

FCC TEST REPORT

(WLAN 15.247)

REPORT NO.: RF140702E01

MODEL NO.: AP-7502

FCC ID: UZ7AP7502

RECEIVED: July 02, 2014

TESTED: July 24 to Aug. 04, 2014

ISSUED: Aug. 12, 2014

APPLICANT: Motorola Solutions, Inc.

ADDRESS: One Motorola Plaza Holtsville, NY 11742-1300

MANUFACTURER: Accton Technology Corporation

ADDRESS: 1, Creation 3rd Rd., Science-based Industrial Park, Hsinchu
300, Taiwan, R.O.C.

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

LAB ADDRESS : No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
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TEST LOCATION (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen,
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140702E01	Original release	Aug. 12, 2014

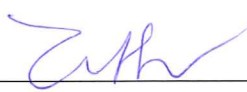


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1. CERTIFICATION

PRODUCT: Dual Radio Wallplate AP
BRAND NAME: Motorola
MODEL NO.: AP-7502
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: Motorola Solutions, Inc.
TESTED: July 24 to Aug. 04, 2014
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (Model: AP-7502) 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:** Aug. 12, 2014
(Elsie Hsu, Specialist)

APPROVED BY :  , **DATE:** Aug. 12, 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 -7.33dB at 0.40781MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted 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 IPEX not a standard connector.

NOTE: 1. For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.25GHz, and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz. For the 5.15~5.25GHz 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)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT (WLAN)

PRODUCT	Dual Radio Wallplate AP
MODEL NO.	AP-7502
POWER SUPPLY	DC 12V from Adapter or DC 48V from PoE
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a / g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
OPERATING FREQUENCY	For 15.407 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
NUMBER OF CHANNEL	For 15.407 9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
	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: 77.907mW 802.11n (HT20): 79.398mW 802.11n (HT40): 56.579mW 802.11ac (VHT20): 80.513mW 802.11ac (VHT40): 57.373mW 802.11ac (VHT80): 6.498mW For 15.247 802.11b: 185.368mW 802.11g: 342.766mW 802.11n (HT20): 341.779mW 802.11n (HT40): 152.641mW
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(LE) and WLAN technology used for the EUT.
2. For WLAN, 2.4GHz and 5GHz technology can transmit at same time.
3. WLAN and Bluetooth technology can transmit at same time.
4. Radiated emissions of the simultaneous operation (WLAN & Bluetooth) has been evaluated and no non-compliance was found.
5. The Version of EUT information are as below

FW HW Version :	DVT
SW Version :	runtime FW 5.5.3.0-038R

6. The EUT could be supplied with an adapter or a PoE as the following table:

Adapter (only for test)		
Brand	Model No.	Spec.
FAIRWAY	WRG10F-120A	AC Input: 100-240V, 0.5A, 47-63Hz DC Output:12V, 0.83A
PoE (only for test)		
Brand	Model No.	Spec.
Motorola	AP-PSBIAS-2P2-AFR	AC Input: 100-240V, 0.5A, 50/60Hz DC Output: 48V, 0.35A
For radiated test, the EUT was pre-tested with adapter and PoE, the worse case was found in adapter . Therefore only the test data of the adapter was recorded in this report.		

7. There are four antennas provided to this EUT, please refer to the following table:

WLAN (2.4GHz)					
Transmitter Circuit	PCB Chain NO.	Antenna Type	Antenna Gain(dBi) Including cable loss	Connector type	Frequency range (GHz to GHz)
Chain (0)	ALA140-051025	PCB-Dipole	5.81	I-Pex	2400~2483.5
Chain (1)	ALA140-051024	PCB-Dipole	4.52	I-Pex	2400~2483.5
WLAN (5GHz)					
Transmitter Circuit	PCB Chain NO.	Antenna Type	Antenna Gain(dBi) Including cable loss	Connector type	Frequency range (GHz to GHz)
Chain (0)	ALA140-091020	PCB-Dipole	7.22	I-Pex	5150~5850
Chain (1)	ALA140-091020	PCB-Dipole	7.3	I-Pex	5150~5850
BT					
Transmitter Circuit	PCB Chain NO.	Antenna Type	Antenna Gain(dBi) Including cable loss	Connector type	Frequency range (GHz to GHz)
Chain (0)	ALC140-051020	PCB-Dipole	4.74	I-Pex	2400~2483.5

8. The EUT incorporates a MIMO function without beamforming.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX (CDD) / 1TX	2RX
802.11b	1 ~ 11Mbps	2TX (CDD) / 1TX	2RX
802.11g	6 ~ 54Mbps	2TX (CDD) / 1TX	2RX
802.11n (HT20)	MCS 0~7	2TX (CDD) / 1TX	2RX
	MCS 8~15	2TX / 1TX	2RX
802.11n (HT40)	MCS 0~7	2TX (CDD) / 1TX	2RX
	MCS 8~15	2TX / 1TX	2RX
802.11ac (VHT20) (5GHz)	MCS0~8 (256QAM) Nss= 1	2TX (CDD) / 1TX	2RX
	MCS0~8 (256QAM) Nss= 2	2TX / 1TX	2RX
802.11ac (VHT40) (5GHz)	MCS0~9 (256QAM) Nss= 1	2TX (CDD) / 1TX	2RX
	MCS0~9 (256QAM) Nss= 2	2TX / 1TX	2RX
802.11ac (VHT80) (5GHz)	MCS0~9 (256QAM) Nss= 1	2TX (CDD) / 1TX	2RX
	MCS0~9 (256QAM) Nss= 2	2TX / 1TX	2RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

9. 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 ³ 1G	APCM	OB	
1	√	√	√	√	√	With Adapter
2	√	-	-	-	-	With PoE

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

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane** (for below 1GHz) and **Y-plane** (for above 1GHz).

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	MODULATI ON TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

RADIATED EMISSION TEST (BELOW 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	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

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



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TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	30deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	27deg. C, 67%RH	120Vac, 60Hz	Robert Cheng
RE ³ 1G	24deg. C, 71%RH	120Vac, 60Hz	Robert Cheng
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

662911 D01 Multiple Transmitter Output v02r01

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

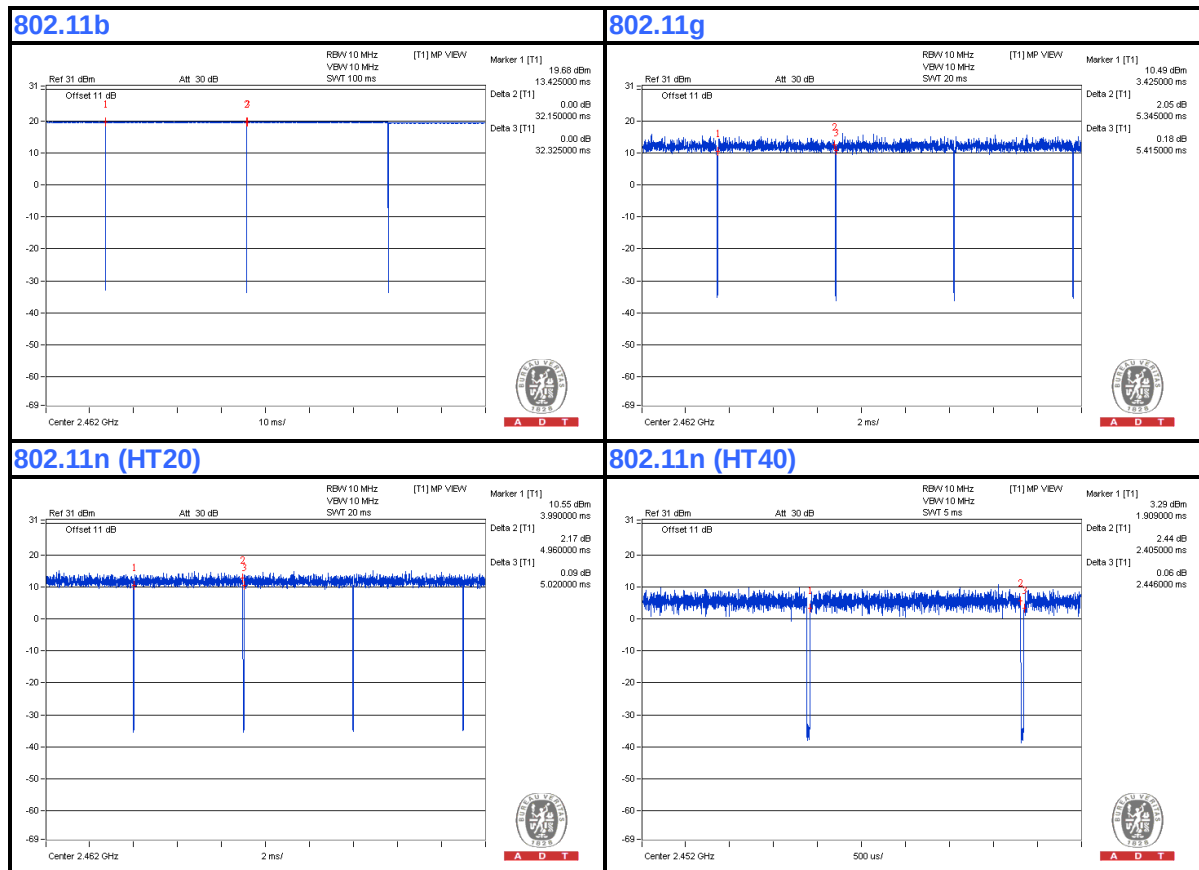
Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11b: Duty cycle = 32.15 ms/32.325 ms = 0.995

802.11g: Duty cycle = 5.345 ms/5.415 ms = 0.987

802.11n (HT20): Duty cycle = 4.96 ms/5.02 ms = 0.988

802.11n (HT40): Duty cycle = 2.405 ms/2.446 ms = 0.983





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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	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B	NOTEBOOK COMPUTER	DELL	PP27L	7YLB32S	FCC DoC	Provided by Lab
C	Switch	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
D	Adapter	Fairway	WRG10F-120A	NA	FCC DoC	Supplied by client
E	PoE	Motorola	AP-PSBIAS-2P 2-AFR	NA	FCC DoC	Supplied by client

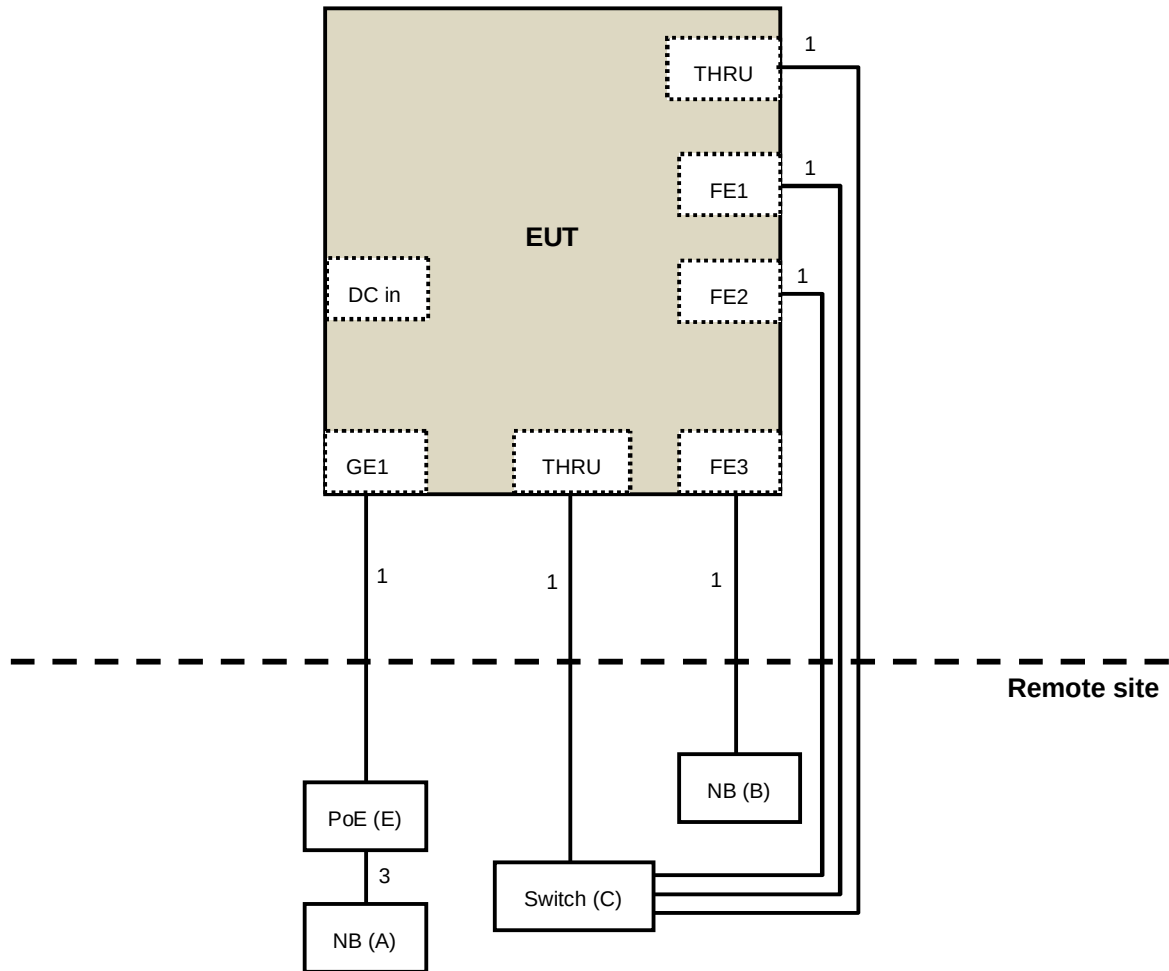
NOTE:

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

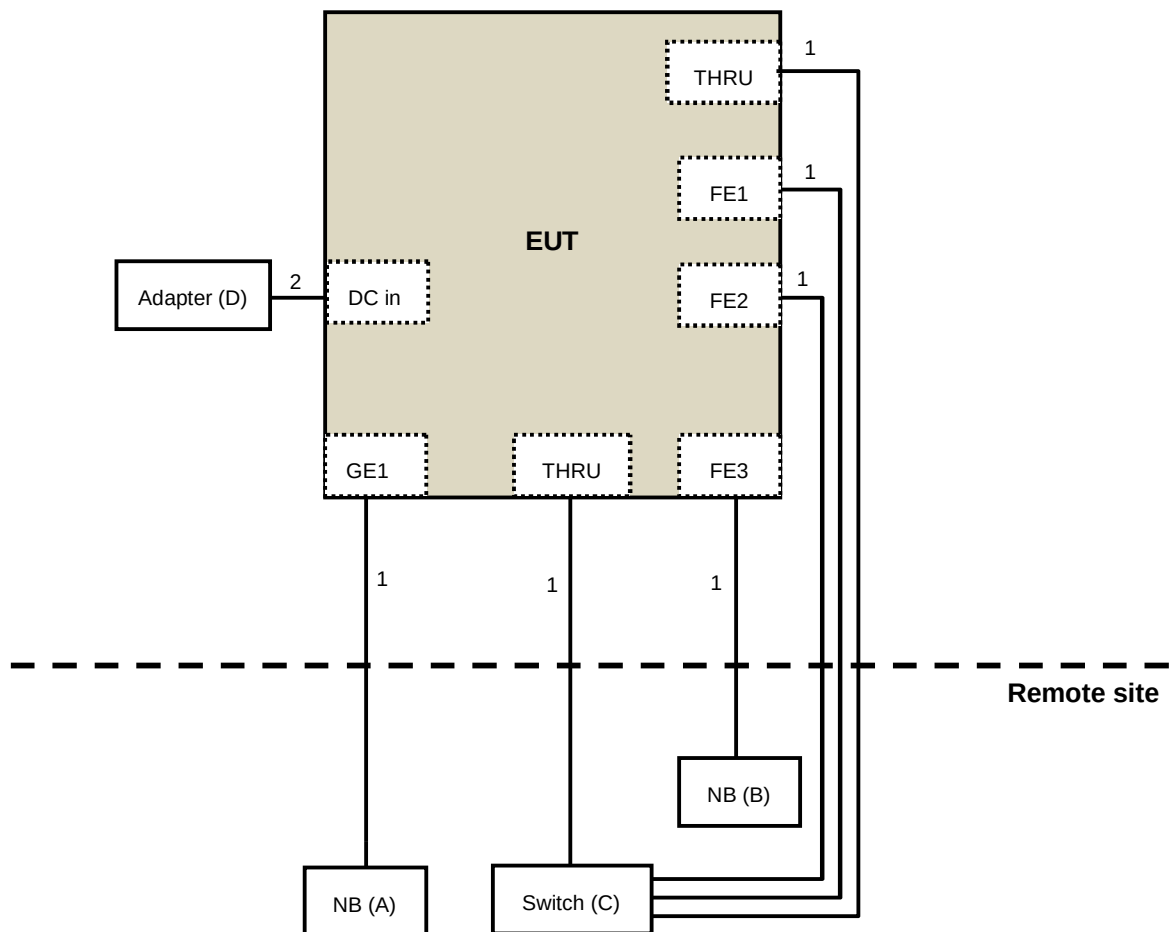
No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1.	RJ-45	6	10	No	0	Provided by Lab
2.	DC	1	1.8	No	0	Supplied by client
3.	RJ-45	1	3	No	0	Provided by Lab

3.6 CONFIGURATION OF SYSTEM UNDER TEST

For PoE Mode



For Adapter Mode



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)	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 24, 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.

