



FCC TEST REPORT (15.247)

REPORT NO.: RF130502C16-5
MODEL NO.: PN07310
FCC ID: NM8PN07310
RECEIVED: Mar. 02, 2013
TESTED: May 23, 2013 ~ May 30, 2013
ISSUED: Jun. 06, 2013

APPLICANT: HTC Corporation

ADDRESS: No. 23, Xinghua Rd., Taoyuan City, Taiwan

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

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist.,
New Taipei City, Taiwan (R.O.C)

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	5
1. CERTIFICATION.....	6
2. SUMMARY OF TEST RESULTS.....	7
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT.....	8
3.2 DESCRIPTION OF TEST MODES.....	9
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	10
3.3 DESCRIPTION OF SUPPORT UNITS.....	14
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST	14
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	14
4. TEST TYPES AND RESULTS (FOR 2.4GHZ BAND).....	15
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	15
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	15
4.1.2 TEST INSTRUMENTS	16
4.1.3 TEST PROCEDURES.....	17
4.1.4 DEVIATION FROM TEST STANDARD	17
4.1.5 TEST SETUP.....	18
4.1.6 EUT OPERATING CONDITIONS.....	18
4.1.7 TEST RESULTS	19
4.2 CONDUCTED EMISSION MEASUREMENT	29
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	29
4.2.2 TEST INSTRUMENTS	29
4.2.3 TEST PROCEDURES.....	30
4.2.4 DEVIATION FROM TEST STANDARD	30
4.2.5 TEST SETUP.....	31
4.2.6 EUT OPERATING CONDITIONS.....	31
4.2.7 TEST RESULTS	32
4.3 6DB BANDWIDTH MEASUREMENT.....	34
4.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT.....	34
4.3.2 TEST SETUP.....	34
4.3.3 TEST INSTRUMENTS	34
4.3.4 TEST PROCEDURE	34
4.3.5 DEVIATION FROM TEST STANDARD	34
4.3.6 EUT OPERATING CONDITIONS.....	34
4.3.7 TEST RESULTS	35
4.4 CONDUCTED OUTPUT POWER.....	36
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	36
4.4.2 TEST SETUP.....	36
4.4.3 TEST INSTRUMENTS	36
4.4.4 TEST PROCEDURES.....	36
4.4.5 DEVIATION FROM TEST STANDARD	36
4.4.6 EUT OPERATING CONDITIONS.....	36
4.4.7 TEST RESULTS	37
4.5 POWER SPECTRAL DENSITY MEASUREMENT	38
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	38
4.5.2 TEST SETUP.....	38
4.5.3 TEST INSTRUMENTS	38
4.5.4 TEST PROCEDURE	38



4.5.5	DEVIATION FROM TEST STANDARD	38
4.5.6	EUT OPERATING CONDITION	38
4.5.7	TEST RESULTS	39
4.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	40
4.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT	40
4.6.2	TEST SETUP.....	40
4.6.3	TEST INSTRUMENTS.....	40
4.6.4	TEST PROCEDURE.....	40
4.6.5	DEVIATION FROM TEST STANDARD	41
4.6.6	EUT OPERATING CONDITION	41
4.6.7	TEST RESULTS	41
5.	TEST TYPES AND RESULTS (FOR 5.0GHZ BAND).....	45
5.1	RADIATED EMISSION AND BANDEDGE MEASUREMENT	45
5.1.1	LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	45
5.1.2	TEST INSTRUMENTS.....	46
5.1.3	TEST PROCEDURES.....	46
5.1.4	DEVIATION FROM TEST STANDARD	46
5.1.5	TEST SETUP.....	46
5.1.6	EUT OPERATING CONDITIONS.....	46
5.1.7	TEST RESULTS	47
5.2	CONDUCTED EMISSION MEASUREMENT	57
5.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	57
5.2.2	TEST INSTRUMENTS.....	57
5.2.3	TEST PROCEDURES.....	57
5.2.4	DEVIATION FROM TEST STANDARD	57
5.2.5	TEST SETUP.....	57
5.2.6	EUT OPERATING CONDITIONS.....	57
5.2.7	TEST RESULTS	58
5.3	6DB BANDWIDTH MEASUREMENT.....	60
5.3.1	LIMITS OF 6DB BANDWIDTH MEASUREMENT.....	60
5.3.2	TEST SETUP.....	60
5.3.3	TEST INSTRUMENTS.....	60
5.3.4	TEST PROCEDURE.....	60
5.3.5	DEVIATION FROM TEST STANDARD	60
5.3.6	EUT OPERATING CONDITIONS.....	60
5.3.7	TEST RESULTS	61
5.4	MAXIMUM OUTPUT POWER.....	62
5.4.1	LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT	62
5.4.2	TEST SETUP.....	62
5.4.3	INSTRUMENTS.....	62
5.4.4	TEST PROCEDURES.....	62
5.4.5	DEVIATION FROM TEST STANDARD	62
5.4.6	EUT OPERATING CONDITIONS.....	62
5.4.7	TEST RESULTS	63
5.5	POWER SPECTRAL DENSITY MEASUREMENT	64
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	64
5.5.2	TEST SETUP.....	64
5.5.3	TEST INSTRUMENTS.....	64
5.5.4	TEST PROCEDURE.....	64
5.5.5	DEVIATION FROM TEST STANDARD	64
5.5.6	EUT OPERATING CONDITION	64
5.5.7	TEST RESULTS	65



A D T

5.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	66
5.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	66
5.6.2	TEST SETUP	66
5.6.3	TEST INSTRUMENTS	66
5.6.4	TEST PROCEDURE	66
5.6.5	DEVIATION FROM TEST STANDARD	66
5.6.6	EUT OPERATING CONDITION	66
5.6.7	TEST RESULTS	66
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION	70
7.	INFORMATION ON THE TESTING LABORATORIES	71
8.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	72



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130502C16-5	Original release	Jun. 06, 2013

1. CERTIFICATION

PRODUCT: Smartphone
MODEL NO.: PN07310
BRAND: HTC
APPLICANT: HTC Corporation
TESTED: May 23, 2013 ~ May 30, 2013
TEST SAMPLE: Production Unit
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (model: PN07310) 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 : Ivonne Wu , **DATE** : Jun. 06, 2013
Ivonne Wu / Senior Specialist

APPROVED BY : Sam Chen , **DATE** : Jun. 06, 2013
Sam Chen / Assistant Manager



2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -1.33dB at 13.55859MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.79dB at 3836MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

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	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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



A D T

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Smartphone
MODEL NO.	PN07310
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (Li-ion battery)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to MCS7 802.11ac: up to V9
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5805MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 5.0GHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
OUTPUT POWER	277.971mW for 2412 ~ 2462MHz 269.153mW for 5745 ~ 5805MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with -2.94dBi gain 5.0GHz: PIFA antenna with -2.35dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

NOTE:

1. The EUT's accessories list refers to Ext. Pho.
2. The above EUT information is declared by the 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 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

FOR 5.0GHz (5745 ~ 5805MHz):

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

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

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

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (20MHz)	1 to 11	11	OFDM	BPSK	MCS0

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (20MHz)	1 to 11	11	OFDM	BPSK	MCS0



BANDEDGE MEASUREMENT:

- 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	MCS0

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
PLC	25deg. C, 65%RH	120Vac, 60Hz	Anson Lin
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao



A D T

FOR 5.0GHz (5745 ~ 5805MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 161	149, 157, 161	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 161	149, 157, 161	OFDM	BPSK	MCS0
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (80MHz)	155	155	OFDM	BPSK	V0

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 161	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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 161	157	OFDM	BPSK	6.0



BANDEDGE MEASUREMENT:

- 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 161	149, 161	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 161	149, 161	OFDM	BPSK	MCS0
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (80MHz)	155	155	OFDM	BPSK	V0

ANTENNA PORT CONDUCTED MEASUREMENT:

- 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 161	149, 157, 161	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 161	149, 157, 161	OFDM	BPSK	MCS0
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (80MHz)	155	155	OFDM	BPSK	V0

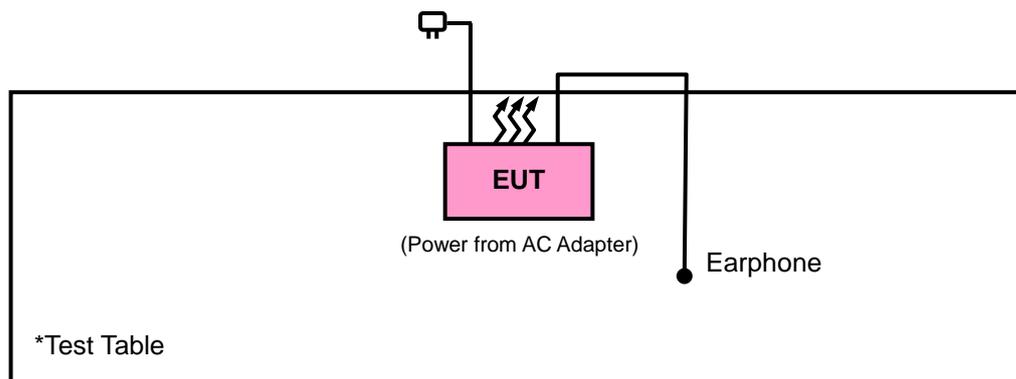
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
PLC	25deg. C, 65%RH	120Vac, 60Hz	Anson Lin
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2009

KDB 558074 D01 DTS Meas Guidance v02

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 (FOR 2.4GHz BAND)

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. Other emissions shall be at least 20dB below the highest level of the desired power:

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.



