

FCC Test Report

Report No.: RF150624E06

FCC ID: PY315300320

Test Model: WAC720

Received Date: June 24, 2015

Test Date: Aug. 06 to 11, 2015

Issued Date: Aug. 20, 2015

Applicant: NETGEAR, Inc.

Address: 350 East Plumeria Drive San Jose, CA 95134

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

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

Test Location (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, 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.

Test Location (3): E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City, Taiwan
R.O.C.



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A D T

Release Control Record

Issue No.	Description	Date Issued
RF150624E06	Original release.	Aug. 20, 2015



A D T

1 Certificate of Conformity

Product: ProSAFE Dual Band Wireless AC Access Point
Brand: NETGEAR
Test Model: WAC720
Sample Status: MASS-PRODUCTION
Applicant: NETGEAR, Inc.
Test Date: Aug. 06 to 11, 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:** Aug. 20, 2015
Midoli Peng / Specialist

Approved by : May Chen, **Date:** Aug. 20, 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 -6.88dB at 0.30625MHz.
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 2483.50MHz & 2390.00MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	Pass	Meet the requirement of limit.
15.247(b)	Conducted 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 R-SMA and i-pex(MHF) not a standard connector.

NOTE: The EUT was operating in 2400 ~ 2483.5MHz, 5150~5250MHz and 5725~5850MHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz. For the 5150~5250MHz and 5725~5850MHz 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	5.43 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	ProSAFE Dual Band Wireless AC Access Point
Brand	NETGEAR
Test Model	WAC720
Status of EUT	MASS-PRODUCTION
Power Supply Rating	12Vdc from power adapter or 55Vdc from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	For 15.407 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
Number of Channel	For 15.407 9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	For 15.407(5.18 ~ 5.24GHz) CDD Mode: 802.11a: 52.451mW 802.11ac (VHT20): 52.811mW 802.11ac (VHT40): 70.602mW 802.11ac (VHT80): 40.503mW Beamforming Mode: 802.11ac (VHT20): 35.465mW 802.11ac (VHT40): 41.183mW 802.11ac (VHT80): 40.503mW
	For 15.407(5.745 ~ 5.825GHz) CDD Mode: 802.11a: 184.065mW Beamforming Mode: 802.11ac (VHT20): 242.998mW 802.11ac (VHT40): 125.73mW 802.11ac (VHT80): 48.522mW
	For 15.247 CDD Mode: 802.11b: 354.601mW 802.11g: 346.294mW Beamforming Mode: 802.11n(HT20): 355.643mW 802.11n(HT40): 87.919mW

Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

- 2.4GHz and 5GHz technology can transmit at same time.
- The antennas provided to the EUT, please refer to the following table:

External Antenna									
PCB Chain No.	Brand	Model	Antenna Gain (dBi) (Excelude cable loss)	Cable Loss (dB)	Net Gain (dBi)	Cable Length (mm)	Frequency range (GHz to GHz)	Antenna Type	Connector Type
Chain (0) (Left)	Master Wave Tech.	98364PRSX004	0.8	0.8	0	180	2.4~2.4835	Dipole	R-SMA
			1.5	1.5	0		5.15~5.25		
			1.6	1.5	0.1		5.25~5.35		
			0.7	1.5	-0.8		5.47~5.725		
			0.5	1.5	-1		5.725~5.85		
Chain (1) (Right)	Master Wave Tech.	98364PRSX004	0.8	0.9	-0.1	190	2.4~2.4835	Dipole	R-SMA
			1.5	1.7	-0.3		5.15~5.25		
			1.6	1.7	-0.1		5.25~5.35		
			0.7	1.7	-1		5.47~5.725		
			0.5	1.7	-1		5.725~5.85		
Internal Antenna									
PCB Chain No.	Brand	Model	Antenna Gain (dBi)		Frequency range (GHz to GHz)		Antenna Type	Connector Type	
Chain (0)	NA	NA	5		2.4~2.4835		PIFA	i-pex(MHF)	
			6		5.15~5.25				
			6		5.25~5.35				
			6		5.47~5.725				
			6		5.725~5.85				
Chain (1)	NA	NA	5		2.4~2.4835		PIFA	i-pex(MHF)	
			6		5.15~5.25				
			6		5.25~5.35				
			6		5.47~5.725				
			6		5.725~5.85				

3. The EUT must be supplied with POE or a power adapter and following two different models could be chosen as following table:

Adapter				
No	Brand Name	Model No.	P/N	Spec.
1	NETGEAR	2ABL030F 1	332-10758-01	Input: 100-120V, 1.0A, 50/60Hz Output: 12V, 2.5A DC output cable: 1.8m, unshielded
2	NETGEAR	ADS-40FPA-12	332-10759-01	Input: 100-120V, 1.0A, 60Hz Output: 12V, 2.5A DC output cable: 1.8m, unshielded
POE (test only, not for sale)				
No	Brand Name	Model No.	Spec.	
1	Microsemi Corp.	PD-9001GR/AC	Input: 100-240V, 0.8A, 50/60Hz Output: 55V, 0.6A	

Note: From the above adapters & POE, the radiated emission worse case was found in adapter 2. Therefore only the test data of the mode was recorded in this report.

4. The EUT incorporates a MIMO function with beamforming.(Except for 802.11a/b/g)

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

5. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
6. 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	√	√	-	-	With adapter 2 + External antenna
2	√	√	√	√	With adapter 2 + Internal antenna
3	-	-	√	-	With adapter 1 + Internal antenna
4	-	-	√	-	With POE + Internal antenna

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

NOTE: 1. The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane (below 1GHz) & Y-plane (above 1GHz)**.

2. "-" 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.

CDD Mode					
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
Beamforming Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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.

Beamforming Mode					
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.

Beamforming Mode					
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.

CDD Mode					
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
Beamforming Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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	22deg. C, 68%RH	120Vac, 60Hz	Andy Ho
RE<1G	23deg. C, 66%RH	120Vac, 60Hz	Robert Cheng
PLC	28deg. C, 59%RH	120Vac, 60Hz	Wythe Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

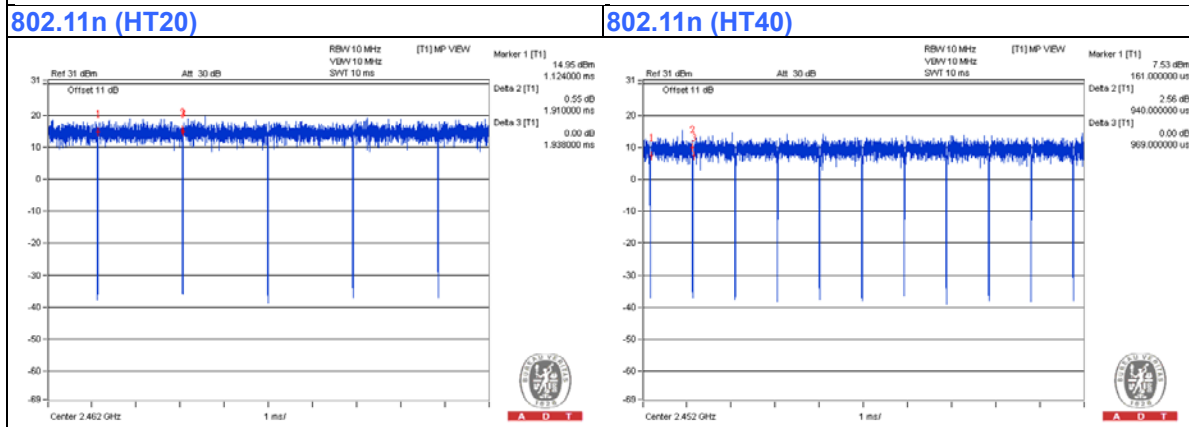
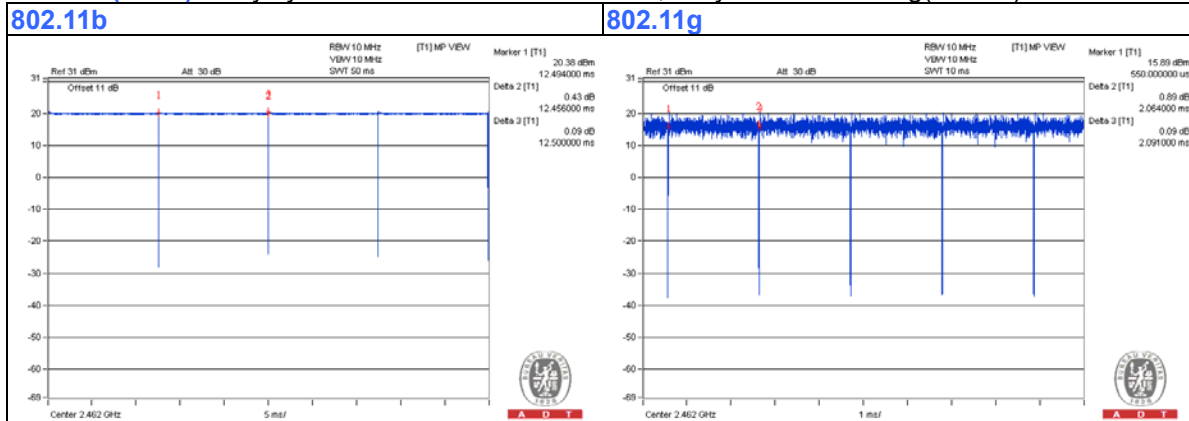
If duty cycle of test signal is $\geq 98\%$, duty factor is not required.
 If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11b: Duty cycle = $12.456 \text{ ms} / 12.5 \text{ ms} = 0.996$

802.11g: Duty cycle = $2.064 \text{ ms} / 2.091 \text{ ms} = 0.987$

802.11n (HT20): Duty cycle = $1.91 \text{ ms} / 1.938 \text{ ms} = 0.986$

802.11n (HT40): Duty cycle = $0.94 \text{ ms} / 0.969 \text{ ms} = 0.97$, Duty factor = $10 * \log(1/0.97) = 0.13$



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.

With adapter test Mode						
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	NOTEBOOK COMPUTER	DELL	PP32LA	DSL32S	FCC DoC	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	1.8	No	0	Supplied by Client
2.	RJ-45	1	10	No	0	Provided by Lab
3.	RJ-45 to RS232	1	1	No	0	Provided by Lab

With POE test Mode						
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	NOTEBOOK COMPUTER	DELL	PP32LA	DSL32S	FCC DoC	Provided by Lab
B	POE	Microsemi Corp.	PD-9001GR/AC	NA	NA	Supplied by Client

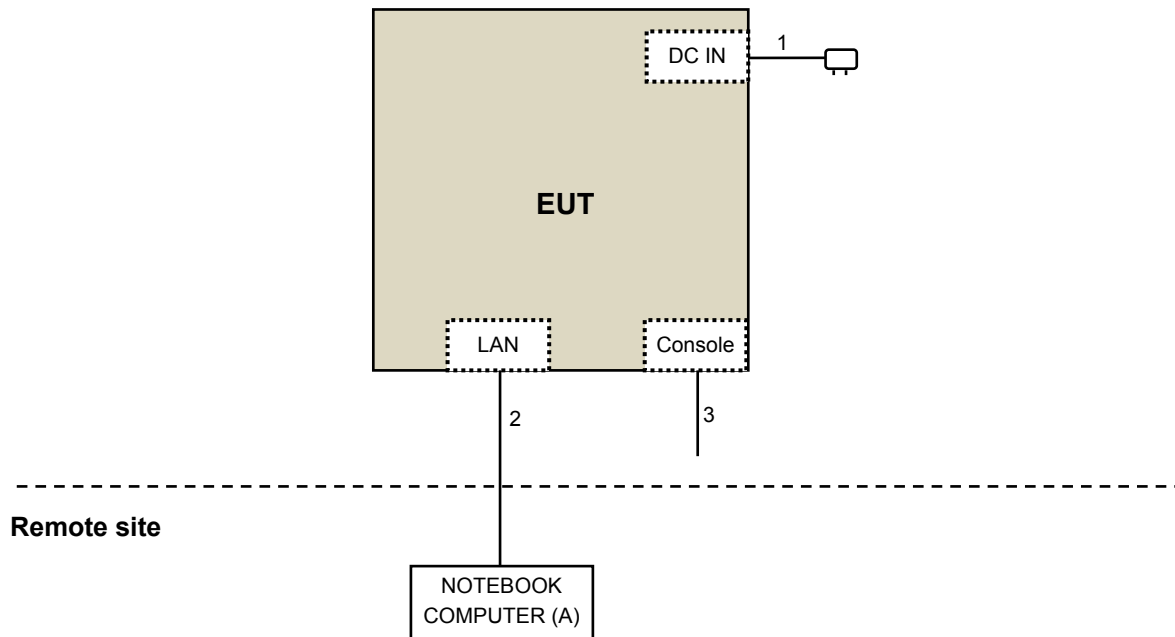
Note:

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

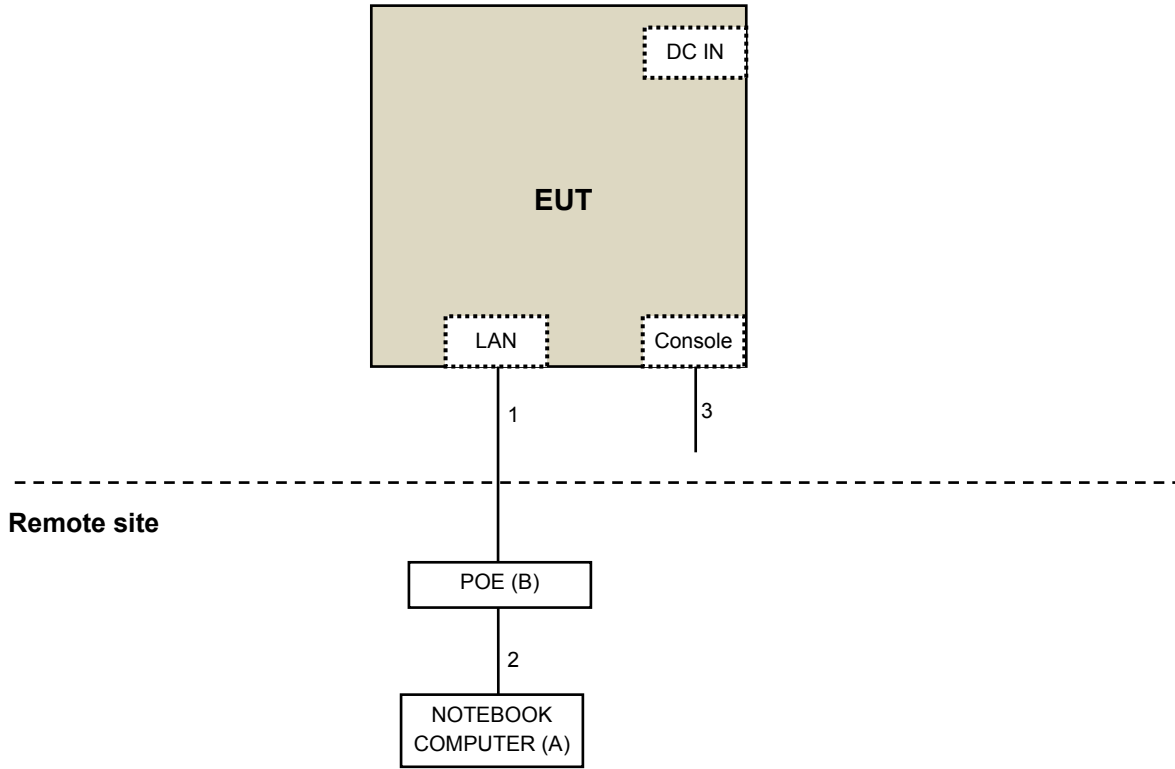
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45	1	10	No	0	Supplied by Client
2	RJ-45	1	3	No	0	Provided by Lab
3	RJ-45 to RS232	1	1	No	0	Provided by Lab

3.4.1 Configuration of System under Test

With adapter test Mode



With POE test mode



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.

