

FCC TEST REPORT (WLAN 15.247)

REPORT NO.: RF140815C17

MODEL NO.: LBEN6ZZZTC

FCC ID: VPYLBZT

RECEIVED: Aug. 15, 2014

TESTED: Aug. 28 to Sep. 01, 2014

ISSUED: Oct. 27, 2014

APPLICANT: MURATA MANUFACTURING CO., LTD.

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

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R.O.C.

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140815C17	Original release	Oct. 27, 2014

1. CERTIFICATION

PRODUCT: Communication Module
BRAND NAME: MURATA
MODEL NO.: LBEN6ZZZTC
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: MURATA MANUFACTURING CO., LTD.
TESTED: Aug. 28 to Sep. 01, 2014
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (Model: LBEN6ZZZTC) 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:** Oct. 27, 2014
(Elsie Hsu, Specialist)

APPROVED BY :  , **DATE:** Oct. 27, 2014
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -16.39dB at 0.18906MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2483.50MHz, 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 Output 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 SMA-P. (The device is professionally installed)

NOTE: 1. For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz. For the 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz RF parameters was recorded in another 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
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.37 dB
Radiated emissions (1GHz -6GHz)	3.72 dB
Radiated emissions (6GHz -18GHz)	4.00 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT (WLAN)

PRODUCT	Communication Module
MODEL NO.	LBEN6ZZZTC
POWER SUPPLY	3.3Vdc (from host equipment)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS,OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a / g: up to 54Mbps 802.11n: up to 150Mbps
OPERATING FREQUENCY	For 15.407 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.70GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
NUMBER OF CHANNEL	For 15.407 24 for 802.11a, 802.11n (HT20) 11 for 802.11n (HT40)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	For 15.407 802.11a: 9.908mW 802.11n (HT20): 9.75mW 802.11n (HT40): 7.603mW For 15.247 802.11b: 21.232mW 802.11g: 56.754mW 802.11n (HT20): 60.395mW 802.11n (HT40): 53.088mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

Note:

1. There are Bluetooth 4.0 and WLAN technology used for the EUT.
2. For WLAN, 2.4GHz and 5GHz technology can not transmit at same time.
3. WLAN and Bluetooth technology can transmit at same time.
4. The emission of the simultaneous operation (WLAN & Bluetooth) has been evaluated and no non-compliance was found.
5. There are antennas provided to the EUT, please refer to the following table:

WLAN					
Brand	Model	Antenna Gain(dBi) <include cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connector Type
JRC	NZA-606	1	2.4~2.4835	Monopole	SMA-P
		1.4	5.15~5.35		
		2	5.47~5.725		
		2	5.725~5.850		
BT					
Brand	Model	Antenna Gain(dBi) <include cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connector Type
JRC	NZA-606	1	2.4~2.4835	Monopole	SMA-P

6. The EUT incorporates a SISO function.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	1TX	1RX
802.11b	1 ~ 11Mbps	1TX	1RX
802.11g	6 ~ 54Mbps	1TX	1RX
802.11n (HT20)	MCS 0~7	1TX	1RX
802.11n (HT40)	MCS 0~7	1TX	1RX

7. 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 TEST MODES

Operated in 2400 ~ 2483.5MHz band:

11 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		

7 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		

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

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

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)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

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

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	30deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	24deg. C, 69%RH	120Vac, 60Hz	Robert Cheng
RE ³ 1G	20deg. C, 65%RH	120Vac, 60Hz	Tim Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng
OB	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

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 v03r02

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.

3.4 DUTY CYCLE OF TEST SIGNAL

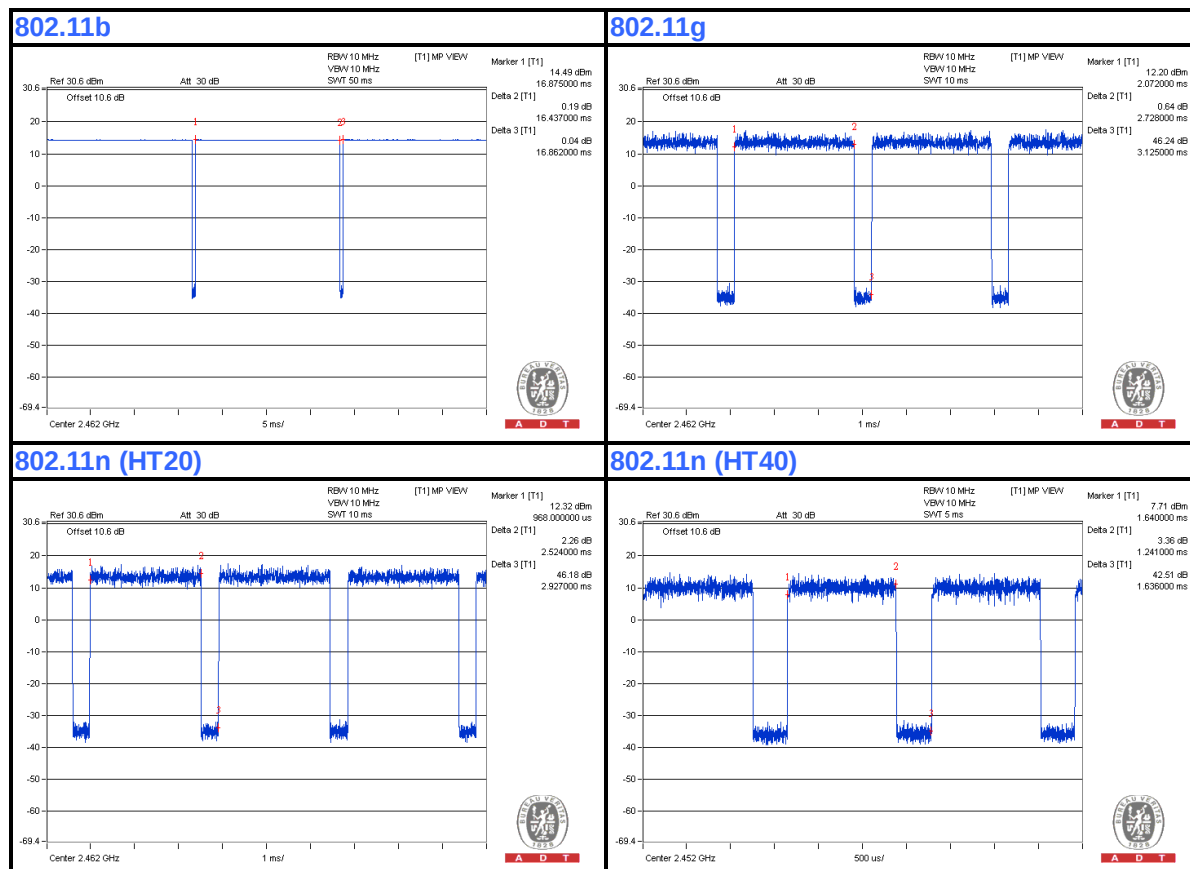
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 16.437 ms/16.862 ms = 0.975, Duty factor = $10 * \log(1/0.975) = 0.1$

802.11g: Duty cycle = 2.728 ms/3.125 ms = 0.873, Duty factor = $10 * \log(1/0.873) = 0.6$

802.11n (HT20): Duty cycle = 2.524 ms/2.927 ms = 0.862, Duty factor = $10 * \log(1/0.862) = 0.6$

802.11n (HT40): Duty cycle = 1.241 ms/1.636 ms = 0.75.9, Duty factor = $10 * \log(1/0.759) = 1.2$





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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.

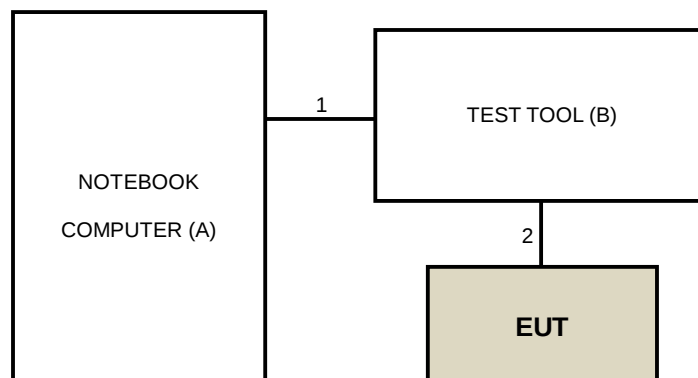
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	FCC	F-090407-1004-1	112450	NA	Provided by Lab
B	TEST TOOL	7Layers	NA	NA	NA	Supplied by client

NOTE:

1. All power cords of the above support units are non-shielded (1.8 m).

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1.	USB	1	0.85	Yes	0	Supplied by client
2.	Data	1	0.3	Yes	0	Supplied by client

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 12, 2013	Sep. 11, 2014
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10, 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
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. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Sep. 01, 2014