A D T

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 15, 2013	Apr. 14, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2012	Dec. 16, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 07, 2013	Jan. 06, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 25, 2012	Dec. 24, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 184045	980116	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2012	Dec. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable Worken	RG-213	NA	Dec. 29, 2012	Dec. 28, 2013
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Power Meter	ML2495A	1232002	Aug. 10, 2012	Aug. 09, 2013
Power Sensor	MA2411B	1207325	Aug. 15, 2012	Aug. 14, 2013

- 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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. The test was performed in HwaYa Chamber 10.
 4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 5. The FCC Site Registration No. is 690701.
 6. The IC Site Registration No. is IC 7450F-10.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters 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. Height of receiving 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

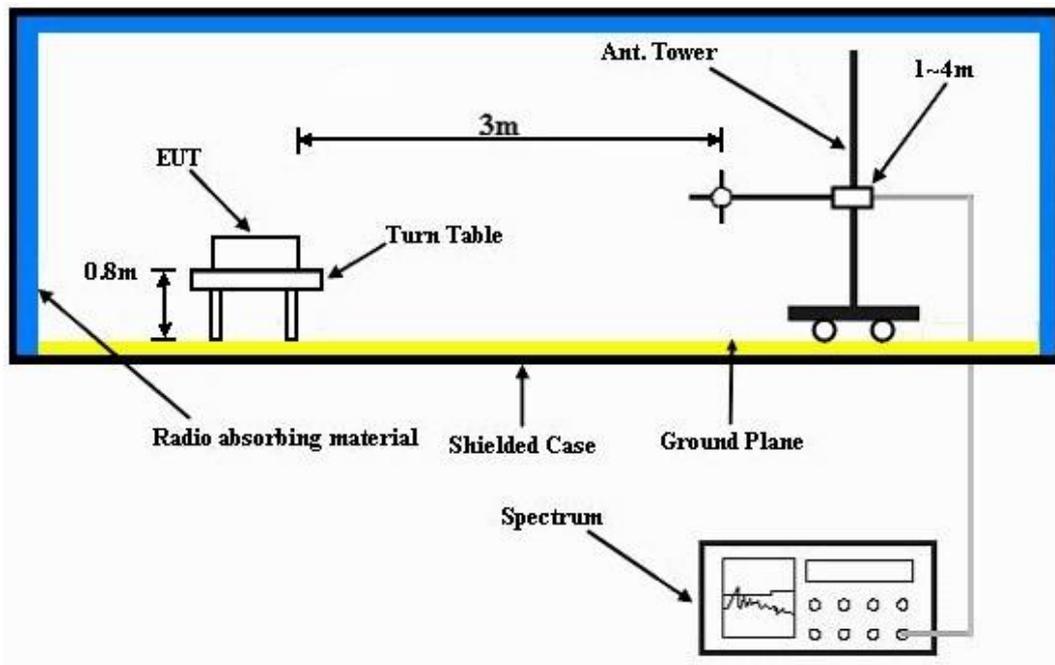
NOTE:

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 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on a testing table.
- b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.



A D T

4.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	37.85	43.59	54	-16.15	26.91	4.87	37.52	106	27	Average
2390	52.7	58.44	74	-21.3	26.91	4.87	37.52	106	27	Peak
2412	102.3	107.99			26.96	4.87	37.52	106	27	Average
2412	106.55	112.24			26.96	4.87	37.52	106	27	Peak
2488	42.25	47.45	54	-11.75	27.2	4.92	37.32	106	27	Average
2488	54.01	59.21	74	-19.99	27.2	4.92	37.32	106	27	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2320	35.16	41.12	54	-18.84	26.72	4.79	37.47	100	313	Average
2320	51.47	57.43	74	-22.53	26.72	4.79	37.47	100	313	Peak
2412	95.2	100.89			26.96	4.87	37.52	100	313	Average
2412	99.49	105.18			26.96	4.87	37.52	100	313	Peak
2498	37.08	42.19	54	-16.92	27.2	4.94	37.25	100	313	Average
2498	50.97	56.08	74	-23.03	27.2	4.94	37.25	100	313	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
- 2412MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	36.4	42.14	54	-17.6	26.91	4.85	37.5	103	24	Average
2388	52.06	57.8	74	-21.94	26.91	4.85	37.5	103	24	Peak
2437	105.06	110.57			27.06	4.89	37.46	103	24	Average
2437	109.36	114.87			27.06	4.89	37.46	103	24	Peak
2484	37.04	42.29	54	-16.96	27.15	4.92	37.32	103	24	Average
2484	52.2	57.45	74	-21.8	27.15	4.92	37.32	103	24	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2340	35.24	41.14	54	-18.76	26.77	4.82	37.49	100	315	Average
2340	51.47	57.37	74	-22.53	26.77	4.82	37.49	100	315	Peak
2437	96.31	101.82			27.06	4.89	37.46	100	315	Average
2437	100.12	105.63			27.06	4.89	37.46	100	315	Peak
2484	35.45	40.7	54	-18.55	27.15	4.92	37.32	100	315	Average
2484	50.87	56.12	74	-23.13	27.15	4.92	37.32	100	315	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 2437MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2382	39.45	45.24	54	-14.55	26.86	4.85	37.5	104	27	Average
2382	52.32	58.11	74	-21.68	26.86	4.85	37.5	104	27	Peak
2462	102.61	107.99			27.1	4.91	37.39	104	27	Average
2462	106.91	112.29			27.1	4.91	37.39	104	27	Peak
2486	38.88	44.13	54	-15.12	27.15	4.92	37.32	104	27	Average
2486	53.02	58.27	74	-20.98	27.15	4.92	37.32	104	27	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2318	36.42	42.38	54	-17.58	26.72	4.79	37.47	100	314	Average
2318	51.26	57.22	74	-22.74	26.72	4.79	37.47	100	314	Peak
2462	94.82	100.2			27.1	4.91	37.39	100	314	Average
2462	98.62	104			27.1	4.91	37.39	100	314	Peak
2498	35.59	40.7	54	-18.41	27.2	4.94	37.25	100	314	Average
2498	50.74	55.85	74	-23.26	27.2	4.94	37.25	100	314	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 2462MHz: Fundamental frequency.



802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	43.51	49.25	54	-10.49	26.91	4.87	37.52	105	26	Average
2390	61.86	67.6	74	-12.14	26.91	4.87	37.52	105	26	Peak
2412	92.64	98.33			26.96	4.87	37.52	105	26	Average
2412	102.53	108.22			26.96	4.87	37.52	105	26	Peak
2486	41.01	46.26	54	-12.99	27.15	4.92	37.32	105	26	Average
2486	54.13	59.38	74	-19.87	27.15	4.92	37.32	105	26	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	39.67	45.41	54	-14.33	26.91	4.87	37.52	100	315	Average
2390	56.73	62.47	74	-17.27	26.91	4.87	37.52	100	315	Peak
2412	88.75	94.44			26.96	4.87	37.52	100	315	Average
2412	98.16	103.85			26.96	4.87	37.52	100	315	Peak
2494	36.77	41.88	54	-17.23	27.2	4.94	37.25	100	315	Average
2494	51.85	56.96	74	-22.15	27.2	4.94	37.25	100	315	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 2412MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	36.06	41.8	54	-17.94	26.91	4.85	37.5	104	26	Average
2388	57.41	63.15	74	-16.59	26.91	4.85	37.5	104	26	Peak
2437	91.73	97.24			27.06	4.89	37.46	104	26	Average
2437	101.73	107.24			27.06	4.89	37.46	104	26	Peak
2494	36.27	41.38	54	-17.73	27.2	4.94	37.25	104	26	Average
2494	52.03	57.14	74	-21.97	27.2	4.94	37.25	104	26	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	35.09	40.83	54	-18.91	26.91	4.87	37.52	100	312	Average
2390	52.15	57.89	74	-21.85	26.91	4.87	37.52	100	312	Peak
2437	85.21	90.72			27.06	4.89	37.46	100	312	Average
2437	95.18	100.69			27.06	4.89	37.46	100	312	Peak
2484	35.46	40.71	54	-18.54	27.15	4.92	37.32	100	312	Average
2484	52.24	57.49	74	-21.76	27.15	4.92	37.32	100	312	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 2437MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2340	37.17	43.07	54	-16.83	26.77	4.82	37.49	101	29	Average
2340	52.18	58.08	74	-21.82	26.77	4.82	37.49	101	29	Peak
2462	91.14	96.52			27.1	4.91	37.39	101	29	Average
2462	101.16	106.54			27.1	4.91	37.39	101	29	Peak
2484	41.71	46.96	54	-12.29	27.15	4.92	37.32	101	29	Average
2484	62.24	67.49	74	-11.76	27.15	4.92	37.32	101	29	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2386	35.89	41.63	54	-18.11	26.91	4.85	37.5	100	315	Average
2386	52.04	57.78	74	-21.96	26.91	4.85	37.5	100	315	Peak
2462	84.22	89.6			27.1	4.91	37.39	100	315	Average
2462	94.72	100.1			27.1	4.91	37.39	100	315	Peak
2484	36.67	41.92	54	-17.33	27.15	4.92	37.32	100	315	Average
2484	55.36	60.61	74	-18.64	27.15	4.92	37.32	100	315	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 2462MHz: Fundamental frequency.