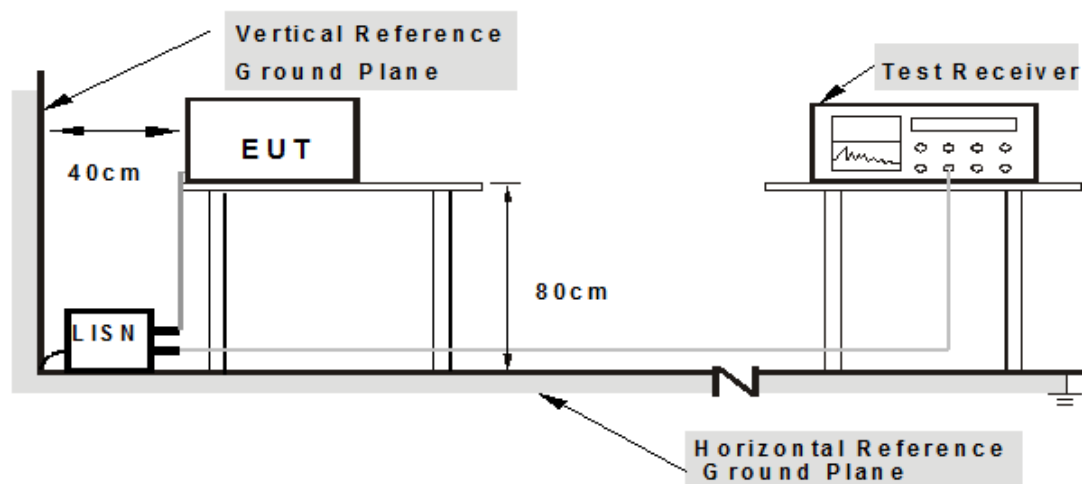
NOTE:

- 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 units A-B (NB) which is placed on table in remote site.
2. The communication partner run test program "WiFi CART[Ver.4.9] paste Cart command.txt]+ BT HyperTerminal paste command" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

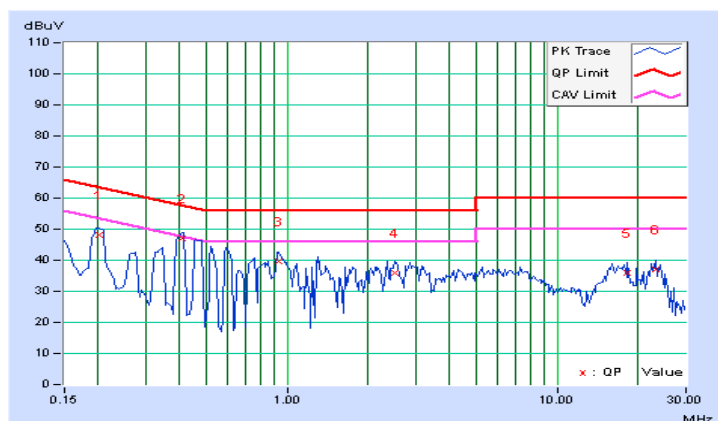
4.1.7 TEST RESULTS (MODE 1)

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	0.20078	0.07	48.06	41.16	48.13	41.23	63.58	53.58	-15.45	-12.35
2	0.40781	0.09	47.06	40.27	47.15	40.36	57.69	47.69	-10.54	-7.33
3	0.92734	0.13	39.61	27.64	39.74	27.77	56.00	46.00	-16.26	-18.23
4	2.49609	0.19	35.89	23.50	36.08	23.69	56.00	46.00	-19.92	-22.31
5	18.24219	0.67	35.16	30.85	35.83	31.52	60.00	50.00	-24.17	-18.48
6	23.07031	0.80	36.38	32.84	37.18	33.64	60.00	50.00	-22.82	-16.36

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

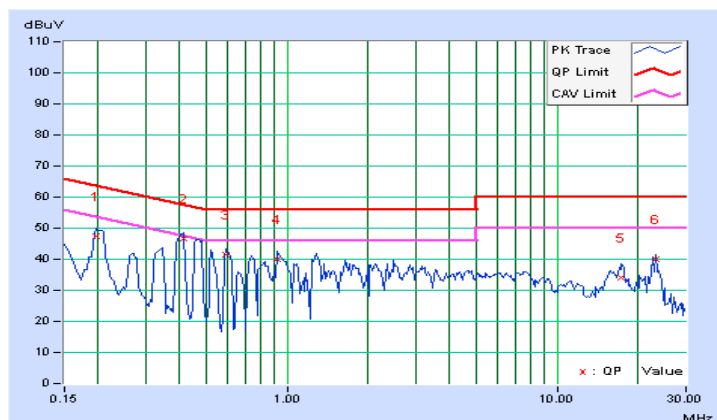


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. (dB)	AV. (dB)
1	0.19687	0.07	47.49	36.57	47.56	36.64	63.74	53.74	-16.18	-17.10
2	0.41172	0.09	46.74	37.83	46.83	37.92	57.61	47.61	-10.78	-9.69
3	0.59141	0.10	41.25	31.74	41.35	31.84	56.00	46.00	-14.65	-14.16
4	0.91953	0.12	39.73	27.62	39.85	27.74	56.00	46.00	-16.15	-18.26
5	17.20313	0.64	33.44	24.45	34.08	25.09	60.00	50.00	-25.92	-24.91
6	23.12891	0.79	39.16	33.45	39.95	34.24	60.00	50.00	-20.05	-15.76

REMARKS:

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



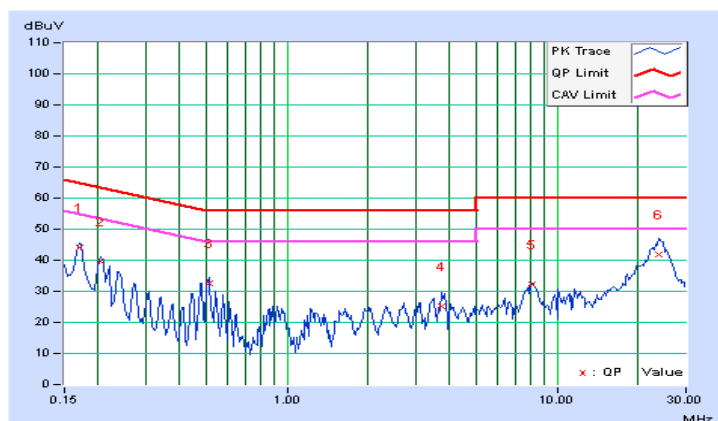
4.1.8 TEST RESULTS (MODE 2)

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	0.16953	0.07	43.86	36.04	43.93	36.11	64.98	54.98	-21.06	-18.88
2	0.20469	0.07	39.43	31.85	39.50	31.92	63.42	53.42	-23.92	-21.50
3	0.51328	0.10	32.60	31.63	32.70	31.73	56.00	46.00	-23.30	-14.27
4	3.73828	0.25	25.08	17.06	25.33	17.31	56.00	46.00	-30.67	-28.69
5	8.12891	0.39	31.79	28.93	32.18	29.32	60.00	50.00	-27.82	-20.68
6	23.76953	0.82	40.89	34.42	41.71	35.24	60.00	50.00	-18.29	-14.76

REMARKS:

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

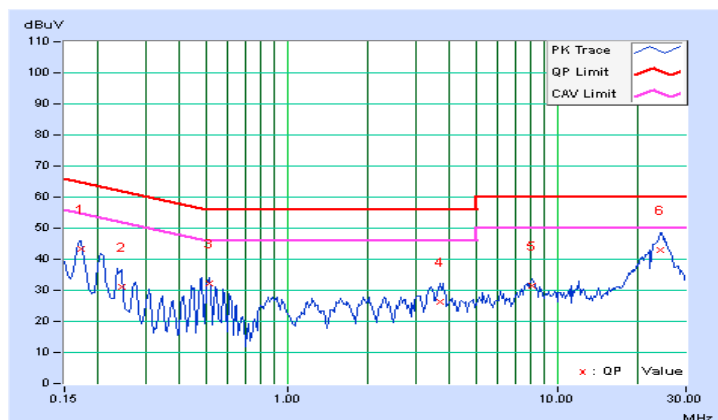


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	0.07	43.36	35.62	43.43	35.69	64.79	54.79	-21.36	-19.10
2	0.24375	0.07	31.19	21.36	31.26	21.43	61.97	51.97	-30.70	-30.53
3	0.51328	0.10	32.18	30.70	32.28	30.80	56.00	46.00	-23.72	-15.20
4	3.67578	0.25	25.94	18.45	26.19	18.70	56.00	46.00	-29.81	-27.30
5	8.13281	0.39	31.16	27.37	31.55	27.76	60.00	50.00	-28.45	-22.24
6	24.25781	0.82	42.25	36.45	43.07	37.27	60.00	50.00	-16.93	-12.73

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

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
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 30 to Aug. 04, 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:

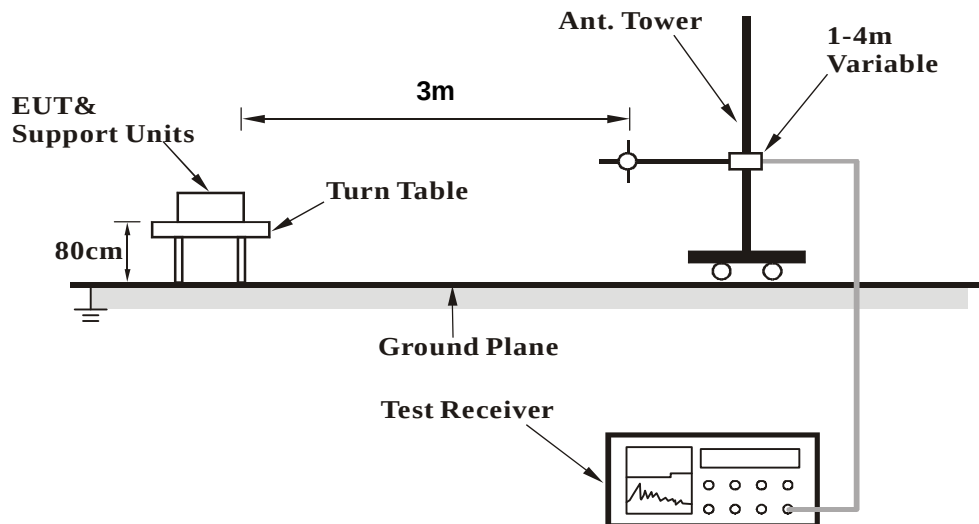
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

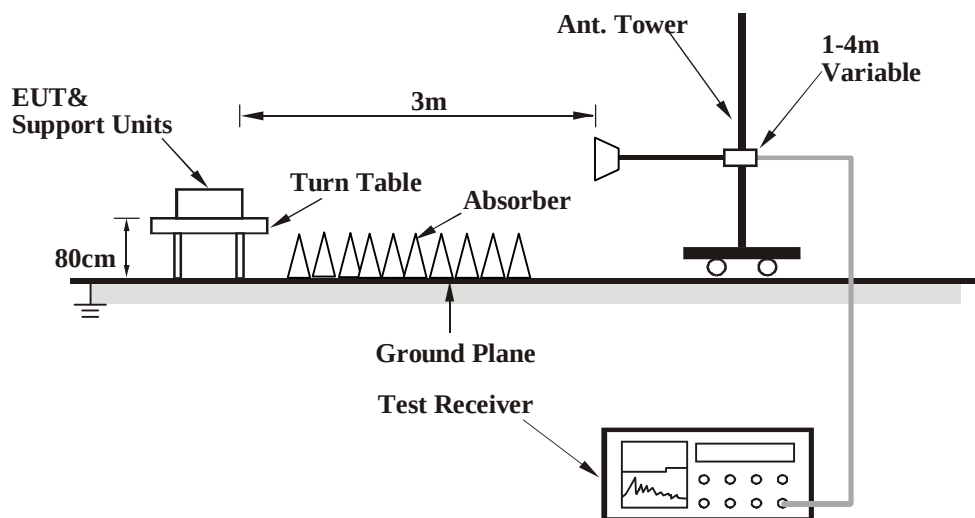
No deviation

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

802.11b

CHANNEL	TX Channel 1	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	77.05	31.8 QP	40.0	-8.2	2.00 H	276	49.23	-17.46
2	110.80	33.7 QP	43.5	-9.8	1.50 H	93	49.93	-16.25
3	153.19	36.0 QP	43.5	-7.5	2.00 H	96	49.09	-13.07
4	374.98	38.4 QP	46.0	-7.6	1.00 H	59	48.63	-10.24
5	503.12	37.5 QP	46.0	-8.5	1.50 H	106	44.79	-7.29
6	1000.00	45.6 QP	54.0	-8.5	1.00 H	46	44.09	1.46
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	51.20	31.9 QP	40.0	-8.1	1.00 V	212	45.43	-13.57
2	76.40	33.9 QP	40.0	-6.2	1.00 V	357	51.03	-17.18
3	118.04	34.8 QP	43.5	-8.7	1.50 V	191	50.10	-15.31
4	153.07	33.6 QP	43.5	-9.9	1.00 V	331	46.72	-13.08
5	426.62	36.9 QP	46.0	-9.1	1.50 V	360	45.73	-8.80
6	1000.00	41.2 QP	54.0	-12.8	1.00 V	66	39.74	1.46

