



A D T

FCC TEST REPORT (15.247)

REPORT NO.: RF120719C20
MODEL NO.: NWA1123-NI, NWA5123-NI
FCC ID: I88NWA1123NI
RECEIVED: Jul. 19, 2012
TESTED: Jul. 28 ~ Aug. 23, 2012
ISSUED: Aug. 28, 2012

APPLICANT: ZyXEL Communications Corporation

ADDRESS: No. 6, Innovation Road II , Science-Park,
Hsin-Chu, 300, Taiwan

ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist.,
New Taipei City, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	5
1. CERTIFICATION	6
2. SUMMARY OF TEST RESULTS	7
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT	8
3.2 DESCRIPTION OF TEST MODES	10
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	11
3.3 DESCRIPTION OF SUPPORT UNITS	16
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST	17
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	18
4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)	19
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	19
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	19
4.1.2 TEST INSTRUMENTS	20
4.1.3 TEST PROCEDURES	21
4.1.4 DEVIATION FROM TEST STANDARD	21
4.1.5 TEST SETUP	22
4.1.6 EUT OPERATING CONDITIONS	22
4.1.7 TEST RESULTS	23
4.2 CONDUCTED EMISSION MEASUREMENT	37
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	37
4.2.2 TEST INSTRUMENTS	37
4.2.3 TEST PROCEDURES	38
4.2.4 DEVIATION FROM TEST STANDARD	38
4.2.5 TEST SETUP	38
4.2.6 EUT OPERATING CONDITIONS	38
4.2.7 TEST RESULTS	39
4.3 6dB BANDWIDTH MEASUREMENT	43
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	43
4.3.2 TEST SETUP	43
4.3.3 TEST INSTRUMENTS	43
4.3.4 TEST PROCEDURE	43
4.3.5 DEVIATION FROM TEST STANDARD	43
4.3.6 EUT OPERATING CONDITIONS	43
4.3.7 TEST RESULTS	44
4.4 CONDUCTED OUTPUT POWER	45
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	45
4.4.2 TEST SETUP	45
4.4.3 TEST INSTRUMENTS	45
4.4.4 TEST PROCEDURES	45
4.4.5 DEVIATION FROM TEST STANDARD	45
4.4.6 EUT OPERATING CONDITIONS	45
4.4.7 TEST RESULTS	46
4.5 POWER SPECTRAL DENSITY MEASUREMENT	48
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	48
4.5.2 TEST SETUP	48



A D T

4.5.3	TEST INSTRUMENTS	48
4.5.4	TEST PROCEDURE	48
4.5.5	DEVIATION FROM TEST STANDARD	48
4.5.6	EUT OPERATING CONDITION	48
4.5.7	TEST RESULTS	49
4.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	51
4.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT	51
4.6.2	TEST SETUP	51
4.6.3	TEST INSTRUMENTS	51
4.6.4	TEST PROCEDURE	51
4.6.5	DEVIATION FROM TEST STANDARD	52
4.6.6	EUT OPERATING CONDITION	52
4.6.7	TEST RESULTS	52
4.6.8	TEST RESULTS	53
5.	TEST TYPES AND RESULTS (FOR 5.0GHz BAND)	59
5.1	RADIATED EMISSION MEASUREMENT	59
5.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT	59
5.1.2	TEST INSTRUMENTS	60
5.1.3	TEST PROCEDURES	60
5.1.4	DEVIATION FROM TEST STANDARD	60
5.1.5	TEST SETUP	60
5.1.6	EUT OPERATING CONDITIONS	60
5.1.7	TEST RESULTS	61
5.2	CONDUCTED EMISSION MEASUREMENT	71
5.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	71
5.2.2	TEST INSTRUMENTS	71
5.2.3	TEST PROCEDURES	71
5.2.4	DEVIATION FROM TEST STANDARD	71
5.2.5	TEST SETUP	71
5.2.6	EUT OPERATING CONDITIONS	71
5.2.7	TEST RESULTS	72
5.3	6dB BANDWIDTH MEASUREMENT	76
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	76
5.3.2	TEST SETUP	76
5.3.3	TEST INSTRUMENTS	76
5.3.4	TEST PROCEDURE	76
5.3.5	DEVIATION FROM TEST STANDARD	76
5.3.6	EUT OPERATING CONDITIONS	76
5.3.7	TEST RESULTS	77
5.4	CONDUCTED OUTPUT POWER	78
5.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	78
5.4.2	TEST SETUP	78
5.4.3	INSTRUMENTS	78
5.4.4	TEST PROCEDURES	78
5.4.5	DEVIATION FROM TEST STANDARD	78
5.4.6	EUT OPERATING CONDITIONS	78
5.4.7	TEST RESULTS	79
5.5	POWER SPECTRAL DENSITY MEASUREMENT	80
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	80



A D T

5.5.2	TEST SETUP	80
5.5.3	TEST INSTRUMENTS	80
5.5.4	TEST PROCEDURE	80
5.5.5	DEVIATION FROM TEST STANDARD	80
5.5.6	EUT OPERATING CONDITION.....	80
5.5.7	TEST RESULTS	81
5.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	82
5.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT.....	82
5.6.2	TEST SETUP.....	82
5.6.3	TEST INSTRUMENTS.....	82
5.6.4	TEST PROCEDURE.....	82
5.6.5	DEVIATION FROM TEST STANDARD	82
5.6.6	EUT OPERATING CONDITION.....	82
5.6.7	TEST RESULTS	82
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	87
7.	INFORMATION ON THE TESTING LABORATORIES.....	88
8.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	89



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120719C20	Original release	Aug. 28, 2012



A D T

1. CERTIFICATION

PRODUCT: 802.11 a/b/g/n Dual-Radio PoE Access Point
MODEL NO.: NWA1123-NI, NWA5123-NI
BRAND: ZyXEL
APPLICANT: ZyXEL Communications Corporation
TESTED: Jul. 28 ~ Aug. 23, 2012
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (model: NWA1123-NI) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY :  , **DATE** : Aug. 28, 2012
Pettie Chen / Senior Specialist

APPROVED BY :  , **DATE** : Aug. 28, 2012
Gary Chang / Technical Manager



2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -3.60dB at 0.34531MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is I-PEX 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	3.19 dB
	200MHz ~1000MHz	3.21 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	802.11 a/b/g/n Dual-Radio PoE Access Point
MODEL NO.	NWA1123-NI, NWA5123-NI
POWER SUPPLY	12Vdc from adapter 48Vdc from POE
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	149.48mW for 2412 ~ 2462MHz 454.58mW for 5745 ~ 5825MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with 2dBi gain 5.0GHz: PCB antenna with 2dBi gain
ANTENNA CONNECTOR	I-PEX
DATA CABLE	N/A
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. All models are listed as below.

Brand	Model	Different
ZyXEL	NWA1123-NI	All models are identical to each other except for their model designation due to marketing purpose.
	NWA5123-NI	



A D T

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

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

3. The EUT uses following power supply.

Brand	DVE
Model	DSA-12CA-12
Input Power	100-240Vac, 50/60Hz, 0.3A
Output Power	+12Vdc, 1A
Power Line	1.5m non-shielded cable w/o core

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

3.2 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

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

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

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

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

FOR 5.0GHz (5745 ~ 5825MHz):

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from PoE

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

NOTE:
The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
NOTE: “-” means no effect.

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	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	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	802.11b	1 to 11	1	DSSS	DBPSK	1.0



A D T

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	802.11b	1 to 11	1	DSSS	DBPSK	1.0

BANDEDGE MEASUREMENT:

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

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



A D T

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	24deg. C, 66%RH	120Vac, 60Hz	Brad Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz 48Vdc	Anderson Hong
PLC	25deg. C, 65%RH	120Vac, 60Hz 48Vdc	Anderson Hong
APCM	25deg. C, 65%RH	120Vac, 60Hz	Mark Liao



FOR 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	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:
The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
NOTE: “-” means no effect.

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

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



BANDEDGE MEASUREMENT:

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	24deg. C, 66%RH	120Vac, 60Hz	Brad Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz 48Vdc	Anderson Hong
PLC	25deg. C, 65%RH	120Vac, 60Hz 48Vdc	Anderson Hong
APCM	25deg. C, 65%RH	120Vac, 60Hz	Mark Liao



A D T

3.3 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved
2	POE	DNI	LM-POE30B-R	NA	NA

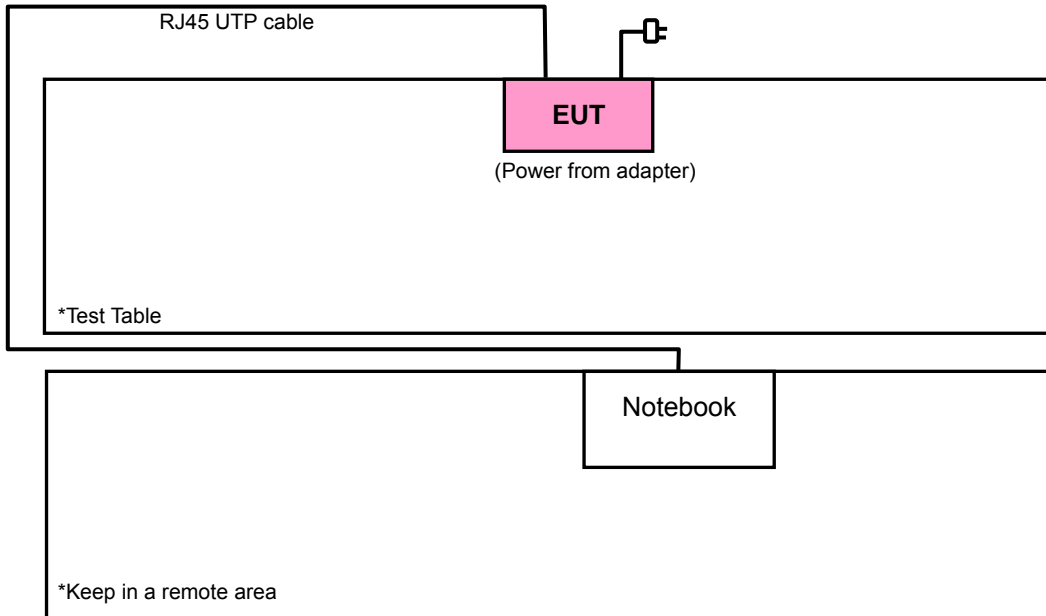
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ45 UTP cable
2	10m RJ45 UTP cable

NOTE:

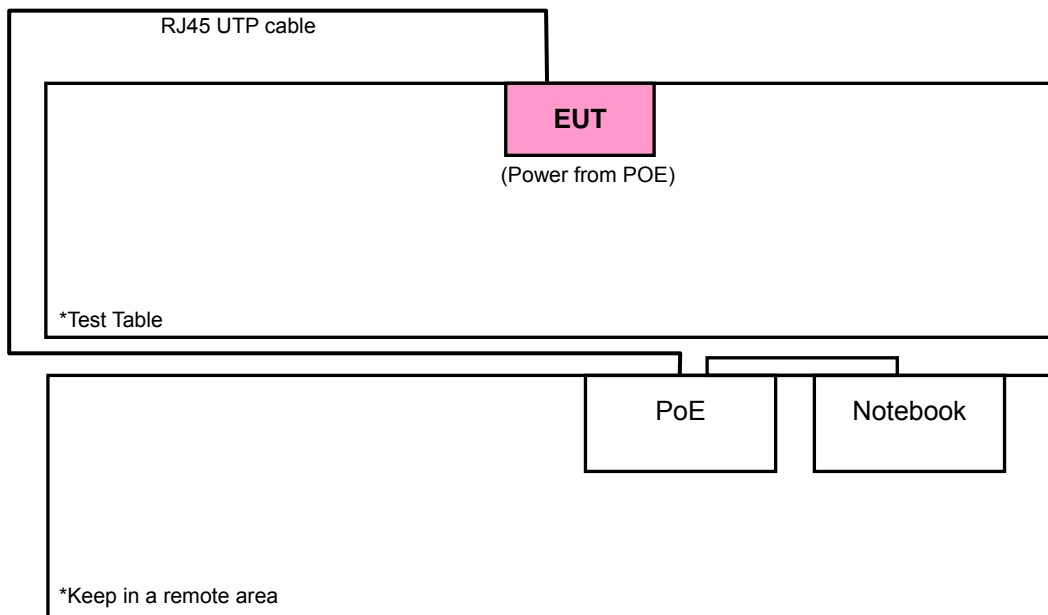
1. All power cords of the above support units are non-shielded (1.8 m).
2. Item 1, 2 acted as a communication partner to transfer data.
3. Item 2 was provided by client.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST

Test Mode A



Test Mode B





A D T

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v01

ANSI C63.10-2009

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

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



4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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



A D T

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2012	Apr. 18, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 30, 2012	Jan. 29, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 03, 2012	Apr. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Sep. 06, 2011	Sep. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8449B	3008A01911	Oct. 29, 2011	Oct. 28, 2012
Preamplifier Agilent	8447D	2944A10638	Oct. 29, 2011	Oct. 28, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Nov. 03, 2011	Nov. 02, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Nov. 03, 2011	Nov. 02, 2012
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 29, 2011	Oct. 28, 2012
High Speed Peak Power Meter	ML2495A	0842014	Apr. 28, 2012	Apr. 27, 2013
Power Sensor	MA2411B	0738404	Apr. 28, 2012	Apr. 27, 2013

- 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 4.
 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 460141.
 6. The IC Site Registration No. is IC7450F-4.



