



FCC TEST REPORT (15.247)

REPORT NO.: RF121225C13-4
MODEL NO.: PM33100
FCC ID: NM8PM33100
RECEIVED: Dec. 25, 2012
TESTED: Jan. 09, 2013 ~ Jan. 30, 2013
ISSUED: Feb. 08, 2013

APPLICANT: HTC Corporation

ADDRESS: 23, Xinghua Rd., Taoyuan 330, Taiwan, R.O.C.

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.....	10
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	11
3.3 DESCRIPTION OF SUPPORT UNITS	16
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST	16
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	16
4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)	17
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	17
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	17
4.1.2 TEST INSTRUMENTS	18
4.1.3 TEST PROCEDURES.....	19
4.1.4 DEVIATION FROM TEST STANDARD	19
4.1.5 TEST SETUP.....	20
4.1.6 EUT OPERATING CONDITIONS.....	20
4.1.7 TEST RESULTS	21
4.2 CONDUCTED EMISSION MEASUREMENT	35
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	35
4.2.2 TEST INSTRUMENTS	35
4.2.3 TEST PROCEDURES.....	36
4.2.4 DEVIATION FROM TEST STANDARD	36
4.2.5 TEST SETUP.....	37
4.2.6 EUT OPERATING CONDITIONS.....	37
4.2.7 TEST RESULTS	38
4.3 6dB BANDWIDTH MEASUREMENT	42
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	42
4.3.2 TEST SETUP.....	42
4.3.3 TEST INSTRUMENTS	42
4.3.4 TEST PROCEDURE	42
4.3.5 DEVIATION FROM TEST STANDARD	42
4.3.6 EUT OPERATING CONDITIONS.....	42
4.3.7 TEST RESULTS	43
4.4 CONDUCTED OUTPUT POWER.....	44
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	44
4.4.2 TEST SETUP.....	44
4.4.3 TEST INSTRUMENTS	44
4.4.4 TEST PROCEDURES.....	44
4.4.5 DEVIATION FROM TEST STANDARD	44
4.4.6 EUT OPERATING CONDITIONS.....	44
4.4.7 TEST RESULTS	45
4.5 POWER SPECTRAL DENSITY MEASUREMENT	46
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	46
4.5.2 TEST SETUP.....	46



4.5.3	TEST INSTRUMENTS	46
4.5.4	TEST PROCEDURE	46
4.5.5	DEVIATION FROM TEST STANDARD	46
4.5.6	EUT OPERATING CONDITION	46
4.5.7	TEST RESULTS	47
4.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	48
4.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT	48
4.6.2	TEST SETUP.....	48
4.6.3	TEST INSTRUMENTS	48
4.6.4	TEST PROCEDURE	48
4.6.5	DEVIATION FROM TEST STANDARD	49
4.6.6	EUT OPERATING CONDITION	49
4.6.7	TEST RESULTS	49
5.	TEST TYPES AND RESULTS (FOR 5.0GHz BAND)	54
5.1	RADIATED EMISSION AND BANDEDGE MEASUREMENT	54
5.1.1	LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	54
5.1.2	TEST INSTRUMENTS	55
5.1.3	TEST PROCEDURES.....	55
5.1.4	DEVIATION FROM TEST STANDARD	55
5.1.5	TEST SETUP.....	55
5.1.6	EUT OPERATING CONDITIONS.....	55
5.1.7	TEST RESULTS	56
5.2	CONDUCTED EMISSION MEASUREMENT	66
5.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	66
5.2.2	TEST INSTRUMENTS	66
5.2.3	TEST PROCEDURES.....	66
5.2.4	DEVIATION FROM TEST STANDARD	66
5.2.5	TEST SETUP.....	66
5.2.6	EUT OPERATING CONDITIONS.....	66
5.2.7	TEST RESULTS	67
5.3	6dB BANDWIDTH MEASUREMENT	69
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	69
5.3.2	TEST SETUP.....	69
5.3.3	TEST INSTRUMENTS	69
5.3.4	TEST PROCEDURE	69
5.3.5	DEVIATION FROM TEST STANDARD	69
5.3.6	EUT OPERATING CONDITIONS.....	69
5.3.7	TEST RESULTS	70
5.4	MAXIMUM OUTPUT POWER.....	71
5.4.1	LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT	71
5.4.2	TEST SETUP.....	71
5.4.3	INSTRUMENTS	71
5.4.4	TEST PROCEDURES.....	71
5.4.5	DEVIATION FROM TEST STANDARD	71
5.4.6	EUT OPERATING CONDITIONS.....	71
5.4.7	TEST RESULTS	72
5.5	POWER SPECTRAL DENSITY MEASUREMENT	73
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	73
5.5.2	TEST SETUP.....	73
5.5.3	TEST INSTRUMENTS.....	73



A D T

5.5.4	TEST PROCEDURE.....	73
5.5.5	DEVIATION FROM TEST STANDARD	73
5.5.6	EUT OPERATING CONDITION	73
5.5.7	TEST RESULTS	74
5.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	75
5.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	75
5.6.2	TEST SETUP.....	75
5.6.3	TEST INSTRUMENTS	75
5.6.4	TEST PROCEDURE	75
5.6.5	DEVIATION FROM TEST STANDARD	75
5.6.6	EUT OPERATING CONDITION	75
5.6.7	TEST RESULTS	75
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION	79
7.	INFORMATION ON THE TESTING LABORATORIES	80
8.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	81



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF121225C13-4	Original release	Feb. 08, 2013

1. CERTIFICATION

PRODUCT: Smartphone
MODEL NO.: PM33100
BRAND: HTC
APPLICANT: HTC Corporation
TESTED: Jan. 09, 2013 ~ Jan. 30, 2013
TEST SAMPLE: Production Unit
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (model: PM33100) 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** : Feb. 08, 2013
Ivonne Wu / Senior Specialist

APPROVED BY : Anderson Chiu , **DATE** : Feb. 08, 2013
Anderson Chiu / Senior Engineer



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 -7.46dB at 13.56250MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.46dB at 43.77MHz.
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.	PM33100
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (Li-ion battery)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 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
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	242.103mW for 2412 ~ 2462MHz 271.644mW for 5745 ~ 5825MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with -0.7dBi gain 5.0GHz: PIFA antenna with -1.21Bi 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



A D T

NOTE:

1. The EUT's accessories list refers to Ext. Pho.
2. The EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX

3. The device has 2 configurations as below.
Main Sample (A): Battery 1 + Photo Camera 1
2nd Sample (B): Battery 2 + Photo Camera 2
4. 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		

7 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

FOR 5.0GHz:

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

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
A	√	√	√	√	Main Sample
B	√	-	√	-	2nd Sample

Where **RE \geq 1G**: Radiated Emission above 1GHz

RE $<$ 1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane** for mode A and **X-plane** for mode B.

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	AVAILABLE CH.	TESTED CH.	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	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
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0
B	802.11n (40MHz)	3 to 9	9	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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g	1 to 11	6	OFDM	BPSK	6.0



A D T

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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g	1 to 11	6	OFDM	BPSK	6.0
B	802.11g	1 to 11	6	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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	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	6.5
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	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	6.5
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5



A D T

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao



FOR 5.0GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Main Sample
B	√	-	-	-	2nd Sample

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 **Y-plane** for mode A and **X-plane** for mode B.

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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0
B	802.11n (40MHz)	151 to 159	151	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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	165	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	AVAILABLE CHANNEL	TESTED CH.	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	165	OFDM	BPSK	6.0
B	802.11a	149 to 165	165	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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0

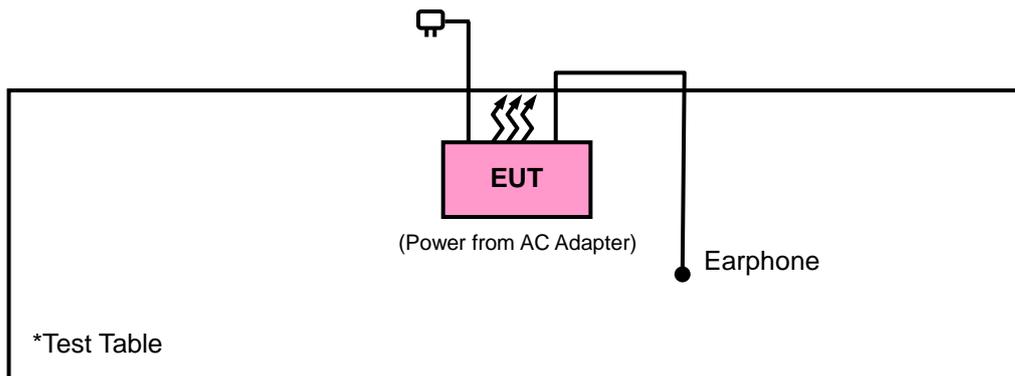
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	David Huang
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.

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.



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. 19, 2012	Apr. 18, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2012	Dec. 16, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Apr. 03, 2012	Apr. 02, 2013
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
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2012	Apr. 18, 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	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 9.
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 460141.
6. The IC Site Registration No. is IC7450F-4.

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.

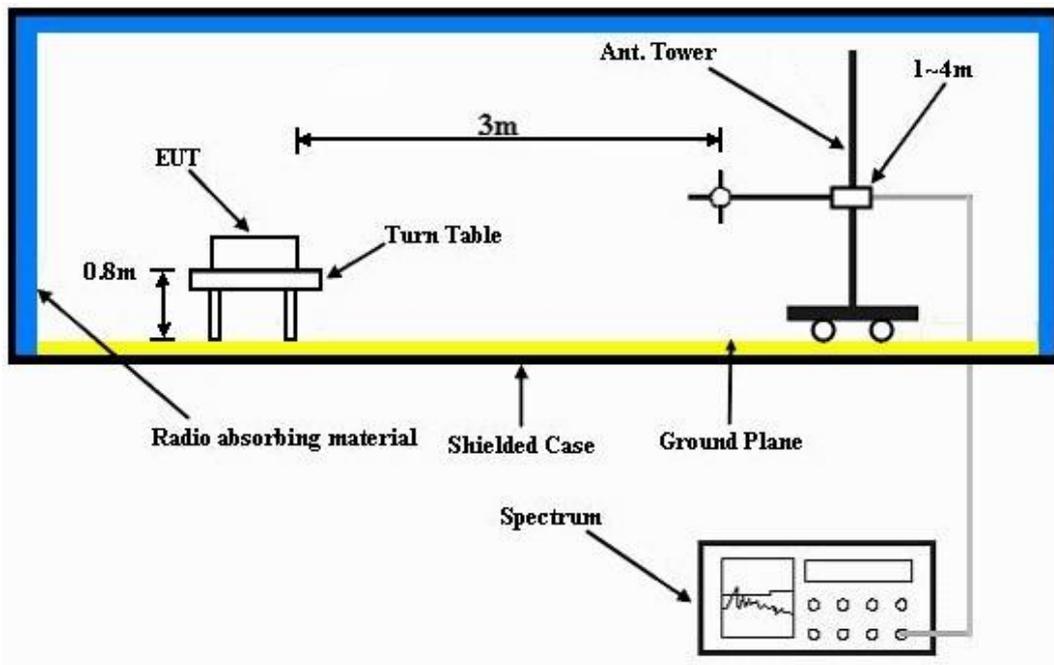
NOTE:

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

TEST MODE A

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	Kay Wu

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	40.27	46.01	54	-13.73	26.91	4.87	37.52	100	334	Average
2390	52.32	58.06	74	-21.68	26.91	4.87	37.52	100	334	Peak
2412	99.07	104.76			26.96	4.87	37.52	100	334	Average
2412	102.30	107.99			26.96	4.87	37.52	100	334	Peak
2484	36.42	41.67	54	-17.58	27.15	4.92	37.32	100	334	Average
2484	49.20	54.45	74	-24.80	27.15	4.92	37.32	100	334	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	39.80	45.54	54	-14.20	26.91	4.87	37.52	103	270	Average
2390	52.35	58.09	74	-21.65	26.91	4.87	37.52	103	270	Peak
2412	98.84	104.53			26.96	4.87	37.52	103	270	Average
2412	102.18	107.87			26.96	4.87	37.52	103	270	Peak
2485.5	37.31	42.56	54	-16.69	27.15	4.92	37.32	103	270	Average
2485.5	53.88	59.13	74	-20.12	27.15	4.92	37.32	103	270	Peak

