RADIO TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results, data evaluation, test procedures, and equipment of configurations shown in this report were made in accordance with the procedures in ANSI C63.10(2013).

Applicant	:	Chenghai Udirc Toys Co.,Ltd
Address	:	Dengfeng Industrial Zone, Chenghai District, Shantou, Guangdong, China
Manufacturer /Factory	:	Chenghai Udirc Toys Co.,Ltd
Address	:	Dengfeng Industrial Zone, Chenghai District, Shantou, Guangdong, China
E.U.T.	:	5G WIFI FPV DRONE
Brand Name	:	N/A
Model No.	:	U62 /For additional models refer to section 1.
FCC ID	:	ZKWGPS20060002
Measurement Standard	:	47 CFR FCC PART 15 Subpart E (section 407)
Date of Receiver	:	June 09, 2020
Date of Test	:	June 09, 2020 to June 20, 2020
Date of Report	:	June 20, 2020

This Test Report is Issued Under the Authority of :

Prepared by	Approved by Authorized Signer
Rose Hu / Engineer	Iori Fan / Authorized Signatory

This test report is for the customer shown above and their specific product only. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.

TEL: +86-769-22022444 FAX: +86-769-22022799 Web: www.ntc-c.com
Address: Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong, China

Table of Contents

1. GENERAL INFORMATION 5

1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST 5
1.2 RELATED SUBMITTAL(S) / GRANT (S) 10
1.3 TEST METHODOLOGY 10
1.4 EQUIPMENT MODIFICATIONS 10
1.5 SUPPORT DEVICE 10
1.6 TEST FACILITY AND LOCATION 11
1.7 SUMMARY OF TEST RESULTS 12

2. SYSTEM TEST CONFIGURATION 13

2.1 EUT CONFIGURATION 13
2.2 SPECIAL ACCESSORIES 13
2.3 DESCRIPTION OF TEST MODES 13
2.4 EUT EXERCISE 13
2.5 DUTY CYCLE 14

3. CONDUCTED EMISSIONS TEST 19

3.1 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 19
3.2 TEST CONDITION 19
3.3 MEASUREMENT RESULTS 19

4. MAX. CONDUCTED OUTPUT POWER 20

4.1 LIMITS 20
4.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 20
4.3 TEST PROCEDURE 20
4.4 MEASUREMENT RESULTS 20

5. 6DB BANDWIDTH 23

5.1 LIMITS 23
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 23
5.3 TEST PROCEDURE 23
5.4 MEASUREMENT RESULTS 23

6. 26DB BANDWIDTH & 99% OCCUPIED BANDWIDTH 30

6.1 LIMITS 30
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 30
6.3 TEST PROCEDURE 30
6.4 MEASUREMENT RESULTS 30

7. POWER SPECTRAL DENSITY 36

7.1 LIMITS 36
7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 36
7.3 TEST PROCEDURE 36
7.4 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 36
7.5 MEASUREMENT RESULTS 36

8. BAND EDGE 43

8.1 LIMITS 43
8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 43
8.3 TEST PROCEDURE 43
8.4 MEASUREMENT RESULTS 43

9. FREQUENCY STABILITY 48

9.1 LIMITS 48
9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 48
9.3 TEST PROCEDURE 48
9.4 MEASUREMENT RESULTS 48

10. RADIATED SPURIOUS EMISSIONS AND RESTRICTED BANDS 51

10.1 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) 51
10.2 MEASUREMENT PROCEDURE 52
10.3 LIMIT 53
10.4 MEASUREMENT RESULTS 54

11. ANTENNA APPLICATION 61

11.1 ANTENNA REQUIREMENT 61
11.2 MEASUREMENT RESULTS 61

12. TEST EQUIPMENT LIST 62

Revision History of This Test Report

Report Number	Description	Issued Date
NTC2006064FV00	Initial Issue	2020-07-20

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test

Product Name	:	5G WIFI FPV DRONE
Main Model Name	:	U62
Additional Model Name	:	See Page 6-7
Brand Name	:	N/A
Power Supply	:	DC 7.4V li-ion battery
Test voltage	:	DC 7.4V li-ion battery
Model Difference Description	:	Those models have the same circuit schematic, construction, PCB Layout and critical components. The difference is model number only due to trading purpose.
Hardware version	:	V1.0
Software version	:	V1.0
Serial number	:	2020.7.20
Note	:	N/A
Remark	:	N/A

Model List:

UA24
U01,U01S,UDI001,VR1,VR-1,I-18MT, U02,U02S,UDI002,VR2,VR-2,I-18SC,
U03,U03S,UDI003,VR3,VR-3,MT18, U04,U04S,UDI004,VR4,VR-4,SC18,
U05,U05S,UDI005,VR5,VR-5,B18, U06,U06S,UDI006,VR6,VR-6,T18,
U07,U07S,UDI007,VR7,VR-7,TC18, U08,U08S,UDI008,VR8,VR-8,D18,
U09,U09S,UDI009,VR9,VR-9 C18, U10 U10S,UDI010,VR10,VR-10,B18,
U11,U11S,UDI011, U12,U12S,UDI012, U13,U13S,UDI013, U14,U14S,UDI014,
U15,U15S,UDI015, U16,U16S,UDI016, U17,U17S,UDI017, U18,U18S,UDI018,
U19,U19S,UDI019, U20,U20S,UDI020, U21,U21S,UDI021, U22,U22S,UDI022,UA22
U23,U23S,UDI023, U24,U24S,UDI024, U25,U25S,UDI025, U26,U26S,UDI026,
U27,U27S,UDI027, U28,U28S,U28W,U28-1,UDI028,
U29,U29S,U29D,U29W,U29S,U29S-E,U29Plus,U29Plus-G,UDI029,
U30,U30S,UDI030, U31,U31S,U31W,U31R,U31D, U32,U32S, U33,U33S,
U34,U34S,U34W, U35,U35S,U818A Plus,U818A Plus-C,U818A Plus-G,
U36,36S,U36W,U36D, U37,U37S, U38,U38S, U39,U39S,
U40,U40S,U40W, U41,U41S,U41W, U42,U42S,U42W,U42HW, U43,U43S,U43W,
U44,U44S,U44W, U45,U45S,U45W, U46,U46S,U46W,U46C,U46C-W,
U47,U47S,U47B,U47W, U48,U48S,U48W, U49,U49S,U49C,U49W, U50,U50S,
U51,U51S,U51W, U52,U52S,U52G,U52W, U53,U53S, U54,U54S,U54W,U54Plus,
U55,U55S, U56,U56S, U57,U57S, U58,U58S, U59,U59S, U60,U60S, U61W,
U61,U61S, U62,U62S, U63,U63S, U64,U64S, U65,U65S, U66,U66S,
U67,U67S, U68,U68S, U69,U69S, U70,U70S, U71,U71S, U72,U72S, U73,U73S,
U74,U74S, U75,U75S, U76,U76S, U77,U77S, U78,U78S, U79,U79S, U80,U80S,
U81,U81S, U82,U82S, U83,U83S, U84,U84S, U85,U85S, U86,U86S, U87,U87S,
U88,U88S,U88Plus,U88Plus-G, U89,U89S, U90,U90S, U91,U91S, U92,U92S,
U93,U93S, U94,U94S, U95,U95S, U96,U96S, U97,U97S, U98,U98S, U99,U99S,
U100,U100S, U101,U101S, U102,U102S, U103,U103S, U104,U104S, U105,U105S,
U106,U106S, U107,U107S, U108,U108S, U109,U109S, U110,U110S, U111,U111S,
U112,U112S, U113,U113S, U114,U114S, U115,U115S, U116,U116S, U117,U117S,
U118,U118S, U119,U119S, U120,U120S, U121,U121S, U122,U122S, U123,U123S,
U124,U124S, U125,U125S, U126,U126S, U127,U127S, U128,U128S, U129,U129S,

U130,U130S, U131,U131S, U132,U132S, U133,U133S, U134,U134S, U135,U135S,
U136,U136S, U137,U137S, U138,U138S, U139,U139S, U140,U140S, U141,U141S,
U142,U142S, U143,U143S, U144,U144S, U145,U145S, U146,U146S, U147,U147S,
U148,U148S, U149,U149S, U150,U150S, U151,U151S, U152,U152S, U153,U153S,
U154,U154S, U155,U155S, U156,U156S, U157,U157S, U158,U158S, U159,U159S,
U160,U160S, U161,U161S, U162,U162S, U163,U163S, U164,U164S, U165,U165S,
U166,U166S, U167,U167S, U168,U168S, U169,U169S, U170,U170S, U171,U171S,
U172,U172S, U173,U173S, U174,U174S, U175,U175S, U176,U176S, U177,U177S,
U178,U178S, U179,U179S, U180,U180S, U181,U181S, U182,U182S, U183,U183S,
U184,U184S, U185,U185S, U186,U186S, U187,U187S, U188,U188S, U189,U189S,
U190,U190S, U191,U191S, U192,U192S, U193,U193S, U194,U194S, U195,U195S,
U196,U196S, U197,U197S, U198,U198S, U199,U199S, U200,U200S,
6182-7SN,6182-7S DIL,6182-7S,6182-7RC DIL,6182-7RC,6182-7RC STE, 6182-7SN MCE,6182-7S BI,6182-7RCHA WAL,6182-7RCH MCE,6182-7SH, ACDRVR,Archos Drone VR,U818A,U818A HD,U818A WIFI,U842-1, U842 WIFI,U845,U841-1,U841-1,Xerall,X-TankCopter,3A-U46-BL,SYRIO, DRAKO,U829A,U842,U845WIFI,U835,U28-1,U28W,U42,U42W,VR-2, Falcon Pro,U820,U843,D2,ZX-TTN,ZX-ATL,ZXRHD,ZXNVA,ZXRAP, ZXSPT,6182-7RB TM1,_titan,_hydra,ZX-HRA,ARCHOS DRONE WW, ARCHOS PICO DRONE,A15W,CW4,U48A,U48HW,TDFT0019, TDFT0014,TDLB0010,RC60706,RC49581,RC46892,DRONE 200, DRONE 400,25197,25163,T5176,T5177,AA108,AA818,AA101. AA102.AA200.A20,A20W,A30,A30W,D20,D50,D60,D35,D58,D65, D68,D52 ,25196,25194,25159,25160,23938,NT.SS9,NT.SF1M,RC18167, RC18168,RC15771,RC46892,RC49580,T5147,T5170,RGR3000,TDFT0005, TDFT0006,EC16238,EC16242,EC16241,EC16239,EC16243,6182-7RC AEO, 6182-7SN AEO,6182-7RB TM1,6182-7SC BUR,ACPIDR,ACDRONE,CW10, U88WIFI,6182-7RCHA,6182-1GH,6182-1GHB,6182-1GXA,6182-1GE, 6182-1GB,8073472,8073473,RC60706,TDFT0020,TDFT0021,TDFT0027, TDFT0028,TDFT0031,TDLB0002,Robin FPV,U60Pro-WCH,U61W,U48, A15,T20,D28,6182-7RCHB

Technical parameters
For 5G Band

Frequency Range	:	U-NII-1: 5180-5240MHz U-NII-3: 5745-5825MHz
Modulation type	:	IEEE 802.11a: OFDM IEEE 802.11n: see the below table
Data Modulation	:	EEE 802.11a: OFDM (BPSK/QPSK/16QAM/64-QAM) IEEE 802.11n: OFDM (BPSK/QPSK/16QAM/ 64-QAM/256-QAM)
Modulation Technology	:	OFDM
Number of Channel	:	802.11a/n(HT20)
Data rate	:	802.11a: 6~54Mbps 802.11n(HT20): MCS 0~7
Antenna Type	:	PCB antenna *2
Antenna Gain	:	2.5dBi

Channel list for 5GHz Band

Band 5180~5240MHz	
802.11a/n(HT20)	
Channel	Frequency MHz
36	5180
40	5200
44	5220
48	5240
Band 5745~5825MHz	
802.11a/n(HT20)	
Channel	Frequency MHz
149	5745
153	5765
157	5785
161	5805
165	5825

Note: According to section 15.31(m), regards to the operating frequency range over 10MHz, the Lowest, middle, and the Highest frequency of channel were selected to perform the test. The selected frequency see below:

Band 5180~5240MHz		Band 5745~5825MHz	
802.11a/n(HT20)		802.11a/n(HT20)	
Channel	Frequency MHz	Channel	Frequency MHz
36	5180	149	5745
40	5200	157	5785
48	5240	165	5825

Test SW version	secureCRT

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **ZKWGPS20060002** filing to comply with Section 15.407 of the FCC Part 15 subpart E(2016) Rule.

1.3 Test Methodology

The radiated emission measurement was performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters. All other measurements were made in accordance with the procedures in 47 CFR part 2.

1.4 Equipment Modifications

Not available for this EUT intended for grant.

1.5 Support Device

Notebook	:	Manufacturer: Lenovo Model: TP00067A P/N: SL10G10768 S/N: PF-0DS3YC 15/12 CE, FCC: DOC
Adapter (For notebook)	:	Manufacturer: Lenovo Model: ADLX65NLC3A I/P: AC 100-240V 50-60Hz, 1.8A O/P: DC 20V 3.25A

1.6 Test Facility and Location

Site Description		
EMC Lab	:	Listed by CNAS, August 13, 2018 The certificate is valid until August 13, 2024 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 The Certificate Registration Number is L5795. Listed by A2LA, November 01, 2017 The certificate is valid until December 31, 2019 The Laboratory has been assessed and proved to be in compliance with ISO17025 The Certificate Registration Number is 4429.01 Listed by FCC, November 06, 2017 The Designation Number is CN1214 Test Firm Registration Number: 907417 Listed by Industry Canada, June 08, 2017 The Certificate Registration Number. Is 46405-9743
Name of Firm	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Site Location	:	Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong Province, China

1.7 Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

1.8 Summary of Test Results

FCC Rules	Description Of Test	Uncertainty	Result
§15.207 (a)	AC Power Conducted Emission	±1.06dB	N/A
§15.407(a)	Max. Conducted Output Power	±1.06dB	Compliance
§15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	±1.42 $x10^{-4}$%	Compliance
§15.407(e)	6dB Bandwidth	±1.42 $x10^{-4}$%	Compliance
§15.407(a)	Power Spectral Density	±1.70dB	Compliance
§15.407(b) §15.205	Radiated Emissions	±3.70dB	Compliance
§15.407(b)	Band Edge Emissions	±1.06dB	Compliance
§15.407(g)	Frequency Stability	±8.42 $x10^{-8}$	Compliance
§15.203	Antenna Requirement	---	Compliance

Note:
1. The EUT has been tested as an independent unit. And continual transmitting in maximum power (New batteries were used during test)

2. AC Power Conducted Emission is not applicable due to the EUT only can be powered by battery.

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 Special Accessories

Not available for this EUT intended for grant.