A D T

4.1.3 TEST PROCEDURES

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

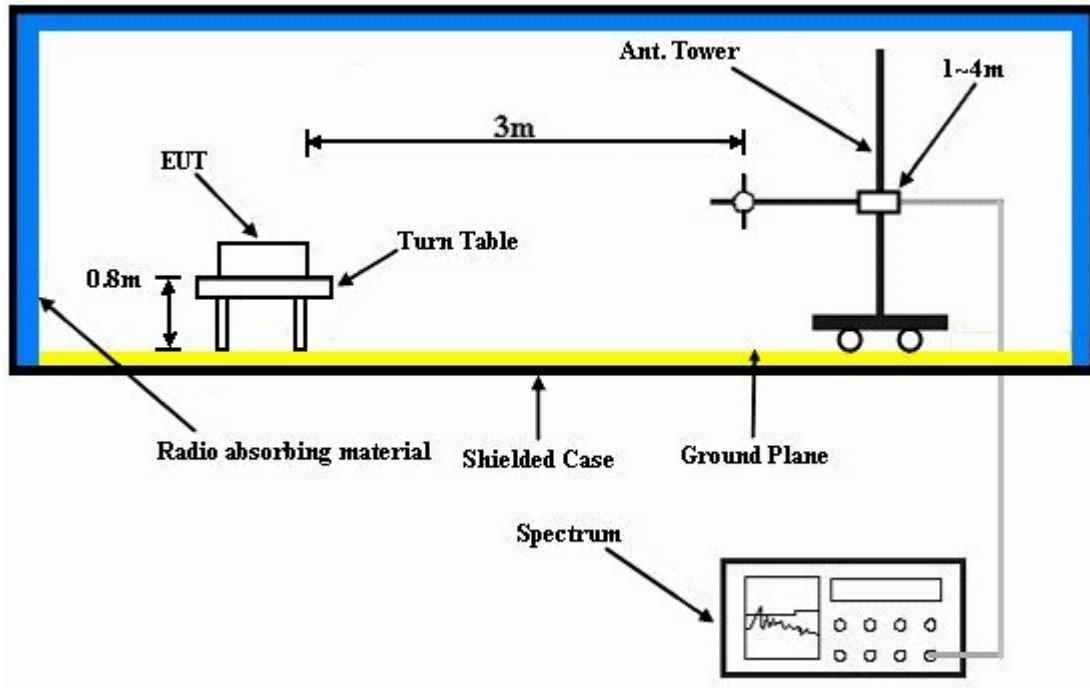
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

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



A D T

4.1.7 TEST RESULT

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	24deg. C, 66%RH	TESTED BY	Brad Wu

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	66.0 PK	74.0	-8.0	1.87 H	312	34.00	32.00
2	2390.00	53.0 AV	54.0	-1.0	1.87 H	312	21.00	32.00
3	*2412.00	111.3 PK			1.87 H	312	79.30	32.00
4	*2412.00	107.2 AV			1.87 H	312	75.20	32.00
5	4824.00	48.3 PK	74.0	-25.7	1.13 H	194	9.90	38.40
6	4824.00	40.1 AV	54.0	-13.9	1.13 H	194	1.70	38.40
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	61.8 PK	74.0	-12.2	1.60 V	250	29.80	32.00
2	2390.00	49.5 AV	54.0	-4.5	1.60 V	250	17.50	32.00
3	*2412.00	107.5 PK			1.61 V	254	75.50	32.00
4	*2412.00	103.3 AV			1.61 V	254	71.30	32.00
5	4824.00	49.7 PK	74.0	-24.3	1.03 V	209	11.30	38.40
6	4824.00	43.4 AV	54.0	-10.6	1.03 V	209	5.00	38.40

REMARKS:

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



A D T

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	24deg. C, 66%RH	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.8 PK			1.00 H	47	76.70	32.10
2	*2437.00	104.6 AV			1.00 H	47	72.50	32.10
3	4874.00	48.9 PK	74.0	-25.1	1.09 H	159	10.50	38.40
4	4874.00	41.0 AV	54.0	-13.0	1.09 H	159	2.60	38.40
5	7311.00	55.6 PK	74.0	-18.4	1.11 H	150	11.30	44.30
6	7311.00	46.3 AV	54.0	-7.7	1.11 H	150	2.00	44.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.6 PK			1.06 V	58	74.50	32.10
2	*2437.00	102.5 AV			1.06 V	58	70.40	32.10
3	4874.00	49.5 PK	74.0	-24.5	1.01 V	210	11.10	38.40
4	4874.00	42.1 AV	54.0	-11.9	1.01 V	210	3.70	38.40
5	7311.00	54.1 PK	74.0	-19.9	1.11 V	14	9.80	44.30
6	7311.00	42.5 AV	54.0	-11.5	1.11 V	14	-1.80	44.30

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 66%RH	TESTED BY	Brad Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.3 PK			1.00 H	54	77.10	32.20
2	*2462.00	105.1 AV			1.00 H	54	72.90	32.20
3	2483.50	65.2 PK	74.0	-8.8	1.00 H	54	32.90	32.30
4	2483.50	50.9 AV	54.0	-3.1	1.00 H	54	18.60	32.30
5	4924.00	48.8 PK	74.0	-25.2	1.26 H	91	10.40	38.40
6	4924.00	42.6 AV	54.0	-11.4	1.26 H	91	4.20	38.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.1 PK			1.50 V	239	75.90	32.20
2	*2462.00	103.9 AV			1.50 V	239	71.70	32.20
3	2483.50	66.2 PK	74.0	-7.8	1.50 V	240	33.90	32.30
4	2483.50	50.6 AV	54.0	-3.4	1.50 V	240	18.30	32.30
5	4924.00	49.4 PK	74.0	-24.6	1.00 V	1	11.00	38.40
6	4924.00	43.1 AV	54.0	-10.9	1.00 V	1	4.70	38.40

REMARKS:

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



A D T

802.11g

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	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.5 PK	74.0	-3.5	1.00 H	230	38.50	32.00
2	2390.00	52.7 AV	54.0	-1.3	1.00 H	230	20.70	32.00
3	#2400.00	77.4 PK	80.8	-3.4	1.00 H	228	45.40	32.00
4	#2400.00	67.6 AV	71.0	-3.4	1.00 H	228	35.60	32.00
5	*2412.00	110.8 PK			1.87 H	136	78.80	32.00
6	*2412.00	101.0 AV			1.87 H	136	69.00	32.00
7	4824.00	46.9 PK	74.0	-27.1	1.31 H	233	8.50	38.40
8	4824.00	33.4 AV	54.0	-20.6	1.31 H	233	-5.00	38.40

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	67.9 PK	74.0	-6.1	1.57 V	93	35.90	32.00
2	2390.00	52.3 AV	54.0	-1.7	1.57 V	93	20.30	32.00
3	#2400.00	75.1 PK	79.8	-4.7	1.57 V	93	43.10	32.00
4	#2400.00	64.8 AV	69.5	-4.7	1.57 V	93	32.80	32.00
5	*2412.00	109.8 PK			1.57 V	96	77.80	32.00
6	*2412.00	99.5 AV			1.57 V	96	67.50	32.00
7	4824.00	47.5 PK	74.0	-26.5	1.00 V	133	9.10	38.40
8	4824.00	34.7 AV	54.0	-19.3	1.00 V	133	-3.70	38.40

REMARKS:

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	112.8 PK			1.00 H	227	80.70	32.10
2	*2437.00	102.5 AV			1.00 H	227	70.40	32.10
3	4874.00	48.2 PK	74.0	-25.8	1.00 H	134	9.80	38.40
4	4874.00	35.1 AV	54.0	-18.9	1.00 H	134	-3.30	38.40
5	7311.00	53.5 PK	74.0	-20.5	1.06 H	5	9.20	44.30
6	7311.00	41.7 AV	54.0	-12.3	1.06 H	5	-2.60	44.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.5 PK			1.00 V	104	79.40	32.10
2	*2437.00	100.7 AV			1.00 V	104	68.60	32.10
3	4874.00	49.0 PK	74.0	-25.0	1.00 V	43	10.60	38.40
4	4874.00	36.6 AV	54.0	-17.4	1.00 V	43	-1.80	38.40
5	7311.00	54.8 PK	74.0	-19.2	1.00 V	350	10.50	44.30
6	7311.00	42.8 AV	54.0	-11.2	1.00 V	350	-1.50	44.30

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 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	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.0 PK			1.00 H	228	77.80	32.20
2	*2462.00	100.5 AV			1.00 H	228	68.30	32.20
3	2483.50	69.7 PK	74.0	-4.3	1.00 H	155	37.40	32.30
4	2483.50	50.0 AV	54.0	-4.0	1.00 H	155	17.70	32.30
5	4924.00	46.6 PK	74.0	-27.4	1.13 H	319	8.20	38.40
6	4924.00	32.8 AV	54.0	-21.2	1.13 H	319	-5.60	38.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.2 PK			1.00 V	85	77.00	32.20
2	*2462.00	99.3 AV			1.00 V	85	67.10	32.20
3	2483.50	68.6 PK	74.0	-5.4	1.00 V	82	36.30	32.30
4	2483.50	49.0 AV	54.0	-5.0	1.00 V	82	16.70	32.30
5	4924.00	47.2 PK	74.0	-26.8	1.00 V	310	8.80	38.40
6	4924.00	33.0 AV	54.0	-21.0	1.00 V	310	-5.40	38.40

REMARKS:

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



A D T

802.11n (20MHz)

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	Alan Wu

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	70.7 PK	74.0	-3.3	1.89 H	161	38.70	32.00
2	2390.00	53.0 AV	54.0	-1.0	1.89 H	161	21.00	32.00
3	#2400.00	79.0 PK	81.0	-2.0	1.00 H	230	47.00	32.00
4	#2400.00	68.7 AV	70.7	-2.0	1.00 H	230	36.70	32.00
5	*2412.00	111.0 PK			1.87 H	134	79.00	32.00
6	*2412.00	100.7 AV			1.87 H	134	68.70	32.00
7	4824.00	47.1 PK	74.0	-26.9	1.30 H	235	8.70	38.40
8	4824.00	33.7 AV	54.0	-20.3	1.30 H	235	-4.70	38.40
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	67.5 PK	74.0	-6.5	1.58 V	243	35.50	32.00
2	2390.00	51.6 AV	54.0	-2.4	1.58 V	243	19.60	32.00
3	#2400.00	74.5 PK	78.5	-4.0	1.00 V	243	42.50	32.00
4	#2400.00	64.5 AV	68.5	-4.0	1.00 V	243	32.50	32.00
5	*2412.00	108.5 PK			1.58 V	247	76.50	32.00
6	*2412.00	98.5 AV			1.58 V	247	66.50	32.00
7	4824.00	48.8 PK	74.0	-25.2	1.00 V	130	10.40	38.40
8	4824.00	34.0 AV	54.0	-20.0	1.00 V	130	-4.40	38.40

REMARKS:

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	112.3 PK			1.00 H	226	80.20	32.10
2	*2437.00	102.1 AV			1.00 H	226	70.00	32.10
3	4874.00	47.7 PK	74.0	-26.3	1.00 H	139	9.30	38.40
4	4874.00	34.6 AV	54.0	-19.4	1.00 H	139	-3.80	38.40
5	7311.00	53.1 PK	74.0	-20.9	1.09 H	2	8.80	44.30
6	7311.00	41.3 AV	54.0	-12.7	1.09 H	2	-3.00	44.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.5 PK			1.30 V	84	79.40	32.10
2	*2437.00	101.1 AV			1.30 V	84	69.00	32.10
3	4874.00	48.4 PK	74.0	-25.6	1.00 V	93	10.00	38.40
4	4874.00	35.0 AV	54.0	-19.0	1.00 V	93	-3.40	38.40
5	7311.00	54.4 PK	74.0	-19.6	1.00 V	320	10.10	44.30
6	7311.00	42.4 AV	54.0	-11.6	1.00 V	320	-1.90	44.30

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 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	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.5 PK			1.00 H	226	77.30	32.20
2	*2462.00	99.6 AV			1.00 H	226	67.40	32.20
3	2483.50	72.5 PK	74.0	-1.5	1.00 H	149	40.20	32.30
4	2483.50	50.6 AV	54.0	-3.4	1.00 H	149	18.30	32.30
5	4924.00	47.1 PK	74.0	-26.9	1.09 H	312	8.70	38.40
6	4924.00	33.3 AV	54.0	-20.7	1.09 H	312	-5.10	38.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.4 PK			1.00 V	87	76.20	32.20
2	*2462.00	98.7 AV			1.00 V	87	66.50	32.20
3	2483.50	71.7 PK	74.0	-2.3	1.00 V	81	39.40	32.30
4	2483.50	49.6 AV	54.0	-4.4	1.00 V	81	17.30	32.30
5	4924.00	48.8 PK	74.0	-25.2	1.01 V	221	10.40	38.40
6	4924.00	34.6 AV	54.0	-19.4	1.01 V	221	-3.80	38.40

REMARKS:

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



A D T

802.11n (40MHz)

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	24deg. C, 66%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.2 PK	74.0	-5.8	1.07 H	322	36.20	32.00
2	2390.00	52.7 AV	54.0	-1.3	1.07 H	322	20.70	32.00
3	#2400.00	72.7 PK	75.9	-3.2	1.03 H	320	40.70	32.00
4	#2400.00	62.8 AV	66.0	-3.2	1.03 H	320	30.80	32.00
5	*2422.00	105.9 PK			1.87 H	320	73.80	32.10
6	*2422.00	96.0 AV			1.87 H	320	63.90	32.10
7	4844.00	49.7 PK	74.0	-24.3	1.00 H	311	11.30	38.40
8	4844.00	36.2 AV	54.0	-17.8	1.00 H	311	-2.20	38.40
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	67.0 PK	74.0	-7.0	1.00 V	245	35.00	32.00
2	2390.00	51.9 AV	54.0	-2.1	1.00 V	245	19.90	32.00
3	#2400.00	69.9 PK	74.5	-4.6	1.04 V	247	37.90	32.00
4	#2400.00	59.9 AV	64.5	-4.6	1.04 V	247	27.90	32.00
5	*2422.00	104.5 PK			1.03 V	248	72.40	32.10
6	*2422.00	94.5 AV			1.03 V	248	62.40	32.10
7	4844.00	50.6 PK	74.0	-23.4	1.00 V	99	12.20	38.40
8	4844.00	37.8 AV	54.0	-16.2	1.00 V	99	-0.60	38.40

REMARKS:

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



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.8 PK	74.0	-5.2	1.00 H	228	36.80	32.00
2	2390.00	52.9 AV	54.0	-1.1	1.00 H	228	20.90	32.00
3	*2437.00	107.3 PK			1.00 H	229	75.20	32.10
4	*2437.00	97.7 AV			1.00 H	229	65.60	32.10
5	4874.00	49.2 PK	74.0	-24.8	1.00 H	339	10.80	38.40
6	4874.00	36.0 AV	54.0	-18.0	1.00 H	339	-2.40	38.40
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	67.3 PK	74.0	-6.7	1.00 V	106	35.30	32.00
2	2390.00	52.2 AV	54.0	-1.8	1.00 V	106	20.20	32.00
3	*2437.00	106.7 PK			1.00 V	104	74.60	32.10
4	*2437.00	96.6 AV			1.00 V	104	64.50	32.10
5	4874.00	50.1 PK	74.0	-23.9	1.00 V	31	11.70	38.40
6	4874.00	37.0 AV	54.0	-17.0	1.00 V	31	-1.40	38.40

REMARKS:

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



A D T

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	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.0 PK			1.00 H	227	72.80	32.20
2	*2452.00	95.2 AV			1.00 H	227	63.00	32.20
3	2483.50	72.8 PK	74.0	-1.2	1.00 H	149	40.50	32.30
4	2483.50	50.3 AV	54.0	-3.7	1.00 H	149	18.00	32.30
5	4904.00	48.9 PK	74.0	-25.1	1.00 H	319	10.40	38.50
6	4904.00	35.7 AV	54.0	-18.3	1.00 H	319	-2.80	38.50
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	*2452.00	103.9 PK			1.25 V	85	71.70	32.20
2	*2452.00	94.1 AV			1.25 V	85	61.90	32.20
3	2483.50	71.0 PK	74.0	-3.0	1.00 V	87	38.70	32.30
4	2483.50	49.3 AV	54.0	-4.7	1.00 V	87	17.00	32.30
5	4904.00	49.7 PK	74.0	-24.3	1.00 V	91	11.20	38.50
6	4904.00	36.2 AV	54.0	-17.8	1.00 V	91	-2.30	38.50

REMARKS:

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



A D T

BELOW 1GHz WORST-CASE DATA : 802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anderson Hong
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	175.50	32.1 QP	43.5	-11.4	1.50 H	89	18.90	13.20
2	274.44	37.4 QP	46.0	-8.6	1.25 H	275	23.50	13.90
3	299.66	37.8 QP	46.0	-8.2	1.00 H	258	22.90	14.90
4	400.54	42.5 QP	46.0	-3.5	1.00 H	128	25.00	17.50
5	600.36	43.5 QP	46.0	-2.5	1.25 H	10	21.10	22.40
6	786.60	42.0 QP	46.0	-4.0	1.00 H	145	17.10	24.90
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	274.44	32.5 QP	46.0	-13.5	1.50 V	342	18.60	13.90
2	350.10	34.1 QP	46.0	-11.9	1.00 V	4	17.90	16.20
3	400.54	38.0 QP	46.0	-8.0	2.00 V	348	20.50	17.50
4	474.26	36.1 QP	46.0	-9.9	1.00 V	356	16.70	19.40
5	600.36	36.1 QP	46.0	-9.9	1.00 V	172	13.70	22.40
6	786.60	42.5 QP	46.0	-3.5	2.00 V	162	17.60	24.90

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Anderson Hong
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	198.78	30.8 QP	43.5	-12.7	1.00 H	13	19.50	11.30
2	305.48	33.8 QP	46.0	-12.2	1.00 H	61	18.80	15.00
3	400.54	35.9 QP	46.0	-10.1	1.00 H	87	18.40	17.50
4	433.52	38.7 QP	46.0	-7.3	1.25 H	17	20.40	18.30
5	600.36	40.8 QP	46.0	-5.2	1.25 H	297	18.40	22.40
6	786.46	44.2 QP	46.0	-1.8	1.40 H	37	19.30	24.90

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	198.78	28.9 QP	43.5	-14.6	1.00 V	120	17.60	11.30
2	303.54	28.9 QP	46.0	-17.1	2.00 V	221	13.90	15.00
3	400.54	32.8 QP	46.0	-13.2	1.25 V	277	15.30	17.50
4	600.36	36.9 QP	46.0	-9.1	2.00 V	100	14.50	22.40
5	709.00	34.8 QP	46.0	-11.2	2.00 V	1	11.80	23.00
6	786.47	44.0 QP	46.0	-2.0	1.51 V	17	19.10	24.90

REMARKS:

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



A D T

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	100289	Nov. 19, 2011	Nov. 18, 2012
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 29, 2011	Dec. 28, 2012
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 TEST PROCEDURES

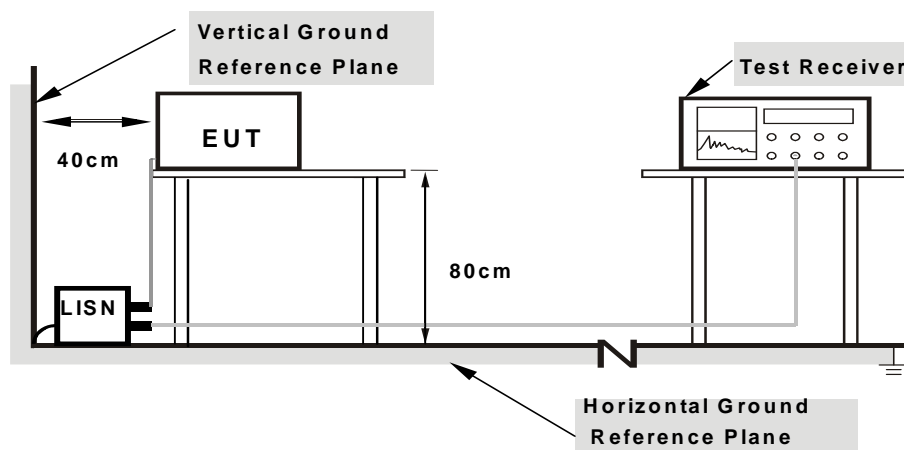
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

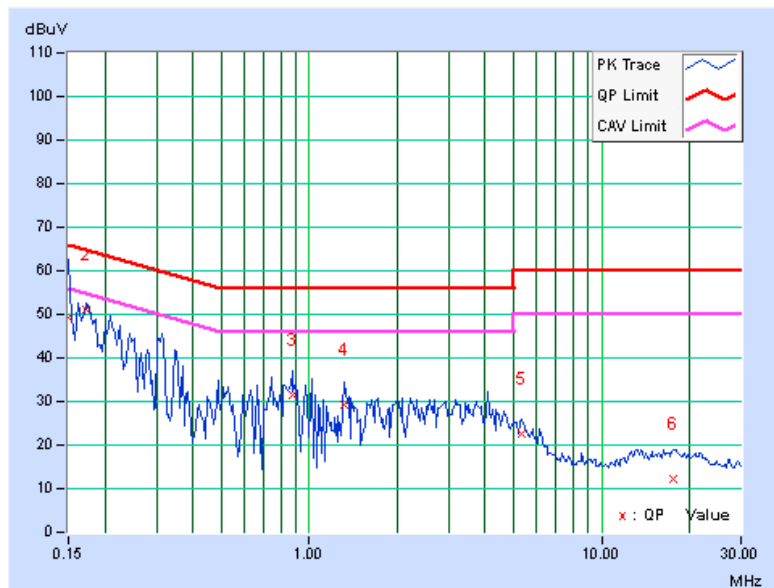
CONDUCTED WORST-CASE DATA : 802.11b

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.15	49.07	29.40	49.22	29.55	66.00	56.00	-16.78	-26.45
2	0.17344	0.15	50.96	38.73	51.11	38.88	64.79	54.79	-13.68	-15.91
3	0.87266	0.19	31.40	29.47	31.59	29.66	56.00	46.00	-24.41	-16.34
4	1.32422	0.21	29.16	27.11	29.37	27.32	56.00	46.00	-26.63	-18.68
5	5.30859	0.36	22.41	14.54	22.77	14.90	60.00	50.00	-37.23	-35.10
6	17.65625	0.58	11.62	5.39	12.20	5.97	60.00	50.00	-47.80	-44.03

REMARKS:

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

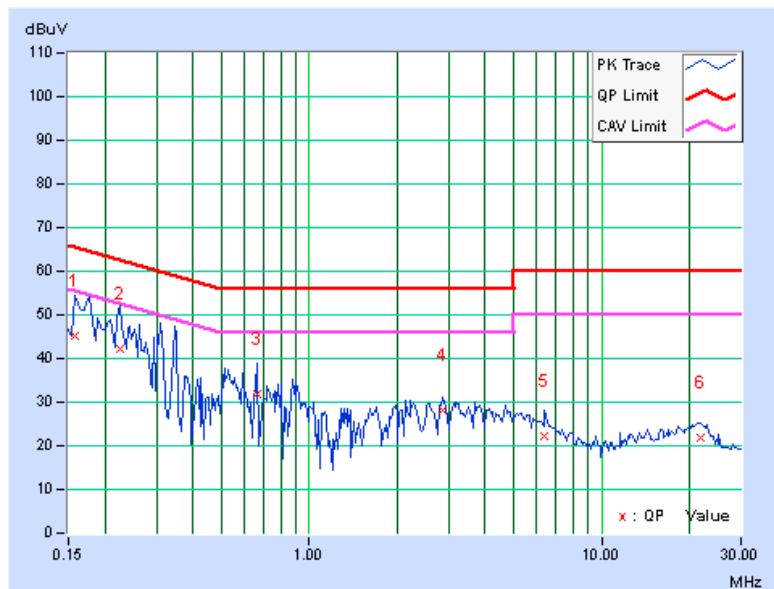


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.13	45.14	32.99	45.27	33.12	65.58	55.58	-20.31	-22.46
2	0.22422	0.14	41.94	27.67	42.08	27.81	62.66	52.66	-20.58	-24.85
3	0.66563	0.17	31.53	17.37	31.70	17.54	56.00	46.00	-24.30	-28.46
4	2.86719	0.30	27.97	24.94	28.27	25.24	56.00	46.00	-27.73	-20.76
5	6.40625	0.40	21.96	14.37	22.36	14.77	60.00	50.00	-37.64	-35.23
6	21.96094	0.69	21.02	16.10	21.71	16.79	60.00	50.00	-38.29	-33.21

REMARKS:

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

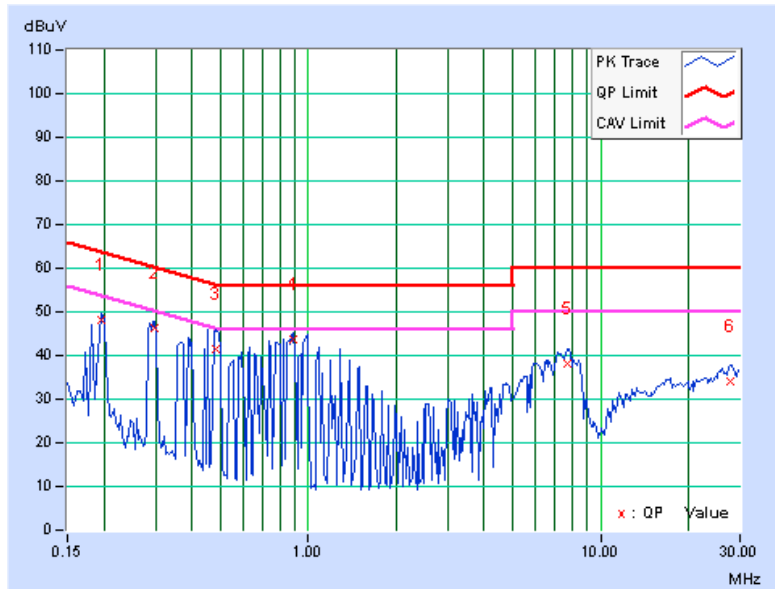


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.15	47.90	46.03	48.05	46.18	63.74	53.74	-15.69	-7.56
2	0.29844	0.16	46.12	44.98	46.28	45.14	60.29	50.29	-14.01	-5.15
3	0.48203	0.17	41.48	32.98	41.65	33.15	56.30	46.30	-14.65	-13.15
4	0.89219	0.19	43.66	41.93	43.85	42.12	56.00	46.00	-12.15	-3.88
5	7.72656	0.40	37.88	24.00	38.28	24.40	60.00	50.00	-21.72	-25.60
6	27.66797	0.54	33.43	26.68	33.97	27.22	60.00	50.00	-26.03	-22.78

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.





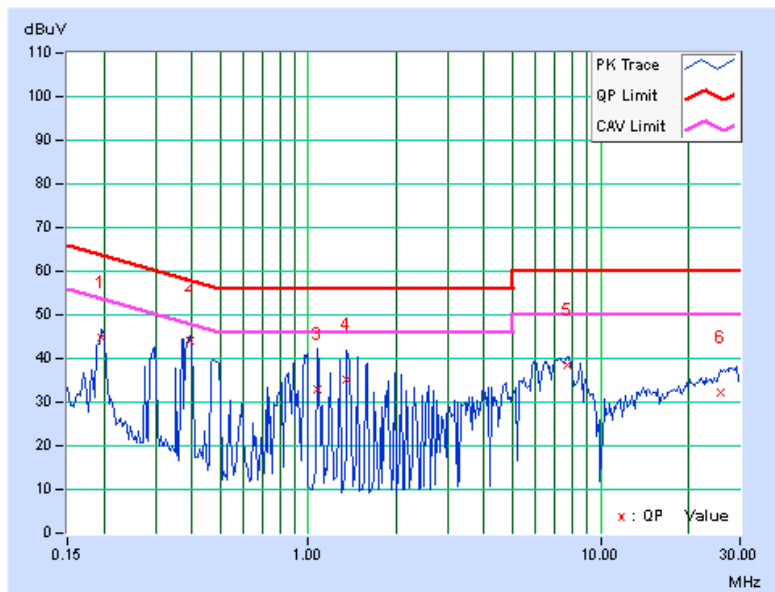
A D T

PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.14	44.79	41.21	44.93	41.35	63.74	53.74	-18.81	-12.39
2	0.39609	0.16	44.05	43.54	44.21	43.70	57.93	47.93	-13.73	-4.24
3	1.07422	0.20	32.83	13.78	33.03	13.98	56.00	46.00	-22.97	-32.02
4	1.35938	0.22	35.11	23.66	35.33	23.88	56.00	46.00	-20.67	-22.12
5	7.71484	0.43	37.96	28.02	38.39	28.45	60.00	50.00	-21.61	-21.55
6	25.64844	0.62	31.51	20.53	32.13	21.15	60.00	50.00	-27.87	-28.85

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.

