

FCC TEST REPORT (15.247)

REPORT NO.: RF130207C20

MODEL NO.: DXN-W224

FCC ID: KA2XNW224A1

RECEIVED: Dec. 28, 2012

TESTED: Dec. 28, 2012 ~ May 09, 2013

ISSUED: May 09, 2013

APPLICANT: D-Link Corporation

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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
RF130207C20	Original release.	May 09, 2013



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1. CERTIFICATION

PRODUCT: Wireless Ethernet Coax Bridge

MODEL NO.: DXN-W224

BRAND: D-Link

APPLICANT: D-Link Corporation

TESTED: Dec. 28, 2012 ~ May 09, 2013

TEST SAMPLE: ENGINEERING SAMPLE

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

ANSI C63.10-2009

The above equipment (model: DXN-W224) 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 : Sun Li , **DATE :** May 09, 2013
Suntee Liu / Specialist

APPROVED BY : Ken Liu , **DATE :** May 09, 2013
Ken Liu / 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 -10.64dB at 0.57969MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 11650.00MHz.
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	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	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	Wireless Ethernet Coax Bridge
MODEL NO.	DXN-W224
POWER SUPPLY	12Vdc (Adapter)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11/5.5/2/1Mbps 802.11a/g: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	2.4GHz: 802.11b, 802.11g, 802.11n (20MHz): 11 802.11n (40MHz): 7 5.0GHz: 802.11a, 802.11n (20MHz): 5 802.11n (40MHz): 2
OUTPUT POWER	349.035mW for 2412 ~ 2462MHz 609.556mW for 5745 ~ 5825MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with 3dBi gain 5.0GHz: PIFA antenna with 3dBi gain PCB antenna with 3dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

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

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

2. The EUT consumes power from the following adapter.

Brand	D-Link
Model	CG2412-B
Input Power	100-240Vac, 0.6A, 50-60Hz
Output Power	+12dc, 2A
Power Line	1.2m cable without core attached on adapter

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, 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		

FOR 5.0GHz (5745 ~ 5825MHz):

5 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

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.

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2

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)
-	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
-	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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



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TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	21deg. C, 68%RH	120Vac, 60Hz	Brad Tung Sun Lin
RE<1G	21deg. C, 68%RH	120Vac, 60Hz	Sun Lin
PLC	25deg. C, 68%RH	120Vac, 60Hz	Sun Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Martin Lee

FOR 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	√	√	5GHz PIFA antenna.
B	√	√	-	-	5GHz PCB antenna.

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: “-” means no effect.

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, B	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A, B	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A, B	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	149 to 165	157	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	157	OFDM	BPSK	6.0

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)
-	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	21deg. C, 68%RH	120Vac, 60Hz	Brad Tung Sun Lin Chris Lin
RE<1G	21deg. C, 68%RH 25deg. C, 65%RH	120Vac, 60Hz	Sun Lin Ted Chang
PLC	25deg. C, 68%RH	120Vac, 60Hz	Sun Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Martin Lee

3.3 DESCRIPTION OF SUPPORT UNITS

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

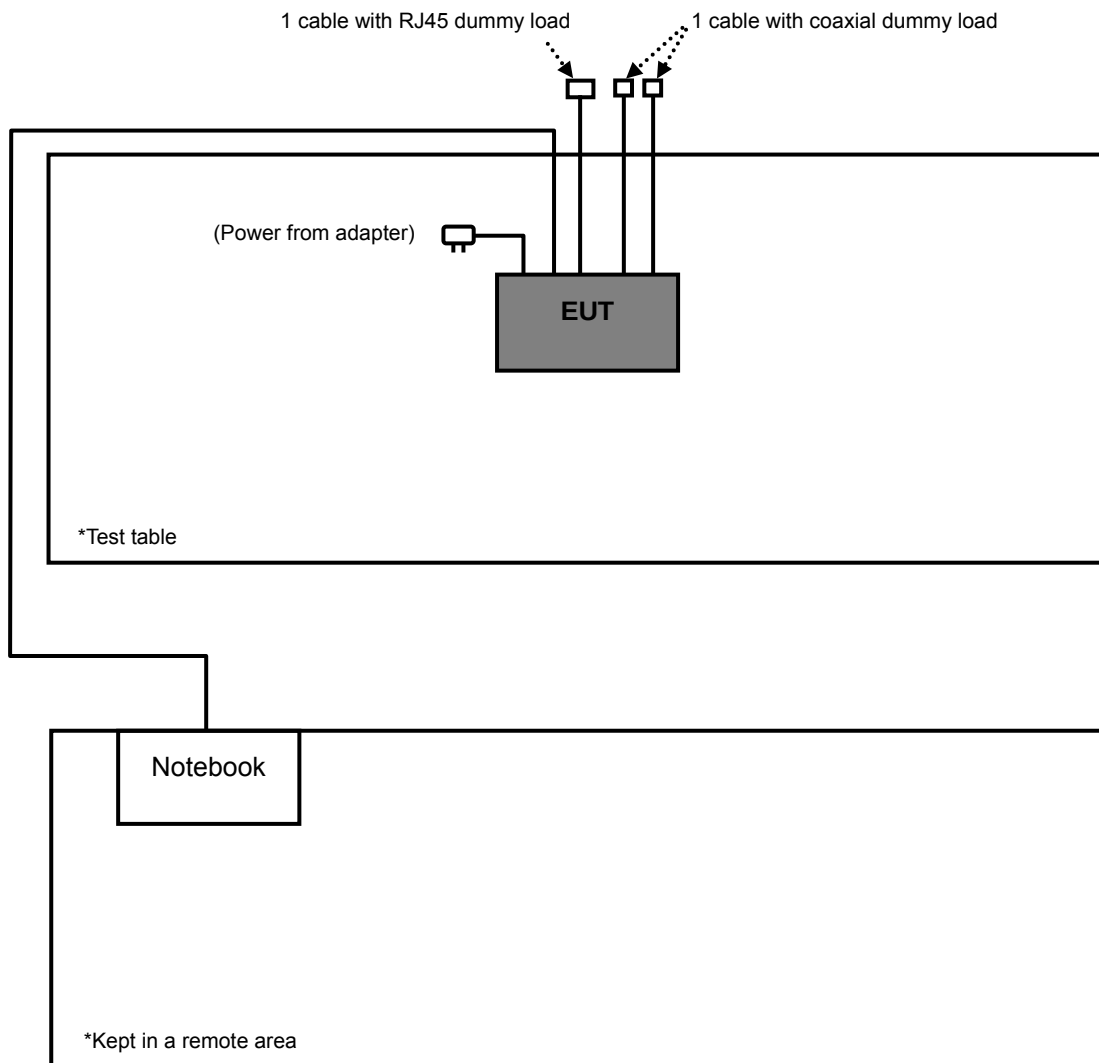
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	RJ45 Dummy Load	NA	NA	NA	NA
2	Coaxial Dummy Load	NA	NA	NA	NA
3	Coaxial Dummy Load	NA	NA	NA	NA
4	Notebook	DELL	D531	CN-0XM006-48643-8 1U-2973	QDS-BRCM1020

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.8m RJ45 UTP cable with load connected to EUT
2	1.8m coaxial cable with load connected to EUT
3	1.8m coaxial cable with load connected to EUT
4	10m RJ45 UTP cable

NOTE:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item 4 acted as a communication partner to transfer data.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST





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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)

558074 D01 DTS Meas Guidance v02

662911 D01 Multiple Transmitter Output v01 r02

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 (FOR 2.4GHz BAND)

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

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

4.1.2 TEST INSTRUMENTS

Tested date: Feb. 22 ~ May 09, 2013

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 16, 2012	Nov. 15, 2013
Spectrum Analyzer Agilent	FSP40	100269	Jan. 28, 2013	Jan. 27, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 03, 2012 Mar. 22, 2013	Apr. 02, 2013 Mar. 21, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Sep. 03, 2012	Sep. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8449B	3008A01911	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10638	Oct. 25, 2012	Oct. 24, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 11, 2012	Aug. 10, 2013
Software	ADT_Radiated_ V7.6.15.9.2	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
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 25, 2012	Oct. 24, 2013
High Speed Peak Power Meter	ML2495A	0842014	Apr. 28, 2012 Apr. 25, 2013	Apr. 27, 2013 Apr. 26, 2014
Power Sensor	MA2411B	0738404	Apr. 28, 2012 Apr. 24, 2013	Apr. 27, 2013 Apr. 23, 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 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 9.
 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 215374.
 6. 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.

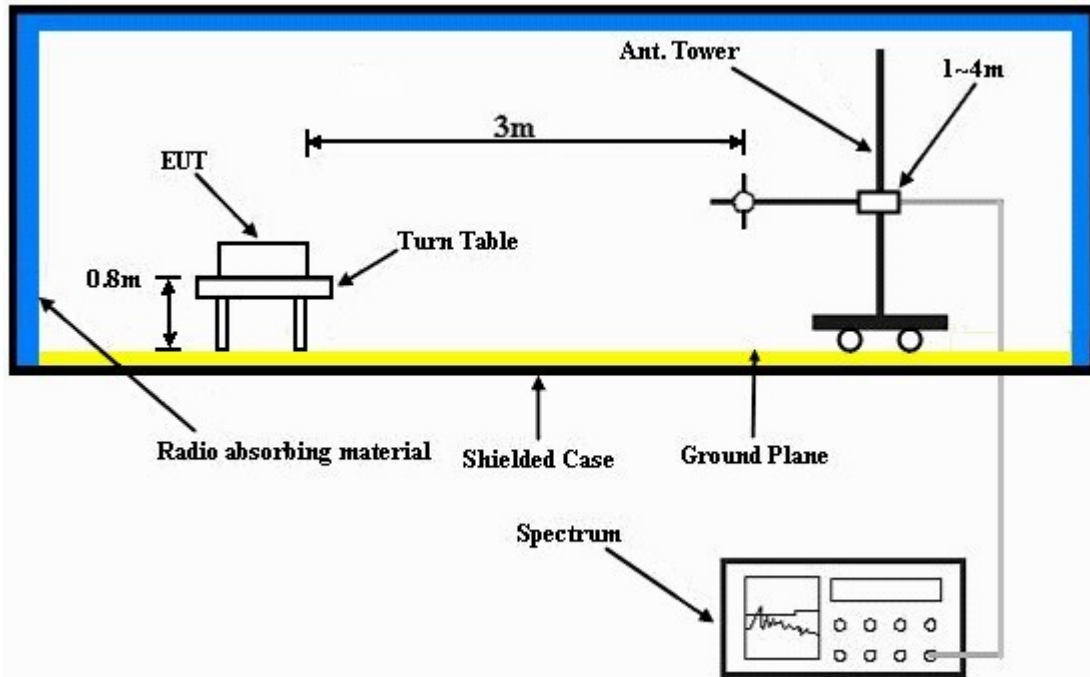
NOTE:

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



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4.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE 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	21deg. C, 68%RH	TESTED BY	Brad Tung

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.7 PK	74.0	-9.3	1.34 H	219	32.70	32.00
2	2390.00	52.8 AV	54.0	-1.2	1.34 H	219	20.80	32.00
3	*2412.00	109.4 PK			1.33 H	226	77.40	32.00
4	*2412.00	105.3 AV			1.33 H	226	73.30	32.00
5	4824.00	50.1 PK	74.0	-23.9	1.29 H	109	11.30	38.80
6	4824.00	43.3 AV	54.0	-10.7	1.29 H	109	4.50	38.80
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	66.9 PK	74.0	-7.1	1.00 V	184	34.90	32.00
2	2390.00	51.8 AV	54.0	-2.2	1.00 V	184	19.80	32.00
3	*2412.00	109.4 PK			1.00 V	184	77.40	32.00
4	*2412.00	106.0 AV			1.00 V	184	74.00	32.00
5	4824.00	53.1 PK	74.0	-20.9	1.00 V	16	14.30	38.80
6	4824.00	50.1 AV	54.0	-3.9	1.00 V	16	11.30	38.80

REMARKS:

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



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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	21deg. C, 68%RH	TESTED BY	Brad Tung

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	1440.00	55.9 PK	74.0	-18.1	1.00 H	281	27.50	28.40
2	1440.00	51.9 AV	54.0	-2.1	1.00 H	281	23.50	28.40
3	*2437.00	109.7 PK			1.32 H	218	77.60	32.10
4	*2437.00	105.5 AV			1.32 H	218	73.40	32.10
5	4874.00	49.6 PK	74.0	-24.4	1.25 H	108	10.70	38.90
6	4874.00	44.3 AV	54.0	-9.7	1.25 H	108	5.40	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.6 PK			1.00 V	184	78.50	32.10
2	*2437.00	106.3 AV			1.00 V	184	74.20	32.10
3	4874.00	56.3 PK	74.0	-17.7	1.00 V	9	17.40	38.90
4	4874.00	52.4 AV	54.0	-1.6	1.00 V	9	13.50	38.90
5	7311.00	56.3 PK	74.0	-17.7	1.68 V	327	13.10	43.20
6	7311.00	51.4 AV	54.0	-2.6	1.68 V	327	8.20	43.20

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 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Brad Tung

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	107.8 PK			1.30 H	250	75.70	32.10
2	*2462.00	103.8 AV			1.30 H	250	71.70	32.10
3	2483.50	63.7 PK	74.0	-10.3	1.29 H	220	31.50	32.20
4	2483.50	50.6 AV	54.0	-3.4	1.29 H	220	18.40	32.20
5	4924.00	51.4 PK	74.0	-22.6	1.33 H	120	12.40	39.00
6	4924.00	41.3 AV	54.0	-12.7	1.33 H	120	2.30	39.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.8 PK			1.17 V	208	75.70	32.10
2	*2462.00	103.6 AV			1.17 V	208	71.50	32.10
3	2483.50	68.1 PK	74.0	-5.9	1.17 V	208	35.90	32.20
4	2483.50	52.8 AV	54.0	-1.2	1.17 V	208	20.60	32.20
5	4924.00	53.8 PK	74.0	-20.2	1.00 V	15	14.80	39.00
6	4924.00	52.2 AV	54.0	-1.8	1.00 V	15	13.20	39.00
7	7311.00	52.5 PK	74.0	-21.5	1.66 V	350	9.30	43.20
8	7311.00	44.5 AV	54.0	-9.5	1.66 V	350	1.30	43.20

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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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	21deg. C, 68%RH	TESTED BY	Sun Lin

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	68.4 PK	74.0	-5.6	1.06 H	223	36.40	32.00
2	2390.00	52.4 AV	54.0	-1.6	1.06 H	223	20.40	32.00
3	*2412.00	108.3 PK			1.06 H	223	76.30	32.00
4	*2412.00	96.0 AV			1.06 H	223	64.00	32.00
5	4824.00	45.4 PK	74.0	-28.6	1.51 H	195	6.60	38.80
6	4824.00	32.8 AV	54.0	-21.2	1.51 H	195	-6.00	38.80
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	68.1 PK	74.0	-5.9	1.20 V	193	36.10	32.00
2	2390.00	52.1 AV	54.0	-1.9	1.20 V	193	20.10	32.00
3	*2412.00	108.0 PK			1.20 V	193	76.00	32.00
4	*2412.00	95.6 AV			1.20 V	193	63.60	32.00
5	4824.00	48.4 PK	74.0	-25.6	1.00 V	205	9.60	38.80
6	4824.00	34.9 AV	54.0	-19.1	1.00 V	205	-3.90	38.80

REMARKS:

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



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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	21deg. C, 68%RH	TESTED BY	Sun Lin

