



A D T

FCC TEST REPORT (15.247)

REPORT NO.: RF120328C07-1

MODEL NO.: TL-WDN3200

FCC ID: TE7WDN3200

IC: 8853A-WDN3200

RECEIVED: Mar. 28, 2012

TESTED: Apr. 6 ~ 12, 2012

ISSUED: May 11, 2012

APPLICANT: TP-LINK TECHNOLOGIES CO., LTD.

ADDRESS: Building 24 (floors 1,3,4,5) and 28 (floors1-4)
Central Science and Technology Park,Shennan
Rd, Nanshan, Shenzhen,China

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

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

This test report consists of 111 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.





TABLE OF CONTENTS

RELEASE CONTROL RECORD.....	6
1. CERTIFICATION	7
2. SUMMARY OF TEST RESULTS	8
2.1 MEASUREMENT UNCERTAINTY	9
3. GENERAL INFORMATION	10
3.1 GENERAL DESCRIPTION OF EUT	10
3.2 DESCRIPTION OF TEST MODES	12
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	13
3.3 DESCRIPTION OF SUPPORT UNITS	17
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 CONDUCTED EMISSION MEASUREMENT.....	19
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	19
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 RADIATED EMISSION AND BANDEDGE MEASUREMENT	24
4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT ..	24
4.2.2 TEST INSTRUMENTS.....	25
4.2.3 TEST PROCEDURES	26
4.2.4 DEVIATION FROM TEST STANDARD.....	26
4.2.5 TEST SETUP.....	27
4.2.6 EUT OPERATING CONDITIONS	27
4.2.7 TEST RESULTS	28
4.3 6dB BANDWIDTH MEASUREMENT	41
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	41
4.3.2 TEST SETUP.....	41
4.3.3 TEST INSTRUMENTS.....	41
4.3.4 TEST PROCEDURE.....	41
4.3.5 DEVIATION FROM TEST STANDARD.....	41
4.3.6 EUT OPERATING CONDITIONS	41
4.3.7 TEST RESULTS	42
4.4 CONDUCTED OUTPUT POWER.....	46
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	46
4.4.2 TEST SETUP.....	46
4.4.3 TEST INSTRUMENTS.....	46
4.4.4 TEST PROCEDURES	46
4.4.5 DEVIATION FROM TEST STANDARD.....	46



4.4.6	EUT OPERATING CONDITIONS	46
4.4.7	TEST RESULTS	47
4.5	POWER SPECTRAL DENSITY MEASUREMENT	48
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	48
4.5.2	TEST SETUP.....	48
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	53
4.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT	53
4.6.2	TEST SETUP.....	53
4.6.3	TEST INSTRUMENTS.....	53
4.6.4	TEST PROCEDURE.....	53
4.6.5	DEVIATION FROM TEST STANDARD.....	54
4.6.6	EUT OPERATING CONDITION.....	54
4.6.7	TEST RESULTS	54
4.6.8	TEST RESULTS	55
5.	TEST TYPES AND RESULTS (FOR 5.0GHz BAND).....	59
5.1	CONDUCTED EMISSION MEASUREMENT.....	59
5.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	59
5.1.2	TEST INSTRUMENTS.....	59
5.1.3	TEST PROCEDURES	59
5.1.4	DEVIATION FROM TEST STANDARD.....	59
5.1.5	TEST SETUP.....	59
5.1.6	EUT OPERATING CONDITIONS	59
5.1.7	TEST RESULTS	60
5.2	RADIATED EMISSION MEASUREMENT.....	62
5.2.1	LIMITS OF RADIATED 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	72
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	72
5.3.2	TEST SETUP.....	72
5.3.3	TEST INSTRUMENTS.....	72
5.3.4	TEST PROCEDURE.....	72
5.3.5	DEVIATION FROM TEST STANDARD.....	72
5.3.6	EUT OPERATING CONDITIONS	72
5.3.7	TEST RESULTS	73
5.4	CONDUCTED OUTPUT POWER.....	76
5.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT.....	76



5.4.2	TEST SETUP.....	76
5.4.3	INSTRUMENTS.....	76
5.4.4	TEST PROCEDURES	76
5.4.5	DEVIATION FROM TEST STANDARD.....	76
5.4.6	EUT OPERATING CONDITIONS	76
5.4.7	TEST RESULTS	77
5.5	POWER SPECTRAL DENSITY MEASUREMENT	78
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT.....	78
5.5.2	TEST SETUP.....	78
5.5.3	TEST INSTRUMENTS.....	78
5.5.4	TEST PROCEDURE.....	78
5.5.5	DEVIATION FROM TEST STANDARD.....	78
5.5.6	EUT OPERATING CONDITION.....	78
5.5.7	TEST RESULTS	79
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	86
7.	INFORMATION ON THE TESTING LABORATORIES.....	87
8.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	88
9.	APPENDIX-B – TEST TYPES AND RESULTS (FOR 2.4GHz BAND).....	89
9.1	RECEIVER RADIATED EMISSION MEASUREMENT	89
9.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT	89
9.1.2	TEST INSTRUMENTS.....	89
9.1.3	TEST PROCEDURES	90
9.1.4	DEVIATION FROM TEST STANDARD.....	90
9.1.5	TEST SETUP.....	91
9.1.6	EUT OPERATING CONDITIONS	91
9.1.7	TEST RESULTS	92
9.2	OCCUPIED BANDWIDTH MEASUREMENT	96
9.2.1	TEST INSTRUMENTS.....	96
9.2.2	TEST PROCEDURE.....	96
9.2.3	DEVIATION FROM TEST STANDARD.....	96
9.2.4	TEST SETUP.....	96
9.2.5	EUT OPERATING CONDITIONS	96
9.2.6	TEST RESULTS	97
10.	APPENDIX-C – TEST TYPES AND RESULTS (FOR 5.0GHz BAND).....	101
10.1	RECEIVER RADIATED EMISSION MEASUREMENT	101



10.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT	101
10.1.2	TEST INSTRUMENTS.....	101
10.1.3	TEST PROCEDURES	102
10.1.4	DEVIATION FROM TEST STANDARD.....	102
10.1.5	TEST SETUP.....	103
10.1.6	EUT OPERATING CONDITIONS	103
10.1.7	TEST RESULTS	104
10.2	OCCUPIED BANDWIDTH MEASUREMENT	108
10.2.1	TEST INSTRUMENTS.....	108
10.2.2	TEST PROCEDURE.....	108
10.2.3	DEVIATION FROM TEST STANDARD.....	108
10.2.4	TEST SETUP.....	108
10.2.5	EUT OPERATING CONDITIONS	108
10.2.6	TEST RESULTS	109



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120328C07-1	Original release	May 11, 2212



A D T

1. CERTIFICATION

PRODUCT: N600 Wireless Dual Band USB Adapter
MODEL NO.: TL-WDN3200
BRAND: TP-LINK
APPLICANT: TP-LINK TECHNOLOGIES CO., LTD.
TESTED: Apr. 6 ~ 12, 2012
TEST SAMPLE: PROTOTYPE
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)
ANSI C63.10-2009

The above equipment 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 : Annie Chang , DATE: May 11, 2012
(Annie Chang / Senior Specialist)

APPROVED BY : Ken Liu , DATE: May 11, 2012
(Ken Liu / Manager)



2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)				
STANDARD SECTION		TEST TYPE AND LIMIT	RESULT	REMARK
FCC Part 15	RSS-Gen			
15.207	7.2.4	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -2.71dB at 15.27344MHz
--	6.1	Receiver Radiated Emissions RSS-Gen Limit: Table 2	PASS	Meet the requirement of limit. Minimum passing margin is -2.8dB at 232.14MHz.
STANDARD SECTION		TEST TYPE AND LIMIT	RESULT	REMARK
FCC Part 15	RSS-210			
15.247(d) 15.209	A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 4924.00MHz.
15.247(d)	A8.5	Out-of-band Emission Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	A8.2 (a)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	A8.4 (4)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	A8.2 (b)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	-	Antenna Requirement	PASS	No antenna connector is used.

NOTE: The “Receiver Radiated Emission measurement” and “Occupied Bandwidth measurement” were recorded in Appendix B & C of this report.



A D T

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	150kHz~30MHz	2.41 dB
Radiated emissions	30MHz ~ 1GHz	3.87 dB
	Above 1GHz	3.36 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	N600 Wireless Dual Band USB Adapter
MODEL NO.	TL-WDN3200
FCC ID	TE7WDN3200
IC	8853A-WDN3200
POWER SUPPLY	5Vdc from host equipment
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	487.9mW for 2412 ~ 2462MHz 285.8mW for 5745 ~ 5825MHz
ANTENNA TYPE	Printed antenna with 0dBi gain
ANTENNA CONNECTOR	N/A
DATA CABLE	N/A
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	N/A

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)	√	√	√



2. The functions of EUT listed as below:

FUNCTION	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g/n	FCC Part 15, Subpart C (Section 15.247)	RF120328C07-1
WLAN 802.11a/n (5745~5825 MHz)		
WLAN 802.11a/n (5180~ 5240MHz)	FCC Part 15, Subpart E (Section 15.407)	RF120328C07

3. 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

4. The EUT had been pre-tested with Horizontal & Vertical condition. The worst case was found when tested under Vertical condition, therefore only its test data was recorded in this report.

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



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 [≥] 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

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	13.0
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	27.0

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)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0

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)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0



A D T

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	13.0
-	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	27.0

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	13.0
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	27.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	24deg. C, 80%RH	120Vac, 60Hz	Jun Wu
RE ³ 1G	20deg. C, 78%RH	120Vac, 60Hz	Nick Chen
RE<1G	21deg. C, 71%RH	120Vac, 60Hz	Nick Chen
APCM	24deg. C, 78%RH	120Vac, 60Hz	Jun Wu



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

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	13.0
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	27.0

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	149	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	149	OFDM	BPSK	6.0



A D T

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	13.0
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	27.0

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	13.0
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	27.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	24deg. C, 80%RH	120Vac, 60Hz	Jun Wu
RE ³ 1G	20deg. C, 78%RH	120Vac, 60Hz	Nick Chen
RE<1G	21deg. C, 71%RH	120Vac, 60Hz	Nick Chen
APCM	24deg. C, 78%RH	120Vac, 60Hz	Jun Wu

3.3 DESCRIPTION OF SUPPORT UNITS

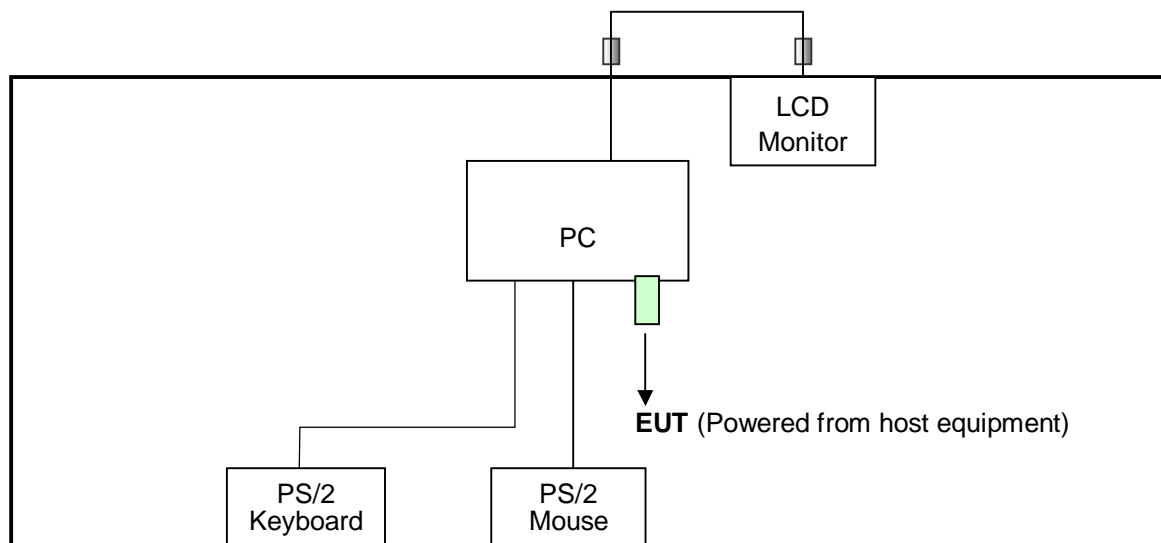
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PERSONAL COMPUTER	HP	dx7300MT	SGH72102P4	FCC DoC Approved
2	LCD MONITOR	DELL	U2410	CN082WXD728 720CC0LGL	FCC DoC Approved
3	PS/2 KEYBOARD	BTC	5200T	F24800276	E5XKB5122WTH01 10
4	PS/2 MOUSE	BTC	M851	N/A	E5XMSM860

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, with two cores
3	1.6 m foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.
4	1.5 m Non shielded wire, terminated with PS/2 connector via drain wire, w/o core.

NOTE: All power cords of the above support units are non shielded (1.8m).

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)

558074 D01 DTS Meas Guidance v01

662911 D01 Multiple Transmitter Output v01r01

Canada RSS-210 Issue 8 (2010-12)

Canada RSS-Gen Issue 3 (2010-12)

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.



A D T

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

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100276	Jan. 04, 2012	Jan. 03, 2013
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100219	Nov. 24, 2011	Nov. 23, 2012
LISN With Adapter (for EUT)	AD10	C10Ada-001	Nov. 24, 2011	Nov. 23, 2012
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Dec. 08, 2011	Dec. 07, 2012
Software	ADT_Cond_V7.3.7	NA	NA	NA
Software	ADT_ISN_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Feb. 20, 2012	Feb. 19, 2013
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 22, 2012	Feb. 21, 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 test was performed in Shielded Room No. 10.
 3. The VCCI Site Registration No. C-1852.



A D T

4.1.3 TEST PROCEDURES

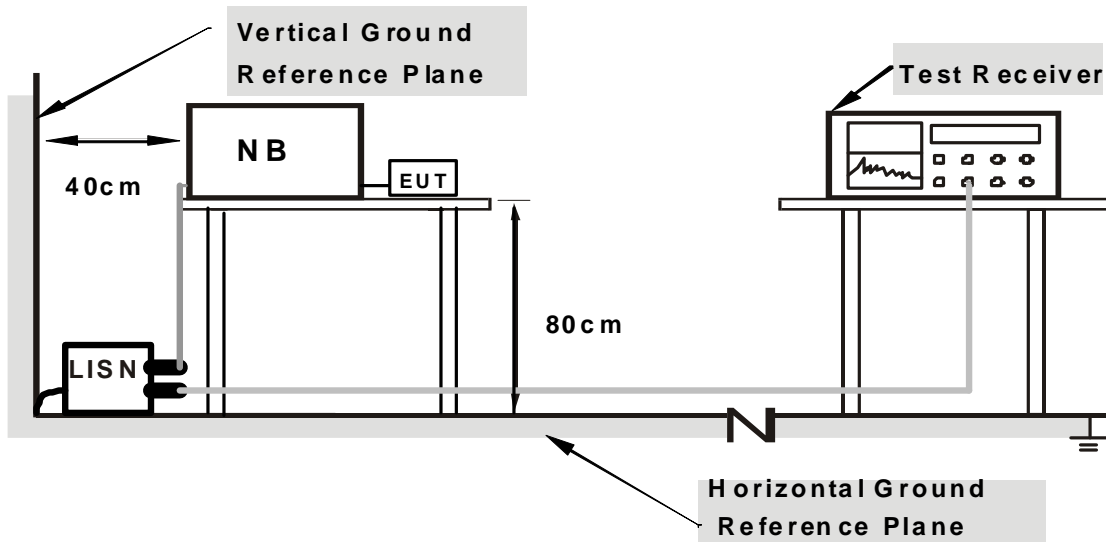
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 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).

4.1.6 EUT OPERATING CONDITIONS

- a. Turn on the power of all equipment.
- b. PC ran a test program (provided by manufacture) to enable EUT under transmitting condition at specific channel continuously.

4.1.7 TEST RESULTS

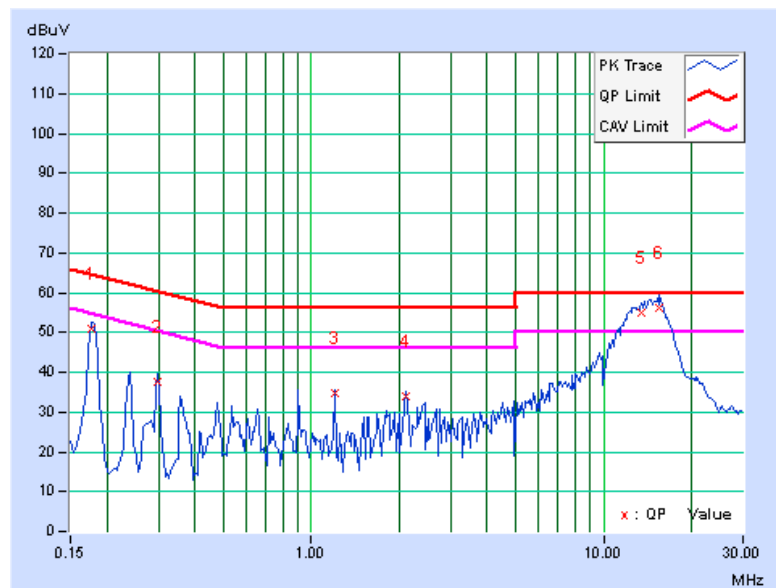
CONDUCTED WORST-CASE DATA : 802.11b

CHANNEL	Channel 1	6dB BANDWIDTH	9kHz
PHASE	Line 1		

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	0.17734	0.15	50.95	-	51.10	-	64.61	54.61	-13.51	-
2	0.29844	0.17	37.26	-	37.43	-	60.29	50.29	-22.86	-
3	1.20703	0.24	34.31	-	34.55	-	56.00	46.00	-21.45	-
4	2.11328	0.30	33.75	-	34.05	-	56.00	46.00	-21.95	-
5	13.41797	0.93	54.06	45.12	54.99	46.05	60.00	50.00	-5.01	-3.95
6	15.44531	1.04	55.30	45.33	56.34	46.37	60.00	50.00	-3.66	-3.63

REMARKS:

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

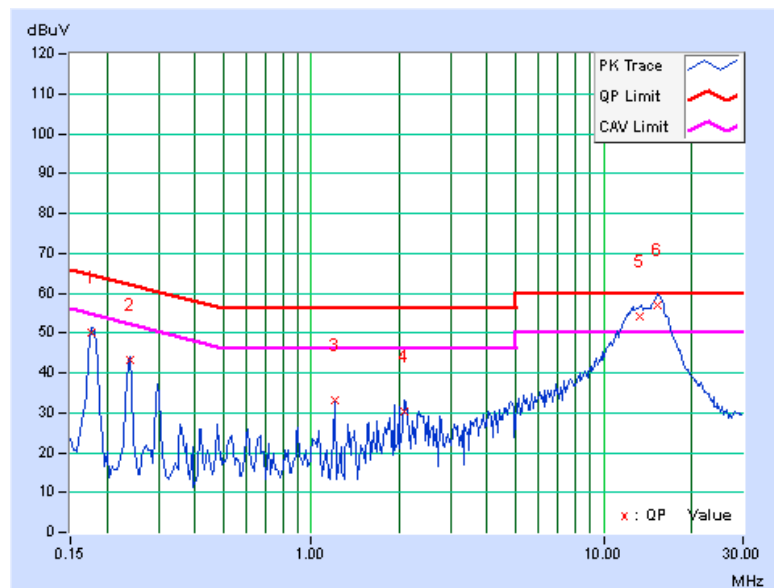


CHANNEL	Channel 1	6dB BANDWIDTH	9kHz
PHASE	Line 2		

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	0.17734	0.15	50.15	-	50.30	-	64.61	54.61	-14.31	-
2	0.23984	0.16	43.01	-	43.17	-	62.10	52.10	-18.93	-
3	1.20703	0.24	32.70	-	32.94	-	56.00	46.00	-23.06	-
4	2.07422	0.28	30.18	-	30.46	-	56.00	46.00	-25.54	-
5	13.29297	0.73	53.25	42.69	53.98	43.42	60.00	50.00	-6.02	-6.58
6	15.32031	0.80	56.11	45.72	56.91	46.52	60.00	50.00	-3.09	-3.48

REMARKS:

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





4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 29, 2012	Feb. 28, 2013
HP Preamplifier	8449B	3008A01201	Feb. 29, 2012	Feb. 28, 2013
Agilent Spectrum Analyzer	E4446A	MY46180403	Jun. 22, 2011	Jun. 21, 2012
ROHDE & SCHWARZ Test Receiver	ESCS 30	838251/021	Oct. 14, 2011	Oct. 13, 2012
Schwarzbeck Antenna	VULB 9168	137	Apr. 03, 2012	Apr. 02, 2013
Schwarzbeck Antenna	VHBA 9123	480	May 06, 2011	May 05, 2012
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V 7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF102	CABLE-CH6	Aug. 19, 2011	Aug. 18, 2012
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	May 16, 2011	May 15, 2012
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	Apr. 29, 2011	Apr. 28, 2012
Anritsu Power Sensor	MA2411B	0738404	Apr. 26, 2011	Apr. 25, 2012
Anritsu Power Meter	ML2495A	0842014	Apr. 26, 2011	Apr. 25, 2012
Schwarzbeck Horn Antenna	BBHA-9170	BBHA9170190	Oct. 7, 2011	Oct. 6, 2012
Pre_Amplifier MITEQ	AMF-6F-260400- 33-8P	892164	Mar. 2, 2012	Mar. 1, 2013

- NOTE:** 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.