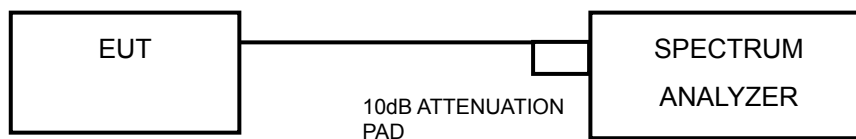


4.3 6dB BANDWIDTH MEASUREMENT

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) = approximately 1% of the emission bandwidth
- 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.



4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.28	10.29	0.5	PASS
6	2437	10.31	10.30	0.5	PASS
11	2462	10.27	10.29	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.49	16.48	0.5	PASS
6	2437	16.58	16.62	0.5	PASS
11	2462	16.53	16.57	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.81	17.83	0.5	PASS
6	2437	17.71	17.78	0.5	PASS
11	2462	17.79	17.87	0.5	PASS

802.11n (40MHz)

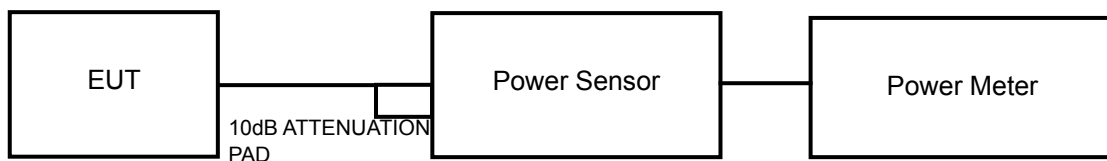
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.90	36.98	0.5	PASS
6	2437	36.91	36.92	0.5	PASS
9	2452	36.51	36.73	0.5	PASS

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

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

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



4.4.7 TEST RESULTS

802.11b

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	18.81	18.66	149.48	21.75	30	PASS
6	2437	18.58	18.34	140.34	21.47	30	PASS
11	2462	18.41	18.33	137.42	21.38	30	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the conducted power limit is not reduced.

802.11g

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	16.12	15.83	79.21	18.99	30	PASS
6	2437	18.69	18.24	140.64	21.48	30	PASS
11	2462	15.42	15.26	68.41	18.35	30	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the conducted power limit is not reduced.

802.11n (20MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	16.43	15.90	82.86	19.18	30	PASS
6	2437	18.89	18.34	145.68	21.63	30	PASS
11	2462	15.71	15.24	70.66	18.49	30	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the conducted power limit is not reduced.



802.11n (40MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	13.56	13.50	45.09	16.54	30	PASS
6	2437	16.61	16.45	89.97	19.54	30	PASS
9	2452	13.23	13.18	41.83	16.22	30	PASS

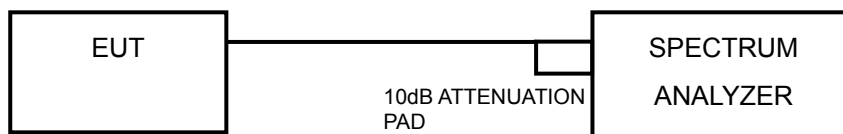
NOTE: Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the conducted power limit is not reduced.

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- Set the RBW = 100 kHz, VBW = 300 kHz, Detector = average.
- Sweep time = 26s, Trace mode = max hold, allow trace to fully stabilize.
- Use the average marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



A D T

4.5.7 TEST RESULTS

802.11b

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	0.62	-14.61	3.01	-11.60	8	PASS
	6	2437	0.18	-15.05	3.01	-12.04	8	PASS
	11	2462	0.06	-15.17	3.01	-12.16	8	PASS
1	1	2412	0.07	-15.16	3.01	-12.15	8	PASS
	6	2437	-0.21	-15.44	3.01	-12.43	8	PASS
	11	2462	-0.29	-15.52	3.01	-12.51	8	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit is not reduced.

802.11g

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-4.46	-19.69	3.01	-16.68	8	PASS
	6	2437	-2.11	-17.34	3.01	-14.33	8	PASS
	11	2462	-5.20	-20.43	3.01	-17.42	8	PASS
1	1	2412	-5.23	-20.46	3.01	-17.45	8	PASS
	6	2437	-2.71	-17.94	3.01	-14.93	8	PASS
	11	2462	-5.64	-20.87	3.01	-17.86	8	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit is not reduced.

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-4.43	-19.66	3.01	-16.65	8	PASS
	6	2437	-2.13	-17.36	3.01	-14.35	8	PASS
	11	2462	-5.05	-20.28	3.01	-17.27	8	PASS
1	1	2412	-4.90	-20.13	3.01	-17.12	8	PASS
	6	2437	-3.11	-18.34	3.01	-15.33	8	PASS
	11	2462	-6.01	-21.24	3.01	-18.23	8	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit is not reduced.



A D T

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-10.48	-25.71	3.01	-22.70	8	PASS
	6	2437	-7.37	-22.60	3.01	-19.59	8	PASS
	9	2452	-10.86	-26.09	3.01	-23.08	8	PASS
1	3	2422	-10.13	-25.36	3.01	-22.35	8	PASS
	6	2437	-7.39	-22.62	3.01	-19.61	8	PASS
	9	2452	-10.52	-25.75	3.01	-22.74	8	PASS

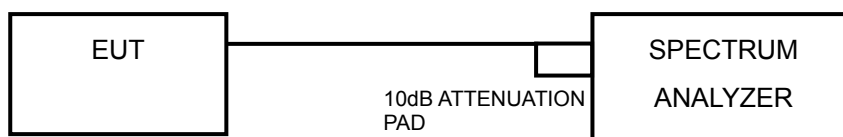
NOTE: Directional gain = $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$, so the power density limit is not reduced.

4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = average.
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.



A D T

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = average.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

