

FCC Test Report

Report No.: RF141223C34

FCC ID: TE7WR720NV2

Test Model: TL-WR720N

Received Date: Dec. 23, 2014

Test Date: Dec. 27, 2014 ~ Sep. 25, 2015

Issued Date: Oct. 01, 2015

Applicant: TP-LINK TECHNOLOGIES CO., LTD.

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Release Control Record

Issue No.	Description	Date Issued
RF141223C34	Original release	Oct. 01, 2015

1 Certificate of Conformity

Product: 150Mbps Wireless N Router

Brand: TP-LINK

Test Model: TL-WR720N

Sample Status: Prototype

Applicant: TP-LINK TECHNOLOGIES CO., LTD.

Test Date: Dec. 27, 2014 ~ Sep. 25, 2015

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2009

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Oct. 01, 2015
Celine Chou / Specialist

Approved by : Ken Liu , **Date:** Oct. 01, 2015
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 -23.28dB at 0.18125MHz
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.3dB at 4874.00MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	Pass	Meet the requirement of limit.
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is Weld 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) ($\pm$)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.63 dB
	200MHz ~ 1000MHz	3.64 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	150Mbps Wireless N Router
Brand	TP-LINK
Test Model	TL-WR720N
Sample Status	Prototype
Power Supply Rating	5Vdc (Adapter)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 150Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	215.774mW
Antenna Type	Omni-Directional antenna with 5dBi gain
Antenna Connector	Weld
Accessory Device	Adapter
Data Cable Supplied	N/A

Note:

1. The EUT provides 1 completed transmitter and 1 receiver.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (HT20)	1TX
802.11n (HT40)	1TX

2. EUT uses following adapter.

Brand	TP-LINK TECHNOLOGIES CO., LTD.
Model	T050060-2B1
Input Power	100-240Vac, 50/60Hz, 0.3A
Output Power	5Vdc, 0.6A
Power Line	1.45m DC cable without core attached on adapter

3.2 Description of Test Modes

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

Channel	Frequency	Channel	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

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)
-	802.11b	1 to 11	1, 2, 6, 10, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 4, 6, 8, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0

Power Line Conducted Emission Test:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0

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)
-	802.11b	1 to 11	1, 2, 6, 10, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 4, 6, 8, 9	OFDM	BPSK	13.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Ted Chang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Tank Wu
PLC	19deg. C, 70%RH	120Vac, 60Hz	Nick Hsu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Antony Lee

3.3 Duty Cycle of Test Signal

802.11b: Duty cycle of test signal is > 98%.

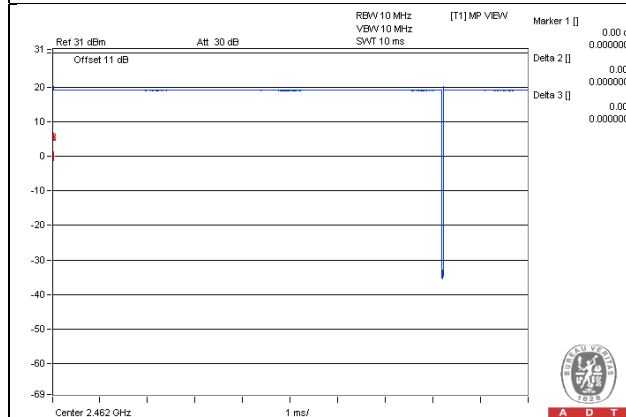
802.11g, 802.11n (HT20), 802.11n (HT40): Duty cycle of test signal is < 98%

802.11g: Duty cycle = $1.352/1.430 = 0.945$, Duty factor = $10 * \log(1/0.945) = 0.24$

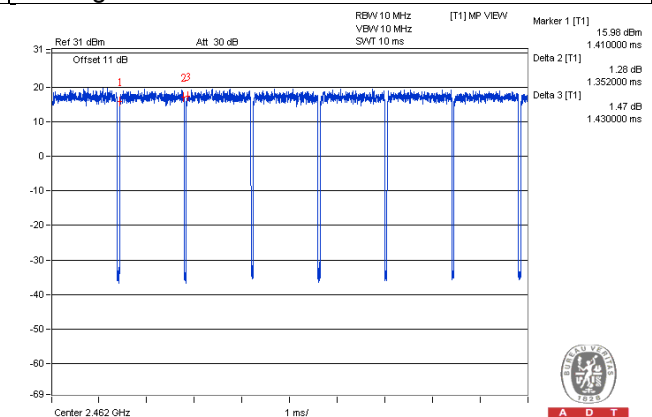
802.11n (HT20): Duty cycle = $1.270/1.320 = 0.962$, Duty factor = $10 * \log(1/0.962) = 0.17$

802.11n (HT40): Duty cycle = $0.627/0.705 = 0.889$, Duty factor = $10 * \log(1/0.889) = 0.51$

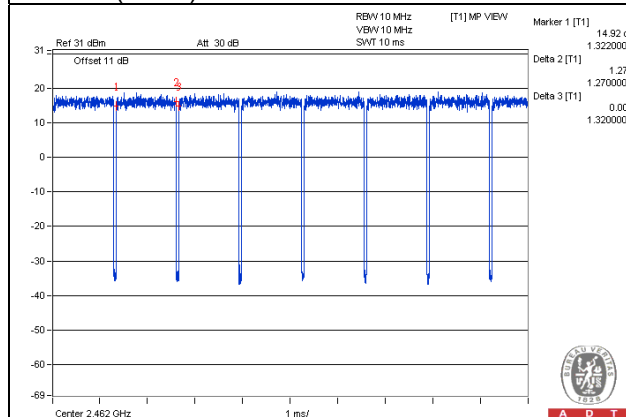
802.11b



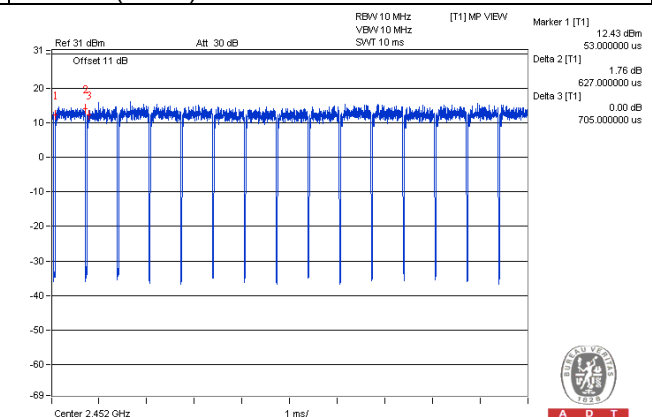
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

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

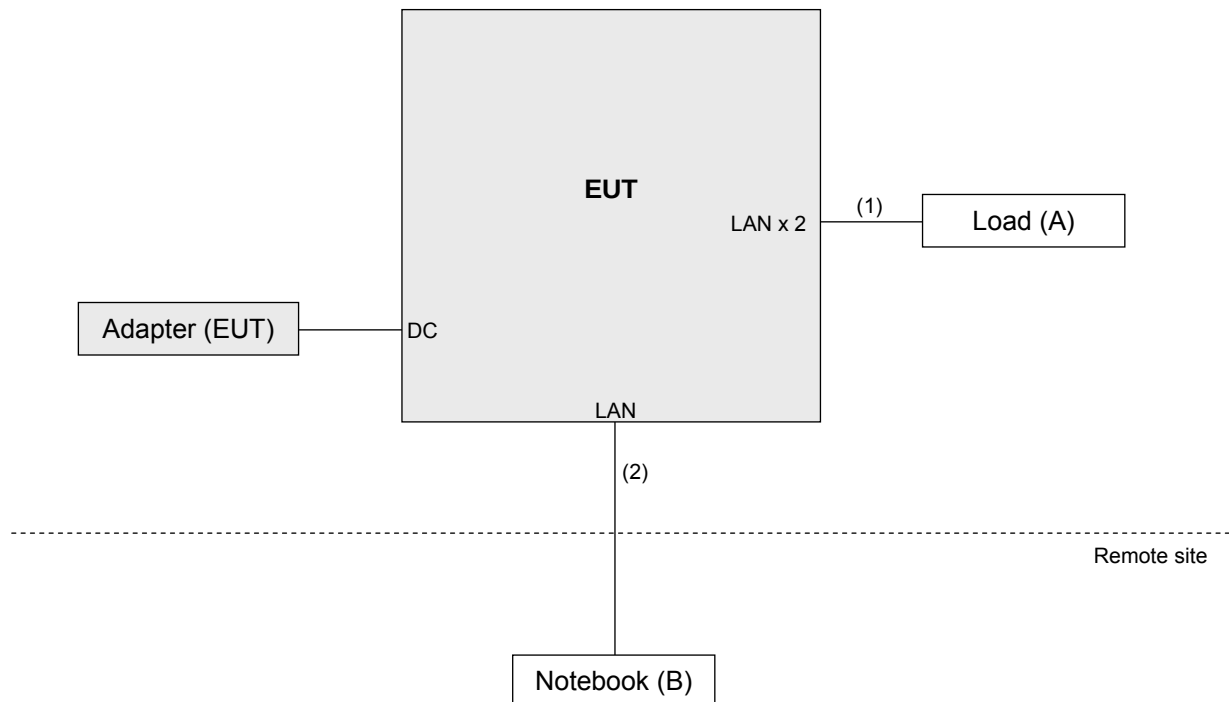
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Load	NA	NA	NA	NA	-
B.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Cat5e cable	2	1.8	N	0	-
2.	Cat5e cable	1	3	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r03

ANSI C63.10-2009

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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

Note:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 01, 2014	Nov. 30, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Mar. 30, 2014	Mar. 29, 2015
			Mar. 30, 2015	Mar. 29, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 06, 2014	Feb. 05, 2015
			Feb. 06, 2015	Feb. 05, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Feb. 09, 2014	Feb. 08, 2015
			Feb. 09, 2015	Feb. 08, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2014	Feb. 08, 2015
			Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8449B	3008A01911	Aug. 09, 2014	Aug. 08, 2015
			Aug. 09, 2015	Aug. 08, 2016
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2014	Aug. 08, 2015
			Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-02(309222 +248780)	Aug. 09, 2014	Aug. 08, 2015
			Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-03(274092)	Aug. 09, 2014	Aug. 08, 2015
			Aug. 09, 2015	Aug. 08, 2016
RF signal cable Woken	8D-FB	Cable-CH9-01	Aug. 11, 2014	Aug. 10, 2015
			Aug. 11, 2015	Aug. 10, 2016
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2014	Jul. 08, 2015
			Jul. 09, 2015	Jul. 08, 2016
Power Sensor	MA2411B	0738171	Jul. 09, 2014	Jul. 08, 2015
			Jul. 09, 2015	Jul. 08, 2016

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
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 215374.
5. The IC Site Registration No. is IC 7450F-9.

