test Method:	ANSI C63.10-2020, section 6.9 & 12.5 KDB 789033 D02, Clause C.2
Procedure:	Emission bandwidth: - Set RBW = approximately 1% of the emission bandwidth. - Set the VBW > RBW. - Detector = peak. - Trace mode = max hold. - Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%. Occupied bandwidth: - The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW. - The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement. - Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2. - Step a) through step c) might require iteration to adjust within the specified range. - Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used. - Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth. - If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies. - The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s). 6 dB emission bandwidth: - Set RBW = 100 kHz. - Set the video bandwidth (VBW) $\geq 3 \times$ RBW. - Detector = Peak. - Trace mode = max hold. - Sweep = auto couple. - Allow the trace to stabilize. - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.1 °C	Humidity:	49 %	Atmospheric Pressure:	101.2 kPa
Pretest mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.3.2 Test Setup Diagram:



5.3.3 Test Data:

Please Refer to Appendix for Details.

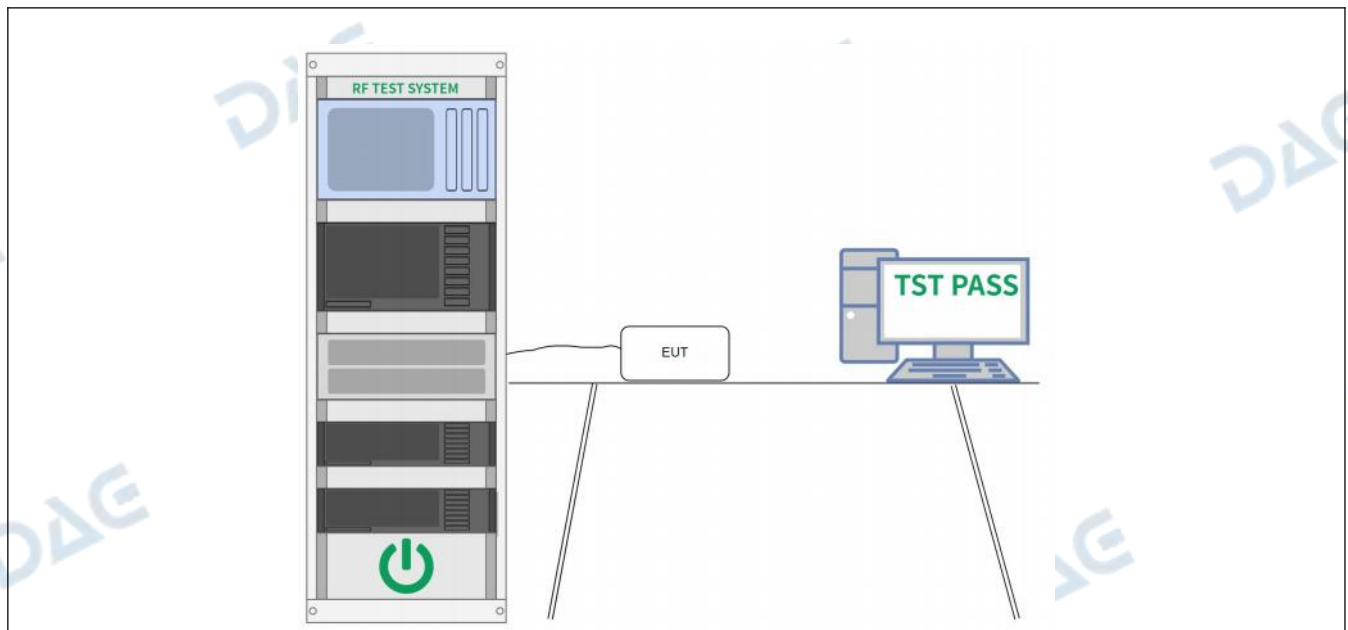
5.4 Maximum conducted output power

Test Requirement:	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
Test Limit:	For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2020, section 12.4
Procedure:	Refer to ANSI C63.10-2020 section 12.4

5.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.8 °C	Humidity:	51 %	Atmospheric Pressure:	101.2 kPa
Pretest mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.4.2 Test Setup Diagram:



5.4.3 Test Data:

Please Refer to Appendix for Details.

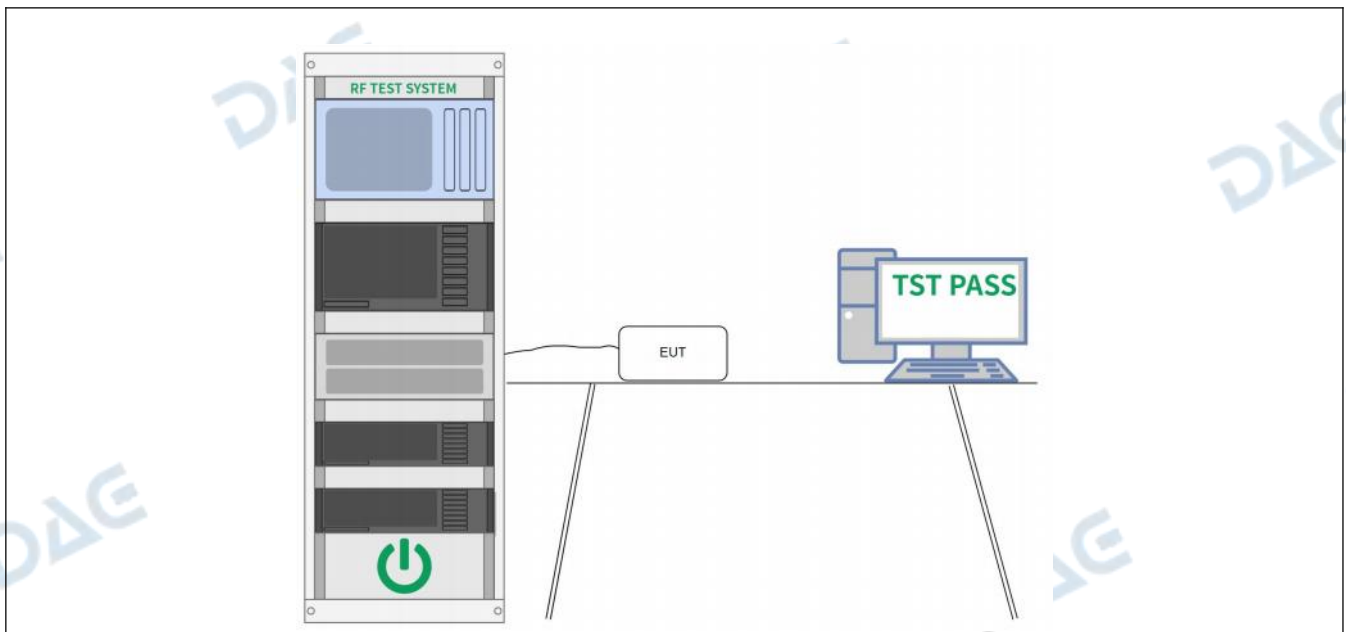
5.5 Power spectral density

Test Requirement:	47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
Test Limit:	For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2020, section 12.6
Procedure:	Refer to ANSI C63.10-2020, section 12.6

5.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.9 °C	Humidity:	46 %	Atmospheric Pressure:	101.2 kPa
Pretest mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.5.2 Test Setup Diagram:



5.5.3 Test Data:

Please Refer to Appendix for Details.

