

FCC Test Report

Report No.: RF170307C24

FCC ID: A8J-EAP1300

Test Model: EAP1300, EAP1300EXT (refer to item 3.1 for more details)

Received Date: Feb. 17, 2017

Test Date: Feb. 17 ~ Apr. 18, 2017

Issued Date: Apr. 20, 2017

Applicant: EnGenius Technologies

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Release Control Record

Issue No.	Description	Date Issued
RF170307C24	Original release.	Apr. 20, 2017

1 Certificate of Conformity

Product: Dual Band Indoor Access Point

Brand: EnGenius

Test Model: EAP1300, EAP1300EXT (refer to item 3.1 for more details)

Sample Status: Engineering sample

Applicant: EnGenius Technologies

Test Date: Feb. 17 ~ Apr. 18, 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 : Sunt Lee , **Date:** Apr. 20, 2017
Sunt Lee / Specialist

Approved by : Ken Liu , **Date:** Apr. 20, 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 -9.16dB at 0.48594MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.7dB 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	Internal antenna: Antenna connector is IPEX for PIFA antenna not a standard connector. External antenna: Antenna connector is RSMA for dipole antenna 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	3.86 dB
	200MHz ~ 1000MHz	3.87 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	Dual Band Indoor Access Point
Brand	EnGenius
Test Model	EAP1300, EAP1300EXT
Model Difference	Refer to Note
Sample Status	Engineering sample
Power Supply Rating	12Vdc (adapter) 54Vdc (POE)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 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 400Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), 802.11ac (VHT20): 11 802.11n (HT40), 802.11ac (VHT40): 7
Output Power	CDD Mode: 288.124mW Beamforming Mode: 126.779mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Cable Supplied	0.5m non-shielded RJ45 cable without core

Note:

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

Modulation Mode	TX Function	Beamforming
802.11b	2TX	Not Support
802.11g	2TX	Not Support
802.11a	2TX	Not Support
802.11n (HT20)	2TX	Support
802.11n (HT40)	2TX	Support
802.11ac (VHT20)	2TX	Support
802.11ac (VHT40)	2TX	Support
802.11ac (VHT80)	2TX	Support

* The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

* For 802.11n and 802.11ac, 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 EUT uses following antennas.

Internal antenna		
Type	PIFA	
Connector	IPEX	
Gain (dBi)		
Frequency	2.4GHz	5GHz
	4	5

External antenna						
Type	Dipole					
Connector	RSMA					
Gain (dBi)						
Frequency (MHz)	2400	2410	2420	2430	2440	2450
	4.50	4.67	4.89	4.63	4.94	4.98
	2460	2470	2480	2490	2500	
	5.67	4.78	4.78	4.84	4.81	
	5000	5100	5150	5250	5350	5450
	3.55	3.70	3.01	3.32	3.76	4.31
	5550	5650	5725	5750	5800	5825
	4.85	4.99	4.86	4.48	4.46	4.71
	5850	5900	5950	6000		
	4.50	4.33	4.44	4.56		

* The 2.4GHz max. gain (External antenna) is chosen for final tests since it has the maximum gain among all antennas.

* The 5GHz max. gain (Internal antenna) is chosen for final tests since it has the maximum gain among all antennas.

3. All models are listed as below.

Brand	Model	Difference
EnGenius	EAP1300	Internal antenna
	EAP1300EXT	External antenna

4. The EUT uses following adapter.

Brand	DVE
Model	DSA-12PFT-12 FUS 120100
Input Power	100-240Vac, 50/60Hz, 0.5A
Output Power	+12Vdc, 1A
Power Line	1.45m DC cable without core attached on adapter

5. The EUT uses following POE (support unit).

Brand	SENAO
Model	EAP5006GP
Input Power	100-240Vac, 0.8A, 50-60Hz
Output Power	54Vdc, 0.6A
Power Line	0.5m non-shielded power cable without core

6. 2.4GHz and 5GHz technologies can transmit at same time.

7. Spurious emission of the simultaneous operation (2.4GHz and 5GHz) has been evaluated and no non-compliance was found.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20), 802.11ac (VHT20):

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), 802.11ac (VHT40):

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	
A1	√	√	√	-	Internal antenna, Adapter
A2	-	√	√	-	Internal antenna, POE
B1	√	√	√	√	External antenna, Adapter
B2	-	√	√	-	External antenna, POE

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

Note:

1. The antenna had been pre-tested on the positioned of each 3 axis. The worst cases were found when positioned on Y-plane for internal antenna and X-plane for external antenna.
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)
A1, B1	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A1, B1	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A1, B1	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A1, B1	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

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)
A1, A2, B1, B2	802.11g	1 to 11	6	OFDM	BPSK	6.0

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)
A1, A2, B1, B2	802.11g	1 to 11	6	OFDM	BPSK	6.0

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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
B1	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
B1	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
B1	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
B1	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	20deg. C, 66%RH 16deg. C, 70%RH	120Vac, 60Hz	James Yang Jones Chang Nick Hsu
RE<1G	20deg. C, 66%RH	120Vac, 60Hz	James Yang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Chris Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Antony Lee

3.3 Duty Cycle of Test Signal

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

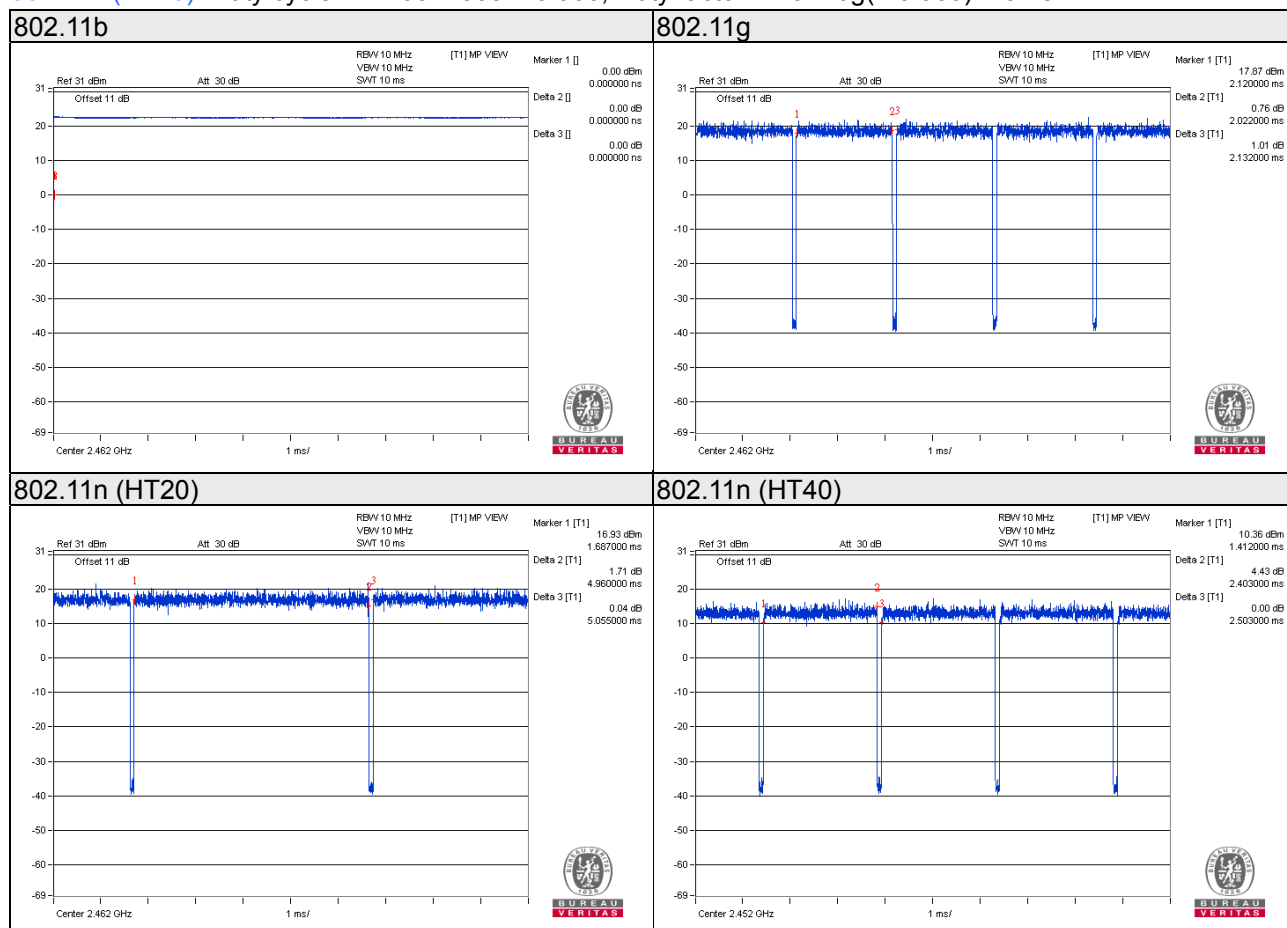
Duty cycle of test signal is $< 98\%$, duty factor is required.

802.11b: Duty cycle = 100%

802.11g: Duty cycle = $2.022/2.132 = 0.948$, Duty factor = $10 * \log(1/0.948) = 0.23$

802.11n (HT20): Duty cycle = $4.960/5.055 = 0.981$

802.11n (HT40): Duty cycle = $2.403/2.503 = 0.960$, Duty factor = $10 * \log(1/0.960) = 0.18$



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.	PC	DELL	OptiPlex 9010 DT	HR465W1	FCC DoC Approved	-
B.	POE	SENAO	EAP5006GP	NA	NA	Provided by manufacturer

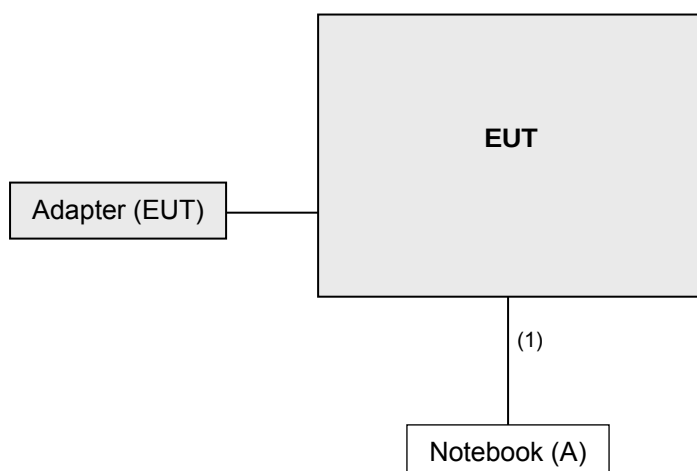
Note:

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.

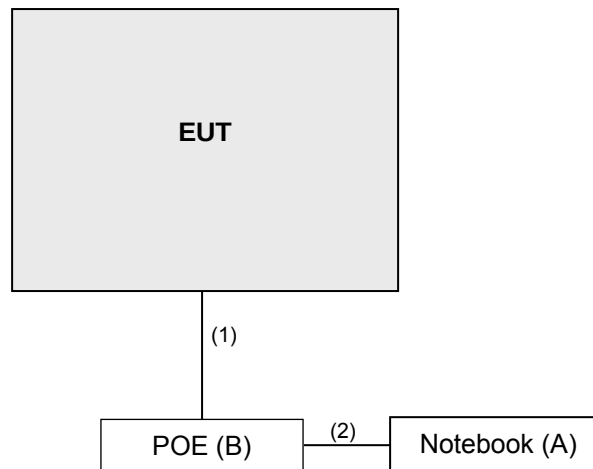
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45, Cat5e	1	0.5	N	0	Accessory of EUT
2.	RJ45, Cat5e	1	3	N	0	-

3.4.1 Configuration of System under Test

Mode A1, B1



Mode A2, B2



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	ESIB7	100187	Apr. 18, 2016	Apr. 17, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 16, 2016	Aug. 15, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	9120D	209	Dec. 27, 2016	Dec. 26, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier Agilent	8447D	2944A10738	Aug. 22, 2016	Aug. 21, 2017
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (214378)	Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 106	Cable-CH3-03 (309224+12738)	Aug. 22, 2016	Aug. 21, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2016	Jul. 08, 2017
Power Sensor	MA2411B	0738171	Aug. 11, 2016	Aug. 10, 2017

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 3.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

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:

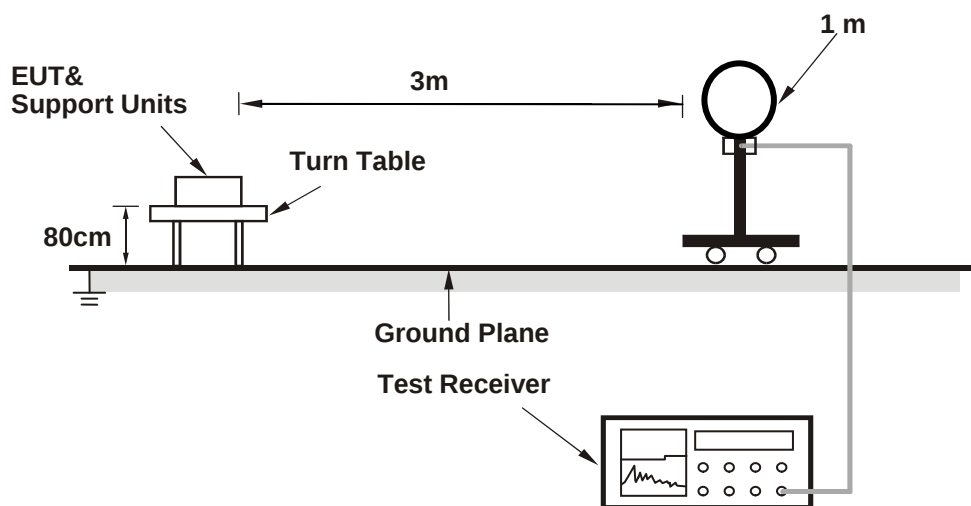
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or $3 \times \text{RBW}$ (Duty cycle $\geq 98\%$) for Average detection (AV) 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

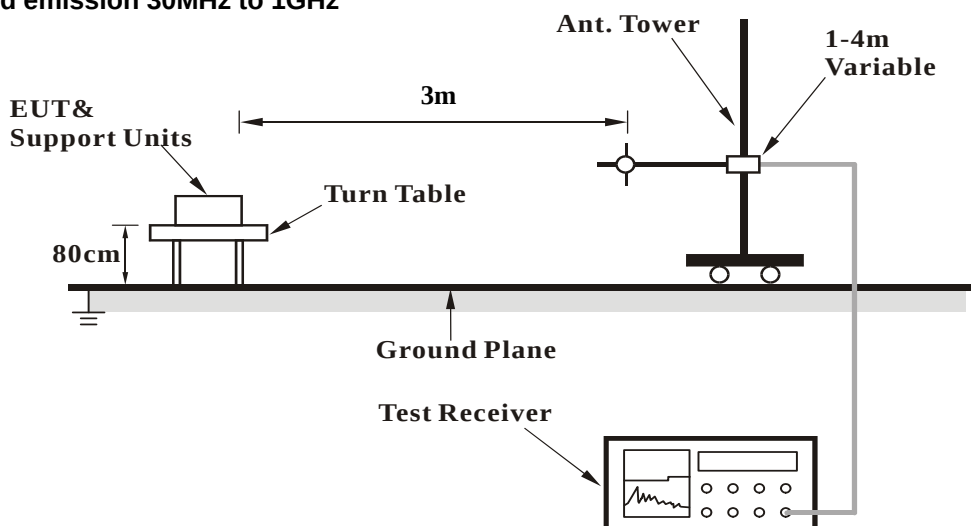
No deviation.

