

FCC TEST REPORT

(15.247)

REPORT NO.: RF110826C12E

MODEL NO.: WNA1000Mv2

FCC ID: PY314300282

RECEIVED: July 01, 2014

TESTED: July 16 to 18, 2014

ISSUED: Sep. 23, 2014

APPLICANT: Netgear Incorporated

ADDRESS: 350 East Plumeria Drive, San Jose, CA
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ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110826C12E	Original release	Sep. 23, 2014

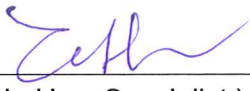


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1. CERTIFICATION

PRODUCT: G54/N150 WiFi USB Micro Adapter
BRAND NAME: NETGEAR
MODEL NO.: WNA1000Mv2
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: Netgear Incorporated
TESTED: July 16 to 18, 2014
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2009

The above equipment (Model: WNA1000Mv2) 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:** Sep. 23, 2014
(Elsie Hsu, Specialist)

APPROVED BY :  , **DATE:** Sep. 23, 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 -11.73dB at 2.21484MHz
15.205 15.209 15.247(d)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2390.00MHz
15.247(d)	Antenna Port Emission	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	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

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)	5.43 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	G54/N150 WiFi USB Micro Adapter
MODEL NO.	WNA1000Mv2
POWER SUPPLY	DC 5V 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 802.11g: up to 54Mbps 802.11n: up to 150Mbps
OPERATING FREQUENCY	2.412 ~ 2.462GHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	802.11b: 121.339mW 802.11g: 328.852mW 802.11n (HT20): 374.111mW 802.11n (HT40): 335.738mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

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

Transmitter Circuit	Brand	Model	Gain (dBi)	Antenna Type	Connector Type	Frequency range (GHz to GHz)
Chain (0)	LYNwave Technology Ltd.	AAU110-05 2020	2	PIFA	NA	2.4~2.4835
Chain (1)			2	PIFA	NA	2.4~2.4835
From above antenna, the worst case was found in Chain (0) Ant.						

2. The EUT incorporates a SISO function.

MODULATION MODE	Data Rate (MCS)	Tx/Rx FUNCTION
802.11b	1 ~ 11Mbps	1TX (diversity) / 1RX
802.11g	6 ~ 54Mbps	1TX (diversity) / 1RX
802.11n (HT20)	MCS 0~7	1TX (diversity) / 1RX
802.11n (HT40)	MCS 0~7	1TX (diversity) / 1RX

3. 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

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 ³ 1G	APCM	OB	
-	√	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission **RE < 1G**: Radiated Emission below 1GHz
RE ³ 1G: Radiated Emission above 1GHz **APCM**: Antenna Port Conducted Measurement
OB: Conducted Out-Band Emission Measurement

POWER LINE CONDUCTED EMISSION TEST:

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)	1 to 7	1, 4, 7	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)	1 to 7	1, 4, 7	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)	1 to 7	1, 4, 7	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER(SYSTEM)	Tested by
PLC	25deg. C, 62%RH	120Vac, 60Hz	Ping Liu
RE<1G	21deg. C, 70%RH	120Vac, 60Hz	Gary Cheng
RE ³ 1G	23deg. C, 70%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee
OB	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee

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

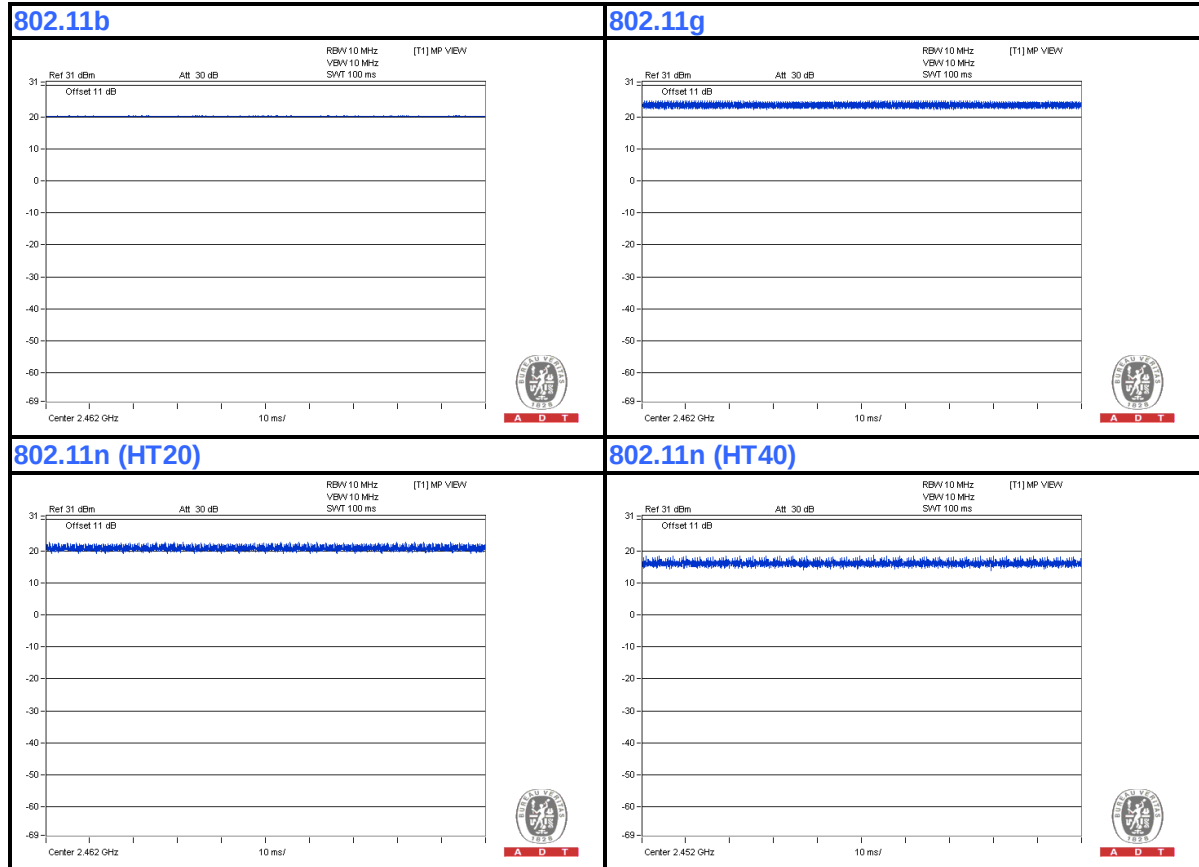
ANSI C63.10-2009

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 100 %, duty factor is not required.



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.

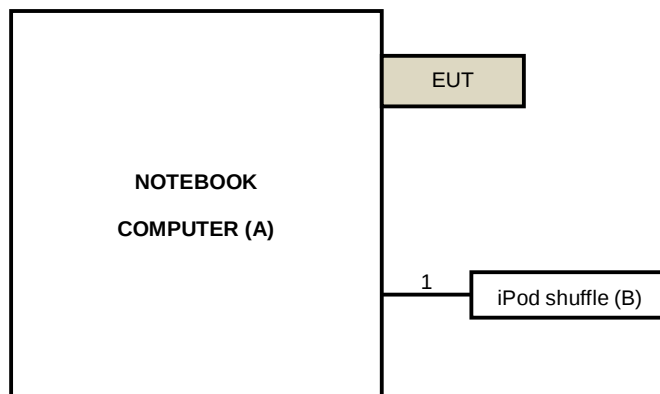
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B	iPod shuffle	Apple	MC749TA/A	CC4DN25WDFD M	NA	Provided by Lab

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	0.1	Yes	0	Provided by Lab

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 (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	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)	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: July 18, 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.

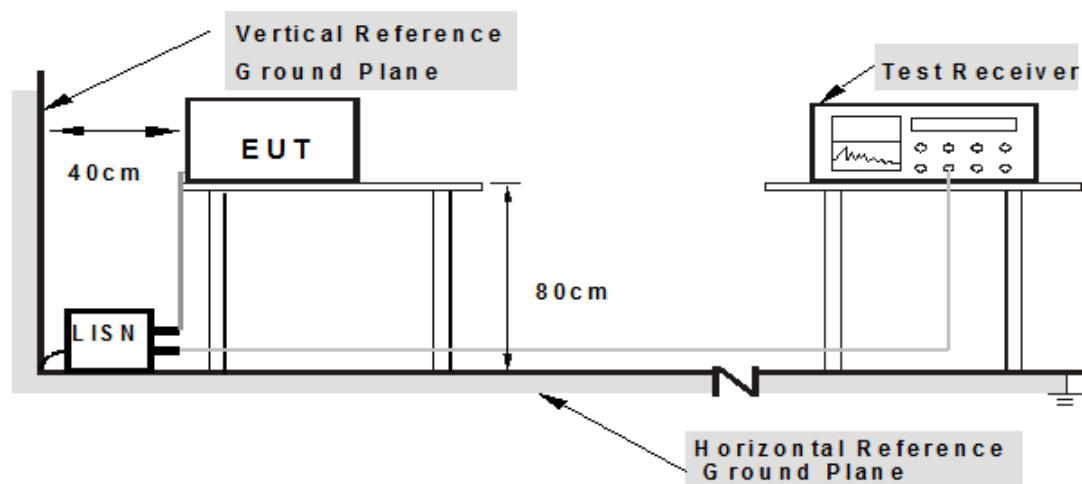
NOTE:

- 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.