REMARKS:

- 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	Kay Wu

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
2378	34.93	40.72	54	-19.07	26.86	4.85	37.5	100	180	Average
2378	50.89	56.68	74	-23.11	26.86	4.85	37.5	100	180	Peak
2437	95.58	101.09			27.06	4.89	37.46	100	180	Average
2437	100.01	105.52			27.06	4.89	37.46	100	180	Peak
2496	35.33	40.44	54	-18.67	27.20	4.94	37.25	100	180	Average
2496	49.55	54.66	74	-24.45	27.20	4.94	37.25	100	180	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	34.95	40.69	54	-19.05	26.91	4.87	37.52	100	269	Average
2390	47.60	53.34	74	-26.40	26.91	4.87	37.52	100	269	Peak
2437	95.25	100.76			27.06	4.89	37.46	100	269	Average
2437	99.50	105.01			27.06	4.89	37.46	100	269	Peak
2486	36.13	41.38	54	-17.87	27.15	4.92	37.32	100	269	Average
2486	51.96	57.21	74	-22.04	27.15	4.92	37.32	100	269	Peak

REMARKS:

- 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	Kay Wu

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
2344	34.63	40.53	54	-19.37	26.77	4.82	37.49	100	118	Average
2344	47.75	53.65	74	-26.25	26.77	4.82	37.49	100	118	Peak
2462	94.71	100.09			27.10	4.91	37.39	100	118	Average
2462	98.10	103.48			27.10	4.91	37.39	100	118	Peak
2492	37.30	42.41	54	-16.70	27.20	4.94	37.25	100	118	Average
2492	50.13	55.24	74	-23.87	27.20	4.94	37.25	100	118	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
2356	34.95	40.81	54	-19.05	26.81	4.82	37.49	109	270	Average
2356	48.25	54.11	74	-25.75	26.81	4.82	37.49	109	270	Peak
2462	96.91	102.29			27.10	4.91	37.39	109	270	Average
2462	100.95	106.33			27.10	4.91	37.39	109	270	Peak
2488	39.69	44.89	54	-14.31	27.20	4.92	37.32	109	270	Average
2488	52.27	57.47	74	-21.73	27.20	4.92	37.32	109	270	Peak

REMARKS:

- 2462MHz: Fundamental frequency.



A D T

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	Kay Wu

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	43.53	48.01	54	-10.47	28.17	4.87	37.52	100	337	Average
2390	58.05	62.53	74	-15.95	28.17	4.87	37.52	100	337	Peak
2412	90.11	94.54			28.22	4.87	37.52	100	337	Average
2412	99.52	103.95			28.22	4.87	37.52	100	337	Peak
2486	37.87	41.83	54	-16.13	28.44	4.92	37.32	100	337	Average
2486	51.67	55.63	74	-22.33	28.44	4.92	37.32	100	337	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	43.61	48.09	54	-10.39	28.17	4.87	37.52	100	301	Average
2390	59.92	64.40	74	-14.08	28.17	4.87	37.52	100	301	Peak
2412	91.35	95.78			28.22	4.87	37.52	100	301	Average
2412	100.77	105.20			28.22	4.87	37.52	100	301	Peak
2494	38.56	42.37	54	-15.44	28.50	4.94	37.25	100	301	Average
2494	51.64	55.45	74	-22.36	28.50	4.94	37.25	100	301	Peak

REMARKS:

- 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	Kay Wu

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	37.99	42.53	54	-16.01	28.11	4.85	37.5	100	180	Average
2382	51.67	56.21	74	-22.33	28.11	4.85	37.5	100	180	Peak
2437	88.95	93.19			28.33	4.89	37.46	100	180	Average
2437	98.93	103.17			28.33	4.89	37.46	100	180	Peak
2490	38.24	42.14	54	-15.76	28.5	4.92	37.32	100	180	Average
2490	52.28	56.18	74	-21.72	28.5	4.92	37.32	100	180	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
2382	38.07	42.61	54	-15.93	28.11	4.85	37.5	100	301	Average
2382	51.92	56.46	74	-22.08	28.11	4.85	37.5	100	301	Peak
2437	89.59	93.83			28.33	4.89	37.46	100	301	Average
2437	100.28	104.52			28.33	4.89	37.46	100	301	Peak
2488	38.4	42.30	54	-15.60	28.5	4.92	37.32	100	301	Average
2488	52.93	56.83	74	-21.07	28.5	4.92	37.32	100	301	Peak

REMARKS:

1. 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	Kay Wu

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
2374	37.63	42.17	54	-16.37	28.11	4.85	37.5	100	173	Average
2374	51.2	55.74	74	-22.80	28.11	4.85	37.5	100	173	Peak
2462	88.95	93.04			28.39	4.91	37.39	100	173	Average
2462	98.52	102.61			28.39	4.91	37.39	100	173	Peak
2483.5	43.03	46.99	54	-10.97	28.44	4.92	37.32	100	173	Average
2483.5	57.69	61.65	74	-16.31	28.44	4.92	37.32	100	173	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
2364	37.21	41.82	54	-16.79	28.06	4.82	37.49	100	267	Average
2364	51.24	55.85	74	-22.76	28.06	4.82	37.49	100	267	Peak
2462	87.71	91.80			28.39	4.91	37.39	100	267	Average
2462	98.29	102.38			28.39	4.91	37.39	100	267	Peak
2483.5	44.23	48.19	54	-9.77	28.44	4.92	37.32	100	267	Average
2483.5	61.63	65.59	74	-12.37	28.44	4.92	37.32	100	267	Peak

REMARKS:

1. 2462MHz: Fundamental frequency.



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	Kay Wu

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	44.02	48.50	54	-9.98	28.17	4.87	37.52	100	180	Average
2390	55.27	59.75	74	-18.73	28.17	4.87	37.52	100	180	Peak
2412	91.05	95.48			28.22	4.87	37.52	100	180	Average
2412	100.55	104.98			28.22	4.87	37.52	100	180	Peak
2483.5	36.61	40.57	54	-17.39	28.44	4.92	37.32	100	180	Average
2483.5	49.49	53.45	74	-24.51	28.44	4.92	37.32	100	180	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	44.53	50.27	54	-9.47	26.91	4.87	37.52	100	186	Average
2390	60.08	65.82	74	-13.92	26.91	4.87	37.52	100	186	Peak
2412	90.92	96.61			26.96	4.87	37.52	100	186	Average
2412	100.59	106.28			26.96	4.87	37.52	100	186	Peak
2494	35.62	40.73	54	-18.38	27.2	4.94	37.25	100	186	Average
2494	51.02	56.13	74	-22.98	27.2	4.94	37.25	100	186	Peak

REMARKS:

- 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	Kay Wu

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	35.41	39.89	54	-18.59	28.17	4.87	37.52	126	179	Average
2390	49.12	53.60	74	-24.88	28.17	4.87	37.52	126	179	Peak
2437	88.68	92.92			28.33	4.89	37.46	126	179	Average
2437	97.87	102.11			28.33	4.89	37.46	126	179	Peak
2483.5	36.33	40.29	54	-17.67	28.44	4.92	37.32	126	179	Average
2483.5	49.18	53.14	74	-24.82	28.44	4.92	37.32	126	179	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	35.36	39.84	54	-18.64	28.17	4.87	37.52	100	302	Average
2390	48.82	53.30	74	-25.18	28.17	4.87	37.52	100	302	Peak
2437	88.12	92.36			28.33	4.89	37.46	100	302	Average
2437	97.49	101.73			28.33	4.89	37.46	100	302	Peak
2483.5	36.06	40.02	54	-17.94	28.44	4.92	37.32	100	302	Average
2483.5	50.65	54.61	74	-23.35	28.44	4.92	37.32	100	302	Peak

REMARKS:

- 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	Kay Wu

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	35.2	39.68	54	-18.80	28.17	4.87	37.52	100	178	Average
2390	49.85	54.33	74	-24.15	28.17	4.87	37.52	100	178	Peak
2462	89.19	93.28			28.39	4.91	37.39	100	178	Average
2462	98.9	102.99			28.39	4.91	37.39	100	178	Peak
2483.5	43.84	47.80	54	-10.16	28.44	4.92	37.32	100	178	Average
2483.5	57.27	61.23	74	-16.73	28.44	4.92	37.32	100	178	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	35.27	39.75	54	-18.73	28.17	4.87	37.52	100	353	Average
2390	50.02	54.50	74	-23.98	28.17	4.87	37.52	100	353	Peak
2462	88.15	92.24			28.39	4.91	37.39	100	353	Average
2462	98.09	102.18			28.39	4.91	37.39	100	353	Peak
2483.5	45.66	49.62	54	-8.34	28.44	4.92	37.32	100	353	Average
2483.5	59.68	63.64	74	-14.32	28.44	4.92	37.32	100	353	Peak

REMARKS:

- 2462MHz: Fundamental frequency.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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	46.69	51.17	54	-7.31	28.17	4.87	37.52	100	184	Average
2390	62.14	66.62	74	-11.86	28.17	4.87	37.52	100	184	Peak
2422	87.63	91.92			28.28	4.89	37.46	100	184	Average
2422	97.53	101.82			28.28	4.89	37.46	100	184	Peak
2483.5	36.33	40.29	54	-17.67	28.44	4.92	37.32	100	184	Average
2483.5	50.61	54.57	74	-23.39	28.44	4.92	37.32	100	184	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	45.39	49.87	54	-8.61	28.17	4.87	37.52	100	298	Average
2390	61.46	65.94	74	-12.54	28.17	4.87	37.52	100	298	Peak
2422	87.62	91.91			28.28	4.89	37.46	100	298	Average
2422	97.36	101.65			28.28	4.89	37.46	100	298	Peak
2483.5	35.52	39.48	54	-18.48	28.44	4.92	37.32	100	298	Average
2483.5	50.69	54.65	74	-23.31	28.44	4.92	37.32	100	298	Peak

REMARKS:

- 2422MHz: 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	Kay Wu

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	35.91	40.39	54	-18.09	28.17	4.87	37.52	100	0	Average
2390	52.74	57.22	74	-21.26	28.17	4.87	37.52	100	0	Peak
2437	86.05	90.29			28.33	4.89	37.46	100	0	Average
2437	95.88	100.12			28.33	4.89	37.46	100	0	Peak
2483.5	37.12	41.08	54	-16.88	28.44	4.92	37.32	100	0	Average
2483.5	54.89	58.85	74	-19.11	28.44	4.92	37.32	100	0	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	35.99	40.47	54	-18.01	28.17	4.87	37.52	100	240	Average
2390	50.66	55.14	74	-23.34	28.17	4.87	37.52	100	240	Peak
2437	86.37	90.61			28.33	4.89	37.46	100	240	Average
2437	95.8	100.04			28.33	4.89	37.46	100	240	Peak
2483.5	36.95	40.91	54	-17.05	28.44	4.92	37.32	100	240	Average
2483.5	55.25	59.21	74	-18.75	28.44	4.92	37.32	100	240	Peak

REMARKS:

- 2437MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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	35.58	40.06	54	-18.42	28.17	4.87	37.52	100	18	Average
2390	50.01	54.49	74	-23.99	28.17	4.87	37.52	100	18	Peak
2452	85.74	89.89			28.33	4.91	37.39	100	18	Average
2452	95.22	99.37			28.33	4.91	37.39	100	18	Peak
2483.5	44.56	48.52	54	-9.44	28.44	4.92	37.32	100	18	Average
2483.5	61.2	65.16	74	-12.8	28.44	4.92	37.32	100	18	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	35.99	40.47	54	-18.01	28.17	4.87	37.52	100	300	Average
2390	49.97	54.45	74	-24.03	28.17	4.87	37.52	100	300	Peak
2452	85.54	89.69			28.33	4.91	37.39	100	300	Average
2452	95.57	99.72			28.33	4.91	37.39	100	300	Peak
2483.5	47.77	51.73	54	-6.23	28.44	4.92	37.32	100	300	Average
2483.5	62.16	66.12	74	-11.84	28.44	4.92	37.32	100	300	Peak

REMARKS:

1. 2452MHz: Fundamental frequency.



