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FCC (15.247) & CANADA RSS-210 (ANNEX 8) TEST REPORT

REPORT NO.: RF120301C28
MODEL NO.: TL-WR2543ND
FCC ID: TE7WR2543N
IC: 8853A-WR2543N
RECEIVED: Mar. 1, 2012
TESTED: Jul. 25 ~ Aug. 1, 2012
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APPLICANT: TP-LINK TECHNOLOGIES CO., LTD.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120301C28	Original release	Aug. 30, 2012



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1. CERTIFICATION

PRODUCT: 450Mbps Dual-Band Wireless N Gigabit Router

MODEL NO.: TL-WR2543ND

BRAND: TP-LINK

APPLICANT: TP-LINK TECHNOLOGIES CO., LTD.

TESTED: Jul. 25 ~ Aug. 1, 2012

TEST SAMPLE: MASS-PRODUCTION

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 (model: TL-WR2543ND) 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 : Celia Chen , **DATE** : Aug. 30, 2012
(Celia Chen / Senior Specialist)

APPROVED BY : Ken Liu , **DATE** : Aug. 30, 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) & RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15 15.207	RSS-Gen 7.2.4	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -0.69dB at 0.51183MHz.
-	RSS-Gen 4.6	Occupied Bandwidth Measurement	PASS	Meet the requirement of limit.
FCC Part 15 15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2483.50MHz.
FCC Part 15 15.247(d)	RSS-210 A8.5	Band Edge Measurement	PASS	Meet the requirement of limit.
FCC Part 15 15.247(a)(2)	RSS-210 A8.2 (a)	6dB bandwidth	PASS	Meet the requirement of limit.
FCC Part 15 15.247(b)	RSS-210 A8.4 (4)	Conducted power	PASS	Meet the requirement of limit.
FCC Part 15 15.247(e)	RSS-210 A8.2 (b)	Power Spectral Density	PASS	Meet the requirement of limit.
FCC Part 15 15.203	-	Antenna Requirement	PASS	Antenna connector is SMA Reverse not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	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 $k = 2$.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	450Mbps Dual-Band Wireless N Gigabit Router
MODEL NO.	TL-WR2543ND
POWER SUPPLY	12Vdc from AC adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 450.0Mbps
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	820.3mW for 2412 ~ 2462MHz 534.8mW for 5745 ~ 5825MHz
ANTENNA TYPE	Refer to note as below
ANTENNA CONNECTOR	Refer to note as below
DATA CABLE	Refer to user's manual
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to note as below

NOTE:

- 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 following antenna was applied to the EUT:

Function	Type	Connector	Gain (dBi)	
			2.4G	5.0G
WLAN 802.11a/b/g/n	Omni-Directional	SMA Reverse	2	3

3. The EUT incorporates a MIMO function. Physically, the EUT provides three completed transmitters and three receivers.

MODULATION MODE	TX FUNCTION
802.11b	3TX
802.11g	3TX
802.11a	3TX
802.11n (20MHz)	3TX
802.11n (40MHz)	3TX

4. The EUT consumes power from a power adapter as the following:

BRAND	Huntkey
MODEL	HKA01812015-2K
INPUT POWER	100-240V~50/60Hz,0.5A
OUTPUT POWER	12.0V / 1.5A
POEWR LINE	1.5 m non-shielded cable

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 ³ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE³1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

NOTE:

The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane**.

RADIATED EMISSION TEST (ABOVE 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	19.5
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	40.5

RADIATED EMISSION TEST (BELOW 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11g	1 to 11	6	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11g	1 to 11	6	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	19.5
-	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	40.5

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	19.5
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	40.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE ³ 1G	27deg. C, 75%RH	120Vac, 60Hz	Chad Lee
RE<1G	25deg. C, 76%RH	120Vac, 60Hz	Chad Lee
PLC	26deg. C, 73%RH	120Vac, 60Hz	Chad Lee
APCM	24deg. C, 82%RH	120Vac, 60Hz	Jun Wu

FOR 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE ³ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE³1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	19.5
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	40.5

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



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BANDEDGE MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
-	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	19.5
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	40.5

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	19.5
-	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	40.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE ³ 1G	25deg. C, 76%RH	120Vac, 60Hz	Chad Lee
RE<1G	25deg. C, 76%RH	120Vac, 60Hz	Chad Lee
PLC	26deg. C, 73%RH	120Vac, 60Hz	Chad Lee
APCM	24deg. C, 82%RH	120Vac, 60Hz	Jun Wu

3.3 DESCRIPTION OF SUPPORT UNITS

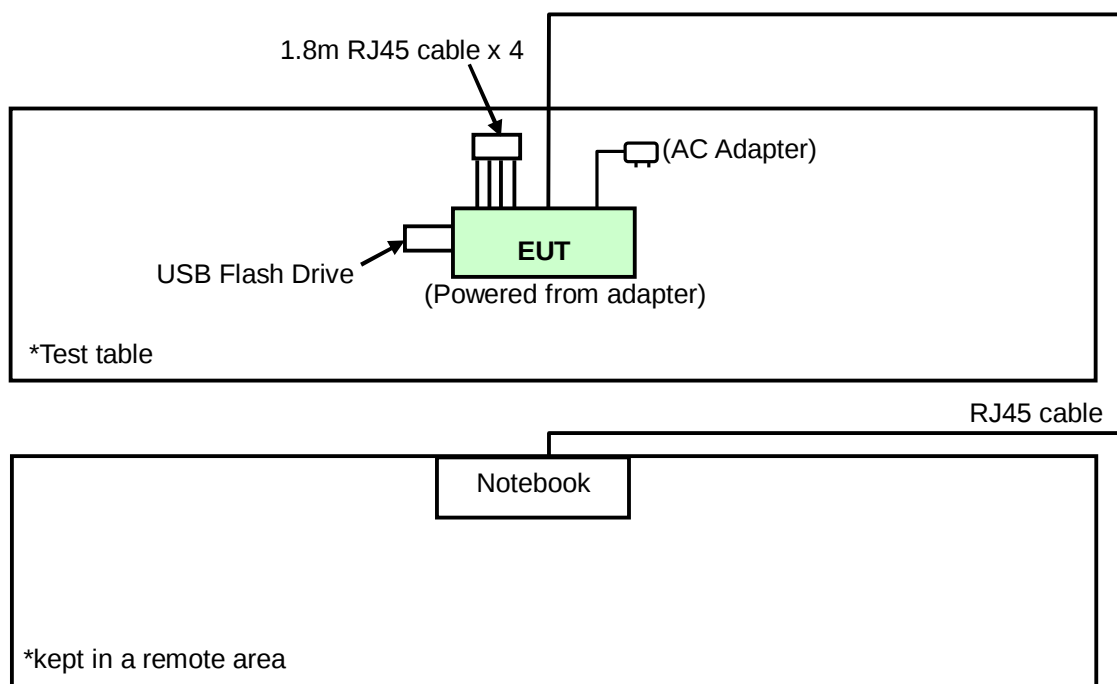
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	E5410	BW33YM1	FCC DoC Approved
2	USB Flash Drive	SanDisk	Cruzer Micro Skin	NA	FCC DoC Approved

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

NOTE: (1) All power cords of the above support units are non shielded (1.8m).
(2) Four RJ45 cables (1.8m each) were connected from EUT to form open loop cables, which was terminated with 50ohm resistor load.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST





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3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance 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.

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

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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

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4.1.2 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. 13, 2012	Jun. 12, 2013
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 22, 2012	May 21, 2013
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 18, 2012	May 17, 2013
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	May 09, 2012	May 08, 2013
Anritsu Power Sensor	MA2411B	0738404	Apr. 28, 2012	Apr. 27, 2013
Anritsu Power Meter	ML2495A	0842014	Apr. 28, 2012	Apr. 27, 2013

- NOTE:** 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The 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.

4.1.3 TEST PROCEDURES

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

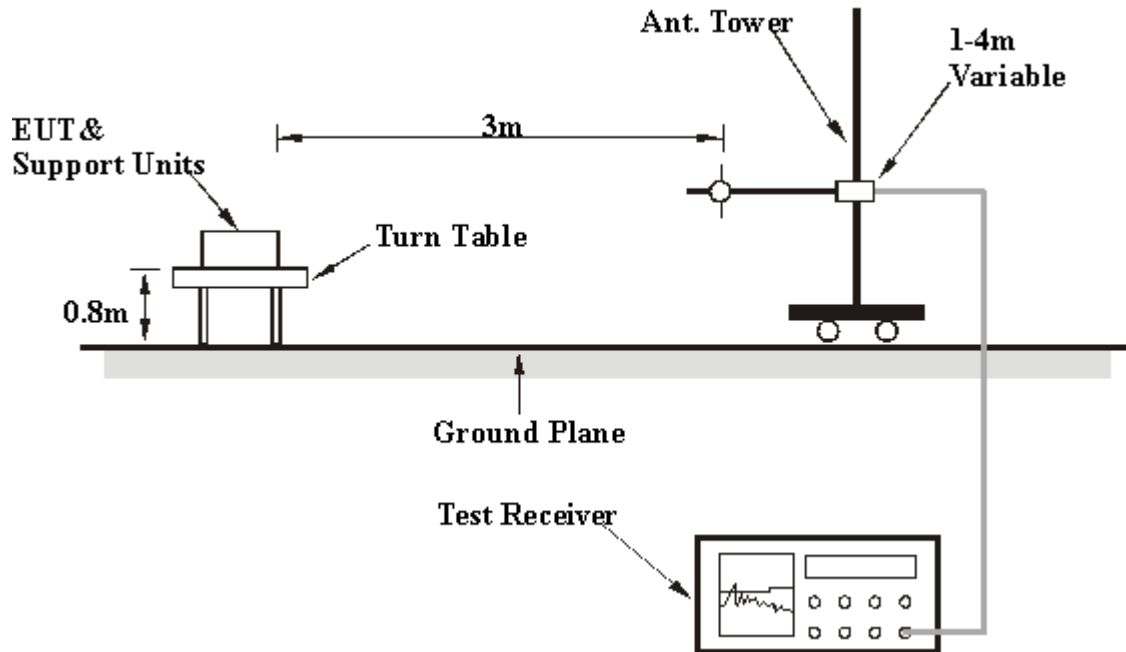
NOTE:

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITIONS

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

4.1.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 6	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	38.08	29.2 QP	40.0	-10.8	1.15 H	10	16.28	12.92
2	63.95	28.2 QP	40.0	-11.8	1.34 H	232	15.01	13.15
3	159.33	31.9 QP	43.5	-11.6	1.08 H	108	17.79	14.15
4	199.75	37.9 QP	43.5	-5.6	1.35 H	239	26.73	11.17
5	249.87	39.5 QP	46.0	-6.6	1.44 H	154	26.02	13.43
6	374.35	39.4 QP	46.0	-6.6	1.00 H	260	21.79	17.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	36.47	37.5 QP	40.0	-2.5	1.12 V	174	24.98	12.51
2	63.95	36.2 QP	40.0	-3.8	1.36 V	194	23.01	13.15
3	120.53	29.7 QP	43.5	-13.8	1.84 V	12	17.80	11.92
4	374.35	35.4 QP	46.0	-10.6	1.24 V	280	17.80	17.60
5	500.45	32.5 QP	46.0	-13.5	1.35 V	77	11.37	21.14
6	624.93	34.9 QP	46.0	-11.1	1.00 V	153	11.27	23.59

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.



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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	58.6 PK	74.0	-15.4	1.00 H	215	28.33	30.24
2	2390.00	45.5 AV	54.0	-8.5	1.00 H	215	15.26	30.24
3	*2412.00	108.6 PK			1.00 H	215	78.26	30.33
4	*2412.00	104.4 AV			1.00 H	215	74.09	30.33
5	4824.00	45.0 PK	74.0	-29.0	1.00 H	349	8.40	36.64
6	4824.00	33.6 AV	54.0	-20.4	1.00 H	349	-3.08	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	60.3 PK	74.0	-13.7	1.00 V	253	30.10	30.24
2	2390.00	47.7 AV	54.0	-6.3	1.00 V	253	17.43	30.24
3	*2412.00	112.8 PK			1.00 V	70	82.48	30.33
4	*2412.00	108.9 AV			1.00 V	70	78.59	30.33
5	4824.00	49.2 PK	74.0	-24.9	1.00 V	354	12.51	36.64
6	4824.00	41.2 AV	54.0	-12.8	1.00 V	354	4.52	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.



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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	105.5 PK			1.00 H	215	75.09	30.42
2	*2437.00	102.6 AV			1.00 H	215	72.16	30.42
3	4874.00	45.9 PK	74.0	-28.1	1.00 H	6	9.10	36.77
4	4874.00	32.1 AV	54.0	-21.9	1.00 H	6	-4.63	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	112.5 PK			1.00 V	269	82.07	30.42
2	*2437.00	108.5 AV			1.00 V	269	78.11	30.42
3	4874.00	50.7 PK	74.0	-23.3	1.00 V	93	13.89	36.77
4	4874.00	45.8 AV	54.0	-8.2	1.00 V	93	9.05	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.



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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	103.9 PK			1.00 H	214	73.38	30.50
2	*2462.00	100.5 AV			1.00 H	214	70.03	30.50
3	2483.50	55.8 PK	74.0	-18.2	1.00 H	214	25.19	30.57
4	2483.50	43.7 AV	54.0	-10.3	1.00 H	214	13.11	30.57
5	4924.00	45.0 PK	74.0	-29.0	1.00 H	16	8.10	36.90
6	4924.00	32.2 AV	54.0	-21.8	1.00 H	16	-4.67	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	111.0 PK			1.00 V	282	80.54	30.50
2	*2462.00	106.5 AV			1.00 V	282	76.03	30.50
3	2483.50	59.2 PK	74.0	-14.8	1.00 V	282	28.65	30.57
4	2483.50	45.7 AV	54.0	-8.3	1.00 V	282	15.10	30.57
5	4924.00	47.1 PK	74.0	-26.9	1.13 V	23	10.17	36.90
6	4924.00	38.1 AV	54.0	-15.9	1.13 V	23	1.17	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.



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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	64.6 PK	74.0	-9.4	1.00 H	215	34.32	30.24
2	2390.00	45.4 AV	54.0	-8.6	1.00 H	215	15.13	30.24
3	*2412.00	109.8 PK			1.00 H	215	79.46	30.33
4	*2412.00	98.6 AV			1.00 H	215	68.31	30.33
5	4824.00	43.7 PK	74.0	-30.3	1.00 H	197	7.09	36.64
6	4824.00	31.6 AV	54.0	-22.4	1.00 H	197	-5.05	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	71.4 PK	74.0	-2.7	1.00 V	6	41.11	30.24
2	2390.00	46.9 AV	54.0	-7.1	1.00 V	6	16.62	30.24
3	*2412.00	114.9 PK			1.00 V	273	84.53	30.33
4	*2412.00	104.7 AV			1.00 V	273	74.36	30.33
5	4824.00	43.9 PK	74.0	-30.1	1.00 V	150	7.26	36.64
6	4824.00	31.9 AV	54.0	-22.1	1.00 V	150	-4.71	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.



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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	110.1 PK			1.00 H	215	79.72	30.42
2	*2437.00	97.9 AV			1.00 H	215	67.46	30.42
3	4874.00	43.8 PK	74.0	-30.2	1.00 H	5	7.00	36.77
4	4874.00	32.1 AV	54.0	-21.9	1.00 H	5	-4.66	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	115.9 PK			1.00 V	269	85.44	30.42
2	*2437.00	103.7 AV			1.00 V	269	73.28	30.42
3	4874.00	43.9 PK	74.0	-30.1	1.00 V	19	7.10	36.77
4	4874.00	32.2 AV	54.0	-21.9	1.00 V	19	-4.62	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.



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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	108.7 PK			1.00 H	214	78.19	30.50
2	*2462.00	97.4 AV			1.00 H	214	66.89	30.50
3	2483.50	66.8 PK	74.0	-7.3	1.00 H	237	36.18	30.57
4	2483.50	45.1 AV	54.0	-8.9	1.00 H	237	14.54	30.57
5	4924.00	43.2 PK	74.0	-30.8	1.00 H	6	6.26	36.90
6	4924.00	32.1 AV	54.0	-21.9	1.00 H	6	-4.84	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	112.4 PK			1.00 V	357	81.89	30.50
2	*2462.00	101.7 AV			1.00 V	357	71.18	30.50
3	2483.50	72.9 PK	74.0	-1.1	1.18 V	0	42.29	30.57
4	2483.50	47.8 AV	54.0	-6.2	1.18 V	0	17.21	30.57
5	4924.00	46.9 PK	74.0	-27.1	1.00 V	6	9.97	36.90
6	4924.00	33.3 AV	54.0	-20.7	1.00 V	6	-3.64	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	56.3 PK	74.0	-17.7	1.00 H	243	26.02	30.24
2	2390.00	44.7 AV	54.0	-9.3	1.00 H	243	14.50	30.24
3	*2412.00	104.0 PK			1.00 H	243	73.71	30.33
4	*2412.00	93.1 AV			1.00 H	243	62.79	30.33
5	4824.00	44.5 PK	74.0	-29.5	1.00 H	16	7.88	36.64
6	4824.00	32.3 AV	54.0	-21.7	1.00 H	16	-4.30	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	63.4 PK	74.0	-10.6	1.00 V	273	33.18	30.24
2	2390.00	50.1 AV	54.0	-3.9	1.00 V	273	19.84	30.24
3	*2412.00	114.0 PK			1.00 V	71	83.62	30.33
4	*2412.00	103.3 AV			1.00 V	71	72.93	30.33
5	4824.00	44.7 PK	74.0	-29.3	1.00 V	16	8.09	36.64
6	4824.00	32.9 AV	54.0	-21.1	1.00 V	16	-3.74	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.



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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	108.0 PK			1.00 H	89	77.56	30.42
2	*2437.00	98.5 AV			1.00 H	89	68.03	30.42
3	4874.00	43.9 PK	74.0	-30.1	1.00 H	15	7.10	36.77
4	4874.00	31.2 AV	54.0	-22.9	1.00 H	15	-5.62	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	117.5 PK			1.00 V	69	87.03	30.42
2	*2437.00	107.1 AV			1.00 V	69	76.63	30.42
3	4874.00	44.4 PK	74.0	-29.6	1.00 V	10	7.60	36.77
4	4874.00	31.6 AV	54.0	-22.4	1.00 V	10	-5.16	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.



