FCC Test Report

Report No.:	RF170905C13
FCC ID:	PY317200377
Test Model:	RBS50Y
Received Date:	Sep. 05, 2017
Test Date:	Sep. 11 ~ Oct. 06, 2017
Issued Date:	Oct. 11, 2017
Applicant:	NETGEAR, INC.
Address:	350 East Plumeria Drive San Jose, CA 95134
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF170905C13	Original release.	Oct. 11, 2017

1 Certificate of Conformity

Product:	Orbi Router, Orbi Satellite, Orbi AC3000 Tri-band WiFi System
Brand:	NETGEAR
Test Model:	RBS50Y
Sample Status:	Engineering sample
Applicant:	NETGEAR, INC.
Test Date:	Sep. 11 ~ Oct. 06, 2017
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 : Celine Chou , **Date:** Oct. 11, 2017

Celine Chou / Specialist

Approved by : Ken Liu , **Date:** Oct. 11, 2017

Ken Liu / Senior 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 -13.53dB at 0.31021MHz.
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.
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 i-pex (MHF) not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.63 dB
	200MHz ~1000MHz	3.64 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Orbi Router, Orbi Satellite, Orbi AC3000 Tri-band WiFi System
Brand	NETGEAR
Test Model	RBS50Y
Sample Status	Engineering sample
Power Supply Rating	12Vdc from adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	CDD Mode: 819.478mW Beamforming Mode: 569.557mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Cable Supplied	N/A

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	Beamforming Mode	TX Function
802.11b	Not Support	2TX
802.11g	Not Support	2TX
802.11n (HT20)	Support (CDD / NSS1)	2TX
802.11n (HT40)	Support (CDD / NSS1)	2TX

* For 802.11n, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

2. The following RF Modules are for the EUT.

Brand	Model	RF Module	Band
NETGEAR	RBS50Y	Module 1	2.4G
			UNII-1
		Module 2	UNII-3
		BT Module	BT LE

3. The EUT uses following antennas.

Ant. Type	Dipole		
Connecter Type	i-pex(MHF)		
Directional Antenna Gain (dBi)			
Item	2.4G	UNII-1	UNII-3
-	5.31	5.97	7.57

4. The EUT consumes power from the following adapters.

Adapter 1 (US)	
Brand	NETGEAR
Model	AD2110F10
P/N	332-10999-01
Input Power	100-120Vac, 50/60Hz, 1.0A
Output Power	12Vdc, 2.5A
Power Line	3m power cable without core attached on adapter

Adapter 2 (US)	
Brand	NETGEAR
Model	2ADF030F1 NA
P/N	332-11000-01
Input Power	100-120Vac, 50/60Hz, 1.0A
Output Power	12Vdc, 2.5A
Power Line	3m power cable without core attached on adapter

5. Spurious emission of the simultaneous operation mode as below and the test data please refer to report no.: RF170905C13-3.

No	Mode
1	WLAN 2.4GHz + WLAN 5GHz B1 (1TX) + WLAN 5GHz B4 + BT LE
2	WLAN 2.4GHz + WLAN 5GHz B1 (2TX) + WLAN 5GHz B4 + BT LE

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≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter 1
B	-	√	√	-	Power from adapter 2

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement 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 3 axis. The worst case was found when positioned on **Z-plane**.
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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A, B	802.11b	1 to 11	1	DSSS	DBPSK	1.0

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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A, B	802.11b	1 to 11	1	DSSS	DBPSK	1.0

6dB Bandwidth, Power Spectral Density and Conducted Out of Band Emission 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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Conducted Output Power 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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
CDD Mode						
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Beamforming Mode						
A	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

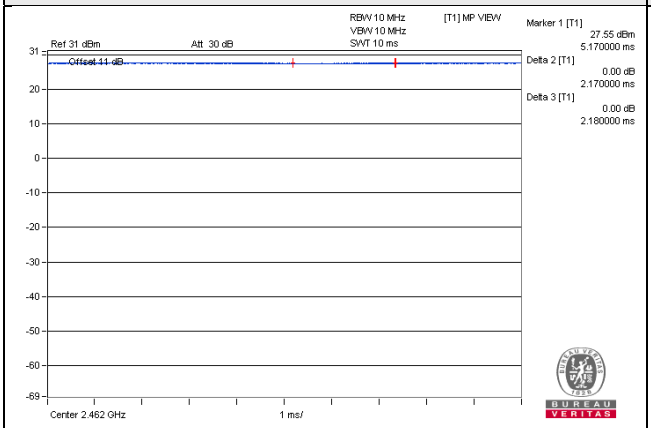
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 70% RH	120Vac, 60Hz	Luis Lee
RE<1G	25 deg. C, 70% RH	120Vac, 60Hz	Luis Lee
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Matthew Yang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ted Chang

3.3 Duty Cycle of Test Signal

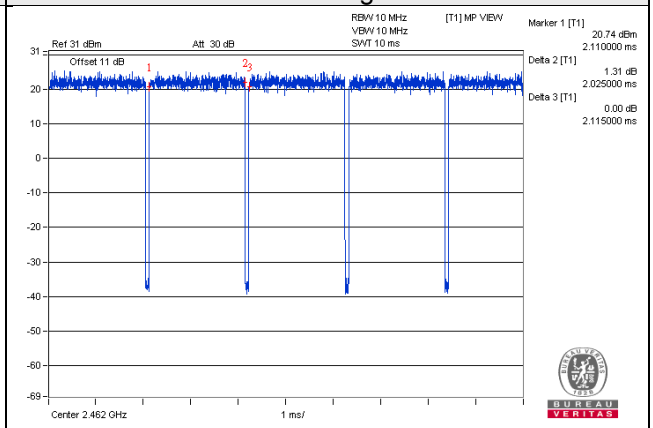
802.11b: Duty cycle of test signal is 100%, duty factor is not required.
802.11g, 802.11n (HT20), 802.11n (HT40): Duty cycle of test signal is < 98%, duty factor is required.

802.11g: Duty cycle = 2.025/2.115 = 0.957, Duty factor = 10 * log(1/0.957) = 0.19
802.11n (HT20): Duty cycle = 4.950/5.055 = 0.979, Duty factor = 10 * log(1/0.979) = 0.09
802.11n (HT40): Duty cycle = 2.405/2.507 = 0.959, Duty factor = 10 * log(1/0.959) = 0.18

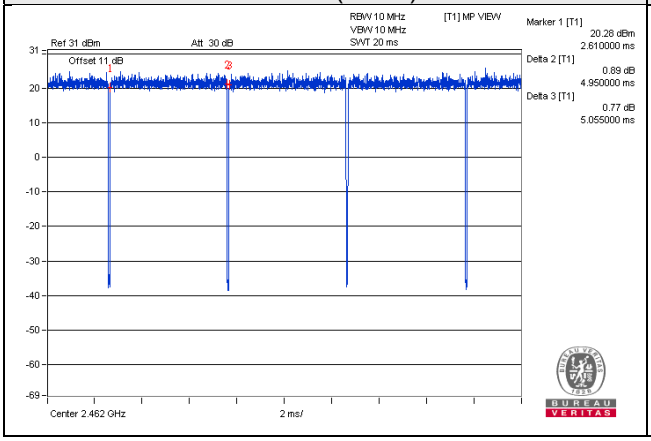
802.11b



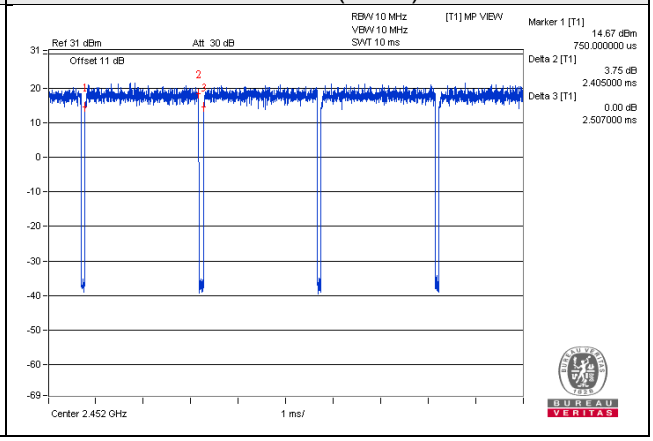
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

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

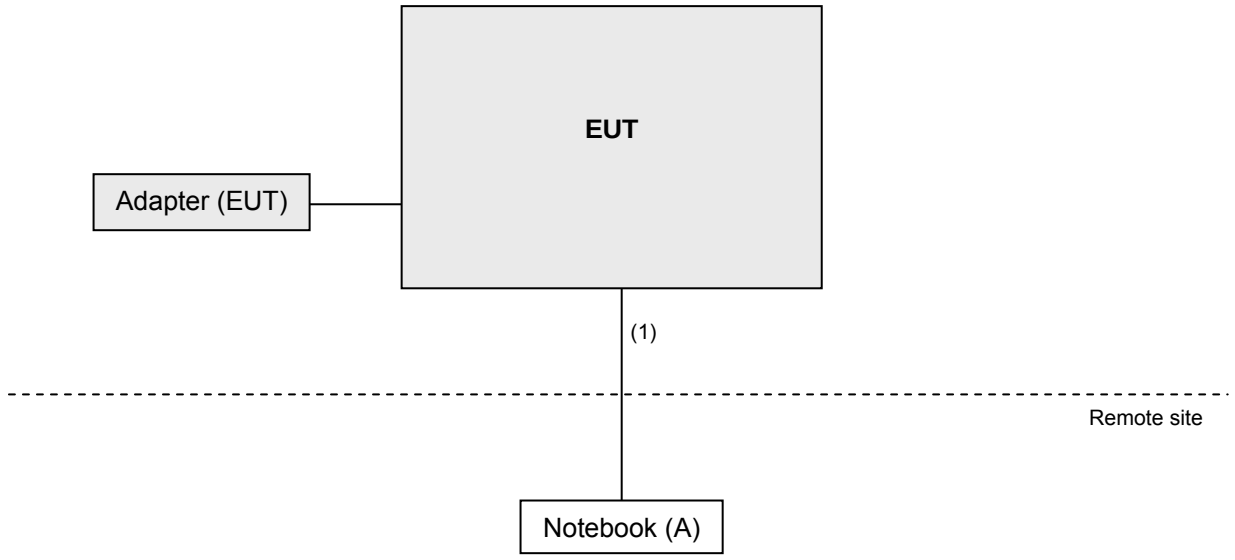
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	6RP2YM1	FCC DoC Approved	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45, Cat5e	1	3	N	0	-

3.4.1 Configuration of System under Test



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)
KDB 558074 D01 DTS Meas Guidance v04
KDB 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 30dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 24, 2016	Oct. 23, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 18, 2017	Aug. 17, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Dec. 15, 2016	Dec. 14, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent	8449B	3008A01960	Aug. 08, 2017	Aug. 07, 2018
Preamplifier Agilent	8447D	2944A10631	Aug. 08, 2017	Aug. 07, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Aug. 08, 2017	Aug. 07, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Aug. 08, 2017	Aug. 07, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
High Speed Peak Power Meter	ML2495A	0824012	Aug. 18, 2017	Aug. 17, 2018
Power Sensor	MA2411B	0738171	Aug. 18, 2017	Aug. 17, 2018

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 HwaYa Chamber 4.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
5. The IC Site Registration No. is IC7450F-4.