A D T

TEST MODE B

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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	35.72	41.46	54	-18.28	26.91	4.85	37.5	100	320	Average
2388	47.34	53.08	74	-26.66	26.91	4.85	37.5	100	320	Peak
2452	87.21	92.63			27.06	4.91	37.39	100	320	Average
2452	97.06	102.48			27.06	4.91	37.39	100	320	Peak
2483.5	49.07	54.32	54	-4.93	27.15	4.92	37.32	100	320	Average
2483.5	65.08	70.33	74	-8.92	27.15	4.92	37.32	100	320	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
2362	35.66	41.52	54	-18.34	26.81	4.82	37.49	100	8	Average
2362	47.83	53.69	74	-26.17	26.81	4.82	37.49	100	8	Peak
2452	86.06	91.48			27.06	4.91	37.39	100	8	Average
2452	96.03	101.45			27.06	4.91	37.39	100	8	Peak
2483.5	48.73	53.98	54	-5.27	27.15	4.92	37.32	100	8	Average
2483.5	65.7	70.95	74	-8.30	27.15	4.92	37.32	100	8	Peak

REMARKS:

- 2422MHz: Fundamental frequency.



A D T

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

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

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
54.57	23.42	41.40	40.0	-16.58	12.56	0.79	31.33	100	14	Peak
111.81	23.3	43.83	43.5	-20.20	10.18	1.14	31.85	132	52	Peak
179.04	22.38	41.88	43.5	-21.12	10.83	1.5	31.83	177	57	Peak
589.8	25.43	35.14	46.0	-20.57	19.37	3.06	32.14	133	212	Peak
721.4	26.3	33.34	46.0	-19.70	21.12	3.49	31.65	107	44	Peak
766.2	27.71	33.71	46.0	-18.29	21.75	3.61	31.36	100	220	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
42.96	32.53	49.33	40.0	-7.47	13.58	0.7	31.08	132	253	Peak
54.84	26.03	44.11	40.0	-13.97	12.45	0.8	31.33	100	187	Peak
173.1	17.51	36.44	43.5	-25.99	11.38	1.46	31.77	130	285	Peak
737.5	27.15	33.78	46.0	-18.85	21.34	3.54	31.51	253	132	Peak
776.7	27.21	33.06	46.0	-18.79	21.9	3.64	31.39	102	285	Peak
881.7	28.75	33.55	46.0	-17.25	23.27	3.91	31.98	174	44	Peak

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.



A D T

4.2.3 TEST PROCEDURES

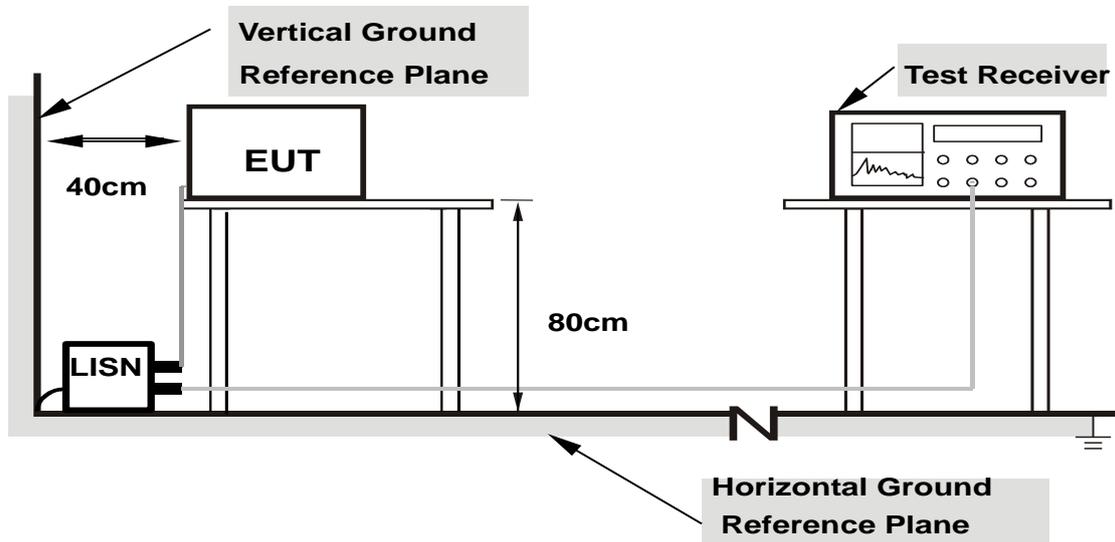
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

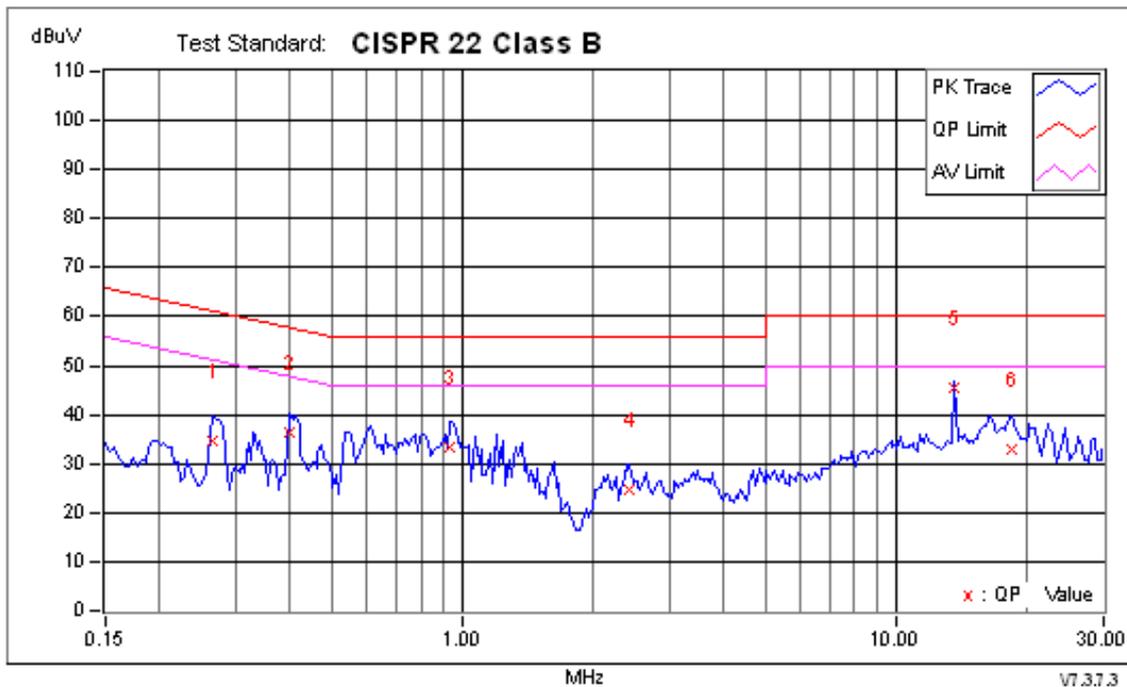
Same as 4.1.6.

4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11g

TEST MODE A

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

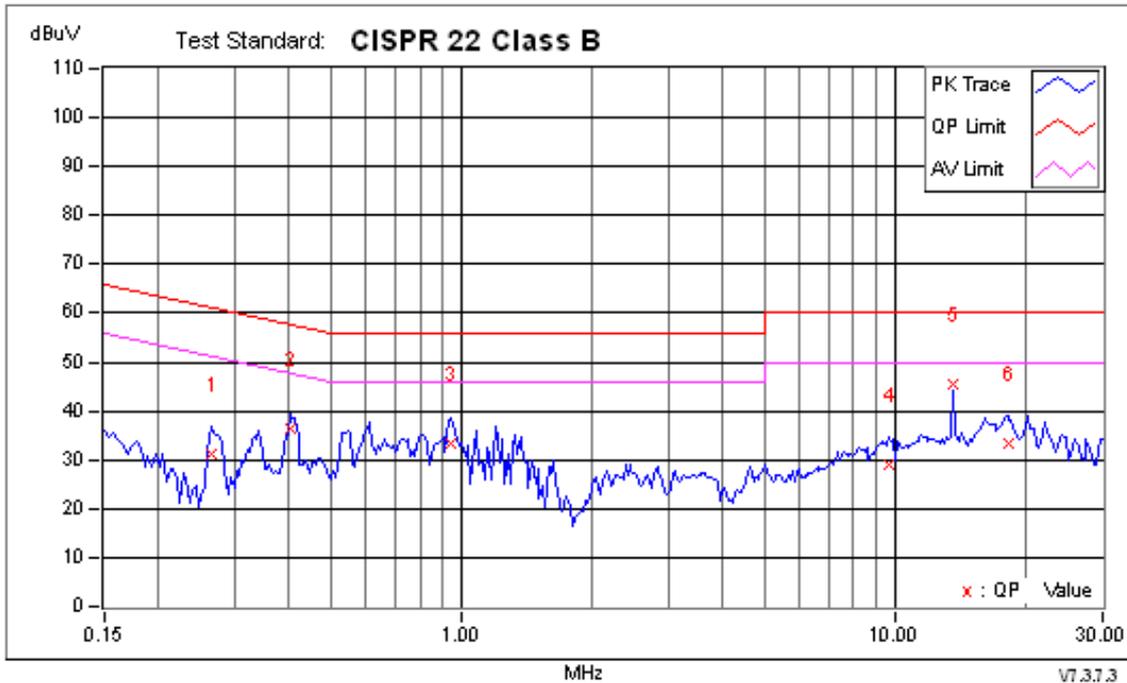


No.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.26328	0.18	34.28	17.75	34.46	17.93	61.33	51.33	-26.86	-33.39	
2	0.40000	0.21	36.31	22.00	36.52	22.21	57.85	47.85	-21.33	-25.64	
3	0.93516	0.26	33.28	17.53	33.54	17.79	56.00	46.00	-22.46	-28.21	
4	2.42578	0.30	24.40	13.80	24.70	14.10	56.00	46.00	-31.30	-31.90	
+5	13.56250	0.50	44.87	41.75	45.37	42.25	60.00	50.00	-14.63	-7.75	
6	18.34375	0.61	32.30	24.32	32.91	24.93	60.00	50.00	-27.09	-25.07	

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
-------	--------	---------------	------



