FCC Test Report

Report No.:	RF171003C10C-1
FCC ID:	S4L4FIC00
Test Model:	4FIC00
Received Date:	Oct. 03, 2017
Test Date:	Oct. 25 ~ Nov. 07, 2017
Issued Date:	Nov. 09, 2017
Applicant:	TomTom International B.V.
Address:	De Ruijterkade 154, 1011 AC Amsterdam The Netherlands
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Test Location (1):	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)
Test Location (2):	No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C
FCC Registration / Designation Number:	427177 / TW0011

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF171003C10C-1	Original release	Nov. 09, 2017

1 Certificate of Conformity

Product:	TomTom BRIDGE Hub
Brand:	TOMTOM
Test Model:	4FIC00
Sample Status:	Pre-MFB build sample
Applicant:	TomTom International B.V.
Test Date:	Oct. 25 ~ Nov. 07, 2017
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Nov. 09, 2017

Celine Chou / Specialist

Approved by : Ken Liu , **Date:** Nov. 09, 2017

Ken Liu / Senior Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -25.36dB at 16.22792MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.11dB at 5145.35MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	2.0153 dB
	200MHz ~1000MHz	2.0224 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.0121 dB
	18GHz ~ 40GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	TomTom BRIDGE Hub
Brand	TOMTOM
Test Model	4FIC00
Sample Status	Pre-MFB build sample
Power Supply Rating	12-24Vdc, 2.0A
Modulation Type	64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 150Mbps
Operating Frequency	5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 5745~5825MHz
Number of Channel	5180~5240MHz: 802.11a, 802.11n (HT20): 4 802.11n (HT40): 2 5260~5320MHz: 802.11a, 802.11n (HT20): 4 802.11n (HT40): 2 5500~5700MHz: 802.11a, 802.11n (HT20): 11 5745~5825MHz: 802.11a, 802.11n (HT20): 5
Output Power	5180~5240MHz: 19.861mW 5260~5320MHz: 19.815mW 5500~5700MHz: 19.724mW 5745~5825MHz: 19.724mW
Antenna Type	Chip antenna with 3.11dBi gain
Antenna Connector	NA
Accessory Device	Refer to note
Cable Supplied	Refer to note

Note:

1. The EUT provides 1 completed transmitter and 1 receiver.

Modulation Mode	TX Function
802.11a	1TX
802.11n (HT20)	1TX
802.11n (HT40)	1TX

2. The EUT contains the following accessories.

Item	Brand	Model	Specification	Remark
Car Charger	TomTom	CLA 4FIC0, 4FIC.000.02	Input: 12/24Vdc, 2A Output: 12/24Vdc, 2A FUSE: 125V, 5A	Option
InCube Power Cable	TomTom	4FIC.000.01	2m non-shielded power cable without core	Accessory
InCube CLA Car Charger Cable	TomTom	4FIC.000.02	2m non-shielded power cable without core	Option
InCube Full Power Cable (Harnessed)	TomTom	4FIC.000.03	2m non-shielded power cable without core	Option

3. WLAN (2.4GHz or 5GHz) and BT (BT EDR or BT LE) technology can transmit simultaneously.
4. Spurious emission of the simultaneous operation (WLAN (2.4GHz or 5GHz) and BT (BT EDR or BT LE) has been evaluated and no non-compliance was found.

3.2 Description of Test Modes

5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (HT20)

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

5260~5320MHz:

4 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

5500~5700MHz:

11 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz		

5745~5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	12Vdc
B	-	√	√	√	24Vdc

Where RE≥1G: Radiated Emission above 1GHz & RE<1G: Radiated Emission below 1GHz
Bandedge Measurement
PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane.**

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	6.5
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A, B	802.11a	5180-5240	36 to 48	36	OFDM	6.0
	802.11a	5260-5320	52 to 64		OFDM	6.0
	802.11a	5500-5700	100 to 140		OFDM	6.0
	802.11a	5745-5825	149 to 165		OFDM	6.0

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A, B	802.11a	5180-5240	36 to 48	36	OFDM	6.0
	802.11a	5260-5320	52 to 64		OFDM	6.0
	802.11a	5500-5700	100 to 140		OFDM	6.0
	802.11a	5745-5825	149 to 165		OFDM	6.0

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	6.5
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5

Test Condition:

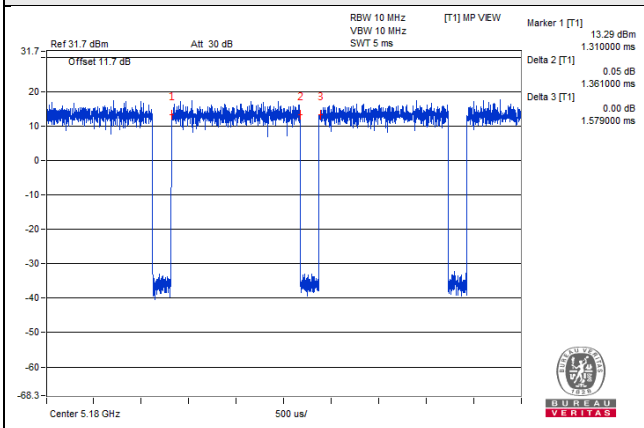
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65% RH	12Vdc	Karl Lee
RE<1G	25 deg. C, 65% RH	12Vdc 24Vdc	Karl Lee
PLC	25 deg. C, 65% RH	12Vdc 24Vdc	Greg Lin
APCM	25 deg. C, 60% RH	12Vdc	Luke Chen

3.3 Duty Cycle of Test Signal

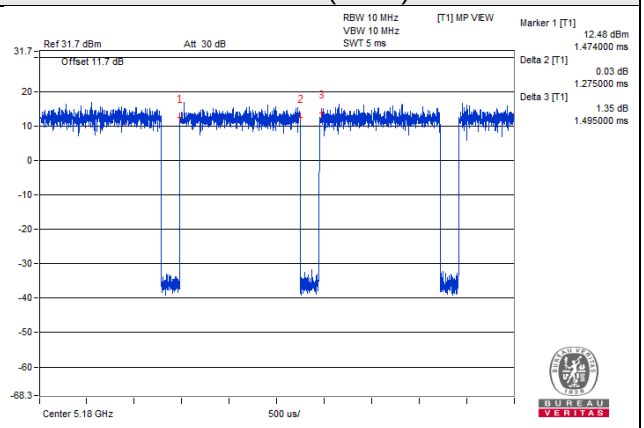
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 1.361/1.579 = 0.862, Duty factor = 10 * log(1/0.862) = 0.65
802.11n (HT20): Duty cycle = 1.275/1.495 = 0.853, Duty factor = 10 * log(1/0.853) = 0.69
802.11n (HT40): Duty cycle = 0.632/0.835 = 0.757, Duty factor = 10 * log(1/0.757) = 1.21

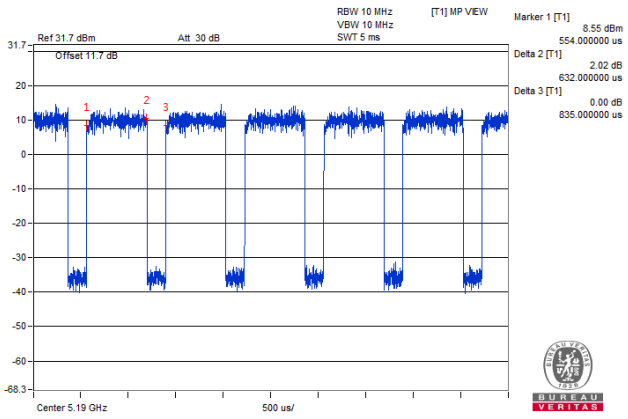
802.11a



802.11n (HT20)



802.11n (HT40)



3.4 Description of 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.

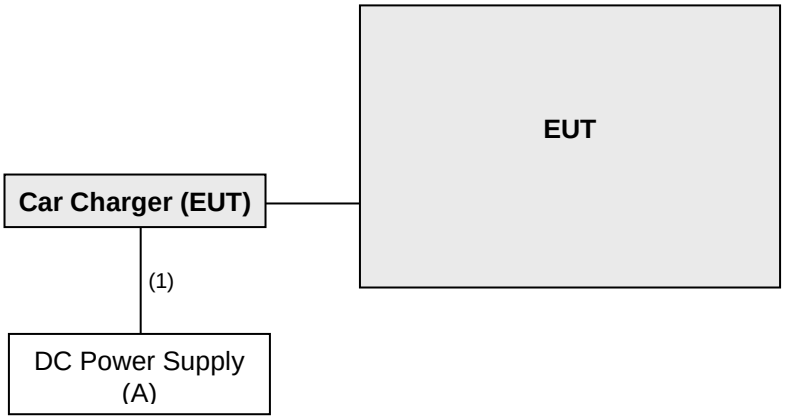
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	DC Power Supply	Topward	33010D	807748	NA	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC	1	0.5	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedure New Rules v02
ANSI C63.10:2013

All test items have been performed and recorded as per the above standards.

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (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:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

<table>
<tr><td colspan="3">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="3" rowspan="2">789033 D02 General UNII Test Procedure New Rules v02</td><td colspan="2">Field Strength at 3m</td></tr>
<tr><td>PK: 74 (dBμV/m)</td><td>AV: 54 (dBμV/m)</td></tr>
<tr><td>Frequency Band</td><td colspan="2">Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3m</td></tr>
<tr><td>5150~5250 MHz</td><td colspan="2">15.407(b)(1)</td><td rowspan="3">PK: -27 (dBm/MHz)</td><td rowspan="3">PK: 68.2(dBμV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td colspan="2">15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td colspan="2">15.407(b)(3)</td></tr>
<tr><td rowspan="2">5725~5850 MHz</td><td>☒</td><td>15.407(b)(4)(i)</td><td>PK: -27 (dBm/MHz) *1
PK: 10 (dBm/MHz) *2
PK: 15.6 (dBm/MHz) *3
PK: 27 (dBm/MHz) *4</td><td>PK: 68.2(dBμV/m) *1
PK: 105.2 (dBμV/m) *2
PK: 110.8(dBμV/m) *3
PK: 122.2 (dBμV/m) *4</td></tr>
<tr><td>☐</td><td>15.407(b)(4)(ii)</td><td colspan="2">Emission limits in section 15.247(d)</td></tr>
<tr><td colspan="5">*1 beyond 75 MHz or more above of the band edge.
*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.
*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.
*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.</td></tr>
</table>

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Agilent Technologies	N9038A	MY52260177	Jul. 05, 2017	Jul. 04, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 16, 2016	Dec. 15, 2017
HORN Antenna ETS-Lindgren	3117	00143293	Dec. 29, 2016	Dec. 28, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 14, 2016	Dec. 13, 2017
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 17, 2017	Apr. 16, 2018
Bluetooth Tester	CBT	100980	Jun. 28, 2017	Jun. 27, 2019
Loop Antenna	HLA 6121	45745	May 19, 2017	May 18, 2018
Preamplifier Agilent	310N	187226	Jun. 23, 2017	Jun. 22, 2018
Preamplifier Agilent	83017A	MY39501357	Jun. 23, 2017	Jun. 22, 2018
Power Meter Anritsu	ML2495A	1232002	Sep. 08, 2017	Sep. 07, 2018
Power Sensor Anritsu	MA2411B	1207325	Sep. 08, 2017	Sep. 07, 2018
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 23, 2017	Jun. 22, 2018
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 23, 2017	Jun. 22, 2018
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 02, 2017	Sep. 01, 2018
DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2018
Digital Multimeter Fluke	87-III	70360742	Jun. 30, 2017	Jun. 29, 2018

Note:
1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The FCC Designation Number is TW0011. The number will be varied with the Lab location and scope as attached.
5. The IC Site Registration No. is IC7450I-1.

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.

2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.

