

FCC TEST REPORT (15.247)

REPORT NO.: RF131029C26

MODEL NO.: M5360

FCC ID: TE7M5360

RECEIVED: Oct. 29, 2013

TESTED: Jan. 04 ~ Feb. 07, 2014

ISSUED: Jan. 28, 2014

APPLICANT: TP-LINK TECHNOLOGIES CO., LTD.

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF131029C26	Original release	Jan. 28, 2014



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1. CERTIFICATION

PRODUCT: 3G Mobile Wi-Fi, 5200mAh Power Bank

MODEL NO.: M5360

BRAND: TP-LINK

APPLICANT: TP-LINK TECHNOLOGIES CO., LTD.

TESTED: Jan. 04 ~ Feb. 07, 2014

TEST SAMPLE: PRODUCTION SAMPLE

STANDARDS: FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10-2009

The above equipment (model: M5360) 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 :  , **DATE :** Jan. 28, 2014
Pettie Chen / Senior Specialist

APPROVED BY :  , **DATE :** Jan. 28, 2014
Ken Liu / Senior Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -15.27dB at 0.61920MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.1dB at 31.22MHz.
15.247(d)	Band Edge Measurement	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	No antenna connector is used.

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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	3G Mobile Wi-Fi, 5200mAh Power Bank
MODEL NO.	M5360
POWER SUPPLY	5Vdc (adapter or host equipment) 3.7Vdc (battery)
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 72.2Mbps
OPERATING FREQUENCY	2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz)
OUTPUT POWER	83.560mW
ANTENNA TYPE	Fixed Internal antenna with 0.42dBi gain
ANTENNA CONNECTOR	Refer to Note as below
DATA CABLE	0.8m shielded USB Cable without core
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter, Battery

NOTE:

- The EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX

- The EUT uses following adapter and battery.

Adapter	
Brand	HuntKey
Model	HKA00605010-2B
Input Power	100-240Vac~50/60Hz 0.2A
Output Power	5.0Vdc / 1.0A

Battery 1	
Brand	HUIZHOU DESAY BATTERY CO., LTD
Model	TBL-18B5200
Power Rating	3.7Vdc, 5200mAh, 19.2 Wh

Battery 2	
Brand	TP-LINK technologies co., LTD
Model	TBL-18B5200
Power Rating	3.7Vdc, 5200mAh, 19.2 Wh

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

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		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	-	√	Power from battery 1
B	-	√	√	-	Power from battery 1+ adapter
C	√	√	-	-	Power from battery 2
D	-	√	√	-	Power from battery 2+ adapter

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE:

The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-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)
A, C	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A, C	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A, C	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B, C, D	802.11n (20MHz)	1 to 11	1	OFDM	BPSK	6.5

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B, D	802.11n (20MHz)	1 to 11	1	OFDM	BPSK	6.5

BANDEDGE MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, C	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
A, C	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
A, C	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5

ANTENNA PORT CONDUCTED MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, C	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A, C	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A, C	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE $\geq$ 1G	25deg. C, 68%RH	3.7Vdc 120Vac, 60Hz	Sun Lin
RE $<$ 1G	25deg. C, 68%RH	3.7Vdc	Sun Lin
PLC	21deg. C, 68%RH	120Vac, 60Hz	Brad Tung
APCM	24deg. C, 64%RH	3.7Vdc	Frank Liu

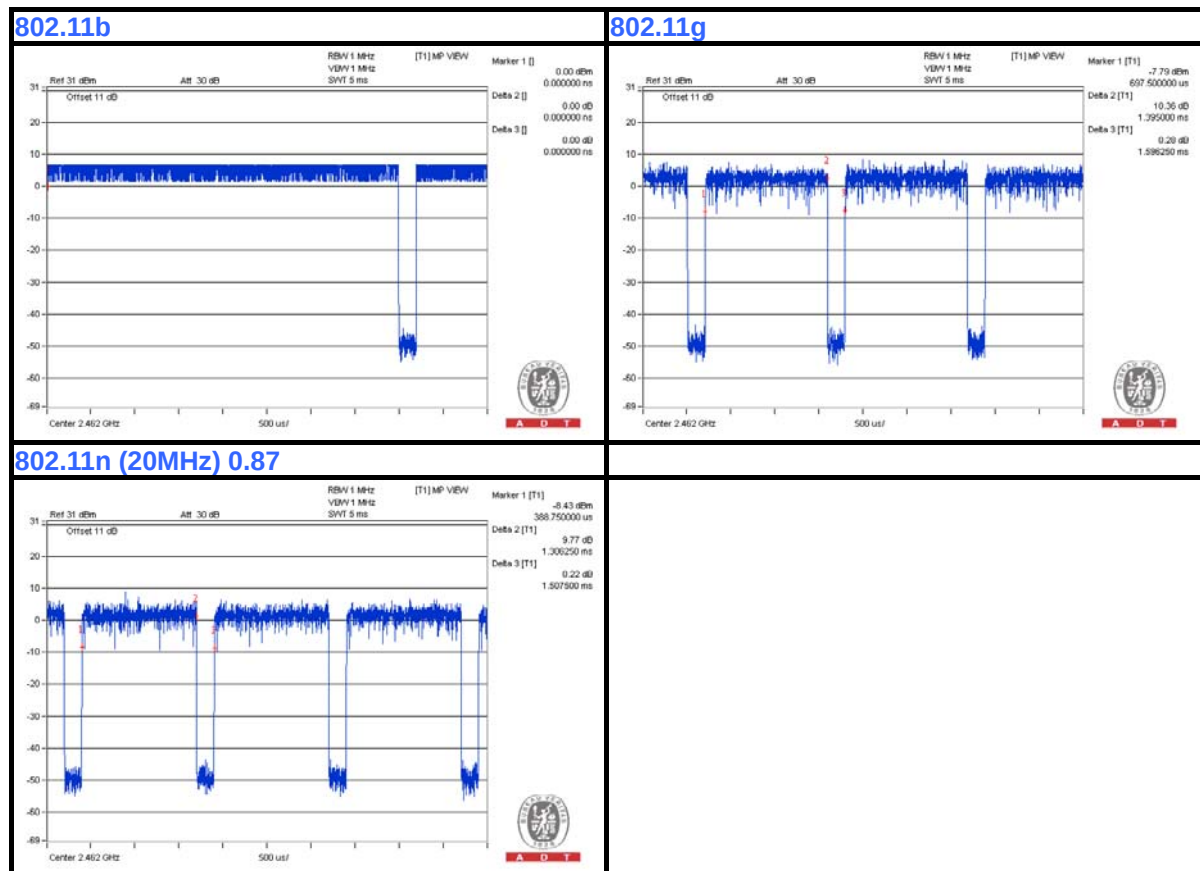
3.3 DUTY CYCLE OF TEST SIGNAL

802.11b: Duty cycle of test signal is > 98 %, duty factor is not required.

802.11g, 802.11n (20MHz): Duty cycle of test signal is < 98%

802.11g: Duty cycle = $1.395/1.59625 = 0.87$, Duty factor = $10 * \log(1/0.87) = 0.605$

802.11n (20MHz): Duty cycle = $1.30625/1.5075 = 0.87$, Duty factor = $10 * \log(1/0.87) = 0.605$

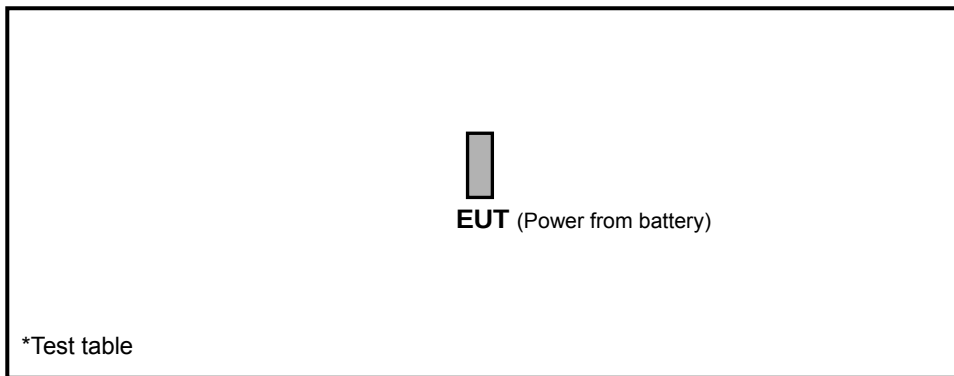


3.4 DESCRIPTION OF SUPPORT UNITS

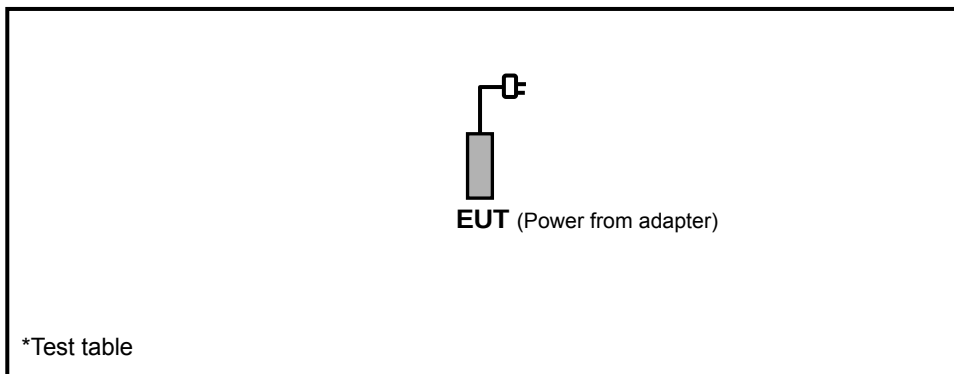
The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