2.3 Description of test modes

The EUT has been tested under continuous operating condition. Test program used to control the EUT staying in continuous transmitting mode. The Lowest, middle and highest channel were chosen for testing, and modulation type CCK, DQPSK, DBPSK, OFDM, OFDM-BPSK, QPSK, 16QAM, 256QAM and all data rate were tested. But only the worst case data is shown in this report.

2.4 EUT Exercise

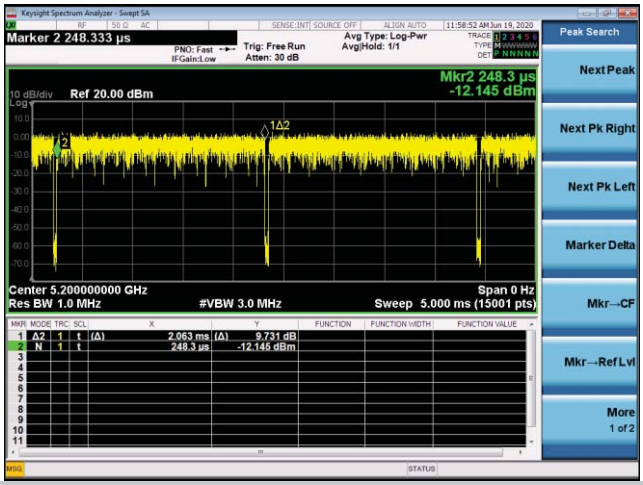
The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

2.5 Duty cycle

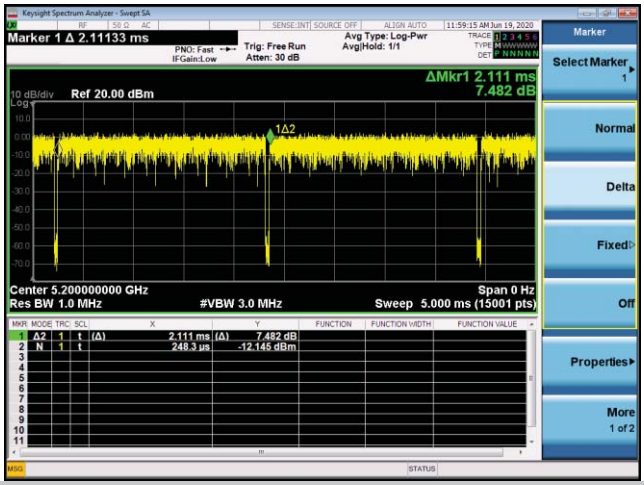
Operation Band (MHz)	Mode	Ton (ms)	Ton+off (ms)	Duty Cycle (%)	1/T minimum VBW (kHz)
5180~5240 ANT1	802.11a	2.063	2.111	97.73	0.048
	802.11n(HT20)	1.912	1.955	97.80	0.043
5180~5240 ANT2	802.11a	2.064	2.108	97.91	0.044
	802.11n(HT20)	1.920	1.955	98.21	0.035
5745~5825 ANT1	802.11a	2.054	2.089	98.32	0.035
	802.11n(HT20)	1.914	1.956	97.85	0.042
5745~5825 ANT2	802.11a	2.058	2.094	98.28	0.036
	802.11n(HT20)	1.920	1.963	97.81	0.043

Band 5180-5240MHz ANT1
IEEE 802.11a

Ton

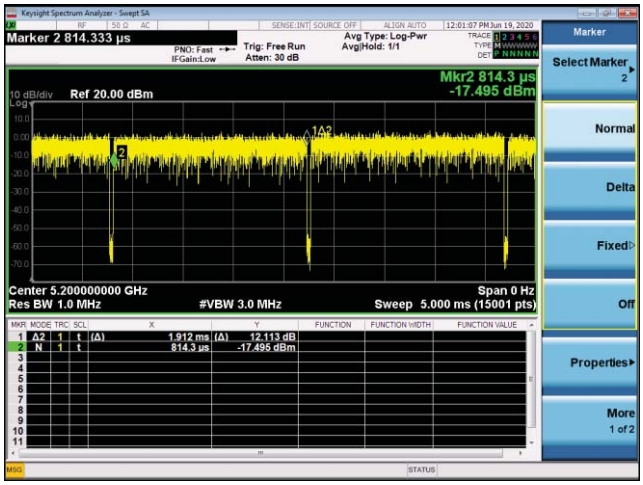


Ton+off

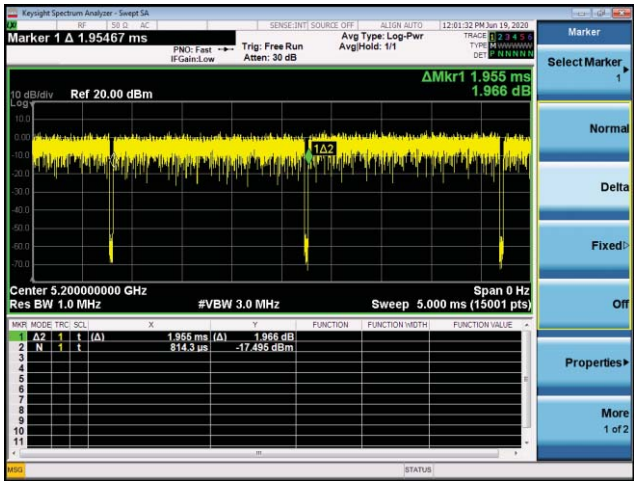


IEEE 802.11n(HT20)

Ton

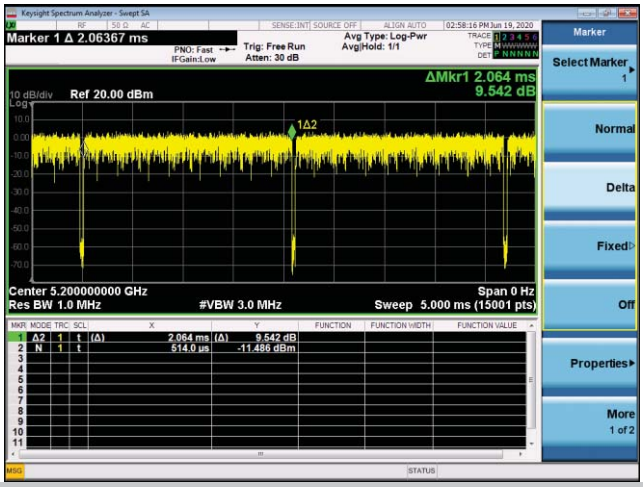


Ton+off

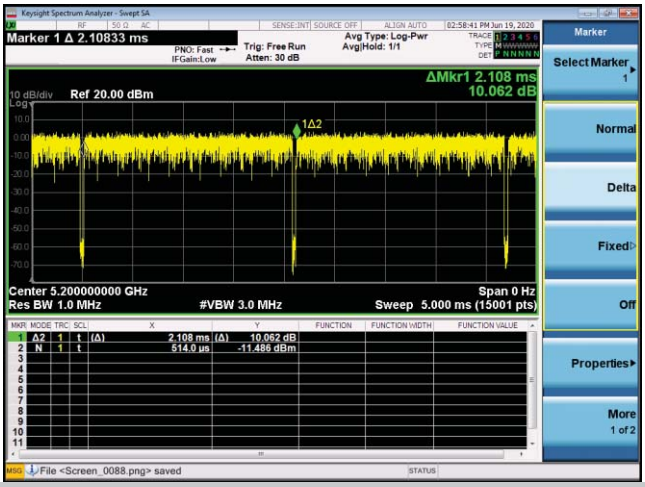


Band 5180-5240MHz ANT2
IEEE 802.11a

Ton

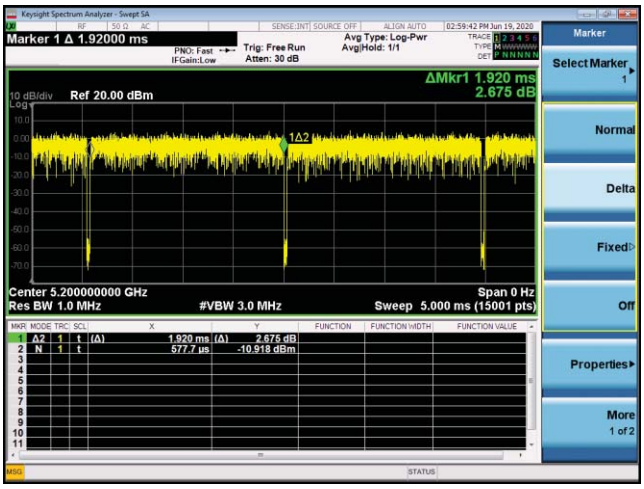


Ton+off

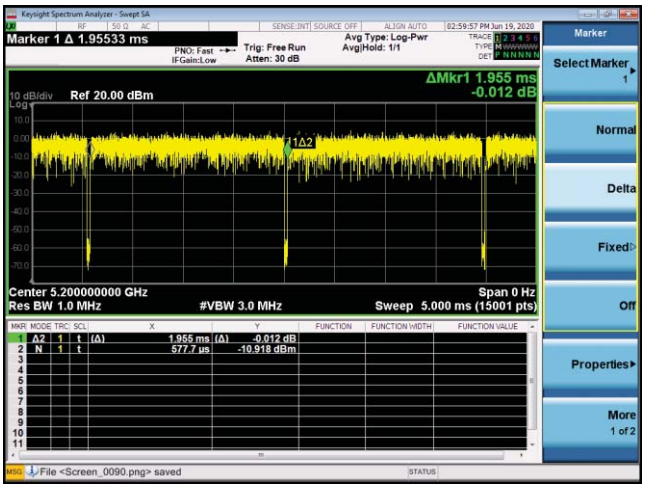


IEEE 802.11n(HT20)

Ton

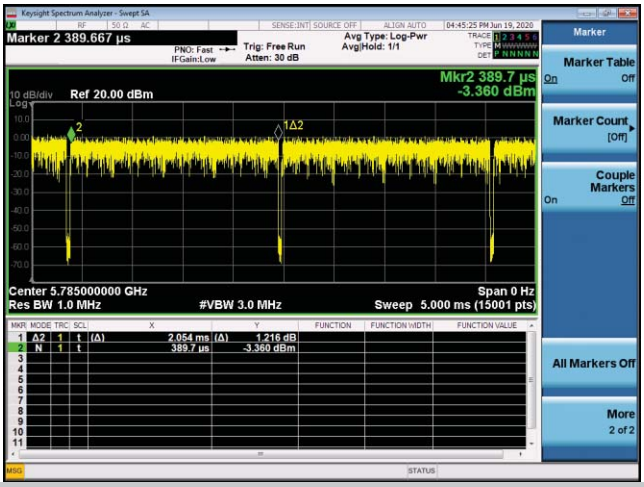


Ton+off

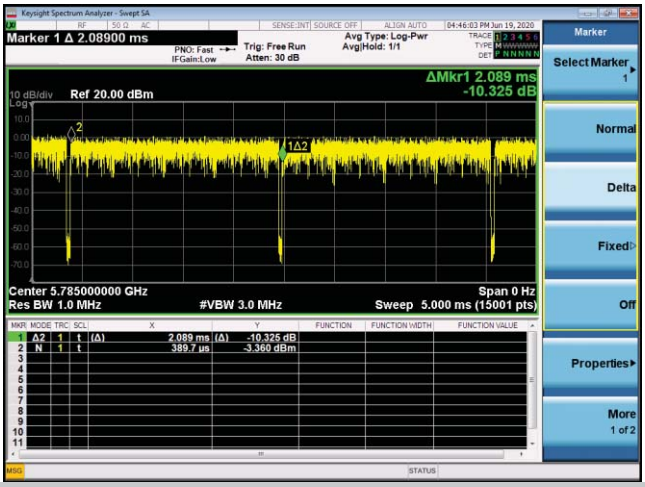


Band 4 5745-5825MHz ANT1
IEEE 802.11a

Ton

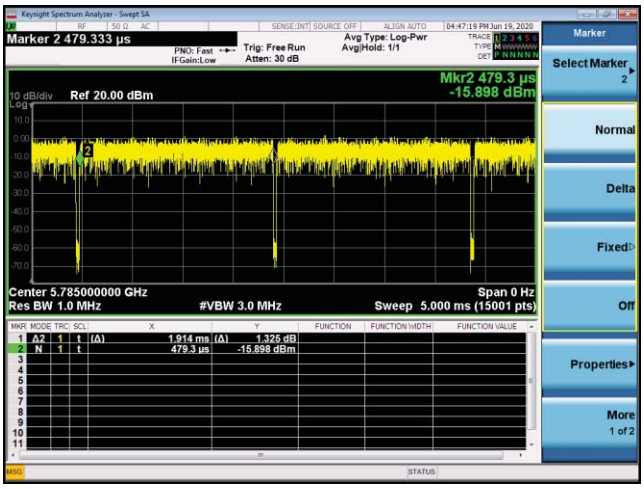


Ton+off

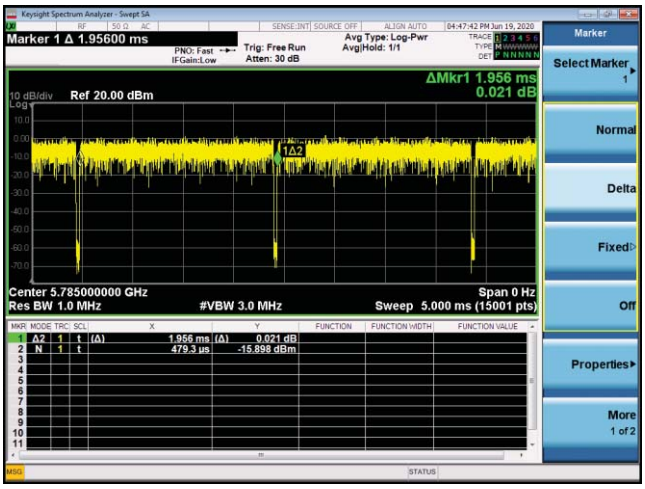


IEEE 802.11n(HT20)

