



A D T

FCC TEST REPORT (15.247)

REPORT NO.: RF120321C13
MODEL NO.: DG H300
FCC ID: NM8DGH300
RECEIVED: Mar. 21, 2012
TESTED: Apr. 07 ~ Apr. 26, 2012
ISSUED: May 10, 2012

APPLICANT: HTC Corporation

ADDRESS: No. 23, Xinghua Rd., Taoyuan City, 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 test report consists of 77 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval or endorsement by TAF or any government agency. The test results in the report only apply to the tested sample.





A D T

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	15
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST	16
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	17
4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)	18
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	18
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	18
4.1.2 TEST INSTRUMENTS	19
4.1.3 TEST PROCEDURES	20
4.1.4 DEVIATION FROM TEST STANDARD	20
4.1.5 TEST SETUP	21
4.1.6 EUT OPERATING CONDITIONS	21
4.1.7 TEST RESULTS	22
4.2 CONDUCTED EMISSION MEASUREMENT	35
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	35
4.2.2 TEST INSTRUMENTS	35
4.2.3 TEST PROCEDURES	36
4.2.4 DEVIATION FROM TEST STANDARD	36
4.2.5 TEST SETUP	36
4.2.6 EUT OPERATING CONDITIONS	36
4.2.7 TEST RESULTS	37
4.3 6dB BANDWIDTH MEASUREMENT	39
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	39
4.3.2 TEST SETUP	39
4.3.3 TEST INSTRUMENTS	39
4.3.4 TEST PROCEDURE	39
4.3.5 DEVIATION FROM TEST STANDARD	39
4.3.6 EUT OPERATING CONDITIONS	39
4.3.7 TEST RESULTS	40
4.4 CONDUCTED OUTPUT POWER	41
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	41
4.4.2 TEST SETUP	41
4.4.3 TEST INSTRUMENTS	41
4.4.4 TEST PROCEDURES	41
4.4.5 DEVIATION FROM TEST STANDARD	41
4.4.6 EUT OPERATING CONDITIONS	41
4.4.7 TEST RESULTS	42
4.5 POWER SPECTRAL DENSITY MEASUREMENT	43
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	43



4.5.2	TEST SETUP	43
4.5.3	TEST INSTRUMENTS	43
4.5.4	TEST PROCEDURE	43
4.5.5	DEVIATION FROM TEST STANDARD	43
4.5.6	EUT OPERATING CONDITION.....	43
4.5.7	TEST RESULTS.....	44
4.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	45
4.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT	45
4.6.2	TEST SETUP.....	45
4.6.3	TEST INSTRUMENTS.....	45
4.6.4	TEST PROCEDURE	45
4.6.5	DEVIATION FROM TEST STANDARD	46
4.6.6	EUT OPERATING CONDITION.....	46
4.6.7	TEST RESULTS.....	46
4.6.8	TEST RESULTS.....	47
5.	TEST TYPES AND RESULTS (FOR 5.0GHz BAND).....	51
5.1	RADIATED EMISSION MEASUREMENT	51
5.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT	51
5.1.2	TEST INSTRUMENTS.....	52
5.1.3	TEST PROCEDURES	52
5.1.4	DEVIATION FROM TEST STANDARD	52
5.1.5	TEST SETUP	52
5.1.6	EUT OPERATING CONDITIONS	52
5.1.7	TEST RESULTS.....	53
5.2	CONDUCTED EMISSION MEASUREMENT	62
5.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	62
5.2.2	TEST INSTRUMENTS.....	62
5.2.3	TEST PROCEDURES	62
5.2.4	DEVIATION FROM TEST STANDARD	62
5.2.5	TEST SETUP	62
5.2.6	EUT OPERATING CONDITIONS	62
5.2.7	TEST RESULTS.....	63
5.3	6dB BANDWIDTH MEASUREMENT.....	65
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	65
5.3.2	TEST SETUP	65
5.3.3	TEST INSTRUMENTS.....	65
5.3.4	TEST PROCEDURE	65
5.3.5	DEVIATION FROM TEST STANDARD	65
5.3.6	EUT OPERATING CONDITIONS	65
5.3.7	TEST RESULTS.....	66
5.4	CONDUCTED OUTPUT POWER.....	67
5.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT.....	67
5.4.2	TEST SETUP	67
5.4.3	INSTRUMENTS	67
5.4.4	TEST PROCEDURES	67
5.4.5	DEVIATION FROM TEST STANDARD	67
5.4.6	EUT OPERATING CONDITIONS	67
5.4.7	TEST RESULTS.....	68
5.5	POWER SPECTRAL DENSITY MEASUREMENT.....	69



A D T

5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	69
5.5.2	TEST SETUP	69
5.5.3	TEST INSTRUMENTS	69
5.5.4	TEST PROCEDURE	69
5.5.5	DEVIATION FROM TEST STANDARD	69
5.5.6	EUT OPERATING CONDITION	69
5.5.7	TEST RESULTS	70
5.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	71
5.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT	71
5.6.2	TEST SETUP	71
5.6.3	TEST INSTRUMENTS	71
5.6.4	TEST PROCEDURE	71
5.6.5	DEVIATION FROM TEST STANDARD	71
5.6.6	EUT OPERATING CONDITION	71
5.6.7	TEST RESULTS	71
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION	75
7.	INFORMATION ON THE TESTING LABORATORIES	76
8.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	77



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120321C13	Original release	May 10, 2012



A D T

1. CERTIFICATION

PRODUCT: Media Link HD
MODEL NO.: DG H300
BRAND: HTC
APPLICANT: HTC Corporation
TESTED: Apr. 07 ~ Apr. 26, 2012
TEST SAMPLE: Production Unit
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
ANSI C63.10-2009

The above equipment (model: DG H300) 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 : Ivonne Wu , **DATE** : May 10, 2012
Ivonne Wu / Senior Specialist

APPROVED BY : Gary Chang , **DATE** : May 10, 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 -2.14dB at 0.50156MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.2dB at 62.95MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

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

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



A D T

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Media Link HD
MODEL NO.	DG H300
POWER SUPPLY	5Vdc (Adapter)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 150.0Mbps
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	154.525mW for 2412 ~ 2462MHz 165.196mW for 5745 ~ 5825MHz
ANTENNA TYPE	PIFA antenna with 2 dBi gain for 2.4GHz PIFA antenna with 1 dBi gain for 5.0GHz
ANTENNA CONNECTOR	N/A
DATA CABLE	Refer to NOTE as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to NOTE as below

NOTE:

1. The frequency bands used in this EUT are listed as follows:

Frequency Band (MHz)	2412~2462	5180~5240	5745~5825
802.11b	√		
802.11g	√		
802.11a		√	√
802.11n (20MHz)	√	√	√
802.11n (40MHz)	√	√	√



A D T

2. The EUT provides one completed transmitter and two receiver.

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

3. The EUT's accessories list refers to EUT Photo.pdf.

*Item 1, 4, 5 were the worst for the final test.

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	
-	√	√	√	√	-

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**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11g	1 to 11	11	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)
-	802.11g	1 to 11	11	OFDM	BPSK	6.0



BANDEDGE MEASUREMENT:

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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Haru Yang, Mark Liao, Brad Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Alan Wu
PLC	23deg. C, 66%RH	120Vac, 60Hz	David Huang
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	
-	√	√	√	√	-

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

RADIATED EMISSION TEST (BELOW 1GHz):

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

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

POWER LINE CONDUCTED EMISSION TEST:

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

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

**BANDEDGE MEASUREMENT:**

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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 65%RH	120Vac, 60Hz	Haru Yang
RE $<$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Alan Wu
PLC	23deg. C, 66%RH	120Vac, 60Hz	David Huang
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.

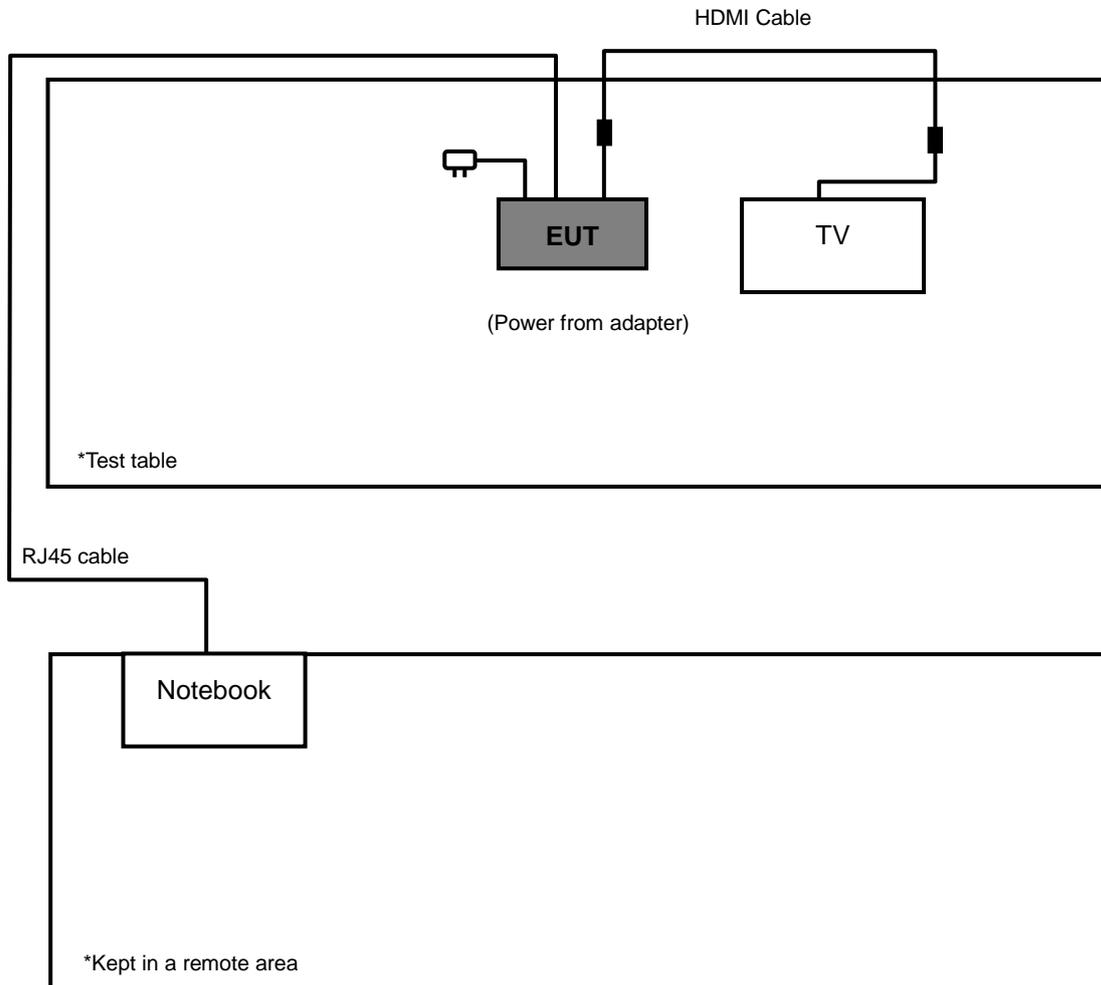
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	LED TV MONITOR	PANASONIC	TH-L32E30W	12500043	FCC DOC APPROVED
2	NOTEBOOK	DELL	E5410	1HC2XM1	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	HDMI Cable with 2 cores
2	RJ45 Cable

NOTE:

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

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST





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)

ANSI C63.10-2009

KDB 558074 D01 DTS Meas Guidance v01

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

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



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

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (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	100040	Aug. 04, 2011	Aug. 03, 2012
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. 20, 2011	Jul. 19, 2012
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	295013/4 283403/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 13, 2011	Aug. 12, 2012
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
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

- NOTE:**
1. The calibration interval of the above test instruments is 12 months except the loop antenna and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. The test was performed in HwaYa Chamber 9.
 4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 5. The FCC Site Registration No. is 460141.
 6. The IC Site Registration No. is IC7450F-4.



