

FCC TEST REPORT

(15.407)

REPORT NO.: RF140804C28-1
MODEL NO.: DWL-6610AP
FCC ID: KA2WL6610APA1
RECEIVED: Jul. 22, 2014
TESTED: Aug. 07 ~ Oct. 15, 2014
Jan. 23 ~ Jan. 29, 2015
Apr. 17 ~ Apr. 18, 2015
ISSUED: Apr. 23, 2015

APPLICANT: D-Link Corporation

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ISSUED BY: Bureau Veritas Consumer Products Services (H.K.)
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TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140804C28-1	Original release	Apr. 23, 2015

1. CERTIFICATION

PRODUCT: Unified AC Concurrent Dual-band PoE Access Point

MODEL: DWL-6610AP

BRAND: D-Link

APPLICANT: D-Link Corporation

TESTED: Aug. 07 ~ Oct. 15, 2014

Jan. 23 ~ Jan. 29, 2015

Apr. 17 ~ Apr. 18, 2015

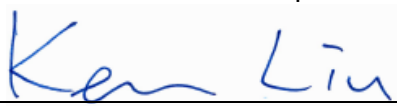
TEST SAMPLE: ENGINEERING SAMPLE

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

ANSI C63.10:2009

The above equipment (model: DWL-6610AP) 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 :** Apr. 23, 2015
Pettie Chen / Senior Specialist

APPROVED BY :  , **DATE :** Apr. 23, 2015
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 Under New Rule)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.51dB at 3.18807MHz.
15.407(b)(1/2/3/4/6)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5150.00, 5722.90, 10360.00, 11570.00MHz.
15.407(b)(1/2/3/4/6)	Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5150.00MHz.
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 IPEX not a standard connector. (The device is professionally installed).

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	3.63 dB
	200MHz ~1000MHz	3.64 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	Unified AC Concurrent Dual-band PoE Access Point
MODEL NO.	DWL-6610AP
POWER SUPPLY	12Vdc from adapter 48Vdc from 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 300.0Mbps 802.11ac: up to 866.6Mbps
OPERATING FREQUENCY	5180 ~ 5240MHz & 5745 ~ 5825MHz
NUMBER OF CHANNEL	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
OUTPUT POWER	282.225mW for 5180 ~ 5240MHz 292.327mW for 5745 ~ 5825MHz
ANTENNA TYPE	Ant. 3: PIFA antenna with 5.5dBi gain Ant. 4: PIFA antenna with 5.0dBi gain
ANTENNA CONNECTOR	IPEX
POWER CORD	Refer to NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

MODULATION MODE	TX FUNCTION
802.11a	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX
802.11ac (20MHz)	2TX
802.11ac (40MHz)	2TX
802.11ac (80MHz)	2TX

* 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 use following adapters and PoE.

Adapter 1	
Brand:	D-Link
Model:	WA-24K12R
Input:	100-240Vac~50-60Hz, 0.8A Max
Output:	12Vdc, 2A
Power Cord:	1.2m cable without core

Adapter 2	
Brand:	D-Link
Model:	WA-24Q12R
Input:	100-240Vac~50-60Hz, 0.7A Max
Output:	12Vdc, 2A
Power Cord:	1.2m cable without core

PoE (Support unit only)	
Brand:	EnGenius
Model:	NPE-7530G
Rating:	48Vdc

Adapter of PoE (Support unit only)	
Brand:	Powertron Electronics Corp.
Model:	PA1040-480IB080
Input:	100-240V~50-60Hz, 1.5A
Output:	48Vdc, 0.5A 24W Max
Power Cord:	1.6m non-shielded 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):

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

2 channels are provided for 802.11n (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):

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

2 channels are provided for 802.11n (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≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter 1
B	-	√	√	-	Power from adapter 2
C	-	√	√	-	Power from PoE

Where **RE≥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 **Z-plane**.
2. "-" means no effect.

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	65.0
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	65.0

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, C	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, C	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	65.0
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	65.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
RE $<$ 1G	25deg. C, 65%RH 20deg. C, 70%RH	120Vac, 60Hz 48Vdc	Ted Chang Match Tsui Jones Chang
PLC	25deg. C, 65%RH 24deg. C, 64%RH 18deg. C, 70%RH	120Vac, 60Hz 48Vdc	Ted Chang Match Tsui Nick Hsu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Ted Chang

3.3 DUTY CYCLE OF TEST SIGNAL

For 5180-5240MHz Band:

Duty cycle of test signal is > 98 %, duty factor is not required.

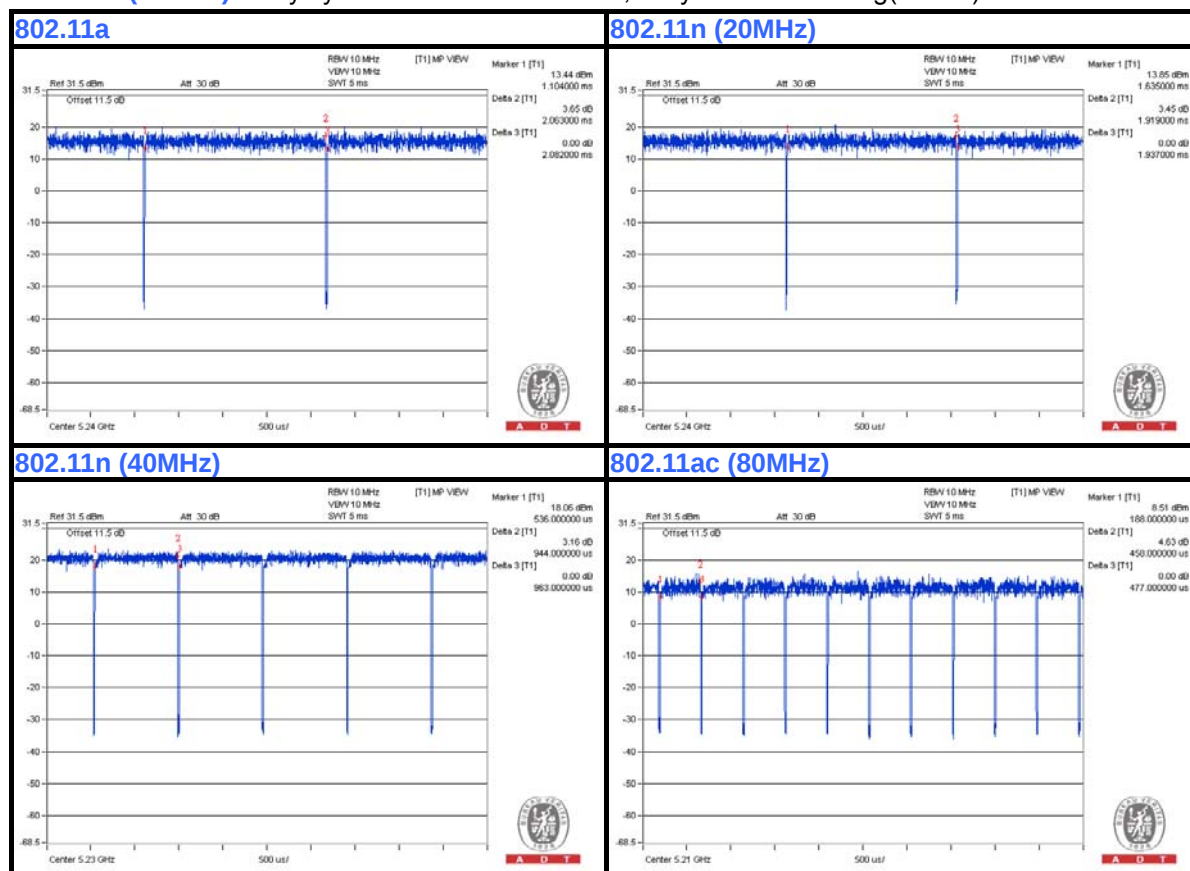
802.11a: Duty cycle = $2.063/2.082 = 0.991$

802.11n (20MHz): Duty cycle = $1.919/1.937 = 0.991$

802.11n (40MHz): Duty cycle = $0.944/0.963 = 0.98$

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

802.11ac (80MHz): Duty cycle = $0.458/0.477 = 0.96$, Duty factor = $10 * \log(1/0.96) = 0.18$



For 5745-5825MHz Band:

Duty cycle of test signal is > 98 %, duty factor is not required.

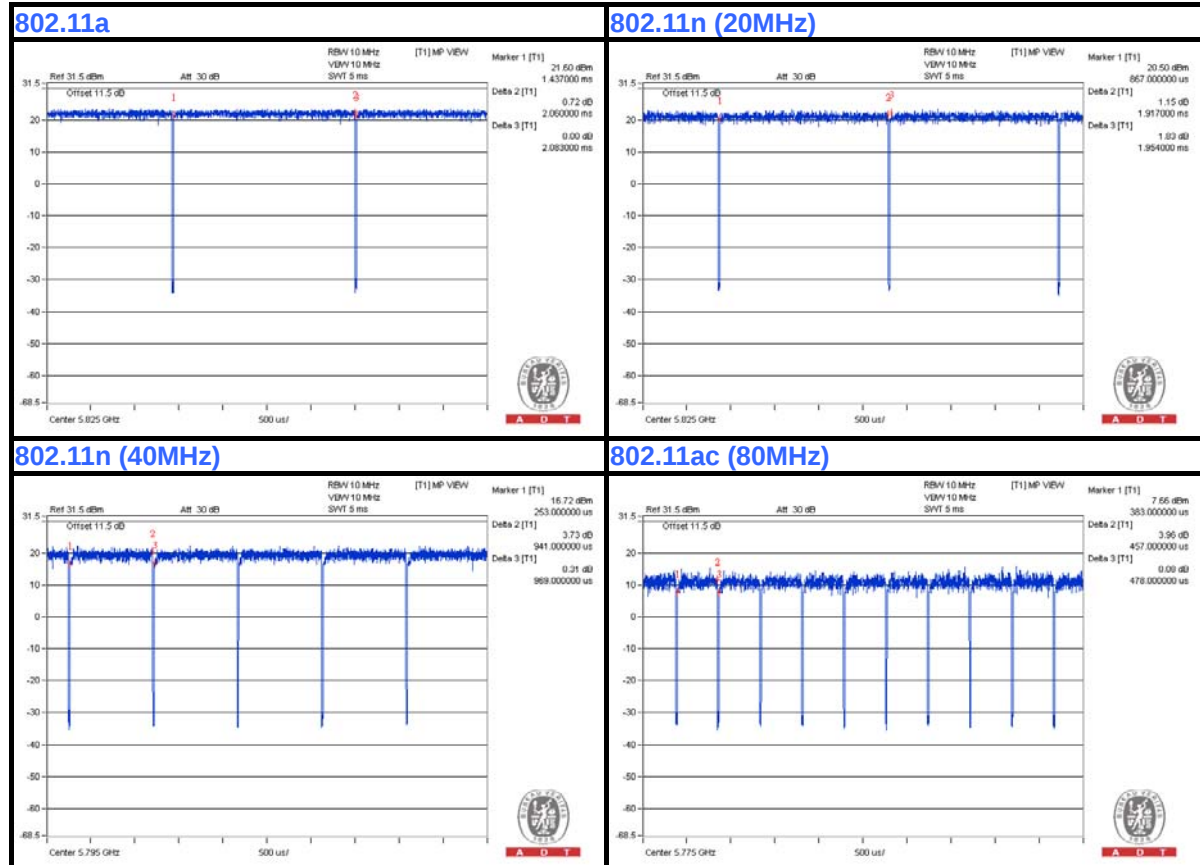
802.11a: Duty cycle = $2.06/2.083 = 0.989$

