

FCC TEST REPORT (WLAN)

REPORT NO.: RF120508C10
MODEL NO.: TP00042A
FCC ID: GKR-TP00042AHJ
RECEIVED: May 08, 2012
TESTED: May 18 ~ May 29, 2012
ISSUED: Jul. 17, 2012

APPLICANT: COMPAL ELECTRONICS, INC.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120508C10	Original release	Jul. 17, 2012

1. CERTIFICATION

PRODUCT: Convertible Tablet Computer
MODEL NO.: TP00042A
BRAND: Lenovo
APPLICANT: COMPAL ELECTRONICS, INC.
TESTED: May 18 ~ May 29, 2012
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2009

The above equipment (model: TP00042A) 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 : Andrea Hsia , DATE : Jul. 17, 2012
Andrea Hsia / Specialist

APPROVED BY : Gary Chang , DATE : Jul. 17, 2012
Gary Chang / Technical 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 -19.51dB at 0.55234MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.0dB at 2390.00MHz.
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	Antenna connector is I-Pex.

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	3.34 dB
	200MHz ~1000MHz	3.35 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	Convertible Tablet Computer
MODEL NO.	TP00042A
POWER SUPPLY	20Vdc (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 300.0Mbps
OPERATING FREQUENCY	2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
OUTPUT POWER	222.7mW
ANTENNA TYPE	Refer to NOTE as below
ANTENNA CONNECTOR	I-Pex
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

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

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX / 2TX
802.11n (40MHz)	1TX / 2TX

2. The antenna information is listed as below.

JPC Antenna		
Antenna Type	PIFA	
Manufacturer	Jess-Link Product Co., LTD	
Model Name	Antenna Type	Model name
	WLAN MAIN L	PANT11A00034-1
	WLAN AUX R	PANT11A00035-1
Antenna Gain	WLAN Main	
	2.4~2.4835 GHz	-2.03
	5.15~5.25 GHz	-0.59
	5.25~5.35 GHz	-1.56
	5.47~5.725 GHz	0.21
	5.725~5.85 GHz	0.45
	WLAN Aux.	
	2.4~2.4835 GHz	-3.47
	5.15~5.25 GHz	-0.13
	5.25~5.35 GHz	-0.07
	5.47~5.725 GHz	-0.08
	5.725~5.85 GHz	0.42

3. The EUT consumes power from the following adapter.

ADAPTER	
BRAND:	lenovo
MODEL:	45N0185
INPUT:	100-240Vac, 50/60Hz, 1.5A
OUTPUT:	20Vdc, 3.25A
POWER LINE:	1.8m non-shielded cable with one core

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

3.2 DESCRIPTION OF TEST MODES

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

7 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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 X-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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX Function
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	1TX
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	1TX
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	1TX
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0	1TX
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	14.4	2TX
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	30.0	2TX

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX Function
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	14.4	2TX

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX Function
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	14.4	2TX

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX Function
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0	1TX
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0	1TX
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2	1TX
802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15.0	1TX
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	14.4	2TX
802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	30.0	2TX

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX Function
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	1TX
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	1TX
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	1TX
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15.0	1TX
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	14.4	2TX
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	30.0	2TX

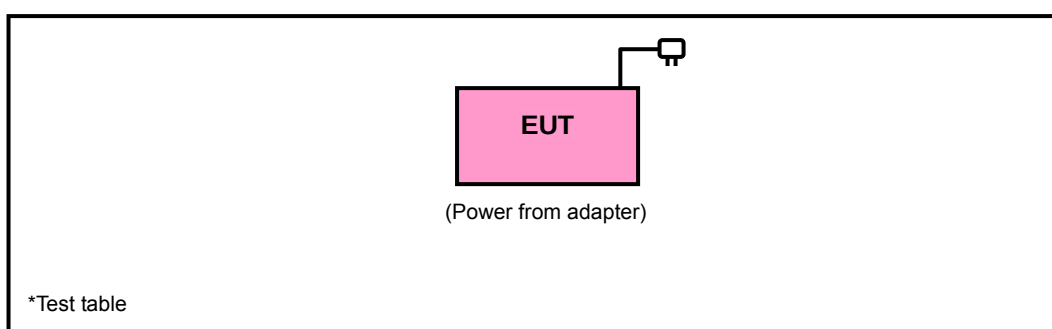
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Haru Yang
RE $<$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Aska Huang
PLC	25deg. C, 65%RH	120Vac, 60Hz	Scott Yang
APCM	25deg. C, 66%RH	120Vac, 60Hz	Brad Wu

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 DTS Meas Guidance v01

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.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 06, 2012	Apr. 05, 2013
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 20, 2011	Jul. 19, 2012
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8447D	2944A10633	Oct. 29, 2011	Oct. 28, 2012
Preamplifier Agilent	8449B	3008A01964	Oct. 29, 2011	Oct. 28, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250723/4	Aug. 30, 2011	Aug. 29, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6+309224/ 4	Aug. 30, 2011	Aug. 29, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100	TT93021703	NA	NA
Turn Table Controller ADT.	SC100	SC93021703	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Aug. 04, 2011	Aug. 03, 2012
Power Sensor	MA2411B	0738171	Aug. 04, 2011	Aug. 03, 2012

- 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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. The test was performed in HwaYa Chamber 3.
 4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 5. The FCC Site Registration No. is 988962.
 6. The IC Site Registration No. is IC 7450F-3.

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.

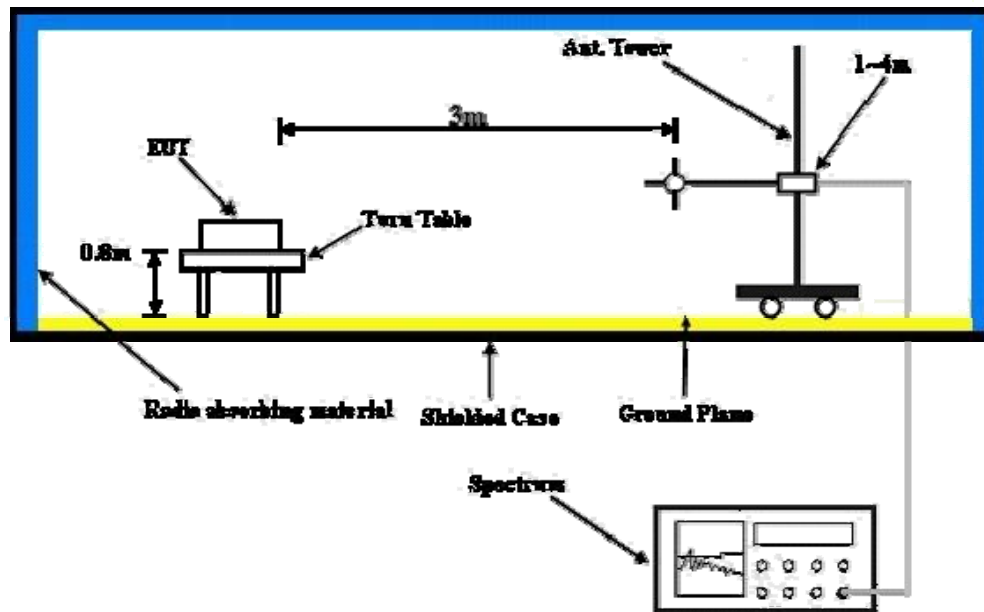
NOTE:

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 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

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

4.1.7 TEST RESULTS

ABOVE 1GHz DATA:

802.11b: 1TX

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	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.2 PK	74.0	-19.8	1.31 H	302	22.90	31.30
2	2390.00	42.3 AV	54.0	-11.7	1.31 H	302	11.00	31.30
3	*2412.00	100.4 PK			1.31 H	302	69.00	31.40
4	*2412.00	96.5 AV			1.31 H	302	65.10	31.40
5	4824.00	45.8 PK	74.0	-28.2	1.00 H	96	8.60	37.20
6	4824.00	33.0 AV	54.0	-21.0	1.00 H	96	-4.20	37.20
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	2390.00	54.2 PK	74.0	-19.8	1.14 V	288	22.90	31.30
2	2390.00	41.9 AV	54.0	-12.1	1.14 V	288	10.60	31.30
3	*2412.00	101.9 PK			1.14 V	288	70.50	31.40
4	*2412.00	98.5 AV			1.14 V	288	67.10	31.40
5	4824.00	46.6 PK	74.0	-27.4	1.00 V	337	9.40	37.20
6	4824.00	33.1 AV	54.0	-20.9	1.00 V	337	-4.10	37.20

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.