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. Controlling software (RTL11n_SingleChip 9xC USB WLAN NIC Massproduction Kit) has been activated to set the EUT under transmission/receiving condition continuously.

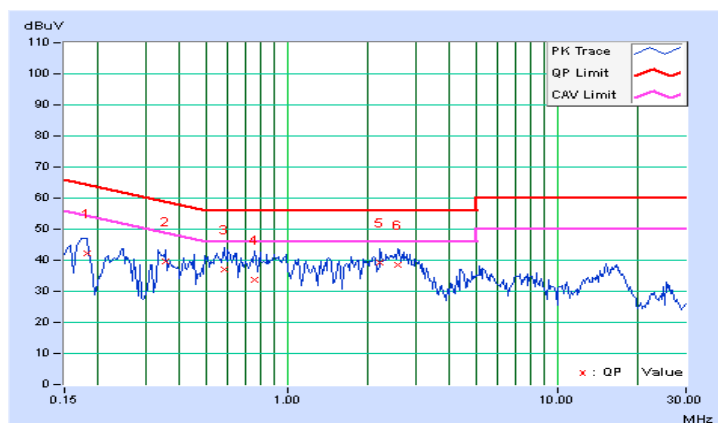
4.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.07	42.05	35.98	42.12	36.05	64.43	54.43	-22.31	-18.38
2	0.35703	0.09	39.55	32.75	39.64	32.84	58.80	48.80	-19.16	-15.96
3	0.58359	0.10	36.87	26.30	36.97	26.40	56.00	46.00	-19.03	-19.60
4	0.75938	0.11	33.69	22.21	33.80	22.32	56.00	46.00	-22.20	-23.68
5	2.21484	0.18	39.21	34.09	39.39	34.27	56.00	46.00	-16.61	-11.73
6	2.58594	0.20	38.50	33.52	38.70	33.72	56.00	46.00	-17.30	-12.28

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

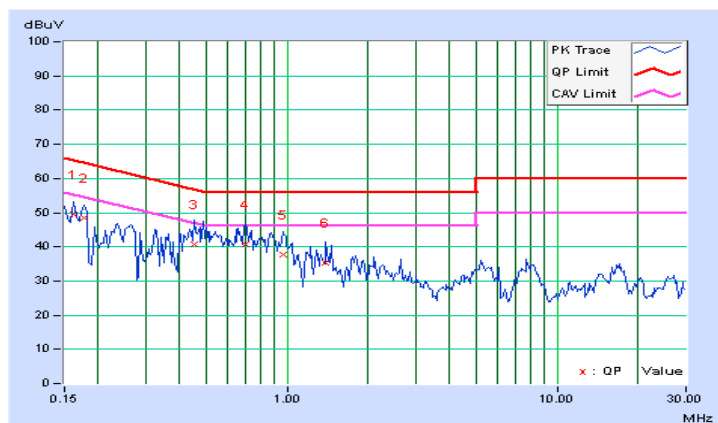


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.07	49.48	41.31	49.55	41.38	65.38	55.38	-15.82	-13.99
2	0.17734	0.07	48.40	41.79	48.47	41.86	64.61	54.61	-16.14	-12.75
3	0.45469	0.09	40.58	28.93	40.67	29.02	56.79	46.79	-16.12	-17.77
4	0.70469	0.11	40.66	32.55	40.77	32.66	56.00	46.00	-15.23	-13.34
5	0.96641	0.13	37.44	31.07	37.57	31.20	56.00	46.00	-18.43	-14.80
6	1.39063	0.15	35.33	28.50	35.48	28.65	56.00	46.00	-20.52	-17.35

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:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 15, 2014	Jan. 14, 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
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 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: July 16, 2014



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For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21,2014	Jan. 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
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 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. 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: July 16, 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:

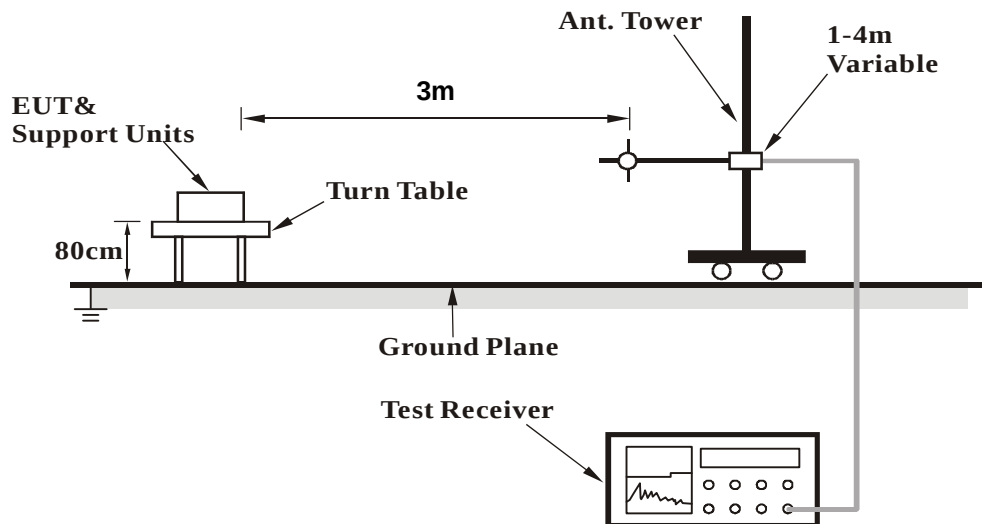
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

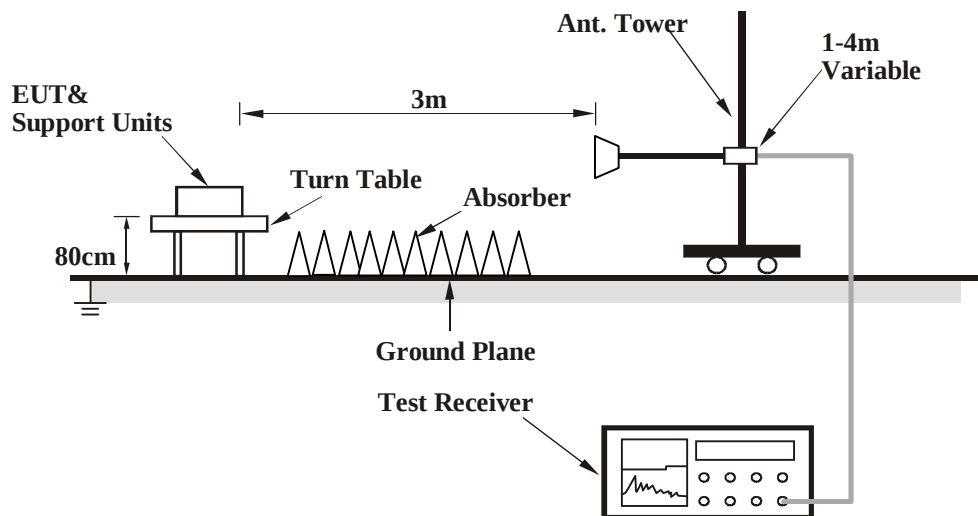
No deviation

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	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	165.96	40.4 QP	43.5	-3.1	1.50 H	274	53.30	-12.88
2	232.37	42.8 QP	46.0	-3.2	1.50 H	95	57.39	-14.62
3	698.28	42.1 QP	46.0	-3.9	1.00 H	360	45.27	-3.15
4	720.16	40.9 QP	46.0	-5.1	1.00 H	360	43.81	-2.87
5	798.24	40.6 QP	46.0	-5.4	1.00 H	360	41.57	-0.97
6	823.80	41.5 QP	46.0	-4.5	1.00 H	33	42.10	-0.56
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	165.99	37.0 QP	43.5	-6.5	1.00 V	230	49.87	-12.88
2	232.34	34.7 QP	46.0	-11.3	1.00 V	169	49.34	-14.63
3	240.01	30.4 QP	46.0	-15.6	1.00 V	162	44.18	-13.80
4	696.92	39.0 QP	46.0	-7.0	1.50 V	297	42.17	-3.16
5	796.64	41.5 QP	46.0	-4.5	1.50 V	195	42.44	-0.95
6	953.05	39.7 QP	46.0	-6.3	1.00 V	260	38.13	1.54