802.11n (20MHz): Duty cycle = $1.917/1.954 = 0.981$

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

802.11n (40MHz): Duty cycle = $0.941/0.969 = 0.971$, Duty factor = $10 * \log(1/0.971) = 0.13$

802.11ac (80MHz): Duty cycle = $0.457/0.478 = 0.956$, Duty factor = $10 * \log(1/0.956) = 0.20$



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	D531	CN-0XM006-48643 -81U-2973	QDS-BRCM1020

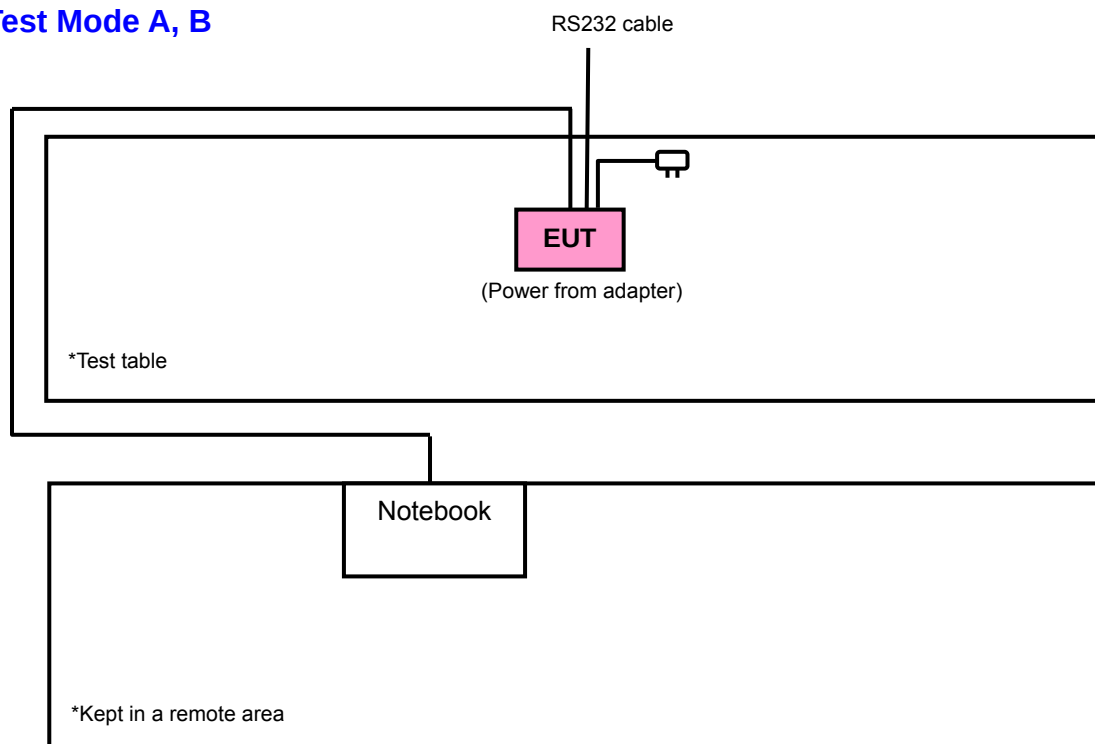
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ45 UTP cable

NOTE:

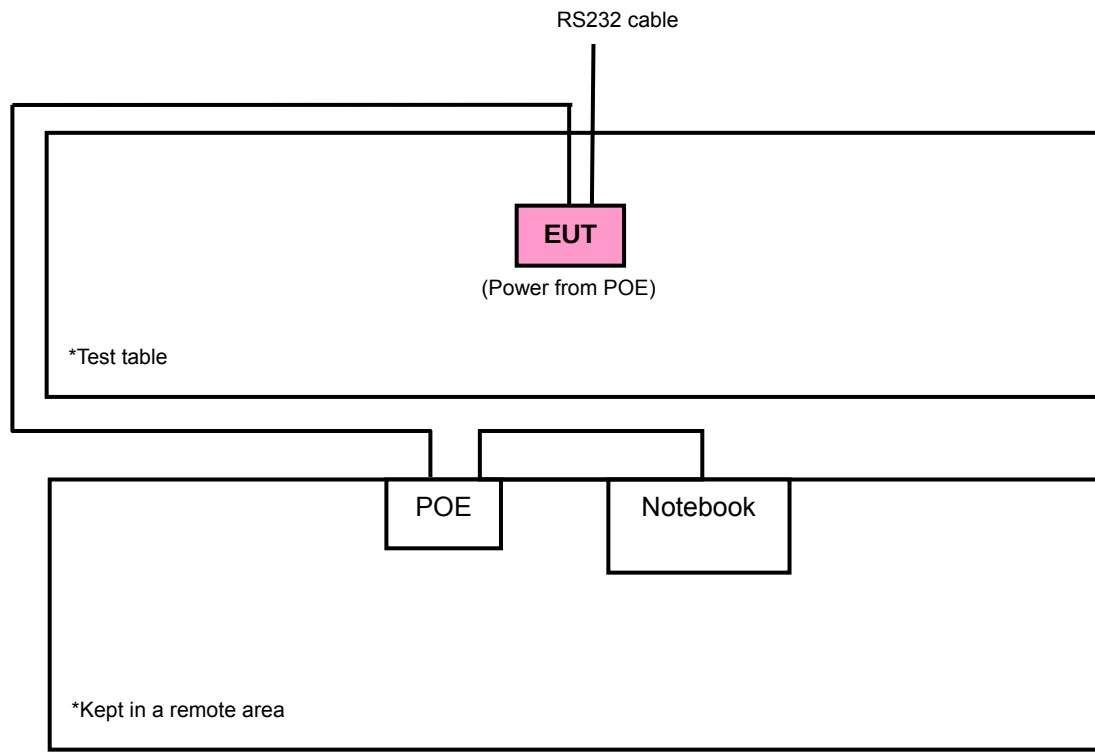
1. All power cords of the above support units are non-shielded (1.8m).
2. Item 1 acted as communication partners to transfer data.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

Test Mode A, B



Test Mode C



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

Tested Date: Aug. 07 ~ Oct. 15, 2014

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
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Feb. 11, 2014	Feb. 10, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 25, 2014	Feb. 24, 2015
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Jan. 05, 2014	Jan. 04, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 17, 2014	Feb. 16, 2015
Preamplifier Agilent	8449B	3008A01911	Aug. 09, 2014	Aug. 08, 2015
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	248780/4 309222/4 274092/4	Aug. 09, 2014	Aug. 08, 2015
RF signal cable Worken	8D-FB	Cable-CH9-01	Aug. 11, 2014	Aug. 10, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	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
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 9.
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 215374.
5. The IC Site Registration No. is IC 7450F-9.

Tested Date: Jan. 23 ~ Jan. 29, 2015

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 01, 2014	Nov. 30, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Feb. 11, 2014	Feb. 10, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 25, 2014	Feb. 24, 2015
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Aug. 25, 2014	Aug. 24, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 17, 2014	Feb. 16, 2015
Preamplifier Agilent	8449B	3008A01911	Aug. 09, 2014	Aug. 08, 2015
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	248780/4 309222/4 274092/4	Aug. 09, 2014	Aug. 08, 2015
RF signal cable Worken	8D-FB	Cable-CH9-01	Aug. 11, 2014	Aug. 10, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	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

- 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 9.
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 215374.
5. The IC Site Registration No. is IC 7450F-9.

Tested Date: Apr. 18, 2015

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 01, 2014	Nov. 30, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Mar. 30, 2015	Mar. 29, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 06, 2015	Feb. 05, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Feb. 09, 2015	Feb. 08, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8449B	3008A01911	Aug. 09, 2014	Aug. 08, 2015
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	248780/4 309222/4 274092/4	Aug. 09, 2014	Aug. 08, 2015
RF signal cable Worken	8D-FB	Cable-CH9-01	Aug. 11, 2014	Aug. 10, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	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 Chamber 9.
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 215374.
5. The IC Site Registration No. is IC 7450F-9.

4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 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:

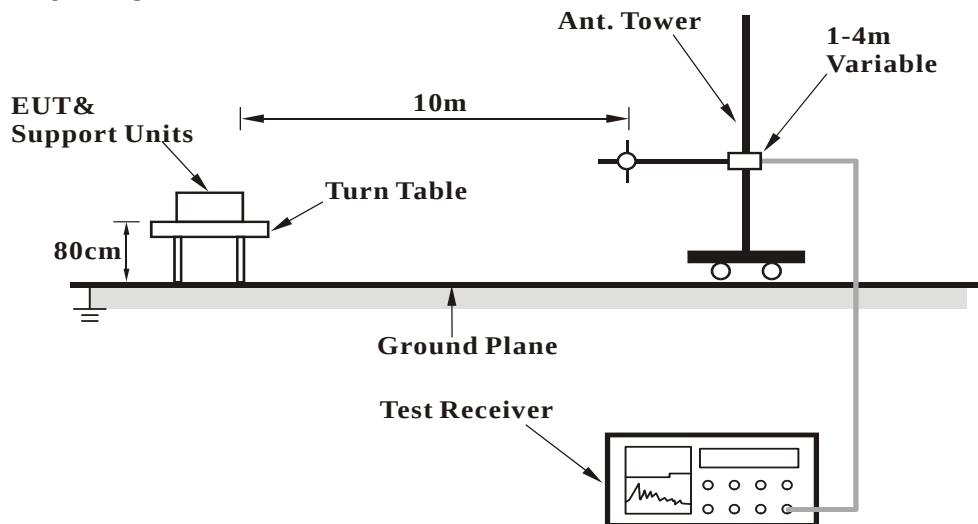
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 DEVIATION FROM TEST STANDARD

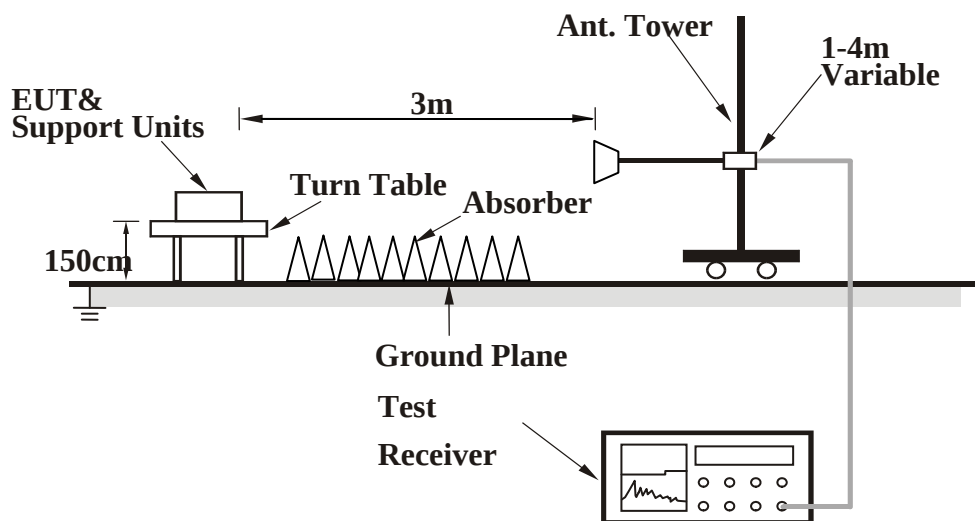
No deviation.

