FCC TEST REPORT (WLAN/DTS-15.247)

REPORT NO.:	RF130223E01
MODEL NO.:	QCNFA222
FCC ID:	PPD-QCNFA222
IC:	4104A-QCNFA222
RECEIVED:	Feb. 23, 2013
TESTED:	Feb. 26 to June 19, 2013
ISSUED:	July 08, 2013

APPLICANT:	Qualcomm Atheros, Inc.
ADDRESS:	1700 Technology Drive, San Jose, CA 95110

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS :	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130223E01	Original release	July 08, 2013

1. CERTIFICATION

PRODUCT:	PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
BRAND NAME:	Qualcomm Atheros
MODEL NO.:	QCNFA222
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Qualcomm Atheros, Inc.
TESTED:	Feb. 26 to June 19, 2013
STANDARDS:	FCC Part 15, Subpart C (Section 15.247) ANSI C63.10-2009 Canada RSS-210 Issue 8 (2010-12) Canada RSS-Gen Issue 3 (2010-12)

The above equipment (Model: QCNFA222) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and was in compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** *July 08, 2013*
(Claire Kuan, Specialist)

APPROVED BY : _____ , **DATE:** *July 08, 2013*
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz(WLAN), 2412~2462MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) ; RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15	RSS-Gen			
15.207	RSS-Gen 7.2.4	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -3.20dB at 16.46484MHz
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.6dB at 600.32MHz
15.247(d)	RSS-210 A8.5	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	RSS-210 A8.2 (a)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	RSS-210 A8.2 (4)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	RSS-210 A8.2 (b)	Power Spectral Density	PASS	Meet the requirement of limit.
-	RSS-Gen 4.6	Occupied Bandwidth Measurement	-	Meet the requirement
15.203	-	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

For 2.4GHz(BT-LE(GFSK)), 2402~2480MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) ; RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15	RSS-Gen			
15.207	RSS-Gen 7.2.4	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -3.35dB at 16.46484MHz
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.9dB at 600.32MHz
15.247(d)	RSS-210 A8.5	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	RSS-210 A8.2 (a)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	RSS-210 A8.2 (4)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	RSS-210 A8.2 (b)	Power Spectral Density	PASS	Meet the requirement of limit.
-	RSS-Gen 4.6	Occupied Bandwidth Measurement	-	Meet the requirement
15.203	-	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

For 5GHz, 5725~5850MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) ; RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15	RSS-210; RSS-Gen			
15.207	RSS-Gen 7.2.4	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -3.70dB at 16.46484MHz
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.7dB at 600.32MHz
15.247(d)	RSS-210 A8.5	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	RSS-210 A8.2 (a)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	RSS-210 A8.2 (4)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	RSS-210 A8.2 (b)	Power Spectral Density	PASS	Meet the requirement of limit.
-	RSS-Gen 4.6	Occupied Bandwidth Measurement	-	Meet the requirement.
15.203	-	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

NOTE: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz and 5.725~5.850GHz. For the 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz RF parameters was recorded in another test report.

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:

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

Measurement	Value
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	5.63 dB
Radiated emissions (1GHz -6GHz)	3.54 dB
Radiated emissions (6GHz -18GHz)	4.08 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT(WLAN / DTS)

PRODUCT	PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
MODEL NO.	QCNFA222
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM GFSK(BT <LE> mode) for DTS
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n (HT20, 800ns GI): up to 130Mbps 802.11n (HT20, 400ns GI): up to 144.4Mbps 802.11n (HT40, 800ns GI): up to 270Mbps 802.11n (HT40, 400ns GI): up to 300Mbps BT-LE(GFSK): 1Mbps
OPERATING FREQUENCY	**For 15.407** 802.11a: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.7GHz
	For 15.247 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz BT-LE(GFSK): 2.402 ~ 2.480GHz
NUMBER OF CHANNEL	**For 15.407** 19 for 802.11a, 802.11n (HT20) 9 for 802.11n (HT40)
	For 15.247(2.4GHz) 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) 40 for BT-LE(GFSK) **For 15.247(5GHz)** 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)

MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 57.254mW 802.11n (HT20): 36.279mW 802.11n (HT40): 36.770mW **For 15.247(2.4GHz)** 802.11b: 151.445mW 802.11g: 430.397mW 802.11n (HT20): 348.819mW 802.11n (HT40): 171.840mW BT-LE(GFSK): 3.899mW **For 15.247(5GHz)** 802.11a: 176.663mW 802.11n (HT20): 135.083mW 802.11n (HT40): 103.656mW
ANTENNA TYPE	See item 3.2
ANTENNA CONNECTOR	See item 3.2
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. There are Bluetooth technology and WLAN technology used for the EUT.

2. The EUT is 2 * 2 MIMO with 802.11n beam forming function.

MODULATION MODE	Tx/Rx FUNCTION
802.11b	1TX/1RX or 2TX/2RX
802.11g	1TX/1RX or 2TX/2RX
802.11a	1TX/1RX or 2TX/2RX
802.11n (HT20)	1TX/1RX or 2TX/2RX
802.11n (HT40)	1TX/1RX or 2TX/2RX

The maximum compliance powers listed on the report are compliance with both Beam Forming and non-Beam Forming configurations.

3. The EUT was pre-tested under the following modes:

Test Mode	Data rate
Mode A	400ns GI
Mode B	**800ns GI**

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

4. Spurious emission of the simultaneous operation (WiFi & Bluetooth) has been evaluated and no non-compliance was found.

5. This device support the power back off for WLAN/BT coexist mode. The WiFi output power will reduce to 10.5dBm from Maximum power in 802.11n HT20 (2TX) mode of 2.4GHz when WLAN and BT simultaneously transmission.

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

3.2 DESCRIPTION OF ANTENNA

The antenna provided to the EUT, please refer to the following table:

Brand	Model	Antenna Type	2.4G Gain with cable loss (dBi)	5G Gain with cable loss (dBi)	2.4G Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
WNC	81.EBJ15.005	PIFA	3.62	Band 1&2: 3.08 Band 3: 4.76 Band 4: 4.76	1.15	Band1&2: 1.70 Band 3: 1.74 Band 4: 1.79	IPEX	300

Note:

1. Above antenna gains of antenna are Total (H+V).
2. All of antenna can be application for WLAN and Bluetooth.

3.3 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

Eleven channels are provided for 802.11b, 802.11g, 802.11n (HT20):

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		

Seven channels are provided for 802.11n (HT 40):

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

Forty channels are provided for Bluetooth LE mode:

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Operated in 5725 ~ 5850MHz band:

Five channels are provided for 802.11a, 802.11n (HT20):

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

Two channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

3.3.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	UE < 1G	UE ≥ 1G	APCM	OB	
-	√	√	√	√	√	-

Where **PLC:** Power Line Conducted Emission **UE < 1G:** Unwanted Emission below 1GHz

UE ≥ 1G: Unwanted Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

NOTE: The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane.**

AC 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
For 2.4 GHz 802.11g	1 to 11	6	OFDM	6
BT-LE	0 to 39	39	DTS	1
For 5 GHz 802.11a	149 to 165	149	OFDM	6.5

UNWANTED EMISSION TEST (BELOW 1 GHz):

☒ 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
For 2.4 GHz 802.11g	1 to 11	6	OFDM	6
BT-LE	0 to 39	39	DTS	1
For 5 GHz 802.11a	149 to 165	149	OFDM	6.5

UNWANTED EMISSION TEST (ABOVE 1 GHZ):

☒ Radiated versus Conducted Measurements
☒ 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5
BT-LE	0 to 39	0, 19, 39	DTS	1
802.11a	149 to 165	149, 157, 165	OFDM	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	13.5

ANTENNA PORT CONDUCTED 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5
BT-LE	0 to 39	0, 19, 39	DTS	1
802.11a	149 to 165	149, 157, 165	OFDM	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	13.5

CONDUCTED OUT-BAND EMISSION 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
For 2.4 GHz 802.11n (HT20)	1 to 11	1, 6, 11	OFDM	6.5
For 2.4 GHz 802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5
BT-LE	0 to 39	0, 39	DTS	1
802.11a	149 to 165	149, 157, 165	OFDM	6
For 5 GHz 802.11n (HT20)	149 to 165	149, 157, 165	OFDM	6.5
For 5 GHz 802.11n (HT40)	151 to 159	151, 159	OFDM	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	20deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	25deg. C, 69%RH	120Vac, 60Hz	Tim Ho
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Tim Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	James Chan
OB	25deg. C, 60%RH	120Vac, 60Hz	James Chan

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 (Section 15.247)
558074 D01 DTS Meas Guidance v03r01
662911 D01 Multiple Transmitter Output v01 r02
ANSI C63.10-2009
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)

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

3.5 DESCRIPTION OF SUPPORT UNITS

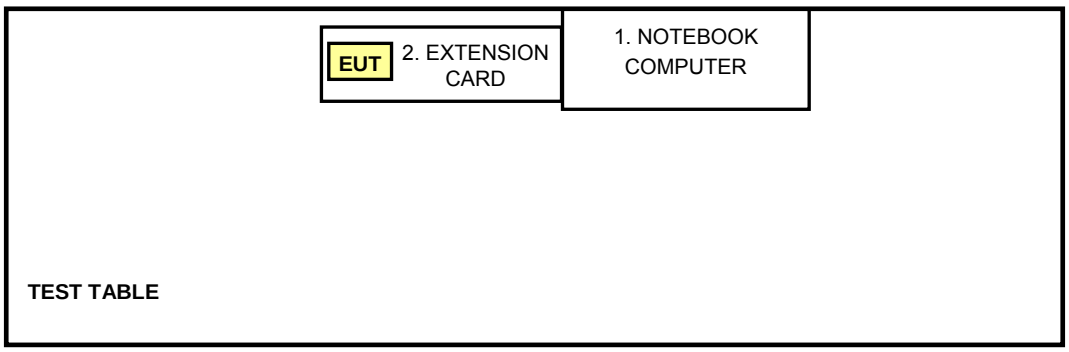
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
2	EXTENSION CARD	Qualcomm Atheros	NA	NA	NA

No.	Signal cable description
1	NA
2	NA

Note: The power cords of the above support units were unshielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS (FOR 2.4GHz, 2400 ~ 2483.5MHz Band)

4.1 CONDUCTED OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

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

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

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

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.1.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 20, 2013	May 19, 2014
Peak Power Sensor	MA2411B	0738172	May 20, 2013	May 19, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10 to 19, 2013

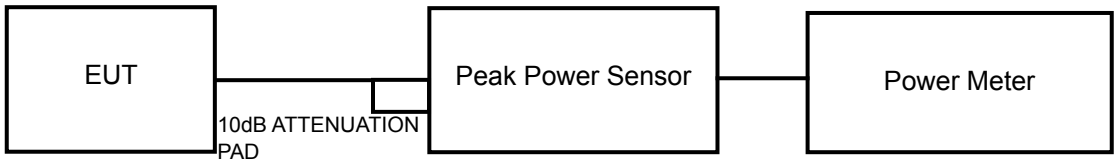
4.1.3 TEST PROCEDURES

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.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



4.1.6 EUT OPERATING CONDITIONS

The software (artgui.exe Ver2.3) provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.1.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	18.65	18.81	149.315	21.74	29.37	PASS
6	2437	18.71	18.24	140.983	21.49	29.37	PASS
11	2462	18.93	18.65	151.445	21.80	29.37	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)=6.63
The effective legacy gain is 6.63dBi, therefore the limit needs to reduce.

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	20.49	20.31	219.343	23.41	29.37	PASS
6	2437	22.91	23.71	430.397	26.34	29.37	PASS
11	2462	19.71	19.75	187.947	22.74	29.37	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)= 6.63
The effective legacy gain is 6.63dBi, therefore the limit needs to reduce.

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	19.64	19.58	182.827	22.62	29.37	PASS
6	2437	22.10	22.71	348.819	25.43	29.37	PASS
11	2462	19.04	19.18	162.962	22.12	29.37	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)= 6.63
The effective legacy gain is 6.63dBi, therefore the limit needs to reduce.

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	16.19	16.21	83.374	19.21	29.37	PASS
6	2437	19.25	19.43	171.840	22.35	29.37	PASS
9	2452	15.77	16.11	78.589	18.95	29.37	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)= 6.63
The effective legacy gain is 6.63dBi, therefore the limit needs to reduce.

BT_LE-GFSK

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
0	2402	3.266	6.84	30	PASS
19	2440	3.724	7.41	30	PASS
39	2480	3.899	7.61	30	PASS

4.2 AVERAGE OUTPUT POWER

4.2.1 FOR REFERENCE.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 20, 2013	May 19, 2014
Average Power Sensor	MA2411B	0738172	May 20, 2013	May 19, 2014

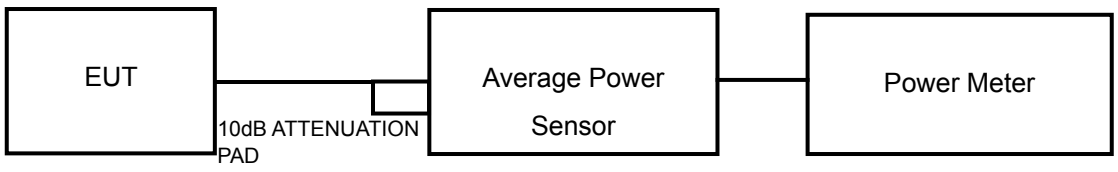
Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June. 10 to 19, 2013

4.2.3 TEST PROCEDURES

1. The transmitter output was connected to the power meter through an attenuator, the bandwidth of the fundamental frequency was measured with the power meter.
2. Record the average power level.

4.2.4 TEST SETUP



4.2.5 EUT OPERATING CONDITIONS

Same as Item 4.1.6

4.2.6 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	16.47	16.63	19.56
6	2437	16.42	16.11	19.28
11	2462	16.75	16.50	19.64

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	12.53	12.56	15.56
6	2437	16.13	16.59	19.38
11	2462	11.58	11.68	14.64

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	11.48	11.56	14.53
6	2437	15.18	15.43	18.32
11	2462	10.24	10.61	13.44

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
3	2422	10.85	11.19	14.03
6	2437	14.11	14.23	17.18
9	2452	10.13	10.84	13.51

BT_LE-GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
0	2402	5.02
19	2440	5.51
39	2480	5.63

4.3 POWER SPECTRAL DENSITY MEASUREMENT

4.3.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10 to 19, 2013

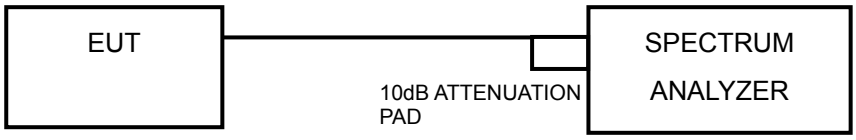
4.3.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITION

Same as Item 4.1.6

4.3.7 TEST RESULTS

802.11b

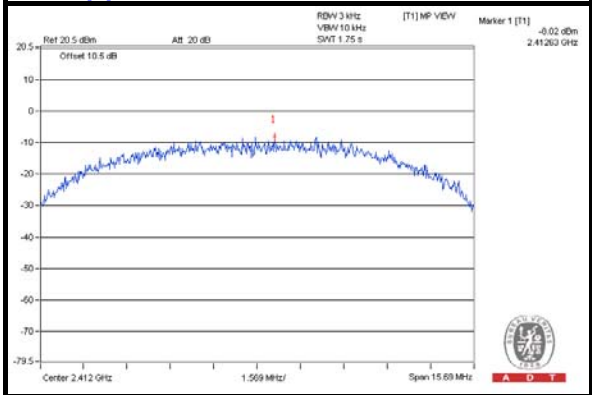
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-8.02	3.01	-5.01	7.37	PASS
	6	2437	-8.64	3.01	-5.63	7.37	PASS
	11	2462	-8.17	3.01	-5.16	7.37	PASS
1	1	2412	-7.59	3.01	-4.58	7.37	PASS
	6	2437	-8.23	3.01	-5.22	7.37	PASS
	11	2462	-8.15	3.01	-5.14	7.37	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

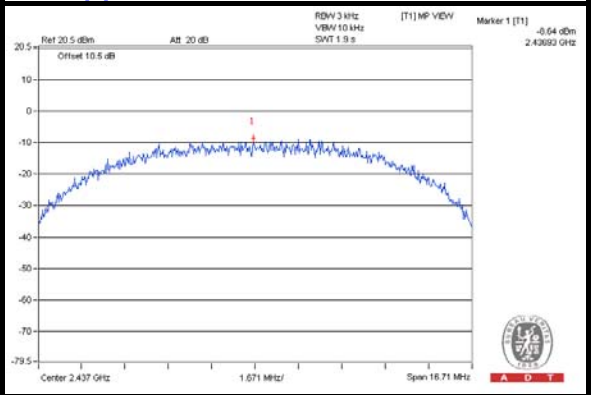
Effective Legacy Gain (dBi)=6.63

The effective legacy gain is 6.63dBi, therefore the limit needs to reduce.

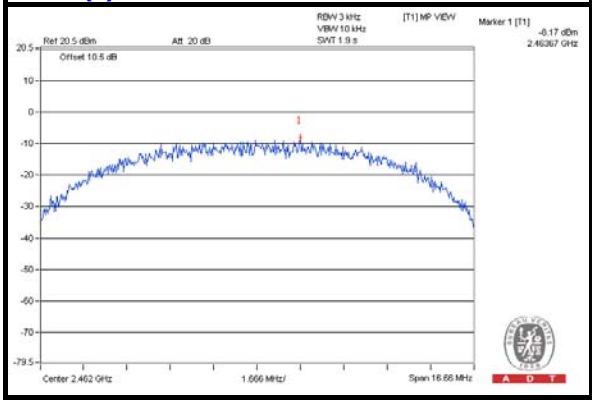
Chain(0) : CH1

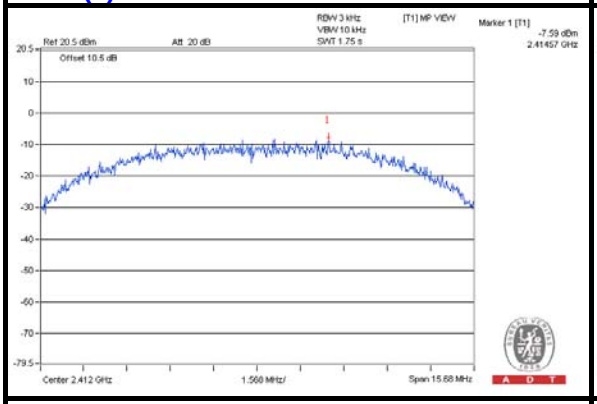
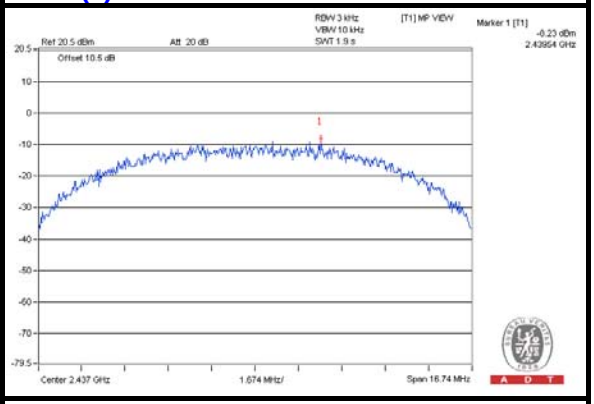
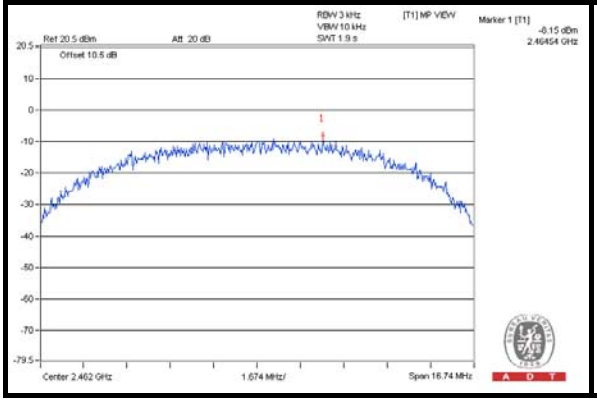


Chain(0) : CH6



Chain(0) : CH11



Chain(1) : CH1	Chain(1) : CH6
	
Chain(1) : CH11	
	

802.11g

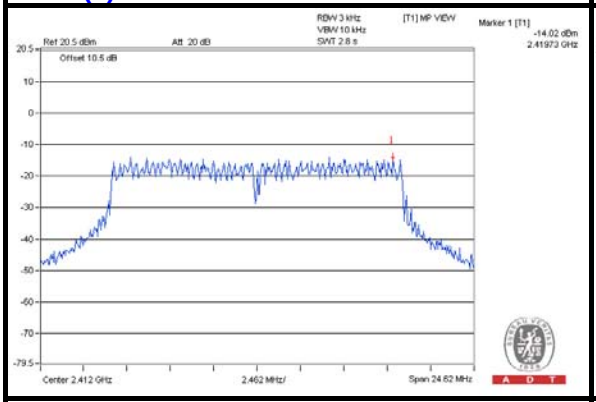
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-14.02	3.01	-11.01	7.37	PASS
	6	2437	-9.22	3.01	-6.21	7.37	PASS
	11	2462	-14.59	3.01	-11.58	7.37	PASS
1	1	2412	-13.45	3.01	-10.44	7.37	PASS
	6	2437	-9.09	3.01	-6.08	7.37	PASS
	11	2462	-14.72	3.01	-11.71	7.37	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

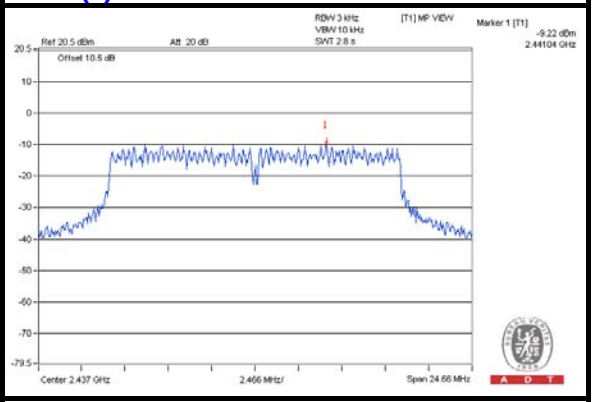
Effective Legacy Gain (dBi)=6.63

The effective legacy gain is 6.63dBi, therefore the limit needs to reduce.

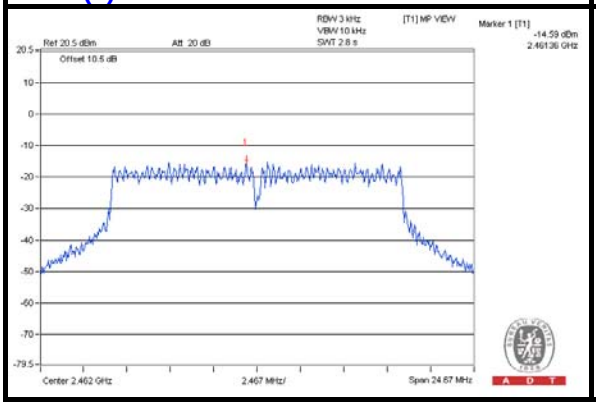
Chain(0) : CH1

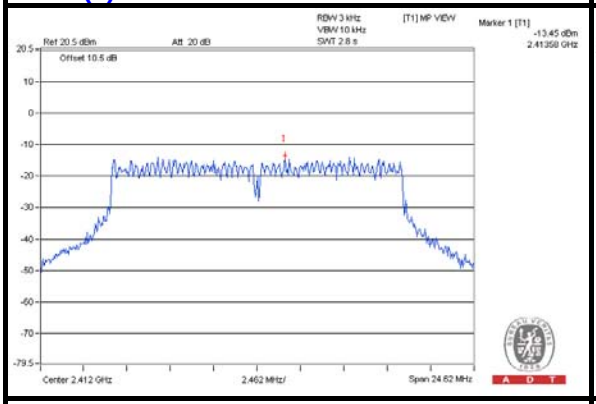
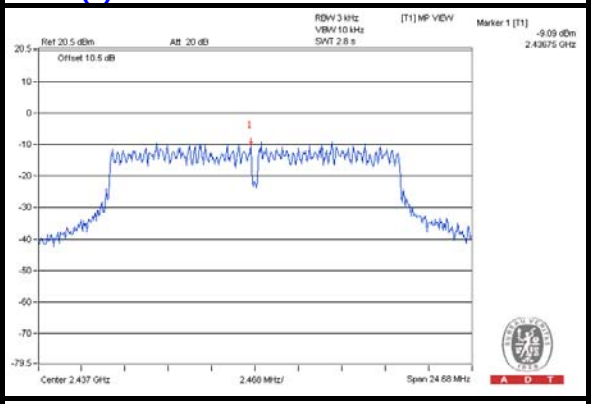
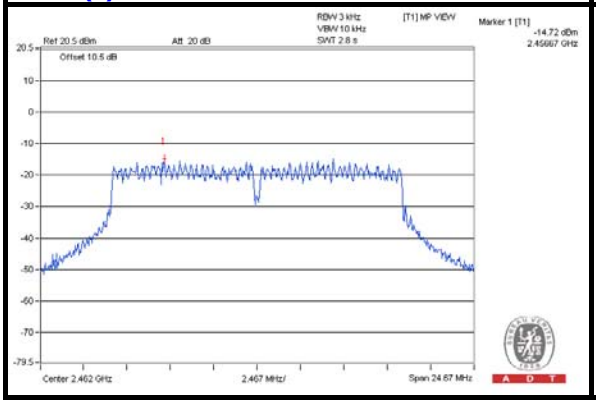


Chain(0) : CH6



Chain(0) : CH11



Chain(1) : CH1	Chain(1) : CH6
	
Chain(1) : CH11	
	

802.11n (HT20)

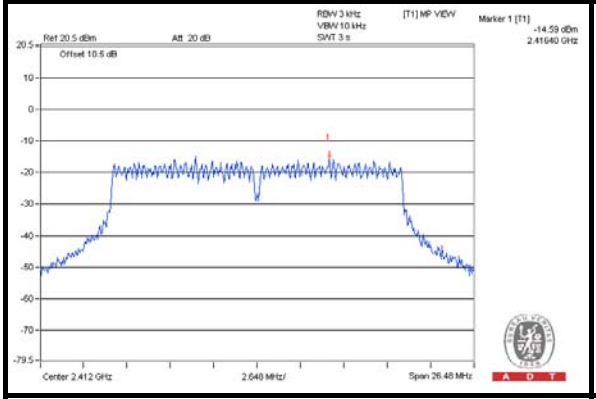
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-14.59	3.01	-11.58	7.37	PASS
	6	2437	-11.64	3.01	-8.63	7.37	PASS
	11	2462	-15.88	3.01	-12.87	7.37	PASS
1	1	2412	-15.49	3.01	-12.48	7.37	PASS
	6	2437	-10.82	3.01	-7.81	7.37	PASS
	11	2462	-15.91	3.01	-12.90	7.37	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

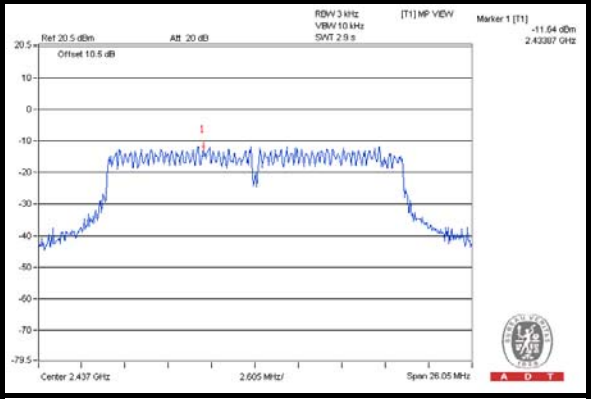
Effective Legacy Gain (dBi)= 6.63

The effective legacy gain is 6.63dBi, therefore the limit needs to reduce.