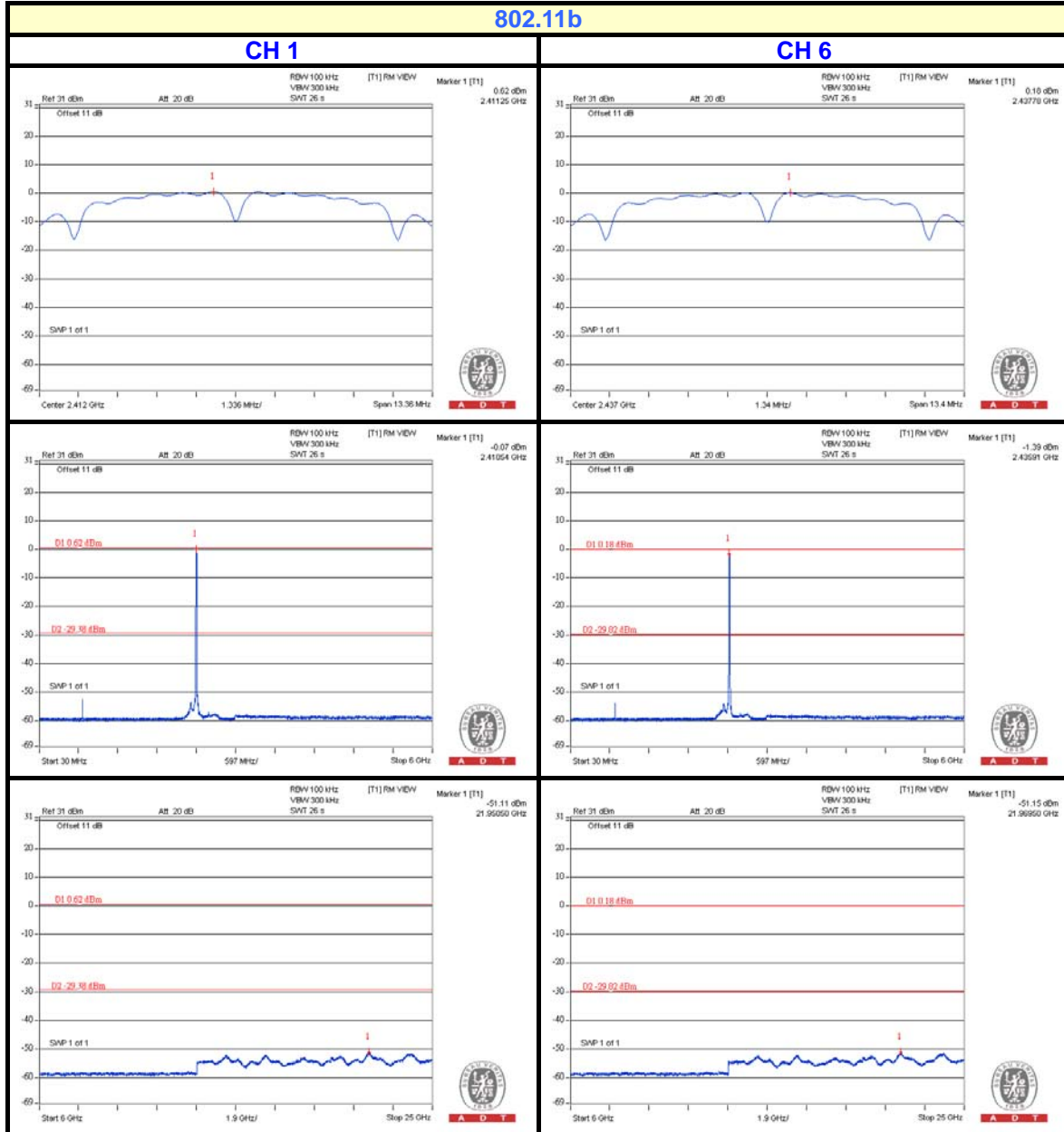
Same as Item 4.3.6

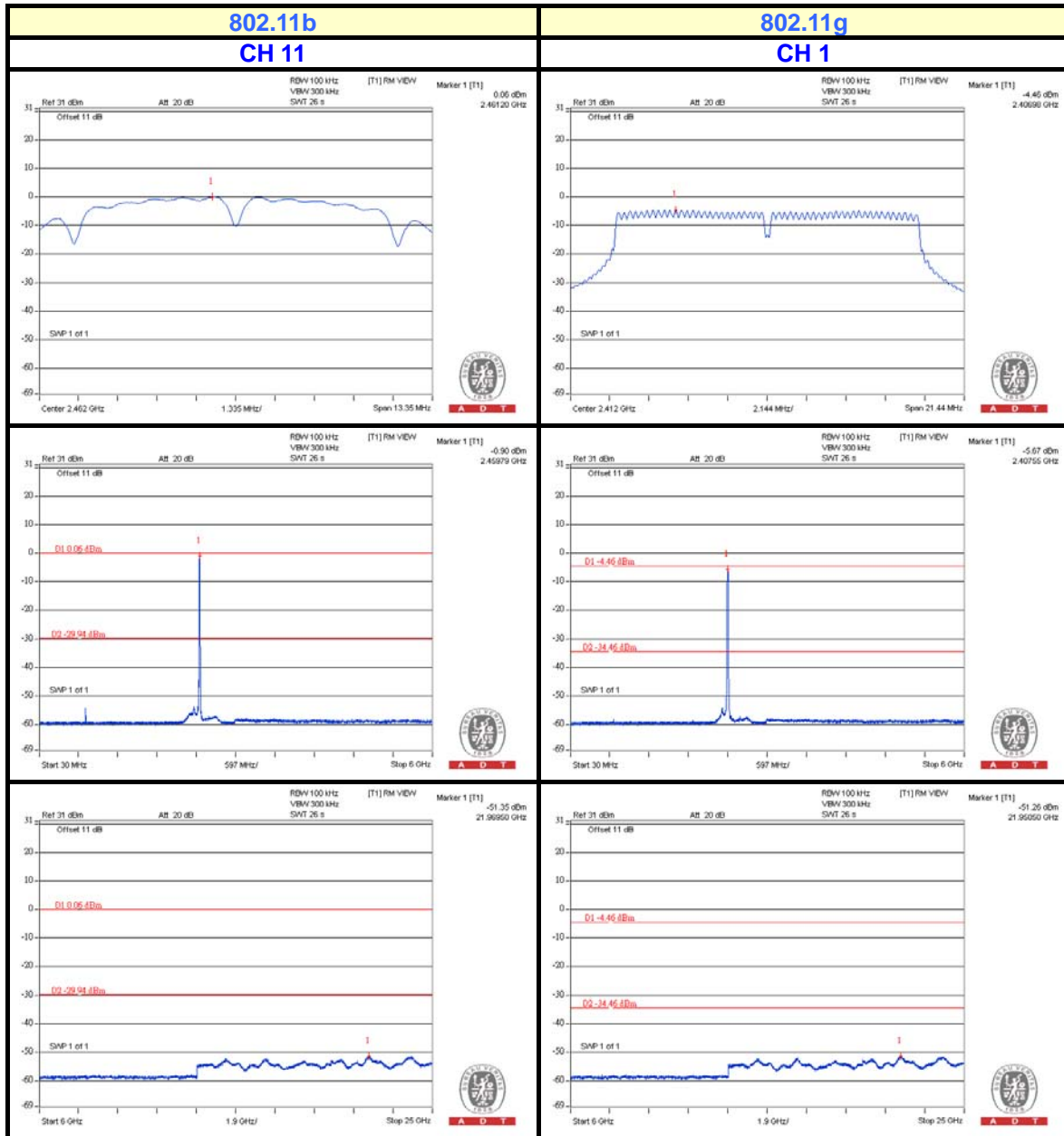
4.6.7 TEST RESULTS

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

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

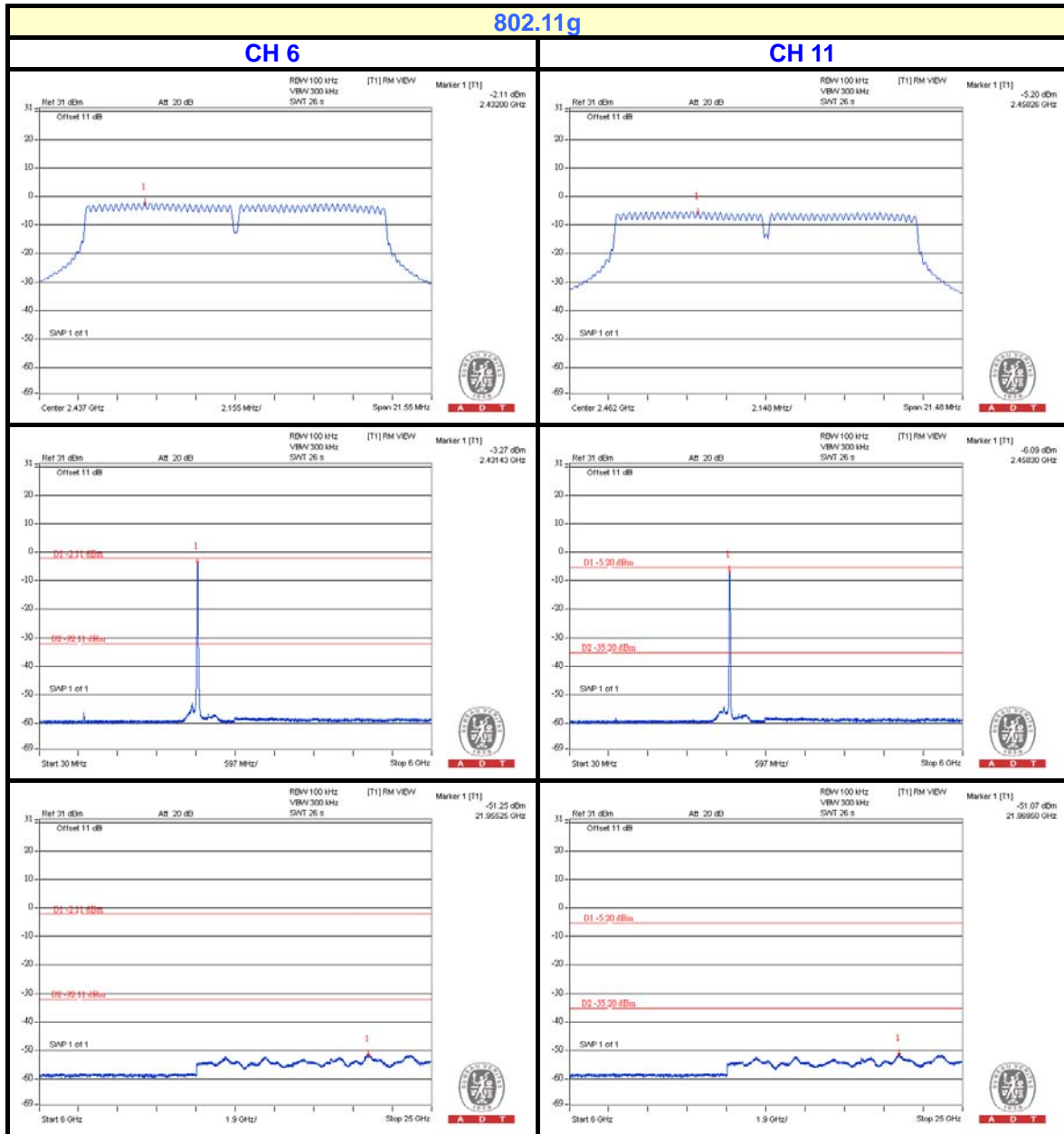
4.6.8 TEST RESULTS







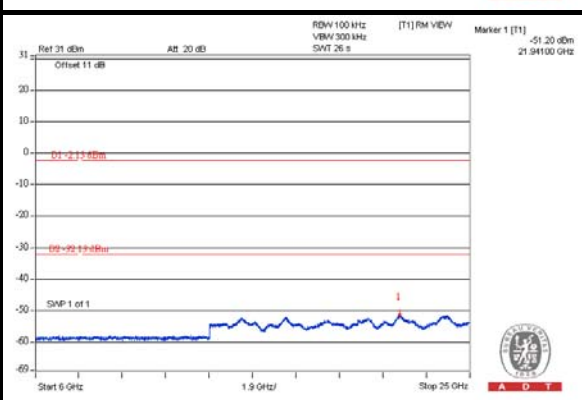
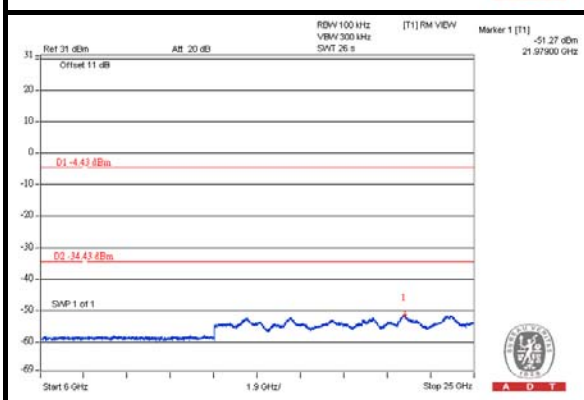
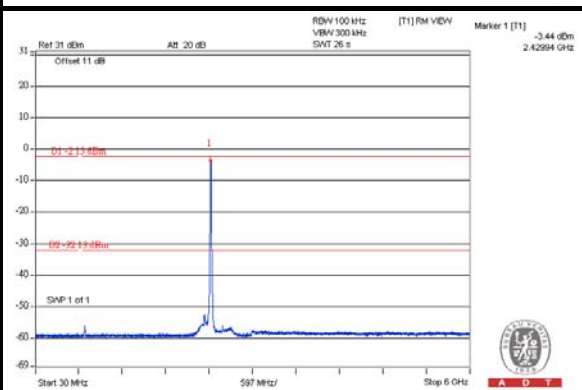
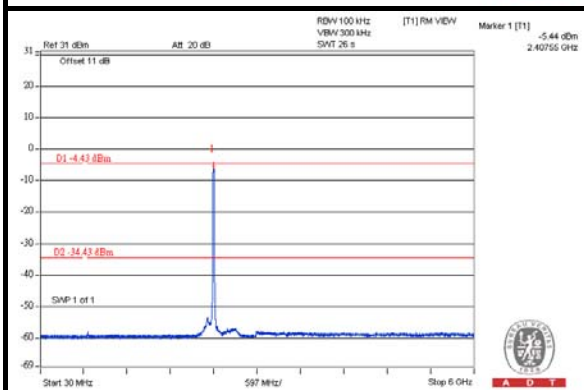
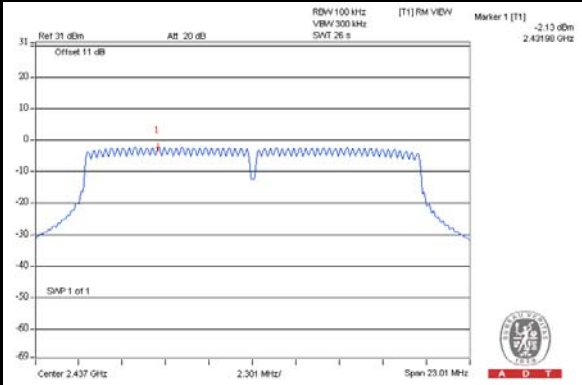
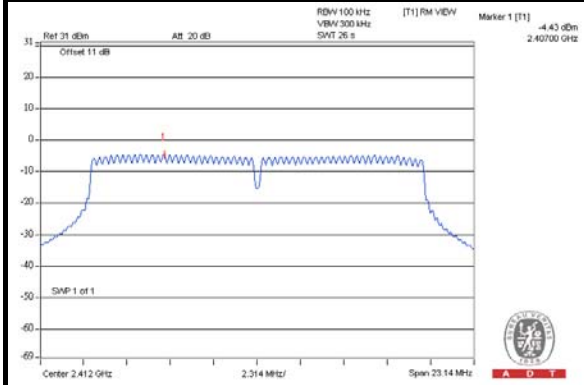
A D T

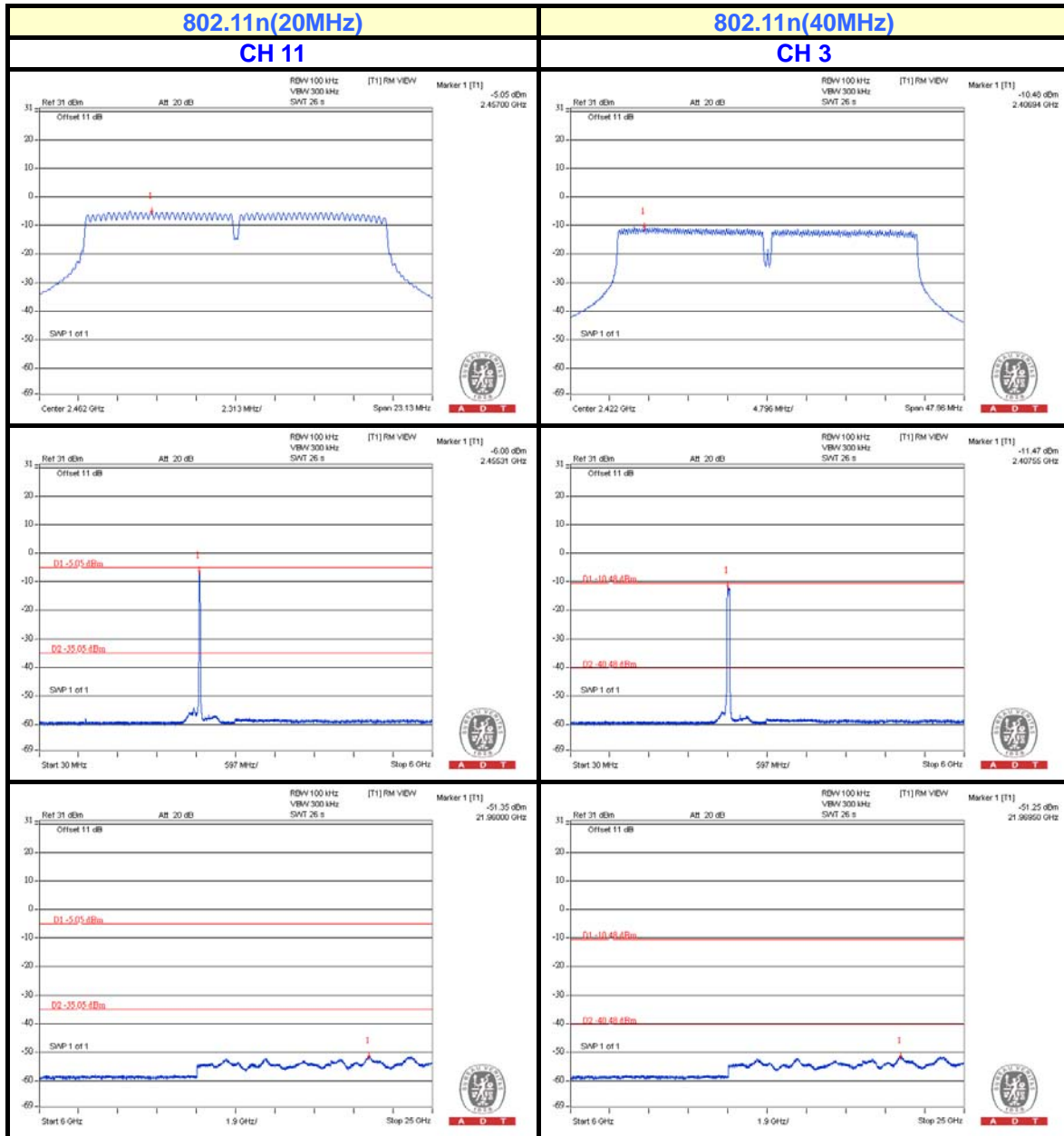


802.11n(20MHz)