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	5100.00	60.6 PK	74.0	-13.4	1.00 H	337	58.30	2.30
2	5100.00	47.7 AV	54.0	-6.3	1.00 H	337	45.40	2.30
3	*5180.00	108.8 PK			1.16 H	349	69.40	39.40
4	*5180.00	99.0 AV			1.16 H	349	59.60	39.40
5	#6906.00	55.6 PK	68.2	-12.6	1.17 H	318	47.60	8.00
6	#10360.00	64.7 PK	74.0	-9.3	1.16 H	26	50.80	13.90
7	#10360.00	50.8 AV	54.0	-3.2	1.16 H	26	36.90	13.90
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	5100.00	58.8 PK	74.0	-15.2	1.00 V	311	56.50	2.30
2	5100.00	47.8 AV	54.0	-6.2	1.00 V	311	45.50	2.30
3	*5180.00	109.0 PK			1.08 V	320	69.60	39.40
4	*5180.00	99.4 AV			1.08 V	320	60.00	39.40
5	#6906.00	55.7 PK	68.2	-12.5	1.02 V	303	47.70	8.00
6	#10360.00	68.4 PK	74.0	-5.6	1.44 V	27	54.50	13.90
7	#10360.00	52.9 AV	54.0	-1.1	1.44 V	27	39.00	13.90

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.

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	*5200.00	109.9 PK			1.06 H	346	70.40	39.50
2	*5200.00	100.2 AV			1.06 H	346	60.70	39.50
3	5360.00	58.7 PK	74.0	-15.3	1.12 H	313	56.10	2.60
4	5360.00	47.4 AV	54.0	-6.6	1.12 H	313	44.80	2.60
5	#6933.00	54.3 PK	68.2	-13.9	1.11 H	317	46.40	7.90
6	#10400.00	65.0 PK	74.0	-9.0	1.24 H	26	50.90	14.10
7	#10400.00	50.6 AV	54.0	-3.4	1.24 H	26	36.50	14.10
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	*5200.00	109.1 PK			1.00 V	328	69.60	39.50
2	*5200.00	99.7 AV			1.00 V	328	60.20	39.50
3	5360.00	59.6 PK	74.0	-14.4	1.07 V	57	57.00	2.60
4	5360.00	50.4 AV	54.0	-3.6	1.07 V	57	47.80	2.60
5	#6933.00	55.4 PK	68.2	-12.8	1.15 V	302	47.50	7.90
6	#10400.00	67.9 PK	74.0	-6.1	1.46 V	26	53.80	14.10
7	#10400.00	52.8 AV	54.0	-1.2	1.46 V	26	38.70	14.10

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.

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	105.1 PK			1.18 H	1	65.50	39.60
2	*5240.00	95.2 AV			1.18 H	1	55.60	39.60
3	5400.00	58.3 PK	74.0	-15.7	1.00 H	341	55.70	2.60
4	5400.00	46.3 AV	54.0	-7.7	1.00 H	341	43.70	2.60
5	#6986.00	53.8 PK	68.2	-14.4	1.00 H	310	45.60	8.20
6	#10480.00	64.0 PK	74.0	-10.0	1.00 H	238	48.70	15.30
7	#10480.00	49.3 AV	54.0	-4.7	1.00 H	238	34.00	15.30
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	104.9 PK			1.20 V	319	65.30	39.60
2	*5240.00	95.0 AV			1.20 V	319	55.40	39.60
3	5400.00	58.4 PK	74.0	-15.6	1.13 V	306	55.80	2.60
4	5400.00	46.2 AV	54.0	-7.8	1.13 V	306	43.60	2.60
5	#6986.00	53.6 PK	68.2	-14.6	1.00 V	303	45.40	8.20
6	#10480.00	67.9 PK	74.0	-6.1	1.42 V	27	52.60	15.30
7	#10480.00	52.9 AV	54.0	-1.1	1.42 V	27	37.60	15.30

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 (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	5100.00	59.3 PK	74.0	-14.7	1.21 H	350	57.00	2.30
2	5100.00	46.5 AV	54.0	-7.5	1.21 H	350	44.20	2.30
3	*5180.00	107.1 PK			1.18 H	352	67.70	39.40
4	*5180.00	97.0 AV			1.18 H	352	57.60	39.40
5	#5260.00	60.1 PK	74.0	-13.9	1.01 H	320	57.50	2.60
6	#5260.00	47.5 AV	54.0	-6.5	1.01 H	320	44.90	2.60
7	#6906.00	62.5 PK	74.0	-11.5	1.18 H	313	54.50	8.00
8	#6906.00	50.8 AV	54.0	-3.2	1.18 H	313	42.80	8.00
9	#10360.00	63.8 PK	74.0	-10.2	1.09 H	27	49.90	13.90
10	#10360.00	49.6 AV	54.0	-4.4	1.09 H	27	35.70	13.90
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	5100.00	59.9 PK	74.0	-14.1	1.11 V	314	57.60	2.30
2	5100.00	48.3 AV	54.0	-5.7	1.11 V	314	46.00	2.30
3	*5180.00	108.3 PK			1.00 V	328	68.90	39.40
4	*5180.00	97.9 AV			1.00 V	328	58.50	39.40
5	#5260.00	59.5 PK	74.0	-14.5	1.00 V	327	56.90	2.60
6	#5260.00	47.9 AV	54.0	-6.1	1.00 V	327	45.30	2.60
7	#6906.00	62.8 PK	74.0	-11.2	1.31 V	299	54.80	8.00
8	#6906.00	51.5 AV	54.0	-2.5	1.31 V	299	43.50	8.00
9	#10360.00	67.2 PK	74.0	-6.8	1.53 V	23	53.30	13.90
10	#10360.00	53.0 AV	54.0	-1.0	1.53 V	23	39.10	13.90

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.

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	5120.00	59.0 PK	74.0	-15.0	1.21 H	349	56.60	2.40
2	5120.00	47.9 AV	54.0	-6.1	1.21 H	349	45.50	2.40
3	*5200.00	109.7 PK			1.06 H	347	70.20	39.50
4	*5200.00	99.6 AV			1.06 H	347	60.10	39.50
5	#5280.00	61.2 PK	74.0	-12.8	1.03 H	327	58.60	2.60
6	#5280.00	49.3 AV	54.0	-4.7	1.03 H	327	46.70	2.60
7	5360.00	59.6 PK	74.0	-14.4	1.02 H	42	57.00	2.60
8	5360.00	48.0 AV	54.0	-6.0	1.02 H	42	45.40	2.60
9	#6934.00	63.2 PK	74.0	-10.8	1.21 H	317	55.30	7.90
10	#6934.00	51.2 AV	54.0	-2.8	1.21 H	317	43.30	7.90
11	#10400.00	64.6 PK	74.0	-9.4	1.25 H	27	50.50	14.10
12	#10400.00	49.9 AV	54.0	-4.1	1.25 H	27	35.80	14.10
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	5120.00	59.5 PK	74.0	-14.5	1.00 V	325	57.10	2.40
2	5120.00	48.3 AV	54.0	-5.7	1.00 V	325	45.90	2.40
3	*5200.00	109.3 PK			1.10 V	324	69.80	39.50
4	*5200.00	98.6 AV			1.10 V	324	59.10	39.50
5	#5280.00	61.5 PK	74.0	-12.5	1.07 V	322	58.90	2.60
6	#5280.00	49.2 AV	54.0	-4.8	1.07 V	322	46.60	2.60
7	5360.00	60.1 PK	74.0	-13.9	1.07 V	61	57.50	2.60
8	5360.00	47.4 AV	54.0	-6.6	1.07 V	61	44.80	2.60
9	#6934.00	61.8 PK	74.0	-12.2	1.06 V	2	53.90	7.90
10	#6934.00	49.8 AV	54.0	-4.2	1.06 V	2	41.90	7.90
11	#10400.00	67.0 PK	74.0	-7.0	1.43 V	25	52.90	14.10
12	#10400.00	52.5 AV	54.0	-1.5	1.43 V	25	38.40	14.10

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.

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	104.7 PK			1.00 H	0	65.10	39.60
2	*5240.00	94.4 AV			1.00 H	0	54.80	39.60
3	#5320.00	59.7 PK	74.0	-14.3	1.02 H	323	57.00	2.70
4	#5320.00	47.1 AV	54.0	-6.9	1.02 H	323	44.40	2.70
5	#6986.00	61.4 PK	74.0	-12.6	1.21 H	318	53.20	8.20
6	#6986.00	50.1 AV	54.0	-3.9	1.21 H	318	41.90	8.20
7	#10480.00	64.7 PK	74.0	-9.3	1.40 H	25	49.40	15.30
8	#10480.00	51.5 AV	54.0	-2.5	1.40 H	25	36.20	15.30
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	104.9 PK			1.00 V	327	65.30	39.60
2	*5240.00	94.5 AV			1.00 V	327	54.90	39.60
3	#5320.00	59.3 PK	74.0	-14.7	1.00 V	59	56.60	2.70
4	#5320.00	47.2 AV	54.0	-6.8	1.00 V	59	44.50	2.70
5	#6986.00	61.5 PK	74.0	-12.5	1.49 V	301	53.30	8.20
6	#6986.00	50.9 AV	54.0	-3.1	1.49 V	301	42.70	8.20
7	#10480.00	67.3 PK	74.0	-6.7	1.49 V	22	52.00	15.30
8	#10480.00	52.8 AV	54.0	-1.2	1.49 V	22	37.50	15.30

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	71.0 PK	74.0	-3.0	1.00 H	347	68.60	2.40
2	5150.00	51.5 AV	54.0	-2.5	1.00 H	347	49.10	2.40
3	*5190.00	105.2 PK			1.04 H	347	65.70	39.50
4	*5190.00	95.3 AV			1.04 H	347	55.80	39.50
5	#6920.00	63.2 PK	74.0	-10.8	1.11 H	318	55.30	7.90
6	#6920.00	51.8 AV	54.0	-2.2	1.11 H	318	43.90	7.90
7	#10380.00	65.2 PK	74.0	-8.8	1.18 H	26	51.10	14.10
8	#10380.00	49.9 AV	54.0	-4.1	1.18 H	26	35.80	14.10
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	71.2 PK	74.0	-2.8	1.00 V	324	68.80	2.40
2	5150.00	52.8 AV	54.0	-1.2	1.00 V	324	50.40	2.40
3	*5190.00	106.7 PK			1.00 V	328	67.20	39.50
4	*5190.00	96.0 AV			1.00 V	328	56.50	39.50
5	#6920.00	57.2 PK	74.0	-16.8	1.32 V	301	49.30	7.90
6	#6920.00	51.7 AV	54.0	-2.3	1.32 V	301	43.80	7.90
7	#10380.00	65.8 PK	74.0	-8.2	1.30 V	3	51.70	14.10
8	#10380.00	50.1 AV	54.0	-3.9	1.30 V	3	36.00	14.10

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.

