



FCC RF Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : 10643
FCC ID : IHDT56WC1
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Feb. 15, 2017 and testing was completed on Mar. 16, 2017. We, Sporton International (KunShan) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (KunShan) INC., the test report shall not be reproduced except in full.

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	2.1049 15.403(i)	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	FCC ≤ 24 dBm (depend on band)	Pass	-
3.3	15.407(a)	Power Spectral Density	FCC ≤ 11 dBm (depend on band)	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b) 15.209(a)	Pass	Under limit 3.12 dB at 5350.300 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 9.39 dB at 0.614 MHz
3.6	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	10643
FCC ID	IHDT56WC1
EUT supports Radios application	CDMA/EV-DO/GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+(16QAM uplink is not supported)/DC-HSDPA/LTE/ WLAN2.4GHz 802.11b/g/n HT20/ WLAN5GHz 802.11a/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE Bluetooth v4.1 LE/ Bluetooth v4.2 LE
IMEI Code	Conducted: 353308080014111 Conduction: 353308080019250 Radiation: 353308080017742
HW Version	DVT2
SW Version	fastboot_perry_oem_userdebug_7.1.1_NPQ26.46_1467_i ntcfg-test-keys_oem.tar
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5720 MHz
Maximum Output Power to Antenna	<p><5180 MHz ~ 5240 MHz> 802.11a : 16.72 dBm / 0.0470 W 802.11n HT20 : 16.69 dBm / 0.0467 W 802.11n HT40 : 16.40 dBm / 0.0437 W</p> <p><5260 MHz ~ 5320 MHz> 802.11a : 16.53 dBm / 0.0450 W 802.11n HT20 : 16.46 dBm / 0.0443 W 802.11n HT40 : 16.41 dBm / 0.0438 W</p> <p><5500 MHz ~ 5720 MHz > 802.11a : 16.44 dBm / 0.0441 W 802.11n HT20 : 16.37 dBm / 0.0434 W 802.11n HT40 : 16.16 dBm / 0.0413 W</p>
Maximum Output Power to Antenna for Straddle Channel	802.11a : 14.89 dBm / 0.0308 W 802.11n HT20 : 15.21 dBm / 0.0332 W 802.11n HT40 : 14.95 dBm / 0.0313 W
99% Occupied Bandwidth	<p><5180 MHz ~ 5240 MHz> 802.11a : 23.18 MHz 802.11n HT20 : 24.33 MHz 802.11n HT40 : 38.66 MHz</p> <p><5260 MHz ~ 5320 MHz> 802.11a : 21.53 MHz 802.11n HT20 : 23.38 MHz 802.11n HT40 : 37.86 MHz</p> <p><5500 MHz ~ 5720 MHz > 802.11a : 22.38 MHz 802.11n HT20 : 23.83 MHz 802.11n HT40 : 39.26 MHz</p>
99% Occupied Bandwidth for Straddle Channel	802.11a : 19.23 MHz 802.11n HT20 : 19.83 MHz 802.11n HT40 : 39.06 MHz
Antenna Gain / Gain	<p><5180 MHz ~ 5240 MHz > Monopole Antenna with gain -0.75 dBi</p> <p><5260 MHz ~ 5320 MHz > Monopole Antenna with gain -1.83 dBi</p> <p><5500 MHz ~ 5720 MHz > Monopole Antenna with gain -0.46 dBi</p>
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

Note: WLAN operation in 5600 MHz ~ 5650 MHz is notched.



1.5 Specification of Accessory

Specification of Accessory				
AC Adapter 1	Brand Name	Motorola (AcBel)	Model Name	C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2 Vdc, 2000mA		
AC Adapter 2	Brand Name	Motorola(Salom)	Model Name	SSW-2919UMTJ C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2 Vdc, 2000mA		
Battery	Brand Name	Motorola (Amperex)	Model Name	GK40
	Power Rating	3.8Vdc,2685/2800mAh (Min/Typ)	Type	Li-ion
USB Cable	Brand Name	Motorola	Model Name	SKN6462A
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		

1.6 Modification of EUT

No modifications are made to the EUT during all test items.



1.7 Testing Location

Test Site	Sporton International (KunShan) INC.			
Test Site Location	No.3-2, Pingxiang Road, Kunshan Development Zone, Jiangsu, China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
Test Site No.	Sporton Site No.			FCC Registration No.
	TH01-KS	03CH02-KS	CO01-KS	418269

Note: The test site complies with ANSI C63.4 2014 requirement.

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5180-5240 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	-	-	-	-

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	-	-	-	-

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5700 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	-	-	134*	5670
	108	5540	136	5680
	110*	5550	140	5700



Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
TDWR Channel	120	5600	126*	5630
	-	-	128	5640
	124	5620	-	-

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Straddle Channel	-	-	144	5720
	142*	5710	-	-

Note: The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

WLAN 5GHz 802.11a Average Power (dBm)									
Power vs. Channel		Power vs. Data Rate							
Channel	Frequency (MHz)	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 36	5180	14.83	14.77	14.76	14.81	14.79	14.05	13.25	12.31
CH 44	5220	16.72	16.54	16.52	16.48	16.57	15.84	14.88	13.85
CH 48	5240	15.62	15.47	15.44	15.59	15.57	14.89	13.83	12.96
CH 52	5260	16.53	16.12	16.09	16.20	16.27	15.34	14.53	13.59
CH 60	5300	16.17	16.00	16.07	16.10	16.14	15.20	14.37	13.44
CH 64	5320	15.94	15.74	15.82	15.86	15.91	14.91	14.18	13.28
CH 100	5500	14.97	14.96	14.93	14.94	14.95	14.09	13.14	12.14
CH 116	5580	16.44	16.33	16.41	16.34	16.21	15.51	14.57	13.63
CH 140	5700	11.26	11.03	11.16	11.22	11.18	10.37	9.63	8.58

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel		Power vs. Data Rate							
Channel	Frequency (MHz)	MCS 0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	14.90	14.82	14.86	14.83	14.85	13.72	13.75	12.41
CH 44	5220	16.69	16.66	16.62	16.60	16.65	14.64	15.73	14.11
CH 48	5240	15.98	15.91	15.93	15.94	15.91	14.60	14.68	13.16
CH 52	5260	16.46	16.42	16.39	16.38	16.32	15.13	15.24	13.66
CH 60	5300	16.43	16.35	16.39	16.35	16.29	15.09	15.20	13.67
CH 64	5320	16.19	16.09	16.12	16.09	16.15	14.93	15.03	13.43
CH 100	5500	14.91	14.87	14.88	14.90	14.89	13.66	13.78	12.37
CH 116	5580	16.37	16.36	16.32	16.31	16.35	15.16	15.26	13.69
CH 140	5700	11.39	11.36	11.29	11.34	11.33	10.03	10.05	8.67



WLAN 5GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel		Power vs. Data Rate							
Channel	Frequency (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	10.37	10.35	10.32	10.36	10.34	9.85	9.92	7.92
CH 46	5230	16.40	16.35	16.37	16.28	16.20	14.97	15.08	13.59
CH 54	5270	16.41	16.37	16.39	16.35	16.33	15.05	15.14	13.61
CH 62	5310	11.12	11.06	11.10	10.97	11.08	9.81	9.88	8.27
CH 102	5510	11.20	11.12	11.15	11.13	11.18	9.59	9.57	8.15
CH 110	5550	16.16	16.13	15.93	15.81	16.11	14.60	14.68	13.24
CH 134	5670	15.46	15.28	15.40	15.20	15.33	14.06	14.23	12.67



2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 1) + Earphone Mode 2 : GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 2) + Earphone
Remark: <ol style="list-style-type: none">1. For Radiated TCs, the tests were performed with Adapter, Earphone, and USB Cable.2. The worst case of conducted emission is mode 2; only the test data of it was reported.	



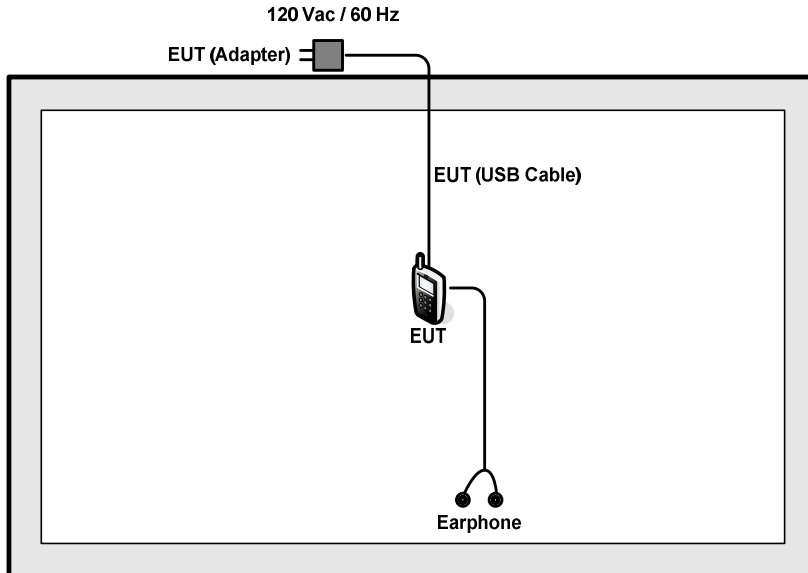
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140
Straddle		-	-	144

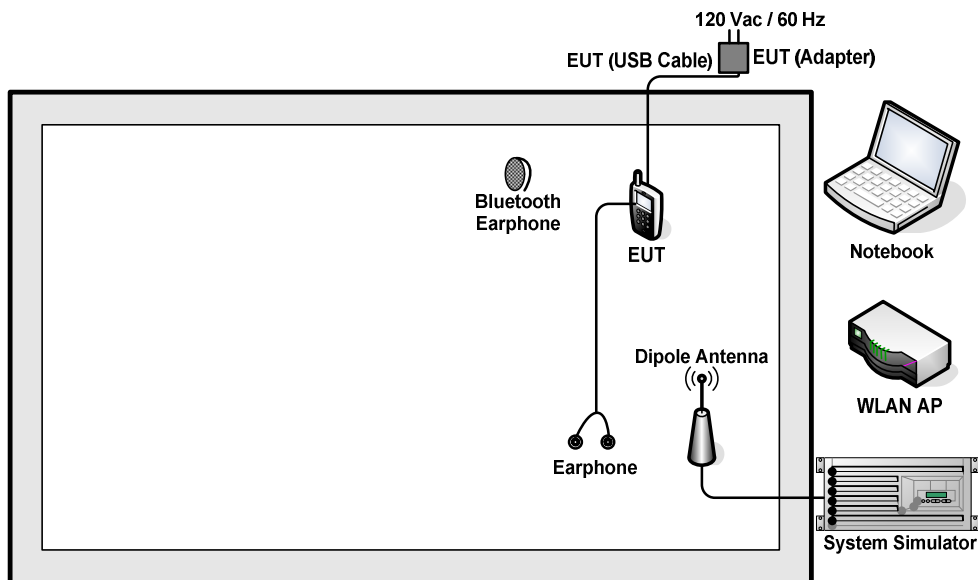
Ch. #		Band I : 5180-5240 MHz	Band II : 5260-5320 MHz	Band III : 5500-5720MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134
Straddle		-	-	142

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	LINKSYS	WRT600N	Q87-WRT600NV11	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	G480	PRC4	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
5.	SD Card	Kingston	4GB	N/A	N/A	N/A
6.	Earphone	Lenovo	LH102	N/A	Unshielded, 1.2 m	N/A

2.6 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the Notebook under large package sizes transmission.



