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TEST REPORT

FCC PART 15 SUBPART E 15.407

Report Reference No.....: **CTL2508212021-WF04**

Compiled by: (position+printed name+signature)	Happy Guo (File administrators)	Happy Guo
Tested by: (position+printed name+signature)	Jack Wang (Test Engineer)	Jack Wang
Approved by: (position+printed name+signature)	Ivan Xie (Manager)	Ivan Xie

Product Name..... :	Rugged Smart Phone
Model/Type reference.....:	16 Rugged Ultra
List Model(s).....:	S26 Ultra Rugged, Titan X, Titan T1 pro, Xone, Xone pro, 17PROMA X, 16PROMA X
Trade Mark..... :	N/A
FCC ID..... :	**2BDI3-RUGGEDULTRA**
Applicant's name..... :	**Shenzhen Haimeilan Technology Co., LTD.**
Address of applicant.....:	9V777, East 9th Floor, Building 2, SEG Science Park, Huaqiang North Street, Futian District, Shenzhen, China
Test Firm.....:	**Shenzhen CTL Testing Technology Co., Ltd.**
Address of Test Firm.....:	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test specification.....:	
Standard.....:	**47 CFR FCC Part 15 Subpart E 15.407**
TRF Originator.....:	Shenzhen CTL Testing Technology Co., Ltd.
Master TRF..... :	Dated 2011-01
Date of receipt of test item..... :	Aug. 21, 2025
Date of Test Date..... :	Aug. 21, 2025-Nov. 17, 2025
Date of Issue.....:	Nov. 18, 2025
Result..... :	**Pass**

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TEST REPORT

Test Report No. :	CTL2508212021-WF04	Nov. 18, 2025 Date of issue

Equipment under Test	:	Rugged Smart Phone
Sample No	:	CTL250821202015 CTL250821202011
Model /Type	:	16 Rugged Ultra
Listed Models	:	S26 Ultra Rugged, Titan X, Titan T1 pro, Xone, Xone pro, 17PROMA X, 16PROMA X
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, only the model number are different.
Applicant	:	**Shenzhen Haimeilan Technology Co., LTD.**
Address	:	9V777, East 9th Floor, Building 2, SEG Science Park, Huaqiang North Street, Futian District, Shenzhen, China
Manufacturer	:	**Shenzhen Haimeilan Technology Co., LTD.**
Address	:	9V777, East 9th Floor, Building 2, SEG Science Park, Huaqiang North Street, Futian District, Shenzhen, China

Test result	Pass *

∗ In the configuration tested, the EUT complied with the standards specified page 5.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

** Modified History **

Revisions	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	2025-11-18	CTL2508212021-WF04	Tracy Qi

Table of Contents Page

1. SUMMARY 5

1.1. TEST STANDARDS 5
1.2. TEST DESCRIPTION 5
1.3. TEST FACILITY 6
1.4. STATEMENT OF THE MEASUREMENT UNCERTAINTY 6

2. GENERAL INFORMATION 8

2.1. ENVIRONMENTAL CONDITIONS 8
2.2. GENERAL DESCRIPTION OF EUT 8
2.3. DESCRIPTION OF TEST MODES AND TEST FREQUENCY 9
2.4. EQUIPMENTS USED DURING THE TEST 10
2.5. RELATED SUBMITTAL(S) / GRANT (S) 11
2.6. MODIFICATIONS 11

3. TEST CONDITIONS AND RESULTS 12

3.1. CONDUCTED EMISSIONS TEST 12
3.2. RADIATED EMISSIONS 17
3.3. MAXIMUM CONDUCTED AVERAGE OUTPUT POWER 45
3.4. POWER SPECTRAL DENSITY 46
3.5. EMISSION BANDWIDTH (26DBM BANDWIDTH) 48
3.6. MINIMUM EMISSION BANDWIDTH (6DBM BANDWIDTH) 49
3.7. FREQUENCY STABILITY 50
3.8. ANTENNA REQUIREMENT 51

4. TEST SETUP PHOTOS OF THE EUT 52

5. PHOTOS OF THE EUT 52

1. SUMMARY

1.1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15 Subpart E—Unlicensed National Information Infrastructure Devices

ANSI C63.10: 2020: American National Standard for Testing Unlicensed Wireless Devices

KDB789033 D02: General UNII Test Procedures New Rules v02r01

1.2. Test Description

FCC Requirement		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.407(a)	Emission Bandwidth(26dBm Bandwidth)	PASS$_{Note1}$
FCC Part 15.407(e)	Minimum Emission Bandwidth(6dBm Bandwidth)	PASS$_{Note2}$
FCC Part 15.407(a)	Maximum Conducted Output Power	PASS
FCC Part 15.407(a)	Peak Power Spectral Density	PASS
FCC Part 15.407(g)	Frequency Stability	PASS
FCC Part 15.407(b)	Undesirable emission	PASS
FCC Part 15.407(b)/15.205/15.209	Radiated Emissions	PASS
FCC Part 15.407(h)	Dynamic Frequency Selection	PASS$_{Note3}$
FCC Part 15.203	Antenna requirement	PASS

Note 1: Apply to U-NII 1, U-NII 2A, and U-NII 2C band.
Note 2: Apply to U-NII 3 band only.
Note 3: Test result refer to DFS report.

1.3. Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co.,Ltd.
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.3.2 Laboratory accreditation

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

A2LA-Lab Cert. No. 4343.01

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

IC Registration No.: 9618B

CAB identifier: CN0041

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9618B.

FCC-Registration No.: 399832

Designation No.: CN1216

Shenzhen CTL Testing Technology Co., Ltd. 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 399832.

1.4. 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 CTL 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 CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±1.60 dB	(1)
Occupied Bandwidth	±0.20ppm	(1)
Radiated Emission9KHz~30MHz	±3.66dB	(1)
Radiated Emission 30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
Conducted Disturbance0.15~30MHz	±3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

2. GENERAL INFORMATION

2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Description of EUT

Product Name:	Rugged Smart Phone		
Model/Type reference:	16 Rugged Ultra		
Power supply:	Adapter Model: ZZ-5032-33W-1C Input: AC 100-240V~50/60Hz 1.0A PD Output: DC 5.0V⎓3.0A 15.0W DC 9.0V⎓3.0A 27.0W DC 12.0V⎓2.75A 33.0W DC 15.0V⎓2.2A 33.0W DC 20.0V⎓1.65A 33.0W PPS Output: 5.0V-11.0V-⎓3.0A 33.0W DC 3.87V from battery		
Hardware version:	V1.0		
Software version:	V1.0		
WIFI 5GHz			
Supported type:	20MHz system	40MHz system	80MHz system
	802.11a 802.11n	802.11n	N/A
Operation frequency:	5180MHz-5240MHz 5260MHz-5320MHz 5500MHz-5700MHz 5745MHz-5825MHz	5190MHz-5230MHz 5270MHz-5310MHz 5510MHz-5670MHz 5755MHz-5795MHz	N/A
Modulation:	OFDM	OFDM	N/A
Channel number:	24	11	N/A
Channel separation:	20MHz	40MHz	N/A
Antenna type:	Internal Antenna		
Antenna gain:	BAND 1: 1.67dBi BAND 2A: 1.01dBi BAND 2C: -1.01dBi BAND 3: 1.70dBi		

Note1: For more details, please refer to the user's manual of the EUT.
Note2: Antenna gain provided by the applicant.
Note3: This report is only for 5G WIFI.

2.3. Description of Test Modes and Test Frequency

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

All test performed at the low, middle and high of operational frequency range of each mode.

Operation Frequency List WIFI on 5G Band：

Operating band	20MHz		40MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
U-NII 1 (5150MHz-5250MHz)	36	5180	38	5190
	40	5200		
	44	5220	46	5230
	48	5240		
U-NII 2A (5250MHz-5350MHz)	52	5260	54	5270
	56	5280		
	60	5300	62	5310
	64	5320		
U-NII 2C (5470MHz-5725MHz)	100	5500	102	5510
	104	5520		
	108	5540	110	5550
	112	5560		
	116	5580	118	5590
	120	5600		
	124	5620	126	5630
	128	5640		
	132	5660	134	5670
	136	5680		
	140	5700	--	--
U-NII 3 (5725MHz-5850MHz)	149	5745	151	5755
	153	5765		
	157	5785	159	5795
	161	5805		
	165	5825	--	--

Note:

1. “--“Means no channel(s) available any more.
2. The line display in grey is those Channels/Frequencies select to test in this report for each operation mode.

Data Rate Used:

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate
Maximum Conducted Output Power Power Spectral Density Emission Bandwidth(26dBm Bandwidth) Minimum Emission Bandwidth(6dBm Bandwidth) Undesirable emission Frequency Stability	11a(20MHz)/OFDM	6 Mbps
	11n(20MHz)/OFDM	7.2 Mbps
	11n(40MHz)/OFDM	15.0Mbps

2.4. Equipments Used during the Test

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
EMI Test Receiver		ROHDE & SCHWARZ	ESCI	1166.5950.03	2025/04/29	2026/04/28
LISN		R&S	ESH2-Z5	860014/010	2025/04/29	2026/04/28
Limitator		ROHDE & SCHWARZ	ESH3-Z2	100408	2025/04/29	2026/04/28

Software:	
Name of Software:	Version:
ES-K1	V1.71

Radiated Emissions and Band Edge					
Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Active Loop Antenna	Da Ze	ZN30900A	/	2024/04/30	2027/04/29
Double cone logarithmic antenna	Schwarzbeck	VULB 9168	824	2023/02/13	2026/02/12
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2024/11/25	2027/11/24
Horn Antenna	Ocean Microwave	OBH100400	26999002	2024/12/21	2027/12/20
Amplifier	Agilent	8449B	3008A02306	2025/05/01	2026/04/30
Amplifier	Brief&Smart	LNA-4018	2104197	2024/04/30	2026/04/29
EMI Test Receiver	R&S	ESCI	1166.5950.03	2025/04/29	2026/04/28
Spectrum Analyzer	Keysight	N9020A	MY53420874	2025/04/29	2026/04/28

Test software	
Name of Software	Version
EZ_EMC(Below 1GHz)	V1.1.4.2
EZ_EMC(Above 1GHz)	V1.1.4.2

Maximum Peak Output Power & 20dB Bandwidth & Frequency Separation & Number of hopping frequency & Dwell Time & Out-of-band Emissions					
Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Spectrum Analyzer	Keysight	N9020A	MY53420874	2025/04/29	2026/04/28
Temperature/Humidity Meter	Ji Yu	MC501	/	2025/05/06	2026/05/05

Test Software	
Name of Software	Version
TST-PASS	V2.0

2.5. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.

2.6. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Conducted Emissions Test

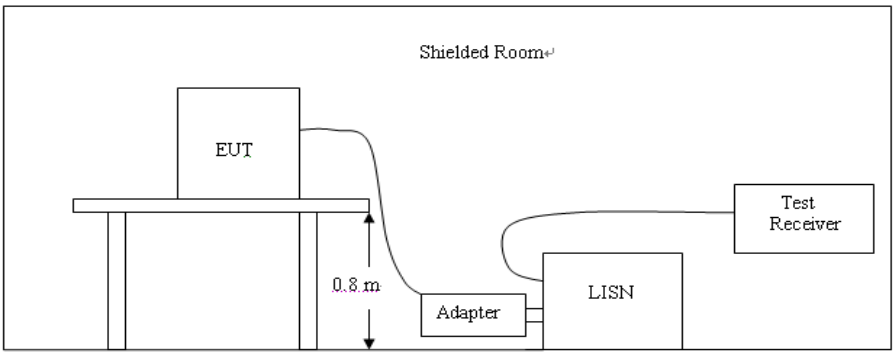
LIMIT

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

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 CONFIGURATION



TEST PROCEDURE

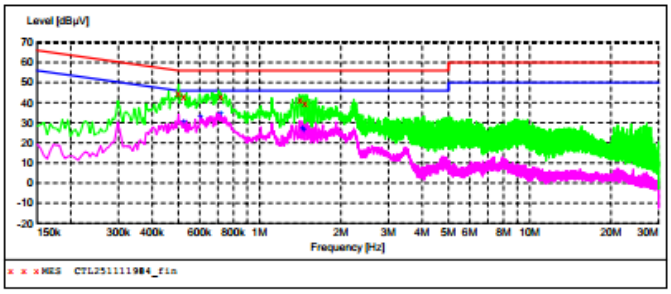
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a Laser Projector op system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10: 2020.
2. Support equipment, if needed, was placed as per ANSI C63.10: 2020.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10: 2020.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

Remark: All 802.11a20 / 802.11n (HT20)/ 802.11n (HT40) all have been tested, only worse case is reported.

Line:	L
Test Mode:	802.11n 5180MHz

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL251111984_fin"

11/11/2025 9:20PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.501000	44.70	10.0	56	11.3	QP	L1	GND
0.523500	43.30	10.0	56	12.7	QP	L1	GND
0.717000	42.60	10.0	56	13.4	QP	L1	GND
1.414500	40.90	10.1	56	15.1	QP	L1	GND
1.477500	39.50	10.1	56	16.5	QP	L1	GND

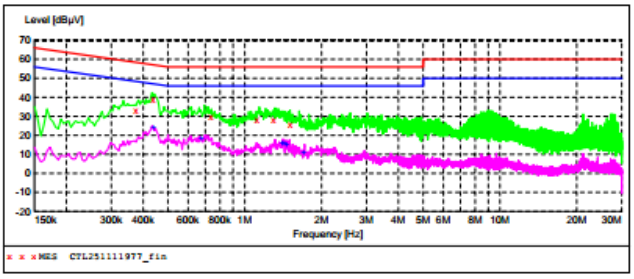
MEASUREMENT RESULT: "CTL251111984_fin2"

11/11/2025 9:20PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.523500	30.60	10.0	46	15.4	AV	L1	GND
0.604500	32.80	10.0	46	13.2	AV	L1	GND
0.717000	34.30	10.0	46	11.7	AV	L1	GND
1.437000	27.00	10.1	46	19.0	AV	L1	GND
1.455000	26.60	10.1	46	19.4	AV	L1	GND

Line:	N
Test Mode:	802.11n 5180MHz

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL251111977_fin"

11/11/2025 9:00PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.375000	33.40	9.9	58	25.0	QP	N	GND
0.438000	38.80	9.9	57	18.3	QP	N	GND
0.739500	29.40	10.0	56	26.6	QP	N	GND
1.117500	28.40	10.1	56	27.6	QP	N	GND
1.297500	27.90	10.1	56	28.1	QP	N	GND
1.513500	25.50	10.1	56	30.5	QP	N	GND

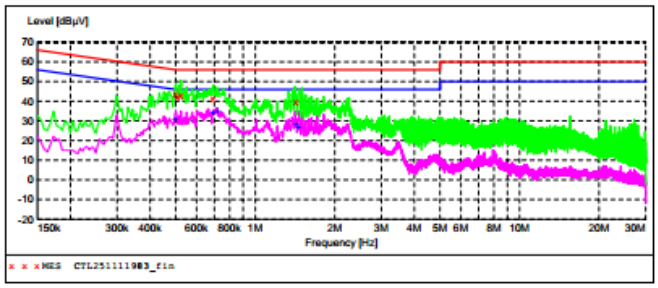
MEASUREMENT RESULT: "CTL251111977_fin2"

11/11/2025 9:00PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.438000	23.60	9.9	47	23.5	AV	N	GND
0.676500	18.60	10.0	46	27.4	AV	N	GND
1.401000	15.70	10.1	46	30.3	AV	N	GND
1.428000	15.60	10.1	46	30.4	AV	N	GND
1.455000	14.70	10.1	46	31.3	AV	N	GND
1.698000	10.80	10.1	46	35.2	AV	N	GND

Line:	L
Test Mode:	802.11n 5260MHz

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL251111983_fin"

