



FCC TEST REPORT

(15.407)

REPORT NO.: RF140826C10-1

MODEL NO.: ECB1750

FCC ID: A8J-ECB1750

RECEIVED: Aug. 26, 2014

TESTED: Aug. 29 ~ Oct. 09, 2014

ISSUED: Oct. 17, 2014

APPLICANT: EnGenius Technologies

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ISSUED BY: Bureau Veritas Consumer Products Services (H.K.)
Ltd., Taoyuan Branch

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140826C10-1	Original release	Oct. 17, 2014



1. CERTIFICATION

PRODUCT: Wireless AC1750 Indoor AP/CB

MODEL: ECB1750

BRAND: EnGenius

APPLICANT: EnGenius Technologies

TESTED: Aug. 29 ~ Oct. 09, 2014

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart E (Section 15.407)

ANSI C63.10-2009

The above equipment (model: ECB1750) 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 :  , **DATE :** Oct. 17, 2014
Pettie Chen / Senior Specialist

APPROVED BY :  , **DATE :** Oct. 17, 2014
Ken Liu / Senior Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -11.75dB at 21.774MHz.
15.407(b)(1/2/3/4/6)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5150.0MHz.
15.407(b)(1/2/3/4/6)	Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5150.0MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
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	Antenna connector is RSMA not a standard connector.

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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless AC1750 Indoor AP/CB
MODEL NO.	ECB1750
POWER SUPPLY	12Vdc (adapter) 48Vdc (PoE)
MODULATION TYPE	256QAM, 64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 450.0Mbps 802.11ac: up to 1299.9Mbps
OPERATING FREQUENCY	5180 ~ 5240MHz & 5745 ~ 5825MHz
NUMBER OF CHANNEL	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz), 802.11ac (20MHz) 2 for 802.11n (40MHz), 802.11ac (40MHz) 1 for 802.11ac (80MHz) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (20MHz), 802.11ac (20MHz) 2 for 802.11n (40MHz), 802.11ac (40MHz) 1 for 802.11ac (80MHz)
OUTPUT POWER	488.095mW for 5180 ~ 5240MHz 531.625mW for 5745 ~ 5825MHz
ANTENNA TYPE	Dipole antenna with 5dBi gain
ANTENNA CONNECTOR	RSMA
POWER CORD	NA
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

- The EUT incorporates a MIMO function. Physically, the EUT provides three completed transmitters and three receivers.

MODULATION MODE	TX FUNCTION
802.11a	3TX
802.11n (20MHz)	3TX
802.11n (40MHz)	3TX
802.11ac (20MHz)	3TX
802.11ac (40MHz)	3TX
802.11ac (80MHz)	3TX

*The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT uses following adapter and PoE. (PoE is Support units only)

Adapter	
Brand:	Powertron Electronics Corp.
Model:	PA1024-2HUB PA1024-120HUB200
Input:	100-240Vac~50-60Hz 0.6A
Output:	12Vdc / 2.0A 24W Max
Power Cord:	1.5m cable with one core

PoE (Support unit only)	
BRAND	EnGenius
Model:	NPE-5818
Rating:	52Vdc, 1.25A

Adapter of PoE (Support unit only)	
Brand:	MW
Model:	ES18U48-4804
Input:	100-240Vac~50/60Hz, 0.5A
Output:	48Vdc, 0.375A, 18W MAX.
Power Cord:	1.85m cable with one core

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (80MHz):

CHANNEL	FREQUENCY
42	5210MHz

FOR 5745 ~ 5825MHz

5 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (80MHz):

CHANNEL	FREQUENCY
155	5775MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from PoE

Where **RE \geq 1G**: Radiated Emission above 1GHz **RE $<$ 1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

NOTE: 1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Y-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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
A	802.11ac (80MHz)		42	42	OFDM	BPSK	97.5
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (80MHz)		155	155	OFDM	BPSK	97.5

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	5180-5320, 5745-5825	36 to 64, 149 to 165	157	OFDM	BPSK	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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	5180-5320, 5745-5825	36 to 64, 149 to 165	157	OFDM	BPSK	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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
A	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
A	802.11ac (80MHz)		42	42	OFDM	BPSK	97.5
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	15.0
A	802.11ac (80MHz)		155	155	OFDM	BPSK	97.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	21deg. C, 67%RH 20deg. C, 65%RH	120Vac, 60Hz	Jones Chang Nick Hsu
RE<1G	22deg. C, 65%RH	120Vac, 60Hz	Jones Chang
PLC	25deg. C, 70%RH	120Vac, 60Hz	Jones Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Ted Chang

3.3 DUTY CYCLE OF TEST SIGNAL

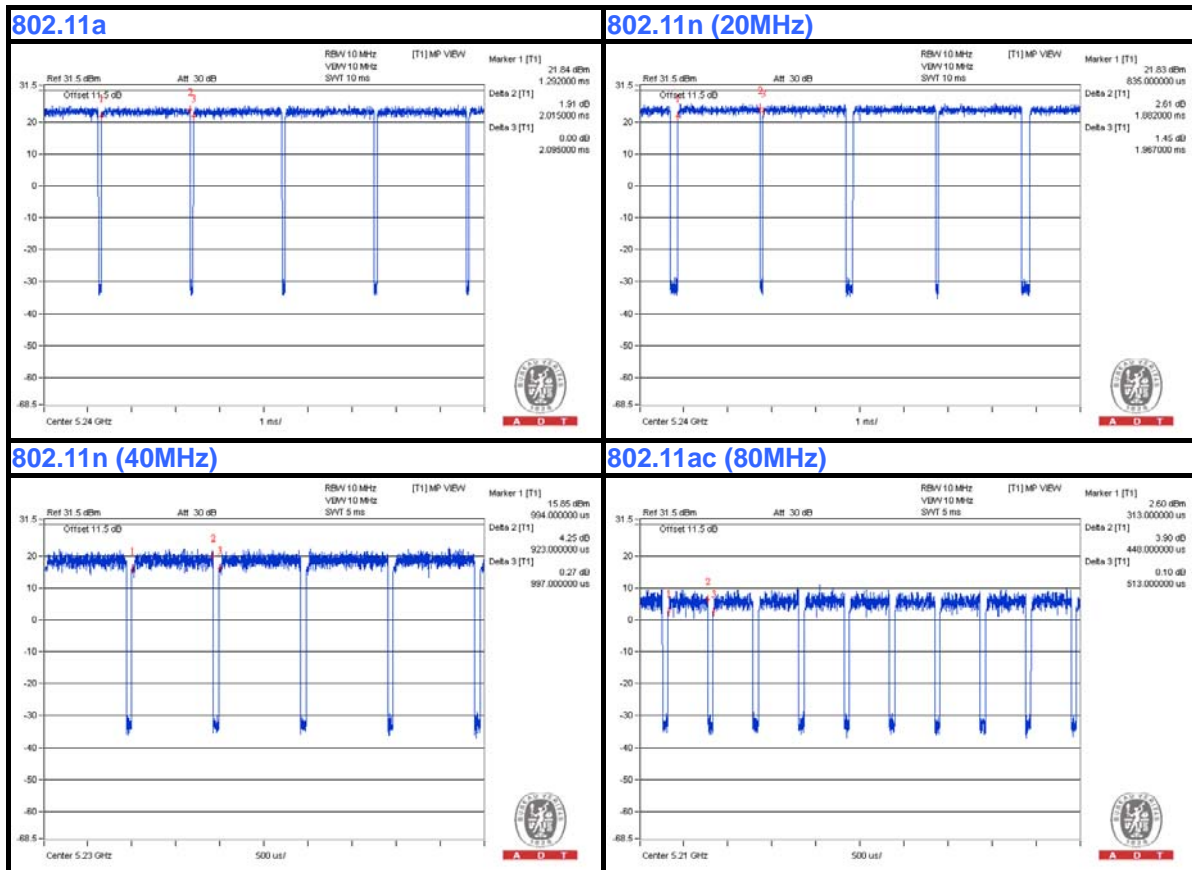
Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 2.015/2.095 = 0.962, Duty factor = $10 * \log(1/0.962) = 0.17$

802.11n (20MHz): Duty cycle = 1.882/1.967 = 0.957, Duty factor = $10 * \log(1/0.957) = 0.19$

802.11n (40MHz): Duty cycle = 0.923/0.997 = 0.926, Duty factor = $10 * \log(1/0.926) = 0.33$

802.11ac (80MHz): Duty cycle = 0.448/0.513 = 0.873, Duty factor = $10 * \log(1/0.873) = 0.59$



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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved
2	PoE	EnGenius	NPE-5818	NA	NA
3	Adapter of PoE	MW	ES18U48-4804	NA	NA