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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	106.0 PK			1.00 H	261	75.49	30.50
2	*2462.00	94.9 AV			1.00 H	261	64.35	30.50
3	2483.50	62.9 PK	74.0	-11.1	1.00 H	261	32.32	30.57
4	2483.50	45.1 AV	54.0	-8.9	1.00 H	261	14.54	30.57
5	4924.00	44.0 PK	74.0	-30.0	1.00 H	16	7.06	36.90
6	4924.00	31.7 AV	54.0	-22.3	1.00 H	16	-5.23	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	113.3 PK			1.00 V	19	82.80	30.50
2	*2462.00	102.9 AV			1.00 V	19	72.40	30.50
3	2483.50	73.0 PK	74.0	-1.0	1.00 V	6	42.42	30.57
4	2483.50	50.7 AV	54.0	-3.3	1.00 V	6	20.17	30.57
5	4924.00	44.0 PK	74.0	-30.0	1.00 V	4	7.12	36.90
6	4924.00	31.8 AV	54.0	-22.2	1.00 V	4	-5.10	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	60.8 PK	74.0	-13.2	1.06 H	263	30.59	30.24
2	2390.00	45.1 AV	54.0	-8.9	1.06 H	263	14.86	30.24
3	*2422.00	100.3 PK			1.06 H	263	69.93	30.36
4	*2422.00	89.9 AV			1.06 H	263	59.54	30.36
5	4844.00	44.0 PK	74.0	-30.0	1.00 H	163	7.28	36.69
6	4844.00	30.9 AV	54.0	-23.1	1.00 H	163	-5.77	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	64.8 PK	74.0	-9.2	1.00 V	70	34.56	30.24
2	2390.00	47.3 AV	54.0	-6.7	1.00 V	70	17.03	30.24
3	*2422.00	108.2 PK			1.00 V	70	77.85	30.36
4	*2422.00	96.4 AV			1.00 V	70	66.02	30.36
5	4844.00	44.7 PK	74.0	-29.3	1.00 V	16	8.01	36.69
6	4844.00	31.2 AV	54.0	-22.8	1.00 V	16	-5.50	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	101.8 PK			1.00 H	137	71.33	30.42
2	*2437.00	92.0 AV			1.00 H	137	61.61	30.42
3	4874.00	44.2 PK	74.0	-29.8	1.00 H	16	7.44	36.77
4	4874.00	31.5 AV	54.0	-22.5	1.00 H	16	-5.25	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	114.0 PK			1.00 V	70	83.60	30.42
2	*2437.00	102.8 AV			1.00 V	70	72.35	30.42
3	4874.00	44.8 PK	74.0	-29.2	1.00 V	6	8.04	36.77
4	4874.00	32.1 AV	54.0	-21.9	1.00 V	6	-4.70	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.



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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	100.9 PK			1.00 H	245	70.47	30.47
2	*2452.00	90.6 AV			1.00 H	245	60.08	30.47
3	2483.50	65.2 PK	74.0	-8.8	1.00 H	245	34.67	30.57
4	2483.50	45.7 AV	54.0	-8.3	1.00 H	245	15.10	30.57
5	4904.00	44.6 PK	74.0	-29.4	1.00 H	245	7.77	36.85
6	4904.00	31.9 AV	54.0	-22.1	1.00 H	245	-4.94	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	#3249.00	42.9 PK	80.9	-38.1	1.00 V	16	9.55	33.31
2	#3249.00	32.7 AV	70.6	-37.8	1.00 V	16	-0.59	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.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	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
SUHNER 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.

4.2.3 TEST PROCEDURES

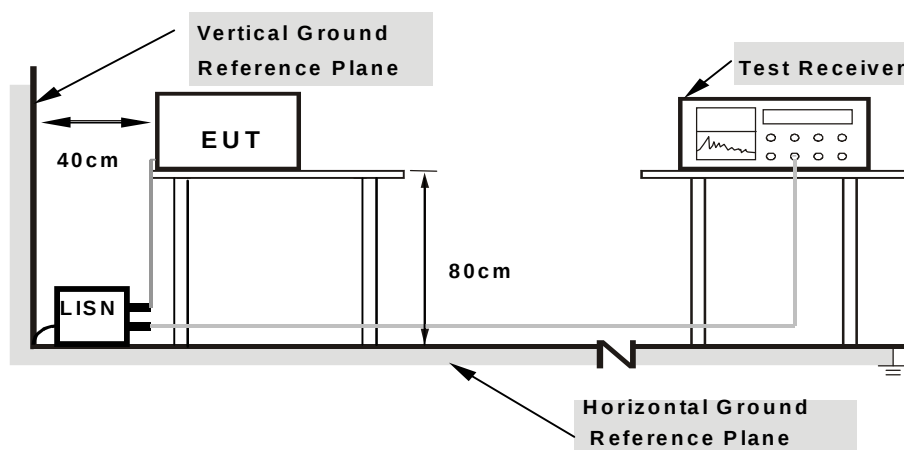
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

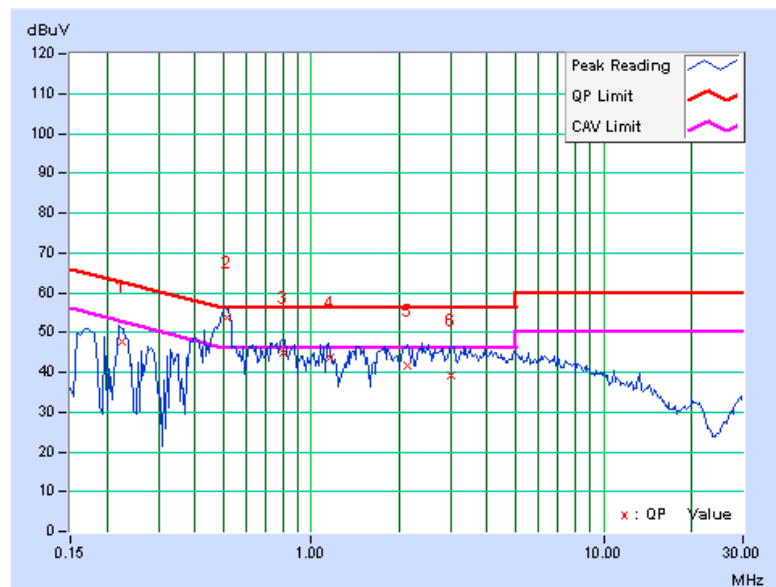
CONDUCTED WORST-CASE DATA : 802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22667	0.16	47.63	-	47.79	-	62.57	52.57	-14.79	-
2	0.51542	0.20	53.44	44.43	53.64	44.63	56.00	46.00	-2.36	-1.37
3	0.80753	0.22	44.44	-	44.66	-	56.00	46.00	-11.34	-
4	1.15378	0.24	43.47	-	43.71	-	56.00	46.00	-12.29	-
5	2.13372	0.30	41.25	-	41.55	-	56.00	46.00	-14.45	-
6	3.01690	0.36	38.91	-	39.27	-	56.00	46.00	-16.73	-

REMARKS:

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

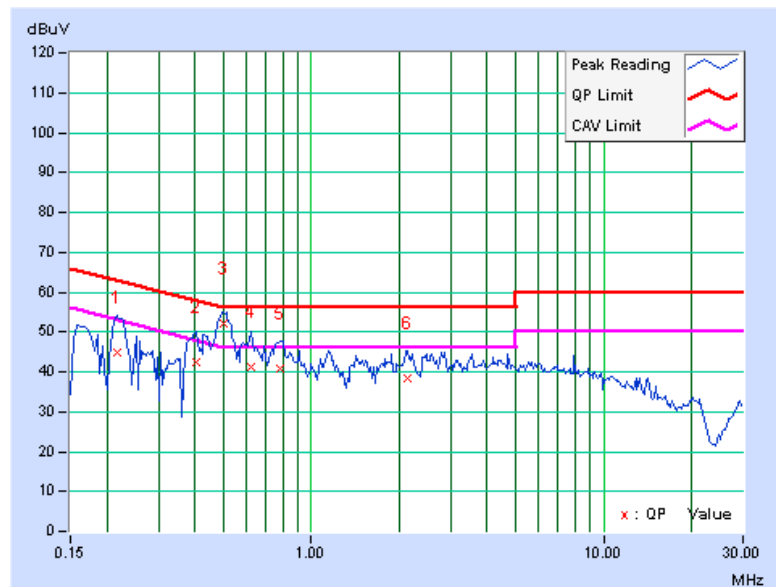


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21641	0.15	44.52	-	44.67	-	62.96	52.96	-18.28	-
2	0.40391	0.19	42.31	-	42.50	-	57.77	47.77	-15.27	-
3	0.50220	0.20	51.84	41.64	52.04	41.84	56.00	46.00	-3.96	-4.16
4	0.61875	0.20	40.86	-	41.06	-	56.00	46.00	-14.94	-
5	0.78281	0.22	40.50	-	40.72	-	56.00	46.00	-15.28	-
6	2.14844	0.29	37.96	-	38.25	-	56.00	46.00	-17.75	-

REMARKS:

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

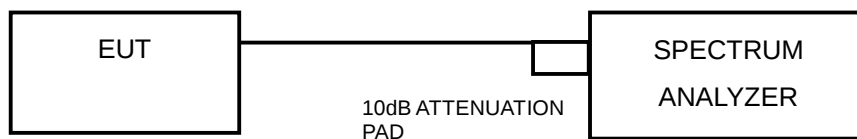


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

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

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

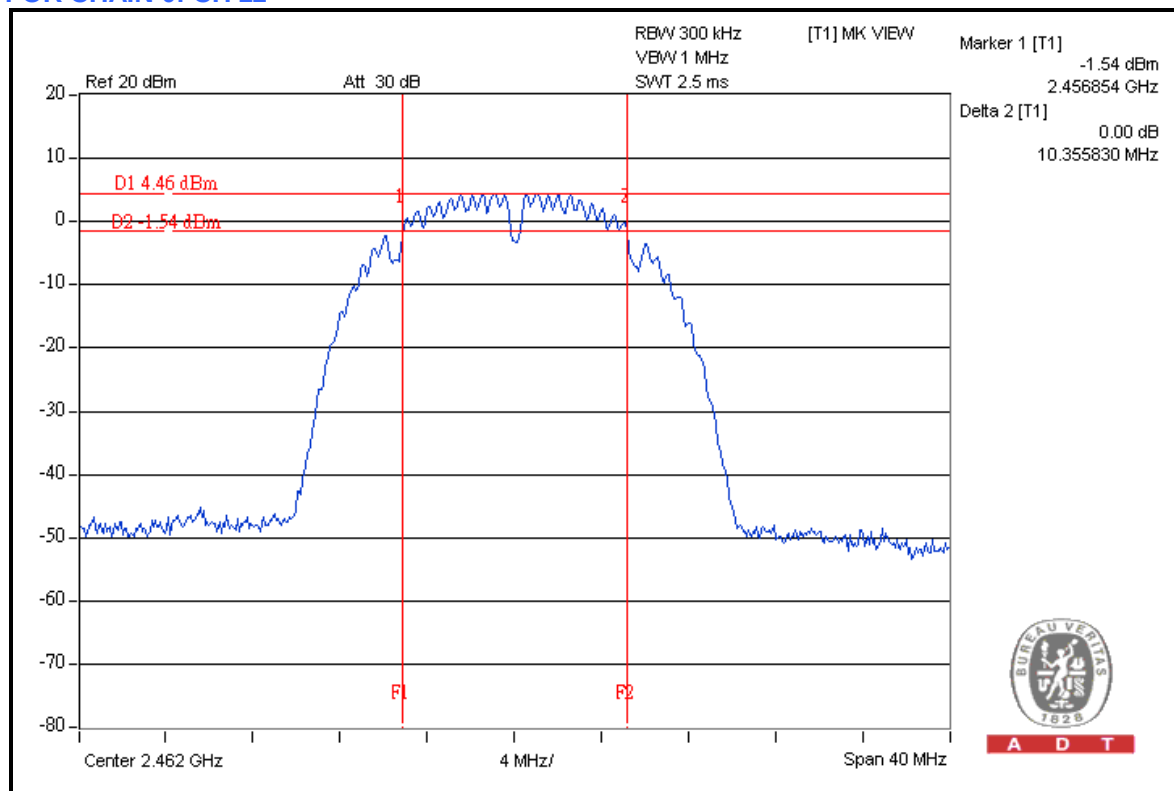
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	10.24	10.29	10.26	0.5	PASS
6	2437	10.29	10.31	10.30	0.5	PASS
11	2462	10.36	10.32	10.32	0.5	PASS

FOR CHAIN 0: CH 11



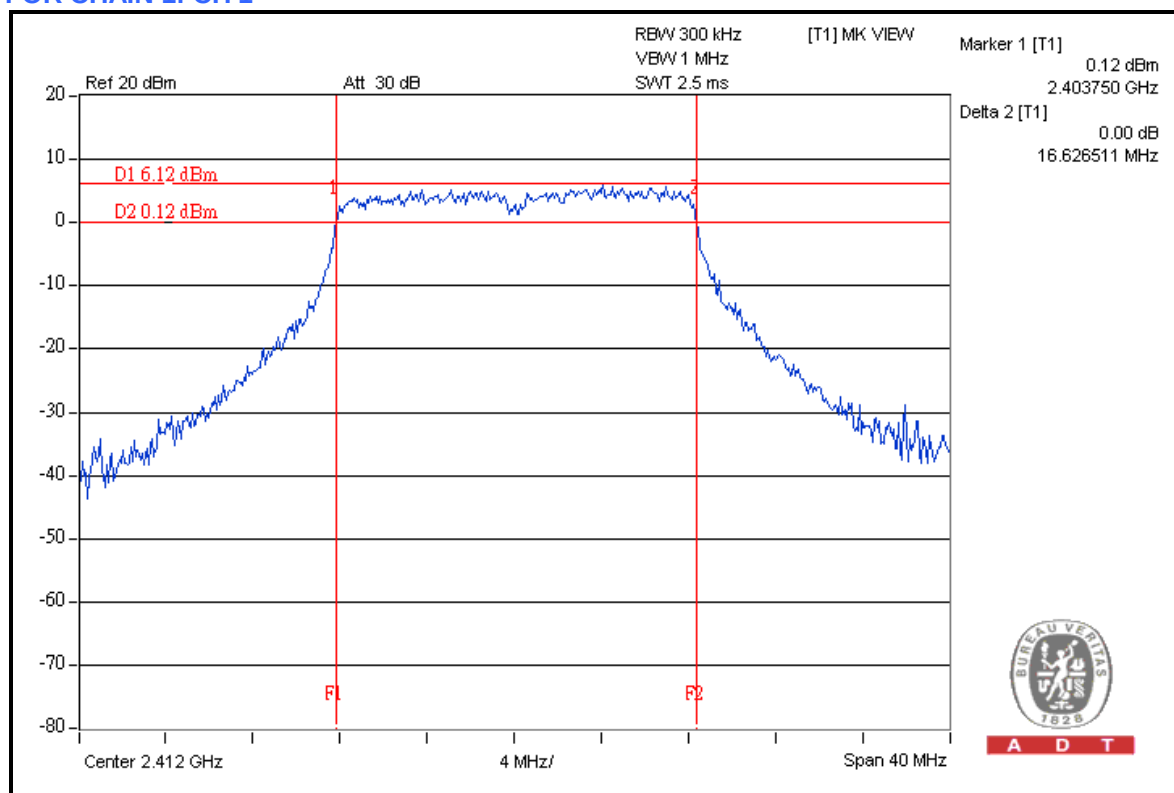


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802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	16.55	16.63	16.50	0.5	PASS
6	2437	16.53	16.62	16.51	0.5	PASS
11	2462	16.45	16.56	16.55	0.5	PASS

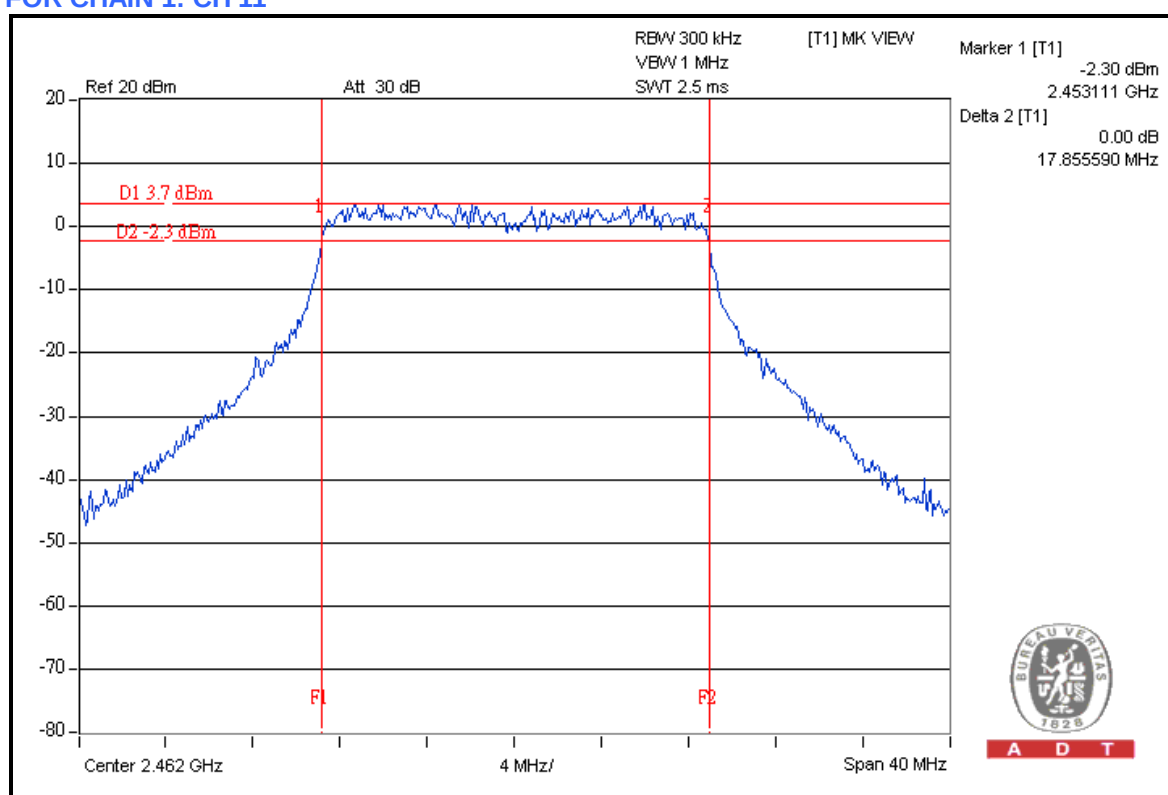
FOR CHAIN 1: CH 1



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	17.54	17.78	17.74	0.5	PASS
6	2437	17.70	17.73	17.75	0.5	PASS
11	2462	17.48	17.86	17.83	0.5	PASS