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case 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.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 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:

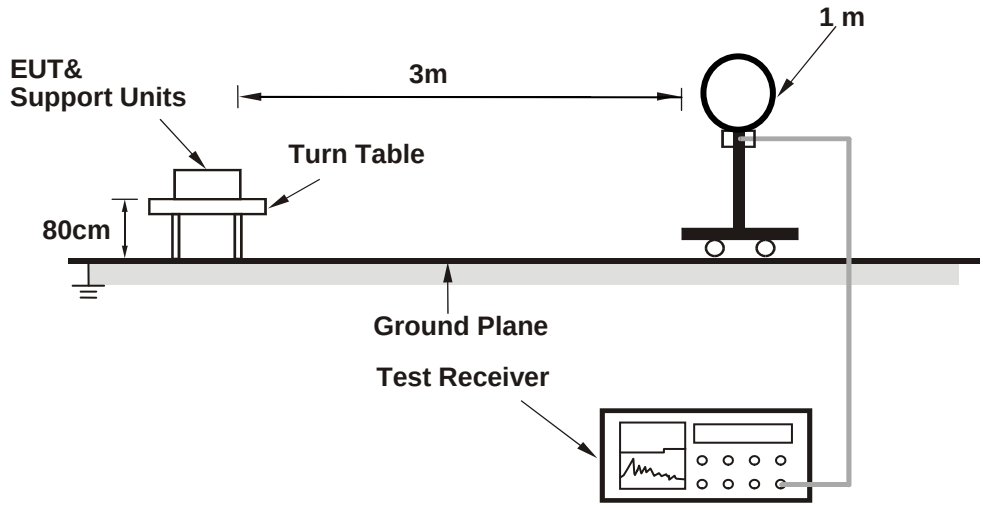
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

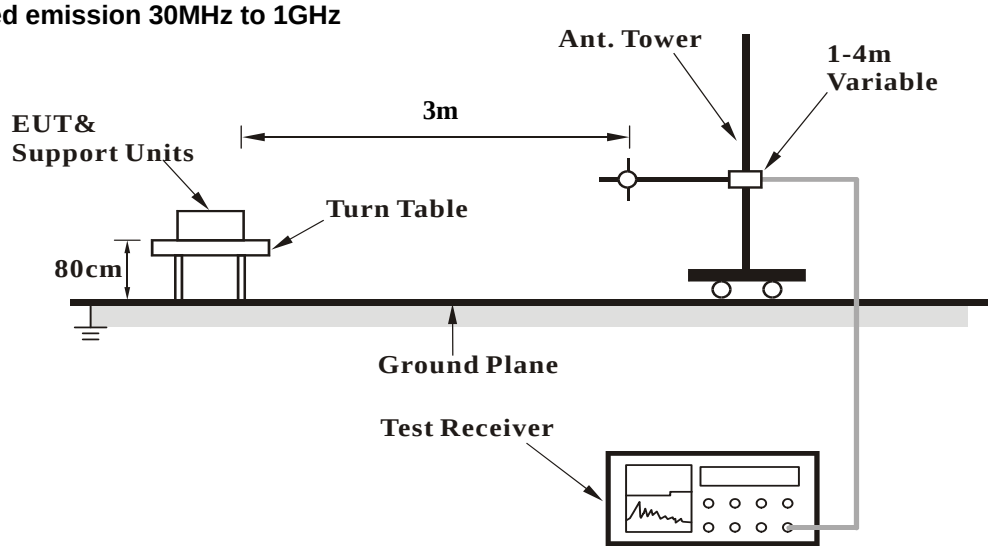
No deviation.

4.1.5 Test Setup

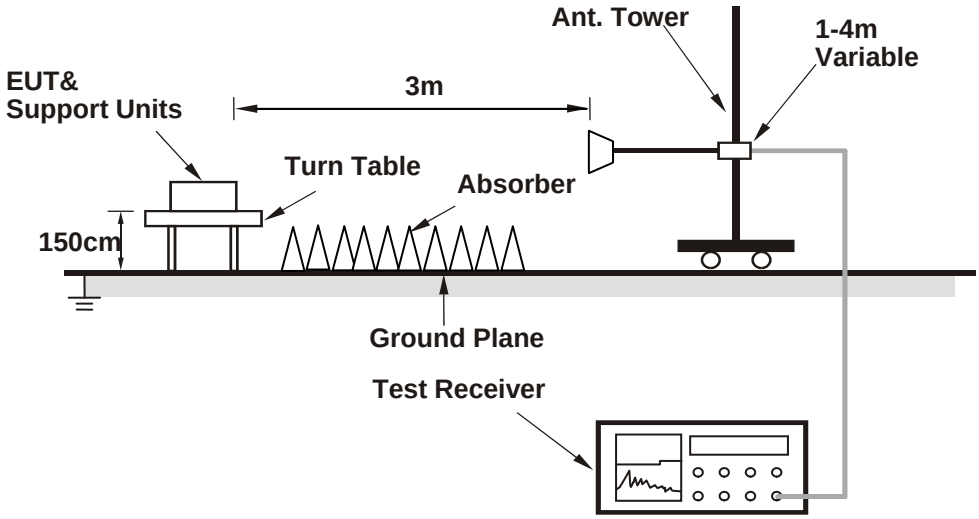
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz Data:

802.11b

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

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	58.3 PK	74.0	-15.7	3.21 H	300	24.8	33.5
2	2390.00	45.9 AV	54.0	-8.1	3.21 H	300	12.4	33.5
3	*2412.00	108.2 PK			3.21 H	300	74.7	33.5
4	*2412.00	104.6 AV			3.21 H	300	71.1	33.5
5	4824.00	56.0 PK	74.0	-18.0	2.34 H	73	48.0	8.0
6	4824.00	51.5 AV	54.0	-2.5	2.34 H	73	43.5	8.0
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	62.5 PK	74.0	-11.5	1.61 V	4	29.0	33.5
2	2390.00	53.5 AV	54.0	-0.5	1.61 V	4	20.0	33.5
3	*2412.00	122.8 PK			1.61 V	4	89.3	33.5
4	*2412.00	119.0 AV			1.61 V	4	85.5	33.5
5	4824.00	54.9 PK	74.0	-19.1	1.99 V	30	46.9	8.0
6	4824.00	50.6 AV	54.0	-3.4	1.99 V	30	42.6	8.0

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.6 PK			3.73 H	320	75.0	33.6
2	*2437.00	104.8 AV			3.73 H	320	71.2	33.6
3	4874.00	57.4 PK	74.0	-16.6	3.33 H	78	49.3	8.1
4	4874.00	53.8 AV	54.0	-0.2	3.33 H	78	45.7	8.1
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	123.2 PK			1.72 V	1	89.6	33.6
2	*2437.00	119.5 AV			1.72 V	1	85.9	33.6
3	4874.00	56.9 PK	74.0	-17.1	1.86 V	34	48.8	8.1
4	4874.00	52.5 AV	54.0	-1.5	1.86 V	34	44.4	8.1

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	100.9 PK			3.02 H	312	67.1	33.8
2	*2462.00	97.0 AV			3.02 H	312	63.2	33.8
3	2483.50	58.3 PK	74.0	-15.7	3.02 H	312	24.4	33.9
4	2483.50	46.1 AV	54.0	-7.9	3.02 H	312	12.2	33.9
5	4924.00	57.6 PK	74.0	-16.4	3.27 H	78	49.3	8.3
6	4924.00	53.8 AV	54.0	-0.2	3.27 H	78	45.5	8.3
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	119.1 PK			1.70 V	333	85.3	33.8
2	*2462.00	105.4 AV			1.70 V	333	71.6	33.8
3	2483.50	60.5 PK	74.0	-13.5	1.70 V	333	26.6	33.9
4	2483.50	48.9 AV	54.0	-5.1	1.70 V	333	15.0	33.9
5	4924.00	57.9 PK	74.0	-16.1	1.81 V	37	49.6	8.3
6	4924.00	53.2 AV	54.0	-0.8	1.81 V	37	44.9	8.3

Remarks:

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

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

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	58.1 PK	74.0	-15.9	2.98 H	318	24.6	33.5
2	2390.00	46.0 AV	54.0	-8.0	2.98 H	318	12.5	33.5
3	*2412.00	102.3 PK			2.98 H	318	68.8	33.5
4	*2412.00	91.8 AV			2.98 H	318	58.3	33.5
5	4824.00	49.4 PK	74.0	-24.6	2.98 H	328	41.4	8.0
6	4824.00	37.5 AV	54.0	-16.5	2.98 H	328	29.5	8.0
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	69.4 PK	74.0	-4.6	1.15 V	342	35.9	33.5
2	2390.00	53.8 AV	54.0	-0.2	1.15 V	342	20.3	33.5
3	*2412.00	118.7 PK			1.15 V	342	85.2	33.5
4	*2412.00	108.3 AV			1.15 V	342	74.8	33.5
5	4824.00	49.7 PK	74.0	-24.3	1.22 V	288	41.7	8.0
6	4824.00	36.4 AV	54.0	-17.6	1.22 V	288	28.4	8.0

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.7 PK	74.0	-16.3	3.49 H	342	24.2	33.5
2	2390.00	46.0 AV	54.0	-8.0	3.49 H	342	12.5	33.5
3	*2437.00	108.1 PK			3.49 H	342	74.5	33.6
4	*2437.00	97.4 AV			3.49 H	342	63.8	33.6
5	2483.50	58.3 PK	74.0	-15.7	3.49 H	342	24.4	33.9
6	2483.50	46.3 AV	54.0	-7.7	3.49 H	342	12.4	33.9
7	4874.00	50.5 PK	74.0	-23.5	2.14 H	119	42.4	8.1
8	4874.00	36.5 AV	54.0	-17.5	2.14 H	119	28.4	8.1
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	71.3 PK	74.0	-2.7	1.57 V	346	37.8	33.5
2	2390.00	53.8 AV	54.0	-0.2	1.57 V	346	20.3	33.5
3	*2437.00	124.0 PK			1.57 V	346	90.4	33.6
4	*2437.00	114.4 AV			1.57 V	346	80.8	33.6
5	2483.50	71.0 PK	74.0	-3.0	1.57 V	346	37.1	33.9
6	2483.50	53.1 AV	54.0	-0.9	1.57 V	346	19.2	33.9
7	4874.00	52.9 PK	74.0	-21.1	1.97 V	30	44.8	8.1
8	4874.00	40.0 AV	54.0	-14.0	1.97 V	30	31.9	8.1

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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			3.45 H	265	68.6	33.8
2	*2462.00	91.3 AV			3.45 H	265	57.5	33.8
3	2483.50	58.1 PK	74.0	-15.9	3.45 H	265	24.2	33.9
4	2483.50	46.1 AV	54.0	-7.9	3.45 H	265	12.2	33.9
5	4924.00	50.4 PK	74.0	-23.6	1.64 H	227	42.1	8.3
6	4924.00	36.8 AV	54.0	-17.2	1.64 H	227	28.5	8.3
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	118.2 PK			1.67 V	341	84.4	33.8
2	*2462.00	108.0 AV			1.67 V	341	74.2	33.8
3	2483.50	68.3 PK	74.0	-5.7	1.67 V	341	34.4	33.9
4	2483.50	53.7 AV	54.0	-0.3	1.67 V	341	19.8	33.9
5	4924.00	50.6 PK	74.0	-23.4	1.89 V	34	42.3	8.3
6	4924.00	38.1 AV	54.0	-15.9	1.89 V	34	29.8	8.3

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.7 PK	74.0	-16.3	3.39 H	264	24.2	33.5
2	2390.00	46.0 AV	54.0	-8.0	3.39 H	264	12.5	33.5
3	*2412.00	101.6 PK			3.39 H	264	68.1	33.5
4	*2412.00	91.2 AV			3.39 H	264	57.7	33.5
5	4824.00	49.8 PK	74.0	-24.2	2.64 H	119	41.8	8.0
6	4824.00	36.5 AV	54.0	-17.5	2.64 H	119	28.5	8.0
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	68.1 PK	74.0	-5.9	1.80 V	351	34.6	33.5
2	2390.00	53.8 AV	54.0	-0.2	1.80 V	351	20.3	33.5
3	*2412.00	118.3 PK			1.80 V	351	84.8	33.5
4	*2412.00	108.1 AV			1.80 V	351	74.6	33.5
5	4824.00	50.0 PK	74.0	-24.0	1.32 V	296	42.0	8.0
6	4824.00	37.0 AV	54.0	-17.0	1.32 V	296	29.0	8.0

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.7 PK	74.0	-16.3	3.38 H	314	24.2	33.5
2	2390.00	46.1 AV	54.0	-7.9	3.38 H	314	12.6	33.5
3	*2437.00	108.2 PK			3.38 H	314	74.6	33.6
4	*2437.00	97.1 AV			3.38 H	314	63.5	33.6
5	2483.50	57.7 PK	74.0	-16.3	3.38 H	314	23.8	33.9
6	2483.50	46.0 AV	54.0	-8.0	3.38 H	314	12.1	33.9
7	4874.00	50.5 PK	74.0	-23.5	2.64 H	118	42.4	8.1
8	4874.00	37.2 AV	54.0	-16.8	2.64 H	118	29.1	8.1
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	71.0 PK	74.0	-3.0	1.73 V	321	37.5	33.5
2	2390.00	53.8 AV	54.0	-0.2	1.73 V	321	20.3	33.5
3	*2437.00	123.3 PK			1.73 V	321	89.7	33.6
4	*2437.00	113.1 AV			1.73 V	321	79.5	33.6
5	2483.50	67.8 PK	74.0	-6.2	1.73 V	321	33.9	33.9
6	2483.50	53.0 AV	54.0	-1.0	1.73 V	321	19.1	33.9
7	4874.00	53.2 PK	74.0	-20.8	1.88 V	37	45.1	8.1
8	4874.00	40.3 AV	54.0	-13.7	1.88 V	37	32.2	8.1