2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 6.9 dB.

Offset (dB) = RF cable loss(dB).
= 6.9 (dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

For Straddle Channel, U-NII procedures and limits were applied for operations in the frequency band in accordance with FCC KDB 644545 D03.

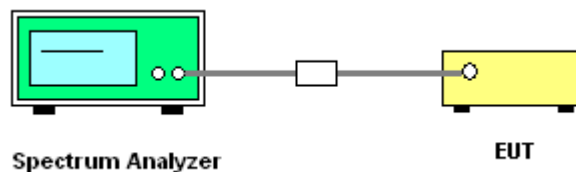
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. Section C) Emission bandwidth
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%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) $\geq 3 * RBW$.
8. Measure and record the results in the test report.

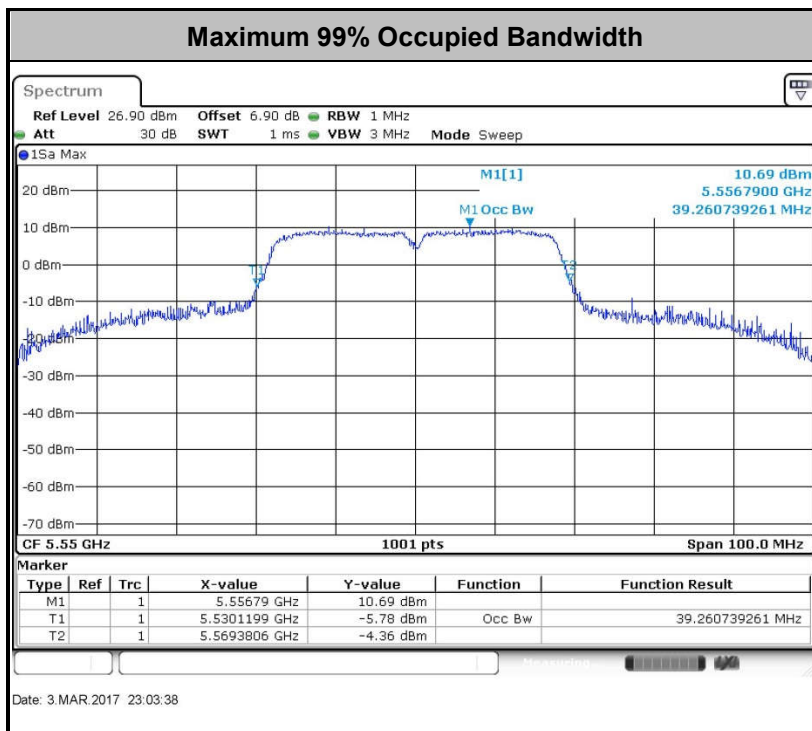
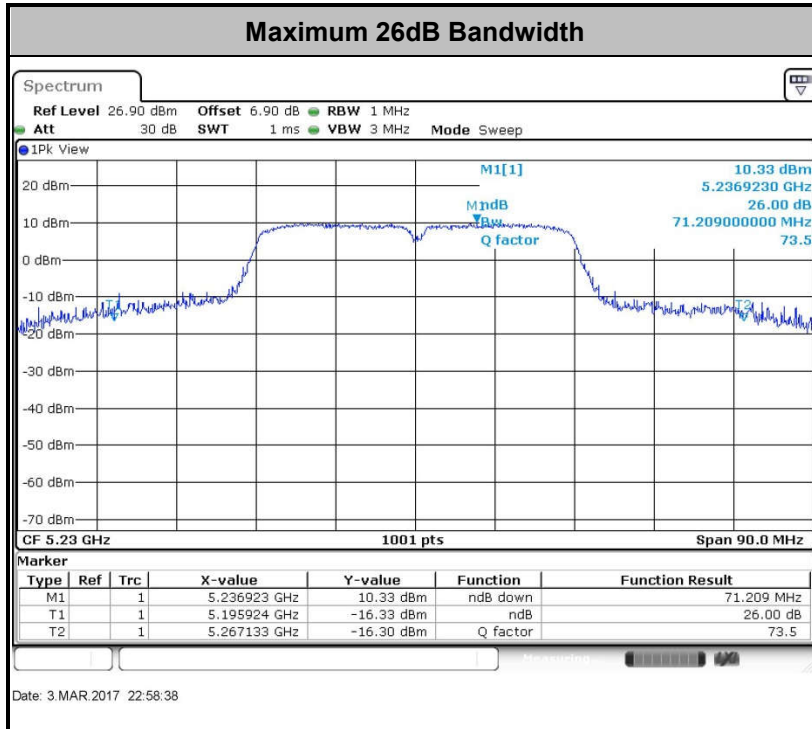
3.1.4 Test Setup



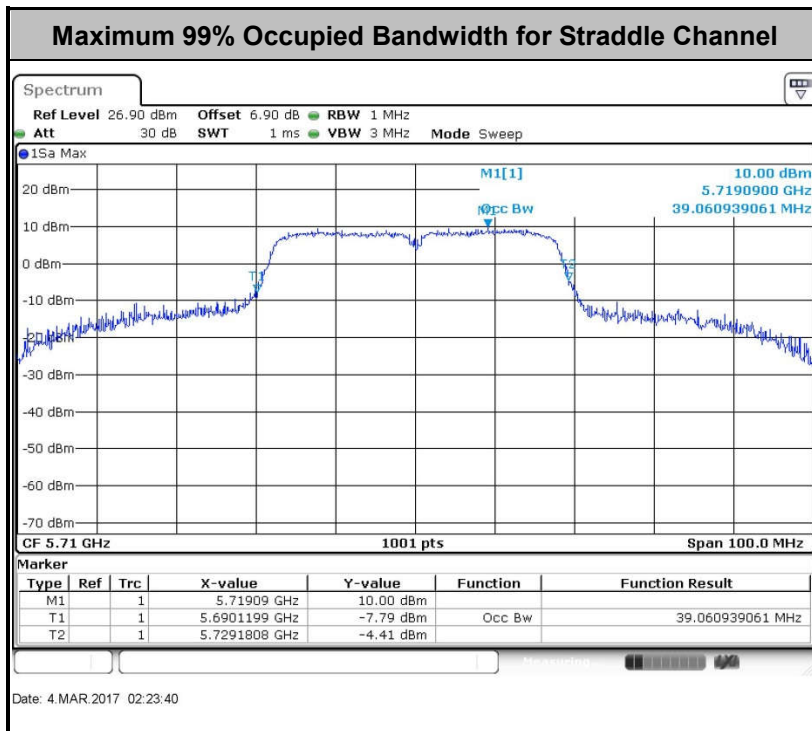
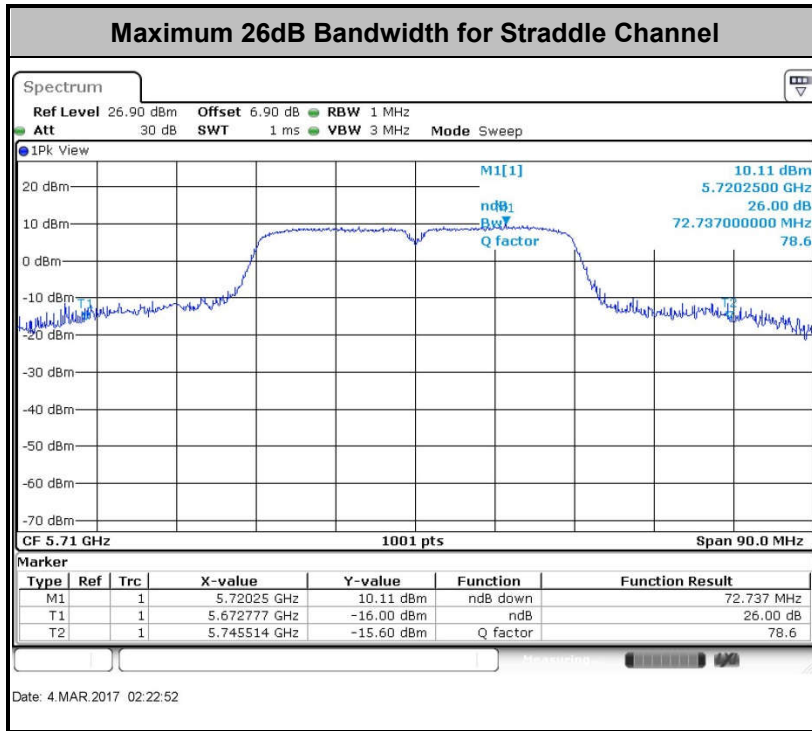


3.1.5 Test Result of 26dB & 99% Occupied Bandwidth Plots

Please refer to Appendix A.



Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

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.

For the 5.25–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

For Straddle Channel, U-NII procedures and limits were applied for operations in the frequency band in accordance with FCC KDB 644545 D03.

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

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

Method PM (Measurement using an RF average power meter):

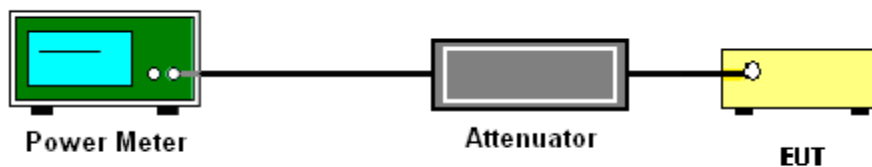
1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

For straddle channel, the testing follows Method SA-3 (RMS detection with max hold) of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

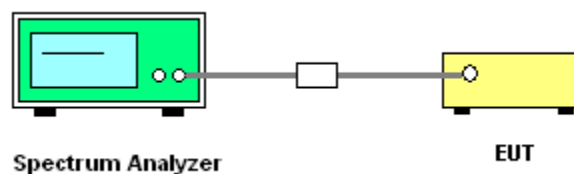
Compute power by integrating the spectrum across the 99% occupied bandwidth of the signal using the instrument's band power measurement function.

