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FCC TEST REPORT (15.247)

REPORT NO.: RF130911C29

MODEL NO.: MR18-HW

FCC ID: UDX-60026010

RECEIVED: Sep. 11, 2013

TESTED: Oct. 28 ~ Nov. 18, 2013

ISSUED: Nov. 19, 2013

APPLICANT: Cisco Systems, Inc.

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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
RF130911C29	Original release.	Nov. 19, 2013



1. CERTIFICATION

PRODUCT: Wireless 802.11 abgn AP

MODEL NO.: MR18-HW

BRAND: Cisco

APPLICANT: Cisco Systems, Inc.

TESTED: Oct. 28 ~ Nov. 18, 2013

TEST SAMPLE: ENGINEERING SAMPLE

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

ANSI C63.10-2009

The above equipment (model: MR18-HW) 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 : Sunee Liu, **DATE :** Nov. 19, 2013
Suntee Liu / Specialist

APPROVED BY : Ken Liu, **DATE :** Nov. 19, 2013
Ken Liu / Senior Manager



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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 -1.02dB at 11.89844MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00, 2483.50, 4824.00, 4924.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	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 $k = 2$.



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless 802.11 abgn AP
MODEL NO.	MR18-HW
POWER SUPPLY	12Vdc (Adapter) 48Vdc (POE)
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	2.4GHz: 840.531mW 5.0GHz: 951.766mW
ANTENNA TYPE	Refer to Note
ANTENNA CONNECTOR	Refer to Note
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	NA



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NOTE:

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

Radio 1	
MODULATION MODE	TX FUNCTION
802.11b	2TX
802.11g	2TX
802.11n (20MHz) - MCS 8-15	2TX
802.11n (40MHz) - MCS 8-15	2TX

Radio 2	
MODULATION MODE	TX FUNCTION
802.11a	2TX
802.11n (20MHz) - MCS 8-15	2TX
802.11n (40MHz) - MCS 8-15	2TX

Radio 3	
MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz) - MCS 0-7	1TX
802.11n (40MHz) - MCS 0-7	1TX

2. The EUT consumes power from the following adapter (support unit).

Brand	Ruckus
Model	HK-AD-120A100-US
Input Power	100-240Vac, 50/60Hz, 0.4A
Output Power	12Vdc, 1.0A
Power Line	1.8m cable without core attached on adapter

3. The EUT consumes power from the following POE (support unit).

Brand	SONICWALL
Model	PD-6083G300
Input Power	100-250Vac, 50/60Hz, 0.5A
Output Power	48Vdc, 0.35A

4. The EUT uses following antennas.

Radio	Antenna Type	Connector	Gain (dBi)		Remark
1	PIFA	IPEX	4		2.4GHz only
2	PIFA	IPEX	5150~5250MHz	4	5GHz only
			5725~5825MHz	6	
3	Printed	IPEX	2		2.4GHz + 5GHz combo

5. 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.



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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



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3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Radio 1, Power from adapter
B	-	√	√	-	Radio 1, Power from POE
C	√	√	√	√	Radio 3, Power from adapter
D	-	√	√	-	Radio 3, Power from POE

Where

RE≥1G: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE 1: “-”means no effect.

NOTE 2: The EUT had been pre-tested on the positioned of X-plane and Z-plane. The worst case was found when positioned on **Z-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, C	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A, C	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A, C	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A, C	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)
A, B, C, D	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2



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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, B, C, D	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)
A, C	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
A, C	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
A, C	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
A, C	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)
A, C	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A, C	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A, C	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A, C	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≥1G	26deg. C, 73%RH 25deg. C, 65%RH	120Vac, 60Hz	Martin Lee Ted Chang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin Ted Chang
PLC	25deg. C, 68%RH 25deg. C, 65%RH	120Vac, 60Hz	Leo Tsai Ted Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Antony Lee



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FOR 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Radio 2, Power from adapter
B	-	√	√	-	Radio 2, Power from POE
C	√	√	√	√	Radio 3, Power from adapter
D	-	√	√	-	Radio 3, Power from POE

Where

RE≥1G: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE 1: "-"means no effect.

NOTE 2: The EUT had been pre-tested on the positioned of X-plane and Z-plane. The worst case was found when positioned on Z-plane.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, C	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A, C	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A, C	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, C, D	802.11a	149 to 165	165	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, B, C, D	802.11a	149 to 165	165	OFDM	BPSK	6.0



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BANDEdge MEASUREMENT:

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	26deg. C, 73%RH 25deg. C, 65%RH	120Vac, 60Hz	Jones Chang Chris Lin Ted Chang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin Ted Chang
PLC	25deg. C, 68%RH 25deg. C, 65%RH	120Vac, 60Hz	Leo Tsai Ted Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Antony Lee



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3.3 DUTY CYCLE OF TEST SIGNAL

For 2.4GHz Band:

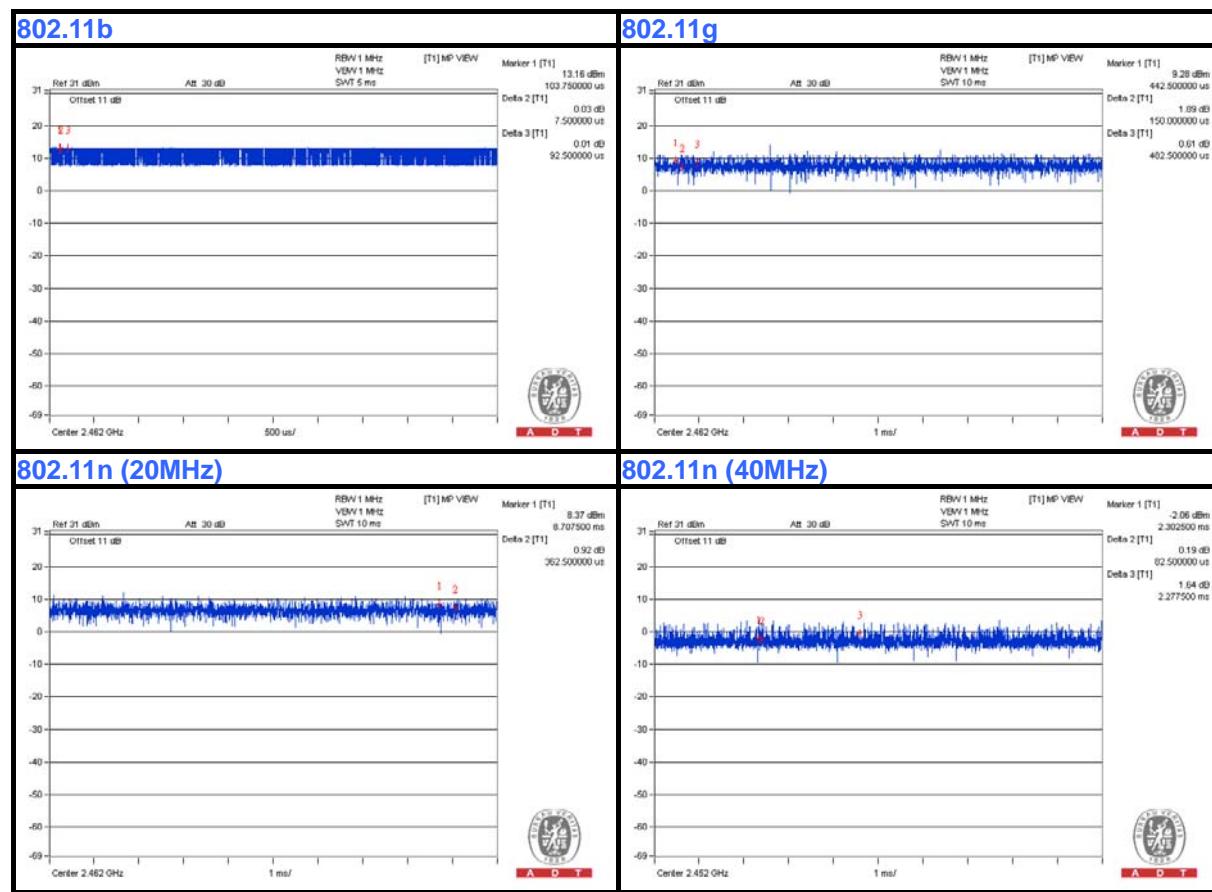
Test mode A

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

802.11g: Duty cycle of test signal is > 98 %

802.11n (20MHz): Duty cycle of test signal is > 98 %

802.11n (40MHz): Duty cycle of test signal is > 98 %





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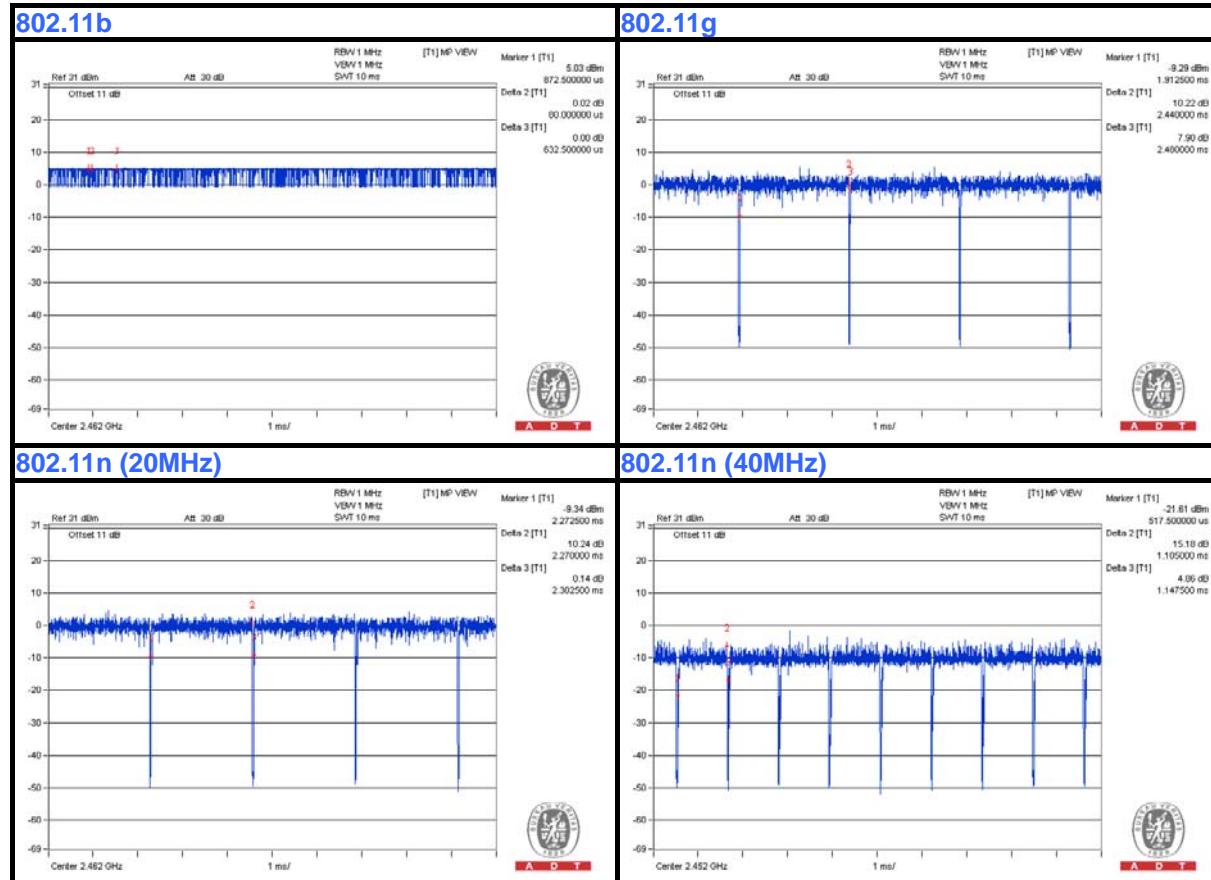
Test mode C

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

802.11g: Duty cycle = $2.44/2.48 = 0.984$, Duty factor = $10 * \log(1/0.984) = 0.07$

802.11n (20MHz): $2.27/2.30 = 0.987$, Duty factor = $10 * \log(1/0.987) = 0.06$

802.11n (40MHz): $1.11/1.15 = 0.965$, Duty factor = $10 * \log(1/0.965) = 0.15$





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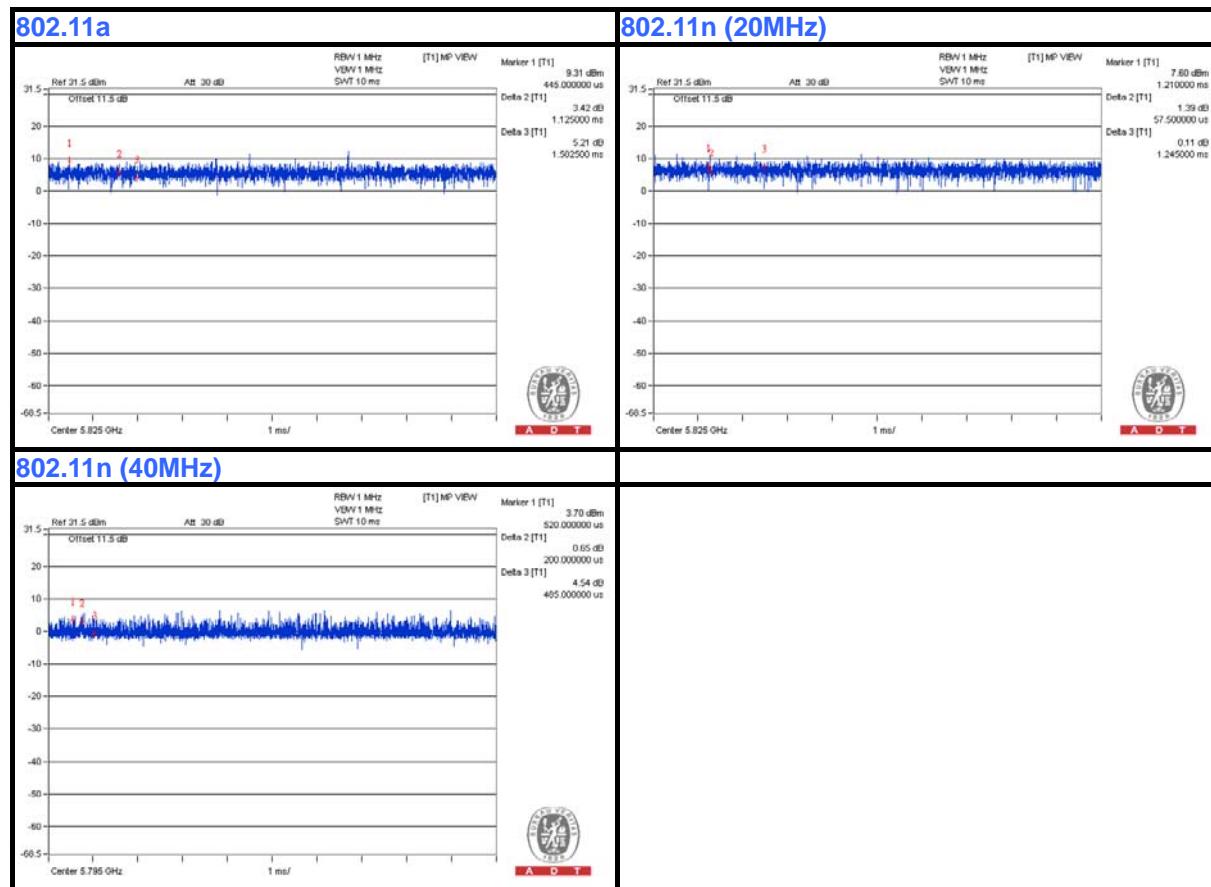
For 5GHz Band:

Test mode A

802.11a: Duty cycle of test signal is > 98 %

802.11n (20MHz): Duty cycle of test signal is > 98 %

802.11n (40MHz): Duty cycle of test signal is > 98 %





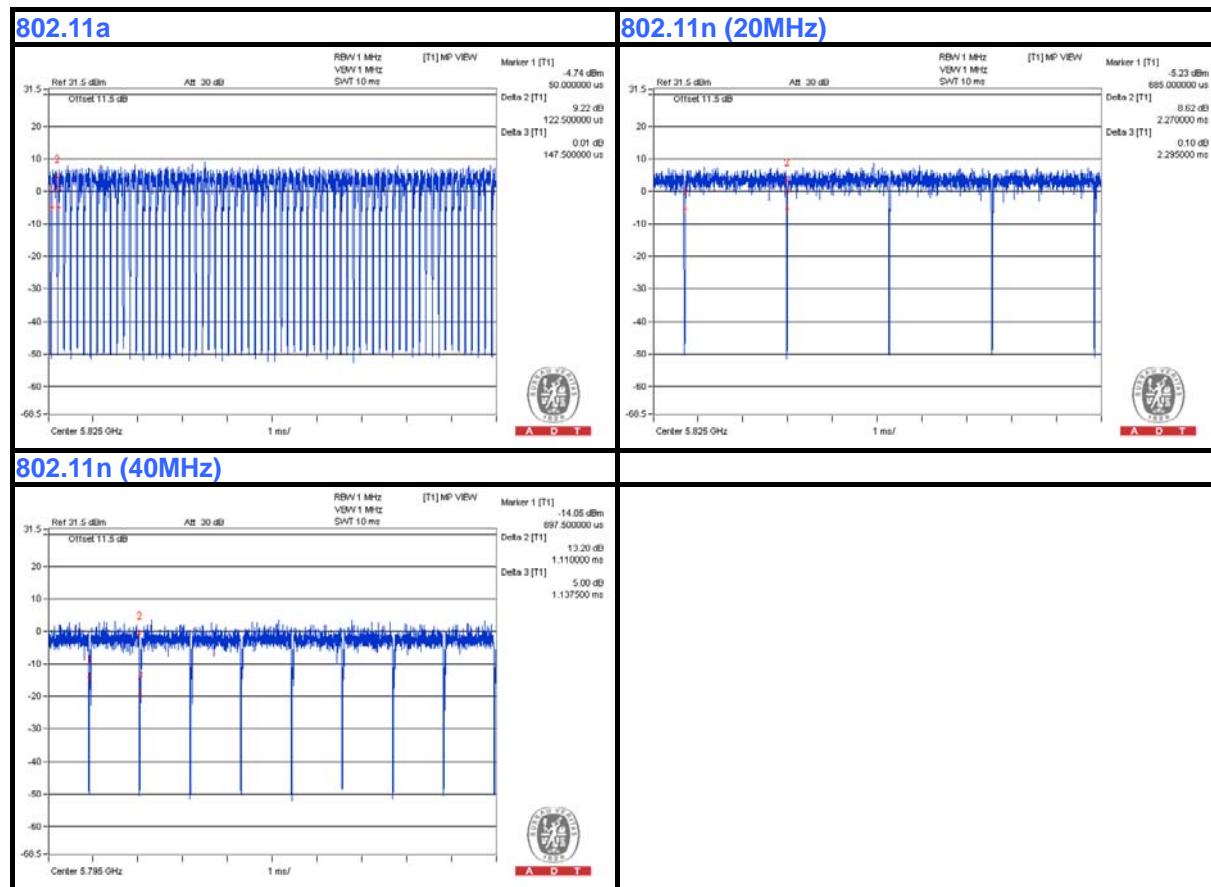
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Test mode C

802.11a: Duty cycle = $0.12/0.15 = 0.8$, Duty factor = $10 * \log(1/0.8) = 0.97$

802.11n (20MHz): Duty cycle = $2.27/2.30 = 0.987$, Duty factor = $10 * \log(1/0.987) = 0.06$

802.11n (40MHz): Duty cycle = $1.11/1.14 = 0.974$, Duty factor = $10 * \log(1/0.974) = 0.11$





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3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Adapter	Ruckus	HK-AD-120A1 00-US	NA	NA
2	Notebook	DELL	E5420	BPQ7MQ1	FCC DoC Approved
3	POE	NA	AIR-PWRINJ1 500-2	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	10m RJ45 UTP cable
3	10m RJ45 UTP cable

NOTE:

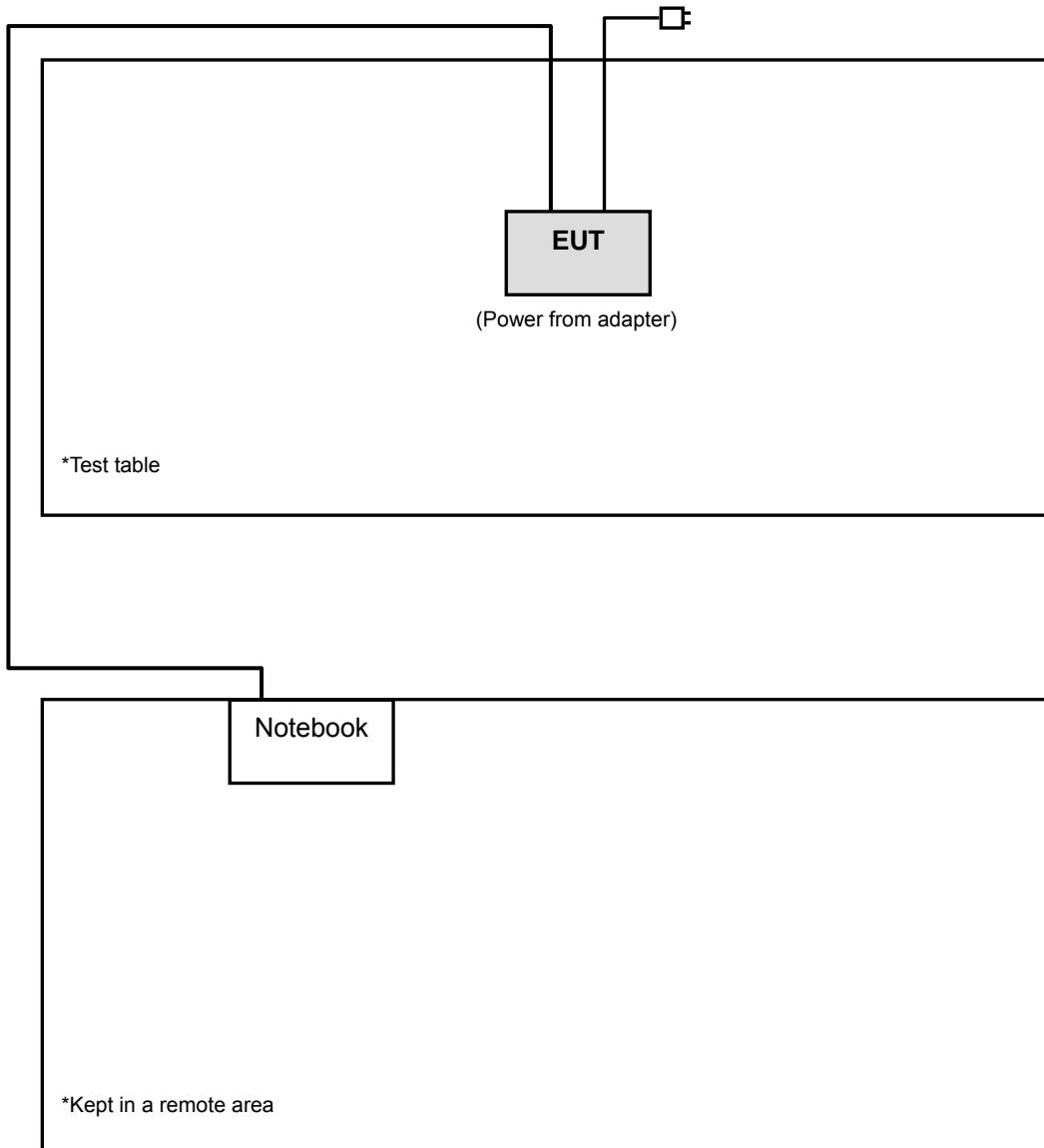
1. All power cords of the above support units are non-shielded (1.8m).
2. Items 2-3 acted as communication partners to transfer data.



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3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

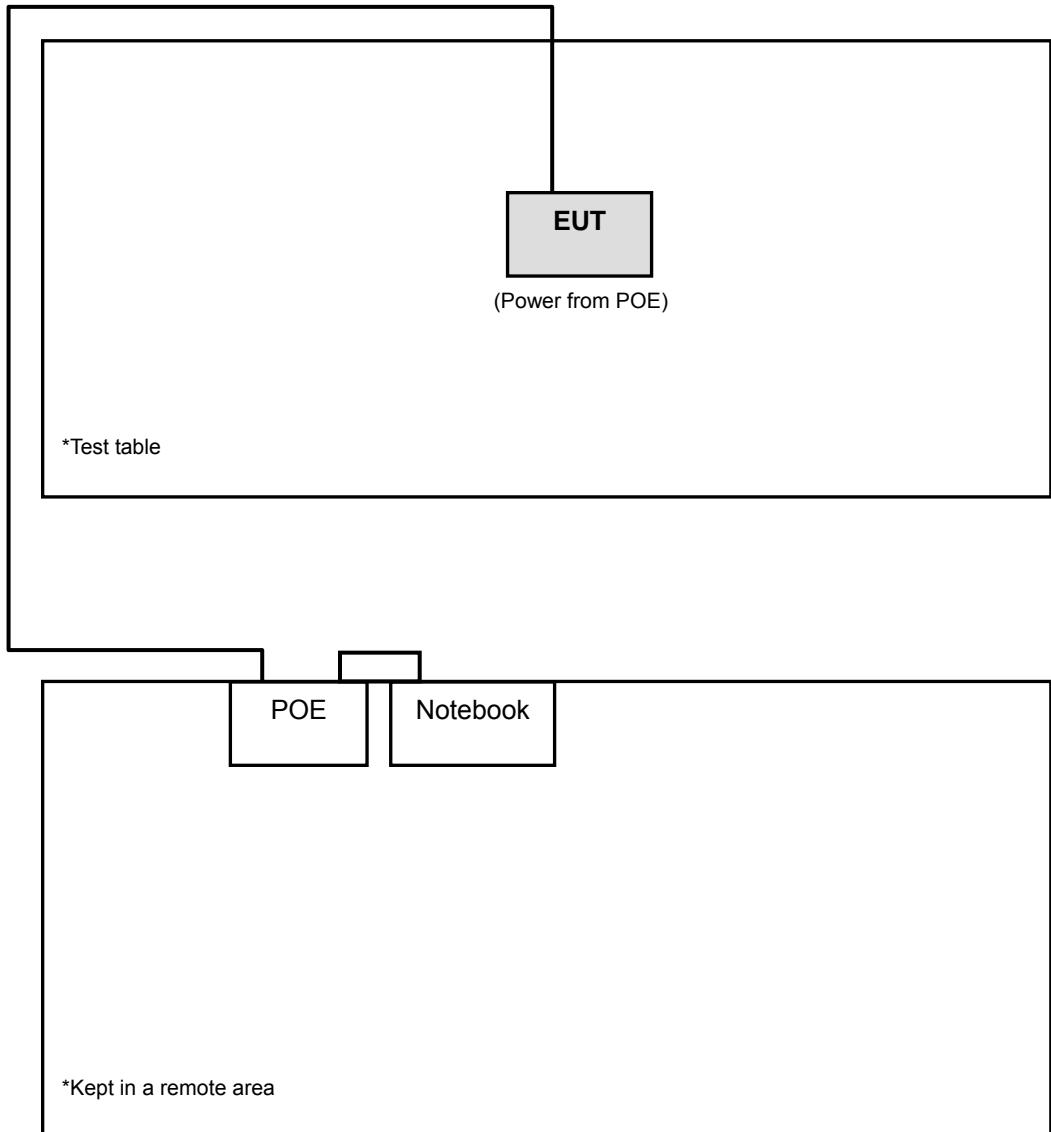
Adapter mode





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POE mode





3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r01

662911 D01 Multiple Transmitter Output v02

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 20dB below the highest level of the desired power:

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB_{uV}/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.



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4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUe DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 25, 2012	Dec. 24, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jan. 31, 2013	Jan. 30, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Mar. 20, 2013	Mar. 19, 2014
HORN Antenna SCHWARZBECK	9120D	209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8447D	2944A10633	Oct. 07, 2013	Oct. 06, 2014
Preamplifier Agilent	8449B	3008A01964	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250723/4	Aug. 23, 2013	Aug. 22, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6+309224/4	Aug. 23, 2013	Aug. 22, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2013	Oct. 17, 2014
High Speed Peak Power Meter	ML2495A	0824011	Jul. 29, 2013	Jul. 28, 2014
Power Sensor	MA2411B	0738171	Jul. 29, 2013	Jul. 28, 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 3.
 4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 5. The FCC Site Registration No. is 988962.
 6. The IC Site Registration No. is IC 7450F-3.



4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

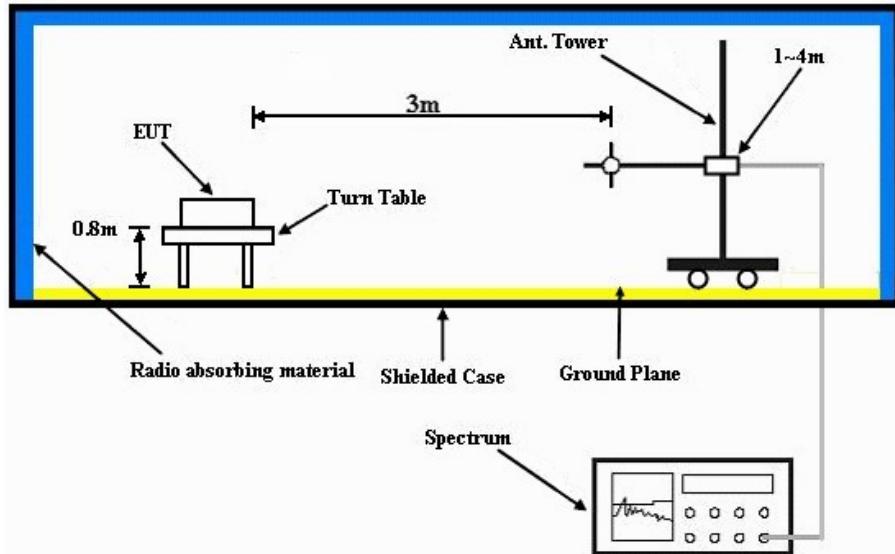
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

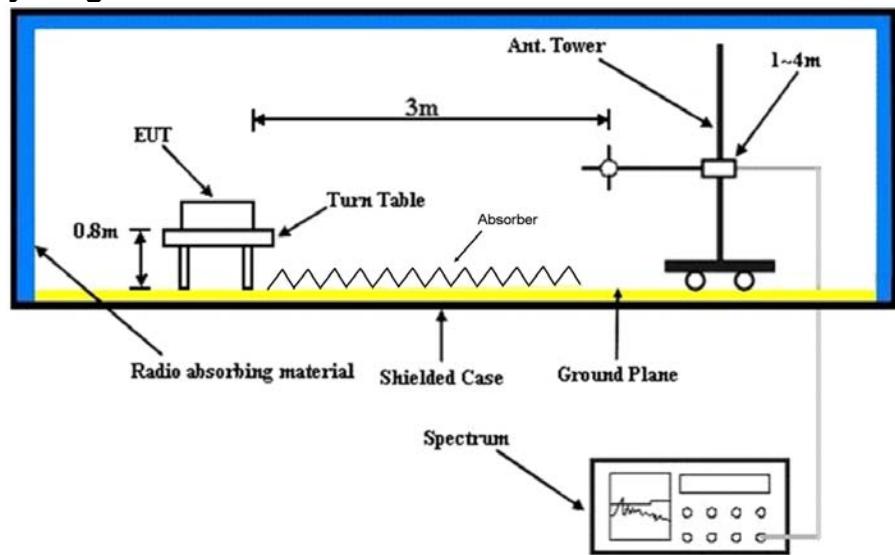
No deviation.

4.1.5 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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



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4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on the testing table.
- b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
- c. 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.
- d. The communication partners sent data to EUT by command "PING".
- e. The necessary accessories enabled the system in full functions.



