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TEST REPORT

Report No.: CQASZ20260400847E-01
Applicant: TOPDON TECHNOLOGY Co., Ltd.
Address of Applicant: Unit 2005 20/F, Qianhai Shimao Tower, Qianhai Shenzhen-Hong Kong Cooperation Zone Shenzhen China
Equipment Under Test (EUT):
Product: Handheld Thermal Imaging Camera
Model No.: TC004 Mini
Test Model No.: TC004 Mini
Brand Name: **TOPDON**
FCC ID: 2AVYW-TC004MN
Standards: 47 CFR Part 15, Subpart C
KDB558074 D01 15.247 Meas Guidance v05r02
ANSI C63.10:2020
Date of Receipt: 2026-04-02
Date of Test: 2026-04-02 to 2026-6-30
Date of Issue: 2026-07-22
Test Result : **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack Ai
(Jack Ai)



The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20260400847E-01	Rev.01	Initial report	2026-07-22

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15.203	N/A	PASS
AC Power Line Conducted Emission	47 CFR Part 15.207	ANSI C63.10- 2020+Cor. 1- 2023+C63.10a-2024 + Errata to C63.10a- 2024	PASS
Conducted Peak & Average Output Power	47 CFR Part 15.247	ANSI C63.10- 2020+Cor. 1- 2023+C63.10a-2024 + Errata to C63.10a- 2024	PASS
6dB Occupied Bandwidth	47 CFR Part 15.247	ANSI C63.10- 2020+Cor. 1- 2023+C63.10a-2024 + Errata to C63.10a- 2024	PASS
Power Spectral Density	47 CFR Part 15.247	ANSI C63.10- 2020+Cor. 1- 2023+C63.10a-2024 + Errata to C63.10a- 2024	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15.247	ANSI C63.10- 2020+Cor. 1- 2023+C63.10a-2024 + Errata to C63.10a- 2024	PASS
RF Conducted Spurious Emissions	47 CFR Part 15.247	ANSI C63.10- 2020+Cor. 1- 2023+C63.10a-2024 + Errata to C63.10a- 2024	PASS
Radiated Spurious Emissions	47 CFR Part 15.209	ANSI C63.10- 2020+Cor. 1- 2023+C63.10a-2024 + Errata to C63.10a- 2024	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15.205/15.209	ANSI C63.10- 2020+Cor. 1- 2023+C63.10a-2024 + Errata to C63.10a- 2024	PASS

Remark:

The tested sample(s) and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

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4 General Information

4.1 Client Information

Applicant:	TOPDON TECHNOLOGY Co., Ltd.
Address of Applicant:	Unit 2005 20/F, Qianhai Shima Tower, Qianhai Shenzhen-Hong kong Cooperation Zone Shenzhen China
Manufacturer:	TOPDON TECHNOLOGY Co., Ltd.
Address of Manufacturer:	Unit 2005 20/F, Qianhai Shima Tower, Qianhai Shenzhen-Hong kong Cooperation Zone Shenzhen China
Factory:	TOPDON TECHNOLOGY Co., Ltd.
Address of Factory:	Unit 2005 20/F, Qianhai Shima Tower, Qianhai Shenzhen-Hong kong Cooperation Zone Shenzhen China

4.2 General Description of EUT

Product Name:	Handheld Thermal Imaging Camera
Model No.:	TC004 Mini
Test Model No.:	TC004 Mini
Trade Mark:	TOPDON
Software Version:	V1.0
Hardware Version:	V1.0
Power Supply:	Li-ion battery DC 3.7V 3350mAh, Charge by DC 5V for adapter
EUT Supports Radios application:	2.4GHz: Wi-Fi: 802.11b/g/n(HT20)/ax(HE20): 2412MHz~2462MHz; 802.11n(HT40): 2422MHz~2452MHz
Simultaneous Transmission	☐ Simultaneous TX is supported and evaluated in this report. ☒ Simultaneous TX is not supported.

4.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20)/ax(HE20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20/ax HE20: 11 Channels IEEE 802.11n HT40: 7 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11ax(HE20): OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transfer Rate:	IEEE for 802.11b: 1Mbps/2Mbps/5.5Mbps/11Mbps IEEE for 802.11g : 6Mbps/9Mbps/12Mbps/18Mbps/24Mbps/36Mbps/48Mbps/54Mbps IEEE for 802.11n(HT20) : 6.5Mbps/13Mbps/19.5Mbps/26Mbps/39Mbps/52Mbps/58.5Mbps/65Mbps IEEE for 802.11n(HT40) : 13.5Mbps/27Mbps/40.5Mbps/54Mbps/81Mbps/108Mbps/121.5Mbps/135Mbps

	IEEE for 802.11ax(HE20): 8.6Mbps/17.2Mbps/25.8Mbps/34.4Mbps/51.6Mbps/68.8Mbps/77.4Mbps /86.7Mbps/103.3Mbps/114.7Mbps/129.0Mbps/143.4Mbps
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Test Software of EUT:	Serial-com3
Antenna Type:	FPC antenna
Antenna Gain:	-0.19dBi

Operation Frequency each of channel(802.11b/g/n HT20/ax HE20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		
Operation Frequency each of channel(802.11n HT40)							
Channel		Frequency		Channel		Frequency	
3		2422MHz		6		2437MHz	
4		2427MHz		7		2442MHz	
5		2432MHz		8		2447MHz	

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:

For 802.11b/g/n (HT20)/ax (HE20):

Channel	Frequency
The Lowest channel	2412MHz
The Middle channel	2437MHz
The Highest channel	2462MHz

For 802.11n (HT40):

Channel	Frequency
The Lowest channel	2422MHz
The Middle channel	2437MHz
The Highest channel	2452MHz

Note:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

4.6 Test Location

All tests were performed at:

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD

102A, 102B, Building 2, Shanghenglang New Industrial Zone, Shanghenglang Community, Dalang Street, Longhua District, Shenzhen, Guangdong, People's Republic of China, 518000

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 4742.01)**

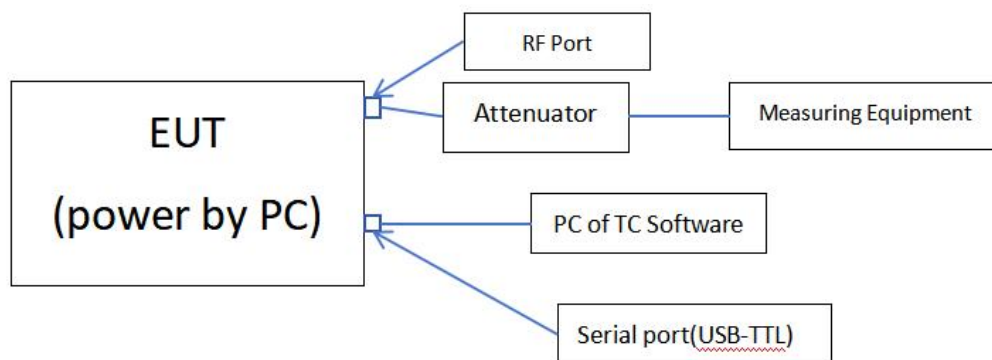
SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD, Shenzhen EMC Laboratory is accredited by the