4.1.5 Test Setup

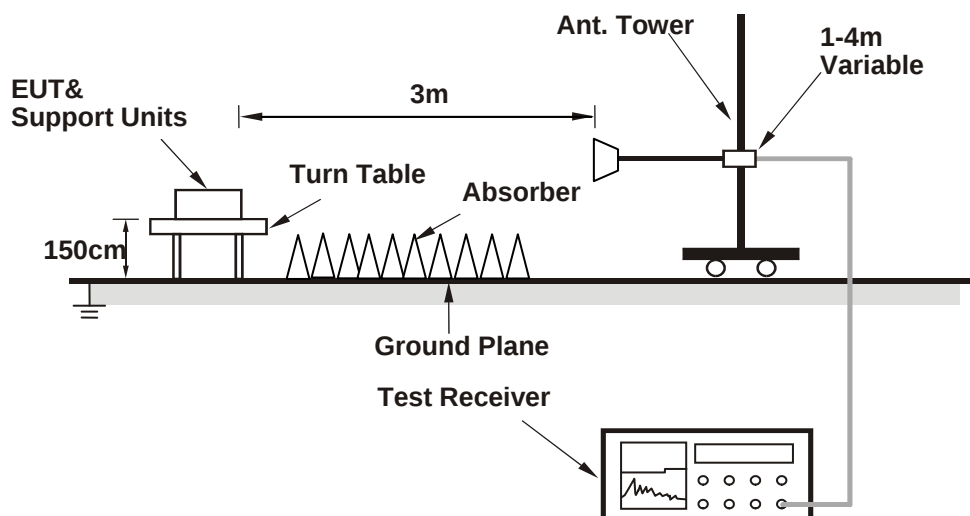
For Radiated emission below 30MHz



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

- Placed the EUT on the testing table.
- Prepared a PC to act as a communication partner and placed it outside of testing area.
- 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.
- The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz worst-Case data:

Test Mode A1

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.2 PK	74.0	-16.8	1.59 H	30	26.2	31.0
2	2390.00	50.2 AV	54.0	-3.8	1.59 H	30	19.2	31.0
3	*2412.00	112.2 PK			1.57 H	32	81.0	31.2
4	*2412.00	109.7 AV			1.57 H	32	78.5	31.2
5	4824.00	50.1 PK	74.0	-23.9	1.34 H	282	49.6	0.5
6	4824.00	45.1 AV	54.0	-8.9	1.34 H	282	44.6	0.5
7	14472.00	66.3 PK	74.0	-7.7	1.50 H	322	45.9	20.4
8	14472.00	52.3 AV	54.0	-1.7	1.50 H	322	31.9	20.4
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	55.1 PK	74.0	-18.9	3.02 V	11	24.1	31.0
2	2390.00	44.4 AV	54.0	-9.6	3.02 V	11	13.4	31.0
3	*2412.00	107.6 PK			2.99 V	9	76.4	31.2
4	*2412.00	105.0 AV			2.99 V	9	73.8	31.2
5	4824.00	54.3 PK	74.0	-19.7	1.70 V	11	53.8	0.5
6	4824.00	50.4 AV	54.0	-3.6	1.70 V	11	49.9	0.5
7	14472.00	66.1 PK	74.0	-7.9	1.99 V	205	45.7	20.4
8	14472.00	52.9 AV	54.0	-1.1	1.99 V	205	32.5	20.4

Remarks:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.6 PK			1.62 H	338	76.3	31.3
2	*2437.00	103.7 AV			1.62 H	338	72.4	31.3
3	4874.00	51.1 PK	74.0	-22.9	1.66 H	58	50.5	0.6
4	4874.00	46.1 AV	54.0	-7.9	1.66 H	58	45.5	0.6
5	7311.00	54.4 PK	74.0	-19.6	1.62 H	329	47.3	7.1
6	7311.00	43.5 AV	54.0	-10.5	1.62 H	329	36.4	7.1
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	110.9 PK			2.24 V	7	79.6	31.3
2	*2437.00	108.7 AV			2.24 V	7	77.4	31.3
3	4874.00	56.0 PK	74.0	-18.0	1.15 V	336	55.4	0.6
4	4874.00	53.0 AV	54.0	-1.0	1.15 V	336	52.4	0.6
5	7311.00	53.8 PK	74.0	-20.2	1.76 V	305	46.7	7.1
6	7311.00	44.1 AV	54.0	-9.9	1.76 V	305	37.0	7.1

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	114.4 PK			1.95 H	306	83.0	31.4
2	*2462.00	112.0 AV			1.95 H	306	80.6	31.4
3	2483.50	60.2 PK	74.0	-13.8	1.70 H	307	28.7	31.5
4	2483.50	49.6 AV	54.0	-4.4	1.70 H	307	18.1	31.5
5	4924.00	50.9 PK	74.0	-23.1	1.38 H	54	50.3	0.6
6	4924.00	45.0 AV	54.0	-9.0	1.38 H	54	44.4	0.6
7	7386.00	52.5 PK	74.0	-21.5	1.65 H	326	45.4	7.1
8	7386.00	41.5 AV	54.0	-12.5	1.65 H	326	34.4	7.1
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	*2462.00	105.4 PK			2.90 V	26	74.0	31.4
2	*2462.00	102.6 AV			2.90 V	26	71.2	31.4
3	2483.50	56.6 PK	74.0	-17.4	2.92 V	33	25.1	31.5
4	2483.50	44.1 AV	54.0	-9.9	2.92 V	33	12.6	31.5
5	4924.00	55.7 PK	74.0	-18.3	1.65 V	7	55.1	0.6
6	4924.00	52.6 AV	54.0	-1.4	1.65 V	7	52.0	0.6
7	7386.00	52.6 PK	74.0	-21.4	2.41 V	188	45.5	7.1
8	7386.00	42.5 AV	54.0	-11.5	2.41 V	188	35.4	7.1

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.

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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	67.6 PK	74.0	-6.4	2.62 H	32	36.6	31.0
2	2390.00	52.5 AV	54.0	-1.5	2.62 H	32	21.5	31.0
3	*2412.00	110.3 PK			1.59 H	307	79.1	31.2
4	*2412.00	100.4 AV			1.59 H	307	69.2	31.2
5	4824.00	46.3 PK	74.0	-27.7	1.97 H	41	45.8	0.5
6	4824.00	33.3 AV	54.0	-20.7	1.97 H	41	32.8	0.5
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	67.8 PK	74.0	-6.2	1.52 V	352	36.8	31.0
2	2390.00	52.0 AV	54.0	-2.0	1.52 V	352	21.0	31.0
3	*2412.00	109.1 PK			1.44 V	352	77.9	31.2
4	*2412.00	98.9 AV			1.44 V	352	67.7	31.2
5	4824.00	49.1 PK	74.0	-24.9	1.70 V	7	48.6	0.5
6	4824.00	36.0 AV	54.0	-18.0	1.70 V	7	35.5	0.5

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	67.1 PK	74.0	-6.9	2.59 H	302	36.1	31.0
2	2390.00	52.5 AV	54.0	-1.5	2.59 H	302	21.5	31.0
3	*2437.00	117.2 PK			1.79 H	309	85.9	31.3
4	*2437.00	107.3 AV			1.79 H	309	76.0	31.3
5	2483.50	62.4 PK	74.0	-11.6	2.58 H	302	30.9	31.5
6	2483.50	50.1 AV	54.0	-3.9	2.58 H	302	18.6	31.5
7	4874.00	55.9 PK	74.0	-18.1	1.64 H	55	55.3	0.6
8	4874.00	41.9 AV	54.0	-12.1	1.64 H	55	41.3	0.6
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	64.8 PK	74.0	-9.2	2.13 V	345	33.8	31.0
2	2390.00	51.6 AV	54.0	-2.4	2.13 V	345	20.6	31.0
3	*2437.00	114.9 PK			2.36 V	0	83.6	31.3
4	*2437.00	104.9 AV			2.36 V	0	73.6	31.3
5	2483.50	64.3 PK	74.0	-9.7	2.31 V	349	32.8	31.5
6	2483.50	49.1 AV	54.0	-4.9	2.31 V	349	17.6	31.5
7	4874.00	60.0 PK	74.0	-14.0	1.54 V	335	59.4	0.6
8	4874.00	47.3 AV	54.0	-6.7	1.54 V	335	46.7	0.6

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	110.2 PK			1.97 H	37	78.8	31.4
2	*2462.00	100.5 AV			1.97 H	37	69.1	31.4
3	2483.50	67.6 PK	74.0	-6.4	1.06 H	254	36.1	31.5
4	2483.50	52.7 AV	54.0	-1.3	1.06 H	254	21.2	31.5
5	4924.00	45.9 PK	74.0	-28.1	2.84 H	286	45.3	0.6
6	4924.00	33.6 AV	54.0	-20.4	2.84 H	286	33.0	0.6
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	109.5 PK			2.06 V	359	78.1	31.4
2	*2462.00	99.3 AV			2.06 V	359	67.9	31.4
3	2483.50	70.3 PK	74.0	-3.7	2.28 V	0	38.8	31.5
4	2483.50	52.9 AV	54.0	-1.1	2.28 V	0	21.4	31.5
5	4924.00	47.1 PK	74.0	-26.9	1.58 V	63	46.5	0.6
6	4924.00	34.2 AV	54.0	-19.8	1.58 V	63	33.6	0.6

Remarks:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.5 PK	74.0	-7.5	1.62 H	317	35.5	31.0
2	2390.00	52.5 AV	54.0	-1.5	1.62 H	317	21.5	31.0
3	*2412.00	109.6 PK			1.54 H	308	78.4	31.2
4	*2412.00	99.7 AV			1.54 H	308	68.5	31.2
5	4824.00	46.6 PK	74.0	-27.4	2.00 H	44	46.1	0.5
6	4824.00	33.6 AV	54.0	-20.4	2.00 H	44	33.1	0.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.7 PK	74.0	-12.3	1.86 V	6	30.7	31.0
2	2390.00	48.7 AV	54.0	-5.3	1.86 V	6	17.7	31.0
3	*2412.00	107.3 PK			2.06 V	2	76.1	31.2
4	*2412.00	97.6 AV			2.06 V	2	66.4	31.2
5	4824.00	49.1 PK	74.0	-24.9	1.44 V	330	48.6	0.5
6	4824.00	35.3 AV	54.0	-18.7	1.44 V	330	34.8	0.5

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	66.8 PK	74.0	-7.2	1.60 H	320	35.8	31.0
2	2390.00	52.2 AV	54.0	-1.8	1.60 H	320	21.2	31.0
3	*2437.00	116.4 PK			1.59 H	317	85.1	31.3
4	*2437.00	106.1 AV			1.59 H	317	74.8	31.3
5	2483.50	63.2 PK	74.0	-10.8	1.60 H	323	31.7	31.5
6	2483.50	49.7 AV	54.0	-4.3	1.60 H	323	18.2	31.5
7	4874.00	56.2 PK	74.0	-17.8	1.08 H	1	55.6	0.6
8	4874.00	41.6 AV	54.0	-12.4	1.08 H	1	41.0	0.6
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	66.5 PK	74.0	-7.5	2.29 V	5	35.5	31.0
2	2390.00	51.4 AV	54.0	-2.6	2.29 V	5	20.4	31.0
3	*2437.00	114.3 PK			2.37 V	354	83.0	31.3
4	*2437.00	104.6 AV			2.37 V	354	73.3	31.3
5	2483.50	63.5 PK	74.0	-10.5	2.28 V	354	32.0	31.5
6	2483.50	49.5 AV	54.0	-4.5	2.28 V	354	18.0	31.5
7	4874.00	56.3 PK	74.0	-17.7	2.30 V	24	55.7	0.6
8	4874.00	40.9 AV	54.0	-13.1	2.30 V	24	40.3	0.6

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	110.6 PK			1.30 H	307	79.2	31.4
2	*2462.00	100.3 AV			1.30 H	307	68.9	31.4
3	2483.50	67.9 PK	74.0	-6.1	1.68 H	315	36.4	31.5
4	2483.50	52.4 AV	54.0	-1.6	1.68 H	315	20.9	31.5
5	4924.00	46.5 PK	74.0	-27.5	2.01 H	50	45.9	0.6
6	4924.00	33.6 AV	54.0	-20.4	2.01 H	50	33.0	0.6
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	108.2 PK			2.62 V	359	76.8	31.4
2	*2462.00	98.1 AV			2.62 V	359	66.7	31.4
3	2483.50	60.1 PK	74.0	-13.9	2.23 V	20	28.6	31.5
4	2483.50	49.6 AV	54.0	-4.4	2.23 V	20	18.1	31.5
5	4924.00	48.7 PK	74.0	-25.3	1.50 V	333	48.1	0.6
6	4924.00	35.0 AV	54.0	-19.0	1.50 V	333	34.4	0.6

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	1.40 H	22	38.6	31.0
2	2390.00	52.6 AV	54.0	-1.4	1.40 H	22	21.6	31.0
3	*2422.00	106.0 PK			1.49 H	24	74.8	31.2
4	*2422.00	97.0 AV			1.49 H	24	65.8	31.2
5	4844.00	46.4 PK	74.0	-27.6	1.87 H	334	46.0	0.4
6	4844.00	32.9 AV	54.0	-21.1	1.87 H	334	32.5	0.4
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	2.13 V	0	36.5	31.0
2	2390.00	52.6 AV	54.0	-1.4	2.13 V	0	21.6	31.0
3	*2422.00	105.1 PK			1.99 V	0	73.9	31.2
4	*2422.00	95.8 AV			1.99 V	0	64.6	31.2
5	4844.00	45.9 PK	74.0	-28.1	1.60 V	354	45.5	0.4
6	4844.00	33.6 AV	54.0	-20.4	1.60 V	354	33.2	0.4

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	64.1 PK	74.0	-9.9	1.00 H	306	33.1	31.0
2	2390.00	49.4 AV	54.0	-4.6	1.00 H	306	18.4	31.0
3	*2437.00	107.4 PK			1.02 H	307	76.1	31.3
4	*2437.00	97.6 AV			1.02 H	307	66.3	31.3
5	2483.50	65.8 PK	74.0	-8.2	1.05 H	274	34.3	31.5
6	2483.50	52.5 AV	54.0	-1.5	1.05 H	274	21.0	31.5
7	4874.00	46.4 PK	74.0	-27.6	1.18 H	259	45.8	0.6
8	4874.00	33.4 AV	54.0	-20.6	1.18 H	259	32.8	0.6
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	64.8 PK	74.0	-9.2	2.17 V	0	33.8	31.0
2	2390.00	52.3 AV	54.0	-1.7	2.17 V	0	21.3	31.0
3	*2437.00	105.7 PK			2.34 V	10	74.4	31.3
4	*2437.00	96.5 AV			2.34 V	10	65.2	31.3
5	2483.50	64.3 PK	74.0	-9.7	2.17 V	341	32.8	31.5
6	2483.50	51.4 AV	54.0	-2.6	2.17 V	341	19.9	31.5
7	4874.00	46.8 PK	74.0	-27.2	1.68 V	265	46.2	0.6
8	4874.00	35.5 AV	54.0	-18.5	1.68 V	265	34.9	0.6

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	105.4 PK			3.33 H	291	74.0	31.4
2	*2452.00	95.5 AV			3.33 H	291	64.1	31.4
3	2483.50	68.1 PK	74.0	-5.9	3.33 H	51	36.6	31.5
4	2483.50	52.6 AV	54.0	-1.4	3.33 H	51	21.1	31.5
5	4904.00	46.1 PK	74.0	-27.9	2.74 H	281	45.6	0.5
6	4904.00	33.4 AV	54.0	-20.6	2.74 H	281	32.9	0.5
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	103.5 PK			2.28 V	1	72.1	31.4
2	*2452.00	94.4 AV			2.28 V	1	63.0	31.4
3	2483.50	66.8 PK	74.0	-7.2	2.34 V	354	35.3	31.5
4	2483.50	52.3 AV	54.0	-1.7	2.34 V	354	20.8	31.5
5	4904.00	44.9 PK	74.0	-29.1	1.76 V	341	44.4	0.5
6	4904.00	32.8 AV	54.0	-21.2	1.76 V	341	32.3	0.5

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.