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4.1.7 TEST RESULTS (A)

ABOVE 1GHz DATA :

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 1		FREQUENCY RANGE 1 ~ 25GHz
INPUT POWER (SYSTEM)		120Vac, 60 Hz		DETECTOR FUNCTION Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		26deg. C, 73%RH		TESTED BY Martin Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.9 PK	74.0	-7.1	1.00 H	303	34.70	32.20
2	2390.00	51.7 AV	54.0	-2.3	1.00 H	303	19.50	32.20
3	*2412.00	117.4 PK			1.00 H	303	85.10	32.30
4	*2412.00	113.9 AV			1.00 H	303	81.60	32.30
5	4824.00	50.0 PK	74.0	-24.0	1.30 H	43	43.50	6.50
6	4824.00	45.3 AV	54.0	-8.7	1.30 H	43	38.80	6.50
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	2390.00	59.5 PK	74.0	-14.5	1.38 V	359	27.30	32.20
2	2390.00	49.1 AV	54.0	-4.9	1.38 V	359	16.90	32.20
3	*2412.00	114.5 PK			1.38 V	359	82.20	32.30
4	*2412.00	111.0 AV			1.38 V	359	78.70	32.30
5	4824.00	50.6 PK	74.0	-23.4	1.30 V	43	44.10	6.50
6	4824.00	43.7 AV	54.0	-10.3	1.20 V	9	37.20	6.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 73%RH	TESTED BY	Martin Lee

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)	CORRECTION FACTOR (dB/m)
1	*2437.00	117.4 PK			1.00 H	39	85.00
2	*2437.00	114.1 AV			1.00 H	39	81.70
3	4874.00	48.4 PK	74.0	-25.6	1.21 H	330	41.80
4	4874.00	37.1 AV	54.0	-16.9	1.21 H	330	30.50
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)	CORRECTION FACTOR (dB/m)
1	*2437.00	114.7 PK			1.10 V	339	82.30
2	*2437.00	110.9 AV			1.00 V	39	78.50
3	4874.00	47.6 PK	74.0	-26.4	1.05 V	1	41.00
4	4874.00	36.3 AV	54.0	-17.7	1.05 V	1	29.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	26deg. C, 73%RH	TESTED BY	Martin Lee

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)
1	*2462.00	117.3 PK			1.00 H	33	84.90
2	*2462.00	113.9 AV			1.00 H	33	81.50
3	2483.50	62.7 PK	74.0	-11.3	1.00 H	33	30.20
4	2483.50	51.5 AV	54.0	-2.5	1.00 H	33	19.00
5	4924.00	48.0 PK	74.0	-26.0	1.00 H	310	41.10
6	4924.00	37.2 AV	54.0	-16.8	1.00 H	310	30.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)
1	*2462.00	114.4 PK			1.07 V	321	82.00
2	*2462.00	110.7 AV			1.07 V	321	78.30
3	2483.50	59.8 PK	74.0	-14.2	1.07 V	321	27.30
4	2483.50	51.1 AV	54.0	-2.9	1.07 V	321	18.60
5	4924.00	46.9 PK	74.0	-27.1	1.00 V	100	40.00
6	4924.00	36.4 AV	54.0	-17.6	1.00 V	100	29.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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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		26deg. C, 73%RH		TESTED BY Martin Lee

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	71.7 PK	74.0	-2.3	1.00 H	43	39.50	32.20
2	2390.00	53.0 AV	54.0	-1.0	1.00 H	43	20.80	32.20
3	*2412.00	113.4 PK			1.00 H	43	81.10	32.30
4	*2412.00	103.8 AV			1.00 H	43	71.50	32.30
5	4824.00	47.5 PK	74.0	-26.5	1.00 H	149	41.00	6.50
6	4824.00	36.5 AV	54.0	-17.5	1.00 H	149	30.00	6.50
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	2390.00	66.9 PK	74.0	-7.1	1.13 V	334	34.70	32.20
2	2390.00	51.6 AV	54.0	-2.4	1.13 V	334	19.40	32.20
3	*2412.00	110.8 PK			1.13 V	334	78.50	32.30
4	*2412.00	101.6 AV			1.13 V	334	69.30	32.30
5	4824.00	47.3 PK	74.0	-26.7	1.00 V	109	40.80	6.50
6	4824.00	35.9 AV	54.0	-18.1	1.00 V	109	29.40	6.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 73%RH	TESTED BY	Martin Lee

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)
1	*2437.00	114.3 PK			1.00 H	44	81.90
2	*2437.00	105.3 AV			1.00 H	44	72.90
3	4874.00	48.6 PK	74.0	-25.4	1.00 H	199	42.00
4	4874.00	37.6 AV	54.0	-16.4	1.00 H	199	31.00
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)
1	*2437.00	112.3 PK			1.10 V	340	79.90
2	*2437.00	104.3 AV			1.10 V	340	71.90
3	4874.00	47.5 PK	74.0	-26.5	1.00 V	259	40.90
4	4874.00	36.4 AV	54.0	-17.6	1.00 V	259	29.80

REMARKS:

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 73%RH	TESTED BY	Martin Lee

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)
1	*2462.00	113.4 PK			1.00 H	40	81.00
2	*2462.00	104.4 AV			1.00 H	40	72.00
3	2483.50	70.5 PK	74.0	-3.5	1.00 H	43	38.00
4	2483.50	52.9 AV	54.0	-1.1	1.00 H	43	20.40
5	4924.00	48.2 PK	74.0	-25.8	1.00 H	320	41.30
6	4924.00	38.1 AV	54.0	-15.9	1.00 H	320	31.20

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)
1	*2462.00	110.4 PK			1.14 V	359	78.00
2	*2462.00	102.3 AV			1.14 V	359	69.90
3	2483.50	68.6 PK	74.0	-5.4	1.15 V	359	36.10
4	2483.50	51.5 AV	54.0	-2.5	1.15 V	359	19.00
5	4924.00	47.9 PK	74.0	-26.1	1.30 V	353	41.00
6	4924.00	36.4 AV	54.0	-17.6	1.30 V	353	29.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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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		26deg. C, 73%RH		TESTED BY Martin Lee

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	70.4 PK	74.0	-3.6	1.02 H	41	38.20	32.20
2	2390.00	52.8 AV	54.0	-1.2	1.02 H	41	20.60	32.20
3	*2412.00	112.3 PK			1.02 H	41	80.00	32.30
4	*2412.00	101.0 AV			1.02 H	41	68.70	32.30
5	4824.00	47.3 PK	74.0	-26.7	1.00 H	306	40.80	6.50
6	4824.00	37.5 AV	54.0	-16.5	1.00 H	306	31.00	6.50
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	2390.00	64.5 PK	74.0	-9.5	1.10 V	332	32.30	32.20
2	2390.00	51.0 AV	54.0	-3.0	1.10 V	332	18.80	32.20
3	*2412.00	108.8 PK			1.65 V	332	76.50	32.30
4	*2412.00	98.4 AV			1.65 V	332	66.10	32.30
5	4824.00	46.8 PK	74.0	-27.2	1.00 V	343	40.30	6.50
6	4824.00	36.6 AV	54.0	-17.4	1.00 V	343	30.10	6.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 73%RH	TESTED BY	Martin Lee

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)
1	#1875.00	58.9 PK	94.1	-35.2	1.36 H	27	28.20
2	#1875.00	52.7 AV	82.6	-29.9	1.36 H	27	22.00
3	*2437.00	114.1 PK			1.00 H	42	81.70
4	*2437.00	102.6 AV			1.00 H	42	70.20
5	4924.00	49.0 PK	74.0	-25.0	1.00 H	222	42.10
6	4924.00	37.4 AV	54.0	-16.6	1.00 H	222	30.50

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)
1	#1875.00	56.3 PK	89.5	-33.2	1.40 V	359	25.60
2	#1875.00	50.0 AV	79.3	-29.3	1.40 V	359	19.30
3	*2437.00	109.5 PK			1.07 V	309	77.10
4	*2437.00	99.3 AV			1.07 V	309	66.90
5	4924.00	48.3 PK	74.0	-25.7	1.00 V	22	41.40
6	4924.00	37.0 AV	54.0	-17.0	1.00 V	22	30.10

REMARKS:

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



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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	26deg. C, 73%RH	TESTED BY	Martin Lee

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)
1	*2462.00	113.2 PK			1.00 H	42	80.80
2	*2462.00	100.9 AV			1.00 H	42	68.50
3	2483.50	69.0 PK	74.0	-5.0	1.00 H	42	36.50
4	2483.50	52.5 AV	54.0	-1.5	1.00 H	42	20.00
5	4924.00	49.6 PK	74.0	-24.4	1.00 H	299	42.70
6	4924.00	37.7 AV	54.0	-16.3	1.00 H	299	30.80

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)
1	*2462.00	109.4 PK			1.11 V	347	77.00
2	*2462.00	98.5 AV			1.11 V	347	66.10
3	2483.50	66.2 PK	74.0	-7.8	1.11 V	347	33.70
4	2483.50	51.0 AV	54.0	-3.0	1.11 V	347	18.50
5	4924.00	48.2 PK	74.0	-25.8	1.00 V	159	41.30
6	4924.00	37.1 AV	54.0	-16.9	1.00 V	159	30.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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		26deg. C, 73%RH		TESTED BY Martin Lee

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	2288.00	58.3 PK	74.0	-15.7	1.34 H	49	27.60	30.70
2	2288.00	48.4 AV	54.0	-5.6	1.34 H	49	17.70	30.70
3	2390.00	63.6 PK	74.0	-10.4	1.00 H	40	32.60	31.00
4	2390.00	52.6 AV	54.0	-1.4	1.00 H	40	21.60	31.00
5	*2422.00	105.7 PK			1.00 H	40	74.40	31.30
6	*2422.00	94.2 AV			1.00 H	40	62.90	31.30
7	4844.00	47.4 PK	74.0	-26.6	1.05 H	199	42.80	4.60
8	4844.00	35.2 AV	54.0	-18.8	1.05 H	199	30.60	4.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2288.00	56.2 PK	74.0	-17.8	1.00 V	333	25.50	30.70
2	2288.00	46.1 AV	54.0	-7.9	1.00 V	333	15.40	30.70
3	2390.00	63.8 PK	74.0	-10.2	1.34 V	359	32.80	31.00
4	2390.00	48.9 AV	54.0	-5.1	1.34 V	359	17.90	31.00
5	*2422.00	102.1 PK			1.34 V	359	70.80	31.30
6	*2422.00	91.0 AV			1.34 V	359	59.70	31.30
7	4844.00	46.0 PK	74.0	-28.0	1.00 V	19	41.40	4.60
8	4844.00	34.2 AV	54.0	-19.8	1.00 V	19	29.60	4.60

REMARKS:

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 73%RH	TESTED BY	Martin Lee

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)
1	2390.00	66.8 PK	74.0	-7.2	1.00 H	40	35.80
2	2390.00	52.4 AV	54.0	-1.6	1.00 H	40	21.40
3	*2422.00	108.8 PK			1.00 H	40	77.50
4	*2422.00	97.1 AV			1.00 H	40	65.80
5	4874.00	47.4 PK	74.0	-26.6	1.29 H	222	42.70
6	4874.00	35.5 AV	54.0	-18.5	1.29 H	222	30.80

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)
1	2390.00	60.3 PK	74.0	-13.7	1.30 V	324	29.30
2	2390.00	49.3 AV	54.0	-4.7	1.30 V	324	18.30
3	*2437.00	105.3 PK			1.30 V	324	74.00
4	*2437.00	94.1 AV			1.30 V	324	62.80
5	4874.00	46.5 PK	74.0	-27.5	1.00 V	119	41.80
6	4874.00	34.9 AV	54.0	-19.1	1.00 V	119	30.20

REMARKS:

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



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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	26deg. C, 73%RH	TESTED BY	Martin Lee

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)	CORRECTION FACTOR (dB/m)
1	*2452.00	106.5 PK			1.01 H	40	75.20
2	*2452.00	94.7 AV			1.01 H	40	63.40
3	2483.50	68.9 PK	74.0	-5.1	1.00 H	40	37.50
4	2483.50	52.4 AV	54.0	-1.6	1.00 H	40	21.00
5	4904.00	46.8 PK	74.0	-27.2	1.00 H	75	41.90
6	4904.00	35.3 AV	54.0	-18.7	1.00 H	75	30.40

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)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.0 PK			1.11 V	332	72.70
2	*2452.00	92.3 AV			1.11 V	332	61.00
3	2483.50	64.9 PK	74.0	-9.1	1.10 V	324	33.50
4	2483.50	52.3 AV	54.0	-1.7	1.10 V	324	20.90
5	4904.00	45.5 PK	74.0	-28.5	1.00 V	321	40.60
6	4904.00	34.5 AV	54.0	-19.5	1.00 V	321	29.60

REMARKS:

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



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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		25deg. C, 65%RH		TESTED BY Chris 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	57.07	29.9 QP	40.0	-10.1	1.25 H	14	44.70	-14.80
2	375.29	37.0 QP	46.0	-9.0	1.00 H	191	48.00	-11.00
3	600.38	34.4 QP	46.0	-11.6	1.50 H	119	40.80	-6.40
4	625.60	40.3 QP	46.0	-5.7	1.25 H	22	46.00	-5.70
5	749.79	28.9 QP	46.0	-17.1	1.00 H	120	32.40	-3.50
6	899.20	30.6 QP	46.0	-15.4	1.50 H	84	31.40	-0.80

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	57.07	36.3 QP	40.0	-3.7	1.25 V	356	51.10	-14.80
2	66.77	34.5 QP	40.0	-5.5	1.00 V	51	50.40	-15.90
3	375.29	35.3 QP	46.0	-10.7	1.50 V	168	46.30	-11.00
4	499.48	30.2 QP	46.0	-15.8	1.25 V	178	38.70	-8.50
5	625.60	38.7 QP	46.0	-7.3	1.00 V	12	44.40	-5.70
6	875.91	31.0 QP	46.0	-15.0	1.50 V	359	32.50	-1.50

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



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4.1.8 TEST RESULTS (B)

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		25deg. C, 65%RH		TESTED BY Chris 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	57.07	28.1 QP	40.0	-11.9	1.25 H	7	42.90	-14.80
2	214.24	25.0 QP	43.5	-18.5	1.00 H	102	41.40	-16.40
3	375.29	36.9 QP	46.0	-9.1	1.50 H	193	47.90	-11.00
4	625.60	39.1 QP	46.0	-6.9	1.25 H	23	44.80	-5.70
5	751.73	26.5 QP	46.0	-19.5	1.00 H	131	29.90	-3.40
6	889.50	28.6 QP	46.0	-17.4	1.50 H	341	29.80	-1.20
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	57.07	35.3 QP	40.0	-4.7	1.25 V	340	50.10	-14.80
2	216.18	23.3 QP	46.0	-22.7	1.00 V	143	39.70	-16.40
3	375.29	36.3 QP	46.0	-9.7	1.50 V	172	47.30	-11.00
4	600.38	35.6 QP	46.0	-10.4	1.00 V	33	42.00	-6.40
5	625.60	38.1 QP	46.0	-7.9	1.50 V	356	43.80	-5.70
6	875.91	29.4 QP	46.0	-16.6	1.25 V	5	30.90	-1.50

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



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4.1.9 TEST RESULTS (C)

ABOVE 1GHz DATA :

802.11b

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

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	2386.00	55.3 PK	74.0	-18.7	1.00 H	38	24.30	31.00
2	2386.00	45.2 AV	54.0	-8.8	1.00 H	38	14.20	31.00
3	*2412.00	97.3 PK			1.02 H	37	66.20	31.10
4	*2412.00	93.7 AV			1.02 H	37	62.60	31.10
5	4824.00	50.8 PK	74.0	-23.2	1.00 H	57	46.40	4.40
6	4824.00	45.8 AV	54.0	-8.2	1.00 H	57	41.40	4.40
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	2386.00	55.6 PK	74.0	-18.4	1.00 V	0	24.60	31.00
2	2386.00	46.1 AV	54.0	-7.9	1.00 V	0	15.10	31.00
3	*2412.00	101.9 PK			1.00 V	14	70.80	31.10
4	*2412.00	98.1 AV			1.00 V	14	67.00	31.10
5	4824.00	55.9 PK	74.0	-18.1	1.00 V	346	51.50	4.40
6	4824.00	53.0 AV	54.0	-1.0	1.00 V	346	48.60	4.40

REMARKS:

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



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

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)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.9 PK			1.03 H	35	74.70
2	*2437.00	102.2 AV			1.03 H	35	71.00
3	4874.00	51.6 PK	74.0	-22.4	1.11 H	12	47.10
4	4874.00	46.0 AV	54.0	-8.0	1.11 H	12	41.50
5	7311.00	54.9 PK	74.0	-19.1	1.00 H	0	44.20
6	7311.00	45.5 AV	54.0	-8.5	1.00 H	0	34.80
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)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.1 PK			1.00 V	355	78.90
2	*2437.00	106.3 AV			1.00 V	355	75.10
3	4874.00	53.5 PK	74.0	-20.5	1.26 V	339	49.00
4	4874.00	49.2 AV	54.0	-4.8	1.26 V	339	44.70
5	7311.00	57.0 PK	74.0	-17.0	1.00 V	26	46.30
6	7311.00	48.3 AV	54.0	-5.7	1.00 V	26	37.60

REMARKS:

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



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

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)
1	*2462.00	99.0 PK			1.02 H	37	67.70
2	*2462.00	95.2 AV			1.02 H	37	63.90
3	2483.50	55.6 PK	74.0	-18.4	1.02 H	37	24.20
4	2483.50	44.2 AV	54.0	-9.8	1.02 H	37	12.80
5	4924.00	50.5 PK	74.0	-23.5	1.28 H	34	45.70
6	4924.00	44.0 AV	54.0	-10.0	1.28 H	34	39.20

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)
1	*2462.00	104.1 PK			1.00 V	14	72.80
2	*2462.00	99.8 AV			1.00 V	14	68.50
3	2483.50	56.7 PK	74.0	-17.3	1.19 V	5	25.30
4	2483.50	46.2 AV	54.0	-7.8	1.19 V	5	14.80
5	4924.00	55.9 PK	74.0	-18.1	1.00 V	345	51.10
6	4924.00	53.0 AV	54.0	-1.0	1.00 V	345	48.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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		25deg. C, 65%RH		TESTED BY Ted Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.9 PK	74.0	-19.1	1.02 H	154	23.90	31.00
2	2390.00	43.4 AV	54.0	-10.6	1.02 H	154	12.40	31.00
3	*2412.00	100.1 PK			1.03 H	37	69.00	31.10
4	*2412.00	90.0 AV			1.03 H	37	58.90	31.10
5	4824.00	49.8 PK	74.0	-24.2	1.02 H	51	45.40	4.40
6	4824.00	36.9 AV	54.0	-17.1	1.02 H	51	32.50	4.40
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	2390.00	70.4 PK	74.0	-3.6	1.00 V	341	39.40	31.00
2	2390.00	53.0 AV	54.0	-1.0	1.00 V	341	22.00	31.00
3	*2412.00	104.7 PK			1.21 V	322	73.60	31.10
4	*2412.00	94.5 AV			1.21 V	322	63.40	31.10
5	4824.00	53.6 PK	74.0	-20.4	1.00 V	346	49.20	4.40
6	4824.00	39.3 AV	54.0	-14.7	1.00 V	346	34.90	4.40

REMARKS:

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



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

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	58.5 PK	74.0	-15.5	1.00 H	36	27.50	31.00
2	2390.00	45.1 AV	54.0	-8.9	1.00 H	36	14.10	31.00
3	*2437.00	107.9 PK			1.00 H	35	76.70	31.20
4	*2437.00	97.3 AV			1.00 H	35	66.10	31.20
5	2483.50	67.9 PK	74.0	-6.1	1.00 H	35	36.50	31.40
6	2483.50	47.1 AV	54.0	-6.9	1.00 H	35	15.70	31.40
7	4874.00	50.2 PK	74.0	-23.8	1.02 H	154	45.70	4.50
8	4874.00	38.0 AV	54.0	-16.0	1.02 H	154	33.50	4.50

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	2390.00	65.0 PK	74.0	-9.0	1.00 V	348	34.00	31.00
2	2390.00	49.3 AV	54.0	-4.7	1.00 V	348	18.30	31.00
3	*2437.00	112.6 PK			1.00 V	345	81.40	31.20
4	*2437.00	101.8 AV			1.00 V	345	70.60	31.20
5	2483.50	73.0 PK	74.0	-1.0	1.19 V	13	41.60	31.40
6	2483.50	50.0 AV	54.0	-4.0	1.19 V	13	18.60	31.40
7	4874.00	56.4 PK	74.0	-17.6	1.00 V	340	51.90	4.50
8	4874.00	42.2 AV	54.0	-11.8	1.00 V	340	37.70	4.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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

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)
1	*2462.00	99.1 PK			1.02 H	36	67.80
2	*2462.00	88.6 AV			1.02 H	36	57.30
3	2483.50	67.3 PK	74.0	-6.7	1.02 H	36	35.90
4	2483.50	48.3 AV	54.0	-5.7	1.02 H	36	16.90
5	4924.00	50.1 PK	74.0	-23.9	1.02 H	32	45.30
6	4924.00	37.0 AV	54.0	-17.0	1.02 H	32	32.20

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)
1	*2462.00	103.9 PK			1.00 V	13	72.60
2	*2462.00	92.9 AV			1.00 V	13	61.60
3	2483.50	72.4 PK	74.0	-1.6	1.20 V	346	41.00
4	2483.50	51.6 AV	54.0	-2.4	1.20 V	346	20.20
5	4924.00	51.4 PK	74.0	-22.6	1.05 V	121	46.60
6	4924.00	38.3 AV	54.0	-15.7	1.05 V	121	33.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



A D T

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.4 PK	74.0	-11.6	1.02 H	37	31.40	31.00
2	2390.00	47.4 AV	54.0	-6.6	1.02 H	37	16.40	31.00
3	*2412.00	97.1 PK			1.02 H	37	66.00	31.10
4	*2412.00	86.9 AV			1.02 H	37	55.80	31.10
5	4824.00	49.6 PK	74.0	-24.4	1.02 H	154	45.20	4.40
6	4824.00	36.9 AV	54.0	-17.1	1.02 H	154	32.50	4.40
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	2390.00	68.0 PK	74.0	-6.0	1.00 V	8	37.00	31.00
2	2390.00	51.7 AV	54.0	-2.3	1.00 V	8	20.70	31.00
3	*2412.00	102.5 PK			1.23 V	324	71.40	31.10
4	*2412.00	91.8 AV			1.23 V	324	60.70	31.10
5	4824.00	54.0 PK	74.0	-20.0	1.02 V	51	49.60	4.40
6	4824.00	40.9 AV	54.0	-13.1	1.02 V	51	36.50	4.40

REMARKS:

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



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

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	58.0 PK	74.0	-16.0	1.02 H	52	27.00	31.00
2	2390.00	44.8 AV	54.0	-9.2	1.02 H	52	13.80	31.00
3	*2437.00	107.4 PK			1.00 H	34	76.20	31.20
4	*2437.00	96.8 AV			1.00 H	34	65.60	31.20
5	2483.50	67.4 PK	74.0	-6.6	1.32 H	151	36.00	31.40
6	2483.50	46.6 AV	54.0	-7.4	1.32 H	151	15.20	31.40
7	4874.00	48.2 PK	74.0	-25.8	1.02 H	117	43.70	4.50
8	4874.00	36.0 AV	54.0	-18.0	1.02 H	117	31.50	4.50

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	2390.00	64.5 PK	74.0	-9.5	1.02 V	152	33.50	31.00
2	2390.00	48.9 AV	54.0	-5.1	1.02 V	152	17.90	31.00
3	*2437.00	111.9 PK			1.00 V	346	80.70	31.20
4	*2437.00	101.3 AV			1.00 V	346	70.10	31.20
5	2483.50	72.4 PK	74.0	-1.6	1.02 V	111	41.00	31.40
6	2483.50	49.5 AV	54.0	-4.5	1.02 V	111	18.10	31.40
7	4874.00	55.7 PK	74.0	-18.3	1.02 V	151	51.20	4.50
8	4874.00	41.3 AV	54.0	-12.7	1.02 V	151	36.80	4.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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

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)
1	*2462.00	98.9 PK			1.02 H	35	67.60
2	*2462.00	88.4 AV			1.02 H	35	57.10
3	2483.50	67.0 PK	74.0	-7.0	1.02 H	33	35.60
4	2483.50	48.2 AV	54.0	-5.8	1.02 H	33	16.80
5	4924.00	49.5 PK	74.0	-24.5	1.95 H	152	44.70
6	4924.00	36.6 AV	54.0	-17.4	1.95 H	152	31.80
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)
1	*2462.00	103.6 PK			1.00 V	15	72.30
2	*2462.00	92.8 AV			1.00 V	15	61.50
3	2483.50	72.2 PK	74.0	-1.8	1.20 V	345	40.80
4	2483.50	51.5 AV	54.0	-2.5	1.20 V	345	20.10
5	4924.00	50.4 PK	74.0	-23.6	1.02 V	52	45.60
6	4924.00	37.9 AV	54.0	-16.1	1.02 V	52	33.10

REMARKS:

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



A D T

802.11n (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		25deg. C, 65%RH		TESTED BY Ted Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.7 PK	74.0	-13.3	1.03 H	36	29.70	31.00
2	2390.00	48.0 AV	54.0	-6.0	1.03 H	36	17.00	31.00
3	*2422.00	94.9 PK			1.03 H	36	63.70	31.20
4	*2422.00	94.8 AV			1.03 H	36	63.60	31.20
5	4844.00	48.0 PK	74.0	-26.0	1.21 H	141	43.50	4.50
6	4844.00	35.7 AV	54.0	-18.3	1.21 H	141	31.20	4.50
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	2390.00	66.5 PK	74.0	-7.5	1.00 V	0	35.50	31.00
2	2390.00	52.5 AV	54.0	-1.5	1.00 V	0	21.50	31.00
3	*2422.00	98.7 PK			1.00 V	327	67.50	31.20
4	*2422.00	88.7 AV			1.00 V	327	57.50	31.20
5	4844.00	50.5 PK	74.0	-23.5	1.25 V	111	46.00	4.50
6	4844.00	38.0 AV	54.0	-16.0	1.25 V	111	33.50	4.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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

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	58.0 PK	74.0	-16.0	1.00 H	35	27.00	31.00
2	2390.00	45.6 AV	54.0	-8.4	1.00 H	35	14.60	31.00
3	*2437.00	97.9 PK			1.00 H	36	66.70	31.20
4	*2437.00	87.9 AV			1.00 H	36	56.70	31.20
5	2483.50	64.7 PK	74.0	-9.3	1.00 H	35	33.30	31.40
6	2483.50	48.8 AV	54.0	-5.2	1.00 H	35	17.40	31.40
7	4874.00	49.8 PK	74.0	-24.2	1.06 H	255	45.30	4.50
8	4874.00	37.0 AV	54.0	-17.0	1.06 H	255	32.50	4.50

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	2390.00	67.1 PK	74.0	-6.9	1.00 V	351	36.10	31.00
2	2390.00	50.5 AV	54.0	-3.5	1.00 V	351	19.50	31.00
3	*2437.00	102.6 PK			1.00 V	14	71.40	31.20
4	*2437.00	92.4 AV			1.00 V	14	61.20	31.20
5	2483.50	71.3 PK	74.0	-2.7	1.19 V	3	39.90	31.40
6	2483.50	52.2 AV	54.0	-1.8	1.19 V	3	20.80	31.40
7	4874.00	51.0 PK	74.0	-23.0	1.00 V	151	46.50	4.50
8	4874.00	39.6 AV	54.0	-14.4	1.00 V	151	35.10	4.50

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)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Ted Chang

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)	CORRECTION FACTOR (dB/m)
1	*2452.00	92.9 PK			1.00 H	38	61.60
2	*2452.00	82.9 AV			1.00 H	38	51.60
3	2483.50	62.9 PK	74.0	-11.1	1.00 H	38	31.50
4	2483.50	48.2 AV	54.0	-5.8	1.00 H	38	31.40
5	4904.00	48.0 PK	74.0	-26.0	1.55 H	102	43.30
6	4904.00	36.9 AV	54.0	-17.1	1.55 H	102	32.20
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)	CORRECTION FACTOR (dB/m)
1	*2452.00	98.0 PK			1.00 V	16	66.70
2	*2452.00	87.7 AV			1.00 V	16	56.40
3	2483.50	67.6 PK	74.0	-6.4	1.19 V	345	36.20
4	2483.50	51.8 AV	54.0	-2.2	1.19 V	345	31.40
5	4904.00	50.7 PK	74.0	-23.3	1.20 V	114	46.00
6	4904.00	39.8 AV	54.0	-14.2	1.20 V	114	35.10

REMARKS:

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



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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		25deg. C, 65%RH		TESTED BY Ted Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.07	32.4 QP	40.0	-7.6	1.50 H	5	47.20	-14.80
2	142.44	25.2 QP	43.5	-18.3	2.00 H	281	39.50	-14.30
3	223.94	26.2 QP	46.0	-19.8	1.50 H	246	42.60	-16.40
4	274.39	31.0 QP	46.0	-15.0	1.00 H	78	44.10	-13.10
5	600.38	38.3 QP	46.0	-7.7	1.25 H	343	44.70	-6.40
6	625.60	32.0 QP	46.0	-14.0	1.25 H	196	37.70	-5.70

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	64.83	35.1 QP	40.0	-4.9	1.00 V	224	50.20	-15.10
2	107.52	26.7 QP	43.5	-16.8	1.24 V	93	44.20	-17.50
3	274.39	28.0 QP	46.0	-18.0	1.50 V	135	41.10	-13.10
4	499.48	23.2 QP	46.0	-22.8	1.24 V	8	31.70	-8.50
5	600.38	36.6 QP	46.0	-9.4	1.00 V	77	43.00	-6.40
6	751.73	28.5 QP	46.0	-17.5	1.50 V	55	31.90	-3.40

REMARKS:

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



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4.1.10 TEST RESULTS (D)

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		25deg. C, 65%RH		TESTED BY Chris 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	57.07	26.6 QP	40.0	-13.4	1.25 H	96	41.40	-14.80
2	235.58	28.9 QP	46.0	-17.1	1.00 H	261	44.30	-15.40
3	262.75	32.6 QP	46.0	-13.4	1.50 H	259	46.40	-13.80
4	600.38	34.6 QP	46.0	-11.4	1.00 H	32	41.00	-6.40
5	625.60	36.1 QP	46.0	-9.9	1.50 H	24	41.80	-5.70
6	875.91	30.9 QP	46.0	-15.1	1.25 H	258	32.40	-1.50
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	57.07	24.8 QP	40.0	-15.2	1.25 V	14	39.60	-14.80
2	233.64	25.5 QP	46.0	-20.5	1.00 V	287	41.10	-15.60
3	264.69	25.3 QP	46.0	-20.7	1.50 V	266	39.00	-13.70
4	600.38	36.6 QP	46.0	-9.4	1.00 V	106	43.00	-6.40
5	794.42	27.2 QP	46.0	-18.8	1.50 V	51	29.90	-2.70
6	951.59	29.7 QP	46.0	-16.3	1.25 V	96	29.60	0.10

REMARKS:

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



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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
			Nov. 08, 2013	Nov. 07, 2014
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	100312	Jul. 08, 2013	Jul. 07, 2014
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

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

4.2.3 TEST PROCEDURES

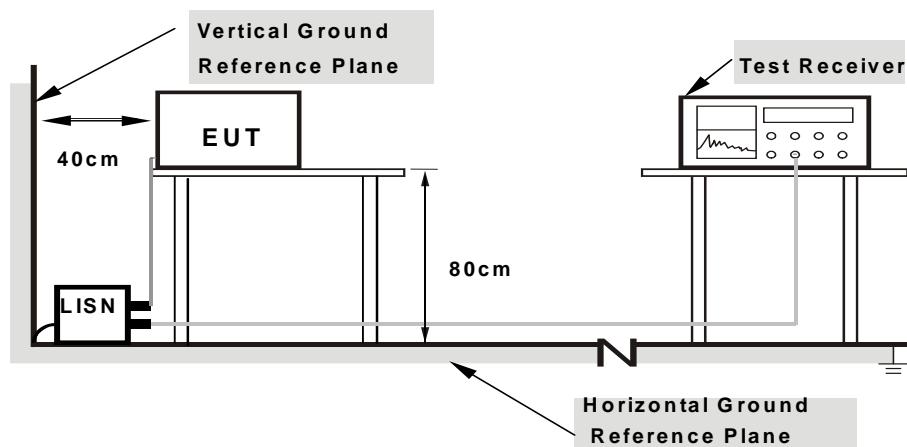
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

- Support units were connected to second LISN.
- 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 (A)

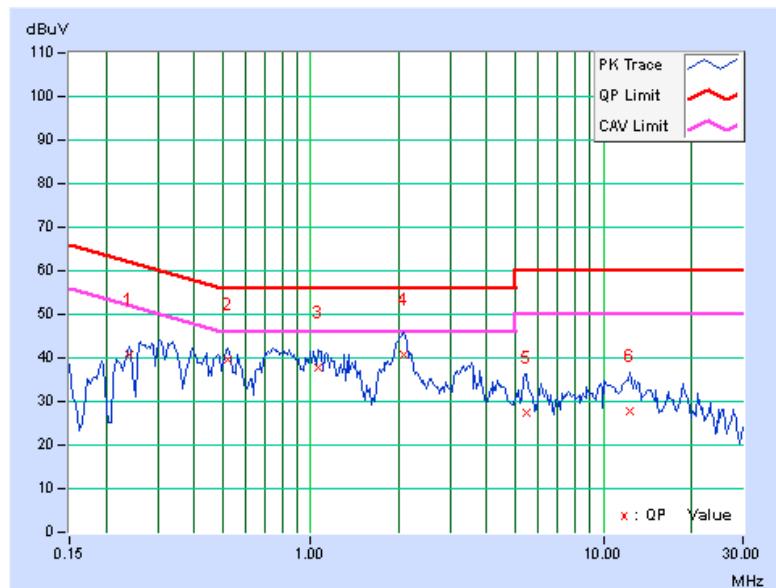
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1		6dB BANDWIDTH		9kHz	
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.23984	0.20	40.39	31.73	40.59	31.93	62.10	52.10	-21.51	-20.17
2	0.52109	0.23	39.32	26.02	39.55	26.25	56.00	46.00	-16.45	-19.75
3	1.05469	0.29	37.35	25.40	37.64	25.69	56.00	46.00	-18.36	-20.31
4	2.07813	0.32	40.27	30.46	40.59	30.78	56.00	46.00	-15.41	-15.22
5	5.47266	0.42	27.03	15.59	27.45	16.01	60.00	50.00	-32.55	-33.99
6	12.40234	0.55	27.24	18.15	27.79	18.70	60.00	50.00	-32.21	-31.30

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.





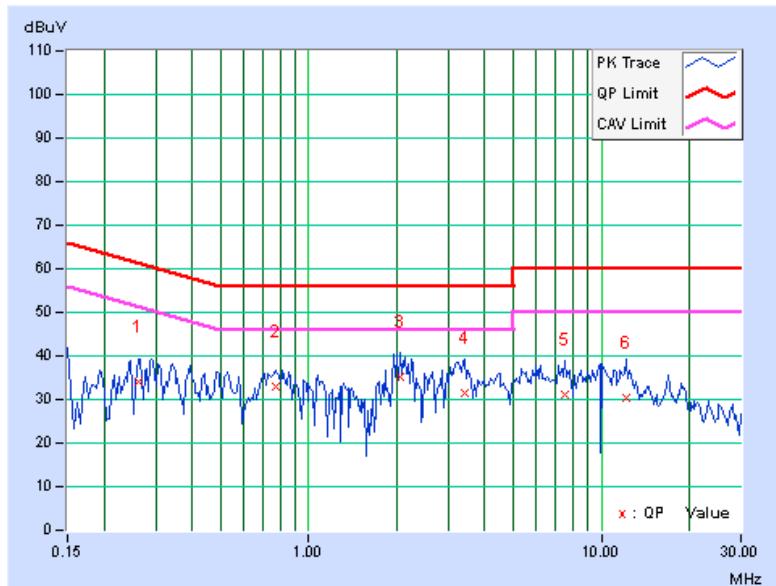
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PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.26328	0.22	33.98	17.24	34.20	17.46	61.33	51.33	-27.13	-33.87
2	0.77500	0.26	32.71	20.27	32.97	20.53	56.00	46.00	-23.03	-25.47
3	2.05469	0.32	34.88	20.90	35.20	21.22	56.00	46.00	-20.80	-24.78
4	3.41016	0.41	30.95	15.04	31.36	15.45	56.00	46.00	-24.64	-30.55
5	7.47266	0.52	30.57	14.44	31.09	14.96	60.00	50.00	-28.91	-35.04
6	12.18359	0.62	29.77	14.05	30.39	14.67	60.00	50.00	-29.61	-35.33

REMARKS:

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



4.2.8 TEST RESULTS (B)

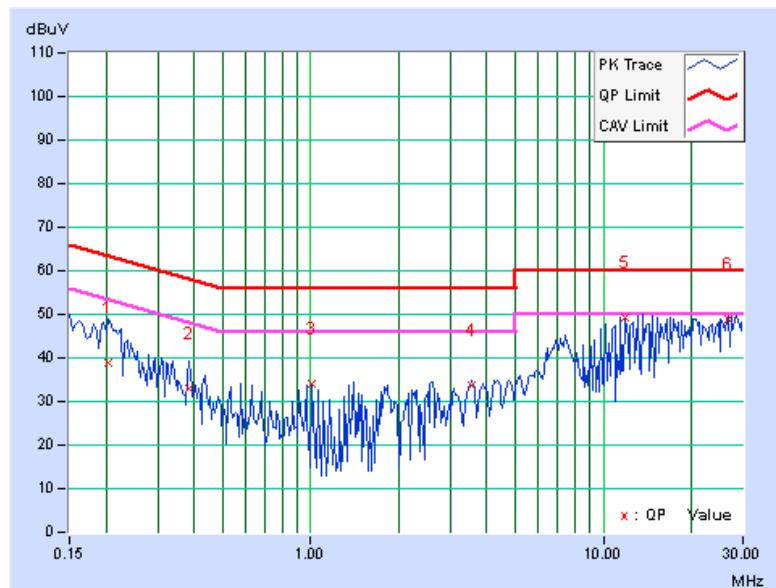
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH		9kHz	
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20469	0.17	38.60	11.70	38.77	11.87	63.42	53.42	-24.65	-41.55
2	0.38438	0.21	32.85	30.25	33.06	30.46	58.18	48.18	-25.13	-17.73
3	1.01172	0.27	33.77	32.14	34.04	32.41	56.00	46.00	-21.96	-13.59
4	3.57031	0.35	33.43	31.48	33.78	31.83	56.00	46.00	-22.22	-14.17
5	11.89844	0.47	48.72	48.51	49.19	48.98	60.00	50.00	-10.81	-1.02
6	26.89063	0.57	48.41	47.80	48.98	48.37	60.00	50.00	-11.02	-1.63

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.





