FCC TEST REPORT (15.247)

REPORT NO.:	RF120120E03F
MODEL NO.:	AR5BMD22
FCC ID:	PPD-AR5BMD22
IC:	4104A-AR5BMD22
RECEIVED:	Mar. 14, 2013
TESTED:	Mar. 27 to Apr. 23, 2013
ISSUED:	Apr. 26, 2013

APPLICANT:	Qualcomm Atheros, Inc.
ADDRESS:	1700 Technology Drive, San Jose, CA 95110

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS :	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, 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.

Testing Laboratory 2022

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

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120120E03F	Original release	Apr. 26, 2013

1. CERTIFICATION

PRODUCT:	802.11 a/b/g/n + BT Combo Card
BRAND NAME:	Qualcomm Atheros
MODEL NO.:	AR5BMD22
TEST SAMPLE:	R&D SAMPLE
APPLICANT:	Qualcomm Atheros, Inc.
TESTED:	Mar. 27 to Apr. 23, 2013
STANDARDS:	FCC Part 15, Subpart C (Section 15.247) ANSI C63.10-2009 Canada RSS-210 Issue 8 (2010-12) Canada RSS-Gen Issue 3 (2010-12)

The above equipment (Model: AR5BMD22) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and was in compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** *Apr. 26, 2013*
(Midoli Peng, Specialist)

APPROVED BY : _____ , **DATE:** *Apr. 26, 2013*
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz(WLAN), 2412~2462MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) ; RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15	RSS-Gen			
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 2390.00MHz
15.247(b)	RSS-210 A8.2 (4)	Conducted power	PASS	Meet the requirement of limit.
15.203	-	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

For 2.4GHz(Bluetooth(LE mode)), 2402~2480MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) ; RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15	RSS-Gen			
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00MHz
15.247(b)	RSS-210 A8.2 (4)	Conducted power	PASS	Meet the requirement of limit.
15.203	-	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

For 5GHz, 5725~5850MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) ; RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15	RSS-Gen			
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.3dB at 298.84MHz
15.247(b)	RSS-210 A8.2 (4)	Conducted power	PASS	Meet the requirement of limit.
15.203	-	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

NOTE:

1. For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz and 5.725~5.850GHz. For the 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz RF parameters was recorded in another test report..
2. This report is prepared for FCC class II change and IC reassessment change. Only radiated emission / conducted power were presented in this test report.

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:

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

Measurement	Value
Radiated emissions (30MHz-1GHz)	5.43 dB
Radiated emissions (1GHz -6GHz)	3.54 dB
Radiated emissions (6GHz -18GHz)	4.08 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	802.11 a/b/g/n + BT Combo Card
MODEL NO.	AR5BMD22
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM GFSK(BT <LE> mode) for DSSS
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 300Mbps Bluetooth(LE mode): 1Mbps
OPERATING FREQUENCY	**For 15.407** 802.11a: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.58GHz & 5.66~5.7GHz
	For 15.247 802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.745 ~ 5.825GHz Bluetooth(LE mode): 2.402 ~ 2.480GHz
NUMBER OF CHANNEL	**For 15.407** 16 for 802.11a, 802.11n (HT20) 7 for 802.11n (HT40)
	For 15.247(2.4GHz) 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) 40 (37 hopping + 3 advertising channel) for Bluetooth(LE mode) **For 15.247(5GHz)** 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)

MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 56.402mW 802.11n (HT20): 43.173mW 802.11n (HT40): 43.861mW **For 15.247(2.4GHz)** 802.11b: 133.045mW 802.11g: 370.928mW 802.11n (HT20): 355.657mW 802.11n (HT40): 290.422mW Bluetooth(LE mode): 2.897 mW **For 15.247(5GHz)** 802.11a: 235.229mW 802.11n (HT20): 184.624mW 802.11n (HT40): 182.450mW
ANTENNA TYPE	See item 3.2
ANTENNA CONNECTOR	See item 3.2
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. This report is prepared for FCC class II permissive change and IC reassessment change. The difference compared with the Report No.: RF120120E03 R2 design is as the following information:
   - **u** Change the brand name.
   - **u** Enable the implementation of using micro-strip and RF connectors on mother board
2. There are Bluetooth technology and WLAN technology used for the EUT.
3. The device has three configurations (working mode)
   a. WLAN only (2x2 MIMO)
   b. BT+WLAN (2x2 MIMO) with reduced power on WLAN
   c. BT+WLAN (1x1 mode on a/b/g only, chain 0 is used for BT and chain 1 is used for WLAN)

4. Spurious Emission (radiated emission) of the simultaneous operation (WiFi & Bluetooth) have been evaluated and no non-compliance found. The detail combinations of transmitters / frequencies / modes as below table

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type
2.4 GHz (802.11g) + Bluetooth	1 to 11	6	OFDM	BPSK
	0 to 78	0	FHSS	8DPSK
5 GHz (802.11a) + Bluetooth	149 to 165	157	OFDM	BPSK
	0 to 78	0	FHSS	8DPSK

5. This device support the power back off (For WLAN only mode.) for WLAN/BT coexist mode. The WiFi output power will reduce 5dB from Maximum power for WLAN and BT simultaneously transmission.

6. The EUT is 2 * 2 MIMO with 11n beam forming function.

MODULATION MODE	TX/Rx FUNCTION
802.11b	1TX/1RX(Diversity) or 2TX/2RX
802.11g	1TX/1RX (Diversity) or 2TX/2RX
802.11a	1TX/1RX (Diversity) or 2TX/2RX
802.11n (HT20)	2TX/2RX
802.11n (HT40)	2TX/2RX

7. The EUT was pre-tested under the following modes:

Test Mode	Data rate
Mode A	400ns GI
Mode B	**800ns GI**

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

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

3.2 DESCRIPTION OF ANTENNA

The antenna provided to the EUT, please refer to the following table:

No.	Brand	Model	Antenna Type	Connector	Antenna Gain (dBi)< included cable loss>			
					For 2.4GHz	For 5GHz (5.15~5.35)	For 5GHz (5.47~5.725)	For 5GHz (5.725~5.850)
1&2	WNC	81.EBJ15.005	PIFA	IPEX	3.62	3.08	4.76	4.76

Cable Loss:

No.	Brand	Model	Cable Loss(dB)				Cable Length
			For 2.4GHz	For 5GHz (5.15~5.35)	For 5GHz (5.47~5.725)	For 5GHz (5.725~5.850)	
1&2	WNC	81-EBJ15.005	1.15	1.70	1.74	1.79	300

Note: Above antenna gains of antenna are Total (H+V).

3.3 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

Eleven channels are provided for 802.11b, 802.11g, 802.11n (HT20):

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		

Seven channels are provided for 802.11n (HT40):

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

Forty channels are provided for Bluetooth LE mode:

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Operated in 5725 ~ 5850MHz band:

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

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

Two channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

3.3.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE < 1G	RE ³ 1G	APCM	
-	√	√	√	-

Where **RE < 1G:** Radiated Emission below 1GHz **RE ³ 1G:** Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

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

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ 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).

☒ The investigation has been done for the worst-case (1x1 vs. 2x2) on harmonics and band-edge to find out the worst-case for the final tests.

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	6
Bluetooth LE	0 to 39	0	FHSS	1
802.11a	149 to 165	157	OFDM	6

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ 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).

☒ The measurement was separately on 1x1 and 2x2 for a/b/g mode.

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5
Bluetooth LE	0 to 39	0, 19, 39	FHSS	1
802.11a	149 to 165	149, 157, 165	OFDM	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	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).

☒ The measurement was separately on 1x1 and 2x2 for a/b/g mode.