5.6 Band edge emissions (Radiated)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)																																																																														
Test Limit:	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 e.i.r.p. of -27 dBm/MHz. For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. <table><tr><th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr><tr><td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr><tr><td>¹ 0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr><tr><td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr><tr><td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr><tr><td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr><tr><td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr><tr><td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr><tr><td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr><tr><td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr><tr><td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr><tr><td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr><tr><td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr><tr><td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr><tr><td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr><tr><td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr><tr><td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>(²)</td></tr><tr><td>13.36-13.41</td><td></td><td></td><td></td></tr></table> ¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ² Above 38.6 The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table: <table><tr><th>Frequency (MHz)</th><th>Field strength</th><th>Measurement</th></tr></table>				MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4	6.31175-6.31225	123-138	2200-2300	14.47-14.5	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5	12.57675-12.57725	322-335.4	3600-4400	(²)	13.36-13.41				Frequency (MHz)	Field strength	Measurement
MHz	MHz	MHz	GHz																																																																												
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																												
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																												
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75																																																																												
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5																																																																												
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2																																																																												
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5																																																																												
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7																																																																												
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4																																																																												
6.31175-6.31225	123-138	2200-2300	14.47-14.5																																																																												
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2																																																																												
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4																																																																												
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12																																																																												
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0																																																																												
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8																																																																												
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5																																																																												
12.57675-12.57725	322-335.4	3600-4400	(²)																																																																												
13.36-13.41																																																																															
Frequency (MHz)	Field strength	Measurement																																																																													

	(microvolts/meter)	distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.

In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7
Procedure:	Above 1GHz: - For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. - The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. - The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. - For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. - The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. - If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet. - Test the EUT in the lowest channel, the middle channel, the Highest channel. - The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. - Repeat above procedures until all frequencies measured was complete. Remark: - Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor - Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. - As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower

than the average limit, only the peak measurement is shown in the report.
4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

5.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.8 °C	Humidity:	50 %	Atmospheric Pressure:	101.2 kPa
Pretest mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.6.2 Test Data:

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11a-ant1_Low Channel: 5180MHz								
H	5100	48.64	0.16	48.80	74	-25.20	PK	Pass
H	5100	37.47	0.16	37.63	54	-16.37	AV	Pass
H	5150	47.59	0.25	47.84	74	-26.16	PK	Pass
H	5150	38.67	0.25	38.92	54	-15.08	AV	Pass
V	5100	49.12	0.16	49.28	74	-24.72	PK	Pass
V	5100	39.09	0.16	39.25	54	-14.75	AV	Pass
V	5150	48.61	0.25	48.86	74	-25.14	PK	Pass
V	5150	37.74	0.25	37.99	54	-16.01	AV	Pass
802.11a-ant1_High Channel: 5240MHz								
H	5150	57.45	0.16	57.61	74	-16.39	PK	Pass
H	5150	43.14	0.16	43.30	54	-10.70	AV	Pass
H	5350	56.38	0.25	56.63	74	-17.37	PK	Pass
H	5350	44.73	0.25	44.98	54	-9.02	AV	Pass
V	5150	56.73	0.16	56.89	74	-17.11	PK	Pass
V	5150	44.02	0.16	44.18	54	-9.82	AV	Pass
V	5350	56.96	0.25	57.21	74	-16.79	PK	Pass
V	5350	43.05	0.25	43.30	54	-10.70	AV	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11a-ant1_Low Channel: 5260MHz								
H	5150	48.47	0.25	48.72	74	-25.28	PK	Pass
H	5150	38.45	0.25	38.70	54	-15.30	AV	Pass
H	5350	48.79	0.65	49.44	74	-24.56	PK	Pass
H	5350	37.34	0.65	37.99	54	-16.01	AV	Pass
V	5150	49.36	0.25	49.61	74	-24.39	PK	Pass
V	5150	37.17	0.25	37.42	54	-16.58	AV	Pass
V	5350	49.42	0.65	50.07	74	-23.93	PK	Pass