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.7 PK			3.42 H	261	67.9	33.8
2	*2462.00	91.0 AV			3.42 H	261	57.2	33.8
3	2483.50	57.8 PK	74.0	-16.2	3.42 H	261	23.9	33.9
4	2483.50	46.2 AV	54.0	-7.8	3.42 H	261	12.3	33.9
5	4924.00	50.4 PK	74.0	-23.6	2.24 H	164	42.1	8.3
6	4924.00	37.4 AV	54.0	-16.6	2.24 H	164	29.1	8.3
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	118.1 PK			1.93 V	350	84.3	33.8
2	*2462.00	107.0 AV			1.93 V	350	73.2	33.8
3	2483.50	70.1 PK	74.0	-3.9	1.93 V	350	36.2	33.9
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.93 V**	**350**	**20.0**	**33.9**
5	4924.00	50.7 PK	74.0	-23.3	1.87 V	28	42.4	8.3
6	4924.00	38.3 AV	54.0	-15.7	1.87 V	28	30.0	8.3

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.8 PK	74.0	-16.2	3.43 H	252	24.3	33.5
2	2390.00	46.0 AV	54.0	-8.0	3.43 H	252	12.5	33.5
3	*2422.00	95.6 PK			3.43 H	252	62.0	33.6
4	*2422.00	85.8 AV			3.43 H	252	52.2	33.6
5	4844.00	49.2 PK	74.0	-24.8	3.01 H	157	41.2	8.0
6	4844.00	36.3 AV	54.0	-17.7	3.01 H	157	28.3	8.0
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	66.1 PK	74.0	-7.9	1.90 V	331	32.6	33.5
2	2390.00	53.5 AV	54.0	-0.5	1.90 V	331	20.0	33.5
3	*2422.00	112.9 PK			1.90 V	331	79.3	33.6
4	*2422.00	103.0 AV			1.90 V	331	69.4	33.6
5	4844.00	49.4 PK	74.0	-24.6	1.48 V	302	41.4	8.0
6	4844.00	36.6 AV	54.0	-17.4	1.48 V	302	28.6	8.0

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.2 PK	74.0	-16.8	3.74 H	325	23.7	33.5
2	2390.00	45.9 AV	54.0	-8.1	3.74 H	325	12.4	33.5
3	*2437.00	100.8 PK			3.74 H	325	67.2	33.6
4	*2437.00	90.9 AV			3.74 H	325	57.3	33.6
5	2483.50	58.0 PK	74.0	-16.0	3.74 H	325	24.1	33.9
6	2483.50	46.1 AV	54.0	-7.9	3.74 H	325	12.2	33.9
7	4874.00	50.4 PK	74.0	-23.6	2.16 H	187	42.3	8.1
8	4874.00	37.2 AV	54.0	-16.8	2.16 H	187	29.1	8.1
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	67.2 PK	74.0	-6.8	2.02 V	345	33.7	33.5
2	2390.00	53.8 AV	54.0	-0.2	2.02 V	345	20.3	33.5
3	*2437.00	115.3 PK			2.02 V	345	81.7	33.6
4	*2437.00	105.3 AV			2.02 V	345	71.7	33.6
5	2483.50	67.6 PK	74.0	-6.4	2.02 V	345	33.7	33.9
6	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**2.02 V**	**345**	**20.0**	**33.9**
7	4874.00	50.4 PK	74.0	-23.6	1.69 V	40	42.3	8.1
8	4874.00	37.9 AV	54.0	-16.1	1.69 V	40	29.8	8.1

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	98.2 PK			3.72 H	335	64.4	33.8
2	*2452.00	88.0 AV			3.72 H	335	54.2	33.8
3	2483.50	59.3 PK	74.0	-14.7	3.72 H	335	25.4	33.9
4	2483.50	46.8 AV	54.0	-7.2	3.72 H	335	12.9	33.9
5	4904.00	50.3 PK	74.0	-23.7	1.53 H	330	42.1	8.2
6	4904.00	36.6 AV	54.0	-17.4	1.53 H	330	28.4	8.2
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	114.2 PK			1.37 V	342	80.4	33.8
2	*2452.00	104.0 AV			1.37 V	342	70.2	33.8
3	2483.50	69.8 PK	74.0	-4.2	1.37 V	342	35.9	33.9
4	2483.50	53.8 AV	54.0	-0.2	1.37 V	342	19.9	33.9
5	4904.00	50.6 PK	74.0	-23.4	2.49 V	331	42.4	8.2
6	4904.00	37.8 AV	54.0	-16.2	2.49 V	331	29.6	8.2

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 worst-case data: 802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	A		

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	101.69	28.4 QP	43.5	-15.1	2.00 H	134	46.5	-18.1
2	142.44	26.9 QP	43.5	-16.6	2.00 H	95	40.9	-14.0
3	249.17	31.3 QP	46.0	-14.7	1.49 H	266	45.4	-14.1
4	579.03	40.2 QP	46.0	-5.8	1.49 H	129	46.9	-6.7
5	877.85	36.1 QP	46.0	-9.9	1.49 H	148	37.2	-1.1
6	936.07	40.5 QP	46.0	-5.5	2.00 H	7	40.3	0.2
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	47.36	33.4 QP	40.0	-6.6	2.00 V	250	47.9	-14.5
2	64.83	33.9 QP	40.0	-6.1	1.00 V	63	49.2	-15.3
3	101.69	29.9 QP	43.5	-13.6	1.24 V	158	48.0	-18.1
4	249.17	27.2 QP	46.0	-18.8	1.00 V	44	41.3	-14.1
5	584.85	39.0 QP	46.0	-7.0	1.50 V	171	45.5	-6.5
6	936.07	40.3 QP	46.0	-5.7	1.00 V	61	40.1	0.2

Remarks:

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

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

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	35.72	27.1 QP	40.0	-12.9	1.00 H	159	42.8	-15.7
2	101.69	28.3 QP	43.5	-15.2	1.50 H	134	46.4	-18.1
3	173.49	21.7 QP	43.5	-21.8	1.50 H	252	35.8	-14.1
4	260.81	20.1 QP	46.0	-25.9	1.00 H	159	33.6	-13.5
5	567.39	42.9 QP	46.0	-3.1	2.00 H	222	50.0	-7.1
6	932.19	38.8 QP	46.0	-7.2	1.50 H	12	38.6	0.2
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	45.42	27.7 QP	40.0	-12.3	1.24 V	213	42.4	-14.7
2	97.81	25.1 QP	43.5	-18.4	1.24 V	242	43.8	-18.7
3	400.52	24.5 QP	46.0	-21.5	1.24 V	112	34.9	-10.4
4	567.39	38.5 QP	46.0	-7.5	1.50 V	193	45.6	-7.1
5	891.44	40.0 QP	46.0	-6.0	2.00 V	13	40.9	-0.9
6	932.19	38.6 QP	46.0	-7.4	1.24 V	143	38.4	0.2

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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 21, 2016	Nov. 20, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 22, 2016	Dec. 21, 2017
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

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.

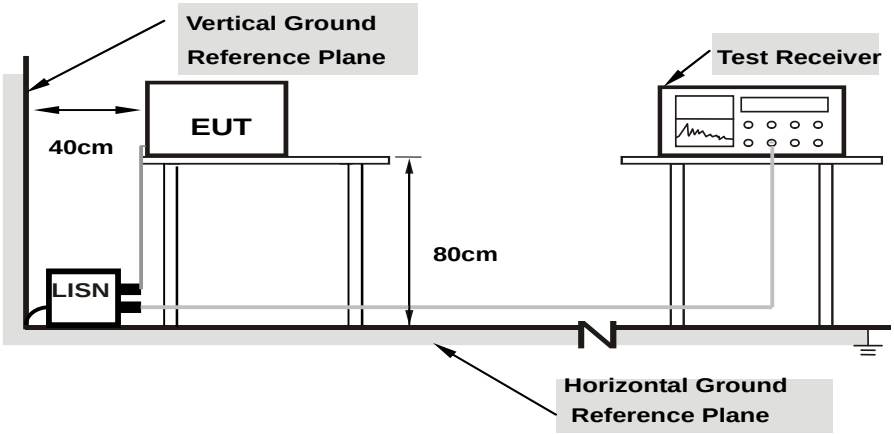
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

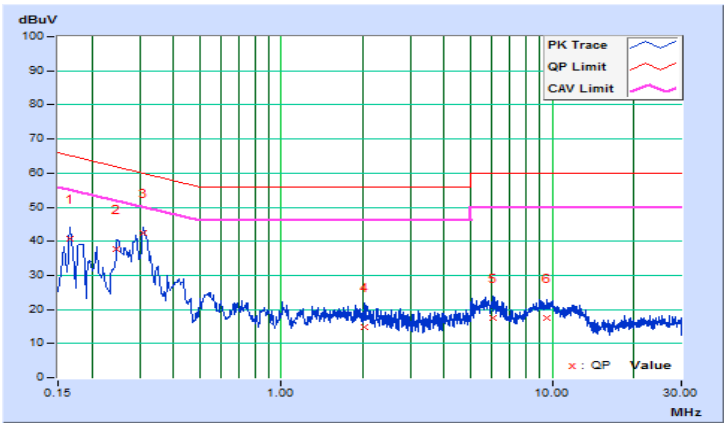
Worst-case data: 802.11b

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

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16569	10.45	30.23	16.68	40.68	27.13	65.17	55.17	-24.49	-28.04
2	0.24775	10.47	27.30	19.76	37.77	30.23	61.83	51.83	-24.06	-21.60
3	**0.31021**	**10.49**	**31.91**	**25.94**	**42.40**	**36.43**	**59.96**	**49.96**	**-17.56**	**-13.53**
4	2.01898	10.53	4.17	-1.03	14.70	9.50	56.00	46.00	-41.30	-36.50
5	6.08538	10.74	6.82	0.54	17.56	11.28	60.00	50.00	-42.44	-38.72
6	9.53791	10.91	6.52	1.98	17.43	12.89	60.00	50.00	-42.57	-37.11

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.

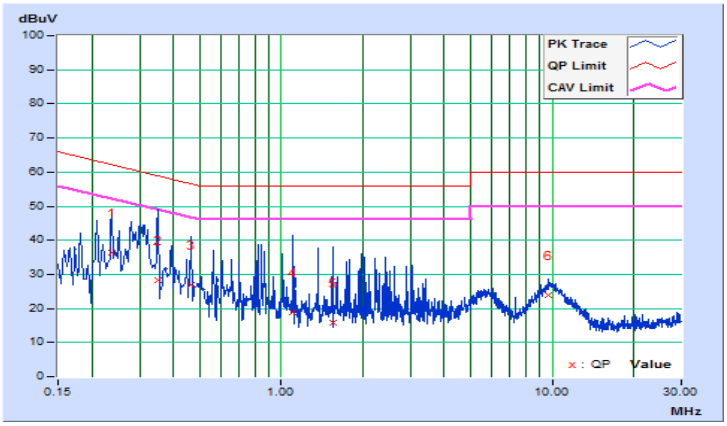


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.23602	10.23	26.19	18.97	36.42	29.20	62.24	52.24	-25.82	-23.04
2	0.34941	10.23	18.11	9.14	28.34	19.37	58.98	48.98	-30.64	-29.61
3	0.46280	10.24	16.77	8.12	27.01	18.36	56.64	46.64	-29.63	-28.28
4	1.10795	10.27	8.42	2.12	18.69	12.39	56.00	46.00	-37.31	-33.61
5	1.54587	10.29	5.45	0.29	15.74	10.58	56.00	46.00	-40.26	-35.42
6	9.72559	10.66	13.15	8.55	23.81	19.21	60.00	50.00	-36.19	-30.79

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.

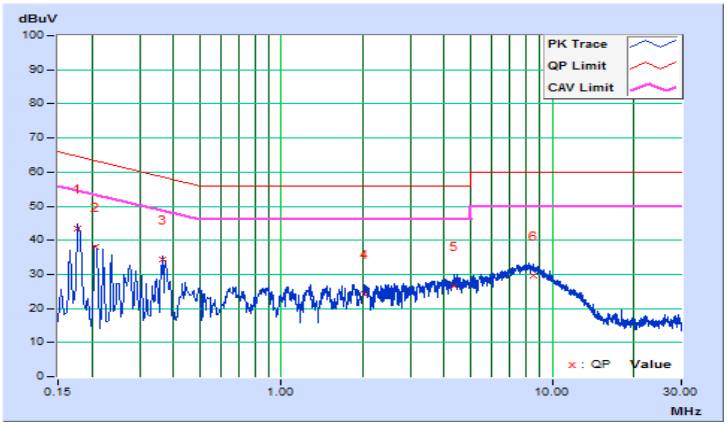


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17744	10.45	33.08	19.80	43.53	30.25	64.60	54.60	-21.07	-24.35
2	0.20511	10.46	27.57	12.37	38.03	22.83	63.40	53.40	-25.37	-30.57
3	0.36505	10.51	23.91	18.67	34.42	29.18	58.61	48.61	-24.19	-19.43
4	2.01898	10.53	13.72	7.29	24.25	17.82	56.00	46.00	-31.75	-28.18
5	4.37280	10.66	15.80	7.03	26.46	17.69	56.00	46.00	-29.54	-28.31
6	8.48221	10.86	18.72	12.66	29.58	23.52	60.00	50.00	-30.42	-26.48

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.