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5
Bluetooth LE	0 to 39	0, 19, 39	FHSS	1
802.11a	149 to 165	149, 157, 165	OFDM	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Nelson Tseng
RE≥1G	22deg. C, 65%RH	120Vac, 60Hz	Nelson Tseng
APCM	25deg. C, 60%RH	120Vac, 60Hz	James Chan

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)
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)
ANSI C63.10-2009

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

3.5 DESCRIPTION OF SUPPORT UNITS

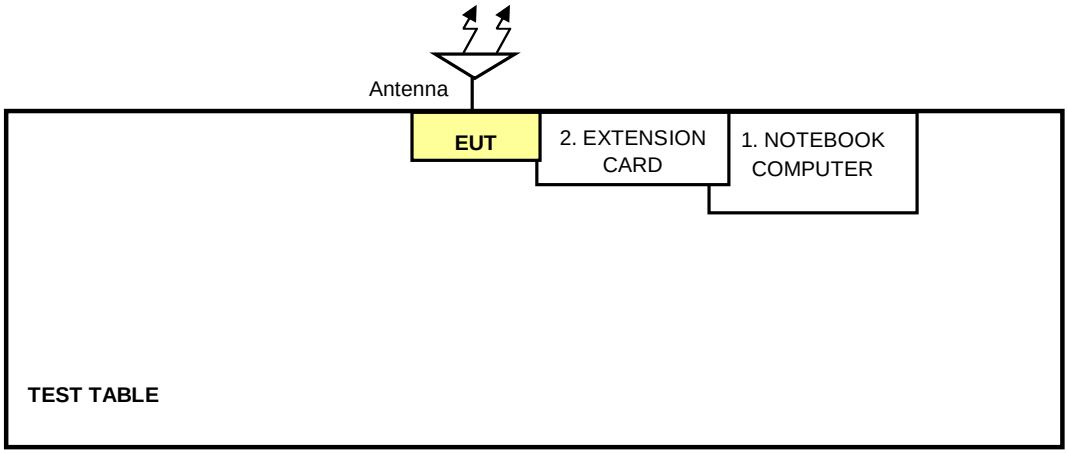
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	Lenovo	0769	L3-be248 08/01	FCC DoC
2	EXTENSION CARD	Atheros	NA	NA	NA

No.	Signal cable description
1	NA
2	NA

Note: The power cords of the above support units were unshielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS (FOR 2.4GHz, 2400 ~ 2483.5MHz BAND)

4.1 CONDUCTED OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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

4.1.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 10, 2012	May 09, 2013
Power Sensor	MA2411B	0738172	May 10, 2012	May 09, 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. Tested date :Apr. 23, 2013

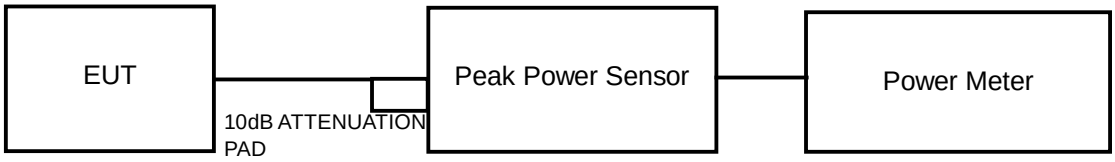
4.1.3 TEST PROCEDURES

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.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



4.1.6 EUT OPERATING CONDITIONS

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

4.1.7 TEST RESULTS (WLAN MODE)

Single chain - 802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	101.625	20.07	30	PASS
6	2437	133.045	21.24	30	PASS
11	2462	114.551	20.59	30	PASS

Single chain - 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	186.638	22.71	30	PASS
6	2437	270.396	24.32	30	PASS
11	2462	115.878	20.64	30	PASS

Multiple chain - 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	17.83	18.26	127.662	21.06	29.37	PASS
6	2437	18.24	18.11	131.395	21.19	29.37	PASS
11	2462	18.16	17.74	124.893	20.97	29.37	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.63dBi > 6dBi , so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

Multiple chain - 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	18.47	19.54	160.257	22.05	29.37	PASS
6	2437	22.83	22.53	370.928	25.69	29.37	PASS
11	2462	19.02	19.25	163.939	22.15	29.37	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.63dBi > 6dBi , so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	18.54	19.35	157.549	21.97	29.37	PASS
6	2437	22.51	22.49	355.657	25.51	29.37	PASS
11	2462	17.67	17.95	120.852	20.82	29.37	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.63dBi > 6dBi , so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	16.55	17.88	106.562	20.28	29.37	PASS
6	2437	21.62	21.62	290.422	24.63	29.37	PASS
9	2452	16.41	16.49	88.318	19.46	29.37	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.63dBi > 6dBi , so the power limit shall be reduced to 30-(6.63-6) = 29.37dBm.

4.1.1 TEST RESULTS (BT<LE> MODE)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
0	2402	2.773	4.43	30	PASS
19	2440	2.891	4.61	30	PASS
39	2480	2.897	4.62	30	PASS

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION 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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Mar. 27 to Apr. 23, 2013

4.2.3 TEST PROCEDURES

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

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

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

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

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

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

NOTE:

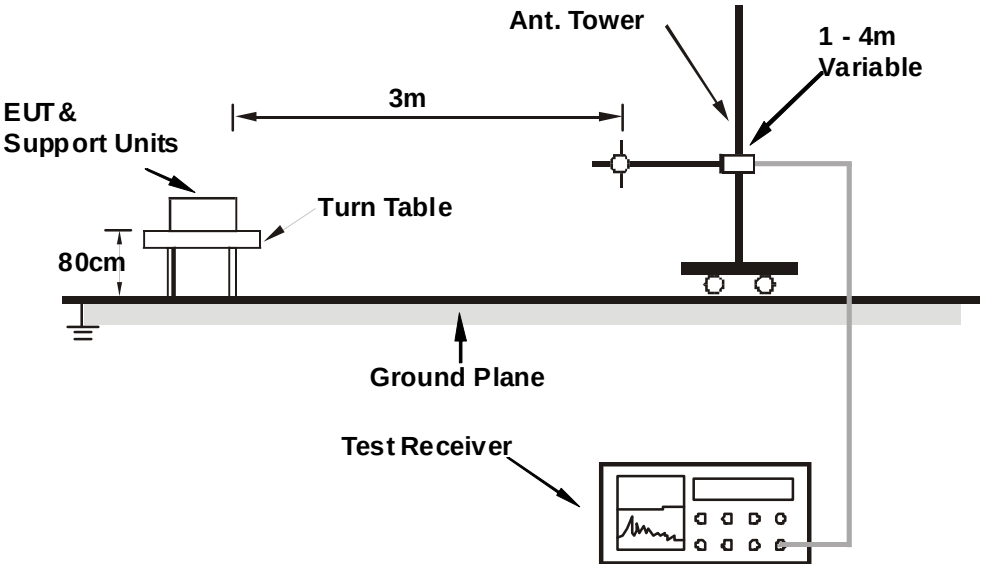
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

