Shenzhen CTL Testing Technology Co., Ltd.
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

TEST REPORT

FCC PART 15 SUBPART E 15.407

Report Reference No. ..... :	**CTL2407181051-WF04**	
Compiled by: (position+printed name+signature)	Happy Guo (File administrators)	
Tested by: (position+printed name+signature)	Wuqiang Wu (Test Engineer)	
Approved by: (position+printed name+signature)	Ivan Xie (Manager)	

Product Name ..... :	laptop
Model/Type reference ..... :	T156A
List Model(s)..... :	T140J, T140R, T141R, T159H, T1567, T1568, T160R, T160H, T173H
Trade Mark..... :	N/A
FCC ID..... :	**2BAGV-T156A**
Applicant's name ..... :	**Shenzhen Forwell Electronics Technology Co., Ltd.**
Address of applicant ..... :	2nd Floor, Building A, Shatang Beifangyongfa Science and Technology Park, Jincheng Rd., Shajing, Baoan, Shenzhen, Guangdong, 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 ..... :	August 01, 2024
Date of Test Date..... :	August 01, 2024-September 18, 2024
Date of Issue ..... :	September 19, 2024
Result..... :	**Pass**

TEST REPORT

Test Report No. :	CTL2407181051-WF04	September 19, 2024 Date of issue

Equipment under Test	:	laptop
Sample No	:	CTL2407181051
Model /Type	:	T156A
Listed Models	:	T140J, T140R, T141R, T159H, T1567, T1568, T160R, T160H, T173H
Applicant	:	**Shenzhen Forwell Electronics Technology Co., Ltd.**
Address	:	2nd Floor, Building A, Shatang Beifangyongfa Science and Technology Park, Jincheng Rd., Shajing, Baoan, Shenzhen, Guangdong, China
Manufacturer	:	**Shenzhen Forwell Electronics Technology Co., Ltd.**
Address	:	2nd Floor, Building A, Shatang Beifangyongfa Science and Technology Park, Jincheng Rd., Shajing, Baoan, Shenzhen, Guangdong, 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.
The device (Product Name: laptop) Models Name: T156A, T140J, T140R, T141R, T159H, T1567, T1568, T160R, T160H, T173H have same electrical, PCB and BOM, only the colour and model' s names are different for marketing requirements.

** Modified History **

Revisions	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	2024-09-19	CTL2407181051-WF04	Tracy Qi

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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: 2013: 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.

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:

CNAS-Lab Code: L7497

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

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:	laptop		
Model/Type reference:	T156A		
Power supply:	AC120V/60Hz		
Adapter information:	MODEL: JHD-AP036Z-120300BA-A INPUT: 100-240V,50/60Hz 1.2A OUTPUT: 12.0V⎓3.0A 36.0W		
WIFI 5GHz			
Supported type:	20MHz system	40MHz system	80MHz system
	802.11a 802.11n 802.11ac	802.11n 802.11ac	802.11ac
Operation frequency:	5180-5240MHz 5745-5825MHz	5190-5230MHz 5755-5795MHz	5210MHz, 5775MHz
Modulation:	OFDM	OFDM	OFDM
Channel number:	9	4	2
Channel separation:	20MHz	40MHz	80MHz
TPC:	Not support		
MIMO	Not support		
Antenna type:	ANT1: FPC Antenna ANT2: FPC Antenna		
Antenna gain:	ANT1: 1.26dBi ANT2: 1.20dBi		

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.
Note4: The device has two WIFI antennas, but WIFI Ant1 and Ant2 cannot transmit simultaneously in MIMO mode.

2.3. Description of Test Modes and Test Frequency

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting (Duty Cycle more than 98%) 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		80MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
U-NII 1 (5150MHz-5250MHz)	36	5180	38	5190	42	5210
	40	5200				
	44	5220	46	5230		
	48	5240				
U-NII 3 (5725MHz-5850MHz)	149	5745	151	5755	155	5775
	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/OFDM	6 Mbps
	11n(20MHz),11ac(20MHz)/OFDM	7.2 Mbps
	11n(40MHz),11ac(40MHz)/OFDM	15.0Mbps
	11ac(80MHz), /OFDM	65.0Mbps

2.4. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ESH2-Z5	860014/010	2024/04/30	2025/04/29
Double cone logarithmic antenna	Schwarzbeck	VULB 9168	824	2023/02/13	2026/02/12
Horn Antenna	Ocean Microwave	OBH100400	26999002	2021/12/22	2024/12/21
EMI Test Receiver	R&S	ESCI	1166.5950.03	2024/04/30	2025/04/29
Spectrum Analyzer	Agilent	N9020A	UE22220290	2024/05/02	2025/05/01
Spectrum Analyzer	Keysight	N9020A	MY53420874	2024/05/02	2025/05/01
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2021/12/23	2024/12/22
Active Loop Antenna	Da Ze	ZN30900A	/	2024/04/30	2025/04/29
Amplifier	Agilent	8449B	3008A02306	2024/04/30	2025/04/29
Amplifier	Agilent	8447D	2944A10176	2024/04/30	2025/04/29
Amplifier	Brief&Smart	LNA-4018	2104197	2024/05/03	2025/05/02
Temperature/Humidity Meter	Ji Yu	MC501	/	2024/05/04	2025/05/03
Power Sensor	Agilent	U2021XA	MY55130004	2024/05/03	2025/05/02
Power Sensor	Agilent	U2021XA	MY55130006	2024/05/03	2025/05/02
Power Sensor	Agilent	U2021XA	MY54510008	2024/05/03	2025/05/02
Power Sensor	Agilent	U2021XA	MY55060003	2024/05/03	2025/05/02
Spectrum Analyzer	RS	FSP	1164.4391.38	2024/05/03	2025/05/02
LISN	R&S	ESH2-Z5	860014/010	2024/05/03	2025/05/02

Test Software

Name of Software	Version
TST-PASS	V2.0
EZ_EMC(Below 1GHz)	V1.1.4.2
EZ_EMC((Above 1GHz)	V1.1.4.2

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

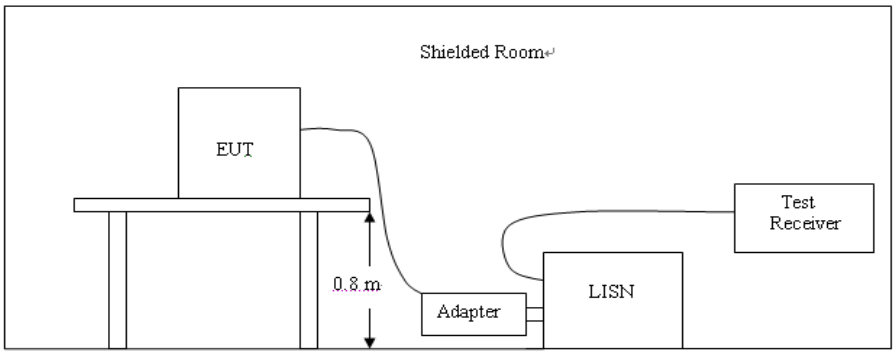
LIMIT

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

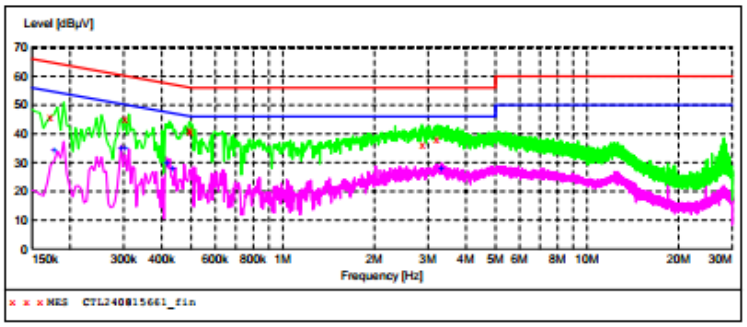
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a Laser Projector op system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
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

1. Pre-scan all modes of IEEE 802.11a/n(HT20)/ac (VHT20)/n (HT40)/ac (VHT40) / ac (VHT80) at Low, Middle, and High channel; only the worst result of was reported as below:
2. Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:

Test Mode	WIFI-Band 1	Line:	L

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



MEASUREMENT RESULT: "CTL240815661_fin"

8/22/2024 9:01AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172500	46.00	10.0	65	18.8	QP	L1	GND
0.303000	44.90	10.0	60	15.3	QP	L1	GND
0.492000	41.10	10.0	56	15.0	QP	L1	GND
0.496500	40.70	10.0	56	15.4	QP	L1	GND
2.877000	36.30	10.1	56	19.7	QP	L1	GND
3.210000	38.20	10.1	56	17.8	QP	L1	GND

MEASUREMENT RESULT: "CTL240815661_fin2"

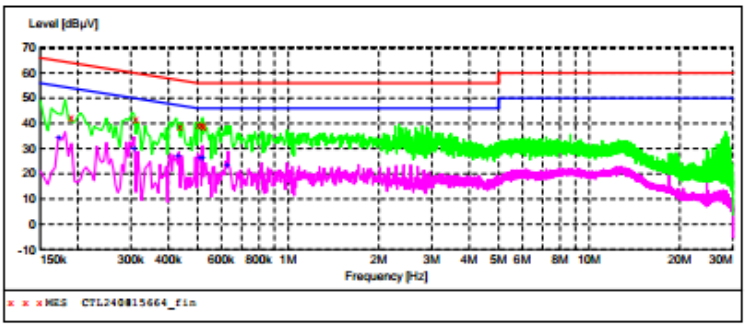
8/22/2024 9:01AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.177000	33.90	10.0	55	20.7	AV	L1	GND
0.294000	34.90	10.0	50	15.5	AV	L1	GND
0.303000	34.80	10.0	50	15.4	AV	L1	GND
0.415500	29.80	10.0	48	17.7	AV	L1	GND
0.433500	28.00	10.0	47	19.2	AV	L1	GND
3.309000	27.60	10.1	46	18.4	AV	L1	GND

