

FCC Test Report

Report No.: RF150825E05

FCC ID: U8G-P1811

Test Model: MAX 700

Series Model: Pismo 811

Received Date: Aug. 25, 2015

Test Date: Sep. 08 to 14, 2015

Issued Date: Sep. 25, 2015

Applicant: Pismo Labs Technology Limited

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

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A D T

Release Control Record

Issue No.	Description	Date Issued
RF150825E05	Original release.	Sep. 25, 2015



1 Certificate of Conformity

Product: Pepwave / Peplink / Pismo Wireless Product

Brand: Pepwave / Peplink / Pismo

Test Model: MAX 700

Series Model: Pismo 811

Sample Status: ENGINEERING SAMPLE

Applicant: Pismo Labs Technology Limited

Test Date: Sep. 08 to 14, 2015

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013

The above equipment 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 : Phoenix Huang, **Date:** Sep. 25, 2015
Phoenix Huang / Specialist

Approved by : May Chen, **Date:** Sep. 25, 2015
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -5.33dB at 0.47422MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2390.00MHz, 2483.50MHz.
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 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 RP-SMA not a standard connector.

NOTE: 1. The EUT was operating in 2.4 ~ 2.4835GHz, 5.15~5.25GHz and 5.725~5.85GHz frequencies band. This report was recorded the RF parameters including 2.4 ~ 2.4835GHz. For the 5.15~5.25GHz and 5.725~5.85GHz 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:

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.65 dB
	6GHz ~ 18GHz	3.88 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Pepwave / Peplink / Pismo Wireless Product
Brand	Pepwave / Peplink / Pismo
Test Model	MAX 700
Series Model	Pismo 811
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter or 12-48Vdc from Terminal block
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	2.4GHz: 2.412GHz ~ 2.462GHz 5GHz: 5.18GHz ~ 5.24GHz, 5.745GHz ~ 5.825GHz
Number of Channel	2.4GHz: 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 5GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	2.4GHz: 802.11b: 797.576mW 802.11g: 838.62mW 802.11n (HT20): 889.322mW 802.11n (HT40): 151.881mW 5GHz: 802.11a: 176.644mW 802.11ac (VHT20): 172.549mW 802.11ac (VHT40): 235.977mW 802.11ac (VHT80): 43.321mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The EUT could be applied with four Cellular USB Dongles, therefore emission tests are added for simultaneously transmit between WLAN and Cellular USB Dongles. The emission tests have been performed at the worst channel of all WLAN and Cellular USB Dongles, the emission of the simultaneous operation (WLAN & Cellular USB Dongles) has been evaluated and no non-compliance found. < Cellular USB Dongle only for test, not for sale >
2. The EUT has different model names, which are identical to each other in all aspects except for the following table:

Product Name	Brand Name	Model No.	Description
Pepwave / Peplink / Pismo Wireless Product	Pepwave / Peplink / Pismo	MAX 700	For marketing requirement
		Pismo 811	

From the above models, model: **MAX 700** was selected as representative model for the test and its data was recorded in this report.

3. The EUT must be supplied with a power adapter and as the following table:

Brand	Model No.	Spec.
Ten Pao	S024WM1200200	AC input: 100-240V, 600mA, 50/60Hz DC output: 12V, 2000mA DC output cable: 1.5m, unshielded with one core

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

For WIFI 1							
No.	Transmitter Circuit	Brand	Model	Ant. Gain (dBi) <Excluding cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connector Type
1	Chain (0)	SmartAnt	SAA06-220690	3	2.4~2.4835	Dipole	RP-SMA
				4~5.5	5.15~5.25		
				5.5~6	5.725~5.85		
2	Chain (1)	SmartAnt	SAA06-220690	3	2.4~2.4835	Dipole	RP-SMA
				4~5.5	5.15~5.25		
				5.5~6	5.725~5.85		
For WIFI 2							
No.	Transmitter Circuit	Brand	Model	Ant. Gain (dBi) <Excluding cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connector Type
3	Chain (0)	SmartAnt	SAA06-220690	3	2.4~2.4835	Dipole	RP-SMA
				4~5.5	5.15~5.25		
				5.5~6	5.725~5.85		
4	Chain (1)	SmartAnt	SAA06-220690	3	2.4~2.4835	Dipole	RP-SMA
				4~5.5	5.15~5.25		
				5.5~6	5.725~5.85		

5. The EUT incorporates a MIMO function.

For 2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20) & 802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
For 5GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20) & 802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS0~8 Nss= 1	2TX	2RX
	MCS0~8 Nss= 2	2TX	2RX
802.11ac (VHT40) & 802.11ac (VHT80)	MCS0~9 Nss= 1	2TX	2RX
	MCS0~9 Nss= 2	2TX	2RX

Note: 1. 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)

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

Pre-test Mode	Power
Mode A	Power from Terminal Block (48Vdc)
Mode B	Power from Terminal Block (12Vdc)
Mode C	Power from Adapter

Note: The worst radiated emissions were found in **Mode C**. Therefore only the test data of the modes were recorded in this report.

7. The above EUT information is 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

11 channels are provided for 802.11b, 802.11g and 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
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
1	√	√	√	√	Power from Adapter
2	-	-	√	-	Power from Terminal Block (48Vdc)

Where **RE \geq 1G**: Radiated Emission above 1GHz & Bandedge Measurement
RE $<$ 1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

NOTE:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
- "-" means no effect.

Radiated Emission Test (Above 1GHz):

- 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 (Below 1GHz):

- 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

Power Line Conducted Emission Test:

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

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

Antenna Port Conducted Measurement:

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

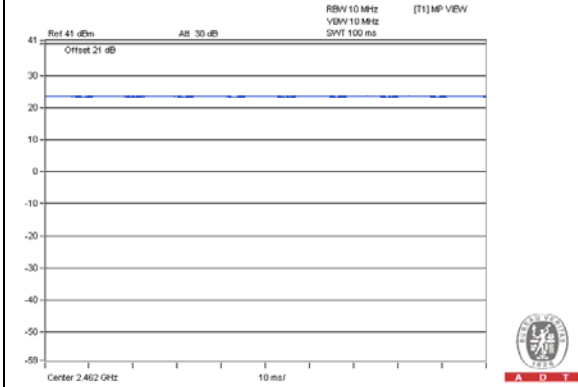
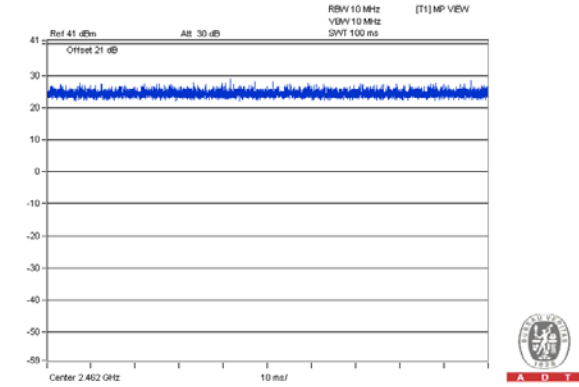
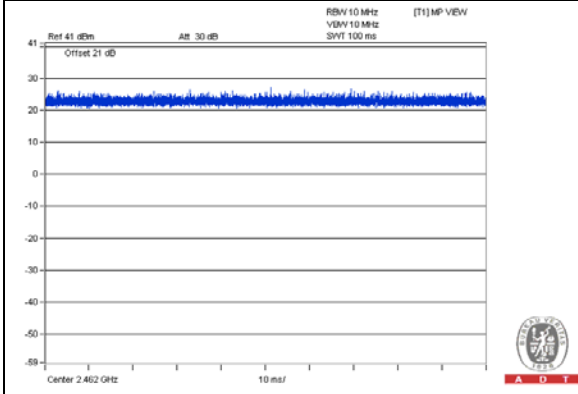
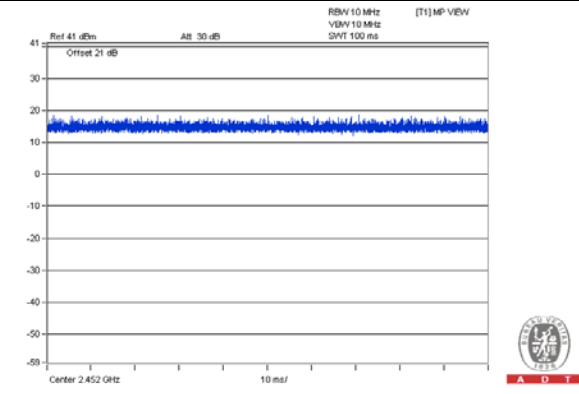
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	24deg. C, 70%RH	120Vac, 60Hz	Weiwei Lo
RE<1G	24deg. C, 65%RH	120Vac, 60Hz	Weiwei Lo
PLC	25deg. C, 60%RH	120Vac, 60Hz	Timmy Hu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.

802.11b**802.11g****802.11n (HT20)****802.11n (HT40)**

3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook Computer	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	Notebook Computer	DELL	E6420	482T3R1	FCC DoC	Provided by Lab
C.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
D.	3G Dongle	at&t	QUALCOMM 3G	NA	N7NMC8781U	Provided by Lab
E.	3G Dongle	at&t	QUALCOMM 3G	NA	N7NMC8781U	Provided by Lab
F.	3G Dongle	at&t	QUALCOMM 3G	NA	N7NMC8781U	Provided by Lab
G.	3G Dongle	at&t	QUALCOMM 3G	NA	N7NMC8781U	Provided by Lab
H.	DC Power Supply	Topward	6603D	795551	NA	Provided by Lab

Note:

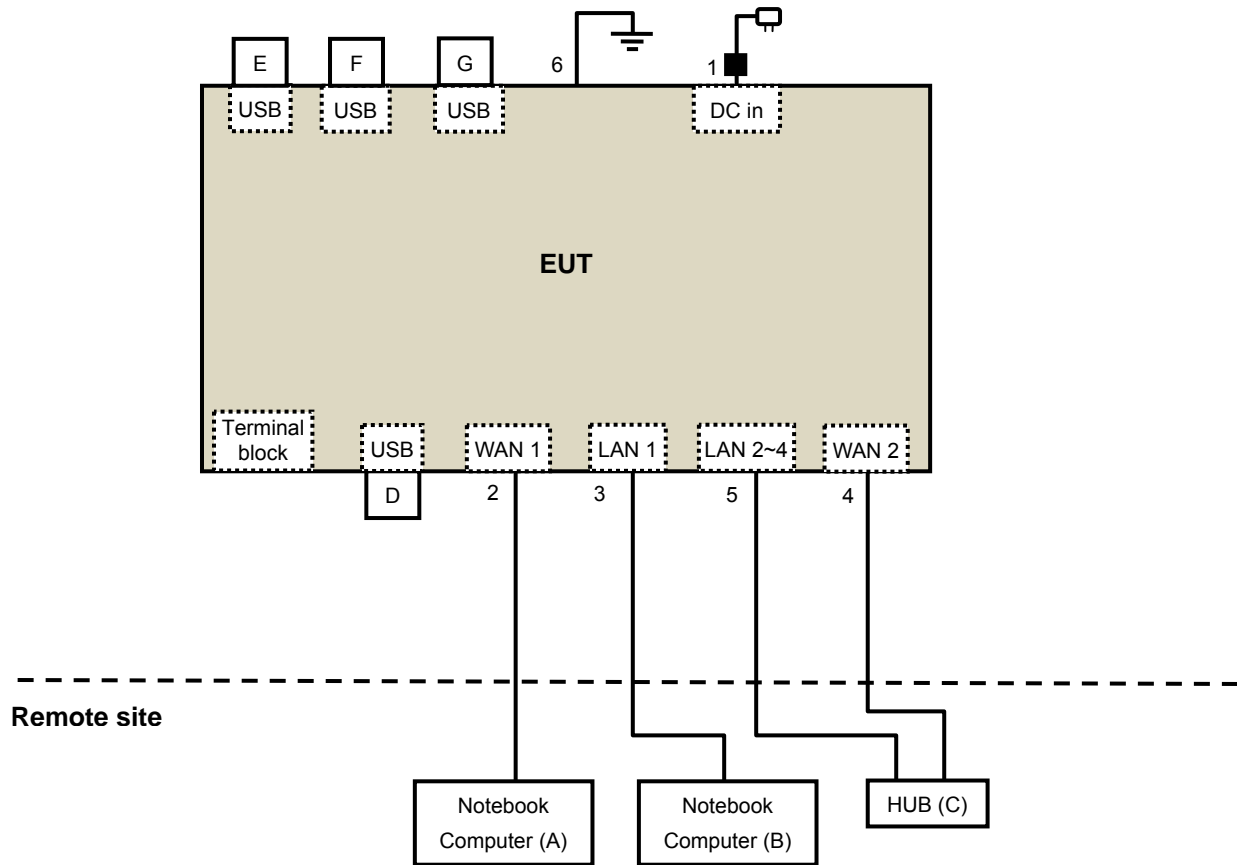
1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC	1	1.5	No	1	Supplied by Client
2.	RJ-45	1	10	No	0	Provided by Lab
3.	RJ-45	1	10	No	0	Provided by Lab
4.	RJ-45	1	10	No	0	Provided by Lab
5.	RJ-45	3	10	No	0	Provided by Lab
6.	GND	1	1.8	No	0	Provided by Lab
7.	DC	1	1.5	No	0	Provided by Lab

Note: The core(s) is(are) originally attached to the cable(s).