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	65.4 PK	74.0	-8.6	1.05 H	216	33.40	32.00
2	2390.00	50.2 AV	54.0	-3.8	1.05 H	216	18.20	32.00
3	*2437.00	111.6 PK			1.02 H	213	79.50	32.10
4	*2437.00	101.9 AV			1.02 H	213	69.80	32.10
5	4874.00	52.0 PK	74.0	-22.0	1.01 H	142	13.10	38.90
6	4874.00	38.9 AV	54.0	-15.1	1.01 H	142	0.00	38.90
7	7311.00	48.5 PK	74.0	-25.5	1.18 H	51	5.30	43.20
8	7311.00	35.5 AV	54.0	-18.5	1.18 H	51	-7.70	43.20
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	70.0 PK	74.0	-4.0	1.15 V	204	38.00	32.00
2	2390.00	53.0 AV	54.0	-1.0	1.15 V	204	21.00	32.00
3	*2437.00	112.7 PK			1.00 V	207	80.60	32.10
4	*2437.00	103.5 AV			1.00 V	207	71.40	32.10
5	4874.00	58.0 PK	74.0	-16.0	1.00 V	360	19.10	38.90
6	4874.00	45.4 AV	54.0	-8.6	1.00 V	360	6.50	38.90
7	7311.00	53.3 PK	74.0	-20.7	1.11 V	189	10.10	43.20
8	7311.00	40.9 AV	54.0	-13.1	1.11 V	189	-2.30	43.20

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 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Sun Lin

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	109.5 PK			1.25 H	264	77.40	32.10
2	*2462.00	97.2 AV			1.25 H	264	65.10	32.10
3	2483.50	70.8 PK	74.0	-3.2	1.25 H	267	38.60	32.20
4	2483.50	52.7 AV	54.0	-1.3	1.25 H	267	20.50	32.20
5	4924.00	47.0 PK	74.0	-27.0	1.30 H	212	8.00	39.00
6	4924.00	34.4 AV	54.0	-19.6	1.30 H	212	-4.60	39.00
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	109.3 PK			1.15 V	178	77.20	32.10
2	*2462.00	96.6 AV			1.15 V	178	64.50	32.10
3	2483.50	67.4 PK	74.0	-6.6	1.15 V	175	35.20	32.20
4	2483.50	52.3 AV	54.0	-1.7	1.15 V	175	20.10	32.20
5	4924.00	48.6 PK	74.0	-25.4	1.05 V	212	9.60	39.00
6	4924.00	36.0 AV	54.0	-18.0	1.05 V	212	-3.00	39.00

REMARKS:

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



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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	21deg. C, 68%RH	TESTED BY	Sun Lin

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	71.5 PK	74.0	-2.5	1.29 H	270	39.50	32.00
2	2390.00	52.8 AV	54.0	-1.2	1.29 H	270	20.80	32.00
3	*2412.00	109.1 PK			1.22 H	270	77.10	32.00
4	*2412.00	95.9 AV			1.22 H	270	63.90	32.00
5	4824.00	46.4 PK	74.0	-27.6	1.47 H	221	7.60	38.80
6	4824.00	35.0 AV	54.0	-19.0	1.47 H	221	-3.80	38.80
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	68.4 PK	74.0	-5.6	1.21 V	145	36.40	32.00
2	2390.00	52.0 AV	54.0	-2.0	1.21 V	145	20.00	32.00
3	*2412.00	108.7 PK			1.18 V	176	76.70	32.00
4	*2412.00	95.5 AV			1.18 V	176	63.50	32.00
5	4824.00	47.3 PK	74.0	-26.7	1.05 V	189	8.50	38.80
6	4824.00	35.1 AV	54.0	-18.9	1.05 V	189	-3.70	38.80

REMARKS:

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



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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	21deg. C, 68%RH	TESTED BY	Sun Lin

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	68.9 PK	74.0	-5.1	1.50 H	222	36.90	32.00
2	2390.00	52.8 AV	54.0	-1.2	1.50 H	222	20.80	32.00
3	*2437.00	110.3 PK			1.33 H	214	78.20	32.10
4	*2437.00	100.1 AV			1.33 H	214	68.00	32.10
5	4874.00	53.8 PK	74.0	-20.2	1.00 H	307	14.90	38.90
6	4874.00	40.9 AV	54.0	-13.1	1.00 H	307	2.00	38.90
7	7311.00	48.2 PK	74.0	-25.8	1.52 H	136	5.00	43.20
8	7311.00	37.4 AV	54.0	-16.6	1.52 H	136	-5.80	43.20
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	69.9 PK	74.0	-4.1	1.23 V	206	37.90	32.00
2	2390.00	52.9 AV	54.0	-1.1	1.23 V	206	20.90	32.00
3	*2437.00	111.0 PK			1.00 V	210	78.90	32.10
4	*2437.00	101.3 AV			1.00 V	210	69.20	32.10
5	4874.00	58.2 PK	74.0	-15.8	1.00 V	21	19.30	38.90
6	4874.00	45.3 AV	54.0	-8.7	1.00 V	21	6.40	38.90
7	7311.00	51.4 PK	74.0	-22.6	1.10 V	50	8.20	43.20
8	7311.00	38.9 AV	54.0	-15.1	1.10 V	50	-4.30	43.20

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 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Sun Lin

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	109.3 PK			1.25 H	252	77.20	32.10
2	*2462.00	96.8 AV			1.25 H	252	64.70	32.10
3	2483.50	71.5 PK	74.0	-2.5	1.25 H	267	39.30	32.20
4	2483.50	52.4 AV	54.0	-1.6	1.25 H	267	20.20	32.20
5	4924.00	46.6 PK	74.0	-27.4	1.39 H	227	7.60	39.00
6	4924.00	36.4 AV	54.0	-17.6	1.39 H	227	-2.60	39.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.9 PK			1.16 V	172	76.80	32.10
2	*2462.00	96.2 AV			1.16 V	172	64.10	32.10
3	2483.50	70.2 PK	74.0	-3.8	1.16 V	172	38.00	32.20
4	2483.50	52.0 AV	54.0	-2.0	1.16 V	172	19.80	32.20
5	4924.00	47.6 PK	74.0	-26.4	1.07 V	18	8.60	39.00
6	4924.00	36.2 AV	54.0	-17.8	1.07 V	18	-2.80	39.00

REMARKS:

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



A D T

802.11n (40MHz)

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	21deg. C, 68%RH	TESTED BY	Sun Lin

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	68.2 PK	74.0	-5.8	1.30 H	272	36.20	32.00
2	2390.00	52.9 AV	54.0	-1.1	1.30 H	272	20.90	32.00
3	*2422.00	104.0 PK			1.30 H	270	71.90	32.10
4	*2422.00	94.3 AV			1.30 H	270	62.20	32.10
5	4844.00	44.3 PK	74.0	-29.7	1.35 H	218	5.50	38.80
6	4844.00	34.1 AV	54.0	-19.9	1.35 H	218	-4.70	38.80
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	68.7 PK	74.0	-5.3	1.26 V	198	36.70	32.00
2	2390.00	51.6 AV	54.0	-2.4	1.26 V	198	19.60	32.00
3	*2422.00	102.3 PK			1.26 V	198	70.20	32.10
4	*2422.00	92.0 AV			1.26 V	198	59.90	32.10
5	4844.00	45.8 PK	74.0	-28.2	1.00 V	21	7.00	38.80
6	4844.00	35.3 AV	54.0	-18.7	1.00 V	21	-3.50	38.80

REMARKS:

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



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	21deg. C, 68%RH	TESTED BY	Sun Lin

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	70.5 PK	74.0	-3.5	1.29 H	268	38.50	32.00
2	2390.00	52.4 AV	54.0	-1.6	1.29 H	268	20.40	32.00
3	*2437.00	107.3 PK			1.29 H	268	75.20	32.10
4	*2437.00	96.6 AV			1.29 H	268	64.50	32.10
5	2483.50	72.5 PK	74.0	-1.5	1.28 H	268	40.30	32.20
6	2483.50	51.4 AV	54.0	-2.6	1.28 H	268	19.20	32.20
7	4874.00	46.3 PK	74.0	-27.7	1.45 H	227	7.40	38.90
8	4874.00	35.6 AV	54.0	-18.4	1.45 H	227	-3.30	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.7 PK	74.0	-6.3	1.00 V	212	35.70	32.00
2	2390.00	52.2 AV	54.0	-1.8	1.00 V	212	20.20	32.00
3	*2437.00	106.1 PK			1.18 V	198	74.00	32.10
4	*2437.00	95.8 AV			1.18 V	198	63.70	32.10
5	2483.50	68.3 PK	74.0	-5.7	1.18 V	202	36.10	32.20
6	2483.50	51.9 AV	54.0	-2.1	1.18 V	202	19.70	32.20
7	4874.00	46.5 PK	74.0	-27.5	1.01 V	15	7.60	38.90
8	4874.00	35.7 AV	54.0	-18.3	1.01 V	15	-3.20	38.90

REMARKS:

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



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	21deg. C, 68%RH	TESTED BY	Sun Lin

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	104.0 PK			1.28 H	269	71.90	32.10
2	*2452.00	93.8 AV			1.28 H	269	61.70	32.10
3	2483.50	70.8 PK	74.0	-3.2	1.28 H	269	38.60	32.20
4	2483.50	52.8 AV	54.0	-1.2	1.28 H	269	20.60	32.20
5	4904.00	46.4 PK	74.0	-27.6	1.31 H	228	7.50	38.90
6	4904.00	36.2 AV	54.0	-17.8	1.31 H	228	-2.70	38.90
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	*2452.00	103.0 PK			1.16 V	178	70.90	32.10
2	*2452.00	92.7 AV			1.16 V	178	60.60	32.10
3	2483.50	70.6 PK	74.0	-3.4	1.16 V	177	38.40	32.20
4	2483.50	51.9 AV	54.0	-2.1	1.16 V	177	19.70	32.20
5	4904.00	47.5 PK	74.0	-26.5	1.04 V	12	8.60	38.90
6	4904.00	36.8 AV	54.0	-17.2	1.04 V	12	-2.10	38.90

REMARKS:

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



A D T

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Sun Lin

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	92.08	39.9 QP	43.5	-3.6	1.99 H	80	31.80	8.10
2	194.90	31.6 QP	43.5	-11.9	1.75 H	120	20.40	11.20
3	249.22	29.8 QP	46.0	-16.2	1.00 H	139	16.90	12.90
4	625.58	34.9 QP	46.0	-11.1	1.50 H	209	12.30	22.60
5	751.68	31.9 QP	46.0	-14.1	1.00 H	249	7.60	24.30
6	961.20	40.2 QP	54.0	-13.8	1.25 H	72	13.10	27.10
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	92.08	40.8 QP	43.5	-2.7	1.25 V	256	32.70	8.10
2	105.66	40.2 QP	43.5	-3.3	1.25 V	160	30.60	9.60
3	189.08	31.9 QP	43.5	-11.6	1.25 V	328	20.20	11.70
4	233.70	29.0 QP	46.0	-17.0	1.25 V	21	16.80	12.20
5	375.32	30.6 QP	46.0	-15.4	1.25 V	95	13.80	16.80
6	625.58	32.3 QP	46.0	-13.7	1.25 V	87	9.70	22.60

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).
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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 21, 2012	Dec. 20, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

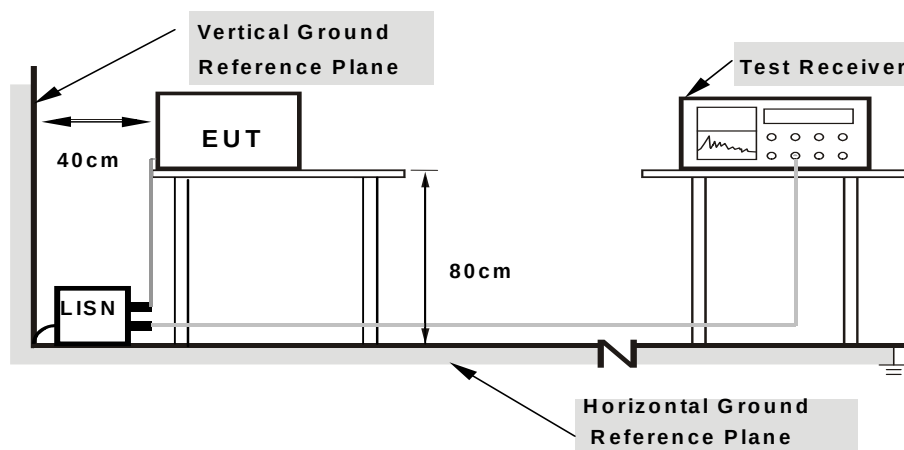
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

NOTE: 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

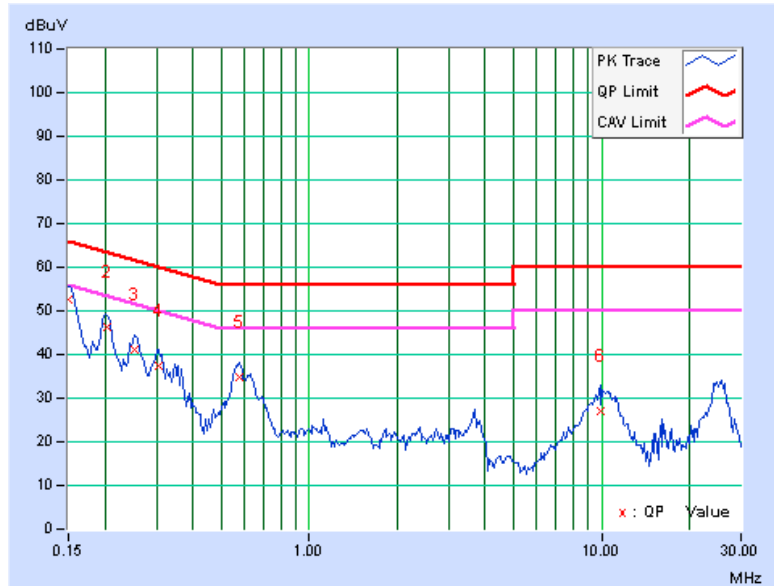
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
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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	0.15000	0.18	52.58	44.24	52.76	44.42	66.00	56.00	-13.24	-11.58
2	0.20469	0.17	45.98	38.55	46.15	38.72	63.42	53.42	-17.27	-14.70
3	0.25156	0.18	40.98	35.09	41.16	35.27	61.71	51.71	-20.55	-16.44
4	0.30625	0.19	37.40	32.14	37.59	32.33	60.07	50.07	-22.48	-17.74
5	0.57578	0.23	34.63	29.07	34.86	29.30	56.00	46.00	-21.14	-16.70
6	9.96094	0.43	26.51	21.44	26.94	21.87	60.00	50.00	-33.06	-28.13

REMARKS:

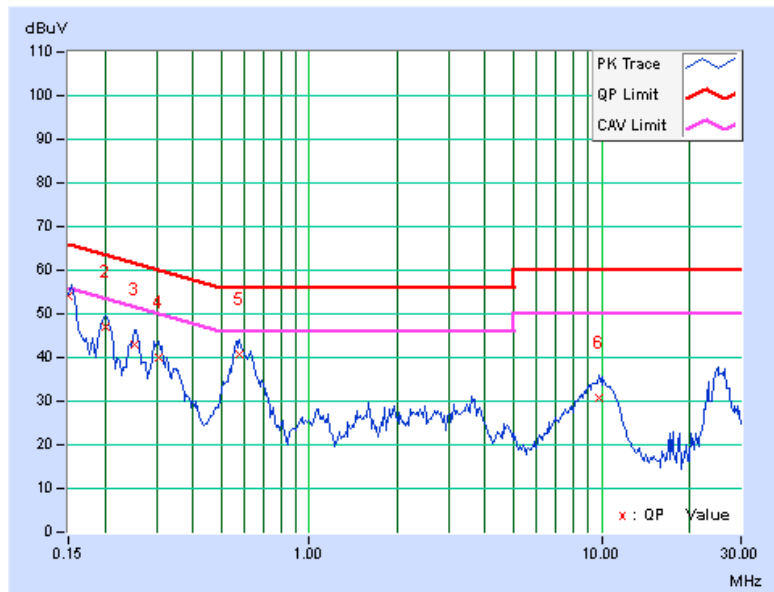
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



