RADIO TEST REPORT

Report No.:STS2009211W04

Issued for

K-MOBILE TECHNOLOGY CO., LTD

NO 1109-1110, C1 Block, bantian international center, NO 5 huancheng south road, longgang district, Shenzhen, China.

Product Name:	Smart Poc Radio
Brand Name:	Estalky
Model Name:	E550
Series Model:	N/A
FCC ID:	2AVAF-E550B
Test Standard:	FCC Part 15.407

Shenzhen STS Test Services Co., Ltd.
A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ,
Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China
TEL: +86-755 3688 6288 FAX: +86-755 3688 6277 E-mail:sts@stsapp.com

TEST RESULT CERTIFICATION

Applicant's Name	:	K-MOBILE TECHNOLOGY CO., LTD
Address	:	NO 1109-1110, C1 Block, bantian international center, NO 5 huancheng south road, longgang district, Shenzhen, China.
Manufacturer's Name	:	K-MOBILE TECHNOLOGY CO., LTD
Address	:	NO 1109-1110, C1 Block, bantian international center, NO 5 huancheng south road, longgang district, Shenzhen, China.

Product Description

Product Name	:	Smart Poc Radio
Brand Name	:	Estalky
Model Name	:	E550
Series Model	:	N/A
Test Standards	:	FCC Part15.407
Test Procedure		ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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Date of Test	:	
Date of receipt of test item	:	15 Sept. 2020
Date (s) of performance of tests	:	15 Sept. 2020 ~ 24 Sept. 2020
Date of Issue	:	24 Sept. 2020
Test Result	:	**Pass**

Testing Engineer : Chris Chen

(Chris Chen)

Technical Manager : Sean She

(Sean she)

Authorized Signatory : Vita Li

(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	24 Sept. 2020	STS2009211W04	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
§ 15.407,KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

FCC Part 15.407		
FCC standard	Test Item	Results
15.207	AC Conducted Emission	PASS
15.407 (a) /15.407 (e)	26dB/6dB &99% Bandwidth	PASS
15.407(a)	Maximum Conducted Output Power	PASS
15.407(b)/15.205/15.209	Radiated Emission And (bandedge Emissions) Measurement	PASS
15.407(a)	Power Spectral Density	PASS
15.407(c)	Automatically Discontinue Transmission	PASS
15.203/15.204	Antenna Requirement	PASS

NOTE:

(1) “N/A” denotes test is not applicable in this Test Report.

(2) All tests are according to ANSI C63.10-2013.

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD
Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China
FCC test Firm Registration Number: 625569
IC test Firm Registration Number: 12108A
A2LA Certificate No.: 4338.01

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	RF output power, conducted	±0.68dB
2	Unwanted Emissions, conducted	±2.988dB
3	All emissions, radiated 30-1GHz	±5.6dB
4	All emissions, radiated 1G-6GHz	±5.5dB
5	All emissions, radiated>6G	±5.8dB
6	Conducted Emission (9KHz-150KHz)	±3.37dB
7	Conducted Emission (150KHz-30MHz)	±3.83dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

<table>
<tr><td>Product Name</td><td>Smart Poc Radio</td></tr>
<tr><td>Trade Name</td><td>Estalky</td></tr>
<tr><td>Model Name</td><td>E550</td></tr>
<tr><td>Series Model</td><td>N/A</td></tr>
<tr><td>Model Difference</td><td>N/A</td></tr>
<tr><td>Product Description</td><td>The EUT is a Smart Poc Radio
<table>
<tr><td rowspan="3">Operation Frequency:</td><td>IEEE 802.11a/ n(HT20)/ac(VHT20):
5.180GHz-5.240GHz
IEEE 802.11n(HT40)/ac(VHT40):
5.190GHz-5.230GHz</td></tr>
<tr><td>IEEE 802.11a/ n(HT20)/ac(VHT20):
5.260GHz-5.320GHz
IEEE 802.11n(HT40)/ac(VHT40):
5.270GHz-5.310GHz</td></tr>
<tr><td>IEEE 802.11a/ n(HT20)/ac(VHT20):
5.745GHz-5.825GHz
IEEE 802.11n(HT40)/ac(VHT40):
5.755GHz-5.795GHz</td></tr>
<tr><td>Modulation Type:</td><td>802.11a(OFDM):
BPSK,QPSK,16-QAM,64-QAM
802.11n(OFDM):
BPSK,QPSK,16-QAM,64-QAM
802.11ac(OFDM):
BPSK,QPSK,16-QAM,64-QAM,256-QAM</td></tr>
<tr><td>Antenna Designation:</td><td>Please refer to the Note 3.</td></tr>
<tr><td>Max.Output Power(Conducted):</td><td>8.62dBm</td></tr>
</table>
More details of EUT technical specification, please refer to the User Manual.</td></tr>
<tr><td>Test Channel</td><td>Please refer to the Note 2.</td></tr>
<tr><td>Adapter</td><td>Input: AC 100~240V, 300mA, 50~60Hz
Output: 5V, 2000mA</td></tr>
<tr><td>Battery</td><td>Rated Voltage: 3.8V
Charge Limit: 4.35V
Capacity: 3600mA</td></tr>
<tr><td>Hardware version number</td><td>R886_MB_V4.0</td></tr>
<tr><td>Software version number</td><td>E550_V01_20200910</td></tr>
<tr><td>Connecting I/O Port(s)</td><td>Please refer to the Note 1.</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.

2.

Operation Frequency of channel			
5.180GHz-5.240GHz		5.745GHz-5.825GHz	
Channel	Frequency	Channel	Frequency
36	5180	149	5745
38	5190	151	5755
40	5200	153	5765
42	5210	157	5785
44	5220	159	5795
46	5230	161	5805
48	5240	165	5825
5.260GHz-5.320GHz			
Channel	Frequency		
52	5260		
54	5270		
56	5280		
58	5290		
60	5300		
62	5310		
64	5320		

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:
Carrier Frequency Channel

5GHz:

For 802.11a/n(HT20) /ac (VHT20)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
36	5180	52	5260
40	5200	60	5300
48	5240	64	5320

For 802.11a/n(HT20) /ac (VHT20)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
149	5745	157	5785
165	5825		

For 802.11n(HT40) /ac (VHT40)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
38	5190	54	5270
46	5230	62	5310

For 802.11n(HT40) /ac (VHT40)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
151	5755	159	5795

3.

Ant	Brand	Model Name	Ant Type	Connector	Gain (dBi)	NOTE
A	Estalky	E550	PIFA	N/A	1.4dBi	WLAN Ant

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.

Worst Mode	Description	Data Rate
Mode 1	TX IEEE 802.11a HT20 CH36&CH40&CH48	6 Mbps
Mode 2	TX IEEE 802.11a HT20 CH52&CH60&CH64	6 Mbps
Mode 3	TX IEEE 802.11a HT20 CH149&CH157&CH165	6 Mbps
Mode 4	TX IEEE 802.11n HT20 CH36&CH40&CH48	MCS 0
Mode 5	TX IEEE 802.11ac HT20 CH36&CH40&CH48	NSS1 MCS0
Mode 6	TX IEEE 802.11n HT20 CH52&CH60&CH64	MCS 0
Mode 7	TX IEEE 802.11ac HT20 CH52&CH60&CH64	NSS1 MCS0
Mode 8	TX IEEE 802.11n HT20 CH149&CH157&CH165	MCS 0
Mode 9	TX IEEE 802.11ac HT20 CH149&CH157&CH165	NSS1 MCS0
Mode 10	TX IEEE 802.11n HT40 CH38&CH46	MCS 0
Mode 11	TX IEEE 802.11ac HT40 CH38&CH46	NSS1 MCS0
Mode 12	TX IEEE 802.11n HT40 CH54 &CH62	MCS 0
Mode 13	TX IEEE 802.11ac HT40 CH54 &CH62	NSS1 MCS0
Mode 14	TX IEEE 802.11n HT40 CH151&CH159	MCS 0
Mode 15	TX IEEE 802.11ac HT40 CH151&CH159	NSS1 MCS0

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.

(3) We have be tested for all avaiable U.S. voltage and frequencies(For 120V,50/60Hz and 240V, 50/60Hz) for which the device is capable of operation.

(4) The battery is fully-charged during the radited and RF conducted test.

AC Conducted Emission

Test Case	
AC Conducted Emission	Mode 16: Keeping TX + WLAN Link

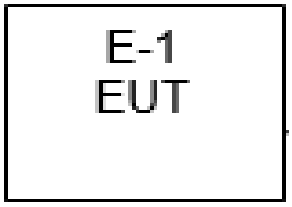
2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

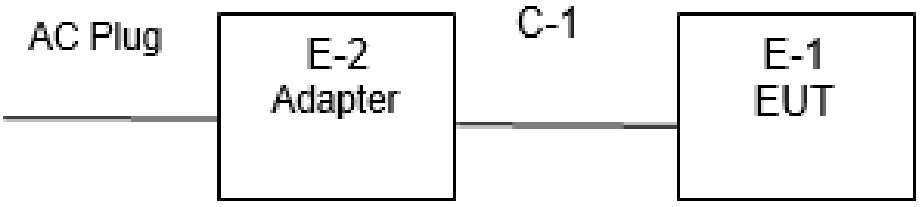
RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Power Class	Software For Testing
WIFI(5G)	5G WIFI Band1 (5150MHz-5250MHz)	802.11a	1.4	17	Engineering mode
		802.11n(HT20)		17	
		802.11n(HT40)		17	
		802.11ac(VHT20)		17	
		802.11ac(VHT40)		17	
RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Power Class	Software For Testing
WIFI(5G)	5G WIFI Band2 (5250MHz-5350MHz)	802.11a	1.4	17	Engineering mode
		802.11n(HT20)		17	
		802.11n(HT40)		17	
		802.11ac(VHT20)		17	
		802.11ac(VHT40)		17	
RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Power Class	Software For Testing
WIFI(5G)	5G WIFI Band4 (5725MHz-5875MHz)	802.11a	1.4	17	Engineering mode
		802.11n(HT20)		17	
		802.11n(HT40)		17	
		802.11ac(VHT20)		17	
		802.11ac(VHT40)		17	

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious EmissionTest



Conducted Emission Test



2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
E-2	Adapter	N/A	MR-0502000	N/A	N/A
C-1	DC Cable	N/A	N/A	110cm	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

Note:

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

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY51110105	2020.03.05	2021.03.04
Active loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Horn Antenna	SCHWARZBECK	BBHA 9120D(1201)	9120D-1343	2018.10.19	2021.10.18
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2018.03.11	2021.03.10
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2019.10.09	2020.10.08
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2019.10.12	2020.10.11
Pre-Amplifier (18G-40GHz)	SKET	LNPA-1840-50	SK2018101801	2019.10.12	2020.10.11
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
LISN	R&S	ENV216	101242	2019.10.09	2020.10.08
LISN	EMCO	3810/2NM	23625	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)			

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY49100060	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
Test SW	FARAD	LZ-RF /LzRf-3A3			

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class B (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	56.00	46.00	CISPR
5.0 -30.0	60.00	50.00	CISPR

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

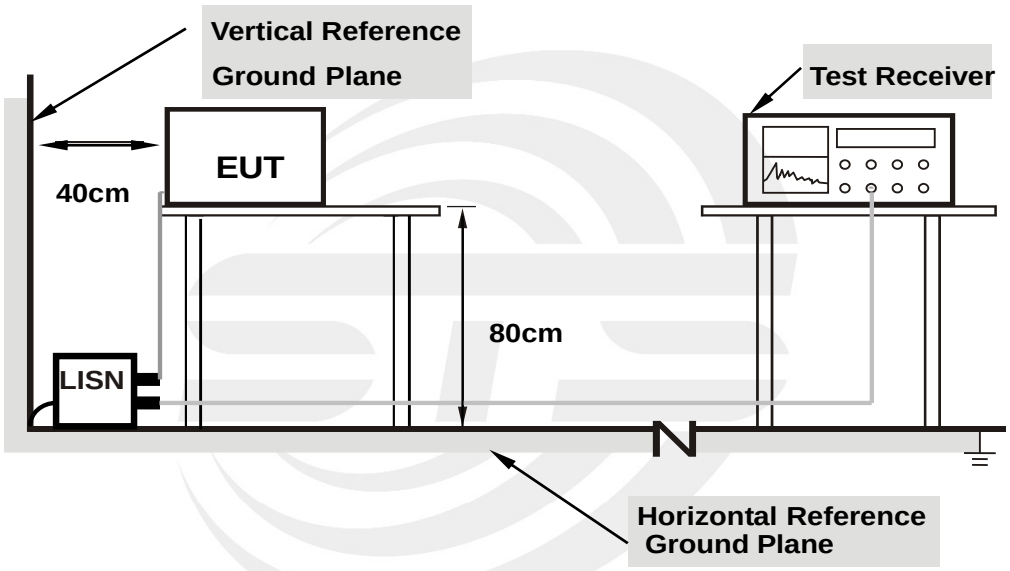
3.1.2 TEST PROCEDURE

a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. 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 40 cm long.
c. 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.
d. LISN is at least 80 cm from the nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes support.

3.1.5 EUT OPERATING CONDITIONS

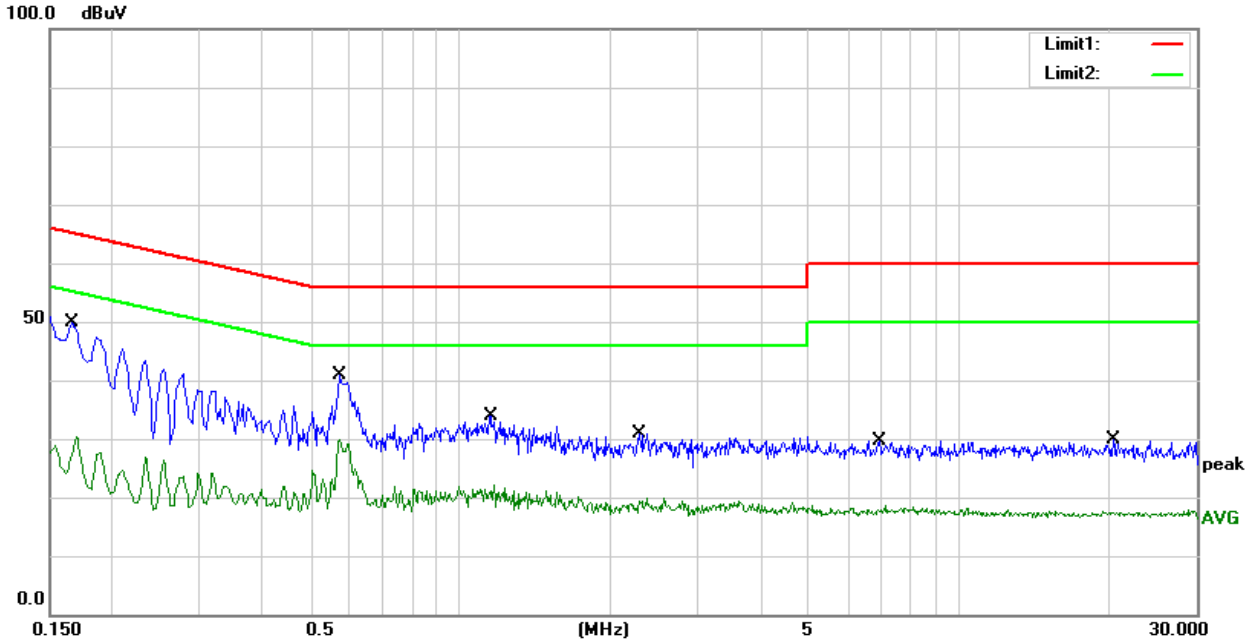
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

Temperature:	28.0(C)	Relative Humidity:	67%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode：	Mode 16		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1660	29.54	20.23	49.77	65.16	-15.39	QP
2	0.1660	10.18	20.23	30.41	55.16	-24.75	AVG
3	0.5740	20.48	20.40	40.88	56.00	-15.12	QP
4	0.5740	9.60	20.40	30.00	46.00	-16.00	AVG
5	1.1500	13.72	20.15	33.87	56.00	-22.13	QP
6	1.1500	1.87	20.15	22.02	46.00	-23.98	AVG
7	2.2940	10.79	20.04	30.83	56.00	-25.17	QP
8	2.2940	-0.20	20.04	19.84	46.00	-26.16	AVG
9	6.9420	9.77	19.91	29.68	60.00	-30.32	QP
10	6.9420	-1.37	19.91	18.54	50.00	-31.46	AVG
11	20.4820	9.21	20.63	29.84	60.00	-30.16	QP
12	20.4820	-3.19	20.63	17.44	50.00	-32.56	AVG

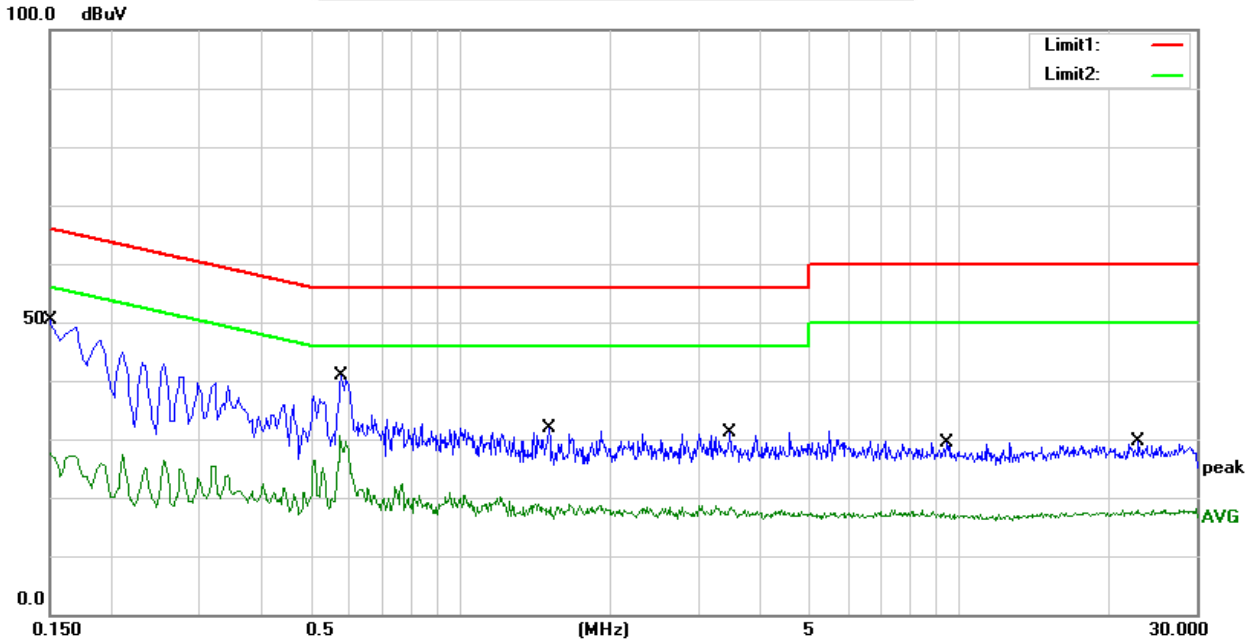
Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)



Temperature:	28.0(C)	Relative Humidity:	67%RH
Test Voltage	AC 120V/60Hz	Phase:	N
Test Mode	Mode 16		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	30.14	20.23	50.37	66.00	-15.63	QP
2	0.1500	7.29	20.23	27.52	56.00	-28.48	AVG
3	0.5780	20.35	20.40	40.75	56.00	-15.25	QP
4	0.5780	10.32	20.40	30.72	46.00	-15.28	AVG
5	1.5060	11.79	20.11	31.90	56.00	-24.10	QP
6	1.5060	-1.82	20.11	18.29	46.00	-27.71	AVG
7	3.4820	11.14	19.97	31.11	56.00	-24.89	QP
8	3.4820	-1.58	19.97	18.39	46.00	-27.61	AVG
9	9.4940	9.25	20.10	29.35	60.00	-30.65	QP
10	9.4940	-2.81	20.10	17.29	50.00	-32.71	AVG
11	23.0140	8.96	20.59	29.55	60.00	-30.45	QP
12	23.0140	-3.09	20.59	17.50	50.00	-32.50	AVG

Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)



3.2 RADIATED EMISSION AND (BANDEDGE) MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

In case the emission fall within the restricted band specified on 15.407(b)7&15.205/209(a), then the limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	68.2	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15E.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (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	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	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	Above 38.6
13.36-13.41			

Note: In case the emission radiated emission above 1000MHz fall within the restricted band the restricted frequency bands, the peak limit is 74 dBuV/m.