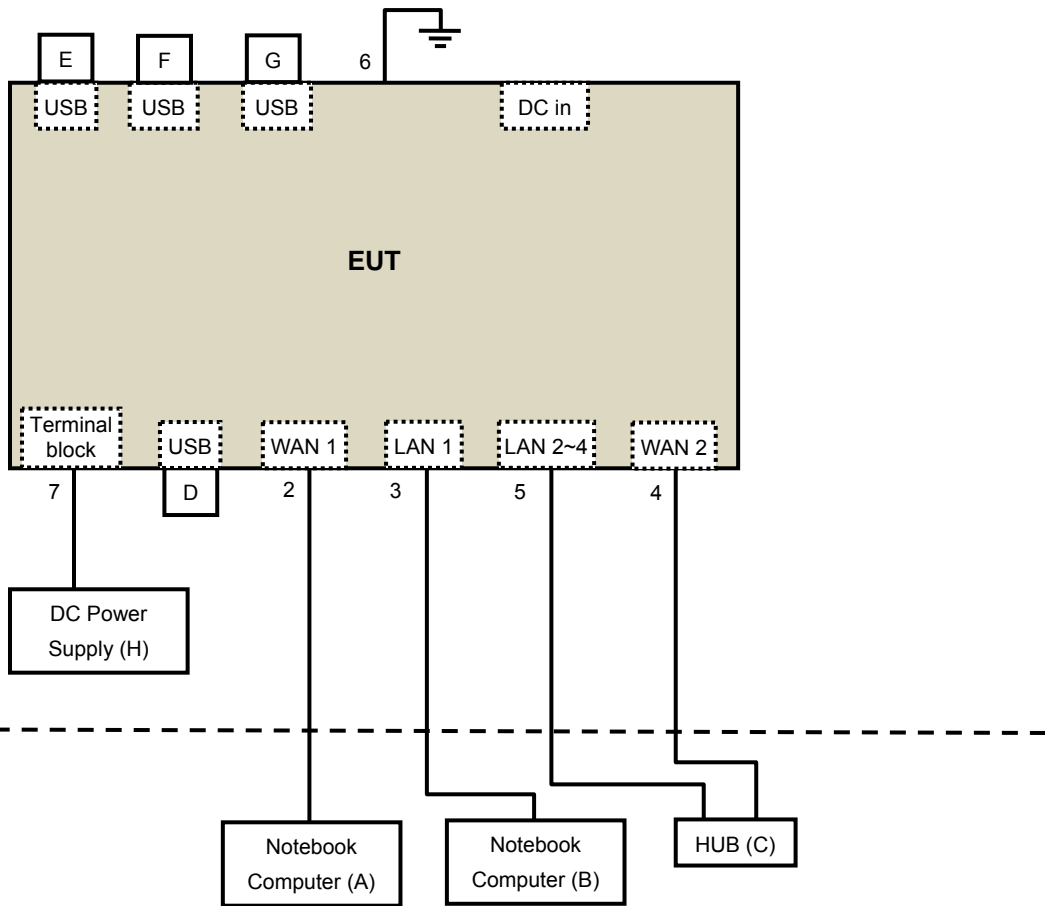
3.4.1 Configuration of System under Test

For Radiated Emission, Conducted Emission test: (Mode 1)



Note: Support units D~G are 3G Dongles.

For Conducted Emission test: (Mode 2)



Note: Support units D~G are 3G Dongles.

3.5 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 v03r03

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 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 30dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210105	July 24, 2015	July 23, 2016
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	8D-FB	CHGCAB-001 -1 CHGCAB-001 -2	Oct. 04, 2014	Oct. 03, 2015
	RF-141	CHGCAB-004	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	000032009111 0	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/ 4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Spectrum Analyzer R&S	FSP 40	100060	May 08, 2015	May 07, 2016
Power meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016

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 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: Sep. 10 to 14, 2015

4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) 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:

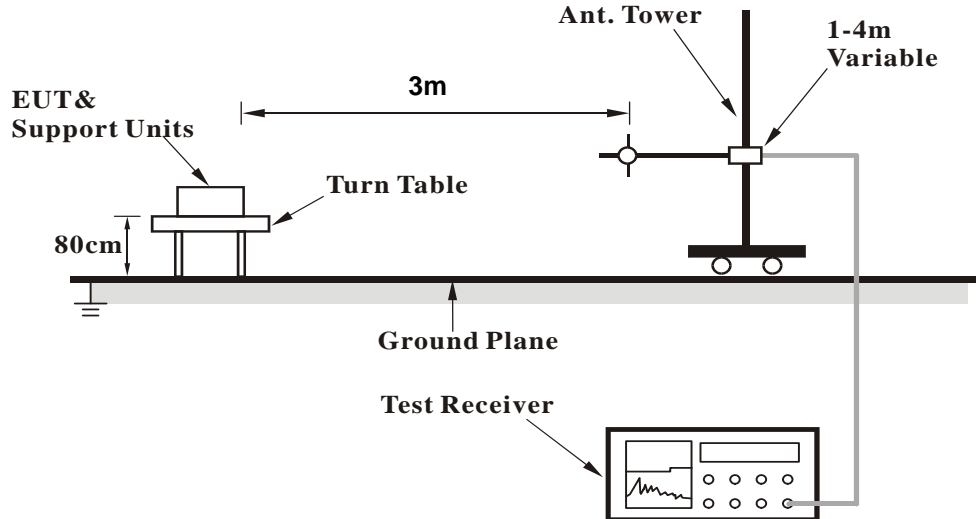
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

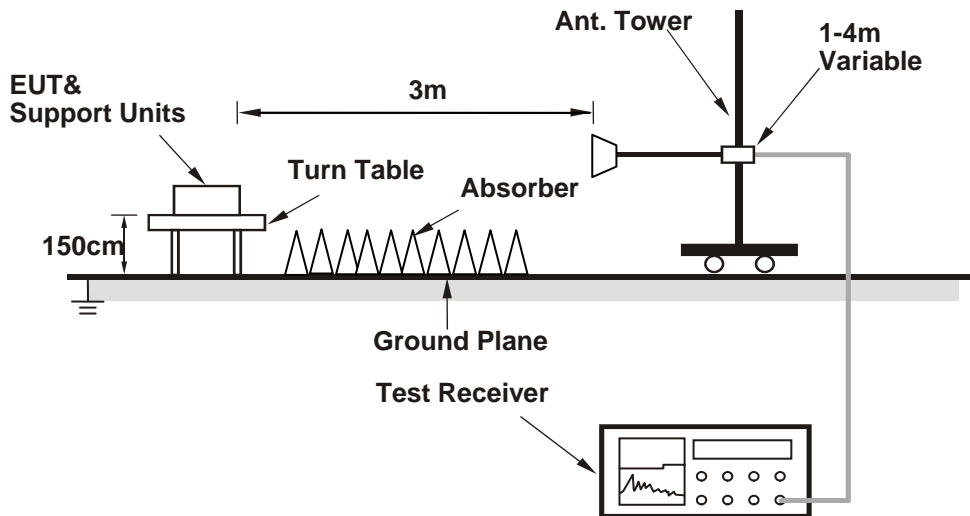
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

1. Placed the EUT on the testing table.
2. Connect the EUT with the support unit A (Notebook Computer) which is placed in remote site.
3. The communication partner run test program "artgui.exe V2.3" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	47.1 PK	74.0	-26.9	2.02 H	357	47.26	-0.16
2	2390.00	35.4 AV	54.0	-18.6	2.02 H	357	35.56	-0.16
3	*2412.00	97.6 PK			2.02 H	357	97.70	-0.10
4	*2412.00	94.7 AV			2.02 H	357	94.80	-0.10
5	4824.00	48.7 PK	74.0	-25.3	2.57 H	342	39.94	8.76
6	4824.00	45.1 AV	54.0	-8.9	2.57 H	342	36.34	8.76
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.2 PK	74.0	-14.8	2.12 V	177	59.36	-0.16
2	2390.00	53.8 AV	54.0	-0.2	2.12 V	177	53.96	-0.16
3	*2412.00	111.6 PK			2.12 V	177	111.70	-0.10
4	*2412.00	109.2 AV			2.12 V	177	109.30	-0.10
5	4824.00	52.9 PK	74.0	-21.1	1.69 V	168	44.14	8.76
6	4824.00	47.6 AV	54.0	-6.4	1.69 V	168	38.84	8.76

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	44.2 PK	74.0	-29.8	2.05 H	360	44.36	-0.16
2	2390.00	30.5 AV	54.0	-23.5	2.05 H	360	30.66	-0.16
3	*2437.00	105.8 PK			2.01 H	354	105.83	-0.03
4	*2437.00	103.3 AV			2.01 H	354	103.33	-0.03
5	2483.50	40.3 PK	74.0	-33.7	1.98 H	358	40.19	0.11
6	2483.50	30.0 AV	54.0	-24.0	1.98 H	358	29.89	0.11
7	4874.00	52.3 PK	74.0	-21.7	2.01 H	360	43.39	8.91
8	4874.00	50.5 AV	54.0	-3.5	2.01 H	360	41.59	8.91
9	7311.00	54.6 PK	74.0	-19.4	1.72 H	166	38.15	16.45
10	7311.00	43.3 AV	54.0	-10.7	1.72 H	166	26.85	16.45

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.6 PK	74.0	-17.4	1.77 V	4	56.76	-0.16
2	2390.00	48.2 AV	54.0	-5.8	1.77 V	4	48.36	-0.16
3	*2437.00	119.6 PK			1.77 V	4	119.63	-0.03
4	*2437.00	117.4 AV			1.77 V	4	117.43	-0.03
5	2483.50	50.6 PK	74.0	-23.4	1.77 V	4	50.49	0.11
6	2483.50	39.4 AV	54.0	-14.6	1.77 V	4	39.29	0.11
7	4874.00	56.9 PK	74.0	-17.1	1.79 V	118	47.99	8.91
8	4874.00	53.6 AV	54.0	-0.4	1.79 V	118	44.69	8.91
9	7311.00	57.8 PK	74.0	-16.2	1.62 V	342	41.35	16.45
10	7311.00	47.3 AV	54.0	-6.7	1.62 V	342	30.85	16.45

REMARKS:

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

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	98.0 PK			1.96 H	360	97.95	0.05
2	*2462.00	94.5 AV			1.96 H	360	94.45	0.05
3	2483.50	46.4 PK	74.0	-27.6	2.03 H	357	46.29	0.11
4	2483.50	35.1 AV	54.0	-18.9	2.03 H	357	34.99	0.11
5	4924.00	48.9 PK	74.0	-25.1	2.53 H	333	39.81	9.09
6	4924.00	45.6 AV	54.0	-8.4	2.53 H	333	36.51	9.09
7	7386.00	54.5 PK	74.0	-19.5	1.72 H	162	37.90	16.60
8	7386.00	42.9 AV	54.0	-11.1	1.72 H	162	26.30	16.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.7 PK			1.91 V	174	111.65	0.05
2	*2462.00	108.9 AV			1.91 V	174	108.85	0.05
3	2483.50	58.9 PK	74.0	-15.1	1.91 V	174	58.79	0.11
4	2483.50	53.7 AV	54.0	-0.3	1.91 V	174	53.59	0.11
5	4924.00	52.7 PK	74.0	-21.3	1.69 V	177	43.61	9.09
6	4924.00	47.2 AV	54.0	-6.8	1.69 V	177	38.11	9.09
7	7386.00	57.5 PK	74.0	-16.5	1.58 V	357	40.90	16.60
8	7386.00	47.3 AV	54.0	-6.7	1.58 V	357	30.70	16.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	61.1 PK	74.0	-12.9	2.02 H	352	61.26	-0.16
2	2390.00	36.2 AV	54.0	-17.8	2.02 H	352	36.36	-0.16
3	*2412.00	98.9 PK			1.99 H	353	99.00	-0.10
4	*2412.00	88.6 AV			1.99 H	353	88.70	-0.10
5	4824.00	47.7 PK	74.0	-26.3	1.81 H	141	38.94	8.76
6	4824.00	35.9 AV	54.0	-18.1	1.81 H	141	27.14	8.76

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	1.87 V	178	73.16	-0.16
2	2390.00	53.4 AV	54.0	-0.6	1.87 V	178	53.56	-0.16
3	*2412.00	111.8 PK			1.93 V	337	111.90	-0.10
4	*2412.00	101.7 AV			1.93 V	337	101.80	-0.10
5	4824.00	49.8 PK	74.0	-24.2	1.84 V	175	41.04	8.76
6	4824.00	38.7 AV	54.0	-15.3	1.84 V	175	29.94	8.76

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	58.7 PK	74.0	-15.3	1.93 H	360	58.86	-0.16
2	2390.00	31.0 AV	54.0	-23.0	1.93 H	360	31.16	-0.16
3	*2437.00	110.7 PK			1.91 H	360	110.73	-0.03
4	*2437.00	99.8 AV			1.91 H	360	99.83	-0.03
5	2483.50	48.3 PK	74.0	-25.7	2.01 H	360	48.19	0.11
6	2483.50	30.0 AV	54.0	-24.0	2.01 H	360	29.89	0.11
7	4874.00	48.2 PK	74.0	-25.8	1.79 H	164	39.29	8.91
8	4874.00	36.5 AV	54.0	-17.5	1.79 H	164	27.59	8.91
9	7311.00	55.7 PK	74.0	-18.3	1.56 H	144	39.25	16.45
10	7311.00	41.5 AV	54.0	-12.5	1.56 H	144	25.05	16.45

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.0 PK	74.0	-4.0	1.92 V	178	70.16	-0.16
2	2390.00	49.4 AV	54.0	-4.6	1.92 V	178	49.56	-0.16
3	*2437.00	123.1 PK			1.91 V	333	123.13	-0.03
4	*2437.00	112.7 AV			1.91 V	333	112.73	-0.03
5	2483.50	60.0 PK	74.0	-14.0	1.92 V	178	59.89	0.11
6	2483.50	41.0 AV	54.0	-13.0	1.92 V	178	40.89	0.11
7	4874.00	50.3 PK	74.0	-23.7	1.88 V	165	41.39	8.91
8	4874.00	39.1 AV	54.0	-14.9	1.88 V	165	30.19	8.91
9	7311.00	54.9 PK	74.0	-19.1	1.77 V	211	38.45	16.45
10	7311.00	42.3 AV	54.0	-11.7	1.77 V	211	25.85	16.45

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.7 PK			2.00 H	360	102.65	0.05
2	*2462.00	91.9 AV			2.00 H	360	91.85	0.05
3	2483.50	62.3 PK	74.0	-11.7	1.94 H	353	62.19	0.11
4	2483.50	35.4 AV	54.0	-18.6	1.94 H	353	35.29	0.11
5	4924.00	48.0 PK	74.0	-26.0	1.75 H	156	38.91	9.09
6	4924.00	36.3 AV	54.0	-17.7	1.75 H	156	27.21	9.09
7	7386.00	56.2 PK	74.0	-17.8	1.55 H	149	39.60	16.60
8	7386.00	42.0 AV	54.0	-12.0	1.55 H	149	25.40	16.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	116.1 PK			1.84 V	205	116.05	0.05
2	*2462.00	105.5 AV			1.84 V	205	105.45	0.05
3	2483.50	73.8 PK	74.0	-0.2	2.00 V	172	73.69	0.11
4	2483.50	52.1 AV	54.0	-1.9	2.00 V	172	51.99	0.11
5	4924.00	50.0 PK	74.0	-24.0	1.86 V	153	40.91	9.09
6	4924.00	38.7 AV	54.0	-15.3	1.86 V	153	29.61	9.09
7	7386.00	54.7 PK	74.0	-19.3	1.77 V	213	38.10	16.60
8	7386.00	42.2 AV	54.0	-11.8	1.77 V	213	25.60	16.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	60.9 PK	74.0	-13.1	2.04 H	349	61.06	-0.16
2	2390.00	36.2 AV	54.0	-17.8	2.04 H	349	36.36	-0.16
3	*2412.00	97.3 PK			1.85 H	360	97.40	-0.10
4	*2412.00	86.9 AV			1.85 H	360	87.00	-0.10
5	4824.00	48.2 PK	74.0	-25.8	1.78 H	145	39.44	8.76
6	4824.00	36.4 AV	54.0	-17.6	1.78 H	145	27.64	8.76

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	73.4 PK	74.0	-0.6	1.76 V	3	73.56	-0.16
2	2390.00	52.1 AV	54.0	-1.9	1.76 V	3	52.26	-0.16
3	*2412.00	110.5 PK			1.76 V	3	110.60	-0.10
4	*2412.00	99.6 AV			1.76 V	3	99.70	-0.10
5	4824.00	50.5 PK	74.0	-23.5	1.82 V	189	41.74	8.76
6	4824.00	39.1 AV	54.0	-14.9	1.82 V	189	30.34	8.76

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	1.98 H	360	59.06	-0.16
2	2390.00	32.0 AV	54.0	-22.0	1.98 H	360	32.16	-0.16
3	*2437.00	110.1 PK			1.89 H	360	110.13	-0.03
4	*2437.00	99.5 AV			1.89 H	360	99.53	-0.03
5	2483.50	48.2 PK	74.0	-25.8	1.99 H	360	48.09	0.11
6	2483.50	30.1 AV	54.0	-23.9	1.99 H	360	29.99	0.11
7	4874.00	47.7 PK	74.0	-26.3	1.78 H	161	38.79	8.91
8	4874.00	36.1 AV	54.0	-17.9	1.78 H	161	27.19	8.91
9	7311.00	55.4 PK	74.0	-18.6	1.60 H	138	38.95	16.45
10	7311.00	41.1 AV	54.0	-12.9	1.60 H	138	24.65	16.45

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.5 PK	74.0	-2.5	1.82 V	0	71.66	-0.16
2	2390.00	50.6 AV	54.0	-3.4	1.82 V	0	50.76	-0.16
3	*2437.00	122.9 PK			1.82 V	0	122.93	-0.03
4	*2437.00	112.1 AV			1.82 V	0	112.13	-0.03
5	2483.50	57.9 PK	74.0	-16.1	1.82 V	0	57.79	0.11
6	2483.50	40.9 AV	54.0	-13.1	1.82 V	0	40.79	0.11
7	4874.00	50.5 PK	74.0	-23.5	1.83 V	153	41.59	8.91
8	4874.00	39.2 AV	54.0	-14.8	1.83 V	153	30.29	8.91
9	7311.00	54.7 PK	74.0	-19.3	1.76 V	201	38.25	16.45
10	7311.00	42.1 AV	54.0	-11.9	1.76 V	201	25.65	16.45

REMARKS:

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

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	101.8 PK			1.86 H	360	101.75	0.05
2	*2462.00	90.1 AV			1.86 H	360	90.05	0.05
3	2483.50	48.2 PK	74.0	-25.8	2.02 H	360	48.09	0.11
4	2483.50	30.0 AV	54.0	-24.0	2.02 H	360	29.89	0.11
5	4924.00	47.8 PK	74.0	-26.2	1.80 H	148	38.71	9.09
6	4924.00	35.9 AV	54.0	-18.1	1.80 H	148	26.81	9.09
7	7386.00	56.3 PK	74.0	-17.7	1.55 H	142	39.70	16.60
8	7386.00	42.1 AV	54.0	-11.9	1.55 H	142	25.50	16.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	116.6 PK			2.04 V	337	116.55	0.05
2	*2462.00	105.4 AV			2.04 V	337	105.35	0.05
3	2483.50	73.3 PK	74.0	-0.7	2.04 V	337	73.19	0.11
4	2483.50	52.3 AV	54.0	-1.7	2.04 V	337	52.19	0.11
5	4924.00	49.7 PK	74.0	-24.3	1.81 V	158	40.61	9.09
6	4924.00	38.3 AV	54.0	-15.7	1.81 V	158	29.21	9.09
7	7386.00	54.9 PK	74.0	-19.1	1.73 V	217	38.30	16.60
8	7386.00	42.7 AV	54.0	-11.3	1.73 V	217	26.10	16.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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 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	57.9 PK	74.0	-16.1	1.52 H	111	58.06	-0.16
2	2390.00	37.6 AV	54.0	-16.4	1.52 H	111	37.76	-0.16
3	*2422.00	98.9 PK			1.92 H	360	98.98	-0.08
4	*2422.00	87.3 AV			1.92 H	360	87.38	-0.08
5	4844.00	47.6 PK	74.0	-26.4	1.75 H	177	38.78	8.82
6	4844.00	36.1 AV	54.0	-17.9	1.75 H	177	27.28	8.82
7	7266.00	55.4 PK	74.0	-18.6	1.58 H	129	38.79	16.61
8	7266.00	40.8 AV	54.0	-13.2	1.58 H	129	24.19	16.61

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	68.8 PK	74.0	-5.2	2.08 V	334	68.96	-0.16
2	2390.00	53.7 AV	54.0	-0.3	2.08 V	334	53.86	-0.16
3	*2422.00	110.7 PK			2.08 V	334	110.78	-0.08
4	*2422.00	99.7 AV			2.08 V	334	99.78	-0.08
5	4844.00	48.7 PK	74.0	-25.3	1.75 V	155	39.88	8.82
6	4844.00	37.6 AV	54.0	-16.4	1.75 V	155	28.78	8.82
7	7266.00	55.1 PK	74.0	-18.9	1.76 V	238	38.49	16.61
8	7266.00	43.2 AV	54.0	-10.8	1.76 V	238	26.59	16.61

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	62.4 PK	74.0	-11.6	1.91 H	360	62.56	-0.16
2	2390.00	37.7 AV	54.0	-16.3	1.91 H	360	37.86	-0.16
3	*2437.00	101.7 PK			1.85 H	360	101.73	-0.03
4	*2437.00	89.9 AV			1.85 H	360	89.93	-0.03
5	2483.50	54.0 PK	74.0	-20.0	1.81 H	360	53.89	0.11
6	2483.50	30.0 AV	54.0	-24.0	1.81 H	360	29.89	0.11
7	4874.00	48.3 PK	74.0	-25.7	1.78 H	176	39.39	8.91
8	4874.00	36.6 AV	54.0	-17.4	1.78 H	176	27.69	8.91
9	7311.00	55.5 PK	74.0	-18.5	1.60 H	131	39.05	16.45
10	7311.00	41.0 AV	54.0	-13.0	1.60 H	131	24.55	16.45