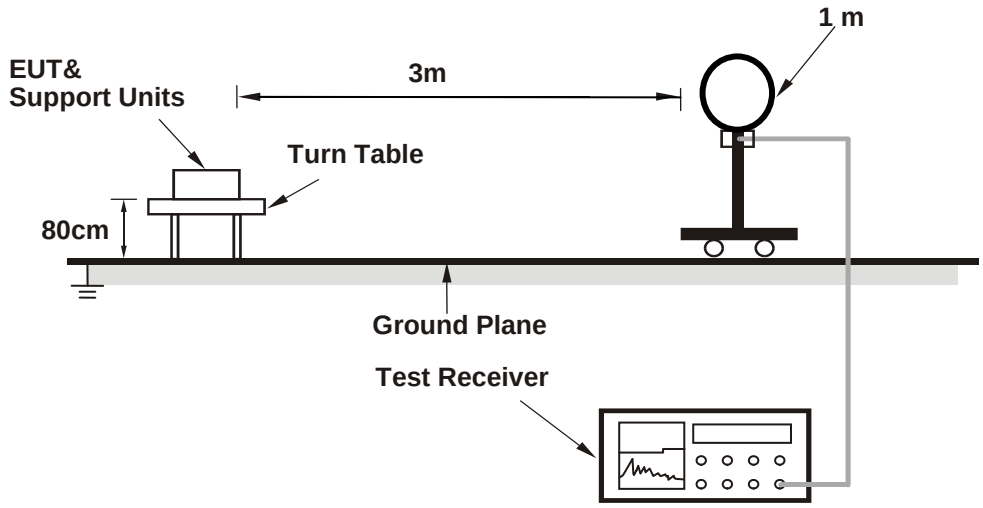
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

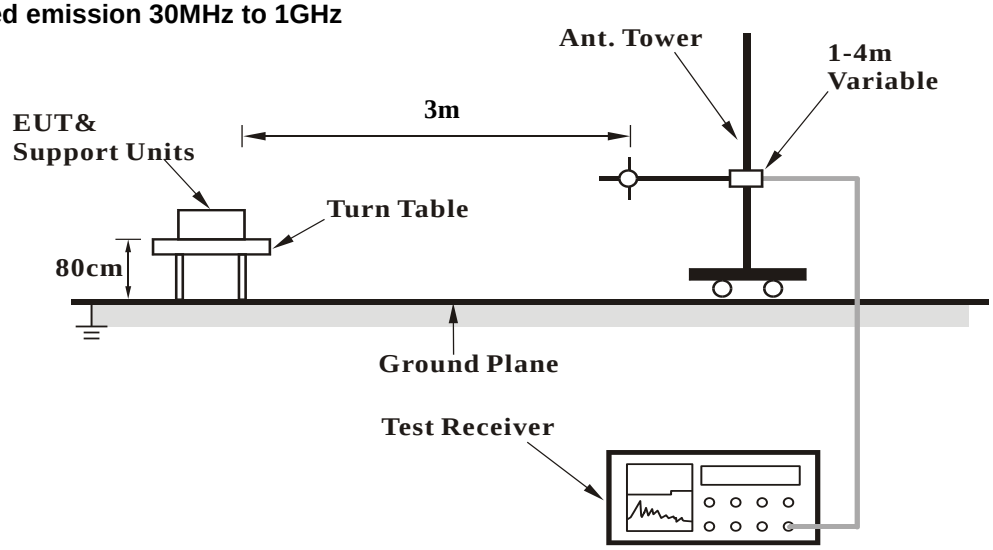
No deviation.

4.1.5 Test Setup

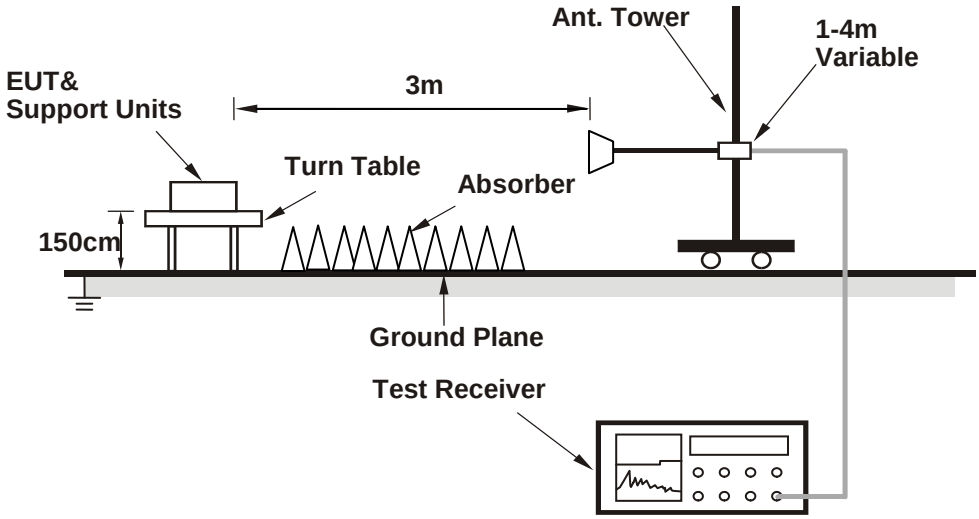
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

a. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz data:

802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.85	48.10	39.85	54.00	-5.90	34.12	8.13	34.00	101	6	Average
5149.85	63.30	55.05	74.00	-10.70	34.12	8.13	34.00	101	6	Peak
5180.00	99.74	91.43			34.15	8.16	34.00	101	6	Average
5180.00	106.29	97.98			34.15	8.16	34.00	101	6	Peak
*10360.00	55.30	41.00	68.20	-12.90	37.12	12.30	35.12	137	62	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.80	46.96	38.71	54.00	-7.04	34.12	8.13	34.00	269	265	Average
5148.80	62.95	54.70	74.00	-11.05	34.12	8.13	34.00	269	265	Peak
5180.00	98.81	90.50			34.15	8.16	34.00	269	265	Average
5180.00	105.31	97.00			34.15	8.16	34.00	269	265	Peak
*10360.00	56.19	41.89	68.20	-12.01	37.12	12.30	35.12	136	107	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 44	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5113.55	44.16	35.96	54.00	-9.84	34.09	8.10	33.99	101	6	Average
5113.55	54.26	46.06	74.00	-19.74	34.09	8.10	33.99	101	6	Peak
5220.00	99.75	91.36			34.17	8.22	34.00	101	6	Average
5220.00	106.18	97.79			34.17	8.22	34.00	101	6	Peak
5451.42	43.53	34.71	54.00	-10.47	34.36	8.51	34.05	101	6	Average
5451.42	53.37	44.55	74.00	-20.63	34.36	8.51	34.05	101	6	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5122.70	43.25	35.03	54.00	-10.75	34.11	8.10	33.99	269	265	Average
5122.70	53.40	45.18	74.00	-20.60	34.11	8.10	33.99	269	265	Peak
5220.00	98.50	90.11			34.17	8.22	34.00	269	265	Average
5220.00	104.94	96.55			34.17	8.22	34.00	269	265	Peak
5403.68	43.44	34.72	54.00	-10.56	34.32	8.44	34.04	269	265	Average
5403.68	54.17	45.45	74.00	-19.83	34.32	8.44	34.04	269	265	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5220 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 48	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240.00	100.02	91.58			34.19	8.26	34.01	101	6	Average
5240.00	106.75	98.31			34.19	8.26	34.01	101	6	Peak
5439.54	43.64	34.85	54.00	-10.36	34.35	8.48	34.04	101	6	Average
5439.54	53.45	44.66	74.00	-20.55	34.35	8.48	34.04	101	6	Peak
*10480.00	55.41	40.90	68.20	-12.79	37.19	12.53	35.21	142	31	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240.00	97.84	89.40			34.19	8.26	34.01	269	265	Average
5240.00	105.85	97.41			34.19	8.26	34.01	269	265	Peak
5399.72	42.65	33.93	54.00	-11.35	34.32	8.44	34.04	269	265	Average
5399.72	53.07	44.35	74.00	-20.93	34.32	8.44	34.04	269	265	Peak
*10480.00	55.66	41.15	68.20	-12.54	37.19	12.53	35.21	162	105	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 52	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5069.75	44.41	36.31	54.00	-9.59	34.05	8.03	33.98	112	7	Average
5069.75	54.42	46.32	74.00	-19.58	34.05	8.03	33.98	112	7	Peak
5260.00	98.78	90.32			34.21	8.26	34.01	112	7	Average
5260.00	105.93	97.47			34.21	8.26	34.01	112	7	Peak
*10520.00	56.01	41.42	68.20	-12.19	37.21	12.61	35.23	112	327	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5069.75	43.58	35.48	54.00	-10.42	34.05	8.03	33.98	267	254	Average
5069.75	53.54	45.44	74.00	-20.46	34.05	8.03	33.98	267	254	Peak
5260.00	97.17	88.71			34.21	8.26	34.01	267	254	Average
5260.00	105.01	96.55			34.21	8.26	34.01	267	254	Peak
*10520.00	55.25	40.66	68.20	-12.95	37.21	12.61	35.23	196	231	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 60	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5115.80	44.75	36.55	54.00	-9.25	34.09	8.10	33.99	112	7	Average
5115.80	54.20	46.00	74.00	-19.80	34.09	8.10	33.99	112	7	Peak
5300.00	98.92	90.38			34.24	8.32	34.02	112	7	Average
5300.00	106.15	97.61			34.24	8.32	34.02	112	7	Peak
5352.64	46.63	38.00	54.00	-7.37	34.28	8.38	34.03	112	7	Average
5352.64	55.20	46.57	74.00	-18.80	34.28	8.38	34.03	112	7	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5111.60	43.22	35.02	54.00	-10.78	34.09	8.10	33.99	267	254	Average
5111.60	53.31	45.11	74.00	-20.69	34.09	8.10	33.99	267	254	Peak
5300.00	97.92	89.38			34.24	8.32	34.02	267	254	Average
5300.00	105.03	96.49			34.24	8.32	34.02	267	254	Peak
5352.09	45.72	37.09	54.00	-8.28	34.28	8.38	34.03	267	254	Average
5352.09	54.16	45.53	74.00	-19.84	34.28	8.38	34.03	267	254	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 64	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320.00	99.83	91.25			34.25	8.35	34.02	112	7	Average
5320.00	106.37	97.79			34.25	8.35	34.02	112	7	Peak
5350.33	46.92	38.29	54.00	-7.08	34.28	8.38	34.03	112	7	Average
5350.33	58.17	49.54	74.00	-15.83	34.28	8.38	34.03	112	7	Peak
10640.00	47.22	32.49	54.00	-6.78	37.31	12.71	35.29	125	82	Average
10640.00	56.14	41.41	74.00	-17.86	37.31	12.71	35.29	125	82	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320.00	98.17	89.59			34.25	8.35	34.02	267	254	Average
5320.00	105.43	96.85			34.25	8.35	34.02	267	254	Peak
5353.41	45.71	37.08	54.00	-8.29	34.28	8.38	34.03	267	254	Average
5353.41	55.30	46.67	74.00	-18.70	34.28	8.38	34.03	267	254	Peak
10640.00	47.27	32.54	54.00	-6.73	37.31	12.71	35.29	196	212	Average
10640.00	56.55	41.82	74.00	-17.45	37.31	12.71	35.29	196	212	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 100	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5448.08	47.00	38.17	54.00	-7.00	34.36	8.51	34.04	149	360	Average
5448.08	55.82	46.99	74.00	-18.18	34.36	8.51	34.04	149	360	Peak
*5470.80	58.56	49.70	68.20	-9.64	34.37	8.54	34.05	149	360	Peak
5500.00	98.65	89.73			34.40	8.57	34.05	149	360	Average
5500.00	106.75	97.83			34.40	8.57	34.05	149	360	Peak
11000.00	47.06	31.98	54.00	-6.94	37.60	12.96	35.48	110	85	Average
11000.00	56.65	41.57	74.00	-17.35	37.60	12.96	35.48	110	85	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5447.76	46.15	37.32	54.00	-7.85	34.36	8.51	34.04	100	240	Average
5447.76	54.86	46.03	74.00	-19.14	34.36	8.51	34.04	100	240	Peak
*5470.80	57.33	48.47	68.20	-10.87	34.37	8.54	34.05	100	240	Peak
5500.00	96.51	87.59			34.40	8.57	34.05	100	240	Average
5500.00	104.21	95.29			34.40	8.57	34.05	100	240	Peak
11000.00	47.44	32.36	54.00	-6.56	37.60	12.96	35.48	124	346	Average
11000.00	55.96	40.88	74.00	-18.04	37.60	12.96	35.48	124	346	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 116	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5393.52	43.97	35.26	54.00	-10.03	34.31	8.44	34.04	149	360	Average
5393.52	53.46	44.75	74.00	-20.54	34.31	8.44	34.04	149	360	Peak
*5470.00	51.52	42.69	68.20	-16.68	34.37	8.51	34.05	149	360	Peak
5580.00	98.36	89.37			34.47	8.60	34.08	149	360	Average
5580.00	106.87	97.88			34.47	8.60	34.08	149	360	Peak
*5725.72	52.43	43.27	68.20	-15.77	34.62	8.65	34.11	149	360	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5393.36	44.36	35.65	54.00	-9.64	34.31	8.44	34.04	100	240	Average
5393.36	54.68	45.97	74.00	-19.32	34.31	8.44	34.04	100	240	Peak
*5468.88	51.41	42.58	68.20	-16.79	34.37	8.51	34.05	100	240	Peak
5580.00	96.09	87.10			34.47	8.60	34.08	100	240	Average
5580.00	104.03	95.04			34.47	8.60	34.08	100	240	Peak
*5724.52	52.41	43.25	68.20	-15.79	34.62	8.65	34.11	100	240	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 140	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700.00	98.46	89.33			34.59	8.64	34.10	149	360	Average
5700.00	106.51	97.38			34.59	8.64	34.10	149	360	Peak
*5725.16	60.03	50.87	68.20	-8.17	34.62	8.65	34.11	149	360	Peak
11400.00	47.11	32.01	54.00	-6.89	37.84	12.67	35.41	128	114	Average
11400.00	57.27	42.17	74.00	-16.73	37.84	12.67	35.41	128	114	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700.00	96.55	87.42			34.59	8.64	34.10	100	240	Average
5700.00	104.46	95.33			34.59	8.64	34.10	100	240	Peak
*5726.04	59.13	49.97	68.20	-9.07	34.62	8.65	34.11	100	240	Peak
11400.00	47.22	32.12	54.00	-6.78	37.84	12.67	35.41	125	124	Average
11400.00	56.25	41.15	74.00	-17.75	37.84	12.67	35.41	125	124	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745.00	97.66	88.47			34.64	8.66	34.11	123	0	Average
5745.00	105.49	96.30			34.64	8.66	34.11	123	0	Peak
11490.00	47.16	32.04	54.00	-6.84	37.89	12.62	35.39	147	111	Average
11490.00	56.71	41.59	74.00	-17.29	37.89	12.62	35.39	147	111	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745.00	95.44	86.25			34.64	8.66	34.11	100	256	Average
5745.00	103.27	94.08			34.64	8.66	34.11	100	256	Peak
11490.00	47.18	32.06	54.00	-6.82	37.89	12.62	35.39	124	322	Average
11490.00	56.24	41.12	74.00	-17.76	37.89	12.62	35.39	124	322	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5555.13	53.96	44.99	68.20	-14.24	34.45	8.59	34.07	123	0	Peak
5654.35	52.69	43.60	71.42	-18.73	34.56	8.63	34.10	123	0	Peak
5920.00	50.36	40.98	71.90	-21.54	34.81	8.73	34.16	123	0	Peak
*5979.33	53.07	43.61	68.20	-15.13	34.88	8.75	34.17	123	0	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5556.18	54.31	45.34	68.20	-13.89	34.45	8.59	34.07	100	256	Peak
5655.40	53.08	43.99	72.20	-19.12	34.56	8.63	34.10	100	256	Peak
5916.85	51.29	41.91	74.23	-22.94	34.81	8.73	34.16	100	256	Peak
*6018.18	53.09	43.58	68.20	-15.11	34.92	8.77	34.18	100	256	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785.00	97.76	88.53			34.68	8.68	34.13	123	0	Average
5785.00	105.47	96.24			34.68	8.68	34.13	123	0	Peak
11570.00	47.53	32.22	54.00	-6.47	38.00	12.68	35.37	145	320	Average
11570.00	56.34	41.03	74.00	-17.66	38.00	12.68	35.37	145	320	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785.00	95.44	86.21			34.68	8.68	34.13	100	256	Average
5785.00	103.84	94.61			34.68	8.68	34.13	100	256	Peak
11570.00	47.25	31.94	54.00	-6.75	38.00	12.68	35.37	139	288	Average
11570.00	55.85	40.54	74.00	-18.15	38.00	12.68	35.37	139	288	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5588.73	54.75	45.74	68.20	-13.45	34.49	8.60	34.08	123	0	Peak
5652.78	52.40	43.30	70.25	-17.85	34.56	8.63	34.09	123	0	Peak
5915.28	51.93	42.55	75.40	-23.47	34.81	8.73	34.16	123	0	Peak
*5980.38	53.01	43.55	68.20	-15.19	34.88	8.75	34.17	123	0	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5590.30	53.65	44.64	68.20	-14.55	34.49	8.60	34.08	100	256	Peak
5654.88	52.62	43.53	71.81	-19.19	34.56	8.63	34.10	100	256	Peak
5918.95	50.97	41.59	72.68	-21.71	34.81	8.73	34.16	100	256	Peak
*6010.83	53.04	43.54	68.20	-15.16	34.92	8.76	34.18	100	256	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825.00	97.39	88.10			34.73	8.69	34.13	123	0	Average
5825.00	105.74	96.45			34.73	8.69	34.13	123	0	Peak
11650.00	47.68	32.15	54.00	-6.32	38.09	12.80	35.36	125	249	Average
11650.00	55.85	40.32	74.00	-18.15	38.09	12.80	35.36	125	249	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825.00	95.25	85.96			34.73	8.69	34.13	100	256	Average
5825.00	103.35	94.06			34.73	8.69	34.13	100	256	Peak
11650.00	47.61	32.08	54.00	-6.39	38.09	12.80	35.36	157	224	Average
11650.00	56.76	41.23	74.00	-17.24	38.09	12.80	35.36	157	224	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5632.30	55.02	45.97	68.20	-13.18	34.52	8.62	34.09	123	0	Peak
5660.13	52.46	43.37	75.69	-23.23	34.56	8.63	34.10	123	0	Peak
5918.43	51.98	42.60	73.07	-21.09	34.81	8.73	34.16	123	0	Peak
*5929.45	53.64	44.24	68.20	-14.56	34.83	8.73	34.16	123	0	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5634.93	53.40	44.33	68.20	-14.80	34.54	8.62	34.09	100	256	Peak
5653.30	51.47	42.37	70.64	-19.17	34.56	8.63	34.09	100	256	Peak
5917.90	52.04	42.66	73.45	-21.41	34.81	8.73	34.16	100	256	Peak
*5948.88	52.87	43.44	68.20	-15.33	34.85	8.74	34.16	100	256	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5825MHz: Fundamental Frequency
3. *: Out of Restricted Band