4.1.3 TEST PROCEDURES

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

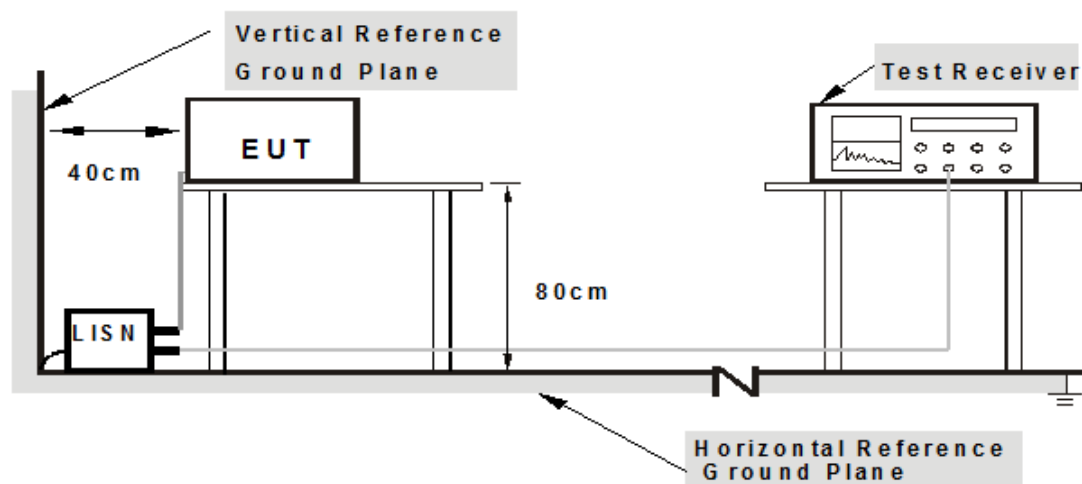
NOTE:

- 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.



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4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit A (NOTEBOOK COMPUTER) which is placed on a testing table.
2. The support unit A (NOTEBOOK COMPUTER) runs test program "RTTT[ver2.0.0.55]" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

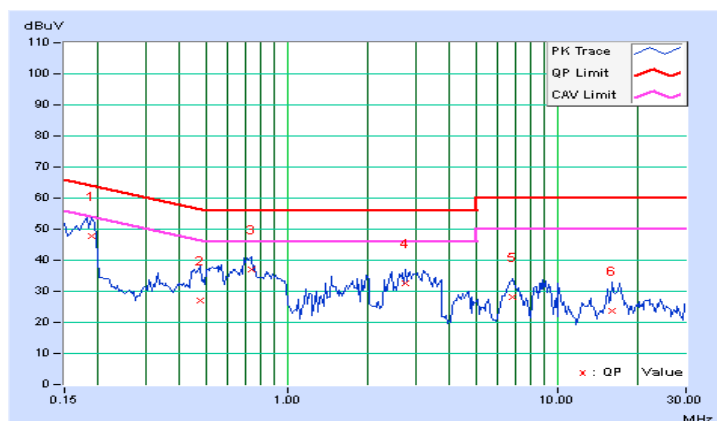
4.1.7 TEST RESULTS

PHASE	Line (L)	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	0.18906	0.07	47.62	27.55	47.69	27.62	64.08	54.08	-16.39	-26.46
2	0.47813	0.10	26.87	11.79	26.97	11.89	56.37	46.37	-29.41	-34.49
3	0.73594	0.11	36.94	20.74	37.05	20.85	56.00	46.00	-18.95	-25.15
4	2.74609	0.20	32.23	21.93	32.43	22.13	56.00	46.00	-23.57	-23.87
5	6.82422	0.35	27.86	19.33	28.21	19.68	60.00	50.00	-31.79	-30.32
6	15.96094	0.61	22.96	16.59	23.57	17.20	60.00	50.00	-36.43	-32.80

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

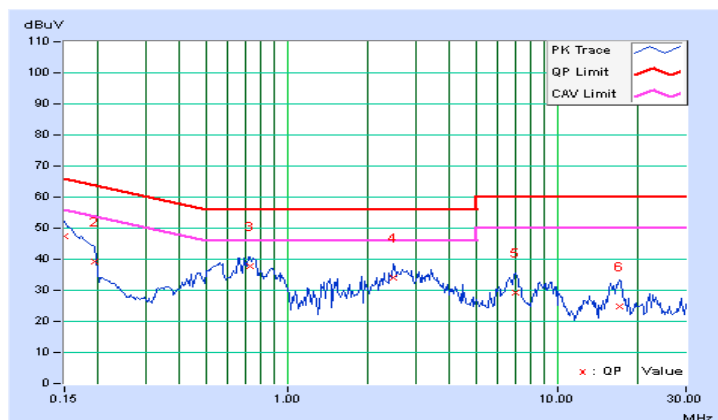


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. (dB)	AV. (dB)
1	0.15000	0.08	47.29	25.34	47.37	25.42	66.00	56.00	-18.63	-30.58
2	0.19297	0.07	39.32	22.74	39.39	22.81	63.91	53.91	-24.52	-31.10
3	0.73203	0.11	37.57	21.80	37.68	21.91	56.00	46.00	-18.32	-24.09
4	2.48047	0.20	33.87	23.06	34.07	23.26	56.00	46.00	-21.93	-22.74
5	7.01953	0.36	28.92	19.90	29.28	20.26	60.00	50.00	-30.72	-29.74
6	16.99219	0.63	24.20	17.74	24.83	18.37	60.00	50.00	-35.17	-31.63

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.

4.2.2 TEST INSTRUMENTS

For Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	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.
- 3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
- 5 The VCCI Site Registration No. is G-137.
- 6 The CANADA Site Registration No. is IC 7450H-2.
- 7 Tested Date: Aug. 28, 2014

**A D T****For Above 1GHz test:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	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: Aug. 28, 2014

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 for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

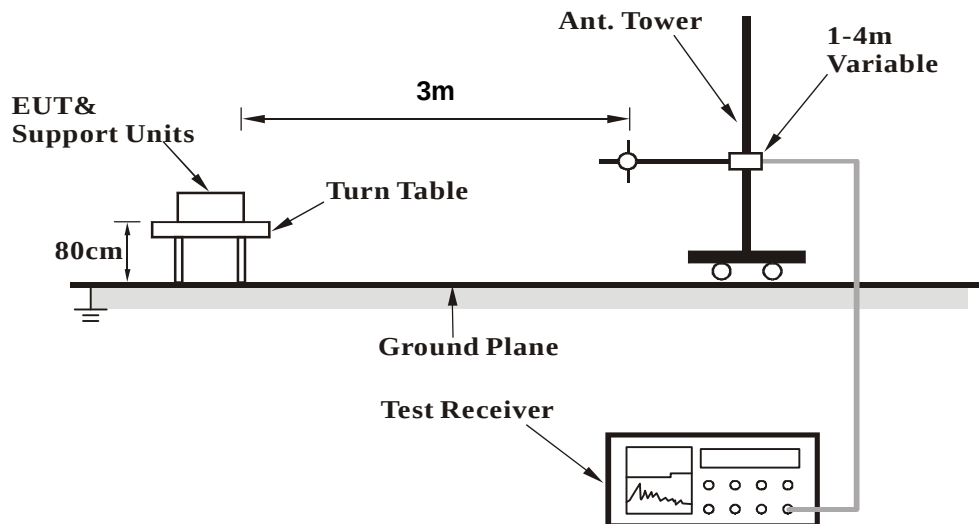
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.2.4 DEVIATION FROM TEST STANDARD

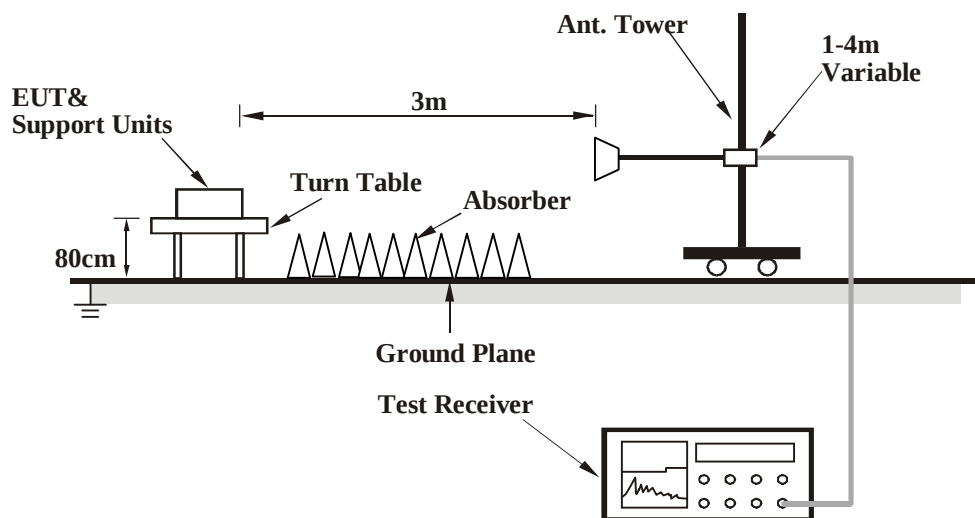
No deviation

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

Same as 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11n (HT20)