CH 1

CH 6

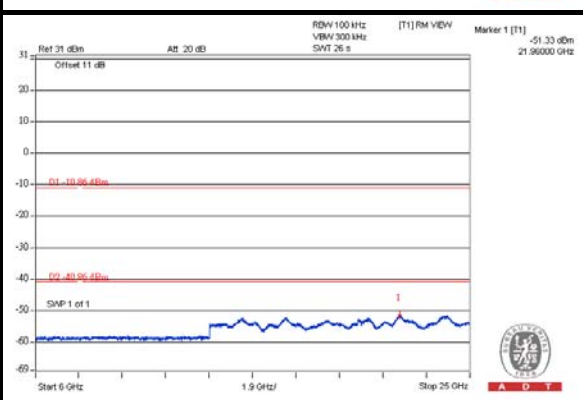
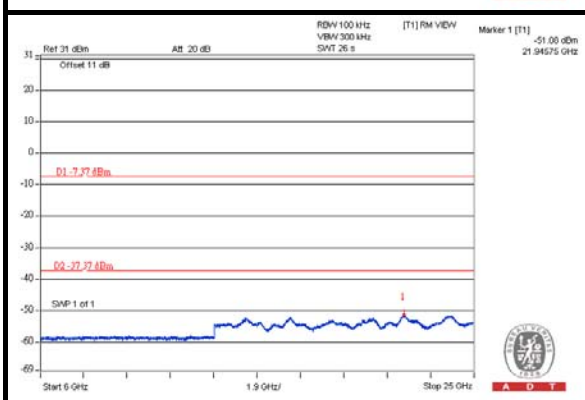
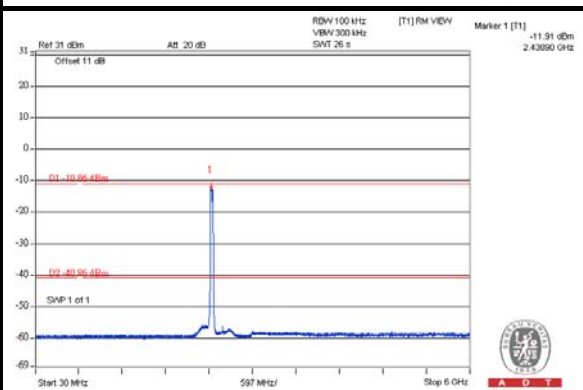
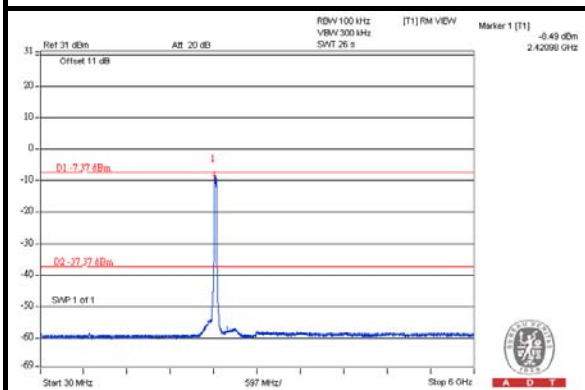
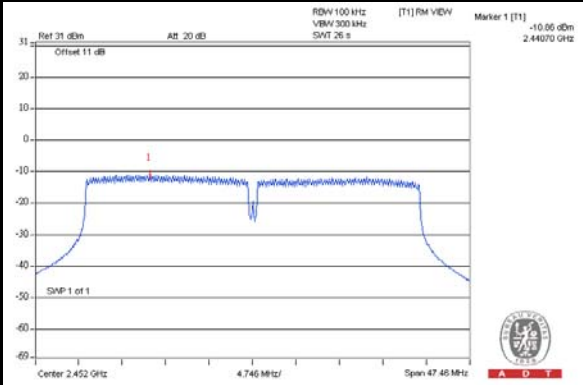
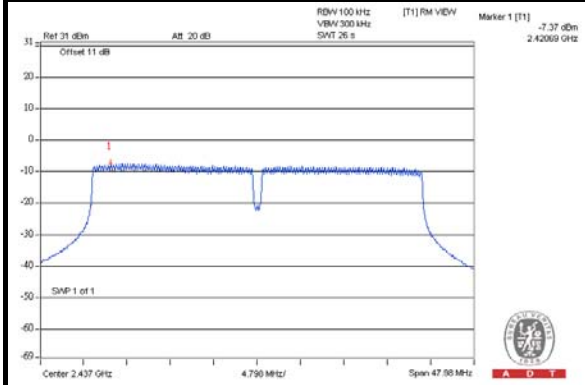




802.11n(40MHz)

CH 6

CH 9





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

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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



A D T

5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

5.1.3 TEST PROCEDURES

Same as item 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as item 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.



A D T

5.1.7 TEST RESULTS

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	Alan Wu

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	68.8 PK	80.0	-11.2	1.00 H	323	29.30	39.50
2	#5725.00	57.1 AV	68.3	-11.2	1.00 H	323	17.60	39.50
3	*5745.00	110.0 PK			1.00 H	227	70.40	39.60
4	*5745.00	98.3 AV			1.00 H	227	58.70	39.60
5	11490.00	60.7 PK	74.0	-13.3	1.00 H	301	9.00	51.70
6	11490.00	46.5 AV	54.0	-7.5	1.00 H	301	-5.20	51.70
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	#5725.00	66.8 PK	79.1	-12.3	1.22 V	86	27.30	39.50
2	#5725.00	54.9 AV	67.2	-12.3	1.22 V	86	15.40	39.50
3	*5745.00	109.1 PK			1.28 V	86	69.50	39.60
4	*5745.00	97.2 AV			1.28 V	86	57.60	39.60
5	11490.00	59.7 PK	74.0	-14.3	1.00 V	202	8.00	51.70
6	11490.00	45.1 AV	54.0	-8.9	1.00 V	202	-6.60	51.70

REMARKS:

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	115.1 PK			1.00 H	329	75.40	39.70
2	*5785.00	102.8 AV			1.00 H	329	63.10	39.70
3	11570.00	63.9 PK	74.0	-10.1	1.00 H	76	12.30	51.60
4	11570.00	48.7 AV	54.0	-5.3	1.00 H	76	-2.90	51.60
5	#17355.00	66.1 PK	85.1	-19.0	1.00 H	319	10.70	55.40
6	#17355.00	51.3 AV	72.8	-21.5	1.00 H	319	-4.10	55.40
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	*5785.00	114.7 PK			1.38 V	278	75.00	39.70
2	*5785.00	102.5 AV			1.38 V	278	62.80	39.70
3	11570.00	62.2 PK	74.0	-11.8	1.00 V	7	10.60	51.60
4	11570.00	47.5 AV	54.0	-6.5	1.00 V	7	-4.10	51.60
5	#17355.00	65.7 PK	84.7	-19.0	1.00 V	291	10.30	55.40
6	#17355.00	50.4 AV	72.5	-22.1	1.00 V	291	-5.00	55.40

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 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	Alan Wu

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	115.6 PK			1.20 H	329	75.90	39.70
2	*5825.00	103.2 AV			1.20 H	329	63.50	39.70
3	#5850.00	67.6 PK	85.6	-18.0	1.16 H	328	27.80	39.80
4	#5850.00	55.2 AV	73.2	-18.0	1.16 H	328	15.40	39.80
5	11650.00	64.6 PK	74.0	-9.4	1.00 H	76	13.00	51.60
6	11650.00	49.7 AV	54.0	-4.3	1.00 H	76	-1.90	51.60
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	*5825.00	113.6 PK			1.00 V	81	73.90	39.70
2	*5825.00	101.9 AV			1.00 V	81	62.20	39.70
3	#5850.00	64.6 PK	83.6	-19.0	1.00 V	80	24.80	39.80
4	#5850.00	52.9 AV	71.9	-19.0	1.00 V	80	13.10	39.80
5	11650.00	63.0 PK	74.0	-11.0	1.00 V	8	11.40	51.60
6	11650.00	48.6 AV	54.0	-5.4	1.00 V	8	-3.00	51.60

REMARKS:

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

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	71.1 PK	82.6	-11.5	1.34 H	75	31.60	39.50
2	#5725.00	58.1 AV	68.1	-10.0	1.34 H	75	18.60	39.50
3	*5745.00	112.6 PK			1.35 H	87	73.00	39.60
4	*5745.00	98.1 AV			1.35 H	87	58.50	39.60
5	11490.00	61.6 PK	74.0	-12.4	1.00 H	300	9.90	51.70
6	11490.00	47.8 AV	54.0	-6.2	1.00 H	300	-3.90	51.70

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	#5725.00	70.9 PK	80.9	-10.0	1.00 V	87	31.40	39.50
2	#5725.00	58.3 AV	68.3	-10.0	1.00 V	87	18.80	39.50
3	*5745.00	110.9 PK			1.00 V	86	71.30	39.60
4	*5745.00	98.3 AV			1.00 V	86	58.70	39.60
5	11490.00	60.1 PK	74.0	-13.9	1.00 V	200	8.40	51.70
6	11490.00	47.2 AV	54.0	-6.8	1.00 V	200	-4.50	51.70

REMARKS:

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	114.3 PK			1.22 H	329	74.60	39.70
2	*5785.00	102.4 AV			1.22 H	329	62.70	39.70
3	11570.00	64.5 PK	74.0	-9.5	1.17 H	73	12.90	51.60
4	11570.00	49.8 AV	54.0	-4.2	1.17 H	73	-1.80	51.60
5	#17355.00	67.4 PK	84.3	-16.9	1.05 H	316	12.00	55.40
6	#17355.00	52.1 AV	72.4	-20.3	1.05 H	316	-3.30	55.40
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	*5785.00	113.1 PK			1.00 V	276	73.40	39.70
2	*5785.00	101.5 AV			1.00 V	276	61.80	39.70
3	11570.00	61.0 PK	74.0	-13.0	1.45 V	48	9.40	51.60
4	11570.00	47.6 AV	54.0	-6.4	1.45 V	48	-4.00	51.60
5	#17355.00	65.0 PK	83.1	-18.1	1.00 V	70	9.60	55.40
6	#17355.00	51.0 AV	71.5	-20.5	1.00 V	70	-4.40	55.40

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 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	Brad Wu

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	115.7 PK			1.18 H	332	76.00	39.70
2	*5825.00	103.4 AV			1.18 H	332	63.70	39.70
3	#5850.00	69.0 PK	85.7	-16.7	1.31 H	331	29.20	39.80
4	#5850.00	56.7 AV	73.4	-16.7	1.31 H	331	16.90	39.80
5	11650.00	65.1 PK	74.0	-8.9	1.14 H	74	13.50	51.60
6	11650.00	50.7 AV	54.0	-3.3	1.14 H	74	-0.90	51.60
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	*5825.00	113.7 PK			1.14 V	180	74.00	39.70
2	*5825.00	101.6 AV			1.14 V	180	61.90	39.70
3	#5850.00	73.7 PK	83.7	-10.0	1.14 V	183	33.90	39.80
4	#5850.00	61.6 AV	71.6	-10.0	1.14 V	183	21.80	39.80
5	11650.00	60.6 PK	74.0	-13.4	1.00 V	34	9.00	51.60
6	11650.00	47.0 AV	54.0	-7.0	1.00 V	34	-4.60	51.60

REMARKS:

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

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	68.9 PK	73.7	-4.8	1.00 H	324	29.40	39.50
2	#5725.00	58.0 AV	62.8	-4.8	1.00 H	324	18.50	39.50
3	*5755.00	103.7 PK			1.00 H	229	64.10	39.60
4	*5755.00	92.8 AV			1.00 H	229	53.20	39.60
5	11510.00	60.2 PK	74.0	-13.8	1.00 H	10	8.50	51.70
6	11510.00	46.6 AV	54.0	-7.4	1.00 H	10	-5.10	51.70

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	#5725.00	67.1 PK	72.3	-5.2	1.00 V	281	27.60	39.50
2	#5725.00	56.8 AV	62.0	-5.2	1.00 V	281	17.30	39.50
3	*5755.00	102.3 PK			1.00 V	282	62.70	39.60
4	*5755.00	92.0 AV			1.00 V	282	52.40	39.60
5	11510.00	59.2 PK	74.0	-14.8	1.00 V	301	7.50	51.70
6	11510.00	45.2 AV	54.0	-8.8	1.00 V	301	-6.50	51.70

REMARKS:

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

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	111.6 PK			1.27 H	325	71.90	39.70
2	*5795.00	100.5 AV			1.27 H	325	60.80	39.70
3	#5850.00	66.8 PK	81.6	-14.8	1.27 H	325	27.00	39.80
4	#5850.00	55.7 AV	70.5	-14.8	1.27 H	325	15.90	39.80
5	11590.00	64.8 PK	74.0	-9.2	1.17 H	73	13.30	51.50
6	11590.00	49.5 AV	54.0	-4.5	1.17 H	73	-2.00	51.50
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	*5795.00	110.0 PK			1.00 V	277	70.30	39.70
2	*5795.00	99.4 AV			1.00 V	277	59.70	39.70
3	#5850.00	64.8 PK	80.0	-15.2	1.00 V	270	25.00	39.80
4	#5850.00	54.2 AV	69.4	-15.2	1.00 V	270	14.40	39.80
5	11590.00	63.2 PK	74.0	-10.8	1.00 V	337	11.70	51.50
6	11590.00	48.4 AV	54.0	-5.6	1.00 V	337	-3.10	51.50

REMARKS:

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



A D T

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

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	Anderson Hong
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	249.22	35.4 QP	46.0	-10.6	1.00 H	76	22.40	13.00
2	274.44	36.9 QP	46.0	-9.1	1.00 H	159	23.00	13.90
3	299.66	41.4 QP	46.0	-4.6	1.00 H	273	26.50	14.90
4	400.54	41.4 QP	46.0	-4.6	1.00 H	296	23.90	17.50
5	600.36	42.6 QP	46.0	-3.4	1.00 H	353	20.20	22.40
6	786.60	41.6 QP	46.0	-4.4	1.00 H	207	16.70	24.90

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	189.08	29.6 QP	43.5	-13.9	1.00 V	17	17.60	12.00
2	274.44	36.0 QP	46.0	-10.0	1.25 V	241	22.10	13.90
3	299.66	34.8 QP	46.0	-11.2	1.25 V	328	19.90	14.90
4	400.54	38.3 QP	46.0	-7.7	2.00 V	3	20.80	17.50
5	600.36	39.7 QP	46.0	-6.3	1.00 V	122	17.30	22.40
6	701.24	41.4 QP	46.0	-4.6	1.00 V	17	18.60	22.80

REMARKS:

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



A D T

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	Anderson Hong
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	198.78	34.0 QP	43.5	-9.5	1.50 H	72	22.70	11.30
2	307.42	33.9 QP	46.0	-12.1	1.00 H	55	18.80	15.10
3	400.54	36.6 QP	46.0	-9.4	1.00 H	75	19.10	17.50
4	425.76	27.4 QP	46.0	-18.6	1.50 H	37	9.30	18.10
5	600.36	40.3 QP	46.0	-5.7	1.25 H	195	17.90	22.40
6	786.60	43.0 QP	46.0	-3.0	1.00 H	195	18.10	24.90
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	189.08	27.3 QP	43.5	-16.2	1.50 V	212	15.30	12.00
2	309.36	28.5 QP	46.0	-17.5	1.50 V	334	13.40	15.10
3	400.54	34.5 QP	46.0	-11.5	1.25 V	272	17.00	17.50
4	600.36	34.1 QP	46.0	-11.9	1.50 V	25	11.70	22.40
5	709.00	35.6 QP	46.0	-10.4	1.50 V	6	12.60	23.00
6	786.60	43.0 QP	46.0	-3.0	1.50 V	350	18.10	24.90

REMARKS:

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

5.2 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

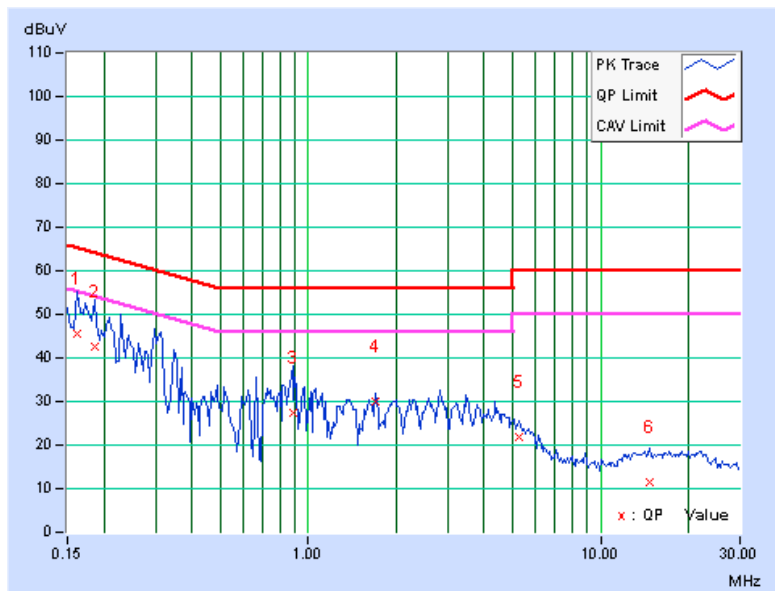
CONDUCTED WORST-CASE DATA : 802.11n(20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.15	45.47	30.28	45.62	30.43	65.38	55.38	-19.76	-24.95
2	0.18516	0.15	42.41	26.50	42.56	26.65	64.25	54.25	-21.69	-27.60
3	0.88438	0.19	27.32	19.51	27.51	19.70	56.00	46.00	-28.49	-26.30
4	1.69922	0.24	29.74	27.81	29.98	28.05	56.00	46.00	-26.02	-17.95
5	5.25781	0.36	21.33	14.34	21.69	14.70	60.00	50.00	-38.31	-35.30
6	14.73047	0.52	10.80	5.10	11.32	5.62	60.00	50.00	-48.68	-44.38

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.