FOR CHAIN 1: CH 11



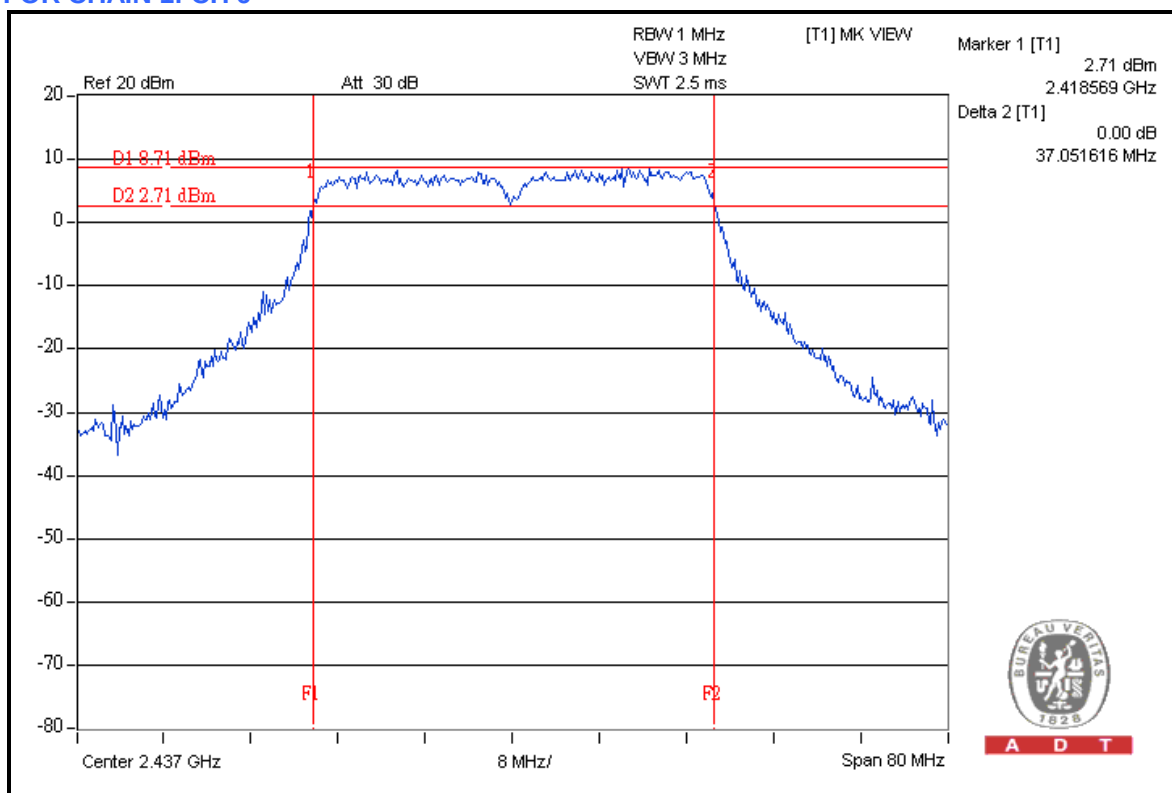


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802.11n (40MHz)

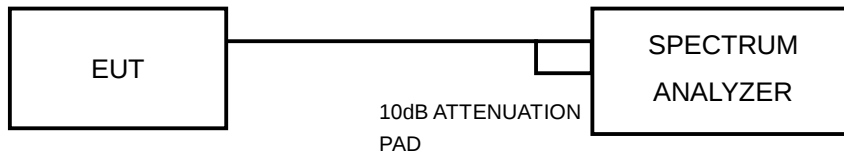
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
3	2422	36.50	36.41	36.47	0.5	PASS
6	2437	36.47	37.05	36.74	0.5	PASS
9	2452	36.71	36.82	36.25	0.5	PASS

FOR CHAIN 1: CH 6



4.4 OCCUPIED BANDWIDTH MEASUREMENT

4.4.1 TEST SETUP



4.4.2 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.3 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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 EUT OPERATING CONDITIONS

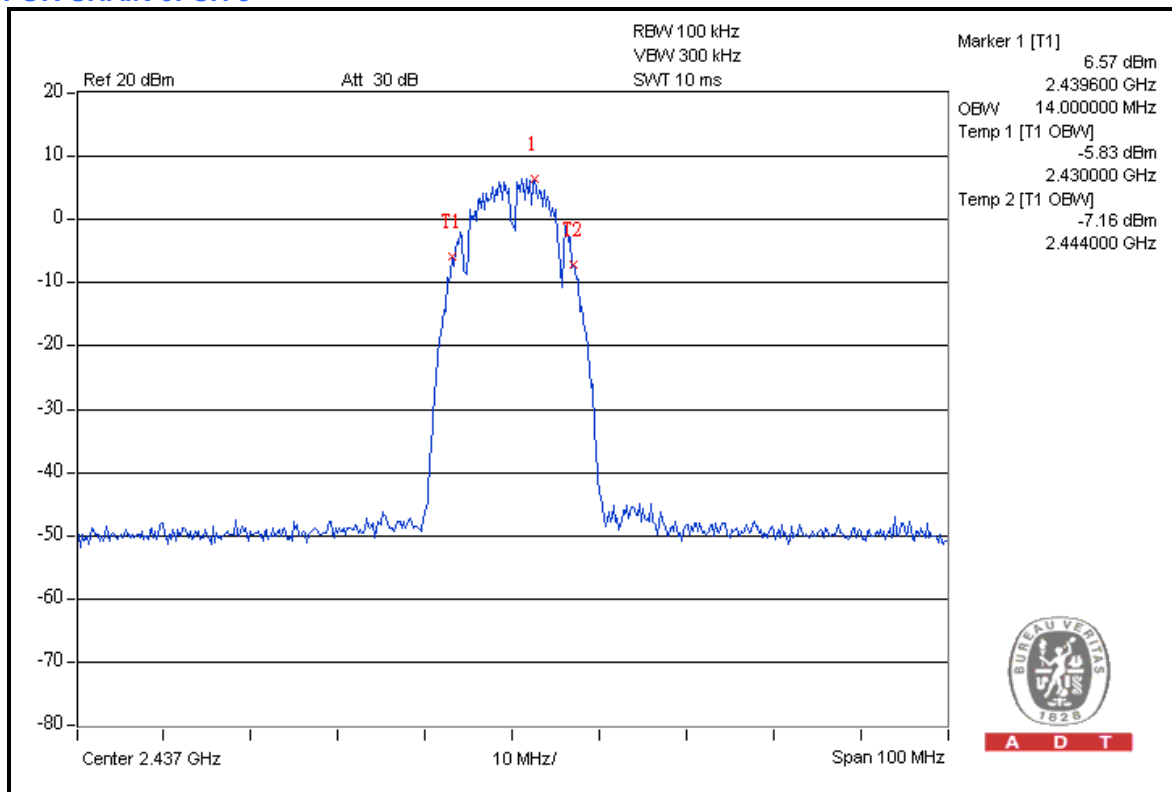
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.6 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
1	2412	13.8	14.0	13.8	PASS
6	2437	14.0	14.0	14.0	PASS
11	2462	14.0	14.0	14.0	PASS

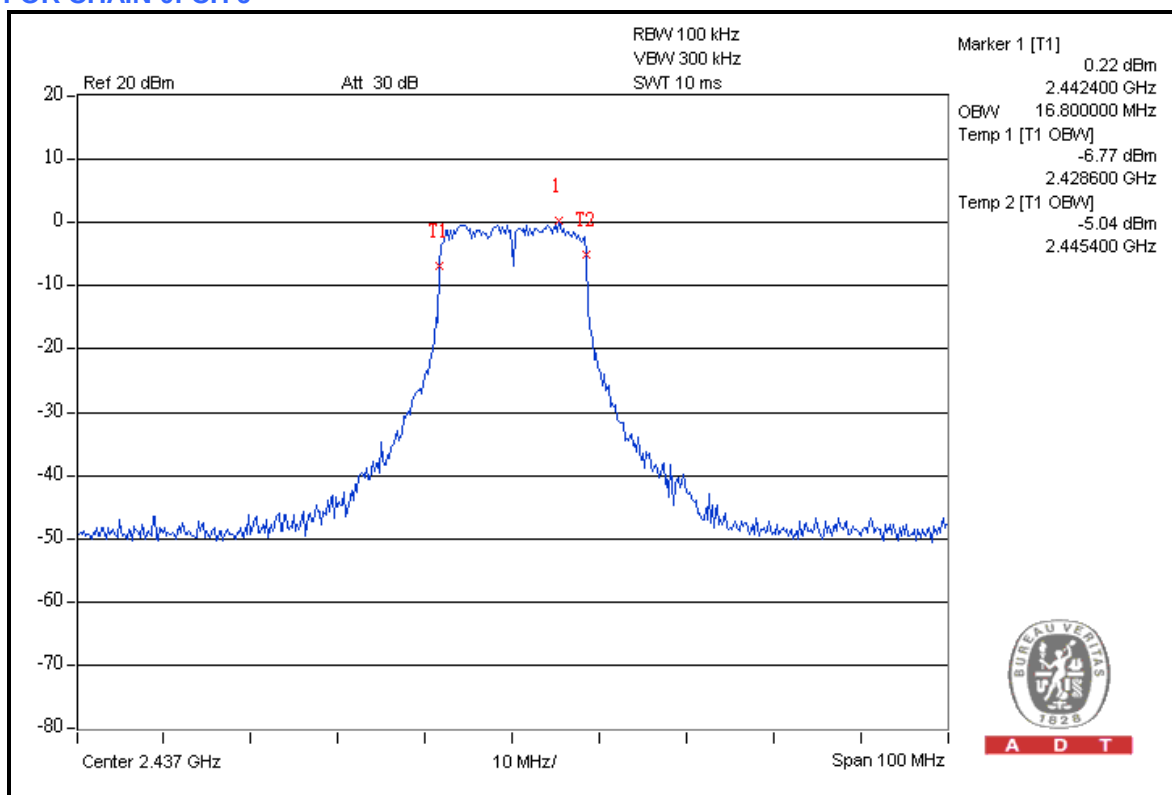
FOR CHAIN 0: CH 6



802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
1	2412	16.6	16.6	16.6	PASS
6	2437	16.8	16.6	16.8	PASS
11	2462	16.8	16.6	16.6	PASS

FOR CHAIN 0: CH 6



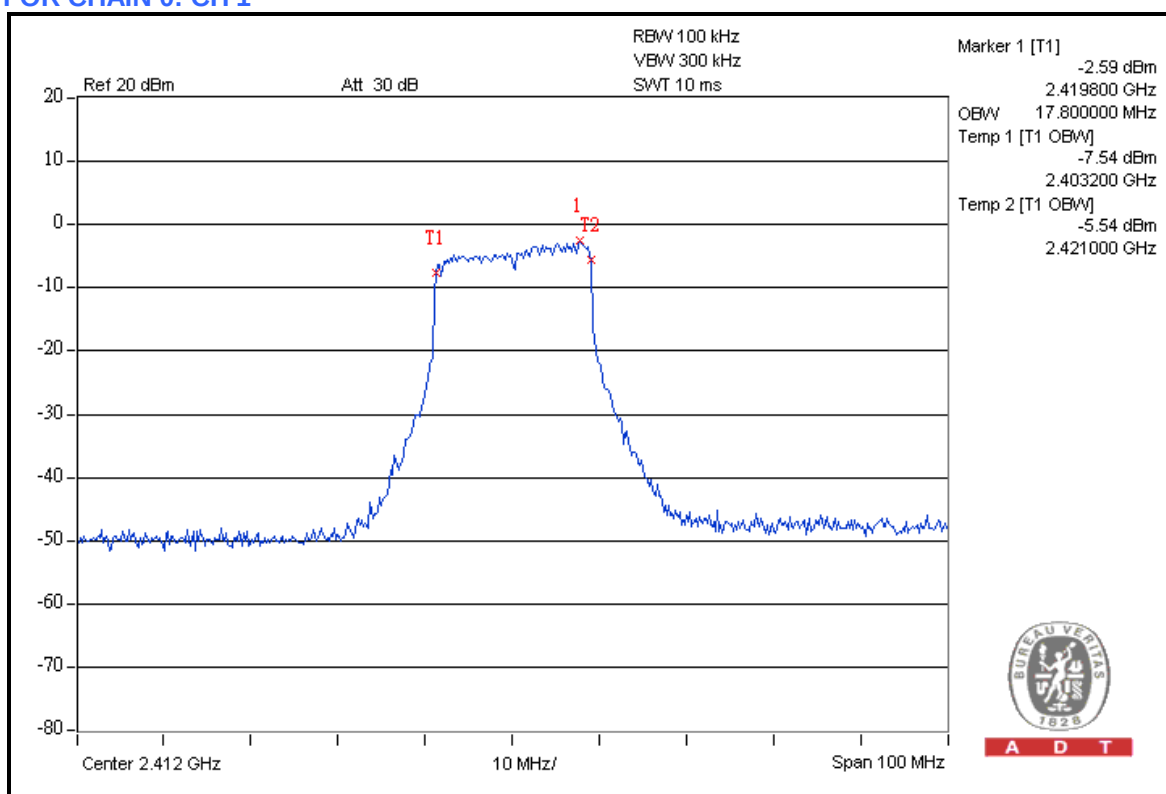


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802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
1	2412	17.8	17.8	17.8	PASS
6	2437	17.8	17.8	17.8	PASS
11	2462	17.6	17.8	17.6	PASS

FOR CHAIN 0: CH 1



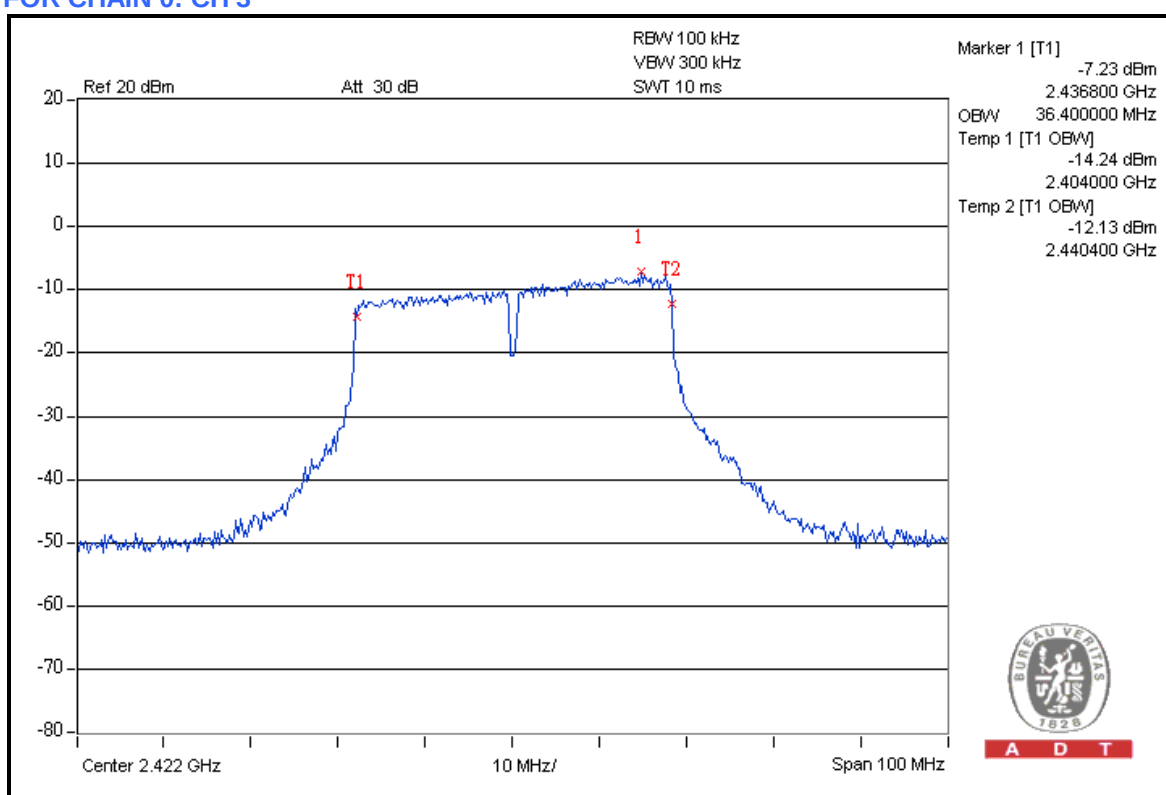


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802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
3	2422	36.4	36.4	36.2	PASS
6	2437	36.4	36.2	36.2	PASS
9	2452	36.4	36.4	36.4	PASS

FOR CHAIN 0: CH 3

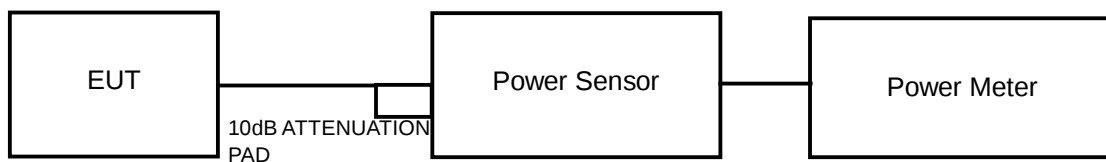


4.5 CONDUCTED OUTPUT POWER

4.5.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.5.7 TEST RESULTS

802.11b

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	20.8	20.0	20.2	324.6	25.1	29.2	PASS
6	2437	21.1	20.9	20.7	370.0	25.7	29.2	PASS
11	2462	17.2	17.6	17.7	169.8	22.3	29.2	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(3) = 6.8\text{dBi} > 6\text{dBi}$, so the conducted power limit shall be reduced to $30-(6.8-6) = 29.2\text{dBm}$.