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 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

For below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 12, 2014	Dec. 11, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 09, 2015	Feb. 08, 2016
RF Cable	8D-FB	CHHCAB-001-1	Oct. 05, 2014	Oct. 04, 2015
		CHHCAB-001-2		
	RF-141	CHHCAB-004	Oct. 05, 2014	Oct. 04, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. H.
3. The FCC Site Registration No. is 797305.
4. The CANADA Site Registration No. is IC 7450H-3.
5. Tested Date: Aug. 10, 2015

**For above 1GHz test:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 12, 2014	Dec. 11, 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	FSV 40	100964	June 26, 2015	June 25, 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: Aug. 07 to 11, 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:

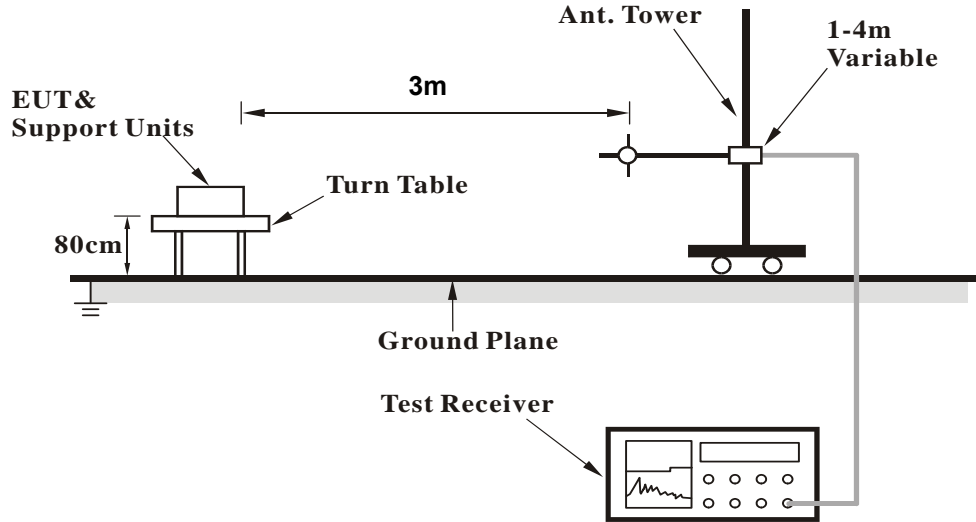
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

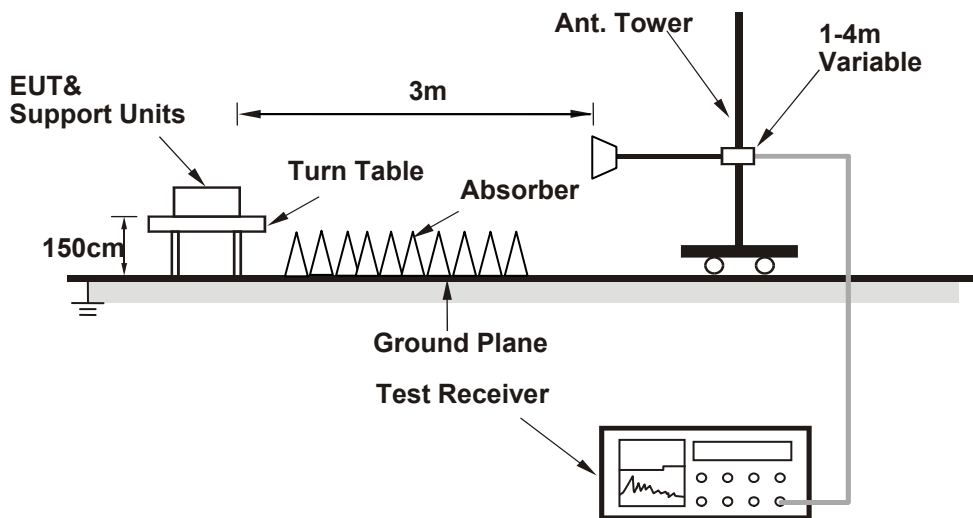
No deviation.

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. Connect the EUT with the support unit A (NOTEBOOK COMPUTER) which is placed on remote site.
2. Controlling software (Mtool.exe (V1.0.0.10)) has been activated to set the EUT on specific status.

4.1.7 Test Results (Mode 1)

Above 1GHz Data

CDD Mode

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	59.6 PK	74.0	-14.4	1.17 H	61	61.03	-1.43
2	2390.00	48.4 AV	54.0	-5.6	1.17 H	61	49.83	-1.43
3	*2412.00	105.2 PK			1.17 H	61	106.58	-1.38
4	*2412.00	101.9 AV			1.17 H	61	103.28	-1.38
5	4824.00	42.1 PK	74.0	-31.9	1.65 H	332	35.01	7.09
6	4824.00	34.7 AV	54.0	-19.3	1.65 H	332	27.61	7.09

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.7 PK	74.0	-11.3	2.17 V	309	64.13	-1.43
2	2390.00	53.7 AV	54.0	-0.3	2.17 V	309	55.13	-1.43
3	*2412.00	113.2 PK			2.17 V	309	114.58	-1.38
4	*2412.00	110.4 AV			2.17 V	309	111.78	-1.38
5	4824.00	47.6 PK	74.0	-26.4	1.57 V	166	40.51	7.09
6	4824.00	43.7 AV	54.0	-10.3	1.57 V	166	36.61	7.09

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	106.6 PK			1.21 H	51	107.92	-1.32
2	*2437.00	103.5 AV			1.21 H	51	104.82	-1.32
3	4874.00	42.4 PK	74.0	-31.6	1.61 H	326	35.15	7.25
4	4874.00	34.9 AV	54.0	-19.1	1.61 H	326	27.65	7.25
5	7311.00	47.1 PK	74.0	-26.9	1.24 H	61	32.65	14.45
6	7311.00	33.6 AV	54.0	-20.4	1.24 H	61	19.15	14.45

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	*2437.00	115.0 PK			2.26 V	181	116.32	-1.32
2	*2437.00	112.0 AV			2.26 V	181	113.32	-1.32
3	4874.00	48.3 PK	74.0	-25.7	1.54 V	177	41.05	7.25
4	4874.00	44.2 AV	54.0	-9.8	1.54 V	177	36.95	7.25
5	7311.00	49.2 PK	74.0	-24.8	1.20 V	360	34.75	14.45
6	7311.00	39.0 AV	54.0	-15.0	1.20 V	360	24.55	14.45

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	104.2 PK			1.12 H	67	105.46	-1.26
2	*2462.00	101.3 AV			1.12 H	67	102.56	-1.26
3	2483.50	60.4 PK	74.0	-13.6	1.12 H	67	61.61	-1.21
4	2483.50	48.5 AV	54.0	-5.5	1.12 H	67	49.71	-1.21
5	4924.00	42.5 PK	74.0	-31.5	1.66 H	323	35.05	7.45
6	4924.00	34.8 AV	54.0	-19.2	1.66 H	323	27.35	7.45
7	7386.00	46.7 PK	74.0	-27.3	1.30 H	52	32.18	14.52
8	7386.00	33.4 AV	54.0	-20.6	1.30 H	52	18.88	14.52

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	112.2 PK			2.17 V	15	113.46	-1.26
2	*2462.00	109.8 AV			2.17 V	15	111.06	-1.26
3	2483.50	63.5 PK	74.0	-10.5	2.17 V	15	64.71	-1.21
4	2483.50	53.7 AV	54.0	-0.3	2.17 V	15	54.91	-1.21
5	4924.00	48.5 PK	74.0	-25.5	1.49 V	185	41.05	7.45
6	4924.00	44.6 AV	54.0	-9.4	1.49 V	185	37.15	7.45
7	7386.00	49.4 PK	74.0	-24.6	1.16 V	360	34.88	14.52
8	7386.00	39.2 AV	54.0	-14.8	1.16 V	360	24.68	14.52

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	67.3 PK	74.0	-6.7	1.14 H	64	68.73	-1.43
2	2390.00	46.3 AV	54.0	-7.7	1.14 H	64	47.73	-1.43
3	*2412.00	102.3 PK			1.14 H	64	103.68	-1.38
4	*2412.00	91.0 AV			1.14 H	64	92.38	-1.38
5	4824.00	42.3 PK	74.0	-31.7	1.67 H	317	35.21	7.09
6	4824.00	34.9 AV	54.0	-19.1	1.67 H	317	27.81	7.09

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.1 PK	74.0	-3.9	1.81 V	300	71.53	-1.43
2	2390.00	51.4 AV	54.0	-2.6	1.81 V	300	52.83	-1.43
3	*2412.00	110.5 PK			1.81 V	300	111.88	-1.38
4	*2412.00	99.5 AV			1.81 V	300	100.88	-1.38
5	4824.00	49.1 PK	74.0	-24.9	1.52 V	173	42.01	7.09
6	4824.00	45.0 AV	54.0	-9.0	1.52 V	173	37.91	7.09

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	63.6 PK	74.0	-10.4	1.10 H	68	65.03	-1.43
2	2390.00	43.9 AV	54.0	-10.1	1.10 H	68	45.33	-1.43
3	*2437.00	108.9 PK			1.10 H	68	110.22	-1.32
4	*2437.00	98.6 AV			1.10 H	68	99.92	-1.32
5	2483.50	61.0 PK	74.0	-13.0	1.10 H	68	62.21	-1.21
6	2483.50	43.0 AV	54.0	-11.0	1.10 H	68	44.21	-1.21
7	4874.00	42.5 PK	74.0	-31.5	1.65 H	312	35.25	7.25
8	4874.00	34.7 AV	54.0	-19.3	1.65 H	312	27.45	7.25
9	7311.00	46.1 PK	74.0	-27.9	1.27 H	40	31.65	14.45
10	7311.00	33.1 AV	54.0	-20.9	1.27 H	40	18.65	14.45

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	66.7 PK	74.0	-7.3	1.96 V	273	68.13	-1.43
2	2390.00	49.3 AV	54.0	-4.7	1.96 V	273	50.73	-1.43
3	*2437.00	117.9 PK			1.96 V	273	119.22	-1.32
4	*2437.00	107.1 AV			1.96 V	273	108.42	-1.32
5	2483.50	64.1 PK	74.0	-9.9	1.96 V	273	65.31	-1.21
6	2483.50	48.4 AV	54.0	-5.6	1.96 V	273	49.61	-1.21
7	4874.00	48.2 PK	74.0	-25.8	1.47 V	177	40.95	7.25
8	4874.00	44.4 AV	54.0	-9.6	1.47 V	177	37.15	7.25
9	7311.00	49.4 PK	74.0	-24.6	1.18 V	360	34.95	14.45
10	7311.00	39.0 AV	54.0	-15.0	1.18 V	360	24.55	14.45

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	102.4 PK			1.09 H	59	103.66	-1.26
2	*2462.00	92.0 AV			1.09 H	59	93.26	-1.26
3	2483.50	68.7 PK	74.0	-5.3	1.09 H	59	69.91	-1.21
4	2483.50	46.5 AV	54.0	-7.5	1.09 H	59	47.71	-1.21
5	4924.00	42.6 PK	74.0	-31.4	1.65 H	313	35.15	7.45
6	4924.00	35.0 AV	54.0	-19.0	1.65 H	313	27.55	7.45
7	7386.00	46.3 PK	74.0	-27.7	1.26 H	43	31.78	14.52
8	7386.00	33.0 AV	54.0	-21.0	1.26 H	43	18.48	14.52

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	111.4 PK			1.92 V	186	112.66	-1.26
2	*2462.00	100.5 AV			1.92 V	186	101.76	-1.26
3	2483.50	71.8 PK	74.0	-2.2	1.92 V	186	73.01	-1.21
4	2483.50	51.9 AV	54.0	-2.1	1.92 V	186	53.11	-1.21
5	4924.00	48.1 PK	74.0	-25.9	1.43 V	181	40.65	7.45
6	4924.00	44.2 AV	54.0	-9.8	1.43 V	181	36.75	7.45
7	7386.00	49.0 PK	74.0	-25.0	1.19 V	360	34.48	14.52
8	7386.00	38.9 AV	54.0	-15.1	1.19 V	360	24.38	14.52

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.