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	0.15000	0.19	53.91	44.83	54.10	45.02	66.00	56.00	-11.90	-10.98
2	0.20078	0.18	46.90	40.42	47.08	40.60	63.58	53.58	-16.50	-12.98
3	0.25156	0.20	42.83	37.06	43.03	37.26	61.71	51.71	-18.68	-14.45
4	0.30625	0.22	39.72	35.00	39.94	35.22	60.07	50.07	-20.13	-14.85
5	0.57969	0.24	40.35	35.12	40.59	35.36	56.00	46.00	-15.41	-10.64
6	9.78125	0.48	30.35	25.14	30.83	25.62	60.00	50.00	-29.17	-24.38

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

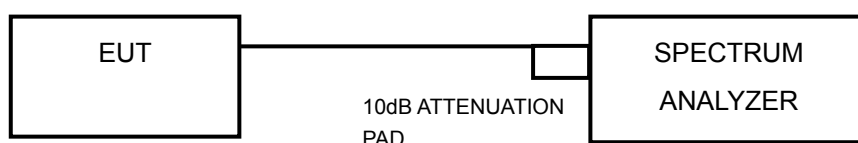


4.3 6dB BANDWIDTH MEASUREMENT

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
		CHAIN 0	CHAIN 1		
1	2412	9.65	10.09	0.5	PASS
6	2437	9.68	10.16	0.5	PASS
11	2462	10.13	10.12	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.63	16.58	0.5	PASS
6	2437	16.62	16.57	0.5	PASS
11	2462	16.61	16.56	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.86	17.85	0.5	PASS
6	2437	17.82	17.87	0.5	PASS
11	2462	17.86	17.86	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.66	36.59	0.5	PASS
6	2437	36.62	36.68	0.5	PASS
9	2452	36.61	36.70	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)

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

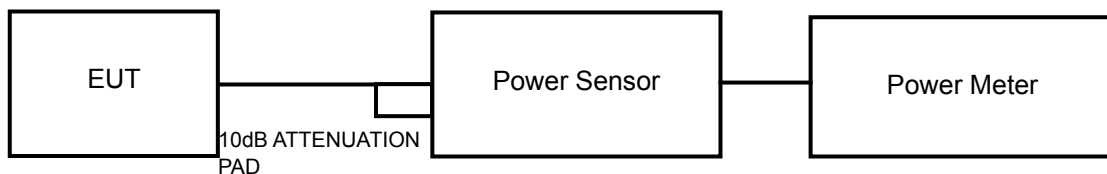
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the 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 AVERAGE POWER

802.11b

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)
		CHAIN 0	CHAIN 1			
1	2412	20.04	20.02	201.387	23.04	30
6	2437	21.14	20.55	243.518	23.87	30
11	2462	21.77	21.58	294.194	24.69	30

802.11g

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)
		CHAIN 0	CHAIN 1			
1	2412	16.78	16.51	92.414	19.66	30
6	2437	22.33	22.23	338.111	25.29	30
11	2462	16.72	16.51	91.760	19.63	30

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)
		CHAIN 0	CHAIN 1			
1	2412	15.21	15.54	68.999	18.39	30
6	2437	22.68	22.14	349.035	25.43	30
11	2462	15.88	15.04	70.641	18.49	30

802.11n (40MHz)

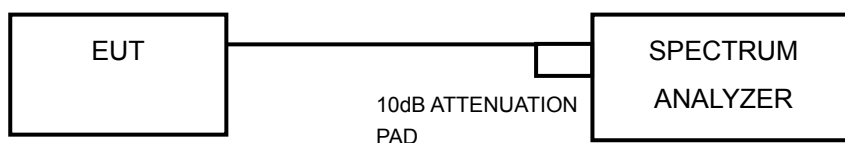
CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)
		CHAIN 0	CHAIN 1			
3	2422	12.89	13.21	40.395	16.06	30
6	2437	16.18	16.82	89.579	19.52	30
9	2452	12.58	12.27	34.979	15.44	30

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 = 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

4.5.7 TEST RESULTS

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-4.15	3.01	-1.14	7.99	PASS
	6	2437	-2.37	3.01	0.64	7.99	PASS
	11	2462	-2.29	3.01	0.72	7.99	PASS
1	1	2412	-4.40	3.01	-1.39	7.99	PASS
	6	2437	-4.07	3.01	-1.06	7.99	PASS
	11	2462	-1.73	3.01	1.28	7.99	PASS

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-9.73	3.01	-6.72	7.99	PASS
	6	2437	-4.17	3.01	-1.16	7.99	PASS
	11	2462	-9.21	3.01	-6.20	7.99	PASS
1	1	2412	-10.34	3.01	-7.33	7.99	PASS
	6	2437	-2.19	3.01	0.82	7.99	PASS
	11	2462	-10.30	3.01	-7.29	7.99	PASS

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-11.32	3.01	-8.31	7.99	PASS
	6	2437	-4.49	3.01	-1.48	7.99	PASS
	11	2462	-11.24	3.01	-8.23	7.99	PASS
1	1	2412	-11.72	3.01	-8.71	7.99	PASS
	6	2437	-1.24	3.01	1.77	7.99	PASS
	11	2462	-11.69	3.01	-8.68	7.99	PASS

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.



A D T

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-16.46	3.01	-13.45	7.99	PASS
	6	2437	-13.11	3.01	-10.10	7.99	PASS
	9	2452	-16.87	3.01	-13.86	7.99	PASS
1	3	2422	-16.08	3.01	-13.07	7.99	PASS
	6	2437	-12.32	3.01	-9.31	7.99	PASS
	9	2452	-17.58	3.01	-14.57	7.99	PASS

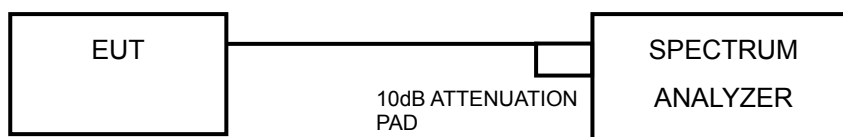
NOTE: Directional gain = $3\text{dBi} + 10\log(2) = 6.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.01-6) = 7.99\text{dBm}$.

4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. 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.