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	2386.20	52.4 PK	74.0	-21.6	1.14 H	159	55.16	-2.76
2	2386.20	45.1 AV	54.0	-8.9	1.14 H	159	47.86	-2.76
3	*2412.00	106.7 PK			1.14 H	159	109.34	-2.64
4	*2412.00	103.4 AV			1.14 H	159	106.04	-2.64
5	4824.00	54.9 PK	74.0	-19.1	1.16 H	174	49.63	5.27
6	4824.00	52.0 AV	54.0	-2.0	1.16 H	174	46.73	5.27
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	2386.20	47.9 PK	74.0	-26.1	1.66 V	293	50.66	-2.76
2	2386.20	40.2 AV	54.0	-13.8	1.66 V	293	42.96	-2.76
3	*2412.00	101.9 PK			1.66 V	293	104.54	-2.64
4	*2412.00	98.1 AV			1.66 V	293	100.74	-2.64
5	4824.00	55.5 PK	74.0	-18.5	1.03 V	279	50.23	5.27
6	4824.00	52.8 AV	54.0	-1.2	1.03 V	279	47.53	5.27

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.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.1 PK			1.09 H	145	110.63	-2.53
2	*2437.00	105.6 AV			1.09 H	145	108.13	-2.53
3	4874.00	54.8 PK	74.0	-19.2	1.20 H	177	49.31	5.49
4	4874.00	52.0 AV	54.0	-2.0	1.20 H	177	46.51	5.49
5	7311.00	54.7 PK	74.0	-19.3	1.12 H	324	42.00	12.70
6	7311.00	41.1 AV	54.0	-12.9	1.12 H	324	28.40	12.70
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	103.3 PK			1.58 V	300	105.83	-2.53
2	*2437.00	100.2 AV			1.58 V	300	102.73	-2.53
3	4874.00	56.2 PK	74.0	-17.8	1.02 V	278	50.71	5.49
4	4874.00	52.9 AV	54.0	-1.1	1.02 V	278	47.41	5.49
5	7311.00	55.1 PK	74.0	-18.9	1.00 V	263	42.40	12.70
6	7311.00	41.7 AV	54.0	-12.3	1.00 V	263	29.00	12.70

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	108.7 PK			1.37 H	143	111.12	-2.42
2	*2462.00	106.1 AV			1.37 H	143	108.52	-2.42
3	2483.50	57.5 PK	74.0	-16.5	1.37 H	143	59.82	-2.32
4	2483.50	50.9 AV	54.0	-3.1	1.37 H	143	53.22	-2.32
5	4924.00	54.7 PK	74.0	-19.3	1.17 H	167	49.00	5.70
6	4924.00	51.9 AV	54.0	-2.1	1.17 H	167	46.20	5.70
7	7386.00	55.4 PK	74.0	-18.6	1.00 H	334	42.72	12.68
8	7386.00	41.5 AV	54.0	-12.5	1.00 H	334	28.82	12.68
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	104.0 PK			1.60 V	298	106.42	-2.42
2	*2462.00	100.8 AV			1.60 V	298	103.22	-2.42
3	4924.00	55.5 PK	74.0	-18.5	1.02 V	278	49.80	5.70
4	4924.00	53.8 AV	54.0	-0.2	1.02 V	278	48.10	5.70
5	7386.00	55.0 PK	74.0	-19.0	1.00 V	248	42.32	12.68
6	7386.00	41.6 AV	54.0	-12.4	1.00 V	248	28.92	12.68

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	70.9 PK	74.0	-3.1	1.12 H	143	73.64	-2.74
2	2390.00	53.6 AV	54.0	-0.4	1.12 H	143	56.34	-2.74
3	*2412.00	108.5 PK			1.12 H	143	111.14	-2.64
4	*2412.00	99.4 AV			1.12 H	143	102.04	-2.64
5	4824.00	56.1 PK	74.0	-17.9	1.08 H	178	50.83	5.27
6	4824.00	43.2 AV	54.0	-10.8	1.08 H	178	37.93	5.27
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	52.0 PK	74.0	-22.0	1.62 V	282	54.74	-2.74
2	2390.00	41.6 AV	54.0	-12.4	1.62 V	282	44.34	-2.74
3	*2412.00	97.9 PK			1.62 V	282	100.54	-2.64
4	*2412.00	94.0 AV			1.62 V	282	96.64	-2.64
5	4824.00	57.2 PK	74.0	-16.8	1.00 V	284	51.93	5.27
6	4824.00	44.8 AV	54.0	-9.2	1.00 V	284	39.53	5.27

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	56.4 PK	74.0	-17.6	1.11 H	143	59.14	-2.74
2	2390.00	41.2 AV	54.0	-12.8	1.11 H	143	43.94	-2.74
3	*2437.00	110.8 PK			1.11 H	143	113.33	-2.53
4	*2437.00	101.5 AV			1.11 H	143	104.03	-2.53
5	2483.50	64.0 PK	74.0	-10.0	1.11 H	143	66.32	-2.32
6	2483.50	47.7 AV	54.0	-6.3	1.11 H	143	50.02	-2.32
7	4874.00	56.1 PK	74.0	-17.9	1.13 H	172	50.61	5.49
8	4874.00	43.0 AV	54.0	-11.0	1.13 H	172	37.51	5.49
9	7311.00	55.4 PK	74.0	-18.6	1.02 H	343	42.70	12.70
10	7311.00	41.7 AV	54.0	-12.3	1.02 H	343	29.00	12.70
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	47.6 PK	74.0	-26.4	1.62 V	287	50.34	-2.74
2	2390.00	40.2 AV	54.0	-13.8	1.62 V	287	42.94	-2.74
3	*2437.00	100.2 PK			1.62 V	287	102.73	-2.53
4	*2437.00	96.1 AV			1.62 V	287	98.63	-2.53
5	2483.50	51.2 PK	74.0	-22.8	1.62 V	287	53.52	-2.32
6	2483.50	41.3 AV	54.0	-12.7	1.62 V	287	43.62	-2.32
7	4874.00	57.2 PK	74.0	-16.8	1.01 V	278	51.71	5.49
8	4874.00	44.9 AV	54.0	-9.1	1.01 V	278	39.41	5.49
9	7311.00	55.0 PK	74.0	-19.0	1.02 V	237	42.30	12.70
10	7311.00	41.6 AV	54.0	-12.4	1.02 V	237	28.90	12.70

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	107.1 PK			1.38 H	143	109.52	-2.42
2	*2462.00	97.0 AV			1.38 H	143	99.42	-2.42
3	2483.50	72.0 PK	74.0	-2.0	1.38 H	143	74.32	-2.32
4	2483.50	53.7 AV	54.0	-0.3	1.38 H	143	56.02	-2.32
5	4924.00	56.5 PK	74.0	-17.5	1.13 H	179	50.80	5.70
6	4924.00	43.4 AV	54.0	-10.6	1.13 H	179	37.70	5.70
7	7386.00	55.5 PK	74.0	-18.5	1.03 H	336	42.82	12.68
8	7386.00	42.0 AV	54.0	-12.0	1.03 H	336	29.32	12.68
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	96.5 PK			1.66 V	322	98.92	-2.42
2	*2462.00	96.4 AV			1.66 V	322	98.82	-2.42
3	2483.50	51.8 PK	74.0	-22.2	1.66 V	322	54.12	-2.32
4	2483.50	41.7 AV	54.0	-12.3	1.66 V	322	44.02	-2.32
5	4924.00	56.9 PK	74.0	-17.1	1.02 V	274	51.20	5.70
6	4924.00	44.8 AV	54.0	-9.2	1.02 V	274	39.10	5.70
7	7386.00	55.3 PK	74.0	-18.7	1.00 V	248	42.62	12.68
8	7386.00	41.8 AV	54.0	-12.2	1.00 V	248	29.12	12.68