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.

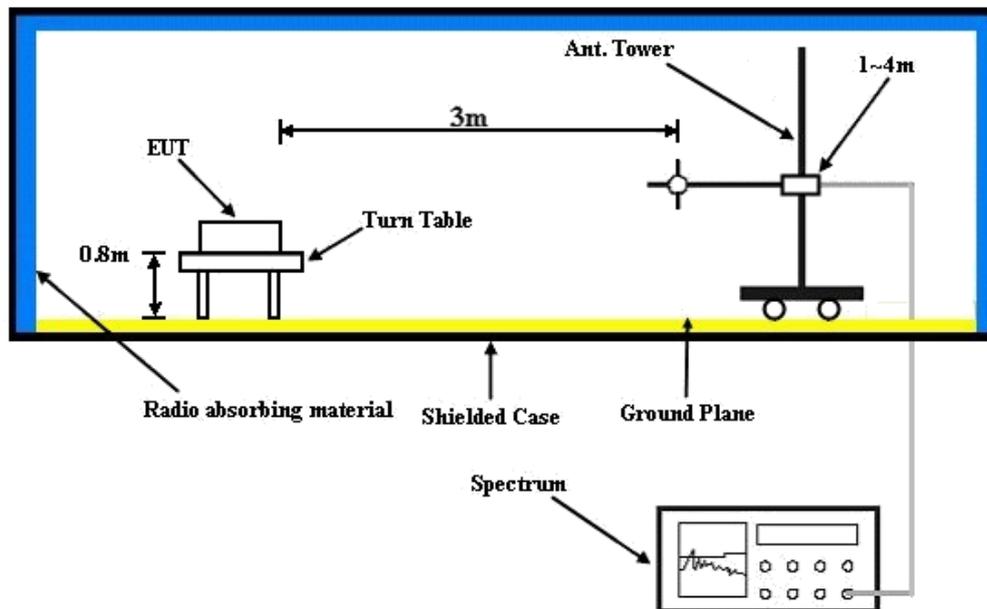
NOTE:

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

- a. Placed the EUT on the testing table, and connected with TV via HDMI cable.
- b. Prepared notebooks to act as communication partner and placed it outside of testing area.
- c. 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, and the TV displayed it.



A D T

4.1.7 TEST RESULTS

ABOVE 1GHz DATA

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2389.00	57.3 PK	74.0	-16.7	1.00 H	2	25.90	31.40
2	2389.00	49.3 AV	54.0	-4.7	1.00 H	2	17.90	31.40
3	*2412.00	104.7 PK			1.44 H	94	73.30	31.40
4	*2412.00	101.0 AV			1.44 H	94	69.60	31.40
5	#3073.00	43.1 PK	84.7	-41.6	1.00 H	9	9.70	33.40
6	#3073.00	35.4 AV	81.0	-45.6	1.00 H	9	2.00	33.40
7	4824.00	50.7 PK	74.0	-23.3	1.26 H	73	13.20	37.50
8	4824.00	42.7 AV	54.0	-11.3	1.26 H	73	5.20	37.50
9	#7236.00	52.6 PK	84.7	-32.1	1.02 H	331	9.00	43.60
10	#7236.00	44.5 AV	81.0	-36.5	1.02 H	331	0.90	43.60
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	2389.00	54.1 PK	74.0	-19.9	1.08 V	242	22.70	31.40
2	2389.00	44.2 AV	54.0	-9.8	1.08 V	242	12.80	31.40
3	*2412.00	97.8 PK			1.08 V	242	66.40	31.40
4	*2412.00	94.5 AV			1.08 V	242	63.10	31.40
5	#3073.00	43.5 PK	77.8	-34.3	1.18 V	348	10.10	33.40
6	#3073.00	33.6 AV	74.5	-40.9	1.18 V	348	0.20	33.40
7	4824.00	47.2 PK	74.0	-26.8	1.41 V	306	9.70	37.50
8	4824.00	40.2 AV	54.0	-13.8	1.41 V	306	2.70	37.50
9	#7236.00	51.2 PK	77.8	-26.6	1.00 V	88	7.60	43.60
10	#7236.00	39.3 AV	74.5	-35.2	1.00 V	88	-4.30	43.60

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 radiated frequency is out of the restricted band.



A D T

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	104.7 PK			1.00 H	1	73.20	31.50
2	*2437.00	101.2 AV			1.00 H	1	69.70	31.50
3	#3073.00	45.2 PK	84.7	-39.5	1.00 H	353	11.80	33.40
4	#3073.00	35.7 AV	81.2	-45.5	1.00 H	353	2.30	33.40
5	4874.00	49.8 PK	74.0	-24.2	1.05 H	225	12.20	37.60
6	4874.00	44.9 AV	54.0	-9.1	1.05 H	225	7.30	37.60
7	7311.00	50.0 PK	74.0	-24.0	1.00 H	35	6.30	43.70
8	7311.00	38.5 AV	54.0	-15.5	1.00 H	35	-5.20	43.70

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	*2437.00	98.6 PK			1.04 V	281	67.10	31.50
2	*2437.00	95.0 AV			1.04 V	281	63.50	31.50
3	#3073.00	42.8 PK	78.6	-35.8	1.20 V	11	9.40	33.40
4	#3073.00	33.0 AV	75.0	-42.0	1.20 V	11	-0.40	33.40
5	4874.00	47.7 PK	74.0	-26.3	1.05 V	261	10.10	37.60
6	4874.00	41.0 AV	54.0	-13.0	1.05 V	261	3.40	37.60
7	7311.00	50.1 PK	74.0	-23.9	1.08 V	25	6.40	43.70
8	7311.00	37.2 AV	54.0	-16.8	1.08 V	25	-6.50	43.70

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 radiated frequency is out of the restricted band.



A D T

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.6 PK			1.25 H	182	73.00	31.60
2	*2462.00	100.8 AV			1.25 H	182	69.20	31.60
3	2483.50	55.3 PK	74.0	-18.7	1.25 H	182	23.60	31.70
4	2483.50	45.4 AV	54.0	-8.6	1.25 H	182	13.70	31.70
5	#3073.00	45.5 PK	84.6	-39.1	1.01 H	255	12.10	33.40
6	#3073.00	36.0 AV	80.8	-44.8	1.01 H	255	2.60	33.40
7	4924.00	50.7 PK	74.0	-23.3	1.04 H	224	13.00	37.70
8	4924.00	45.9 AV	54.0	-8.1	1.04 H	224	8.20	37.70
9	7386.00	50.5 PK	74.0	-23.5	1.06 H	210	6.60	43.90
10	7386.00	38.4 AV	54.0	-15.6	1.06 H	210	-5.50	43.90

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	*2462.00	98.9 PK			1.04 V	259	67.30	31.60
2	*2462.00	95.2 AV			1.04 V	259	63.60	31.60
3	2483.50	53.9 PK	74.0	-20.1	1.04 V	259	22.20	31.70
4	2483.50	44.8 AV	54.0	-9.2	1.04 V	259	13.10	31.70
5	#3073.00	43.0 PK	78.9	-35.9	1.18 V	27	9.60	33.40
6	#3073.00	33.2 AV	75.2	-42.0	1.18 V	27	-0.20	33.40
7	4924.00	48.4 PK	74.0	-25.6	1.19 V	246	10.70	37.70
8	4924.00	41.1 AV	54.0	-12.9	1.19 V	246	3.40	37.70
9	7386.00	50.4 PK	74.0	-23.6	1.02 V	144	6.50	43.90
10	7386.00	37.9 AV	54.0	-16.1	1.02 V	144	-6.00	43.90

REMARKS:

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



A D T

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.1 PK	74.0	-10.9	1.00 H	2	31.70	31.40
2	2390.00	47.1 AV	54.0	-6.9	1.00 H	2	15.70	31.40
3	*2412.00	104.1 PK			1.00 H	2	72.70	31.40
4	*2412.00	94.0 AV			1.00 H	2	62.60	31.40
5	4824.00	45.0 PK	74.0	-29.0	1.05 H	158	7.50	37.50
6	4824.00	32.8 AV	54.0	-21.2	1.05 H	158	-4.70	37.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.0 PK	74.0	-16.0	1.07 V	256	26.60	31.40
2	2390.00	44.8 AV	54.0	-9.2	1.07 V	256	13.40	31.40
3	*2412.00	99.1 PK			1.07 V	256	67.70	31.40
4	*2412.00	89.4 AV			1.07 V	256	58.00	31.40
5	4824.00	44.6 PK	74.0	-29.4	1.01 V	239	7.10	37.50
6	4824.00	32.5 AV	54.0	-21.5	1.01 V	239	-5.00	37.50

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	104.5 PK			1.21 H	10	73.00	31.50
2	*2437.00	94.6 AV			1.21 H	10	63.10	31.50
3	#3073.00	43.8 PK	84.5	-40.7	1.01 H	52	10.40	33.40
4	#3073.00	35.7 AV	74.6	-38.9	1.01 H	52	2.30	33.40
5	4874.00	44.7 PK	74.0	-29.3	1.09 H	81	7.10	37.60
6	4874.00	32.5 AV	54.0	-21.5	1.09 H	81	-5.10	37.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	99.6 PK			1.06 V	241	68.10	31.50
2	*2437.00	90.0 AV			1.06 V	241	58.50	31.50
3	#3073.00	43.7 PK	79.6	-35.9	1.14 V	301	10.30	33.40
4	#3073.00	33.5 AV	70.0	-36.5	1.14 V	301	0.10	33.40
5	4874.00	44.5 PK	74.0	-29.5	1.02 V	166	6.90	37.60
6	4874.00	32.3 AV	54.0	-21.7	1.02 V	166	-5.30	37.60

REMARKS:

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



A D T

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.1 PK			1.22 H	7	72.50	31.60
2	*2462.00	94.3 AV			1.22 H	7	62.70	31.60
3	2483.50	65.4 PK	74.0	-8.6	1.22 H	7	33.70	31.70
4	2483.50	45.9 AV	54.0	-8.1	1.22 H	7	14.20	31.70
5	4924.00	44.5 PK	74.0	-29.5	1.02 H	48	6.80	37.70
6	4924.00	32.4 AV	54.0	-21.6	1.02 H	48	-5.30	37.70

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	*2462.00	98.2 PK			1.06 V	241	66.60	31.60
2	*2462.00	89.2 AV			1.06 V	241	57.60	31.60
3	2483.50	61.3 PK	74.0	-12.7	1.06 V	241	29.60	31.70
4	2483.50	44.4 AV	54.0	-9.6	1.06 V	241	12.70	31.70
5	4924.00	44.2 PK	74.0	-29.8	1.10 V	158	6.50	37.70
6	4924.00	32.1 AV	54.0	-21.9	1.10 V	158	-5.60	37.70

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.