A D T

4.2.3 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.

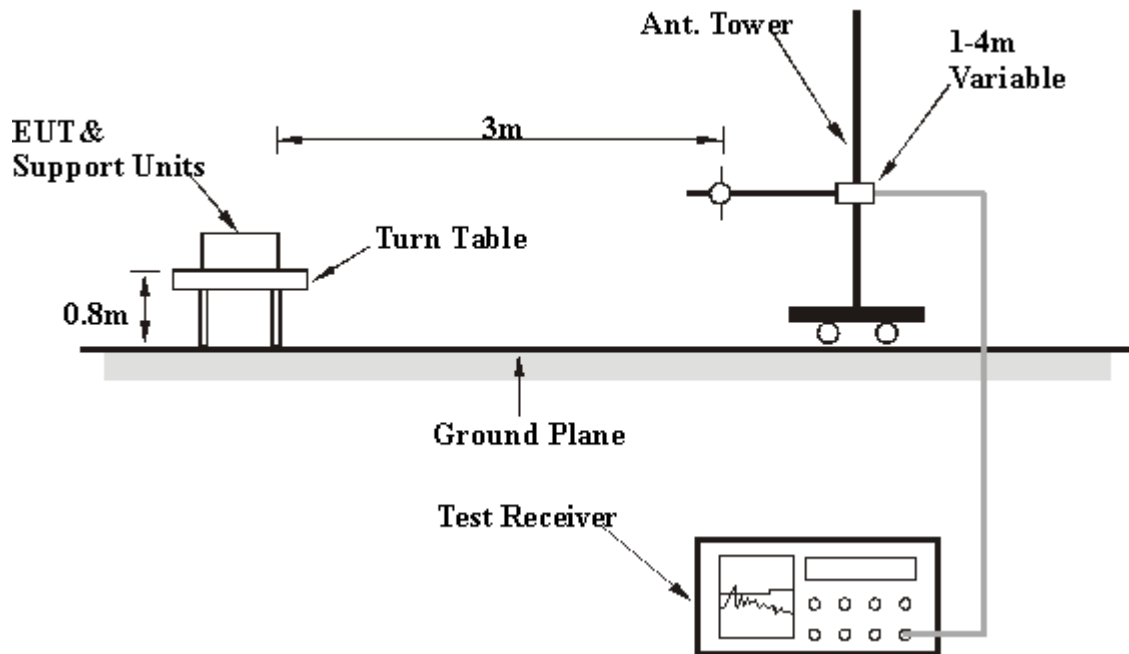
NOTE:

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.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.



A D T

4.2.7 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	2390.00	60.9 PK	74.0	-13.1	1.33 H	52	30.69	30.24
2	2390.00	50.2 AV	54.0	-3.8	1.33 H	52	20.00	30.24
3	*2412.00	113.9 PK			1.33 H	52	83.61	30.33
4	*2412.00	110.4 AV			1.33 H	52	80.03	30.33
5	4824.00	56.7 PK	74.0	-17.3	1.00 H	44	20.09	36.64
6	4824.00	52.7 AV	54.0	-1.3	1.00 H	44	16.06	36.64
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	56.0 PK	74.0	-18.0	1.21 V	55	25.78	30.24
2	2390.00	45.2 AV	54.0	-8.8	1.21 V	55	14.97	30.24
3	*2412.00	105.9 PK			1.21 V	55	75.53	30.33
4	*2412.00	102.6 AV			1.21 V	55	72.24	30.33
5	4824.00	51.9 PK	74.0	-22.1	1.46 V	337	15.29	36.64
6	4824.00	47.6 AV	54.0	-6.5	1.46 V	337	10.91	36.64

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	113.4 PK			1.28 H	52	82.95	30.42
2	*2437.00	110.5 AV			1.28 H	52	80.09	30.42
3	4874.00	56.3 PK	74.0	-17.7	1.00 H	46	19.55	36.77
4	4874.00	51.1 AV	54.0	-2.9	1.00 H	46	14.29	36.77
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	105.9 PK			1.25 V	43	75.44	30.42
2	*2437.00	101.8 AV			1.25 V	43	71.41	30.42
3	4874.00	49.1 PK	74.0	-24.9	1.20 V	325	12.35	36.77
4	4874.00	44.1 AV	54.0	-9.9	1.20 V	325	7.29	36.77

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	112.0 PK			1.35 H	52	81.48	30.50
2	*2462.00	107.8 AV			1.35 H	52	77.25	30.50
3	2483.50	58.3 PK	74.0	-15.7	1.35 H	52	27.74	30.57
4	2483.50	47.9 AV	54.0	-6.1	1.35 H	52	17.33	30.57
5	4924.00	58.3 PK	74.0	-15.7	1.00 H	53	21.38	36.90
6	4924.00	53.8 AV	54.0	-0.2	1.00 H	53	16.93	36.90
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	108.3 PK			1.26 V	56	77.79	30.50
2	*2462.00	104.7 AV			1.26 V	56	74.21	30.50
3	2483.50	57.0 PK	74.0	-17.0	1.26 V	56	26.43	30.57
4	2483.50	45.3 AV	54.0	-8.7	1.26 V	56	14.73	30.57
5	4924.00	53.6 PK	74.0	-20.4	1.28 V	350	16.74	36.90
6	4924.00	50.2 AV	54.0	-3.8	1.28 V	350	13.27	36.90

REMARKS:

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



A D T

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	72.0 PK	74.0	-2.0	1.33 H	39	41.72	30.24
2	2390.00	51.4 AV	54.0	-2.7	1.33 H	39	21.11	30.24
3	*2412.00	115.5 PK			1.33 H	39	85.13	30.33
4	*2412.00	105.7 AV			1.33 H	39	75.35	30.33
5	4824.00	53.6 PK	74.0	-20.4	1.03 H	38	17.00	36.64
6	4824.00	41.2 AV	54.0	-12.9	1.03 H	38	4.51	36.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.3 PK	74.0	-5.8	1.34 V	55	38.01	30.24
2	2390.00	48.3 AV	54.0	-5.7	1.34 V	55	18.07	30.24
3	*2412.00	108.7 PK			1.34 V	55	78.39	30.33
4	*2412.00	99.3 AV			1.34 V	55	69.00	30.33
5	4824.00	45.7 PK	74.0	-28.3	1.31 V	38	9.08	36.64
6	4824.00	34.9 AV	54.0	-19.2	1.31 V	38	-1.79	36.64

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	116.4 PK			1.29 H	40	86.01	30.42
2	*2437.00	105.9 AV			1.29 H	40	75.47	30.42
3	4874.00	55.8 PK	74.0	-18.2	1.04 H	73	19.04	36.77
4	4874.00	42.2 AV	54.0	-11.8	1.04 H	73	5.46	36.77
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	108.6 PK			1.35 V	55	78.21	30.42
2	*2437.00	98.8 AV			1.35 V	55	68.41	30.42
3	4874.00	47.2 PK	74.0	-26.8	1.27 V	52	10.47	36.77
4	4874.00	35.7 AV	54.0	-18.3	1.27 V	52	-1.06	36.77

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	114.8 PK			1.27 H	40	84.28	30.50
2	*2462.00	103.5 AV			1.27 H	40	73.04	30.50
3	2483.50	73.7 PK	74.0	-0.4	1.27 H	40	43.08	30.57
4	2483.50	51.3 AV	54.0	-2.8	1.27 H	40	20.68	30.57
5	4924.00	53.6 PK	74.0	-20.4	1.04 H	280	16.66	36.90
6	4924.00	39.6 AV	54.0	-14.4	1.04 H	280	2.74	36.90

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	107.7 PK			1.28 V	44	77.23	30.50
2	*2462.00	99.1 AV			1.28 V	44	68.55	30.50
3	2483.50	71.2 PK	74.0	-2.8	1.28 V	44	40.59	30.57
4	2483.50	48.6 AV	54.0	-5.4	1.28 V	44	18.02	30.57
5	4924.00	45.4 PK	74.0	-28.6	1.30 V	38	8.47	36.90
6	4924.00	34.9 AV	54.0	-19.1	1.30 V	38	-2.01	36.90

REMARKS:

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



A D T

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	71.6 PK	74.0	-2.4	1.42 H	52	41.35	30.24
2	2390.00	49.7 AV	54.0	-4.3	1.42 H	52	19.45	30.24
3	*2412.00	112.7 PK			1.42 H	52	82.39	30.33
4	*2412.00	104.2 AV			1.42 H	52	73.88	30.33
5	4824.00	52.3 PK	74.0	-21.7	1.08 H	78	15.63	36.64
6	4824.00	39.1 AV	54.0	-14.9	1.08 H	78	2.48	36.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.1 PK	74.0	-7.9	1.37 V	88	35.83	30.24
2	2390.00	47.2 AV	54.0	-6.8	1.37 V	88	16.98	30.24
3	*2412.00	105.7 PK			1.37 V	88	75.32	30.33
4	*2412.00	97.2 AV			1.37 V	88	66.83	30.33
5	4824.00	45.3 PK	74.0	-28.7	1.39 V	32	8.64	36.64
6	4824.00	33.7 AV	54.0	-20.3	1.39 V	32	-2.92	36.64

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	113.2 PK			1.26 H	43	82.76	30.42
2	*2437.00	104.6 AV			1.26 H	43	74.16	30.42
3	4874.00	51.8 PK	74.0	-22.2	1.12 H	79	15.07	36.77
4	4874.00	39.7 AV	54.0	-14.4	1.12 H	79	2.88	36.77
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	105.9 PK			1.37 V	63	75.46	30.42
2	*2437.00	97.6 AV			1.37 V	63	67.19	30.42
3	4874.00	46.3 PK	74.0	-27.8	1.31 V	12	9.48	36.77
4	4874.00	34.6 AV	54.0	-19.5	1.31 V	12	-2.22	36.77

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	112.2 PK			1.31 H	43	81.70	30.50
2	*2462.00	102.8 AV			1.31 H	43	72.33	30.50
3	2483.50	73.2 PK	74.0	-0.8	1.31 H	43	42.65	30.57
4	2483.50	50.3 AV	54.0	-3.7	1.31 H	43	19.72	30.57
5	4924.00	51.3 PK	74.0	-22.7	1.05 H	68	14.38	36.90
6	4924.00	37.1 AV	54.0	-16.9	1.05 H	68	0.20	36.90
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	102.5 PK			1.00 V	21	71.96	30.50
2	*2462.00	93.1 AV			1.00 V	21	62.62	30.50
3	2483.50	64.6 PK	74.0	-9.4	1.00 V	21	34.02	30.57
4	2483.50	47.7 AV	54.0	-6.3	1.00 V	21	17.16	30.57
5	4924.00	44.2 PK	74.0	-29.8	1.34 V	28	7.28	36.90
6	4924.00	32.8 AV	54.0	-21.2	1.34 V	28	-4.10	36.90

REMARKS:

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



A D T

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	73.7 PK	74.0	-0.3	1.31 H	41	43.50	30.24
2	2390.00	51.4 AV	54.0	-2.7	1.31 H	41	21.11	30.24
3	*2422.00	109.1 PK			1.31 H	41	78.77	30.36
4	*2422.00	99.1 AV			1.31 H	41	68.71	30.36
5	4844.00	45.4 PK	74.0	-28.6	1.00 H	60	8.70	36.69
6	4844.00	32.9 AV	54.0	-21.1	1.00 H	60	-3.83	36.69
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.7 PK	74.0	-8.3	1.00 V	29	35.49	30.24
2	2390.00	46.5 AV	54.0	-7.5	1.00 V	29	16.29	30.24
3	*2422.00	99.9 PK			1.00 V	29	69.49	30.36
4	*2422.00	90.2 AV			1.00 V	29	59.84	30.36
5	4844.00	43.2 PK	74.0	-30.8	1.21 V	51	6.51	36.69
6	4844.00	31.9 AV	54.0	-22.1	1.21 V	51	-4.76	36.69

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	111.6 PK			1.31 H	61	81.14	30.42
2	*2437.00	101.5 AV			1.31 H	61	71.05	30.42
3	4874.00	50.6 PK	74.0	-23.5	1.00 H	66	13.78	36.77
4	4874.00	37.1 AV	54.0	-16.9	1.00 H	66	0.33	36.77
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	102.5 PK			1.00 V	28	72.11	30.42
2	*2437.00	93.5 AV			1.00 V	28	63.05	30.42
3	4874.00	44.1 PK	74.0	-29.9	1.00 V	269	7.35	36.77
4	4874.00	33.7 AV	54.0	-20.3	1.00 V	269	-3.11	36.77

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	102.4 PK			1.06 H	50	71.92	30.47
2	*2452.00	91.8 AV			1.06 H	50	61.28	30.47
3	2483.50	73.3 PK	74.0	-0.7	1.06 H	50	42.74	30.57
4	2483.50	51.5 AV	54.0	-2.5	1.06 H	50	20.96	30.57
5	4904.00	44.5 PK	74.0	-29.5	1.02 H	55	7.62	36.85
6	4904.00	30.9 AV	54.0	-23.1	1.02 H	55	-5.99	36.85
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	96.3 PK			1.12 V	52	65.84	30.47
2	*2452.00	86.1 AV			1.12 V	52	55.67	30.47
3	2483.50	67.8 PK	74.0	-6.2	1.12 V	52	37.22	30.57
4	2483.50	48.8 AV	54.0	-5.2	1.12 V	52	18.24	30.57
5	4904.00	42.2 PK	74.0	-31.8	1.00 V	277	5.36	36.85
6	4904.00	28.5 AV	54.0	-25.5	1.00 V	277	-8.31	36.85

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

CHANNEL	TX Channel 1	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	121.13	33.4 QP	43.5	-10.1	1.11 H	85	21.07	12.36
2	155.07	37.6 QP	43.5	-5.9	1.24 H	7	23.13	14.46
3	164.76	33.5 QP	43.5	-10.0	1.23 H	163	19.19	14.27
4	200.15	31.8 QP	43.5	-11.7	1.28 H	319	20.43	11.35
5	232.14	43.5 QP	46.0	-2.5	1.29 H	289	30.77	12.76
6	534.15	35.0 QP	46.0	-11.1	1.25 H	118	12.96	21.99

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	44.54	37.1 QP	40.0	-2.9	1.03 V	130	23.01	14.06
2	120.16	34.8 QP	43.5	-8.7	1.11 V	10	22.50	12.29
3	152.64	34.5 QP	43.5	-9.0	1.27 V	70	20.02	14.46
4	306.31	35.2 QP	46.0	-10.8	1.22 V	130	19.42	15.80
5	458.04	35.6 QP	46.0	-10.4	1.02 V	175	15.48	20.12
6	534.15	36.6 QP	46.0	-9.5	1.33 V	10	14.56	21.99
7	763.92	34.2 QP	46.0	-11.9	1.25 V	115	8.40	25.75

REMARKS:

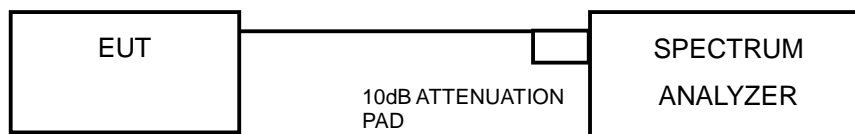
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

4.3 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 4.2.2 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.



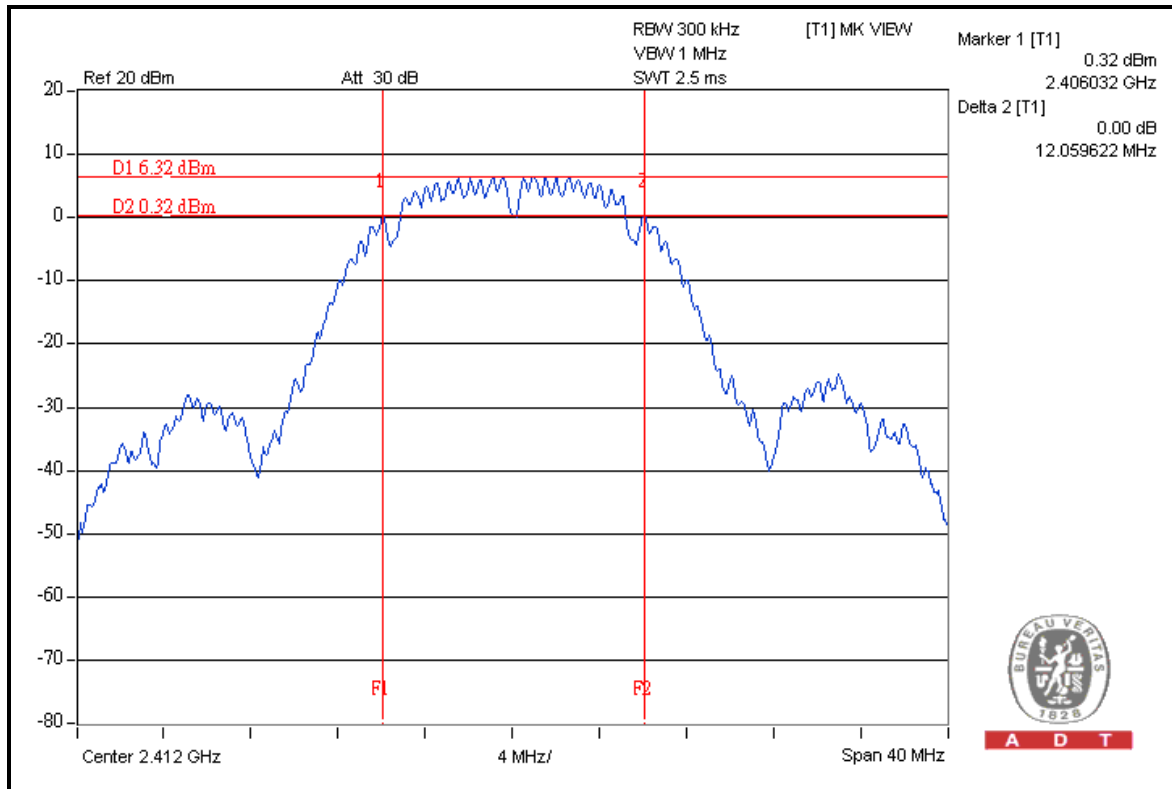
A D T

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	12.05	11.22	0.5	PASS
6	2437	11.25	11.24	0.5	PASS
11	2462	11.24	10.42	0.5	PASS

