FCC RADIO TEST REPORT
FCC ID: 2BFLD-N37663U2

Product : WiFi Module

Trade Mark : CDTECH

Model Name : CDW-N37663U-02

Family Model : N/A

Report No. : N26052105005E

Prepared for

CHINA DRAGON (HUNAN) TECHNOLOGY CO., LTD.
NO.13, ZIYUAN ROAD, XUESHI STREET, YUELU DISTRICT,
CHANGSHA CITY, HUNAN PROVINCE

Prepared by

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Tel. 0755-23200050 Website: http://www.ntek.org.cn

TEST RESULT CERTIFICATION

Applicant's name ..... : CHINA DRAGON (HUNAN) TECHNOLOGY CO., LTD.

Address..... : NO.13, ZIYUAN ROAD, XUESHI STREET, YUELU DISTRICT, CHANGSHA CITY, HUNAN PROVINCE

Manufacturer's Name ..... : CHINA DRAGON (HUNAN) TECHNOLOGY CO., LTD.

Address..... : NO.13, ZIYUAN ROAD, XUESHI STREET, YUELU DISTRICT, CHANGSHA CITY, HUNAN PROVINCE

Product description

Product name.....: WiFi Module

Model and/or type reference : CDW-N37663U-02

Family Model.....: N/A

Sample number S250414076005
S2605260174-1#

Standards ..... : FCC Part15.407

Test procedure ..... ANSI C63.10-2020+Cor 1-2023 and KDB 789033 D02 General UNII Test Procedures New Rules v02r01

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements/ the Industry Canada requirements.. And it is applicable only to the tested sample identified in the report.

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Date of Test .....

Date (s) of performance of tests..... Apr. 16, 2025 ~ Jun. 05, 2025
May. 21, 2025 ~ Jun. 27, 2026

Date of Issue ..... Jun. 27, 2026

Test Result..... **Pass**

Note: All test data of this report are based on the original test report S25041407604004, dated by Jun. 05, 2025
Updated RSE data by Jun. 27, 2026

Prepared By	Reviewed By	Approved By
Mary Hu	Aaron Cheng	Alex Li
(Project Engineer)	(Supervisor)	(Manager)

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Revision History

Report No.	Version	Description	Issued Date
S25041407604004	Rev.01	Initial issue of report	Jun. 05, 2025
N26052105005E	Rev.02	Update Spurious Emission data	Jun. 27, 2026

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart E			
Standard Section	Test Item	Judgment	Remark
15.207	AC Power Line Conducted Emissions	PASS	
15.209(a), 15.407 (b)(1) 15.407 (b)(4)	Spurious Radiated Emissions	PASS	
15.407 (a)(1) 15.407 (a)(3)	26 dB and 99% Emission Bandwidth	PASS	
15.407(e)	Minimum 6 dB bandwidth	PASS	
15.407 (a)(1) 15.407 (a)(3)	Maximum Conducted Output Power	PASS	
15.407(b)(1) 15.407(b)(4)	Band Edge	PASS	
15.407 (a)(1) 15.407 (a)(3)	Power Spectral Density	PASS	
15.407(b)	Spurious Emissions at Antenna Terminals	PASS	
15.203	Antenna Requirement	PASS	
15.407(c)	Automatically discontinue transmission	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 FACILITIES AND ACCREDITATIONS

FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

CNAS-Lab.	:	The Certificate Registration Number is L5516.
IC-Registration		The Certificate Registration Number is 9270A. CAB identifier:CN0074
FCC- Accredited		Test Firm Registration Number: 463705. Designation Number: CN1184
A2LA-Lab.		The Certificate Registration Number is 4298.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).
Name of Firm	:	Shenzhen NTEK Testing Technology Co., Ltd.
Site Location	:	No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China.

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test(9-150kHz)	3.7dB
2	Conducted Emission Test(0.15-30MHz)	3.3dB
3	RF power, conducted	0.9dB
4	Power Spectral Density, conducted	0.9dB
5	Occupied bandwidth	1.2%
6	Spurious emissions, conducted	2.2dB
7	Radio Frequency	0.2ppm
8	All emissions, radiated(9kHz~30MHz)	4.5dB
9	All emissions, radiated(30MHz~1G)	4.9dB
10	All emissions, radiated(1G~18G)	5.1dB
11	All emissions, radiated(18G~40G)	5.0dB
12	Temperature	0.5°C
13	Humidity	2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	WiFi Module
Trade Mark	CDTECH
Model Name	CDW-N37663U-02
Family Model	N/A
Model Difference	N/A
FCC ID	2BFLD-N37663U2
Product Description	

IEEE 802.11 WLAN Mode Supported	☒802.11a/n/ac (20MHz channel bandwidth) ☒802.11n/ac (40MHz channel bandwidth) ☒802.11ac (80MHz channel bandwidth)
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20):MCS0-MCS8; 802.11ac(VHT40/VHT80):MCS0-MCS9;
Modulation	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Operating Frequency Range	☒5180-5240MHz for 802.11a/n(HT20)/ac(VHT20); 5190-5230MHz for 802.11n(HT40)/ac(VHT40); 5210MHz for 802.11ac(VHT80) ☒5745-5825 MHz for 802.11a/n(HT20)/ac(VHT20); 5755-5795 MHz for 802.11n(HT40)/ac(VHT40); 5775MHz for 802.11ac(VHT80)
Number of Channels	☒4 channels for 802.11a/n20/ac20 in the 5180-5240MHz band ; 2 channels for 802.11 n40/ac40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; ☒5 channels for 802.11a/n20/ac20 in the 5745-5825MHz band ; 2 channels for 802.11 n40/ac40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band ;
Antenna Type	See Table for Filed Antenna on P9
Antenna Gain	See Table for Filed Antenna on P9
Smart system	☒SISO for 802.11a/n/ac ☒MIMO for 802.11n/ac

Based on the application, features, or specification exhibited in User's Manual, More details of EUT technical specification, please refer to the User's Manual.

Adapter	N/A
Battery	N/A
Power supply	DC 3.3V
Connecting I/O Port(s)	Please refer to the User's Manual
HW Version	N/A
SW Version	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Frequency and Channel list for 802.11a/n/ac(20MHz) band I (5180-5240MHz):

802.11a/n/ac(20MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220	-	-	-	-
40	5200	48	5240	-	-	-	-

Frequency and Channel list for 802.11n/ac(40MHz) band I (5190-5230MHz):

802.11n/ac(40MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	-	-	-	-	-	-
46	5230	-	-	-	-	-	-

Frequency and Channel list for 802.11ac(80MHz) band I (5210MHz):

802.11ac(80MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	-	-	-	-	-	-

Frequency and Channel list for 802.11a/n/ac(20 MHz) band IV (5745-5825MHz):

802.11a/n/ac(20 MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

Frequency and Channel list for 802.11n/ac(40MHz) band IV (5755-5795MHz):

802.11n/ac(40MHz) Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-

Frequency and Channel list for 802.11ac(80MHz) band IV (5775MHz):

802.11ac(80MHz) Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775			-	-

Table for Filed Antenna

For Antenna group A

Antenna	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	JYX250824-WL0	FPC Antenna	IPEX	4.55	Wifi Antenna
2	N/A	JYX2603310-WL1	FPC Antenna	IPEX	4.07	Wifi Antenna

For Antenna group B

Antenna	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	SH-P001	FPC Antenna	IPEX	4.04	Wifi Antenna
2	N/A	SH-P001	FPC Antenna	IPEX	4.81	Wifi Antenna

For Antenna group C

Antenna	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	SLK-CZ-2813G	FPC Antenna	IPEX	2.97	Wifi Antenna
2	N/A	SLK-CZ-2813F	FPC Antenna	IPEX	2.82	Wifi Antenna

Mode	Tx/Rx
802.11a/n/ac/ax	1TX, 1RX
802.11n/ac/ax	1TX/2TX, 1RX/2RX

For 5GHz mode, Antenna 1,2 are transmitting, each with the same directional gain.

For Antenna group A

For MIMO mode, Directional gain=$[10\log(10^{G1/20}+10^{G2/20})^2/N_{ANT}]$dBi =7.32dBi>6dBi

For Antenna group B

For MIMO mode, Directional gain=$[10\log(10^{G1/20}+10^{G2/20})^2/N_{ANT}]$dBi =7.44dBi>6dBi

For Antenna group C

For MIMO mode, Directional gain=$[10\log(10^{G1/20}+10^{G2/20})^2/N_{ANT}]$dBi =5.91dBi<6dBi

5GHz has MIMO mode.

Note: G1 means antenna gain for ANT 1 in dBi.
G2 means antenna gain for ANT 2 in dBi.
N_{ANT} means the number of Antennas.

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Normal Link Mode
Mode 2	802.11a / n 20 /ac 20 CH36/ CH40/ CH 48 802.11a / n 20 / ac 20 CH149/ CH157/ CH 165
Mode 3	802.11n40 / ac40 CH38/ CH 46 802.11n 40 / ac 40 CH 151 / CH 159
Mode 4	802.11ac80 CH 42 802.11ac 80 CH 155

For Radiated Emission	
Final Test Mode	Description
Mode 1	Normal Link Mode
Mode 2	802.11a / n 20 /ac 20 CH36/ CH40/ CH 48 802.11a / n 20 / ac 20 CH149/ CH157/ CH 165
Mode 3	802.11n40 / ac40 CH38/ CH 46 802.11n 40 / ac 40 CH 151 / CH 159
Mode 4	802.11ac80 CH 42 802.11ac 80 CH 155

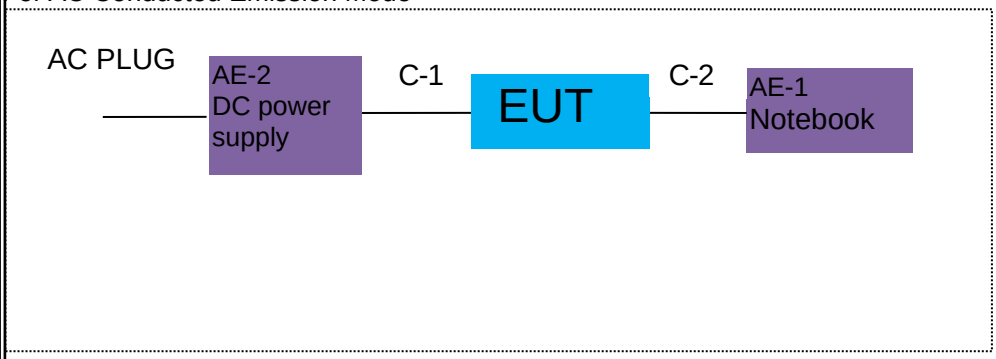
Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

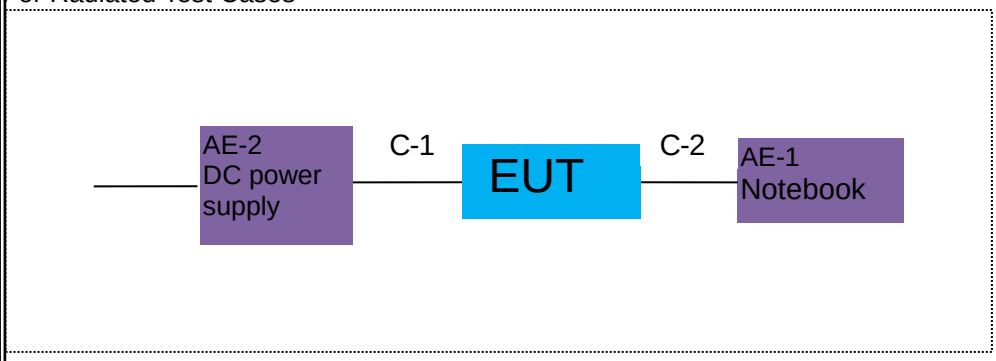
(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

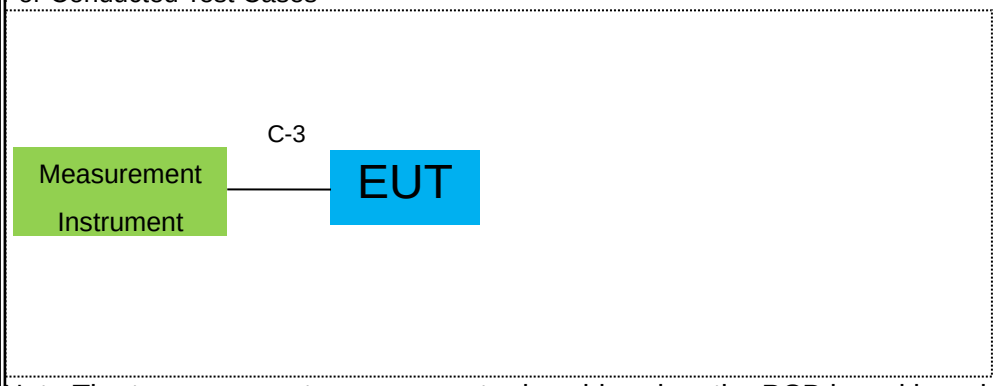
For AC Conducted Emission Mode



For Radiated Test Cases



For Conducted Test Cases



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

2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Model/Type No.	Manufacturer	Series No.	Note
AE-1	Notebook	KLVD-WFH9	HUAWEI	J8GPM21B2 003696	Peripherals
AE-2	Dc power supply	PS-305DF	LWDQGS	10963034	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	DC Cable	NO	NO	0.5m
C-2	USB Cable	NO	NO	0.5m
C-3	RF Conducted Cable	NO	NO	0.1m

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation& Conducted Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4440A	MY41000130	2025.04.24 2026.04.15	2026.04.23 2027.04.14	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	803	2024.05.12	2027.05.11	3 year
7	Amplifier	EMC	EMC051835SE	980246	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
8	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
9	Power Meter	DARE	RPR3006W	15I00041SNO84	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
10	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2023.05.06 2024.05.06	2026.05.05 2027.05.05	3 year
11	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2023.05.06 2024.05.06	2026.05.05 2027.05.05	3 year
12	High Test Cable(1G-40GHz)	N/A	R-03	N/A	2023.05.06 2024.05.06	2026.05.05 2027.05.05	3 year
13	Filter	TRILTHIC	2400MHz	29	2024.04.26	2027.04.25	3 year
14	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

Note:
We will use the temporary antenna connector (soldered on the PCB board) When conducted test
And this temporary antenna connector is listed within the instrument list

AC Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
2	LISN	R&S	ENV216	101313	2025.04.16 2026.04.08	2026.04.15 2027.04.07	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	2025.04.16 2026.04.08	2026.04.15 2027.04.07	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2024.04.26	2027.04.25	3 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2023.05.06 2024.05.06	2026.05.05 2027.05.05	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2023.05.06 2024.05.06	2026.05.05 2027.05.05	3 year
7	Test Cable (9KHz-30MHz)	N/A	C03	N/A	2023.05.06 2024.05.06	2026.05.05 2024.05.06	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& Aux Equipment which is scheduled for calibration every 3 years.

