

FCC Test Report

Report No.: RF151111E04A

FCC ID: U8G-P1930

Test Model: MAX BR1

Series Model: MAX, Surf Pro, AP One, AP Pro, Device Connector, Express, Balance, Pismo 930

Received Date: Nov. 20, 2015

Test Date: Nov. 25 to Dec. 02, 2015

Issued Date: Dec. 16, 2015

Applicant: Pismo Labs Technology Limited

Address: FLAT/RM A5, 5/F, HK SPINNERS IND BLDG PHASE 6, 481 CASTLE PEAK ROAD, CHEUNG SHA WAN, HONG KONG.

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

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

Test Location (1): E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

Test Location (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes	9
3.2.1 Test Mode Applicability and Tested Channel Detail	10
3.3 Duty Cycle of Test Signal	12
3.4 Description of Support Units	13
3.4.1 Configuration of System under Test	14
3.5 General Description of Applied Standards	16
4 Test Types and Results	17
4.1 Radiated Emission and Bandedge Measurement	17
4.1.1 Limits of Radiated Emission and Bandedge Measurement	17
4.1.2 Test Instruments	18
4.1.3 Test Procedures	19
4.1.4 Deviation from Test Standard	19
4.1.5 Test Set Up	20
4.1.6 EUT Operating Conditions	20
4.1.7 Test Results	21
4.2 Conducted Emission Measurement	34
4.2.1 Limits of Conducted Emission Measurement	34
4.2.2 Test Instruments	34
4.2.3 Test Procedures	35
4.2.4 Deviation from Test Standard	35
4.2.5 Test Setup	35
4.2.6 EUT Operating Conditions	35
4.2.7 Test Results (Mode 1)	36
4.2.8 Test Results (Mode 2)	38
4.2.9 Test Results (Mode 3)	40
4.3 6dB Bandwidth Measurement	42
4.3.1 Limits of 6dB Bandwidth Measurement	42
4.3.2 Test Setup	42
4.3.3 Test Instruments	42
4.3.4 Test Procedure	42
4.3.5 Deviation from Test Standard	42
4.3.6 EUT Operating Conditions	42
4.3.7 Test Result	43
4.4 Conducted Output Power Measurement	45
4.4.1 Limits of Conducted Output Power Measurement	45
4.4.2 Test Setup	45
4.4.3 Test Instruments	45
4.4.4 Test Procedures	45
4.4.5 Deviation from Test Standard	45
4.4.6 EUT Operating Conditions	45
4.4.7 Test Results	46
4.5 Power Spectral Density Measurement	48
4.5.1 Limits of Power Spectral Density Measurement	48
4.5.2 Test Setup	48
4.5.3 Test Instruments	48
4.5.4 Test Procedure	48

4.5.5	Deviation from Test Standard	48
4.5.6	EUT Operating Condition	48
4.5.7	Test Results	49
4.6	Conducted Out of Band Emission Measurement.....	51
4.6.1	Limits of Conducted Out of Band Emission Measurement	51
4.6.2	Test Setup.....	51
4.6.3	Test Instruments	51
4.6.4	Test Procedure	51
4.6.5	Deviation from Test Standard	51
4.6.6	EUT Operating Condition	51
4.6.7	Test Results	51
5	Pictures of Test Arrangements.....	56
	Appendix – Information on the Testing Laboratories	57



A D T

Release Control Record

Issue No.	Description	Date Issued
RF151111E04A	Original release.	Dec. 16, 2015

1 Certificate of Conformity

Product: Pepwave / Peplink / Pismo Wireless Product

Brand: Pepwave / Peplink / Pismo

Test Model: MAX BR1

Series Model: MAX, Surf Pro, AP One, AP Pro, Device Connector, Express, Balance, Pismo 930

Sample Status: MASS-PRODUCTION

Applicant: Pismo Labs Technology Limited

Test Date: Nov. 25 to Dec. 02, 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 : Midoli Peng, **Date:** Dec. 16, 2015
Midoli Peng / Specialist

Approved by : May Chen, **Date:** Dec. 16, 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 -7.14dB at 16.22797MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB 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.

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	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1000MHz	5.19 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.43 dB
	6GHz ~ 18GHz	3.49 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 BR1
Series Model	MAX, Surf Pro, AP One, AP Pro, Device Connector, Express, Balance, Pismo 930
Status of EUT	MASS-PRODUCTION
Power Supply Rating	10-30Vdc from power adapter or 10-30dc from terminal block
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 150Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	802.11b: 676.083mW 802.11g: 995.405mW 802.11n(HT20): 990.832mW 802.11n(HT40): 826.038mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1 GPS antenna x 1
Data Cable Supplied	NA

Note:

- The EUT has nine model names, which are identical to each other in all aspects except for the following:

Brand	Model Name	Note
Pepwave / Peplink / Pismo	MAX BR1	For marketing requirement
	MAX	
	Surf Pro	
	AP One	
	AP Pro	
	Device Connector	
	Express	
	Balance	
	Pismo 930	

From the above models, model: MAX BR1 was selected as representative model for the test and its data was recorded in this report.

2. There are WLAN, WWAN(3G), LTE(4G) and GPS technology used for the EUT.
3. The EUT contains WWAN(3G), LTE(4G) certified module which FCC ID: N7NMC7355 (Model: MC7354).
4. WLAN/ WWAN(3G)/LTE(4G) coexistence mode:

Condition	Technology	
1	WLAN	WWAN(3G) (Model No.: MC7354)
2	WLAN	LTE(4G) (Model No.: MC7354)

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

5. The EUT must be supplied with two identical power adapters and following table:

Brand Name	Model No.	Spec.
Ten Pao	S024WM1200200	AC Input: 100-240V, 600mA, 50/60Hz DC Output: 12V, 2000mA DC output cable: Unshielded, 1.5m, with 1 core

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

WLAN antenna						
Brand	Model No.	Antenna Gain (dBi)	Frequency range (GHz to GHz)	Antenna Type	Connector Type	
WNC	9E.XCI15.001	5.1	2.40~2.50	Dipole	Reverse SMA Plug	
GPS antenna						
Brand	Model No.	Antenna Gain (dBi)	Frequency range (GHz)	Antenna Type	Connector Type	
Chang Hong	GPS-01	-1	1575.42 (+/- 1.023MHz)	Magnetic	R-SMA Male	
LTE antenna						
PCB Chain No.	Brand	Model No.	Antenna Gain (dBi)	Frequency range (MHz to MHz)	Antenna Type	Connector Type
Cellular Main	Pulse	SPDA24700/2700	2	698~960	Dipole	SMA Male
				1710~2170		
				2500-2700		
Cellular Diversity / Aux	Pulse	SPDA24700/2700	2	698~960	Dipole	SMA Male
				1710~2170		
				2500-2700		

7. The EUT incorporates a SISO function.

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

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

Test Mode	Description
Mode A	Power from power adapter
Mode B	Power from DC power supply(10Vdc)
Mode C	Power from DC power supply(30Vdc)

From the above modes, the worst radiated emission was found in **Mode A**. Therefore only the test data of the modes were recorded in this report.

9. 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 power adapter
2	-	-	√	-	Power from DC power supply(10Vdc)
3	-	-	√	-	Power from DC power supply(30Vdc)

Where RE $\geq$ 1G: Radiated Emission above 1GHz & Bandedge Measurement

PLC: Power Line Conducted Emission

RE<1G: Radiated Emission below 1GHz

APCM: Antenna Port Conducted Measurement

NOTE: "-" 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)
802.11g	1 to 11	6	OFDM	BPSK	6

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

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

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 $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Jyunchun Lin
RE $<$ 1G	26deg. C, 68%RH	120Vac, 60Hz	Jyunchun Lin
PLC	25deg. C, 68%RH	120Vac, 60Hz / 10Vdc / 30Vdc	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 Duty Cycle of Test Signal

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

If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

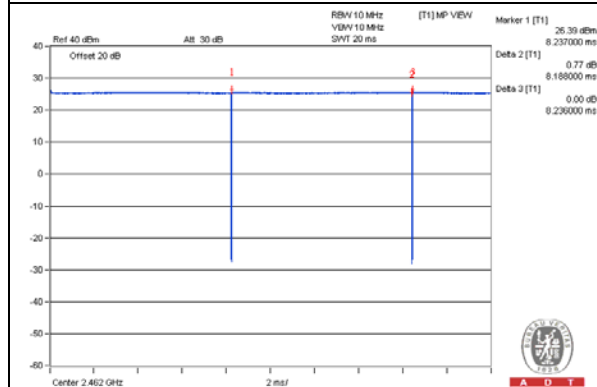
802.11b: Duty cycle = $8.188 \text{ ms} / 8.236 \text{ ms} = 0.994$

802.11g: Duty cycle = $1.359 \text{ ms} / 1.411 \text{ ms} = 0.963$, Duty factor = $10 * \log(1/0.97) = 0.2$

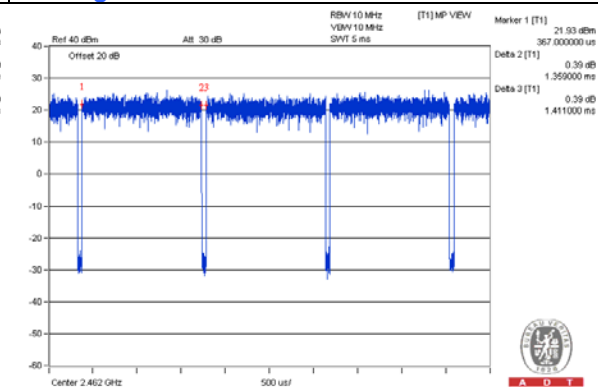
802.11n (HT20): Duty cycle = $1.27 \text{ ms} / 1.323 \text{ ms} = 0.96$, Duty factor = $10 * \log(1/0.96) = 0.2$

802.11n (HT40): Duty cycle = $0.631 \text{ ms} / 0.686 \text{ ms} = 0.92$, Duty factor = $10 * \log(1/0.92) = 0.4$

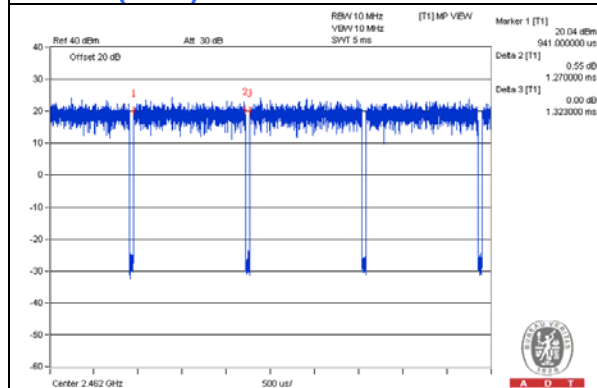
802.11b



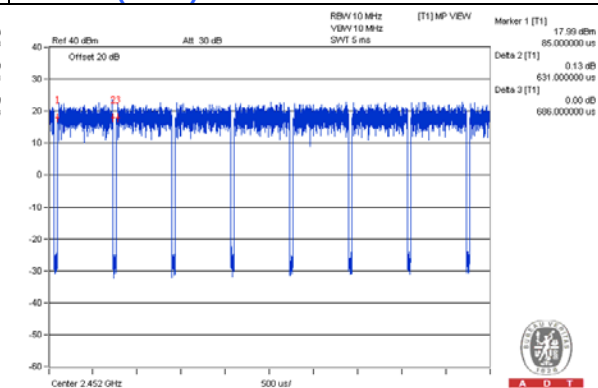
802.11g



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	PP32LA	HSLB32S	FCC DoC	Provided by Lab
B	NOTEBOOK COMPUTER	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
C	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
D	DC POWER SUPPLY	Topward	6603D	795551	NA	Provided by Lab
E	Radio Communication Analyzer	Anritsu	MT8820C	6201127458	NA	Provided by Lab