11/11/2025 9:17PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.501000	44.10	10.0	56	11.9	QP	L1	GND
0.510000	41.90	10.0	56	14.1	QP	L1	GND
0.523500	43.20	10.0	56	12.8	QP	L1	GND
0.690000	41.60	10.0	56	14.4	QP	L1	GND
1.428000	39.50	10.1	56	16.5	QP	L1	GND

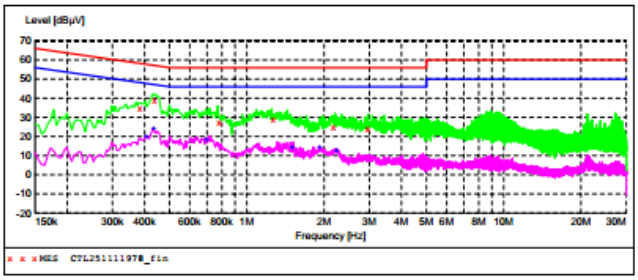
MEASUREMENT RESULT: "CTL251111983_fin2"

11/11/2025 9:17PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.496500	30.60	9.9	46	15.5	AV	L1	GND
0.690000	33.60	10.0	46	12.4	AV	L1	GND
0.717000	34.30	10.0	46	11.7	AV	L1	GND
1.428000	27.70	10.1	46	18.3	AV	L1	GND
1.455000	26.50	10.1	46	19.5	AV	L1	GND

Line:	N
Test Mode:	802.11n 5260MHz

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL251111978_fin"

11/11/2025 9:03PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.384000	34.80	9.9	58	23.4	QP	N	GND
0.438000	38.90	9.9	57	18.2	QP	N	GND
0.780000	27.30	10.0	56	28.7	QP	N	GND
1.266000	28.70	10.1	56	27.3	QP	N	GND
2.179500	25.10	10.2	56	30.9	QP	N	GND
2.962500	23.90	10.4	56	32.1	QP	N	GND

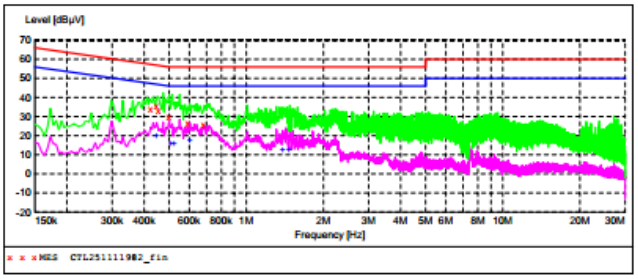
MEASUREMENT RESULT: "CTL251111978_fin2"

11/11/2025 9:03PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.406500	20.10	9.9	48	27.6	AV	N	GND
0.433500	24.30	9.9	47	22.9	AV	N	GND
0.694500	18.60	10.0	46	27.4	AV	N	GND
1.504500	14.00	10.1	46	32.0	AV	N	GND
1.918500	14.30	10.1	46	31.7	AV	N	GND
2.233500	12.80	10.2	46	33.2	AV	N	GND

Line:	L
Test Mode:	802.11n 5500MHz

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL251111982_fin"

11/11/2025 9:15PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.424500	33.70	9.9	57	23.7	QP	L1	GND
0.447000	35.30	9.9	57	21.6	QP	L1	GND
0.456000	33.30	9.9	57	23.5	QP	L1	GND
0.501000	29.60	10.0	56	26.4	QP	L1	GND
0.591000	26.50	10.0	56	29.5	QP	L1	GND
0.681000	26.00	10.0	56	30.0	QP	L1	GND

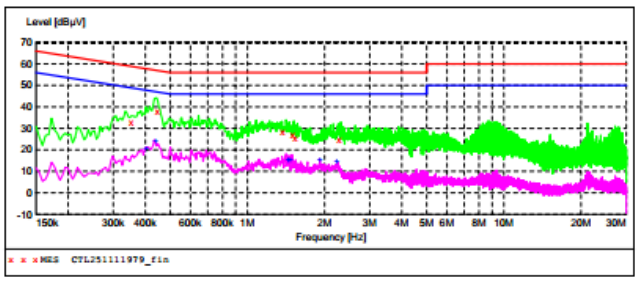
MEASUREMENT RESULT: "CTL251111982_fin2"

11/11/2025 9:15PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.447000	19.60	9.9	47	27.3	AV	L1	GND
0.510000	15.50	10.0	46	30.5	AV	L1	GND
0.523500	16.10	10.0	46	29.9	AV	L1	GND
0.604500	17.50	10.0	46	28.5	AV	L1	GND
1.387500	12.80	10.1	46	33.2	AV	L1	GND
1.464000	12.60	10.1	46	33.4	AV	L1	GND

Line:	N
Test Mode:	802.11n 5500MHz

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL251111979_fin"

11/11/2025 9:06PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.352500	32.90	9.9	59	26.0	QP	N	GND
0.447000	37.70	9.9	57	19.2	QP	N	GND
1.374000	28.20	10.1	56	27.8	QP	N	GND
1.504500	26.70	10.1	56	29.3	QP	N	GND
1.540500	25.40	10.1	56	30.6	QP	N	GND
2.278500	24.80	10.2	56	31.2	QP	N	GND

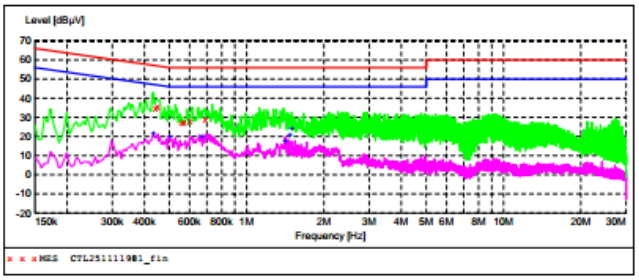
MEASUREMENT RESULT: "CTL251111979_fin2"

11/11/2025 9:06PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.402000	20.20	9.9	48	27.6	AV	N	GND
0.438000	23.80	9.9	47	23.3	AV	N	GND
1.437000	15.50	10.1	46	30.5	AV	N	GND
1.464000	15.40	10.1	46	30.6	AV	N	GND
1.918500	15.30	10.1	46	30.7	AV	N	GND
2.224500	14.40	10.2	46	31.6	AV	N	GND

Line:	L
Test Mode:	802.11n 5745MHz

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL251111981_fin"

11/11/2025 9:12PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.442500	34.90	9.9	57	22.1	QP	L1	GND
0.451500	35.20	9.9	57	21.6	QP	L1	GND
0.559500	27.40	10.0	56	28.6	QP	L1	GND
0.573000	27.40	10.0	56	28.6	QP	L1	GND
0.604500	27.70	10.0	56	28.3	QP	L1	GND
0.690000	29.20	10.0	56	26.8	QP	L1	GND

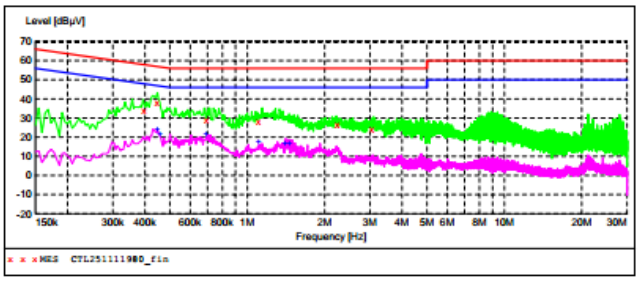
MEASUREMENT RESULT: "CTL251111981_fin2"

11/11/2025 9:12PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.433500	21.30	9.9	47	25.9	AV	L1	GND
0.501000	19.70	10.0	46	26.3	AV	L1	GND
0.667500	20.20	10.0	46	25.8	AV	L1	GND
1.414500	17.30	10.1	46	28.7	AV	L1	GND
1.477500	20.50	10.1	46	25.5	AV	L1	GND
1.504500	24.00	10.1	46	22.0	AV	L1	GND

Line:	N
Test Mode:	802.11n 5745MHz

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL251111980_fin"

11/11/2025 9:09PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.397500	34.10	9.9	58	23.8	QP	N	GND
0.447000	37.60	9.9	57	19.3	QP	N	GND
0.694500	29.30	10.0	56	26.7	QP	N	GND
1.108500	28.50	10.1	56	27.5	QP	N	GND
2.242500	26.20	10.2	56	29.8	QP	N	GND
3.061500	23.80	10.4	56	32.2	QP	N	GND

MEASUREMENT RESULT: "CTL251111980_fin2"

11/11/2025 9:09PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.447000	23.60	9.9	47	23.3	AV	N	GND
0.456000	21.60	9.9	47	25.2	AV	N	GND
0.690000	21.50	10.0	46	24.5	AV	N	GND
1.108500	17.30	10.1	46	28.7	AV	N	GND
1.396500	16.30	10.1	46	29.7	AV	N	GND
1.455000	16.40	10.1	46	29.6	AV	N	GND

Remark: Level(dBuV)=Reading(dBuV) + Transd.(dB)
Margin=Limit(dBuV)- Level(dBuV)

3.2. Radiated Emissions

Limit

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) 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.
(2) For transmitters operating in the 5.25-5.35 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.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 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.

Undesirable emission limits

Requirement	Limit(EIRP)	Limit (Field strength at 3m) Note1
15.407(b)(1)	PK:-27(dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)		

Note1: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

(5) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209

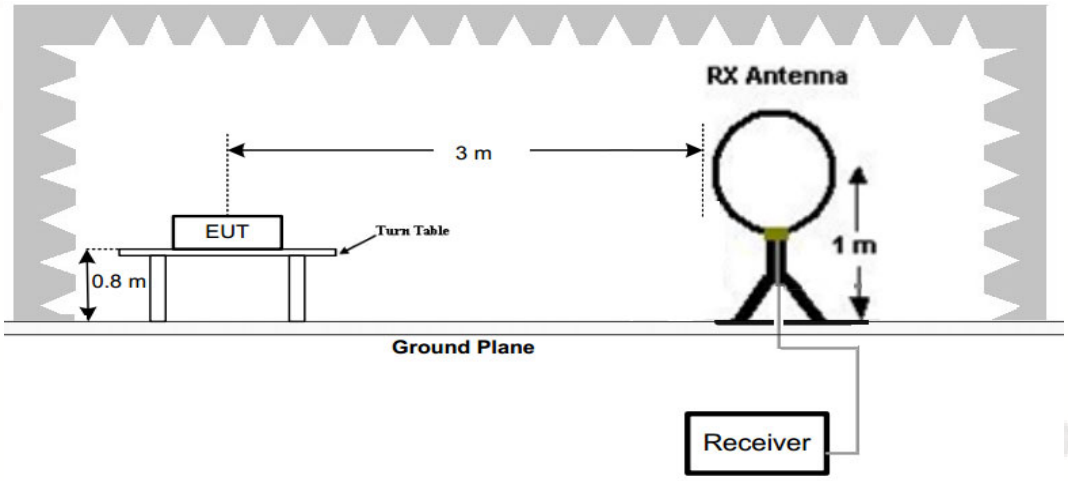
(6)In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

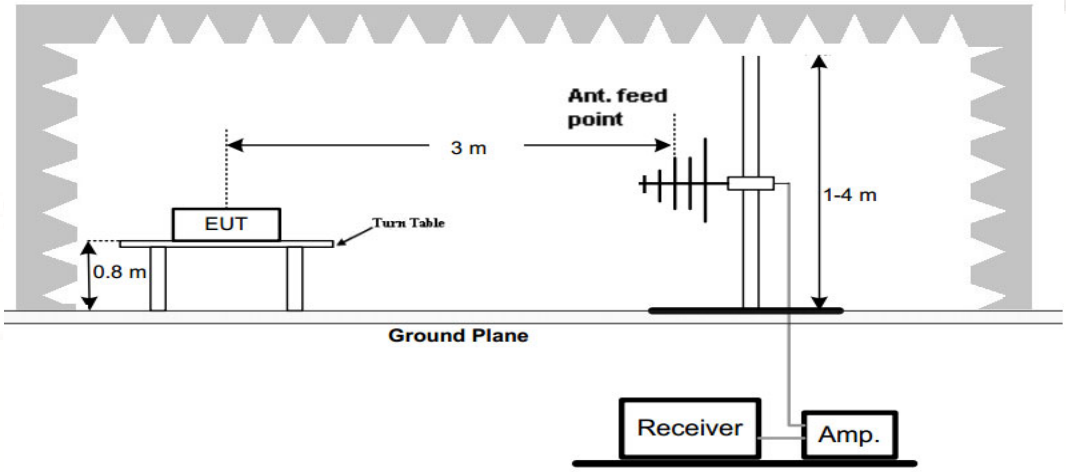
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

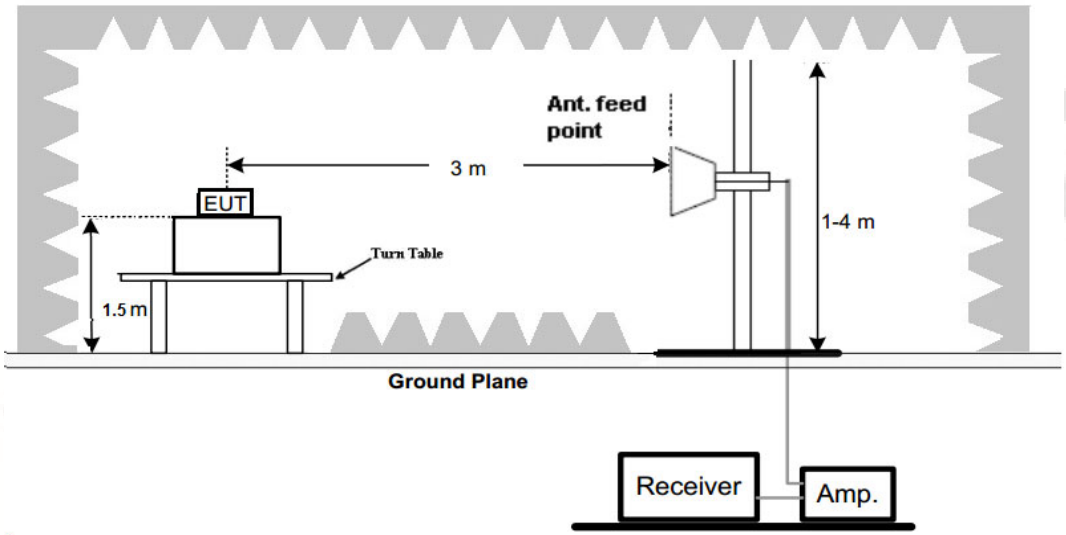
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 40GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3
1GHz-18GHz	Horn Antenna	3
18GHz-40GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

TEST RESULTS

Remark:
1. All 802.11a20 / 802.11n (HT20) / 802.11n (HT40)modes have been tested for below 1GHz test, only the worst case 802.11n (HT20) low channel of U-NII 1 band was recorded.
2. All 802.11a20 / 802.11n (HT20) / 802.11n (HT40)modes have been tested for above 1GHz test, only the worst case 802.11n (HT20) was recorded.
3. All WIFI operation modes have been tested for U-NII 3 bandedge test, only the worst case of 802.11n(HT20) mode was recorded.
4. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

For 30MHz-1GHz

Wi-Fi	802.11n 5180MHz	Horizontal

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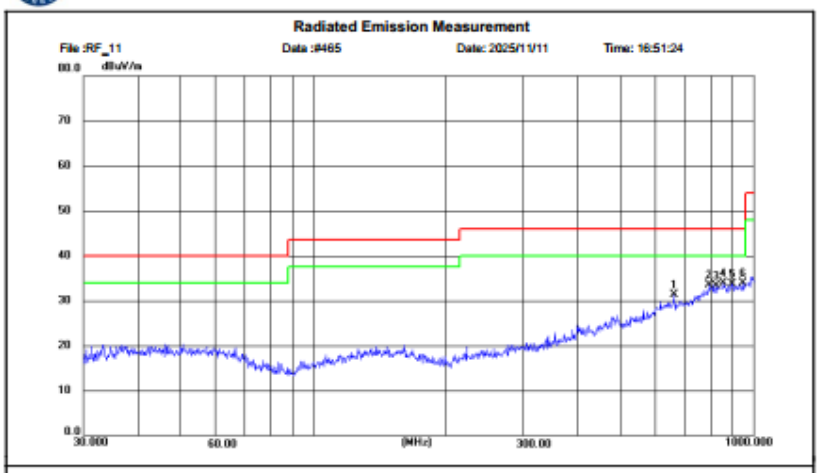