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.3 PK	74.0	-0.7	1.91 V	337	73.46	-0.16
2	2390.00	53.8 AV	54.0	-0.2	1.91 V	337	53.96	-0.16
3	*2437.00	113.6 PK			1.91 V	337	113.63	-0.03
4	*2437.00	102.3 AV			1.91 V	337	102.33	-0.03
5	2483.50	62.7 PK	74.0	-11.3	1.91 V	337	62.59	0.11
6	2483.50	44.4 AV	54.0	-9.6	1.91 V	337	44.29	0.11
7	4874.00	49.4 PK	74.0	-24.6	1.76 V	148	40.49	8.91
8	4874.00	38.0 AV	54.0	-16.0	1.76 V	148	29.09	8.91
9	7311.00	55.4 PK	74.0	-18.6	1.76 V	230	38.95	16.45
10	7311.00	42.8 AV	54.0	-11.2	1.76 V	230	26.35	16.45

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	100.0 PK			1.83 H	360	99.98	0.02
2	*2452.00	88.5 AV			1.83 H	360	88.48	0.02
3	2483.50	62.8 PK	74.0	-11.2	1.85 H	360	62.69	0.11
4	2483.50	36.0 AV	54.0	-18.0	1.85 H	360	35.89	0.11
5	4904.00	48.0 PK	74.0	-26.0	1.74 H	176	38.99	9.01
6	4904.00	36.2 AV	54.0	-17.8	1.74 H	176	27.19	9.01
7	7356.00	55.3 PK	74.0	-18.7	1.54 H	126	38.75	16.55
8	7356.00	40.9 AV	54.0	-13.1	1.54 H	126	24.35	16.55

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	111.6 PK			2.05 V	335	111.58	0.02
2	*2452.00	100.6 AV			2.05 V	335	100.58	0.02
3	2483.50	73.7 PK	74.0	-0.3	2.05 V	335	73.59	0.11
4	2483.50	52.1 AV	54.0	-1.9	2.05 V	335	51.99	0.11
5	4904.00	49.1 PK	74.0	-24.9	1.81 V	147	40.09	9.01
6	4904.00	37.9 AV	54.0	-16.1	1.81 V	147	28.89	9.01
7	7356.00	55.3 PK	74.0	-18.7	1.81 V	227	38.75	16.55
8	7356.00	42.7 AV	54.0	-11.3	1.81 V	227	26.15	16.55

REMARKS:

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

Below 1GHz Data

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	240.01	43.4 QP	46.0	-2.6	1.00 H	77	57.84	-14.44
2	300.00	39.7 QP	46.0	-6.3	1.00 H	309	51.73	-12.04
3	374.98	40.8 QP	46.0	-5.2	1.00 H	322	50.75	-9.98
4	624.95	40.4 QP	46.0	-5.6	1.00 H	44	44.13	-3.74
5	680.00	42.1 QP	46.0	-3.9	1.00 H	26	45.13	-3.03
6	749.98	39.7 QP	46.0	-6.3	1.00 H	35	40.92	-1.21

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	37.56	35.1 QP	40.0	-4.9	1.00 V	274	48.83	-13.76
2	240.01	43.3 QP	46.0	-2.7	2.00 V	0	57.70	-14.44
3	333.32	39.7 QP	46.0	-6.3	1.50 V	206	50.76	-11.09
4	374.98	42.2 QP	46.0	-3.8	1.50 V	360	52.17	-9.98
5	624.95	40.4 QP	46.0	-5.6	1.00 V	59	44.14	-3.74
6	749.98	37.4 QP	46.0	-8.6	1.50 V	187	38.64	-1.21

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 01, 2015	Aug. 31, 2016
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
- 3 The VCCI Con C Registration No. is C-3611.
- 4 Tested Date: Sep. 08 to 10, 2015

4.2.3 Test Procedures

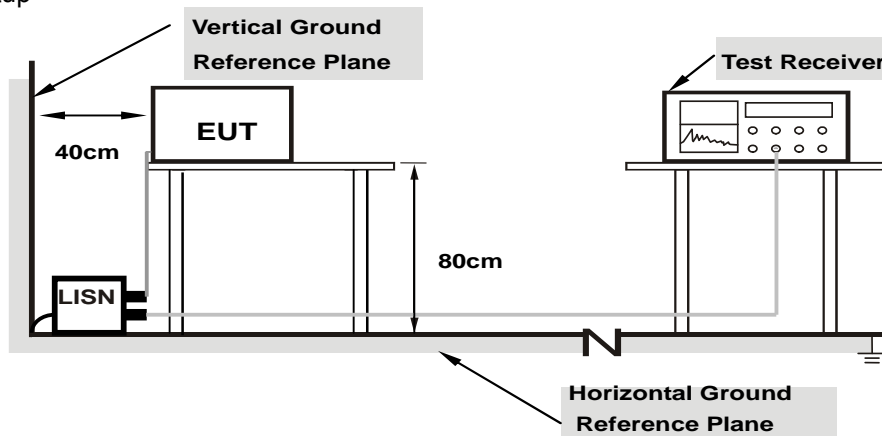
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

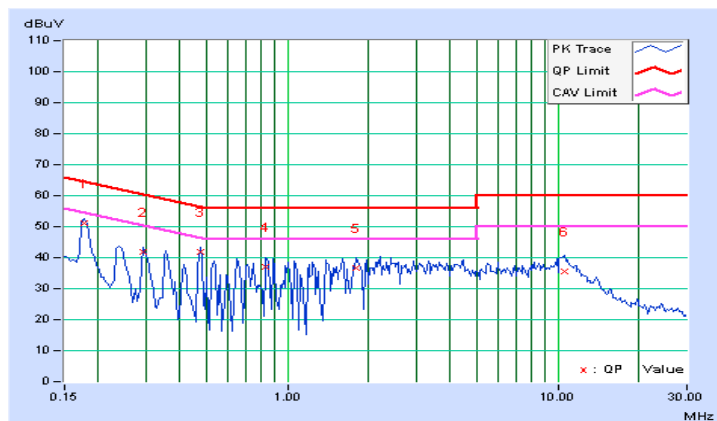
4.2.7 Test Results (Mode 1)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	0.21	50.82	44.75	51.03	44.96	64.61	54.61	-13.58	-9.65
2	0.29453	0.22	41.55	35.44	41.77	35.66	60.40	50.40	-18.63	-14.74
3	0.47422	0.24	41.44	36.68	41.68	36.92	56.44	46.44	-14.76	-9.52
4	0.83359	0.27	36.67	31.08	36.94	31.35	56.00	46.00	-19.06	-14.65
5	1.79297	0.34	36.43	27.69	36.77	28.03	56.00	46.00	-19.23	-17.97
6	10.55078	0.85	34.71	28.13	35.56	28.98	60.00	50.00	-24.44	-21.02

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

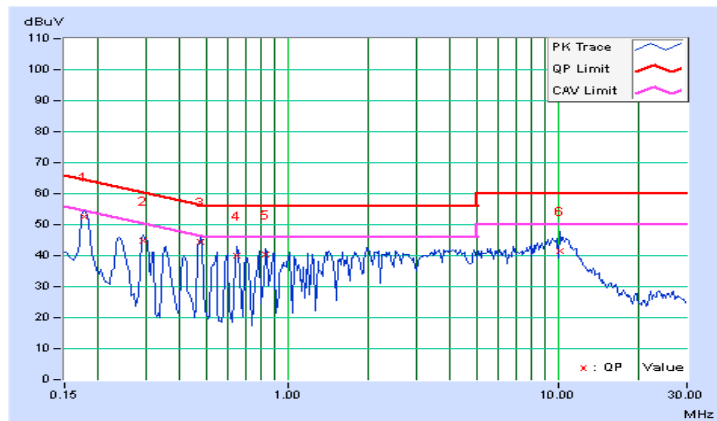


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	0.25	52.51	46.09	52.76	46.34	64.61	54.61	-11.85	-8.27
2	0.29453	0.28	44.67	41.64	44.95	41.92	60.40	50.40	-15.44	-8.47
3	0.47422	0.30	43.99	40.80	44.29	41.10	56.44	46.44	-12.14	-5.33
4	0.65391	0.32	39.80	35.76	40.12	36.08	56.00	46.00	-15.88	-9.92
5	0.82969	0.33	40.04	34.30	40.37	34.63	56.00	46.00	-15.63	-11.37
6	10.17188	0.86	40.46	33.47	41.32	34.33	60.00	50.00	-18.68	-15.67

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



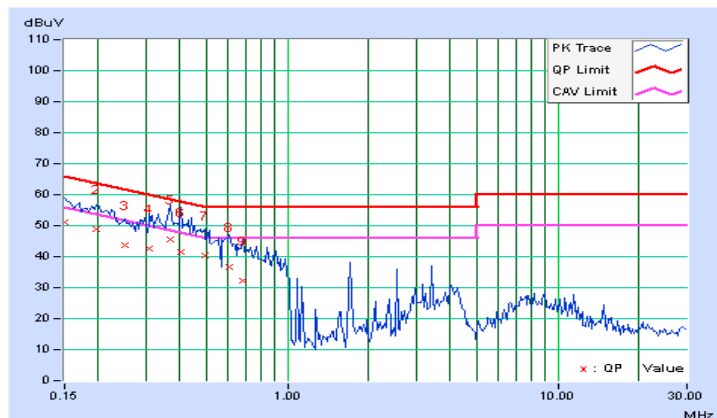
4.2.8 Test Results (Mode 2)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.20	50.97	23.17	51.17	23.37	66.00	56.00	-14.83	-32.63
2	0.19687	0.21	48.57	21.02	48.78	21.23	63.74	53.74	-14.96	-32.51
3	0.25156	0.22	43.34	18.70	43.56	18.92	61.71	51.71	-18.15	-32.79
4	0.31016	0.22	42.54	13.18	42.76	13.40	59.97	49.97	-17.21	-36.57
5	0.36875	0.23	45.21	15.33	45.44	15.56	58.53	48.53	-13.09	-32.97
6	0.40391	0.23	41.42	13.63	41.65	13.86	57.77	47.77	-16.12	-33.91
7	0.49375	0.24	40.30	12.50	40.54	12.74	56.10	46.10	-15.57	-33.37
8	0.61094	0.25	36.50	9.68	36.75	9.93	56.00	46.00	-19.25	-36.07
9	0.68516	0.25	31.90	12.74	32.15	12.99	56.00	46.00	-23.85	-33.01

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

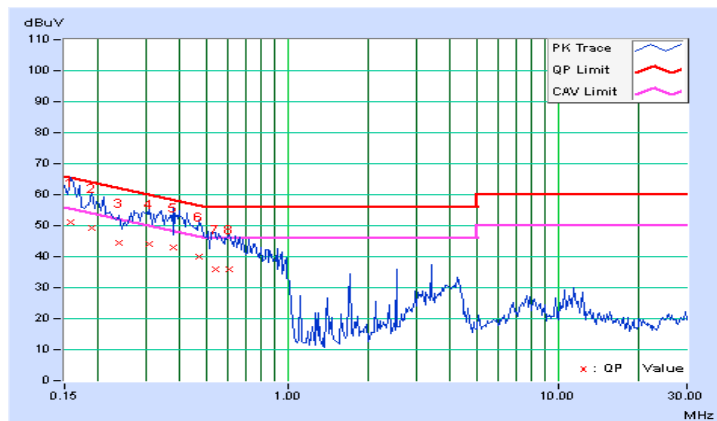


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.23	50.85	20.15	51.08	20.38	65.58	55.58	-14.50	-35.20
2	0.18906	0.26	48.93	21.04	49.19	21.30	64.08	54.08	-14.89	-32.78
3	0.23984	0.28	44.02	16.71	44.30	16.99	62.10	52.10	-17.81	-35.12
4	0.30625	0.29	43.95	14.51	44.24	14.80	60.07	50.07	-15.84	-35.28
5	0.37656	0.30	42.82	13.74	43.12	14.04	58.35	48.35	-15.24	-34.32
6	0.47031	0.30	39.86	12.02	40.16	12.32	56.51	46.51	-16.34	-34.18
7	0.54063	0.31	35.61	8.18	35.92	8.49	56.00	46.00	-20.08	-37.51
8	0.61094	0.31	35.63	9.35	35.94	9.66	56.00	46.00	-20.06	-36.34

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

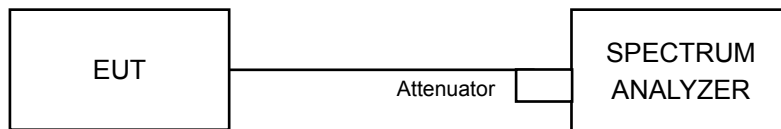


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. 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

4.3.5 Deviation from Test Standard

No deviation.