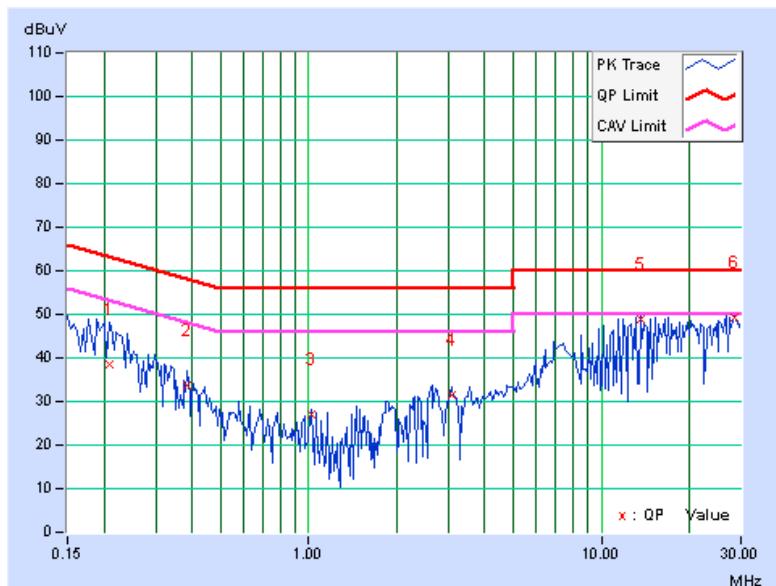
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PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20859	0.18	38.18	10.26	38.36	10.44	63.26	53.26	-24.90	-42.82
2	0.38438	0.24	33.29	31.13	33.53	31.37	58.18	48.18	-24.65	-16.81
3	1.01563	0.23	26.70	26.03	26.93	26.26	56.00	46.00	-29.07	-19.74
4	3.08984	0.34	31.15	30.47	31.49	30.81	56.00	46.00	-24.51	-15.19
5	13.56641	0.57	48.30	47.99	48.87	48.56	60.00	50.00	-11.13	-1.44
6	28.55859	0.63	48.52	48.21	49.15	48.84	60.00	50.00	-10.85	-1.16

REMARKS:

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



4.2.9 TEST RESULTS (C)

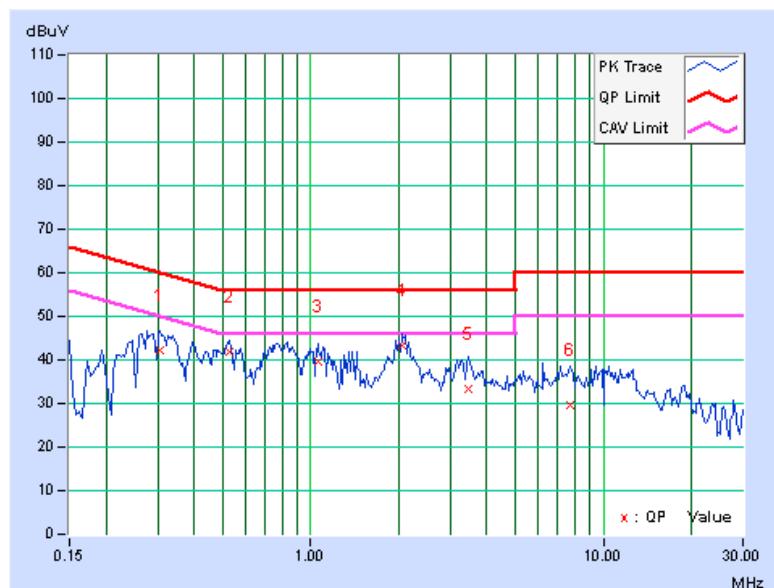
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE		Line 1		6dB BANDWIDTH		9kHz	
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.30625	0.21	42.06	25.11	42.27	25.32	60.07	50.07	-17.80
2	0.52500	0.23	41.60	30.71	41.83	30.94	56.00	46.00	-14.17	-15.06
3	1.05859	0.29	39.44	27.28	39.73	27.57	56.00	46.00	-16.27	-18.43
4	2.06250	0.32	43.17	31.02	43.49	31.34	56.00	46.00	-12.51	-14.66
5	3.46875	0.38	32.97	22.47	33.35	22.85	56.00	46.00	-22.65	-23.15
6	7.70703	0.46	29.31	19.57	29.77	20.03	60.00	50.00	-30.23	-29.97

REMARKS:

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

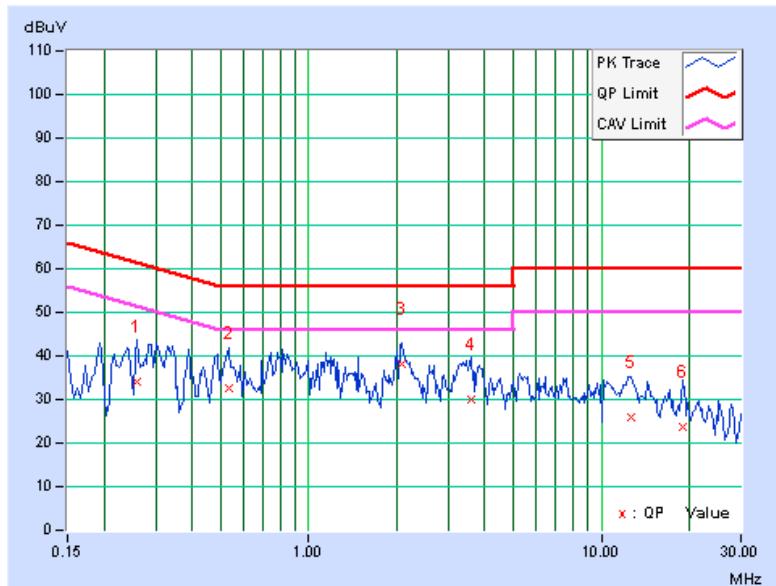


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.25938	0.21	33.87	22.87	34.08	23.08	61.45	51.45	-27.37	-28.37
2	0.53281	0.27	32.19	20.70	32.46	20.97	56.00	46.00	-23.54	-25.03
3	2.08594	0.33	37.70	24.88	38.03	25.21	56.00	46.00	-17.97	-20.79
4	3.58203	0.42	29.44	16.58	29.86	17.00	56.00	46.00	-26.14	-29.00
5	12.66797	0.64	25.17	14.55	25.81	15.19	60.00	50.00	-34.19	-34.81
6	18.89453	0.79	23.08	8.15	23.87	8.94	60.00	50.00	-36.13	-41.06

REMARKS:

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



4.2.10 TEST RESULTS (D)

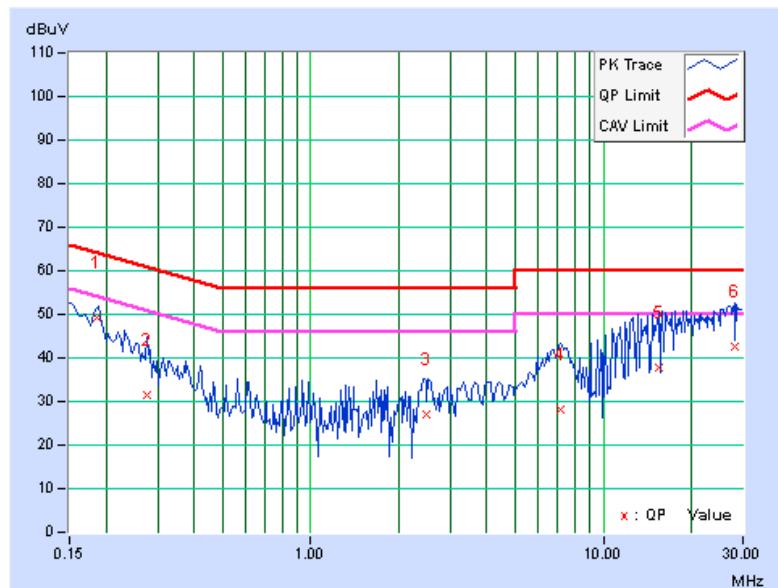
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1		6dB BANDWIDTH		9kHz	
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	0.18516	0.20	48.93	39.51	49.13	39.71	64.25	54.25	-15.13	-14.55
2	0.27500	0.21	31.43	22.69	31.64	22.90	60.97	50.97	-29.33	-28.07
3	2.48047	0.34	26.58	22.84	26.92	23.18	56.00	46.00	-29.08	-22.82
4	7.16406	0.45	27.76	20.88	28.21	21.33	60.00	50.00	-31.79	-28.67
5	15.44922	0.62	37.15	35.99	37.77	36.61	60.00	50.00	-22.23	-13.39
6	28.05078	0.64	42.09	40.75	42.73	41.39	60.00	50.00	-17.27	-8.61

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.





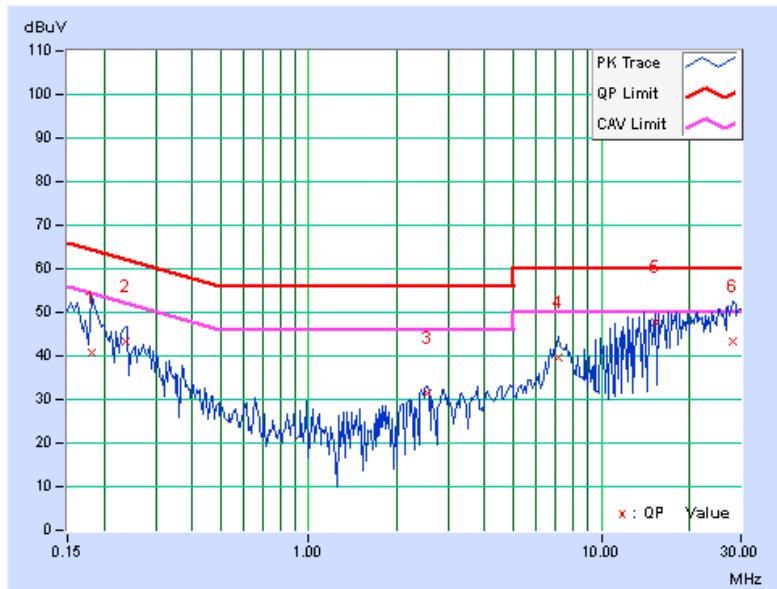
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PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.19	40.56	27.22	40.75	27.41	64.43	54.43	-23.68	-27.02
2	0.23594	0.20	43.30	33.51	43.50	33.71	62.24	52.24	-18.73	-18.52
3	2.53516	0.35	30.96	29.93	31.31	30.28	56.00	46.00	-24.69	-15.72
4	7.13281	0.51	38.98	36.60	39.49	37.11	60.00	50.00	-20.51	-12.89
5	15.21875	0.70	47.15	45.69	47.85	46.39	60.00	50.00	-12.15	-3.61
6	28.29297	0.72	42.50	36.86	43.22	37.58	60.00	50.00	-16.78	-12.42

REMARKS:

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



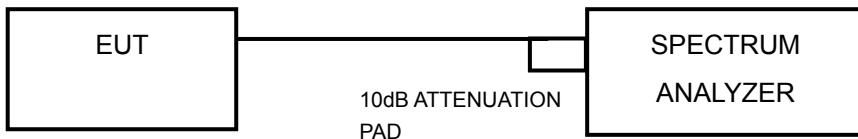


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

- a. Set resolution bandwidth (RBW) = 100kHz.
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. 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.



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4.3.7 TEST RESULTS (A)

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	6.56	6.07	0.5	PASS
6	2437	6.04	6.06	0.5	PASS
11	2462	6.55	6.05	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.60	16.54	0.5	PASS
6	2437	16.62	16.57	0.5	PASS
11	2462	16.62	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	17.83	17.84	0.5	PASS
6	2437	17.85	17.86	0.5	PASS
11	2462	17.81	17.84	0.5	PASS

802.11n (40MHz)

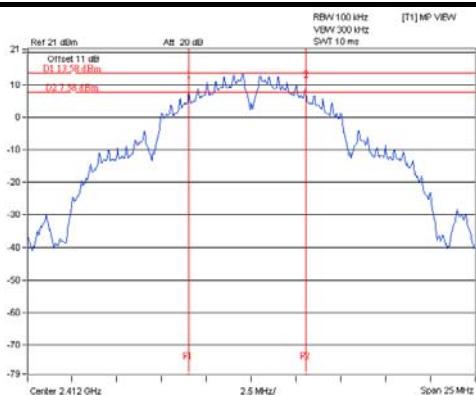
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.53	36.66	0.5	PASS
6	2437	36.58	36.65	0.5	PASS
9	2452	36.55	36.59	0.5	PASS



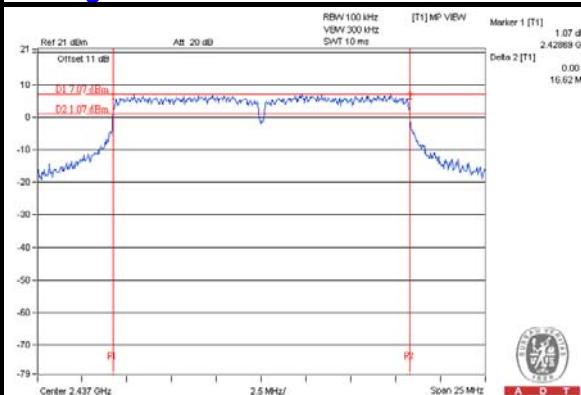
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SPECTRUM PLOT OF WORST VALUE

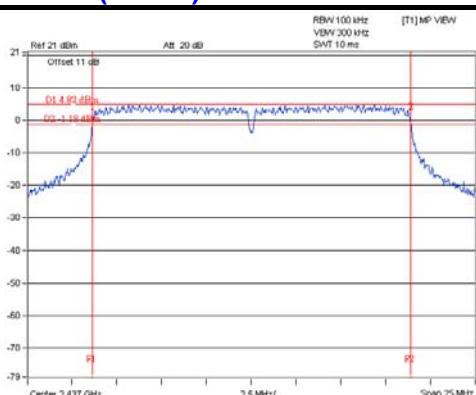
802.11b



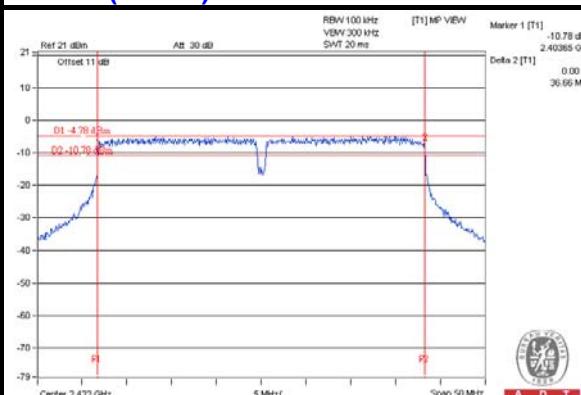
802.11g



802.11n (20MHz)



802.11n (40MHz)





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4.3.8 TEST RESULTS (C)

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.10	0.5	PASS
6	2437	10.12	0.5	PASS
11	2462	10.14	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.41	0.5	PASS
6	2437	16.34	0.5	PASS
11	2462	16.38	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.33	0.5	PASS
6	2437	17.33	0.5	PASS
11	2462	17.61	0.5	PASS

802.11n (40MHz)

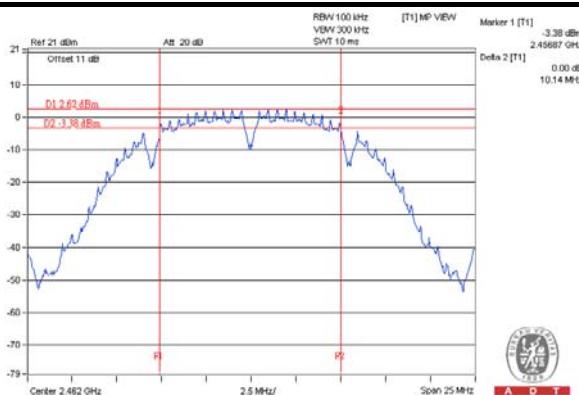
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.47	0.5	PASS
6	2437	36.49	0.5	PASS
9	2452	36.50	0.5	PASS



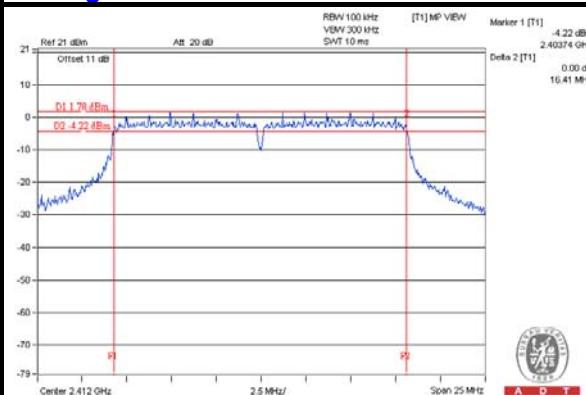
A D T

SPECTRUM PLOT OF WORST VALUE

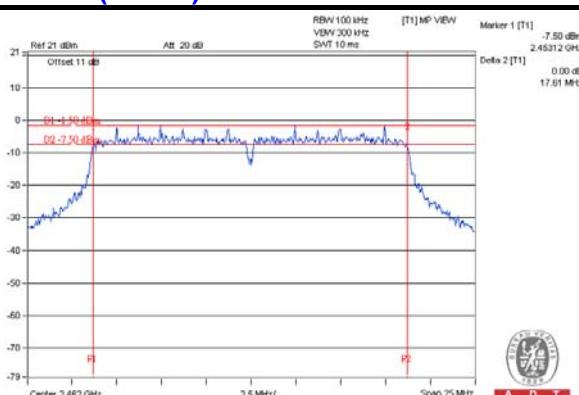
802.11b



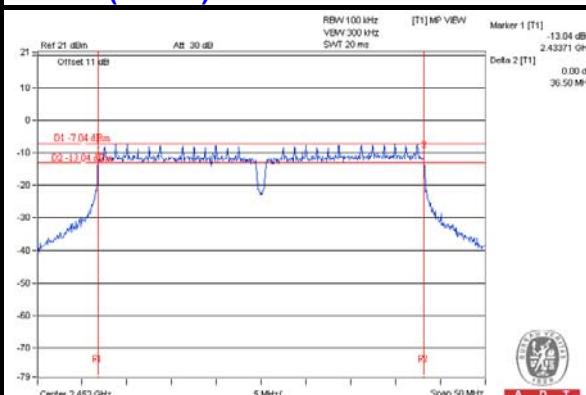
802.11g



802.11n (20MHz)



802.11n (40MHz)





A D T

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

Per KDB 662911 D01 Multiple Transmitter Output v02 Method of conducted output power measurement on IEEE 802.11 devices,

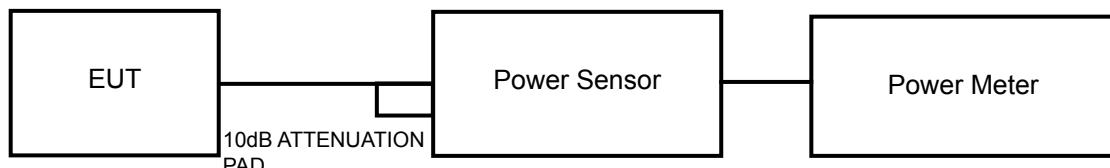
Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

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 ≥ 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

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



A D T

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



A D T

4.4.7 TEST RESULTS (A)

FOR PEAK POWER

802.11b

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	25.20	25.30	669.975	28.26	30	PASS
6	2437	25.13	24.99	641.337	28.07	30	PASS
11	2462	25.56	25.41	707.285	28.50	30	PASS

802.11g

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	25.51	25.56	715.380	28.55	30	PASS
6	2437	26.04	26.13	811.995	29.10	30	PASS
11	2462	25.97	25.94	788.012	28.97	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	25.09	25.19	653.219	28.15	30	PASS
6	2437	26.28	26.19	840.531	29.25	30	PASS
11	2462	25.37	25.07	665.716	28.23	30	PASS

802.11n (40MHz)

CHAN.	FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	22.57	22.25	348.597	25.42	30	PASS
6	2437	25.71	26.07	776.968	28.90	30	PASS
9	2452	24.56	24.04	539.272	27.32	30	PASS



A D T

FOR AVERAGE POWER

802.11b

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	22.02	22.10	321.402	25.07
6	2437	22.19	21.72	314.171	24.97
11	2462	22.34	22.10	333.577	25.23

802.11g

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	17.83	17.56	117.690	20.71
6	2437	19.25	18.95	162.664	22.11
11	2462	17.68	17.22	111.337	20.47

802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	16.32	16.31	85.611	19.33
6	2437	19.22	18.58	155.671	21.92
11	2462	16.21	15.99	81.502	19.11

802.11n (40MHz)

CHAN.	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	13.01	12.52	37.864	15.78
6	2437	17.76	17.53	116.328	20.66
9	2452	14.67	14.04	54.660	17.38



A D T

4.4.8 TEST RESULTS (C)

FOR PEAK POWER

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	46.345	16.66	30	PASS
6	2437	174.582	22.42	30	PASS
11	2462	29.923	14.76	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	139.959	21.46	30	PASS
6	2437	313.329	24.96	30	PASS
11	2462	52.240	17.18	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	123.595	20.92	30	PASS
6	2437	337.287	25.28	30	PASS
11	2462	61.518	17.89	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	71.450	18.54	30	PASS
6	2437	126.765	21.03	30	PASS
9	2452	42.855	16.32	30	PASS



A D T

FOR AVERAGE POWER**802.11b**

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	27.990	14.47
6	2437	118.850	20.75
11	2462	18.030	12.56

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	26.242	14.19
6	2437	105.439	20.23
11	2462	9.036	9.56

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	15.205	11.82
6	2437	102.802	20.12
11	2462	10.280	10.12

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	12.531	10.98
6	2437	20.370	13.09
9	2452	6.237	7.95

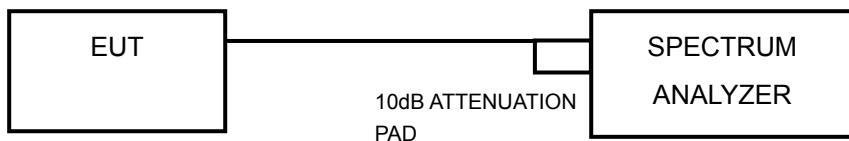


4.5 POWER SPECTRAL DENSITY MEASUREMENT

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

- a. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
- b. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- c. 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.



A D T

4.5.7 TEST RESULTS (A)

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	0.21	3.01	3.22	6.99	PASS
	6	2437	0.60	3.01	3.61	6.99	PASS
	11	2462	-0.30	3.01	2.71	6.99	PASS
1	1	2412	0.19	3.01	3.20	6.99	PASS
	6	2437	-0.04	3.01	2.97	6.99	PASS
	11	2462	0.01	3.01	3.02	6.99	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi, so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

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	-8.12	3.01	-5.11	6.99	PASS
	6	2437	-4.72	3.01	-1.71	6.99	PASS
	11	2462	-7.19	3.01	-4.18	6.99	PASS
1	1	2412	-6.86	3.01	-3.85	6.99	PASS
	6	2437	-6.00	3.01	-2.99	6.99	PASS
	11	2462	-6.58	3.01	-3.57	6.99	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi, so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.



A D T

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	-8.62	3.01	-5.61	8	PASS
	6	2437	-6.41	3.01	-3.40	8	PASS
	11	2462	-9.51	3.01	-6.50	8	PASS
1	1	2412	-9.49	3.01	-6.48	8	PASS
	6	2437	-5.94	3.01	-2.93	8	PASS
	11	2462	-9.62	3.01	-6.61	8	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- IEEE 802.11n, MCS = 8-15, NSS = 2,
Directional gain = $4\text{dBi} + 10\log(2/2) = 4\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

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	-15.04	3.01	-12.03	8	PASS
	6	2437	-9.41	3.01	-6.40	8	PASS
	9	2452	-13.12	3.01	-10.11	8	PASS
1	3	2422	-15.95	3.01	-12.94	8	PASS
	6	2437	-9.03	3.01	-6.02	8	PASS
	9	2452	-8.88	3.01	-5.87	8	PASS

NOTE:

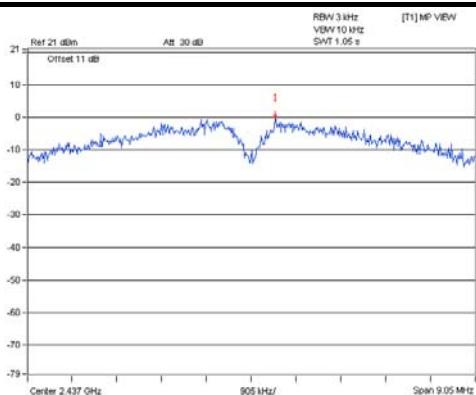
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- IEEE 802.11n, MCS = 8-15, NSS = 2,
Directional gain = $4\text{dBi} + 10\log(2/2) = 4\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.



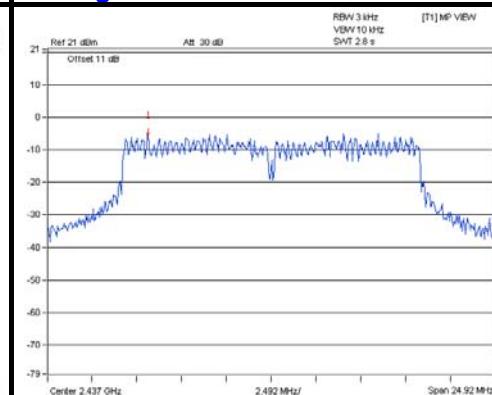
A D T

SPECTRUM PLOT OF WORST VALUE

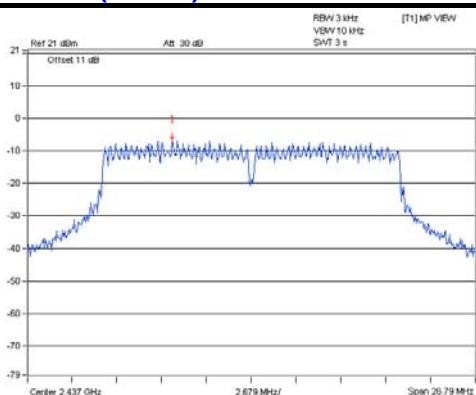
802.11b



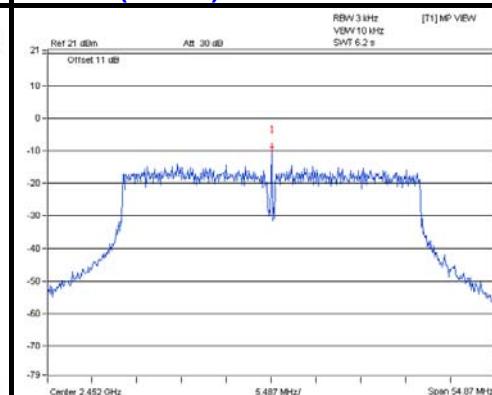
802.11g



802.11n (20MHz)



802.11n (40MHz)





A D T

4.5.8 TEST RESULTS (C)

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-9.60	8	PASS
6	2437	-2.89	8	PASS
11	2462	-11.58	8	PASS

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.12	8	PASS
6	2437	-5.23	8	PASS
11	2462	-14.98	8	PASS

802.11n (20MHz)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-13.43	8	PASS
6	2437	-6.23	8	PASS
11	2462	-15.62	8	PASS

802.11n (40MHz)

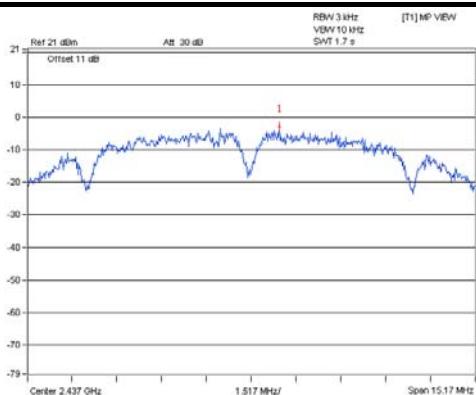
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-16.86	8	PASS
6	2437	-16.01	8	PASS
9	2452	-21.23	8	PASS



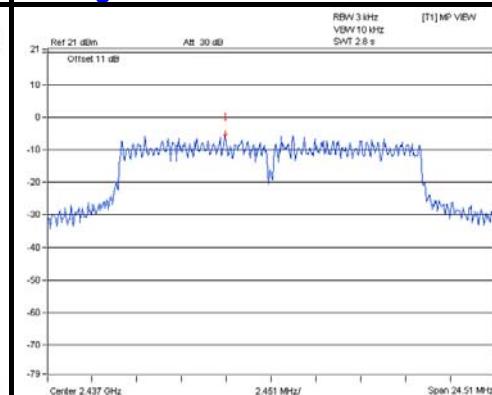
A D T

SPECTRUM PLOT OF WORST VALUE

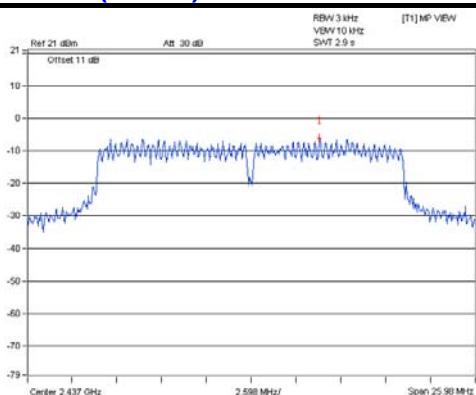
802.11b



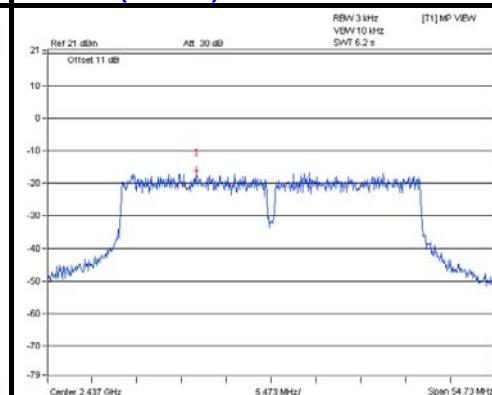
802.11g



802.11n (20MHz)



802.11n (40MHz)





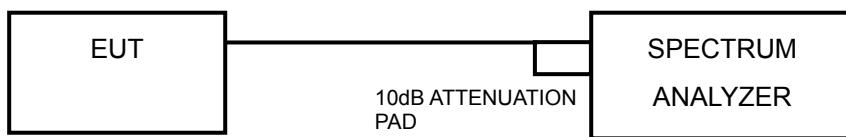
A D T

4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.