Test Mode A, C



Test Mode B, D





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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 v03r01

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

Tested Date: Jan. 04 ~ Jan. 07, 2014

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 28, 2013	Jan. 27, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Mar. 22, 2013	Mar. 21, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Preamplifier Agilent	8449B	3008A01911	Aug. 22, 2013	Aug. 21, 2014
Preamplifier Agilent	8447D	2944A10638	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	248780/4 309222/4 274092/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable Worken	5D-FB	Cable-HYCH9-01	Aug. 11, 2013	Aug. 10, 2014
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 Table Controller EMCO	2090	NA	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021704	NA	NA
High Speed Peak Power Meter	ML2495A	0824012	Aug. 22, 2013	Aug. 21, 2014
Power Sensor	MA2411B	0738171	Jul. 30, 2013	Jul. 29, 2014

- 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 HP 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 a 3 meters semi-anechoic chamber. 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 antenna is a broadband antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

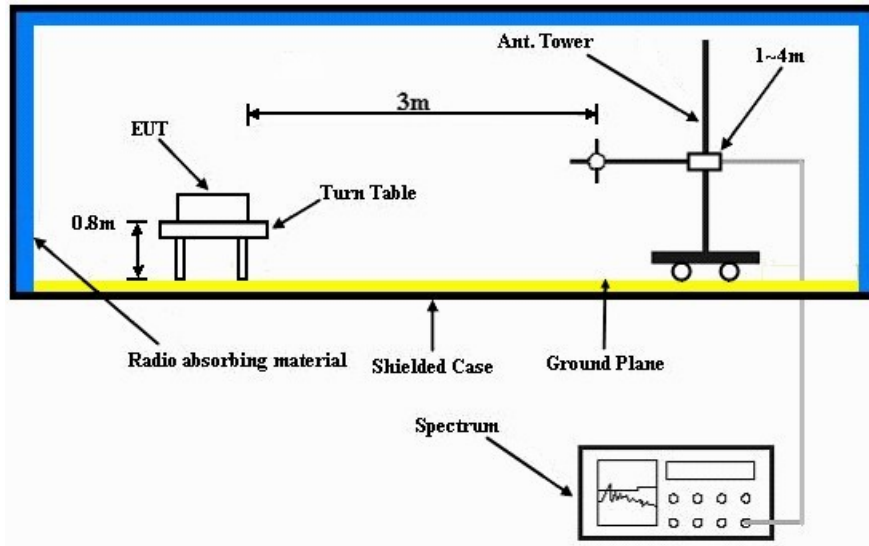
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle > 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

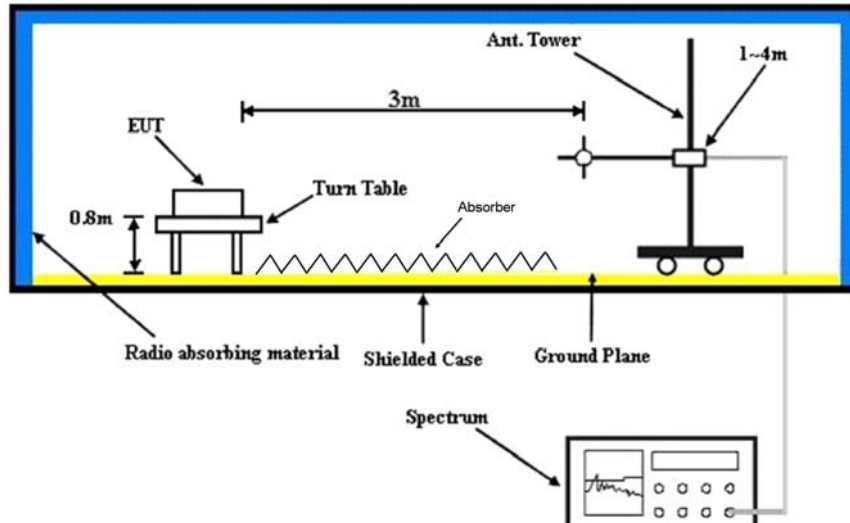
No deviation.

4.1.5 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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



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4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on the testing table.
- b. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

ABOVE 1GHz DATA :

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.8 PK	74.0	-18.2	1.35 H	107	23.50	32.30
2	2390.00	46.8 AV	54.0	-7.2	1.35 H	107	14.50	32.30
3	*2412.00	102.9 PK			1.35 H	107	70.40	32.50
4	*2412.00	98.2 AV			1.35 H	107	65.70	32.50
5	2488.00	60.4 PK	74.0	-13.6	1.32 H	109	27.60	32.80
6	2488.00	49.8 AV	54.0	-4.2	1.32 H	109	17.00	32.80
7	4824.00	50.2 PK	74.0	-23.8	1.51 H	207	48.40	1.80
8	4824.00	43.6 AV	54.0	-10.4	1.51 H	207	41.80	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	54.3 PK	74.0	-19.7	1.25 V	144	22.00	32.30
2	2390.00	44.4 AV	54.0	-9.6	1.25 V	144	12.10	32.30
3	*2412.00	99.0 PK			1.25 V	144	66.50	32.50
4	*2412.00	95.0 AV			1.25 V	144	62.50	32.50
5	2488.00	60.5 PK	74.0	-13.5	1.21 V	171	27.70	32.80
6	2488.00	49.6 AV	54.0	-4.4	1.21 V	171	16.80	32.80
7	4824.00	50.6 PK	74.0	-23.4	1.24 V	141	48.80	1.80
8	4824.00	45.0 AV	54.0	-9.0	1.24 V	141	43.20	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)
– 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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2356.00	57.5 PK	74.0	-16.5	1.52 H	219	25.30	32.20
2	2356.00	46.4 AV	54.0	-7.6	1.52 H	219	14.20	32.20
3	*2437.00	99.7 PK			1.48 H	122	67.20	32.50
4	*2437.00	95.8 AV			1.48 H	122	63.30	32.50
5	4874.00	50.1 PK	74.0	-23.9	1.48 H	224	48.20	1.90
6	4874.00	43.4 AV	54.0	-10.6	1.48 H	224	41.50	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	2358.00	54.8 PK	74.0	-19.2	1.34 V	155	22.60	32.20
2	2358.00	44.8 AV	54.0	-9.2	1.34 V	155	12.60	32.20
3	*2437.00	98.4 PK			1.24 V	151	65.90	32.50
4	*2437.00	94.4 AV			1.24 V	151	61.90	32.50
5	4874.00	51.1 PK	74.0	-22.9	1.22 V	168	49.20	1.90
6	4874.00	45.8 AV	54.0	-8.2	1.22 V	168	43.90	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)
– 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.6 PK			1.34 H	107	69.00	32.60
2	*2462.00	96.7 AV			1.34 H	107	64.10	32.60
3	2483.50	53.9 PK	74.0	-20.1	1.35 H	108	21.10	32.80
4	2483.50	45.3 AV	54.0	-8.7	1.35 H	108	12.50	32.80
5	4924.00	49.0 PK	74.0	-25.0	1.15 H	167	47.00	2.00
6	4924.00	42.2 AV	54.0	-11.8	1.15 H	167	40.20	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	*2462.00	99.8 PK			1.28 V	156	67.20	32.60
2	*2462.00	95.5 AV			1.28 V	156	62.90	32.60
3	2483.50	55.6 PK	74.0	-18.4	1.28 V	156	22.80	32.80
4	2483.50	45.8 AV	54.0	-8.2	1.28 V	156	13.00	32.80
5	4924.00	50.2 PK	74.0	-23.8	1.22 V	152	48.20	2.00
6	4924.00	44.8 AV	54.0	-9.2	1.22 V	152	42.80	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)
– 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

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	56.4 PK	74.0	-17.6	1.35 H	106	24.10	32.30
2	2390.00	45.8 AV	54.0	-8.2	1.35 H	106	13.50	32.30
3	*2412.00	103.6 PK			1.35 H	105	71.10	32.50
4	*2412.00	99.7 AV			1.35 H	105	67.20	32.50
5	2488.00	59.7 PK	74.0	-14.3	1.04 H	51	26.90	32.80
6	2488.00	48.6 AV	54.0	-5.4	1.04 H	51	15.80	32.80
7	4824.00	50.8 PK	74.0	-23.2	1.58 H	140	48.80	2.00
8	4824.00	44.3 AV	54.0	-9.7	1.58 H	140	42.30	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	2390.00	55.6 PK	74.0	-18.4	1.00 V	154	23.30	32.30
2	2390.00	44.9 AV	54.0	-9.1	1.00 V	154	12.60	32.30
3	*2412.00	99.6 PK			1.00 V	155	67.10	32.50
4	*2412.00	96.1 AV			1.00 V	155	63.60	32.50
5	2488.00	60.4 PK	74.0	-13.6	1.00 V	155	27.60	32.80
6	2488.00	48.6 AV	54.0	-5.4	1.00 V	155	15.80	32.80
7	4824.00	51.4 PK	74.0	-22.6	1.10 V	222	49.40	2.00
8	4824.00	45.9 AV	54.0	-8.1	1.10 V	222	43.90	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)
– 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