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N:
Mode: WIFI5G 5180MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	663.1821	8.68	22.59	31.27	46.00	14.73	peak	100	292	P	
2	794.0918	8.04	25.51	33.55	46.00	12.45	peak	100	320	P	
3	825.3200	7.44	25.89	33.33	46.00	12.67	peak	100	38	P	
4	857.0246	7.58	26.34	33.92	46.00	12.08	peak	100	320	P	
5	896.9965	7.26	26.49	33.75	46.00	12.25	peak	100	10	P	
6	950.8425	6.72	27.11	33.83	46.00	12.17	peak	100	347	P	

Wi-Fi	802.11n 5180MHz	Vertical

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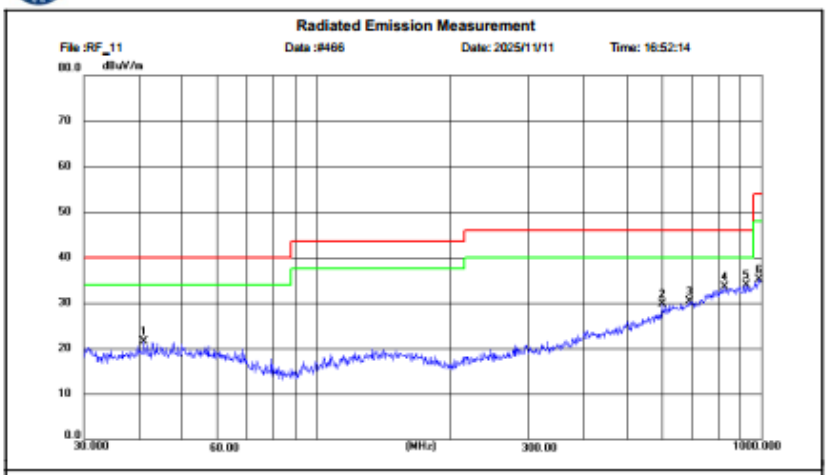

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N:
Mode: WIFI5G 5180MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	41.0420	7.19	14.23	21.42	40.00	18.58	peak	100	153	P	
2	600.6362	7.98	21.79	29.77	46.00	16.23	peak	100	350	P	
3	690.1692	7.50	22.74	30.24	46.00	15.76	peak	100	222	P	
4	828.2191	7.55	25.89	33.44	46.00	12.56	peak	100	69	P	
5	927.3808	6.99	26.97	33.96	46.00	12.04	peak	100	293	P	
6	988.2351	7.66	27.54	35.20	54.00	18.80	peak	100	321	P	

Wi-Fi	802.11n 5260MHz	Horizontal

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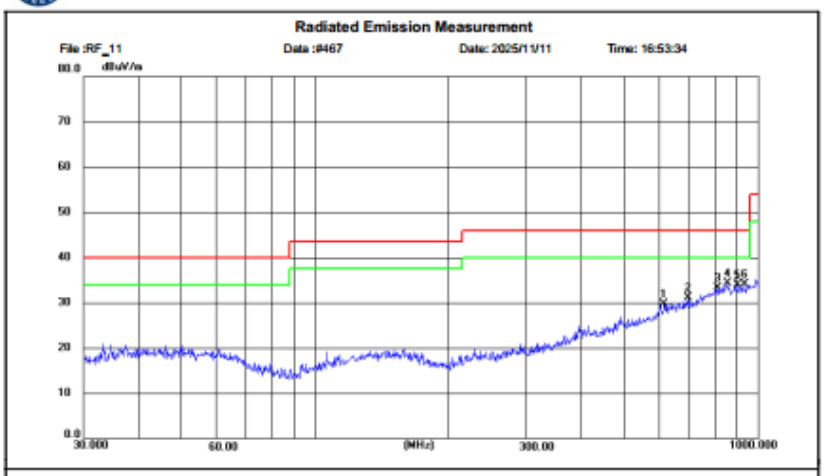

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N:
Mode: WIFI5G 5260MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	615.5617	7.66	22.11	29.77	46.00	16.23	peak	100	180	P	
2	698.0795	8.42	22.76	31.18	46.00	14.82	peak	100	360	P	
3	810.9760	7.44	25.88	33.32	46.00	12.68	peak	100	137	P	
4	855.5234	8.02	26.34	34.36	46.00	11.64	peak	100	67	P	
5	901.7270	7.27	26.62	33.89	46.00	12.11	peak	100	151	P	
6	937.5990	7.10	27.09	34.19	46.00	11.81	peak	100	349	P	

Wi-Fi	802.11n 5260MHz	Vertical

Shenzhen CTL Testing Technology Co., Ltd
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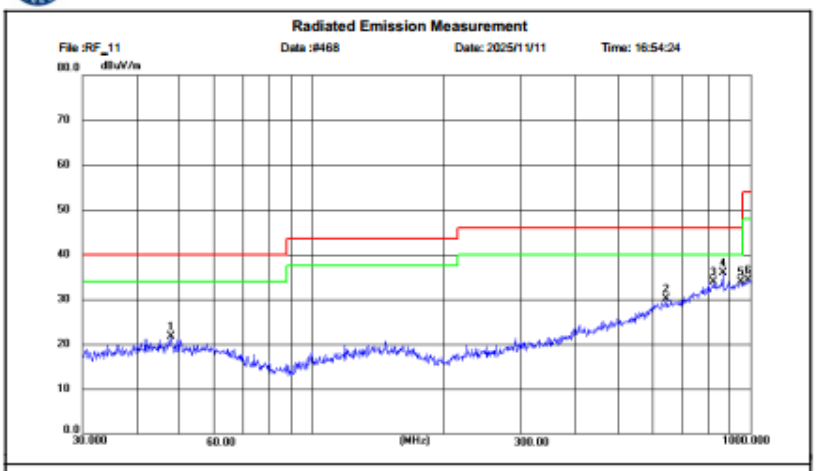

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N:
Mode: WIFI5G 5260MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	47.8680	7.27	14.38	21.65	40.00	18.35	peak	100	307	P	
2	642.8613	7.33	22.69	30.02	46.00	15.98	peak	100	280	P	
3	825.6819	8.10	25.89	33.99	46.00	12.01	peak	100	181	P	
4	867.6077	9.80	26.04	35.84	46.00	10.16	peak	100	322	P	
5	955.4381	6.80	27.13	33.93	46.00	12.07	peak	100	280	P	
6	989.1018	6.78	27.56	34.34	54.00	19.66	peak	100	350	P	

Wi-Fi	802.11n 5500MHz	Horizontal

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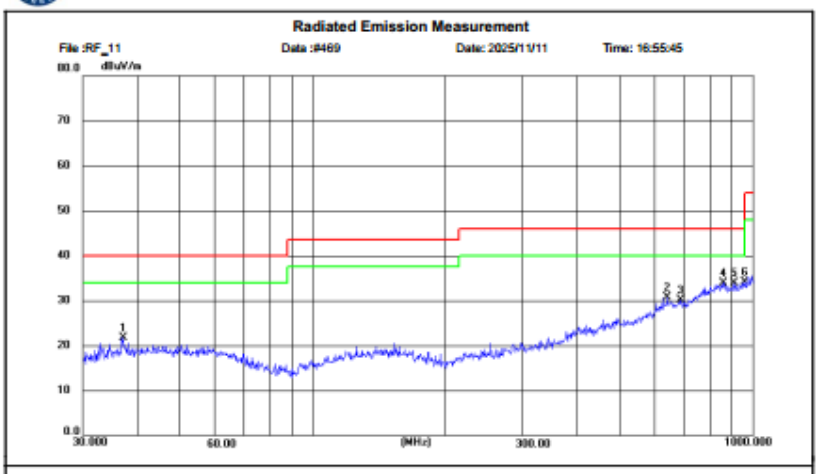

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N:
Mode: WIFI5G 5500MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	37.0736	7.78	13.89	21.67	40.00	18.33	peak	100	236	P	
2	641.1728	7.85	22.78	30.63	46.00	15.37	peak	100	193	P	
3	685.0455	7.31	22.73	30.04	46.00	15.96	peak	100	166	P	
4	857.7763	7.63	26.34	33.97	46.00	12.03	peak	100	109	P	
5	908.0731	7.37	26.63	34.00	46.00	12.00	peak	100	349	P	
6	958.7943	6.95	27.21	34.16	46.00	11.84	peak	100	180	P	

Wi-Fi	802.11n 5500MHz	Vertical

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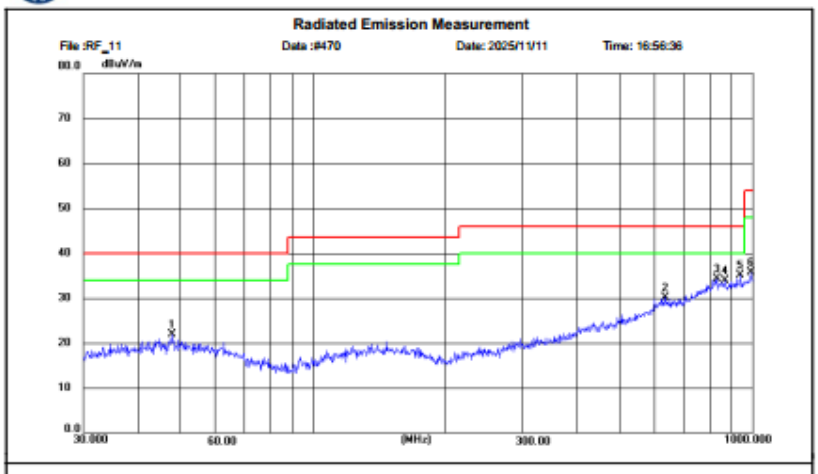

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N:
Mode: WIFI5G 5500MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	47.7632	7.55	14.38	21.93	40.00	18.07	peak	100	350	P	
2	635.5766	7.45	22.57	30.02	46.00	15.98	peak	100	55	P	
3	831.8574	8.35	25.90	34.25	46.00	11.75	peak	100	294	P	
4	867.6077	7.84	26.04	33.88	46.00	12.12	peak	100	210	P	
5	940.0680	8.04	27.09	35.13	46.00	10.87	peak	100	27	P	
6	993.8823	7.98	27.67	35.65	54.00	18.35	peak	100	280	P	

Wi-Fi	802.11n 5745MHz	Horizontal

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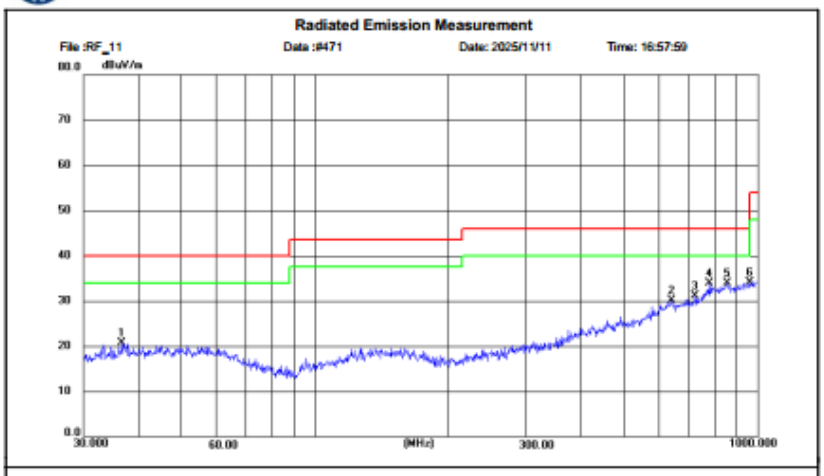

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N:
Mode: WIFI5G 5745MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	36.6856	6.81	13.87	20.68	40.00	19.32	peak	100	10	P	
2	641.4540	7.34	22.76	30.10	46.00	15.90	peak	100	54	P	
3	723.3093	7.65	23.43	31.08	46.00	14.92	peak	100	264	P	
4	777.9000	8.65	25.16	33.81	46.00	12.19	peak	100	139	P	
5	856.2737	7.51	26.34	33.85	46.00	12.15	peak	100	27	P	
6	960.0560	6.88	27.23	34.11	54.00	19.89	peak	100	139	P	

Wi-Fi	802.11n 5745MHz	Vertical

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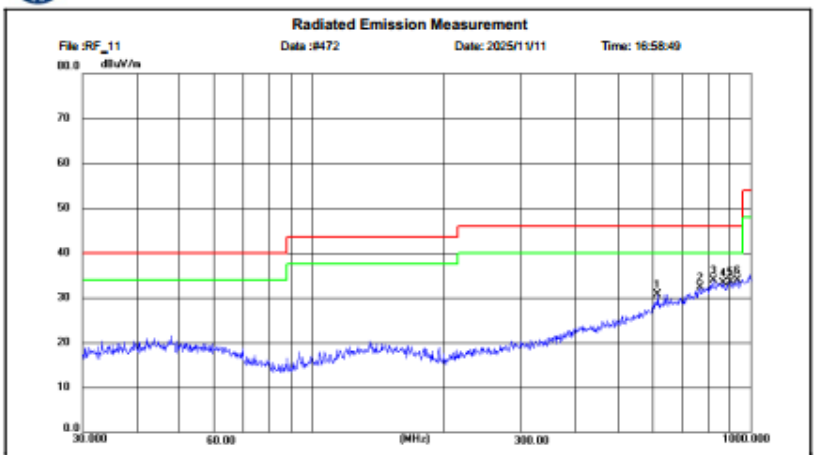

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N:
Mode: WIFI5G 5745MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	615.5618	8.66	22.11	30.77	46.00	15.23	peak	100	293	P	
2	768.0745	7.46	24.82	32.28	46.00	13.72	peak	100	252	P	
3	823.1524	7.91	25.92	33.83	46.00	12.17	peak	100	139	P	
4	867.2275	7.25	26.10	33.35	46.00	12.65	peak	100	195	P	
5	900.9369	6.90	26.62	33.52	46.00	12.48	peak	100	167	P	
6	938.0100	6.85	27.09	33.94	46.00	12.06	peak	100	82	P	

Remark: Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)
Margin= Limit(dBuV/m)- Level(dBuV/m)

For 1GHz to 40GHz

Note: 1. All 802.11a20 / 802.11n (HT20) / 802.11n (HT40)modes have been tested for above 1GHz test, only the worst case 802.11n (HT20) was recorded.

