



FCC TEST REPORT

REPORT NO.: RF121115E05

MODEL NO.: RTL8723AEN0

FCC ID: TX2-RTL8723AEN0

RECEIVED: Nov. 15, 2012

TESTED: Nov. 20 to 26, 2012

ISSUED: Dec. 04, 2012

APPLICANT: Realtek Semiconductor Corp.

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ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd.,
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF121115E05	Original release	Dec. 04, 2012



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1. CERTIFICATION

PRODUCT: 802.11b/g/n RTL8723AE Combo NGFF Card
BRAND NAME: Realtek
MODEL NO.: RTL8723AEN0
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: Realtek Semiconductor Corp.
TESTED: Nov. 20 to 26, 2012
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (Model: RTL8723AEN0) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : , **DATE:** Dec. 04, 2012
(Lori Chung, Specialist)

APPROVED BY : , **DATE:** Dec. 04, 2012
(May Chen, Deputy 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)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.13dB at 0.16172MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.3dB at 2390.00MHz
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	Antenna connector is IPEXMHF4 not a standard connector.

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

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.2dB at 165.32MHz
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	Antenna connector is IPEXMHF4 not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	2.98 dB
Radiated emissions	30MHz ~1000MHz	5.59 dB
	1GHz -6GHz	3.56 dB
	6GHz -18GHz	4.10 dB
	18GHz ~ 40GHz	4.24 dB



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	802.11b/g/n RTL8723AE Combo NGFF Card
MODEL NO.	RTL8723AEN0
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM BT-LE (GFSK) for DTS
MODULATION TECHNOLOGY	DSSS, OFDM, DTS
TRANSFER RATE	802.11b: Up to 11Mbps 802.11g: Up to 54Mbps 802.11n (HT20, 800ns GI): Up to 65Mbps 802.11n (HT20, 400ns GI): Up to 72.2Mbps 802.11n (HT40, 800ns GI): Up to 135Mbps 802.11n (HT40, 400ns GI): Up to 150Mbps BT-LE (GFSK): 1Mbps
OPERATING FREQUENCY	802.11b/g/n (HT20): 2.412 ~ 2.462GHz BT-LE (GFSK): 2.402 ~ 2.480GHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) 40 (37 hopping + 3 advertising channel) for BT-LE (GFSK)
MAXIMUM OUTPUT POWER	802.11b: 87.096mW 802.11g: 204.174mW 802.11n (HT20): 204.174mW 802.11n (HT40): 177.828mW BT-LE (GFSK): 3.020 mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. There are Bluetooth technology and WLAN technology used for the EUT. And the report number corresponds with EUT functions are listed as below:

Function	Report No.
WLAN+ BT-LE (GFSK)	RF121115E05
Bluetooth	RF121115E05-1

2. The antennas provided to the EUT, please refer to the following table:

Transmitter Circuit	Brand	Model	Antenna Type	Gain (dBi) (Include cable loss)	Connector type	Diversity	Frequency range (MHz to MHz)
Chain (0)	LYNwave	ALA110-22205 0-300011	PIFA	3.5	IPEXMHF4	Yes	2400-2500
Chain (1)	LYNwave	ALA110-22205 0-300011	PIFA	3.5	IPEXMHF4	Yes	2400-2500

3. The EUT incorporates a SISO function without beam forming.

MODULATION MODE	Tx/Rx FUNCTION
802.11b	1Tx/1Rx(Diversity)
802.11g	1Tx/1Rx(Diversity)
802.11n (HT20)	1Tx/1Rx(Diversity)
802.11n (HT40)	1Tx/1Rx(Diversity)

4. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.
5. The above EUT information was 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

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



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

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

POWER LINE CONDUCTED EMISSION TEST:

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

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6
Bluetooth LE	0 to 39	0	DSS	GFSK (LE mode)	1



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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Bluetooth LE	0 to 39	0, 19, 39	DTS	GFSK (LE mode)	1

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Bluetooth LE	0 to 39	0, 19, 39	DTS	GFSK (LE mode)	1



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CONDUCTED OUT-BAND EMISSION MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Bluetooth LE	0 to 39	0, 19, 39	DTS	GFSK (LE mode)	1

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C, 61%RH	120Vac, 60Hz (SYSTEM)	JyunChun Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz (SYSTEM)	Nelson Teng
RE≥1G	26deg. C, 72%RH	120Vac, 60Hz (SYSTEM)	Amos Chuang
APCM	25deg. C, 60%RH	DC 3.3V	Amos Chuang
OB	25deg. C, 60%RH	DC 3.3V	Amos Chuang

3.3 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)
558074 D01 DTS Meas Guidance
662911 D01 Multiple Transmitter Output
ANSI C63.10-2009

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

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



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3.4 DESCRIPTION OF SUPPORT UNITS

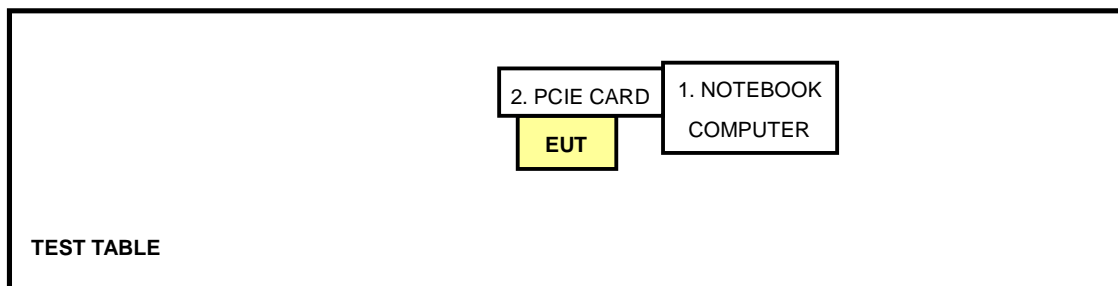
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER (For conducted emission test)	DELL	E6420	B92T3R1	FCC DoC
	NOTEBOOK COMPUTER (For other test items)	DELL	PP19L	CN-OHC416-7016 6-5CA-0448	PIW63250051661 0
2	PCIE CARD	Realtek	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST





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4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100287	Feb. 29, 2012	Feb. 28, 2013
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK 8127	8127-523	Sep. 19, 2012	Sep. 20, 2013
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ESH3-Z5	848773/004	Oct. 29, 2012	Oct. 28, 2013
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 05, 2012	Aug. 04, 2013
50 ohms Terminator	50	3	Oct. 23, 2012	Oct. 22, 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 Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: Nov. 26, 2012

4.1.3 TEST PROCEDURES

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

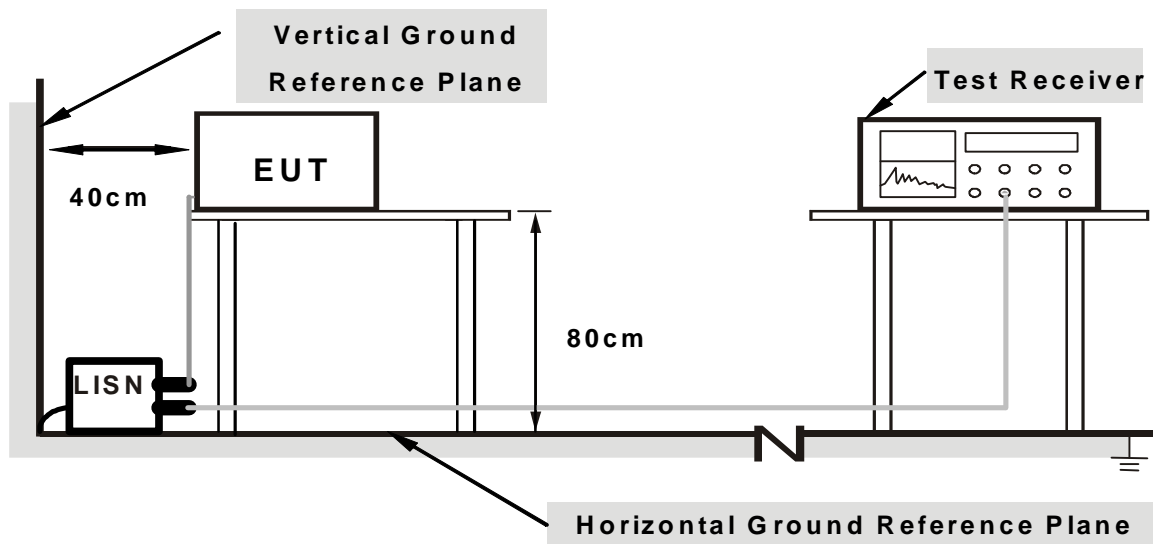
Note: 1. All modes of operation were investigated and the worst-case emissions are reported.

2. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

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

4.1.6 EUT OPERATING CONDITIONS

1. Turned on the power of all equipment.
2. Support unit 1 (Notebook computer) ran test program "MP819xVC.exe" to enable EUT under transmission/receiving condition continuously.

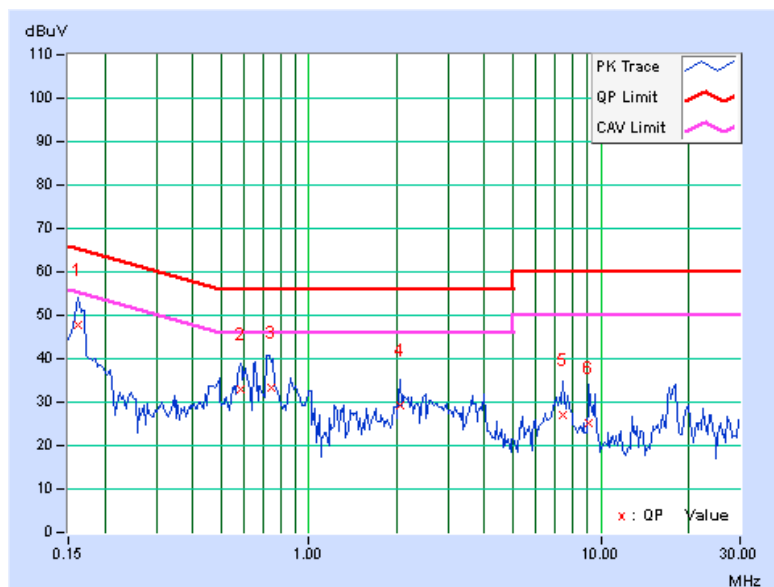
4.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
--------------	----------	--------------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor [dB]	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.09	47.83	40.89	47.92	40.98	65.38	55.38	-17.46	-14.40
2	0.58359	0.16	32.82	22.31	32.98	22.47	56.00	46.00	-23.02	-23.53
3	0.74703	0.17	33.22	21.66	33.39	21.83	56.00	46.00	-22.61	-24.17
4	2.04688	0.25	28.89	18.88	29.14	19.13	56.00	46.00	-26.86	-26.87
5	7.42188	0.44	26.64	18.94	27.08	19.38	60.00	50.00	-32.92	-30.62
6	9.11719	0.49	24.69	16.59	25.18	17.08	60.00	50.00	-34.82	-32.92

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.

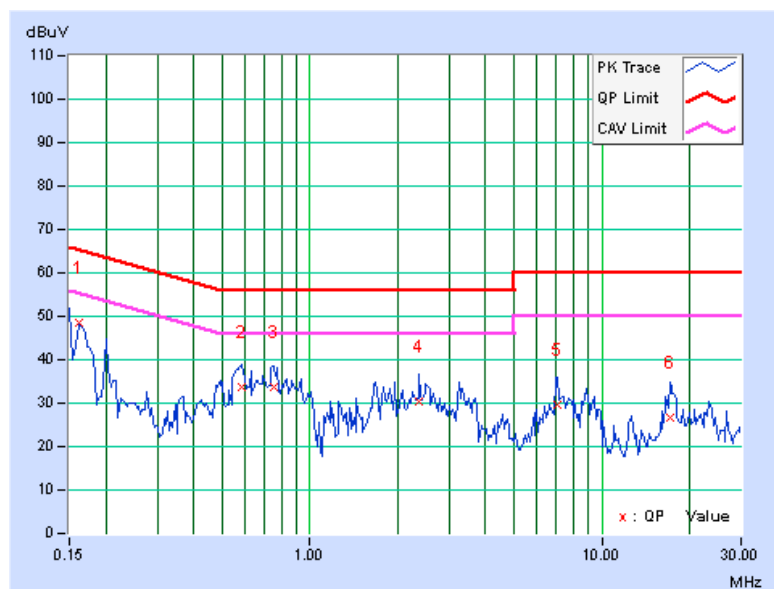


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.10	48.30	41.15	48.40	41.25	65.38	55.38	-16.98	-14.13
2	0.58359	0.17	33.55	21.38	33.72	21.55	56.00	46.00	-22.28	-24.45
3	0.75156	0.17	33.37	20.20	33.54	20.37	56.00	46.00	-22.46	-25.63
4	2.36328	0.25	30.25	20.98	30.50	21.23	56.00	46.00	-25.50	-24.77
5	7.05469	0.41	29.11	20.68	29.52	21.09	60.00	50.00	-30.48	-28.91
6	17.15625	0.64	26.00	19.07	26.64	19.71	60.00	50.00	-33.36	-30.29

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.



4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 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.



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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
Pre-Selector Agilent	N9039A	MY46520310	Sep. 03, 2012	Sep. 02, 2013
Signal Generator Agilent	N5181A	MY49060347	July 24, 2012	July 23, 2013
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02465	Feb. 27, 2012	Feb. 26, 2013
SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Apr. 06, 2012	Apr. 05, 2013
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 23, 2011	Nov. 22, 2012
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 27, 2011	Dec. 26, 2012
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: Nov. 20 to 22, 2012

4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 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.

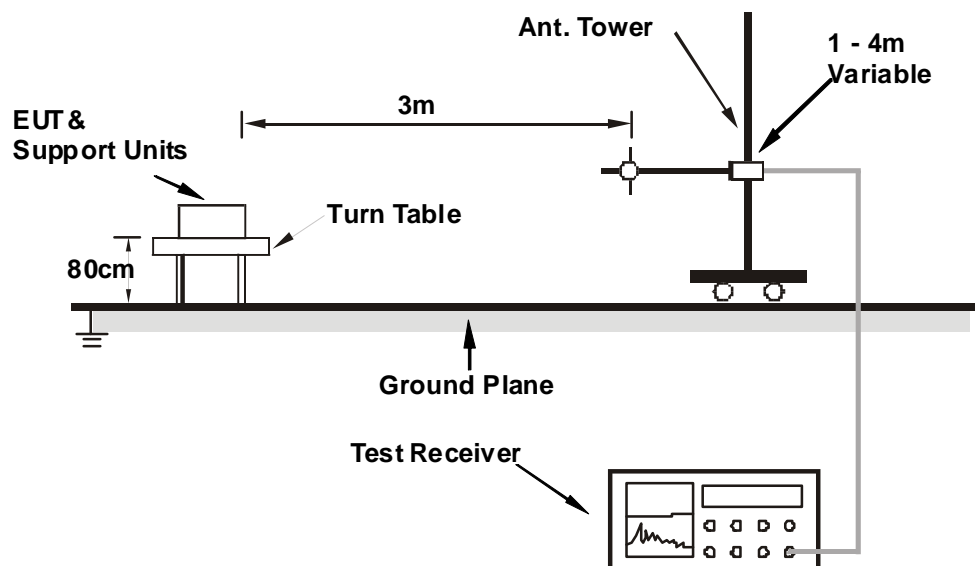
NOTE:

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



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 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	75.00	30.9 QP	40.0	-9.1	1.50 H	0	20.17	10.76
2	165.95	35.1 QP	43.5	-8.4	1.50 H	0	21.18	13.93
3	275.02	36.1 QP	46.0	-9.9	1.00 H	345	21.76	14.31
4	408.01	31.5 QP	46.0	-14.5	2.00 H	332	13.55	17.94
5	600.32	41.3 QP	46.0	-4.8	1.00 H	284	18.99	22.26
6	796.19	37.9 QP	46.0	-8.1	1.00 H	205	12.33	25.60

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	36.04	34.4 QP	40.0	-5.6	1.50 V	200	21.22	13.22
2	168.20	34.1 QP	43.5	-9.4	2.00 V	298	20.28	13.79
3	264.36	25.5 QP	46.0	-20.5	1.00 V	271	11.61	13.88
4	399.83	31.2 QP	46.0	-14.8	1.50 V	278	13.40	17.76
5	597.72	37.3 QP	46.0	-8.8	1.00 V	157	15.04	22.21
6	796.08	37.7 QP	46.0	-8.3	2.00 V	229	12.11	25.60

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.