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

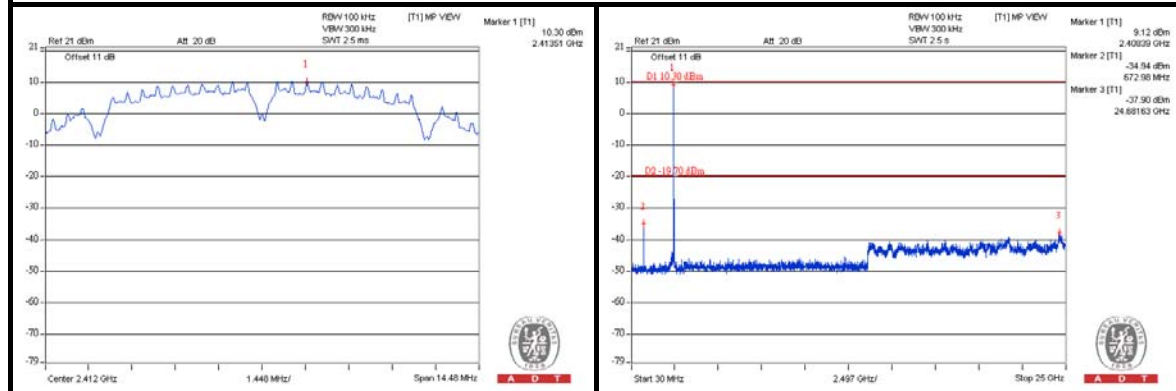


A D T

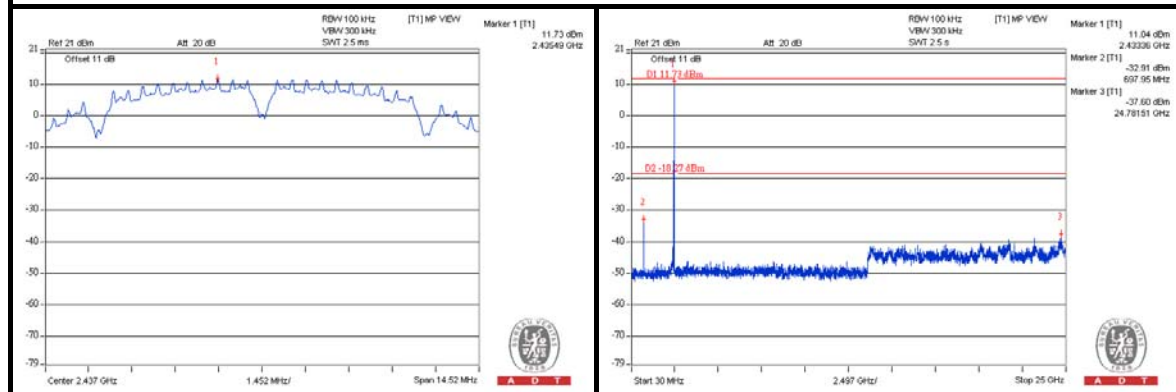
802.11b

CHAIN 0

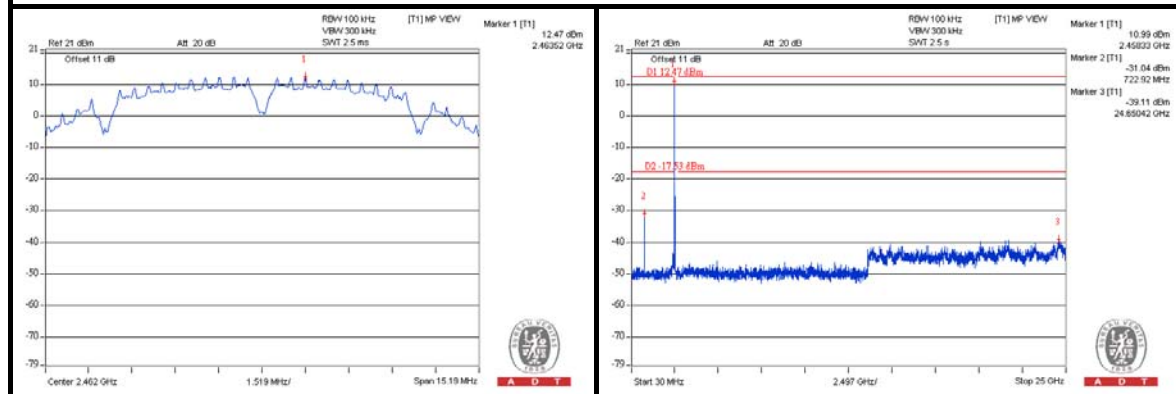
CH 1



CH 6



CH 11

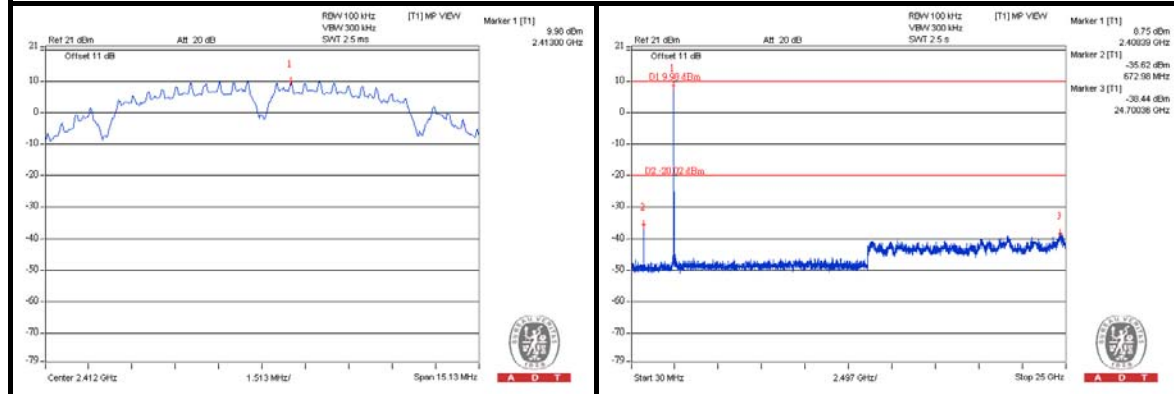




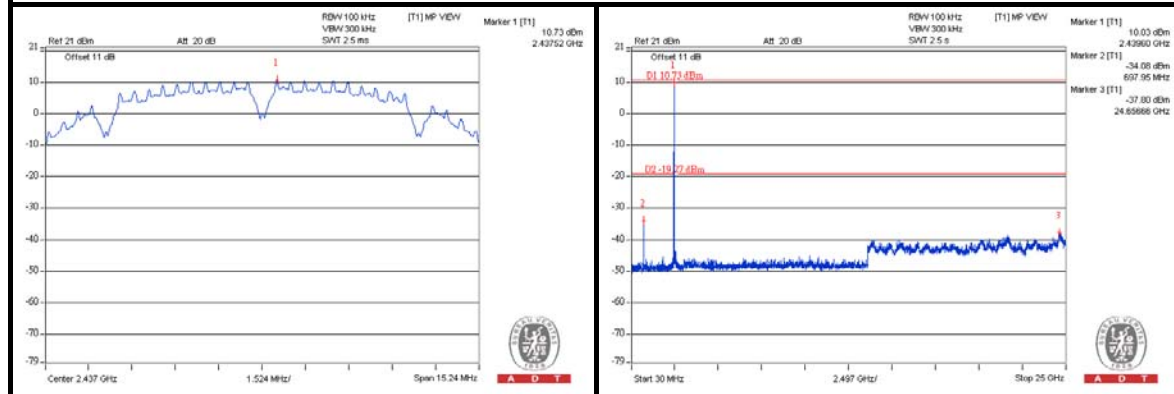
A D T

CHAIN 1

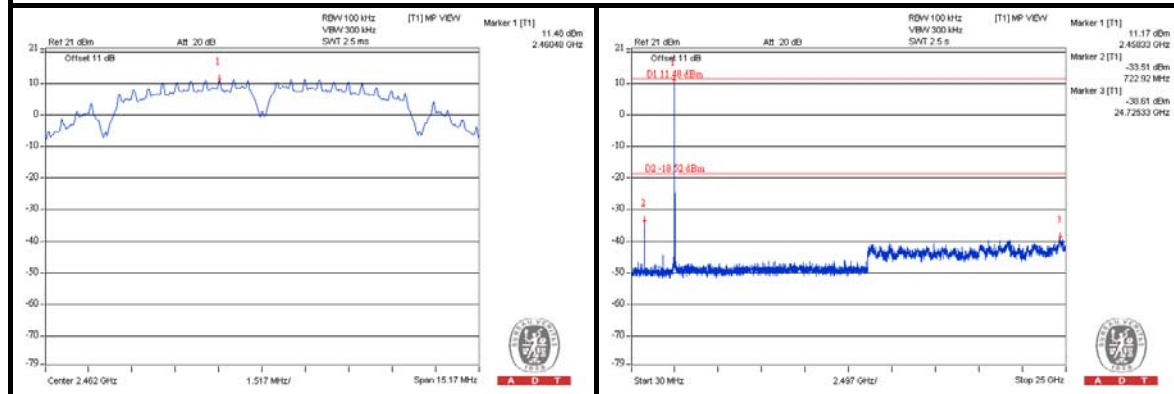
CH 1



CH 6



CH 11



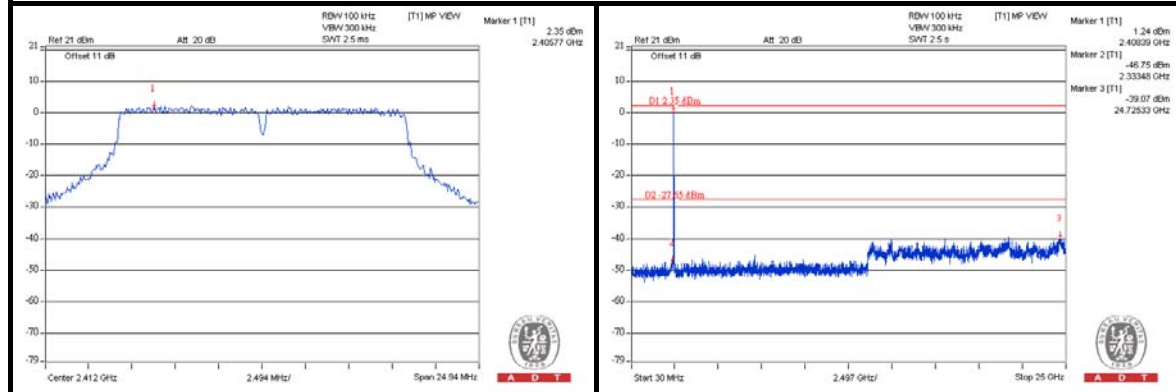


A D T

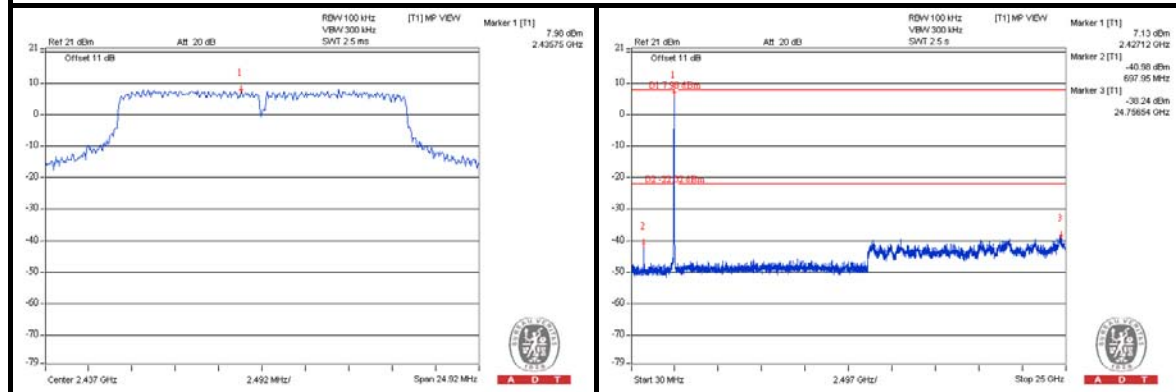
802.11g

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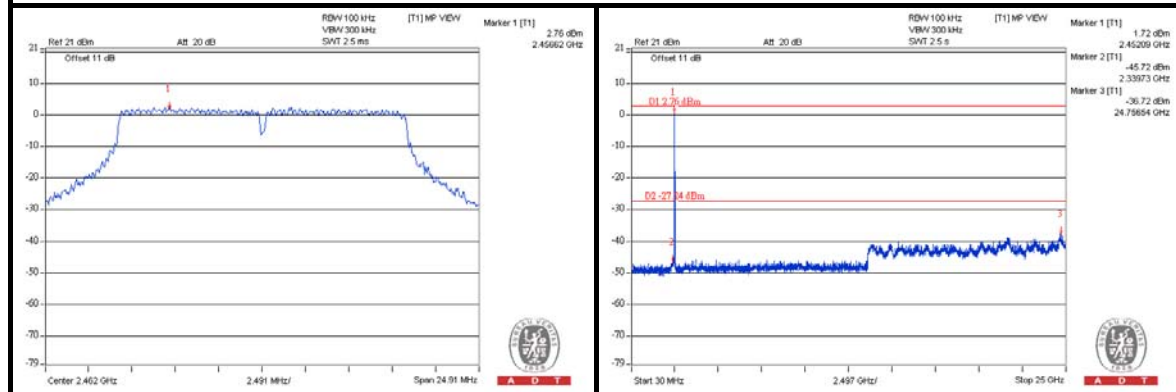
CH 1



CH 6



CH 11

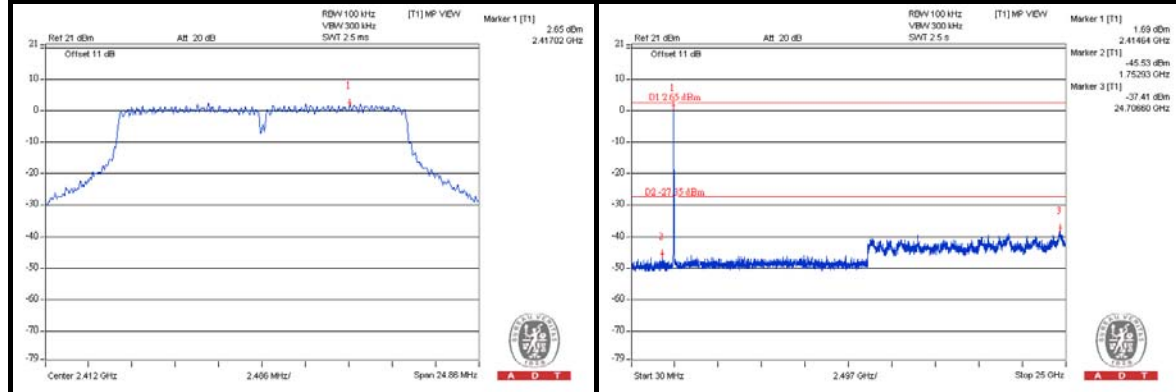




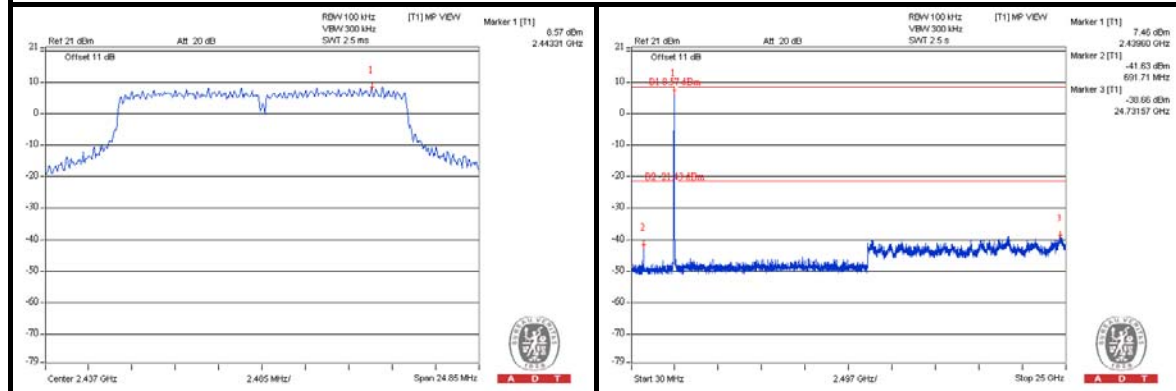
A D T

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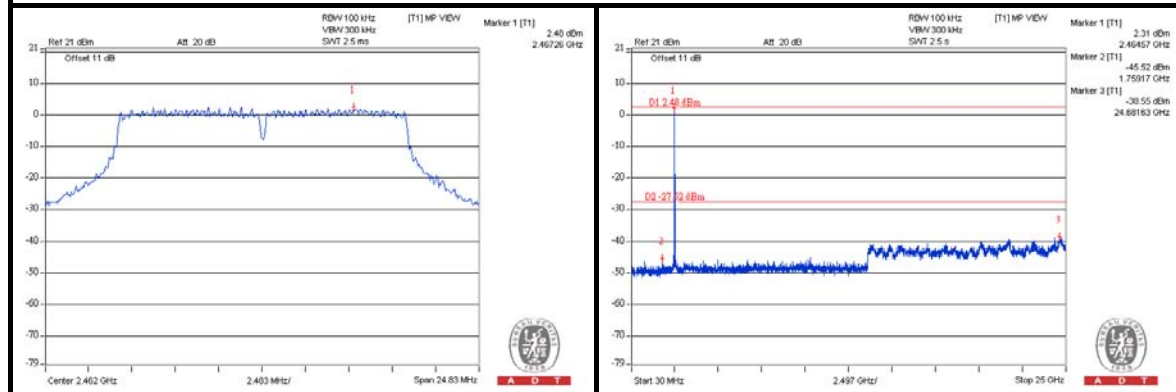
CH 1



CH 6



CH 11



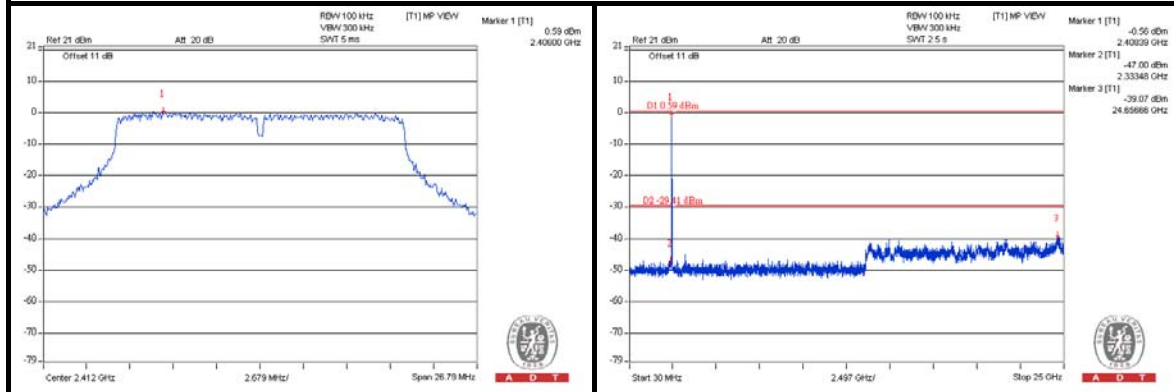


A D T

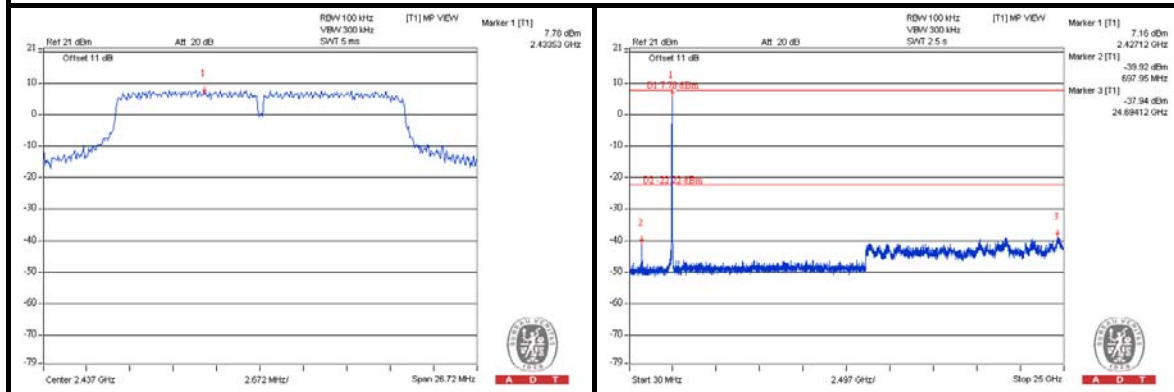
802.11n (20MHz)