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFtest	MTS 8310 2.4GHz/5GHz	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	raditeq	RadiMation	2023.1.3	RadiatedTest
4	Farad	EZ-EMC_CE	AIT-03A	AC Conducted Test

3. TEST REQUIREMENTS

3.1CONDUCTED EMISSION MEASUREMENT

3.1.1 APPLICABLE STANDARD

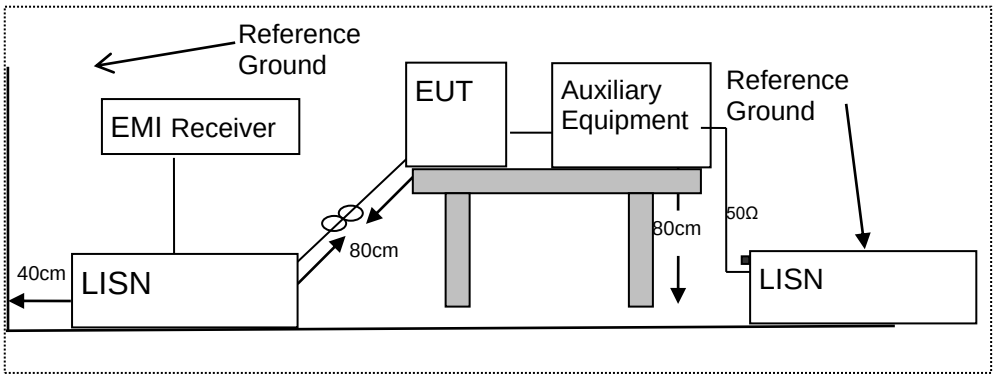
According to FCC Part 15.207(a)

3.1.2 CONFORMANCE LIMIT

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. *Decreases with the logarithm of the frequency
2. The lower limit shall apply at the transition frequencies
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3.1.3 TEST CONFIGURATION



3.1.4 TEST PROCEDURE

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2020+Cor 1-2023 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

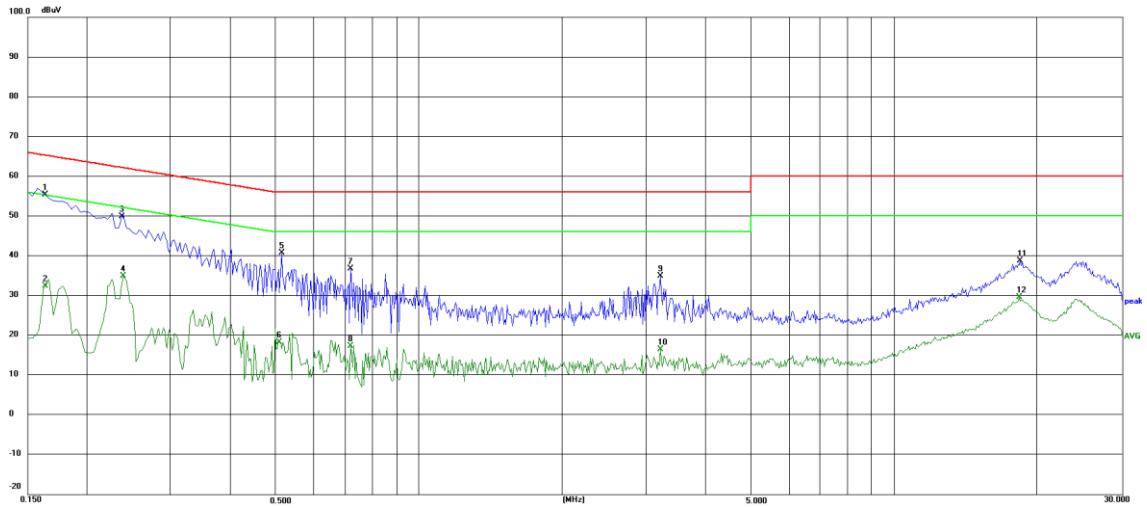
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
2. The EUT was placed on a table which is 0.8m above ground plane.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. The frequency range from 150KHz to 30MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
9. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.5 TEST RESULTS

EUT：	WiFi Module	Model Name ：	CDW-N37663U-02
Temperature：	25.3℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 3.3V	Test Mode：	Mode 1

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1632	45.33	10.02	55.35	65.30	-9.95	QP
0.1632	22.37	10.02	32.39	55.30	-22.91	AVG
0.2365	39.71	10.18	49.89	62.22	-12.33	QP
0.2380	24.80	10.18	34.98	52.17	-17.19	AVG
0.5140	29.97	10.70	40.67	56.00	-15.33	QP
0.5100	7.64	10.70	18.34	46.00	-27.66	AVG
0.7180	25.61	11.15	36.76	56.00	-19.24	QP
0.7180	6.19	11.15	17.34	46.00	-28.66	AVG
3.2140	25.11	9.90	35.01	56.00	-20.99	QP
3.2140	6.55	9.90	16.45	46.00	-29.55	AVG
18.3780	26.33	12.47	38.80	60.00	-21.20	QP
18.2660	17.18	12.44	29.62	50.00	-20.38	AVG

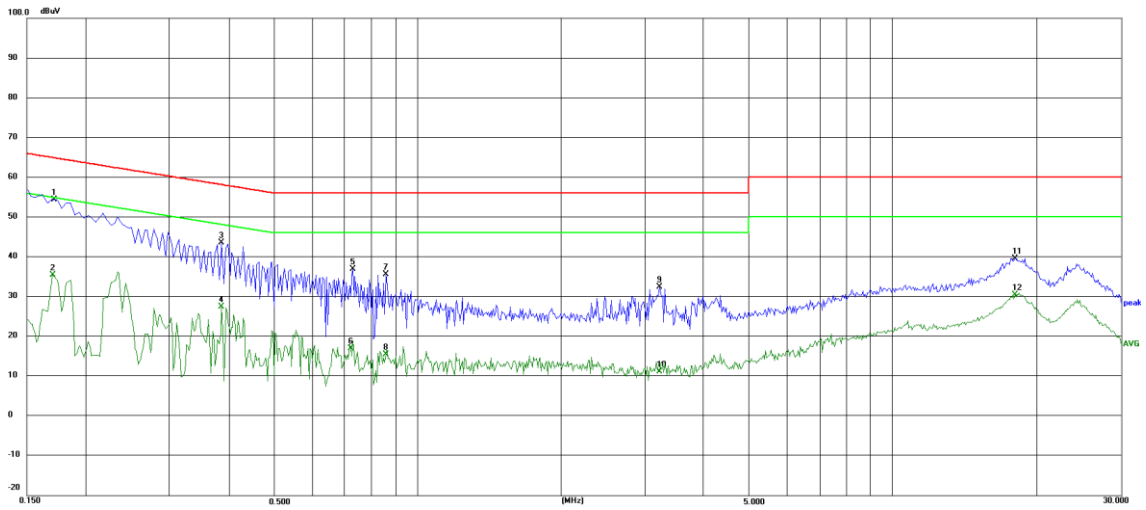
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	WiFi Module	Model Name ：	CDW-N37663U-02
Temperature：	25.3℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 3.3V	Test Mode：	Mode 1

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1712	44.91	9.47	54.38	64.90	-10.52	QP
0.1703	25.91	9.47	35.38	54.95	-19.57	AVG
0.3860	33.71	9.85	43.56	58.15	-14.59	QP
0.3860	17.55	9.85	27.40	48.15	-20.75	AVG
0.7300	26.55	10.44	36.99	56.00	-19.01	QP
0.7220	6.57	10.42	16.99	46.00	-29.01	AVG
0.8540	24.84	10.70	35.54	56.00	-20.46	QP
0.8540	4.73	10.70	15.43	46.00	-30.57	AVG
3.2140	23.23	9.16	32.39	56.00	-23.61	QP
3.2140	2.02	9.16	11.18	46.00	-34.82	AVG
17.9820	27.95	11.58	39.53	60.00	-20.47	QP
17.9820	18.84	11.58	30.42	50.00	-19.58	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 APPLICABLE STANDARD

According to FCC Part 15.407(b) and 15.209

3.2.2 CONFORMANCE LIMIT

According to FCC Part 15.407(b)(9)(10): 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) (see §15.205(c)).

According to FCC Part15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	24000/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Remark :1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. For Frequency 9kHz~30MHz:
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.
For Frequency above 30MHz:
Distance extrapolation factor =20log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, 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.

(4) For transmitters operating in the 5.725-5.85 GHz band:

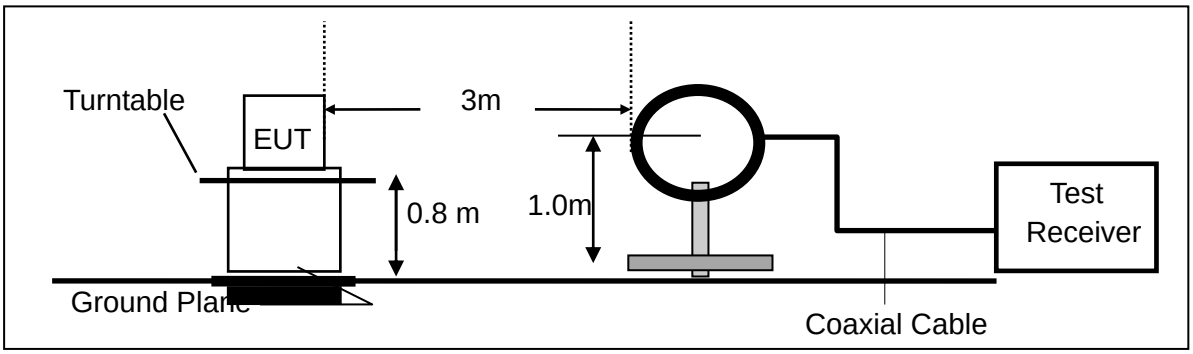
(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the 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.

3.2.3 MEASURING INSTRUMENTS

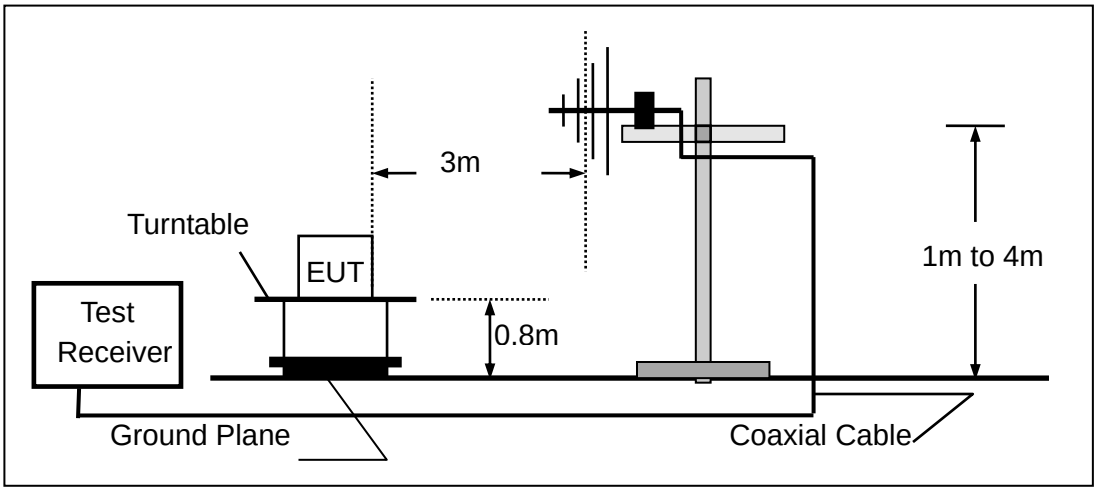
The Measuring equipment is listed in the section 6.3 of this test report.

3.2.4 TEST CONFIGURATION

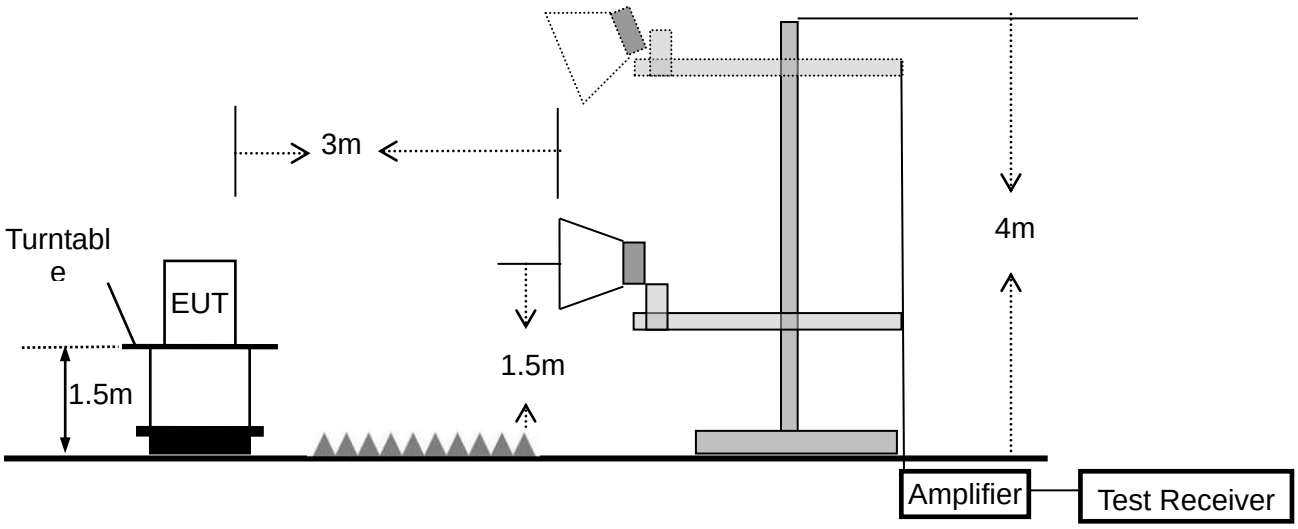
(a) For radiated emissions below 30MHz



(b) For radiated emissions from 30MHz to 1000MHz



(c) For radiated emissions above 1000MHz



3.2.5 TEST PROCEDURE

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2020+Cor 1-2023. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2020+Cor 1-2023 and CAN/CSA-CEI/IEC CISPR 22.
This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205.
It must be performed with the highest gain of each type of antenna proposed for use with the EUT.
Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 1MHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	1 MHz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where RBWCF [dB] =10*lg(100 [kHz]/narrower RBW [kHz]). , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

3.2.6 TEST RESULTS (9KHz – 30 MHz)

EUT：	WiFi Module	Model Name. :	CDW-N37663U-02
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