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	2361.00	56.6 PK	74.0	-17.4	1.04 H	104	24.40	32.20
2	2361.00	45.9 AV	54.0	-8.1	1.04 H	104	13.70	32.20
3	*2437.00	100.8 PK			1.04 H	104	68.30	32.50
4	*2437.00	97.0 AV			1.04 H	104	64.50	32.50
5	4874.00	49.8 PK	74.0	-24.2	1.00 H	186	47.80	2.00
6	4874.00	41.5 AV	54.0	-12.5	1.00 H	186	39.50	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	2361.00	56.8 PK	74.0	-17.2	1.00 V	154	24.60	32.20
2	2361.00	45.7 AV	54.0	-8.3	1.00 V	154	13.50	32.20
3	*2437.00	99.8 PK			1.00 V	155	67.30	32.50
4	*2437.00	95.9 AV			1.00 V	155	63.40	32.50
5	4874.00	52.6 PK	74.0	-21.4	1.13 V	120	50.60	2.00
6	4874.00	47.6 AV	54.0	-6.4	1.13 V	120	45.60	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)
– 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

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	101.1 PK			1.31 H	104	68.50	32.60
2	*2462.00	97.6 AV			1.31 H	104	65.00	32.60
3	2483.50	57.0 PK	74.0	-17.0	1.30 H	104	24.20	32.80
4	2483.50	45.1 AV	54.0	-8.9	1.30 H	104	12.30	32.80
5	4924.00	50.3 PK	74.0	-23.7	1.14 H	56	48.20	2.10
6	4924.00	43.5 AV	54.0	-10.5	1.14 H	56	41.40	2.10
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	101.6 PK			1.00 V	156	69.00	32.60
2	*2462.00	97.7 AV			1.00 V	156	65.10	32.60
3	2483.50	56.8 PK	74.0	-17.2	1.00 V	154	24.00	32.80
4	2483.50	44.9 AV	54.0	-9.1	1.00 V	154	12.10	32.80
5	4924.00	52.2 PK	74.0	-21.8	1.24 V	147	50.10	2.10
6	4924.00	46.9 AV	54.0	-7.1	1.24 V	147	44.80	2.10

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.



A D T

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.5 PK	74.0	-14.5	1.09 H	172	27.20	32.30
2	2390.00	46.0 AV	54.0	-8.0	1.09 H	172	13.70	32.30
3	*2412.00	101.4 PK			1.09 H	170	68.90	32.50
4	*2412.00	91.4 AV			1.09 H	170	58.90	32.50
5	4824.00	47.1 PK	74.0	-26.9	1.22 H	221	45.30	1.80
6	4824.00	34.3 AV	54.0	-19.7	1.22 H	221	32.50	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	55.8 PK	74.0	-18.2	1.27 V	145	23.50	32.30
2	2390.00	46.3 AV	54.0	-7.7	1.27 V	145	14.00	32.30
3	*2412.00	98.6 PK			1.27 V	144	66.10	32.50
4	*2412.00	88.5 AV			1.27 V	144	56.00	32.50
5	4824.00	47.5 PK	74.0	-26.5	1.42 V	100	45.70	1.80
6	4824.00	34.2 AV	54.0	-19.8	1.42 V	100	32.40	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)
– 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	99.1 PK			1.15 H	167	66.60	32.50
2	*2437.00	88.9 AV			1.15 H	167	56.40	32.50
3	4874.00	47.6 PK	74.0	-26.4	1.38 H	251	45.70	1.90
4	4874.00	34.8 AV	54.0	-19.2	1.38 H	251	32.90	1.90
5	7311.00	53.2 PK	74.0	-20.8	1.02 H	96	45.60	7.60
6	7311.00	40.1 AV	54.0	-13.9	1.02 H	96	32.50	7.60
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	98.6 PK			1.28 V	156	66.10	32.50
2	*2437.00	88.2 AV			1.28 V	156	55.70	32.50
3	4874.00	46.1 PK	74.0	-27.9	1.48 V	108	44.20	1.90
4	4874.00	34.5 AV	54.0	-19.5	1.48 V	108	32.60	1.90
5	7311.00	52.2 PK	74.0	-21.8	1.29 V	347	44.60	7.60
6	7311.00	40.1 AV	54.0	-13.9	1.29 V	347	32.50	7.60

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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.4 PK			1.21 H	172	66.80	32.60
2	*2462.00	89.1 AV			1.21 H	172	56.50	32.60
3	2483.50	61.0 PK	74.0	-13.0	1.21 H	172	28.20	32.80
4	2483.50	47.3 AV	54.0	-6.7	1.21 H	172	14.50	32.80
5	4924.00	47.2 PK	74.0	-26.8	1.08 H	102	45.20	2.00
6	4924.00	34.4 AV	54.0	-19.6	1.08 H	102	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	99.0 PK			1.21 V	185	66.40	32.60
2	*2462.00	88.8 AV			1.21 V	185	56.20	32.60
3	2483.50	56.4 PK	74.0	-17.6	1.21 V	185	23.60	32.80
4	2483.50	47.6 AV	54.0	-6.4	1.21 V	185	14.80	32.80
5	4924.00	46.8 PK	74.0	-27.2	1.32 V	351	44.80	2.00
6	4924.00	34.5 AV	54.0	-19.5	1.32 V	351	32.50	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)
– 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

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	59.9 PK	74.0	-14.1	1.32 H	74	27.60	32.30
2	2390.00	46.4 AV	54.0	-7.6	1.32 H	74	14.10	32.30
3	*2412.00	102.8 PK			1.32 H	74	70.30	32.50
4	*2412.00	92.4 AV			1.32 H	74	59.90	32.50
5	4824.00	47.4 PK	74.0	-26.6	1.00 H	152	45.40	2.00
6	4824.00	34.5 AV	54.0	-19.5	1.00 H	152	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	2390.00	58.3 PK	74.0	-15.7	1.00 V	239	26.00	32.30
2	2390.00	45.5 AV	54.0	-8.5	1.00 V	239	13.20	32.30
3	*2412.00	99.8 PK			1.00 V	239	67.30	32.50
4	*2412.00	89.8 AV			1.00 V	239	57.30	32.50
5	4824.00	48.9 PK	74.0	-25.1	1.52 V	162	46.90	2.00
6	4824.00	35.6 AV	54.0	-18.4	1.52 V	162	33.60	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)
– 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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

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	100.4 PK			1.33 H	72	67.90	32.50
2	*2437.00	90.3 AV			1.33 H	72	57.80	32.50
3	4874.00	49.0 PK	74.0	-25.0	1.00 H	251	47.00	2.00
4	4874.00	35.6 AV	54.0	-18.4	1.00 H	251	33.60	2.00
5	7311.00	56.6 PK	74.0	-17.4	1.58 H	9	48.60	8.00
6	7311.00	42.6 AV	54.0	-11.4	1.58 H	9	34.60	8.00
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	*2437.00	100.2 PK			1.00 V	168	67.70	32.50
2	*2437.00	90.2 AV			1.00 V	168	57.70	32.50
3	4874.00	49.6 PK	74.0	-24.4	1.00 V	263	47.60	2.00
4	4874.00	35.6 AV	54.0	-18.4	1.00 V	263	33.60	2.00
5	7311.00	54.3 PK	74.0	-19.7	1.05 V	55	46.30	8.00
6	7311.00	41.6 AV	54.0	-12.4	1.05 V	55	33.60	8.00

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)
– 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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.4 PK			1.29 H	104	67.80	32.60
2	*2462.00	89.9 AV			1.29 H	104	57.30	32.60
3	2483.50	66.2 PK	74.0	-7.8	1.29 H	104	33.40	32.80
4	2483.50	49.1 AV	54.0	-4.9	1.03 H	41	16.30	32.80
5	4924.00	49.1 PK	74.0	-24.9	1.00 H	51	47.00	2.10
6	4924.00	34.7 AV	54.0	-19.3	1.00 H	51	32.60	2.10
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	101.1 PK			1.00 V	128	68.50	32.60
2	*2462.00	90.0 AV			1.00 V	128	57.40	32.60
3	2483.50	66.2 PK	74.0	-7.8	1.00 V	128	33.40	32.80
4	2483.50	48.7 AV	54.0	-5.3	1.00 V	128	15.90	32.80
5	4924.00	49.7 PK	74.0	-24.3	1.96 V	44	47.60	2.10
6	4924.00	35.8 AV	54.0	-18.2	1.96 V	44	33.70	2.10

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.