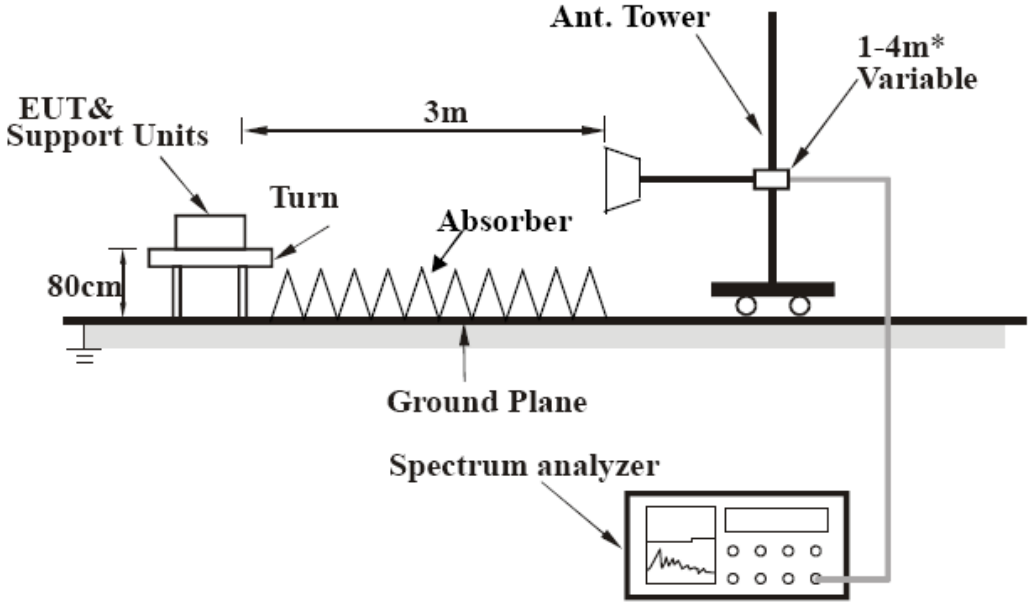
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “artgui.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.2.7 TEST RESULTS (WLAN MODE)

BELOW 1GHz WORST-CASE DATA

Multiple chain - 802.11g

CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	138.25	34.0 QP	43.5	-9.5	2.00 H	353	47.73	-13.70
2	165.99	39.3 QP	43.5	-4.2	1.50 H	360	53.11	-13.79
3	399.62	41.2 QP	46.0	-4.8	1.00 H	239	51.21	-10.03
4	443.80	36.7 QP	46.0	-9.3	2.00 H	243	45.78	-9.06
5	898.93	42.2 QP	46.0	-3.8	1.50 H	309	42.64	-0.44
6	999.03	37.9 QP	54.0	-16.1	1.25 H	222	36.35	1.52
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	34.56	33.3 QP	40.0	-6.7	1.00 V	295	47.81	-14.47
2	115.75	34.5 QP	43.5	-9.0	1.00 V	83	50.41	-15.91
3	148.00	34.3 QP	43.5	-9.2	2.00 V	290	47.49	-13.21
4	298.79	40.5 QP	46.0	-5.5	2.00 V	241	52.99	-12.47
5	332.98	28.2 QP	46.0	-17.8	1.50 V	8	39.76	-11.60
6	899.31	39.8 QP	46.0	-6.2	1.50 V	291	40.22	-0.43

REMARKS:

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

ABOVE 1GHz WORST-CASE DATA

Single chain - 802.11b

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2386.20	60.6 PK	74.0	-13.4	1.41 H	121	28.23	32.37
2	2386.20	53.0 AV	54.0	-1.0	1.41 H	121	20.63	32.37
3	*2412.00	106.5 PK			1.37 H	118	74.06	32.44
4	*2412.00	104.5 AV			1.37 H	118	72.06	32.44
5	4824.00	55.3 PK	74.0	-18.7	1.09 H	69	13.36	41.94
6	4824.00	51.4 AV	54.0	-2.6	1.09 H	69	9.46	41.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	59.7 PK	74.0	-14.3	1.06 V	248	27.32	32.38
2	2390.00	49.1 AV	54.0	-4.9	1.06 V	248	16.72	32.38
3	*2412.00	104.6 PK			1.06 V	248	72.16	32.44
4	*2412.00	102.7 AV			1.06 V	248	70.26	32.44
5	4824.00	55.3 PK	74.0	-18.7	1.04 V	108	13.36	41.94
6	4824.00	51.5 AV	54.0	-2.5	1.04 V	108	9.56	41.94

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.1 PK			1.33 H	119	75.59	32.51
2	*2437.00	106.3 AV			1.33 H	119	73.79	32.51
3	4874.00	53.9 PK	74.0	-20.1	1.18 H	90	11.91	41.99
4	4874.00	49.5 AV	54.0	-4.5	1.18 H	90	7.51	41.99
5	7311.00	56.9 PK	74.0	-17.1	1.77 H	171	10.37	46.53
6	7311.00	46.7 AV	54.0	-7.3	1.77 H	171	0.17	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.6 PK			1.02 V	260	72.09	32.51
2	*2437.00	102.8 AV			1.02 V	260	70.29	32.51
3	4874.00	54.4 PK	74.0	-19.6	1.03 V	109	12.41	41.99
4	4874.00	49.1 AV	54.0	-4.9	1.03 V	109	7.11	41.99
5	7311.00	58.9 PK	74.0	-15.1	1.52 V	286	12.37	46.53
6	7311.00	51.1 AV	54.0	-2.9	1.52 V	286	4.57	46.53

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.6 PK			1.37 H	124	75.03	32.57
2	*2462.00	105.7 AV			1.37 H	124	73.13	32.57
3	2487.82	59.8 PK	74.0	-14.2	1.37 H	124	27.16	32.64
4	2487.82	50.6 AV	54.0	-3.4	1.37 H	124	17.96	32.64
5	4924.00	50.7 PK	74.0	-23.3	1.17 H	89	8.69	42.01
6	4924.00	42.2 AV	54.0	-11.8	1.17 H	89	0.19	42.01
7	7386.00	57.4 PK	74.0	-16.6	1.77 H	166	10.67	46.73
8	7386.00	47.0 AV	54.0	-7.0	1.77 H	166	0.27	46.73
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.6 PK			1.03 V	257	72.03	32.57
2	*2462.00	102.5 AV			1.03 V	257	69.93	32.57
3	2483.50	59.3 PK	74.0	-14.7	1.03 V	280	26.67	32.63
4	2483.50	49.2 AV	54.0	-4.8	1.03 V	280	16.57	32.63
5	4924.00	51.3 PK	74.0	-22.7	1.26 V	109	9.29	42.01
6	4924.00	43.3 AV	54.0	-10.7	1.26 V	109	1.29	42.01
7	7386.00	56.8 PK	74.0	-17.2	1.16 V	283	10.07	46.73
8	7386.00	48.8 AV	54.0	-5.2	1.16 V	283	2.07	46.73

REMARKS:

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

Single chain - 802.11g

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	68.3 PK	74.0	-5.7	1.38 H	86	35.92	32.38
2	**2390.00**	**53.5 AV**	**54.0**	**-0.5**	**1.38 H**	**86**	**21.12**	**32.38**
3	*2412.00	107.4 PK			1.39 H	86	74.96	32.44
4	*2412.00	98.1 AV			1.39 H	86	65.66	32.44
5	4824.00	49.8 PK	74.0	-24.2	1.16 H	113	7.86	41.94
6	4824.00	36.3 AV	54.0	-17.7	1.16 H	113	-5.64	41.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	65.8 PK	74.0	-8.2	1.24 V	221	33.42	32.38
2	2390.00	51.7 AV	54.0	-2.3	1.24 V	221	19.32	32.38
3	*2412.00	104.6 PK			1.24 V	221	72.16	32.44
4	*2412.00	95.6 AV			1.24 V	221	63.16	32.44
5	4824.00	49.9 PK	74.0	-24.1	1.12 V	138	7.96	41.94
6	4824.00	37.9 AV	54.0	-16.1	1.12 V	138	-4.04	41.94