Ton

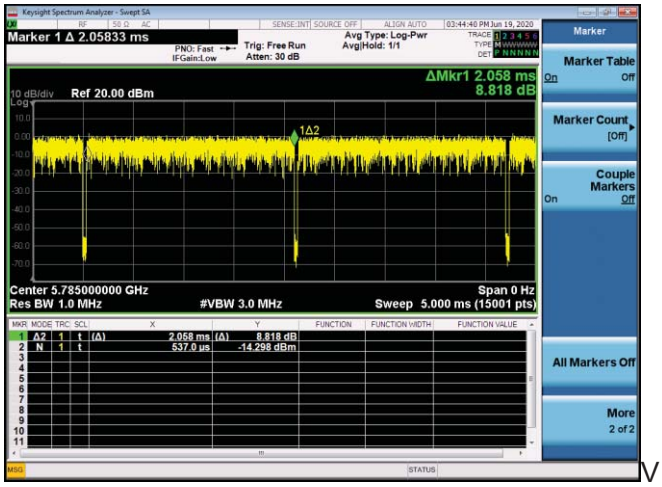


Ton+off

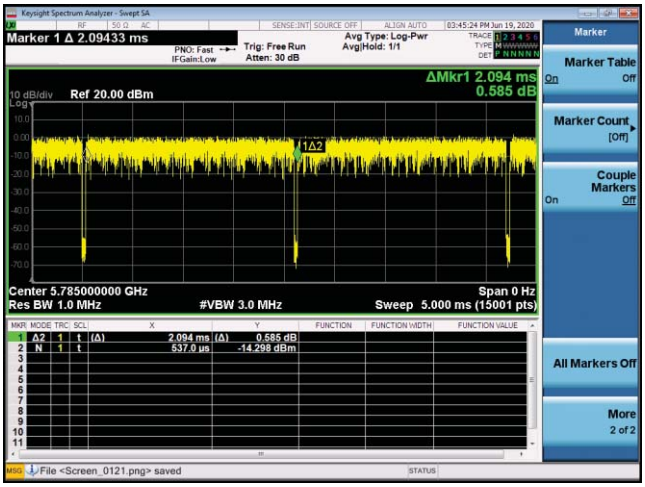


Band 4 5745-5825MHz ANT2
IEEE 802.11a

Ton



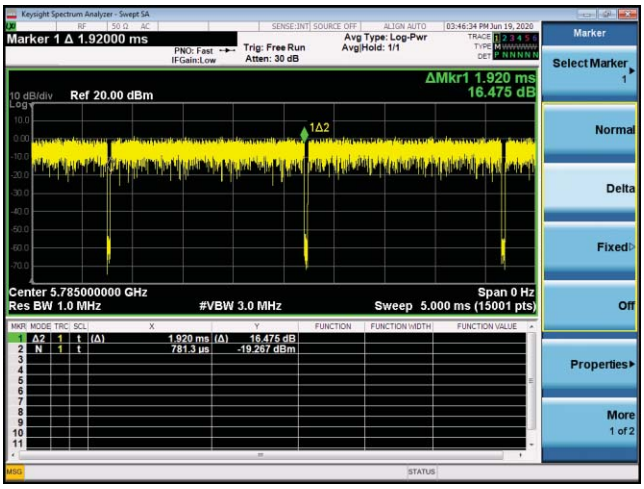
Ton+off



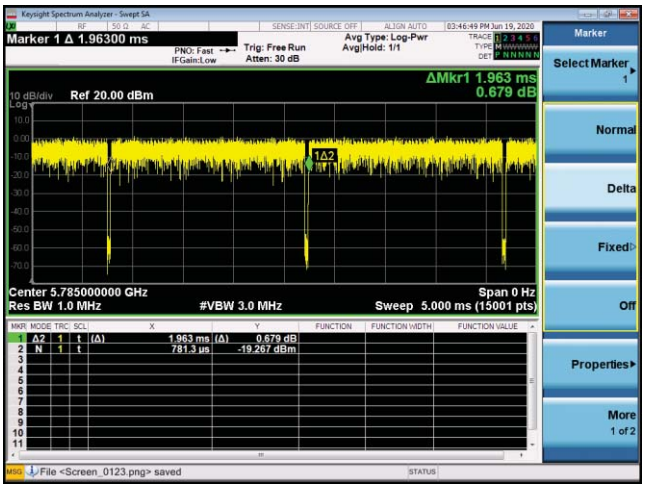
V

IEEE 802.11n(HT20)

Ton

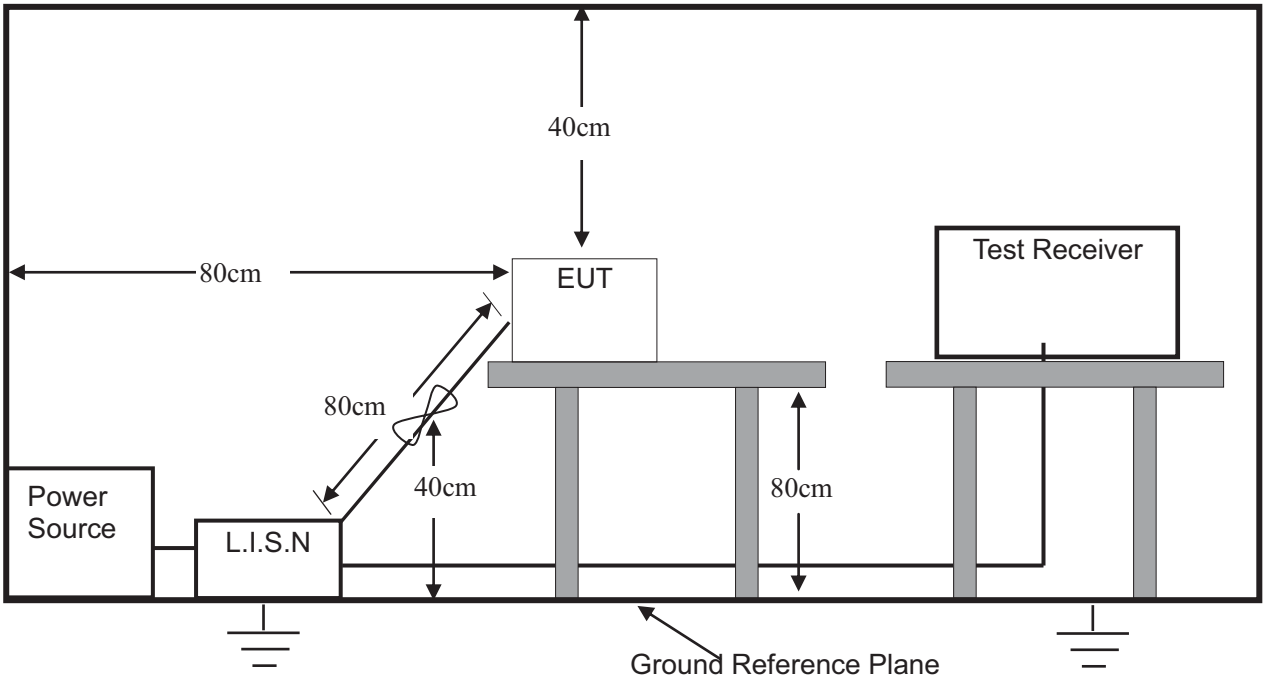


Ton+off



3. Conducted Emissions Test

3.1 Test SET-UP (Block Diagram of Configuration)



3.2 Test Condition

Test Requirement: FCC Part 15.207

Frequency Range: 150KHz ~ 30MHz

Detector: RBW 9KHz, VBW 30KHz

Operation Mode: TX (5G WIFI Band1), TX (5G WIFI Band4)

3.3 Measurement Results

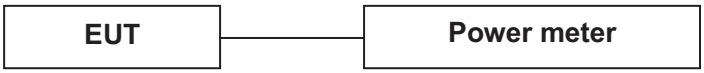
Not Applicable.

4. Max. Conducted Output Power

4.1 Limits

Operation Band	EUT category	Limit
■5180~5240MHz	□Outdoor Access Point	1 Watt (30dBm) (Max. e.i.r.p ≤ 125mW(21dBm) at any elevation angle above 30 degrees as measured from the horizon)
	□Fixed point-to-point Access Point	1 Watt (30dBm)
	■Indoor Access Point	1 Watt (30dBm)
	□Mobile and Portable client device	250mW (24dBm)
■5745~5825MHz	-	1 Watt (30dBm)

4.2 Test SET-UP (Block Diagram of Configuration)



4.3 Test Procedure

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 v01r03 for compliance testing of Unlicensed National Information Infrastructure (U-NII) Device -section (E) Maximum conducted output power. =3. Measurement using a power meter (PM) =b Method PM-G (Measurement using a gated RF average power meter).

4.4 Measurement Results

Pass

Please refer to following table.

Temperature :	23 ℃	Humidity :	52%
Test By:	Lee	Test Date :	June 19, 2020
Test Result:	PASS		

Frequency MHz	Data Rate Mbps	Peak Output Power dBm	Limit dBm
IEEE 802.11a Mode (OFDM, Antenna Gain=2.5dBi)			
Low Channel: 5180	6	15.18	30
Middle Channel: 5200	6	15.11	30
High Channel: 5240	6	15.45	30

Note: Both of antennas have considered during pre-test, but only the worst case (ANT2) was recorded.

Frequency MHz	Data Rate Mbps	Peak Output Power dBm			Limit dBm
IEEE 802.11n(HT20)Mode (OFDM, Antenna Gain=2.5dBi)					
Low Channel: 5180	MCS0	ANT1	ANT2	Total	30
		15.16	14.98	18.08	
Middle Channel: 5200	MCS0	14.91	15.03	17.98	30
High Channel: 5240	MCS0	14.48	15.35	17.95	30

Note : The working on MIMO mode.

Temperature :	22 ℃	Humidity :	54%
Test By:	Lee	Test Date :	June 19, 2020
Test Result:	PASS		

Frequency MHz	Data Rate Mbps	Peak Output Power dBm	Limit dBm
IEEE 802.11a Mode (OFDM, Antenna Gain=2.5dBi)			
Low Channel: 5745	6	13.48	30
Middle Channel: 5785	6	13.09	30
High Channel: 5825	6	12.53	30

Note: Both of antennas have considered during pre-test, but only the worst case (ANT2) was recorded.

Frequency MHz	Data Rate Mbps	Peak Output Power dBm			Limit dBm
IEEE 802.11n(HT20)Mode (OFDM, Antenna Gain=2.5dBi)					
Low Channel: 5745	MCS0	ANT_1	ANT_2	Total	30
		13.03	13.00	16.03	
Middle Channel: 5785	MCS0	13.17	12.61	15.91	30
High Channel: 5825	MCS0	12.53	12.20	15.38	30

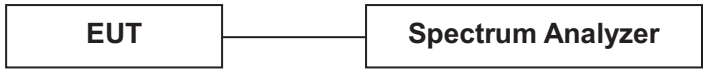
Note : The working on MIMO mode.

5. 6dB Bandwidth

5.1 Limits

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Test Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set as below according to FCC KDB789033(v01r03):

1. For 6dB bandwidth, Set the RBW = 100KHz.
2. Set the VBW ≥ 3 x RBW
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.4 Measurement Results

Pass

Please refer to following table and plots.

Temperature :	21 ℃	Humidity : 54 %	
Test By:	Lee	Test Date : June 19, 2020	
Test Result:	PASS		
Frequency MHz	Data Rate Mbps	6dB Bandwidth MHz	Limit
IEEE 802.11a Mode (CCK)			
Low Channel: 5180	6	15.94	>500KHz
Middle Channel: 5200	6	16.08	>500KHz
High Channel: 5240	6	16.29	>500KHz
IEEE 802.11n(HT20) Mode (OFDM)			
Low Channel: 5180	MCS0	17.15	>500KHz
Middle Channel: 5200	MCS0	16.85	>500KHz
High Channel: 5240	MCS0	16.94	>500KHz

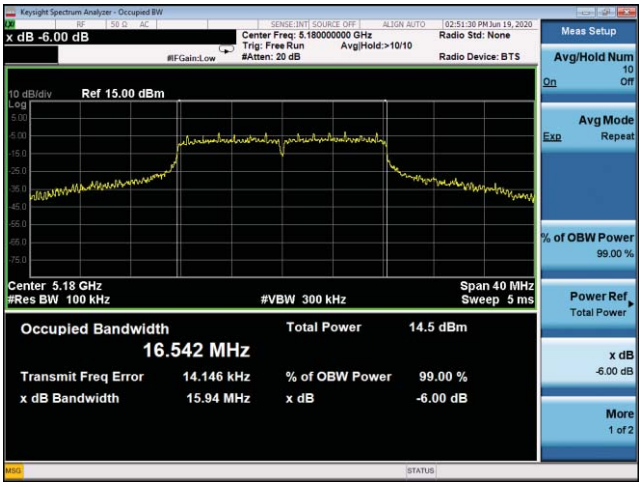
Note: Both of antennas have considered during pre-test, but only the worst case (ANT2) was recorded.