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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	Haru Yang

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	101.4 PK			1.31 H	306	69.90	31.50
2	*2437.00	97.8 AV			1.31 H	306	66.30	31.50
3	4874.00	46.1 PK	74.0	-27.9	1.00 H	117	8.80	37.30
4	4874.00	33.6 AV	54.0	-20.4	1.00 H	117	-3.70	37.30
5	7311.00	51.9 PK	74.0	-22.1	1.07 H	241	8.40	43.50
6	7311.00	37.6 AV	54.0	-16.4	1.07 H	241	-5.90	43.50
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	*2437.00	103.6 PK			1.34 V	284	72.10	31.50
2	*2437.00	99.8 AV			1.34 V	284	68.30	31.50
3	4874.00	46.5 PK	74.0	-27.5	1.00 V	316	9.20	37.30
4	4874.00	33.7 AV	54.0	-20.3	1.00 V	316	-3.60	37.30
5	7311.00	51.2 PK	74.0	-22.8	1.00 V	192	7.70	43.50
6	7311.00	37.4 AV	54.0	-16.6	1.00 V	192	-6.10	43.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	Haru Yang

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	101.8 PK			1.30 H	301	70.20	31.60
2	*2462.00	98.0 AV			1.30 H	301	66.40	31.60
3	2483.50	53.9 PK	74.0	-20.1	1.30 H	301	22.30	31.60
4	2483.50	42.5 AV	54.0	-11.5	1.30 H	301	10.90	31.60
5	4924.00	45.5 PK	74.0	-28.5	1.00 H	124	8.10	37.40
6	4924.00	32.9 AV	54.0	-21.1	1.00 H	124	-4.50	37.40
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	103.1 PK			1.33 V	297	71.50	31.60
2	*2462.00	99.7 AV			1.33 V	297	68.10	31.60
3	2483.50	55.0 PK	74.0	-19.0	1.33 V	297	23.40	31.60
4	2483.50	42.5 AV	54.0	-11.5	1.33 V	297	10.90	31.60
5	4924.00	46.8 PK	74.0	-27.2	1.00 V	307	9.40	37.40
6	4924.00	33.6 AV	54.0	-20.4	1.00 V	307	-3.80	37.40

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).
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: 1TX

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	Haru Yang

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	1.30 H	299	29.20	31.30
2	2390.00	45.9 AV	54.0	-8.1	1.30 H	299	14.60	31.30
3	*2412.00	103.5 PK			1.30 H	299	72.10	31.40
4	*2412.00	93.0 AV			1.30 H	299	61.60	31.40
5	4824.00	46.4 PK	74.0	-27.6	1.00 H	109	9.20	37.20
6	4824.00	33.3 AV	54.0	-20.7	1.00 H	109	-3.90	37.20
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	2390.00	61.1 PK	74.0	-12.9	1.15 V	285	29.80	31.30
2	2390.00	46.4 AV	54.0	-7.6	1.15 V	285	15.10	31.30
3	*2412.00	104.1 PK			1.15 V	285	72.70	31.40
4	*2412.00	93.7 AV			1.15 V	285	62.30	31.40
5	4824.00	46.7 PK	74.0	-27.3	1.00 V	297	9.50	37.20
6	4824.00	33.3 AV	54.0	-20.7	1.00 V	297	-3.90	37.20

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.



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	Haru Yang

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	105.6 PK			1.30 H	302	74.10	31.50
2	*2437.00	94.6 AV			1.30 H	302	63.10	31.50
3	4874.00	46.8 PK	74.0	-27.2	1.00 H	117	9.50	37.30
4	4874.00	33.2 AV	54.0	-20.8	1.00 H	117	-4.10	37.30
5	7311.00	52.1 PK	74.0	-21.9	1.08 H	253	8.60	43.50
6	7311.00	38.4 AV	54.0	-15.6	1.08 H	253	-5.10	43.50
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	*2437.00	106.3 PK			1.35 V	269	74.80	31.50
2	*2437.00	95.9 AV			1.35 V	269	64.40	31.50
3	4874.00	45.6 PK	74.0	-28.4	1.00 V	286	8.30	37.30
4	4874.00	33.0 AV	54.0	-21.0	1.00 V	286	-4.30	37.30
5	7311.00	51.8 PK	74.0	-22.2	1.02 V	185	8.30	43.50
6	7311.00	38.2 AV	54.0	-15.8	1.02 V	185	-5.30	43.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.9 PK			1.30 H	302	71.30	31.60
2	*2462.00	92.4 AV			1.30 H	302	60.80	31.60
3	2483.50	58.2 PK	74.0	-15.8	1.30 H	302	26.60	31.60
4	2483.50	43.5 AV	54.0	-10.5	1.30 H	302	11.90	31.60
5	4924.00	53.7 PK	74.0	-20.3	1.00 H	131	16.30	37.40
6	4924.00	33.5 AV	54.0	-20.5	1.00 H	131	-3.90	37.40
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	104.5 PK			1.32 V	263	72.90	31.60
2	*2462.00	93.4 AV			1.32 V	263	61.80	31.60
3	2483.50	58.5 PK	74.0	-15.5	1.32 V	263	26.90	31.60
4	2483.50	44.3 AV	54.0	-9.7	1.32 V	263	12.70	31.60
5	4924.00	46.4 PK	74.0	-27.6	1.00 V	302	9.00	37.40
6	4924.00	33.1 AV	54.0	-20.9	1.00 V	302	-4.30	37.40

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).
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): 1TX

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	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.5 PK	74.0	-7.5	1.32 H	299	35.20	31.30
2	2390.00	48.3 AV	54.0	-5.7	1.32 H	299	17.00	31.30
3	*2412.00	104.9 PK			1.32 H	299	73.50	31.40
4	*2412.00	94.1 AV			1.32 H	299	62.70	31.40
5	4824.00	47.6 PK	74.0	-26.4	1.00 H	116	10.40	37.20
6	4824.00	33.8 AV	54.0	-20.2	1.00 H	116	-3.40	37.20
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	2390.00	67.6 PK	74.0	-6.4	1.35 V	265	36.30	31.30
2	2390.00	48.9 AV	54.0	-5.1	1.35 V	265	17.60	31.30
3	*2412.00	105.2 PK			1.35 V	265	73.80	31.40
4	*2412.00	94.7 AV			1.35 V	265	63.30	31.40
5	4824.00	46.5 PK	74.0	-27.5	1.00 V	284	9.30	37.20
6	4824.00	33.4 AV	54.0	-20.6	1.00 V	284	-3.80	37.20

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.



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	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.0 PK			1.30 H	301	74.50	31.50
2	*2437.00	95.6 AV			1.30 H	301	64.10	31.50
3	4874.00	47.1 PK	74.0	-26.9	1.00 H	124	9.80	37.30
4	4874.00	33.5 AV	54.0	-20.5	1.00 H	124	-3.80	37.30
5	7311.00	52.4 PK	74.0	-21.6	1.09 H	249	8.90	43.50
6	7311.00	38.5 AV	54.0	-15.5	1.09 H	249	-5.00	43.50
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	*2437.00	107.4 PK			1.35 V	265	75.90	31.50
2	*2437.00	96.8 AV			1.35 V	265	65.30	31.50
3	4874.00	45.8 PK	74.0	-28.2	1.00 V	277	8.50	37.30
4	4874.00	33.2 AV	54.0	-20.8	1.00 V	277	-4.10	37.30
5	7311.00	52.1 PK	74.0	-21.9	1.00 V	197	8.60	43.50
6	7311.00	38.3 AV	54.0	-15.7	1.00 V	197	-5.20	43.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.2 PK			1.28 H	302	72.60	31.60
2	*2462.00	93.1 AV			1.28 H	302	61.50	31.60
3	2483.50	58.4 PK	74.0	-15.6	1.28 H	302	26.80	31.60
4	2483.50	43.9 AV	54.0	-10.1	1.28 H	302	12.30	31.60
5	4924.00	47.1 PK	74.0	-26.9	1.00 H	93	9.70	37.40
6	4924.00	33.1 AV	54.0	-20.9	1.00 H	93	-4.30	37.40
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	104.5 PK			1.32 V	264	72.90	31.60
2	*2462.00	93.7 AV			1.32 V	264	62.10	31.60
3	2483.50	58.6 PK	74.0	-15.4	1.32 V	264	27.00	31.60
4	2483.50	45.0 AV	54.0	-9.0	1.32 V	264	13.40	31.60
5	4924.00	46.7 PK	74.0	-27.3	1.00 V	301	9.30	37.40
6	4924.00	33.1 AV	54.0	-20.9	1.00 V	301	-4.30	37.40