U-NII 1 & 802.11n (HT20) Mode (above 1GHz)

Wi-Fi	**802.11n 5180MHz**	Horizontal

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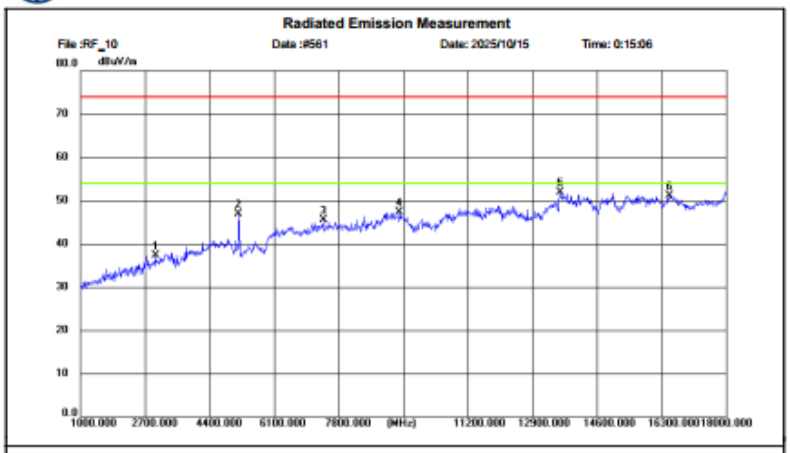

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5180MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2982.625	51.43	-14.11	37.32	74.00	36.68	peak	150	28	P	
2	5175.625	54.79	-7.80	46.99	74.00	27.01	peak	150	185	P	
3	7398.375	48.28	-2.79	45.49	74.00	28.51	peak	150	170	P	
4	9412.875	47.08	0.23	47.31	74.00	26.69	peak	150	355	P	
5	13635.250	47.98	3.94	51.92	74.00	22.08	peak	150	170	P	
6	16521.000	44.86	6.21	51.07	74.00	22.93	peak	150	360	P	

Wi-Fi	**802.11n 5180MHz**	Vertical

Shenzhen CTL Testing Technology Co., Ltd
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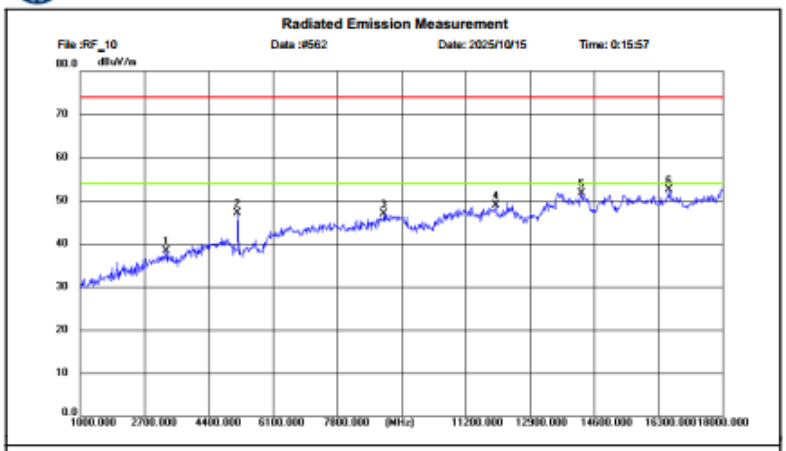

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5180MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3284.375	51.05	-12.80	38.25	74.00	35.75	peak	150	261	P	
2	5175.625	55.00	-7.80	47.20	74.00	26.80	peak	150	205	P	
3	9053.750	47.18	-0.23	46.95	74.00	27.05	peak	150	261	P	
4	12007.500	46.69	2.21	48.90	74.00	25.10	peak	150	134	P	
5	14268.500	48.79	2.89	51.68	74.00	22.32	peak	150	360	P	
6	16584.750	46.32	6.27	52.59	74.00	21.41	peak	150	247	P	

Wi-Fi	802.11n 5200MHz	Horizontal

Shenzhen CTL Testing Technology Co., Ltd
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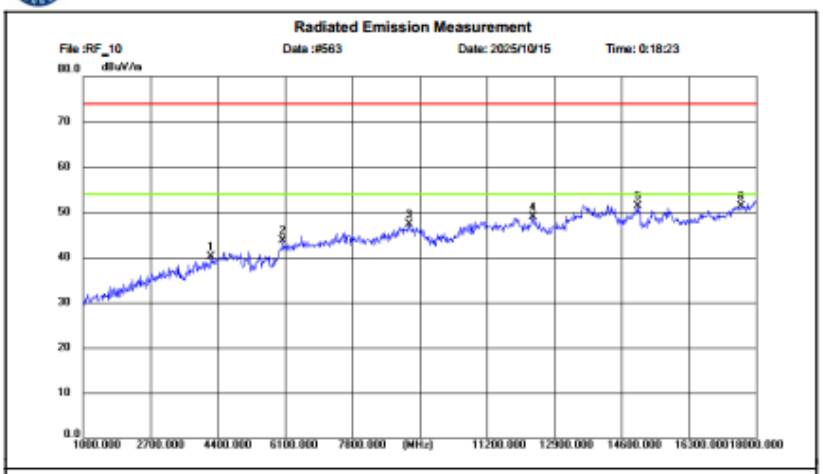

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5200MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	4238.500	49.47	-9.44	40.03	74.00	33.97	peak	150	271	P	
2	6055.375	49.16	-5.49	43.67	74.00	30.33	peak	150	343	P	
3	9242.875	47.25	0.05	47.30	74.00	26.70	peak	150	360	P	
4	12356.000	46.68	2.21	48.89	74.00	25.11	peak	150	157	P	
5	15029.250	47.97	3.36	51.33	74.00	22.67	peak	150	186	P	
6	17630.250	42.21	9.11	51.32	74.00	22.68	peak	150	286	P	

Wi-Fi	802.11n 5200MHz	Vertical

Shenzhen CTL Testing Technology Co., Ltd
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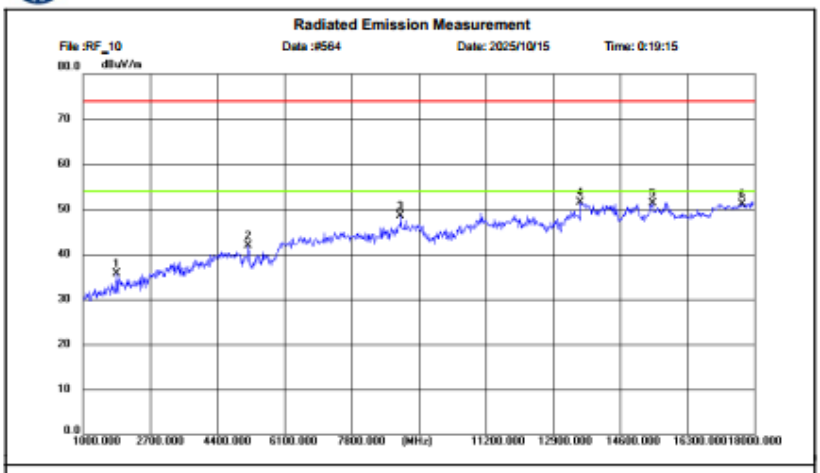

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5200MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	1850.000	55.30	-19.69	35.61	74.00	38.39	peak	150	61	P	
2	5196.875	49.79	-7.81	41.98	74.00	32.02	peak	150	104	P	
3	9051.625	48.70	-0.23	48.47	74.00	25.53	peak	150	318	P	
4	13609.750	47.59	3.96	51.55	74.00	22.45	peak	150	33	P	
5	15420.250	47.43	3.79	51.22	74.00	22.78	peak	150	304	P	
6	17700.375	42.03	9.15	51.18	74.00	22.82	peak	150	76	P	

Wi-Fi	802.11n 5240MHz	Horizontal

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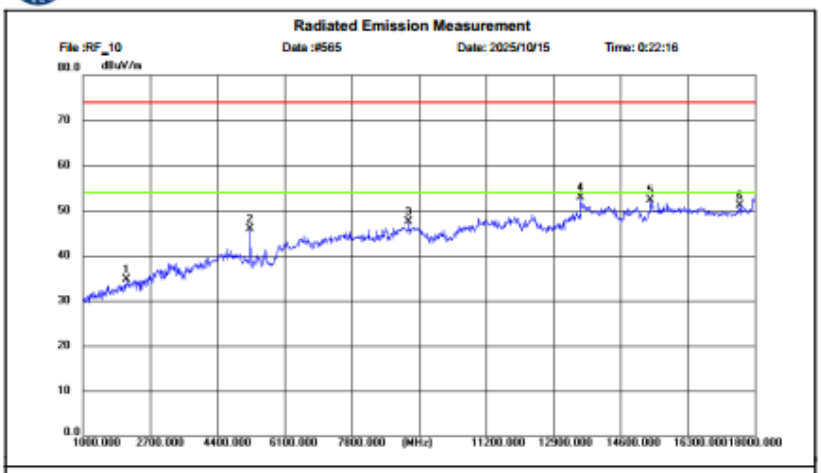

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5240MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2102.875	52.86	-18.20	34.66	74.00	39.34	peak	150	270	P	
2	5239.375	53.68	-7.77	45.91	74.00	28.09	peak	150	342	P	
3	9249.250	47.45	0.07	47.52	74.00	26.48	peak	150	128	P	
4	13611.875	48.91	3.96	52.87	74.00	21.13	peak	150	1	P	
5	15371.375	48.46	3.76	52.22	74.00	21.78	peak	150	228	P	
6	17626.000	41.92	9.11	51.03	74.00	22.97	peak	150	42	P	

Wi-Fi	802.11n 5240MHz	Vertical

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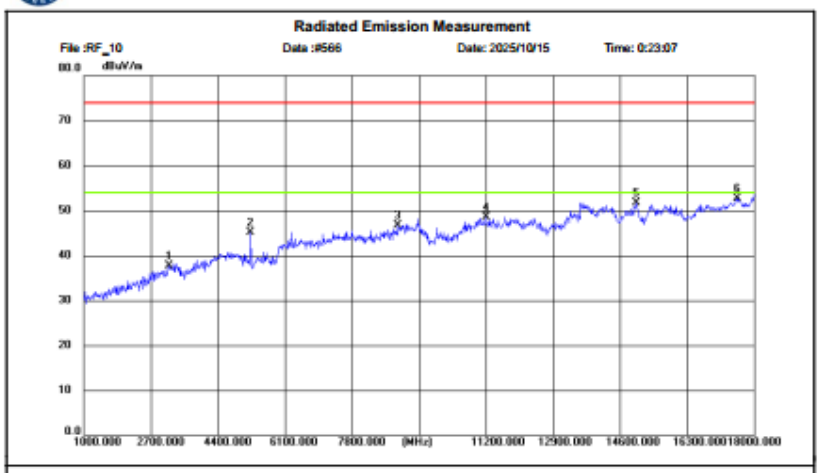

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5240MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3169.625	51.06	-13.28	37.78	74.00	36.22	peak	150	360	P	
2	5241.500	52.81	-7.77	45.04	74.00	28.96	peak	150	104	P	
3	8987.875	47.07	-0.31	46.76	74.00	27.24	peak	150	175	P	
4	11221.250	47.63	0.83	48.46	74.00	25.54	peak	150	190	P	
5	15012.250	48.30	3.35	51.65	74.00	22.35	peak	150	132	P	
6	17589.875	43.56	9.10	52.66	74.00	21.34	peak	150	33	P	

U-NII 2A & 802.11n (HT20) Mode (above 1GHz)

Wi-Fi	802.11n 5260MHz	Horizontal

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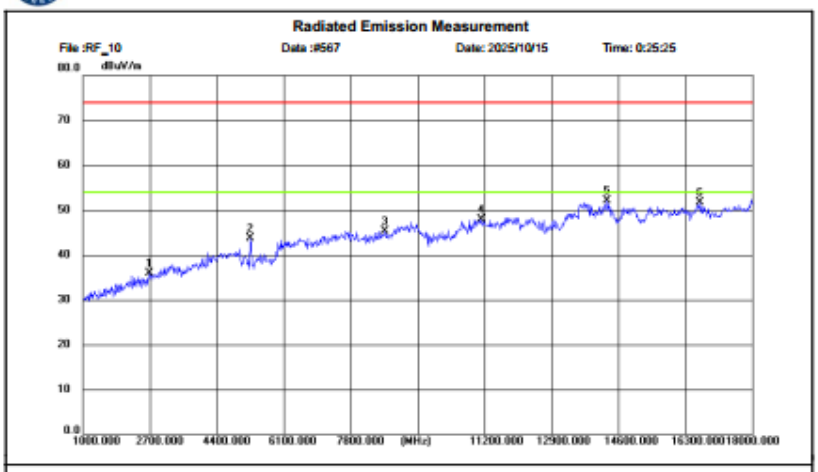

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5260MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2693.625	51.48	-15.55	35.93	74.00	38.07	peak	150	257	P	
2	5264.875	51.45	-7.77	43.68	74.00	30.32	peak	150	299	P	
3	8671.250	46.69	-1.32	45.37	74.00	28.63	peak	150	43	P	
4	11119.250	47.20	0.79	47.99	74.00	26.01	peak	150	171	P	
5	14323.750	49.39	2.77	52.16	74.00	21.84	peak	150	1	P	
6	16678.250	45.19	6.43	51.62	74.00	22.38	peak	150	157	P	

Wi-Fi	802.11n 5260MHz	Vertical

Shenzhen CTL Testing Technology Co., Ltd
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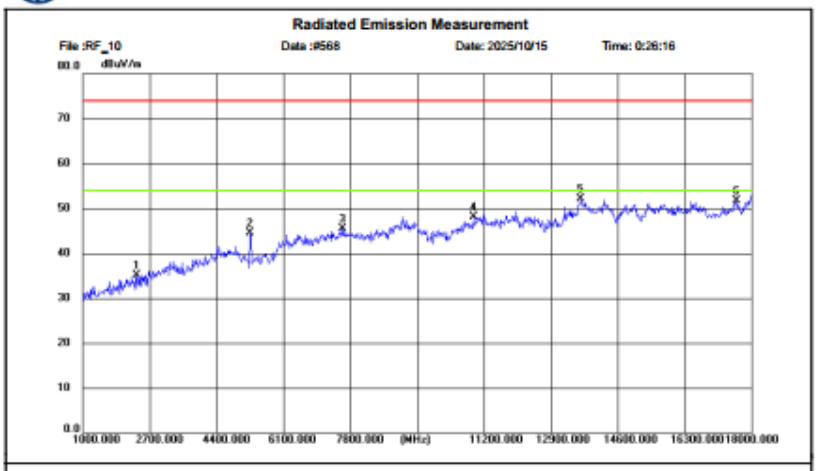

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5260MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2368.500	52.13	-17.05	35.08	74.00	38.92	peak	150	103	P	
2	5256.375	52.17	-7.76	44.41	74.00	29.59	peak	150	290	P	
3	7617.250	48.42	-2.87	45.55	74.00	28.45	peak	150	246	P	
4	10934.375	47.39	0.68	48.07	74.00	25.93	peak	150	132	P	
5	13677.750	48.12	3.91	52.03	74.00	21.97	peak	150	132	P	
6	17632.375	42.63	9.11	51.74	74.00	22.26	peak	150	346	P	

Wi-Fi	802.11n 5300MHz	Horizontal

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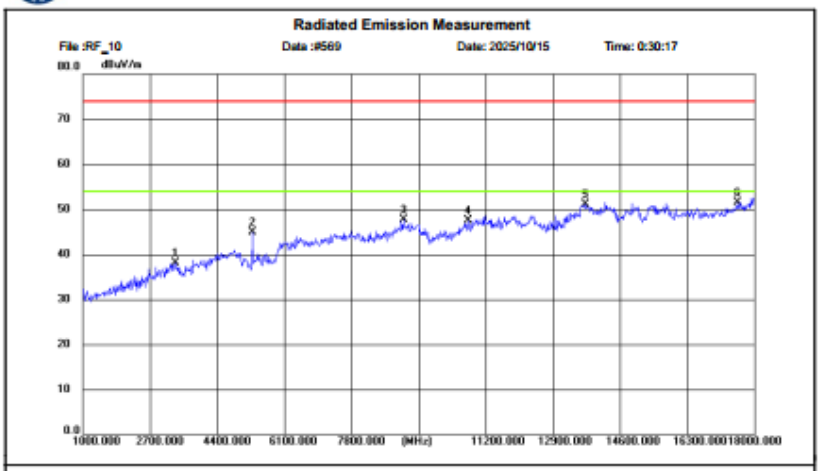

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5300MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3348.125	50.62	-12.56	38.06	74.00	35.94	peak	150	228	P	
2	5298.875	52.74	-7.79	44.95	74.00	29.05	peak	150	312	P	
3	9130.250	47.95	-0.15	47.80	74.00	26.20	peak	150	284	P	
4	10772.875	47.20	0.37	47.57	74.00	26.43	peak	150	28	P	
5	13724.500	47.27	3.86	51.13	74.00	22.87	peak	150	284	P	
6	17577.125	42.37	9.12	51.49	74.00	22.51	peak	150	198	P	