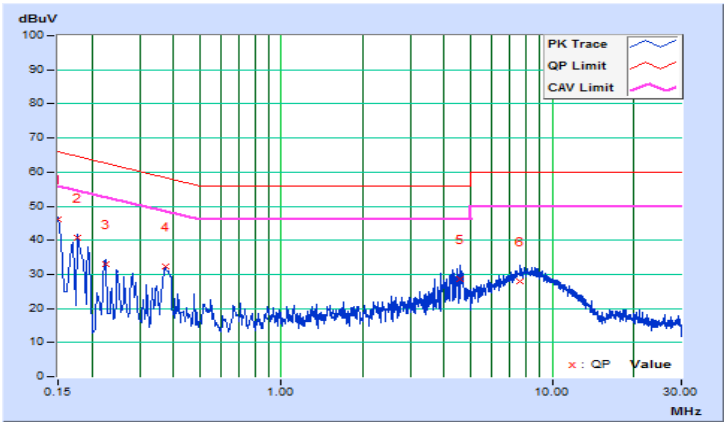


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.20	35.95	19.49	46.15	29.69	66.00	56.00	-19.85	-26.31
2	0.17737	10.21	30.59	16.54	40.80	26.75	64.61	54.61	-23.81	-27.86
3	0.22434	10.23	22.91	9.18	33.14	19.41	62.66	52.66	-29.52	-33.25
4	0.37304	10.23	22.10	14.82	32.33	25.05	58.43	48.43	-26.10	-23.38
5	4.56439	10.43	18.19	8.18	28.62	18.61	56.00	46.00	-27.38	-27.39
6	7.63374	10.57	17.49	11.35	28.06	21.92	60.00	50.00	-31.94	-28.08

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.

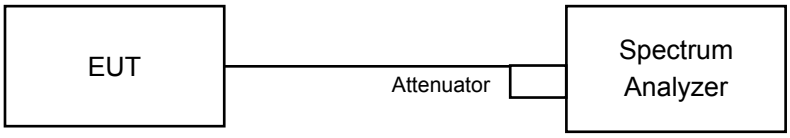


4.3 6dB Bandwidth Measurement

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) ≥ 3 x RBW, Detector = average.

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 fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	8.59	9.11	0.5	Pass
6	2437	9.09	9.60	0.5	Pass
11	2462	8.58	9.06	0.5	Pass

802.11g

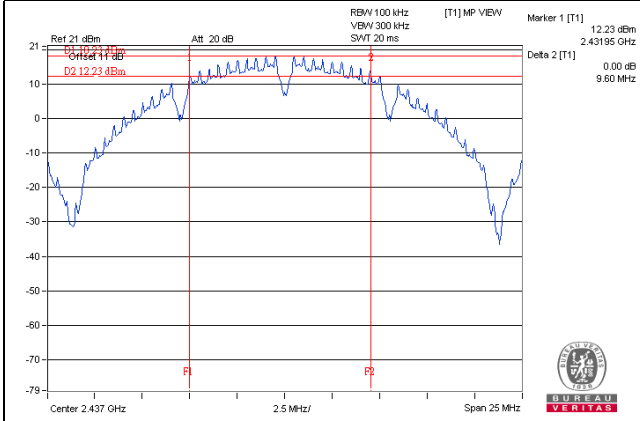
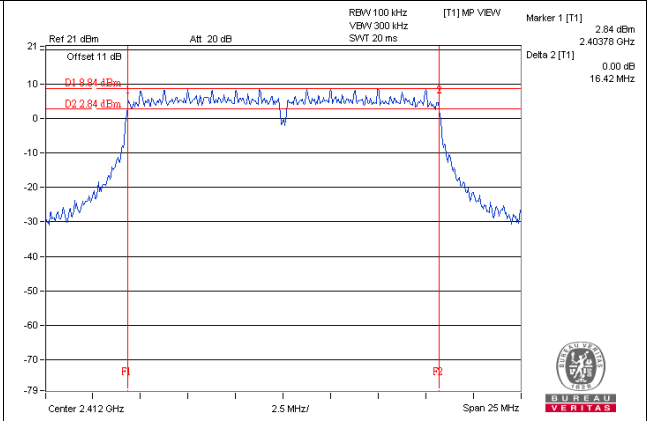
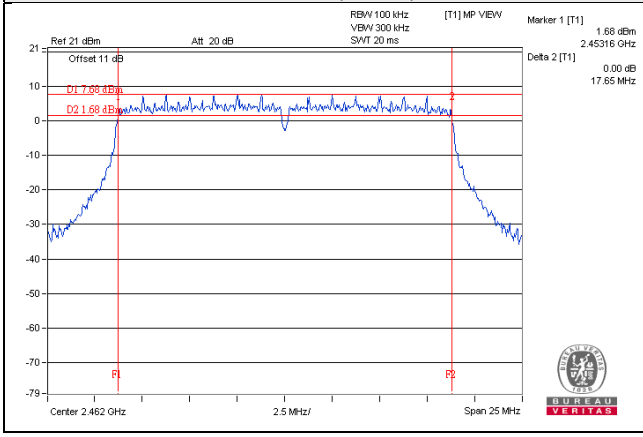
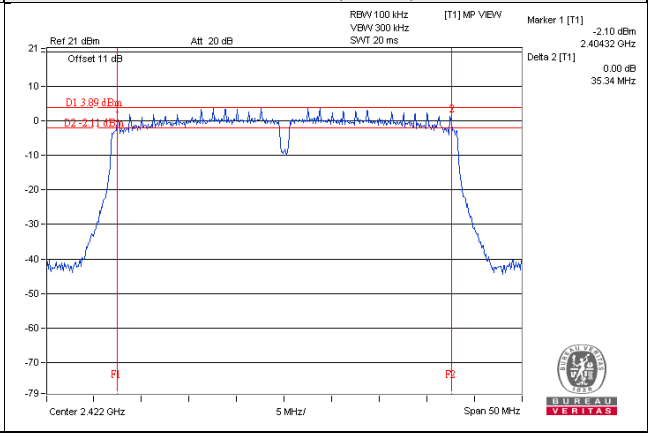
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.41	16.42	0.5	Pass
6	2437	16.38	16.38	0.5	Pass
11	2462	16.39	16.40	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.63	17.64	0.5	Pass
6	2437	17.62	17.61	0.5	Pass
11	2462	17.62	17.65	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.34	35.30	0.5	Pass
6	2437	35.26	35.22	0.5	Pass
9	2452	35.25	35.26	0.5	Pass

Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (HT20)	802.11n (HT40)
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

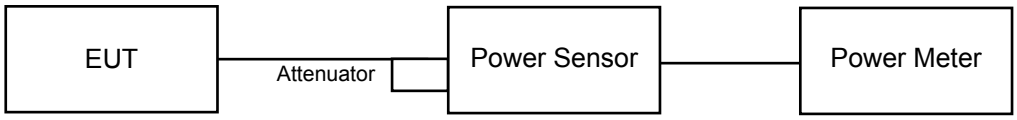
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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 $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) 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

802.11b

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	25.01	25.21	648.851	28.12	30.00	Pass
6	2437	26.10	26.15	**819.478**	29.14	30.00	Pass
11	2462	24.46	24.39	554.043	27.44	30.00	Pass

802.11g

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.42	19.52	177.034	22.48	30.00	Pass
6	2437	25.48	25.58	714.593	28.54	30.00	Pass
11	2462	19.21	19.34	169.269	22.29	30.00	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.56	20.58	228.051	23.58	30.00	Pass
6	2437	25.56	25.59	721.992	28.59	30.00	Pass
11	2462	18.56	18.62	144.557	21.60	30.00	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	18.30	18.64	140.722	21.48	30.00	Pass
6	2437	19.52	19.59	180.527	22.57	30.00	Pass
9	2452	18.56	18.62	144.557	21.60	30.00	Pass

Beamforming Mode

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.56	20.58	228.051	23.58	30.00	Pass
6	2437	24.52	24.57	**569.557**	27.56	30.00	Pass
11	2462	18.56	18.62	144.557	21.60	30.00	Pass

Note: Directional gain = 5.31dBi < 6dBi, so the limit no need to be reduced.

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	17.71	18.02	122.407	20.88	30.00	Pass
6	2437	19.52	19.59	180.527	22.57	30.00	Pass
9	2452	18.56	18.62	144.557	21.60	30.00	Pass

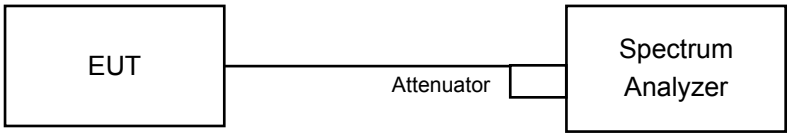
Note: Directional gain = 5.31dBi < 6dBi, so the limit no need to be reduced.

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 Average Power (Duty cycle ≥ 98%)

a. Set instrument center frequency to DTS channel center frequency.
b. Set span to at least 1.5 times the OBW.
c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set VBW ≥3 x RBW.
e. Detector = power averaging (RMS) or sample detector (when RMS not available).
f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g. Sweep time = auto couple.
h. Employ trace averaging (RMS) mode over a minimum of 100 traces.
i. Use the peak marker function to determine the maximum amplitude level.

For Average Power (Duty cycle < 98%)

a. Measure the duty cycle (x).
b. Set instrument center frequency to DTS channel center frequency.
c. Set span to at least 1.5 times the OBW.
d. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
e. Set VBW ≥3 x RBW.
f. Detector = power averaging (RMS) or sample detector (when RMS not available).
g. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h. Sweep time = auto couple.
i. Do not use sweep triggering. Allow sweep to “free run”.
j. Employ trace averaging (RMS) mode over a minimum of 100 traces.
k. Use the peak marker function to determine the maximum amplitude level.
l. 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

802.11b

TX chain	Channel	Frequency (MHz)	PSD (dBm/10kHz)	10 log (N=2) dB	Total PSD (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-3.38	3.01	-0.37	8.00	Pass
	6	2437	-2.30	3.01	0.71	8.00	Pass
	11	2462	-3.61	3.01	-0.60	8.00	Pass
1	1	2412	-2.79	3.01	0.22	8.00	Pass
	6	2437	-1.53	3.01	1.48	8.00	Pass
	11	2462	-3.11	3.01	-0.10	8.00	Pass

Note:
1. Method 1 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 = 5.31dBi < 6dBi, so the limit no need to reduced.