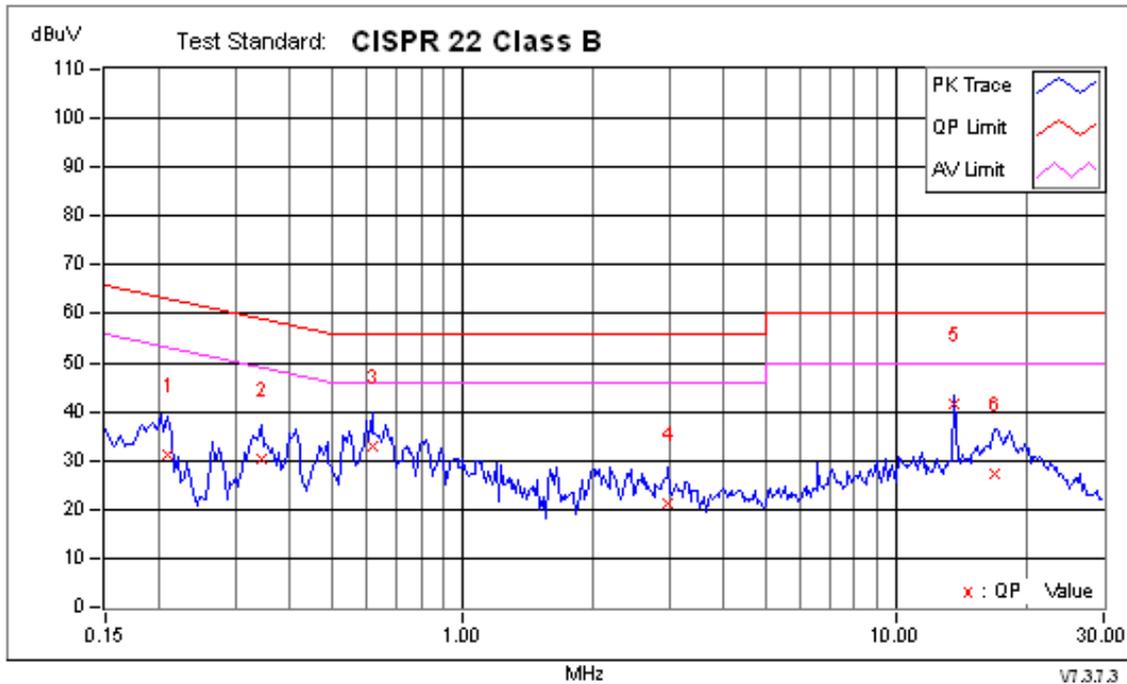
No.	Frequency MHz	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.26328	0.20	30.79	17.43	30.99	17.63	61.33	51.33	-30.34	-33.70	
2	0.40391	0.25	35.94	21.92	36.19	22.17	57.77	47.77	-21.58	-25.60	
3	0.94297	0.23	33.29	18.06	33.52	18.29	56.00	46.00	-22.48	-27.71	
4	9.60547	0.47	28.46	20.80	28.93	21.27	60.00	50.00	-31.07	-28.73	
+5	13.56250	0.57	44.99	41.79	45.56	42.36	60.00	50.00	-14.44	-7.64	
6	18.13281	0.68	32.40	24.56	33.17	25.24	60.00	50.00	-26.83	-24.76	

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.

TEST MODE B

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

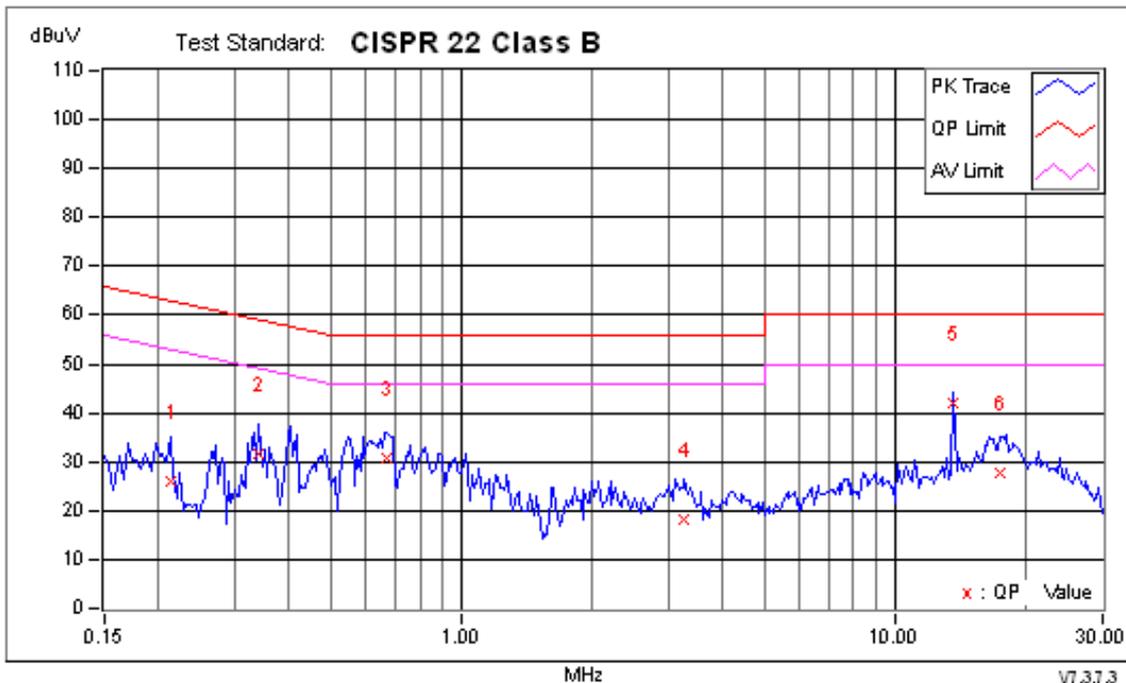


No.	Frequency MHz	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.20859	0.17	31.20	18.18	31.37	18.35	63.26	53.26	-31.89	-34.91	
2	0.34531	0.20	30.16	18.46	30.36	18.66	59.07	49.07	-28.72	-30.42	
3	0.61875	0.23	32.67	25.01	32.90	25.24	56.00	46.00	-23.10	-20.76	
4	2.96875	0.32	20.96	13.16	21.28	13.48	56.00	46.00	-34.72	-32.52	
+5	13.55859	0.50	41.04	39.36	41.54	39.86	60.00	50.00	-18.46	-10.14	
6	16.82422	0.57	26.80	18.69	27.37	19.26	60.00	50.00	-32.63	-30.74	

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.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.21250	0.18	25.85	15.95	26.03	16.13	63.11	53.11	-37.07	-36.97	
2	0.34141	0.23	31.31	19.53	31.54	19.76	59.17	49.17	-27.63	-29.41	
3	0.67344	0.24	30.60	20.04	30.84	20.28	56.00	46.00	-25.16	-25.72	
4	3.25000	0.35	18.00	10.46	18.35	10.81	56.00	46.00	-37.65	-35.19	
+5	13.56250	0.57	41.38	39.62	41.95	40.19	60.00	50.00	-18.05	-9.81	
6	17.46313	0.67	26.98	19.62	27.65	20.29	60.00	50.00	-32.35	-29.71	

REMARKS:

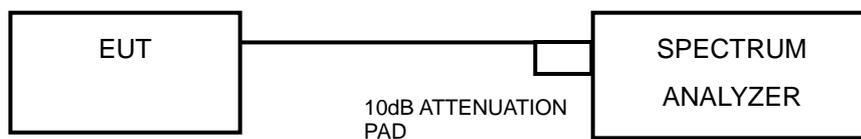
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

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.



4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.01	0.5	PASS
6	2437	8.09	0.5	PASS
11	2462	7.57	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.57	0.5	PASS
6	2437	16.62	0.5	PASS
11	2462	16.74	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.74	0.5	PASS
6	2437	17.88	0.5	PASS
11	2462	17.85	0.5	PASS

802.11n (40MHz)

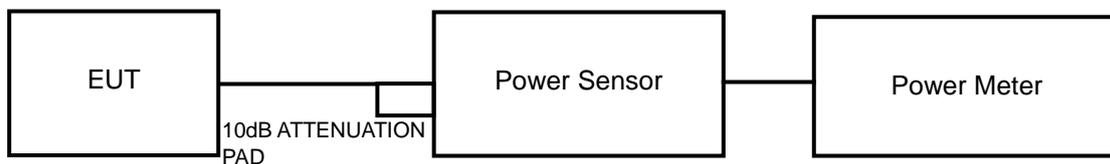
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	37.16	0.5	PASS
6	2437	37.24	0.5	PASS
9	2452	37.33	0.5	PASS

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.



A D T

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	125.893	21	30	PASS
6	2437	126.474	21.02	30	PASS
11	2462	130.617	21.16	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	201.837	23.05	30	PASS
6	2437	242.103	23.84	30	PASS
11	2462	228.560	23.59	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	200.909	23.03	30	PASS
6	2437	221.309	23.45	30	PASS
11	2462	222.331	23.47	30	PASS

802.11n (40MHz)

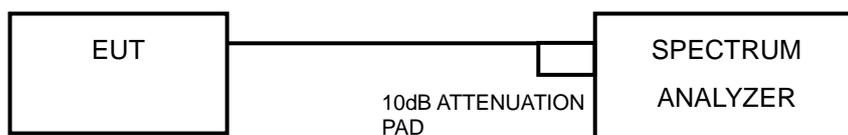
CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	191.867	22.83	30	PASS
6	2437	204.174	23.1	30	PASS
9	2452	204.644	23.11	30	PASS

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

- a. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
- b. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- c. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- d. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{kHz})$

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/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	9.76	-5.44	8	PASS
6	2437	8.44	-6.76	8	PASS
11	2462	9.93	-5.27	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	2.15	-13.05	8	PASS
6	2437	1.94	-13.26	8	PASS
11	2462	1.77	-13.43	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	2.11	-13.09	8	PASS
6	2437	1.89	-13.31	8	PASS
11	2462	1.80	-13.40	8	PASS

802.11n (40MHz)

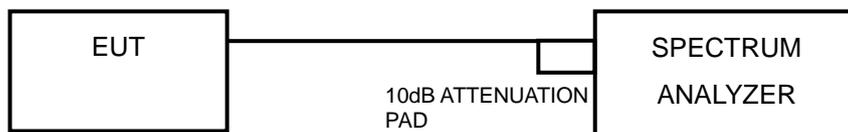
Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-1.38	-16.58	8	PASS
6	2437	-1.36	-16.56	8	PASS
9	2452	-1.50	-16.70	8	PASS

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

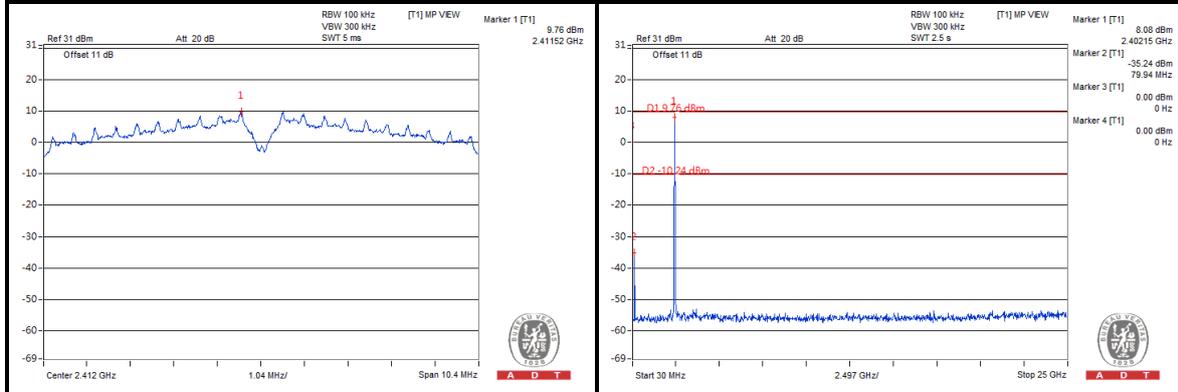
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