Temperature :	23 ℃	Humidity : 53 %	
Test By:	Lee	Test Date : June 19, 2020	
Test Result:	PASS		
Frequency MHz	Data Rate Mbps	6dB Bandwidth MHz	Limit
IEEE 802.11a Mode (CCK)			
Low Channel: 5745	6	16.06	>500KHz
Middle Channel: 5785	6	16.31	>500KHz
High Channel: 5825	6	16.29	>500KHz
IEEE 802.11n(HT20) Mode (OFDM)			
Low Channel: 5745	MCS0	17.17	>500KHz
Middle Channel: 5785	MCS0	17.18	>500KHz
High Channel: 5825	MCS0	17.19	>500KHz

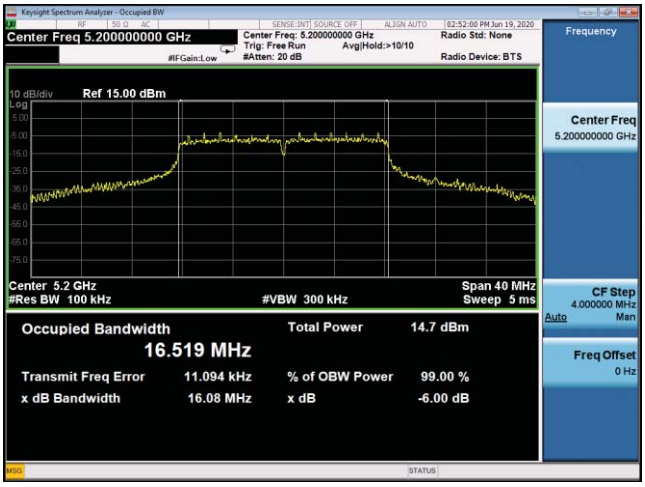
Note: Both of antennas have considered during pre-test, but only the worst case (ANT2) was recorded.

Band 5180-5240MHz
IEEE 802.11a

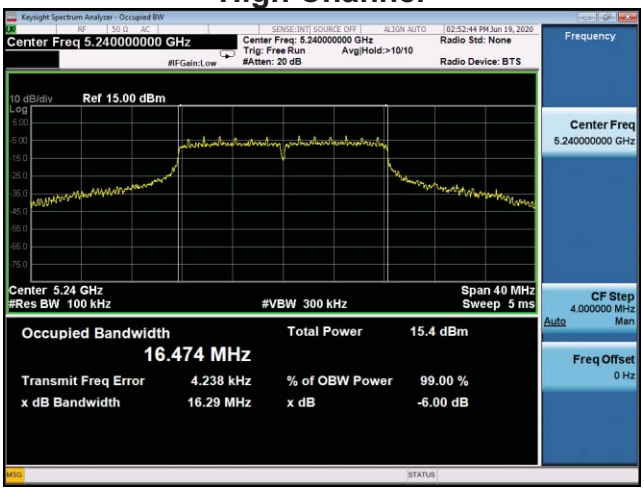
Low Channel



Middle Channel

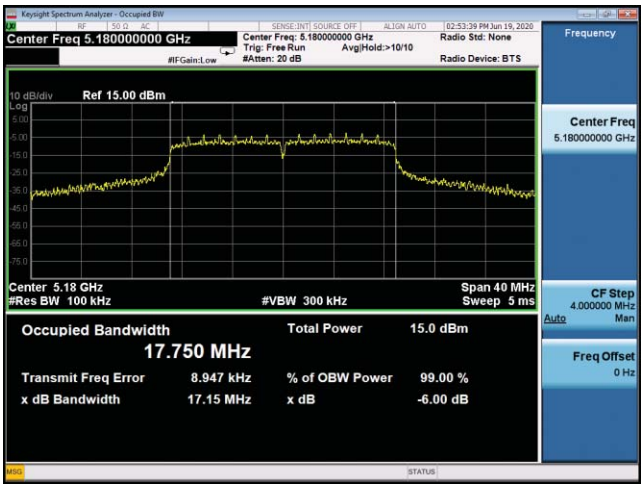


High Channel

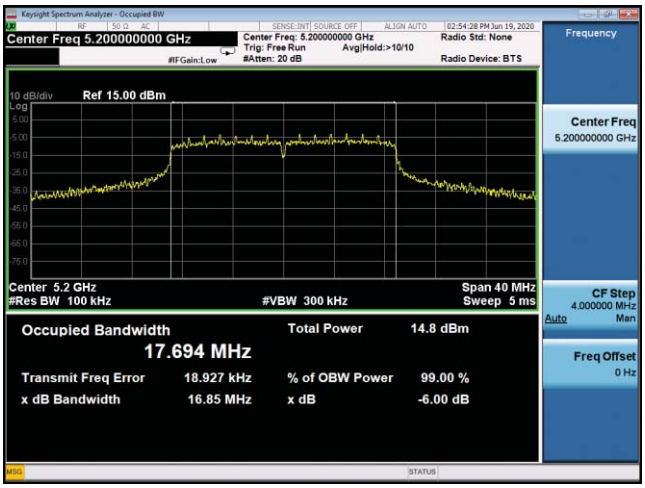


802.11n(HT20)

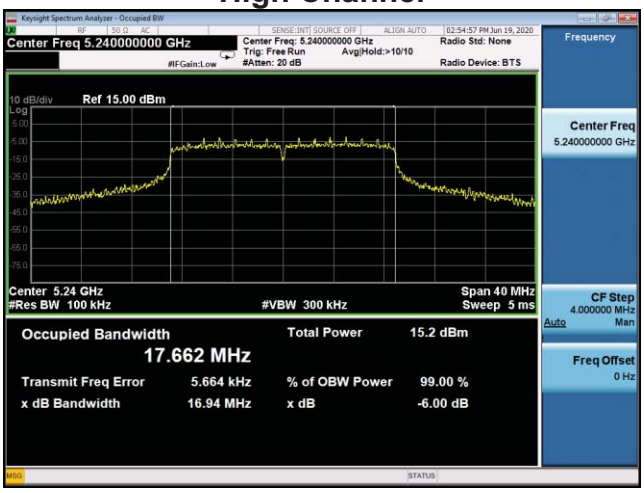
Low Channel



Middle Channel

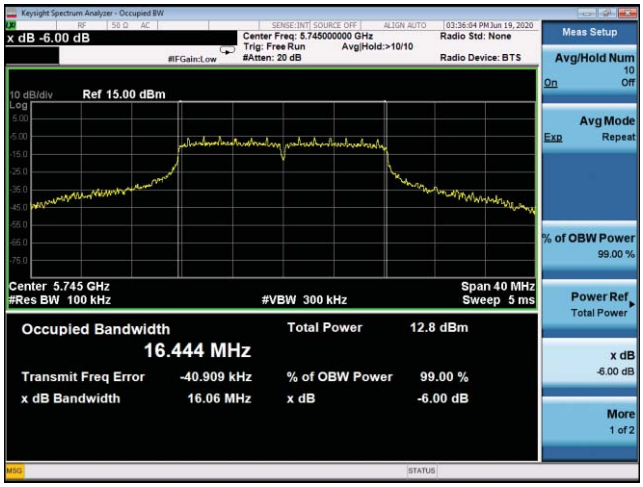


High Channel

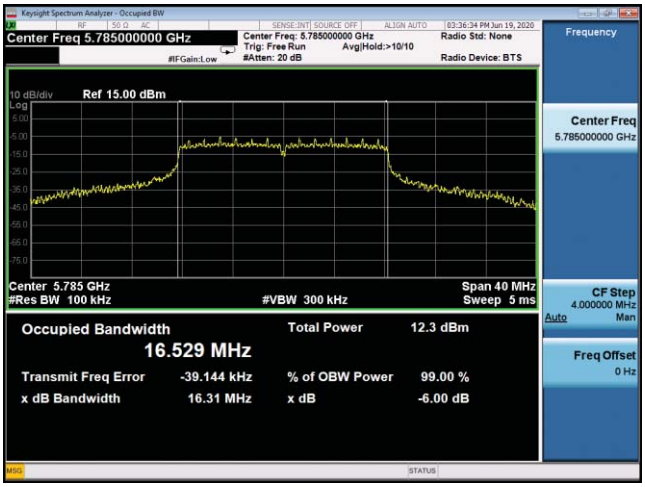


Band 5745-5825MHz
IEEE 802.11a

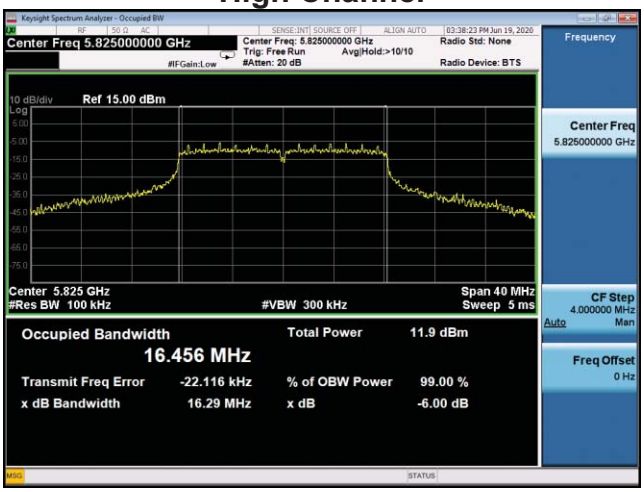
Low Channel



Middle Channel

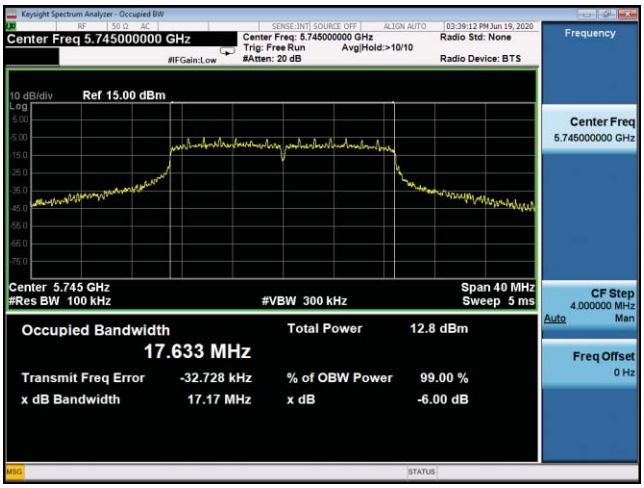


High Channel

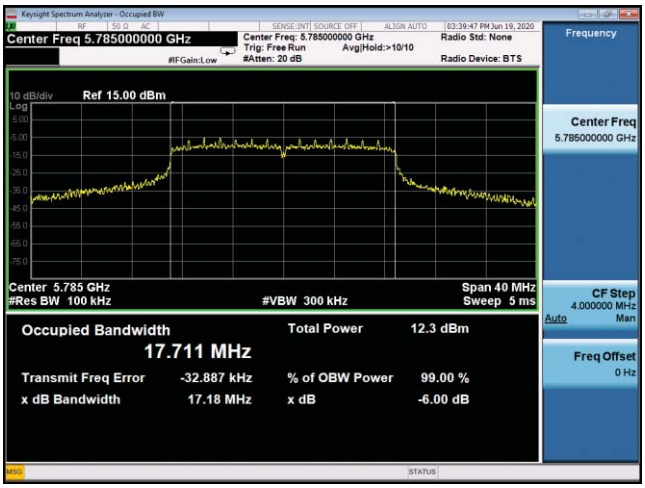


802.11n(HT20)

Low Channel



Middle Channel



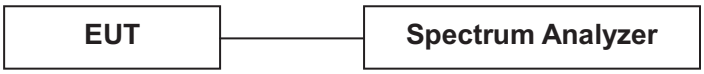
High Channel

6. 26dB Bandwidth & 99% Occupied Bandwidth

6.1 Limits

No restriction limits.

6.2 Test SET-UP (Block Diagram of Configuration)



6.3 Test Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer.
Analyzer was set as below according to FCC KDB789033(v01r03):

1. For 26dB bandwidth, Set the RBW = Approximately 1% of the emission bandwidth
2. Set the VBW ＞ RBW
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. 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 26 dB relative to the maximum level measured in the fundamental emission.

1. For 99% occupied bandwidth, Set the RBW = 1% to 5% of the OBW
2. Set the VBW ≥ 3 x RBW
3. Detector = peak.
4. Span = 1.5 times to 5.0 times the OBW
5. Sweep time = auto couple.
6. Trace mode = max hold. Allow trace to fully stabilize.
7. Use the 99% power bandwidth function of the spectrum analyzer measure the occupied bandwidth.

6.4 Measurement Results

Pass

Please refer to following table and plots.

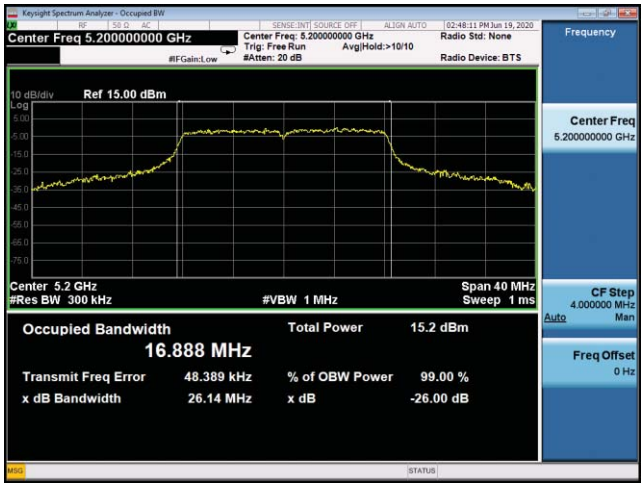
Temperature :	23 ℃	Humidity : 53 %	
Test By:	Lee	Test Date : June 19, 2020	
Test Result:	PASS		
Frequency MHz	Data Rate Mbps	26dB Bandwidth MHz	99% Occupied Bandwidth MHz
IEEE 802.11a Mode (CCK)			
Low Channel: 5180	6	28.58	16.950
Middle Channel: 5200	6	26.14	16.888
High Channel: 5240	6	25.14	16.841
IEEE 802.11n(HT20) Mode (OFDM)			
Low Channel: 5180	MCS0	26.83	18.068
Middle Channel: 5200	MCS0	28.71	18.014
High Channel: 5240	MCS0	26.14	17.958
Frequency MHz	Data Rate Mbps	26dB Bandwidth MHz	99% Occupied Bandwidth MHz
IEEE 802.11a Mode (CCK)			
Low Channel: 5745	6	23.56	16.792
Middle Channel: 5785	6	28.63	16.938
High Channel: 5825	6	25.77	16.782
IEEE 802.11n(HT20) Mode (OFDM)			
Low Channel: 5745	MCS0	24.21	17.896
Middle Channel: 5785	MCS0	28.97	18.077
High Channel: 5825	MCS0	25.36	17.914

Note: Both of antennas have considered during pre-test, but only the worst case (ANT2) was recorded.