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	45.41	51.15	54	-8.59	26.91	4.87	37.52	105	27	Average
2390	66.16	71.9	74	-7.84	26.91	4.87	37.52	105	27	Peak
2412	92.08	97.77			26.96	4.87	37.52	105	27	Average
2412	102.05	107.74			26.96	4.87	37.52	105	27	Peak
2484	40.78	46.03	54	-13.22	27.15	4.92	37.32	105	27	Average
2484	53.56	58.81	74	-20.44	27.15	4.92	37.32	105	27	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	40.19	45.93	54	-13.81	26.91	4.87	37.52	100	315	Average
2390	57.5	63.24	74	-16.5	26.91	4.87	37.52	100	315	Peak
2412	86.48	92.17			26.96	4.87	37.52	100	315	Average
2412	96.17	101.86			26.96	4.87	37.52	100	315	Peak
2494	36.37	41.48	54	-17.63	27.2	4.94	37.25	100	315	Average
2494	52.82	57.93	74	-21.18	27.2	4.94	37.25	100	315	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 2412MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2386	36.94	42.68	54	-17.06	26.91	4.85	37.5	106	26	Average
2386	51.8	57.54	74	-22.2	26.91	4.85	37.5	106	26	Peak
2437	92.21	97.72			27.06	4.89	37.46	106	26	Average
2437	102.9	108.41			27.06	4.89	37.46	106	26	Peak
2486	36.5	41.75	54	-17.5	27.15	4.92	37.32	106	26	Average
2486	52.16	57.41	74	-21.84	27.15	4.92	37.32	106	26	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2352	34.98	40.84	54	-19.02	26.81	4.82	37.49	100	313	Average
2352	51.18	57.04	74	-22.82	26.81	4.82	37.49	100	313	Peak
2437	85.28	90.79			27.06	4.89	37.46	100	313	Average
2437	95.01	100.52			27.06	4.89	37.46	100	313	Peak
2492	35.4	40.51	54	-18.6	27.2	4.94	37.25	100	313	Average
2492	51.38	56.49	74	-22.62	27.2	4.94	37.25	100	313	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 2437MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	37.9	43.64	54	-16.1	26.91	4.85	37.5	101	26	Average
2388	52.05	57.79	74	-21.95	26.91	4.85	37.5	101	26	Peak
2462	91.27	96.65			27.1	4.91	37.39	101	26	Average
2462	101.91	107.29			27.1	4.91	37.39	101	26	Peak
2484	44.76	50.01	54	-9.24	27.15	4.92	37.32	101	26	Average
2484	62.75	68	74	-11.25	27.15	4.92	37.32	101	26	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2350	35.82	41.72	54	-18.18	26.77	4.82	37.49	100	315	Average
2350	51.99	57.89	74	-22.01	26.77	4.82	37.49	100	315	Peak
2462	85.79	91.17			27.1	4.91	37.39	100	315	Average
2462	95.7	101.08			27.1	4.91	37.39	100	315	Peak
2484	38.38	43.63	54	-15.62	27.15	4.92	37.32	100	315	Average
2484	56.35	61.6	74	-17.65	27.15	4.92	37.32	100	315	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 2462MHz: Fundamental frequency.



A D T

BELOW 1GHz WORST-CASE DATA: 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) QP
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
57.54	29.95	48.24	40	-10.05	12.25	0.81	31.35	100	269	Peak
139.08	27.96	46.06	43.5	-15.54	12.27	1.29	31.66	100	175	Peak
230.88	23.04	42.49	46	-22.96	10.66	1.74	31.85	100	32	Peak
490.4	21.25	33.12	46	-24.75	17.14	2.75	31.76	104	154	Peak
676.6	25.52	33.47	46	-20.48	20.54	3.34	31.83	100	277	Peak
900.6	28.46	32.98	46	-17.54	23.52	3.97	32.01	100	135	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
34.86	32.34	50.02	40	-7.66	12.79	0.59	31.06	106	48	QP
42.69	32.33	49.13	40	-7.67	13.58	0.7	31.08	100	172	QP
179.31	18.1	37.6	43.5	-25.4	10.83	1.5	31.83	103	224	Peak
453.3	21.05	34.01	46	-24.95	16.39	2.63	31.98	107	261	Peak
655.6	25.66	34.1	46	-20.34	20.28	3.26	31.98	100	154	Peak
909	27.9	32.4	46	-18.1	23.56	3.99	32.05	100	66	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

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	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 21, 2012	Dec. 20, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
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 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

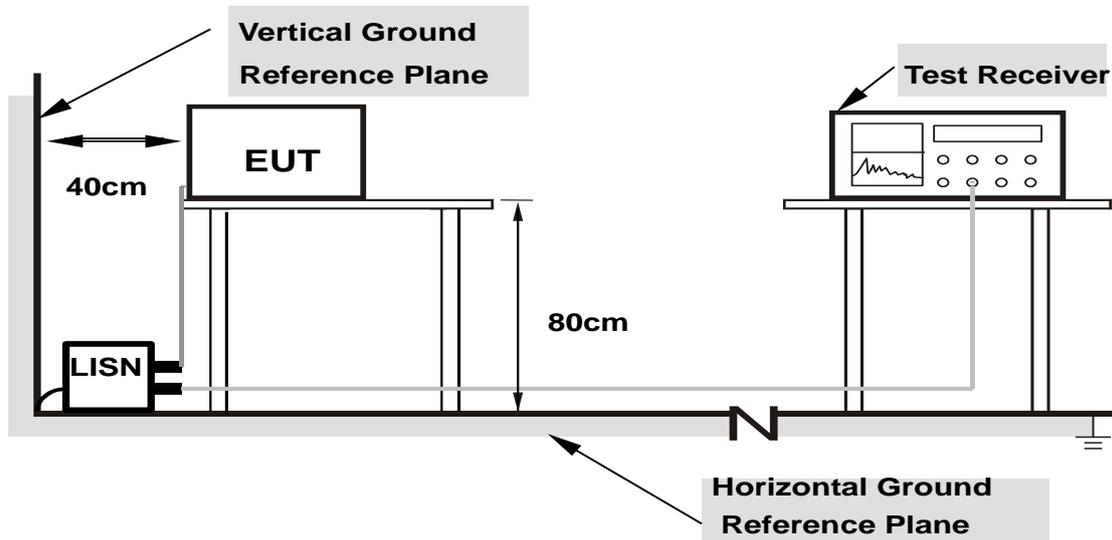
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: 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

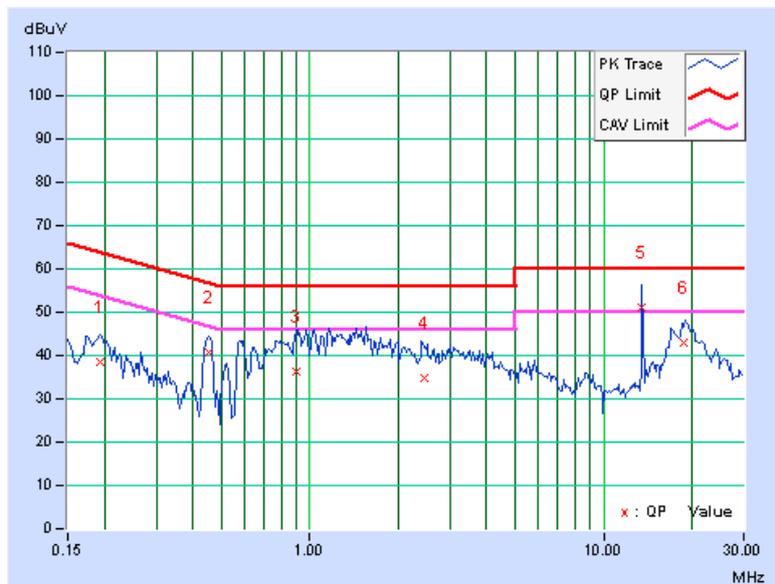
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
--------------	--------	----------------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.19297	0.12	38.58	26.58	38.70	26.70	63.91
2	0.45469	0.16	40.54	31.80	40.70	31.96	56.79	46.79	-16.09	-14.83
3	0.89609	0.20	36.22	26.08	36.42	26.28	56.00	46.00	-19.58	-19.72
4	2.44531	0.26	34.53	24.44	34.79	24.70	56.00	46.00	-21.21	-21.30
5	13.55859	0.86	50.42	47.73	51.28	48.59	60.00	50.00	-8.72	-1.41
6	18.82422	1.17	41.72	31.64	42.89	32.81	60.00	50.00	-17.11	-17.19

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

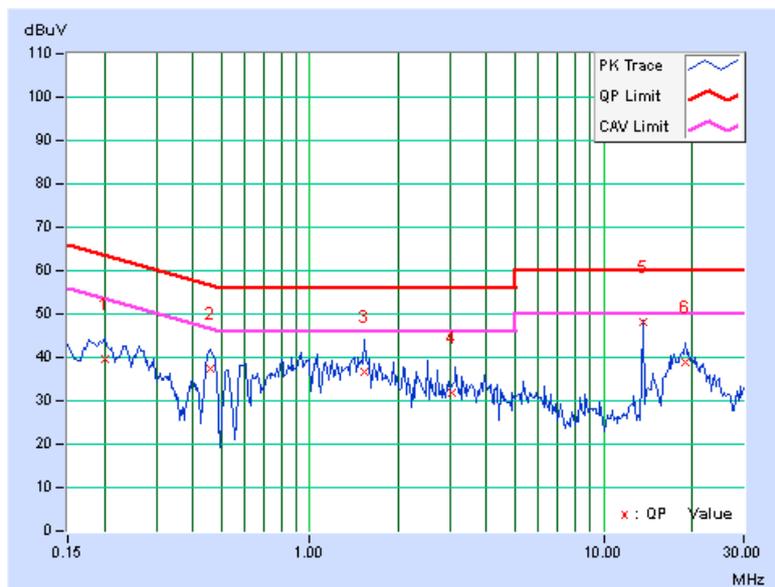


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.20078	0.17	39.55	25.92	39.72	26.09	63.58
2	0.45859	0.21	37.35	28.84	37.56	29.05	56.72	46.72	-19.15	-17.66
3	1.52734	0.27	36.50	27.37	36.77	27.64	56.00	46.00	-19.23	-18.36
4	3.05078	0.33	31.55	22.03	31.88	22.36	56.00	46.00	-24.12	-23.64
5	13.56250	0.71	47.27	45.42	47.98	46.13	60.00	50.00	-12.02	-3.87
6	18.88672	0.89	38.16	28.51	39.05	29.40	60.00	50.00	-20.95	-20.60

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

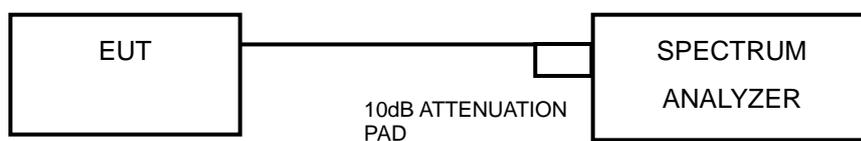


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

- a. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
- 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