LIMITS OF EMISSIONS OUTSIDE OF THE FREQUENCY BANDS

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.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

(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.

Note: dBuV/m(at 3M) = EIRP(dBm) + 95.3.

Peak Limit = -27dBm/MHz + 95.3 = 68.3 dBuV/m.

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier harmonic (Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 1 MHz, AV=1 MHz /3 MHz

For Band edge

Spectrum Parameter	Setting
Detector	Peak
RB / VB (emission in restricted band)	1 MHz / 1 MHz, AV=1 MHz /3 MHz

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization 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 QuasiPeak detector mode will be re-measured.
e. If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

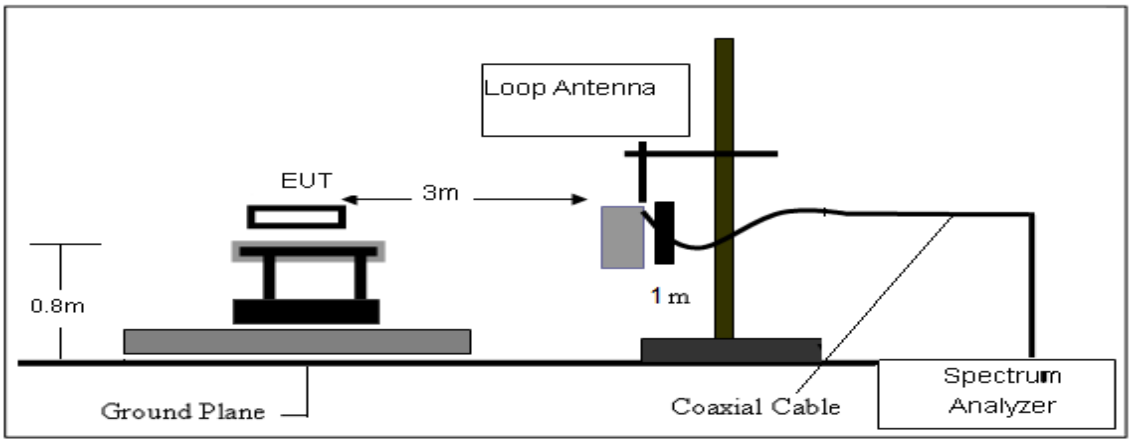
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.2 DEVIATION FROM TEST STANDARD

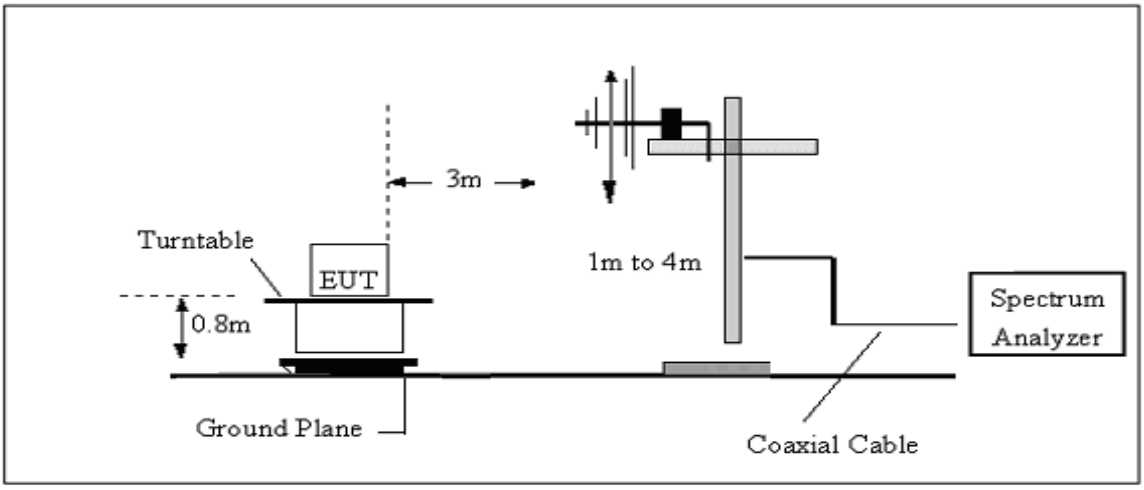
No deviation

3.2.3 TEST SETUP

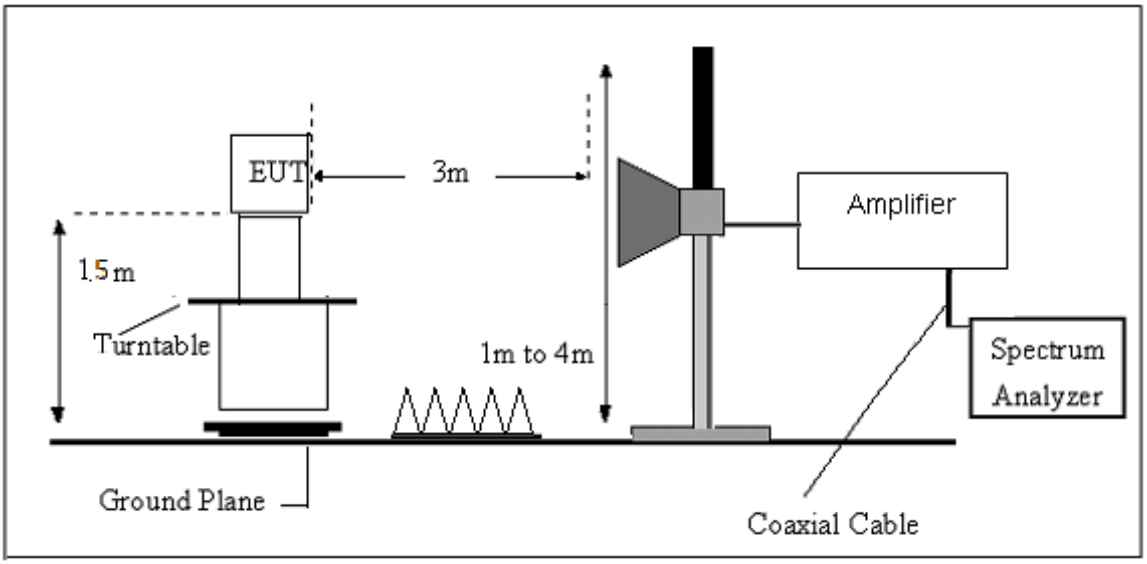
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



3.2.4 EUT OPERATING 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.

3.2.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:
FS = RA + AF + CL - AG
Where
FS = Field Strength
CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude
AG = Amplifier Gain
AF = Antenna Factor
For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG

3.2.6 TEST RESULTS (Between 9KHz – 30 MHz)

Temperature：	23.1(C)	Relative Humidtity:	59%RH
Test Voltage ：	DC 3.8V	Polarization :	--
Test Mode ：	TX Mode		

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

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

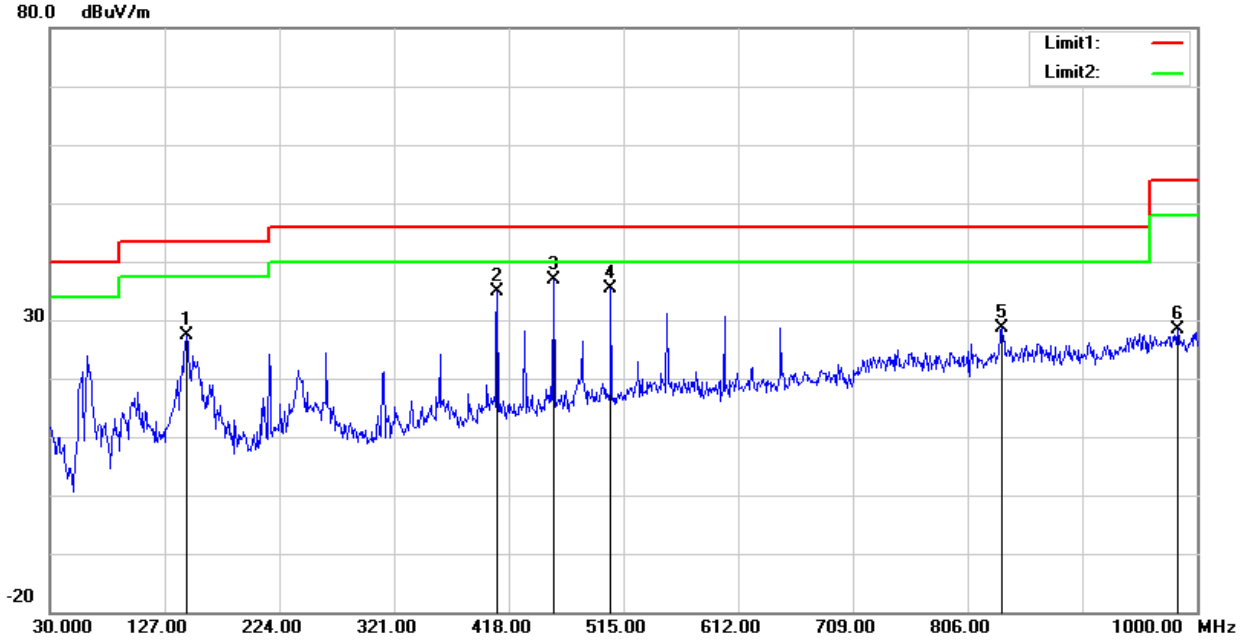
3.2.7 TEST RESULTS (Between 30MHz – 1GHz)

Temperature	23.1(C)	Relative Humidtity:	59%RH
Test Voltage	DC 3.8V	Polarization:	Horizontal
Test Mode	Mode 1~18(Mode 1 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	145.4300	45.62	-18.34	27.28	43.50	-16.22	QP
2	408.3000	45.62	-10.66	34.96	46.00	-11.04	QP
3	455.8300	46.49	-9.55	36.94	46.00	-9.06	QP
4	504.3300	43.30	-7.98	35.32	46.00	-10.68	QP
5	835.1000	29.09	-0.54	28.55	46.00	-17.45	QP
6	983.5100	25.90	2.46	28.36	54.00	-25.64	QP

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

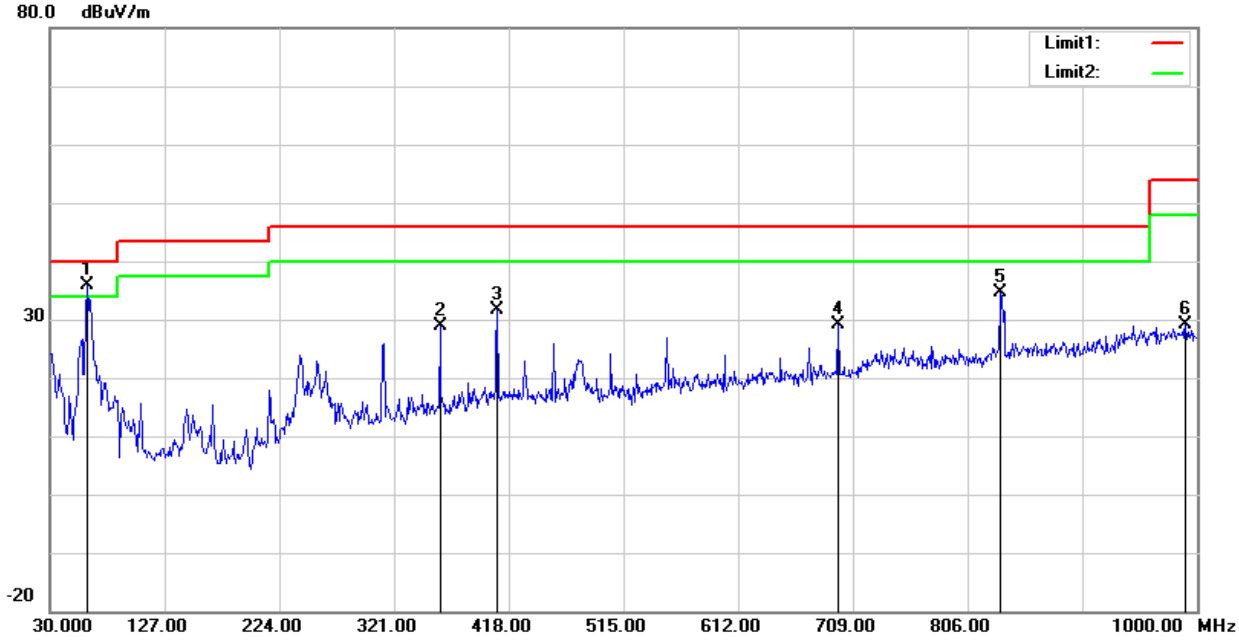


Temperature	23.1(C)	Relative Humidtity:	59%RH
Test Voltage	DC 3.8V	Polarization:	Vertical
Test Mode	Mode 1~18(Mode 1 worst mode)		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	62.0100	61.54	-25.76	35.78	40.00	-4.22	QP
2	359.8000	41.77	-12.87	28.90	46.00	-17.10	QP
3	408.3000	42.41	-10.66	31.75	46.00	-14.25	QP
4	696.3900	33.45	-4.23	29.22	46.00	-16.78	QP
5	834.1300	35.25	-0.59	34.66	46.00	-11.34	QP
6	990.3000	27.02	2.05	29.07	54.00	-24.93	QP