802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150.00	48.71	40.46	54.00	-5.29	34.12	8.13	34.00	101	6	Average
5150.00	62.05	53.80	74.00	-11.95	34.12	8.13	34.00	101	6	Peak
5180.00	99.46	91.15			34.15	8.16	34.00	101	6	Average
5180.00	106.12	97.81			34.15	8.16	34.00	101	6	Peak
*10360.00	55.72	41.42	68.20	-12.48	37.12	12.30	35.12	107	163	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5148.05	47.30	39.05	54.00	-6.70	34.12	8.13	34.00	269	265	Average
5148.05	60.40	52.15	74.00	-13.60	34.12	8.13	34.00	269	265	Peak
5180.00	98.55	90.24			34.15	8.16	34.00	269	265	Average
5180.00	105.26	96.95			34.15	8.16	34.00	269	265	Peak
*10360.00	56.27	41.97	68.20	-11.93	37.12	12.30	35.12	105	283	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 44	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5035.10	44.01	35.95	54.00	-9.99	34.03	8.00	33.97	101	6	Average
5035.10	54.53	46.47	74.00	-19.47	34.03	8.00	33.97	101	6	Peak
5220.00	99.25	90.86			34.17	8.22	34.00	101	6	Average
5220.00	106.05	97.66			34.17	8.22	34.00	101	6	Peak
5365.95	43.31	34.67	54.00	-10.69	34.29	8.38	34.03	101	6	Average
5365.95	53.85	45.21	74.00	-20.15	34.29	8.38	34.03	101	6	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5127.80	43.00	34.78	54.00	-11.00	34.11	8.10	33.99	270	265	Average
5127.80	54.08	45.86	74.00	-19.92	34.11	8.10	33.99	270	265	Peak
5220.00	98.36	89.97			34.17	8.22	34.00	270	265	Average
5220.00	105.18	96.79			34.17	8.22	34.00	270	265	Peak
5413.03	42.57	33.84	54.00	-11.43	34.33	8.44	34.04	270	265	Average
5413.03	53.38	44.65	74.00	-20.62	34.33	8.44	34.04	270	265	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5220 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 48	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240.00	98.73	90.29			34.19	8.26	34.01	101	6	Average
5240.00	106.09	97.65			34.19	8.26	34.01	101	6	Peak
5441.63	43.43	34.64	54.00	-10.57	34.35	8.48	34.04	101	6	Average
5441.63	53.37	44.58	74.00	-20.63	34.35	8.48	34.04	101	6	Peak
*10480.00	56.02	41.51	68.20	-12.18	37.19	12.53	35.21	174	325	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5240.00	97.70	89.26			34.19	8.26	34.01	270	265	Average
5240.00	105.14	96.70			34.19	8.26	34.01	270	265	Peak
5438.11	42.74	33.95	54.00	-11.26	34.35	8.48	34.04	270	265	Average
5438.11	53.28	44.49	74.00	-20.72	34.35	8.48	34.04	270	265	Peak
*10480.00	55.37	40.86	68.20	-12.83	37.19	12.53	35.21	153	180	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 52	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5072.15	44.34	36.22	54.00	-9.66	34.07	8.03	33.98	112	7	Average
5072.15	53.39	45.27	74.00	-20.61	34.07	8.03	33.98	112	7	Peak
5260.00	98.25	89.79			34.21	8.26	34.01	112	7	Average
5260.00	105.49	97.03			34.21	8.26	34.01	112	7	Peak
*10520.00	56.01	41.42	68.20	-12.19	37.21	12.61	35.23	133	304	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5071.70	43.61	35.49	54.00	-10.39	34.07	8.03	33.98	267	254	Average
5071.70	54.84	46.72	74.00	-19.16	34.07	8.03	33.98	267	254	Peak
5260.00	96.17	87.71			34.21	8.26	34.01	267	254	Average
5260.00	104.37	95.91			34.21	8.26	34.01	267	254	Peak
*10520.00	55.25	40.66	68.20	-12.95	37.21	12.61	35.23	155	107	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 60	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5115.20	44.49	36.29	54.00	-9.51	34.09	8.10	33.99	112	7	Average
5115.20	54.47	46.27	74.00	-19.53	34.09	8.10	33.99	112	7	Peak
5300.00	98.70	90.16			34.24	8.32	34.02	112	7	Average
5300.00	105.86	97.32			34.24	8.32	34.02	112	7	Peak
5352.31	47.24	38.61	54.00	-6.76	34.28	8.38	34.03	112	7	Average
5352.31	55.19	46.56	74.00	-18.81	34.28	8.38	34.03	112	7	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5114.15	43.19	34.99	54.00	-10.81	34.09	8.10	33.99	267	254	Average
5114.15	53.83	45.63	74.00	-20.17	34.09	8.10	33.99	267	254	Peak
5300.00	96.66	88.12			34.24	8.32	34.02	267	254	Average
5300.00	104.80	96.26			34.24	8.32	34.02	267	254	Peak
5352.20	46.18	37.55	54.00	-7.82	34.28	8.38	34.03	267	254	Average
5352.20	54.32	45.69	74.00	-19.68	34.28	8.38	34.03	267	254	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 64	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320.00	99.22	90.64			34.25	8.35	34.02	112	7	Average
5320.00	105.65	97.07			34.25	8.35	34.02	112	7	Peak
5350.88	47.31	38.68	54.00	-6.69	34.28	8.38	34.03	112	7	Average
5350.88	56.94	48.31	74.00	-17.06	34.28	8.38	34.03	112	7	Peak
10640.00	47.08	32.35	54.00	-6.92	37.31	12.71	35.29	152	328	Average
10640.00	56.14	41.41	74.00	-17.86	37.31	12.71	35.29	152	328	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5320.00	97.69	89.11			34.25	8.35	34.02	267	254	Average
5320.00	104.59	96.01			34.25	8.35	34.02	267	254	Peak
5350.55	45.98	37.35	54.00	-8.02	34.28	8.38	34.03	267	254	Average
5350.55	59.50	50.87	74.00	-14.50	34.28	8.38	34.03	267	254	Peak
10640.00	47.38	32.65	54.00	-6.62	37.31	12.71	35.29	125	196	Average
10640.00	56.55	41.82	74.00	-17.45	37.31	12.71	35.29	125	196	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 100	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5448.56	47.73	38.90	54.00	-6.27	34.36	8.51	34.04	149	360	Average
5448.56	56.25	47.42	74.00	-17.75	34.36	8.51	34.04	149	360	Peak
*5470.48	59.14	50.31	68.20	-9.06	34.37	8.51	34.05	149	360	Peak
5500.00	98.47	89.55			34.40	8.57	34.05	149	360	Average
5500.00	106.04	97.12			34.40	8.57	34.05	149	360	Peak
11000.00	47.10	32.02	54.00	-6.90	37.60	12.96	35.48	106	353	Average
11000.00	56.57	41.49	74.00	-17.43	37.60	12.96	35.48	106	353	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5448.40	46.49	37.66	54.00	-7.51	34.36	8.51	34.04	100	240	Average
5448.40	54.97	46.14	74.00	-19.03	34.36	8.51	34.04	100	240	Peak
*5470.48	57.37	48.54	68.20	-10.83	34.37	8.51	34.05	100	240	Peak
5500.00	96.28	87.36			34.40	8.57	34.05	100	240	Average
5500.00	104.31	95.39			34.40	8.57	34.05	100	240	Peak
11000.00	47.48	32.40	54.00	-6.52	37.60	12.96	35.48	154	222	Average
11000.00	56.96	41.88	74.00	-17.04	37.60	12.96	35.48	154	222	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 116	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5383.12	44.08	35.40	54.00	-9.92	34.31	8.41	34.04	149	360	Average
5383.12	53.80	45.12	74.00	-20.20	34.31	8.41	34.04	149	360	Peak
*5470.96	53.01	44.15	68.20	-15.19	34.37	8.54	34.05	149	360	Peak
5580.00	98.63	89.64			34.47	8.60	34.08	149	360	Average
5580.00	106.11	97.12			34.47	8.60	34.08	149	360	Peak
*5724.68	52.50	43.34	68.20	-15.70	34.62	8.65	34.11	149	360	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5392.88	44.27	35.56	54.00	-9.73	34.31	8.44	34.04	100	240	Average
5392.88	53.97	45.26	74.00	-20.03	34.31	8.44	34.04	100	240	Peak
*5468.24	51.76	42.93	68.20	-16.44	34.37	8.51	34.05	100	240	Peak
5580.00	96.44	87.45			34.47	8.60	34.08	100	240	Average
5580.00	104.76	95.77			34.47	8.60	34.08	100	240	Peak
*5724.84	52.50	43.34	68.20	-15.70	34.62	8.65	34.11	100	240	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 140	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700.00	98.74	89.61			34.59	8.64	34.10	149	360	Average
5700.00	106.66	97.53			34.59	8.64	34.10	149	360	Peak
*5724.04	61.14	51.98	68.20	-7.06	34.62	8.65	34.11	149	360	Peak
11400.00	47.16	32.06	54.00	-6.84	37.84	12.67	35.41	119	5	Average
11400.00	57.62	42.52	74.00	-16.38	37.84	12.67	35.41	119	5	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5700.00	96.19	87.06			34.59	8.64	34.10	100	240	Average
5700.00	104.09	94.96			34.59	8.64	34.10	100	240	Peak
*5724.36	62.80	53.64	68.20	-5.40	34.62	8.65	34.11	100	240	Peak
11400.00	47.11	32.01	54.00	-6.89	37.84	12.67	35.41	135	133	Average
11400.00	57.32	42.22	74.00	-16.68	37.84	12.67	35.41	135	133	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745.00	97.44	88.25			34.64	8.66	34.11	123	0	Average
5745.00	105.61	96.42			34.64	8.66	34.11	123	0	Peak
11490.00	47.33	32.21	54.00	-6.67	37.89	12.62	35.39	153	285	Average
11490.00	55.87	40.75	74.00	-18.13	37.89	12.62	35.39	153	285	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5745.00	95.46	86.27			34.64	8.66	34.11	100	256	Average
5745.00	103.95	94.76			34.64	8.66	34.11	100	256	Peak
11490.00	46.98	31.86	54.00	-7.02	37.89	12.62	35.39	125	165	Average
11490.00	55.64	40.52	74.00	-18.36	37.89	12.62	35.39	125	165	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5557.23	54.49	45.52	68.20	-13.71	34.45	8.59	34.07	123	0	Peak
5656.45	52.45	43.36	72.97	-20.52	34.56	8.63	34.10	123	0	Peak
5916.85	51.96	42.58	74.23	-22.27	34.81	8.73	34.16	123	0	Peak
*5928.93	53.47	44.07	68.20	-14.73	34.83	8.73	34.16	123	0	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5550.93	53.31	44.34	68.20	-14.89	34.45	8.59	34.07	100	256	Peak
5658.03	52.12	43.03	74.14	-22.02	34.56	8.63	34.10	100	256	Peak
5921.05	53.03	43.65	71.12	-18.09	34.81	8.73	34.16	100	256	Peak
*5936.28	53.44	44.04	68.20	-14.76	34.83	8.73	34.16	100	256	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785.00	97.34	88.11			34.68	8.68	34.13	123	0	Average
5785.00	105.08	95.85			34.68	8.68	34.13	123	0	Peak
11570.00	47.30	31.99	54.00	-6.70	38.00	12.68	35.37	188	187	Average
11570.00	56.32	41.01	74.00	-17.68	38.00	12.68	35.37	188	187	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5785.00	95.14	85.91			34.68	8.68	34.13	100	256	Average
5785.00	103.79	94.56			34.68	8.68	34.13	100	256	Peak
11570.00	47.19	31.88	54.00	-6.81	38.00	12.68	35.37	138	328	Average
11570.00	56.38	41.07	74.00	-17.62	38.00	12.68	35.37	138	328	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5595.03	53.98	44.97	68.20	-14.22	34.49	8.60	34.08	123	0	Peak
5656.45	51.57	42.48	72.97	-21.40	34.56	8.63	34.10	123	0	Peak
5908.98	53.02	43.65	80.06	-27.04	34.81	8.72	34.16	123	0	Peak
*5947.30	53.03	43.60	68.20	-15.17	34.85	8.74	34.16	123	0	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5600.28	53.38	44.36	68.20	-14.82	34.50	8.60	34.08	100	256	Peak
5656.98	52.76	43.67	73.36	-20.60	34.56	8.63	34.10	100	256	Peak
5917.38	51.12	41.74	73.84	-22.72	34.81	8.73	34.16	100	256	Peak
*5997.18	54.80	45.31	68.20	-13.40	34.90	8.76	34.17	100	256	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