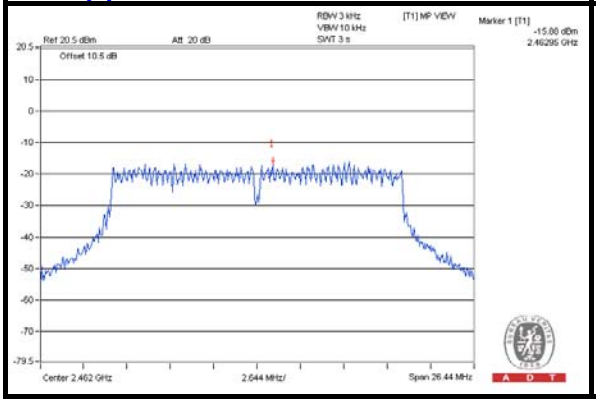
Chain(0) : CH1

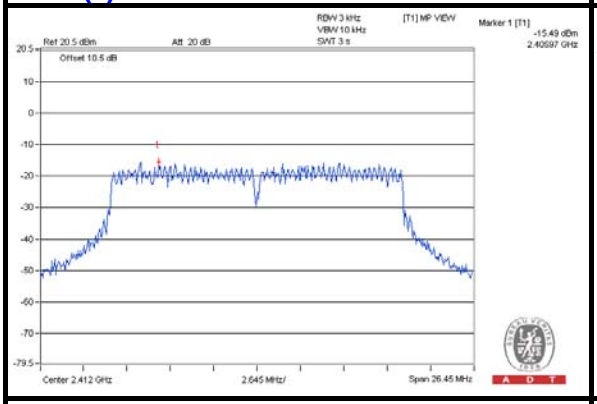
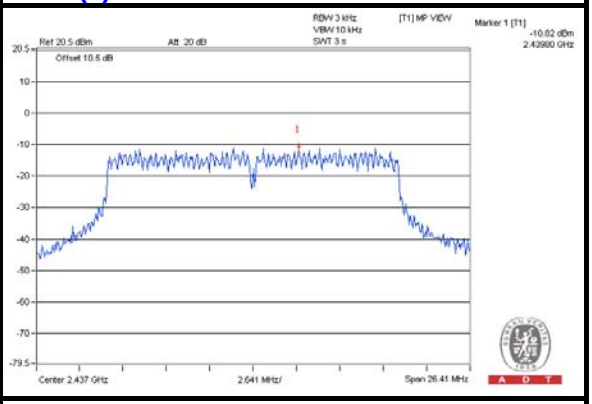
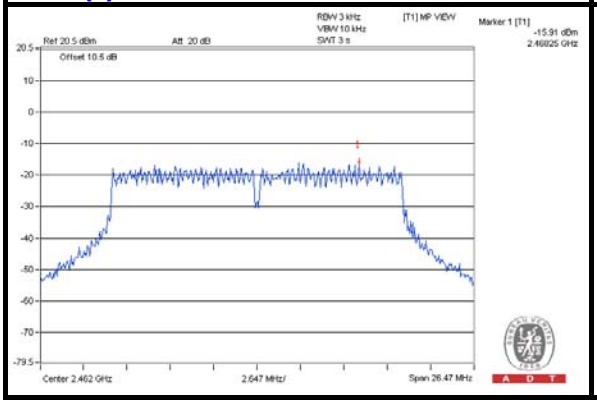


Chain(0) : CH6



Chain(0) : CH11



Chain(1) : CH1	Chain(1) : CH6
	
Chain(1) : CH11	
	

802.11n (HT40)

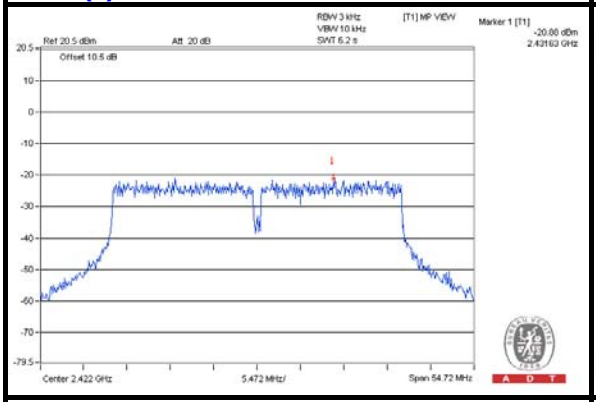
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-20.88	3.01	-17.87	7.37	PASS
	6	2437	-15.75	3.01	-12.74	7.37	PASS
	9	2452	-20.47	3.01	-17.46	7.37	PASS
1	3	2422	-19.83	3.01	-16.82	7.37	PASS
	6	2437	-16.94	3.01	-13.93	7.37	PASS
	9	2452	-20.60	3.01	-17.59	7.37	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

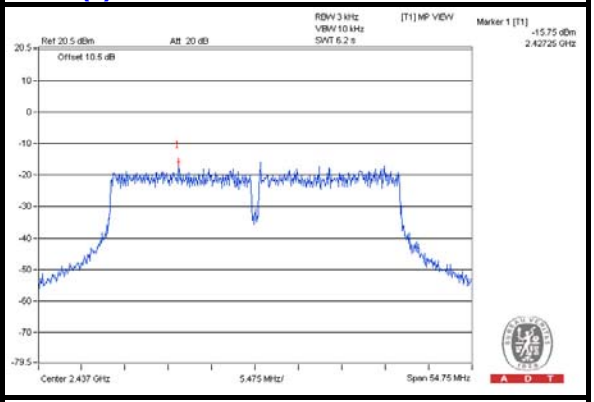
Effective Legacy Gain (dBi)= 6.63

The effective legacy gain is 6.63dBi, therefore the limit needs to reduce.

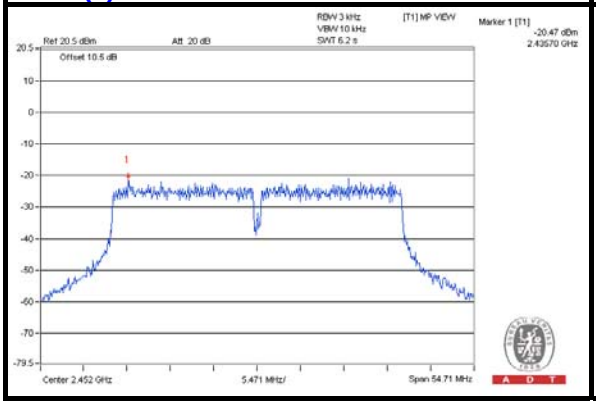
Chain(0) : CH3

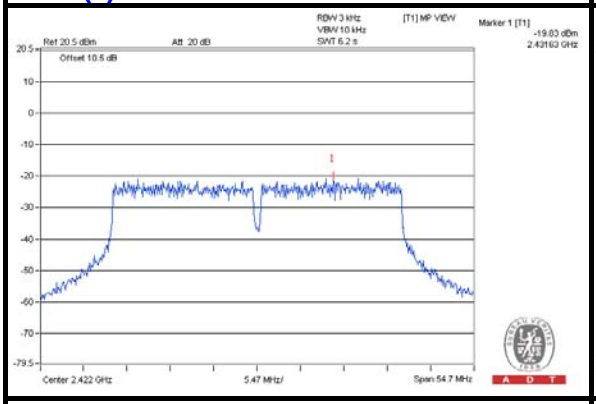
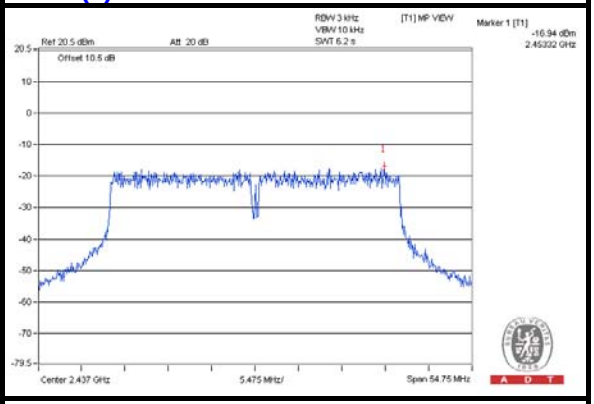
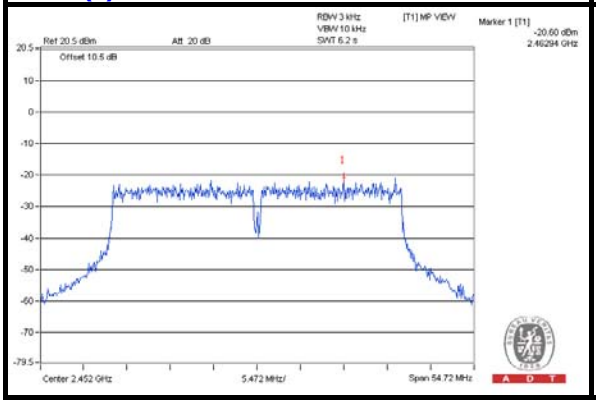


Chain(0) : CH6



Chain(0) : CH9

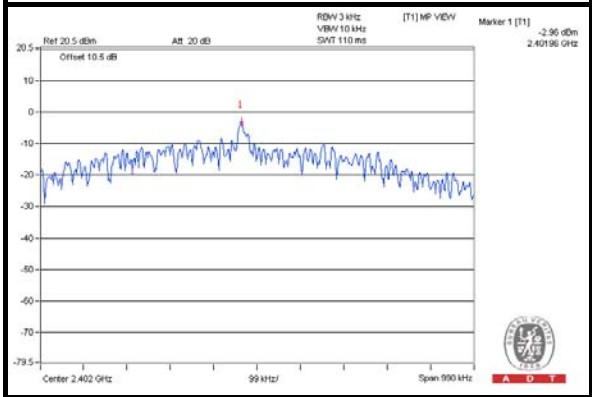


Chain(1) : CH3	Chain(1) : CH6
	
Chain(1) : CH9	
	

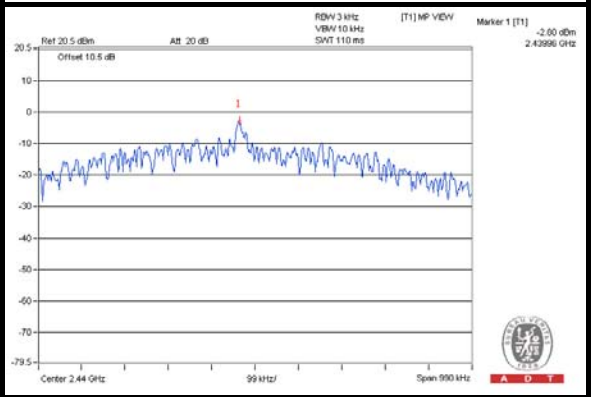
BT_LE-GFSK

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-2.96	8	PASS
19	2440	-2.80	8	PASS
39	2480	-2.95	8	PASS

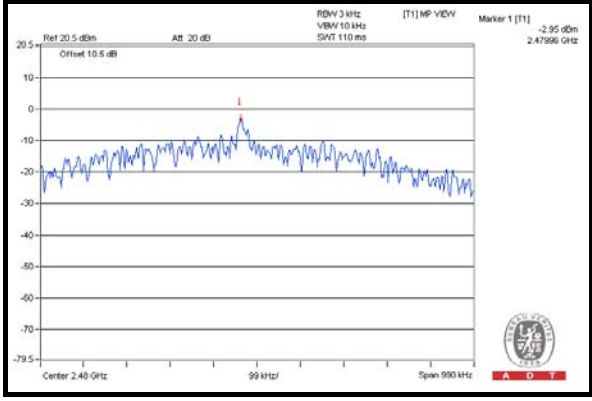
CH0



CH19



CH39



4.4 6dB BANDWIDTH MEASUREMENT

4.4.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10 to 19, 2013

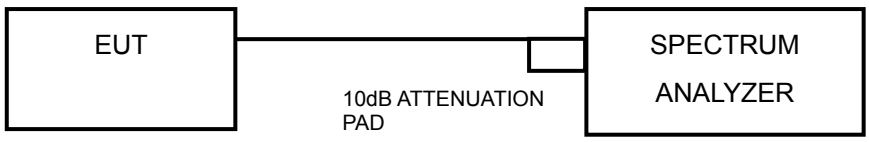
4.4.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

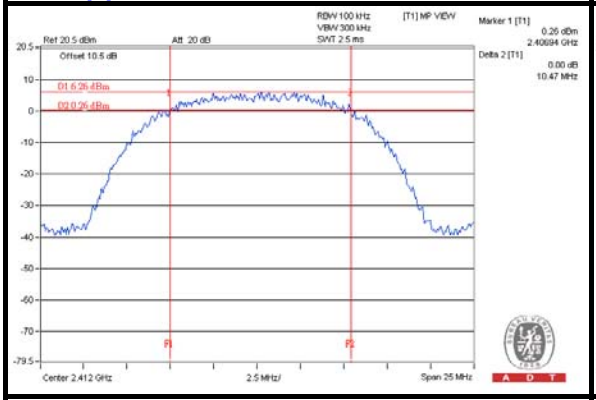
Same as Item 4.1.6

4.4.7 TEST RESULTS

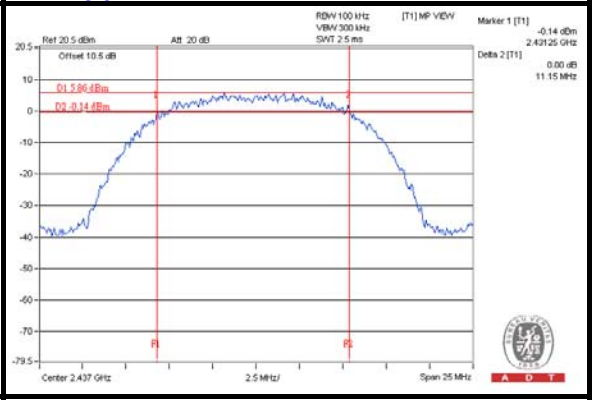
802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	10.47	10.46	0.5	PASS
6	2437	11.15	11.16	0.5	PASS
11	2462	11.11	11.16	0.5	PASS

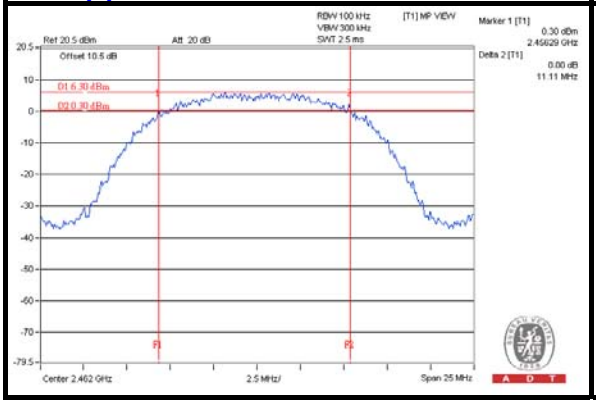
Chain(0) : CH1



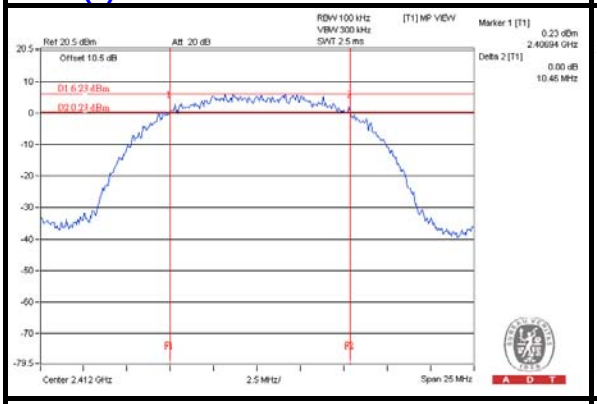
Chain(0) : CH6



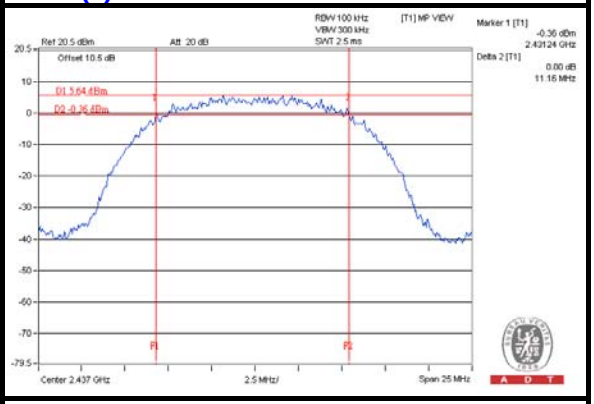
Chain(0) : CH11



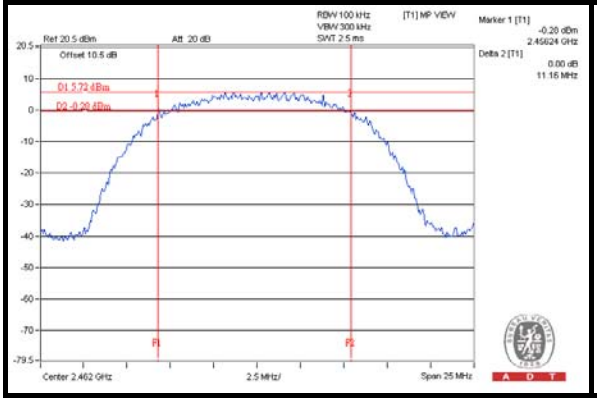
Chain(1) : CH1



Chain(1) : CH6



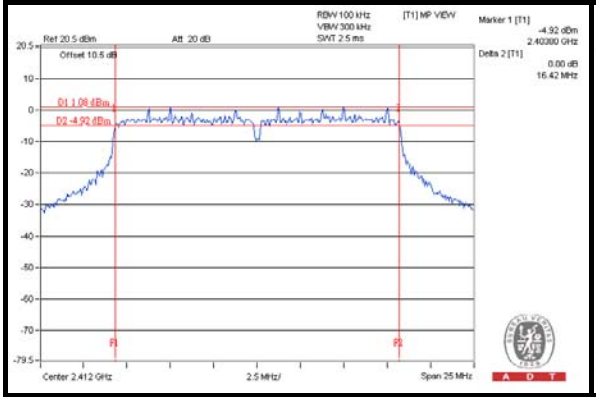
Chain(1) : CH11



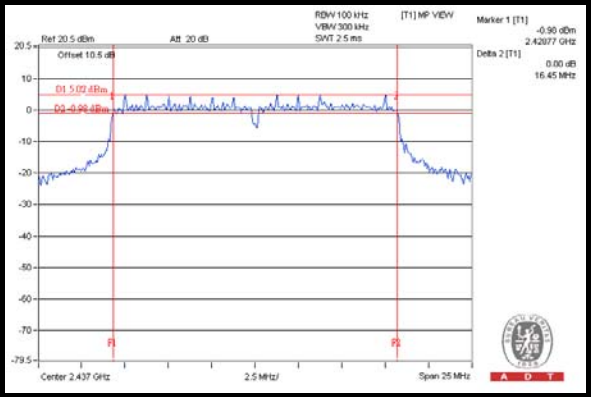
802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	16.42	16.41	0.5	PASS
6	2437	16.45	16.45	0.5	PASS
11	2462	16.45	16.45	0.5	PASS

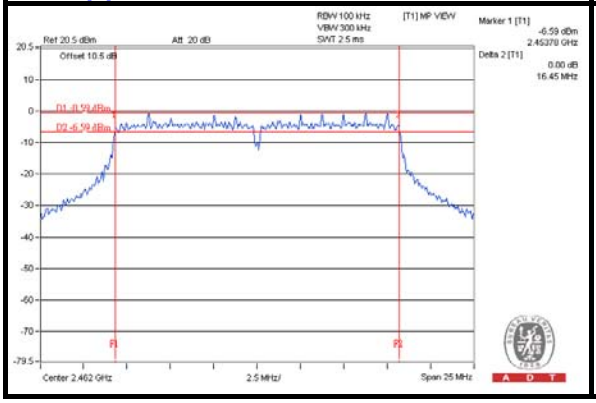
Chain(0) : CH1

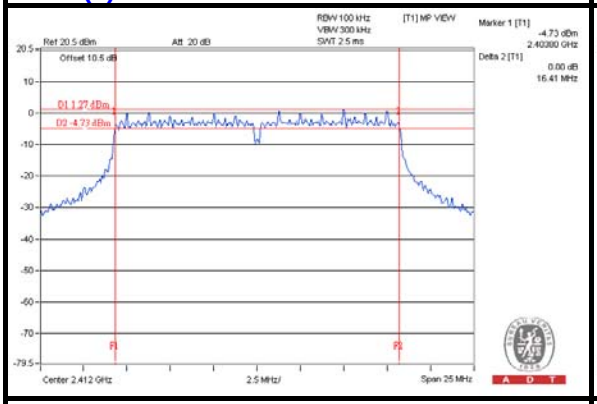
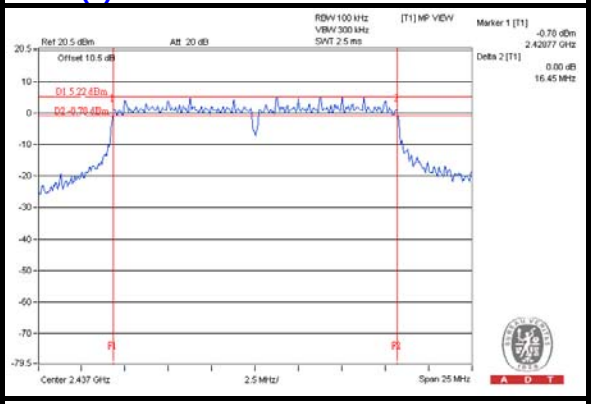
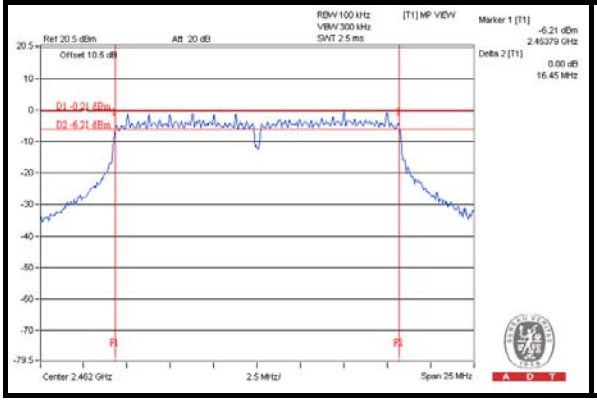


Chain(0) : CH6



Chain(0) : CH11

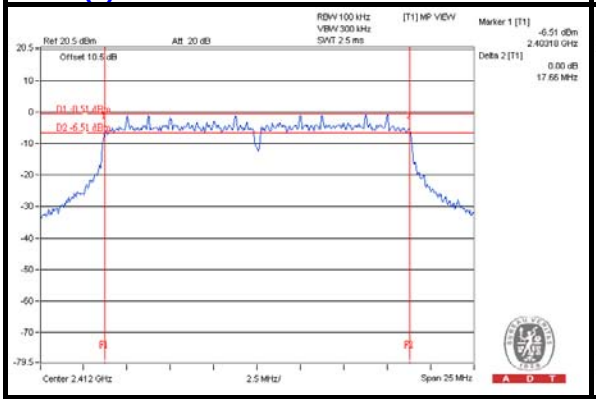


Chain(1) : CH1	Chain(1) : CH6
	
Chain(1) : CH11	
	

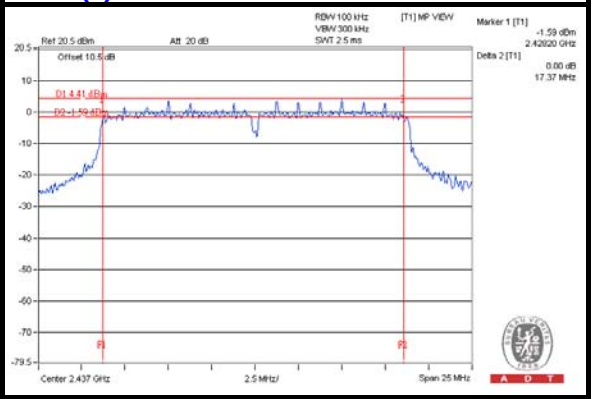
802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	17.66	17.63	0.5	PASS
6	2437	17.37	17.61	0.5	PASS
11	2462	17.63	17.65	0.5	PASS