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

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



A D T

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.52	0.5	PASS
6	2437	8.11	0.5	PASS
11	2462	9.04	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.38	0.5	PASS
6	2437	16.39	0.5	PASS
11	2462	16.43	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.63	0.5	PASS
6	2437	17.64	0.5	PASS
11	2462	17.64	0.5	PASS

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the peak power level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	128.233	21.08	30	PASS
6	2437	151.356	21.8	30	PASS
11	2462	149.624	21.75	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	230.675	23.63	30	PASS
6	2437	255.859	24.08	30	PASS
11	2462	262.422	24.19	30	PASS

802.11n (20MHz)

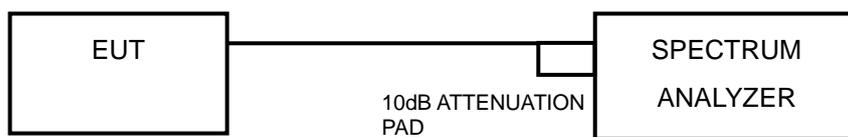
CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	231.206	23.64	30	PASS
6	2437	272.898	24.36	30	PASS
11	2462	277.971	24.44	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-5.75	8	PASS
6	2437	-4.60	8	PASS
11	2462	-4.49	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.02	8	PASS
6	2437	-9.92	8	PASS
11	2462	-10.15	8	PASS

802.11n (20MHz)

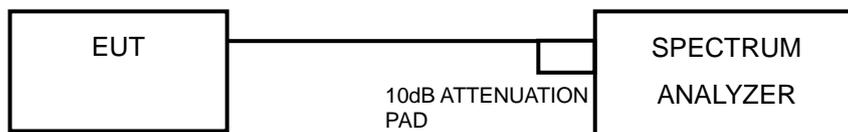
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.45	8	PASS
6	2437	-10.25	8	PASS
11	2462	-19.85	8	PASS

4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

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

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

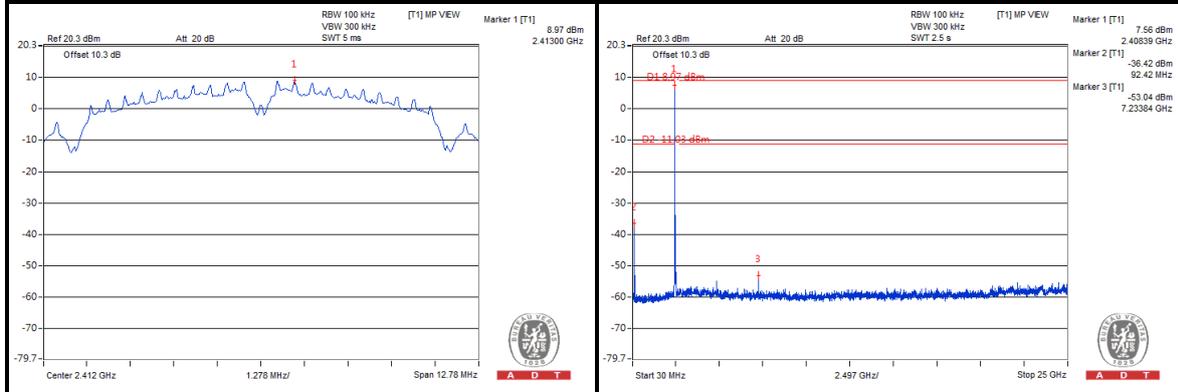
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