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



3.2.8 TEST RESULTS (Above 1000 MHz)

Band I 5150-5250MHz

Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Orrected Factor (dB)	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11a20/ 5180 MHz)										
3245.94	45.14	44.70	6.70	28.20	-9.80	35.34	68.20	-32.86	Pk	Vertical
3245.94	42.21	44.70	6.70	28.20	-9.80	32.41	54.00	-21.59	AV	Vertical
3259.24	43.81	44.70	6.70	28.20	-9.80	34.01	68.20	-34.19	Pk	Horizontal
3259.24	42.00	44.70	6.70	28.20	-9.80	32.20	54.00	-21.80	AV	Horizontal
3982.68	39.17	44.20	7.90	29.70	-6.60	32.57	68.20	-35.63	Pk	Vertical
3982.68	37.03	44.20	7.90	29.70	-6.60	30.43	54.00	-23.57	AV	Vertical
3994.07	40.14	44.20	7.90	29.70	-6.60	33.54	68.20	-34.66	Pk	Horizontal
3994.07	37.01	44.20	7.90	29.70	-6.60	30.41	54.00	-23.59	AV	Horizontal
7220.78	36.61	43.50	11.40	35.50	3.40	40.01	68.20	-28.19	Pk	Vertical
7220.78	34.69	43.50	11.40	35.50	3.40	38.09	54.00	-15.91	AV	Vertical
7228.33	37.10	43.50	11.40	35.50	3.40	40.50	68.20	-27.70	Pk	Horizontal
7228.33	33.70	43.50	11.40	35.50	3.40	37.10	54.00	-16.90	AV	Horizontal
10360.05	39.47	44.50	13.80	38.80	8.10	47.57	68.20	-20.63	Pk	Vertical
10360.05	37.00	44.50	13.80	38.80	8.10	45.10	54.00	-8.90	AV	Vertical
10360.05	40.06	44.50	13.80	38.80	8.10	48.16	68.20	-20.04	Pk	Horizontal
10360.05	36.54	44.50	13.80	38.80	8.10	44.64	54.00	-9.36	AV	Horizontal
11034.67	34.05	43.60	14.30	39.50	10.20	44.25	68.20	-23.95	Pk	Vertical
11034.67	30.00	43.60	14.30	39.50	10.20	40.20	54.00	-13.80	AV	Vertical
11036.28	34.18	43.60	14.30	39.50	10.20	44.38	68.20	-23.82	Pk	Horizontal
11036.28	29.78	43.60	14.30	39.50	10.20	39.98	54.00	-14.02	AV	Horizontal
13296.42	32.28	42.60	15.90	38.90	12.20	44.48	68.20	-23.72	Pk	Vertical
13296.42	29.12	42.60	15.90	38.90	12.20	41.32	54.00	-12.68	AV	Vertical
13294.53	31.78	42.60	15.90	38.90	12.20	43.98	68.20	-24.22	Pk	Horizontal
13294.53	29.58	42.60	15.90	38.90	12.20	41.78	54.00	-12.22	AV	Horizontal
Mid Channel (802.11a20/ 5200 MHz)										
3263.44	44.21	44.70	6.70	28.20	-9.80	34.41	68.20	-33.79	Pk	Vertical
3263.44	40.78	44.70	6.70	28.20	-9.80	30.98	54.00	-23.02	AV	Vertical
3251.18	45.02	44.70	6.70	28.20	-9.80	35.22	68.20	-32.98	Pk	Horizontal
3251.18	41.06	44.70	6.70	28.20	-9.80	31.26	54.00	-22.74	AV	Horizontal
3990.60	39.73	44.20	7.90	29.70	-6.60	33.13	68.20	-35.07	Pk	Vertical
3990.60	36.91	44.20	7.90	29.70	-6.60	30.31	54.00	-23.69	AV	Vertical
3988.03	40.13	44.20	7.90	29.70	-6.60	33.53	68.20	-34.67	Pk	Horizontal
3988.03	36.81	44.20	7.90	29.70	-6.60	30.21	54.00	-23.79	AV	Horizontal
7234.64	37.78	43.50	11.40	35.50	3.40	41.18	68.20	-27.02	Pk	Vertical
7234.64	33.76	43.50	11.40	35.50	3.40	37.16	54.00	-16.84	AV	Vertical
7217.79	36.74	43.50	11.40	35.50	3.40	40.14	68.20	-28.06	Pk	Horizontal
7217.79	34.37	43.50	11.40	35.50	3.40	37.77	54.00	-16.23	AV	Horizontal
10399.95	39.99	44.50	13.80	38.80	8.10	48.09	68.20	-20.11	Pk	Vertical
10399.95	36.63	44.50	13.80	38.80	8.10	44.73	54.00	-9.27	AV	Vertical
10400.33	39.50	44.50	13.80	38.80	8.10	47.60	68.20	-20.60	Pk	Horizontal
10400.33	36.77	44.50	13.80	38.80	8.10	44.87	54.00	-9.13	AV	Horizontal
11026.60	33.59	43.60	14.30	39.50	10.20	43.79	68.20	-24.41	Pk	Vertical
11026.60	30.80	43.60	14.30	39.50	10.20	41.00	54.00	-13.00	AV	Vertical
11033.45	32.72	43.60	14.30	39.50	10.20	42.92	68.20	-25.28	Pk	Horizontal
11033.45	30.10	43.60	14.30	39.50	10.20	40.30	54.00	-13.70	AV	Horizontal
13295.31	31.77	42.60	15.90	38.90	12.20	43.97	68.20	-24.23	Pk	Vertical
13295.31	28.86	42.60	15.90	38.90	12.20	41.06	54.00	-12.94	AV	Vertical
13282.14	31.72	42.60	15.90	38.90	12.20	43.92	68.20	-24.28	Pk	Horizontal
13282.14	29.71	42.60	15.90	38.90	12.20	41.91	54.00	-12.09	AV	Horizontal

High Channel (802.11a20/ 5240 MHz)										
3257.70	44.89	44.70	6.70	28.20	-9.80	35.09	68.20	-33.11	Pk	Vertical
3257.70	41.39	44.70	6.70	28.20	-9.80	31.59	54.00	-22.41	AV	Vertical
3256.06	44.82	44.70	6.70	28.20	-9.80	35.02	68.20	-33.18	Pk	Horizontal
3256.06	42.00	44.70	6.70	28.20	-9.80	32.20	54.00	-21.80	AV	Horizontal
3990.09	39.25	44.20	7.90	29.70	-6.60	32.65	68.20	-35.55	Pk	Vertical
3990.09	35.87	44.20	7.90	29.70	-6.60	29.27	54.00	-24.73	AV	Vertical
3988.70	39.11	44.20	7.90	29.70	-6.60	32.51	68.20	-35.69	Pk	Horizontal
3988.70	36.85	44.20	7.90	29.70	-6.60	30.25	54.00	-23.75	AV	Horizontal
7235.86	36.72	43.50	11.40	35.50	3.40	40.12	68.20	-28.08	Pk	Vertical
7235.86	33.44	43.50	11.40	35.50	3.40	36.84	54.00	-17.16	AV	Vertical
7226.79	37.27	43.50	11.40	35.50	3.40	40.67	68.20	-27.53	Pk	Horizontal
7226.79	34.57	43.50	11.40	35.50	3.40	37.97	54.00	-16.03	AV	Horizontal
10480.41	39.01	44.50	13.80	38.80	8.10	47.11	68.20	-21.09	Pk	Vertical
10480.41	36.52	44.50	13.80	38.80	8.10	44.62	54.00	-9.38	AV	Vertical
10480.13	39.25	44.50	13.80	38.80	8.10	47.35	68.20	-20.85	Pk	Horizontal
10480.13	36.79	44.50	13.80	38.80	8.10	44.89	54.00	-9.11	AV	Horizontal
11016.80	32.96	43.60	14.30	39.50	10.20	43.16	68.20	-25.04	Pk	Vertical
11016.80	29.93	43.60	14.30	39.50	10.20	40.13	54.00	-13.87	AV	Vertical
11031.32	34.01	43.60	14.30	39.50	10.20	44.21	68.20	-23.99	Pk	Horizontal
11031.32	30.64	43.60	14.30	39.50	10.20	40.84	54.00	-13.16	AV	Horizontal
13299.39	31.71	42.60	15.90	38.90	12.20	43.91	68.20	-24.29	Pk	Vertical
13299.39	29.53	42.60	15.90	38.90	12.20	41.73	54.00	-12.27	AV	Vertical
13286.07	32.55	42.60	15.90	38.90	12.20	44.75	68.20	-23.45	Pk	Horizontal
13286.07	28.70	42.60	15.90	38.90	12.20	40.90	54.00	-13.10	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a,802.11n (HT-20),802.11n (HT-40), 802.11ac (VHT-20),802.11ac (VHT-40), 802.11ac (VHT-80) the worst case is 802.11a.
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

Band II 5250-5350MHz

Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Orrected Factor (dB)	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11a20/ 5260 MHz)										
3254.45	44.06	44.70	6.70	28.20	-9.80	34.26	68.20	-33.94	Pk	Vertical
3254.45	41.39	44.70	6.70	28.20	-9.80	31.59	54.00	-22.41	AV	Vertical
3263.55	45.01	44.70	6.70	28.20	-9.80	35.21	68.20	-32.99	Pk	Horizontal
3263.55	42.12	44.70	6.70	28.20	-9.80	32.32	54.00	-21.68	AV	Horizontal
3989.12	38.99	44.20	7.90	29.70	-6.60	32.39	68.20	-35.81	Pk	Vertical
3989.12	35.69	44.20	7.90	29.70	-6.60	29.09	54.00	-24.91	AV	Vertical
3997.02	40.10	44.20	7.90	29.70	-6.60	33.50	68.20	-34.70	Pk	Horizontal
3997.02	35.72	44.20	7.90	29.70	-6.60	29.12	54.00	-24.88	AV	Horizontal
7232.81	36.54	43.50	11.40	35.50	3.40	39.94	68.20	-28.26	Pk	Vertical
7232.81	33.63	43.50	11.40	35.50	3.40	37.03	54.00	-16.97	AV	Vertical
7232.02	37.52	43.50	11.40	35.50	3.40	40.92	68.20	-27.28	Pk	Horizontal
7232.02	34.81	43.50	11.40	35.50	3.40	38.21	54.00	-15.79	AV	Horizontal
10520.27	39.44	44.50	13.90	38.80	8.20	47.64	68.20	-20.56	Pk	Vertical
10520.27	36.13	44.50	13.90	38.80	8.20	44.33	54.00	-9.67	AV	Vertical
10520.21	39.00	44.50	13.90	38.80	8.20	47.20	68.20	-21.00	Pk	Horizontal
10520.21	37.17	44.50	13.90	38.80	8.20	45.37	54.00	-8.63	AV	Horizontal
11036.28	32.88	43.60	14.30	39.50	10.20	43.08	68.20	-25.12	Pk	Vertical
11036.28	30.54	43.60	14.30	39.50	10.20	40.74	54.00	-13.26	AV	Vertical
11023.36	33.22	43.60	14.30	39.50	10.20	43.42	68.20	-24.78	Pk	Horizontal
11023.36	29.91	43.60	14.30	39.50	10.20	40.11	54.00	-13.89	AV	Horizontal
13297.42	31.66	42.60	15.90	38.90	12.20	43.86	68.20	-24.34	Pk	Vertical
13297.42	30.01	42.60	15.90	38.90	12.20	42.21	54.00	-11.79	AV	Vertical
13282.53	32.59	42.60	15.90	38.90	12.20	44.79	68.20	-23.41	Pk	Horizontal
13282.53	28.59	42.60	15.90	38.90	12.20	40.79	54.00	-13.21	AV	Horizontal
Mid Channel (802.11a20/ 5300 MHz)										
3253.30	45.03	44.70	6.70	28.20	-9.80	35.23	68.20	-32.97	Pk	Vertical
3253.30	41.95	44.70	6.70	28.20	-9.80	32.15	54.00	-21.85	AV	Vertical
3263.80	44.12	44.70	6.70	28.20	-9.80	34.32	68.20	-33.88	Pk	Horizontal
3263.80	42.21	44.70	6.70	28.20	-9.80	32.41	54.00	-21.59	AV	Horizontal
3991.06	39.97	44.20	7.90	29.70	-6.60	33.37	68.20	-34.83	Pk	Vertical
3991.06	36.99	44.20	7.90	29.70	-6.60	30.39	54.00	-23.61	AV	Vertical
3987.99	39.06	44.20	7.90	29.70	-6.60	32.46	68.20	-35.74	Pk	Horizontal
3987.99	36.06	44.20	7.90	29.70	-6.60	29.46	54.00	-24.54	AV	Horizontal
7218.66	36.67	43.50	11.40	35.50	3.40	40.07	68.20	-28.13	Pk	Vertical
7218.66	33.91	43.50	11.40	35.50	3.40	37.31	54.00	-16.69	AV	Vertical
7219.95	36.95	43.50	11.40	35.50	3.40	40.35	68.20	-27.85	Pk	Horizontal
7219.95	34.71	43.50	11.40	35.50	3.40	38.11	54.00	-15.89	AV	Horizontal
10599.96	39.89	44.50	13.80	38.80	8.10	47.99	68.20	-20.21	Pk	Vertical
10599.96	36.83	44.50	13.80	38.80	8.10	44.93	54.00	-9.07	AV	Vertical
10600.11	39.91	44.50	13.80	38.80	8.10	48.01	68.20	-20.19	Pk	Horizontal
10600.11	36.10	44.50	13.80	38.80	8.10	44.20	54.00	-9.80	AV	Horizontal
11031.06	33.62	43.60	14.30	39.50	10.20	43.82	68.20	-24.38	Pk	Vertical
11031.06	30.20	43.60	14.30	39.50	10.20	40.40	54.00	-13.60	AV	Vertical
11026.00	33.88	43.60	14.30	39.50	10.20	44.08	68.20	-24.12	Pk	Horizontal
11026.00	30.02	43.60	14.30	39.50	10.20	40.22	54.00	-13.78	AV	Horizontal
13294.26	31.89	42.60	15.90	38.90	12.20	44.09	68.20	-24.11	Pk	Vertical
13294.26	29.55	42.60	15.90	38.90	12.20	41.75	54.00	-12.25	AV	Vertical
13285.63	32.80	42.60	15.90	38.90	12.20	45.00	68.20	-23.20	Pk	Horizontal
13285.63	29.49	42.60	15.90	38.90	12.20	41.69	54.00	-12.31	AV	Horizontal

High Channel (802.11a20/ 5320 MHz)										
3245.66	43.94	44.70	6.70	28.20	-9.80	34.14	68.20	-34.06	Pk	Vertical
3245.66	41.56	44.70	6.70	28.20	-9.80	31.76	54.00	-22.24	AV	Vertical
3254.12	44.81	44.70	6.70	28.20	-9.80	35.01	68.20	-33.19	Pk	Horizontal
3254.12	41.12	44.70	6.70	28.20	-9.80	31.32	54.00	-22.68	AV	Horizontal
3989.08	38.79	44.20	7.90	29.70	-6.60	32.19	68.20	-36.01	Pk	Vertical
3989.08	36.49	44.20	7.90	29.70	-6.60	29.89	54.00	-24.11	AV	Vertical
3995.13	39.17	44.20	7.90	29.70	-6.60	32.57	68.20	-35.63	Pk	Horizontal
3995.13	35.94	44.20	7.90	29.70	-6.60	29.34	54.00	-24.66	AV	Horizontal
7229.69	36.91	43.50	11.40	35.50	3.40	40.31	68.20	-27.89	Pk	Vertical
7229.69	34.15	43.50	11.40	35.50	3.40	37.55	54.00	-16.45	AV	Vertical
7231.04	37.73	43.50	11.40	35.50	3.40	41.13	68.20	-27.07	Pk	Horizontal
7231.04	33.85	43.50	11.40	35.50	3.40	37.25	54.00	-16.75	AV	Horizontal
10640.02	40.09	44.50	13.80	38.80	8.10	48.19	68.20	-20.01	Pk	Vertical
10640.02	37.10	44.50	13.80	38.80	8.10	45.20	54.00	-8.80	AV	Vertical
10640.13	39.36	44.50	13.80	38.80	8.10	47.46	68.20	-20.74	Pk	Horizontal
10640.13	36.09	44.50	13.80	38.80	8.10	44.19	54.00	-9.81	AV	Horizontal
11025.49	33.24	43.60	14.30	39.50	10.20	43.44	68.20	-24.76	Pk	Vertical
11025.49	29.95	43.60	14.30	39.50	10.20	40.15	54.00	-13.85	AV	Vertical
11020.96	33.71	43.60	14.30	39.50	10.20	43.91	68.20	-24.29	Pk	Horizontal
11020.96	30.48	43.60	14.30	39.50	10.20	40.68	54.00	-13.32	AV	Horizontal
13290.11	32.24	42.70	18.00	37.10	12.40	44.64	68.20	-23.56	Pk	Vertical
13290.11	29.01	42.70	18.00	37.10	12.40	41.41	54.00	-12.59	AV	Vertical
13285.66	32.04	42.70	18.00	37.10	12.40	44.44	68.20	-23.76	Pk	Horizontal
13285.66	28.89	42.70	18.00	37.10	12.40	41.29	54.00	-12.71	AV	Horizontal

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a,802.11n (HT-20),802.11n (HT-40), 802.11ac (VHT-20),802.11ac (VHT-40), 802.11ac (VHT-80) the worst case is 802.11a.
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