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ABOVE 1GHz DATA

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	2390.00	58.8 PK	74.0	-15.2	1.63 H	21	26.82	31.98
2	2390.00	48.9 AV	54.0	-5.1	1.63 H	21	16.92	31.98
3	*2412.00	105.7 PK			1.63 H	21	73.65	32.05
4	*2412.00	103.1 AV			1.63 H	21	71.05	32.05
5	4824.00	49.8 PK	74.0	-24.2	1.35 H	307	10.22	39.58
6	4824.00	42.6 AV	54.0	-11.4	1.35 H	307	3.02	39.58

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	56.2 PK	74.0	-17.8	1.27 V	68	24.22	31.98
2	2390.00	45.1 AV	54.0	-8.9	1.27 V	68	13.12	31.98
3	*2412.00	95.9 PK			1.27 V	68	63.85	32.05
4	*2412.00	93.0 AV			1.27 V	68	60.95	32.05
5	4824.00	48.2 PK	74.0	-25.8	1.00 V	201	8.62	39.58
6	4824.00	38.3 AV	54.0	-15.7	1.00 V	201	-1.28	39.58

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.



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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	106.7 PK			1.47 H	7	74.58	32.12
2	*2437.00	103.9 AV			1.47 H	7	71.78	32.12
3	4874.00	49.9 PK	74.0	-24.1	1.37 H	308	10.20	39.70
4	4874.00	40.3 AV	54.0	-13.7	1.37 H	308	0.60	39.70
5	7311.00	52.4 PK	74.0	-21.6	1.00 H	153	4.81	47.59
6	7311.00	40.8 AV	54.0	-13.2	1.00 H	153	-6.79	47.59

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	95.8 PK			1.40 V	267	63.68	32.12
2	*2437.00	93.2 AV			1.40 V	267	61.08	32.12
3	4874.00	48.1 PK	74.0	-25.9	1.00 V	201	8.40	39.70
4	4874.00	38.1 AV	54.0	-15.9	1.00 V	201	-1.60	39.70
5	7311.00	53.3 PK	74.0	-20.7	1.00 V	111	5.71	47.59
6	7311.00	40.7 AV	54.0	-13.3	1.00 V	111	-6.89	47.59

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.



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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	104.1 PK			1.59 H	21	71.92	32.18
2	*2462.00	101.7 AV			1.59 H	21	69.52	32.18
3	2483.50	57.6 PK	74.0	-16.4	1.59 H	21	25.36	32.24
4	2483.50	46.3 AV	54.0	-7.7	1.59 H	21	14.06	32.24
5	4924.00	49.7 PK	74.0	-24.3	1.37 H	301	9.86	39.84
6	4924.00	40.1 AV	54.0	-13.9	1.37 H	301	0.26	39.84
7	7386.00	53.1 PK	74.0	-20.9	1.00 H	157	5.58	47.52
8	7386.00	40.9 AV	54.0	-13.1	1.00 H	157	-6.62	47.52

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	*2462.00	94.6 PK			1.36 V	267	62.42	32.18
2	*2462.00	91.8 AV			1.36 V	267	59.62	32.18
3	2483.50	56.8 PK	74.0	-17.2	1.36 V	267	24.56	32.24
4	2483.50	43.9 AV	54.0	-10.1	1.36 V	267	11.66	32.24
5	4924.00	48.3 PK	74.0	-25.7	1.00 V	200	8.46	39.84
6	4924.00	38.2 AV	54.0	-15.8	1.00 V	200	-1.64	39.84
7	7386.00	53.2 PK	74.0	-20.8	1.00 V	121	5.68	47.52
8	7386.00	40.8 AV	54.0	-13.2	1.00 V	121	-6.72	47.52

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.
5. " * " : Fundamental frequency.



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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	62.9 PK	74.0	-11.1	1.61 H	21	30.92	31.98
2	2390.00	47.5 AV	54.0	-6.5	1.61 H	21	15.52	31.98
3	*2412.00	105.4 PK			1.61 H	21	73.35	32.05
4	*2412.00	94.3 AV			1.61 H	21	62.25	32.05
5	4824.00	44.8 PK	74.0	-29.2	1.33 H	308	5.22	39.58
6	4824.00	32.5 AV	54.0	-21.5	1.33 H	308	-7.08	39.58

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	56.3 PK	74.0	-17.7	1.41 V	269	24.32	31.98
2	2390.00	44.8 AV	54.0	-9.2	1.41 V	269	12.82	31.98
3	*2412.00	96.9 PK			1.41 V	269	64.85	32.05
4	*2412.00	85.7 AV			1.41 V	269	53.65	32.05
5	4824.00	42.7 PK	74.0	-31.3	1.00 V	205	3.12	39.58
6	4824.00	31.6 AV	54.0	-22.4	1.00 V	205	-7.98	39.58

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.



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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	57.1 PK	74.0	-16.9	1.64 H	17	25.12	31.98
2	2390.00	45.1 AV	54.0	-8.9	1.64 H	17	13.12	31.98
3	*2437.00	104.9 PK			1.64 H	17	72.78	32.12
4	*2437.00	93.9 AV			1.64 H	17	61.78	32.12
5	2483.50	56.8 PK	74.0	-17.2	1.64 H	17	24.56	32.24
6	2483.50	44.3 AV	54.0	-9.7	1.64 H	17	12.06	32.24
7	4874.00	44.5 PK	74.0	-29.5	1.33 H	303	4.80	39.70
8	4874.00	31.9 AV	54.0	-22.1	1.33 H	303	-7.80	39.70
9	7311.00	48.9 PK	74.0	-25.1	1.00 H	155	1.31	47.59
10	7311.00	36.8 AV	54.0	-17.2	1.00 H	155	-10.79	47.59

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	56.6 PK	74.0	-17.4	1.39 V	266	24.62	31.98
2	2390.00	44.5 AV	54.0	-9.5	1.39 V	266	12.52	31.98
3	*2437.00	95.7 PK			1.39 V	266	63.58	32.12
4	*2437.00	85.4 AV			1.39 V	266	53.28	32.12
5	2483.50	56.2 PK	74.0	-17.8	1.39 V	266	23.96	32.24
6	2483.50	44.2 AV	54.0	-9.8	1.39 V	266	11.96	32.24
7	4874.00	42.6 PK	74.0	-31.4	1.00 V	204	2.90	39.70
8	4874.00	31.5 AV	54.0	-22.5	1.00 V	204	-8.20	39.70
9	7311.00	49.1 PK	74.0	-24.9	1.00 V	125	1.51	47.59
10	7311.00	35.7 AV	54.0	-18.3	1.00 V	125	-11.89	47.59

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.



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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	103.8 PK			1.60 H	21	71.62	32.18
2	*2462.00	92.3 AV			1.60 H	21	60.12	32.18
3	2483.50	64.2 PK	74.0	-9.8	1.60 H	21	31.96	32.24
4	2483.50	47.1 AV	54.0	-6.9	1.60 H	21	14.86	32.24
5	4924.00	44.1 PK	74.0	-29.9	1.35 H	301	4.26	39.84
6	4924.00	32.6 AV	54.0	-21.4	1.35 H	301	-7.24	39.84
7	7386.00	48.8 PK	74.0	-25.2	1.00 H	153	1.28	47.52
8	7386.00	36.4 AV	54.0	-17.6	1.00 H	153	-11.12	47.52

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	*2462.00	93.4 PK			1.36 V	265	61.22	32.18
2	*2462.00	83.1 AV			1.36 V	265	50.92	32.18
3	2483.50	56.7 PK	74.0	-17.3	1.36 V	265	24.46	32.24
4	2483.50	44.6 AV	54.0	-9.4	1.36 V	265	12.36	32.24
5	4924.00	42.5 PK	74.0	-31.5	1.00 V	203	2.66	39.84
6	4924.00	31.6 AV	54.0	-22.4	1.00 V	203	-8.24	39.84
7	7386.00	49.3 PK	74.0	-24.7	1.00 V	112	1.78	47.52
8	7386.00	35.7 AV	54.0	-18.3	1.00 V	112	-11.82	47.52

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.
5. " * " : Fundamental frequency.