Beamforming Mode
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	69.4 PK	74.0	-4.6	1.08 H	44	70.83	-1.43
2	2390.00	47.0 AV	54.0	-7.0	1.08 H	44	48.43	-1.43
3	*2412.00	101.6 PK			1.08 H	44	102.98	-1.38
4	*2412.00	91.2 AV			1.08 H	44	92.58	-1.38
5	4824.00	42.9 PK	74.0	-31.1	1.61 H	325	35.81	7.09
6	4824.00	35.0 AV	54.0	-19.0	1.61 H	325	27.91	7.09

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	1.88 V	285	74.43	-1.43
2	2390.00	52.8 AV	54.0	-1.2	1.88 V	285	54.23	-1.43
3	*2412.00	111.5 PK			1.88 V	285	112.88	-1.38
4	*2412.00	99.7 AV			1.88 V	285	101.08	-1.38
5	4824.00	47.8 PK	74.0	-26.2	1.37 V	167	40.71	7.09
6	4824.00	43.8 AV	54.0	-10.2	1.37 V	167	36.71	7.09

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	67.2 PK	74.0	-6.8	1.07 H	42	68.63	-1.43
2	2390.00	44.9 AV	54.0	-9.1	1.07 H	42	46.33	-1.43
3	*2437.00	109.4 PK			1.07 H	42	110.72	-1.32
4	*2437.00	98.2 AV			1.07 H	42	99.52	-1.32
5	2483.50	66.4 PK	74.0	-7.6	1.07 H	42	67.61	-1.21
6	2483.50	42.2 AV	54.0	-11.8	1.07 H	42	43.41	-1.21
7	4874.00	42.4 PK	74.0	-31.6	1.70 H	318	35.15	7.25
8	4874.00	35.0 AV	54.0	-19.0	1.70 H	318	27.75	7.25
9	7311.00	46.1 PK	74.0	-27.9	1.22 H	49	31.65	14.45
10	7311.00	32.6 AV	54.0	-21.4	1.22 H	49	18.15	14.45

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	70.7 PK	74.0	-3.3	1.94 V	265	72.13	-1.43
2	2390.00	50.3 AV	54.0	-3.7	1.94 V	265	51.73	-1.43
3	*2437.00	118.3 PK			1.94 V	265	119.62	-1.32
4	*2437.00	106.7 AV			1.94 V	265	108.02	-1.32
5	2483.50	69.7 PK	74.0	-4.3	1.94 V	265	70.91	-1.21
6	2483.50	47.7 AV	54.0	-6.3	1.94 V	265	48.91	-1.21
7	4874.00	48.0 PK	74.0	-26.0	1.46 V	190	40.75	7.25
8	4874.00	44.2 AV	54.0	-9.8	1.46 V	190	36.95	7.25
9	7311.00	49.2 PK	74.0	-24.8	1.17 V	360	34.75	14.45
10	7311.00	38.9 AV	54.0	-15.1	1.17 V	360	24.45	14.45

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	100.0 PK			1.04 H	29	101.26	-1.26
2	*2462.00	89.9 AV			1.04 H	29	91.16	-1.26
3	2483.50	67.1 PK	74.0	-6.9	1.04 H	29	68.31	-1.21
4	2483.50	47.4 AV	54.0	-6.6	1.04 H	29	48.61	-1.21
5	4924.00	42.4 PK	74.0	-31.6	1.65 H	311	34.95	7.45
6	4924.00	35.0 AV	54.0	-19.0	1.65 H	311	27.55	7.45
7	7386.00	45.8 PK	74.0	-28.2	1.22 H	47	31.28	14.52
8	7386.00	32.1 AV	54.0	-21.9	1.22 H	47	17.58	14.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.6 PK			1.93 V	294	110.86	-1.26
2	*2462.00	98.1 AV			1.93 V	294	99.36	-1.26
3	2483.50	70.4 PK	74.0	-3.6	1.93 V	294	71.61	-1.21
4	2483.50	52.9 AV	54.0	-1.1	1.93 V	294	54.11	-1.21
5	4924.00	48.0 PK	74.0	-26.0	1.44 V	198	40.55	7.45
6	4924.00	44.1 AV	54.0	-9.9	1.44 V	198	36.65	7.45
7	7386.00	49.2 PK	74.0	-24.8	1.21 V	360	34.68	14.52
8	7386.00	38.6 AV	54.0	-15.4	1.21 V	360	24.08	14.52

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	59.7 PK	74.0	-14.3	1.00 H	21	61.13	-1.43
2	2390.00	46.5 AV	54.0	-7.5	1.00 H	21	47.93	-1.43
3	*2422.00	96.0 PK			1.00 H	21	97.36	-1.36
4	*2422.00	84.7 AV			1.00 H	21	86.06	-1.36
5	4844.00	42.6 PK	74.0	-31.4	1.59 H	302	35.45	7.15
6	4844.00	35.5 AV	54.0	-18.5	1.59 H	302	28.35	7.15
7	7266.00	46.2 PK	74.0	-27.8	1.22 H	62	31.63	14.57
8	7266.00	32.6 AV	54.0	-21.4	1.22 H	62	18.03	14.57

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.6 PK	74.0	-5.4	2.02 V	248	70.03	-1.43
2	2390.00	50.8 AV	54.0	-3.2	2.02 V	248	52.23	-1.43
3	*2422.00	104.9 PK			2.02 V	248	106.26	-1.36
4	*2422.00	93.2 AV			2.02 V	248	94.56	-1.36
5	4844.00	48.5 PK	74.0	-25.5	1.43 V	211	41.35	7.15
6	4844.00	44.5 AV	54.0	-9.5	1.43 V	211	37.35	7.15
7	7266.00	49.2 PK	74.0	-24.8	1.25 V	360	34.63	14.57
8	7266.00	38.9 AV	54.0	-15.1	1.25 V	360	24.33	14.57

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	67.2 PK	74.0	-6.8	1.05 H	12	68.63	-1.43
2	2390.00	44.1 AV	54.0	-9.9	1.05 H	12	45.53	-1.43
3	*2437.00	100.3 PK			1.05 H	12	101.62	-1.32
4	*2437.00	89.0 AV			1.05 H	12	90.32	-1.32
5	2483.50	69.2 PK	74.0	-4.8	1.05 H	12	70.41	-1.21
6	2483.50	46.3 AV	54.0	-7.7	1.05 H	12	47.51	-1.21
7	4874.00	42.2 PK	74.0	-31.8	1.65 H	294	34.95	7.25
8	4874.00	35.4 AV	54.0	-18.6	1.65 H	294	28.15	7.25
9	7311.00	46.4 PK	74.0	-27.6	1.25 H	67	31.95	14.45
10	7311.00	32.6 AV	54.0	-21.4	1.25 H	67	18.15	14.45

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	70.5 PK	74.0	-3.5	2.01 V	262	71.93	-1.43
2	2390.00	49.2 AV	54.0	-4.8	2.01 V	262	50.63	-1.43
3	*2437.00	109.2 PK			2.01 V	262	110.52	-1.32
4	*2437.00	97.5 AV			2.01 V	262	98.82	-1.32
5	2483.50	73.1 PK	74.0	-0.9	2.01 V	262	74.31	-1.21
6	2483.50	51.7 AV	54.0	-2.3	2.01 V	262	52.91	-1.21
7	4874.00	47.8 PK	74.0	-26.2	1.46 V	197	40.55	7.25
8	4874.00	44.0 AV	54.0	-10.0	1.46 V	197	36.75	7.25
9	7311.00	49.0 PK	74.0	-25.0	1.28 V	360	34.55	14.45
10	7311.00	38.9 AV	54.0	-15.1	1.28 V	360	24.45	14.45

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	95.4 PK			1.05 H	18	96.68	-1.28
2	*2452.00	84.0 AV			1.05 H	18	85.28	-1.28
3	2483.50	60.2 PK	74.0	-13.8	1.05 H	18	61.41	-1.21
4	2483.50	49.4 AV	54.0	-4.6	1.05 H	18	50.61	-1.21
5	4904.00	41.8 PK	74.0	-32.2	1.66 H	297	34.44	7.36
6	4904.00	35.0 AV	54.0	-19.0	1.66 H	297	27.64	7.36
7	7356.00	45.9 PK	74.0	-28.1	1.29 H	81	31.40	14.50
8	7356.00	32.1 AV	54.0	-21.9	1.29 H	81	17.60	14.50

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	104.4 PK			2.04 V	284	105.68	-1.28
2	*2452.00	92.7 AV			2.04 V	284	93.98	-1.28
3	2483.50	69.8 PK	74.0	-4.2	2.04 V	284	71.01	-1.21
4	2483.50	52.9 AV	54.0	-1.1	2.04 V	284	54.11	-1.21
5	4904.00	48.3 PK	74.0	-25.7	1.43 V	210	40.94	7.36
6	4904.00	44.5 AV	54.0	-9.5	1.43 V	210	37.14	7.36
7	7356.00	49.3 PK	74.0	-24.7	1.28 V	360	34.80	14.50
8	7356.00	39.2 AV	54.0	-14.8	1.28 V	360	24.70	14.50

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

Beamforming Mode

802.11n (HT20)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	165.99	32.2 QP	43.5	-11.3	2.00 H	101	45.56	-13.32
2	218.62	30.3 QP	46.0	-15.8	1.50 H	73	46.04	-15.79
3	327.84	31.6 QP	46.0	-14.4	1.00 H	127	42.78	-11.14
4	500.01	27.7 QP	46.0	-18.3	2.00 H	61	34.55	-6.83
5	608.81	33.5 QP	46.0	-12.5	1.46 H	0	37.45	-3.93
6	713.61	33.4 QP	46.0	-12.6	1.60 H	67	36.04	-2.63
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	60.47	35.2 QP	40.0	-4.8	1.40 V	60	48.91	-13.72
2	93.82	35.4 QP	43.5	-8.1	2.00 V	21	53.80	-18.38
3	237.43	29.9 QP	46.0	-16.1	1.00 V	360	44.58	-14.64
4	320.27	30.6 QP	46.0	-15.4	1.00 V	360	41.94	-11.35
5	418.81	31.2 QP	46.0	-14.8	1.30 V	36	39.95	-8.77
6	566.28	29.7 QP	46.0	-16.3	1.60 V	8	35.33	-5.61

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

4.1.8 Test Results (Mode 2)

Above 1GHz Data

CDD Mode

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	58.0 PK	74.0	-16.0	1.93 H	64	59.43	-1.43
2	2390.00	52.6 AV	54.0	-1.4	1.93 H	64	54.03	-1.43
3	*2412.00	109.1 PK			1.93 H	64	110.48	-1.38
4	*2412.00	106.2 AV			1.93 H	64	107.58	-1.38
5	4824.00	46.7 PK	74.0	-27.3	1.69 H	307	39.61	7.09
6	4824.00	41.1 AV	54.0	-12.9	1.69 H	307	34.01	7.09

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	55.5 PK	74.0	-18.5	1.63 V	6	56.93	-1.43
2	2390.00	50.2 AV	54.0	-3.8	1.63 V	6	51.63	-1.43
3	*2412.00	106.6 PK			1.63 V	6	107.98	-1.38
4	*2412.00	103.6 AV			1.63 V	6	104.98	-1.38
5	4824.00	49.8 PK	74.0	-24.2	1.72 V	332	42.71	7.09
6	4824.00	46.4 AV	54.0	-7.6	1.72 V	332	39.31	7.09

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	50.0 PK	74.0	-24.0	1.62 H	37	51.43	-1.43
2	2390.00	38.8 AV	54.0	-15.2	1.62 H	37	40.23	-1.43
3	*2437.00	112.7 PK			1.62 H	37	114.02	-1.32
4	*2437.00	110.3 AV			1.62 H	37	111.62	-1.32
5	2483.50	56.3 PK	74.0	-17.7	1.62 H	37	57.51	-1.21
6	2483.50	43.0 AV	54.0	-11.0	1.62 H	37	44.21	-1.21
7	4874.00	47.2 PK	74.0	-26.8	1.74 H	317	39.95	7.25
8	4874.00	41.3 AV	54.0	-12.7	1.74 H	317	34.05	7.25
9	7311.00	48.4 PK	74.0	-25.6	1.17 H	318	33.95	14.45
10	7311.00	35.8 AV	54.0	-18.2	1.17 H	318	21.35	14.45

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	48.0 PK	74.0	-26.0	1.63 V	19	49.43	-1.43
2	2390.00	36.3 AV	54.0	-17.7	1.63 V	19	37.73	-1.43
3	*2437.00	110.1 PK			1.63 V	19	111.42	-1.32
4	*2437.00	107.7 AV			1.63 V	19	109.02	-1.32
5	2483.50	53.8 PK	74.0	-20.2	1.63 V	19	55.01	-1.21
6	2483.50	40.5 AV	54.0	-13.5	1.63 V	19	41.71	-1.21
7	4874.00	50.0 PK	74.0	-24.0	1.67 V	347	42.75	7.25
8	4874.00	46.7 AV	54.0	-7.3	1.67 V	347	39.45	7.25
9	7311.00	48.6 PK	74.0	-25.4	1.73 V	17	34.15	14.45
10	7311.00	37.2 AV	54.0	-16.8	1.73 V	17	22.75	14.45

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	109.8 PK			1.89 H	42	111.06	-1.26
2	*2462.00	106.7 AV			1.89 H	42	107.96	-1.26
3	2483.50	60.7 PK	74.0	-13.3	1.89 H	42	61.91	-1.21
4	2483.50	53.7 AV	54.0	-0.3	1.89 H	42	54.91	-1.21
5	4924.00	43.6 PK	74.0	-30.4	1.66 H	313	36.15	7.45
6	4924.00	34.9 AV	54.0	-19.1	1.66 H	313	27.45	7.45
7	7386.00	47.0 PK	74.0	-27.0	1.51 H	254	32.48	14.52
8	7386.00	33.2 AV	54.0	-20.8	1.51 H	254	18.68	14.52

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	107.3 PK			1.62 V	10	108.56	-1.26
2	*2462.00	104.1 AV			1.62 V	10	105.36	-1.26
3	4924.00	47.1 PK	74.0	-26.9	1.62 V	23	39.65	7.45
4	4924.00	42.7 AV	54.0	-11.3	1.62 V	23	35.25	7.45
5	7386.00	47.5 PK	74.0	-26.5	1.44 V	217	32.98	14.52
6	7386.00	33.8 AV	54.0	-20.2	1.44 V	217	19.28	14.52

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	69.6 PK	74.0	-4.4	1.98 H	317	71.03	-1.43
2	2390.00	53.9 AV	54.0	-0.1	1.98 H	317	55.33	-1.43
3	*2412.00	112.4 PK			1.98 H	317	113.78	-1.38
4	*2412.00	102.0 AV			1.98 H	317	103.38	-1.38
5	4824.00	44.2 PK	74.0	-29.8	1.74 H	316	37.11	7.09
6	4824.00	35.6 AV	54.0	-18.4	1.74 H	316	28.51	7.09

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.1 PK	74.0	-6.9	1.60 V	4	68.53	-1.43
2	2390.00	51.4 AV	54.0	-2.6	1.60 V	4	52.83	-1.43
3	*2412.00	109.9 PK			1.60 V	4	111.28	-1.38
4	*2412.00	99.4 AV			1.60 V	4	100.78	-1.38
5	4824.00	47.5 PK	74.0	-26.5	1.63 V	32	40.41	7.09
6	4824.00	43.0 AV	54.0	-11.0	1.63 V	32	35.91	7.09