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

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	76.72	31.7 QP	40.0	-8.3	2.00 H	285	48.98	-17.32
2	111.03	33.6 QP	43.5	-9.9	1.50 H	98	49.84	-16.21
3	153.33	36.1 QP	43.5	-7.4	2.00 H	101	49.20	-13.06
4	374.91	38.3 QP	46.0	-7.7	1.00 H	60	48.53	-10.24
5	503.43	37.9 QP	46.0	-8.1	1.50 H	110	45.16	-7.29
6	1000.00	46.3 QP	54.0	-7.8	1.00 H	52	44.79	1.46
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	51.19	31.8 QP	40.0	-8.2	1.00 V	211	45.33	-13.57
2	76.20	33.4 QP	40.0	-6.6	1.00 V	360	50.47	-17.09
3	118.27	34.6 QP	43.5	-8.9	1.50 V	192	49.86	-15.30
4	152.87	33.3 QP	43.5	-10.3	1.00 V	337	46.34	-13.09
5	426.45	37.2 QP	46.0	-8.8	1.50 V	360	45.97	-8.81
6	1000.00	40.8 QP	54.0	-13.2	1.00 V	65	39.36	1.46

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



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CHANNEL	TX Channel 11	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	76.64	32.1 QP	40.0	-7.9	2.00 H	283	49.38	-17.29
2	110.86	33.3 QP	43.5	-10.2	1.50 H	90	49.52	-16.23
3	153.35	36.0 QP	43.5	-7.5	2.00 H	106	49.09	-13.06
4	374.99	38.3 QP	46.0	-7.7	1.00 H	70	48.52	-10.24
5	503.59	37.4 QP	46.0	-8.6	1.50 H	102	44.68	-7.29
6	1000.00	46.3 QP	54.0	-7.7	1.00 H	47	44.82	1.46
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	51.17	31.7 QP	40.0	-8.3	1.00 V	213	45.27	-13.57
2	76.37	33.5 QP	40.0	-6.5	1.00 V	360	50.70	-17.17
3	118.05	34.5 QP	43.5	-9.0	1.50 V	188	49.80	-15.31
4	152.69	33.5 QP	43.5	-10.0	1.00 V	343	46.60	-13.10
5	426.47	37.5 QP	46.0	-8.5	1.50 V	360	46.30	-8.81
6	1000.00	41.2 QP	54.0	-12.8	1.00 V	58	39.74	1.46

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

802.11g

CHANNEL	TX Channel 1	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	76.50	31.7 QP	40.0	-8.3	2.00 H	278	48.94	-17.22
2	111.07	33.7 QP	43.5	-9.8	1.50 H	90	49.90	-16.21
3	153.28	36.1 QP	43.5	-7.4	2.00 H	115	49.13	-13.07
4	374.94	38.4 QP	46.0	-7.7	1.00 H	72	48.59	-10.24
5	503.46	37.0 QP	46.0	-9.0	1.50 H	96	44.25	-7.29
6	1000.00	46.1 QP	54.0	-7.9	1.00 H	52	44.63	1.46
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	50.95	31.9 QP	40.0	-8.1	1.00 V	214	45.44	-13.56
2	76.26	33.3 QP	40.0	-6.7	1.00 V	360	50.43	-17.12
3	117.97	35.0 QP	43.5	-8.6	1.50 V	184	50.27	-15.32
4	152.75	33.3 QP	43.5	-10.2	1.00 V	350	46.40	-13.09
5	426.46	37.4 QP	46.0	-8.6	1.50 V	360	46.20	-8.81
6	1000.00	41.6 QP	54.0	-12.5	1.00 V	60	40.09	1.46

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

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	76.39	31.4 QP	40.0	-8.6	2.00 H	269	48.60	-17.18
2	110.99	33.6 QP	43.5	-9.9	1.50 H	93	49.85	-16.22
3	153.46	35.7 QP	43.5	-7.8	2.00 H	112	48.78	-13.06
4	374.71	38.2 QP	46.0	-7.8	1.00 H	79	48.49	-10.25
5	503.46	36.8 QP	46.0	-9.2	1.50 H	88	44.05	-7.29
6	1000.00	45.7 QP	54.0	-8.3	1.00 H	54	44.20	1.46
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	50.74	32.0 QP	40.0	-8.0	1.00 V	214	45.59	-13.57
2	76.28	33.5 QP	40.0	-6.5	1.00 V	360	50.66	-17.13
3	118.03	35.2 QP	43.5	-8.3	1.50 V	175	50.52	-15.31
4	152.93	33.7 QP	43.5	-9.8	1.00 V	356	46.81	-13.08
5	426.68	37.0 QP	46.0	-9.0	1.50 V	360	45.84	-8.80
6	1000.00	41.1 QP	54.0	-12.9	1.00 V	58	39.65	1.46

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

CHANNEL	TX Channel 11	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	76.40	31.7 QP	40.0	-8.3	2.00 H	278	48.88	-17.18
2	111.14	33.9 QP	43.5	-9.6	1.50 H	100	50.13	-16.20
3	153.42	35.4 QP	43.5	-8.1	2.00 H	113	48.49	-13.06
4	374.47	38.1 QP	46.0	-7.9	1.00 H	83	48.36	-10.25
5	503.69	36.3 QP	46.0	-9.7	1.50 H	84	43.60	-7.29
6	1000.00	46.1 QP	54.0	-7.9	1.00 H	56	44.65	1.46
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	50.96	32.2 QP	40.0	-7.8	1.00 V	212	45.79	-13.56
2	76.16	33.8 QP	40.0	-6.2	1.00 V	360	50.88	-17.07
3	118.05	35.4 QP	43.5	-8.1	1.50 V	181	50.69	-15.31
4	153.06	33.5 QP	43.5	-10.0	1.00 V	360	46.57	-13.08
5	426.53	36.7 QP	46.0	-9.3	1.50 V	360	45.53	-8.80
6	1000.00	40.9 QP	54.0	-13.1	1.00 V	59	39.47	1.46

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



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802.11n (HT20)

CHANNEL	TX Channel 1	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	76.53	32.0 QP	40.0	-8.0	2.00 H	270	49.21	-17.24
2	111.11	33.8 QP	43.5	-9.7	1.50 H	110	50.04	-16.20
3	153.35	35.7 QP	43.5	-7.8	2.00 H	114	48.75	-13.06
4	374.65	37.8 QP	46.0	-8.2	1.00 H	80	48.01	-10.25
5	503.81	36.5 QP	46.0	-9.5	1.50 H	80	43.77	-7.29
6	1000.00	46.5 QP	54.0	-7.5	1.00 H	60	45.07	1.46
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	51.18	32.3 QP	40.0	-7.7	1.00 V	214	45.85	-13.57
2	76.23	33.5 QP	40.0	-6.5	1.00 V	351	50.60	-17.10
3	117.86	35.4 QP	43.5	-8.1	1.50 V	181	50.70	-15.34
4	153.08	33.1 QP	43.5	-10.5	1.00 V	360	46.13	-13.08
5	426.65	36.3 QP	46.0	-9.7	1.50 V	360	45.11	-8.80
6	1000.00	40.6 QP	54.0	-13.4	1.00 V	57	39.14	1.46

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

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	76.78	32.0 QP	40.0	-8.0	2.00 H	262	49.31	-17.35
2	111.30	34.0 QP	43.5	-9.5	1.50 H	112	50.19	-16.17
3	153.54	35.8 QP	43.5	-7.7	2.00 H	112	48.84	-13.05
4	374.41	38.2 QP	46.0	-7.8	1.00 H	89	48.45	-10.25
5	503.59	37.0 QP	46.0	-9.0	1.50 H	75	44.26	-7.29
6	1000.00	46.5 QP	54.0	-7.5	1.00 H	62	45.06	1.46
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	50.96	32.0 QP	40.0	-8.0	1.00 V	207	45.56	-13.56
2	76.27	34.0 QP	40.0	-6.0	1.00 V	355	51.09	-17.12
3	117.94	35.5 QP	43.5	-8.0	1.50 V	177	50.78	-15.32
4	153.20	33.2 QP	43.5	-10.3	1.00 V	360	46.31	-13.07
5	426.44	36.5 QP	46.0	-9.5	1.50 V	360	45.29	-8.81
6	1000.00	41.1 QP	54.0	-12.9	1.00 V	55	39.63	1.46

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

CHANNEL	TX Channel 11	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	76.92	32.3 QP	40.0	-7.7	2.00 H	270	49.67	-17.41
2	111.31	34.4 QP	43.5	-9.1	1.50 H	122	50.59	-16.17
3	153.46	36.1 QP	43.5	-7.4	2.00 H	120	49.20	-13.06
4	374.55	38.1 QP	46.0	-8.0	1.00 H	85	48.30	-10.25
5	503.53	36.6 QP	46.0	-9.4	1.50 H	82	43.86	-7.29
6	1000.00	47.0 QP	54.0	-7.0	1.00 H	57	45.54	1.46
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	50.77	32.1 QP	40.0	-8.0	1.00 V	197	45.62	-13.57
2	76.22	33.7 QP	40.0	-6.3	1.00 V	360	50.83	-17.10
3	117.70	35.7 QP	43.5	-7.8	1.50 V	179	51.08	-15.36
4	152.98	33.4 QP	43.5	-10.1	1.00 V	360	46.45	-13.08
5	426.45	36.8 QP	46.0	-9.2	1.50 V	360	45.60	-8.81
6	1000.00	41.0 QP	54.0	-13.0	1.00 V	48	39.51	1.46

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

802.11n (HT40)

CHANNEL	TX Channel 3	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	76.98	31.9 QP	40.0	-8.1	2.00 H	268	49.38	-17.44
2	111.19	34.2 QP	43.5	-9.3	1.50 H	122	50.36	-16.19
3	153.60	36.6 QP	43.5	-6.9	2.00 H	128	49.61	-13.05
4	374.67	37.7 QP	46.0	-8.4	1.00 H	78	47.90	-10.25
5	503.58	36.3 QP	46.0	-9.7	1.50 H	75	43.61	-7.29
6	1000.00	46.8 QP	54.0	-7.2	1.00 H	47	45.34	1.46
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	50.70	31.6 QP	40.0	-8.4	1.00 V	203	45.20	-13.56
2	76.37	34.2 QP	40.0	-5.8	1.00 V	360	51.36	-17.17
3	117.60	35.9 QP	43.5	-7.6	1.50 V	179	51.28	-15.38
4	152.87	33.3 QP	43.5	-10.2	1.00 V	360	46.43	-13.09
5	426.34	36.8 QP	46.0	-9.2	1.50 V	360	45.59	-8.81
6	1000.00	41.3 QP	54.0	-12.7	1.00 V	58	39.81	1.46

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

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	76.83	31.6 QP	40.0	-8.4	2.00 H	276	49.01	-17.37
2	111.12	34.0 QP	43.5	-9.5	1.50 H	122	50.19	-16.20
3	153.74	36.1 QP	43.5	-7.4	2.00 H	133	49.16	-13.04
4	374.60	37.5 QP	46.0	-8.5	1.00 H	81	47.78	-10.25
5	503.44	36.4 QP	46.0	-9.6	1.50 H	74	43.71	-7.29
6	1000.00	46.7 QP	54.0	-7.3	1.00 H	39	45.22	1.46
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	50.61	31.9 QP	40.0	-8.1	1.00 V	204	45.46	-13.56
2	76.21	34.3 QP	40.0	-5.8	1.00 V	360	51.35	-17.10
3	117.64	36.3 QP	43.5	-7.2	1.50 V	180	51.71	-15.37
4	153.00	33.4 QP	43.5	-10.1	1.00 V	360	46.46	-13.08
5	426.52	36.7 QP	46.0	-9.3	1.50 V	360	45.54	-8.80
6	1000.00	40.8 QP	54.0	-13.2	1.00 V	56	39.35	1.46

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

CHANNEL	TX Channel 9	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	76.87	31.6 QP	40.0	-8.4	2.00 H	280	49.01	-17.39
2	111.23	33.7 QP	43.5	-9.8	1.50 H	123	49.90	-16.18
3	153.87	36.5 QP	43.5	-7.0	2.00 H	142	49.53	-13.03
4	374.49	37.8 QP	46.0	-8.2	1.00 H	73	48.04	-10.25
5	503.27	36.7 QP	46.0	-9.3	1.50 H	67	43.99	-7.29
6	1000.00	46.9 QP	54.0	-7.1	1.00 H	39	45.40	1.46
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	50.81	32.1 QP	40.0	-7.9	1.00 V	203	45.71	-13.57
2	75.98	34.1 QP	40.0	-5.9	1.00 V	352	51.12	-17.00
3	117.80	36.6 QP	43.5	-6.9	1.50 V	179	51.96	-15.35
4	152.92	33.8 QP	43.5	-9.7	1.00 V	360	46.84	-13.08
5	426.33	36.6 QP	46.0	-9.4	1.50 V	360	45.41	-8.81
6	1000.00	41.2 QP	54.0	-12.8	1.00 V	49	39.77	1.46

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	2359.00	47.0 PK	74.0	-27.0	1.25 H	252	15.46	31.54
2	2359.00	33.2 AV	54.0	-20.8	1.25 H	252	1.66	31.54
3	*2412.00	99.6 PK			1.25 H	252	67.92	31.68
4	*2412.00	95.6 AV			1.25 H	252	63.92	31.68
5	4824.00	51.5 PK	74.0	-22.5	1.27 H	257	11.11	40.39
6	4824.00	47.6 AV	54.0	-6.4	1.27 H	257	7.21	40.39
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	2359.00	57.7 PK	74.0	-16.3	1.09 V	213	26.16	31.54
2	2359.00	46.1 AV	54.0	-7.9	1.09 V	213	14.56	31.54
3	*2412.00	116.2 PK			1.09 V	213	84.52	31.68
4	*2412.00	113.6 AV			1.09 V	213	81.92	31.68
5	4824.00	51.3 PK	74.0	-22.7	1.07 V	161	10.91	40.39
6	4824.00	43.6 AV	54.0	-10.4	1.07 V	161	3.21	40.39

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 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	2359.00	47.3 PK	74.0	-26.7	1.25 H	249	15.76	31.54
2	2359.00	33.7 AV	54.0	-20.3	1.25 H	249	2.16	31.54
3	*2437.00	99.1 PK			1.25 H	267	67.37	31.73
4	*2437.00	95.2 AV			1.25 H	267	63.47	31.73
5	4874.00	52.8 PK	74.0	-21.2	1.27 H	261	12.44	40.36
6	4874.00	48.0 AV	54.0	-6.0	1.27 H	261	7.64	40.36
7	7311.00	51.5 PK	74.0	-22.5	1.05 H	76	6.53	44.97
8	7311.00	39.6 AV	54.0	-14.4	1.05 H	76	-5.37	44.97
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	2359.00	60.2 PK	74.0	-13.8	1.11 V	193	28.66	31.54
2	2359.00	46.1 AV	54.0	-7.9	1.11 V	193	14.56	31.54
3	*2437.00	116.2 PK			1.11 V	193	84.47	31.73
4	*2437.00	113.8 AV			1.11 V	193	82.07	31.73
5	4874.00	50.9 PK	74.0	-23.1	1.09 V	149	10.54	40.36
6	4874.00	43.5 AV	54.0	-10.5	1.09 V	149	3.14	40.36
7	7311.00	52.1 PK	74.0	-21.9	1.05 V	288	7.13	44.97
8	7311.00	39.2 AV	54.0	-14.8	1.05 V	288	-5.77	44.97