3.2.4 Test Setup

For normal channel:



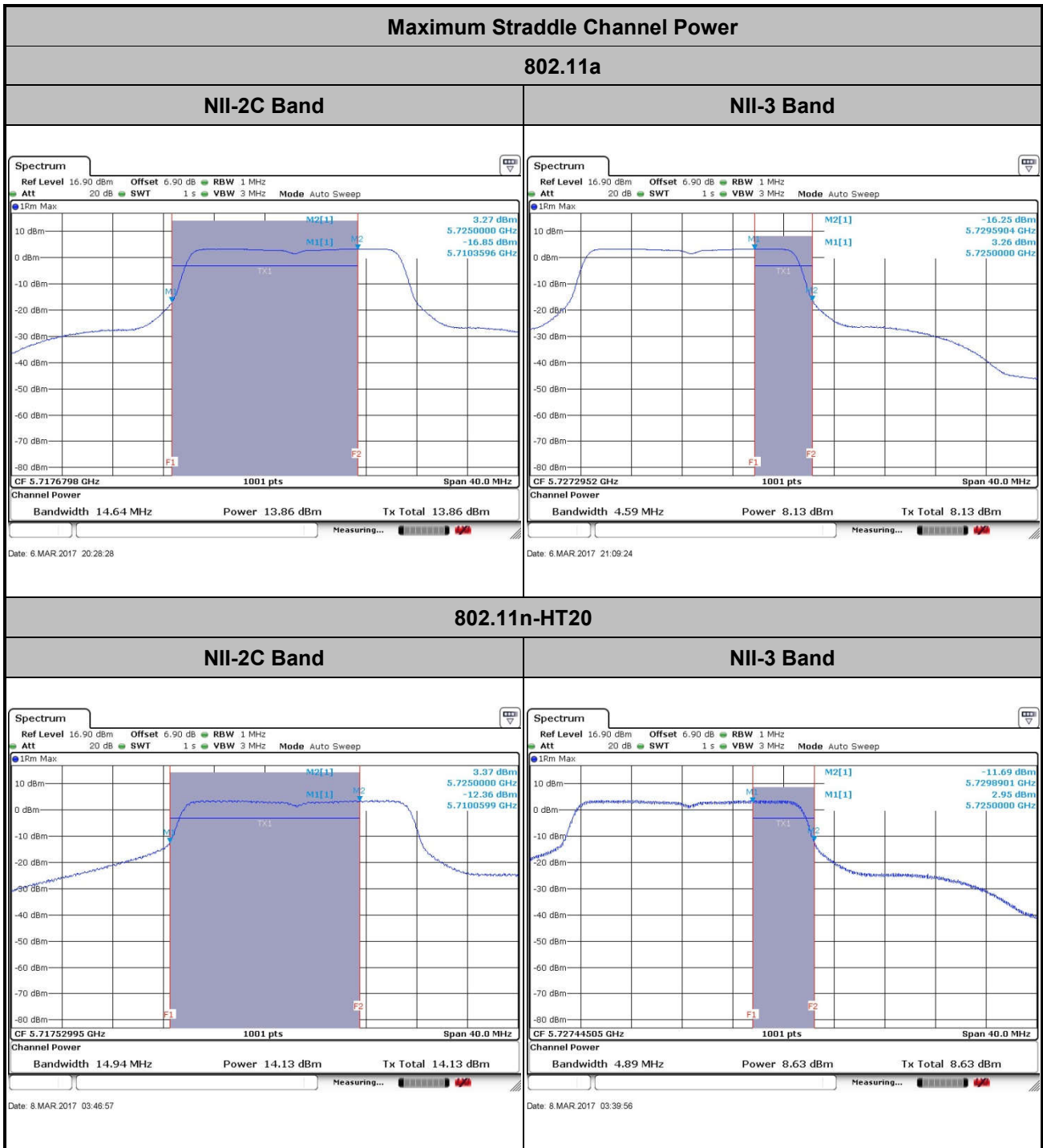
For straddle channel:

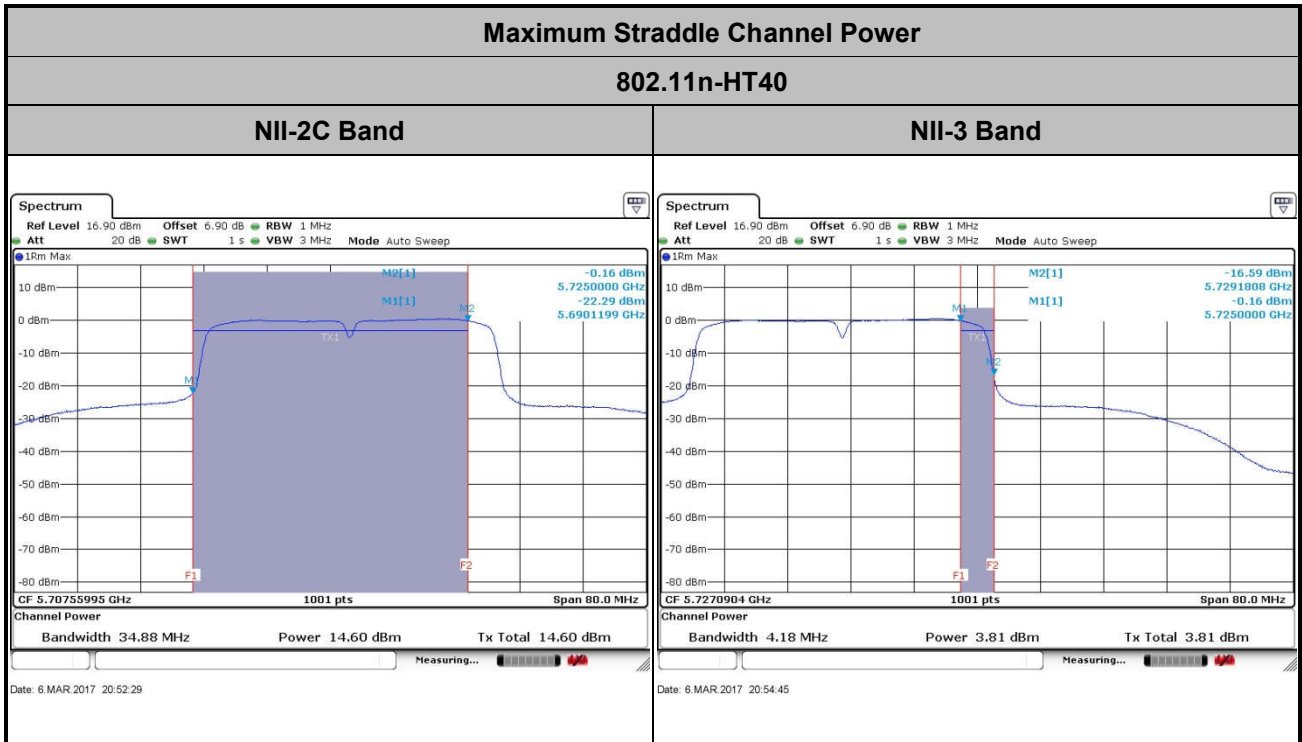




3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.







3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25–5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For Straddle Channel, U-NII procedures and limits were applied for operations in the frequency band in accordance with FCC KDB 644545 D03.

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

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

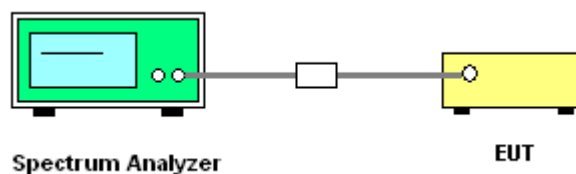
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.
Section F) Maximum power spectral density.

Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.
 - Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW \geq 3 MHz.
 - Number of points in sweep \geq 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

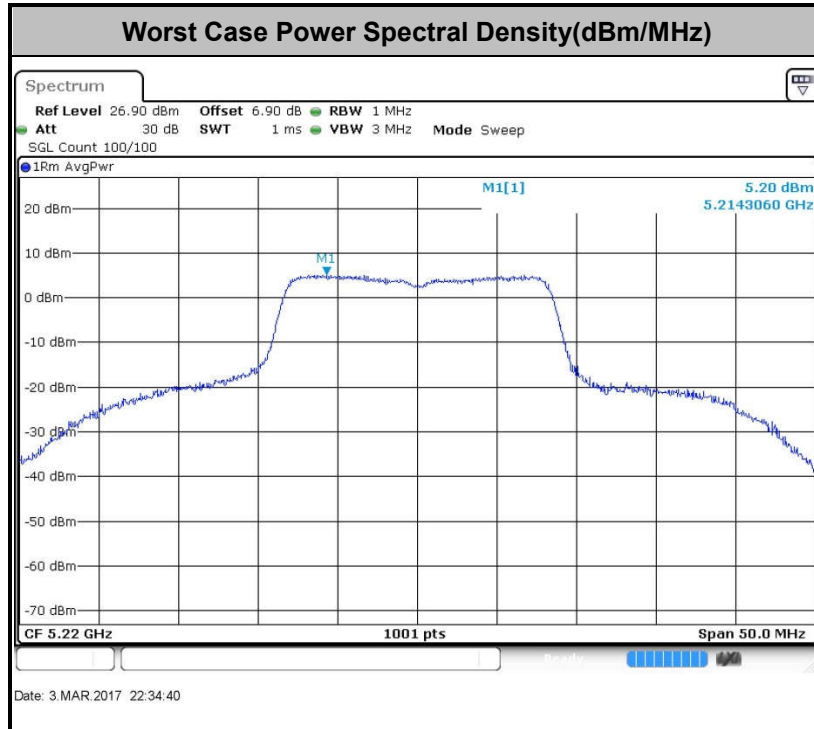
3.3.4 Test Setup





3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



Note: Average Power Density (dB) = Measured value+ Duty Factor



3.4 Unwanted Radiated Emission Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5725MHz band: all emissions outside of the 5470-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table

Frequency (MHz)	Field Strength (microvolts/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

Note: The following formula is used to convert the EIRP to field strength.

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



EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
- 27	68.3

(3) KDB789033 D01 v01r03 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

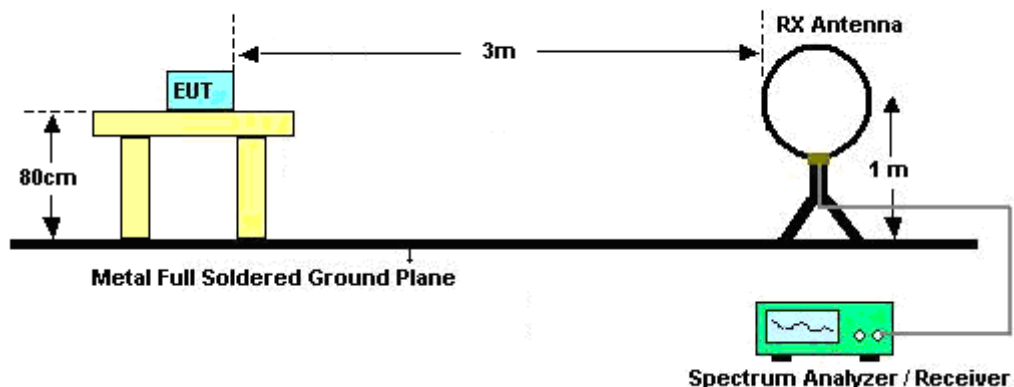
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

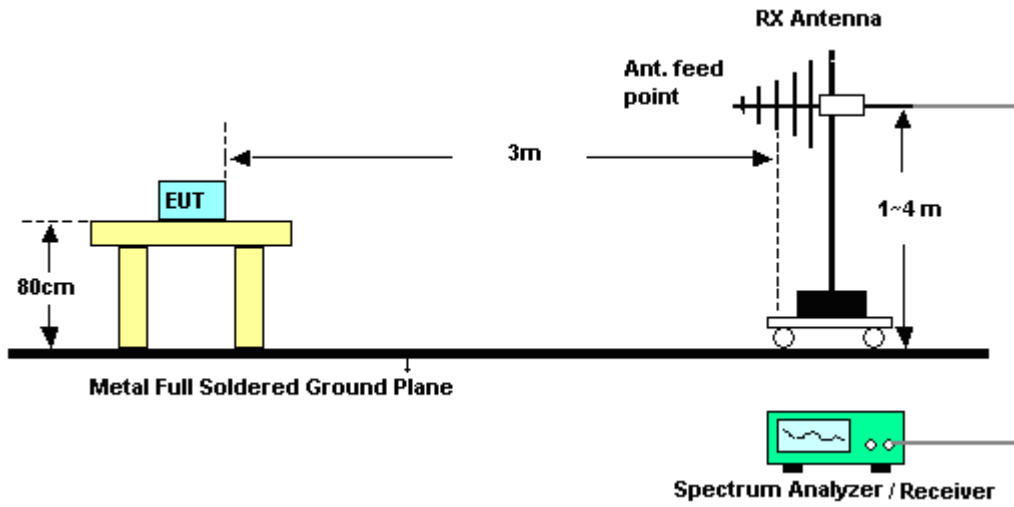
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