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

Test Mode	WIFI-Band 1	Line:	N

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



MEASUREMENT RESULT: "CTL240815664_fin"

8/22/2024 9:10AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.190500	42.20	10.0	64	21.8	QP	N	GND
0.312000	41.20	10.0	60	18.7	QP	N	GND
0.438000	38.70	10.0	57	18.4	QP	N	GND
0.505500	39.30	10.0	56	16.7	QP	N	GND
0.519000	39.40	10.0	56	16.6	QP	N	GND
0.523500	38.90	10.0	56	17.1	QP	N	GND

MEASUREMENT RESULT: "CTL240815664_fin2"

8/22/2024 9:10AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172500	34.20	10.0	55	20.6	AV	N	GND
0.307500	30.20	10.0	50	19.8	AV	N	GND
0.429000	27.10	10.0	47	20.2	AV	N	GND
0.510000	26.20	10.0	46	19.8	AV	N	GND
0.519000	26.40	10.0	46	19.6	AV	N	GND
0.627000	23.20	10.0	46	22.8	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

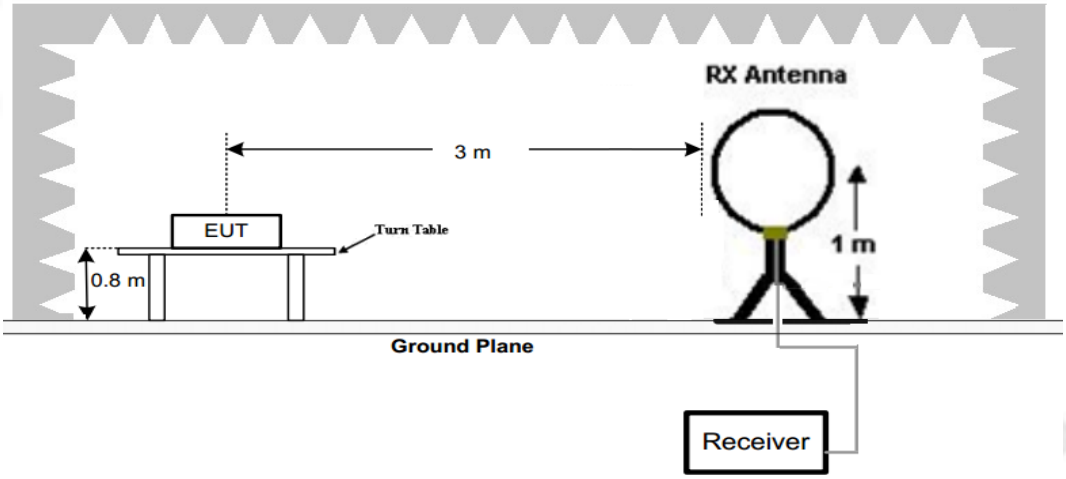
(6)In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

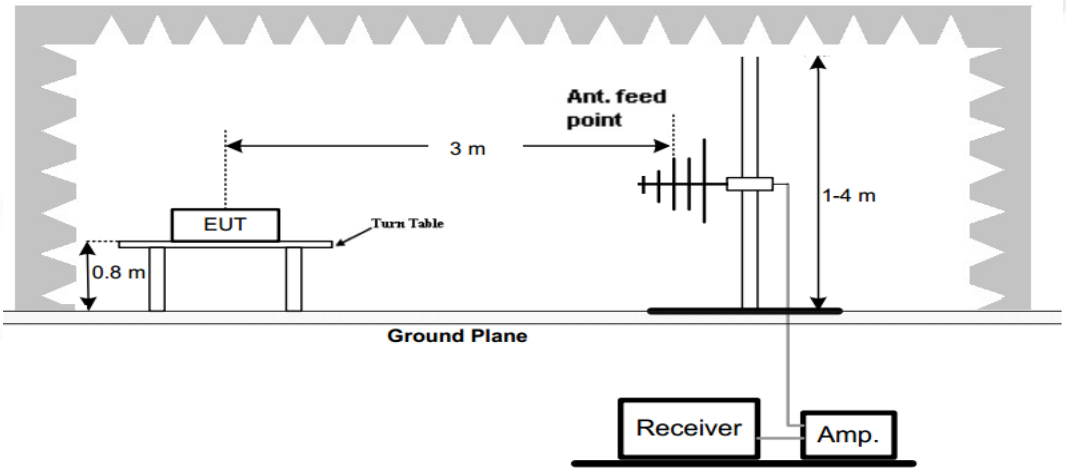
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

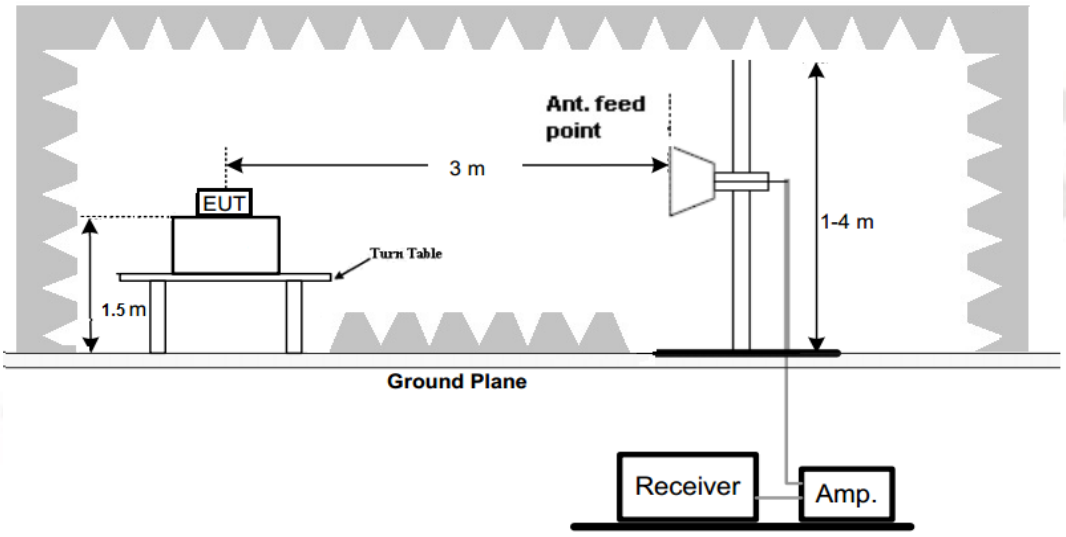
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(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

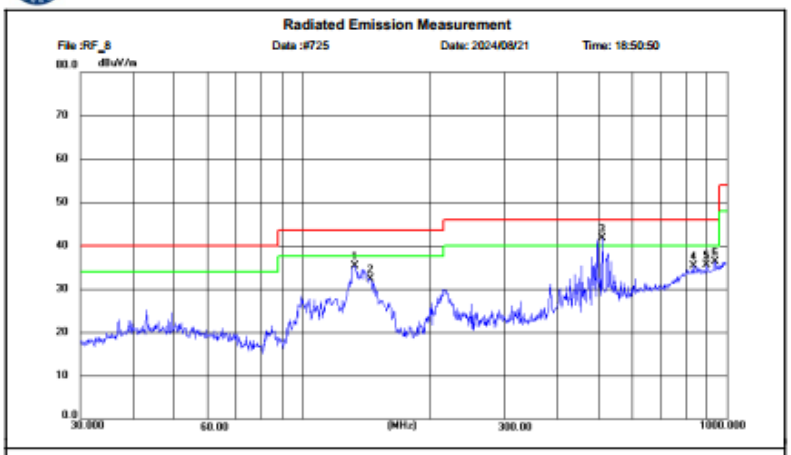
TEST RESULTS

Remark:
1. All 802.11a/n(HT20)/ac (VHT20)/n (HT40)/ac (VHT40) / ac (VHT80) 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 802.11a/n(HT20)/ac (VHT20)/n (HT40)/ac (VHT40) / ac (VHT80) 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

Test Mode	WIFI-Band 1	Polarization:	Horizontal

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



Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N: T156A
Mode: WIFI5G 5180MHz
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	132.8013	21.33	14.04	35.37	43.50	8.13	peak	100	318	P	
2	144.3980	18.15	14.23	32.38	43.50	11.12	peak	100	318	P	
3	509.8200	21.72	20.06	41.78	46.00	4.22	peak	100	351	P	
4	834.4136	8.42	26.96	35.38	46.00	10.62	peak	100	39	P	
5	898.5705	7.73	27.80	35.53	46.00	10.47	peak	100	18	P	
6	940.8924	7.89	28.34	36.23	46.00	9.77	peak	100	339	P	