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	70.4 PK	74.0	-3.6	1.12 H	181	73.14	-2.74
2	2390.00	52.8 AV	54.0	-1.2	1.12 H	181	55.54	-2.74
3	*2412.00	104.2 PK			1.12 H	181	106.84	-2.64
4	*2412.00	95.2 AV			1.12 H	181	97.84	-2.64
5	4824.00	55.1 PK	74.0	-18.9	1.18 H	175	49.83	5.27
6	4824.00	42.2 AV	54.0	-11.8	1.18 H	175	36.93	5.27
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	68.6 PK	74.0	-5.4	1.72 V	207	71.34	-2.74
2	2390.00	50.9 AV	54.0	-3.1	1.72 V	207	53.64	-2.74
3	*2412.00	102.1 PK			1.72 V	207	104.74	-2.64
4	*2412.00	92.8 AV			1.72 V	207	95.44	-2.64
5	4824.00	56.5 PK	74.0	-17.5	1.04 V	301	51.23	5.27
6	4824.00	44.4 AV	54.0	-9.6	1.04 V	301	39.13	5.27

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	55.3 PK	74.0	-18.7	1.11 H	164	58.04	-2.74
2	2390.00	37.1 AV	54.0	-16.9	1.11 H	164	39.84	-2.74
3	*2437.00	105.6 PK			1.11 H	164	108.13	-2.53
4	*2437.00	96.4 AV			1.11 H	164	98.93	-2.53
5	2483.50	65.2 PK	74.0	-8.8	1.11 H	164	67.52	-2.32
6	2483.50	42.3 AV	54.0	-11.7	1.11 H	164	44.62	-2.32
7	4874.00	55.7 PK	74.0	-18.3	1.14 H	181	50.21	5.49
8	4874.00	42.5 AV	54.0	-11.5	1.14 H	181	37.01	5.49
9	7311.00	55.7 PK	74.0	-18.3	1.04 H	335	43.00	12.70
10	7311.00	42.1 AV	54.0	-11.9	1.04 H	335	29.40	12.70
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	53.2 PK	74.0	-20.8	1.64 V	328	55.94	-2.74
2	2390.00	35.1 AV	54.0	-18.9	1.64 V	328	37.84	-2.74
3	*2437.00	102.4 PK			1.64 V	328	104.93	-2.53
4	*2437.00	94.2 AV			1.64 V	328	96.73	-2.53
5	2483.50	63.4 PK	74.0	-10.6	1.64 V	328	65.72	-2.32
6	2483.50	41.1 AV	54.0	-12.9	1.64 V	328	43.42	-2.32
7	4874.00	56.1 PK	74.0	-17.9	1.04 V	290	50.61	5.49
8	4874.00	44.3 AV	54.0	-9.7	1.04 V	290	38.81	5.49
9	7311.00	55.7 PK	74.0	-18.3	1.03 V	237	43.00	12.70
10	7311.00	41.9 AV	54.0	-12.1	1.03 V	237	29.20	12.70

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	106.1 PK			1.10 H	143	108.52	-2.42
2	*2462.00	96.0 AV			1.10 H	143	98.42	-2.42
3	2483.50	71.6 PK	74.0	-2.4	1.10 H	143	73.92	-2.32
4	2483.50	52.5 AV	54.0	-1.5	1.10 H	143	54.82	-2.32
5	4924.00	55.3 PK	74.0	-18.7	1.11 H	170	49.60	5.70
6	4924.00	42.1 AV	54.0	-11.9	1.11 H	170	36.40	5.70
7	7386.00	55.1 PK	74.0	-18.9	1.04 H	338	42.42	12.68
8	7386.00	41.6 AV	54.0	-12.4	1.04 H	338	28.92	12.68
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	97.5 PK			1.67 V	323	99.92	-2.42
2	*2462.00	90.6 AV			1.67 V	323	93.02	-2.42
3	2483.50	52.6 PK	74.0	-21.4	1.61 V	323	54.92	-2.32
4	2483.50	41.2 AV	54.0	-12.8	1.61 V	323	43.52	-2.32
5	4924.00	56.1 PK	74.0	-17.9	1.06 V	298	50.40	5.70
6	4924.00	44.4 AV	54.0	-9.6	1.06 V	298	38.70	5.70
7	7386.00	55.5 PK	74.0	-18.5	1.00 V	250	42.82	12.68
8	7386.00	41.9 AV	54.0	-12.1	1.00 V	250	29.22	12.68

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	70.1 PK	74.0	-3.9	1.12 H	182	72.84	-2.74
2	2390.00	53.9 AV	54.0	-0.1	1.12 H	182	56.64	-2.74
3	*2422.00	101.3 PK			1.12 H	182	103.89	-2.59
4	*2422.00	91.3 AV			1.12 H	182	93.89	-2.59
5	4844.00	54.9 PK	74.0	-19.1	1.16 H	179	49.55	5.35
6	4844.00	42.0 AV	54.0	-12.0	1.16 H	179	36.65	5.35
7	7266.00	54.8 PK	74.0	-19.2	1.09 H	333	42.08	12.72
8	7266.00	41.4 AV	54.0	-12.6	1.09 H	333	28.68	12.72
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	68.4 PK	74.0	-5.6	1.65 V	315	71.14	-2.74
2	2390.00	51.4 AV	54.0	-2.6	1.65 V	315	54.14	-2.74
3	*2422.00	98.7 PK			1.65 V	315	101.29	-2.59
4	*2422.00	88.9 AV			1.65 V	315	91.49	-2.59
5	4844.00	56.3 PK	74.0	-17.7	1.05 V	287	50.95	5.35
6	4844.00	44.7 AV	54.0	-9.3	1.05 V	287	39.35	5.35
7	7266.00	55.9 PK	74.0	-18.1	1.00 V	240	43.18	12.72
8	7266.00	42.1 AV	54.0	-11.9	1.00 V	240	29.38	12.72

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	62.5 PK	74.0	-11.5	1.10 H	181	65.24	-2.74
2	2390.00	45.3 AV	54.0	-8.7	1.10 H	181	48.04	-2.74
3	*2437.00	100.7 PK			1.10 H	181	103.23	-2.53
4	*2437.00	90.8 AV			1.10 H	181	93.33	-2.53
5	2483.50	70.7 PK	74.0	-3.3	1.10 H	181	73.02	-2.32
6	2483.50	51.0 AV	54.0	-3.0	1.10 H	181	53.32	-2.32
7	4874.00	54.6 PK	74.0	-19.4	1.14 H	170	49.11	5.49
8	4874.00	41.6 AV	54.0	-12.4	1.14 H	170	36.11	5.49
9	7311.00	54.5 PK	74.0	-19.5	1.14 H	348	41.80	12.70
10	7311.00	41.2 AV	54.0	-12.8	1.14 H	348	28.50	12.70
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	60.3 PK	74.0	-13.7	1.63 V	325	63.04	-2.74
2	2390.00	42.4 AV	54.0	-11.6	1.63 V	325	45.14	-2.74
3	*2437.00	98.2 PK			1.63 V	325	100.73	-2.53
4	*2437.00	88.3 AV			1.63 V	325	90.83	-2.53
5	2483.50	68.2 PK	74.0	-5.8	1.63 V	325	70.52	-2.32
6	2483.50	48.1 AV	54.0	-5.9	1.63 V	325	50.42	-2.32
7	4874.00	56.2 PK	74.0	-17.8	1.05 V	301	50.71	5.49
8	4874.00	44.4 AV	54.0	-9.6	1.05 V	301	38.91	5.49
9	7311.00	55.9 PK	74.0	-18.1	1.03 V	228	43.20	12.70
10	7311.00	41.9 AV	54.0	-12.1	1.03 V	228	29.20	12.70

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	102.2 PK			1.38 H	146	104.66	-2.46
2	*2452.00	92.1 AV			1.38 H	146	94.56	-2.46
3	2483.50	67.7 PK	74.0	-6.3	1.38 H	146	70.02	-2.32
4	2483.50	52.8 AV	54.0	-1.2	1.38 H	146	55.12	-2.32
5	4904.00	54.8 PK	74.0	-19.2	1.17 H	174	49.18	5.62
6	4904.00	41.9 AV	54.0	-12.1	1.17 H	174	36.28	5.62
7	7356.00	54.1 PK	74.0	-19.9	1.14 H	349	41.41	12.69
8	7356.00	40.8 AV	54.0	-13.2	1.14 H	349	28.11	12.69
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	95.6 PK			1.61 V	331	98.06	-2.46
2	*2452.00	88.2 AV			1.61 V	331	90.66	-2.46
3	2483.50	52.5 PK	74.0	-21.5	1.60 V	328	54.82	-2.32
4	2483.50	41.5 AV	54.0	-12.5	1.60 V	328	43.82	-2.32
5	4904.00	55.5 PK	74.0	-18.5	1.02 V	306	49.88	5.62
6	4904.00	44.0 AV	54.0	-10.0	1.02 V	306	38.38	5.62
7	7356.00	55.8 PK	74.0	-18.2	1.04 V	223	43.11	12.69
8	7356.00	42.0 AV	54.0	-12.0	1.04 V	223	29.31	12.69