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

802.11n (40MHz): 1TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang

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	60.6 PK	74.0	-13.4	1.32 H	302	29.30	31.30
2	2390.00	46.8 AV	54.0	-7.2	1.32 H	302	15.50	31.30
3	*2422.00	96.7 PK			1.32 H	302	65.30	31.40
4	*2422.00	86.0 AV			1.32 H	302	54.60	31.40
5	4844.00	47.5 PK	74.0	-26.5	1.00 H	133	10.20	37.30
6	4844.00	33.7 AV	54.0	-20.3	1.00 H	133	-3.60	37.30
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	2390.00	61.3 PK	74.0	-12.7	1.35 V	265	30.00	31.30
2	2390.00	47.4 AV	54.0	-6.6	1.35 V	265	16.10	31.30
3	*2422.00	99.2 PK			1.35 V	265	67.80	31.40
4	*2422.00	88.1 AV			1.35 V	265	56.70	31.40
5	4844.00	46.4 PK	74.0	-27.6	1.00 V	291	9.10	37.30
6	4844.00	33.5 AV	54.0	-20.5	1.00 V	291	-3.80	37.30

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).
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	Haru Yang

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	99.7 PK			1.31 H	303	68.20	31.50
2	*2437.00	89.1 AV			1.31 H	303	57.60	31.50
3	4874.00	47.7 PK	74.0	-26.3	1.00 H	128	10.40	37.30
4	4874.00	33.6 AV	54.0	-20.4	1.00 H	128	-3.70	37.30
5	7311.00	52.6 PK	74.0	-21.4	1.07 H	261	9.10	43.50
6	7311.00	38.7 AV	54.0	-15.3	1.07 H	261	-4.80	43.50
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	*2437.00	101.6 PK			1.34 V	267	70.10	31.50
2	*2437.00	90.9 AV			1.34 V	267	59.40	31.50
3	4874.00	46.7 PK	74.0	-27.3	1.00 V	287	9.40	37.30
4	4874.00	33.6 AV	54.0	-20.4	1.00 V	287	-3.70	37.30
5	7311.00	52.3 PK	74.0	-21.7	1.00 V	190	8.80	43.50
6	7311.00	38.5 AV	54.0	-15.5	1.00 V	190	-5.00	43.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	96.5 PK			1.29 H	300	65.00	31.50
2	*2452.00	85.9 AV			1.29 H	300	54.40	31.50
3	2483.50	56.1 PK	74.0	-17.9	1.29 H	300	24.50	31.60
4	2483.50	43.5 AV	54.0	-10.5	1.29 H	300	11.90	31.60
5	4904.00	47.7 PK	74.0	-26.3	1.00 H	129	10.30	37.40
6	4904.00	33.5 AV	54.0	-20.5	1.00 H	129	-3.90	37.40
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	98.9 PK			1.33 V	266	67.40	31.50
2	*2452.00	87.9 AV			1.33 V	266	56.40	31.50
3	2483.50	56.8 PK	74.0	-17.2	1.33 V	266	25.20	31.60
4	2483.50	44.1 AV	54.0	-9.9	1.33 V	266	12.50	31.60
5	4904.00	46.2 PK	74.0	-27.8	1.00 V	304	8.80	37.40
6	4904.00	33.4 AV	54.0	-20.6	1.00 V	304	-4.00	37.40

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).
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): 2TX

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	Haru Yang

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	60.6 PK	74.0	-13.4	1.08 H	141	29.30	31.30
2	2390.00	46.6 AV	54.0	-7.4	1.08 H	141	15.30	31.30
3	*2412.00	104.1 PK			1.08 H	141	72.70	31.40
4	*2412.00	90.8 AV			1.08 H	141	59.40	31.40
5	4824.00	46.8 PK	74.0	-27.2	1.00 H	141	9.60	37.20
6	4824.00	33.4 AV	54.0	-20.6	1.00 H	141	-3.80	37.20
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	2390.00	60.6 PK	74.0	-13.4	1.36 V	265	29.30	31.30
2	2390.00	48.8 AV	54.0	-5.2	1.36 V	265	17.50	31.30
3	*2412.00	105.7 PK			1.35 V	265	74.30	31.40
4	*2412.00	92.7 AV			1.35 V	265	61.30	31.40
5	4824.00	46.8 PK	74.0	-27.2	1.00 V	314	9.60	37.20
6	4824.00	33.7 AV	54.0	-20.3	1.00 V	314	-3.50	37.20

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.



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	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.4 PK			1.06 H	133	75.90	31.50
2	*2437.00	93.6 AV			1.06 H	133	62.10	31.50
3	4874.00	47.9 PK	74.0	-26.1	1.00 H	134	10.60	37.30
4	4874.00	33.7 AV	54.0	-20.3	1.00 H	134	-3.60	37.30
5	7311.00	52.9 PK	74.0	-21.1	1.07 H	266	9.40	43.50
6	7311.00	38.8 AV	54.0	-15.2	1.07 H	266	-4.70	43.50
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	*2437.00	107.9 PK			1.57 V	73	76.40	31.50
2	*2437.00	94.9 AV			1.57 V	73	63.40	31.50
3	4874.00	47.3 PK	74.0	-26.7	1.00 V	290	10.00	37.30
4	4874.00	34.1 AV	54.0	-19.9	1.00 V	290	-3.20	37.30
5	7311.00	52.9 PK	74.0	-21.1	1.00 V	199	9.40	43.50
6	7311.00	38.8 AV	54.0	-15.2	1.00 V	199	-4.70	43.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.6 PK			1.05 H	135	73.00	31.60
2	*2462.00	91.5 AV			1.05 H	135	59.90	31.60
3	2483.50	61.4 PK	74.0	-12.6	1.05 H	135	29.80	31.60
4	2483.50	47.7 AV	54.0	-6.3	1.05 H	135	16.10	31.60
5	4924.00	42.1 PK	74.0	-31.9	1.00 H	137	4.70	37.40
6	4924.00	29.2 AV	54.0	-24.8	1.00 H	137	-8.20	37.40
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	106.5 PK			1.28 V	266	74.90	31.60
2	*2462.00	93.1 AV			1.28 V	266	61.50	31.60
3	2483.50	60.8 PK	74.0	-13.2	1.28 V	266	29.20	31.60
4	2483.50	47.2 AV	54.0	-6.8	1.28 V	266	15.60	31.60
5	4924.00	43.1 PK	74.0	-30.9	1.00 V	291	5.70	37.40
6	4924.00	29.5 AV	54.0	-24.5	1.00 V	291	-7.90	37.40

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).
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 (40MHz): 2TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.9 PK	74.0	-10.1	1.07 H	137	32.60	31.30
2	2390.00	48.6 AV	54.0	-5.4	1.07 H	137	17.30	31.30
3	*2422.00	97.9 PK			1.07 H	137	66.50	31.40
4	*2422.00	84.8 AV			1.07 H	137	53.40	31.40
5	4844.00	46.9 PK	74.0	-27.1	1.00 H	127	9.60	37.30
6	4844.00	33.6 AV	54.0	-20.4	1.00 H	127	-3.70	37.30
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	2390.00	66.2 PK	74.0	-7.8	1.35 V	265	34.90	31.30
2	2390.00	50.0 AV	54.0	-4.0	1.35 V	265	18.70	31.30
3	*2422.00	99.3 PK			1.35 V	265	67.90	31.40
4	*2422.00	86.3 AV			1.35 V	265	54.90	31.40
5	4844.00	46.5 PK	74.0	-27.5	1.00 V	297	9.20	37.30
6	4844.00	33.3 AV	54.0	-20.7	1.00 V	297	-4.00	37.30

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).
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	Haru Yang