A D T

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6



A D T

4.6.7 TEST RESULTS (A)

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

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

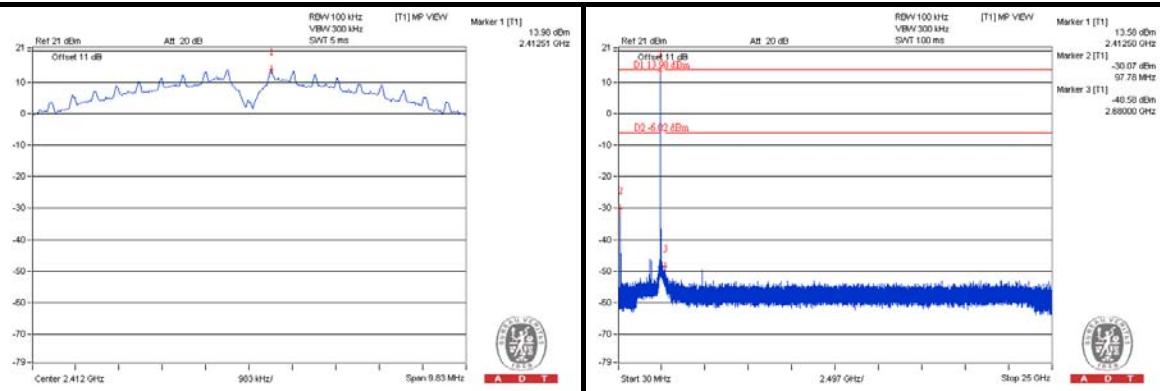


A D T

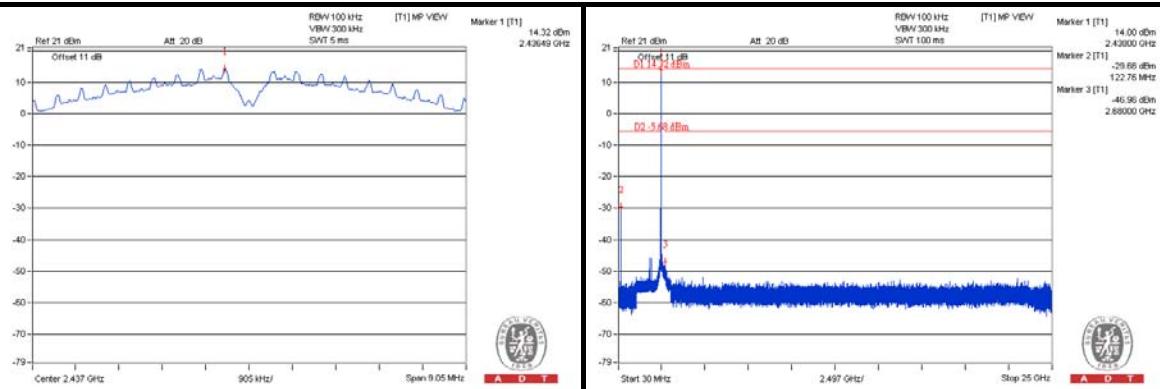
802.11b

CHAIN 0

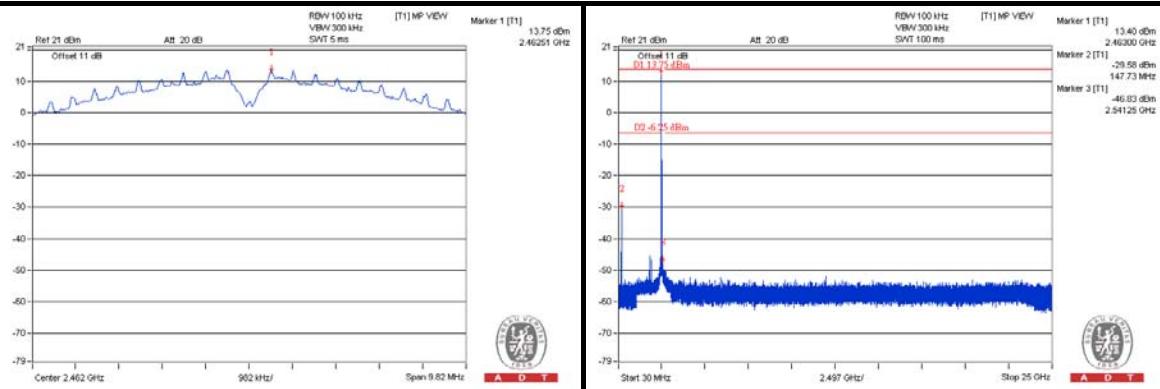
CH 1



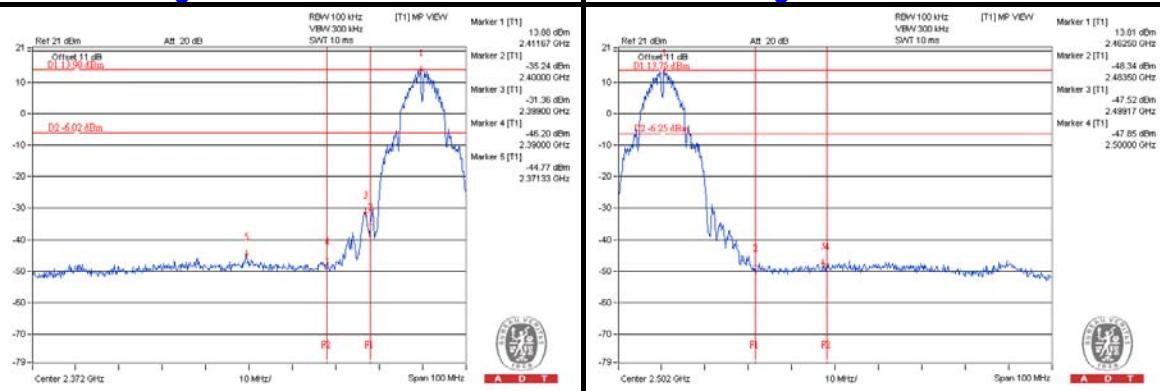
CH 6



CH 11



CH 1 Band edge

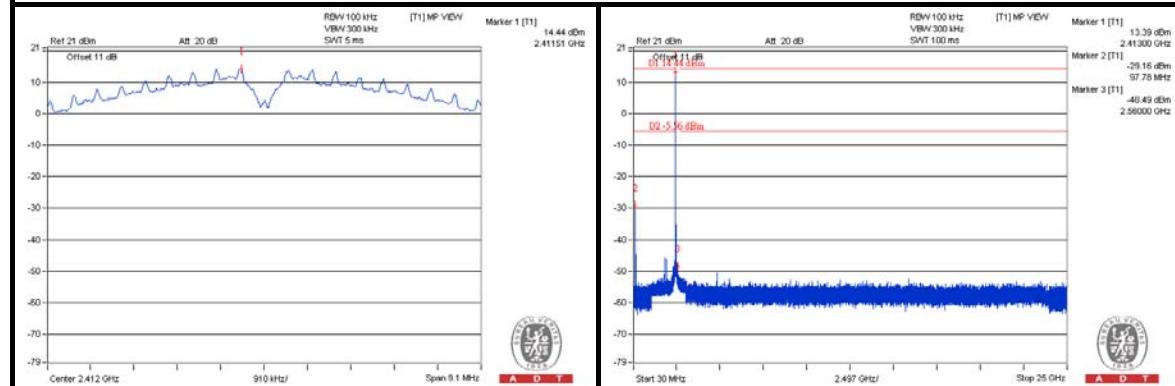




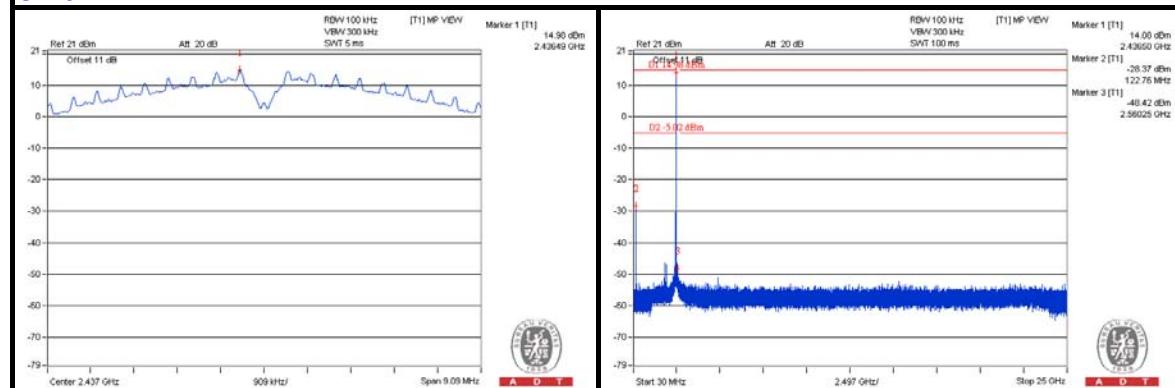
A D T

CHAIN 1

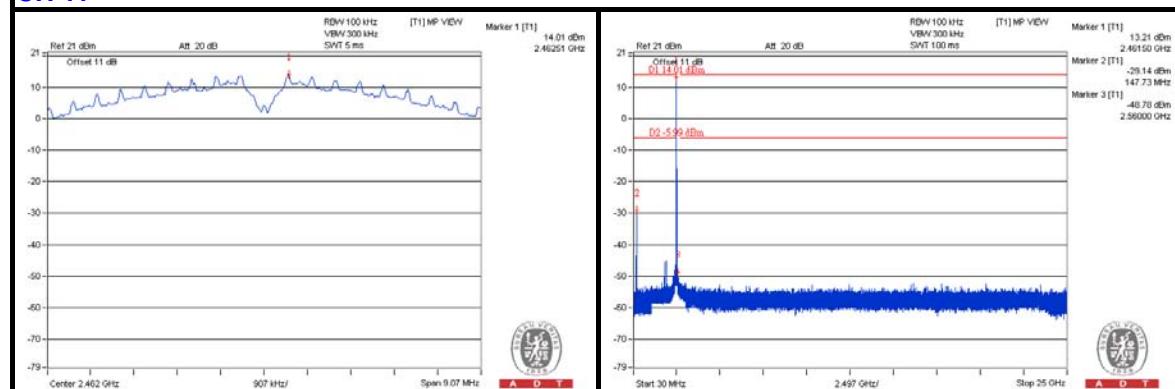
CH 1



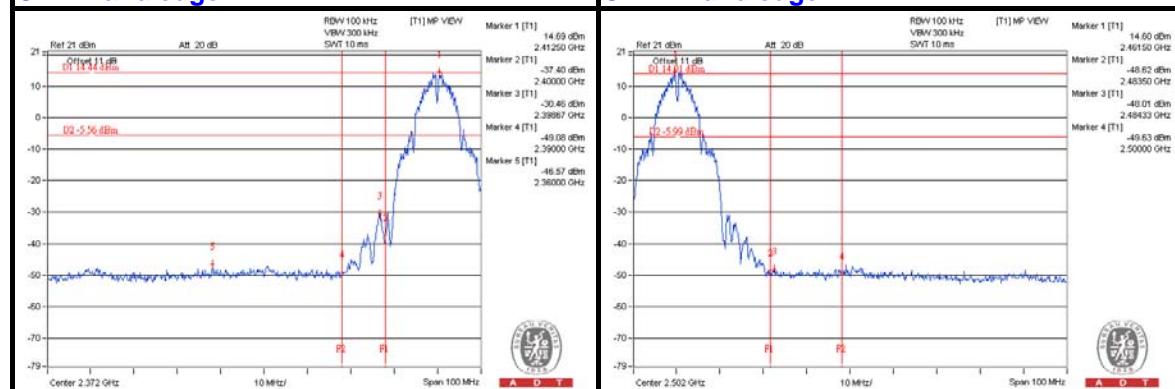
CH 6



CH 11



CH 1 Band edge



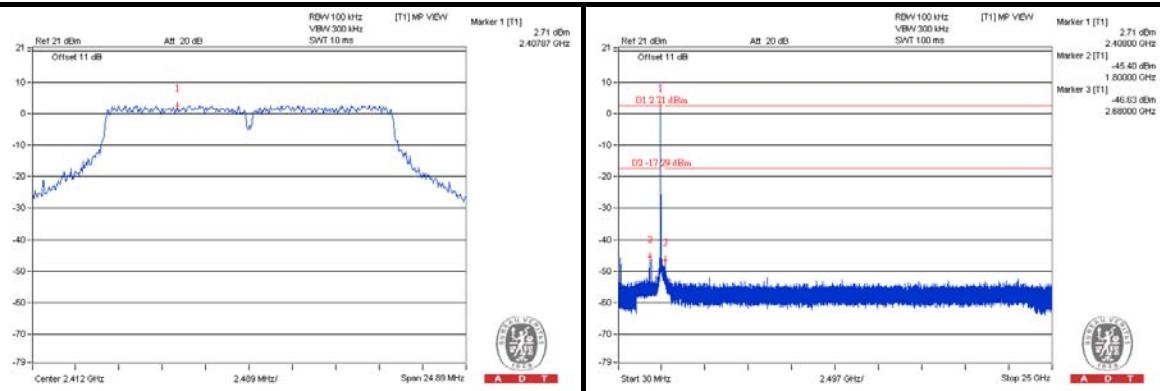


A D T

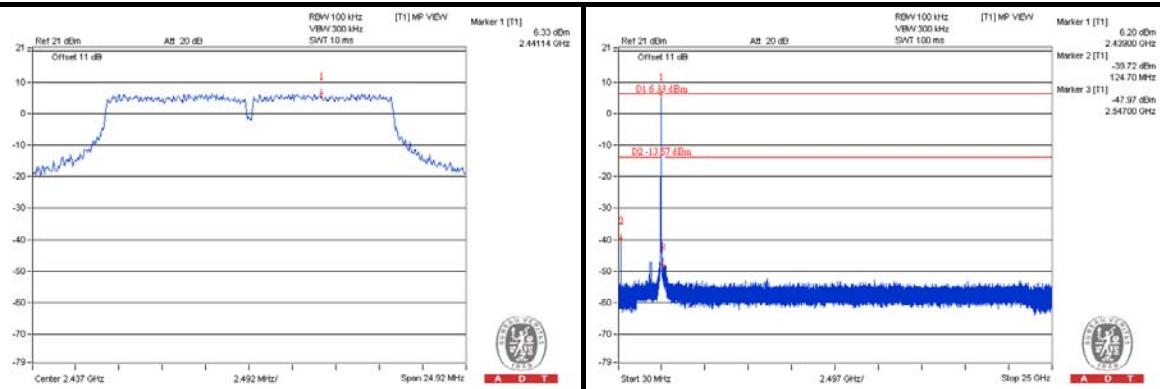
802.11g

CHAIN 0

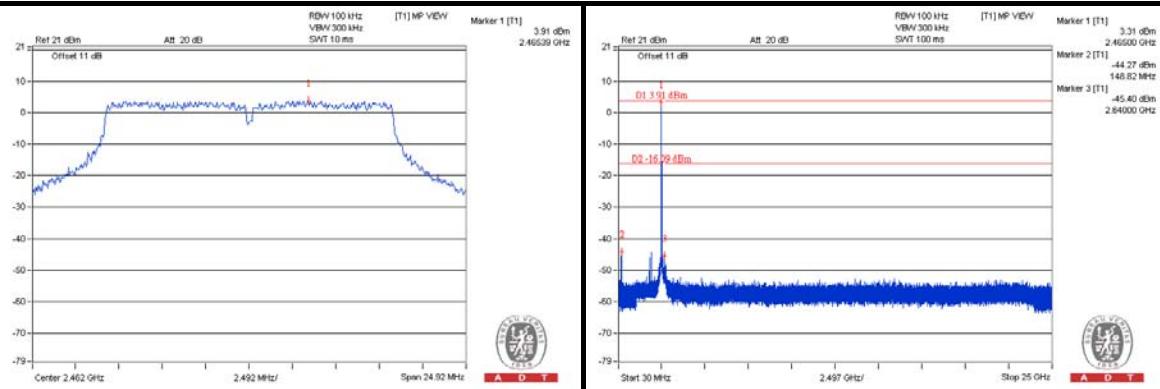
CH 1



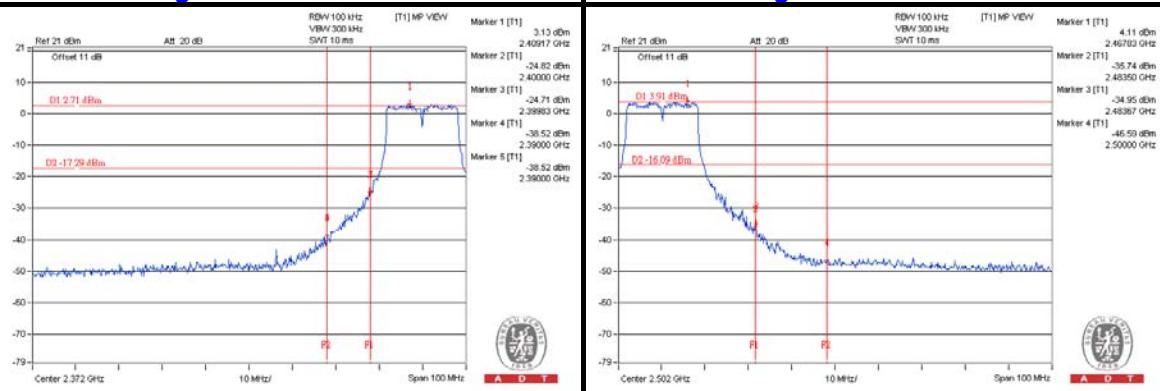
CH 6



CH 11



CH 1 Band edge

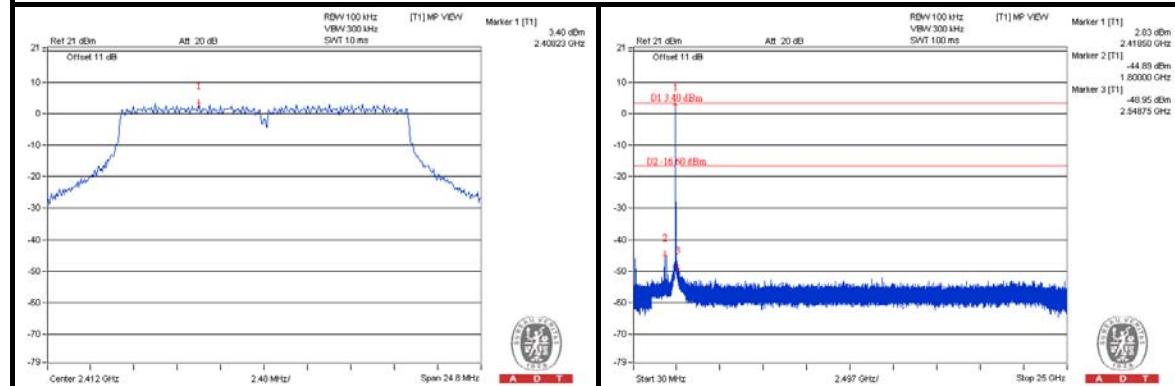




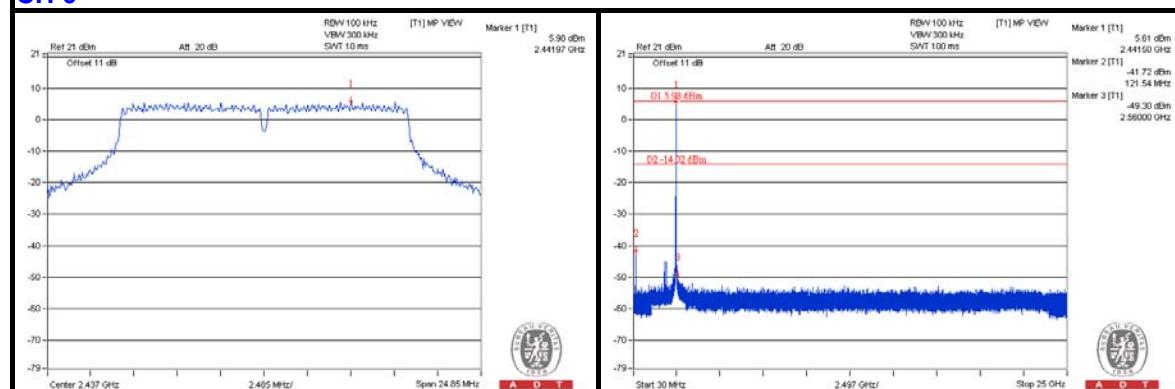
A D T

CHAIN 1

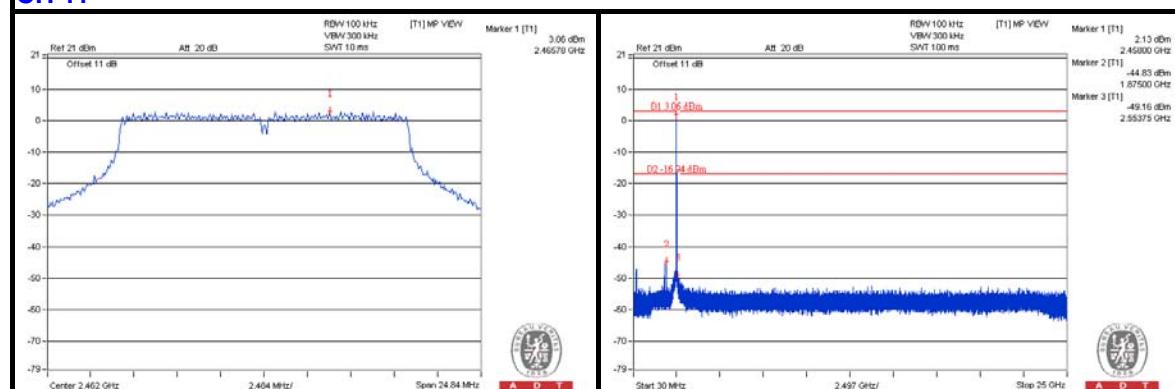
CH 1



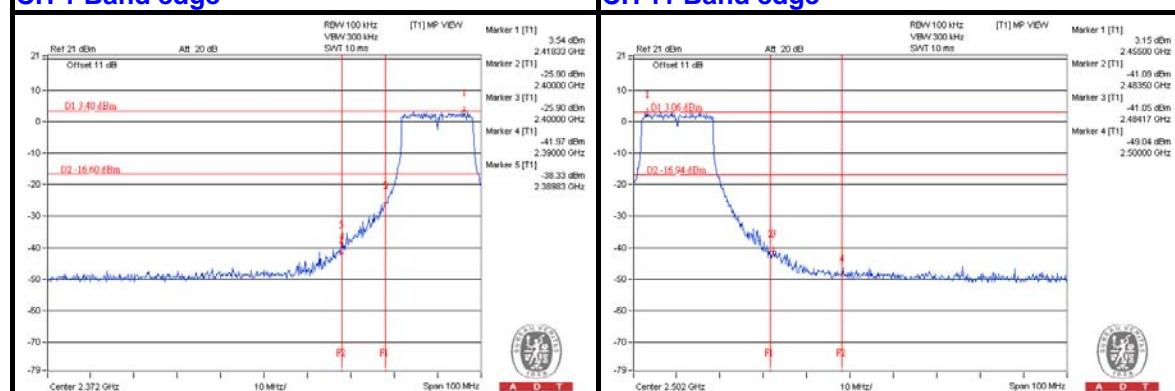
CH 6



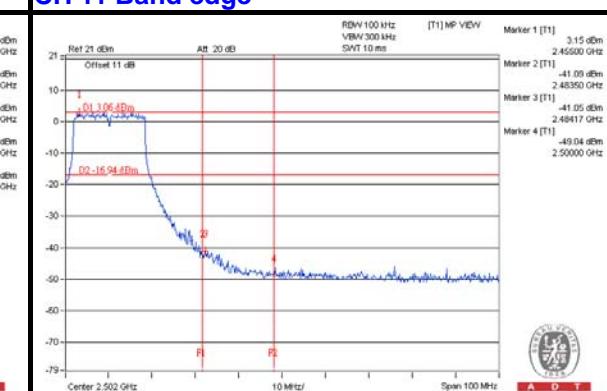
CH 11



CH 1 Band edge



CH 11 Band edge



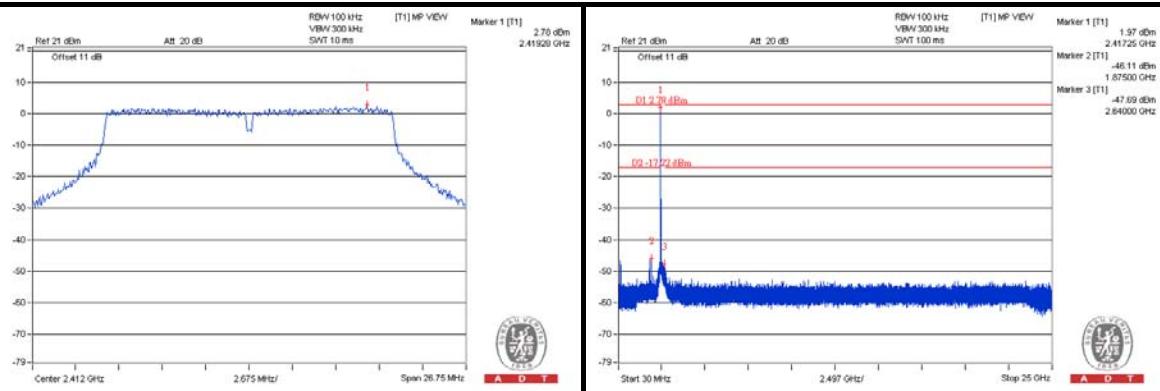


A D T

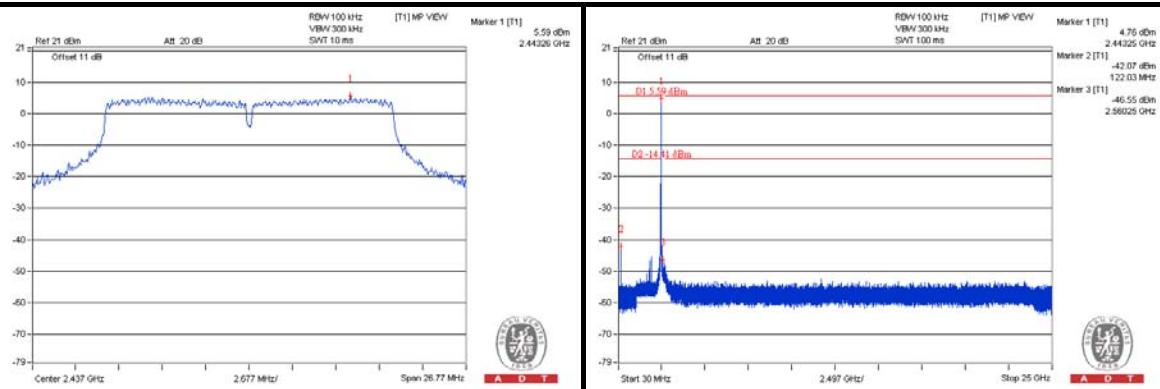
802.11n (20MHz)

CHAIN 0

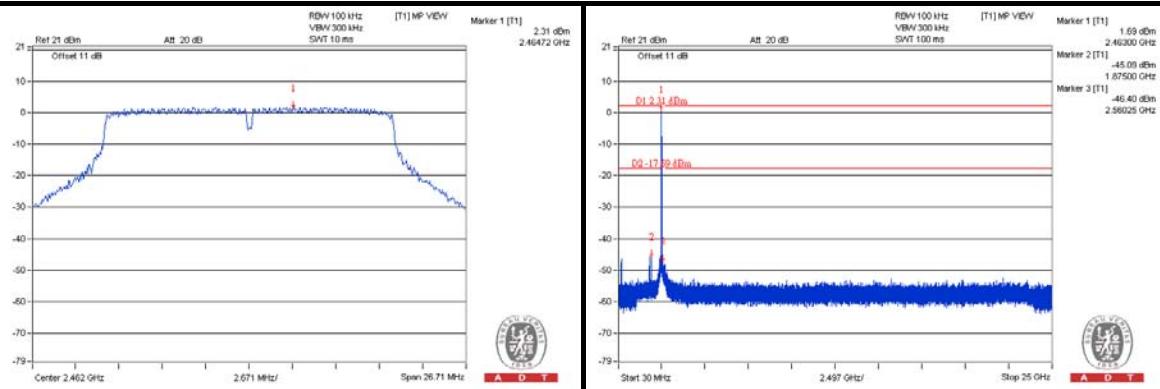
CH 1



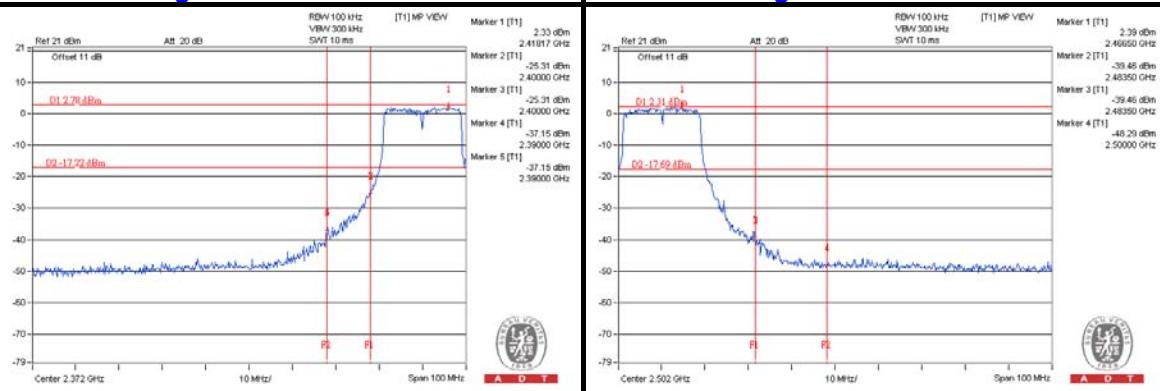
CH 6



CH 11



CH 1 Band edge

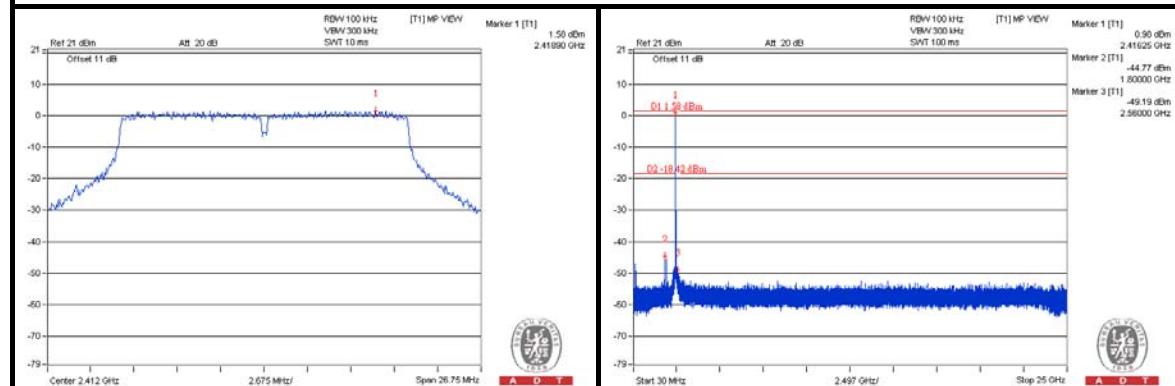




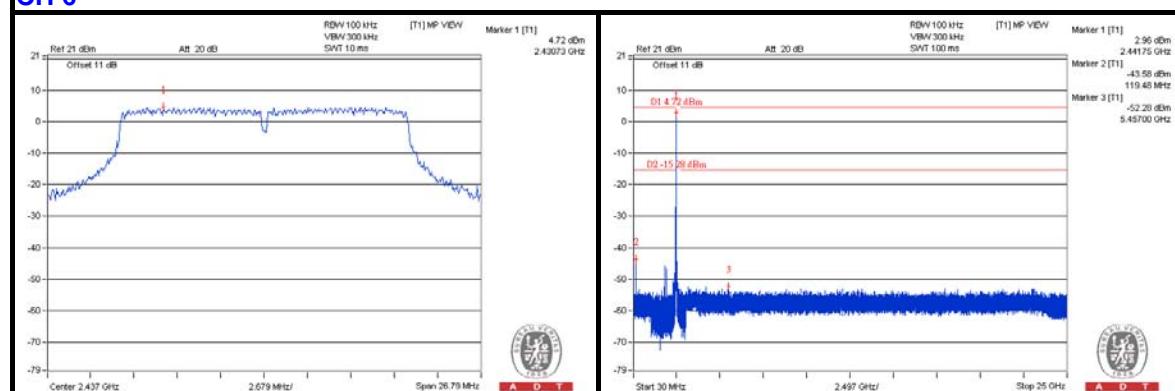
A D T

CHAIN 1

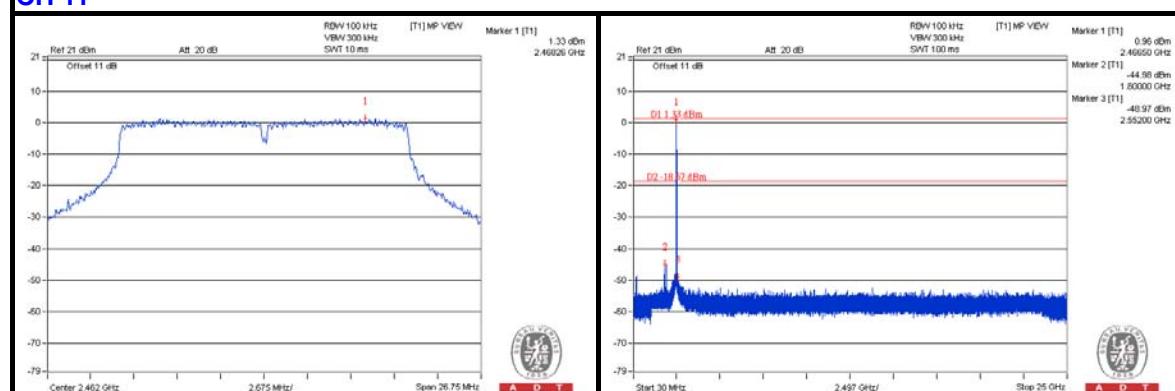
CH 1



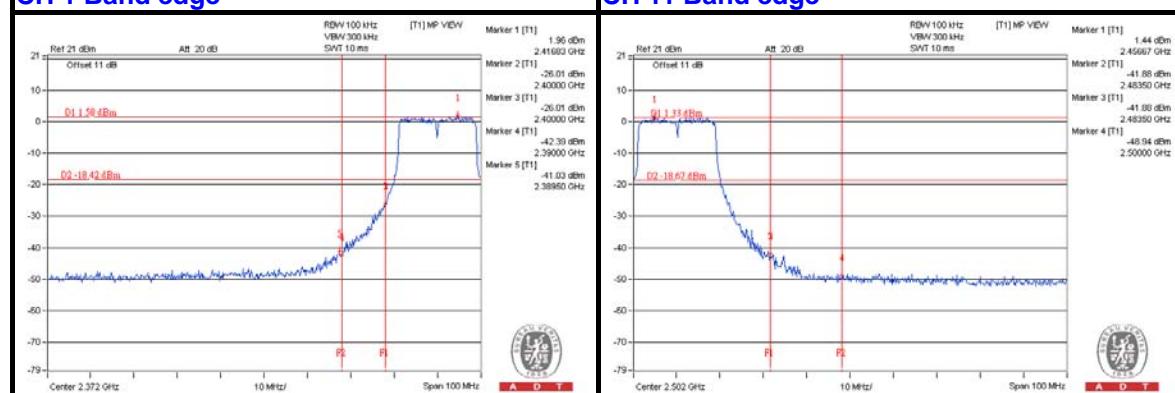
CH 6



CH 11



CH 1 Band edge



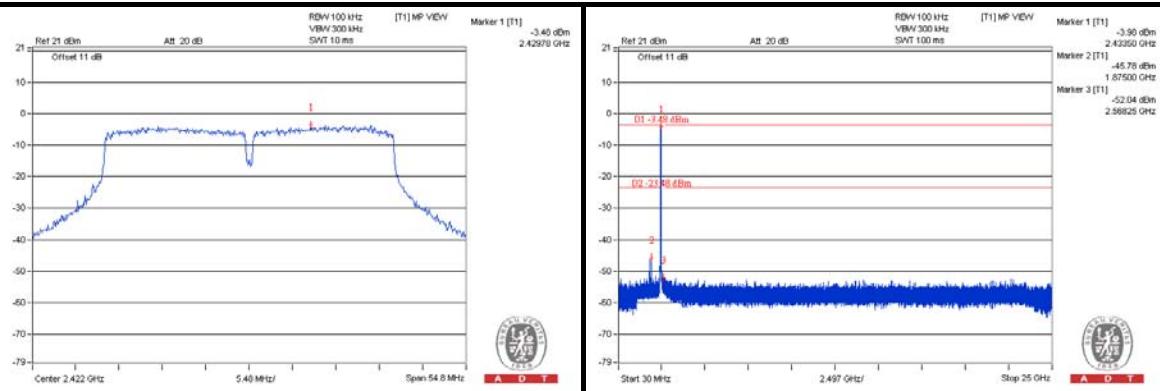


A D T

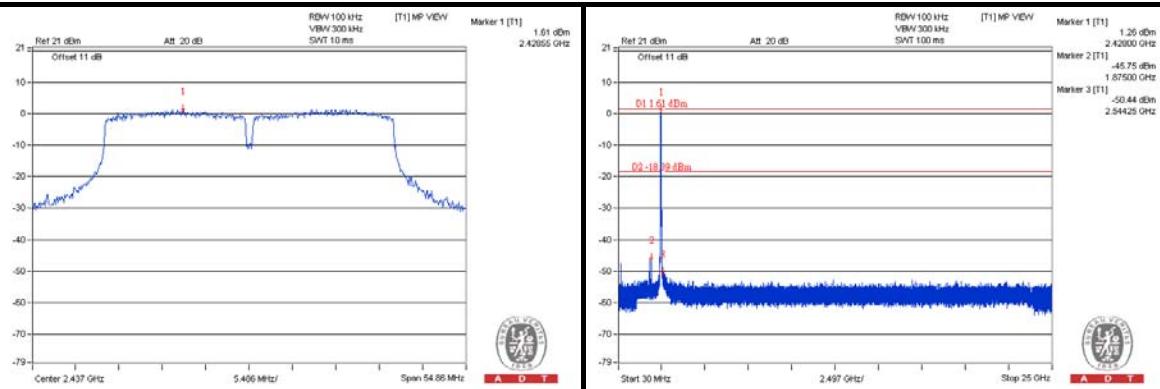
802.11n (40MHz)