802.11g

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-11.73	3.01	0.19	-8.53	8.00	Pass
	6	2437	-6.05	3.01	0.19	-2.85	8.00	Pass
	11	2462	-12.19	3.01	0.19	-8.99	8.00	Pass
1	1	2412	-11.11	3.01	0.19	-7.91	8.00	Pass
	6	2437	-5.43	3.01	0.19	-2.23	8.00	Pass
	11	2462	-11.42	3.01	0.19	-8.22	8.00	Pass

Note:
1. Method 1 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 = 5.31dBi < 6dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

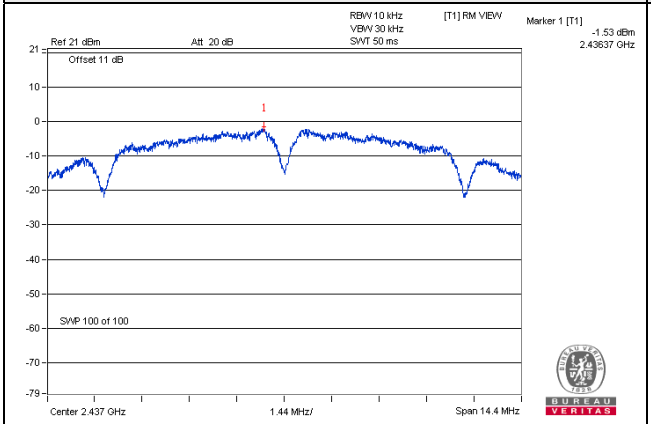
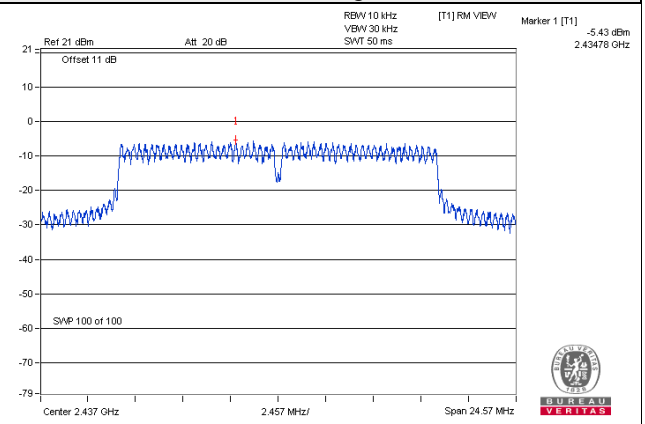
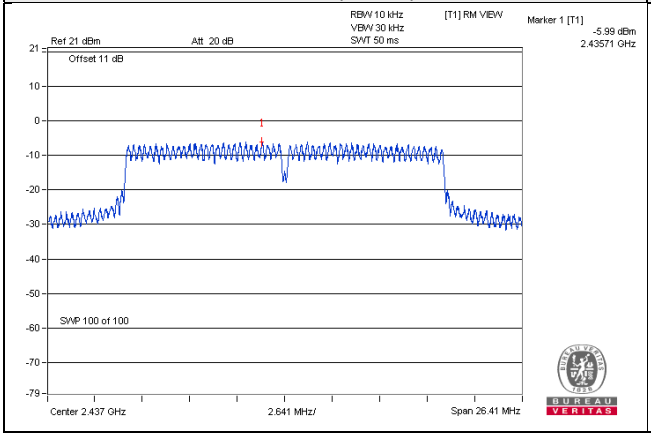
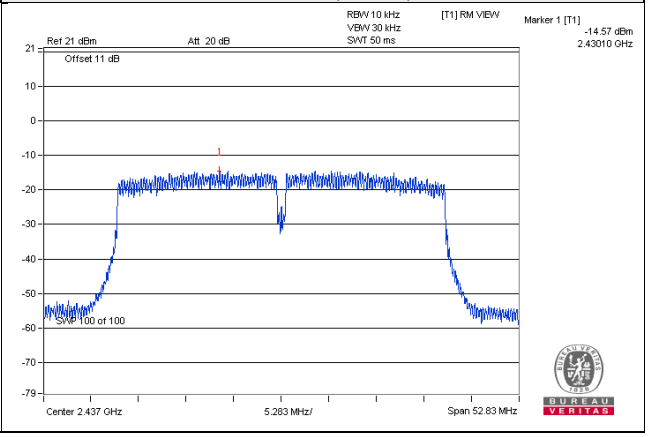
TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-10.95	3.01	0.09	-7.85	8.00	Pass
	6	2437	-6.52	3.01	0.09	-3.42	8.00	Pass
	11	2462	-12.38	3.01	0.09	-9.28	8.00	Pass
1	1	2412	-10.42	3.01	0.09	-7.32	8.00	Pass
	6	2437	-5.99	3.01	0.09	-2.89	8.00	Pass
	11	2462	-12.15	3.01	0.09	-9.05	8.00	Pass

Note:
1. Method 1 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 = 5.31dBi < 6dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	3	2422	-16.63	3.01	0.18	-13.44	8.00	Pass
	6	2437	-15.37	3.01	0.18	-12.18	8.00	Pass
	9	2452	-15.95	3.01	0.18	-12.76	8.00	Pass
1	3	2422	-16.22	3.01	0.18	-13.03	8.00	Pass
	6	2437	-14.57	3.01	0.18	-11.38	8.00	Pass
	9	2452	-15.50	3.01	0.18	-12.31	8.00	Pass

Note:
1. Method 1 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 = 5.31dBi < 6dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

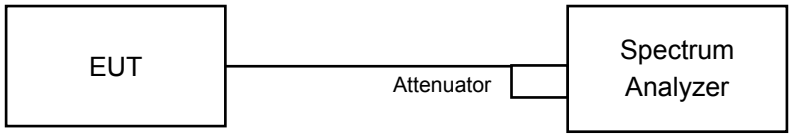
Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (HT20)	802.11n (HT40)
	

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

a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = average.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Detector = average.
d. Sweep = auto couple.
e. Trace Mode = max hold.
f. Allow trace to fully stabilize.
g. 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