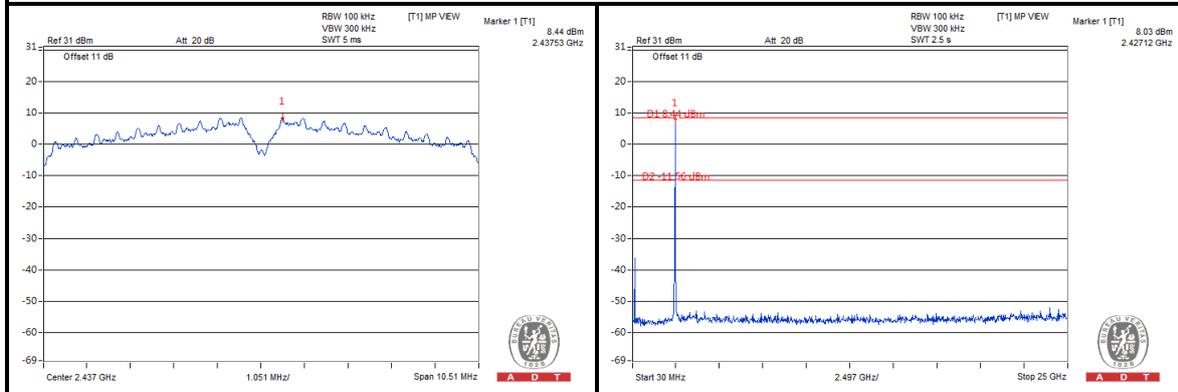
A D T

802.11b

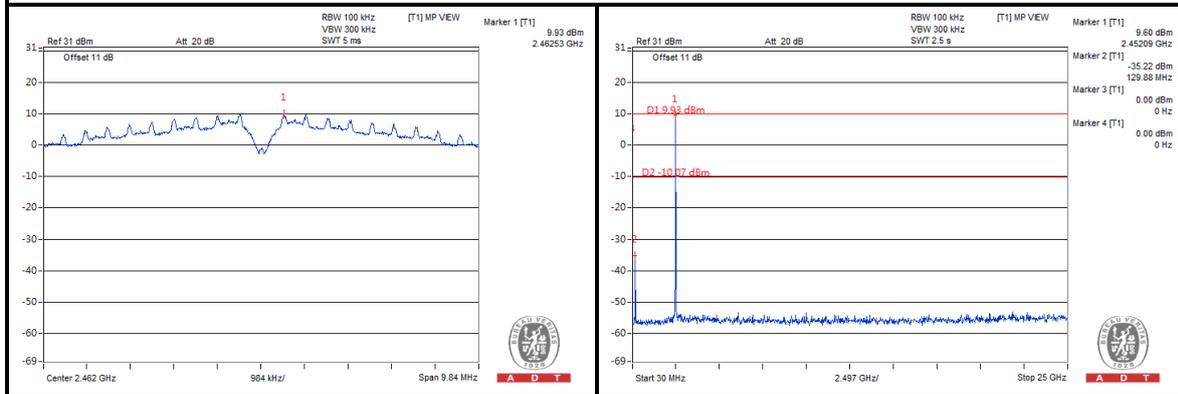
CH 1



CH 6



CH 11

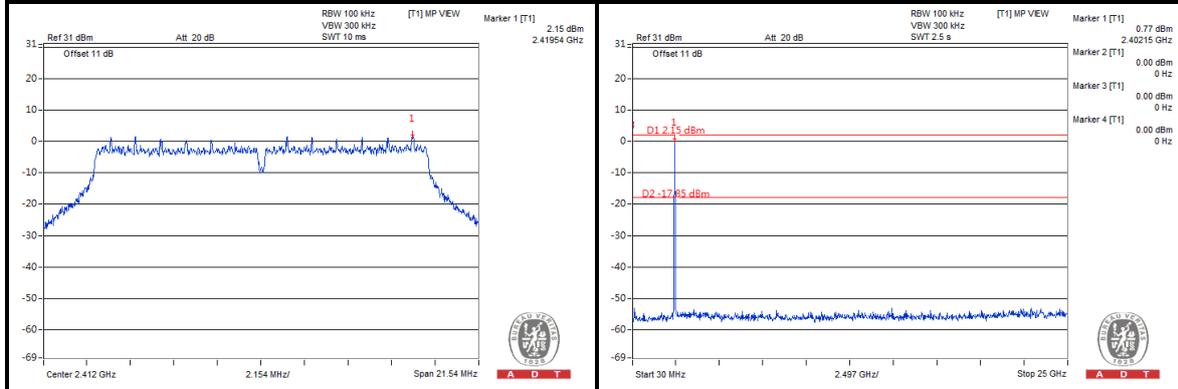




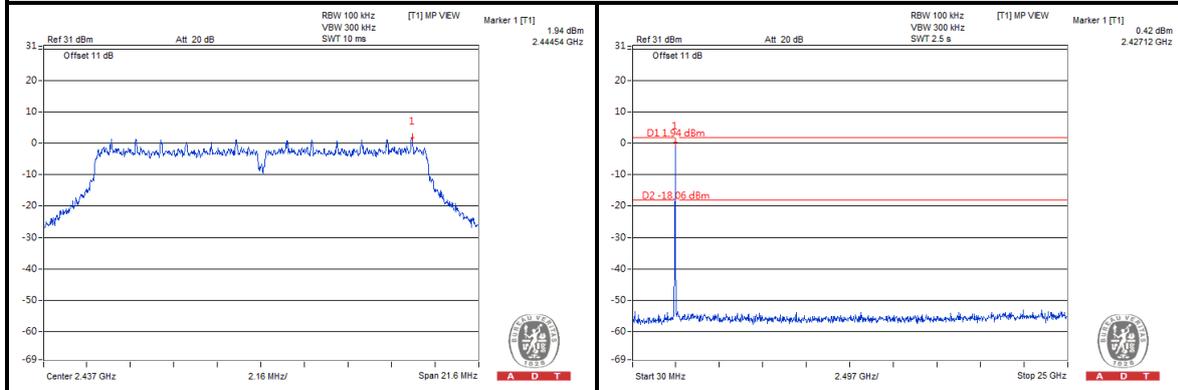
A D T

802.11g

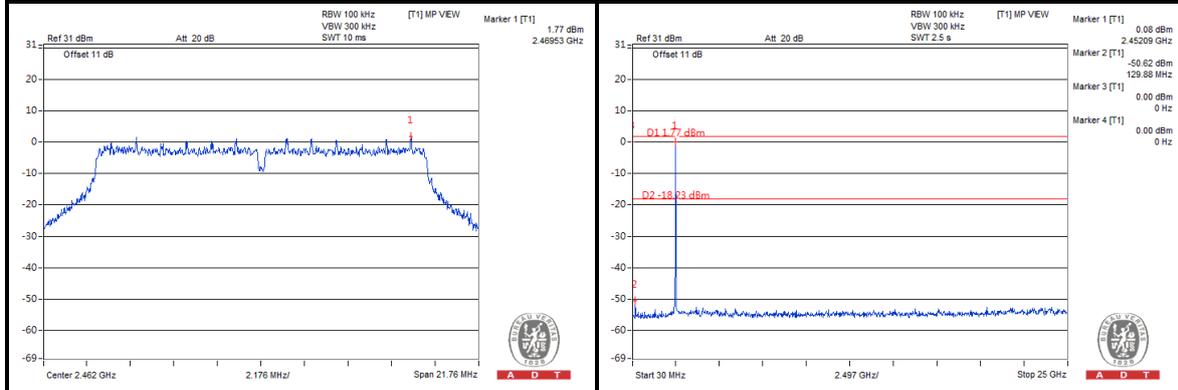
CH 1



CH 6



CH 11

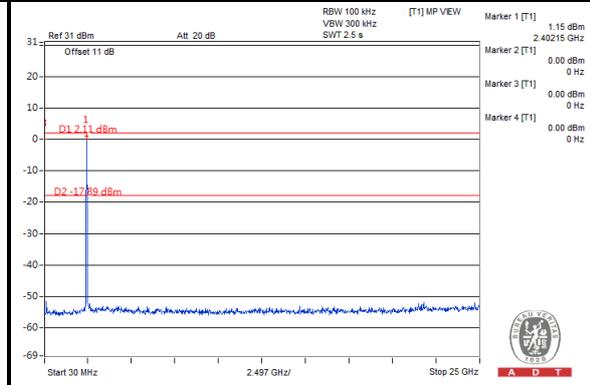
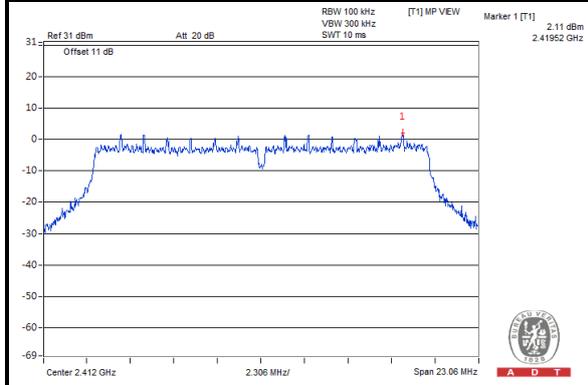




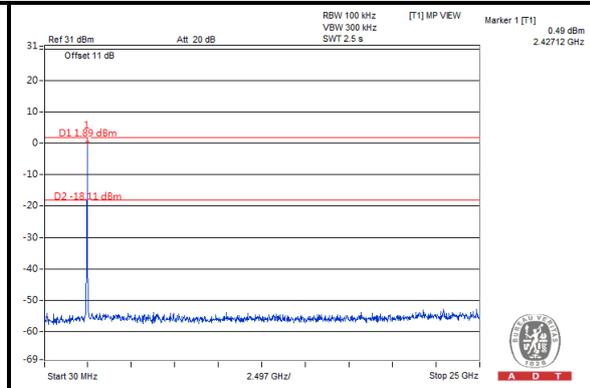
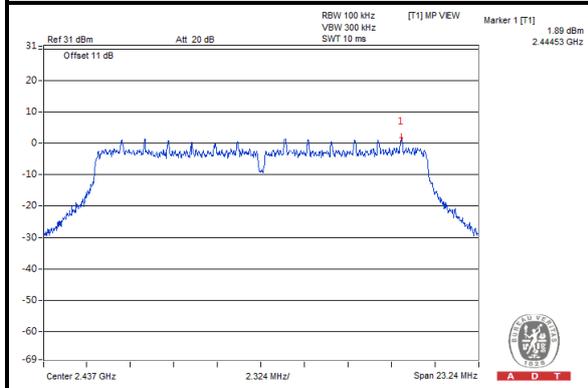
A D T

802.11n (20MHz)

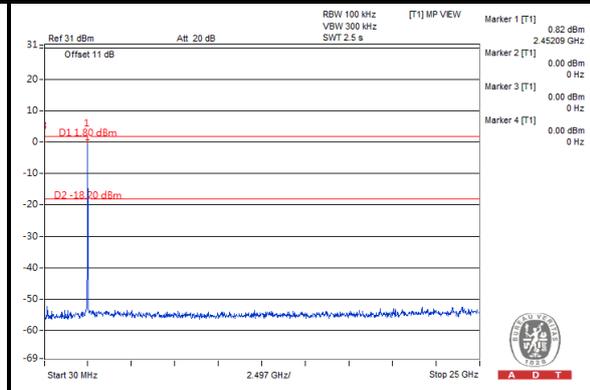
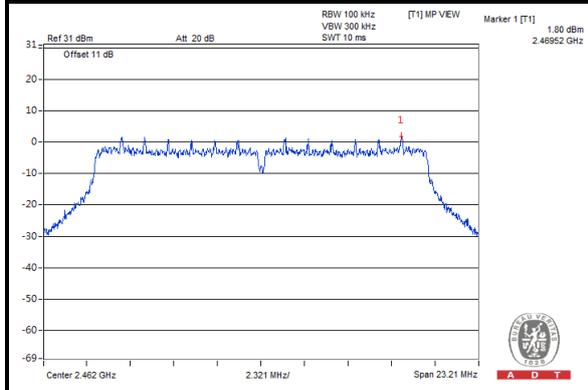
CH 1