CHAIN 0

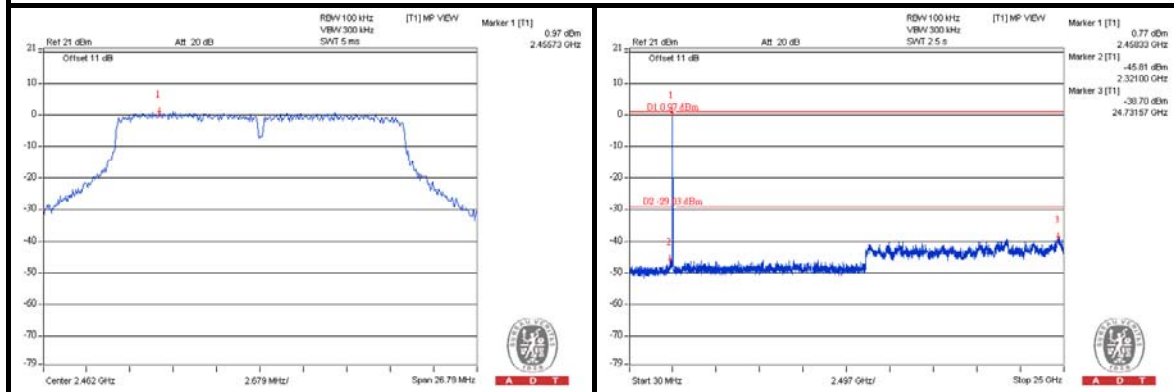
CH 1



CH 6



CH 11

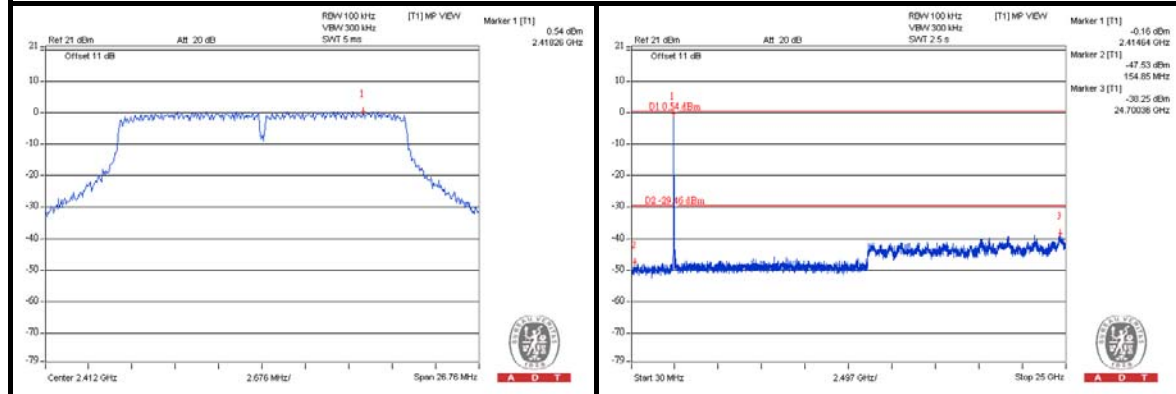




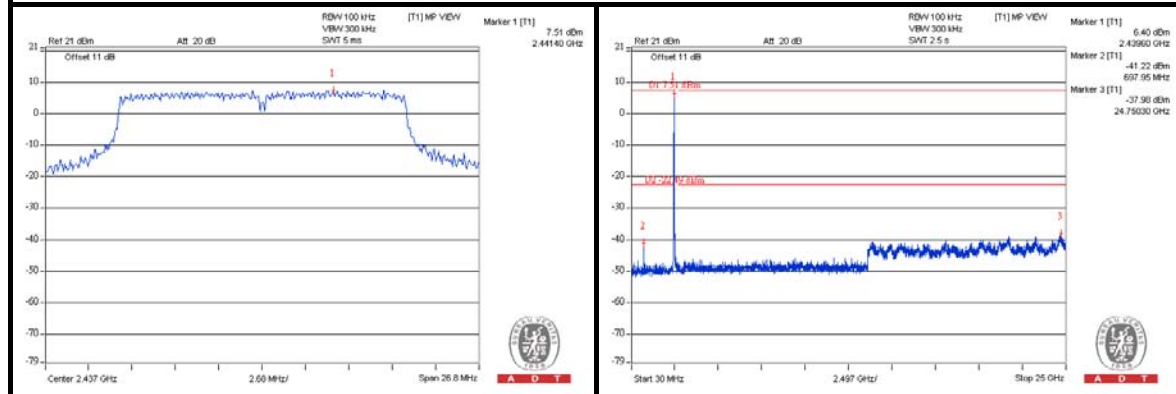
A D T

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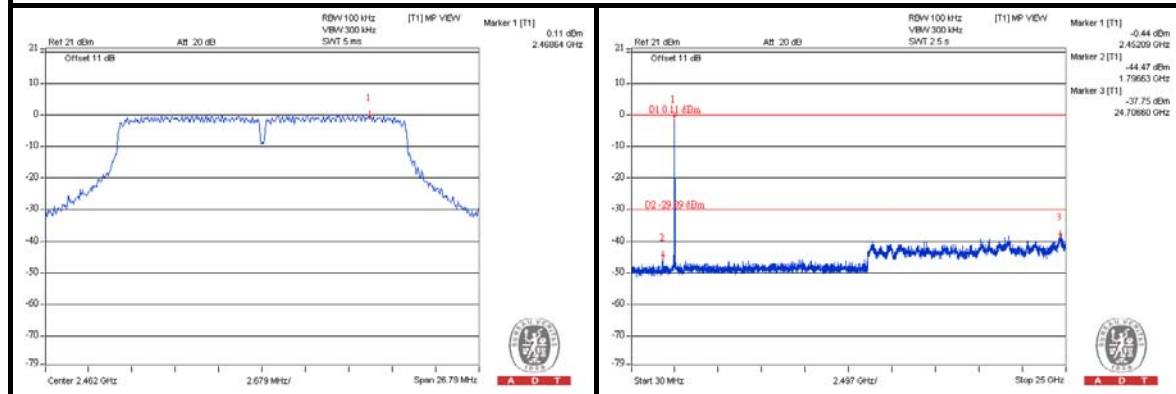
CH 1



CH 6



CH 11



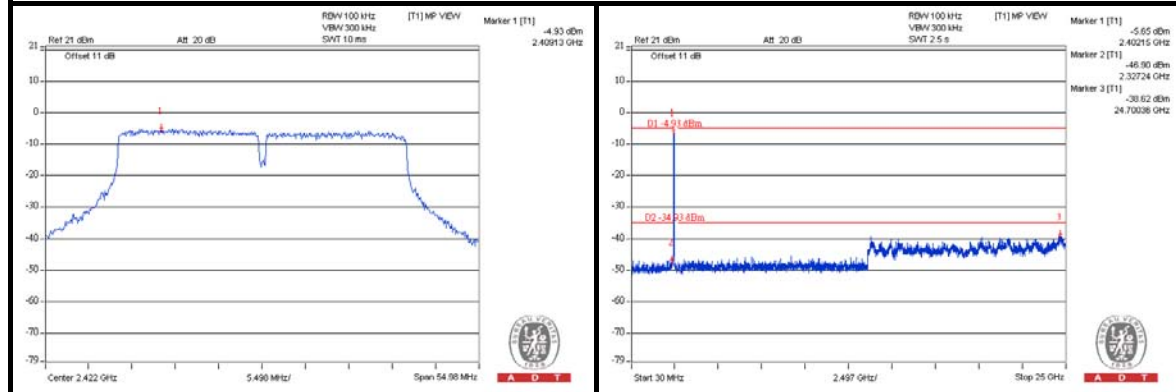


A D T

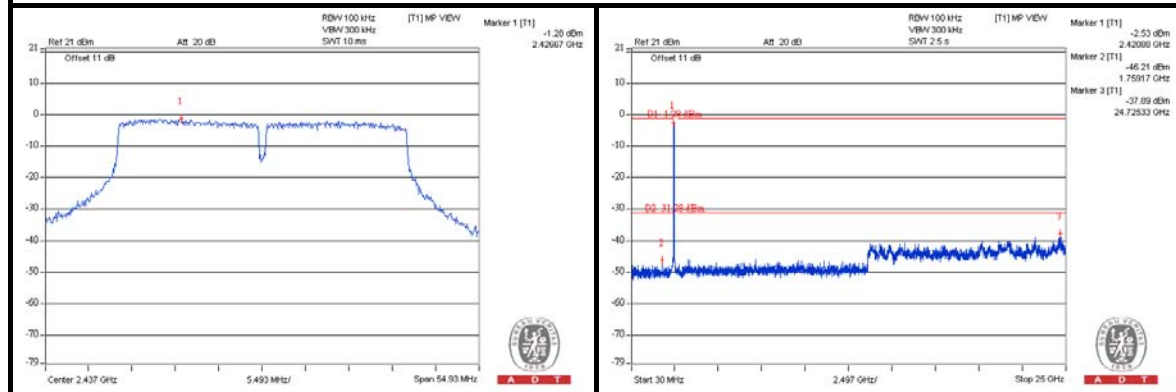
802.11n (40MHz)

CHAIN 0

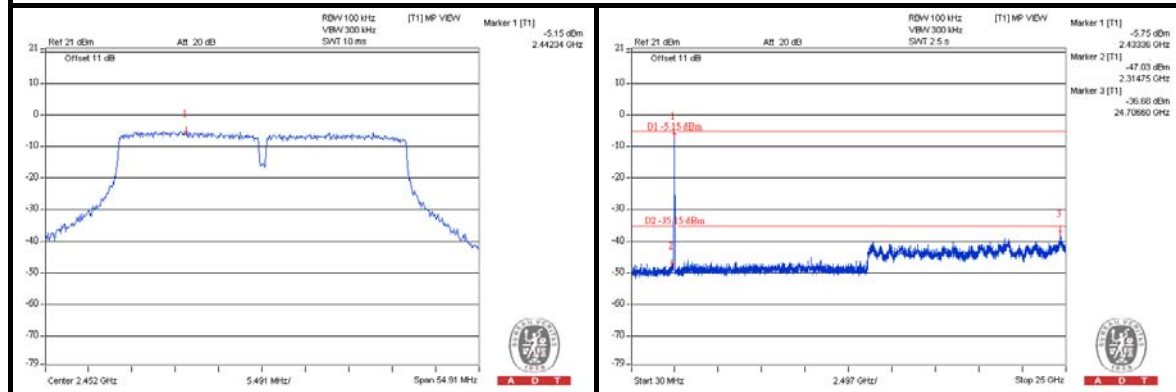
CH 3



CH 6



CH 9

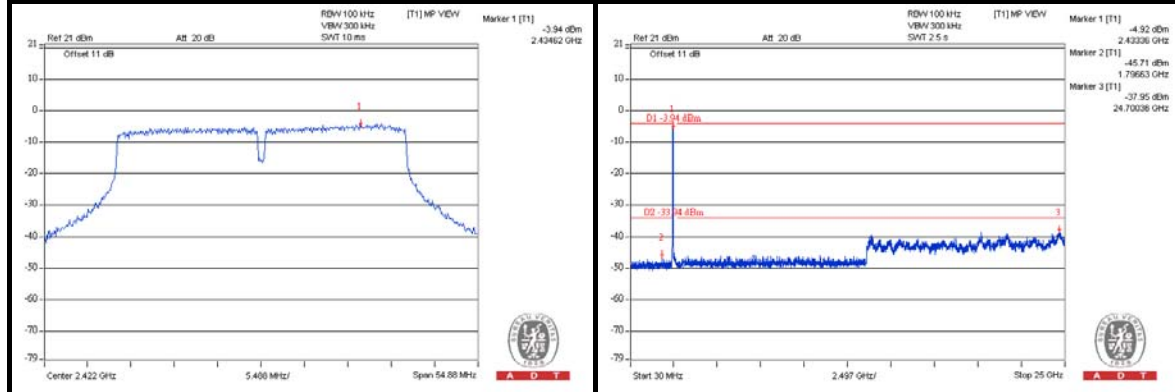




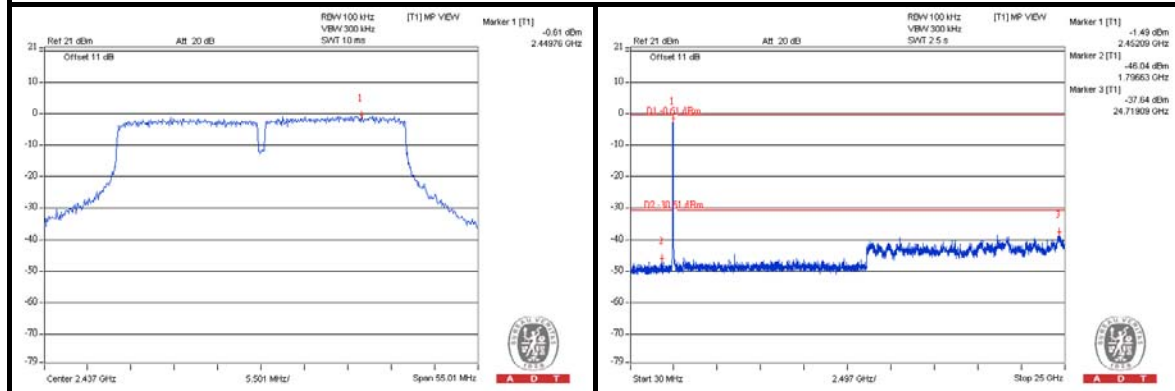
A D T

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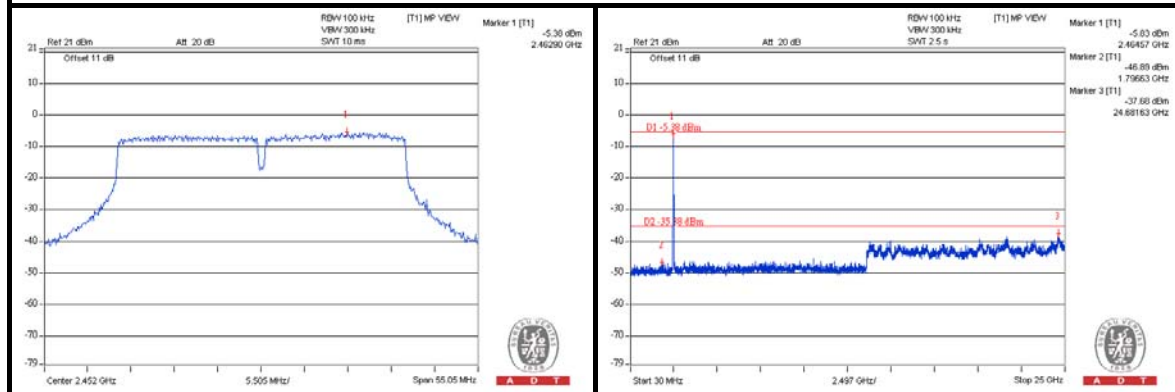
CH 3



CH 6



CH 9



5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

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



A D T

5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

5.1.3 TEST PROCEDURES

Same as item 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as item 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.



A D T

5.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA :

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	#5725.00	81.0 PK	85.5	-4.5	1.20 H	240	40.70	40.30
2	#5725.00	70.4 AV	74.9	-4.5	1.20 H	240	30.10	40.30
3	*5745.00	115.5 PK			1.00 H	233	75.20	40.30
4	*5745.00	104.9 AV			1.00 H	233	64.60	40.30
5	11490.00	59.0 PK	74.0	-15.0	1.10 H	177	10.60	48.40
6	11490.00	45.9 AV	54.0	-8.1	1.10 H	177	-2.50	48.40
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	#5725.00	77.0 PK	81.5	-4.5	1.30 V	185	36.70	40.30
2	#5725.00	67.5 AV	72.0	-4.5	1.30 V	185	27.20	40.30
3	*5745.00	111.5 PK			1.00 V	81	71.20	40.30
4	*5745.00	102.0 AV			1.00 V	81	61.70	40.30
5	11490.00	60.2 PK	74.0	-13.8	1.00 V	304	11.80	48.40
6	11490.00	47.7 AV	54.0	-6.3	1.00 V	304	-0.70	48.40

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.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5785.00	117.2 PK			1.00 H	237	76.90	40.30
2	*5785.00	107.4 AV			1.00 H	237	67.10	40.30
3	11570.00	58.0 PK	74.0	-16.0	1.00 H	74	9.60	48.40
4	11570.00	46.2 AV	54.0	-7.8	1.00 H	74	-2.20	48.40
5	#17355.00	65.8 PK	87.2	-21.4	1.17 H	91	10.90	54.90
6	#17355.00	52.9 AV	77.4	-34.5	1.17 H	91	-2.00	54.90
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	*5785.00	114.1 PK			1.00 V	74	73.80	40.30
2	*5785.00	104.2 AV			1.00 V	74	63.90	40.30
3	11570.00	57.7 PK	74.0	-16.3	1.00 V	186	9.30	48.40
4	11570.00	45.7 AV	54.0	-8.3	1.00 V	186	-2.70	48.40
5	#17355.00	64.6 PK	84.1	-19.5	1.23 V	185	9.70	54.90
6	#17355.00	51.4 AV	74.2	-22.8	1.23 V	185	-3.50	54.90

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5825.00	117.4 PK			1.00 H	244	77.00	40.40
2	*5825.00	106.9 AV			1.00 H	244	66.50	40.40
3	#5850.00	78.4 PK	87.4	-9.0	1.00 H	245	38.00	40.40
4	#5850.00	67.9 AV	76.9	-9.0	1.00 H	245	27.50	40.40
5	11650.00	60.1 PK	74.0	-13.9	1.15 H	77	11.60	48.50
6	11650.00	47.6 AV	54.0	-6.4	1.15 H	77	-0.90	48.50
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	*5825.00	114.3 PK			1.00 V	77	73.90	40.40
2	*5825.00	104.7 AV			1.00 V	77	64.30	40.40
3	#5850.00	75.3 PK	84.3	-9.0	1.00 V	245	34.90	40.40
4	#5850.00	65.7 AV	74.7	-9.0	1.00 V	245	25.30	40.40
5	11650.00	64.4 PK	74.0	-9.6	1.11 V	0	15.90	48.50
6	11650.00	52.5 AV	54.0	-1.5	1.11 V	0	4.00	48.50

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.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	#5725.00	81.5 PK	95.1	-13.6	1.00 H	267	41.20	40.30
2	#5725.00	72.5 AV	86.1	-13.6	1.00 H	267	32.20	40.30
3	*5745.00	115.1 PK			1.00 H	270	74.80	40.30
4	*5745.00	106.1 AV			1.00 H	270	65.80	40.30
5	11490.00	52.8 PK	74.0	-21.2	1.26 H	34	4.40	48.40
6	11490.00	42.6 AV	54.0	-11.4	1.26 H	34	-5.80	48.40
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	#5725.00	74.5 PK	88.0	-13.5	1.00 V	267	34.20	40.30
2	#5725.00	64.5 AV	78.0	-13.5	1.00 V	267	24.20	40.30
3	*5745.00	108.0 PK			1.78 V	175	67.70	40.30
4	*5745.00	98.0 AV			1.78 V	175	57.70	40.30
5	11490.00	53.7 PK	74.0	-20.3	1.62 V	147	5.30	48.40
6	11490.00	43.7 AV	54.0	-10.3	1.62 V	147	-4.70	48.40