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	65.8 PK	74.0	-8.2	1.06 H	347	63.40	2.40
2	5150.00	50.7 AV	54.0	-3.3	1.06 H	347	48.30	2.40
3	*5230.00	110.4 PK			1.17 H	348	70.80	39.60
4	*5230.00	99.9 AV			1.17 H	348	60.30	39.60
5	5390.00	60.5 PK	74.0	-13.5	1.00 H	53	57.90	2.60
6	5390.00	47.7 AV	54.0	-6.3	1.00 H	53	45.10	2.60
7	#6973.00	62.4 PK	74.0	-11.6	1.00 H	319	54.30	8.10
8	#6973.00	50.2 AV	54.0	-3.8	1.00 H	319	42.10	8.10
9	#10460.00	64.0 PK	74.0	-10.0	1.14 H	24	49.20	14.80
10	#10460.00	50.0 AV	54.0	-4.0	1.14 H	24	35.20	14.80
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	68.1 PK	74.0	-5.9	1.00 V	323	65.70	2.40
2	5150.00	51.1 AV	54.0	-2.9	1.00 V	323	48.70	2.40
3	*5230.00	111.7 PK			1.00 V	327	72.10	39.60
4	*5230.00	100.5 AV			1.00 V	327	60.90	39.60
5	5390.00	61.1 PK	74.0	-12.9	1.13 V	303	58.50	2.60
6	5390.00	48.9 AV	54.0	-5.1	1.13 V	303	46.30	2.60
7	#6973.00	63.0 PK	74.0	-11.0	1.00 V	302	54.90	8.10
8	#6973.00	51.5 AV	54.0	-2.5	1.00 V	302	43.40	8.10
9	#10460.00	64.9 PK	74.0	-9.1	1.05 V	51	50.10	14.80
10	#10460.00	50.8 AV	54.0	-3.2	1.05 V	51	36.00	14.80

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.

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	70.2 PK	74.0	-3.8	1.07 H	344	67.80	2.40
2	5150.00	53.0 AV	54.0	-1.0	1.07 H	344	50.60	2.40
3	*5210.00	101.5 PK			1.05 H	350	62.00	39.50
4	*5210.00	90.9 AV			1.05 H	350	51.40	39.50
5	#5788.00	58.2 PK	74.0	-15.8	1.24 H	323	54.90	3.30
6	#5788.00	48.2 AV	54.0	-5.8	1.24 H	323	44.90	3.30
7	#6946.00	62.6 PK	74.0	-11.4	1.22 H	317	54.50	8.10
8	#6946.00	50.8 AV	54.0	-3.2	1.22 H	317	42.70	8.10
9	#10420.00	61.7 PK	74.0	-12.3	1.26 H	357	47.30	14.40
10	#10420.00	48.8 AV	54.0	-5.2	1.26 H	357	34.40	14.40
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	71.0 PK	74.0	-3.0	1.00 V	321	68.60	2.40
2	5150.00	52.7 AV	54.0	-1.3	1.00 V	321	50.30	2.40
3	*5210.00	101.9 PK			1.21 V	322	62.40	39.50
4	*5210.00	91.0 AV			1.21 V	322	51.50	39.50
5	#5788.00	58.3 PK	74.0	-15.7	1.05 V	321	55.00	3.30
6	#5788.00	47.8 AV	54.0	-6.2	1.05 V	321	44.50	3.30
7	#6946.00	52.3 PK	74.0	-21.7	1.00 V	1	44.20	8.10
8	#6946.00	40.1 AV	54.0	-13.9	1.00 V	1	32.00	8.10
9	#10420.00	63.1 PK	74.0	-10.9	1.59 V	31	48.70	14.40
10	#10420.00	49.8 AV	54.0	-4.2	1.59 V	31	35.40	14.40

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	#5714.90	63.2 PK	74.0	-10.8	1.04 H	323	59.90	3.30
2	#5714.90	47.4 AV	54.0	-6.6	1.04 H	323	44.10	3.30
3	#5722.90	72.7 PK	78.2	-5.5	1.22 H	331	69.40	3.30
4	#5725.00	61.7 PK	78.2	-16.5	1.28 H	326	58.40	3.30
5	*5745.00	109.6 PK			1.24 H	54	69.30	40.30
6	*5745.00	99.6 AV			1.24 H	54	59.30	40.30
7	11490.00	61.9 PK	74.0	-12.1	1.04 H	17	46.00	15.90
8	11490.00	49.4 AV	54.0	-4.6	1.04 H	17	33.50	15.90
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	#5714.90	65.4 PK	74.0	-8.6	1.09 V	315	62.10	3.30
2	#5714.90	49.1 AV	54.0	-4.9	1.09 V	315	45.80	3.30
3	#5722.90	77.1 PK	78.2	-1.1	1.08 V	318	73.80	3.30
4	#5725.00	63.7 PK	78.2	-14.5	1.07 V	313	60.40	3.30
5	*5745.00	109.8 PK			1.00 V	320	69.50	40.30
6	*5745.00	99.9 AV			1.00 V	320	59.60	40.30
7	11490.00	62.5 PK	74.0	-11.5	1.27 V	42	46.60	15.90
8	11490.00	49.0 AV	54.0	-5.0	1.27 V	42	33.10	15.90

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.

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	#5620.00	64.7 PK	68.2	-3.5	1.00 H	334	61.60	3.10
2	#5700.00	64.8 PK	68.2	-3.4	1.00 H	338	61.60	3.20
3	*5785.00	114.4 PK			1.24 H	57	74.10	40.30
4	*5785.00	103.9 AV			1.24 H	57	63.60	40.30
5	#6267.00	56.8 PK	68.2	-11.4	1.04 H	329	50.40	6.40
6	11570.00	64.6 PK	74.0	-9.4	1.34 H	12	48.70	15.90
7	11570.00	51.1 AV	54.0	-2.9	1.34 H	12	35.20	15.90
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	#5620.00	66.7 PK	68.2	-1.5	1.00 V	312	63.60	3.10
2	#5700.00	66.5 PK	68.2	-1.7	1.00 V	318	63.30	3.20
3	*5785.00	114.1 PK			1.06 V	318	73.80	40.30
4	*5785.00	103.1 AV			1.06 V	318	62.80	40.30
5	#6267.00	57.7 PK	68.2	-10.5	1.07 V	67	51.30	6.40
6	11570.00	65.2 PK	74.0	-8.8	1.00 V	42	49.30	15.90
7	11570.00	51.4 AV	54.0	-2.6	1.00 V	42	35.50	15.90

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.

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	112.4 PK			1.25 H	321	71.90	40.50
2	*5825.00	102.1 AV			1.25 H	321	61.60	40.50
3	#5850.00	58.0 PK	78.2	-20.2	1.00 H	49	54.60	3.40
4	#5852.10	76.3 PK	78.2	-1.9	1.00 H	51	72.90	3.40
5	#5860.10	66.4 PK	74.0	-7.6	1.00 H	50	62.90	3.50
6	#5860.10	47.5 AV	54.0	-6.5	1.00 H	50	44.00	3.50
7	#5900.00	63.3 PK	68.2	-4.9	1.00 H	47	59.80	3.50
8	11650.00	63.5 PK	74.0	-10.5	1.07 H	343	47.60	15.90
9	11650.00	49.6 AV	54.0	-4.4	1.07 H	343	33.70	15.90
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	*5825.00	111.6 PK			1.05 V	318	71.10	40.50
2	*5825.00	101.6 AV			1.05 V	318	61.10	40.50
3	#5850.00	61.1 PK	78.2	-17.1	1.04 V	315	57.70	3.40
4	#5852.10	76.6 PK	78.2	-1.6	1.04 V	318	73.20	3.40
5	#5860.10	67.9 PK	74.0	-6.1	1.04 V	314	64.40	3.50
6	#5860.10	48.6 AV	54.0	-5.4	1.04 V	314	45.10	3.50
7	#5900.00	63.9 PK	68.2	-4.3	1.03 V	315	60.40	3.50
8	11650.00	64.5 PK	74.0	-9.5	1.00 V	338	48.60	15.90
9	11650.00	50.6 AV	54.0	-3.4	1.00 V	338	34.70	15.90

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.

802.11n (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	#5664.00	61.3 PK	74.0	-12.7	1.00 H	44	58.10	3.20
2	#5664.00	49.9 AV	54.0	-4.1	1.00 H	44	46.70	3.20
3	#5722.90	74.4 PK	78.2	-3.8	1.17 H	337	71.10	3.30
4	#5725.00	58.2 PK	78.2	-20.0	1.19 H	35	54.90	3.30
5	*5745.00	108.0 PK			1.25 H	51	67.70	40.30
6	*5745.00	97.5 AV			1.25 H	51	57.20	40.30
7	11490.00	61.4 PK	74.0	-12.6	1.00 H	82	45.50	15.90
8	11490.00	48.4 AV	54.0	-5.6	1.00 H	82	32.50	15.90
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	#5664.00	62.7 PK	74.0	-11.3	1.09 V	315	59.50	3.20
2	#5664.00	51.3 AV	54.0	-2.7	1.09 V	315	48.10	3.20
3	#5722.90	77.2 PK	78.2	-1.0	1.00 V	63	73.90	3.30
4	#5725.00	60.5 PK	78.2	-17.7	1.07 V	66	57.20	3.30
5	*5745.00	108.8 PK			1.00 V	320	68.50	40.30
6	*5745.00	97.1 AV			1.00 V	320	56.80	40.30
7	11490.00	62.5 PK	74.0	-11.5	1.00 V	15	46.60	15.90
8	11490.00	48.9 AV	54.0	-5.1	1.00 V	15	33.00	15.90

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.