CHAIN 0

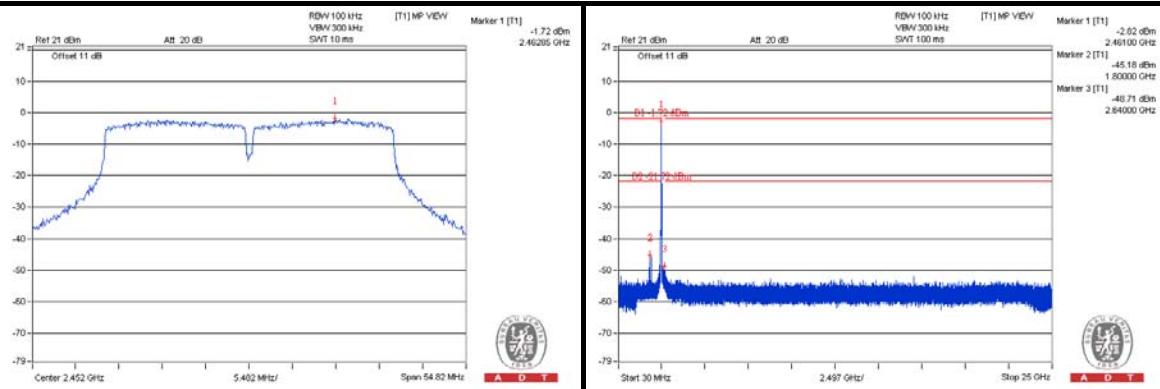
CH 3



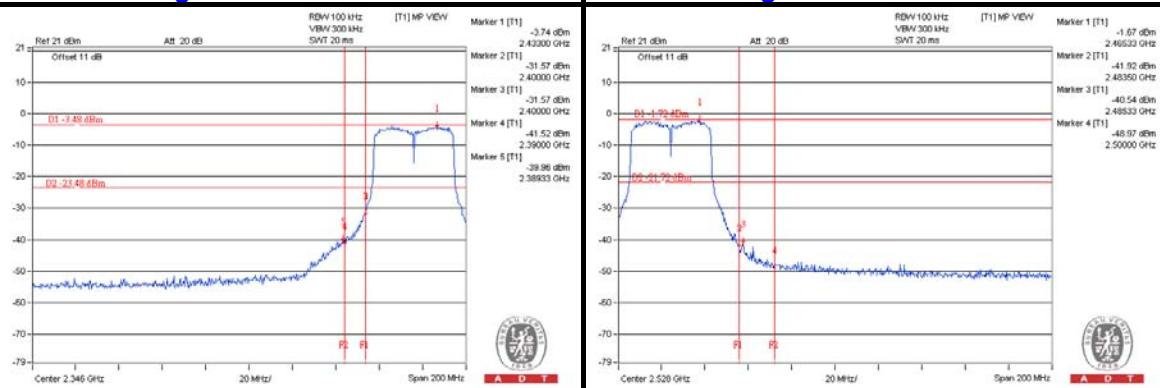
CH 6



CH 9



CH 3 Band edge

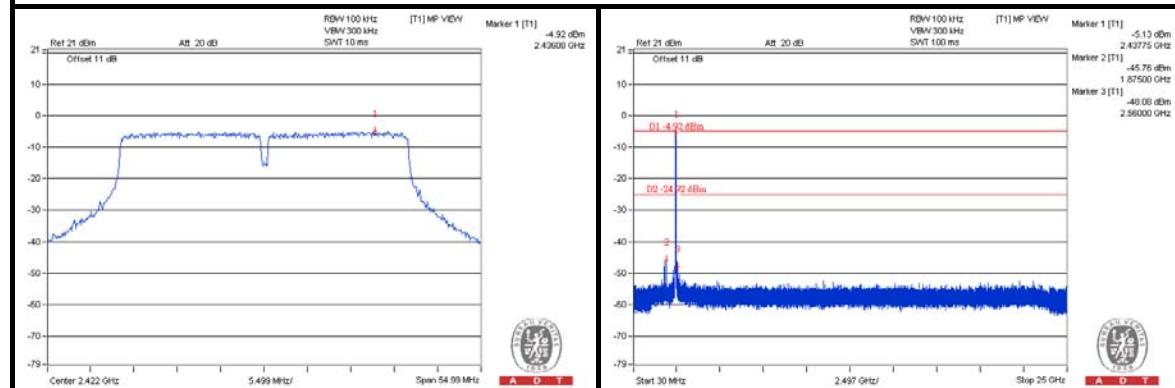




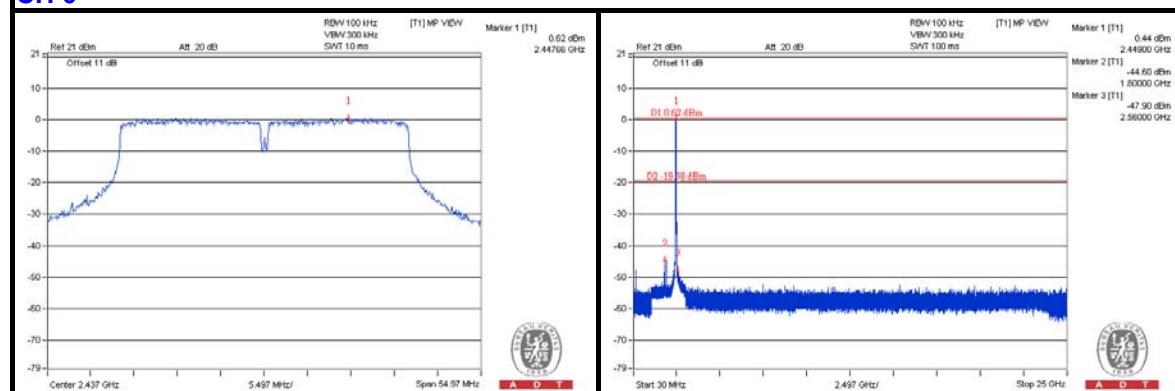
A D T

CHAIN 1

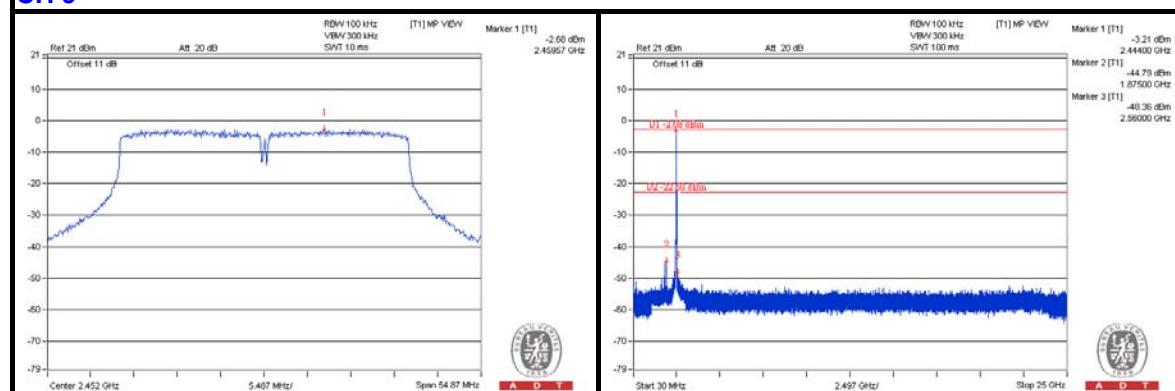
CH 3



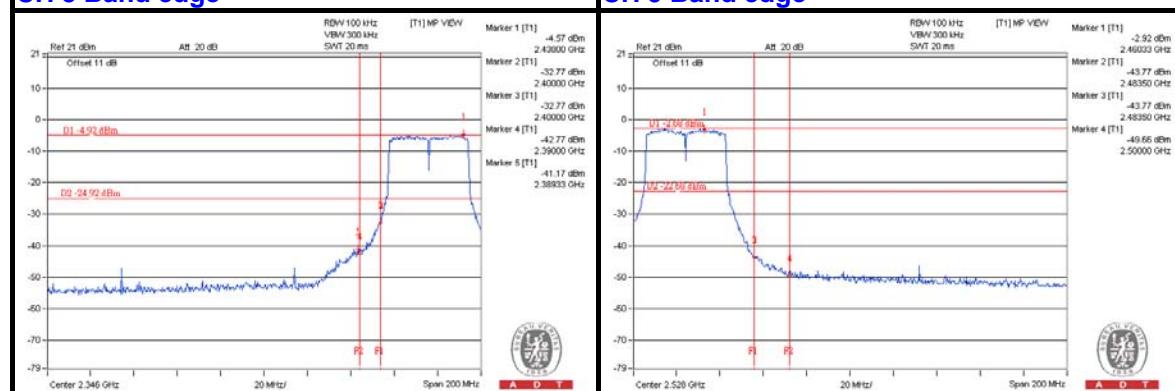
CH 6



CH 9



CH 3 Band edge





A D T

4.6.8 TEST RESULTS (C)

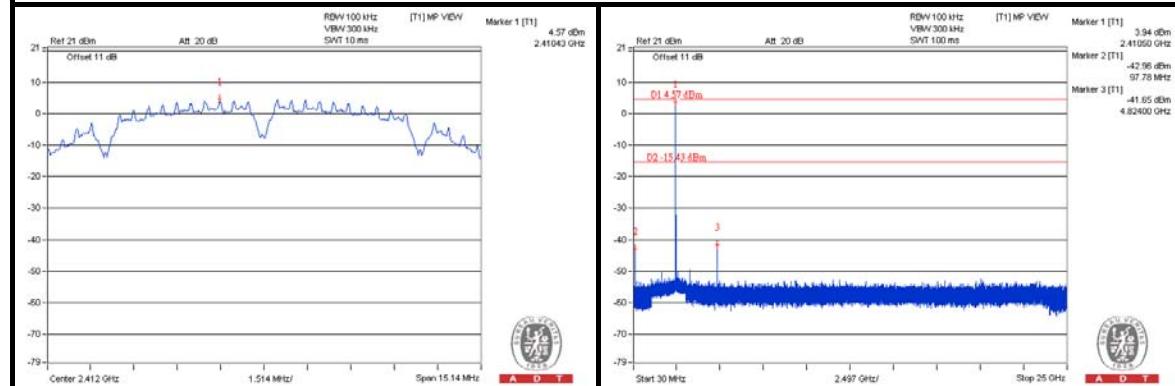
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



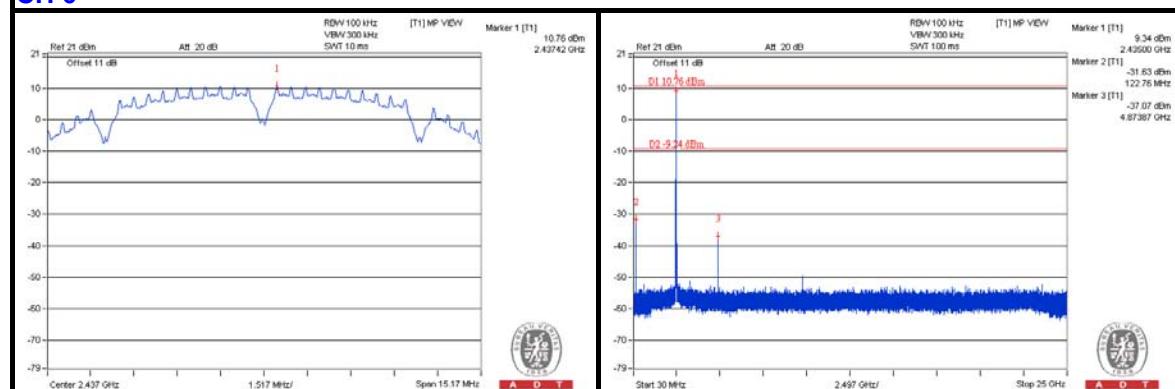
A D T

802.11b

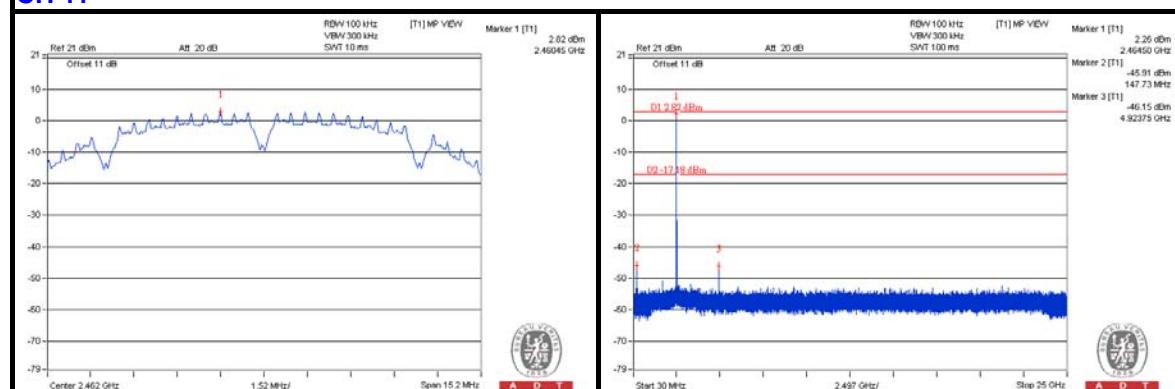
CH 1



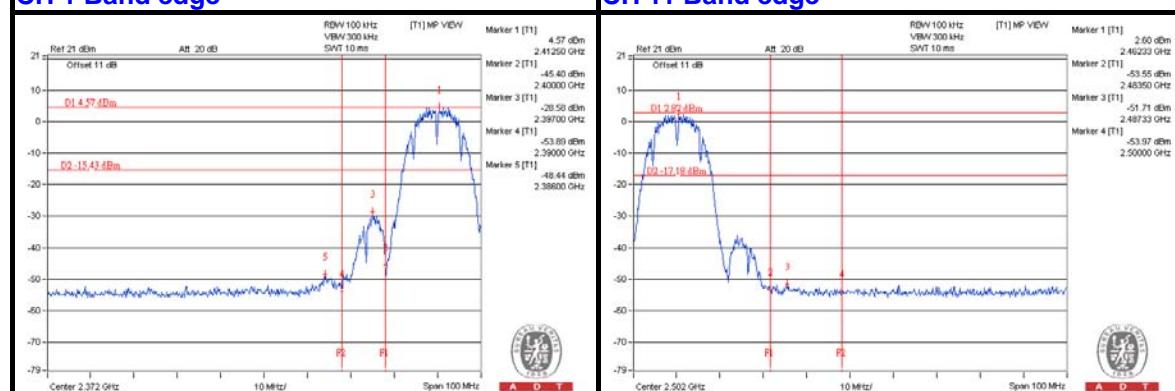
CH 6



CH 11



CH 1 Band edge

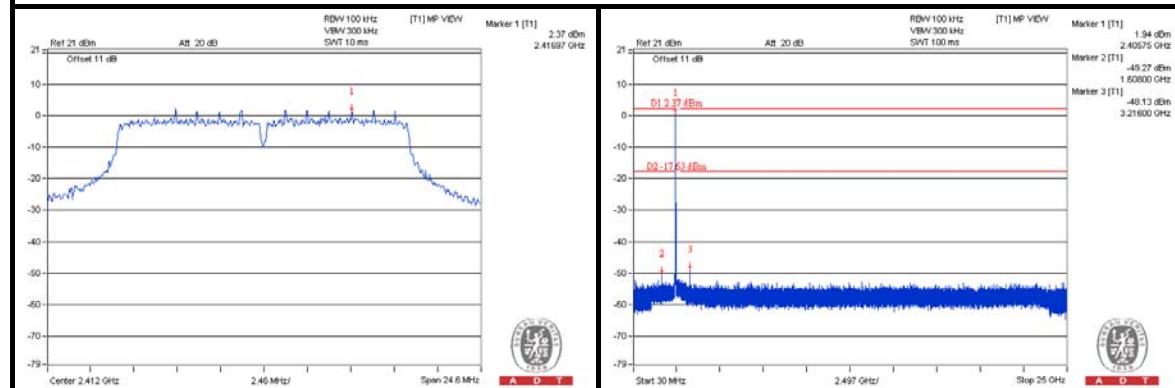




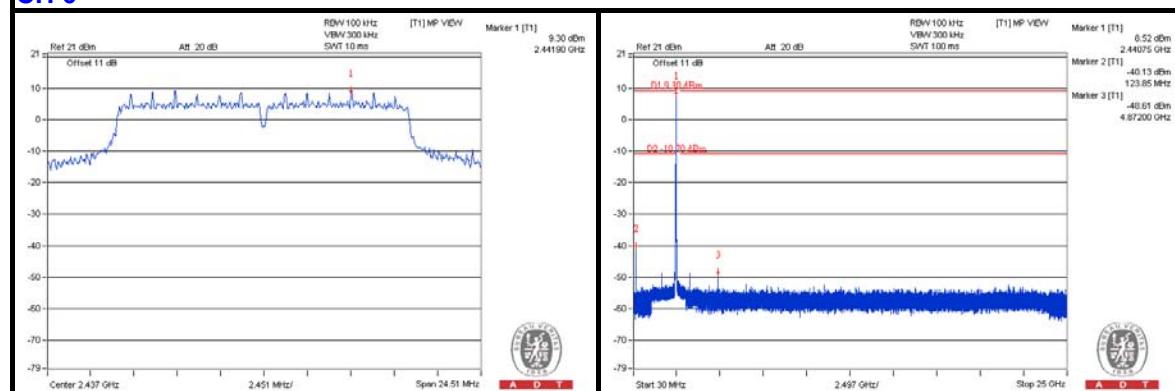
A D T

802.11g

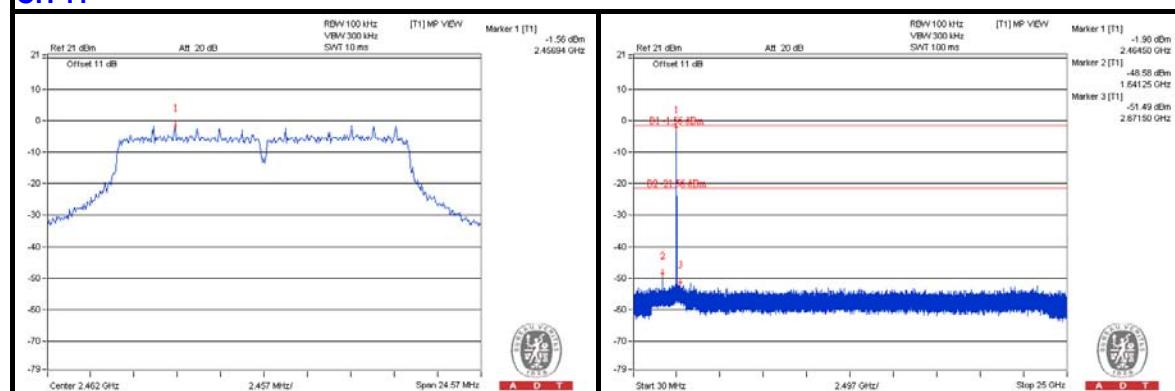
CH 1



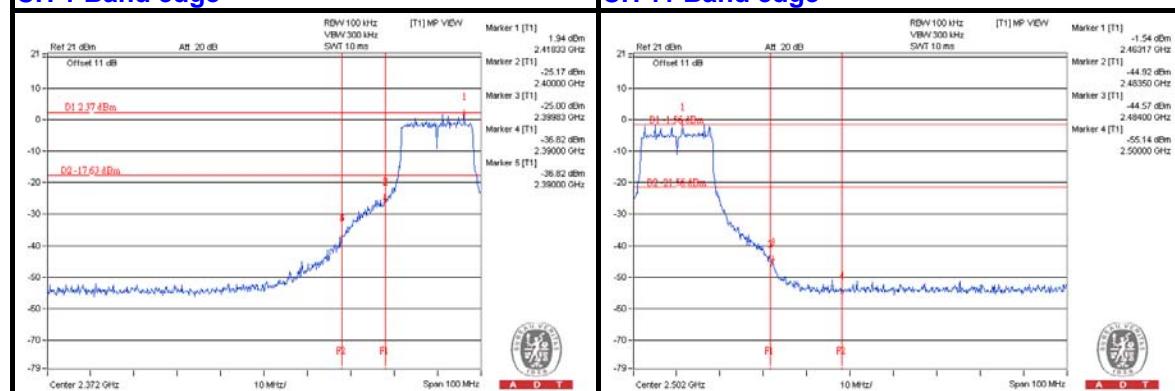
CH 6



CH 11



CH 1 Band edge

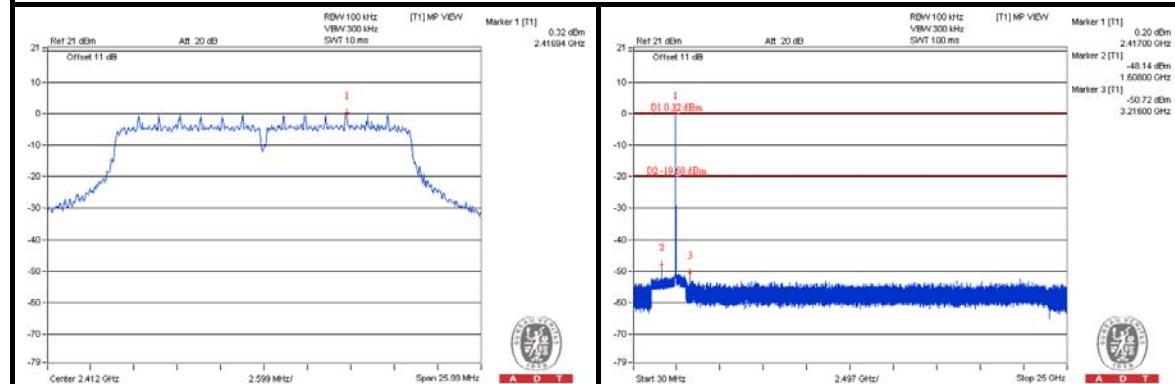




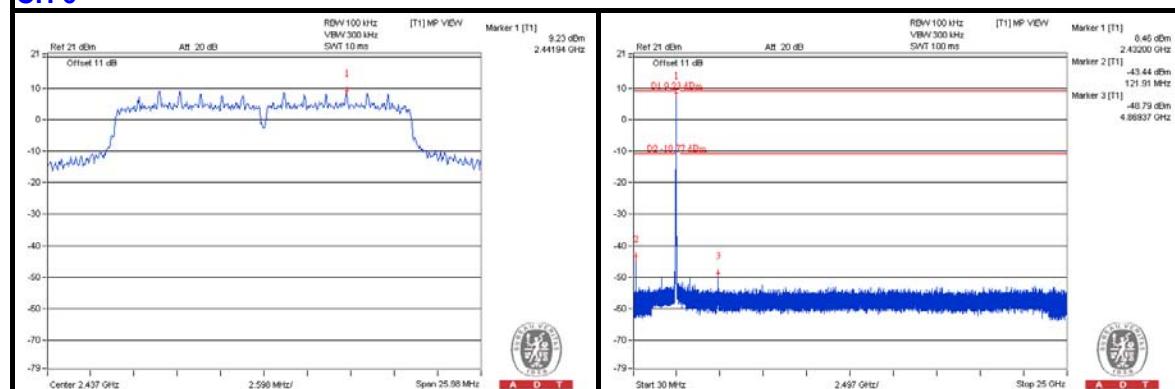
A D T

802.11n (20MHz)

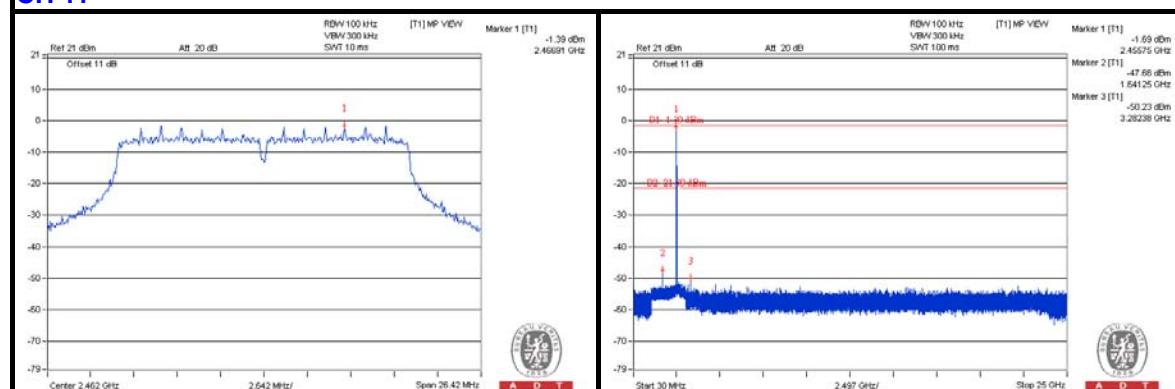
CH 1



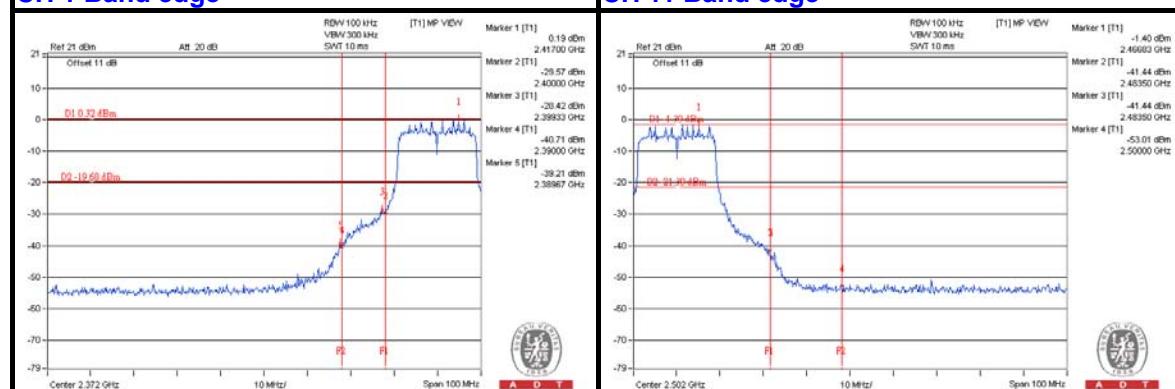
CH 6



CH 11



CH 1 Band edge

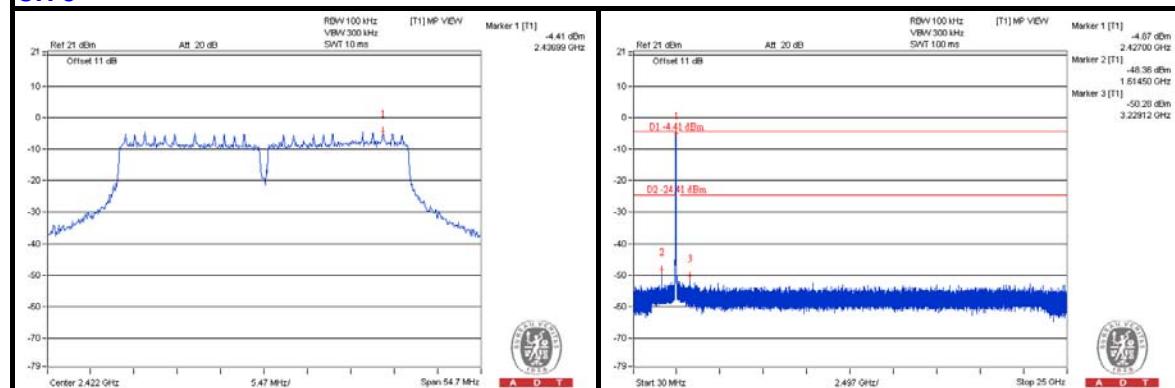




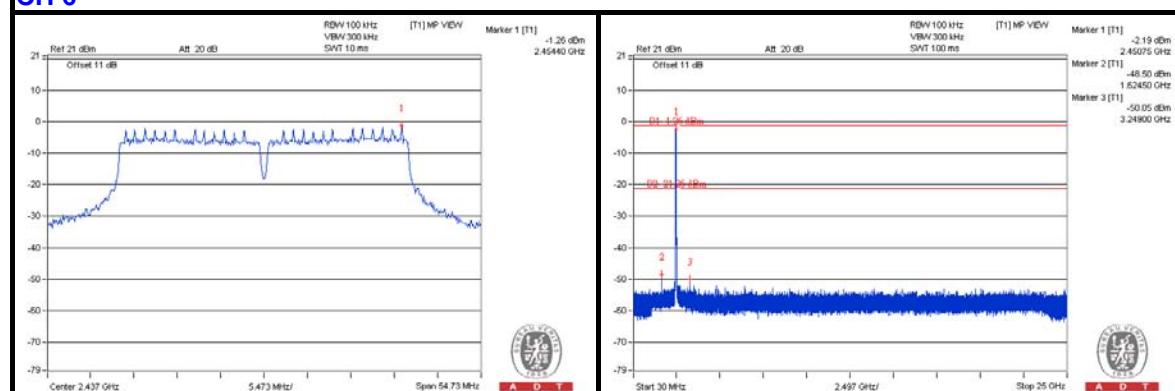
A D T

802.11n (40MHz)

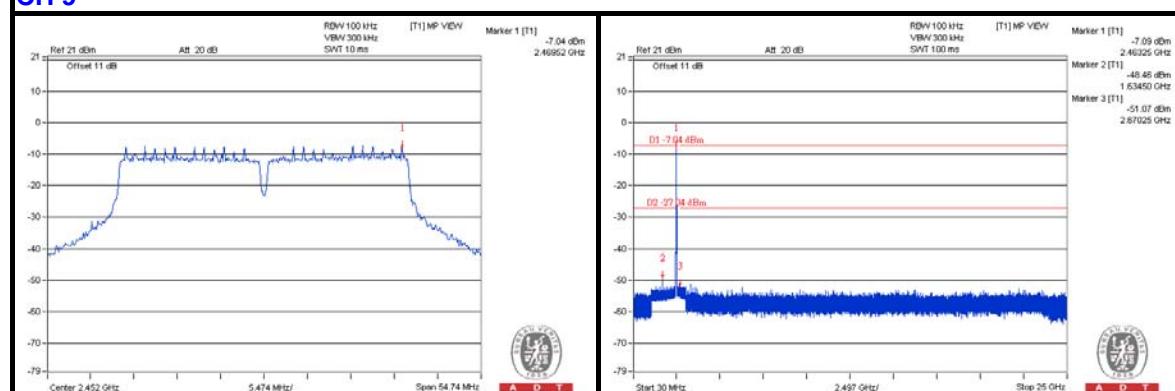
CH 3



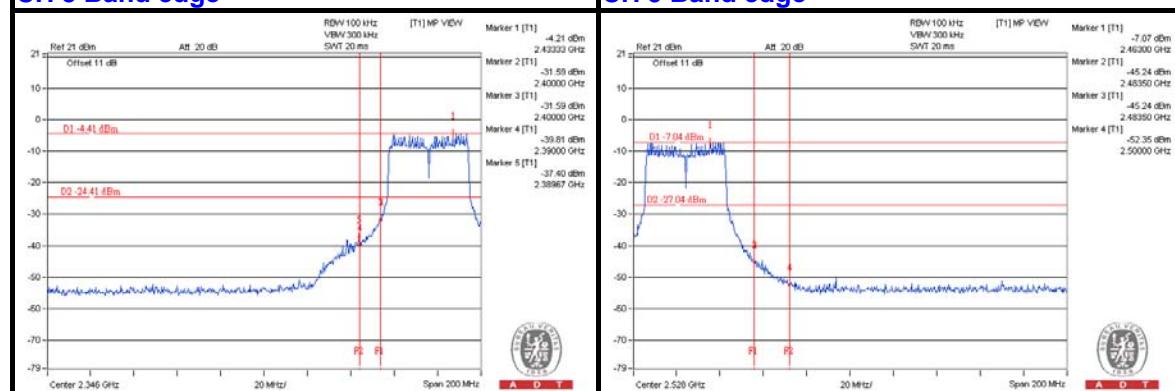
CH 6



CH 9



CH 3 Band edge





A D T

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 20dB below the highest level of the desired power:

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB_{uV}/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 (A)

ABOVE 1GHz 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		26deg. C, 73%RH		TESTED BY Jones Chang