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

Test Mode	WIFI-Band 1	Polarization:	Vertical

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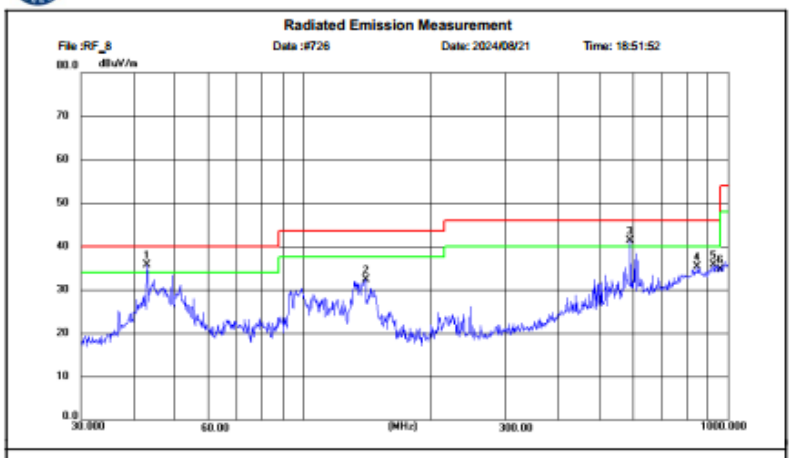

Site LAB Chamber 2
Limit: FCC Part15 RE-Class C_30-1000MHz
EUT:
M/N: T156A
Mode: WIFI5G 5180MHz
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	43.0127	20.89	14.72	35.61	40.00	4.39	peak	100	270	P	
2	140.3421	17.98	14.28	32.26	43.50	11.24	peak	100	259	P	
3	589.9385	19.23	22.06	41.29	46.00	4.71	peak	100	259	P	
4	850.2896	8.01	27.32	35.33	46.00	10.67	peak	100	134	P	
5	926.9744	7.49	28.19	35.68	46.00	10.32	peak	100	166	P	
6	960.8979	6.19	28.42	34.61	54.00	19.39	peak	100	187	P	

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

For 1GHz to 40GHz

Note: All 802.11a / 802.11n (HT20) /802.11ac (HT20)/802.11n (HT40)/ 802.11ac (HT40)/ 802.11ac (HT80) 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)

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
36 (5180MHz)	5150.00	48.78	PK	H	68.20	19.42	37.42	37.64	9.28	35.56	11.36
	10360.00	50.69	PK	H	68.20	17.51	34.96	39.20	11.45	34.92	15.73
	--	--	--	--	--	--	--	--	--	--	--
40 (5200MHz)	10400.00	49.98	PK	H	68.20	18.22	34.17	39.22	11.48	34.89	15.81
	--	--	--	--	--	--	--	--	--	--	--
48 (5240MHz)	5350.50	48.57	PK	H	68.20	19.63	37.16	37.64	9.28	35.51	11.41
	10480.00	50.89	PK	H	68.20	17.31	34.90	39.27	11.55	34.83	15.99
	--	--	--	--	--	--	--	--	--	--	--

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
36 (5180MHz)	5150.00	47.98	PK	V	68.20	20.22	36.62	37.64	9.28	35.56	11.36
	10360.00	50.54	PK	V	68.20	17.66	34.81	39.20	11.45	34.92	15.73
	--	--	--	--	--	--	--	--	--	--	--
40 (5200MHz)	10400.00	49.35	PK	V	68.20	18.85	33.54	39.22	11.48	34.89	15.81
	--	--	--	--	--	--	--	--	--	--	--
48 (5240MHz)	5350.50	48.14	PK	V	68.20	20.06	36.73	37.64	9.28	35.51	11.41
	10480.00	51.24	PK	V	68.20	16.96	35.25	39.27	11.55	34.83	15.99
	--	--	--	--	--	--	--	--	--	--	--

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

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
149 (5745MHz)	5720.00	64.68	PK	H	110.80	46.12	53.17	37.64	9.28	35.41	11.51
	5725.00	65.55	PK	H	122.20	56.65	54.04	37.64	9.28	35.41	11.51
	11490.00	51.77	PK	H	68.20	16.43	33.51	39.69	12.90	34.33	18.26
	--	--	--	--	--	--	--	--	--	--	--
157 (5785MHz)	11570.00	50.55	PK	H	68.20	17.65	32.10	39.71	13.05	34.31	18.45
	--	--	--	--	--	--	--	--	--	--	--
165 (5825MHz)	5850.00	58.74	PK	H	122.50	63.76	47.20	37.64	9.28	35.38	11.54
	5855.00	57.56	PK	H	110.80	53.24	46.02	37.64	9.28	35.38	11.54
	11650.00	51.95	PK	H	68.20	16.25	33.33	39.73	13.19	34.30	18.62
	--	--	--	--	--	--	--	--	--	--	--

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
149 (5745MHz)	5720.00	63.29	PK	V	110.80	47.51	51.78	37.64	9.28	35.41	11.51
	5725.00	68.70	PK	V	122.20	53.50	57.19	37.64	9.28	35.41	11.51
	11490.00	50.23	PK	V	68.20	17.97	31.97	39.69	12.90	34.33	18.26
	--	--	--	--	--	--	--	--	--	--	--
157 (5785MHz)	11570.00	51.00	PK	V	68.20	17.20	32.55	39.71	13.05	34.31	18.45
	--	--	--	--	--	--	--	--	--	--	--
165 (5825MHz)	5850.00	62.30	PK	V	122.50	60.20	50.76	37.64	9.28	35.38	11.54
	5855.00	56.34	PK	V	110.80	54.46	44.80	37.64	9.28	35.38	11.54
	11650.00	51.52	PK	V	68.20	16.68	32.90	39.73	13.19	34.30	18.62
	--	--	--	--	--	--	--	--	--	--	--

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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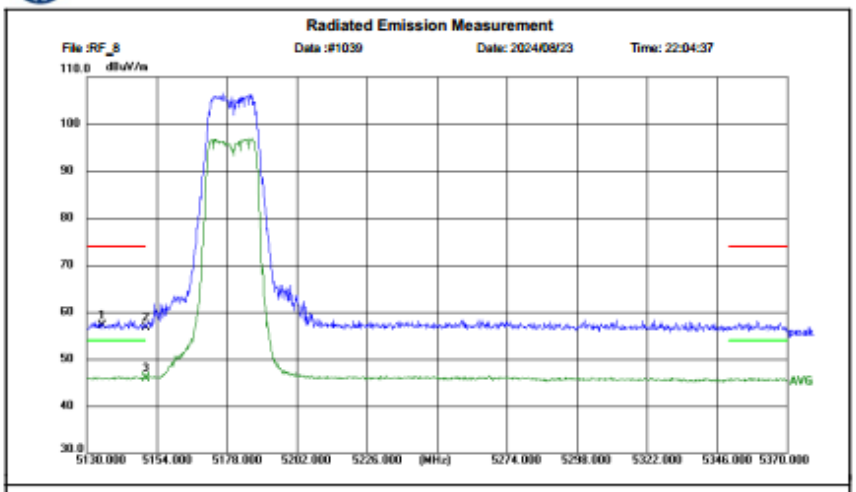

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5180MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	5135.490	38.15	18.98	57.13	74.00	16.87	peak	150	327	P	
2	5150.000	37.76	18.99	56.75	74.00	17.25	peak	150	360	P	
3	5150.000	26.94	18.99	45.93	54.00	8.07	AVG	150	360	P	

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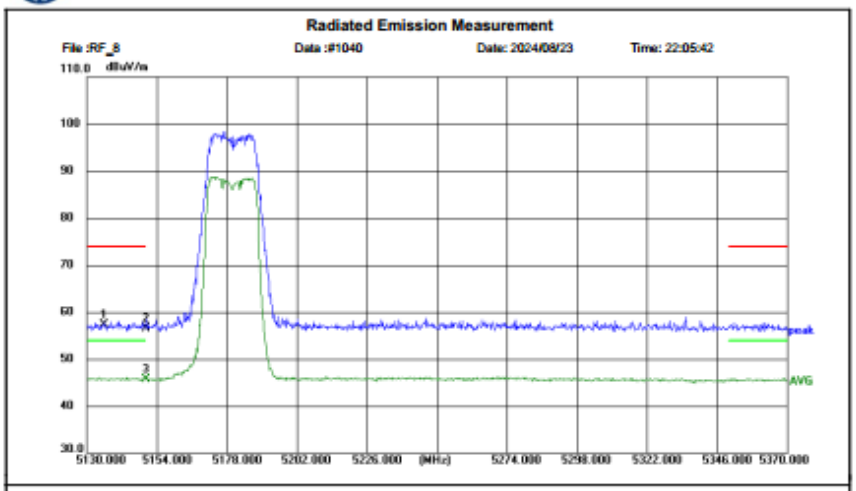

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5180MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	5135.550	38.25	18.98	57.23	74.00	16.77	peak	150	3	P	
2	5150.000	37.54	18.99	56.53	74.00	17.47	peak	150	145	P	
3	5150.000	26.65	18.99	45.64	54.00	8.36	AVG	150	145	P	