<Spurious Emission>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825.00	97.43	88.14			34.73	8.69	34.13	123	0	Average
5825.00	105.58	96.29			34.73	8.69	34.13	123	0	Peak
11650.00	47.41	31.88	54.00	-6.59	38.09	12.80	35.36	100	24	Average
11650.00	57.13	41.60	74.00	-16.87	38.09	12.80	35.36	100	24	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5825.00	95.63	86.34			34.73	8.69	34.13	100	256	Average
5825.00	103.46	94.17			34.73	8.69	34.13	100	256	Peak
11650.00	47.66	32.13	54.00	-6.34	38.09	12.80	35.36	124	135	Average
11650.00	56.67	41.14	74.00	-17.33	38.09	12.80	35.36	124	135	Peak

<Ouf of Band Emission (OOBE)>

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5629.15	53.50	44.45	68.20	-14.70	34.52	8.62	34.09	123	0	Peak
5659.08	52.32	43.23	74.92	-22.60	34.56	8.63	34.10	123	0	Peak
5919.48	51.27	41.89	72.29	-21.02	34.81	8.73	34.16	123	0	Peak
*6022.90	53.01	43.50	68.20	-15.19	34.92	8.77	34.18	123	0	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
*5624.95	55.66	46.61	68.20	-12.54	34.52	8.61	34.08	100	256	Peak
5661.70	51.70	42.61	76.86	-25.16	34.56	8.63	34.10	100	256	Peak
5914.75	53.39	44.01	75.78	-22.39	34.81	8.73	34.16	100	256	Peak
*6020.28	52.80	43.29	68.20	-15.40	34.92	8.77	34.18	100	256	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5825MHz: Fundamental Frequency
3. *: Out of Restricted Band

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5145.35	**52.89**	**44.64**	**54.00**	**-1.11**	**34.12**	**8.13**	**34.00**	**101**	**6**	**Average**
5145.35	64.86	56.61	74.00	-9.14	34.12	8.13	34.00	101	6	Peak
5190.00	93.76	85.42			34.15	8.19	34.00	101	6	Average
5190.00	101.68	93.34			34.15	8.19	34.00	101	6	Peak
5367.82	42.64	33.97	54.00	-11.36	34.29	8.41	34.03	101	6	Average
5367.82	53.26	44.59	74.00	-20.74	34.29	8.41	34.03	101	6	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.25	51.74	43.49	54.00	-2.26	34.12	8.13	34.00	269	265	Average
5149.25	64.20	55.95	74.00	-9.80	34.12	8.13	34.00	269	265	Peak
5190.00	92.30	83.96			34.15	8.19	34.00	269	265	Average
5190.00	100.16	91.82			34.15	8.19	34.00	269	265	Peak
5439.76	42.58	33.79	54.00	-11.42	34.35	8.48	34.04	269	265	Average
5439.76	53.10	44.31	74.00	-20.90	34.35	8.48	34.04	269	265	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 46	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5051.90	43.69	35.63	54.00	-10.31	34.04	8.00	33.98	101	6	Average
5051.90	54.13	46.07	74.00	-19.87	34.04	8.00	33.98	101	6	Peak
5230.00	95.53	87.13			34.19	8.22	34.01	101	6	Average
5230.00	103.17	94.77			34.19	8.22	34.01	101	6	Peak
5373.87	42.87	34.21	54.00	-11.13	34.29	8.41	34.04	101	6	Average
5373.87	53.12	44.46	74.00	-20.88	34.29	8.41	34.04	101	6	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5118.80	43.29	35.09	54.00	-10.71	34.09	8.10	33.99	269	265	Average
5118.80	53.21	45.01	74.00	-20.79	34.09	8.10	33.99	269	265	Peak
5230.00	94.00	85.60			34.19	8.22	34.01	269	265	Average
5230.00	101.67	93.27			34.19	8.22	34.01	269	265	Peak
5430.74	42.48	33.69	54.00	-11.52	34.35	8.48	34.04	269	265	Average
5430.74	53.27	44.48	74.00	-20.73	34.35	8.48	34.04	269	265	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5230 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 54	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5070.20	43.60	35.50	54.00	-10.40	34.05	8.03	33.98	112	7	Average
5070.20	53.24	45.14	74.00	-20.76	34.05	8.03	33.98	112	7	Peak
5270.00	96.12	87.63			34.21	8.29	34.01	112	7	Average
5270.00	102.96	94.47			34.21	8.29	34.01	112	7	Peak
5374.97	43.54	34.88	54.00	-10.46	34.29	8.41	34.04	112	7	Average
5374.97	53.54	44.88	74.00	-20.46	34.29	8.41	34.04	112	7	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5079.20	43.15	35.03	54.00	-10.85	34.07	8.03	33.98	267	254	Average
5079.20	54.10	45.98	74.00	-19.90	34.07	8.03	33.98	267	254	Peak
5270.00	94.88	86.39			34.21	8.29	34.01	267	254	Average
5270.00	102.09	93.60			34.21	8.29	34.01	267	254	Peak
5421.06	43.06	34.29	54.00	-10.94	34.33	8.48	34.04	267	254	Average
5421.06	54.15	45.38	74.00	-19.85	34.33	8.48	34.04	267	254	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5270 MHz: Fundamental Frequency
3. *: Out of Restricted Band