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	2871.00	67.4 PK	74.0	-6.6	1.07 H	333	68.30	-0.90
2	2871.00	34.2 AV	54.0	-19.8	1.07 H	333	35.10	-0.90
3	#5725.00	78.2 PK	95.2	-17.0	1.09 H	295	72.20	6.00
4	#5725.00	68.8 AV	85.8	-17.0	1.09 H	295	62.80	6.00
5	*5745.00	115.2 PK			1.00 H	296	76.70	38.50
6	*5745.00	105.8 AV			1.00 H	296	67.30	38.50
7	11490.00	66.7 PK	74.0	-7.3	1.18 H	284	47.70	19.00
8	11490.00	52.8 AV	54.0	-1.2	1.18 H	284	33.80	19.00

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	2871.00	62.1 PK	74.0	-11.9	1.00 V	33	63.00	-0.90
2	2871.00	39.1 AV	54.0	-14.9	1.00 V	33	40.00	-0.90
3	#5725.00	73.4 PK	90.4	-17.0	1.02 V	359	67.40	6.00
4	#5725.00	64.0 AV	81.0	-17.0	1.02 V	359	58.00	6.00
5	*5745.00	110.4 PK			1.02 V	359	71.90	38.50
6	*5745.00	101.0 AV			1.02 V	359	62.50	38.50
7	11490.00	65.7 PK	74.0	-8.3	1.10 V	339	46.70	19.00
8	11490.00	52.5 AV	54.0	-1.5	1.10 V	339	33.50	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
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	26deg. C, 73%RH	TESTED BY	Jones Chang

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	2890.00	61.6 PK	74.0	-12.4	1.09 H	11	62.40	-0.80
2	2890.00	39.2 AV	54.0	-14.8	1.09 H	11	40.00	-0.80
3	*5785.00	116.0 PK			1.09 H	288	77.40	38.60
4	*5785.00	106.2 AV			1.09 H	288	67.60	38.60
5	11570.00	65.7 PK	74.0	-8.3	1.20 H	289	46.70	19.00
6	11570.00	52.8 AV	54.0	-1.2	1.20 H	289	33.80	19.00

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	2890.00	59.6 PK	74.0	-14.4	1.00 V	334	60.40	-0.80
2	2890.00	34.2 AV	54.0	-19.8	1.00 V	334	35.00	-0.80
3	*5785.00	112.0 PK			1.01 V	359	73.40	38.60
4	*5785.00	102.7 AV			1.01 V	359	64.10	38.60
5	11570.00	64.4 PK	74.0	-9.6	1.09 V	339	45.40	19.00
6	11570.00	52.4 AV	54.0	-1.6	1.09 V	339	33.40	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
6. 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	26deg. C, 73%RH	TESTED BY	Jones Chang

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)
1	*5825.00	115.7 PK			1.08 H	285	77.00
2	*5825.00	106.4 AV			1.08 H	285	67.70
3	#5850.00	72.7 PK	95.7	-23.0	1.08 H	285	66.50
4	#5850.00	63.4 AV	86.4	-23.0	1.08 H	285	57.20
5	11650.00	65.7 PK	74.0	-8.3	1.03 H	286	46.80
6	11650.00	52.5 AV	54.0	-1.5	1.03 H	286	33.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)
1	*5825.00	113.2 PK			1.02 V	358	74.50
2	*5825.00	104.1 AV			1.02 V	358	65.40
3	#5850.00	70.2 PK	93.2	-23.0	1.02 V	358	64.00
4	#5850.00	31.1 AV	84.1	-53.0	1.02 V	358	24.90
5	11650.00	66.3 PK	74.0	-7.7	1.03 V	358	47.40
6	11650.00	52.3 AV	54.0	-1.7	1.03 V	358	33.40

REMARKS:

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

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		26deg. C, 73%RH		TESTED BY Chris 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	#5725.00	73.5 PK	94.0	-20.5	1.21 H	296	67.50	6.00
2	#5725.00	62.5 AV	83.0	-20.5	1.21 H	296	56.50	6.00
3	*5745.00	114.0 PK			1.11 H	297	75.50	38.50
4	*5745.00	103.0 AV			1.11 H	297	64.50	38.50
5	11490.00	63.9 PK	74.0	-10.1	1.05 H	292	44.90	19.00
6	11490.00	50.4 AV	54.0	-3.6	1.05 H	292	31.40	19.00
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	#5725.00	69.9 PK	90.4	-20.5	1.21 V	296	63.90	6.00
2	#5725.00	59.4 AV	79.9	-20.5	1.21 V	296	53.40	6.00
3	*5745.00	110.4 PK			1.01 V	1	71.90	38.50
4	*5745.00	99.9 AV			1.01 V	1	61.40	38.50
5	11490.00	63.4 PK	74.0	-10.6	1.00 V	14	44.40	19.00
6	11490.00	50.1 AV	54.0	-3.9	1.00 V	14	31.10	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
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	26deg. C, 73%RH	TESTED BY	Chris 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)
1	*5785.00	114.9 PK			1.30 H	292	76.30
2	*5785.00	103.5 AV			1.30 H	292	64.90
3	11570.00	62.7 PK	74.0	-11.3	1.15 H	291	43.70
4	11570.00	50.3 AV	54.0	-3.7	1.15 H	291	31.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)
1	*5785.00	110.7 PK			1.01 V	2	72.10
2	*5785.00	100.0 AV			1.01 V	2	61.40
3	11570.00	62.6 PK	74.0	-11.4	1.14 V	58	43.60
4	11570.00	49.1 AV	54.0	-4.9	1.14 V	58	30.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
6. 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	26deg. C, 73%RH	TESTED BY	Chris 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)
1	*5825.00	114.9 PK			1.31 H	294	76.20
2	*5825.00	104.0 AV			1.31 H	294	65.30
3	#5850.00	69.4 PK	94.9	-25.5	1.07 H	290	63.20
4	#5850.00	58.5 AV	84.0	-25.5	1.07 H	290	52.30
5	11650.00	62.0 PK	74.0	-12.0	1.16 H	295	43.10
6	11650.00	50.6 AV	54.0	-3.4	1.16 H	295	31.70

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)
1	*5825.00	111.3 PK			1.00 V	0	72.60
2	*5825.00	101.3 AV			1.00 V	0	62.60
3	#5850.00	65.8 PK	91.3	-25.5	1.07 V	290	59.60
4	#5850.00	55.8 AV	81.3	-25.5	1.07 V	290	49.60
5	11650.00	62.4 PK	74.0	-11.6	1.02 V	55	43.50
6	11650.00	49.2 AV	54.0	-4.8	1.02 V	55	30.30

REMARKS:

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

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		26deg. C, 73%RH		TESTED BY Chris 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	#5725.00	73.8 PK	91.5	-17.7	1.31 H	292	67.80	6.00
2	#5725.00	62.5 AV	80.2	-17.7	1.31 H	292	56.50	6.00
3	*5755.00	111.5 PK			1.09 H	286	72.90	38.60
4	*5755.00	100.2 AV			1.09 H	286	61.60	38.60
5	11510.00	63.2 PK	74.0	-10.8	1.15 H	290	44.20	19.00
6	11510.00	50.6 AV	54.0	-3.4	1.15 H	290	31.60	19.00
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	#5725.00	70.7 PK	88.4	-17.7	1.31 V	292	64.70	6.00
2	#5725.00	59.7 AV	77.4	-17.7	1.31 V	292	53.70	6.00
3	*5755.00	108.4 PK			1.02 V	0	69.80	38.60
4	*5755.00	97.4 AV			1.02 V	0	58.80	38.60
5	11510.00	62.7 PK	74.0	-11.3	1.10 V	230	43.70	19.00
6	11510.00	49.0 AV	54.0	-5.0	1.10 V	230	30.00	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
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	26deg. C, 73%RH	TESTED BY	Chris 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)
1	*5795.00	111.8 PK			1.30 H	298	73.20
2	*5795.00	100.7 AV			1.30 H	298	62.10
3	#5850.00	72.5 PK	91.8	-19.3	1.31 H	298	66.30
4	#5850.00	61.4 AV	80.7	-19.3	1.31 H	298	55.20
5	11590.00	63.9 PK	74.0	-10.1	1.14 H	52	44.90
6	11590.00	50.6 AV	54.0	-3.4	1.14 H	52	31.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)
1	*5795.00	108.7 PK			1.00 V	0	70.10
2	*5795.00	98.1 AV			1.00 V	0	59.50
3	#5850.00	63.2 PK	88.7	-25.5	1.30 V	289	57.00
4	#5850.00	52.6 AV	78.1	-25.5	1.30 V	289	46.40
5	11590.00	62.6 PK	74.0	-11.4	1.02 V	53	43.60
6	11590.00	49.0 AV	54.0	-5.0	1.02 V	53	30.00

REMARKS:

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



A D T

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 165		FREQUENCY RANGE Below 1000MHz
INPUT POWER (SYSTEM)		120Vac, 60 Hz		DETECTOR FUNCTION Quasi-Peak
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH		TESTED BY Chris 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	57.07	29.3 QP	40.0	-10.7	1.25 H	6	44.10	-14.80
2	210.36	24.3 QP	43.5	-19.2	1.00 H	93	41.00	-16.70
3	375.29	35.2 QP	46.0	-10.8	1.50 H	191	46.20	-11.00
4	600.38	35.2 QP	46.0	-10.8	1.25 H	121	41.60	-6.40
5	625.60	40.6 QP	46.0	-5.4	1.00 H	28	46.30	-5.70
6	899.20	31.6 QP	46.0	-14.4	1.50 H	179	32.40	-0.80
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	55.13	35.1 QP	40.0	-4.9	1.25 V	331	49.30	-14.20
2	103.64	25.4 QP	43.5	-18.1	1.00 V	59	43.50	-18.10
3	375.29	35.0 QP	46.0	-11.0	1.50 V	152	46.00	-11.00
4	600.38	36.2 QP	46.0	-9.8	1.00 V	1	42.60	-6.40
5	625.60	37.8 QP	46.0	-8.2	1.25 V	350	43.50	-5.70
6	875.91	30.2 QP	46.0	-15.8	1.50 V	6	31.70	-1.50

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



A D T

5.1.8 TEST RESULTS (B)

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 165		FREQUENCY RANGE Below 1000MHz
INPUT POWER (SYSTEM)		120Vac, 60 Hz		DETECTOR FUNCTION Quasi-Peak
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH		TESTED BY Chris 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	57.07	28.2 QP	40.0	-11.8	1.25 H	15	43.00	-14.80
2	214.24	24.6 QP	43.5	-18.9	1.00 H	110	41.00	-16.40
3	375.29	37.5 QP	46.0	-8.5	1.50 H	201	48.50	-11.00
4	600.38	33.3 QP	46.0	-12.7	1.25 H	212	39.70	-6.40
5	625.60	38.9 QP	46.0	-7.1	1.50 H	9	44.60	-5.70
6	840.99	27.8 QP	46.0	-18.2	1.25 H	166	29.70	-1.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.07	33.5 QP	40.0	-6.5	1.25 V	345	48.30	-14.80
2	218.12	22.6 QP	46.0	-23.4	1.00 V	161	39.00	-16.40
3	375.29	35.8 QP	46.0	-10.2	1.50 V	171	46.80	-11.00
4	600.38	37.6 QP	46.0	-8.4	1.25 V	42	44.00	-6.40
5	625.60	38.1 QP	46.0	-7.9	1.50 V	12	43.80	-5.70
6	901.14	30.4 QP	46.0	-15.6	1.50 V	46	31.20	-0.80

REMARKS:

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



A D T

5.1.9 TEST RESULTS (C)

ABOVE 1GHz 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		25deg. C, 65%RH		TESTED BY Chris 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	#5725.00	72.4 PK	78.8	-6.4	1.05 H	310	66.40	6.00
2	#5725.00	62.1 AV	68.5	-6.4	1.05 H	310	56.10	6.00
3	*5745.00	98.8 PK			1.44 H	332	60.30	38.50
4	*5745.00	88.5 AV			1.44 H	332	50.00	38.50
5	11490.00	63.9 PK	74.0	-10.1	1.30 H	55	44.90	19.00
6	11490.00	47.7 AV	54.0	-6.3	1.30 H	55	28.70	19.00
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	#5725.00	84.6 PK	91.0	-6.4	1.10 V	310	78.60	6.00
2	#5725.00	74.0 AV	80.4	-6.4	1.10 V	310	68.00	6.00
3	*5745.00	111.0 PK			1.00 V	299	72.50	38.50
4	*5745.00	100.4 AV			1.00 V	299	61.90	38.50
5	11490.00	65.5 PK	74.0	-8.5	1.14 V	85	46.50	19.00
6	11490.00	49.4 AV	54.0	-4.6	1.14 V	85	30.40	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
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	25deg. C, 65%RH	TESTED BY	Chris 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)
1	*5785.00	99.4 PK			1.50 H	356	60.80
2	*5785.00	88.9 AV			1.50 H	356	50.30
3	11570.00	62.6 PK	74.0	-11.4	1.13 H	52	43.60
4	11570.00	47.7 AV	54.0	-6.3	1.13 H	52	28.70
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)
1	*5785.00	109.8 PK			1.00 V	299	71.20
2	*5785.00	99.7 AV			1.00 V	299	61.10
3	11570.00	64.0 PK	74.0	-10.0	1.47 V	58	45.00
4	11570.00	49.1 AV	54.0	-4.9	1.47 V	58	30.10

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
6. 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	25deg. C, 65%RH	TESTED BY	Chris 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)
1	*5825.00	98.1 PK			1.00 H	0	59.40
2	*5825.00	88.0 AV			1.00 H	0	49.30
3	#5850.00	62.1 PK	78.1	-16.0	1.10 H	310	55.90
4	#5850.00	52.0 AV	68.0	-16.0	1.10 H	310	45.80
5	11650.00	62.4 PK	74.0	-11.6	1.03 H	205	43.50
6	11650.00	47.5 AV	54.0	-6.5	1.03 H	205	28.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)
1	*5825.00	109.5 PK			1.00 V	299	70.80
2	*5825.00	98.7 AV			1.00 V	299	60.00
3	#5850.00	73.5 PK	89.5	-16.0	1.07 V	300	67.30
4	#5850.00	62.7 AV	78.7	-16.0	1.07 V	300	56.50
5	11650.00	63.5 PK	74.0	-10.5	1.23 V	65	44.60
6	11650.00	49.3 AV	54.0	-4.7	1.23 V	65	30.40

REMARKS:

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

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		25deg. C, 65%RH		TESTED BY Ted Chang

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	74.5 PK	78.3	-3.8	1.00 H	300	36.00	38.50
2	#5725.00	63.5 AV	67.3	-3.8	1.00 H	300	25.00	38.50
3	*5745.00	98.3 PK			1.00 H	326	59.80	38.50
4	*5745.00	87.3 AV			1.00 H	326	48.80	38.50
5	11490.00	62.2 PK	74.0	-11.8	1.02 H	58	43.20	19.00
6	11490.00	47.0 AV	54.0	-7.0	1.02 H	58	28.00	19.00
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	#5725.00	86.2 PK	89.9	-3.7	1.00 V	300	47.70	38.50
2	#5725.00	74.8 AV	78.6	-3.8	1.00 V	300	36.30	38.50
3	*5745.00	109.9 PK			1.00 V	299	71.40	38.50
4	*5745.00	98.6 AV			1.00 V	299	60.10	38.50
5	11490.00	59.5 PK	74.0	-14.5	1.00 V	154	40.50	19.00
6	11490.00	48.6 AV	54.0	-5.4	1.00 V	154	29.60	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
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	25deg. C, 65%RH	TESTED BY	Ted Chang

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)
1	*5785.00	98.6 PK			1.42 H	350	60.00
2	*5785.00	88.1 AV			1.42 H	350	49.50
3	11570.00	61.2 PK	74.0	-12.8	1.02 H	141	42.20
4	11570.00	48.8 AV	54.0	-5.2	1.02 H	141	29.80
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)
1	*5785.00	108.6 PK			1.00 V	289	70.00
2	*5785.00	99.6 AV			1.00 V	289	61.00
3	11570.00	64.3 PK	74.0	-9.7	1.52 V	224	45.30
4	11570.00	49.2 AV	54.0	-4.8	1.52 V	224	30.20

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
6. 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	25deg. C, 65%RH	TESTED BY	Ted Chang

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	97.1 PK			1.00 H	12	58.40	38.70
2	*5825.00	87.0 AV			1.00 H	12	48.30	38.70
3	#5850.00	60.9 PK	77.1	-16.2	1.00 H	301	22.20	38.70
4	#5850.00	50.8 AV	67.0	-16.2	1.00 H	301	12.10	38.70
5	11650.00	62.9 PK	74.0	-11.1	1.02 H	165	44.00	18.90
6	11650.00	46.9 AV	54.0	-7.1	1.02 H	165	28.00	18.90
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	*5825.00	108.6 PK			1.00 V	300	69.90	38.70
2	*5825.00	97.7 AV			1.00 V	300	59.00	38.70
3	#5850.00	72.4 PK	88.6	-16.2	1.00 V	301	33.70	38.70
4	#5850.00	61.5 AV	77.7	-16.2	1.00 V	301	22.80	38.70
5	11650.00	64.2 PK	74.0	-9.8	1.25 V	185	45.30	18.90
6	11650.00	49.4 AV	54.0	-4.6	1.25 V	185	30.50	18.90

REMARKS:

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



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		25deg. C, 65%RH		TESTED BY Ted Chang

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	73.4 PK	75.0	-1.6	1.00 H	300	34.90	38.50
2	#5725.00	62.6 AV	64.2	-1.6	1.00 H	300	24.10	38.50
3	*5755.00	95.0 PK			1.00 H	326	56.40	38.60
4	*5755.00	84.2 AV			1.00 H	326	45.60	38.60
5	11510.00	61.2 PK	74.0	-12.8	1.02 H	152	42.20	19.00
6	11510.00	47.8 AV	54.0	-6.2	1.02 H	152	28.80	19.00
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	#5725.00	85.1 PK	86.7	-1.6	1.00 V	300	46.60	38.50
2	#5725.00	73.6 AV	75.2	-1.6	1.00 V	300	35.10	38.50
3	*5755.00	106.7 PK			1.00 V	300	68.10	38.60
4	*5755.00	95.2 AV			1.00 V	300	56.60	38.60
5	11510.00	62.5 PK	74.0	-11.5	1.00 V	214	43.50	19.00
6	11510.00	49.5 AV	54.0	-4.5	1.00 V	214	30.50	19.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
 - Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * ”: Fundamental frequency.
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	25deg. C, 65%RH	TESTED BY	Ted Chang

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	96.3 PK			1.11 H	330	57.70	38.60
2	*5795.00	85.3 AV			1.11 H	330	46.70	38.60
3	#5850.00	61.3 PK	76.3	-15.0	1.00 H	299	22.60	38.70
4	#5850.00	50.3 AV	65.3	-15.0	1.00 H	299	11.60	38.70
5	11590.00	61.7 PK	74.0	-12.3	1.00 H	201	42.70	19.00
6	11590.00	47.2 AV	54.0	-6.8	1.00 H	201	28.20	19.00
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	*5795.00	106.3 PK			1.00 V	300	67.70	38.60
2	*5795.00	95.1 AV			1.00 V	300	56.50	38.60
3	#5850.00	71.3 PK	86.3	-15.0	1.00 V	299	32.60	38.70
4	#5850.00	60.1 AV	75.1	-15.0	1.00 V	299	21.40	38.70
5	11590.00	63.0 PK	74.0	-11.0	1.23 V	65	44.00	19.00
6	11590.00	49.6 AV	54.0	-4.4	1.23 V	65	30.60	19.00

REMARKS:

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



A D T

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 165		FREQUENCY RANGE Below 1000MHz
INPUT POWER (SYSTEM)		120Vac, 60 Hz		DETECTOR FUNCTION Quasi-Peak
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH		TESTED BY Ted Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.07	27.2 QP	40.0	-12.8	1.24 H	326	42.00	-14.80
2	142.44	23.6 QP	43.5	-19.9	1.00 H	273	37.90	-14.30
3	247.22	25.6 QP	46.0	-20.4	1.50 H	224	40.10	-14.50
4	274.39	31.1 QP	46.0	-14.9	1.50 H	118	44.20	-13.10
5	600.38	34.9 QP	46.0	-11.1	1.00 H	203	41.30	-6.40
6	726.50	28.3 QP	46.0	-17.7	1.99 H	8	32.50	-4.20

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	64.83	34.3 QP	40.0	-5.7	1.99 V	233	49.40	-15.10
2	107.52	25.1 QP	43.5	-18.4	1.50 V	81	42.60	-17.50
3	274.39	24.0 QP	46.0	-22.0	1.00 V	354	37.10	-13.10
4	375.29	21.7 QP	46.0	-24.3	1.00 V	171	32.70	-11.00
5	501.42	22.9 QP	46.0	-23.1	1.24 V	191	31.40	-8.50
6	600.38	36.7 QP	46.0	-9.3	1.00 V	75	43.10	-6.40

REMARKS:

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



A D T

5.1.10 TEST RESULTS (D)

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 165		FREQUENCY RANGE Below 1000MHz
INPUT POWER (SYSTEM)		120Vac, 60 Hz		DETECTOR FUNCTION Quasi-Peak
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH		TESTED BY Chris 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	57.07	26.7 QP	40.0	-13.3	1.25 H	333	41.50	-14.80
2	229.76	27.6 QP	46.0	-18.4	1.00 H	267	43.80	-16.20
3	270.51	32.5 QP	46.0	-13.5	1.50 H	227	45.70	-13.20
4	375.29	24.0 QP	46.0	-22.0	1.00 H	246	35.00	-11.00
5	600.38	37.5 QP	46.0	-8.5	1.25 H	135	43.90	-6.40
6	903.08	33.8 QP	46.0	-12.2	1.50 H	267	34.60	-0.80
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	57.07	26.7 QP	40.0	-13.3	1.25 V	30	41.50	-14.80
2	229.76	25.7 QP	46.0	-20.3	1.00 V	280	41.90	-16.20
3	266.63	25.5 QP	46.0	-20.5	1.50 V	274	39.10	-13.60
4	600.38	33.0 QP	46.0	-13.0	1.00 V	104	39.40	-6.40
5	625.60	31.8 QP	46.0	-14.2	1.25 V	94	37.50	-5.70
6	910.84	36.1 QP	46.0	-9.9	1.50 V	146	36.50	-0.40

REMARKS:

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



A D T

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 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.

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 (A)

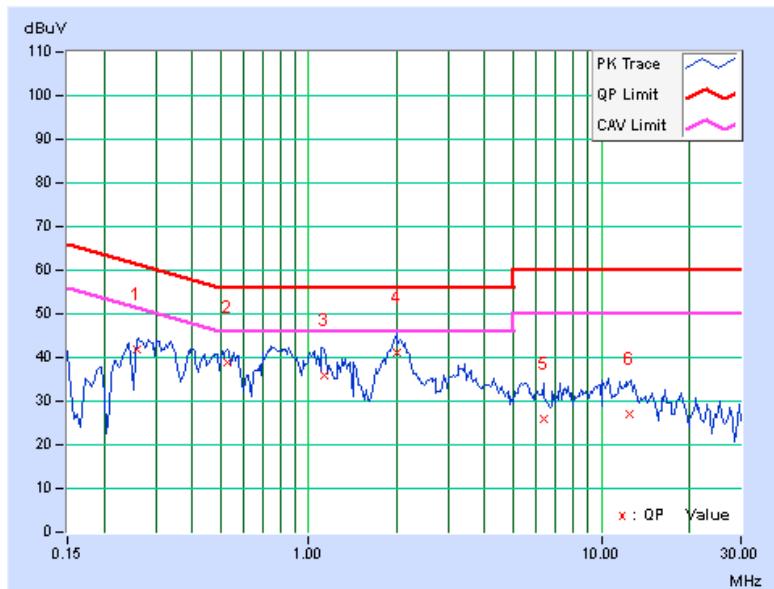
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.25938	0.21	41.61	30.17	41.82	30.38	61.45	51.45	-19.64
2	0.52500	0.23	38.82	29.64	39.05	29.87	56.00	46.00	-16.95	-16.13
3	1.13672	0.29	35.76	23.98	36.05	24.27	56.00	46.00	-19.95	-21.73
4	2.01172	0.32	40.70	28.86	41.02	29.18	56.00	46.00	-14.98	-16.82
5	6.34375	0.44	25.43	15.78	25.87	16.22	60.00	50.00	-34.13	-33.78
6	12.44922	0.55	26.44	17.81	26.99	18.36	60.00	50.00	-33.01	-31.64

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.





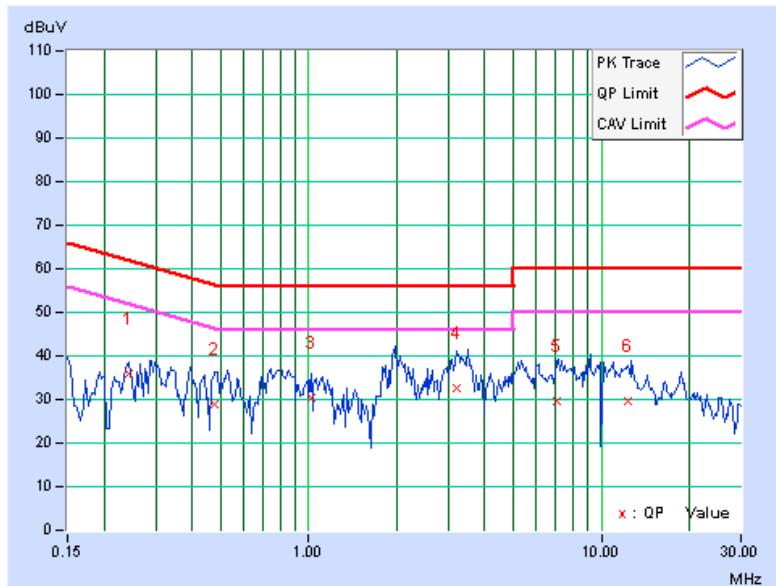
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PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.24375	0.21	35.84	22.29	36.05	22.50	61.97	51.97	-25.92	-29.47
2	0.47422	0.27	28.74	21.70	29.01	21.97	56.44	46.44	-27.43	-24.47
3	1.01953	0.26	30.26	14.96	30.52	15.22	56.00	46.00	-25.48	-30.78
4	3.21484	0.40	32.07	15.39	32.47	15.79	56.00	46.00	-23.53	-30.21
5	7.07031	0.51	29.12	12.50	29.63	13.01	60.00	50.00	-30.37	-36.99
6	12.25000	0.63	29.16	13.78	29.79	14.41	60.00	50.00	-30.21	-35.59

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.



5.2.8 TEST RESULTS (B)

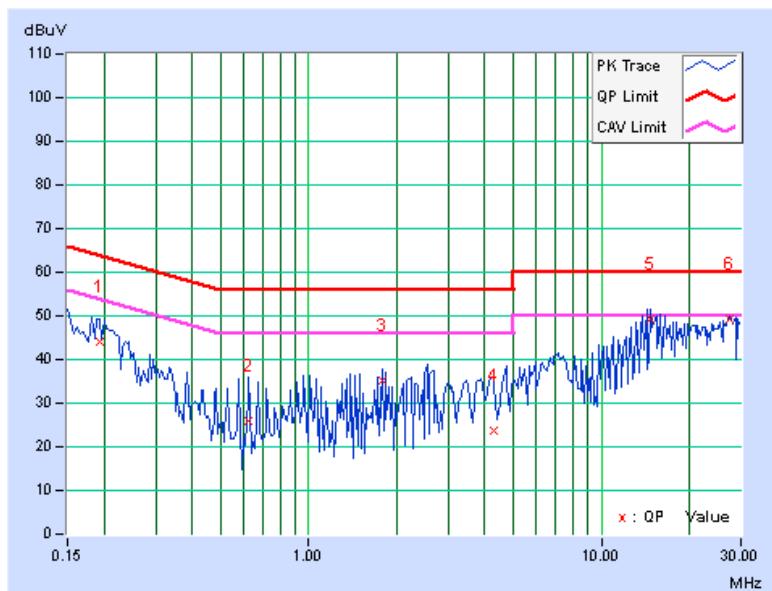
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.19297	0.17	44.04	35.78	44.21	35.95	63.91	53.91	-19.70
2	0.61878	0.23	25.81	24.97	26.04	25.20	56.00	46.00	-29.96	-20.80
3	1.77734	0.28	34.97	34.91	35.25	35.19	56.00	46.00	-20.75	-10.81
4	4.27344	0.37	23.40	19.65	23.77	20.02	56.00	46.00	-32.23	-25.98
5	14.75016	0.53	48.67	47.55	49.20	48.08	60.00	50.00	-10.80	-1.92
6	27.60156	0.55	48.68	48.31	49.23	48.86	60.00	50.00	-10.77	-1.14

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.





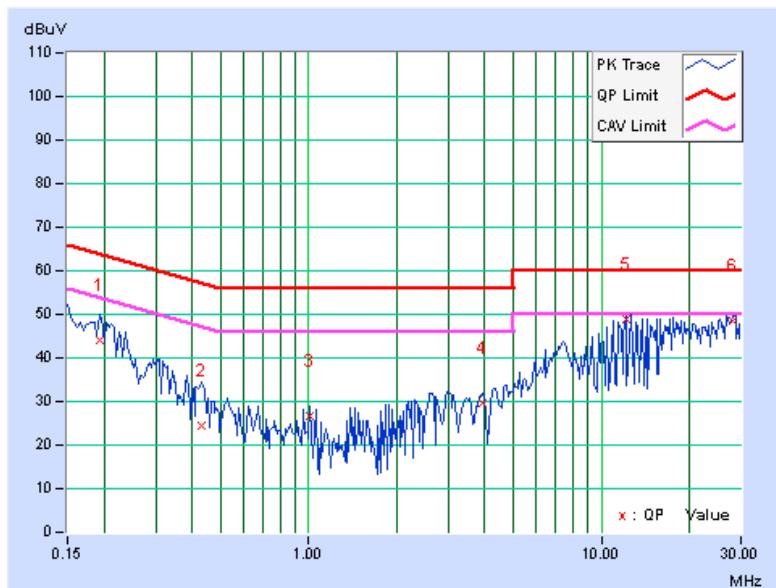
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PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.18	43.78	33.80	43.96	33.98	63.91	53.91	-19.95	-19.93
2	0.43125	0.25	24.35	18.91	24.60	19.16	57.23	47.23	-32.63	-28.07
3	1.00781	0.23	26.44	26.13	26.67	26.36	56.00	46.00	-29.33	-19.64
4	3.93358	0.39	29.19	29.13	29.58	29.52	56.00	46.00	-26.42	-16.48
5	12.13281	0.53	48.50	47.03	49.03	47.56	60.00	50.00	-10.97	-2.44
6	28.31250	0.63	47.77	47.20	48.40	47.83	60.00	50.00	-11.60	-2.17

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.



5.2.9 TEST RESULTS (C)

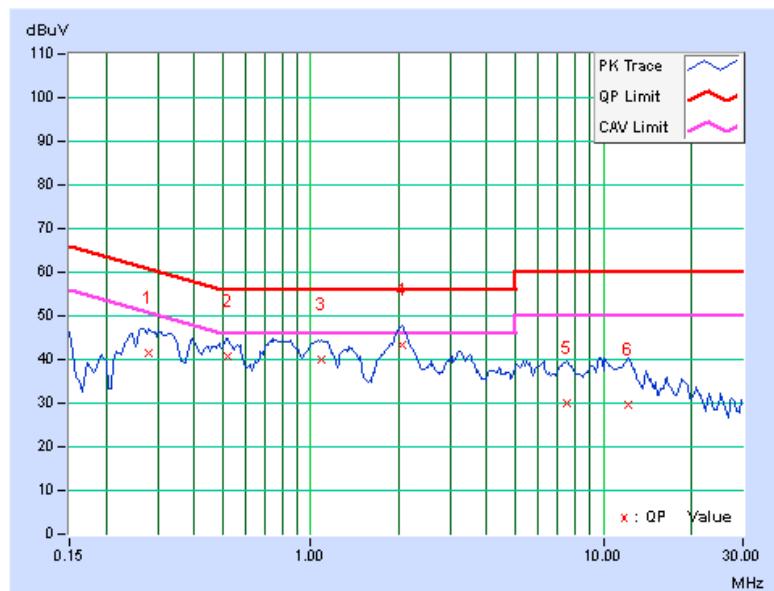
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.27891	0.21	41.11	24.57	41.32	24.78	60.85	50.85	-19.53
2	0.52109	0.23	40.46	30.50	40.69	30.73	56.00	46.00	-15.31	-15.27
3	1.09375	0.29	39.80	25.88	40.09	26.17	56.00	46.00	-15.91	-19.83
4	2.05859	0.32	42.96	30.66	43.28	30.98	56.00	46.00	-12.72	-15.02
5	7.54297	0.45	29.62	18.64	30.07	19.09	60.00	50.00	-29.93	-30.91
6	12.23438	0.54	29.19	17.48	29.73	18.02	60.00	50.00	-30.27	-31.98

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.





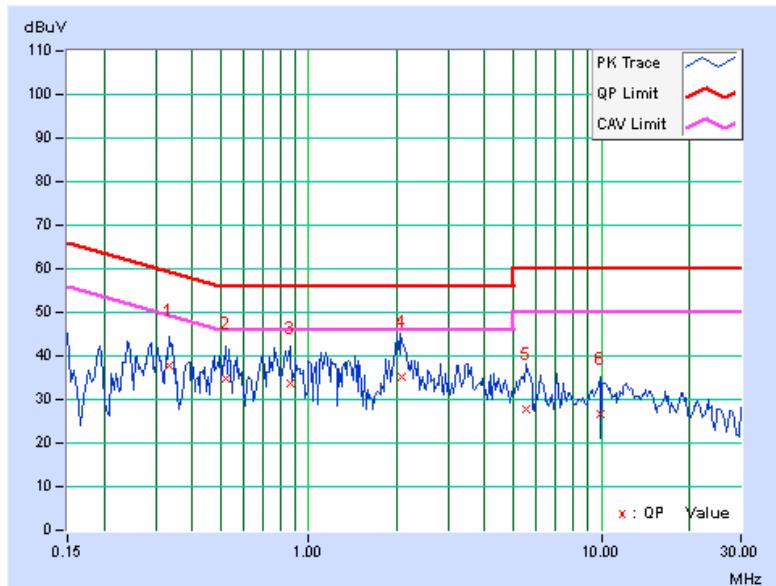
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PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.33359	0.24	37.36	23.69	37.60	23.93	59.36	49.36	-21.76	-25.43
2	0.52109	0.27	34.65	23.14	34.92	23.41	56.00	46.00	-21.08	-22.59
3	0.86094	0.26	33.37	20.72	33.63	20.98	56.00	46.00	-22.37	-25.02
4	2.09375	0.33	35.02	23.05	35.35	23.38	56.00	46.00	-20.65	-22.62
5	5.52344	0.48	27.47	14.10	27.95	14.58	60.00	50.00	-32.05	-35.42
6	9.98047	0.57	26.11	16.34	26.68	16.91	60.00	50.00	-33.32	-33.09

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.