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.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5785.00	115.4 PK			1.01 H	322	75.10	40.30
2	*5785.00	106.1 AV			1.01 H	322	65.80	40.30
3	11570.00	53.5 PK	74.0	-20.5	1.36 H	55	5.10	48.40
4	11570.00	42.6 AV	54.0	-11.4	1.36 H	55	-5.80	48.40
5	#17355.00	59.9 PK	95.4	-35.5	1.17 H	54	5.00	54.90
6	#17355.00	49.9 AV	86.1	-36.2	1.17 H	54	-5.00	54.90
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	*5785.00	108.6 PK			1.02 V	138	68.30	40.30
2	*5785.00	99.2 AV			1.02 V	138	58.90	40.30
3	11570.00	52.6 PK	74.0	-21.4	1.56 V	23	4.20	48.40
4	11570.00	42.4 AV	54.0	-11.6	1.56 V	23	-6.00	48.40
5	#17355.00	60.0 PK	88.6	-28.6	1.36 V	47	5.10	54.90
6	#17355.00	49.0 AV	79.2	-30.2	1.36 V	47	-5.90	54.90

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5825.00	116.6 PK			1.06 H	327	76.20	40.40
2	*5825.00	107.7 AV			1.06 H	327	67.30	40.40
3	#5850.00	76.6 PK	96.6	-20.0	1.19 H	153	36.20	40.40
4	#5850.00	67.7 AV	87.7	-20.0	1.19 H	153	27.30	40.40
5	11650.00	53.6 PK	74.0	-20.4	1.33 H	148	5.10	48.50
6	11650.00	42.6 AV	54.0	-11.4	1.33 H	148	-5.90	48.50
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	*5825.00	107.6 PK			1.00 V	75	67.20	40.40
2	*5825.00	98.3 AV			1.00 V	75	57.90	40.40
3	#5850.00	67.6 PK	87.6	-20.0	1.19 V	123	27.20	40.40
4	#5850.00	58.3 AV	78.3	-20.0	1.19 V	123	17.90	40.40
5	11650.00	52.5 PK	74.0	-21.5	1.62 V	147	4.00	48.50
6	11650.00	42.4 AV	54.0	-11.6	1.62 V	147	-6.10	48.50

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.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	#5725.00	80.7 PK	85.2	-4.5	1.00 H	289	40.40	40.30
2	#5725.00	70.0 AV	74.5	-4.5	1.00 H	289	29.70	40.30
3	*5745.00	115.2 PK			1.00 H	213	74.90	40.30
4	*5745.00	104.5 AV			1.00 H	213	64.20	40.30
5	11490.00	64.3 PK	74.0	-9.7	1.13 H	233	15.90	48.40
6	11490.00	51.5 AV	54.0	-2.5	1.13 H	233	3.10	48.40
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	#5725.00	77.9 PK	82.4	-4.5	1.00 V	289	37.60	40.30
2	#5725.00	67.5 AV	72.0	-4.5	1.00 V	289	27.20	40.30
3	*5745.00	112.4 PK			1.48 V	320	72.10	40.30
4	*5745.00	102.0 AV			1.48 V	320	61.70	40.30
5	11490.00	59.4 PK	74.0	-14.6	1.10 V	123	11.00	48.40
6	11490.00	48.1 AV	54.0	-5.9	1.10 V	123	-0.30	48.40

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.
6. The limit value is defined as per 15.247.
7. "#": The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5785.00	117.5 PK			1.00 H	239	77.20	40.30
2	*5785.00	106.9 AV			1.00 H	239	66.60	40.30
3	11570.00	63.3 PK	74.0	-10.7	1.32 H	168	14.90	48.40
4	11570.00	50.8 AV	54.0	-3.2	1.32 H	168	2.40	48.40
5	#17355.00	70.3 PK	87.5	-17.2	1.13 H	57	15.40	54.90
6	#17355.00	52.1 AV	76.9	-24.8	1.13 H	57	-2.80	54.90
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	*5785.00	114.2 PK			1.24 V	318	73.90	40.30
2	*5785.00	104.0 AV			1.24 V	318	63.70	40.30
3	11570.00	61.0 PK	74.0	-13.0	1.00 V	19	12.60	48.40
4	11570.00	49.5 AV	54.0	-4.5	1.00 V	19	1.10	48.40
5	#17355.00	67.8 PK	84.2	-16.4	1.30 V	58	12.90	54.90
6	#17355.00	52.9 AV	74.0	-21.1	1.30 V	58	-2.00	54.90

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5825.00	117.3 PK			1.00 H	243	76.90	40.40
2	*5825.00	106.7 AV			1.00 H	243	66.30	40.40
3	#5850.00	79.5 PK	87.3	-7.8	1.00 H	240	39.10	40.40
4	#5850.00	69.2 AV	76.7	-7.5	1.00 H	240	28.80	40.40
5	11650.00	65.1 PK	74.0	-8.9	1.13 H	246	16.60	48.50
6	11650.00	53.9 AV	54.0	-0.1	1.13 H	246	5.40	48.50
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	*5825.00	114.4 PK			1.00 V	223	74.00	40.40
2	*5825.00	103.7 AV			1.00 V	223	63.30	40.40
3	#5850.00	76.9 PK	84.4	-7.5	1.00 V	240	36.50	40.40
4	#5850.00	66.2 AV	73.7	-7.5	1.00 V	240	25.80	40.40
5	11650.00	63.1 PK	74.0	-10.9	1.24 V	232	14.60	48.50
6	11650.00	51.3 AV	54.0	-2.7	1.24 V	232	2.80	48.50

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.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	#5725.00	84.0 PK	95.0	-11.0	1.00 H	267	43.70	40.30
2	#5725.00	71.3 AV	85.3	-14.0	1.00 H	267	31.00	40.30
3	*5745.00	115.0 PK			1.00 H	322	74.70	40.30
4	*5745.00	105.3 AV			1.00 H	322	65.00	40.30
5	11490.00	53.7 PK	74.0	-20.3	1.06 H	352	5.30	48.40
6	11490.00	43.4 AV	54.0	-10.6	1.06 H	352	-5.00	48.40
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	#5725.00	71.1 PK	85.1	-14.0	1.00 V	269	30.80	40.30
2	#5725.00	62.1 AV	76.1	-14.0	1.00 V	269	21.80	40.30
3	*5745.00	105.1 PK			1.08 V	169	64.80	40.30
4	*5745.00	96.1 AV			1.08 V	169	55.80	40.30
5	11490.00	52.3 PK	74.0	-21.7	1.52 V	147	3.90	48.40
6	11490.00	42.6 AV	54.0	-11.4	1.52 V	147	-5.80	48.40

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.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5785.00	117.7 PK			1.00 H	322	77.40	40.30
2	*5785.00	107.2 AV			1.00 H	322	66.90	40.30
3	11570.00	53.5 PK	74.0	-20.5	1.52 H	136	5.10	48.40
4	11570.00	43.5 AV	54.0	-10.5	1.52 H	136	-4.90	48.40
5	#17355.00	59.5 PK	97.7	-38.2	1.06 H	201	4.60	54.90
6	#17355.00	49.8 AV	87.2	-37.4	1.06 H	201	-5.10	54.90
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	*5785.00	107.3 PK			1.00 V	77	67.00	40.30
2	*5785.00	97.9 AV			1.00 V	77	57.60	40.30
3	11570.00	51.5 PK	74.0	-22.5	1.06 V	337	3.10	48.40
4	11570.00	42.8 AV	54.0	-11.2	1.06 V	337	-5.60	48.40
5	#17355.00	59.9 PK	87.3	-27.4	1.52 V	333	5.00	54.90
6	#17355.00	49.5 AV	77.9	-28.4	1.52 V	333	-5.40	54.90

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5825.00	117.5 PK			1.07 H	327	77.10	40.40
2	*5825.00	107.8 AV			1.07 H	327	67.40	40.40
3	#5850.00	75.5 PK	97.5	-22.0	1.25 H	130	35.10	40.40
4	#5850.00	65.8 AV	87.8	-22.0	1.25 H	130	25.40	40.40
5	11650.00	53.6 PK	74.0	-20.4	1.17 H	45	5.10	48.50
6	11650.00	42.6 AV	54.0	-11.4	1.17 H	45	-5.90	48.50
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	*5825.00	107.6 PK			1.00 V	173	67.20	40.40
2	*5825.00	97.8 AV			1.00 V	173	57.40	40.40
3	#5850.00	65.6 PK	87.6	-22.0	1.25 V	136	25.20	40.40
4	#5850.00	55.8 AV	77.8	-22.0	1.25 V	136	15.40	40.40
5	11650.00	52.7 PK	74.0	-21.3	1.65 V	24	4.20	48.50
6	11650.00	41.5 AV	54.0	-12.5	1.65 V	24	-7.00	48.50

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.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	#5725.00	77.2 PK	80.2	-3.0	1.02 H	243	36.90	40.30
2	#5725.00	66.6 AV	69.6	-3.0	1.02 H	243	26.30	40.30
3	*5755.00	110.2 PK			1.00 H	234	69.90	40.30
4	*5755.00	99.6 AV			1.00 H	234	59.30	40.30
5	11510.00	60.7 PK	74.0	-13.3	1.08 H	238	12.30	48.40
6	11510.00	48.0 AV	54.0	-6.0	1.08 H	238	-0.40	48.40
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	#5725.00	72.7 PK	75.7	-3.0	1.02 V	243	32.40	40.30
2	#5725.00	63.9 AV	66.9	-3.0	1.02 V	243	23.60	40.30
3	*5755.00	105.7 PK			1.00 V	319	65.40	40.30
4	*5755.00	96.9 AV			1.00 V	319	56.60	40.30
5	11510.00	57.0 PK	74.0	-17.0	1.12 V	196	8.60	48.40
6	11510.00	45.7 AV	54.0	-8.3	1.12 V	196	-2.70	48.40

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.
6. The limit value is defined as per 15.247.
7. "#": The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5795.00	114.1 PK			1.00 H	237	73.70	40.40
2	*5795.00	103.7 AV			1.00 H	237	63.30	40.40
3	#5850.00	74.1 PK	84.1	-10.0	1.23 H	148	33.70	40.40
4	#5850.00	63.7 AV	73.7	-10.0	1.23 H	148	23.30	40.40
5	11590.00	61.8 PK	74.0	-12.2	1.17 H	176	13.40	48.40
6	11590.00	48.7 AV	54.0	-5.3	1.17 H	176	0.30	48.40
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	*5795.00	109.1 PK			1.00 V	65	68.70	40.40
2	*5795.00	100.3 AV			1.00 V	65	59.90	40.40
3	#5850.00	69.1 PK	79.1	-10.0	1.20 V	156	28.70	40.40
4	#5850.00	60.3 AV	70.3	-10.0	1.20 V	156	19.90	40.40
5	11590.00	61.0 PK	74.0	-13.0	1.00 V	360	12.60	48.40
6	11590.00	49.2 AV	54.0	-4.8	1.00 V	360	0.80	48.40

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.
6. The limit value is defined as per 15.247.
7. “#”:The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	#5725.00	81.2 PK	92.3	-11.1	1.36 H	323	40.90	40.30
2	#5725.00	71.6 AV	82.7	-11.1	1.36 H	323	31.30	40.30
3	*5755.00	112.3 PK			1.00 H	325	72.00	40.30
4	*5755.00	102.7 AV			1.00 H	325	62.40	40.30
5	11510.00	54.7 PK	74.0	-19.3	1.23 H	65	6.30	48.40
6	11510.00	43.7 AV	54.0	-10.3	1.23 H	65	-4.70	48.40
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	#5725.00	70.7 PK	81.8	-11.1	1.36 V	323	30.40	40.30
2	#5725.00	60.7 AV	71.8	-11.1	1.36 V	323	20.40	40.30
3	*5755.00	101.8 PK			1.00 V	178	61.50	40.30
4	*5755.00	91.8 AV			1.00 V	178	51.50	40.30
5	11510.00	52.7 PK	74.0	-21.3	1.25 V	68	4.30	48.40
6	11510.00	42.6 AV	54.0	-11.4	1.25 V	68	-5.80	48.40

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.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 68%RH	TESTED BY	Chris 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	*5795.00	116.6 PK			1.00 H	325	76.20	40.40
2	*5795.00	106.6 AV			1.00 H	325	66.20	40.40
3	#5850.00	76.6 PK	96.6	-20.0	1.30 H	152	36.20	40.40
4	#5850.00	66.6 AV	86.6	-20.0	1.30 H	152	26.20	40.40
5	11590.00	53.5 PK	74.0	-20.5	1.35 H	124	5.10	48.40
6	11590.00	42.5 AV	54.0	-11.5	1.35 H	124	-5.90	48.40
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	*5795.00	105.9 PK			1.00 V	77	65.50	40.40
2	*5795.00	96.3 AV			1.00 V	77	55.90	40.40
3	#5850.00	65.9 PK	85.9	-20.0	1.30 V	145	25.50	40.40
4	#5850.00	56.3 AV	76.3	-20.0	1.30 V	145	15.90	40.40
5	11590.00	52.6 PK	74.0	-21.4	1.36 V	48	4.20	48.40
6	11590.00	41.3 AV	54.0	-12.7	1.36 V	48	-7.10	48.40

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.
6. " # ": The radiated frequency is out of the restricted band.
7. The limit value is defined as per 15.247.

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. 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	92.08	42.0 QP	43.5	-1.5	1.99 H	244	33.90	8.10
2	107.60	37.8 QP	43.5	-5.7	1.49 H	123	27.90	9.90
3	196.84	32.7 QP	43.5	-10.8	1.49 H	308	21.60	11.10
4	249.22	31.1 QP	46.0	-14.9	1.00 H	119	18.20	12.90
5	375.32	30.1 QP	46.0	-15.9	1.99 H	150	13.30	16.80
6	961.20	39.5 QP	54.0	-14.5	1.00 H	65	12.40	27.10
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	92.08	40.3 QP	43.5	-3.2	1.00 V	267	32.20	8.10
2	105.66	41.0 QP	43.5	-2.5	1.00 V	16	31.40	9.60
3	187.14	32.7 QP	43.5	-10.8	1.00 V	326	20.90	11.80
4	233.70	30.5 QP	46.0	-15.5	1.00 V	16	18.30	12.20
5	480.08	33.8 QP	46.0	-12.2	1.00 V	109	14.30	19.50
6	625.58	32.8 QP	46.0	-13.2	1.50 V	90	10.20	22.60

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).
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 157	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang
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	107.60	38.0 QP	43.5	-5.5	1.50 H	118	27.50	10.50
2	173.56	33.8 QP	43.5	-9.7	1.50 H	122	21.00	12.80
3	280.26	32.2 QP	46.0	-13.8	1.00 H	115	18.40	13.80
4	375.32	32.8 QP	46.0	-13.2	2.00 H	258	16.20	16.60
5	625.58	38.8 QP	46.0	-7.2	1.00 H	239	16.10	22.70
6	961.20	40.5 QP	54.0	-13.5	1.24 H	84	13.10	27.40
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	59.10	36.1 QP	40.0	-3.9	1.24 V	5	23.60	12.50
2	105.66	36.1 QP	43.5	-7.4	1.00 V	254	25.80	10.30
3	156.10	32.2 QP	43.5	-11.3	1.24 V	16	18.60	13.60
4	375.32	33.4 QP	46.0	-12.6	1.24 V	300	16.80	16.60
5	480.08	35.2 QP	46.0	-10.8	1.00 V	85	15.90	19.30
6	625.58	34.5 QP	46.0	-11.5	1.49 V	52	11.80	22.70

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 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.