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.3 PK	74.0	-12.7	1.36 H	88	28.92	32.38
2	2390.00	47.6 AV	54.0	-6.4	1.36 H	88	15.22	32.38
3	*2437.00	111.4 PK			1.36 H	88	78.89	32.51
4	*2437.00	102.3 AV			1.36 H	88	69.79	32.51
5	2483.50	63.6 PK	74.0	-10.4	1.36 H	88	30.97	32.63
6	2483.50	47.4 AV	54.0	-6.6	1.36 H	88	14.77	32.63
7	4874.00	50.1 PK	74.0	-23.9	1.17 H	111	8.11	41.99
8	4874.00	36.9 AV	54.0	-17.1	1.17 H	111	-5.09	41.99
9	7311.00	55.4 PK	74.0	-18.6	1.72 H	182	8.87	46.53
10	7311.00	44.9 AV	54.0	-9.1	1.72 H	182	-1.63	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.8 PK			1.21 V	223	76.29	32.51
2	*2437.00	99.3 AV			1.21 V	223	66.79	32.51
3	4874.00	50.9 PK	74.0	-23.1	1.07 V	131	8.91	41.99
4	4874.00	38.3 AV	54.0	-15.7	1.07 V	131	-3.69	41.99
5	7311.00	59.3 PK	74.0	-14.7	1.56 V	292	12.77	46.53
6	7311.00	46.6 AV	54.0	-7.4	1.56 V	292	0.07	46.53

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.0 PK			1.38 H	87	72.43	32.57
2	*2462.00	96.3 AV			1.38 H	87	63.73	32.57
3	2483.50	70.3 PK	74.0	-3.7	1.38 H	87	37.67	32.63
4	2483.50	52.9 AV	54.0	-1.1	1.38 H	87	20.27	32.63
5	4924.00	49.6 PK	74.0	-24.4	1.18 H	137	7.59	42.01
6	4924.00	36.4 AV	54.0	-17.6	1.18 H	137	-5.61	42.01
7	7386.00	55.6 PK	74.0	-18.4	1.75 H	180	8.87	46.73
8	7386.00	44.3 AV	54.0	-9.7	1.75 H	180	-2.43	46.73
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.4 PK			1.23 V	214	69.83	32.57
2	*2462.00	93.2 AV			1.23 V	214	60.63	32.57
3	2483.50	70.6 PK	74.0	-3.4	1.23 V	214	37.97	32.63
4	2483.50	51.9 AV	54.0	-2.1	1.23 V	214	19.27	32.63
5	4924.00	49.9 PK	74.0	-24.1	1.11 V	144	7.89	42.01
6	4924.00	37.7 AV	54.0	-16.3	1.11 V	144	-4.31	42.01
7	7386.00	55.3 PK	74.0	-18.7	1.11 V	287	8.57	46.73
8	7386.00	44.4 AV	54.0	-9.6	1.11 V	287	-2.33	46.73

REMARKS:

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

Multiple chain - 802.11b

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2387.20	58.7 PK	74.0	-15.3	1.36 H	67	26.33	32.37
2	2387.20	48.5 AV	54.0	-5.5	1.36 H	67	16.13	32.37
3	*2412.00	106.4 PK			1.36 H	67	73.96	32.44
4	*2412.00	104.5 AV			1.36 H	67	72.06	32.44
5	4824.00	54.5 PK	74.0	-19.5	1.00 H	68	12.56	41.94
6	4824.00	50.5 AV	54.0	-3.5	1.00 H	68	8.56	41.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2386.14	60.1 PK	74.0	-13.9	1.00 V	248	27.73	32.37
2	2386.14	50.5 AV	54.0	-3.5	1.00 V	248	18.13	32.37
3	*2412.00	106.6 PK			1.00 V	248	74.16	32.44
4	*2412.00	104.6 AV			1.00 V	248	72.16	32.44
5	4824.00	54.1 PK	74.0	-19.9	1.52 V	286	12.16	41.94
6	4824.00	49.0 AV	54.0	-5.0	1.52 V	286	7.06	41.94

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.0 PK			1.37 H	92	77.49	32.51
2	*2437.00	107.9 AV			1.37 H	92	75.39	32.51
3	4874.00	52.9 PK	74.0	-21.1	1.09 H	69	10.91	41.99
4	4874.00	47.4 AV	54.0	-6.6	1.09 H	69	5.41	41.99
5	7311.00	56.6 PK	74.0	-17.4	1.11 H	58	10.07	46.53
6	7311.00	45.7 AV	54.0	-8.3	1.11 H	58	-0.83	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.1 PK			1.00 V	97	75.59	32.51
2	*2437.00	106.2 AV			1.00 V	97	73.69	32.51
3	4874.00	53.3 PK	74.0	-20.7	1.14 V	245	11.31	41.99
4	4874.00	47.8 AV	54.0	-6.2	1.14 V	245	5.81	41.99
5	7311.00	57.6 PK	74.0	-16.4	1.19 V	295	11.07	46.53
6	7311.00	49.1 AV	54.0	-4.9	1.19 V	295	2.57	46.53

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.4 PK			1.36 H	82	75.83	32.57
2	*2462.00	106.5 AV			1.36 H	82	73.93	32.57
3	2483.50	59.8 PK	74.0	-14.2	1.36 H	82	27.17	32.63
4	2483.50	49.0 AV	54.0	-5.0	1.36 H	82	16.37	32.63
5	4924.00	50.4 PK	74.0	-23.6	1.00 H	312	8.39	42.01
6	4924.00	40.2 AV	54.0	-13.8	1.00 H	312	-1.81	42.01
7	7386.00	55.9 PK	74.0	-18.1	1.11 H	35	9.17	46.73
8	7386.00	44.9 AV	54.0	-9.1	1.11 H	35	-1.83	46.73
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.4 PK			1.00 V	255	74.83	32.57
2	*2462.00	105.7 AV			1.00 V	255	73.13	32.57
3	2483.50	58.9 PK	74.0	-15.1	1.00 V	255	26.27	32.63
4	2483.50	48.2 AV	54.0	-5.8	1.00 V	255	15.57	32.63
5	4924.00	51.0 PK	74.0	-23.0	1.49 V	289	8.99	42.01
6	4924.00	42.6 AV	54.0	-11.4	1.49 V	289	0.59	42.01
7	7386.00	55.9 PK	74.0	-18.1	1.12 V	287	9.17	46.73
8	7386.00	45.4 AV	54.0	-8.6	1.12 V	287	-1.33	46.73

REMARKS:

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

Multiple chain - 802.11g

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	64.4 PK	74.0	-9.6	1.38 H	85	32.02	32.38
2	2390.00	48.9 AV	54.0	-5.1	1.38 H	85	16.52	32.38
3	*2412.00	106.3 PK			1.38 H	85	73.86	32.44
4	*2412.00	97.8 AV			1.38 H	85	65.36	32.44
5	4824.00	49.1 PK	74.0	-24.9	1.04 H	61	7.16	41.94
6	4824.00	36.7 AV	54.0	-17.3	1.04 H	61	-5.24	41.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	59.8 PK	74.0	-14.2	1.00 V	247	27.42	32.38
2	2390.00	47.3 AV	54.0	-6.7	1.00 V	247	14.92	32.38
3	*2412.00	104.9 PK			1.00 V	247	72.46	32.44
4	*2412.00	96.3 AV			1.00 V	247	63.86	32.44
5	4824.00	48.9 PK	74.0	-25.1	1.49 V	283	6.96	41.94
6	4824.00	36.4 AV	54.0	-17.6	1.49 V	283	-5.54	41.94