American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• **FCC Registration No.: 522263**

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD, Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

4.8 Test configuration



4.9 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	5.12dB	(1)
2	Radiated Emission (Above 1GHz)	4.60dB	(1)
3	Conducted Disturbance (0.15~30MHz)	3.34dB	(1)
4	Radio Frequency	3×10^{-8}	(1)
5	Duty cycle	0.6 %.	(1)
6	Occupied Bandwidth	1.1%	(1)
7	RF conducted power	0.86dB	(1)
8	RF power density	0.74	(1)
9	Conducted Spurious emissions	0.86dB	(1)
10	Temperature test	0.8℃	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	Frequency Error	5.5 Hz	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

4.10 Deviation from Standards

None.

4.11 Abnormalities from Standard Conditions

None.

4.12 Other Information Requested by the Customer

None.

4.13 Equipment List

Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2025/9/1	2026/8/31
Spectrum analyzer	R&S	FSU26	CQA-038	2025/9/1	2026/8/31
Spectrum analyzer	R&S	FSU40	CQA-075	2025/9/1	2026/8/31
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2025/9/1	2026/8/31
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2025/9/1	2026/8/31
Preamplifier	EMCI	EMC184055SE	CQA-089	2025/9/1	2026/8/31
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	HL562	CQA-011	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2023/9/7	2026/9/6
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2025/9/1	2026/8/31
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2025/9/1	2026/8/31
Antenna Connector	CQA	RFC-01	CQA-080	2025/9/1	2026/8/31
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2025/9/1	2026/8/31
Power meter	R&S	NRVD	CQA-029	2025/9/1	2026/8/31
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2025/9/1	2026/8/31
EMI Test Receiver	R&S	ESR7	CQA-005	2025/9/1	2026/8/31
LISN	R&S	ENV216	CQA-003	2025/9/1	2026/8/31
Coaxial cable	CQA	N/A	CQA-C009	2025/9/1	2026/8/31
DC power	KEYSIGHT	E3631A	CQA-028	2025/9/1	2026/8/31
Band Reject Filter	Wainwright instrument gmbh	WRCG2400/2483-2390/2493-35/10SS	CQA-037	2025/9/1	2026/8/31

Test software:

	Manufacturer	Software brand	Software version
Radiated Emissions test software	Tonscend	JS1120-3	Version:8
Conducted Emissions test software	Audix	e3	Version:9
RF Conducted test software	Audix	e3	V3.5.39

Note:

The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
15.203 requirement: 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
EUT Antenna:	
The antenna is FPC antenna. The connection/connection type between the antenna to the EUT's antenna port is: unique coupling This is either permanently attachment or a unique coupling that satisfies the requirement.	

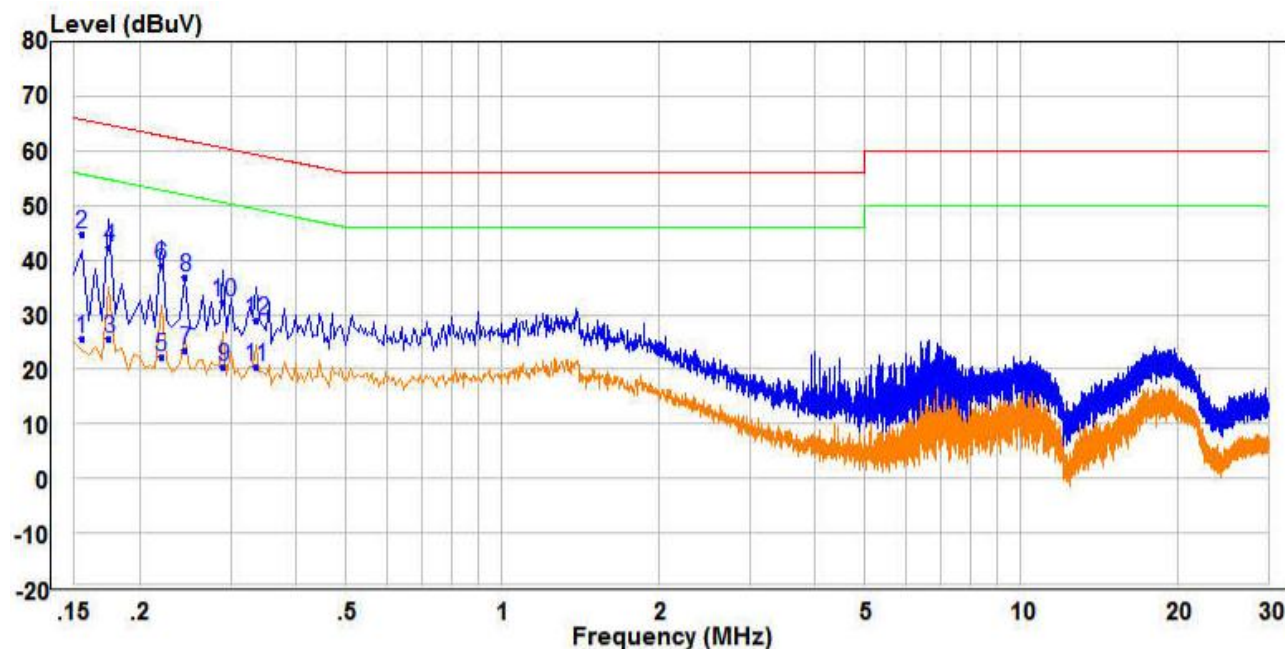
5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207																
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024																
Test Frequency Range:	150kHz to 30MHz																
Limit:	<table><thead><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr></thead><tbody><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></tbody></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50		
Frequency range (MHz)	Limit (dBuV)																
	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 Procedure:	1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2020 on conducted measurement.																
Test Setup:	Shielding Room AC Mains LISN1 EUT AE LISN2 AC Mains 80cm 80cm Test Receiver Ground Reference Plane																

Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate of 802.11b at middle channel is the worst case. Only the worst case is recorded in the report.
Test Voltage:	AC120V/60Hz
Test Results:	Pass

Measurement Data

Live Line:

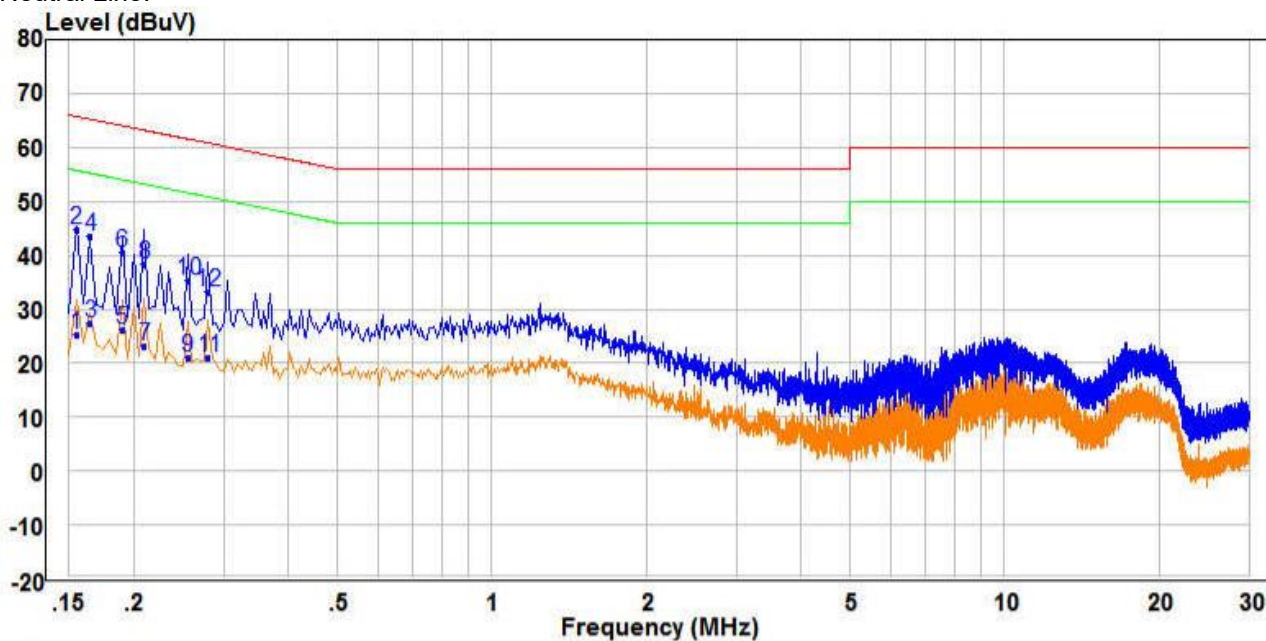


		Read			Limit	Over		
	Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.155	15.99	9.69	25.68	55.73	-30.05	Average	Line
2	PP	0.155	35.02	9.69	44.71	65.73	-21.02	QP
3		0.175	16.06	9.65	25.71	54.72	-29.01	Average
4		0.175	32.54	9.65	42.19	64.72	-22.53	QP
5		0.220	12.64	9.58	22.22	52.82	-30.60	Average
6		0.220	29.44	9.58	39.02	62.82	-23.80	QP
7	AV	0.245	13.98	9.55	23.53	51.92	-28.39	Average
8		0.245	27.20	9.55	36.75	61.92	-25.17	QP
9		0.290	10.89	9.50	20.39	50.52	-30.13	Average
10		0.290	22.76	9.50	32.26	60.52	-28.26	QP
11		0.335	10.91	9.54	20.45	49.33	-28.88	Average
12		0.335	19.55	9.54	29.09	59.33	-30.24	QP

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral Line:

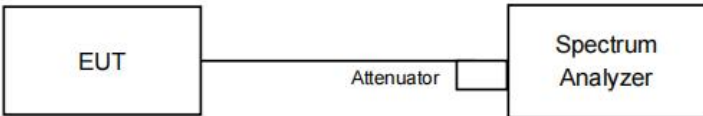


	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.155	15.51	9.69	25.20	55.73	-30.53	Average	Neutral
2 PP	0.155	34.92	9.69	44.61	65.73	-21.12	QP	Neutral
3	0.165	17.86	9.67	27.53	55.21	-27.68	Average	Neutral
4	0.165	33.74	9.67	43.41	65.21	-21.80	QP	Neutral
5 AV	0.190	16.74	9.62	26.36	54.04	-27.68	Average	Neutral
6	0.190	30.82	9.62	40.44	64.04	-23.60	QP	Neutral
7	0.210	13.49	9.59	23.08	53.21	-30.13	Average	Neutral
8	0.210	28.70	9.59	38.29	63.21	-24.92	QP	Neutral
9	0.255	11.50	9.53	21.03	51.59	-30.56	Average	Neutral
10	0.255	25.86	9.53	35.39	61.59	-26.20	QP	Neutral
11	0.280	11.55	9.50	21.05	50.82	-29.77	Average	Neutral
12	0.280	23.73	9.50	33.23	60.82	-27.59	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

5.3 Conducted Peak & Average Output Power

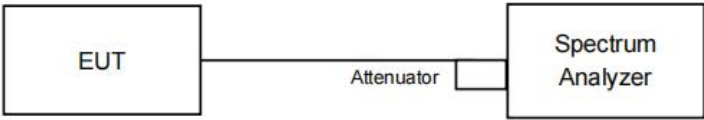
Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Setup:	<i>Setup for Power meter measurement method</i>  <i>Setup for Spectrum analyser measurement method</i> 
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	30dBm
Test Results:	Pass

Measurement Data

Please Refer to Appendix for Details

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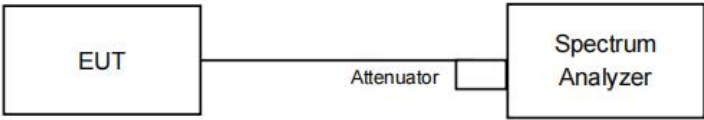
5.4 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15C
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Setup:	 $\text{Offset} = \text{cable loss} + \text{attenuation factor}$
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

Measurement Data

Please Refer to Appendix for Details

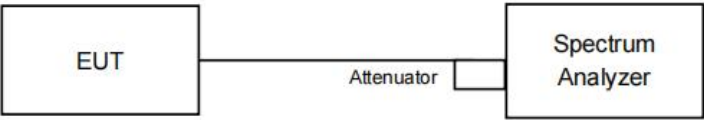
5.5 6dB Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Setup:	 $\text{Offset} = \text{cable loss} + \text{attenuation factor}$
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	$\geq 500 \text{ kHz}$
Test Results:	Pass