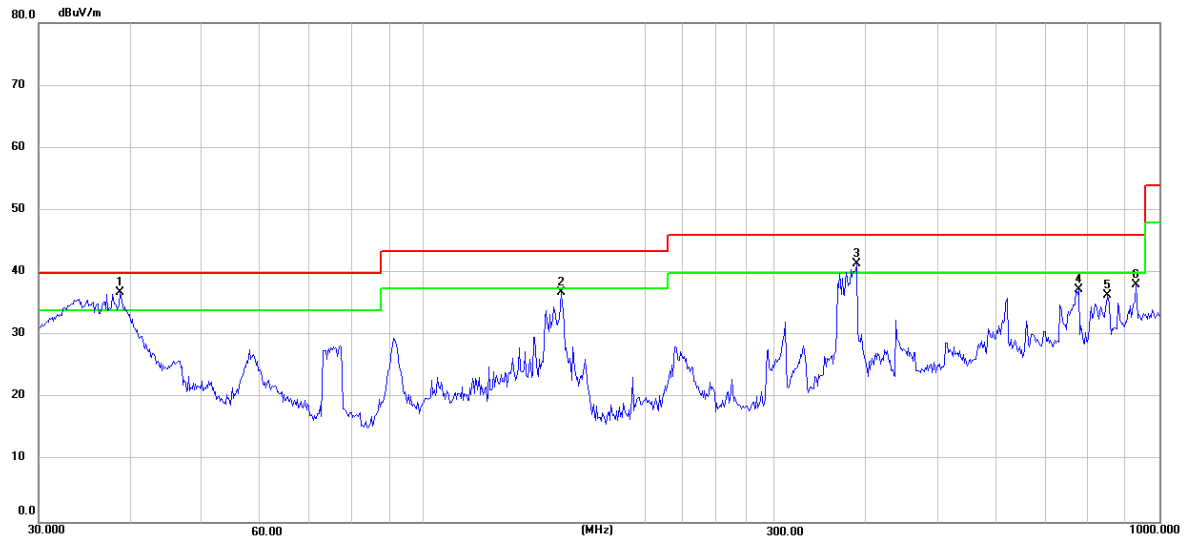
3.2.7 TEST RESULTS (30MHz – 1GHz)

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	23.5℃	Relative Humidity：	45%
Pressure：	1010 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX(5G WIFI)- 802.11ac20 MIMO (High CH)		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	38.7516	18.43	18.51	36.94	40.00	-3.06	QP
V	153.7384	22.37	14.54	36.91	43.50	-6.59	QP
V	387.9920	19.40	21.99	41.39	46.00	-4.61	QP
V	776.8777	8.78	28.61	37.39	46.00	-8.61	QP
V	851.0353	6.50	29.89	36.39	46.00	-9.61	QP
V	929.0081	7.31	30.85	38.16	46.00	-7.84	QP

Remark:

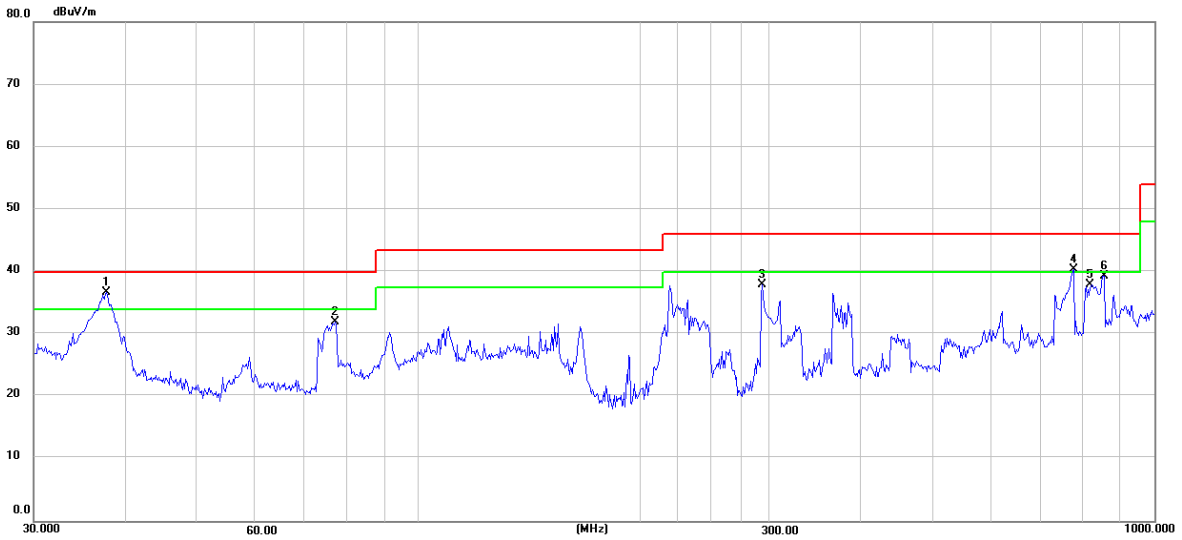
Emission Level = Meter Reading + Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	37.6796	18.65	18.13	36.78	40.00	-3.22	QP
H	77.0502	17.21	14.85	32.06	40.00	-7.94	QP
H	293.0842	17.97	19.95	37.92	46.00	-8.08	QP
H	776.8777	11.77	28.61	40.38	46.00	-5.62	QP
H	821.7103	8.32	29.66	37.98	46.00	-8.02	QP
H	854.0247	9.53	29.77	39.30	46.00	-6.70	QP

Remark:

Emission Level = Meter Reading + Factor, Margin= Emission Level - Limit



Note(1)“802.11ac20 MIMO” mode is the worst mode.

(2)Other emissions are attenuated more than 20dB below the permissible limits, so it does not recorded in the report

3.2.8 TEST RESULTS (1GHz-18GHz)

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage：	DC 3.3V
Test Mode ：	TX(5.2G) - 802.11n20 MIMO_5180~5240MHz		

For Antenna group A

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	3695.18	68.08	3.25	30.50	43.23	58.60	74.00	-15.40	Pk
Vertical	3695.18	49.08	3.25	30.50	43.23	39.60	54.00	-14.40	AV
Vertical	10360.87	60.00	5.62	38.96	43.41	61.16	68.20	-7.04	Pk
Vertical	15540.92	59.94	7.54	38.98	41.24	65.22	74.00	-8.78	Pk
Vertical	15540.92	40.59	7.54	38.98	41.24	45.87	54.00	-8.13	AV
Horizontal	3743.85	67.91	3.26	31.12	43.23	59.07	74.00	-14.93	Pk
Horizontal	3743.85	49.74	3.26	31.12	43.23	40.90	54.00	-13.10	AV
Horizontal	10361.08	60.07	5.62	38.96	43.41	61.23	68.20	-6.97	Pk
Horizontal	15540.84	56.09	7.54	38.98	41.24	61.37	74.00	-12.63	Pk
Horizontal	15540.84	39.33	7.54	38.98	41.24	44.61	54.00	-9.39	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	3625.20	66.96	3.22	30.26	43.24	57.20	74.00	-16.80	Pk
Vertical	3625.20	50.95	3.22	30.26	43.24	41.19	54.00	-12.81	AV
Vertical	10401.75	59.81	5.64	38.81	43.40	60.85	68.20	-7.35	Pk
Vertical	15601.71	58.62	7.55	39.09	41.19	64.07	74.00	-9.93	Pk
Vertical	15601.71	39.40	7.55	39.09	41.19	44.85	54.00	-9.15	AV
Horizontal	4203.67	64.18	3.45	32.31	43.22	56.72	74.00	-17.28	Pk
Horizontal	4203.67	50.93	3.45	32.31	43.22	43.47	54.00	-10.53	AV
Horizontal	10401.57	63.01	5.64	38.81	43.40	64.05	68.20	-4.15	Pk
Horizontal	15602.02	58.88	7.55	39.09	41.19	64.33	74.00	-9.67	Pk
Horizontal	15602.02	39.88	7.55	39.09	41.19	45.33	54.00	-8.67	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4600.34	71.66	3.67	32.30	43.26	64.37	74.00	-9.63	Pk
Vertical	4600.34	51.39	3.67	32.30	43.26	44.10	54.00	-9.90	AV
Vertical	10482.37	59.44	5.68	39.21	43.38	60.95	68.20	-7.25	Pk
Vertical	15722.91	59.97	7.56	38.22	41.09	64.66	74.00	-9.34	Pk
Vertical	15722.91	40.83	7.56	38.22	41.09	45.52	54.00	-8.48	AV
Horizontal	4591.56	69.24	3.67	32.37	43.26	62.02	74.00	-11.98	Pk
Horizontal	4591.56	49.41	3.67	32.37	43.26	42.19	54.00	-11.81	AV
Horizontal	10482.49	62.81	5.68	39.21	43.38	64.32	68.20	-3.88	Pk
Horizontal	15722.26	59.01	7.56	38.22	41.09	63.70	74.00	-10.30	Pk
Horizontal	15722.26	42.20	7.56	38.22	41.09	46.89	54.00	-7.11	AV

Note:"802.11n20 MIMO" mode is the worst mode.
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported. Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

For Antenna group B

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	3695.18	68.08	3.25	30.50	43.23	58.60	74.00	-15.40	Pk
Vertical	3695.18	49.08	3.25	30.50	43.23	39.60	54.00	-14.40	AV
Vertical	10360.87	60.00	5.62	38.96	43.41	61.16	68.20	-7.04	Pk
Vertical	15540.92	59.94	7.54	38.98	41.24	65.22	74.00	-8.78	Pk
Vertical	15540.92	40.59	7.54	38.98	41.24	45.87	54.00	-8.13	AV
Horizontal	3743.85	67.91	3.26	31.12	43.23	59.07	74.00	-14.93	Pk
Horizontal	3743.85	49.74	3.26	31.12	43.23	40.90	54.00	-13.10	AV
Horizontal	10361.08	60.07	5.62	38.96	43.41	61.23	68.20	-6.97	Pk
Horizontal	15540.84	56.09	7.54	38.98	41.24	61.37	74.00	-12.63	Pk
Horizontal	15540.84	39.33	7.54	38.98	41.24	44.61	54.00	-9.39	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	3625.20	66.96	3.22	30.26	43.24	57.20	74.00	-16.80	Pk
Vertical	3625.20	50.95	3.22	30.26	43.24	41.19	54.00	-12.81	AV
Vertical	10401.75	59.81	5.64	38.81	43.40	60.85	68.20	-7.35	Pk
Vertical	15601.71	58.62	7.55	39.09	41.19	64.07	74.00	-9.93	Pk
Vertical	15601.71	39.40	7.55	39.09	41.19	44.85	54.00	-9.15	AV
Horizontal	4203.67	64.18	3.45	32.31	43.22	56.72	74.00	-17.28	Pk
Horizontal	4203.67	50.93	3.45	32.31	43.22	43.47	54.00	-10.53	AV
Horizontal	10401.57	63.01	5.64	38.81	43.40	64.05	68.20	-4.15	Pk
Horizontal	15602.02	58.88	7.55	39.09	41.19	64.33	74.00	-9.67	Pk
Horizontal	15602.02	39.88	7.55	39.09	41.19	45.33	54.00	-8.67	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4600.34	71.66	3.67	32.30	43.26	64.37	74.00	-9.63	Pk
Vertical	4600.34	51.39	3.67	32.30	43.26	44.10	54.00	-9.90	AV
Vertical	10482.37	59.44	5.68	39.21	43.38	60.95	68.20	-7.25	Pk
Vertical	15722.91	59.97	7.56	38.22	41.09	64.66	74.00	-9.34	Pk
Vertical	15722.91	40.83	7.56	38.22	41.09	45.52	54.00	-8.48	AV
Horizontal	4591.56	69.24	3.67	32.37	43.26	62.02	74.00	-11.98	Pk
Horizontal	4591.56	49.41	3.67	32.37	43.26	42.19	54.00	-11.81	AV
Horizontal	10482.49	62.81	5.68	39.21	43.38	64.32	68.20	-3.88	Pk
Horizontal	15722.26	59.01	7.56	38.22	41.09	63.70	74.00	-10.30	Pk
Horizontal	15722.26	42.20	7.56	38.22	41.09	46.89	54.00	-7.11	AV

Note:"802.11n20 MIMO" mode is the worst mode.
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported. Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

For Antenna group C

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	3695.19	68.24	3.25	30.50	43.23	58.76	74.00	-15.24	Pk
Vertical	3695.26	49.16	3.25	30.50	43.23	39.68	54.00	-14.32	AV
Vertical	10360.73	60.35	5.62	38.96	43.41	61.51	68.20	-6.69	Pk
Vertical	15540.74	59.89	7.54	38.98	41.24	65.17	74.00	-8.83	Pk
Vertical	15540.74	40.39	7.54	38.98	41.24	45.67	54.00	-8.33	AV
Horizontal	3743.84	67.92	3.26	31.12	43.23	59.08	74.00	-14.92	Pk
Horizontal	3743.84	50.28	3.26	31.12	43.23	41.44	54.00	-12.56	AV
Horizontal	10361.41	59.86	5.62	38.96	43.41	61.02	68.20	-7.18	Pk
Horizontal	15540.76	55.82	7.54	38.98	41.24	61.10	74.00	-12.90	Pk
Horizontal	15540.76	39.45	7.54	38.98	41.24	44.73	54.00	-9.27	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	3625.21	66.89	3.22	30.26	43.24	57.13	74.00	-16.87	Pk
Vertical	3625.21	50.57	3.22	30.26	43.24	40.81	54.00	-13.19	AV
Vertical	10401.30	59.62	5.64	38.81	43.40	60.66	68.20	-7.54	Pk
Vertical	15602.09	58.48	7.55	39.09	41.19	63.93	74.00	-10.07	Pk
Vertical	15602.09	39.39	7.55	39.09	41.19	44.84	54.00	-9.16	AV
Horizontal	4203.39	63.93	3.45	32.31	43.22	56.47	74.00	-17.53	Pk
Horizontal	4203.39	50.64	3.45	32.31	43.22	43.18	54.00	-10.82	AV
Horizontal	10401.22	62.93	5.64	38.81	43.40	63.97	68.20	-4.23	Pk
Horizontal	15601.97	58.99	7.55	39.09	41.19	64.44	74.00	-9.56	Pk
Horizontal	15601.97	39.87	7.55	39.09	41.19	45.32	54.00	-8.68	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4599.63	71.47	3.67	32.30	43.26	64.18	74.00	-9.82	Pk
Vertical	4599.63	51.62	3.67	32.30	43.26	44.33	54.00	-9.67	AV
Vertical	10482.71	59.44	5.68	39.21	43.38	60.95	68.20	-7.25	Pk
Vertical	15722.68	60.39	7.56	38.22	41.09	65.08	74.00	-8.92	Pk
Vertical	15722.68	40.67	7.56	38.22	41.09	45.36	54.00	-8.64	AV
Horizontal	4591.81	69.14	3.67	32.37	43.26	61.92	74.00	-12.08	Pk
Horizontal	4591.81	49.26	3.67	32.37	43.26	42.04	54.00	-11.96	AV
Horizontal	10482.28	62.61	5.68	39.21	43.38	64.12	68.20	-4.08	Pk
Horizontal	15722.52	59.48	7.56	38.22	41.09	64.17	74.00	-9.83	Pk
Horizontal	15722.52	42.07	7.56	38.22	41.09	46.76	54.00	-7.24	AV

Note:"802.11n20 MIMO" mode is the worst mode.
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported. Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX (5.8G) -- 802.11ac20 MIMO_5745~5825MHz		