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	102.3 PK			1.07 H	135	70.80	31.50
2	*2437.00	89.2 AV			1.07 H	135	57.70	31.50
3	4874.00	47.3 PK	74.0	-26.7	1.00 H	152	10.00	37.30
4	4874.00	33.9 AV	54.0	-20.1	1.00 H	152	-3.40	37.30
5	7311.00	52.7 PK	74.0	-21.3	1.05 H	251	9.20	43.50
6	7311.00	38.5 AV	54.0	-15.5	1.05 H	251	-5.00	43.50
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	*2437.00	103.7 PK			1.35 V	265	72.20	31.50
2	*2437.00	90.4 AV			1.35 V	265	58.90	31.50
3	4874.00	47.1 PK	74.0	-26.9	1.00 V	276	9.80	37.30
4	4874.00	33.8 AV	54.0	-20.2	1.00 V	276	-3.50	37.30
5	7311.00	52.7 PK	74.0	-21.3	1.00 V	194	9.20	43.50
6	7311.00	38.7 AV	54.0	-15.3	1.00 V	194	-4.80	43.50

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Haru Yang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	98.4 PK			1.06 H	134	66.90	31.50
2	*2452.00	85.2 AV			1.06 H	134	53.70	31.50
3	2483.50	60.9 PK	74.0	-13.1	1.06 H	134	29.30	31.60
4	2483.50	47.0 AV	54.0	-7.0	1.06 H	134	15.40	31.60
5	4904.00	46.4 PK	74.0	-27.6	1.00 H	147	9.00	37.40
6	4904.00	33.3 AV	54.0	-20.7	1.00 H	147	-4.10	37.40
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	99.6 PK			1.32 V	264	68.10	31.50
2	*2452.00	85.9 AV			1.32 V	264	54.40	31.50
3	2483.50	61.0 PK	74.0	-13.0	1.32 V	264	29.40	31.60
4	2483.50	46.1 AV	54.0	-7.9	1.32 V	264	14.50	31.60
5	4904.00	46.5 PK	74.0	-27.5	1.00 V	285	9.10	37.40
6	4904.00	33.1 AV	54.0	-20.9	1.00 V	285	-4.30	37.40

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).
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 :

802.11n (20MHz): 2TX

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Aska Huang

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	96.01	21.8 QP	43.5	-21.7	2.00 H	235	12.90	8.90
2	193.22	32.5 QP	43.5	-11.0	1.50 H	237	21.00	11.50
3	300.16	34.8 QP	46.0	-11.2	1.00 H	53	19.80	15.00
4	327.38	33.6 QP	46.0	-12.4	1.00 H	103	17.90	15.70
5	364.32	30.1 QP	46.0	-15.9	1.00 H	276	13.50	16.60
6	500.42	27.7 QP	46.0	-18.3	2.00 H	273	7.70	20.00
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	59.06	25.7 QP	40.0	-14.3	1.24 V	15	12.20	13.50
2	193.22	29.6 QP	43.5	-13.9	1.24 V	176	18.10	11.50
3	300.16	32.7 QP	46.0	-13.3	1.50 V	7	17.70	15.00
4	333.21	31.3 QP	46.0	-14.7	1.50 V	7	15.50	15.80
5	364.32	30.8 QP	46.0	-15.2	1.50 V	7	14.20	16.60
6	498.47	31.4 QP	46.0	-14.6	1.00 V	77	11.50	19.90

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.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 19, 2011	Nov. 18, 2012
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 22, 2011	Dec. 21, 2012
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
Software ADT	ADT_Cond_ V7.3.7	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

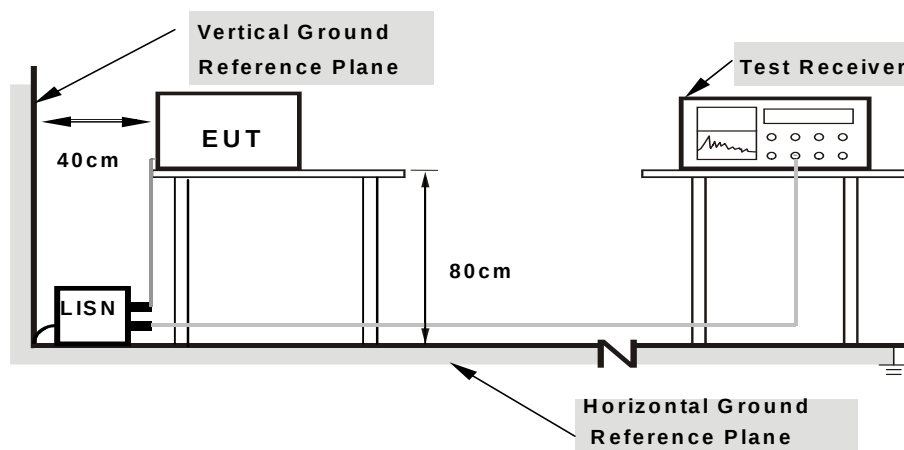
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

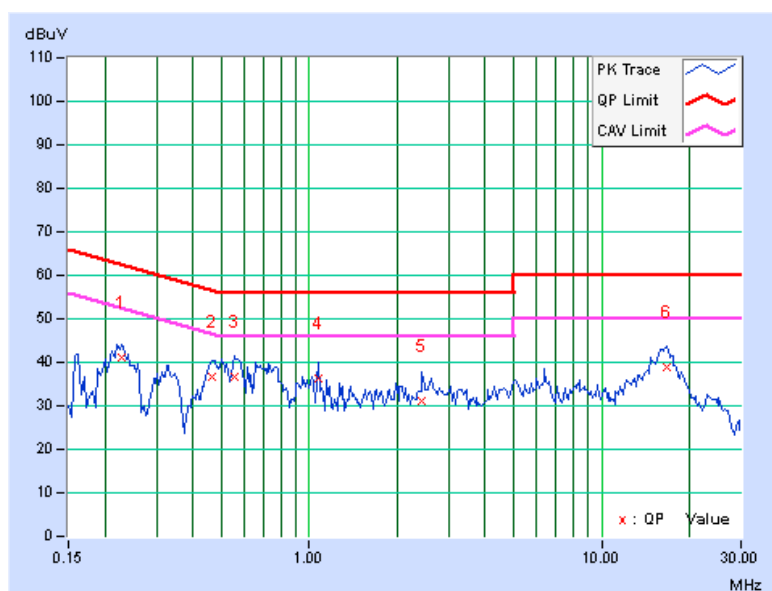
CONDUCTED WORST-CASE DATA :

802.11n (20MHz): 2TX

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22812	0.15	40.83	29.15	40.98	29.30	62.52	52.52	-21.54	-23.22
2	0.46250	0.17	36.62	21.93	36.79	22.10	56.65	46.65	-19.86	-24.55
3	0.55234	0.18	36.31	22.96	36.49	23.14	56.00	46.00	-19.51	-22.86
4	1.07422	0.20	36.11	24.55	36.31	24.75	56.00	46.00	-19.69	-21.25
5	2.42578	0.28	30.81	24.74	31.09	25.02	56.00	46.00	-24.91	-20.98
6	16.64453	0.56	38.29	31.15	38.85	31.71	60.00	50.00	-21.15	-18.29

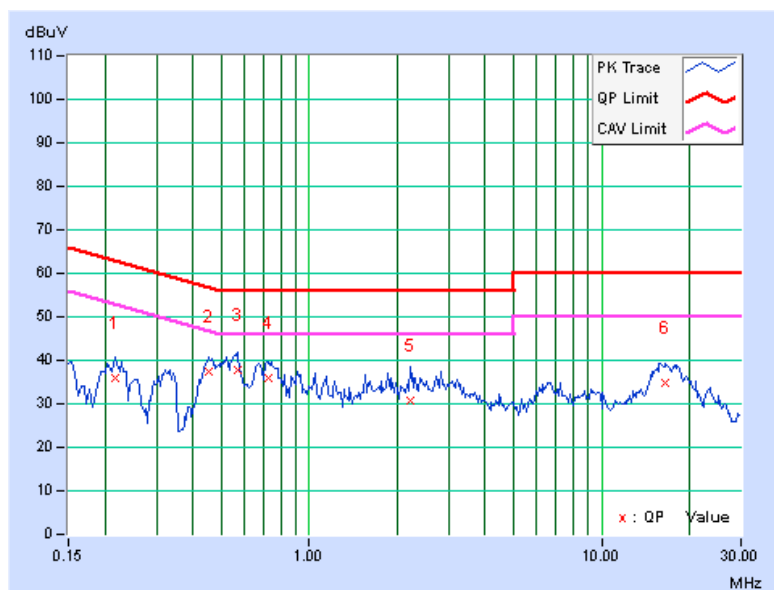
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21641	0.14	35.86	29.50	36.00	29.64	62.96	52.96	-26.95	-23.31
2	0.45469	0.16	37.07	18.63	37.23	18.79	56.79	46.79	-19.56	-28.00
3	0.56797	0.17	37.77	20.53	37.94	20.70	56.00	46.00	-18.06	-25.30
4	0.72422	0.18	35.74	22.94	35.92	23.12	56.00	46.00	-20.08	-22.88
5	2.21094	0.27	30.45	25.36	30.72	25.63	56.00	46.00	-25.28	-20.37
6	16.60156	0.64	34.03	27.11	34.67	27.75	60.00	50.00	-25.33	-22.25

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.