Test Mode B1

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.1 PK	74.0	-19.9	1.66 H	177	23.1	31.0
2	2390.00	43.0 AV	54.0	-11.0	1.66 H	177	12.0	31.0
3	*2412.00	98.9 PK			1.55 H	176	67.7	31.2
4	*2412.00	95.4 AV			1.55 H	176	64.2	31.2
5	4824.00	47.6 PK	74.0	-26.4	2.51 H	228	47.1	0.5
6	4824.00	40.0 AV	54.0	-14.0	2.51 H	228	39.5	0.5
7	14472.00	64.8 PK	74.0	-9.2	1.54 H	211	44.4	20.4
8	14472.00	51.0 AV	54.0	-3.0	1.54 H	211	30.6	20.4

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	54.4 PK	74.0	-19.6	1.50 V	358	23.4	31.0
2	2390.00	44.1 AV	54.0	-9.9	1.50 V	358	13.1	31.0
3	*2412.00	113.0 PK			1.50 V	122	81.8	31.2
4	*2412.00	109.1 AV			1.50 V	122	77.9	31.2
5	4824.00	48.8 PK	74.0	-25.2	2.94 V	316	48.3	0.5
6	4824.00	43.2 AV	54.0	-10.8	2.94 V	316	42.7	0.5
7	14472.00	64.7 PK	74.0	-9.3	1.45 V	13	44.3	20.4
8	14472.00	53.2 AV	54.0	-0.8	1.45 V	13	32.8	20.4

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	1624.00	43.6 PK	74.0	-30.4	1.49 H	198	51.8	-8.2
2	1624.00	40.1 AV	54.0	-13.9	1.49 H	198	48.3	-8.2
3	2390.00	54.8 PK	74.0	-19.2	2.30 H	355	23.8	31.0
4	2390.00	43.9 AV	54.0	-10.1	2.30 H	355	12.9	31.0
5	*2437.00	103.9 PK			2.30 H	355	72.6	31.3
6	*2437.00	100.1 AV			2.30 H	355	68.8	31.3
7	2483.50	54.6 PK	74.0	-19.4	2.00 H	340	23.1	31.5
8	2483.50	43.8 AV	54.0	-10.2	2.00 H	340	12.3	31.5
9	4874.00	50.5 PK	74.0	-23.5	1.50 H	189	49.9	0.6
10	4874.00	44.4 AV	54.0	-9.6	1.50 H	189	43.8	0.6
11	7311.00	52.8 PK	74.0	-21.2	3.50 H	307	45.7	7.1
12	7311.00	43.7 AV	54.0	-10.3	3.50 H	307	36.6	7.1

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	1624.00	45.2 PK	74.0	-28.8	3.18 V	345	53.4	-8.2
2	1624.00	42.8 AV	54.0	-11.2	3.18 V	345	51.0	-8.2
3	2390.00	57.3 PK	74.0	-16.7	1.45 V	350	26.3	31.0
4	2390.00	48.8 AV	54.0	-5.2	1.45 V	350	17.8	31.0
5	*2437.00	117.0 PK			1.55 V	11	85.7	31.3
6	*2437.00	113.1 AV			1.55 V	11	81.8	31.3
7	2483.50	61.1 PK	74.0	-12.9	1.58 V	344	29.6	31.5
8	2483.50	52.2 AV	54.0	-1.8	1.58 V	344	20.7	31.5
9	4874.00	55.9 PK	74.0	-18.1	1.67 V	2	55.3	0.6
10	4874.00	51.9 AV	54.0	-2.1	1.67 V	2	51.3	0.6
11	7311.00	53.4 PK	74.0	-20.6	2.69 V	271	46.3	7.1
12	7311.00	45.1 AV	54.0	-8.9	2.69 V	271	38.0	7.1

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	102.9 PK			1.28 H	298	71.5	31.4
2	*2462.00	100.5 AV			1.28 H	298	69.1	31.4
3	2483.50	56.9 PK	74.0	-17.1	1.30 H	300	25.4	31.5
4	2483.50	45.6 AV	54.0	-8.4	1.30 H	300	14.1	31.5
5	4924.00	48.2 PK	74.0	-25.8	2.21 H	205	47.6	0.6
6	4924.00	39.1 AV	54.0	-14.9	2.21 H	205	38.5	0.6
7	7386.00	52.2 PK	74.0	-21.8	3.14 H	300	45.1	7.1
8	7386.00	41.1 AV	54.0	-12.9	3.14 H	300	34.0	7.1
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	*2462.00	114.9 PK			1.32 V	39	83.5	31.4
2	*2462.00	111.1 AV			1.32 V	39	79.7	31.4
3	2483.50	59.9 PK	74.0	-14.1	1.53 V	248	28.4	31.5
4	2483.50	52.5 AV	54.0	-1.5	1.53 V	248	21.0	31.5
5	4924.00	52.5 PK	74.0	-21.5	2.92 V	315	51.9	0.6
6	4924.00	48.2 AV	54.0	-5.8	2.92 V	315	47.6	0.6
7	7386.00	58.1 PK	74.0	-15.9	2.64 V	96	51.0	7.1
8	7386.00	52.0 AV	54.0	-2.0	2.64 V	96	44.9	7.1

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.

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	55.9 PK	74.0	-18.1	1.00 H	225	24.9	31.0
2	2390.00	45.6 AV	54.0	-8.4	1.00 H	225	14.6	31.0
3	*2412.00	100.8 PK			1.00 H	223	69.6	31.2
4	*2412.00	90.7 AV			1.00 H	223	59.5	31.2
5	4824.00	45.6 PK	74.0	-28.4	1.77 H	288	45.1	0.5
6	4824.00	34.9 AV	54.0	-19.1	1.77 H	288	34.4	0.5
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	1.35 V	15	35.1	31.0
2	2390.00	52.4 AV	54.0	-1.6	1.35 V	15	21.4	31.0
3	*2412.00	111.6 PK			1.49 V	123	80.4	31.2
4	*2412.00	101.2 AV			1.49 V	123	70.0	31.2
5	4824.00	46.3 PK	74.0	-27.7	2.90 V	321	45.8	0.5
6	4824.00	32.2 AV	54.0	-21.8	2.90 V	321	31.7	0.5

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	55.4 PK	74.0	-18.6	1.35 H	350	24.4	31.0
2	2390.00	44.4 AV	54.0	-9.6	1.35 H	350	13.4	31.0
3	*2437.00	105.0 PK			1.35 H	344	73.7	31.3
4	*2437.00	95.1 AV			1.35 H	344	63.8	31.3
5	2483.50	56.9 PK	74.0	-17.1	1.40 H	359	25.4	31.5
6	2483.50	46.6 AV	54.0	-7.4	1.40 H	359	15.1	31.5
7	4874.00	47.1 PK	74.0	-26.9	2.61 H	189	46.5	0.6
8	4874.00	34.9 AV	54.0	-19.1	2.61 H	189	34.3	0.6
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	68.3 PK	74.0	-5.7	1.32 V	330	37.3	31.0
2	2390.00	52.8 AV	54.0	-1.2	1.32 V	330	21.8	31.0
3	*2437.00	117.9 PK			1.62 V	130	86.6	31.3
4	*2437.00	108.4 AV			1.62 V	130	77.1	31.3
5	2483.50	65.7 PK	74.0	-8.3	1.83 V	304	34.2	31.5
6	2483.50	51.3 AV	54.0	-2.7	1.83 V	304	19.8	31.5
7	4874.00	51.3 PK	74.0	-22.7	2.51 V	274	50.7	0.6
8	4874.00	38.6 AV	54.0	-15.4	2.51 V	274	38.0	0.6

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.2 PK			1.12 H	217	69.8	31.4
2	*2462.00	91.2 AV			1.12 H	217	59.8	31.4
3	2483.50	58.4 PK	74.0	-15.6	1.15 H	220	26.9	31.5
4	2483.50	47.0 AV	54.0	-7.0	1.15 H	220	15.5	31.5
5	4924.00	44.4 PK	74.0	-29.6	2.16 H	156	43.8	0.6
6	4924.00	34.4 AV	54.0	-19.6	2.16 H	156	33.8	0.6
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	112.6 PK			1.56 V	327	81.2	31.4
2	*2462.00	102.4 AV			1.56 V	327	71.0	31.4
3	2483.50	67.8 PK	74.0	-6.2	1.51 V	340	36.3	31.5
4	2483.50	52.5 AV	54.0	-1.5	1.51 V	340	21.0	31.5
5	4924.00	47.0 PK	74.0	-27.0	3.06 V	313	46.4	0.6
6	4924.00	32.8 AV	54.0	-21.2	3.06 V	313	32.2	0.6

Remarks:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.1 PK	74.0	-16.9	1.47 H	298	26.1	31.0
2	2390.00	46.2 AV	54.0	-7.8	1.47 H	298	15.2	31.0
3	*2412.00	95.7 PK			1.47 H	298	64.5	31.2
4	*2412.00	85.6 AV			1.47 H	298	54.4	31.2
5	4824.00	45.6 PK	74.0	-28.4	2.33 H	0	45.1	0.5
6	4824.00	32.5 AV	54.0	-21.5	2.33 H	0	32.0	0.5
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	66.4 PK	74.0	-7.6	1.54 V	34	35.4	31.0
2	2390.00	53.1 AV	54.0	-0.9	1.54 V	34	22.1	31.0
3	*2412.00	111.1 PK			1.64 V	197	79.9	31.2
4	*2412.00	100.3 AV			1.64 V	197	69.1	31.2
5	4824.00	45.6 PK	74.0	-28.4	1.89 V	354	45.1	0.5
6	4824.00	32.8 AV	54.0	-21.2	1.89 V	354	32.3	0.5

Remarks:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.6 PK	74.0	-19.4	1.79 H	184	23.6	31.0
2	2390.00	43.5 AV	54.0	-10.5	1.79 H	184	12.5	31.0
3	*2437.00	102.2 PK			1.79 H	184	70.9	31.3
4	*2437.00	92.5 AV			1.79 H	184	61.2	31.3
5	2483.50	56.1 PK	74.0	-17.9	1.88 H	199	24.6	31.5
6	2483.50	44.8 AV	54.0	-9.2	1.88 H	199	13.3	31.5
7	4874.00	49.4 PK	74.0	-24.6	2.01 H	244	48.8	0.6
8	4874.00	39.1 AV	54.0	-14.9	2.01 H	244	38.5	0.6
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	70.6 PK	74.0	-3.4	1.51 V	319	39.6	31.0
2	2390.00	52.3 AV	54.0	-1.7	1.51 V	319	21.3	31.0
3	*2437.00	118.6 PK			1.61 V	344	87.3	31.3
4	*2437.00	108.9 AV			1.61 V	344	77.6	31.3
5	2483.50	66.6 PK	74.0	-7.4	1.49 V	15	35.1	31.5
6	2483.50	51.3 AV	54.0	-2.7	1.49 V	15	19.8	31.5
7	4874.00	51.7 PK	74.0	-22.3	3.51 V	112	51.1	0.6
8	4874.00	37.7 AV	54.0	-16.3	3.51 V	112	37.1	0.6

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	96.4 PK			1.76 H	0	65.0	31.4
2	*2462.00	86.4 AV			1.76 H	0	55.0	31.4
3	2483.50	57.2 PK	74.0	-16.8	1.76 H	1	25.7	31.5
4	2483.50	44.8 AV	54.0	-9.2	1.76 H	1	13.3	31.5
5	4924.00	46.5 PK	74.0	-27.5	2.12 H	345	45.9	0.6
6	4924.00	33.2 AV	54.0	-20.8	2.12 H	345	32.6	0.6
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	112.5 PK			1.51 V	56	81.1	31.4
2	*2462.00	102.3 AV			1.51 V	56	70.9	31.4
3	2483.50	66.9 PK	74.0	-7.1	1.51 V	307	35.4	31.5
4	2483.50	53.3 AV	54.0	-0.7	1.51 V	307	21.8	31.5
5	4924.00	44.5 PK	74.0	-29.5	1.89 V	356	43.9	0.6
6	4924.00	32.6 AV	54.0	-21.4	1.89 V	356	32.0	0.6

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	55.0 PK	74.0	-19.0	1.10 H	220	24.0	31.0
2	2390.00	44.6 AV	54.0	-9.4	1.10 H	220	13.6	31.0
3	*2422.00	95.2 PK			1.08 H	217	64.0	31.2
4	*2422.00	86.3 AV			1.08 H	217	55.1	31.2
5	4844.00	44.4 PK	74.0	-29.6	1.60 H	311	44.0	0.4
6	4844.00	34.2 AV	54.0	-19.8	1.60 H	311	33.8	0.4
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	66.3 PK	74.0	-7.7	1.40 V	218	35.3	31.0
2	2390.00	52.3 AV	54.0	-1.7	1.40 V	218	21.3	31.0
3	*2422.00	107.1 PK			1.57 V	197	75.9	31.2
4	*2422.00	97.6 AV			1.57 V	197	66.4	31.2
5	4844.00	45.1 PK	74.0	-28.9	2.89 V	320	44.7	0.4
6	4844.00	31.5 AV	54.0	-22.5	2.89 V	320	31.1	0.4

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	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	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	98.0 PK			1.32 H	220	66.7	31.3
2	*2437.00	88.8 AV			1.32 H	220	57.5	31.3
3	2483.50	57.4 PK	74.0	-16.6	1.21 H	219	25.9	31.5
4	2483.50	46.0 AV	54.0	-8.0	1.21 H	219	14.5	31.5
5	4874.00	46.5 PK	74.0	-27.5	2.10 H	345	45.9	0.6
6	4874.00	36.2 AV	54.0	-17.8	2.10 H	345	35.6	0.6
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	66.3 PK	74.0	-7.7	1.34 V	9	35.3	31.0
2	2390.00	52.5 AV	54.0	-1.5	1.34 V	9	21.5	31.0
3	*2437.00	110.2 PK			1.47 V	323	78.9	31.3
4	*2437.00	101.4 AV			1.47 V	323	70.1	31.3
5	2483.50	66.2 PK	74.0	-7.8	1.32 V	339	34.7	31.5
6	2483.50	51.8 AV	54.0	-2.2	1.32 V	339	20.3	31.5
7	4874.00	44.8 PK	74.0	-29.2	2.96 V	310	44.2	0.6
8	4874.00	32.2 AV	54.0	-21.8	2.96 V	310	31.6	0.6

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	96.3 PK			1.13 H	218	64.9	31.4
2	*2452.00	87.1 AV			1.13 H	218	55.7	31.4
3	2483.50	54.5 PK	74.0	-19.5	1.15 H	220	23.0	31.5
4	2483.50	44.6 AV	54.0	-9.4	1.15 H	220	13.1	31.5
5	4904.00	46.6 PK	74.0	-27.4	1.70 H	200	46.1	0.5
6	4904.00	34.8 AV	54.0	-19.2	1.70 H	200	34.3	0.5
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	106.0 PK			1.54 V	166	74.6	31.4
2	*2452.00	97.5 AV			1.54 V	166	66.1	31.4
3	2483.50	66.8 PK	74.0	-7.2	1.49 V	248	35.3	31.5
4	2483.50	53.2 AV	54.0	-0.8	1.49 V	248	21.7	31.5
5	4904.00	44.7 PK	74.0	-29.3	2.87 V	324	44.2	0.5
6	4904.00	32.4 AV	54.0	-21.6	2.87 V	324	31.9	0.5

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: 802.11g

Test Mode A1

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	55.18	27.2 QP	40.0	-12.8	2.00 H	228	41.7	-14.5
2	107.67	30.0 QP	43.5	-13.5	1.51 H	119	47.5	-17.5
3	142.67	28.1 QP	43.5	-15.4	2.00 H	84	42.2	-14.1
4	315.71	22.2 QP	46.0	-23.8	1.00 H	244	33.7	-11.5
5	504.31	23.7 QP	46.0	-22.3	1.51 H	57	31.4	-7.7
6	920.38	30.8 QP	46.0	-15.2	1.00 H	282	29.9	0.9
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	35.73	35.5 QP	40.0	-4.5	1.00 V	67	51.4	-15.9
2	55.18	38.0 QP	40.0	-2.0	1.00 V	9	52.5	-14.5
3	140.72	28.8 QP	43.5	-14.7	1.49 V	14	43.1	-14.3
4	517.92	22.7 QP	46.0	-23.3	1.49 V	178	30.1	-7.4
5	729.84	32.0 QP	46.0	-14.0	1.49 V	42	34.8	-2.8
6	900.94	39.9 QP	46.0	-6.1	1.49 V	178	39.7	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

Test Mode A2

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	57.12	26.9 QP	40.0	-13.1	2.00 H	250	41.5	-14.6
2	105.73	29.5 QP	43.5	-14.0	1.51 H	115	47.2	-17.7
3	142.67	31.5 QP	43.5	-12.0	2.00 H	115	45.6	-14.1
4	269.05	30.3 QP	46.0	-15.7	1.00 H	135	43.3	-13.0
5	747.34	29.8 QP	46.0	-16.2	2.00 H	159	32.1	-2.3
6	908.72	31.4 QP	46.0	-14.6	2.00 H	259	30.8	0.6
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	35.73	32.5 QP	40.0	-7.5	1.00 V	339	48.4	-15.9
2	57.12	25.1 QP	40.0	-14.9	1.00 V	5	39.7	-14.6
3	160.17	23.1 QP	43.5	-20.4	1.00 V	144	36.7	-13.6
4	269.05	27.8 QP	46.0	-18.2	1.49 V	163	40.8	-13.0
5	790.12	27.8 QP	46.0	-18.2	1.00 V	227	29.4	-1.6
6	908.72	30.9 QP	46.0	-15.1	2.00 V	198	30.3	0.6