CH 6



CH 11

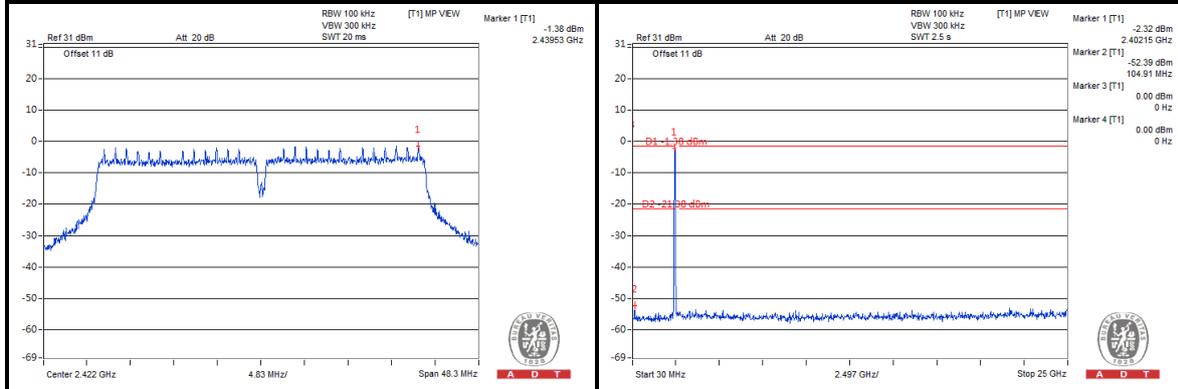




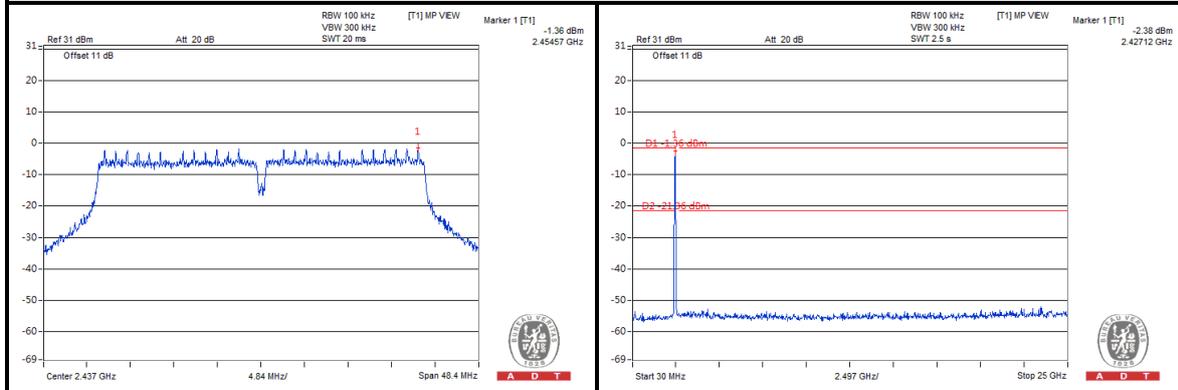
A D T

802.11n (40MHz)

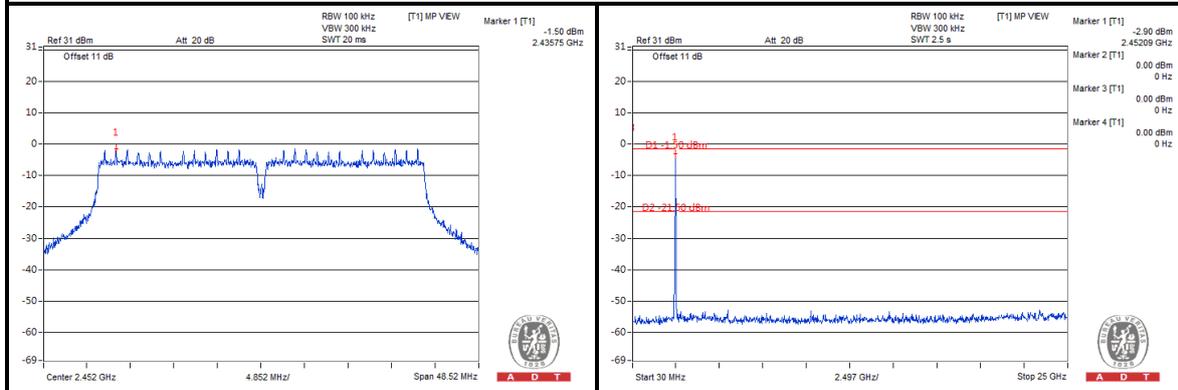
CH 3



CH 6



CH 9



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

TEST MODE A

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	Kay Wu

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
5725	43.4	40.15	61.10	-17.70	32.97	7.71	37.43	100	293	Average
5725	56.49	53.24	70.58	-14.09	32.97	7.71	37.43	100	293	Peak
5745	81.1	77.84			32.99	7.74	37.47	100	293	Average
5745	90.58	87.32			32.99	7.74	37.47	100	293	Peak
5850	41.07	37.64	61.10	-20.03	33.11	7.83	37.51	100	293	Average
5850	53.01	49.58	70.58	-17.57	33.11	7.83	37.51	100	293	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
5725	47.33	44.08	68.09	-20.76	32.97	7.71	37.43	100	8	Average
5725	61.83	58.58	79.40	-17.57	32.97	7.71	37.43	100	8	Peak
5745	88.09	84.83			32.99	7.74	37.47	100	8	Average
5745	99.4	96.14			32.99	7.74	37.47	100	8	Peak
5850	41.32	37.89	68.09	-26.77	33.11	7.83	37.51	100	8	Average
5850	53.74	50.31	79.40	-25.66	33.11	7.83	37.51	100	8	Peak

REMARKS:

- 5745MHz: Fundamental frequency.
- 5725MHz & 5850MHz: 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	Kay Wu

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
5725	41.18	37.93	62.04	-20.86	32.97	7.71	37.43	100	30	Average
5725	52.56	49.31	71.89	-19.33	32.97	7.71	37.43	100	30	Peak
5785	82.04	78.75			33.03	7.8	37.54	100	30	Average
5785	91.89	88.60			33.03	7.8	37.54	100	30	Peak
5850	41.17	37.74	62.04	-20.87	33.11	7.83	37.51	100	30	Average
5850	51.73	48.30	71.89	-20.16	33.11	7.83	37.51	100	30	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
5725	41.65	38.4	68.46	-26.81	32.97	7.71	37.43	100	24	Average
5725	53.11	49.86	77.93	-24.82	32.97	7.71	37.43	100	24	Peak
5785	88.46	85.17			33.03	7.8	37.54	100	24	Average
5785	97.93	94.64			33.03	7.8	37.54	100	24	Peak
5850	41.28	37.85	68.46	-27.18	33.11	7.83	37.51	100	24	Average
5850	52.62	49.19	77.93	-25.31	33.11	7.83	37.51	100	24	Peak

REMARKS:

- 5785MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5725	40.91	37.66	63.70	-22.79	32.97	7.71	37.43	100	305	Average
5725	51.77	48.52	73.35	-21.58	32.97	7.71	37.43	100	305	Peak
5825	83.7	80.32			33.09	7.82	37.53	100	305	Average
5825	93.35	89.97			33.09	7.82	37.53	100	305	Peak
5850	41.9	38.47	63.7	-21.80	33.11	7.83	37.51	100	305	Average
5850	54.46	51.03	73.35	-18.89	33.11	7.83	37.51	100	305	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
5725	41.09	37.84	67.49	-26.40	32.97	7.71	37.43	100	344	Average
5725	53.56	50.31	77.60	-24.04	32.97	7.71	37.43	100	344	Peak
5825	87.49	84.11			33.09	7.82	37.53	100	344	Average
5825	97.6	94.22			33.09	7.82	37.53	100	344	Peak
5850	42.94	39.51	67.49	-24.55	33.11	7.83	37.51	100	344	Average
5850	57.77	54.34	77.60	-19.83	33.11	7.83	37.51	100	344	Peak

REMARKS:

- 5825MHz: Fundamental frequency.
- 5725MHz & 5850MHz: 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	Kay Wu

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
5725	43.45	40.20	61.53	-18.08	32.97	7.71	37.43	100	91	Average
5725	53.57	50.32	70.57	-17.00	32.97	7.71	37.43	100	91	Peak
5745	81.53	78.27			32.99	7.74	37.47	100	91	Average
5745	90.57	87.31			32.99	7.74	37.47	100	91	Peak
5850	41.81	38.38	61.53	-19.72	33.11	7.83	37.51	100	91	Average
5850	50.73	47.30	70.57	-19.84	33.11	7.83	37.51	100	91	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
5725	49.86	46.61	69.88	-20.02	32.97	7.71	37.43	100	22	Average
5725	61.47	58.22	79.06	-17.59	32.97	7.71	37.43	100	22	Peak
5745	89.88	86.62			32.99	7.74	37.47	100	22	Average
5745	99.06	95.80			32.99	7.74	37.47	100	22	Peak
5850	41.93	38.50	69.88	-27.95	33.11	7.83	37.51	100	22	Average
5850	51.14	47.71	79.06	-27.92	33.11	7.83	37.51	100	22	Peak

REMARKS:

- 5745MHz: Fundamental frequency.
- 5725MHz & 5850MHz: 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	Kay Wu

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
5725	41.64	38.39	61.38	-19.74	32.97	7.71	37.43	100	289	Average
5725	50.49	47.24	70.55	-20.06	32.97	7.71	37.43	100	289	Peak
5785	81.38	78.09			33.03	7.8	37.54	100	289	Average
5785	90.55	87.26			33.03	7.8	37.54	100	289	Peak
5850	41.71	38.28	61.38	-19.67	33.11	7.83	37.51	100	289	Average
5850	50.93	47.50	70.55	-19.62	33.11	7.83	37.51	100	289	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
5725	41.67	38.42	68.08	-26.41	32.97	7.71	37.43	100	2	Average
5725	52.75	49.50	76.52	-23.77	32.97	7.71	37.43	100	2	Peak
5785	88.08	84.79			33.03	7.8	37.54	100	2	Average
5785	96.52	93.23			33.03	7.8	37.54	100	2	Peak
5850	42	38.57	68.08	-26.08	33.11	7.83	37.51	100	2	Average
5850	51.98	48.55	76.52	-24.54	33.11	7.83	37.51	100	2	Peak

REMARKS:

- 5785MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5725	41.61	39.37	62.29	-20.68	31.96	7.71	37.43	100	353	Average
5725	52.2	49.96	71.31	-19.11	31.96	7.71	37.43	100	353	Peak
5825	82.29	79.88			32.12	7.82	37.53	100	353	Average
5825	91.31	88.90			32.12	7.82	37.53	100	353	Peak
5850	42.14	39.67	62.29	-20.15	32.15	7.83	37.51	100	353	Average
5850	51.95	49.48	71.31	-19.36	32.15	7.83	37.51	100	353	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
5725	41.53	39.29	69.60	-28.07	31.96	7.71	37.43	100	2	Average
5725	51.8	49.56	78.65	-26.85	31.96	7.71	37.43	100	2	Peak
5825	89.6	87.19			32.12	7.82	37.53	100	2	Average
5825	98.65	96.24			32.12	7.82	37.53	100	2	Peak
5850	44.81	42.34	69.60	-24.79	32.15	7.83	37.51	100	2	Average
5850	60.15	57.68	78.65	-18.50	32.15	7.83	37.51	100	2	Peak

REMARKS:

- 5825MHz: Fundamental frequency.
- 5725MHz & 5850MHz: 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	Kay Wu

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
5725	44.13	40.88	57.50	-13.37	32.97	7.71	37.43	100	289	Average
5725	53.33	50.08	66.67	-13.34	32.97	7.71	37.43	100	289	Peak
5755	77.5	74.22			33.01	7.74	37.47	100	289	Average
5755	86.67	83.39			33.01	7.74	37.47	100	289	Peak
5850	41.81	38.38	57.50	-15.69	33.11	7.83	37.51	100	289	Average
5850	52.47	49.04	66.67	-14.20	33.11	7.83	37.51	100	289	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
5725	50.66	47.41	65.18	-14.52	32.97	7.71	37.43	100	22	Average
5725	62.15	58.90	74.54	-12.39	32.97	7.71	37.43	100	22	Peak
5755	85.18	81.90			33.01	7.74	37.47	100	22	Average
5755	94.54	91.26			33.01	7.74	37.47	100	22	Peak
5850	42.01	38.58	65.18	-23.17	33.11	7.83	37.51	100	22	Average
5850	49.97	46.54	74.54	-24.57	33.11	7.83	37.51	100	22	Peak