Band IV(5.725-5.850) GHz

Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Orrected Factor (dB)	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11a20/ 5745 MHz)										
3257.38	45.17	44.70	6.70	28.20	-9.80	35.37	68.20	-32.83	Pk	Vertical
3257.38	41.60	44.70	6.70	28.20	-9.80	31.80	54.00	-22.20	AV	Vertical
3256.17	44.75	44.70	6.70	28.20	-9.80	34.95	68.20	-33.25	Pk	Horizontal
3256.17	40.78	44.70	6.70	28.20	-9.80	30.98	54.00	-23.02	AV	Horizontal
3985.48	39.11	44.20	7.90	29.70	-6.60	32.51	68.20	-35.69	Pk	Vertical
3985.48	35.70	44.20	7.90	29.70	-6.60	29.10	54.00	-24.90	AV	Vertical
3997.02	38.73	44.20	7.90	29.70	-6.60	32.13	68.20	-36.07	Pk	Horizontal
3997.02	36.31	44.20	7.90	29.70	-6.60	29.71	54.00	-24.29	AV	Horizontal
7229.30	36.52	43.50	11.40	35.50	3.40	39.92	68.20	-28.28	Pk	Vertical
7229.30	33.90	43.50	11.40	35.50	3.40	37.30	54.00	-16.70	AV	Vertical
7219.27	36.58	43.50	11.40	35.50	3.40	39.98	68.20	-28.22	Pk	Horizontal
7219.27	34.59	43.50	11.40	35.50	3.40	37.99	54.00	-16.01	AV	Horizontal
10513.53	39.17	44.50	13.90	38.80	8.20	47.37	68.20	-20.83	Pk	Vertical
10513.53	36.88	44.50	13.90	38.80	8.20	45.08	54.00	-8.92	AV	Vertical
10514.19	40.01	44.50	13.90	38.80	8.20	48.21	68.20	-19.99	Pk	Horizontal
10514.19	36.73	44.50	13.90	38.80	8.20	44.93	54.00	-9.07	AV	Horizontal
11490.13	32.72	43.60	14.30	39.50	10.20	42.92	68.20	-25.28	Pk	Vertical
11490.13	30.34	43.60	14.30	39.50	10.20	40.54	54.00	-13.46	AV	Vertical
11490.11	33.21	43.60	14.30	39.50	10.20	43.41	68.20	-24.79	Pk	Horizontal
11490.11	30.15	43.60	14.30	39.50	10.20	40.35	54.00	-13.65	AV	Horizontal
13283.17	32.11	42.60	15.90	38.90	12.20	44.31	68.20	-23.89	Pk	Vertical
13283.17	29.59	42.60	15.90	38.90	12.20	41.79	54.00	-12.21	AV	Vertical
13290.88	32.37	42.60	15.90	38.90	12.20	44.57	68.20	-23.63	Pk	Horizontal
13290.88	29.49	42.60	15.90	38.90	12.20	41.69	54.00	-12.31	AV	Horizontal
Mid Channel (802.11a20/ 5785 MHz)										
3250.57	44.80	44.70	6.70	28.20	-9.80	35.00	68.20	-33.20	Pk	Vertical
3250.57	41.62	44.70	6.70	28.20	-9.80	31.82	54.00	-22.18	AV	Vertical
3251.36	43.81	44.70	6.70	28.20	-9.80	34.01	68.20	-34.19	Pk	Horizontal
3251.36	41.80	44.70	6.70	28.20	-9.80	32.00	54.00	-22.00	AV	Horizontal
3998.70	39.98	44.20	7.90	29.70	-6.60	33.38	68.20	-34.82	Pk	Vertical
3998.70	35.92	44.20	7.90	29.70	-6.60	29.32	54.00	-24.68	AV	Vertical
3986.31	39.74	44.20	7.90	29.70	-6.60	33.14	68.20	-35.06	Pk	Horizontal
3986.31	36.13	44.20	7.90	29.70	-6.60	29.53	54.00	-24.47	AV	Horizontal
7218.10	36.98	43.50	11.40	35.50	3.40	40.38	68.20	-27.82	Pk	Vertical
7218.10	33.71	43.50	11.40	35.50	3.40	37.11	54.00	-16.89	AV	Vertical
7217.23	36.93	43.50	11.40	35.50	3.40	40.33	68.20	-27.87	Pk	Horizontal
7217.23	33.55	43.50	11.40	35.50	3.40	36.95	54.00	-17.05	AV	Horizontal
10593.53	38.73	44.50	13.80	38.80	8.10	46.83	68.20	-21.37	Pk	Vertical
10593.53	36.05	44.50	13.80	38.80	8.10	44.15	54.00	-9.85	AV	Vertical
10590.94	38.97	44.50	13.80	38.80	8.10	47.07	68.20	-21.13	Pk	Horizontal
10590.94	36.41	44.50	13.80	38.80	8.10	44.51	54.00	-9.49	AV	Horizontal
11570.09	33.94	43.60	14.30	39.50	10.20	44.14	68.20	-24.06	Pk	Vertical
11570.09	30.04	43.60	14.30	39.50	10.20	40.24	54.00	-13.76	AV	Vertical
11569.99	33.31	43.60	14.30	39.50	10.20	43.51	68.20	-24.69	Pk	Horizontal
11569.99	29.91	43.60	14.30	39.50	10.20	40.11	54.00	-13.89	AV	Horizontal
13292.61	32.43	42.60	15.90	38.90	12.20	44.63	68.20	-23.57	Pk	Vertical
13292.61	28.84	42.60	15.90	38.90	12.20	41.04	54.00	-12.96	AV	Vertical
13282.72	32.20	42.60	15.90	38.90	12.20	44.40	68.20	-23.80	Pk	Horizontal
13282.72	29.04	42.60	15.90	38.90	12.20	41.24	54.00	-12.76	AV	Horizontal

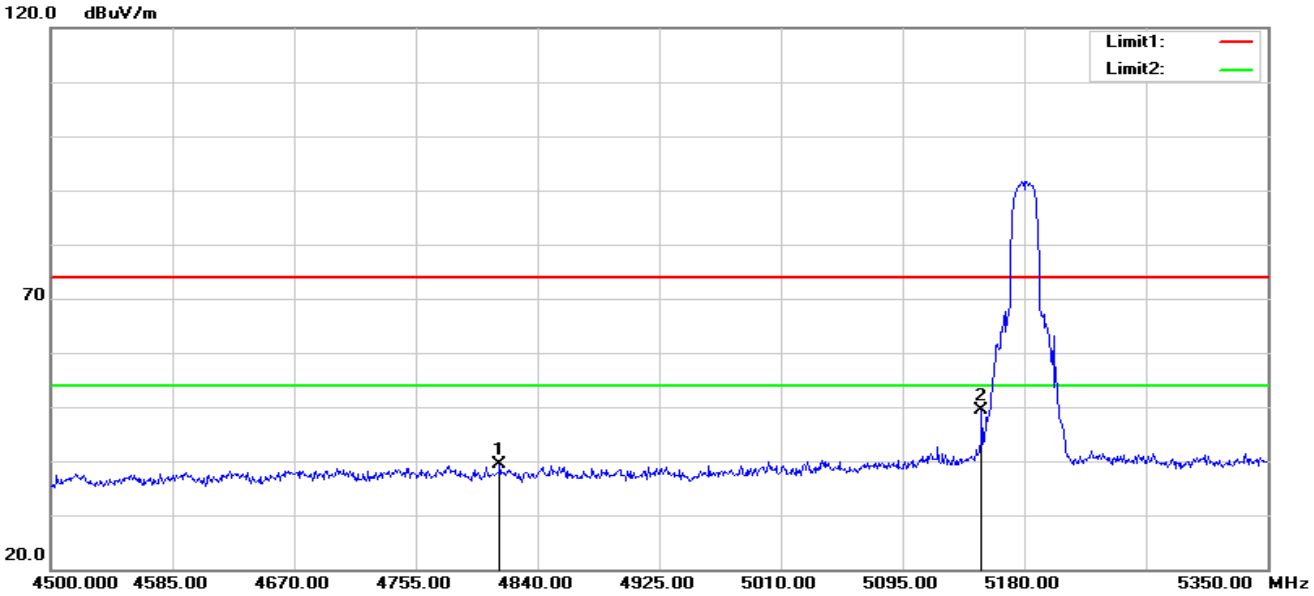
High Channel (802.11a20/ 5825 MHz)										
3256.01	43.82	44.70	6.70	28.20	-9.80	34.02	68.20	-34.18	Pk	Vertical
3256.01	42.09	44.70	6.70	28.20	-9.80	32.29	54.00	-21.71	AV	Vertical
3263.61	43.90	44.70	6.70	28.20	-9.80	34.10	68.20	-34.10	Pk	Horizontal
3263.61	42.11	44.70	6.70	28.20	-9.80	32.31	54.00	-21.69	AV	Horizontal
3986.88	39.52	44.20	7.90	29.70	-6.60	32.92	68.20	-35.28	Pk	Vertical
3986.88	36.41	44.20	7.90	29.70	-6.60	29.81	54.00	-24.19	AV	Vertical
3990.15	39.57	44.20	7.90	29.70	-6.60	32.97	68.20	-35.23	Pk	Horizontal
3990.15	36.92	44.20	7.90	29.70	-6.60	30.32	54.00	-23.68	AV	Horizontal
7217.64	37.80	43.50	11.40	35.50	3.40	41.20	68.20	-27.00	Pk	Vertical
7217.64	33.64	43.50	11.40	35.50	3.40	37.04	54.00	-16.96	AV	Vertical
7217.38	37.71	43.50	11.40	35.50	3.40	41.11	68.20	-27.09	Pk	Horizontal
7217.38	33.76	43.50	11.40	35.50	3.40	37.16	54.00	-16.84	AV	Horizontal
10640.11	39.09	44.50	13.80	38.80	8.10	47.19	68.20	-21.01	Pk	Vertical
10640.11	36.12	44.50	13.80	38.80	8.10	44.22	54.00	-9.78	AV	Vertical
10640.24	39.25	44.50	13.80	38.80	8.10	47.35	68.20	-20.85	Pk	Horizontal
10640.24	36.56	44.50	13.80	38.80	8.10	44.66	54.00	-9.34	AV	Horizontal
11650.42	32.76	43.60	14.30	39.50	10.20	42.96	68.20	-25.24	Pk	Vertical
11650.42	30.61	43.60	14.30	39.50	10.20	40.81	54.00	-13.19	AV	Vertical
11650.18	32.72	43.60	14.30	39.50	10.20	42.92	68.20	-25.28	Pk	Horizontal
11650.18	30.26	43.60	14.30	39.50	10.20	40.46	54.00	-13.54	AV	Horizontal
13291.30	32.97	42.70	18.00	37.10	12.40	45.37	68.20	-22.83	Pk	Vertical
13291.30	29.04	42.70	18.00	37.10	12.40	41.44	54.00	-12.56	AV	Vertical
13297.52	31.64	42.70	18.00	37.10	12.40	44.04	68.20	-24.16	Pk	Horizontal
13297.52	29.52	42.70	18.00	37.10	12.40	41.92	54.00	-12.08	AV	Horizontal

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a,802.11n (HT-20),802.11n (HT-40), 802.11ac (VHT-20),802.11ac (VHT-40), 802.11ac (VHT-80) the worst case is 802.11a.
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

3.2.9 RESTRICTED FREQUENCY BANDS AND BAND EDGE

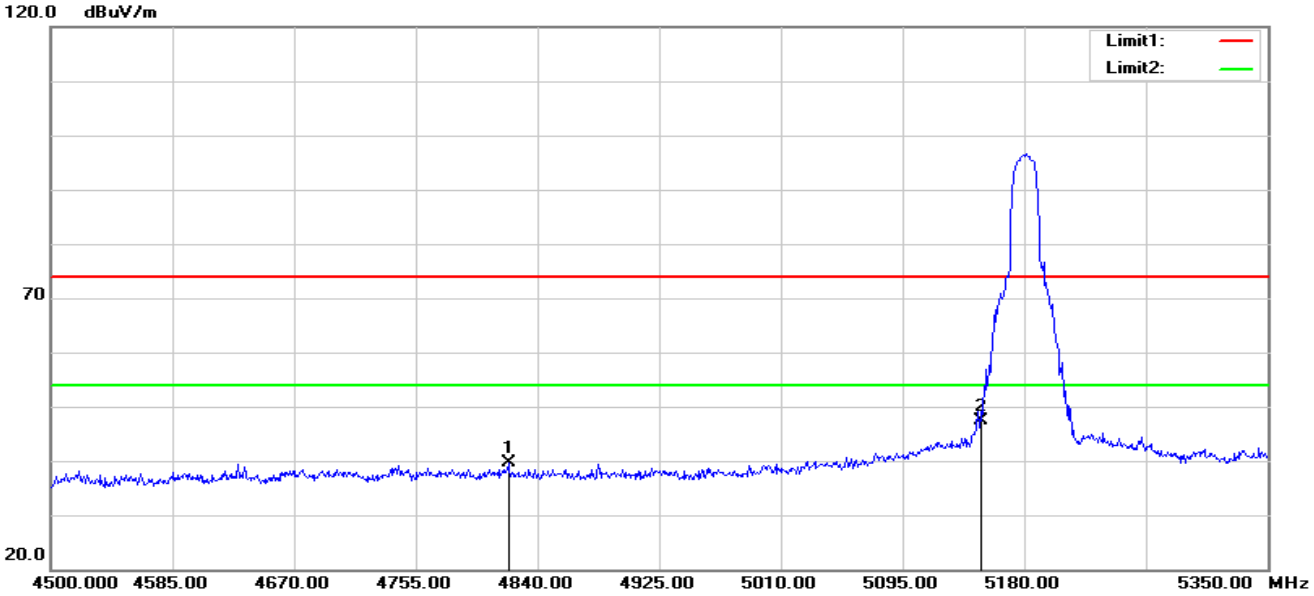
Band I 5150-5250MHz

802.11a-L-H



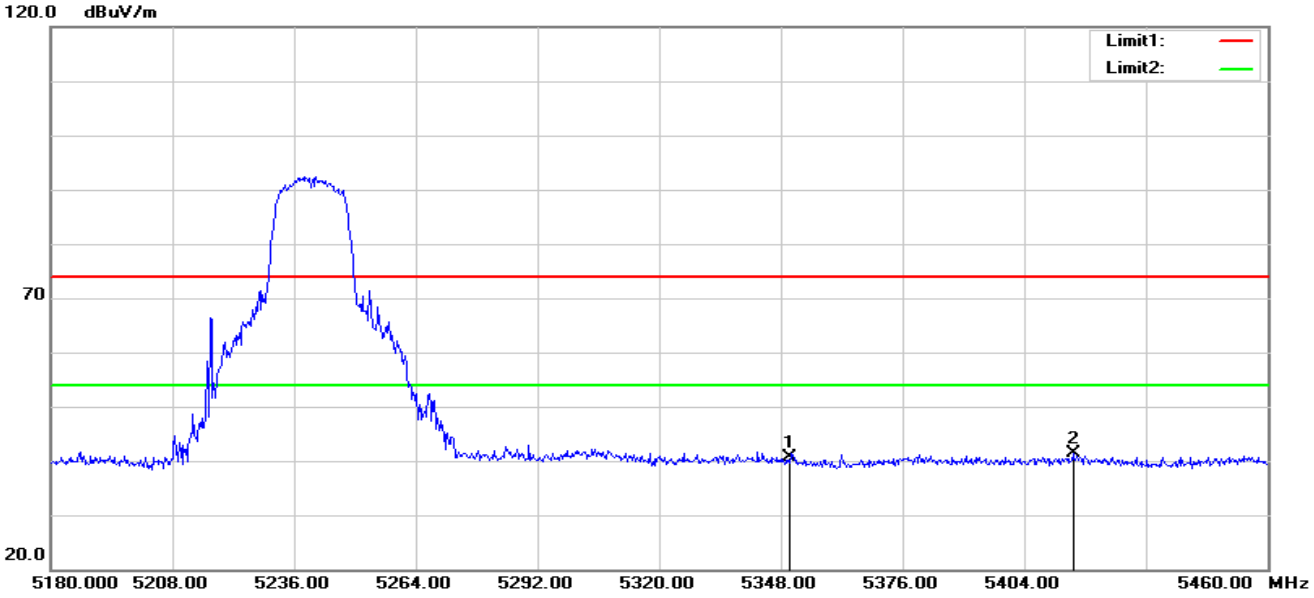
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4813.650	46.54	-7.17	39.37	74.00	-34.63	peak
2	5150.000	55.10	-5.73	49.37	74.00	-24.63	peak

802.11a-L-V



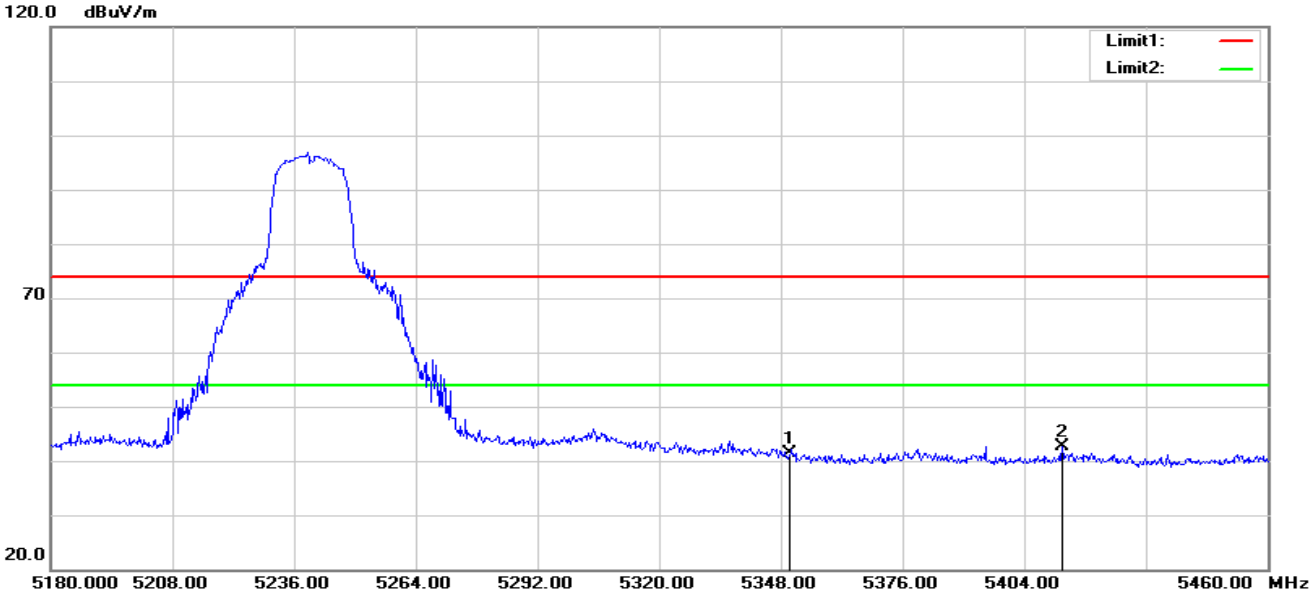
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4819.600	46.70	-7.14	39.56	74.00	-34.44	peak
2	5150.000	53.03	-5.73	47.30	74.00	-26.70	peak

802.11a-H-H



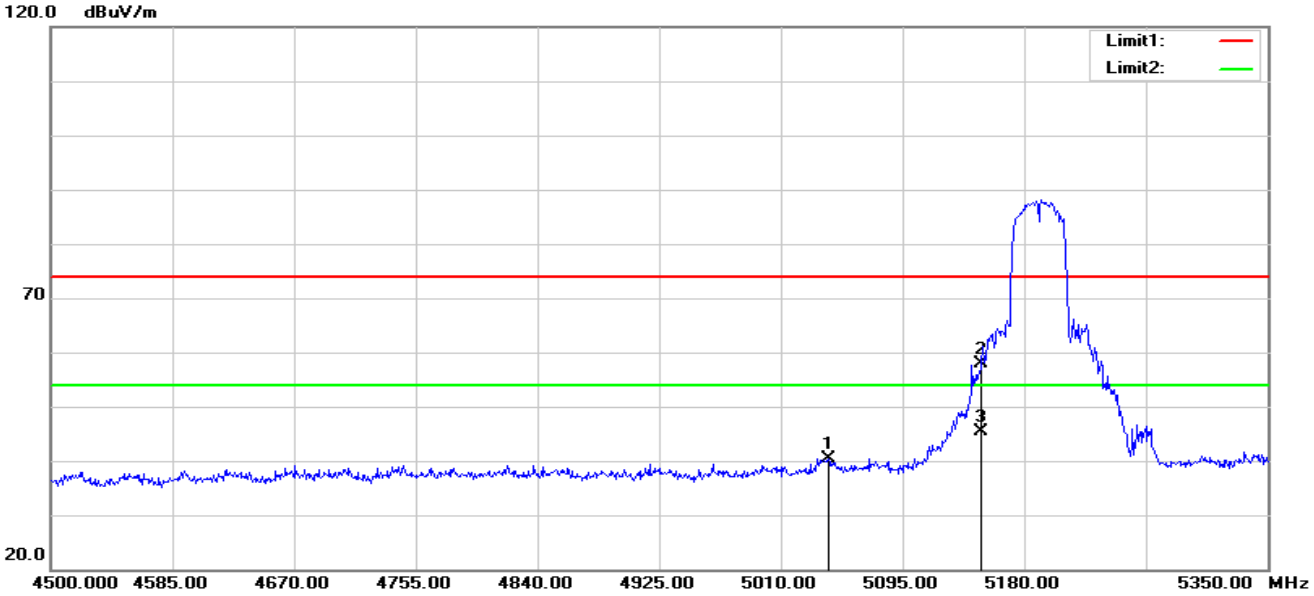
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5350.000	45.96	-5.23	40.73	74.00	-33.27	peak
2	5415.200	46.49	-5.22	41.27	74.00	-32.73	peak