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 : July 18, 2014

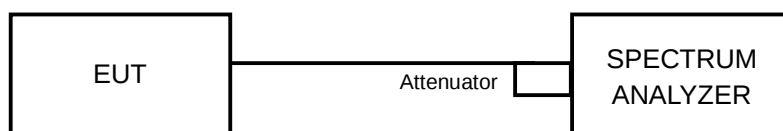
4.3.3 TEST PROCEDURE

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	10.13	0.5	PASS
6	2437	10.12	0.5	PASS
11	2462	10.12	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.59	0.5	PASS
6	2437	16.59	0.5	PASS
11	2462	16.60	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.83	0.5	PASS
6	2437	17.82	0.5	PASS
11	2462	17.81	0.5	PASS

802.11n (HT40)

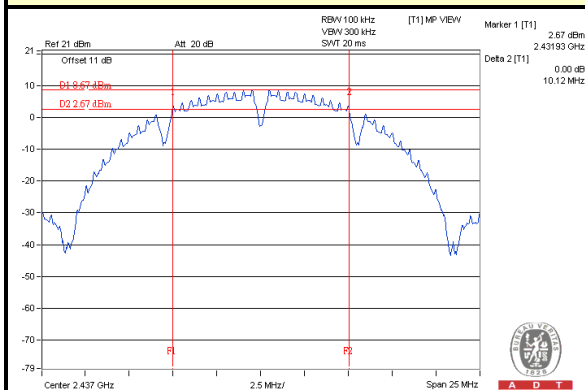
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.52	0.5	PASS
6	2437	36.54	0.5	PASS
9	2452	36.53	0.5	PASS



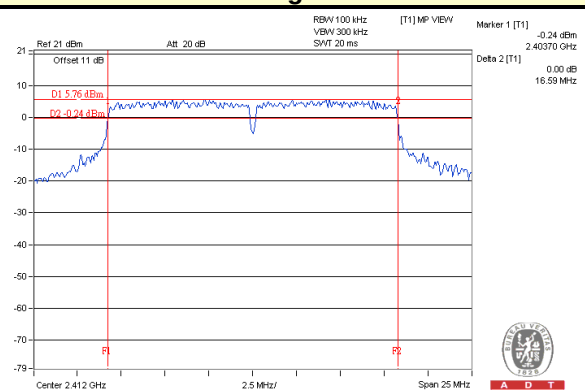
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SPECTRUM PLOT OF WORST VALUE

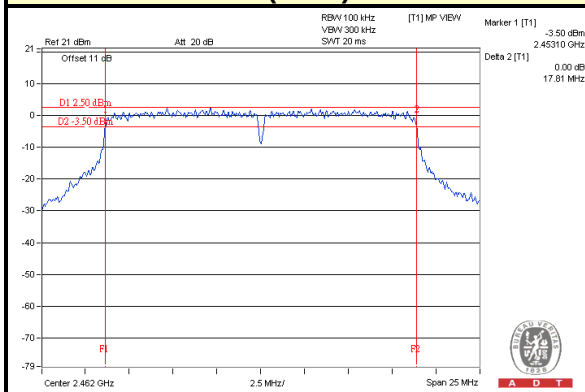
802.11b : CH6



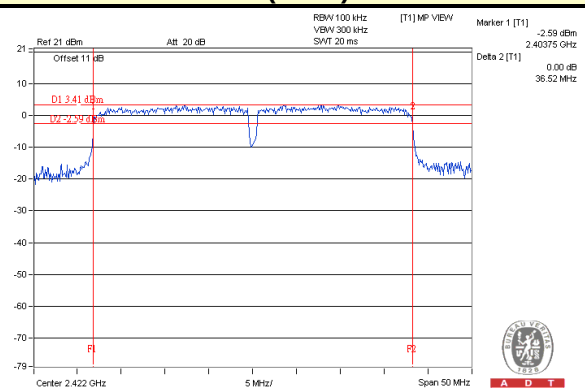
802.11g : CH1



802.11n (HT20) : CH11



802.11n (HT40) : CH3





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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 : July 18, 2014

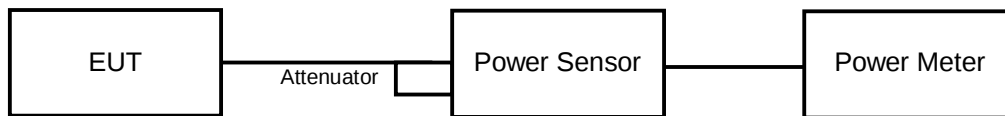
4.4.3 TEST PROCEDURES

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	118.577	20.74	30	PASS
6	2437	121.339	20.84	30	PASS
11	2462	118.85	20.75	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	312.608	24.95	30	PASS
6	2437	328.852	25.17	30	PASS
11	2462	314.051	24.97	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	346.737	25.40	30	PASS
6	2437	374.111	25.73	30	PASS
11	2462	220.293	23.43	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	335.738	25.26	30	PASS
6	2437	319.89	25.05	30	PASS
9	2452	146.893	21.67	30	PASS



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FOR AVERAGE POWER**802.11b**

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	76.033	18.81
6	2437	71.945	18.57
11	2462	69.823	18.44

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	111.429	20.47
6	2437	153.815	21.87
11	2462	121.339	20.84

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	123.027	20.90
6	2437	132.739	21.23
11	2462	46.345	16.66

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	121.899	20.86
6	2437	112.460	20.51
9	2452	35.318	15.48

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 : July 18, 2014

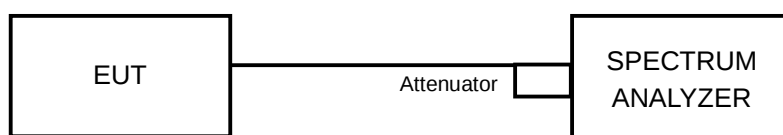
4.5.3 TEST PROCEDURE

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	-4.39	8	PASS
6	2437	-4.12	8	PASS
11	2462	-4.83	8	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-6.71	8	PASS
6	2437	-5.54	8	PASS
11	2462	-6.69	8	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-6.79	8	PASS
6	2437	-5.74	8	PASS
11	2462	-9.70	8	PASS

802.11n (HT40)

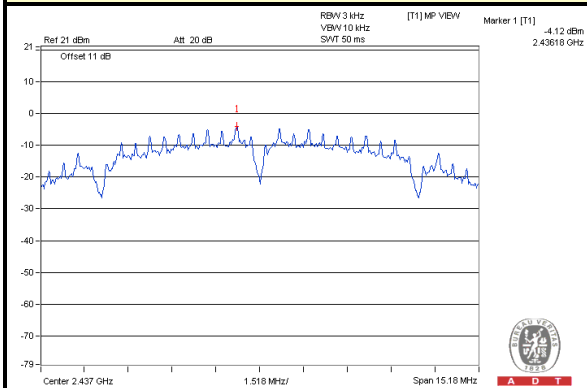
CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
3	2422	-9.13	8	PASS
6	2437	-10.16	8	PASS
9	2452	-15.39	8	PASS



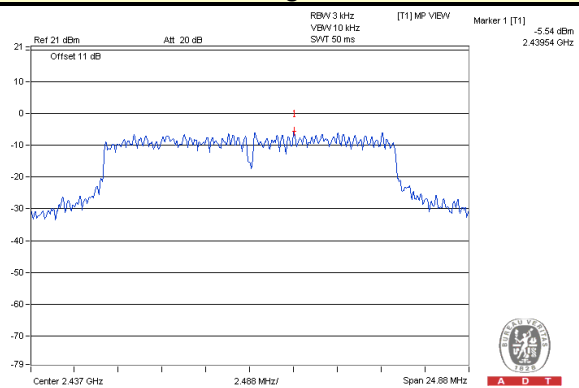
A D T

SPECTRUM PLOT OF WORST VALUE

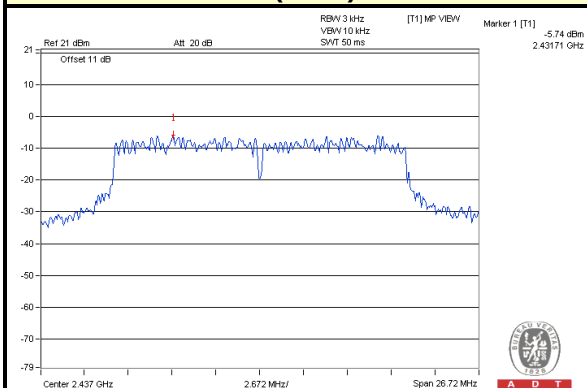
802.11b : CH6



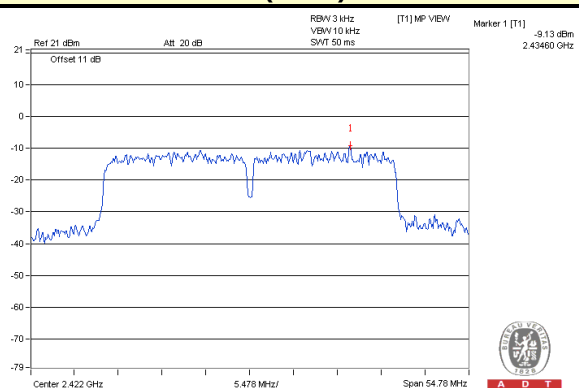
802.11g : CH6



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 : July 18, 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.