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	133.31	39.8 QP	43.5	-3.7	1.50 H	266	53.89	-14.05
2	220.70	40.9 QP	46.0	-5.1	1.50 H	67	56.99	-16.11
3	239.91	42.9 QP	46.0	-3.2	1.00 H	70	57.63	-14.78
4	328.76	42.5 QP	46.0	-3.5	1.00 H	202	54.00	-11.49
5	335.93	40.7 QP	46.0	-5.3	1.00 H	204	52.08	-11.34
6	359.95	40.3 QP	46.0	-5.7	1.00 H	204	51.07	-10.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	55.37	34.8 QP	40.0	-5.2	1.00 V	243	48.54	-13.73
2	93.68	30.7 QP	43.5	-12.8	1.50 V	360	49.51	-18.83
3	118.66	34.4 QP	43.5	-9.1	1.50 V	271	49.72	-15.29
4	132.82	31.4 QP	43.5	-12.1	2.00 V	199	45.47	-14.10
5	166.04	29.9 QP	43.5	-13.6	1.00 V	316	43.40	-13.49
6	666.47	33.7 QP	46.0	-12.3	1.50 V	232	37.65	-3.99

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

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	2386.00	49.3 PK	74.0	-24.7	1.11 H	197	17.67	31.63
2	2386.00	38.9 AV	54.0	-15.1	1.11 H	197	7.27	31.63
3	*2412.00	99.5 PK			1.11 H	197	67.77	31.73
4	*2412.00	96.2 AV			1.11 H	197	64.47	31.73
5	4824.00	53.3 PK	74.0	-20.7	1.52 H	244	14.41	38.89
6	4824.00	48.0 AV	54.0	-6.0	1.52 H	244	9.11	38.89
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	2386.00	50.7 PK	74.0	-23.3	1.21 V	218	19.07	31.63
2	2386.00	43.1 AV	54.0	-10.9	1.21 V	218	11.47	31.63
3	*2412.00	103.0 PK			1.21 V	218	71.27	31.73
4	*2412.00	100.0 AV			1.21 V	218	68.27	31.73
5	4824.00	55.6 PK	74.0	-18.4	1.01 V	260	16.71	38.89
6	4824.00	51.8 AV	54.0	-2.2	1.01 V	260	12.91	38.89

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) – Pre-Amplifier 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	48.2 PK	74.0	-25.8	1.12 H	204	16.55	31.65
2	2390.00	36.4 AV	54.0	-17.6	1.12 H	204	4.75	31.65
3	*2437.00	99.7 PK			1.12 H	204	67.88	31.82
4	*2437.00	96.5 AV			1.12 H	204	64.68	31.82
5	2483.50	46.8 PK	74.0	-27.2	1.12 H	204	14.81	31.99
6	2483.50	31.3 AV	54.0	-22.7	1.12 H	204	-0.69	31.99
7	4874.00	51.1 PK	74.0	-22.9	1.47 H	147	12.05	39.05
8	4874.00	43.7 AV	54.0	-10.3	1.47 H	147	4.65	39.05
9	7311.00	51.8 PK	74.0	-22.2	1.00 H	203	5.38	46.42
10	7311.00	38.7 AV	54.0	-15.3	1.00 H	203	-7.72	46.42
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	49.5 PK	74.0	-24.5	1.18 V	218	17.85	31.65
2	2390.00	40.6 AV	54.0	-13.4	1.18 V	218	8.95	31.65
3	*2437.00	103.2 PK			1.18 V	218	71.38	31.82
4	*2437.00	100.2 AV			1.18 V	218	68.38	31.82
5	2483.50	48.0 PK	74.0	-26.0	1.18 V	218	16.01	31.99
6	2483.50	34.5 AV	54.0	-19.5	1.18 V	218	2.51	31.99
7	4874.00	53.6 PK	74.0	-20.4	1.00 V	155	14.55	39.05
8	4874.00	48.8 AV	54.0	-5.2	1.00 V	155	9.75	39.05
9	7311.00	51.9 PK	74.0	-22.1	1.00 V	184	5.48	46.42
10	7311.00	39.6 AV	54.0	-14.4	1.00 V	184	-6.82	46.42

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) – Pre-Amplifier 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	96.9 PK			1.14 H	190	64.99	31.91
2	*2462.00	96.9 AV			1.14 H	190	64.99	31.91
3	2483.50	48.7 PK	74.0	-25.3	1.14 H	190	16.71	31.99
4	2483.50	38.6 AV	54.0	-15.4	1.14 H	190	6.61	31.99
5	4924.00	51.2 PK	74.0	-22.8	1.49 H	153	11.99	39.21
6	4924.00	43.6 AV	54.0	-10.4	1.49 H	153	4.39	39.21
7	7386.00	52.0 PK	74.0	-22.0	1.04 H	198	5.55	46.45
8	7386.00	38.9 AV	54.0	-15.1	1.04 H	198	-7.55	46.45
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	100.9 PK			1.17 V	221	68.99	31.91
2	*2462.00	100.9 AV			1.17 V	221	68.99	31.91
3	2483.50	53.1 PK	74.0	-20.9	1.17 V	221	21.11	31.99
4	2483.50	42.7 AV	54.0	-11.3	1.17 V	221	10.71	31.99
5	4924.00	54.4 PK	74.0	-19.6	1.13 V	38	15.19	39.21
6	4924.00	49.9 AV	54.0	-4.1	1.13 V	38	10.69	39.21
7	7386.00	51.7 PK	74.0	-22.3	1.04 V	190	5.25	46.45
8	7386.00	39.3 AV	54.0	-14.7	1.04 V	190	-7.15	46.45

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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	63.1 PK	74.0	-10.9	1.11 H	190	31.45	31.65
2	2390.00	40.6 AV	54.0	-13.4	1.11 H	190	8.95	31.65
3	*2412.00	102.1 PK			1.11 H	190	70.37	31.73
4	*2412.00	91.3 AV			1.11 H	190	59.57	31.73
5	4824.00	50.2 PK	74.0	-23.8	1.21 H	150	11.31	38.89
6	4824.00	45.9 AV	54.0	-8.1	1.21 H	150	7.01	38.89
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	67.2 PK	74.0	-6.8	1.19 V	218	35.55	31.65
2	2390.00	44.6 AV	54.0	-9.4	1.19 V	218	12.95	31.65
3	*2412.00	106.2 PK			1.19 V	218	74.47	31.73
4	*2412.00	95.3 AV			1.19 V	218	63.57	31.73
5	4824.00	51.3 PK	74.0	-22.7	1.00 V	260	12.41	38.89
6	4824.00	48.3 AV	54.0	-5.7	1.00 V	260	9.41	38.89

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) – Pre-Amplifier 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	65.3 PK	74.0	-8.7	1.13 H	196	33.65	31.65
2	2390.00	38.4 AV	54.0	-15.6	1.13 H	196	6.75	31.65
3	*2437.00	102.7 PK			1.13 H	196	70.88	31.82
4	*2437.00	91.6 AV			1.13 H	196	59.78	31.82
5	2483.50	69.4 PK	74.0	-4.6	1.13 H	196	37.41	31.99
6	2483.50	46.3 AV	54.0	-7.7	1.13 H	196	14.31	31.99
7	4874.00	49.8 PK	74.0	-24.2	1.24 H	158	10.75	39.05
8	4874.00	45.7 AV	54.0	-8.3	1.24 H	158	6.65	39.05
9	7311.00	47.6 PK	74.0	-26.4	1.00 H	192	1.18	46.42
10	7311.00	37.0 AV	54.0	-17.0	1.00 H	192	-9.42	46.42
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	69.0 PK	74.0	-5.0	1.19 V	218	37.35	31.65
2	2390.00	39.9 AV	54.0	-14.1	1.19 V	218	8.25	31.65
3	*2437.00	104.8 PK			1.19 V	218	72.98	31.82
4	*2437.00	95.0 AV			1.19 V	218	63.18	31.82
5	2483.50	71.2 PK	74.0	-2.8	1.19 V	218	39.21	31.99
6	2483.50	49.7 AV	54.0	-4.3	1.19 V	218	17.71	31.99
7	4874.00	51.2 PK	74.0	-22.8	1.02 V	261	12.15	39.05
8	4874.00	48.3 AV	54.0	-5.7	1.02 V	261	9.25	39.05
9	7311.00	49.4 PK	74.0	-24.6	1.00 V	180	2.98	46.42
10	7311.00	38.4 AV	54.0	-15.6	1.00 V	180	-8.02	46.42