For Antenna group A

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	5123.70	66.16	3.91	34.12	43.28	60.91	74.00	-13.09	Pk
Vertical	5123.70	47.84	3.91	34.12	43.28	42.59	54.00	-11.41	AV
Vertical	11491.27	60.51	6.20	39.44	43.13	63.03	74.00	-10.97	Pk
Vertical	11491.27	44.01	6.20	39.44	43.13	46.53	54.00	-7.47	AV
Vertical	17236.75	49.96	8.07	39.38	40.20	57.22	68.20	-10.98	Pk
Horizontal	5167.56	61.26	3.91	34.43	43.27	56.34	68.20	-11.86	Pk
Horizontal	11491.42	59.80	6.20	39.44	43.13	62.32	74.00	-11.68	Pk
Horizontal	11491.42	42.48	6.20	39.44	43.13	45.00	54.00	-9.00	AV
Horizontal	17236.22	48.65	8.07	39.38	40.20	55.91	68.20	-12.29	Pk
middle Channel (5785 MHz)-Above 1G									
Vertical	5134.06	66.42	3.95	34.24	43.21	61.39	74.00	-12.61	Pk
Vertical	5134.06	46.36	3.95	34.24	43.21	41.33	54.00	-12.67	AV
Vertical	11571.68	60.28	6.24	38.90	43.11	62.32	74.00	-11.68	Pk
Vertical	11571.68	42.56	6.24	38.90	43.11	44.60	54.00	-9.40	AV
Vertical	17357.37	52.73	8.11	39.93	40.30	60.47	68.20	-7.73	Pk
Horizontal	4867.70	64.45	3.82	33.39	43.29	58.37	74.00	-15.63	Pk
Horizontal	4867.70	48.21	3.82	33.39	43.29	42.13	54.00	-11.87	AV
Horizontal	11571.77	63.34	6.24	38.90	43.11	65.38	74.00	-8.62	Pk
Horizontal	11571.77	44.63	6.24	38.90	43.11	46.67	54.00	-7.33	AV
Horizontal	17356.06	53.20	8.11	39.92	40.30	60.94	68.20	-7.26	Pk
High Channel (5825 MHz)-Above 1G									
Vertical	5111.75	68.05	3.92	34.12	43.25	62.84	74.00	-11.16	Pk
Vertical	5111.68	50.04	3.92	34.12	43.09	44.99	54.00	-9.01	Pk
Vertical	11652.43	60.38	6.29	38.80	43.09	62.39	74.00	-11.61	AV
Vertical	11652.43	43.88	6.29	38.80	40.39	48.58	54.00	-5.42	Pk
Vertical	17473.74	54.73	8.15	40.98	40.39	63.46	68.20	-4.74	Pk
Horizontal	5118.95	66.40	3.92	34.12	43.25	61.19	74.00	-12.81	Pk
Horizontal	5118.95	47.68	3.92	34.12	43.25	42.47	54.00	-11.53	Pk
Horizontal	11652.35	60.23	6.29	38.80	43.09	62.24	74.00	-11.76	AV
Horizontal	11652.35	44.98	6.29	38.80	43.09	46.98	54.00	-7.02	Pk
Horizontal	17476.06	54.60	8.15	40.98	40.39	63.33	68.20	-4.87	Pk

Note:"802.11ac20 MIMO" mode is the worst mode.
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

For Antenna group B

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	5123.58	65.83	3.91	34.12	43.28	60.58	74.00	-13.42	Pk
Vertical	5123.58	47.75	3.91	34.12	43.28	42.50	54.00	-11.50	AV
Vertical	11491.87	60.20	6.20	39.44	43.13	62.72	74.00	-11.28	Pk
Vertical	11491.87	43.80	6.20	39.44	43.13	46.32	54.00	-7.68	AV
Vertical	17236.68	49.95	8.07	39.38	40.20	57.21	68.20	-10.99	Pk
Horizontal	5167.47	61.20	3.91	34.43	43.27	56.28	68.20	-11.92	Pk
Horizontal	11491.71	59.45	6.20	39.44	43.13	61.97	74.00	-12.03	Pk
Horizontal	11491.71	42.08	6.20	39.44	43.13	44.60	54.00	-9.40	AV
Horizontal	17236.22	48.51	8.07	39.38	40.20	55.77	68.20	-12.43	Pk
middle Channel (5785 MHz)-Above 1G									
Vertical	5133.72	66.12	3.95	34.24	43.21	61.09	74.00	-12.91	Pk
Vertical	5133.72	46.36	3.95	34.24	43.21	41.33	54.00	-12.67	AV
Vertical	11572.18	59.75	6.24	38.90	43.11	61.79	74.00	-12.21	Pk
Vertical	11572.18	42.27	6.24	38.90	43.11	44.31	54.00	-9.69	AV
Vertical	17357.71	52.36	8.11	39.93	40.30	60.10	68.20	-8.10	Pk
Horizontal	4868.19	64.28	3.82	33.39	43.29	58.20	74.00	-15.80	Pk
Horizontal	4868.19	47.80	3.82	33.39	43.29	41.72	54.00	-12.28	AV
Horizontal	11572.26	62.86	6.24	38.90	43.11	64.90	74.00	-9.10	Pk
Horizontal	11572.26	44.18	6.24	38.90	43.11	46.22	54.00	-7.78	AV
Horizontal	17356.56	53.16	8.11	39.92	40.30	60.90	68.20	-7.30	Pk
High Channel (5825 MHz)-Above 1G									
Vertical	5111.69	67.95	3.92	34.12	43.25	62.74	74.00	-11.26	Pk
Vertical	5111.99	49.71	3.92	34.12	43.09	44.66	54.00	-9.34	Pk
Vertical	11652.20	60.04	6.29	38.80	43.09	62.05	74.00	-11.95	AV
Vertical	11652.20	43.78	6.29	38.80	40.39	48.48	54.00	-5.52	Pk
Vertical	17473.31	54.62	8.15	40.98	40.39	63.35	68.20	-4.85	Pk
Horizontal	5119.37	66.16	3.92	34.12	43.25	60.95	74.00	-13.05	Pk
Horizontal	5119.37	47.18	3.92	34.12	43.25	41.97	54.00	-12.03	Pk
Horizontal	11652.89	60.05	6.29	38.80	43.09	62.06	74.00	-11.94	AV
Horizontal	11652.89	44.44	6.29	38.80	43.09	46.44	54.00	-7.56	Pk
Horizontal	17475.90	54.32	8.15	40.98	40.39	63.05	68.20	-5.15	Pk

Note:"802.11ac20 MIMO" mode is the worst mode.
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

For Antenna group C

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	5123.43	65.90	3.91	34.12	43.28	60.65	74.00	-13.35	Pk
Vertical	5123.43	47.70	3.91	34.12	43.28	42.45	54.00	-11.55	AV
Vertical	11491.20	60.00	6.20	39.44	43.13	62.52	74.00	-11.48	Pk
Vertical	11491.20	43.94	6.20	39.44	43.13	46.46	54.00	-7.54	AV
Vertical	17236.95	49.54	8.07	39.38	40.20	56.80	68.20	-11.40	Pk
Horizontal	5167.68	61.21	3.91	34.43	43.27	56.29	68.20	-11.91	Pk
Horizontal	11491.80	59.67	6.20	39.44	43.13	62.19	74.00	-11.81	Pk
Horizontal	11491.80	42.32	6.20	39.44	43.13	44.84	54.00	-9.16	AV
Horizontal	17236.45	48.63	8.07	39.38	40.20	55.89	68.20	-12.31	Pk
middle Channel (5785 MHz)-Above 1G									
Vertical	5134.24	66.33	3.95	34.24	43.21	61.30	74.00	-12.70	Pk
Vertical	5134.24	46.30	3.95	34.24	43.21	41.27	54.00	-12.73	AV
Vertical	11572.12	60.19	6.24	38.90	43.11	62.23	74.00	-11.77	Pk
Vertical	11572.12	41.97	6.24	38.90	43.11	44.01	54.00	-9.99	AV
Vertical	17357.65	52.47	8.11	39.93	40.30	60.21	68.20	-7.99	Pk
Horizontal	4867.79	64.02	3.82	33.39	43.29	57.94	74.00	-16.06	Pk
Horizontal	4867.79	48.05	3.82	33.39	43.29	41.97	54.00	-12.03	AV
Horizontal	11571.65	63.23	6.24	38.90	43.11	65.27	74.00	-8.73	Pk
Horizontal	11571.65	44.13	6.24	38.90	43.11	46.17	54.00	-7.83	AV
Horizontal	17356.28	52.71	8.11	39.92	40.30	60.45	68.20	-7.75	Pk
High Channel (5825 MHz)-Above 1G									
Vertical	5111.96	67.53	3.92	34.12	43.25	62.32	74.00	-11.68	Pk
Vertical	5111.99	49.71	3.92	34.12	43.09	44.66	54.00	-9.34	Pk
Vertical	11652.37	60.11	6.29	38.80	43.09	62.12	74.00	-11.88	AV
Vertical	11652.37	43.78	6.29	38.80	40.39	48.48	54.00	-5.52	Pk
Vertical	17473.84	54.67	8.15	40.98	40.39	63.40	68.20	-4.80	Pk
Horizontal	5119.05	66.34	3.92	34.12	43.25	61.13	74.00	-12.87	Pk
Horizontal	5119.05	47.08	3.92	34.12	43.25	41.87	54.00	-12.13	Pk
Horizontal	11652.55	60.22	6.29	38.80	43.09	62.23	74.00	-11.77	AV
Horizontal	11652.55	44.63	6.29	38.80	43.09	46.63	54.00	-7.37	Pk
Horizontal	17475.73	54.21	8.15	40.98	40.39	62.94	68.20	-5.26	Pk

Note:"802.11ac20 MIMO" mode is the worst mode.
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

3.2.9 TEST RESULTS (18GHz-40GHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

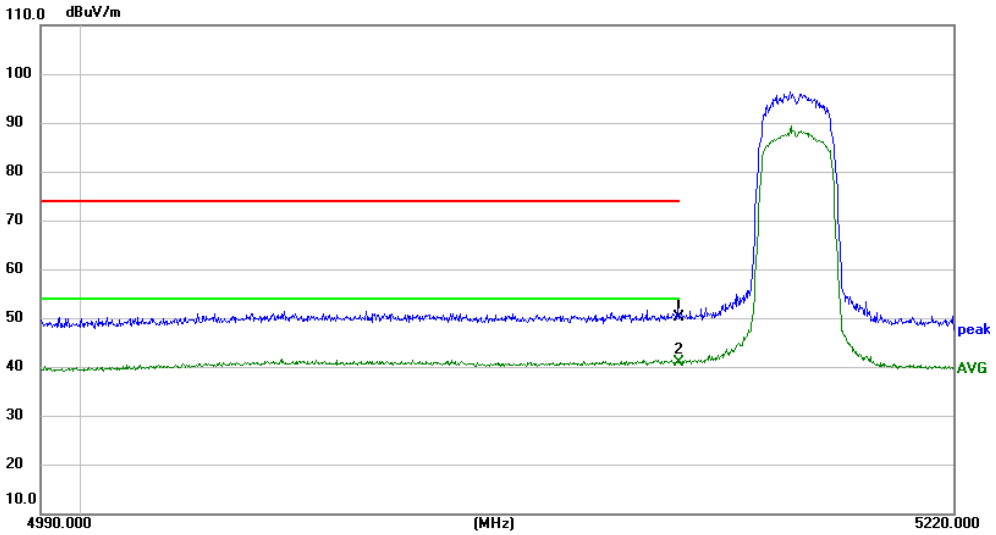
3.2.10 Spurious Emission in Restricted Band 4.5GHz~5.150 GHz& 5.350GHz~5460GHz

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX (5.2G)-802.11n20 MIMO 5150MHz~5250MHz,		

For Antenna group A

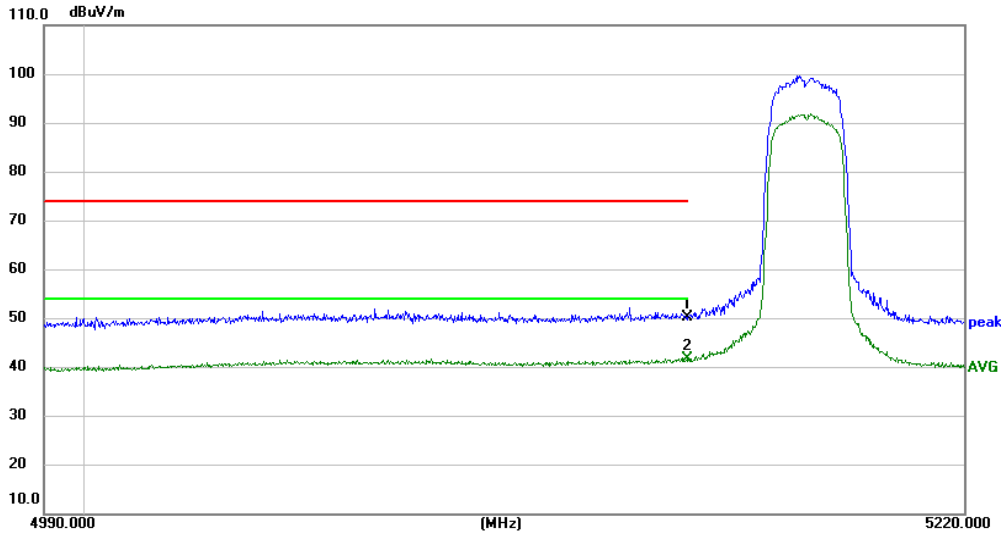
All the modulation modes have been tested, The report just record the worst data mode.