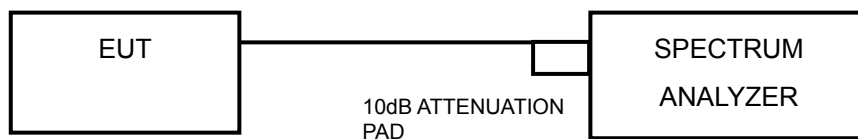


4.3 6dB BANDWIDTH MEASUREMENT

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) = approximately 1% of the emission bandwidth
- 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	8.13	0.5	PASS
6	2437	8.09	0.5	PASS
11	2462	8.14	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.14	0.5	PASS
6	2437	16.11	0.5	PASS
11	2462	16.08	0.5	PASS

802.11n (20MHz): 1TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.71	0.5	PASS
6	2437	17.70	0.5	PASS
11	2462	17.71	0.5	PASS

802.11n (40MHz): 1TX

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.38	0.5	PASS
6	2437	36.37	0.5	PASS
9	2452	36.40	0.5	PASS

**802.11n (20MHz): 2TX**

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.61	17.81	0.5	PASS
6	2437	17.70	17.77	0.5	PASS
11	2462	17.74	17.81	0.5	PASS

802.11n (40MHz): 2TX

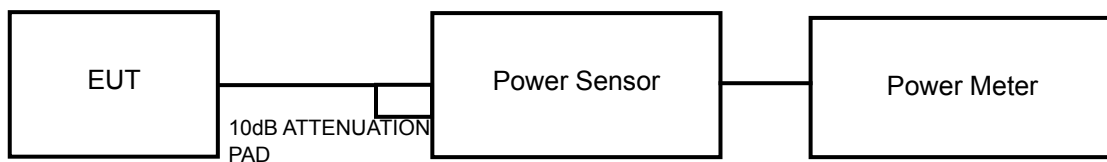
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.39	36.43	0.5	PASS
6	2437	36.33	36.26	0.5	PASS
9	2452	36.36	36.46	0.5	PASS

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)

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

802.11b: 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	44.4	16.47	30	PASS
6	2437	55.6	17.45	30	PASS
11	2462	54.0	17.32	30	PASS

802.11g: 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	128.2	21.08	30	PASS
6	2437	166.3	22.21	30	PASS
11	2462	119.7	20.78	30	PASS

802.11n (20MHz): 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	106.7	20.28	30	PASS
6	2437	166.3	22.21	30	PASS
11	2462	103.5	20.15	30	PASS

802.11n (40MHz): 1TX

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	67.9	18.32	30	PASS
6	2437	107.9	20.33	30	PASS
9	2452	62.8	17.98	30	PASS

**A D T****802.11n (20MHz): 2TX**

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	18.12	18.62	137.6	21.4	30	PASS
6	2437	20.35	20.58	222.7	23.5	30	PASS
11	2462	18.47	18.43	140.0	21.5	30	PASS

802.11n (40MHz): 2TX

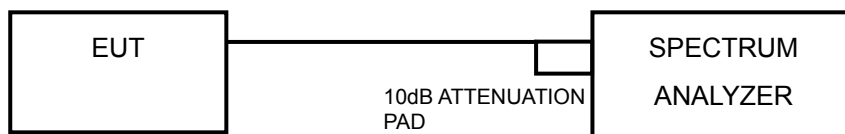
CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	15.53	15.59	72.0	18.6	30	PASS
6	2437	20.18	20.41	214.1	23.3	30	PASS
9	2452	15.67	15.72	74.2	18.7	30	PASS

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 the RBW = 100 kHz, VBW = 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.
- Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

**A D T**

4.5.7 TEST RESULTS

802.11b: 1TX

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	4.75	-10.48	8	PASS
6	2437	5.61	-9.62	8	PASS
11	2462	5.58	-9.65	8	PASS

802.11g: 1TX

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	2.79	-12.44	8	PASS
6	2437	4.15	-11.08	8	PASS
11	2462	2.43	-12.80	8	PASS

802.11n (20MHz): 1TX

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	2.13	-13.10	8	PASS
6	2437	3.91	-11.32	8	PASS
11	2462	1.94	-13.29	8	PASS

802.11n (40MHz): 1TX

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-4.87	-20.10	8	PASS
6	2437	-2.98	-18.21	8	PASS
9	2452	-5.41	-20.64	8	PASS

**A D T****802.11n (20MHz): 2TX**

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-0.26	-15.49	3.01	-12.48	8	PASS
	6	2437	2.17	-13.06	3.01	-10.05	8	PASS
	11	2462	0.28	-14.95	3.01	-11.94	8	PASS
1	1	2412	0.72	-14.51	3.01	-11.50	8	PASS
	6	2437	2.66	-12.57	3.01	-9.56	8	PASS
	11	2462	0.41	-14.82	3.01	-11.81	8	PASS

802.11n (40MHz): 2TX

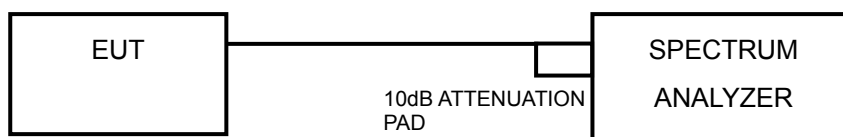
TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-7.37	-22.60	3.01	-19.59	8	PASS
	6	2437	-2.69	-17.92	3.01	-14.91	8	PASS
	9	2452	-7.20	-22.43	3.01	-19.42	8	PASS
1	3	2422	-6.61	-21.84	3.01	-18.83	8	PASS
	6	2437	-1.92	-17.15	3.01	-14.14	8	PASS
	9	2452	-6.53	-21.76	3.01	-18.75	8	PASS

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. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. 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

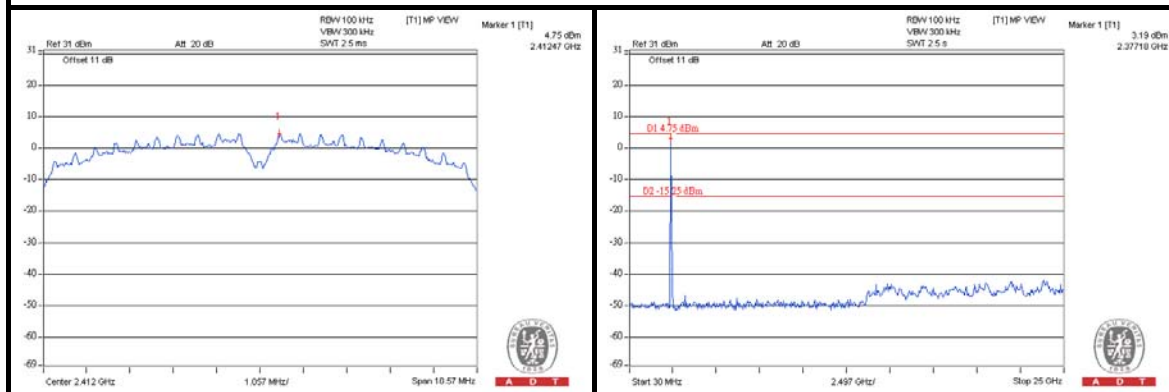
The conducted emission test is performed on each TX port of operating mode without summing or adding $10\log(N)$ since the limit is relative emission limit. Only worst data of each operating mode is presented.

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.