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) – Pre-Amplifier 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	102.5 PK			1.09 H	198	70.59	31.91
2	*2462.00	91.2 AV			1.09 H	198	59.29	31.91
3	2483.50	69.5 PK	74.0	-4.5	1.09 H	198	37.51	31.99
4	2483.50	46.4 AV	54.0	-7.6	1.09 H	198	14.41	31.99
5	4924.00	49.6 PK	74.0	-24.4	1.28 H	162	10.39	39.21
6	4924.00	45.5 AV	54.0	-8.5	1.28 H	162	6.29	39.21
7	7386.00	47.0 PK	74.0	-27.0	1.00 H	191	0.55	46.45
8	7386.00	36.6 AV	54.0	-17.4	1.00 H	191	-9.85	46.45
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	104.3 PK			1.18 V	221	72.39	31.91
2	*2462.00	93.7 AV			1.18 V	221	61.79	31.91
3	2483.50	65.4 PK	74.0	-8.6	1.18 V	221	33.41	31.99
4	2483.50	52.8 AV	54.0	-1.2	1.18 V	221	20.81	31.99
5	4924.00	51.1 PK	74.0	-22.9	1.06 V	277	11.89	39.21
6	4924.00	47.9 AV	54.0	-6.1	1.06 V	277	8.69	39.21
7	7386.00	49.1 PK	74.0	-24.9	1.00 V	172	2.65	46.45
8	7386.00	38.0 AV	54.0	-16.0	1.00 V	172	-8.45	46.45

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) – Pre-Amplifier 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	62.9 PK	74.0	-11.1	1.08 H	179	31.25	31.65
2	2390.00	40.7 AV	54.0	-13.3	1.08 H	179	9.05	31.65
3	*2412.00	102.1 PK			1.08 H	179	70.37	31.73
4	*2412.00	91.5 AV			1.08 H	179	59.77	31.73
5	4824.00	50.6 PK	74.0	-23.4	1.24 H	158	11.71	38.89
6	4824.00	46.4 AV	54.0	-7.6	1.24 H	158	7.51	38.89
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	69.7 PK	74.0	-4.3	1.20 V	219	38.05	31.65
2	2390.00	46.2 AV	54.0	-7.8	1.20 V	219	14.55	31.65
3	*2412.00	105.8 PK			1.20 V	219	74.07	31.73
4	*2412.00	95.6 AV			1.20 V	219	63.87	31.73
5	4824.00	51.0 PK	74.0	-23.0	1.00 V	276	12.11	38.89
6	4824.00	48.1 AV	54.0	-5.9	1.00 V	276	9.21	38.89

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) – Pre-Amplifier 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	65.5 PK	74.0	-8.5	1.07 H	189	33.85	31.65
2	2390.00	38.6 AV	54.0	-15.4	1.07 H	189	6.95	31.65
3	*2437.00	102.5 PK			1.07 H	189	70.68	31.82
4	*2437.00	91.4 AV			1.07 H	189	59.58	31.82
5	2483.50	69.1 PK	74.0	-4.9	1.07 H	189	37.11	31.99
6	2483.50	45.9 AV	54.0	-8.1	1.07 H	189	13.91	31.99
7	4874.00	49.6 PK	74.0	-24.4	1.21 H	173	10.55	39.05
8	4874.00	45.6 AV	54.0	-8.4	1.21 H	173	6.55	39.05
9	7311.00	47.8 PK	74.0	-26.2	1.05 H	204	1.38	46.42
10	7311.00	37.1 AV	54.0	-16.9	1.05 H	204	-9.32	46.42
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	65.9 PK	74.0	-8.1	1.17 V	219	34.25	31.65
2	2390.00	39.9 AV	54.0	-14.1	1.17 V	219	8.25	31.65
3	*2437.00	106.0 PK			1.17 V	219	74.18	31.82
4	*2437.00	95.4 AV			1.17 V	219	63.58	31.82
5	2483.50	70.6 PK	74.0	-3.4	1.17 V	219	38.61	31.99
6	2483.50	51.1 AV	54.0	-2.9	1.17 V	219	19.11	31.99
7	4874.00	51.1 PK	74.0	-22.9	1.06 V	255	12.05	39.05
8	4874.00	48.1 AV	54.0	-5.9	1.06 V	255	9.05	39.05
9	7311.00	49.7 PK	74.0	-24.3	1.02 V	175	3.28	46.42
10	7311.00	38.9 AV	54.0	-15.1	1.02 V	175	-7.52	46.42

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) – Pre-Amplifier 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	102.4 PK			1.11 H	179	70.49	31.91
2	*2462.00	91.5 AV			1.11 H	179	59.59	31.91
3	2483.50	69.0 PK	74.0	-5.0	1.11 H	179	37.01	31.99
4	2483.50	45.6 AV	54.0	-8.4	1.11 H	179	13.61	31.99
5	4924.00	49.5 PK	74.0	-24.5	1.17 H	176	10.29	39.21
6	4924.00	45.8 AV	54.0	-8.2	1.17 H	176	6.59	39.21
7	7386.00	47.1 PK	74.0	-26.9	1.07 H	205	0.65	46.45
8	7386.00	36.7 AV	54.0	-17.3	1.07 H	205	-9.75	46.45
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	104.8 PK			1.16 V	220	72.89	31.91
2	*2462.00	95.2 AV			1.16 V	220	63.29	31.91
3	2483.50	73.9 PK	74.0	-0.1	1.16 V	220	41.91	31.99
4	2483.50	53.0 AV	54.0	-1.0	1.16 V	220	21.01	31.99
5	4924.00	51.1 PK	74.0	-22.9	1.06 V	269	11.89	39.21
6	4924.00	47.9 AV	54.0	-6.1	1.06 V	269	8.69	39.21
7	7386.00	49.5 PK	74.0	-24.5	1.04 V	165	3.05	46.45
8	7386.00	38.2 AV	54.0	-15.8	1.04 V	165	-8.25	46.45

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) – Pre-Amplifier 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	72.4 PK	74.0	-1.6	1.11 H	178	40.75	31.65
2	2390.00	48.7 AV	54.0	-5.3	1.11 H	178	17.05	31.65
3	*2422.00	98.8 PK			1.11 H	178	67.03	31.77
4	*2422.00	89.0 AV			1.11 H	178	57.23	31.77
5	4844.00	49.3 PK	74.0	-24.7	1.17 H	184	10.35	38.95
6	4844.00	44.2 AV	54.0	-9.8	1.17 H	184	5.25	38.95
7	7266.00	46.3 PK	74.0	-27.7	1.09 H	207	-0.12	46.42
8	7266.00	35.4 AV	54.0	-18.6	1.09 H	207	-11.02	46.42
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	73.9 PK	74.0	-0.1	1.18 V	143	42.25	31.65
2	2390.00	51.9 AV	54.0	-2.1	1.18 V	143	20.25	31.65
3	*2422.00	101.8 PK			1.18 V	143	70.03	31.77
4	*2422.00	93.0 AV			1.18 V	143	61.23	31.77
5	4844.00	50.3 PK	74.0	-23.7	1.10 V	256	11.35	38.95
6	4844.00	46.4 AV	54.0	-7.6	1.10 V	256	7.45	38.95
7	7266.00	47.3 PK	74.0	-26.7	1.00 V	168	0.88	46.42
8	7266.00	36.5 AV	54.0	-17.5	1.00 V	168	-9.92	46.42

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) – Pre-Amplifier 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	60.3 PK	74.0	-13.7	1.15 H	164	28.65	31.65
2	2390.00	41.3 AV	54.0	-12.7	1.15 H	164	9.65	31.65
3	*2437.00	99.1 PK			1.15 H	164	67.28	31.82
4	*2437.00	89.3 AV			1.15 H	164	57.48	31.82
5	2483.50	56.4 PK	74.0	-17.6	1.15 H	164	24.41	31.99
6	2483.50	40.3 AV	54.0	-13.7	1.15 H	164	8.31	31.99
7	4874.00	49.3 PK	74.0	-24.7	1.18 H	175	10.25	39.05
8	4874.00	44.4 AV	54.0	-9.6	1.18 H	175	5.35	39.05
9	7311.00	46.0 PK	74.0	-28.0	1.05 H	213	-0.42	46.42
10	7311.00	34.9 AV	54.0	-19.1	1.05 H	213	-11.52	46.42
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	62.3 PK	74.0	-11.7	1.16 V	142	30.65	31.65
2	2390.00	43.2 AV	54.0	-10.8	1.16 V	142	11.55	31.65
3	*2437.00	102.6 PK			1.16 V	142	70.78	31.82
4	*2437.00	92.8 AV			1.16 V	142	60.98	31.82
5	2483.50	57.9 PK	74.0	-16.1	1.16 V	142	25.91	31.99
6	2483.50	41.1 AV	54.0	-12.9	1.16 V	142	9.11	31.99
7	4874.00	50.3 PK	74.0	-23.7	1.15 V	255	11.25	39.05
8	4874.00	46.2 AV	54.0	-7.8	1.15 V	255	7.15	39.05
9	7311.00	47.1 PK	74.0	-26.9	1.00 V	175	0.68	46.42
10	7311.00	36.5 AV	54.0	-17.5	1.00 V	175	-9.92	46.42