Vertical Low Channel (5180 MHz)-Above 1G



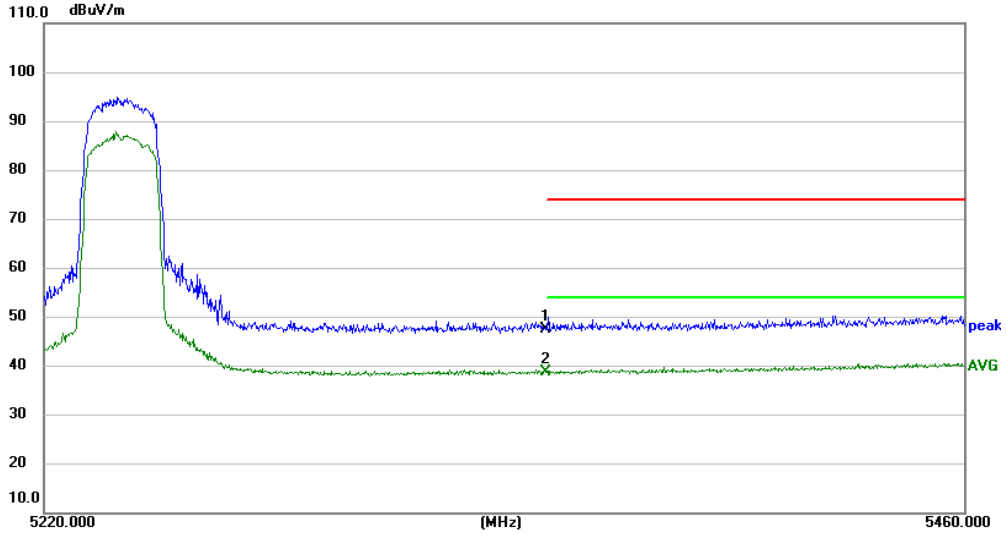
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5150.000	12.76	38.51	49.27	74.00	-24.73	peak
2	5150.000	2.54	38.51	41.05	54.00	-12.95	AVG

Horizontal Low Channel (5180 MHz)-Above 1G



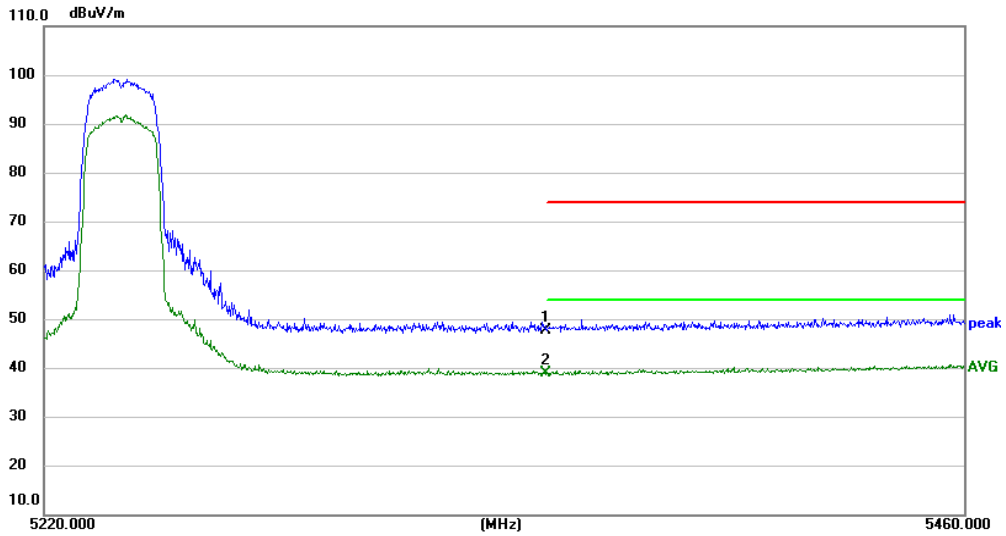
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5150.000	11.85	38.51	50.36	74.00	-23.64	peak
2	5150.000	3.18	38.51	41.69	54.00	-12.31	AVG

Vertical High Channel (5240 MHz)-Above 1G



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5350.000	10.01	37.64	47.65	74.00	-26.35	peak
2	5350.000	1.25	37.64	38.89	54.00	-15.11	AVG

Horizontal High Channel (5240 MHz)-Above 1G

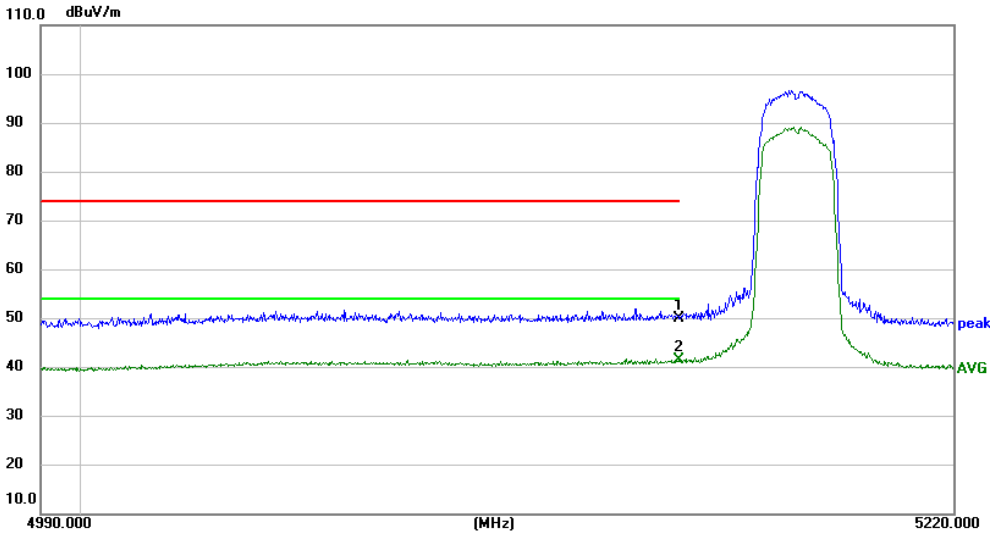


No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5350.000	10.02	37.64	47.66	74.00	-26.34	peak
2	5350.000	1.35	37.64	38.99	54.00	-15.01	AVG

Note:
(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(2) “802.11n20 MIMO ” mode is the worst mode. When PK value is lower than the Average value limit, average don't record.

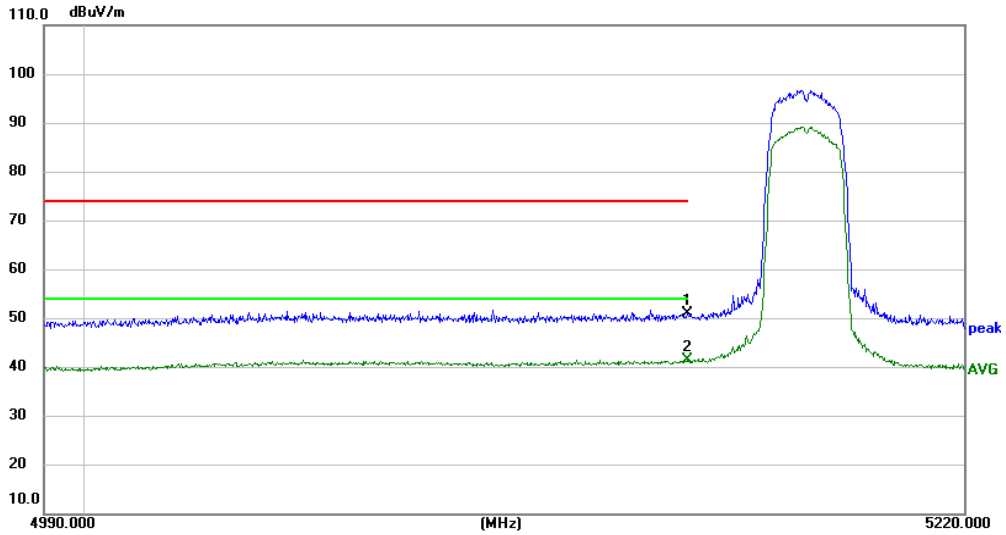
For Antenna group B
All the modulation modes have been tested, The report just record the worst data mode.

Vertical Low Channel (5180 MHz)-Above 1G



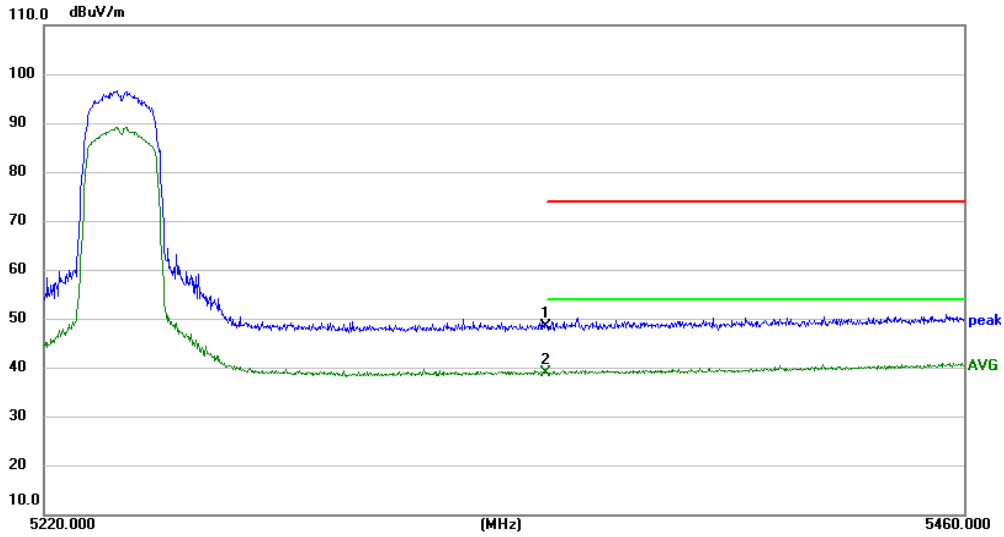
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5150.000	11.43	38.51	49.94	74.00	-24.06	peak
2	5150.000	3.04	38.51	41.55	54.00	-12.45	AVG

Horizontal Low Channel (5180 MHz)-Above 1G



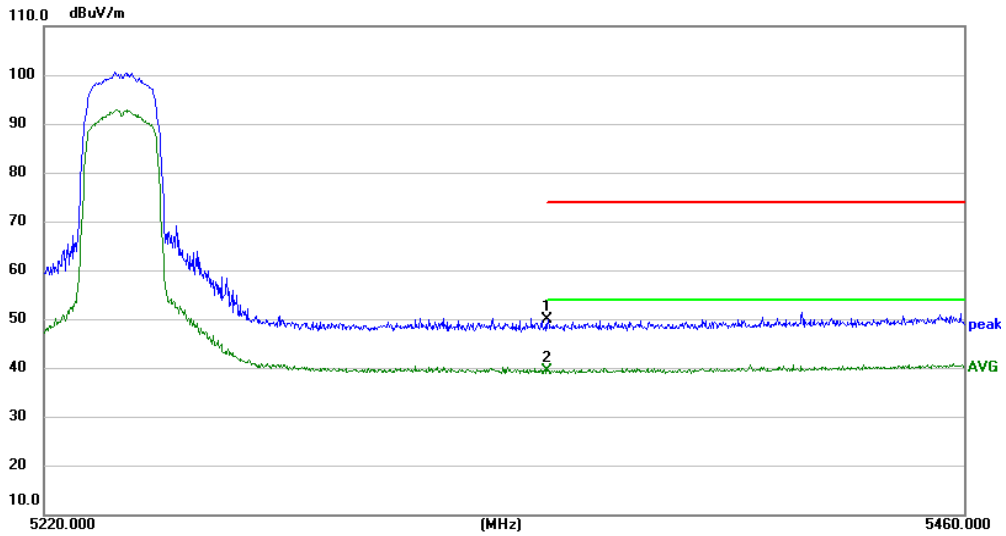
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5150.000	12.57	38.51	51.08	74.00	-22.92	peak
2	5150.000	3.09	38.51	41.60	54.00	-12.40	AVG

Vertical High Channel (5240 MHz)-Above 1G



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5350.000	10.88	37.64	48.52	74.00	-25.48	peak
2	5350.000	1.32	37.64	38.96	54.00	-15.04	AVG

Horizontal High Channel (5240 MHz)-Above 1G



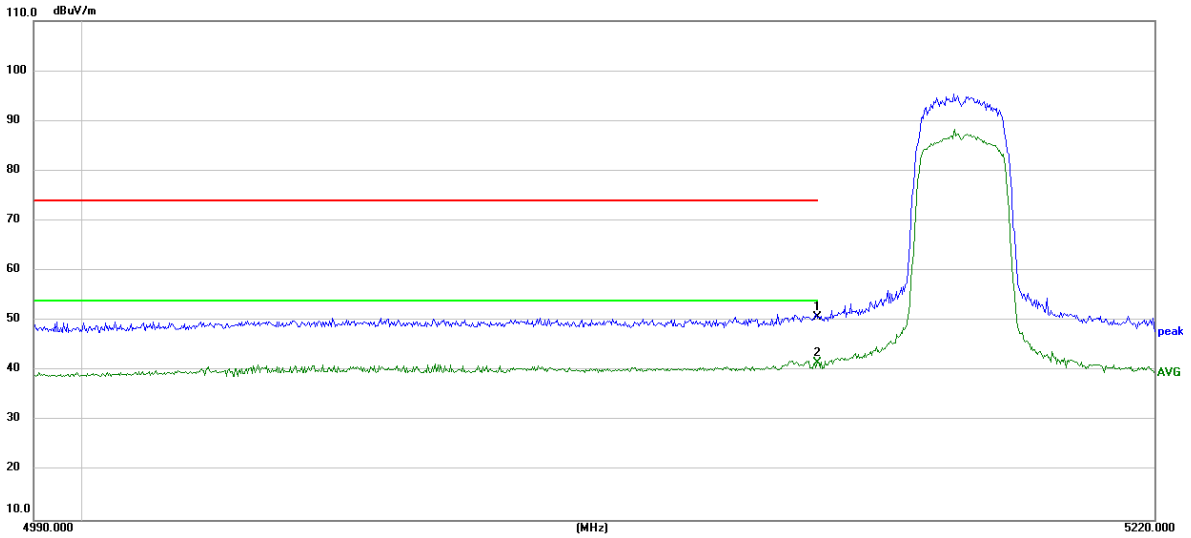
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5350.000	12.36	37.64	50.00	74.00	-24.00	peak
2	5350.000	1.79	37.64	39.43	54.00	-14.57	AVG

Note:
(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(2) “802.11n20 MIMO ” mode is the worst mode. When PK value is lower than the Average value limit, average don't record.

For Antenna group C

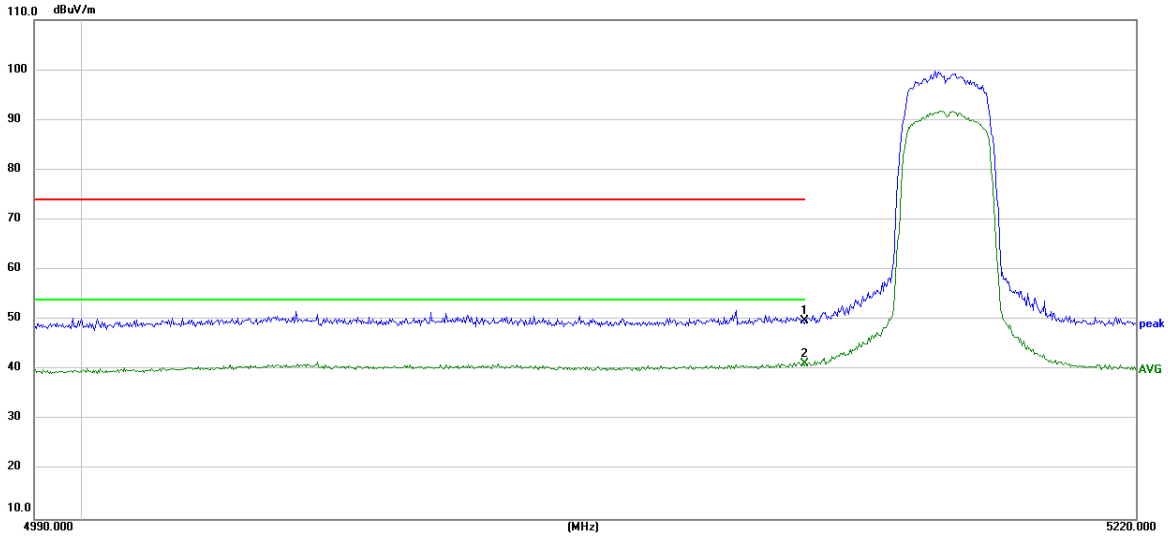
All the modulation modes have been tested, The report just record the worst data mode.