4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

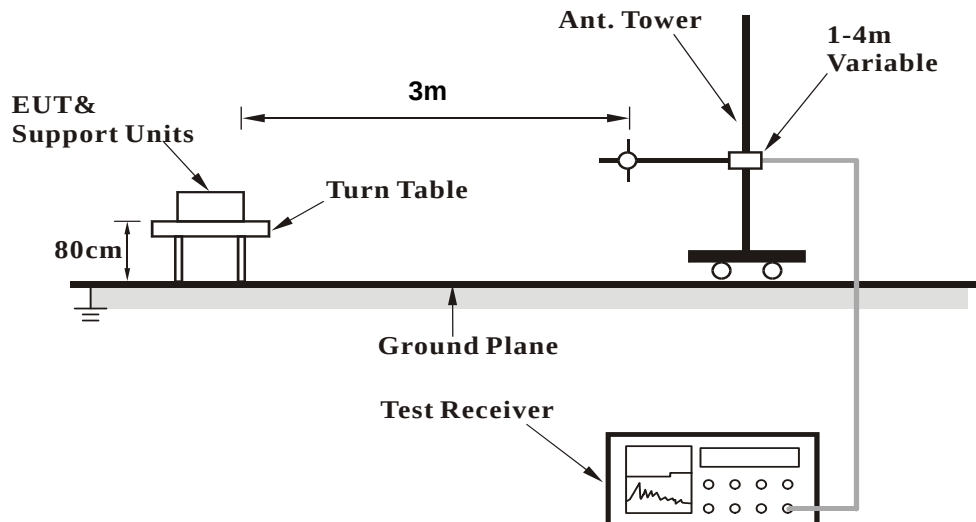
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

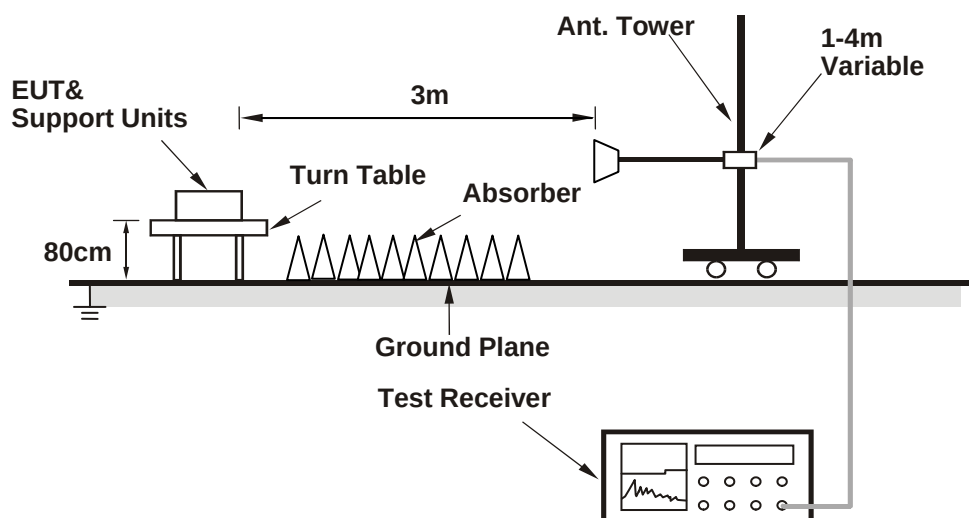
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1GHz data:

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	59.3 PK	74.0	-14.7	1.57 H	229	26.30	33.00
2	2390.00	45.6 AV	54.0	-8.4	1.57 H	229	12.60	33.00
3	*2412.00	94.5 PK			1.57 H	229	61.40	33.10
4	*2412.00	91.8 AV			1.57 H	229	58.70	33.10
5	4824.00	54.8 PK	74.0	-19.2	1.00 H	41	53.00	1.80
6	4824.00	51.6 AV	54.0	-2.4	1.00 H	41	49.80	1.80
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	64.7 PK	74.0	-9.3	1.01 V	39	31.70	33.00
2	2390.00	47.5 AV	54.0	-6.5	1.01 V	39	14.50	33.00
3	*2412.00	106.4 PK			1.00 V	39	73.30	33.10
4	*2412.00	103.7 AV			1.00 V	39	70.60	33.10
5	4824.00	56.3 PK	74.0	-17.7	1.11 V	9	54.50	1.80
6	4824.00	53.5 AV	54.0	-0.5	1.11 V	9	51.70	1.80

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.5 PK	74.0	-14.5	1.00 H	266	24.80	34.70
2	2390.00	47.7 AV	54.0	-6.3	1.00 H	266	13.00	34.70
3	*2417.00	100.9 PK			1.00 H	226	66.00	34.90
4	*2417.00	97.3 AV			1.00 H	226	62.40	34.90
5	4834.00	56.4 PK	74.0	-17.6	1.08 H	340	52.40	4.00
6	4834.00	52.6 AV	54.0	-1.4	1.08 H	340	48.60	4.00
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	60.2 PK	74.0	-13.8	1.01 V	9	25.50	34.70
2	2390.00	48.0 AV	54.0	-6.0	1.01 V	9	13.30	34.70
3	*2417.00	108.3 PK			1.01 V	9	73.40	34.90
4	*2417.00	104.7 AV			1.01 V	9	69.80	34.90
5	4834.00	57.1 PK	74.0	-16.9	1.15 V	331	53.10	4.00
6	4834.00	53.5 AV	54.0	-0.5	1.15 V	331	49.50	4.00

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)
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	97.3 PK			1.02 H	236	64.00	33.30
2	*2437.00	94.8 AV			1.02 H	236	61.50	33.30
3	4874.00	54.9 PK	74.0	-19.1	1.01 H	41	53.00	1.90
4	4874.00	51.9 AV	54.0	-2.1	1.01 H	41	50.00	1.90
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	108.3 PK			1.00 V	233	75.00	33.30
2	*2437.00	105.6 AV			1.00 V	233	72.30	33.30
3	4874.00	55.9 PK	74.0	-18.1	1.37 V	13	54.00	1.90
4	4874.00	53.7 AV	54.0	-0.3	1.37 V	13	51.80	1.90

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 10	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	*2457.00	100.2 PK			1.00 H	225	65.10	35.10
2	*2457.00	97.2 AV			1.00 H	225	62.10	35.10
3	2483.50	60.0 PK	74.0	-14.0	1.00 H	225	24.80	35.20
4	2483.50	48.0 AV	54.0	-6.0	1.00 H	225	12.80	35.20
5	4914.00	55.0 PK	74.0	-19.0	1.42 H	69	50.80	4.20
6	4914.00	50.0 AV	54.0	-4.0	1.42 H	69	45.80	4.20
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	*2457.00	108.9 PK			1.00 V	277	73.80	35.10
2	*2457.00	105.2 AV			1.00 V	277	70.10	35.10
3	2483.50	60.8 PK	74.0	-13.2	1.00 V	277	25.60	35.20
4	2483.50	48.9 AV	54.0	-5.1	1.00 V	277	13.70	35.20
5	4914.00	57.1 PK	74.0	-16.9	1.18 V	12	52.90	4.20
6	4914.00	53.6 AV	54.0	-0.4	1.18 V	12	49.40	4.20

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)
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	98.2 PK			1.01 H	235	64.80	33.40
2	*2462.00	95.6 AV			1.01 H	235	62.20	33.40
3	2483.50	60.2 PK	74.0	-13.8	1.01 H	235	26.80	33.40
4	2483.50	46.4 AV	54.0	-7.6	1.01 H	235	13.00	33.40
5	4924.00	54.6 PK	74.0	-19.4	1.36 H	44	52.60	2.00
6	4924.00	50.6 AV	54.0	-3.4	1.36 H	44	48.60	2.00
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	108.4 PK			1.00 V	265	75.00	33.40
2	*2462.00	105.7 AV			1.00 V	265	72.30	33.40
3	2483.50	61.0 PK	74.0	-13.0	1.00 V	265	27.60	33.40
4	2483.50	48.4 AV	54.0	-5.6	1.00 V	265	15.00	33.40
5	4924.00	56.6 PK	74.0	-17.4	1.08 V	20	54.60	2.00
6	4924.00	53.6 AV	54.0	-0.4	1.08 V	20	51.60	2.00

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)
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	60.9 PK	74.0	-13.1	1.29 H	236	27.90	33.00
2	2390.00	47.5 AV	54.0	-6.5	1.29 H	236	14.50	33.00
3	*2412.00	97.9 PK			1.29 H	236	64.80	33.10
4	*2412.00	89.9 AV			1.29 H	236	56.80	33.10
5	4824.00	48.4 PK	74.0	-25.6	1.05 H	35	46.60	1.80
6	4824.00	35.3 AV	54.0	-18.7	1.05 H	35	33.50	1.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.9 PK	74.0	-2.1	1.00 V	36	38.90	33.00
2	2390.00	53.3 AV	54.0	-0.7	1.00 V	36	20.30	33.00
3	*2412.00	108.7 PK			1.00 V	36	75.60	33.10
4	*2412.00	97.8 AV			1.00 V	36	64.70	33.10
5	4824.00	53.5 PK	74.0	-20.5	1.10 V	7	51.70	1.80
6	4824.00	39.3 AV	54.0	-14.7	1.10 V	7	37.50	1.80