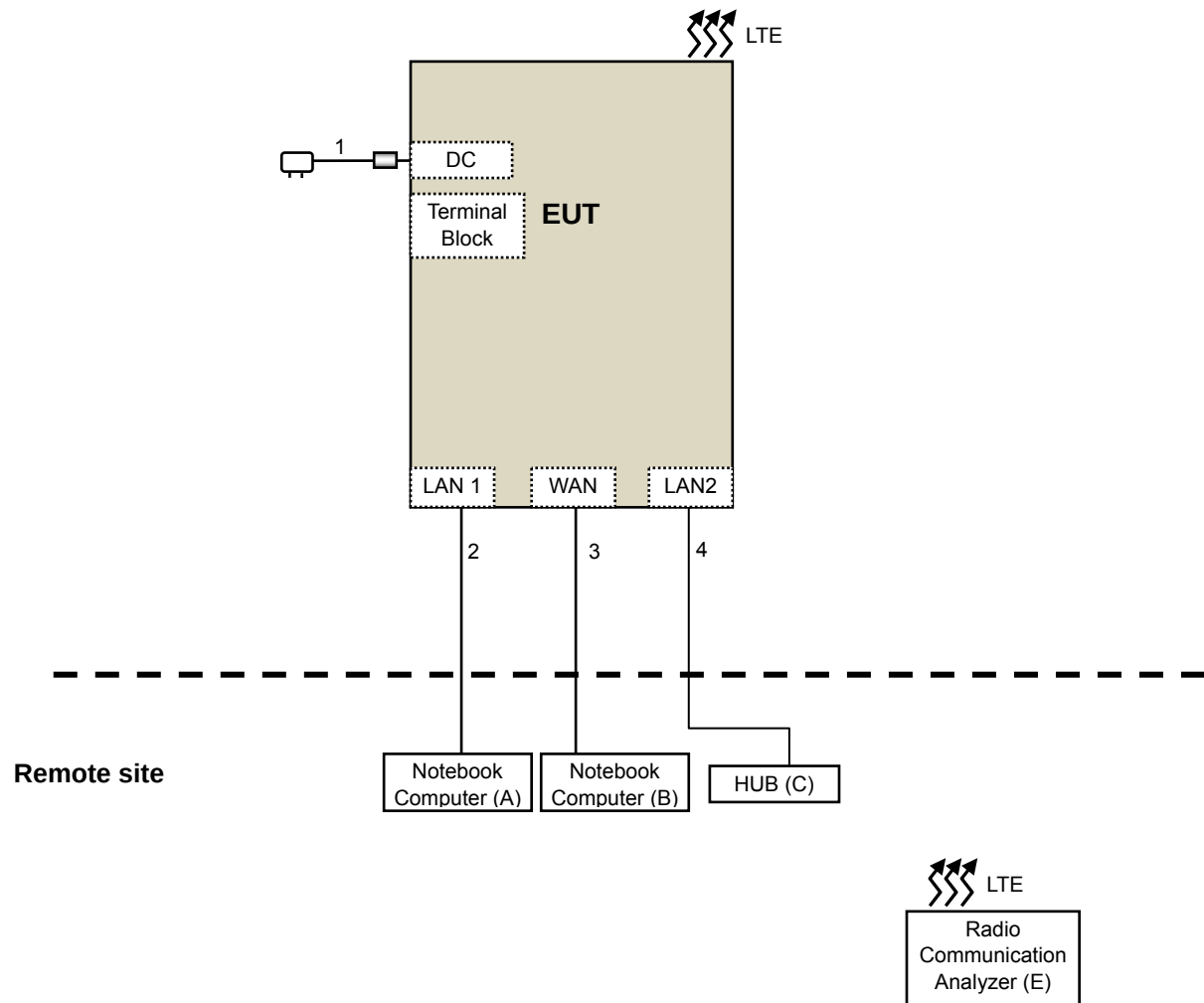
Note:

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

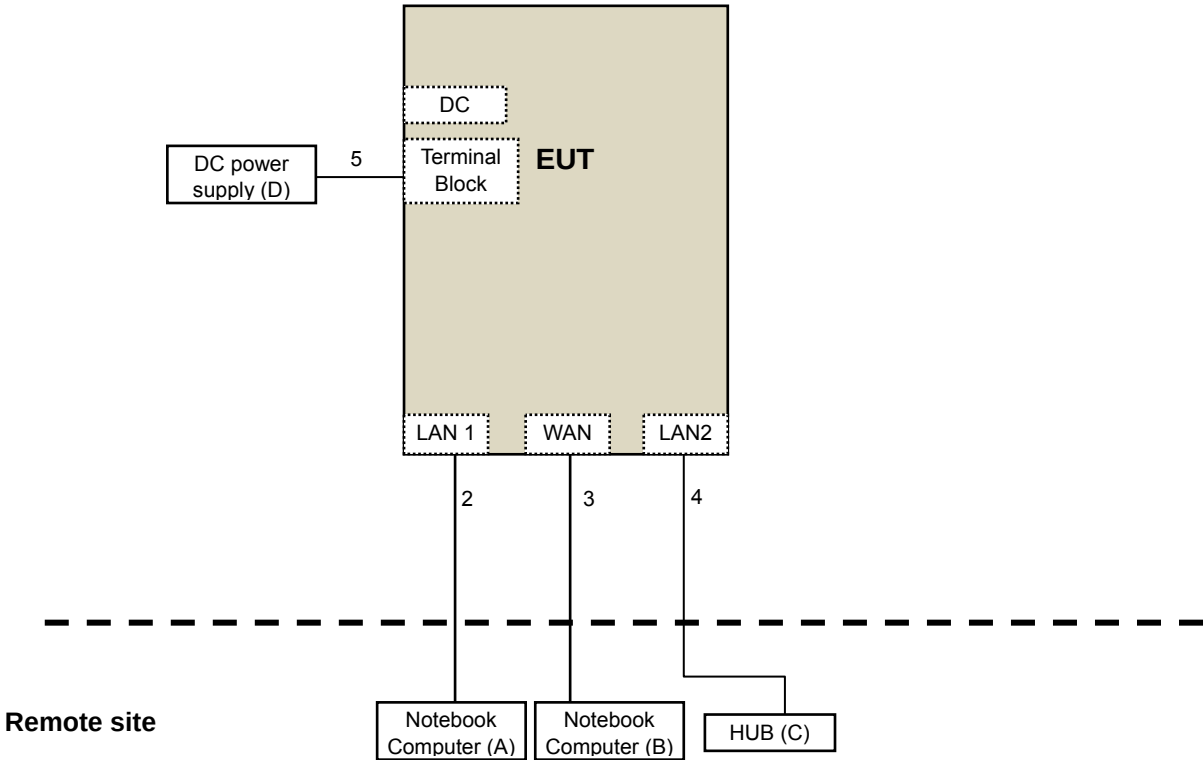
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC	1	1.5	No	0	Supplied by Client
2	RJ45	1	10	No	0	Provided by Lab
3	RJ45	1	10	No	0	Provided by Lab
4	RJ45	1	10	No	0	Provided by Lab
5	DC	1	1	No	0	Provided by Lab

3.4.1 Configuration of System under Test

Power from power adapter



Power from DC power supply



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

ANSI C63.10-2013

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.

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 20dB below the highest level of the desired power:

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

NOTE:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 2016
Pre-Amplifier ^(*) EMCI	EMC001340	980142	Jan. 13, 2014	Jan. 12, 2016
Loop Antenna ^(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2015	Jan. 17, 2016
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-06	Nov. 11, 2015	Nov. 10, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Feb. 03, 2015	Feb. 02, 2016
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 03, 2015	Apr. 02, 2016
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Feb. 06, 2015	Feb. 05, 2016
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 19, 2015	Sep. 18, 2016
RF Cable	EMC104-SM- SM-2000 EMC104-SM- SM-5000 EMC104-SM- SM-5000	150318 150323 150324	Mar. 31, 2015	Mar. 30, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Feb. 05, 2015	Feb. 04, 2016
RF Cable	SUCOFLEX 104	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	FSP40	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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Loop antenna was used for all emissions below 30 MHz.
4. The test was performed in 966 Chamber No. 4.
5. The FCC Site Registration No. is 292998
6. The CANADA Site Registration No. is 20331-2
7. Tested Date: Nov. 26 to Dec. 02, 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:

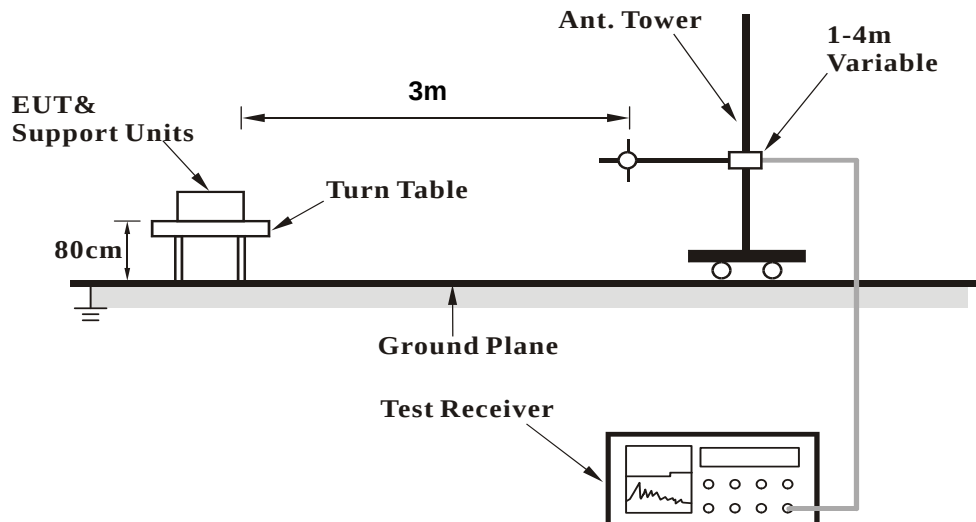
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

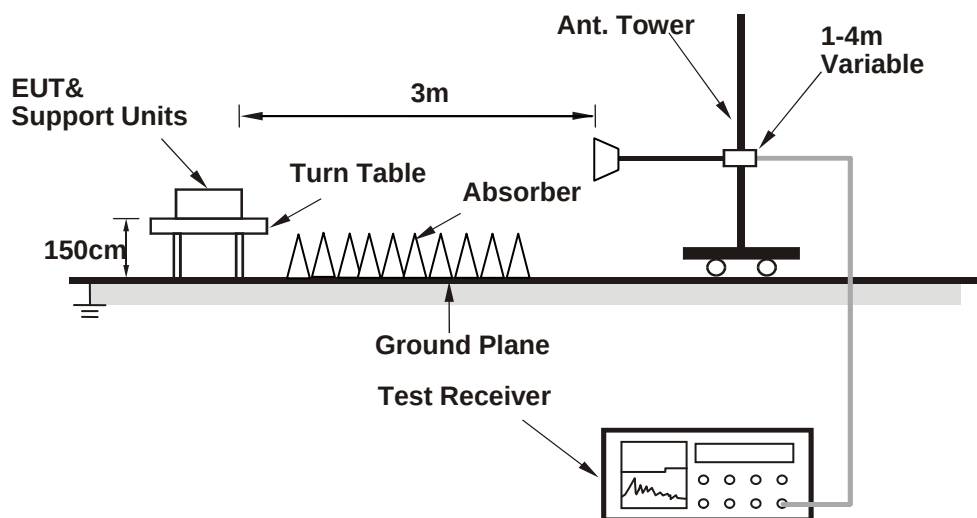
No deviation.