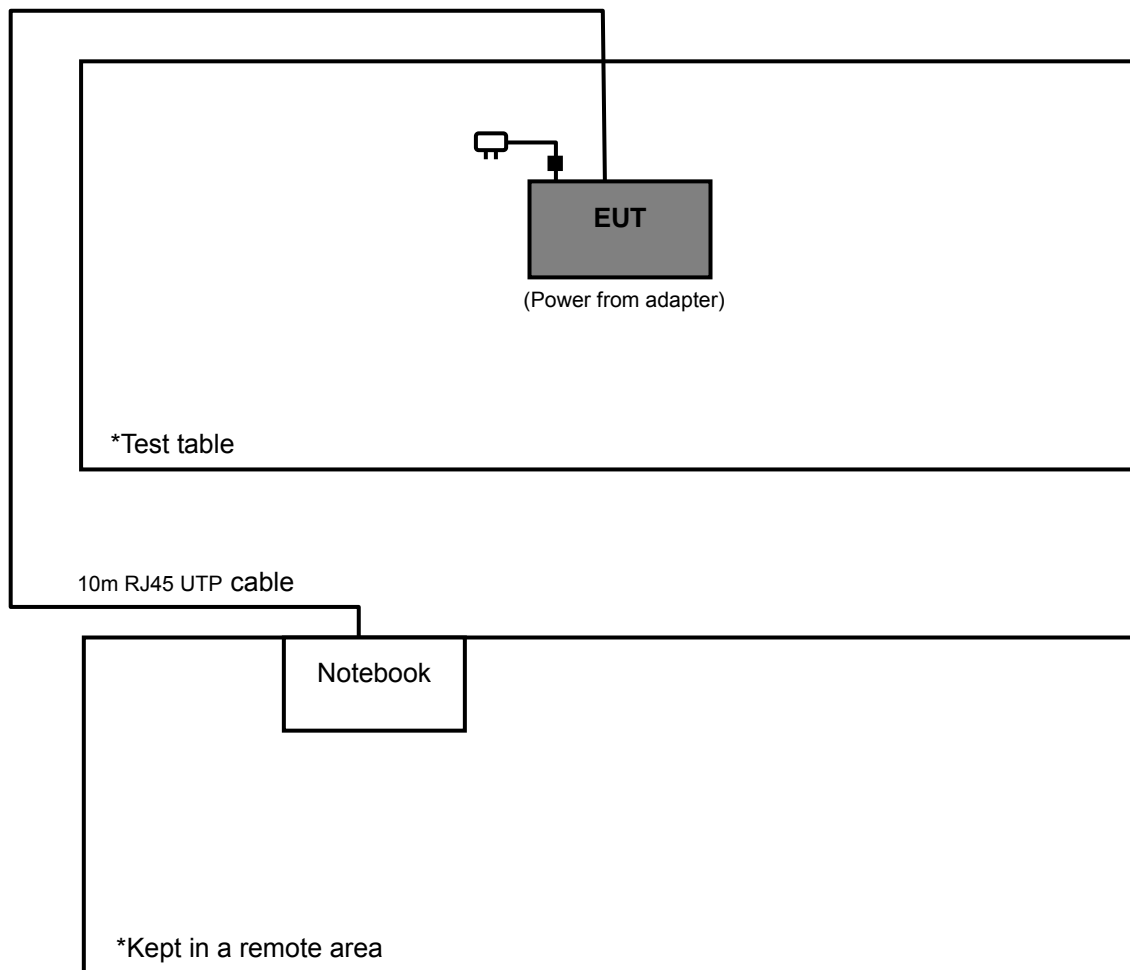
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ45 UTP cable
2	NA
3	NA

NOTE:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item 1, 2, 3 acted as communication partners to transfer data.
3. Item 2, 3 were provided by client.

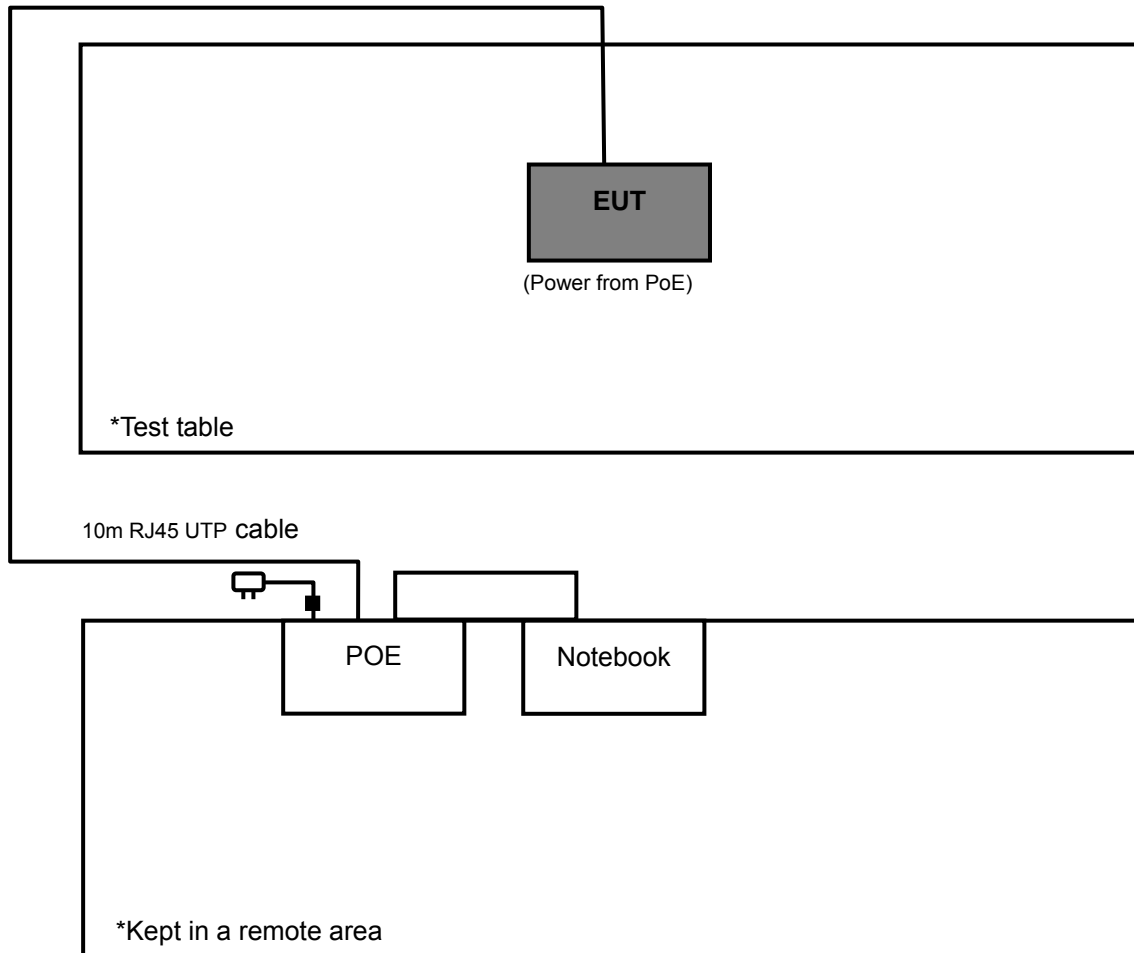
3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

Test Mode A





Test Mode B



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)

789033 D02 General UNII Test Procedures New Rules v01

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It 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.

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK: -27 (dBm/MHz) ^{*1} PK: -17 (dBm/MHz) ^{*2}	PK: 68.2 (dBµV/m) ^{*1} PK: 78.2 (dBµV/m) ^{*2}

NOTE: ^{*1} beyond 10MHz of the band edge ^{*2} within 10 MHz of band edge

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

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

4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Jan. 02, 2014	Jan. 01, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Mar. 03, 2014	Mar. 02, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Feb. 26, 2014	Feb. 25, 2015
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2014	Aug. 24, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 17, 2014	Feb. 16, 2015
Preamplifier Agilent	8447D	2944A10639	Oct. 18, 2013	Oct. 17, 2014
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2014	Aug. 21, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 22, 2014	Aug. 21, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6 +309224/4	Aug. 22, 2014	Aug. 21, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Jul. 26, 2014	Jul. 25, 2015
Power Sensor	MA2411B	0738171	Jul. 26, 2014	Jul. 25, 2015
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2013	Oct. 17, 2014
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 09, 2014	Jun. 08, 2015

- 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 Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 antenna is a broadband antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

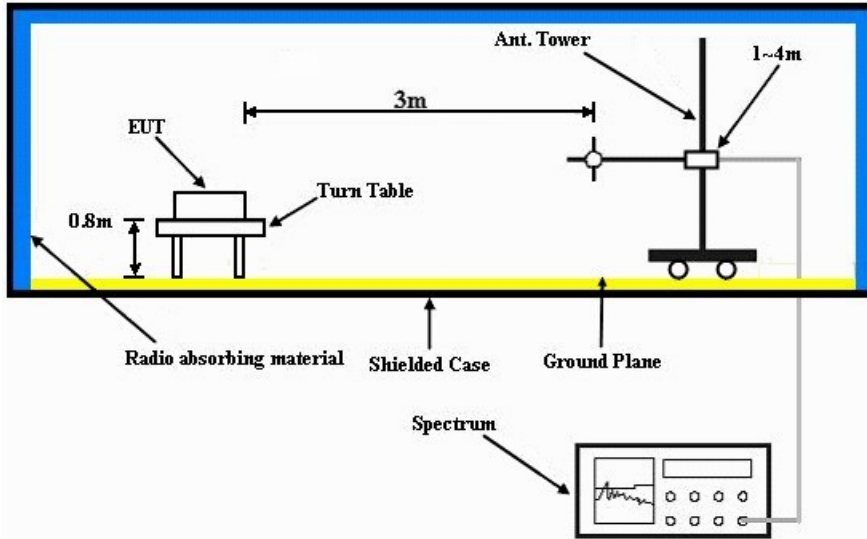
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (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.