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.8 PK	74.0	-12.2	1.00 H	227	27.10	34.70
2	2390.00	48.8 AV	54.0	-5.2	1.00 H	227	14.10	34.70
3	*2417.00	104.4 PK			1.00 H	227	69.50	34.90
4	*2417.00	93.3 AV			1.00 H	227	58.40	34.90
5	4834.00	56.7 PK	74.0	-17.3	1.34 H	53	52.70	4.00
6	4834.00	43.0 AV	54.0	-11.0	1.34 H	53	39.00	4.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.9 PK	74.0	-2.1	1.01 V	215	37.20	34.70
2	2390.00	53.5 AV	54.0	-0.5	1.01 V	215	18.80	34.70
3	*2417.00	111.7 PK			1.01 V	243	76.80	34.90
4	*2417.00	101.0 AV			1.01 V	243	66.10	34.90
5	4834.00	60.0 PK	74.0	-14.0	1.04 V	6	56.00	4.00
6	4834.00	45.0 AV	54.0	-9.0	1.04 V	6	41.00	4.00

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)
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	103.5 PK			1.02 H	234	70.20	33.30
2	*2437.00	92.3 AV			1.02 H	234	59.00	33.30
3	4874.00	58.2 PK	74.0	-15.8	1.00 H	33	56.30	1.90
4	4874.00	44.5 AV	54.0	-9.5	1.00 H	33	42.60	1.90
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	113.4 PK			1.00 V	39	80.10	33.30
2	*2437.00	102.5 AV			1.00 V	39	69.20	33.30
3	4874.00	59.9 PK	74.0	-14.1	1.11 V	8	58.00	1.90
4	4874.00	45.0 AV	54.0	-9.0	1.11 V	8	43.10	1.90

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 10	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	*2457.00	102.2 PK			1.00 H	227	67.10	35.10
2	*2457.00	92.0 AV			1.00 H	227	56.90	35.10
3	2483.50	61.6 PK	74.0	-12.4	1.00 H	227	26.40	35.20
4	2483.50	48.3 AV	54.0	-5.7	1.00 H	227	13.10	35.20
5	4914.00	52.9 PK	74.0	-21.1	1.57 H	56	48.70	4.20
6	4914.00	39.3 AV	54.0	-14.7	1.57 H	56	35.10	4.20
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	*2457.00	111.0 PK			1.01 V	27	75.90	35.10
2	*2457.00	100.2 AV			1.01 V	27	65.10	35.10
3	2483.50	71.2 PK	74.0	-2.8	1.01 V	27	36.00	35.20
4	2483.50	53.2 AV	54.0	-0.8	1.01 V	27	18.00	35.20
5	4914.00	56.5 PK	74.0	-17.5	1.02 V	16	52.30	4.20
6	4914.00	41.1 AV	54.0	-12.9	1.02 V	16	36.90	4.20

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)
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	98.8 PK			1.51 H	231	65.40	33.40
2	*2462.00	87.8 AV			1.51 H	231	54.40	33.40
3	2483.50	63.1 PK	74.0	-10.9	1.51 H	231	29.70	33.40
4	2483.50	47.6 AV	54.0	-6.4	1.51 H	231	14.20	33.40
5	4924.00	48.3 PK	74.0	-25.7	1.00 H	335	46.30	2.00
6	4924.00	34.5 AV	54.0	-19.5	1.00 H	335	32.50	2.00
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	108.1 PK			1.29 V	5	74.70	33.40
2	*2462.00	97.6 AV			1.29 V	5	64.20	33.40
3	2483.50	73.3 PK	74.0	-0.7	1.29 V	5	39.90	33.40
4	2483.50	53.4 AV	54.0	-0.6	1.29 V	5	20.00	33.40
5	4924.00	51.3 PK	74.0	-22.7	1.24 V	13	49.30	2.00
6	4924.00	36.4 AV	54.0	-17.6	1.24 V	13	34.40	2.00

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)
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	60.5 PK	74.0	-13.5	1.29 H	235	27.50	33.00
2	2390.00	47.3 AV	54.0	-6.7	1.29 H	235	14.30	33.00
3	*2412.00	96.4 PK			1.29 H	235	63.30	33.10
4	*2412.00	85.6 AV			1.29 H	235	52.50	33.10
5	4824.00	48.9 PK	74.0	-25.1	1.00 H	328	47.10	1.80
6	4824.00	35.5 AV	54.0	-18.5	1.00 H	328	33.70	1.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.2 PK	74.0	-2.8	1.00 V	45	38.20	33.00
2	2390.00	53.4 AV	54.0	-0.6	1.00 V	45	20.40	33.00
3	*2412.00	107.1 PK			1.00 V	45	74.00	33.10
4	*2412.00	96.2 AV			1.00 V	45	63.10	33.10
5	4824.00	50.6 PK	74.0	-23.4	1.00 V	7	48.80	1.80
6	4824.00	37.3 AV	54.0	-16.7	1.00 V	7	35.50	1.80

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.5 PK	74.0	-14.5	1.00 H	226	24.80	34.70
2	2390.00	48.2 AV	54.0	-5.8	1.00 H	226	13.50	34.70
3	*2417.00	103.3 PK			1.00 H	226	68.40	34.90
4	*2417.00	93.2 AV			1.00 H	226	58.30	34.90
5	4834.00	55.5 PK	74.0	-18.5	1.10 H	344	51.50	4.00
6	4834.00	41.6 AV	54.0	-12.4	1.10 H	344	37.60	4.00
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	68.7 PK	74.0	-5.3	1.00 V	303	34.00	34.70
2	2390.00	53.5 AV	54.0	-0.5	1.00 V	303	18.80	34.70
3	*2417.00	110.6 PK			1.00 V	241	75.70	34.90
4	*2417.00	100.1 AV			1.00 V	241	65.20	34.90
5	4834.00	57.3 PK	74.0	-16.7	1.05 V	4	53.30	4.00
6	4834.00	43.2 AV	54.0	-10.8	1.05 V	4	39.20	4.00

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)
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	103.3 PK			1.54 H	234	70.00	33.30
2	*2437.00	92.6 AV			1.54 H	234	59.30	33.30
3	4874.00	58.4 PK	74.0	-15.6	1.00 H	47	56.50	1.90
4	4874.00	44.6 AV	54.0	-9.4	1.00 H	47	42.70	1.90
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	113.3 PK			1.00 V	290	80.00	33.30
2	*2437.00	102.4 AV			1.00 V	290	69.10	33.30
3	4874.00	58.9 PK	74.0	-15.1	1.25 V	12	57.00	1.90
4	4874.00	44.1 AV	54.0	-9.9	1.25 V	12	42.20	1.90

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 10	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	*2457.00	101.3 PK			1.00 H	225	66.20	35.10
2	*2457.00	90.8 AV			1.00 H	225	55.70	35.10
3	2483.50	61.1 PK	74.0	-12.9	1.00 H	225	25.90	35.20
4	2483.50	48.5 AV	54.0	-5.5	1.00 H	225	13.30	35.20
5	4914.00	53.0 PK	74.0	-21.0	1.41 H	75	48.80	4.20
6	4914.00	38.3 AV	54.0	-15.7	1.41 H	75	34.10	4.20
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	*2457.00	109.6 PK			1.00 V	32	74.50	35.10
2	*2457.00	99.3 AV			1.00 V	32	64.20	35.10
3	2483.50	71.2 PK	74.0	-2.8	1.00 V	29	36.00	35.20
4	2483.50	53.5 AV	54.0	-0.5	1.00 V	29	18.30	35.20
5	4914.00	55.1 PK	74.0	-18.9	1.17 V	13	50.90	4.20
6	4914.00	40.3 AV	54.0	-13.7	1.17 V	13	36.10	4.20

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)
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	97.4 PK			1.01 H	233	64.00	33.40
2	*2462.00	86.4 AV			1.01 H	233	53.00	33.40
3	2483.50	61.3 PK	74.0	-12.7	1.01 H	233	27.90	33.40
4	2483.50	47.8 AV	54.0	-6.2	1.01 H	233	14.40	33.40
5	4924.00	48.3 PK	74.0	-25.7	1.00 H	346	46.30	2.00
6	4924.00	34.4 AV	54.0	-19.6	1.00 H	346	32.40	2.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.5 PK			1.02 V	6	74.10	33.40
2	*2462.00	97.0 AV			1.02 V	6	63.60	33.40
3	2483.50	72.8 PK	74.0	-1.2	1.02 V	6	39.40	33.40
4	2483.50	53.2 AV	54.0	-0.8	1.02 V	6	19.80	33.40
5	4924.00	51.5 PK	74.0	-22.5	1.20 V	19	49.50	2.00
6	4924.00	36.6 AV	54.0	-17.4	1.20 V	19	34.60	2.00

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.2 PK	74.0	-14.8	1.26 H	237	26.20	33.00
2	2390.00	47.1 AV	54.0	-6.9	1.26 H	237	14.10	33.00
3	*2422.00	93.1 PK			1.26 H	237	59.90	33.20
4	*2422.00	81.8 AV			1.26 H	237	48.60	33.20
5	4844.00	48.3 PK	74.0	-25.7	1.00 H	210	46.50	1.80
6	4844.00	34.9 AV	54.0	-19.1	1.00 H	210	33.10	1.80
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	67.0 PK	74.0	-7.0	1.00 V	37	34.00	33.00
2	2390.00	53.2 AV	54.0	-0.8	1.00 V	37	20.20	33.00
3	*2422.00	102.8 PK			1.00 V	38	69.60	33.20
4	*2422.00	91.2 AV			1.00 V	38	58.00	33.20
5	4844.00	48.8 PK	74.0	-25.2	1.00 V	21	47.00	1.80
6	4844.00	35.1 AV	54.0	-18.9	1.00 V	21	33.30	1.80