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	119.9 PK			2.42 H	322	121.22	-1.32
2	*2437.00	109.2 AV			2.42 H	322	110.52	-1.32
3	4874.00	44.1 PK	74.0	-29.9	1.69 H	317	36.85	7.25
4	4874.00	35.4 AV	54.0	-18.6	1.69 H	317	28.15	7.25
5	7311.00	47.6 PK	74.0	-26.4	1.47 H	241	33.15	14.45
6	7311.00	33.7 AV	54.0	-20.3	1.47 H	241	19.25	14.45

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	*2437.00	117.4 PK			1.60 V	9	118.72	-1.32
2	*2437.00	106.6 AV			1.60 V	9	107.92	-1.32
3	4874.00	46.6 PK	74.0	-27.4	1.63 V	27	39.35	7.25
4	4874.00	42.3 AV	54.0	-11.7	1.63 V	27	35.05	7.25
5	7311.00	47.4 PK	74.0	-26.6	1.44 V	226	32.95	14.45
6	7311.00	33.6 AV	54.0	-20.4	1.44 V	226	19.15	14.45

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	112.9 PK			2.08 H	320	114.16	-1.26
2	*2462.00	102.3 AV			2.08 H	320	103.56	-1.26
3	2483.50	71.9 PK	74.0	-2.1	2.08 H	320	73.11	-1.21
4	2483.50	53.6 AV	54.0	-0.4	2.08 H	320	54.81	-1.21
5	4924.00	44.4 PK	74.0	-29.6	1.64 H	310	36.95	7.45
6	4924.00	35.9 AV	54.0	-18.1	1.64 H	310	28.45	7.45
7	7386.00	47.6 PK	74.0	-26.4	1.50 H	241	33.08	14.52
8	7386.00	33.6 AV	54.0	-20.4	1.50 H	241	19.08	14.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.4 PK			1.65 V	0	111.66	-1.26
2	*2462.00	99.7 AV			1.65 V	0	100.96	-1.26
3	2483.50	69.4 PK	74.0	-4.6	1.65 V	0	70.61	-1.21
4	2483.50	51.1 AV	54.0	-2.9	1.65 V	0	52.31	-1.21
5	4924.00	46.8 PK	74.0	-27.2	1.69 V	25	39.35	7.45
6	4924.00	42.6 AV	54.0	-11.4	1.69 V	25	35.15	7.45
7	7386.00	47.2 PK	74.0	-26.8	1.45 V	218	32.68	14.52
8	7386.00	33.4 AV	54.0	-20.6	1.45 V	218	18.88	14.52

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.

Beamforming Mode

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	73.7 PK	74.0	-0.3	2.39 H	314	75.13	-1.43
2	2390.00	53.9 AV	54.0	-0.1	2.39 H	314	55.33	-1.43
3	*2412.00	112.1 PK			2.39 H	314	113.48	-1.38
4	*2412.00	101.1 AV			2.39 H	314	102.48	-1.38
5	4824.00	45.0 PK	74.0	-29.0	1.61 H	323	37.91	7.09
6	4824.00	36.3 AV	54.0	-17.7	1.61 H	323	29.21	7.09

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	71.2 PK	74.0	-2.8	1.69 V	9	72.63	-1.43
2	2390.00	51.4 AV	54.0	-2.6	1.69 V	9	52.83	-1.43
3	*2412.00	109.6 PK			1.69 V	9	110.98	-1.38
4	*2412.00	98.5 AV			1.69 V	9	99.88	-1.38
5	4824.00	46.2 PK	74.0	-27.8	1.63 V	33	39.11	7.09
6	4824.00	42.2 AV	54.0	-11.8	1.63 V	33	35.11	7.09

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	67.9 PK	74.0	-6.1	2.29 H	314	69.33	-1.43
2	2390.00	50.9 AV	54.0	-3.1	2.29 H	314	52.33	-1.43
3	*2437.00	119.7 PK			2.29 H	314	121.02	-1.32
4	*2437.00	108.6 AV			2.29 H	314	109.92	-1.32
5	2483.50	70.7 PK	74.0	-3.3	2.29 H	314	71.91	-1.21
6	2483.50	49.9 AV	54.0	-4.1	2.29 H	314	51.11	-1.21
7	4874.00	44.6 PK	74.0	-29.4	1.61 H	294	37.35	7.25
8	4874.00	36.0 AV	54.0	-18.0	1.61 H	294	28.75	7.25
9	7311.00	47.4 PK	74.0	-26.6	1.54 H	249	32.95	14.45
10	7311.00	33.2 AV	54.0	-20.8	1.54 H	249	18.75	14.45

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	65.4 PK	74.0	-8.6	1.68 V	4	66.83	-1.43
2	2390.00	48.4 AV	54.0	-5.6	1.68 V	4	49.83	-1.43
3	*2437.00	117.2 PK			1.68 V	4	118.52	-1.32
4	*2437.00	106.0 AV			1.68 V	4	107.32	-1.32
5	2483.50	68.2 PK	74.0	-5.8	1.68 V	4	69.41	-1.21
6	2483.50	47.4 AV	54.0	-6.6	1.68 V	4	48.61	-1.21
7	4874.00	47.3 PK	74.0	-26.7	1.66 V	10	40.05	7.25
8	4874.00	43.1 AV	54.0	-10.9	1.66 V	10	35.85	7.25
9	7311.00	47.5 PK	74.0	-26.5	1.45 V	215	33.05	14.45
10	7311.00	33.4 AV	54.0	-20.6	1.45 V	215	18.95	14.45

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	111.2 PK			2.17 H	309	112.46	-1.26
2	*2462.00	100.4 AV			2.17 H	309	101.66	-1.26
3	2483.50	73.3 PK	74.0	-0.7	2.17 H	309	74.51	-1.21
4	2483.50	53.9 AV	54.0	-0.1	2.17 H	309	55.11	-1.21
5	4924.00	44.6 PK	74.0	-29.4	1.64 H	302	37.15	7.45
6	4924.00	36.0 AV	54.0	-18.0	1.64 H	302	28.55	7.45
7	7386.00	46.9 PK	74.0	-27.1	1.53 H	248	32.38	14.52
8	7386.00	32.9 AV	54.0	-21.1	1.53 H	248	18.38	14.52

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	108.7 PK			1.64 V	10	109.96	-1.26
2	*2462.00	97.8 AV			1.64 V	10	99.06	-1.26
3	2483.50	70.5 PK	74.0	-3.5	1.64 V	10	71.71	-1.21
4	2483.50	51.3 AV	54.0	-2.7	1.64 V	10	52.51	-1.21
5	4924.00	47.3 PK	74.0	-26.7	1.66 V	9	39.85	7.45
6	4924.00	43.0 AV	54.0	-11.0	1.66 V	9	35.55	7.45
7	7386.00	47.7 PK	74.0	-26.3	1.50 V	229	33.18	14.52
8	7386.00	33.6 AV	54.0	-20.4	1.50 V	229	19.08	14.52

REMARKS:

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

802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.2 PK	74.0	-3.8	2.09 H	308	71.63	-1.43
2	2390.00	53.9 AV	54.0	-0.1	2.09 H	308	55.33	-1.43
3	*2422.00	107.0 PK			2.09 H	308	108.36	-1.36
4	*2422.00	96.0 AV			2.09 H	308	97.36	-1.36
5	4844.00	44.3 PK	74.0	-29.7	1.62 H	290	37.15	7.15
6	4844.00	35.6 AV	54.0	-18.4	1.62 H	290	28.45	7.15
7	7266.00	47.2 PK	74.0	-26.8	1.55 H	239	32.63	14.57
8	7266.00	33.3 AV	54.0	-20.7	1.55 H	239	18.73	14.57

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.5 PK	74.0	-6.5	1.61 V	26	68.93	-1.43
2	2390.00	51.4 AV	54.0	-2.6	1.61 V	26	52.83	-1.43
3	*2422.00	104.5 PK			1.61 V	26	105.86	-1.36
4	*2422.00	93.4 AV			1.61 V	26	94.76	-1.36
5	4844.00	47.1 PK	74.0	-26.9	1.68 V	13	39.95	7.15
6	4844.00	43.1 AV	54.0	-10.9	1.68 V	13	35.95	7.15
7	7266.00	47.8 PK	74.0	-26.2	1.52 V	230	33.23	14.57
8	7266.00	33.5 AV	54.0	-20.5	1.52 V	230	18.93	14.57

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	2390.00	73.5 PK	74.0	-0.5	1.98 H	301	74.93	-1.43
2	2390.00	53.0 AV	54.0	-1.0	1.98 H	301	54.43	-1.43
3	*2437.00	110.6 PK			1.98 H	301	111.92	-1.32
4	*2437.00	99.4 AV			1.98 H	301	100.72	-1.32
5	2483.50	73.9 PK	74.0	-0.1	1.98 H	301	75.11	-1.21
6	2483.50	52.1 AV	54.0	-1.9	1.98 H	301	53.31	-1.21
7	4874.00	43.9 PK	74.0	-30.1	1.67 H	301	36.65	7.25
8	4874.00	35.1 AV	54.0	-18.9	1.67 H	301	27.85	7.25
9	7311.00	47.1 PK	74.0	-26.9	1.50 H	230	32.65	14.45
10	7311.00	32.9 AV	54.0	-21.1	1.50 H	230	18.45	14.45

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	69.0 PK	74.0	-5.0	1.63 V	36	70.43	-1.43
2	2390.00	50.5 AV	54.0	-3.5	1.63 V	36	51.93	-1.43
3	*2437.00	108.1 PK			1.63 V	36	109.42	-1.32
4	*2437.00	96.8 AV			1.63 V	36	98.12	-1.32
5	2483.50	68.3 PK	74.0	-5.7	1.63 V	36	69.51	-1.21
6	2483.50	49.5 AV	54.0	-4.5	1.63 V	36	50.71	-1.21
7	4874.00	46.9 PK	74.0	-27.1	1.66 V	10	39.65	7.25
8	4874.00	42.8 AV	54.0	-11.2	1.66 V	10	35.55	7.25
9	7311.00	48.1 PK	74.0	-25.9	1.57 V	237	33.65	14.45
10	7311.00	33.8 AV	54.0	-20.2	1.57 V	237	19.35	14.45

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	105.7 PK			1.97 H	306	106.98	-1.28
2	*2452.00	94.7 AV			1.97 H	306	95.98	-1.28
3	2483.50	69.7 PK	74.0	-4.3	1.97 H	306	70.91	-1.21
4	2483.50	53.7 AV	54.0	-0.3	1.97 H	306	54.91	-1.21
5	4904.00	43.7 PK	74.0	-30.3	1.66 H	288	36.34	7.36
6	4904.00	35.2 AV	54.0	-18.8	1.66 H	288	27.84	7.36
7	7356.00	47.2 PK	74.0	-26.8	1.44 H	228	32.70	14.50
8	7356.00	33.2 AV	54.0	-20.8	1.44 H	228	18.70	14.50

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	103.2 PK			1.68 V	50	104.48	-1.28
2	*2452.00	92.1 AV			1.68 V	50	93.38	-1.28
3	2483.50	66.7 PK	74.0	-7.3	1.68 V	50	67.91	-1.21
4	2483.50	51.1 AV	54.0	-2.9	1.68 V	50	52.31	-1.21
5	4904.00	47.2 PK	74.0	-26.8	1.63 V	4	39.84	7.36
6	4904.00	43.2 AV	54.0	-10.8	1.63 V	4	35.84	7.36
7	7356.00	48.7 PK	74.0	-25.3	1.59 V	244	34.20	14.50
8	7356.00	34.3 AV	54.0	-19.7	1.59 V	244	19.80	14.50

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

Beamforming Mode

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	116.96	22.5 QP	43.5	-21.0	1.50 H	360	37.91	-15.44
2	167.45	24.9 QP	43.5	-18.6	1.50 H	63	38.17	-13.24
3	264.69	35.7 QP	46.0	-10.3	1.00 H	278	49.13	-13.41
4	320.18	38.8 QP	46.0	-7.2	1.00 H	1	49.86	-11.08
5	399.18	29.7 QP	46.0	-16.3	1.00 H	1	39.31	-9.65
6	524.07	29.9 QP	46.0	-16.1	1.50 H	301	36.56	-6.67

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	76.22	13.4 QP	40.0	-26.7	2.00 V	327	30.05	-16.70
2	118.61	18.1 QP	43.5	-25.4	1.00 V	267	33.36	-15.22
3	173.95	18.5 QP	43.5	-25.0	1.00 V	271	32.29	-13.75
4	266.53	29.9 QP	46.0	-16.1	1.50 V	315	43.16	-13.29
5	319.45	30.1 QP	46.0	-15.9	1.50 V	53	41.17	-11.11
6	365.77	31.1 QP	46.0	-14.9	1.50 V	360	41.41	-10.31

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	100287	Apr. 17, 2015	Apr. 16, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-523	Sep. 29, 2014	Sep. 28, 2015
RF Cable	5D-FB	COACAB-001	May 25, 2015	May 24, 2016
50 ohms Terminator	50	3	Oct. 17, 2014	Oct. 16, 2015
50 ohms Terminator	N/A	EMC-04	Oct. 21, 2014	Oct. 20, 2015
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015

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. A.
- 3 The VCCI Con A Registration No. is C-817.
4. Tested Date: Aug. 06, 2015

4.2.3 Test Procedures

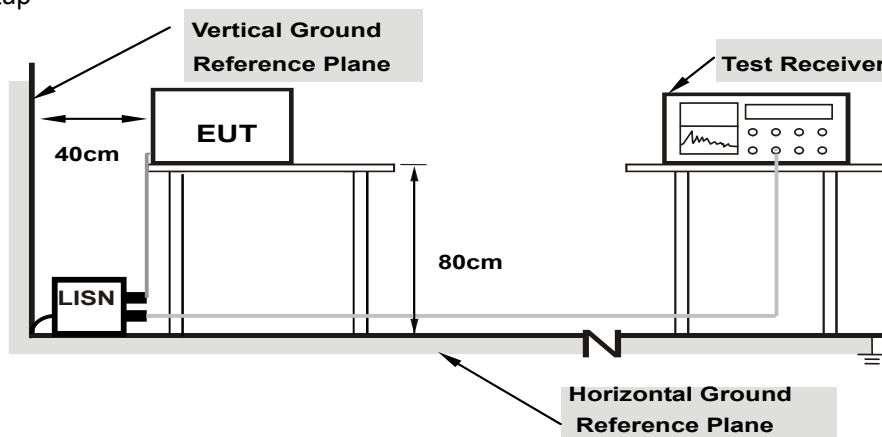
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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 2)