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

Test Mode B1

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	57.12	26.2 QP	40.0	-13.8	2.00 H	48	40.8	-14.6
2	101.84	29.8 QP	43.5	-13.7	2.00 H	302	48.0	-18.2
3	185.44	31.9 QP	43.5	-11.6	1.50 H	226	47.5	-15.6
4	220.44	29.7 QP	46.0	-16.3	1.50 H	14	45.4	-15.7
5	305.99	25.8 QP	46.0	-20.2	1.01 H	107	37.7	-11.9
6	912.61	30.6 QP	46.0	-15.4	1.50 H	33	29.9	0.7
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	35.73	35.5 QP	40.0	-4.5	1.00 V	314	51.4	-15.9
2	55.18	36.7 QP	40.0	-3.3	1.49 V	16	51.2	-14.5
3	101.84	31.7 QP	43.5	-11.8	1.00 V	77	49.9	-18.2
4	185.44	27.1 QP	43.5	-16.4	1.00 V	140	42.7	-15.6
5	307.93	23.2 QP	46.0	-22.8	1.00 V	147	35.0	-11.8
6	747.34	31.9 QP	46.0	-14.1	1.49 V	16	34.2	-2.3

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

Test Mode B2

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	57.12	26.8 QP	40.0	-13.2	1.99 H	297	41.4	-14.6
2	105.73	29.3 QP	43.5	-14.2	1.99 H	105	47.0	-17.7
3	142.67	31.7 QP	43.5	-11.8	1.99 H	73	45.8	-14.1
4	185.44	34.3 QP	43.5	-9.2	1.49 H	151	49.9	-15.6
5	224.33	30.1 QP	46.0	-15.9	1.00 H	6	45.9	-15.8
6	333.21	28.2 QP	46.0	-17.8	1.00 H	136	39.3	-11.1
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	33.79	31.4 QP	40.0	-8.6	1.01 V	190	47.3	-15.9
2	62.95	28.7 QP	40.0	-11.3	1.01 V	16	44.0	-15.3
3	142.67	28.1 QP	43.5	-15.4	1.01 V	139	42.2	-14.1
4	187.39	28.6 QP	43.5	-14.9	2.00 V	256	44.3	-15.7
5	331.26	25.0 QP	46.0	-21.0	1.51 V	61	36.3	-11.3
6	747.34	31.4 QP	46.0	-14.6	2.00 V	157	33.7	-2.3

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

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	ESCS 30	100288	Aug. 18, 2016	Aug. 17, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 22, 2016	Dec. 21, 2017
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 17, 2017	Jan. 16, 2018
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 26, 2016	Jul. 25, 2017
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 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 Test Procedures

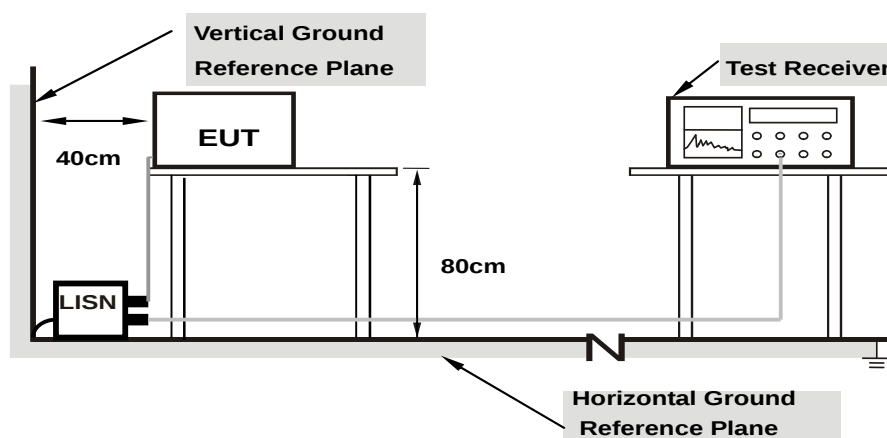
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

Worst-case data: 802.11g

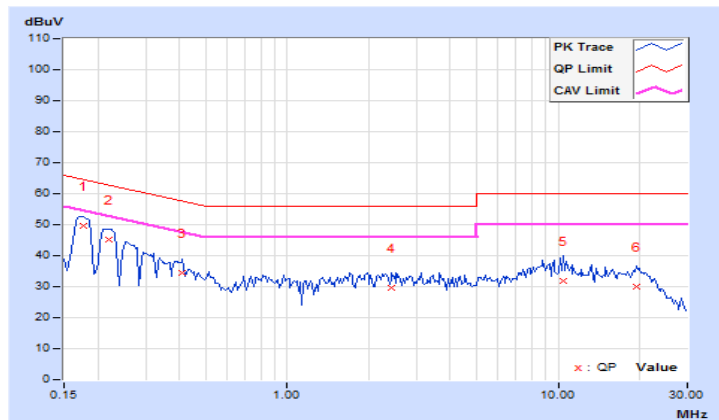
Test Mode A1

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	10.00	39.70	24.77	49.70	34.77	64.61	54.61	-14.91	-19.84
2	0.22031	10.02	35.10	20.72	45.12	30.74	62.81	52.81	-17.69	-22.07
3	0.41172	10.03	24.51	20.54	34.54	30.57	57.61	47.61	-23.07	-17.04
4	2.43750	10.13	19.64	9.28	29.77	19.41	56.00	46.00	-26.23	-26.59
5	10.46875	10.27	21.63	13.27	31.90	23.54	60.00	50.00	-28.10	-26.46
6	19.42188	10.45	19.66	12.58	30.11	23.03	60.00	50.00	-29.89	-26.97

Remarks:

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

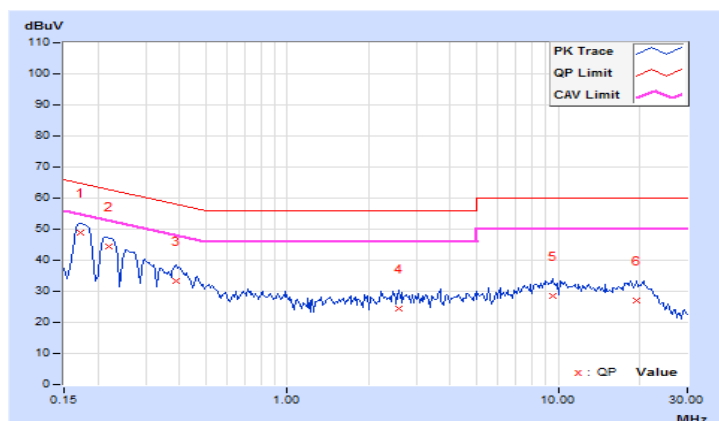


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	9.99	39.01	24.75	49.00	34.74	64.79	54.79	-15.79	-20.05
2	0.22031	9.95	34.34	19.59	44.29	29.54	62.81	52.81	-18.52	-23.27
3	0.38828	9.99	23.16	10.53	33.15	20.52	58.10	48.10	-24.95	-27.58
4	2.57031	10.09	14.33	6.24	24.42	16.33	56.00	46.00	-31.58	-29.67
5	9.57031	10.21	18.17	9.96	28.38	20.17	60.00	50.00	-31.62	-29.83
6	19.37891	10.54	16.32	8.27	26.86	18.81	60.00	50.00	-33.14	-31.19

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.



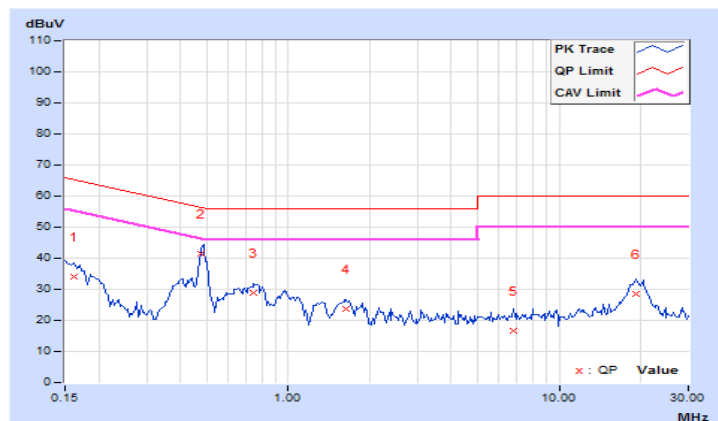
Test Mode A2

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.99	24.04	15.51	34.03	25.50	65.38	55.38	-31.35	-29.88
2	0.47813	10.04	31.35	26.19	41.39	36.23	56.37	46.37	-14.98	-10.14
3	0.74766	10.06	18.71	12.65	28.77	22.71	56.00	46.00	-27.23	-23.29
4	1.63281	10.10	13.68	7.94	23.78	18.04	56.00	46.00	-32.22	-27.96
5	6.76563	10.22	6.45	1.97	16.67	12.19	60.00	50.00	-43.33	-37.81
6	19.14844	10.44	18.06	11.76	28.50	22.20	60.00	50.00	-31.50	-27.80

Remarks:

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

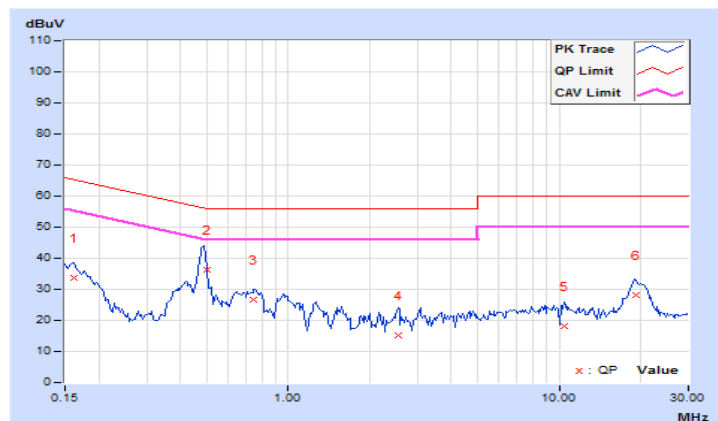


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	10.01	23.63	14.69	33.64	24.70	65.38	55.38	-31.74	-30.68
2	0.50000	10.01	26.21	21.03	36.22	31.04	56.00	46.00	-19.78	-14.96
3	0.74766	10.05	16.61	10.29	26.66	20.34	56.00	46.00	-29.34	-25.66
4	2.54688	10.09	5.25	-1.00	15.34	9.09	56.00	46.00	-40.66	-36.91
5	10.49219	10.23	7.98	2.41	18.21	12.64	60.00	50.00	-41.79	-37.36
6	19.16016	10.53	17.63	11.40	28.16	21.93	60.00	50.00	-31.84	-28.07

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.



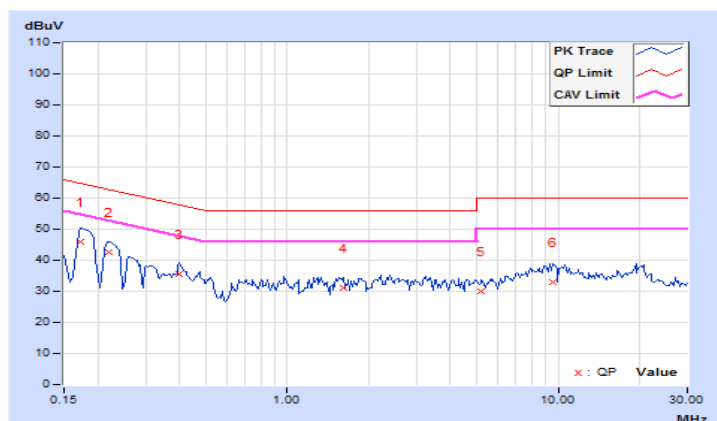
Test Mode B1

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	10.00	35.88	19.19	45.88	29.19	64.79	54.79	-18.91	-25.60
2	0.22031	10.02	32.70	17.35	42.72	27.37	62.81	52.81	-20.09	-25.44
3	0.40000	10.03	25.36	14.14	35.39	24.17	57.85	47.85	-22.46	-23.68
4	1.60938	10.10	20.94	10.56	31.04	20.66	56.00	46.00	-24.96	-25.34
5	5.22266	10.20	19.75	10.02	29.95	20.22	60.00	50.00	-30.05	-29.78
6	9.58594	10.25	22.75	15.19	33.00	25.44	60.00	50.00	-27.00	-24.56

Remarks:

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

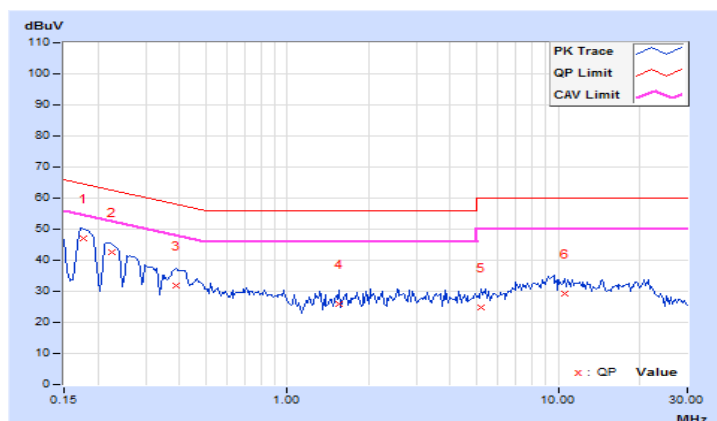


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	9.98	36.91	23.28	46.89	33.26	64.61	54.61	-17.72	-21.35
2	0.22422	9.95	32.80	18.14	42.75	28.09	62.66	52.66	-19.91	-24.57
3	0.38828	9.99	21.77	4.89	31.76	14.88	58.10	48.10	-26.34	-33.22
4	1.56250	10.07	15.86	6.55	25.93	16.62	56.00	46.00	-30.07	-29.38
5	5.18359	10.19	14.68	5.43	24.87	15.62	60.00	50.00	-35.13	-34.38
6	10.55078	10.23	19.03	10.43	29.26	20.66	60.00	50.00	-30.74	-29.34

Remarks:

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



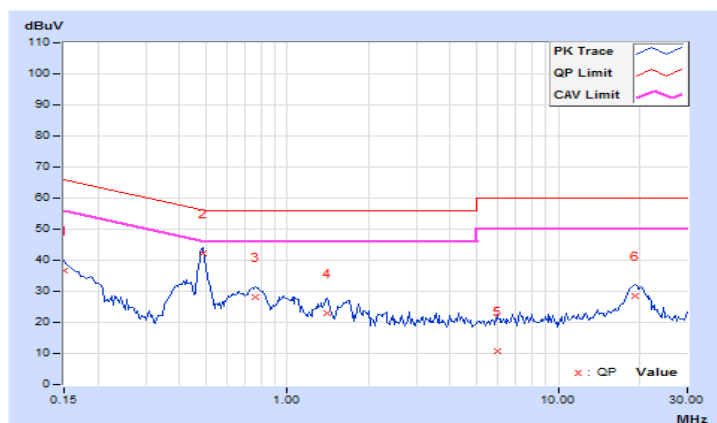
Test Mode B2

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.99	26.50	17.18	36.49	27.17	66.00	56.00	-29.51	-28.83
2	0.48594	10.04	32.28	27.04	42.32	37.08	56.24	46.24	-13.92	-9.16
3	0.76328	10.06	18.26	12.35	28.32	22.41	56.00	46.00	-27.68	-23.59
4	1.40234	10.09	12.83	7.20	22.92	17.29	56.00	46.00	-33.08	-28.71
5	5.94141	10.21	0.51	-5.25	10.72	4.96	60.00	50.00	-49.28	-45.04
6	19.14844	10.44	17.90	11.88	28.34	22.32	60.00	50.00	-31.66	-27.68

Remarks:

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

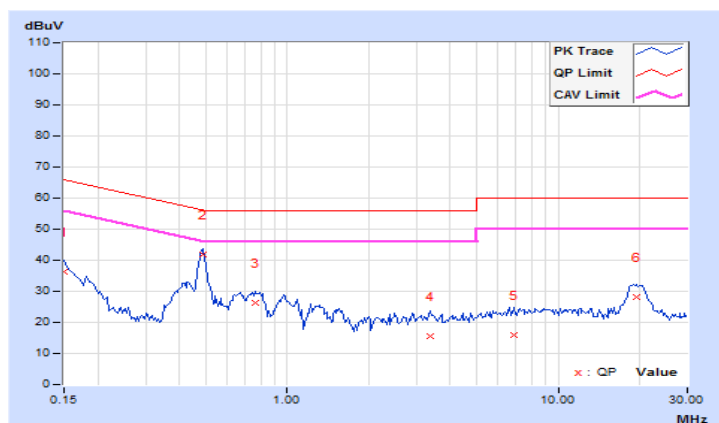


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.03	26.40	16.76	36.43	26.79	66.00	56.00	-29.57	-29.21
2	0.48594	10.01	31.92	26.78	41.93	36.79	56.24	46.24	-14.31	-9.45
3	0.75938	10.06	16.37	11.20	26.43	21.26	56.00	46.00	-29.57	-24.74
4	3.39063	10.14	5.50	0.18	15.64	10.32	56.00	46.00	-40.36	-35.68
5	6.86719	10.19	5.82	-0.74	16.01	9.45	60.00	50.00	-43.99	-40.55
6	19.38281	10.54	17.61	11.11	28.15	21.65	60.00	50.00	-31.85	-28.35