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 4	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.8 PK	74.0	-13.2	1.01 H	226	26.10	34.70
2	2390.00	48.6 AV	54.0	-5.4	1.01 H	226	13.90	34.70
3	*2427.00	95.6 PK			1.01 H	226	60.70	34.90
4	*2427.00	85.0 AV			1.01 H	226	50.10	34.90
5	4854.00	49.7 PK	74.0	-24.3	1.06 H	219	45.70	4.00
6	4854.00	36.6 AV	54.0	-17.4	1.06 H	219	32.60	4.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.1 PK	74.0	-6.9	1.00 V	218	32.40	34.70
2	2390.00	53.5 AV	54.0	-0.5	1.00 V	218	18.80	34.70
3	*2427.00	103.5 PK			1.01 V	218	68.60	34.90
4	*2427.00	93.0 AV			1.01 V	218	58.10	34.90
5	4854.00	49.5 PK	74.0	-24.5	1.15 V	10	45.50	4.00
6	4854.00	36.4 AV	54.0	-17.6	1.15 V	10	32.40	4.00

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)
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	60.1 PK	74.0	-13.9	1.02 H	227	27.10	33.00
2	2390.00	46.1 AV	54.0	-7.9	1.02 H	227	13.10	33.00
3	*2437.00	96.6 PK			1.03 H	233	63.30	33.30
4	*2437.00	86.0 AV			1.03 H	233	52.70	33.30
5	2483.50	61.3 PK	74.0	-12.7	1.00 H	226	27.90	33.40
6	2483.50	47.0 AV	54.0	-7.0	1.00 H	226	13.60	33.40
7	4874.00	48.8 PK	74.0	-25.2	1.00 H	221	46.90	1.90
8	4874.00	36.0 AV	54.0	-18.0	1.00 H	221	34.10	1.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.7 PK	74.0	-4.3	1.00 V	230	36.70	33.00
2	2390.00	51.6 AV	54.0	-2.4	1.00 V	230	18.60	33.00
3	*2437.00	107.3 PK			1.00 V	230	74.00	33.30
4	*2437.00	96.5 AV			1.00 V	230	63.20	33.30
5	2483.50	68.8 PK	74.0	-5.2	1.01 V	227	35.40	33.40
6	2483.50	53.3 AV	54.0	-0.7	1.01 V	227	19.90	33.40
7	4874.00	49.4 PK	74.0	-24.6	1.36 V	10	47.50	1.90
8	4874.00	36.2 AV	54.0	-17.8	1.36 V	10	34.30	1.90

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 8	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	*2447.00	95.8 PK			1.00 H	225	60.80	35.00
2	*2447.00	85.1 AV			1.00 H	225	50.10	35.00
3	2483.50	61.1 PK	74.0	-12.9	1.00 H	225	25.90	35.20
4	2483.50	48.5 AV	54.0	-5.5	1.00 H	225	13.30	35.20
5	4894.00	49.6 PK	74.0	-24.4	1.00 H	221	45.60	4.00
6	4894.00	36.8 AV	54.0	-17.2	1.00 H	221	32.80	4.00
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	*2447.00	103.6 PK			1.01 V	30	68.60	35.00
2	*2447.00	92.6 AV			1.01 V	30	57.60	35.00
3	2483.50	69.7 PK	74.0	-4.3	1.01 V	30	34.50	35.20
4	2483.50	53.8 AV	54.0	-0.2	1.01 V	30	18.60	35.20
5	4894.00	49.3 PK	74.0	-24.7	1.00 V	18	45.30	4.00
6	4894.00	36.4 AV	54.0	-17.6	1.00 V	18	32.40	4.00

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)
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	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	*2452.00	93.3 PK			1.03 H	233	60.00	33.30
2	*2452.00	81.8 AV			1.03 H	233	48.50	33.30
3	2483.50	61.4 PK	74.0	-12.6	1.03 H	233	28.00	33.40
4	2483.50	47.6 AV	54.0	-6.4	1.03 H	233	14.20	33.40
5	4904.00	47.8 PK	74.0	-26.2	1.00 H	303	45.80	2.00
6	4904.00	34.2 AV	54.0	-19.8	1.00 H	303	32.20	2.00
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			1.04 V	359	70.20	33.30
2	*2452.00	92.1 AV			1.04 V	359	58.80	33.30
3	2483.50	68.6 PK	74.0	-5.4	1.04 V	359	35.20	33.40
4	2483.50	53.2 AV	54.0	-0.8	1.04 V	359	19.80	33.40
5	4904.00	48.0 PK	74.0	-26.0	1.00 V	61	46.00	2.00
6	4904.00	34.7 AV	54.0	-19.3	1.00 V	61	32.70	2.00

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Below 1GHz worst-case data: 802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	51.34	28.8 QP	40.0	-11.2	2.00 H	183	42.70	-13.90
2	125.06	35.7 QP	43.5	-7.8	1.51 H	111	51.80	-16.10
3	198.78	37.4 QP	43.5	-6.1	2.00 H	114	54.00	-16.60
4	600.36	42.4 QP	46.0	-3.6	1.26 H	342	48.70	-6.30
5	875.84	40.6 QP	46.0	-5.4	1.51 H	144	42.50	-1.90
6	1000.00	39.2 QP	54.0	-14.8	1.26 H	162	39.00	0.20
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	61.04	36.2 QP	40.0	-3.8	1.00 V	14	51.10	-14.90
2	125.06	38.8 QP	43.5	-4.7	1.00 V	66	54.90	-16.10
3	375.32	38.3 QP	46.0	-7.7	1.00 V	235	49.20	-10.90
4	600.36	39.9 QP	46.0	-6.1	1.49 V	209	46.20	-6.30
5	875.84	41.0 QP	46.0	-5.0	1.00 V	202	42.90	-1.90
6	1000.00	38.0 QP	54.0	-16.0	1.00 V	113	37.80	0.20

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)
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	Apr. 27, 2014	Apr. 26, 2015
			Apr. 27, 2015	Apr. 26, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2013	Dec. 29, 2014
			Dec. 30, 2014	Dec. 29, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 21, 2014	Jul. 20, 2015
			Jul. 21, 2015	Jul. 20, 2016
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

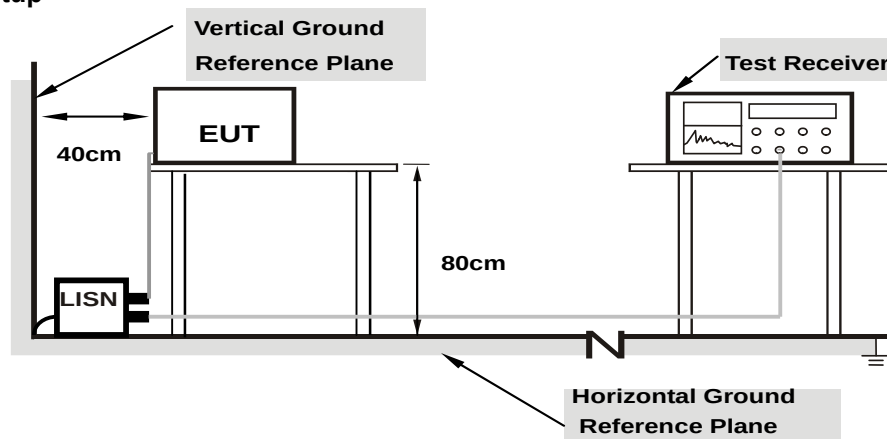
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

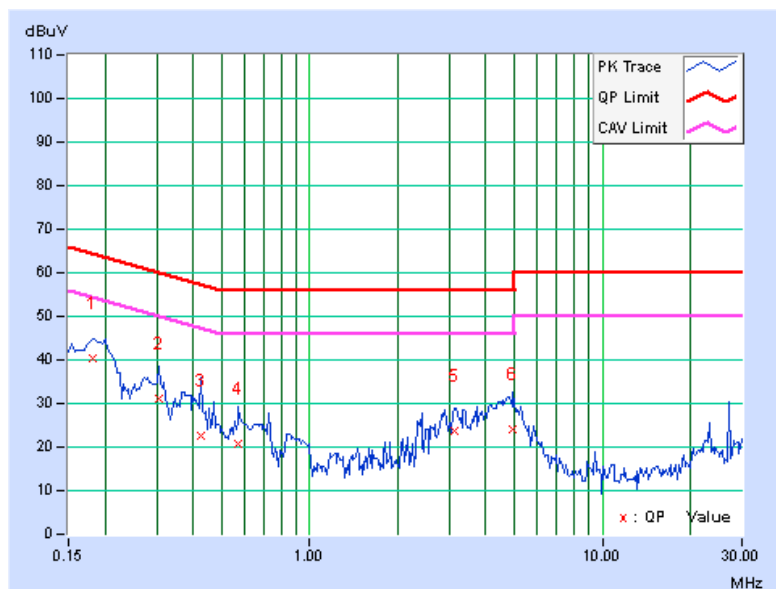
4.2.7 Test Results

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	0.18125	0.20	40.21	26.75	40.41	26.95	64.43	54.43	-24.02	-27.48
2	0.30625	0.20	30.84	19.90	31.04	20.10	60.07	50.07	-29.03	-29.97
3	0.42344	0.20	22.45	8.89	22.65	9.09	57.38	47.38	-34.73	-38.29
4	0.57188	0.23	20.56	9.66	20.79	9.89	56.00	46.00	-35.21	-36.11
5	3.13672	0.40	23.43	14.50	23.83	14.90	56.00	46.00	-32.17	-31.10
6	4.95313	0.44	23.71	16.16	24.15	16.60	56.00	46.00	-31.85	-29.40

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.