EUT Test Condition		Measurement Detail	
Channel	Channel 62	Frequency Range	1 GHz ~ 40 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5126.90	43.27	35.05	54.00	-10.73	34.11	8.10	33.99	112	7	Average
5126.90	53.84	45.62	74.00	-20.16	34.11	8.10	33.99	112	7	Peak
5310.00	94.63	86.08			34.25	8.32	34.02	112	7	Average
5310.00	101.53	92.98			34.25	8.32	34.02	112	7	Peak
5350.66	52.57	43.94	54.00	-1.43	34.28	8.38	34.03	112	7	Average
5350.66	66.34	57.71	74.00	-7.66	34.28	8.38	34.03	112	7	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5142.50	42.89	34.63	54.00	-11.11	34.12	8.13	33.99	267	254	Average
5142.50	53.68	45.42	74.00	-20.32	34.12	8.13	33.99	267	254	Peak
5310.00	93.52	84.97			34.25	8.32	34.02	267	254	Average
5310.00	100.20	91.65			34.25	8.32	34.02	267	254	Peak
5350.44	51.26	42.63	54.00	-2.74	34.28	8.38	34.03	267	254	Average
5350.44	64.19	55.56	74.00	-9.81	34.28	8.38	34.03	267	254	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. *: Out of Restricted Band

9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	30 MHz ~ 1 GHz
Input Power	12Vdc	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee
Test Mode	A		

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
70.23	28.72	49.68	40.00	-11.28	10.15	1.11	32.22	153	126	Peak
107.76	32.47	51.25	43.50	-11.03	12.19	1.28	32.25	104	134	Peak
226.56	32.28	50.99	46.00	-13.72	11.63	1.85	32.19	195	118	Peak
329.40	21.64	37.76	46.00	-24.36	13.78	2.19	32.09	148	119	Peak
680.10	26.63	36.76	46.00	-19.37	18.93	3.05	32.11	163	134	Peak
890.80	26.63	33.28	46.00	-19.37	21.40	3.49	31.54	127	185	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
70.77	26.09	47.39	40.00	-13.91	9.81	1.11	32.22	102	85	Peak
115.86	25.53	45.43	43.50	-17.97	11.07	1.28	32.25	175	154	Peak
193.89	33.17	52.95	43.50	-10.33	10.88	1.61	32.27	196	134	Peak
393.10	20.41	35.42	46.00	-25.59	14.85	2.34	32.20	184	115	Peak
558.30	20.64	32.82	46.00	-25.36	17.26	2.76	32.20	127	151	Peak
749.40	25.41	34.53	46.00	-20.59	19.81	3.22	32.15	196	346	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	30 MHz ~ 1 GHz
Input Power	24Vdc	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee
Test Mode	B		

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
85.62	31.04	52.70	40.00	-8.96	9.19	1.11	31.96	161	124	Peak
142.59	22.23	44.72	43.50	-21.27	8.40	1.38	32.27	187	244	Peak
256.26	25.03	42.77	46.00	-20.97	12.42	1.94	32.10	193	216	Peak
340.60	22.34	38.15	46.00	-23.66	14.08	2.19	32.08	197	126	Peak
512.10	16.96	29.88	46.00	-29.04	16.50	2.70	32.12	133	142	Peak
785.80	19.68	28.30	46.00	-26.32	20.19	3.27	32.08	187	154	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
79.68	23.13	45.97	40.00	-16.87	8.26	1.11	32.21	149	115	Peak
177.15	24.81	45.88	43.50	-18.69	9.56	1.61	32.24	157	124	Peak
237.63	30.54	48.82	46.00	-15.46	12.02	1.85	32.15	102	312	Peak
353.90	22.89	38.51	46.00	-23.11	14.27	2.19	32.08	166	120	Peak
531.70	16.84	29.54	46.00	-29.16	16.76	2.70	32.16	148	215	Peak
922.30	21.83	28.05	46.00	-24.17	21.57	3.53	31.32	121	190	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 21, 2016	Nov. 20, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 22, 2016	Dec. 21, 2017
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

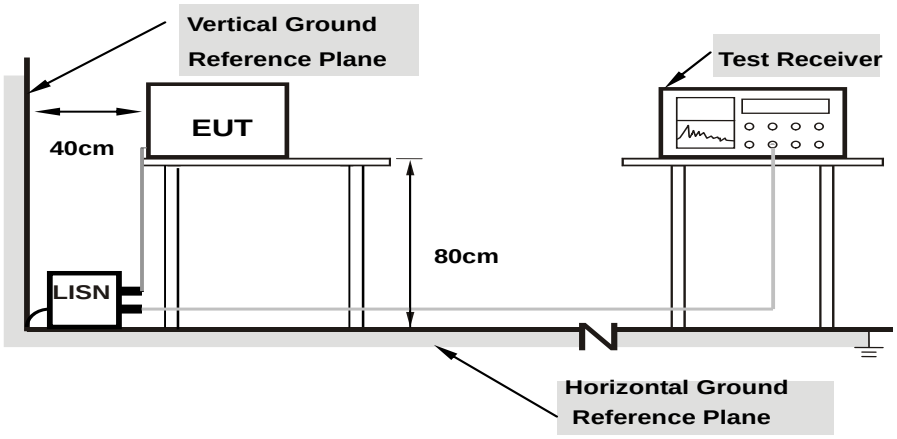
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

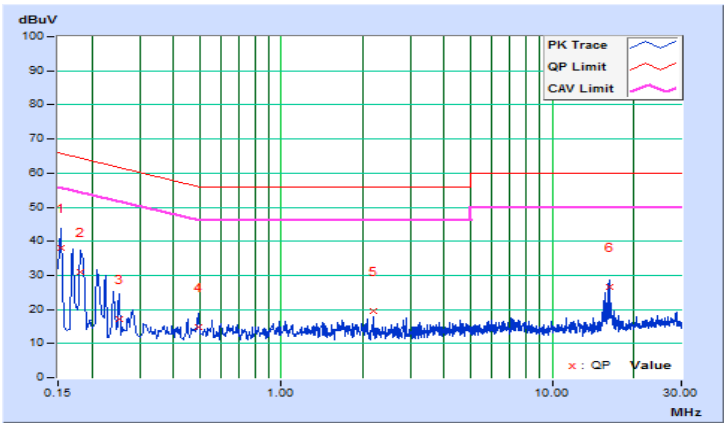
Worst-case data: 802.11a

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.45	27.60	10.07	38.05	20.52	65.79	55.79	-27.74	-35.27
2	0.18128	10.45	20.48	14.87	30.93	25.32	64.43	54.43	-33.50	-29.11
3	0.25166	10.47	6.81	1.75	17.28	12.22	61.70	51.70	-44.42	-39.48
4	0.49408	10.51	4.43	1.46	14.94	11.97	56.10	46.10	-41.16	-34.13
5	2.19884	10.54	9.05	1.63	19.59	12.17	56.00	46.00	-36.41	-33.83
6	**16.22792**	**11.24**	**15.21**	**13.40**	**26.45**	**24.64**	**60.00**	**50.00**	**-33.55**	**-25.36**

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

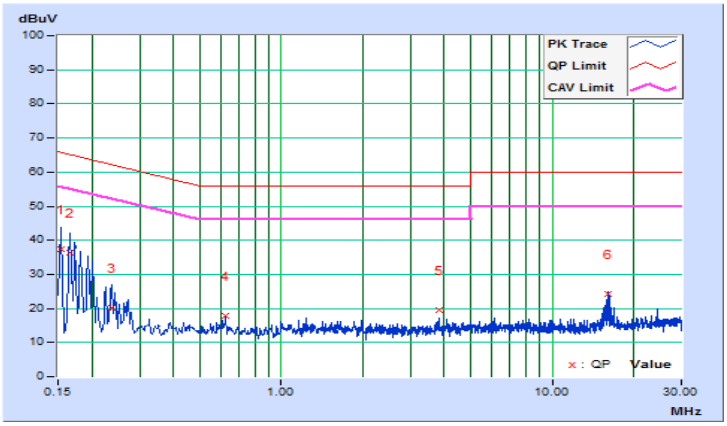


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.21	27.25	10.17	37.46	20.38	65.79	55.79	-28.33	-35.41
2	0.16564	10.21	26.29	10.88	36.50	21.09	65.18	55.18	-28.68	-34.09
3	0.23602	10.23	9.85	4.55	20.08	14.78	62.24	52.24	-42.16	-37.46
4	0.62311	10.25	7.46	3.86	17.71	14.11	56.00	46.00	-38.29	-31.89
5	3.82540	10.40	9.28	1.84	19.68	12.24	56.00	46.00	-36.32	-33.76
6	16.16536	10.91	13.48	11.96	24.39	22.87	60.00	50.00	-35.61	-27.13

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

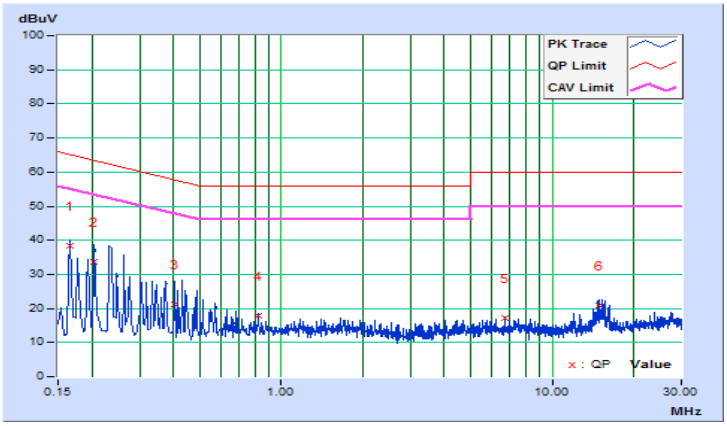


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16564	10.45	27.80	12.61	38.25	23.06	65.18	55.18	-26.93	-32.12
2	0.20474	10.46	23.17	10.34	33.63	20.80	63.42	53.42	-29.79	-32.62
3	0.40415	10.52	10.84	5.32	21.36	15.84	57.77	47.77	-36.41	-31.93
4	0.82234	10.49	7.26	4.53	17.75	15.02	56.00	46.00	-38.25	-30.98
5	6.69143	10.77	6.33	4.94	17.10	15.71	60.00	50.00	-42.90	-34.29
6	15.00800	11.18	9.57	5.95	20.75	17.13	60.00	50.00	-39.25	-32.87

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

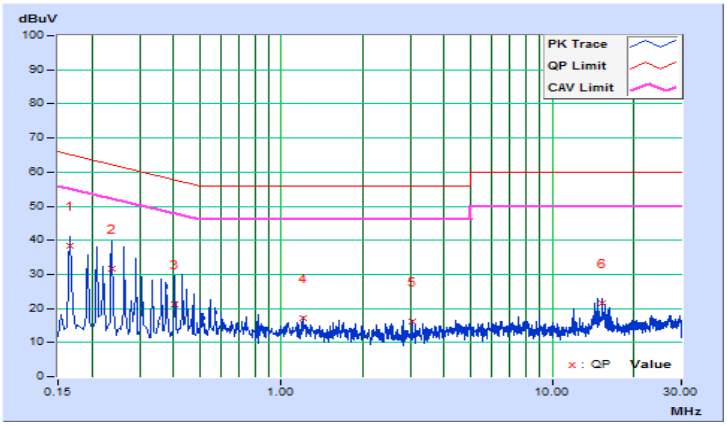


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16569	10.21	28.10	12.80	38.31	23.01	65.17	55.17	-26.86	-32.16
2	0.23602	10.23	21.30	10.73	31.53	20.96	62.24	52.24	-30.71	-31.28
3	0.40415	10.24	10.88	5.37	21.12	15.61	57.77	47.77	-36.65	-32.16
4	1.19788	10.27	6.79	4.56	17.06	14.83	56.00	46.00	-38.94	-31.17
5	3.03558	10.36	5.78	1.28	16.14	11.64	56.00	46.00	-39.86	-34.36
6	15.25042	10.87	10.66	7.13	21.53	18.00	60.00	50.00	-38.47	-32.00