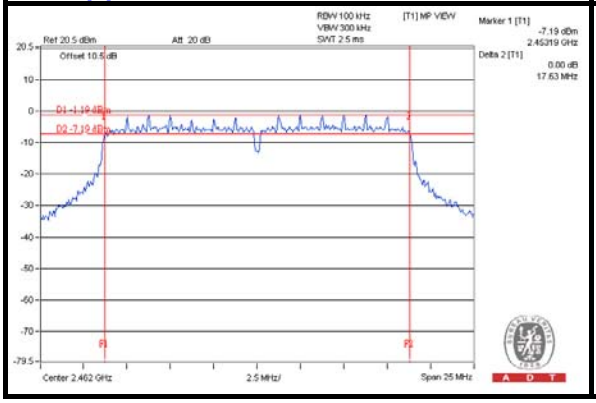
Chain(0) : CH1



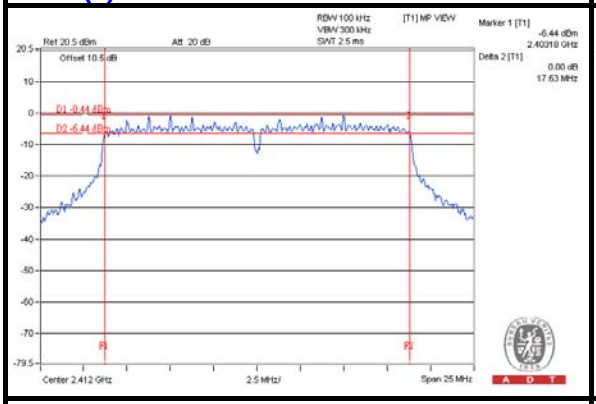
Chain(0) : CH6



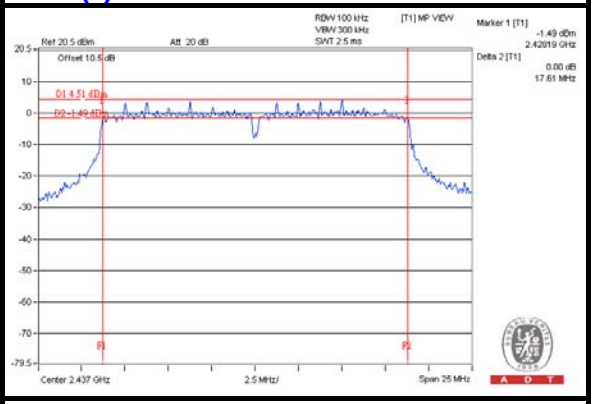
Chain(0) : CH11



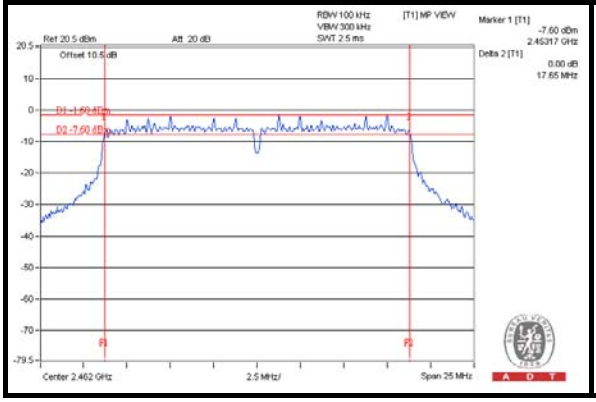
Chain(1) : CH1



Chain(1) : CH6



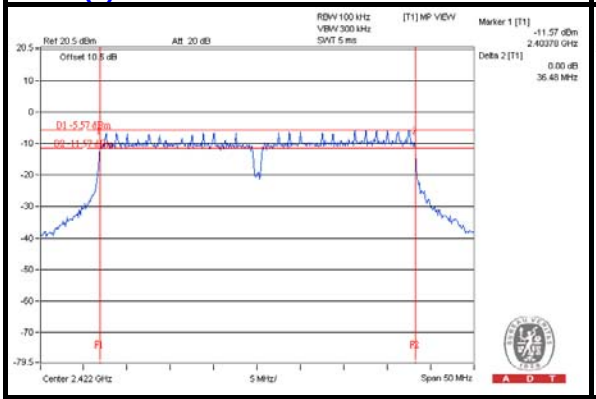
Chain(1) : CH11



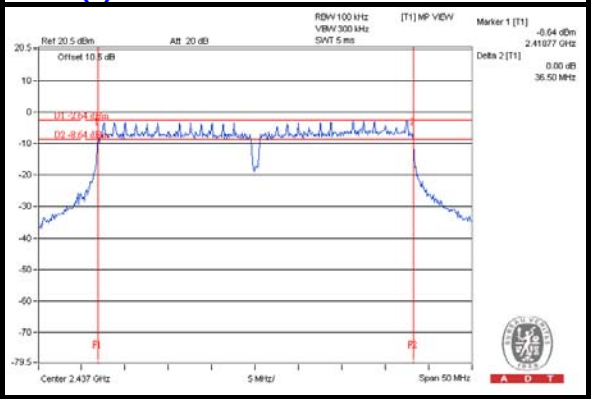
802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
3	2422	36.48	36.47	0.5	PASS
6	2437	36.50	36.50	0.5	PASS
9	2452	36.48	36.48	0.5	PASS

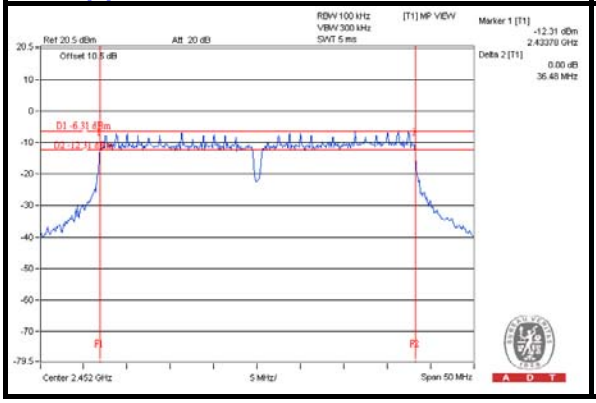
Chain(0) : CH3

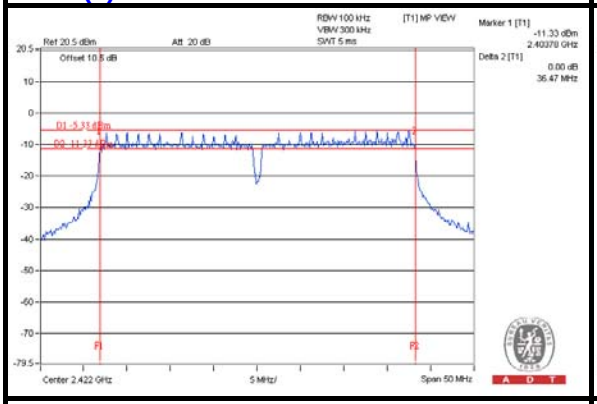
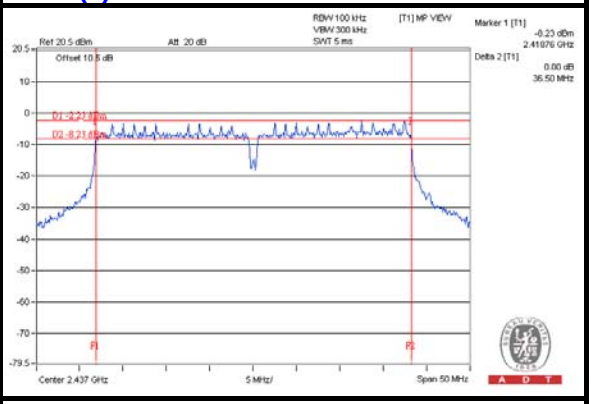
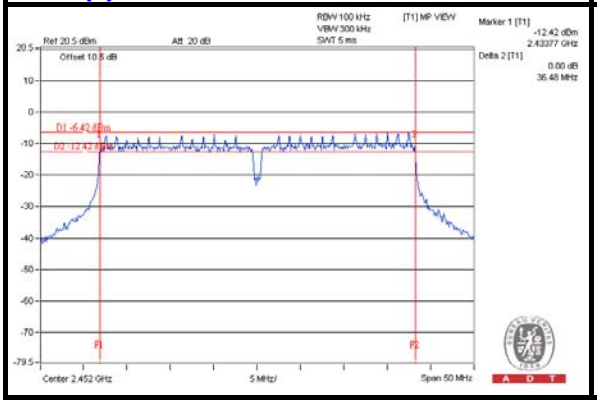


Chain(0) : CH6



Chain(0) : CH9

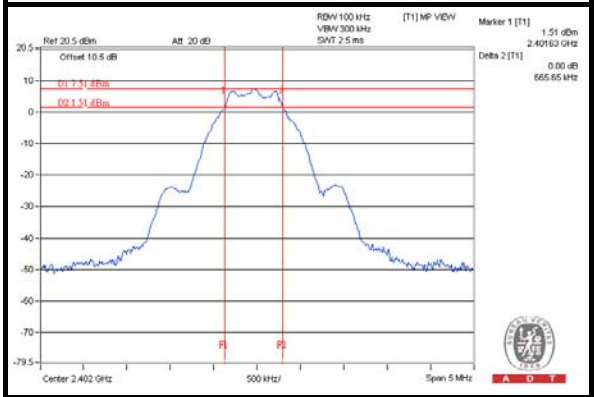


Chain(1) : CH3	Chain(1) : CH6
	
Chain(1) : CH9	
	

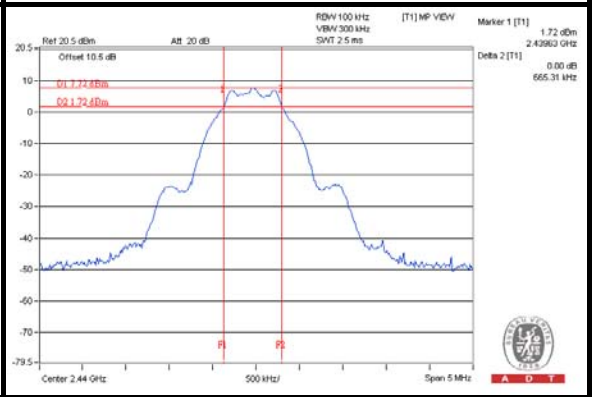
BT_LE-GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)
0	2402	0.67
19	2440	0.67
39	2480	0.66

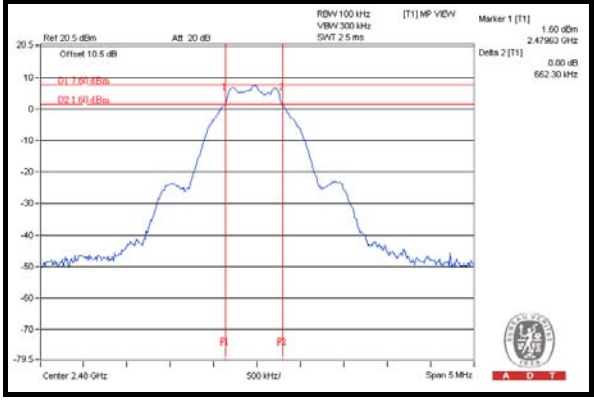
CH0



CH19



CH39



4.5 OCCUPIED BANDWIDTH MEASUREMENT

4.5.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

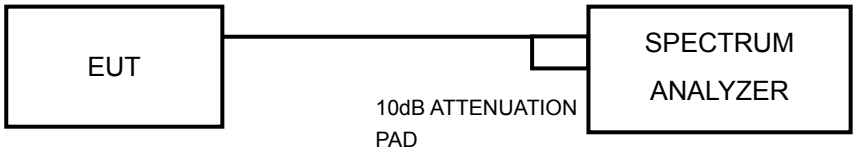
Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10 to 19, 2013

4.5.2 TEST PROCEDURE

1. Set RBW ≥ 1% of the emission bandwidth.
2. Set the VBW > 3 × RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Record the 99% emission bandwidth.

4.5.3 TEST SETUP



4.5.4 EUT OPERATING CONDITIONS

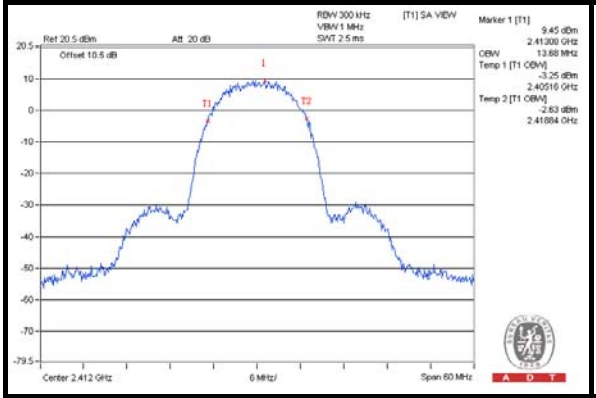
Same as Item 4.1.6

4.5.5 TEST RESULTS

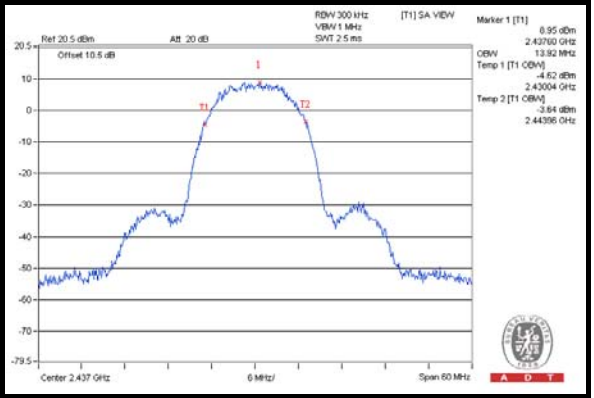
802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	13.68	13.68
6	2437	13.92	13.92
11	2462	13.92	13.68

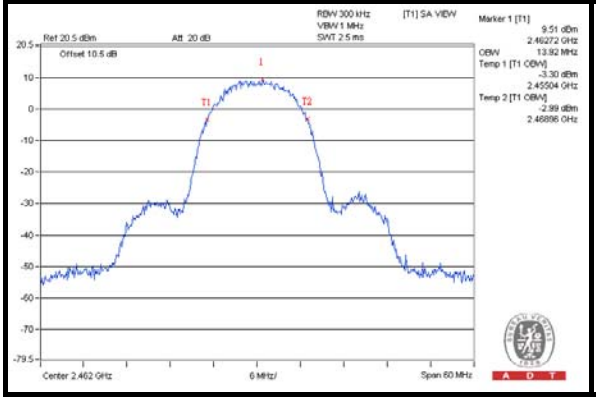
Chain(0) : CH1

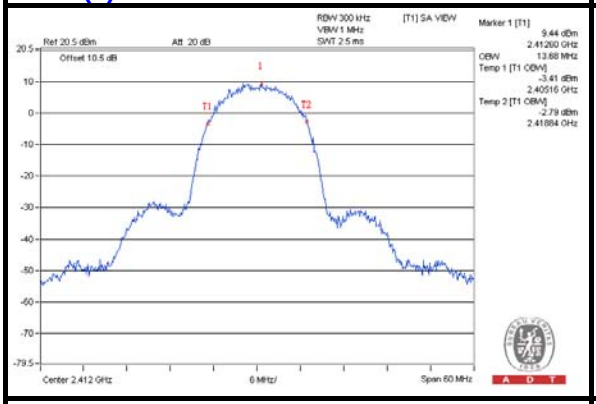
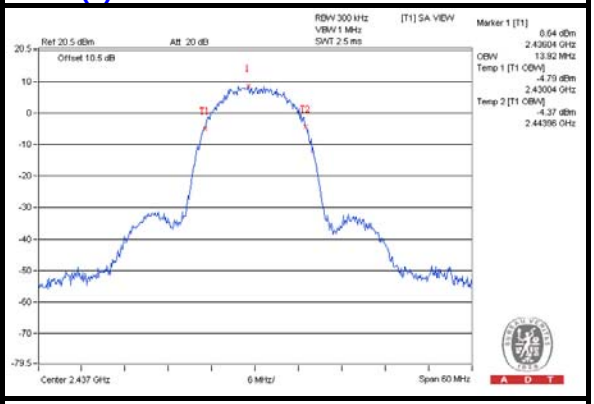
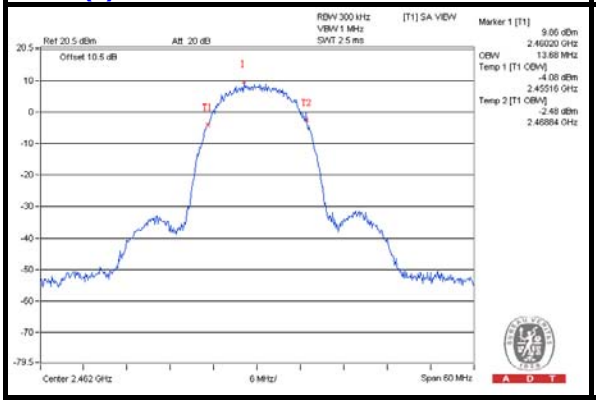


Chain(0) : CH6



Chain(0) : CH11

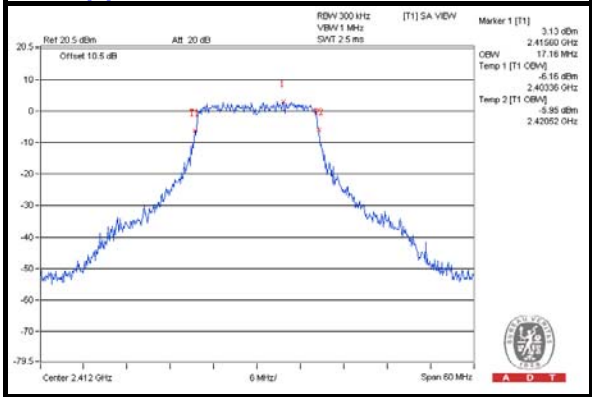


Chain(1) : CH1	Chain(1) : CH6
	
Chain(1) : CH11	
	

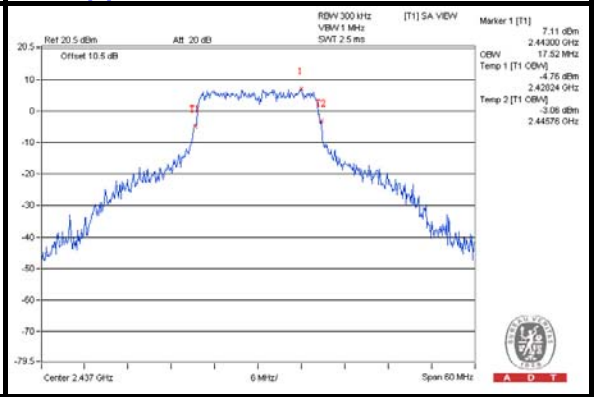
802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	17.16	16.80
6	2437	17.52	17.28
11	2462	16.92	16.80

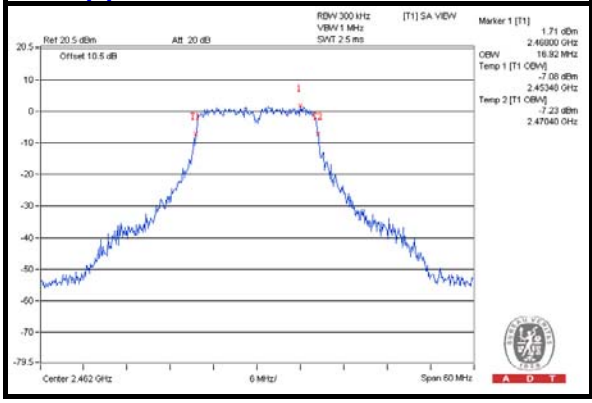
Chain(0) : CH1



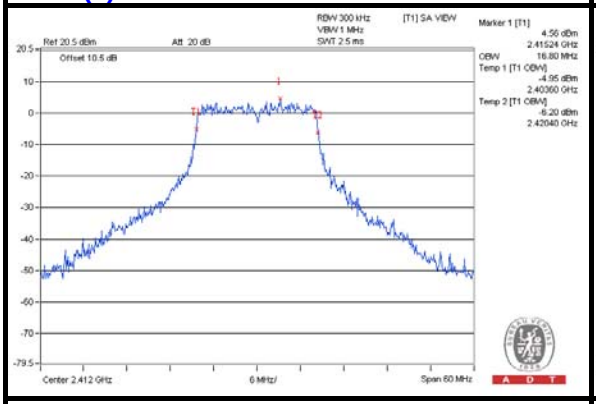
Chain(0) : CH6



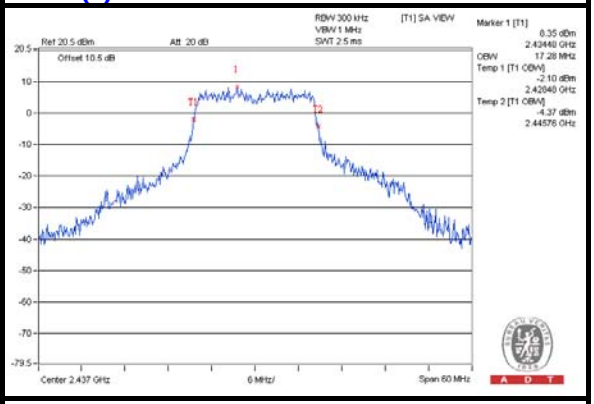
Chain(0) : CH11



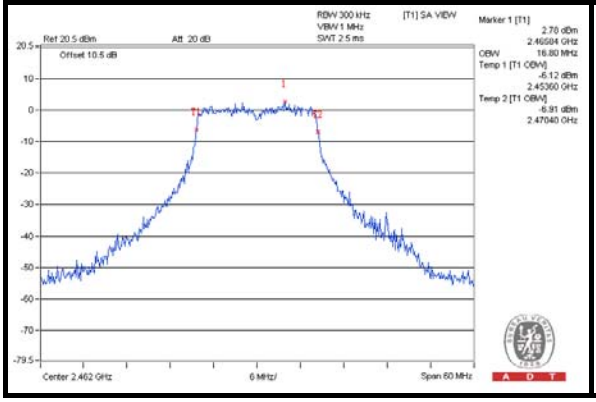
Chain(1) : CH1



Chain(1) : CH6



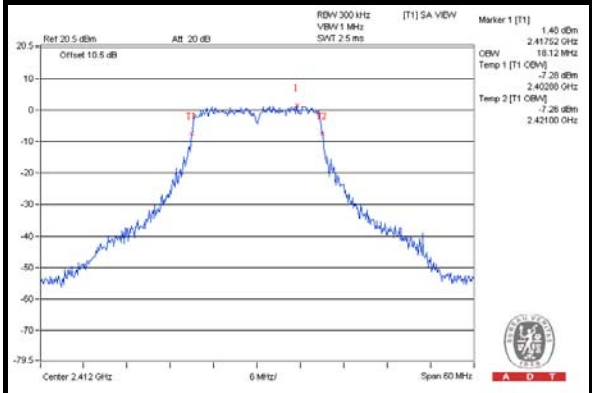
Chain(1) : CH11



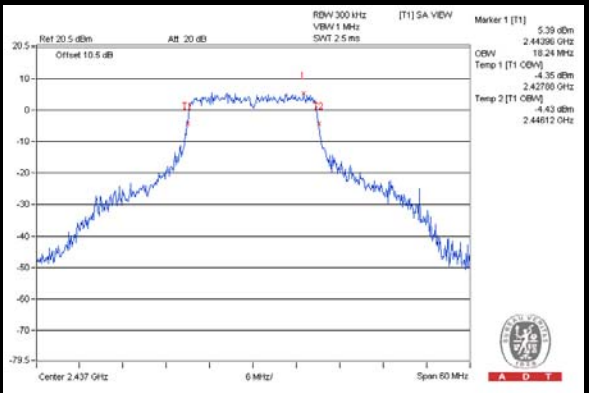
802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	18.12	18.00
6	2437	18.24	18.12
11	2462	18.24	18.12

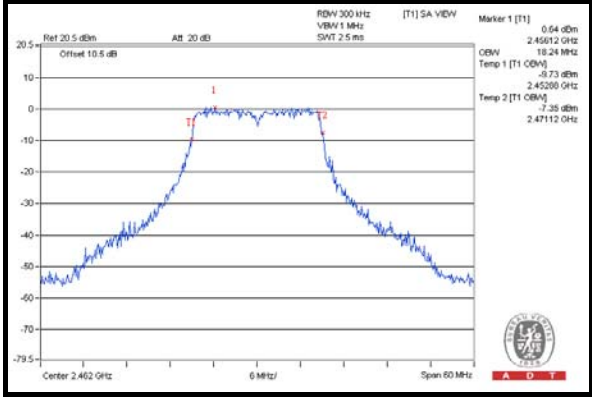
Chain(0) : CH1

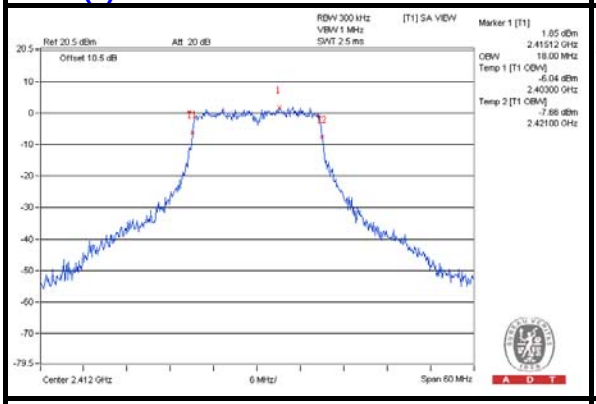
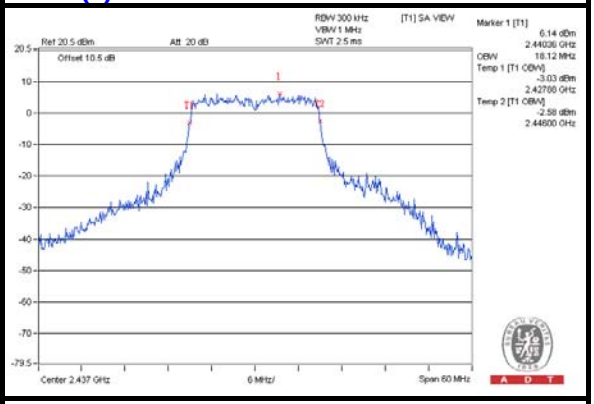
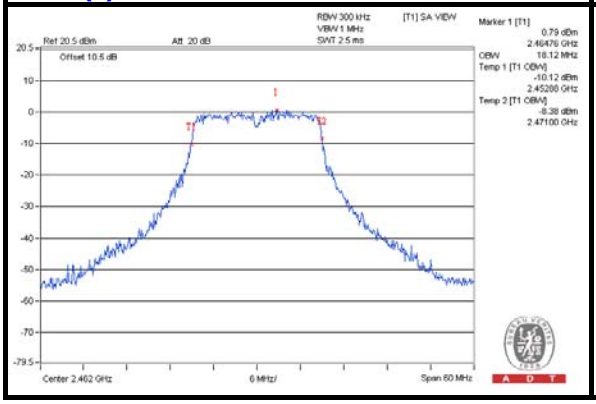