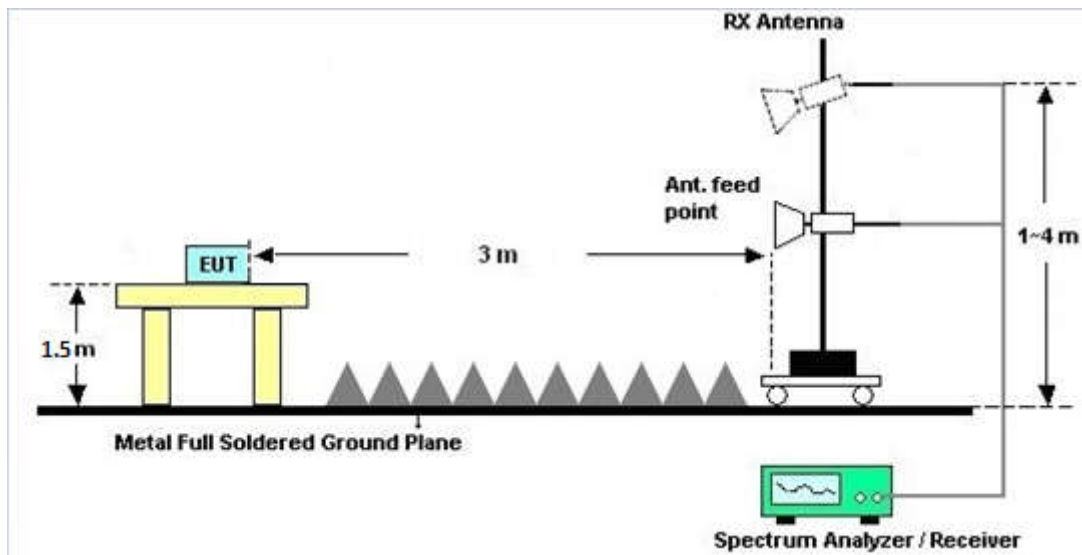
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.4.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.4.7 Duty Cycle

Please refer to Appendix C.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix B.



3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

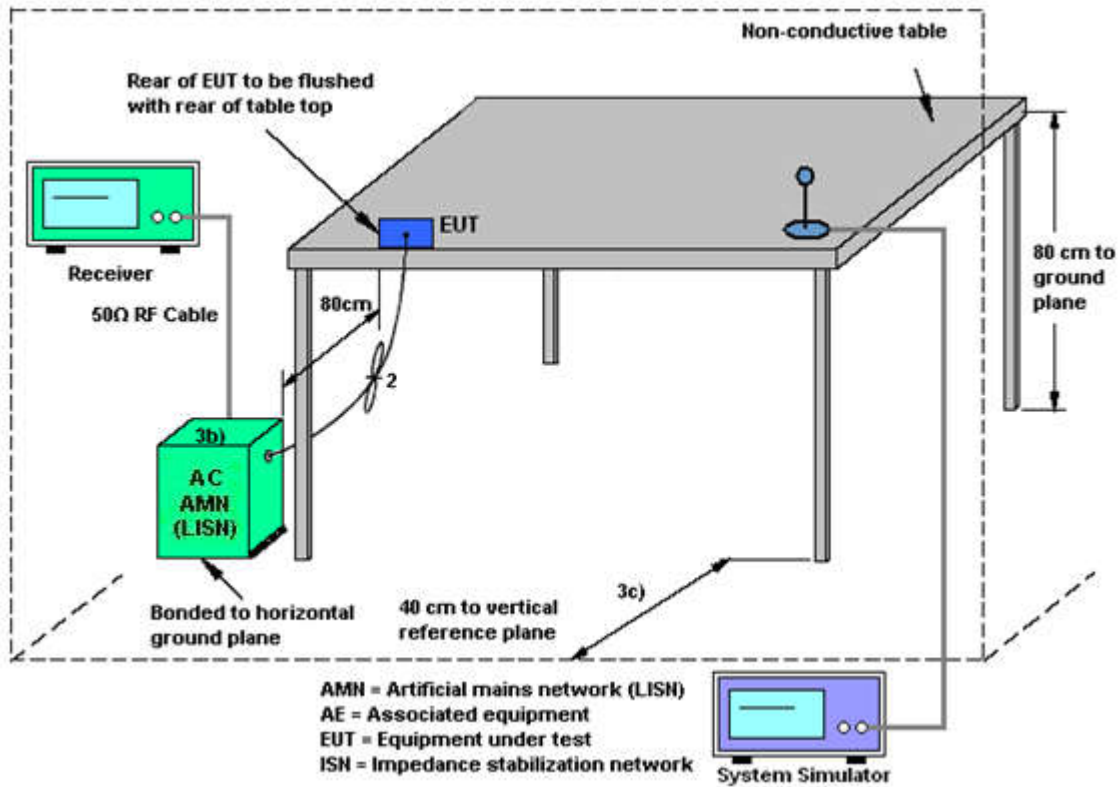
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

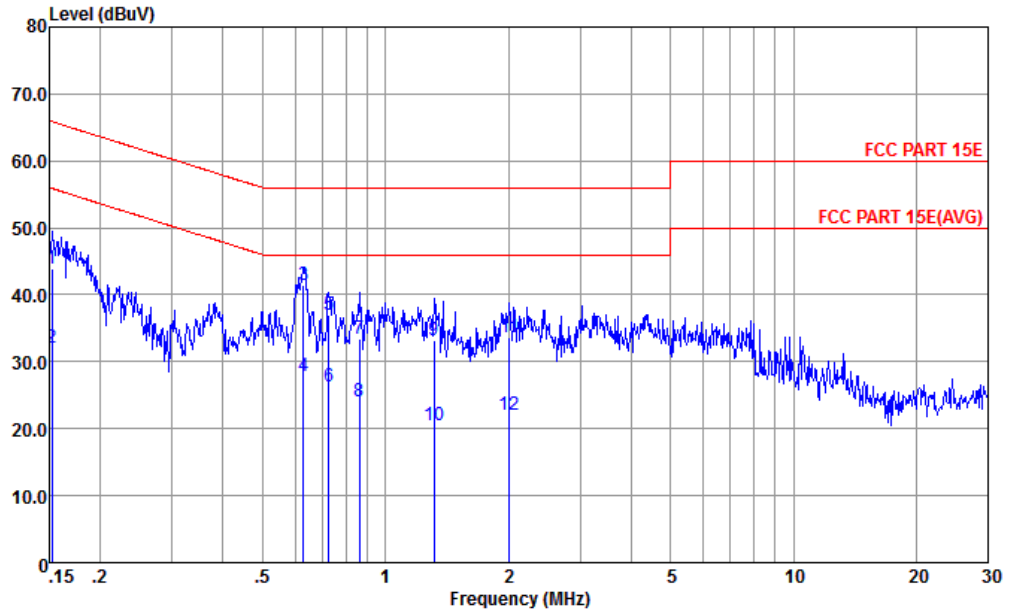
3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 2) + Earphone		

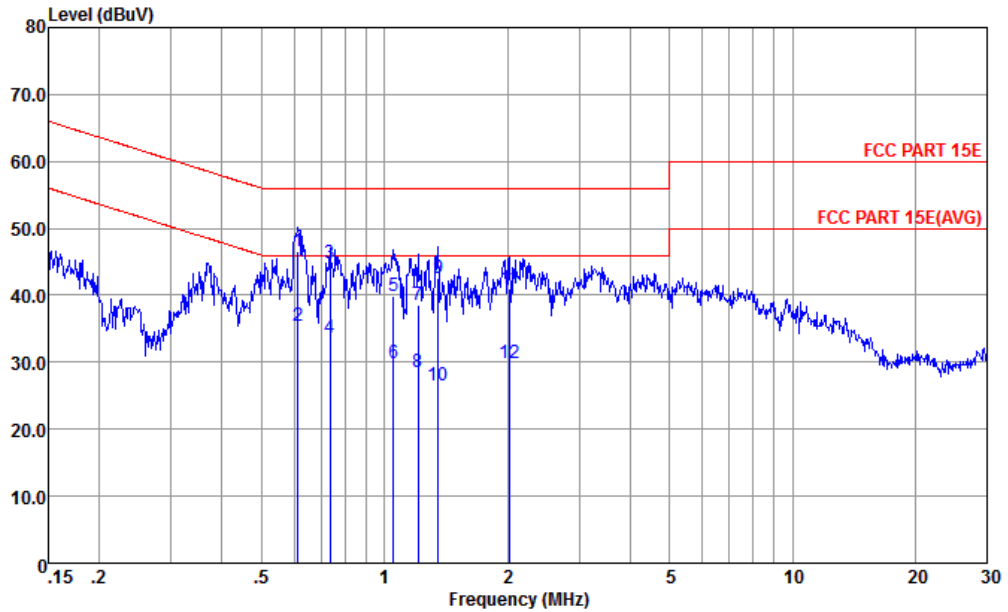


Site : CO01-KS
 Condition : FCC PART 15E LISN-L-20151024 LINE
 mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.152	43.90	-21.97	65.87	33.00	0.51	10.39	QP
2	0.152	32.10	-23.77	55.87	21.20	0.51	10.39	Average
3 *	0.630	41.42	-14.58	56.00	31.00	0.24	10.18	QP
4	0.630	27.82	-18.18	46.00	17.40	0.24	10.18	Average
5	0.727	37.02	-18.98	56.00	26.60	0.24	10.18	QP
6	0.727	26.32	-19.68	46.00	15.90	0.24	10.18	Average
7	0.862	33.42	-22.58	56.00	22.99	0.25	10.18	QP
8	0.862	24.02	-21.98	46.00	13.59	0.25	10.18	Average
9	1.317	33.31	-22.69	56.00	22.90	0.22	10.19	QP
10	1.317	20.41	-25.59	46.00	10.00	0.22	10.19	Average
11	2.012	33.57	-22.43	56.00	23.20	0.18	10.19	QP
12	2.012	22.07	-23.93	46.00	11.70	0.18	10.19	Average



Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable (Charging from Adapter 2) + Earphone		



Site : CO01-KS
 Condition : FCC PART 15E LISN-N-20151024 NEUTRAL
 mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.614	46.61	-9.39	56.00	36.10	0.33	10.18	QP
2	0.614	35.51	-10.49	46.00	25.00	0.33	10.18	Average
3	0.735	44.72	-11.28	56.00	34.20	0.34	10.18	QP
4	0.735	33.72	-12.28	46.00	23.20	0.34	10.18	Average
5	1.054	39.96	-16.04	56.00	29.40	0.37	10.19	QP
6	1.054	29.76	-16.24	46.00	19.20	0.37	10.19	Average
7	1.210	38.56	-17.44	56.00	28.00	0.37	10.19	QP
8	1.210	28.56	-17.44	46.00	18.00	0.37	10.19	Average
9	1.352	42.46	-13.54	56.00	31.90	0.37	10.19	QP
10	1.352	26.56	-19.44	46.00	16.00	0.37	10.19	Average
11	2.033	40.97	-15.03	56.00	30.40	0.38	10.19	QP
12	2.033	29.87	-16.13	46.00	19.30	0.38	10.19	Average

3.6 Frequency Stability Measurement

3.6.1 Limit of Frequency Stability

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

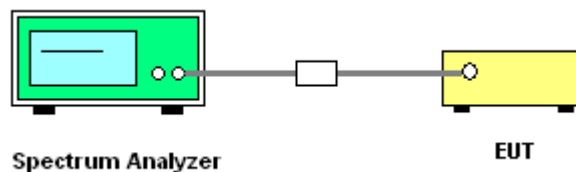
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.6.4 Test Setup



3.6.5 Test Result of Frequency Stability

Please refer to Appendix A.