Band Edge Test Plots of U-NII 1

802.11n (HT20) mode@ Ch48_5240MHz

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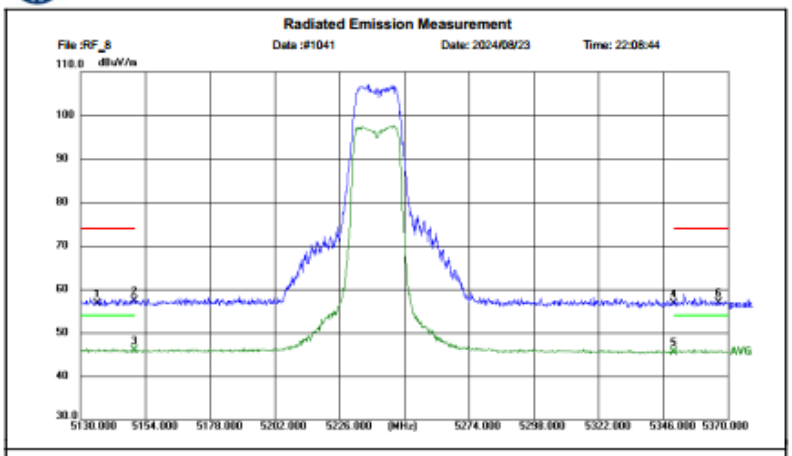

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5240MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	5136.450	37.68	18.97	56.65	74.00	17.35	peak	150	281	P	
2	5150.000	38.26	18.99	57.25	74.00	16.75	peak	150	312	P	
3	5150.000	26.85	18.99	45.84	54.00	8.16	AVG	150	312	P	
4	5350.000	37.73	18.99	56.72	74.00	17.28	peak	150	157	P	
5	5350.000	26.47	18.99	45.46	54.00	8.54	AVG	150	157	P	
6	5366.490	37.94	18.97	56.91	74.00	17.09	peak	150	266	P	

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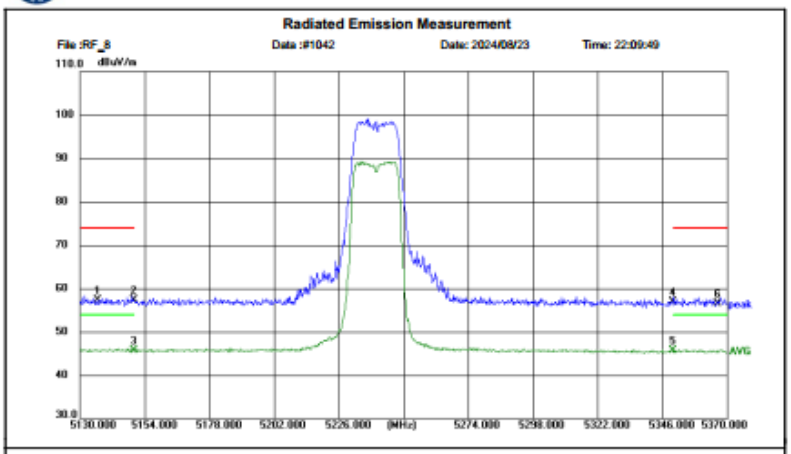


Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5240MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

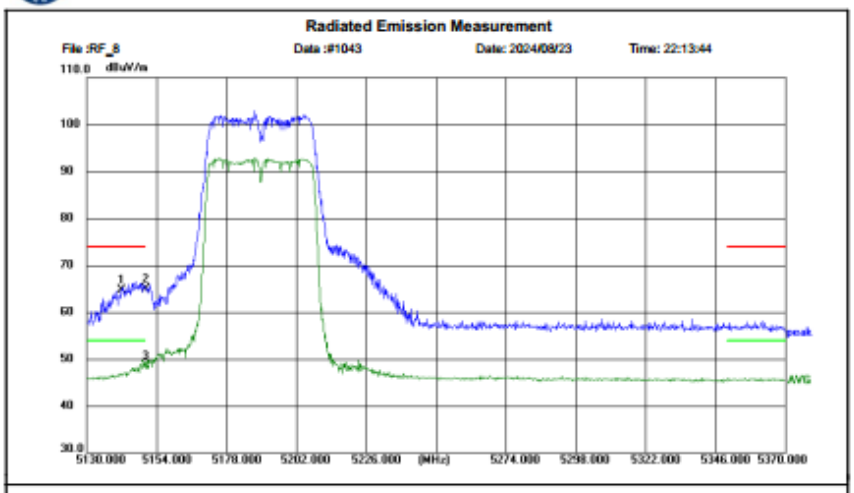
Temperature: 25(C)
Humidity: 50 %

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	5136.360	38.36	18.97	57.33	74.00	16.67	peak	150	343	P	
2	5150.000	38.31	18.99	57.30	74.00	16.70	peak	150	358	P	
3	5150.000	26.79	18.99	45.78	54.00	8.22	AVG	150	358	P	
4	5350.000	37.94	18.99	56.93	74.00	17.07	peak	150	0	P	
5	5350.000	26.77	18.99	45.76	54.00	8.24	AVG	150	0	P	
6	5366.460	37.61	18.97	56.58	74.00	17.42	peak	150	19	P	

Band Edge Test Plots of U-NII 1

802.11n (HT40) mode@ Ch38_5190MHz

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



Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5190MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	5142.180	45.64	18.99	64.63	74.00	9.37	peak	150	280	P	
2	5150.000	46.01	18.99	65.00	74.00	9.00	peak	150	357	P	
3	5150.000	29.52	18.99	48.51	54.00	5.49	AVG	150	357	P	

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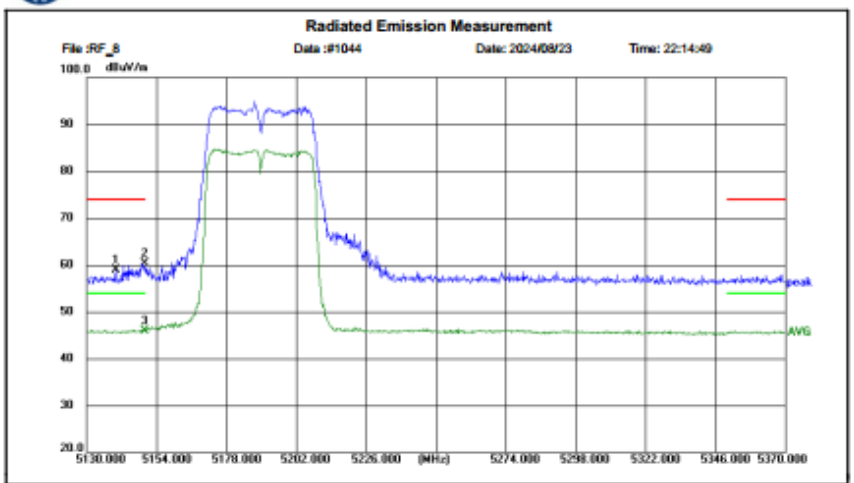

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5190MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	5140.230	39.93	18.99	58.92	74.00	15.08	peak	150	142	P	
2	5150.000	41.26	18.99	60.25	74.00	13.75	peak	150	142	P	
3	5150.000	26.83	18.99	45.82	54.00	8.18	AVG	150	142	P	

Band Edge Test Plots of U-NII 1

802.11n (HT40) mode@ Ch46_5230MHz

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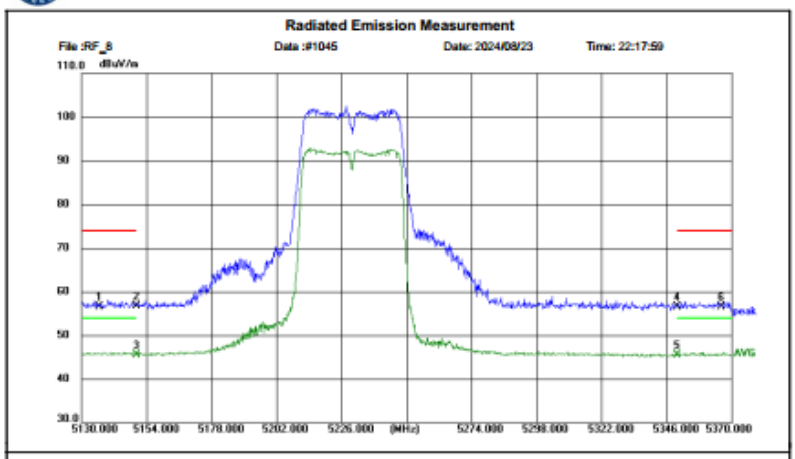

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5230MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	5136.270	37.60	18.97	56.57	74.00	17.43	peak	150	264	P	
2	5150.000	37.77	18.99	56.76	74.00	17.24	peak	150	110	P	
3	5150.000	26.57	18.99	45.56	54.00	8.44	AVG	150	110	P	
4	5350.000	37.54	18.99	56.53	74.00	17.47	peak	150	32	P	
5	5350.000	26.58	18.99	45.57	54.00	8.43	AVG	150	32	P	
6	5366.250	37.63	18.97	56.60	74.00	17.40	peak	150	218	P	

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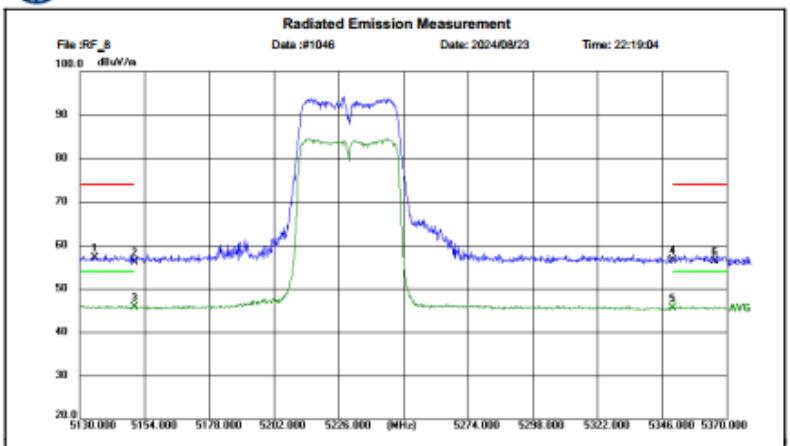