Chain(0) : CH6



Chain(0) : CH11

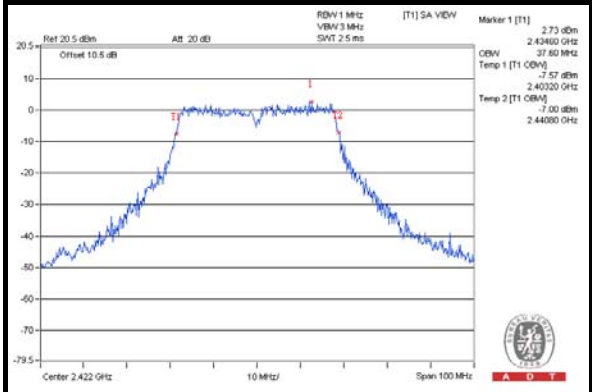


Chain(1) : CH1	Chain(1) : CH6
	
Chain(1) : CH11	
	

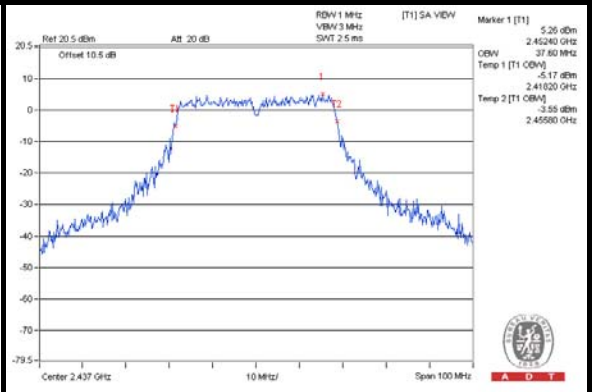
802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
3	2422	37.60	37.20
6	2437	37.60	37.20
9	2452	38.00	37.40

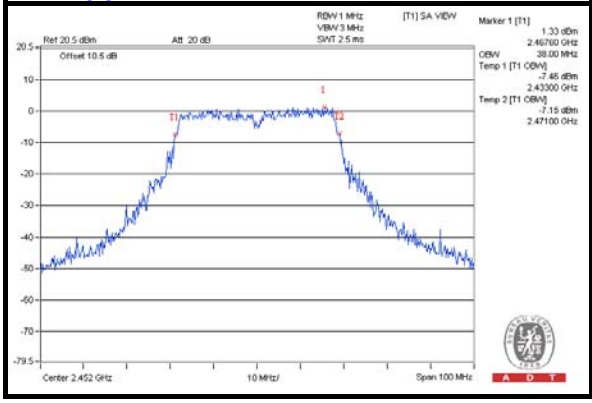
Chain(0) : CH3



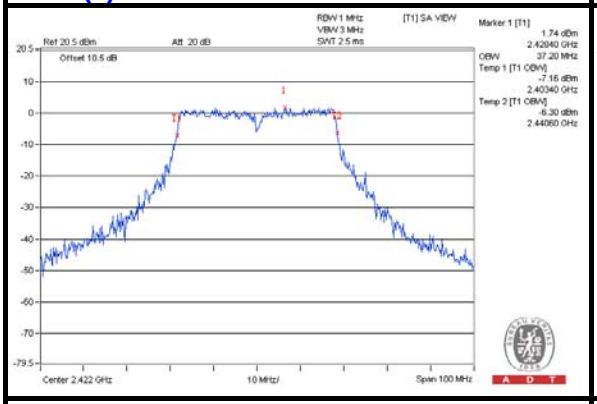
Chain(0) : CH6



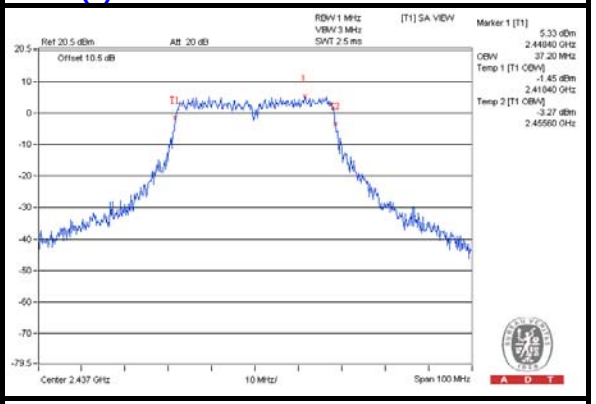
Chain(0) : CH9



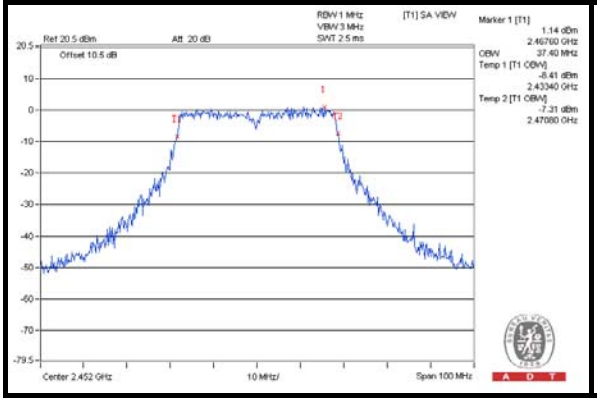
Chain(1) : CH3



Chain(1) : CH6



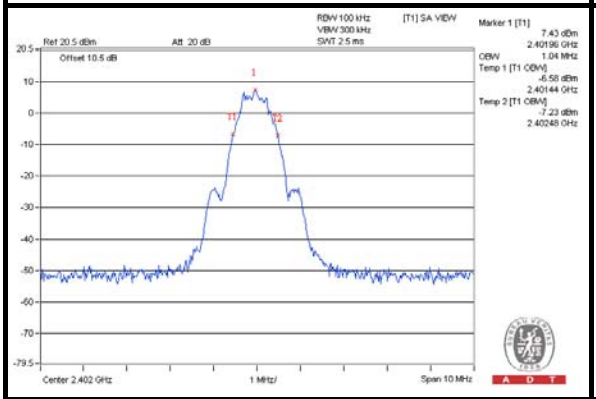
Chain(1) : CH9



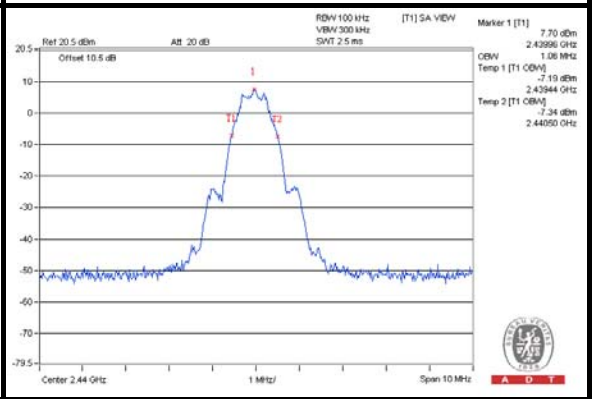
BT_LE-GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
0	2402	1.04
19	2440	1.06
39	2480	1.04

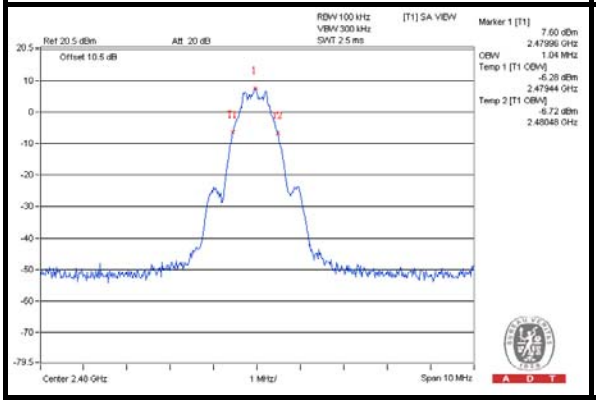
CH0



CH19



CH39



4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10 to 19, 2013

4.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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 –Unwanted Emission Level

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

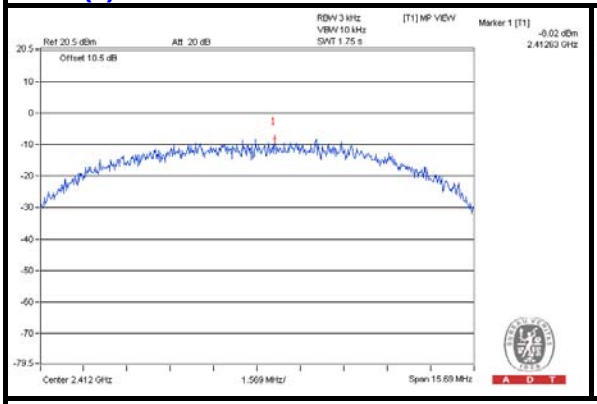
Same as Item 4.1.6

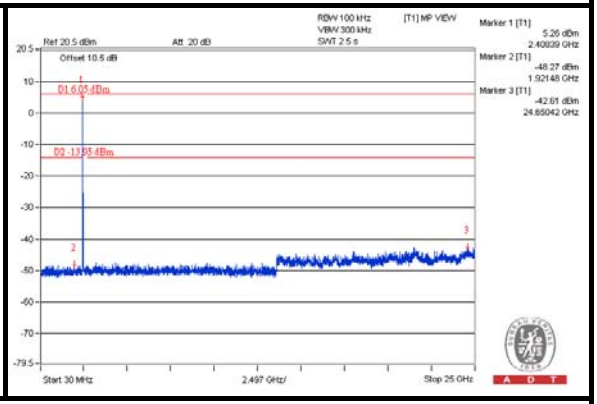
4.6.6 TEST RESULTS

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

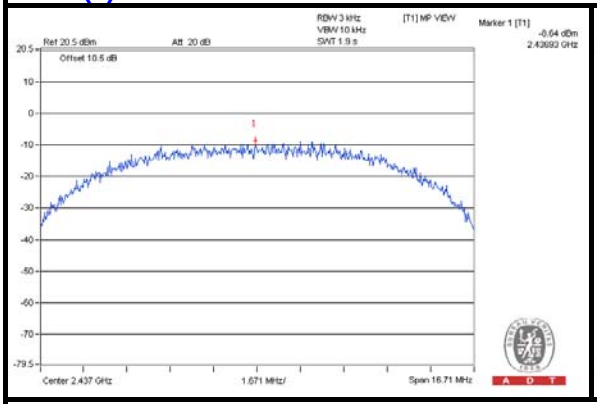
802.11b

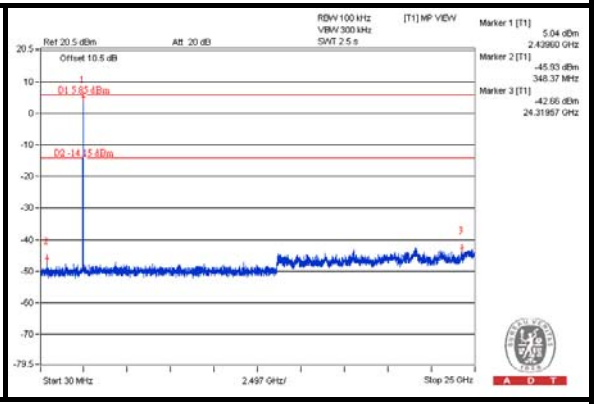
Chain(0) : CH 1



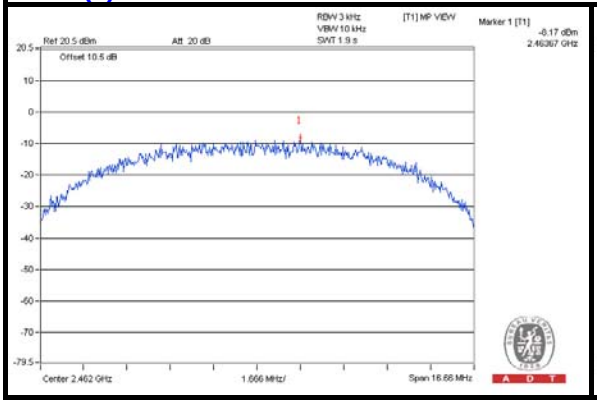


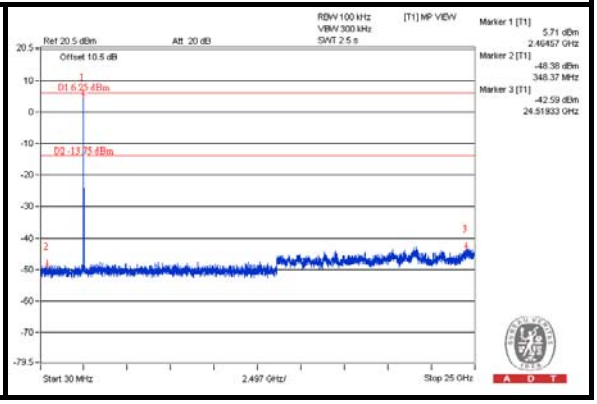
Chain(0) : CH 6





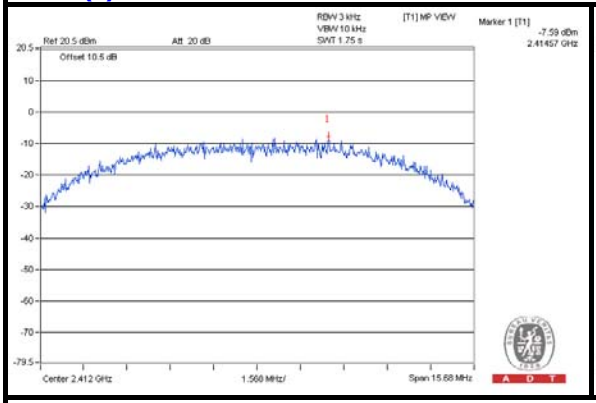
Chain(0) : CH 11

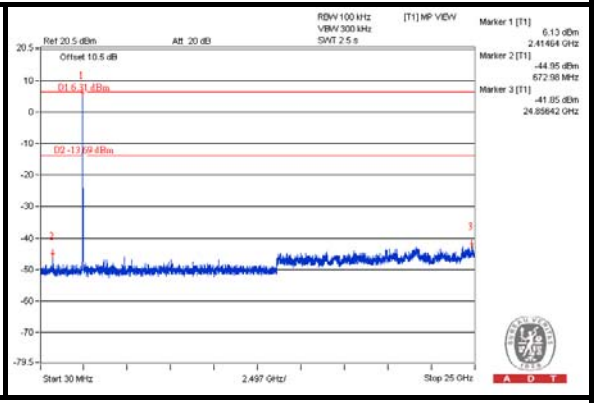




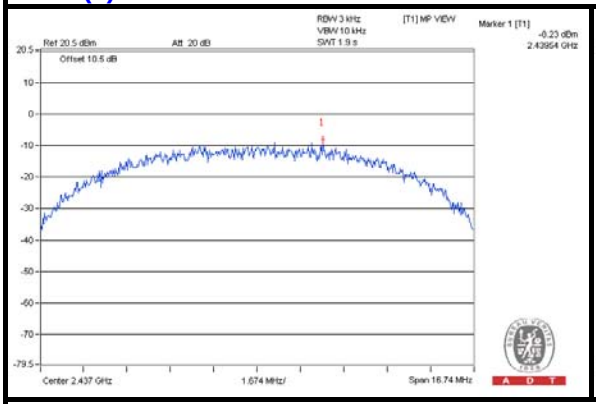
802.11b

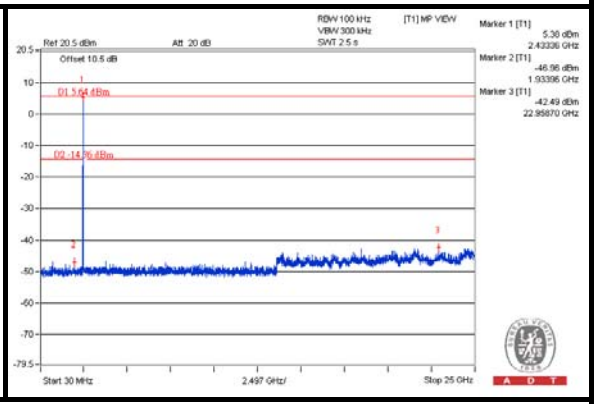
Chain(1) : CH 1



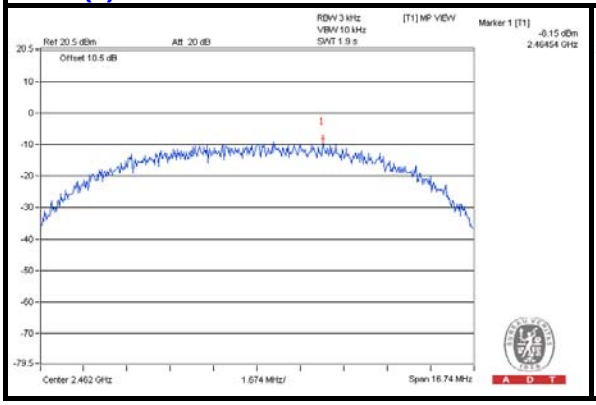


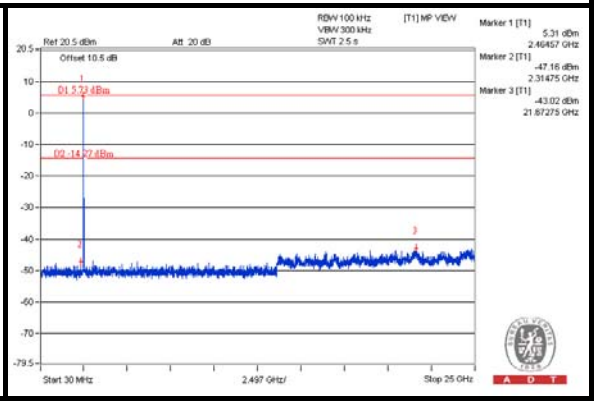
Chain(1) : CH 6





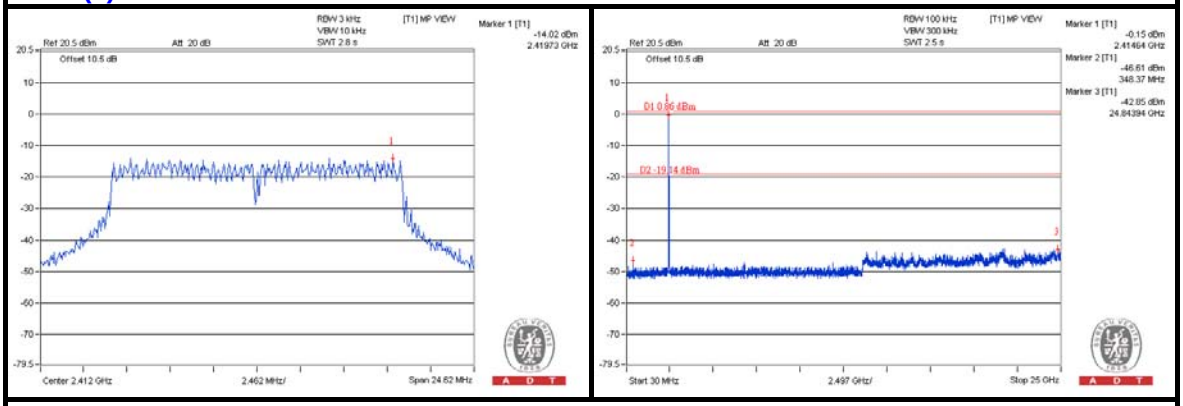
Chain(1) : CH 11





802.11g

Chain(0) : CH 1



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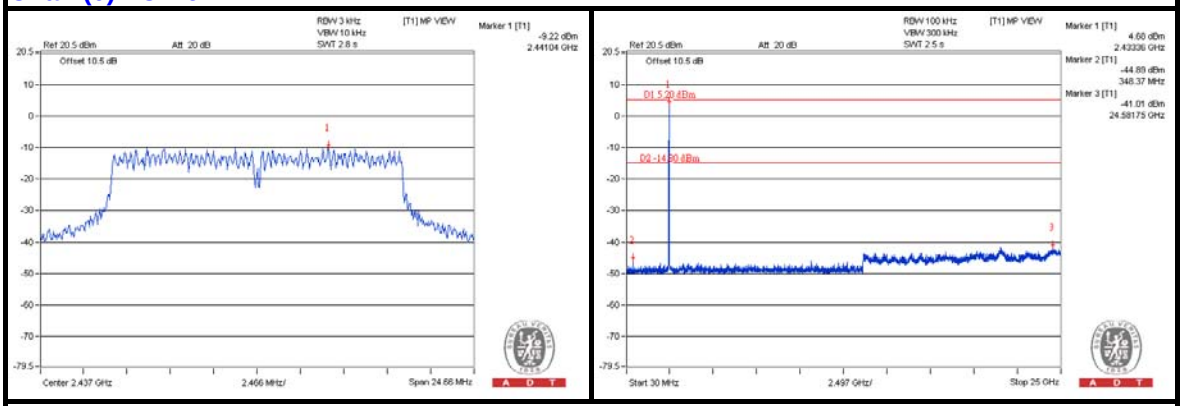
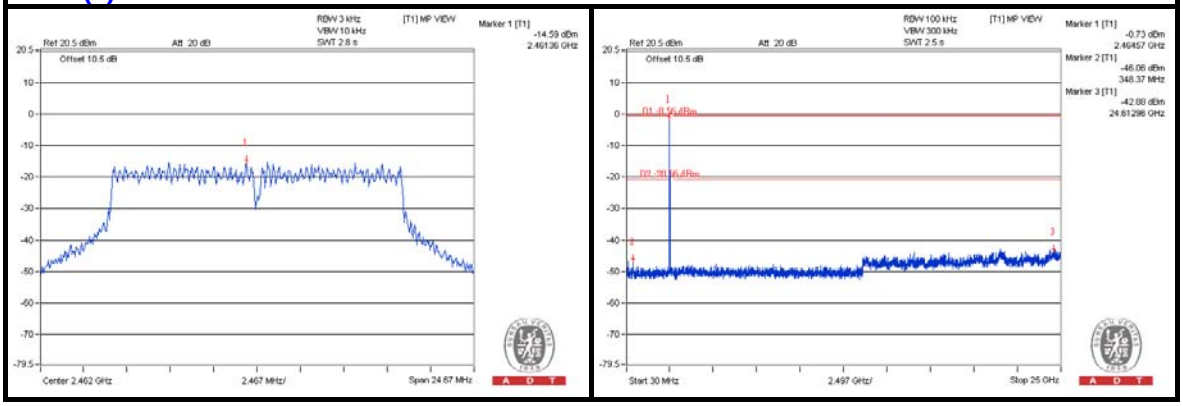
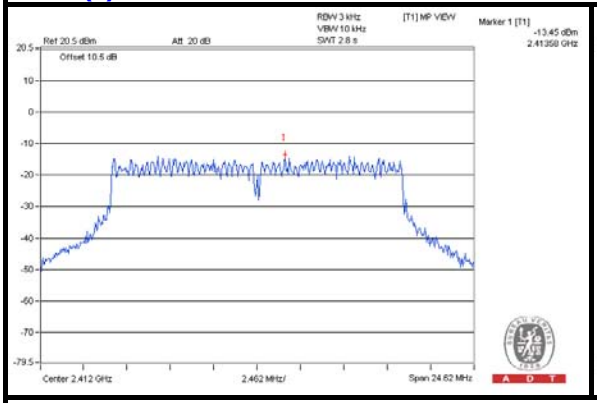