4.1.5 Test Set Up

<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

- Placed the EUT on the testing table.
- Prepared support units A~B (Notebook Computer) to act as communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and ran a test program (Artgui.exe(ver_2_28_6BIN)) to enable EUT under transmission 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	2386.00	54.6 PK	74.0	-19.4	1.34 H	299	57.80	-3.20
2	2386.00	49.3 AV	54.0	-4.7	1.34 H	299	52.50	-3.20
3	*2412.00	107.3 PK			1.34 H	299	110.43	-3.13
4	*2412.00	105.2 AV			1.34 H	299	108.33	-3.13
5	4824.00	50.1 PK	74.0	-23.9	1.06 H	221	44.13	5.97
6	4824.00	47.1 AV	54.0	-6.9	1.06 H	221	41.13	5.97
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	2386.00	58.3 PK	74.0	-15.7	1.15 V	170	61.50	-3.20
2	2386.00	53.8 AV	54.0	-0.2	1.15 V	170	57.00	-3.20
3	*2412.00	115.8 PK			1.15 V	170	118.93	-3.13
4	*2412.00	113.6 AV			1.15 V	170	116.73	-3.13
5	4824.00	53.9 PK	74.0	-20.1	2.98 V	357	47.93	5.97
6	4824.00	52.3 AV	54.0	-1.7	2.98 V	357	46.33	5.97

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.

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	107.0 PK			1.39 H	310	110.04	-3.04
2	*2437.00	104.9 AV			1.39 H	310	107.94	-3.04
3	4874.00	50.1 PK	74.0	-23.9	1.00 H	226	44.05	6.05
4	4874.00	47.2 AV	54.0	-6.8	1.00 H	226	41.15	6.05
5	7311.00	47.1 PK	74.0	-26.9	1.12 H	283	36.16	10.94
6	7311.00	33.7 AV	54.0	-20.3	1.12 H	283	22.76	10.94
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	118.2 PK			1.65 V	178	121.24	-3.04
2	*2437.00	115.8 AV			1.65 V	178	118.84	-3.04
3	4874.00	53.1 PK	74.0	-20.9	1.33 V	24	47.05	6.05
4	4874.00	52.1 AV	54.0	-1.9	1.33 V	24	46.05	6.05
5	7311.00	47.4 PK	74.0	-26.6	1.40 V	52	36.46	10.94
6	7311.00	33.8 AV	54.0	-20.2	1.40 V	52	22.86	10.94

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.4 PK			1.34 H	295	110.34	-2.94
2	*2462.00	105.5 AV			1.34 H	295	108.44	-2.94
3	2483.50	54.4 PK	74.0	-19.6	1.34 H	295	57.27	-2.87
4	2483.50	49.2 AV	54.0	-4.8	1.34 H	295	52.07	-2.87
5	4924.00	49.9 PK	74.0	-24.1	1.04 H	212	43.83	6.07
6	4924.00	47.2 AV	54.0	-6.8	1.04 H	212	41.13	6.07
7	7386.00	46.9 PK	74.0	-27.1	1.08 H	270	35.48	11.42
8	7386.00	33.3 AV	54.0	-20.7	1.08 H	270	21.88	11.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	116.3 PK			1.45 V	165	119.24	-2.94
2	*2462.00	113.8 AV			1.45 V	165	116.74	-2.94
3	2483.50	57.1 PK	74.0	-16.9	1.45 V	165	59.97	-2.87
4	2483.50	53.3 AV	54.0	-0.7	1.45 V	165	56.17	-2.87
5	4924.00	52.8 PK	74.0	-21.2	3.04 V	4	46.73	6.07
6	4924.00	51.7 AV	54.0	-2.3	3.04 V	4	45.63	6.07
7	7386.00	47.2 PK	74.0	-26.8	3.00 V	18	35.78	11.42
8	7386.00	33.7 AV	54.0	-20.3	3.00 V	18	22.28	11.42

REMARKS:

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

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	54.0 PK	74.0	-20.0	1.39 H	290	57.19	-3.19
2	2390.00	49.1 AV	54.0	-4.9	1.39 H	290	52.29	-3.19
3	*2412.00	106.9 PK			1.39 H	290	110.03	-3.13
4	*2412.00	96.2 AV			1.39 H	290	99.33	-3.13
5	4824.00	59.7 PK	74.0	-14.3	1.01 H	210	53.73	5.97
6	4824.00	42.3 AV	54.0	-11.7	1.01 H	210	36.33	5.97
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	71.7 PK	74.0	-2.3	1.30 V	161	74.89	-3.19
2	2390.00	53.3 AV	54.0	-0.7	1.30 V	161	56.49	-3.19
3	*2412.00	114.9 PK			1.30 V	161	118.03	-3.13
4	*2412.00	104.1 AV			1.30 V	161	107.23	-3.13
5	4824.00	59.5 PK	74.0	-14.5	3.00 V	360	53.53	5.97
6	4824.00	42.5 AV	54.0	-11.5	3.00 V	360	36.53	5.97

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.

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	113.7 PK			1.40 H	297	116.74	-3.04
2	*2437.00	103.4 AV			1.40 H	297	106.44	-3.04
3	4874.00	58.7 PK	74.0	-15.3	1.09 H	205	52.65	6.05
4	4874.00	45.1 AV	54.0	-8.9	1.09 H	205	39.05	6.05
5	7311.00	57.6 PK	74.0	-16.4	1.05 H	282	46.66	10.94
6	7311.00	44.3 AV	54.0	-9.7	1.05 H	282	33.36	10.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.9 PK	74.0	-0.1	1.23 V	157	77.09	-3.19
2	2390.00	49.2 AV	54.0	-4.8	1.23 V	157	52.39	-3.19
3	*2437.00	122.0 PK			1.23 V	157	125.04	-3.04
4	*2437.00	111.5 AV			1.23 V	157	114.54	-3.04
5	2483.50	73.5 PK	74.0	-0.5	1.23 V	157	76.37	-2.87
6	2483.50	45.3 AV	54.0	-8.7	1.23 V	157	48.17	-2.87
7	4874.00	61.6 PK	74.0	-12.4	2.77 V	16	55.55	6.05
8	4874.00	47.9 AV	54.0	-6.1	2.77 V	16	41.85	6.05
9	7311.00	60.2 PK	74.0	-13.8	2.30 V	165	49.26	10.94
10	7311.00	47.1 AV	54.0	-6.9	2.30 V	165	36.16	10.94

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	106.8 PK			1.36 H	298	109.74	-2.94
2	*2462.00	96.4 AV			1.36 H	298	99.34	-2.94
3	2483.50	53.9 PK	74.0	-20.1	1.36 H	298	56.77	-2.87
4	2483.50	49.1 AV	54.0	-4.9	1.36 H	298	51.97	-2.87
5	4924.00	59.9 PK	74.0	-14.1	1.03 H	210	53.83	6.07
6	4924.00	42.7 AV	54.0	-11.3	1.03 H	210	36.63	6.07
7	7386.00	60.4 PK	74.0	-13.6	1.14 H	270	48.98	11.42
8	7386.00	47.2 AV	54.0	-6.8	1.14 H	270	35.78	11.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.7 PK			1.45 V	162	118.64	-2.94
2	*2462.00	105.6 AV			1.45 V	162	108.54	-2.94
3	2483.50	73.5 PK	74.0	-0.5	1.45 V	162	76.37	-2.87
4	2483.50	51.5 AV	54.0	-2.5	1.45 V	162	54.37	-2.87
5	4924.00	60.1 PK	74.0	-13.9	2.76 V	30	54.03	6.07
6	4924.00	42.8 AV	54.0	-11.2	2.76 V	30	36.73	6.07
7	7386.00	60.2 PK	74.0	-13.8	2.30 V	181	48.78	11.42
8	7386.00	47.1 AV	54.0	-6.9	2.30 V	181	35.68	11.42

REMARKS:

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

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	54.2 PK	74.0	-19.8	1.38 H	302	57.39	-3.19
2	2390.00	49.3 AV	54.0	-4.7	1.38 H	302	52.49	-3.19
3	*2412.00	106.9 PK			1.38 H	302	110.03	-3.13
4	*2412.00	96.0 AV			1.38 H	302	99.13	-3.13
5	4824.00	59.8 PK	74.0	-14.2	1.00 H	199	53.83	5.97
6	4824.00	42.9 AV	54.0	-11.1	1.00 H	199	36.93	5.97
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	71.5 PK	74.0	-2.5	1.23 V	165	74.69	-3.19
2	2390.00	53.3 AV	54.0	-0.7	1.23 V	165	56.49	-3.19
3	*2412.00	113.8 PK			1.23 V	165	116.93	-3.13
4	*2412.00	103.1 AV			1.23 V	165	106.23	-3.13
5	4824.00	60.7 PK	74.0	-13.3	2.80 V	22	54.73	5.97
6	4824.00	43.3 AV	54.0	-10.7	2.80 V	22	37.33	5.97

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.

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	113.6 PK			1.37 H	302	116.64	-3.04
2	*2437.00	103.3 AV			1.37 H	302	106.34	-3.04
3	4874.00	59.2 PK	74.0	-14.8	1.03 H	218	53.15	6.05
4	4874.00	45.4 AV	54.0	-8.6	1.03 H	218	39.35	6.05
5	7311.00	58.2 PK	74.0	-15.8	1.02 H	276	47.26	10.94
6	7311.00	44.6 AV	54.0	-9.4	1.02 H	276	33.66	10.94
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	73.8 PK	74.0	-0.2	1.24 V	158	76.99	-3.19
2	2390.00	48.3 AV	54.0	-5.7	1.24 V	158	51.49	-3.19
3	*2437.00	121.0 PK			1.24 V	158	124.04	-3.04
4	*2437.00	110.9 AV			1.24 V	158	113.94	-3.04
5	2483.50	72.5 PK	74.0	-1.5	1.24 V	158	75.37	-2.87
6	2483.50	45.6 AV	54.0	-8.4	1.24 V	158	48.47	-2.87
7	4874.00	61.3 PK	74.0	-12.7	2.73 V	29	55.25	6.05
8	4874.00	47.4 AV	54.0	-6.6	2.73 V	29	41.35	6.05
9	7311.00	60.5 PK	74.0	-13.5	2.30 V	174	49.56	10.94
10	7311.00	47.3 AV	54.0	-6.7	2.30 V	174	36.36	10.94