Vertical Low Channel (5180 MHz)-Above 1G



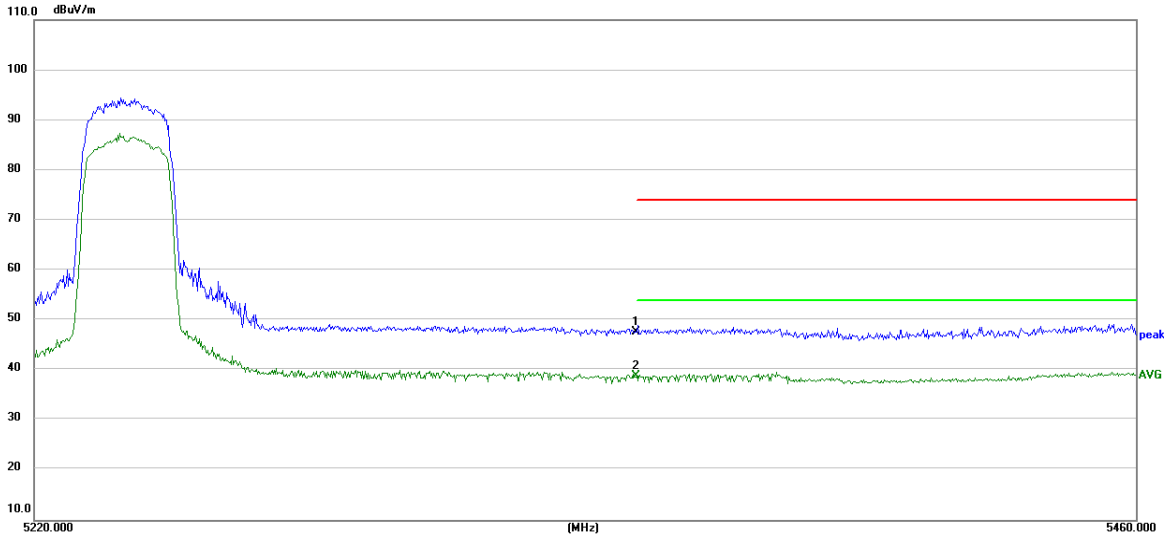
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5150.000	12.26	38.51	50.77	74.00	-23.23	peak
2	5150.000	3.04	38.51	41.55	54.00	-12.45	AVG

Horizontal Low Channel (5180 MHz)-Above 1G



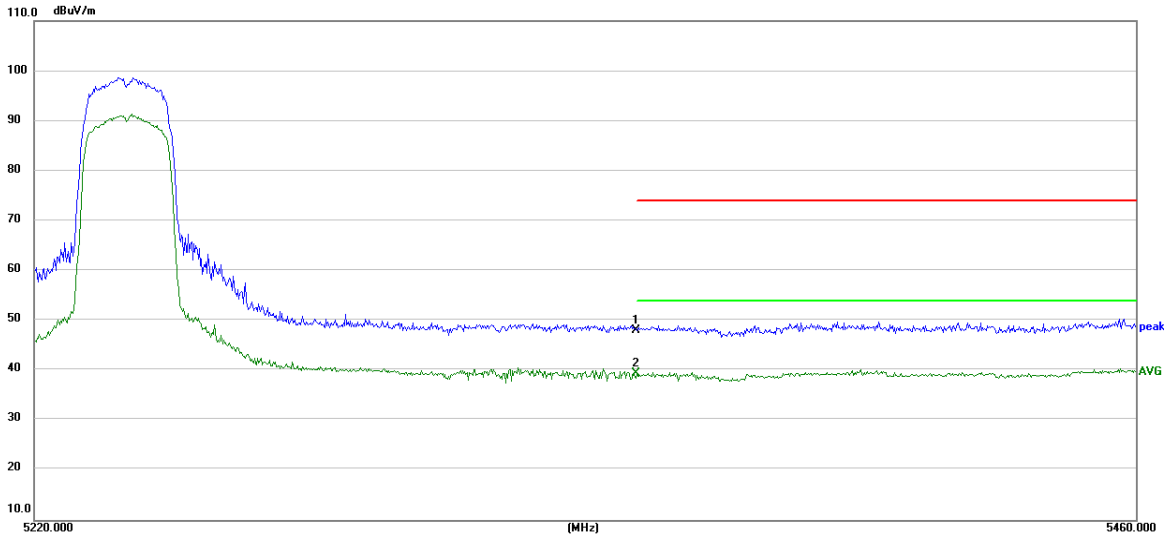
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5150.000	11.35	38.51	49.86	74.00	-24.14	peak
2	5150.000	2.68	38.51	41.19	54.00	-12.81	AVG

Vertical High Channel (5240 MHz)-Above 1G



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5350.000	10.01	37.64	47.65	74.00	-26.35	peak
2	5350.000	1.25	37.64	38.89	54.00	-15.11	AVG

Horizontal High Channel (5240 MHz)-Above 1G



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5350.000	10.52	37.64	48.16	74.00	-25.84	peak
2	5350.000	1.85	37.64	39.49	54.00	-14.51	AVG

Note:
(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(2) “802.11n20 MIMO ” mode is the worst mode. When PK value is lower than the Average value limit, average don't record.

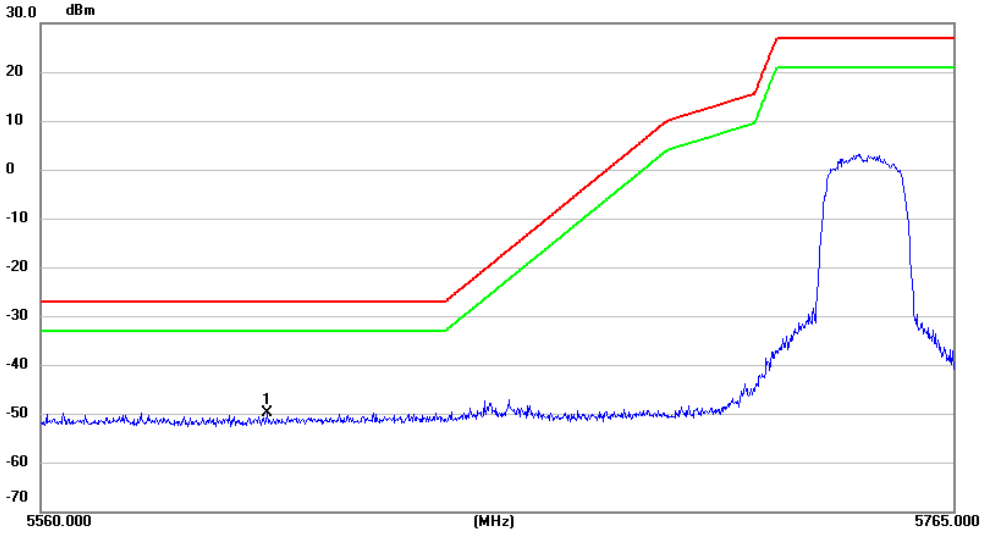
emission for operating in the band 5725-5850 MHz

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX (5.8G)-802.11n20 MIMO 5745MHz~5825MHz		

For Antenna group A

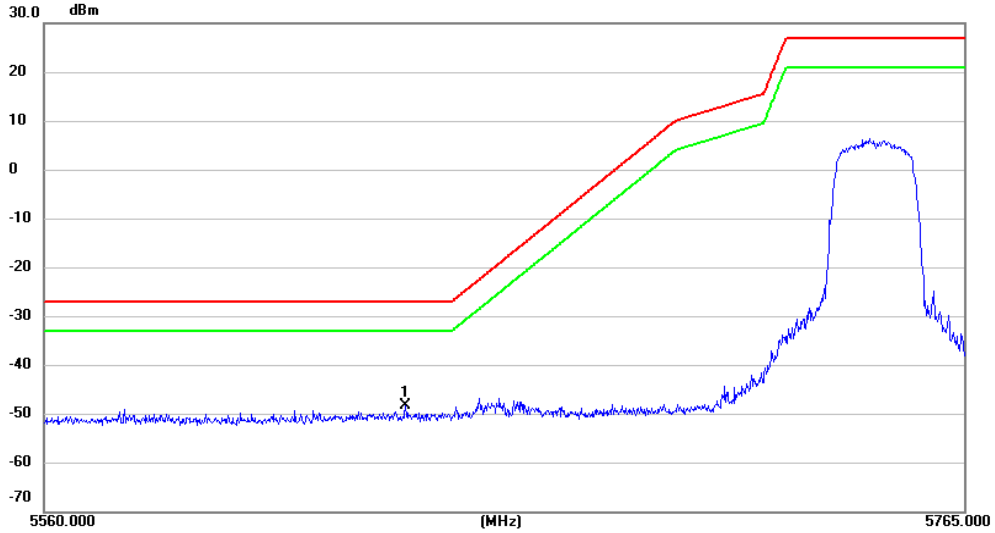
All the modulation modes have been tested, The report just record the worst data mode.

Vertical Low Channel (5745 MHz)-Above 1G



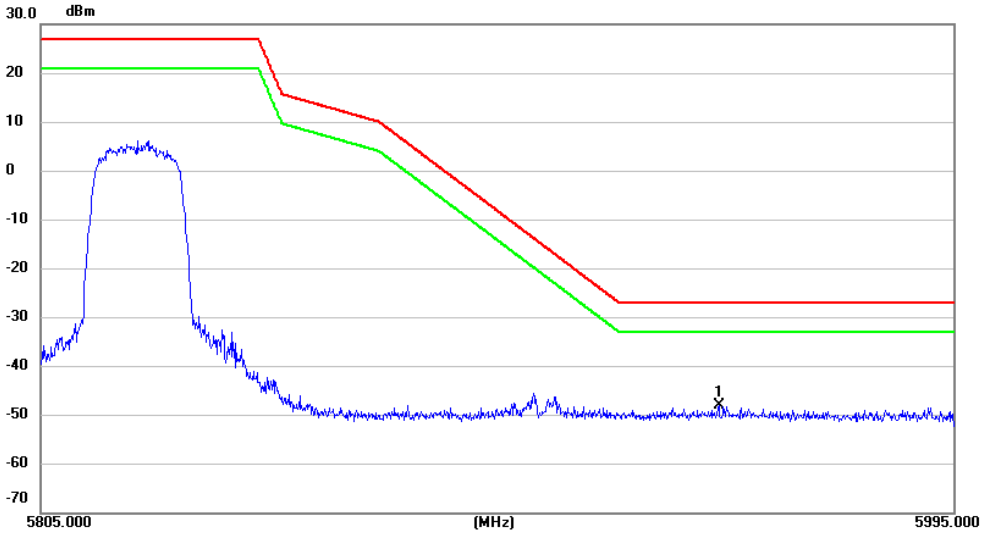
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5610.225	-100.06	50.42	-49.64	-27.00	-22.64	peak

Horizontal Low Channel (5745 MHz)-Above 1G



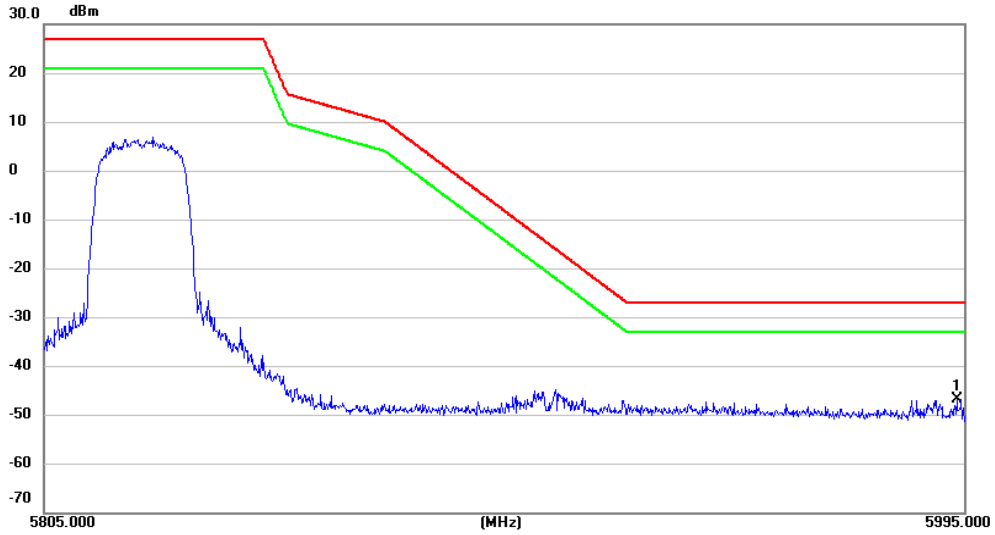
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5639.868	-98.65	50.54	-48.11	-27.00	-21.11	peak

Vertical High Channel (5825 MHz)-Above 1G



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5945.600	-99.82	51.88	-47.94	-27.00	-20.94	peak

Horizontal High Channel (5825 MHz)-Above 1G



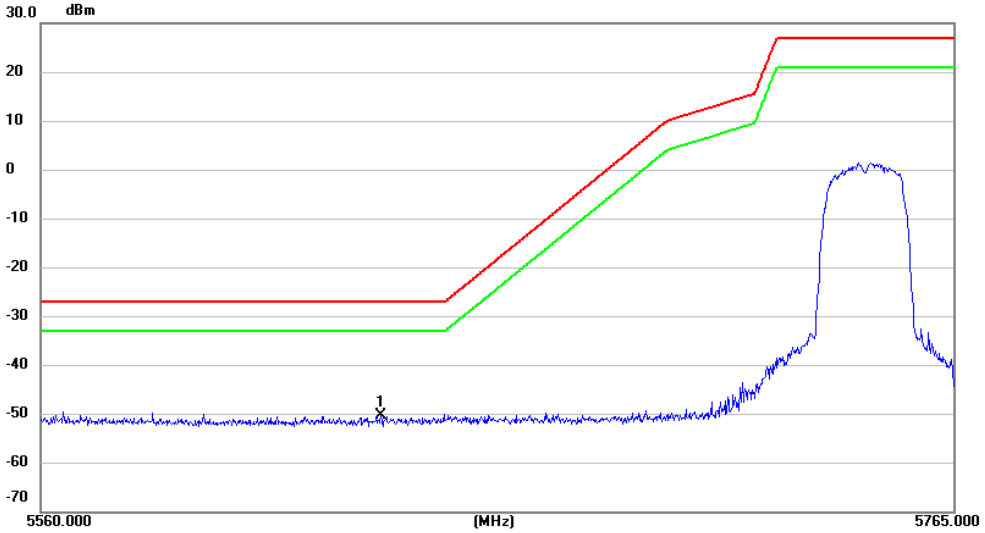
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5993.480	-97.85	51.06	-46.79	-27.00	-19.79	peak

Note:
(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(2) “802.11n20 MIMO ” mode is the worst mode. When PK value is lower than the Average value limit, average don't record.