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	112.4 PK			1.35 H	85	79.89	32.51
2	*2437.00	103.5 AV			1.35 H	85	70.99	32.51
3	4874.00	51.0 PK	74.0	-23.0	1.02 H	73	9.01	41.99
4	4874.00	38.6 AV	54.0	-15.4	1.02 H	73	-3.39	41.99
5	7311.00	54.8 PK	74.0	-19.2	1.59 H	212	8.27	46.53
6	7311.00	44.0 AV	54.0	-10.0	1.59 H	212	-2.53	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.1 PK			1.00 V	208	78.59	32.51
2	*2437.00	102.7 AV			1.00 V	208	70.19	32.51
3	4874.00	50.7 PK	74.0	-23.3	1.44 V	281	8.71	41.99
4	4874.00	38.6 AV	54.0	-15.4	1.44 V	281	-3.39	41.99
5	7311.00	57.6 PK	74.0	-16.4	1.07 V	287	11.07	46.53
6	7311.00	46.0 AV	54.0	-8.0	1.07 V	287	-0.53	46.53

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.8 PK			1.39 H	88	74.23	32.57
2	*2462.00	98.0 AV			1.39 H	88	65.43	32.57
3	2483.50	69.9 PK	74.0	-4.1	1.34 H	85	37.27	32.63
4	2483.50	52.2 AV	54.0	-1.8	1.34 H	85	19.57	32.63
5	4924.00	48.6 PK	74.0	-25.4	1.08 H	46	6.59	42.01
6	4924.00	35.8 AV	54.0	-18.2	1.08 H	46	-6.21	42.01
7	7386.00	54.3 PK	74.0	-19.7	1.49 H	212	7.57	46.73
8	7386.00	43.8 AV	54.0	-10.2	1.49 H	212	-2.93	46.73
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.1 PK			1.00 V	210	73.53	32.57
2	*2462.00	97.8 AV			1.00 V	210	65.23	32.57
3	2483.50	69.8 PK	74.0	-4.2	1.00 V	208	37.17	32.63
4	2483.50	53.0 AV	54.0	-1.0	1.00 V	208	20.37	32.63
5	4924.00	48.7 PK	74.0	-25.3	1.52 V	269	6.69	42.01
6	4924.00	36.2 AV	54.0	-17.8	1.52 V	269	-5.81	42.01
7	7386.00	54.5 PK	74.0	-19.5	1.11 V	279	7.77	46.73
8	7386.00	44.3 AV	54.0	-9.7	1.11 V	279	-2.43	46.73

REMARKS:

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

802.11n (HT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.3 PK	74.0	-6.7	1.38 H	66	34.92	32.38
2	2390.00	50.5 AV	54.0	-3.5	1.38 H	66	18.12	32.38
3	*2412.00	106.7 PK			1.38 H	85	74.26	32.44
4	*2412.00	97.7 AV			1.38 H	85	65.26	32.44
5	4824.00	49.0 PK	74.0	-25.0	1.06 H	66	7.06	41.94
6	4824.00	36.7 AV	54.0	-17.3	1.06 H	66	-5.24	41.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.2 PK	74.0	-7.8	1.00 V	260	33.82	32.38
2	2390.00	49.4 AV	54.0	-4.6	1.00 V	260	17.02	32.38
3	*2412.00	105.2 PK			1.00 V	238	72.76	32.44
4	*2412.00	96.8 AV			1.00 V	238	64.36	32.44
5	4824.00	49.2 PK	74.0	-24.8	1.53 V	286	7.26	41.94
6	4824.00	36.6 AV	54.0	-17.4	1.53 V	286	-5.34	41.94

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.3 PK			1.37 H	83	78.79	32.51
2	*2437.00	102.7 AV			1.37 H	83	70.19	32.51
3	4874.00	51.9 PK	74.0	-22.1	1.02 H	66	9.91	41.99
4	4874.00	39.2 AV	54.0	-14.8	1.02 H	66	-2.79	41.99
5	7311.00	54.7 PK	74.0	-19.3	1.59 H	230	8.17	46.53
6	7311.00	43.6 AV	54.0	-10.4	1.59 H	230	-2.93	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.9 PK			1.05 V	223	79.39	32.51
2	*2437.00	103.2 AV			1.05 V	223	70.69	32.51
3	4874.00	51.0 PK	74.0	-23.0	1.49 V	288	9.01	41.99
4	4874.00	38.7 AV	54.0	-15.3	1.49 V	288	-3.29	41.99
5	7311.00	57.5 PK	74.0	-16.5	1.03 V	292	10.97	46.53
6	7311.00	45.9 AV	54.0	-8.1	1.03 V	292	-0.63	46.53

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.9 PK			1.35 H	83	72.33	32.57
2	*2462.00	96.2 AV			1.35 H	83	63.63	32.57
3	2483.50	68.0 PK	74.0	-6.0	1.32 H	117	35.37	32.63
4	2483.50	51.0 AV	54.0	-3.0	1.32 H	117	18.37	32.63
5	4924.00	49.0 PK	74.0	-25.0	1.12 H	63	6.99	42.01
6	4924.00	36.6 AV	54.0	-17.4	1.12 H	63	-5.41	42.01
7	7386.00	54.3 PK	74.0	-19.7	1.50 H	222	7.57	46.73
8	7386.00	43.6 AV	54.0	-10.4	1.50 H	222	-3.13	46.73
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.4 PK			1.05 V	221	71.83	32.57
2	*2462.00	96.9 AV			1.05 V	221	64.33	32.57
3	2483.50	70.0 PK	74.0	-4.0	1.00 V	202	37.37	32.63
4	2483.50	52.7 AV	54.0	-1.3	1.00 V	202	20.07	32.63
5	4924.00	48.9 PK	74.0	-25.1	1.53 V	276	6.89	42.01
6	4924.00	36.4 AV	54.0	-17.6	1.53 V	276	-5.61	42.01
7	7386.00	54.6 PK	74.0	-19.4	1.13 V	286	7.87	46.73
8	7386.00	44.5 AV	54.0	-9.5	1.13 V	286	-2.23	46.73

REMARKS:

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

802.11n (HT40)

CHANNEL	TX Channel 3	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	67.2 PK	74.0	-6.8	1.37 H	64	34.82	32.38
2	2390.00	52.9 AV	54.0	-1.1	1.37 H	64	20.52	32.38
3	*2422.00	104.2 PK			1.36 H	85	71.73	32.47
4	*2422.00	95.4 AV			1.36 H	85	62.93	32.47
5	4844.00	49.5 PK	74.0	-24.5	1.14 H	54	7.54	41.96
6	4844.00	37.0 AV	54.0	-17.0	1.14 H	54	-4.96	41.96
7	7266.00	54.3 PK	74.0	-19.7	1.45 H	208	7.90	46.40
8	7266.00	43.5 AV	54.0	-10.5	1.45 H	208	-2.90	46.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	67.7 PK	74.0	-6.3	1.00 V	231	35.32	32.38
2	2390.00	53.2 AV	54.0	-0.8	1.00 V	231	20.82	32.38
3	*2422.00	102.7 PK			1.00 V	208	70.23	32.47
4	*2422.00	94.5 AV			1.00 V	208	62.03	32.47
5	4844.00	48.6 PK	74.0	-25.4	1.50 V	283	6.64	41.96
6	4844.00	36.4 AV	54.0	-17.6	1.50 V	283	-5.56	41.96
7	7266.00	54.5 PK	74.0	-19.5	1.08 V	268	8.10	46.40
8	7266.00	44.1 AV	54.0	-9.9	1.08 V	268	-2.30	46.40