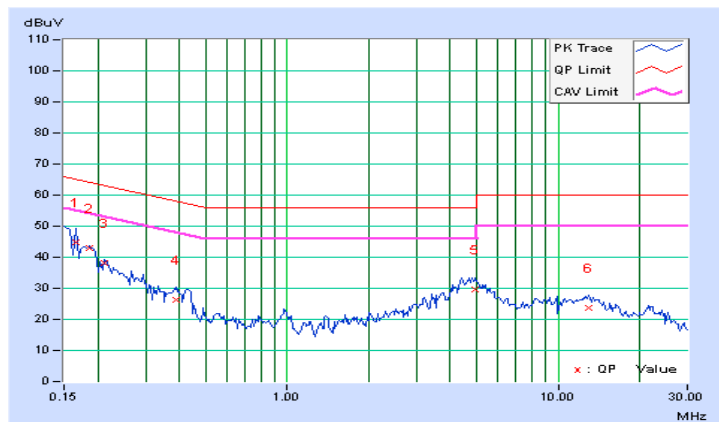
Beamforming Mode

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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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	0.16562	0.10	44.78	24.32	44.88	24.42	65.18	55.18	-20.30	-30.76
2	0.18516	0.10	42.74	30.74	42.84	30.84	64.25	54.25	-21.41	-23.41
3	0.21250	0.10	37.88	23.74	37.98	23.84	63.11	53.11	-25.12	-29.26
4	0.38828	0.16	26.32	15.26	26.48	15.42	58.10	48.10	-31.62	-32.68
5	4.96094	0.37	29.34	23.46	29.71	23.83	56.00	46.00	-26.29	-22.17
6	13.00781	0.61	23.16	17.18	23.77	17.79	60.00	50.00	-36.23	-32.21

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

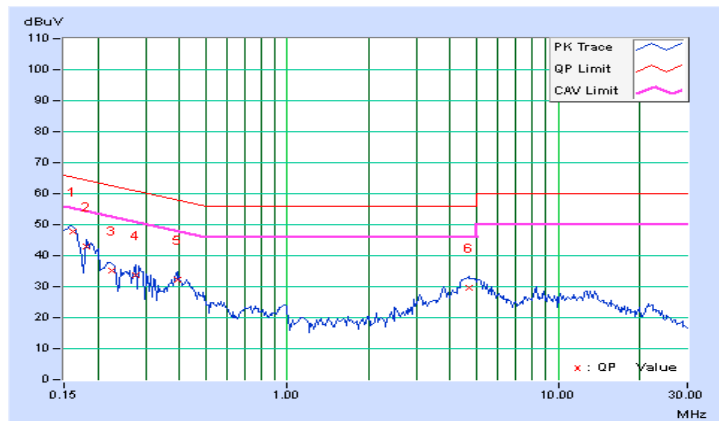


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.09	47.72	35.18	47.81	35.27	65.38	55.38	-17.57	-20.11
2	0.18125	0.09	42.82	25.50	42.91	25.59	64.43	54.43	-21.51	-28.83
3	0.22422	0.11	34.98	18.00	35.09	18.11	62.66	52.66	-27.58	-34.56
4	0.27500	0.12	33.64	23.26	33.76	23.38	60.97	50.97	-27.21	-27.59
5	0.39609	0.15	31.96	24.64	32.11	24.79	57.93	47.93	-25.83	-23.15
6	4.69531	0.33	29.48	23.58	29.81	23.91	56.00	46.00	-26.19	-22.09

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 3)

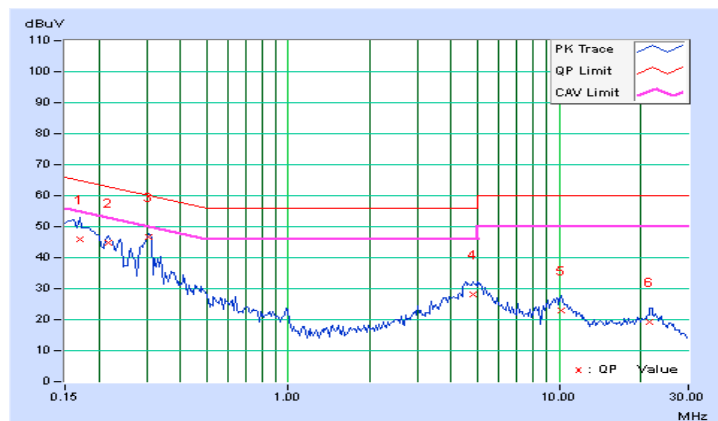
Beamforming Mode

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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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	0.16953	0.10	45.94	35.88	46.04	35.98	64.98	54.98	-18.95	-19.01
2	0.21641	0.10	44.60	37.78	44.70	37.88	62.96	52.96	-18.25	-15.07
3	0.30625	0.13	46.50	43.06	46.63	43.19	60.07	50.07	-13.44	-6.88
4	4.80859	0.37	27.78	21.82	28.15	22.19	56.00	46.00	-27.85	-23.81
5	10.17188	0.54	22.48	17.42	23.02	17.96	60.00	50.00	-36.98	-32.04
6	21.69141	0.80	18.38	12.68	19.18	13.48	60.00	50.00	-40.82	-36.52

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

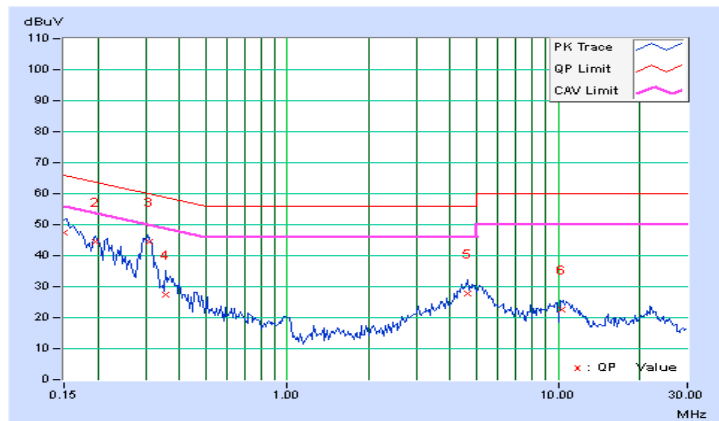


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.08	47.48	37.90	47.56	37.98	66.00	56.00	-18.44	-18.02
2	0.19687	0.10	44.20	34.72	44.30	34.82	63.74	53.74	-19.44	-18.92
3	0.30925	0.13	44.38	41.16	44.51	41.29	59.99	49.99	-15.48	-8.70
4	0.35703	0.14	27.42	17.26	27.56	17.40	58.80	48.80	-31.24	-31.40
5	4.62500	0.33	27.30	21.50	27.63	21.83	56.00	46.00	-28.37	-24.17
6	10.35938	0.52	22.24	17.18	22.76	17.70	60.00	50.00	-37.24	-32.30

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 4)

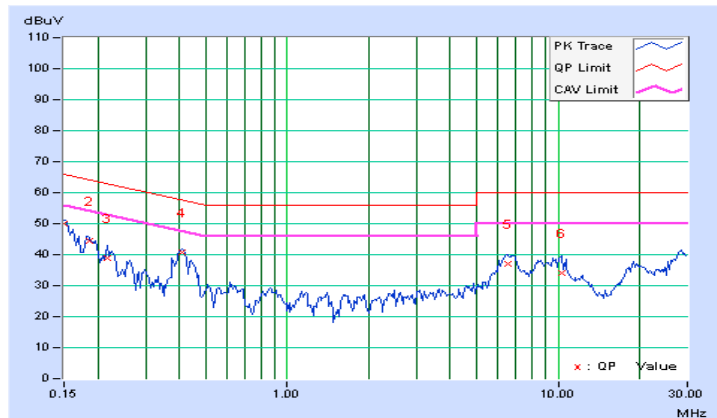
Beamforming Mode

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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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	0.10	49.84	42.24	49.94	42.34	66.00	56.00	-16.06	-13.66
2	0.18516	0.10	44.24	36.48	44.34	36.58	64.25	54.25	-19.91	-17.67
3	0.21641	0.10	38.88	24.98	38.98	25.08	62.96	52.96	-23.97	-27.87
4	0.40781	0.16	40.52	35.82	40.68	35.98	57.69	47.69	-17.01	-11.71
5	6.50391	0.42	36.76	31.06	37.18	31.48	60.00	50.00	-22.82	-18.52
6	10.26953	0.55	33.58	27.76	34.13	28.31	60.00	50.00	-25.87	-21.69

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

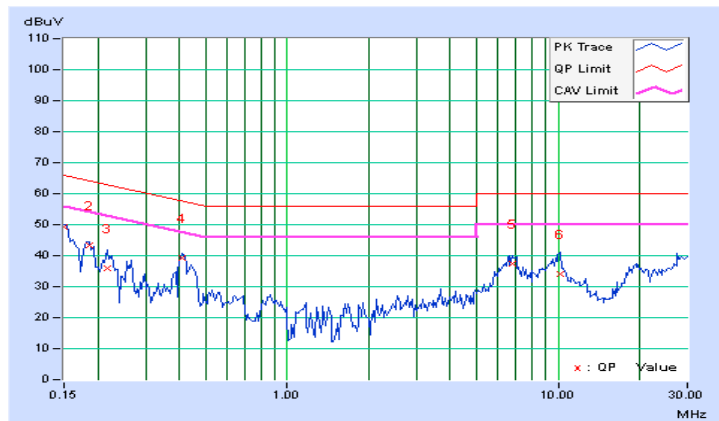


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.08	49.02	41.12	49.10	41.20	66.00	56.00	-16.90	-14.80
2	0.18516	0.10	43.32	35.18	43.42	35.28	64.25	54.25	-20.84	-18.98
3	0.21641	0.10	36.00	23.58	36.10	23.68	62.96	52.96	-26.85	-29.27
4	0.41172	0.15	39.18	34.62	39.33	34.77	57.61	47.61	-18.28	-12.84
5	6.77344	0.40	37.14	31.34	37.54	31.74	60.00	50.00	-22.46	-18.26
6	10.23438	0.52	33.64	27.78	34.16	28.30	60.00	50.00	-25.84	-21.70

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

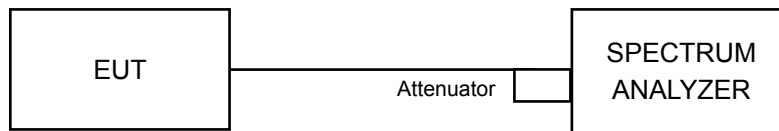


4.3 6dB Bandwidth Measurement

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

- 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

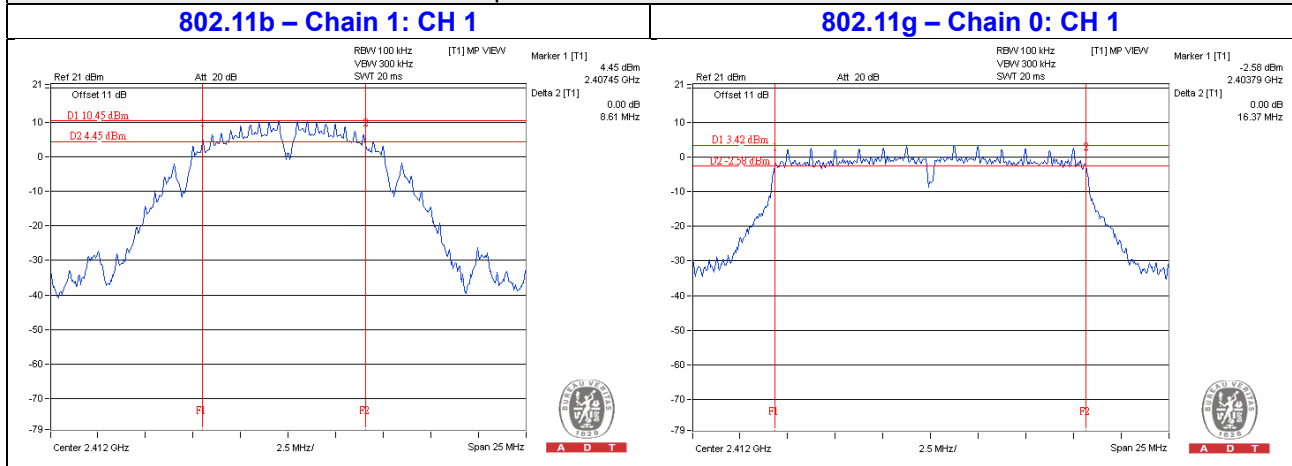
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Result

CDD Mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
802.11b					
1	2412	9.05	8.61	0.5	Pass
6	2437	9.13	9.11	0.5	Pass
11	2462	9.07	9.08	0.5	Pass
802.11g					
1	2412	16.37	16.40	0.5	Pass
6	2437	16.39	16.39	0.5	Pass
11	2462	16.39	16.41	0.5	Pass

Spectrum Plot of Worst Value



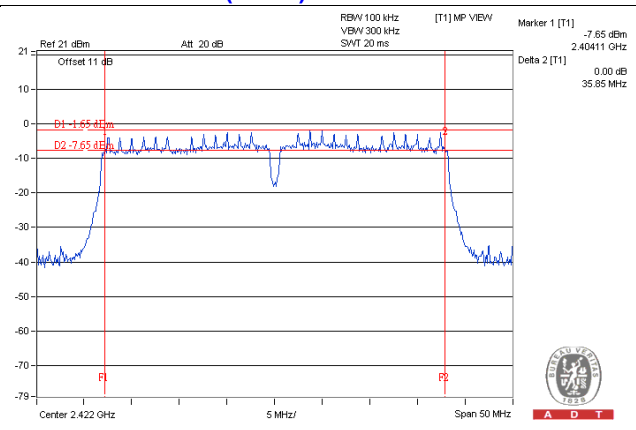
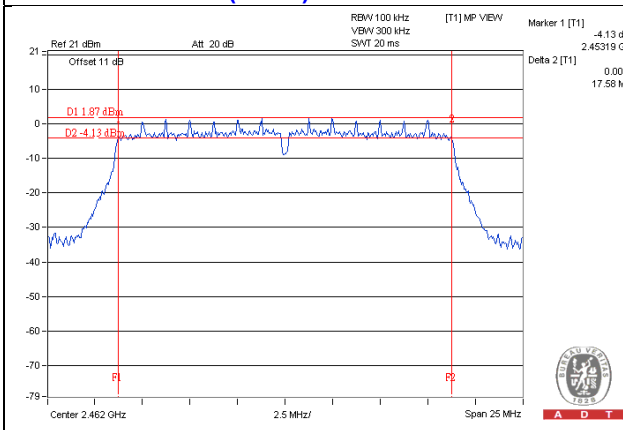
Beamforming Mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
802.11n (HT20)					
1	2412	17.59	17.61	0.5	Pass
6	2437	17.62	17.61	0.5	Pass
11	2462	17.60	17.58	0.5	Pass
802.11n (HT40)					
3	2422	36.12	35.85	0.5	Pass
6	2437	36.25	35.92	0.5	Pass
9	2452	36.43	36.43	0.5	Pass