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) – Pre-Amplifier 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	98.3 PK			1.10 H	183	66.42	31.88
2	*2452.00	88.5 AV			1.10 H	183	56.62	31.88
3	2483.50	68.3 PK	74.0	-5.7	1.10 H	183	36.31	31.99
4	2483.50	45.3 AV	54.0	-8.7	1.10 H	183	13.31	31.99
5	4904.00	48.8 PK	74.0	-25.2	1.16 H	182	9.65	39.15
6	4904.00	43.8 AV	54.0	-10.2	1.16 H	182	4.65	39.15
7	7356.00	46.3 PK	74.0	-27.7	1.11 H	196	-0.14	46.44
8	7356.00	35.6 AV	54.0	-18.4	1.11 H	196	-10.84	46.44
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	102.5 PK			1.16 V	141	70.62	31.88
2	*2452.00	92.4 AV			1.16 V	141	60.52	31.88
3	2483.50	71.1 PK	74.0	-2.9	1.16 V	141	39.11	31.99
4	2483.50	47.8 AV	54.0	-6.2	1.16 V	141	15.81	31.99
5	4904.00	49.6 PK	74.0	-24.4	1.14 V	266	10.45	39.15
6	4904.00	45.9 AV	54.0	-8.1	1.14 V	266	6.75	39.15
7	7356.00	47.7 PK	74.0	-26.3	1.01 V	170	1.26	46.44
8	7356.00	36.7 AV	54.0	-17.3	1.01 V	170	-9.74	46.44

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) – Pre-Amplifier 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
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 29, 2014

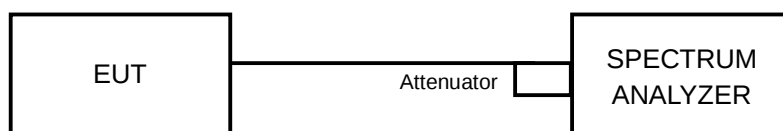
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz.
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.

4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.08	0.5	PASS
6	2437	10.08	0.5	PASS
11	2462	10.07	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.11	0.5	PASS
6	2437	14.84	0.5	PASS
11	2462	15.13	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	13.92	0.5	PASS
6	2437	15.12	0.5	PASS
11	2462	15.17	0.5	PASS

802.11n (HT40)

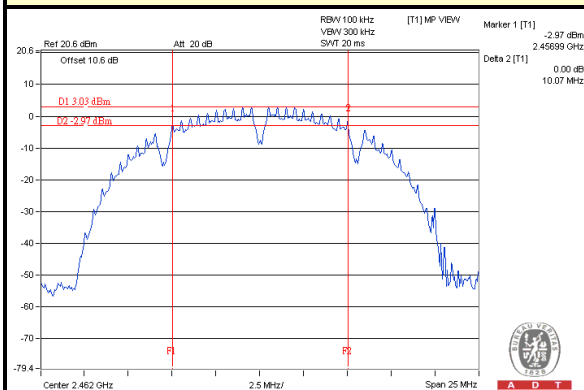
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	35.22	0.5	PASS
6	2437	35.15	0.5	PASS
9	2452	35.14	0.5	PASS



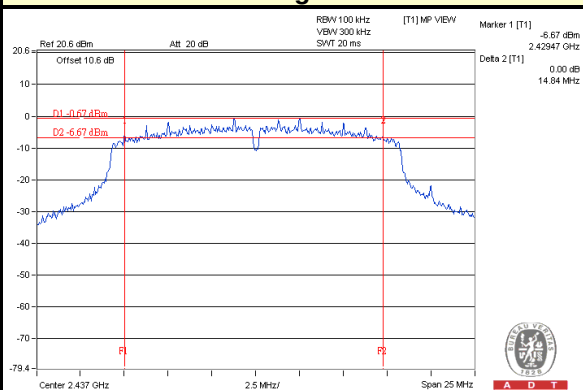
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SPECTRUM PLOT OF WORST VALUE

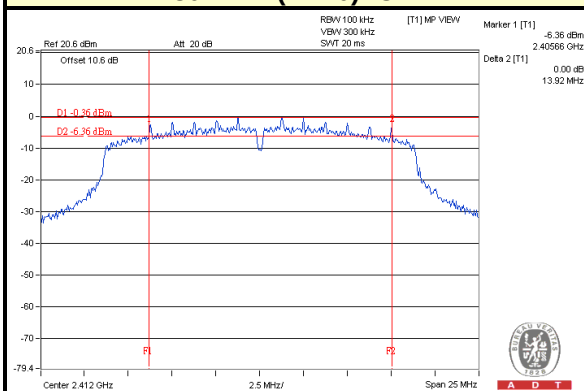
802.11b: CH11



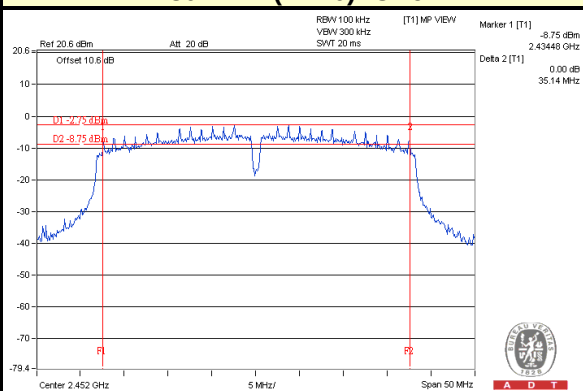
802.11g: CH6



802.11n (HT20): CH1



802.11n (HT40): CH9



4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 29, 2014

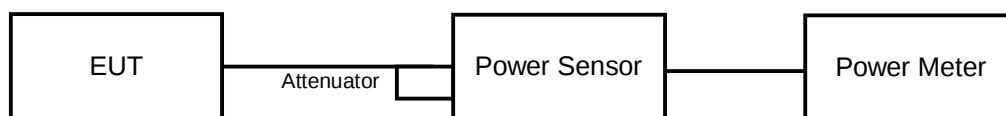
4.4.3 TEST PROCEDURES

The peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average 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

4.4.7 TEST RESULTS

FOR PEAK POWER

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	21.135	13.25	30	PASS
6	2437	20.893	13.20	30	PASS
11	2462	21.232	13.27	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	55.719	17.46	30	PASS
6	2437	56.754	17.54	30	PASS
11	2462	48.865	16.89	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	59.566	17.75	30	PASS
6	2437	60.395	17.81	30	PASS
11	2462	58.749	17.69	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	52.845	17.23	30	PASS
6	2437	53.088	17.25	30	PASS
9	2452	52.481	17.20	30	PASS

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	13.646	11.35
6	2437	13.243	11.22
11	2462	13.804	11.40

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	8.241	9.16
6	2437	8.414	9.25
11	2462	8.035	9.05

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	8.630	9.36
6	2437	8.650	9.37
11	2462	8.551	9.32

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	10.940	10.39
6	2437	10.914	10.38
9	2452	10.889	10.37

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
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 29, 2014

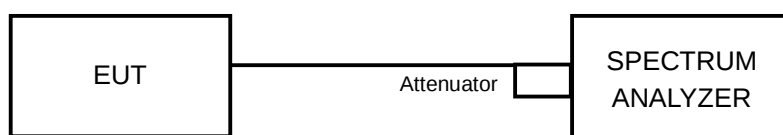
4.5.3 TEST PROCEDURE

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 amplitude level.

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

4.5.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-12.24	8	PASS
6	2437	-11.47	8	PASS
11	2462	-11.25	8	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-14.49	8	PASS
6	2437	-14.79	8	PASS
11	2462	-14.05	8	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-15.14	8	PASS
6	2437	-14.78	8	PASS
11	2462	-15.54	8	PASS

802.11n (HT40)

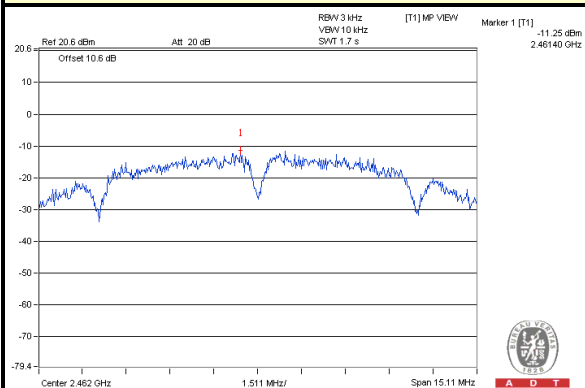
CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
3	2422	-17.19	8	PASS
6	2437	-17.62	8	PASS
9	2452	-17.20	8	PASS