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	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	11.11	10.15	0.5	Pass
6	2437	10.13	9.12	0.5	Pass
11	2462	9.58	8.60	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.63	16.61	0.5	Pass
6	2437	16.42	15.15	0.5	Pass
11	2462	16.44	15.11	0.5	Pass

802.11n (HT20)

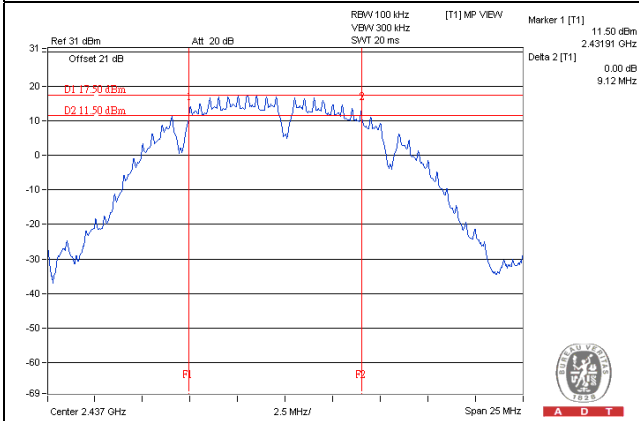
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.83	17.87	0.5	Pass
6	2437	17.70	16.37	0.5	Pass
11	2462	17.66	17.00	0.5	Pass

802.11n (HT40)

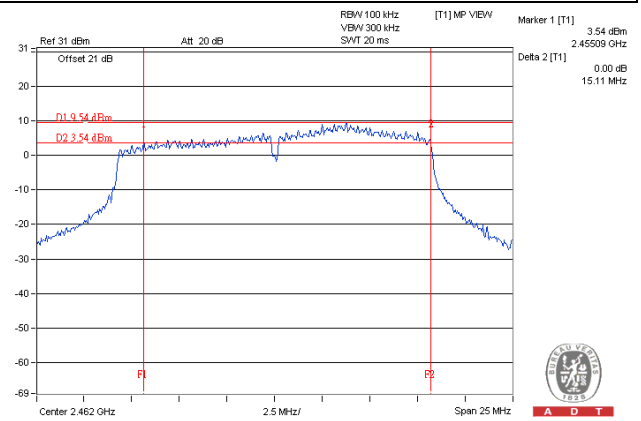
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	36.57	35.78	0.5	Pass
6	2437	36.56	31.92	0.5	Pass
9	2452	36.57	36.58	0.5	Pass

Spectrum Plot of Worst Value

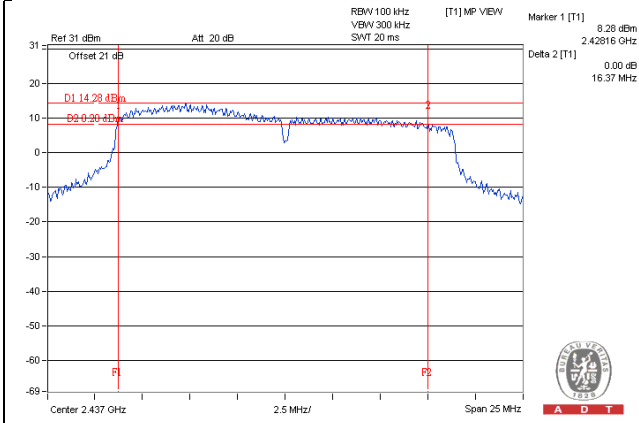
802.11b_Chain 1 / CH



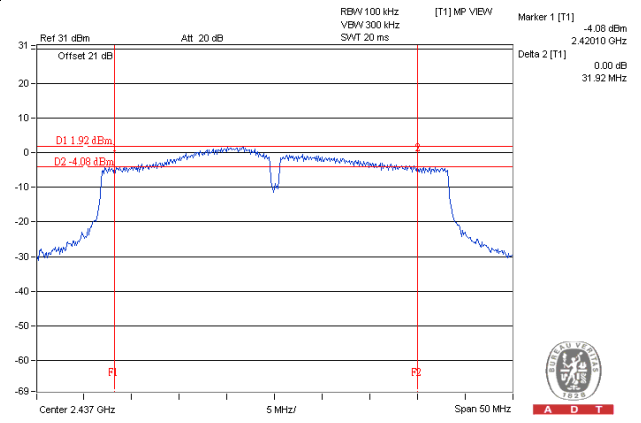
802.11g_Chain 1 / CH11



802.11n (HT20)_Chain 1 / CH6



802.11n (HT40)_Chain 1 / 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 v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

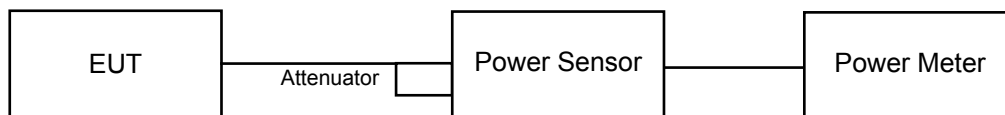
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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 Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.60	20.36	223.458	23.49	30	Pass
6	2437	26.15	25.86	797.576	29.02	30	Pass
11	2462	20.20	20.17	208.705	23.20	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	16.72	15.88	85.715	19.33	30	Pass
6	2437	26.17	26.28	838.62	29.24	30	Pass
11	2462	20.19	20.14	207.748	23.18	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	15.72	15.24	70.745	18.50	30	Pass
6	2437	26.53	26.43	889.322	29.49	30	Pass
11	2462	19.31	19.29	170.228	22.31	30	Pass

802.11n (HT40)

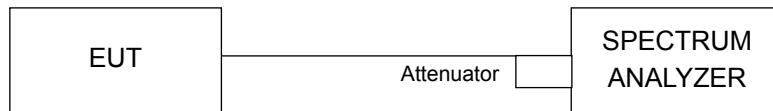
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	14.86	15.77	68.377	18.35	30	Pass
6	2437	19.32	18.22	151.881	21.82	30	Pass
9	2452	19.12	18.26	148.646	21.72	30	Pass

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- Sweep time = auto couple.
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as Item 4.3.6

4.5.7 Test Results

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-6.38	3.01	-3.37	7.99	Pass
	6	2437	-0.85	3.01	2.16	7.99	Pass
	11	2462	-7.31	3.01	-4.30	7.99	Pass
1	1	2412	-8.95	3.01	-5.94	7.99	Pass
	6	2437	-2.55	3.01	0.46	7.99	Pass
	11	2462	-7.73	3.01	-4.72	7.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-12.37	3.01	-9.36	7.99	Pass
	6	2437	-2.04	3.01	0.97	7.99	Pass
	11	2462	-8.36	3.01	-5.35	7.99	Pass
1	1	2412	-13.31	3.01	-10.30	7.99	Pass
	6	2437	-2.64	3.01	0.37	7.99	Pass
	11	2462	-7.87	3.01	-4.86	7.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11n (HT20)

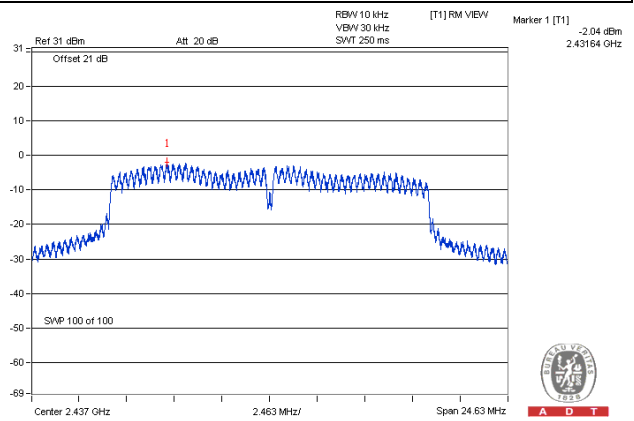
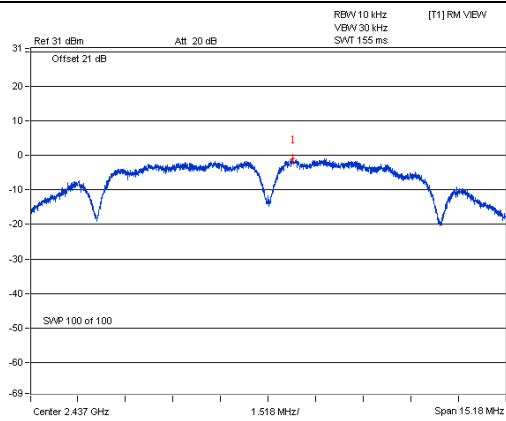
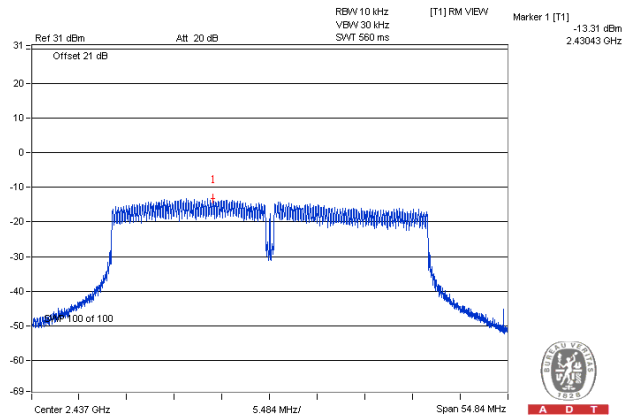
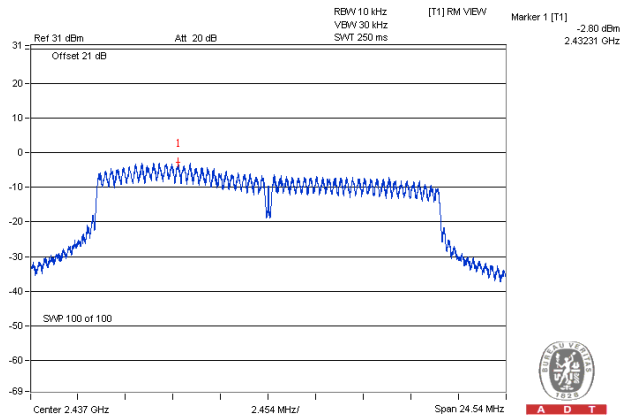
TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-13.73	3.01	-10.72	7.99	Pass
	6	2437	-2.93	3.01	0.08	7.99	Pass
	11	2462	-10.60	3.01	-7.59	7.99	Pass
1	1	2412	-15.67	3.01	-12.66	7.99	Pass
	6	2437	-2.80	3.01	0.21	7.99	Pass
	11	2462	-10.09	3.01	-7.08	7.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-14.46	3.01	-11.45	7.99	Pass
	6	2437	-13.31	3.01	-10.30	7.99	Pass
	9	2452	-14.14	3.01	-11.13	7.99	Pass
1	3	2422	-13.77	3.01	-10.76	7.99	Pass
	6	2437	-13.70	3.01	-10.69	7.99	Pass
	9	2452	-13.42	3.01	-10.41	7.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

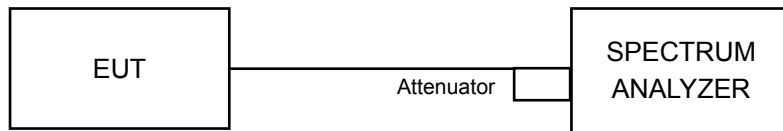
Spectrum Plot of Worst Value**802.11b_Chain 0 / CH6****802.11g_Chain 0 / CH6****802.11n (HT20)_Chain 1 / CH6****802.11n (HT40)_Chain 0 / CH6**

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedures

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW ≥ 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.

4.6.5 Deviation from Test Standard

No deviation.