V	5350	38.21	0.65	38.86	54	-15.14	AV	Pass
802.11a-ant1_High Channel: 5320MHz								
H	5350	57.89	0.65	58.54	74	-15.46	PK	Pass
H	5350	43.77	0.65	44.42	54	-9.58	AV	Pass
H	5460	58.46	0.71	59.17	74	-14.83	PK	Pass
H	5460	43.97	0.71	44.68	54	-9.32	AV	Pass
V	5350	58.49	0.65	59.14	74	-14.86	PK	Pass
V	5350	44.58	0.65	45.23	54	-8.77	AV	Pass
V	5460	58.49	0.71	59.20	74	-14.80	PK	Pass
V	5460	45.31	0.71	46.02	54	-7.98	AV	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11a-ant1_Low Channel: 5500MHz								
H	5460	47.74	0.71	48.45	74	-25.55	PK	Pass
H	5460	37.46	0.71	38.17	54	-15.83	AV	Pass
H	5470	48.56	0.79	49.35	74	-24.65	PK	Pass
H	5470	39.49	0.79	40.28	/	/	AV	Pass
V	5460	48.07	0.71	48.78	74	-25.22	PK	Pass
V	5460	37.60	0.71	38.31	54	-15.69	AV	Pass
V	5470	48.49	0.79	49.28	74	-24.72	PK	Pass
V	5470	37.05	0.79	37.84	/	/	AV	Pass
802.11a-ant1_High Channel: 5700MHz								
H	5725	57.41	1.17	58.58	68.2	-9.62	PK	Pass
H	5725	45.31	1.17	46.48	68.2	-21.72	PK	Pass
V	5725	56.67	1.17	57.84	68.2	-10.36	PK	Pass
V	5725	44.97	1.17	46.14	68.2	-22.06	PK	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11a-ant1_Low Channel: 5745MHz								
H	5647	47.72	0.71	48.43	68.2	-19.77	PK	Pass
H	5725	57.22	1.17	58.39	122.2	-63.81	PK	Pass
V	5647	47.56	0.71	48.27	68.2	-19.93	PK	Pass
V	5725	59.20	1.17	60.37	122.2	-61.83	PK	Pass
802.11a-ant1_High Channel: 5825MHz								
H	5850	58.24	1.33	59.57	122.2	-62.63	PK	Pass
H	5950	49.38	1.39	50.77	68.2	-17.43	PK	Pass
V	5850	59.11	1.33	60.44	122.2	-61.76	PK	Pass
V	5950	48.21	1.39	49.60	68.2	-18.60	PK	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac20-ant1_Low Channel: 5180MHz								
H	5100	47.04	0.16	47.20	74	-26.80	PK	Pass
H	5100	39.42	0.16	39.58	54	-14.42	AV	Pass
H	5150	47.76	0.25	48.01	74	-25.99	PK	Pass
H	5150	38.64	0.25	38.89	54	-15.11	AV	Pass
V	5100	47.25	0.16	47.41	74	-26.59	PK	Pass
V	5100	38.74	0.16	38.90	54	-15.10	AV	Pass
V	5150	47.57	0.25	47.82	74	-26.18	PK	Pass
V	5150	38.07	0.25	38.32	54	-15.68	AV	Pass
802.11ac20-ant1_High Channel: 5240MHz								
H	5150	57.51	0.16	57.67	74	-16.33	PK	Pass
H	5150	43.47	0.16	43.63	54	-10.37	AV	Pass
H	5350	56.45	0.25	56.70	74	-17.30	PK	Pass
H	5350	44.62	0.25	44.87	54	-9.13	AV	Pass
V	5150	58.36	0.16	58.52	74	-15.48	PK	Pass
V	5150	45.34	0.16	45.50	54	-8.50	AV	Pass
V	5350	57.53	0.25	57.78	74	-16.22	PK	Pass
V	5350	43.69	0.25	43.94	54	-10.06	AV	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac20-ant1_Low Channel: 5260MHz								
H	5150	47.73	0.25	47.98	74	-26.02	PK	Pass
H	5150	37.64	0.25	37.89	54	-16.11	AV	Pass
H	5350	48.60	0.65	49.25	74	-24.75	PK	Pass
H	5350	39.19	0.65	39.84	54	-14.16	AV	Pass
V	5150	49.13	0.25	49.38	74	-24.62	PK	Pass
V	5150	38.34	0.25	38.59	54	-15.41	AV	Pass
V	5350	48.24	0.65	48.89	74	-25.11	PK	Pass
V	5350	37.48	0.65	38.13	54	-15.87	AV	Pass
802.11ac20-ant1_High Channel: 5320MHz								
H	5350	57.60	0.65	58.25	74	-15.75	PK	Pass
H	5350	43.35	0.65	44.00	54	-10.00	AV	Pass
H	5460	56.84	0.71	57.55	74	-16.45	PK	Pass
H	5460	44.39	0.71	45.10	54	-8.90	AV	Pass
V	5350	58.48	0.65	59.13	74	-14.87	PK	Pass
V	5350	44.87	0.65	45.52	54	-8.48	AV	Pass
V	5460	57.27	0.71	57.98	74	-16.02	PK	Pass
V	5460	44.81	0.71	45.52	54	-8.48	AV	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac20-ant1_Low Channel: 5500MHz								
H	5460	47.77	0.71	48.48	74	-25.52	PK	Pass
H	5460	38.66	0.71	39.37	54	-14.63	AV	Pass
H	5470	48.50	0.79	49.29	74	-24.71	PK	Pass
H	5470	37.66	0.79	38.45	/	/	AV	Pass
V	5460	49.03	0.71	49.74	74	-24.26	PK	Pass
V	5460	38.40	0.71	39.11	54	-14.89	AV	Pass
V	5470	48.38	0.79	49.17	74	-24.83	PK	Pass
V	5470	38.42	0.79	39.21	/	/	AV	Pass
802.11ac20-ant1_High Channel: 5700MHz								
H	5725	56.14	1.17	57.31	68.2	-10.89	PK	Pass
H	5725	43.61	1.17	44.78	68.2	-23.42	PK	Pass
V	5725	57.61	1.17	58.78	68.2	-9.42	PK	Pass
V	5725	44.24	1.17	45.41	68.2	-22.79	PK	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac20-ant1_Low Channel: 5745MHz								
H	5647	47.21	0.71	47.92	68.2	-20.28	PK	Pass
H	5725	57.65	1.17	58.82	122.2	-63.38	PK	Pass
V	5647	48.83	0.71	49.54	68.2	-18.66	PK	Pass
V	5725	57.69	1.17	58.86	122.2	-63.34	PK	Pass
802.11ac20-ant1_High Channel: 5825MHz								
H	5850	59.05	1.33	60.38	122.2	-61.82	PK	Pass
H	5950	48.83	1.39	50.22	68.2	-17.98	PK	Pass
V	5850	59.27	1.33	60.60	122.2	-61.60	PK	Pass
V	5950	49.10	1.39	50.49	68.2	-17.71	PK	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac40-ant1_Low Channel: 5190MHz								
H	5100	47.04	0.16	47.20	74	-26.80	PK	Pass
H	5100	38.79	0.16	38.95	54	-15.05	AV	Pass
H	5150	49.52	0.25	49.77	74	-24.23	PK	Pass
H	5150	38.26	0.25	38.51	54	-15.49	AV	Pass
V	5100	48.21	0.16	48.37	74	-25.63	PK	Pass
V	5100	37.20	0.16	37.36	54	-16.64	AV	Pass
V	5150	48.68	0.25	48.93	74	-25.07	PK	Pass