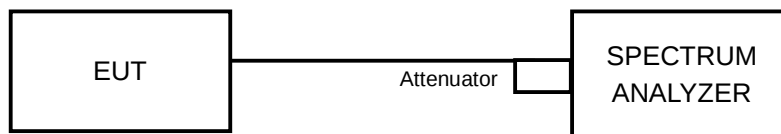
Measurement Procedure –Unwanted Emission Level

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

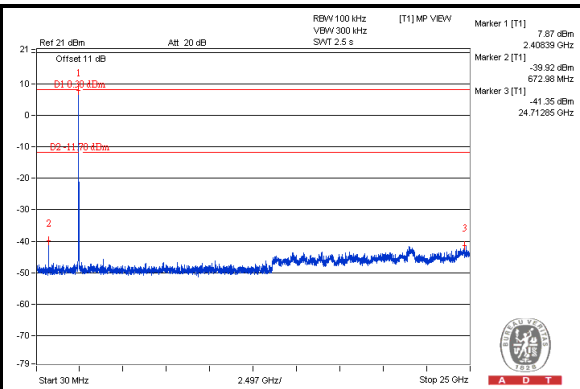
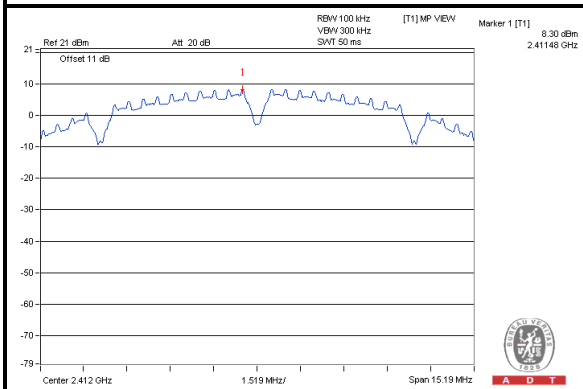
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



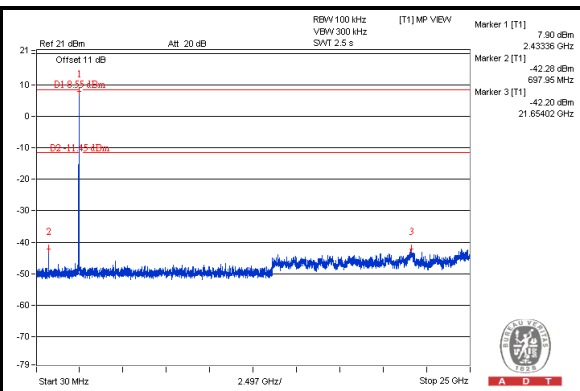
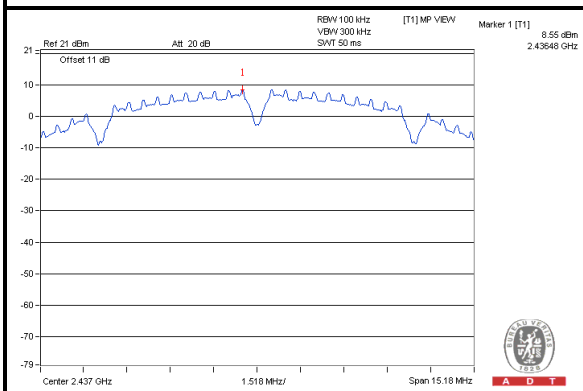
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802.11b

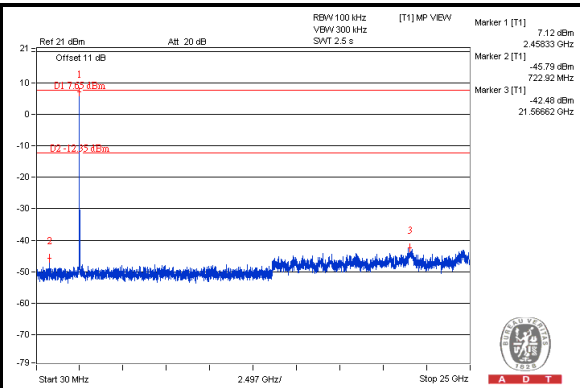
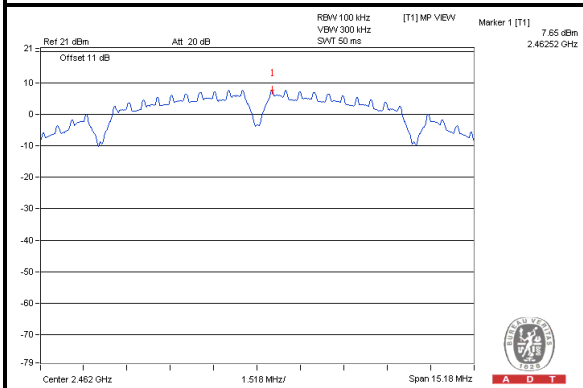
CH 1