FOR CHAIN 0: CH 1



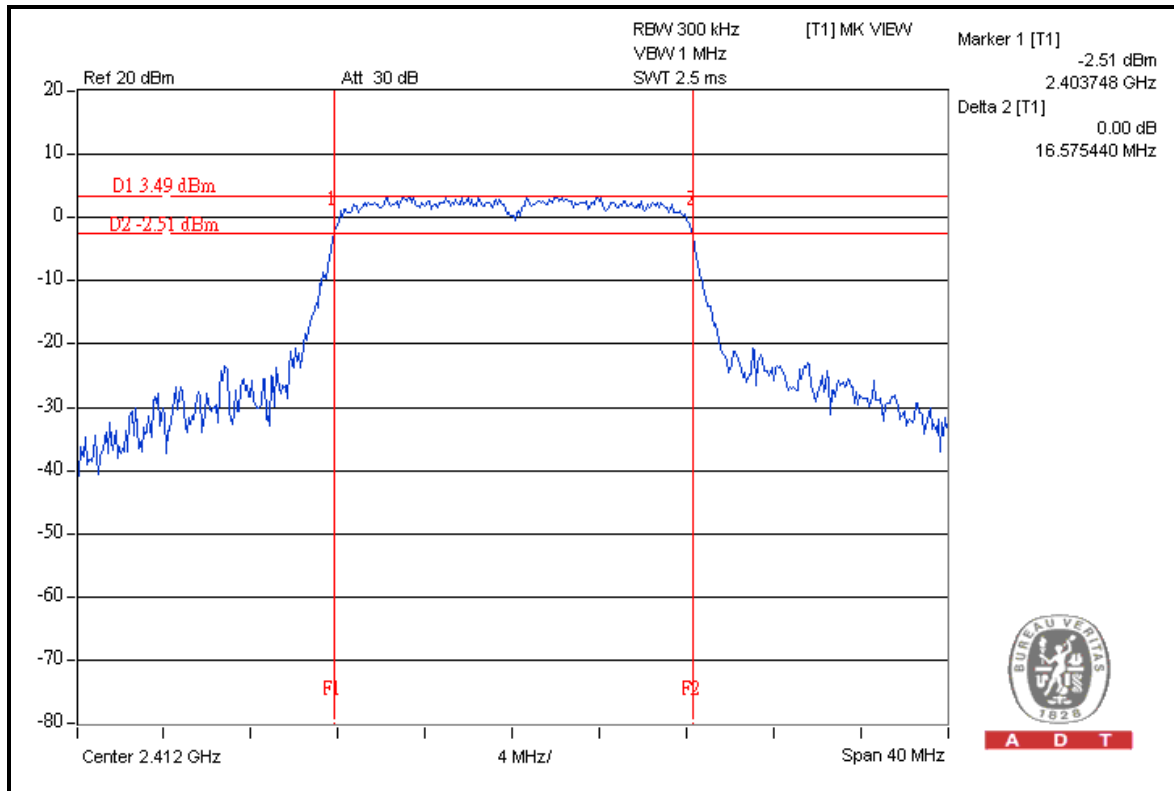


A D T

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.37	16.57	0.5	PASS
6	2437	16.56	16.46	0.5	PASS
11	2462	16.45	16.44	0.5	PASS

FOR CHAIN 1: CH 1



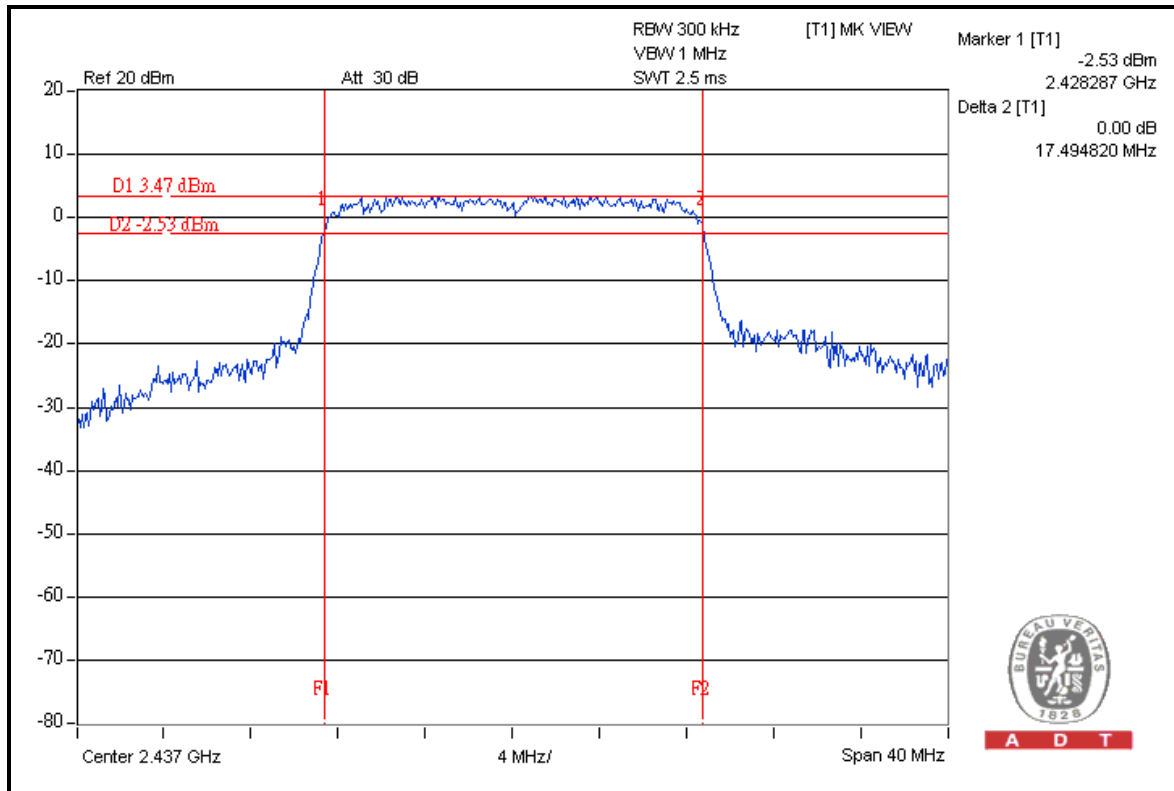


A D T

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.43	17.39	0.5	PASS
6	2437	17.49	17.48	0.5	PASS
11	2462	17.43	17.43	0.5	PASS

FOR CHAIN 0: CH 6



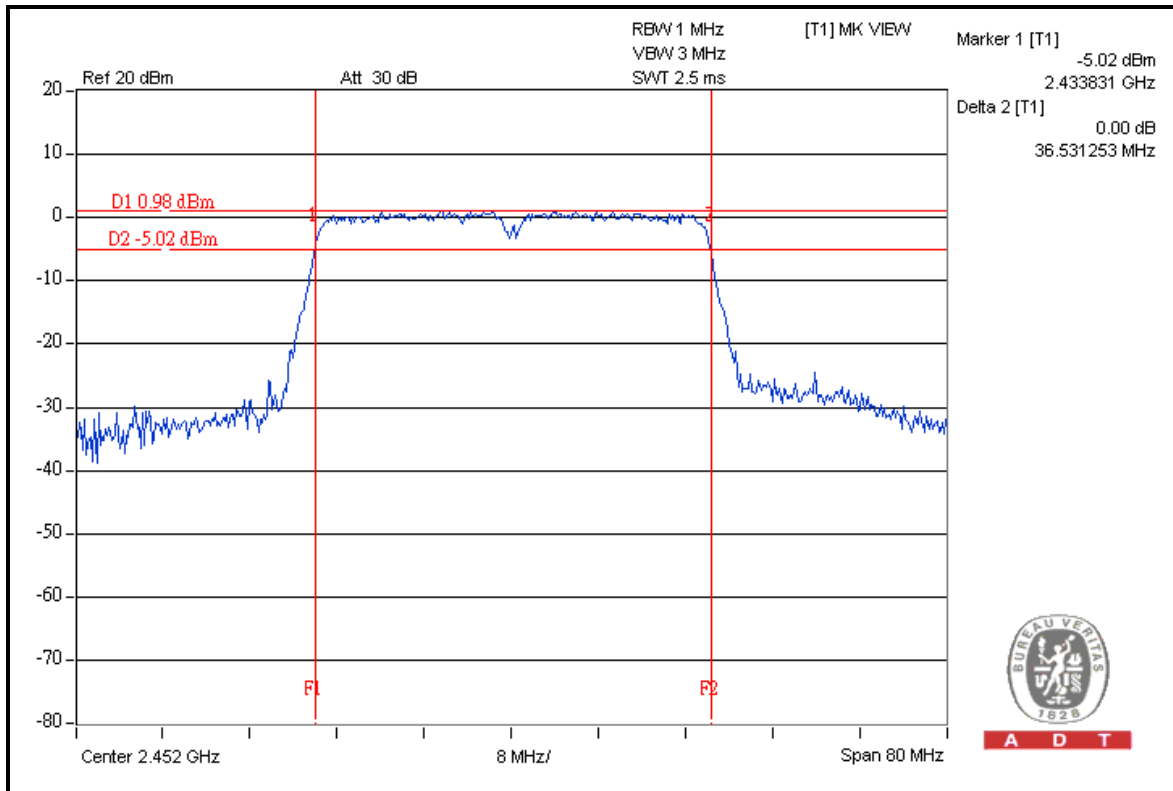


A D T

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.47	36.33	0.5	PASS
6	2437	36.39	36.25	0.5	PASS
9	2452	36.53	36.31	0.5	PASS

FOR CHAIN 0: CH 9

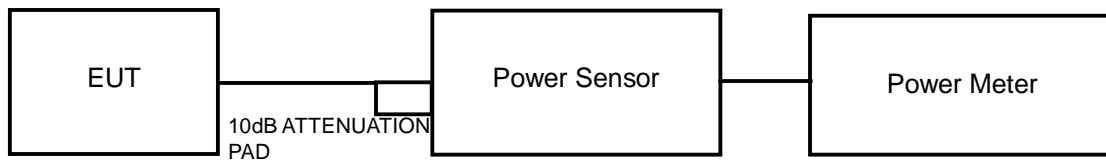


4.4 CONDUCTED OUTPUT POWER

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 4.2.2 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

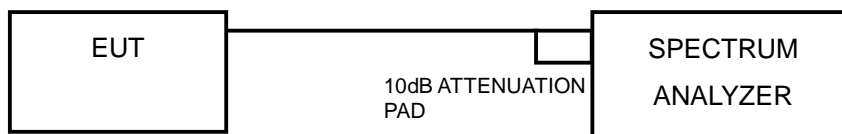
CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
802.11b							
1	2412	19.6	19.7	184.5	22.7	30	PASS
6	2437	19.6	19.4	178.3	22.5	30	PASS
11	2462	18.1	18.5	134.3	21.3	30	PASS
802.11g							
1	2412	23.3	23.9	459.3	26.6	30	PASS
6	2437	23.4	24.3	487.9	26.9	30	PASS
11	2462	23.2	23.9	454.4	26.6	30	PASS
802.11n (20MHz)							
1	2412	22.9	23.6	424.1	26.3	30	PASS
6	2437	22.9	23.3	408.8	26.1	30	PASS
11	2462	21.2	21.2	263.7	24.2	30	PASS
802.11n (40MHz)							
3	2422	19.5	20.1	191.5	22.8	30	PASS
6	2437	23.0	23.4	418.3	26.2	30	PASS
9	2452	17.3	18.1	118.3	20.7	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.2.2 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 $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

Follow KDB 558074 D01 DTS Meas Guidance v01 of measurement procedure PKPSD.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



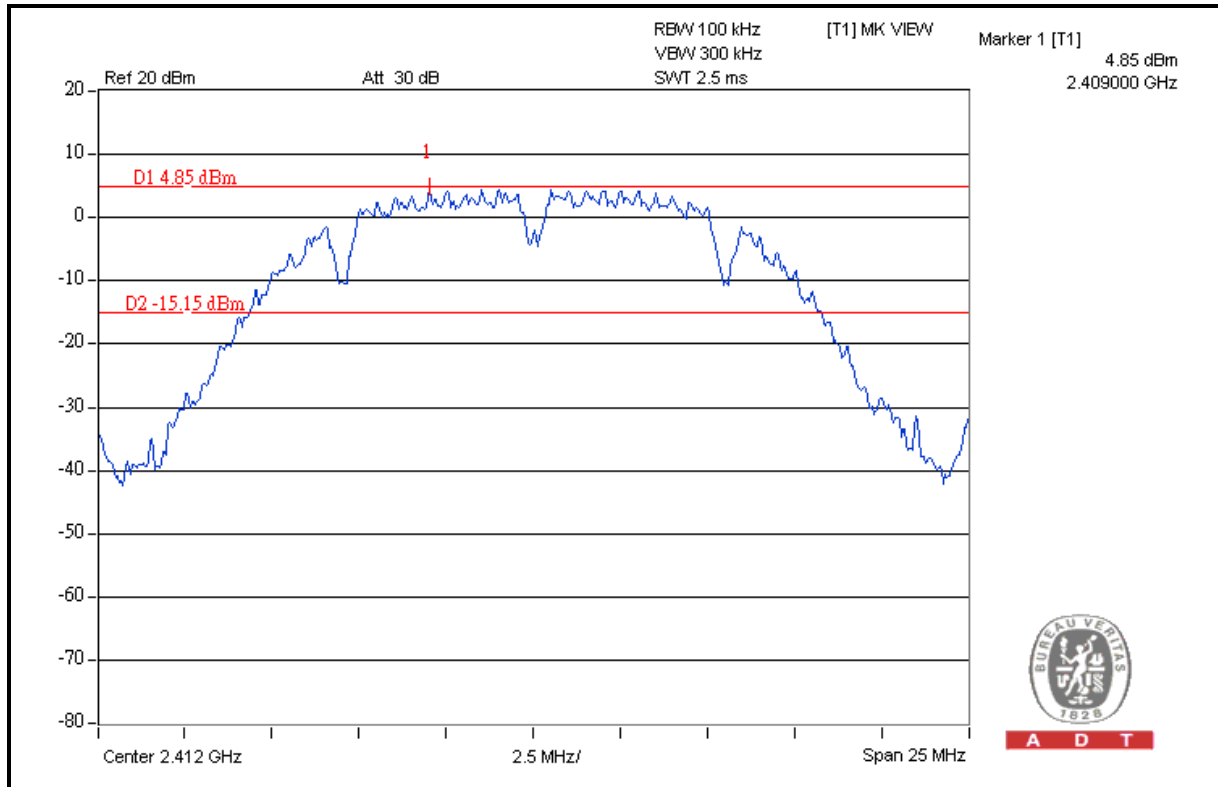
A D T

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	4.85	-10.35	3.01	-7.34	8	PASS
	6	2437	4.62	-10.58	3.01	-7.57	8	PASS
	11	2462	4.40	-10.80	3.01	-7.79	8	PASS
1	1	2412	3.57	-11.63	3.01	-8.62	8	PASS
	6	2437	4.00	-11.20	3.01	-8.19	8	PASS
	11	2462	3.63	-11.57	3.01	-8.56	8	PASS

FOR CHAIN 0: CH 1



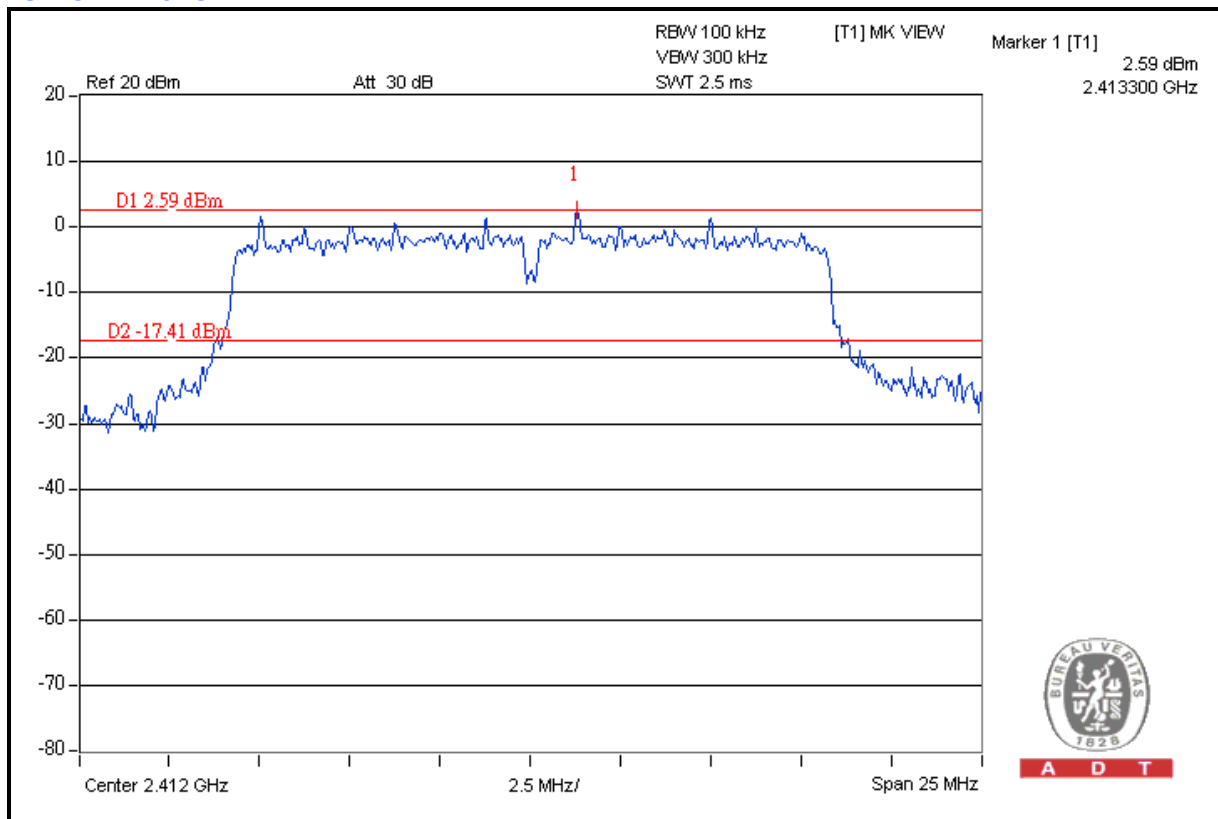


A D T

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	2.59	-12.61	3.01	-9.60	8	PASS
	6	2437	1.42	-13.78	3.01	-10.77	8	PASS
	11	2462	1.54	-13.66	3.01	-10.65	8	PASS
1	1	2412	0.69	-14.51	3.01	-11.50	8	PASS
	6	2437	2.37	-12.83	3.01	-9.82	8	PASS
	11	2462	1.75	-13.45	3.01	-10.44	8	PASS

FOR CHAIN 0: CH 1



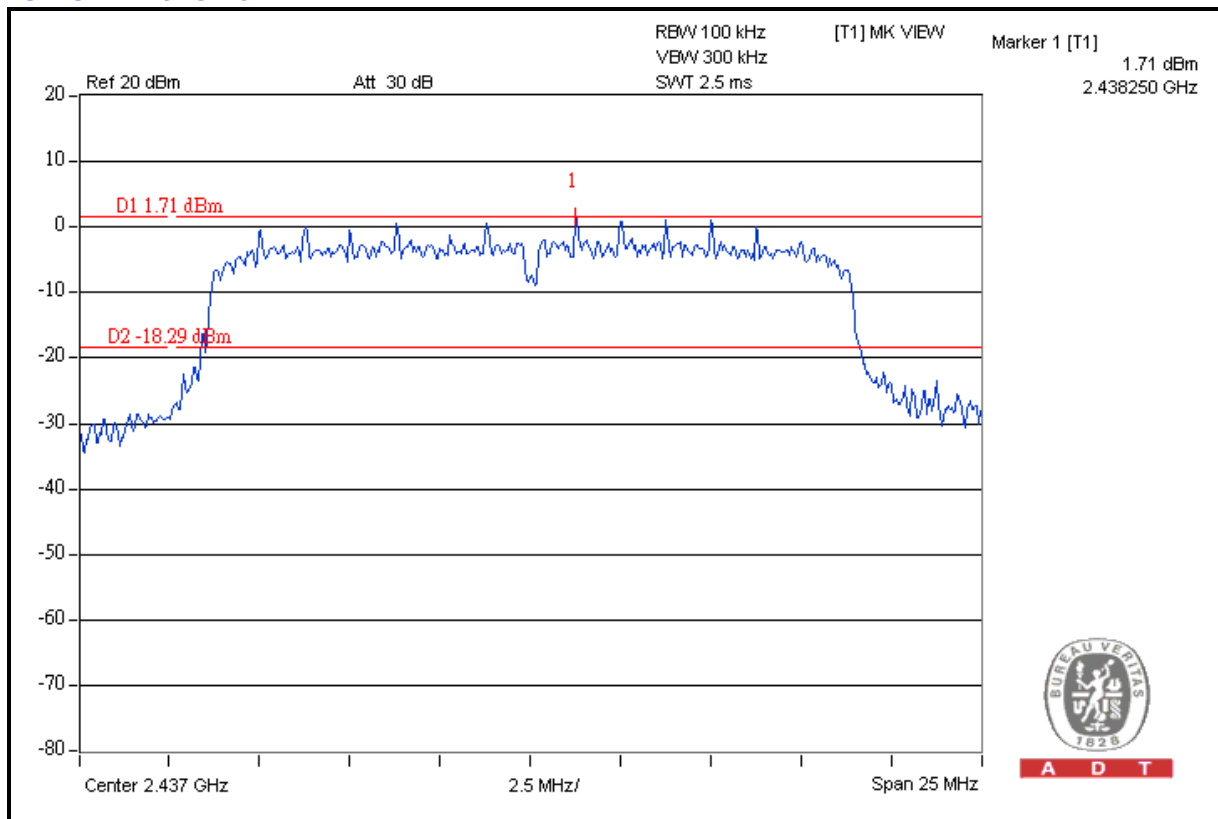


A D T

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	0.61	-14.59	3.01	-11.58	8	PASS
	6	2437	1.71	-13.49	3.01	-10.48	8	PASS
	11	2462	-0.96	-16.16	3.01	-13.15	8	PASS
1	1	2412	0.70	-14.50	3.01	-11.49	8	PASS
	6	2437	0.29	-14.91	3.01	-11.90	8	PASS
	11	2462	-0.94	-16.14	3.01	-13.13	8	PASS