802.11a-H-V



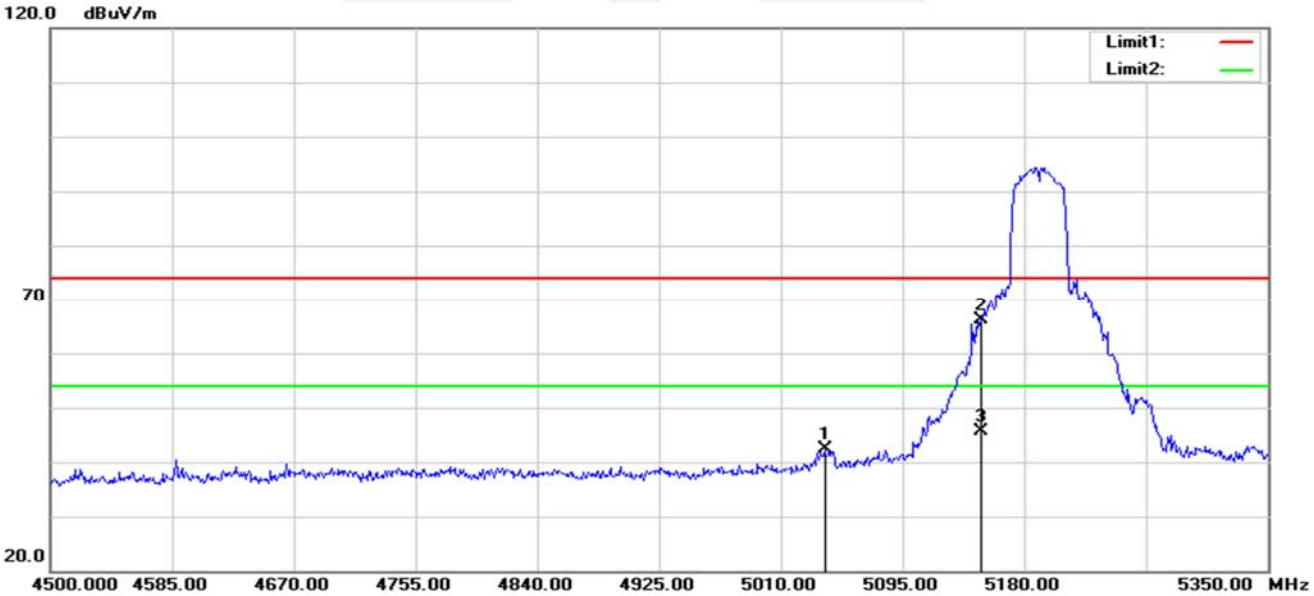
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5350.000	46.49	-5.23	41.26	74.00	-32.74	peak
2	5412.680	47.96	-5.22	42.74	74.00	-31.26	peak

802.11n40-L-H



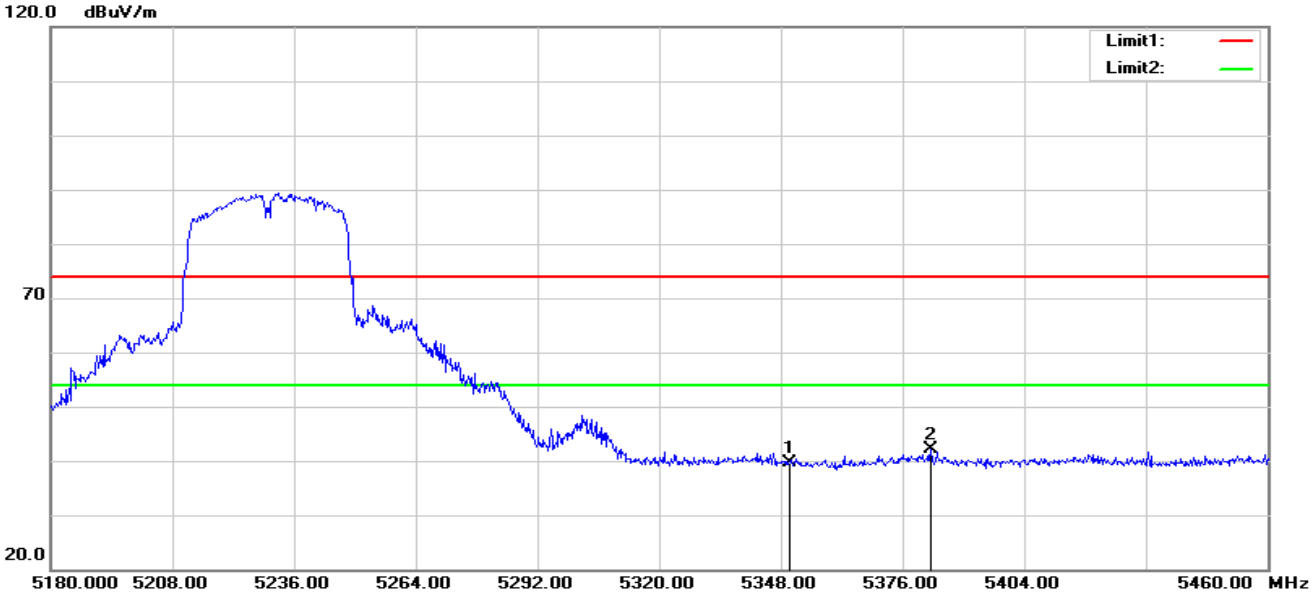
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5043.150	46.49	-6.00	40.49	74.00	-33.51	peak
2	5150.000	63.61	-5.73	57.88	74.00	-16.12	peak
3	5150.000	51.06	-5.73	45.33	54.00	-8.67	AVG

802.11n40-L-V



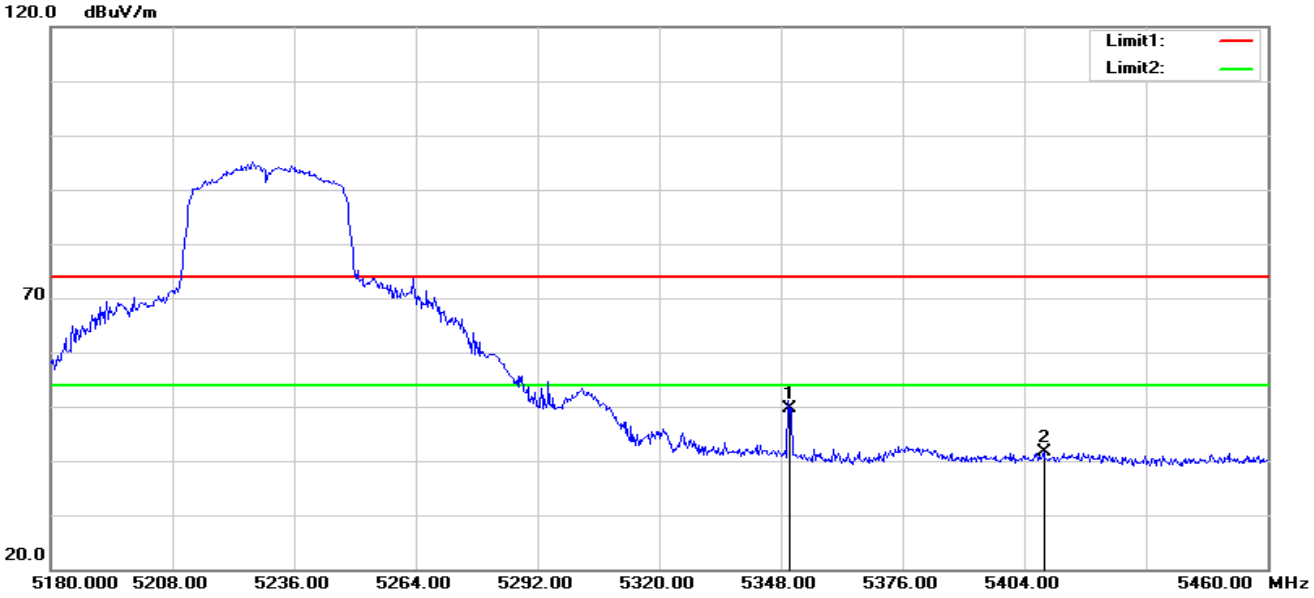
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5040.600	48.39	-6.01	42.38	74.00	-31.62	peak
2	5150.000	71.78	-5.73	66.05	74.00	-7.95	peak
3	5150.000	51.40	-5.73	45.67	54.00	-8.33	AVG

802.11n40-H-H



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5350.000	44.98	-5.23	39.75	74.00	-34.25	peak
2	5382.440	47.37	-5.24	42.13	74.00	-31.87	peak

802.11n40-H-V

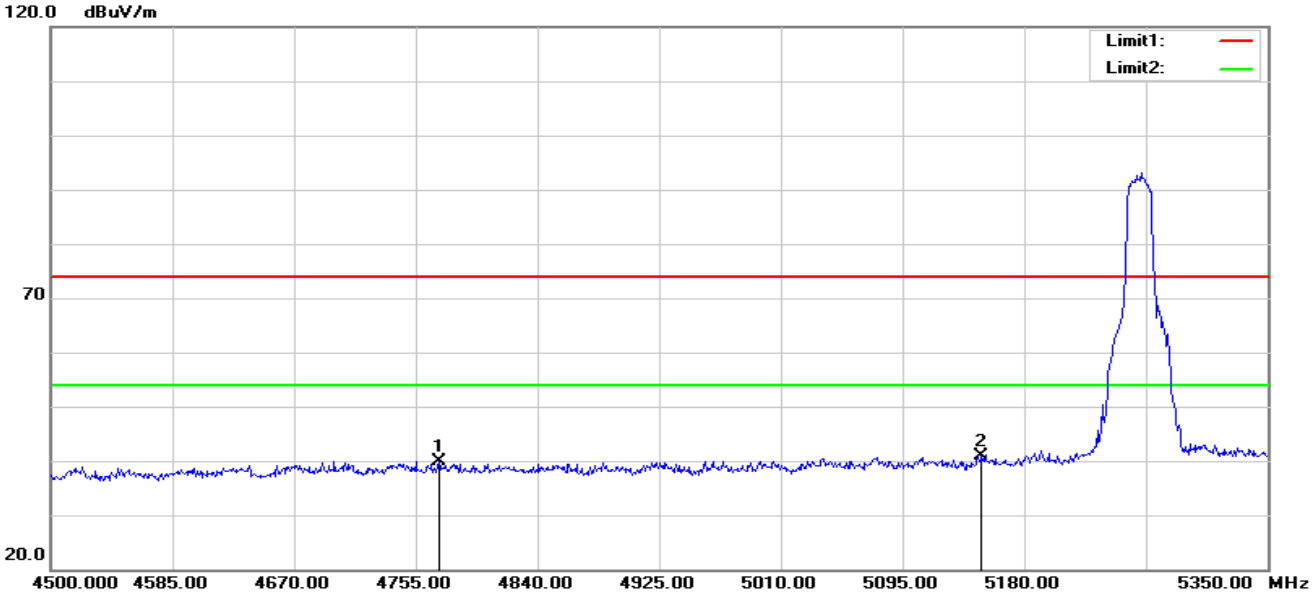


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5350.000	54.81	-5.23	49.58	74.00	-24.42	peak
2	5408.480	46.77	-5.23	41.54	74.00	-32.46	peak

Note: All modes have been tested. Only the worst mode shown in the report.

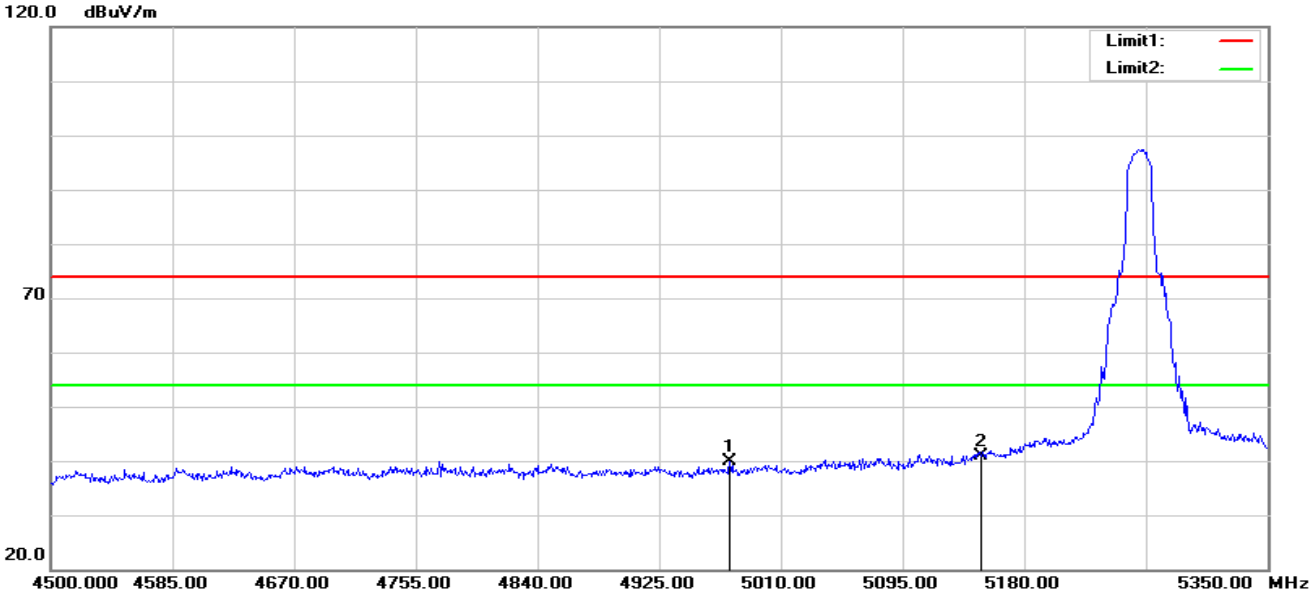
Band II 5250-5350MHz

802.11a-L-H



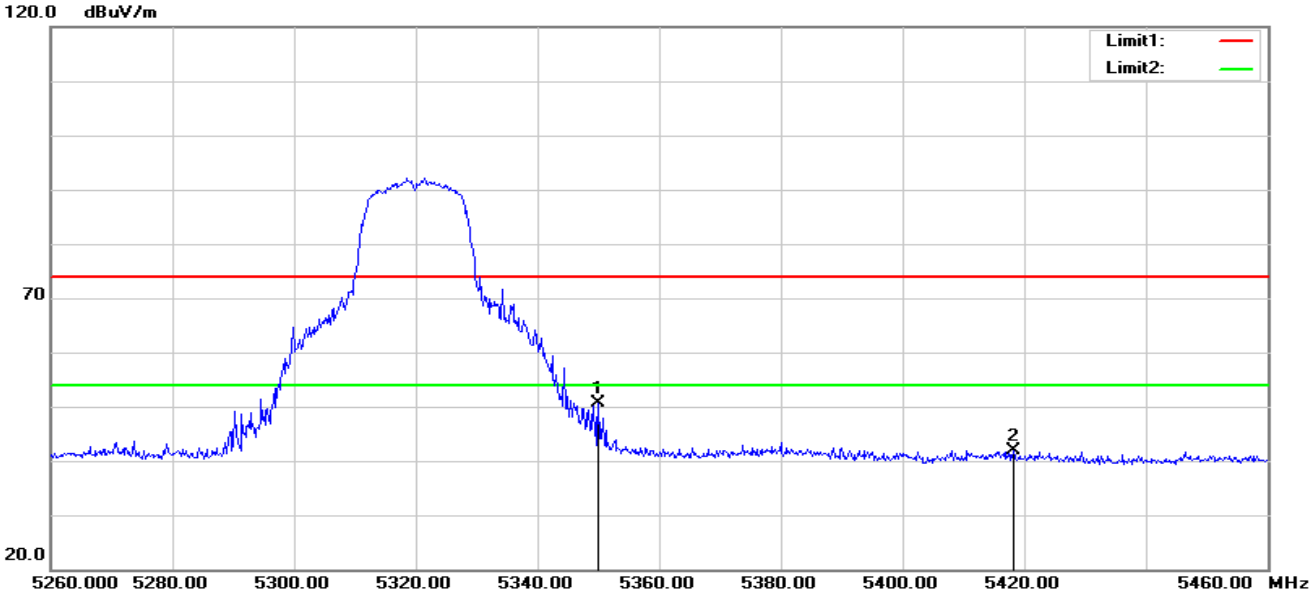
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4771.150	47.24	-7.26	39.98	74.00	-34.02	peak
2	5150.000	46.52	-5.73	40.79	74.00	-33.21	peak