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.2 PK	74.0	-12.8	1.21 H	156	28.90	32.30
2	2390.00	47.4 AV	54.0	-6.6	1.21 H	156	15.10	32.30
3	*2412.00	100.7 PK			1.21 H	156	68.20	32.50
4	*2412.00	90.0 AV			1.21 H	156	57.50	32.50
5	4824.00	46.6 PK	74.0	-27.4	1.24 H	228	44.80	1.80
6	4824.00	34.5 AV	54.0	-19.5	1.24 H	228	32.70	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	55.1 PK	74.0	-18.9	1.28 V	185	22.80	32.30
2	2390.00	47.0 AV	54.0	-7.0	1.28 V	185	14.70	32.30
3	*2412.00	97.4 PK			1.28 V	185	64.90	32.50
4	*2412.00	87.7 AV			1.28 V	185	55.20	32.50
5	4824.00	47.2 PK	74.0	-26.8	1.62 V	115	45.40	1.80
6	4824.00	34.5 AV	54.0	-19.5	1.62 V	115	32.70	1.80

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	98.6 PK			1.18 H	172	66.10	32.50
2	*2437.00	88.7 AV			1.18 H	172	56.20	32.50
3	4874.00	46.1 PK	74.0	-27.9	1.29 H	218	44.20	1.90
4	4874.00	34.5 AV	54.0	-19.5	1.29 H	218	32.60	1.90
5	7311.00	52.3 PK	74.0	-21.7	1.02 H	108	44.70	7.60
6	7311.00	40.2 AV	54.0	-13.8	1.02 H	108	32.60	7.60
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	98.2 PK			1.22 V	196	65.70	32.50
2	*2437.00	87.5 AV			1.22 V	196	55.00	32.50
3	4874.00	47.1 PK	74.0	-26.9	1.64 V	121	45.20	1.90
4	4874.00	34.3 AV	54.0	-19.7	1.64 V	121	32.40	1.90
5	7311.00	51.8 PK	74.0	-22.2	1.34 V	325	44.20	7.60
6	7311.00	40.2 AV	54.0	-13.8	1.34 V	325	32.60	7.60

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.2 PK			1.28 H	171	66.60	32.60
2	*2462.00	88.0 AV			1.28 H	171	55.40	32.60
3	2483.50	64.4 PK	74.0	-9.6	1.28 H	171	31.60	32.80
4	2483.50	50.2 AV	54.0	-3.8	1.28 H	171	17.40	32.80
5	4924.00	47.8 PK	74.0	-26.2	1.25 H	328	45.80	2.00
6	4924.00	35.0 AV	54.0	-19.0	1.25 H	328	33.00	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	98.8 PK			1.34 V	196	66.20	32.60
2	*2462.00	87.4 AV			1.34 V	196	54.80	32.60
3	2483.50	55.3 PK	74.0	-18.7	1.34 V	196	22.50	32.80
4	2483.50	47.9 AV	54.0	-6.1	1.34 V	196	15.10	32.80
5	4924.00	46.5 PK	74.0	-27.5	1.58 V	125	44.50	2.00
6	4924.00	34.9 AV	54.0	-19.1	1.58 V	125	32.90	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)
– 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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

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	62.4 PK	74.0	-11.6	1.32 H	74	30.10	32.30
2	2390.00	47.3 AV	54.0	-6.7	1.32 H	74	15.00	32.30
3	*2412.00	101.8 PK			1.32 H	73	69.30	32.50
4	*2412.00	91.3 AV			1.32 H	73	58.80	32.50
5	4824.00	49.0 PK	74.0	-25.0	1.12 H	88	47.00	2.00
6	4824.00	35.6 AV	54.0	-18.4	1.12 H	88	33.60	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	2390.00	59.2 PK	74.0	-14.8	1.00 V	238	26.90	32.30
2	2390.00	46.2 AV	54.0	-7.8	1.00 V	238	13.90	32.30
3	*2412.00	99.6 PK			1.00 V	238	67.10	32.50
4	*2412.00	89.0 AV			1.00 V	238	56.50	32.50
5	4824.00	49.0 PK	74.0	-25.0	1.55 V	54	47.00	2.00
6	4824.00	35.5 AV	54.0	-18.5	1.55 V	54	33.50	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)
– 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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

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	99.8 PK			1.33 H	71	67.30	32.50
2	*2437.00	89.5 AV			1.33 H	71	57.00	32.50
3	4874.00	47.8 PK	74.0	-26.2	1.95 H	261	45.80	2.00
4	4874.00	34.2 AV	54.0	-19.8	1.95 H	261	32.20	2.00
5	7311.00	56.6 PK	74.0	-17.4	1.41 H	201	48.60	8.00
6	7311.00	41.6 AV	54.0	-12.4	1.41 H	201	33.60	8.00
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	*2437.00	99.6 PK			1.00 V	167	67.10	32.50
2	*2437.00	89.5 AV			1.00 V	167	57.00	32.50
3	4874.00	48.3 PK	74.0	-25.7	1.02 V	54	46.30	2.00
4	4874.00	35.6 AV	54.0	-18.4	1.02 V	54	33.60	2.00
5	7311.00	54.0 PK	74.0	-20.0	1.59 V	354	46.00	8.00
6	7311.00	41.6 AV	54.0	-12.4	1.59 V	354	33.60	8.00

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)
– 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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
TEST MODE	C		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.0 PK			1.29 H	103	67.40	32.60
2	*2462.00	89.0 AV			1.29 H	103	56.40	32.60
3	2483.50	67.0 PK	74.0	-7.0	1.03 H	42	34.20	32.80
4	2483.50	49.9 AV	54.0	-4.1	1.03 H	42	17.10	32.80
5	4924.00	50.7 PK	74.0	-23.3	1.14 H	332	48.60	2.10
6	4924.00	36.7 AV	54.0	-17.3	1.14 H	332	34.60	2.10
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	100.7 PK			1.00 V	129	68.10	32.60
2	*2462.00	89.1 AV			1.00 V	129	56.50	32.60
3	2483.50	67.1 PK	74.0	-6.9	1.00 V	128	34.30	32.80
4	2483.50	49.3 AV	54.0	-4.7	1.00 V	128	16.50	32.80
5	4924.00	49.0 PK	74.0	-25.0	1.88 V	254	46.90	2.10
6	4924.00	35.5 AV	54.0	-18.5	1.88 V	254	33.40	2.10

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.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	26.3 QP	40.0	-13.7	1.00 H	75	41.90	-15.60
2	152.22	17.8 QP	43.5	-25.7	1.00 H	1	31.50	-13.70
3	297.72	21.5 QP	46.0	-24.5	1.24 H	323	33.90	-12.40
4	336.52	20.5 QP	46.0	-25.5	1.00 H	124	32.00	-11.50
5	524.70	24.4 QP	46.0	-21.6	1.00 H	85	32.30	-7.90
6	734.22	29.0 QP	46.0	-17.0	1.24 H	86	33.30	-4.30
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	107.60	22.4 QP	43.5	-21.1	1.00 V	13	40.00	-17.60
2	134.76	22.0 QP	43.5	-21.5	1.24 V	12	36.90	-14.90
3	189.08	25.4 QP	43.5	-18.1	1.00 V	266	41.50	-16.10
4	243.40	25.4 QP	46.0	-20.6	1.00 V	235	40.00	-14.60
5	297.72	25.1 QP	46.0	-20.9	1.00 V	263	37.50	-12.40
6	404.42	22.0 QP	46.0	-24.0	1.24 V	143	32.30	-10.30

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	33.88	25.1 QP	40.0	-14.9	1.00 H	9	41.00	-15.90
2	105.66	25.5 QP	43.5	-18.0	1.00 H	203	43.40	-17.90
3	136.70	26.0 QP	43.5	-17.5	1.00 H	128	40.80	-14.80
4	305.48	23.5 QP	46.0	-22.5	1.00 H	302	35.70	-12.20
5	439.34	24.5 QP	46.0	-21.5	1.00 H	7	33.60	-9.10
6	670.20	25.9 QP	46.0	-20.1	1.00 H	12	31.20	-5.30
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	31.22	37.9 QP	40.0	-2.1	1.28 V	322	54.00	-16.10
2	64.92	31.8 QP	40.0	-8.2	1.00 V	313	47.10	-15.30
3	297.72	24.7 QP	46.0	-21.3	1.00 V	78	37.10	-12.40
4	437.40	24.6 QP	46.0	-21.4	1.24 V	222	33.70	-9.10
5	522.76	25.8 QP	46.0	-20.2	1.49 V	207	33.80	-8.00
6	763.32	28.4 QP	46.0	-17.6	1.24 V	78	31.80	-3.40

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	C		

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	30.02	27.2 QP	40.0	-12.8	1.00 H	102	42.80	-15.60
2	151.64	19.2 QP	43.5	-24.3	1.25 H	22	32.90	-13.70
3	296.62	22.4 QP	46.0	-23.6	1.00 H	247	34.80	-12.40
4	395.52	21.2 QP	46.0	-24.8	1.24 H	58	31.70	-10.50
5	599.47	26.6 QP	46.0	-19.4	1.50 H	164	32.90	-6.30
6	642.52	27.6 QP	46.0	-18.4	1.50 H	12	33.10	-5.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	54.22	22.8 QP	40.0	-17.2	1.00 V	277	36.80	-14.00
2	108.22	24.5 QP	43.5	-19.0	1.25 V	24	42.00	-17.50
3	189.69	26.9 QP	43.5	-16.6	1.25 V	312	43.10	-16.20
4	244.82	26.9 QP	46.0	-19.1	1.25 V	147	41.50	-14.60
5	298.28	25.2 QP	46.0	-20.8	1.25 V	299	37.60	-12.40
6	404.48	22.2 QP	46.0	-23.8	1.50 V	168	32.40	-10.20

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)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Sun Lin
TEST MODE	D		