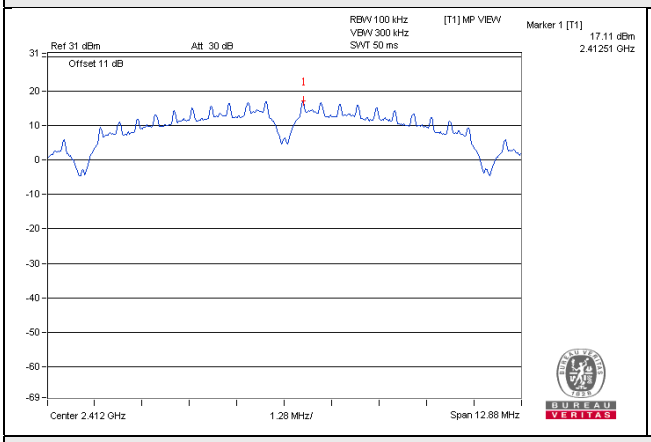
Same as item 4.3.6

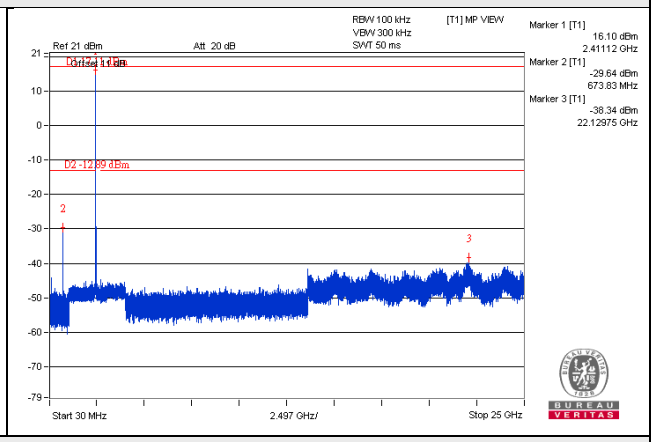
4.6.7 Test Results

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

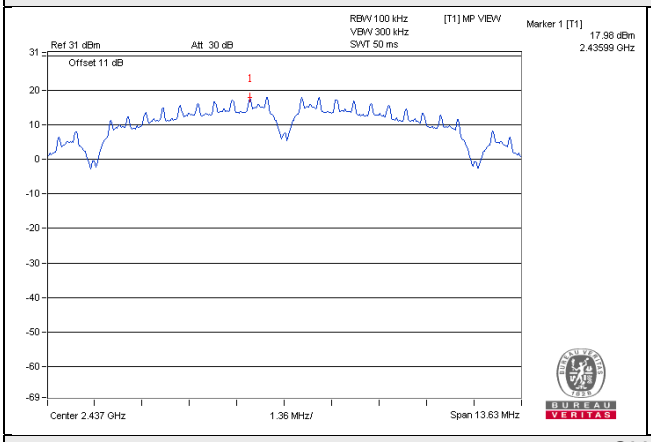
802.11b_Chain 0

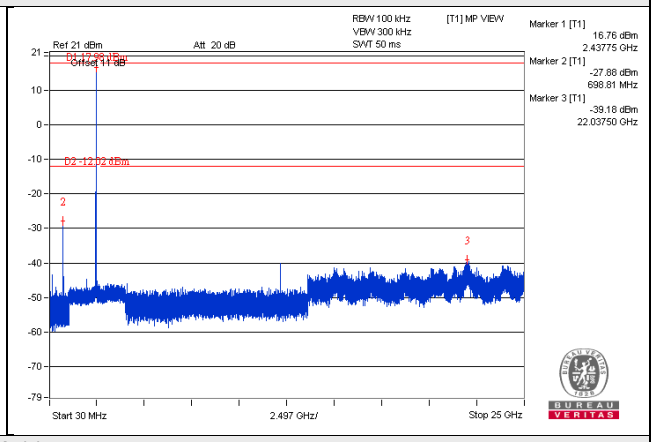
CH 1



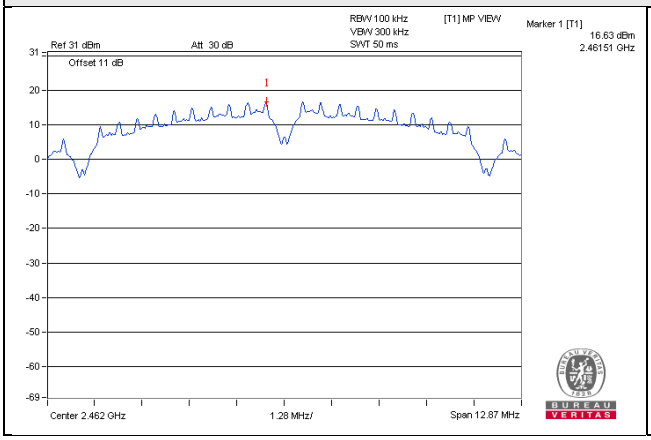


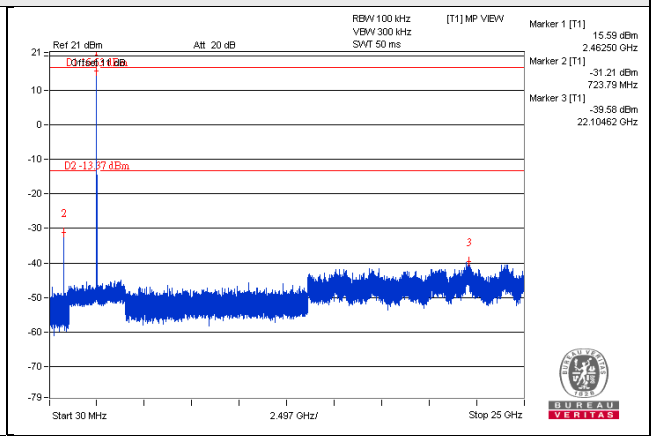
CH 6





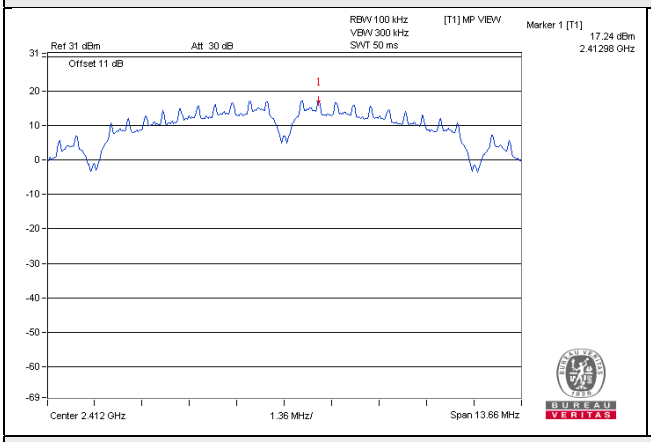
CH 11

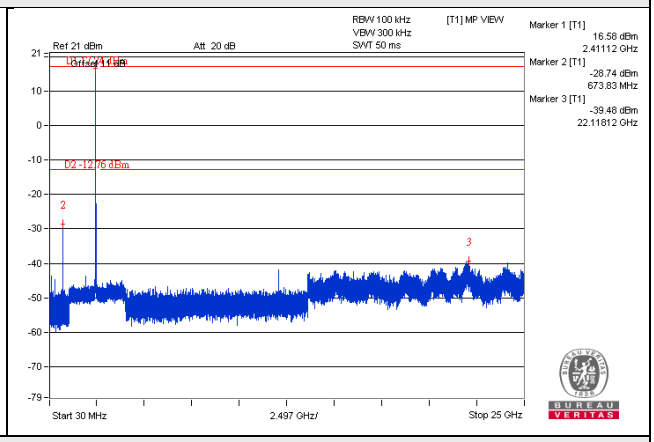




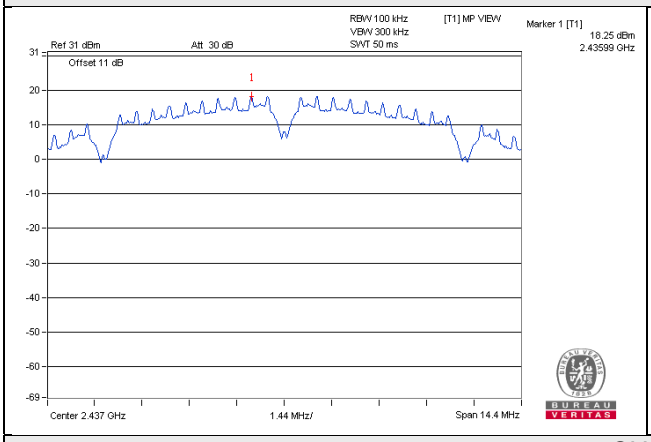
802.11b_Chain 1

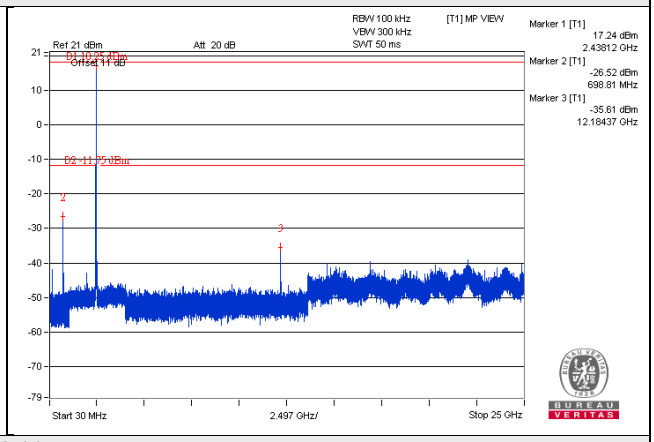
CH 1



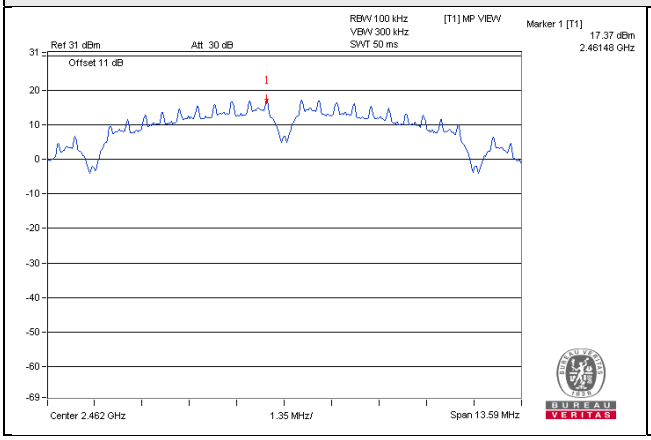


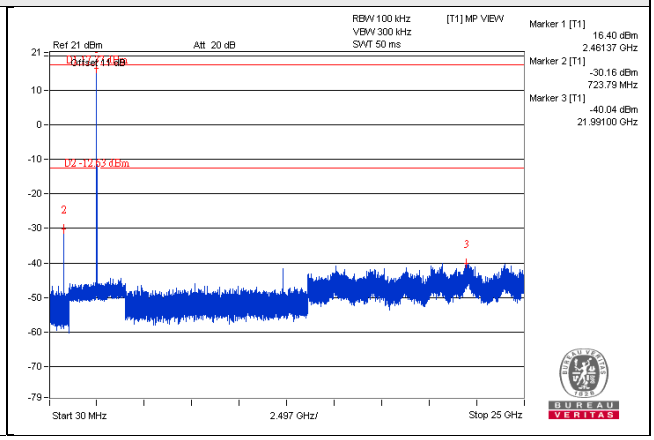
CH 6





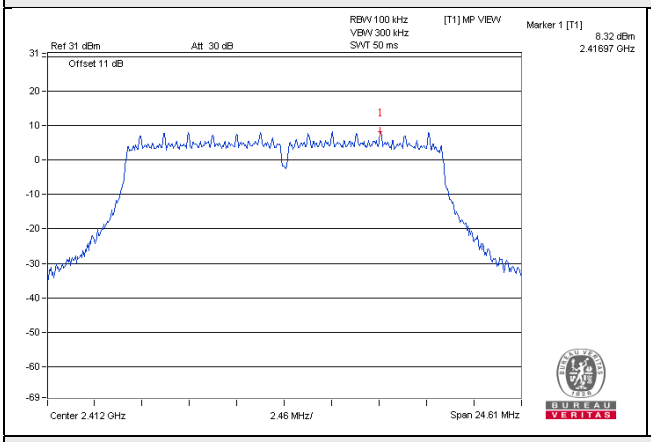
CH 11

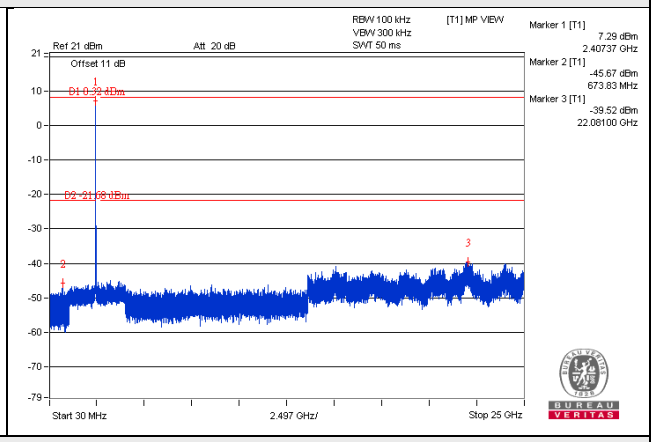




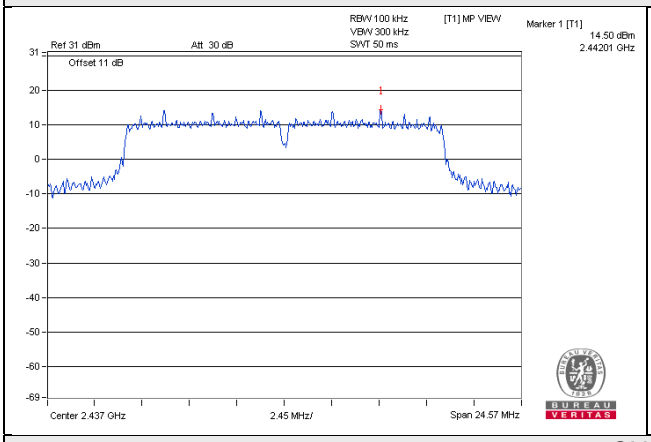
802.11g_Chain 0

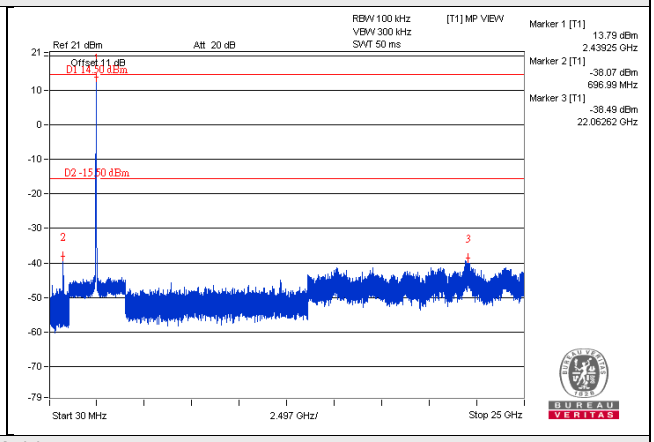
CH 1



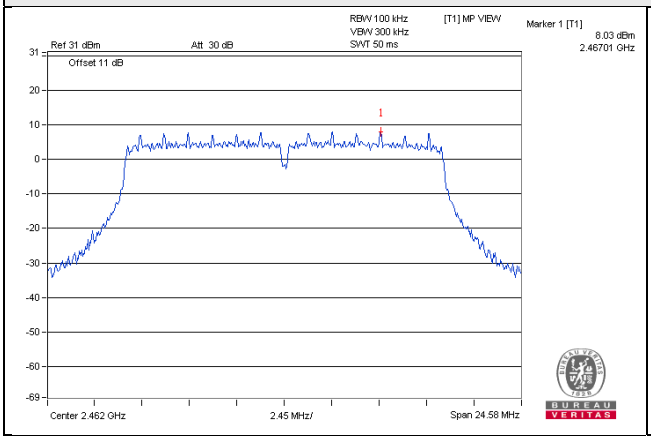


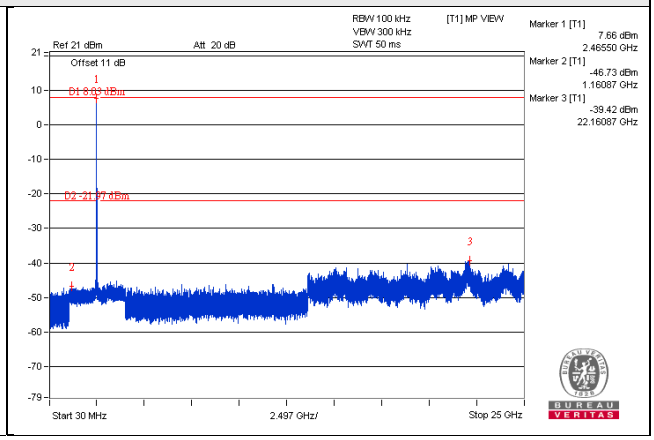