Band 5180-5240MHz
IEEE 802.11a

Low Channel

Middle Channel

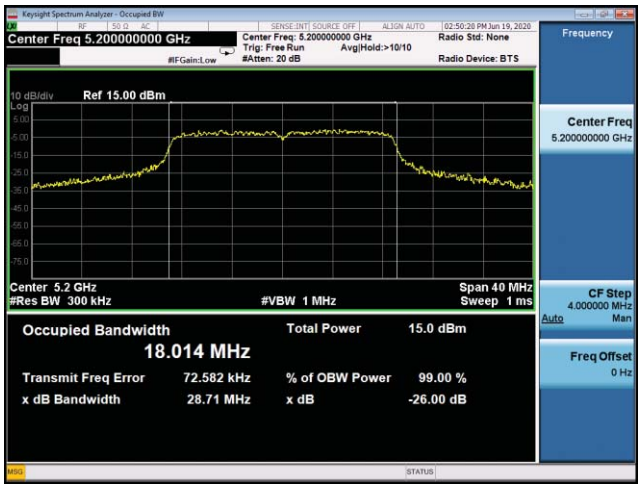


High Channel

802.11n(HT20)

Low Channel

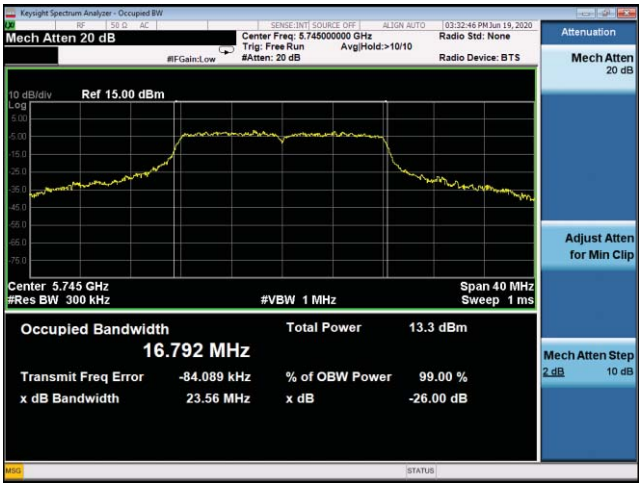
Middle Channel



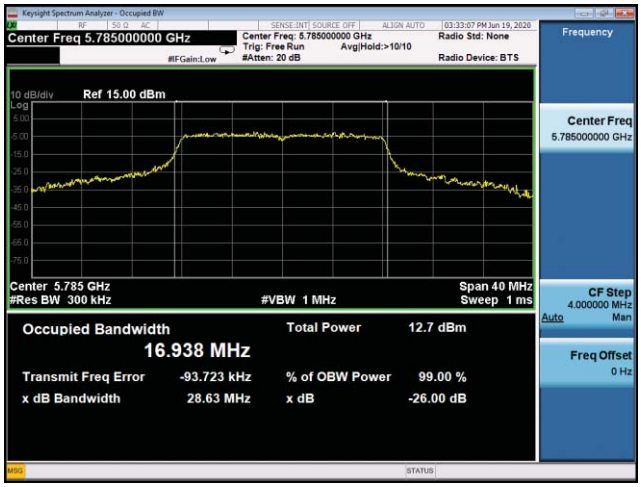
High Channel

Band 5745-5825MHz
IEEE 802.11a

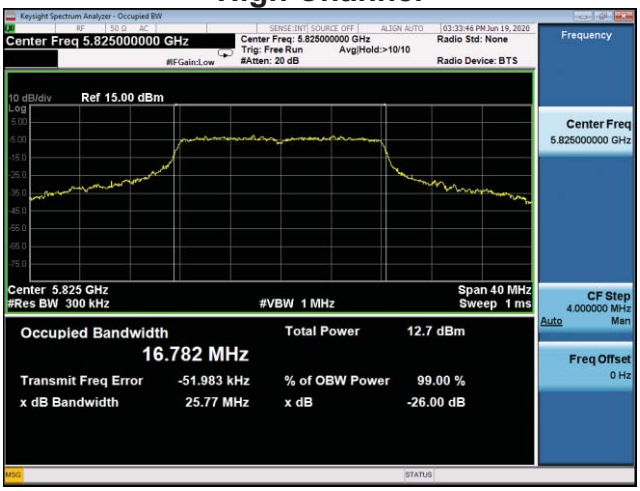
Low Channel



Middle Channel

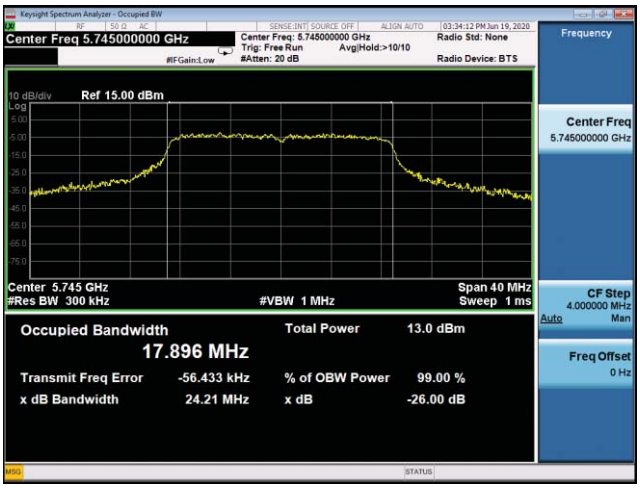


High Channel

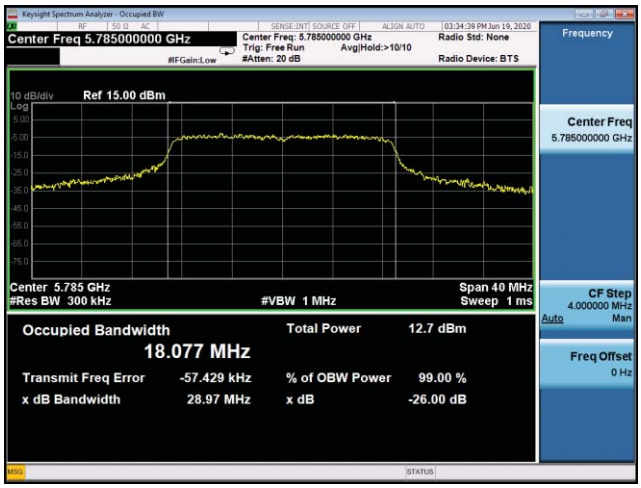


802.11n(HT20)

Low Channel



Middle Channel



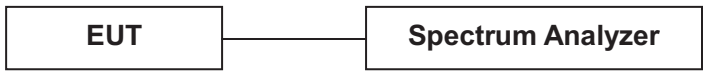
High Channel

7. Power Spectral Density

7.1 Limits

Operation Band		Limit
■5180~5240MHz	□Outdoor access point	17 dBm/MHz
	■Indoor access point	17 dBm/MHz
	□Fixed point-to-point access points	17 dBm/MHz
	□Client devices	17 dBm/MHz
■5745~5825MHz		30 dBm/500kHz

7.2 Test SET-UP (Block Diagram of Configuration)

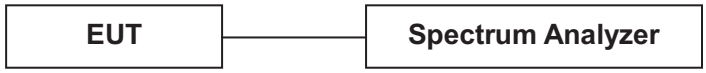


7.3 Test Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set as below according to FCC KDB789033 (v01r03):

1. Set analyzer center frequency to center frequency
2. Set the RBW to: 1MHz
3. Set the VBW to: 3MHz
4. Detector = RMS
5. Sweep time = auto couple
6. Trace Average = 100 times
7. If measured bandwidth of Maximum PSD is specified in 500kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (<500kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

7.4 Test SET-UP (Block Diagram of Configuration)



7.5 Measurement Results

Pass

Please refer to following table and plots.

Temperature :	21 ℃	Humidity :	51 %
Test By:	Lee	Test Date :	June 19, 2020
Test Result:	PASS		
Frequency MHz	Data Rate Mbps	PSD dBm/MHz	Limit dBm/ MHz
IEEE 802.11a Mode (OFDM)			
Low Channel: 5180	6	5.957	17
Middle Channel: 5200	6	5.948	17
High Channel: 5240	6	6.567	17

Note: Both of antennas have been tested, but only the worst case (ANT2) was recorded.

Frequency MHz	Data Rate Mbps	PSD dBm/MHz			Limit dBm/ MHz
IEEE 802.11n(HT20) Mode (OFDM)					
Low Channel: 5180	MCS0	ANT 1	ANT 2	Total	17
		6.718	5.858	9.32	
Middle Channel: 5200	MCS0	5.988	5.827	8.92	17
High Channel: 5240	MCS0	5.376	6.482	8.98	17

Note: 1. The working on MIMO mode.

Temperature :	23 ℃	Humidity :	53 %
Test By:	Lee	Test Date :	June 19, 2020
Test Result:	PASS		
Frequency MHz	Data Rate Mbps	PSD dBm/500KHz	Limit dBm/ 500kHz
IEEE 802.11a Mode (OFDM)			
Low Channel: 5745	6	1.033	30
Middle Channel: 5785	6	0.745	30
High Channel: 5825	6	0.442	30

Note: 1. Both of antennas have considered during pre-test, but only the worst case (ANT2) was recorded.

Frequency MHz	Data Rate Mbps	PSD dBm/MHz			PSD dBm/ 500kHz	Limit dBm/ 500kHz
IEEE 802.11n(HT20) Mode (OFDM)						
Low Channel: 5745	MCS0	ANT 1	ANT 2	Total	4.40	30
		4.565	4.228	7.41		
Middle Channel: 5785	MCS0	4.140	3.535	6.85	3.84	30
High Channel: 5825	MCS0	3.673	3.324	6.51	3.50	30

Note: 1. The working on MIMO mode.
2. Both of antennas have considered during pre-test, but only the worst case (ANT1) was recorded.
3. 10log(500kHz/RNW) Factor = -3.01dB

Band 5180-5240MHz
IEEE 802.11a

Low Channel

Middle Channel

High Channel

802.11n(HT20)

Low Channel

Middle Channel

High Channel

Band 5745-5825MHz
IEEE 802.11a

Low Channel

Middle Channel

High Channel

802.11n(HT20)

Low Channel

Middle Channel

High Channel

8. Band Edge

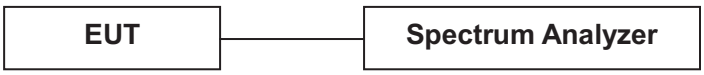
8.1 Limits

For transmitters operating in the 5.15-5.25GHz band: all emissions outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm

For transmitter operating in the 5.25-5.35GHz band: all emissions outside of the 5.15-5.35GHz band shall not exceed an EIRP of -27dBm/MHz. Devices operating in the 5.25-5.35GHz band generate emissions in the 5.15-5.25GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27dBm/MHz in the 5.15-5.25GHz band.

For transmitters operating in the 5.725-5.850GHz band: all emissions shall be limited to a level of -27dBm/MHz at 75MHz or more above or below the band edge increasing linearly to 10dBm/MHz at 25MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6dBm/MHz at 5MHz above or below the band edge, and from 5MHz above or below the band increasing linearly to a level of 27dBm/MHz at the band edge.

8.2 Test SET-UP (Block Diagram of Configuration)



8.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibration or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 1MHz and VBW to 3MHz of spectrum analyzer.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

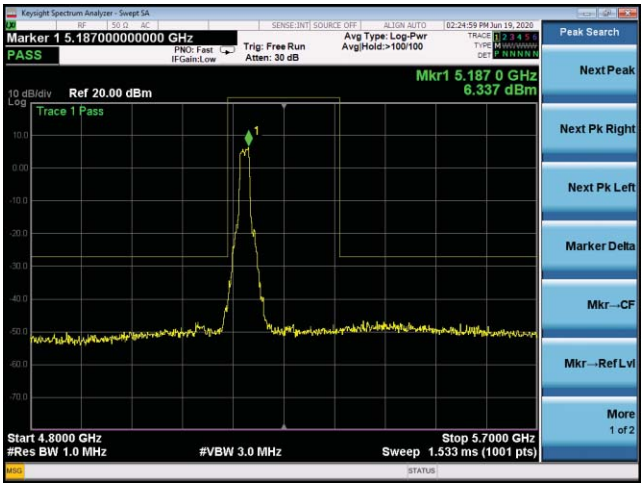
8.4 Measurement Results

Pass

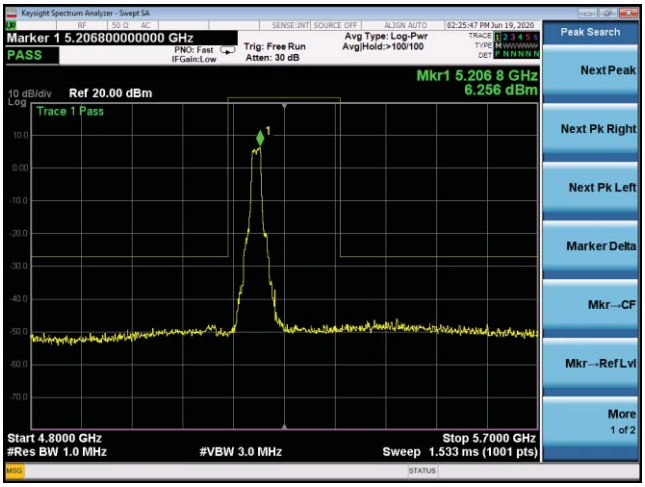
Please refer to following plots of the worst case ANT2.