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	99.7 PK			1.27 H	245	67.91	31.79
2	*2462.00	95.8 AV			1.27 H	245	64.01	31.79
3	2483.50	47.3 PK	74.0	-26.7	1.28 H	268	15.46	31.84
4	2483.50	33.5 AV	54.0	-20.5	1.28 H	268	1.66	31.84
5	4924.00	54.0 PK	74.0	-20.0	1.24 H	264	13.68	40.32
6	4924.00	49.2 AV	54.0	-4.8	1.24 H	264	8.88	40.32
7	7386.00	51.9 PK	74.0	-22.1	1.03 H	61	6.71	45.19
8	7386.00	39.7 AV	54.0	-14.3	1.03 H	61	-5.49	45.19

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	116.1 PK			1.08 V	199	84.31	31.79
2	*2462.00	113.8 AV			1.08 V	199	82.01	31.79
3	4924.00	51.1 PK	74.0	-22.9	1.12 V	164	10.78	40.32
4	4924.00	43.7 AV	54.0	-10.3	1.12 V	164	3.38	40.32
5	7386.00	52.1 PK	74.0	-21.9	1.04 V	292	6.91	45.19
6	7386.00	39.2 AV	54.0	-14.8	1.04 V	292	-5.99	45.19

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	59.3 PK	74.0	-14.7	1.27 H	265	27.67	31.63
2	2390.00	36.4 AV	54.0	-17.6	1.27 H	265	4.77	31.63
3	*2412.00	95.4 PK			1.27 H	265	63.72	31.68
4	*2412.00	82.9 AV			1.27 H	265	51.22	31.68
5	4824.00	48.0 PK	74.0	-26.0	1.29 H	269	7.61	40.39
6	4824.00	37.2 AV	54.0	-16.8	1.29 H	269	-3.19	40.39
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	73.0 PK	74.0	-1.0	1.08 V	233	41.37	31.63
2	2390.00	51.6 AV	54.0	-2.4	1.08 V	233	19.97	31.63
3	*2412.00	111.4 PK			1.08 V	233	79.72	31.68
4	*2412.00	100.6 AV			1.08 V	233	68.92	31.68
5	4824.00	45.5 PK	74.0	-28.5	1.17 V	152	5.11	40.39
6	4824.00	32.7 AV	54.0	-21.3	1.17 V	152	-7.69	40.39

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	58.9 PK	74.0	-15.1	1.21 H	262	27.27	31.63
2	2390.00	36.1 AV	54.0	-17.9	1.21 H	262	4.47	31.63
3	*2437.00	95.5 PK			1.21 H	262	63.77	31.73
4	*2437.00	82.8 AV			1.21 H	262	51.07	31.73
5	2483.50	61.4 PK	74.0	-12.6	1.21 H	262	29.56	31.84
6	2483.50	37.4 AV	54.0	-16.6	1.21 H	262	5.56	31.84
7	4874.00	48.1 PK	74.0	-25.9	1.25 H	255	7.74	40.36
8	4874.00	37.2 AV	54.0	-16.8	1.25 H	255	-3.16	40.36
9	7311.00	50.5 PK	74.0	-23.5	1.00 H	215	5.53	44.97
10	7311.00	38.6 AV	54.0	-15.4	1.00 H	215	-6.37	44.97
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	61.5 PK	74.0	-12.5	1.08 V	232	29.87	31.63
2	2390.00	42.8 AV	54.0	-11.2	1.08 V	232	11.17	31.63
3	*2437.00	117.1 PK			1.08 V	232	85.37	31.73
4	*2437.00	106.4 AV			1.08 V	232	74.67	31.73
5	2483.50	66.4 PK	74.0	-7.6	1.08 V	232	34.56	31.84
6	2483.50	43.2 AV	54.0	-10.8	1.08 V	232	11.36	31.84
7	4874.00	45.3 PK	74.0	-28.7	1.12 V	165	4.94	40.36
8	4874.00	32.4 AV	54.0	-21.6	1.12 V	165	-7.96	40.36
9	7311.00	51.3 PK	74.0	-22.7	1.02 V	292	6.33	44.97
10	7311.00	38.2 AV	54.0	-15.8	1.02 V	292	-6.77	44.97

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	94.8 PK			1.32 H	273	63.01	31.79
2	*2462.00	82.5 AV			1.32 H	273	50.71	31.79
3	2483.50	59.9 PK	74.0	-14.1	1.32 H	273	28.06	31.84
4	2483.50	36.9 AV	54.0	-17.1	1.32 H	273	5.06	31.84
5	4924.00	48.1 PK	74.0	-25.9	1.29 H	240	7.78	40.32
6	4924.00	37.5 AV	54.0	-16.5	1.29 H	240	-2.82	40.32
7	7386.00	50.6 PK	74.0	-23.4	1.01 H	204	5.41	45.19
8	7386.00	38.7 AV	54.0	-15.3	1.01 H	204	-6.49	45.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.8 PK			1.08 V	216	78.01	31.79
2	*2462.00	99.4 AV			1.08 V	216	67.61	31.79
3	2483.50	72.8 PK	74.0	-1.2	1.08 V	216	40.96	31.84
4	2483.50	50.5 AV	54.0	-3.5	1.08 V	216	18.66	31.84
5	4924.00	44.9 PK	74.0	-29.1	1.09 V	177	4.58	40.32
6	4924.00	32.3 AV	54.0	-21.7	1.09 V	177	-8.02	40.32
7	7386.00	51.7 PK	74.0	-22.3	1.01 V	285	6.51	45.19
8	7386.00	38.6 AV	54.0	-15.4	1.01 V	285	-6.59	45.19

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	59.4 PK	74.0	-14.6	1.25 H	265	27.77	31.63
2	2390.00	35.0 AV	54.0	-19.0	1.25 H	265	3.37	31.63
3	*2412.00	107.3 PK			1.25 H	265	75.62	31.68
4	*2412.00	80.8 AV			1.25 H	265	49.12	31.68
5	4824.00	48.1 PK	74.0	-25.9	1.31 H	280	7.71	40.39
6	4824.00	37.2 AV	54.0	-16.8	1.31 H	280	-3.19	40.39
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	72.6 PK	74.0	-1.4	1.13 V	213	40.97	31.63
2	2390.00	50.2 AV	54.0	-3.8	1.13 V	213	18.57	31.63
3	*2412.00	109.2 PK			1.13 V	213	77.52	31.68
4	*2412.00	98.6 AV			1.13 V	213	66.92	31.68
5	4824.00	45.1 PK	74.0	-28.9	1.15 V	153	4.71	40.39
6	4824.00	32.4 AV	54.0	-21.6	1.15 V	153	-7.99	40.39

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	*2437.00	95.2 PK			1.26 H	270	63.47	31.73
2	*2437.00	82.5 AV			1.26 H	270	50.77	31.73
3	4874.00	48.3 PK	74.0	-25.7	1.31 H	269	7.94	40.36
4	4874.00	37.3 AV	54.0	-16.7	1.31 H	269	-3.06	40.36
5	7311.00	50.4 PK	74.0	-23.6	1.00 H	224	5.43	44.97
6	7311.00	38.5 AV	54.0	-15.5	1.00 H	224	-6.47	44.97
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	117.8 PK			1.08 V	221	86.07	31.73
2	*2437.00	106.8 AV			1.08 V	221	75.07	31.73
3	4874.00	44.6 PK	74.0	-29.4	1.10 V	176	4.24	40.36
4	4874.00	31.9 AV	54.0	-22.1	1.10 V	176	-8.46	40.36
5	7311.00	51.5 PK	74.0	-22.5	1.03 V	295	6.53	44.97
6	7311.00	38.3 AV	54.0	-15.7	1.03 V	295	-6.67	44.97

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	94.9 PK			1.37 H	283	63.11	31.79
2	*2462.00	82.4 AV			1.37 H	283	50.61	31.79
3	2483.50	59.7 PK	74.0	-14.3	1.33 H	267	27.86	31.84
4	2483.50	37.0 AV	54.0	-17.0	1.33 H	267	5.16	31.84
5	4924.00	48.4 PK	74.0	-25.6	1.28 H	254	8.08	40.32
6	4924.00	37.9 AV	54.0	-16.1	1.28 H	254	-2.42	40.32
7	7386.00	50.7 PK	74.0	-23.3	1.00 H	216	5.51	45.19
8	7386.00	38.9 AV	54.0	-15.1	1.00 H	216	-6.29	45.19

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.2 PK			1.09 V	220	78.41	31.79
2	*2462.00	99.2 AV			1.09 V	220	67.41	31.79
3	2483.50	72.9 PK	74.0	-1.1	1.09 V	220	41.06	31.84
4	2483.50	52.2 AV	54.0	-1.8	1.09 V	220	20.36	31.84
5	4924.00	45.3 PK	74.0	-28.7	1.15 V	166	4.98	40.32
6	4924.00	32.7 AV	54.0	-21.3	1.15 V	166	-7.62	40.32
7	7386.00	51.4 PK	74.0	-22.6	1.00 V	294	6.21	45.19
8	7386.00	38.3 AV	54.0	-15.7	1.00 V	294	-6.89	45.19

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	52.6 PK	74.0	-21.4	1.00 H	282	20.97	31.63
2	2390.00	37.6 AV	54.0	-16.4	1.00 H	282	5.97	31.63
3	*2422.00	88.2 PK			1.00 H	282	56.50	31.70
4	*2422.00	79.2 AV			1.00 H	282	47.50	31.70
5	4844.00	46.6 PK	74.0	-27.4	1.30 H	239	6.22	40.38
6	4844.00	35.4 AV	54.0	-18.6	1.30 H	239	-4.98	40.38
7	7266.00	48.8 PK	74.0	-25.2	1.02 H	205	3.97	44.83
8	7266.00	37.8 AV	54.0	-16.2	1.02 H	205	-7.03	44.83
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.1 PK	74.0	-3.9	1.13 V	218	38.47	31.63
2	2390.00	53.0 AV	54.0	-1.0	1.13 V	218	21.37	31.63
3	*2422.00	105.6 PK			1.13 V	218	73.90	31.70
4	*2422.00	94.6 AV			1.13 V	218	62.90	31.70
5	4844.00	43.2 PK	74.0	-30.8	1.09 V	178	2.82	40.38
6	4844.00	30.9 AV	54.0	-23.1	1.09 V	178	-9.48	40.38
7	7266.00	49.1 PK	74.0	-24.9	1.03 V	266	4.27	44.83
8	7266.00	36.2 AV	54.0	-17.8	1.03 V	266	-8.63	44.83

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	54.3 PK	74.0	-19.7	1.02 H	282	22.67	31.63
2	2390.00	39.4 AV	54.0	-14.6	1.02 H	282	7.77	31.63
3	*2437.00	91.3 PK			1.02 H	282	59.57	31.73
4	*2437.00	81.6 AV			1.02 H	282	49.87	31.73
5	2483.50	55.3 PK	74.0	-18.7	1.02 H	282	23.46	31.84
6	2483.50	40.2 AV	54.0	-13.8	1.02 H	282	8.36	31.84
7	4874.00	47.3 PK	74.0	-26.7	1.35 H	248	6.94	40.36
8	4874.00	35.9 AV	54.0	-18.1	1.35 H	248	-4.46	40.36
9	7311.00	48.6 PK	74.0	-25.4	1.00 H	203	3.63	44.97
10	7311.00	37.6 AV	54.0	-16.4	1.00 H	203	-7.37	44.97
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	69.5 PK	74.0	-4.5	1.06 V	215	37.87	31.63
2	2390.00	48.4 AV	54.0	-5.6	1.06 V	215	16.77	31.63
3	*2437.00	107.6 PK			1.06 V	215	75.87	31.73
4	*2437.00	96.7 AV			1.06 V	215	64.97	31.73
5	2483.50	71.9 PK	74.0	-2.1	1.06 V	215	40.06	31.84
6	2483.50	52.0 AV	54.0	-2.0	1.06 V	215	20.16	31.84
7	4874.00	43.7 PK	74.0	-30.3	1.15 V	184	3.34	40.36
8	4874.00	31.2 AV	54.0	-22.8	1.15 V	184	-9.16	40.36
9	7311.00	49.4 PK	74.0	-24.6	1.06 V	282	4.43	44.97
10	7311.00	36.6 AV	54.0	-17.4	1.06 V	282	-8.37	44.97

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	88.4 PK			1.00 H	297	56.64	31.76
2	*2452.00	78.9 AV			1.00 H	297	47.14	31.76
3	2483.50	52.3 PK	74.0	-21.7	1.00 H	297	20.46	31.84
4	2483.50	37.4 AV	54.0	-16.6	1.00 H	297	5.56	31.84
5	4904.00	46.3 PK	74.0	-27.7	1.36 H	228	5.96	40.34
6	4904.00	35.1 AV	54.0	-18.9	1.36 H	228	-5.24	40.34
7	7356.00	48.5 PK	74.0	-25.5	1.03 H	198	3.39	45.11
8	7356.00	37.6 AV	54.0	-16.4	1.03 H	198	-7.51	45.11

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.1 PK			1.08 V	219	73.34	31.76
2	*2452.00	93.9 AV			1.08 V	219	62.14	31.76
3	2483.50	71.6 PK	74.0	-2.4	1.08 V	219	39.76	31.84
4	2483.50	52.7 AV	54.0	-1.3	1.08 V	219	20.86	31.84
5	4904.00	43.3 PK	74.0	-30.7	1.05 V	163	2.96	40.34
6	4904.00	31.2 AV	54.0	-22.8	1.05 V	163	-9.14	40.34
7	7356.00	49.3 PK	74.0	-24.7	1.04 V	274	4.19	45.11
8	7356.00	36.2 AV	54.0	-17.8	1.04 V	274	-8.91	45.11

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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. 01, 2014

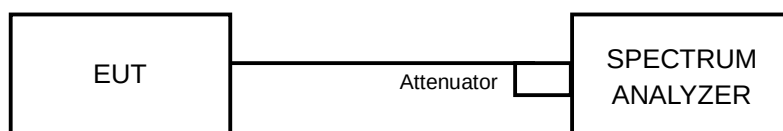
4.3.3 TEST PROCEDURE

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
		CHAIN 0	CHAIN 1		
1	2412	7.12	7.11	0.5	PASS
6	2437	7.11	8.06	0.5	PASS
11	2462	7.09	7.59	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.39	16.40	0.5	PASS
6	2437	16.37	16.38	0.5	PASS
11	2462	16.40	16.42	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.63	17.64	0.5	PASS
6	2437	17.57	17.34	0.5	PASS
11	2462	17.60	17.61	0.5	PASS

802.11n (HT40)

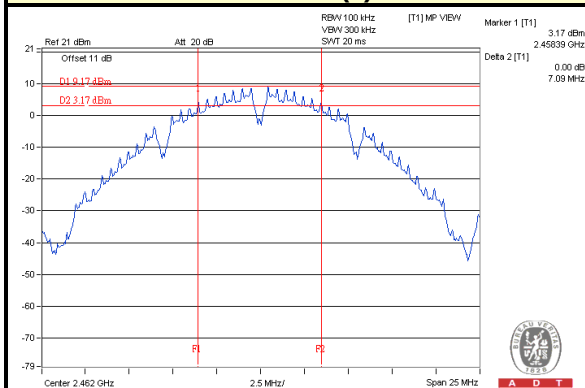
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.41	36.42	0.5	PASS
6	2437	36.20	36.42	0.5	PASS
9	2452	36.43	36.44	0.5	PASS