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	#5714.90	64.8 PK	68.2	-3.4	1.00 H	335	61.50	3.30
2	*5785.00	114.1 PK			1.23 H	56	73.80	40.30
3	*5785.00	103.3 AV			1.23 H	56	63.00	40.30
4	11570.00	64.2 PK	74.0	-9.8	1.00 H	14	48.30	15.90
5	11570.00	51.9 AV	54.0	-2.1	1.00 H	14	36.00	15.90
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	#5714.90	65.8 PK	68.2	-2.4	1.08 V	64	62.50	3.30
2	*5785.00	114.0 PK			1.00 V	61	73.70	40.30
3	*5785.00	102.9 AV			1.00 V	61	62.60	40.30
4	11570.00	66.5 PK	74.0	-7.5	1.00 V	15	50.60	15.90
5	11570.00	53.0 AV	54.0	-1.0	1.00 V	15	37.10	15.90

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.

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	111.1 PK			1.25 H	327	70.60	40.50
2	*5825.00	100.5 AV			1.25 H	327	60.00	40.50
3	#5850.00	59.4 PK	78.2	-18.8	1.00 H	57	56.00	3.40
4	#5852.10	75.1 PK	78.2	-3.1	1.02 H	54	71.70	3.40
5	#5860.10	66.4 PK	74.0	-7.6	1.01 H	53	62.90	3.50
6	#5860.10	46.3 AV	54.0	-7.7	1.01 H	53	42.80	3.50
7	#5900.00	62.0 PK	68.2	-6.2	1.00 H	52	58.50	3.50
8	11650.00	62.3 PK	74.0	-11.7	1.01 H	12	46.40	15.90
9	11650.00	49.2 AV	54.0	-4.8	1.01 H	12	33.30	15.90
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	*5825.00	109.7 PK			1.00 V	58	69.20	40.50
2	*5825.00	99.2 AV			1.00 V	58	58.70	40.50
3	#5850.00	59.9 PK	78.2	-18.3	1.05 V	69	56.50	3.40
4	#5852.10	77.0 PK	78.2	-1.2	1.04 V	59	73.60	3.40
5	#5860.10	66.0 PK	74.0	-8.0	1.00 V	60	62.50	3.50
6	#5860.10	47.1 AV	54.0	-6.9	1.00 V	60	43.60	3.50
7	#5900.00	62.7 PK	68.2	-5.5	1.00 V	60	59.20	3.50
8	11650.00	64.9 PK	74.0	-9.1	1.00 V	4	49.00	15.90
9	11650.00	51.5 AV	54.0	-2.5	1.00 V	4	35.60	15.90

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.

802.11n (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	#5714.90	72.2 PK	74.0	-1.8	1.00 H	61	68.90	3.30
2	#5714.90	52.4 AV	54.0	-1.6	1.00 H	61	49.10	3.30
3	#5722.90	76.4 PK	78.2	-1.8	1.19 H	37	73.10	3.30
4	#5725.00	60.6 PK	78.2	-17.6	1.17 H	35	57.30	3.30
5	*5755.00	102.5 PK			1.00 H	65	62.20	40.30
6	*5755.00	92.9 AV			1.00 H	65	52.60	40.30
7	7500.00	56.9 PK	74.0	-17.1	1.01 H	55	48.00	8.90
8	7500.00	46.0 AV	54.0	-8.0	1.01 H	55	37.10	8.90
9	11510.00	61.6 PK	74.0	-12.4	1.00 H	144	45.70	15.90
10	11510.00	48.4 AV	54.0	-5.6	1.00 H	144	32.50	15.90
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	#5714.90	72.5 PK	74.0	-1.5	1.00 V	319	69.20	3.30
2	#5714.90	52.7 AV	54.0	-1.3	1.00 V	319	49.40	3.30
3	#5722.90	76.1 PK	78.2	-2.1	1.00 V	320	72.80	3.30
4	#5725.00	59.9 PK	78.2	-18.3	1.08 V	316	56.60	3.30
5	*5755.00	105.3 PK			1.00 V	321	65.00	40.30
6	*5755.00	93.7 AV			1.00 V	321	53.40	40.30
7	7500.00	57.4 PK	74.0	-16.6	1.00 V	6	48.50	8.90
8	7500.00	44.8 AV	54.0	-9.2	1.00 V	6	35.90	8.90
9	11510.00	62.4 PK	74.0	-11.6	1.05 V	64	46.50	15.90
10	11510.00	48.5 AV	54.0	-5.5	1.05 V	64	32.60	15.90

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.

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	107.9 PK			1.00 H	65	67.50	40.40
2	*5795.00	97.5 AV			1.00 H	65	57.10	40.40
3	#5850.00	57.1 PK	78.2	-21.1	1.19 H	51	53.70	3.40
4	#5852.10	73.9 PK	78.2	-4.3	1.21 H	52	70.50	3.40
5	#5860.10	72.6 PK	74.0	-1.4	1.22 H	56	69.10	3.50
6	#5860.10	52.5 AV	54.0	-1.5	1.22 H	56	49.00	3.50
7	11590.00	61.3 PK	74.0	-12.7	1.00 H	17	45.50	15.80
8	11590.00	47.7 AV	54.0	-6.3	1.00 H	17	31.90	15.80
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	*5795.00	110.2 PK			1.16 V	61	69.80	40.40
2	*5795.00	97.8 AV			1.16 V	61	57.40	40.40
3	#5850.00	60.8 PK	78.2	-17.4	1.15 V	67	57.40	3.40
4	#5852.10	76.9 PK	78.2	-1.3	1.05 V	68	73.50	3.40
5	#5860.10	72.8 PK	74.0	-1.2	1.06 V	59	69.30	3.50
6	#5860.10	52.5 AV	54.0	-1.5	1.06 V	59	49.00	3.50
7	11590.00	62.2 PK	74.0	-11.8	1.04 V	22	46.40	15.80
8	11590.00	48.3 AV	54.0	-5.7	1.04 V	22	32.50	15.80

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.

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	#5714.90	67.5 PK	74.0	-6.5	1.00 H	18	64.20	3.30
2	#5714.90	51.2 AV	54.0	-2.8	1.00 H	18	47.90	3.30
3	#5722.90	71.2 PK	78.2	-7.0	1.00 H	20	67.90	3.30
4	#5725.00	56.6 PK	78.2	-21.6	1.14 H	17	53.30	3.30
5	*5775.00	99.1 PK			1.00 H	65	58.80	40.30
6	*5775.00	88.8 AV			1.00 H	65	48.50	40.30
7	#5850.00	53.4 PK	78.2	-24.8	1.11 H	319	50.00	3.40
8	#5852.10	68.1 PK	78.2	-10.1	1.12 H	321	64.70	3.40
9	#5860.10	66.4 PK	74.0	-7.6	1.03 H	18	62.90	3.50
10	#5860.10	50.0 AV	54.0	-4.0	1.03 H	18	46.50	3.50
11	11500.00	60.6 PK	74.0	-13.4	1.00 H	315	44.70	15.90
12	11550.00	46.7 AV	54.0	-7.3	1.00 H	315	30.80	15.90
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	#5714.90	69.4 PK	74.0	-4.6	1.00 V	65	66.10	3.30
2	#5714.90	52.8 AV	54.0	-1.2	1.00 V	65	49.50	3.30
3	#5722.90	72.5 PK	78.2	-5.7	1.07 V	65	69.20	3.30
4	#5725.00	53.0 PK	78.2	-25.2	1.06 V	65	49.70	3.30
5	*5775.00	99.6 PK			1.10 V	60	59.30	40.30
6	*5775.00	89.5 AV			1.10 V	60	49.20	40.30
7	#5850.00	53.0 PK	78.2	-25.2	1.00 V	58	49.60	3.40
8	#5852.10	68.8 PK	78.2	-9.4	1.00 V	57	65.40	3.40
9	#5860.10	66.8 PK	74.0	-7.2	1.00 V	71	63.30	3.50
10	#5860.10	49.5 AV	54.0	-4.5	1.00 V	71	46.00	3.50
11	11550.00	61.4 PK	74.0	-12.6	1.00 V	14	45.50	15.90
12	11550.00	47.6 AV	54.0	-6.4	1.00 V	14	31.70	15.90

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.

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	76.60	26.7 QP	40.0	-13.3	1.24 H	268	44.20	-17.50
2	121.70	27.5 QP	43.5	-16.0	1.00 H	282	43.50	-16.00
3	236.70	27.1 QP	46.0	-18.9	1.24 H	261	42.10	-15.00
4	308.30	22.2 QP	46.0	-23.8	1.00 H	151	34.50	-12.30
5	499.50	24.2 QP	46.0	-21.8	1.49 H	36	33.20	-9.00
6	678.20	26.2 QP	46.0	-19.8	1.00 H	41	31.90	-5.70
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	42.40	31.1 QP	40.0	-8.9	1.49 V	349	45.50	-14.40
2	76.60	34.8 QP	40.0	-5.2	1.00 V	243	52.40	-17.60
3	120.20	32.5 QP	43.5	-11.0	1.99 V	62	48.50	-16.00
4	400.00	27.4 QP	46.0	-18.6	1.49 V	46	38.10	-10.70
5	499.50	30.6 QP	46.0	-15.4	1.00 V	15	39.60	-9.00
6	801.00	35.5 QP	46.0	-10.5	1.00 V	2	38.70	-3.20

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

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	97.90	28.7 QP	43.5	-14.8	1.99 H	265	48.00	-19.30
2	159.98	28.3 QP	43.5	-15.2	1.99 H	269	42.30	-14.00
3	165.80	30.4 QP	43.5	-13.1	1.99 H	105	44.70	-14.30
4	499.48	33.2 QP	46.0	-12.8	1.99 H	245	41.90	-8.70
5	802.12	35.2 QP	46.0	-10.8	1.00 H	323	38.00	-2.80
6	934.04	31.1 QP	46.0	-14.9	1.99 H	47	31.60	-0.50
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	49.40	34.2 QP	40.0	-5.8	1.00 V	356	48.70	-14.50
2	68.80	32.5 QP	40.0	-7.5	1.00 V	16	48.40	-15.90
3	97.90	30.5 QP	43.5	-13.0	1.00 V	317	49.80	-19.30
4	499.48	35.4 QP	46.0	-10.6	1.00 V	107	44.10	-8.70
5	802.12	36.0 QP	46.0	-10.0	1.00 V	16	38.80	-2.80
6	901.06	33.1 QP	46.0	-12.9	1.00 V	12	34.40	-1.30

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

802.11a

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

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	31.84	28.4 QP	40.0	-11.6	1.49 H	290	44.40	-16.00
2	210.72	33.9 QP	43.5	-9.6	1.00 H	248	50.40	-16.50
3	278.77	31.5 QP	46.0	-14.5	1.00 H	203	44.40	-12.90
4	325.43	29.4 QP	46.0	-16.6	1.00 H	223	41.10	-11.70
5	500.42	36.5 QP	46.0	-9.5	1.00 H	147	44.90	-8.40
6	1000.00	33.4 QP	54.0	-20.6	1.49 H	8	32.60	0.80
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	43.51	28.7 QP	40.0	-11.3	1.01 V	3	43.50	-14.80
2	212.66	28.4 QP	43.5	-15.1	2.00 V	156	44.90	-16.50
3	325.43	30.5 QP	46.0	-15.5	1.51 V	138	42.20	-11.70
4	500.42	31.7 QP	46.0	-14.3	1.01 V	138	40.10	-8.40
5	799.84	33.4 QP	46.0	-12.6	1.01 V	13	35.60	-2.20
6	900.94	31.7 QP	46.0	-14.3	1.01 V	329	32.20	-0.50

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 (dBμV)	
	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

Tested Date: Oct. 09, 2014

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100612	Sep. 30, 2014	Sep. 29, 2015
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.