FOR CHAIN 0: CH 6



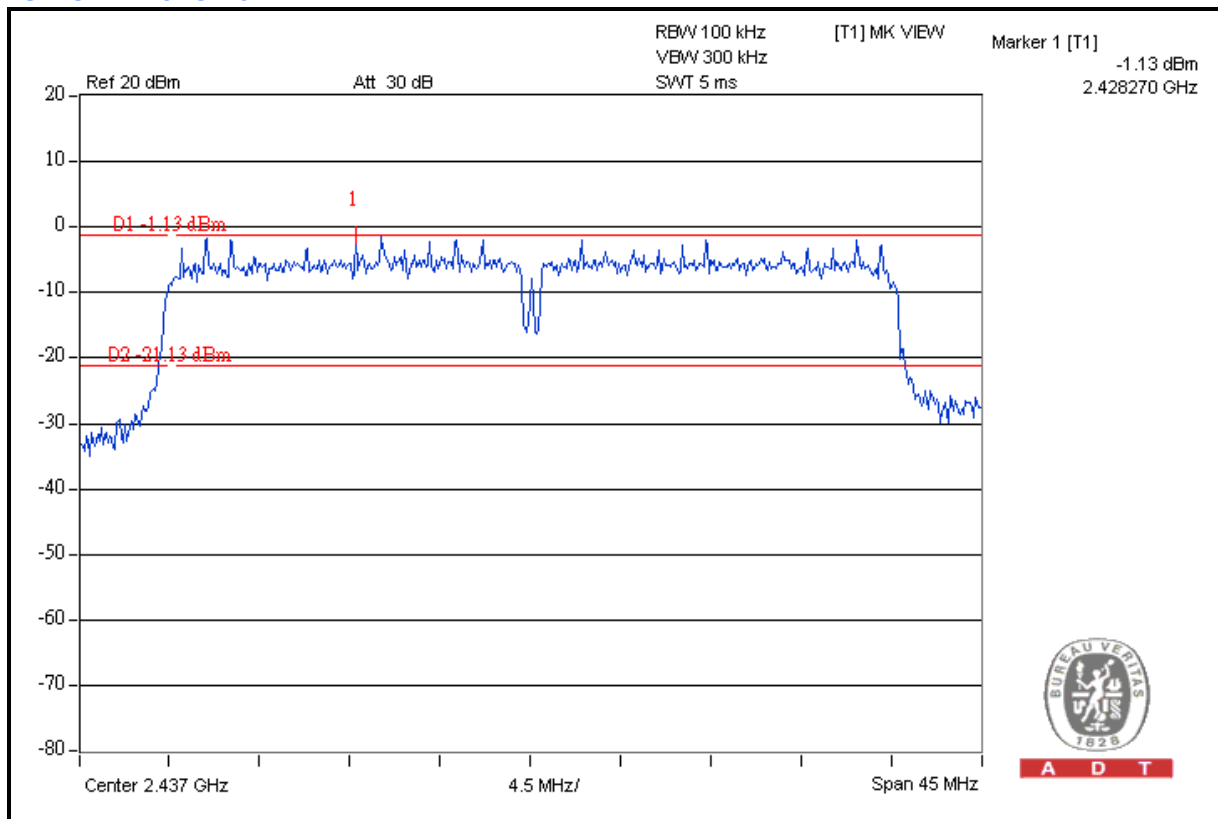


A D T

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	-4.47	-19.67	3.01	-16.66	8	PASS
	6	2437	-1.13	-16.33	3.01	-13.32	8	PASS
	9	2452	-6.50	-21.70	3.01	-18.69	8	PASS
1	3	2422	-4.43	-19.63	3.01	-16.62	8	PASS
	6	2437	-1.57	-16.77	3.01	-13.76	8	PASS
	9	2452	-6.85	-22.05	3.01	-19.04	8	PASS

FOR CHAIN 0: CH 6

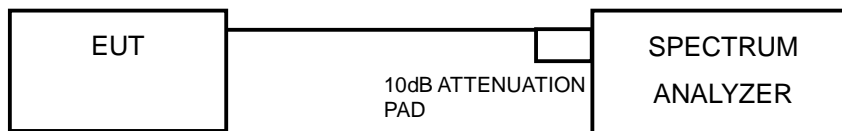


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -20 dB 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 4.2.2 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.

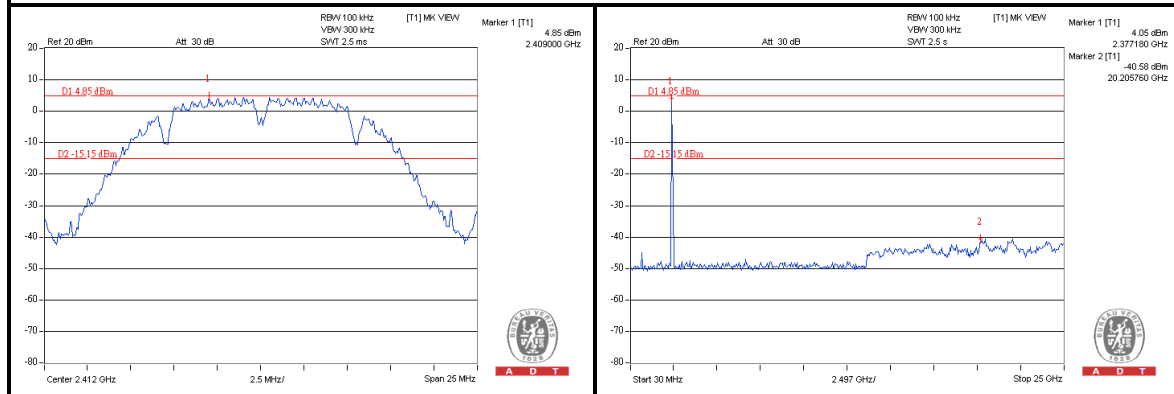


A D T

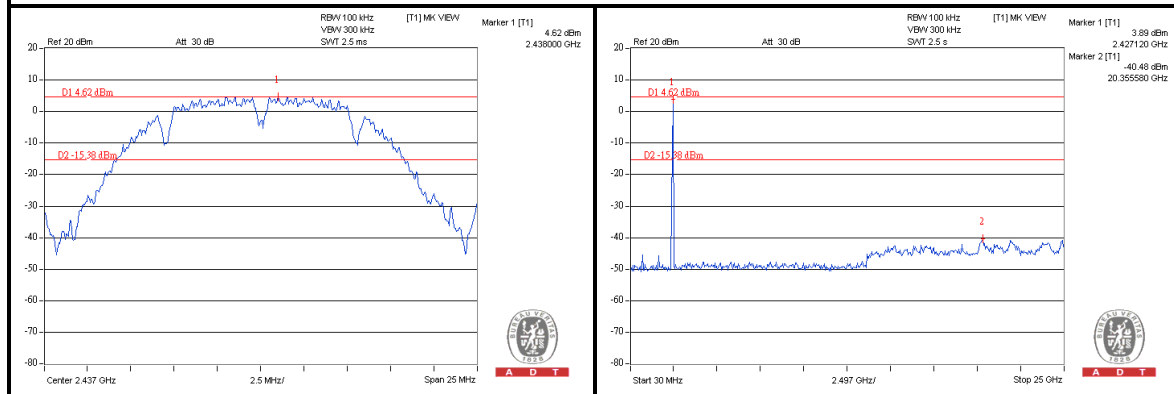
4.6.8 TEST RESULTS

802.11b

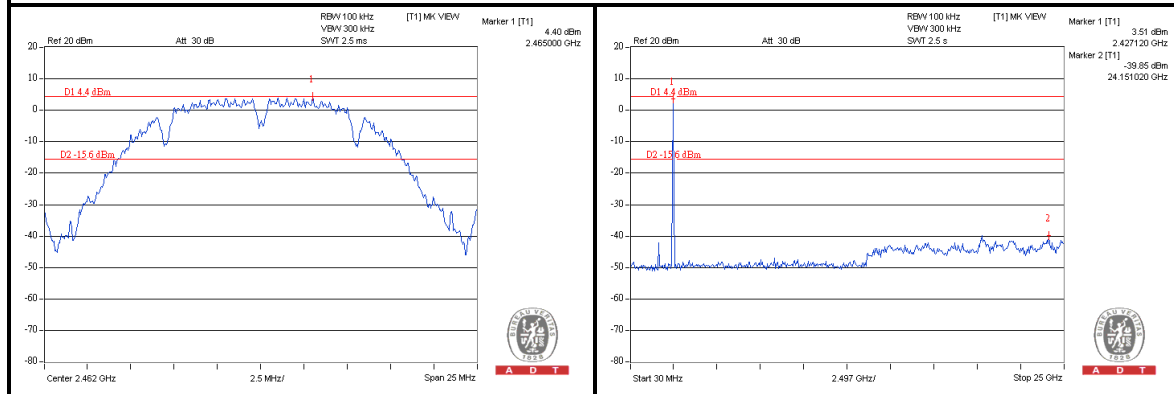
CH 1



CH 6



CH 11

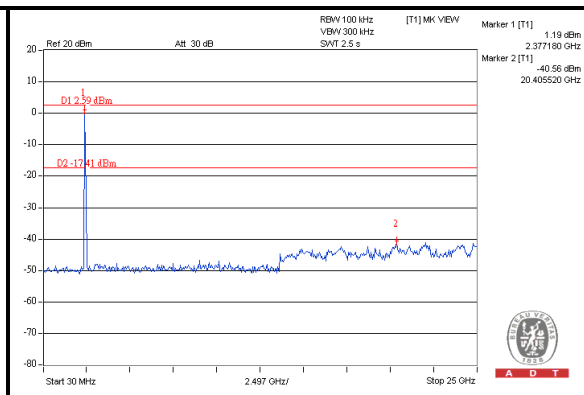
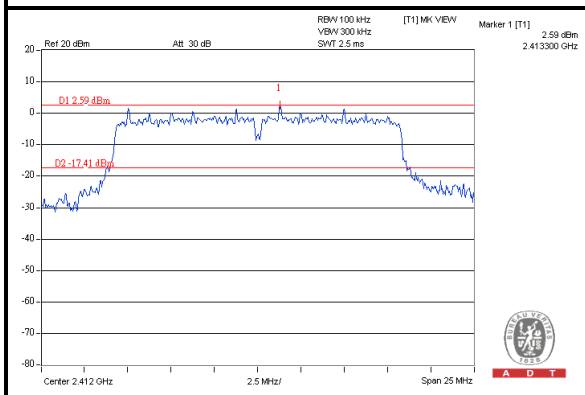




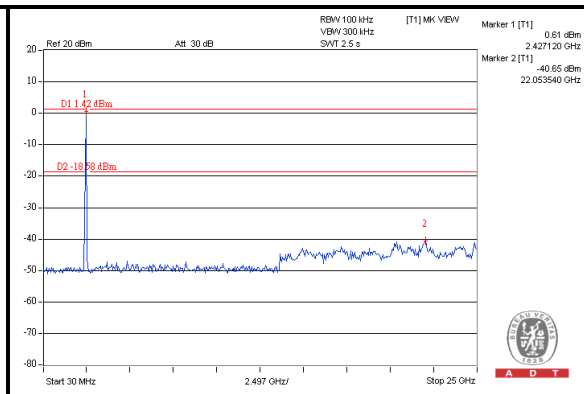
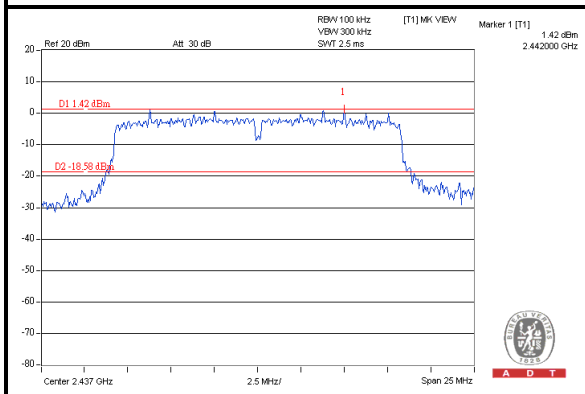
A D T

802.11g

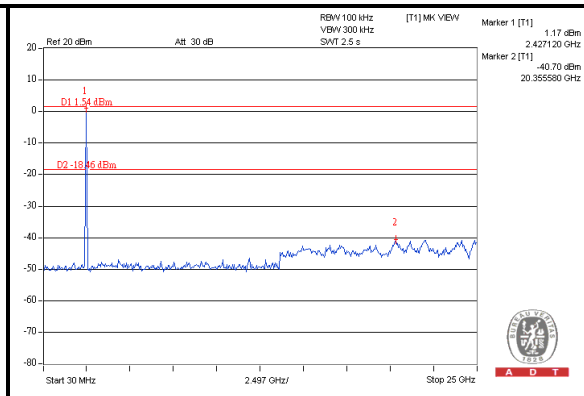
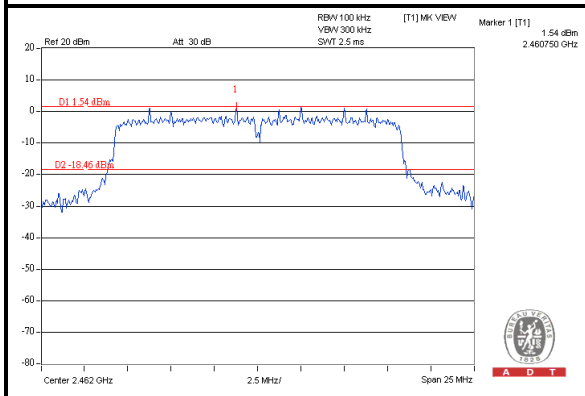
CH 1



CH 6



CH 11

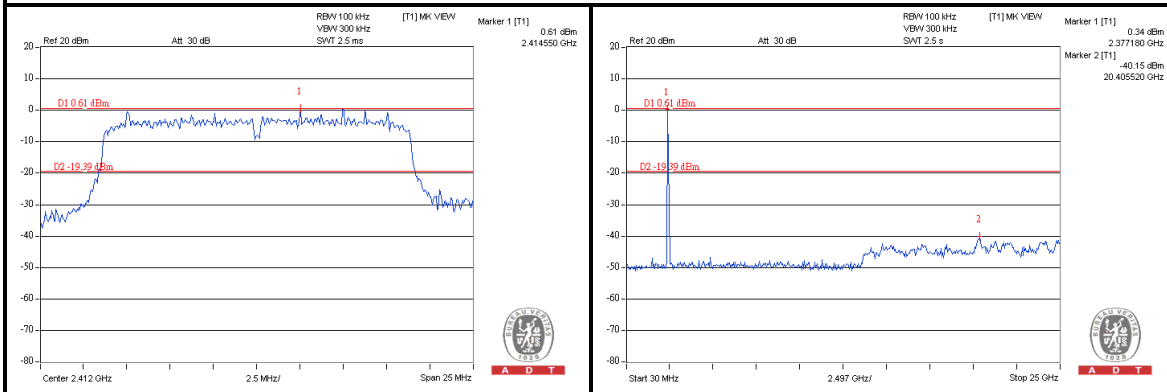




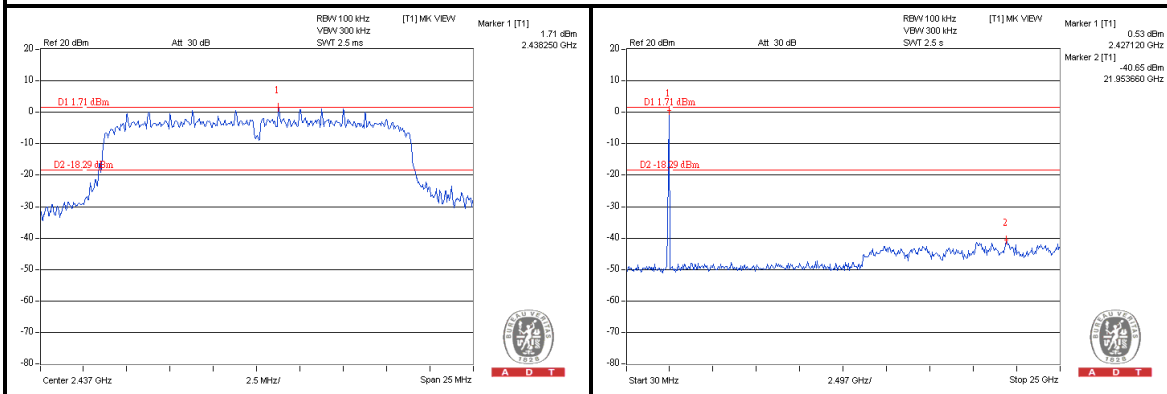
A D T

802.11n (20MHz)

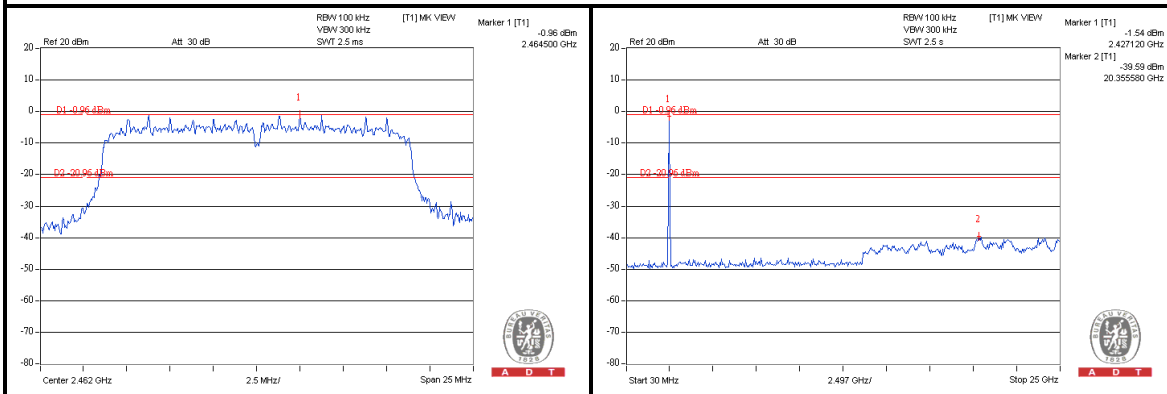
CH 1



CH 6



CH 11

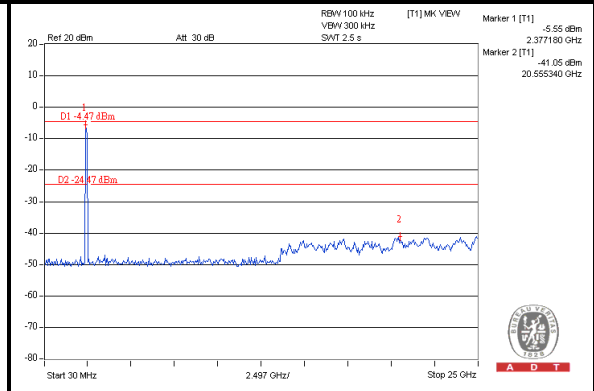
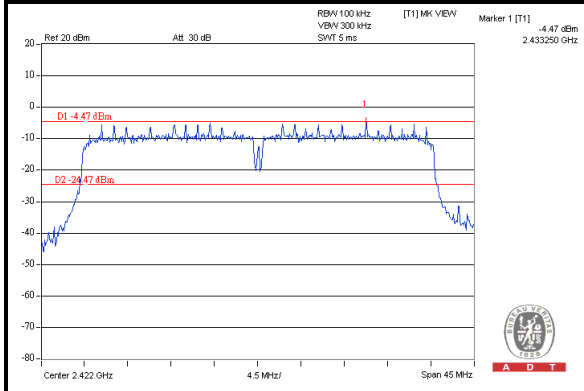




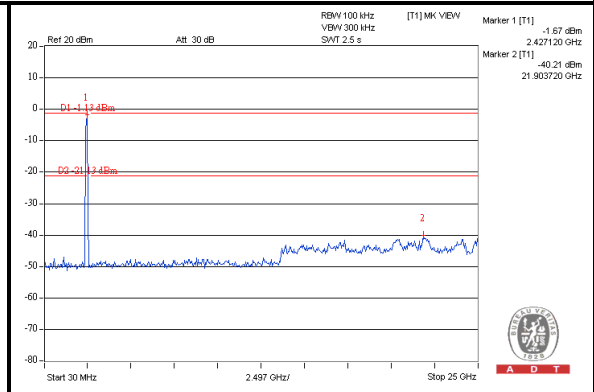
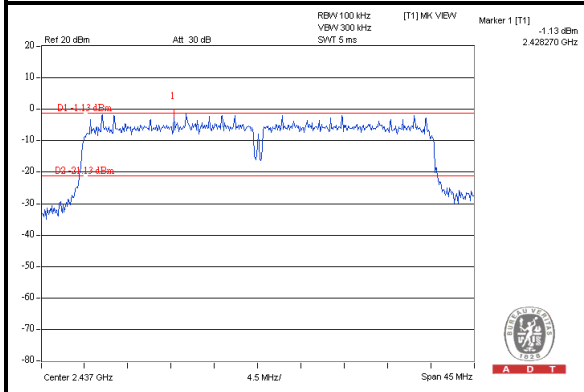
A D T

802.11n (40MHz)

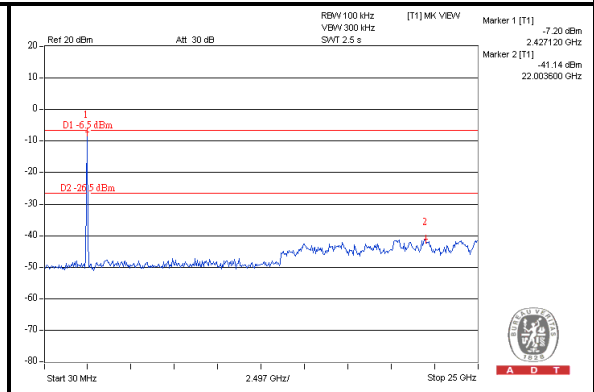
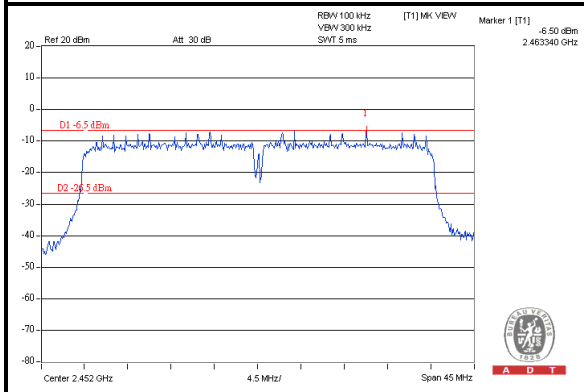
CH 3



CH 6



CH 9





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

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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.