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5230MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	5135.580	38.16	18.98	57.14	74.00	16.86	peak	150	65	P	
2	5150.000	37.04	18.99	56.03	74.00	17.97	peak	150	174	P	
3	5150.000	26.73	18.99	45.72	54.00	8.28	AVG	150	174	P	
4	5350.000	37.57	18.99	56.56	74.00	17.44	peak	150	96	P	
5	5350.000	26.53	18.99	45.52	54.00	8.48	AVG	150	96	P	
6	5365.770	37.40	18.97	56.37	74.00	17.63	peak	150	358	P	

Band Edge Test Plots of U-NII 1

802.11a (AC80) mode@ Ch42_5210MHz

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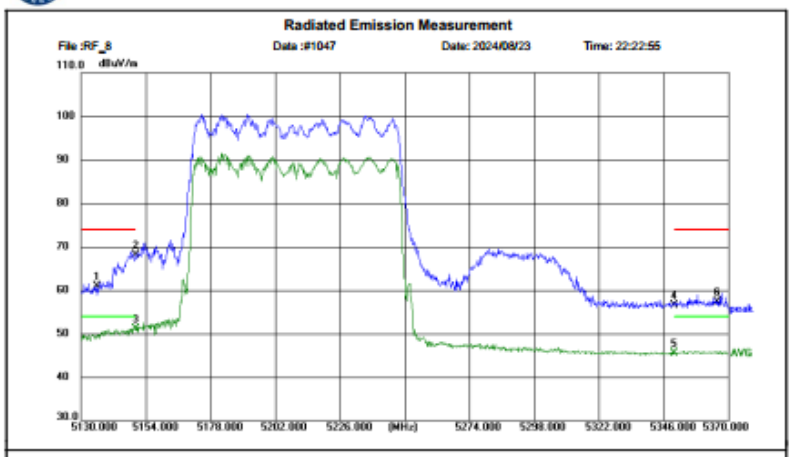

Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5210MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	5136.180	41.86	18.97	60.83	74.00	13.17	peak	150	279	P	
2	5150.000	49.11	18.99	68.10	74.00	5.90	peak	150	279	P	
3	5150.000	32.19	18.99	51.18	54.00	2.82	AVG	150	279	P	
4	5350.000	37.47	18.99	56.46	74.00	17.54	peak	150	110	P	
5	5350.000	26.49	18.99	45.48	54.00	8.52	AVG	150	110	P	
6	5366.010	38.35	18.97	57.32	74.00	16.68	peak	150	356	P	

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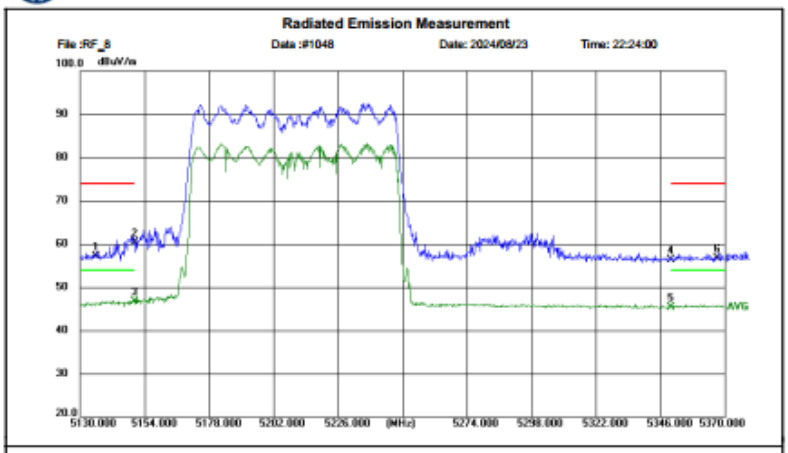


Site LAB Chamber 2
Limit: FCC Part15 Band edge (UNII) PK
EUT:
M/N: T156A
Mode: WIFI5G 5210MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

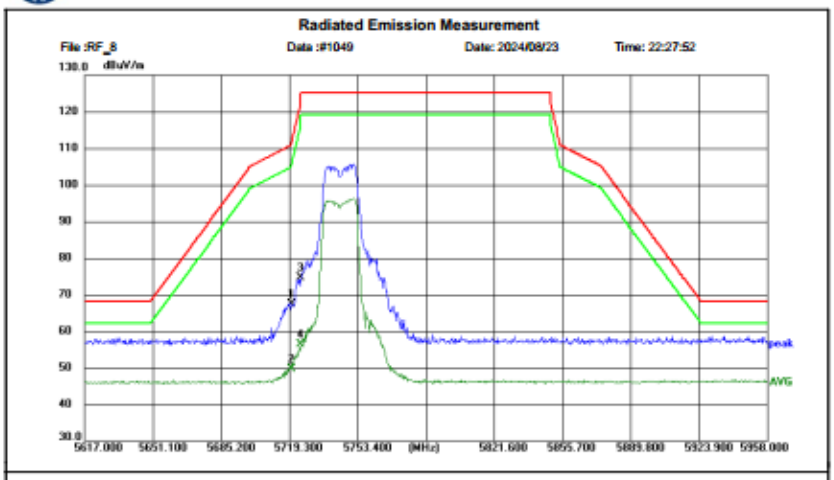
Temperature: 25(C)
Humidity: 50 %

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	5135.790	38.21	18.98	57.19	74.00	16.81	peak	150	313	P	
2	5150.000	41.35	18.99	60.34	74.00	13.66	peak	150	158	P	
3	5150.000	27.79	18.99	46.78	54.00	7.22	AVG	150	158	P	
4	5350.000	37.31	18.99	56.30	74.00	17.70	peak	150	111	P	
5	5350.000	26.37	18.99	45.36	54.00	8.64	AVG	150	111	P	
6	5366.910	37.75	18.97	56.72	74.00	17.28	peak	150	19	P	

Band Edge Test Plots of U-NII 3

802.11n (HT20) mode@ Ch149_5745MHz

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



Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5745MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	47.62	19.65	67.27	110.80	43.53	peak	150	236	P	
2	5720.000	29.91	19.65	49.56	110.80	61.24	AVG	150	236	P	
3	5725.000	54.89	19.65	74.54	122.20	47.66	peak	150	252	P	
4	5725.000	36.82	19.65	56.47	122.20	65.73	AVG	150	252	P	

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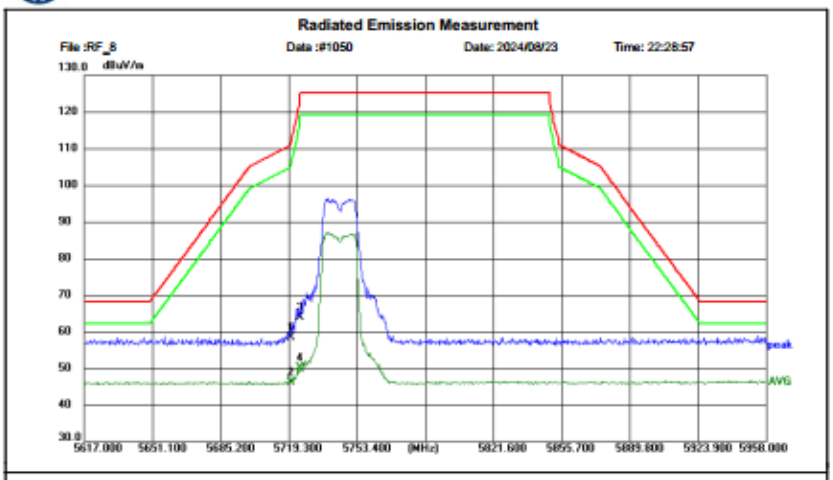


Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5745MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

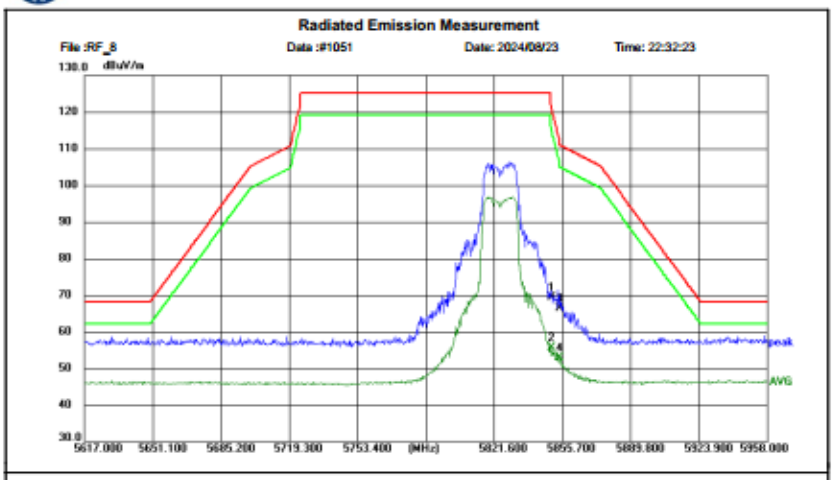
Temperature: 25(C)
Humidity: 50 %

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	38.68	19.65	58.33	110.80	52.47	peak	150	43	P	
2	5720.000	26.56	19.65	46.21	110.80	64.59	AVG	150	43	P	
3	5725.000	44.18	19.65	63.83	122.20	58.37	peak	150	154	P	
4	5725.000	30.58	19.65	50.23	122.20	71.97	AVG	150	154	P	