A D T

802.11n (20MHz)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.2 PK	74.0	-11.8	1.00 H	3	30.80	31.40
2	2390.00	45.7 AV	54.0	-8.3	1.00 H	3	14.30	31.40
3	*2412.00	102.8 PK			1.00 H	3	71.40	31.40
4	*2412.00	92.1 AV			1.00 H	3	60.70	31.40
5	4824.00	44.8 PK	74.0	-29.2	1.05 H	112	7.30	37.50
6	4824.00	32.5 AV	54.0	-21.5	1.05 H	112	-5.00	37.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.8 PK	74.0	-17.2	1.05 V	261	25.40	31.40
2	2390.00	43.5 AV	54.0	-10.5	1.05 V	261	12.10	31.40
3	*2412.00	97.8 PK			1.05 V	261	66.40	31.40
4	*2412.00	88.2 AV			1.05 V	261	56.80	31.40
5	4824.00	43.2 PK	74.0	-30.8	1.05 V	261	5.70	37.50
6	4824.00	31.3 AV	54.0	-22.7	1.05 V	261	-6.20	37.50

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	103.1 PK			1.01 H	5	71.60	31.50
2	*2437.00	92.5 AV			1.01 H	5	61.00	31.50
3	4874.00	44.5 PK	74.0	-29.5	1.03 H	112	6.90	37.60
4	4874.00	32.1 AV	54.0	-21.9	1.03 H	112	-5.50	37.60
5	7311.00	51.1 PK	74.0	-22.9	1.05 H	112	7.40	43.70
6	7311.00	38.0 AV	54.0	-16.0	1.05 H	112	-5.70	43.70

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	*2437.00	98.2 PK			1.06 V	260	66.70	31.50
2	*2437.00	88.5 AV			1.06 V	260	57.00	31.50
3	4874.00	43.6 PK	74.0	-30.4	1.05 V	112	6.00	37.60
4	4874.00	31.5 AV	54.0	-22.5	1.05 V	112	-6.10	37.60
5	7311.00	50.8 PK	74.0	-23.2	1.05 V	24	7.10	43.70
6	7311.00	37.6 AV	54.0	-16.4	1.05 V	24	-6.10	43.70

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.



A D T

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.6 PK			1.01 H	10	71.00	31.60
2	*2462.00	91.8 AV			1.01 H	10	60.20	31.60
3	2483.50	63.7 PK	74.0	-10.3	1.01 H	10	32.00	31.70
4	2483.50	45.3 AV	54.0	-8.7	1.01 H	10	13.60	31.70
5	4924.00	44.5 PK	74.0	-29.5	1.03 H	66	6.80	37.70
6	4924.00	32.3 AV	54.0	-21.7	1.03 H	66	-5.40	37.70

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	*2462.00	97.5 PK			1.05 V	238	65.90	31.60
2	*2462.00	88.0 AV			1.05 V	238	56.40	31.60
3	2483.50	60.9 PK	74.0	-13.1	1.05 V	238	29.20	31.70
4	2483.50	44.1 AV	54.0	-9.9	1.05 V	238	12.40	31.70
5	4924.00	44.4 PK	74.0	-29.6	1.03 V	66	6.70	37.70
6	4924.00	32.1 AV	54.0	-21.9	1.03 V	66	-5.60	37.70

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.



A D T

802.11n (40MHz)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.4 PK	74.0	-9.6	1.00 H	3	33.00	31.40
2	2390.00	48.1 AV	54.0	-5.9	1.00 H	3	16.70	31.40
3	*2422.00	99.1 PK			1.00 H	3	67.60	31.50
4	*2422.00	88.8 AV			1.00 H	3	57.30	31.50
5	4844.00	44.5 PK	74.0	-29.5	1.05 H	110	7.00	37.50
6	4844.00	32.1 AV	54.0	-21.9	1.05 H	110	-5.40	37.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.9 PK	74.0	-16.1	1.04 V	260	26.50	31.40
2	2390.00	44.8 AV	54.0	-9.2	1.04 V	260	13.40	31.40
3	*2422.00	94.6 PK			1.04 V	260	63.10	31.50
4	*2422.00	85.0 AV			1.04 V	260	53.50	31.50
5	4844.00	43.2 PK	74.0	-30.8	1.03 V	56	5.70	37.50
6	4844.00	31.0 AV	54.0	-23.0	1.03 V	56	-6.50	37.50

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	99.3 PK			1.01 H	5	67.80	31.50
2	*2437.00	89.0 AV			1.01 H	5	57.50	31.50
3	4874.00	44.8 PK	74.0	-29.2	1.08 H	115	7.20	37.60
4	4874.00	32.4 AV	54.0	-21.6	1.08 H	115	-5.20	37.60
5	7311.00	50.8 PK	74.0	-23.2	1.06 H	55	7.10	43.70
6	7311.00	37.6 AV	54.0	-16.4	1.06 H	55	-6.10	43.70

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	*2437.00	94.8 PK			1.05 V	266	63.30	31.50
2	*2437.00	85.2 AV			1.05 V	266	53.70	31.50
3	4874.00	43.5 PK	74.0	-30.5	1.05 V	91	5.90	37.60
4	4874.00	31.2 AV	54.0	-22.8	1.05 V	91	-6.40	37.60
5	7311.00	50.5 PK	74.0	-23.5	1.12 V	48	6.80	43.70
6	7311.00	37.4 AV	54.0	-16.6	1.12 V	48	-6.30	43.70

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.



A D T

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	99.8 PK			1.00 H	4	68.20	31.60
2	*2452.00	89.7 AV			1.00 H	4	58.10	31.60
3	2483.50	62.9 PK	74.0	-11.1	1.01 H	5	31.20	31.70
4	2483.50	46.8 AV	54.0	-7.2	1.01 H	5	15.10	31.70
5	4904.00	45.1 PK	74.0	-28.9	1.01 H	22	7.50	37.60
6	4904.00	32.6 AV	54.0	-21.4	1.01 H	22	-5.00	37.60

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	*2452.00	95.2 PK			1.03 V	261	63.60	31.60
2	*2452.00	85.6 AV			1.03 V	261	54.00	31.60
3	2483.50	61.8 PK	74.0	-12.2	1.03 V	261	30.10	31.70
4	2483.50	45.6 AV	54.0	-8.4	1.03 V	261	13.90	31.70
5	4904.00	44.8 PK	74.0	-29.2	1.09 V	26	7.20	37.60
6	4904.00	32.4 AV	54.0	-21.6	1.09 V	26	-5.20	37.60

REMARKS:

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

802.11g

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	80.45	35.6 QP	40.0	-4.4	2.00 H	164	25.50	10.10
2	90.17	38.4 QP	43.5	-5.1	2.00 H	164	29.90	8.50
3	97.95	39.0 QP	43.5	-4.5	2.00 H	164	29.60	9.40
4	377.93	34.4 QP	46.0	-11.6	2.00 H	155	16.60	17.80
5	720.12	38.3 QP	46.0	-7.7	1.00 H	152	13.40	24.90
6	960.14	42.7 QP	54.0	-11.3	1.24 H	207	13.40	29.30

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	47.40	35.5 QP	40.0	-4.5	1.00 V	1	21.40	14.10
2	64.76	37.0 QP	40.0	-3.0	1.00 V	17	24.00	13.00
3	74.62	36.9 QP	40.0	-3.1	1.25 V	291	25.50	11.40
4	136.84	36.0 QP	43.5	-7.5	1.00 V	275	22.40	13.60
5	377.93	33.5 QP	46.0	-12.5	2.00 V	52	15.70	17.80
6	720.12	37.2 QP	46.0	-8.8	1.25 V	191	12.30	24.90
7	961.21	42.0 QP	54.0	-12.0	1.00 V	254	12.70	29.30

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.



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. 22, 2011	Dec. 21, 2012
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
Software ADT	ADT_Cond_ V7.3.7	NA	NA	NA

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

4.2.3 TEST PROCEDURES

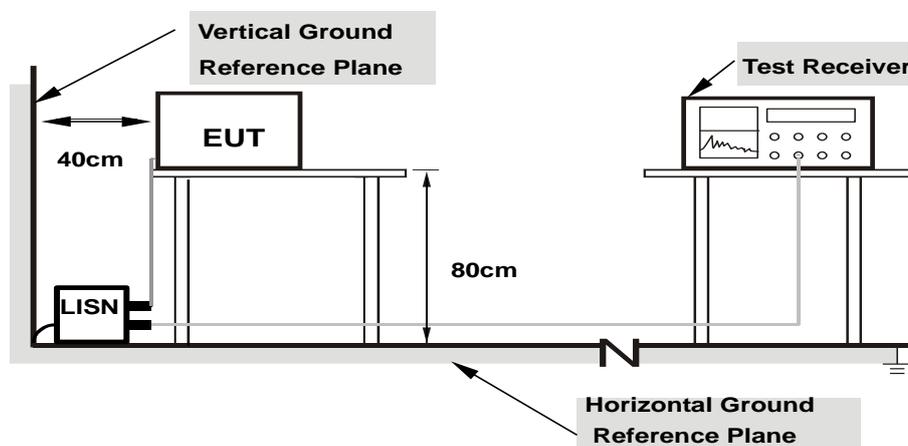
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