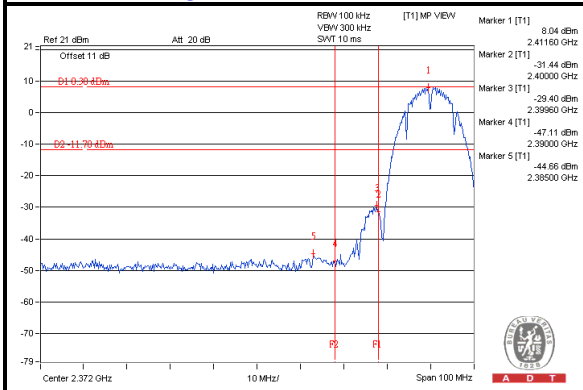
CH 6



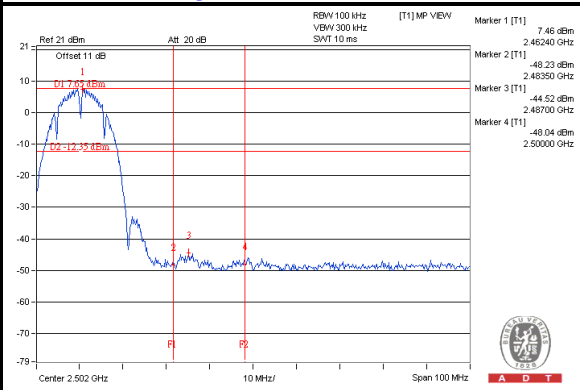
CH 11



CH 1 Band edge



CH 11 Band edge

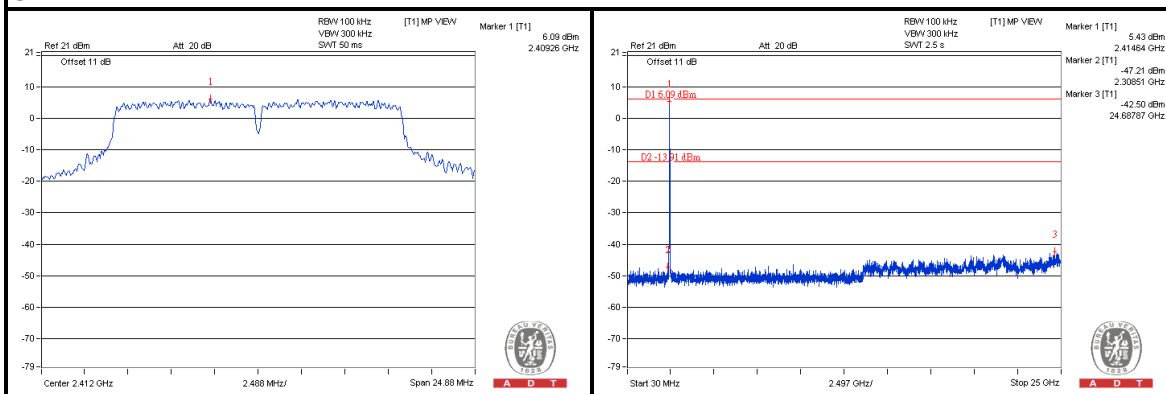




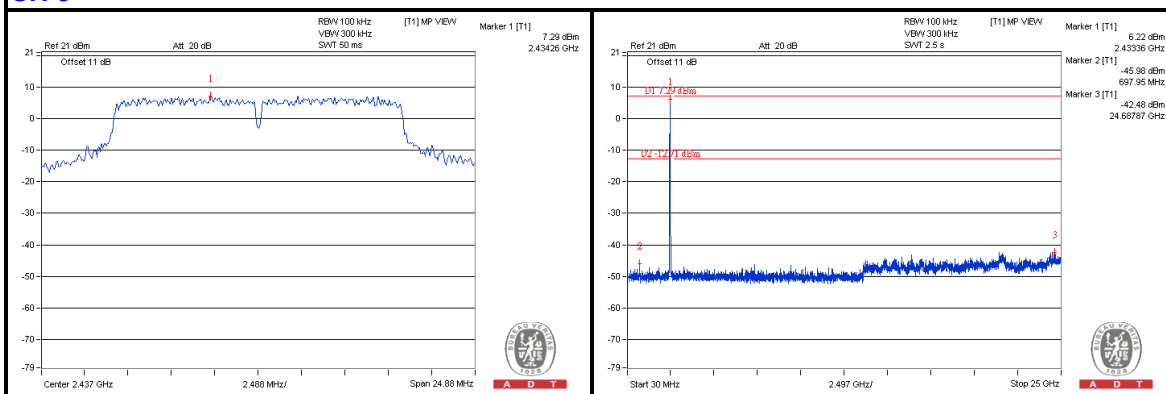
A D T

802.11g

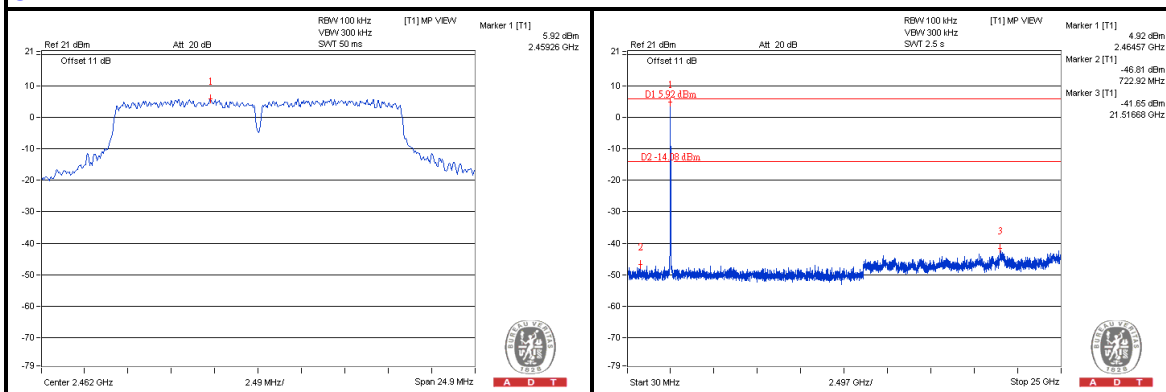
CH 1



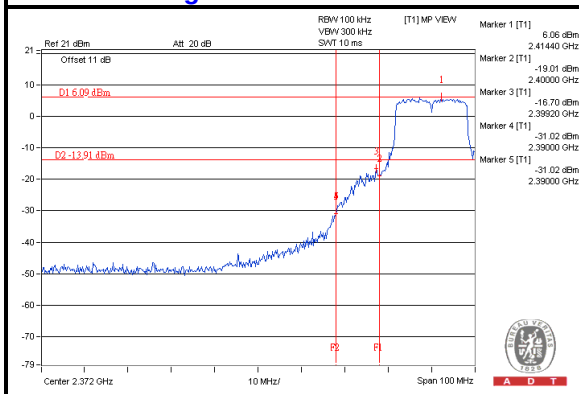
CH 6



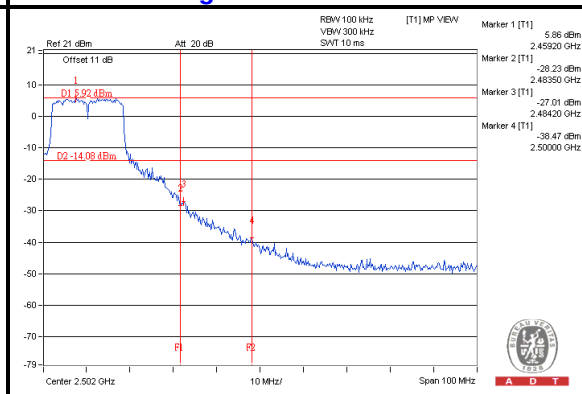
CH 11



CH 1 Band edge



CH 11 Band edge

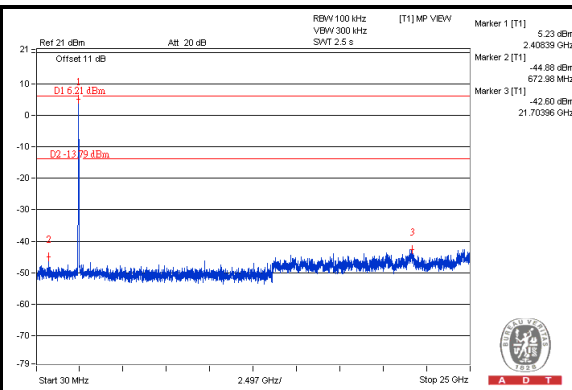
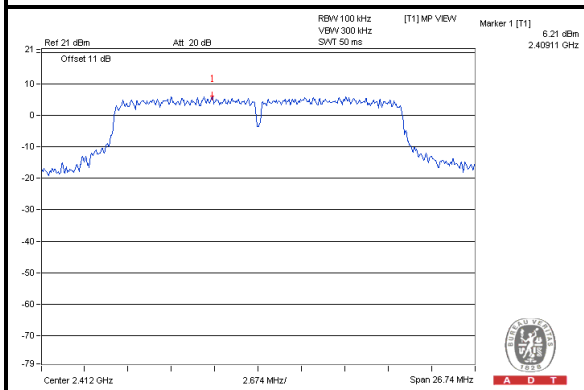




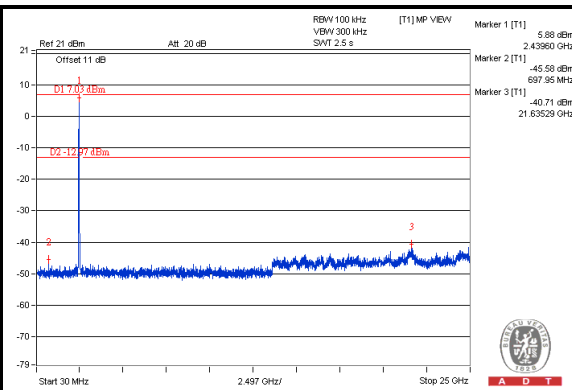
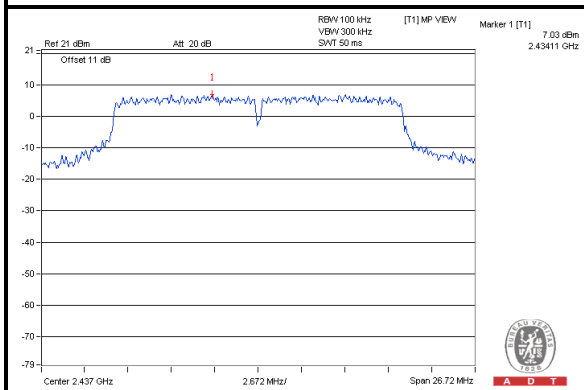
A D T

802.11n (HT20)