Band Edge Test Plots of U-NII 3

802.11n (HT20) mode@ Ch165_5825MHz

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



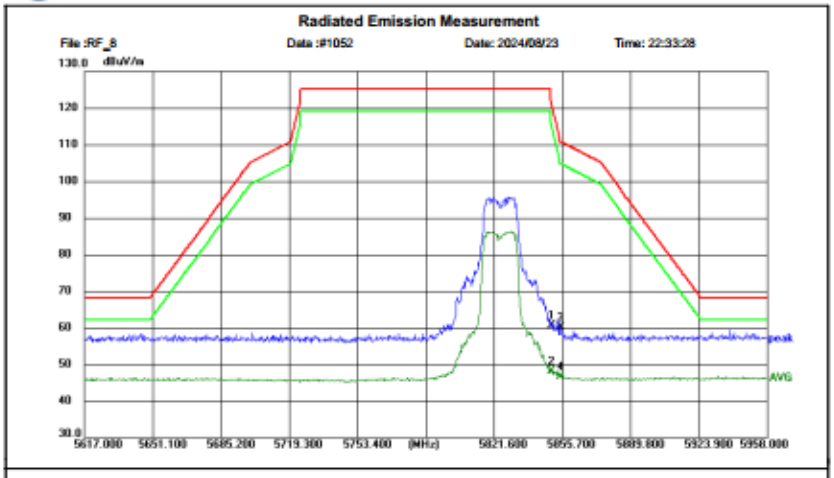
Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5825MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	49.52	19.80	69.32	122.20	52.88	peak	150	239	P	
2	5850.000	35.88	19.80	55.68	122.20	66.52	AVG	150	239	P	
3	5855.000	46.65	19.84	66.49	110.80	44.31	peak	150	239	P	
4	5855.000	33.06	19.84	52.90	110.80	57.90	AVG	150	239	P	

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



Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5825MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

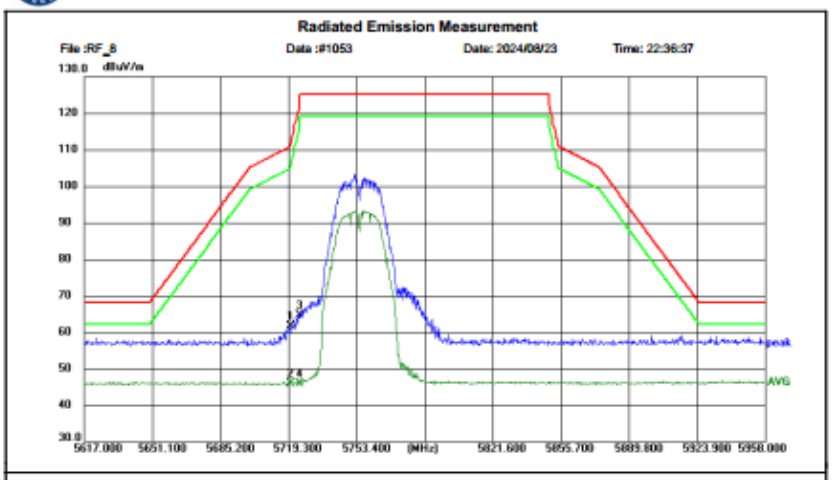
Temperature: 25(C)
Humidity: 50 %

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	40.74	19.80	60.54	122.20	61.66	peak	150	358	P	
2	5850.000	28.40	19.80	48.20	122.20	74.00	AVG	150	358	P	
3	5855.000	40.19	19.84	60.03	110.80	50.77	peak	150	59	P	
4	5855.000	26.79	19.84	46.63	110.80	64.17	AVG	150	59	P	

Band Edge Test Plots of U-NII 3

802.11n (HT40) mode@ Ch151_5755MHz

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



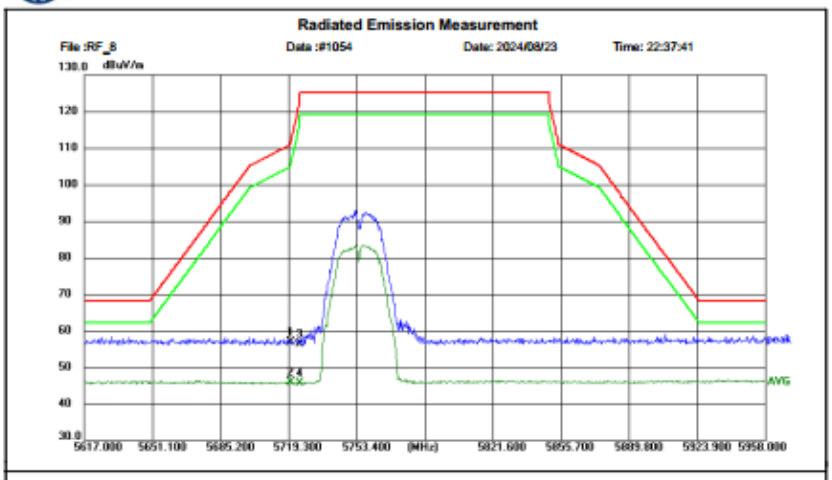
Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5755MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	42.07	19.65	61.72	110.80	49.08	peak	150	255	P	
2	5720.000	26.32	19.65	45.97	110.80	64.83	AVG	150	255	P	
3	5725.000	44.89	19.65	64.54	122.20	57.66	peak	150	255	P	
4	5725.000	26.31	19.65	45.96	122.20	76.24	AVG	150	255	P	

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



Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5755MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

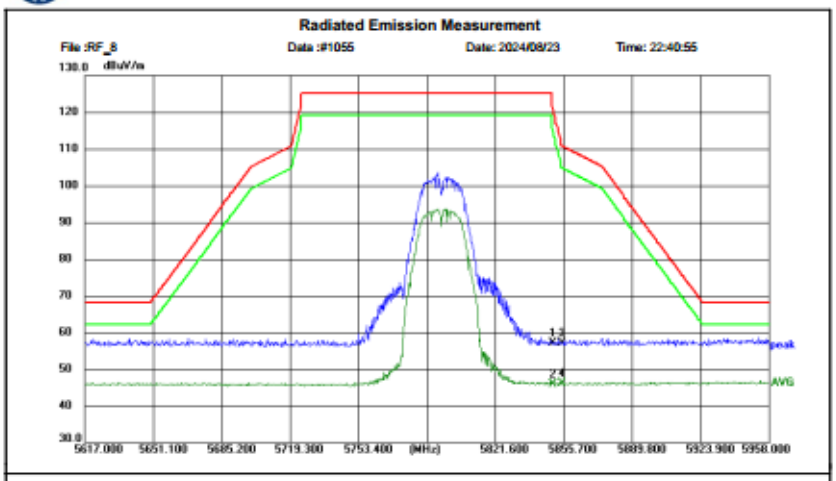
Temperature: 25(C)
Humidity: 50 %

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	37.11	19.65	56.76	110.80	54.04	peak	150	279	P	
2	5720.000	26.14	19.65	45.79	110.80	65.01	AVG	150	279	P	
3	5725.000	36.80	19.65	56.45	122.20	65.75	peak	150	137	P	
4	5725.000	25.95	19.65	45.60	122.20	76.60	AVG	150	137	P	

Band Edge Test Plots of U-NII 3

802.11n (HT40) mode@ Ch159_5795MHz

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



Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5795MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	37.31	19.80	57.11	122.20	65.09	peak	150	192	P	
2	5850.000	26.20	19.80	46.00	122.20	76.20	AVG	150	192	P	
3	5855.000	37.29	19.84	57.13	110.80	53.67	peak	150	360	P	
4	5855.000	26.25	19.84	46.09	110.80	64.71	AVG	150	360	P	

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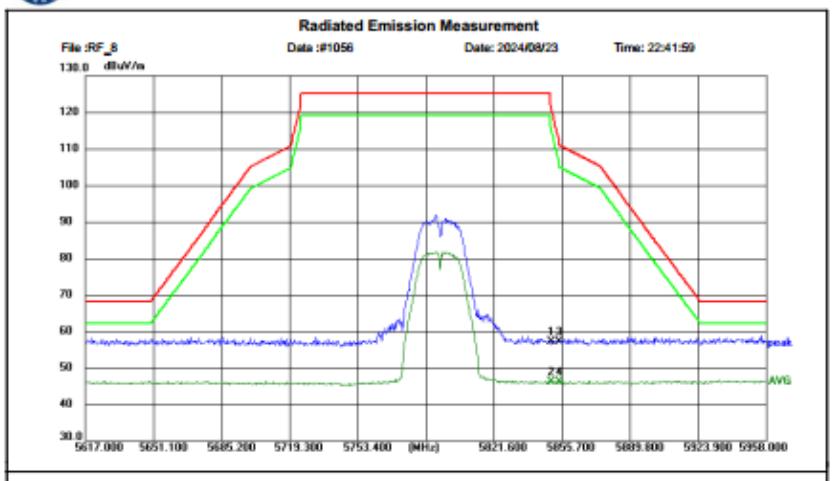


Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5795MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