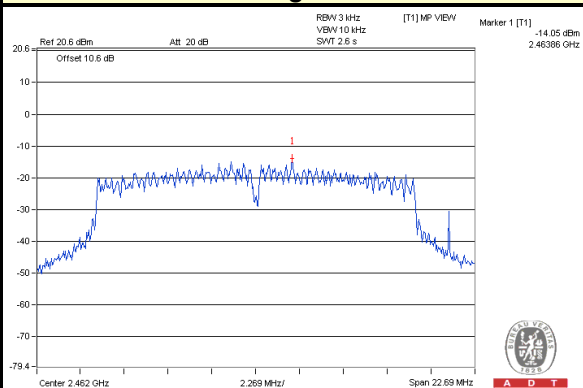
A D T

SPECTRUM PLOT OF WORST VALUE

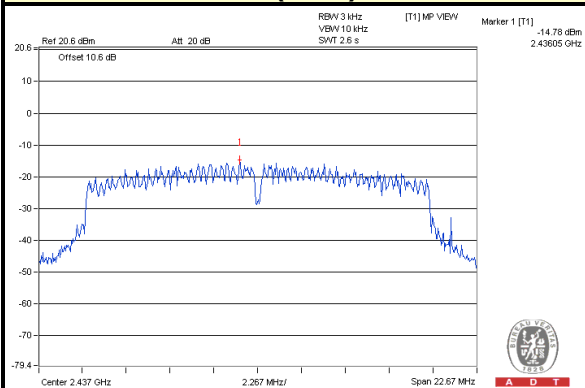
802.11b: CH11



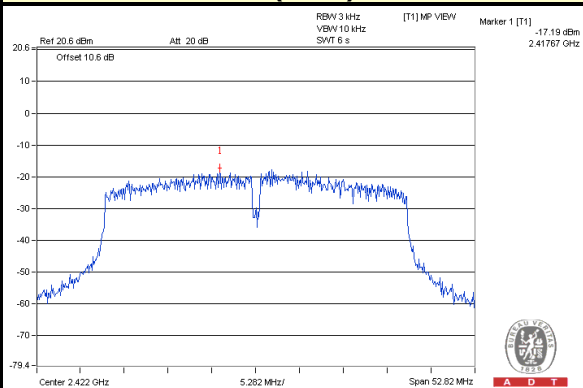
802.11g: CH11



802.11n (HT20): CH6



802.11n (HT40): CH3



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
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 29, 2014

4.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

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.

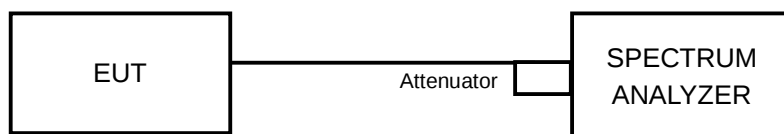
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

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

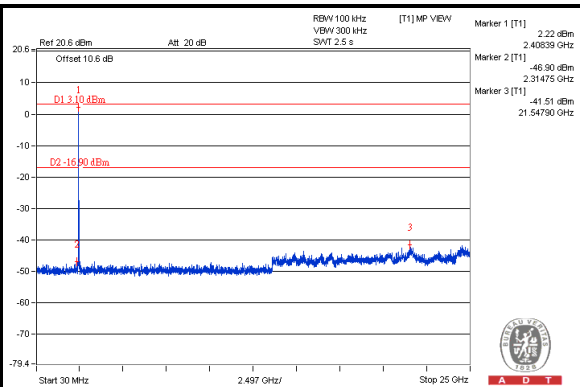
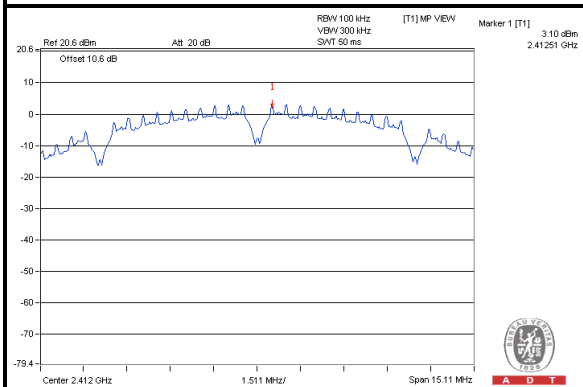
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



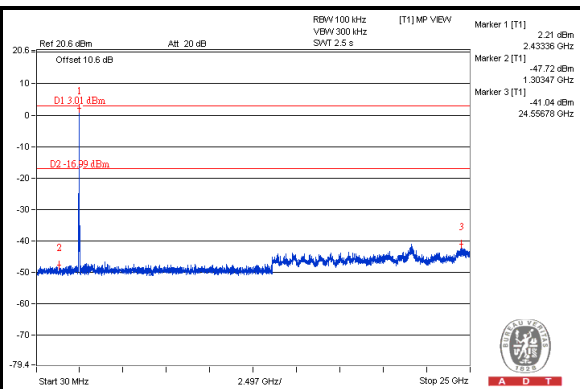
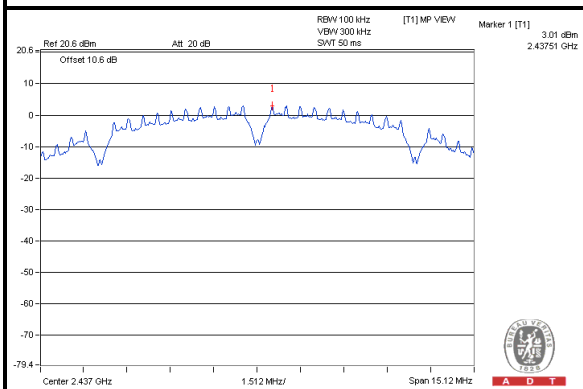
A D T

802.11b

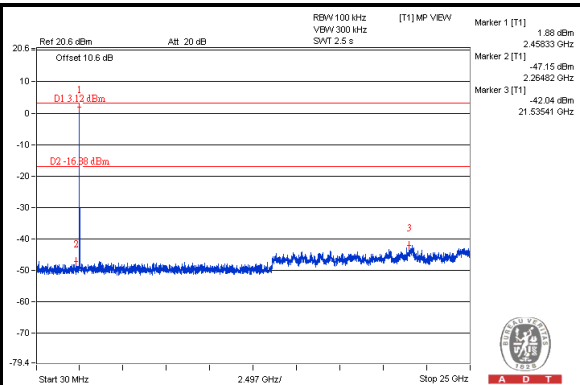
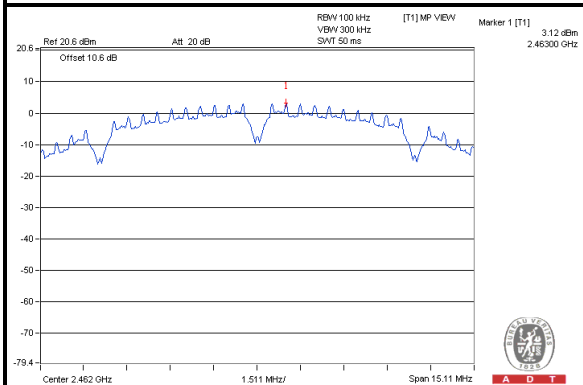
CH 1



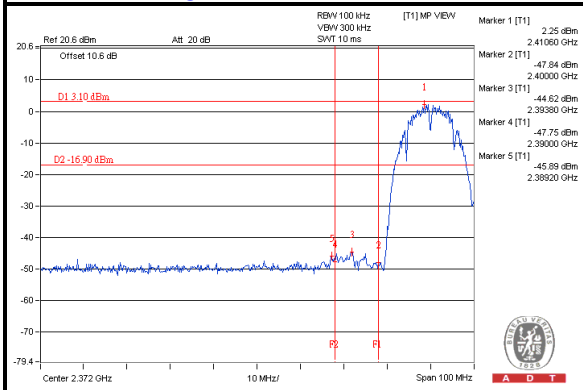
CH 6



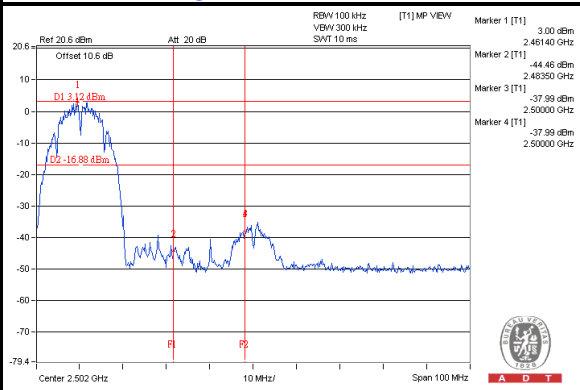
CH 11



CH 1 Band edge



CH 11 Band edge

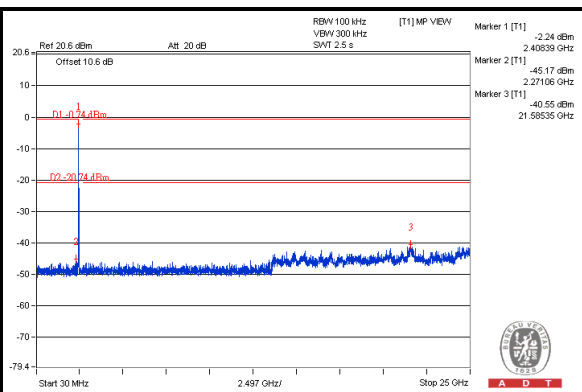
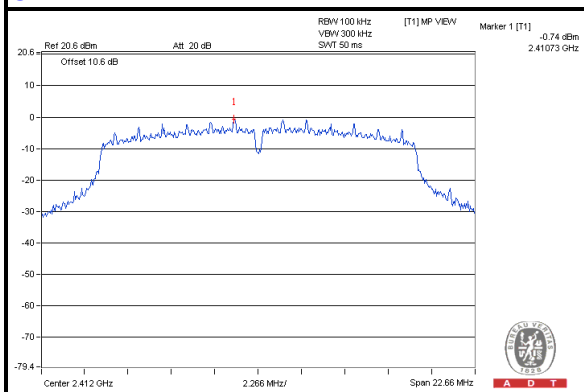