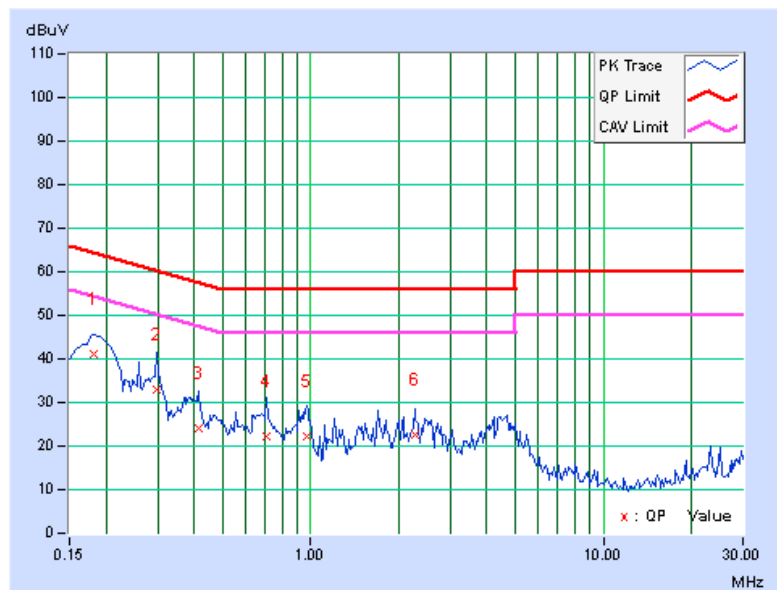


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.21	40.93	28.14	41.14	28.35	64.43	54.43	-23.28	-26.07
2	0.29844	0.23	32.74	23.15	32.97	23.38	60.29	50.29	-27.31	-26.90
3	0.41563	0.25	23.77	14.63	24.02	14.88	57.54	47.54	-33.51	-32.65
4	0.70859	0.28	21.83	15.05	22.11	15.33	56.00	46.00	-33.89	-30.67
5	0.96641	0.31	21.85	16.29	22.16	16.60	56.00	46.00	-33.84	-29.40
6	2.26172	0.41	22.33	16.51	22.74	16.92	56.00	46.00	-33.26	-29.08

Remarks:

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

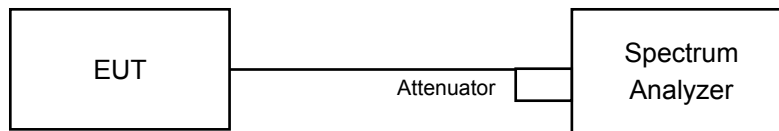


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	10.11	0.5	Pass
6	2437	10.12	0.5	Pass
11	2462	10.11	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.11	0.5	Pass
6	2437	16.34	0.5	Pass
11	2462	16.11	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.68	0.5	Pass
6	2437	16.44	0.5	Pass
11	2462	16.89	0.5	Pass

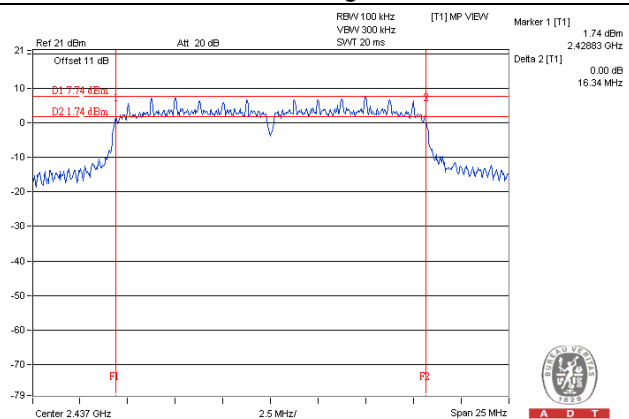
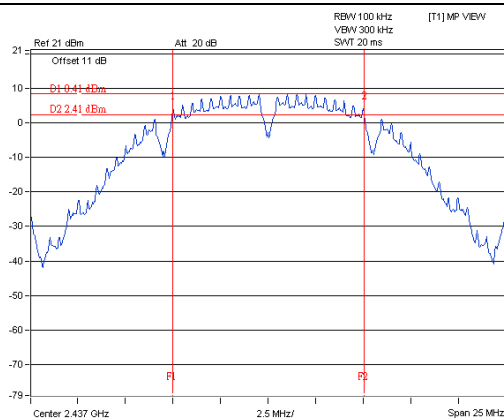
802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	33.93	0.5	Pass
6	2437	33.93	0.5	Pass
9	2452	35.12	0.5	Pass

Spectrum Plot of Worst Value

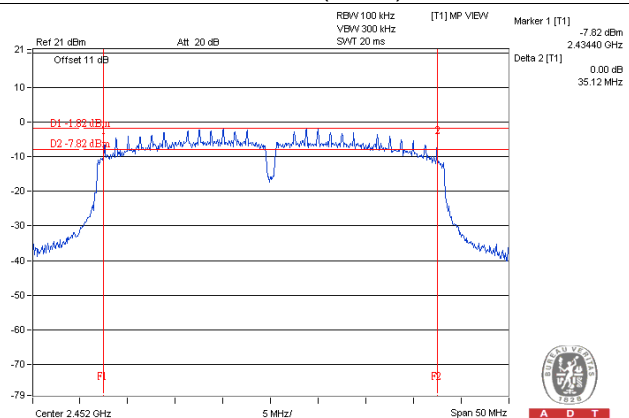
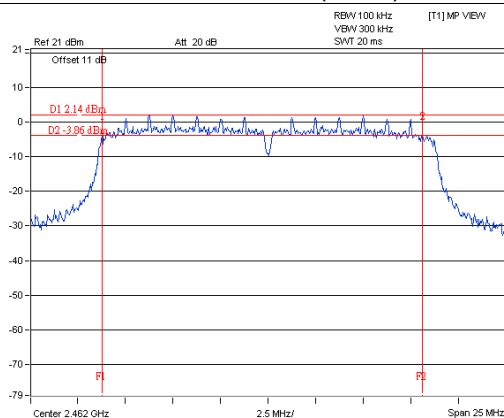
802.11b

802.11g



802.11n (HT20)

802.11n (HT40)

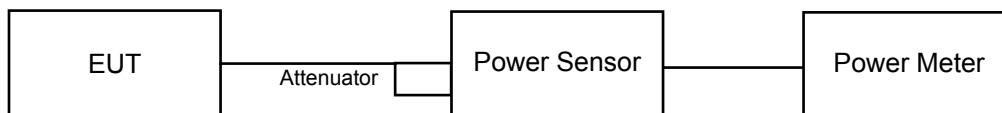


4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

For Peak Power

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	69.984	18.45	30	Pass
2	2417	65.615	18.17	30	Pass
6	2437	114.025	20.57	30	Pass
10	2457	83.946	19.24	30	Pass
11	2462	101.859	20.08	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	150.661	21.78	30	Pass
2	2417	160.694	22.06	30	Pass
6	2437	215.774	23.34	30	Pass
10	2457	143.219	21.56	30	Pass
11	2462	133.660	21.26	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	121.899	20.86	30	Pass
2	2417	161.808	22.09	30	Pass
6	2437	203.704	23.09	30	Pass
10	2457	135.831	21.33	30	Pass
11	2462	106.660	20.28	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	90.365	19.56	30	Pass
4	2427	93.756	19.72	30	Pass
6	2437	164.816	22.17	30	Pass
8	2447	72.946	18.63	30	Pass
9	2452	88.105	19.45	30	Pass

For Average Power

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	39.994	16.02
2	2417	40.087	16.03
6	2437	63.096	18.00
10	2457	52.966	17.24
11	2462	62.373	17.95

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	30.903	14.90
2	2417	52.240	17.18
6	2437	71.450	18.54
10	2457	42.855	16.32
11	2462	25.704	14.10

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	24.099	13.82
2	2417	46.881	16.71
6	2437	69.183	18.40
10	2457	38.194	15.82
11	2462	20.941	13.21

802.11n (HT40)

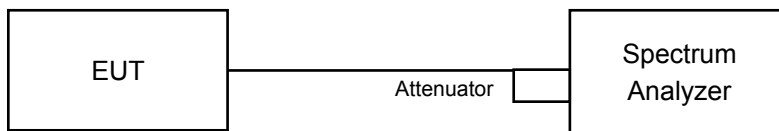
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	15.596	11.93
4	2427	18.281	12.62
6	2437	43.251	16.36
8	2447	14.355	11.57
9	2452	15.311	11.85

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Pass / Fail
1	2412	-7.51	8.00	Pass
6	2437	-5.82	8.00	Pass
11	2462	-5.49	8.00	Pass

802.11g

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Pass / Fail
1	2412	-10.88	8.00	Pass
6	2437	-8.11	8.00	Pass
11	2462	-11.30	8.00	Pass

802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Pass / Fail
1	2412	-12.48	8.00	Pass
6	2437	-8.49	8.00	Pass
11	2462	-10.98	8.00	Pass

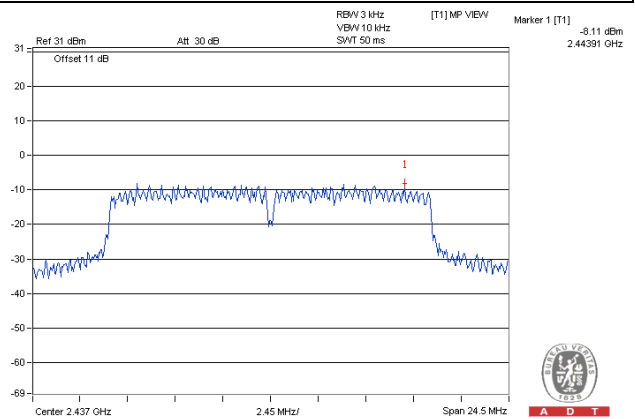
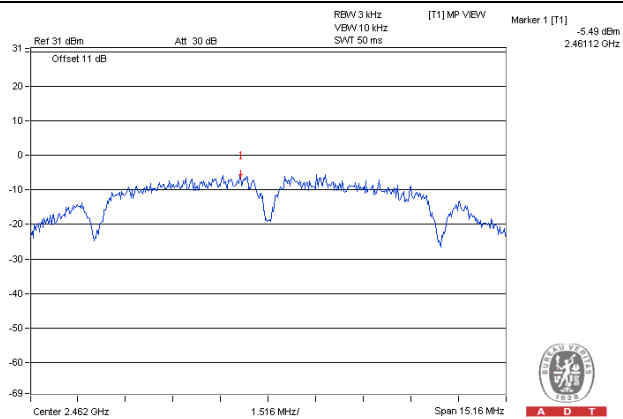
802.11n (HT40)

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Pass / Fail
3	2422	-17.22	8.00	Pass
6	2437	-12.40	8.00	Pass
9	2452	-17.29	8.00	Pass