REMARKS:

- 5755MHz: Fundamental frequency.
- 5725MHz & 5850MHz: 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	Kay Wu

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
5725	41.42	38.17	64.20	-22.78	32.97	7.71	37.43	100	10	Average
5725	51.06	47.81	73.14	-22.08	32.97	7.71	37.43	100	10	Peak
5795	84.2	80.89			33.05	7.8	37.54	100	10	Average
5795	93.14	89.83			33.05	7.8	37.54	100	10	Peak
5850	41.79	38.36	64.20	-22.41	33.11	7.83	37.51	100	10	Average
5850	52.02	48.59	73.14	-21.12	33.11	7.83	37.51	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
5725	41.51	38.26	57.38	-15.87	32.97	7.71	37.43	104	288	Average
5725	51.14	47.89	65.77	-14.63	32.97	7.71	37.43	104	288	Peak
5795	77.38	74.07			33.05	7.8	37.54	104	288	Average
5795	85.77	82.46			33.05	7.8	37.54	104	288	Peak
5850	41.74	38.31	57.38	-15.64	33.11	7.83	37.51	104	288	Average
5850	50.51	47.08	65.77	-15.26	33.11	7.83	37.51	104	288	Peak

REMARKS:

- 5795MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

TEST MODE B

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	Kay Wu

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
5725	44.68	42.44	61.08	-16.40	31.96	7.71	37.43	100	33	Average
5725	58.7	56.46	71.39	-12.69	31.96	7.71	37.43	100	33	Peak
5755	81.08	78.80			32.01	7.74	37.47	100	33	Average
5755	91.39	89.11			32.01	7.74	37.47	100	33	Peak
5850	40.35	37.88	61.08	-20.73	32.15	7.83	37.51	100	33	Average
5850	51.75	49.28	71.39	-19.64	32.15	7.83	37.51	100	33	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
5725	44.03	41.79	60.43	-16.40	31.96	7.71	37.43	100	317	Average
5725	57.14	54.90	69.85	-12.71	31.96	7.71	37.43	100	317	Peak
5755	80.43	78.15			32.01	7.74	37.47	100	317	Average
5755	89.85	87.57			32.01	7.74	37.47	100	317	Peak
5850	40.59	38.12	60.43	-19.84	32.15	7.83	37.51	100	317	Average
5850	51.04	48.57	69.85	-18.81	32.15	7.83	37.51	100	317	Peak

REMARKS:

- 5755MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
43.23	26.66	43.47	40.0	-13.34	13.59	0.71	31.11	102	152	Peak
107.49	29.83	50.77	43.5	-13.67	9.81	1.11	31.86	106	263	Peak
178.23	23.66	43.07	43.5	-19.84	10.92	1.49	31.82	112	235	Peak
646.5	24.48	33.12	46.0	-21.52	20.17	3.23	32.04	112	193	Peak
724.2	26.24	33.21	46.0	-19.76	21.16	3.5	31.63	115	286	Peak
804	27.56	33.02	46.0	-18.44	22.28	3.7	31.44	164	248	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
43.77	37.54	54.35	40.0	-2.46	13.59	0.71	31.11	145	243	Peak
61.86	32.00	50.90	40.0	-8.00	11.71	0.84	31.45	108	154	Peak
108.03	22.42	43.36	43.5	-21.08	9.81	1.11	31.86	131	185	Peak
745.9	26.69	33.04	46.0	-19.31	21.46	3.56	31.37	110	185	Peak
860.7	28.40	33.45	46.0	-17.60	23	3.85	31.9	112	195	Peak
920.9	28.82	33.19	46.0	-17.18	23.62	4.01	32	115	237	Peak



A D T

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.

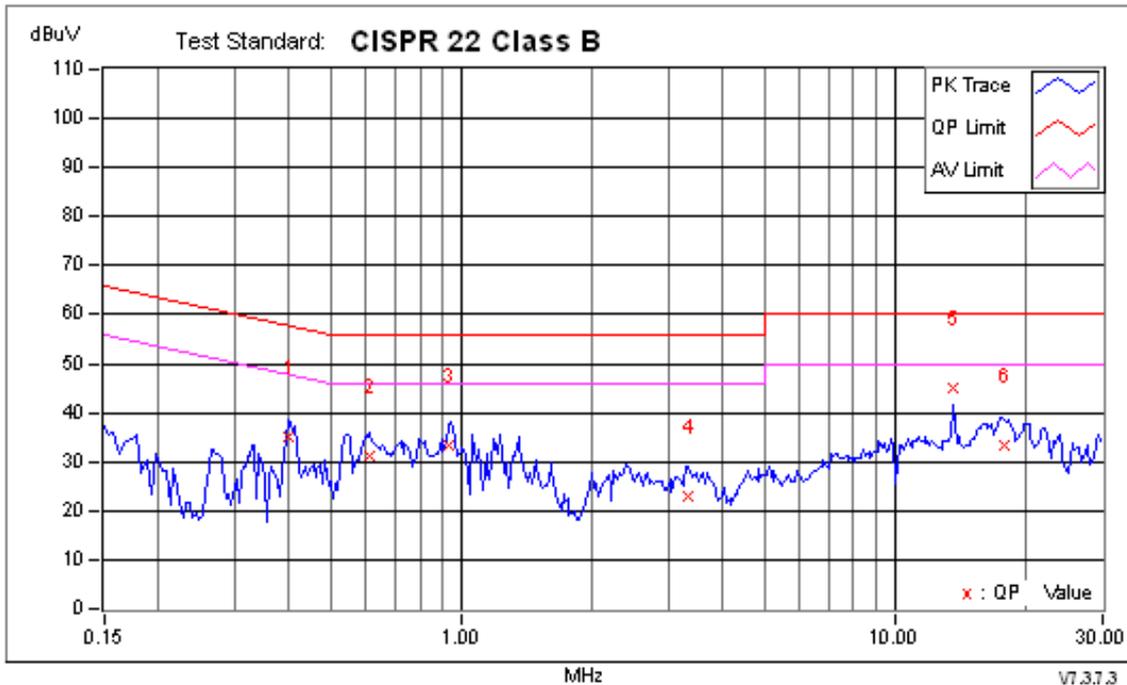
5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA : 802.11a

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

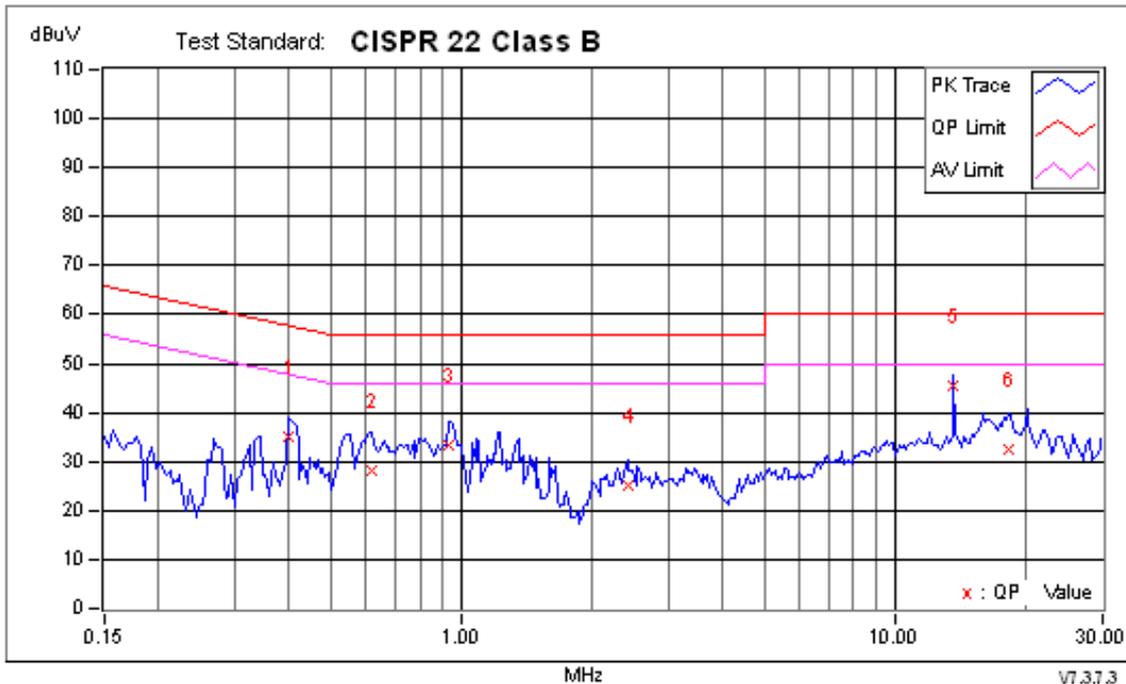


No.	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
	MHz		QP	AV	QP	AV	QP	AV	QP	AV	
1	0.39609	0.21	34.77	18.44	34.98	18.65	57.93	47.93	-22.96	-29.29	
2	0.61094	0.23	30.74	20.94	30.97	21.17	56.00	46.00	-25.03	-24.83	
3	0.92734	0.26	32.98	18.19	33.24	18.45	56.00	46.00	-22.76	-27.55	
4	3.32813	0.34	22.63	13.90	22.97	14.24	56.00	46.00	-33.03	-31.76	
+5	13.55859	0.50	44.67	41.59	45.17	42.09	60.00	50.00	-14.83	-7.91	
6	17.87109	0.60	32.60	24.71	33.20	25.31	60.00	50.00	-26.80	-24.69	

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.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.39609	0.25	35.04	18.73	35.29	18.98	57.93	47.93	-22.65	-28.96	
2	0.62266	0.24	28.03	17.94	28.27	18.18	56.00	46.00	-27.73	-27.82	
3	0.93125	0.23	33.06	18.11	33.29	18.34	56.00	46.00	-22.71	-27.66	
4	2.41797	0.30	25.01	14.24	25.31	14.54	56.00	46.00	-30.69	-31.46	
+5	13.56250	0.57	44.97	41.97	45.54	42.54	60.00	50.00	-14.46	-7.46	
6	18.29297	0.69	31.65	23.90	32.34	24.59	60.00	50.00	-27.66	-25.41	

REMARKS:

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



A D T

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	16.62	0.5	PASS
157	5785	16.55	0.5	PASS
165	5825	16.56	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.91	0.5	PASS
157	5785	17.88	0.5	PASS
165	5825	17.98	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	37.3	0.5	PASS
159	5795	37.09	0.5	PASS



A D T

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.