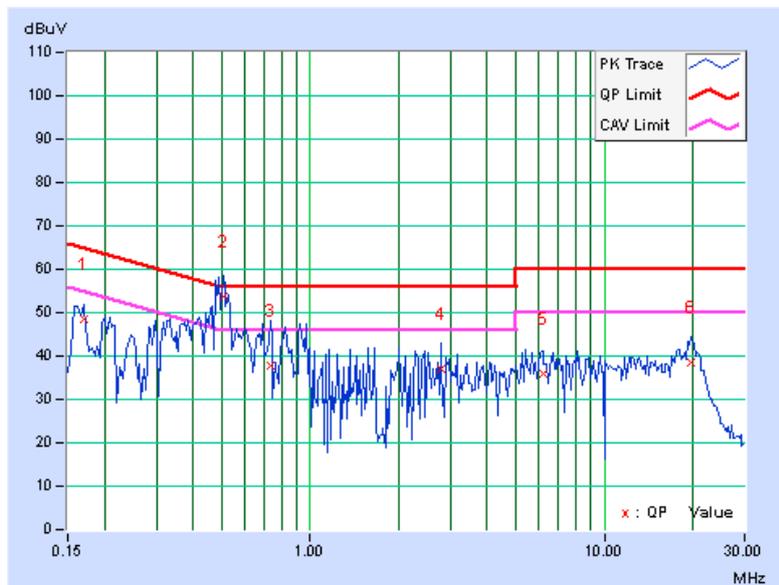
CONDUCTED WORST-CASE DATA : 802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
--------------	--------	----------------------	------

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	0.17	48.49	32.68	48.66	32.85	64.98	54.98	-16.32	-22.13
2	0.50547	0.21	53.46	36.07	53.67	36.28	56.00	46.00	-2.33	-9.72
3	0.73203	0.22	37.49	21.82	37.71	22.04	56.00	46.00	-18.29	-23.96
4	2.80078	0.34	36.57	23.24	36.91	23.58	56.00	46.00	-19.09	-22.42
5	6.18359	0.42	35.41	22.32	35.83	22.74	60.00	50.00	-24.17	-27.26
6	19.72656	0.72	37.70	23.13	38.42	23.85	60.00	50.00	-21.58	-26.15

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.

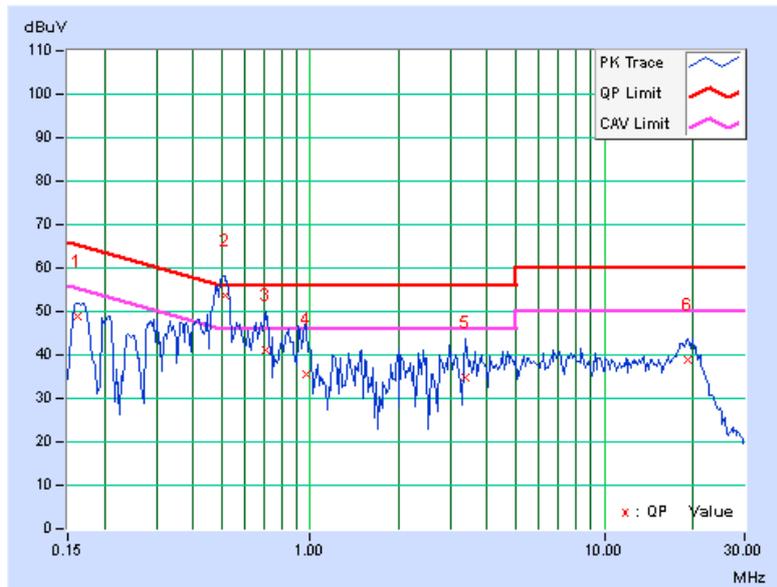


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

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	0.17	48.83	35.40	49.00	35.57	65.38	55.38	-16.38	-19.81
2	0.51328	0.18	53.63	35.05	53.81	35.23	56.00	46.00	-2.19	-10.77
3	0.70469	0.19	40.90	24.74	41.09	24.93	56.00	46.00	-14.91	-21.07
4	0.96641	0.19	35.19	19.94	35.38	20.13	56.00	46.00	-20.62	-25.87
5	3.38281	0.35	34.65	21.65	35.00	22.00	56.00	46.00	-21.00	-24.00
6	19.33594	0.80	38.09	23.46	38.89	24.26	60.00	50.00	-21.11	-25.74

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.

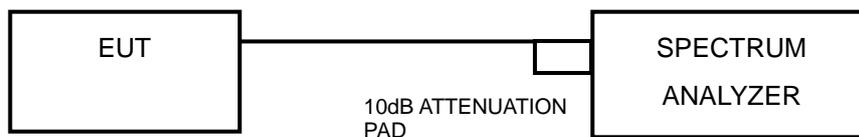


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

- Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.29	0.5	PASS
6	2437	10.29	0.5	PASS
11	2462	10.29	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.53	0.5	PASS
6	2437	16.51	0.5	PASS
11	2462	16.56	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.69	0.5	PASS
6	2437	17.70	0.5	PASS
11	2462	17.72	0.5	PASS

802.11n (40MHz)

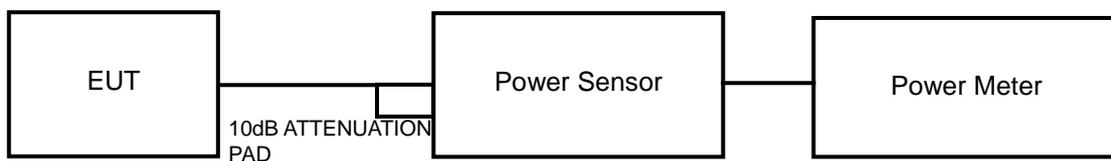
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.34	0.5	PASS
6	2437	36.61	0.5	PASS
9	2452	36.47	0.5	PASS

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

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

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	68.391	18.35	30	PASS
6	2437	72.946	18.63	30	PASS
11	2462	72.611	18.61	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	111.686	20.48	30	PASS
6	2437	136.773	21.36	30	PASS
11	2462	154.525	21.89	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	102.802	20.12	30	PASS
6	2437	119.674	20.78	30	PASS
11	2462	126.765	21.03	30	PASS

802.11n (40MHz)

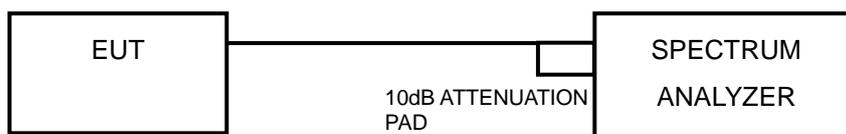
CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	118.850	20.75	30	PASS
6	2437	112.460	20.51	30	PASS
9	2452	112.980	20.53	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

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

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



A D T

4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	5.70	-9.53	8	PASS
6	2437	6.22	-9.01	8	PASS
11	2462	6.13	-9.1	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	1.48	-13.75	8	PASS
6	2437	2.23	-13	8	PASS
11	2462	2.87	-12.36	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	0.40	-14.83	8	PASS
6	2437	0.83	-14.4	8	PASS
11	2462	1.12	-14.11	8	PASS

802.11n (40MHz)

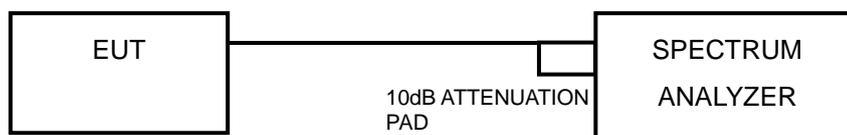
Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-2.38	-17.61	8	PASS
6	2437	-2.80	-18.03	8	PASS
9	2452	-2.79	-18.02	8	PASS

4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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



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 = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