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	30.00	30.7 QP	40.0	-9.3	1.00 H	188	46.30	-15.60
2	101.78	23.9 QP	43.5	-19.6	1.00 H	224	42.40	-18.50
3	130.88	22.5 QP	43.5	-21.0	1.24 H	100	38.10	-15.60
4	175.50	23.5 QP	43.5	-20.0	1.24 H	33	38.60	-15.10
5	289.96	21.2 QP	46.0	-24.8	1.00 H	264	33.80	-12.60
6	540.22	24.5 QP	46.0	-21.5	1.00 H	52	32.40	-7.90
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	61.04	31.8 QP	40.0	-8.2	1.00 V	11	46.50	-14.70
2	86.26	30.0 QP	40.0	-10.0	1.00 V	230	49.70	-19.70
3	161.92	22.7 QP	43.5	-20.8	1.00 V	18	36.30	-13.60
4	297.72	24.9 QP	46.0	-21.1	1.24 V	286	37.30	-12.40
5	431.58	25.7 QP	46.0	-20.3	1.00 V	117	35.00	-9.30
6	629.46	27.3 QP	46.0	-18.7	1.00 V	256	33.00	-5.70

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 OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	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.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

Tested Date: Feb. 07, 2014

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 17, 2013	Jul. 16, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	100312	Jul. 18, 2013	Jul. 17, 2014
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 TEST PROCEDURES

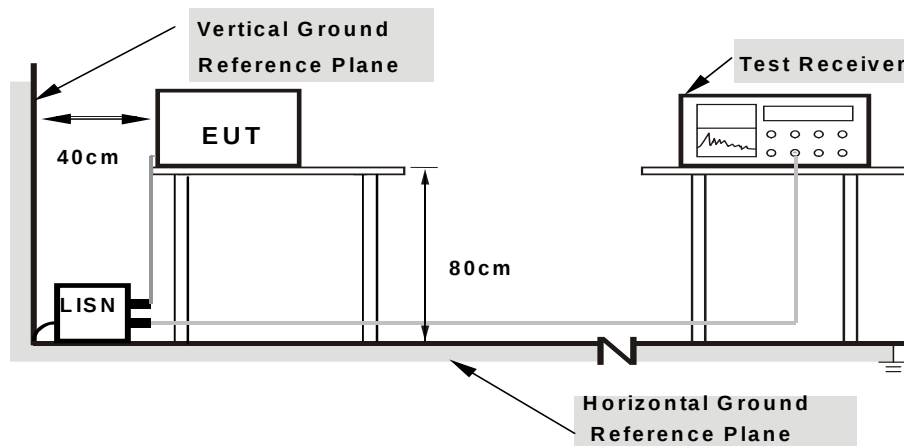
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

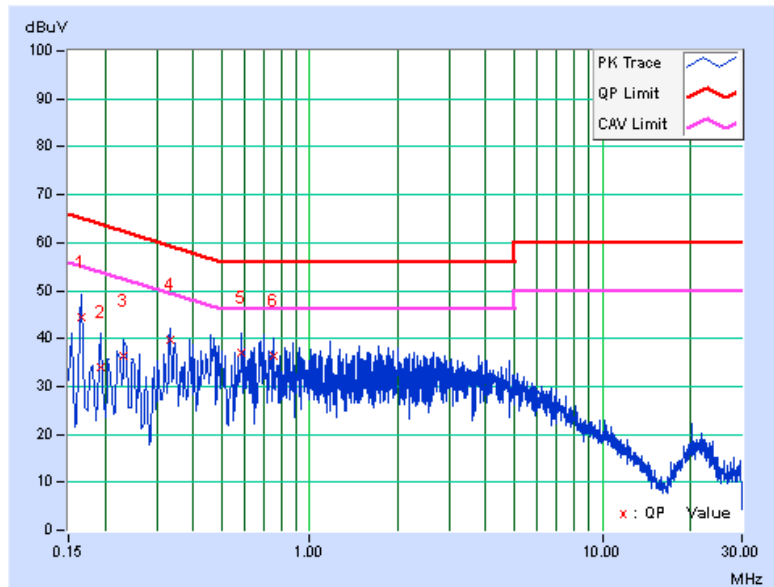
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16564	0.10	44.29	29.59	44.39	29.69	65.18	55.18	-20.79	-25.49
2	0.19301	0.10	33.99	22.15	34.09	22.25	63.91	53.91	-29.82	-31.66
3	0.23216	0.10	36.27	25.75	36.37	25.85	62.37	52.37	-26.00	-26.52
4	0.33377	0.11	39.64	29.65	39.75	29.76	59.36	49.36	-19.60	-19.59
5	0.58401	0.13	37.07	26.97	37.20	27.10	56.00	46.00	-18.80	-18.90
6	0.75214	0.13	36.16	25.88	36.29	26.01	56.00	46.00	-19.71	-19.99

REMARKS:

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

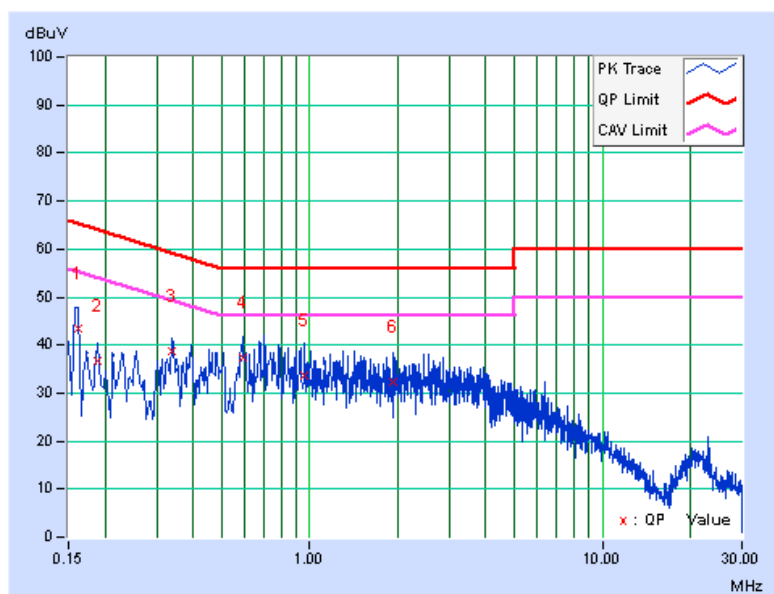


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16173	0.11	43.36	28.73	43.47	28.84	65.37	55.37	-21.90	-26.53
2	0.18903	0.11	36.65	23.65	36.76	23.76	64.08	54.08	-27.32	-30.32
3	0.33768	0.12	38.69	29.60	38.81	29.72	59.26	49.26	-20.45	-19.54
4	0.58792	0.13	37.17	27.23	37.30	27.36	56.00	46.00	-18.70	-18.64
5	0.95937	0.14	33.37	23.78	33.51	23.92	56.00	46.00	-22.49	-22.08
6	1.92125	0.16	32.00	21.07	32.16	21.23	56.00	46.00	-23.84	-24.77

REMARKS:

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

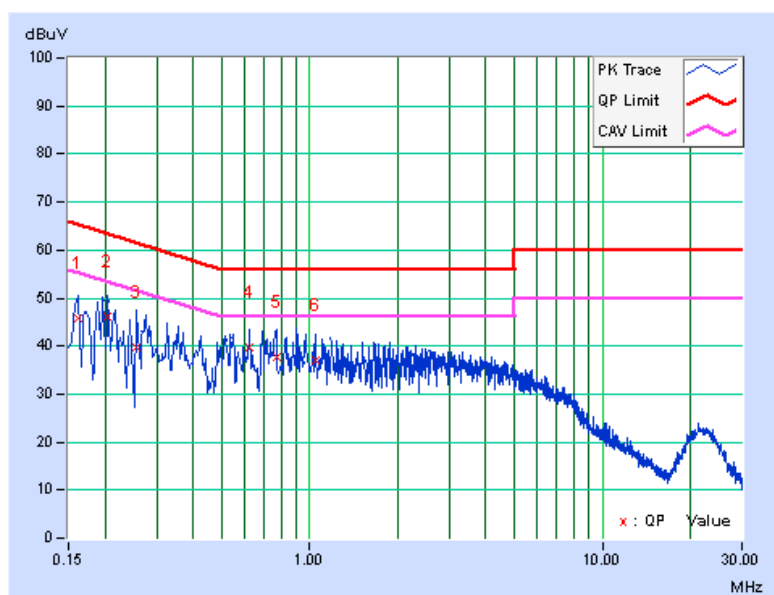


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	D		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16139	0.10	45.56	27.10	45.66	27.20	65.39	55.39	-19.73	-28.19
2	0.20474	0.10	46.11	30.39	46.21	30.49	63.42	53.42	-17.21	-22.93
3	0.25557	0.11	39.58	20.54	39.69	20.65	61.57	51.57	-21.89	-30.93
4	0.62311	0.13	39.62	28.81	39.75	28.94	56.00	46.00	-16.25	-17.06
5	0.76789	0.13	37.45	26.83	37.58	26.96	56.00	46.00	-18.42	-19.04
6	1.04148	0.14	36.87	25.84	37.01	25.98	56.00	46.00	-18.99	-20.02

REMARKS:

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

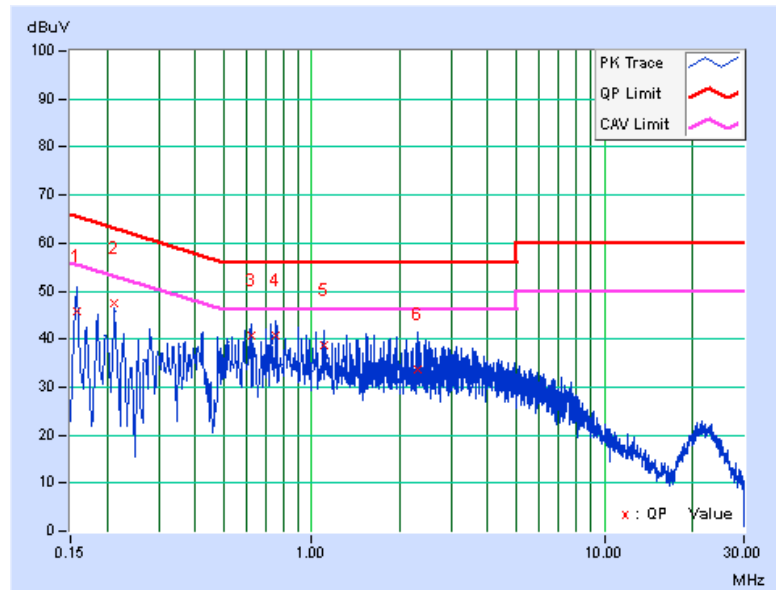


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	D		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15782	0.11	45.60	27.79	45.71	27.90	65.58	55.58	-19.87	-27.68
2	0.21256	0.11	47.41	29.17	47.52	29.28	63.10	53.10	-15.58	-23.82
3	0.61920	0.13	40.60	29.06	40.73	29.19	56.00	46.00	-15.27	-16.81
4	0.75605	0.14	40.57	28.33	40.71	28.47	56.00	46.00	-15.29	-17.53
5	1.09622	0.14	38.60	26.77	38.74	26.91	56.00	46.00	-17.26	-19.09
6	2.29659	0.17	33.39	22.76	33.56	22.93	56.00	46.00	-22.44	-23.07

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

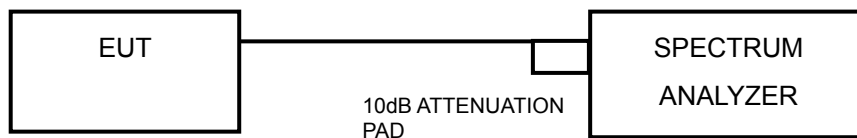


4.3 6dB BANDWIDTH MEASUREMENT

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 RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.12	0.5	PASS
6	2437	8.58	0.5	PASS
11	2462	8.05	0.5	PASS

802.11g

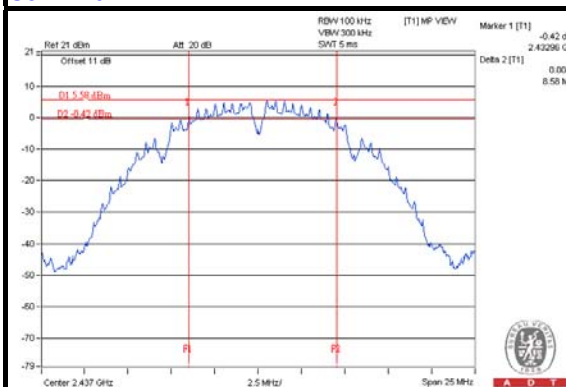
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	13.91	0.5	PASS
6	2437	16.40	0.5	PASS
11	2462	15.33	0.5	PASS

802.11n (20MHz)

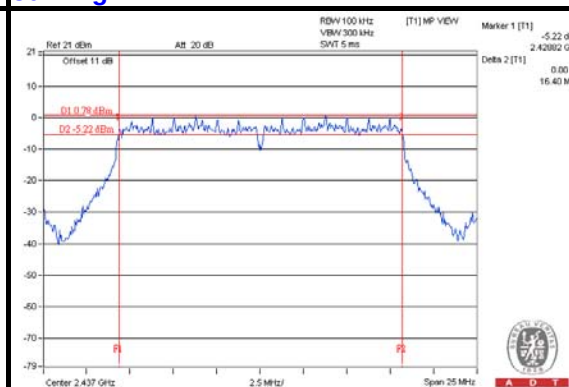
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.17	0.5	PASS
6	2437	17.10	0.5	PASS
11	2462	15.45	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

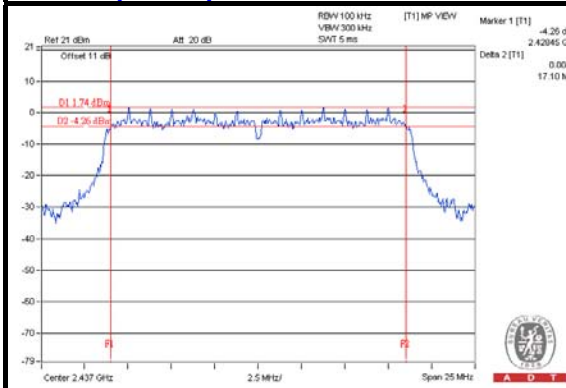
802.11b



802.11g



802.11n (20MHz)



4.4 CONDUCTED OUTPUT POWER

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 v02 Method of conducted output power measurement on IEEE 802.11 devices,

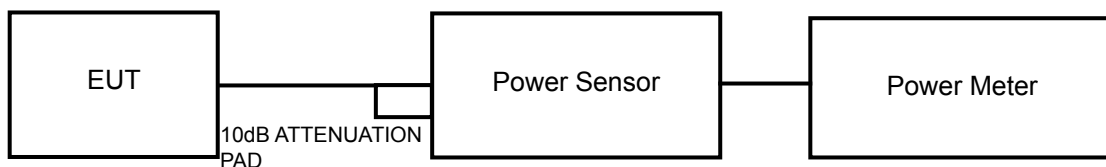
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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

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

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

Follow KDB 558074 D01 DTS Meas Guidance v03r01 section 9.1.3

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 peak power level.



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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	45.604	16.59	30	PASS
6	2437	45.186	16.55	30	PASS
11	2462	45.920	16.62	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	79.433	19.00	30	PASS
6	2437	73.451	18.66	30	PASS
11	2462	68.077	18.33	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	83.560	19.22	30	PASS
6	2437	80.538	19.06	30	PASS
11	2462	81.470	19.11	30	PASS

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	24.322	13.86
6	2437	24.378	13.87
11	2462	24.660	13.92

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	15.488	11.90
6	2437	14.859	11.72
11	2462	15.560	11.92

802.11n (20MHz)

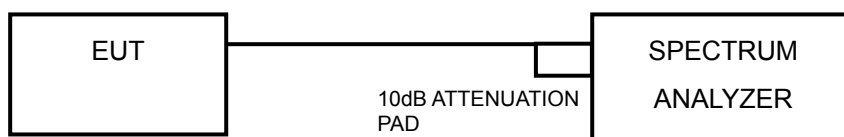
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	15.524	11.91
6	2437	15.205	11.82
11	2462	15.524	11.91

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

Follow 558074 D01 DTS Meas Guidance v03r01 section 10.2

- Set the RBW = 3 kHz, VBW = 10 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

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4.5.7 TEST RESULTS

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-9.24	8	PASS
6	2437	-8.87	8	PASS
11	2462	-11.08	8	PASS

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-13.73	8	PASS
6	2437	-13.55	8	PASS
11	2462	-12.91	8	PASS

802.11n (20MHz)

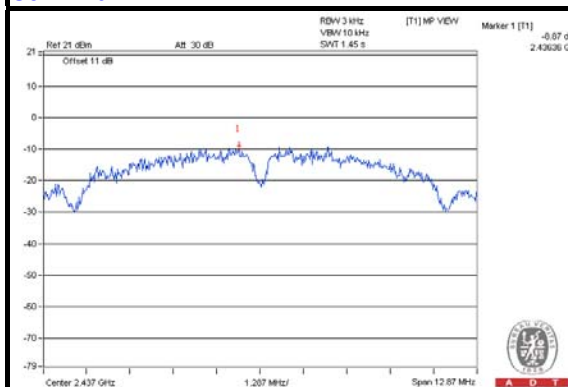
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-10.87	8	PASS
6	2437	-12.97	8	PASS
11	2462	-12.69	8	PASS



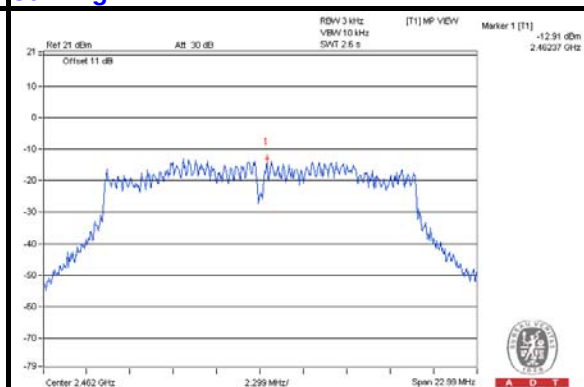
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SPECTRUM PLOT OF WORST VALUE

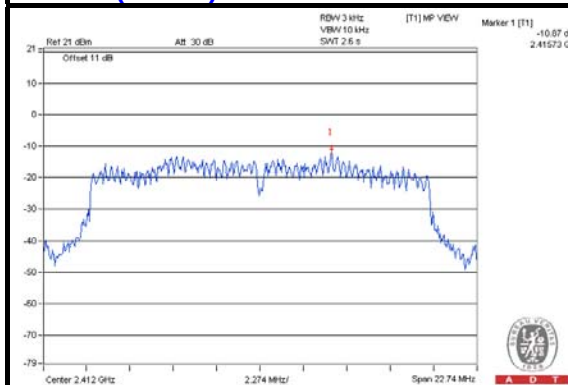
802.11b



802.11g



802.11n (20MHz)

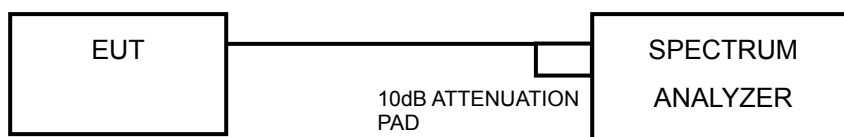


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Ensure that the number of measurement points $\geq$ span/RBW
4. According to measurement points to set different measurement span.
5. Detector = peak.
6. Trace Mode = max hold.
7. 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 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.