V	5150	37.82	0.25	38.07	54	-15.93	AV	Pass
802.11ac40-ant1_High Channel: 5230MHz								
H	5150	57.38	0.16	57.54	74	-16.46	PK	Pass
H	5150	44.18	0.16	44.34	54	-9.66	AV	Pass
H	5350	57.35	0.25	57.60	74	-16.40	PK	Pass
H	5350	44.61	0.25	44.86	54	-9.14	AV	Pass
V	5150	56.79	0.16	56.95	74	-17.05	PK	Pass
V	5150	44.15	0.16	44.31	54	-9.69	AV	Pass
V	5350	58.59	0.25	58.84	74	-15.16	PK	Pass
V	5350	43.77	0.25	44.02	54	-9.98	AV	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac40-ant1_Low Channel: 5270MHz								
H	5150	49.21	0.25	49.46	74	-24.54	PK	Pass
H	5150	39.22	0.25	39.47	54	-14.53	AV	Pass
H	5350	47.97	0.65	48.62	74	-25.38	PK	Pass
H	5350	37.78	0.65	38.43	54	-15.57	AV	Pass
V	5150	48.83	0.25	49.08	74	-24.92	PK	Pass
V	5150	39.35	0.25	39.60	54	-14.40	AV	Pass
V	5350	48.23	0.65	48.88	74	-25.12	PK	Pass
V	5350	37.34	0.65	37.99	54	-16.01	AV	Pass
802.11ac40-ant1_High Channel: 5310MHz								
H	5350	56.63	0.65	57.28	74	-16.72	PK	Pass
H	5350	44.09	0.65	44.74	54	-9.26	AV	Pass
H	5460	57.69	0.71	58.40	74	-15.60	PK	Pass
H	5460	43.85	0.71	44.56	54	-9.44	AV	Pass
V	5350	56.03	0.65	56.68	74	-17.32	PK	Pass
V	5350	43.48	0.65	44.13	54	-9.87	AV	Pass
V	5460	56.14	0.71	56.85	74	-17.15	PK	Pass
V	5460	44.64	0.71	45.35	54	-8.65	AV	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac40-ant1_Low Channel: 5510MHz								
H	5460	47.59	0.71	48.30	74	-25.70	PK	Pass
H	5460	37.36	0.71	38.07	54	-15.93	AV	Pass
H	5470	48.70	0.79	49.49	74	-24.51	PK	Pass
H	5470	37.08	0.79	37.87	/	/	AV	Pass
V	5460	48.03	0.71	48.74	74	-25.26	PK	Pass
V	5460	39.14	0.71	39.85	54	-14.15	AV	Pass

V	5470	47.94	0.79	48.73	74	-25.27	PK	Pass
V	5470	37.78	0.79	38.57	/	/	AV	Pass
802.11ac40-ant1_High Channel: 5670MHz								
H	5725	57.42	1.17	58.59	68.2	-9.61	PK	Pass
H	5725	44.48	1.17	45.65	68.2	-22.55	PK	Pass
V	5725	56.90	1.17	58.07	68.2	-10.13	PK	Pass
V	5725	43.08	1.17	44.25	68.2	-23.95	PK	Pass

Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac40-ant1_Low Channel: 5755MHz								
H	5647	47.90	0.71	48.61	68.2	-19.59	PK	Pass
H	5725	57.05	1.17	58.22	122.2	-63.98	PK	Pass
V	5647	47.16	0.71	47.87	68.2	-20.33	PK	Pass
V	5725	58.69	1.17	59.86	122.2	-62.34	PK	Pass
802.11ac40-ant1_High Channel: 5795MHz								
H	5850	59.03	1.33	60.36	122.2	-61.84	PK	Pass
H	5950	47.98	1.39	49.37	68.2	-18.83	PK	Pass
V	5850	58.22	1.33	59.55	122.2	-62.65	PK	Pass
V	5950	47.85	1.39	49.24	68.2	-18.96	PK	Pass

802.11ac80-ant1_Low Channel: 5210MHz								
H	5100	47.07	0.16	47.23	74	-26.77	PK	Pass
H	5100	38.68	0.16	38.84	54	-15.16	AV	Pass
H	5150	48.85	0.25	49.10	74	-24.90	PK	Pass
H	5150	38.20	0.25	38.45	54	-15.55	AV	Pass
V	5100	49.18	0.16	49.34	74	-24.66	PK	Pass
V	5100	37.17	0.16	37.33	54	-16.67	AV	Pass
V	5150	47.90	0.25	48.15	74	-25.85	PK	Pass
V	5150	37.31	0.25	37.56	54	-16.44	AV	Pass
802.11ac80-ant1_Low Channel: 5290MHz								
H	5150	49.35	0.25	49.60	74	-24.40	PK	Pass
H	5150	38.35	0.25	38.60	54	-15.40	AV	Pass
H	5350	47.27	0.65	47.92	74	-26.08	PK	Pass
H	5350	38.97	0.65	39.62	54	-14.38	AV	Pass
V	5150	49.35	0.25	49.60	74	-24.40	PK	Pass
V	5150	37.42	0.25	37.67	54	-16.33	AV	Pass
V	5350	49.19	0.65	49.84	74	-24.16	PK	Pass
V	5350	39.58	0.65	40.23	54	-13.77	AV	Pass
802.11ac80-ant1_Low Channel: 5530MHz								
H	5460	47.04	0.71	47.75	74	-26.25	PK	Pass
H	5460	39.13	0.71	39.84	54	-14.16	AV	Pass

H	5470	49.34	0.79	50.13	74	-23.87	PK	Pass
H	5470	39.03	0.79	39.82	/	/	AV	Pass
V	5460	49.41	0.71	50.12	74	-23.88	PK	Pass
V	5460	38.39	0.71	39.10	54	-14.90	AV	Pass
V	5470	48.62	0.79	49.41	74	-24.59	PK	Pass
V	5470	37.87	0.79	38.66	/	/	AV	Pass

802.11ac80-ant1_High Channel: 5610MHz								
H	5725	57.23	1.17	58.40	68.2	-9.80	PK	Pass
H	5725	45.16	1.17	46.33	68.2	-21.87	PK	Pass
V	5725	58.05	1.17	59.22	68.2	-8.98	PK	Pass
V	5725	43.10	1.17	44.27	68.2	-23.93	PK	Pass
802.11ac80-ant1_Low Channel: 5775MHz								
H	5647	48.30	0.71	49.01	68.2	-19.19	PK	Pass
H	5725	57.15	1.17	58.32	122.2	-63.88	PK	Pass
V	5647	47.92	0.71	48.63	68.2	-19.57	PK	Pass
V	5725	57.12	1.17	58.29	122.2	-63.91	PK	Pass
H	5850	57.54	1.33	58.87	122.2	-63.33	PK	Pass
H	5950	48.11	1.39	49.50	68.2	-18.70	PK	Pass
V	5850	57.16	1.33	58.49	122.2	-63.71	PK	Pass
V	5950	47.06	1.39	48.45	68.2	-19.75	PK	Pass