5.2.10 TEST RESULTS (D)

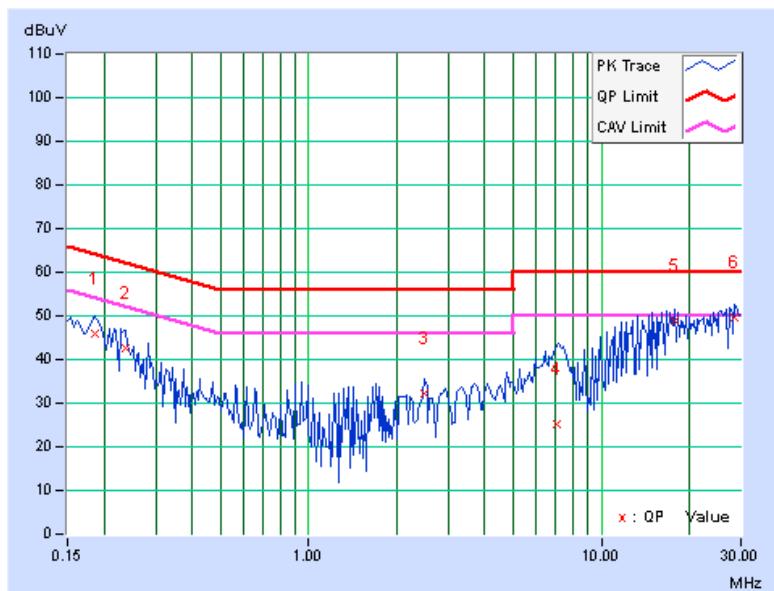
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.18516	0.20	45.61	36.35	45.81	36.55	64.25	54.25	-18.45
2	0.23594	0.20	42.46	34.54	42.66	34.74	62.24	52.24	-19.57	-17.49
3	2.50000	0.34	31.94	29.27	32.28	29.61	56.00	46.00	-23.72	-16.39
4	7.07422	0.45	24.79	18.81	25.24	19.26	60.00	50.00	-34.76	-30.74
5	17.83984	0.68	48.06	46.74	48.74	47.42	60.00	50.00	-11.26	-2.58
6	28.54297	0.63	49.16	47.06	49.79	47.69	60.00	50.00	-10.21	-2.31

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.





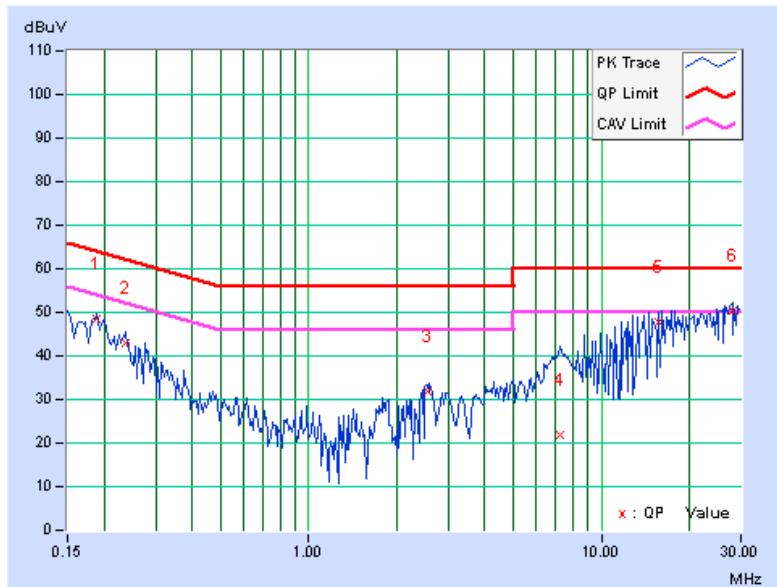
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PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18906	0.19	48.26	37.86	48.45	38.05	64.08	54.08	-15.63	-16.03
2	0.23594	0.20	42.71	33.05	42.91	33.25	62.24	52.24	-19.32	-18.98
3	2.54297	0.36	31.67	30.29	32.03	30.65	56.00	46.00	-23.97	-15.35
4	7.19531	0.51	21.20	15.71	21.71	16.22	60.00	50.00	-38.29	-33.78
5	15.69531	0.71	47.18	46.28	47.89	46.99	60.00	50.00	-12.11	-3.01
6	28.06250	0.72	49.61	45.67	50.33	46.39	60.00	50.00	-9.67	-3.61

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.





A D T

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.



A D T

5.3.7 TEST RESULTS (A)

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.44	16.51	0.5	PASS
157	5785	16.47	16.46	0.5	PASS
165	5825	16.53	16.47	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.83	17.78	0.5	PASS
157	5785	17.75	17.72	0.5	PASS
165	5825	17.69	17.72	0.5	PASS

802.11n (40MHz)

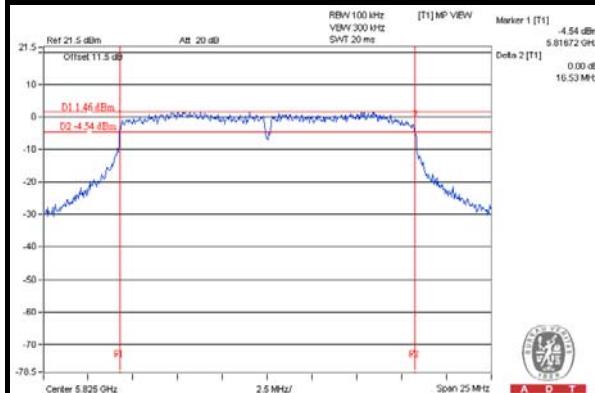
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.47	36.55	0.5	PASS
159	5795	36.58	36.54	0.5	PASS



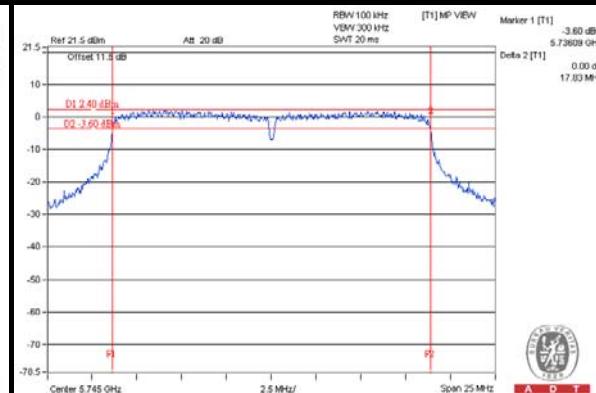
A D T

SPECTRUM PLOT OF WORST VALUE

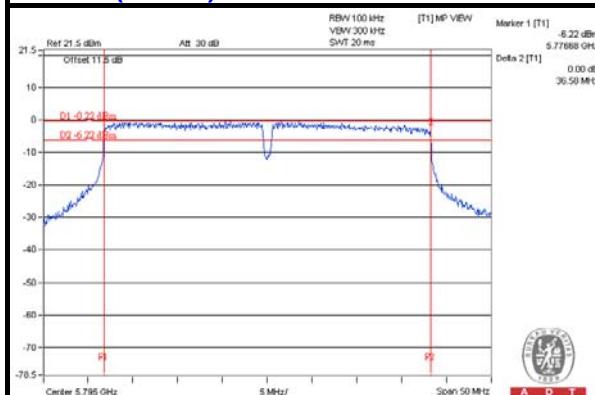
802.11a



802.11n (20MHz)



802.11n (40MHz)





A D T

5.3.8 TEST RESULTS (C)

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.01	0.5	PASS
157	5785	17.00	0.5	PASS
165	5825	17.02	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.57	0.5	PASS
157	5785	17.16	0.5	PASS
165	5825	16.29	0.5	PASS

802.11n (40MHz)

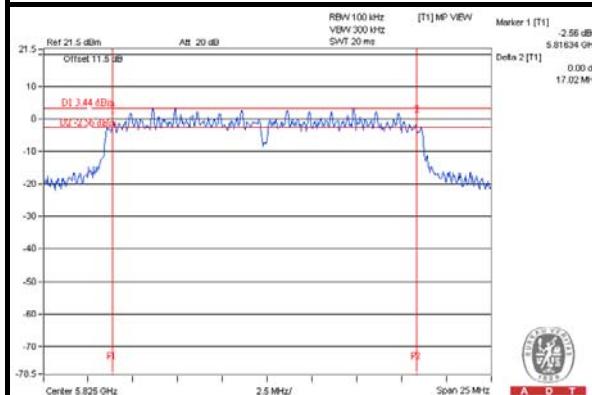
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	36.09	0.5	PASS
159	5795	36.35	0.5	PASS



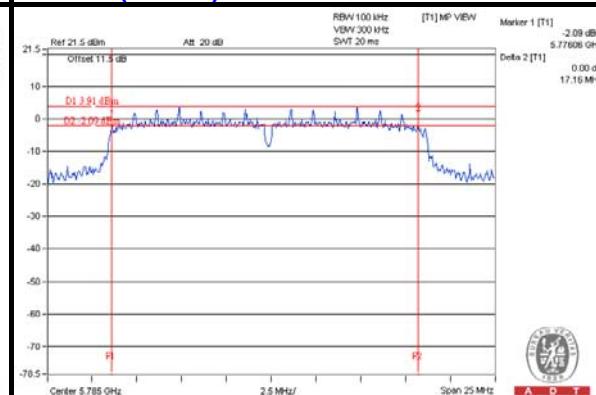
A D T

SPECTRUM PLOT OF WORST VALUE

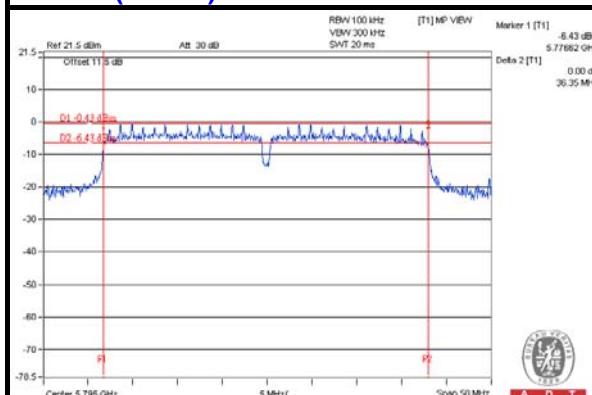
802.11a



802.11n (20MHz)



802.11n (40MHz)





A D T

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 ≤ 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 ≥ 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.



A D T

5.4.7 TEST RESULTS (A)

FOR PEAK POWER

802.11a

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	26.77	26.56	928.233	29.68	30	PASS
157	5785	26.87	26.59	942.444	29.74	30	PASS
165	5825	26.77	26.78	951.766	29.79	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	26.40	26.71	905.329	29.57	30	PASS
157	5785	26.21	26.60	874.918	29.42	30	PASS
165	5825	26.07	26.65	866.957	29.38	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	26.03	26.30	827.447	29.18	30	PASS
159	5795	26.32	26.85	912.721	29.60	30	PASS



A D T

FOR AVERAGE POWER**802.11a**

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	20.13	19.50	192.164	22.84
157	5785	21.11	19.79	224.402	23.51
165	5825	20.85	20.21	226.573	23.55

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
149	5745	19.01	20.46	190.789	22.81
157	5785	19.39	21.19	218.418	23.39
165	5825	19.95	21.07	226.793	23.56

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
151	5755	19.51	21.19	220.853	23.44
159	5795	19.22	21.11	212.682	23.28



A D T

5.4.8 TEST RESULTS (C)

FOR PEAK POWER

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	110.662	20.44	30	PASS
157	5785	103.992	20.17	30	PASS
165	5825	98.401	19.93	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	109.144	20.38	30	PASS
157	5785	101.391	20.06	30	PASS
165	5825	96.605	19.85	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	111.944	20.49	30	PASS
159	5795	113.763	20.56	30	PASS



A D T

FOR AVERAGE POWER

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	55.463	17.44
157	5785	54.828	17.39
165	5825	51.523	17.12

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
149	5745	59.566	17.75
157	5785	55.847	17.47
165	5825	48.084	16.82

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
151	5755	48.641	16.87
159	5795	59.566	17.75



A D T

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.



A D T

5.5.7 TEST RESULTS (A)

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	-7.73	3.01	-4.72	4.99	PASS
	157	5785	-9.41	3.01	-6.40	4.99	PASS
	165	5825	-10.27	3.01	-7.26	4.99	PASS
1	149	5745	-4.97	3.01	-1.96	4.99	PASS
	157	5785	-7.91	3.01	-4.90	4.99	PASS
	165	5825	-9.17	3.01	-6.16	4.99	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $6\text{dBi} + 10\log(2) = 9.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (9.01 - 6) = 4.99\text{dBm}$.

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	-8.93	3.01	-5.92	8	PASS
	157	5785	-6.92	3.01	-3.91	8	PASS
	165	5825	-9.74	3.01	-6.73	8	PASS
1	149	5745	-7.67	3.01	-4.66	8	PASS
	157	5785	-9.69	3.01	-6.68	8	PASS
	165	5825	-9.54	3.01	-6.53	8	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- IEEE 802.11n, MCS = 8-15, NSS = 2,
Directional gain = $6\text{dBi} + 10\log(2/2) = 6\text{dBi}$, so the limit no need to reduced.



A D T

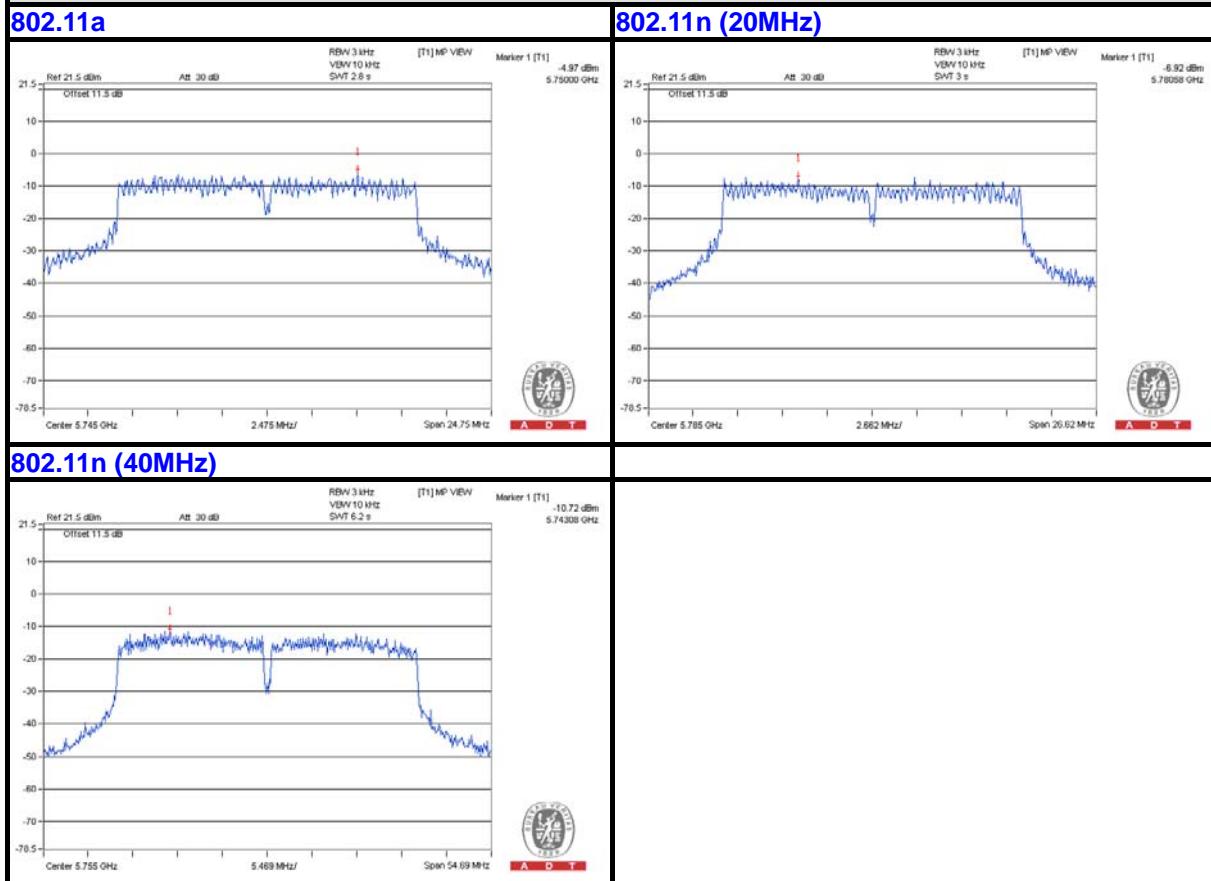
802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-10.72	3.01	-7.71	8	PASS
	159	5795	-11.82	3.01	-8.81	8	PASS
1	151	5755	-11.98	3.01	-8.97	8	PASS
	159	5795	-11.82	3.01	-8.81	8	PASS

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- IEEE 802.11n, MCS = 8-15, NSS = 2,
Directional gain = 6dBi + 10log(2/2) = 6dBi, so the limit no need to reduced.

SPECTRUM PLOT OF WORST VALUE





A D T

5.5.8 TEST RESULTS (C)

802.11a

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-10.00	8	PASS
157	5785	-10.56	8	PASS
165	5825	-10.52	8	PASS

802.11n (20MHz)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	-11.58	8	PASS
157	5785	-10.54	8	PASS
165	5825	-11.29	8	PASS

802.11n (40MHz)

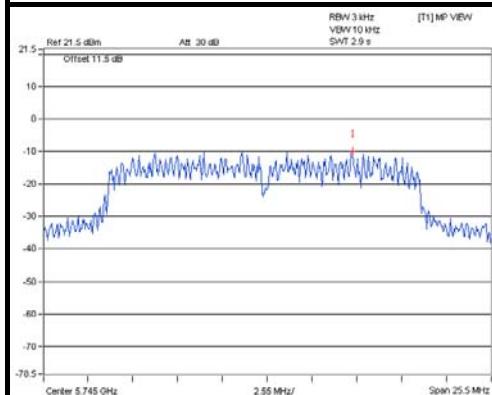
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
151	5755	-14.03	8	PASS
159	5795	-13.51	8	PASS



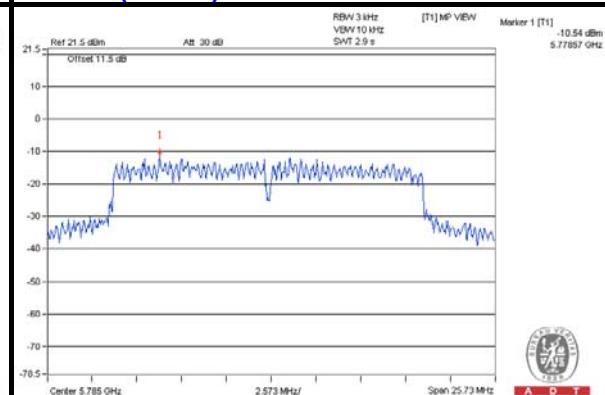
A D T

SPECTRUM PLOT OF WORST VALUE

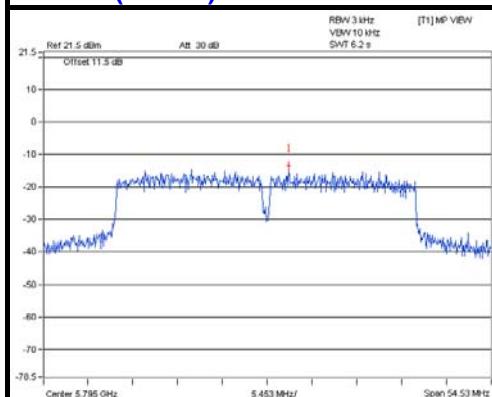
802.11a



802.11n (20MHz)



802.11n (40MHz)





5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below –20dB 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 (A)

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

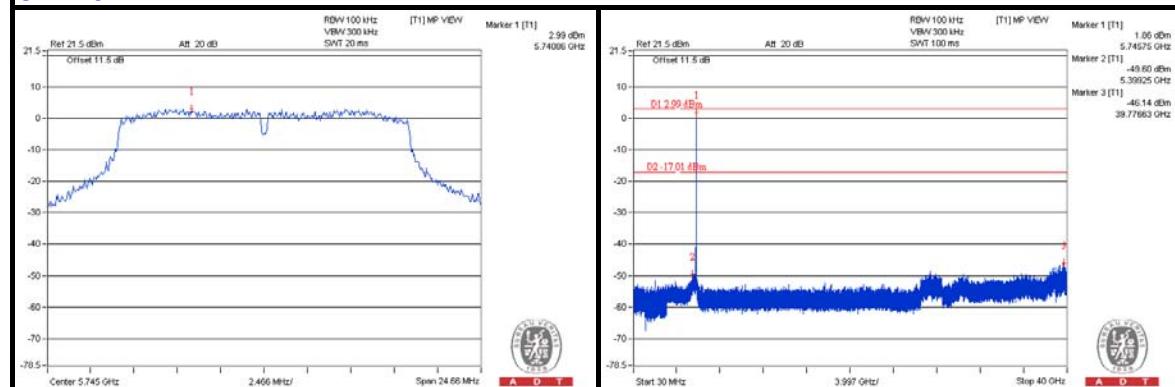
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