Remarks:

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

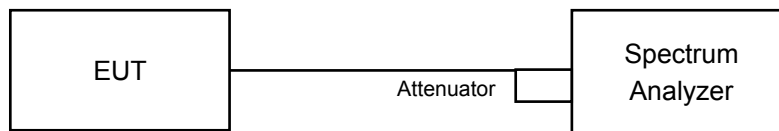


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

- Set resolution bandwidth (RBW) = 100kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = average.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	8.10	9.09	0.5	Pass
6	2437	8.57	9.09	0.5	Pass
11	2462	8.56	9.07	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.39	15.76	0.5	Pass
6	2437	16.39	15.79	0.5	Pass
11	2462	16.41	16.34	0.5	Pass

802.11n (HT20)

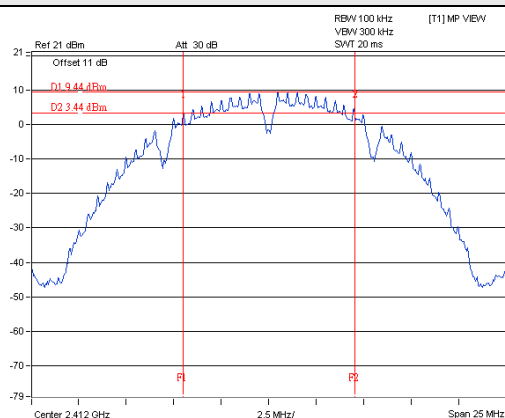
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.63	16.73	0.5	Pass
6	2437	17.64	16.88	0.5	Pass
11	2462	17.62	16.60	0.5	Pass

802.11n (HT40)

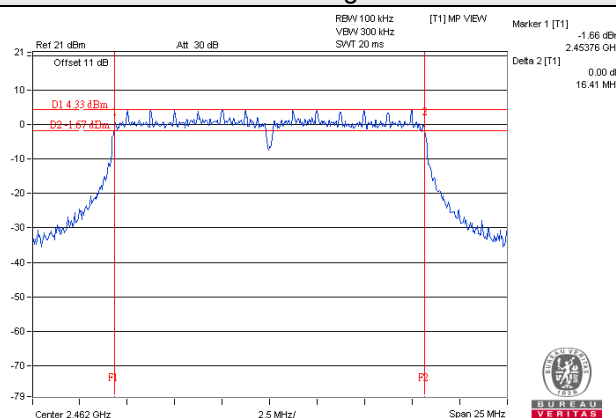
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.30	35.11	0.5	Pass
6	2437	35.20	35.24	0.5	Pass
9	2452	35.17	35.21	0.5	Pass

Spectrum Plot of Worst Value

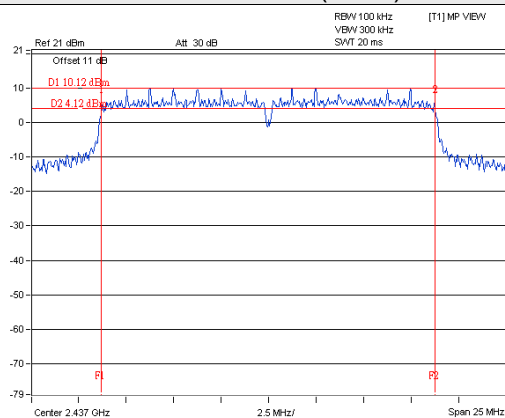
802.11b



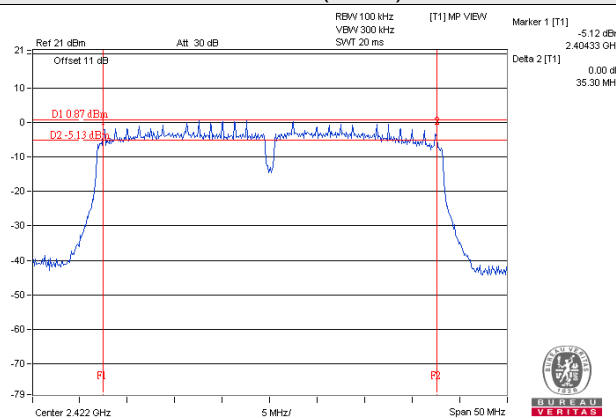
802.11g



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,

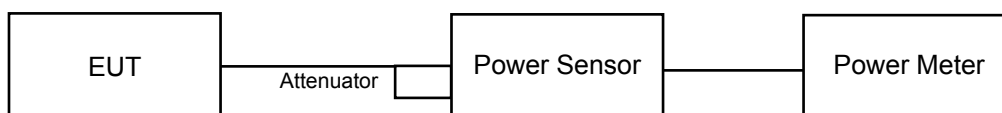
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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	17.73	18.13	124.306	20.94	30	Pass
6	2437	19.69	19.91	191.060	22.81	30	Pass
11	2462	19.71	19.83	189.702	22.78	30	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	16.07	16.13	81.478	19.11	30	Pass
6	2437	21.65	21.52	288.124	24.60	30	Pass
11	2462	15.78	15.84	76.215	18.82	30	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	14.55	14.91	59.484	17.74	30	Pass
6	2437	21.07	20.99	253.541	24.04	30	Pass
11	2462	14.71	15.10	61.939	17.92	30	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	14.35	14.50	55.411	17.44	30	Pass
6	2437	16.87	16.74	95.847	19.82	30	Pass
9	2452	13.66	13.61	46.188	16.65	30	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	11.540	11.90	29.744	14.73	27.32	Pass
6	2437	18.060	17.98	126.779	21.03	27.32	Pass
11	2462	11.700	12.09	30.972	14.91	27.32	Pass

Note: Max. directional gain = $5.67\text{dBi} + 10\log(2) = 8.68\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (8.68 - 6) = 27.32\text{dBm}$.

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	11.340	11.49	27.707	14.43	27.32	Pass
6	2437	13.860	13.73	47.927	16.81	27.32	Pass
9	2452	10.650	10.60	23.096	13.64	27.32	Pass

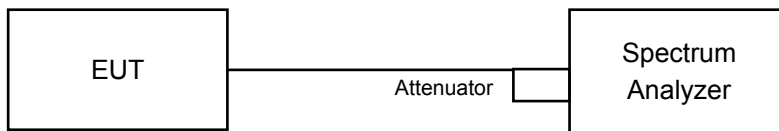
Note: Max. directional gain = $5.67\text{dBi} + 10\log(2) = 8.68\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (8.68 - 6) = 27.32\text{dBm}$.

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 $\geq 98\%$)

- 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 $\geq 2 \times \text{span/RBW}$.
- 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 Average 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 $\geq 2 \times \text{span/RBW}$.
- 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

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/10kHz)	10 log (N=2) dB	Total PSD (dBm/10kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-10.19	3.01	-7.18	5.32	Pass
	6	2437	-7.50	3.01	-4.49	5.32	Pass
	11	2462	-8.32	3.01	-5.31	5.32	Pass
1	1	2412	-10.48	3.01	-7.47	5.32	Pass
	6	2437	-7.01	3.01	-4.00	5.32	Pass
	11	2462	-8.49	3.01	-5.48	5.32	Pass

Note:

- 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.
- Max. directional gain = $5.67\text{dBi} + 10\log(2) = 8.68\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $8-(8.68-6) = 5.32\text{dBm}$.

802.11g

TX chain	Channel	Freq. (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	-15.39	3.01	0.23	-12.15	5.32	Pass
	6	2437	-9.75	3.01	0.23	-6.51	5.32	Pass
	11	2462	-15.60	3.01	0.23	-12.36	5.32	Pass
1	1	2412	-13.95	3.01	0.23	-10.71	5.32	Pass
	6	2437	-9.61	3.01	0.23	-6.37	5.32	Pass
	11	2462	-14.94	3.01	0.23	-11.70	5.32	Pass

Note:

- 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.
- Max. directional gain = $5.67\text{dBi} + 10\log(2) = 8.68\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $8-(8.68-6) = 5.32\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/10kHz)	10 log (N=2) dB	Total PSD (dBm/10kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-17.03	3.01	-14.02	5.32	Pass
	6	2437	-10.20	3.01	-7.19	5.32	Pass
	11	2462	-17.09	3.01	-14.08	5.32	Pass
1	1	2412	-16.05	3.01	-13.04	5.32	Pass
	6	2437	-9.65	3.01	-6.64	5.32	Pass
	11	2462	-15.87	3.01	-12.86	5.32	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. Max. directional gain = 5.67dBi + 10log(2) = 8.68dBi > 6dBi, so the limit shall be reduced to 8-(8.68-6) = 5.32dBm.

802.11n (HT40)

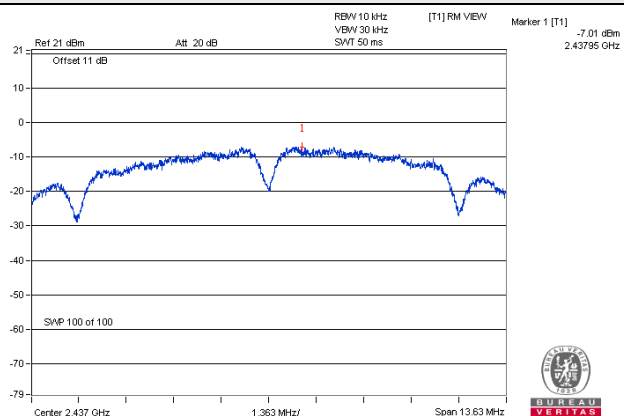
TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/10kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-19.46	3.01	0.18	-16.27	5.32	Pass
	6	2437	-17.31	3.01	0.18	-14.12	5.32	Pass
	9	2452	-20.64	3.01	0.18	-17.45	5.32	Pass
1	3	2422	-19.29	3.01	0.18	-16.10	5.32	Pass
	6	2437	-16.99	3.01	0.18	-13.80	5.32	Pass
	9	2452	-20.03	3.01	0.18	-16.84	5.32	Pass

Note:

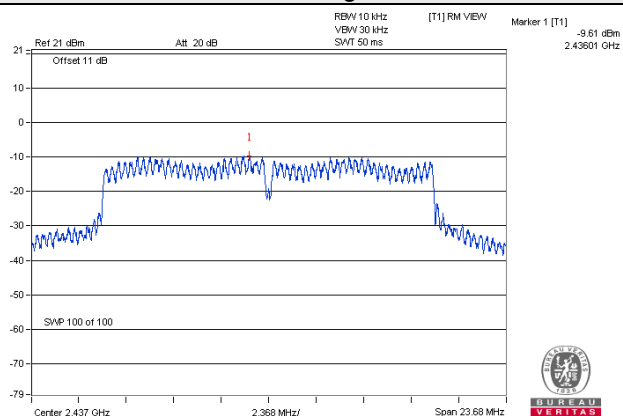
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Max. directional gain = 5.67dBi + 10log(2) = 8.68dBi > 6dBi, so the limit shall be reduced to 8-(8.68-6) = 5.32dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

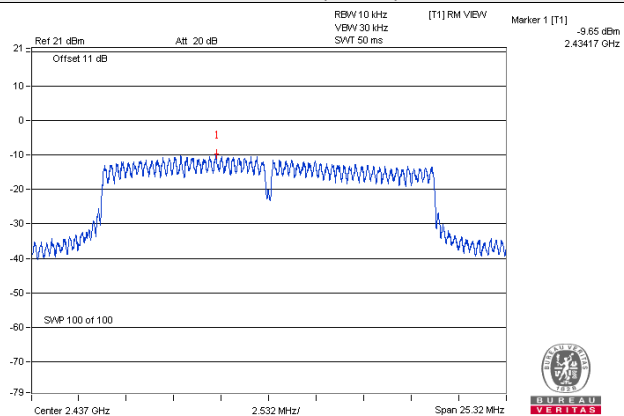
802.11b



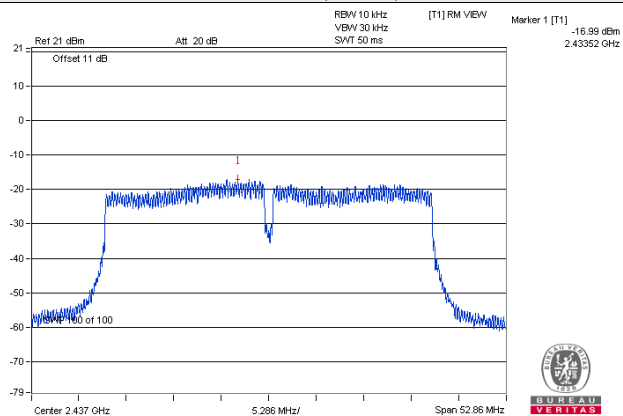
802.11g



802.11n (HT20)



802.11n (HT40)

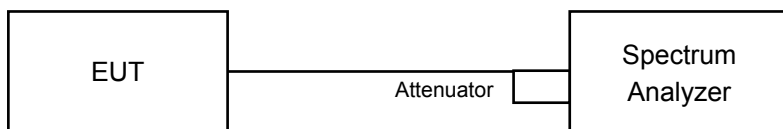


4.6 Conducted Out of Band Emission Measurement

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

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 OOB

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

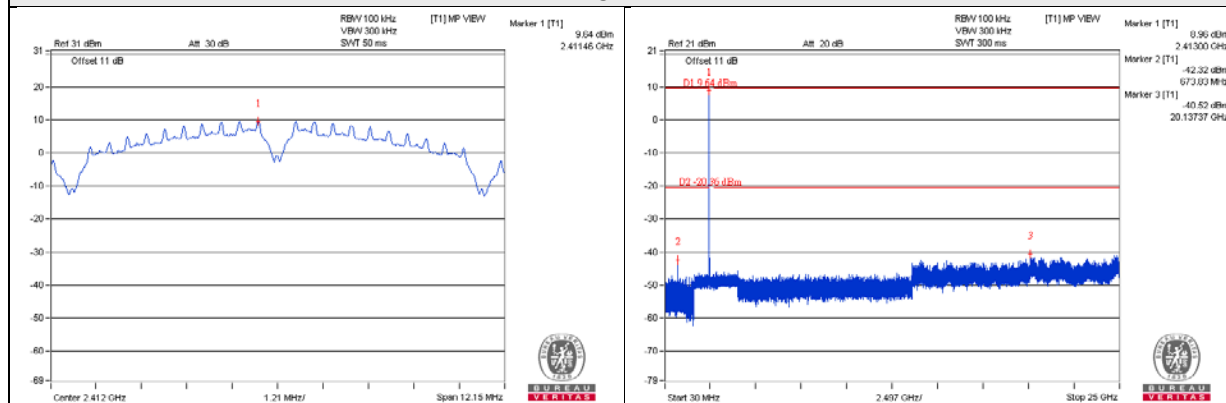
4.6.7 Test Results

The conducted emission test is performed on each TX port of operating mode without summing or adding $10\log(N)$ since the limit is relative emission limit.