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.7 PK	74.0	-6.3	1.40 H	120	35.32	32.38
2	2390.00	52.1 AV	54.0	-1.9	1.40 H	120	19.72	32.38
3	*2437.00	106.3 PK			1.36 H	86	73.79	32.51
4	*2437.00	97.9 AV			1.36 H	86	65.39	32.51
5	2483.50	69.3 PK	74.0	-4.7	1.40 H	78	36.67	32.63
6	2483.50	52.7 AV	54.0	-1.3	1.40 H	78	20.07	32.63
7	4874.00	51.5 PK	74.0	-22.5	1.05 H	50	9.51	41.99
8	4874.00	39.0 AV	54.0	-15.0	1.05 H	50	-2.99	41.99
9	7311.00	55.0 PK	74.0	-19.0	1.59 H	244	8.47	46.53
10	7311.00	43.8 AV	54.0	-10.2	1.59 H	244	-2.73	46.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.4 PK	74.0	-6.6	1.00 V	239	35.02	32.38
2	2390.00	52.6 AV	54.0	-1.4	1.00 V	239	20.22	32.38
3	*2437.00	105.7 PK			1.00 V	209	73.19	32.51
4	*2437.00	96.9 AV			1.00 V	209	64.39	32.51
5	2483.50	70.3 PK	74.0	-3.7	1.00 V	178	37.67	32.63
6	2483.50	53.3 AV	54.0	-0.7	1.00 V	178	20.67	32.63
7	4874.00	50.1 PK	74.0	-23.9	1.48 V	313	8.11	41.99
8	4874.00	38.0 AV	54.0	-16.0	1.48 V	313	-3.99	41.99
9	7311.00	56.8 PK	74.0	-17.2	1.13 V	301	10.27	46.53
10	7311.00	45.2 AV	54.0	-8.8	1.13 V	301	-1.33	46.53

REMARKS:

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

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	102.1 PK			1.35 H	84	69.55	32.55
2	*2452.00	93.3 AV			1.35 H	84	60.75	32.55
3	2483.50	69.3 PK	74.0	-4.7	1.32 H	119	36.67	32.63
4	2483.50	52.4 AV	54.0	-1.6	1.32 H	119	19.77	32.63
5	4904.00	49.2 PK	74.0	-24.8	1.09 H	61	7.18	42.02
6	4904.00	37.1 AV	54.0	-16.9	1.09 H	61	-4.92	42.02
7	7356.00	54.1 PK	74.0	-19.9	1.48 H	234	7.45	46.65
8	7356.00	43.3 AV	54.0	-10.7	1.48 H	234	-3.35	46.65
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	101.8 PK			1.00 V	211	69.25	32.55
2	*2452.00	93.9 AV			1.00 V	211	61.35	32.55
3	2483.50	67.3 PK	74.0	-6.7	1.00 V	189	34.67	32.63
4	2483.50	53.2 AV	54.0	-0.8	1.00 V	189	20.57	32.63
5	4904.00	48.6 PK	74.0	-25.4	1.57 V	259	6.58	42.02
6	4904.00	36.3 AV	54.0	-17.7	1.57 V	259	-5.72	42.02
7	7356.00	54.8 PK	74.0	-19.2	1.16 V	293	8.15	46.65
8	7356.00	44.6 AV	54.0	-9.4	1.16 V	293	-2.05	46.65

REMARKS:

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

4.2.8 TEST RESULTS (BT <LE> MODE)

BELOW 1GHz WORST-CASE DATA

CHANNEL	TX Channel 39	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	148.39	39.4 QP	43.5	-4.1	1.75 H	205	52.63	-13.19
2	165.99	39.8 QP	43.5	-3.7	1.75 H	206	53.62	-13.79
3	399.62	42.2 QP	46.0	-3.8	2.00 H	246	52.26	-10.03
4	443.85	36.2 QP	46.0	-9.8	2.00 H	253	45.22	-9.06
5	899.12	42.7 QP	46.0	-3.3	1.00 H	179	43.14	-0.43
6	995.83	38.2 QP	54.0	-15.8	1.25 H	226	36.72	1.47
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	35.19	31.5 QP	40.0	-8.6	1.25 V	332	45.90	-14.45
2	166.04	32.1 QP	43.5	-11.4	2.00 V	296	45.88	-13.79
3	298.79	40.6 QP	46.0	-5.4	1.75 V	238	53.05	-12.47
4	399.90	32.1 QP	46.0	-13.9	1.50 V	237	42.10	-10.02
5	899.17	40.9 QP	46.0	-5.1	1.50 V	285	41.33	-0.43
6	998.98	34.2 QP	54.0	-19.8	1.25 V	290	32.70	1.52

REMARKS:

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

ABOVE 1GHz DATA

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.3 PK	74.0	-14.7	1.58 H	246	26.52	32.78
2	2390.00	47.6 AV	54.0	-6.4	1.58 H	246	14.82	32.78
3	*2402.00	94.7 PK			1.36 H	226	61.88	32.82
4	*2402.00	87.9 AV			1.36 H	226	55.08	32.82
5	4804.00	50.8 PK	74.0	-23.2	1.00 H	243	8.55	42.25
6	4804.00	38.5 AV	54.0	-15.5	1.00 H	243	-3.75	42.25
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.1 PK	74.0	-11.9	1.02 V	245	29.32	32.78
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.02 V**	**245**	**20.22**	**32.78**
3	*2402.00	98.8 PK			1.00 V	251	65.98	32.82
4	*2402.00	94.3 AV			1.00 V	251	61.48	32.82
5	4804.00	50.5 PK	74.0	-23.5	1.00 V	115	8.25	42.25
6	4804.00	39.4 AV	54.0	-14.6	1.00 V	115	-2.85	42.25

REMARKS:

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

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	98.9 PK			1.20 H	116	65.99	32.91
2	*2440.00	93.7 AV			1.20 H	116	60.79	32.91
3	4880.00	49.5 PK	74.0	-24.5	1.00 H	205	7.18	42.32
4	4880.00	38.2 AV	54.0	-15.8	1.00 H	205	-4.12	42.32
5	7320.00	53.8 PK	74.0	-20.2	1.01 H	103	6.82	46.98
6	7320.00	43.0 AV	54.0	-11.0	1.01 H	103	-3.98	46.98
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	100.1 PK			1.00 V	175	67.19	32.91
2	*2440.00	95.5 AV			1.00 V	175	62.59	32.91
3	4880.00	49.1 PK	74.0	-24.9	1.00 V	105	6.78	42.32
4	4880.00	39.5 AV	54.0	-14.5	1.00 V	105	-2.82	42.32
5	7320.00	44.2 PK	74.0	-29.8	1.00 V	247	-2.78	46.98
6	7320.00	41.6 AV	54.0	-12.4	1.00 V	247	-5.38	46.98

REMARKS:

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

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	99.6 PK			1.19 H	74	66.58	33.02
2	*2480.00	94.0 AV			1.19 H	74	60.98	33.02
3	2483.50	57.5 PK	74.0	-16.5	1.01 H	153	24.47	33.03
4	2483.50	46.0 AV	54.0	-8.0	1.01 H	153	12.97	33.03
5	4960.00	49.4 PK	74.0	-24.6	1.03 H	196	7.10	42.30
6	4960.00	38.1 AV	54.0	-15.9	1.03 H	196	-4.20	42.30
7	7440.00	54.7 PK	74.0	-19.3	1.00 H	197	7.41	47.29
8	7440.00	43.6 AV	54.0	-10.4	1.00 H	197	-3.69	47.29
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	101.5 PK			1.00 V	211	68.48	33.02
2	*2480.00	97.0 AV			1.00 V	211	63.98	33.02
3	2483.50	59.5 PK	74.0	-14.5	1.00 V	196	26.47	33.03
4	2483.50	48.8 AV	54.0	-5.2	1.00 V	196	15.77	33.03
5	4960.00	48.5 PK	74.0	-25.5	1.00 V	105	6.20	42.30
6	4960.00	34.3 AV	54.0	-19.7	1.00 V	105	-8.00	42.30
7	7440.00	53.8 PK	74.0	-20.2	1.00 V	294	6.51	47.29
8	7440.00	43.5 AV	54.0	-10.5	1.00 V	294	-3.79	47.29