For Antenna group B

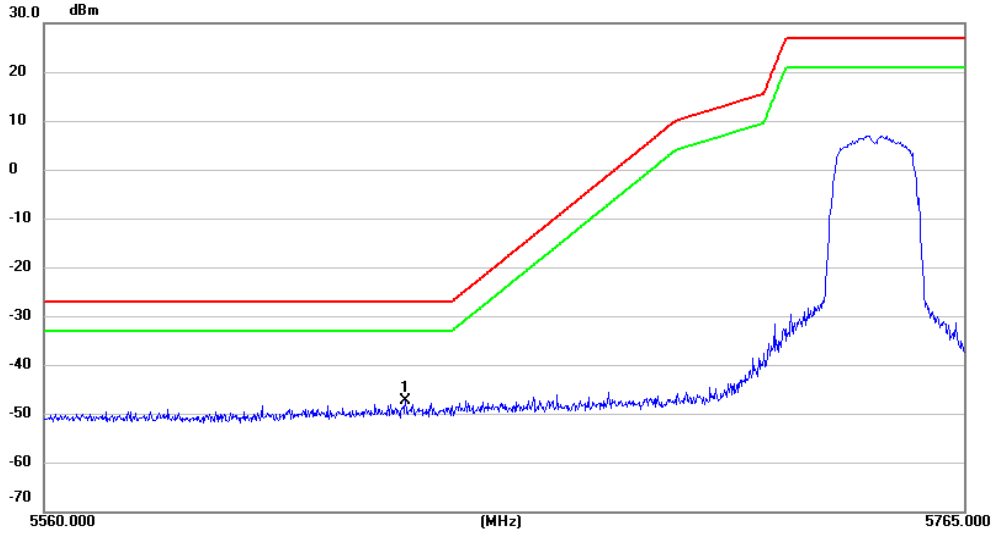
All the modulation modes have been tested, The report just record the worst data mode.

Vertical Low Channel (5745 MHz)-Above 1G



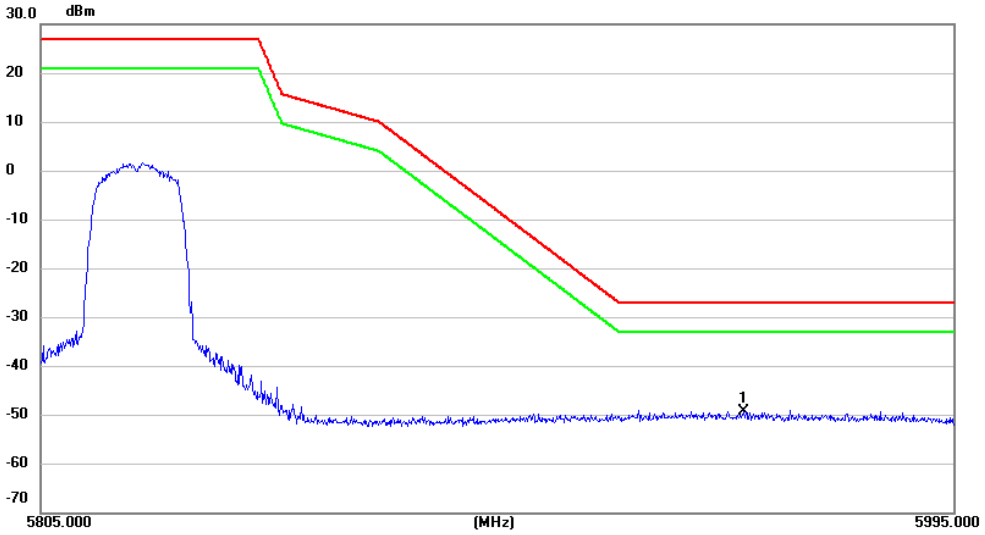
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5635.707	-100.79	50.52	-50.27	-27.00	-23.27	peak

Horizontal Low Channel (5745 MHz)-Above 1G



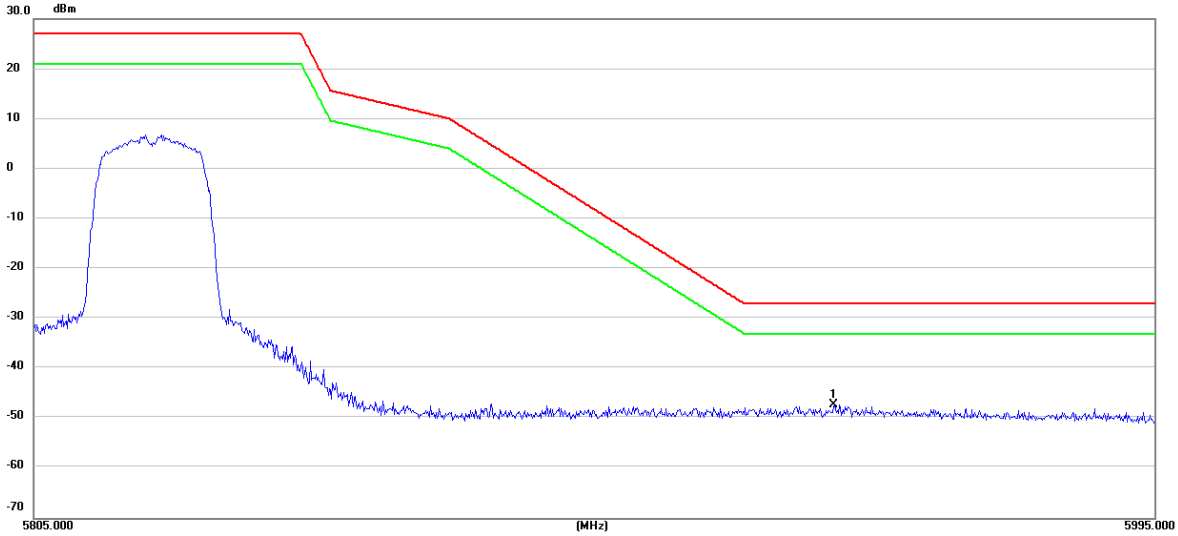
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5639.827	-97.83	50.54	-47.29	-27.00	-20.29	peak

Vertical High Channel (5825 MHz)-Above 1G



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5951.129	-100.97	51.90	-49.07	-27.00	-22.07	peak

Horizontal High Channel (5825 MHz)-Above 1G

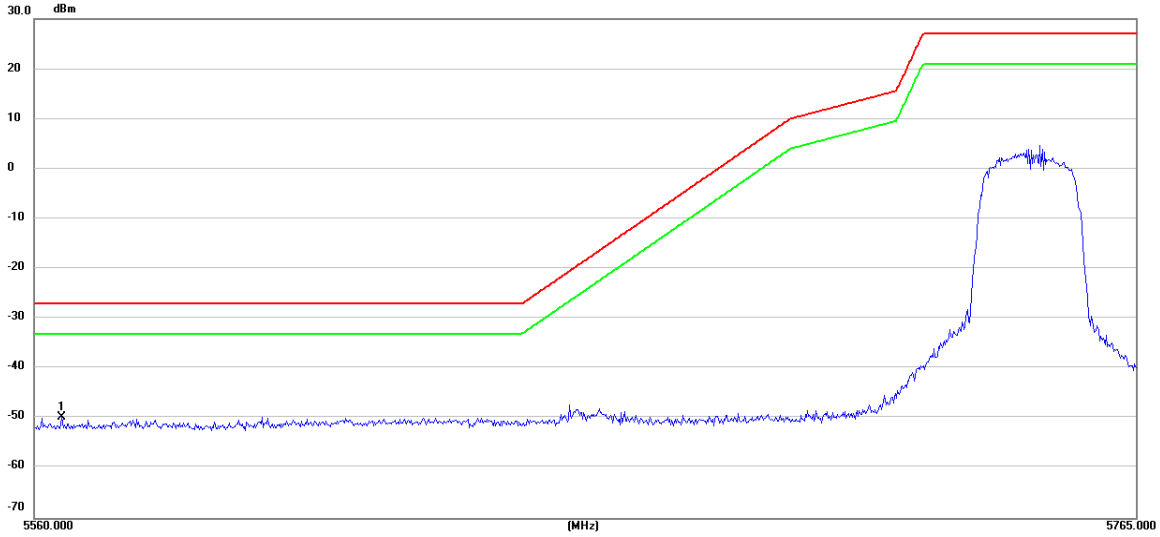


No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5940.280	-99.00	51.82	-47.18	-27.00	-20.18	peak

Note:
(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(2) “802.11n20 MIMO ” mode is the worst mode. When PK value is lower than the Average value limit, average don't record.

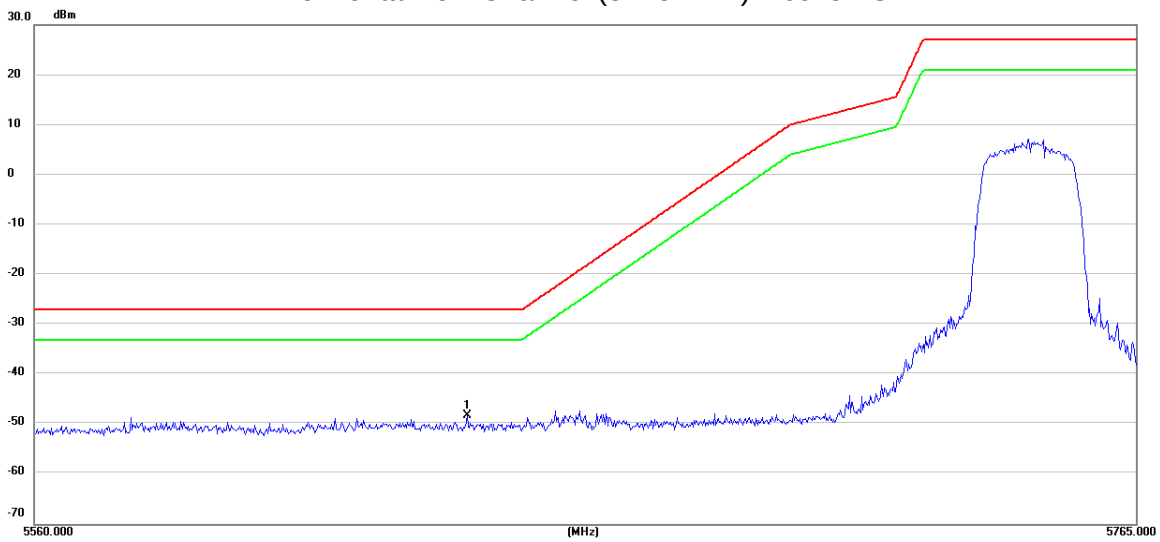
For Antenna group C
All the modulation modes have been tested, The report just record the worst data mode.

Vertical Low Channel (5745 MHz)-Above 1G



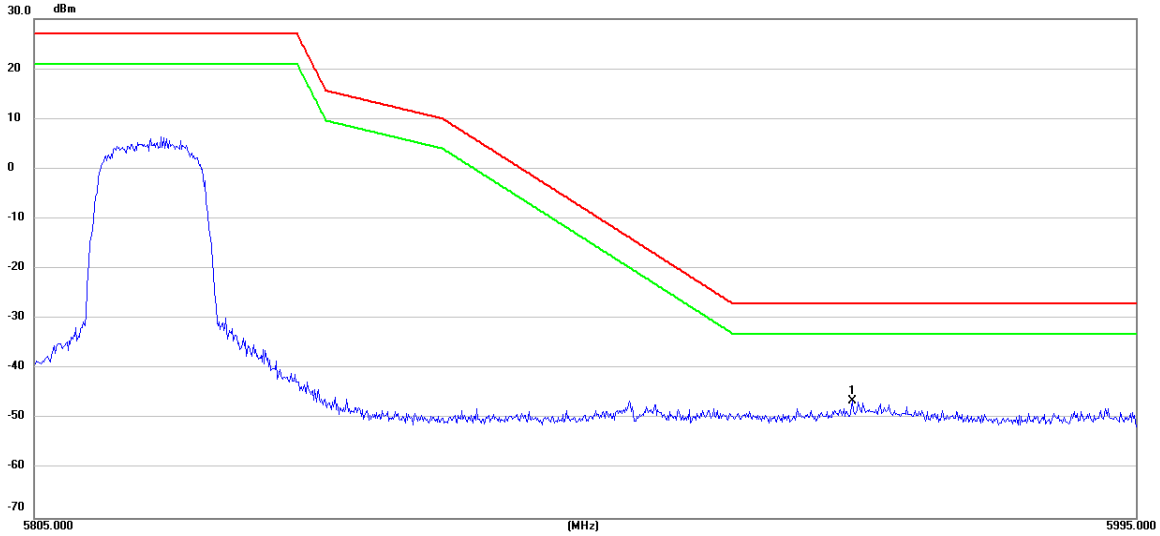
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5565.064	-100.14	50.51	-49.63	-27.00	-22.63	peak

Horizontal Low Channel (5745 MHz)-Above 1G



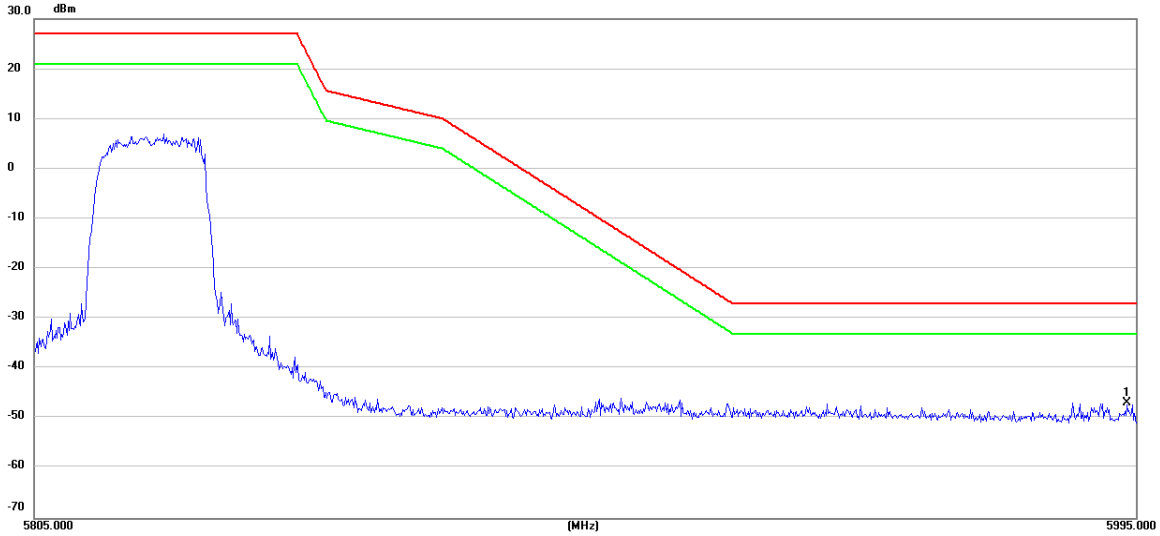
No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5639.868	-98.65	50.54	-48.11	-27.00	-21.11	peak

Vertical High Channel (5825 MHz)-Above 1G



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5945.600	-98.32	51.88	-46.44	-27.00	-19.44	peak

Horizontal High Channel (5825 MHz)-Above 1G



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Det.
1	5993.480	-97.85	51.06	-46.79	-27.00	-19.79	peak

Note:
(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(2) “802.11n20 MIMO ” mode is the worst mode. When PK value is lower than the Average value limit, average don't record.