CH 6





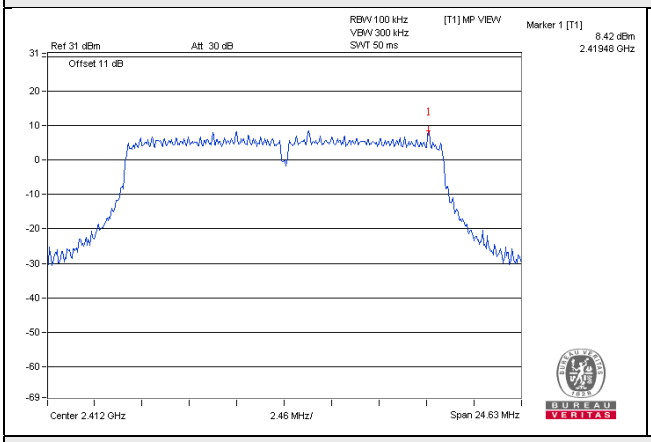
CH 11

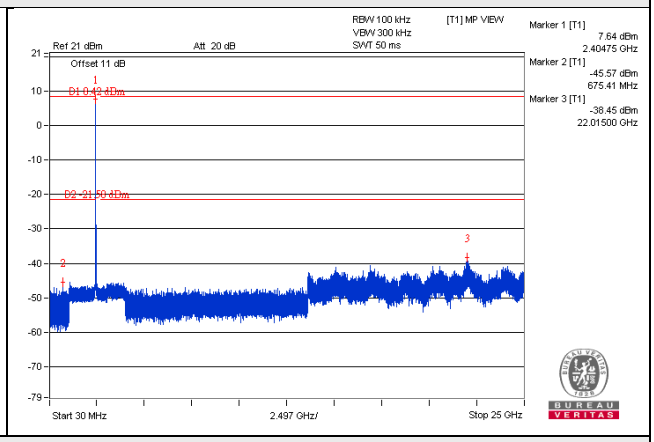




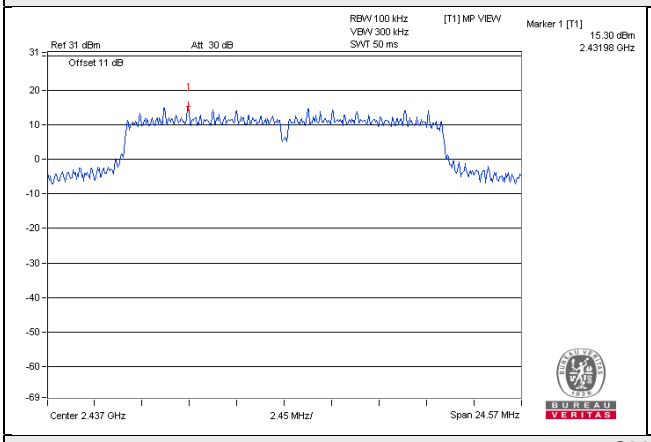
802.11g_Chain 1

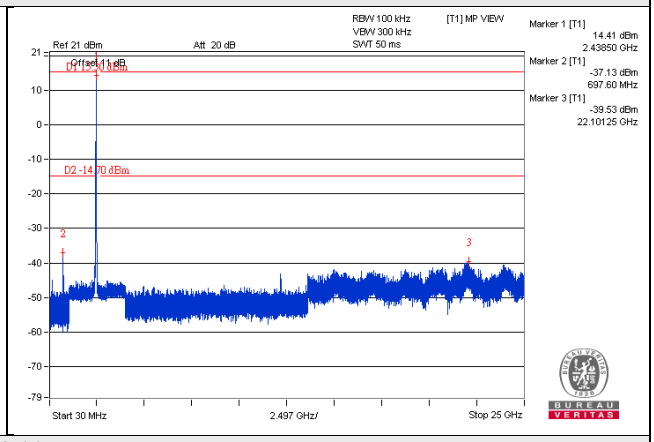
CH 1



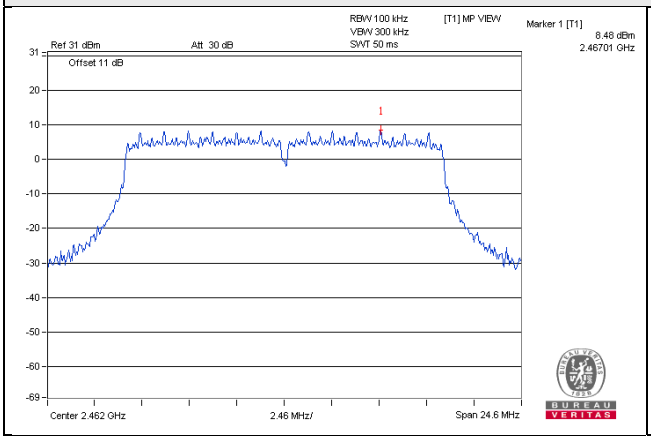


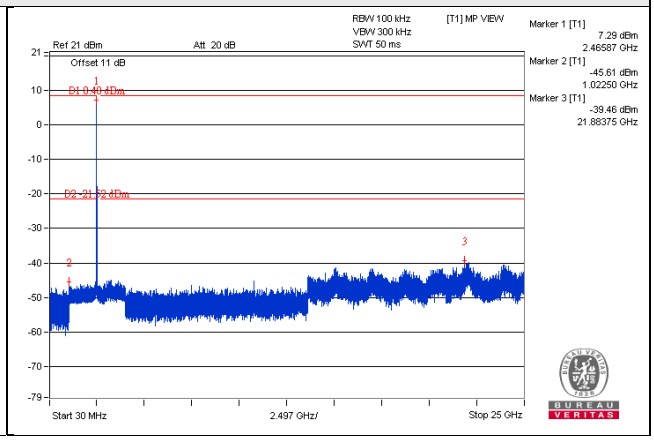
CH 6





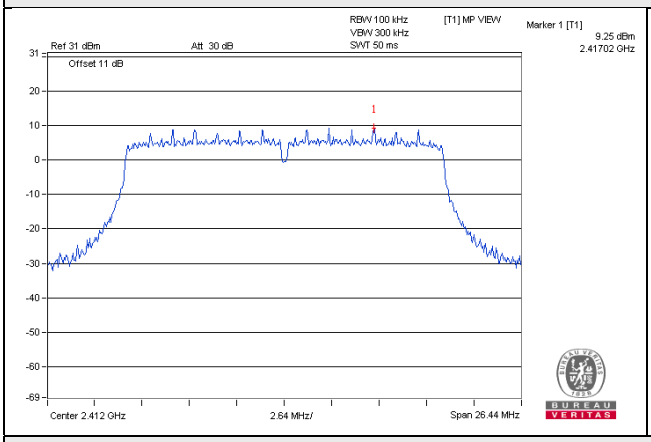
CH 11

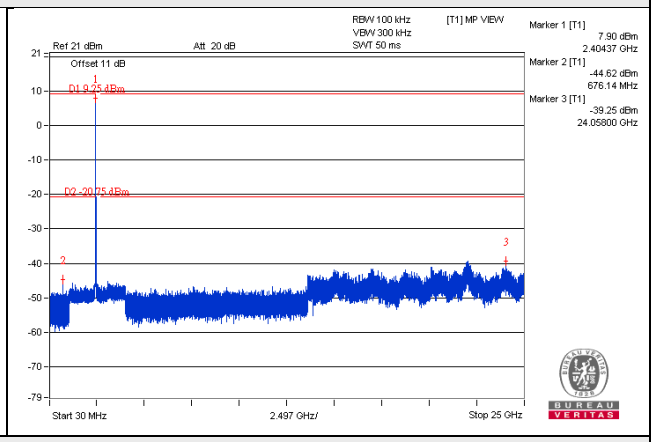




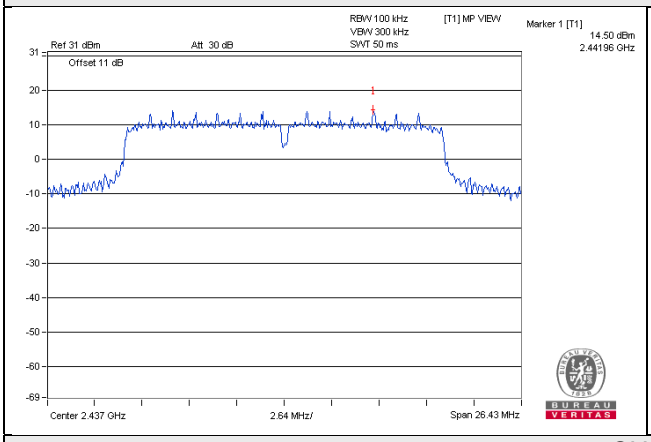
802.11n (HT20)_Chain 0

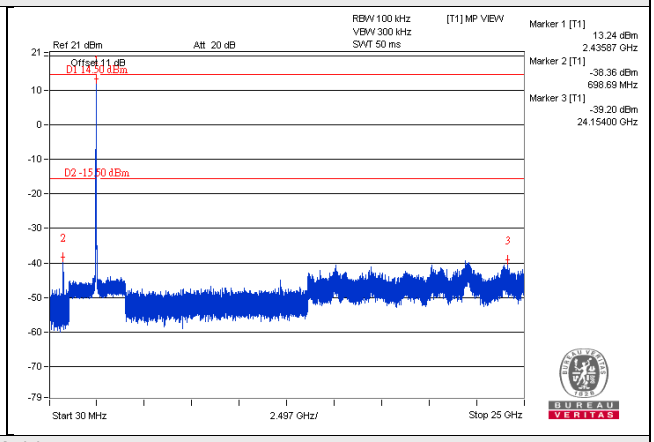
CH 1



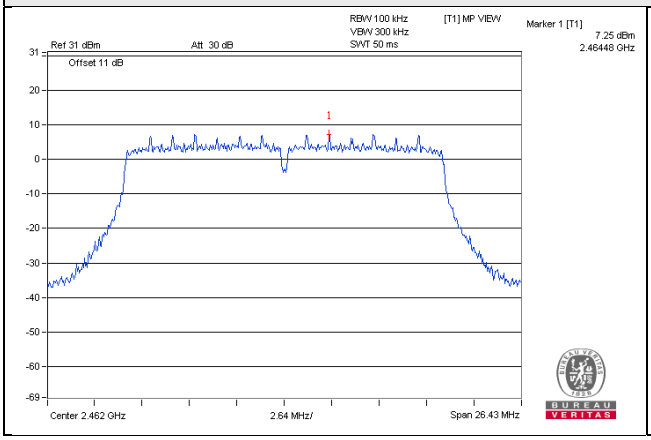


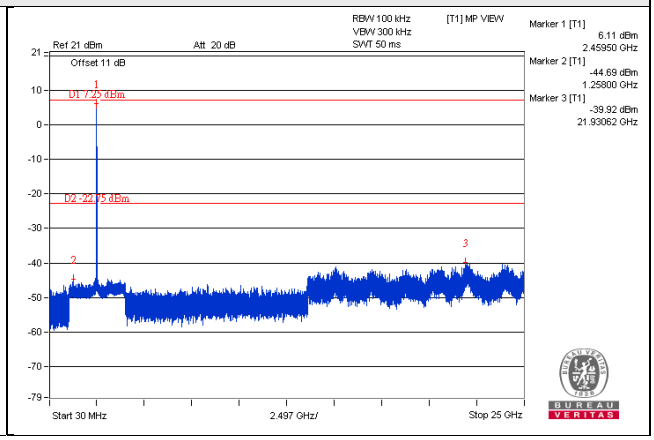
CH 6





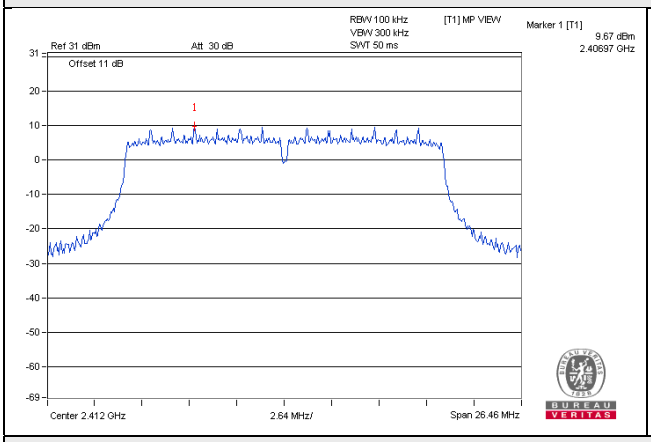
CH 11

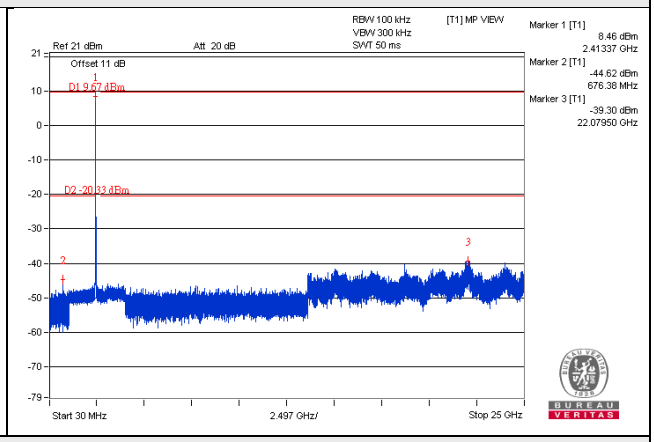




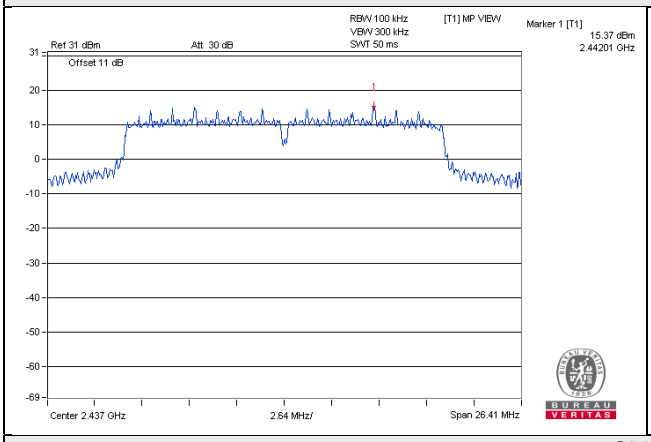
802.11n (HT20)_Chain 1

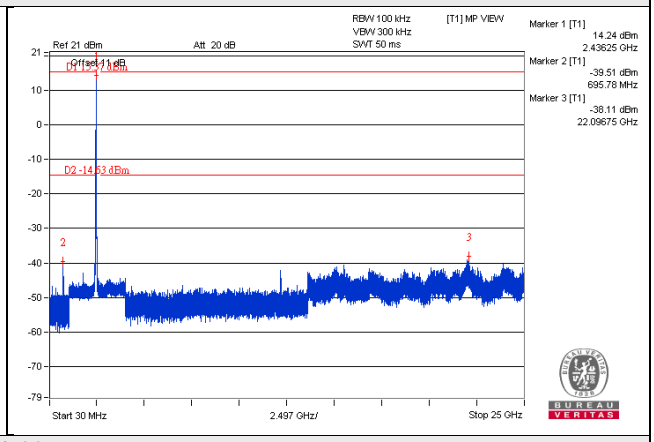
CH 1



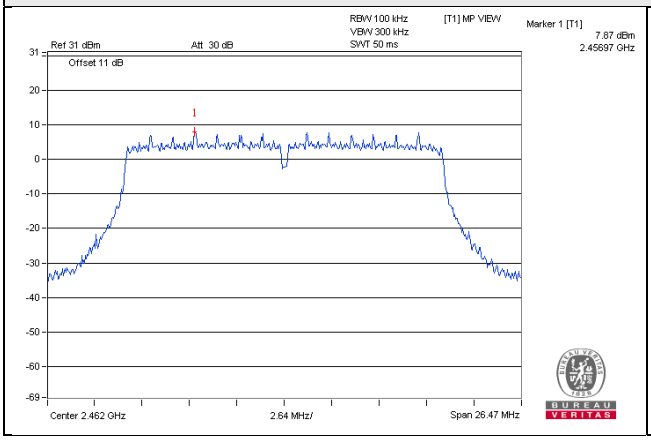


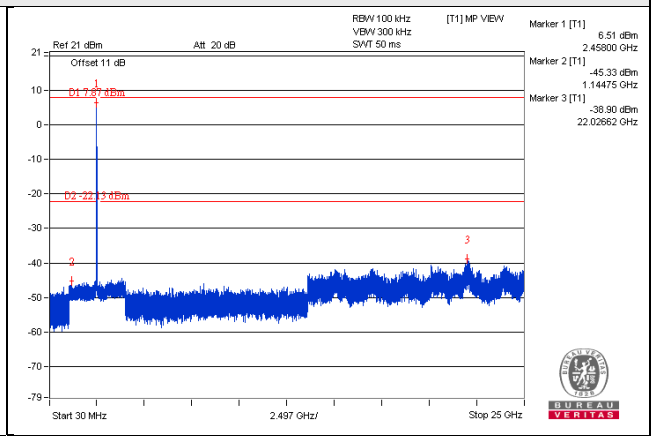
CH 6





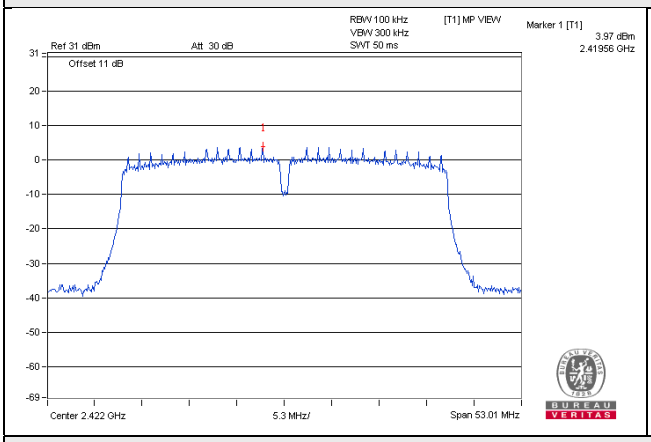