5.1.2 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

5.1.7 TEST RESULTS

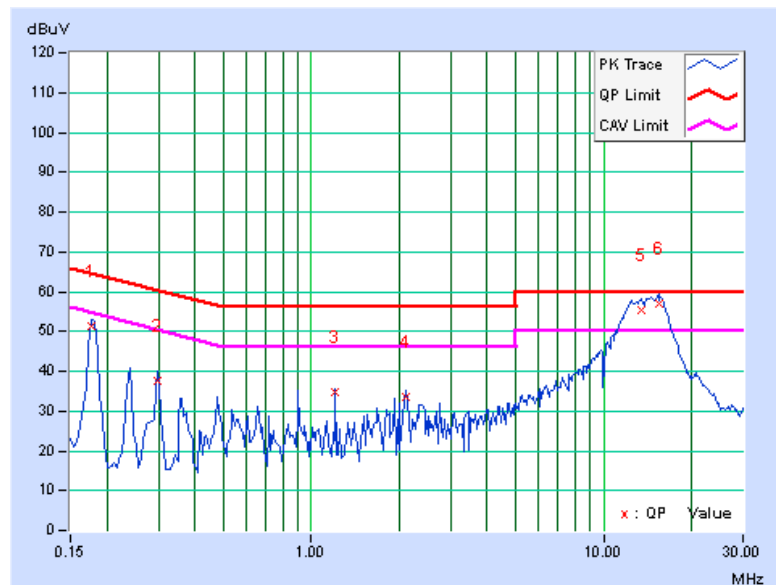
CONDUCTED WORST-CASE DATA : 802.11a

CHANNEL	Channel 149	6dB BANDWIDTH	9kHz
PHASE	Line 1		

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	0.17734	0.15	51.17	-	51.32	-	64.61	54.61	-13.29	-
2	0.29844	0.17	37.30	-	37.47	-	60.29	50.29	-22.82	-
3	1.20703	0.24	34.42	-	34.66	-	56.00	46.00	-21.34	-
4	2.11328	0.30	33.21	-	33.51	-	56.00	46.00	-22.49	-
5	13.48438	0.93	54.57	45.49	55.50	46.42	60.00	50.00	-4.50	-3.58
6	15.45313	1.04	56.02	45.62	57.06	46.66	60.00	50.00	-2.94	-3.34

REMARKS:

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

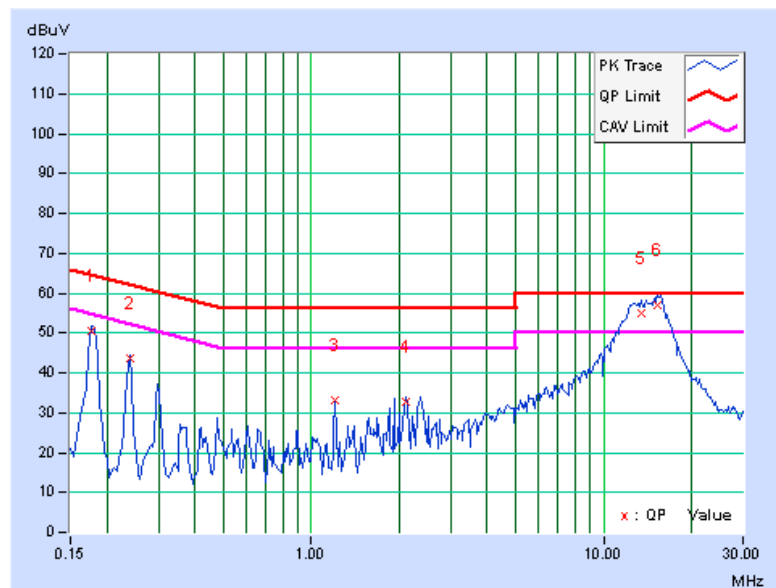


CHANNEL	Channel 149	6dB BANDWIDTH	9kHz
PHASE	Line 2		

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	0.17734	0.15	50.40	-	50.55	-	64.61	54.61	-14.06	-
2	0.23984	0.16	43.39	-	43.55	-	62.10	52.10	-18.55	-
3	1.20703	0.24	32.70	-	32.94	-	56.00	46.00	-23.06	-
4	2.10938	0.29	32.25	-	32.54	-	56.00	46.00	-23.46	-
5	13.48047	0.74	54.09	44.56	54.83	45.30	60.00	50.00	-5.17	-4.70
6	15.27344	0.80	56.19	46.49	56.99	47.29	60.00	50.00	-3.01	-2.71

REMARKS:

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





5.2 RADIATED EMISSION MEASUREMENT

5.2.1 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.

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.



A D T

5.2.7 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	74.0 PK	91.6	-17.6	1.00 H	314	35.71	38.31
2	#5725.00	58.1 AV	83.5	-25.4	1.00 H	314	19.80	38.31
3	*5745.00	111.6 PK			1.00 H	314	73.26	38.33
4	*5745.00	103.5 AV			1.00 H	314	65.21	38.33
5	11490.00	58.6 PK	74.0	-15.4	1.20 H	333	10.35	48.22
6	11490.00	48.3 AV	54.0	-5.7	1.20 H	333	0.10	48.22
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	75.1 PK	94.1	-19.1	1.00 V	317	36.74	38.31
2	#5725.00	59.3 AV	85.3	-26.0	1.00 V	317	21.00	38.31
3	*5745.00	114.1 PK			1.00 V	317	75.78	38.33
4	*5745.00	105.3 AV			1.00 V	317	66.99	38.33
5	11490.00	60.2 PK	74.0	-13.8	1.00 V	67	11.98	48.22
6	11490.00	49.2 AV	54.0	-4.8	1.00 V	67	1.01	48.22

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	113.9 PK			1.00 H	314	75.55	38.39
2	*5785.00	104.7 AV			1.00 H	314	66.29	38.39
3	11570.00	60.4 PK	74.0	-13.6	1.09 H	310	12.16	48.21
4	11570.00	49.1 AV	54.0	-4.9	1.09 H	310	0.85	48.21
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	114.6 PK			1.00 V	316	76.22	38.39
2	*5785.00	105.0 AV			1.00 V	316	66.59	38.39
3	11570.00	59.8 PK	74.0	-14.2	1.09 V	60	11.61	48.21
4	11570.00	49.5 AV	54.0	-4.6	1.09 V	60	1.24	48.21

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.



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	113.7 PK			1.01 H	314	75.21	38.45
2	*5825.00	104.9 AV			1.01 H	314	66.42	38.45
3	#5850.00	69.8 PK	93.7	-23.8	1.01 H	314	31.34	38.48
4	#5850.00	47.2 AV	84.9	-37.7	1.01 H	314	8.71	38.48
5	11650.00	58.2 PK	74.0	-15.8	1.00 H	331	10.06	48.16
6	11650.00	47.9 AV	54.0	-6.1	1.00 H	331	-0.27	48.16
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	114.1 PK			1.00 V	306	75.68	38.45
2	*5825.00	105.3 AV			1.00 V	306	66.80	38.45
3	#5850.00	70.6 PK	94.1	-23.5	1.00 V	306	32.14	38.48
4	#5850.00	47.5 AV	85.3	-37.8	1.00 V	306	8.97	38.48
5	11650.00	60.3 PK	74.0	-13.7	1.00 V	65	12.17	48.16
6	11650.00	49.4 AV	54.0	-4.6	1.00 V	65	1.26	48.16

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	78.6 PK	95.8	-17.2	1.00 H	315	40.30	38.31
2	#5725.00	62.5 AV	86.0	-23.5	1.00 H	315	24.21	38.31
3	*5745.00	115.8 PK			1.00 H	315	77.45	38.33
4	*5745.00	106.0 AV			1.00 H	315	67.70	38.33
5	11490.00	58.6 PK	74.0	-15.4	1.00 H	351	10.41	48.22
6	11490.00	49.2 AV	54.0	-4.8	1.00 H	351	0.96	48.22
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	79.0 PK	96.0	-17.0	1.00 V	310	40.68	38.31
2	#5725.00	63.2 AV	86.9	-23.7	1.00 V	310	24.84	38.31
3	*5745.00	116.0 PK			1.00 V	310	77.67	38.33
4	*5745.00	106.9 AV			1.00 V	310	68.56	38.33
5	11490.00	57.5 PK	74.0	-16.5	1.05 V	77	9.30	48.22
6	11490.00	47.8 AV	54.0	-6.2	1.05 V	77	-0.41	48.22

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	117.5 PK			1.00 H	323	79.10	38.39
2	*5785.00	107.4 AV			1.00 H	323	68.98	38.39
3	11650.00	60.0 PK	74.0	-14.0	1.00 H	332	11.82	48.16
4	11650.00	48.6 AV	54.0	-5.4	1.00 H	332	0.42	48.16
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	118.0 PK			1.11 V	311	79.63	38.39
2	*5785.00	107.9 AV			1.11 V	311	69.52	38.39
3	11650.00	59.8 PK	74.0	-14.2	1.15 V	65	11.62	48.16
4	11650.00	47.9 AV	54.0	-6.1	1.15 V	65	-0.29	48.16

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.



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	117.7 PK			1.00 H	316	79.23	38.45
2	*5825.00	108.1 AV			1.00 H	316	69.62	38.45
3	#5850.00	63.2 PK	97.7	-34.5	1.00 H	316	24.70	38.48
4	#5850.00	48.6 AV	88.1	-39.5	1.00 H	316	10.10	38.48
5	11650.00	57.7 PK	74.0	-16.3	1.00 H	344	9.57	48.16
6	11650.00	48.1 AV	54.0	-5.9	1.00 H	344	-0.03	48.16
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	118.9 PK			1.36 V	314	80.45	38.45
2	*5825.00	109.4 AV			1.36 V	314	70.95	38.45
3	#5850.00	64.2 PK	98.9	-34.7	1.36 V	314	25.74	38.48
4	#5850.00	49.2 AV	89.4	-40.2	1.36 V	314	10.70	38.48
5	11650.00	57.3 PK	74.0	-16.7	1.00 V	65	9.10	48.16
6	11650.00	47.7 AV	54.0	-6.4	1.00 V	65	-0.51	48.16

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	82.2 PK	92.0	-9.8	1.00 H	315	43.86	38.31
2	#5725.00	67.0 AV	82.7	-15.7	1.00 H	315	28.73	38.31
3	*5755.00	112.0 PK			1.00 H	315	73.66	38.35
4	*5755.00	102.7 AV			1.00 H	315	64.36	38.35
5	11510.00	56.4 PK	74.0	-17.6	1.00 H	313	8.15	48.21
6	11510.00	46.2 AV	54.0	-7.8	1.00 H	313	-1.97	48.21
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	82.8 PK	92.8	-10.0	1.00 V	320	44.53	38.31
2	#5725.00	67.8 AV	83.3	-15.5	1.00 V	320	29.52	38.31
3	*5755.00	112.8 PK			1.00 V	320	74.49	38.35
4	*5755.00	103.3 AV			1.00 V	320	64.96	38.35
5	11510.00	55.7 PK	74.0	-18.3	1.00 V	78	7.45	48.21
6	11510.00	45.5 AV	54.0	-8.5	1.00 V	78	-2.67	48.21

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	112.5 PK			1.00 H	314	74.12	38.40
2	*5795.00	102.7 AV			1.00 H	314	64.33	38.40
3	#5850.00	69.0 PK	92.5	-23.5	1.00 H	314	30.49	38.48
4	#5850.00	50.2 AV	82.7	-32.5	1.00 H	314	11.75	38.48
5	11590.00	56.6 PK	74.0	-17.4	1.00 H	312	8.38	48.21
6	11590.00	46.8 AV	54.0	-7.2	1.00 H	312	-1.44	48.21
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	112.9 PK			1.00 V	319	74.51	38.40
2	*5795.00	103.2 AV			1.00 V	319	64.84	38.40
3	#5850.00	69.4 PK	92.9	-23.5	1.00 V	319	30.90	38.48
4	#5850.00	50.8 AV	83.2	-32.4	1.00 V	319	12.36	38.48
5	11590.00	56.0 PK	74.0	-18.0	1.00 V	92	7.77	48.21
6	11590.00	45.7 AV	54.0	-8.3	1.00 V	92	-2.47	48.21

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 149	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	120.16	32.9 QP	43.5	-10.6	1.11 H	241	20.61	12.29
2	155.07	36.3 QP	43.5	-7.2	1.27 H	10	21.82	14.46
3	179.31	34.1 QP	43.5	-9.4	1.00 H	28	20.95	13.19
4	233.11	41.6 QP	46.0	-4.4	1.12 H	283	28.82	12.80
5	543.36	34.5 QP	46.0	-11.5	1.36 H	124	12.29	22.20
6	959.28	34.9 QP	46.0	-11.1	1.25 H	334	6.35	28.54

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	88.17	32.1 QP	43.5	-11.4	1.14 V	49	23.23	8.85
2	108.05	34.0 QP	43.5	-9.5	1.05 V	40	23.40	10.61
3	152.64	33.2 QP	43.5	-10.3	1.26 V	61	18.75	14.46
4	309.71	34.5 QP	46.0	-11.5	1.42 V	151	18.58	15.91
5	457.56	34.9 QP	46.0	-11.2	1.23 V	178	14.74	20.11
6	534.63	35.8 QP	46.0	-10.2	1.26 V	10	13.76	22.00
7	776.53	35.2 QP	46.0	-10.8	1.25 V	148	9.12	26.05

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

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 4.2.2 to get information of above instrument.

5.3.4 TEST PROCEDURE

Same as item 4.3.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.



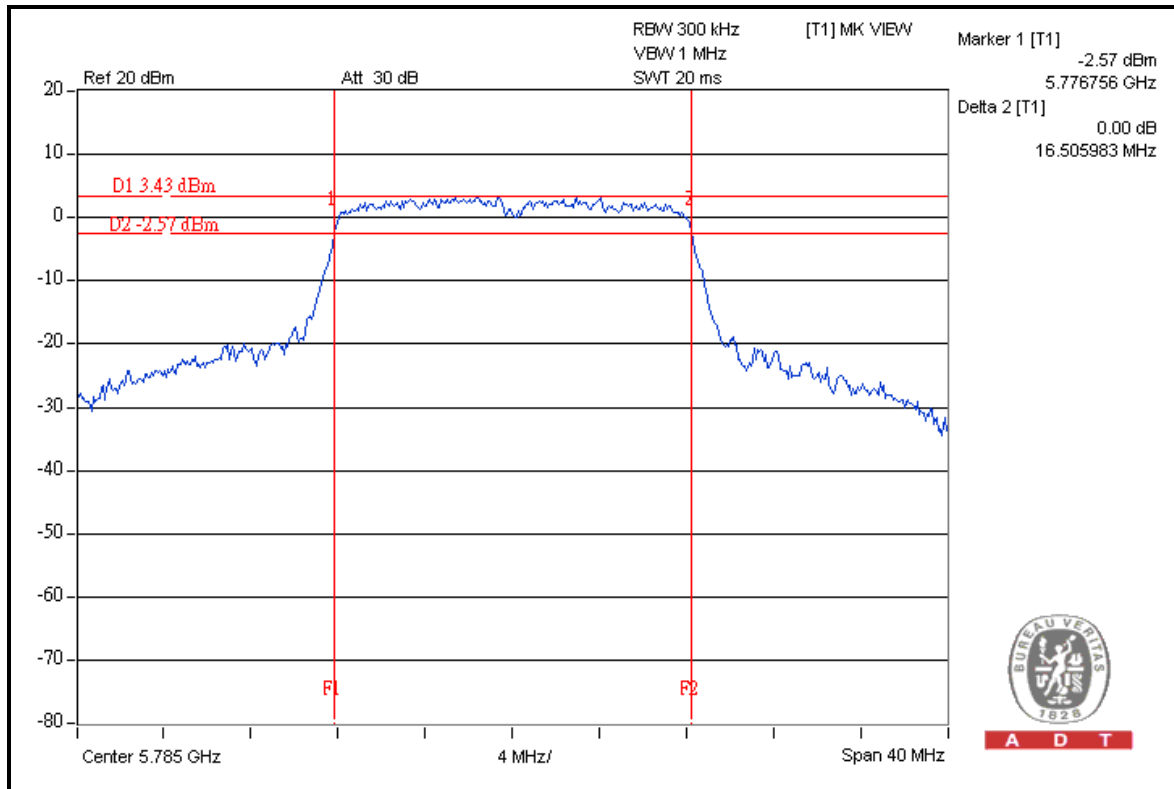
A D T

5.3.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	16.42	16.43	0.5	PASS
157	5785	16.50	16.39	0.5	PASS
165	5825	16.44	16.49	0.5	PASS