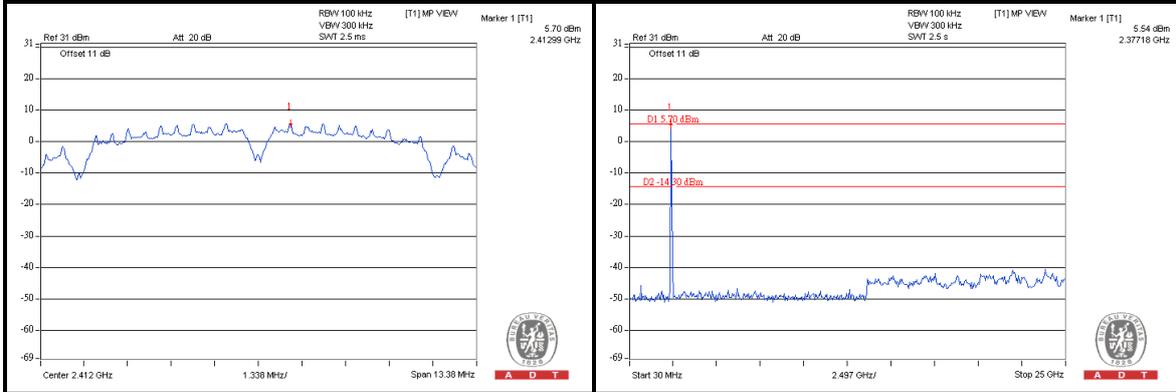
4.6.7 TEST RESULTS

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

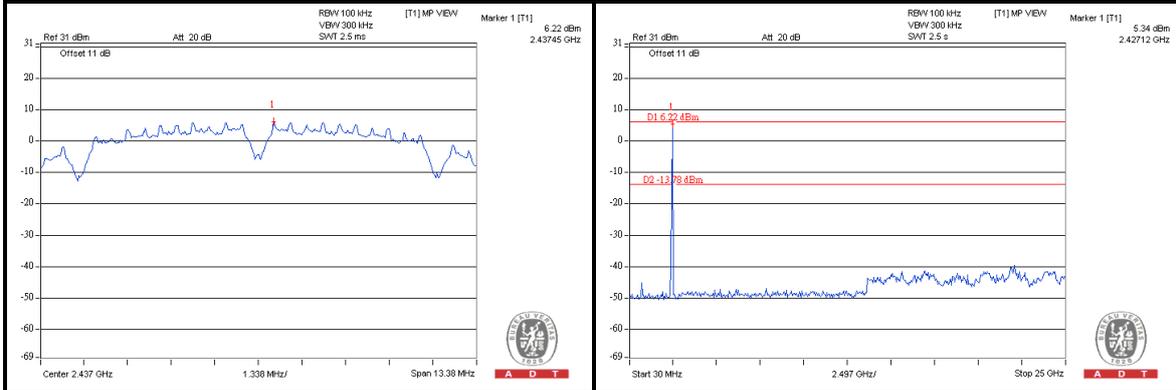
4.6.8 TEST RESULTS

802.11b

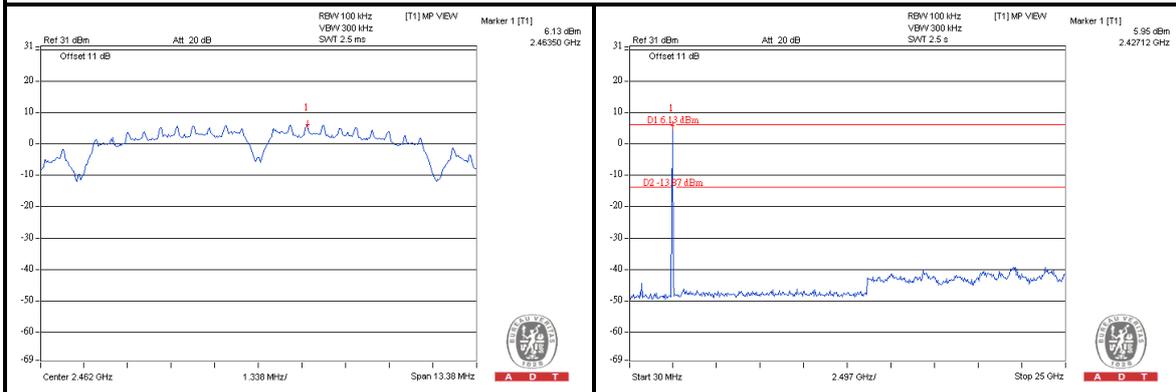
CH 1



CH 6



CH 11

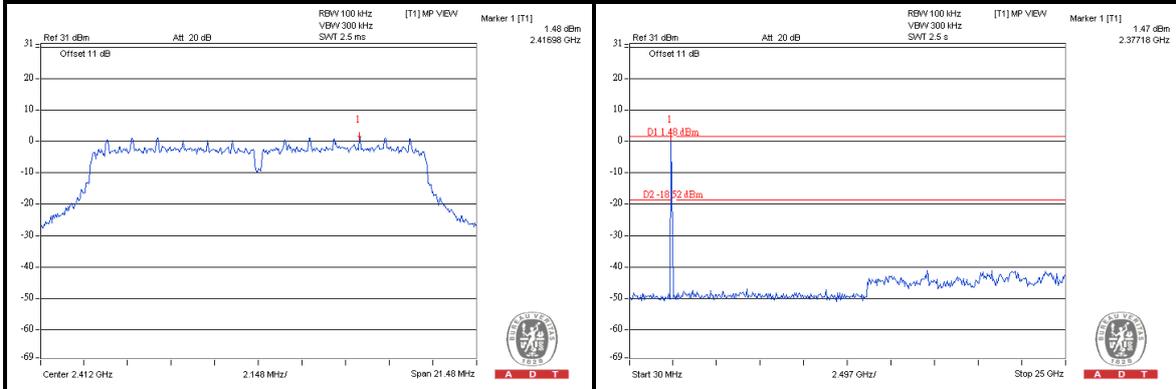




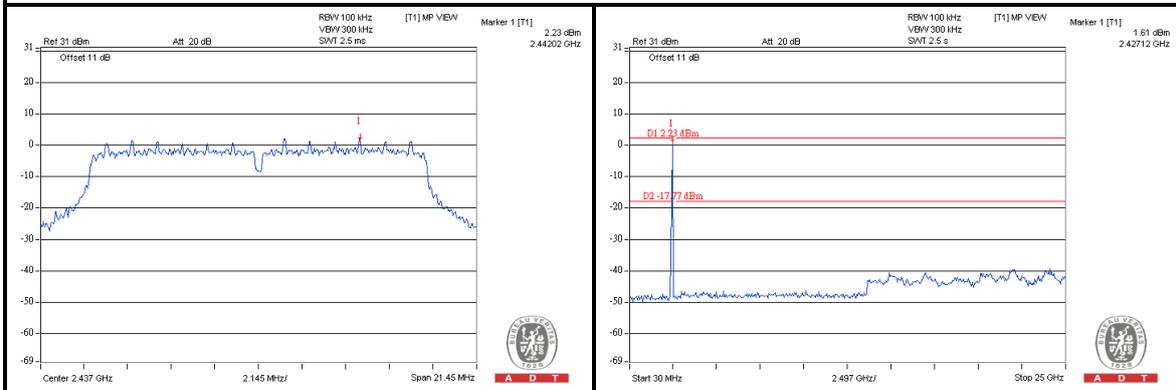
A D T

802.11g

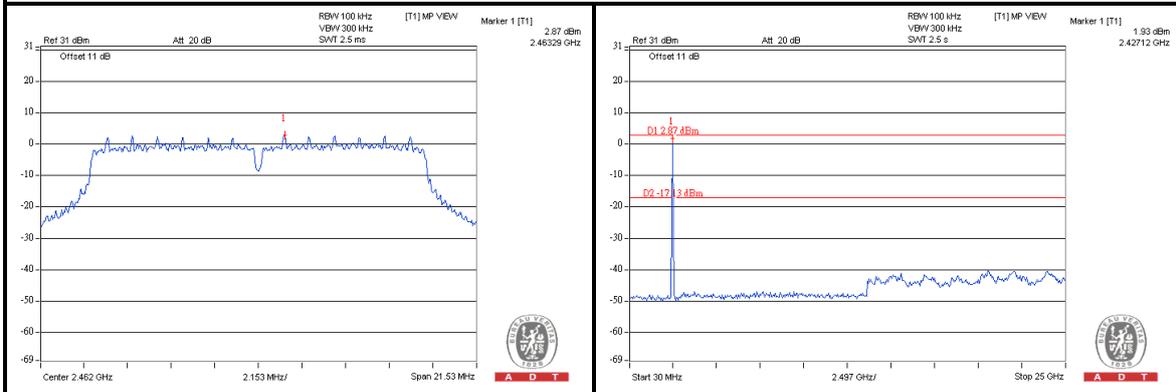
CH 1



CH 6

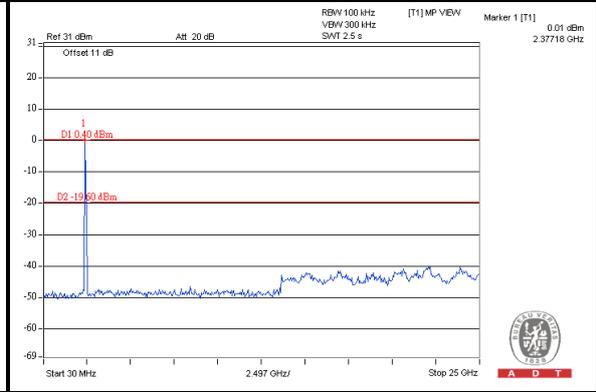
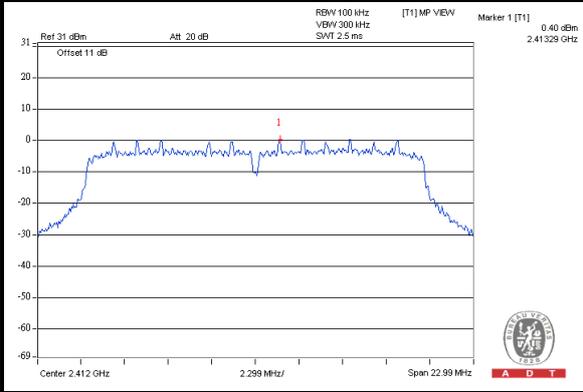


CH 11

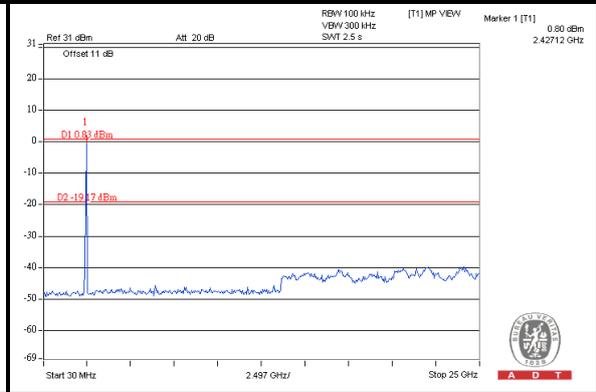
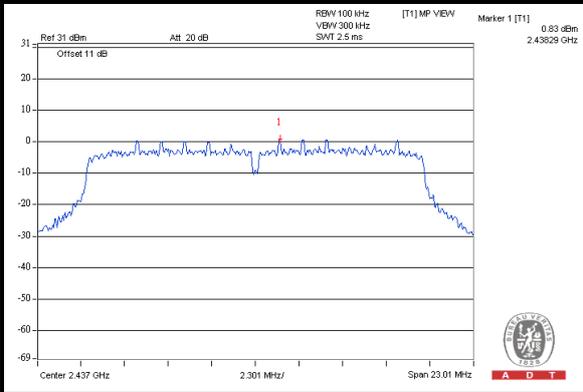


802.11n (20MHz)

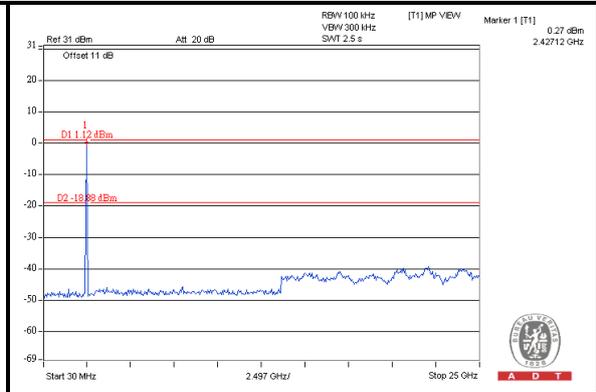
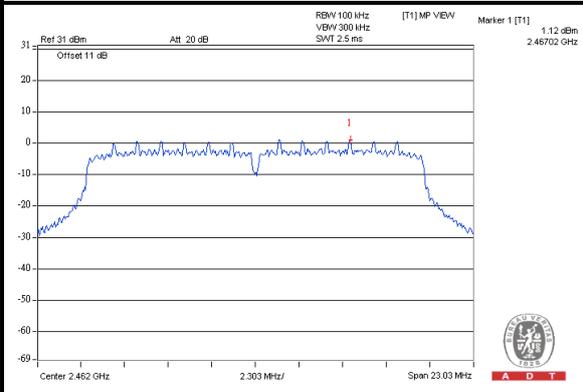
CH 1