Note: All the mode have been tested, and only the worst case 802.11a and 802.11ac mode are in the report

5.7 Undesirable emission limits (below 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(9)																								
Test Limit:	Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table: <table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	0.009-0.490	2400/F(kHz)	300	0.490-1.705	24000/F(kHz)	30	1.705-30.0	30	30	30-88	100 **	3	88-216	150 **	3	216-960	200 **	3	Above 960	500	3
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																							
0.009-0.490	2400/F(kHz)	300																							
0.490-1.705	24000/F(kHz)	30																							
1.705-30.0	30	30																							
30-88	100 **	3																							
88-216	150 **	3																							
216-960	200 **	3																							
Above 960	500	3																							
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.5																								
Procedure:	Below 1GHz: a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor																								

2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Above 1GHz:

- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark:

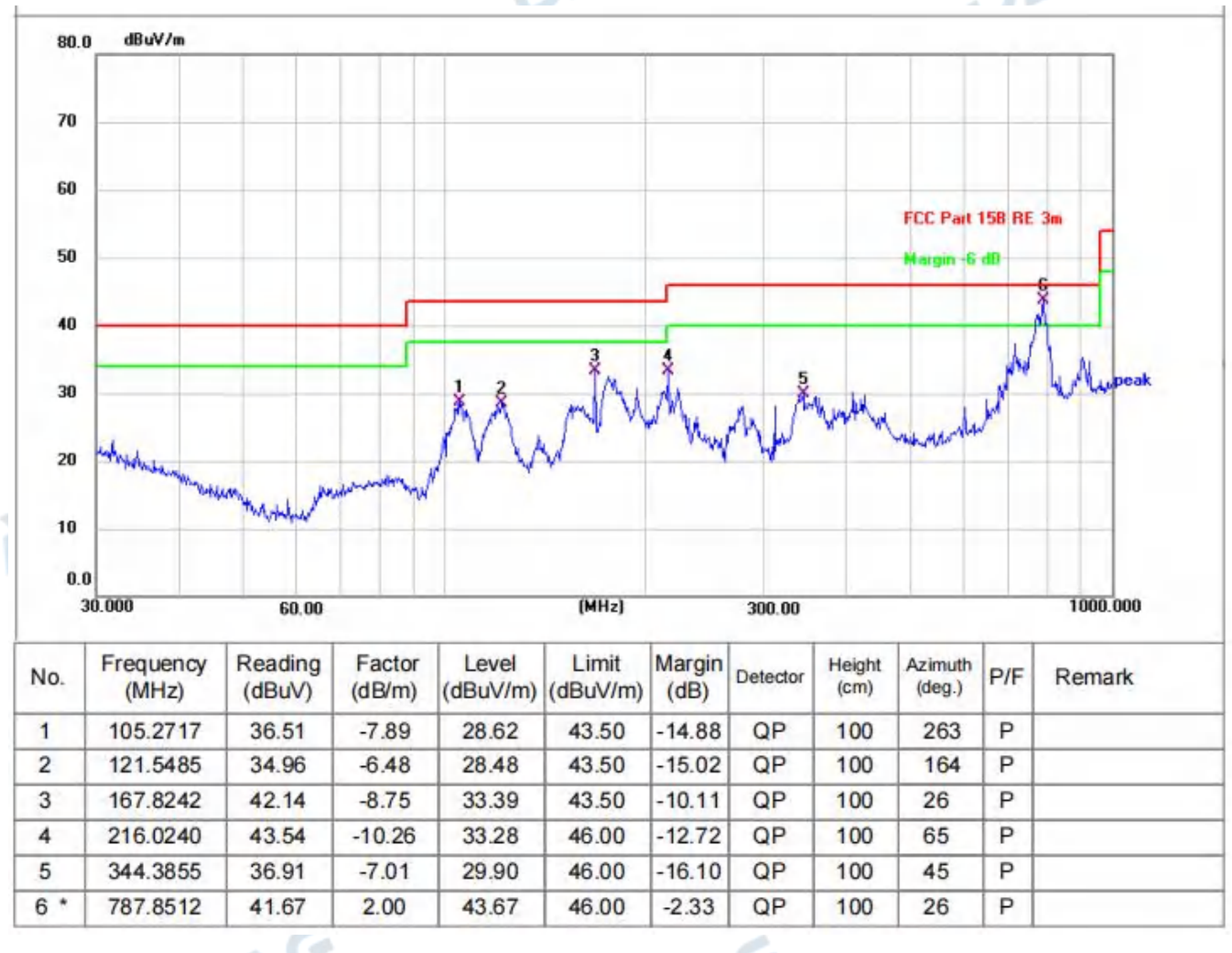
- Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

5.7.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.2 °C	Humidity:	47 %	Atmospheric Pressure:	101.2 kPa
Pretest mode:	TM1, TM2, TM3				
Final test mode:	TM1				

5.7.2 Test Data:

TM1 / Polarization: Horizontal / Band: 5150-5250 MHz / BW: 20 / CH: L



TM1 / Polarization: Vertical / Band: 5150-5250 MHz / BW: 20 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	48.5016	39.87	-12.54	27.33	40.00	-12.67	QP	100	289	P	
2	115.3205	39.47	-6.80	32.67	43.50	-10.83	QP	100	47	P	
3 *	167.8243	45.33	-8.75	36.58	43.50	-6.92	QP	100	269	P	
4	533.8321	39.01	-3.24	35.77	46.00	-10.23	QP	100	147	P	
5	798.9797	31.41	2.42	33.83	46.00	-12.17	QP	100	268	P	
6	900.1474	32.38	3.98	36.36	46.00	-9.64	QP	100	24	P	

5.8 Undesirable emission limits (above 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)																																																																																	
Test Limit:	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 e.i.r.p. of -27 dBm/MHz. For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. <table><tr><th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr><tr><td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr><tr><td>¹ 0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr><tr><td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr><tr><td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr><tr><td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr><tr><td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr><tr><td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr><tr><td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr><tr><td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr><tr><td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr><tr><td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr><tr><td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr><tr><td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr><tr><td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr><tr><td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr><tr><td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>(²)</td></tr><tr><td>13.36-13.41</td><td></td><td></td><td></td></tr></table> ¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ² Above 38.6 The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table: <table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr></table>				MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4	6.31175-6.31225	123-138	2200-2300	14.47-14.5	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5	12.57675-12.57725	322-335.4	3600-4400	(²)	13.36-13.41				Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	0.009-0.490	2400/F(kHz)	300
MHz	MHz	MHz	GHz																																																																															
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																															
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																															
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75																																																																															
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8.291-8.294	149.9-150.05	2310-2390	15.35-16.2																																																																															
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8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12																																																																															
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12.29-12.293	167.72-173.2	3332-3339	31.2-31.8																																																																															
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5																																																																															
12.57675-12.57725	322-335.4	3600-4400	(²)																																																																															
13.36-13.41																																																																																		
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																																																																																
0.009-0.490	2400/F(kHz)	300																																																																																

	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.			
Test Method:	ANSI C63.10-2020, section 12.7.4, 12.7.6, 12.7.7		
Procedure:	Above 1GHz: a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 26.5GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.		