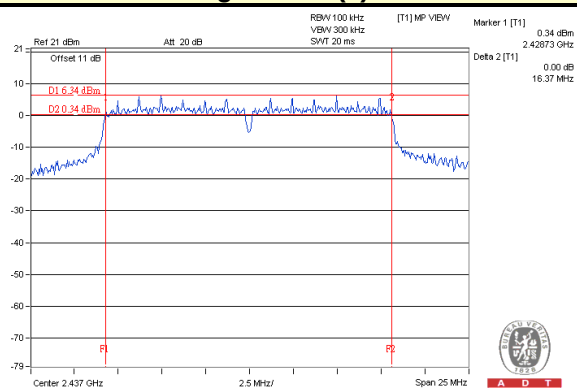
A D T

SPECTRUM PLOT OF WORST VALUE

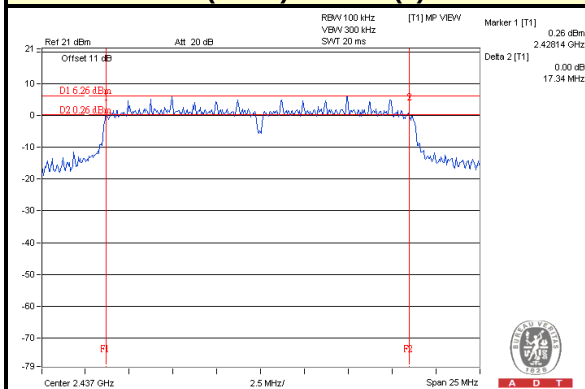
802.11b / Chain (0) : CH11



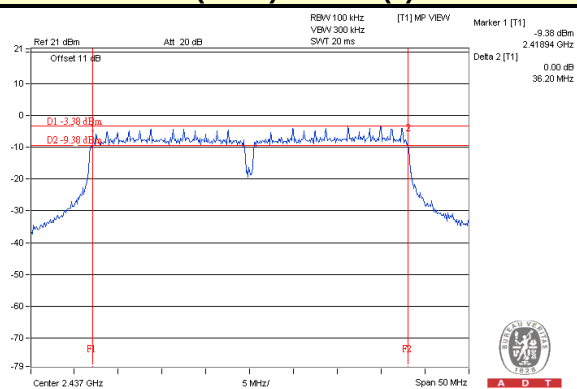
802.11g / Chain (0) : CH6



802.11n (HT20) / Chain (1) : CH6



802.11n (HT40) / Chain (0) : CH6



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)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = $5 \log(NANT/NSS)$ dB or 3 dB, whichever is less for 20-MHz channel widths with $NANT \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(NANT/NSS)$ dB.

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. 01, 2014

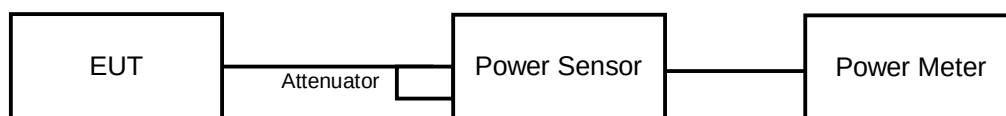
4.4.3 TEST PROCEDURES

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 (1TX)

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	92.257	19.65	30	PASS
6	2437	90.365	19.56	30	PASS
11	2462	86.896	19.39	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	91.622	19.62	30	PASS
6	2437	159.956	22.04	30	PASS
11	2462	63.68	18.04	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	63.826	18.05	30	PASS
6	2437	183.654	22.64	30	PASS
11	2462	61.802	17.91	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	45.29	16.56	30	PASS
6	2437	81.846	19.13	30	PASS
9	2452	51.761	17.14	30	PASS

FOR AVERAGE POWER (1TX)

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	47.973	16.81
6	2437	49.774	16.97
11	2462	48.865	16.89

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	12.106	10.83
6	2437	46.132	16.64
11	2462	8.017	9.04

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	7.430	8.71
6	2437	49.091	16.91
11	2462	7.379	8.68

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	5.689	7.55
6	2437	11.508	10.61
9	2452	6.237	7.95

※Add test for each data rate output power (require by manufacturer):

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)			
		Data rate			
		1Mbps	2Mbps	5.5Mbps	11Mbps
1	2412	19.65	19.53	19.62	19.57
6	2437	19.56	19.36	19.41	19.54
11	2462	19.39	19.36	19.19	19.36

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)							
		Data rate							
		6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	2412	19.62	19.49	19.50	19.55	19.57	19.42	19.43	19.51
6	2437	22.04	21.85	22.00	21.87	21.89	21.96	21.89	21.96
11	2462	18.04	17.88	18.00	17.92	17.90	18.01	17.84	17.87

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)							
		Data rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	2412	18.05	17.96	18.00	18.04	17.93	17.87	18.04	18.00
6	2437	22.64	22.63	22.62	22.62	22.46	22.61	22.62	22.54
11	2462	17.91	17.71	17.77	17.89	17.88	17.87	17.76	17.83

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)							
		Data rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
3	2422	16.56	16.52	16.41	16.38	16.40	16.49	16.50	16.41
6	2437	19.13	18.94	18.96	18.95	19.12	19.01	18.98	18.94
9	2452	17.14	17.02	17.12	17.00	17.09	17.01	16.97	17.13

FOR PEAK POWER (2TX)

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	19.65	19.69	185.368	22.68	30	PASS
6	2437	19.56	19.34	176.266	22.46	30	PASS
11	2462	19.39	19.35	172.995	22.38	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	19.62	19.11	173.092	22.38	30	PASS
6	2437	22.04	22.62	342.766	25.35	30	PASS
11	2462	18.04	18.11	128.394	21.09	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	18.05	17.90	125.486	20.99	30	PASS
6	2437	22.64	21.99	341.779	25.34	30	PASS
11	2462	17.91	18.22	128.176	21.08	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	16.56	16.85	93.707	19.72	30	PASS
6	2437	19.13	18.50	152.641	21.84	30	PASS
9	2452	17.14	16.78	99.404	19.97	30	PASS

FOR FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	16.81	17.09	99.141	19.96
6	2437	16.97	16.89	98.639	19.94
11	2462	16.89	16.93	98.182	19.92

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	10.83	10.89	24.380	13.87
6	2437	16.64	16.81	94.105	19.74
11	2462	9.04	9.77	17.501	12.43

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	8.71	8.94	15.264	11.84
6	2437	16.91	16.67	95.543	19.80
11	2462	8.68	9.65	16.605	12.20

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	7.55	7.97	11.955	10.78
6	2437	10.61	10.66	23.149	13.65
9	2452	7.95	7.75	12.194	10.86

※Add test for each data rate output power (require by manufacturer):

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)			
		Data rate			
		1Mbps	2Mbps	5.5Mbps	11Mbps
1	2412	22.68	22.62	22.58	22.57
6	2437	22.46	22.45	22.37	22.29
11	2462	22.38	22.25	22.20	22.26

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)							
		Data rate							
		6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	2412	22.38	22.32	22.23	22.27	22.27	22.32	22.32	22.22
6	2437	25.35	25.25	25.16	25.27	25.16	25.24	25.21	25.23
11	2462	21.09	21.01	20.96	20.90	21.03	21.01	21.00	21.00

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)							
		Data rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	2412	18.05	17.96	18.00	18.04	17.93	17.87	18.04	18.00
6	2437	22.64	22.63	22.62	22.62	22.46	22.61	22.62	22.54
11	2462	17.91	17.71	17.77	17.89	17.88	17.87	17.76	17.83

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)							
		Data rate							
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
1	2412	20.96	20.95	20.79	20.92	20.91	20.90	20.87	20.83
6	2437	25.29	25.19	25.19	25.17	25.10	25.23	25.10	25.24
11	2462	21.07	20.97	20.99	21.02	21.02	20.94	20.98	20.90

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)							
		Data rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
3	2422	19.72	19.58	19.58	19.71	19.65	19.69	19.64	19.64
6	2437	21.84	21.74	21.79	21.77	21.76	21.68	21.70	21.71
9	2452	19.97	19.78	19.91	19.93	19.86	19.84	19.96	19.80

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)							
		Data rate							
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
3	2422	19.70	19.57	19.54	19.54	19.69	19.63	19.62	19.66
6	2437	21.79	21.67	21.59	21.74	21.73	21.60	21.66	21.78
9	2452	19.93	19.89	19.89	19.73	19.84	19.91	19.76	19.77

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. 01, 2014

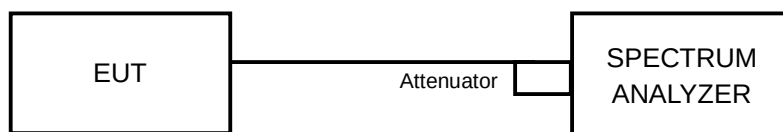
4.5.3 TEST PROCEDURE

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

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	1	2412	-4.72	3.01	-1.71	5.8	PASS
	6	2437	-5.10	3.01	-2.09	5.8	PASS
	11	2462	-5.77	3.01	-2.76	5.8	PASS
1	1	2412	-5.87	3.01	-2.86	5.8	PASS
	6	2437	-6.98	3.01	-3.97	5.8	PASS
	11	2462	-5.40	3.01	-2.39	5.8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 8.2\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.2-6) = 5.8\text{dBm}$.

802.11g

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	1	2412	-14.20	3.01	-11.19	5.8	PASS
	6	2437	-9.06	3.01	-6.05	5.8	PASS
	11	2462	-17.20	3.01	-14.19	5.8	PASS
1	1	2412	-15.73	3.01	-12.72	5.8	PASS
	6	2437	-9.89	3.01	-6.88	5.8	PASS
	11	2462	-16.03	3.01	-13.02	5.8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 8.2\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.2-6) = 5.8\text{dBm}$.

802.11n (HT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-17.51	3.01	-14.50	5.8	PASS
	6	2437	-10.59	3.01	-7.58	5.8	PASS
	11	2462	-17.66	3.01	-14.65	5.8	PASS
1	1	2412	-18.39	3.01	-15.38	5.8	PASS
	6	2437	-10.93	3.01	-7.92	5.8	PASS
	11	2462	-17.36	3.01	-14.35	5.8	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 8.2\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.2-6) = 5.8\text{dBm}$.

802.11n (HT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	TOTAL PSD (dBm)	LIMIT (dBm)	PASS /FAIL
0	3	2422	-22.03	3.01	-19.02	5.8	PASS
	6	2437	-19.76	3.01	-16.75	5.8	PASS
	9	2452	-21.34	3.01	-18.33	5.8	PASS
1	3	2422	-23.04	3.01	-20.03	5.8	PASS
	6	2437	-19.24	3.01	-16.23	5.8	PASS
	9	2452	-23.96	3.01	-20.95	5.8	PASS

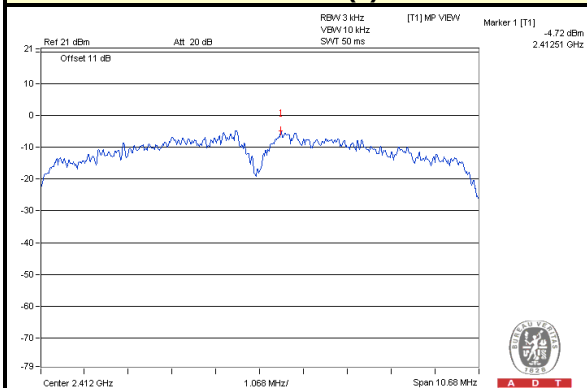
NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 8.2\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.2-6) = 5.8\text{dBm}$.



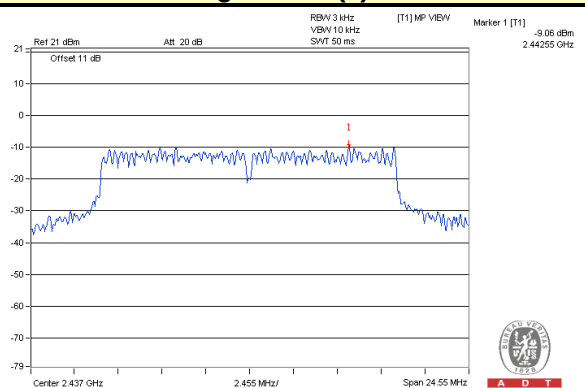
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SPECTRUM PLOT OF WORST VALUE

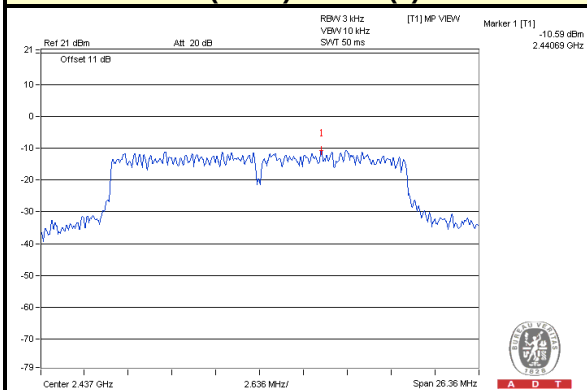
802.11b / Chain (0) : CH1



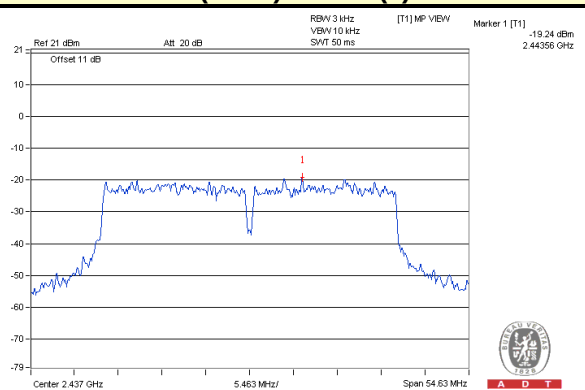
802.11g / Chain (0) : CH6



802.11n (HT20) / Chain(0) : CH6



802.11n (HT40) / Chain(1) : CH6



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. 01, 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.