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



4.3 Transmit Power Measurement

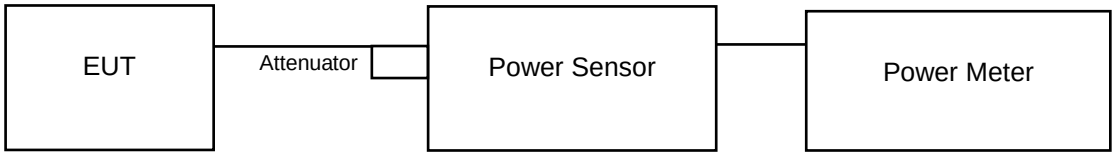
4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

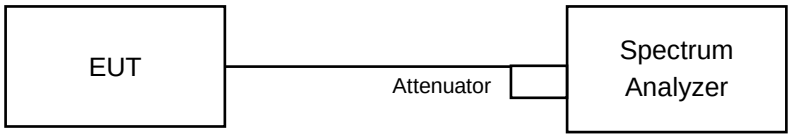
*B is the 26 dB emission bandwidth in megahertz

4.3.2 Test Setup

For Power Output



For 26dB Bandwidth



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

For 26dB Bandwidth

a. Set RBW = approximately 1% of the emission bandwidth.
b. Set the VBW > RBW.
c. Detector = Peak.
d. Trace mode = max hold.
e. Measure the maximum width of the emission that is 26 dB down from the 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%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Result

Power Output:

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	19.724	12.95	24.00	Pass
40	5200	19.498	12.90	24.00	Pass
48	5240	19.588	12.92	24.00	Pass
52	5260	19.231	12.84	24.00	Pass
60	5300	19.770	12.96	24.00	Pass
64	5320	19.543	12.91	24.00	Pass
100	5500	19.724	12.95	24.00	Pass
116	5580	19.231	12.84	24.00	Pass
140	5700	19.634	12.93	24.00	Pass
149	5745	19.588	12.92	30.00	Pass
157	5785	19.543	12.91	30.00	Pass
165	5825	19.409	12.88	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
1. 11dBm + 10log (22.66) = 24.55 > 24dBm
2. 11dBm + 10log (22.61) = 24.54 > 24dBm
3. 11dBm + 10log (22.42) = 24.51 > 24dBm
4. 11dBm + 10log (22.51) = 24.52 > 24dBm
5. 11dBm + 10log (23.03) = 24.62 > 24dBm
6. 11dBm + 10log (23.09) = 24.63 > 24dBm

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	19.099	12.81	24.00	Pass
40	5200	19.187	12.83	24.00	Pass
48	5240	**19.861**	12.98	24.00	Pass
52	5260	19.275	12.85	24.00	Pass
60	5300	19.770	12.96	24.00	Pass
64	5320	**19.815**	12.97	24.00	Pass
100	5500	19.679	12.94	24.00	Pass
116	5580	**19.724**	12.95	24.00	Pass
140	5700	19.364	12.87	24.00	Pass
149	5745	19.543	12.91	30.00	Pass
157	5785	19.231	12.84	30.00	Pass
165	5825	**19.724**	12.95	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
1. 11dBm + 10log (22.75) = 24.57 > 24dBm
2. 11dBm + 10log (23.13) = 24.64 > 24dBm
3. 11dBm + 10log (22.71) = 24.56 > 24dBm
4. 11dBm + 10log (22.99) = 24.62 > 24dBm
5. 11dBm + 10log (22.91) = 24.60 > 24dBm
6. 11dBm + 10log (22.74) = 24.57 > 24dBm

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	19.679	12.94	24.00	Pass
46	5230	19.275	12.85	24.00	Pass
54	5270	19.231	12.84	24.00	Pass
62	5310	19.011	12.79	24.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
1. 11dBm + 10log (46.58) = 27.68 > 24dBm
2. 11dBm + 10log (46.64) = 27.69 > 24dBm

26dB Bandwidth:

802.11a

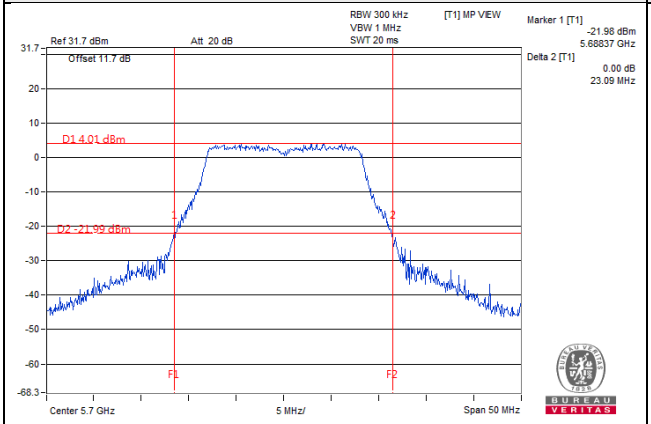
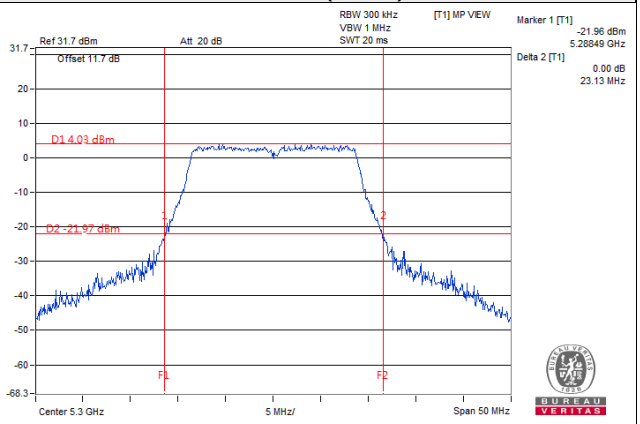
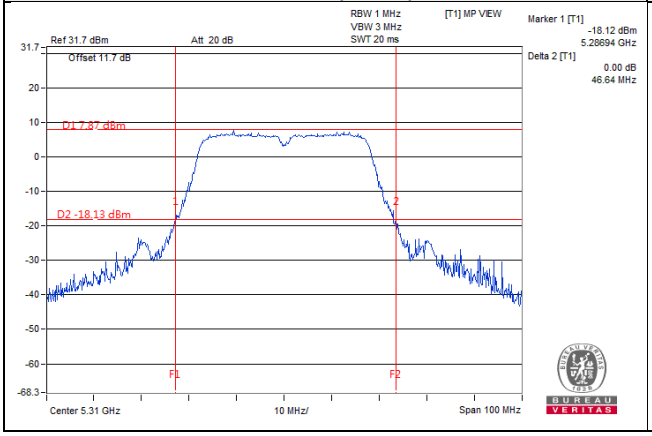
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)
52	5260	22.66
60	5300	22.61
64	5320	22.42
100	5500	22.51
116	5580	23.03
140	5700	23.09

802.11n (HT20)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)
52	5260	22.75
60	5300	23.13
64	5320	22.71
100	5500	22.99
116	5580	22.91
140	5700	22.74

802.11n (HT40)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)
54	5270	46.58
62	5310	46.64

Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	
	

EUT Maximum Conducted Power

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	19.770	12.96
5470~5725	19.724	12.95

802.11n (HT20)

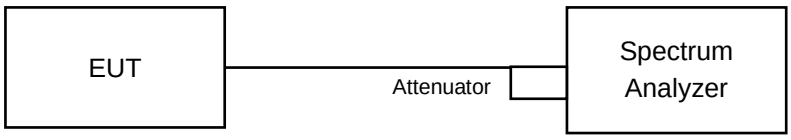
Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	19.815	12.97
5470~5725	19.724	12.95

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	19.231	12.84

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Test Result

802.11a

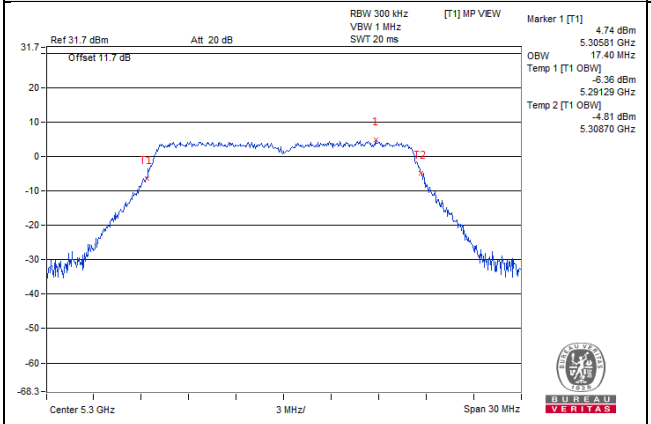
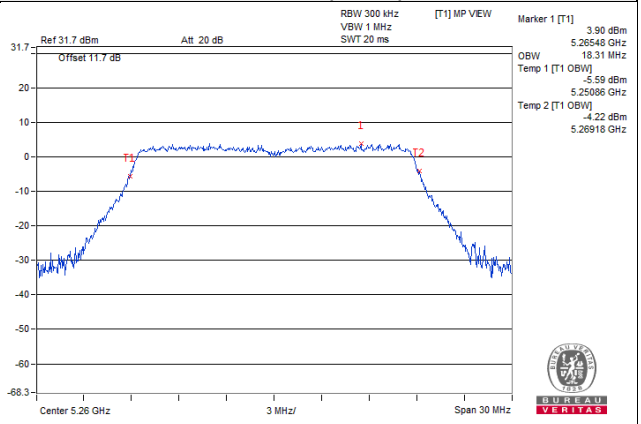
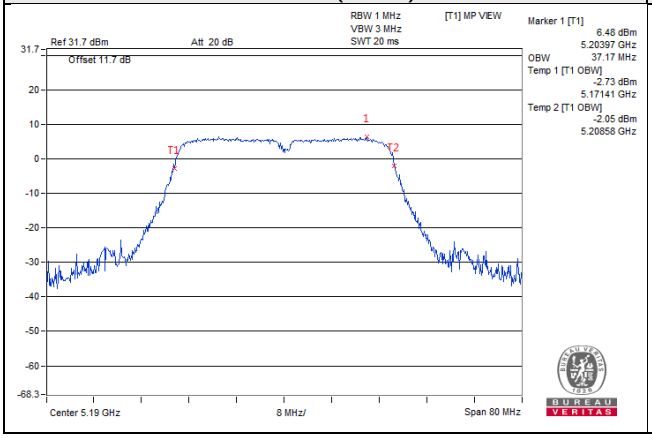
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)
36	5180	17.25
40	5200	17.30
48	5240	17.25
52	5260	17.35
60	5300	17.40
64	5320	17.30
100	5500	17.30
116	5580	17.35
140	5700	17.35
149	5745	16.87
157	5785	17.10
165	5825	17.05

802.11n (HT20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)
36	5180	18.26
40	5200	18.22
48	5240	18.26
52	5260	18.31
60	5300	18.31
64	5320	18.26
100	5500	18.31
116	5580	18.26
140	5700	18.26
149	5745	17.98
157	5785	18.05
165	5825	18.20

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)
38	5190	37.17
46	5230	37.17
54	5270	37.17
62	5310	37.17

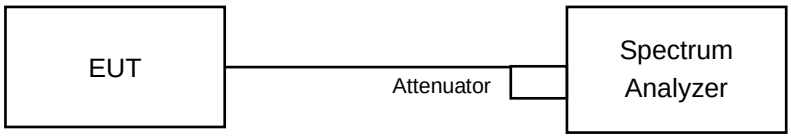
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	
	

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Mobile and Portable client device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-1 band, U-NII-2A, U-NII-2C Band:

Using method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Set Channel power measure = 1MHz

d. Sweep time = auto, trigger set to “free run”.

e. Trace average at least 100 traces in power averaging mode.

f. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 Band:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

For U-NII-1 band, U-NII-2A, U-NII-2C Band:

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
36	5180	-0.36	0.65	0.28	11.00	Pass
40	5200	-0.43	0.65	0.21	11.00	Pass
48	5240	-0.13	0.65	0.51	11.00	Pass
52	5260	0.24	0.65	0.88	11.00	Pass
60	5300	0.69	0.65	1.34	11.00	Pass
64	5320	0.70	0.65	1.34	11.00	Pass
100	5500	1.62	0.65	2.26	11.00	Pass
116	5580	0.92	0.65	1.56	11.00	Pass
140	5700	0.18	0.65	0.82	11.00	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
36	5180	-1.21	0.69	-0.52	11.00	Pass
40	5200	-1.03	0.69	-0.34	11.00	Pass
48	5240	-0.29	0.69	0.40	11.00	Pass
52	5260	-0.66	0.69	0.03	11.00	Pass
60	5300	0.22	0.69	0.91	11.00	Pass
64	5320	0.32	0.69	1.01	11.00	Pass
100	5500	1.50	0.69	2.19	11.00	Pass
116	5580	0.93	0.69	1.62	11.00	Pass
140	5700	-0.78	0.69	-0.09	11.00	Pass

Note: Refer to section 3.3 for duty cycle spectrum plot.