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	106.5 PK			1.36 H	310	109.44	-2.94
2	*2462.00	95.5 AV			1.36 H	310	98.44	-2.94
3	2483.50	53.6 PK	74.0	-20.4	1.33 H	298	56.47	-2.87
4	2483.50	48.9 AV	54.0	-5.1	1.33 H	298	51.77	-2.87
5	4924.00	60.0 PK	74.0	-14.0	1.01 H	218	53.93	6.07
6	4924.00	42.7 AV	54.0	-11.3	1.01 H	218	36.63	6.07
7	7386.00	60.8 PK	74.0	-13.2	1.15 H	285	49.38	11.42
8	7386.00	47.4 AV	54.0	-6.6	1.15 H	285	35.98	11.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.4 PK			1.25 V	157	117.34	-2.94
2	*2462.00	103.8 AV			1.25 V	157	106.74	-2.94
3	2483.50	73.9 PK	74.0	-0.1	1.25 V	157	76.77	-2.87
4	2483.50	49.9 AV	54.0	-4.1	1.25 V	157	52.77	-2.87
5	4924.00	60.0 PK	74.0	-14.0	2.77 V	22	53.93	6.07
6	4924.00	42.4 AV	54.0	-11.6	2.77 V	22	36.33	6.07
7	7386.00	60.3 PK	74.0	-13.7	2.25 V	168	48.88	11.42
8	7386.00	47.4 AV	54.0	-6.6	2.25 V	168	35.98	11.42

REMARKS:

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

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	54.3 PK	74.0	-19.7	1.40 H	295	57.49	-3.19
2	2390.00	49.7 AV	54.0	-4.3	1.40 H	295	52.89	-3.19
3	*2422.00	101.5 PK			1.40 H	295	104.59	-3.09
4	*2422.00	89.0 AV			1.40 H	295	92.09	-3.09
5	4844.00	59.8 PK	74.0	-14.2	1.00 H	205	53.81	5.99
6	4844.00	42.8 AV	54.0	-11.2	1.00 H	205	36.81	5.99
7	7266.00	60.3 PK	74.0	-13.7	1.12 H	283	49.41	10.89
8	7266.00	47.2 AV	54.0	-6.8	1.12 H	283	36.31	10.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.4 PK	74.0	-3.6	1.27 V	161	73.59	-3.19
2	2390.00	53.9 AV	54.0	-0.1	1.27 V	161	57.09	-3.19
3	*2422.00	109.1 PK			1.27 V	161	112.19	-3.09
4	*2422.00	98.3 AV			1.27 V	161	101.39	-3.09
5	4844.00	60.2 PK	74.0	-13.8	2.73 V	38	54.21	5.99
6	4844.00	42.8 AV	54.0	-11.2	2.73 V	38	36.81	5.99
7	7266.00	60.4 PK	74.0	-13.6	2.26 V	162	49.51	10.89
8	7266.00	47.4 AV	54.0	-6.6	2.26 V	162	36.51	10.89

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": 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	105.8 PK			1.41 H	296	108.84	-3.04
2	*2437.00	94.1 AV			1.41 H	296	97.14	-3.04
3	4874.00	60.3 PK	74.0	-13.7	1.05 H	223	54.25	6.05
4	4874.00	43.2 AV	54.0	-10.8	1.05 H	223	37.15	6.05
5	7311.00	60.9 PK	74.0	-13.1	1.21 H	294	49.96	10.94
6	7311.00	47.7 AV	54.0	-6.3	1.21 H	294	36.76	10.94
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	72.2 PK	74.0	-1.8	1.28 V	158	75.39	-3.19
2	2390.00	53.6 AV	54.0	-0.4	1.28 V	158	56.79	-3.19
3	*2437.00	113.9 PK			1.28 V	158	116.94	-3.04
4	*2437.00	102.1 AV			1.28 V	158	105.14	-3.04
5	2483.50	71.9 PK	74.0	-2.1	1.28 V	158	74.77	-2.87
6	2483.50	48.9 AV	54.0	-5.1	1.28 V	158	51.77	-2.87
7	4874.00	59.6 PK	74.0	-14.4	2.75 V	29	53.55	6.05
8	4874.00	42.0 AV	54.0	-12.0	2.75 V	29	35.95	6.05
9	7311.00	60.3 PK	74.0	-13.7	2.27 V	178	49.36	10.94
10	7311.00	47.5 AV	54.0	-6.5	2.27 V	178	36.56	10.94

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	101.9 PK			1.39 H	317	104.88	-2.98
2	*2452.00	89.2 AV			1.39 H	317	92.18	-2.98
3	2483.50	53.8 PK	74.0	-20.2	1.39 H	317	56.67	-2.87
4	2483.50	49.2 AV	54.0	-4.8	1.39 H	317	52.07	-2.87
5	4904.00	60.2 PK	74.0	-13.8	1.00 H	223	54.12	6.08
6	4904.00	42.7 AV	54.0	-11.3	1.00 H	223	36.62	6.08
7	7356.00	61.4 PK	74.0	-12.6	1.14 H	274	50.18	11.22
8	7356.00	47.9 AV	54.0	-6.1	1.14 H	274	36.68	11.22
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	110.1 PK			1.57 V	157	113.08	-2.98
2	*2452.00	98.9 AV			1.57 V	157	101.88	-2.98
3	2483.50	73.0 PK	74.0	-1.0	1.57 V	157	75.87	-2.87
4	2483.50	53.6 AV	54.0	-0.4	1.57 V	157	56.47	-2.87
5	4904.00	59.4 PK	74.0	-14.6	2.80 V	17	53.32	6.08
6	4904.00	42.1 AV	54.0	-11.9	2.80 V	17	36.02	6.08
7	7356.00	60.4 PK	74.0	-13.6	2.29 V	156	49.18	11.22
8	7356.00	47.7 AV	54.0	-6.3	2.29 V	156	36.48	11.22

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

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	88.85	35.8 QP	43.5	-7.7	2.00 H	90	56.72	-20.96
2	189.71	36.1 QP	43.5	-7.4	1.50 H	271	54.00	-17.86
3	224.99	40.4 QP	46.0	-5.6	1.50 H	300	58.74	-18.30
4	296.80	36.9 QP	46.0	-9.1	1.00 H	46	51.22	-14.31
5	450.01	37.0 QP	46.0	-9.0	2.00 H	313	47.01	-9.99
6	675.00	39.0 QP	46.0	-7.0	1.00 H	336	44.81	-5.83
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	106.70	35.7 QP	43.5	-7.8	1.00 V	293	54.10	-18.42
2	224.99	39.5 QP	46.0	-6.5	1.00 V	1	57.78	-18.30
3	305.00	35.6 QP	46.0	-10.4	1.50 V	212	49.64	-14.06
4	375.00	32.0 QP	46.0	-14.0	1.50 V	8	44.35	-12.36
5	449.99	40.0 QP	46.0	-6.0	1.00 V	338	49.99	-9.99
6	675.00	35.4 QP	46.0	-10.6	1.50 V	350	41.25	-5.83

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

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. 23, 2015	Sep. 22, 2016
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2015	Sep. 30, 2016
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: Nov. 25, 2015

4.2.3 Test Procedures

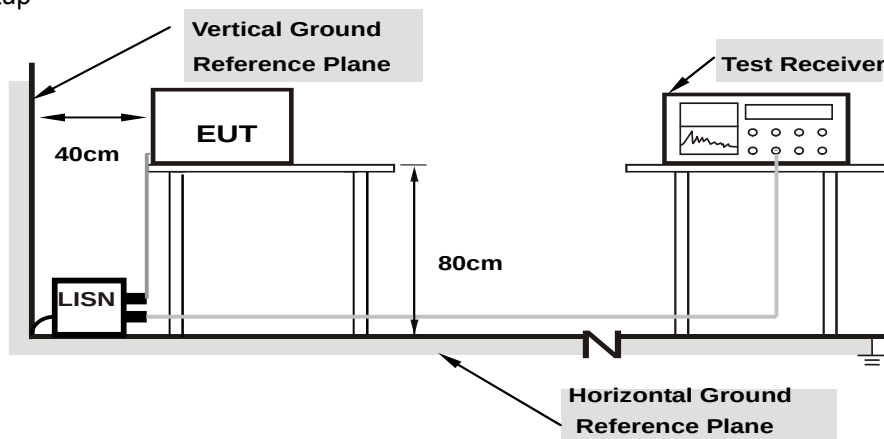
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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) 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.

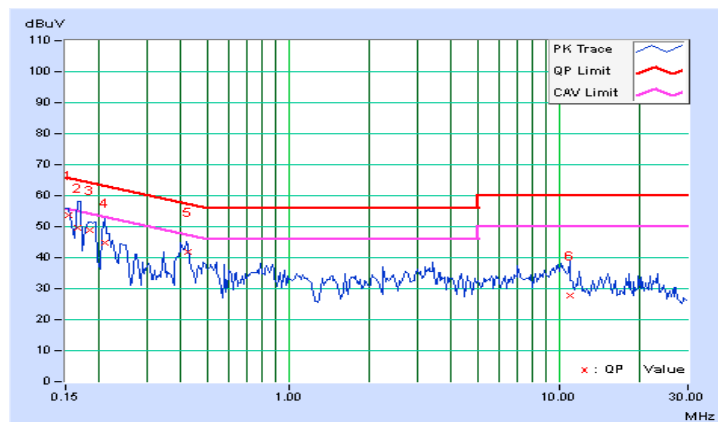
4.2.7 Test Results (Mode 1)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

Phase Of Power : Line (L)										
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	0.15300	10.38	43.49	32.77	53.87	43.15	65.84	55.84	-11.97	-12.69
2	0.16562	10.37	39.19	14.73	49.56	25.10	65.18	55.18	-15.62	-30.08
3	0.18516	10.35	38.52	28.38	48.87	38.73	64.25	54.25	-15.38	-15.52
4	0.20859	10.34	34.56	24.69	44.90	35.03	63.26	53.26	-18.36	-18.23
5	0.42253	10.37	31.59	28.21	41.96	38.58	57.40	47.40	-15.44	-8.82
6	10.94141	10.96	16.76	9.14	27.72	20.10	60.00	50.00	-32.28	-29.90

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

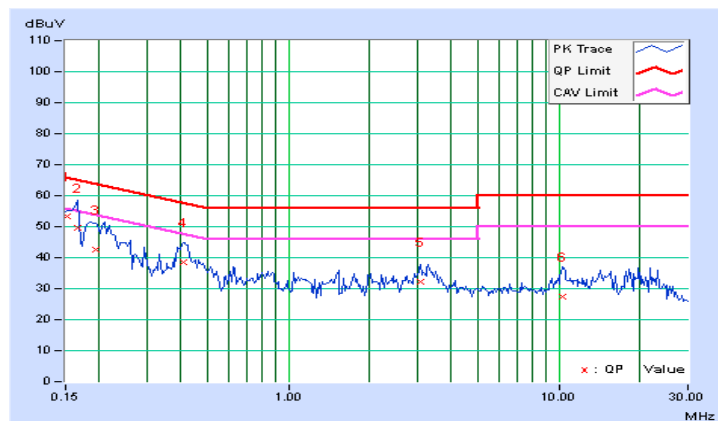


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
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	0.15125	10.38	42.78	31.76	53.16	42.14	65.93	55.93	-12.77	-13.79
2	0.16562	10.38	39.15	15.21	49.53	25.59	65.18	55.18	-15.64	-29.58
3	0.19297	10.39	32.23	14.01	42.62	24.40	63.91	53.91	-21.29	-29.51
4	0.40781	10.42	27.98	13.93	38.40	24.35	57.69	47.69	-19.29	-23.34
5	3.08203	10.57	21.62	15.35	32.19	25.92	56.00	46.00	-23.81	-20.08
6	10.26953	10.94	16.56	11.47	27.50	22.41	60.00	50.00	-32.50	-27.59