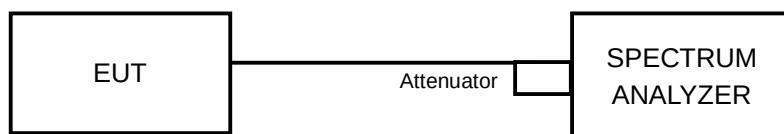
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

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

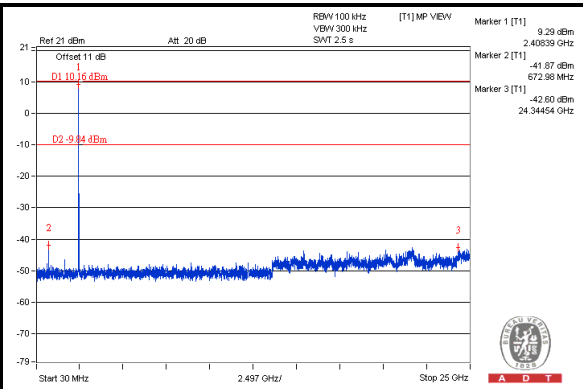
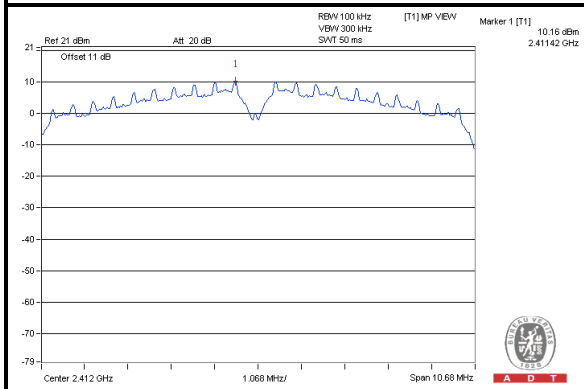


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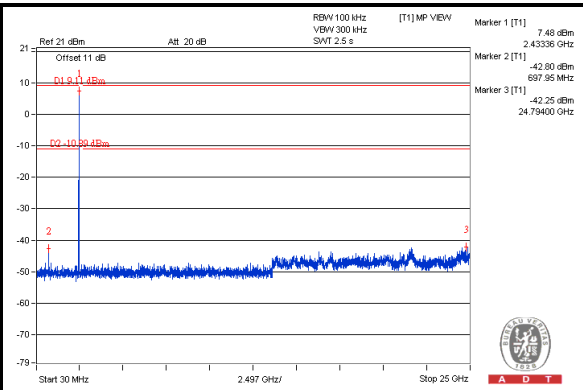
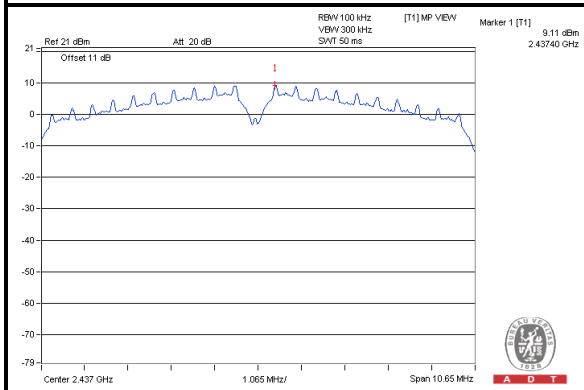
802.11b

Chain (0)

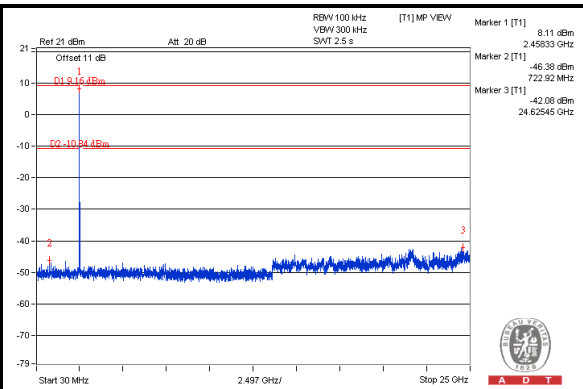
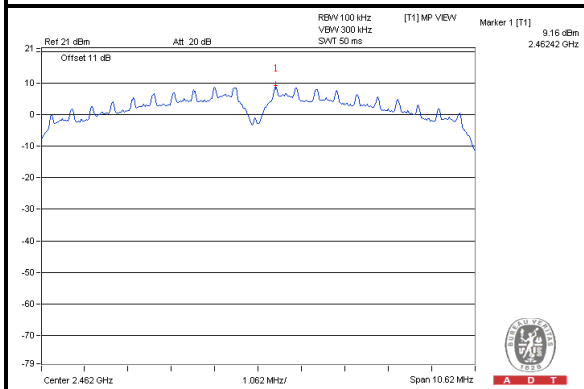
CH 1



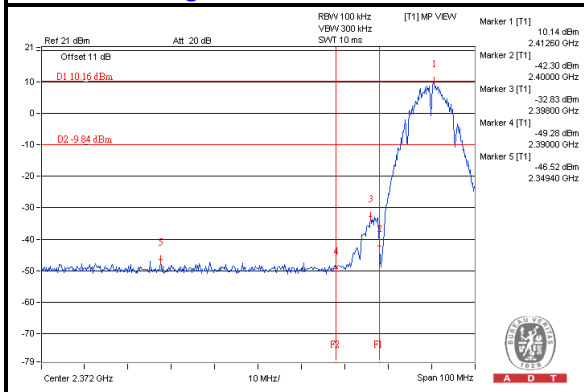
CH 6



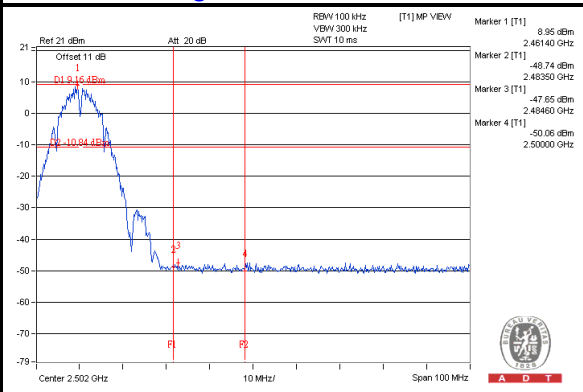
CH 11



CH 1 Band edge



CH 11 Band edge

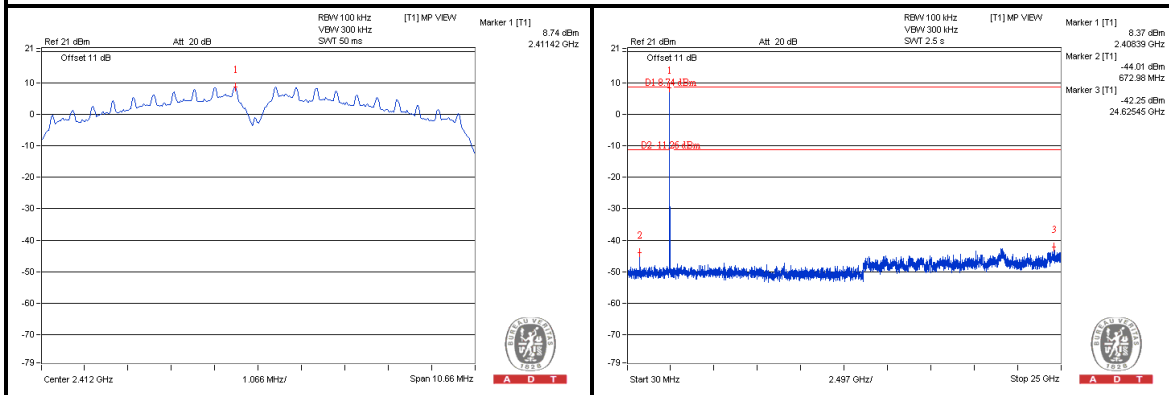




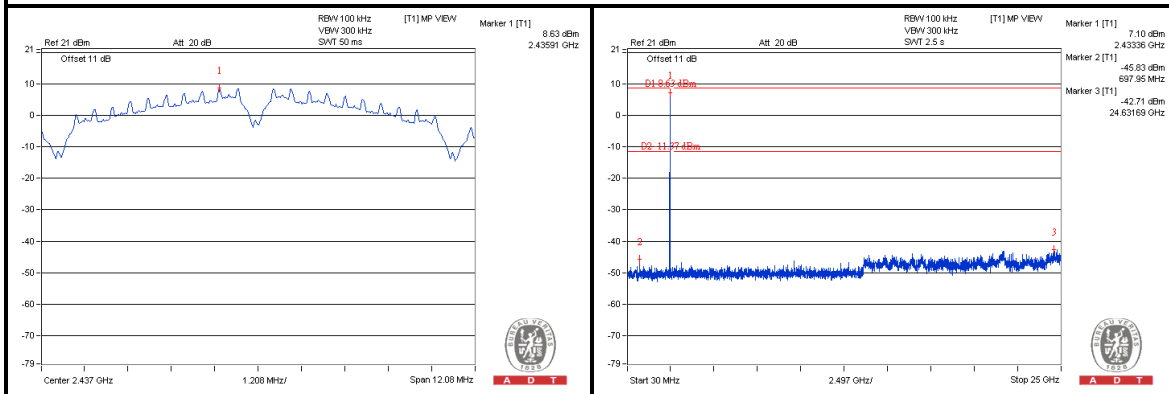
A D T

Chain (1)

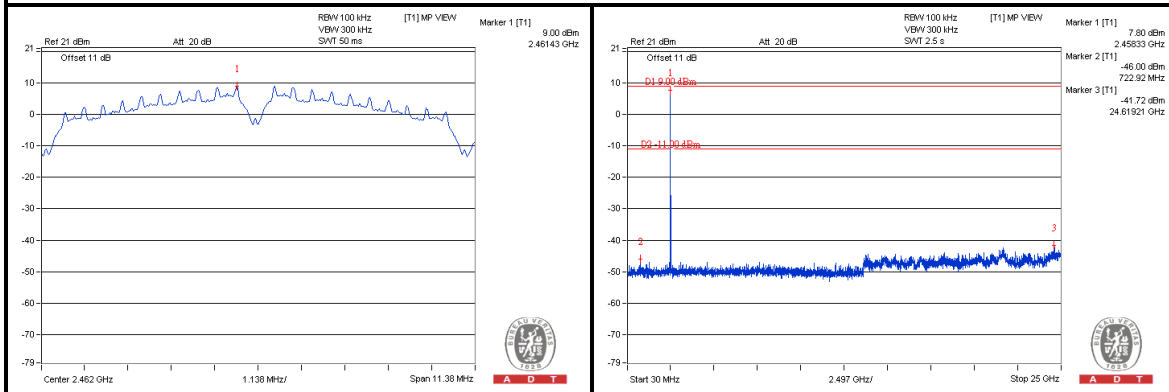
CH 1



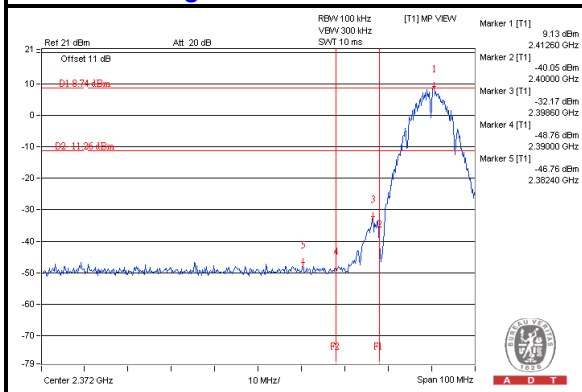
CH 6



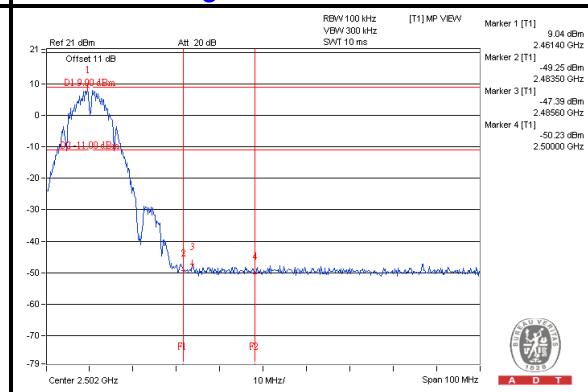
CH 11



CH 1 Band edge



CH 11 Band edge



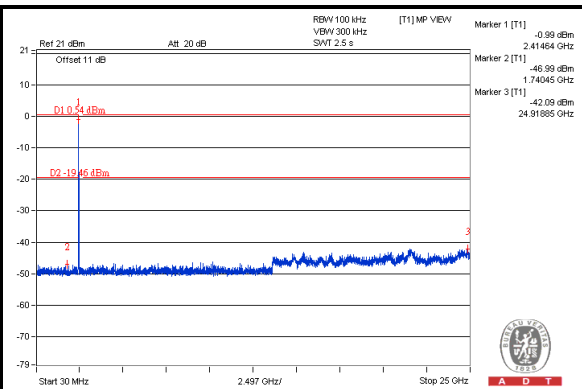
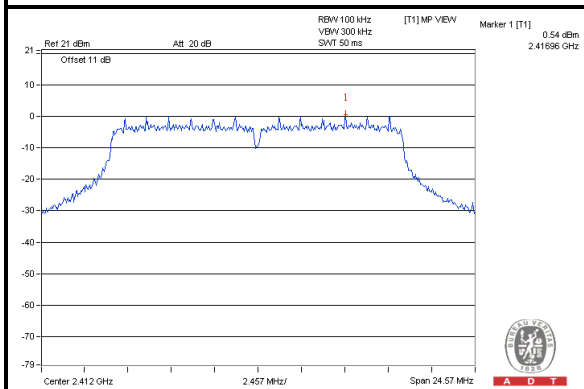


A D T

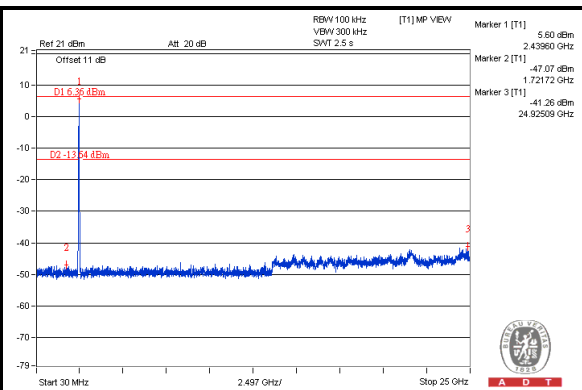
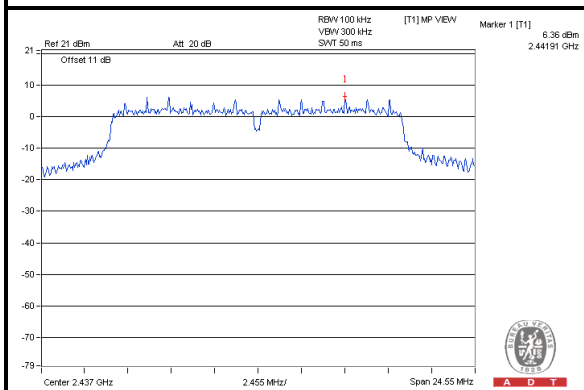
802.11g

Chain (0)

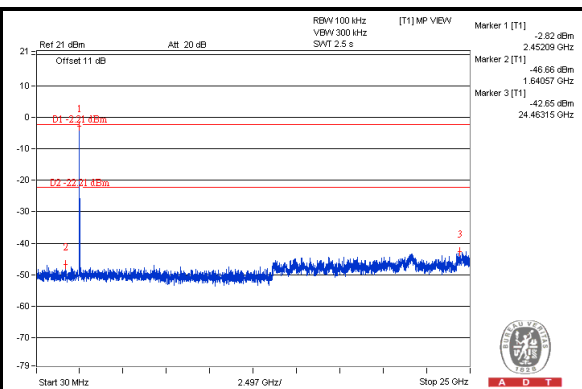
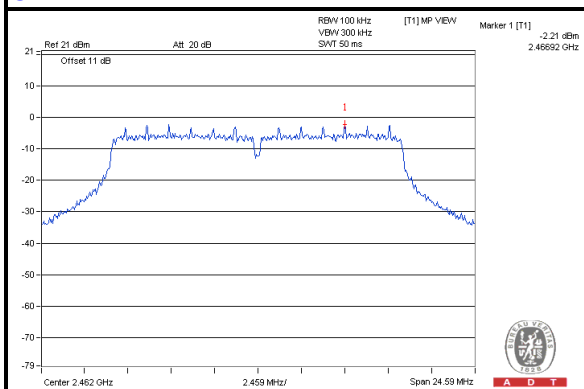
CH 1