802.11g

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	23.8	23.7	23.6	707.8	28.5	29.2	PASS
6	2437	24.1	24.6	24.4	813.3	29.1	29.2	PASS
11	2462	21.9	22.3	22.2	491.5	26.9	29.2	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(3) = 6.8\text{dBi} > 6\text{dBi}$, so the conducted power limit shall be reduced to $30-(6.8-6) = 29.2\text{dBm}$.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
1	2412	22.1	21.7	21.8	459.9	26.6	29.2	PASS
6	2437	23.8	24.8	24.4	820.3	29.1	29.2	PASS
11	2462	20.0	20.5	20.8	331.8	25.2	29.2	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(3) = 6.8\text{dBi} > 6\text{dBi}$, so the conducted power limit shall be reduced to $30 - (6.8 - 6) = 29.2\text{dBm}$.

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
3	2422	19.6	17.9	17.7	212.1	23.3	29.2	PASS
6	2437	22.5	23.0	22.5	554.1	27.4	29.2	PASS
9	2452	18.0	19.9	19.4	249.1	24.0	29.2	PASS

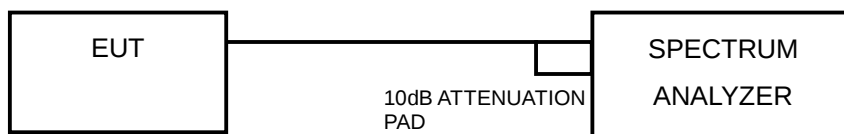
NOTE: Directional gain = $2\text{dBi} + 10\log(3) = 6.8\text{dBi} > 6\text{dBi}$, so the conducted power limit shall be reduced to $30 - (6.8 - 6) = 29.2\text{dBm}$.

4.6 POWER SPECTRAL DENSITY MEASUREMENT

4.6.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

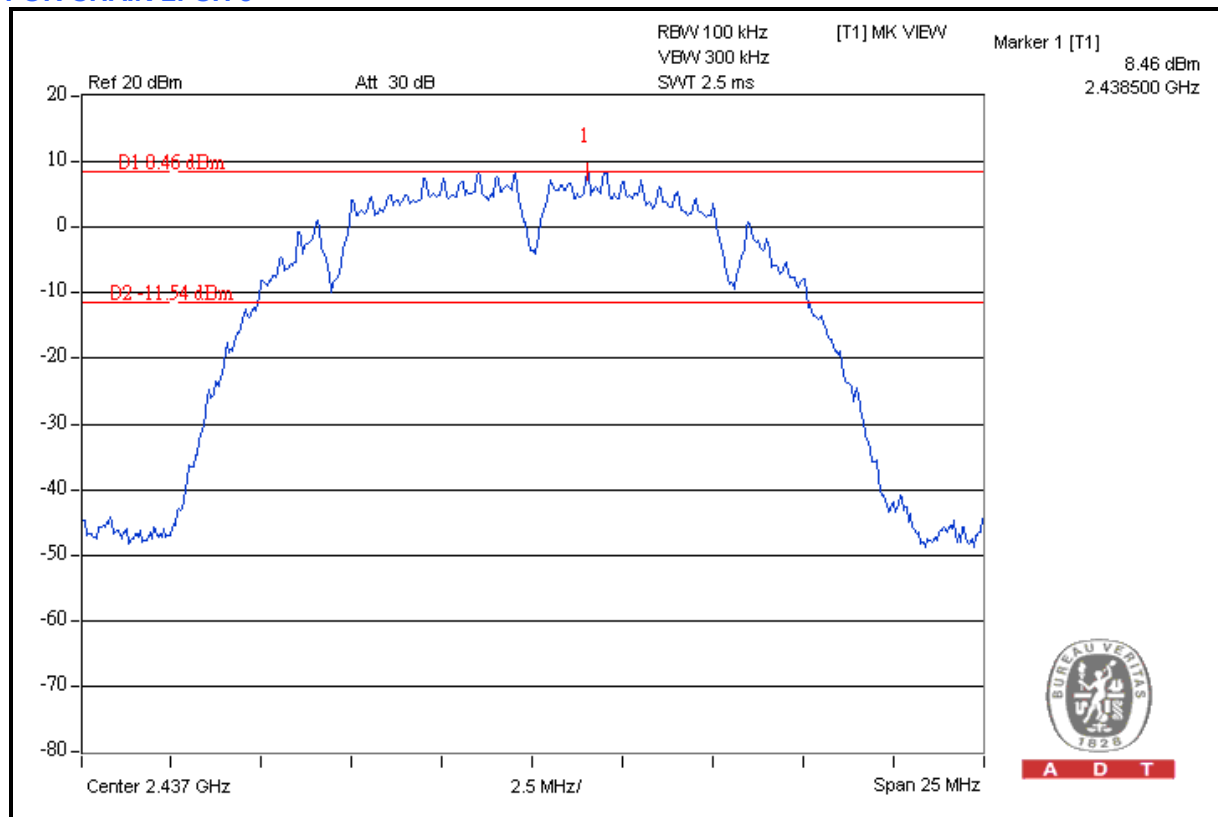
4.6.7 TEST RESULTS

802.11b

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	7.50	-7.70	4.77	-2.93	7.2	PASS
	6	2437	6.68	-8.52	4.77	-3.75	7.2	PASS
	11	2462	3.42	-11.78	4.77	-7.01	7.2	PASS
1	1	2412	6.94	-8.26	4.77	-3.49	7.2	PASS
	6	2437	8.12	-7.08	4.77	-2.31	7.2	PASS
	11	2462	5.49	-9.71	4.77	-4.94	7.2	PASS
2	1	2412	7.28	-7.92	4.77	-3.15	7.2	PASS
	6	2437	8.46	-6.74	4.77	-1.97	7.2	PASS
	11	2462	5.43	-9.77	4.77	-5.00	7.2	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(3) = 6.8\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.8 - 6) = 7.2\text{dBm}$.

FOR CHAIN 2: CH 6





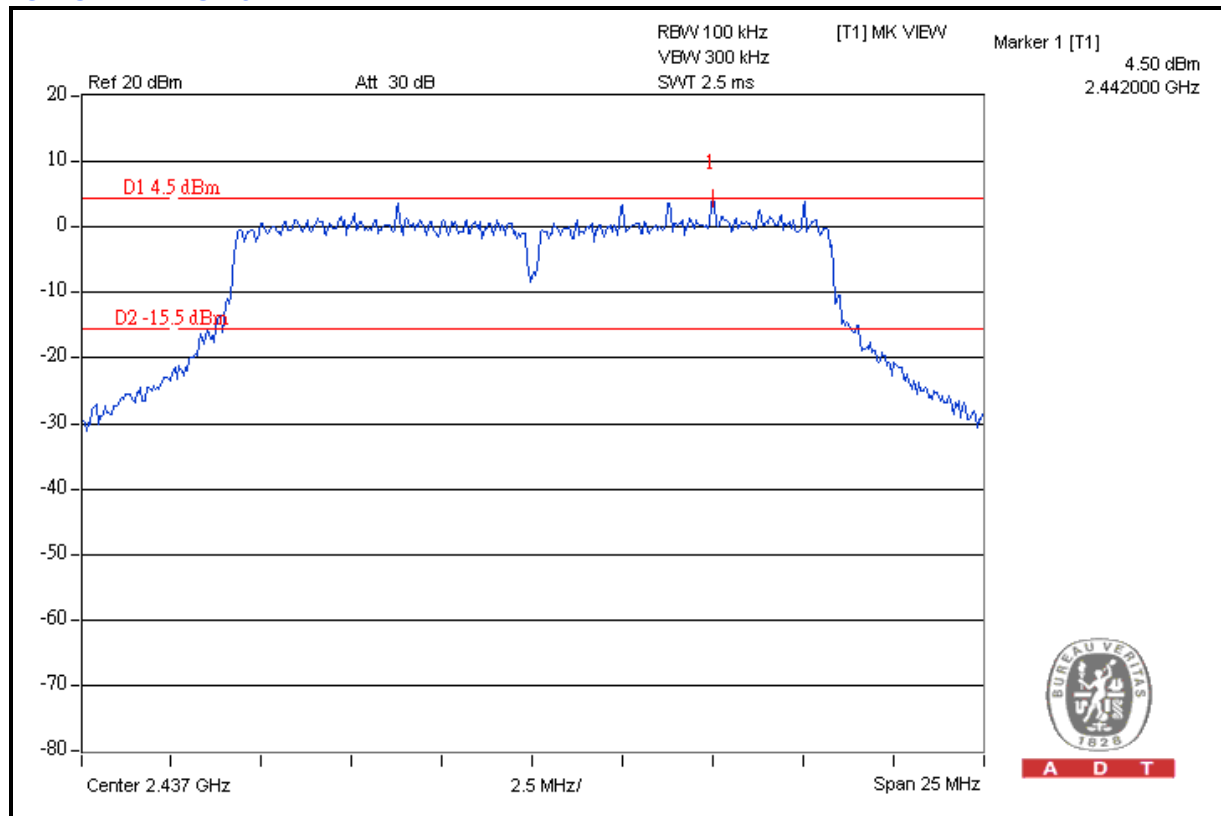
A D T

802.11g

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	0.56	-14.64	4.77	-9.87	7.2	PASS
	6	2437	-0.18	-15.38	4.77	-10.61	7.2	PASS
	11	2462	-1.52	-16.72	4.77	-11.95	7.2	PASS
1	1	2412	2.55	-12.65	4.77	-7.88	7.2	PASS
	6	2437	4.50	-10.70	4.77	-5.93	7.2	PASS
	11	2462	2.03	-13.17	4.77	-8.40	7.2	PASS
2	1	2412	2.45	-12.75	4.77	-7.98	7.2	PASS
	6	2437	4.45	-10.75	4.77	-5.98	7.2	PASS
	11	2462	2.76	-12.44	4.77	-7.67	7.2	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(3) = 6.8\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.8 - 6) = 7.2\text{dBm}$.

FOR CHAIN 1: CH 6





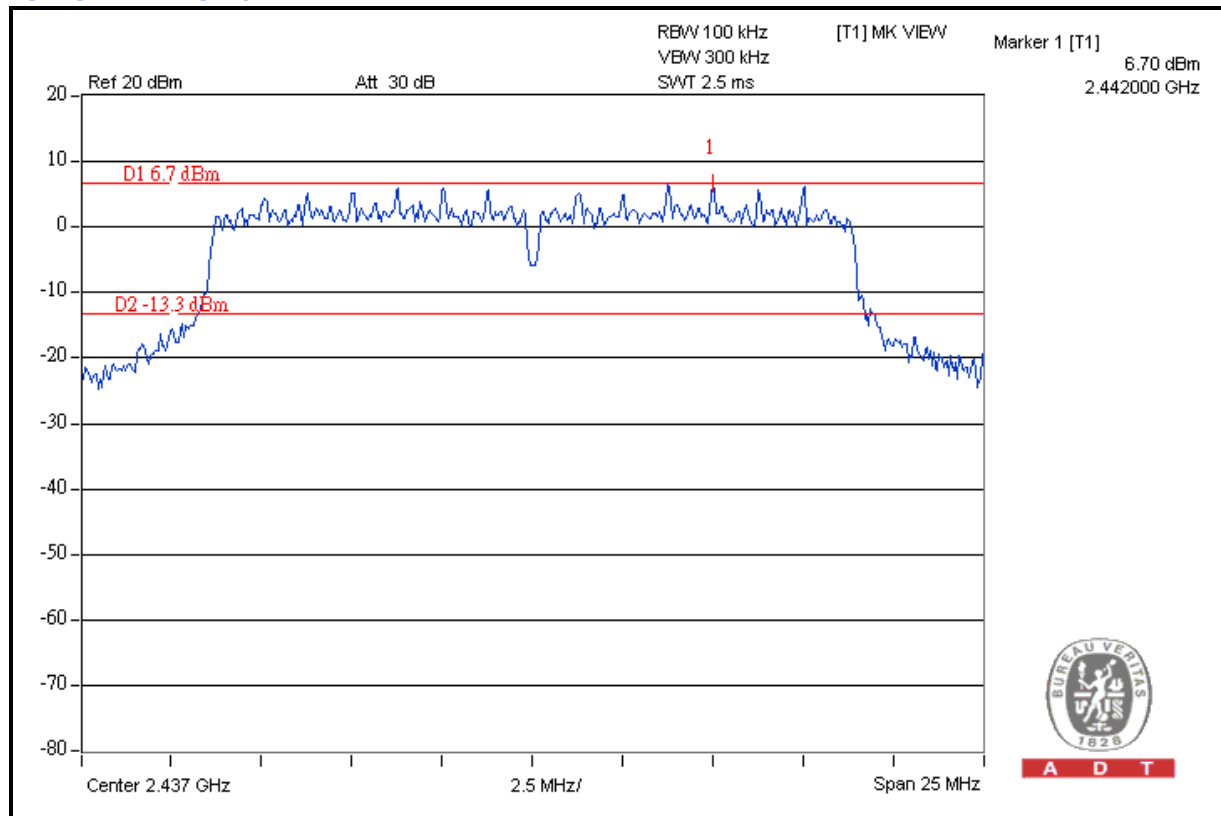
A D T

802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-2.68	-17.88	4.77	-13.11	7.2	PASS
	6	2437	0.99	-14.21	4.77	-9.44	7.2	PASS
	11	2462	-3.59	-18.79	4.77	-14.02	7.2	PASS
1	1	2412	0.57	-14.63	4.77	-9.86	7.2	PASS
	6	2437	6.33	-8.87	4.77	-4.10	7.2	PASS
	11	2462	0.53	-14.67	4.77	-9.90	7.2	PASS
2	1	2412	0.59	-14.61	4.77	-9.84	7.2	PASS
	6	2437	6.70	-8.50	4.77	-3.73	7.2	PASS
	11	2462	0.57	-14.63	4.77	-9.86	7.2	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(3) = 6.8\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.8 - 6) = 7.2\text{dBm}$.

FOR CHAIN 2: CH 6



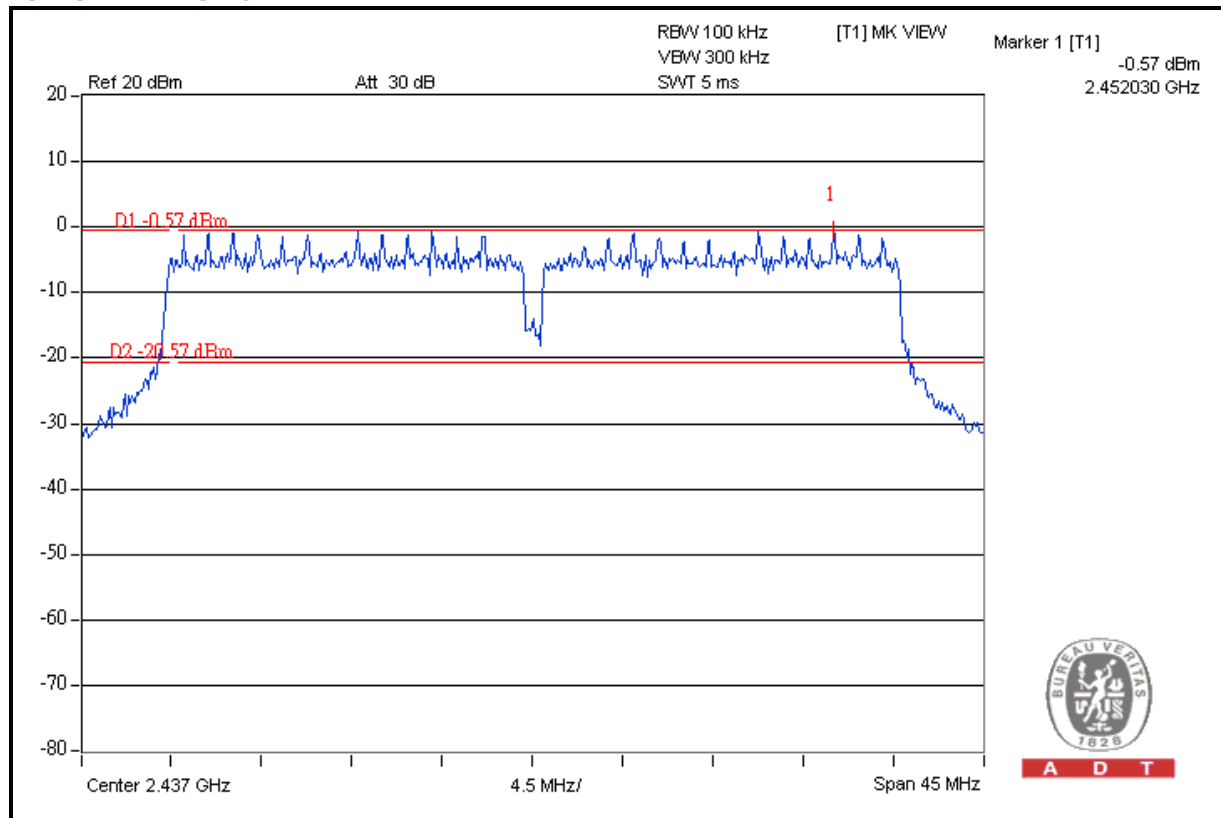
A D T

802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-7.11	-22.31	4.77	-17.54	7.2	PASS
	6	2437	-3.98	-19.18	4.77	-14.41	7.2	PASS
	9	2452	-9.22	-24.42	4.77	-19.65	7.2	PASS
1	3	2422	-4.80	-20.00	4.77	-15.23	7.2	PASS
	6	2437	-0.64	-15.84	4.77	-11.07	7.2	PASS
	9	2452	-3.84	-19.04	4.77	-14.27	7.2	PASS
2	3	2422	-5.15	-20.35	4.77	-15.58	7.2	PASS
	6	2437	-0.57	-15.77	4.77	-11.00	7.2	PASS
	9	2452	-3.76	-18.96	4.77	-14.19	7.2	PASS

NOTE: Directional gain = $2\text{dBi} + 10\log(3) = 6.8\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.8-6) = 7.2\text{dBm}$.