3.3 POWER SPECTRAL DENSITY TEST

3.3.1 Applied procedures / limit

According to FCC §15.407(a)(1)(3)

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 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz

(3)For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

,

3.3.2 TEST PROCEDURE

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.l.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

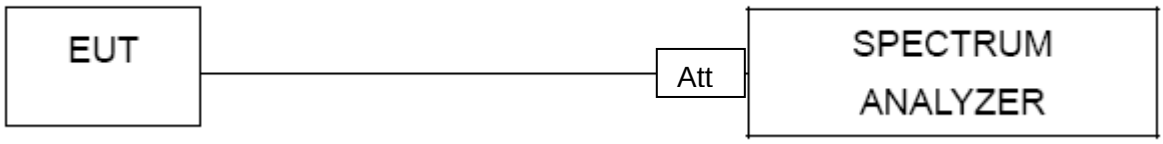
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

3.3.3 DEVIATION FROM STANDARD

No deviation.

3.3.4 TEST SETUP



3.3.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.6 **TEST RESULTS**

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX Frequency Band I (5150-5250MHz), Band IV (5725-5850MHz)		

Note: Band1&Band IV For 802.11n/ac 5GHz has MIMO mode.

For Antenna group A

For MIMO mode, Directional gain=[10log($10^{G1/20}+10^{G2/20}$)^2/N_{ANT}]dBi =7.32dBi>6dBi

For Antenna group B

For MIMO mode, Directional gain=[10log($10^{G1/20}+10^{G2/20}$)^2/N_{ANT}]dBi =7.44dBi>6dBi

For Antenna group C

For MIMO mode, Directional gain=[10log($10^{G1/20}+10^{G2/20}$)^2/N_{ANT}]dBi =5.91dBi<6dBi

5GHz has MIMO mode.

Test data reference attachment.

3.4 26DB & 99% EMISSION BANDWIDTH

3.4.1 Applied procedures / limit

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

3.4.2 TEST PROCEDURE

a) Set RBW = approximately 1% of the emission bandwidth.

b) Set the VBW > RBW.

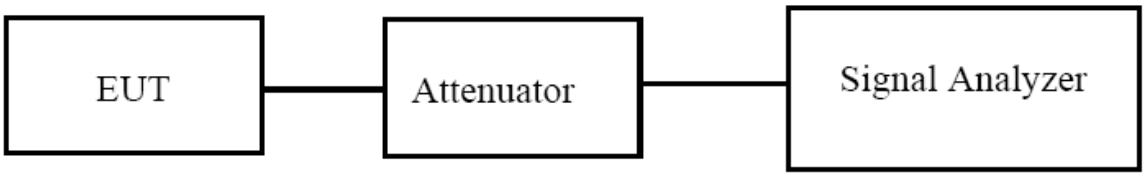
c) Detector = Peak.

d) Trace mode = max hold.

e) Measure the maximum width of the emission that is 26 dB down from the maximum 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%.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.



3.4.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.4.4 TEST RESULTS

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX Frequency Band I (5150-5250MHz), Band IV (5725-5850MHz)		

Test data reference attachment.

3.5 MINIMUM 6 DB BANDWIDTH

3.5.1 Applied procedures / limit

According to FCC §15.407(e)
(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

3.5.2 TEST PROCEDURE

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 × RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

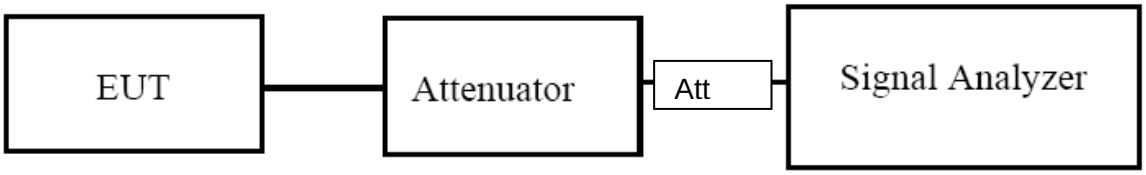
f) Allow the trace to stabilize.

g) 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.

3.5.3 DEVIATION FROM STANDARD

No deviation.

3.5.4 TEST SETUP



3.5.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.5.6 TEST RESULTS

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX (5G) Mode Frequency Band IV (5725-5850MHz)		

Test data reference attachment.

3.6 MAXIMUM CONDUCTED OUTPUT POWER

3.6.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407

The maximum conduced output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5725~5850	1W

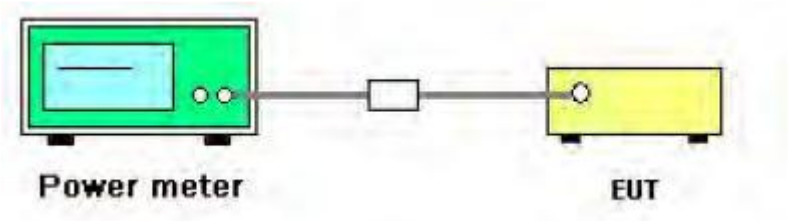
3.6.2 TEST PROCEDURE

· Method PM-G is measurement using a gated RF average power meter. Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no dutycycle correction factor is required.

3.6.3 DEVIATION FROM STANDARD

No deviation.

3.6.4 TEST SETUP



3.6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.6.6 TEST RESULTS

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX (5G) Mode Frequency Band I (5150-5250MHz), Band IV (5725-5850MHz)		

Note: Band1&Band IV For 802.11n/ac 5GHz has MIMO mode.
For Antenna group A
For MIMO mode, Directional gain=[10log($10^{G1/20}$+$10^{G2/20}$)^2/N_{ANT}]dBi =7.32dBi>6dBi

For Antenna group B
For MIMO mode, Directional gain=[10log($10^{G1/20}$+$10^{G2/20}$)^2/N_{ANT}]dBi =7.44dBi>6dBi

For Antenna group C
For MIMO mode, Directional gain=[10log($10^{G1/20}$+$10^{G2/20}$)^2/N_{ANT}]dBi =5.91dBi<6dBi
5GHz has MIMO mode.

Test data reference attachment.

3.7 FREQUENCY STABILITY MEASUREMENT

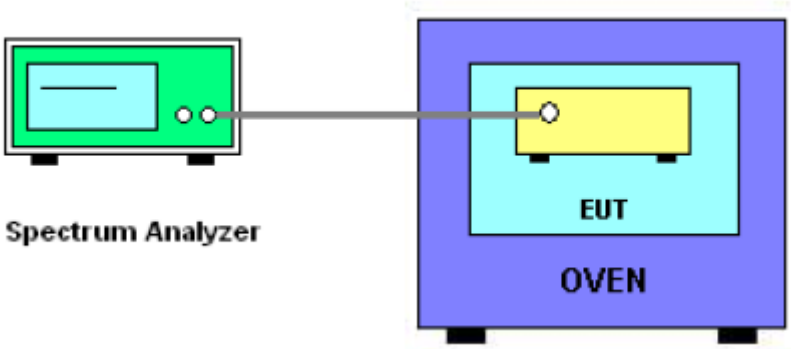
3.7.1 LIMIT

Manufactures 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 user's manual.

3.7.2 TEST PROCEDURES

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is $(fc-f)/fc \times 10^6$ ppm .
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is -20°C~70°C.

3.7.3 TEST SETUP LAYOUT



3.7.4 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously un-modulation transmitting mode.

3.7.5 TEST RESULTS

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX Frequency Band I (5150-5250MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	3.30	5180.0239	5180	0.0239	4.6139
		V max (V)	3.63	5180.0087	5180	0.0087	1.6795
		V min (V)	2.97	5180.0299	5180	0.0299	5.7722
Limits				Within 5150-5250MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	3.3	T (°C)	-20	5180.0239	5180	0.0239	4.6139
		T (°C)	-10	5180.0087	5180	0.0087	1.6795
		T (°C)	0	5180.0299	5180	0.0299	5.7722
		T (°C)	10	5180.0090	5180	0.0090	1.7375
		T (°C)	20	5180.0137	5180	0.0137	2.6448
		T (°C)	30	5180.0163	5180	0.0163	3.1467
		T (°C)	40	5180.0335	5180	0.0335	6.4672
		T (°C)	50	5180.0109	5180	0.0109	2.1042
		T (°C)	60	5180.0354	5180	0.0354	6.8340
		T (°C)	70	5180.0266	5180	0.0266	5.1351
Limits				Within 5150-5250MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	3.30	5200.0135	5200	0.0135	2.5962
		V max (V)	3.63	5200.0084	5200	0.0084	1.6154
		V min (V)	2.97	5200.0116	5200	0.0116	2.2308
Limits				Within 5150-5250MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	3.3	T (°C)	-20	5200.0028	5200	0.0028	0.5385
		T (°C)	-10	5200.0275	5200	0.0275	5.2885
		T (°C)	0	5200.0181	5200	0.0181	3.4808
		T (°C)	10	5200.0232	5200	0.0232	4.4615
		T (°C)	20	5200.0254	5200	0.0254	4.8846
		T (°C)	30	5200.0076	5200	0.0076	1.4615
		T (°C)	40	5200.0216	5200	0.0216	4.1538
		T (°C)	50	5200.0378	5200	0.0378	7.2692
		T (°C)	60	5200.0248	5200	0.0248	4.7692
		T (°C)	70	5200.0281	5200	0.0281	5.4038
Limits				Within 5150-5250MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	3.30	5240.0198	5240	0.0198	3.7786
		V max (V)	3.63	5240.0136	5240	0.0136	2.5954
		V min (V)	2.97	5240.0168	5240	0.0168	3.2061
Limits				Within 5150-5250MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	3.3	T (°C)	-20	5240.0216	5240	0.0216	4.1221
		T (°C)	-10	5240.0079	5240	0.0079	1.5076
		T (°C)	0	5240.0274	5240	0.0274	5.2290
		T (°C)	10	5240.0253	5240	0.0253	4.8282
		T (°C)	20	5240.0151	5240	0.0151	2.8817
		T (°C)	30	5240.0191	5240	0.0191	3.6450
		T (°C)	40	5240.0379	5240	0.0379	7.2328
		T (°C)	50	5240.0368	5240	0.0368	7.0229
		T (°C)	60	5240.0117	5240	0.0117	2.2328
		T (°C)	70	5240.0112	5240	0.0112	2.1374
Limits				Within 5150-5250MHz			
Result				Complies			

EUT：	WiFi Module	Model Name. ：	CDW-N37663U-02
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 3.3V
Test Mode ：	TX Frequency(5745-5825MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	3.30	5745.0191	5745	0.01910	3.3246
		V max (V)	3.63	5745.0391	5745	0.03910	6.8059
		V min (V)	2.97	5745.0188	5745	0.01880	3.2724
Limits				Within 5745-5850MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	3.3	T (°C)	-20	5745.0321	5745	0.03210	5.5875
		T (°C)	-10	5745.0291	5745	0.02910	5.0653
		T (°C)	0	5745.0032	5745	0.00320	0.5570
		T (°C)	10	5745.0170	5745	0.01700	2.9591
		T (°C)	20	5745.0311	5745	0.03110	5.4134
		T (°C)	30	5745.0052	5745	0.00520	0.9051
		T (°C)	40	5745.0336	5745	0.03360	5.8486
		T (°C)	50	5745.0173	5745	0.01730	3.0113
		T (°C)	60	5745.0181	5745	0.01810	3.1506
		T (°C)	70	5745.0134	5745	0.01340	2.3325
Limits				Within 5745-5850MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	3.30	5785.0160	5785	0.01600	2.7658
		V max (V)	3.63	5785.0216	5785	0.02160	3.7338
		V min (V)	2.97	5785.0071	5785	0.00710	1.2273
Limits				Within 5745-5850MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	3.3	T (°C)	-20	5785.0286	5785	0.02860	4.9438
		T (°C)	-10	5785.0403	5785	0.04030	6.9663
		T (°C)	0	5785.0175	5785	0.01750	3.0251
		T (°C)	10	5785.0240	5785	0.02400	4.1487
		T (°C)	20	5785.0107	5785	0.01070	1.8496
		T (°C)	30	5785.0024	5785	0.00240	0.4149
		T (°C)	40	5785.0165	5785	0.01650	2.8522
		T (°C)	50	5785.0128	5785	0.01280	2.2126
		T (°C)	60	5785.0074	5785	0.00740	1.2792
		T (°C)	70	5785.0333	5785	0.03330	5.7563
Limits				Within 5745-5850MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	3.30	5825.0283	5825	0.02830	4.8584
		V max (V)	3.63	5825.0486	5825	0.04860	8.3433
		V min (V)	2.97	5825.0381	5825	0.03810	6.5408
Limits				Within 5745-5850MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	3.3	T (°C)	-20	5825.0015	5825	0.00150	0.2575
		T (°C)	-10	5825.0102	5825	0.01020	1.7511
		T (°C)	0	5825.0152	5825	0.01520	2.6094
		T (°C)	10	5825.0096	5825	0.00960	1.6481
		T (°C)	20	5825.0084	5825	0.00840	1.4421
		T (°C)	30	5825.0149	5825	0.01490	2.5579
		T (°C)	40	5825.0347	5825	0.03470	5.9571
		T (°C)	50	5825.0183	5825	0.01830	3.1416
		T (°C)	60	5825.0126	5825	0.01260	2.1631
		T (°C)	70	5825.0168	5825	0.01680	2.8841
Limits				Within 5745-5850MHz			
Result				Complies			

4. ANTENNA REQUIREMENT

4.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

4.2 EUT ANTENNA

The EUT antenna is permanent attached as below table.. It comply with the standard requirement.

For Antenna group A

Antenna	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	JYX250824-WL0	FPC Antenna	IPEX	4.55	Wifi Antenna
2	N/A	JYX2603310-WL1	FPC Antenna	IPEX	4.07	Wifi Antenna

For Antenna group B

Antenna	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	SH-P001	FPC Antenna	IPEX	4.04	Wifi Antenna
2	N/A	SH-P001	FPC Antenna	IPEX	4.81	Wifi Antenna

For Antenna group C

Antenna	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	SLK-CZ-2813G	FPC Antenna	IPEX	2.97	Wifi Antenna
2	N/A	SLK-CZ-2813F	FPC Antenna	IPEX	2.82	Wifi Antenna

END OF REPORT