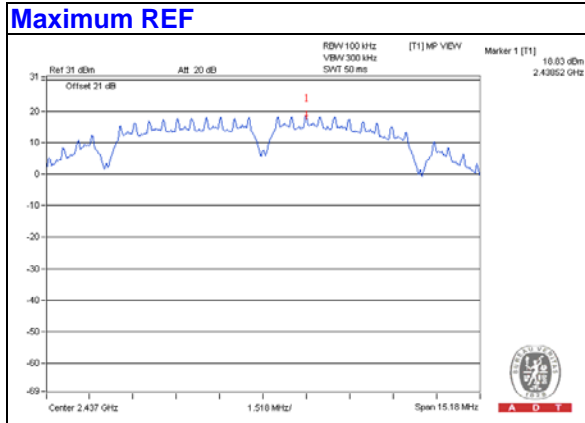
4.6.6 EUT Operating Conditions

Same as Item 4.3.6

4.6.7 Test Results

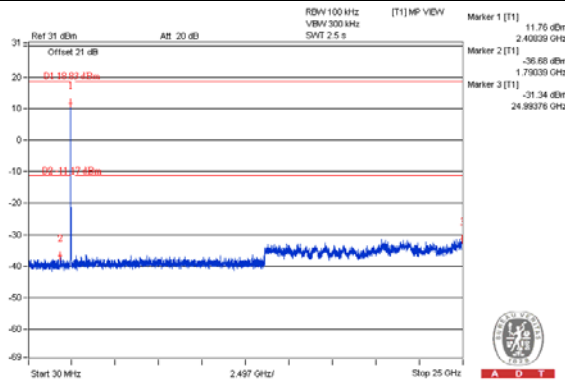
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b

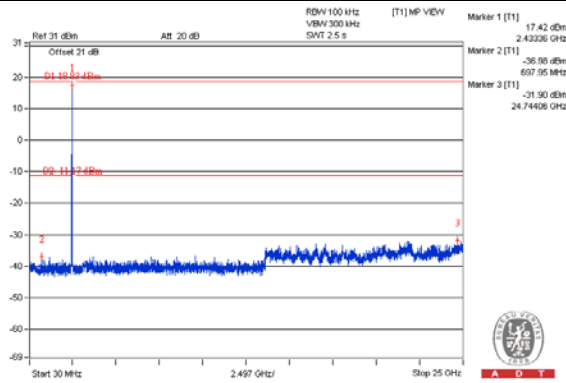


Chain 0

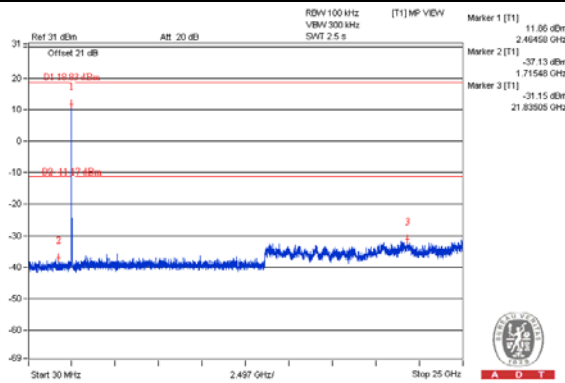
CH 1



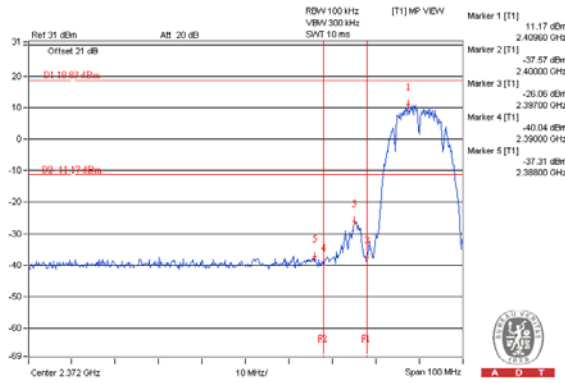
CH 6



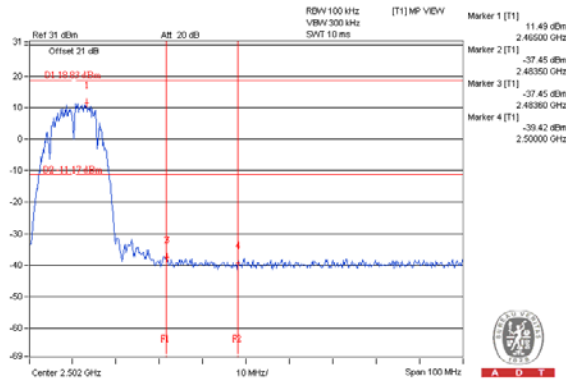
CH 11



CH 1 Band edge

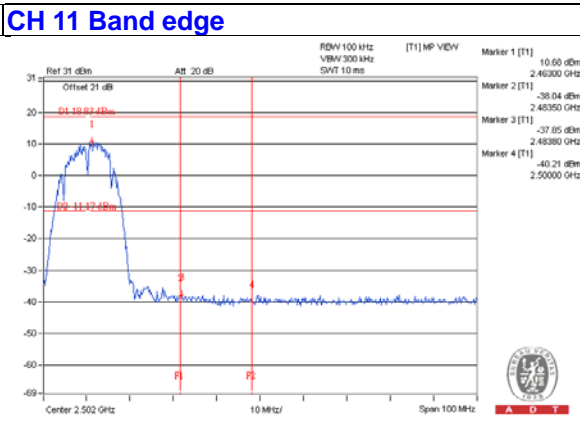
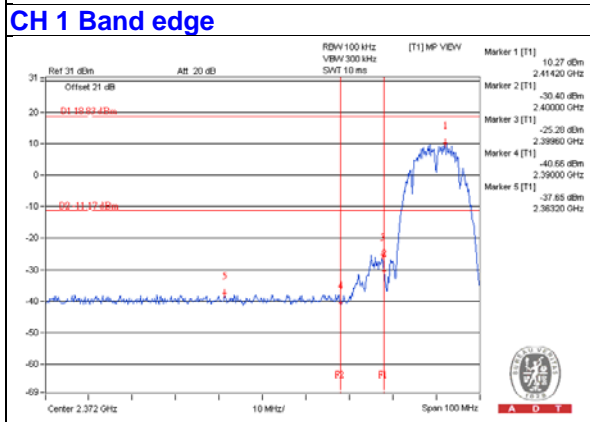
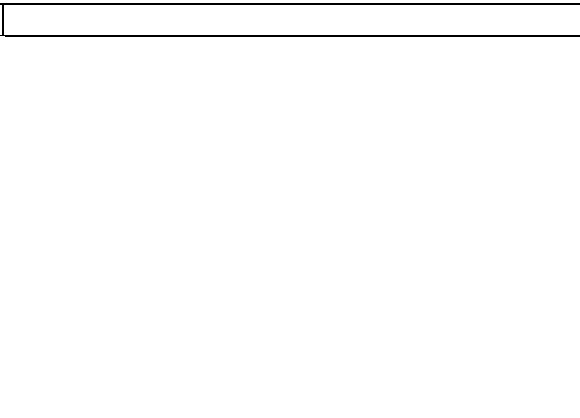
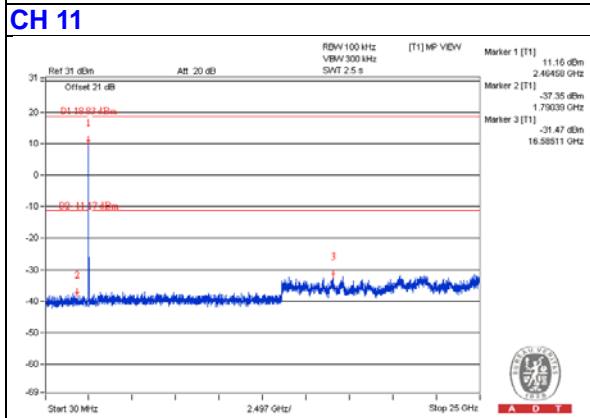
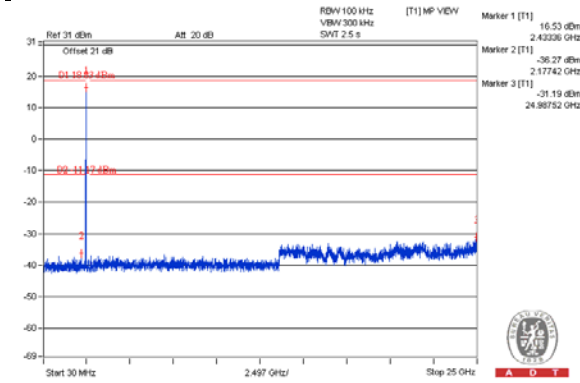
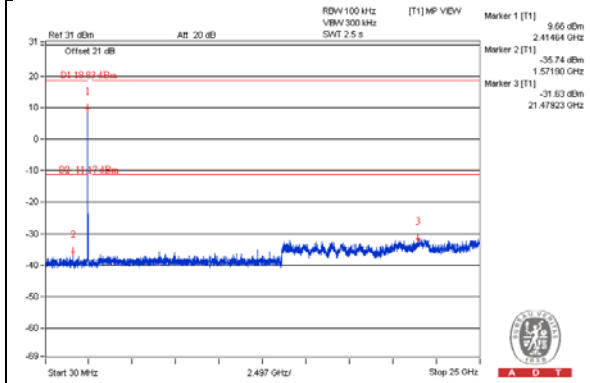


CH 11 Band edge

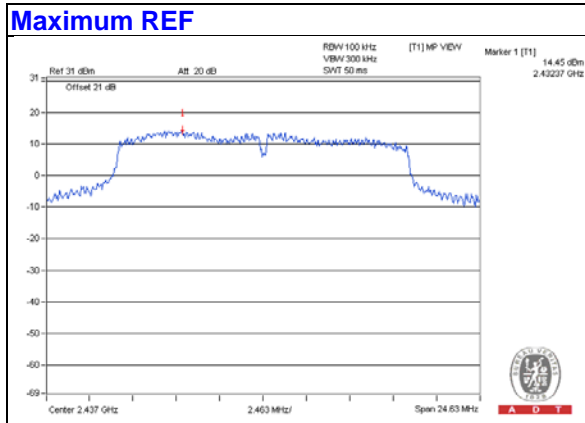


Chain 1

CH 1 **CH 6**



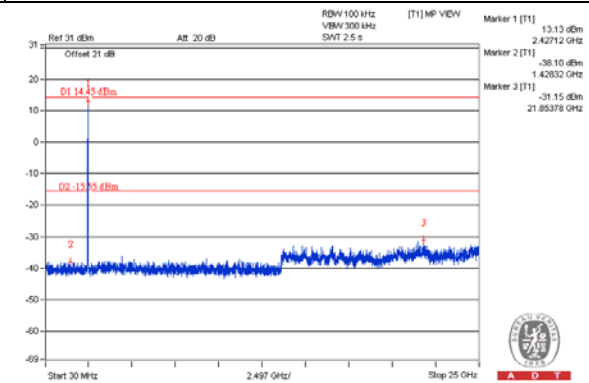
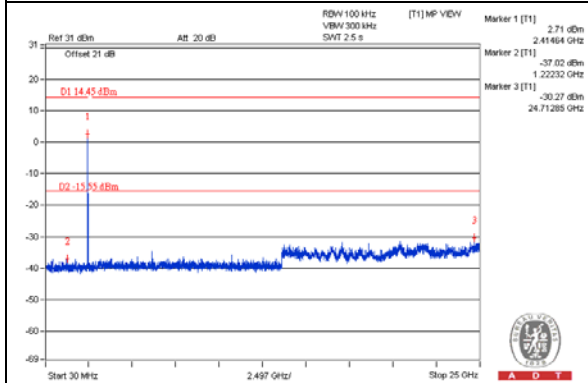
802.11g