Spectrum Plot of Worst Value

802.11n (HT20) – Chain 1: CH 11

802.11n (HT40) – Chain 1: CH 3



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

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

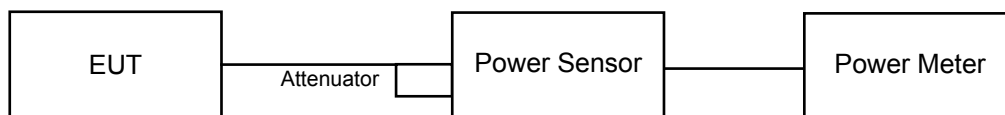
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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

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

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

An 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

CDD Mode

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
802.11b							
1	2412	19.52	19.38	176.232	22.46	30	Pass
6	2437	22.62	22.35	354.601	25.50	30	Pass
11	2462	18.28	18.25	134.132	21.28	30	Pass
802.11g							
1	2412	14.73	14.54	58.162	17.65	30	Pass
6	2437	22.57	22.19	346.294	25.39	30	Pass
11	2462	14.48	14.41	55.66	17.46	30	Pass

Beamforming Mode

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
802.11n (HT20)							
1	2412	15.23	14.95	64.604	18.10	27.99	Pass
6	2437	22.70	22.29	355.643	25.51	27.99	Pass
11	2462	13.36	13.03	41.768	16.21	27.99	Pass
802.11n (HT40)							
3	2422	12.35	12.00	33.028	15.19	27.99	Pass
6	2437	16.50	16.36	87.919	19.44	27.99	Pass
9	2452	11.22	11.06	26.007	14.15	27.99	Pass

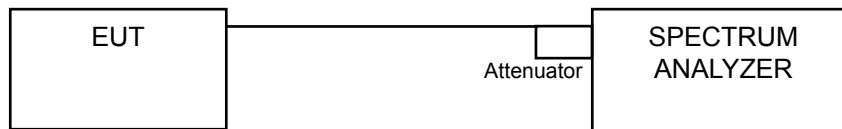
NOTE: Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power limit shall be reduced to 30-(8.01-6) = 27.99dBm.

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

For AVG. power (duty cycle \geq 98%)

- 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.

For AVG. power (duty cycle $<$ 98%)

- Measure the duty cycle (x).
- 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.
- Do not use sweep triggering. Allow sweep to "free run".
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.
- Add $10 \log(1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

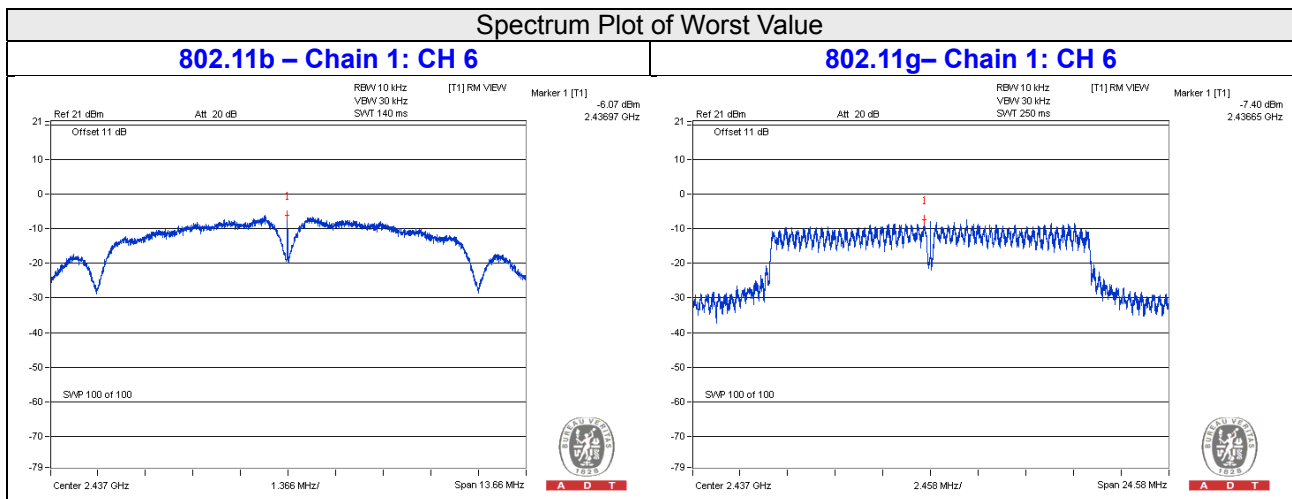
Same as Item 4.3.6

4.5.7 Test Results

CDD Mode

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
802.11b							
0	1	2412	-8.86	3.01	-5.85	5.99	Pass
	6	2437	-6.57	3.01	-3.56	5.99	Pass
	11	2462	-9.81	3.01	-6.80	5.99	Pass
1	1	2412	-8.86	3.01	-5.85	5.99	Pass
	6	2437	-6.07	3.01	-3.06	5.99	Pass
	11	2462	-10.36	3.01	-7.35	5.99	Pass
802.11g							
0	1	2412	-14.94	3.01	-11.93	5.99	Pass
	6	2437	-7.70	3.01	-4.69	5.99	Pass
	11	2462	-15.16	3.01	-12.15	5.99	Pass
1	1	2412	-14.75	3.01	-11.74	5.99	Pass
	6	2437	-7.40	3.01	-4.39	5.99	Pass
	11	2462	-13.97	3.01	-10.96	5.99	Pass

- Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm.



Beamforming Mode

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
802.11n (HT20)							
0	1	2412	-15.66	3.01	-12.65	5.99	Pass
	6	2437	-8.50	3.01	-5.49	5.99	Pass
	11	2462	-17.39	3.01	-14.38	5.99	Pass
1	1	2412	-15.55	3.01	-12.54	5.99	Pass
	6	2437	-8.65	3.01	-5.64	5.99	Pass
	11	2462	-17.64	3.01	-14.63	5.99	Pass

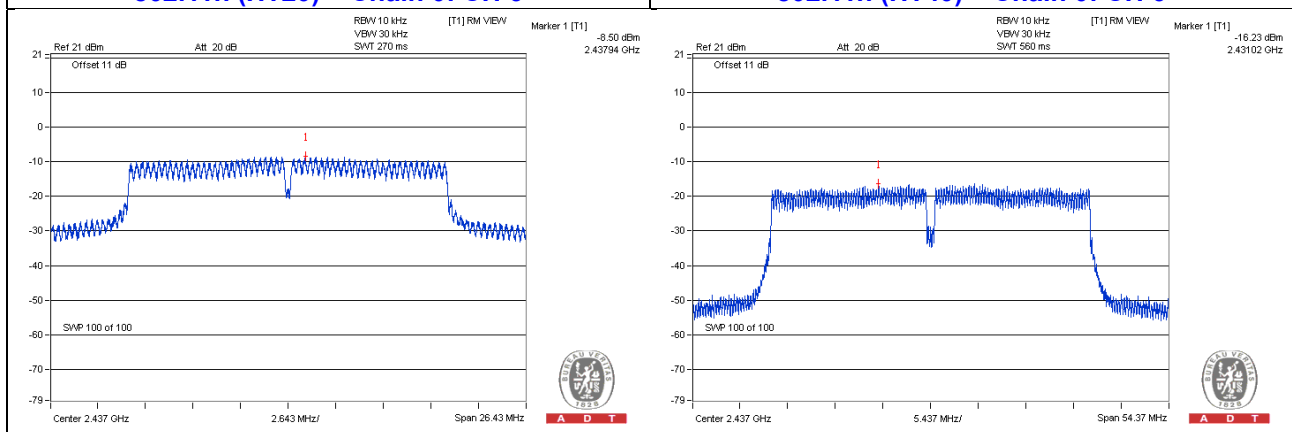
TX chain	Channel	Freq. (MHz)	PSD w/o Duty Factor (dBm)	10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass /Fail
802.11n (HT40)								
0	3	2422	-20.32	3.01	0.13	-17.18	5.99	Pass
	6	2437	-16.23	3.01	0.13	-13.09	5.99	Pass
	9	2452	-21.26	3.01	0.13	-18.12	5.99	Pass
1	3	2422	-20.01	3.01	0.13	-16.87	5.99	Pass
	6	2437	-16.33	3.01	0.13	-13.19	5.99	Pass
	9	2452	-22.07	3.01	0.13	-18.93	5.99	Pass

- Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

802.11n (HT20) – Chain 0: CH 6

802.11n (HT40) – Chain 0: CH 6

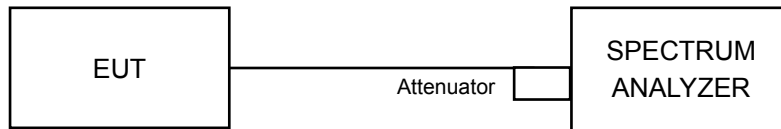


4.6 Conducted Out of Band Emission Measurement

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 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.

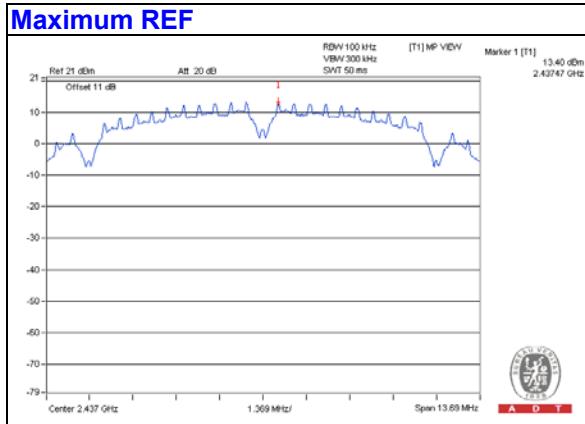
4.6.6 EUT Operating Condition

Same as Item 4.3.6

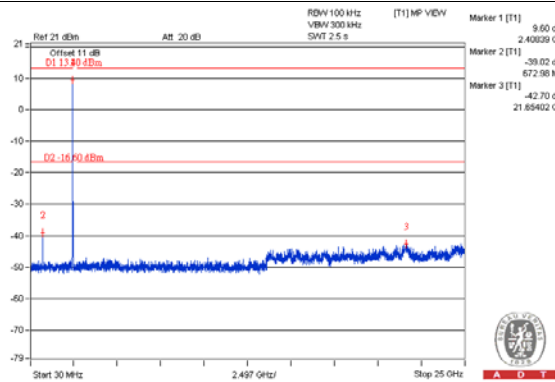
4.6.7 Test Results

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

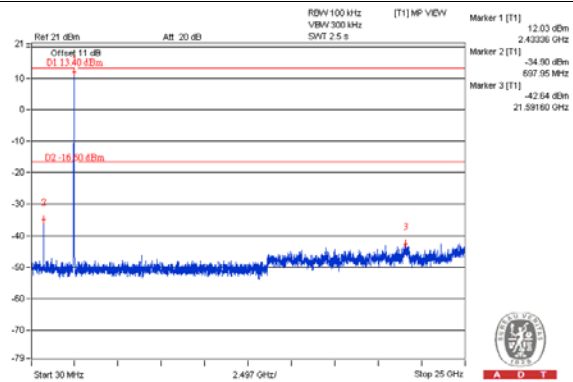
CDD Mode
802.11b



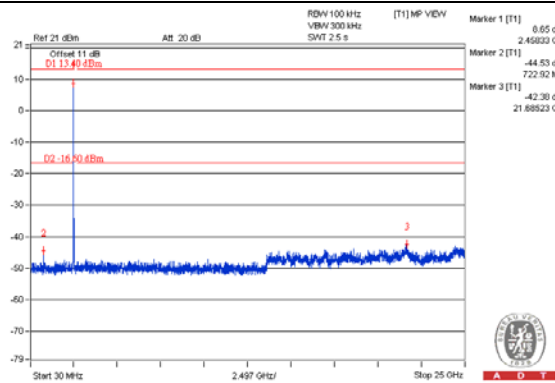
Chain 0
CH 1



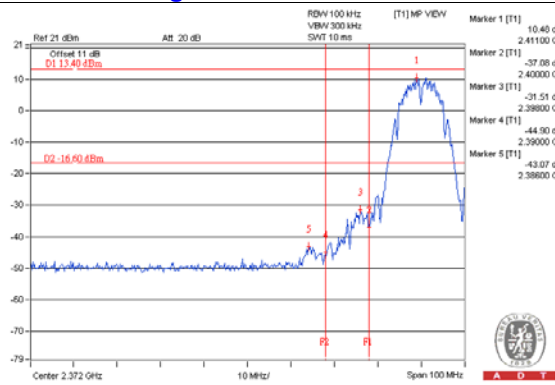
CH 6



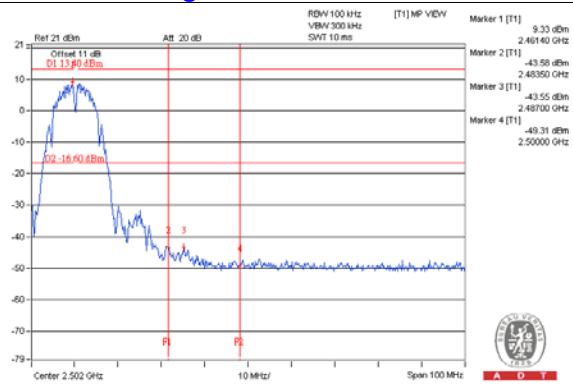
CH 11



CH 1 Band edge



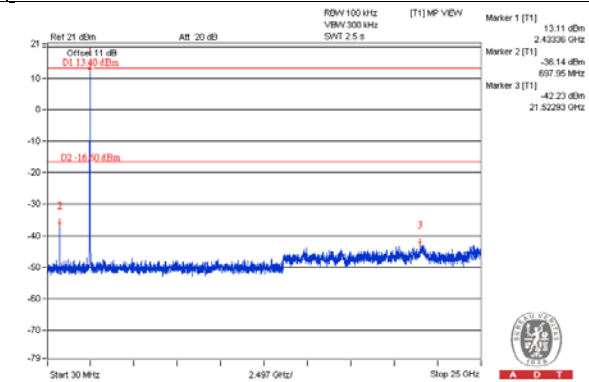
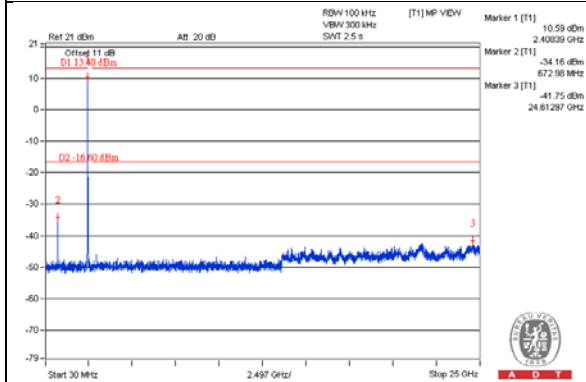
CH 11 Band edge