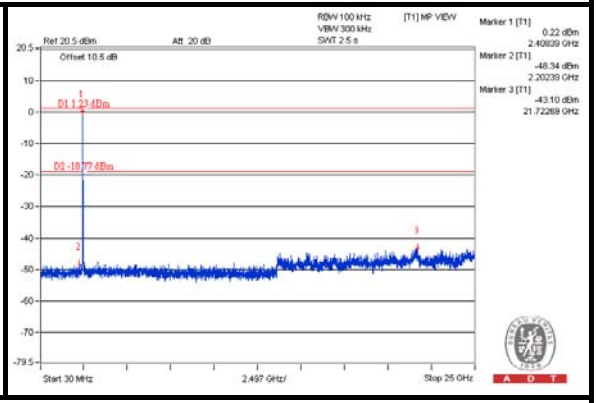
Chain(0) : CH 11



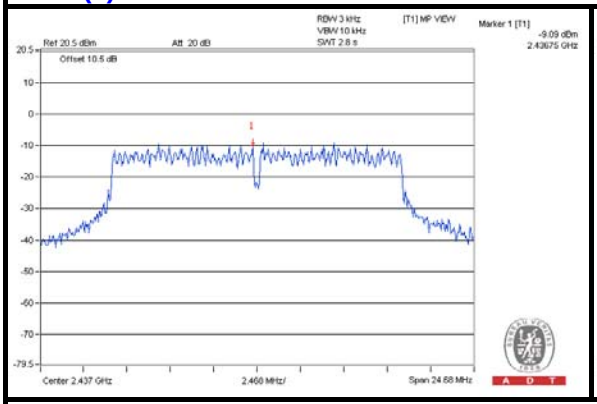
802.11g

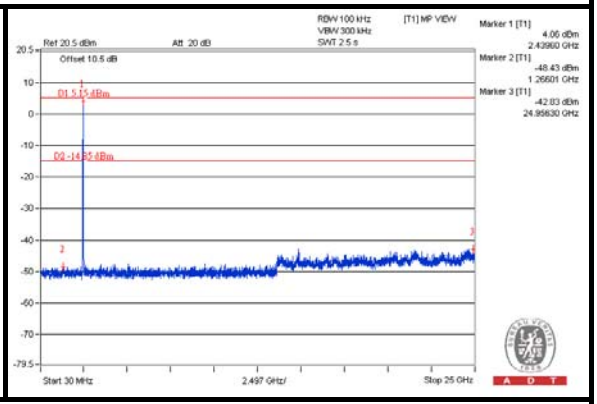
Chain(1) : CH 1



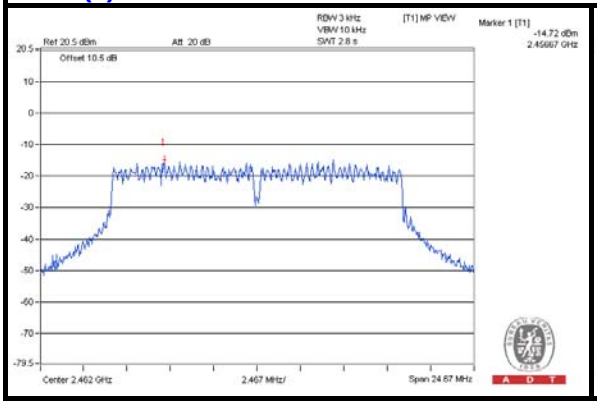


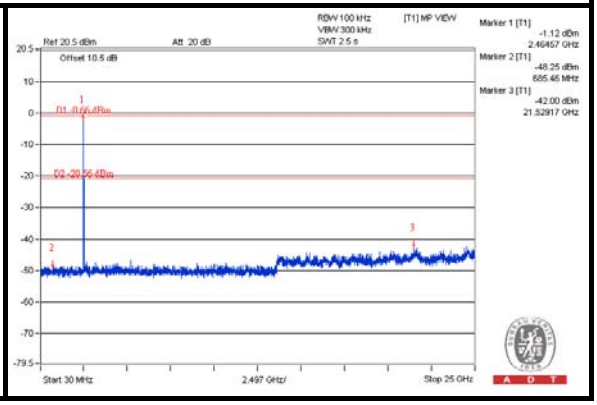
Chain(1) : CH 6





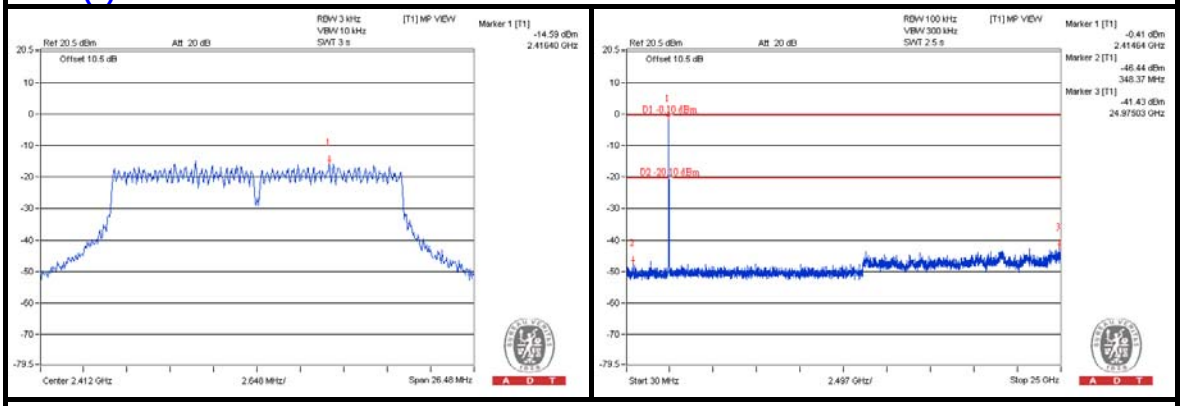
Chain(1) : CH 11



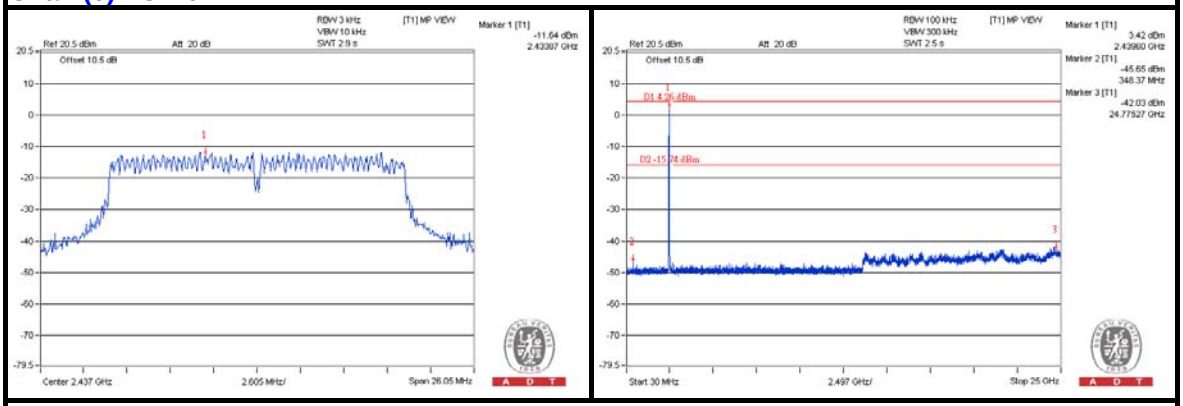


802.11n (HT20)

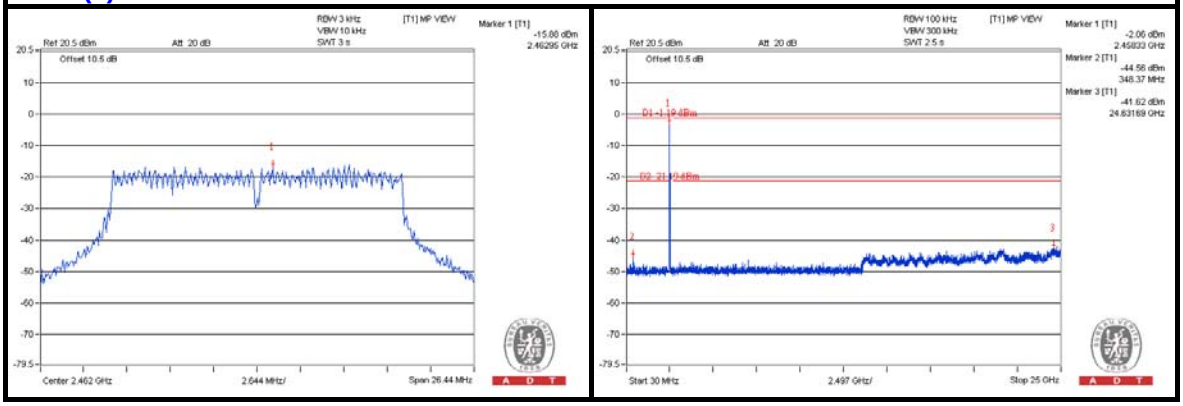
Chain(0) : CH 1



Chain(0) : CH 6

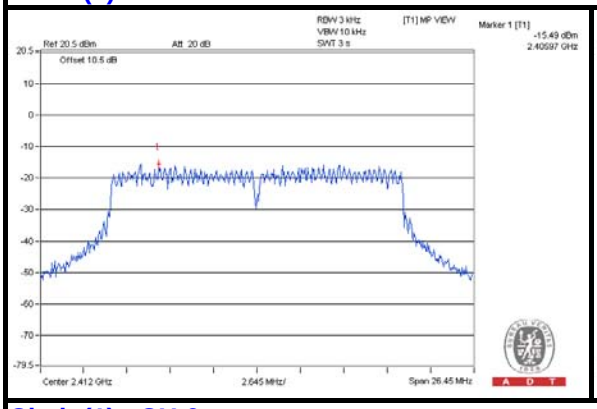


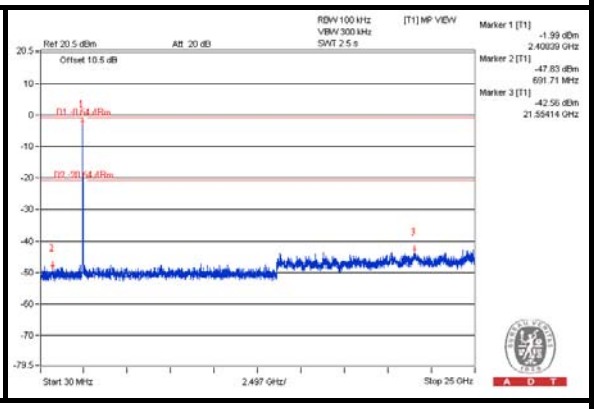
Chain(0) : CH 11



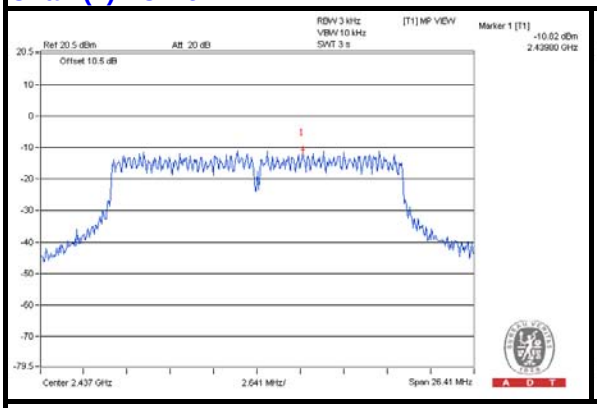
802.11n (HT20)

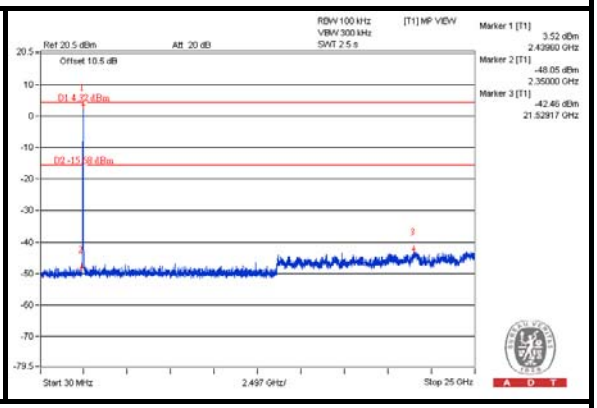
Chain(1) : CH 1



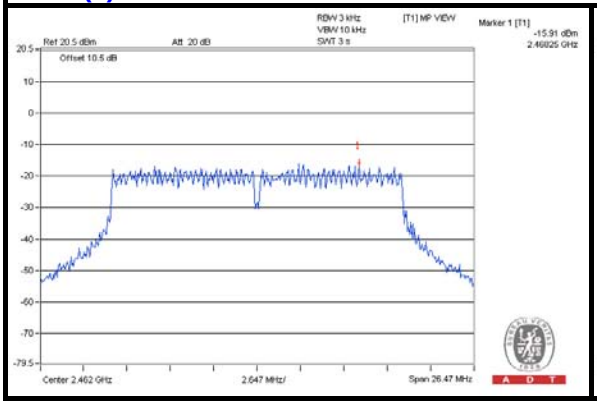


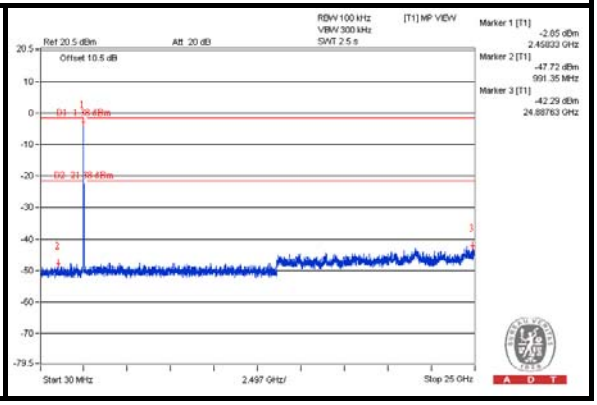
Chain(1) : CH 6





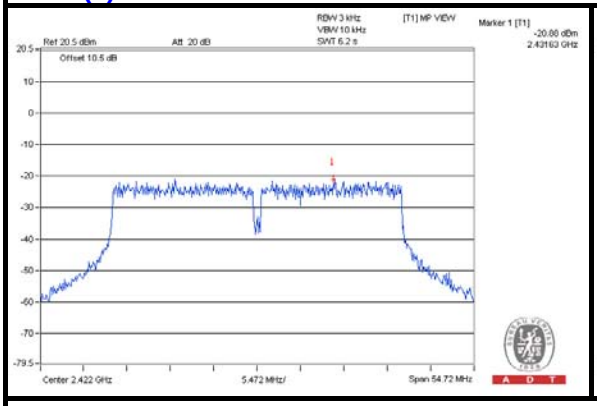
Chain(1) : CH 11

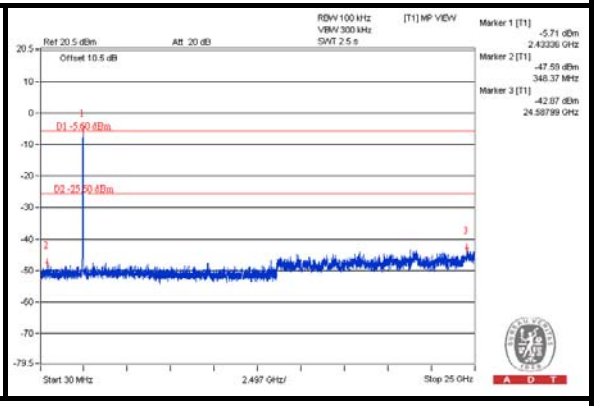




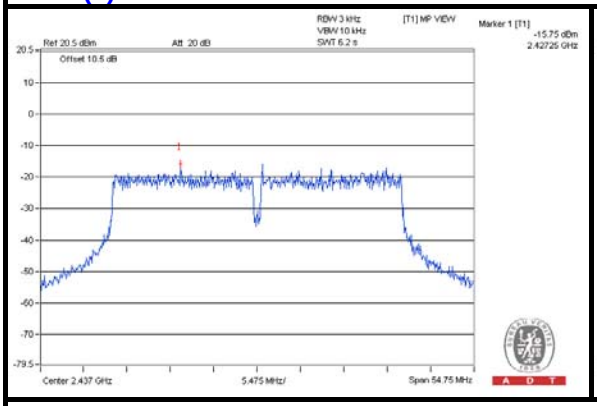
802.11n (HT40)

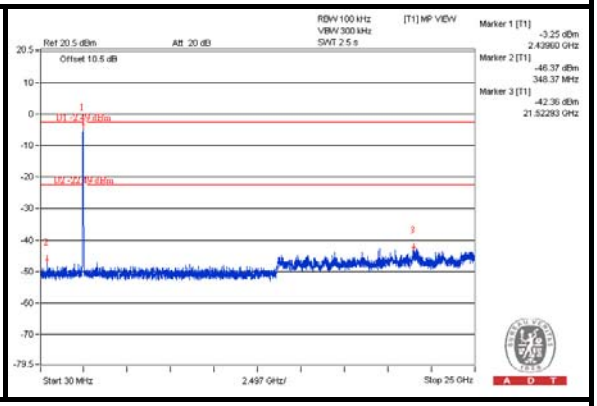
Chain(0) : CH 3



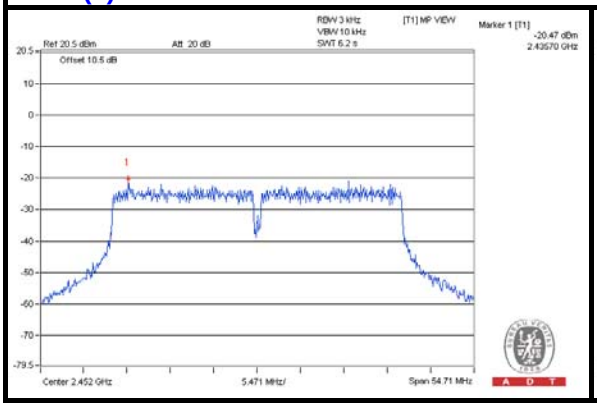


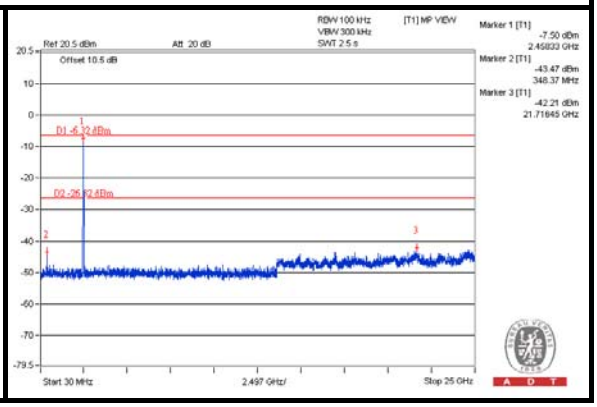
Chain(0) : CH 6





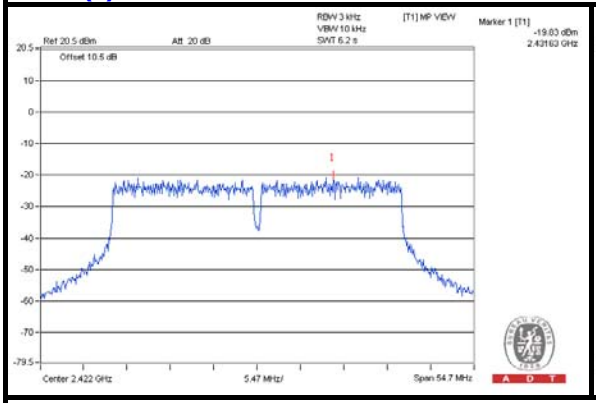
Chain(0) : CH 9

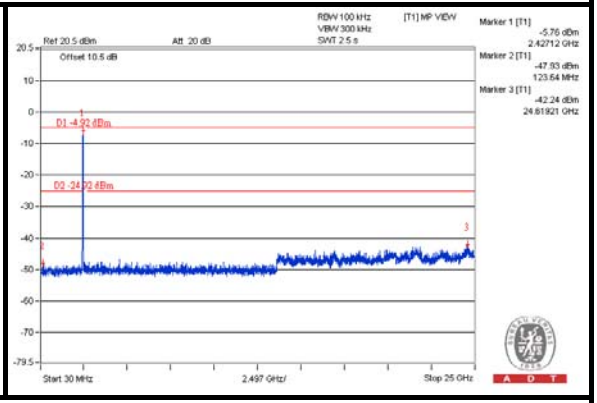




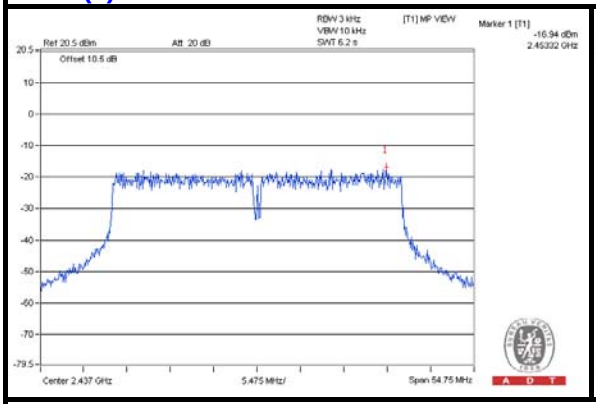
802.11n (HT40)

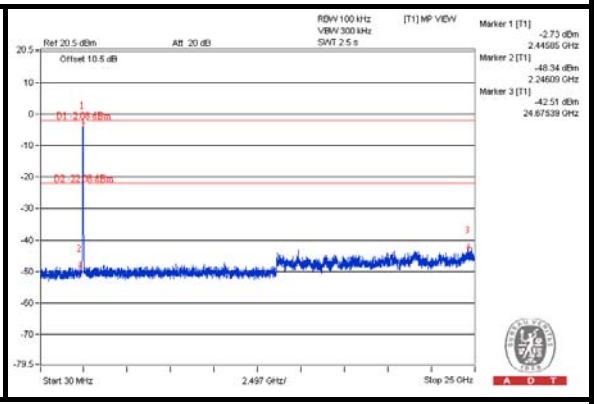
Chain(1) : CH 3



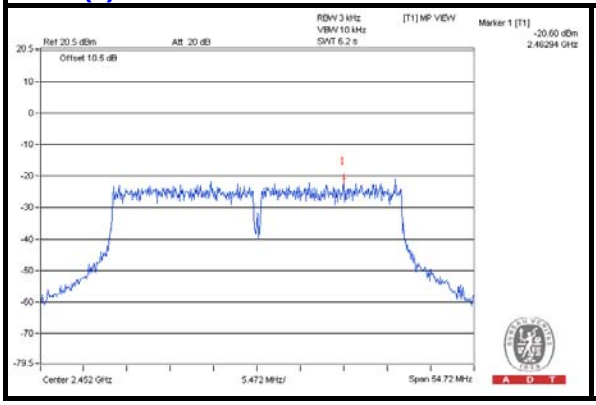


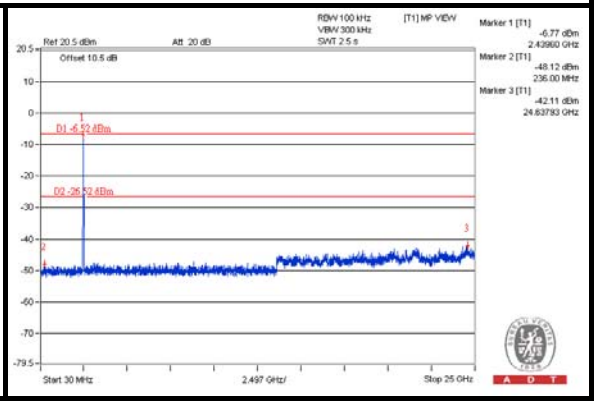
Chain(1) : CH 6





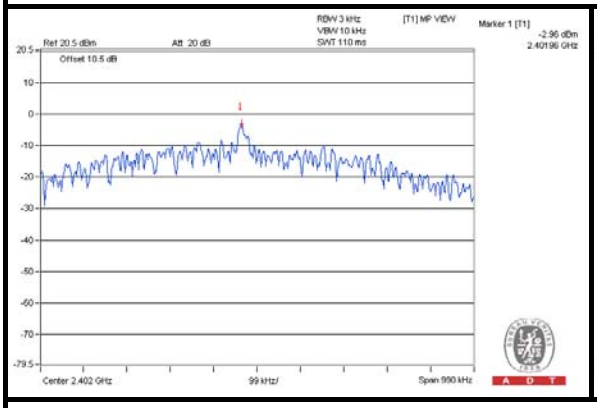
Chain(1) : CH 9

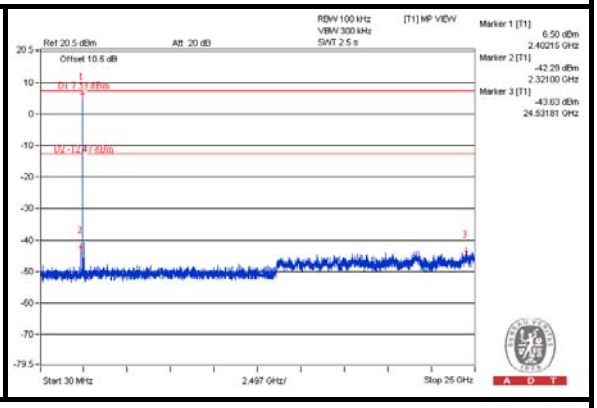




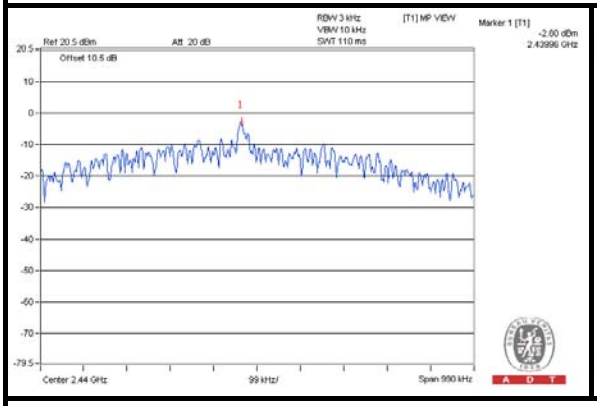
BT_LE-GFSK

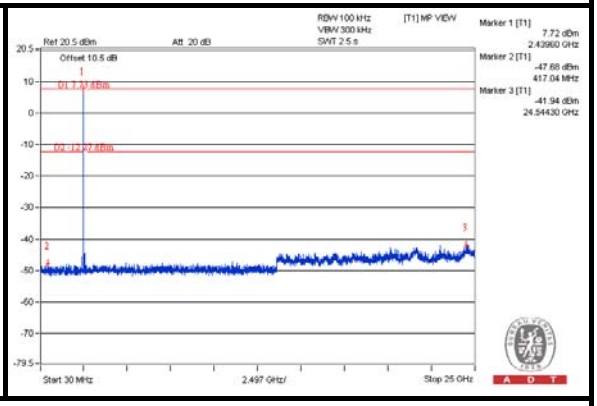
CH 0



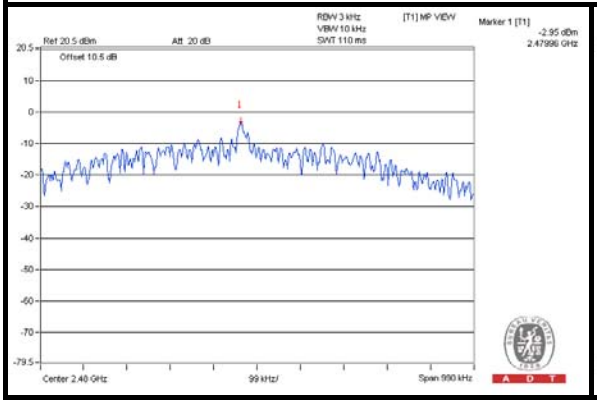


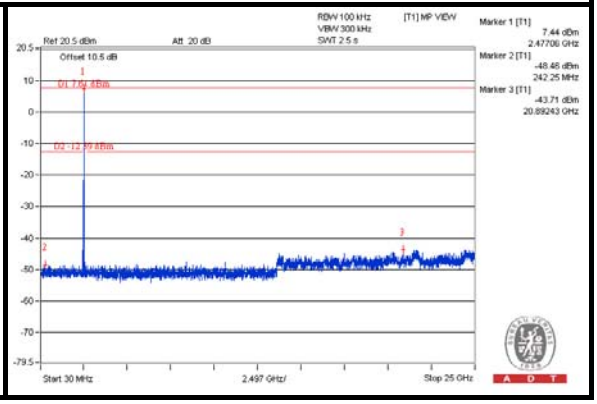
CH 19





CH 39





4.7 UNWANTED EMISSION MEASUREMENT(RADIATED VERSUS CONDUCTED)

4.7.1 LIMITS OF UNWANTED 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.

4.7.2 TEST INSTRUMENTS

Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29,2013	Jan. 28,2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 26, 2012	June 25, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Apr. 09, 2012	Apr. 08, 2013
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 19, 2012	Nov. 18, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Feb. 26, 2013

Above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: June 06, 2013

4.7.3 TEST PROCEDURES

For Below 1GHz test:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

For Above 1GHz test:

Following FCC KDB 558074 D01 DTS Meas. Guidance :

Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT
c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater
d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)

e. For all of Radiation emission test

e-1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

e-3. 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.

e-4. 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-5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

e-6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin 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 of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

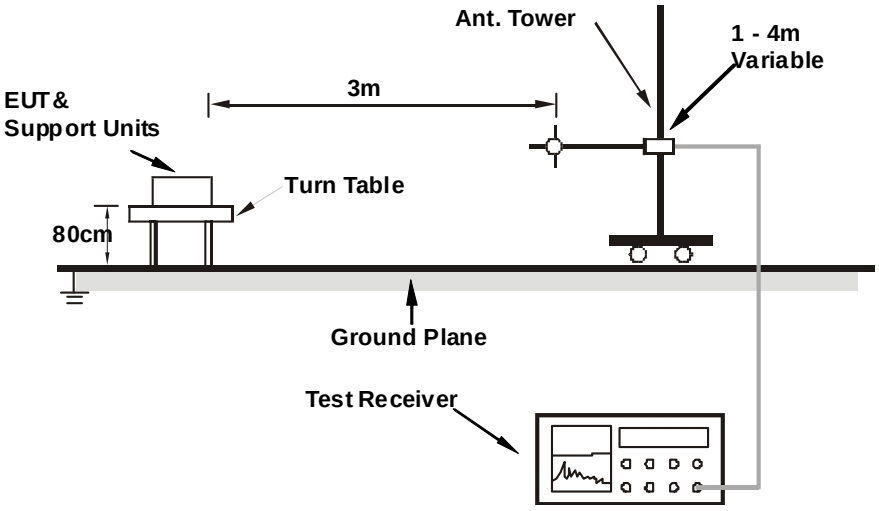
4.7.4 DEVIATION FROM TEST STANDARD

No deviation

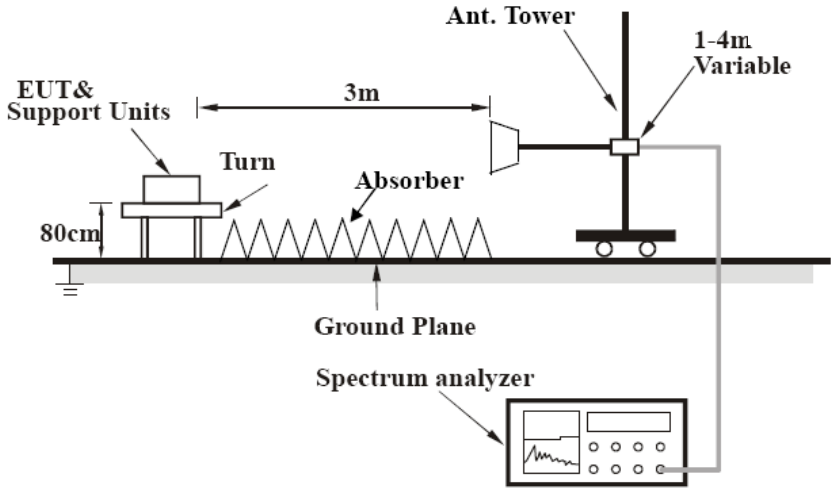
4.7.5 TEST SETUP

For radiated configuration:

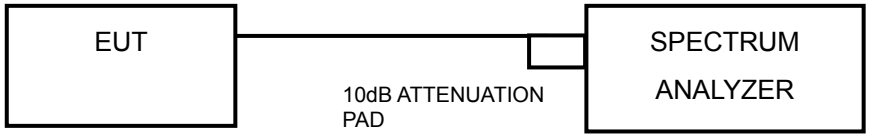
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



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

4.7.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “artgui.exe Ver2.3” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.7.7 TEST RESULTS (WLAN MODE, RADIATED MEASUREMENT)

Radiated versus Conducted Measurement	
☐ Conducted measurement	☒ Radiated measurement
For Radiated measurement: The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) For Conducted measurement: The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 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	300.00	40.6 QP	46.0	-5.4	1.00 H	34	25.29	15.29
2	366.56	43.4 QP	46.0	-2.7	2.00 H	268	26.35	17.00
3	398.06	42.8 QP	46.0	-3.2	2.00 H	261	24.97	17.81
4	497.65	41.7 QP	46.0	-4.4	2.00 H	360	21.32	20.33
5	600.33	43.9 QP	46.0	-2.1	1.00 H	268	21.27	22.66
6	796.08	43.1 QP	46.0	-2.9	1.50 H	266	17.22	25.84
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	99.99	33.8 QP	43.5	-9.7	2.00 V	301	23.93	9.88
2	299.89	38.8 QP	46.0	-7.2	1.50 V	264	23.55	15.29
3	366.56	39.6 QP	46.0	-6.4	2.00 V	294	22.58	17.00
4	398.06	38.9 QP	46.0	-7.1	2.00 V	294	21.07	17.81
5	**600.32**	**44.4 QP**	**46.0**	**-1.6**	**1.00 V**	**220**	**21.70**	**22.66**
6	799.98	42.5 QP	46.0	-3.5	1.00 V	299	16.55	25.92

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.

Radiated test was done with 50ohm terminator on antenna port

ABOVE 1GHz DATA

802.11b

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

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	4824.00	48.2 PK	74.0	-25.8	1.00 H	359	41.81	6.39
2	4824.00	37.5 AV	54.0	-16.5	1.00 H	359	31.11	6.39
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	4824.00	49.0 PK	74.0	-25.0	1.00 V	124	42.61	6.39
2	4824.00	39.5 AV	54.0	-14.5	1.00 V	124	33.11	6.39

REMARKS:

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

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	4874.00	48.4 PK	74.0	-25.6	1.45 H	346	41.98	6.42
2	4874.00	39.0 AV	54.0	-15.0	1.45 H	346	32.58	6.42
3	7311.00	57.1 PK	74.0	-16.9	1.50 H	356	46.13	10.97
4	7311.00	45.9 AV	54.0	-8.1	1.50 H	356	34.93	10.97
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	4874.00	49.3 PK	74.0	-24.7	1.26 V	129	42.88	6.42
2	4874.00	40.9 AV	54.0	-13.1	1.26 V	129	34.48	6.42
3	7311.00	58.1 PK	74.0	-15.9	1.15 V	93	47.13	10.97
4	7311.00	48.2 AV	54.0	-5.8	1.15 V	93	37.23	10.97

REMARKS:

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

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	4924.00	49.3 PK	74.0	-24.7	1.53 H	347	42.86	6.44
2	4924.00	39.1 AV	54.0	-14.9	1.53 H	347	32.66	6.44
3	7386.00	57.9 PK	74.0	-16.1	1.50 H	360	46.71	11.19
4	7386.00	46.5 AV	54.0	-7.5	1.50 H	360	35.31	11.19
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	4924.00	50.1 PK	74.0	-23.9	1.00 V	26	43.66	6.44
2	4924.00	41.4 AV	54.0	-12.6	1.00 V	26	34.96	6.44
3	7386.00	58.5 PK	74.0	-15.5	1.00 V	146	47.31	11.19
4	7386.00	48.3 AV	54.0	-5.7	1.00 V	146	37.11	11.19

REMARKS:

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

802.11g

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

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	4824.00	47.1 PK	74.0	-26.9	1.45 H	345	40.71	6.39
2	4824.00	33.4 AV	54.0	-20.6	1.45 H	345	27.01	6.39
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	4824.00	48.0 PK	74.0	-26.0	1.21 V	355	41.61	6.39
2	4824.00	35.3 AV	54.0	-18.7	1.21 V	355	28.91	6.39

REMARKS:

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

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	4874.00	47.4 PK	74.0	-26.6	1.55 H	359	40.98	6.42
2	4874.00	33.3 AV	54.0	-20.7	1.55 H	359	26.88	6.42
3	7311.00	58.5 PK	74.0	-15.5	1.54 H	344	47.53	10.97
4	7311.00	44.1 AV	54.0	-9.9	1.54 H	344	33.13	10.97
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	4874.00	47.8 PK	74.0	-26.2	1.18 V	360	41.38	6.42
2	4874.00	35.4 AV	54.0	-18.6	1.18 V	360	28.98	6.42
3	7311.00	60.7 PK	74.0	-13.3	1.91 V	143	49.73	10.97
4	7311.00	47.5 AV	54.0	-6.5	1.91 V	143	36.53	10.97

REMARKS:

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

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	4924.00	46.6 PK	74.0	-27.4	1.53 H	355	40.16	6.44
2	4924.00	32.7 AV	54.0	-21.3	1.53 H	355	26.26	6.44
3	7386.00	58.4 PK	74.0	-15.6	1.45 H	360	47.21	11.19
4	7386.00	44.3 AV	54.0	-9.7	1.45 H	360	33.11	11.19
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	4924.00	47.0 PK	74.0	-27.0	1.23 V	344	40.56	6.44
2	4924.00	34.8 AV	54.0	-19.2	1.23 V	344	28.36	6.44
3	7386.00	60.1 PK	74.0	-13.9	1.18 V	82	48.91	11.19
4	7386.00	47.0 AV	54.0	-7.0	1.18 V	82	35.81	11.19

REMARKS:

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

802.11n (HT20)

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

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	4824.00	46.9 PK	74.0	-27.1	1.55 H	350	40.51	6.39
2	4824.00	33.1 AV	54.0	-20.9	1.55 H	350	26.71	6.39
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	4824.00	48.1 PK	74.0	-25.9	1.21 V	357	41.71	6.39
2	4824.00	35.3 AV	54.0	-18.7	1.21 V	357	28.91	6.39

REMARKS:

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

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	4874.00	47.2 PK	74.0	-26.8	1.47 H	360	40.78	6.42
2	4874.00	33.7 AV	54.0	-20.3	1.47 H	360	27.28	6.42
3	7311.00	57.6 PK	74.0	-16.4	1.49 H	345	46.63	10.97
4	7311.00	43.6 AV	54.0	-10.4	1.49 H	345	32.63	10.97
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	4874.00	48.1 PK	74.0	-25.9	1.24 V	341	41.68	6.42
2	4874.00	35.3 AV	54.0	-18.7	1.24 V	341	28.88	6.42
3	7311.00	59.5 PK	74.0	-14.5	1.33 V	255	48.53	10.97
4	7311.00	46.5 AV	54.0	-7.5	1.33 V	255	35.53	10.97

REMARKS:

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

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	4924.00	47.6 PK	74.0	-26.4	1.52 H	357	41.16	6.44
2	4924.00	33.7 AV	54.0	-20.3	1.52 H	357	27.26	6.44
3	7386.00	56.4 PK	74.0	-17.6	1.53 H	352	45.21	11.19
4	7386.00	42.4 AV	54.0	-11.6	1.53 H	352	31.21	11.19
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	4924.00	47.6 PK	74.0	-26.4	1.21 V	360	41.16	6.44
2	4924.00	34.8 AV	54.0	-19.2	1.21 V	360	28.36	6.44
3	7386.00	58.9 PK	74.0	-15.1	1.17 V	263	47.71	11.19
4	7386.00	46.0 AV	54.0	-8.0	1.17 V	263	34.81	11.19

REMARKS:

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

802.11n (HT40)

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

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	4844.00	46.8 PK	74.0	-27.2	1.50 H	359	40.40	6.40
2	4844.00	33.2 AV	54.0	-20.8	1.50 H	359	26.80	6.40
3	7266.00	56.5 PK	74.0	-17.5	1.50 H	359	45.63	10.87
4	7266.00	42.8 AV	54.0	-11.2	1.50 H	359	31.93	10.87
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	4844.00	47.9 PK	74.0	-26.1	1.17 V	360	41.50	6.40
2	4844.00	35.2 AV	54.0	-18.8	1.17 V	360	28.80	6.40
3	7266.00	57.3 PK	74.0	-16.7	1.14 V	277	46.43	10.87
4	7266.00	44.8 AV	54.0	-9.2	1.14 V	277	33.93	10.87

REMARKS:

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

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	4874.00	47.0 PK	74.0	-27.0	1.50 H	359	40.58	6.42
2	4874.00	33.3 AV	54.0	-20.7	1.50 H	359	26.88	6.42
3	7311.00	57.4 PK	74.0	-16.6	1.50 H	359	46.43	10.97
4	7311.00	43.3 AV	54.0	-10.7	1.50 H	359	32.33	10.97
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	4874.00	47.8 PK	74.0	-26.2	1.18 V	357	41.38	6.42
2	4874.00	35.3 AV	54.0	-18.7	1.18 V	357	28.88	6.42
3	7311.00	58.2 PK	74.0	-15.8	1.16 V	228	47.23	10.97
4	7311.00	45.3 AV	54.0	-8.7	1.16 V	228	34.33	10.97

REMARKS:

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

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	4904.00	47.9 PK	74.0	-26.1	1.50 H	359	41.47	6.43
2	4904.00	33.8 AV	54.0	-20.2	1.50 H	359	27.37	6.43
3	7356.00	56.3 PK	74.0	-17.7	1.50 H	359	45.21	11.09
4	7356.00	42.2 AV	54.0	-11.8	1.50 H	359	31.11	11.09
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	4904.00	48.7 PK	74.0	-25.3	1.20 V	360	42.27	6.43
2	4904.00	35.8 AV	54.0	-18.2	1.20 V	360	29.37	6.43
3	7356.00	57.1 PK	74.0	-16.9	1.55 V	322	46.01	11.09
4	7356.00	44.2 AV	54.0	-9.8	1.55 V	322	33.11	11.09

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.

4.7.8 TEST RESULTS (BT <LE> MODE, RADIATED MEASUREMENT)

Radiated versus Conducted Measurement	
☐ Conducted measurement	☒ Radiated measurement
For Radiated measurement: The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) For Conducted measurement: The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

BELOW 1GHz WORST-CASE DATA

BT_LE-GFSK

CHANNEL	TX Channel 0	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	300.00	40.4 QP	46.0	-5.6	1.00 H	34	25.14	15.29
2	366.56	43.2 QP	46.0	-2.8	2.00 H	268	26.16	17.00
3	398.06	42.8 QP	46.0	-3.2	2.00 H	261	24.97	17.81
4	497.65	41.7 QP	46.0	-4.4	2.00 H	360	21.32	20.33
5	600.33	43.9 QP	46.0	-2.1	1.00 H	268	21.20	22.66
6	796.08	42.9 QP	46.0	-3.1	1.50 H	266	17.06	25.84
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	99.99	33.8 QP	43.5	-9.7	2.00 V	301	23.89	9.88
2	299.89	38.5 QP	46.0	-7.5	1.50 V	264	23.23	15.29
3	366.56	39.3 QP	46.0	-6.7	2.00 V	294	22.32	17.00
4	398.06	38.5 QP	46.0	-7.5	2.00 V	294	20.73	17.81
5	**600.32**	**44.2 QP**	**46.0**	**-1.9**	**1.00 V**	**220**	**21.49**	**22.66**
6	799.98	42.2 QP	46.0	-3.8	1.00 V	299	16.31	25.92

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.

Radiated test was done with 50ohm terminator on antenna port

ABOVE 1GHz DATA

BT_LE-GFSK

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2322.00	60.4 PK	74.0	-13.6	1.41 H	75	64.12	-3.72
2	2322.00	51.1 AV	54.0	-2.9	1.41 H	75	54.82	-3.72
3	*2402.00	103.0 PK			1.41 H	89	106.42	-3.42
4	*2402.00	98.7 AV			1.41 H	89	102.12	-3.42
5	4804.00	47.2 PK	74.0	-26.8	1.22 H	330	40.72	6.48
6	4804.00	35.9 AV	54.0	-18.1	1.22 H	330	29.42	6.48
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	2322.00	58.6 PK	74.0	-15.4	1.28 V	119	62.32	-3.72
2	2322.00	48.4 AV	54.0	-5.6	1.28 V	119	52.12	-3.72
3	*2402.00	101.1 PK			1.24 V	122	104.52	-3.42
4	*2402.00	96.6 AV			1.24 V	122	100.02	-3.42
5	4804.00	46.4 PK	74.0	-27.6	1.26 V	176	39.92	6.48
6	4804.00	35.7 AV	54.0	-18.3	1.26 V	176	29.22	6.48

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.

CHANNEL	TX Channel 19	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	2361.06	60.0 PK	74.0	-14.0	1.44 H	119	63.57	-3.57
2	2361.06	51.5 AV	54.0	-2.5	1.44 H	119	55.07	-3.57
3	*2440.00	103.9 PK			1.41 H	122	107.20	-3.30
4	*2440.00	99.7 AV			1.41 H	122	103.00	-3.30
5	4880.00	46.8 PK	74.0	-27.2	1.22 H	173	40.27	6.53
6	4880.00	36.3 AV	54.0	-17.7	1.22 H	173	29.77	6.53
7	7320.00	53.5 PK	74.0	-20.5	1.18 H	192	42.37	11.13
8	7320.00	43.6 AV	54.0	-10.4	1.18 H	192	32.47	11.13
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	2361.06	58.4 PK	74.0	-15.6	1.00 V	117	61.97	-3.57
2	2361.06	49.0 AV	54.0	-5.0	1.00 V	117	52.57	-3.57
3	*2440.00	101.5 PK			1.00 V	117	104.80	-3.30
4	*2440.00	97.3 AV			1.00 V	117	100.60	-3.30
5	4880.00	46.5 PK	74.0	-27.5	1.22 V	186	39.97	6.53
6	4880.00	36.0 AV	54.0	-18.0	1.22 V	186	29.47	6.53
7	7320.00	54.2 PK	74.0	-19.8	1.22 V	186	43.07	11.13
8	7320.00	44.1 AV	54.0	-9.9	1.22 V	186	32.97	11.13

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.

CHANNEL	TX Channel 39	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	*2480.00	104.5 PK			1.37 H	87	107.67	-3.17
2	*2480.00	100.2 AV			1.37 H	87	103.37	-3.17
3	2483.50	57.5 PK	74.0	-16.5	1.37 H	87	60.66	-3.16
4	2483.50	45.9 AV	54.0	-8.1	1.37 H	87	49.06	-3.16
5	4960.00	46.5 PK	74.0	-27.5	1.21 H	189	39.96	6.54
6	4960.00	36.0 AV	54.0	-18.0	1.21 H	189	29.46	6.54
7	7440.00	53.1 PK	74.0	-20.9	1.21 H	179	41.59	11.51
8	7440.00	43.5 AV	54.0	-10.5	1.21 H	179	31.99	11.51
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	*2480.00	102.0 PK			1.20 V	129	105.17	-3.17
2	*2480.00	97.9 AV			1.20 V	129	101.07	-3.17
3	2483.50	56.0 PK	74.0	-18.0	1.19 V	186	59.16	-3.16
4	2483.50	43.3 AV	54.0	-10.7	1.19 V	186	46.46	-3.16
5	4960.00	47.0 PK	74.0	-27.0	1.27 V	182	40.46	6.54
6	4960.00	36.3 AV	54.0	-17.7	1.27 V	182	29.76	6.54
7	7440.00	53.7 PK	74.0	-20.3	1.20 V	170	42.19	11.51
8	7440.00	43.6 AV	54.0	-10.4	1.20 V	170	32.09	11.51

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.

4.7.9 TEST RESULTS (WLAN MODE, CONDUCTED MEASUREMENT)

Radiated versus Conducted Measurement	
☒ Conducted measurement	☐ Radiated measurement

For Radiated measurement:

The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation)

For Conducted measurement:

The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

Conducted Measurement Factor
a. The composite gain will be used when signal support the correlated signal. (Composite gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.63dBi) b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. c. For the band edge the gain for the specific band may have been used. d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For f = 30 – 1000 MHz, add 4.7 dB. Note: The conducted emission test was considered some factor to compute test result.

ABOVE 1GHz DATA

802.11b

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
1	1606.25 PK	-47.85	-44.94	-43.15	-21.26	-21.89	PASS
	1606.25 AV	-57.55	-51.49	-50.53	-41.26	-9.27	PASS
	4825 PK	-39.76	-40.41	-37.06	-21.26	-15.8	PASS
	4821.875 AV	-46.19	-46.14	-43.15	-41.26	-1.89	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
1	2386 PK	-38.13	-35.74	-33.76	-21.26	-12.5	PASS
	2387.14 AV	-50.7	-47.13	-45.55	-41.26	-4.29	PASS
	2498.48 PK	-39.55	-38.74	-36.12	-21.26	-14.86	PASS
	2498.48 AV	-52.31	-51.82	-49.05	-41.26	-7.79	PASS

802.11b

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
6	1625 PK	-47.15	-46.1	-43.58	-21.26	-22.32	PASS
	1621.875 AV	-57.31	-52.35	-51.15	-41.26	-9.89	PASS
	4875 PK	-40.3	-42.11	-38.1	-21.26	-16.84	PASS
	4875 AV	-51.78	-47.88	-46.4	-41.26	-5.14	PASS
	7315.625 PK	-43.28	-42.36	-39.79	-21.26	-18.53	PASS
	7312.5 AV	-53.25	-53.05	-50.14	-41.26	-8.88	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
6	2355.22 PK	-40.71	-42.46	-38.49	-21.26	-17.23	PASS
	2359.78 AV	-53.73	-54.62	-51.14	-41.26	-9.88	PASS
	2486.32 PK	-41.06	-38.8	-36.77	-21.26	-15.51	PASS
	2485.18 AV	-52.98	-53.22	-50.09	-41.26	-8.83	PASS

802.11b

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
11	4925 PK	-39.73	-41.41	-37.48	-21.26	-16.22	PASS
	4925 AV	-48.54	-53.66	-47.38	-41.26	-6.12	PASS
	7387.5 PK	-41.78	-42.38	-39.06	-21.26	-17.8	PASS
	7387.5 AV	-52.89	-53.05	-49.96	-41.26	-8.7	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
11	2381.06 PK	-41.49	-41.14	-38.3	-21.26	-17.04	PASS
	2383.72 AV	-53.31	-54.38	-50.8	-41.26	-9.54	PASS
	2484.8 PK	-36.5	-38.19	-34.25	-21.26	-12.99	PASS
	2483.66 AV	-50.61	-51.26	-47.91	-41.26	-6.65	PASS

802.11g

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
1	1606.25 PK	-48.05	-45.27	-43.43	-21.26	-22.17	PASS
	1606.25 AV	-57.55	-50.69	-49.88	-41.26	-8.62	PASS
	4821.875 PK	-43.52	-42.64	-40.05	-21.26	-18.79	PASS
	4821.875 AV	-53.99	-54.04	-51	-41.26	-9.74	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
1	2389.8 PK	-26	-25.28	-22.61	-21.26	-1.35	PASS
	2389.8 AV	-45.61	-44.19	-41.83	-41.26	-0.57	PASS
	2493.92 PK	-38.42	-39.29	-35.82	-21.26	-14.56	PASS
	2493.92 AV	-52.21	-51.95	-49.07	-41.26	-7.81	PASS

802.11g

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
6	1625 PK	-47.73	-44.47	-42.79	-21.26	-21.53	PASS
	1621.875 AV	-57.62	-52.13	-51.05	-41.26	-9.79	PASS
	4875 PK	-43.12	-36.54	-35.68	-21.26	-14.42	PASS
	4875 AV	-53.47	-48.78	-47.51	-41.26	-6.25	PASS
	7315.625 PK	-42.33	-42.05	-39.18	-21.26	-17.92	PASS
	7306.25 AV	-53.08	-52.64	-49.84	-41.26	-8.58	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
6	2388.66 PK	-39.26	-33.56	-32.52	-21.26	-11.26	PASS
	2389.8 AV	-53.01	-52.4	-49.68	-41.26	-8.42	PASS
	2487.08 PK	-38.76	-35.75	-33.99	-21.26	-12.73	PASS
	2483.66 AV	-52.15	-50.98	-48.52	-41.26	-7.26	PASS

802.11g

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
11	4921.875 PK	-44.53	-43.56	-41.01	-21.26	-19.75	PASS
	4915.625 AV	-54.76	-54.62	-51.68	-41.26	-10.42	PASS
	7387.5 PK	-42.09	-42.38	-39.22	-21.26	-17.96	PASS
	7387.5 AV	-53.12	-53.46	-50.28	-41.26	-9.02	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
11	2379.16 PK	-42.06	-41.29	-38.65	-21.26	-17.39	PASS
	2380.68 AV	-54.31	-54.95	-51.61	-41.26	-10.35	PASS
	2483.66 PK	-26.82	-26.51	-23.65	-21.26	-2.39	PASS
	2483.66 AV	-45.35	-47.39	-43.24	-41.26	-1.98	PASS

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
1	1606.25 PK	-48.85	-45.33	-43.73	-21.26	-22.47	PASS
	1606.25 AV	-57.64	-52.03	-50.98	-41.26	-9.72	PASS
	4818.75 PK	-43.68	-42.78	-40.2	-21.26	-18.94	PASS
	4818.75 AV	-54.4	-54.12	-51.25	-41.26	-9.99	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
1	2388.66 PK	-32.25	-24.51	-23.83	-21.26	-2.57	PASS
	2389.8 AV	-46.14	-44.67	-42.33	-41.26	-1.07	PASS
	2499.62 PK	-40.3	-39.56	-36.9	-21.26	-15.64	PASS
	2495.82 AV	-53.12	-52.78	-49.94	-41.26	-8.68	PASS

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
6	1621.875 PK	-48.99	-44.7	-43.33	-21.26	-22.07	PASS
	1621.875 AV	-57.56	-51.43	-50.48	-41.26	-9.22	PASS
	4871.875 PK	-43.13	-39.6	-38.01	-21.26	-16.75	PASS
	4871.875 AV	-53.34	-51.36	-49.23	-41.26	-7.97	PASS
	7309.375 PK	-42.43	-42.96	-39.68	-21.26	-18.42	PASS
	7306.25 AV	-53.09	-53.06	-50.06	-41.26	-8.8	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
6	2389.04 PK	-40.69	-36.58	-35.16	-21.26	-13.9	PASS
	2389.8 AV	-53.38	-52.7	-50.02	-41.26	-8.76	PASS
	2484.04 PK	-39.07	-35.1	-33.64	-21.26	-12.38	PASS
	2483.66 AV	-52.38	-51.29	-48.79	-41.26	-7.53	PASS

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
11	4925 PK	-44.22	-43.64	-40.91	-21.26	-19.65	PASS
	4915.625 AV	-54.89	-54.4	-51.63	-41.26	-10.37	PASS
	7378.125 PK	-43.26	-42.98	-40.11	-21.26	-18.85	PASS
	7390.625 AV	-53.06	-53.46	-50.25	-41.26	-8.99	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
11	2381.44 PK	-41.87	-42.07	-38.96	-21.26	-17.7	PASS
	2380.3 AV	-54.6	-54.99	-51.78	-41.26	-10.52	PASS
	2483.66 PK	-27.1	-27.32	-24.2	-21.26	-2.94	PASS
	2483.66 AV	-45.3	-47.55	-43.27	-41.26	-2.01	PASS

802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
3	1612.5 PK	-48.06	-46.13	-43.98	-21.26	-22.72	PASS
	1612.5 AV	-57.61	-53.4	-52	-41.26	-10.74	PASS
	4834.375 PK	-43.22	-43	-40.1	-21.26	-18.84	PASS
	4834.375 AV	-54.88	-54.41	-51.63	-41.26	-10.37	PASS
	7262.5 PK	-42.8	-42.7	-39.74	-21.26	-18.48	PASS
	7256.25 AV	-53.62	-53.38	-50.49	-41.26	-9.23	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
3	2389.8 PK	-25.48	-25.29	-22.37	-21.26	-1.11	PASS
	2389.8 AV	-46	-44.7	-42.29	-41.26	-1.03	PASS
	2485.18 PK	-35.92	-30.68	-29.54	-21.26	-8.28	PASS
	2499.62 AV	-55.33	-55.09	-52.2	-41.26	-10.94	PASS

802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
6	1621.875 PK	-47.98	-46.4	-44.11	-21.26	-22.85	PASS
	1621.875 AV	-57.56	-52.04	-50.97	-41.26	-9.71	PASS
	4871.875 PK	-43.55	-44.31	-40.9	-21.26	-19.64	PASS
	4875 AV	-54.86	-54.48	-51.66	-41.26	-10.4	PASS
	7309.375 PK	-43.03	-42.19	-39.58	-21.26	-18.32	PASS
	7306.25 AV	-53.43	-53.53	-50.47	-41.26	-9.21	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
6	2386.38 PK	-26.48	-26.72	-23.59	-21.26	-2.33	PASS
	2389.8 AV	-46.84	-45.05	-42.84	-41.26	-1.58	PASS
	2484.04 PK	-27.09	-25.03	-22.93	-21.26	-1.67	PASS
	2483.66 AV	-44.34	-45.91	-42.04	-41.26	-0.78	PASS

802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
9	4912.5 PK	-44.4	-44.29	-41.33	-21.26	-20.07	PASS
	4906.25 AV	-54.9	-54.92	-51.9	-41.26	-10.64	PASS
	7362.5 PK	-42.68	-42.76	-39.71	-21.26	-18.45	PASS
	7365.625 AV	-53.66	-53.3	-50.47	-41.26	-9.21	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
9	2386.38 PK	-26.48	-26.72	-23.59	-21.26	-2.33	PASS
	2389.8 AV	-46.84	-45.05	-42.84	-41.26	-1.58	PASS
	2484.04 PK	-27.09	-25.03	-22.93	-21.26	-1.67	PASS
	2483.66 AV	-44.34	-45.91	-42.04	-41.26	-0.78	PASS

4.8 AC POWER LINE CONDUCTED EMISSION MEASUREMENT

4.8.1 LIMITS OF AC POWER LINE CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 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 0.50 MHz.