4.1.5 DEVIATION FROM TEST STANDARD

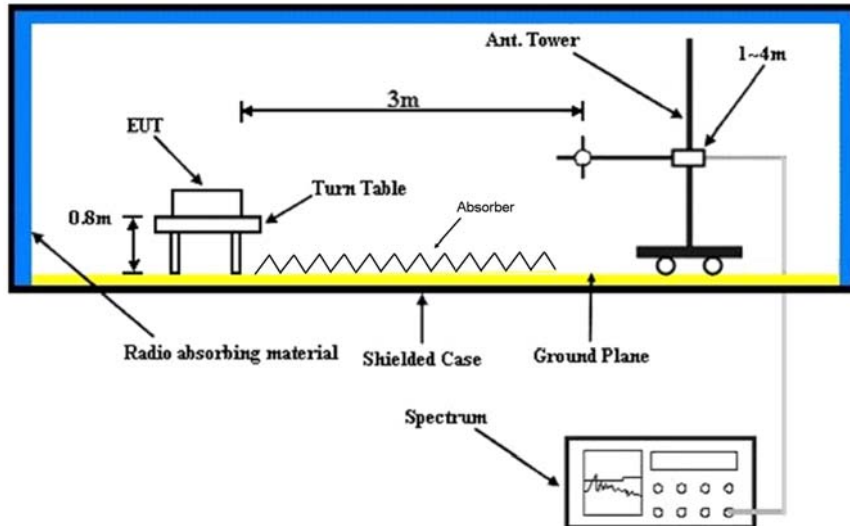
No deviation.

4.1.6 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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

4.1.7 EUT OPERATING CONDITION

- a. Placed the EUT on the testing table.
- b. Prepared a notebook to act as communication partner and placed it outside of testing area.
- c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- d. The communication partner sent data to EUT by command "PING".
- e. The necessary accessories enable the system in full functions.

4.1.8 TEST RESULTS

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.3 PK	74.0	-4.7	1.00 H	174	62.90	6.40
2	5150.00	52.4 AV	54.0	-1.6	1.00 H	174	46.00	6.40
3	*5180.00	122.1 PK			1.04 H	354	82.20	39.90
4	*5180.00	109.1 AV			1.04 H	354	69.20	39.90
5	#6906.00	57.2 PK	74.0	-16.8	1.00 H	166	45.00	12.20
6	#6906.00	51.0 AV	54.0	-3.0	1.00 H	166	38.80	12.20
7	#10360.00	59.9 PK	74.0	-14.1	1.13 H	150	41.20	18.70
8	#10360.00	47.1 AV	54.0	-6.9	1.13 H	150	28.40	18.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.2 PK	74.0	-14.8	1.00 V	269	52.80	6.40
2	5150.00	46.3 AV	54.0	-7.7	1.00 V	269	39.90	6.40
3	*5180.00	109.1 PK			1.00 V	257	69.20	39.90
4	*5180.00	97.3 AV			1.00 V	257	57.40	39.90
5	#6906.00	54.2 PK	74.0	-19.8	1.00 V	196	42.00	12.20
6	#6906.00	44.4 AV	54.0	-9.6	1.00 V	196	32.20	12.20
7	#10360.00	59.7 PK	74.0	-14.3	1.06 V	254	41.00	18.70
8	#10360.00	46.7 AV	54.0	-7.3	1.06 V	254	28.00	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.6 PK	74.0	-3.4	1.15 H	353	64.20	6.40
2	5150.00	53.0 AV	54.0	-1.0	1.15 H	353	46.60	6.40
3	*5200.00	125.2 PK			1.00 H	174	85.20	40.00
4	*5200.00	112.1 AV			1.00 H	174	72.10	40.00
5	#6933.00	57.1 PK	74.0	-16.9	1.00 H	339	44.70	12.40
6	#6933.00	51.4 AV	54.0	-2.6	1.00 H	339	39.00	12.40
7	#10400.00	61.3 PK	74.0	-12.7	1.00 H	19	42.30	19.00
8	#10400.00	48.7 AV	54.0	-5.3	1.00 H	19	29.70	19.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.0 PK	74.0	-16.0	1.27 V	274	51.60	6.40
2	5150.00	45.4 AV	54.0	-8.6	1.27 V	274	39.00	6.40
3	*5200.00	114.1 PK			1.13 V	265	74.10	40.00
4	*5200.00	102.1 AV			1.13 V	265	62.10	40.00
5	#6933.00	55.0 PK	74.0	-19.0	1.00 V	198	42.60	12.40
6	#6933.00	44.6 AV	54.0	-9.4	1.00 V	198	32.20	12.40
7	#10400.00	60.2 PK	74.0	-13.8	1.28 V	200	41.20	19.00
8	#10400.00	48.0 AV	54.0	-6.0	1.28 V	200	29.00	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	125.8 PK			1.00 H	171	85.80	40.00
2	*5240.00	113.5 AV			1.00 H	171	73.50	40.00
3	5350.00	60.6 PK	74.0	-13.4	1.00 H	172	54.20	6.40
4	5350.00	48.3 AV	54.0	-5.7	1.00 H	172	41.90	6.40
5	#6986.00	55.6 PK	74.0	-18.4	1.00 H	141	42.90	12.70
6	#6986.00	45.7 AV	54.0	-8.3	1.00 H	141	33.00	12.70
7	#10480.00	59.2 PK	74.0	-14.8	1.07 H	86	40.00	19.20
8	#10480.00	47.3 AV	54.0	-6.7	1.07 H	86	28.10	19.20
9	15720.00	66.0 PK	74.0	-8.0	1.00 H	33	46.70	19.30
10	15720.00	52.5 AV	54.0	-1.5	1.00 H	33	33.20	19.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	115.5 PK			1.37 V	259	75.50	40.00
2	*5240.00	105.1 AV			1.37 V	259	65.10	40.00
3	5350.00	56.6 PK	74.0	-17.4	1.10 V	253	50.20	6.40
4	5350.00	44.2 AV	54.0	-9.8	1.10 V	253	37.80	6.40
5	#6986.00	54.9 PK	74.0	-19.1	1.15 V	248	42.20	12.70
6	#6986.00	43.3 AV	54.0	-10.7	1.15 V	248	30.60	12.70
7	#10480.00	61.9 PK	74.0	-12.1	1.07 V	157	42.70	19.20
8	#10480.00	47.6 AV	54.0	-6.4	1.07 V	157	28.40	19.20
9	15720.00	62.9 PK	74.0	-11.1	1.06 V	26	43.60	19.30
10	15720.00	51.4 AV	54.0	-2.6	1.06 V	26	32.10	19.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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802.11n (20MHz)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.3 PK	74.0	-7.7	1.14 H	0	59.90	6.40
2	5150.00	52.2 AV	54.0	-1.8	1.14 H	0	45.80	6.40
3	*5180.00	118.1 PK			1.00 H	173	78.20	39.90
4	*5180.00	108.6 AV			1.00 H	173	68.70	39.90
5	#6906.00	55.0 PK	74.0	-19.0	1.00 H	166	42.80	12.20
6	#6906.00	49.1 AV	54.0	-4.9	1.00 H	166	36.90	12.20
7	#10360.00	59.9 PK	74.0	-14.1	1.07 H	146	41.20	18.70
8	#10360.00	46.3 AV	54.0	-7.7	1.07 H	146	27.60	18.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.6 PK	74.0	-17.4	1.00 V	263	50.20	6.40
2	5150.00	45.8 AV	54.0	-8.2	1.00 V	263	39.40	6.40
3	*5180.00	108.0 PK			1.12 V	273	68.10	39.90
4	*5180.00	98.7 AV			1.12 V	273	58.80	39.90
5	#6906.00	54.2 PK	74.0	-19.8	1.18 V	66	42.00	12.20
6	#6906.00	43.1 AV	54.0	-10.9	1.18 V	66	30.90	12.20
7	#10360.00	60.6 PK	74.0	-13.4	1.01 V	154	41.90	18.70
8	#10360.00	47.3 AV	54.0	-6.7	1.01 V	154	28.60	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.7 PK	74.0	-5.3	1.18 H	3	62.30	6.40
2	5150.00	52.9 AV	54.0	-1.1	1.18 H	3	46.50	6.40
3	*5200.00	123.8 PK			1.00 H	174	83.80	40.00
4	*5200.00	114.1 AV			1.00 H	174	74.10	40.00
5	#6933.00	56.0 PK	74.0	-18.0	1.00 H	149	43.60	12.40
6	#6933.00	49.9 AV	54.0	-4.1	1.00 H	149	37.50	12.40
7	#10400.00	61.5 PK	74.0	-12.5	1.16 H	31	42.50	19.00
8	#10400.00	48.2 AV	54.0	-5.8	1.16 H	31	29.20	19.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.4 PK	74.0	-16.6	1.19 V	260	51.00	6.40
2	5150.00	47.4 AV	54.0	-6.6	1.19 V	260	41.00	6.40
3	*5200.00	113.8 PK			1.00 V	270	73.80	40.00
4	*5200.00	103.5 AV			1.00 V	270	63.50	40.00
5	#6933.00	55.0 PK	74.0	-19.0	1.00 V	270	42.60	12.40
6	#6933.00	43.9 AV	54.0	-10.1	1.00 V	270	31.50	12.40
7	#10400.00	61.7 PK	74.0	-12.3	1.00 V	171	42.70	19.00
8	#10400.00	48.3 AV	54.0	-5.7	1.00 V	171	29.30	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	125.7 PK			1.16 H	168	85.70	40.00
2	*5240.00	115.5 AV			1.16 H	168	75.50	40.00
3	5350.00	60.6 PK	74.0	-13.4	1.00 H	0	54.20	6.40
4	5350.00	48.4 AV	54.0	-5.6	1.00 H	0	42.00	6.40
5	#6986.00	56.2 PK	74.0	-17.8	1.13 H	192	43.50	12.70
6	#6986.00	48.6 AV	54.0	-5.4	1.13 H	192	35.90	12.70
7	#10480.00	61.5 PK	74.0	-12.5	1.17 H	151	42.30	19.20
8	#10480.00	47.8 AV	54.0	-6.2	1.17 H	151	28.60	19.20
9	15720.00	64.6 PK	74.0	-9.4	1.00 H	32	45.30	19.30
10	15720.00	52.2 AV	54.0	-1.8	1.00 H	32	32.90	19.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	116.6 PK			1.43 V	84	76.60	40.00
2	*5240.00	106.3 AV			1.43 V	84	66.30	40.00
3	5350.00	58.1 PK	74.0	-15.9	1.11 V	255	51.70	6.40
4	5350.00	47.0 AV	54.0	-7.0	1.11 V	255	40.60	6.40
5	#6986.00	55.0 PK	74.0	-19.0	1.00 V	270	42.30	12.70
6	#6986.00	44.5 AV	54.0	-9.5	1.00 V	270	31.80	12.70
7	#10480.00	62.4 PK	74.0	-11.6	1.34 V	348	43.20	19.20
8	#10480.00	48.5 AV	54.0	-5.5	1.34 V	348	29.30	19.20
9	15720.00	63.5 PK	74.0	-10.5	1.13 V	26	44.20	19.30
10	15720.00	50.6 AV	54.0	-3.4	1.13 V	26	31.30	19.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