Polarization: *Vertical*
Power:
Distance: 3m

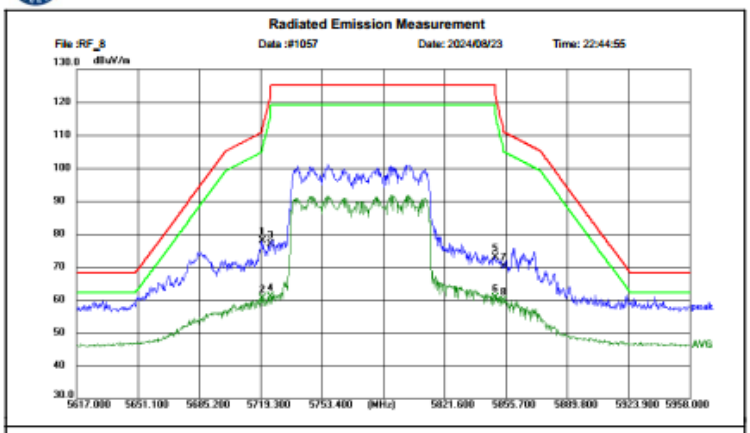
Temperature: 25(C)
Humidity: 50 %

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	37.26	19.80	57.06	122.20	65.14	peak	150	343	P	
2	5850.000	26.29	19.80	46.09	122.20	76.11	AVG	150	343	P	
3	5855.000	37.38	19.84	57.22	110.80	53.58	peak	150	12	P	
4	5855.000	26.23	19.84	46.07	110.80	64.73	AVG	150	12	P	

Band Edge Test Plots of U-NII 3

802.11a (AC80) mode@ Ch155_5775MHz

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



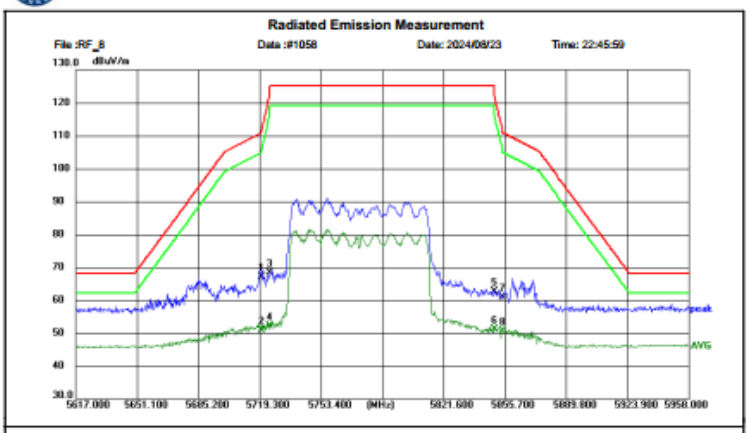
Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5775MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	58.18	19.65	77.83	110.80	32.97	peak	150	239	P	
2	5720.000	40.81	19.65	60.46	110.80	50.34	AVG	150	239	P	
3	5725.000	57.18	19.65	76.83	122.20	45.37	peak	150	239	P	
4	5725.000	41.31	19.65	60.96	122.20	61.24	AVG	150	239	P	
5	5850.000	53.08	19.80	72.88	122.20	49.32	peak	150	239	P	
6	5850.000	40.89	19.80	60.69	122.20	61.51	AVG	150	239	P	
7	5855.000	50.33	19.84	70.17	110.80	40.63	peak	150	239	P	
8	5855.000	39.69	19.84	59.53	110.80	51.27	AVG	150	239	P	

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



Site LAB Chamber 2
Limit: FCC Part15 Band edge (U-NII-3) PK
EUT:
M/N: T156A
Mode: WIFI5G 5775MHz TX
Note: Shenzhen Forwell Electronics Technology Co., Ltd.

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	47.55	19.65	67.20	110.80	43.60	peak	150	154	P	
2	5720.000	31.26	19.65	50.91	110.80	59.89	AVG	150	154	P	
3	5725.000	48.83	19.65	68.48	122.20	53.72	peak	150	170	P	
4	5725.000	32.44	19.65	52.09	122.20	70.11	AVG	150	170	P	
5	5850.000	42.87	19.80	62.67	122.20	59.53	peak	150	58	P	
6	5850.000	31.30	19.80	51.10	122.20	71.10	AVG	150	58	P	
7	5855.000	41.06	19.84	60.90	110.80	49.90	peak	150	91	P	
8	5855.000	30.78	19.84	50.62	110.80	60.18	AVG	150	91	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.

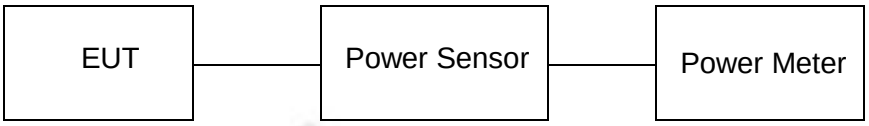
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or 11dBm + 10log B, where B is the 26 dB emission bandwidth in megahertz.

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 from CTL2407181051-WF04_5G_U-NII_BAND1_Appendix.
Raw data reference to Section 2 from CTL2407181051-WF04_5G_U-NII_BAND3_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

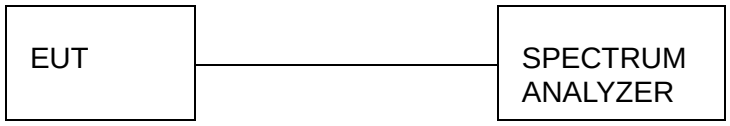
Note1: If transmitting antennas of directional gain greater than 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

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 from CTL2407181051-WF04_5G_U-NII_BAND1_Appendix.
Raw data reference to Section 3 from CTL2407181051-WF04_5G_U-NII_BAND3_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 from CTL2407181051-WF04_5G_U-NII_BAND1_Appendix.
Raw data reference to Section 1 from CTL2407181051-WF04_5G_U-NII_BAND3_Appendix.

3.6. Minimum Emission Bandwidth (6dBm Bandwidth)

Limit

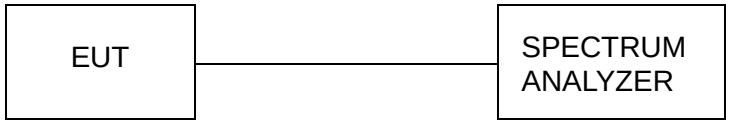
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 kHz for the band

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

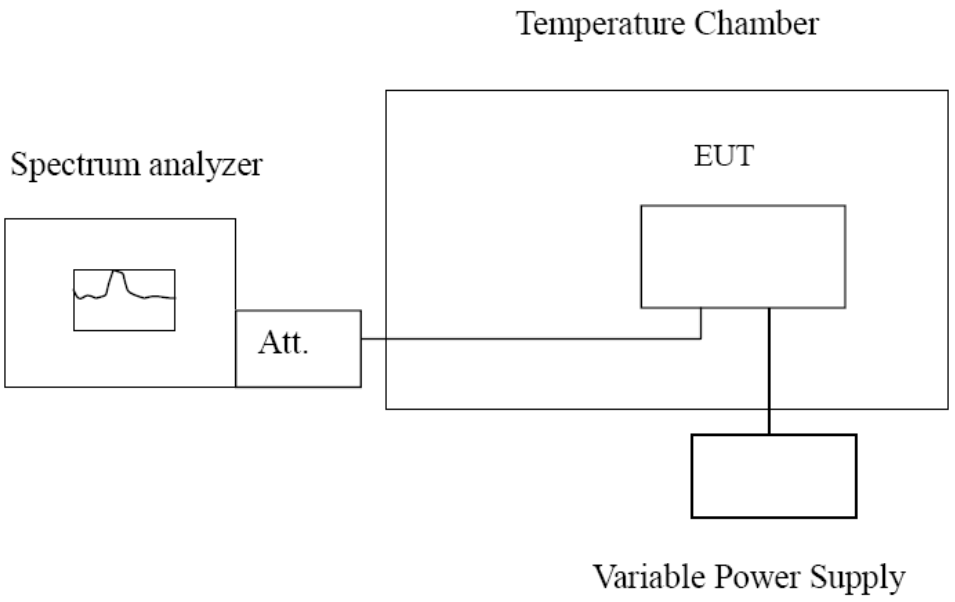
Raw data reference to Section 1 from CTL2407181051-WF04_5G_U-NII_BAND1_Appendix.
Raw data reference to Section 1 from CTL2407181051-WF04_5G_U-NII_BAND3_Appendix.