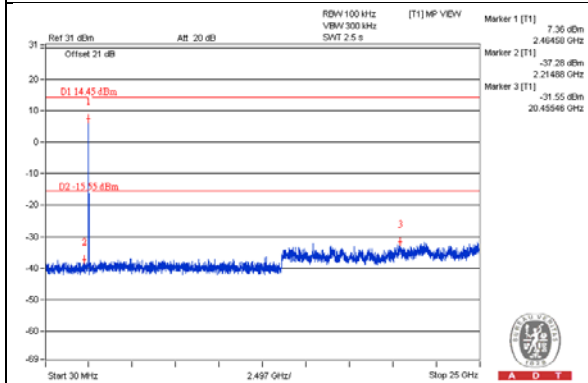
Chain 0

CH 1

CH 6

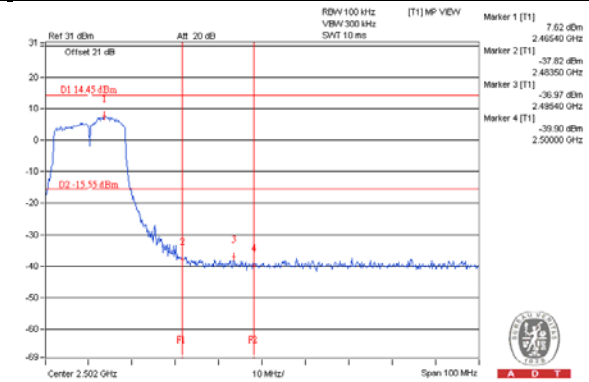
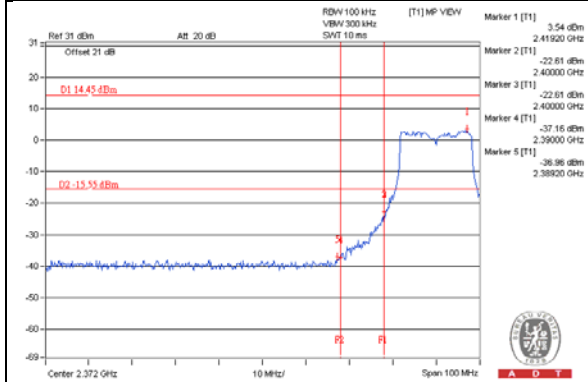


CH 11



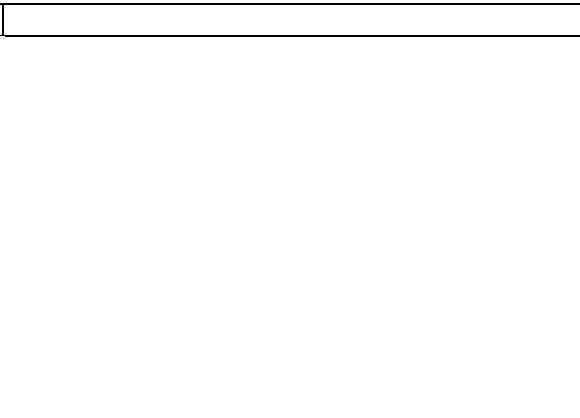
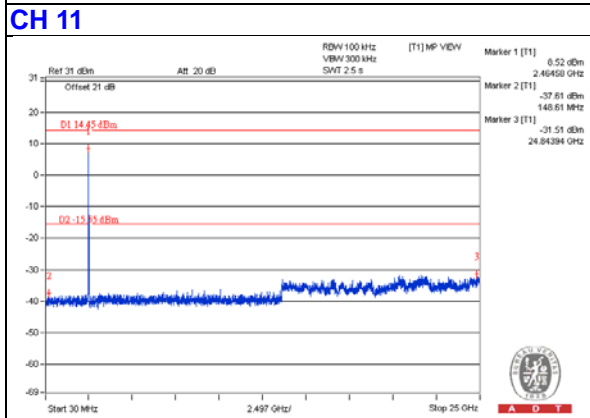
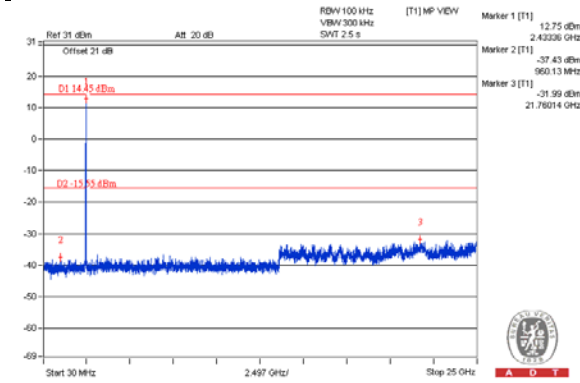
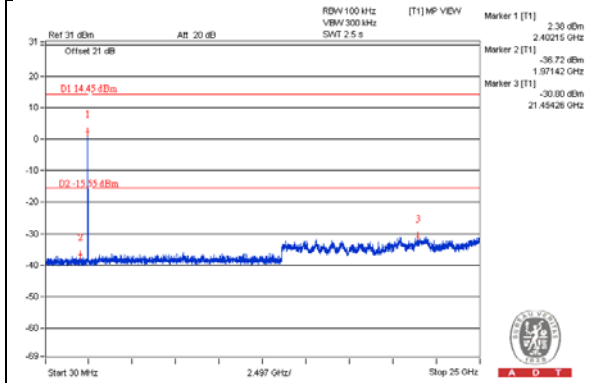
CH 1 Band edge

CH 11 Band edge



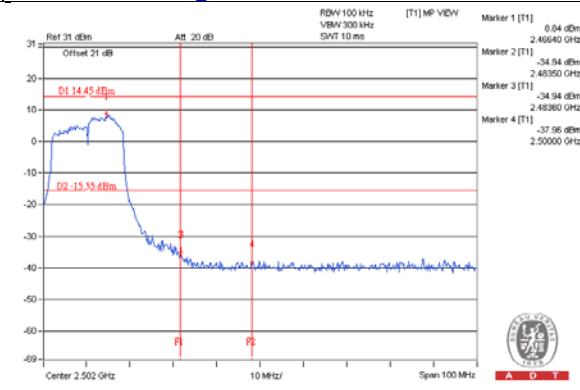
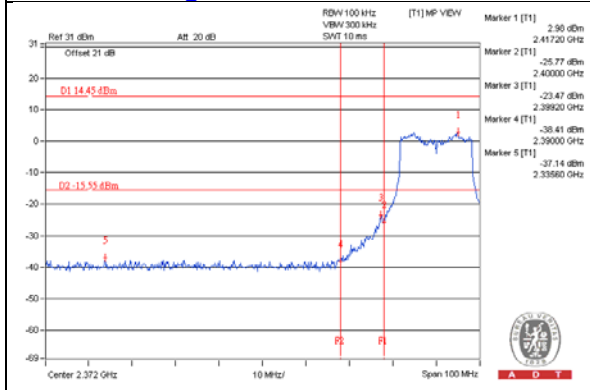
Chain 1

CH 1 CH 6



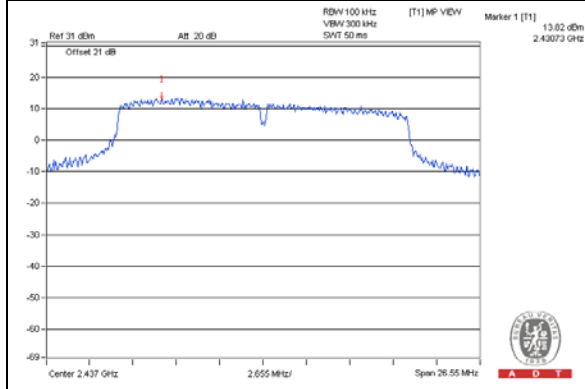
CH 1 Band edge

CH 11 Band edge



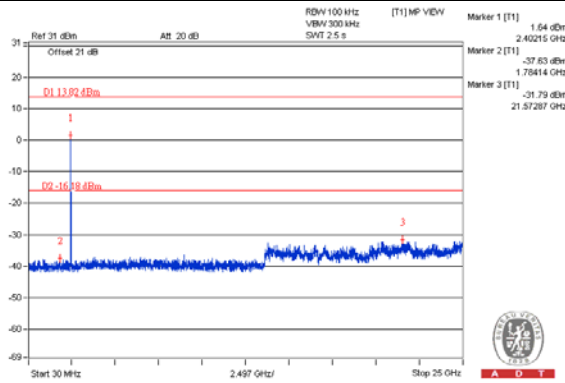
802.11n (HT20)

Maximum REF

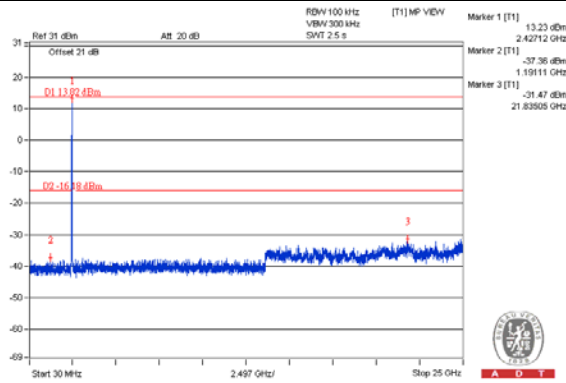


Chain 0

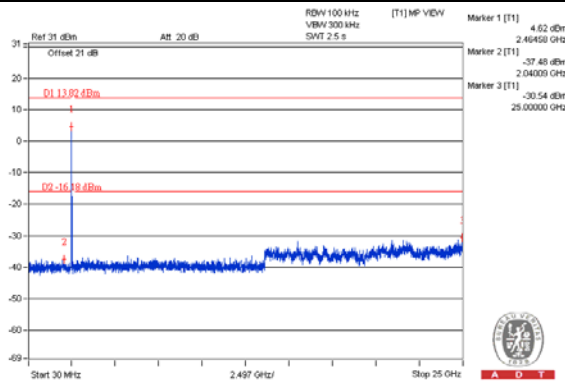
CH 1



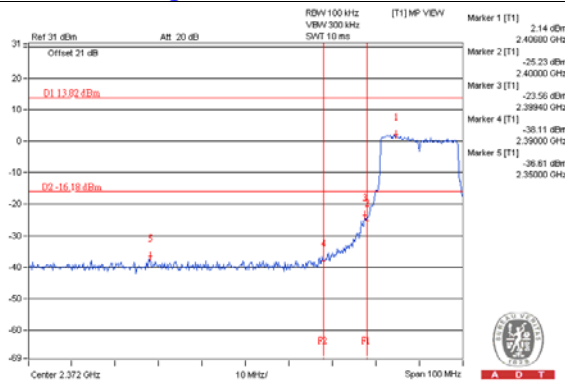
CH 6



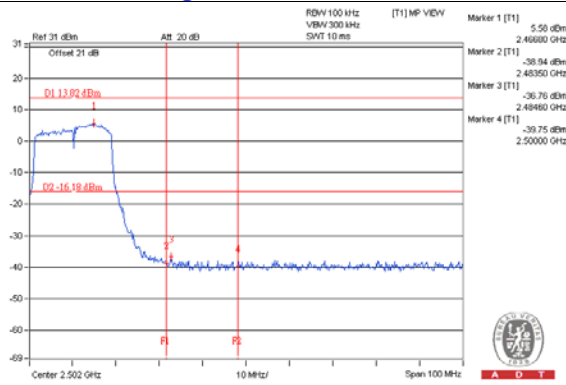
CH 11



CH 1 Band edge

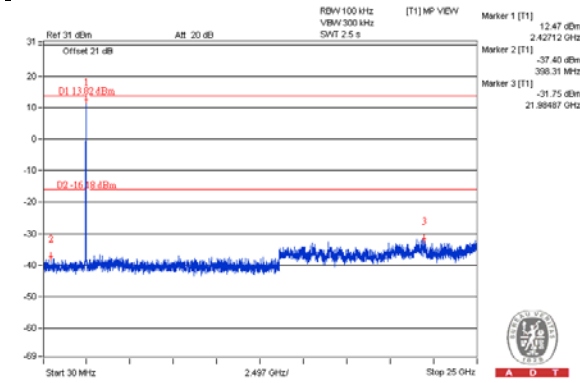
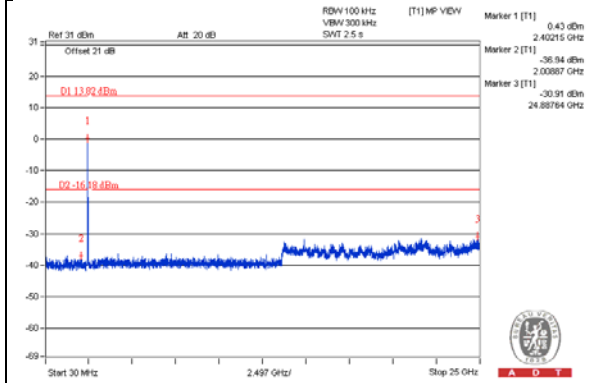