A D T

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	63.6 PK	74.0	-10.4	1.61 H	21	31.62	31.98
2	2390.00	50.7 AV	54.0	-3.3	1.61 H	21	18.72	31.98
3	*2412.00	103.8 PK			1.61 H	21	71.75	32.05
4	*2412.00	92.2 AV			1.61 H	21	60.15	32.05
5	4824.00	44.3 PK	74.0	-29.7	1.33 H	302	4.72	39.58
6	4824.00	33.5 AV	54.0	-20.5	1.33 H	302	-6.08	39.58

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	58.6 PK	74.0	-15.4	1.41 V	269	26.62	31.98
2	2390.00	45.7 AV	54.0	-8.3	1.41 V	269	13.72	31.98
3	*2412.00	97.1 PK			1.41 V	269	65.05	32.05
4	*2412.00	85.3 AV			1.41 V	269	53.25	32.05
5	4824.00	43.5 PK	74.0	-30.5	1.00 V	205	3.92	39.58
6	4824.00	32.3 AV	54.0	-21.7	1.00 V	205	-7.28	39.58

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.



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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	56.4 PK	74.0	-17.6	1.62 H	20	24.42	31.98
2	2390.00	45.0 AV	54.0	-9.0	1.62 H	20	13.02	31.98
3	*2437.00	105.4 PK			1.62 H	20	73.28	32.12
4	*2437.00	93.4 AV			1.62 H	20	61.28	32.12
5	2483.50	56.6 PK	74.0	-17.4	1.62 H	20	24.36	32.24
6	2483.50	44.3 AV	54.0	-9.7	1.62 H	20	12.06	32.24
7	4874.00	44.9 PK	74.0	-29.1	1.35 H	306	5.20	39.70
8	4874.00	33.8 AV	54.0	-20.2	1.35 H	306	-5.90	39.70
9	7311.00	49.1 PK	74.0	-24.9	1.00 H	155	1.51	47.59
10	7311.00	36.9 AV	54.0	-17.1	1.00 H	155	-10.69	47.59

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	57.1 PK	74.0	-16.9	1.37 V	268	25.12	31.98
2	2390.00	44.5 AV	54.0	-9.5	1.37 V	268	12.52	31.98
3	*2437.00	96.3 PK			1.37 V	268	64.18	32.12
4	*2437.00	85.6 AV			1.37 V	268	53.48	32.12
5	2483.50	56.5 PK	74.0	-17.5	1.37 V	268	24.26	32.24
6	2483.50	44.1 AV	54.0	-9.9	1.37 V	268	11.86	32.24
7	4874.00	44.1 PK	74.0	-29.9	1.00 V	209	4.40	39.70
8	4874.00	32.5 AV	54.0	-21.5	1.00 V	209	-7.20	39.70
9	7311.00	48.9 PK	74.0	-25.1	1.00 V	123	1.31	47.59
10	7311.00	35.8 AV	54.0	-18.2	1.00 V	123	-11.79	47.59

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.



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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	103.2 PK			1.58 H	21	71.02	32.18
2	*2462.00	91.1 AV			1.58 H	21	58.92	32.18
3	2483.50	63.4 PK	74.0	-10.6	1.58 H	21	31.16	32.24
4	2483.50	47.9 AV	54.0	-6.1	1.58 H	21	15.66	32.24
5	4924.00	44.3 PK	74.0	-29.7	1.35 H	307	4.46	39.84
6	4924.00	33.5 AV	54.0	-20.5	1.35 H	307	-6.34	39.84
7	7386.00	49.3 PK	74.0	-24.7	1.00 H	159	1.78	47.52
8	7386.00	36.7 AV	54.0	-17.3	1.00 H	159	-10.82	47.52

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	*2462.00	92.1 PK			1.35 V	266	59.92	32.18
2	*2462.00	81.6 AV			1.35 V	266	49.42	32.18
3	2483.50	56.8 PK	74.0	-17.2	1.35 V	266	24.56	32.24
4	2483.50	44.3 AV	54.0	-9.7	1.35 V	266	12.06	32.24
5	4924.00	44.2 PK	74.0	-29.8	1.00 V	207	4.36	39.84
6	4924.00	32.6 AV	54.0	-21.4	1.00 V	207	-7.24	39.84
7	7386.00	48.7 PK	74.0	-25.3	1.00 V	125	1.18	47.52
8	7386.00	35.3 AV	54.0	-18.7	1.00 V	125	-12.22	47.52

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.
5. " * ": Fundamental frequency.

802.11n (HT40)

CHANNEL	TX Channel 3	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	62.8 PK	74.0	-11.2	1.61 H	19	30.82	31.98
2	2390.00	48.7 AV	54.0	-5.3	1.61 H	19	16.72	31.98
3	*2422.00	101.1 PK			1.61 H	19	69.02	32.08
4	*2422.00	88.2 AV			1.61 H	19	56.12	32.08
5	4844.00	44.4 PK	74.0	-29.6	1.33 H	307	4.77	39.63
6	4844.00	32.9 AV	54.0	-21.1	1.33 H	307	-6.73	39.63
7	7266.00	48.9 PK	74.0	-25.1	1.00 H	159	1.30	47.60
8	7266.00	36.5 AV	54.0	-17.5	1.00 H	159	-11.10	47.60

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	57.9 PK	74.0	-16.1	1.40 V	266	25.92	31.98
2	2390.00	44.8 AV	54.0	-9.2	1.40 V	266	12.82	31.98
3	*2422.00	91.4 PK			1.40 V	266	59.32	32.08
4	*2422.00	79.9 AV			1.40 V	266	47.82	32.08
5	4844.00	44.5 PK	74.0	-29.5	1.00 V	201	4.87	39.63
6	4844.00	32.3 AV	54.0	-21.7	1.00 V	201	-7.33	39.63
7	7266.00	48.7 PK	74.0	-25.3	1.00 V	121	1.10	47.60
8	7266.00	36.7 AV	54.0	-17.3	1.00 V	121	-10.90	47.60

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.



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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	60.4 PK	74.0	-13.6	1.62 H	20	28.42	31.98
2	2390.00	48.4 AV	54.0	-5.6	1.62 H	20	16.42	31.98
3	*2437.00	100.9 PK			1.62 H	20	68.78	32.12
4	*2437.00	87.7 AV			1.62 H	20	55.58	32.12
5	2483.50	62.0 PK	74.0	-12.0	1.62 H	20	29.76	32.24
6	2483.50	46.7 AV	54.0	-7.3	1.62 H	20	14.46	32.24
7	4874.00	44.7 PK	74.0	-29.3	1.30 H	296	5.00	39.70
8	4874.00	33.7 AV	54.0	-20.3	1.30 H	296	-6.00	39.70
9	7311.00	48.9 PK	74.0	-25.1	1.05 H	158	1.31	47.59
10	7311.00	36.6 AV	54.0	-17.4	1.05 H	158	-10.99	47.59

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	56.5 PK	74.0	-17.5	1.38 V	269	24.52	31.98
2	2390.00	44.9 AV	54.0	-9.1	1.38 V	269	12.92	31.98
3	*2437.00	91.5 PK			1.38 V	269	59.38	32.12
4	*2437.00	79.1 AV			1.38 V	269	46.98	32.12
5	2483.50	57.4 PK	74.0	-16.6	1.38 V	269	25.16	32.24
6	2483.50	44.3 AV	54.0	-9.7	1.38 V	269	12.06	32.24
7	4874.00	44.6 PK	74.0	-29.4	1.00 V	207	4.90	39.70
8	4874.00	32.6 AV	54.0	-21.4	1.00 V	207	-7.10	39.70
9	7311.00	48.2 PK	74.0	-25.8	1.00 V	117	0.61	47.59
10	7311.00	36.5 AV	54.0	-17.5	1.00 V	117	-11.09	47.59

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.