Spectrum Plot of Worst Value

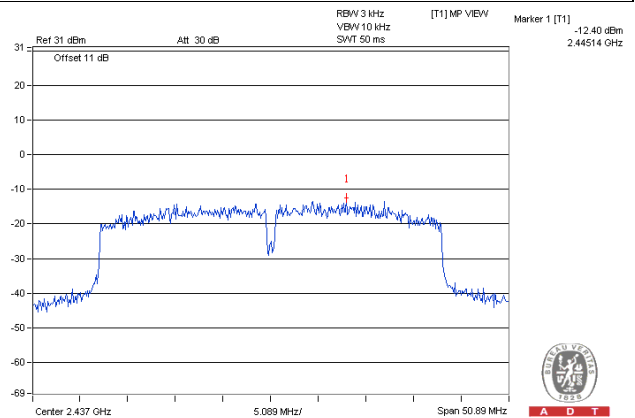
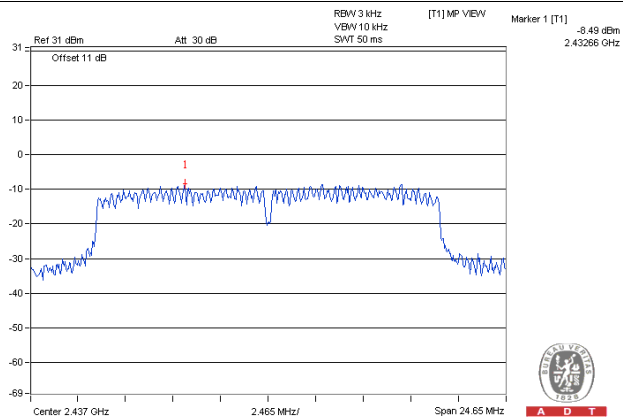
802.11b

802.11g



802.11n (HT20)

802.11n (HT40)

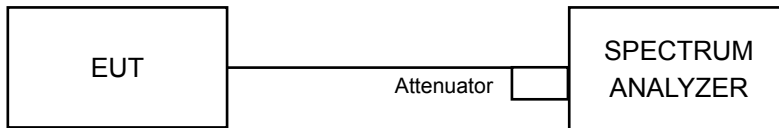


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW $\geq$ 300 kHz.
- Ensure that the number of measurement points $\geq$ span/RBW
- According to measurement points to set differ measurement span.
- Detector = peak.
- Trace Mode = max hold.
- Sweep = auto couple.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

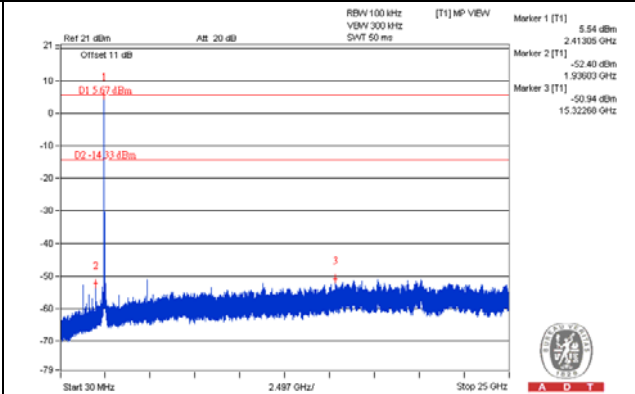
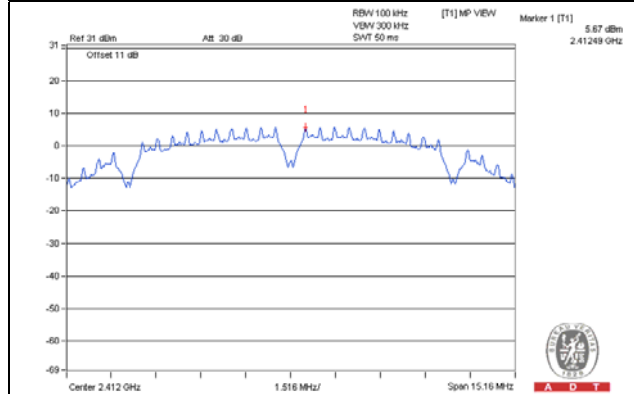
Same as Item 4.3.6

4.6.7 Test Results

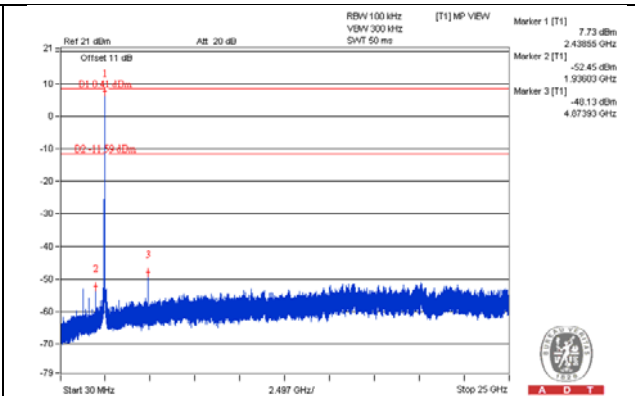
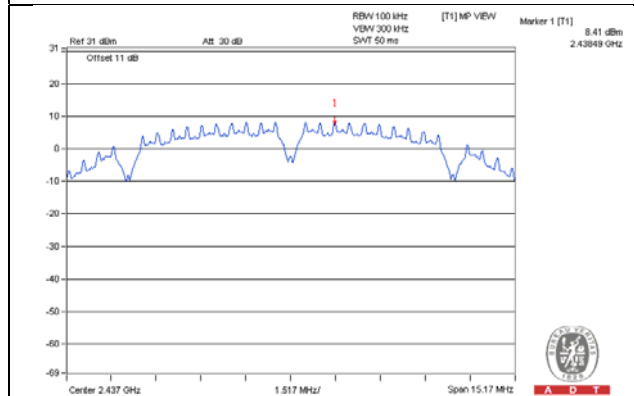
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

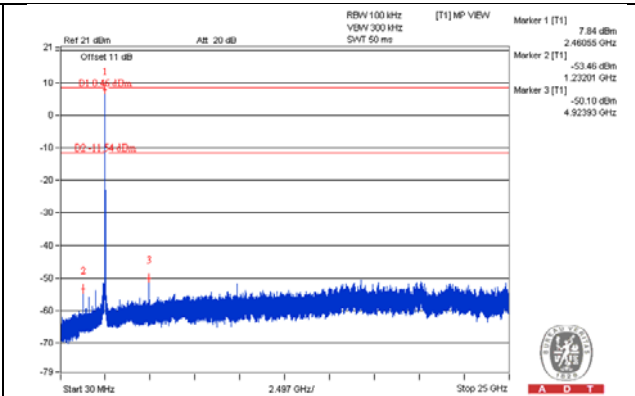
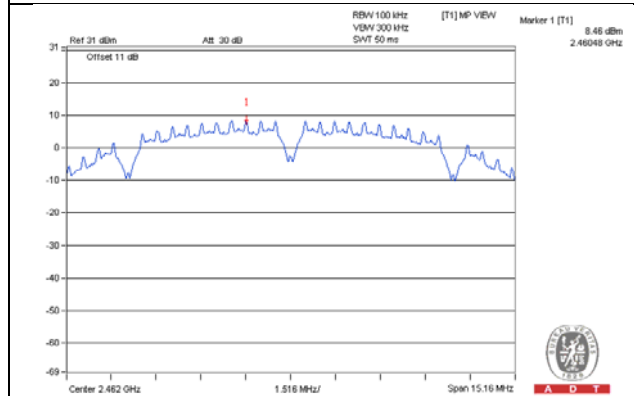
CH 1



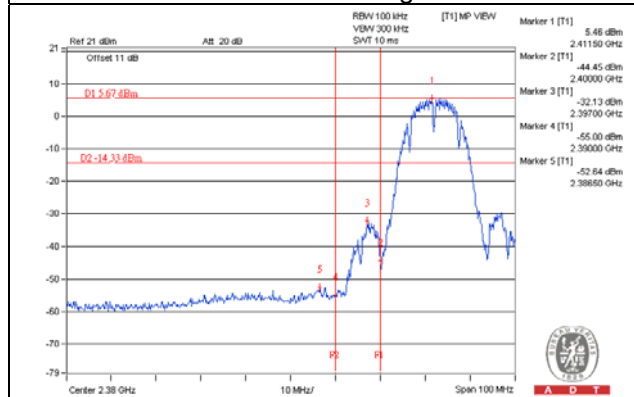
CH 6



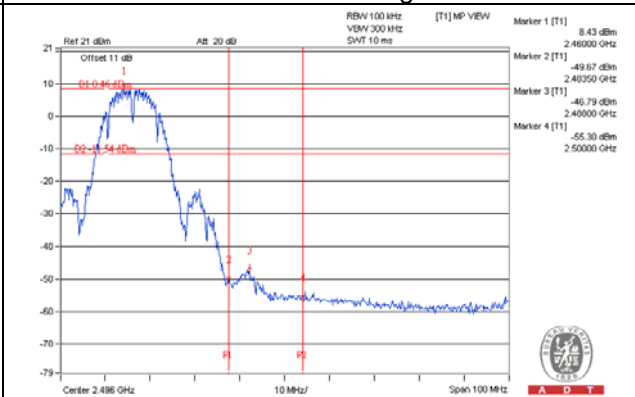
CH 11



CH 1 Band edge

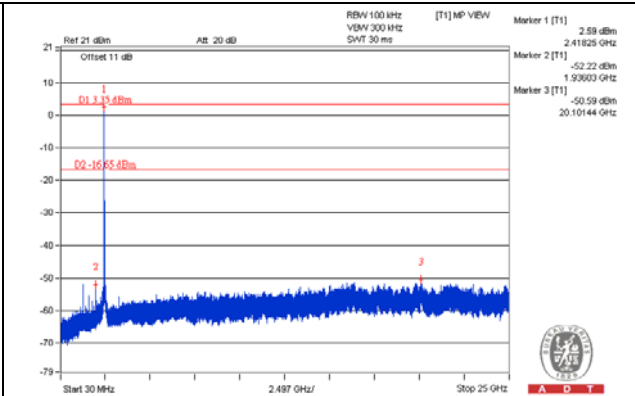
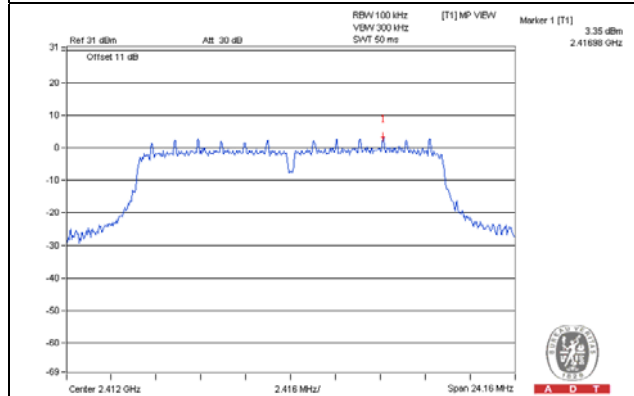