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



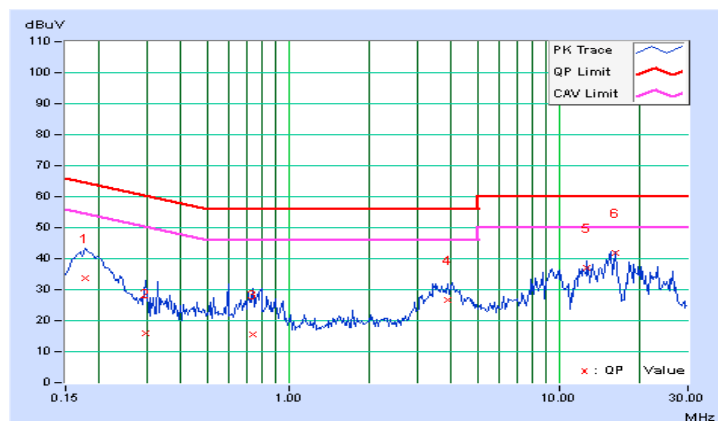
4.2.8 Test Results (Mode 2)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

Phase Of Power : Line (L)										
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	10.24	23.29	-1.73	33.53	8.51	64.61	54.61	-31.08	-46.10
2	0.29844	10.23	5.52	-5.74	15.75	4.49	60.29	50.29	-44.54	-45.80
3	0.73594	10.20	5.44	-2.95	15.64	7.25	56.00	46.00	-40.36	-38.75
4	3.86328	10.37	16.17	10.28	26.54	20.65	56.00	46.00	-29.46	-25.35
5	12.74609	10.66	26.31	24.14	36.97	34.80	60.00	50.00	-23.03	-15.20
6	16.22906	10.81	31.17	28.58	41.98	39.39	60.00	50.00	-18.02	-10.61

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

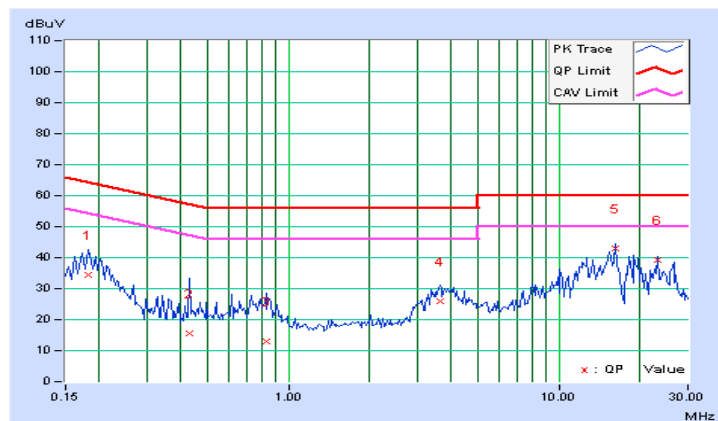


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
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	0.18125	10.22	24.30	-1.19	34.52	9.03	64.43	54.43	-29.91	-45.40
2	0.43125	10.22	5.33	-2.24	15.55	7.98	57.23	47.23	-41.68	-39.25
3	0.82578	10.18	2.63	-5.64	12.81	4.54	56.00	46.00	-43.19	-41.46
4	3.63672	10.36	15.73	9.08	26.09	19.44	56.00	46.00	-29.91	-26.56
5	16.22656	10.83	32.27	29.76	43.10	40.59	60.00	50.00	-16.90	-9.41
6	23.12891	10.98	28.44	26.06	39.42	37.04	60.00	50.00	-20.58	-12.96

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



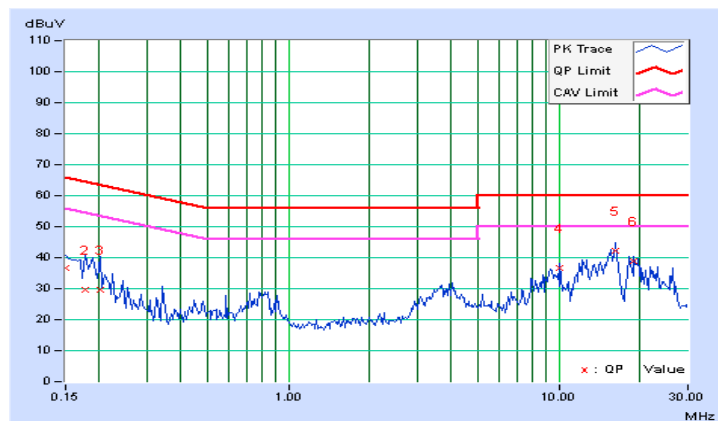
4.2.9 Test Results (Mode 3)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

Phase Of Power : Line (L)										
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	10.26	26.32	2.30	36.58	12.56	66.00	56.00	-29.42	-43.44
2	0.17734	10.24	19.52	-3.42	29.76	6.82	64.61	54.61	-34.85	-47.79
3	0.20078	10.22	19.40	-4.30	29.62	5.92	63.58	53.58	-33.96	-47.66
4	10.05859	10.52	26.24	23.45	36.76	33.97	60.00	50.00	-23.24	-16.03
5	16.22831	10.81	31.29	27.78	42.10	38.59	60.00	50.00	-17.90	-11.41
6	18.91406	10.89	28.07	24.72	38.96	35.61	60.00	50.00	-21.04	-14.39

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

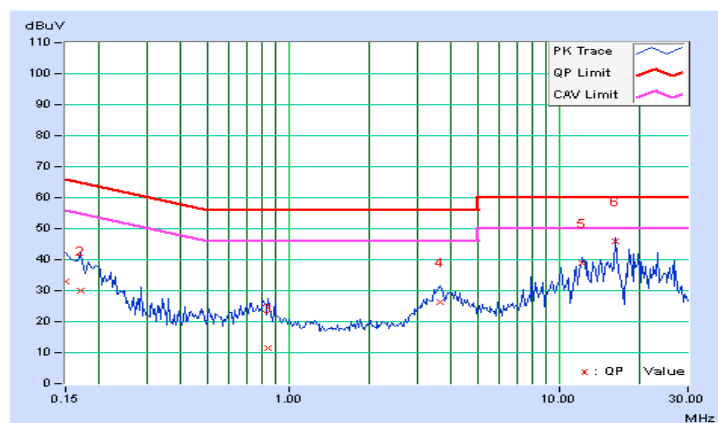


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
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	10.24	22.60	-2.20	32.84	8.04	66.00	56.00	-33.16	-47.96
2	0.16953	10.22	19.79	-4.09	30.01	6.13	64.98	54.98	-34.97	-48.85
3	0.84531	10.18	1.24	-6.54	11.42	3.64	56.00	46.00	-44.58	-42.36
4	3.64063	10.36	15.82	9.50	26.18	19.86	56.00	46.00	-29.82	-26.14
5	12.19922	10.64	28.15	26.47	38.79	37.11	60.00	50.00	-21.21	-12.89
6	16.22797	10.83	34.92	32.03	45.75	42.86	60.00	50.00	-14.25	-7.14

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

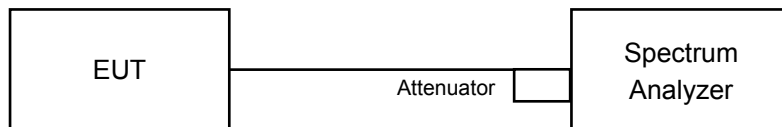


4.3 6dB Bandwidth Measurement

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 Procedure

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

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	10.13	0.5	PASS
6	2437	11.08	0.5	PASS
11	2462	11.11	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.34	0.5	PASS
6	2437	15.78	0.5	PASS
11	2462	15.83	0.5	PASS

802.11n(HT20)

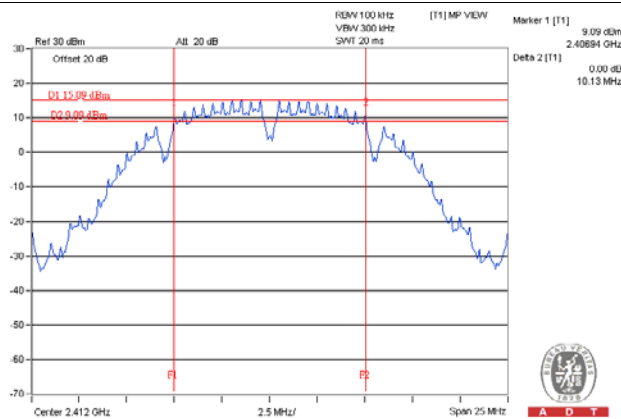
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	17.06	0.5	PASS
6	2437	16.39	0.5	PASS
11	2462	16.43	0.5	PASS

802.11n(HT40)

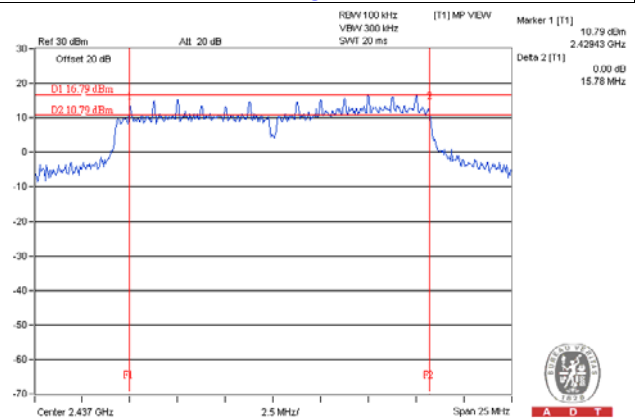
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	36.44	0.5	PASS
6	2437	35.29	0.5	PASS
9	2452	23.96	0.5	PASS

Spectrum Plot of Worst Value

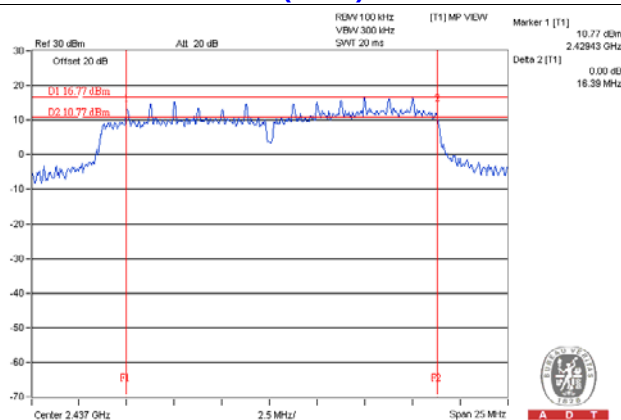
802.11b / CH1



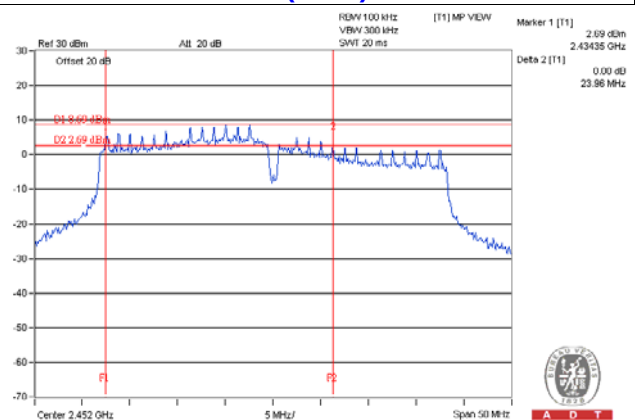
802.11g / CH6



802.11n (HT20) / CH6



802.11n (HT40) / CH9

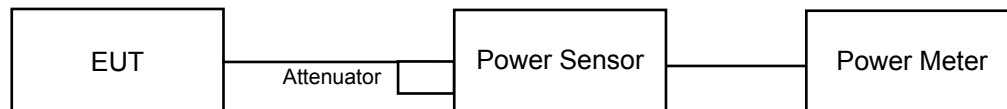


4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A 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 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