5.8.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24 °C	Humidity:	46 %	Atmospheric Pressure:	101.2 kPa
Pretest mode:	TM1, TM2, TM3				
Final test mode:	TM1, TM2, TM3				

5.8.2 Test Data:

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit (dBuV/m)	Margin (dBuV/m)	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)				
802.11a-ant1_Low Channel: 5180MHz								
V	5655.44	54.08	1.02	55.10	74	-18.90	PK	Pass
V	5655.44	35.14	1.02	36.16	54	-17.84	AV	Pass
V	10360	55.46	8.78	64.24	74	-9.76	PK	Pass
V	10360	33.35	8.78	42.13	54	-11.87	AV	Pass
H	5655.27	54.56	1.02	55.58	74	-18.42	PK	Pass
H	5655.27	33.59	1.02	34.61	54	-19.39	AV	Pass
H	10360	53.43	8.78	62.21	74	-11.79	PK	Pass
H	10360	33.05	8.78	41.83	54	-12.17	AV	Pass
802.11a-ant1Middle Channel:5200MHz								
V	5654.21	55.55	1.02	56.57	74	-17.43	PK	Pass
V	5654.21	34.23	1.02	35.25	54	-18.75	AV	Pass
V	10360	54.99	8.78	63.77	74	-10.23	PK	Pass
V	10360	34.24	8.78	43.02	54	-10.98	AV	Pass
H	5654.86	54.13	1.02	55.15	74	-18.85	PK	Pass
H	5654.86	34.14	1.02	35.16	54	-18.84	AV	Pass
H	10360	54.06	8.78	62.84	74	-11.16	PK	Pass
H	10360	34.73	8.78	43.51	54	-10.49	AV	Pass
802.11a-ant1High Channel:5240MHz								
V	5653.34	55.05	1.02	56.07	74	-17.93	PK	Pass
V	5653.34	34.15	1.02	35.17	54	-18.83	AV	Pass
V	10360	53.66	8.78	62.44	74	-11.56	PK	Pass
V	10360	35.03	8.78	43.81	54	-10.19	AV	Pass
H	5655.47	54.63	1.02	55.65	74	-18.35	PK	Pass
H	5655.47	33.44	1.02	34.46	54	-19.54	AV	Pass
H	10360	55.10	8.78	63.88	74	-10.12	PK	Pass
H	10360	34.73	8.78	43.51	54	-10.49	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11a-ant1_Low Channel: 5260MHz								
V	5654.19	53.15	1.02	54.17	74	-19.83	PK	Pass
V	5654.19	34.48	1.02	35.50	54	-18.50	AV	Pass
V	10520	54.31	8.78	63.09	74	-10.91	PK	Pass
V	10520	35.38	8.78	44.16	54	-9.84	AV	Pass
H	5653.55	54.82	1.02	55.84	74	-18.16	PK	Pass
H	5653.55	34.52	1.02	35.54	54	-18.46	AV	Pass
H	10520	55.15	8.78	63.93	74	-10.07	PK	Pass
H	10520	33.43	8.78	42.21	54	-11.79	AV	Pass
802.11a-ant1Middle Channel:5300MHz								
V	5653.25	53.20	1.02	54.22	74	-19.78	PK	Pass
V	5653.25	34.33	1.02	35.35	54	-18.65	AV	Pass
V	10600	53.33	8.78	62.11	74	-11.89	PK	Pass
V	10600	34.07	8.78	42.85	54	-11.15	AV	Pass
H	5653.44	53.91	1.02	54.93	74	-19.07	PK	Pass
H	5653.44	35.45	1.02	36.47	54	-17.53	AV	Pass
H	10600	54.92	8.78	63.70	74	-10.30	PK	Pass
H	10600	34.21	8.78	42.99	54	-11.01	AV	Pass
802.11a-ant1High Channel:5320MHz								
V	5654.04	55.02	1.02	56.04	74	-17.96	PK	Pass
V	5654.04	33.26	1.02	34.28	54	-19.72	AV	Pass
V	10640	54.78	8.78	63.56	74	-10.44	PK	Pass
V	10640	34.65	8.78	43.43	54	-10.57	AV	Pass
H	5653.79	53.87	1.02	54.89	74	-19.11	PK	Pass
H	5653.79	35.33	1.02	36.35	54	-17.65	AV	Pass
H	10640	53.07	8.78	61.85	74	-12.15	PK	Pass
H	10640	33.37	8.78	42.15	54	-11.85	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11a-ant1_Low Channel: 5500MHz								
V	5654.63	55.29	1.02	56.31	74	-17.69	PK	Pass
V	5654.63	33.43	1.02	34.45	54	-19.55	AV	Pass
V	11000	54.98	8.78	63.76	74	-10.24	PK	Pass
V	11000	35.45	8.78	44.23	54	-9.77	AV	Pass
H	5653.09	53.40	1.02	54.42	74	-19.58	PK	Pass
H	5653.09	34.59	1.02	35.61	54	-18.39	AV	Pass
H	11000	54.40	8.78	63.18	74	-10.82	PK	Pass
H	11000	34.93	8.78	43.71	54	-10.29	AV	Pass
802.11a-ant1Middle Channel:5580MHz								
V	5655.36	53.18	1.02	54.20	74	-19.80	PK	Pass
V	5655.36	33.01	1.02	34.03	54	-19.97	AV	Pass
V	11160	54.35	8.78	63.13	74	-10.87	PK	Pass
V	11160	33.81	8.78	42.59	54	-11.41	AV	Pass
H	5653.13	54.71	1.02	55.73	74	-18.27	PK	Pass
H	5653.13	33.20	1.02	34.22	54	-19.78	AV	Pass
H	11160	53.18	8.78	61.96	74	-12.04	PK	Pass
H	11160	34.38	8.78	43.16	54	-10.84	AV	Pass
802.11a-ant1High Channel:5700MHz								
V	5653.96	53.80	1.02	54.82	74	-19.18	PK	Pass
V	5653.96	34.03	1.02	35.05	54	-18.95	AV	Pass
V	11400	53.94	8.78	62.72	74	-11.28	PK	Pass
V	11400	34.19	8.78	42.97	54	-11.03	AV	Pass
H	5654.19	53.23	1.02	54.25	74	-19.75	PK	Pass
H	5654.19	34.03	1.02	35.05	54	-18.95	AV	Pass
H	11400	53.36	8.78	62.14	74	-11.86	PK	Pass
H	11400	34.01	8.78	42.79	54	-11.21	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11a-ant1_Low Channel: 5745MHz								
V	5655.19	54.36	1.02	55.38	74	-18.62	PK	Pass
V	5655.19	35.56	1.02	36.58	54	-17.42	AV	Pass
V	11490	54.96	8.78	63.74	74	-10.26	PK	Pass
V	11490	35.54	8.78	44.32	54	-9.68	AV	Pass
H	5653.50	53.19	1.02	54.21	74	-19.79	PK	Pass
H	5653.50	34.80	1.02	35.82	54	-18.18	AV	Pass
H	11490	53.58	8.78	62.36	74	-11.64	PK	Pass
H	11490	33.30	8.78	42.08	54	-11.92	AV	Pass
802.11a-ant1Middle Channel:5785MHz								
V	5653.63	55.19	1.02	56.21	74	-17.79	PK	Pass
V	5653.63	34.18	1.02	35.20	54	-18.80	AV	Pass
V	11570	53.46	8.78	62.24	74	-11.76	PK	Pass
V	11570	35.52	8.78	44.30	54	-9.70	AV	Pass
H	5655.12	54.17	1.02	55.19	74	-18.81	PK	Pass
H	5655.12	34.05	1.02	35.07	54	-18.93	AV	Pass
H	11570	55.18	8.78	63.96	74	-10.04	PK	Pass
H	11570	35.55	8.78	44.33	54	-9.67	AV	Pass
802.11a-ant1High Channel:5825MHz								
V	5654.65	54.51	1.02	55.53	74	-18.47	PK	Pass
V	5654.65	33.35	1.02	34.37	54	-19.63	AV	Pass
V	11650	55.07	8.78	63.85	74	-10.15	PK	Pass
V	11650	34.44	8.78	43.22	54	-10.78	AV	Pass
H	5654.29	54.40	1.02	55.42	74	-18.58	PK	Pass
H	5654.29	34.88	1.02	35.90	54	-18.10	AV	Pass
H	11650	55.19	8.78	63.97	74	-10.03	PK	Pass
H	11650	33.88	8.78	42.66	54	-11.34	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit (dBuV/m)	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)		(dBuV/m)		
802.11ac40-ant1_Low Channel: 5190MHz								
V	5653.73	54.06	1.02	55.08	74	-18.92	PK	Pass
V	5653.73	35.14	1.02	36.16	54	-17.84	AV	Pass
V	10380	55.09	8.78	63.87	74	-10.13	PK	Pass
V	10380	34.70	8.78	43.48	54	-10.52	AV	Pass
H	5653.86	54.72	1.02	55.74	74	-18.26	PK	Pass
H	5653.86	33.60	1.02	34.62	54	-19.38	AV	Pass
H	10380	54.75	8.78	63.53	74	-10.47	PK	Pass
H	10380	35.49	8.78	44.27	54	-9.73	AV	Pass
High Channel:5230MHz								
V	5654.88	54.89	1.02	55.91	74	-18.09	PK	Pass
V	5654.88	33.07	1.02	34.09	54	-19.91	AV	Pass
V	10460	53.28	8.78	62.06	74	-11.94	PK	Pass
V	10460	34.62	8.78	43.40	54	-10.60	AV	Pass
H	5655.52	53.72	1.02	54.74	74	-19.26	PK	Pass
H	5655.52	34.10	1.02	35.12	54	-18.88	AV	Pass
H	10460	55.08	8.78	63.86	74	-10.14	PK	Pass
H	10460	33.65	8.78	42.43	54	-11.57	AV	Pass