Band 5180-5240MHz
IEEE 802.11a

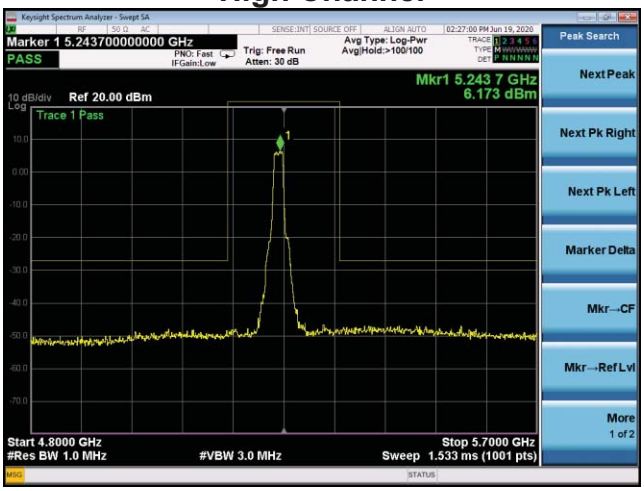
Low Channel



Middle Channel

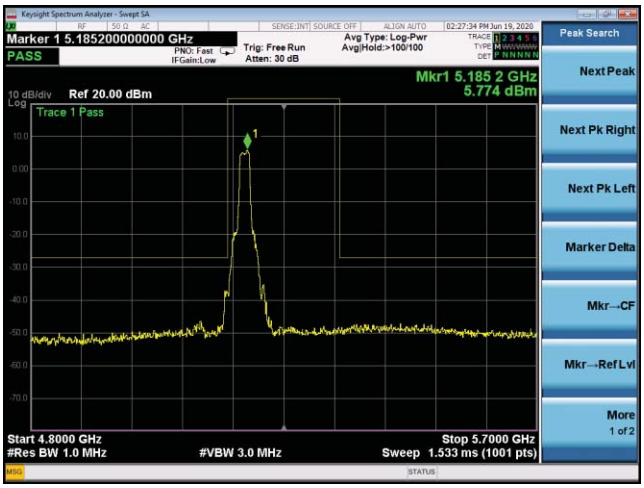


High Channel

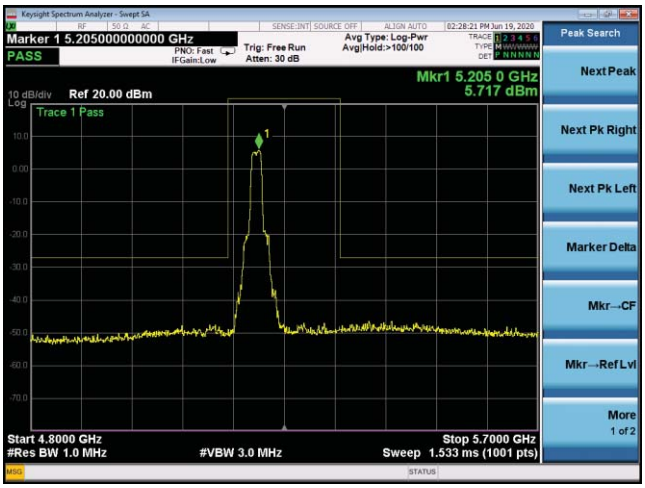


802.11n(HT20)

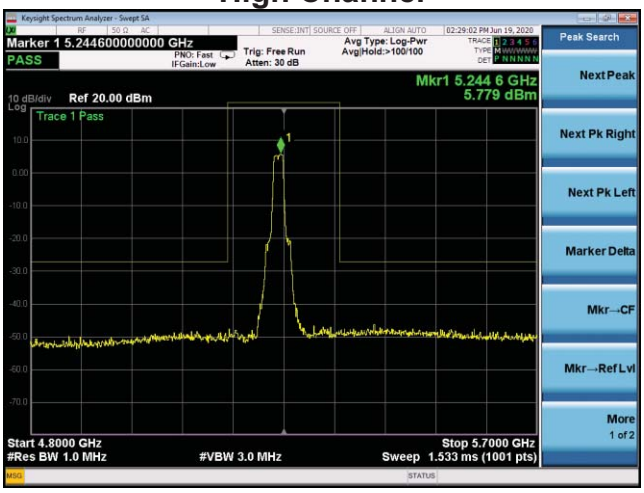
Low Channel



Middle Channel

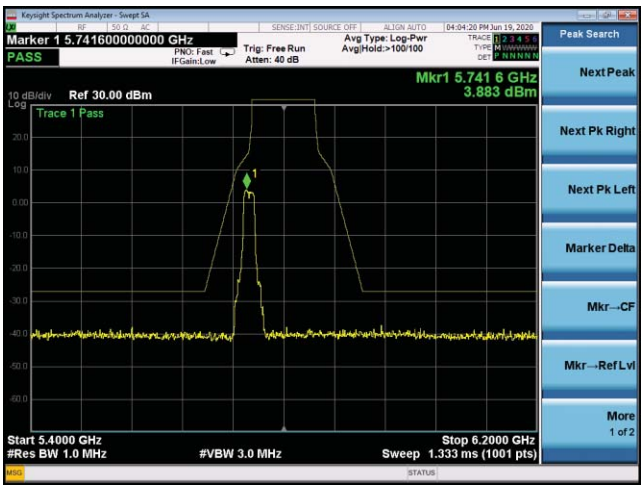


High Channel

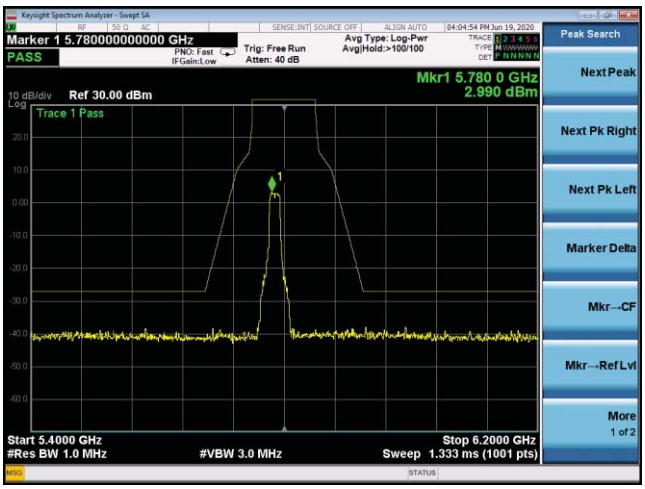


Band 5745-5825MHz
IEEE 802.11a

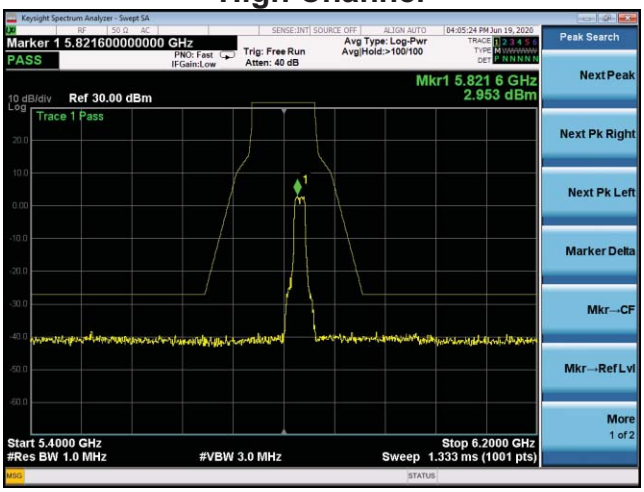
Low Channel



Middle Channel

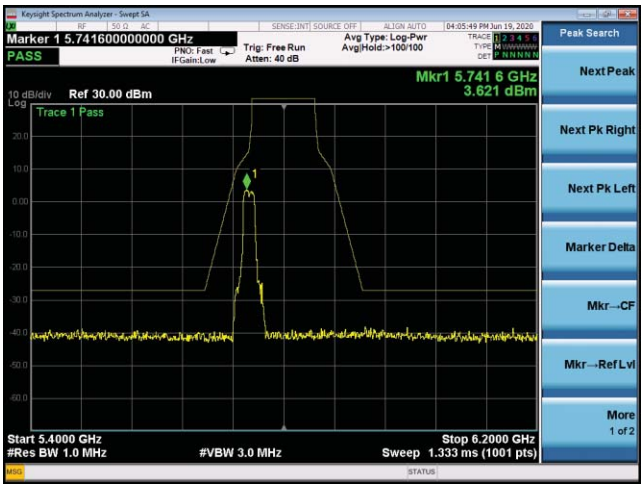


High Channel

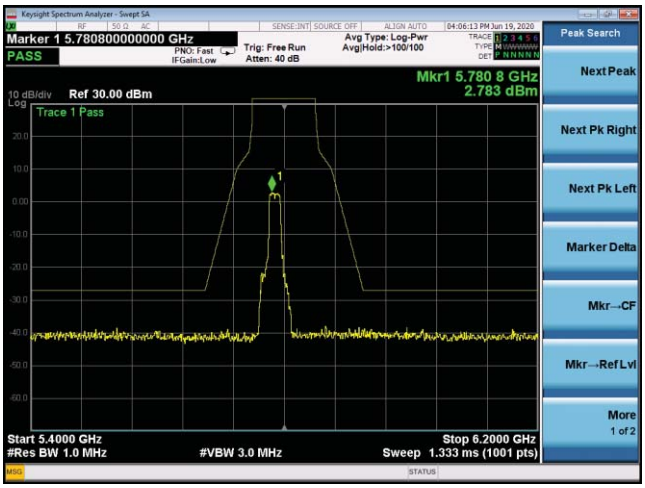


802.11n(HT20)

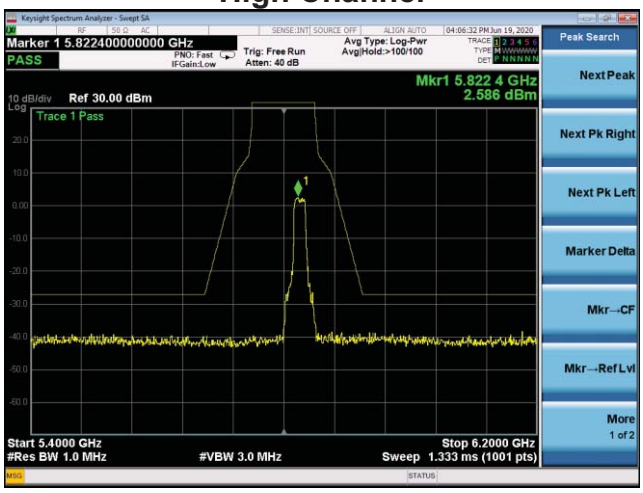
Low Channel



Middle Channel



High Channel

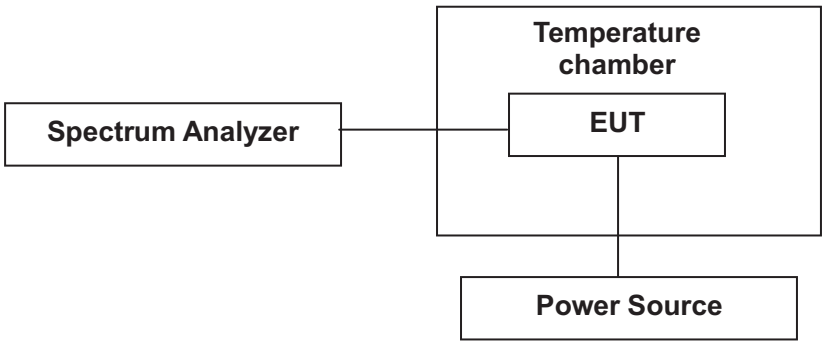


9. Frequency Stability

9.1 Limits

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 users manual.

9.2 Test SET-UP (Block Diagram of Configuration)



9.3 Test Procedure

1. The EUT was placed inside the environmental test chamber and powered by Power source.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
   Note: The EUT set at un-modulation mode during frequency stability test.

9.4 Measurement Results

Pass

Please refer to following tables.

Temperature :	21 ℃	Humidity :	51 %
Test By:	Lee	Test Date :	June 19, 2020

5180~5240MHz Band

Lowest channel 5180MHz

Temperature (℃)	Power Supplied (DC)	Measured Frequency (MHz)				Test Result
		0 Minute	2 Minute	5 Minute	10 Minute	
0	DC 7.4V	5180.0101	5180.0121	5180.0125	5180.0140	Pass
10		5180.0128	5180.0149	5180.0160	5180.0144	Pass
20		5180.0133	5180.0162	5180.0105	5180.0156	Pass
30		5180.0154	5180.0125	5180.0161	5180.0152	Pass
45		5180.0136	5180.0134	5180.0153	5180.0142	Pass
60		5180.0105	5180.0122	5180.0146	5180.0140	Pass
20	DC 7.0V	5180.0145	5180.0176	5180.0120	5180.0165	Pass
	DC 6.5V	5180.0113	5180.0185	5180.0174	5180.0145	Pass

Note: EUT temperature working range is 0 to 46.

Temperature :	21 ℃	Humidity :	51 %
Test By:	Lee	Test Date :	June 19, 2020

5180~5240MHz Band

Highest channel 5240MHz

Temperature (℃)	Power Supplied (Vdc)	Measured Frequency (MHz)				Test Result
		0 Minute	2 Minute	5 Minute	10 Minute	
0	DC 7.4V	5240.0147	5240.0200	5240.0120	5420.0110	Pass
10		5240.0152	5240.0110	5240.0124	5420.0122	Pass
20		5240.0157	5240.0129	5240.0161	5420.0116	Pass
30		5240.0165	5240.0107	5240.0158	5420.0179	Pass
45		5240.0129	5240.0115	5240.0155	5420.0181	Pass
60		5240.0147	5240.0110	5240.0148	5240.0180	Pass
20	DC 7.0V	5240.0138	5240.0130	5240.0127	5420.0184	Pass
	DC 6.5V	5240.0155	5240.0149	5240.0102	5420.0135	Pass

Note: EUT temperature working range is 0 to 60.

Temperature :	21 ℃	Humidity :	51 %
Test By:	Lee	Test Date :	June 19, 2020

5745~5825MHz Band						
Lowest channel 5745MHz						
Temperature (℃)	Power Supplied (Vdc)	Measured Frequency (MHz)				Test Result
		0 Minute	2 Minute	5 Minute	10 Minute	
0	DC 7.4V	5745.0154	5745.0112	5745.0134	5745.0124	Pass
10		5745.0137	5745.0137	5745.0128	5745.0138	Pass
20		5745.0119	5745.0146	5745.0164	5745.0149	Pass
30		5745.0128	5745.0122	5745.0155	5745.0144	Pass
45		5745.0151	5745.0127	5745.0163	5745.0141	Pass
60		5745.0128	5745.0127	5745.0160	5745.0147	Pass
20	DC 7.0V	5745.0168	5745.0118	5745.0162	5745.0156	Pass
	DC 6.5V	5745.0129	5745.0165	5745.0160	5745.0135	Pass

Note: EUT temperature working range is 0 to 60.