Wi-Fi	802.11n 5300MHz	Vertical

Shenzhen CTL Testing Technology Co., Ltd
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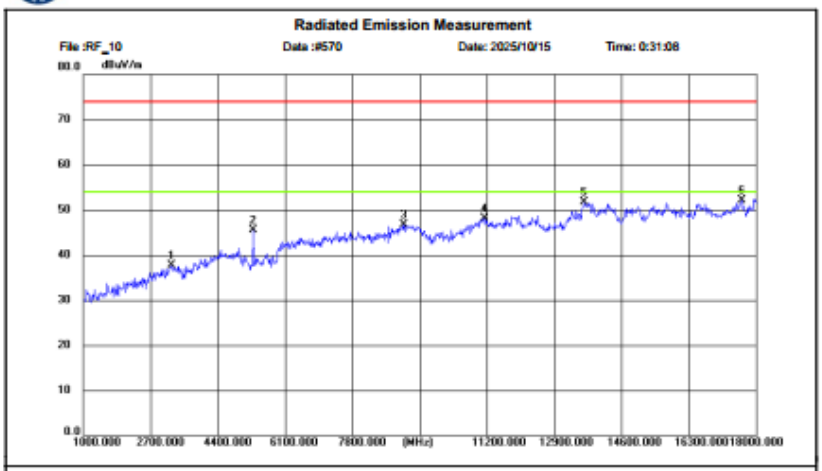

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5300MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3229.125	50.74	-13.04	37.70	74.00	36.30	peak	150	90	P	
2	5301.000	53.31	-7.80	45.51	74.00	28.49	peak	150	174	P	
3	9106.875	46.96	-0.18	46.78	74.00	27.22	peak	150	246	P	
4	11136.250	47.31	0.80	48.11	74.00	25.89	peak	150	18	P	
5	13679.875	47.71	3.92	51.63	74.00	22.37	peak	150	360	P	
6	17647.250	42.96	9.12	52.08	74.00	21.92	peak	150	218	P	

Wi-Fi	802.11n 5320MHz	Horizontal

Shenzhen CTL Testing Technology Co., Ltd
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Radiated Emission Measurement

File :RF_10 Data :#571 Date: 2025/10/15 Time: 0:33:40

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5320MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3214.250	51.17	-13.08	38.09	74.00	35.91	peak	150	128	P	
2	5320.125	52.72	-7.77	44.95	74.00	29.05	peak	150	185	P	
3	8611.750	47.59	-1.54	46.05	74.00	27.95	peak	150	314	P	
4	10955.625	46.29	0.73	47.02	74.00	26.98	peak	150	1	P	
5	13677.750	48.38	3.91	52.29	74.00	21.71	peak	150	357	P	
6	16578.375	44.34	6.27	50.61	74.00	23.39	peak	150	142	P	

Wi-Fi	802.11n 5320MHz	Vertical

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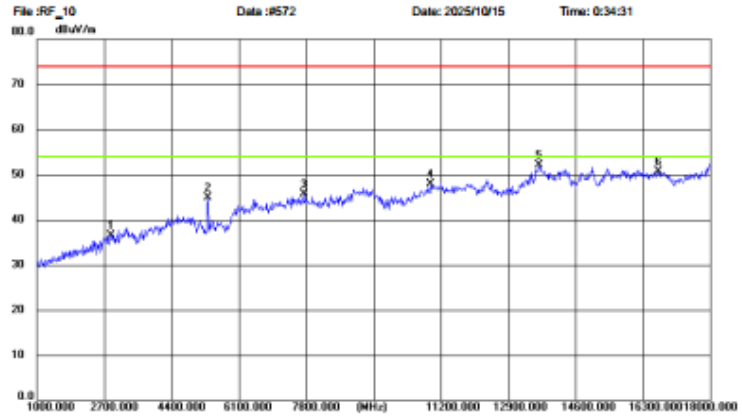
Radiated Emission Measurement

File :RF_10 Data :#572 Date: 2025/10/15 Time: 0:34:31



Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5320MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2876.375	51.15	-14.64	36.51	74.00	37.49	peak	150	161	P	
2	5324.375	52.59	-7.76	44.83	74.00	29.17	peak	150	175	P	
3	7740.500	48.56	-2.89	45.67	74.00	28.33	peak	150	360	P	
4	10947.125	47.13	0.71	47.84	74.00	26.16	peak	150	360	P	
5	13682.000	48.12	3.91	52.03	74.00	21.97	peak	150	360	P	
6	16697.375	44.22	6.47	50.69	74.00	23.31	peak	150	175	P	

U-NII 2C & 802.11n (HT20) Mode (above 1GHz)

Wi-Fi	802.11n 5500MHz	Horizontal

Shenzhen CTL Testing Technology Co., Ltd
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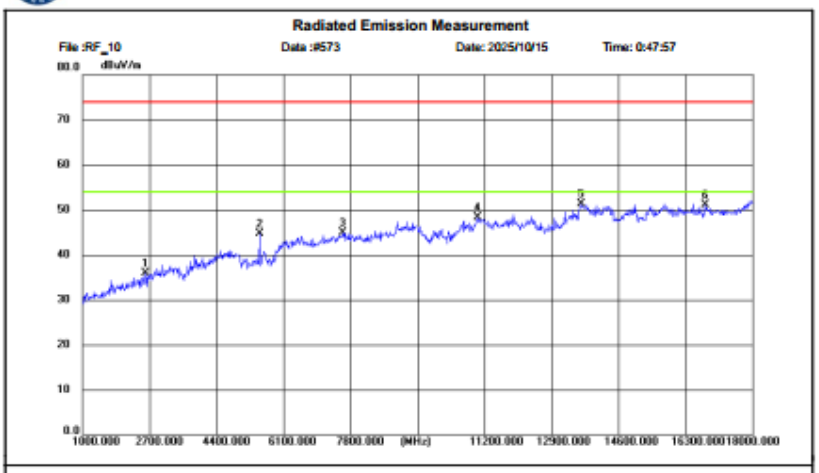

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5500MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2612.875	51.99	-16.08	35.91	74.00	38.09	peak	150	114	P	
2	5498.625	52.51	-7.75	44.76	74.00	29.24	peak	150	199	P	
3	7627.875	47.84	-2.93	44.91	74.00	29.09	peak	150	256	P	
4	11044.875	47.44	0.80	48.24	74.00	25.76	peak	150	57	P	
5	13673.500	47.48	3.92	51.40	74.00	22.60	peak	150	1	P	
6	16820.625	44.54	6.59	51.13	74.00	22.87	peak	150	43	P	

Wi-Fi	802.11n 5500MHz	Vertical

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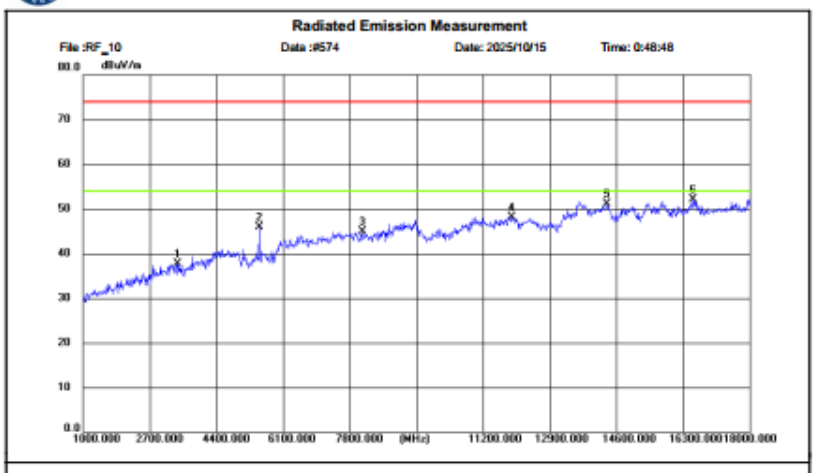

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5500MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3420.375	50.02	-12.40	37.62	74.00	36.38	peak	150	360	P	
2	5496.500	53.70	-7.75	45.95	74.00	28.05	peak	150	290	P	
3	8123.000	47.51	-2.62	44.89	74.00	29.11	peak	150	90	P	
4	11933.125	46.22	1.98	48.20	74.00	25.80	peak	150	290	P	
5	14362.000	48.33	2.70	51.03	74.00	22.97	peak	150	147	P	
6	16565.625	45.80	6.25	52.05	74.00	21.95	peak	150	233	P	

Wi-Fi	802.11n 5580MHz	Horizontal

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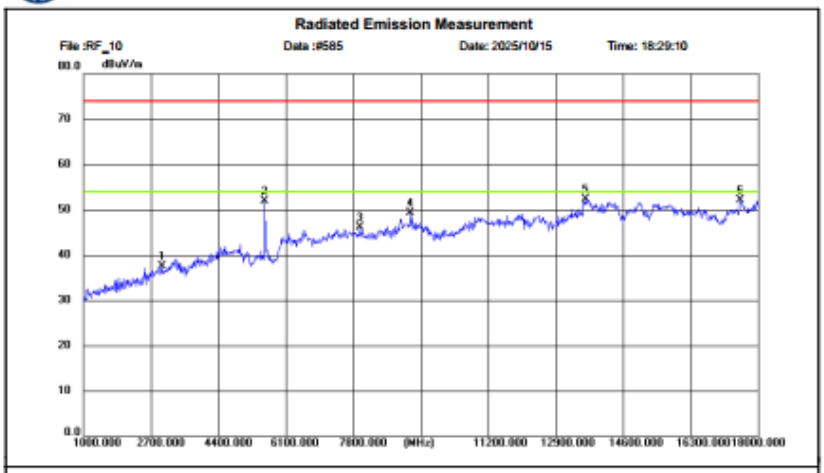

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5580MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2972.000	51.68	-14.15	37.53	74.00	36.47	peak	150	360	P	
2	5577.250	59.28	-7.39	51.89	74.00	22.11	peak	150	170	P	
3	7980.625	49.03	-3.00	46.03	74.00	27.97	peak	150	1	P	
4	9249.250	49.25	0.07	49.32	74.00	24.68	peak	150	197	P	
5	13658.625	48.32	3.93	52.25	74.00	21.75	peak	150	211	P	
6	17558.000	42.99	9.12	52.11	74.00	21.89	peak	150	84	P	

Wi-Fi	802.11n 5580MHz	Vertical

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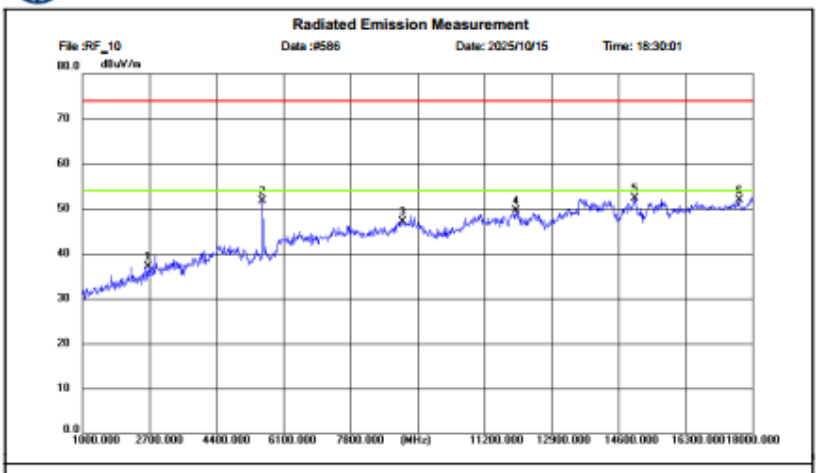

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5580MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2672.375	52.87	-15.67	37.20	74.00	36.80	peak	150	20	P	
2	5575.125	59.16	-7.39	51.77	74.00	22.23	peak	150	162	P	
3	9132.375	47.28	-0.15	47.13	74.00	26.87	peak	150	360	P	
4	12013.875	47.27	2.21	49.48	74.00	24.52	peak	150	360	P	
5	15037.750	48.95	3.37	52.32	74.00	21.68	peak	150	261	P	
6	17666.375	42.78	9.13	51.91	74.00	22.09	peak	150	360	P	

Wi-Fi	802.11n 5700MHz	Horizontal

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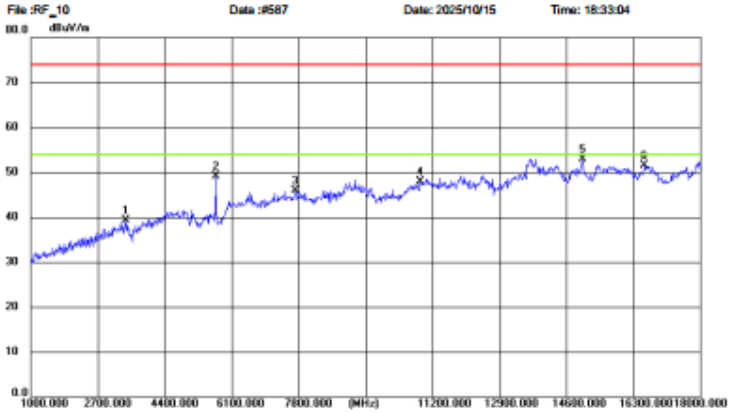
Radiated Emission Measurement

File :RF_10 Data :#587 Date: 2025/10/15 Time: 18:33:04



Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5700MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3422.500	51.76	-12.39	39.37	74.00	34.63	peak	150	212	P	
2	5700.500	55.85	-6.77	49.08	74.00	24.92	peak	150	198	P	
3	7723.500	48.82	-2.88	45.94	74.00	28.06	peak	150	255	P	
4	10902.500	47.23	0.62	47.85	74.00	26.15	peak	150	15	P	
5	15014.375	49.62	3.36	52.98	74.00	21.02	peak	150	113	P	
6	16597.500	45.24	6.27	51.51	74.00	22.49	peak	150	297	P	

Wi-Fi	802.11n 5700MHz	Vertical

Shenzhen CTL Testing Technology Co., Ltd
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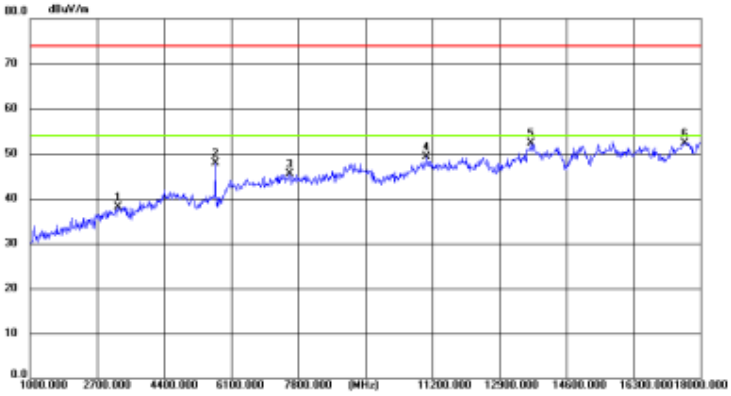
Radiated Emission Measurement

File :RF_10 Data :#588 Date: 2025/10/15 Time: 18:33:55



Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5700MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3239.750	51.07	-13.00	38.07	74.00	35.93	peak	150	332	P	
2	5698.375	54.78	-6.78	48.00	74.00	26.00	peak	150	162	P	
3	7587.500	48.29	-2.78	45.51	74.00	28.49	peak	150	318	P	
4	11053.375	48.51	0.79	49.30	74.00	24.70	peak	150	318	P	
5	13699.000	48.38	3.90	52.28	74.00	21.72	peak	150	204	P	
6	17592.000	43.29	9.11	52.40	74.00	21.60	peak	150	247	P	

U-NII 3 & 802.11n (HT20) Mode (above 1GHz)