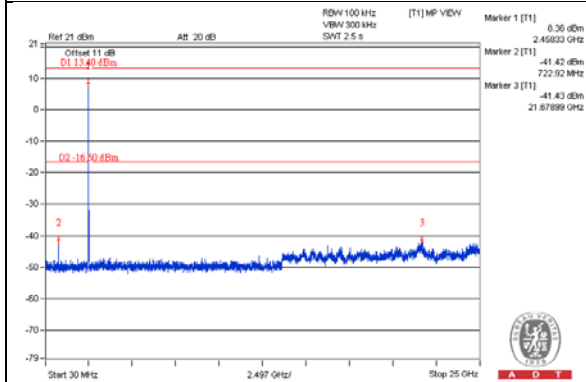
Chain 1

CH 1

CH 6

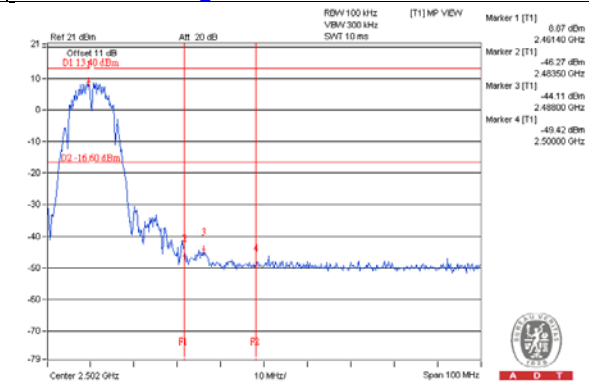
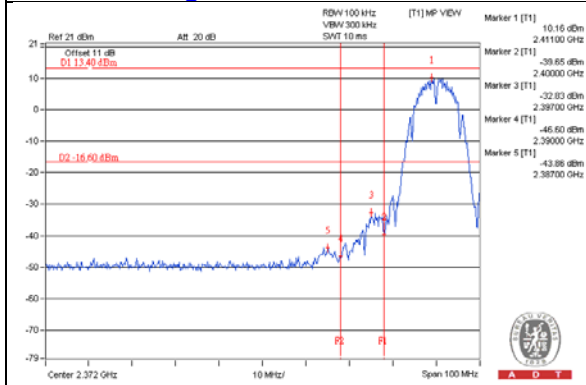


CH 11

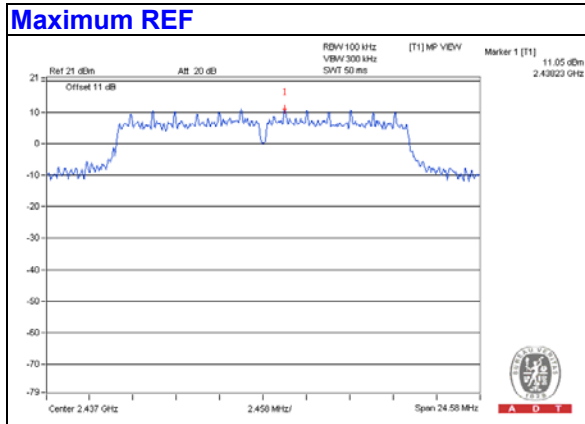


CH 1 Band edge

CH 11 Band edge

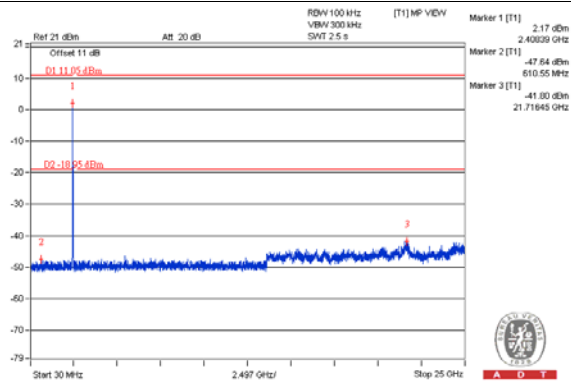


802.11g

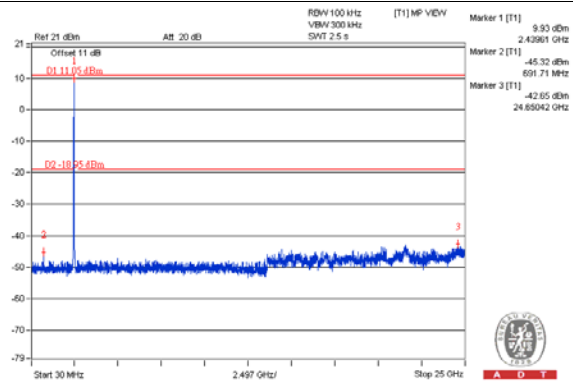


Chain 0

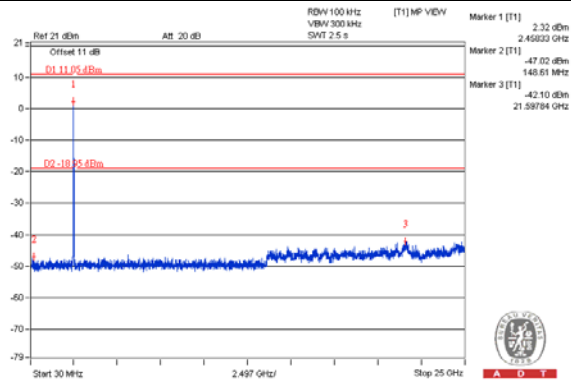
CH 1



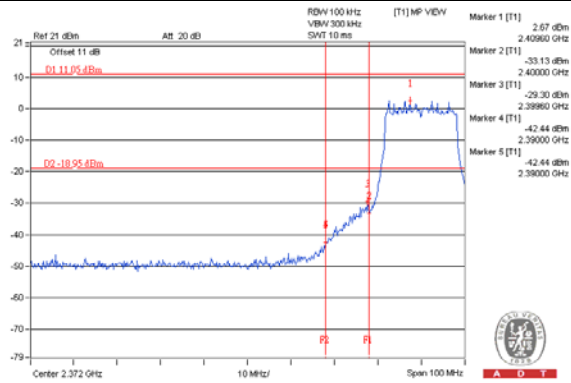
CH 6



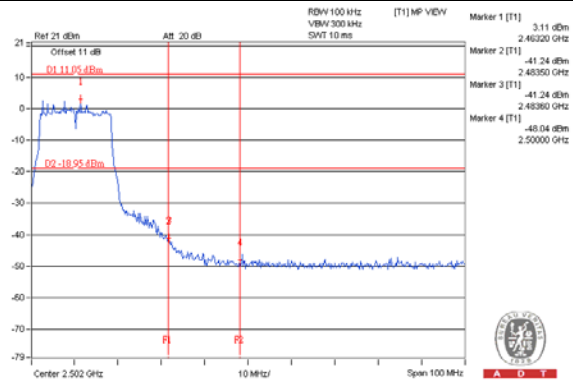
CH 11



CH 1 Band edge

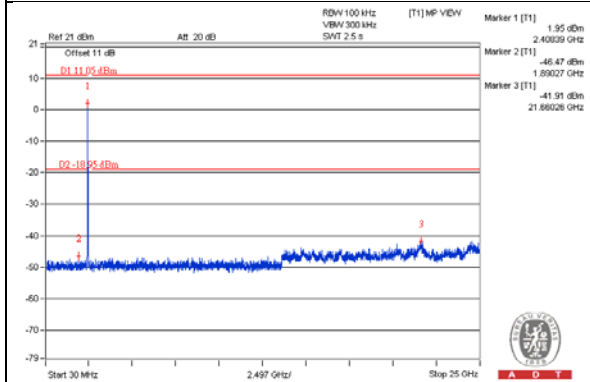


CH 11 Band edge

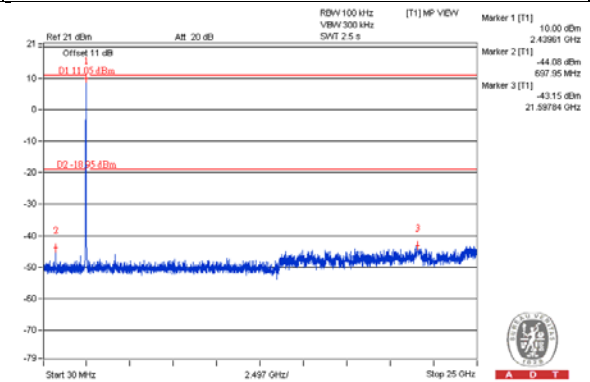


Chain 1

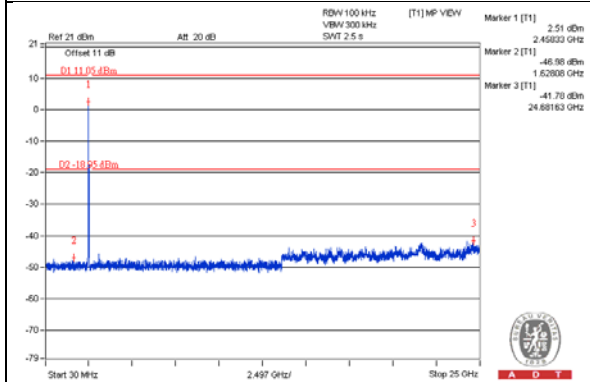
CH 1



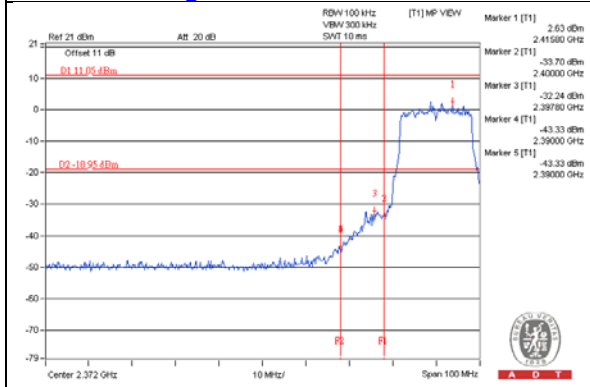
CH 6



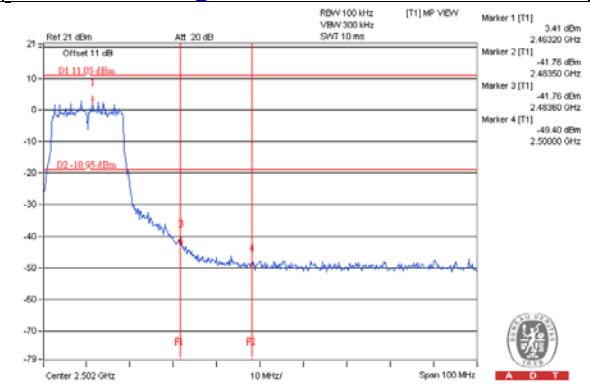
CH 11



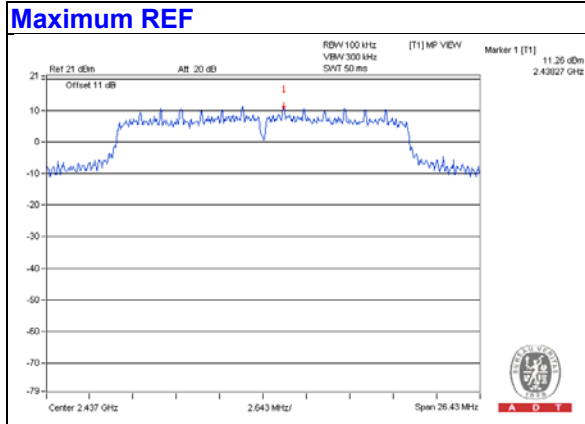
CH 1 Band edge



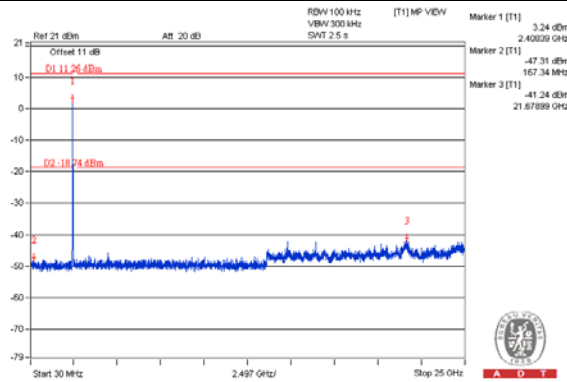
CH 11 Band edge



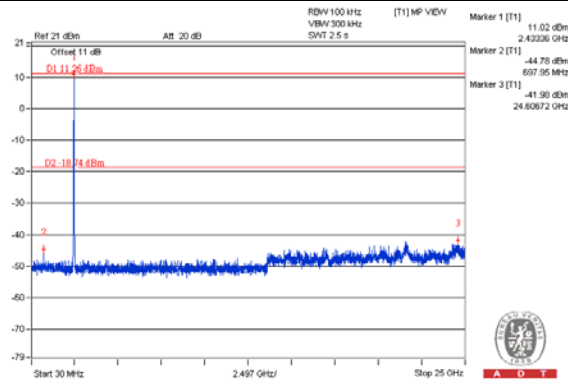
Beamforming Mode
802.11n (HT20)