802.11a-L-V



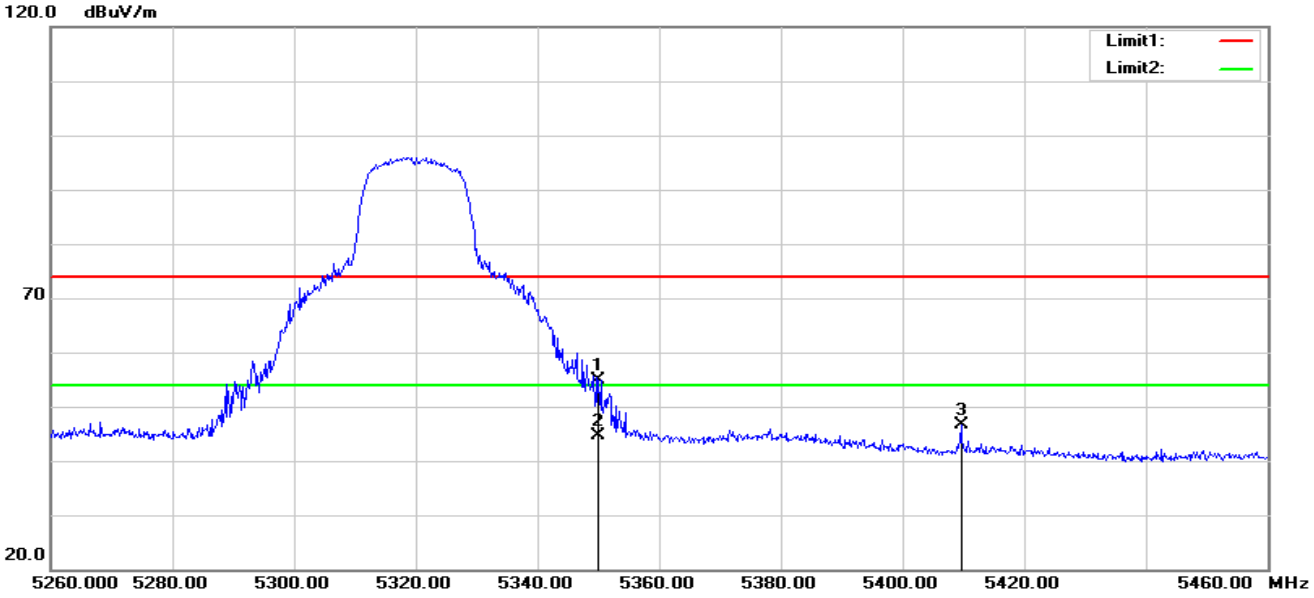
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4974.300	46.13	-6.36	39.77	74.00	-34.23	peak
2	5150.000	46.60	-5.73	40.87	74.00	-33.13	peak

802.11a-H-H



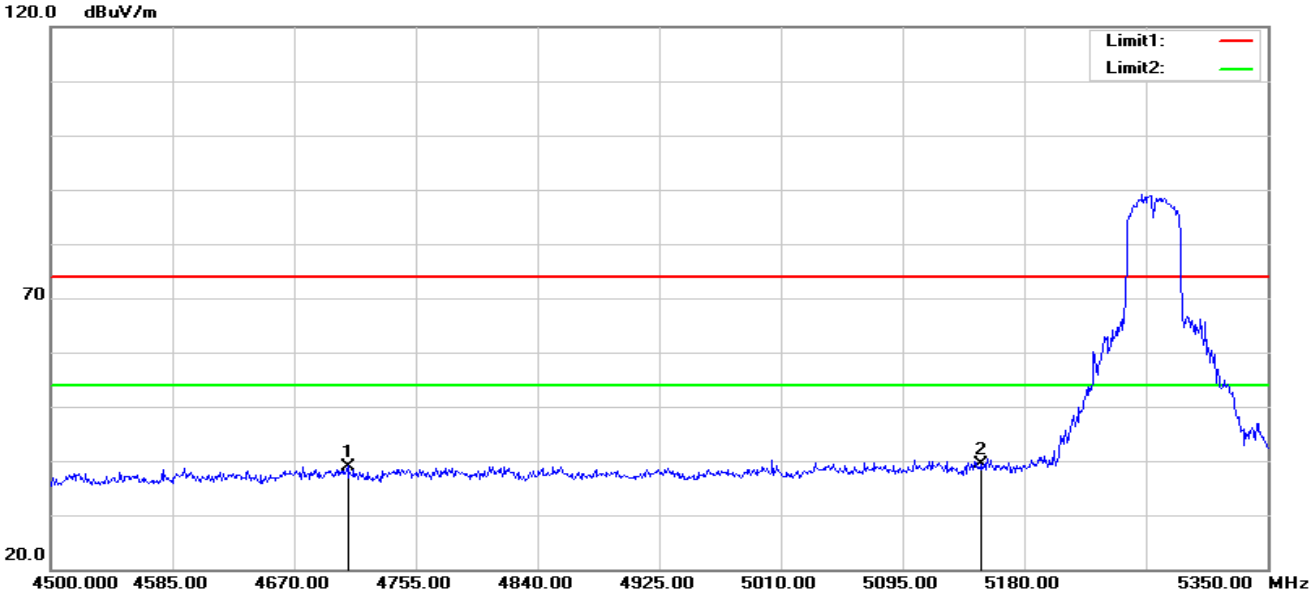
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5350.000	55.93	-5.23	50.70	74.00	-23.30	peak
2	5418.200	47.16	-5.21	41.95	74.00	-32.05	peak

802.11a-H-V



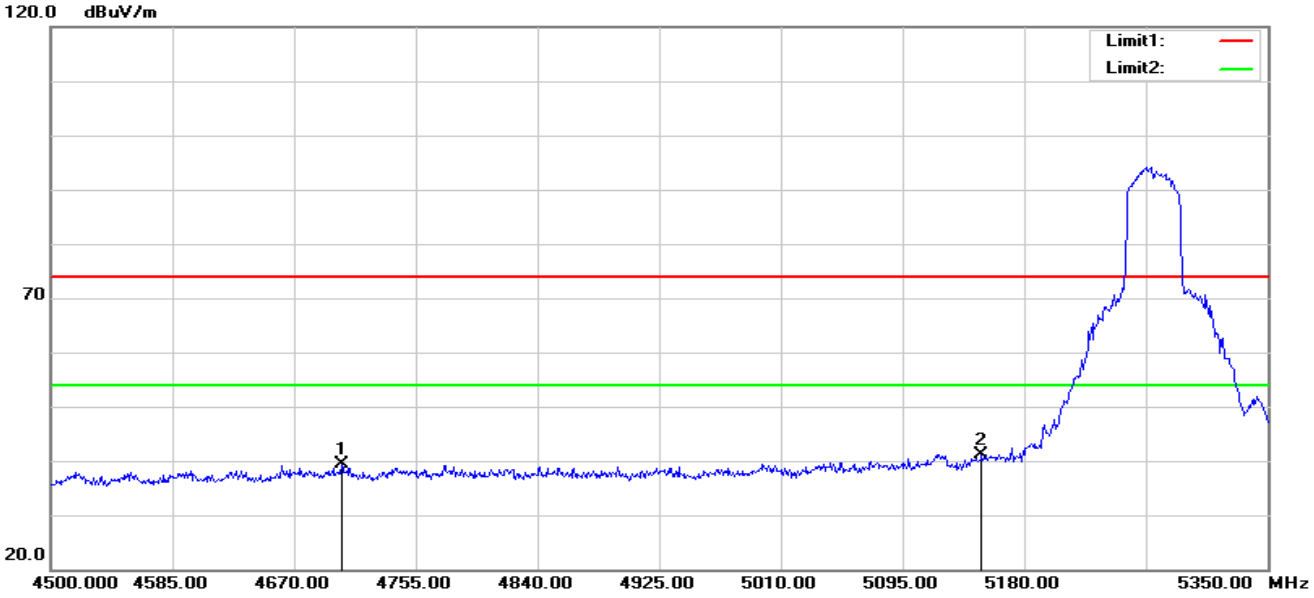
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5350.000	60.15	-5.23	54.92	74.00	-19.08	peak
2	5350.000	49.84	-5.23	44.61	54.00	-9.39	AVG
3	5409.600	51.87	-5.23	46.64	74.00	-27.36	peak

802.11n40-L-H



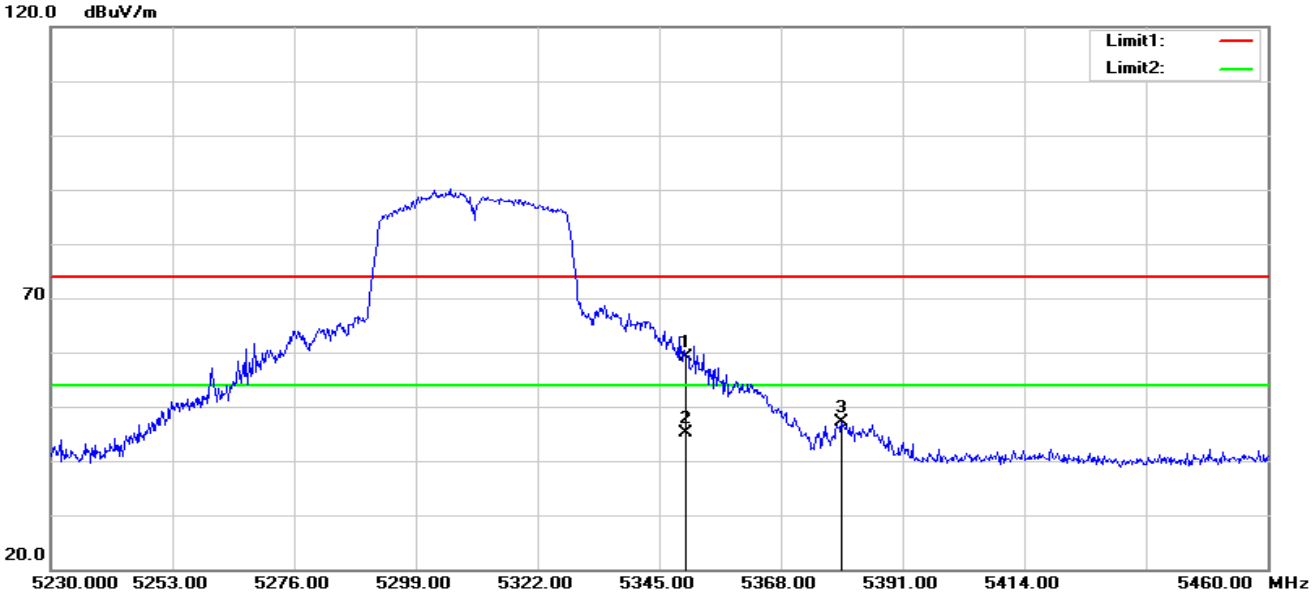
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4707.400	46.35	-7.35	39.00	74.00	-35.00	peak
2	5150.000	45.00	-5.73	39.27	74.00	-34.73	peak

802.11n40-L-V



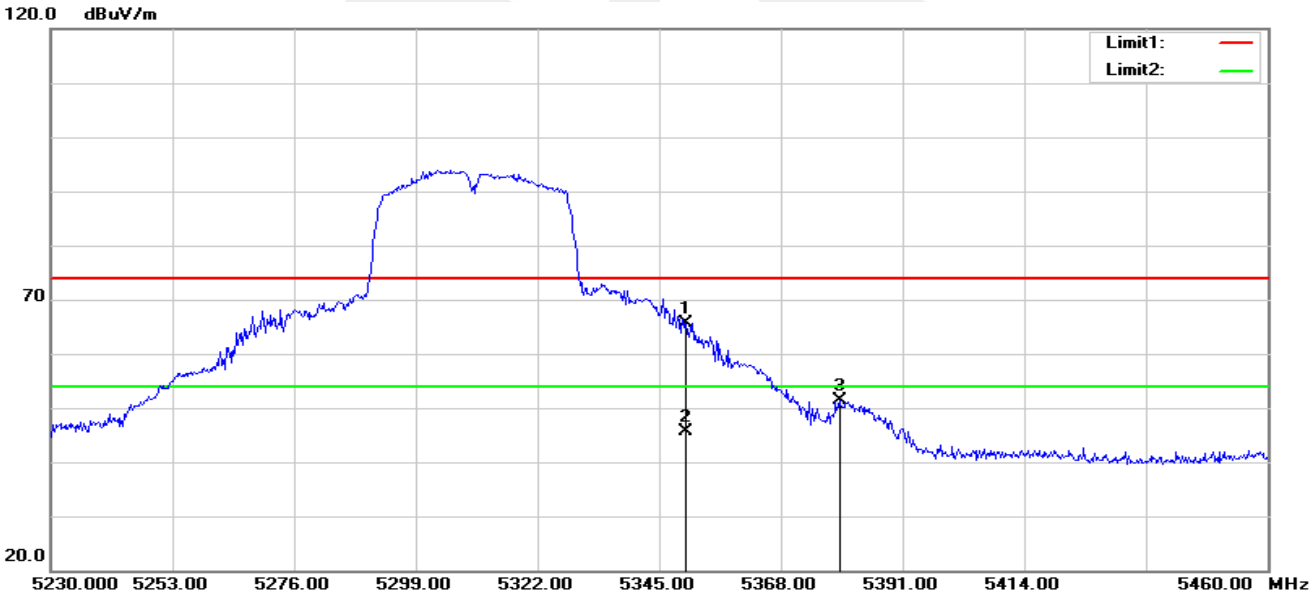
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4703.150	46.73	-7.35	39.38	74.00	-34.62	peak
2	5150.000	46.85	-5.73	41.12	74.00	-32.88	peak

802.11n40-H-H



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5350.000	64.26	-5.23	59.03	74.00	-14.97	peak
2	5350.000	50.25	-5.23	45.02	54.00	-8.98	AVG
3	5379.500	52.29	-5.25	47.04	74.00	-26.96	peak

802.11n40-H-V

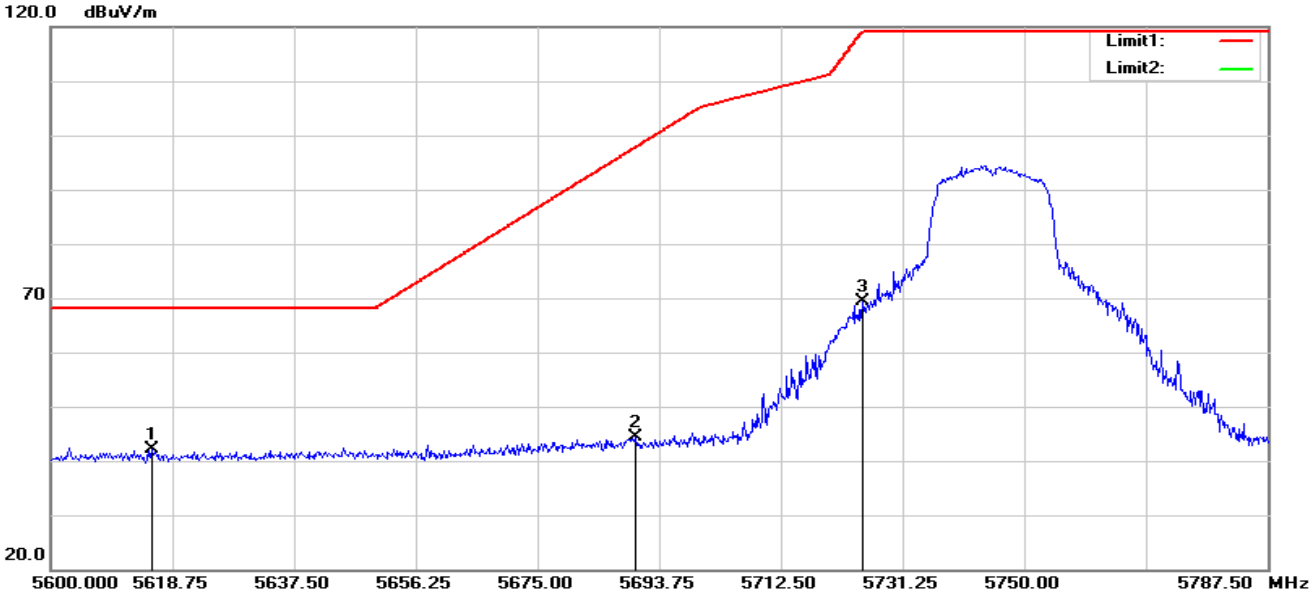


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5350.000	70.87	-5.23	65.64	74.00	-8.36	peak
2	5350.000	50.84	-5.23	45.61	54.00	-8.39	AVG
3	5379.040	56.68	-5.24	51.44	74.00	-22.56	peak

Note: All modes have been tested. Only the worst mode shown in the report.