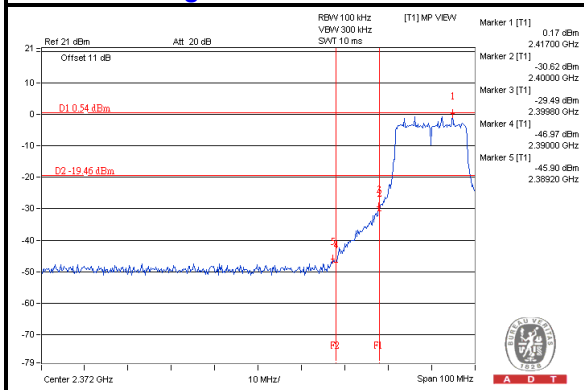
CH 6



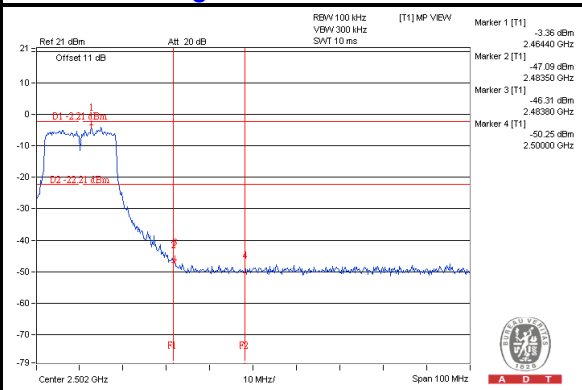
CH 11



CH 1 Band edge



CH 11 Band edge

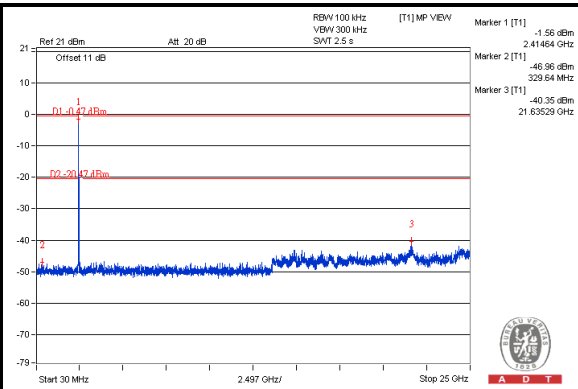
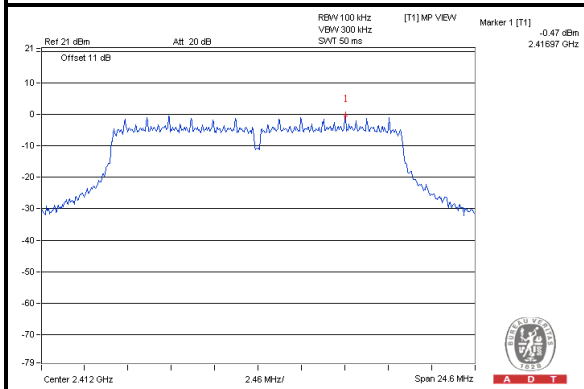




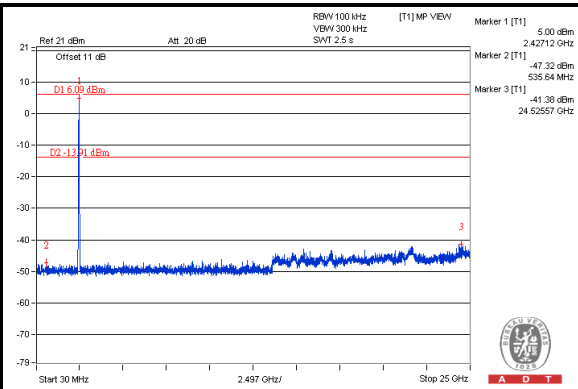
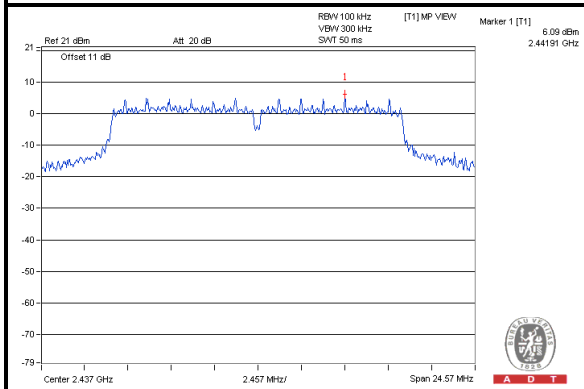
A D T

Chain (1)

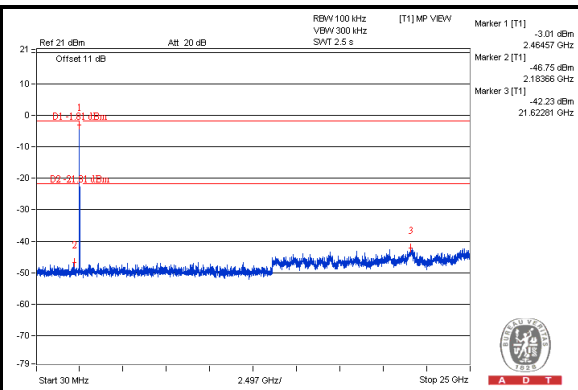
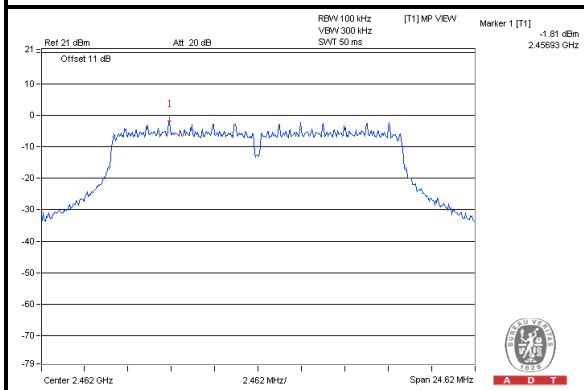
CH 1



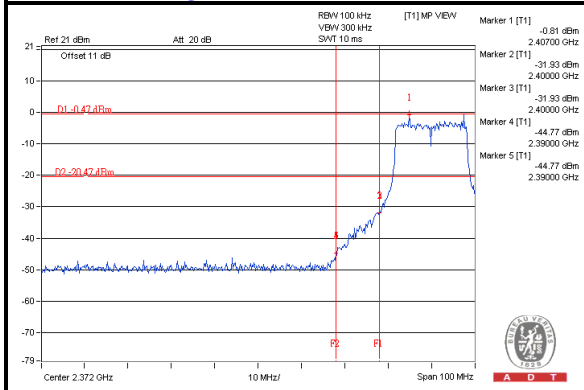
CH 6



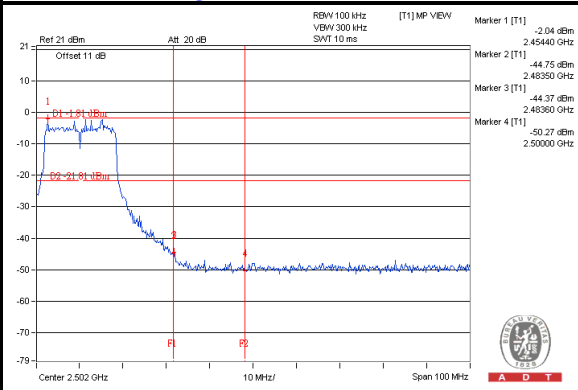
CH 11



CH 1 Band edge



CH 11 Band edge



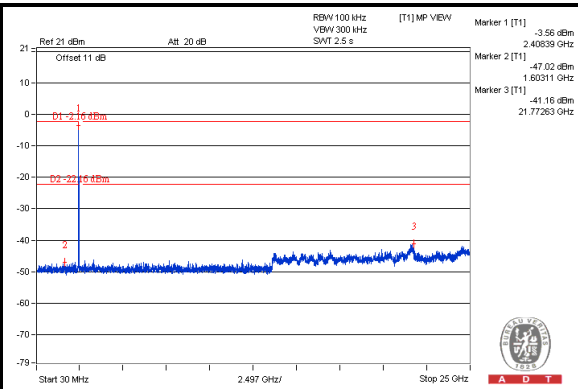
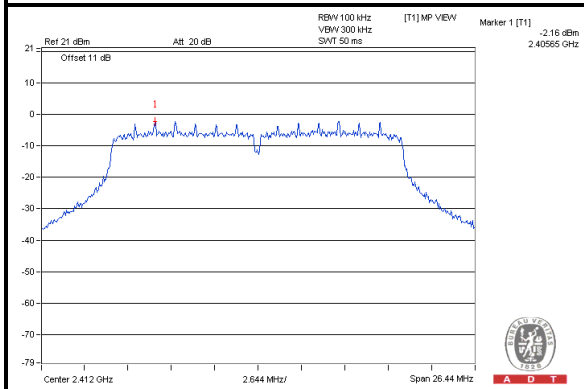


A D T

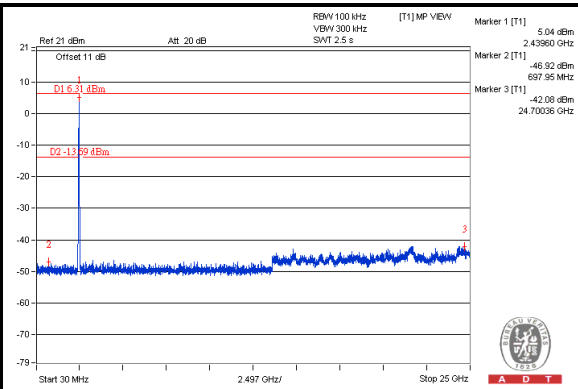
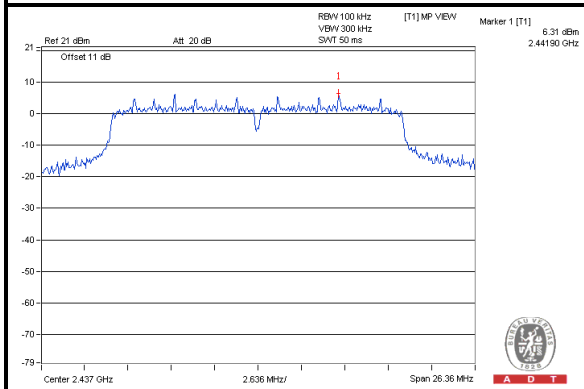
802.11n (HT20)

Chain (0)

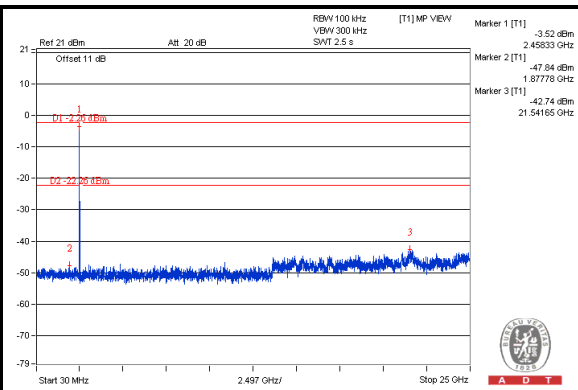
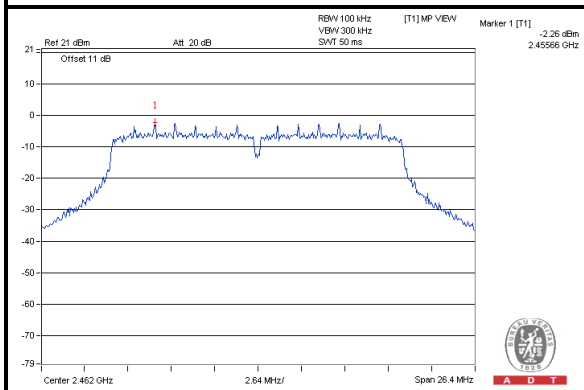
CH 1



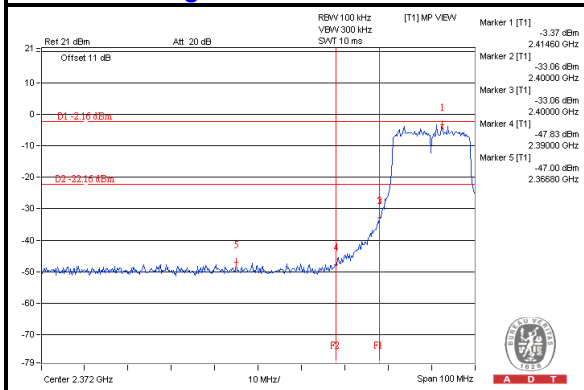
CH 6



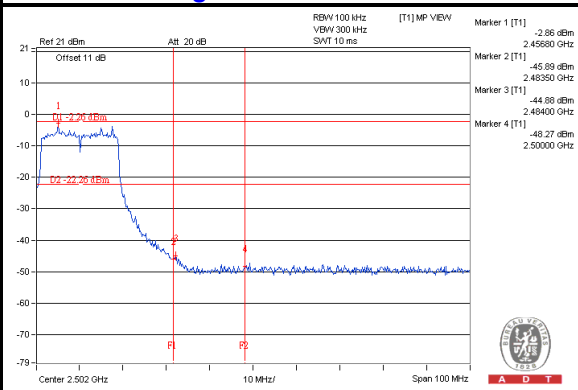
CH 11



CH 1 Band edge



CH 11 Band edge

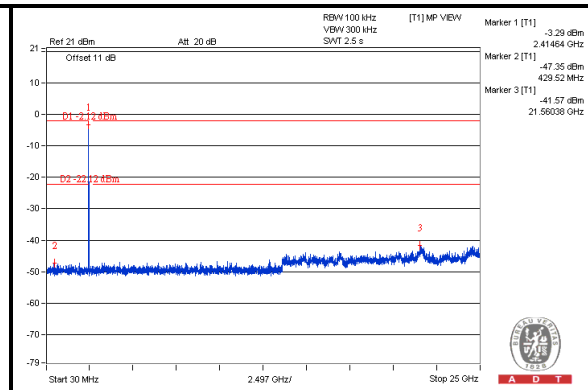
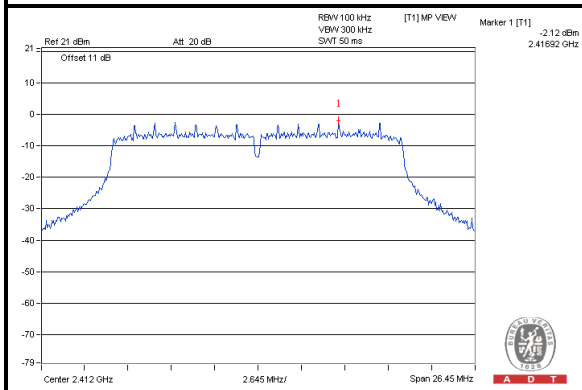




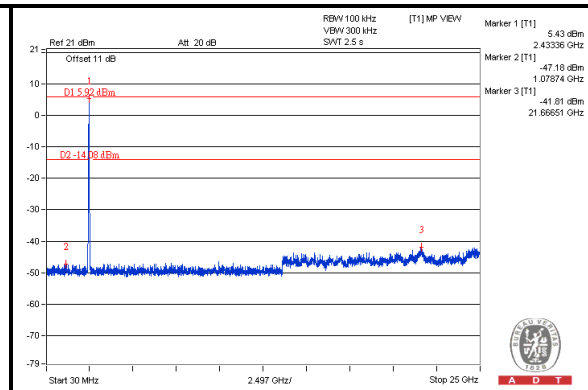
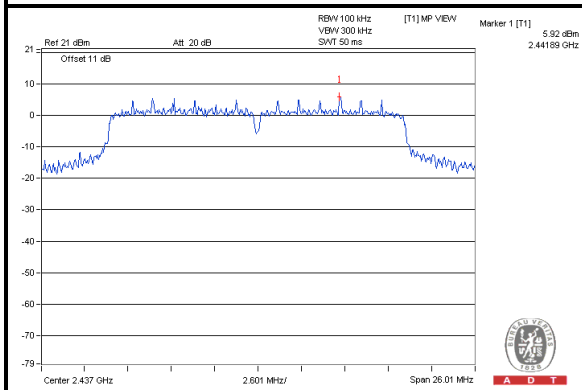
A D T