Wi-Fi	802.11n 5745MHz	Horizontal

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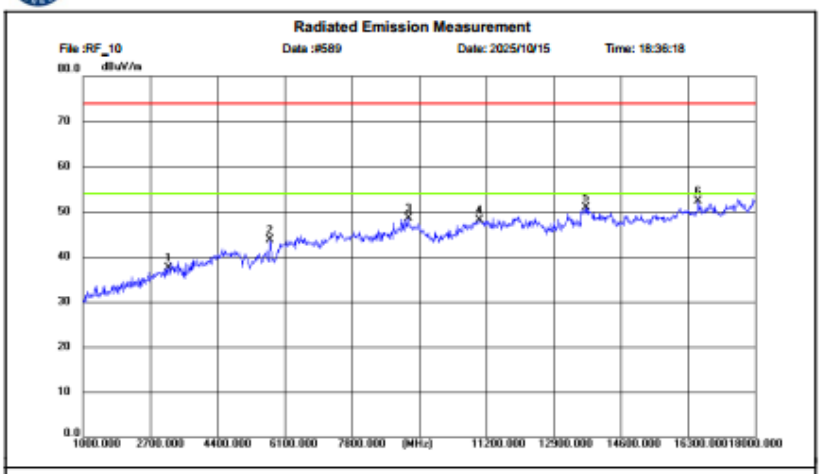

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5745MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3171.750	50.81	-13.27	37.54	74.00	36.46	peak	150	28	P	
2	5738.750	50.41	-6.64	43.77	74.00	30.23	peak	150	156	P	
3	9251.375	48.36	0.06	48.42	74.00	25.58	peak	150	141	P	
4	11044.875	47.22	0.80	48.02	74.00	25.98	peak	150	254	P	
5	13741.500	46.98	3.83	50.81	74.00	23.19	peak	150	254	P	
6	16559.250	46.08	6.25	52.33	74.00	21.67	peak	150	56	P	

Wi-Fi	802.11n 5745MHz	Vertical

Shenzhen CTL Testing Technology Co., Ltd
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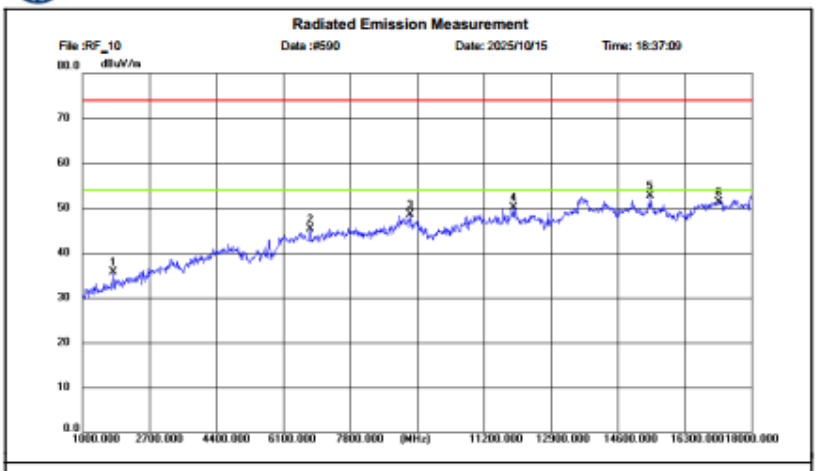

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5745MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	1792.625	55.88	-20.13	35.75	74.00	38.25	peak	150	148	P	
2	6782.125	49.40	-4.01	45.39	74.00	28.61	peak	150	360	P	
3	9332.125	48.33	0.15	48.48	74.00	25.52	peak	150	176	P	
4	11971.375	47.95	2.11	50.06	74.00	23.94	peak	150	219	P	
5	15433.000	48.82	3.80	52.62	74.00	21.38	peak	150	120	P	
6	17173.375	43.74	7.53	51.27	74.00	22.73	peak	150	78	P	

Wi-Fi	802.11n 5785MHz	Horizontal

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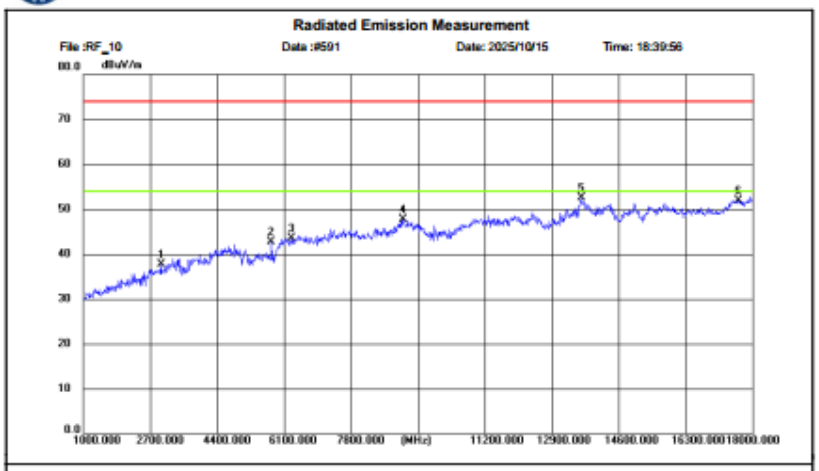

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5785MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2982.625	51.82	-14.11	37.71	74.00	36.29	peak	150	312	P	
2	5781.250	49.34	-6.55	42.79	74.00	31.21	peak	150	99	P	
3	6287.000	48.39	-4.82	43.57	74.00	30.43	peak	150	141	P	
4	9128.125	47.77	-0.16	47.61	74.00	26.39	peak	150	141	P	
5	13658.625	48.64	3.93	52.57	74.00	21.43	peak	150	128	P	
6	17645.125	42.86	9.12	51.98	74.00	22.02	peak	150	283	P	

Wi-Fi	802.11n 5785MHz	Vertical

Shenzhen CTL Testing Technology Co., Ltd
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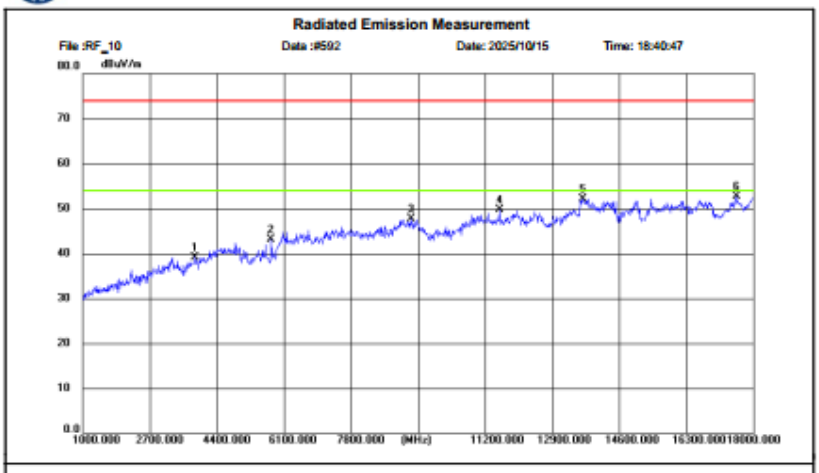

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5785MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	3841.842	50.11	-10.91	39.20	74.00	34.80	peak	150	7	P	
2	5781.782	49.66	-6.55	43.11	74.00	30.89	peak	150	290	P	
3	9321.321	47.54	0.13	47.67	74.00	26.33	peak	150	190	P	
4	11567.568	48.71	0.99	49.70	74.00	24.30	peak	150	92	P	
5	13677.678	48.15	3.91	52.06	74.00	21.94	peak	150	205	P	
6	17574.575	43.53	9.11	52.64	74.00	21.36	peak	150	205	P	

Wi-Fi	802.11n 5825MHz	Horizontal

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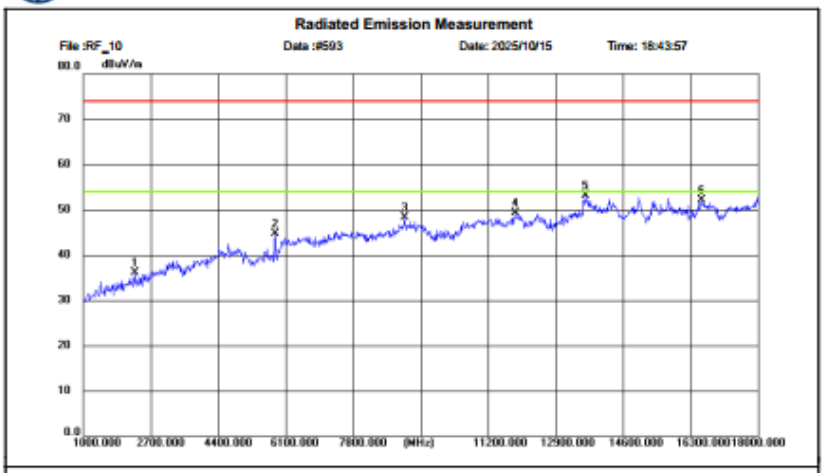

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5825MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2296.250	53.25	-17.24	36.01	74.00	37.99	peak	150	241	P	
2	5832.250	51.18	-6.42	44.76	74.00	29.24	peak	150	99	P	
3	9104.750	48.40	-0.18	48.22	74.00	25.78	peak	150	112	P	
4	11909.750	47.45	1.90	49.35	74.00	24.65	peak	150	1	P	
5	13679.875	49.20	3.92	53.12	74.00	20.88	peak	150	70	P	
6	16586.875	45.92	6.27	52.19	74.00	21.81	peak	150	99	P	

Wi-Fi	802.11n 5825MHz	Vertical

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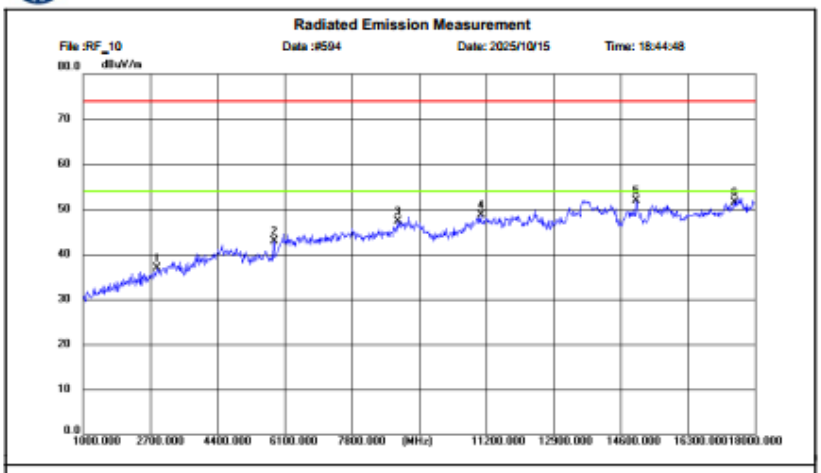

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_Above 1GHz_PK
EUT:
M/N:
Mode: WIFI5G 5825MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	2880.625	51.62	-14.62	37.00	74.00	37.00	peak	150	76	P	
2	5830.125	49.37	-6.43	42.94	74.00	31.06	peak	150	289	P	
3	8956.000	47.61	-0.39	47.22	74.00	26.78	peak	150	91	P	
4	11068.250	47.91	0.79	48.70	74.00	25.30	peak	150	161	P	
5	15003.750	48.52	3.34	51.86	74.00	22.14	peak	150	34	P	
6	17500.625	42.25	9.16	51.41	74.00	22.59	peak	150	317	P	

REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the other emission levels were very low against the limit.
5. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.
6. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40.

Band Edge Test Plots of U-NII 1

802.11n (HT20) mode@ Ch36_5180MHz

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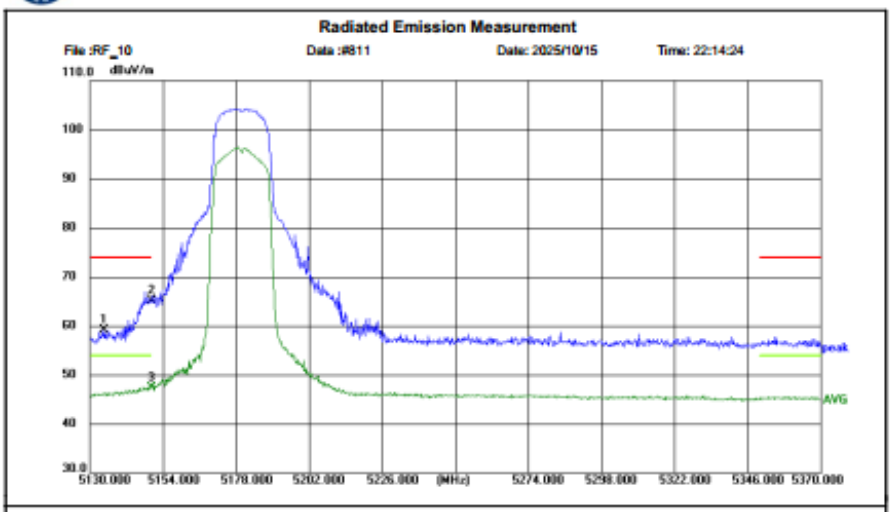

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5180MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5134.350	40.09	18.98	59.07	74.00	14.93	peak	150	208	P	
2	5150.000	46.18	18.99	65.17	74.00	8.83	peak	150	187	P	
3	5150.000	28.26	18.99	47.25	54.00	6.75	AVG	150	187	P	

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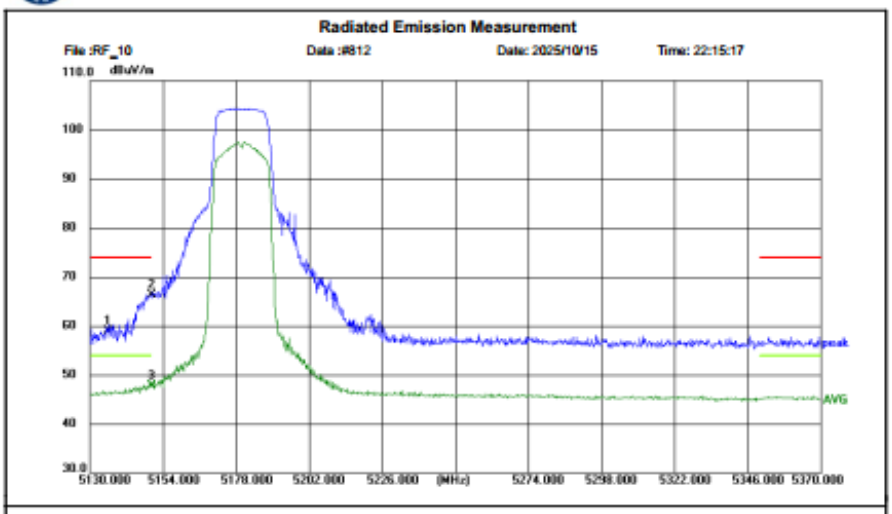

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5180MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5135.650	39.89	18.98	58.87	74.00	15.13	peak	150	298	P	
2	5150.000	47.39	18.99	66.38	74.00	7.62	peak	150	278	P	
3	5150.000	28.64	18.99	47.63	54.00	6.37	AVG	150	278	P	

Band Edge Test Plots of U-NII 1

802.11n (HT20) mode@ Ch48_5240MHz

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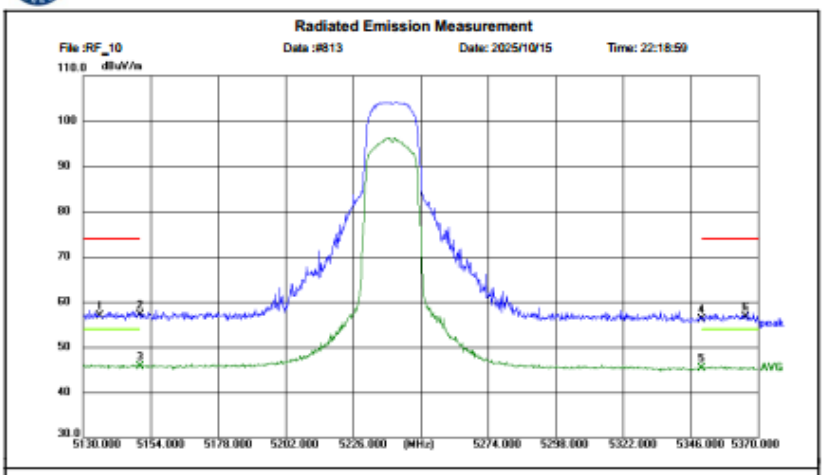