5.2.2 TEST INSTRUMENTS

Same as item 4.2.2.

5.2.3 TEST PROCEDURES

Same as item 4.2.3.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP

Same as item 4.2.5.

5.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6

5.2.7 TEST RESULTS

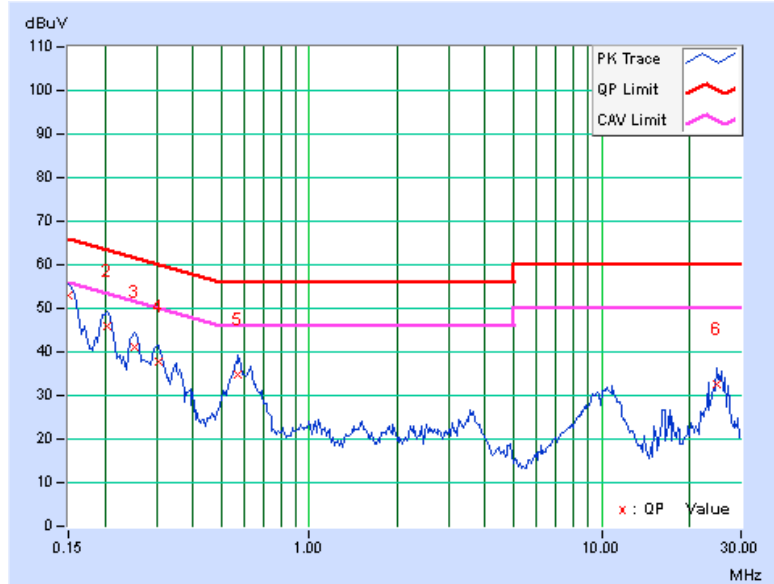
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
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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	0.15000	0.18	52.64	44.36	52.82	44.54	66.00	56.00	-13.18	-11.46
2	0.20469	0.17	45.94	38.61	46.11	38.78	63.42	53.42	-17.31	-14.64
3	0.25156	0.18	41.06	35.27	41.24	35.45	61.71	51.71	-20.47	-16.26
4	0.30625	0.19	37.46	32.28	37.65	32.47	60.07	50.07	-22.42	-17.60
5	0.57188	0.23	34.47	29.03	34.70	29.26	56.00	46.00	-21.30	-16.74
6	24.89844	0.60	31.88	27.04	32.48	27.64	60.00	50.00	-27.52	-22.36

REMARKS:

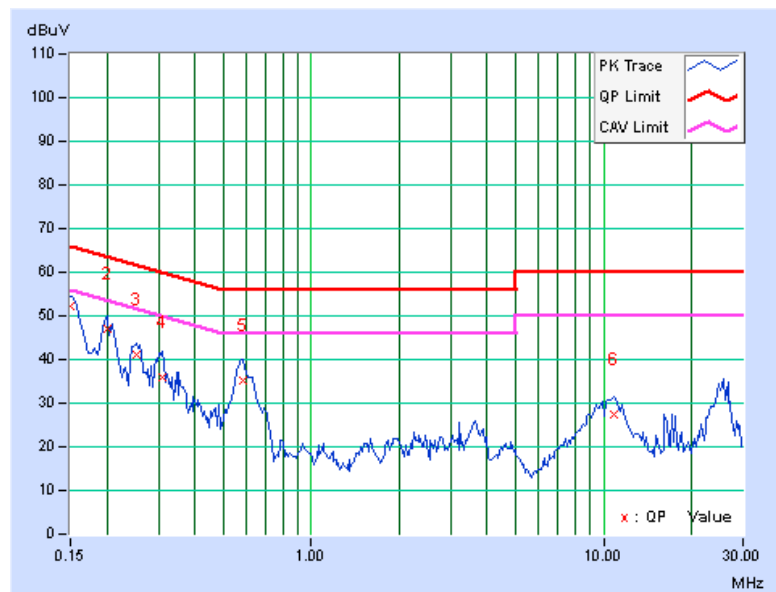
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



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	0.15000	0.19	52.10	43.68	52.29	43.87	66.00	56.00	-13.71	-12.13
2	0.20078	0.18	46.86	38.12	47.04	38.30	63.58	53.58	-16.54	-15.28
3	0.25156	0.20	41.00	34.35	41.20	34.55	61.71	51.71	-20.51	-17.16
4	0.31016	0.22	35.62	28.72	35.84	28.94	59.97	49.97	-24.13	-21.03
5	0.58750	0.24	35.11	29.56	35.35	29.80	56.00	46.00	-20.65	-16.20
6	10.80859	0.50	26.89	22.04	27.39	22.54	60.00	50.00	-32.61	-27.46

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



5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.3.2 TEST SETUP

Same as item 4.3.2.

5.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.3.4 TEST PROCEDURE

Same as item 4.3.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.

5.3.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.61	16.60	0.5	PASS
157	5785	16.64	16.58	0.5	PASS
165	5825	16.62	16.57	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.88	17.88	0.5	PASS
157	5785	17.87	17.88	0.5	PASS
165	5825	17.85	17.85	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.72	36.73	0.5	PASS
159	5795	36.73	36.74	0.5	PASS

5.4 CONDUCTED OUTPUT POWER

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v01r02 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.

5.4.2 TEST SETUP

Same as Item 4.4.2.

5.4.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.4.4 TEST PROCEDURES

Same as Item 4.4.4.

5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

5.4.7 TEST RESULTS

FOR AVERAGE POWER

802.11a

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)
		CHAIN 0	CHAIN 1			
149	5745	22.64	23.16	390.668	25.92	30
157	5785	25.04	24.63	609.556	27.85	30
165	5825	24.80	24.39	576.784	27.61	30

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)
		CHAIN 0	CHAIN 1			
149	5745	22.76	23.33	404.077	26.06	30
157	5785	24.71	24.40	571.224	27.57	30
165	5825	25.17	24.41	604.910	27.82	30

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)
		CHAIN 0	CHAIN 1			
151	5755	21.41	22.16	302.794	24.81	30
159	5795	24.83	24.50	585.927	27.68	30

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST SETUP

Same as item 4.5.2.

5.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.5.4 TEST PROCEDURE.

Same as item 4.5.4.

5.5.5 DEVIATION FROM TEST STANDARD

No deviation.

5.5.6 EUT OPERATING CONDITION

Same as item 4.3.6.

5.5.7 TEST RESULTS

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-3.73	3.01	-0.72	7.99	PASS
	157	5785	-0.43	3.01	2.58	7.99	PASS
	165	5825	-1.07	3.01	1.94	7.99	PASS
1	149	5745	-2.45	3.01	0.56	7.99	PASS
	157	5785	-2.30	3.01	0.71	7.99	PASS
	165	5825	-1.26	3.01	1.75	7.99	PASS

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-2.95	3.01	0.06	7.99	PASS
	157	5785	-1.92	3.01	1.09	7.99	PASS
	165	5825	-1.23	3.01	1.78	7.99	PASS
1	149	5745	-2.85	3.01	0.16	7.99	PASS
	157	5785	-2.61	3.01	0.40	7.99	PASS
	165	5825	-1.78	3.01	1.23	7.99	PASS

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-7.43	3.01	-4.42	7.99	PASS
	159	5795	-4.12	3.01	-1.11	7.99	PASS
1	151	5755	-6.51	3.01	-3.50	7.99	PASS
	159	5795	-4.31	3.01	-1.30	7.99	PASS

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below –30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST SETUP

Same as Item 4.6.2

5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.6.4 TEST PROCEDURE

Same as Item 4.6.4

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

5.6.7 TEST RESULTS

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

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

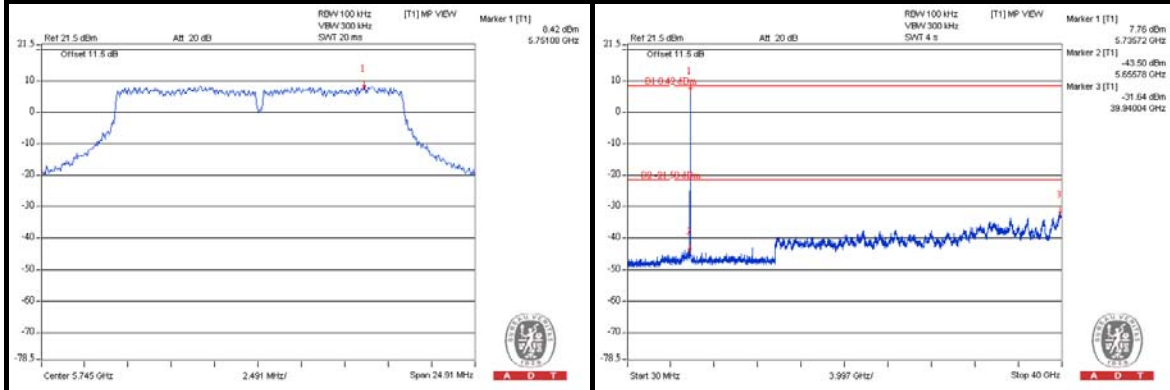


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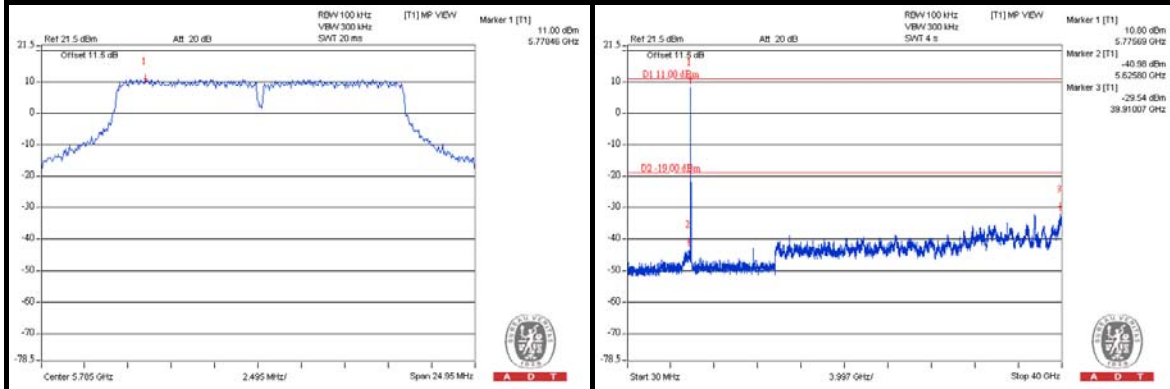
802.11a

CHAIN 0

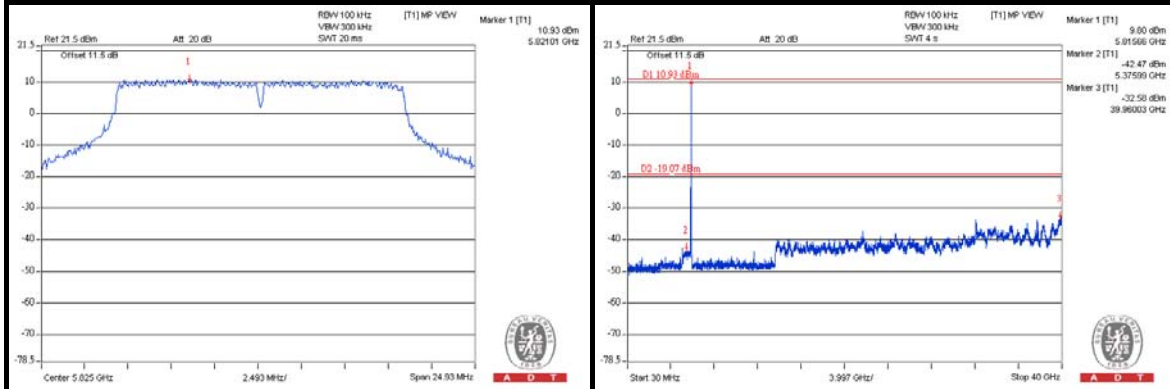
CH 149



CH 157



CH 165

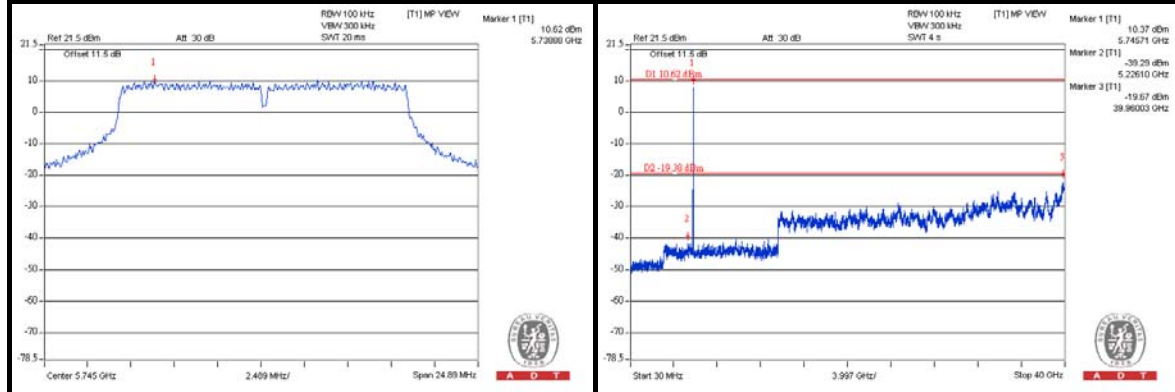




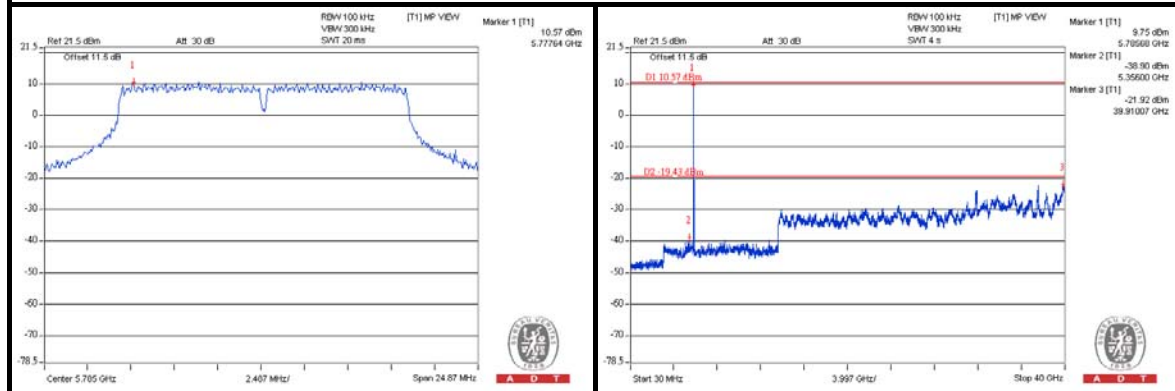
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CHAIN 1