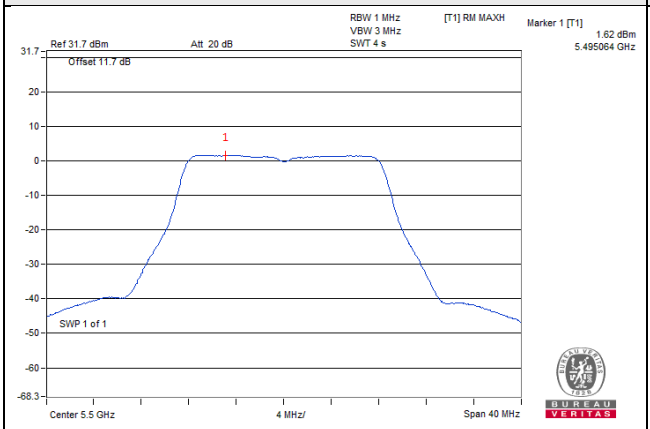
802.11n (HT40)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
38	5190	-2.55	1.21	-1.34	11.00	Pass
46	5230	-2.62	1.21	-1.41	11.00	Pass
54	5270	-2.19	1.21	-0.98	11.00	Pass
62	5310	-2.08	1.21	-0.87	11.00	Pass

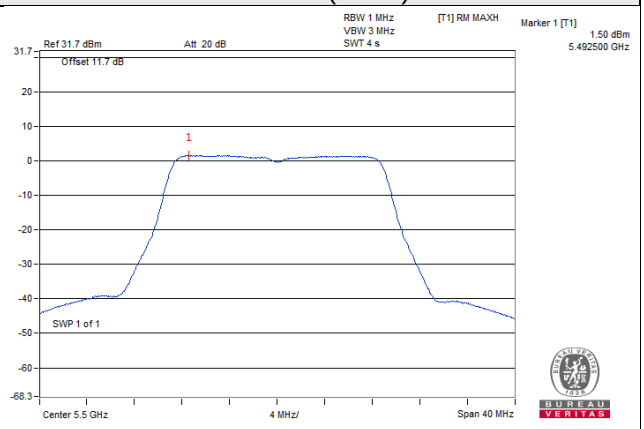
Note: Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

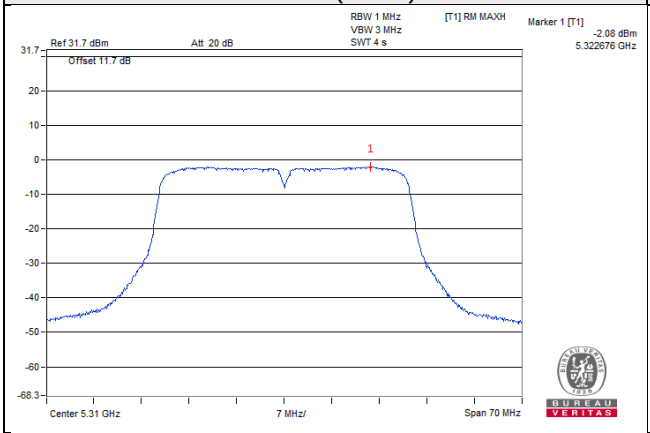
802.11a



802.11n (HT20)



802.11n (HT40)



For U-NII-3 Band:

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/500kHz)	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
149	5745	-3.61	0.65	-2.96	30.00	Pass
157	5785	-3.43	0.65	-2.78	30.00	Pass
165	5825	-2.78	0.65	-2.13	30.00	Pass

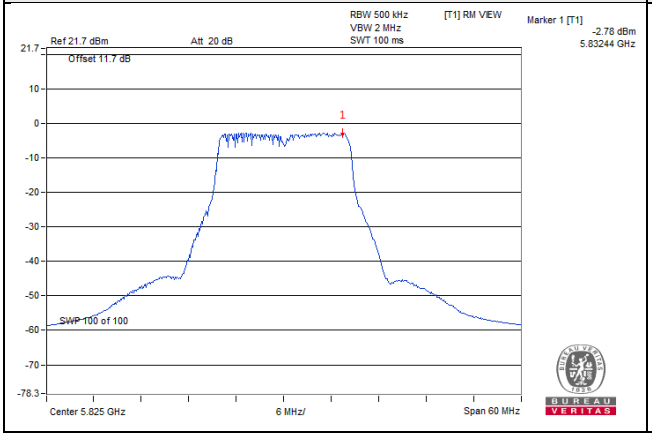
Note: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

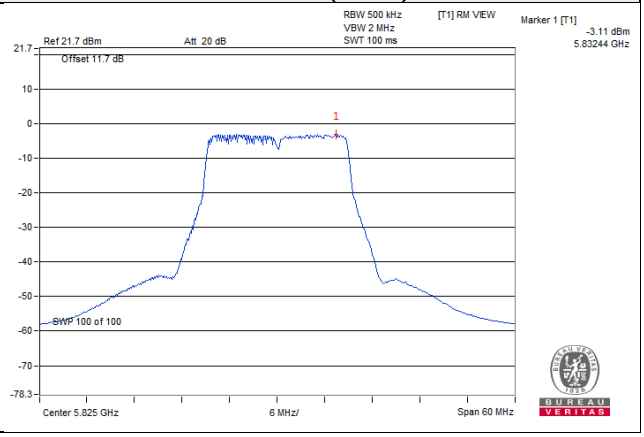
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/500kHz)	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
149	5745	-3.83	0.69	-3.14	30.00	Pass
157	5785	-4.08	0.69	-3.39	30.00	Pass
165	5825	-3.11	0.69	-2.42	30.00	Pass

Spectrum Plot of Worst Value

802.11a



802.11n (HT20)

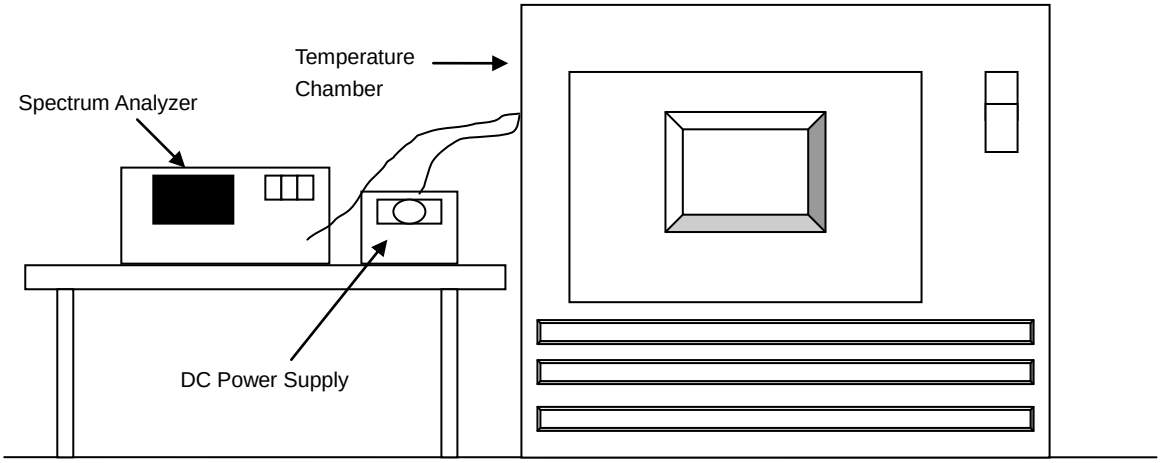


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.

e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	12	5179.994	-0.00012	5179.9944	-0.00011	5179.9952	-0.00009	5179.9967	-0.00006
40	12	5180.0184	0.00036	5180.0209	0.00040	5180.0162	0.00031	5180.0177	0.00034
30	12	5179.9849	-0.00029	5179.987	-0.00025	5179.9857	-0.00028	5179.9873	-0.00025
20	12	5180.002	0.00004	5180.0011	0.00002	5180.0035	0.00007	5180.0006	0.00001
10	12	5179.9901	-0.00019	5179.9927	-0.00014	5179.9944	-0.00011	5179.9913	-0.00017
0	12	5179.9823	-0.00034	5179.9776	-0.00043	5179.9803	-0.00038	5179.9817	-0.00035
-10	12	5180.0181	0.00035	5180.0231	0.00045	5180.0194	0.00037	5180.0198	0.00038
-20	12	5179.9819	-0.00035	5179.9796	-0.00039	5179.9824	-0.00034	5179.9793	-0.00040
-30	12	5180.0177	0.00034	5180.0174	0.00034	5180.0172	0.00033	5180.0157	0.00030

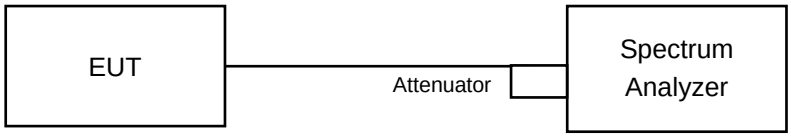
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	10.2	5180.0025	0.00005	5180.0014	0.00003	5180.0027	0.00005	5180.0005	0.00001
	12	5180.002	0.00004	5180.0011	0.00002	5180.0035	0.00007	5180.0006	0.00001
	13.8	5180.0017	0.00003	5180.0002	0.00000	5180.0034	0.00007	5180.0005	0.00001

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

Measurement Procedure REF

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

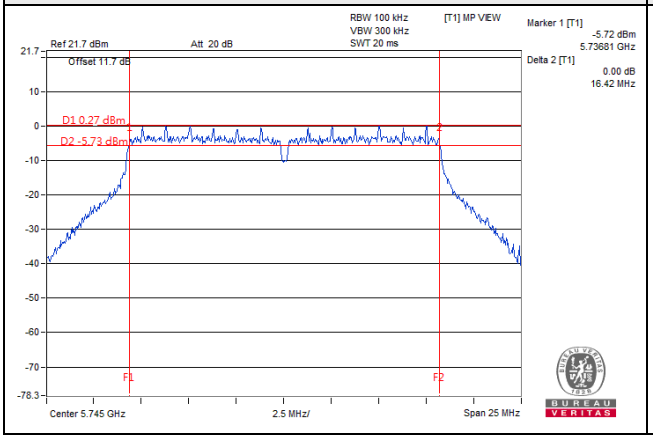
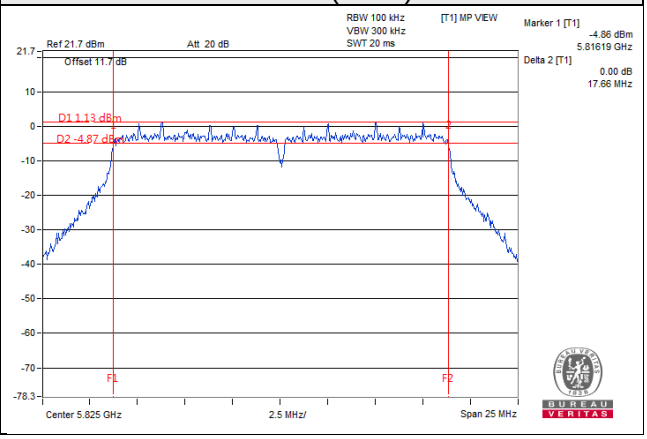
4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.42	0.5	Pass
157	5785	16.42	0.5	Pass
165	5825	16.40	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.64	0.5	Pass
157	5785	17.64	0.5	Pass
165	5825	17.66	0.5	Pass