Tested Date: Apr. 17, 2015

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 11, 2014	Nov. 10, 2015
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 02, 2015	Mar. 01, 2016
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.

Tested Date: Jan. 29, 2015

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100612	Sep. 30, 2014	Sep. 29, 2015
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 26, 2014	Dec. 25, 2015
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

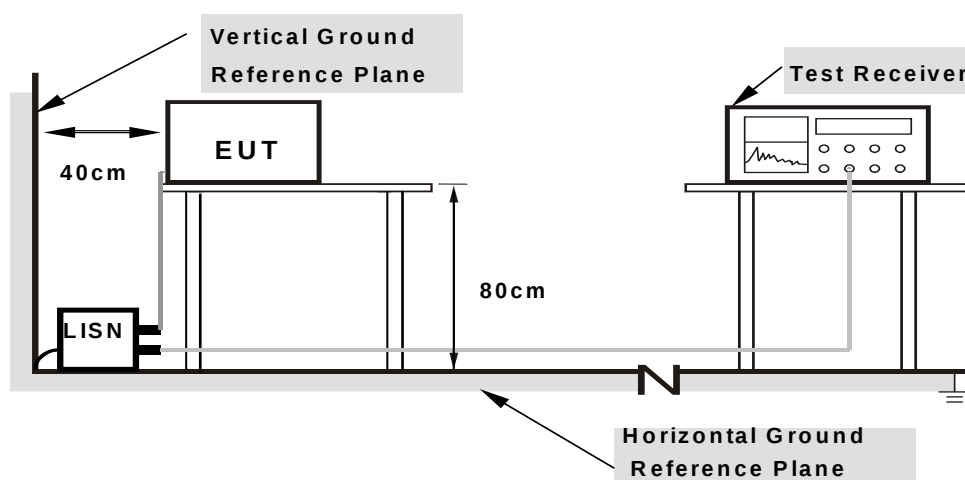
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

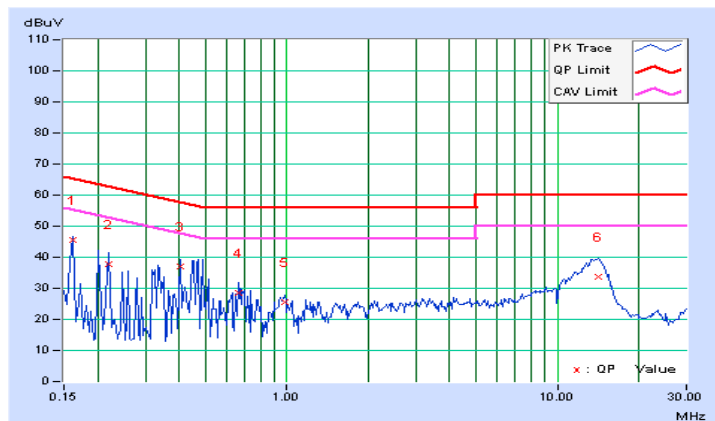
CONDUCTED WORST-CASE DATA: 802.11a

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	0.16172	0.11	45.34	28.24	45.45	28.35	65.38	55.38	-19.93	-27.03
2	0.22031	0.09	37.74	16.46	37.83	16.55	62.81	52.81	-24.98	-36.26
3	0.40391	0.11	36.97	21.81	37.08	21.92	57.77	47.77	-20.69	-25.85
4	0.66172	0.15	28.53	13.09	28.68	13.24	56.00	46.00	-27.32	-32.76
5	0.97813	0.21	25.17	12.63	25.38	12.84	56.00	46.00	-30.62	-33.16
6	14.26172	0.79	32.85	24.49	33.64	25.28	60.00	50.00	-26.36	-24.72

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

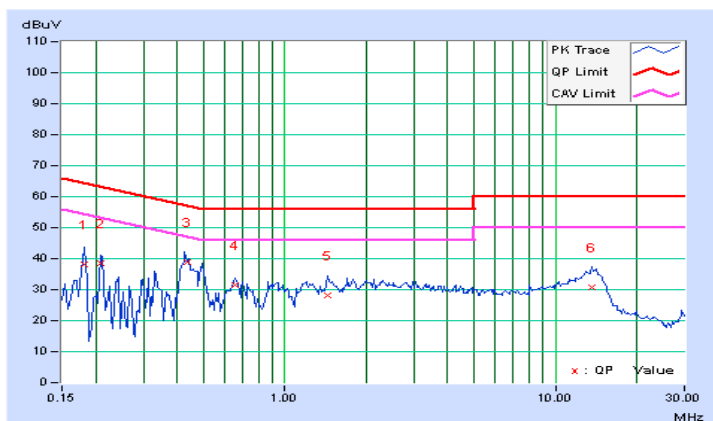


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

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	0.18125	0.07	38.01	15.75	38.08	15.82	64.43	54.43	-26.34	-38.60
2	0.20859	0.09	38.53	23.03	38.62	23.12	63.26	53.26	-24.64	-30.14
3	0.43516	0.17	38.85	26.37	39.02	26.54	57.15	47.15	-18.13	-20.61
4	0.65781	0.19	31.41	22.57	31.60	22.76	56.00	46.00	-24.40	-23.24
5	1.43750	0.22	28.09	18.15	28.31	18.37	56.00	46.00	-27.69	-27.63
6	13.58984	0.71	30.15	22.53	30.86	23.24	60.00	50.00	-29.14	-26.76

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

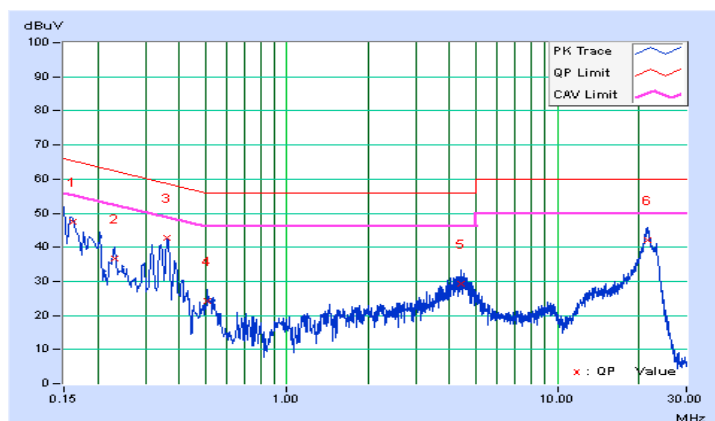


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

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	0.16173	0.05	47.39	37.41	47.44	37.46	65.37	55.37	-17.93	-17.91
2	0.23155	0.06	36.69	29.48	36.75	29.54	62.39	52.39	-25.64	-22.85
3	0.36143	0.06	42.67	40.86	42.73	40.92	58.70	48.70	-15.97	-7.78
4	0.50972	0.06	24.28	17.02	24.34	17.08	56.00	46.00	-31.66	-28.92
5	4.42363	0.21	29.01	19.07	29.22	19.28	56.00	46.00	-26.78	-26.72
6	21.50642	0.94	41.17	32.55	42.11	33.49	60.00	50.00	-17.89	-16.51

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

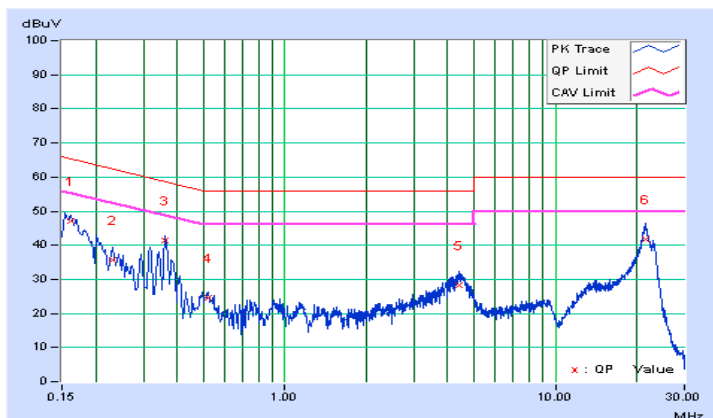


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

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	0.16139	0.05	46.97	37.35	47.02	37.40	65.39	55.39	-18.37	-17.99
2	0.23216	0.05	35.77	27.48	35.82	27.53	62.37	52.37	-26.55	-24.84
3	0.36114	0.06	41.24	39.27	41.30	39.33	58.70	48.70	-17.40	-9.37
4	0.52130	0.06	24.59	18.18	24.65	18.24	56.00	46.00	-31.35	-27.76
5	4.42363	0.21	28.01	18.45	28.22	18.66	56.00	46.00	-27.78	-27.34
6	21.62763	0.75	41.14	33.05	41.89	33.80	60.00	50.00	-18.11	-16.20

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

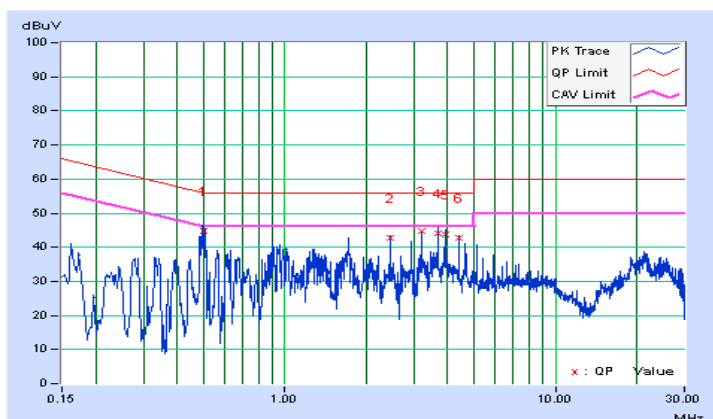


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	C		

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	0.49846	0.13	44.63	32.16	44.76	32.29	56.03	46.03	-11.27	-13.74
2	2.45299	0.25	42.40	42.02	42.65	42.27	56.00	46.00	-13.35	-3.73
3	3.18807	0.26	44.56	44.13	44.82	44.39	56.00	46.00	-11.18	-1.61
4	3.68073	0.26	43.98	43.41	44.24	43.67	56.00	46.00	-11.76	-2.33
5	3.92315	0.26	43.67	42.87	43.93	43.13	56.00	46.00	-12.07	-2.87
6	4.41581	0.28	42.38	42.08	42.66	42.36	56.00	46.00	-13.34	-3.64