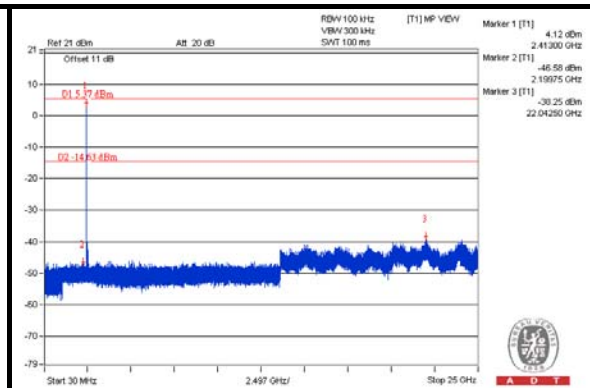
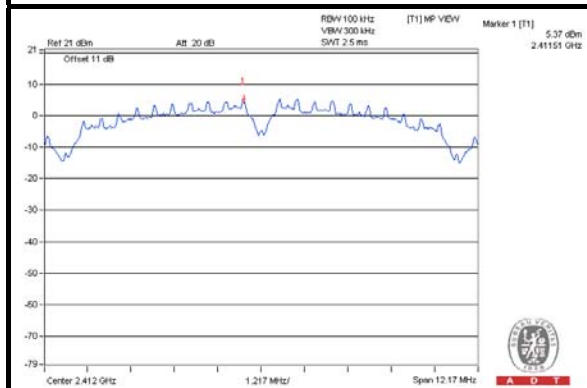
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



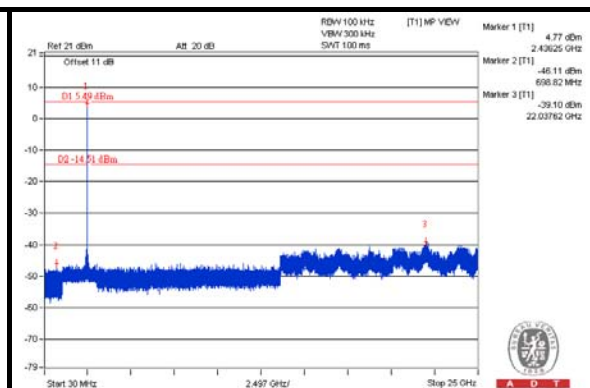
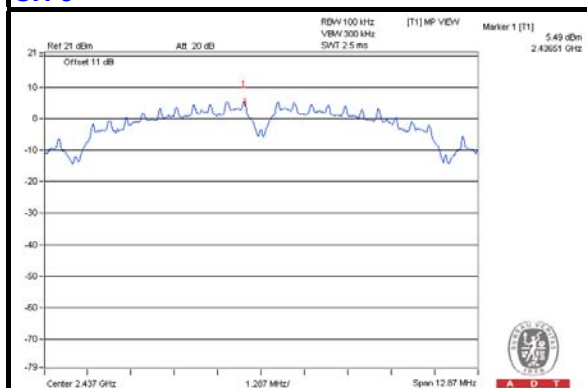
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802.11b

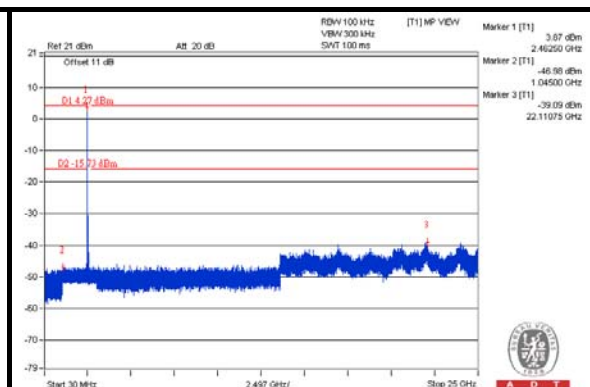
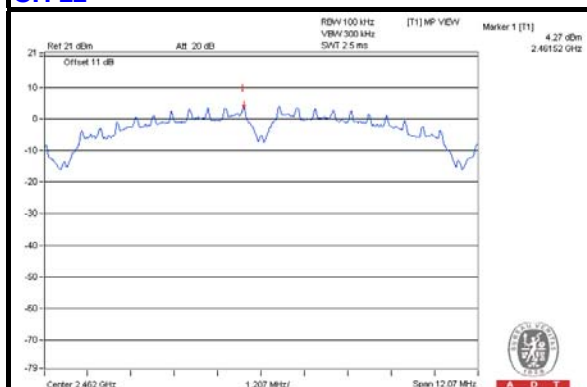
CH 1



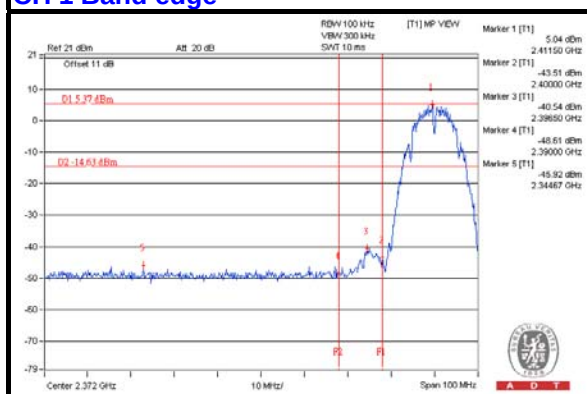
CH 6



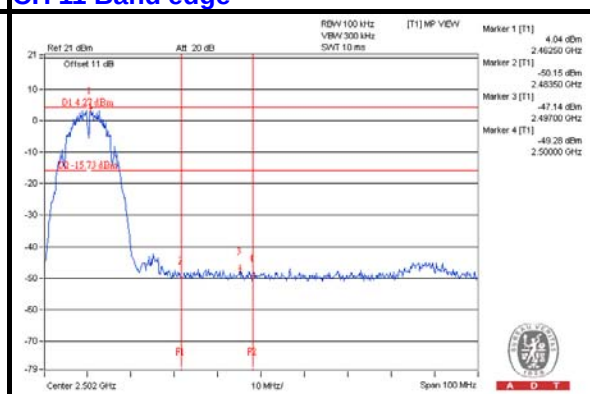
CH 11



CH 1 Band edge



CH 11 Band edge

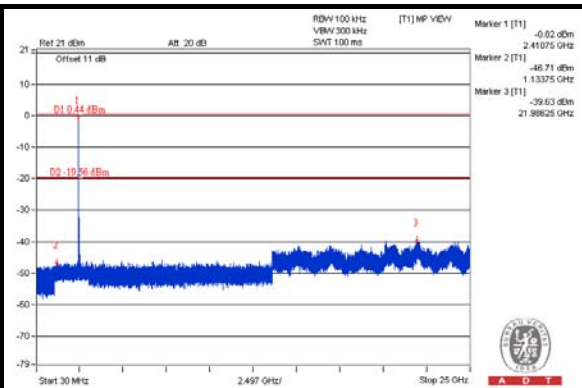
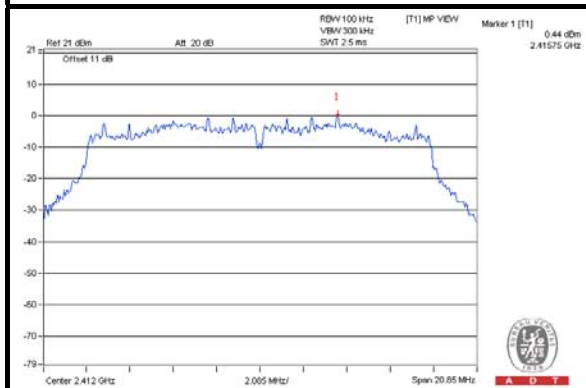




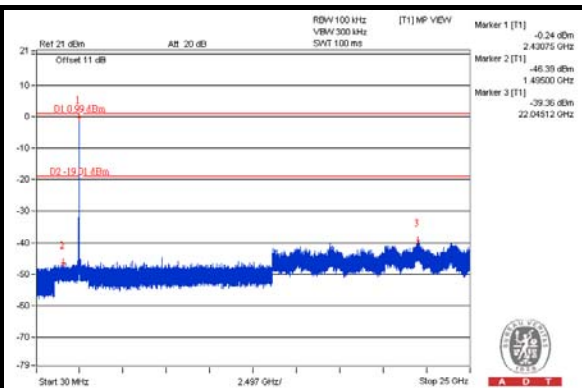
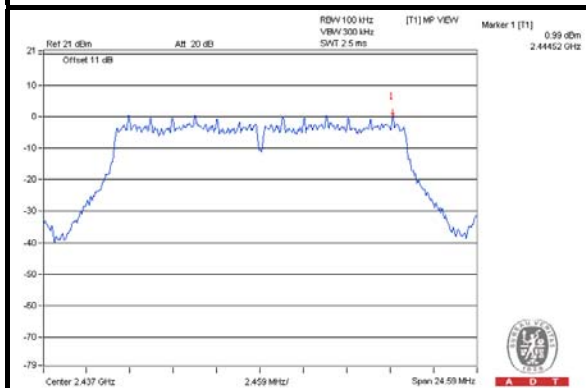
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802.11g