The frequency band 5180-5240MHz which was verified by testing against other standard is less than 20 ppm which is sufficient to maintain the signal within the 5150-5250MHz band.



3.7 Automatically Discontinue Transmission

3.7.1 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.

3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, 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.



3.8 Antenna Requirements

3.8.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit 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.

3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.8.3 Antenna Gain

The antenna gain is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Oct. 13, 2016	Mar. 03, 2017~ Mar. 06, 2017	Oct. 12, 2017	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 09, 2016	Mar. 03, 2017~ Mar. 06, 2017	Aug. 08, 2017	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 19, 2017	Mar. 03, 2017~ Mar. 06, 2017	Jan. 19, 2018	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 19, 2017	Mar. 03, 2017~ Mar. 06, 2017	Jan. 19, 2018	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Mar. 16, 2017	Aug. 08, 2017	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz~44GHz, MAX 30dB	Apr. 22, 2016	Mar. 16, 2017	Apr. 21, 2017	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 23, 2016	Mar. 16, 2017	Nov. 22, 2017	Radiation (03CH01-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Aug. 20, 2016	Mar. 16, 2017	Aug. 19, 2017	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 22, 2016	Mar. 16, 2017	Oct. 21, 2017	Radiation (03CH02-KS)
High Gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	1943529	1GHz~18GHz	Jan. 19, 2017	Mar. 16, 2017	Jan. 18, 2018	Radiation (03CH02-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Feb. 15, 2017	Mar. 16, 2017	Feb. 14, 2018	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz~1000MHz / 32 dB	Apr. 22, 2016	Mar. 16, 2017	Apr. 21, 2017	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1GHz~26.5GHz	Oct. 13, 2016	Mar. 16, 2017	Oct. 12, 2017	Radiation (03CH02-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18GHz~40GHz	Oct. 13, 2016	Mar. 16, 2017	Oct. 12, 2017	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	6160100024 73	N/A	NCR	Mar. 16, 2017	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Mar. 16, 2017	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Mar. 16, 2017	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz	Apr. 29, 2016	Mar. 10, 2017	Apr. 28, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2016	Mar. 10, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2016	Mar. 10, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	AC 0V~300V, 45Hz~1000Hz	Oct. 13, 2016	Mar. 10, 2017	Oct. 12, 2017	Conduction (CO01-KS)

NCR: No Calibration Required



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.3dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2dB
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Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7dB
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Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3dB
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Appendix A. Conducted Test Results

Test Engineer:	Silent Hai	Temperature:	21~25	°C
Test Date:	2017/3/3 ~ 2017/3/6	Relative Humidity:	51~51	%

TEST RESULTS DATA
26dB and 99% OBW

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)		
11a	6Mbps	1	36	5180	19.53	28.92	-	22.91		
11a	6Mbps	1	44	5220	23.18	40.36	-	23.01		
11a	6Mbps	1	48	5240	20.28	37.51	-	23.01		
HT20	MCS0	1	36	5180	19.83	28.92	-	22.97		
HT20	MCS0	1	44	5220	24.33	43.26	-	23.01		
HT20	MCS0	1	48	5240	21.28	41.01	-	23.01		
HT40	MCS0	1	38	5190	36.66	44.60	-	23.01		
HT40	MCS0	1	46	5230	38.66	71.21	-	23.01		

TEST RESULTS DATA
Average Power Table

FCC Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	36	5180	0.59	14.83	24.00	-0.75		Pass
11a	6Mbps	1	44	5220	0.59	16.72	24.00	-0.75		Pass
11a	6Mbps	1	48	5240	0.59	15.62	24.00	-0.75		Pass
HT20	MCS0	1	36	5180	0.61	14.90	24.00	-0.75		Pass
HT20	MCS0	1	44	5220	0.61	16.69	24.00	-0.75		Pass
HT20	MCS0	1	48	5240	0.61	15.98	24.00	-0.75		Pass
HT40	MCS0	1	38	5190	0.65	10.37	24.00	-0.75		Pass
HT40	MCS0	1	46	5230	0.65	16.40	24.00	-0.75		Pass

TEST RESULTS DATA
Power Spectral Density

FCC Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)	-	Pass/Fail
11a	6Mbps	1	36	5180	0.59	3.69	11.00	-0.75		Pass
11a	6Mbps	1	44	5220	0.59	5.79	11.00	-0.75		Pass
11a	6Mbps	1	48	5240	0.59	5.15	11.00	-0.75		Pass
HT20	MCS0	1	36	5180	0.61	3.04	11.00	-0.75		Pass
HT20	MCS0	1	44	5220	0.61	5.28	11.00	-0.75		Pass
HT20	MCS0	1	48	5240	0.61	4.87	11.00	-0.75		Pass
HT40	MCS0	1	38	5190	0.65	-4.52	11.00	-0.75		Pass
HT40	MCS0	1	46	5230	0.65	2.09	11.00	-0.75		Pass

TEST RESULTS DATA
26dB and 99% OBW

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)	Note
11a	6M bps	1	52	5260	20.78	39.81	23.98	30.00	23.98	
11a	6M bps	1	60	5300	21.53	40.41	23.98	30.00	23.98	
11a	6M bps	1	64	5320	20.93	38.41	23.98	30.00	23.98	
HT20	MCS 0	1	52	5260	22.58	43.26	23.98	30.00	23.98	
HT20	MCS 0	1	60	5300	23.08	41.31	23.98	30.00	23.98	
HT20	MCS 0	1	64	5320	23.38	43.41	23.98	30.00	23.98	
HT40	MCS 0	1	54	5270	37.86	70.76	23.98	30.00	23.98	
HT40	MCS 0	1	62	5310	36.66	44.69	23.98	30.00	23.98	

TEST RESULTS DATA
Average Power Table

FCC Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	52	5260	0.59	16.53	23.98	-1.83	26.99	Pass
11a	6M bps	1	60	5300	0.59	16.17	23.98	-1.83	26.99	Pass
11a	6M bps	1	64	5320	0.59	15.94	23.98	-1.83	26.99	Pass
HT20	MCS 0	1	52	5260	0.61	16.46	23.98	-1.83	26.99	Pass
HT20	MCS 0	1	60	5300	0.61	16.43	23.98	-1.83	26.99	Pass
HT20	MCS 0	1	64	5320	0.61	16.19	23.98	-1.83	26.99	Pass
HT40	MCS 0	1	54	5270	0.65	16.41	23.98	-1.83	26.99	Pass
HT40	MCS 0	1	62	5310	0.65	11.12	23.98	-1.83	26.99	Pass

TEST RESULTS DATA
Power Spectral Density

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	52	5260	0.59	5.29	11.00	-1.83		Pass
11a	6M bps	1	60	5300	0.59	5.22	11.00	-1.83		Pass
11a	6M bps	1	64	5320	0.59	5.53	11.00	-1.83		Pass
HT20	MCS 0	1	52	5260	0.61	5.16	11.00	-1.83		Pass
HT20	MCS 0	1	60	5300	0.61	4.84	11.00	-1.83		Pass
HT20	MCS 0	1	64	5320	0.61	4.89	11.00	-1.83		Pass
HT40	MCS 0	1	54	5270	0.65	1.96	11.00	-1.83		Pass
HT40	MCS 0	1	62	5310	0.65	-3.61	11.00	-1.83		Pass

TEST RESULTS DATA
26dB and 99% OBW

Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)	Note
11a	6M bps	1	100	5500	19.58	34.97	23.92	29.92	23.98	
11a	6M bps	1	116	5580	22.38	41.41	23.98	30.00	23.98	
11a	6M bps	1	140	5700	18.83	25.67	23.75	29.75	23.98	
HT20	MCS 0	1	100	5500	20.73	35.66	23.98	30.00	23.98	
HT20	MCS 0	1	116	5580	23.83	44.56	23.98	30.00	23.98	
HT20	MCS 0	1	140	5700	19.58	27.12	23.92	29.92	23.98	
HT40	MCS 0	1	102	5510	37.26	45.76	23.98	30.00	23.98	
HT40	MCS 0	1	110	5550	39.26	67.61	23.98	30.00	23.98	
HT40	MCS 0	1	134	5670	38.16	69.86	23.98	30.00	23.98	

TEST RESULTS DATA
Average Power Table

FCC Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6M bps	1	100	5500	0.59	14.97	23.98	-0.46	26.99	Pass
11a	6M bps	1	116	5580	0.59	16.44	23.98	-0.46	26.99	Pass
11a	6M bps	1	140	5700	0.59	11.26	23.98	-0.46	26.99	Pass
HT20	MCS 0	1	100	5500	0.61	14.91	23.98	-0.46	26.99	Pass
HT20	MCS 0	1	116	5580	0.61	16.37	23.98	-0.46	26.99	Pass
HT20	MCS 0	1	140	5700	0.61	11.39	23.98	-0.46	26.99	Pass
HT40	MCS 0	1	102	5510	0.65	11.20	23.98	-0.46	26.99	Pass
HT40	MCS 0	1	110	5550	0.65	16.16	23.98	-0.46	26.99	Pass
HT40	MCS 0	1	134	5670	0.65	15.46	23.98	-0.46	26.99	Pass

TEST RESULTS DATA
Power Spectral Density

Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6M bps	1	100	5500	0.59	3.03	11.00	-0.46		Pass
11a	6M bps	1	116	5580	0.59	5.42	11.00	-0.46		Pass
11a	6M bps	1	140	5700	0.59	-0.59	11.00	-0.46		Pass
HT20	MCS 0	1	100	5500	0.61	2.69	11.00	-0.46		Pass
HT20	MCS 0	1	116	5580	0.61	4.95	11.00	-0.46		Pass
HT20	MCS 0	1	140	5700	0.61	-0.74	11.00	-0.46		Pass
HT40	MCS 0	1	102	5510	0.65	-3.60	11.00	-0.46		Pass
HT40	MCS 0	1	110	5550	0.65	2.03	11.00	-0.46		Pass
HT40	MCS 0	1	134	5670	0.65	1.40	11.00	-0.46		Pass

TEST RESULTS DATA
26dB and 99% OBW

Straddle Channel											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26dB Emission Bandwidth (MHz)	6 dB Emission Bandwidth (MHz)	IC 99% Bandwidth Power Limit (dBm)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)	Note
11a	6Mbps	1	144	5720	19.23	31.57	16.36		-	-	
				NII-2C	14.64	30.07	13.172	22.66	28.66	22.20	
				NII-3	4.59	1.50	3.192	30.00	36.02	-	
HT20	MCS0	1	144	5720	19.83	34.27	17.58	-	-	-	
				NII-2C	14.94	35.91	13.791	22.74	28.74	22.40	
				NII-3	4.89	-1.64	3.791	30.00	36.02	-	
HT40	MCS0	1	142	5710	39.06	72.74	35.13	-	-	-	
				NII-2C	34.88	67.99	32.542	23.98	30.00	23.98	
				NII-3	4.18	4.75	2.583	30.00	36.02	-	