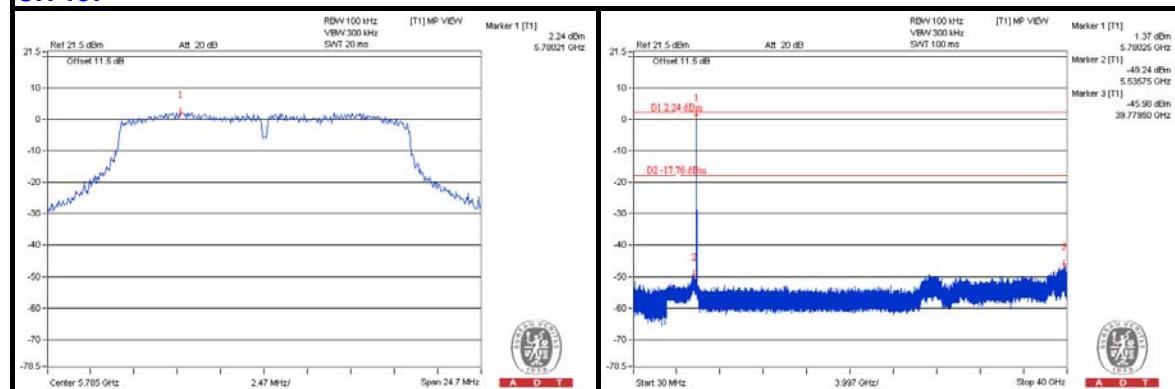
A D T

802.11a CHAIN 0

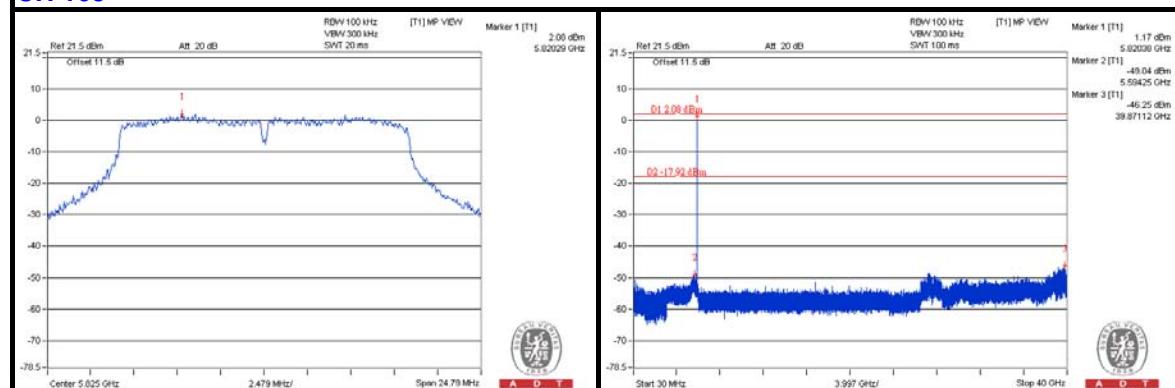
CH 149



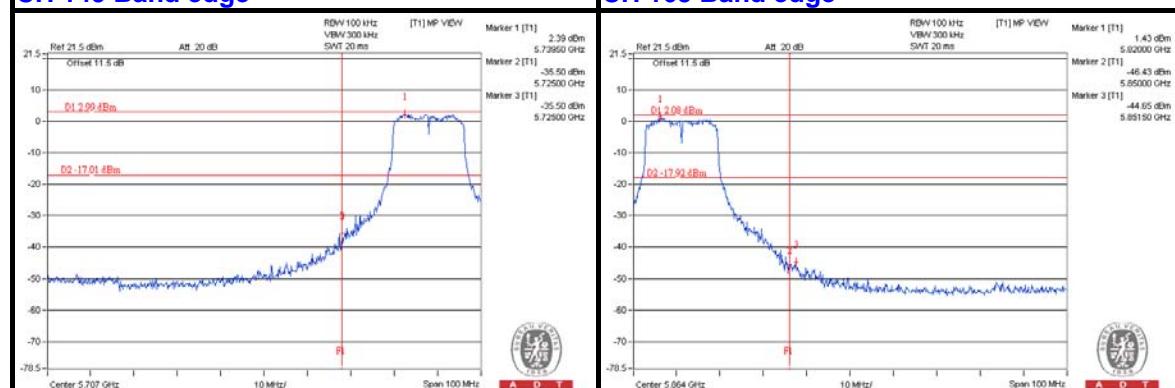
CH 157



CH 165



CH 149 Band edge

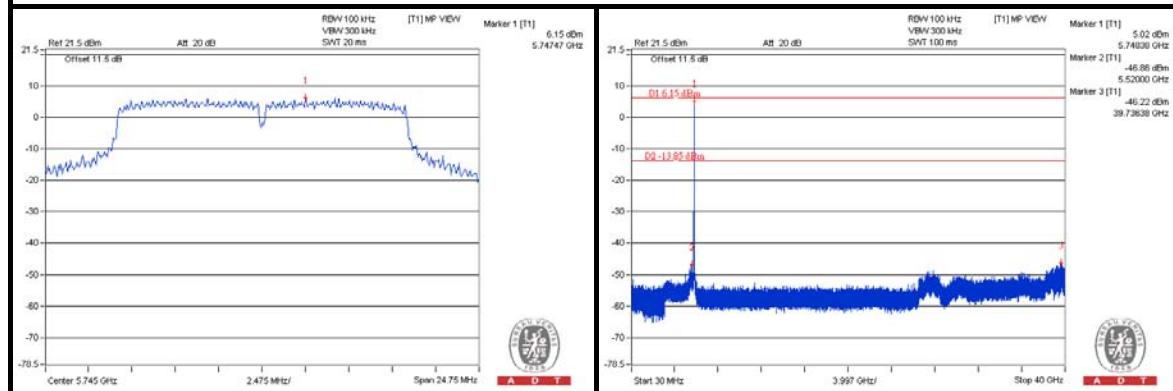




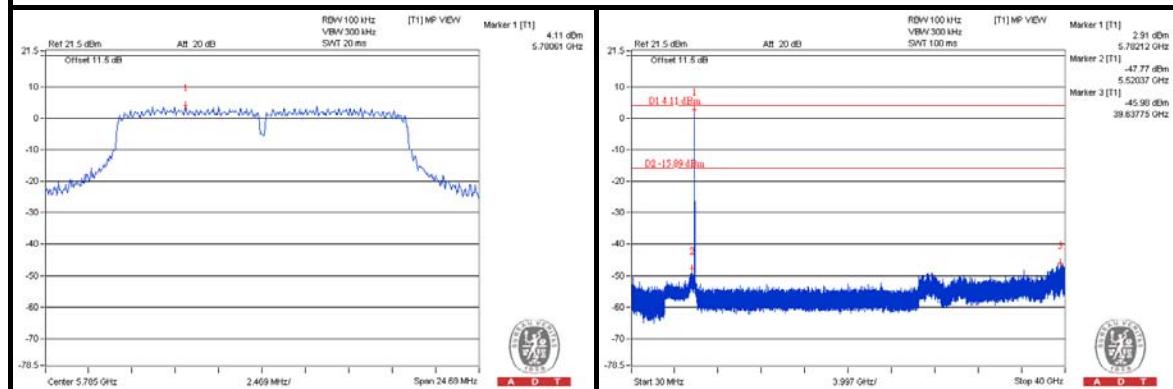
A D T

CHAIN 1

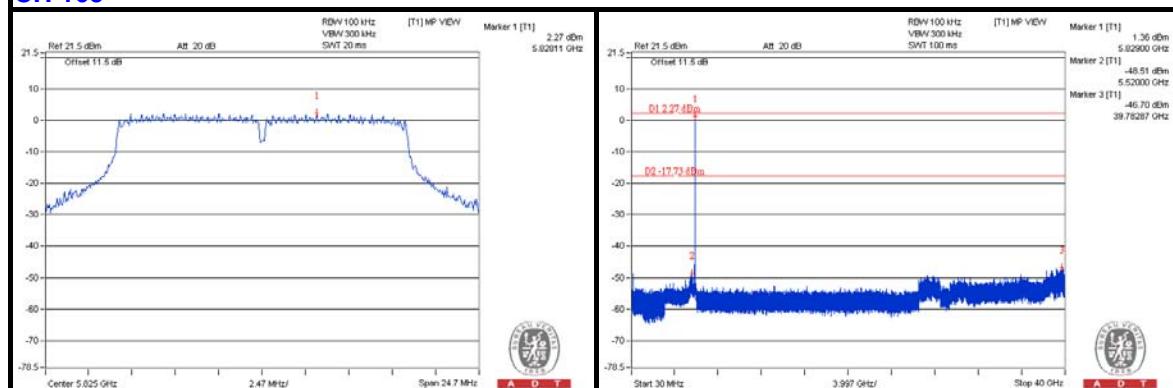
CH 149



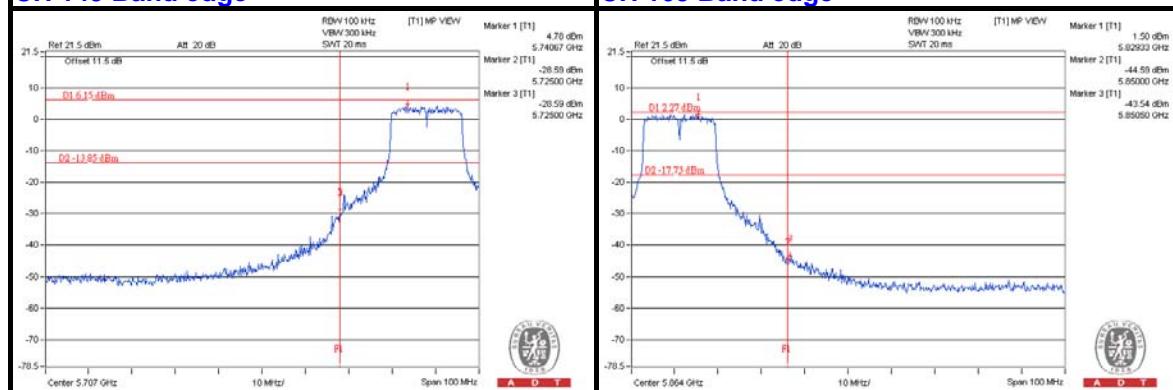
CH 157



CH 165



CH 149 Band edge

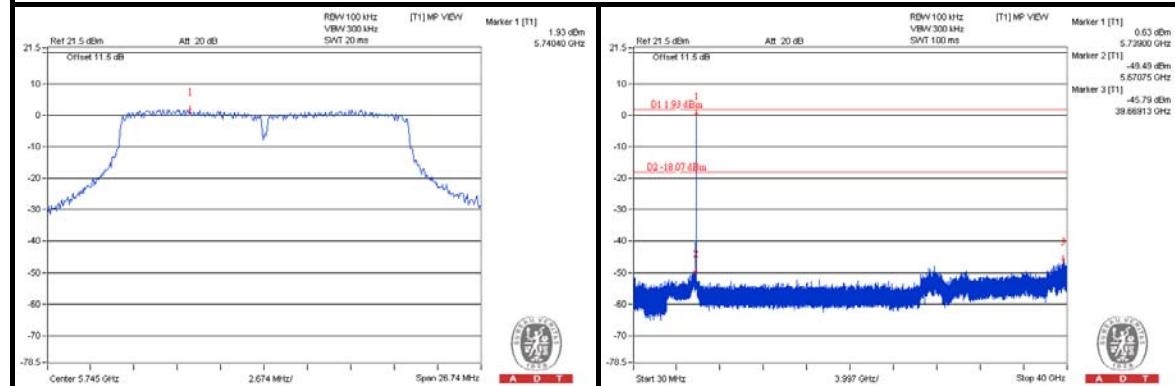




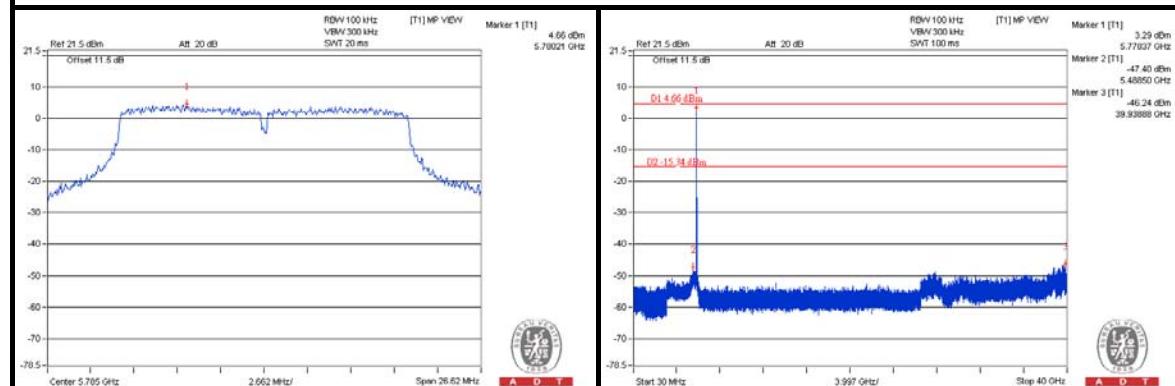
A D T

802.11n (20MHz) CHAIN 0

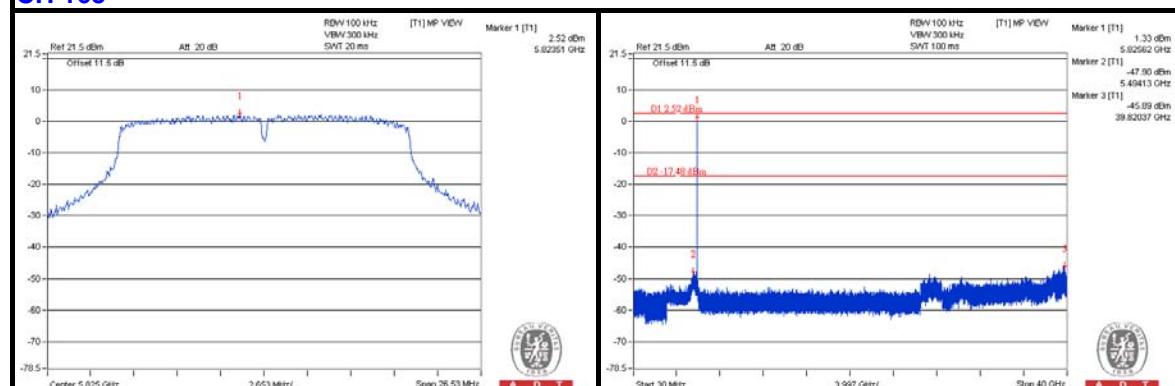
CH 149



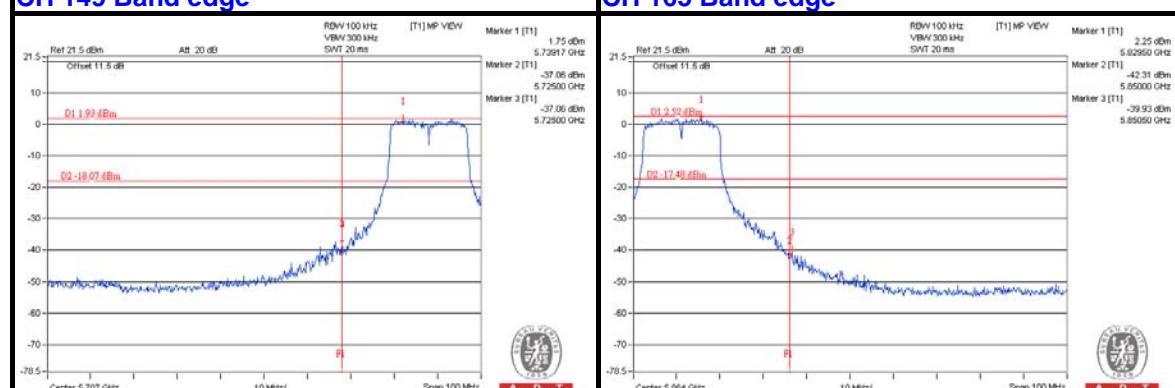
CH 157



CH 165



CH 149 Band edge

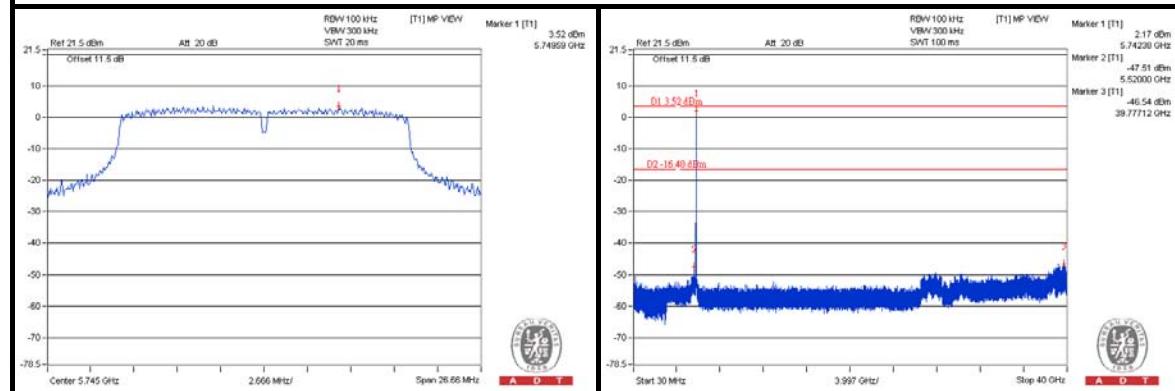




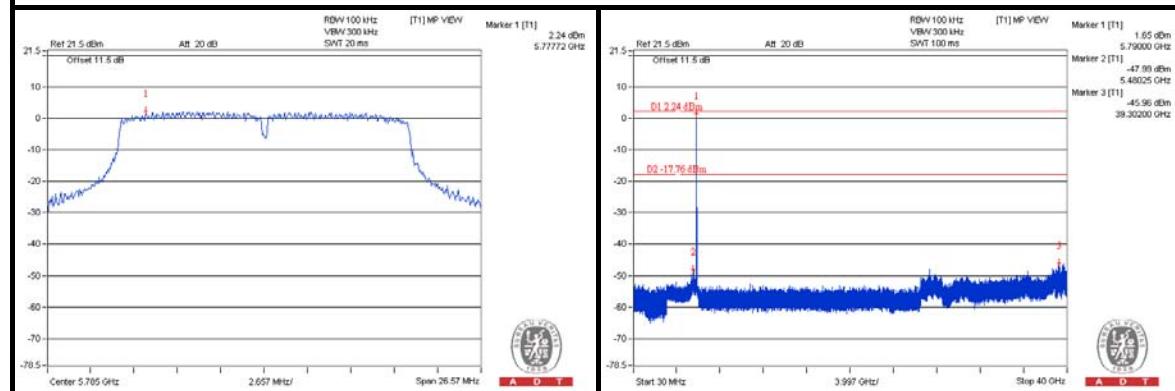
A D T

CHAIN 1

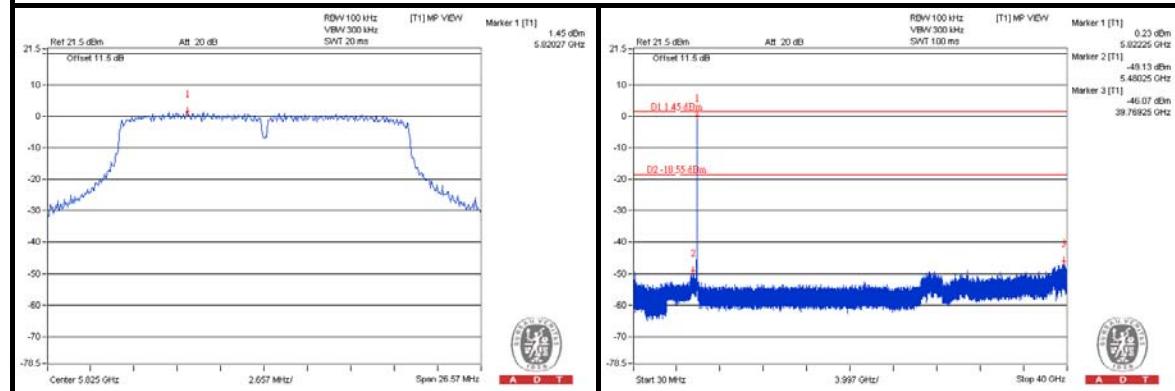
CH 149



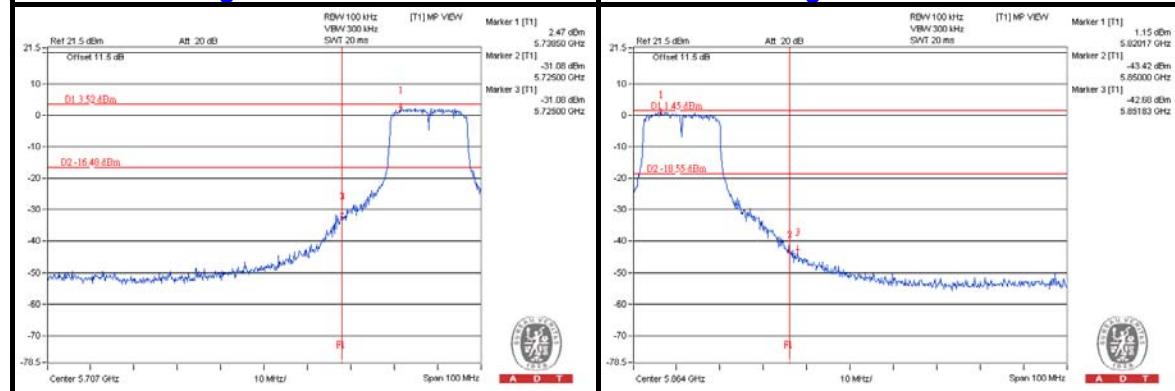
CH 157



CH 165



CH 149 Band edge

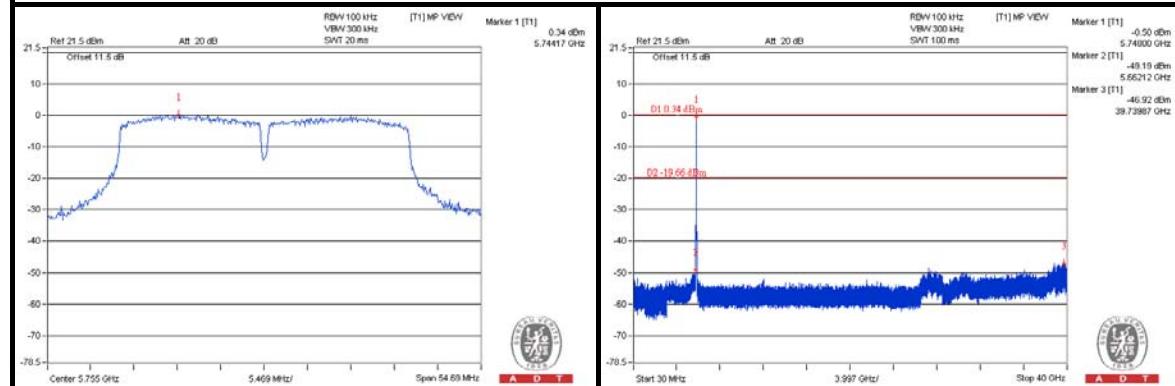




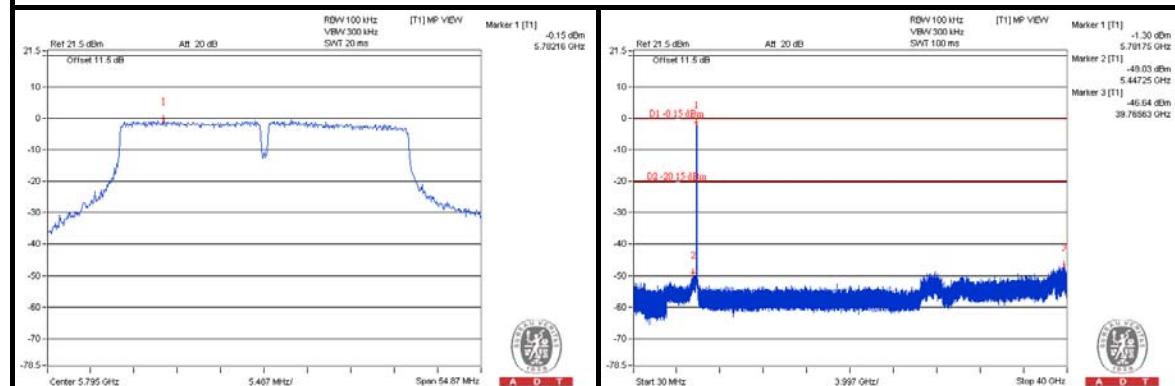
A D T

802.11n (40MHz) CHAIN 0

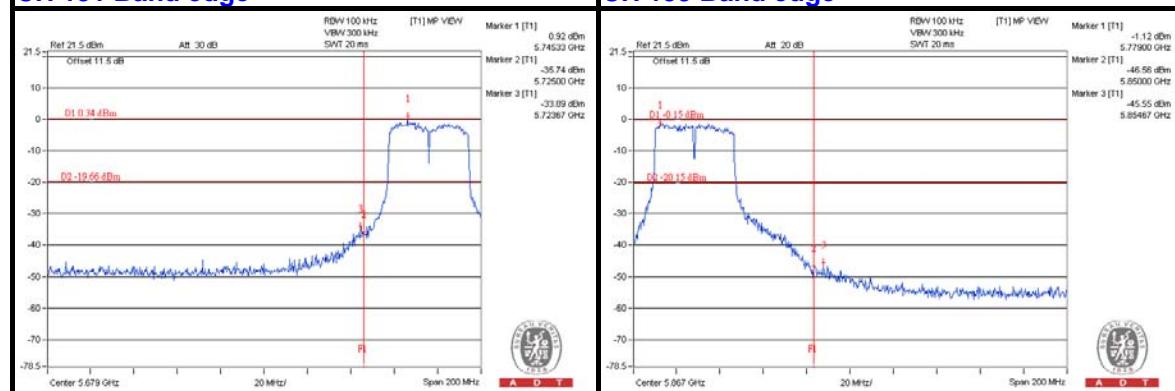
CH 151



CH 159



CH 151 Band edge

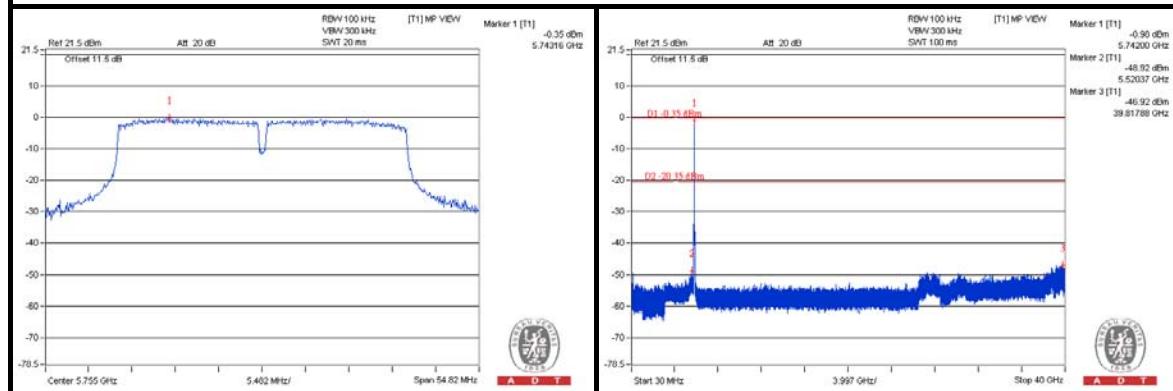




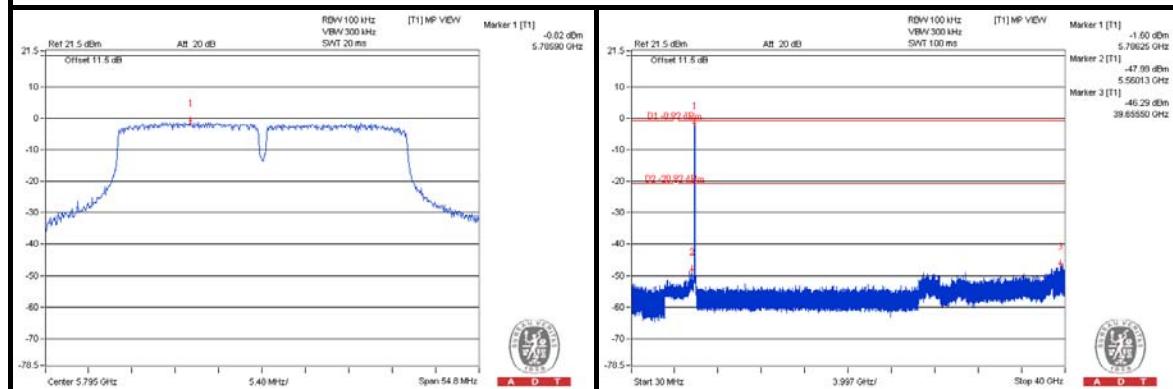
A D T

CHAIN 1

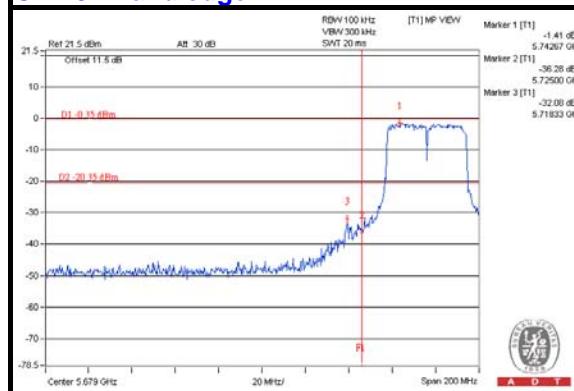
CH 151



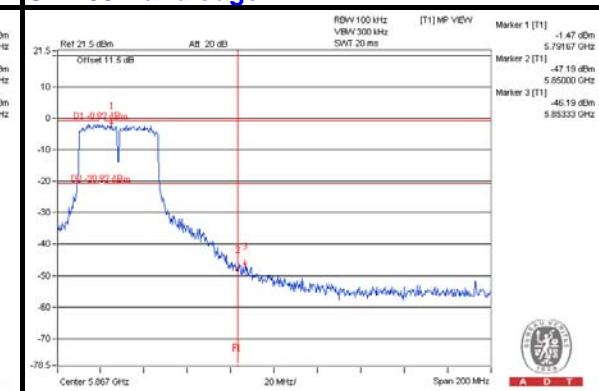
CH 159



CH 151 Band edge



CH 159 Band edge





A D T

5.6.8 TEST RESULTS (C)

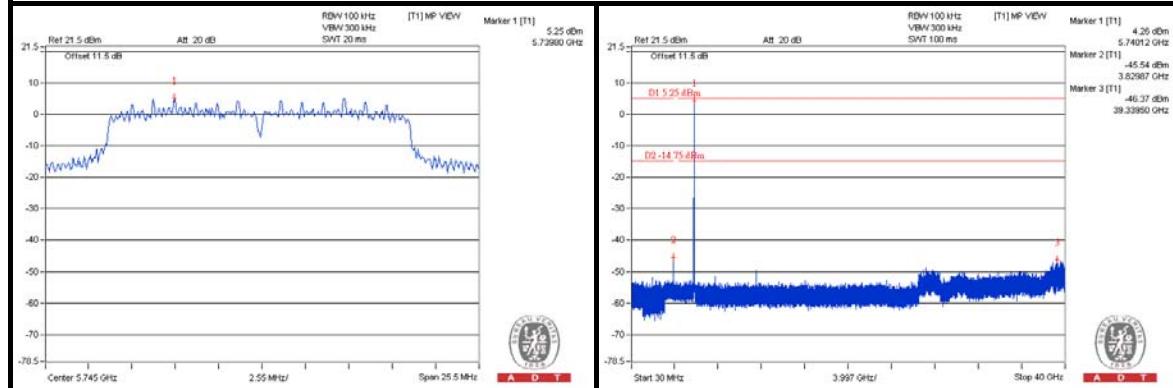
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



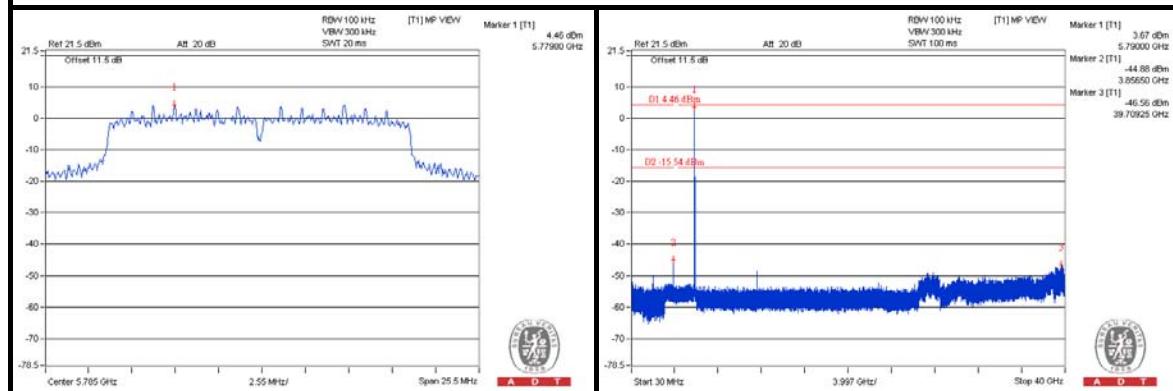
A D T

802.11a

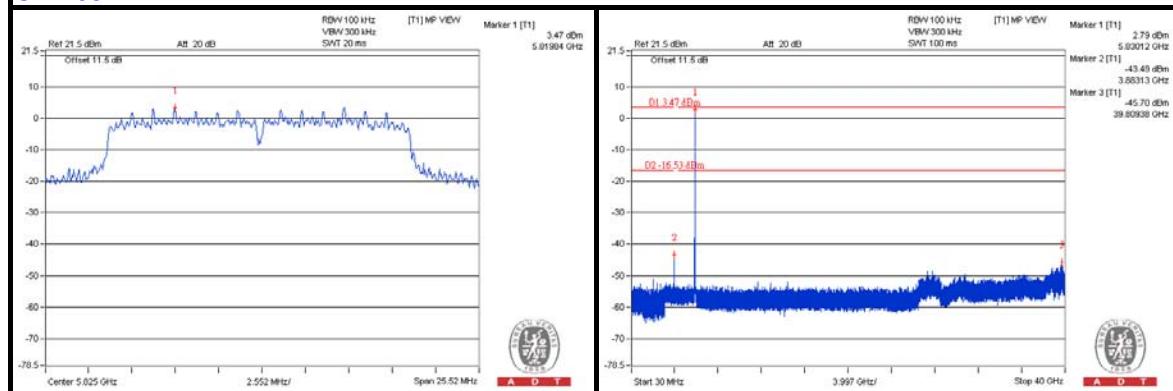
CH 149



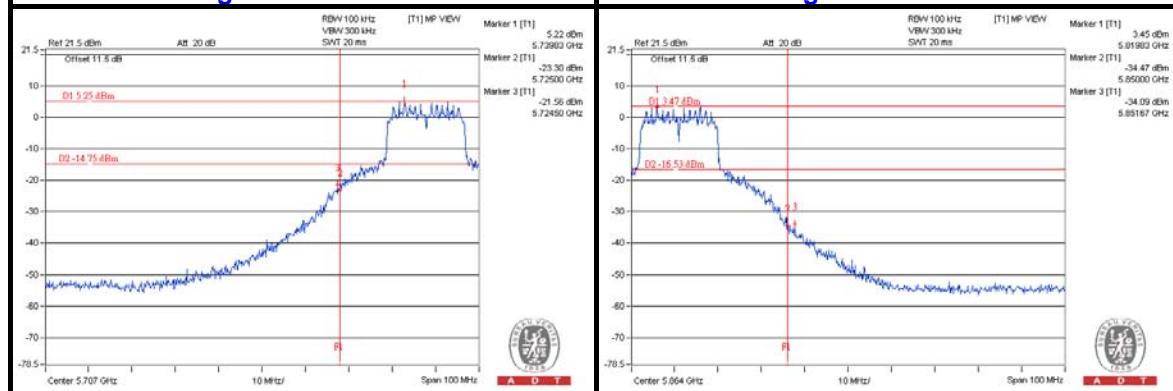
CH 157



CH 165



CH 149 Band edge

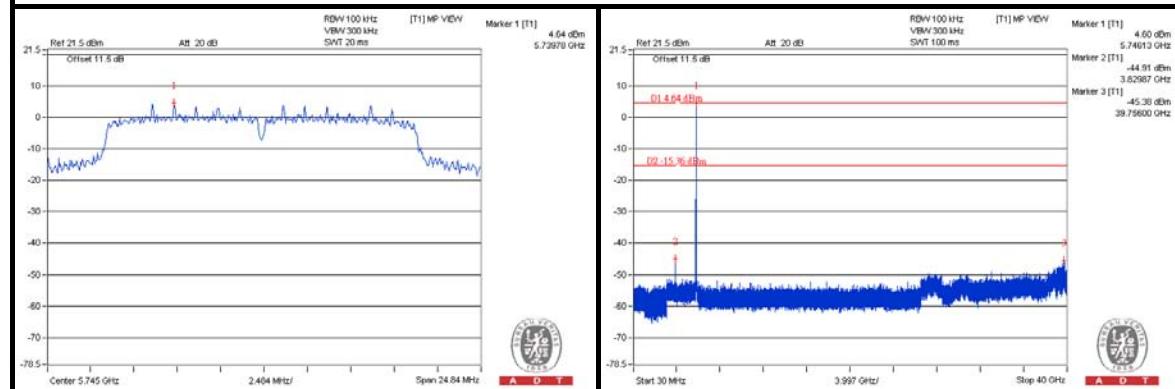




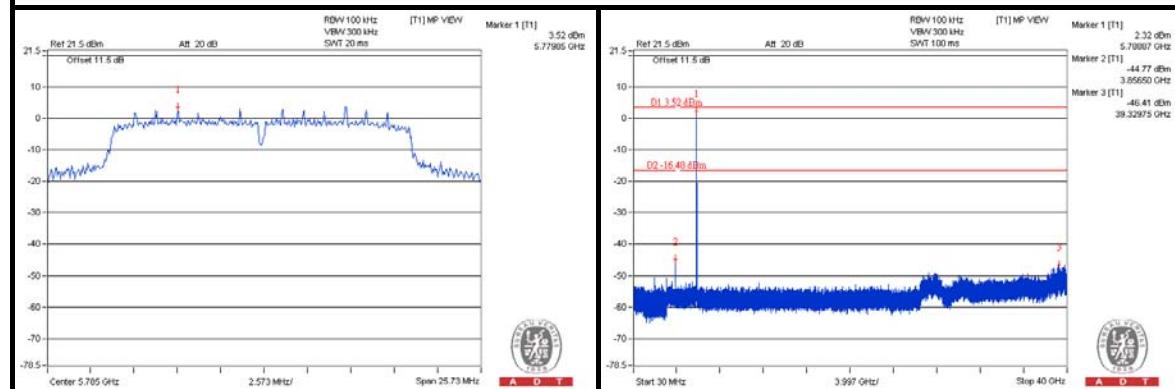
A D T

802.11n (20MHz)

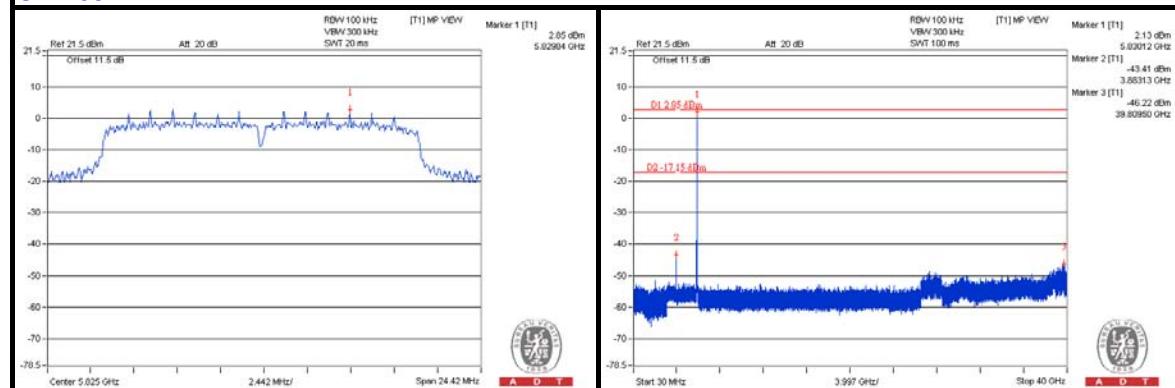
CH 149



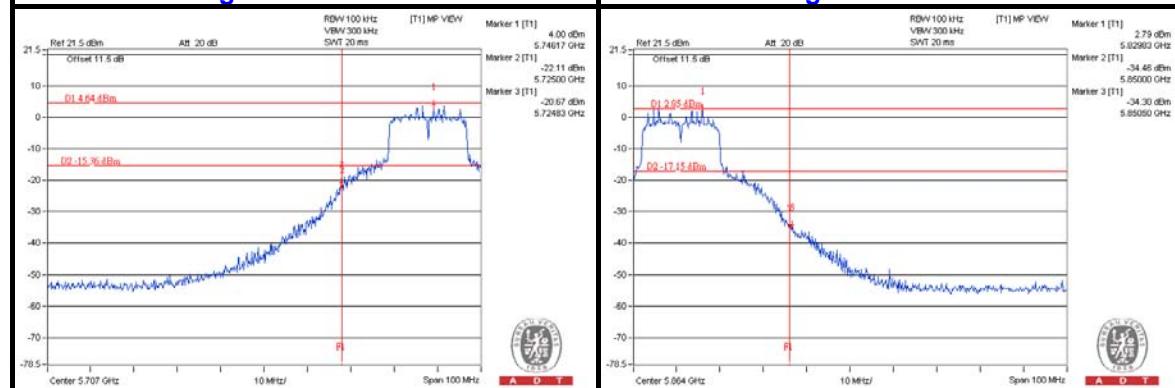
CH 157



CH 165



CH 149 Band edge

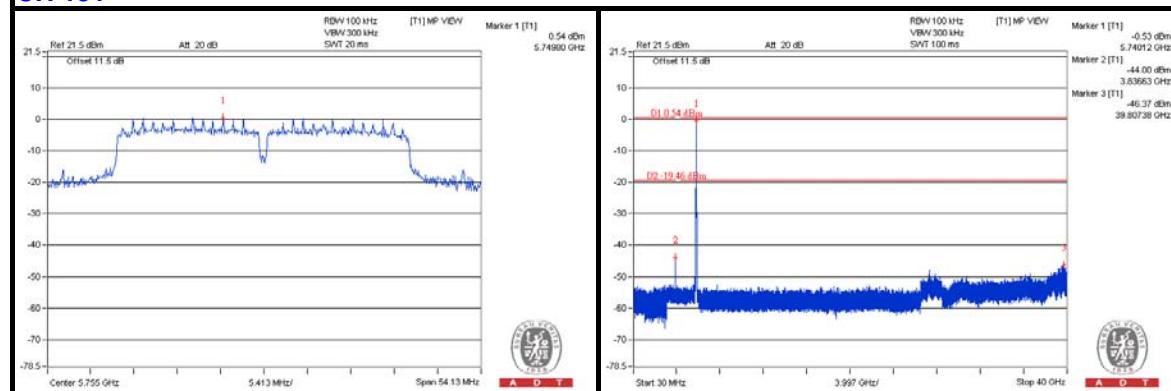




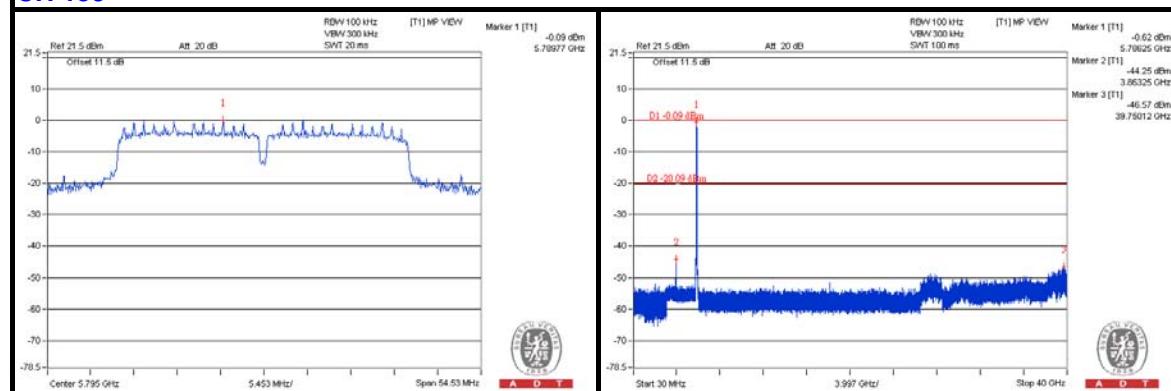
A D T

802.11n (40MHz)

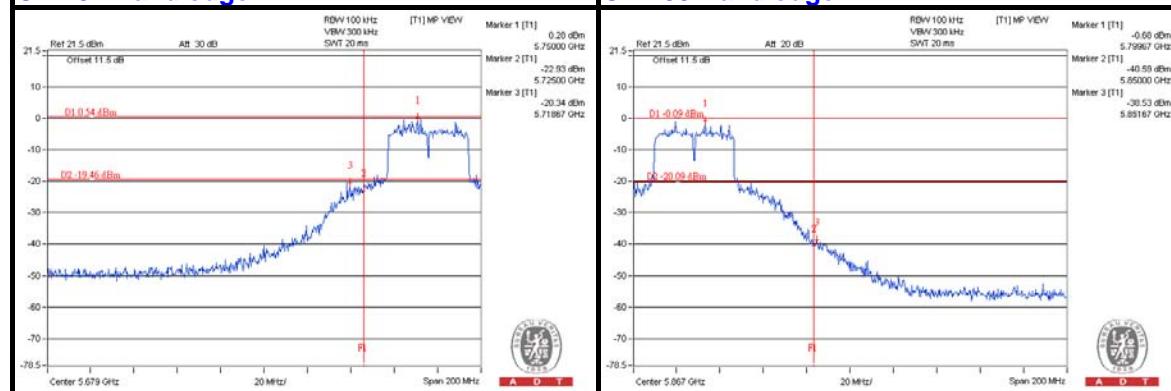
CH 151



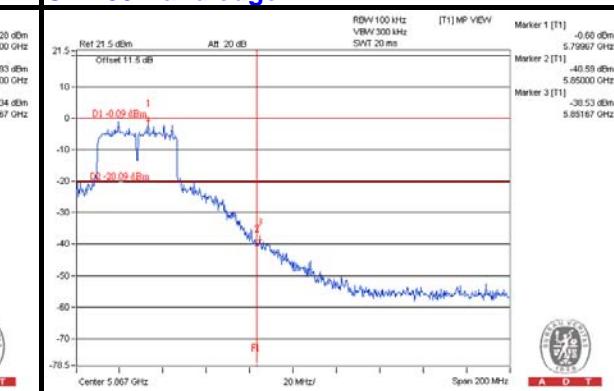
CH 159



CH 151 Band edge



CH 159 Band edge





A D T

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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.



A D T

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---