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 from CTL2407181051-WF04_5G_U-NII_BAND1_Appendix.
Raw data reference to Section 4 from CTL2407181051-WF04_5G_U-NII_BAND3_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

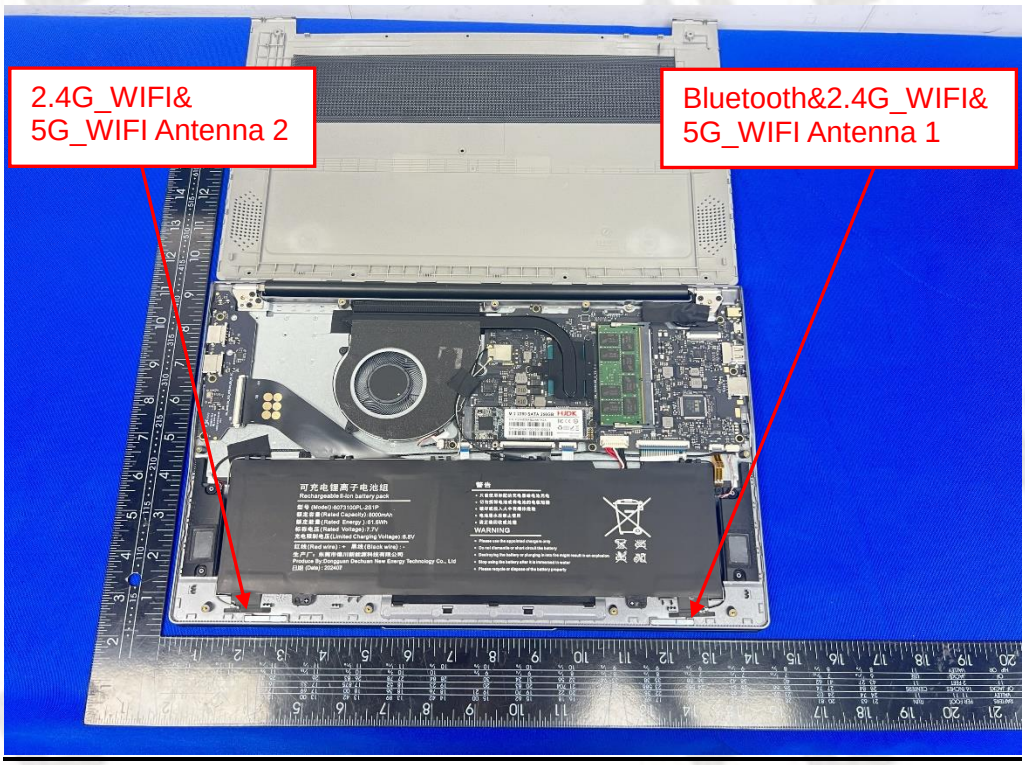
And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance

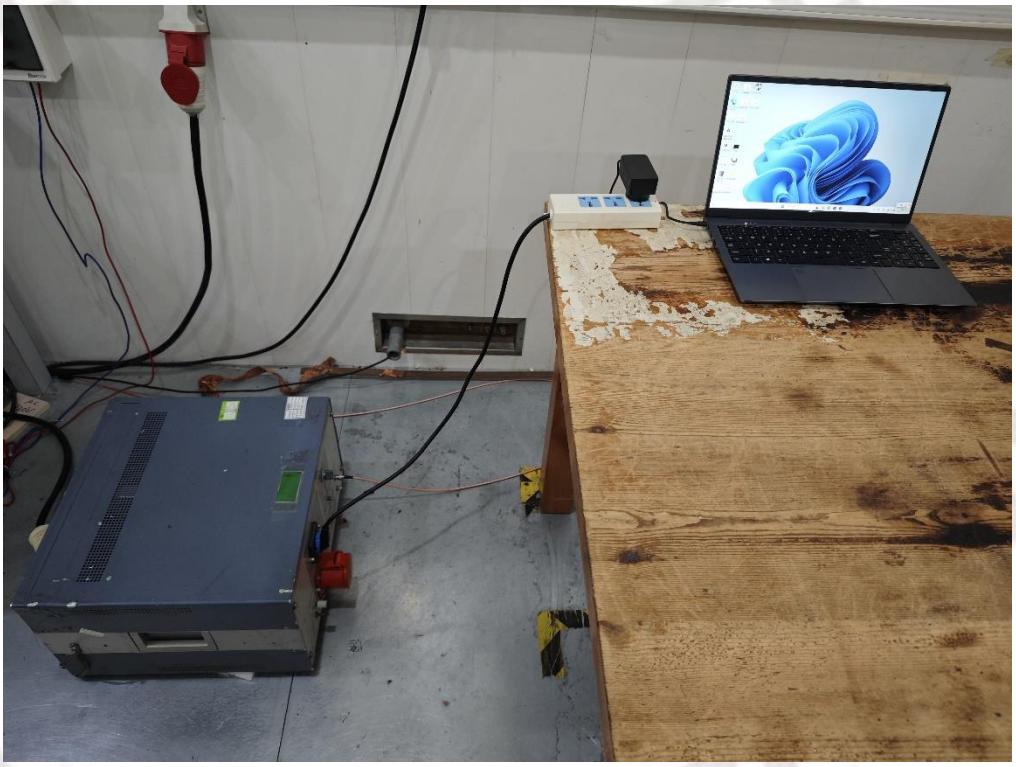
The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

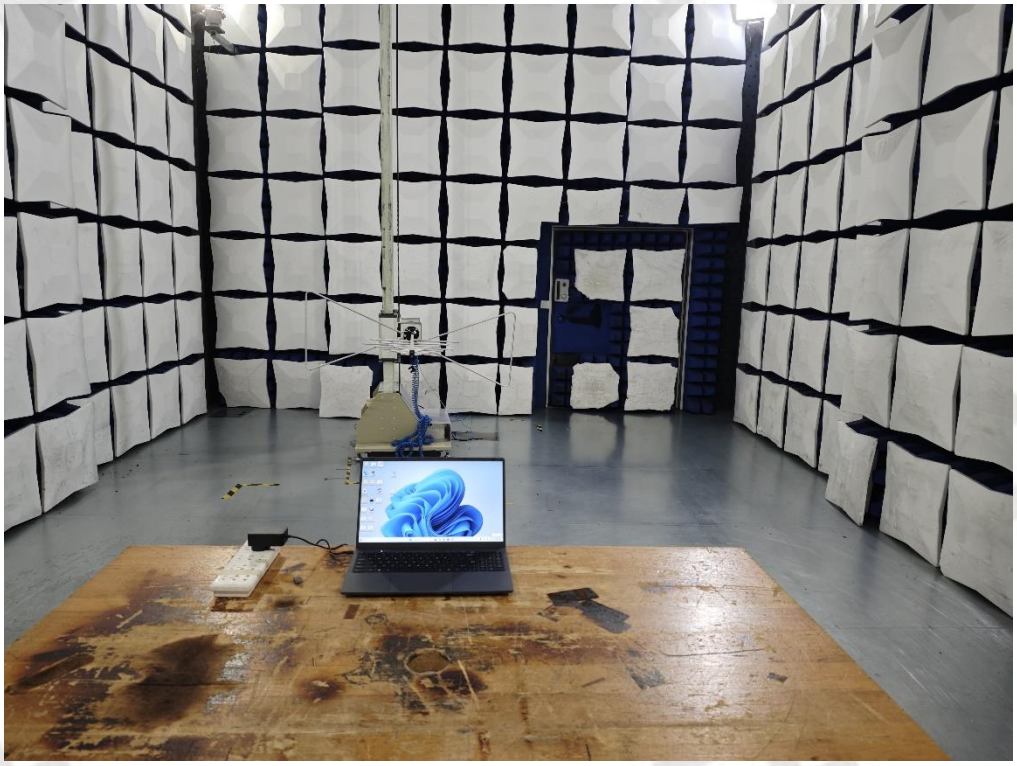
Antenna Connected Construction

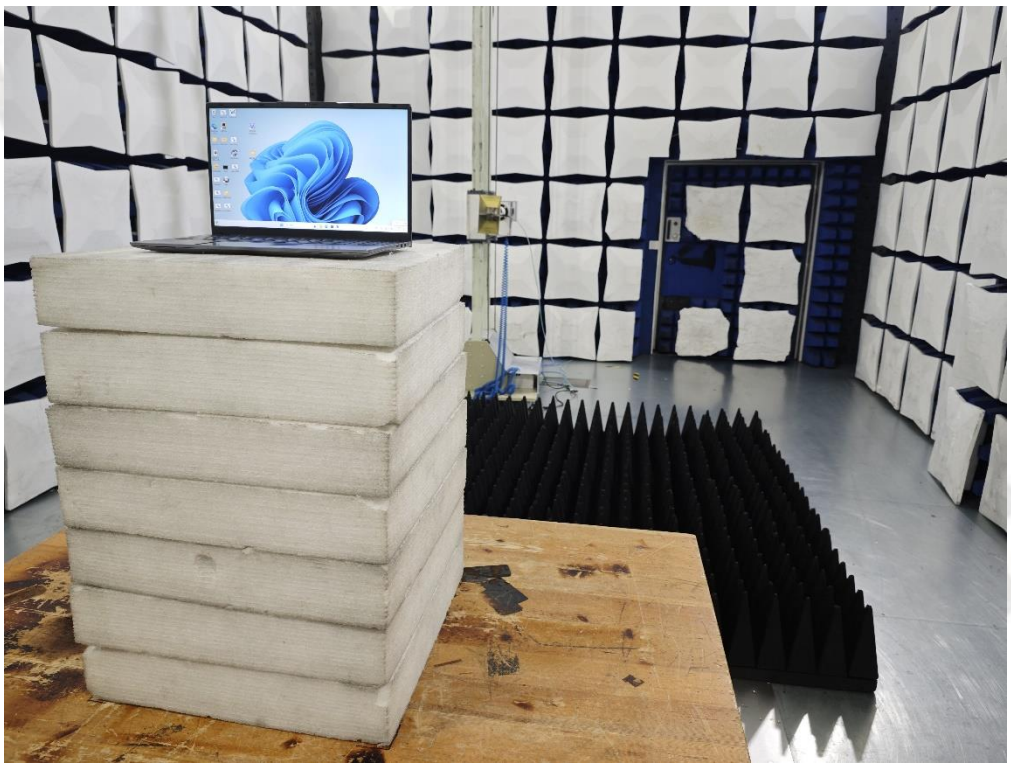
The maximum gain of 5G_WIFI Antenna was 1.26dBi.



4. Test Setup Photos of the EUT







5. External and Internal Photos of the EUT

Reference to the test report No.CTL2407181051-WF01

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