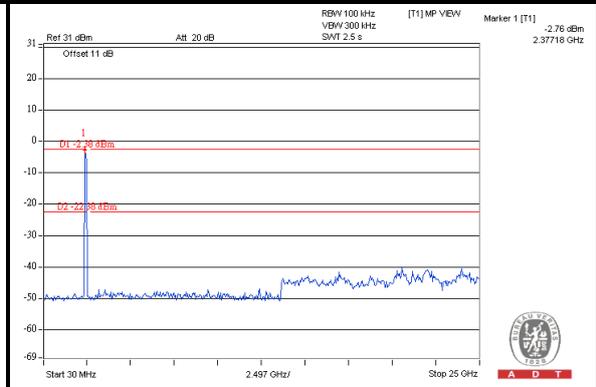
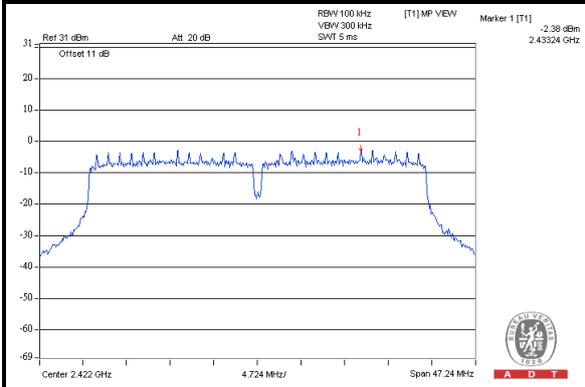
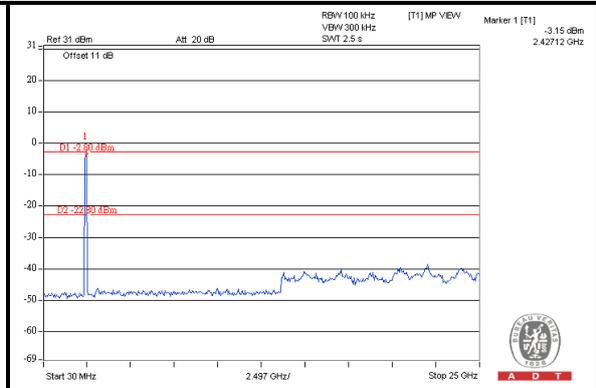
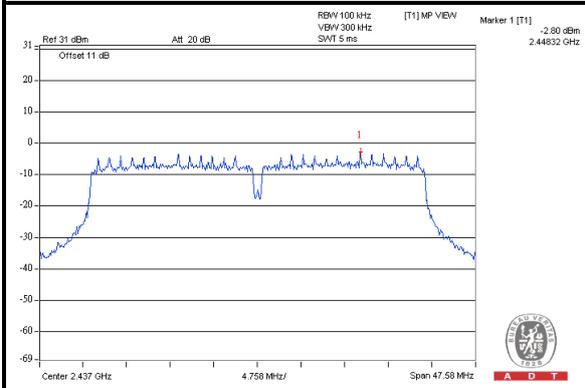
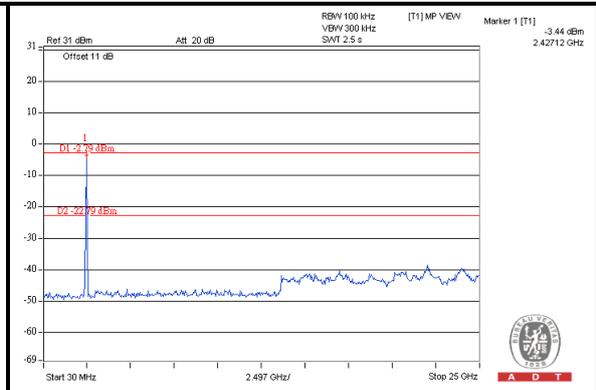
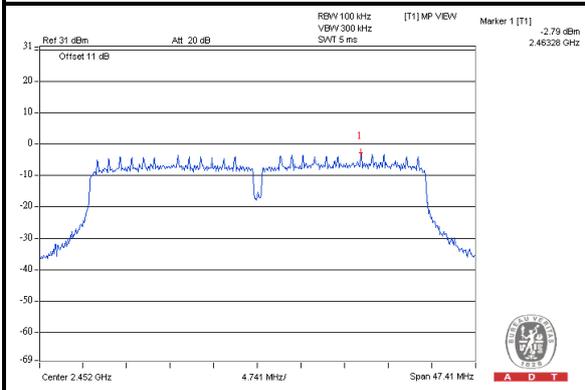


CH 6



CH 11



802.11n (40MHz)**CH 3****CH 6****CH 9**



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

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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

NOTE:

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



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 4.1.6.



A D T

5.1.7 TEST RESULTS

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	73.1 PK	88.4	-15.3	1.00 H	335	33.90	39.20
2	#5725.00	61.7 AV	77.0	-15.3	1.00 H	335	22.50	39.20
3	*5745.00	108.4 PK			1.00 H	335	69.10	39.30
4	*5745.00	97.0 AV			1.00 H	335	57.70	39.30
5	11490.00	59.2 PK	74.0	-14.8	1.03 H	241	9.80	49.40
6	11490.00	46.3 AV	54.0	-7.7	1.03 H	241	-3.10	49.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	61.6 PK	83.9	-22.3	1.10 V	18	22.40	39.20
2	#5725.00	50.5 AV	72.8	-22.3	1.10 V	18	11.30	39.20
3	*5745.00	103.9 PK			1.10 V	18	64.60	39.30
4	*5745.00	92.8 AV			1.10 V	18	53.50	39.30
5	11490.00	56.2 PK	74.0	-17.8	1.05 V	116	6.80	49.40
6	11490.00	44.3 AV	54.0	-9.7	1.05 V	116	-5.10	49.40

REMARKS:

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



A D T

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	108.4 PK			1.00 H	334	69.00	39.40
2	*5785.00	97.9 AV			1.00 H	334	58.50	39.40
3	11570.00	59.1 PK	74.0	-14.9	1.01 H	112	9.90	49.20
4	11570.00	45.7 AV	54.0	-8.3	1.01 H	112	-3.50	49.20
5	#17355.00	63.5 PK	88.4	-24.9	1.03 H	24	9.20	54.30
6	#17355.00	50.4 AV	77.9	-27.5	1.03 H	24	-3.90	54.30

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	*5785.00	104.2 PK			1.08 V	19	64.80	39.40
2	*5785.00	93.3 AV			1.08 V	19	53.90	39.40
3	11570.00	56.6 PK	74.0	-17.4	1.08 V	19	7.40	49.20
4	11570.00	44.7 AV	54.0	-9.3	1.08 V	19	-4.50	49.20
5	#17355.00	63.0 PK	84.2	-21.2	1.08 V	112	8.70	54.30
6	#17355.00	49.8 AV	73.3	-23.5	1.08 V	112	-4.50	54.30

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



A D T

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	108.2 PK			1.08 H	336	68.70	39.50
2	*5825.00	97.8 AV			1.08 H	336	58.30	39.50
3	#5850.00	59.1 PK	88.2	-29.1	1.08 H	336	19.60	39.50
4	#5850.00	48.7 AV	77.8	-29.1	1.08 H	336	9.20	39.50
5	11650.00	57.2 PK	74.0	-16.8	1.08 H	102	8.10	49.10
6	11650.00	45.3 AV	54.0	-8.7	1.08 H	102	-3.80	49.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	103.7 PK			1.05 V	21	64.20	39.50
2	*5825.00	92.9 AV			1.05 V	21	53.40	39.50
3	#5850.00	54.6 PK	83.7	-29.1	1.05 V	21	15.10	39.50
4	#5850.00	43.8 AV	72.9	-29.1	1.05 V	21	4.30	39.50
5	11650.00	56.9 PK	74.0	-17.1	1.02 V	111	7.80	49.10
6	11650.00	46.2 AV	54.0	-7.8	1.02 V	111	-2.90	49.10

REMARKS:

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



A D T

802.11n (20MHz)

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	68.7 PK	87.9	-19.2	1.01 H	336	29.50	39.20
2	#5725.00	57.5 AV	76.7	-19.2	1.01 H	336	18.30	39.20
3	*5745.00	107.9 PK			1.01 H	336	68.60	39.30
4	*5745.00	96.7 AV			1.01 H	336	57.40	39.30
5	11490.00	59.3 PK	74.0	-14.7	1.01 H	22	9.90	49.40
6	11490.00	46.4 AV	54.0	-7.6	1.01 H	22	-3.00	49.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	62.6 PK	84.1	-21.5	1.11 V	16	23.40	39.20
2	#5725.00	51.1 AV	72.6	-21.5	1.11 V	16	11.90	39.20
3	*5745.00	104.1 PK			1.11 V	16	64.80	39.30
4	*5745.00	92.6 AV			1.11 V	16	53.30	39.30
5	11490.00	56.0 PK	74.0	-18.0	1.03 V	101	6.60	49.40
6	11490.00	44.1 AV	54.0	-9.9	1.03 V	101	-5.30	49.40

REMARKS:

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



A D T

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	108.1 PK			1.02 H	338	68.70	39.40
2	*5785.00	97.4 AV			1.02 H	338	58.00	39.40
3	11570.00	58.7 PK	74.0	-15.3	1.08 H	26	9.50	49.20
4	11570.00	45.2 AV	54.0	-8.8	1.08 H	26	-4.00	49.20
5	#17355.00	63.2 PK	88.1	-24.9	1.03 H	28	8.90	54.30
6	#17355.00	50.1 AV	77.4	-27.3	1.03 H	28	-4.20	54.30

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	*5785.00	103.8 PK			1.10 V	16	64.40	39.40
2	*5785.00	93.1 AV			1.10 V	16	53.70	39.40
3	11570.00	56.3 PK	74.0	-17.7	1.02 V	115	7.10	49.20
4	11570.00	44.2 AV	54.0	-9.8	1.02 V	115	-5.00	49.20
5	#17355.00	62.8 PK	83.8	-21.0	1.06 V	104	8.50	54.30
6	#17355.00	49.6 AV	73.1	-23.5	1.06 V	104	-4.70	54.30

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



A D T

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	107.7 PK			1.01 H	335	68.20	39.50
2	*5825.00	97.6 AV			1.01 H	335	58.10	39.50
3	#5850.00	60.5 PK	87.7	-27.2	1.01 H	335	21.00	39.50
4	#5850.00	50.4 AV	77.6	-27.2	1.01 H	335	10.90	39.50
5	11650.00	57.0 PK	74.0	-17.0	1.12 H	234	7.90	49.10
6	11650.00	45.1 AV	54.0	-8.9	1.12 H	234	-4.00	49.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	103.5 PK			1.08 V	18	64.00	39.50
2	*5825.00	92.3 AV			1.08 V	18	52.80	39.50
3	#5850.00	56.8 PK	83.5	-26.7	1.08 V	18	17.30	39.50
4	#5850.00	45.6 AV	72.3	-26.7	1.08 V	18	6.10	39.50
5	11650.00	56.5 PK	74.0	-17.5	1.07 V	56	7.40	49.10
6	11650.00	45.7 AV	54.0	-8.3	1.07 V	56	-3.40	49.10

REMARKS:

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



A D T

802.11n (40MHz)

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	70.3 PK	86.0	-15.7	1.00 H	338	31.10	39.20
2	#5725.00	58.2 AV	73.9	-15.7	1.00 H	338	19.00	39.20
3	*5755.00	106.0 PK			1.00 H	338	66.70	39.30
4	*5755.00	93.9 AV			1.00 H	338	54.60	39.30
5	11510.00	58.7 PK	74.0	-15.3	1.03 H	112	9.30	49.40
6	11510.00	46.4 AV	54.0	-7.6	1.03 H	112	-3.00	49.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	64.4 PK	81.2	-16.8	1.08 V	21	25.20	39.20
2	#5725.00	52.3 AV	69.1	-16.8	1.08 V	21	13.10	39.20
3	*5755.00	101.2 PK			1.08 V	21	61.90	39.30
4	*5755.00	89.1 AV			1.08 V	21	49.80	39.30
5	11510.00	57.4 PK	74.0	-16.6	1.09 V	124	8.00	49.40
6	11510.00	44.2 AV	54.0	-9.8	1.09 V	124	-5.20	49.40

REMARKS:

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



A D T

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	104.9 PK			1.00 H	339	65.50	39.40
2	*5795.00	92.7 AV			1.00 H	339	53.30	39.40
3	#5850.00	61.7 PK	84.9	-23.2	1.00 H	339	22.20	39.50
4	#5850.00	49.5 AV	72.7	-23.2	1.00 H	339	10.00	39.50
5	11590.00	57.9 PK	74.0	-16.1	1.03 H	212	8.80	49.10
6	11590.00	45.8 AV	54.0	-8.2	1.03 H	212	-3.30	49.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	100.2 PK			1.10 V	24	60.80	39.40
2	*5795.00	88.9 AV			1.10 V	24	49.50	39.40
3	#5850.00	54.3 PK	80.2	-25.9	1.10 V	24	14.80	39.50
4	#5850.00	43.0 AV	68.9	-25.9	1.10 V	24	3.50	39.50
5	11590.00	57.8 PK	74.0	-16.2	1.10 V	145	8.70	49.10
6	11590.00	44.5 AV	54.0	-9.5	1.10 V	145	-4.60	49.10

REMARKS:

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



A D T

BELOW 1GHz WORST-CASE DATA

802.11a

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	80.45	35.0 QP	40.0	-5.0	1.00 H	165	24.90	10.10
2	97.95	38.3 QP	43.5	-5.2	1.00 H	173	28.90	9.40
3	210.72	31.4 QP	43.5	-12.1	1.50 H	249	19.50	11.90
4	377.93	33.2 QP	46.0	-12.8	1.75 H	239	15.40	17.80
5	720.12	38.7 QP	46.0	-7.3	1.00 H	154	13.80	24.90
6	961.21	41.4 QP	54.0	-12.6	2.00 H	197	12.10	29.30

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	47.40	35.5 QP	40.0	-4.5	1.00 V	15	21.40	14.10
2	62.95	37.8 QP	40.0	-2.2	1.00 V	234	24.60	13.20
3	74.62	36.5 QP	40.0	-3.5	1.00 V	325	25.10	11.40
4	136.84	35.7 QP	43.5	-7.8	1.25 V	286	22.10	13.60
5	500.42	31.7 QP	46.0	-14.3	1.75 V	233	10.60	21.10
6	961.21	43.6 QP	54.0	-10.4	2.00 V	248	14.30	29.30

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.

5.2 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 4.1.6

5.2.7 TEST RESULTS

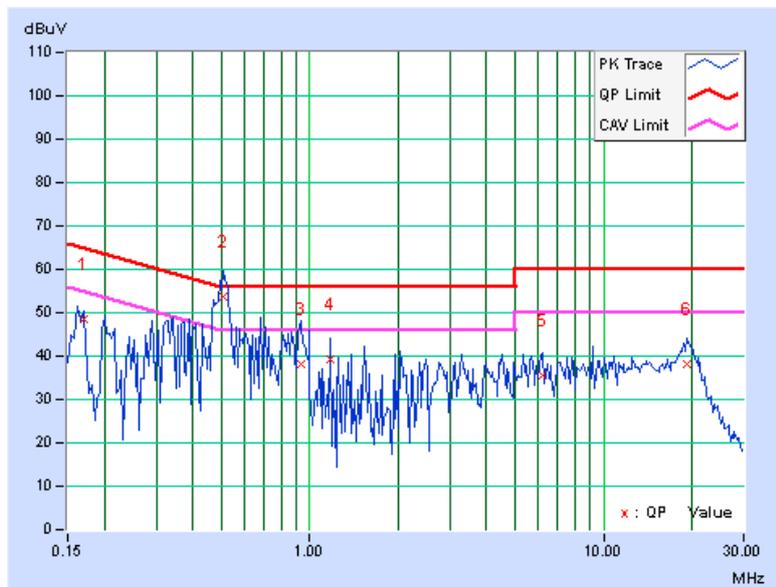
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
--------------	--------	----------------------	------

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	0.17	48.39	32.56	48.56	32.73	64.98	54.98	-16.42	-22.25
2	0.50938	0.21	53.56	35.55	53.77	35.76	56.00	46.00	-2.23	-10.24
3	0.93125	0.23	37.84	22.88	38.07	23.11	56.00	46.00	-17.93	-22.89
4	1.17969	0.24	39.14	23.32	39.38	23.56	56.00	46.00	-16.62	-22.44
5	6.20703	0.42	35.13	22.13	35.55	22.55	60.00	50.00	-24.45	-27.45
6	19.16797	0.71	37.60	22.86	38.31	23.57	60.00	50.00	-21.69	-26.43

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.

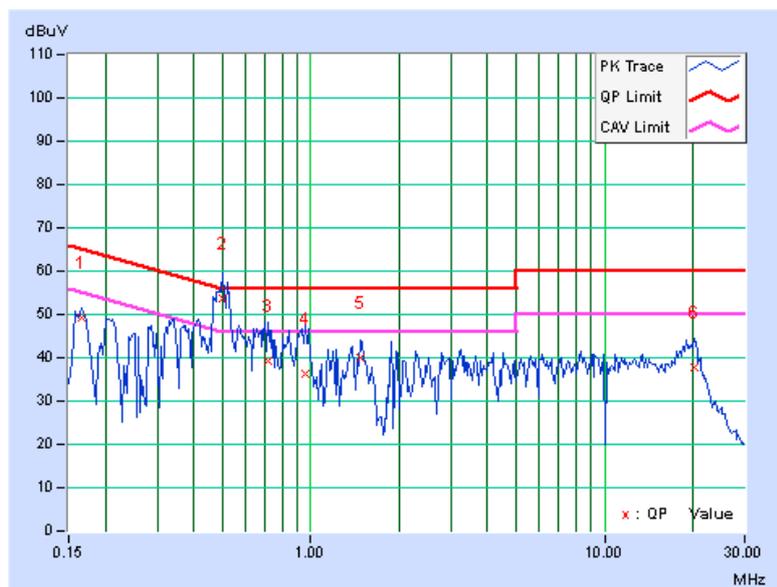


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

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	0.16562	0.16	49.16	35.79	49.32	35.95	65.18	55.18	-15.85	-19.22
2	0.50156	0.18	53.68	36.80	53.86	36.98	56.00	46.00	-2.14	-9.02
3	0.71641	0.19	39.18	23.10	39.37	23.29	56.00	46.00	-16.63	-22.71
4	0.96250	0.19	36.19	20.68	36.38	20.87	56.00	46.00	-19.62	-25.13
5	1.48047	0.23	39.88	26.39	40.11	26.62	56.00	46.00	-15.89	-19.38
6	20.26953	0.82	36.85	22.04	37.67	22.86	60.00	50.00	-22.33	-27.14

REMARKS:

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





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
149	5745	16.45	0.5	PASS
157	5785	16.48	0.5	PASS
165	5825	16.47	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.35	0.5	PASS
157	5785	16.35	0.5	PASS
165	5825	16.34	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	35.68	0.5	PASS
159	5795	36.25	0.5	PASS



5.4 CONDUCTED OUTPUT POWER

5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

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

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	159.956	22.04	30	PASS
157	5785	165.196	22.18	30	PASS
165	5825	160.694	22.06	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	156.675	21.95	30	PASS
157	5785	163.682	22.14	30	PASS
165	5825	157.761	21.98	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	126.183	21.01	30	PASS
159	5795	133.352	21.25	30	PASS



A D T

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST SETUP

Same as item 4.5.2.

5.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.5.4 TEST PROCEDURE.

Same as item 4.5.4.

5.5.5 DEVIATION FROM TEST STANDARD

No deviation.

5.5.6 EUT OPERATING CONDITION

Same as item 4.3.6.



A D T

5.5.7 TEST RESULTS

802.11a

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	1.14	-14.09	8	PASS
157	5785	1.51	-13.72	8	PASS
165	5825	1.35	-13.88	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	1.27	-13.96	8	PASS
157	5785	1.34	-13.89	8	PASS
165	5825	1.36	-13.87	8	PASS

802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
151	5755	-2.54	-17.77	8	PASS
159	5795	-2.47	-17.7	8	PASS



5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

5.6.2 TEST SETUP

Same as Item 4.6.2

5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.6.4 TEST PROCEDURE

Same as Item 4.6.4

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

5.6.6 EUT OPERATING CONDITION

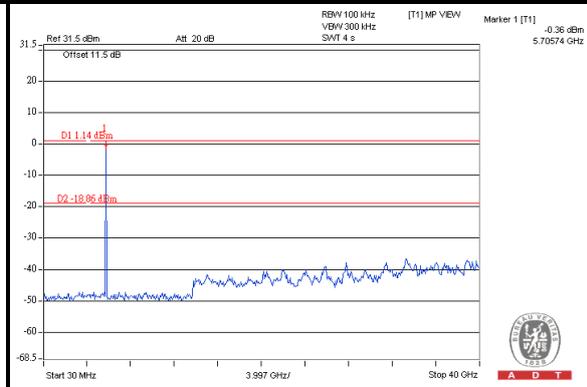
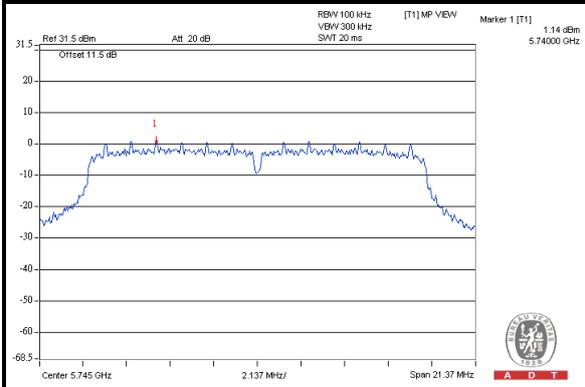
Same as Item 4.3.6