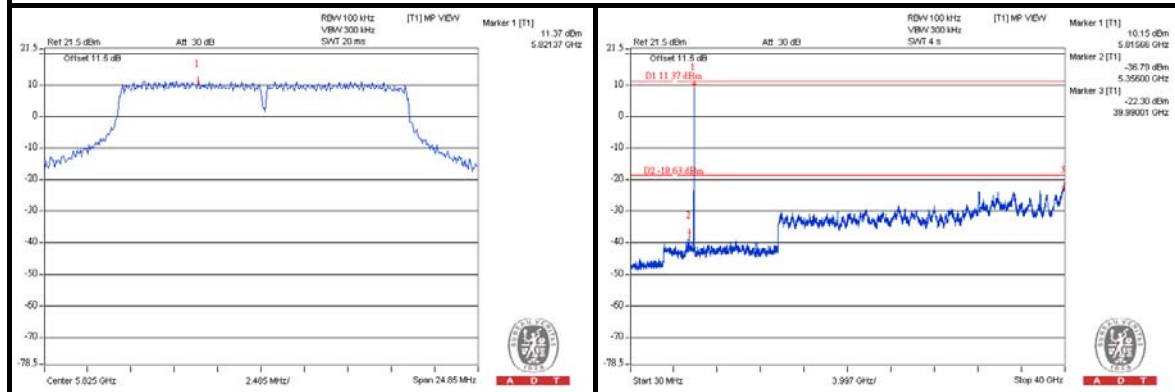
CH 149



CH 157



CH 165



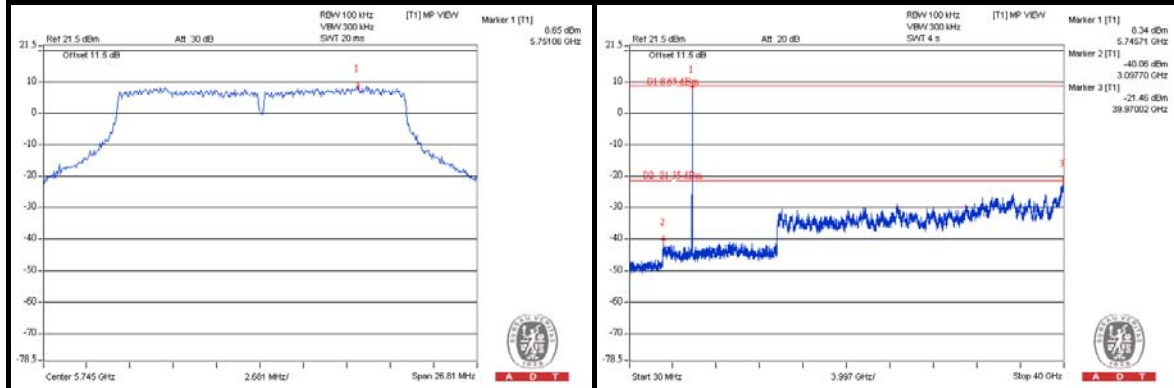


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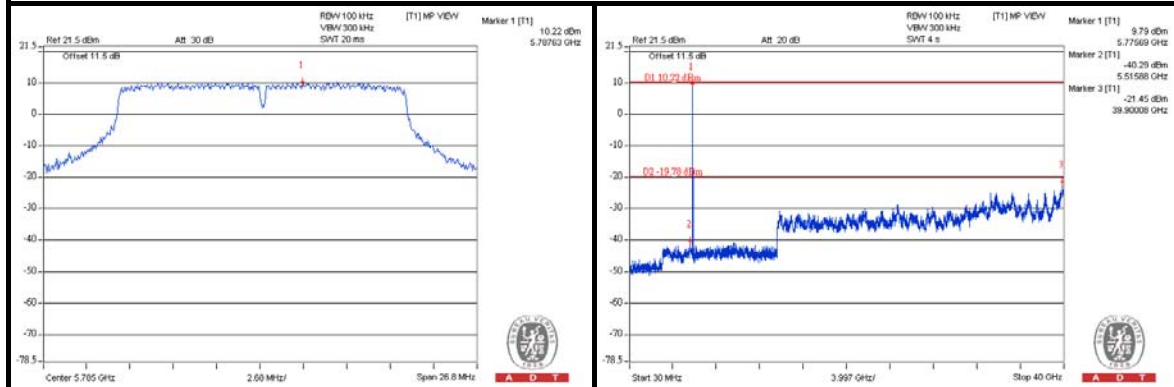
802.11n (20MHz)

CHAIN 0

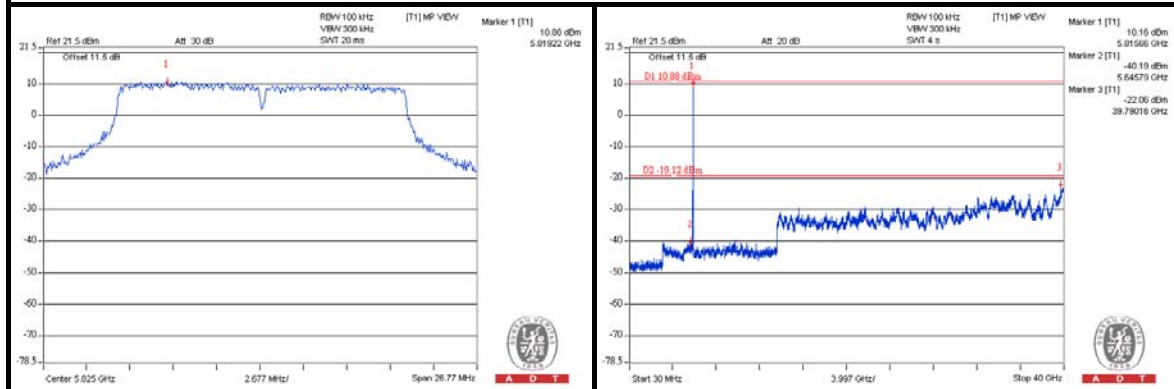
CH 149



CH 157



CH 165

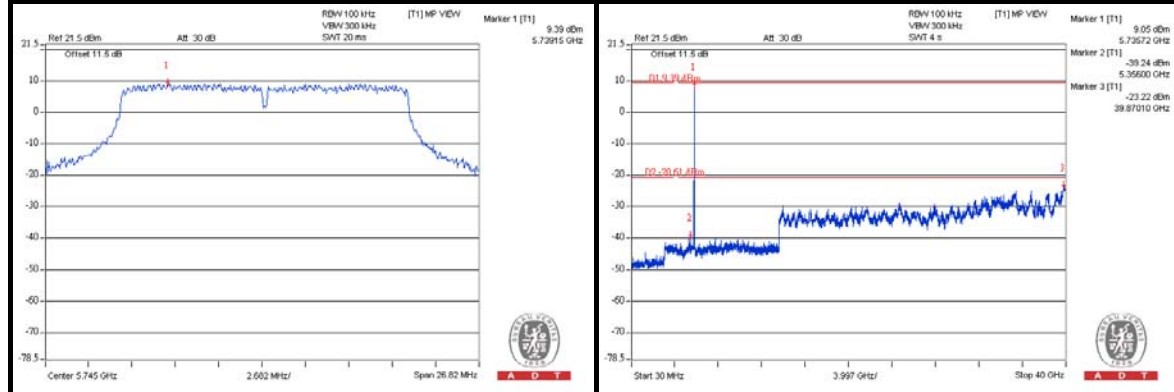




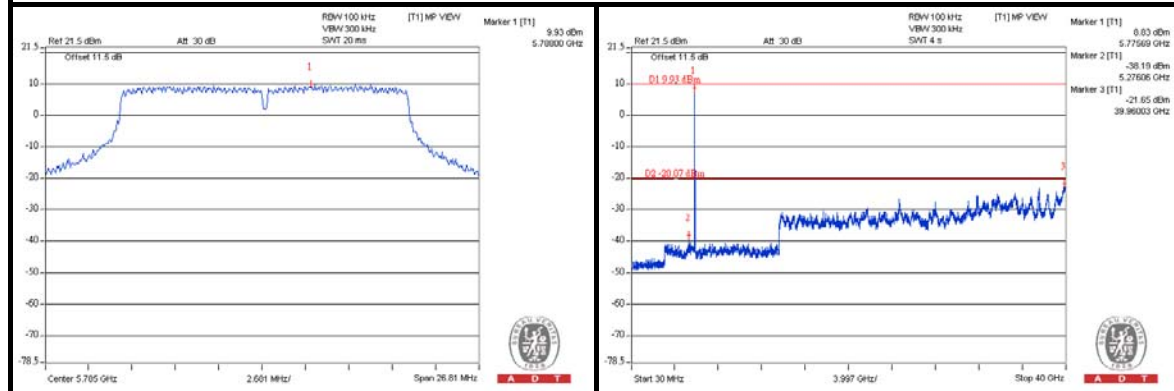
A D T

CHAIN 1

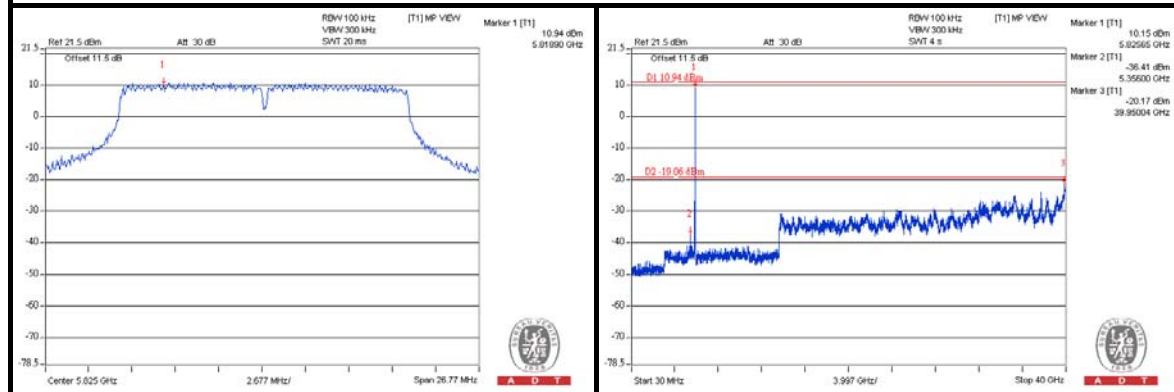
CH 149



CH 157



CH 165



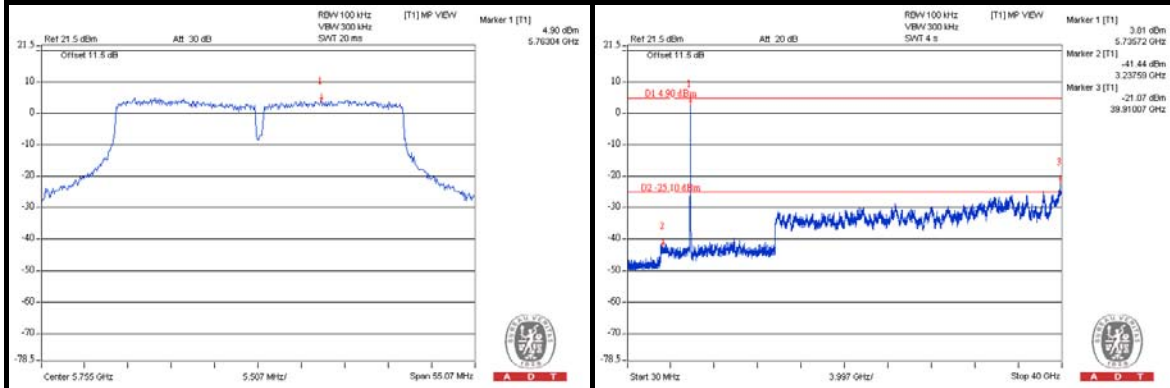


A D T

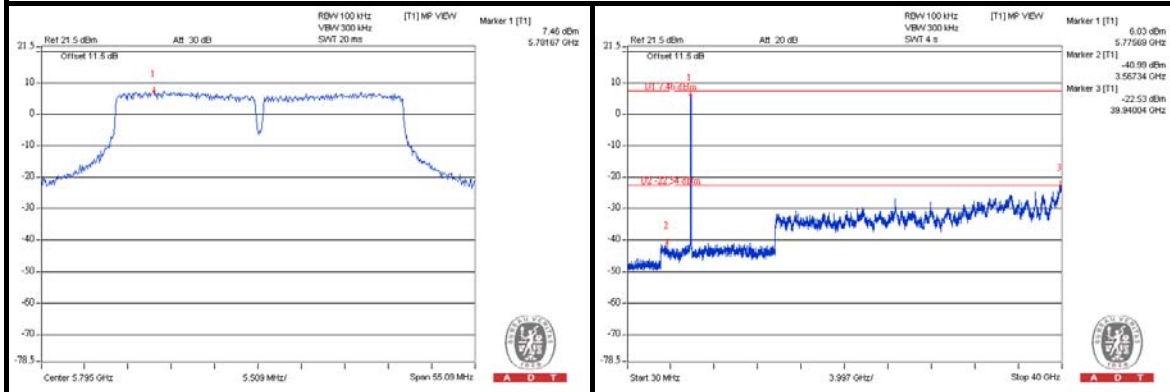
802.11n (40MHz)

CHAIN 0

CH 151



CH 159

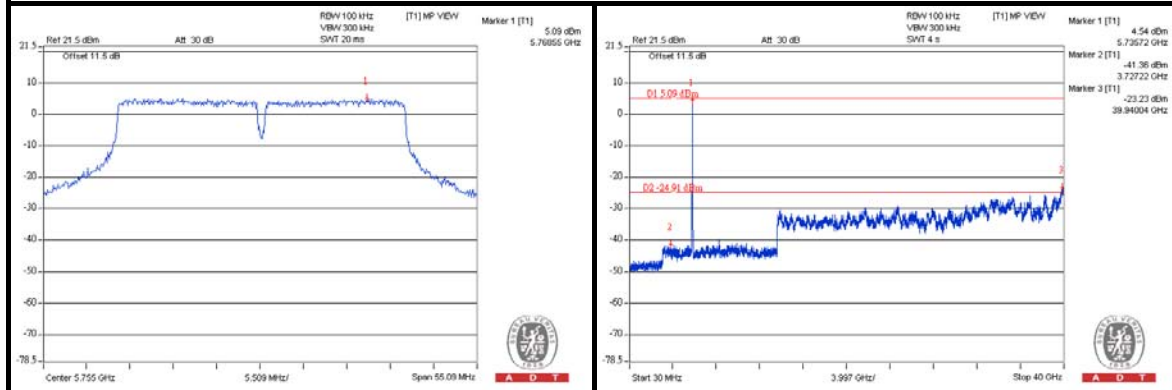




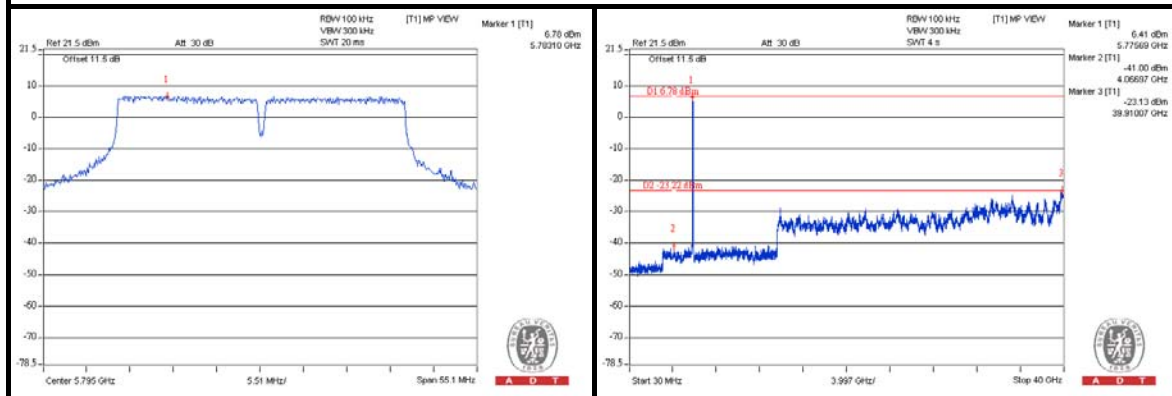
A D T

CHAIN 1

CH 151



CH 159





A D T

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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7. 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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8. 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---