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5240MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5136.120	37.93	18.97	56.90	74.00	17.10	peak	150	206	P	
2	5150.000	38.14	18.99	57.13	74.00	16.87	peak	150	41	P	
3	5150.000	26.65	18.99	45.64	54.00	8.36	AVG	150	41	P	
4	5350.000	37.02	18.99	56.01	74.00	17.99	peak	150	331	P	
5	5350.000	26.28	18.99	45.27	54.00	8.73	AVG	150	331	P	
6	5365.890	37.70	18.97	56.67	74.00	17.33	peak	150	289	P	

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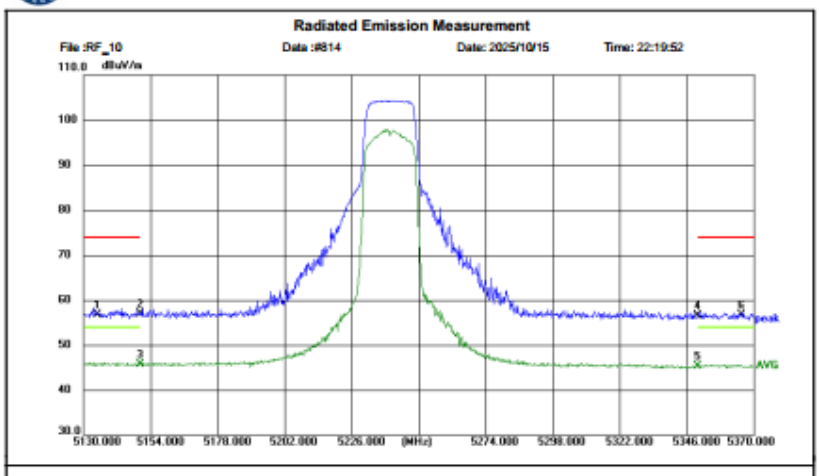

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5240MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5135.250	37.68	18.98	56.66	74.00	17.34	peak	150	360	P	
2	5150.000	37.94	18.99	56.93	74.00	17.07	peak	150	27	P	
3	5150.000	26.78	18.99	45.77	54.00	8.23	AVG	150	27	P	
4	5350.000	37.51	18.99	56.50	74.00	17.50	peak	150	7	P	
5	5350.000	26.35	18.99	45.34	54.00	8.66	AVG	150	7	P	
6	5365.530	37.82	18.97	56.79	74.00	17.21	peak	150	277	P	

Band Edge Test Plots of *U-NII 2A*

802.11n (HT20) mode@ Ch52_5260MHz

Shenzhen CTL Testing Technology Co., Ltd
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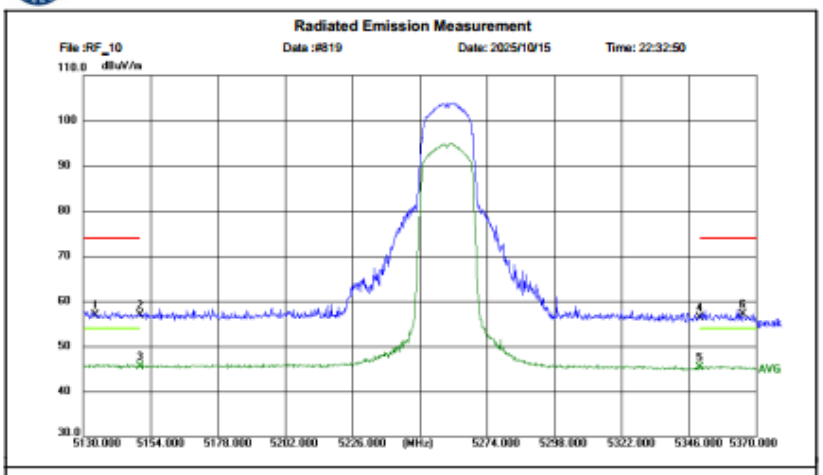

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5260MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5134.500	37.92	18.98	56.90	74.00	17.10	peak	150	1	P	
2	5150.000	37.99	18.99	56.98	74.00	17.02	peak	150	145	P	
3	5150.000	26.42	18.99	45.41	54.00	8.59	AVG	150	145	P	
4	5350.000	37.36	18.99	56.35	74.00	17.65	peak	150	330	P	
5	5350.000	26.29	18.99	45.28	54.00	8.72	AVG	150	330	P	
6	5365.320	38.11	18.97	57.08	74.00	16.92	peak	150	351	P	

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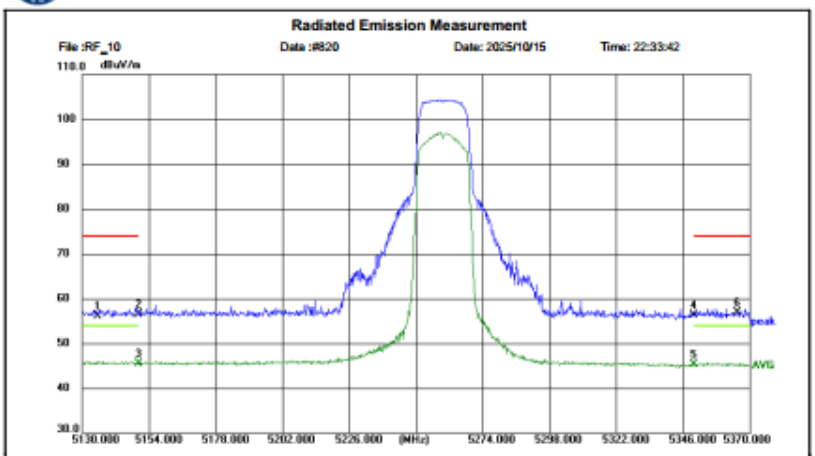

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5260MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5135.670	37.16	18.98	56.14	74.00	17.86	peak	150	277	P	
2	5150.000	37.44	18.99	56.43	74.00	17.57	peak	150	360	P	
3	5150.000	26.53	18.99	45.52	54.00	8.48	AVG	150	360	P	
4	5350.000	37.22	18.99	56.21	74.00	17.79	peak	150	298	P	
5	5350.000	26.26	18.99	45.25	54.00	8.75	AVG	150	298	P	
6	5365.860	38.01	18.97	56.98	74.00	17.02	peak	150	0	P	

Band Edge Test Plots of *U-NII 2A*

802.11n (HT20) mode@ Ch64_5320MHz

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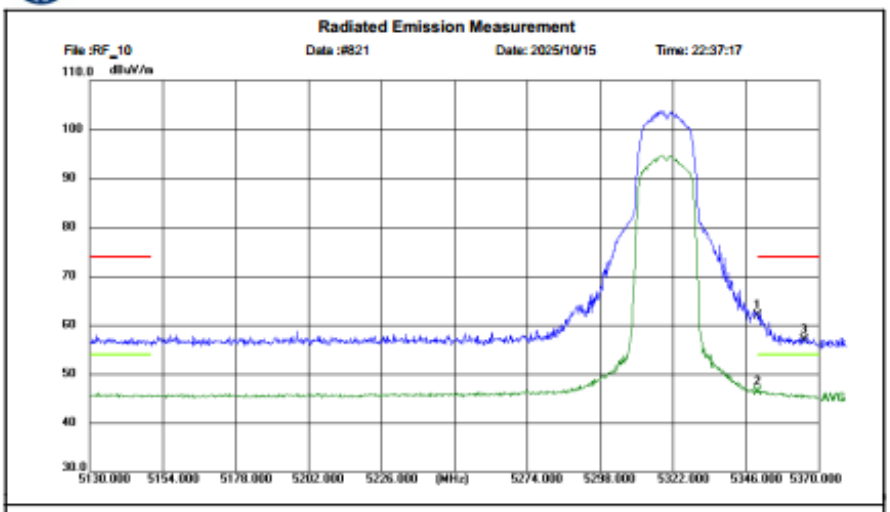

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5320MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5350.000	42.92	18.99	61.91	74.00	12.09	peak	150	187	P	
2	5350.000	27.39	18.99	46.38	54.00	7.62	AVG	150	187	P	
3	5365.000	37.89	18.97	56.86	74.00	17.14	peak	150	248	P	

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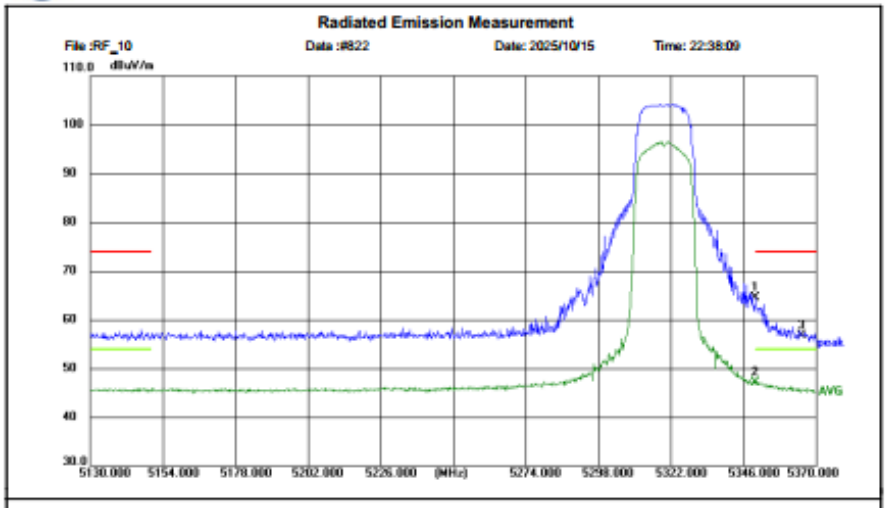


Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5320MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

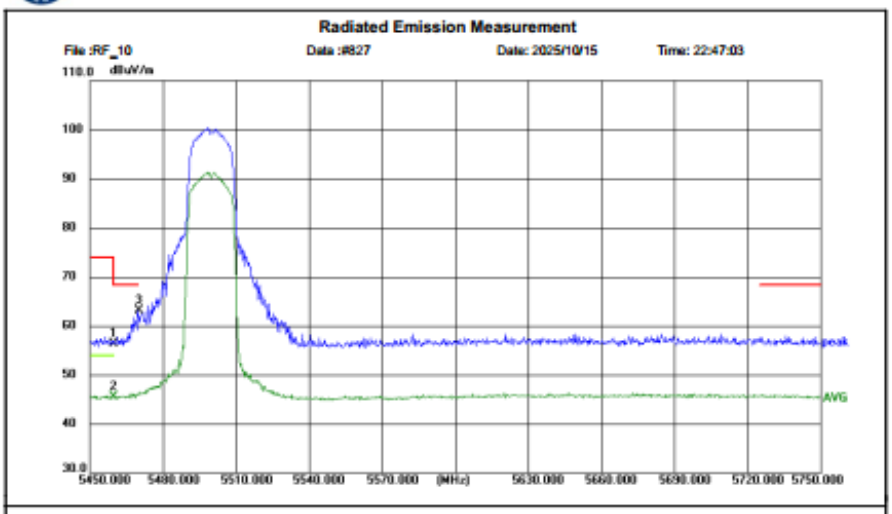
Temperature: 25(C)
Humidity: 50 %

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	5350.000	45.49	18.99	64.48	74.00	9.52	peak	150	279	P	
2	5350.000	28.08	18.99	47.07	54.00	6.93	AVG	150	279	P	
3	5365.000	37.69	18.97	56.66	74.00	17.34	peak	150	279	P	

Band Edge Test Plots of *U-NII 2C*

802.11n (HT20) mode@ Ch100_5500MHz

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194



Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5500MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5460.000	37.49	18.88	56.37	68.20	11.83	peak	150	360	P	
2	5460.000	26.60	18.88	45.48	54.00	8.52	AVG	150	360	P	
3	5470.000	44.16	18.90	63.06	68.20	5.14	peak	150	185	P	

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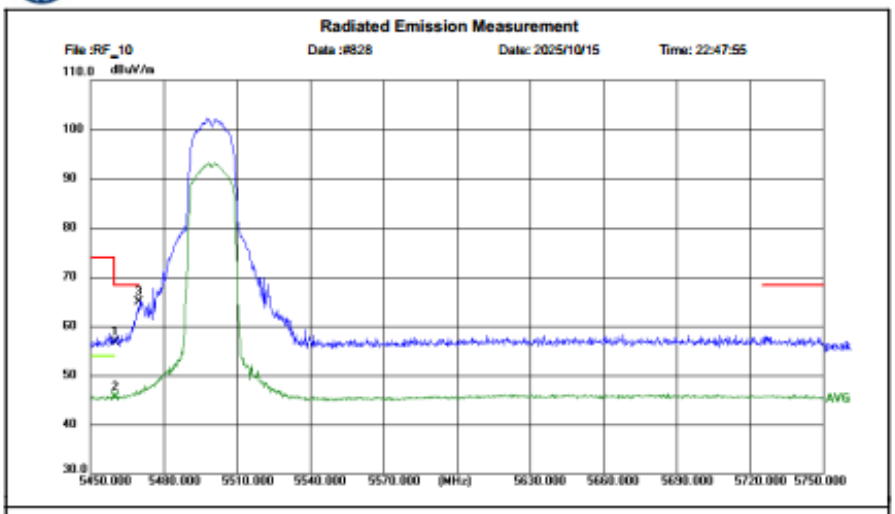

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5500MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5460.000	37.85	18.88	56.73	68.20	11.47	peak	150	360	P	
2	5460.000	26.68	18.88	45.56	54.00	8.44	AVG	150	360	P	
3	5470.000	45.93	18.90	64.83	68.20	3.37	peak	150	300	P	

Band Edge Test Plots of *U-NII 2C*

802.11n (HT20) mode@ Ch140_5700MHz

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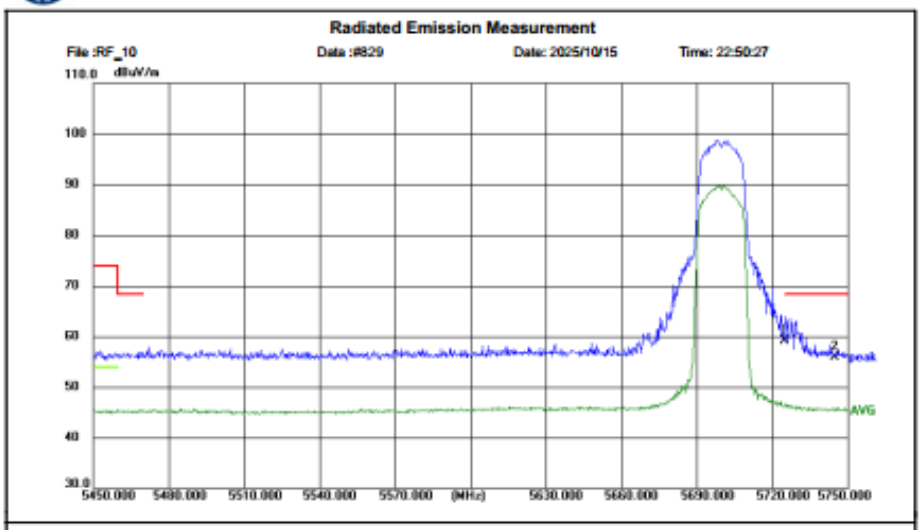

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5700MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5725.000	39.40	19.65	59.05	68.20	9.15	peak	150	164	P	
2	5745.163	36.29	19.70	55.99	68.20	12.21	peak	150	360	P	