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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	100.6 PK			1.59 H	17	68.44	32.16
2	*2452.00	87.6 AV			1.59 H	17	55.44	32.16
3	2483.50	64.5 PK	74.0	-9.5	1.59 H	17	32.26	32.24
4	2483.50	49.1 AV	54.0	-4.9	1.59 H	17	16.86	32.24
5	4904.00	45.1 PK	74.0	-28.9	1.39 H	307	5.33	39.77
6	4904.00	34.1 AV	54.0	-19.9	1.39 H	307	-5.67	39.77
7	7356.00	49.4 PK	74.0	-24.6	1.04 H	164	1.85	47.55
8	7356.00	37.2 AV	54.0	-16.8	1.04 H	164	-10.35	47.55

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	89.2 PK			1.39 V	269	57.04	32.16
2	*2452.00	78.4 AV			1.39 V	269	46.24	32.16
3	2483.50	56.8 PK	74.0	-17.2	1.39 V	269	24.56	32.24
4	2483.50	44.6 AV	54.0	-9.4	1.39 V	269	12.36	32.24
5	4904.00	43.9 PK	74.0	-30.1	1.00 V	195	4.13	39.77
6	4904.00	31.9 AV	54.0	-22.1	1.00 V	195	-7.87	39.77
7	7356.00	48.6 PK	74.0	-25.4	1.00 V	110	1.05	47.55
8	7356.00	36.9 AV	54.0	-17.1	1.00 V	110	-10.65	47.55

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.

4.2.7.1 TEST RESULTS (LE MODE)

BELOW 1GHz WORST-CASE DATA

BT_LE-GFSK

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 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	165.32	40.3 QP	43.5	-3.2	1.30 H	43	26.37	13.96
2	228.56	37.5 QP	46.0	-8.5	1.39 H	317	25.18	12.33
3	269.00	36.0 QP	46.0	-10.0	1.26 H	322	21.90	14.06
4	597.66	41.2 QP	46.0	-4.8	1.19 H	285	19.01	22.21
5	793.00	38.3 QP	46.0	-7.7	1.24 H	246	12.78	25.53
6	962.61	37.6 QP	54.0	-16.4	1.21 H	309	9.39	28.19

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	34.00	34.5 QP	40.0	-5.5	1.00 V	60	21.47	13.04
2	303.00	39.0 QP	46.0	-7.0	1.50 V	294	23.60	15.38
3	366.90	32.8 QP	46.0	-13.2	1.00 V	250	15.89	16.95
4	432.30	35.8 QP	46.0	-10.2	1.13 V	329	17.32	18.49
5	597.78	37.3 QP	46.0	-8.7	1.07 V	168	15.13	22.21
6	796.40	37.8 QP	46.0	-8.2	1.85 V	349	12.20	25.61

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.



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ABOVE 1GHz DATA

BT_LE-GFSK

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	57.8 PK	74.0	-16.2	1.05 H	226	25.82	31.98
2	2390.00	44.8 AV	54.0	-9.2	1.05 H	226	12.82	31.98
3	*2402.00	99.7 PK			1.05 H	226	67.67	32.03
4	*2402.00	86.8 AV			1.05 H	226	54.77	32.03
5	4804.00	46.0 PK	74.0	-28.0	1.05 H	214	6.47	39.53
6	4804.00	34.6 AV	54.0	-19.4	1.05 H	214	-4.93	39.53

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	55.8 PK	74.0	-18.2	1.54 V	90	23.82	31.98
2	2390.00	44.7 AV	54.0	-9.3	1.54 V	90	12.72	31.98
3	*2402.00	91.6 PK			1.54 V	90	59.57	32.03
4	*2402.00	81.2 AV			1.54 V	90	49.17	32.03
5	4804.00	46.4 PK	74.0	-27.6	1.00 V	37	6.87	39.53
6	4804.00	34.9 AV	54.0	-19.1	1.00 V	37	-4.63	39.53

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.



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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	98.6 PK			1.02 H	193	66.48	32.12
2	*2440.00	86.1 AV			1.02 H	193	53.98	32.12
3	4880.00	46.6 PK	74.0	-27.4	1.02 H	219	6.89	39.71
4	4880.00	34.8 AV	54.0	-19.2	1.02 H	219	-4.91	39.71
5	7320.00	53.5 PK	74.0	-20.5	1.00 H	15	5.92	47.58
6	7320.00	41.6 AV	54.0	-12.4	1.00 H	15	-5.98	47.58

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	90.3 PK			1.54 V	89	58.18	32.12
2	*2440.00	80.5 AV			1.54 V	89	48.38	32.12
3	4880.00	46.4 PK	74.0	-27.6	1.00 V	16	6.69	39.71
4	4880.00	34.8 AV	54.0	-19.2	1.00 V	16	-4.91	39.71
5	7320.00	53.6 PK	74.0	-20.4	1.01 V	141	6.02	47.58
6	7320.00	41.6 AV	54.0	-12.4	1.01 V	141	-5.98	47.58

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.



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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	98.1 PK			1.27 H	183	65.87	32.23
2	*2480.00	85.5 AV			1.27 H	183	53.27	32.23
3	2483.50	61.4 PK	74.0	-12.6	1.27 H	183	29.16	32.24
4	2483.50	44.4 AV	54.0	-9.6	1.27 H	183	12.16	32.24
5	4960.00	46.5 PK	74.0	-27.5	1.00 H	212	6.55	39.95
6	4960.00	34.9 AV	54.0	-19.1	1.00 H	212	-5.05	39.95
7	7440.00	52.9 PK	74.0	-21.1	1.00 H	11	5.50	47.40
8	7440.00	41.1 AV	54.0	-12.9	1.00 H	11	-6.30	47.40

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	*2480.00	88.1 PK			1.45 V	87	55.87	32.23
2	*2480.00	78.9 AV			1.45 V	87	46.67	32.23
3	2483.50	60.6 PK	74.0	-13.4	1.45 V	87	28.36	32.24
4	2483.50	44.5 AV	54.0	-9.5	1.45 V	87	12.26	32.24
5	4960.00	46.2 PK	74.0	-27.8	1.00 V	32	6.25	39.95
6	4960.00	34.5 AV	54.0	-19.5	1.00 V	32	-5.45	39.95
7	7440.00	53.3 PK	74.0	-20.7	1.00 V	155	5.90	47.40
8	7440.00	41.5 AV	54.0	-12.5	1.00 V	155	-5.90	47.40

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.

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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100036	Dec. 14, 2011	Dec. 13, 2012

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 : Nov. 26, 2012

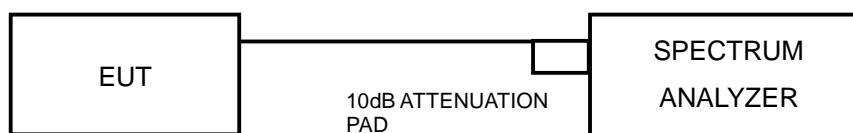
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



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.



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4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.62	0.5	PASS
6	2437	10.85	0.5	PASS
11	2462	10.62	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.42	0.5	PASS
6	2437	16.45	0.5	PASS
11	2462	16.45	0.5	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.66	0.5	PASS
6	2437	17.64	0.5	PASS
11	2462	17.64	0.5	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	35.34	0.5	PASS
6	2437	35.69	0.5	PASS
9	2452	35.60	0.5	PASS



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BT_LE-GFSK

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.70	0.5	PASS
19	2440	0.67	0.5	PASS
39	2480	0.75	0.5	PASS



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4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 10, 2012	May 09, 2013
Peak 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 : Nov. 26, 2012

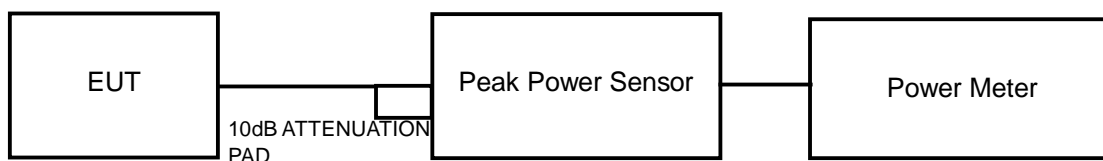
4.4.3 TEST PROCEDURES

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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	72.444	18.6	30	PASS
6	2437	81.283	19.1	30	PASS
11	2462	87.096	19.4	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	165.959	22.2	30	PASS
6	2437	204.174	23.1	30	PASS
11	2462	177.828	22.5	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	162.181	22.1	30	PASS
6	2437	204.174	23.1	30	PASS
11	2462	154.882	21.9	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
3	2422	169.824	22.3	30	PASS
6	2437	177.828	22.5	30	PASS
9	2452	165.959	22.2	30	PASS