Temperature :	21 ℃	Humidity :	51 %
Test By:	Lee	Test Date :	June 19, 2020

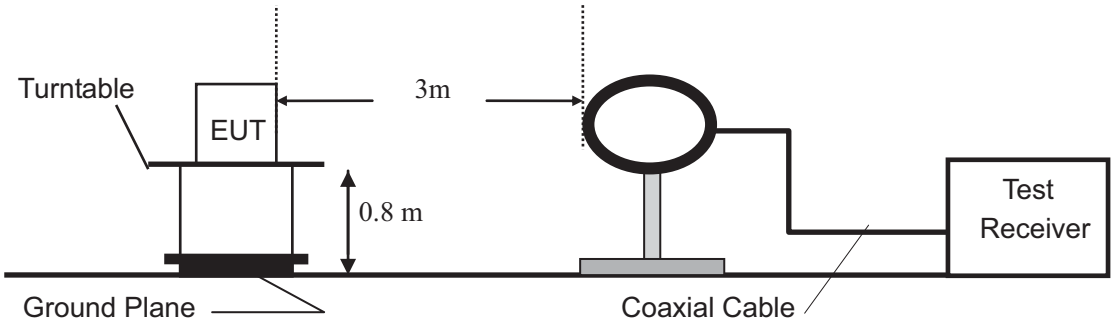
5745~5825MHz Band						
Highest channel 5825MHz						
Temperature (℃)	Power Supplied (Vdc)	Measured Frequency (MHz)				Test Result
		0 Minute	2 Minute	5 Minute	10 Minute	
0	DC 7.4V	5825.0129	5825.0151	5825.0169	5825.0165	Pass
10		5825.0125	5825.0169	5825.0167	5825.0113	Pass
20		5825.0132	5825.0150	5825.0124	5825.0129	Pass
30		5825.0147	5825.0137	5825.0152	5825.0172	Pass
45		5825.0169	5825.0149	5825.0144	5825.0173	Pass
60		5825.0158	5825.0144	5825.0135	5825.0170	Pass
20	DC 7.0V	5825.0152	5825.0150	5825.0130	5825.0146	Pass
	DC 6.5V	5825.0114	5825.0155	5825.0179	5825.0180	Pass

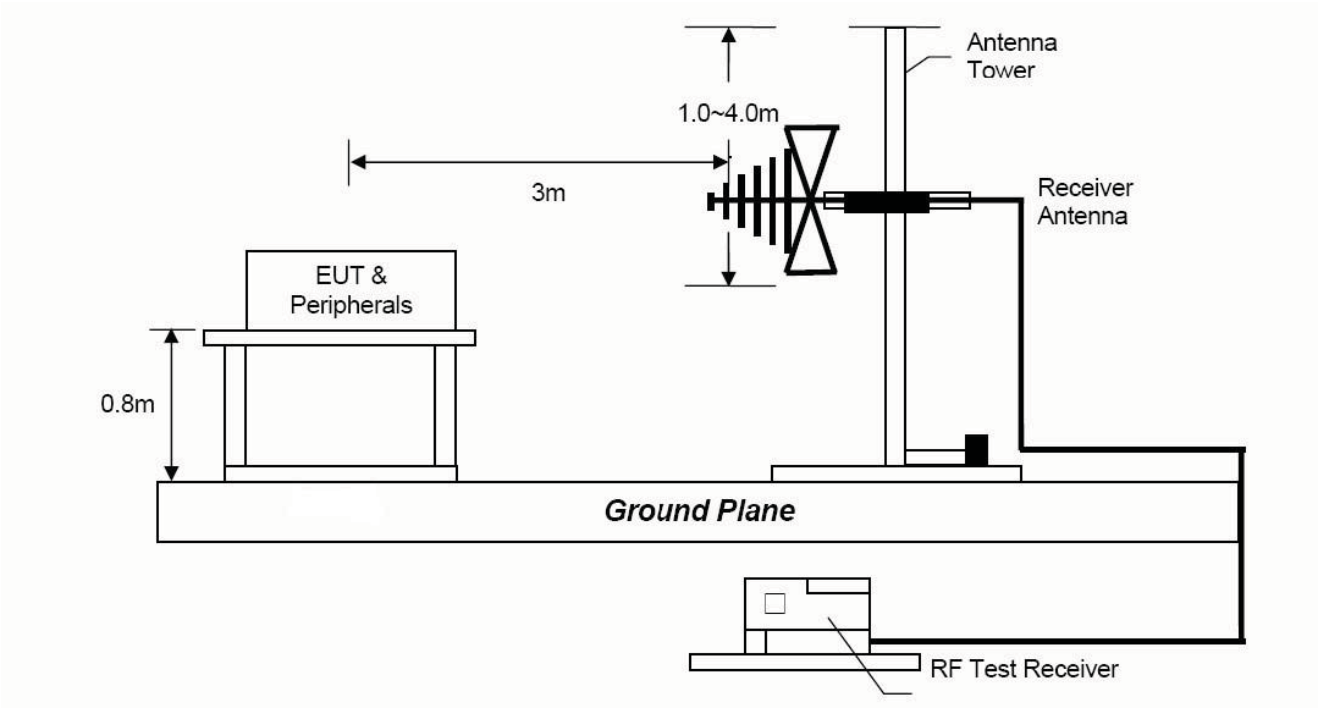
Note: EUT temperature working range is 0 to 60.

10. Radiated Spurious Emissions and Restricted Bands

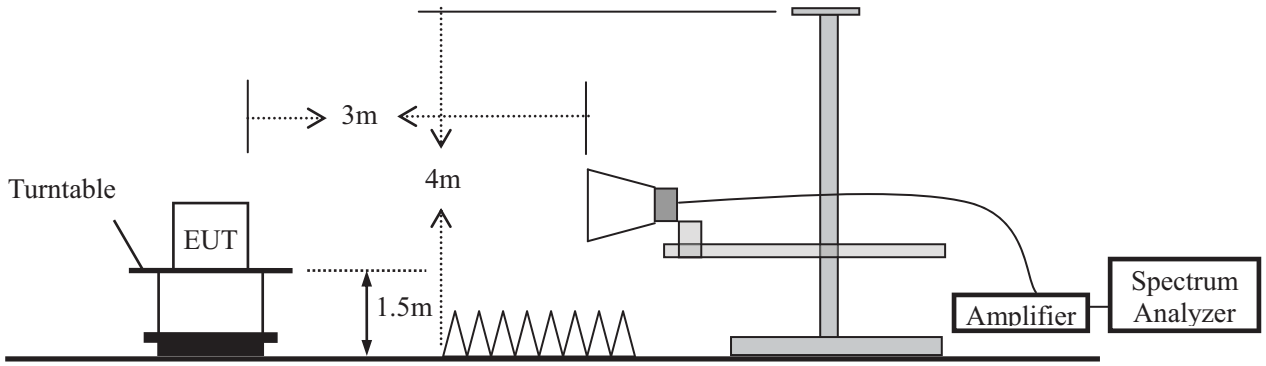
10.1 Test SET-UP (Block Diagram of Configuration)

10.1.1 Radiated Emission Test Set-Up, Frequency Below 30MHz





10.1.2 Radiated Emission Test Set-Up, Frequency above 1GHz



10.2 Measurement Procedure

a. Blow 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
b. For the radiated emission test above 1GHz:
   The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band (MHz)	Level	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	1/T

10.3 Limit

Frequency range MHz	Distance Meters	Field Strengths Limit (15.209) μV/m
0.009 ~ 0.490	300	2400/F(kHz)
0.490 ~ 1.705	30	24000/F(kHz)
1.705 ~ 30	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960	3	500

Remark: (1) Emission level (dB)μV = 20 log Emission level μV/m
(2) The smaller limit shall apply at the cross point between two frequency bands.
(3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
(4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.
(5) §15.247(d) specifies that emissions which fall in the restricted bands, as defined in §15.205 comply with radiated emission limits specified in §15.209.

10.4 Measurement Results

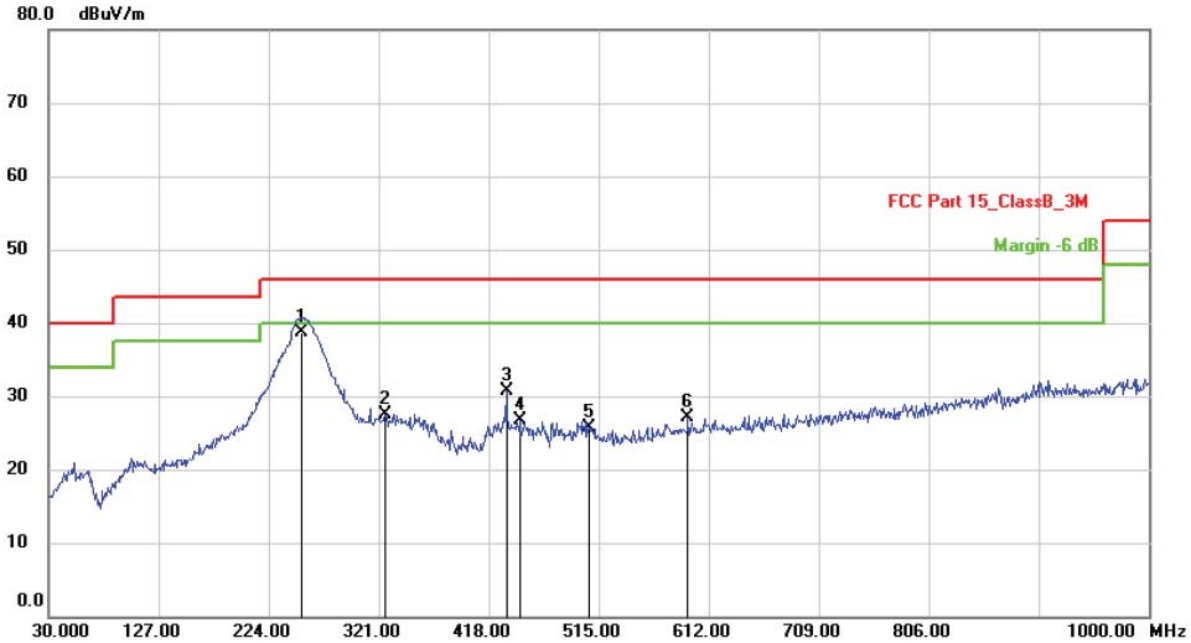
For 5G WIFI U-NII-1: 5180-5240MHz
Please refer to following plots of the worst case: 802.11n HT20 low channel.

For 5G WIFI U-NII-3: 5745-5825MHz
Please refer to following plots of the worst case: 802.11n HT20 low channel.

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :U62 Data :#68 Date: 2020/7/14 Time: 18:35:11



Site: 3m Chamber
Limit: FCC Part 15_ClassB_3M
EUT: 5G WIFI FPV DRONE
M/N: U62
Mode: TX(U-NII-1)
Note:

Polarization: ***Horizontal***
Power: DC7.4V
Distance: 3m

Temperature: 26
Humidity: 47 %

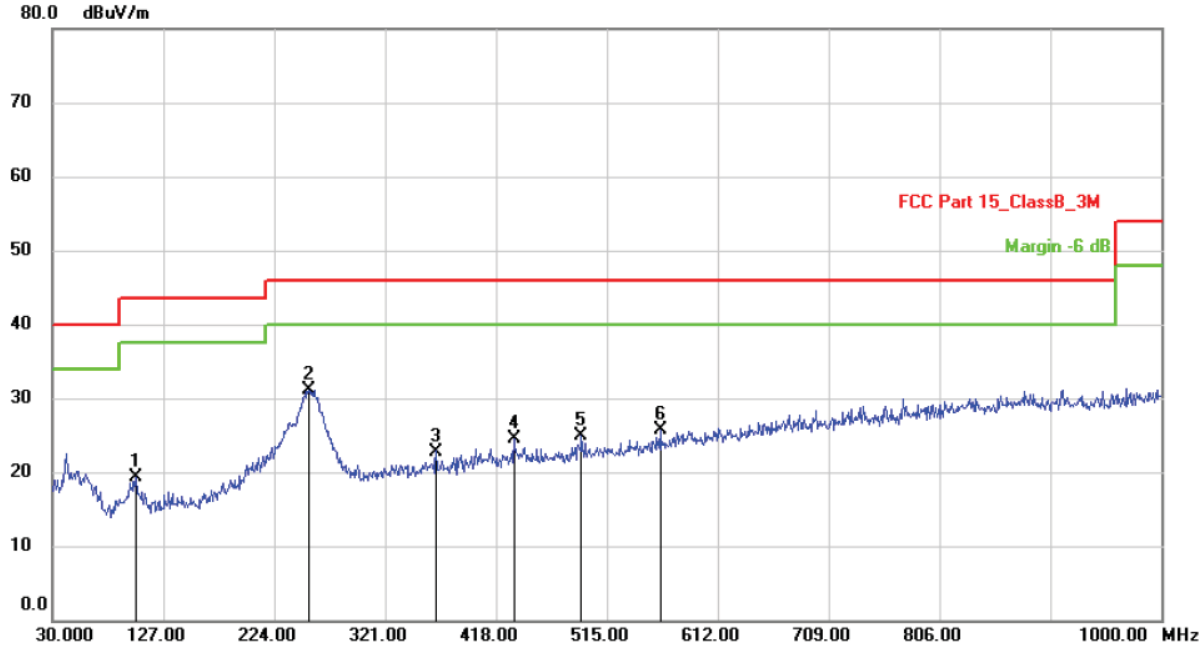
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	253.1000	45.00	-6.30	38.70	46.00	-7.30	QP			
2		326.8200	32.27	-4.76	27.51	46.00	-18.49	QP			
3		433.5200	33.52	-2.81	30.71	46.00	-15.29	QP			
4		445.1600	29.24	-2.63	26.61	46.00	-19.39	QP			
5		506.2700	27.45	-1.66	25.79	46.00	-20.21	QP			
6		593.5700	26.54	0.50	27.04	46.00	-18.96	QP			

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :U62 Data :#69 Date: 2020/7/14 Time: 18:42:17