Chain (1)

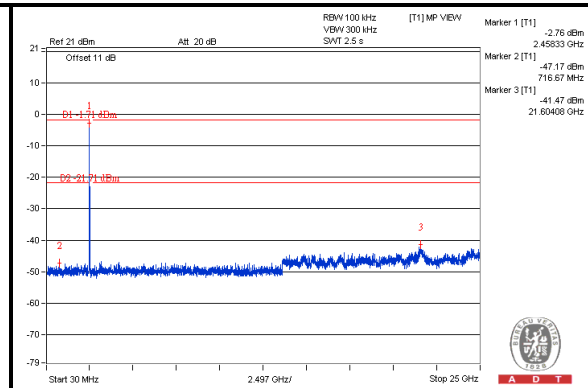
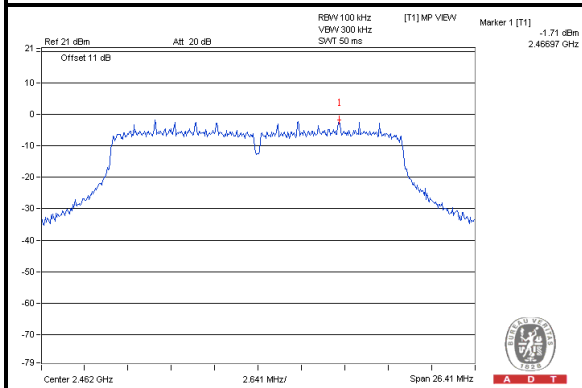
CH 1



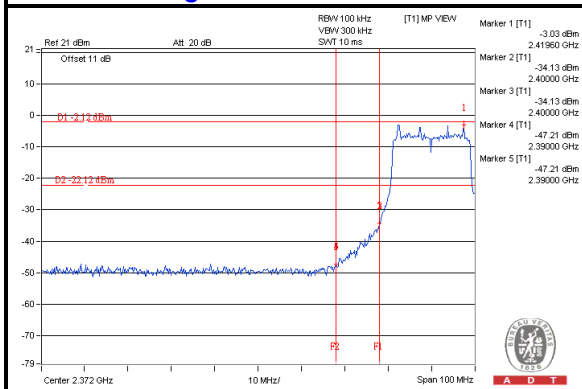
CH 6



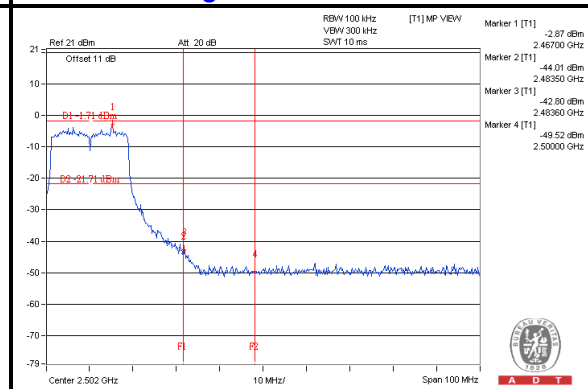
CH 11



CH 1 Band edge



CH 11 Band edge



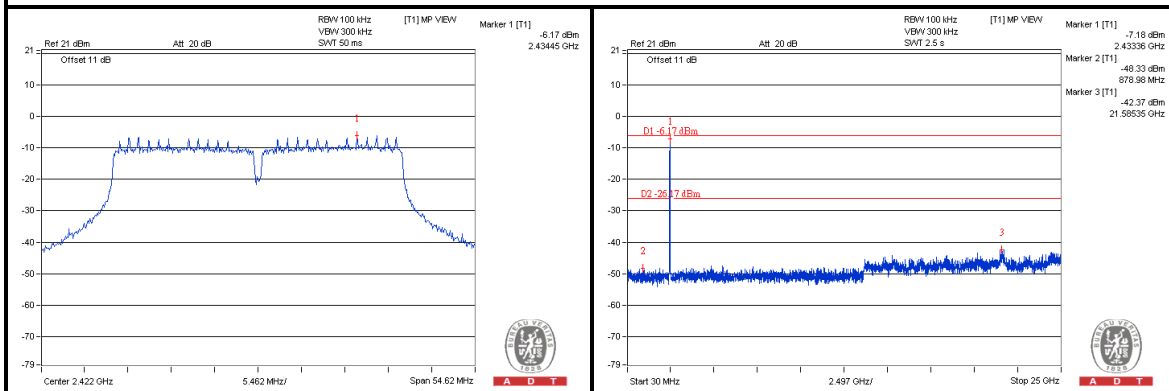


A D T

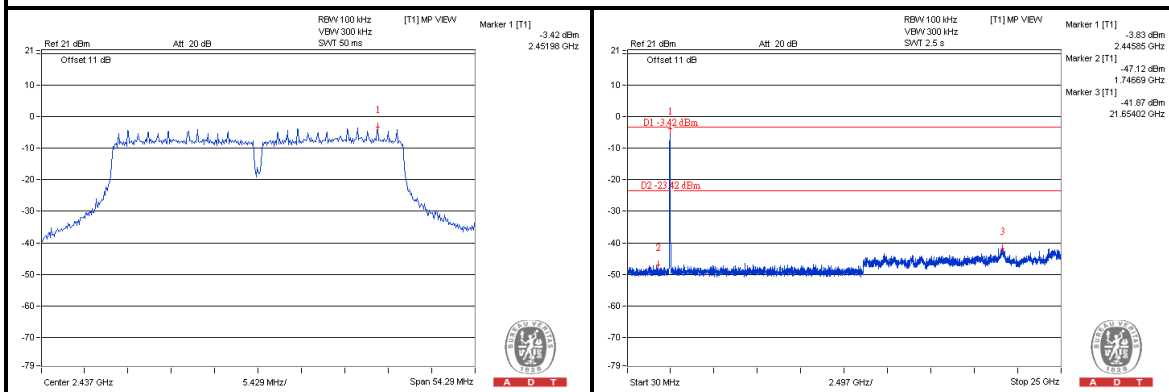
802.11n (HT40)

Chain (0)

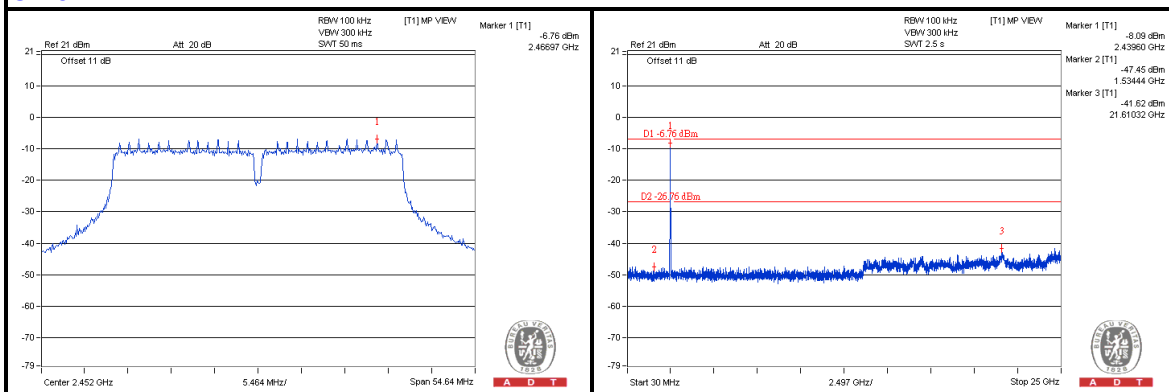
CH 3



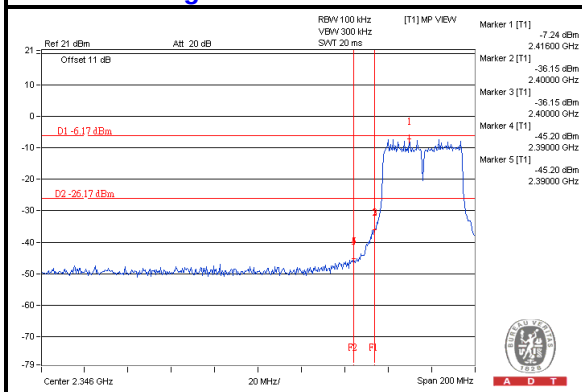
CH 6



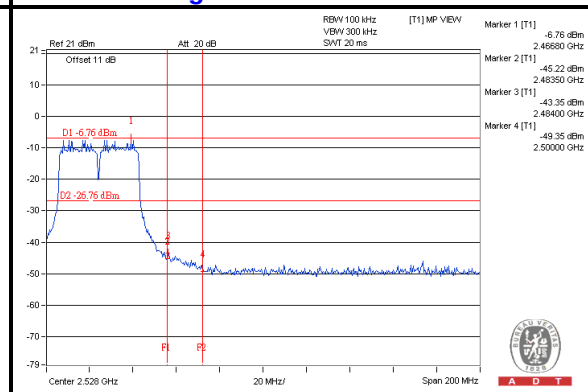
CH 9



CH 3 Band edge



CH 9 Band edge

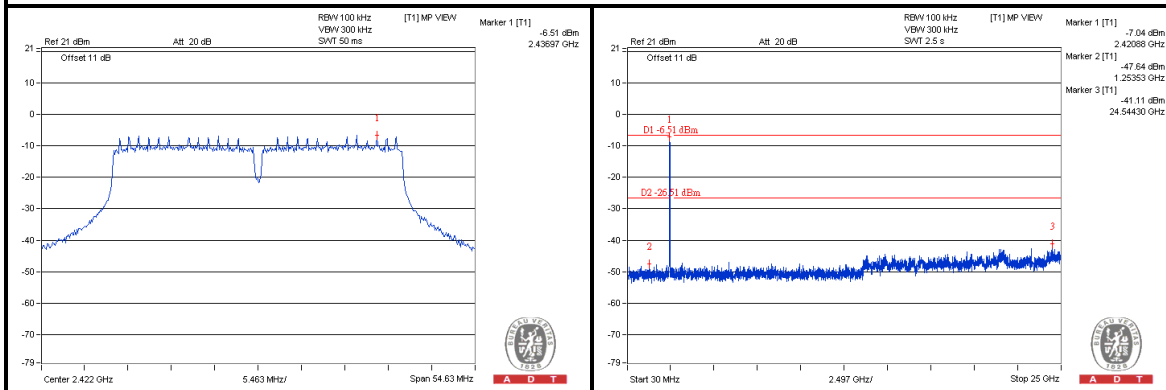




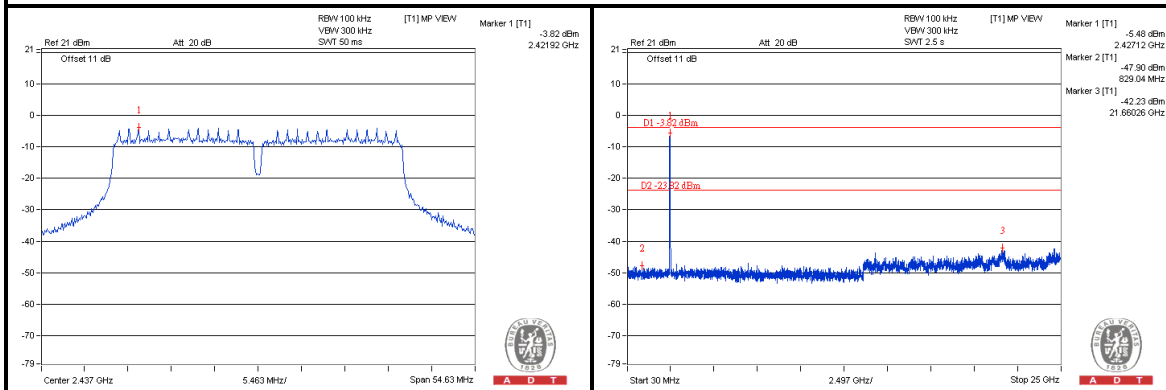
A D T

Chain (1)

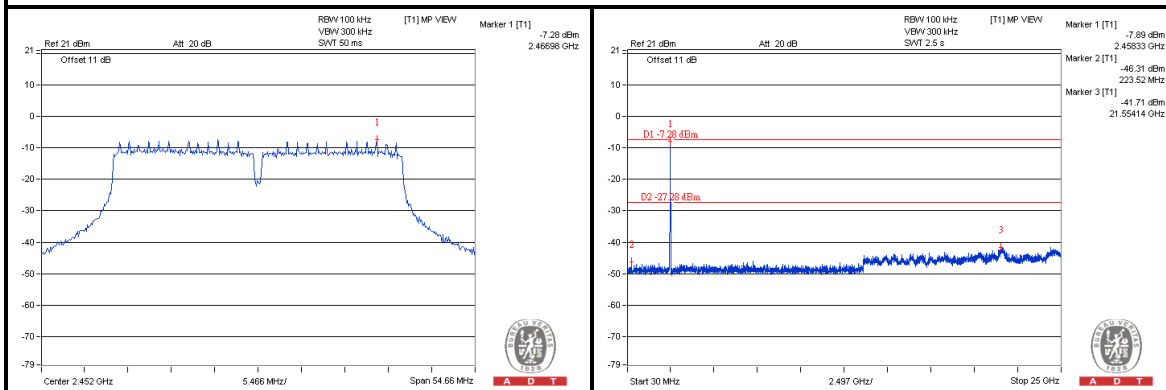
CH 3



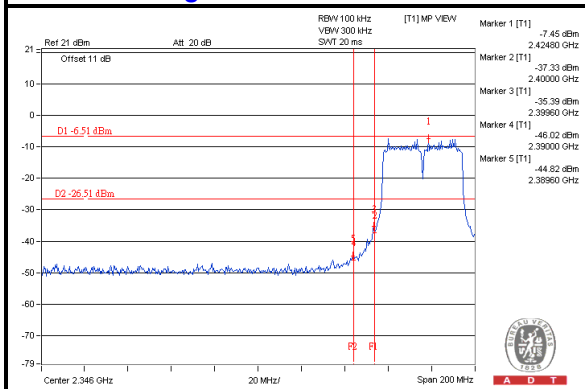
CH 6



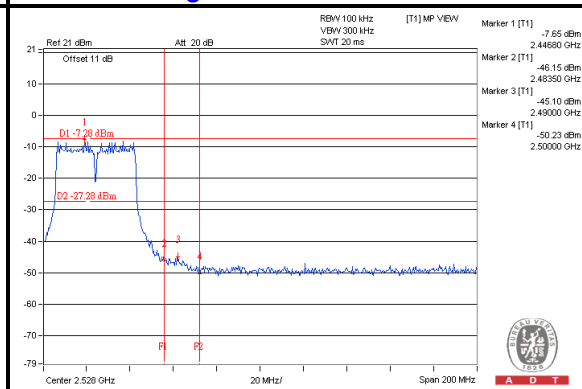
CH 9



CH 3 Band edge



CH 9 Band edge



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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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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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 ---