802.11n (40MHz)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.4 PK	74.0	-7.6	1.00 H	176	60.00	6.40
2	5150.00	52.5 AV	54.0	-1.5	1.00 H	176	46.10	6.40
3	*5190.00	111.4 PK			1.00 H	345	71.50	39.90
4	*5190.00	101.7 AV			1.00 H	345	61.80	39.90
5	#10380.00	59.8 PK	74.0	-14.2	1.09 H	275	41.00	18.80
6	#10380.00	46.5 AV	54.0	-7.5	1.09 H	275	27.70	18.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.8 PK	74.0	-17.2	1.16 V	250	50.40	6.40
2	5150.00	46.1 AV	54.0	-7.9	1.16 V	250	39.70	6.40
3	*5190.00	99.9 PK			1.00 V	270	60.00	39.90
4	*5190.00	90.3 AV			1.00 V	270	50.40	39.90
5	#10380.00	59.7 PK	74.0	-14.3	1.00 V	94	40.90	18.80
6	#10380.00	46.7 AV	54.0	-7.3	1.00 V	94	27.90	18.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.3 PK	74.0	-8.7	1.00 H	355	58.90	6.40
2	5150.00	52.9 AV	54.0	-1.1	1.00 H	355	46.50	6.40
3	*5230.00	119.6 PK			1.15 H	169	79.60	40.00
4	*5230.00	110.0 AV			1.15 H	169	70.00	40.00
5	#10460.00	60.5 PK	74.0	-13.5	1.18 H	245	41.40	19.10
6	#10460.00	47.5 AV	54.0	-6.5	1.18 H	245	28.40	19.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.5 PK	74.0	-13.5	1.15 V	270	54.10	6.40
2	5150.00	48.1 AV	54.0	-5.9	1.15 V	270	41.70	6.40
3	*5230.00	107.1 PK			1.16 V	254	67.10	40.00
4	*5230.00	97.5 AV			1.16 V	254	57.50	40.00
5	#10460.00	61.0 PK	74.0	-13.0	1.28 V	345	41.90	19.10
6	#10460.00	48.1 AV	54.0	-5.9	1.28 V	345	29.00	19.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (80MHz)

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.4 PK	74.0	-3.6	1.11 H	174	64.00	6.40
2	5150.00	53.0 AV	54.0	-1.0	1.11 H	174	46.60	6.40
3	*5210.00	105.5 PK			1.17 H	174	65.50	40.00
4	*5210.00	96.3 AV			1.17 H	174	56.30	40.00
5	#10420.00	60.5 PK	74.0	-13.5	1.06 H	340	41.60	18.90
6	#10420.00	47.4 AV	54.0	-6.6	1.06 H	340	28.50	18.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.4 PK	74.0	-16.6	1.23 V	264	51.00	6.40
2	5150.00	46.1 AV	54.0	-7.9	1.23 V	264	39.70	6.40
3	*5210.00	97.6 PK			1.12 V	265	57.60	40.00
4	*5210.00	86.4 AV			1.12 V	265	46.40	40.00
5	#10420.00	60.8 PK	74.0	-13.2	1.10 V	203	41.90	18.90
6	#10420.00	47.6 AV	54.0	-6.4	1.10 V	203	28.70	18.90

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11a

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	70.1 PK	74.0	-3.9	1.04 H	162	63.10	7.00
2	#5714.00	52.3 AV	54.0	-1.7	1.04 H	162	45.30	7.00
3	#5722.00	72.6 PK	78.2	-5.6	1.03 H	162	65.60	7.00
4	#5725.00	58.7 PK	78.2	-19.5	1.14 H	159	51.60	7.10
5	*5745.00	121.1 PK			1.02 H	158	80.50	40.60
6	*5745.00	110.9 AV			1.02 H	158	70.30	40.60
7	11490.00	61.2 PK	74.0	-12.8	1.00 H	209	42.50	18.70
8	11490.00	48.6 AV	54.0	-5.4	1.00 H	209	29.90	18.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	64.1 PK	74.0	-9.9	1.00 V	262	57.10	7.00
2	#5714.00	48.4 AV	54.0	-5.6	1.00 V	262	41.40	7.00
3	#5722.00	66.7 PK	78.2	-11.5	1.00 V	266	59.70	7.00
4	#5725.00	68.4 PK	78.2	-9.8	1.00 V	260	61.30	7.10
5	*5745.00	111.0 PK			1.00 V	272	70.40	40.60
6	*5745.00	101.1 AV			1.00 V	272	60.50	40.60
7	11490.00	60.8 PK	74.0	-13.2	1.08 V	78	42.10	18.70
8	11490.00	46.9 AV	54.0	-7.1	1.08 V	78	28.20	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	124.2 PK			1.01 H	160	83.50	40.70
2	*5785.00	113.7 AV			1.01 H	160	73.00	40.70
3	11570.00	68.7 PK	74.0	-5.3	1.20 H	204	49.90	18.80
4	11570.00	52.7 AV	54.0	-1.3	1.20 H	204	33.90	18.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	113.9 PK			1.29 V	266	73.20	40.70
2	*5785.00	103.9 AV			1.29 V	266	63.20	40.70
3	11570.00	63.6 PK	74.0	-10.4	1.00 V	332	44.80	18.80
4	11570.00	49.9 AV	54.0	-4.1	1.00 V	332	31.10	18.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	121.1 PK			1.00 H	157	80.40	40.70
2	*5825.00	111.2 AV			1.00 H	157	70.50	40.70
3	#5850.00	64.1 PK	78.2	-14.1	1.00 H	61	57.10	7.00
4	#5853.00	76.6 PK	78.2	-1.6	1.00 H	360	69.50	7.10
5	#5861.00	67.8 PK	74.0	-6.2	1.00 H	6	60.70	7.10
6	#5861.00	51.6 AV	54.0	-2.4	1.00 H	6	44.50	7.10
7	11650.00	65.1 PK	74.0	-8.9	1.14 H	203	45.90	19.20
8	11650.00	51.4 AV	54.0	-2.6	1.14 H	203	32.20	19.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	113.0 PK			1.05 V	272	72.30	40.70
2	*5825.00	103.2 AV			1.05 V	272	62.50	40.70
3	#5850.00	57.0 PK	78.2	-21.2	1.00 V	151	50.00	7.00
4	#5853.00	67.5 PK	78.2	-10.7	1.00 V	251	60.40	7.10
5	#5861.00	64.4 PK	74.0	-9.6	1.06 V	254	57.30	7.10
6	#5861.00	48.6 AV	54.0	-5.4	1.06 V	254	41.50	7.10
7	11650.00	61.3 PK	74.0	-12.7	1.08 V	88	42.10	19.20
8	11650.00	48.4 AV	54.0	-5.6	1.08 V	88	29.20	19.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



A D T

802.11n (20MHz)