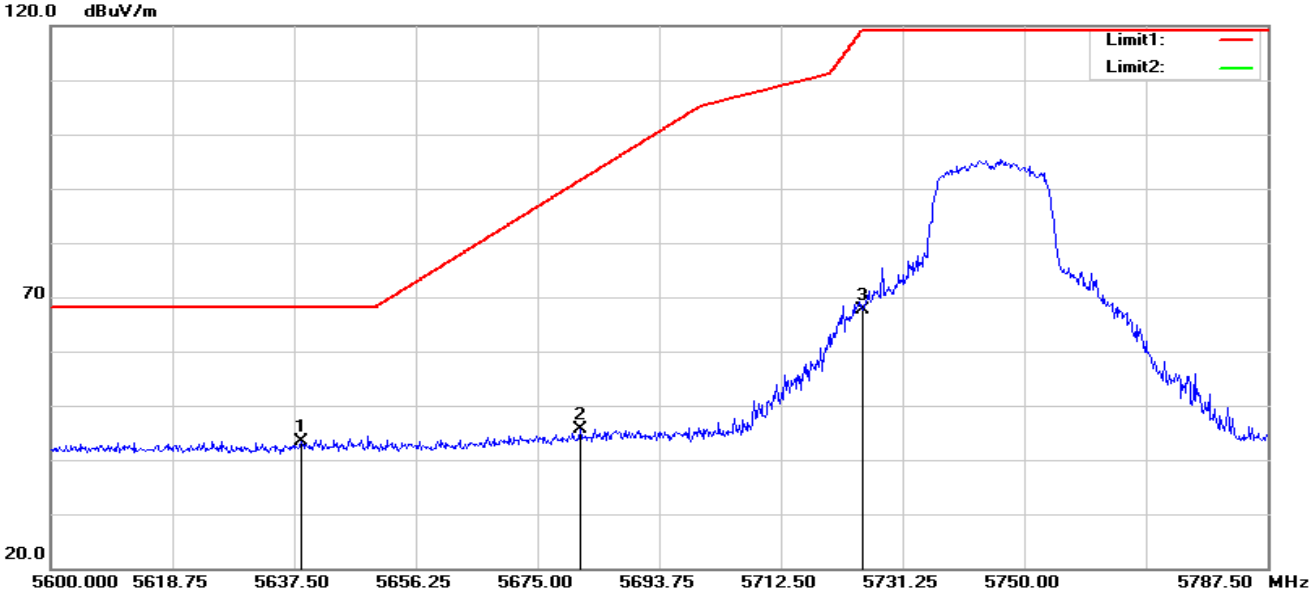
Band IV(5.725-5.85 GHz)

802.11a-L-H



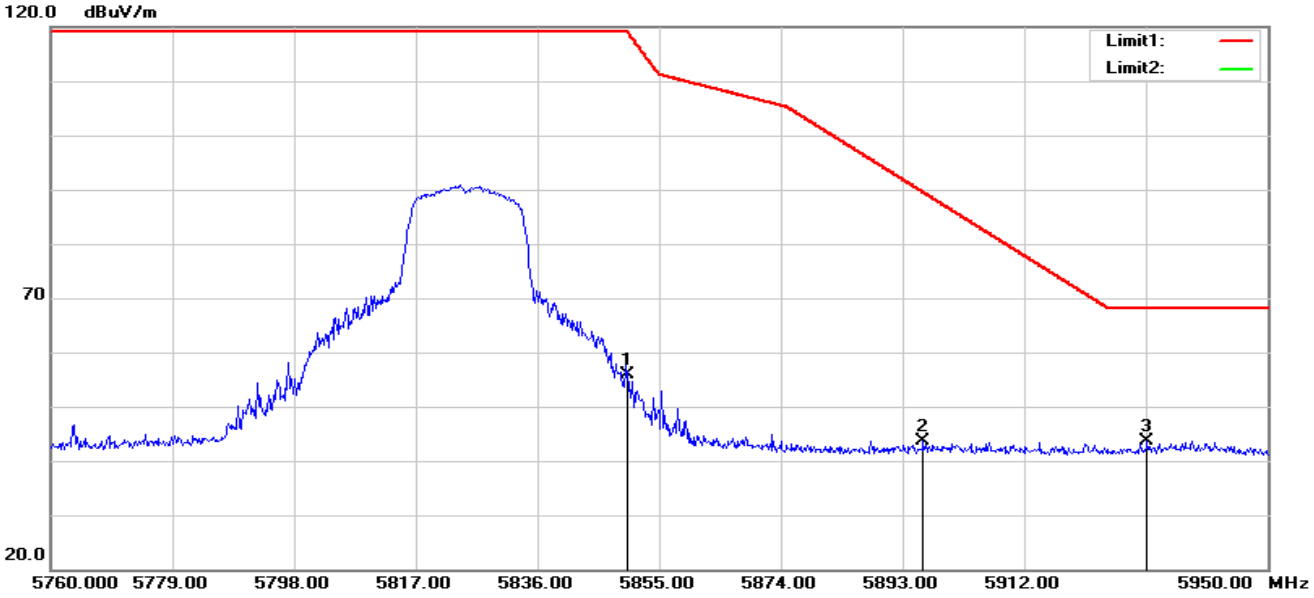
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5615.563	46.89	-4.70	42.19	68.20	-26.01	peak
2	5690.000	49.02	-4.67	44.35	97.80	-53.45	peak
3	5725.000	74.04	-4.57	69.47	119.20	-49.73	peak

802.11a-L-V



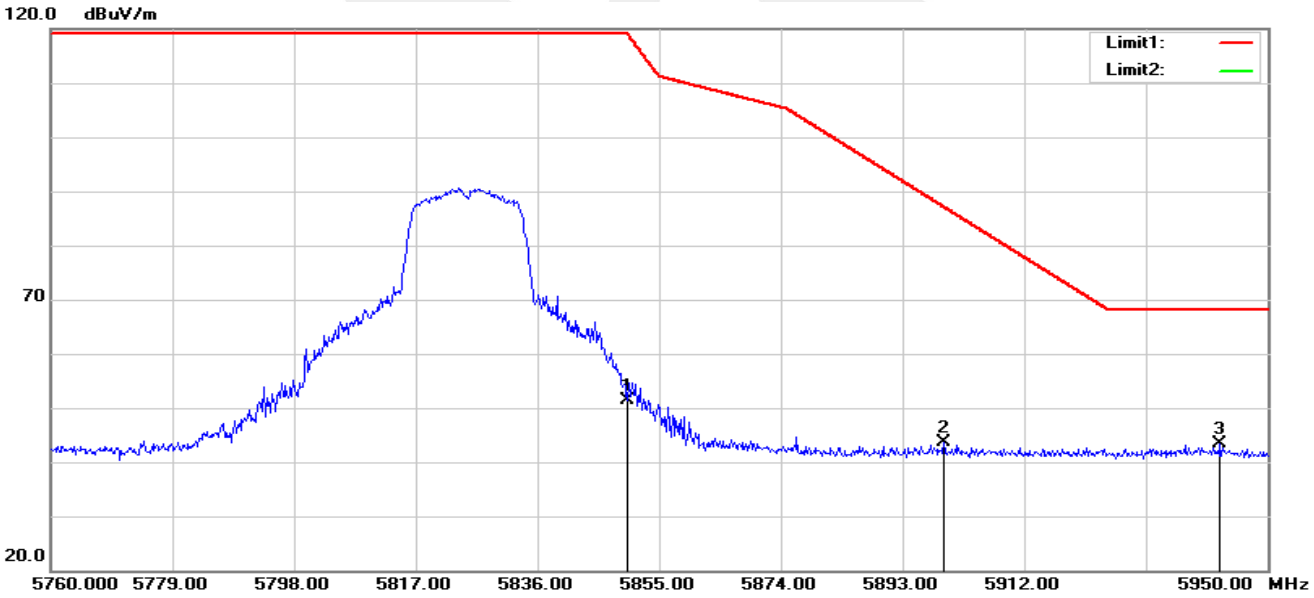
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5638.625	48.19	-4.69	43.50	68.20	-24.70	peak
2	5681.563	50.30	-4.67	45.63	91.56	-45.93	peak
3	5725.000	72.13	-4.57	67.56	119.20	-51.64	peak

802.11a-H-H



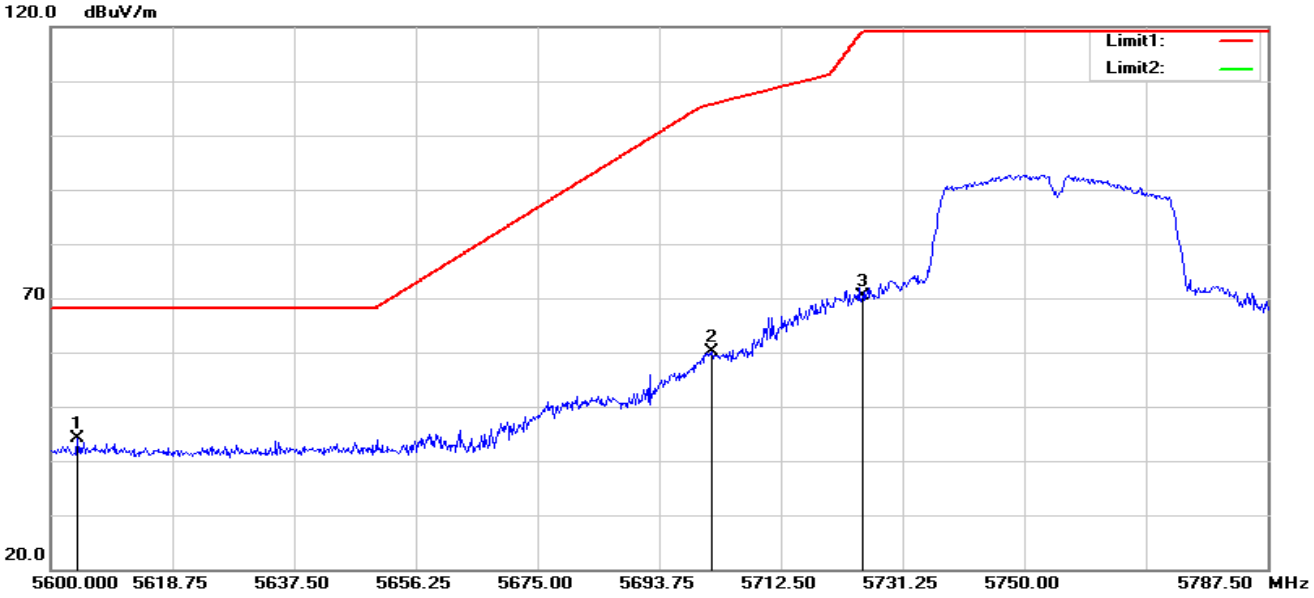
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5850.000	60.06	-4.10	55.96	119.20	-63.24	peak
2	5896.230	47.63	-3.90	43.73	89.49	-45.76	peak
3	5931.190	47.65	-3.93	43.72	68.20	-24.48	peak

802.11a-H-V



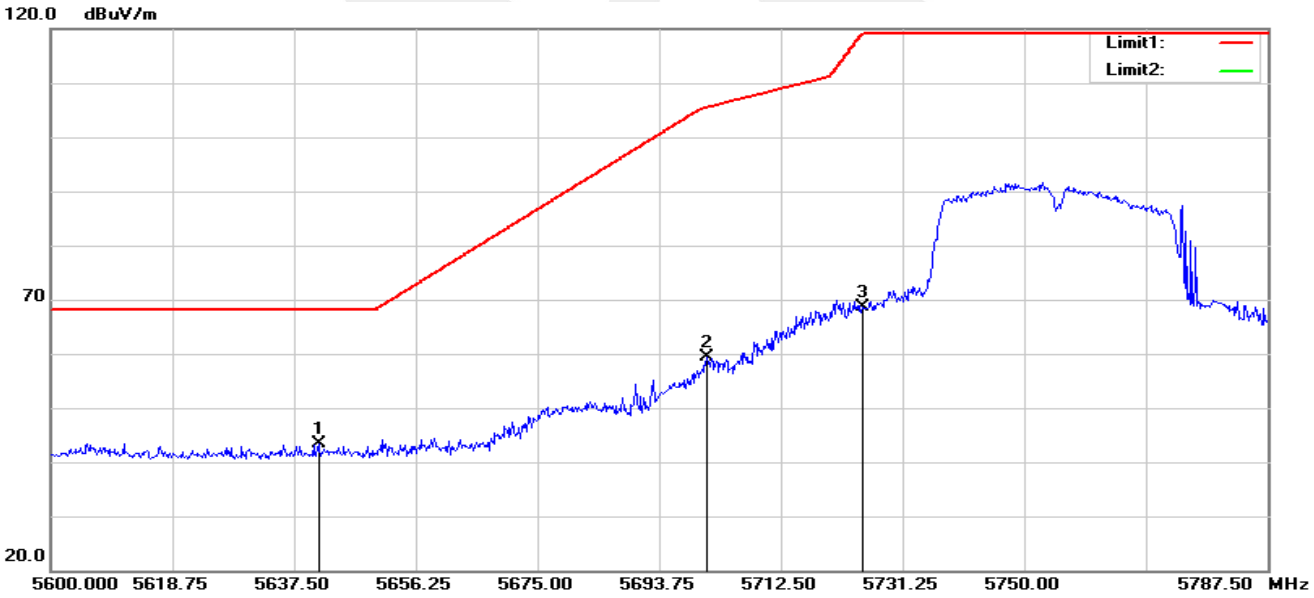
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5850.000	55.56	-4.10	51.46	119.20	-67.74	peak
2	5899.460	47.43	-3.88	43.55	87.10	-43.55	peak
3	5942.590	47.37	-3.95	43.42	68.20	-24.78	peak

802.11n40-L-H



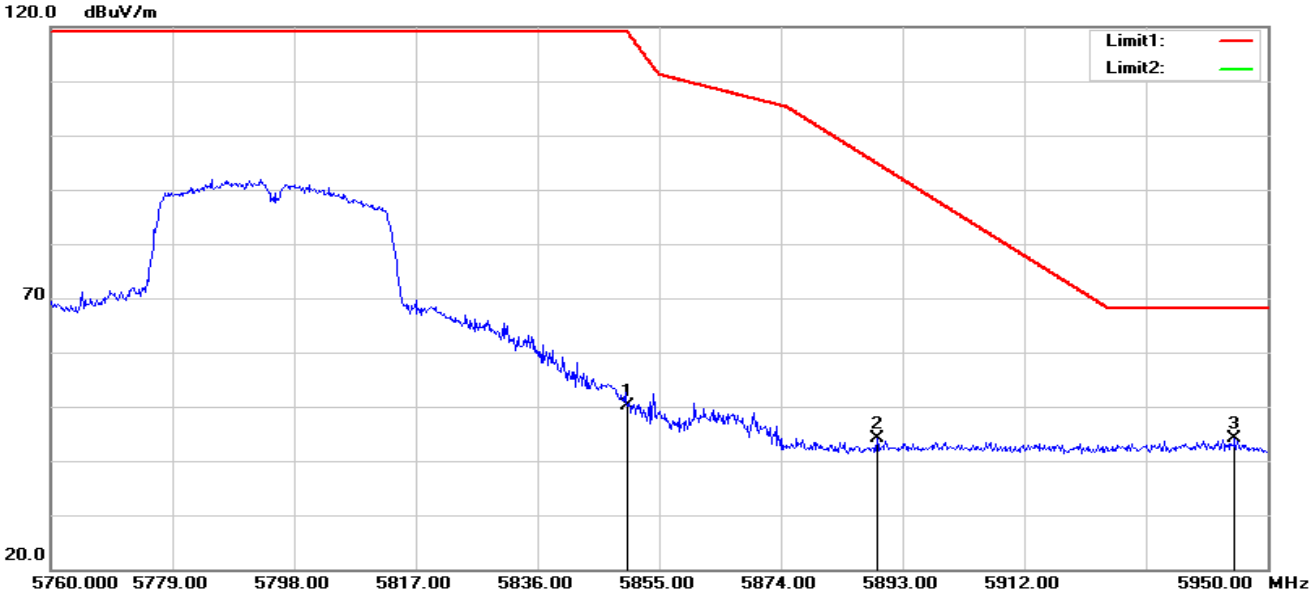
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5604.125	48.83	-4.69	44.14	68.20	-24.06	peak
2	5701.813	64.69	-4.66	60.03	105.74	-45.71	peak
3	5725.000	74.99	-4.57	70.42	119.20	-48.78	peak

802.11n40-L-V



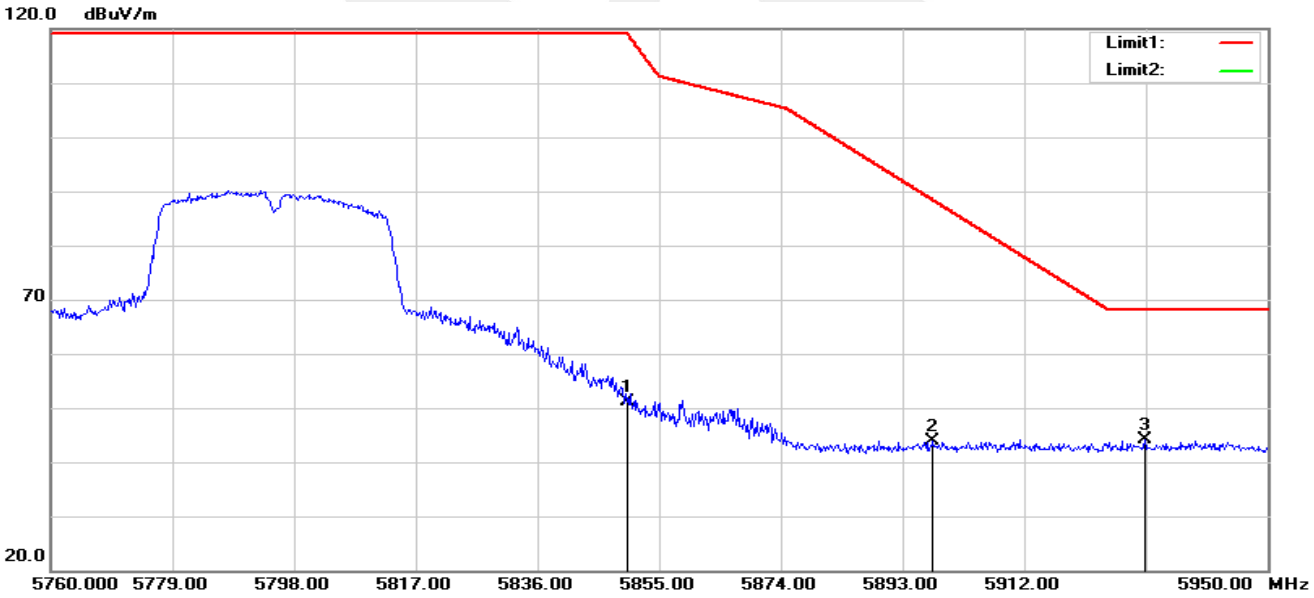
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5641.250	48.03	-4.68	43.35	68.20	-24.85	peak
2	5701.063	63.96	-4.66	59.30	105.52	-46.22	peak
3	5725.000	73.28	-4.57	68.71	119.20	-50.49	peak

802.11n40-H-H



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	54.31	-4.10	50.21	119.20	-68.99	peak
2	5889.010	48.12	-3.93	44.19	94.83	-50.64	peak
3	5944.870	48.01	-3.96	44.05	68.20	-24.15	peak

802.11n40-H-V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	55.35	-4.10	51.25	119.20	-67.95	peak
2	5897.750	47.85	-3.89	43.96	88.37	-44.41	peak
3	5930.810	47.98	-3.93	44.05	68.20	-24.15	peak

Note: All modes have been tested. Only the worst mode shown in the report.