FOR CHAIN 0: CH 157



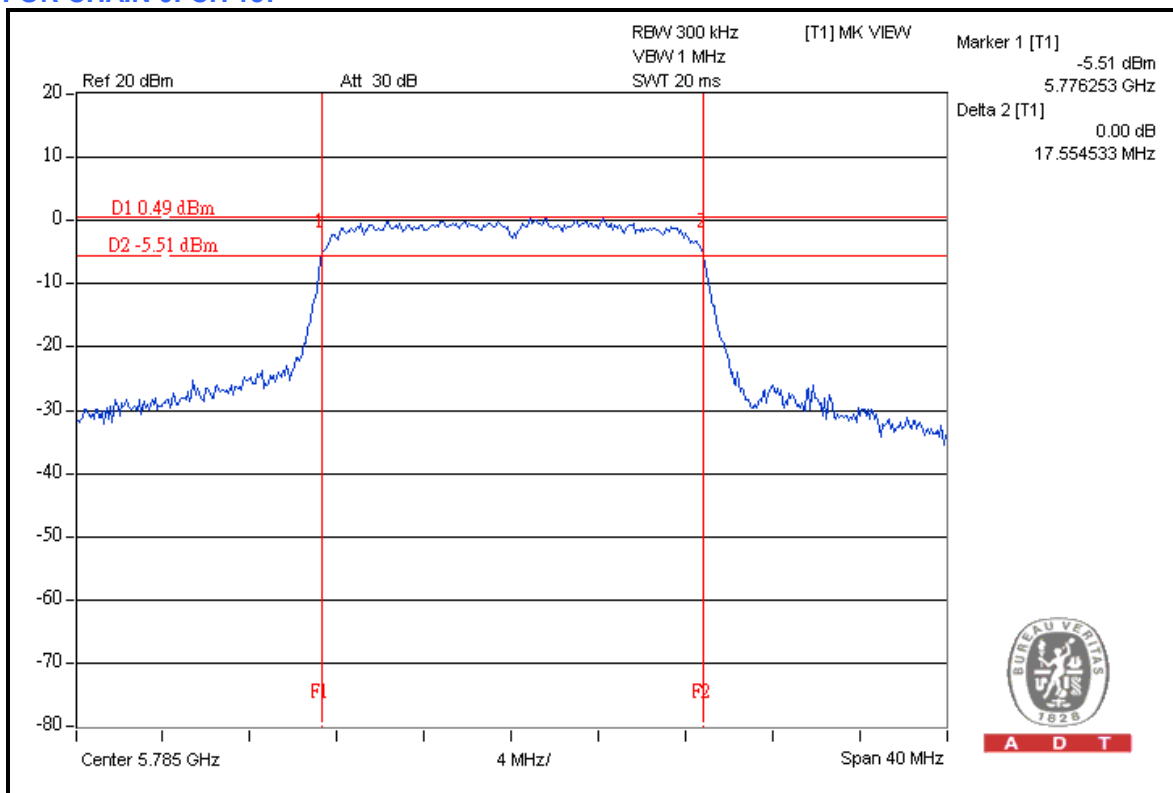


A D T

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.45	17.47	0.5	PASS
157	5785	17.55	17.51	0.5	PASS
165	5825	17.46	17.49	0.5	PASS

FOR CHAIN 0: CH 157



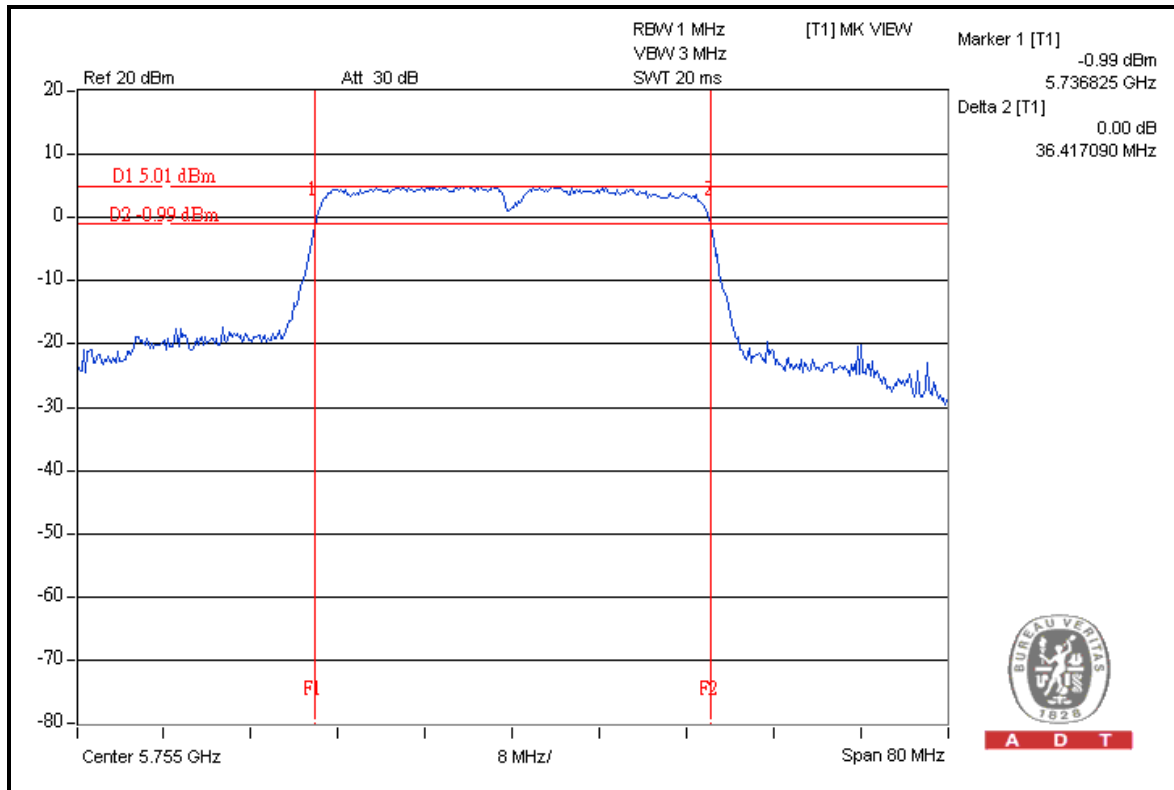


A D T

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.37	36.41	0.5	PASS
159	5795	36.41	36.40	0.5	PASS

FOR CHAIN 1: CH 151



A D T



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 4.2.2 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

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
802.11a							
149	5745	21.6	21.5	285.8	24.7	30	PASS
157	5785	21.8	21.1	280.2	24.4	30	PASS
165	5825	21.6	21.1	273.4	24.4	30	PASS
802.11n (20MHz)							
149	5745	21.5	21.2	273.1	24.4	30	PASS
157	5785	21.1	21.2	260.7	24.2	30	PASS
165	5825	21.4	20.7	255.5	24.1	30	PASS
802.11n (40MHz)							
151	5755	20.7	20.6	232.3	23.7	30	PASS
159	5795	20.8	20.4	229.9	23.6	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 4.2.2 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.



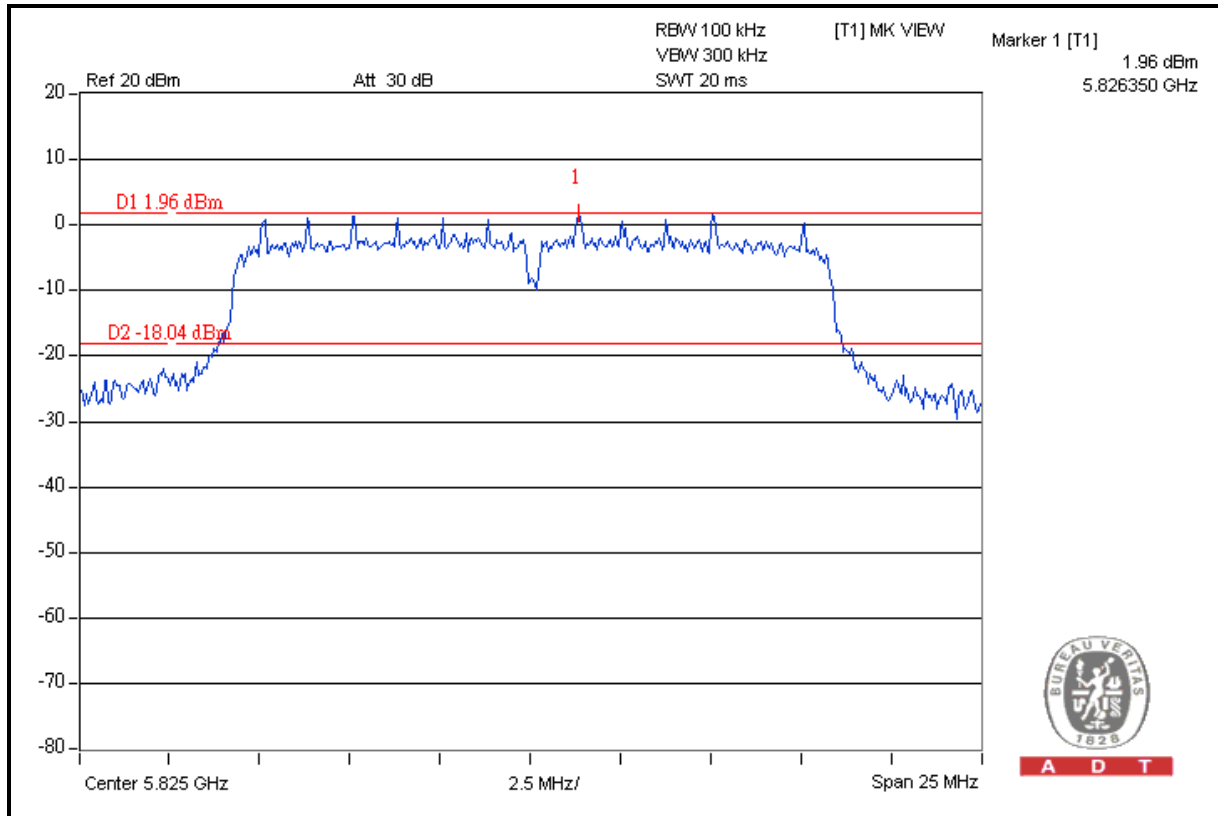
A D T

5.5.7 TEST RESULTS

802.11a

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	-0.62	-15.82	3.01	-12.81	8	PASS
	157	5785	0.07	-15.13	3.01	-12.12	8	PASS
	165	5825	-0.67	-15.87	3.01	-12.86	8	PASS
1	149	5745	1.41	-13.79	3.01	-10.78	8	PASS
	157	5785	1.55	-13.65	3.01	-10.64	8	PASS
	165	5825	1.96	-13.24	3.01	-10.23	8	PASS

FOR CHAIN 1: CH 165



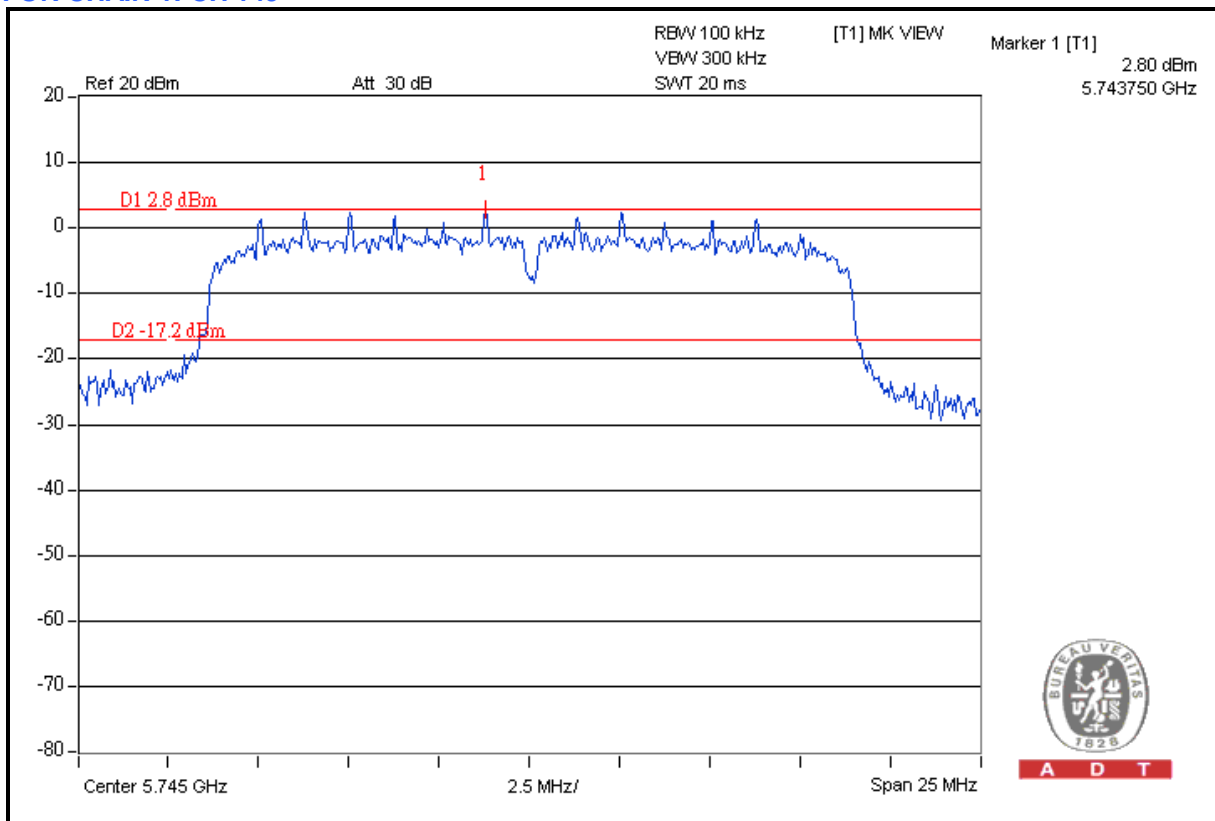


A D T

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	-2.10	-17.30	3.01	-14.29	8	PASS
	157	5785	-2.74	-17.94	3.01	-14.93	8	PASS
	165	5825	-0.71	-15.91	3.01	-12.90	8	PASS
1	149	5745	2.80	-12.40	3.01	-9.39	8	PASS
	157	5785	0.00	-15.20	3.01	-12.19	8	PASS
	165	5825	0.98	-14.22	3.01	-11.21	8	PASS

FOR CHAIN 1: CH 149



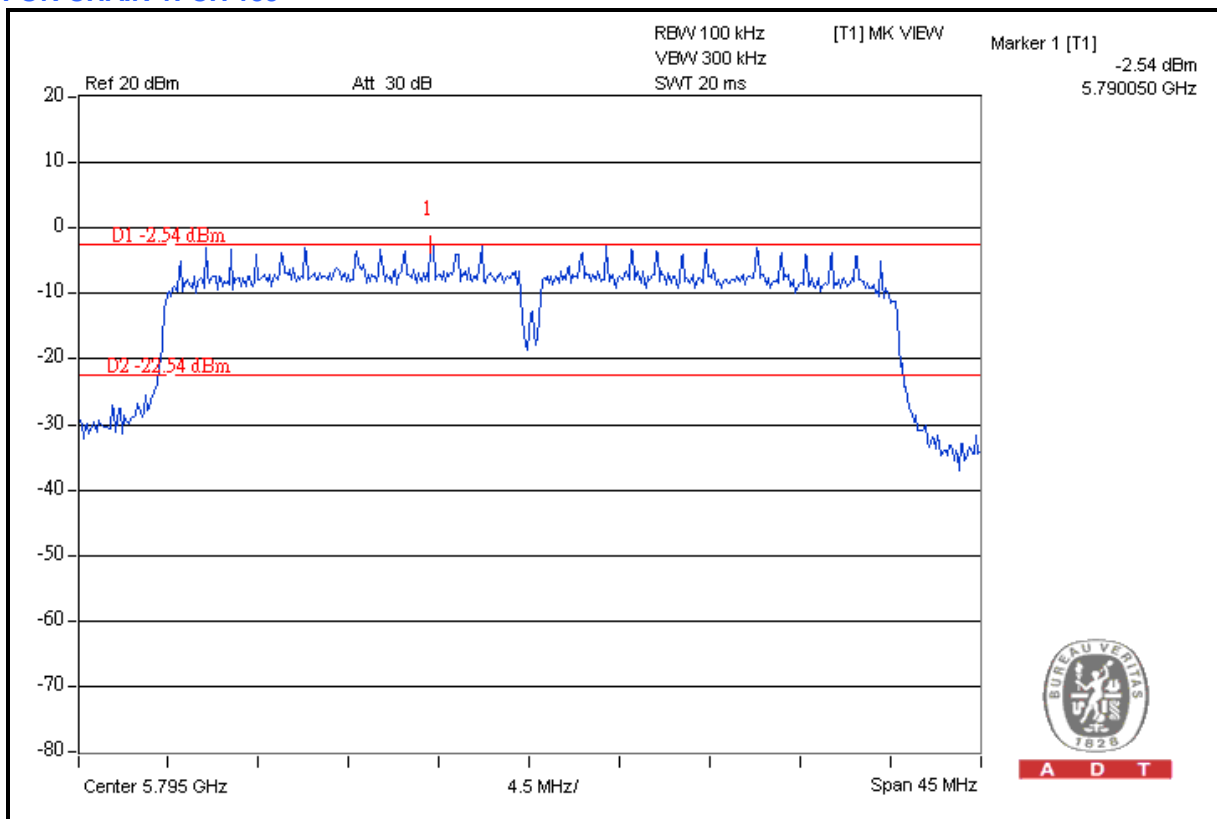


A D T

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	151	5755	-3.98	-19.18	3.01	-16.17	8	PASS
	159	5795	-5.26	-20.46	3.01	-17.45	8	PASS
1	151	5755	-2.60	-17.80	3.01	-14.79	8	PASS
	159	5795	-2.54	-17.74	3.01	-14.73	8	PASS

FOR CHAIN 1: CH 159





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 4.2.2 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

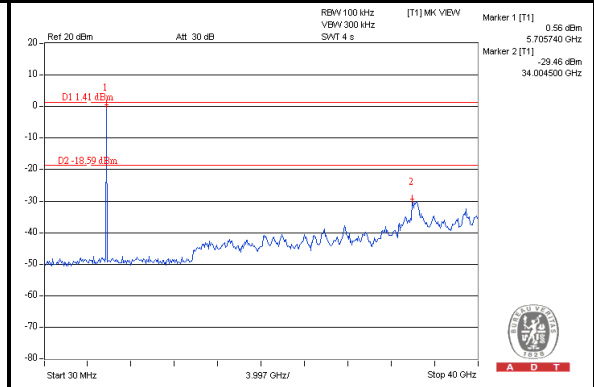
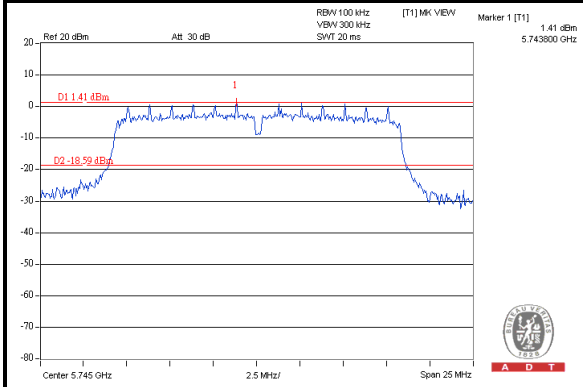
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



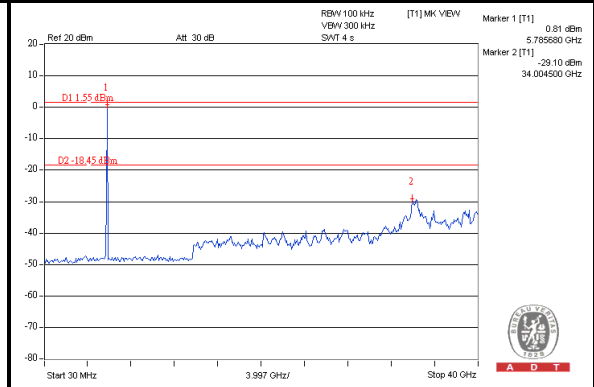
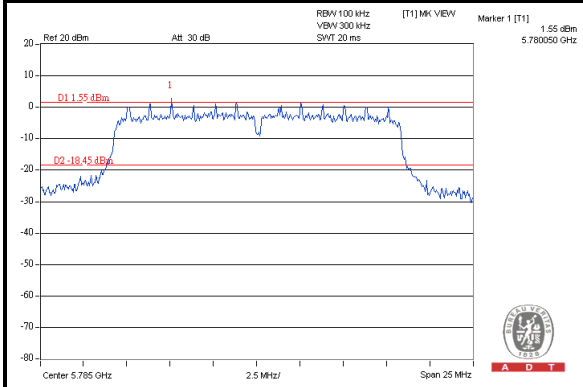
A D T

802.11a

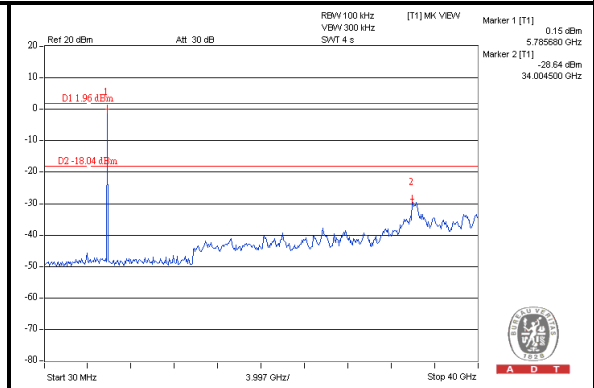
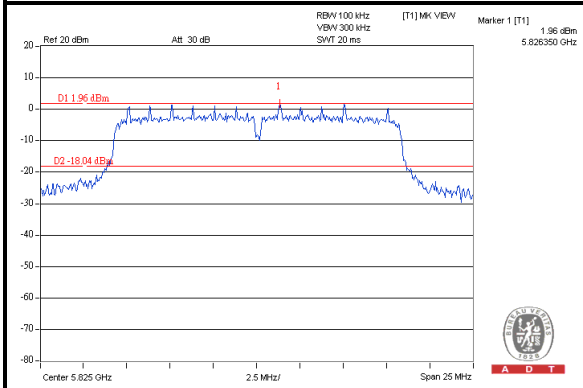
CH 149