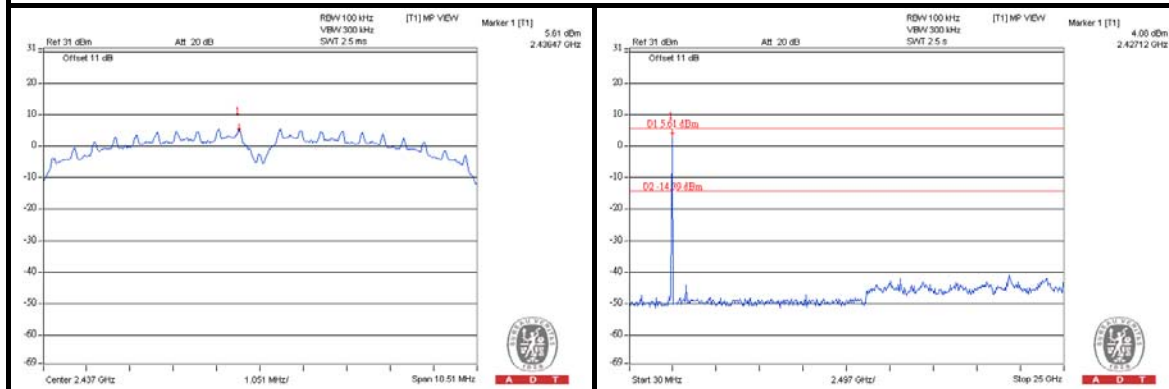
4.6.8 TEST RESULTS

802.11b: 1TX

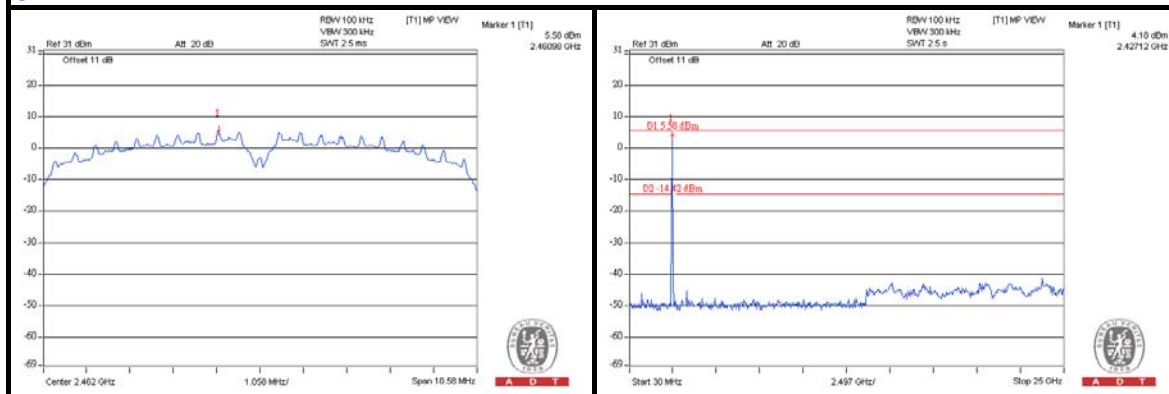
CH 1



CH 6



CH 11

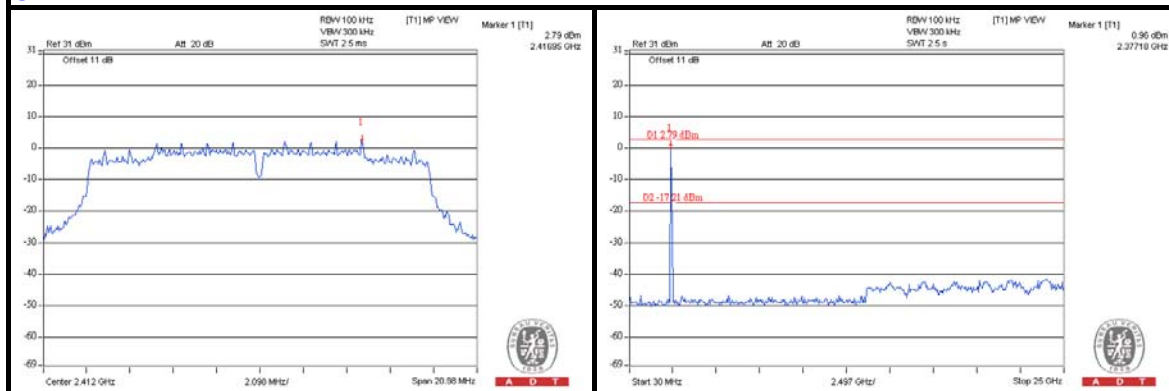




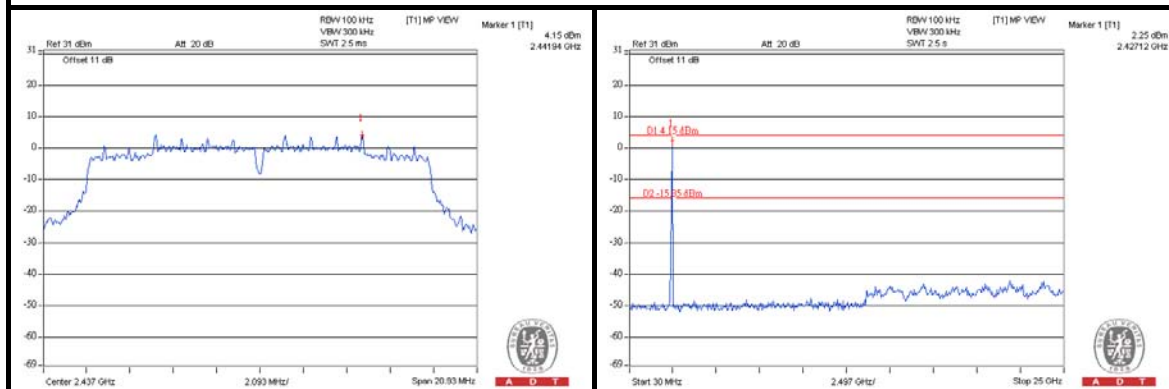
A D T

802.11g: 1TX

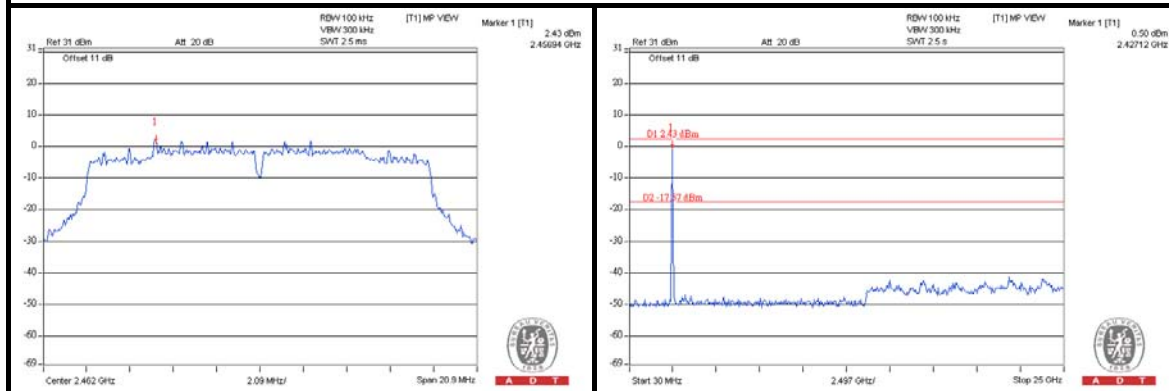
CH 1



CH 6

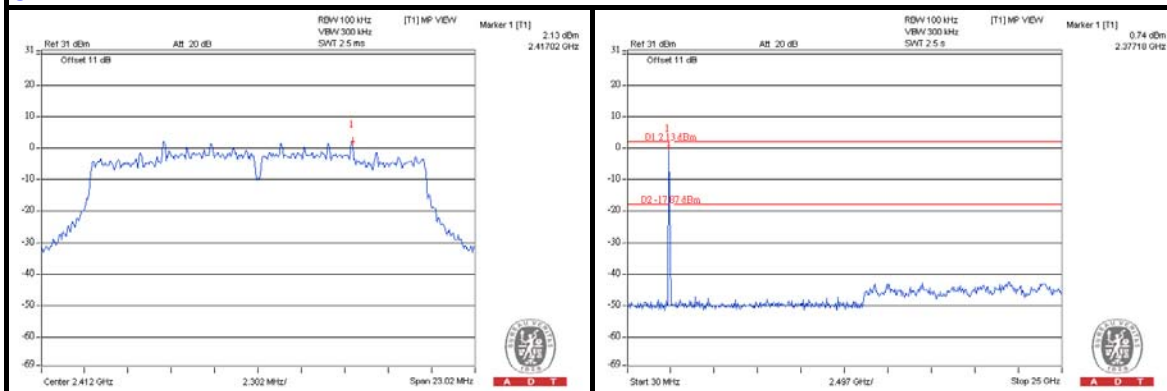


CH 11

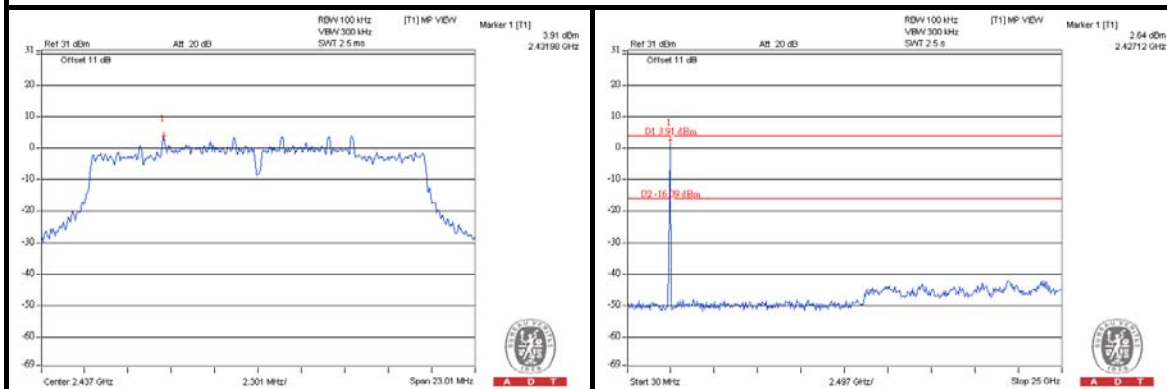


802.11n (20MHz): 1TX