4. POWER SPECTRAL DENSITY TEST

4.1 LIMIT

1. For mobile and portable 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.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, 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.
3. For the band 5.725-5.850 GHz, the peak power spectral density shall not exceed 30 dBm in any 500KHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2 TEST PROCEDURE

1. The setting follows Method SA-1 of FCC KDB D02 General UNII Test Procedures New Rules v01r03.

For devices operating in the band, 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.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (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 10 log (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 sections5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP

4.5 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.

4.6 TEST RESULTS

5150-5250MHz					
Frequency	Direct measurement Power Density (dBm)	Duty cycle factor (dB)	Final Power Density (dBm)	Limit (dBm)	Result
802.11a					
5180	-2.493	0.441	-2.052	11	PASS
5200	-1.995	0.441	-1.554	11	PASS
5240	-2.392	0.441	-1.951	11	PASS
802.11n20					
5180	-2.204	0.467	-1.737	11	PASS
5200	-2.060	0.467	-1.593	11	PASS
5240	-2.359	0.467	-1.892	11	PASS
802.11n40					
5190	-5.508	0.958	-4.550	11	PASS
5230	-5.920	0.958	-4.962	11	PASS
802.11ac20					
5180	-2.209	0.450	-1.759	11	PASS
5200	-2.045	0.450	-1.595	11	PASS
5240	-2.324	0.450	-1.874	11	PASS
802.11ac40					
5190	-5.906	0.910	-4.996	11	PASS
5230	-6.104	0.910	-5.194	11	PASS

5250-5350MHz					
Frequency	Direct measurement Power Density (dBm)	Duty cycle factor (dB)	Final Power Density (dBm)	Limit (dBm)	Result
802.11a					
5260	-2.519	0.458	-2.061	11	PASS
5300	-2.707	0.458	-2.249	11	PASS
5320	-2.888	0.458	-2.430	11	PASS
802.11n20					
5260	-2.866	0.452	-2.414	11	PASS
5300	-2.890	0.452	-2.438	11	PASS
5320	-3.190	0.452	-2.738	11	PASS
802.11n40					
5270	-6.271	0.916	-5.355	11	PASS
5310	-7.349	0.916	-6.433	11	PASS
802.11ac20					
5260	-2.617	0.438	-2.179	11	PASS
5300	-3.128	0.438	-2.690	11	PASS
5320	-3.260	0.438	-2.822	11	PASS
802.11ac40					
5270	-6.499	0.964	-5.535	11	PASS
5310	-7.169	0.964	-6.205	11	PASS

5725-5850MHz						
Frequency	Use RBW 510KHz direct measurement Direct measurement Power Density (dBm)	Convert to RBW 500KHz direct measurement Power Density (dBm)	Duty cycle factor (dB)	Final Power Density (dBm)	Limit (dBm)	Result
802.11a						
5745	-5.908	-5.994	0.439	-5.555	30	PASS
5785	-5.268	-5.354	0.439	-4.915	30	PASS
5825	-6.047	-6.133	0.439	-5.694	30	PASS
802.11n20						
5745	-6.549	-6.635	0.467	-6.168	30	PASS
5785	-5.823	-5.909	0.467	-5.442	30	PASS
5825	-5.322	-5.408	0.467	-4.941	30	PASS
802.11n40						
5755	-10.087	-10.173	0.937	-9.236	30	PASS
5795	-9.774	-9.860	0.937	-8.923	30	PASS
802.11ac20						
5745	-6.177	-6.263	0.454	-5.809	30	PASS
5785	-6.160	-6.246	0.454	-5.792	30	PASS
5825	-5.597	-5.683	0.454	-5.229	30	PASS
802.11ac40						
5755	-10.101	-10.187	0.874	-9.313	30	PASS
5795	-9.688	-9.774	0.874	-8.900	30	PASS

Note: 1. RB conversion formula: 10*LOG(500KHz/RBW)
2. Test plots see Attachment A.

5. BANDWIDTH MEASUREMENT

5.1 EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT

The following procedure shall be used for measuring 26 bandwidth.

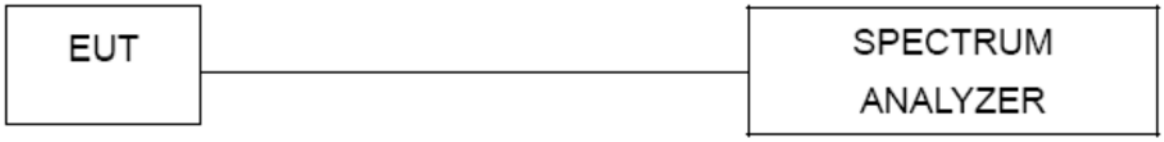
5.1.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > =RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 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.

5.1.5 TEST RESULTS

Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5180	19.67	Pass
5200	19.55	Pass
5240	19.59	Pass
802.11n(HT20)		
5180	20.07	Pass
5200	19.61	Pass
5240	20.24	Pass
802.11n(HT40)		
5190	43.19	Pass
5230	43.38	Pass
802.11ac(VHT20)		
5180	19.67	Pass
5200	19.86	Pass
5240	19.98	Pass
802.11ac(VHT40)		
5190	42.35	Pass
5230	43.35	Pass

Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5260	19.78	Pass
5300	19.77	Pass
5320	19.63	Pass
802.11n(HT20)		
5260	19.71	Pass
5300	19.66	Pass
5320	19.82	Pass
802.11n(HT40)		
5270	40.64	Pass
5310	43.28	Pass
802.11ac(VHT20)		
5260	19.80	Pass
5300	20.81	Pass
5320	19.95	Pass
802.11ac(VHT40)		
5270	43.40	Pass
5310	41.86	Pass

Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
802.11a		
5745	25.80	Pass
5785	25.74	Pass
5825	25.93	Pass
802.11n(HT20)		
5745	25.40	Pass
5785	25.87	Pass
5825	25.79	Pass
802.11n(HT40)		
5755	55.79	Pass
5795	56.00	Pass
802.11ac(VHT20)		
5745	25.90	Pass
5785	25.91	Pass
5825	25.66	Pass
802.11ac(VHT40)		
5755	55.61	Pass
5795	56.00	Pass

Test plots see Attachment B.

5.2 OCCUPIED BANDWIDTH (99%) TEST APPLIED PROCEDURES / LIMIT

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

5.2.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v02r01.
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.

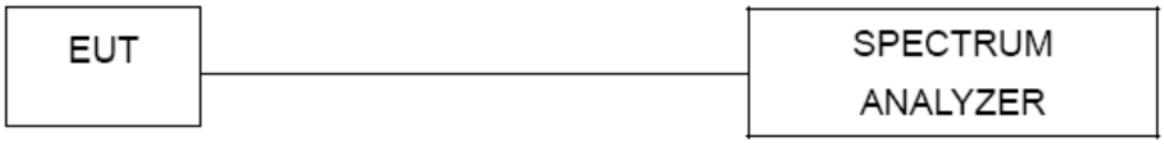
6. Use the 99 % power bandwidth function of the instrument (if available).

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.

5.2.2 DEVIATION FROM STANDARD

No deviation.

5.2.3 TEST SETUP



5.2.4 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.

5.2.5 TEST RESULTS

Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5180	16.52	Pass
5200	16.49	Pass
5240	16.48	Pass
802.11n(HT20)		
5180	17.56	Pass
5200	17.57	Pass
5240	17.58	Pass
802.11n(HT40)		
5190	36.00	Pass
5230	35.99	Pass
802.11ac(VHT20)		
5180	17.56	Pass
5200	17.57	Pass
5240	17.57	Pass
802.11ac(VHT40)		
5190	36.02	Pass
5230	35.97	Pass

Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5260	16.50	Pass
5300	16.47	Pass
5320	16.47	Pass
802.11n(HT20)		
5260	17.56	Pass
5300	17.57	Pass
5320	17.56	Pass
802.11n(HT40)		
5270	35.96	Pass
5310	36.03	Pass
802.11ac(VHT20)		
5260	17.58	Pass
5300	17.56	Pass
5320	17.59	Pass
802.11ac(VHT40)		
5270	36.00	Pass
5310	36.03	Pass

Frequency (MHz)	99% Bandwidth (MHz)	Pass/Fail
802.11a		
5745	16.70	Pass
5785	16.65	Pass
5825	16.67	Pass
802.11n(HT20)		
5745	17.68	Pass
5785	17.71	Pass
5825	17.72	Pass
802.11n(HT40)		
5755	36.21	Pass
5795	36.24	Pass
802.11ac(VHT20)		
5745	17.71	Pass
5785	17.68	Pass
5825	17.71	Pass
802.11ac(VHT40)		
5755	36.22	Pass
5795	36.20	Pass

Test plots See Attachment B.

5.3 MINIMUM EMISSION BANDWIDTH(6 DB) PROCEDURES / LIMIT

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

5.3.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v02r01.

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.

5.3.2 DEVIATION FROM STANDARD

No deviation.

5.3.3 TEST SETUP

5.3.4 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.

5.3.5 TEST RESULTS

Frequency (MHz)	6dB Bandwidth (MHz)	Pass/Fail
802.11a		
5745	15.33	Pass
5785	15.12	Pass
5825	15.11	Pass
802.11n(HT20)		
5745	15.11	Pass
5785	15.12	Pass
5825	15.43	Pass
802.11n(HT40)		
5755	35.15	Pass
5795	35.15	Pass
802.11ac(VHT20)		
5745	15.53	Pass
5785	15.14	Pass
5825	15.13	Pass
802.11ac(VHT40)		
5755	35.16	Pass
5795	35.13	Pass

Test plots see Attachment C.

6. MAXIMUM CONDUCTED OUTPUT POWER

6.1 LIMIT

For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. 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 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz,If transmitting antennas of directional gain greater than 6 dBi are used.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used.

<table>
<tr><td colspan="5">FCC Part15 (15.407) , Subpart E</td></tr>
<tr><td>Section</td><td>Test Item</td><td>Limit</td><td>Frequency Range (MHz)</td><td>Result</td></tr>
<tr><td rowspan="2">15.407(a) (1) (iv)</td><td rowspan="3">Peak Output Power</td><td>0.25 watt</td><td>5150-5250</td><td rowspan="3">PASS</td></tr>
<tr><td>The lesser of 250 mW or 11 dBm + 10 log (26 dB emission bandwidth)</td><td>5250-5350
5470-5725</td></tr>
<tr><td>15.407(a) (3)</td><td>1 watt</td><td>5725-5825</td></tr>
</table>

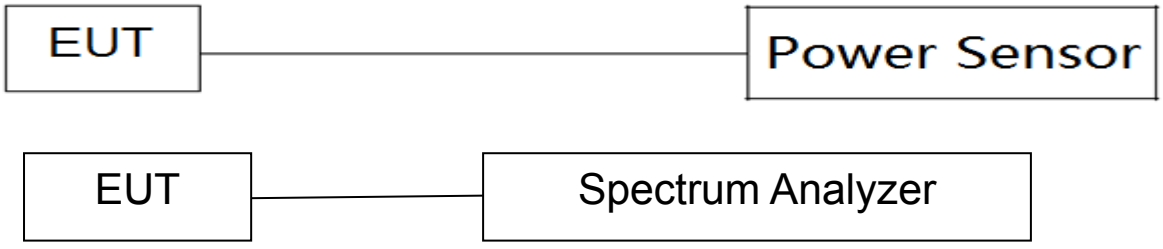
6.2 TEST PROCEDURE

The EUT was directly connected to the Power Sensor&PC

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 5 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULTS

Band I (5.15-5.25GHz)					
Test Channel	Frequency (MHz)	Direct measurement AV Power (dBm)	Duty cycle factor (dB)	Final AV Power (dBm)	LIMIT (dBm)
802.11a					
36	5180	8.18	0.441	8.62	23.98
40	5200	8.09	0.441	8.53	23.98
48	5240	7.61	0.441	8.05	23.98
802.11n(HT20)					
36	5180	8.11	0.467	8.58	23.98
40	5200	8.07	0.467	8.54	23.98
48	5240	7.50	0.467	7.97	23.98
802.11n(HT40)					
38	5190	7.57	0.958	8.53	23.98
46	5230	7.23	0.958	8.19	23.98
802.11ac(VHT20)					
36	5180	8.09	0.450	8.54	23.98
40	5200	8.01	0.450	8.46	23.98
48	5240	7.52	0.450	7.97	23.98
802.11ac(VHT40)					
38	5190	7.54	0.910	8.45	23.98
46	5230	7.21	0.910	8.12	23.98

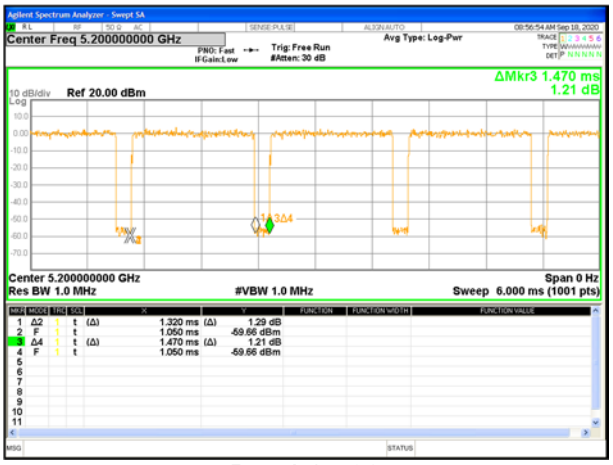
Band II(5.25-5.35GHz)					
Test Channel	Frequency (MHz)	Direct measurement AV Power (dBm)	Duty cycle factor (dB)	Final AV Power (dBm)	LIMIT (dBm)
802.11a					
52	5260	7.01	0.458	7.47	23.96
60	5300	6.33	0.458	6.79	23.96
64	5320	6.14	0.458	6.60	23.93
802.11n(HT20)					
52	5260	6.81	0.452	7.26	23.95
60	5300	6.32	0.452	6.77	23.94
64	5320	5.99	0.452	6.44	23.97
802.11n(HT40)					
54	5270	6.32	0.916	7.24	23.98
62	5310	5.88	0.916	6.80	23.98
802.11ac(VHT20)					
52	5260	6.79	0.438	7.23	23.97
60	5300	6.31	0.438	6.75	23.98
64	5320	5.82	0.438	6.26	23.98
802.11ac(VHT40)					
54	5270	6.29	0.964	7.25	23.98
62	5310	5.82	0.964	6.78	23.98

Band IV (5.725-5.85GHz)					
Test Channel	Frequency (MHz)	Direct measurement AV Power (dBm)	Duty cycle factor (dB)	Final AV Power (dBm)	LIMIT (dBm)
802.11a					
149	5745	6.45	0.439	6.89	30.00
157	5785	6.65	0.439	7.09	30.00
165	5825	6.52	0.439	6.96	30.00
802.11n(HT20)					
149	5745	6.38	0.467	6.85	30.00
157	5785	6.64	0.467	7.11	30.00
165	5825	6.43	0.467	6.90	30.00
802.11n(HT40)					
151	5755	6.22	0.937	7.16	30.00
159	5795	6.21	0.937	7.15	30.00
802.11ac(VHT20)					
149	5745	6.37	0.454	6.82	30.00
157	5785	6.42	0.454	6.87	30.00
165	5825	6.31	0.454	6.76	30.00
802.11ac(VHT40)					
151	5755	6.20	0.874	7.07	30.00
159	5795	6.03	0.874	6.90	30.00

Duty cycle

Band1				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.404	1.554	90.35%	0.441
n20	1.320	1.470	89.80%	0.467
n40	0.648	0.808	80.20%	0.958
ac20	1.320	1.464	90.16%	0.450
ac40	0.652	0.804	81.09%	0.910
Band2				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.404	1.560	90.00%	0.458
n20	1.314	1.458	90.12%	0.452
n40	0.664	0.820	80.98%	0.916
ac20	1.302	1.440	90.42%	0.438
ac40	0.644	0.804	80.10%	0.964
Band4				
Mode	Ton(ms)	Tp(ms)	Duty cycle(%)	Duty factor(dB)
a	1.410	1.560	90.38%	0.439
n20	1.320	1.470	89.80%	0.467
n40	0.648	0.804	80.60%	0.937
ac20	1.308	1.452	90.08%	0.454
ac40	0.664	0.812	81.77%	0.874

Band 1-a20

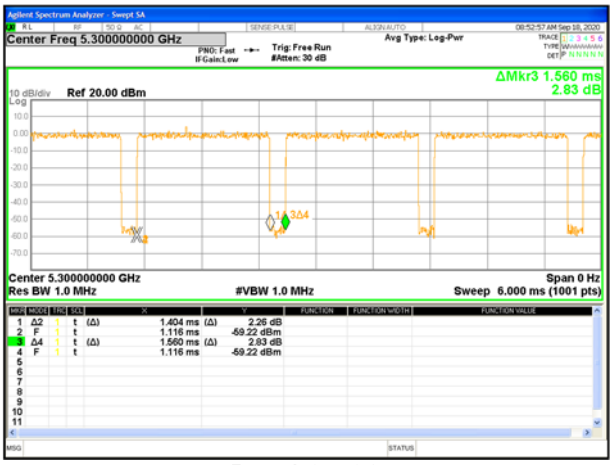


Band 1-n20

Band 1-n40

Band 2-ac20

Band 2-ac40



Band 2-a20

Band 2-n20

Band 2-n40

Band 2-ac20

Band 2-ac40

Band 4-a20

Band 4-n20

Band 4-n40

Band 4-ac20

Band 4-ac40

7. AUTOMATICALLY DISCONTINUE TRANSMISSION

7.1 LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

7.2 TEST RESULT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission

8. ANTENNA REQUIREMENT

8.1 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.

8.2 EUT ANTENNA

The EUT antenna is PIFA Antenna. It comply with the standard requirement.

APPENDIX - PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※