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	466.659	26.69	30	Pass
6	2437	676.083	28.30	30	Pass
11	2462	463.447	26.66	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	630.957	28.00	30	Pass
6	2437	995.405	29.98	30	Pass
11	2462	833.681	29.21	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	594.292	27.74	30	Pass
6	2437	990.832	29.96	30	Pass
11	2462	669.885	28.26	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
3	2422	425.598	26.29	30	Pass
6	2437	826.038	29.17	30	Pass
9	2452	727.78	28.62	30	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	272.898	24.36
6	2437	449.780	26.53
11	2462	292.415	24.66

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	89.743	19.53
6	2437	460.257	26.63
11	2462	124.451	20.95

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	73.282	18.65
6	2437	428.549	26.32
11	2462	88.105	19.45

802.11n (HT40)

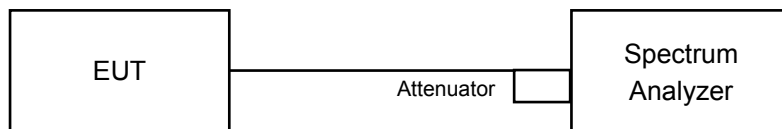
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	39.355	15.95
6	2437	114.025	20.57
9	2452	99.312	19.97

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 Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-0.29	8	Pass
6	2437	2.16	8	Pass
11	2462	-0.98	8	Pass

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-6.95	8	Pass
6	2437	1.60	8	Pass
11	2462	-3.99	8	Pass

802.11n (HT20)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-7.45	8	Pass
6	2437	-0.14	8	Pass
11	2462	-6.20	8	Pass

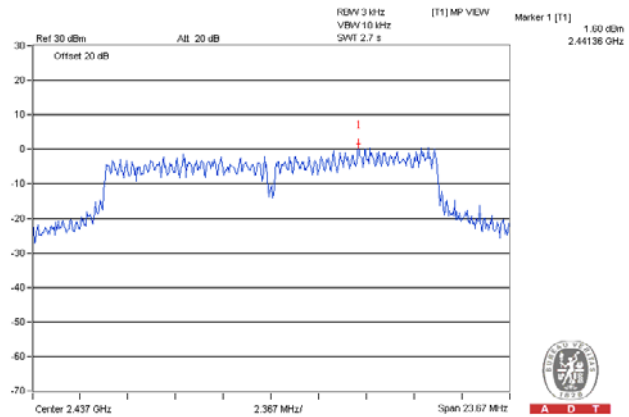
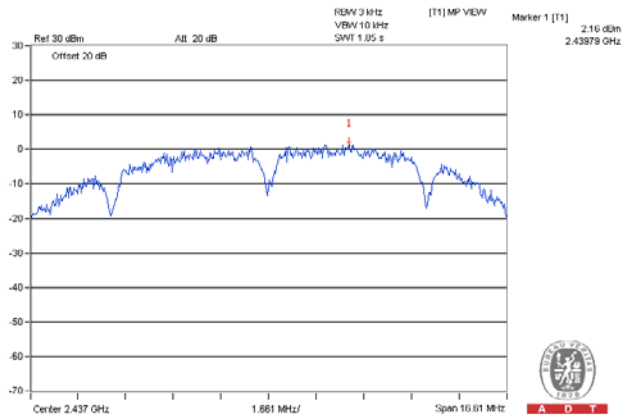
802.11n (HT40)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
3	2422	-13.01	8	Pass
6	2437	-7.62	8	Pass
9	2452	-7.16	8	Pass

Spectrum Plot of Worst Value

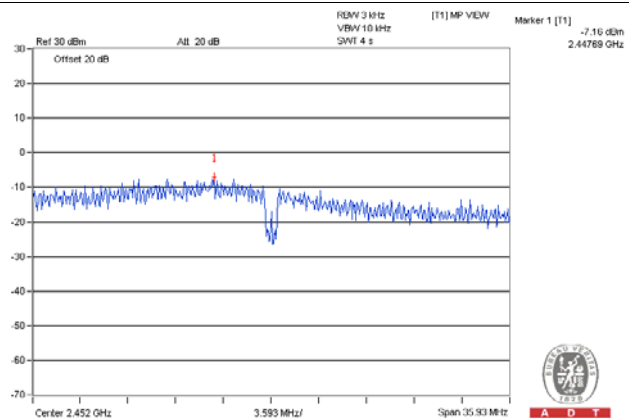
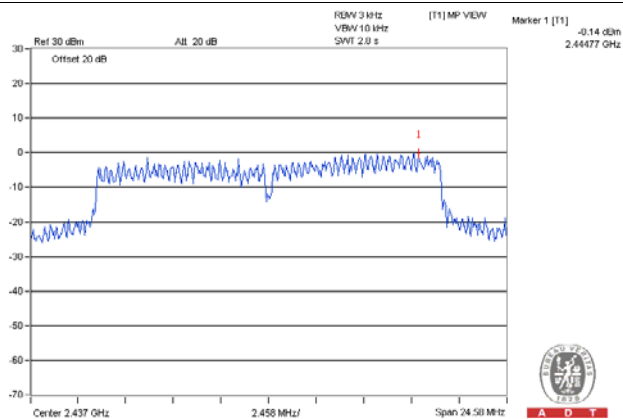
802.11b / CH6

802.11g / CH6



802.11n (HT20) / CH6

802.11n (HT40) / CH9

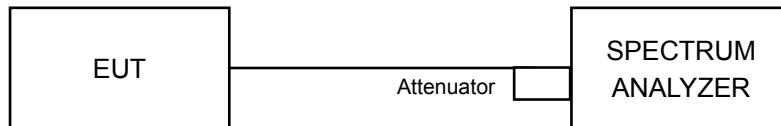


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 20dB 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 Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

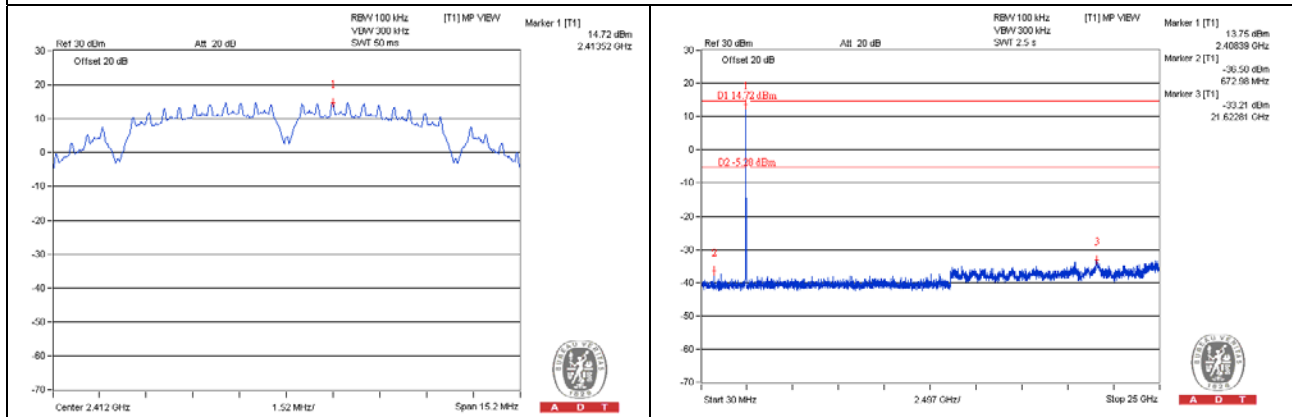
Same as Item 4.3.6

4.6.7 Test Results

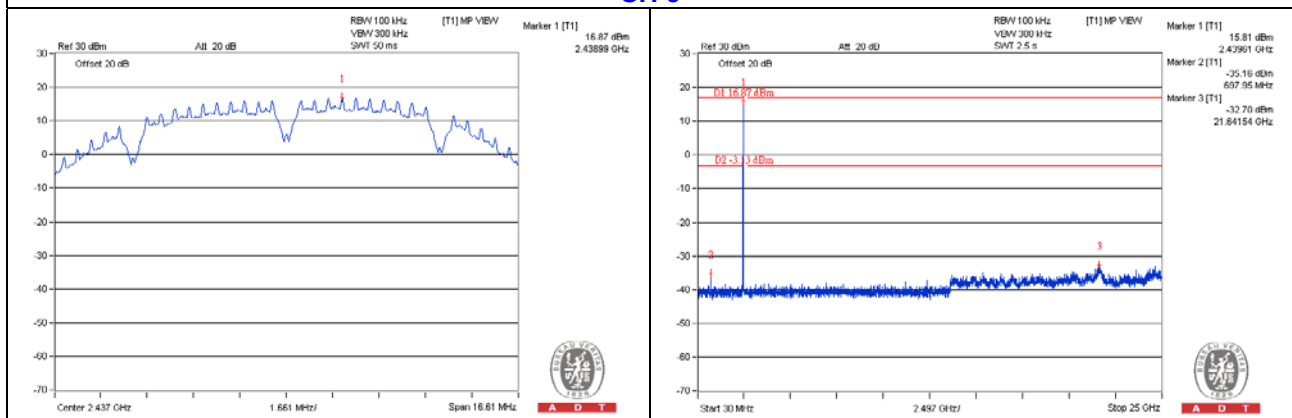
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