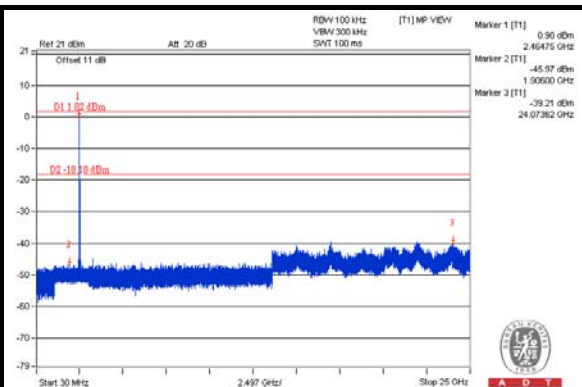
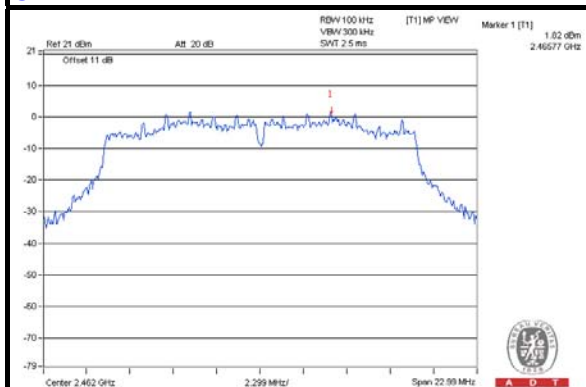
CH 1



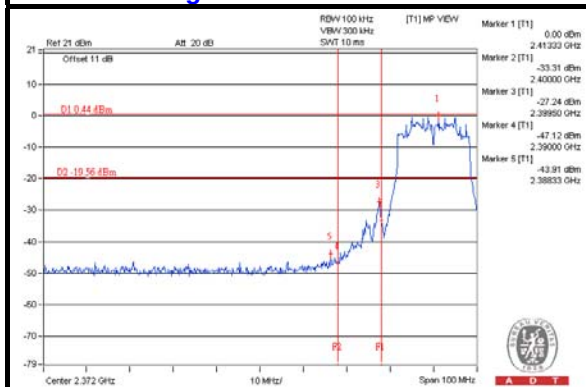
CH 6



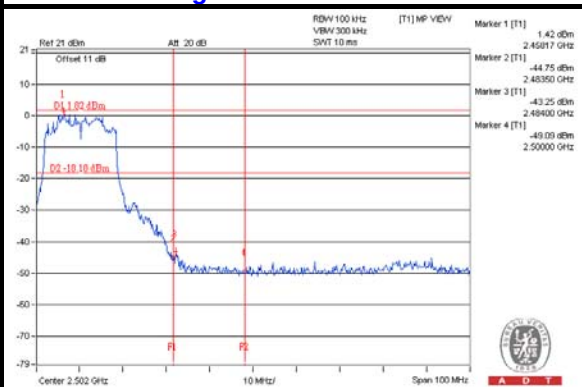
CH 11



CH 1 Band edge

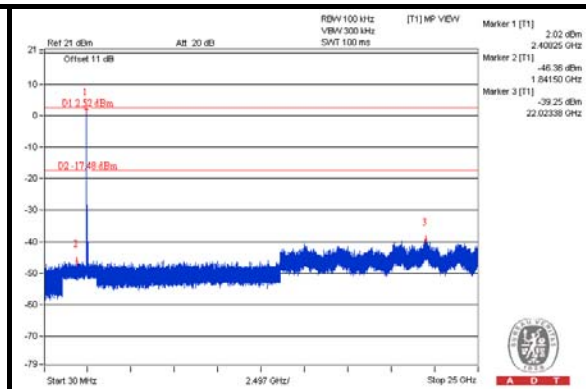
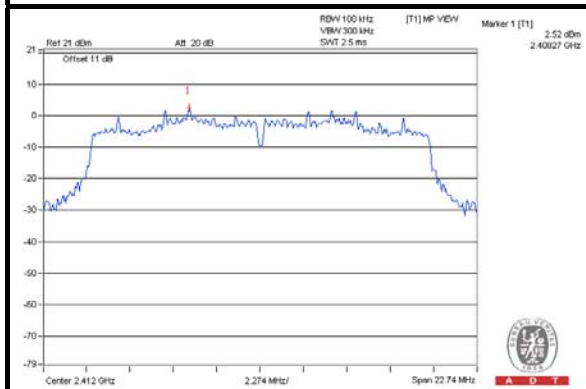


CH 11 Band edge

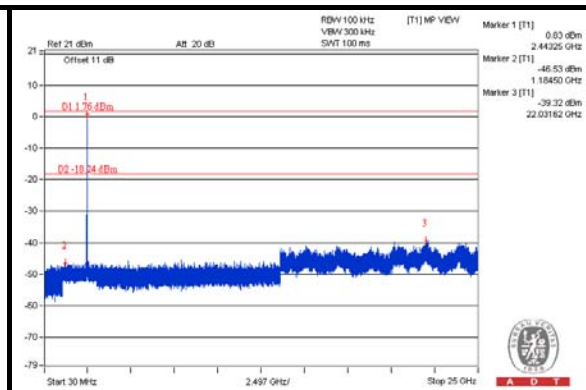
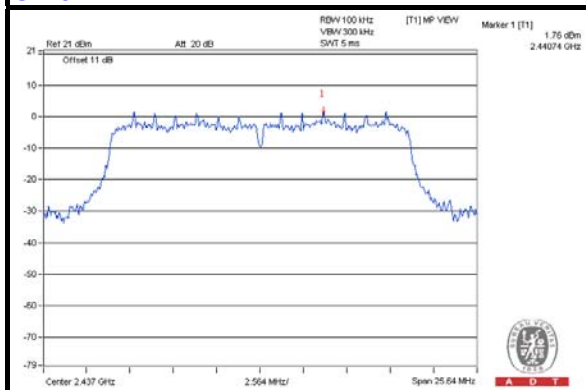


802.11n (20MHz)

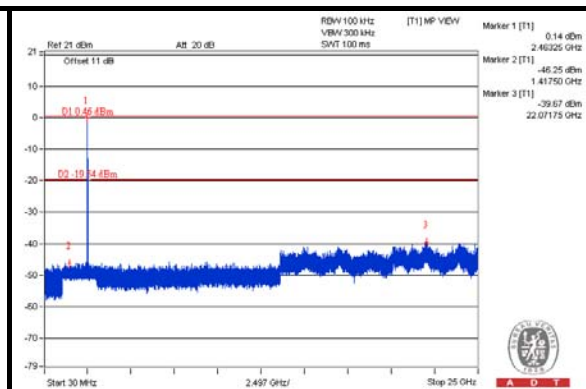
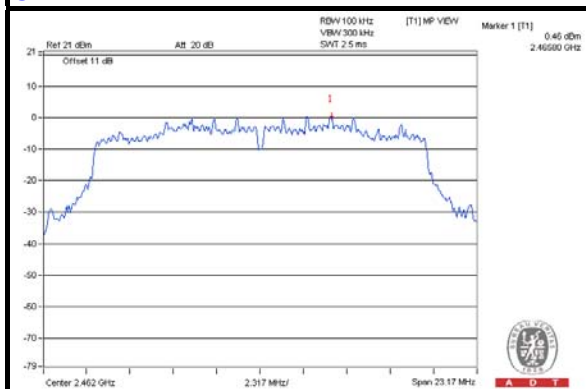
CH 1



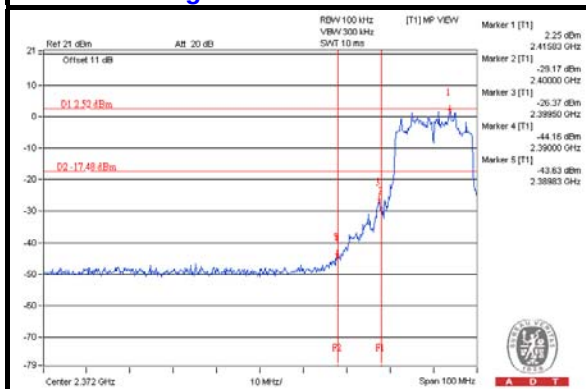
CH 6



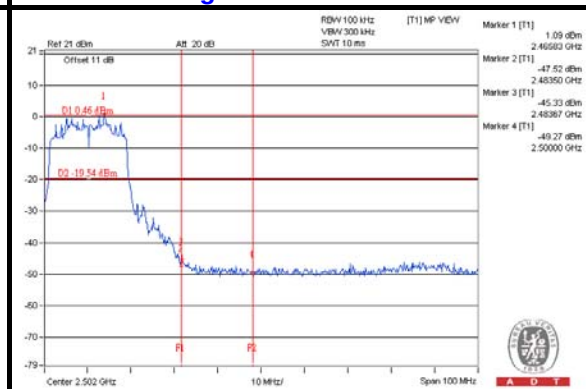
CH 11



CH 1 Band edge



CH 11 Band edge





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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6. 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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7. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---