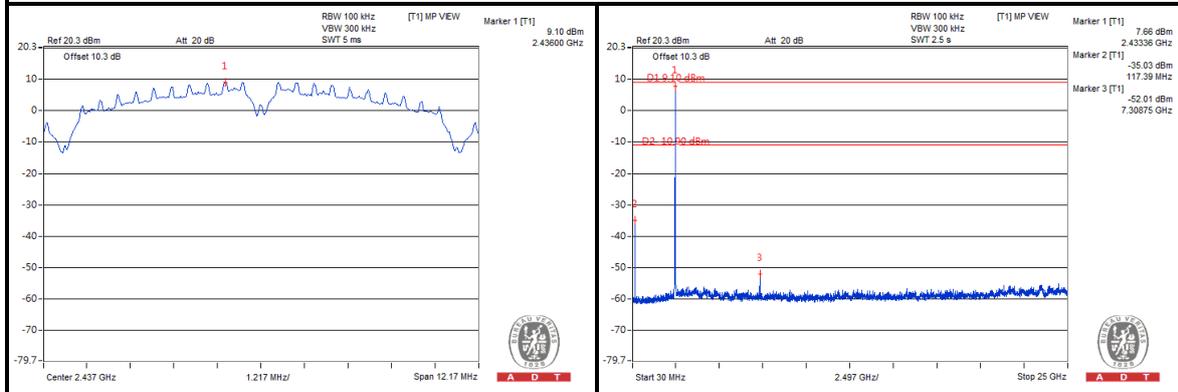
A D T

802.11b

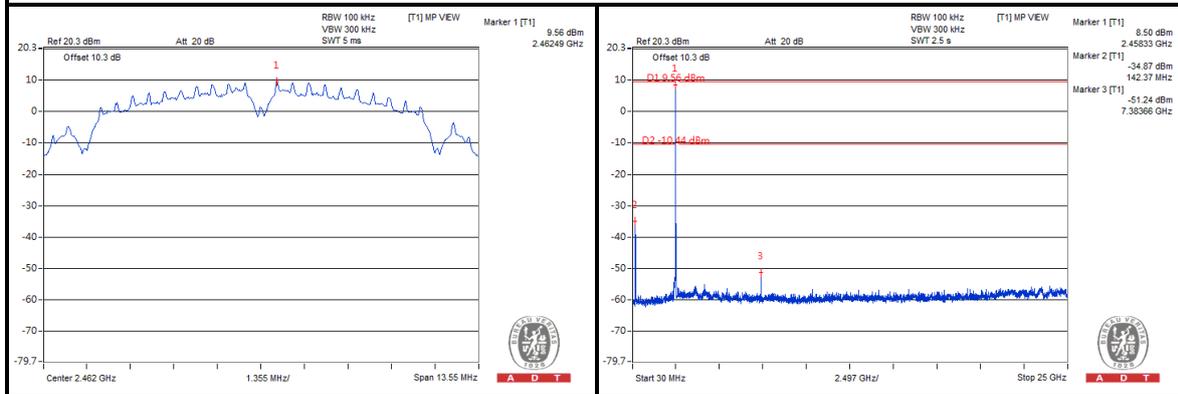
CH 1



CH 6



CH 11

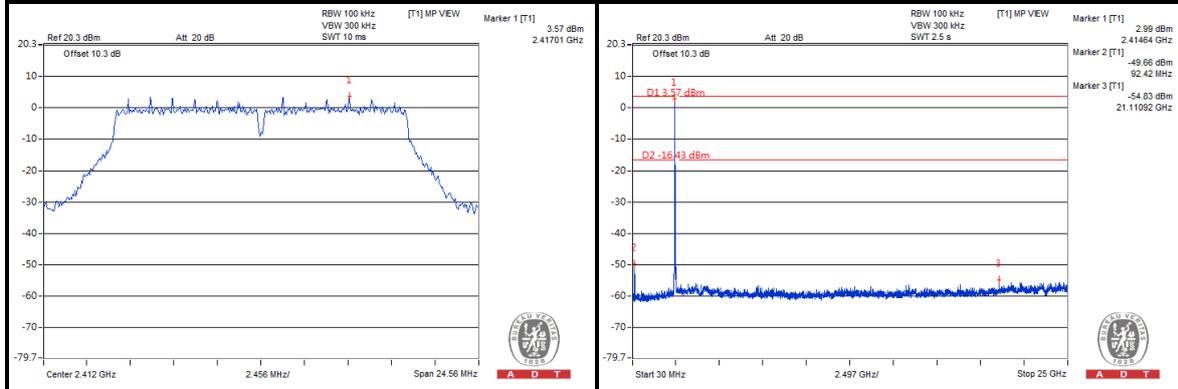




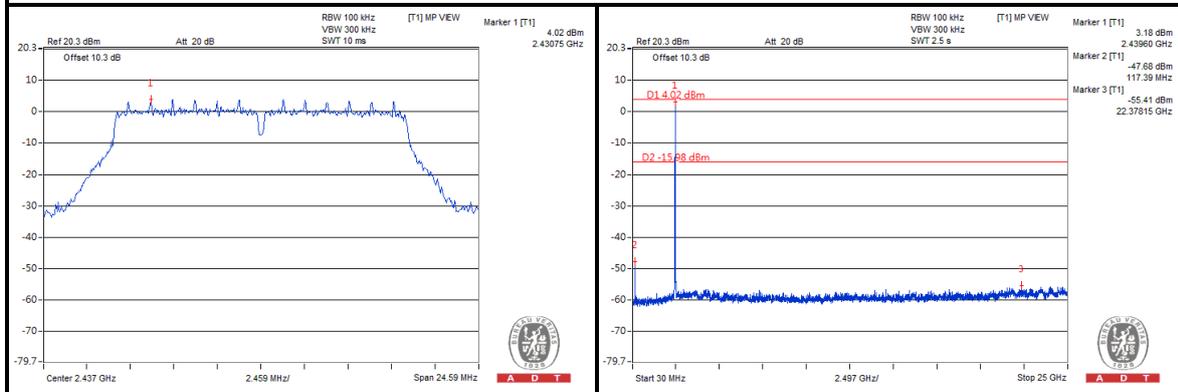
A D T

802.11g

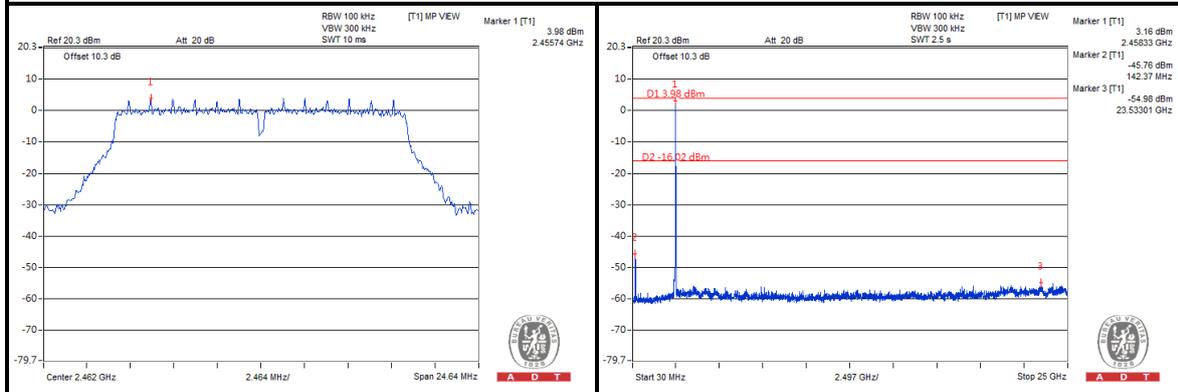
CH 1



CH 6



CH 11

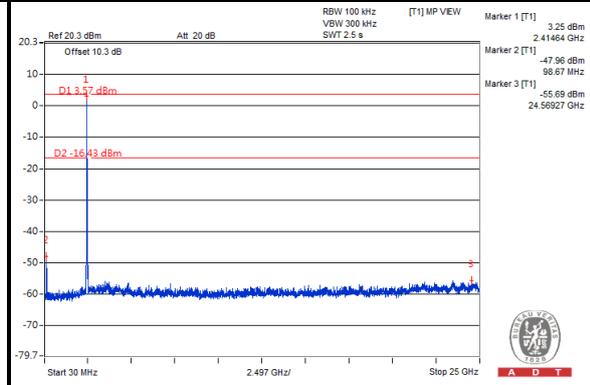
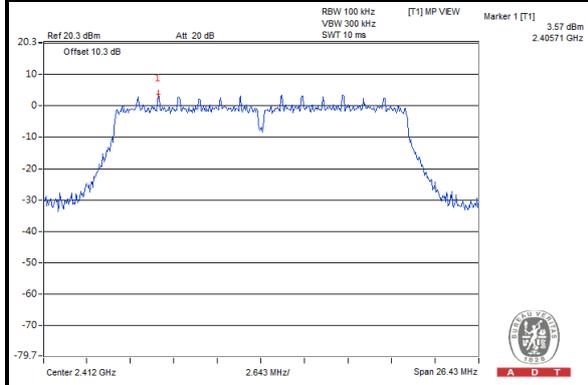




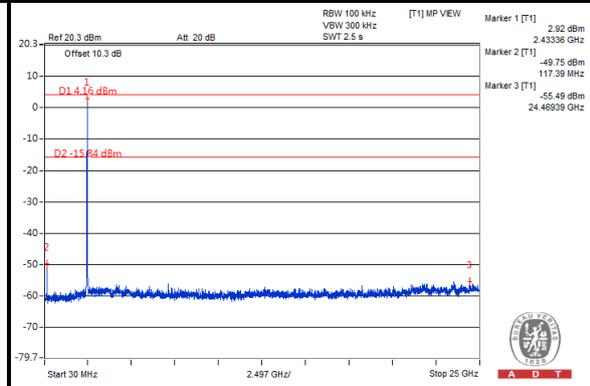
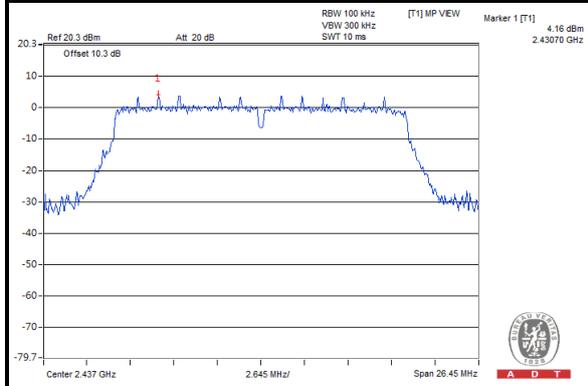
A D T

802.11n (20MHz)

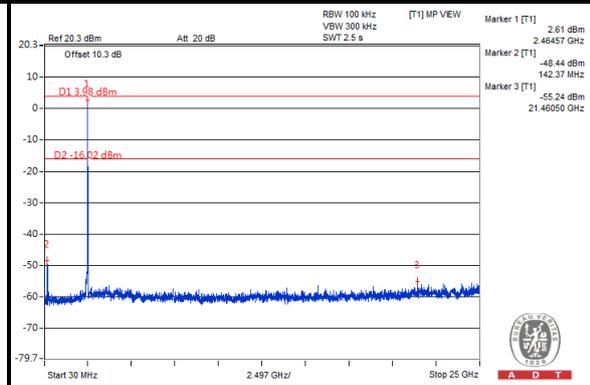
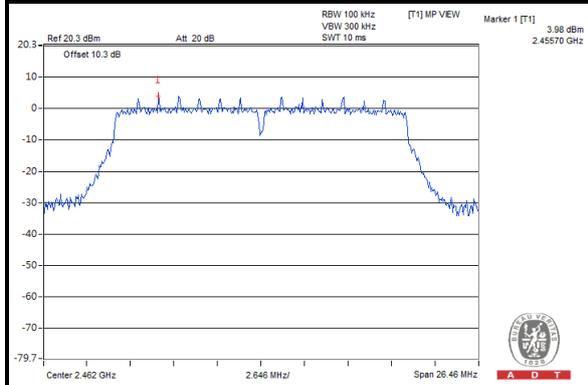
CH 1



CH 6



CH 11



5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

5.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

5.1.1 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. Other emissions shall be at least 20dB below the highest level of the desired power:

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.



A D T

5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

5.1.3 TEST PROCEDURES

Same as item 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as item 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