5.4.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	266.073	24.25	30	PASS
157	5785	254.683	24.06	30	PASS
161	5825	271.644	24.34	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	224.388	23.51	30	PASS
157	5785	237.684	23.76	30	PASS
161	5825	268.534	24.29	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	209.894	23.22	30	PASS
159	5795	226.464	23.55	30	PASS



A D T

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/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-0.37	-15.57	8	PASS
157	5785	0.04	-15.16	8	PASS
161	5825	0.28	-14.92	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-0.28	-15.48	8	PASS
157	5785	0.00	-15.20	8	PASS
161	5825	0.48	-14.72	8	PASS

802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
151	5755	-3.86	-19.06	8	PASS
159	5795	-3.60	-18.80	8	PASS



A D T

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

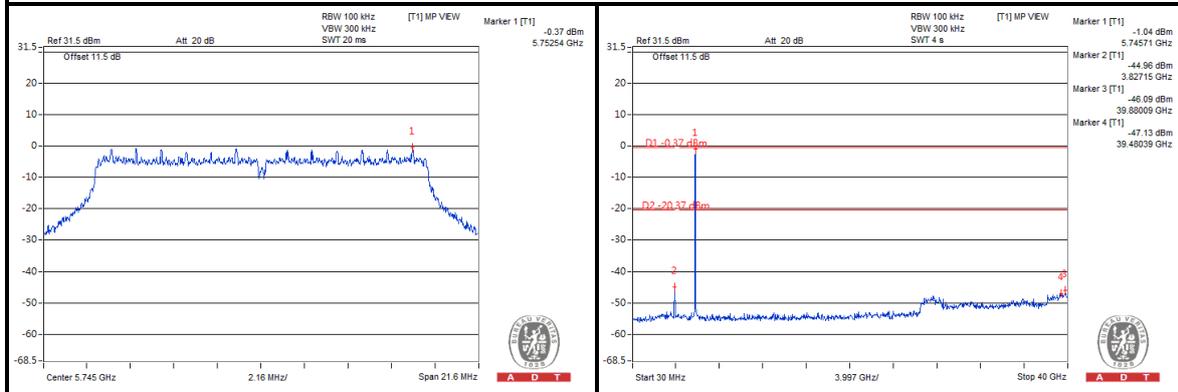
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



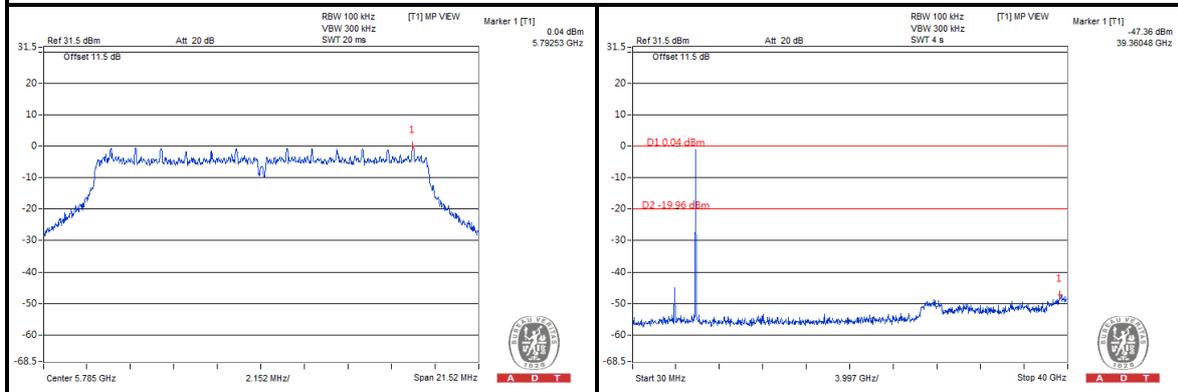
A D T

802.11a

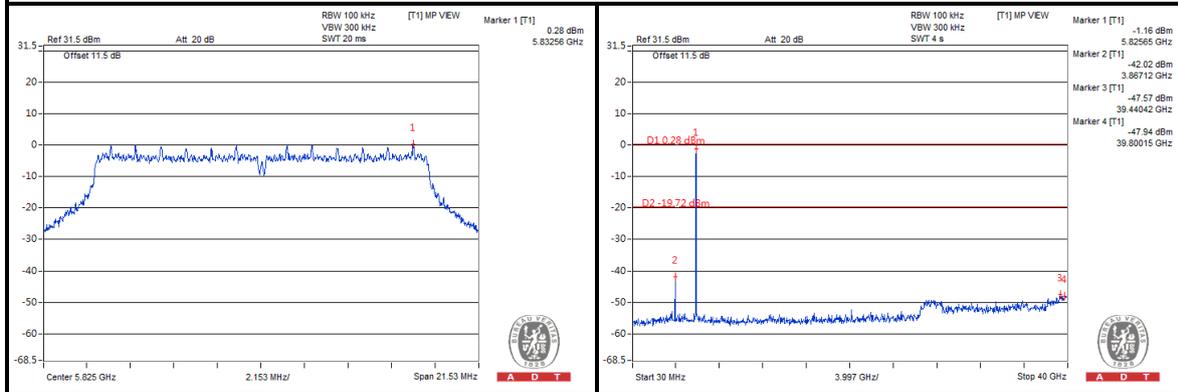
CH 149



CH 157



CH 165

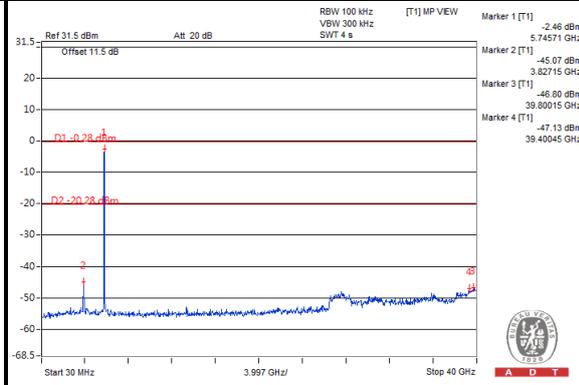
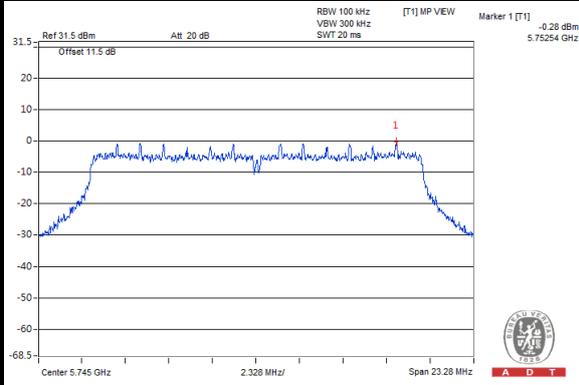




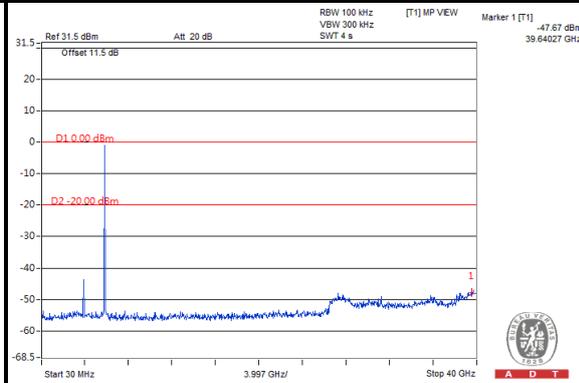
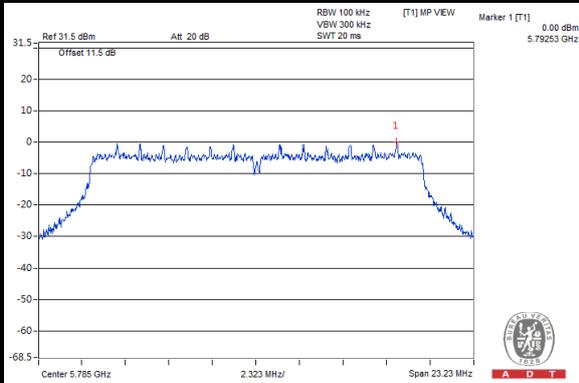
A D T

802.11n (20MHz)

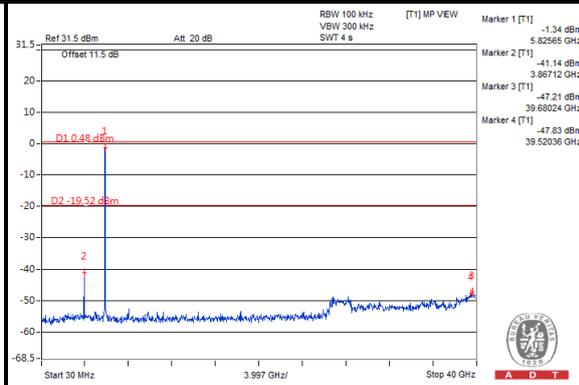
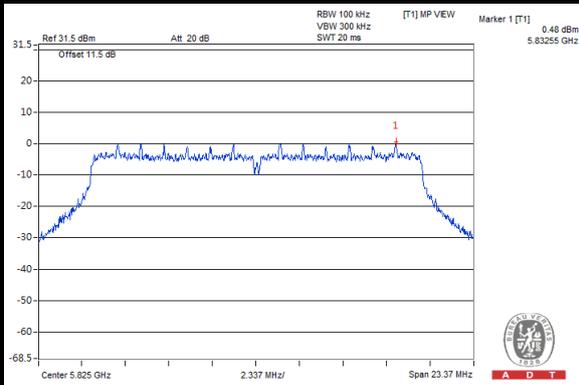
CH 149



CH 157



CH 165

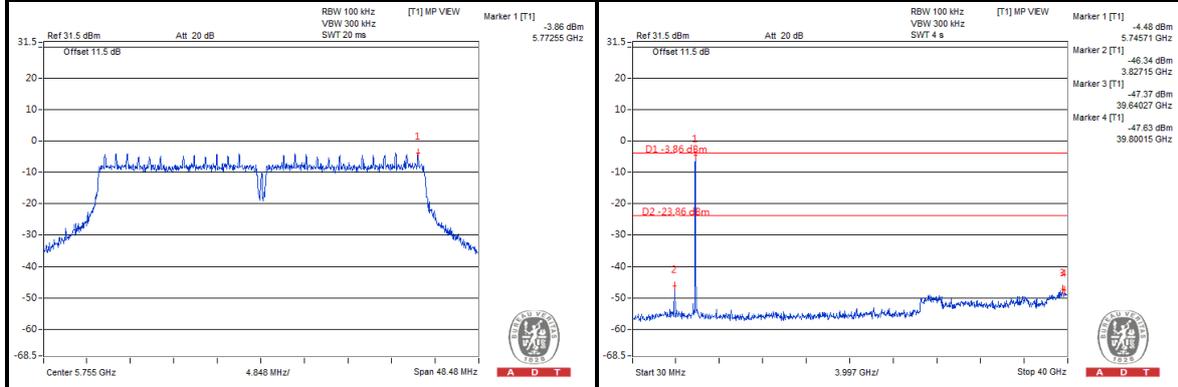




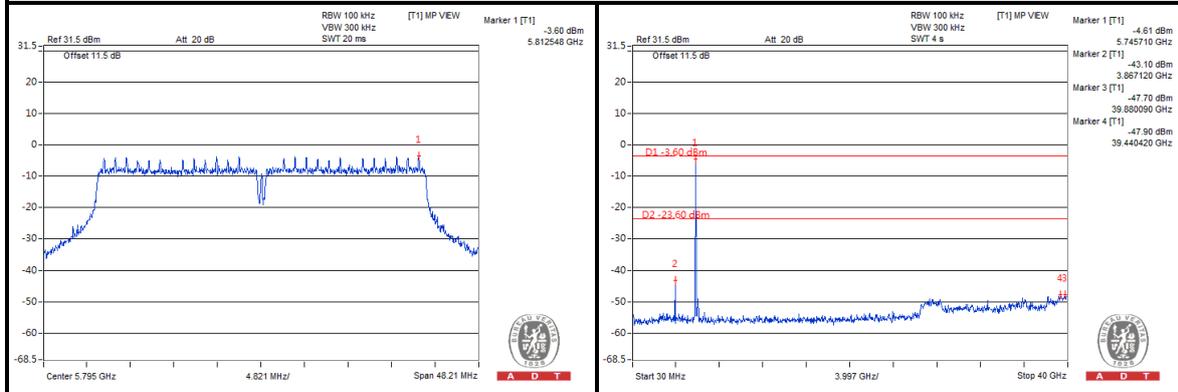
A D T

802.11n (40MHz)

CH 151



CH 159





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---