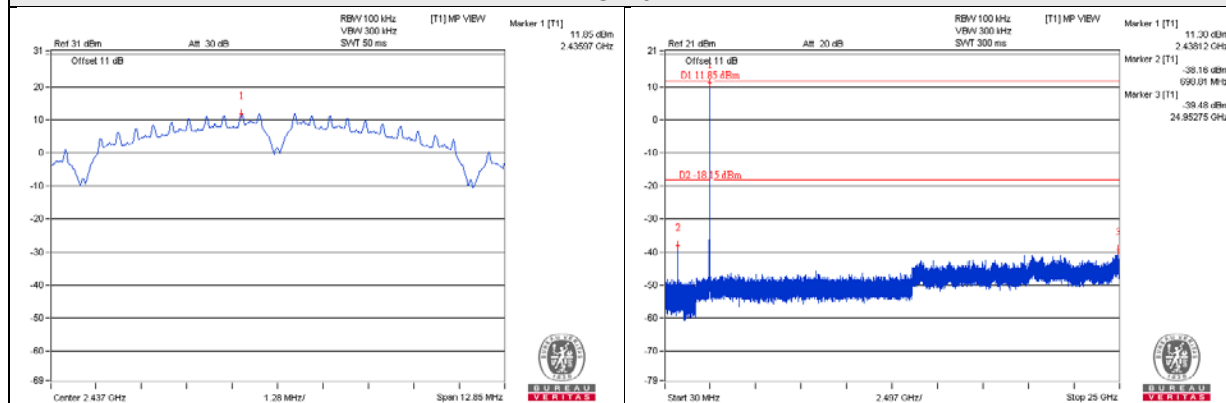
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b_Chain 0