Site: 3m Chamber
Limit: FCC Part 15_ClassB_3M
EUT: 5G WIFI FPV DRONE
M/N: U62
Mode: TX(U-NII-1)
Note:

Polarization: *Vertical*
Power: DC7.4V
Distance: 3m

Temperature: 26
Humidity: 47 %

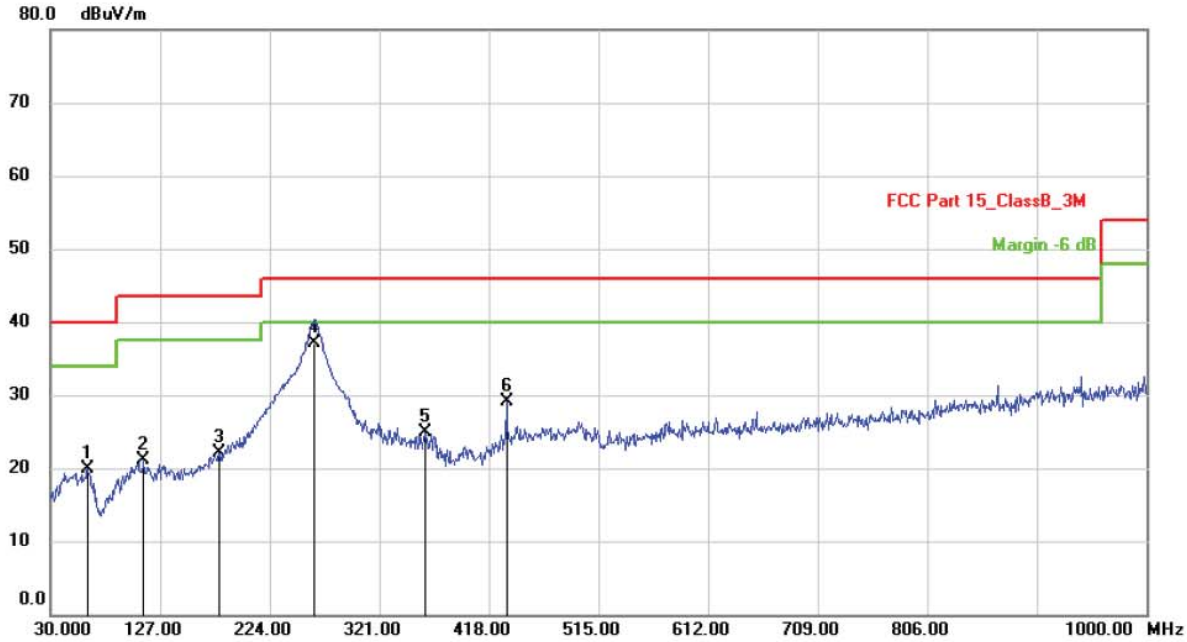
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		102.7500	28.25	-8.91	19.34	43.50	-24.16	QP			
2	*	254.0700	38.37	-7.28	31.09	46.00	-14.91	QP			
3		365.6200	27.73	-4.93	22.80	46.00	-23.20	QP			
4		433.5200	28.28	-3.81	24.47	46.00	-21.53	QP			
5		492.6900	27.83	-2.88	24.95	46.00	-21.05	QP			
6		561.5600	27.19	-1.43	25.76	46.00	-20.24	QP			

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :U62 Data :#71 Date: 2020/7/14 Time: 18:57:00



Site: 3m Chamber
Limit: FCC Part 15_ClassB_3M
EUT: 5G WIFI FPV DRONE
M/N: U62
Mode: TX(U-NII-3)
Note:

Polarization: ***Horizontal***
Power: DC7.4V
Distance: 3m

Temperature: 26
Humidity: 47 %

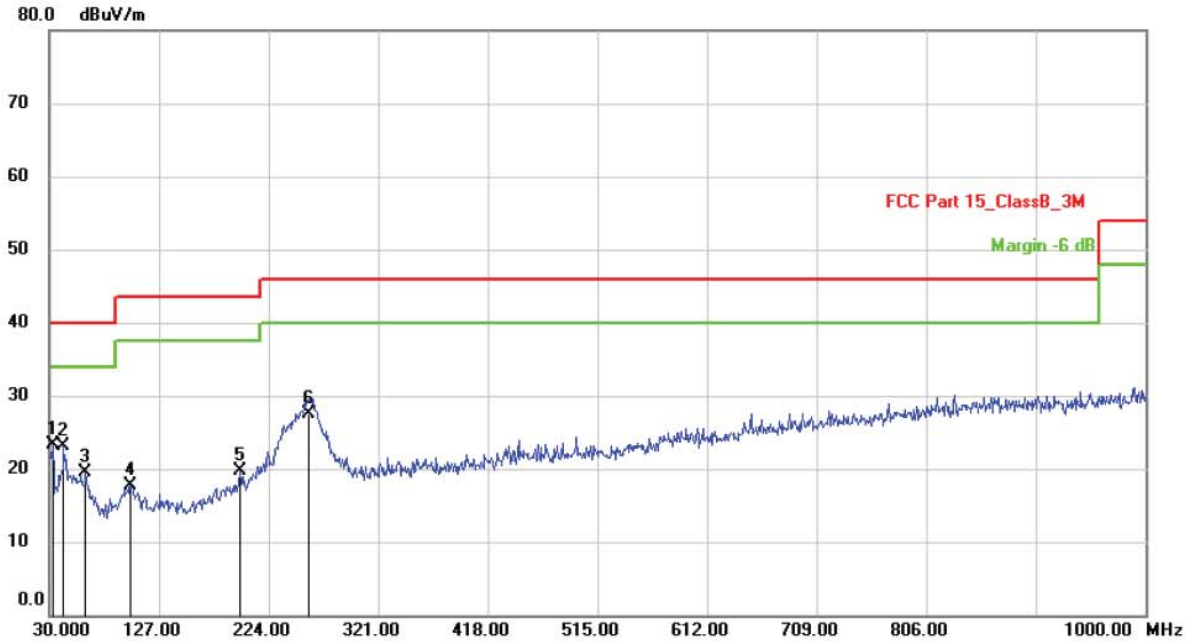
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		62.9800	27.28	-7.30	19.98	40.00	-20.02	QP			
2		112.4500	29.00	-7.94	21.06	43.50	-22.44	QP			
3		179.3800	31.36	-9.30	22.06	43.50	-21.44	QP			
4	*	263.7700	43.31	-6.11	37.20	46.00	-8.80	QP			
5		361.7400	28.81	-3.99	24.82	46.00	-21.18	QP			
6		433.5200	31.88	-2.81	29.07	46.00	-16.93	QP			

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Dongguan NTC Co., Ltd.
Tel:+86-769-22022444 Fax:+86-769-22022799
Web: Http://www.ntc-c.com

Radiated Emission Measurement

File :U62 Data :#70 Date: 2020/7/14 Time: 18:50:40



Site: 3m Chamber
Limit: FCC Part 15_ClassB_3M
EUT: 5G WIFI FPV DRONE
M/N: U62
Mode: TX(U-NII-3)
Note:

Polarization: *Vertical*
Power: DC7.4V
Distance: 3m

Temperature: 26
Humidity: 47 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	32.9100	32.79	-9.49	23.30	40.00	-16.70	QP			
2		42.6100	30.80	-7.72	23.08	40.00	-16.92	QP			
3		62.0100	27.80	-8.32	19.48	40.00	-20.52	QP			
4		101.7800	26.50	-8.72	17.78	43.50	-25.72	QP			
5		198.7800	28.52	-8.80	19.72	43.50	-23.78	QP			
6		259.8900	34.70	-7.16	27.54	46.00	-18.46	QP			

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Test Mode:	The worst case: 802.11n HT20	Test Date :	June 22, 2020
Frequency Range:	Above 1GHz	Temperature :	24℃
Test Result:	PASS	Humidity :	47 %
Measured Distance:	3m	Test By:	Lee

U-NII-1 5180-5240 MHz

Freq. (MHz)	Ant.Pol. (H/V)	Reading Level(dBuV)		Factor (dB/m)	Emission Level (dBuV)		Limit 3m (dBuV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
Operation Mode: TX Mode (Low)										
10360	V	51.19	36.14	14.04	65.23	50.18	74.00	54.00	-8.77	-3.82
15540	V	45.35	30.34	19.00	64.35	49.34	74.00	54.00	-9.65	-4.66

10360	H	48.08	33.90	14.04	62.12	47.94	74.00	54.00	-11.88	-6.06
15540	H	45.40	30.12	19.00	64.40	49.12	74.00	54.00	-9.60	-4.88

Operation Mode: TX Mode (Mid)										
10400	V	50.26	35.49	14.12	64.38	49.61	74.00	54.00	-9.62	-4.39
15600	V	44.12	27.99	20.20	64.32	48.19	74.00	54.00	-9.68	-5.81

10400	H	47.89	33.23	14.12	62.01	47.35	74.00	54.00	-11.99	-6.65
15600	H	43.43	28.53	20.20	63.63	48.73	74.00	54.00	-10.37	-5.27

Operation Mode: TX Mode (High)										
10480	V	49.62	35.14	14.29	63.91	49.43	74.00	54.00	-10.09	-4.57
15720	V	42.50	27.44	20.82	63.32	48.26	74.00	54.00	-10.68	-5.74

10480	H	48.79	33.42	14.29	63.08	47.71	74.00	54.00	-10.92	-6.29
15720	H	41.52	27.29	20.82	62.34	48.11	74.00	54.00	-11.66	-5.89

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level + Factor
(3) Factor= Antenna Gain + Cable Loss – Amplifier Gain
(4) Data of measurement within this frequency range shown " ---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.
(5) Measurement uncertainty : ±3.7dB.
(6) Horn antenna used for the emission over 1000MHz.

Test Mode:	The worst case: 802.11n HT20	Test Date :	June 22, 2020
Frequency Range:	Above 1GHz	Temperature :	24℃
Test Result:	PASS	Humidity :	47 %
Measured Distance:	3m	Test By:	Lee

U-NII-4 5745-5825 MHz

Freq. (MHz)	Ant.Pol. (H/V)	Reading Level(dBuV)		Factor (dB/m)	Emission Level (dBuV)		Limit 3m (dBuV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
Operation Mode: TX Mode (Low)										
11490	V	44.57	30.49	16.86	61.43	47.35	74.00	54.00	-12.57	-6.65
17235	V	41.40	26.28	22.23	63.63	48.51	74.00	54.00	-10.37	-5.49

11490	H	44.87	30.07	16.86	61.73	46.93	74.00	54.00	-12.27	-7.07
17235	H	41.30	26.01	22.23	63.53	48.24	74.00	54.00	-10.47	-5.76

Operation Mode: TX Mode (Mid)										
11570	V	44.62	30.25	17.01	61.63	47.26	74.00	54.00	-12.37	-6.74
17355	V	40.50	25.62	22.62	63.12	48.24	74.00	54.00	-10.88	-5.76

11570	H	43.66	29.41	17.01	60.67	46.42	74.00	54.00	-13.33	-7.58
17355	H	40.89	25.57	22.62	63.51	48.19	74.00	54.00	-10.49	-5.81

Operation Mode: TX Mode (High)										
11650	V	43.24	28.81	17.16	60.40	45.97	74.00	54.00	-13.60	-8.03
17475	V	40.97	25.63	23.01	63.98	48.64	74.00	54.00	-10.02	-5.36

11650	H	43.05	28.33	17.16	60.21	45.49	74.00	54.00	-13.79	-8.51
17475	H	40.21	25.20	23.01	63.22	48.21	74.00	54.00	-10.78	-5.79

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level + Factor
(3) Factor= Antenna Gain + Cable Loss – Amplifier Gain
(4) Data of measurement within this frequency range shown " ---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.
(5) Measurement uncertainty : ±3.7dB.
(6) Horn antenna used for the emission over 1000MHz.

11. Antenna Application

11.1 Antenna requirement

According to of FCC part 15C 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. The structure and application of the EUT were analyzed to determine compliance with section 15.203 of the rules.

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

11.2 Measurement Results

The antenna is PCB antenna that no antenna other than furnished by the responsible party shall be used with the device, and the best case gain of the antenna is 2.5dBi, So, the antenna is consider meet the requirement.

12. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 13, 2020	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 23, 2020	1 Year
3.	Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	Mar. 13, 2020	1 Year
4.	Spectrum Analyzer	Keysight	N9020A	MY54200831	Mar. 13, 2020	1 Year
5.	Spectrum Analyzer	Rohde & Schwarz	FSV40	101094	Mar. 13, 2020	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA9170	9170-172	Mar. 22, 2019	2 Year
7.	Power Sensor	DARE	RPR3006W	15I00041SNO64	Mar. 13, 2020	1 Year
8.	Power Sensor	DARE	RPR3006W	15I00041SNO88	Mar. 13, 2020	1 Year
9.	Communication Tester	Rohde & Schwarz	CMW500	149004	Mar. 13, 2020	1 Year
10.	Horn Antenna	COM-Power	AH-118	071078	Mar. 23, 2020	1 Year
11.	Pre-Amplifier	HP	HP 8449B	3008A00964	Mar. 13, 2020	1 Year
12.	Pre-Amplifier	HP	HP 8447D	1145A00203	Mar. 13, 2020	1 Year
13.	Loop Antenna	Schwarzbeck	FMZB 1513	1513-272	Mar. 23, 2020	1 Year
14	Test Receiver	Rohde & Schwarz	ESCI	101152	Mar. 14, 2020	1 Year
15	L.I.S.N	Rohde & Schwarz	ENV 216	101317	Mar. 13, 2020	1 Year
16.	L.I.S.N	Rohde & Schwarz	ESH2-Z5	893606/014	Mar. 13, 2020	1 Year
17	RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Mar.13, 2020	1 Year
18.	Temperature & Humidity Chamber	REMAFEE	SYHR225L	N/A	Mar. 13, 2020	1 Year
19.	DC Source	Maynuo	MY8811	N/A	Mar. 13, 2020	1 Year
20.	Temporary antenna connector	TESCOM	SS402	N/A	N/A	N/A
21.	Chamber	SAEMC	9*7*7m	N/A	Jun. 20, 2019	2 Year
22.	Test Software	EZ	EZ_EMC	N/A	N/A	N/A

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.

---End---