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

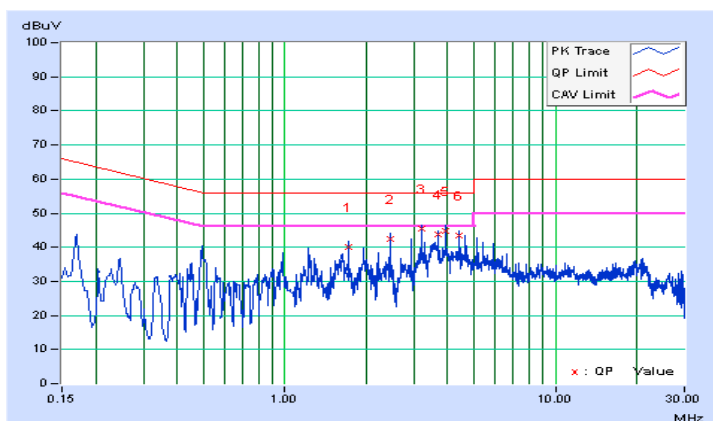


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	C		

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	1.71791	0.22	39.96	39.31	40.18	39.53	56.00	46.00	-15.82	-6.47
2	2.45299	0.23	42.33	42.00	42.56	42.23	56.00	46.00	-13.44	-3.77
3	3.18807	0.24	45.17	44.25	45.41	44.49	56.00	46.00	-10.59	-1.51
4	3.67682	0.25	43.52	42.28	43.77	42.53	56.00	46.00	-12.23	-3.47
5	3.92315	0.26	44.64	43.39	44.90	43.65	56.00	46.00	-11.10	-2.35
6	4.41581	0.28	43.00	42.16	43.28	42.44	56.00	46.00	-12.72	-3.56

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,

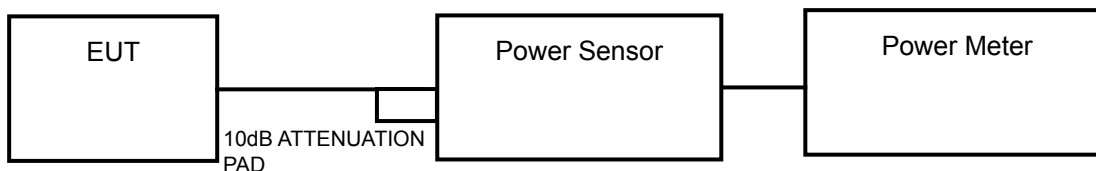
Array Gain = 0 dB (i.e., no array gain) for NANT $\leq$ 4;

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

For 802.11a, 802.11n (HT20), 802.11n (HT40)

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 802.11ac (VHT80)

- 1) Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- 2) Set sweep trigger to "free run".
- 3) Set RBW = 1 MHz.
- 4) Set VBW $\geq$ 3 MHz
- 5) Number of points in sweep $\geq$ 2 Span / RBW.
- 6) Sweep time $\leq$ (number of points in sweep) * T
- 7) Detector = RMS.
- 8) Trace mode = max hold.
- 9) Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

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.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	15.53	15.19	68.764	18.37	30	PASS
40	5200	15.93	15.43	74.088	18.70	30	PASS
48	5240	12.04	11.55	30.285	14.81	30	PASS
149	5745	17.67	17.44	113.942	20.57	30	PASS
157	5785	22.03	21.23	292.327	24.66	30	PASS
165	5825	19.64	19.24	175.991	22.45	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	14.35	13.58	50.030	16.99	30	PASS
40	5200	15.94	15.25	72.761	18.62	30	PASS
48	5240	12.32	11.79	32.162	15.07	30	PASS
149	5745	15.94	15.25	72.761	18.62	30	PASS
157	5785	12.32	11.79	32.162	15.07	30	PASS
165	5825	15.52	15.51	71.208	18.53	30	PASS

**802.11n (40MHz)**

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	14.73	14.22	56.141	17.49	30	PASS
46	5230	21.57	21.42	282.225	24.51	30	PASS
151	5755	15.40	14.80	64.874	18.12	30	PASS
159	5795	19.45	19.36	174.403	22.42	30	PASS

802.11ac (80MHz)

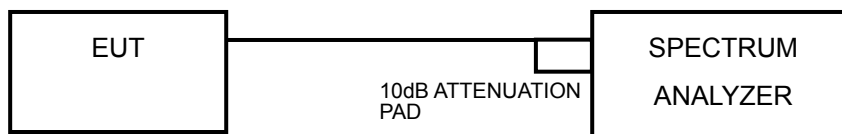
CHAN.	CHAN. FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
42	5210	14.46	14.19	54.167	17.34	30	PASS
155	5775	14.10	13.88	50.138	17.00	30	PASS

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	11dBm/ MHz
U-NII-2A		---	11dBm/ MHz
U-NII-2C		---	11dBm/ MHz
U-NII-3	√	---	30dBm/ 500kHz

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 = 500 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 500 kHz by adjusting (reducing) 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 POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	3.57	3.12	6.36	14.74	PASS
40	5200	4.02	3.60	6.83	14.74	PASS
48	5240	0.41	-0.30	3.08	14.74	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ = 8.26dBi > 6dBi , so the power density limit shall be reduced to 17-(8.26-6) = 14.74dBm.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	1.94	1.69	4.83	14.74	PASS
40	5200	3.32	3.33	6.34	14.74	PASS
48	5240	0.17	-0.21	2.99	14.74	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ = 8.26dBi > 6dBi , so the power density limit shall be reduced to 17-(8.26-6) = 14.74dBm.

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
38	5190	-0.25	-0.94	2.43	14.74	PASS
46	5230	5.85	5.79	8.83	14.74	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ = 8.26dBi > 6dBi , so the power density limit shall be reduced to 17-(8.26-6) = 14.74dBm.

802.11ac (80MHz)

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					
42	5210	-3.99	-4.33	-1.15	0.18	-0.97	14.74	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.

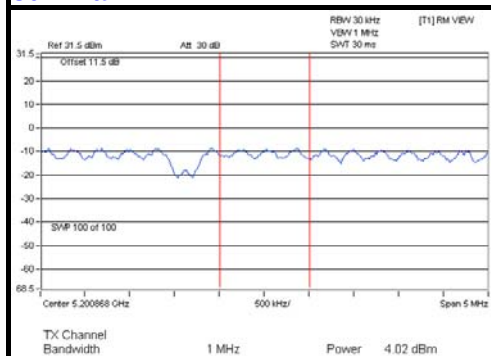
2. For U-NII-1 Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ = 8.26dBi > 6dBi , so the power density limit shall be reduced to 17-(8.26-6) = 14.74dBm.

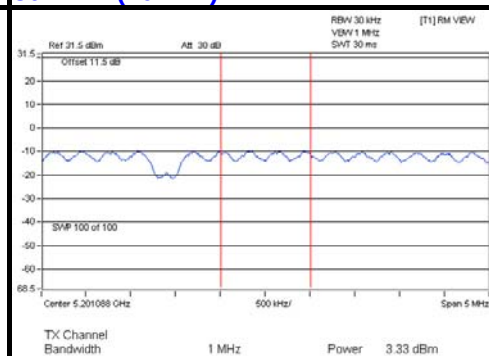
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

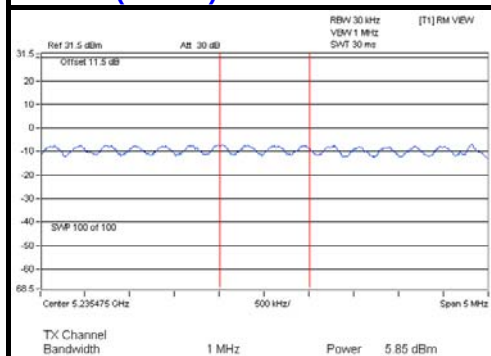
802.11a



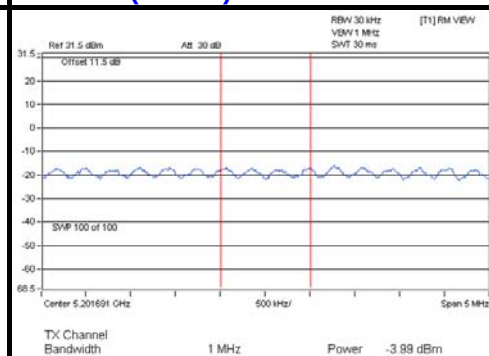
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)



For U-NII-3 Band

802.11a

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	1.59	3.81	3.01	6.82	27.74	PASS
	157	5785	5.60	7.82	3.01	10.83	27.74	PASS
	165	5825	3.65	5.87	3.01	8.88	27.74	PASS
1	149	5745	1.56	3.78	3.01	6.79	27.74	PASS
	157	5785	4.98	7.20	3.01	10.21	27.74	PASS
	165	5825	3.33	5.55	3.01	8.56	27.74	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ = 8.26dBi > 6dBi , so the power density limit shall be reduced to $30-(8.26-6) = 27.74$ dBm.

802.11n (20MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	-0.58	1.64	3.01	4.65	27.74	PASS
	157	5785	5.55	7.77	3.01	10.78	27.74	PASS
	165	5825	2.37	4.59	3.01	7.60	27.74	PASS
1	149	5745	-0.87	1.35	3.01	4.36	27.74	PASS
	157	5785	4.79	7.01	3.01	10.02	27.74	PASS
	165	5825	2.22	4.44	3.01	7.45	27.74	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ = 8.26dBi > 6dBi , so the power density limit shall be reduced to $30-(8.26-6) = 27.74$ dBm.