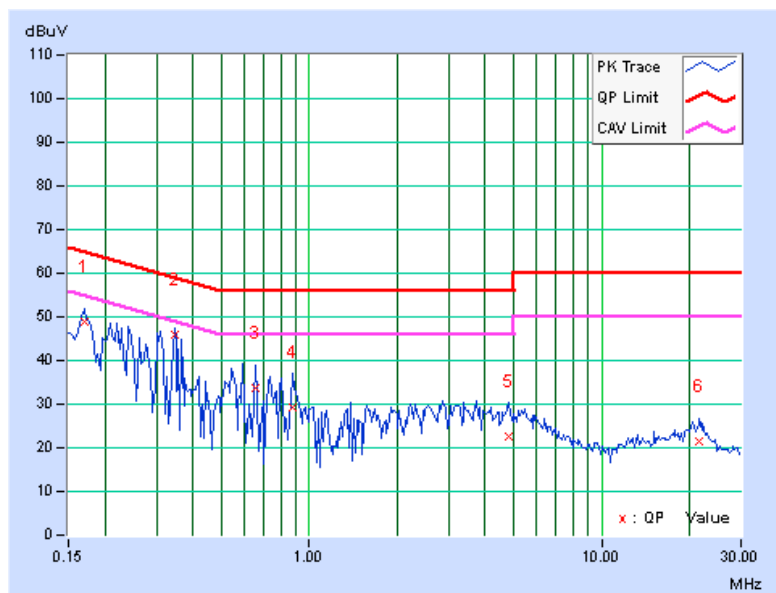
A D T

PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	0.13	48.76	38.79	48.89	38.92	64.98	54.98	-16.09	-16.06
2	0.34531	0.15	45.95	45.32	46.10	45.47	59.07	49.07	-12.97	-3.60
3	0.65781	0.17	33.67	32.22	33.84	32.39	56.00	46.00	-22.16	-13.61
4	0.88047	0.18	28.96	16.20	29.14	16.38	56.00	46.00	-26.86	-29.62
5	4.80859	0.37	22.15	14.64	22.52	15.01	56.00	46.00	-33.48	-30.99
6	21.57813	0.69	20.74	15.66	21.43	16.35	60.00	50.00	-38.57	-33.65

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.





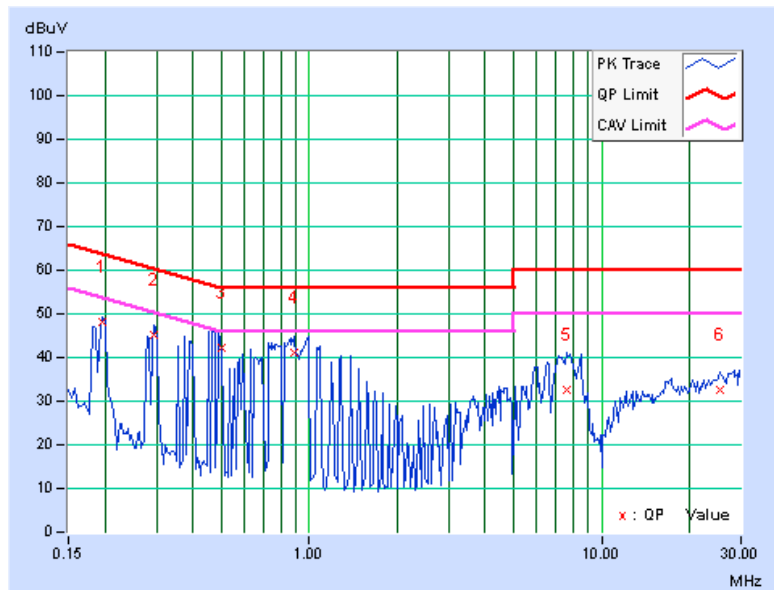
A D T

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.15	48.18	46.44	48.33	46.59	63.74	53.74	-15.41	-7.15
2	0.29453	0.16	44.85	44.59	45.01	44.75	60.40	50.40	-15.39	-5.65
3	0.50000	0.17	41.90	37.74	42.07	37.91	56.00	46.00	-13.93	-8.09
4	0.88438	0.19	40.88	33.36	41.07	33.55	56.00	46.00	-14.93	-12.45
5	7.57813	0.39	32.35	17.43	32.74	17.82	60.00	50.00	-27.26	-32.18
6	25.53516	0.57	32.20	21.69	32.77	22.26	60.00	50.00	-27.23	-27.74

REMARKS:

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

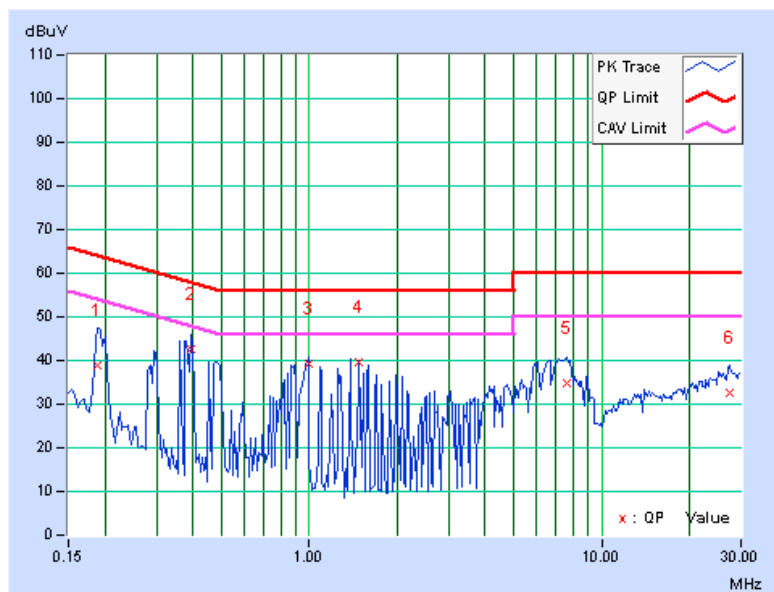


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18906	0.14	38.59	29.01	38.73	29.15	64.08	54.08	-25.35	-24.93
2	0.39219	0.16	42.45	41.09	42.61	41.25	58.02	48.02	-15.41	-6.77
3	0.98984	0.19	39.11	38.58	39.30	38.77	56.00	46.00	-16.70	-7.23
4	1.48438	0.22	39.55	37.54	39.77	37.76	56.00	46.00	-16.23	-8.24
5	7.57422	0.43	34.25	11.15	34.68	11.58	60.00	50.00	-25.32	-38.42
6	27.57813	0.58	32.17	22.12	32.75	22.70	60.00	50.00	-27.25	-27.30

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.





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.



5.3.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.62	16.58	0.5	PASS
157	5785	16.59	16.60	0.5	PASS
165	5825	16.59	16.62	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.75	17.89	0.5	PASS
157	5785	17.84	17.85	0.5	PASS
165	5825	17.81	17.85	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	37.17	37.03	0.5	PASS
159	5795	36.78	37.37	0.5	PASS



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)

5.4.2 TEST SETUP

Same as Item 4.4.2.

5.4.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.4.4 TEST PROCEDURES

Same as Item 4.4.4.

5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



5.4.7 TEST RESULTS

802.11a

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	19.42	18.69	161.46	22.08	30	PASS
157	5785	23.31	22.94	411.08	26.14	30	PASS
165	5825	23.40	22.54	398.25	26.00	30	PASS

NOTE: Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi , so the conducted power limit is not reduced.

802.11n (20MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	19.56	18.81	166.40	22.21	30	PASS
157	5785	23.58	22.84	420.34	26.24	30	PASS
165	5825	23.48	23.65	454.58	26.58	30	PASS

NOTE: Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi , so the conducted power limit is not reduced.

802.11n (40MHz)

CHAN.	FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	16.51	16.36	88.02	19.45	30	PASS
159	5795	23.35	22.65	400.35	26.02	30	PASS

NOTE: Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi , so the conducted power limit is not reduced.



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.



5.5.7 TEST RESULTS

802.11a

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-0.87	-16.10	3.01	-13.09	8	PASS
	157	5785	3.07	-12.16	3.01	-9.15	8	PASS
	165	5825	3.23	-12.00	3.01	-8.99	8	PASS
1	149	5745	-1.61	-16.84	3.01	-13.83	8	PASS
	157	5785	2.51	-12.72	3.01	-9.71	8	PASS
	165	5825	2.12	-13.11	3.01	-10.10	8	PASS

NOTE: Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi , so the power density limit is not reduced.

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-0.67	-15.90	3.01	-12.89	8	PASS
	157	5785	3.26	-11.97	3.01	-8.96	8	PASS
	165	5825	3.39	-11.84	3.01	-8.83	8	PASS
1	149	5745	-1.98	-17.21	3.01	-14.20	8	PASS
	157	5785	2.10	-13.13	3.01	-10.12	8	PASS
	165	5825	1.85	-13.38	3.01	-10.37	8	PASS

NOTE: Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi , so the power density limit is not reduced.

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-6.35	-21.58	3.01	-18.57	8	PASS
	159	5795	0.35	-14.88	3.01	-11.87	8	PASS
1	151	5755	-7.83	-23.06	3.01	-20.05	8	PASS
	159	5795	-1.38	-16.61	3.01	-13.60	8	PASS

NOTE: Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi , so the power density limit is not reduced.