Measurement Data

Please Refer to Appendix for Details

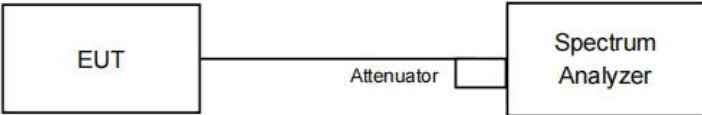
5.6 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Setup:	 Offset=cable loss+ attenuation factor
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	$\leq 8.00\text{dBm}/3\text{kHz}$
Test Results:	Pass

Measurement Data

Please Refer to Appendix for Details

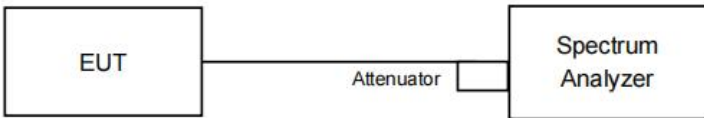
5.7 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Setup:	 Offset=cable loss+ attenuation factor
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test Results:	Pass

Measurement Data

Please Refer to Appendix for Details

5.8 RF Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Setup:	 Offset=cable loss+ attenuation factor
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test Results:	Pass

Measurement Data

Please Refer to Appendix for Details

5.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				

Test Setup:

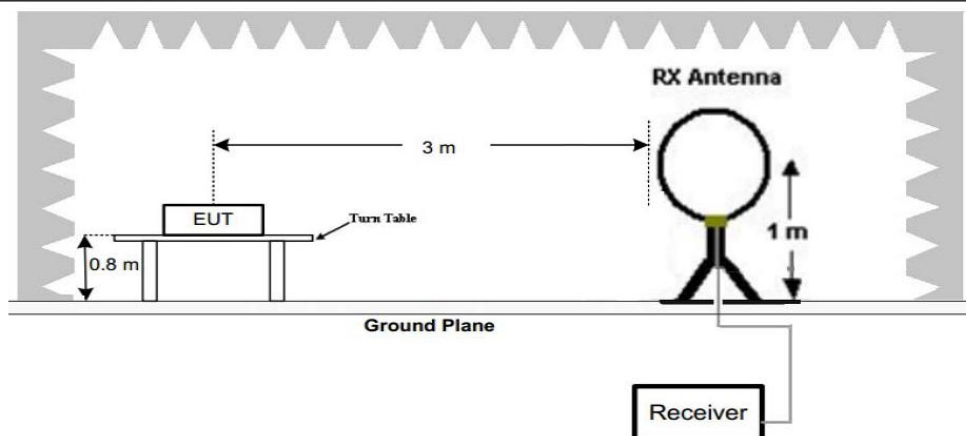


Figure 1. Below 30MHz

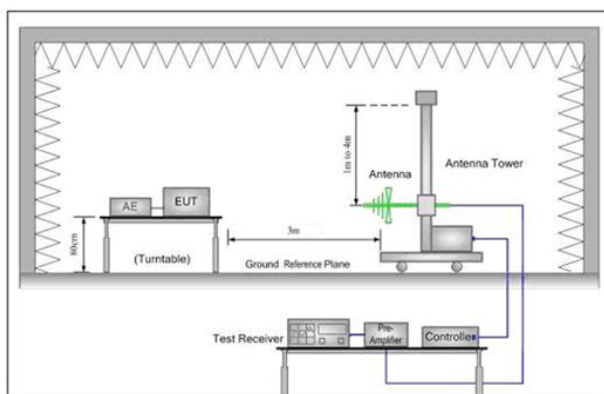


Figure 2. 30MHz to 1GHz

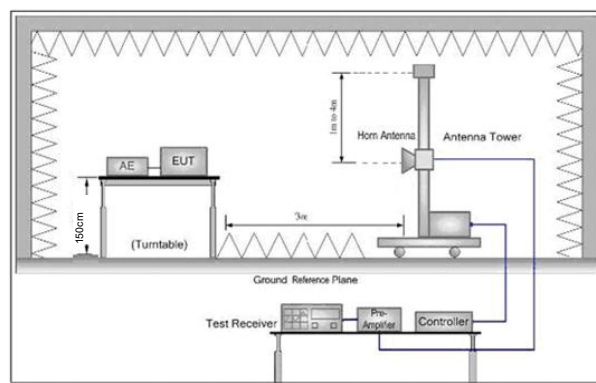


Figure 3. Above 1 GHz

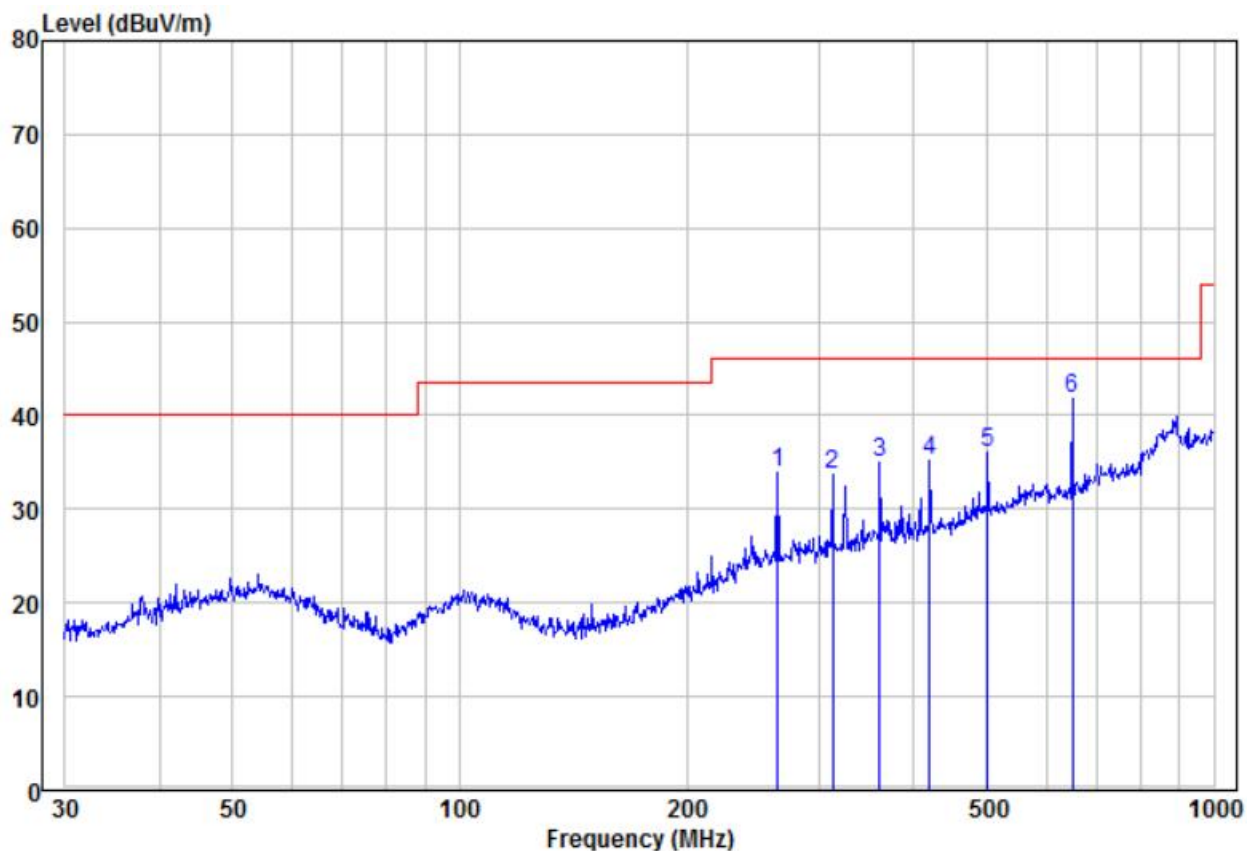
Test Procedure:

- a. 1) Below 1G: 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.
2) Above 1G: The EUT was placed on the top of a rotating table 1.5 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.
Note: For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 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, quasi-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 worse case . i. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

5.9.1 Radiated emission below 1GHz

30MHz~1GHz
Vertical



	Read		Limit	Over			
Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	263.82	17.83	16.04	33.87	46.00	-12.13 Peak	HORIZONTAL
2	312.18	16.42	17.18	33.60	46.00	-12.40 Peak	HORIZONTAL
3	360.45	16.57	18.40	34.97	46.00	-11.03 Peak	HORIZONTAL
4	420.58	16.44	18.81	35.25	46.00	-10.75 Peak	HORIZONTAL
5	501.18	15.16	20.94	36.10	46.00	-9.90 Peak	HORIZONTAL
6 pp	649.66	18.94	22.82	41.76	46.00	-4.24 Peak	HORIZONTAL

Remark:

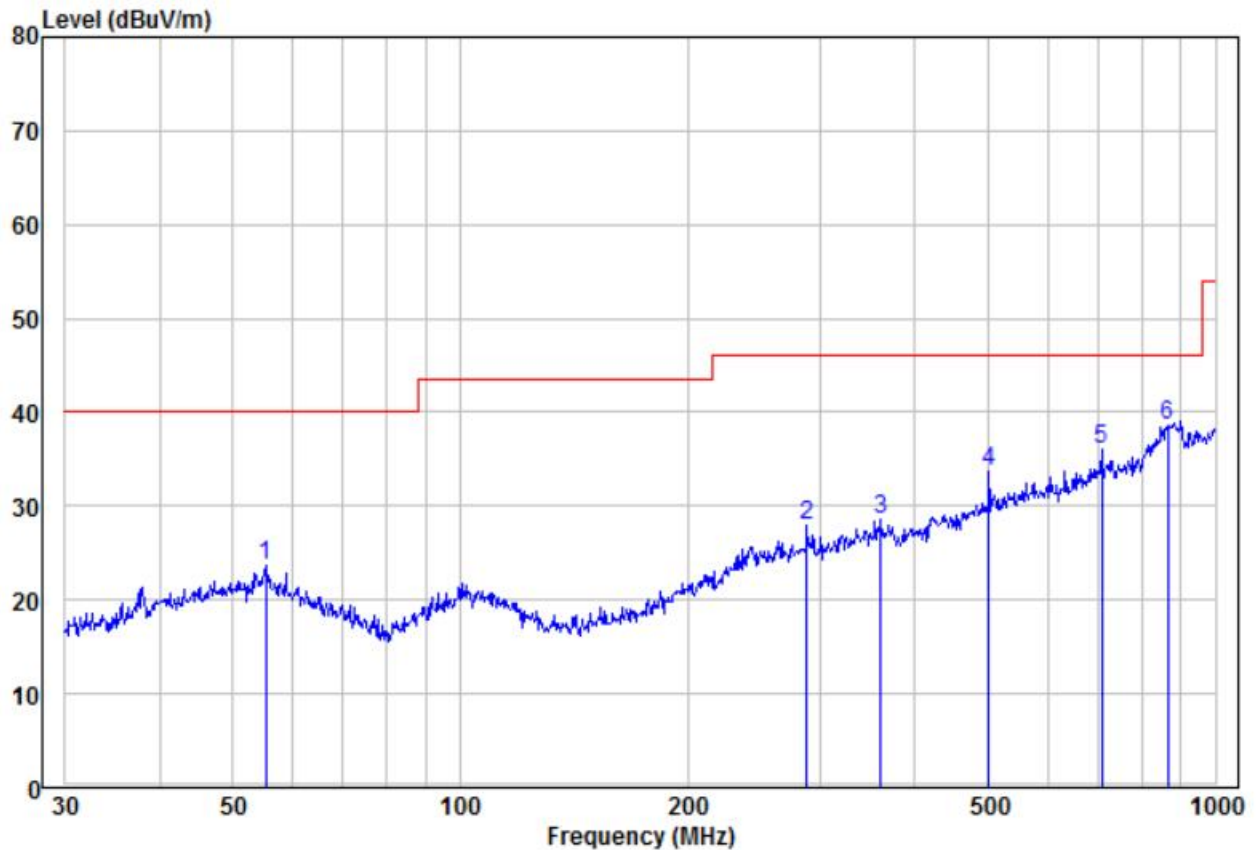
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

Horizontal



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	55.22	10.89	12.79	23.68	40.00	-16.32	Peak	VERTICAL
2	287.99	11.26	16.59	27.85	46.00	-18.15	Peak	VERTICAL
3	360.45	10.25	18.40	28.65	46.00	-17.35	Peak	VERTICAL
4	501.18	12.80	20.94	33.74	46.00	-12.26	Peak	VERTICAL
5	706.70	12.20	23.82	36.02	46.00	-9.98	Peak	VERTICAL
6 pp	866.09	9.94	28.73	38.67	46.00	-7.33	Peak	VERTICAL

Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

5.9.2 Transmitter emission above 1GHz

Test mode:		802.11b(1Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	53.65	-4.26	49.39	74	-24.61	peak	H	1.5	245
4824.000	36.12	-4.26	31.86	54	-22.14	AVG	H	1.5	18
7236.000	51.42	1.18	52.60	74	-21.40	peak	H	1.5	16
7236.000	37.41	1.18	38.59	54	-15.41	AVG	H	1.5	51
4824.000	54.56	-4.26	50.30	74	-23.70	peak	V	1.5	52
4824.000	39.31	-4.26	35.05	54	-18.95	AVG	V	1.5	23
7236.000	50.52	1.18	51.70	74	-22.30	peak	V	1.5	79
7236.000	36.26	1.18	37.44	54	-16.56	AVG	V	1.5	192