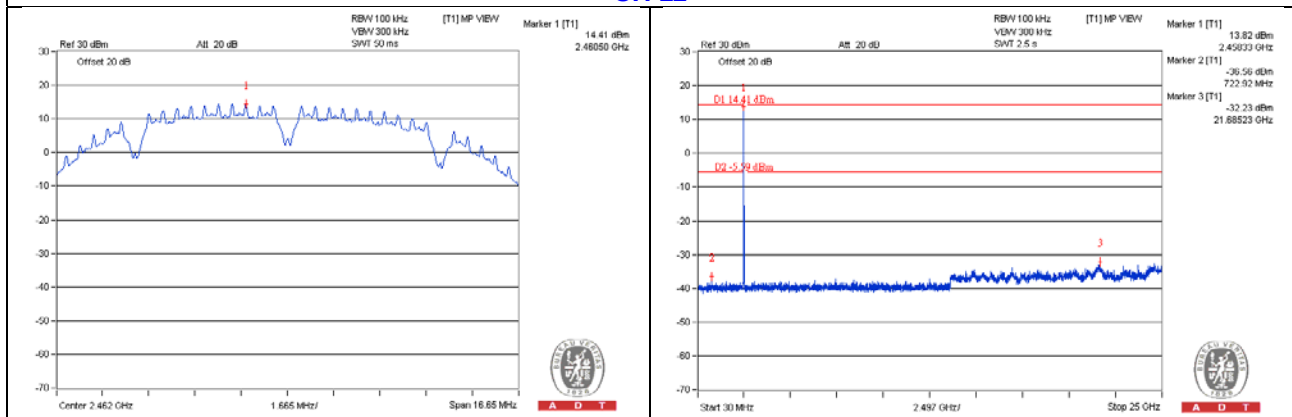
CH 1



CH 6

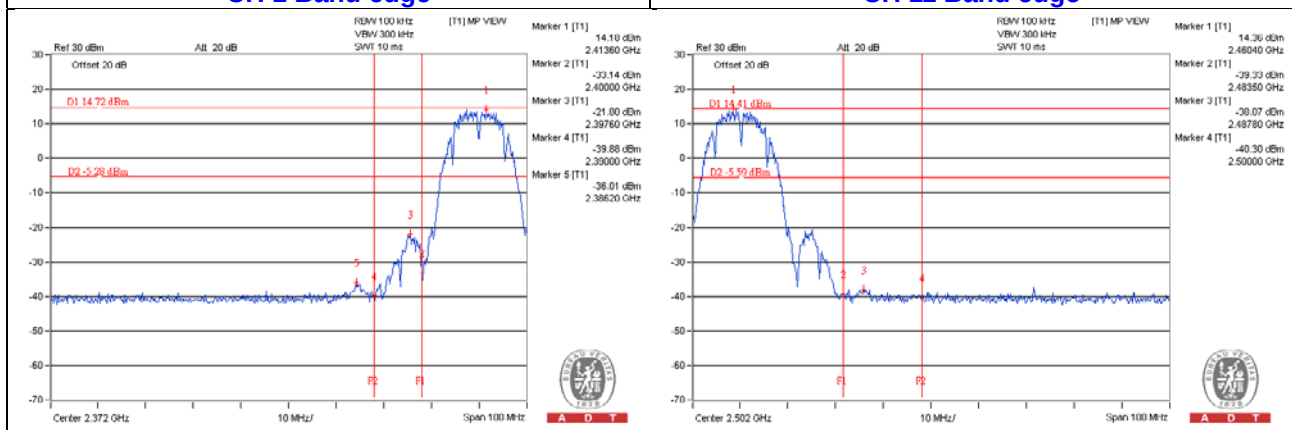


CH 11



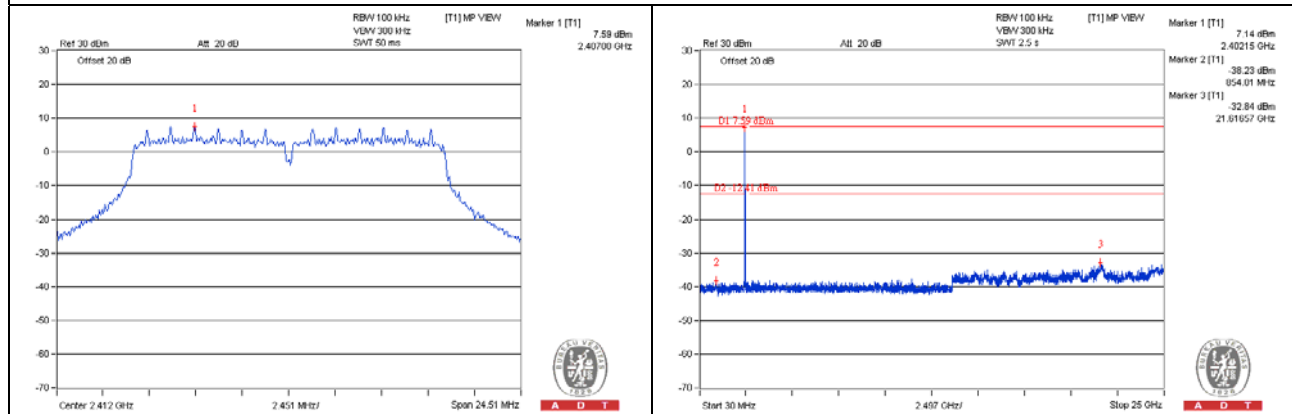
CH 1 Band edge

CH 11 Band edge

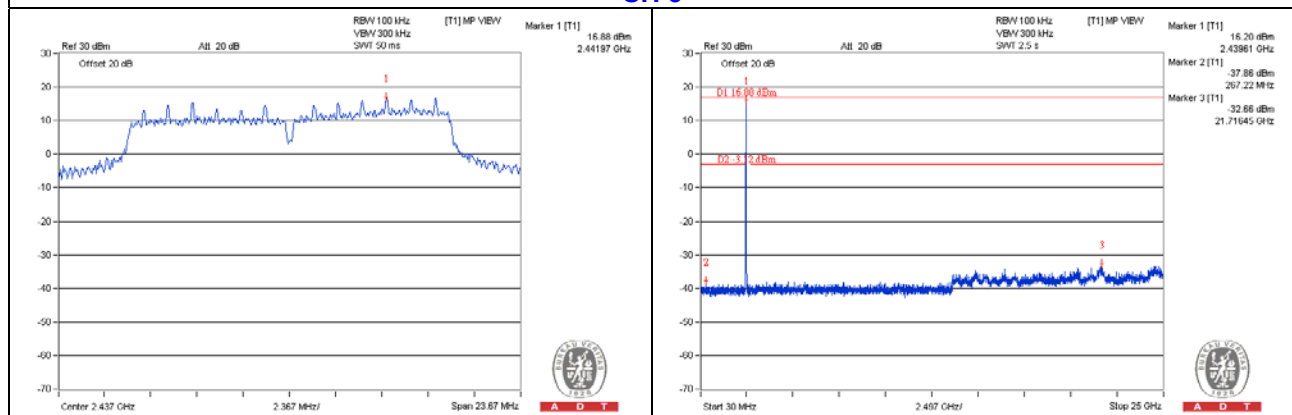


802.11g

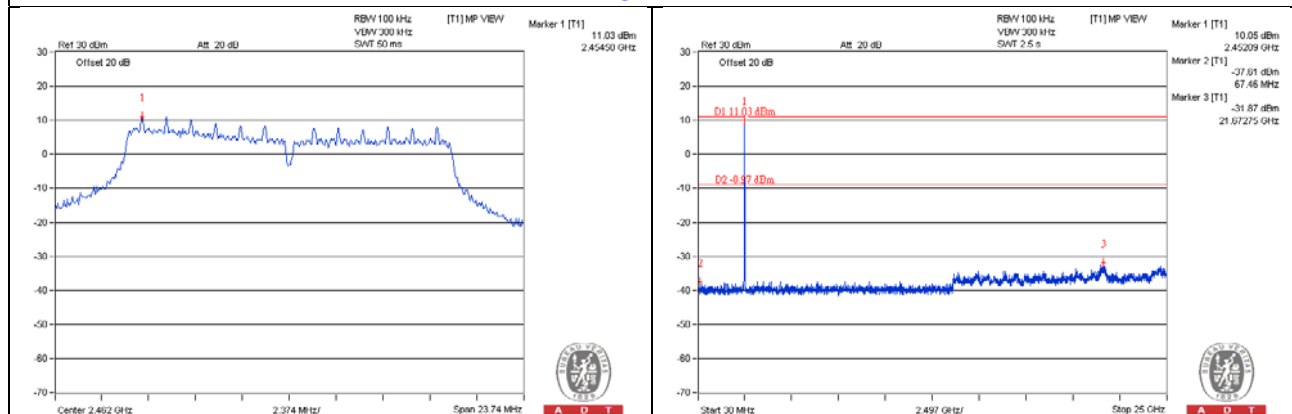
CH 1



CH 6

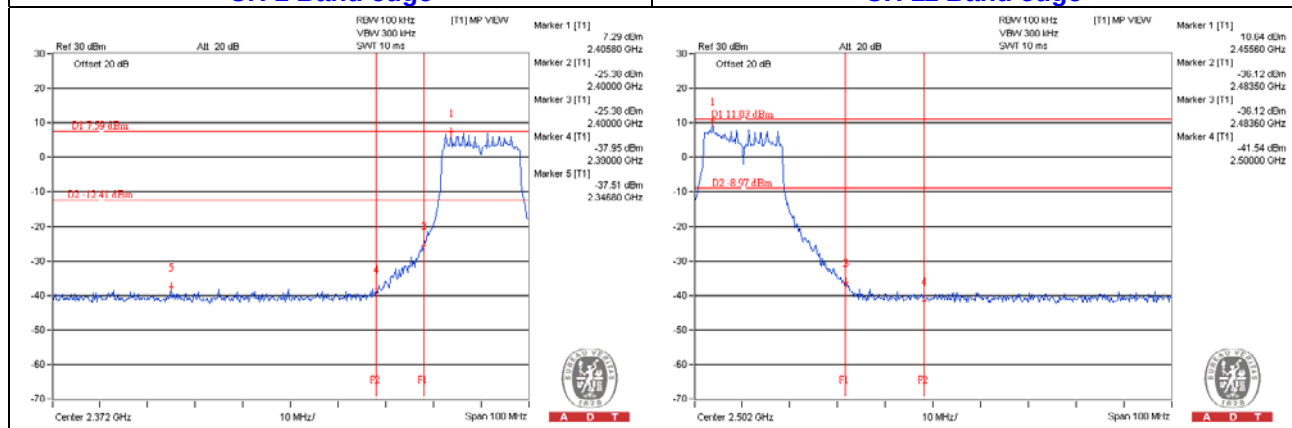


CH 11



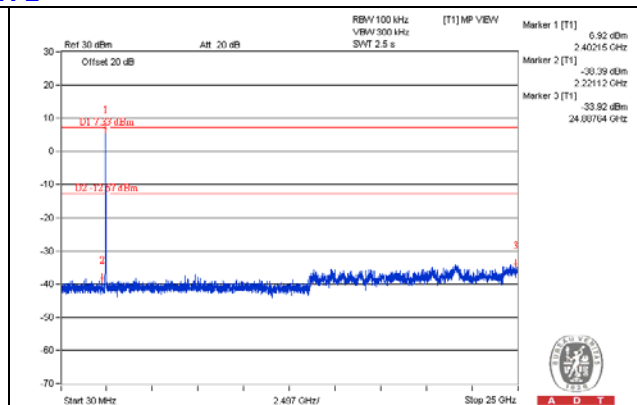
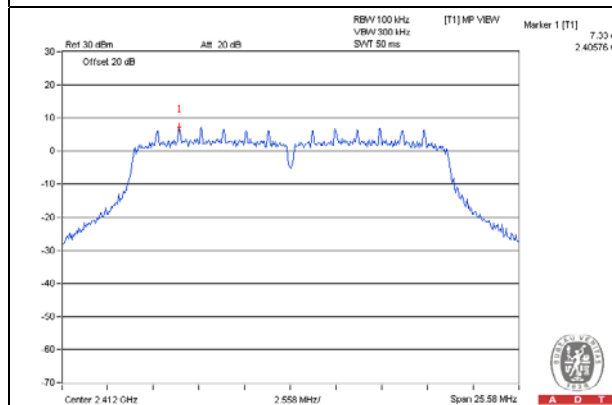
CH 1 Band edge