A D T

5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

5.6.2 TEST SETUP

Same as Item 4.6.2

5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.6.4 TEST PROCEDURE

Same as Item 4.6.4

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

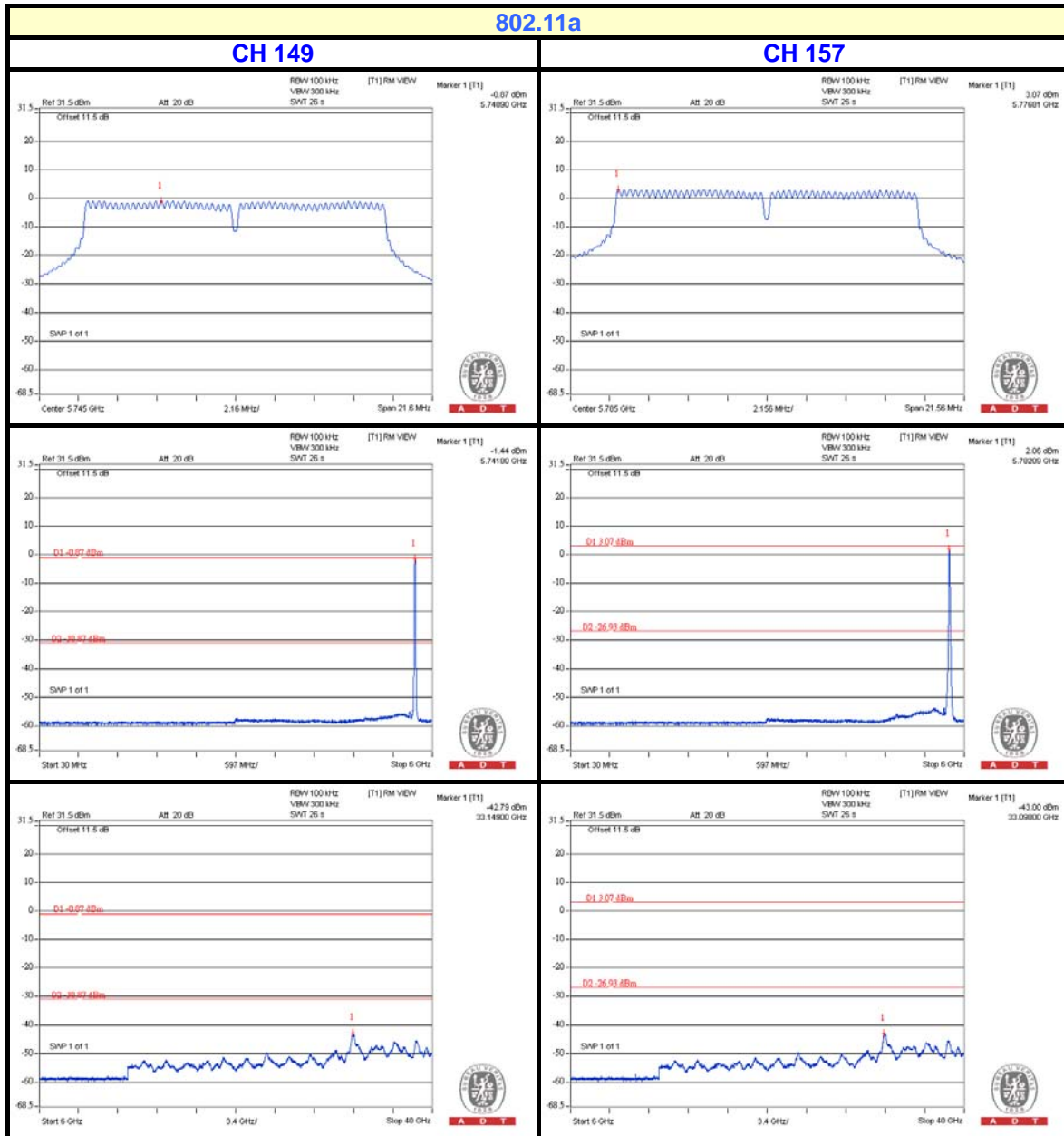
5.6.6 EUT OPERATING CONDITION

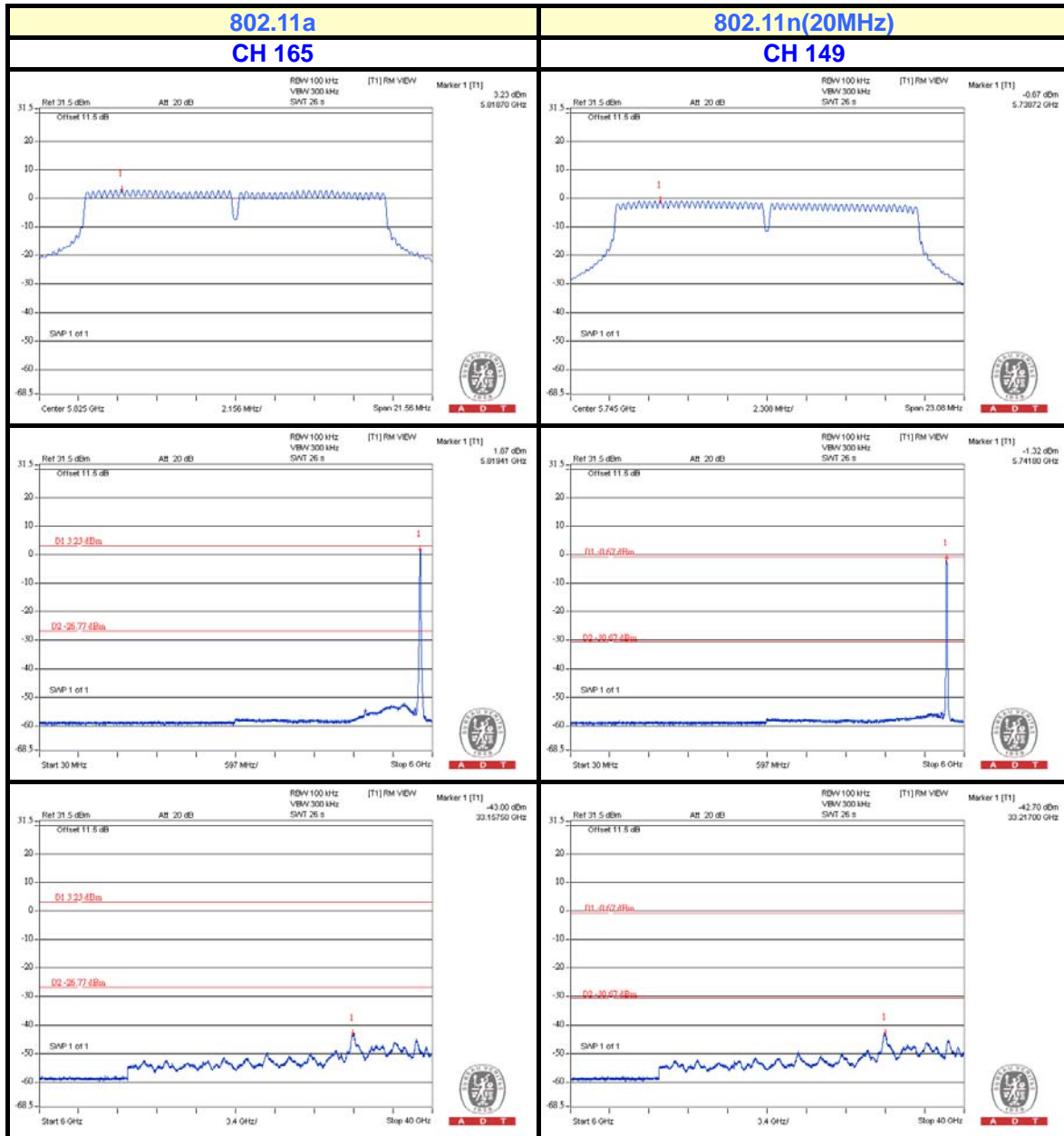
Same as Item 4.3.6

5.6.7 TEST RESULTS

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

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





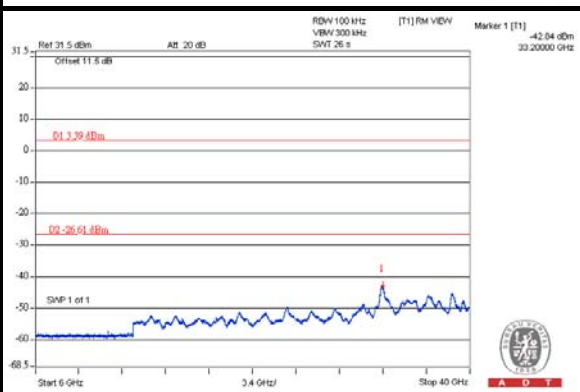
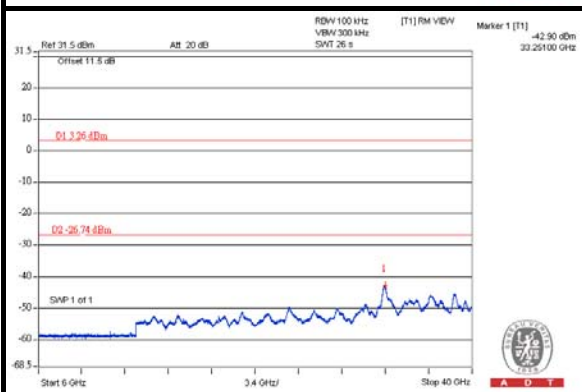
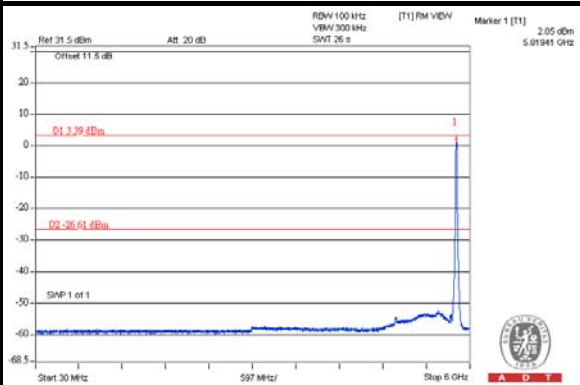
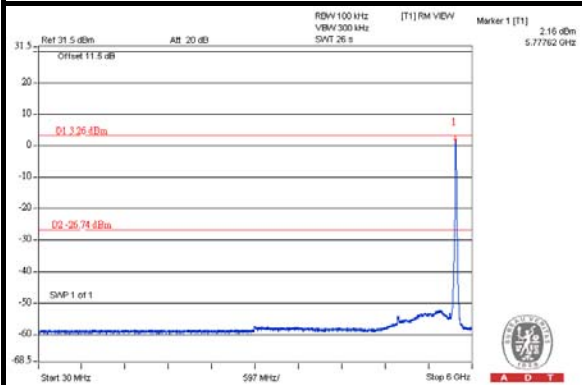
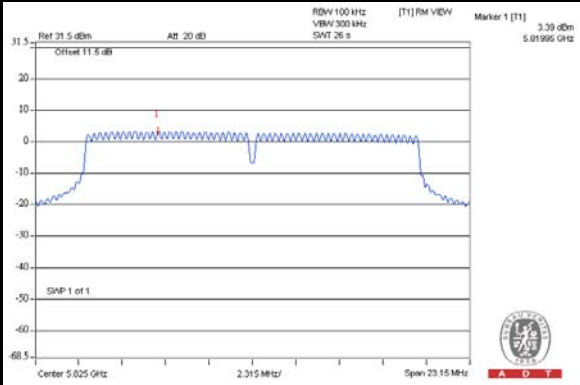
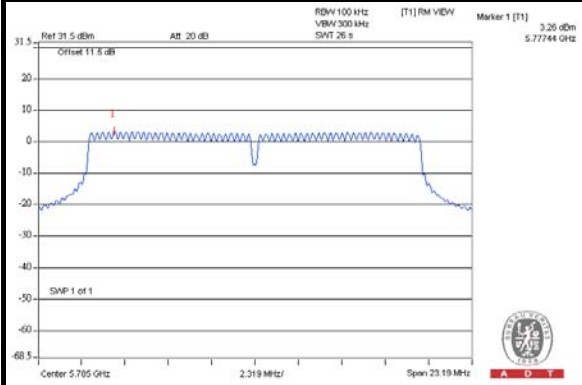


A D T

802.11n(20MHz)

CH 157

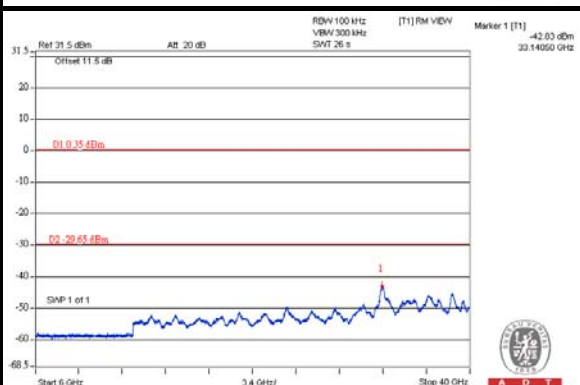
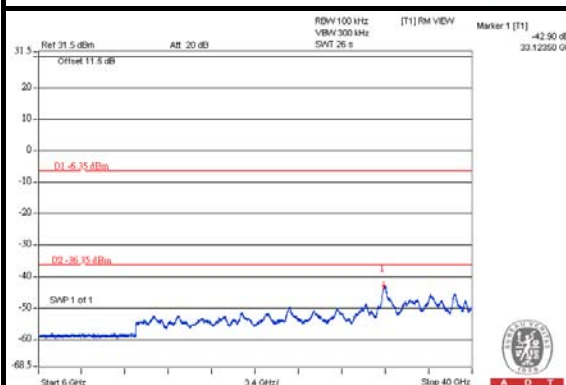
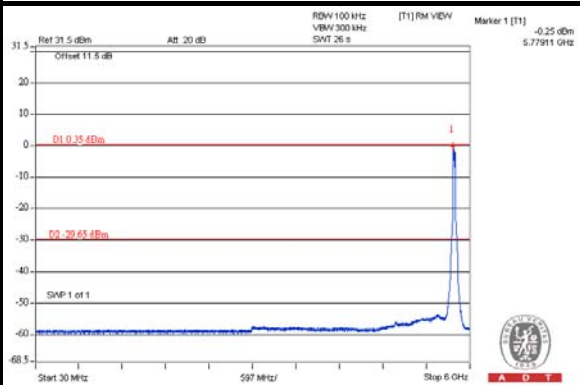
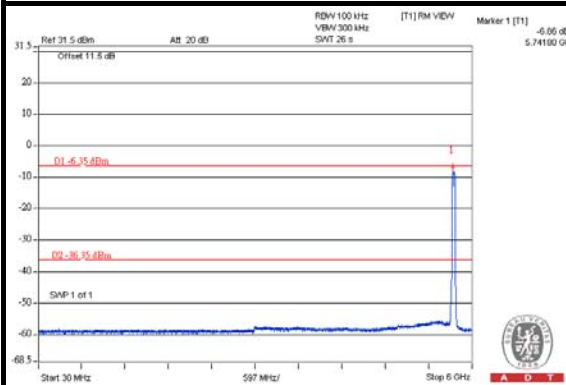
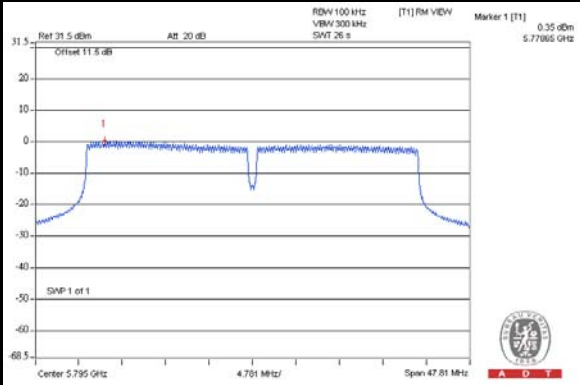
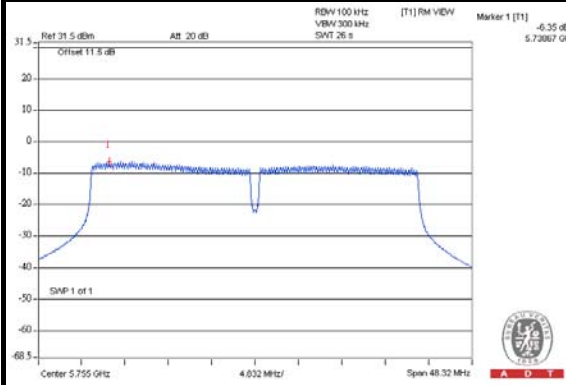
CH 165



802.11n(40MHz)

CH 151

CH 159





A D T

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



A D T

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:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.adt.com.tw

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



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---