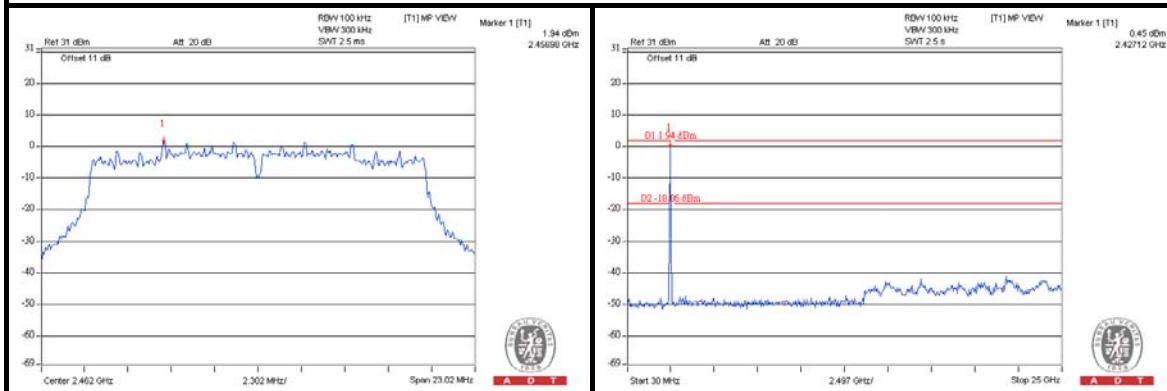
CH 1



CH 6

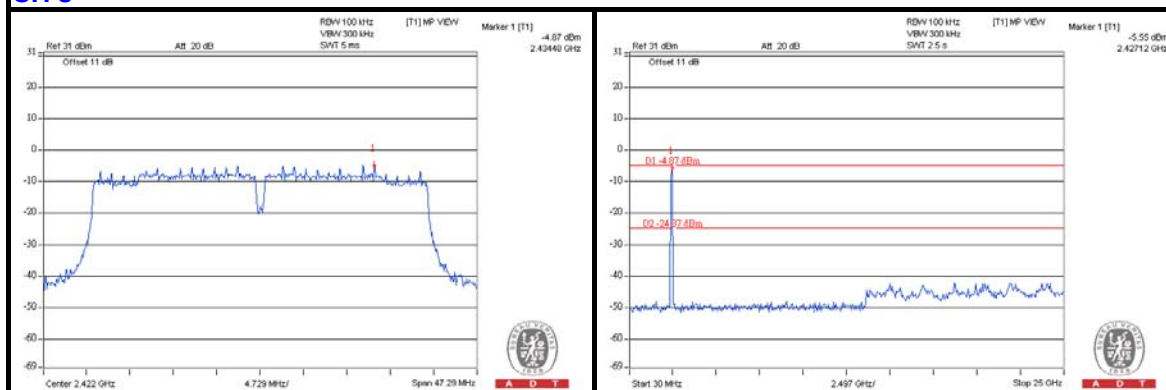


CH 11

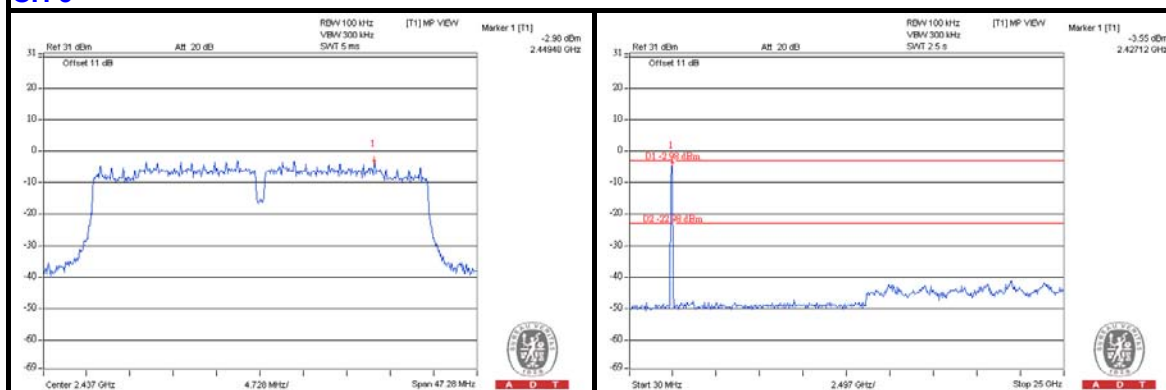


802.11n (40MHz): 1TX

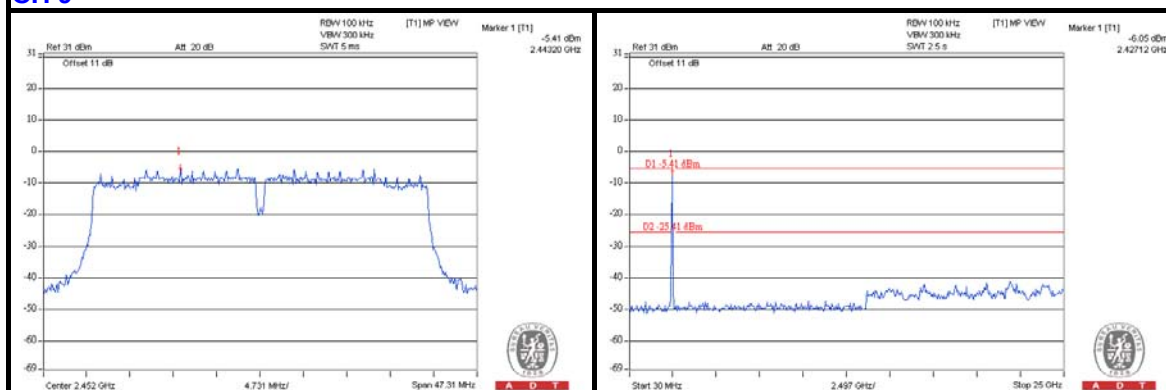
CH 3



CH 6

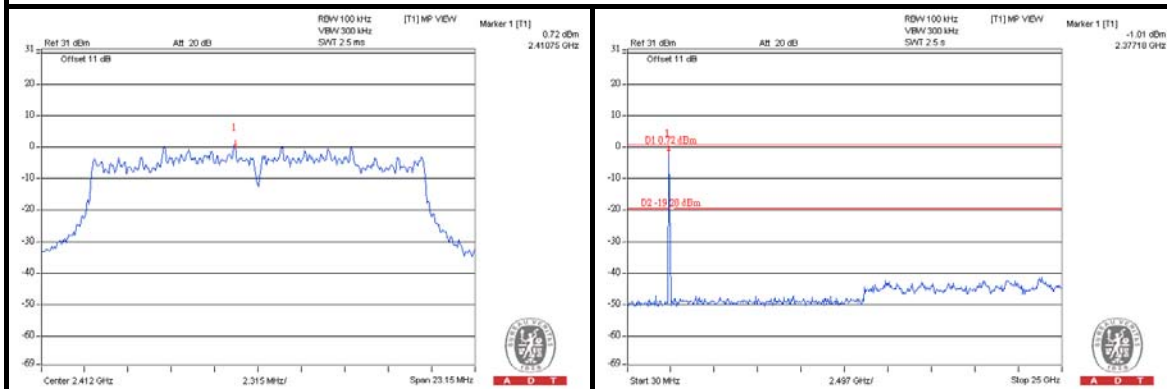


CH 9

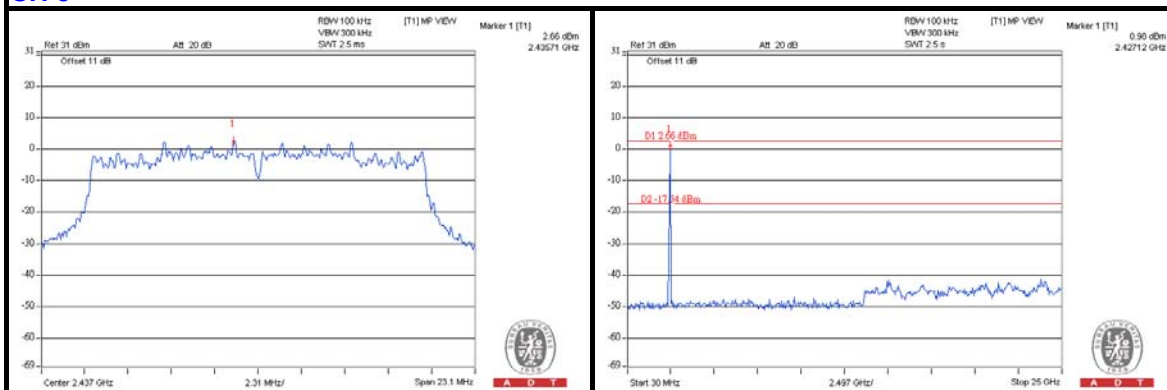


802.11n (20MHz): 2TX

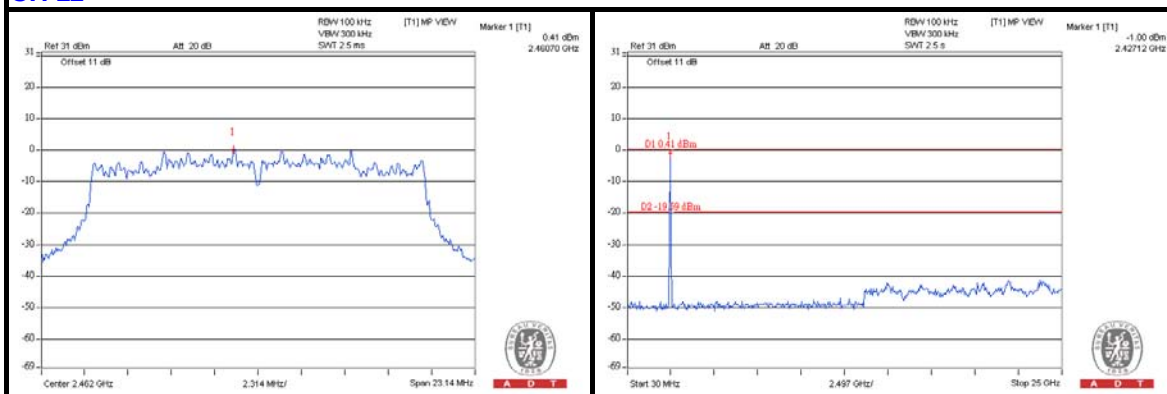
CH 1



CH 6

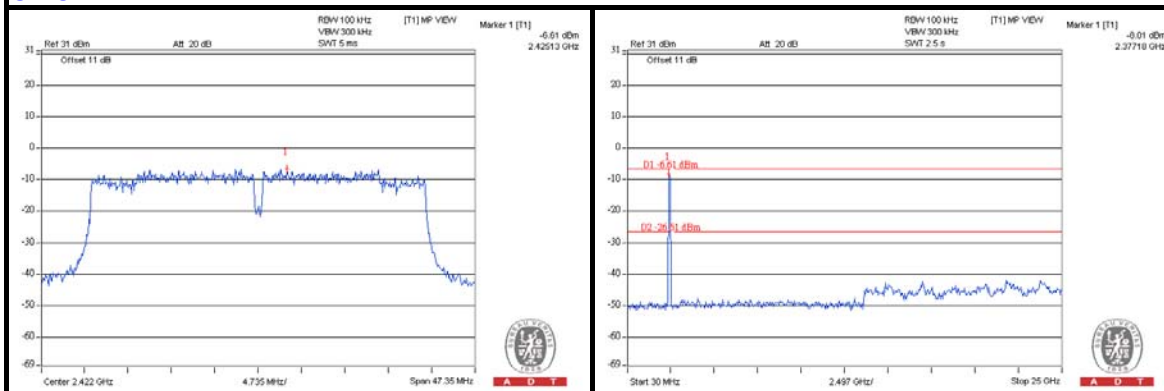


CH 11