FOR CHAIN 2: CH 6

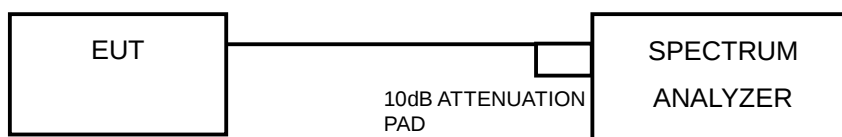


4.7 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.7.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

4.7.2 TEST SETUP



4.7.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.7.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

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

4.7.5 DEVIATION FROM TEST STANDARD

No deviation.

4.7.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.7.7 TEST RESULTS

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

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

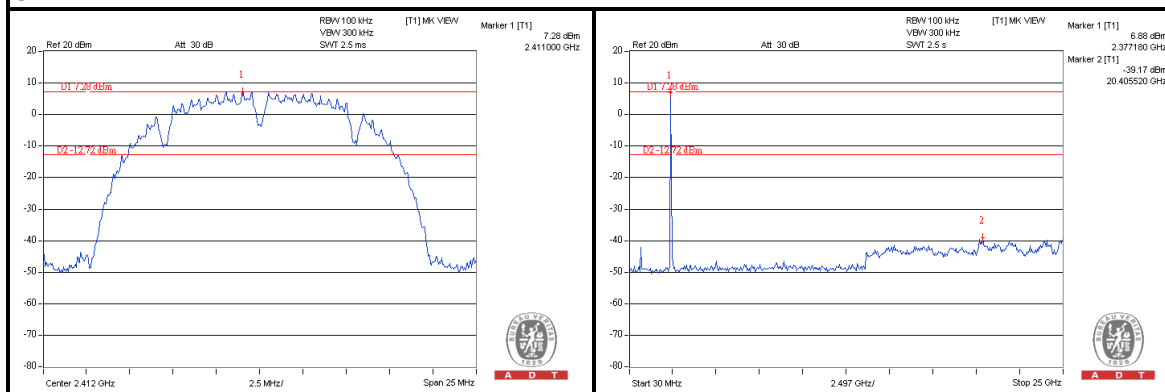


A D T

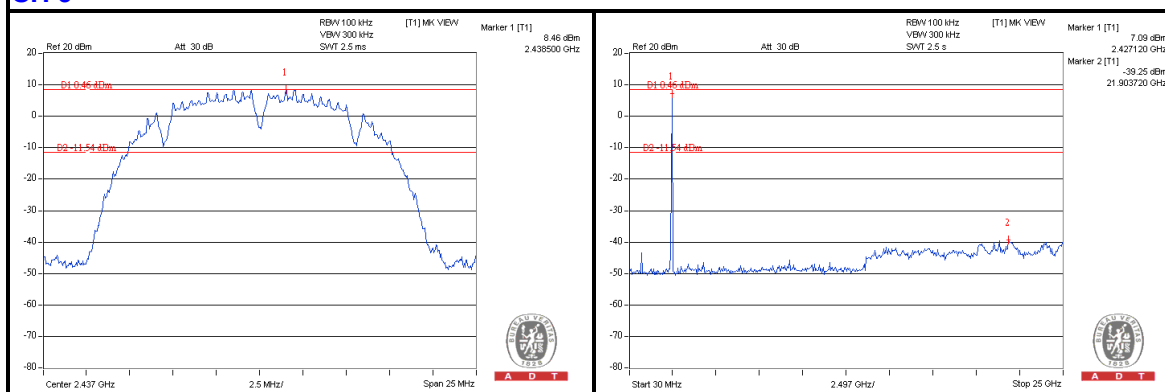
4.7.8 TEST RESULTS

802.11b

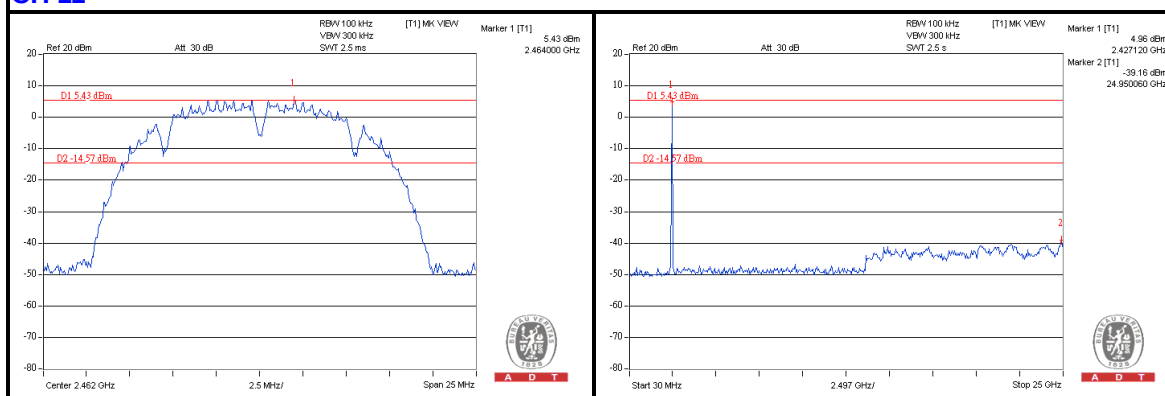
CH 1



CH 6



CH 11

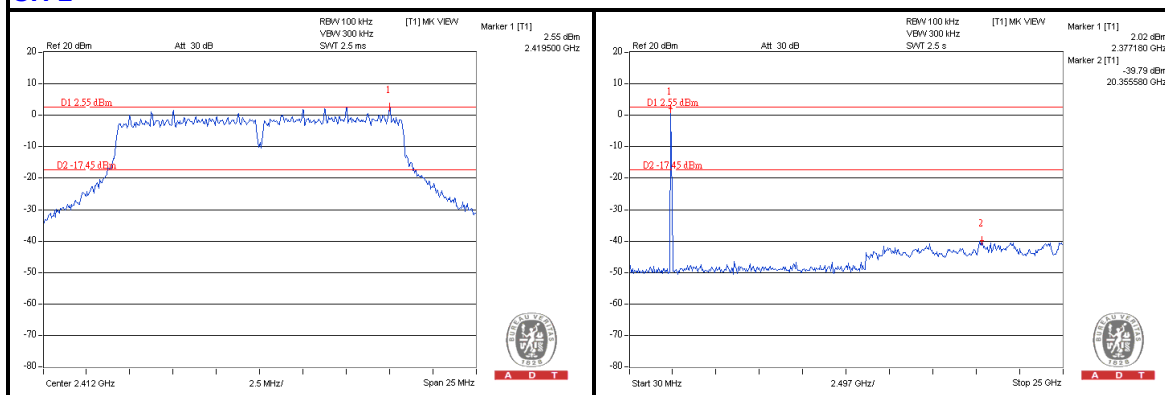




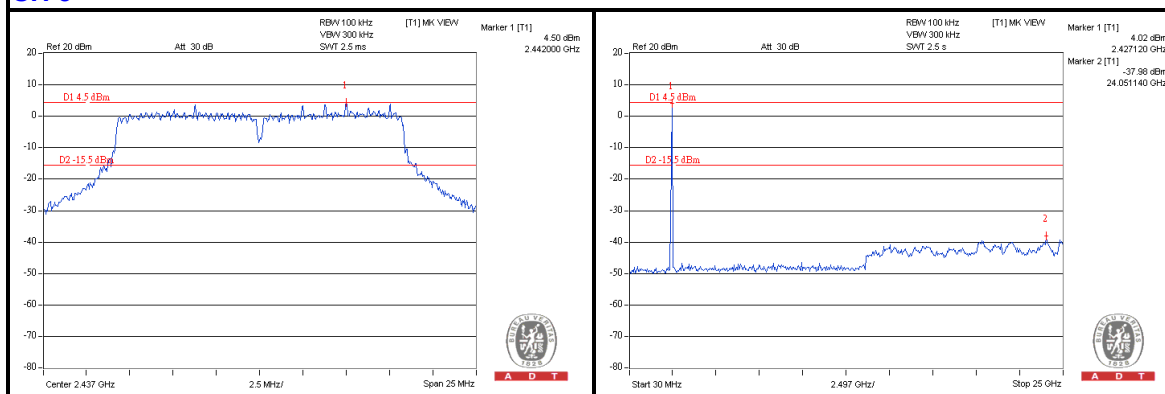
A D T

802.11g

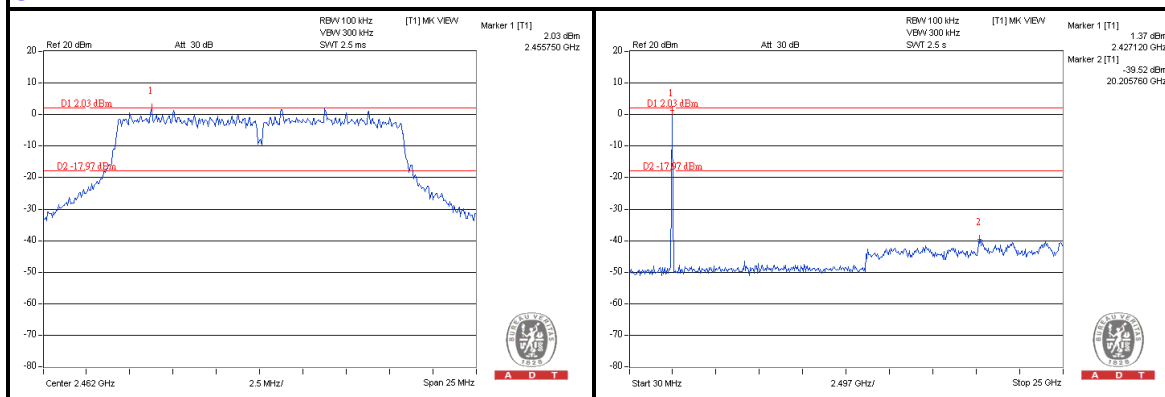
CH 1



CH 6



CH 11

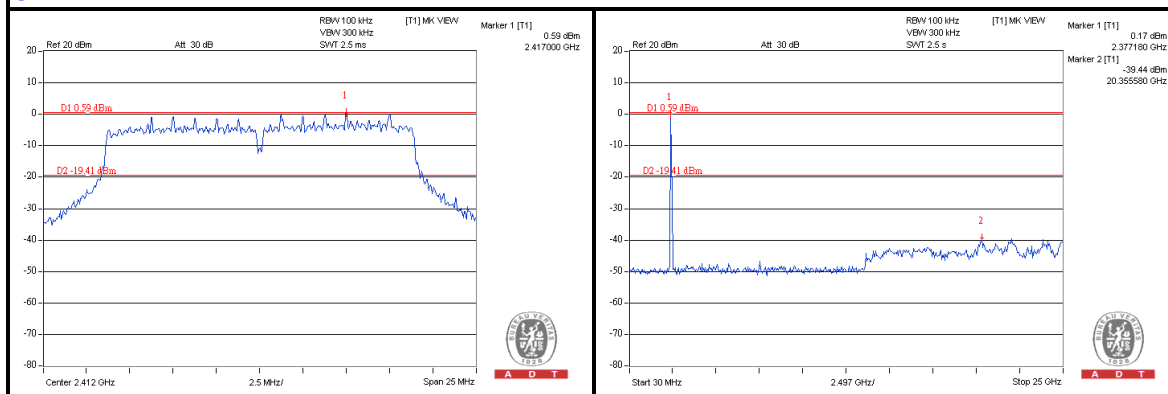




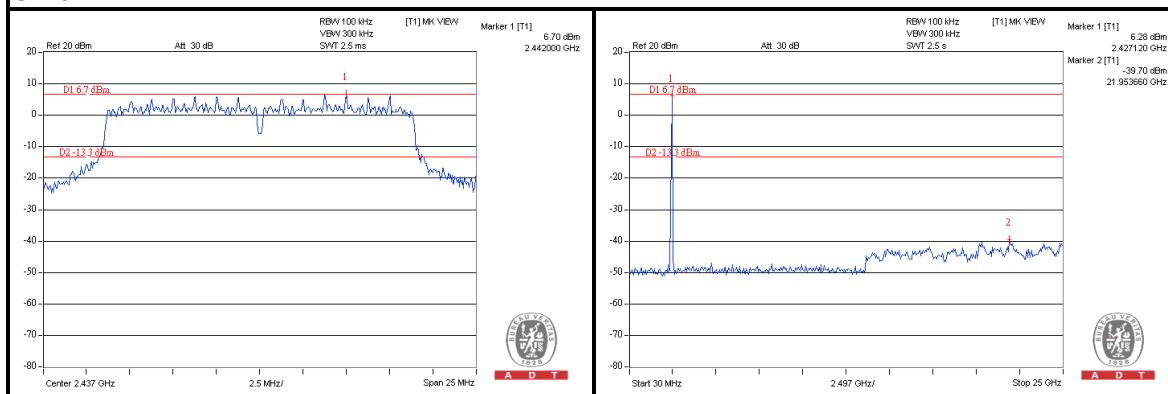
A D T

802.11n (20MHz)

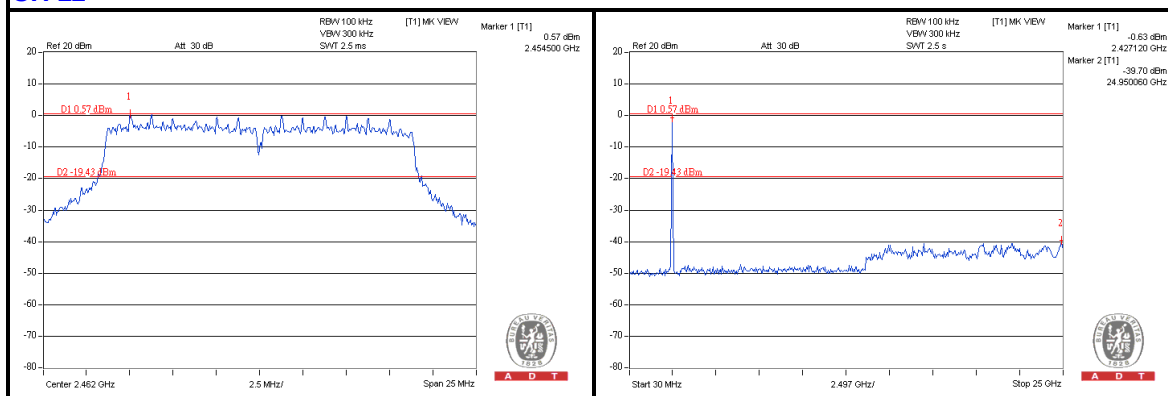
CH 1



CH 6



CH 11

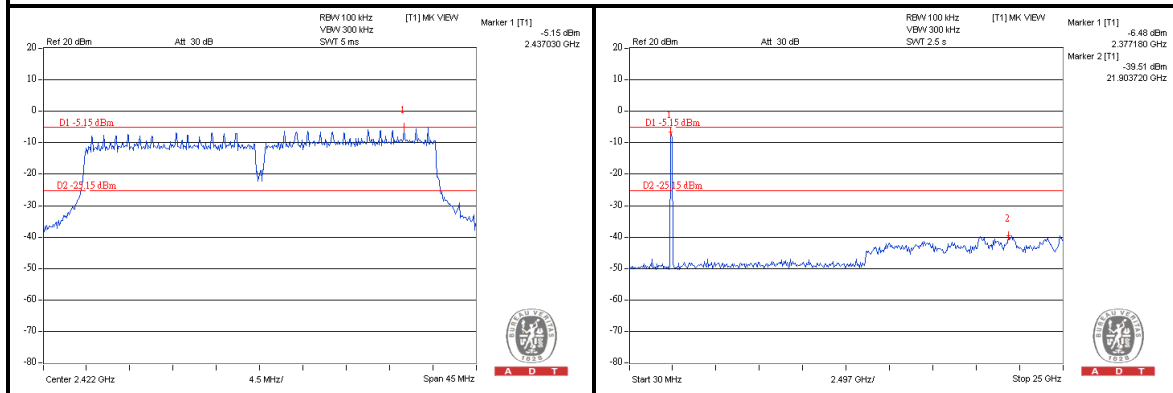




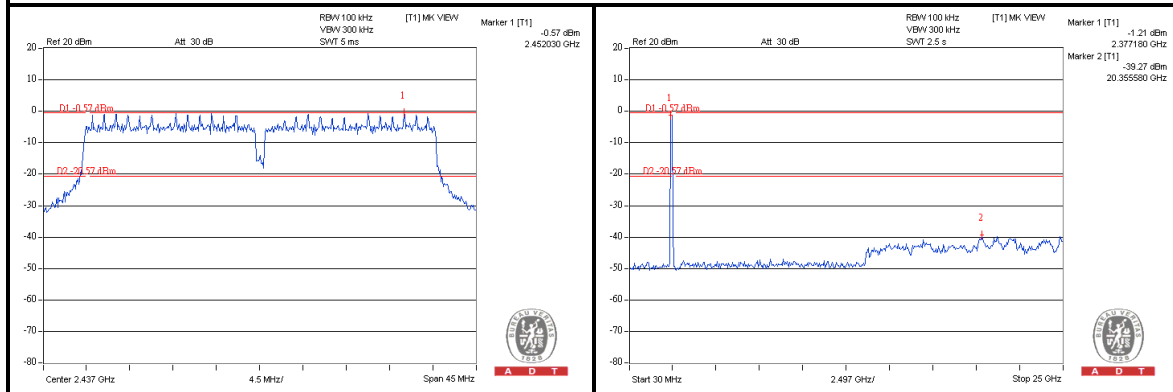
A D T

802.11n (40MHz)