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BT_LE-GFSK

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	2402	3.020	4.8	30	PASS
19	2440	3.020	4.8	30	PASS
39	2480	2.512	4.0	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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100036	Dec. 14, 2011	Dec. 13, 2012

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 : Nov. 26, 2012

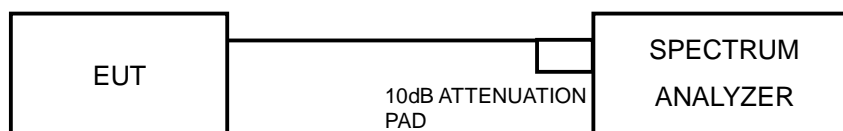
4.5.3 TEST PROCEDURE

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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4.5.7 TEST RESULTS

802.11b

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS/FAIL
1	2412	-8.43	8	PASS
6	2437	-8.13	8	PASS
11	2462	-6.94	8	PASS

802.11g

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS/FAIL
1	2412	-12.15	8	PASS
6	2437	-10.19	8	PASS
11	2462	-11.47	8	PASS

802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS/FAIL
1	2412	-11.99	8	PASS
6	2437	-10.54	8	PASS
11	2462	-13.66	8	PASS

802.11n (HT40)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS/FAIL
3	2422	-16.02	8	PASS
6	2437	-16.08	8	PASS
9	2452	-15.73	8	PASS



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BT_LE-GFSK

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS/FAIL
0	2402	-10.57	8	PASS
19	2440	-11.89	8	PASS
39	2480	-13.12	8	PASS



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4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100036	Dec. 14, 2011	Dec. 13, 2012

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 : Nov. 26, 2012

4.6.3 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.

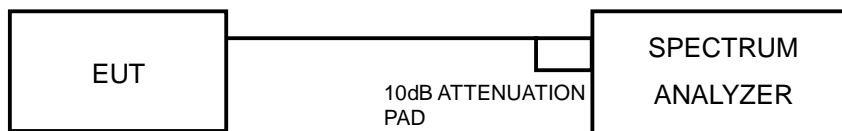
MEASUREMENT PROCEDURE OOB

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.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

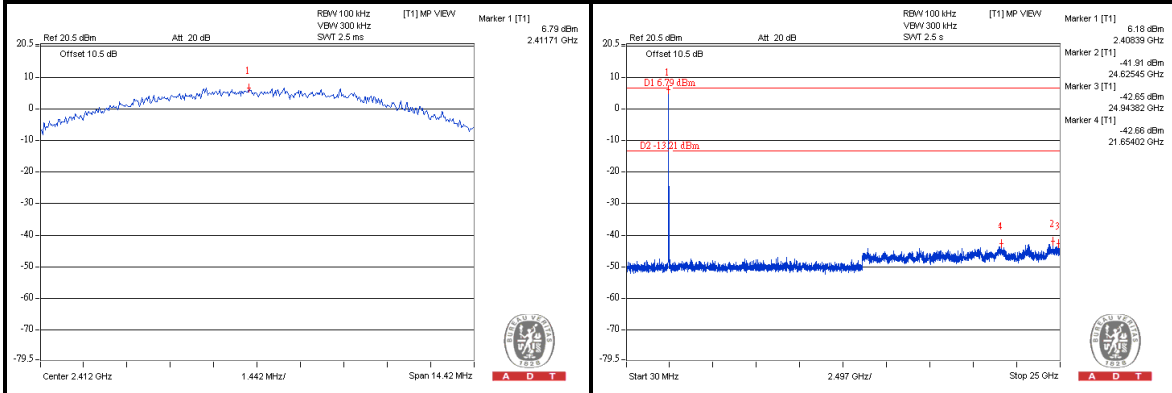
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



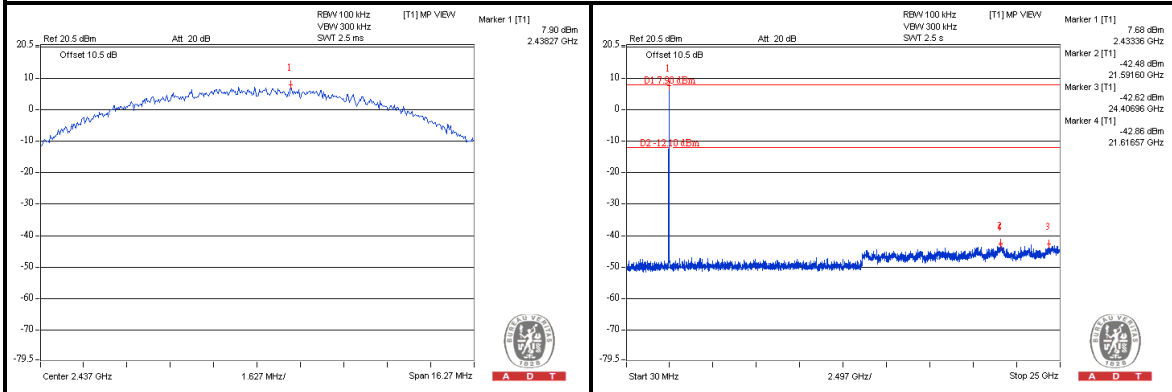
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802.11b

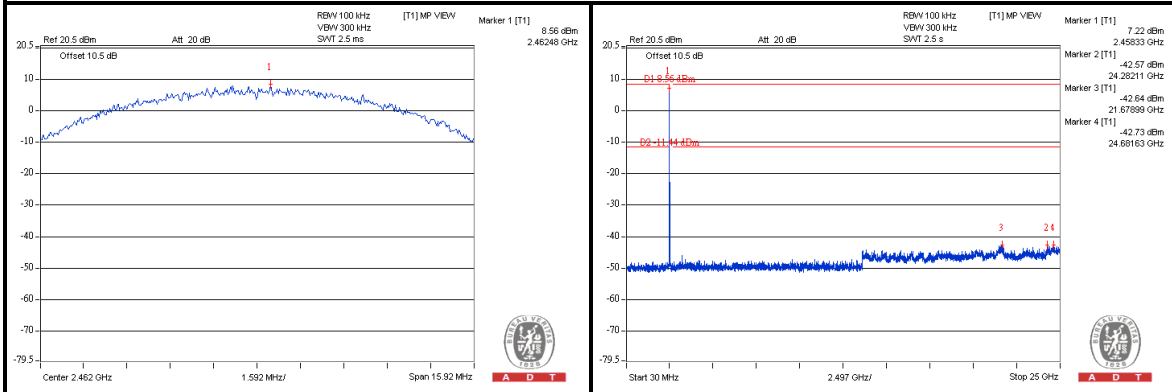
CH 1



CH 6



CH 11

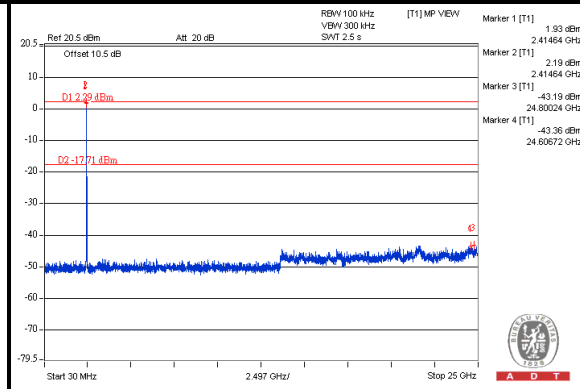
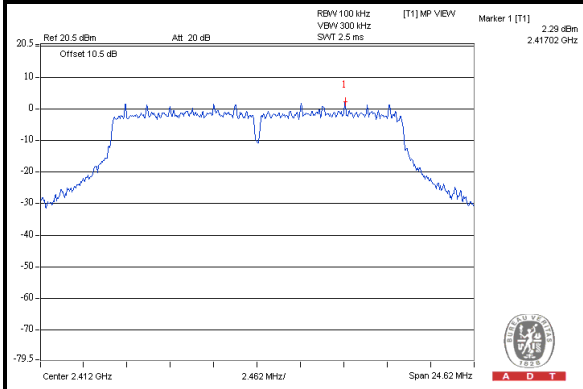