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	66.1 PK	74.0	-7.9	1.00 H	322	59.10	7.00
2	#5714.00	52.3 AV	54.0	-1.7	1.00 H	322	45.30	7.00
3	#5722.00	70.4 PK	78.2	-7.8	1.00 H	336	63.40	7.00
4	#5725.00	60.0 PK	78.2	-18.2	1.00 H	341	52.90	7.10
5	*5745.00	118.2 PK			1.17 H	196	77.60	40.60
6	*5745.00	109.1 AV			1.17 H	196	68.50	40.60
7	11490.00	60.0 PK	74.0	-14.0	1.19 H	218	41.30	18.70
8	11490.00	47.1 AV	54.0	-6.9	1.19 H	218	28.40	18.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	61.8 PK	74.0	-12.2	1.00 V	261	54.80	7.00
2	#5714.00	48.8 AV	54.0	-5.2	1.00 V	261	41.80	7.00
3	#5722.00	65.8 PK	78.2	-12.4	1.01 V	266	58.80	7.00
4	#5725.00	50.7 PK	78.2	-27.5	4.00 V	265	43.60	7.10
5	*5745.00	110.8 PK			1.00 V	273	70.20	40.60
6	*5745.00	101.2 AV			1.00 V	273	60.60	40.60
7	11490.00	60.2 PK	74.0	-13.8	1.00 V	55	41.50	18.70
8	11490.00	47.0 AV	54.0	-7.0	1.00 V	55	28.30	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	121.9 PK			1.00 H	161	81.20	40.70
2	*5785.00	113.8 AV			1.00 H	161	73.10	40.70
3	11570.00	66.6 PK	74.0	-7.4	1.15 H	204	47.80	18.80
4	11570.00	52.8 AV	54.0	-1.2	1.15 H	204	34.00	18.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	114.7 PK			1.17 V	269	74.00	40.70
2	*5785.00	104.7 AV			1.17 V	269	64.00	40.70
3	11570.00	62.1 PK	74.0	-11.9	1.00 V	331	43.30	18.80
4	11570.00	48.8 AV	54.0	-5.2	1.00 V	331	30.00	18.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	120.1 PK			1.00 H	15	79.40	40.70
2	*5825.00	110.5 AV			1.00 H	15	69.80	40.70
3	#5850.00	59.6 PK	78.2	-18.6	1.20 H	163	52.60	7.00
4	#5853.00	71.8 PK	78.2	-6.4	1.09 H	168	64.70	7.10
5	#5861.00	66.8 PK	74.0	-7.2	1.09 H	156	59.70	7.10
6	#5861.00	52.3 AV	54.0	-1.7	1.09 H	156	45.20	7.10
7	11650.00	65.0 PK	74.0	-9.0	1.17 H	204	45.80	19.20
8	11650.00	50.9 AV	54.0	-3.1	1.17 H	204	31.70	19.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	110.8 PK			1.05 V	271	70.10	40.70
2	*5825.00	100.9 AV			1.05 V	271	60.20	40.70
3	#5850.00	57.7 PK	78.2	-20.5	1.17 V	259	50.70	7.00
4	#5853.00	67.8 PK	78.2	-10.4	1.15 V	256	60.70	7.10
5	#5861.00	62.4 PK	74.0	-11.6	1.15 V	262	55.30	7.10
6	#5861.00	47.4 AV	54.0	-6.6	1.15 V	262	40.30	7.10
7	11650.00	60.9 PK	74.0	-13.1	1.08 V	90	41.70	19.20
8	11650.00	47.5 AV	54.0	-6.5	1.08 V	90	28.30	19.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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802.11n (40MHz)

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	66.4 PK	68.2	-1.8	1.16 H	333	59.40	7.00
2	#5722.00	72.0 PK	78.2	-6.2	1.14 H	359	65.00	7.00
3	#5725.00	56.7 PK	78.2	-21.5	1.26 H	360	49.60	7.10
4	*5755.00	114.5 PK			1.02 H	10	73.80	40.70
5	*5755.00	105.0 AV			1.02 H	10	64.30	40.70
6	11510.00	59.8 PK	74.0	-14.2	1.21 H	220	41.10	18.70
7	11510.00	46.8 AV	54.0	-7.2	1.21 H	220	28.10	18.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	58.3 PK	68.2	-9.9	1.34 V	191	51.30	7.00
2	#5722.00	65.5 PK	78.2	-12.7	1.00 V	260	58.50	7.00
3	#5725.00	57.3 PK	78.2	-20.9	1.00 V	267	50.20	7.10
4	*5755.00	106.4 PK			1.00 V	273	65.70	40.70
5	*5755.00	96.5 AV			1.00 V	273	55.80	40.70
6	11510.00	59.6 PK	74.0	-14.4	1.00 V	311	40.90	18.70
7	11510.00	46.8 AV	54.0	-7.2	1.00 V	311	28.10	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	118.1 PK			1.07 H	329	77.40	40.70
2	*5795.00	108.4 AV			1.07 H	329	67.70	40.70
3	#5850.00	53.8 PK	78.2	-24.4	1.00 H	157	46.80	7.00
4	#5853.00	70.3 PK	78.2	-7.9	1.00 H	152	63.20	7.10
5	#5861.00	66.2 PK	74.0	-7.8	1.00 H	157	59.10	7.10
6	#5861.00	52.4 AV	54.0	-1.6	1.00 H	157	45.30	7.10
7	11590.00	59.8 PK	74.0	-14.2	1.15 H	321	40.90	18.90
8	11590.00	49.1 AV	54.0	-4.9	1.15 H	321	30.20	18.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	108.8 PK			1.00 V	281	68.10	40.70
2	*5795.00	99.4 AV			1.00 V	281	58.70	40.70
3	#5850.00	59.1 PK	78.2	-19.1	1.00 V	270	52.10	7.00
4	#5853.00	70.8 PK	78.2	-7.4	1.00 V	268	63.70	7.10
5	#5861.00	60.6 PK	74.0	-13.4	1.00 V	254	53.50	7.10
6	#5861.00	47.2 AV	54.0	-6.8	1.00 V	254	40.10	7.10
7	11590.00	59.6 PK	74.0	-14.4	1.00 V	90	40.70	18.90
8	11590.00	48.3 AV	54.0	-5.7	1.00 V	90	29.40	18.90

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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802.11ac (80MHz)

CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	66.0 PK	74.0	-8.0	1.00 H	189	59.00	7.00
2	#5714.00	52.5 AV	54.0	-1.5	1.00 H	189	45.50	7.00
3	#5722.00	74.1 PK	78.2	-4.1	1.04 H	157	67.10	7.00
4	#5725.00	63.6 PK	78.2	-14.6	1.04 H	159	56.50	7.10
5	*5775.00	109.5 PK			1.13 H	160	68.80	40.70
6	*5775.00	100.0 AV			1.13 H	160	59.30	40.70
7	#5850.00	64.0 PK	78.2	-14.2	1.05 H	155	57.00	7.00
8	#5853.00	60.2 PK	78.2	-18.0	1.03 H	151	53.10	7.10
9	#5861.00	61.2 PK	74.0	-12.8	1.00 H	159	54.10	7.10
10	#5861.00	48.0 AV	54.0	-6.0	1.00 H	159	40.90	7.10
11	11550.00	59.4 PK	74.0	-14.6	1.12 H	249	40.70	18.70
12	11550.00	46.3 AV	54.0	-7.7	1.12 H	249	27.60	18.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5714.00	59.6 PK	74.0	-14.4	1.00 V	263	52.60	7.00
2	#5714.00	47.6 AV	54.0	-6.4	1.00 V	263	40.60	7.00
3	#5722.00	66.6 PK	78.2	-11.6	1.00 V	263	59.60	7.00
4	#5725.00	58.6 PK	78.2	-19.6	1.00 V	260	51.50	7.10
5	*5775.00	101.7 PK			1.08 V	271	61.00	40.70
6	*5775.00	91.3 AV			1.08 V	271	50.60	40.70
7	#5850.00	56.5 PK	78.2	-21.7	1.00 V	257	49.50	7.00
8	#5853.00	68.0 PK	78.2	-10.2	1.10 V	260	60.90	7.10
9	#5861.00	56.3 PK	74.0	-17.7	1.02 V	259	49.20	7.10
10	#5861.00	46.0 AV	54.0	-8.0	1.02 V	259	38.90	7.10
11	11550.00	59.7 PK	74.0	-14.3	1.00 V	208	41.00	18.70
12	11550.00	46.6 AV	54.0	-7.4	1.00 V	208	27.90	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

BELOW 1GHz WORST-CASE DATA

802.11a

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	31.7 QP	40.0	-8.3	2.00 H	342	46.30	-14.60
2	101.84	33.1 QP	43.5	-10.4	2.00 H	256	51.40	-18.30
3	348.76	35.2 QP	46.0	-10.8	1.01 H	241	46.70	-11.50
4	500.42	42.0 QP	46.0	-4.0	1.50 H	35	50.30	-8.30
5	624.85	37.1 QP	46.0	-8.9	1.01 H	292	42.60	-5.50
6	875.67	39.3 QP	46.0	-6.7	1.01 H	218	40.40	-1.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	51.29	33.5 QP	40.0	-6.5	1.00 V	12	48.00	-14.50
2	374.04	33.6 QP	46.0	-12.4	1.00 V	146	44.30	-10.70
3	500.42	35.8 QP	46.0	-10.2	1.49 V	102	44.10	-8.30
4	624.85	35.6 QP	46.0	-10.4	1.00 V	10	41.10	-5.50
5	875.67	41.6 QP	46.0	-4.4	1.00 V	10	42.70	-1.10
6	1000.00	36.1 QP	54.0	-17.9	1.00 V	2	35.00	1.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

802.11a

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	31.5 QP	40.0	-8.5	2.00 H	77	46.10	-14.60
2	175.72	31.2 QP	43.5	-12.3	1.49 H	348	45.80	-14.60
3	374.04	34.9 QP	46.0	-11.1	1.00 H	297	45.60	-10.70
4	500.42	39.8 QP	46.0	-6.2	1.49 H	33	48.10	-8.30
5	624.85	35.9 QP	46.0	-10.1	1.00 H	38	41.40	-5.50
6	875.67	38.4 QP	46.0	-7.6	1.49 H	196	39.50	-1.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.57	38.0 QP	40.0	-2.0	1.01 V	234	53.00	-15.00
2	197.11	34.1 QP	43.5	-9.4	1.01 V	99	50.70	-16.60
3	500.42	34.1 QP	46.0	-11.9	2.00 V	287	42.40	-8.30
4	624.85	35.1 QP	46.0	-10.9	1.01 V	232	40.60	-5.50
5	875.67	40.2 QP	46.0	-5.8	1.01 V	334	41.30	-1.10
6	1000.00	37.3 QP	54.0	-16.7	1.01 V	350	36.20	1.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	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.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 13, 2014	Feb. 12, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 21, 2014	Jul. 20, 2015
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

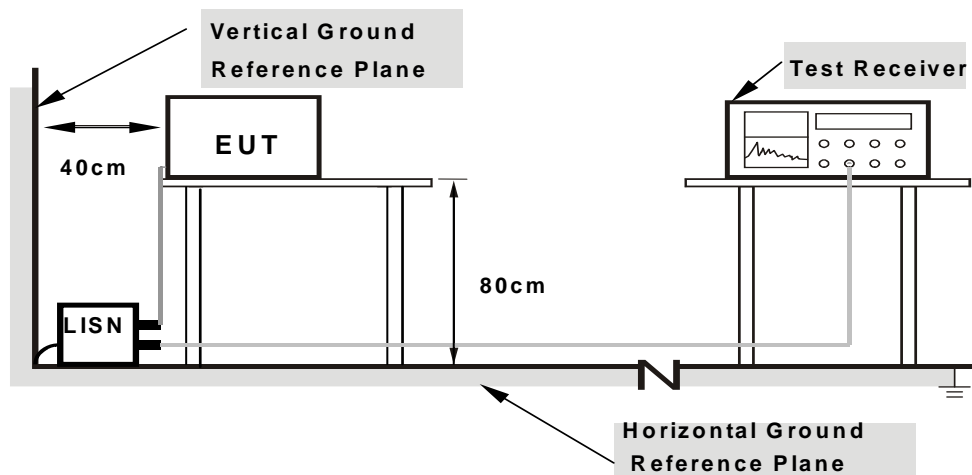
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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) were not recorded.