CH 11

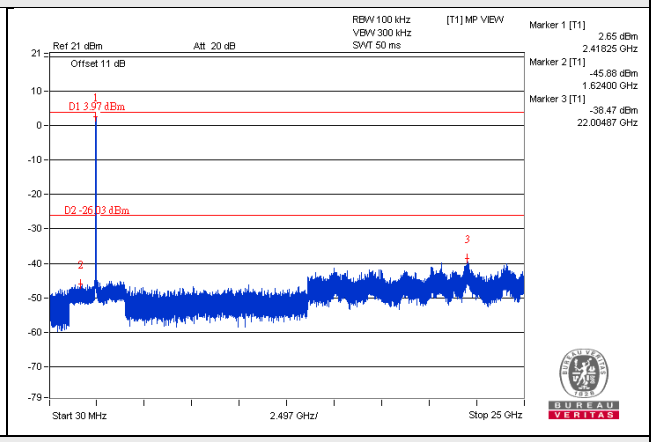




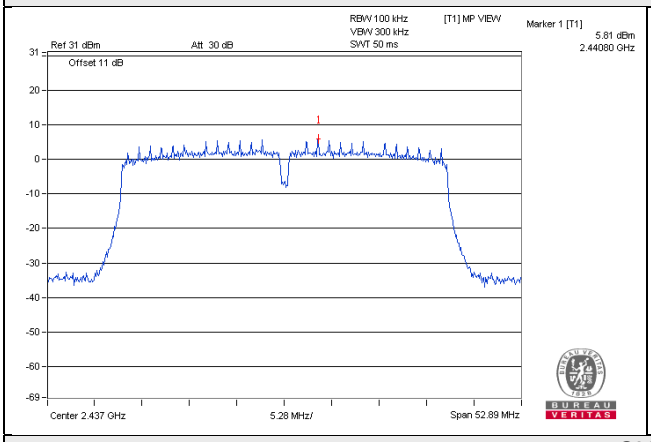
802.11n (HT40)_Chain 0

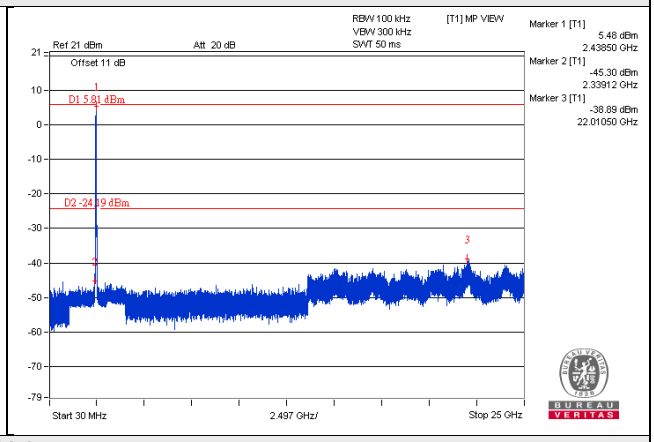
CH 3



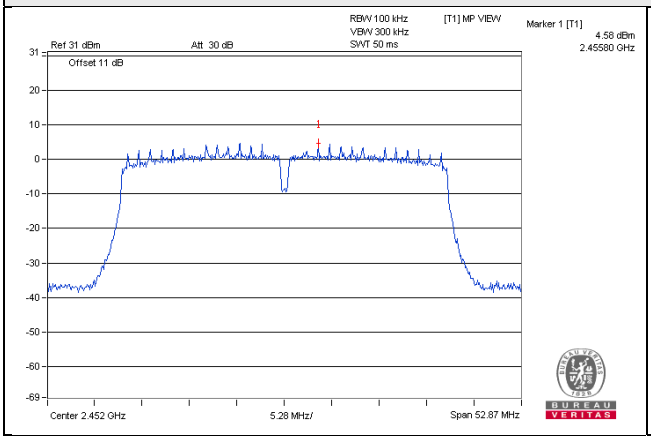


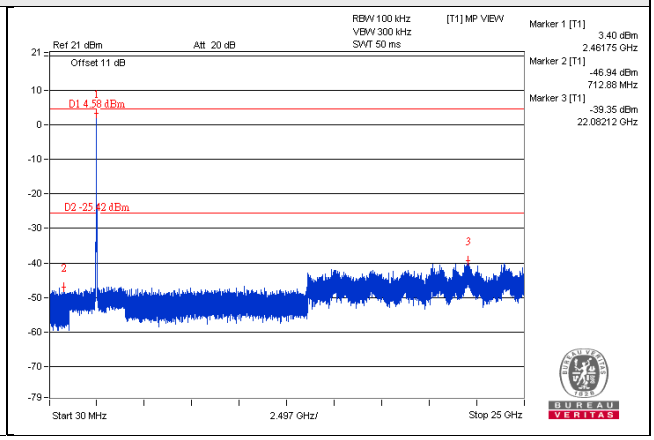
CH 6





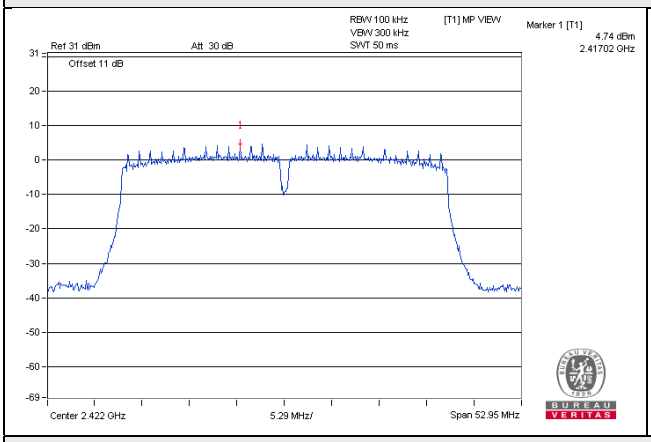
CH 9

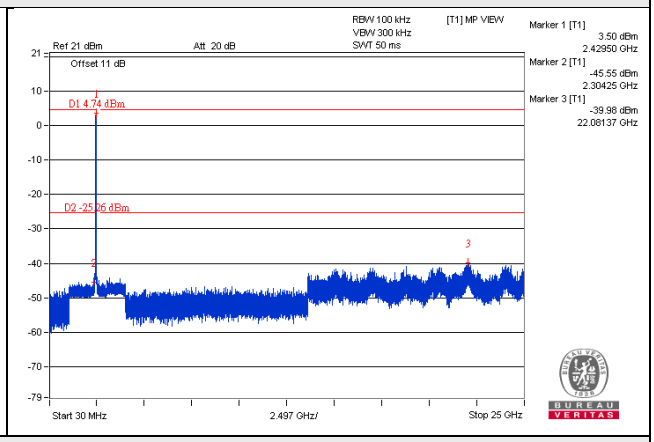




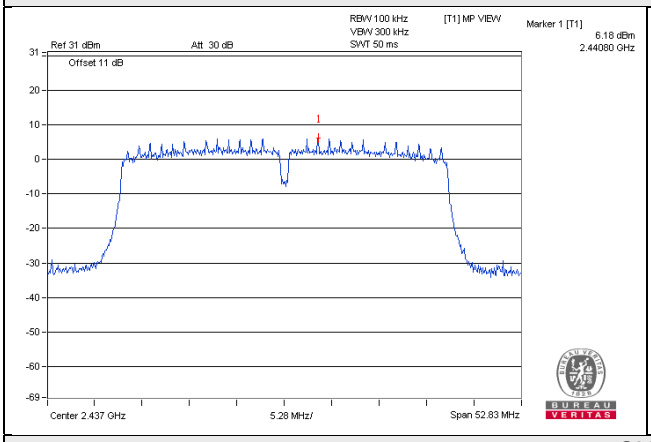
802.11n (HT40)_Chain 1

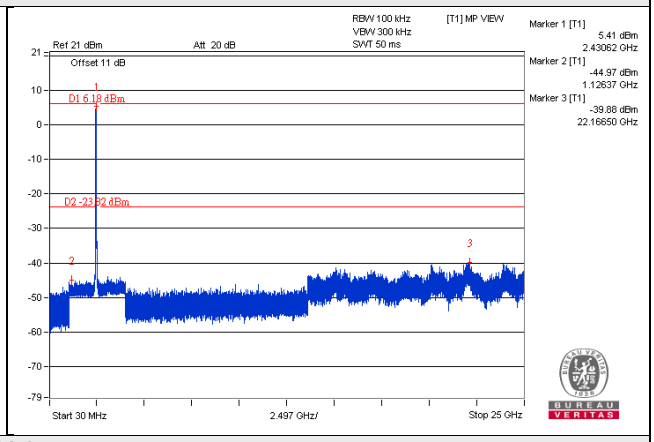
CH 3



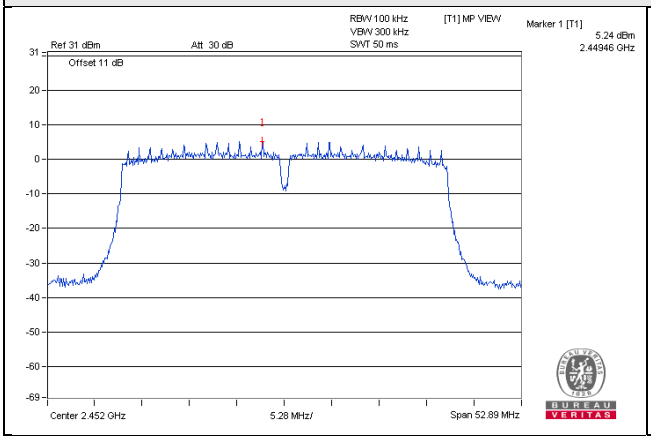


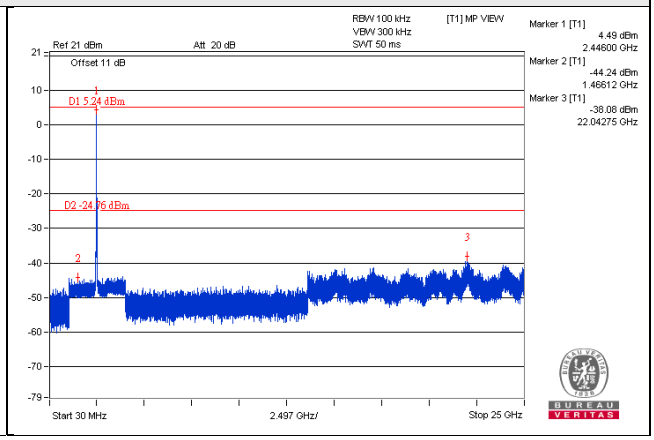
CH 6





CH 9





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 FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

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

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Web Site: www.bureauveritas-adt.com

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

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