TEST RESULTS DATA
Average Power Table

FCC Straddle Channel										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	144	5720	0.59	14.89	-	-0.46		Pass
				NII-2C	0.59	13.86	22.20	-0.46	Pass	
				NII-3	0.59	8.13	30.00	-0.46	Pass	
HT20	MCS0	1	144	5720	0.61	15.21	-	-0.46		Pass
				NII-2C	0.61	14.13	22.40	-0.46	Pass	
				NII-3	0.61	8.63	30.00	-0.46	Pass	
HT40	MCS0	1	142	5710	0.65	14.95	-	-0.46		Pass
				NII-2C	0.65	14.60	23.98	-0.46	Pass	
				NII-3	0.65	3.81	30.00	-0.46	Pass	

TEST RESULTS DATA
Power Spectral Density

Straddle Channel										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm/MHz)	DG (dBi)		Pass/Fail
11a	6Mbps	1	144	NII-2C	0.59	4.13	11.00	-0.46		Pass
				NII-3	0.59	4.13	30.00	-0.46		Pass
HT20	MCS0	1	144	NII-2C	0.61	3.66	11.00	-0.46		Pass
				NII-3	0.61	3.66	30.00	-0.46		Pass
HT40	MCS0	1	142	NII-2C	0.65	1.05	11.00	-0.46		Pass
				NII-3	0.65	1.05	30.00	-0.46		Pass

TEST RESULTS DATA
Frequency Stability

Band I										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	50	3.82	
11a	6Mbps	1	36	5180	5180.025	0.025	4.83	-30	3.82	
11a	6Mbps	1	36	5180	5180.025	0.025	4.83	20	4.4	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.65	
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.82	

Band II										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	50	3.82	
11a	6Mbps	1	64	5320	5320.050	0.050	9.40	-30	3.82	
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	20	4.4	
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	20	3.65	
11a	6Mbps	1	64	5320	5320.050	0.050	9.40	20	3.82	

Band III										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6Mbps	1	100	5500	5500.025	0.025	4.55	50	3.82	
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	-30	3.82	
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	20	4.4	
11a	6Mbps	1	100	5500	5500.025	0.025	4.55	20	3.65	
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	20	3.82	



Appendix B. Radiated Spurious Emission

15E Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 36 5180MHz		5149.28	61.42	-12.58	74	53.85	31.06	7.02	30.51	130	289	P	H
	!	5149.79	49.32	-4.68	54	41.75	31.06	7.02	30.51	130	289	A	H
	*	5174	106.76	-	-	99.29	31	7.06	30.59	130	289	P	H
	*	5174	99.04	-	-	91.57	31	7.06	30.59	130	289	A	H
		5148.16	55.38	-18.62	74	47.81	31.06	7.02	30.51	305	281	P	V
		5150	44.08	-9.92	54	36.51	31.06	7.02	30.51	305	281	A	V
	*	5188	102.21	-	-	94.74	31	7.06	30.59	305	281	P	V
	*	5188	94.72	-	-	87.25	31	7.06	30.59	305	281	A	V
802.11a CH 44 5220MHz		5115.36	49.97	-24.03	74	42.29	31.12	6.98	30.42	100	245	P	H
		5130.4	41.2	-12.8	54	33.57	31.09	7	30.46	100	245	A	H
	*	5228	107.92	-	-	100.46	30.91	7.13	30.58	100	245	P	H
	*	5228	100.36	-	-	92.9	30.91	7.13	30.58	100	245	A	H
		5370.12	48.74	-25.26	74	41.12	30.68	7.32	30.38	100	245	P	H
		5368.5	39.01	-14.99	54	31.39	30.68	7.32	30.38	100	245	A	H
		5126.72	50.34	-23.66	74	42.71	31.09	7	30.46	285	283	P	V
		5126.56	40.41	-13.59	54	32.78	31.09	7	30.46	285	283	A	V
	*	5212	102.74	-	-	95.3	30.94	7.11	30.61	285	283	P	V
	*	5212	95.51	-	-	88.07	30.94	7.11	30.61	285	283	A	V
		5384.7	47.43	-26.57	74	39.79	30.65	7.34	30.35	285	283	P	V
		5358.6	38.65	-15.35	54	31.04	30.71	7.3	30.4	285	283	A	V



802.11a CH 48 5240MHz		5376.96	48.34	-25.66	74	40.72	30.68	7.32	30.38	105	244	P	H
		5389.38	39.22	-14.78	54	31.58	30.65	7.34	30.35	105	244	A	H
	*	5246	108.5	-	-	101.02	30.88	7.16	30.56	105	244	P	H
	*	5246	100.51	-	-	93.03	30.88	7.16	30.56	105	244	A	H
		5394.96	48.26	-25.74	74	40.59	30.62	7.37	30.32	300	278	P	V
		5391.36	38.89	-15.11	54	31.25	30.65	7.34	30.35	300	278	A	V
	*	5246	103.86	-	-	96.38	30.88	7.16	30.56	300	278	P	V
	*	5246	95.88	-	-	88.4	30.88	7.16	30.56	300	278	A	V

Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line.
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15E band 1 5150~5250MHz
WIFI 802.11a (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains three main data rows for channels 36, 44, and 48, each with two sub-rows for different antenna positions.

Remark
1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



**15E band 1 5150~5250MHz
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 36 5180MHz		5147.36	60.85	-13.15	74	53.28	31.06	7.02	30.51	100	288	P	H
	!	5150	50.62	-3.38	54	43.05	31.06	7.02	30.51	100	288	A	H
	*	5174	107.37	-	-	99.9	31	7.06	30.59	100	288	P	H
	*	5174	99.61	-	-	92.14	31	7.06	30.59	100	288	A	H
		5148.16	57.99	-16.01	74	50.42	31.06	7.02	30.51	300	284	P	V
		5150	46.02	-7.98	54	38.45	31.06	7.02	30.51	300	284	A	V
	*	5188	102.17	-	-	94.7	31	7.06	30.59	300	284	P	V
		5188	94.39	-	-	86.92	31	7.06	30.59	300	284	A	V
802.11n HT20 CH 44 5220MHz		5111.52	51.59	-22.41	74	43.91	31.12	6.98	30.42	114	245	P	H
		5128.32	41.06	-12.94	54	33.43	31.09	7	30.46	114	245	A	H
	*	5226	107.65	-	-	100.19	30.91	7.13	30.58	114	245	P	H
	*	5226	99.91	-	-	92.45	30.91	7.13	30.58	114	245	A	H
		5367.78	47.74	-26.26	74	40.12	30.68	7.32	30.38	114	245	P	H
		5356.62	39.18	-14.82	54	31.57	30.71	7.3	30.4	114	245	A	H
		5110.4	50	-24	74	42.32	31.12	6.98	30.42	300	283	P	V
		5119.36	40.64	-13.36	54	32.96	31.12	6.98	30.42	300	283	A	V
	*	5212	103.59	-	-	96.15	30.94	7.11	30.61	300	283	P	V
	*	5212	95.6	-	-	88.16	30.94	7.11	30.61	300	283	A	V
		5367.06	47.47	-26.53	74	39.85	30.68	7.32	30.38	300	283	P	V
	5355.72	38.72	-15.28	54	31.11	30.71	7.3	30.4	300	283	A	V	



802.11n HT20 CH 48 5240MHz		5375.7	47.73	-26.27	74	40.11	30.68	7.32	30.38	100	244	P	H
		5391.72	39.25	-14.75	54	31.61	30.65	7.34	30.35	100	244	A	H
	*	5248	107.9	-	-	100.42	30.88	7.16	30.56	100	244	P	H
	*	5248	100.12	-	-	92.64	30.88	7.16	30.56	100	244	A	H
		5393.16	48.14	-25.86	74	40.5	30.65	7.34	30.35	329	278	P	V
		5391.72	38.81	-15.19	54	31.17	30.65	7.34	30.35	329	278	A	V
	*	5246	103.73	-	-	96.25	30.88	7.16	30.56	329	278	P	V
	*	5246	95.81	-	-	88.33	30.88	7.16	30.56	329	278	A	V

Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												
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15E band 1 5150~5250MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains three main data rows for frequencies 10360, 10440, and 10480 MHz, each with two sub-rows for different channels. A final 'Remark' row contains two notes about spurious signals and test results.



15E band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for 802.11n HT40 CH 38 (5190MHz) and 802.11n HT40 CH 46 (5230MHz).



15E band 1 5150~5250MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for 802.11n HT40 channels 38 and 46 at 10380MHz and 10460MHz.



15E Band 2 - 5250~5350MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 52 5260MHz		5110.72	50.74	-23.26	74	43.06	31.12	6.98	30.42	105	244	P	H
		5120.32	41.17	-12.83	54	33.49	31.12	6.98	30.42	105	244	A	H
	*	5256	109.4	-	-	101.92	30.88	7.16	30.56	105	244	P	H
	*	5256	100.19	-	-	92.71	30.88	7.16	30.56	105	244	A	H
		5139.68	50.23	-23.77	74	42.66	31.06	7.02	30.51	301	279	P	V
		5112.96	40.67	-13.33	54	32.99	31.12	6.98	30.42	301	279	A	V
	*	5256	103.75	-	-	96.27	30.88	7.16	30.56	301	279	P	V
	*	5256	95.78	-	-	88.3	30.88	7.16	30.56	301	279	A	V
802.11a CH 60 5300MHz		5108.96	52.04	-21.96	74	44.36	31.12	6.98	30.42	110	241	P	H
		5102.08	42.51	-11.49	54	34.78	31.15	6.95	30.37	110	241	A	H
	*	5304	109.27	-	-	101.73	30.79	7.23	30.48	110	241	P	H
	*	5304	100.96	-	-	93.42	30.79	7.23	30.48	110	241	A	H
		5352	56.05	-17.95	74	48.44	30.71	7.3	30.4	110	241	P	H
		5352.4	47.23	-6.77	54	39.62	30.71	7.3	30.4	110	241	A	H
		5107.68	50.64	-23.36	74	42.96	31.12	6.98	30.42	314	279	P	V
		5101.92	41.04	-12.96	54	33.31	31.15	6.95	30.37	314	279	A	V
	*	5296	103.8	-	-	96.26	30.79	7.23	30.48	314	279	P	V
	*	5296	96.02	-	-	88.48	30.79	7.23	30.48	314	279	A	V
		5352.1	51.34	-22.66	74	43.73	30.71	7.3	30.4	314	279	P	V
		5352.5	42.84	-11.16	54	35.23	30.71	7.3	30.4	314	279	A	V



802.11a CH 64 5320MHz	*	5324	109.1	-	-	101.54	30.76	7.25	30.45	120	287	P	H
	*	5324	100.94	-	-	93.38	30.76	7.25	30.45	120	287	A	H
		5351.5	60.46	-13.54	74	52.85	30.71	7.3	30.4	120	287	P	H
	!	5350	50.15	-3.85	54	42.54	30.71	7.3	30.4	120	287	A	H
	*	5314	103.16	-	-	95.6	30.76	7.25	30.45	307	278	P	V
	*	5314	95.49	-	-	87.93	30.76	7.25	30.45	307	278	A	V
		5353.5	55.4	-18.6	74	47.79	30.71	7.3	30.4	307	278	P	V
		5350.2	44.97	-9.03	54	37.36	30.71	7.3	30.4	307	278	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												



15E band 2 5250~5350MHz
WIFI 802.11a (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for channels 52, 60, and 64.