4.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 08,2012	June 07,2013
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Mar. 14, 2013

4.8.3 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.

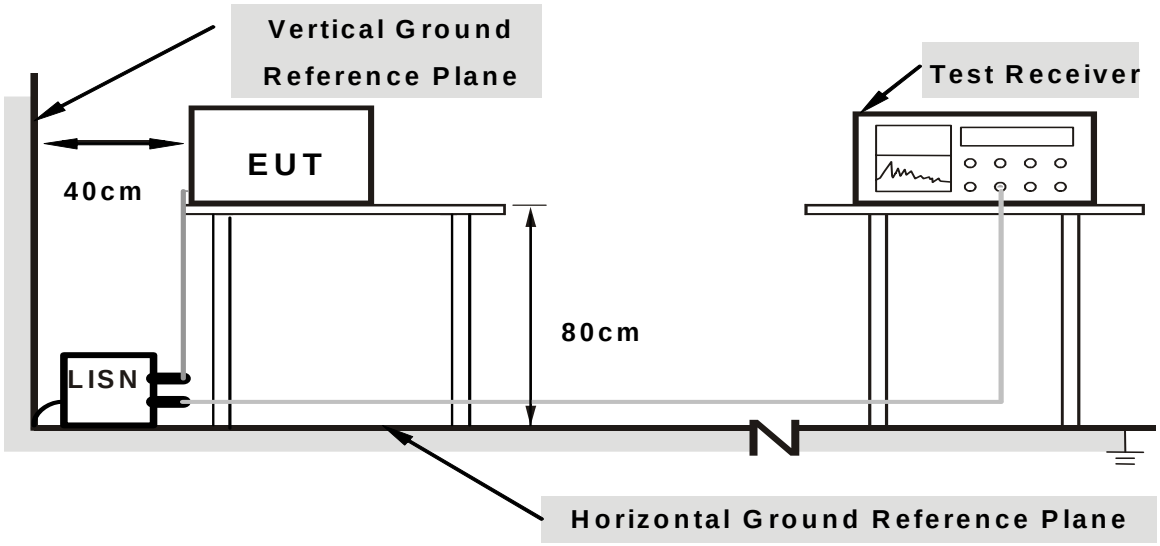
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 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 related item – Photographs of the Test Configuration.

4.8.6 EUT OPERATING CONDITIONS

Same as Item 4.7.6

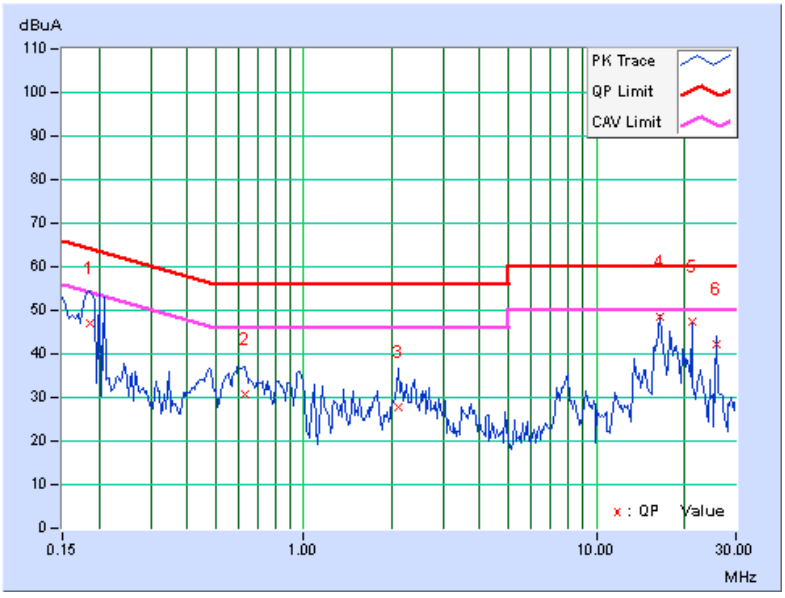
4.8.7 TEST RESULTS (WLAN MODE)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.12	46.93	27.07	47.05	27.19	64.25	54.25	-17.21	-27.07
2	0.62656	0.17	30.41	18.67	30.58	18.84	56.00	46.00	-25.42	-27.16
3	2.10156	0.23	27.58	18.53	27.81	18.76	56.00	46.00	-28.19	-27.24
4	**16.46484**	**0.79**	**47.88**	**46.01**	**48.67**	**46.80**	**60.00**	**50.00**	**-11.33**	**-3.20**
5	21.16797	0.95	46.31	44.73	47.26	45.68	60.00	50.00	-12.74	-4.32
6	25.87109	1.09	41.15	40.77	42.24	41.86	60.00	50.00	-17.76	-8.14

REMARKS:

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

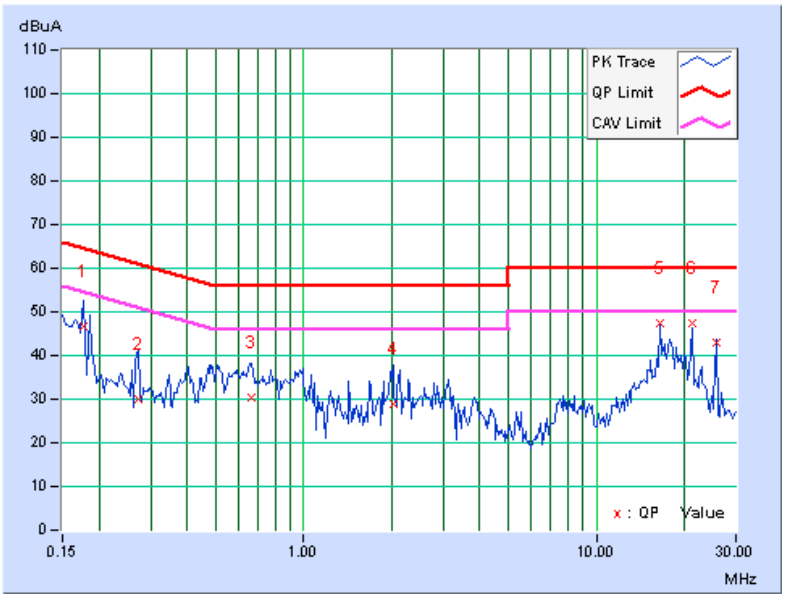


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	0.09	46.57	26.29	46.66	26.38	64.61	54.61	-17.95	-28.23
2	0.27109	0.12	30.06	15.76	30.18	15.88	61.08	51.08	-30.91	-35.21
3	0.66563	0.16	30.08	18.24	30.24	18.40	56.00	46.00	-25.76	-27.60
4	2.01953	0.21	28.59	18.69	28.80	18.90	56.00	46.00	-27.20	-27.10
5	16.46484	0.54	46.72	45.87	47.26	46.41	60.00	50.00	-12.74	-3.59
6	21.16797	0.63	46.89	45.43	47.52	46.06	60.00	50.00	-12.48	-3.94
7	25.87500	0.74	42.12	41.71	42.86	42.45	60.00	50.00	-17.14	-7.55

REMARKS:

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



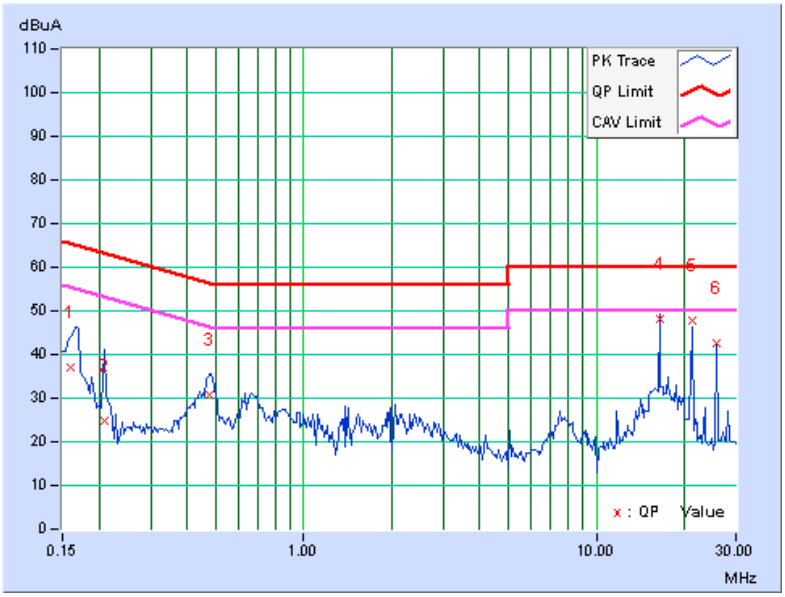
4.8.8 TEST RESULTS (BT<LE> MODE)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15975	0.11	37.08	20.66	37.19	20.77	65.48	55.48	-28.29	-34.71
2	0.20859	0.12	24.57	9.31	24.69	9.43	63.26	53.26	-38.57	-43.83
3	0.47813	0.16	30.48	23.02	30.64	23.18	56.37	46.37	-25.73	-23.19
4	**16.46484**	**0.79**	**47.24**	**45.86**	**48.03**	**46.65**	**60.00**	**50.00**	**-11.97**	**-3.35**
5	21.16797	0.95	46.65	45.35	47.60	46.30	60.00	50.00	-12.40	-3.70
6	25.87500	1.09	41.59	41.31	42.68	42.40	60.00	50.00	-17.32	-7.60

REMARKS:

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

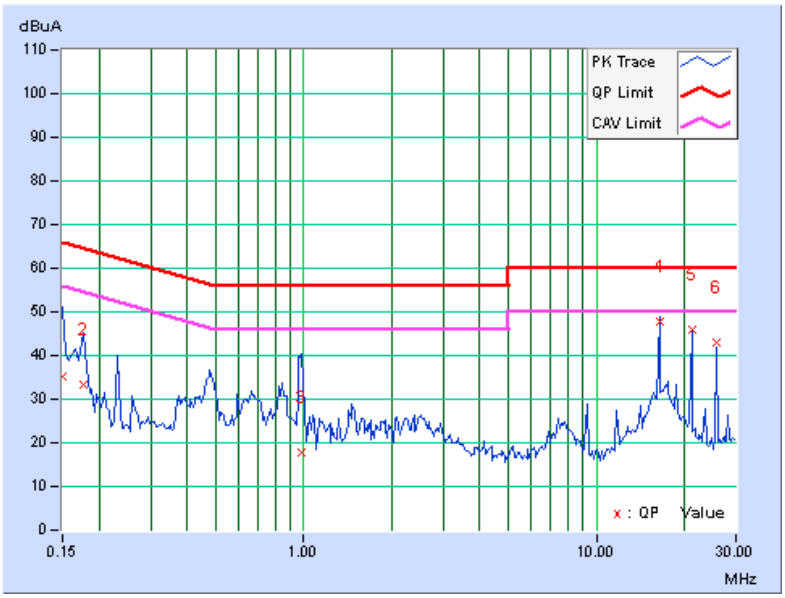


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.09	35.13	27.75	35.22	27.84	66.00	56.00	-30.78	-28.16
2	0.17734	0.09	33.13	24.20	33.22	24.29	64.61	54.61	-31.39	-30.32
3	0.98594	0.17	17.79	12.84	17.96	13.01	56.00	46.00	-38.04	-32.99
4	16.46484	0.54	47.08	45.69	47.62	46.23	60.00	50.00	-12.38	-3.77
5	21.16797	0.63	45.31	45.07	45.94	45.70	60.00	50.00	-14.06	-4.30
6	25.87109	0.74	42.09	40.81	42.83	41.55	60.00	50.00	-17.17	-8.45

REMARKS:

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



5. TEST TYPES AND RESULTS (FOR 5GHz, 5725~5850MHz Band)

5.1 CONDUCTED OUTPUT POWER MEASUREMENT

5.1.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

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

5.1.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	0824006	May 20, 2013	May 19, 2014
Power Sensor Anritsu	MA2411B	0738172	May 20, 2013	May 19, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10, 2013

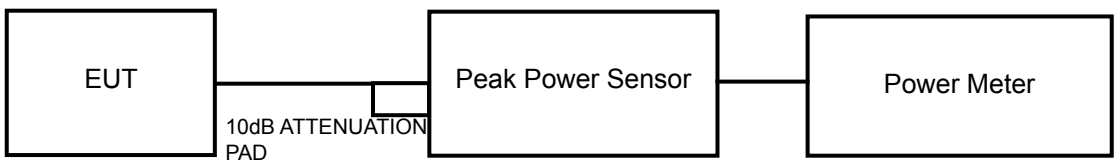
5.1.3 TEST PROCEDURES

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.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



5.1.6 EUT OPERATING CONDITIONS

Same as Item 4.1.6

5.1.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	19.36	19.56	176.663	22.47	28.23	PASS
157	5785	19.32	19.46	173.815	22.40	28.23	PASS
165	5825	18.94	18.92	156.326	21.94	28.23	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)=7.77
The effective legacy gain is 7.77dBi, therefore the limit needs to reduce.

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	18.59	17.98	135.083	21.31	28.23	PASS
157	5785	17.31	18.11	118.541	20.74	28.23	PASS
165	5825	17.56	17.86	118.110	20.72	28.23	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)=7.77
The effective legacy gain is 7.77dBi, therefore the limit needs to reduce.

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
151	5755	17.22	17.07	103.656	20.16	28.23	PASS
159	5795	17.01	17.09	101.402	20.06	28.23	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)=7.77
The effective legacy gain is 7.77dBi, therefore the limit needs to reduce.

5.2 AVERAGE OUTPUT POWER

5.2.1 For reference.

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	0824006	May 20, 2013	May 19, 2014
Power Sensor Anritsu	MA2411B	0738172	May 20, 2013	May 19, 2014

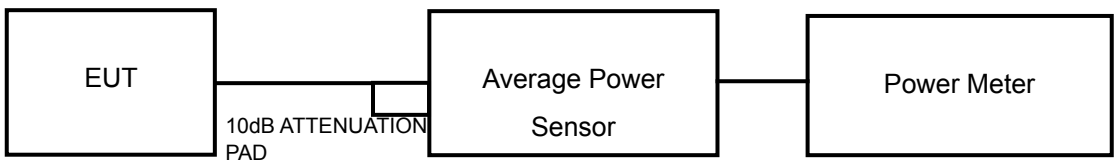
Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10, 2013

5.2.3 TEST PROCEDURES

1. The transmitter output was connected to the power meter through an attenuator, the bandwidth of the fundamental frequency was measured with the power meter.
2. Record the average power level.

5.2.4 TEST SETUP



5.2.5 EUT OPERATING CONDITIONS

Same as Item 4.1.6

5.2.6 TEST RESULTS

802.11a :

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
149	5745	14.23	14.48	17.37
157	5785	14.46	14.67	17.58
165	5825	14.38	14.31	17.36

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
149	5745	12.57	12.29	15.44
157	5785	12.24	12.26	15.26
165	5825	12.44	12.04	15.25

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
151	5755	12.34	12.11	15.24
159	5795	12.24	12.06	15.16

5.3 POWER SPECTRAL DENSITY MEASUREMENT

5.3.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10, 2013

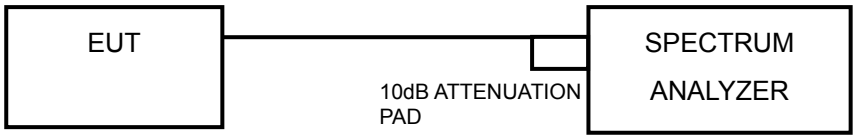
5.3.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITION

Same as Item 4.1.6

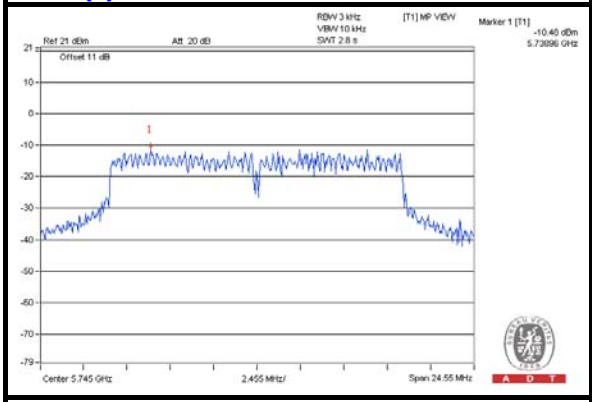
5.3.7 TEST RESULTS

802.11a

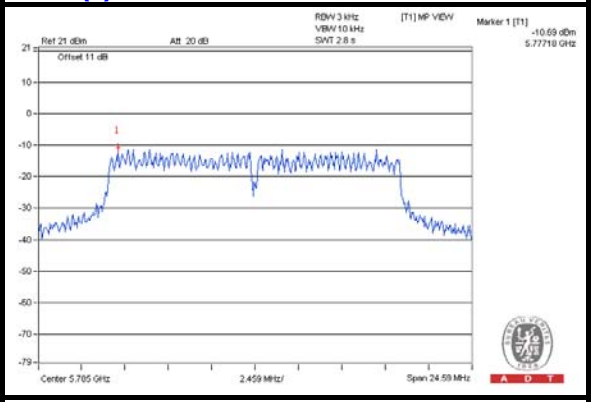
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-10.48	3.01	-7.47	6.23	PASS
	157	5785	-10.69	3.01	-7.68	6.23	PASS
	165	5825	-10.56	3.01	-7.55	6.23	PASS
1	149	5745	-11.21	3.01	-8.20	6.23	PASS
	157	5785	-10.67	3.01	-7.66	6.23	PASS
	165	5825	-10.84	3.01	-7.83	6.23	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)=7.77
The effective legacy gain is 7.77dBi, therefore the limit needs to reduce.

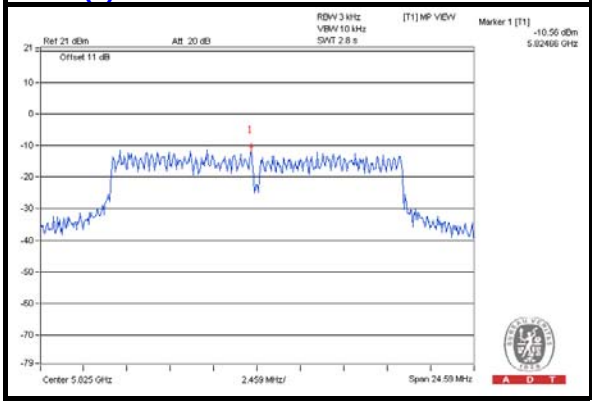
Chain(0) : CH149

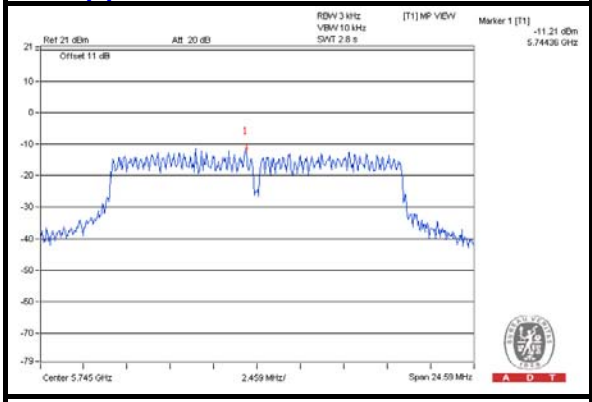
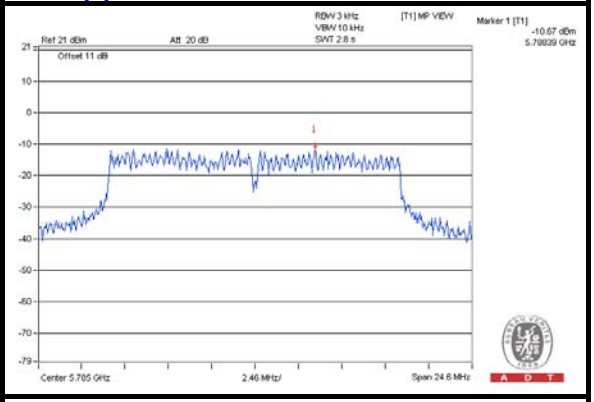
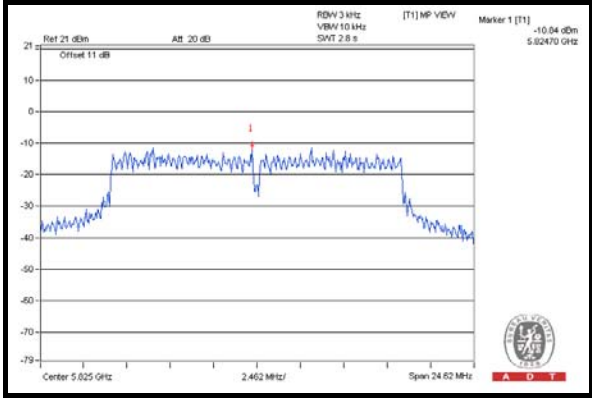


Chain(0) : CH157



Chain(0) : CH165



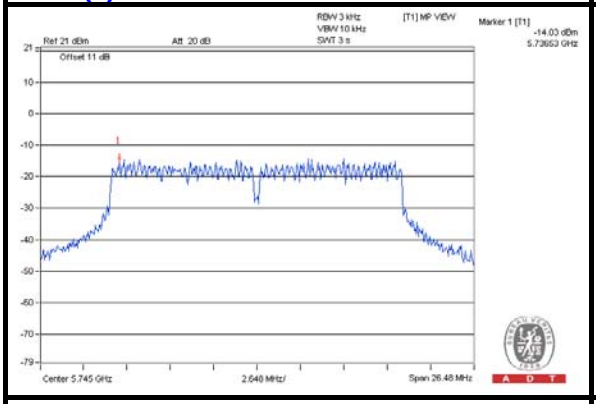
Chain(1) : CH149	Chain(1) : CH157
	
Chain(1) : CH165	
	

802.11n (HT20):

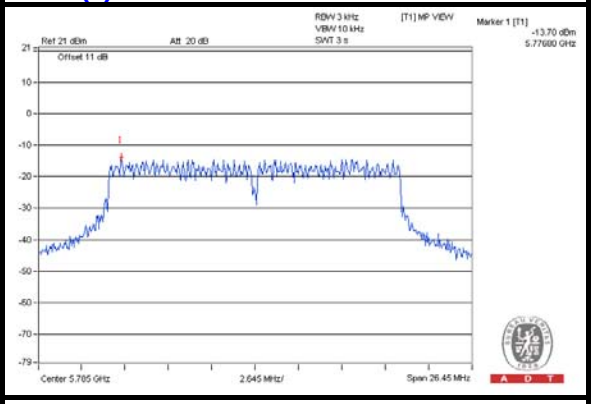
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-14.03	3.01	-11.02	6.23	PASS
	157	5785	-13.70	3.01	-10.69	6.23	PASS
	165	5825	-12.99	3.01	-9.98	6.23	PASS
1	149	5745	-13.83	3.01	-10.82	6.23	PASS
	157	5785	-13.72	3.01	-10.71	6.23	PASS
	165	5825	-14.12	3.01	-11.11	6.23	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)=7.77
The effective legacy gain is 7.77dBi, therefore the limit needs to reduce.