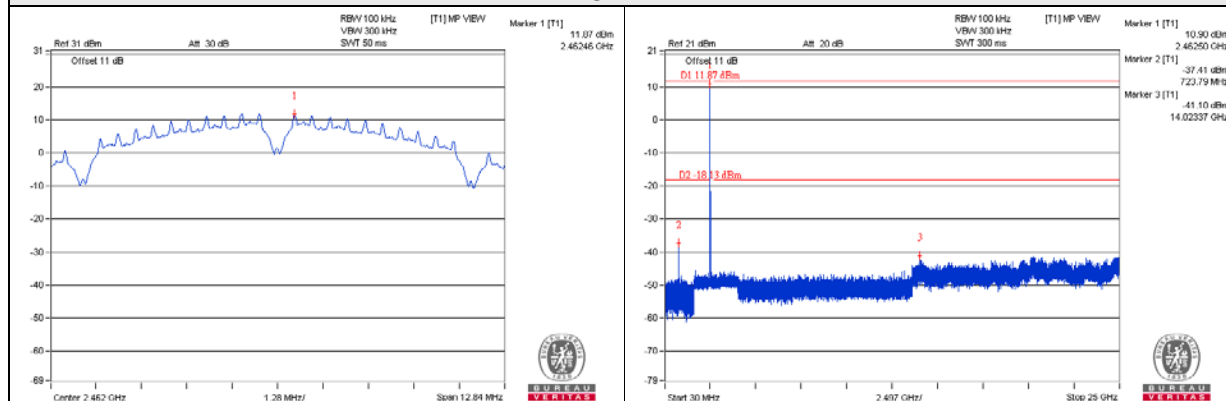
CH 1



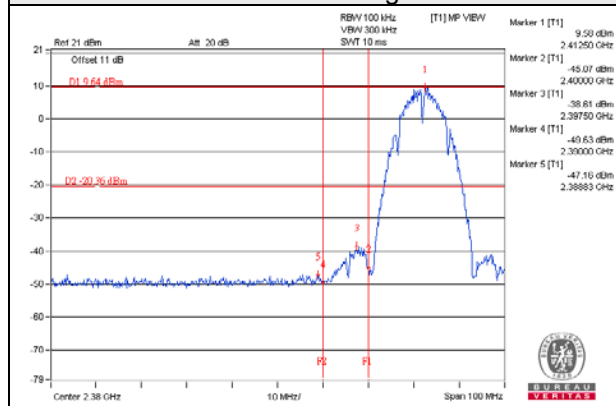
CH 6



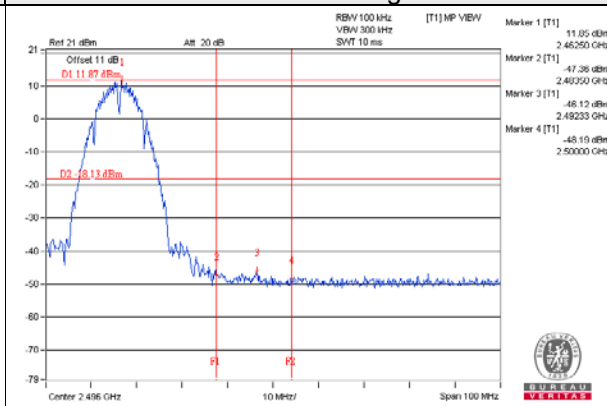
CH 11



CH 1 Band edge

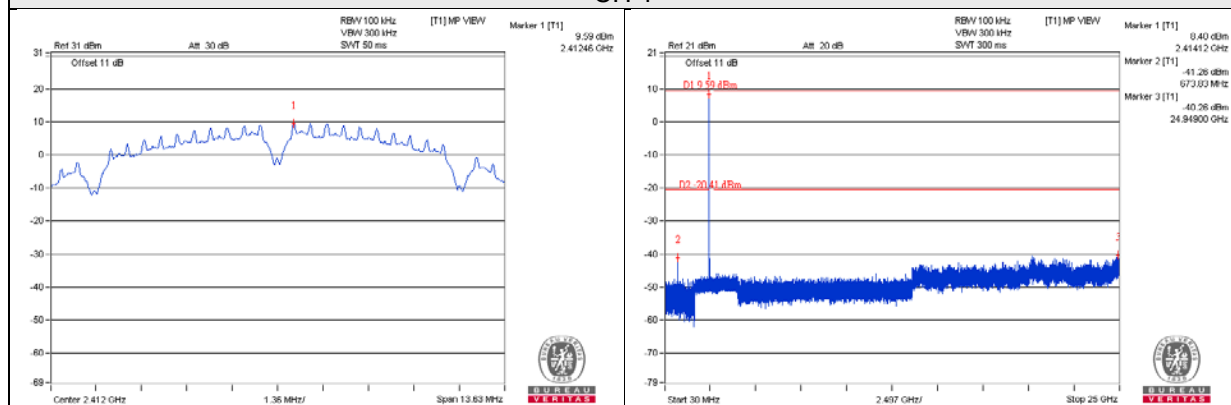


CH 11 Band edge

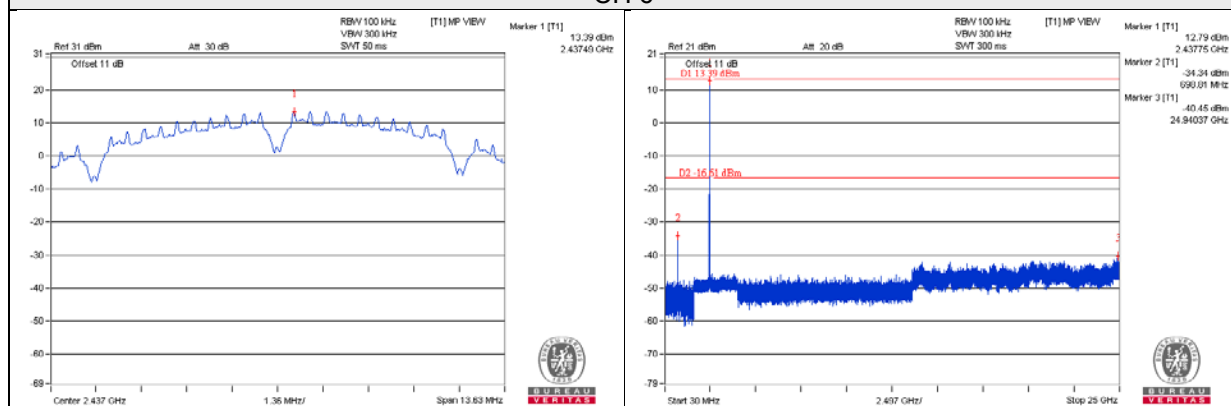


802.11b_Chain 1

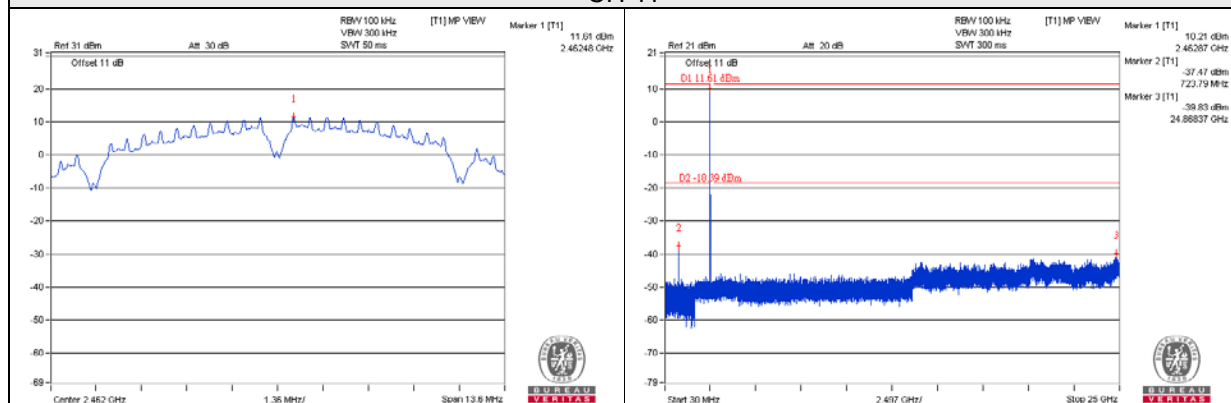
CH 1



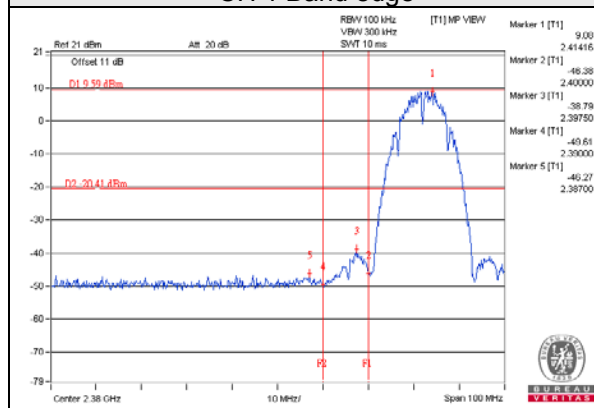
CH 6



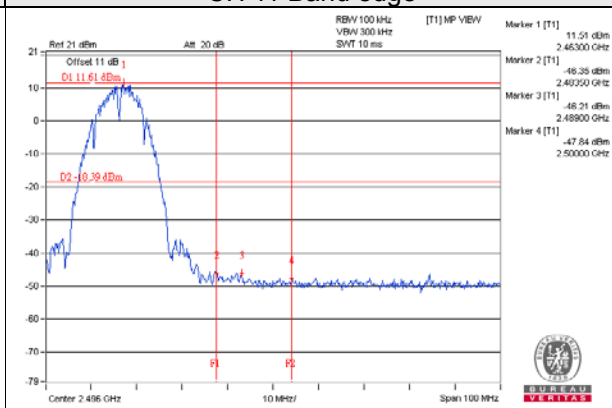
CH 11



CH 1 Band edge

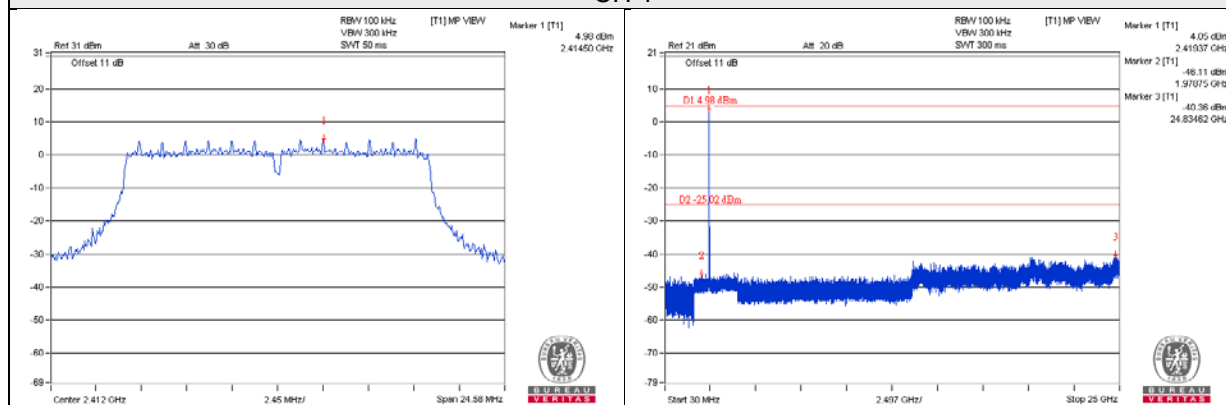


CH 11 Band edge

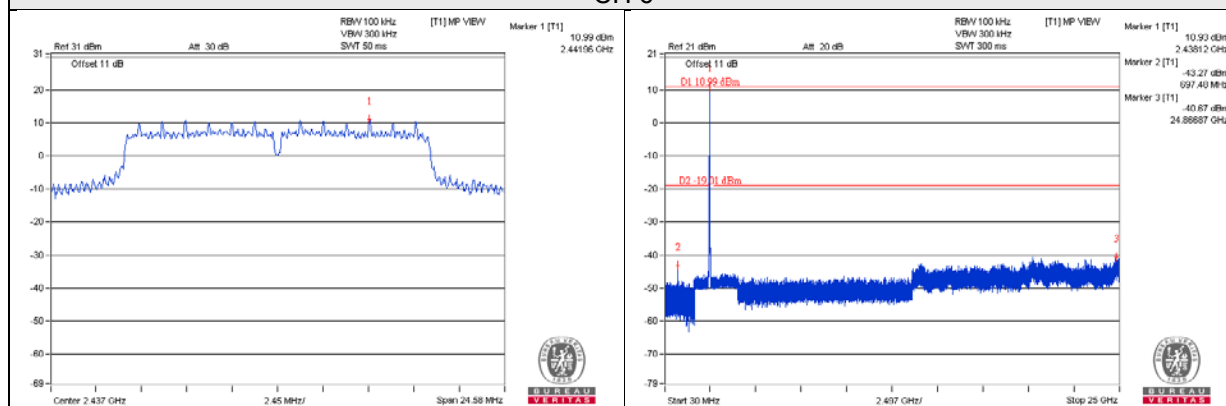


802.11g_Chain 0

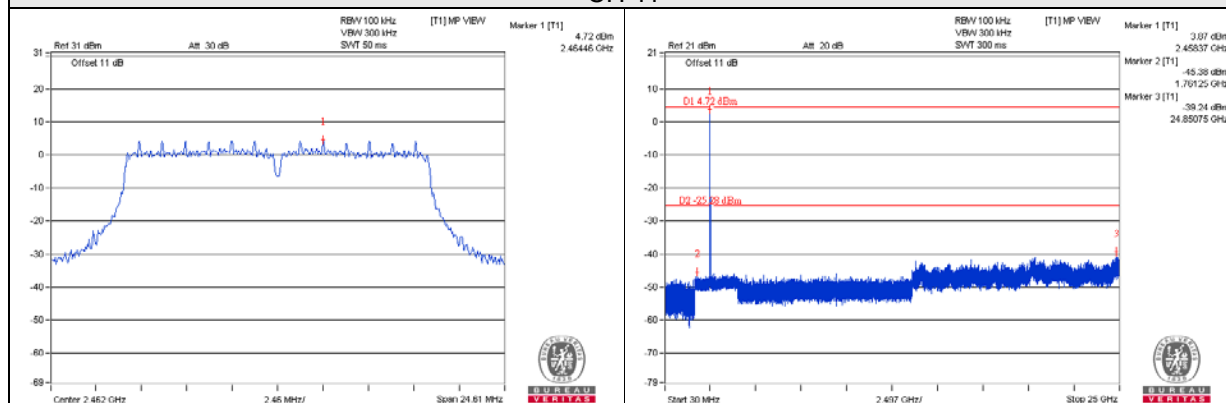
CH 1



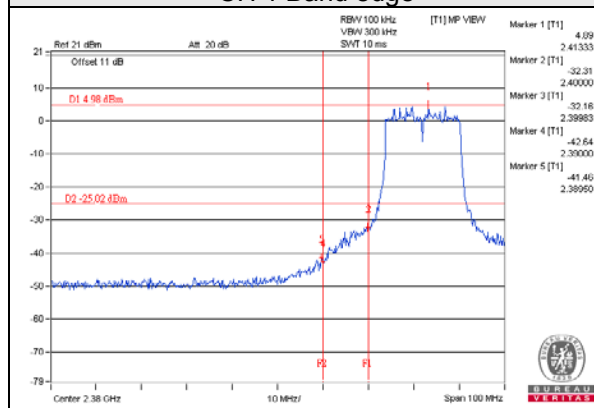
CH 6



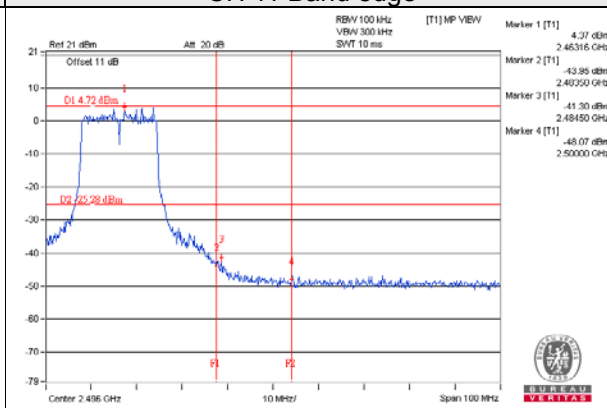
CH 11



CH 1 Band edge

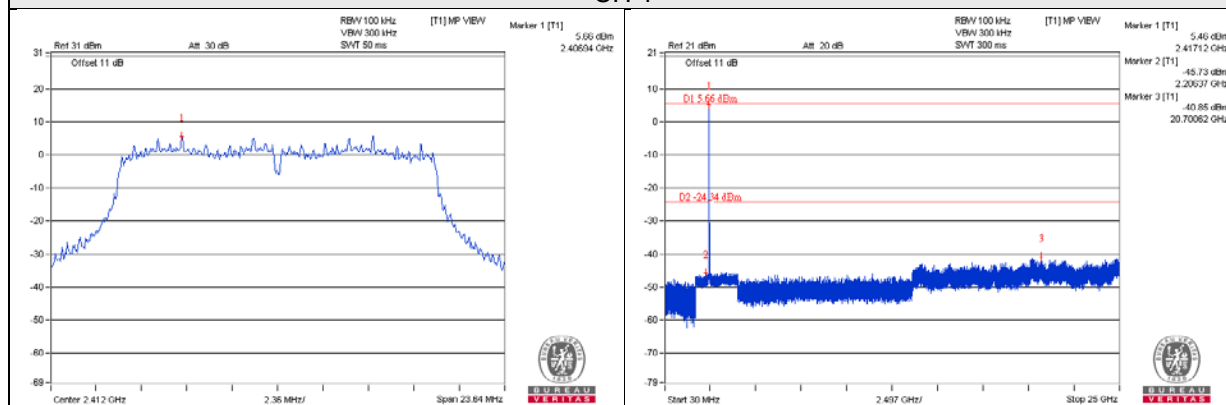


CH 11 Band edge

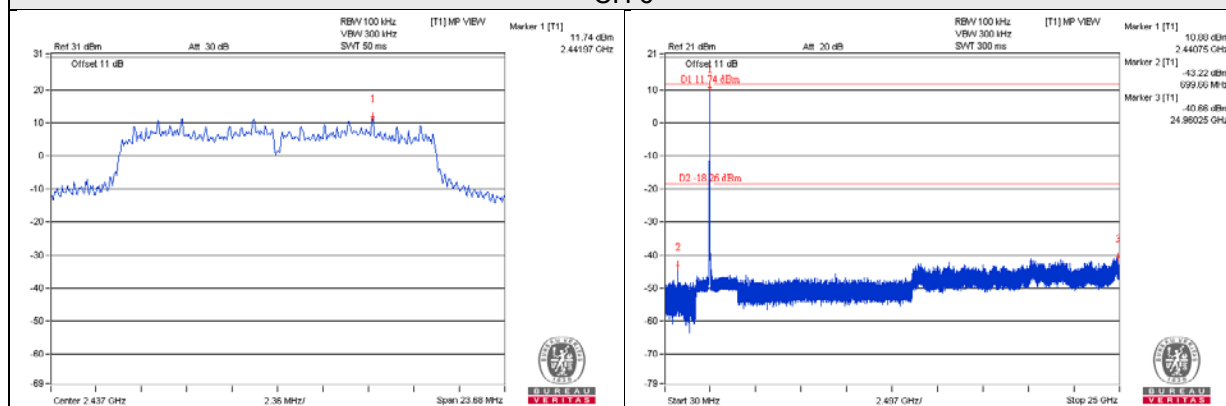


802.11g_Chain 1

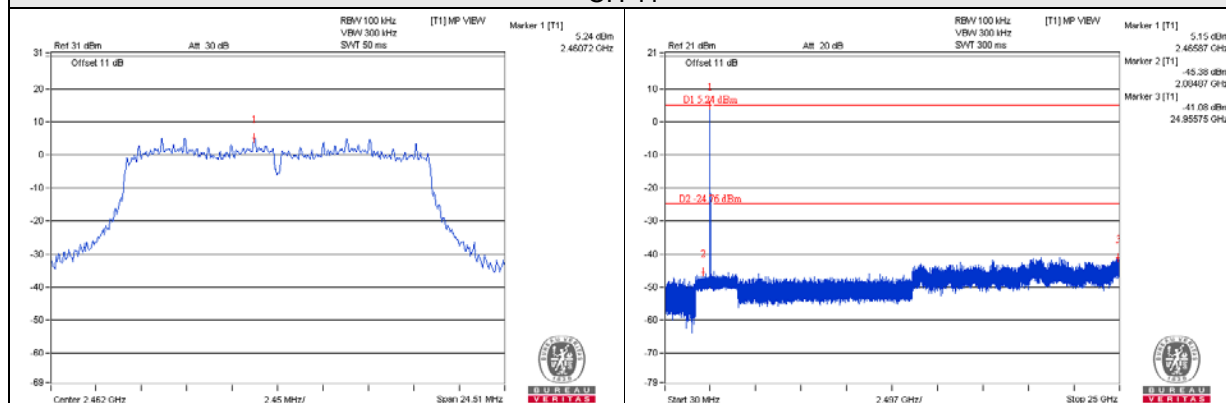
CH 1



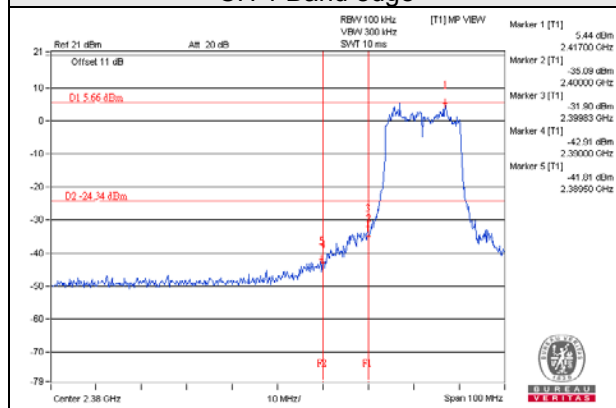
CH 6



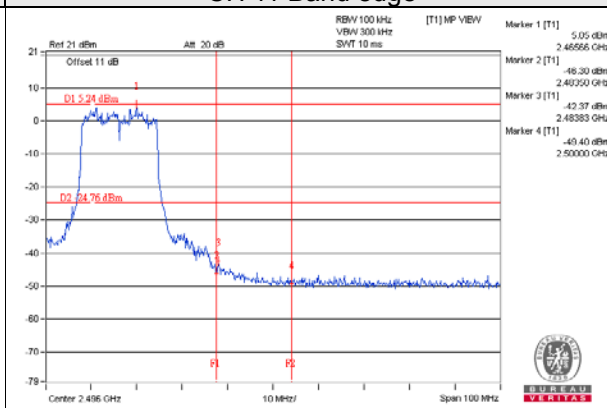
CH 11



CH 1 Band edge

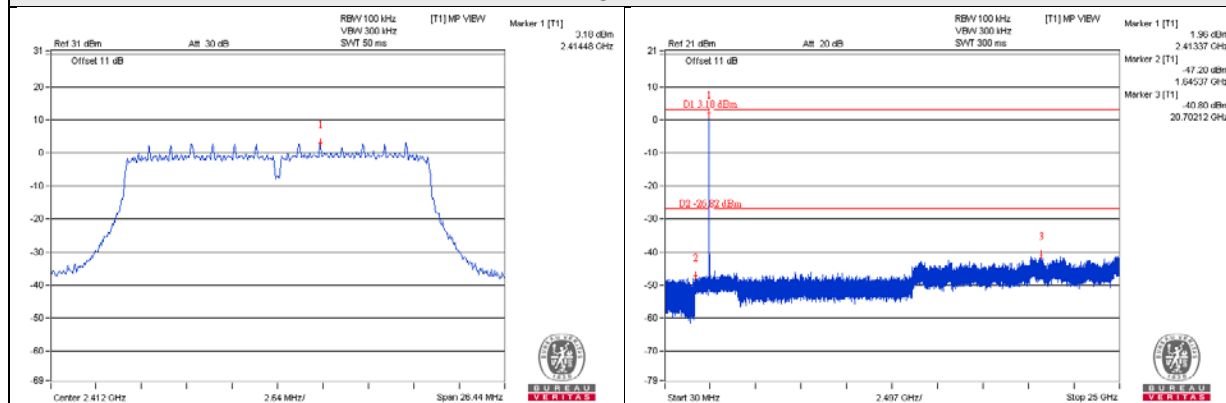


CH 11 Band edge

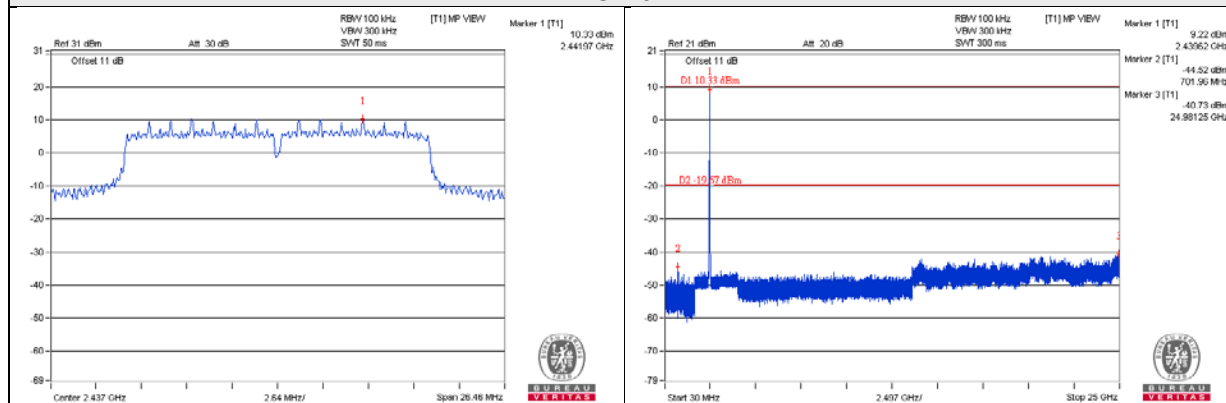


802.11n (HT20)_Chain 0