Remark
1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



**15E band 2 5250~5350MHz
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 52 5260MHz		5134.08	50.57	-23.43	74	42.94	31.09	7	30.46	100	242	P	H
		5111.2	41.43	-12.57	54	33.75	31.12	6.98	30.42	100	242	A	H
	*	5256	107.85	-	-	100.37	30.88	7.16	30.56	100	242	P	H
	*	5256	100.24	-	-	92.76	30.88	7.16	30.56	100	242	A	H
		5115.04	50.74	-23.26	74	43.06	31.12	6.98	30.42	327	279	P	V
		5111.52	40.6	-13.4	54	32.92	31.12	6.98	30.42	327	279	A	V
	*	5268	103.6	-	-	96.1	30.85	7.18	30.53	327	279	P	V
	5268	95.73	-	-	88.23	30.85	7.18	30.53	327	279	A	V	
802.11n HT20 CH 60 5300MHz		5109.92	51.07	-22.93	74	43.39	31.12	6.98	30.42	100	243	P	H
		5104	42.32	-11.68	54	34.59	31.15	6.95	30.37	100	243	A	H
	*	5306	108.59	-	-	101.05	30.79	7.23	30.48	100	243	P	H
	*	5306	100.77	-	-	93.23	30.79	7.23	30.48	100	243	A	H
		5351.8	55.64	-18.36	74	48.03	30.71	7.3	30.4	100	243	P	H
		5351.7	47.94	-6.06	54	40.33	30.71	7.3	30.4	100	243	A	H
		5111.52	49.73	-24.27	74	42.05	31.12	6.98	30.42	400	217	P	V
		5100.64	40.99	-13.01	54	33.26	31.15	6.95	30.37	400	217	A	V
	*	5292	103.55	-	-	96.04	30.82	7.2	30.51	400	217	P	V
	*	5292	95.9	-	-	88.39	30.82	7.2	30.51	400	217	A	V
		5354	50.25	-23.75	74	42.64	30.71	7.3	30.4	400	217	P	V
	5351.7	43.04	-10.96	54	35.43	30.71	7.3	30.4	400	217	A	V	



802.11n HT20 CH 64 5320MHz	*	5314	107.98	-	-	100.42	30.76	7.25	30.45	105	242	P	H
	*	5314	100.65	-	-	93.09	30.76	7.25	30.45	105	242	A	H
		5350.4	62.09	-11.91	74	54.48	30.71	7.3	30.4	105	242	P	H
	!	5350.2	50.43	-3.57	54	42.82	30.71	7.3	30.4	105	242	A	H
	*	5312	103.2	-	-	95.64	30.76	7.25	30.45	400	217	P	V
	*	5312	95.95	-	-	88.39	30.76	7.25	30.45	400	217	A	V
		5350.1	56.88	-17.12	74	49.27	30.71	7.3	30.4	400	217	P	V
		5350.2	45.07	-8.93	54	37.46	30.71	7.3	30.4	400	217	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												



15E band 2 5250~5350MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for three channels (CH 52, CH 60, CH 64) and a final Remark section.



**15E band 2 5250~5350MHz
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 54 5270MHz		5125.12	51.25	-22.75	74	43.62	31.09	7	30.46	100	242	P	H
		5119.2	40.87	-13.13	54	33.19	31.12	6.98	30.42	100	242	A	H
	*	5282	105.26	-	-	97.75	30.82	7.2	30.51	100	242	P	H
	*	5282	97.5	-	-	89.99	30.82	7.2	30.51	100	242	A	H
		5351.7	52.59	-21.41	74	44.98	30.71	7.3	30.4	100	242	P	H
		5350.9	42.92	-11.08	54	35.31	30.71	7.3	30.4	100	242	A	H
		5111.52	49.66	-24.34	74	41.98	31.12	6.98	30.42	336	278	P	V
		5136.32	40.46	-13.54	54	32.83	31.09	7	30.46	336	278	A	V
	*	5282	100.25	-	-	92.74	30.82	7.2	30.51	336	278	P	V
	*	5282	92.91	-	-	85.4	30.82	7.2	30.51	336	278	A	V
		5355.1	49.82	-24.18	74	42.21	30.71	7.3	30.4	336	278	P	V
		5372.3	40.09	-13.91	54	32.47	30.68	7.32	30.38	336	278	A	V
802.11n HT40 CH 62 5310MHz		5136.32	49.82	-24.18	74	42.19	31.09	7	30.46	150	223	P	H
		5104.96	40.66	-13.34	54	32.93	31.15	6.95	30.37	150	223	A	H
	*	5318	99.02	-	-	91.46	30.76	7.25	30.45	150	223	P	H
	*	5318	91.34	-	-	83.78	30.76	7.25	30.45	150	223	A	H
		5351.2	62.05	-11.95	74	54.44	30.71	7.3	30.4	150	223	P	H
	!	5350.3	50.88	-3.12	54	43.27	30.71	7.3	30.4	150	223	A	H
		5127.2	49.9	-24.1	74	42.27	31.09	7	30.46	338	277	P	V
		5105.44	40.5	-13.5	54	32.77	31.15	6.95	30.37	338	277	A	V
	*	5298	95.16	-	-	87.62	30.79	7.23	30.48	338	277	P	V
	*	5298	87.83	-	-	80.29	30.79	7.23	30.48	338	277	A	V
		5354.2	54.98	-19.02	74	47.37	30.71	7.3	30.4	338	277	P	V
		5350.1	46.07	-7.93	54	38.46	30.71	7.3	30.4	338	277	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 2 5250~5350MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for 802.11n HT40 channels 54 and 62 at frequencies 10540 and 10620 MHz.



15E Band 3 - 5470~5725MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 100 5500MHz		5469.2	61.12	-12.88	74	53.67	30.5	7.37	30.42	107	244	P	H
	!	5470	49.59	-4.41	54	42.14	30.5	7.37	30.42	107	244	A	H
	*	5494	106.67	-	-	99.27	30.47	7.37	30.44	107	244	P	H
	*	5494	99.53	-	-	92.13	30.47	7.37	30.44	107	244	A	H
		5467.6	56.03	-17.97	74	48.58	30.5	7.37	30.42	322	279	P	V
		5469.84	44.95	-9.05	54	37.5	30.5	7.37	30.42	322	279	A	V
	*	5506	101.61	-	-	94.27	30.44	7.37	30.47	322	279	P	V
	*	5506	94.27	-	-	86.93	30.44	7.37	30.47	322	279	A	V
802.11a CH 116 5580MHz		5390.48	49.34	-24.66	74	41.7	30.65	7.34	30.35	129	305	P	H
		5393.52	40.9	-13.1	54	33.26	30.65	7.34	30.35	129	305	A	H
	*	5582	106.73	-	-	99.67	30.29	7.36	30.59	129	305	P	H
	*	5582	99.26	-	-	92.2	30.29	7.36	30.59	129	305	A	H
		5755.08	49.54	-24.46	74	41.22	31.17	7.56	30.41	129	305	P	H
		5764.92	40.56	-13.44	54	32.24	31.17	7.56	30.41	129	305	A	H
		5393.36	48	-26	74	40.36	30.65	7.34	30.35	100	353	P	V
		5383.28	39.26	-14.74	54	31.62	30.65	7.34	30.35	100	353	A	V
	*	5574	101.09	-	-	93.97	30.32	7.36	30.56	100	353	P	V
	*	5574	93.44	-	-	86.32	30.32	7.36	30.56	100	353	A	V
		5751	49.88	-24.12	74	41.74	31.03	7.54	30.43	100	353	P	V
		5753	37.48	-16.52	54	29.16	31.17	7.56	30.41	100	353	A	V



802.11a CH 140 5700MHz	*	5708	105.23	-	-	97.47	30.75	7.49	30.48	128	243	P	H
	*	5708	96.86	-	-	89.1	30.75	7.49	30.48	128	243	A	H
		5725.24	62.23	-11.77	74	54.27	30.89	7.52	30.45	128	243	P	H
	!	5725	49.36	-4.64	54	41.4	30.89	7.52	30.45	128	243	A	H
	*	5694	97.84	-	-	90.25	30.62	7.47	30.5	101	301	P	V
	*	5694	89.33	-	-	81.74	30.62	7.47	30.5	101	301	A	V
		5725.72	54.51	-19.49	74	46.55	30.89	7.52	30.45	101	301	P	V
		5725	43.52	-10.48	54	35.56	30.89	7.52	30.45	101	301	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												



15E band 3 - 5470~5725MHz
WIFI 802.11a (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for channels 100, 116, and 140 at 11000, 11160, and 11400 MHz.



**15E band 3 - 5470~5725MHz
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 100 5500MHz		5469.68	61.57	-12.43	74	54.12	30.5	7.37	30.42	100	250	P	H
	!	5469.79	50.62	-3.38	54	43.17	30.5	7.37	30.42	100	250	A	H
	*	5508	106.92	-	-	99.58	30.44	7.37	30.47	100	250	P	H
	*	5508	99.91	-	-	92.57	30.44	7.37	30.47	100	250	A	H
		5467.76	57.8	-16.2	74	50.35	30.5	7.37	30.42	100	264	P	V
		5469.79	46.91	-7.09	54	39.46	30.5	7.37	30.42	100	264	A	V
	*	5494	103.05	-	-	95.65	30.47	7.37	30.44	100	264	P	V
	5494	95.79	-	-	88.39	30.47	7.37	30.44	100	264	A	V	
802.11n HT20 CH 116 5580MHz		5394.32	50.4	-23.6	74	42.76	30.65	7.34	30.35	100	248	P	H
		5390.64	41.92	-12.08	54	34.28	30.65	7.34	30.35	100	248	A	H
	*	5584	107.41	-	-	100.35	30.29	7.36	30.59	100	248	P	H
	*	5584	100.33	-	-	93.27	30.29	7.36	30.59	100	248	A	H
		5764.04	52	-22	74	43.68	31.17	7.56	30.41	100	248	P	H
		5764.2	40.94	-13.06	54	32.62	31.17	7.56	30.41	100	248	A	H
		5386.16	48.79	-25.21	74	41.15	30.65	7.34	30.35	100	269	P	V
		5394.8	40.03	-13.97	54	32.36	30.62	7.37	30.32	100	269	A	V
	*	5576	103.69	-	-	96.57	30.32	7.36	30.56	100	269	P	V
	*	5576	95.88	-	-	88.76	30.32	7.36	30.56	100	269	A	V
		5726.52	50.56	-23.44	74	42.6	30.89	7.52	30.45	100	269	P	V
	5763.8	40.23	-13.77	54	31.91	31.17	7.56	30.41	100	269	A	V	



802.11n HT20 CH 140 5700MHz	*	5694	104.65	-	-	97.06	30.62	7.47	30.5	118	245	P	H
	*	5694	95.96	-	-	88.37	30.62	7.47	30.5	118	245	A	H
		5727.32	61.31	-12.69	74	53.35	30.89	7.52	30.45	118	245	P	H
	!	5725	50.47	-3.53	54	42.51	30.89	7.52	30.45	118	245	A	H
	*	5692	98.36	-	-	90.77	30.62	7.47	30.5	102	300	P	V
	*	5692	89.07	-	-	81.48	30.62	7.47	30.5	102	300	A	V
		5725	55.82	-18.18	74	47.86	30.89	7.52	30.45	102	300	P	V
		5725	45.26	-8.74	54	37.3	30.89	7.52	30.45	102	300	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												



15E band 3 - 5470~5725MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for three channels (CH 100, CH 116, CH 140) and a Remark section.