REMARKS:

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

5. TEST TYPES AND RESULTS (FOR 5GHz, 5725~5850MHz Band)

5.1 CONDUCTED OUTPUT POWER MEASUREMENT

5.1.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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

5.1.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 10, 2012	May 09, 2013
Power Sensor	MA2411B	0738172	May 10, 2012	May 09, 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. Tested date : Apr. 23, 2013

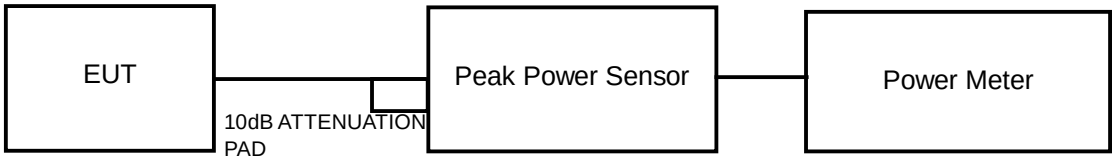
5.1.3 TEST PROCEDURES

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.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



5.1.6 EUT OPERATING CONDITIONS

The software (artgui.exe) provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

5.1.7 TEST RESULTS

Single chain - 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
149	5745	144.544	21.60	30	PASS
157	5785	142.561	21.54	30	PASS
165	5825	141.254	21.50	30	PASS

Multiple chain - 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	20.80	20.10	222.555	23.47	28.23	PASS
157	5785	20.50	20.90	235.229	23.71	28.23	PASS
165	5825	20.47	20.85	233.048	23.67	28.23	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.77dBi > 6dBi , so the power limit shall be reduced to 30-(7.77-6) = 28.23dBm.

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	19.41	19.10	168.580	22.27	28.23	PASS
157	5785	19.80	19.50	184.624	22.66	28.23	PASS
165	5825	19.47	19.40	175.608	22.45	28.23	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.77dBi > 6dBi , so the power limit shall be reduced to 30-(7.77-6) = 28.23dBm.

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
151	5755	19.50	19.70	182.450	22.61	28.23	PASS
159	5795	19.61	19.35	177.510	22.49	28.23	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.77dBi > 6dBi , so the power limit shall be reduced to 30-(7.77-6) = 28.23dBm.

5.2 RADIATED EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION 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.

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Mar. 27 to Apr. 23, 2013

5.2.3 TEST PROCEDURES

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

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

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

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

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

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

NOTE:

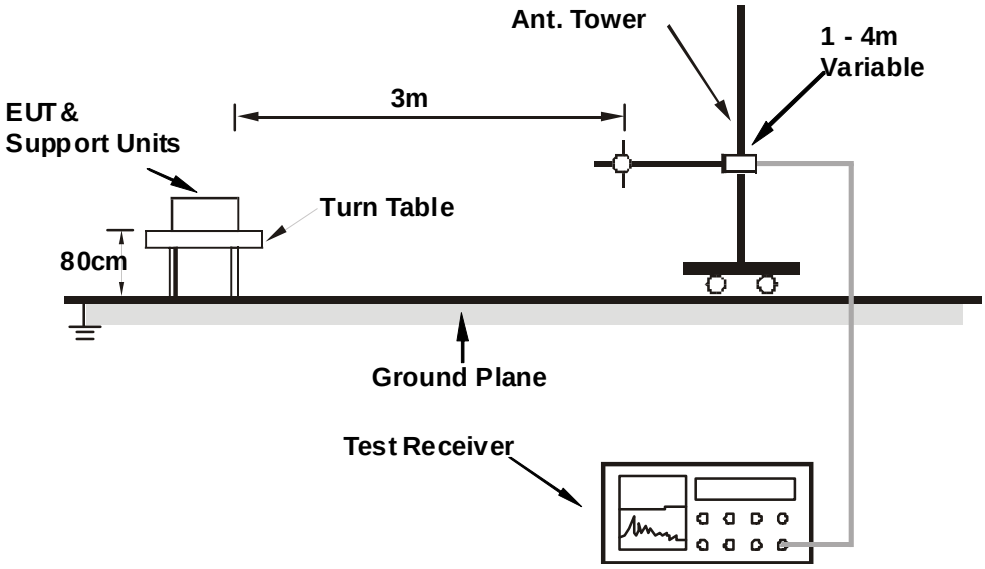
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

5.2.4 DEVIATION FROM TEST STANDARD

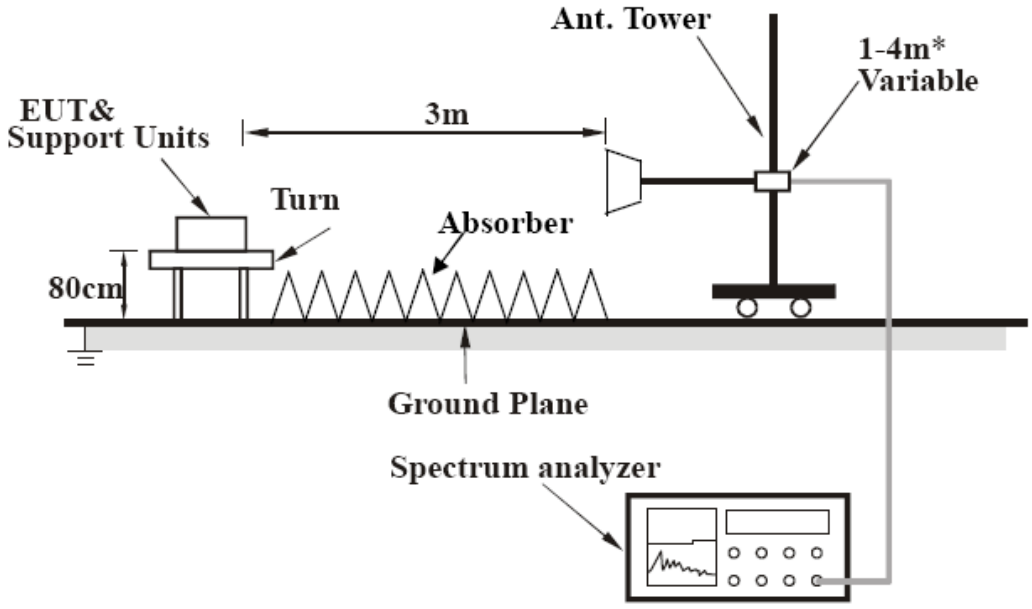
No deviation

5.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.2.6 EUT OPERATING CONDITIONS

Same as the 4.2.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

Multiple chain - 802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	148.44	39.3 QP	43.5	-4.2	1.75 H	360	52.50	-13.19
2	166.48	41.1 QP	43.5	-2.4	1.75 H	180	54.90	-13.82
3	**298.84**	**43.7 QP**	**46.0**	**-2.3**	**1.00 H**	**202**	**56.18**	**-12.47**
4	399.62	39.9 QP	46.0	-6.1	2.00 H	13	49.93	-10.03
5	697.12	38.0 QP	46.0	-8.0	1.00 H	246	42.11	-4.15
6	896.36	42.4 QP	46.0	-3.6	1.50 H	242	42.92	-0.48
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	34.12	34.1 QP	40.0	-5.9	1.00 V	26	48.57	-14.49
2	166.48	35.2 QP	43.5	-8.3	2.00 V	293	49.05	-13.82
3	298.79	40.7 QP	46.0	-5.3	2.00 V	239	53.17	-12.47
4	399.62	42.0 QP	46.0	-4.0	1.00 V	332	52.07	-10.03
5	497.98	43.0 QP	46.0	-3.0	2.00 V	321	50.74	-7.76
6	899.17	39.8 QP	46.0	-6.2	1.00 V	279	40.19	-0.43