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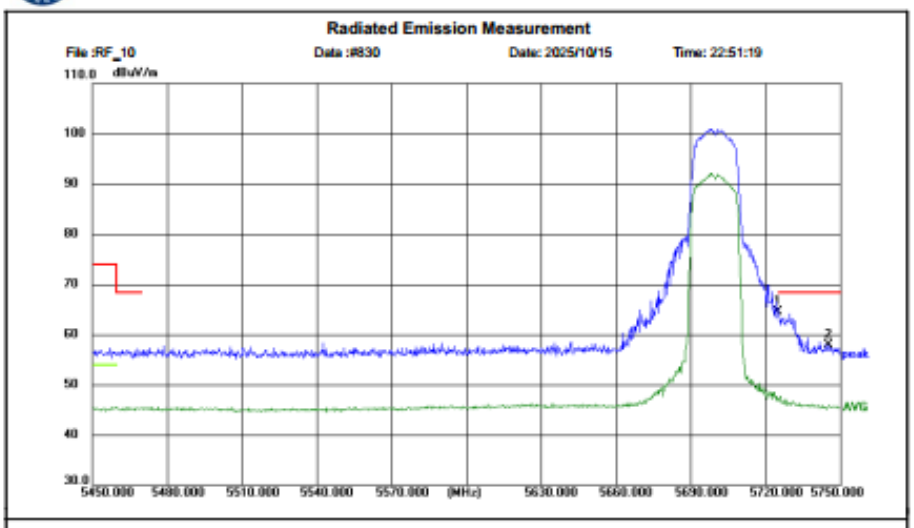

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N:
Mode: WIFI5G 5700MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5725.000	44.79	19.65	64.44	68.20	3.76	peak	150	280	P	
2	5745.425	38.15	19.70	57.85	68.20	10.35	peak	150	300	P	

Band Edge Test Plots of U-NII 3

802.11n (HT20) mode@ Ch149_5745MHz

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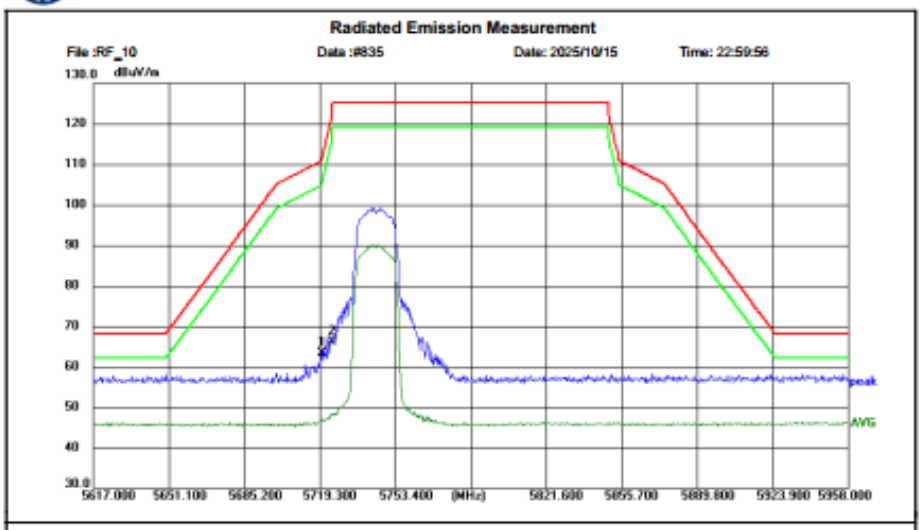

Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N:
Mode: WIFI5G 5745MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5720.000	43.76	19.65	63.41	110.80	47.39	peak	150	148	P	
2	5725.000	46.51	19.65	66.16	122.20	56.04	peak	150	148	P	

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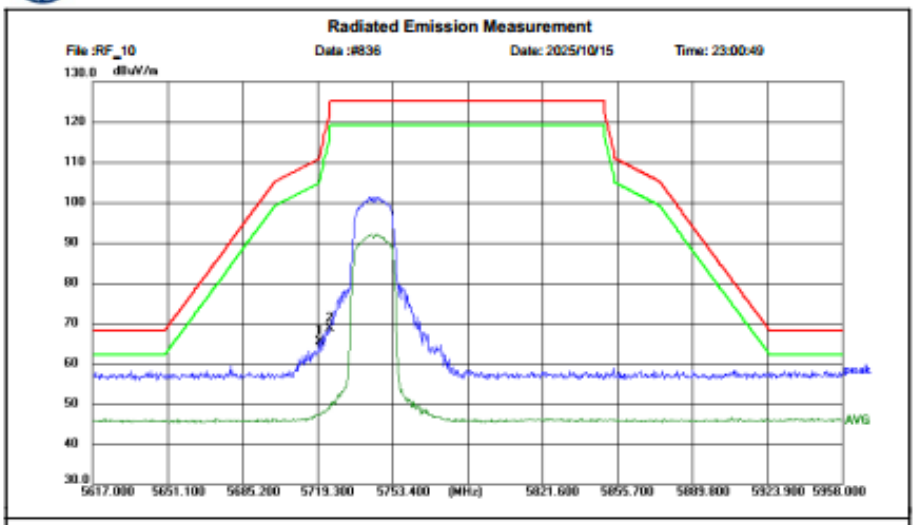

Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N:
Mode: WIFI5G 5745MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5720.000	45.81	19.65	65.46	110.80	45.34	peak	150	298	P	
2	5725.000	49.06	19.65	68.71	122.20	53.49	peak	150	298	P	

Band Edge Test Plots of U-NII 3

802.11n (HT20) mode@ Ch165_5825MHz

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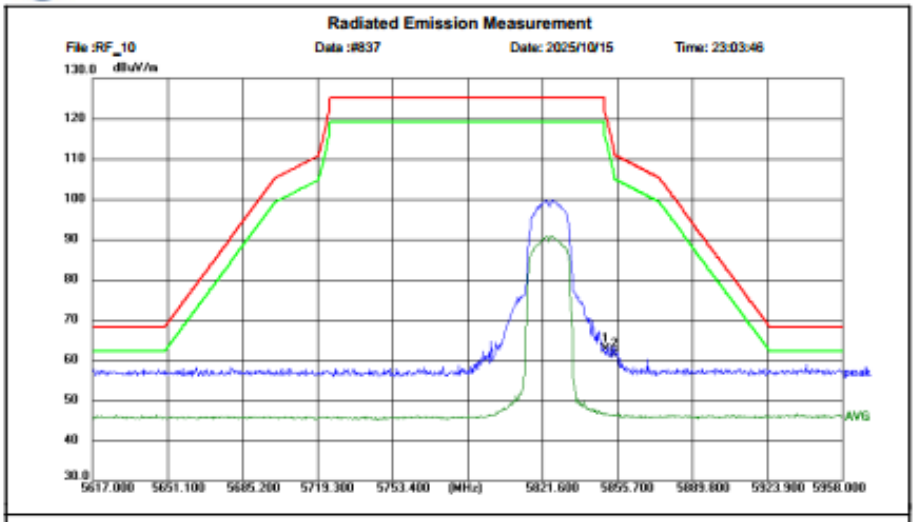

Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N:
Mode: WIFI5G 5825MHz
Note: CTL2508212021-WF

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5850.000	42.95	19.80	62.75	122.20	59.45	peak	150	106	P	
2	5855.000	41.57	19.84	61.41	110.80	49.39	peak	150	148	P	

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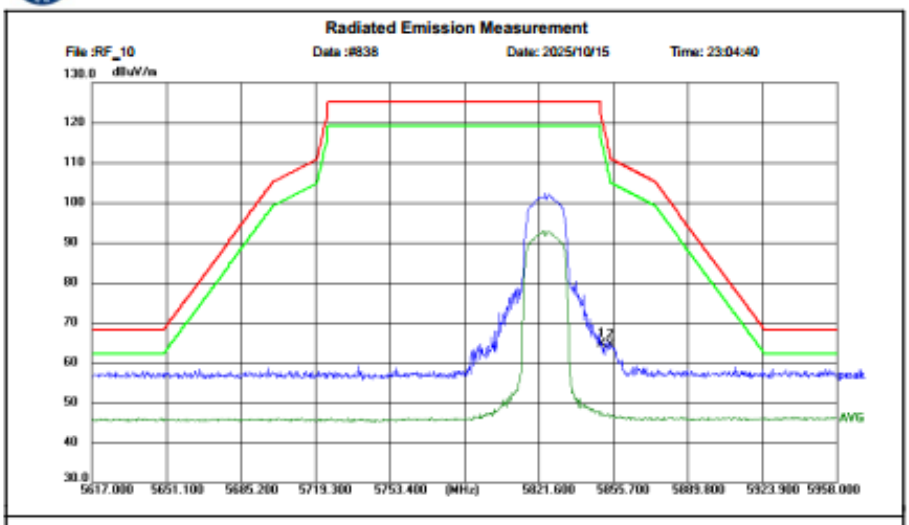


Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N:
Mode: WIFI5G 5825MHz
Note: CTL2508212021-WF

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

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	5850.000	44.79	19.80	64.59	122.20	57.61	peak	150	297	P	
2	5855.000	44.48	19.84	64.32	110.80	46.48	peak	150	297	P	

3.3. Maximum Conducted Average Output Power

Limit

FCC requirement:
For the band 5.15-5.25 GHz.
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6dBi.

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

(iv) 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 250mW provided the maximum antenna gain does not exceed 6dBi.

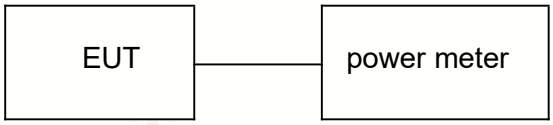
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or 11dBm + 10log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum.

Test Configuration



Test Results

Raw data reference to Section 2 of document No. CTL2508212021-WF04_5G_Band_1_Appendix.
Raw data reference to Section 2 of document No. CTL2508212021-WF04_5G_Band_2A_Appendix.
Raw data reference to Section 2 of document No. CTL2508212021-WF04_5G_Band_2C_Appendix.
Raw data reference to Section 2 of document No. CTL2508212021-WF04_5G_Band_3_Appendix.

3.4. Power Spectral Density

Limit

FCC requirement:
For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17dBm in any 1 MHz band.[note1]

(ii) For an indoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17dBm in any 1 MHz band.[note1]

(iii) For fixed point-to-point access points operating in the band 5.15 - 5.25 GHz, transmitters that employ a directional antenna gain greater than 23dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23dBi.

(iv) For mobile and portable client devices in the 5.15 - 5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 MHz band. [note1]

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

The maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

IC requirement:

For the band 5.15-5.25 GHz.

The e.i.r.p. spectral density shall not exceed 10dBm in any 1.0 MHz band.

Frequency band 5250-5350 MHz

The power spectral density shall not exceed 11dBm in any 1.0 MHz band

Frequency bands 5470-5600 MHz and 5650-5725 MHz

The power spectral density shall not exceed 11dBm in any 1.0 MHz band.

For the band 5.725 - 5.85 GHz

The maximum power spectral density shall not exceed 30dBm in any 500 kHz band. [note1, note2]

Note1: If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Note2: Fixed point - to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi 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 collocated transmitters transmitting the same information.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 1MHz for U-NII 1, U-NII 2A, U-NII C band and 510KHz for U-NII 3 band.
3. Set the VBW ≥ 3× RBW.
4. Set the span to encompass the entire EBW.
5. Detector = Average.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.

Test Configuration

Test Results

Raw data reference to Section 3 of document No. CTL2508212021-WF04_5G_Band_1_Appendix.
Raw data reference to Section 3 of document No. CTL2508212021-WF04_5G_Band_2A_Appendix.
Raw data reference to Section 3 of document No. CTL2508212021-WF04_5G_Band_2C_Appendix.
Raw data reference to Section 3 of document No. CTL2508212021-WF04_5G_Band_3_Appendix.

3.5. Emission Bandwidth (26dBm Bandwidth)

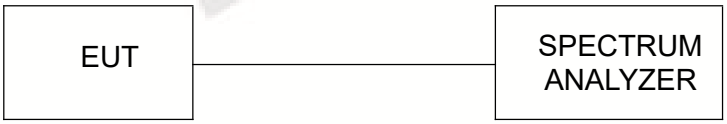
Limit

N/A

Test Procedure

1. Set resolution bandwidth (RBW) = approximately 1 % of the EBW.
2. Set the video bandwidth (VBW) > RBW.
3. Detector = Peak.
4. Trace mode = Max hold.
5. 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 analyzer. Readjust RBW and repeat measurement as needed until the RBW / EBW ratio is approximately 1 %.

Test Configuration



Test Results

Raw data reference to Section 1 of document No. CTL2508212021-WF04_5G_Band_1_Appendix.
Raw data reference to Section 1 of document No. CTL2508212021-WF04_5G_Band_2A_Appendix.
Raw data reference to Section 1 of document No. CTL2508212021-WF04_5G_Band_2C_Appendix.

3.6. Minimum Emission Bandwidth (6dBm Bandwidth)

Limit

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 kHz for the band 5.725-5.85 GHz

Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth 3 x RBW.
3. Detector = Peak.
4. Trace mode = Max hold.
5. 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.

Test Configuration

Test Results

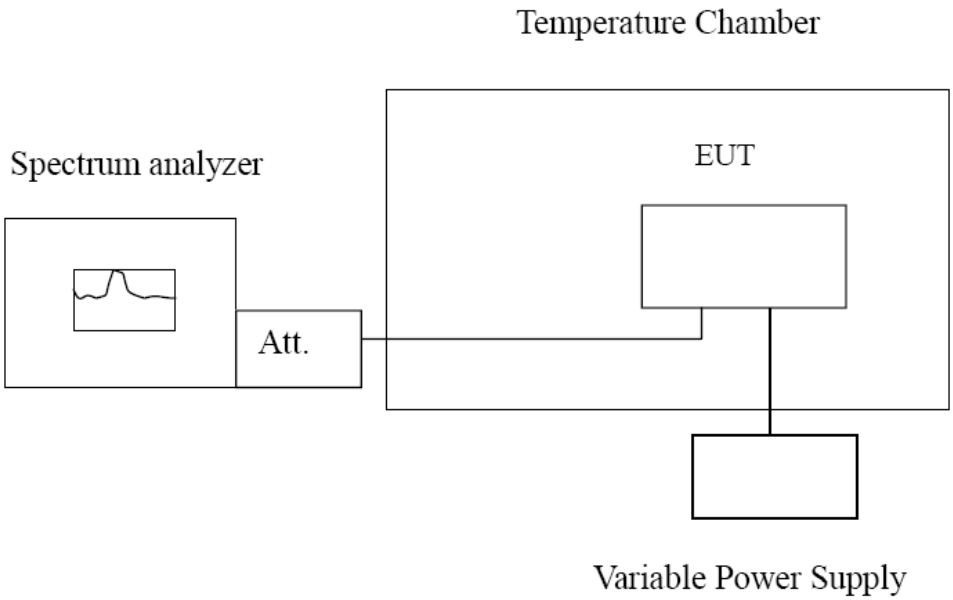
Raw data reference to Section 1 of document No. CTL2508212021-WF04_5G_Band_3_Appendix.

3.7. Frequency Stability

LIMIT

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

TEST CONFIGURATION



TEST PROCEDURE

Frequency Stability under Temperature Variations:
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +85℃ reached.

Frequency Stability under Voltage Variations:
Set chamber temperature to 20℃. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.
Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

TEST RESULTS

Raw data reference to Section 4 of document No. CTL2508212021-WF04_5G_Band_1_Appendix.
Raw data reference to Section 4 of document No. CTL2508212021-WF04_5G_Band_2A_Appendix.
Raw data reference to Section 4 of document No. CTL2508212021-WF04_5G_Band_2C_Appendix.
Raw data reference to Section 4 of document No. CTL2508212021-WF04_5G_Band_3_Appendix.
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3.8. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 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, 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

And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The maximum gain of Antenna was 1.70dBi for 5G WLAN.

4. Test Setup Photos of the EUT

Reference to the test report No.CTL2508212021-WF01

5. Photos of the EUT

Reference to the test report No.CTL2508212021-WF01

********** **End of Report** **********