**15E band 3 - 5470~5725MHz
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 102 5510MHz		5466.96	60.5	-13.5	74	53.05	30.5	7.37	30.42	160	289	P	H
	!	5469.04	50.77	-3.23	54	43.32	30.5	7.37	30.42	160	289	A	H
	*	5498	99.43	-	-	92.09	30.44	7.37	30.47	160	289	P	H
	*	5498	92.2	-	-	84.86	30.44	7.37	30.47	160	289	A	H
		5749.8	49.67	-24.33	74	41.53	31.03	7.54	30.43	160	289	P	H
		5747.48	40.07	-13.93	54	31.93	31.03	7.54	30.43	160	289	A	H
		5468.4	61.66	-12.34	74	54.21	30.5	7.37	30.42	321	277	P	V
		5469.84	47.37	-6.63	54	39.92	30.5	7.37	30.42	321	277	A	V
	*	5502	94.44	-	-	87.1	30.44	7.37	30.47	321	277	P	V
	*	5502	87.4	-	-	80.06	30.44	7.37	30.47	321	277	A	V
		5726.44	48.98	-25.02	74	41.02	30.89	7.52	30.45	321	277	P	V
	5752.28	40.15	-13.85	54	31.83	31.17	7.56	30.41	321	277	A	V	
802.11n HT40 CH 110 5550MHz		5468.24	55.57	-18.43	74	48.12	30.5	7.37	30.42	131	287	P	H
		5469.84	42.54	-11.46	54	35.09	30.5	7.37	30.42	131	287	A	H
	*	5540	104.62	-	-	97.39	30.38	7.36	30.51	131	287	P	H
	*	5540	97.1	-	-	89.87	30.38	7.36	30.51	131	287	A	H
		5735.64	49.76	-24.24	74	41.62	31.03	7.54	30.43	131	287	P	H
		5753	40.58	-13.42	54	32.26	31.17	7.56	30.41	131	287	A	H
		5467.12	49.07	-24.93	74	41.62	30.5	7.37	30.42	284	284	P	V
		5469.2	40.62	-13.38	54	33.17	30.5	7.37	30.42	284	284	A	V
	*	5564	99.45	-	-	92.28	30.35	7.36	30.54	284	284	P	V
	*	5564	91.97	-	-	84.8	30.35	7.36	30.54	284	284	A	V
		5740.28	49.2	-24.8	74	41.06	31.03	7.54	30.43	284	284	P	V
	5754.44	40.09	-13.91	54	31.77	31.17	7.56	30.41	284	284	A	V	



802.11n HT40 CH 134 5670MHz		5377.68	48.2	-25.8	74	40.56	30.65	7.34	30.35	152	287	P	H
		5465.36	39.59	-14.41	54	32.14	30.5	7.37	30.42	152	287	A	H
	*	5682	104.85	-	-	97.44	30.48	7.45	30.52	152	287	P	H
	*	5682	96.16	-	-	88.75	30.48	7.45	30.52	152	287	A	H
		5727	61.87	-12.13	74	53.91	30.89	7.52	30.45	152	287	P	H
	!	5725.08	50.2	-3.8	54	42.24	30.89	7.52	30.45	152	287	A	H
		5450.96	47.82	-26.18	74	40.31	30.53	7.37	30.39	317	276	P	V
		5461.36	39.22	-14.78	54	31.71	30.53	7.37	30.39	317	276	A	V
	*	5662	99.8	-	-	92.57	30.34	7.43	30.54	317	276	P	V
	*	5662	91.54	-	-	84.31	30.34	7.43	30.54	317	276	A	V
		5727.56	56.55	-17.45	74	48.59	30.89	7.52	30.45	317	276	P	V
		5725.72	45.14	-8.86	54	37.18	30.89	7.52	30.45	317	276	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 3 - 5470~5725MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for channels 102, 110, and 134 across three frequency bands (11020, 11100, 11340 MHz).



15E Band 3 - 5470~5725MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 136 5680MHz	*	5684	107.97	-	-	100.38	30.62	7.47	30.5	120	287	P	H
	*	5684	99.18	-	-	91.59	30.62	7.47	30.5	120	287	A	H
		5727.96	57.54	-16.46	74	49.58	30.89	7.52	30.45	120	287	P	H
	!	5732.2	46.96	-7.04	54	39	30.89	7.52	30.45	120	287	A	H
	*	5686	100.17	-	-	92.58	30.62	7.47	30.5	102	174	P	V
	*	5686	91.8	-	-	84.21	30.62	7.47	30.5	102	174	A	V
		5725.32	51.67	-22.33	74	43.71	30.89	7.52	30.45	102	174	P	V
		5732.2	42.24	-11.76	54	34.28	30.89	7.52	30.45	102	174	A	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



15E band 3 - 5470~5725MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a		11360	44.37	-29.63	74	51.22	39.32	10.54	56.71	100	360	P	H
CH 136 5680MHz		11360	44.77	-29.23	74	51.62	39.32	10.54	56.71	100	360	P	V
Remark	3. No other spurious found. 4. All results are PASS against Peak and Average limit line.												



15E band 3 - 5470~5725MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for 802.11n HT20 CH 136 at 5680MHz.



15E band 3 - 5470~5725MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains two rows of test data for 802.11n HT20 CH 136 at 5680MHz.

Remark
3. No other spurious found.
4. All results are PASS against Peak and Average limit line.



15E band 3 - 5470~5725MHz

15E Band 3 - Straddle Channel

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 144 5720MHz	*	5722	110.61	-	-	102.65	30.89	7.52	30.45	100	250	P	H
	*	5722	101.82	-	-	93.86	30.89	7.52	30.45	100	250	A	H
	*	5714	105.32	-	-	97.56	30.75	7.49	30.48	100	267	P	V
	*	5714	96.95	-	-	89.19	30.75	7.49	30.48	100	267	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 3 - Straddle Channel
WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a		11440	45.02	-28.98	74	51.84	39.47	10.59	56.88	100	360	P	H
CH 144 5720MHz		11440	45.03	-28.97	74	51.85	39.47	10.59	56.88	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15E band 3 - Straddle Channel
WIFI 802.11n HT20 (Band Edge @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for 802.11n HT20 and CH 144 at 5720MHz, and a Remark section stating 'No other spurious found' and 'All results are PASS against Peak and Average limit line.'



15E band 3 - Straddle Channel
WIFI 802.11n HT20 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains two rows of data for 802.11n HT20 CH 144 at 5720MHz.

Remark
1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



15E band 3 - Straddle Channel
WIFI 802.11n HT40 (Band Edge @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains test results for 802.11n HT40 and 5710MHz channels, including frequency, level, and various factors.

Remark
1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



15E band 3 - Straddle Channel
WIFI 802.11n HT40 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Cable, Preamp, Ant, Table, Peak, Pol. It contains two rows of test data for 802.11n HT40 CH 142 at 5710MHz.

Remark
1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



15E band 2 5250~5350MHz

15E Emission below 1GHz

WIFI 802.11n HT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dB μ V/m)	(dB)	(dB μ V/m)	(dB μ V)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 LF		34.85	22.67	-17.33	40	30.14	23.5	0.03	31	100	65	P	H
		96.93	22	-21.5	43.5	34.94	17.5	0.32	30.76	-	-	P	H
		103.72	21.42	-22.08	43.5	33.93	17.76	0.45	30.72	-	-	P	H
		150.28	21.98	-21.52	43.5	34.57	17.3	1.01	30.9	-	-	P	H
		208.48	25.3	-18.2	43.5	38.72	16.08	1.62	31.12	-	-	P	H
		427.7	26.29	-19.71	46	32.29	22.99	2.57	31.56	-	-	P	H
		34.85	32.55	-7.45	40	40.02	23.5	0.03	31	100	216	P	V
		68.8	20.8	-19.2	40	38.08	13.36	0.78	31.42	-	-	P	V
		89.17	23.4	-20.1	43.5	37.16	16.76	0.24	30.76	-	-	P	V
		147.37	20.84	-22.66	43.5	33.42	17.33	0.98	30.89	-	-	P	V
		208.48	25.03	-18.47	43.5	38.45	16.08	1.62	31.12	-	-	P	V
	599.39	28.62	-17.38	46	31.77	25.49	2.86	31.5	-	-	P	V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency per 15.209(c).
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

- Level(dBμV/m) =
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- Level(dBμV/m)
= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

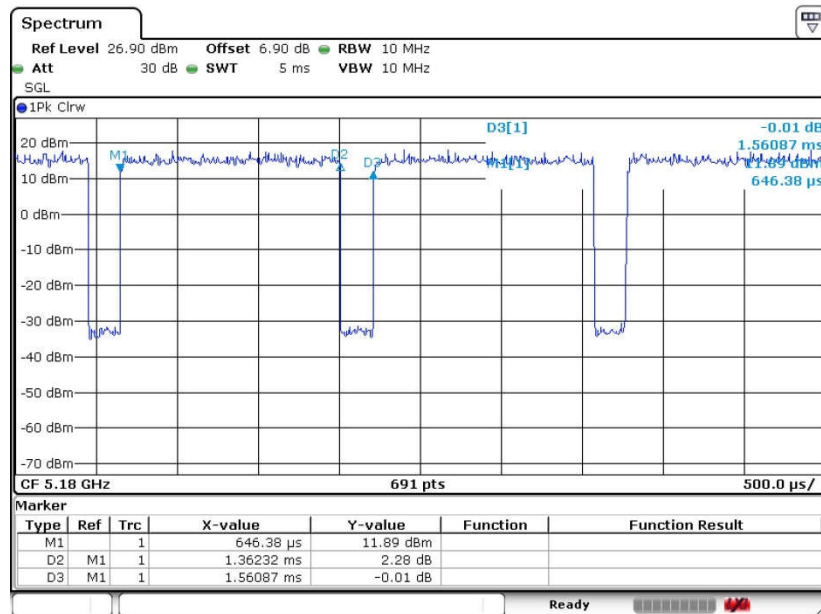
Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix C. Duty Cycle Plots

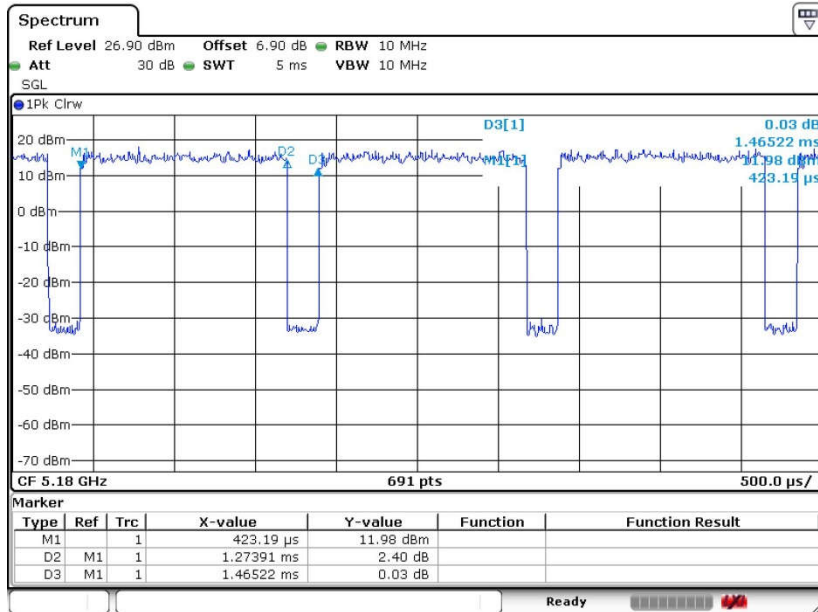
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.28	1.362	0.734	1kHz
802.11n HT20	86.94	1.274	0.785	1kHz
802.11n HT40	86.06	1.226	0.816	1kHz

802.11a





802.11n HT20



802.11n HT40