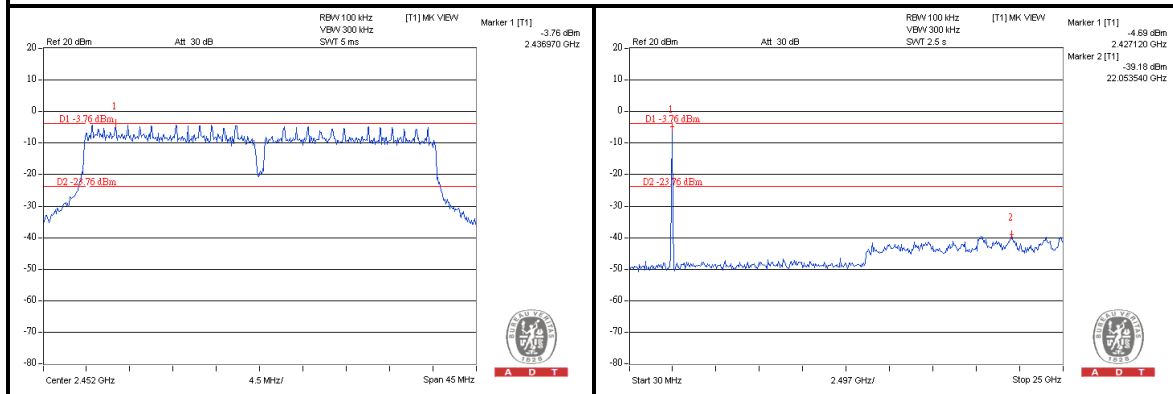
CH 3



CH 6



CH 9



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

5.1 RADIATED EMISSION MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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



A D T

5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

5.1.3 TEST PROCEDURES

Same as item 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as item 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

5.1.7 TEST RESULTS

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	63.95	28.0 QP	40.0	-12.0	1.08 H	213	14.86	13.15
2	159.33	31.3 QP	43.5	-12.2	1.59 H	253	17.12	14.15
3	185.20	35.4 QP	43.5	-8.2	1.36 H	272	22.99	12.36
4	194.90	37.9 QP	43.5	-5.6	1.14 H	241	26.30	11.57
5	249.87	39.3 QP	46.0	-6.7	1.25 H	152	25.85	13.43
6	296.75	32.4 QP	46.0	-13.6	1.83 H	159	16.93	15.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.85	37.7 QP	40.0	-2.3	1.15 V	201	25.53	12.13
2	63.95	36.3 QP	40.0	-3.7	1.69 V	8	23.13	13.15
3	122.15	30.7 QP	43.5	-12.8	1.84 V	10	18.58	12.09
4	201.37	32.5 QP	43.5	-11.0	1.35 V	48	21.25	11.21
5	249.87	33.0 QP	46.0	-13.1	1.12 V	304	19.52	13.43
6	374.35	35.9 QP	46.0	-10.1	1.08 V	288	18.30	17.60

REMARKS:

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



A D T

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	79.1 PK	85.2	-6.2	1.11 H	217	40.75	38.31
2	#5725.00	62.5 AV	74.4	-11.9	1.11 H	217	24.16	38.31
3	*5745.00	105.2 PK			1.11 H	217	66.89	38.33
4	*5745.00	94.4 AV			1.11 H	217	56.03	38.33
5	11490.00	57.1 PK	74.0	-16.9	1.00 H	293	8.88	48.22
6	11490.00	44.1 AV	54.0	-9.9	1.00 H	293	-4.13	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	87.5 PK	98.6	-11.0	1.00 V	357	49.23	38.31
2	#5725.00	69.5 AV	87.9	-18.4	1.00 V	357	31.21	38.31
3	*5745.00	118.6 PK			1.00 V	354	80.25	38.33
4	*5745.00	107.9 AV			1.00 V	354	69.54	38.33
5	11490.00	57.5 PK	74.0	-16.5	1.00 V	105	9.32	48.22
6	11490.00	46.7 AV	54.0	-7.3	1.00 V	105	-1.56	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	104.8 PK			1.25 H	356	66.44	38.39
2	*5785.00	94.4 AV			1.25 H	356	56.03	38.39
3	11570.00	56.1 PK	74.0	-17.9	1.00 H	224	7.90	48.21
4	11570.00	44.9 AV	54.0	-9.1	1.00 H	224	-3.32	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	119.0 PK			1.24 V	2	80.62	38.39
2	*5785.00	108.9 AV			1.24 V	2	70.52	38.39
3	11570.00	58.2 PK	74.0	-15.8	1.00 V	155	10.01	48.21
4	11570.00	45.1 AV	54.0	-8.9	1.00 V	155	-3.10	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	106.8 PK			1.11 H	219	68.30	38.45
2	*5825.00	96.6 AV			1.11 H	219	58.11	38.45
3	#5850.00	66.3 PK	86.8	-20.4	1.11 H	219	27.83	38.48
4	#5850.00	45.6 AV	76.6	-31.0	1.11 H	219	7.10	38.48
5	11650.00	56.1 PK	74.0	-17.9	1.00 H	9	7.93	48.16
6	11650.00	42.8 AV	54.0	-11.2	1.00 H	9	-5.34	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	120.3 PK			1.22 V	1	81.89	38.45
2	*5825.00	109.6 AV			1.22 V	1	71.17	38.45
3	#5850.00	78.4 PK	100.3	-21.9	1.23 V	355	39.93	38.48
4	#5850.00	62.1 AV	89.6	-27.6	1.23 V	355	23.58	38.48
5	11650.00	57.1 PK	74.0	-16.9	1.00 V	57	8.96	48.16
6	11650.00	45.0 AV	54.0	-9.0	1.00 V	57	-3.17	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	70.4 PK	82.1	-11.8	1.29 H	216	32.04	38.31
2	#5725.00	45.1 AV	71.5	-26.4	1.29 H	216	6.83	38.31
3	*5745.00	102.1 PK			1.29 H	216	63.81	38.33
4	*5745.00	91.5 AV			1.29 H	216	53.21	38.33
5	11490.00	56.7 PK	74.0	-17.3	1.00 H	16	8.51	48.22
6	11490.00	43.5 AV	54.0	-10.5	1.00 H	16	-4.68	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	82.5 PK	95.2	-12.7	1.23 V	2	44.19	38.31
2	#5725.00	63.5 AV	74.4	-11.0	1.23 V	2	25.16	38.31
3	*5745.00	115.2 PK			1.24 V	4	76.87	38.33
4	*5745.00	94.4 AV			1.24 V	4	56.11	38.33
5	11490.00	56.7 PK	74.0	-17.3	1.00 V	101	8.45	48.22
6	11490.00	44.6 AV	54.0	-9.4	1.00 V	101	-3.62	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	102.8 PK			1.11 H	16	64.43	38.39
2	*5785.00	92.5 AV			1.11 H	16	54.12	38.39
3	11570.00	55.4 PK	74.0	-18.6	1.00 H	6	7.23	48.21
4	11570.00	45.0 AV	54.0	-9.0	1.00 H	6	-3.21	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	116.9 PK			1.20 V	28	78.51	38.39
2	*5785.00	106.5 AV			1.20 V	28	68.14	38.39
3	11570.00	57.2 PK	74.0	-16.8	1.00 V	16	9.01	48.21
4	11570.00	45.4 AV	54.0	-8.6	1.00 V	16	-2.77	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	102.8 PK			1.00 H	89	64.33	38.45
2	*5825.00	92.6 AV			1.00 H	89	54.11	38.45
3	#5850.00	65.2 PK	82.8	-17.6	1.17 H	135	26.74	38.48
4	#5850.00	48.4 AV	72.6	-24.2	1.17 H	135	9.89	38.48
5	11650.00	57.1 PK	74.0	-16.9	1.00 H	114	8.96	48.16
6	11650.00	45.9 AV	54.0	-8.1	1.00 H	114	-2.27	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	115.6 PK			1.23 V	273	77.11	38.45
2	*5825.00	105.5 AV			1.23 V	273	67.02	38.45
3	#5850.00	71.8 PK	95.6	-23.7	1.23 V	273	33.36	38.48
4	#5850.00	52.2 AV	85.5	-33.3	1.23 V	273	13.69	38.48
5	11650.00	58.1 PK	74.0	-15.9	1.00 V	174	9.96	48.16
6	11650.00	45.4 AV	54.0	-8.6	1.00 V	174	-2.80	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	70.5 PK	77.7	-7.2	1.24 H	16	32.22	38.31
2	#5725.00	47.2 AV	67.5	-20.3	1.24 H	16	8.85	38.31
3	*5755.00	97.7 PK			1.24 H	16	59.36	38.35
4	*5755.00	87.5 AV			1.24 H	16	49.12	38.35
5	11510.00	54.6 PK	74.0	-19.4	1.00 H	196	6.36	48.21
6	11510.00	44.6 AV	54.0	-9.4	1.00 H	196	-3.57	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	75.5 PK	92.8	-17.3	1.11 V	4	37.14	38.31
2	#5725.00	57.6 AV	82.5	-24.9	1.11 V	4	19.27	38.31
3	*5755.00	112.8 PK			1.11 V	4	74.42	38.35
4	*5755.00	102.5 AV			1.11 V	4	64.13	38.35
5	11510.00	54.8 PK	74.0	-19.2	1.00 V	19	6.61	48.21
6	11510.00	42.7 AV	54.0	-11.3	1.00 V	19	-5.50	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	96.7 PK			1.27 H	24	58.30	38.40
2	*5795.00	86.5 AV			1.27 H	24	48.12	38.40
3	#5850.00	45.5 PK	76.7	-31.2	1.27 H	24	7.05	38.48
4	#5850.00	35.2 AV	66.5	-31.3	1.27 H	24	-3.25	38.48
5	11590.00	56.3 PK	74.0	-17.7	1.00 H	136	8.11	48.21
6	11590.00	43.0 AV	54.0	-11.0	1.00 H	136	-5.25	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	112.6 PK			1.22 V	2	74.22	38.40
2	*5795.00	102.6 AV			1.22 V	2	64.19	38.40
3	#5850.00	61.5 PK	92.6	-31.1	1.22 V	2	23.04	38.48
4	#5850.00	40.7 AV	82.6	-41.8	1.22 V	2	2.26	38.48
5	11590.00	55.3 PK	74.0	-18.7	1.00 V	56	7.10	48.21
6	11590.00	43.1 AV	54.0	-10.9	1.00 V	56	-5.13	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.

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

5.2.2 TEST INSTRUMENTS

Same as item 4.2.2.

5.2.3 TEST PROCEDURES

Same as item 4.2.3.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP

Same as item 4.2.5.

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

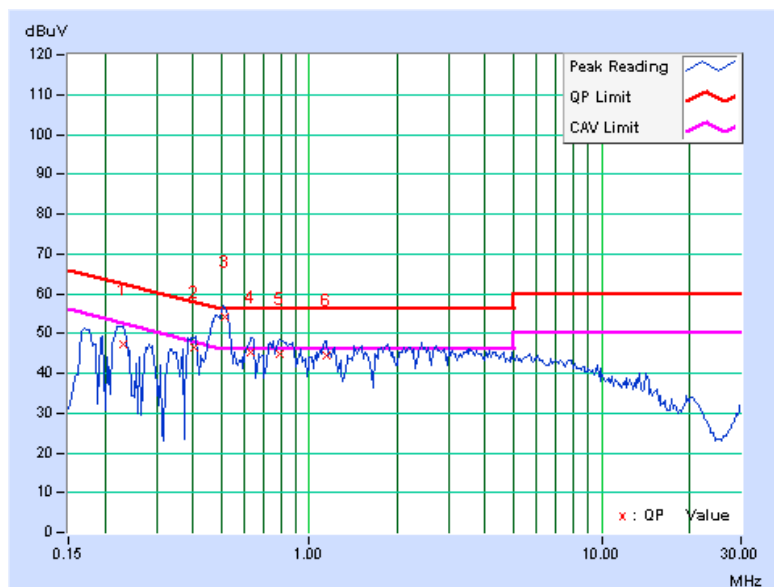
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.23025	0.16	46.92	-	47.08	-	62.44	52.44	-15.36	-
2	0.40257	0.19	46.36	-	46.55	-	57.80	47.80	-11.25	-
3	0.51183	0.20	54.13	45.11	54.33	45.31	56.00	46.00	-1.67	-0.69
4	0.63172	0.21	45.06	-	45.27	-	56.00	46.00	-10.73	-
5	0.79708	0.22	44.67	-	44.89	-	56.00	46.00	-11.11	-
6	1.15106	0.24	44.01	-	44.25	-	56.00	46.00	-11.75	-

REMARKS:

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

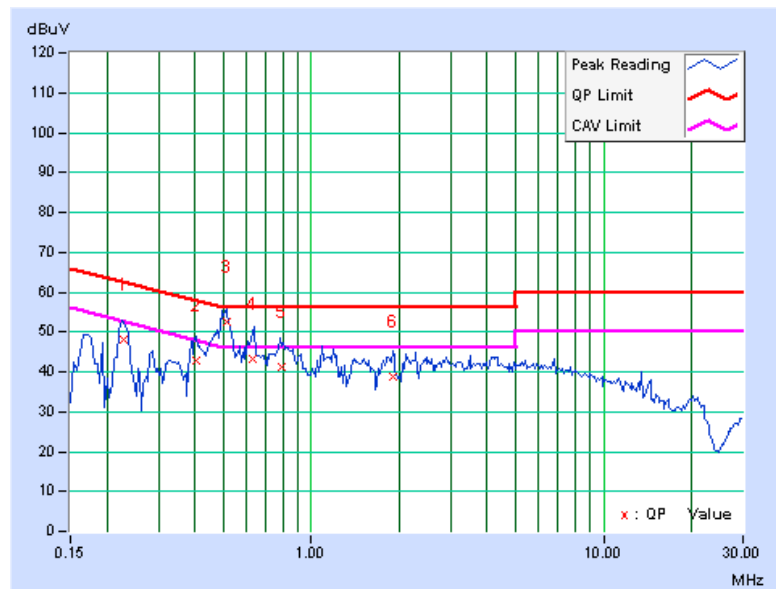


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22777	0.16	47.94	-	48.10	-	62.53	52.53	-14.44	-
2	0.40263	0.19	42.45	-	42.64	-	57.80	47.80	-15.16	-
3	0.51244	0.20	52.23	43.40	52.43	43.60	56.00	46.00	-3.57	-2.40
4	0.62993	0.21	43.13	-	43.34	-	56.00	46.00	-12.66	-
5	0.78781	0.22	41.16	-	41.38	-	56.00	46.00	-14.62	-
6	1.90769	0.28	38.65	-	38.93	-	56.00	46.00	-17.07	-

REMARKS:

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



5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.3.2 TEST SETUP

Same as item 4.3.2.

5.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.3.4 TEST PROCEDURE

Same as item 4.3.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

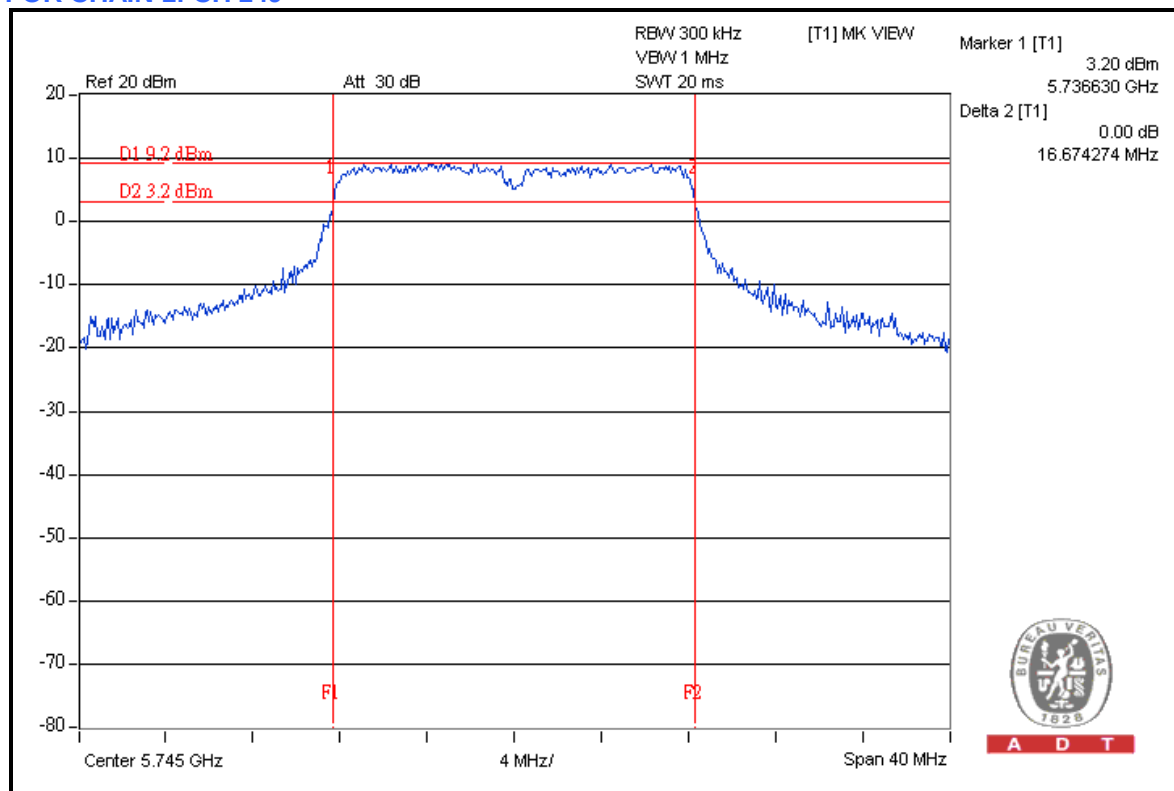
Same as item 4.3.6.

5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	16.64	16.67	16.62	0.5	PASS
157	5785	16.64	16.63	16.65	0.5	PASS
165	5825	16.66	16.63	16.58	0.5	PASS

FOR CHAIN 1: CH 149





CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	17.80	17.84	17.84	0.5	PASS
157	5785	17.87	17.80	17.87	0.5	PASS
165	5825	17.79	17.82	17.82	0.5	PASS

Ref 20 dBm Att 30 dB RBW 300 kHz VBW 1 MHz SWT 20 ms [T1] MK VIEW

Marker 1 [T1] -0.75 dBm 5.776008 GHz

Delta 2 [T1] 0.00 dB 17.867012 MHz

D1 5.25 dBm D2 -0.75 dBm

F1 F2

Center 5.785 GHz 4 MHz/ Span 40 MHz

BUREAU VERITAS 1828

A D T



CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	37.06	37.01	36.80	0.5	PASS
159	5795	37.11	36.97	36.48	0.5	PASS

Ref 20 dBm Att 30 dB RBW 1 MHz VBW 3 MHz SVWT 20 ms [T1] MK VIEW

Marker 1 [T1] 3.21 dBm 5.776222 GHz

Delta 2 [T1] 0.00 dB 37.106282 MHz

D1 9.21 dBm D2 3.21 dBm

F1 F2

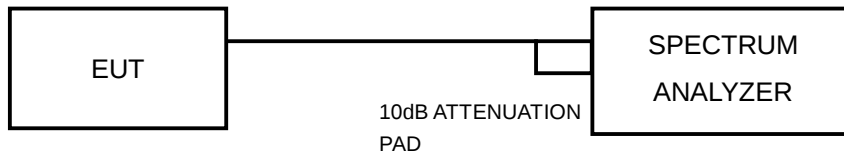
Center 5.795 GHz 8 MHz/ Span 80 MHz

BUREAU VERITAS 1828

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5.4 OCCUPIED BANDWIDTH MEASUREMENT

5.4.1 TEST SETUP



5.4.2 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.4.3 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.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation.