Test mode:		802.11b(1Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	52.29	-4.12	48.17	74	-25.83	peak	H	1.5	288
4874.000	37.02	-4.12	32.90	54	-21.10	AVG	H	1.5	61
7311.000	49.15	1.46	50.61	74	-23.39	peak	H	1.5	289
7311.000	35.09	1.46	36.55	54	-17.45	AVG	H	1.5	259
4874.000	52.80	-4.12	48.68	74	-25.32	peak	V	1.5	192
4874.000	36.93	-4.12	32.81	54	-21.19	AVG	V	1.5	197
7311.000	49.57	1.46	51.03	74	-22.97	peak	V	1.5	149
7311.000	35.00	1.46	36.46	54	-17.54	AVG	V	1.5	275

Test mode:		802.11b(1Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol. H/V	Antenna Height (m)	Table Angle (Degree)
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)				
4924.000	52.03	-4.03	48.00	74	-26.00	peak	H	1.5	296
4924.000	38.46	-4.03	34.43	54	-19.57	AVG	H	1.5	172
7386.000	49.33	1.66	50.99	74	-23.01	peak	H	1.5	92
7386.000	37.23	1.66	38.89	54	-15.11	AVG	H	1.5	237
4924.000	54.98	-4.03	50.95	74	-23.05	peak	V	1.5	126
4924.000	38.19	-4.03	34.16	54	-19.84	AVG	V	1.5	217
7386.000	50.98	1.66	52.64	74	-21.36	peak	V	1.5	138
7386.000	37.01	1.66	38.67	54	-15.33	AVG	V	1.5	41

Remark:

- 1) The 1Mbps of rate of 802.11b is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test mode:		802.11g(6Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	54.06	-4.26	49.80	74	-24.20	peak	H	1.5	179
4824.000	37.10	-4.26	32.84	54	-21.16	AVG	H	1.5	285
7236.000	52.14	1.18	53.32	74	-20.68	peak	H	1.5	66
7236.000	36.98	1.18	38.16	54	-15.84	AVG	H	1.5	154
4824.000	56.10	-4.26	51.84	74	-22.16	peak	V	1.5	232
4824.000	38.43	-4.26	34.17	54	-19.83	AVG	V	1.5	19
7236.000	51.02	1.18	52.20	74	-21.80	peak	V	1.5	169
7236.000	36.33	1.18	37.51	54	-16.49	AVG	V	1.5	339

Test mode:		802.11g(6Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	53.21	-4.12	49.09	74	-24.91	peak	H	1.5	21
4874.000	36.07	-4.12	31.95	54	-22.05	AVG	H	1.5	105
7311.000	49.91	1.46	51.37	74	-22.63	peak	H	1.5	72
7311.000	35.96	1.46	37.42	54	-16.58	AVG	H	1.5	294
4874.000	53.88	-4.12	49.76	74	-24.24	peak	V	1.5	313
4874.000	36.00	-4.12	31.88	54	-22.12	AVG	V	1.5	215
7311.000	48.85	1.46	50.31	74	-23.69	peak	V	1.5	51
7311.000	36.46	1.46	37.92	54	-16.08	AVG	V	1.5	25

Test mode:		802.11g(6Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4924.000	52.09	-4.03	48.06	74	-25.94	peak	H	1.5	75
4924.000	37.91	-4.03	33.88	54	-20.12	AVG	H	1.5	137
7386.000	49.74	1.66	51.40	74	-22.60	peak	H	1.5	228
7386.000	37.66	1.66	39.32	54	-14.68	AVG	H	1.5	108
4924.000	53.56	-4.03	49.53	74	-24.47	peak	V	1.5	203
4924.000	37.50	-4.03	33.47	54	-20.53	AVG	V	1.5	138
7386.000	49.66	1.66	51.32	74	-22.68	peak	V	1.5	286
7386.000	36.19	1.66	37.85	54	-16.15	AVG	V	1.5	67

Remark:

- 1) The 6Mbps of rate of 802.11g is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test mode:		802.11n20(6.5Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	52.34	-4.26	48.08	74	-25.92	peak	H	1.5	18
4824.000	37.00	-4.26	32.74	54	-21.26	AVG	H	1.5	91
7236.000	52.09	1.18	53.27	74	-20.73	peak	H	1.5	276
7236.000	38.16	1.18	39.34	54	-14.66	AVG	H	1.5	337
4824.000	54.53	-4.26	50.27	74	-23.73	peak	V	1.5	85
4824.000	38.99	-4.26	34.73	54	-19.27	AVG	V	1.5	117
7236.000	50.90	1.18	52.08	74	-21.92	peak	V	1.5	43
7236.000	36.12	1.18	37.30	54	-16.70	AVG	V	1.5	341

Test mode:		802.11n20(6.5Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	51.99	-4.12	47.87	74	-26.13	peak	H	1.5	349
4874.000	37.89	-4.12	33.77	54	-20.23	AVG	H	1.5	278
7311.000	50.10	1.46	51.56	74	-22.44	peak	H	1.5	210
7311.000	35.44	1.46	36.90	54	-17.10	AVG	H	1.5	330
4874.000	53.24	-4.12	49.12	74	-24.88	peak	V	1.5	305
4874.000	36.88	-4.12	32.76	54	-21.24	AVG	V	1.5	297
7311.000	50.04	1.46	51.50	74	-22.50	peak	V	1.5	297
7311.000	36.04	1.46	37.50	54	-16.50	AVG	V	1.5	352

Test mode:		802.11n20(6.5Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4924.000	52.08	-4.03	48.05	74	-25.95	peak	H	1.5	310
4924.000	36.99	-4.03	32.96	54	-21.04	AVG	H	1.5	249
7386.000	49.70	1.66	51.36	74	-22.64	peak	H	1.5	206
7386.000	36.21	1.66	37.87	54	-16.13	AVG	H	1.5	18
4924.000	54.50	-4.03	50.47	74	-23.53	peak	V	1.5	307
4924.000	38.98	-4.03	34.95	54	-19.05	AVG	V	1.5	291
7386.000	49.24	1.66	50.90	74	-23.10	peak	V	1.5	52
7386.000	36.50	1.66	38.16	54	-15.84	AVG	V	1.5	110

Remark:

- 1) The MCS0 of rate of 802.11n20 is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test mode:		802.11n40(13.5Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	53.11	-4.24	48.87	74	-25.13	peak	H	1.5	256
4824.000	37.59	-4.24	33.35	54	-20.65	AVG	H	1.5	150
7236.000	50.29	1.2	51.49	74	-22.51	peak	H	1.5	325
7236.000	38.20	1.2	39.40	54	-14.60	AVG	H	1.5	175
4824.000	55.45	-4.24	51.21	74	-22.79	peak	V	1.5	62
4824.000	39.59	-4.24	35.35	54	-18.65	AVG	V	1.5	279
7236.000	50.65	1.2	51.85	74	-22.15	peak	V	1.5	303
7236.000	36.56	1.2	37.76	54	-16.24	AVG	V	1.5	157

Test mode:		802.11n40(13.5Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	52.85	-4.12	48.73	74	-25.27	peak	H	1.5	358
4874.000	36.97	-4.12	32.85	54	-21.15	AVG	H	1.5	160
7311.000	49.23	1.46	50.69	74	-23.31	peak	H	1.5	118
7311.000	35.34	1.46	36.80	54	-17.20	AVG	H	1.5	0
4874.000	52.80	-4.12	48.68	74	-25.32	peak	V	1.5	105
4874.000	36.81	-4.12	32.69	54	-21.31	AVG	V	1.5	240
7311.000	49.59	1.46	51.05	74	-22.95	peak	V	1.5	62
7311.000	36.61	1.46	38.07	54	-15.93	AVG	V	1.5	102

Test mode:		802.11n40(13.5Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4924.000	53.53	-4.05	49.48	74	-24.52	peak	H	1.5	143
4924.000	37.53	-4.05	33.48	54	-20.52	AVG	H	1.5	134
7386.000	51.81	1.64	53.45	74	-20.55	peak	H	1.5	283
7386.000	37.19	1.64	38.83	54	-15.17	AVG	H	1.5	349
4924.000	55.05	-4.05	51.00	74	-23.00	peak	V	1.5	118
4924.000	39.34	-4.05	35.29	54	-18.71	AVG	V	1.5	42
7386.000	50.88	1.64	52.52	74	-21.48	peak	V	1.5	123
7386.000	35.04	1.64	36.68	54	-17.32	AVG	V	1.5	260

Remark:

- 1) The MCS0 of rate of 802.11n40 is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test mode:		802.11ax20(8.6Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4824.000	54.10	-4.26	49.84	74	-24.16	peak	H	1.5	155
4824.000	37.78	-4.26	33.52	54	-20.48	AVG	H	1.5	325
7236.000	51.27	1.18	52.45	74	-21.55	peak	H	1.5	117
7236.000	38.38	1.18	39.56	54	-14.44	AVG	H	1.5	243
4824.000	54.66	-4.26	50.40	74	-23.60	peak	V	1.5	196
4824.000	39.48	-4.26	35.22	54	-18.78	AVG	V	1.5	136
7236.000	51.65	1.18	52.83	74	-21.17	peak	V	1.5	73
7236.000	35.11	1.18	36.29	54	-17.71	AVG	V	1.5	164

Test mode:		802.11ax20(8.6Mbps)		Test channel:		Middle			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4874.000	53.16	-4.12	49.04	74	-24.96	peak	H	1.5	200
4874.000	36.05	-4.12	31.93	54	-22.07	AVG	H	1.5	18
7311.000	49.17	1.46	50.63	74	-23.37	peak	H	1.5	56
7311.000	35.73	1.46	37.19	54	-16.81	AVG	H	1.5	301
4874.000	53.34	-4.12	49.22	74	-24.78	peak	V	1.5	248
4874.000	37.37	-4.12	33.25	54	-20.75	AVG	V	1.5	96
7311.000	48.32	1.46	49.78	74	-24.22	peak	V	1.5	53
7311.000	35.11	1.46	36.57	54	-17.43	AVG	V	1.5	345

Test mode:		802.11ax20(8.6Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
4924.000	52.02	-4.03	47.99	74	-26.01	peak	H	1.5	155
4924.000	38.36	-4.03	34.33	54	-19.67	AVG	H	1.5	81
7386.000	51.07	1.66	52.73	74	-21.27	peak	H	1.5	297
7386.000	36.41	1.66	38.07	54	-15.93	AVG	H	1.5	349
4924.000	53.61	-4.03	49.58	74	-24.42	peak	V	1.5	128
4924.000	38.64	-4.03	34.61	54	-19.39	AVG	V	1.5	72
7386.000	49.86	1.66	51.52	74	-22.48	peak	V	1.5	303
7386.000	37.52	1.66	39.18	54	-14.82	AVG	V	1.5	43

Remark:

- 1) The MCS0 of rate of 802.11ax20 is the worst case.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

5.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10 2020		
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m @3m)	Remark
	30MHz-88MHz	40.0	Quasi-peak Value
	88MHz-216MHz	43.5	Quasi-peak Value
	216MHz-960MHz	46.0	Quasi-peak Value
	960MHz-1GHz	54.0	Quasi-peak Value
	Above 1GHz	54.0	Average Value
		74.0	Peak Value
Test Setup:			

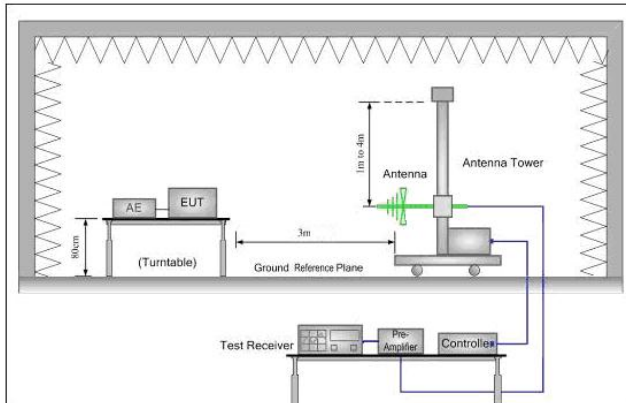


Figure 1. 30MHz to 1GHz

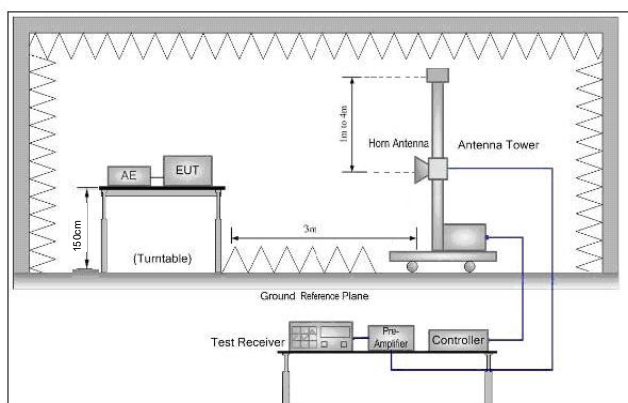


Figure 2. Above 1 GHz

Test Procedure:

- 1) Below 1G: 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.
 - 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 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.
- Note: For the radiated emission test above 1GHz:
- Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 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 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. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel 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 worse case . i. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Transmitting mode.
Final Test Mode:	Pretest the EUT at Transmitting mode, found the Transmitting mode which it is worse case. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40); 8.6Mbps of rate is the worst case of 802.11ax(HE20). Only the worst case is recorded in the report.
Test Results:	Pass

Test data:

Worse case mode:		802.11b(1Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
2390.000	58.66	-9.2	49.46	74	-24.54	peak	H	1.5	293
2390.000	44.84	-9.2	35.64	54	-18.36	AVG	H	1.5	131
2400.000	59.27	-9.39	49.88	74	-24.12	peak	H	1.5	316
2400.000	46.39	-9.39	37.00	54	-17.00	AVG	H	1.5	0
2390.000	58.96	-9.2	49.76	74	-24.24	peak	V	1.5	272
2390.000	44.00	-9.2	34.80	54	-19.20	AVG	V	1.5	103
2400.000	59.63	-9.39	50.24	74	-23.76	peak	V	1.5	231
2400.000	46.28	-9.39	36.89	54	-17.11	AVG	V	1.5	289

Worse case mode:		802.11b(1Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
2483.500	57.93	-9.29	48.64	74	-25.36	peak	H	1.5	323
2483.500	43.58	-9.29	34.29	54	-19.71	AVG	H	1.5	264
2483.500	58.17	-9.29	48.88	74	-25.12	peak	V	1.5	276
2483.500	46.14	-9.29	36.85	54	-17.15	AVG	V	1.5	128

Worse case mode:		802.11g(6Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
2390.000	58.49	-9.2	49.29	74	-24.71	peak	H	1.5	124
2390.000	44.32	-9.2	35.12	54	-18.88	AVG	H	1.5	256
2400.000	59.29	-9.39	49.90	74	-24.10	peak	H	1.5	350
2400.000	46.12	-9.39	36.73	54	-17.27	AVG	H	1.5	89
2390.000	58.41	-9.2	49.21	74	-24.79	peak	V	1.5	297
2390.000	44.62	-9.2	35.42	54	-18.58	AVG	V	1.5	221
2400.000	59.45	-9.39	50.06	74	-23.94	peak	V	1.5	83
2400.000	46.08	-9.39	36.69	54	-17.31	AVG	V	1.5	150

Worse case mode:		802.11g(6Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
2483.500	57.47	-9.29	48.18	74	-25.82	peak	H	1.5	63
2483.500	44.41	-9.29	35.12	54	-18.88	AVG	H	1.5	249
2483.500	57.69	-9.29	48.40	74	-25.60	peak	V	1.5	225
2483.500	45.81	-9.29	36.52	54	-17.48	AVG	V	1.5	327

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2390.000	58.80	-9.2	49.60	74	-24.40	peak	H	1.5	74
2390.000	44.11	-9.2	34.91	54	-19.09	AVG	H	1.5	192
2400.000	59.78	-9.39	50.39	74	-23.61	peak	H	1.5	79
2400.000	46.73	-9.39	37.34	54	-16.66	AVG	H	1.5	62
2390.000	59.02	-9.2	49.82	74	-24.18	peak	V	1.5	287
2390.000	44.28	-9.2	35.08	54	-18.92	AVG	V	1.5	68
2400.000	60.06	-9.39	50.67	74	-23.33	peak	V	1.5	327
2400.000	46.71	-9.39	37.32	54	-16.68	AVG	V	1.5	290

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2483.500	58.33	-9.29	49.04	74	-24.96	peak	H	1.5	63
2483.500	44.34	-9.29	35.05	54	-18.95	AVG	H	1.5	264
2483.500	58.24	-9.29	48.95	74	-25.05	peak	V	1.5	158
2483.500	45.89	-9.29	36.60	54	-17.40	AVG	V	1.5	308

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2390.000	59.06	-9.2	49.86	74	-24.14	peak	H	1.5	114
2390.000	44.75	-9.2	35.55	54	-18.45	AVG	H	1.5	85
2400.000	60.05	-9.39	50.66	74	-23.34	peak	H	1.5	71
2400.000	46.97	-9.39	37.58	54	-16.42	AVG	H	1.5	250
2390.000	58.82	-9.2	49.62	74	-24.38	peak	V	1.5	137
2390.000	44.75	-9.2	35.55	54	-18.45	AVG	V	1.5	23
2400.000	59.34	-9.39	49.95	74	-24.05	peak	V	1.5	135
2400.000	46.93	-9.39	37.54	54	-16.46	AVG	V	1.5	272

Worse case mode:		802.11n(HT40)(13.5Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2483.500	57.86	-9.29	48.57	74	-25.43	peak	H	1.5	353
2483.500	44.23	-9.29	34.94	54	-19.06	AVG	H	1.5	292
2483.500	58.09	-9.29	48.80	74	-25.20	peak	V	1.5	51
2483.500	45.53	-9.29	36.24	54	-17.76	AVG	V	1.5	253

Worse case mode:		802.11ax(HE20)(8.6Mbps)		Test channel:		Lowest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2390.000	58.28	-9.2	49.08	74	-24.92	peak	H	1.5	133
2390.000	44.89	-9.2	35.69	54	-18.31	AVG	H	1.5	244
2400.000	59.76	-9.39	50.37	74	-23.63	peak	H	1.5	220
2400.000	46.28	-9.39	36.89	54	-17.11	AVG	H	1.5	342
2390.000	58.64	-9.2	49.44	74	-24.56	peak	V	1.5	345
2390.000	44.39	-9.2	35.19	54	-18.81	AVG	V	1.5	171
2400.000	59.90	-9.39	50.51	74	-23.49	peak	V	1.5	325
2400.000	46.78	-9.39	37.39	54	-16.61	AVG	V	1.5	0

Worse case mode:		802.11ax(HE20)(8.6Mbps)		Test channel:		Highest			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	H/V	(m)	(Degree)
2483.500	58.39	-9.29	49.10	74	-24.90	peak	H	1.5	181
2483.500	43.46	-9.29	34.17	54	-19.83	AVG	H	1.5	186
2483.500	57.65	-9.29	48.36	74	-25.64	peak	V	1.5	221
2483.500	45.55	-9.29	36.26	54	-17.74	AVG	V	1.5	326

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

6 Photographs - EUT Test Setup

Detailed information is given in Appendix A

7 Photographs - EUT Constructional Details

Detailed information is given in Appendix B and Appendix C

*** END OF REPORT ***