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Duty Factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	PASS /FAIL
0	151	5755	-3.98	-1.76	3.01	0.13	1.38	27.74	PASS
	159	5795	0.29	2.51	3.01	0.13	5.65	27.74	PASS
1	151	5755	-4.36	-2.14	3.01	0.13	1.00	27.74	PASS
	159	5795	-0.11	2.11	3.01	0.13	5.25	27.74	PASS

NOTE:

- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$ = 8.26dBi > 6dBi , so the power density limit shall be reduced to $30-(8.26-6) = 27.74$ dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

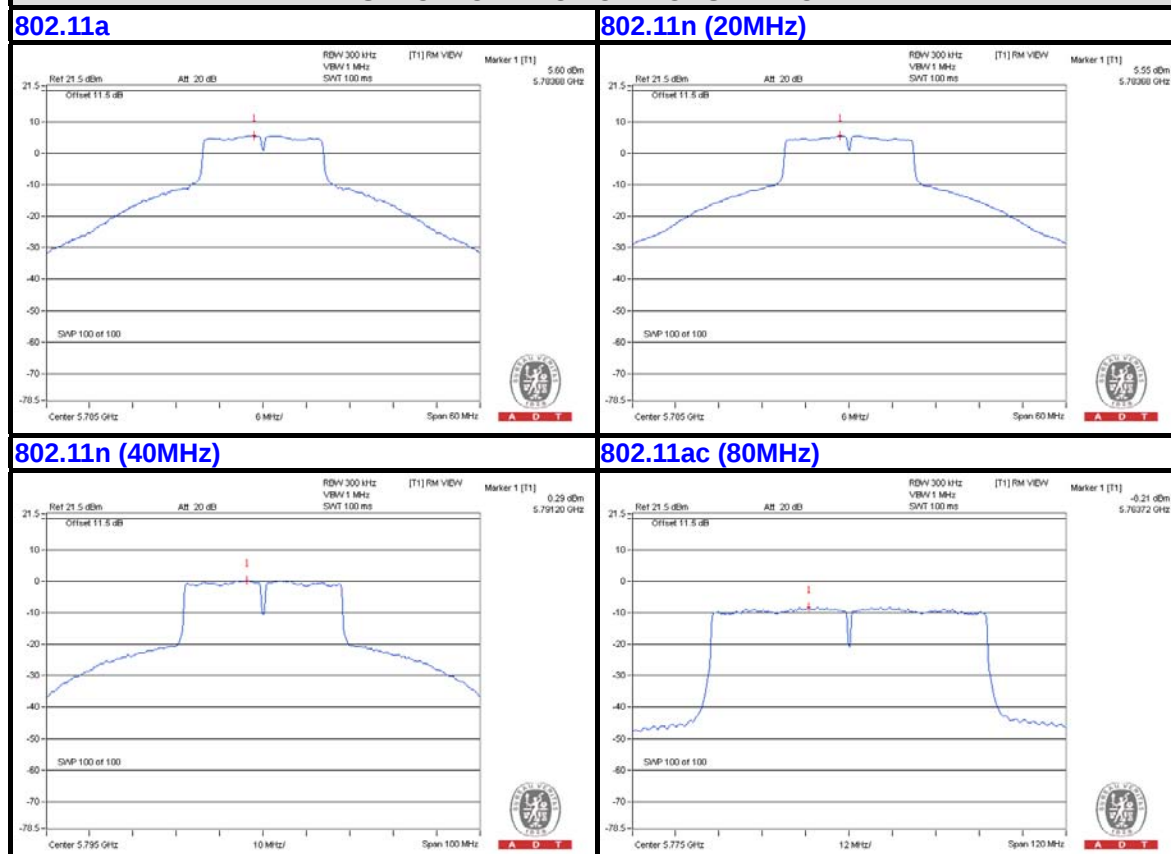
802.11ac (VHT80)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=2) dB	Duty Factor	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	PASS /FAIL
0	155	5775	-8.21	-5.99	3.01	0.20	-2.78	27.74	PASS
1	155	5775	-8.31	-6.09	3.01	0.20	-2.88	27.74	PASS

NOTE:

- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.26\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30-(8.26-6) = 27.74\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

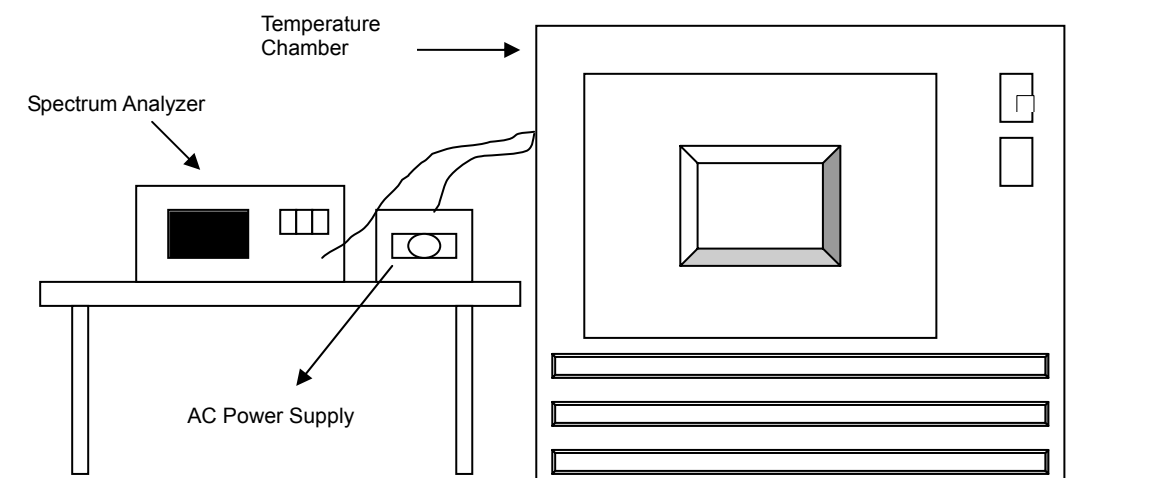


4.5 FREQUENCY STABILITY

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	5199.9751	-0.00048	5199.9740	-0.00050	5199.9756	-0.00047	5199.9751	-0.00048
40	120	5199.9871	-0.00025	5199.9875	-0.00024	5199.9894	-0.00020	5199.9857	-0.00027
30	120	5200.0129	0.00025	5200.0086	0.00017	5200.0098	0.00019	5200.0121	0.00023
20	120	5200.0084	0.00016	5200.0114	0.00022	5200.0104	0.00020	5200.0089	0.00017
10	120	5199.9986	-0.00003	5199.9988	-0.00002	5199.9993	-0.00001	5200.0001	0.00000
0	120	5200.0199	0.00038	5200.0186	0.00036	5200.0217	0.00042	5200.0211	0.00041
-10	120	5200.0071	0.00014	5200.0041	0.00008	5200.0026	0.00005	5200.0042	0.00008
-20	120	5200.0150	0.00029	5200.0142	0.00027	5200.0155	0.00030	5200.0133	0.00026
-30	120	5199.9907	-0.00018	5199.9925	-0.00014	5199.9878	-0.00023	5199.9894	-0.00020

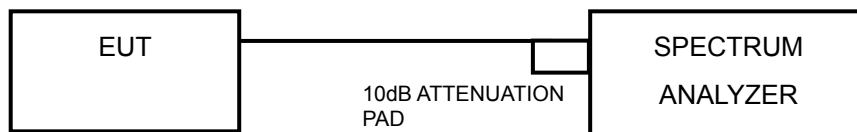
FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5200MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5200.0089	0.00017	5200.0124	0.00024	5200.0107	0.00021	5200.0090	0.00017
	120	5200.0084	0.00016	5200.0114	0.00022	5200.0104	0.00020	5200.0089	0.00017
	102	5200.0093	0.00018	5200.0107	0.00021	5200.0101	0.00019	5200.0098	0.00019

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

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- 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		
149	5745	16.37	16.40	0.5	PASS
157	5785	16.42	16.40	0.5	PASS
165	5825	16.40	16.41	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.65	17.67	0.5	PASS
157	5785	17.64	17.67	0.5	PASS
165	5825	17.63	17.67	0.5	PASS

802.11n (40MHz)

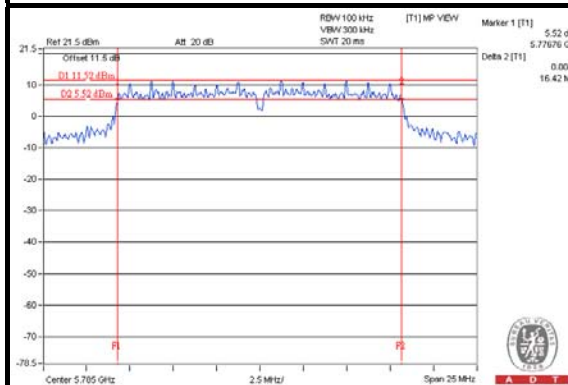
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.42	36.46	0.5	PASS
159	5795	36.43	36.46	0.5	PASS

802.11ac (80MHz)

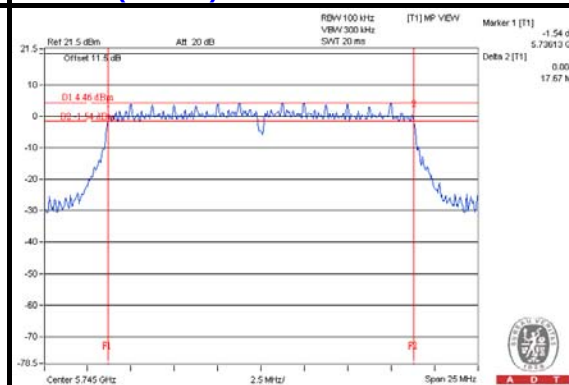
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
155	5775	75.89	76.43	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

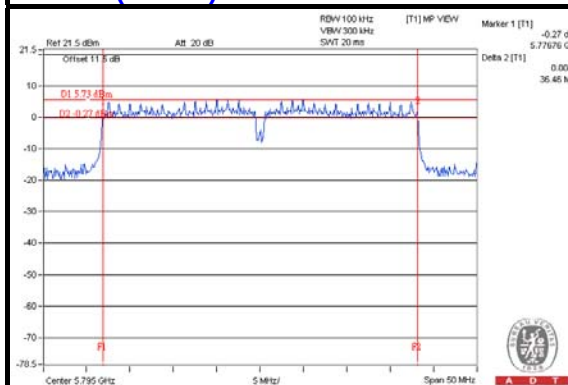
802.11a



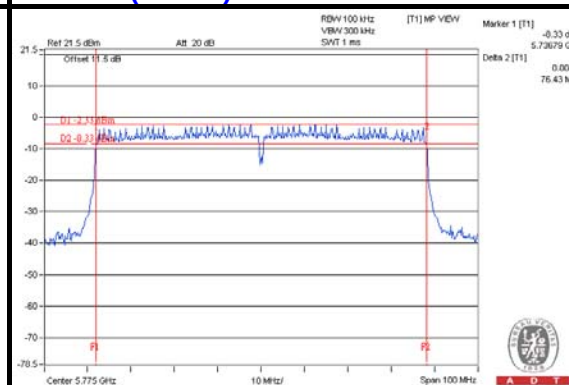
802.11n (20MHz)



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

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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---