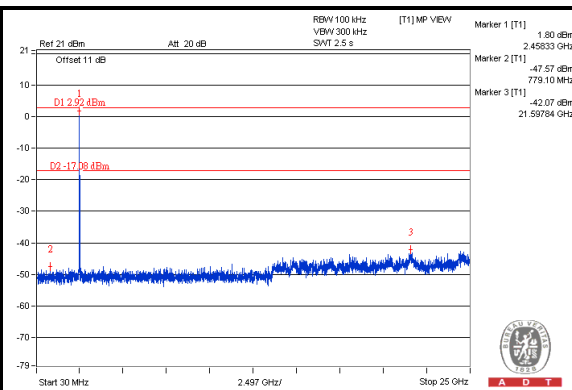
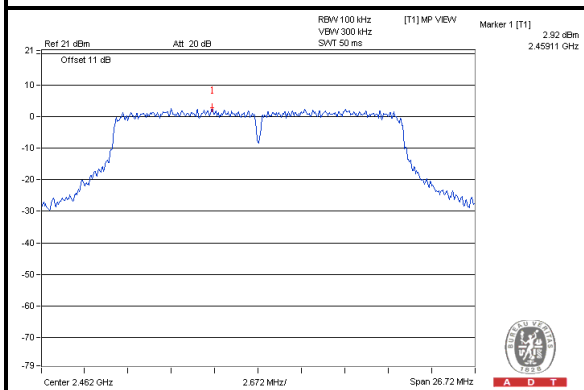
CH 1



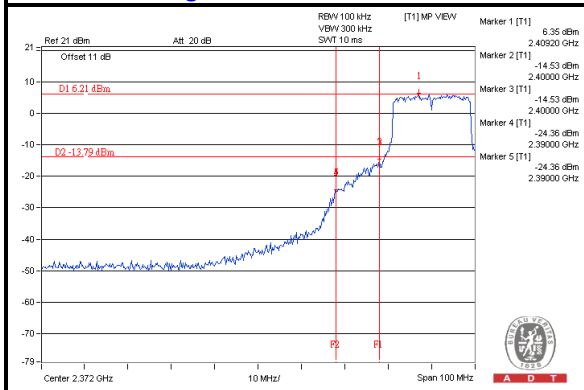
CH 6



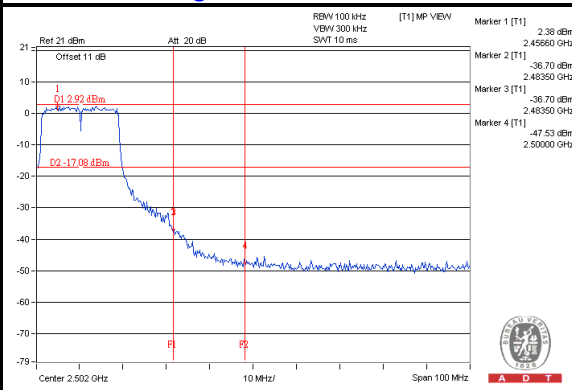
CH 11



CH 1 Band edge



CH 11 Band edge

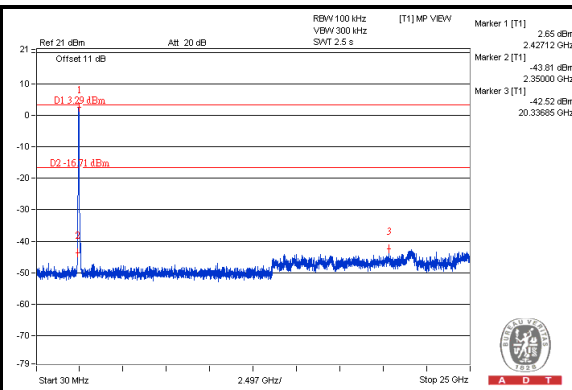
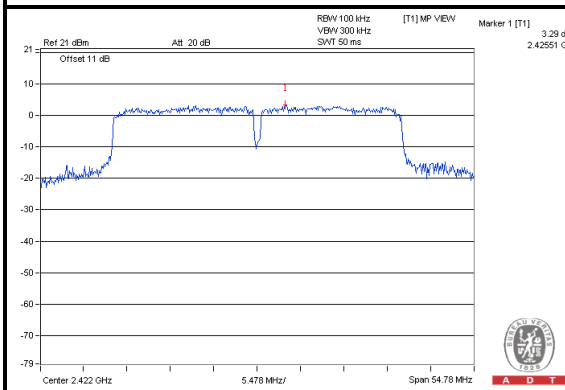




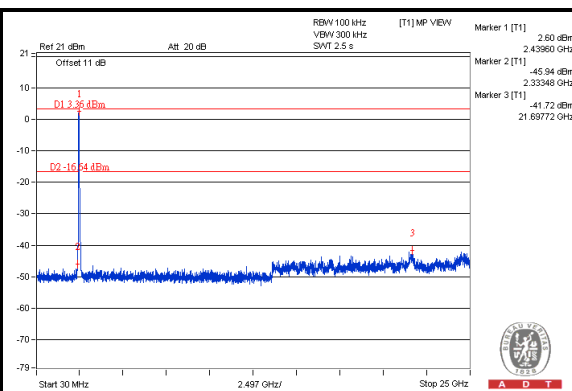
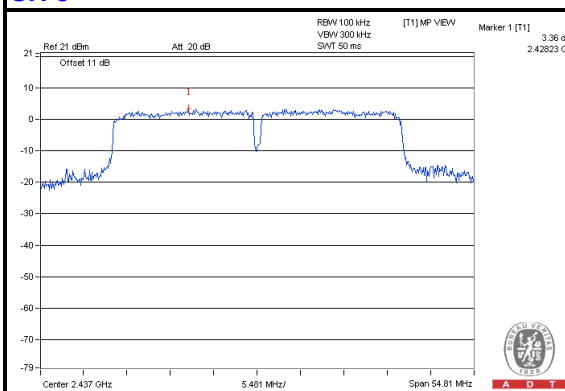
A D T

802.11n (HT40)

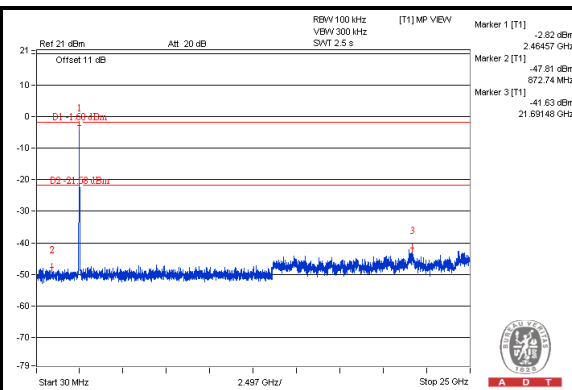
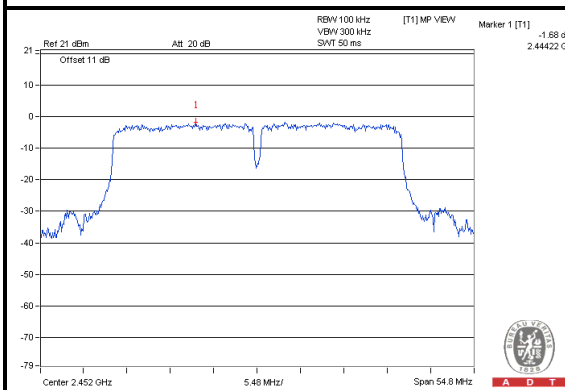
CH 3



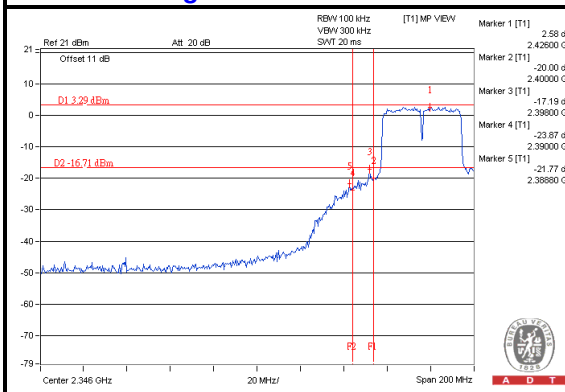
CH 6



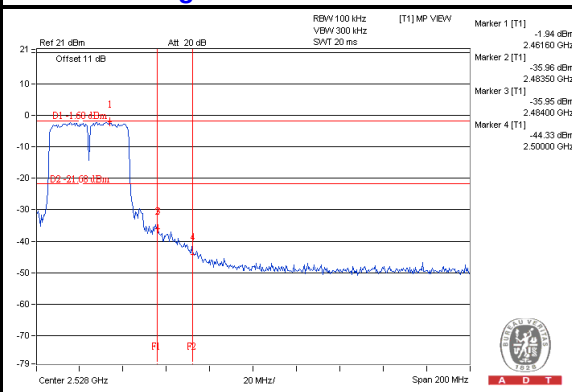
CH 9



CH 3 Band edge



CH 9 Band edge





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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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 Lab:

Tel: 886-3-5935343

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Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

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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 ---