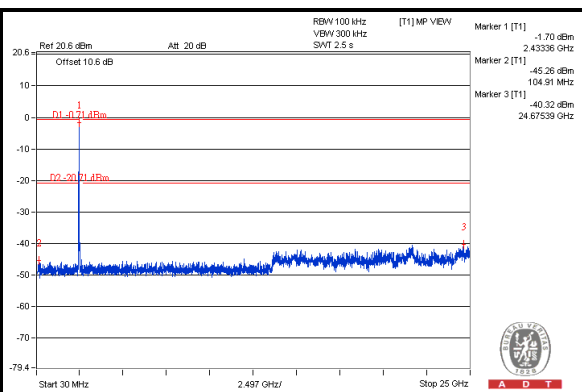
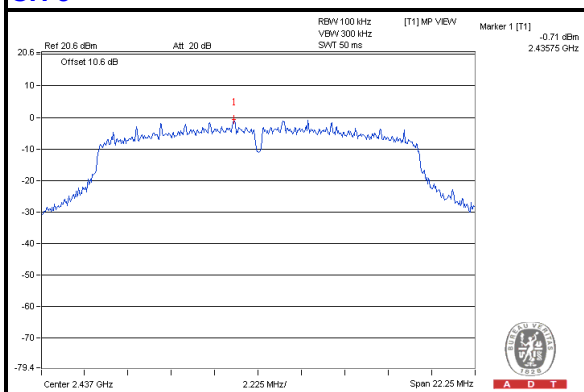
A D T

802.11g

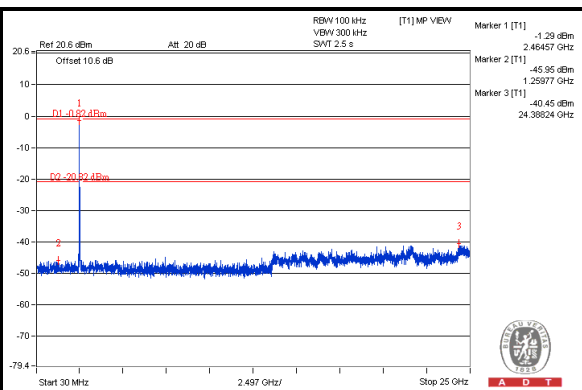
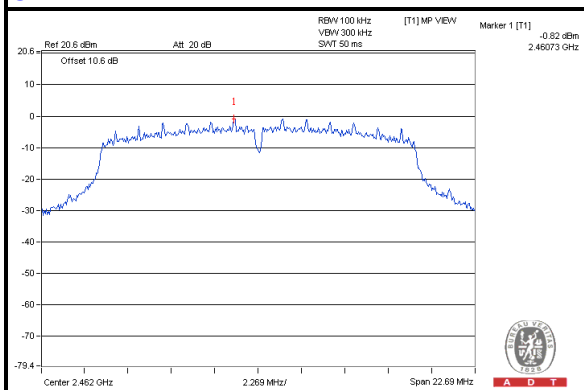
CH 1



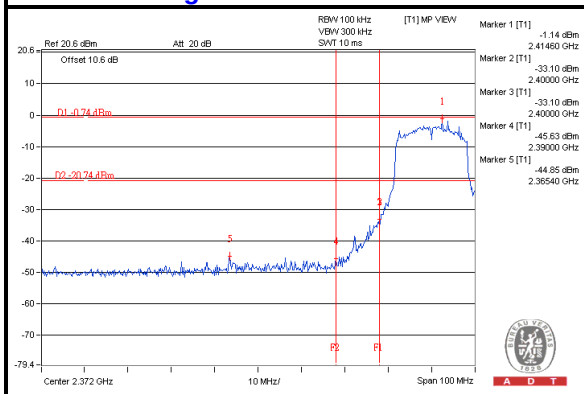
CH 6



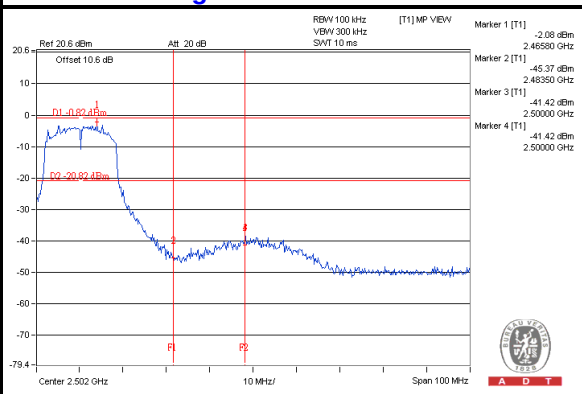
CH 11



CH 1 Band edge



CH 11 Band edge

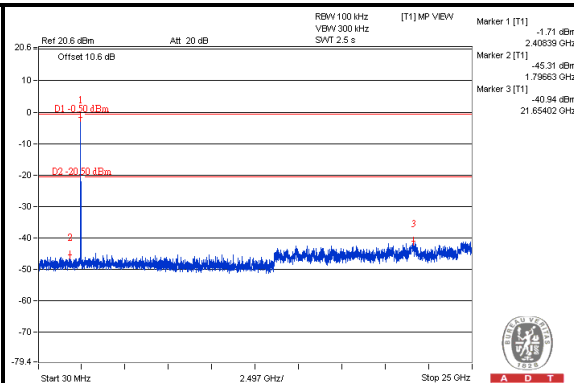
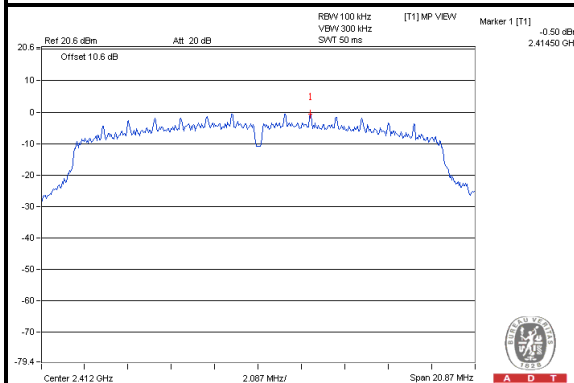




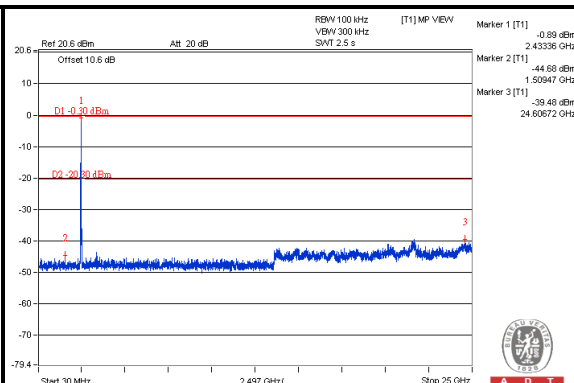
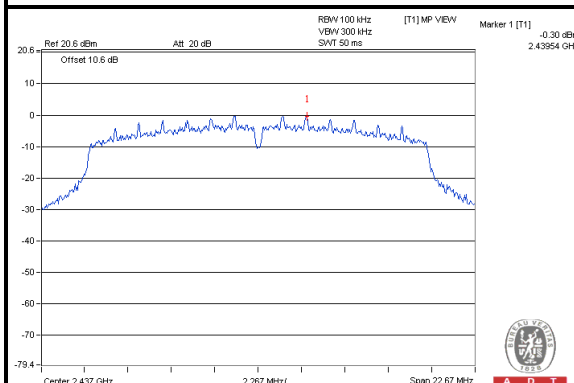
A D T

802.11n (HT20)