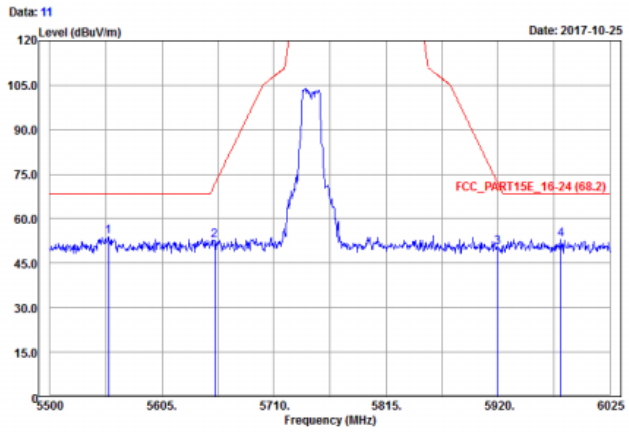
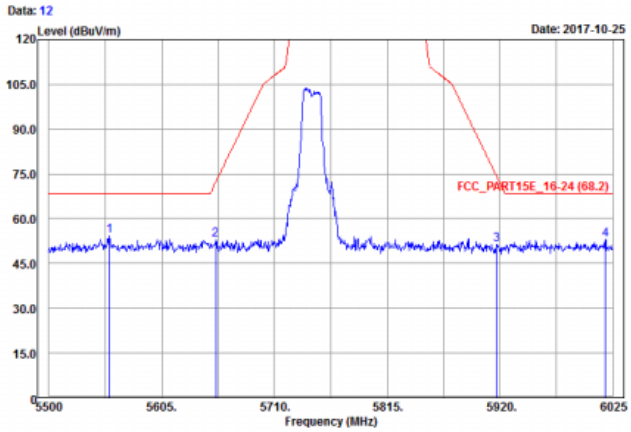
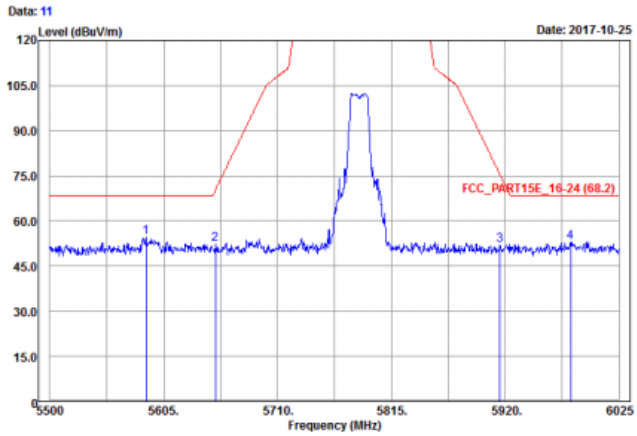
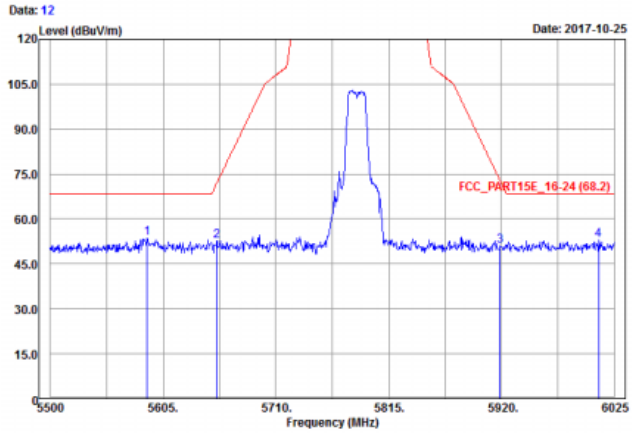
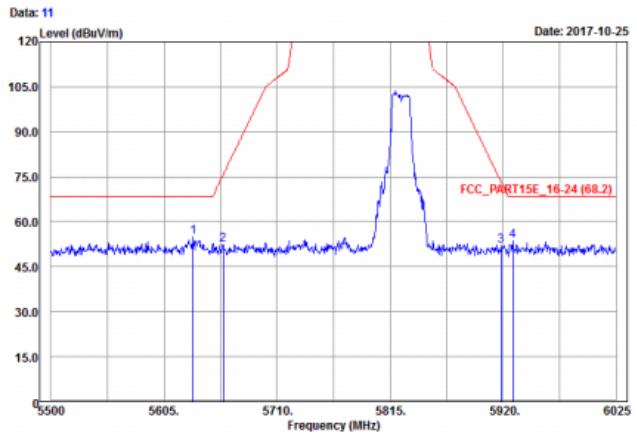
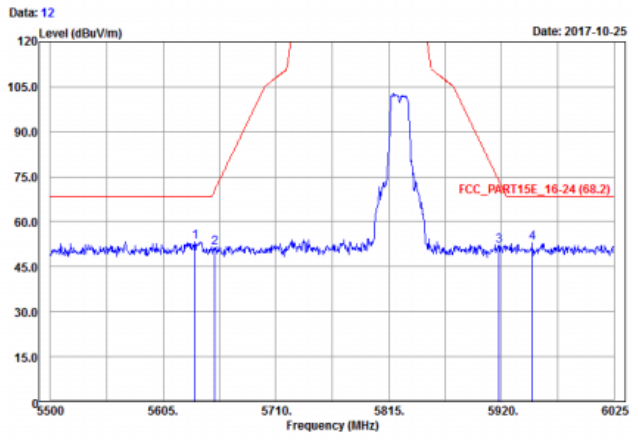
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	

5 Pictures of Test Arrangements

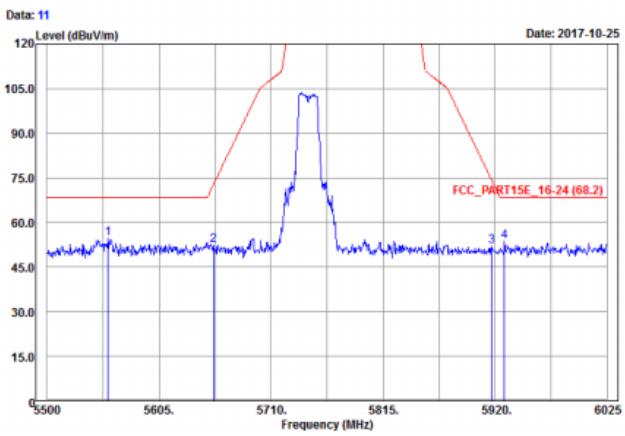
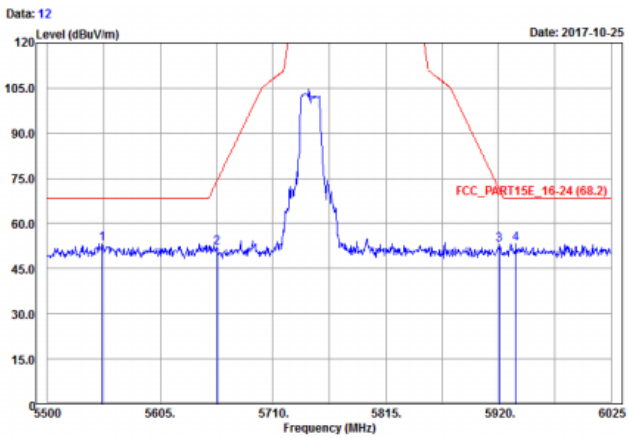
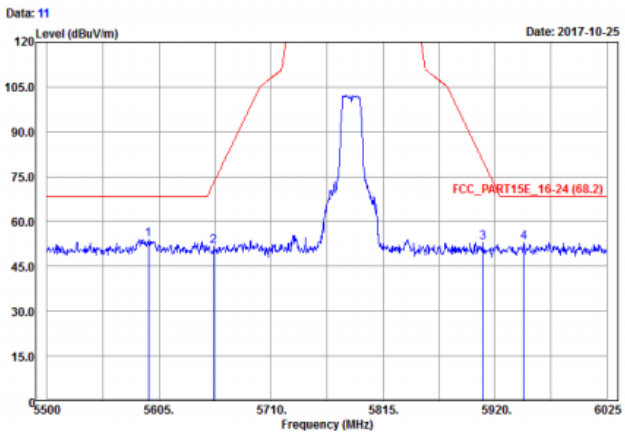
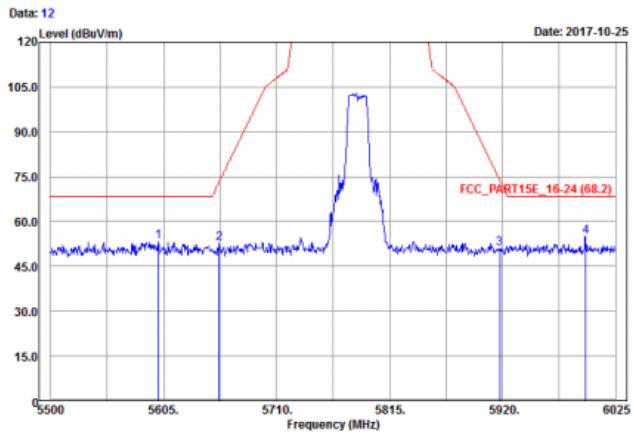
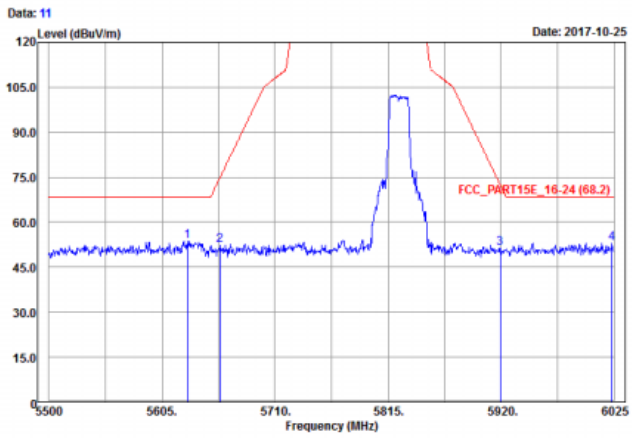
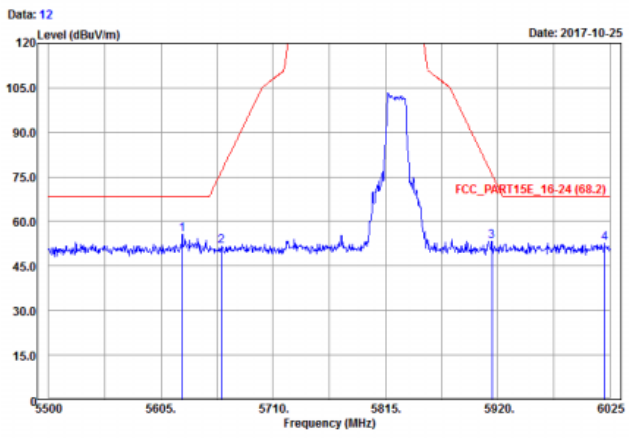
Please refer to the attached file (Test Setup Photo).

Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

802.11n (HT20)

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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