5.4.5 EUT OPERATING CONDITIONS

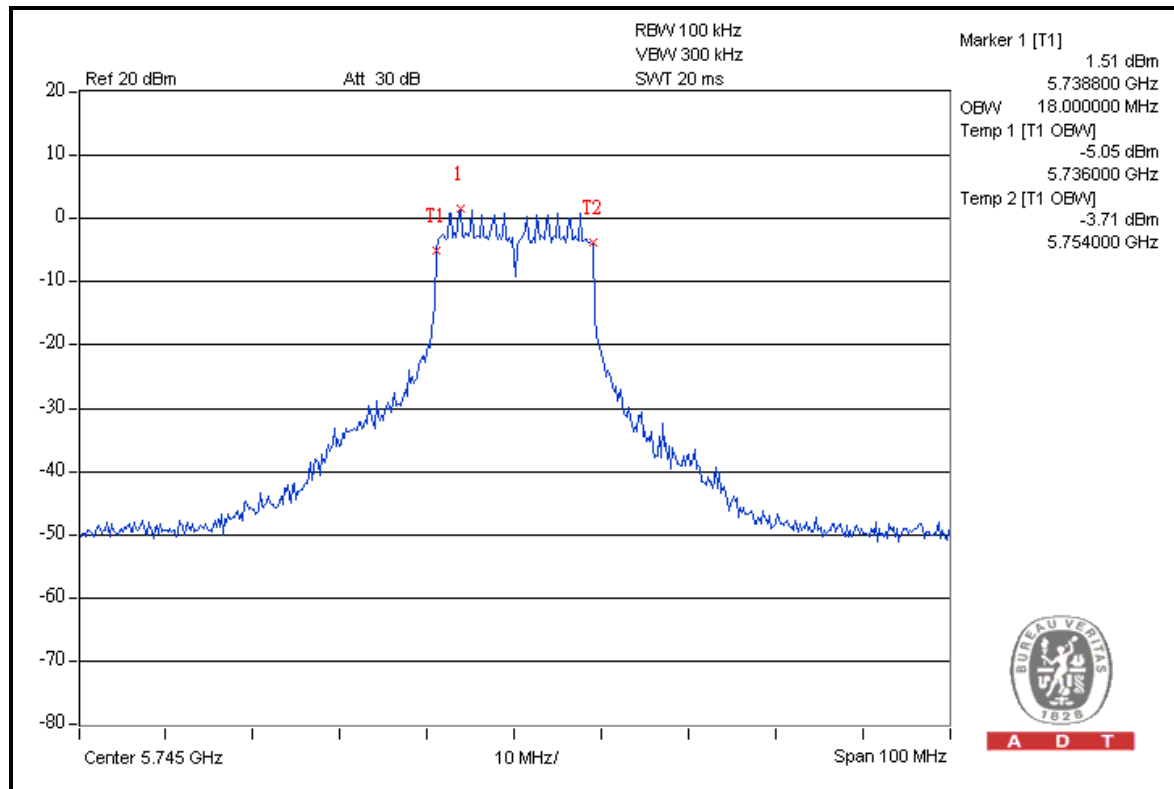
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.4.6 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
149	5745	18.0	18.0	18.0	PASS
157	5785	17.8	17.8	17.8	PASS
165	5825	17.8	17.8	17.8	PASS

FOR CHAIN 0: CH 149



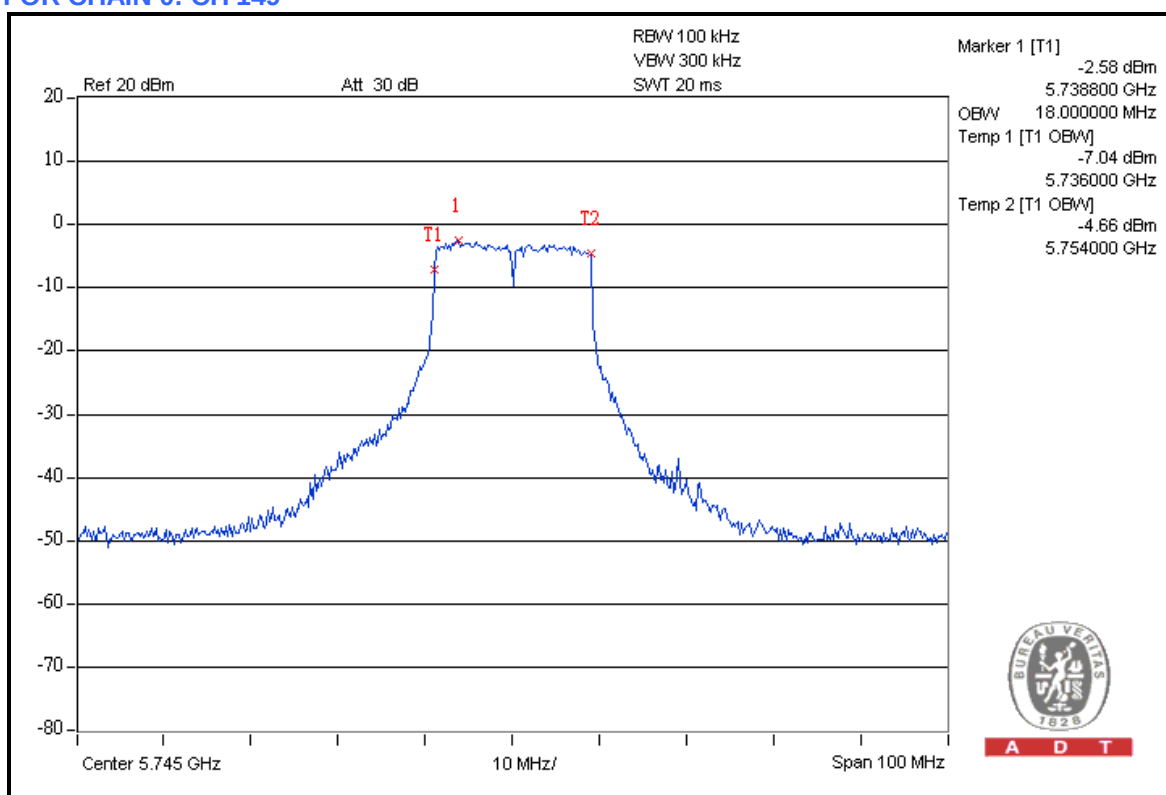


A D T

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
149	5745	18.0	18.0	18.0	PASS
157	5785	17.8	17.8	17.8	PASS
165	5825	17.8	17.8	17.8	PASS

FOR CHAIN 0: CH 149



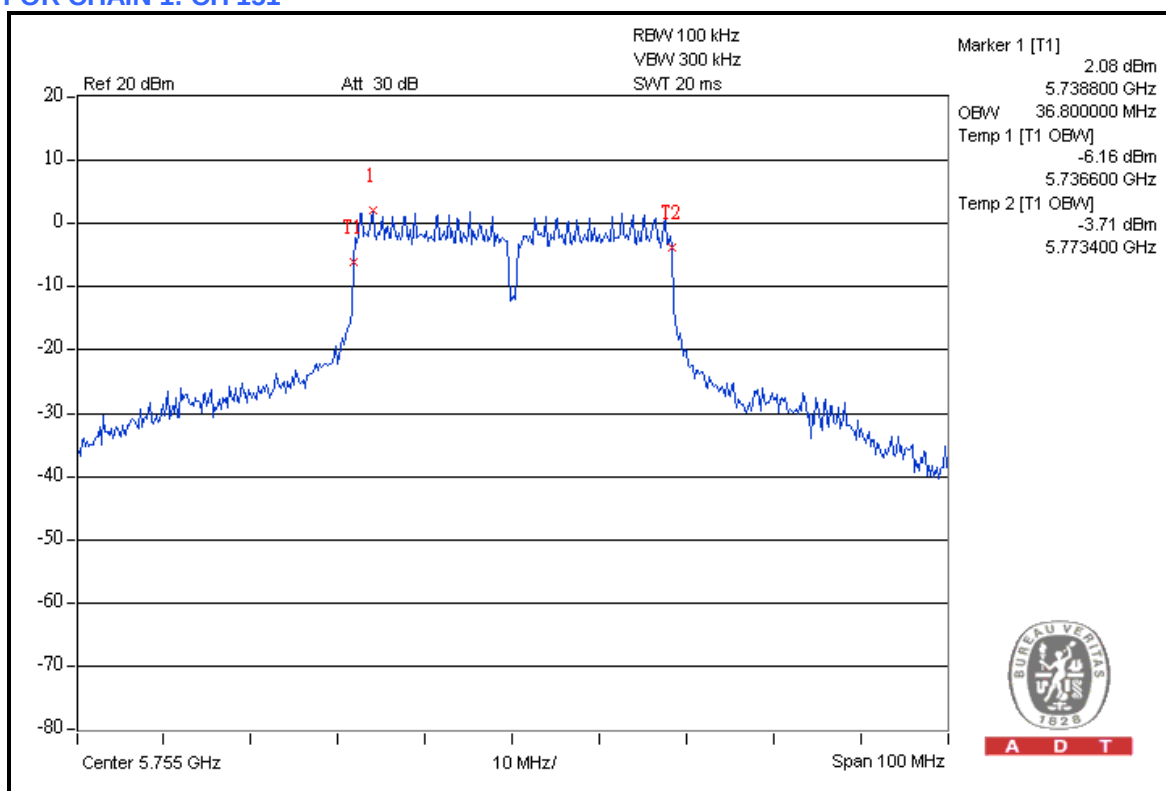


A D T

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
151	5755	36.6	36.8	36.6	PASS
159	5795	36.4	36.4	36.4	PASS

FOR CHAIN 1: CH 151



5.5 CONDUCTED OUTPUT POWER

5.5.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

5.5.2 TEST SETUP

Same as Item 4.4.2.

5.5.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.5.4 TEST PROCEDURES

Same as Item 4.4.4.

5.5.5 DEVIATION FROM TEST STANDARD

No deviation.

5.5.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

5.5.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	22.2	22.6	22.7	534.8	27.3	28.2	PASS
157	5785	22.0	22.9	22.3	522.3	27.2	28.2	PASS
165	5825	22.1	22.8	22.1	512.5	27.1	28.2	PASS

NOTE: Directional gain = $3\text{dBi} + 10\log(3) = 7.8\text{dBi} > 6\text{dBi}$, so the conducted power limit shall be reduced to $30 - (7.8 - 6) = 28.2\text{dBm}$.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	21.3	22.6	22.3	487.6	26.9	28.2	PASS
157	5785	21.7	22.7	22.2	500.2	27.0	28.2	PASS
165	5825	21.9	22.5	22.0	492.1	26.9	28.2	PASS

NOTE: Directional gain = $3\text{dBi} + 10\log(3) = 7.8\text{dBi} > 6\text{dBi}$, so the conducted power limit shall be reduced to $30 - (7.8 - 6) = 28.2\text{dBm}$.

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
151	5755	21.9	22.1	22.6	502.6	27.0	28.2	PASS
159	5795	21.7	21.8	22.0	460.6	26.6	28.2	PASS

NOTE: Directional gain = $3\text{dBi} + 10\log(3) = 7.8\text{dBi} > 6\text{dBi}$, so the conducted power limit shall be reduced to $30 - (7.8 - 6) = 28.2\text{dBm}$.

5.6 POWER SPECTRAL DENSITY MEASUREMENT

5.6.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.6.2 TEST SETUP

Same as item 4.5.2.

5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.6.4 TEST PROCEDURE.

Same as item 4.5.4.

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

5.6.6 EUT OPERATING CONDITION

Same as item 4.3.6.

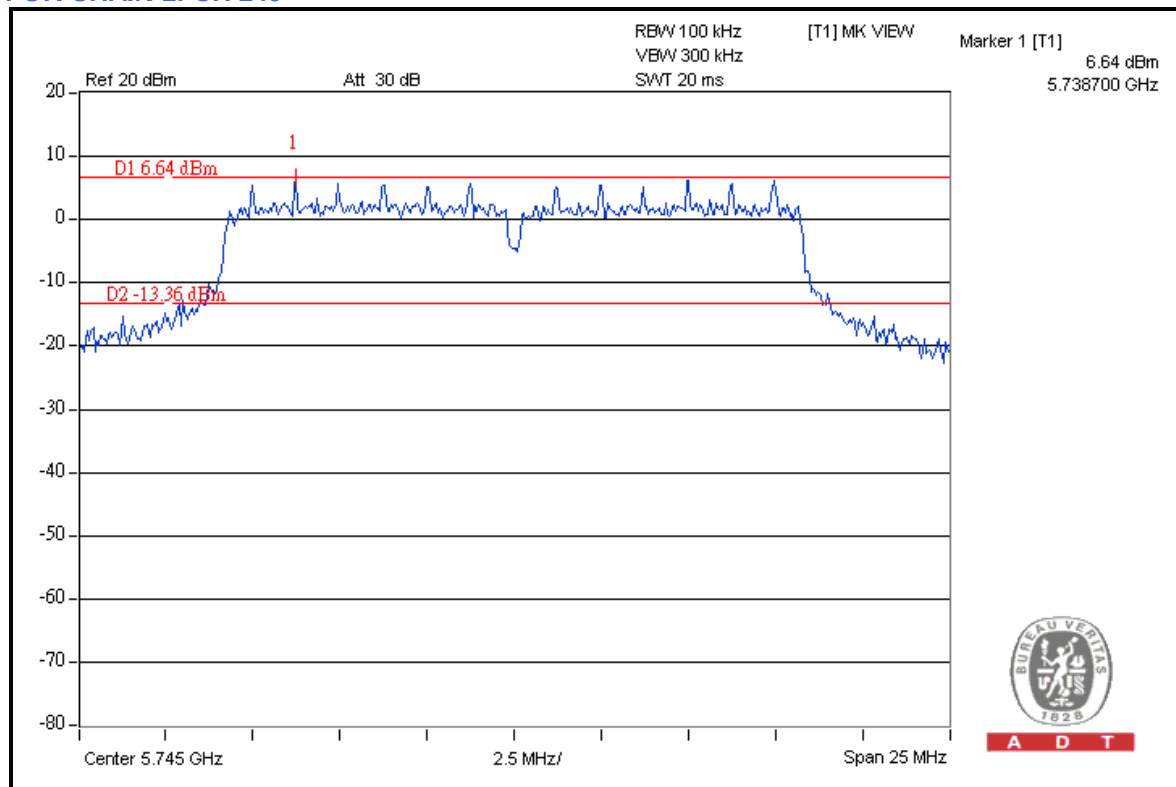
5.6.7 TEST RESULTS

802.11a

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	3.49	-11.71	4.77	-6.94	6.2	PASS
	157	5785	3.38	-11.82	4.77	-7.05	6.2	PASS
	165	5825	3.37	-11.83	4.77	-7.06	6.2	PASS
1	149	5745	6.64	-8.56	4.77	-3.79	6.2	PASS
	157	5785	5.67	-9.53	4.77	-4.76	6.2	PASS
	165	5825	5.45	-9.75	4.77	-4.98	6.2	PASS
2	149	5745	4.60	-10.60	4.77	-5.83	6.2	PASS
	157	5785	4.57	-10.63	4.77	-5.86	6.2	PASS
	165	5825	3.76	-11.44	4.77	-6.67	6.2	PASS

NOTE: Directional gain = $3\text{dBi} + 10\log(3) = 7.8\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (7.8 - 6) = 6.2\text{dBm}$.

FOR CHAIN 1: CH 149

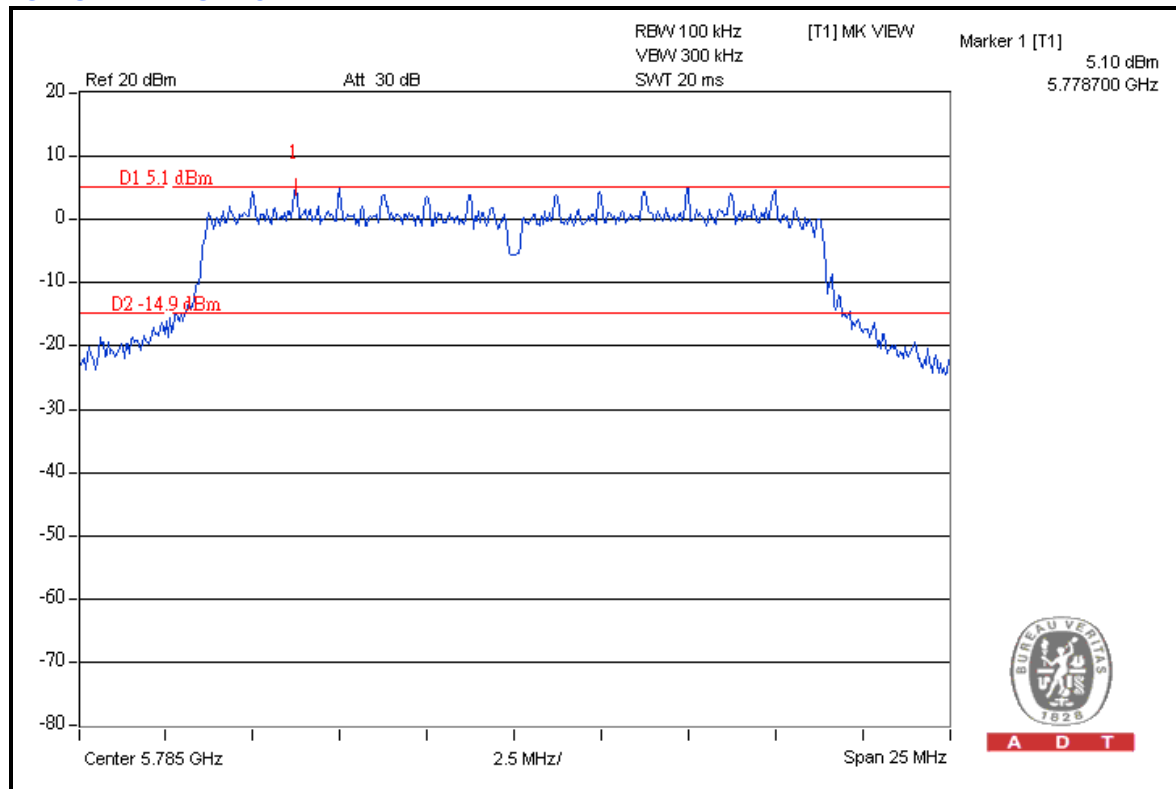


802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	1.53	-13.67	4.77	-8.90	6.2	PASS
	157	5785	2.93	-12.27	4.77	-7.50	6.2	PASS
	165	5825	2.98	-12.22	4.77	-7.45	6.2	PASS
1	149	5745	4.64	-10.56	4.77	-5.79	6.2	PASS
	157	5785	5.10	-10.10	4.77	-5.33	6.2	PASS
	165	5825	4.48	-10.72	4.77	-5.95	6.2	PASS
2	149	5745	2.39	-12.81	4.77	-8.04	6.2	PASS
	157	5785	3.23	-11.97	4.77	-7.20	6.2	PASS
	165	5825	3.67	-11.53	4.77	-6.76	6.2	PASS

NOTE: Directional gain = $3\text{dBi} + 10\log(3) = 7.8\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (7.8 - 6) = 6.2\text{dBm}$.