A D T

5.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3830	46.41	47.95	54	-7.59	29.32	6.19	37.05	100	16	Average
3830	51.48	53.02	74	-22.52	29.32	6.19	37.05	100	16	Peak
5725	43.22	40.98	65.22	-22	31.96	7.71	37.43	103	138	Average
5725	60.51	58.27	74.75	-14.24	31.96	7.71	37.43	103	138	Peak
5745	85.22	82.96			31.99	7.74	37.47	103	138	Average
5745	94.75	92.49			31.99	7.74	37.47	103	138	Peak
5825	41.25	38.84	65.22	-23.97	32.12	7.82	37.53	103	138	Average
5825	55.67	53.26	74.75	-19.08	32.12	7.82	37.53	103	138	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3830	49.22	50.76	54	-4.78	29.32	6.19	37.05	100	183	Average
3830	52.56	54.1	74	-21.44	29.32	6.19	37.05	100	183	Peak
5725	42.19	39.95	63.33	-21.14	31.96	7.71	37.43	100	35	Average
5725	56.72	54.48	72.96	-16.24	31.96	7.71	37.43	100	35	Peak
5745	83.33	81.07			31.99	7.74	37.47	100	35	Average
5745	92.96	90.7			31.99	7.74	37.47	100	35	Peak
5825	41.37	38.96	63.33	-21.96	32.12	7.82	37.53	100	35	Average
5825	56.37	53.96	72.96	-16.59	32.12	7.82	37.53	100	35	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5745MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3856	46.1	47.55	54	-7.9	29.38	6.2	37.03	100	21	Average
3856	50.47	51.92	74	-23.53	29.38	6.2	37.03	100	21	Peak
5725	40.32	38.08	66.58	-26.26	31.96	7.71	37.43	100	60	Average
5725	55.48	53.24	76.17	-20.69	31.96	7.71	37.43	100	60	Peak
5785	86.58	84.28			32.04	7.8	37.54	100	60	Average
5785	96.17	93.87			32.04	7.8	37.54	100	60	Peak
5825	40.8	38.39	66.58	-25.78	32.12	7.82	37.53	100	60	Average
5825	55.82	53.41	76.17	-20.35	32.12	7.82	37.53	100	60	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3856	48.97	50.42	54	-5.03	29.38	6.2	37.03	100	182	Average
3856	52.03	53.48	74	-21.97	29.38	6.2	37.03	100	182	Peak
5725	40.2	37.96	64.23	-24.03	31.96	7.71	37.43	116	135	Average
5725	54.98	52.74	73.92	-18.94	31.96	7.71	37.43	116	135	Peak
5785	84.23	81.93			32.04	7.8	37.54	116	135	Average
5785	93.92	91.62			32.04	7.8	37.54	116	135	Peak
5825	40.57	38.16	64.23	-23.66	32.12	7.82	37.53	116	135	Average
5825	55.24	52.83	73.92	-18.68	32.12	7.82	37.53	116	135	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5785MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 161	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3870	48.01	49.41	54	-5.99	29.41	6.21	37.02	100	22	Average
3870	51.68	53.08	74	-22.32	29.41	6.21	37.02	100	22	Peak
5725	40.97	38.73	66.15	-25.18	31.96	7.71	37.43	100	60	Average
5725	54.71	52.47	75.84	-21.13	31.96	7.71	37.43	100	60	Peak
5805	86.15	83.79			32.1	7.8	37.54	100	60	Average
5805	95.84	93.48			32.1	7.8	37.54	100	60	Peak
5825	42.17	39.76	66.15	-23.98	32.12	7.82	37.53	100	60	Average
5825	56.16	53.75	75.84	-19.68	32.12	7.82	37.53	100	60	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3870	50.67	52.07	54	-3.33	29.41	6.21	37.02	100	182	Average
3870	53.76	55.16	74	-20.24	29.41	6.21	37.02	100	182	Peak
5725	40.95	38.71	65.3	-24.35	31.96	7.71	37.43	100	13	Average
5725	54.72	52.48	75.03	-20.31	31.96	7.71	37.43	100	13	Peak
5805	85.3	82.94			32.1	7.8	37.54	100	13	Average
5805	95.03	92.67			32.1	7.8	37.54	100	13	Peak
5825	41.73	39.32	65.3	-23.57	32.12	7.82	37.53	100	13	Average
5825	59.05	56.64	75.03	-15.98	32.12	7.82	37.53	100	13	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5805MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3830	44.63	46.17	54	-9.37	29.32	6.19	37.05	100	354	Average
3830	50.79	52.33	74	-23.21	29.32	6.19	37.05	100	354	Peak
5725	45.7	43.46	67.25	-21.55	31.96	7.71	37.43	100	36	Average
5725	59.76	57.52	76.99	-17.23	31.96	7.71	37.43	100	36	Peak
5745	87.25	84.99			31.99	7.74	37.47	100	36	Average
5745	96.99	94.73			31.99	7.74	37.47	100	36	Peak
5825	42.11	39.7	67.25	-25.14	32.12	7.82	37.53	100	36	Average
5825	55.69	53.28	76.99	-21.3	32.12	7.82	37.53	100	36	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3830	48.18	49.72	54	-5.82	29.32	6.19	37.05	100	190	Average
3830	51.82	53.36	74	-22.18	29.32	6.19	37.05	100	190	Peak
5725	44.86	42.62	66.32	-21.46	31.96	7.71	37.43	100	9	Average
5725	61.8	59.56	75.95	-14.15	31.96	7.71	37.43	100	9	Peak
5745	86.32	84.06			31.99	7.74	37.47	100	9	Average
5745	95.95	93.69			31.99	7.74	37.47	100	9	Peak
5825	41.62	39.21	66.32	-24.7	32.12	7.82	37.53	100	9	Average
5825	56.84	54.43	75.95	-19.11	32.12	7.82	37.53	100	9	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5745MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3856	44.63	46.08	54	-9.37	29.38	6.2	37.03	100	357	Average
3856	51.19	52.64	74	-22.81	29.38	6.2	37.03	100	357	Peak
5725	40.3	38.06	66.9	-26.6	31.96	7.71	37.43	100	37	Average
5725	55.19	52.95	76.56	-21.37	31.96	7.71	37.43	100	37	Peak
5785	86.9	84.6			32.04	7.8	37.54	100	37	Average
5785	96.56	94.26			32.04	7.8	37.54	100	37	Peak
5825	40.65	38.24	66.9	-26.25	32.12	7.82	37.53	100	37	Average
5825	55.81	53.4	76.56	-20.75	32.12	7.82	37.53	100	37	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3856	48.51	49.96	54	-5.49	29.38	6.2	37.03	100	182	Average
3856	52.46	53.91	74	-21.54	29.38	6.2	37.03	100	182	Peak
5725	40.35	38.11	65.78	-25.43	31.96	7.71	37.43	114	123	Average
5725	55.03	52.79	75.33	-20.3	31.96	7.71	37.43	114	123	Peak
5785	85.78	83.48			32.04	7.8	37.54	114	123	Average
5785	95.33	93.03			32.04	7.8	37.54	114	123	Peak
5825	40.63	38.22	65.78	-25.15	32.12	7.82	37.53	114	123	Average
5825	54.91	52.5	75.33	-20.42	32.12	7.82	37.53	114	123	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5785MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 161	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3870	44.99	46.39	54	-9.01	29.41	6.21	37.02	100	357	Average
3870	51.28	52.68	74	-22.72	29.41	6.21	37.02	100	357	Peak
5725	40.81	38.57	65.63	-24.82	31.96	7.71	37.43	130	90	Average
5725	55.34	53.1	75.09	-19.75	31.96	7.71	37.43	130	90	Peak
5805	85.63	83.27			32.1	7.8	37.54	130	90	Average
5805	95.09	92.73			32.1	7.8	37.54	130	90	Peak
5825	42.01	39.6	65.63	-23.62	32.12	7.82	37.53	130	90	Average
5825	56.54	54.13	75.09	-18.55	32.12	7.82	37.53	130	90	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3870	48.84	50.24	54	-5.16	29.41	6.21	37.02	100	184	Average
3870	52.78	54.18	74	-21.22	29.41	6.21	37.02	100	184	Peak
5725	41.36	39.12	65.86	-24.5	31.96	7.71	37.43	100	34	Average
5725	55.44	53.2	75.09	-19.65	31.96	7.71	37.43	100	34	Peak
5805	85.86	83.5			32.1	7.8	37.54	100	34	Average
5805	95.09	92.73			32.1	7.8	37.54	100	34	Peak
5825	42.14	39.73	65.86	-23.72	32.12	7.82	37.53	100	34	Average
5825	56.57	54.16	75.09	-18.52	32.12	7.82	37.53	100	34	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5805MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3836	50	51.51	54	-4	29.35	6.19	37.05	100	17	Average
3836	53	54.51	74	-21	29.35	6.19	37.05	100	17	Peak
5725	46.15	43.91	64	-17.85	31.96	7.71	37.43	100	10	Average
5725	58.4	56.16	73.97	-15.57	31.96	7.71	37.43	100	10	Peak
5755	84	81.72			32.01	7.74	37.47	100	10	Average
5755	93.97	91.69			32.01	7.74	37.47	100	10	Peak
5825	41.05	38.64	64	-22.95	32.12	7.82	37.53	100	10	Average
5825	55.06	52.65	73.97	-18.91	32.12	7.82	37.53	100	10	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3836	51.21	52.72	54	-2.79	29.35	6.19	37.05	102	192	Average
3836	54.13	55.64	74	-19.87	29.35	6.19	37.05	102	192	Peak
5725	44.69	42.45	61.87	-17.18	31.96	7.71	37.43	100	356	Average
5725	58.77	56.53	71.55	-12.78	31.96	7.71	37.43	100	356	Peak
5755	81.87	79.59			32.01	7.74	37.47	100	356	Average
5755	91.55	89.27			32.01	7.74	37.47	100	356	Peak
5825	41.34	38.93	61.87	-20.53	32.12	7.82	37.53	100	356	Average
5825	55.67	53.26	71.55	-15.88	32.12	7.82	37.53	100	356	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5755MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3863	50.26	51.71	54	-3.74	29.38	6.2	37.03	100	16	Average
3863	53.59	55.04	74	-20.41	29.38	6.2	37.03	100	16	Peak
5725	40.81	38.57	63.23	-22.42	31.96	7.71	37.43	103	11	Average
5725	55.87	53.63	72.6	-16.73	31.96	7.71	37.43	103	11	Peak
5795	83.23	80.9			32.07	7.8	37.54	103	11	Average
5795	92.6	90.27			32.07	7.8	37.54	103	11	Peak
5825	41.79	39.38	63.23	-21.44	32.12	7.82	37.53	103	11	Average
5825	60.41	58	72.6	-12.19	32.12	7.82	37.53	103	11	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3863	50.55	52	54	-3.45	29.38	6.2	37.03	100	209	Average
3863	53.5	54.95	74	-20.5	29.38	6.2	37.03	100	209	Peak
5725	40.51	38.27	61.07	-20.56	31.96	7.71	37.43	100	18	Average
5725	55.57	53.33	70.32	-14.75	31.96	7.71	37.43	100	18	Peak
5795	81.07	78.74			32.07	7.8	37.54	100	18	Average
5795	90.32	87.99			32.07	7.8	37.54	100	18	Peak
5825	41.35	38.94	61.07	-19.72	32.12	7.82	37.53	100	18	Average
5825	57.05	54.64	70.32	-13.27	32.12	7.82	37.53	100	18	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5795MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

802.11ac (80MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 155	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3850	48.35	49.8	54	-5.65	29.38	6.2	37.03	100	14	Average
3850	52.83	54.28	74	-21.17	29.38	6.2	37.03	100	14	Peak
5725	47.13	44.89	60.22	-13.09	31.96	7.71	37.43	100	37	Average
5725	58.39	56.15	70.2	-11.81	31.96	7.71	37.43	100	37	Peak
5775	80.22	77.91			32.04	7.77	37.5	100	37	Average
5775	90.2	87.89			32.04	7.77	37.5	100	37	Peak
5825	41.64	39.23	60.22	-18.58	32.12	7.82	37.53	100	37	Average
5825	55.44	53.03	70.2	-14.76	32.12	7.82	37.53	100	37	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3850	49.84	51.29	54	-4.16	29.38	6.2	37.03	100	193	Average
3850	53.49	54.94	74	-20.51	29.38	6.2	37.03	100	193	Peak
5725	43.91	41.67	55.9	-11.99	31.96	7.71	37.43	100	4	Average
5725	56.7	54.46	66.53	-9.83	31.96	7.71	37.43	100	4	Peak
5775	75.9	73.59			32.04	7.77	37.5	100	4	Average
5775	86.53	84.22			32.04	7.77	37.5	100	4	Peak
5825	41.31	38.9	55.9	-14.59	32.12	7.82	37.53	100	4	Average
5825	56.22	53.81	66.53	-10.31	32.12	7.82	37.53	100	4	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
2. 5775MHz: Fundamental frequency.
3. 5725MHz & 5825MHz: Out of restricted band



A D T

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) QP
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
42.15	30.12	46.92	40	-9.88	13.58	0.7	31.08	110	249	Peak
144.48	31.98	49.78	43.5	-11.52	12.51	1.32	31.63	103	164	Peak
227.1	23.39	42.98	46	-22.61	10.5	1.73	31.82	100	299	Peak
312.6	22.4	39	46	-23.6	13.24	2.1	31.94	107	331	Peak
575.1	23.07	33.12	46	-22.93	19.03	3.02	32.1	105	246	Peak
750.1	26.35	32.56	46	-19.65	21.52	3.57	31.3	100	171	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
36.21	35.16	52.66	40	-4.84	12.94	0.61	31.05	121	264	QP
42.42	35.08	51.88	40	-4.92	13.58	0.7	31.08	102	150	QP
232.23	16.46	35.84	46	-29.54	10.71	1.75	31.84	109	78	Peak
312.6	19	35.6	46	-27	13.24	2.1	31.94	104	268	Peak
511.4	22.01	33.21	46	-23.99	17.57	2.82	31.59	102	88	Peak
717.9	25.59	32.72	46	-20.41	21.07	3.48	31.68	106	62	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 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.

5.2.2 TEST INSTRUMENTS

Same as item 4.2.2.