CH 157



CH 165

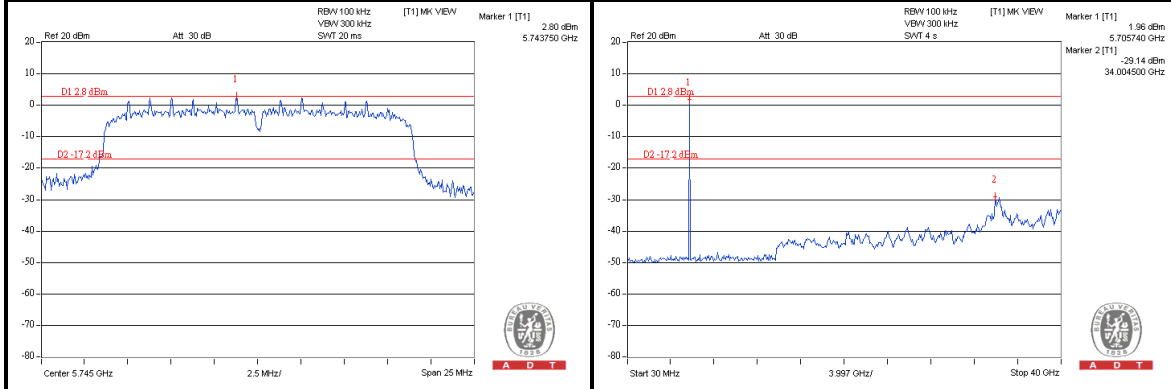




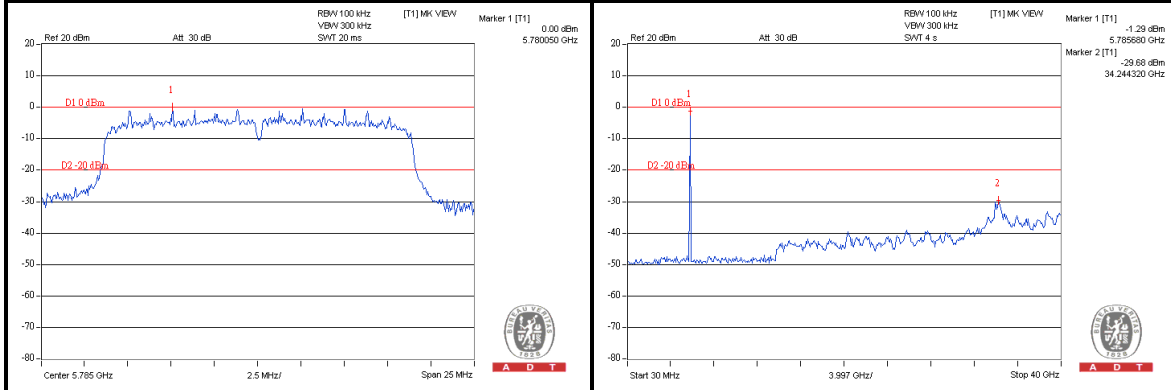
A D T

802.11n (20MHz)

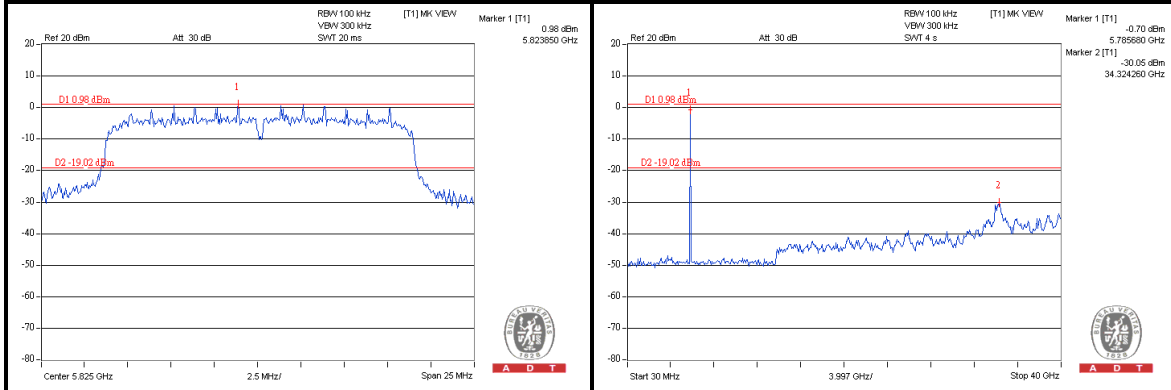
CH 149



CH 157



CH 165

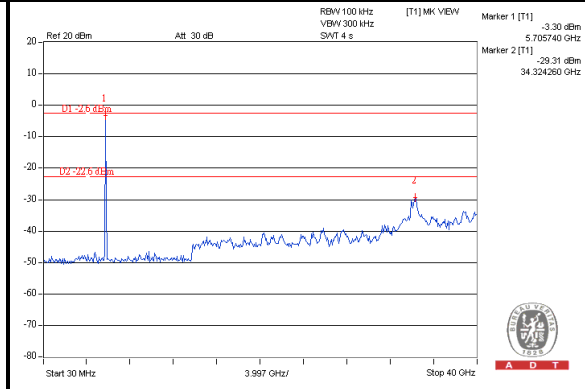
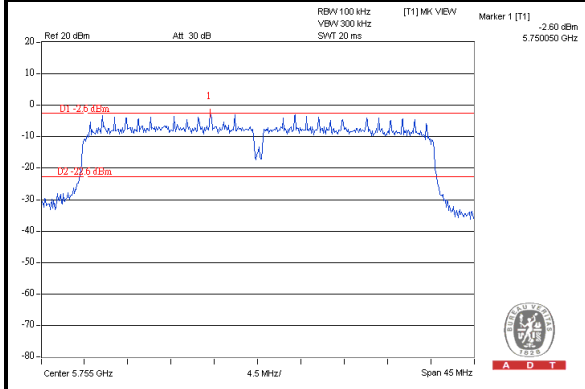




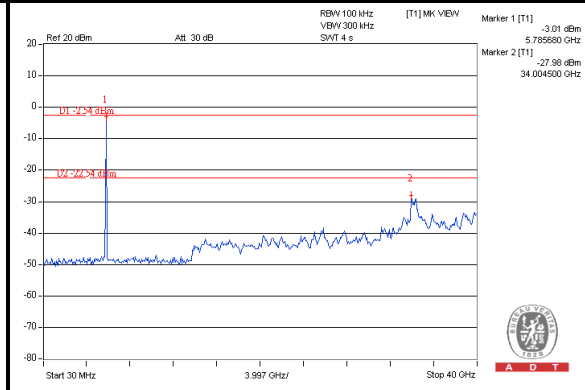
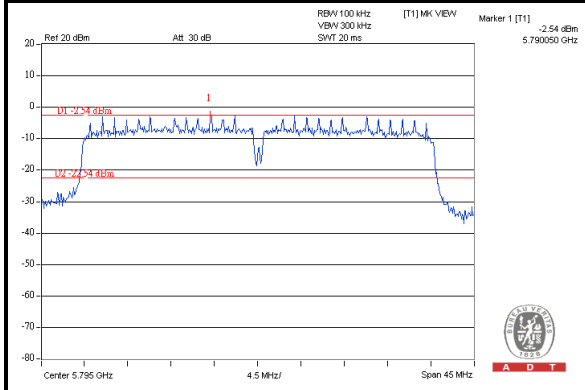
A D T

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.



9. APPENDIX-B – TEST TYPES AND RESULTS (FOR 2.4GHz BAND)

9.1 RECEIVER RADIATED EMISSION MEASUREMENT

9.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in RSS-Gen table 2 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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. As shown in RSS-Gen 7.2.3, 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.

9.1.2 TEST INSTRUMENTS

Refer to section 4.2.3 to get information of above instrument.



9.1.3 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 room. 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 height of antenna 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- 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 method or average method as specified and then reported in data sheet.

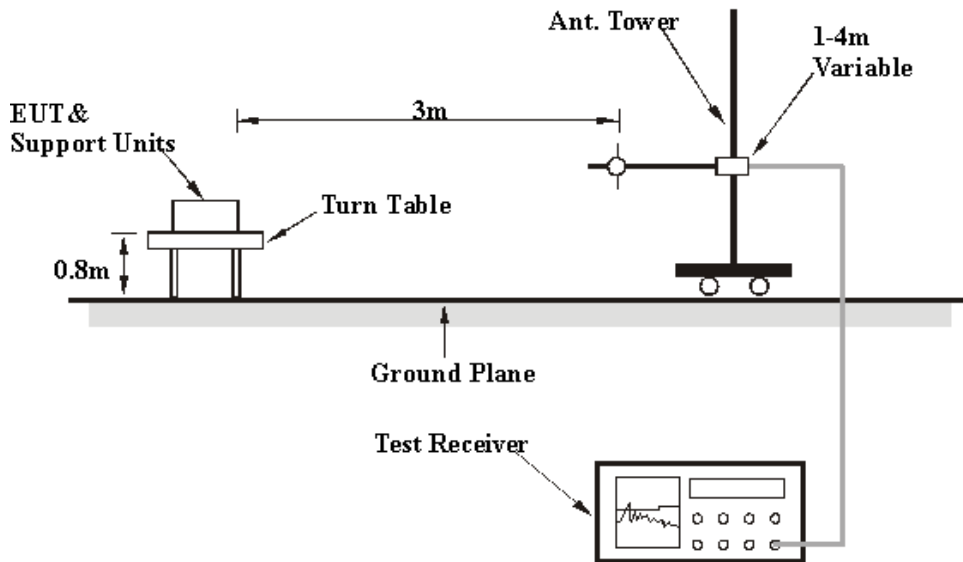
NOTE:

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

9.1.4 DEVIATION FROM TEST STANDARD

No deviation.

9.1.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

9.1.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.



9.1.7 TEST RESULTS

RX ABOVE 1GHz DATA

802.11b

CHANNEL	RX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 7.5GHz		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	3216.00	40.6 PK	74.0	-33.4	1.11 H	45	7.31	33.26
2	3216.00	31.1 AV	54.0	-22.9	1.11 H	45	-2.14	33.26

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	3216.00	42.2 PK	74.0	-31.8	1.00 V	278	8.98	33.26
2	3216.00	35.0 AV	54.0	-19.0	1.00 V	278	1.78	33.26

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

CHANNEL	RX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 7.5GHz		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	3249.00	41.7 PK	74.0	-32.3	1.10 H	40	8.43	33.31
2	3249.00	31.6 AV	54.0	-22.4	1.10 H	40	-1.72	33.31
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	3249.00	43.5 PK	74.0	-30.5	1.00 V	269	10.22	33.31
2	3249.00	36.3 AV	54.0	-17.7	1.00 V	269	2.98	33.31

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

CHANNEL	RX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 7.5GHz		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	3282.00	42.0 PK	74.0	-32.0	1.14 H	271	8.64	33.36
2	3282.00	31.8 AV	54.0	-22.2	1.14 H	271	-1.57	33.36
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	3282.00	44.2 PK	74.0	-29.8	1.16 V	279	10.82	33.36
2	3282.00	37.8 AV	54.0	-16.2	1.16 V	279	4.42	33.36

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

RX WORST-CASE DATA

802.11b

CHANNEL	RX Channel 1	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	49.39	28.1 QP	40.0	-11.9	1.13 H	142	14.22	13.90
2	123.56	34.1 QP	43.5	-9.4	1.27 H	100	21.53	12.53
3	155.07	37.9 QP	43.5	-5.6	1.25 H	10	23.48	14.46
4	184.15	32.6 QP	43.5	-10.9	1.32 H	31	19.88	12.73
5	200.15	31.9 QP	43.5	-11.6	1.30 H	310	20.58	11.35
6	232.14	43.2 QP	46.0	-2.8	1.22 H	295	30.41	12.76

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	31.45	33.7 QP	40.0	-6.3	1.11 V	52	21.47	12.26
2	82.84	32.2 QP	40.0	-7.8	1.04 V	274	22.49	9.74
3	108.05	34.5 QP	43.5	-9.0	1.28 V	34	23.88	10.61
4	152.64	32.8 QP	43.5	-10.7	1.03 V	58	18.34	14.46
5	306.31	34.9 QP	46.0	-11.1	1.27 V	148	19.09	15.80
6	458.04	34.2 QP	46.0	-11.8	1.06 V	163	14.07	20.12
7	534.15	34.6 QP	46.0	-11.4	1.22 V	10	12.61	21.99

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.

9.2 OCCUPIED BANDWIDTH MEASUREMENT

9.2.1 TEST INSTRUMENTS

Refer to section 4.2.3 to get information of above instrument.

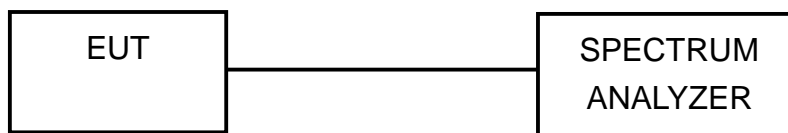
9.2.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 300 kHz VBW. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

9.2.3 DEVIATION FROM TEST STANDARD

No deviation.

9.2.4 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

9.2.5 EUT OPERATING CONDITIONS

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



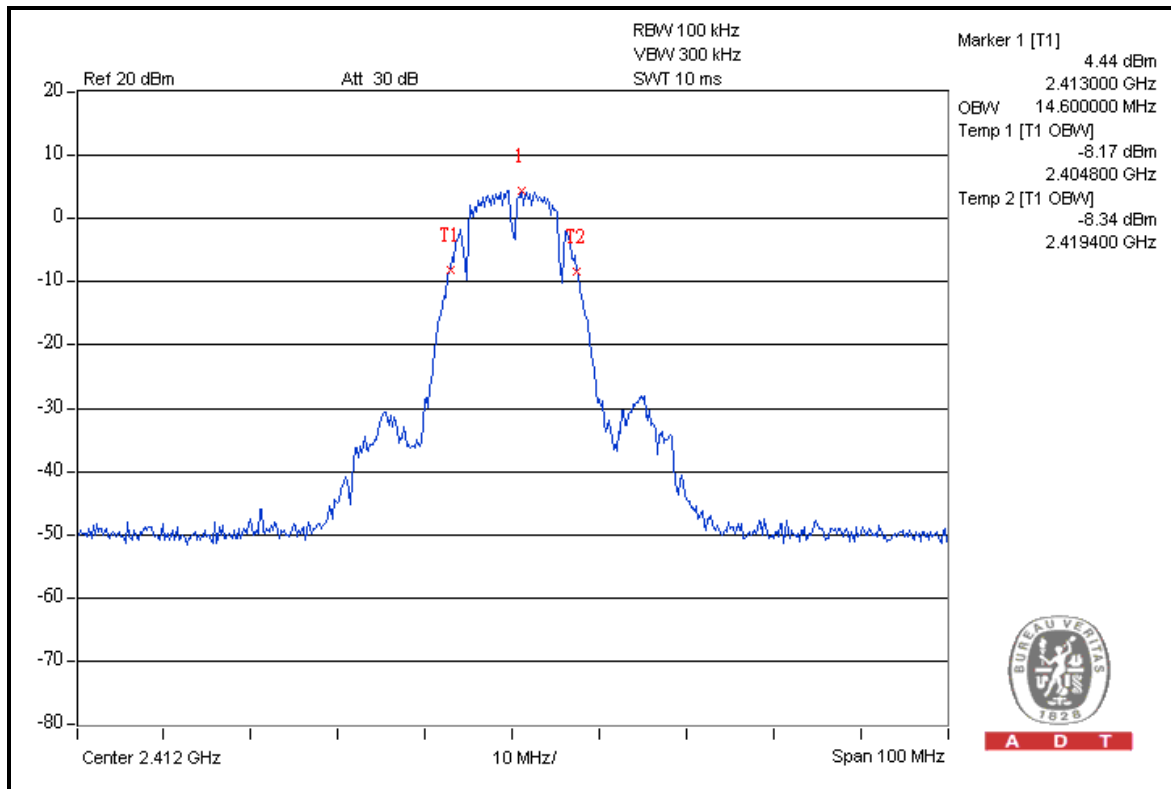
A D T

9.2.6 TEST RESULTS

802.11 b

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	2412	14.6	14.4	PASS
6	2437	14.6	14.4	PASS
11	2462	14.6	14.4	PASS

FOR CHAIN 0: CH 1



A D T

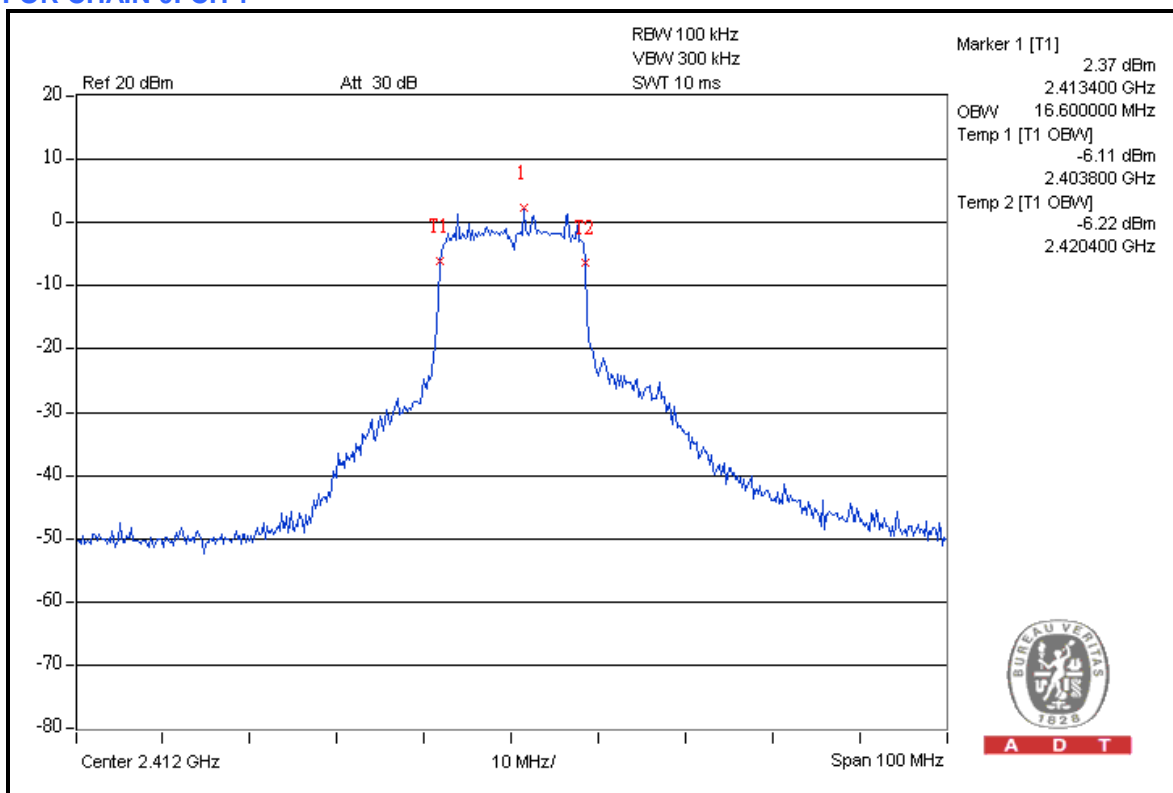


A D T

802.11 g

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	2412	16.6	16.6	PASS
6	2437	16.6	16.4	PASS
11	2462	16.6	16.6	PASS