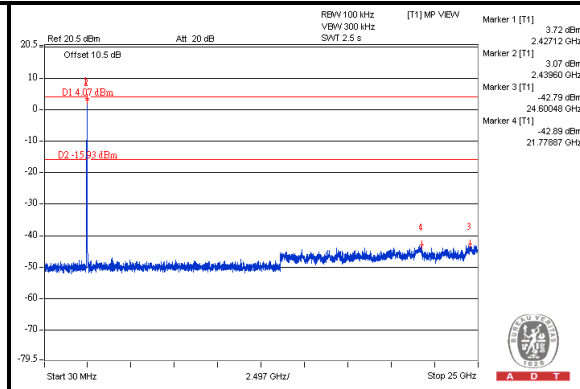
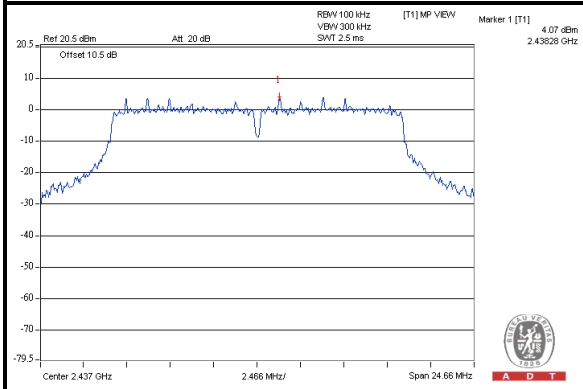
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802.11g

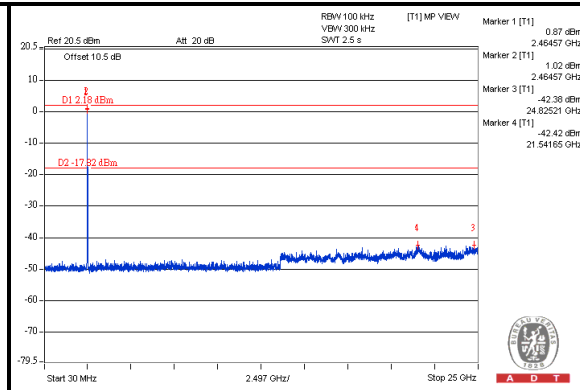
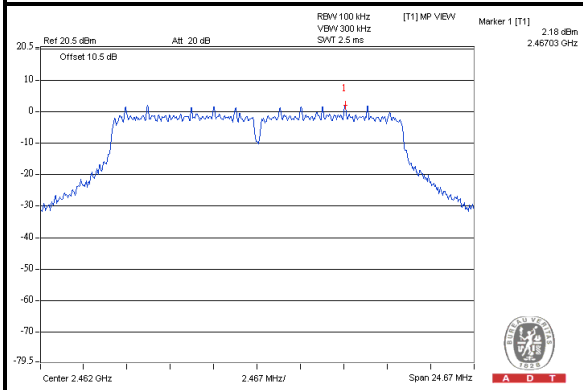
CH 1



CH 6



CH 11

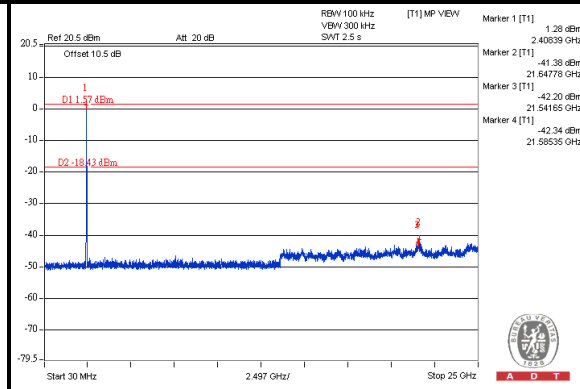
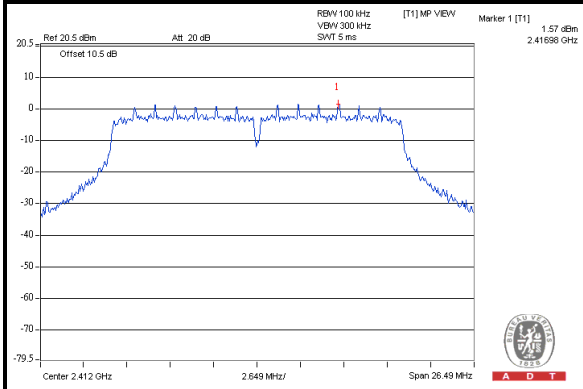




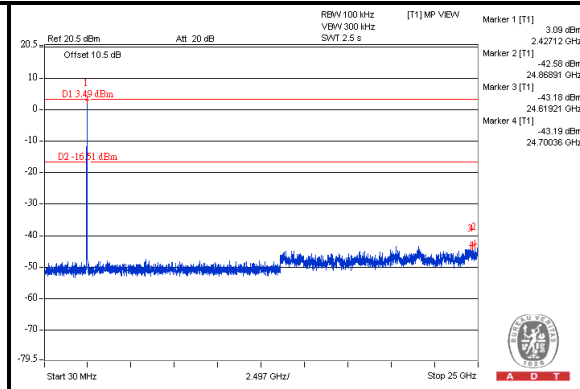
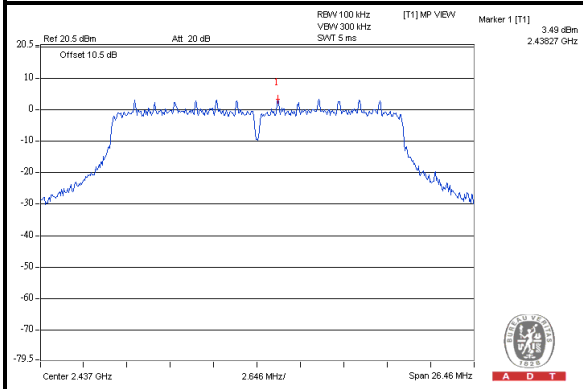
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802.11n (HT20)

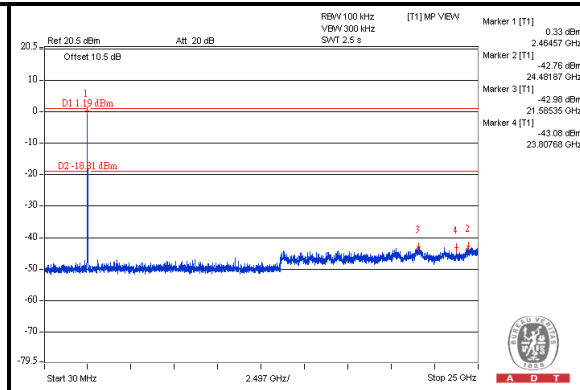
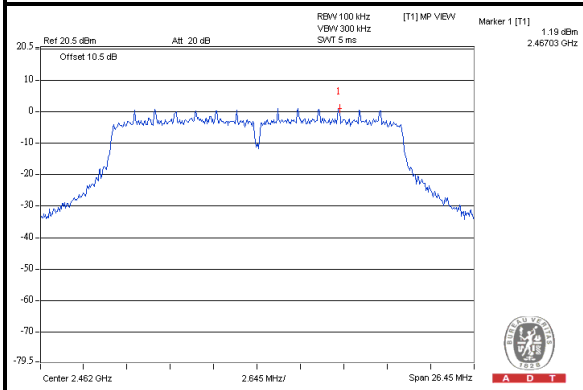
CH 1



CH 6



CH 11

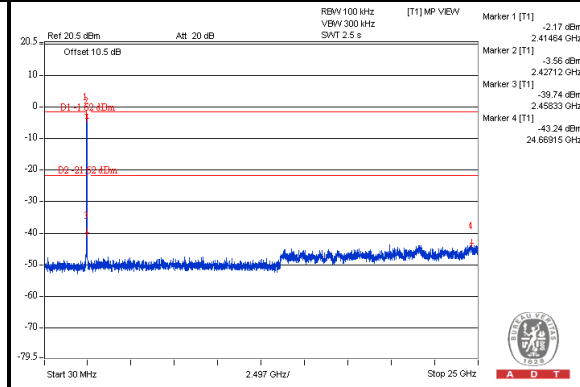
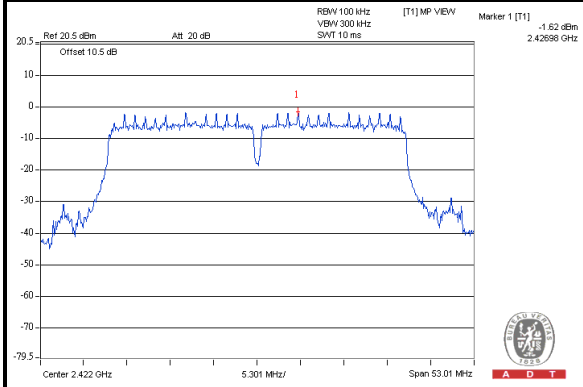