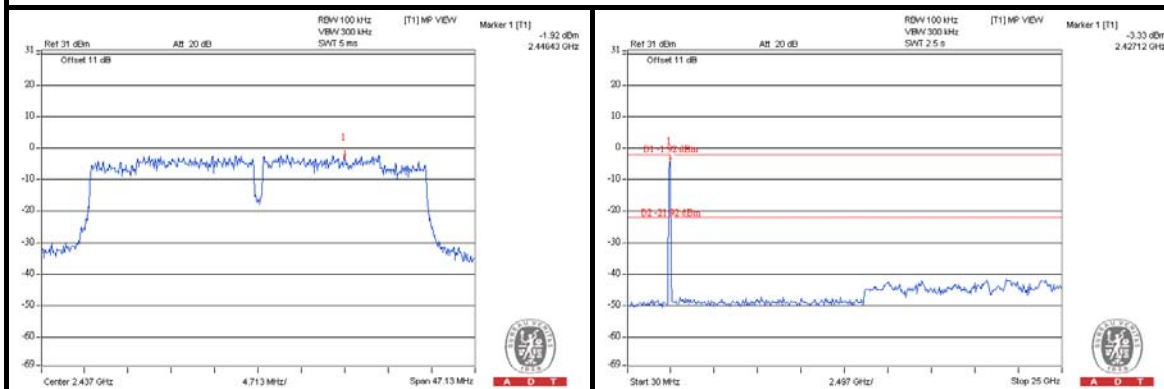


802.11n (40MHz): 2TX

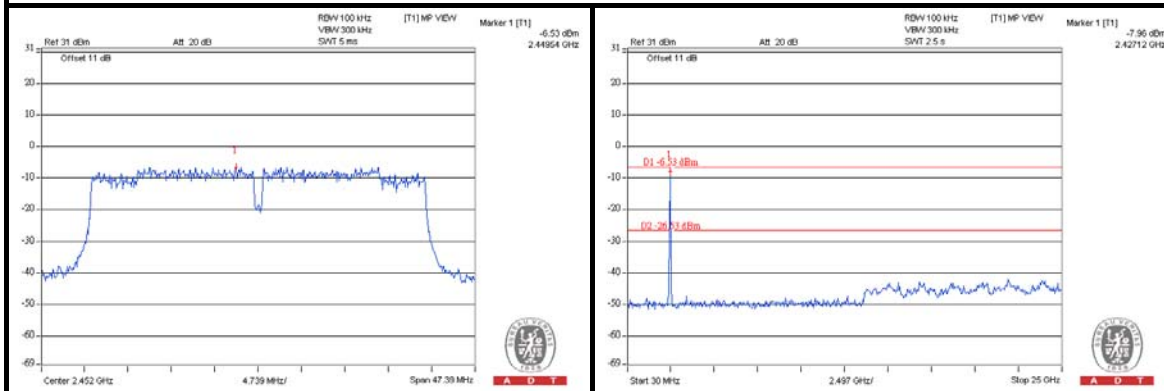
CH 3



CH 6



CH 9



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab

Tel: 886-3-5935343

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Email: service.adt@tw.bureauveritas.com

Web Site: www.adt.com.tw

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

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---