5.2.3 TEST PROCEDURES

Same as item 4.2.3.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP

Same as item 4.2.5.

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

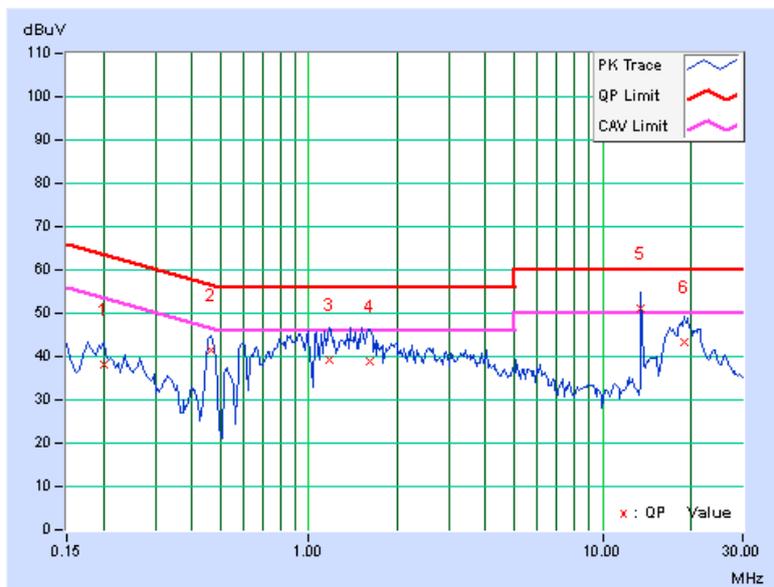
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
--------------	--------	----------------------	------

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	0.20078	0.12	37.85	25.74	37.97	25.86	63.58	53.58	-25.61	-27.72
2	0.46641	0.16	41.41	32.37	41.57	32.53	56.58	46.58	-15.01	-14.05
3	1.16797	0.21	39.12	28.19	39.33	28.40	56.00	46.00	-16.67	-17.60
4	1.60938	0.22	38.60	30.97	38.82	31.19	56.00	46.00	-17.18	-14.81
5	13.55859	0.86	50.36	47.81	51.22	48.67	60.00	50.00	-8.78	-1.33
6	18.97656	1.18	42.01	25.96	43.19	27.14	60.00	50.00	-16.81	-22.86

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

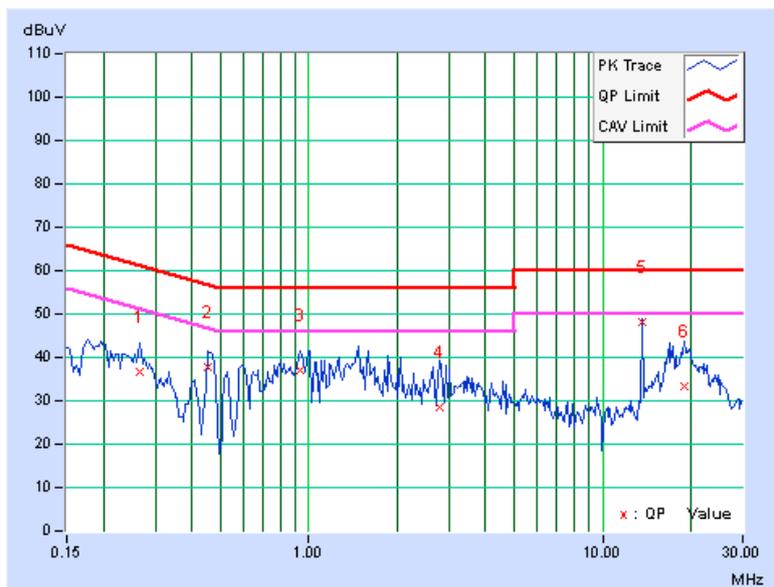


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.26719	0.18	36.54	21.13	36.72	21.31	61.20
2	0.45469	0.21	37.40	23.24	37.61	23.45	56.79	46.79	-19.18	-23.34
3	0.93125	0.25	36.91	27.82	37.16	28.07	56.00	46.00	-18.84	-17.93
4	2.77344	0.32	28.28	19.76	28.60	20.08	56.00	46.00	-27.40	-25.92
5	13.56250	0.71	47.29	45.43	48.00	46.14	60.00	50.00	-12.00	-3.86
6	18.95313	0.89	32.57	23.80	33.46	24.69	60.00	50.00	-26.54	-25.31

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



5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.3.2 TEST SETUP

Same as item 4.3.2.

5.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.3.4 TEST PROCEDURE

Same as item 4.3.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.



5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.37	0.5	PASS
157	5785	16.41	0.5	PASS
161	5805	16.42	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.62	0.5	PASS
157	5785	17.66	0.5	PASS
161	5805	17.63	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	36.38	0.5	PASS
159	5795	36.43	0.5	PASS

802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
155	5775	76.48	0.5	PASS

5.4 MAXIMUM OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725–5850 MHz bands: 1 Watt (30dBm)

5.4.2 TEST SETUP

Same as Item 4.4.2.

5.4.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.4.4 TEST PROCEDURES

Same as Item 4.4.4.

5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



A D T

5.4.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	242.661	23.85	30	PASS
157	5785	269.153	24.3	30	PASS
161	5805	237.684	23.76	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	267.917	24.28	30	PASS
157	5785	256.448	24.09	30	PASS
161	5805	254.683	24.06	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	221.820	23.46	30	PASS
159	5795	206.538	23.15	30	PASS

802.11ac (80MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
155	5775	186.638	22.71	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST SETUP

Same as item 4.5.2.

5.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.5.4 TEST PROCEDURE.

Same as item 4.5.4.

5.5.5 DEVIATION FROM TEST STANDARD

No deviation.

5.5.6 EUT OPERATING CONDITION

Same as item 4.3.6.



5.5.7 TEST RESULTS

802.11a

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-11.67	8	PASS
157	5785	-10.26	8	PASS
161	5805	-10.99	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-10.88	8	PASS
157	5785	-10.95	8	PASS
161	5805	-11.80	8	PASS

802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
151	5755	-16.62	8	PASS
159	5795	-16.65	8	PASS

802.11ac (80MHz)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
155	5775	-30.01	8	PASS

5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST SETUP

Same as Item 4.6.2

5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.6.4 TEST PROCEDURE

Same as Item 4.6.4

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

5.6.7 TEST RESULTS

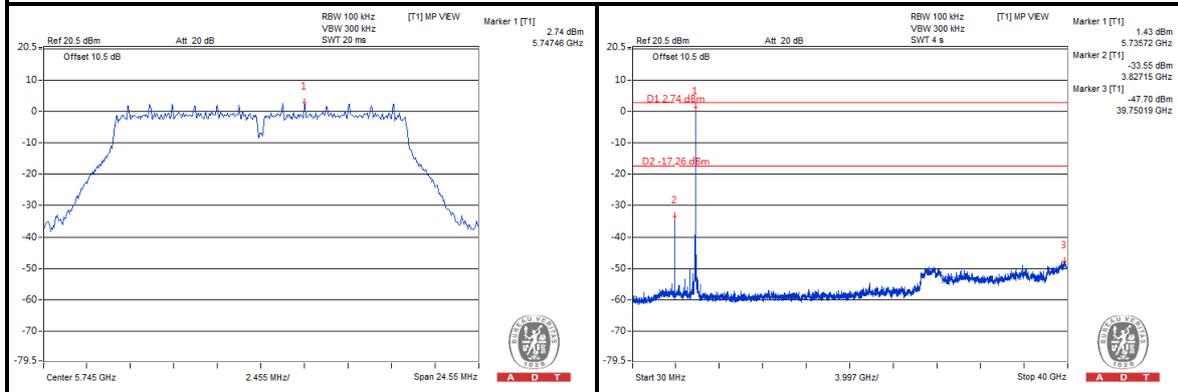
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