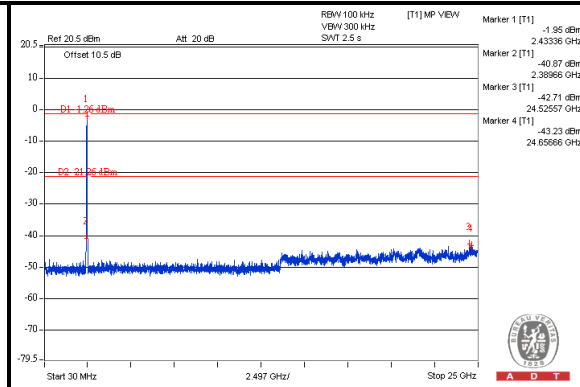
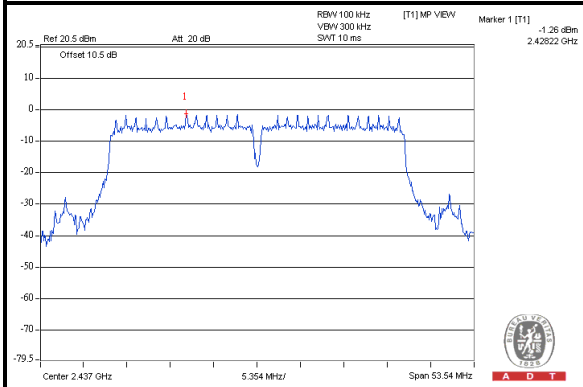
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802.11n (HT40)

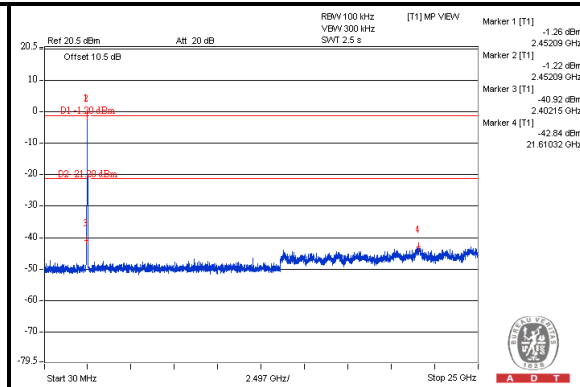
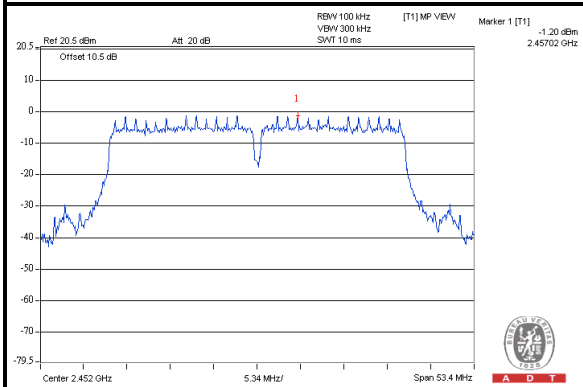
CH 3



CH 6



CH 9

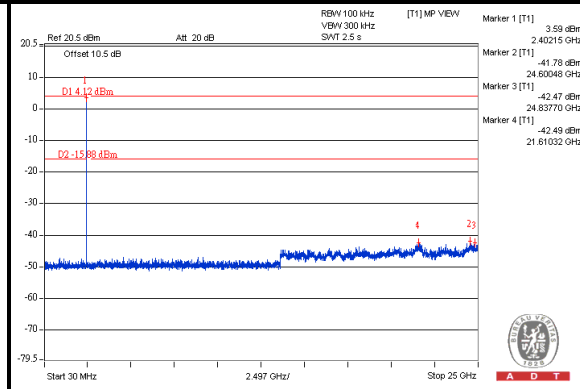
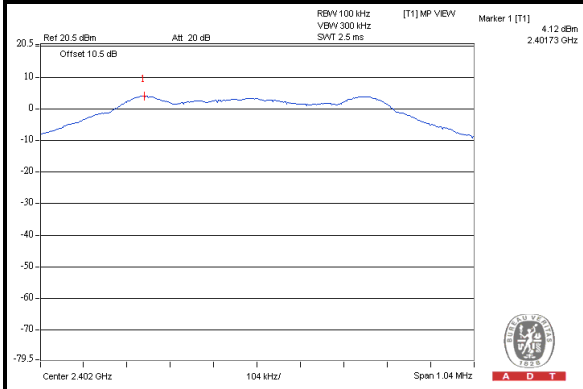




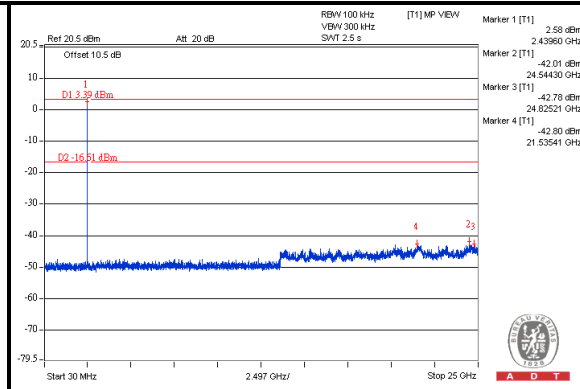
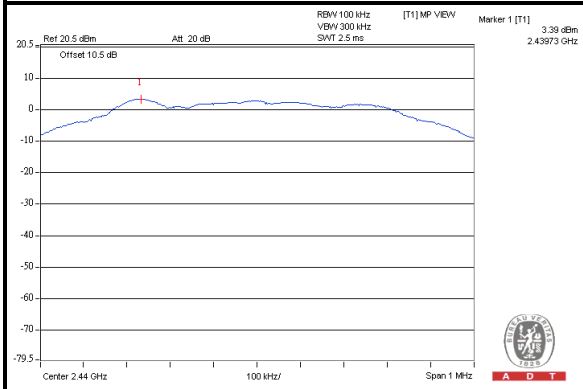
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BT_LE-GFSK

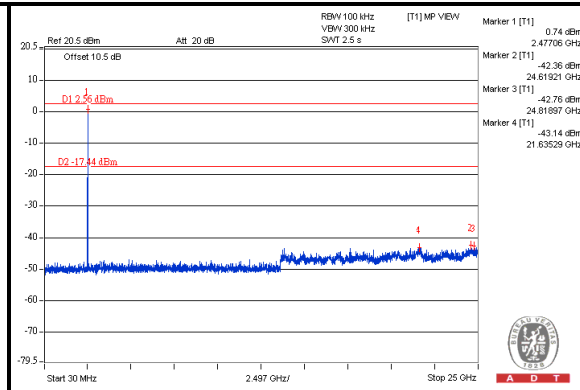
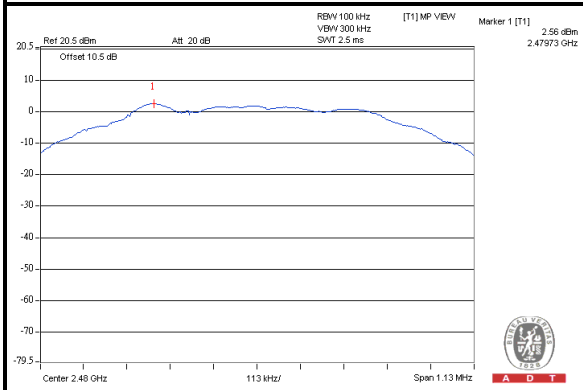
CH 0



CH 19



CH 39





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Fax: 886-2-26052943

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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.



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

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

--- END ---