CH 11 Band edge

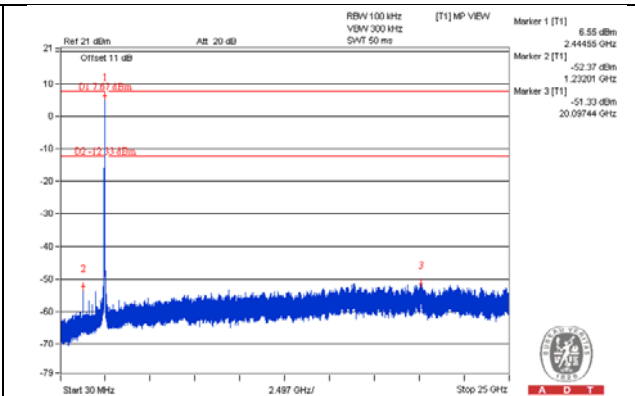
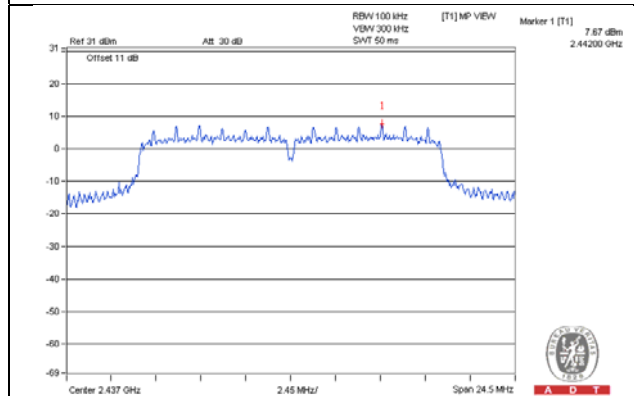


802.11g

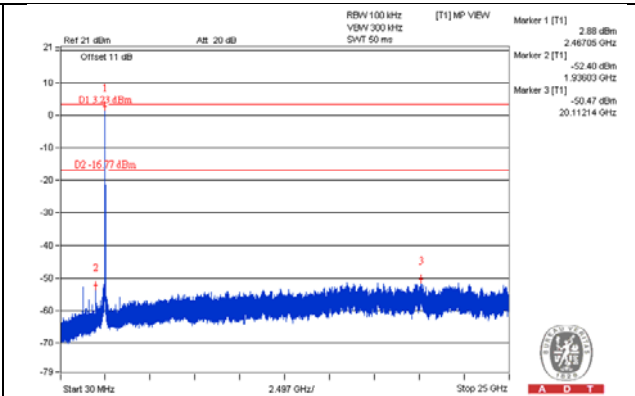
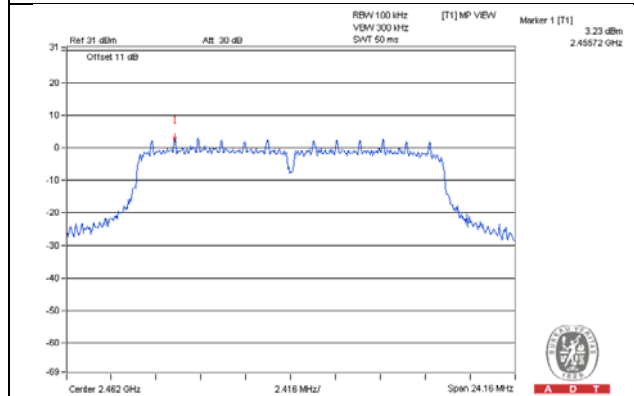
CH 1



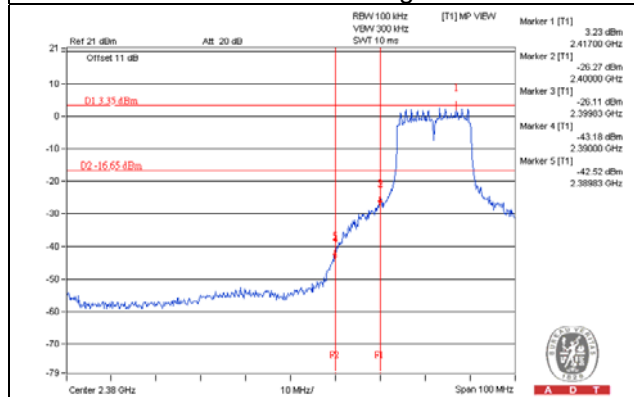
CH 6



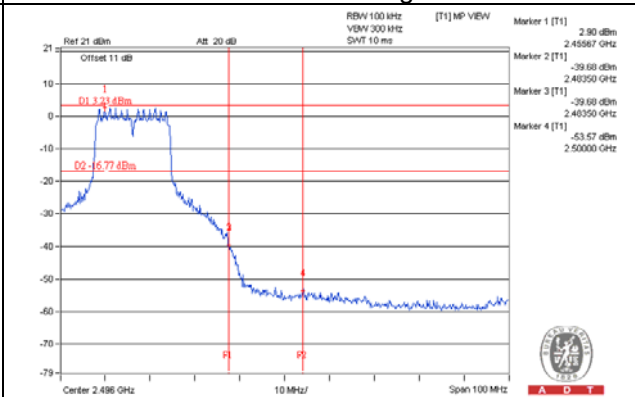
CH 11



CH 1 Band edge

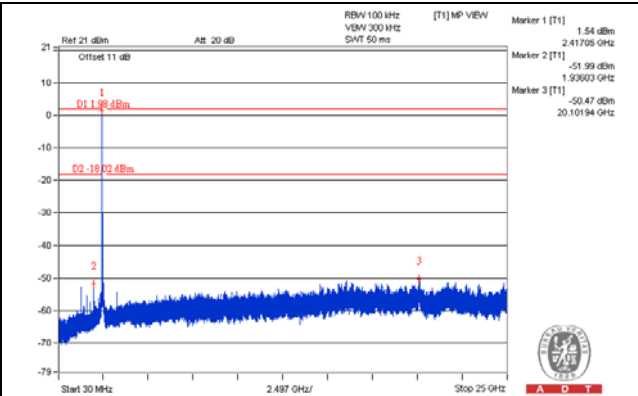
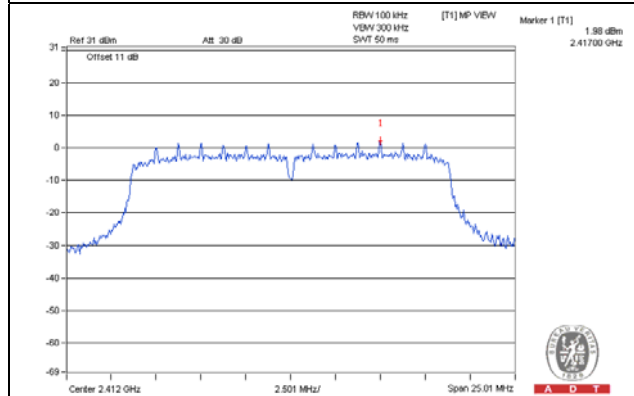


CH 11 Band edge

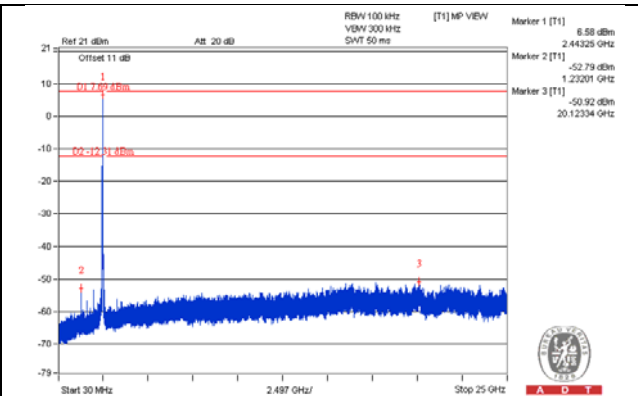
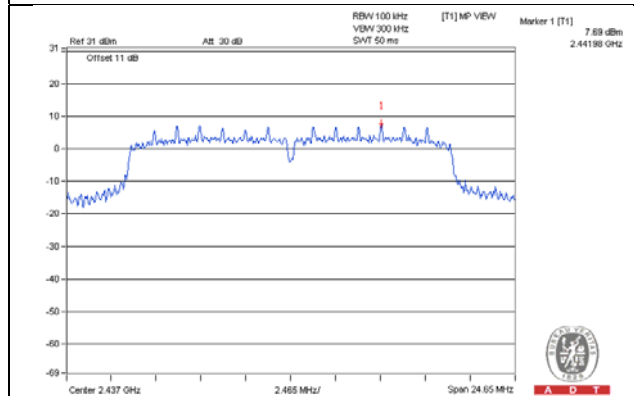


802.11n (HT20)