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

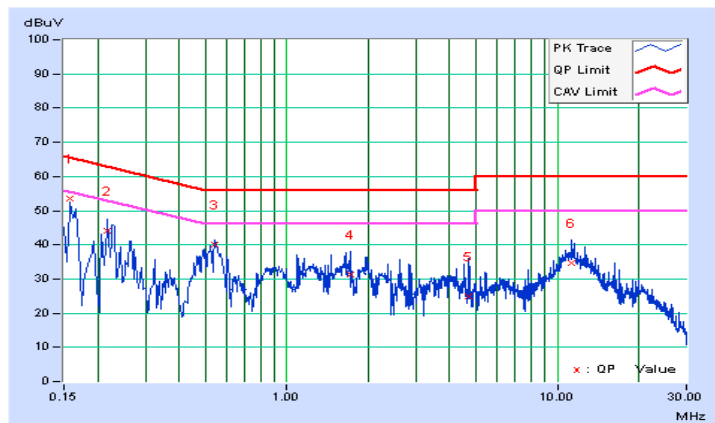
CONDUCTED WORST-CASE DATA: 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	0.11	53.40	36.80	53.51	36.91	65.57	55.57	-12.06	-18.66
2	0.21805	0.09	43.90	30.08	43.99	30.17	62.89	52.89	-18.90	-22.72
3	0.54200	0.13	39.83	32.56	39.96	32.69	56.00	46.00	-16.04	-13.31
4	1.71000	0.24	31.06	23.92	31.30	24.16	56.00	46.00	-24.70	-21.84
5	4.70600	0.29	24.57	13.76	24.86	14.05	56.00	46.00	-31.14	-31.95
6	11.33000	0.62	34.04	28.79	34.66	29.41	60.00	50.00	-25.34	-20.59

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

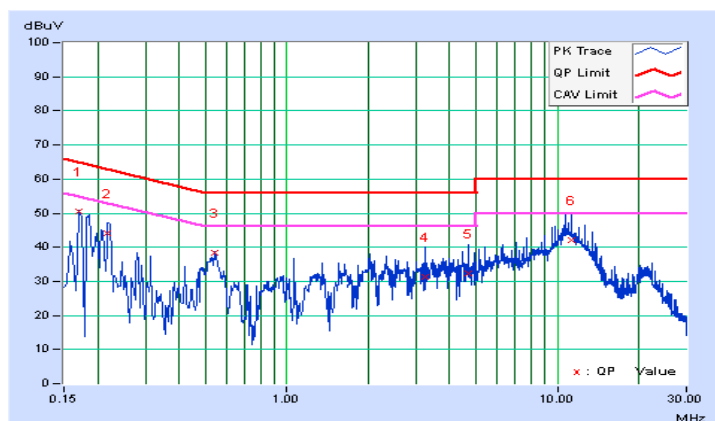


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17000	0.07	50.48	32.49	50.55	32.56	64.96	54.96	-14.41	-22.40
2	0.21805	0.10	43.94	28.04	44.04	28.14	62.89	52.89	-18.86	-24.76
3	0.54255	0.18	38.26	30.96	38.44	31.14	56.00	46.00	-17.56	-14.86
4	3.23000	0.24	31.13	21.43	31.37	21.67	56.00	46.00	-24.63	-24.33
5	4.67800	0.29	32.06	22.86	32.35	23.15	56.00	46.00	-23.65	-22.85
6	11.23400	0.60	41.35	35.72	41.95	36.32	60.00	50.00	-18.05	-13.68

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





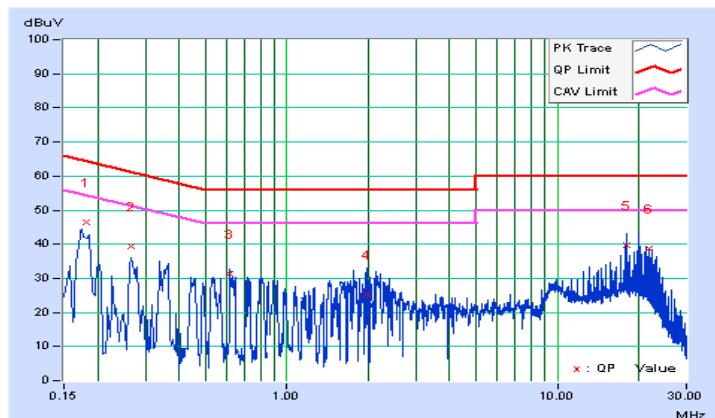
A D T

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18064	0.07	46.24	39.70	46.31	39.77	64.46	54.46	-18.14	-14.68
2	0.26569	0.07	39.31	30.89	39.38	30.96	61.25	51.25	-21.87	-20.29
3	0.61800	0.09	31.36	20.99	31.45	21.08	56.00	46.00	-24.55	-24.92
4	1.97400	0.15	25.08	10.11	25.23	10.26	56.00	46.00	-30.77	-35.74
5	17.99800	0.93	38.71	30.30	39.64	31.23	60.00	50.00	-20.36	-18.77
6	21.77400	1.09	37.53	37.16	38.62	38.25	60.00	50.00	-21.38	-11.75

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





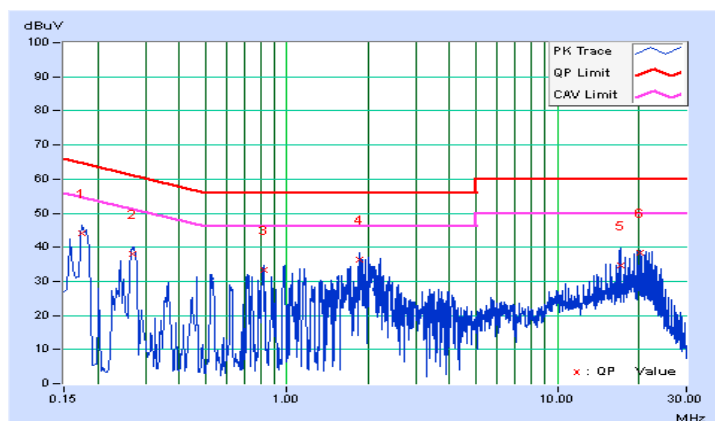
A D T

PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17430	0.05	44.17	31.56	44.22	31.61	64.75	54.75	-20.53	-23.14
2	0.26921	0.06	37.84	29.74	37.90	29.80	61.14	51.14	-23.25	-21.35
3	0.81800	0.08	33.13	18.89	33.21	18.97	56.00	46.00	-22.79	-27.03
4	1.85800	0.13	36.22	22.79	36.35	22.92	56.00	46.00	-19.65	-23.08
5	17.12600	0.77	33.84	31.59	34.61	32.36	60.00	50.00	-25.39	-17.64
6	20.32200	0.92	37.62	36.98	38.54	37.90	60.00	50.00	-21.46	-12.10

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 \leq 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

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

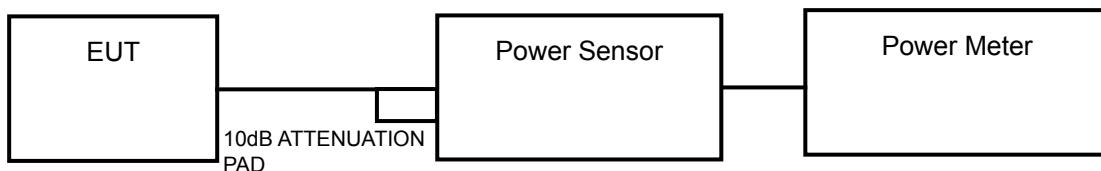
Array Gain = 0 dB (i.e., no array gain) for NANT \leq 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths \geq 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT \geq 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.3 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.

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 specific channel frequencies individually.