802.11ac40-ant1_Low Channel: 5270MHz								
V	5653.97	53.28	1.02	54.30	74	-19.70	PK	Pass
V	5653.97	34.74	1.02	35.76	54	-18.24	AV	Pass
V	10540	55.21	8.78	63.99	74	-10.01	PK	Pass
V	10540	35.38	8.78	44.16	54	-9.84	AV	Pass
H	5653.90	55.27	1.02	56.29	74	-17.71	PK	Pass
H	5653.90	33.59	1.02	34.61	54	-19.39	AV	Pass
H	10540	54.96	8.78	63.74	74	-10.26	PK	Pass
H	10540	33.14	8.78	41.92	54	-12.08	AV	Pass
High Channel:5310.MHz								
V	5653.76	55.03	1.02	56.05	74	-17.95	PK	Pass
V	5653.76	33.41	1.02	34.43	54	-19.57	AV	Pass
V	10620	53.93	8.78	62.71	74	-11.29	PK	Pass
V	10620	34.55	8.78	43.33	54	-10.67	AV	Pass
H	5653.82	54.96	1.02	55.98	74	-18.02	PK	Pass
H	5653.82	33.73	1.02	34.75	54	-19.25	AV	Pass
H	10460	54.23	8.78	63.01	74	-10.99	PK	Pass
H	10460	33.50	8.78	42.28	54	-11.72	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac40-ant1_Low Channel: 5510MHz								
V	5655.42	55.46	1.02	56.48	74	-17.52	PK	Pass
V	5655.42	35.21	1.02	36.23	54	-17.77	AV	Pass
V	11020	54.41	8.78	63.19	74	-10.81	PK	Pass
V	11020	33.78	8.78	42.56	54	-11.44	AV	Pass
H	5653.02	55.52	1.02	56.54	74	-17.46	PK	Pass
H	5653.02	34.61	1.02	35.63	54	-18.37	AV	Pass
H	11020	54.41	8.78	63.19	74	-10.81	PK	Pass
H	11020	35.22	8.78	44.00	54	-10.00	AV	Pass
Middle Channel:5590MHz								
V	5654.70	54.05	1.02	55.07	74	-18.93	PK	Pass
V	5654.70	33.66	1.02	34.68	54	-19.32	AV	Pass
V	11180	54.95	8.78	63.73	74	-10.27	PK	Pass
V	11180	35.46	8.78	44.24	54	-9.76	AV	Pass
H	5653.56	54.64	1.02	55.66	74	-18.34	PK	Pass
H	5653.56	35.22	1.02	36.24	54	-17.76	AV	Pass
H	11180	54.20	8.78	62.98	74	-11.02	PK	Pass
H	11180	33.09	8.78	41.87	54	-12.13	AV	Pass
High Channel:5670MHz								
V	5653.19	54.11	1.02	55.13	74	-18.87	PK	Pass
V	5653.19	33.42	1.02	34.44	54	-19.56	AV	Pass
V	11340	55.24	8.78	64.02	74	-9.98	PK	Pass
V	11340	34.41	8.78	43.19	54	-10.81	AV	Pass
H	5654.07	55.60	1.02	56.62	74	-17.38	PK	Pass
H	5654.07	34.86	1.02	35.88	54	-18.12	AV	Pass
H	11340	54.58	8.78	63.36	74	-10.64	PK	Pass
H	11340	34.87	8.78	43.65	54	-10.35	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac40-ant1_Low Channel: 5755MHz								
V	5654.65	53.73	1.02	54.75	74	-19.25	PK	Pass
V	5654.65	34.12	1.02	35.14	54	-18.86	AV	Pass
V	11510	54.56	8.78	63.34	74	-10.66	PK	Pass
V	11510	35.54	8.78	44.32	54	-9.68	AV	Pass
H	5654.75	53.80	1.02	54.82	74	-19.18	PK	Pass
H	5654.75	34.92	1.02	35.94	54	-18.06	AV	Pass
H	11510	54.13	8.78	62.91	74	-11.09	PK	Pass
H	11510	33.84	8.78	42.62	54	-11.38	AV	Pass
High Channel:5795.MHz								
V	5654.08	53.08	1.02	54.10	74	-19.90	PK	Pass
V	5654.08	35.30	1.02	36.32	54	-17.68	AV	Pass
V	11590	53.40	8.78	62.18	74	-11.82	PK	Pass
V	11590	35.04	8.78	43.82	54	-10.18	AV	Pass
H	5653.24	53.57	1.02	54.59	74	-19.41	PK	Pass
H	5653.24	33.34	1.02	34.36	54	-19.64	AV	Pass
H	11590	53.73	8.78	62.51	74	-11.49	PK	Pass
H	11590	34.81	8.78	43.59	54	-10.41	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac80-ant1_Low Channel: 5210MHz								
V	5653.21	55.38	1.02	56.40	74	-17.60	PK	Pass
V	5653.21	33.51	1.02	34.53	54	-19.47	AV	Pass
V	10420	55.51	8.78	64.29	74	-9.71	PK	Pass
V	10420	33.14	8.78	41.92	54	-12.08	AV	Pass
H	5655.01	53.18	1.02	54.20	74	-19.80	PK	Pass
H	5655.01	34.76	1.02	35.78	54	-18.22	AV	Pass
H	10420	54.39	8.78	63.17	74	-10.83	PK	Pass
H	10420	33.39	8.78	42.17	54	-11.83	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac80-ant1_Low Channel: 5290MHz								
V	5653.72	54.10	1.02	55.12	74	-18.88	PK	Pass
V	5653.72	34.90	1.02	35.92	54	-18.08	AV	Pass
V	10580	54.88	8.78	63.66	74	-10.34	PK	Pass
V	10580	33.75	8.78	42.53	54	-11.47	AV	Pass
H	5655.27	54.34	1.02	55.36	74	-18.64	PK	Pass
H	5655.27	33.18	1.02	34.20	54	-19.80	AV	Pass
H	10580	53.24	8.78	62.02	74	-11.98	PK	Pass
H	10580	35.28	8.78	44.06	54	-9.94	AV	Pass