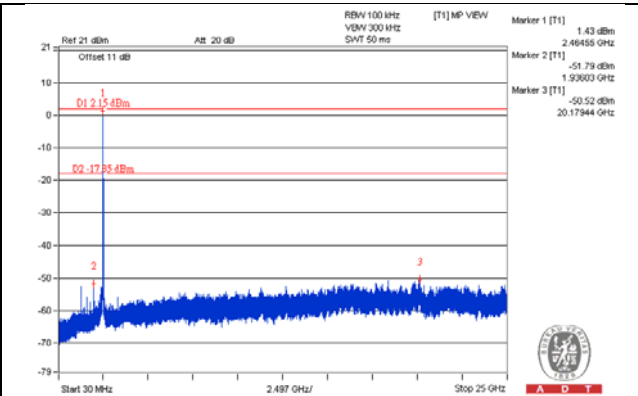
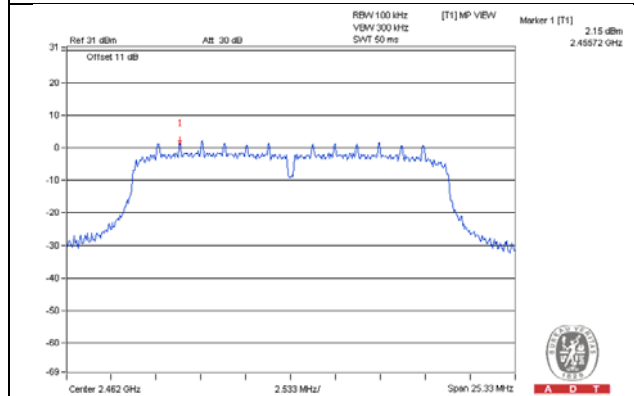
CH 1



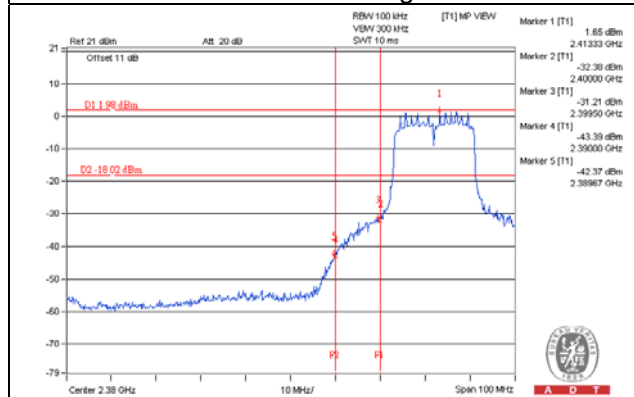
CH 6



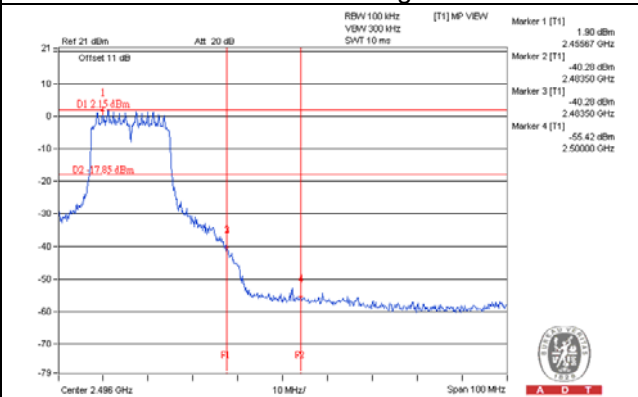
CH 11



CH 1 Band edge

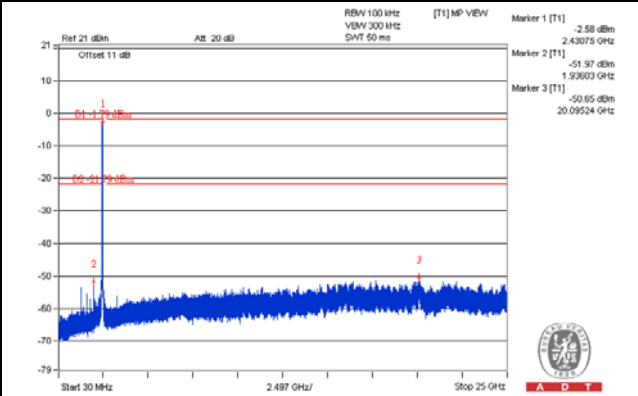
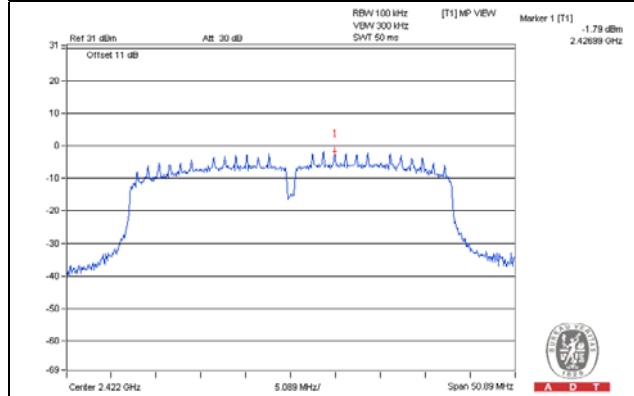


CH 11 Band edge

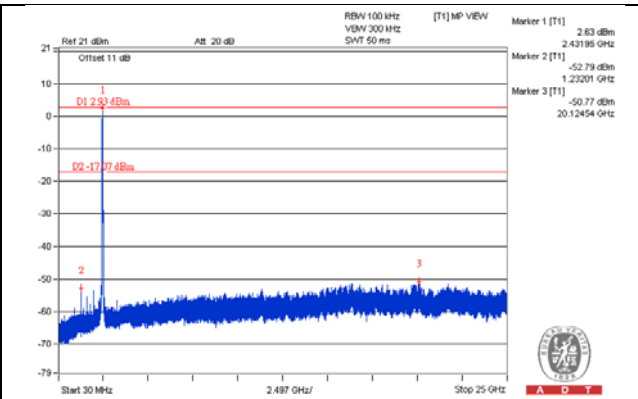
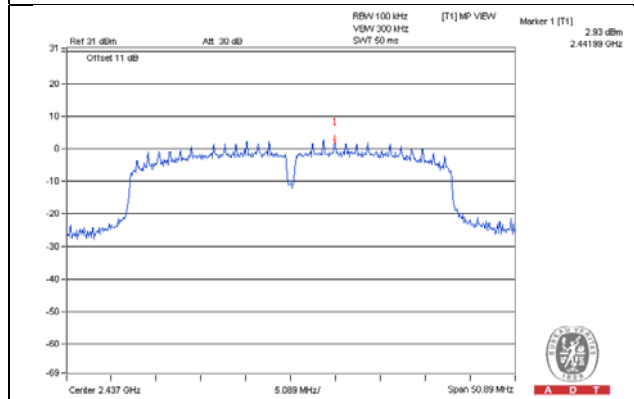


802.11n (HT40)

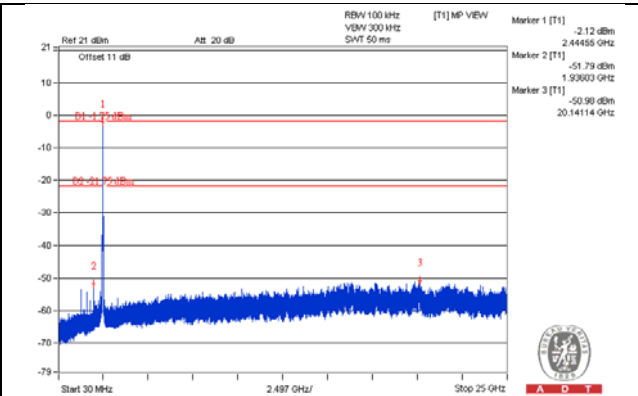
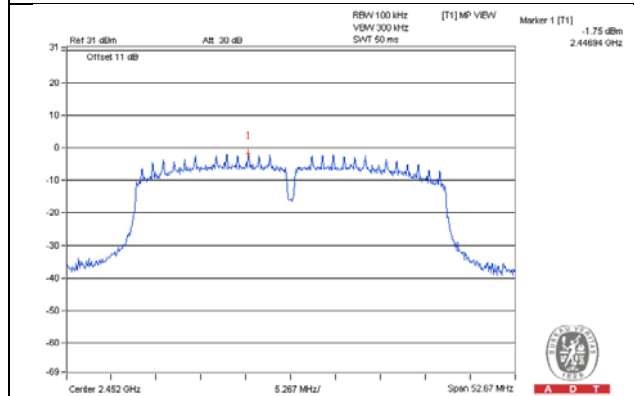
CH 3



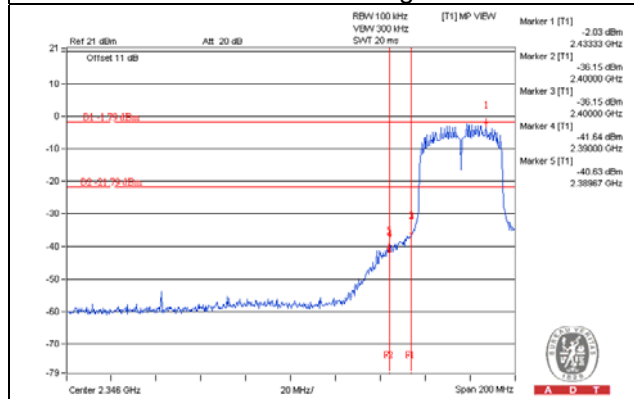
CH 6



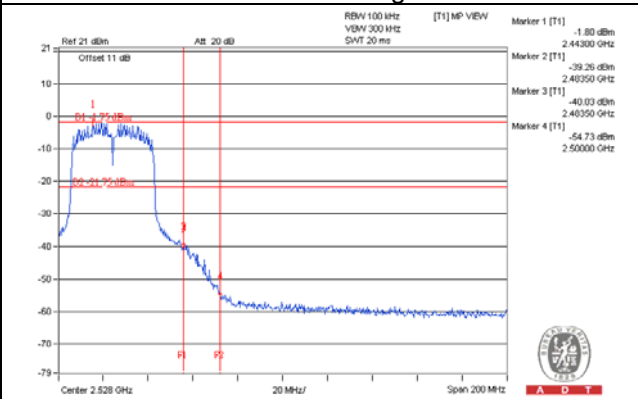
CH 9



CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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Web Site: www.bureauveritas-adt.com

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

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