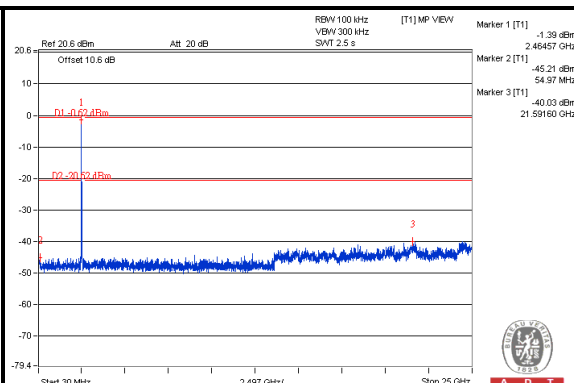
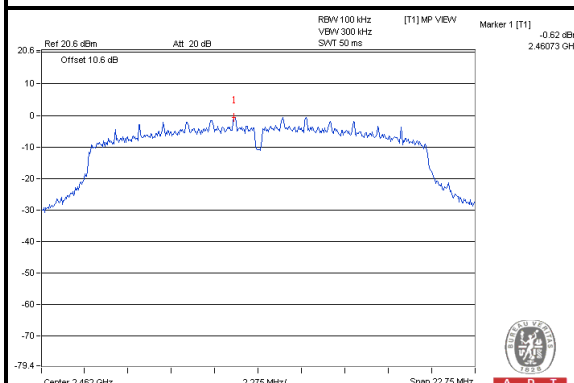
CH 1



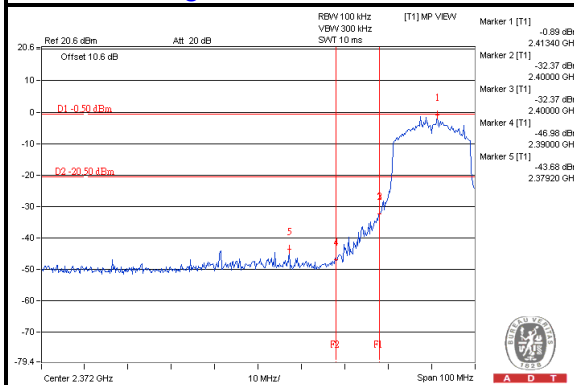
CH 6



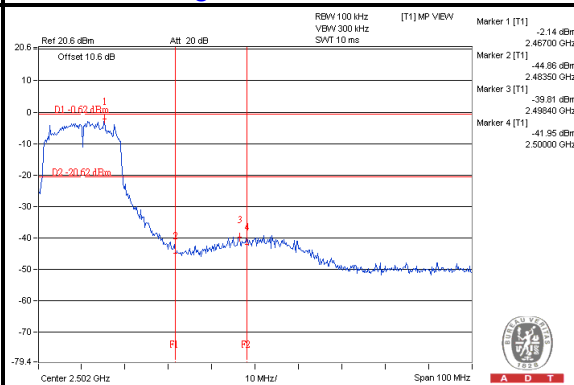
CH 11



CH 1 Band edge



CH 11 Band edge

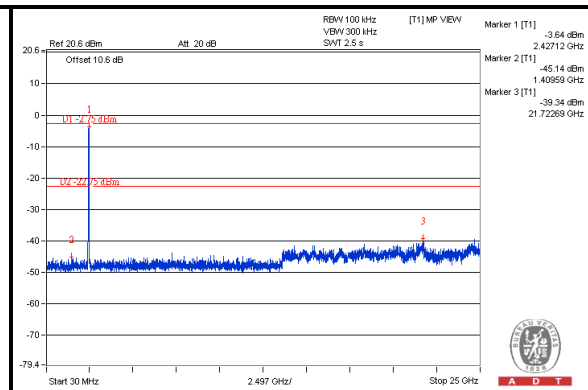
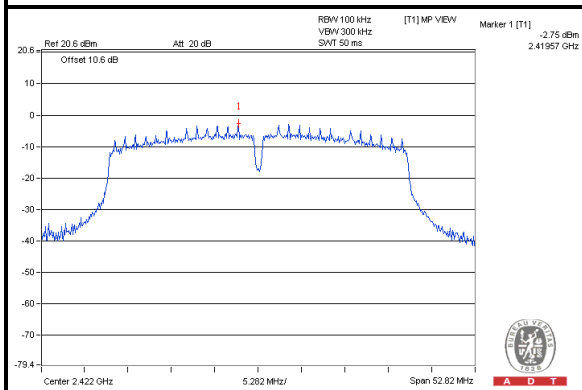




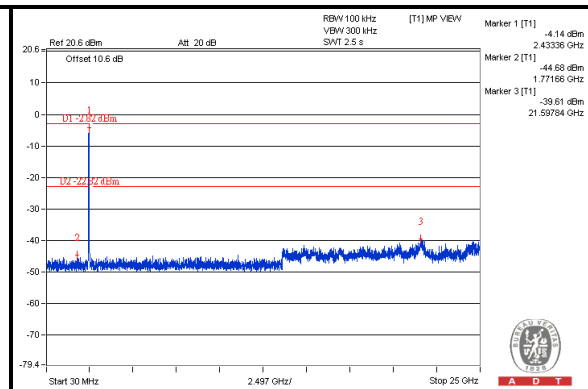
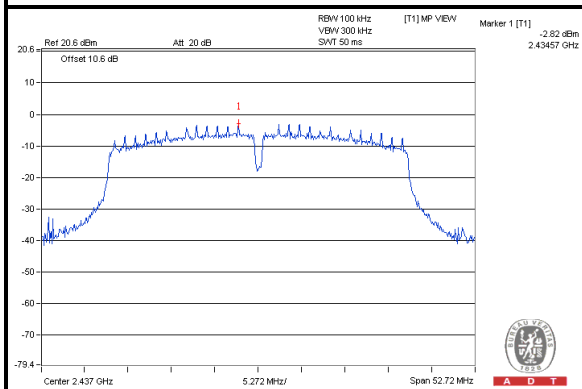
A D T

802.11n (HT40)

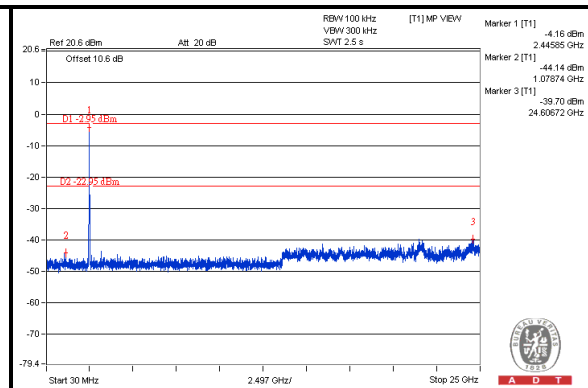
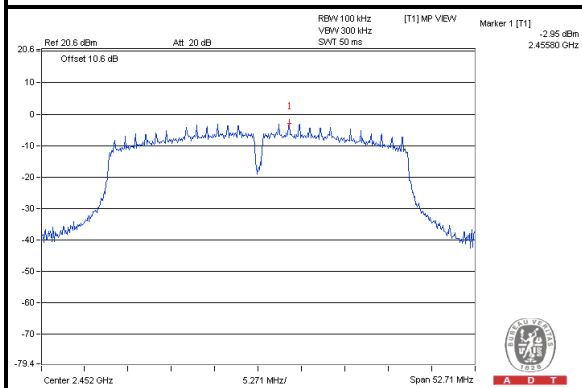
CH 3



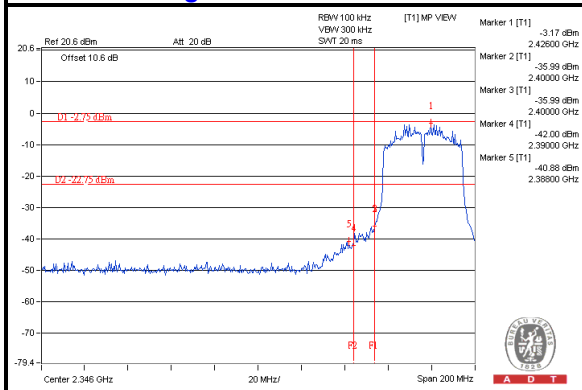
CH 6



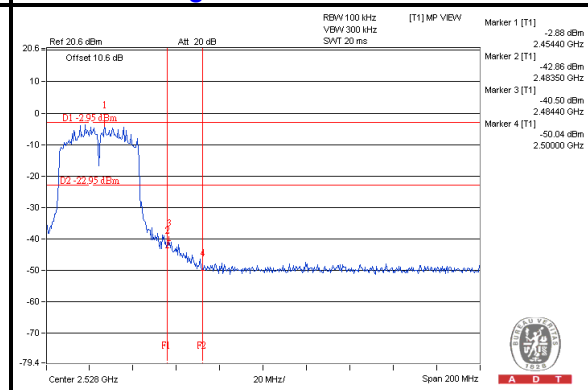
CH 9



CH 3 Band edge



CH 9 Band edge



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

Hsin Chu EMC/RF/Telecom Lab:

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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 ---