WIFI								
Polar	Frequency	Meter Reading	Cable Loss	Level	Limit	Margin	Detector Type	Result
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
802.11ac80-ant1_Low Channel: 5530MHz								
V	5655.34	54.30	1.02	55.32	74	-18.68	PK	Pass
V	5655.34	34.51	1.02	35.53	54	-18.47	AV	Pass
V	11060	53.89	8.78	62.67	74	-11.33	PK	Pass
V	11060	35.56	8.78	44.34	54	-9.66	AV	Pass
H	5654.03	53.75	1.02	54.77	74	-19.23	PK	Pass
H	5654.03	34.36	1.02	35.38	54	-18.62	AV	Pass
H	11060	53.19	8.78	61.97	74	-12.03	PK	Pass
H	11060	33.36	8.78	42.14	54	-11.86	AV	Pass
High Channel: 5610MHz								
V	5653.03	53.43	1.02	54.45	74	-19.55	PK	Pass
V	5653.03	35.34	1.02	36.36	54	-17.64	AV	Pass
V	11220	54.73	8.78	63.51	74	-10.49	PK	Pass
V	11220	34.77	8.78	43.55	54	-10.45	AV	Pass
H	5654.97	53.45	1.02	54.47	74	-19.53	PK	Pass
H	5654.97	33.08	1.02	34.10	54	-19.90	AV	Pass
H	11220	53.29	8.78	62.07	74	-11.93	PK	Pass
H	11220	34.27	8.78	43.05	54	-10.95	AV	Pass
802.11ac80-ant1_Low Channel: 5755MHz								
V	5653.06	53.53	1.02	54.55	74	-19.45	PK	Pass
V	5653.06	33.61	1.02	34.63	54	-19.37	AV	Pass
V	11510	54.63	8.78	63.41	74	-10.59	PK	Pass
V	11510	34.72	8.78	43.50	54	-10.50	AV	Pass
H	5654.09	55.35	1.02	56.37	74	-17.63	PK	Pass
H	5654.09	35.16	1.02	36.18	54	-17.82	AV	Pass

H	11510	53.36	8.78	62.14	74	-11.86	PK	Pass
H	11510	34.27	8.78	43.05	54	-10.95	AV	Pass

Note: All the mode have been tested, and only the worst case 802.11a and 802.11ac ant1 mode are in the report

6 TEST SETUP PHOTOS

Please refer to Setup Photo file

7 PHOTOS OF THE EUT

Please refer to external photos file and internal photos file