REMARKS:

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

ABOVE 1GHz DATA

Single chain - 802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	104.9 PK			1.00 H	113	61.58	43.32
2	*5745.00	96.7 AV			1.00 H	113	53.38	43.32
3	11490.00	59.6 PK	74.0	-14.4	1.11 H	132	9.81	49.79
4	11490.00	47.8 AV	54.0	-6.2	1.11 H	132	-1.99	49.79
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	107.7 PK			1.00 V	235	64.38	43.32
2	*5745.00	99.1 AV			1.00 V	235	55.78	43.32
3	11490.00	59.1 PK	74.0	-14.9	1.21 V	207	9.31	49.79
4	11490.00	47.9 AV	54.0	-6.1	1.21 V	207	-1.89	49.79

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	104.9 PK			1.00 H	100	61.53	43.37
2	*5785.00	96.4 AV			1.00 H	100	53.03	43.37
3	11570.00	59.8 PK	74.0	-14.2	1.17 H	143	9.97	49.83
4	11570.00	47.8 AV	54.0	-6.2	1.17 H	143	-2.03	49.83
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	108.2 PK			1.06 V	222	64.83	43.37
2	*5785.00	99.4 AV			1.06 V	222	56.03	43.37
3	11570.00	59.9 PK	74.0	-14.1	1.24 V	204	10.07	49.83
4	11570.00	48.2 AV	54.0	-5.8	1.24 V	204	-1.63	49.83

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	104.2 PK			1.05 H	104	60.73	43.47
2	*5825.00	95.9 AV			1.05 H	104	52.43	43.47
3	11650.00	59.9 PK	74.0	-14.1	1.11 H	142	9.79	50.11
4	11650.00	47.9 AV	54.0	-6.1	1.11 H	142	-2.21	50.11
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	108.5 PK			1.05 V	219	65.03	43.47
2	*5825.00	99.5 AV			1.05 V	219	56.03	43.47
3	11650.00	59.6 PK	74.0	-14.4	1.19 V	193	9.49	50.11
4	11650.00	48.3 AV	54.0	-5.7	1.19 V	193	-1.81	50.11

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

Multiple chain - 802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	107.4 PK			1.40 H	135	64.08	43.32
2	*5745.00	99.8 AV			1.40 H	135	56.48	43.32
3	11490.00	59.4 PK	74.0	-14.6	1.22 H	18	9.61	49.79
4	11490.00	47.9 AV	54.0	-6.1	1.22 H	18	-1.89	49.79
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	109.9 PK			1.02 V	260	66.58	43.32
2	*5745.00	102.6 AV			1.02 V	260	59.28	43.32
3	11490.00	59.8 PK	74.0	-14.2	1.54 V	152	10.01	49.79
4	11490.00	47.9 AV	54.0	-6.1	1.54 V	152	-1.89	49.79

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	107.7 PK			1.43 H	130	64.33	43.37
2	*5785.00	100.2 AV			1.43 H	130	56.83	43.37
3	11570.00	60.5 PK	74.0	-13.5	1.24 H	18	10.67	49.83
4	11570.00	48.5 AV	54.0	-5.5	1.24 H	18	-1.33	49.83
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	109.9 PK			1.05 V	273	66.53	43.37
2	*5785.00	102.8 AV			1.05 V	273	59.43	43.37
3	11570.00	60.1 PK	74.0	-13.9	1.59 V	142	10.27	49.83
4	11570.00	48.0 AV	54.0	-6.0	1.59 V	142	-1.83	49.83

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	107.3 PK			1.43 H	146	63.83	43.47
2	*5825.00	99.9 AV			1.43 H	146	56.43	43.47
3	11650.00	60.3 PK	74.0	-13.7	1.26 H	29	10.19	50.11
4	11650.00	48.3 AV	54.0	-5.7	1.26 H	29	-1.81	50.11
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	110.0 PK			1.07 V	273	66.53	43.47
2	*5825.00	103.0 AV			1.07 V	273	59.53	43.47
3	11650.00	60.1 PK	74.0	-13.9	1.63 V	141	9.99	50.11
4	11650.00	47.9 AV	54.0	-6.1	1.63 V	141	-2.21	50.11

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	107.1 PK			1.28 H	157	63.78	43.32
2	*5745.00	99.3 AV			1.28 H	157	55.98	43.32
3	11490.00	60.7 PK	74.0	-13.3	1.18 H	33	10.91	49.79
4	11490.00	48.7 AV	54.0	-5.3	1.18 H	33	-1.09	49.79
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	109.3 PK			1.00 V	112	65.98	43.32
2	*5745.00	101.5 AV			1.00 V	112	58.18	43.32
3	11490.00	60.0 PK	74.0	-14.0	1.50 V	140	10.21	49.79
4	11490.00	48.2 AV	54.0	-5.8	1.50 V	140	-1.59	49.79

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	106.8 PK			1.33 H	152	63.43	43.37
2	*5785.00	99.2 AV			1.33 H	152	55.83	43.37
3	11570.00	60.3 PK	74.0	-13.7	1.19 H	29	10.47	49.83
4	11570.00	48.6 AV	54.0	-5.4	1.19 H	29	-1.23	49.83
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	109.3 PK			1.02 V	110	65.93	43.37
2	*5785.00	101.3 AV			1.02 V	110	57.93	43.37
3	11570.00	60.2 PK	74.0	-13.8	1.64 V	130	10.37	49.83
4	11570.00	48.1 AV	54.0	-5.9	1.64 V	130	-1.73	49.83

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	107.4 PK			1.29 H	156	63.93	43.47
2	*5825.00	99.6 AV			1.29 H	156	56.13	43.47
3	11650.00	60.2 PK	74.0	-13.8	1.16 H	44	10.09	50.11
4	11650.00	48.7 AV	54.0	-5.3	1.16 H	44	-1.41	50.11
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	108.8 PK			1.00 V	121	65.33	43.47
2	*5825.00	100.9 AV			1.00 V	121	57.43	43.47
3	11650.00	60.2 PK	74.0	-13.8	1.67 V	135	10.09	50.11
4	11650.00	48.4 AV	54.0	-5.6	1.67 V	135	-1.71	50.11

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	101.8 PK			1.03 H	151	58.46	43.34
2	*5755.00	94.2 AV			1.03 H	151	50.86	43.34
3	11510.00	59.6 PK	74.0	-14.4	1.23 H	40	9.82	49.78
4	11510.00	47.8 AV	54.0	-6.2	1.23 H	40	-1.98	49.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	106.7 PK			1.00 V	113	63.36	43.34
2	*5755.00	98.1 AV			1.00 V	113	54.76	43.34
3	11510.00	59.3 PK	74.0	-14.7	1.59 V	136	9.52	49.78
4	11510.00	47.6 AV	54.0	-6.4	1.59 V	136	-2.18	49.78

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	102.4 PK			1.00 H	144	59.02	43.38
2	*5795.00	94.5 AV			1.00 H	144	51.12	43.38
3	11590.00	60.5 PK	74.0	-13.5	1.17 H	39	10.66	49.84
4	11590.00	48.2 AV	54.0	-5.8	1.17 H	39	-1.64	49.84
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	106.6 PK			1.02 V	105	63.22	43.38
2	*5795.00	98.2 AV			1.02 V	105	54.82	43.38
3	11590.00	59.3 PK	74.0	-14.7	1.57 V	135	9.46	49.84
4	11590.00	47.9 AV	54.0	-6.1	1.57 V	135	-1.94	49.84

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

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: 886-2-26052943

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.

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

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

--- END ---