CH 11 Band edge

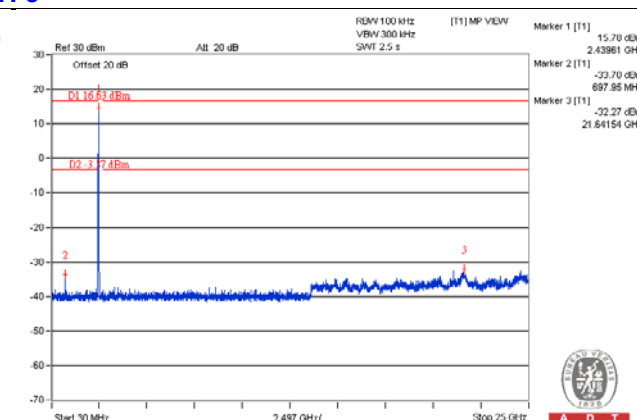
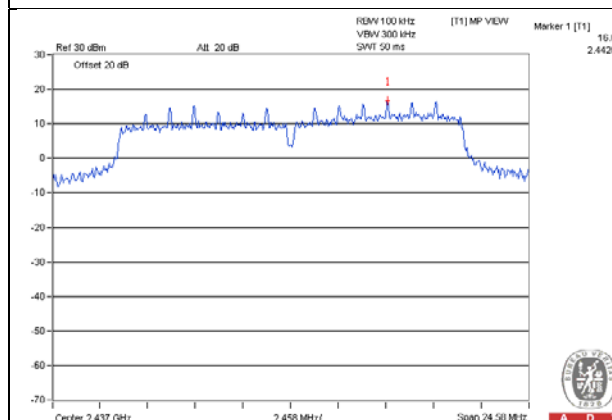


802.11n (HT20)

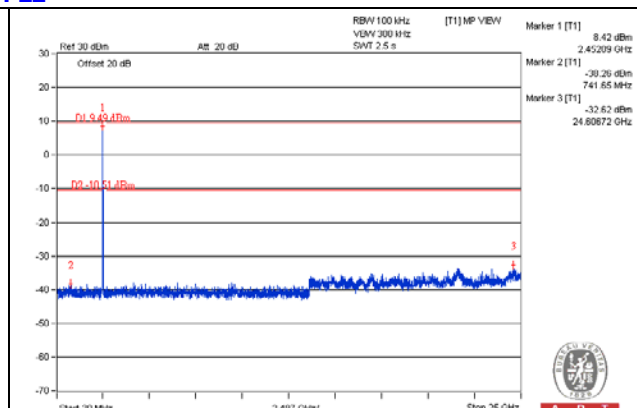
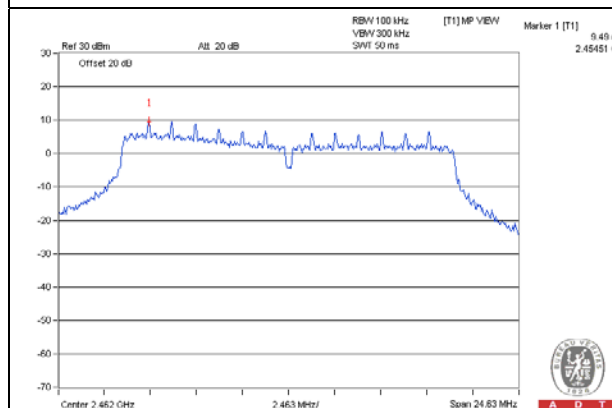
CH 1



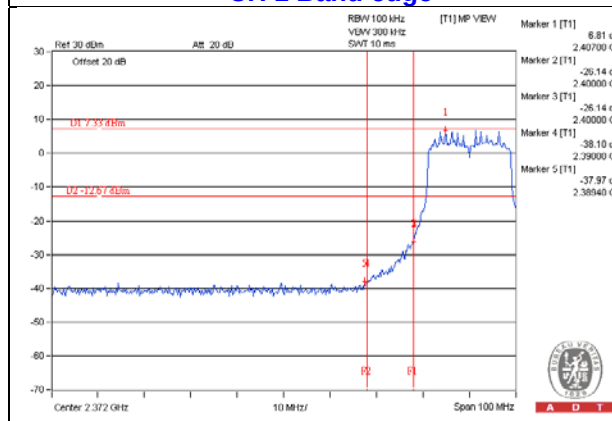
CH 6



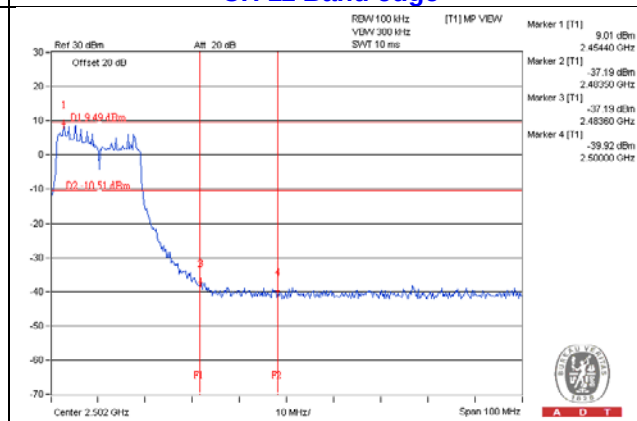
CH 11



CH 1 Band edge

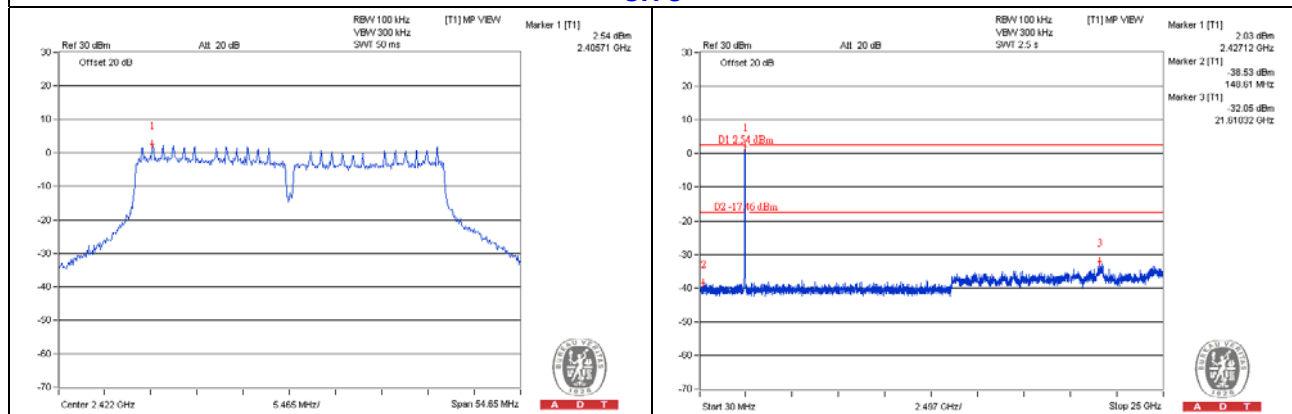


CH 11 Band edge

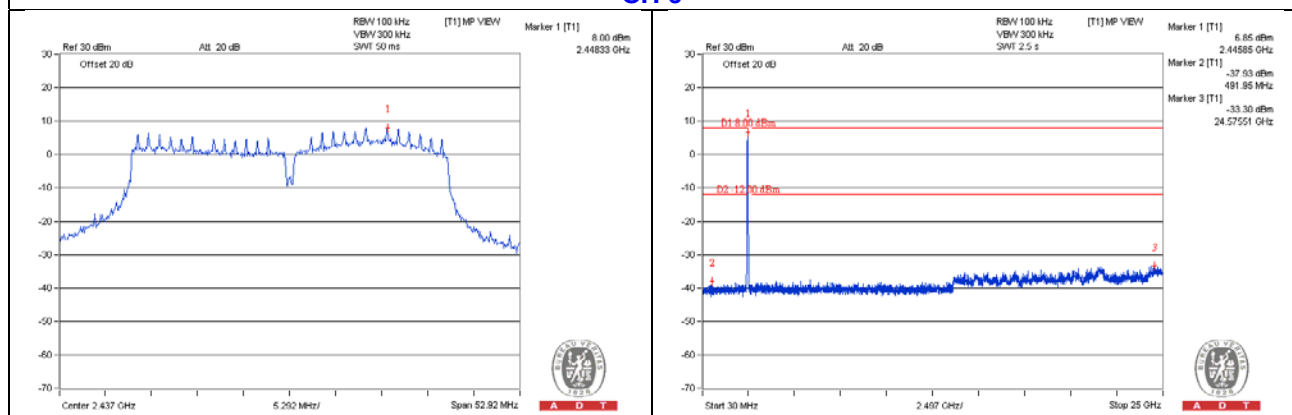


802.11n (HT40)

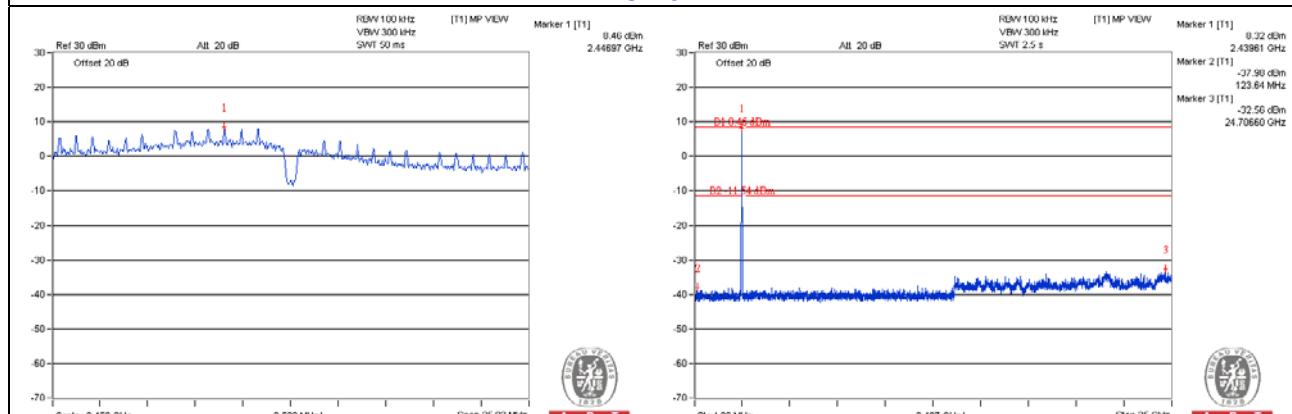
CH 3



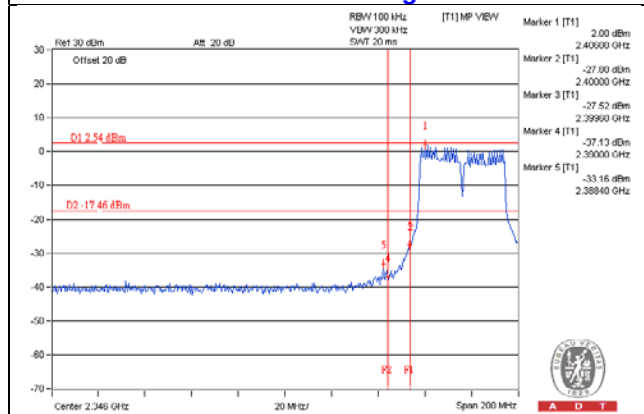
CH 6



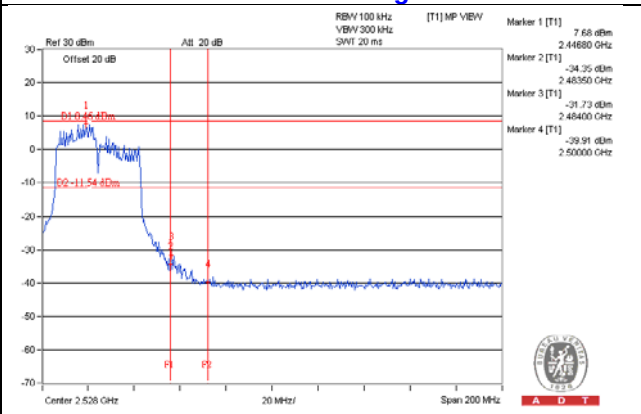
CH 9



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.

--- END ---