4.3.7 TEST RESULTS

POWER OUTPUT:

802.11a

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	17.66	18.02	17.33	175.807	22.45	30	PASS
40	5200	21.30	20.82	20.52	368.397	25.66	30	PASS
48	5240	21.62	22.70	21.95	488.095	26.89	30	PASS
149	5745	18.69	19.67	18.37	235.351	23.72	30	PASS
157	5785	22.49	22.98	21.92	531.625	27.26	30	PASS
165	5825	20.02	21.00	19.92	324.530	25.11	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
36	5180	16.06	17.16	15.71	129.604	21.13	30	PASS
40	5200	20.85	21.68	20.53	381.830	25.82	30	PASS
48	5240	20.24	22.95	21.80	454.280	26.57	30	PASS
149	5745	18.00	19.31	17.55	205.291	23.12	30	PASS
157	5785	22.29	23.07	21.43	511.197	27.09	30	PASS
165	5825	19.71	21.01	19.45	307.829	24.88	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
38	5190	12.02	13.68	11.73	54.151	17.34	30	PASS
46	5230	20.01	21.46	20.26	346.360	25.40	30	PASS
151	5755	15.57	16.72	14.77	113.039	20.53	30	PASS
159	5795	19.71	20.84	19.00	294.313	24.69	30	PASS



802.11ac (80MHz)

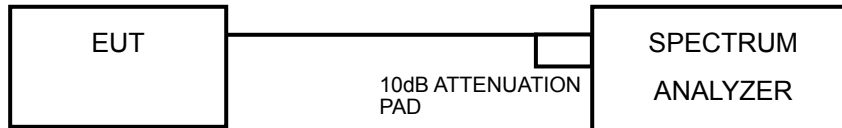
CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
42	5210	9.31	10.92	9.05	28.925	14.61	30	PASS
155	5775	13.24	14.49	12.51	67.029	18.26	30	PASS

4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 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	
U-NII-2A		---	11dBm/ MHz
U-NII-2C		---	11dBm/ MHz
U-NII-3	√	---	30dBm/ MHz

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.4.4 TEST PROCEDURES

For U-NII-1 band:

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW \geq 1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to “free run”.
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value and add $10 \log (1/\text{duty cycle})$

For U-NII-3 band:

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 300 kHz, Set VBW \geq 3 RBW, Detector = RMS
- 3) Sweep time = auto, trigger set to “free run”.
- 4) Trace average at least 100 traces in power averaging mode.
- 5) Record the max value and add $10 \log (1/\text{duty cycle})$
- 6) Scale the observed power level to an equivalent value in 300 kHz by adjusting the measured power by a bandwidth correction factor (BWCF) where $\text{BWCF} = 10 \log(500 \text{ kHz}/300 \text{ kHz})$

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6.

4.4.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)			TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2					
36	5180	4.99	5.21	2.68	9.20	0.17	9.37	13.23	PASS
40	5200	7.70	8.85	7.60	12.86	0.17	13.03	13.23	PASS
48	5240	7.26	8.76	7.32	12.61	0.17	12.78	13.23	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**
Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi , so the power density limit shall be reduced to 17-(9.77-6) = 13.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)			TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2					
36	5180	2.18	3.58	1.53	7.29	0.19	7.48	13.23	PASS
40	5200	7.55	8.93	7.16	12.72	0.19	12.91	13.23	PASS
48	5240	7.74	9.20	7.49	12.98	0.19	13.17	13.23	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- For U-NII-1 Band:**
Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi , so the power density limit shall be reduced to 17-(9.77-6) = 13.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)			TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2					
38	5190	-5.03	-4.08	-4.94	0.11	0.33	0.44	13.23	PASS
46	5230	3.17	3.98	2.33	7.99	0.33	8.32	13.23	PASS

NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
Directional gain = $5\text{dBi} + 10\log(3) = 9.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17-(9.77-6) = 13.23\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)			TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2					
42	5210	-9.70	-8.43	-10.22	-4.61	0.59	-4.02	13.23	PASS

NOTE:

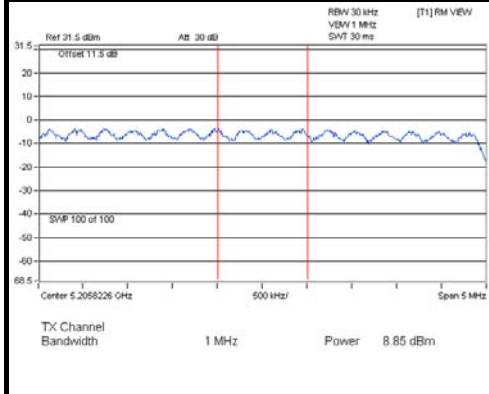
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
Directional gain = $5\text{dBi} + 10\log(3) = 9.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17-(9.77-6) = 13.23\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.



A D T

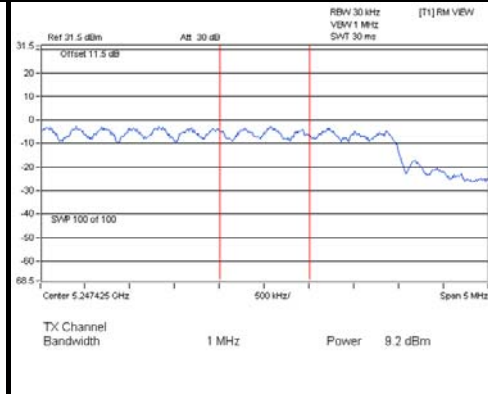
SPECTRUM PLOT OF WORST VALUE

802.11a



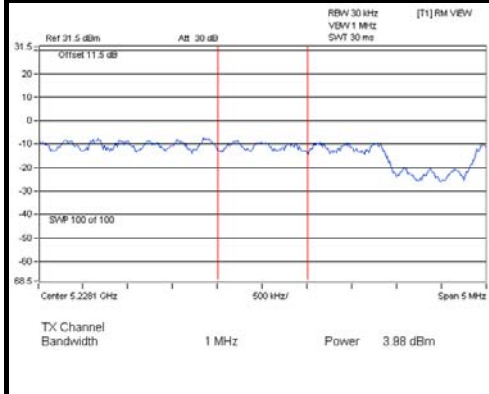
A D T

802.11n (20MHz)



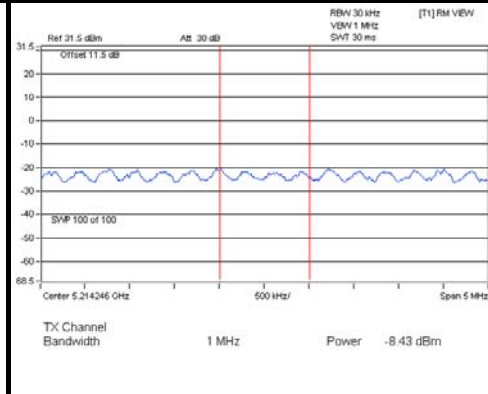
A D T

802.11n (40MHz)



A D T

802.11ac (80MHz)



A D T

For U-NII-3 Band

802.11a

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	1.88	4.10	4.77	9.04	26.23	PASS
	157	5785	4.95	7.17	4.77	12.11	26.23	PASS
	165	5825	2.91	5.13	4.77	10.07	26.23	PASS
1	149	5745	4.07	6.29	4.77	11.23	26.23	PASS
	157	5785	6.40	8.62	4.77	13.56	26.23	PASS
	165	5825	4.54	6.76	4.77	11.70	26.23	PASS
2	149	5745	1.38	3.60	4.77	8.54	26.23	PASS
	157	5785	4.64	6.86	4.77	11.80	26.23	PASS
	165	5825	2.83	5.05	4.77	9.99	26.23	PASS

NOTE: Directional gain = $5\text{dBi} + 10\log(3) = 9.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (9.77 - 6) = 26.23\text{dBm}$.

802.11n (20MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	0.65	2.87	4.77	7.83	26.23	PASS
	157	5785	4.16	6.38	4.77	11.34	26.23	PASS
	165	5825	1.83	4.05	4.77	9.01	26.23	PASS
1	149	5745	2.67	4.89	4.77	9.85	26.23	PASS
	157	5785	6.00	8.22	4.77	13.18	26.23	PASS
	165	5825	4.11	6.33	4.77	11.29	26.23	PASS
2	149	5745	0.49	2.71	4.77	7.67	26.23	PASS
	157	5785	4.04	6.26	4.77	11.22	26.23	PASS
	165	5825	2.11	4.33	4.77	9.29	26.23	PASS

NOTE: Directional gain = $5\text{dBi} + 10\log(3) = 9.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (9.77 - 6) = 26.23\text{dBm}$.

802.11n (40MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	151	5755	-5.00	-2.78	4.77	2.32	26.23	PASS
	159	5795	-1.10	1.12	4.77	6.22	26.23	PASS
1	151	5755	-3.08	-0.86	4.77	4.24	26.23	PASS
	159	5795	0.72	2.94	4.77	8.04	26.23	PASS
2	151	5755	-4.88	-2.66	4.77	2.44	26.23	PASS
	159	5795	-0.92	1.30	4.77	6.40	26.23	PASS

NOTE: Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi , so the power density limit shall be reduced to 30-(9.77-6) = 26.23dBm.

802.11ac (80MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=3) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	155	5775	-10.49	-8.27	4.77	-2.91	26.23	PASS
1	155	5775	-8.52	-6.30	4.77	-0.94	26.23	PASS
2	155	5775	-10.25	-8.03	4.77	-2.67	26.23	PASS

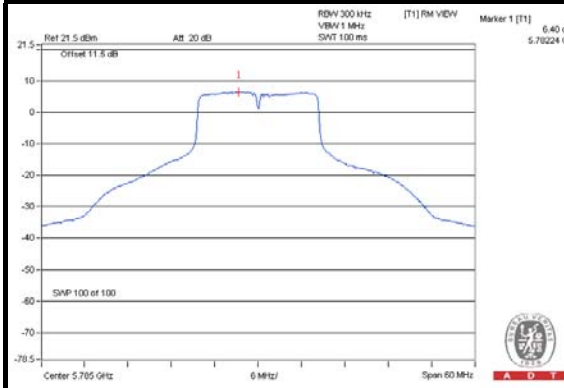
NOTE: Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi , so the power density limit shall be reduced to 30-(9.77-6) = 26.23dBm.