FOR CHAIN 0: CH 1



A D T

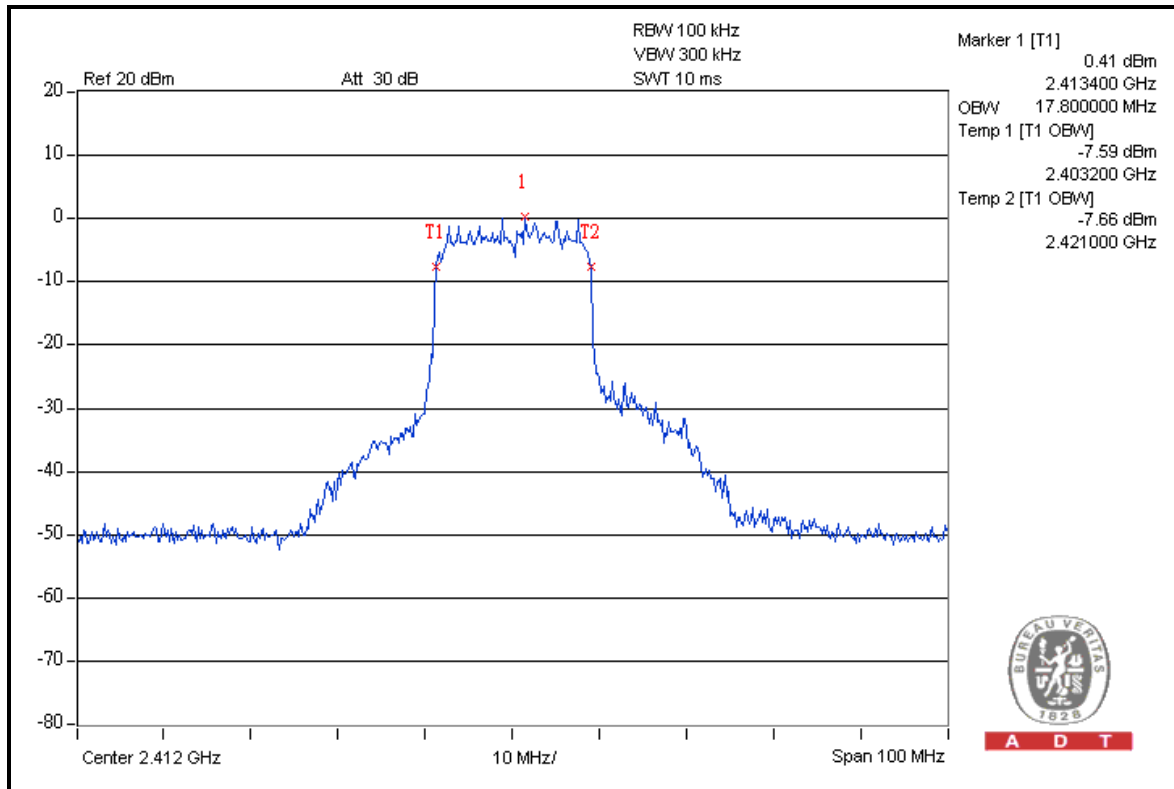


A D T

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	2412	17.8	17.8	PASS
6	2437	17.8	17.6	PASS
11	2462	17.6	17.6	PASS

FOR CHAIN 0: CH 1



A D T

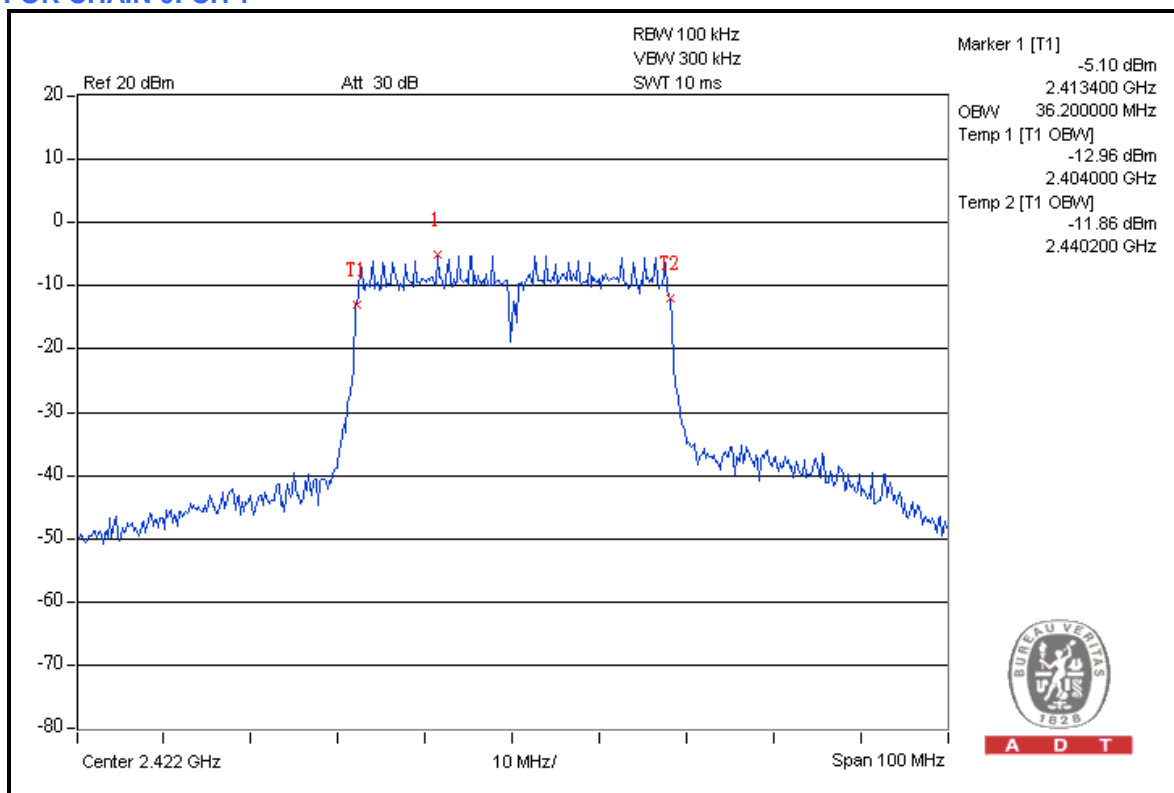


A D T

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
1	2422	36.2	36.0	PASS
4	2437	36.2	36.0	PASS
7	2452	36.2	36.0	PASS

FOR CHAIN 0: CH 1



A D T



10. APPENDIX-C – TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

10.1 RECEIVER RADIATED EMISSION MEASUREMENT

10.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in RSS-Gen table 2 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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. As shown in RSS-Gen 7.2.3, 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.

10.1.2 TEST INSTRUMENTS

Refer to section 4.2.3 to get information of above instrument.



10.1.3 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 room. 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 height of antenna 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- 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 method or average method as specified and then reported in data sheet.

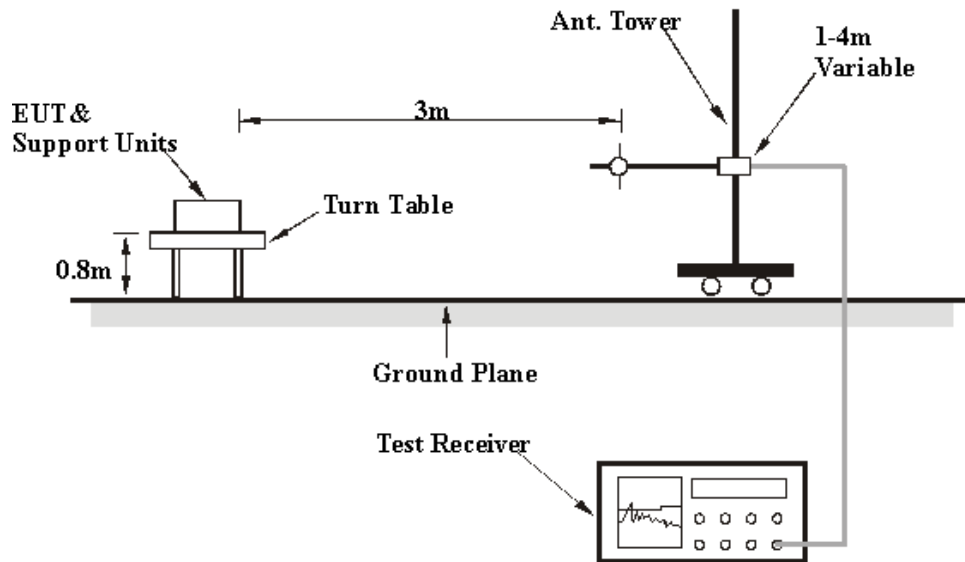
NOTE:

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

10.1.4 DEVIATION FROM TEST STANDARD

No deviation.

10.1.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

10.1.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.



A D T

10.1.7 TEST RESULTS

RX ABOVE 1GHz DATA

802.11a

CHANNEL	RX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 18GHz		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	3830.00	43.6 PK	74.0	-30.4	1.05 H	30	8.74	34.88
2	3830.00	33.5 AV	54.0	-20.5	1.05 H	30	-1.34	34.88
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	3830.00	42.2 PK	74.0	-31.8	1.08 V	34	7.36	34.88
2	3830.00	31.3 AV	54.0	-22.7	1.08 V	34	-3.59	34.88

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

CHANNEL	RX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 18GHz		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	3856.00	43.8 PK	74.0	-30.2	1.01 H	41	8.88	34.93
2	3856.00	33.7 AV	54.0	-20.3	1.01 H	41	-1.25	34.93
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	3856.00	42.1 PK	74.0	-31.9	1.00 V	24	7.18	34.93
2	3856.00	31.0 AV	54.0	-23.0	1.00 V	24	-3.95	34.93

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

CHANNEL	RX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 18GHz		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	3883.00	43.6 PK	74.0	-30.4	1.04 H	43	8.64	34.99
2	3883.00	33.6 AV	54.0	-20.4	1.04 H	43	-1.40	34.99
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	3883.00	42.2 PK	74.0	-31.8	1.01 V	33	7.17	34.99
2	3883.00	30.8 AV	54.0	-23.3	1.01 V	33	-4.24	34.99

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

RX WORST-CASE DATA

802.11a

CHANNEL	RX Channel 149	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	124.04	33.2 QP	43.5	-10.3	1.18 H	88	20.62	12.56
2	152.64	36.2 QP	43.5	-7.3	1.03 H	10	21.72	14.46
3	180.76	34.1 QP	43.5	-9.4	1.24 H	28	21.06	13.02
4	200.15	31.8 QP	43.5	-11.7	1.08 H	319	20.46	11.35
5	232.14	41.6 QP	46.0	-4.4	1.24 H	301	28.83	12.76
6	959.28	35.1 QP	46.0	-10.9	1.00 H	94	6.58	28.54

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	82.84	32.2 QP	40.0	-7.8	1.04 V	304	22.47	9.74
2	108.05	33.6 QP	43.5	-9.9	1.22 V	19	22.98	10.61
3	152.64	33.7 QP	43.5	-9.8	1.08 V	34	19.24	14.46
4	309.71	35.0 QP	46.0	-11.0	1.13 V	148	19.09	15.91
5	465.80	34.8 QP	46.0	-11.2	1.25 V	10	14.51	20.32
6	534.15	35.2 QP	46.0	-10.8	1.03 V	10	13.20	21.99
7	762.95	35.0 QP	46.0	-11.0	1.25 V	133	9.28	25.73

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.

10.2 OCCUPIED BANDWIDTH MEASUREMENT

10.2.1 TEST INSTRUMENTS

Refer to section 4.2.3 to get information of above instrument.

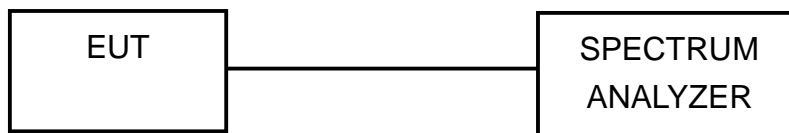
10.2.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 300 kHz VBW. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

10.2.3 DEVIATION FROM TEST STANDARD

No deviation.

10.2.4 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

10.2.5 EUT OPERATING CONDITIONS

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



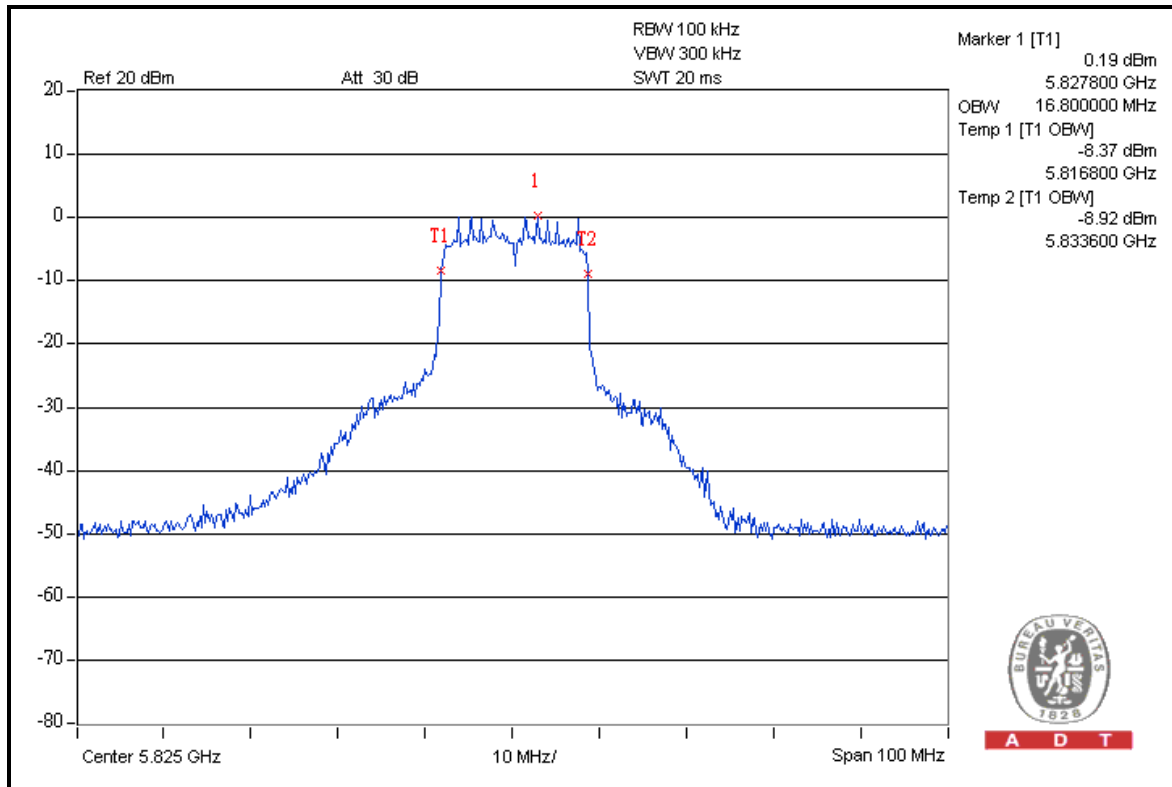
A D T

10.2.6 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
149	5745	16.6	16.6	PASS
157	5785	16.6	16.6	PASS
165	5825	16.6	16.8	PASS

FOR CHAIN 1: CH 165



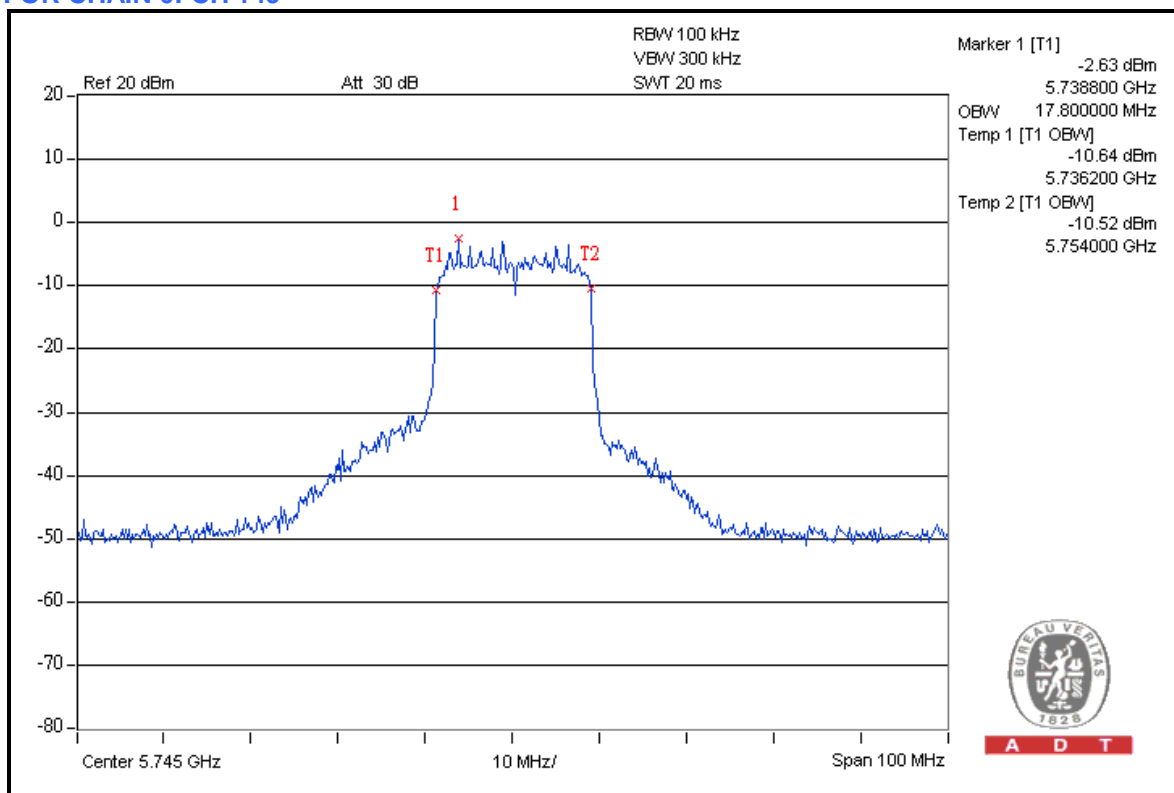


A D T

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
149	5745	17.8	17.8	PASS
157	5785	17.8	17.6	PASS
165	5825	17.6	17.6	PASS

FOR CHAIN 0: CH 149



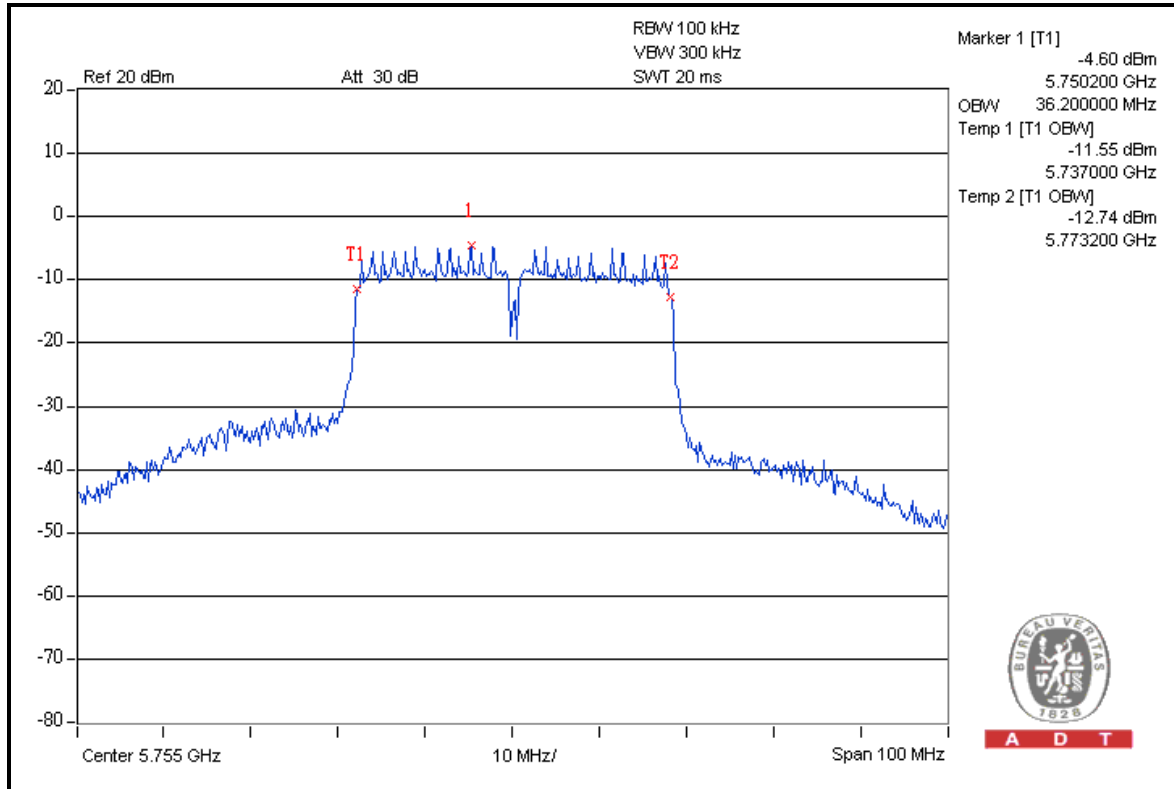


A D T

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
151	5755	36.2	36.2	PASS
159	5795	36.0	36.0	PASS

FOR CHAIN 0: CH 151



A D T

---END---