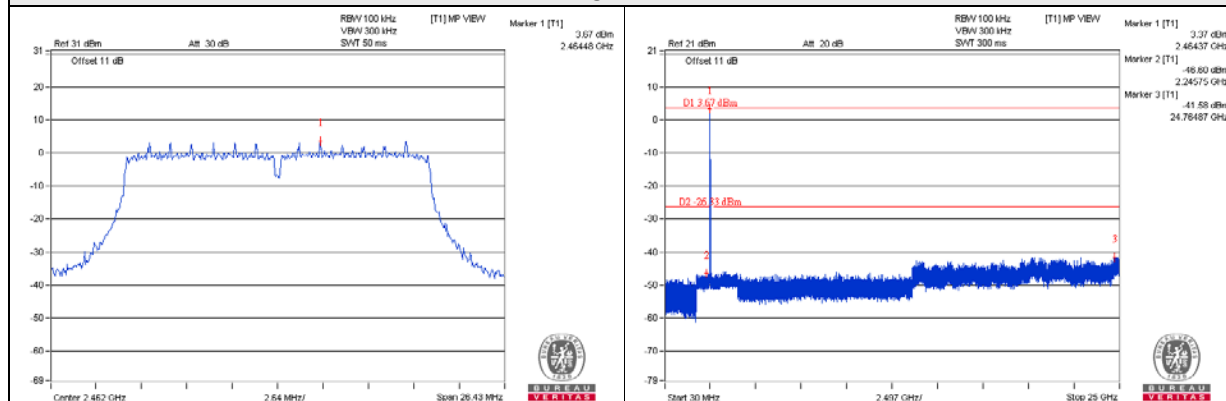
CH 1



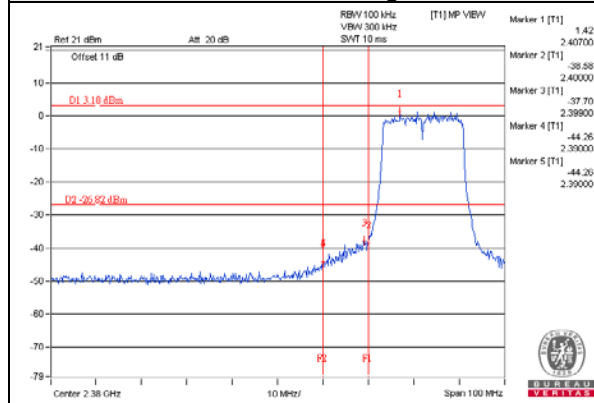
CH 6



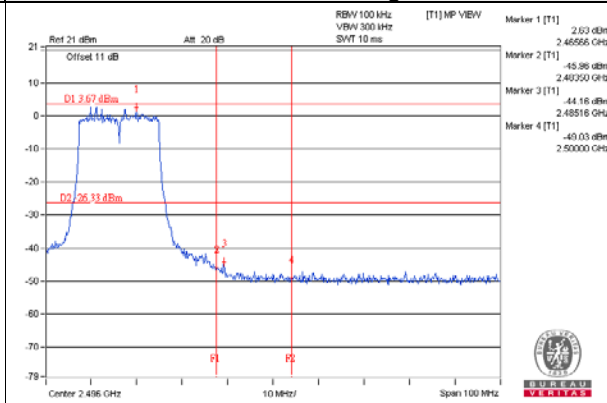
CH 11



CH 1 Band edge

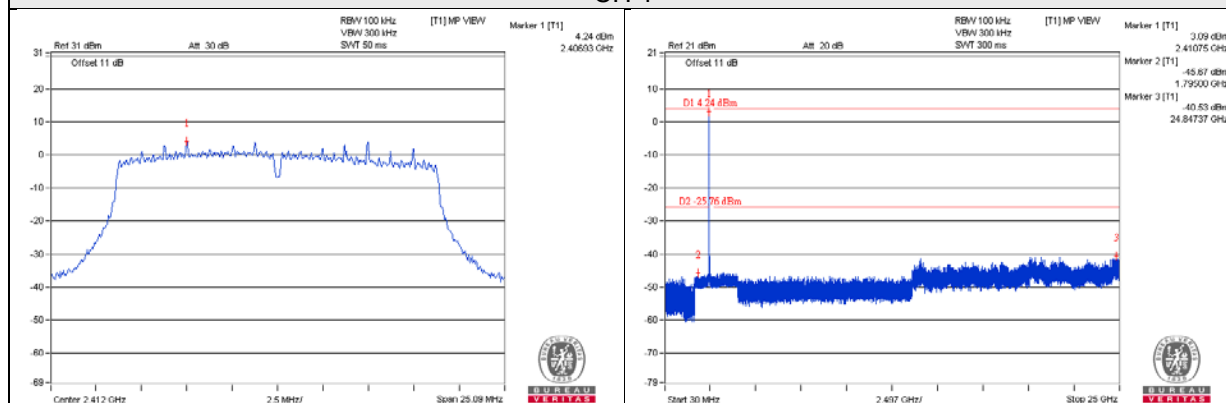


CH 11 Band edge

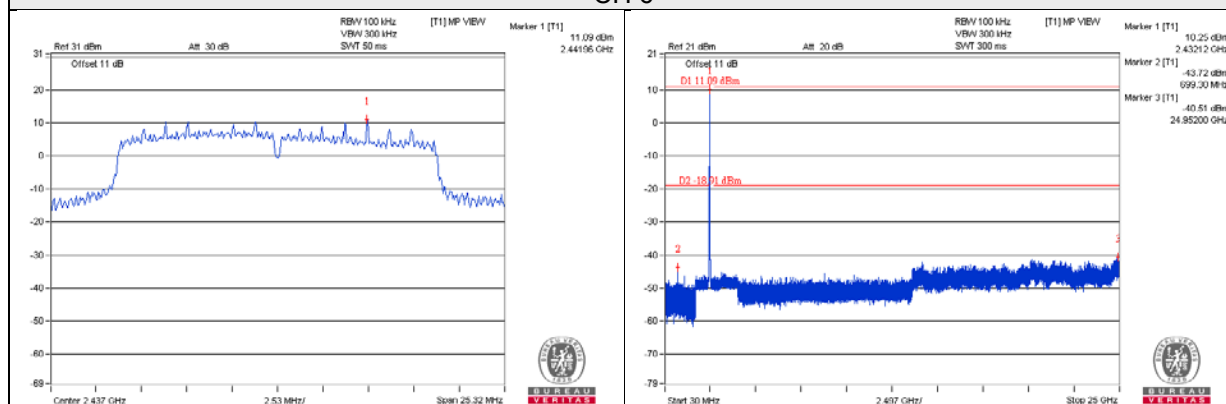


802.11n (HT20)_Chain 1

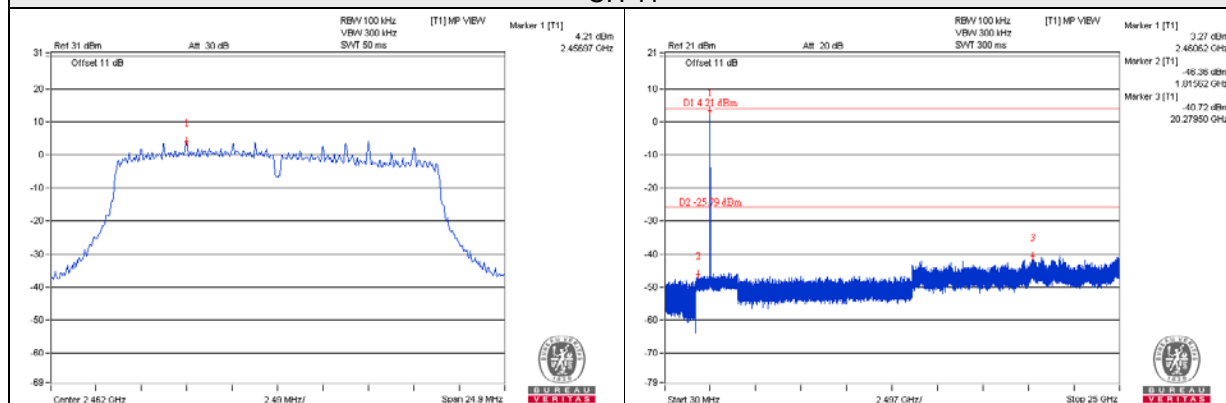
CH 1



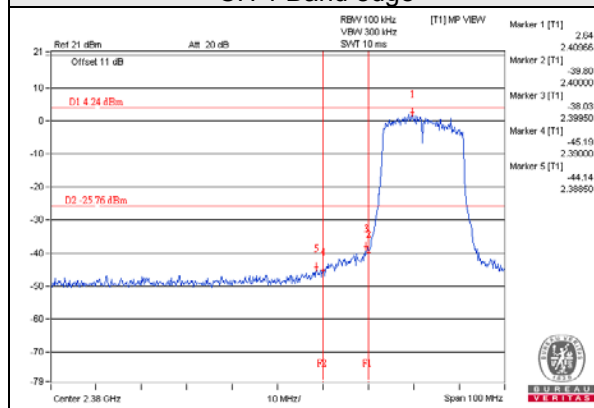
CH 6



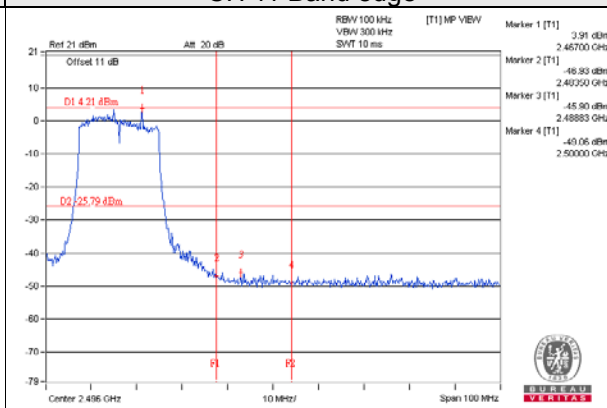
CH 11



CH 1 Band edge

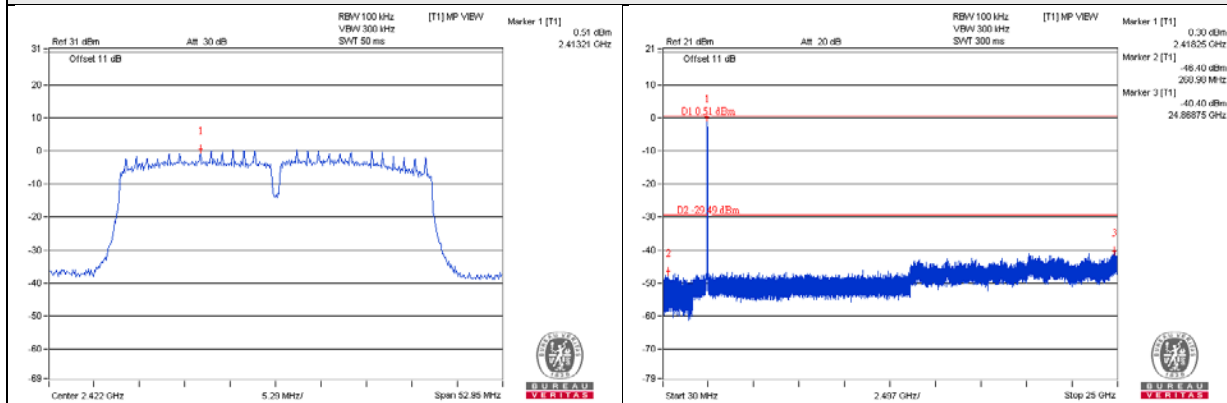


CH 11 Band edge

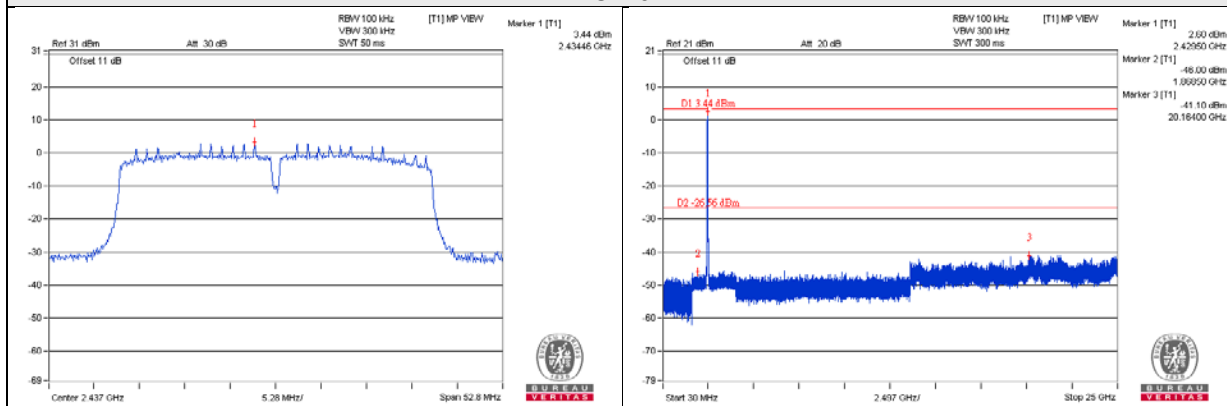


802.11n (HT40)_Chain 0

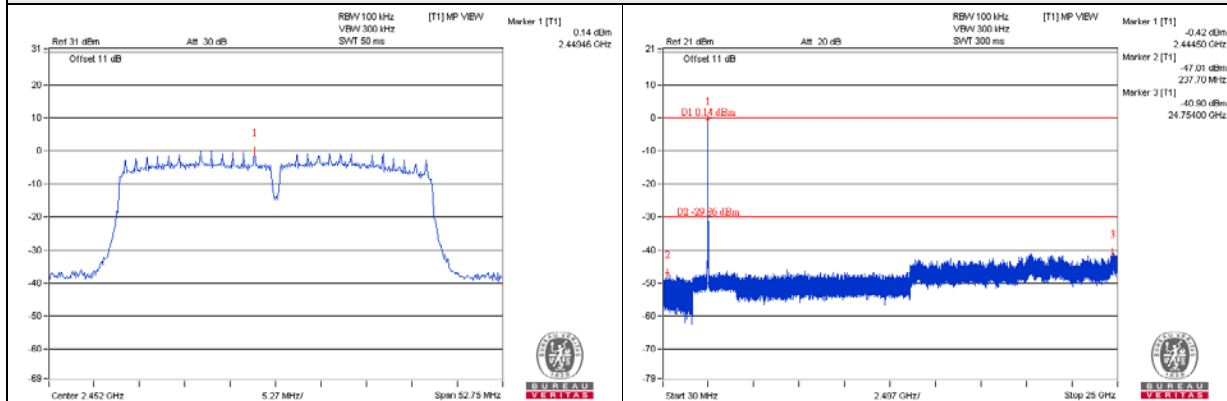
CH 3



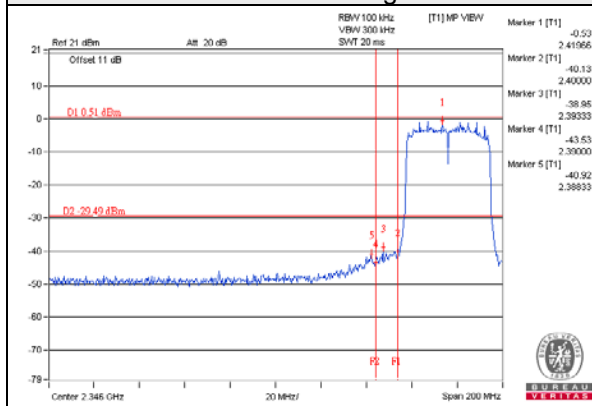
CH 6



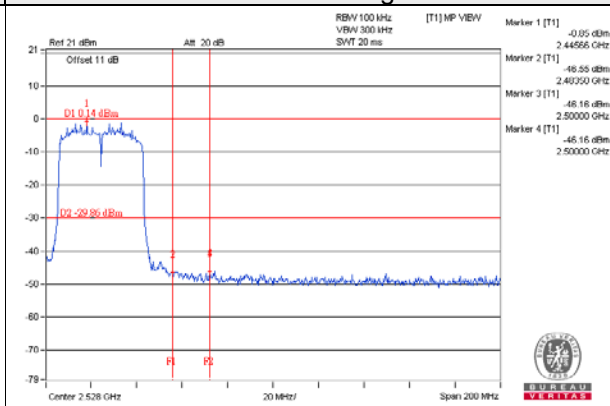
CH 9



CH 3 Band edge

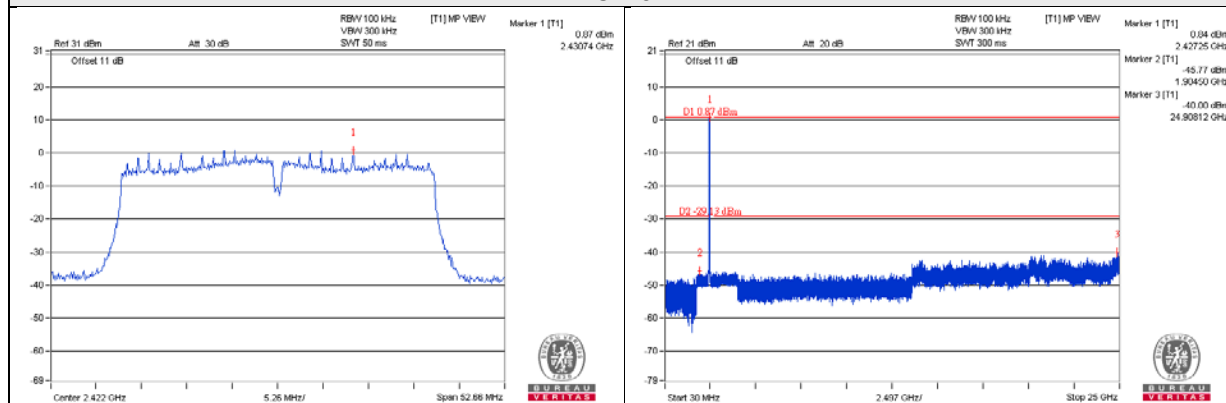


CH 9 Band edge

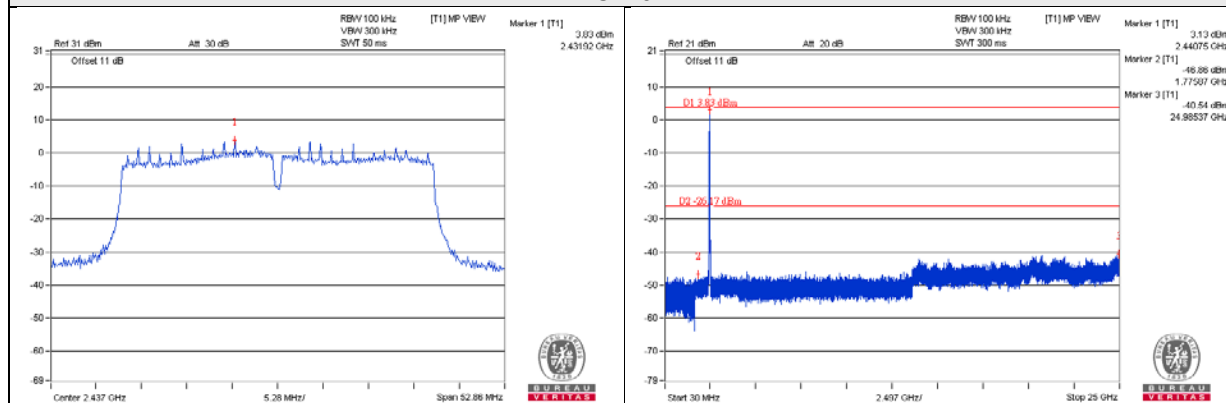


802.11n (HT40)_Chain 1

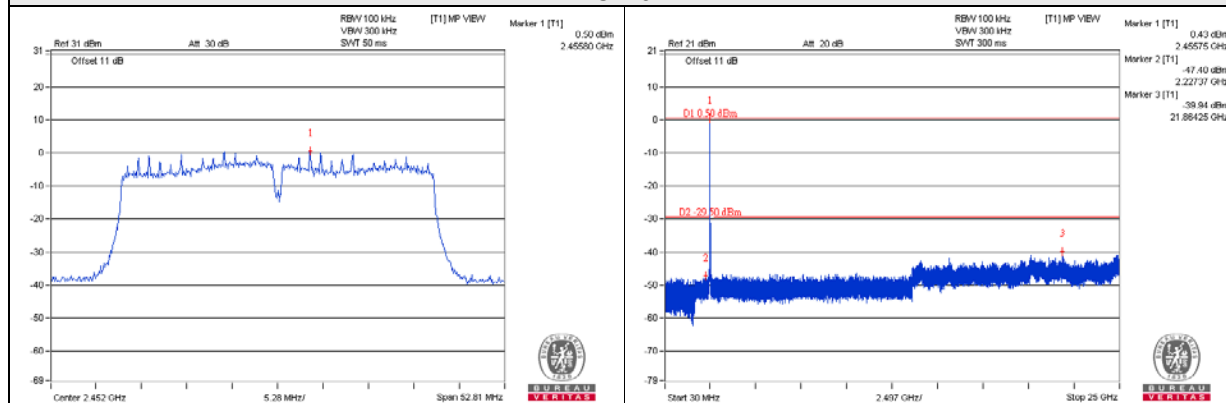
CH 3



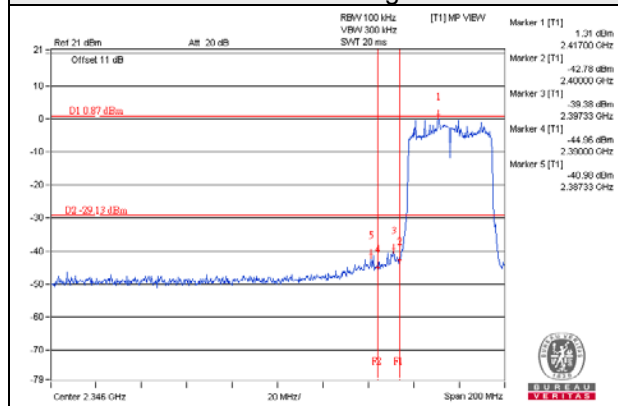
CH 6



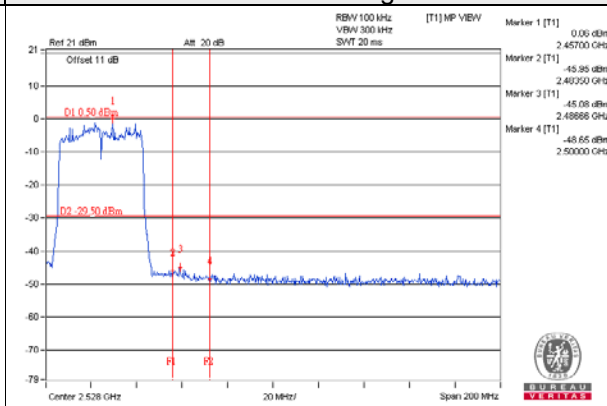
CH 9



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:

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---