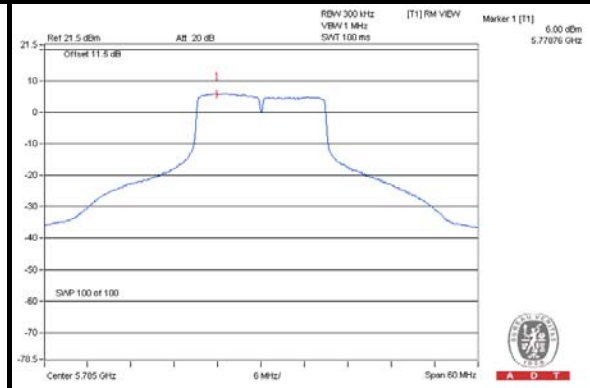
A D T

SPECTRUM PLOT OF WORST VALUE

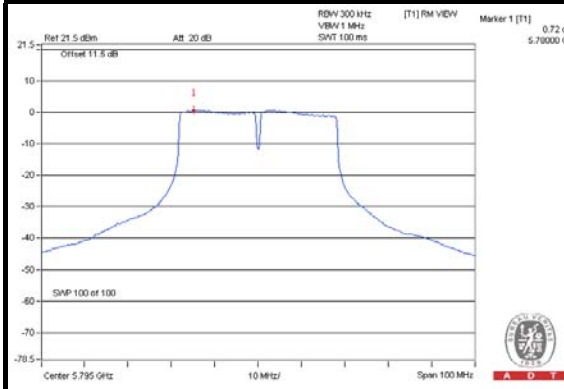
802.11a



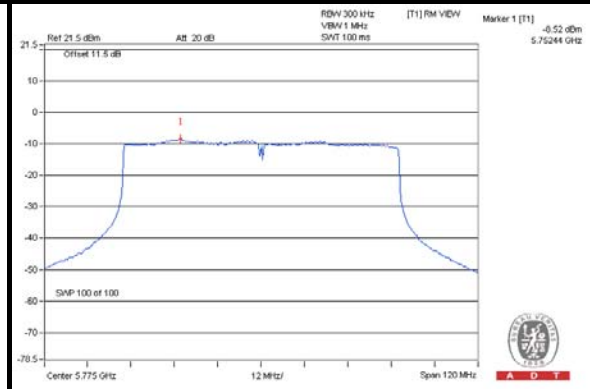
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)

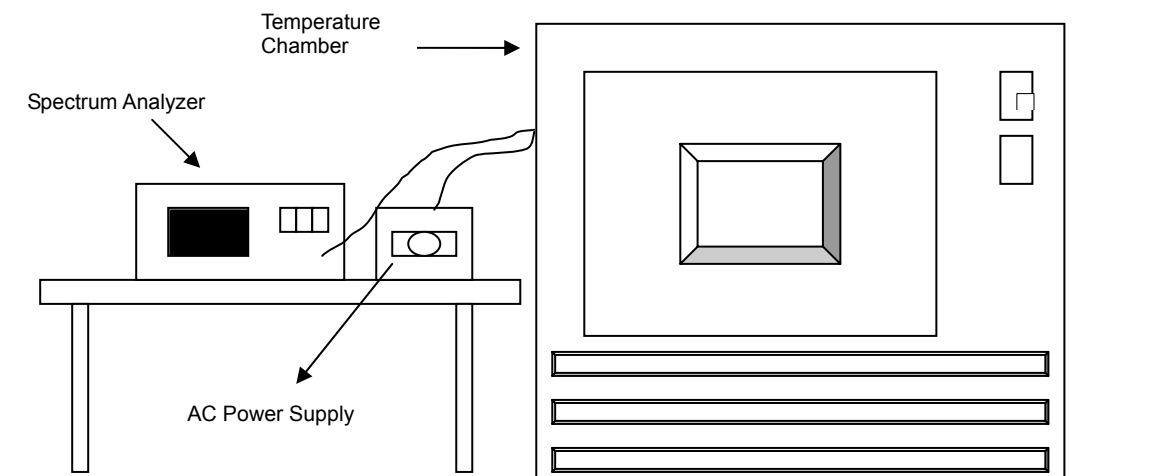


4.5 FREQUENCY STABILITY

4.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.5.4 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

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



4.5.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5200MHz									
TEMP. (°C)	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 (%)
50	120	5200.0157	0.00030	5200.0197	0.00038	5200.0164	0.00032	5200.0195	0.00038
40	120	5200.0198	0.00038	5200.0220	0.00042	5200.0197	0.00038	5200.0182	0.00035
30	120	5199.9812	-0.00036	5199.9816	-0.00035	5199.9836	-0.00032	5199.9798	-0.00039
20	120	5200.0052	0.00010	5200.0049	0.00009	5200.0034	0.00007	5200.0022	0.00004
10	120	5200.0139	0.00027	5200.0116	0.00022	5200.0142	0.00027	5200.0120	0.00023
0	120	5200.0040	0.00008	5200.0032	0.00006	5200.0070	0.00013	5200.0069	0.00013
-10	120	5200.0045	0.00009	5200.0033	0.00006	5200.0017	0.00003	5200.0021	0.00004
-20	120	5200.0252	0.00048	5200.0243	0.00047	5200.0227	0.00044	5200.0215	0.00041
-30	120	5200.0275	0.00053	5200.0274	0.00053	5200.0234	0.00045	5200.0257	0.00049

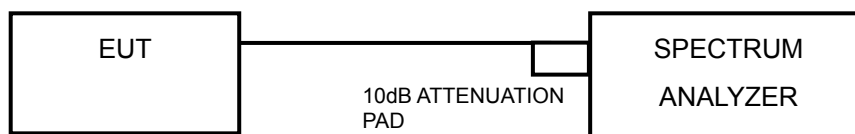
FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5200MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5200.0056	0.00011	5200.0043	0.00008	5200.0036	0.00007	5200.0017	0.00003
	120	5200.0052	0.00010	5200.0049	0.00009	5200.0034	0.00007	5200.0022	0.00004
	102	5200.0056	0.00011	5200.0054	0.00010	5200.0037	0.00007	5200.0014	0.00003

4.6 6dB BANDWIDTH MEASUREMENT

4.6.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

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. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ 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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITIONS

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



4.6.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	16.40	16.39	16.39	0.5	PASS
157	5785	16.39	16.39	16.39	0.5	PASS
165	5825	16.39	16.42	16.44	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	17.66	17.65	17.63	0.5	PASS
157	5785	17.62	17.61	17.61	0.5	PASS
165	5825	17.64	17.64	17.65	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	36.43	36.08	35.91	0.5	PASS
159	5795	36.06	36.45	36.41	0.5	PASS

802.11ac (80MHz)

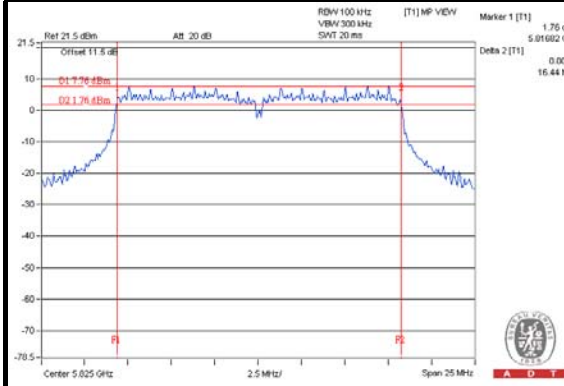
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
155	5775	76.28	76.44	75.87	0.5	PASS



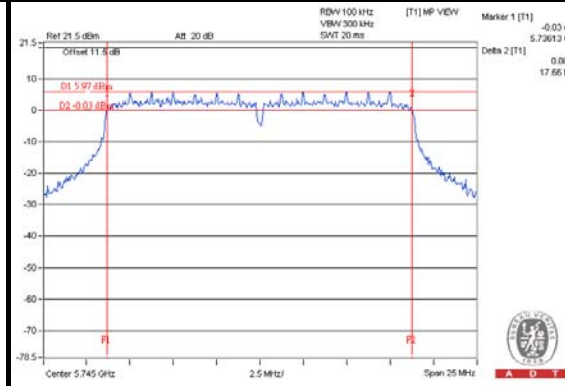
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SPECTRUM PLOT OF WORST VALUE

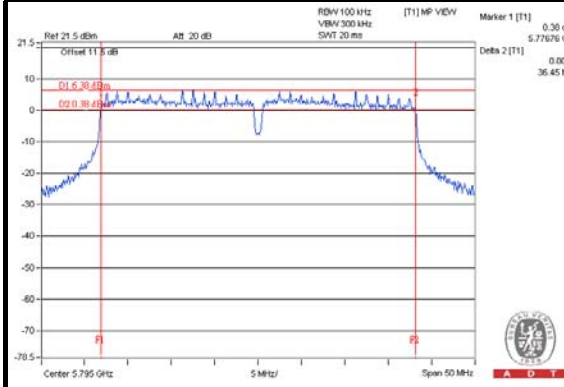
802.11a



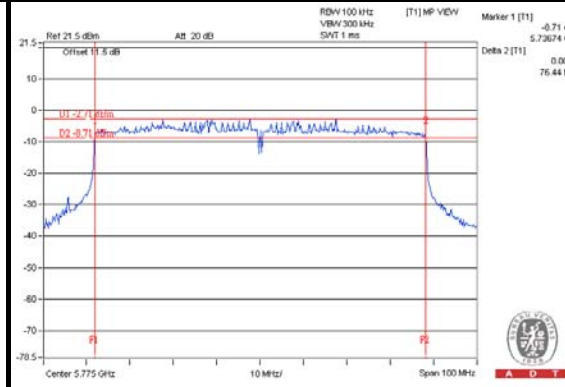
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6. 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 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: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab:

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.

7. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---