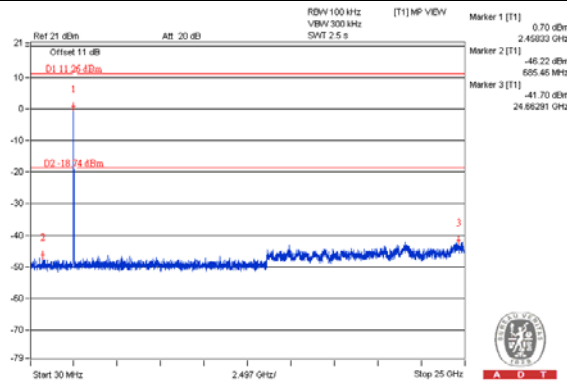
Chain 0
CH 1



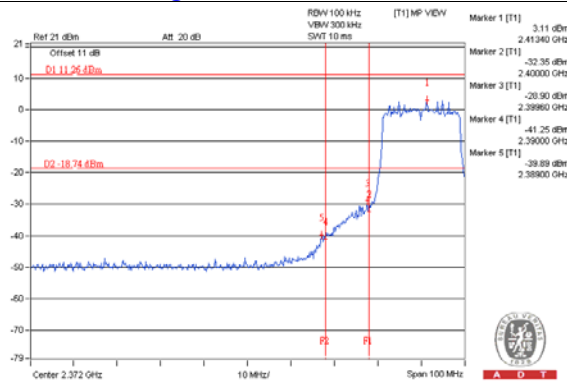
CH 6



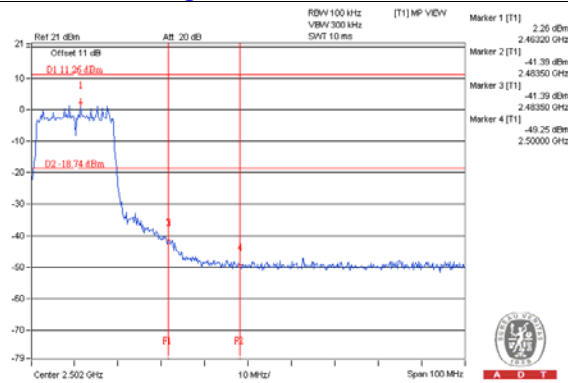
CH 11



CH 1 Band edge



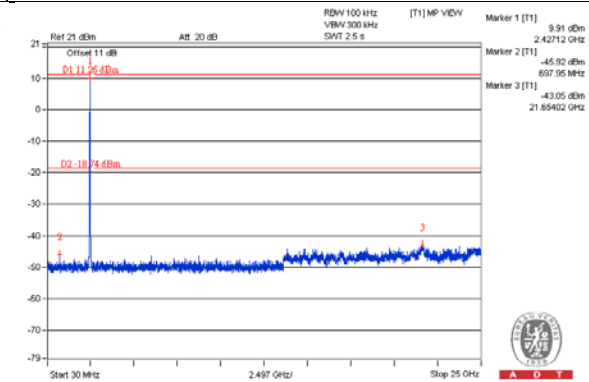
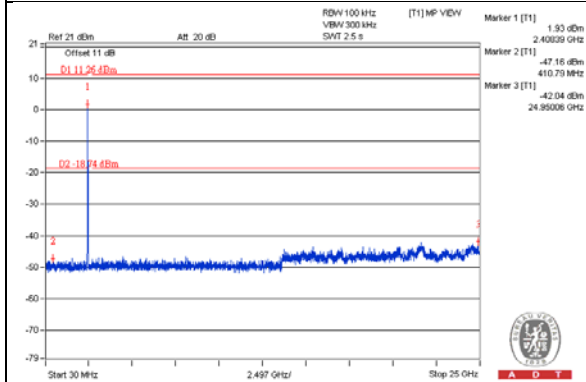
CH 11 Band edge



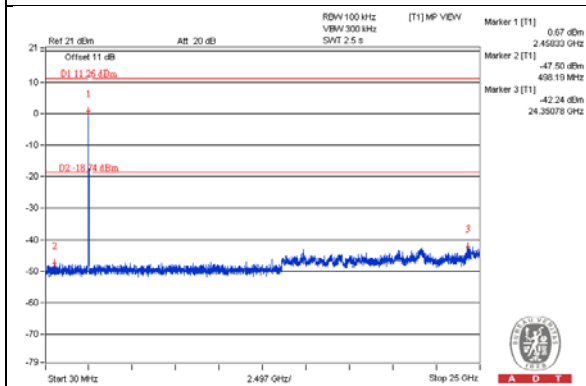
Chain 1

CH 1

CH 6

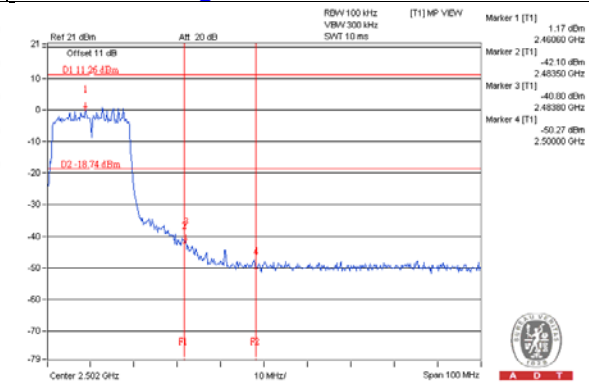
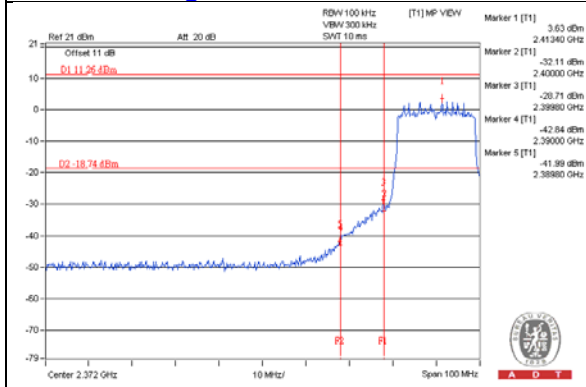


CH 11

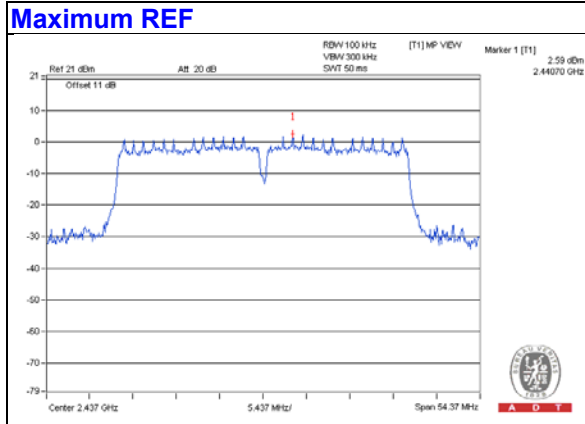


CH 1 Band edge

CH 11 Band edge

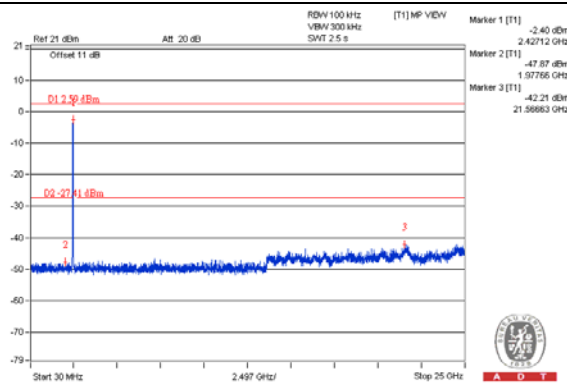


802.11n (HT40)

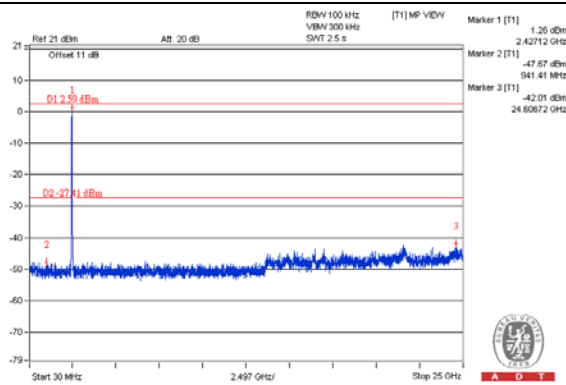


Chain 0

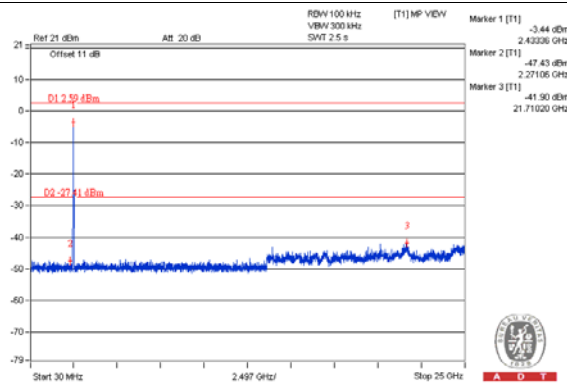
CH 3



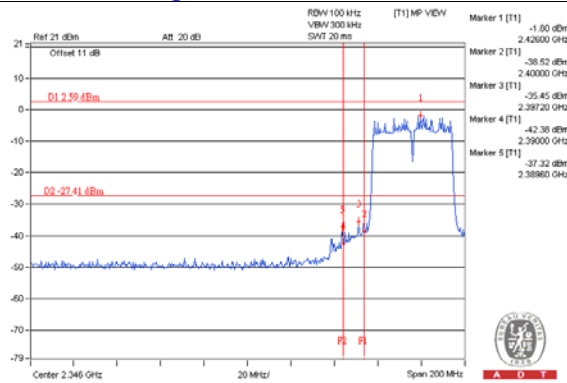
CH 6



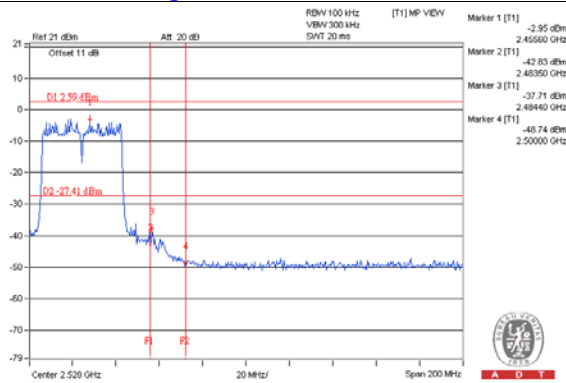
CH 9



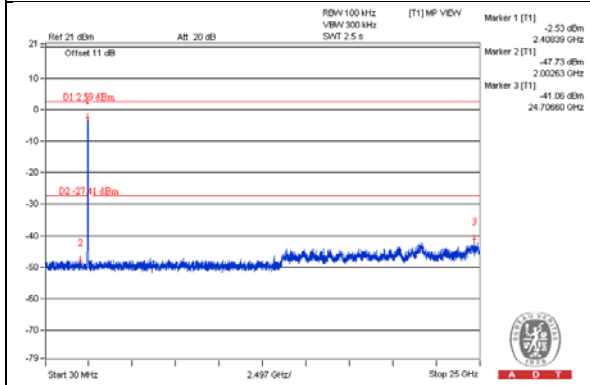
CH 3 Band edge



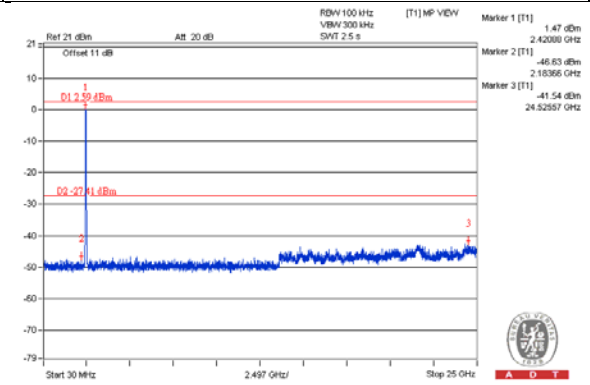
CH 9 Band edge



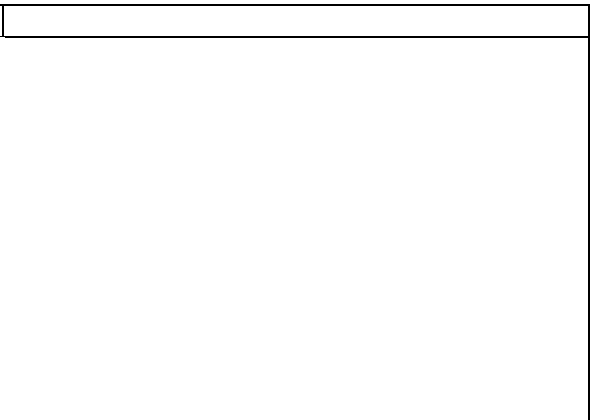
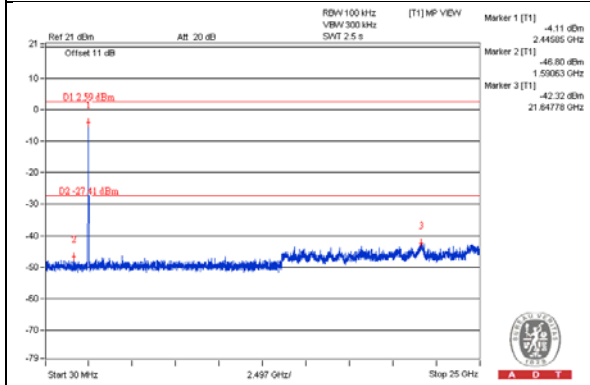
Chain 1
CH 3



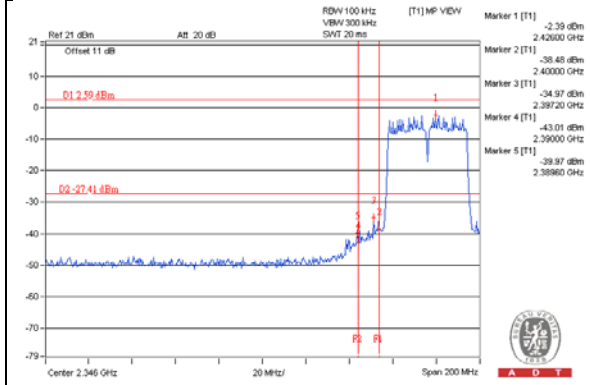
CH 6



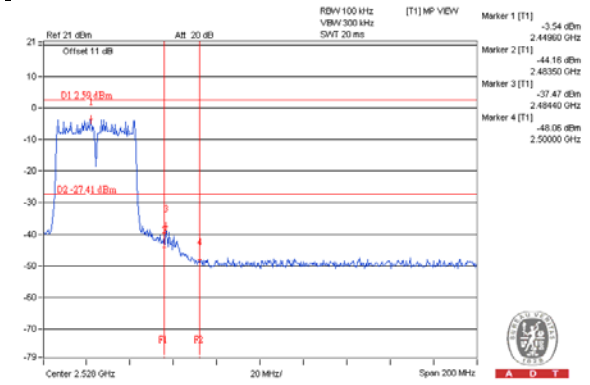
CH 9



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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