CH 11 Band edge

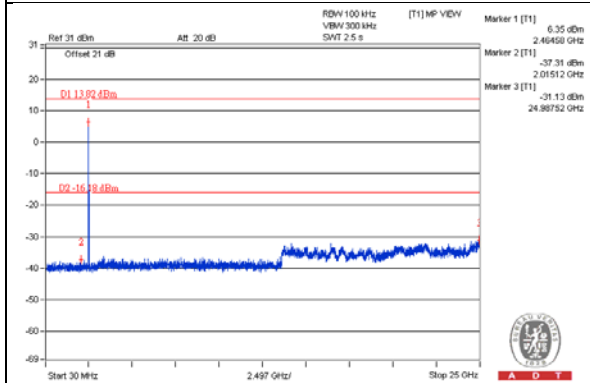


Chain 1

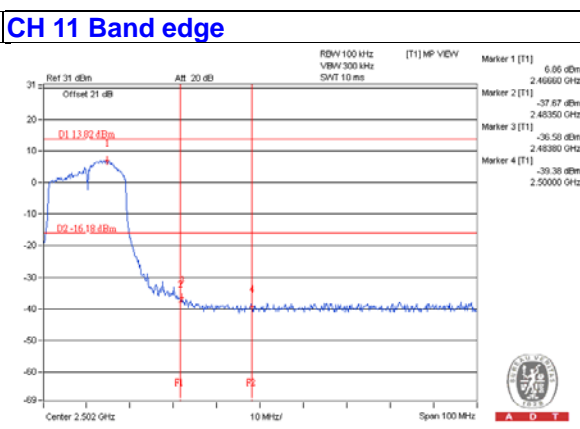
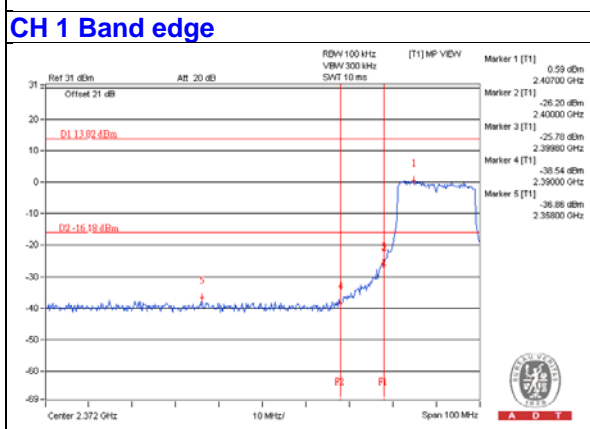
CH 1 CH 6



CH 11

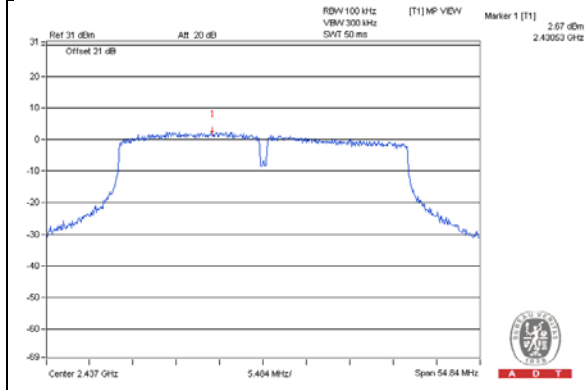


CH 11 Band edge



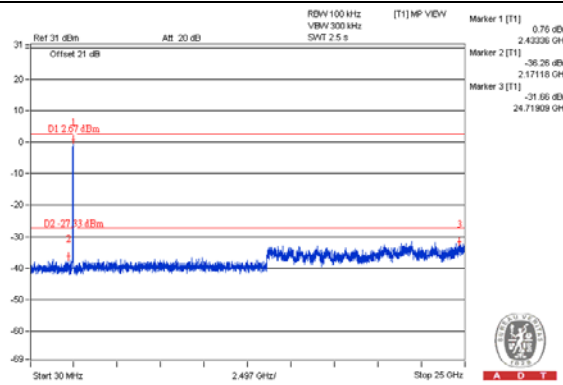
802.11n (HT40)

Maximum REF

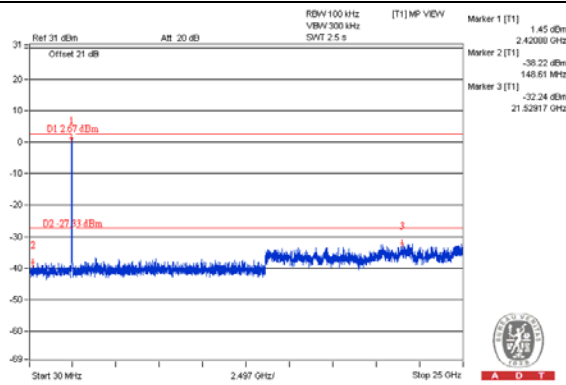


Chain 0

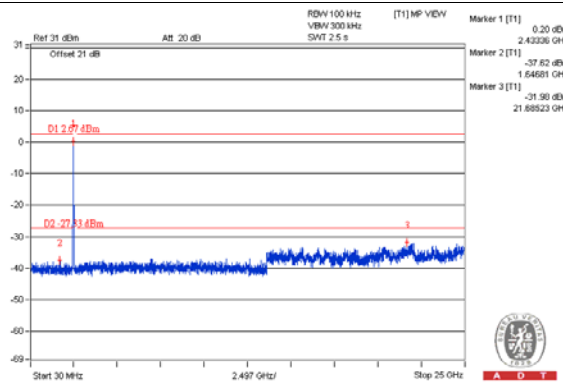
CH 3



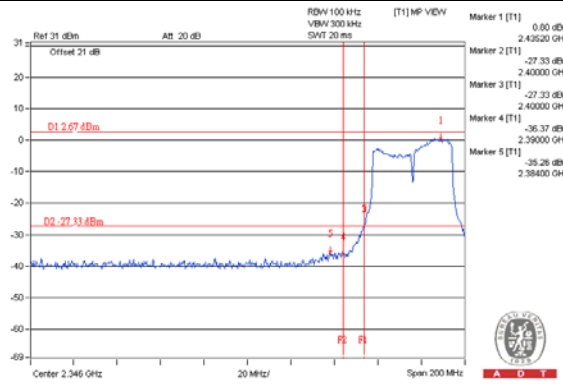
CH 6



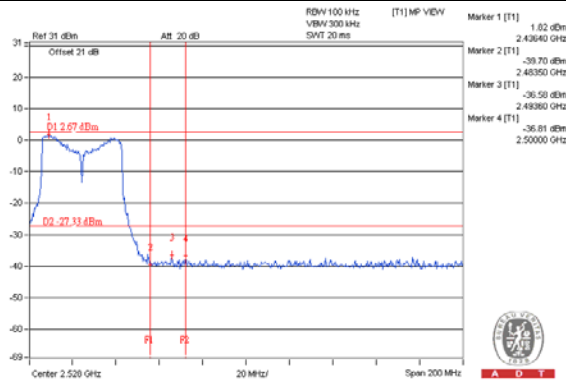
CH 9



CH 3 Band edge

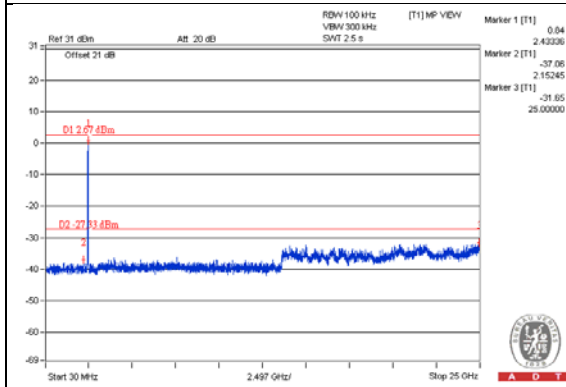


CH 9 Band edge

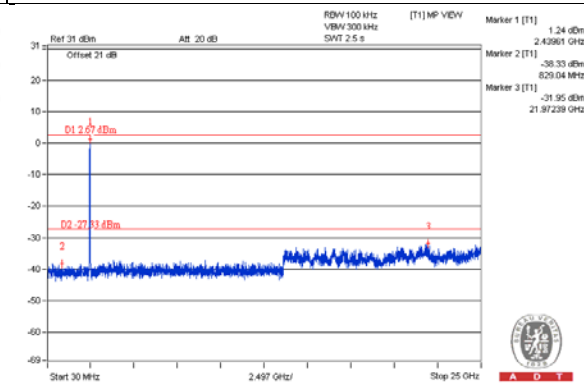


Chain 1

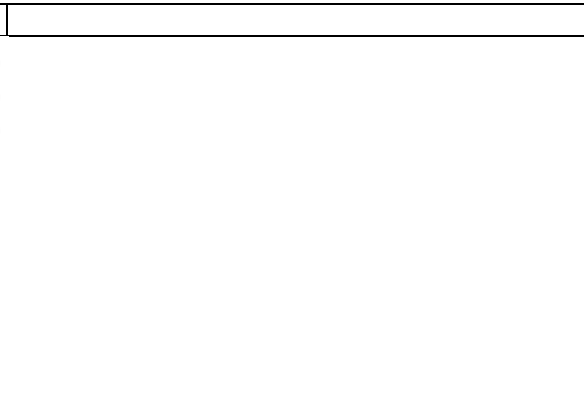
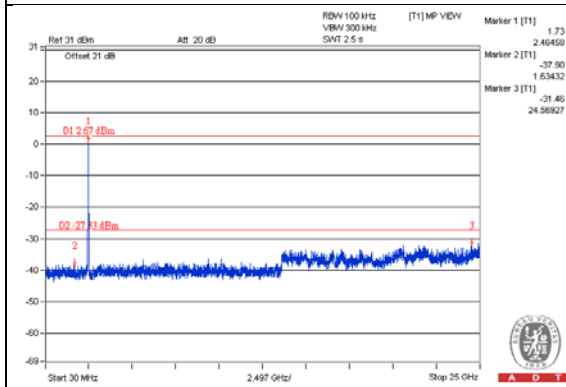
CH 3



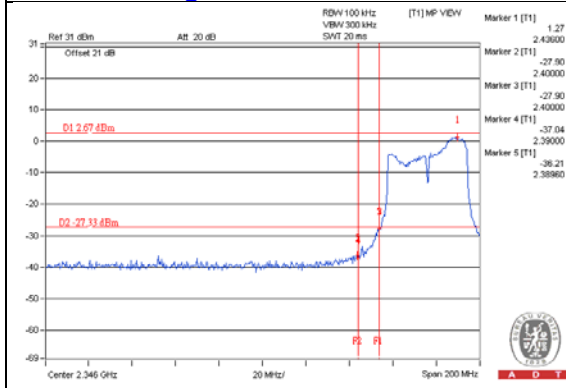
CH 6



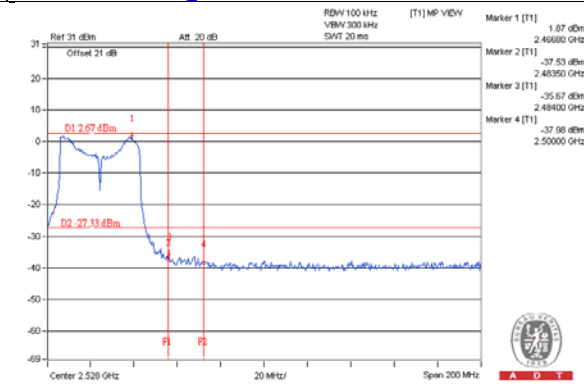
CH 9



CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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



Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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