5.6.7 TEST RESULTS

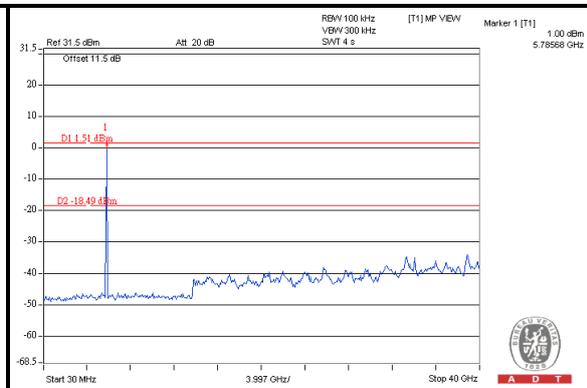
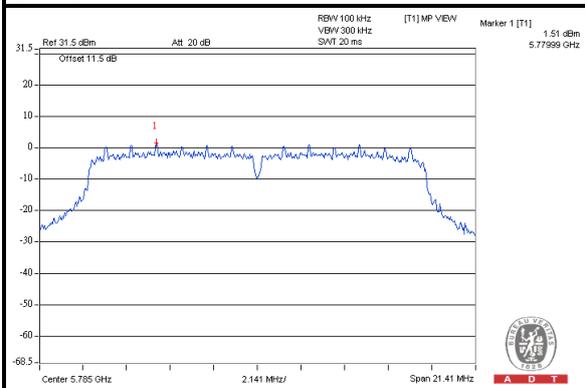
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11a

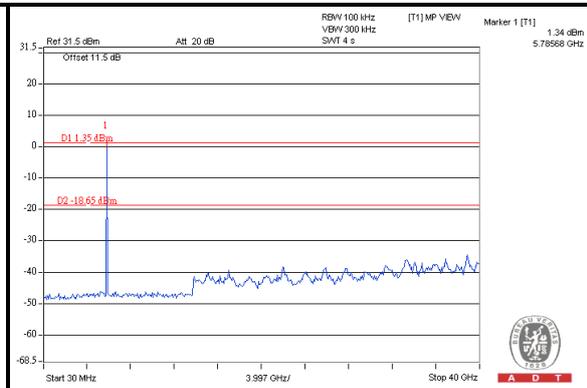
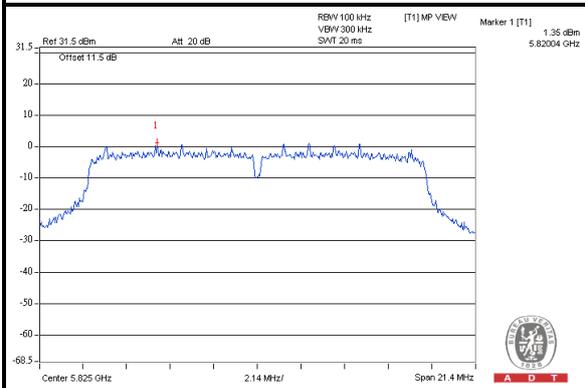
CH 149



CH 157

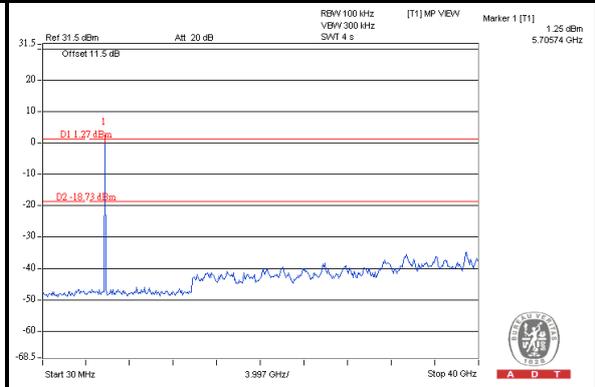
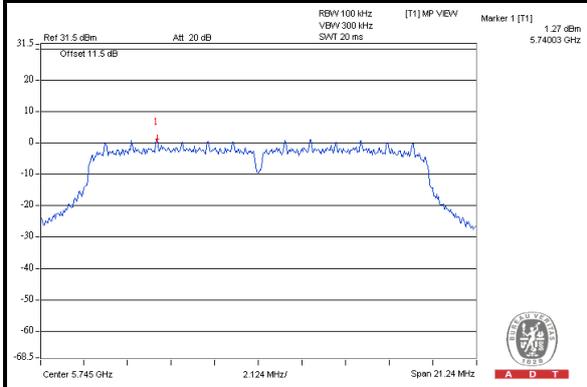


CH 165

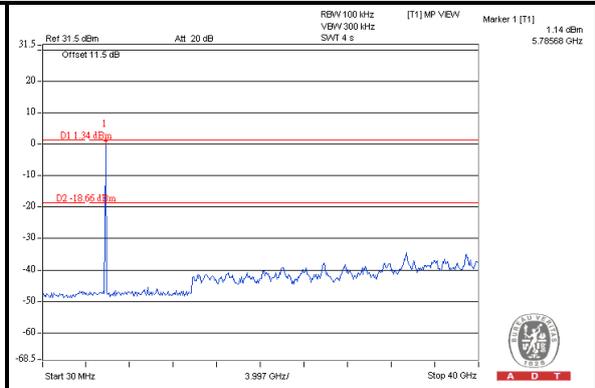
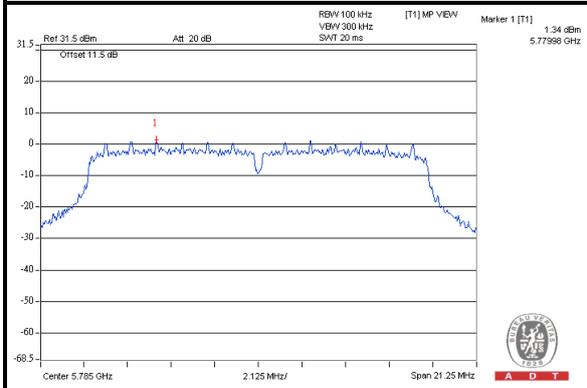


802.11n (20MHz)

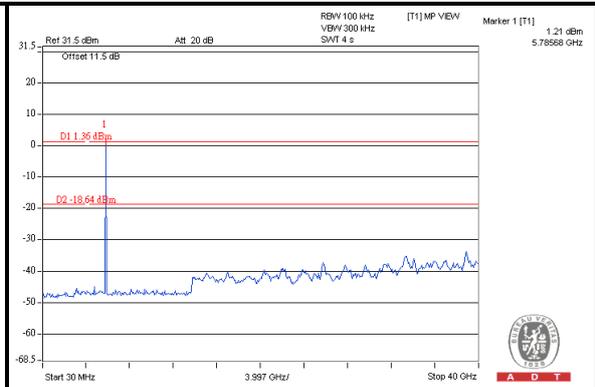
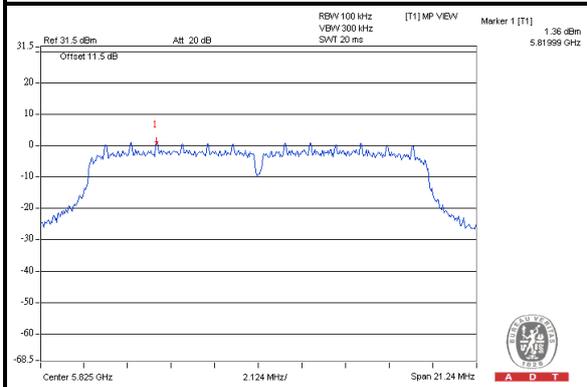
CH 149



CH 157

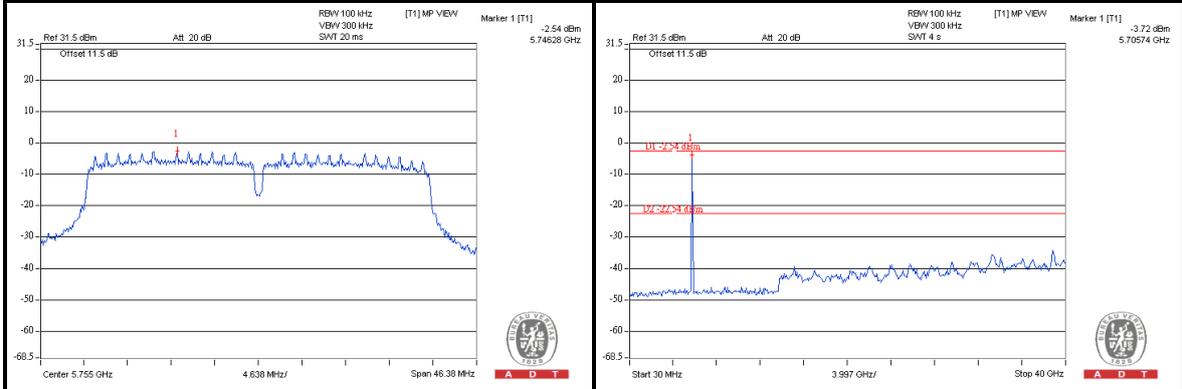


CH 165

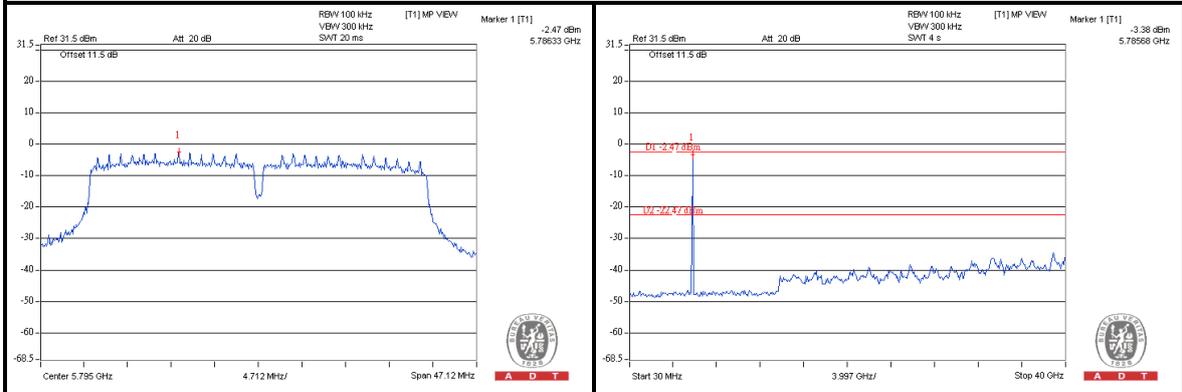


802.11n (40MHz)

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.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml. 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---