FOR CHAIN 1: CH 157

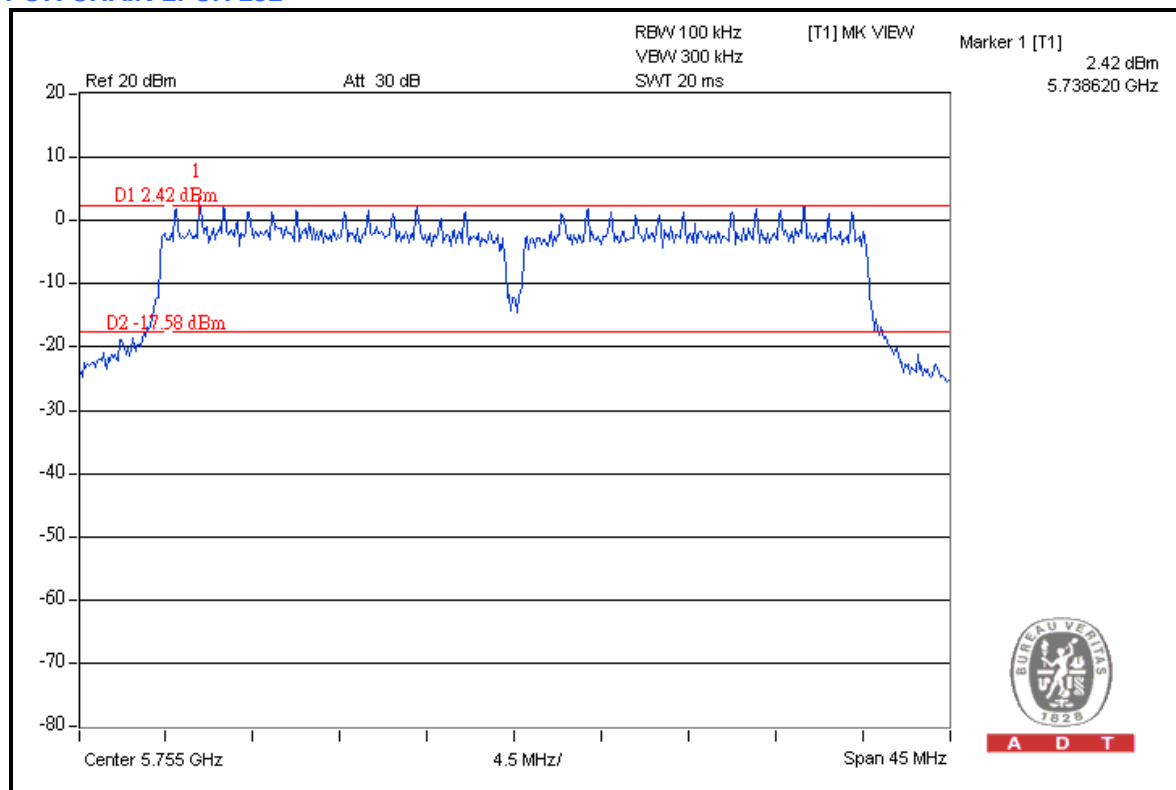


802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-0.25	-15.45	4.77	-10.68	6.2	PASS
	159	5795	0.94	-14.26	4.77	-9.49	6.2	PASS
1	151	5755	2.42	-12.78	4.77	-8.01	6.2	PASS
	159	5795	2.25	-12.95	4.77	-8.18	6.2	PASS
2	151	5755	1.08	-14.12	4.77	-9.35	6.2	PASS
	159	5795	1.56	-13.64	4.77	-8.87	6.2	PASS

NOTE: Directional gain = 3dBi + 10log(3) = 7.8dBi > 6dBi , so the power density limit shall be reduced to 8-(7.8-6) = 6.2dBm.

FOR CHAIN 1: CH 151



5.7 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.7.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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

5.7.2 TEST SETUP

Same as Item 4.6.2

5.7.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.7.4 TEST PROCEDURE

Same as Item 4.6.4

5.7.5 DEVIATION FROM TEST STANDARD

No deviation.

5.7.6 EUT OPERATING CONDITION

Same as Item 4.3.6

5.7.7 TEST RESULTS

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

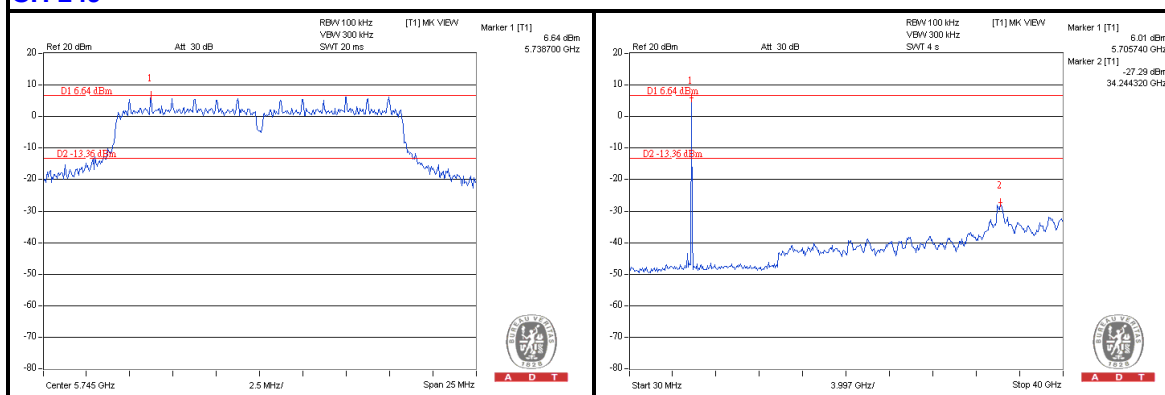
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



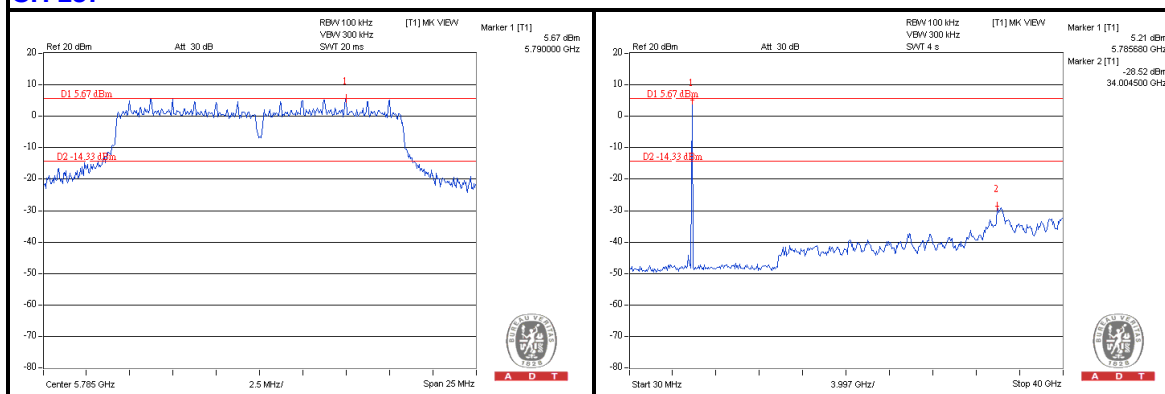
A D T

802.11a

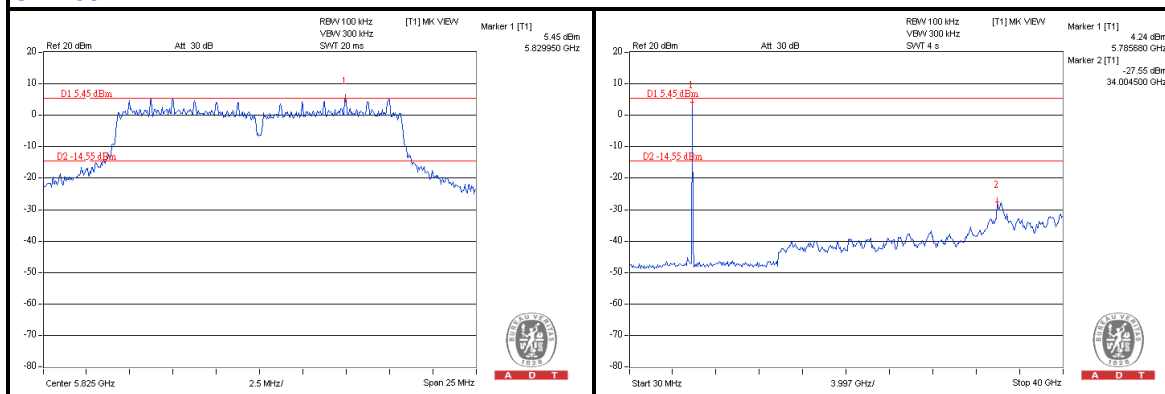
CH 149



CH 157

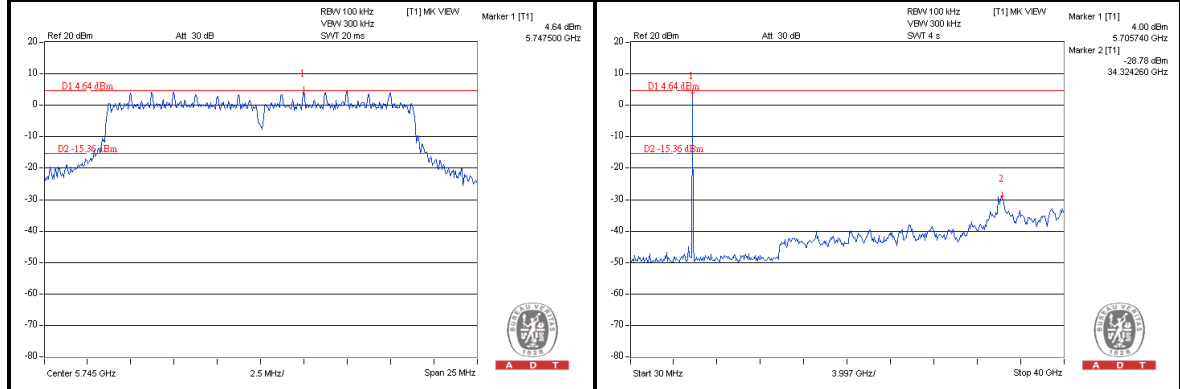


CH 165

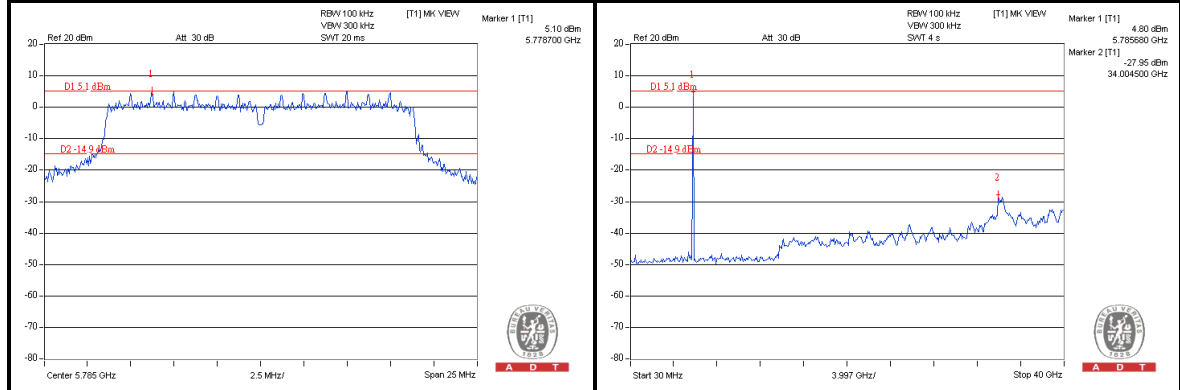


802.11n (20MHz)

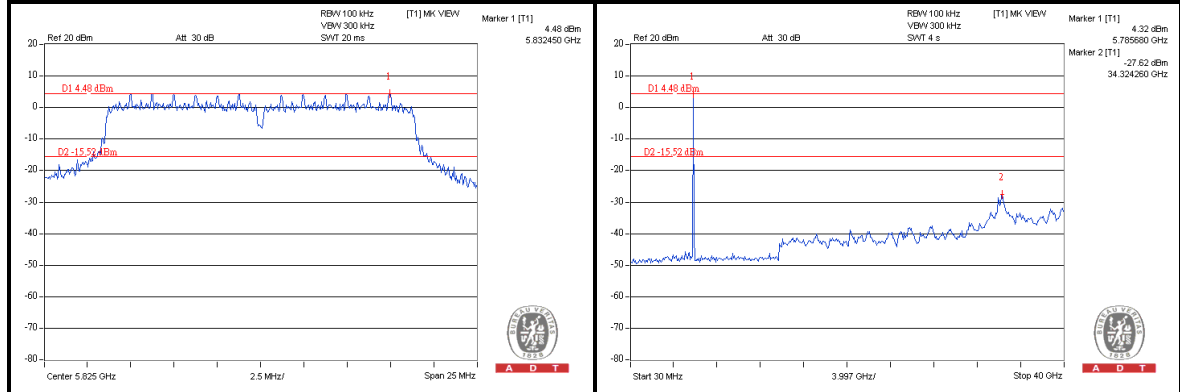
CH 149



CH 157



CH 165

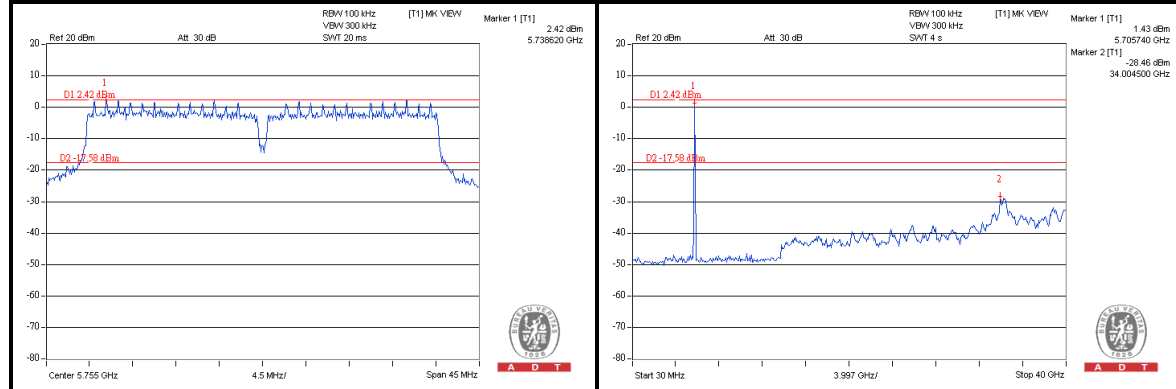




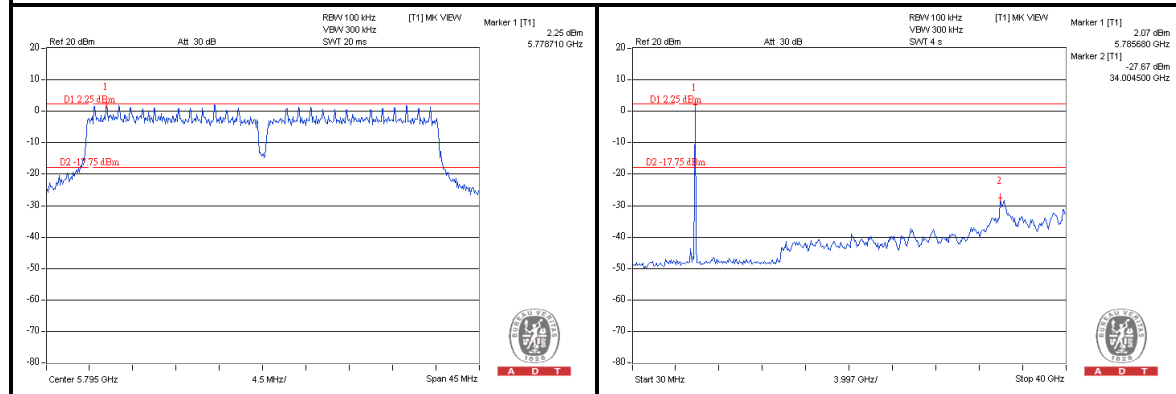
A D T

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.

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

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Tel: 886-3-3183232

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Email: service.adt@tw.bureauveritas.com

Web Site: www.adt.com.tw

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



A D T

8. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---