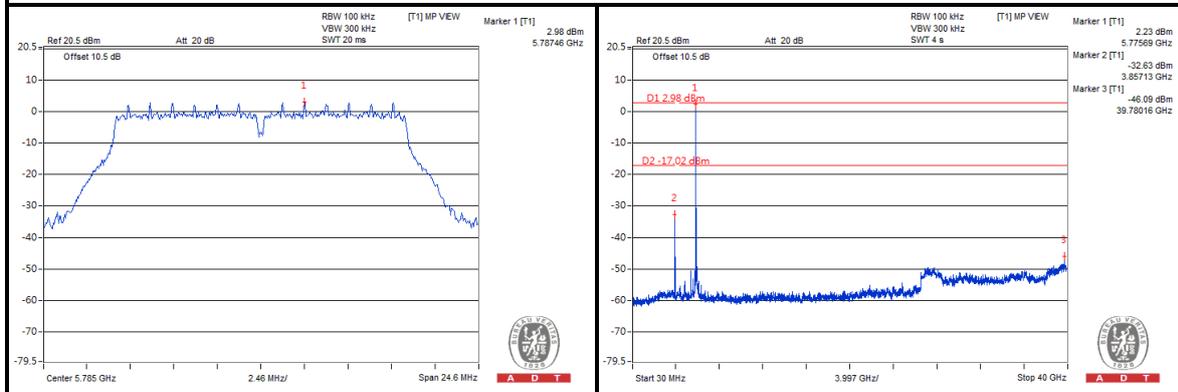
A D T

802.11a

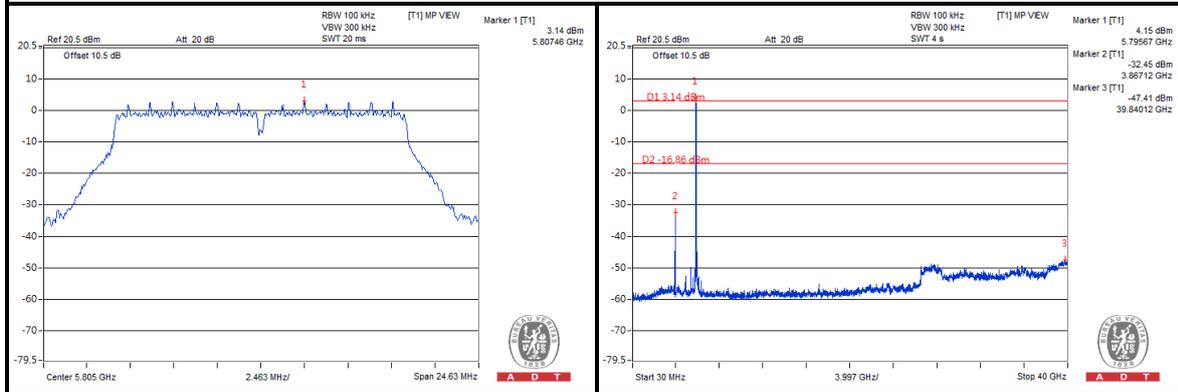
CH 149



CH 157



CH 161

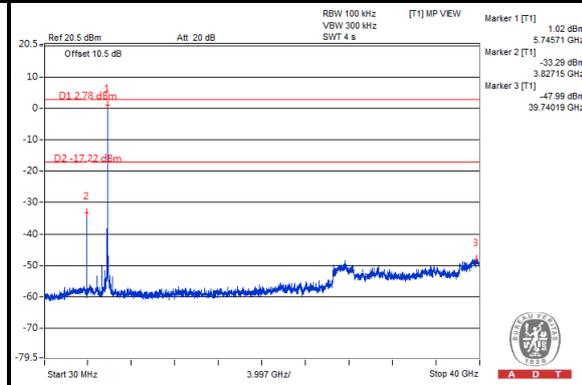
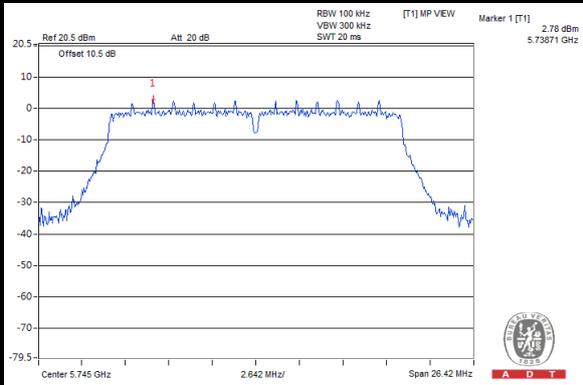




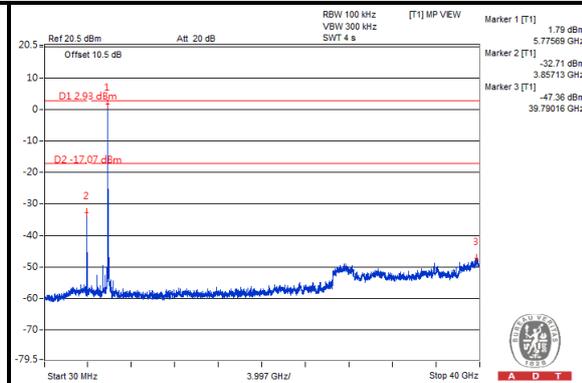
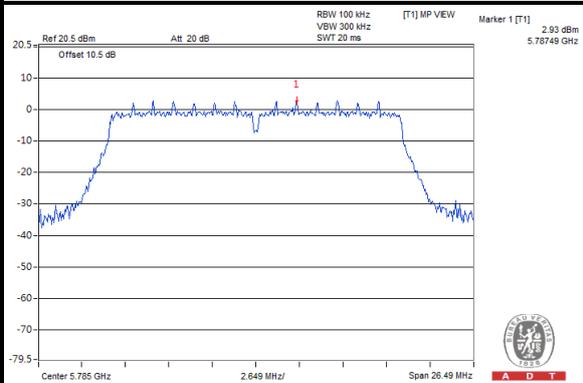
A D T

802.11n (20MHz)

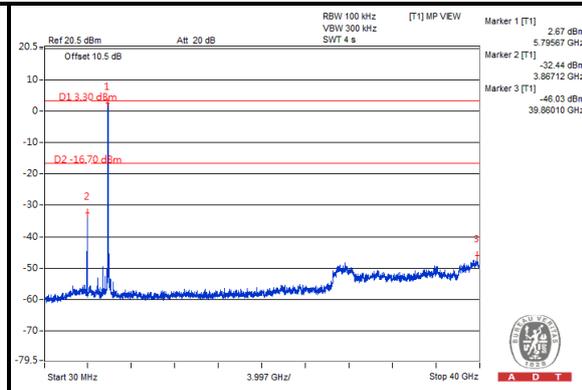
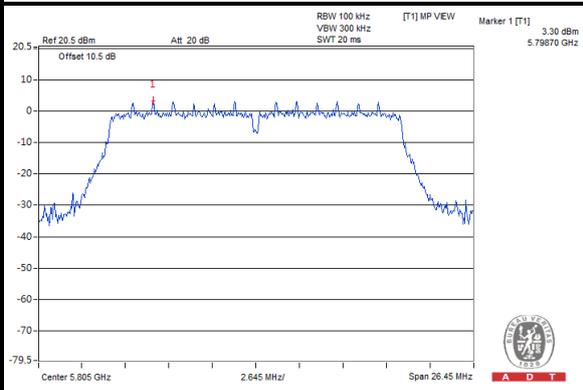
CH 149



CH 157



CH 161

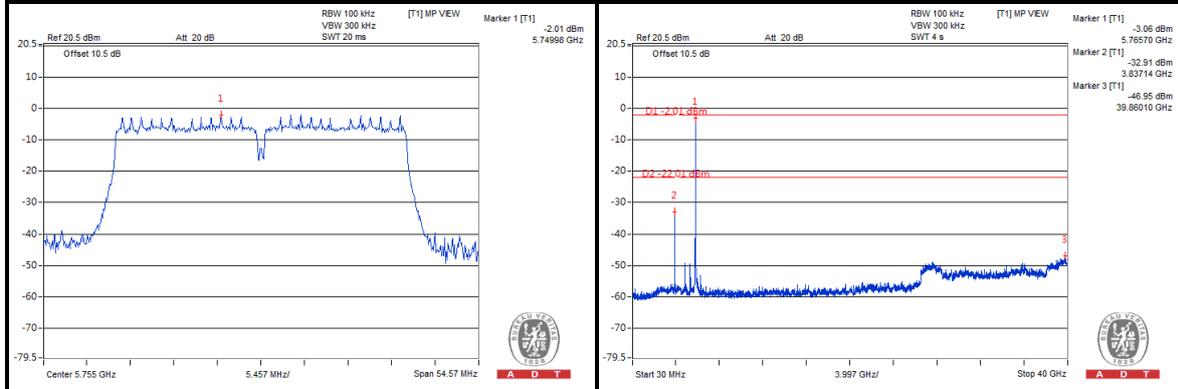




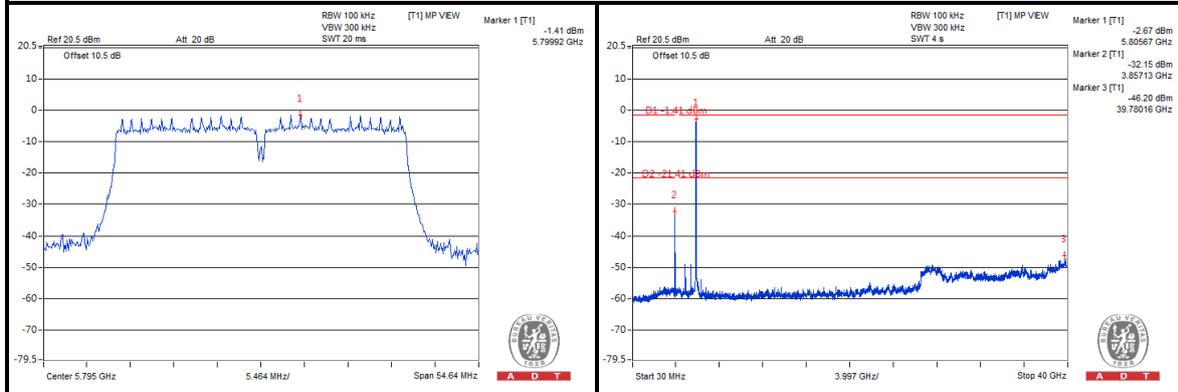
A D T

802.11n (40MHz)

CH 151

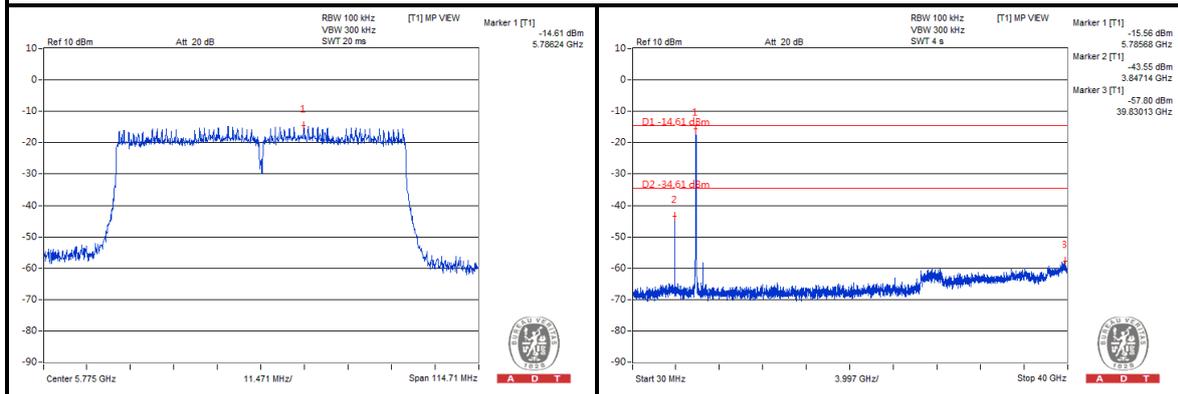


CH 159



802.11ac (80MHz)

CH 155





A D T

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



7. 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 Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom 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.



A D T

8. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---