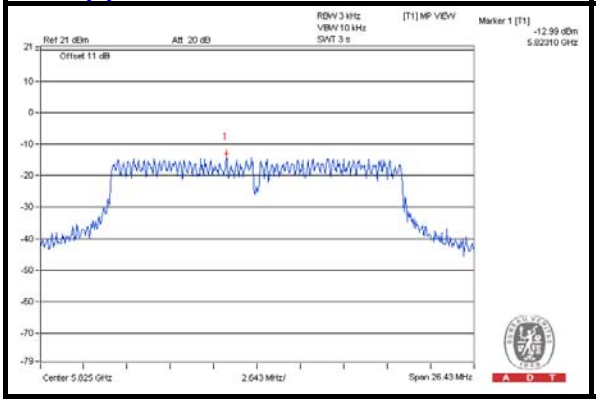
Chain(0) : CH149

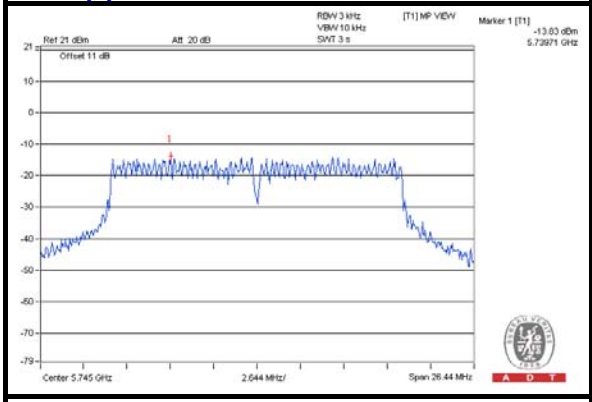
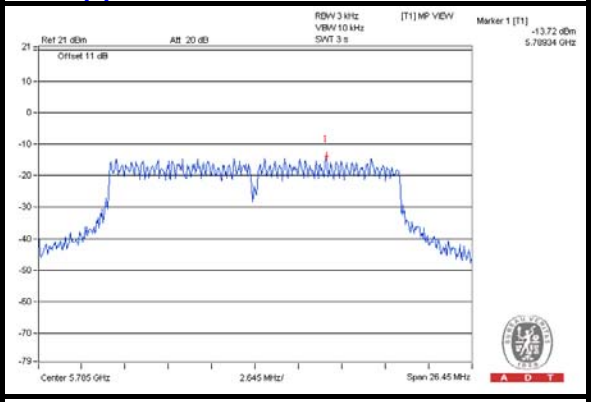
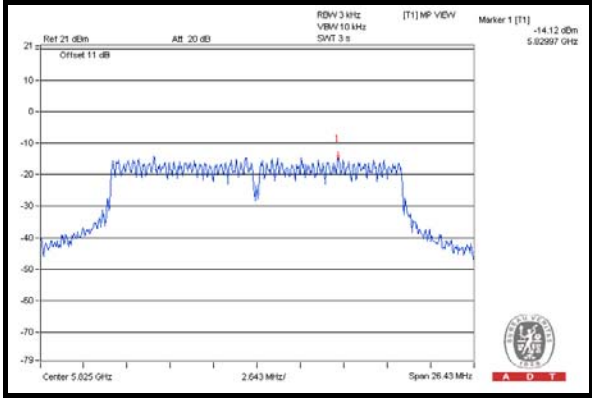


Chain(0) : CH157



Chain(0) : CH165



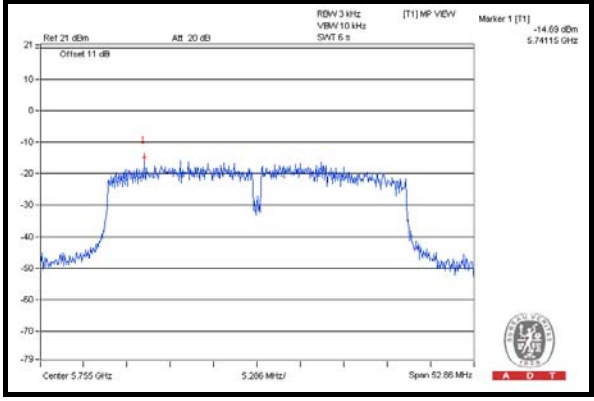
Chain(1) : CH149	Chain(1) : CH157
	
Chain(1) : CH165	
	

802.11n (HT40)

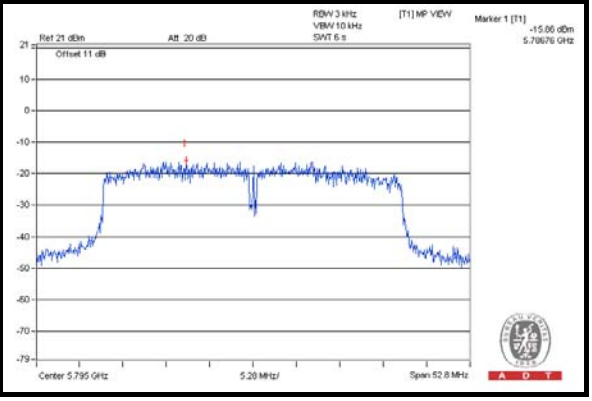
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-14.69	3.01	-11.68	6.23	PASS
	157	5785	-15.86	3.01	-12.85	6.23	PASS
1	149	5745	-16.01	3.01	-13.00	6.23	PASS
	157	5785	-16.33	3.01	-13.32	6.23	PASS

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)
Effective Legacy Gain (dBi)=7.77
The effective legacy gain is 7.77dBi, therefore the limit needs to reduce.

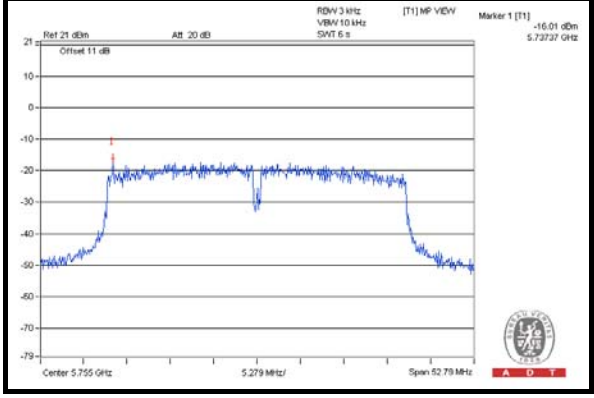
Chain(0) : CH151



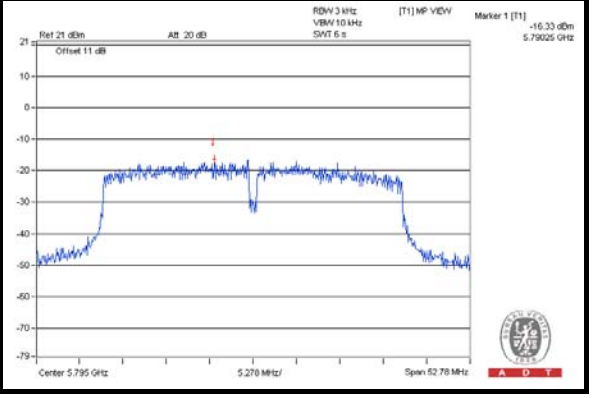
Chain(0) : CH159



Chain(1) : CH151



Chain(1) : CH159



5.4 6dB BANDWIDTH MEASUREMENT

5.4.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10, 2013

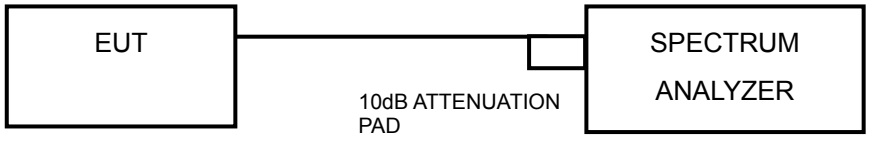
5.4.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

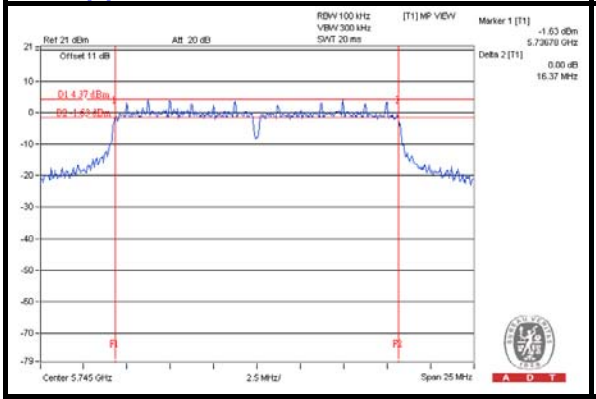
Same as the 4.1.6

5.4.7 TEST RESULTS

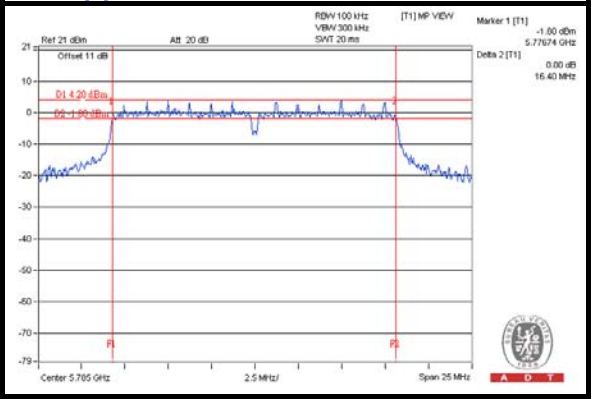
802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
149	5745	16.37	16.40	0.5	PASS
157	5785	16.40	16.40	0.5	PASS
165	5825	16.40	16.42	0.5	PASS

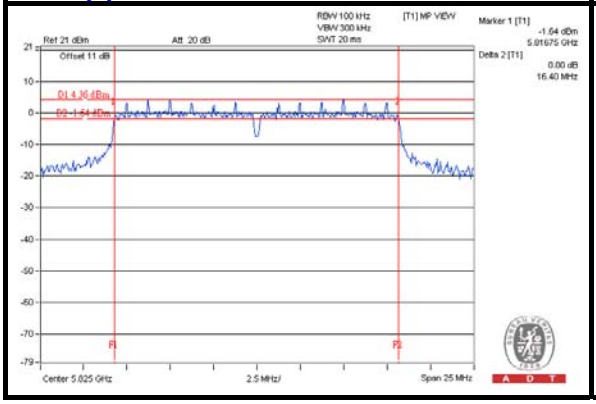
Chain(0) : CH149

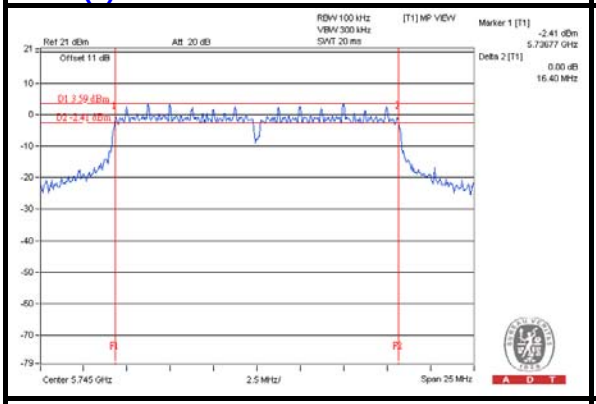
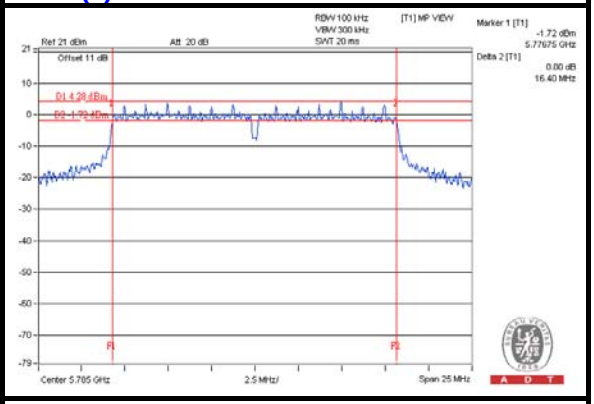
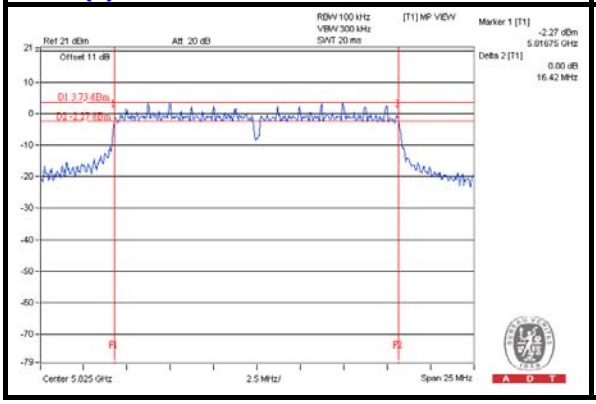


Chain(0) : CH157



Chain(0) : CH165

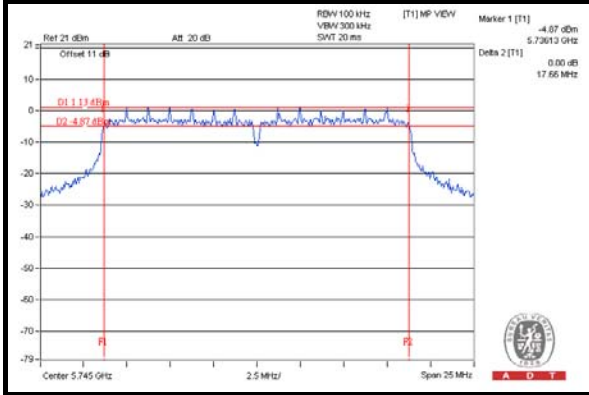


Chain(1) : CH149	Chain(1) : CH157
	
Chain(1) : CH165	
	

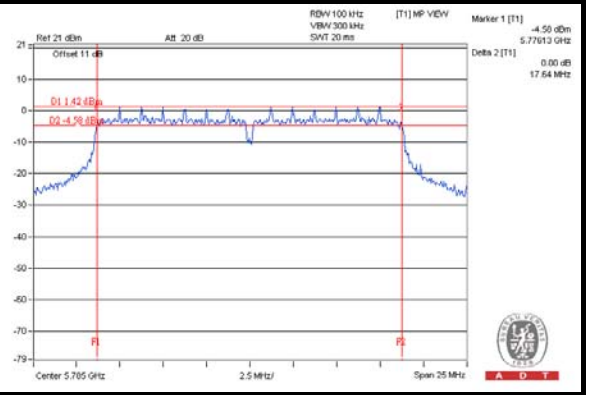
802.11n (HT20):

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
149	5745	17.66	17.63	0.5	PASS
157	5785	17.64	17.64	0.5	PASS
165	5825	17.63	17.62	0.5	PASS

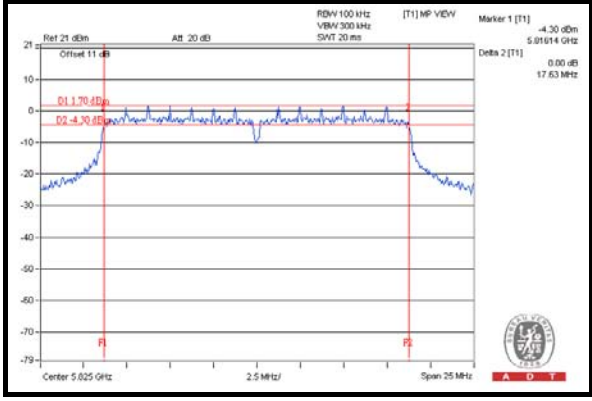
Chain(0) : CH149

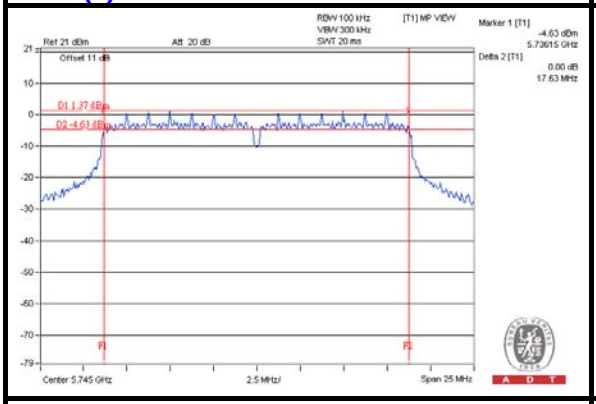
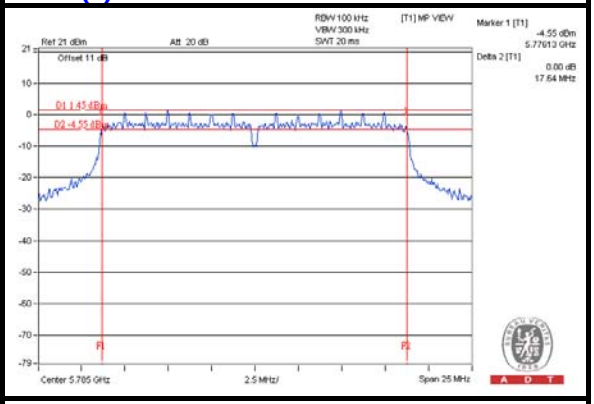
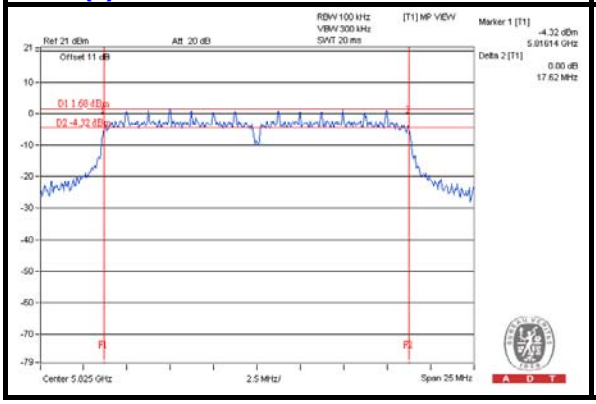


Chain(0) : CH157



Chain(0) : CH165

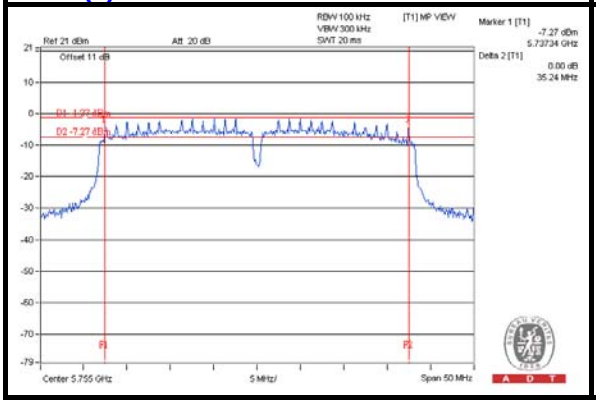


Chain(1) : CH149	Chain(1) : CH157
	
Chain(1) : CH165	
	

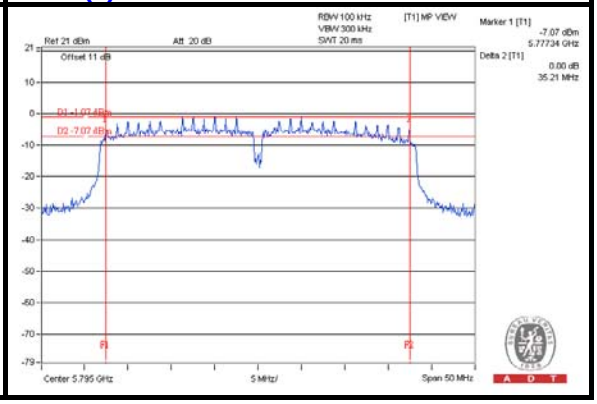
802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
151	5755	35.24	35.20	0.5	PASS
159	5795	35.21	35.19	0.5	PASS

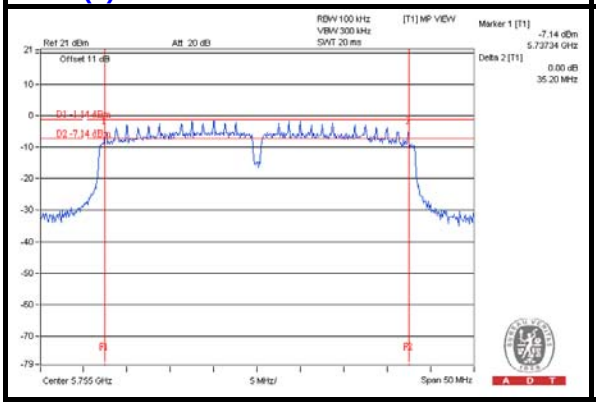
Chain(0) : CH151



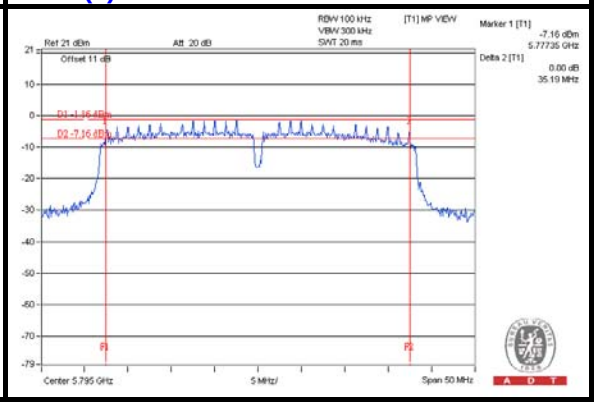
Chain(0) : CH159



Chain(1) : CH151



Chain(1) : CH159



5.5 OCCUPIED BANDWIDTH MEASUREMENT

5.5.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

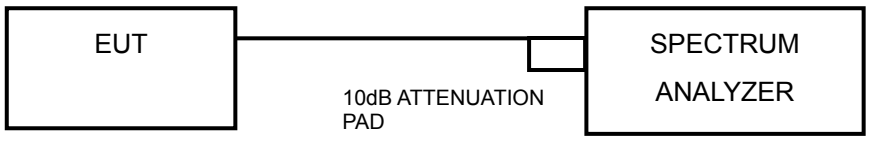
Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10, 2013

5.5.2 TEST PROCEDURE

1. Set RBW ≥ 1% of the emission bandwidth.
2. Set the VBW > 3 × RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Record the 99% emission bandwidth.

5.5.3 TEST SETUP



5.5.4 EUT OPERATING CONDITIONS

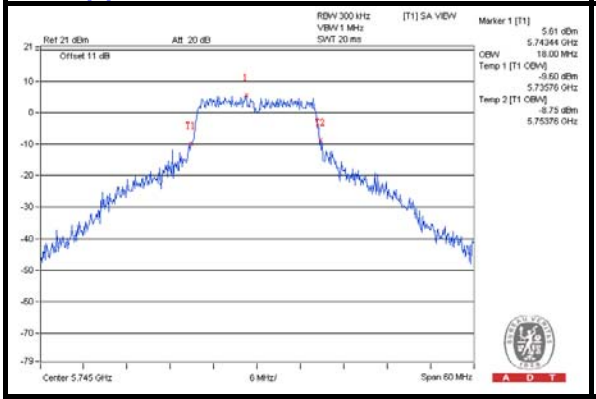
Same as the 4.1.6

5.5.5 TEST RESULTS

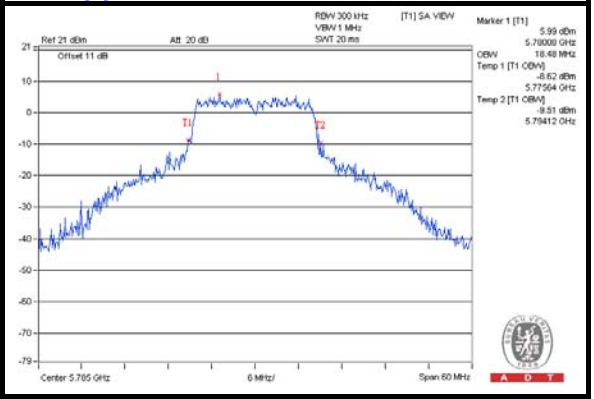
802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
149	5745	18.00	17.52
157	5785	18.48	18.12
165	5825	20.64	18.84

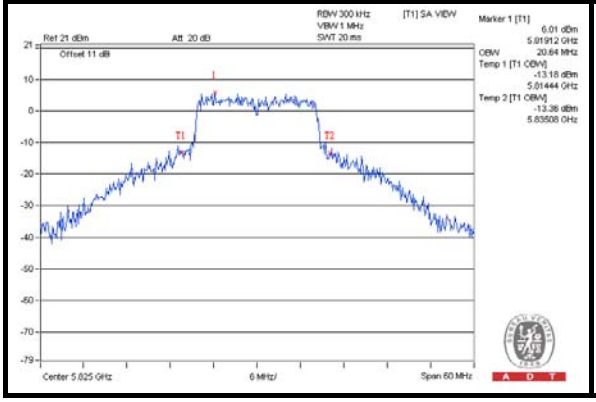
Chain(0) : CH149

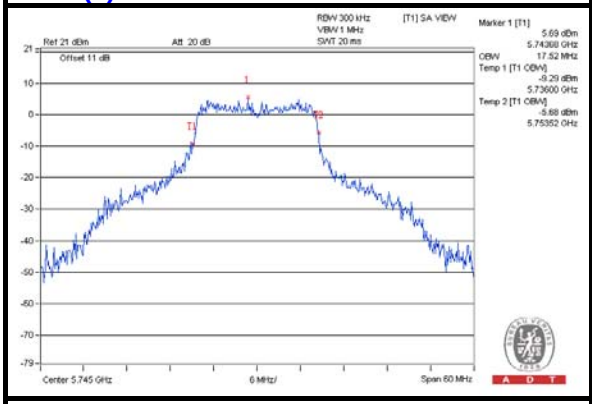
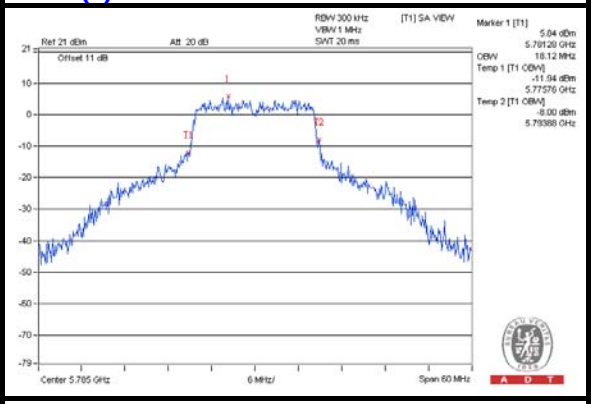
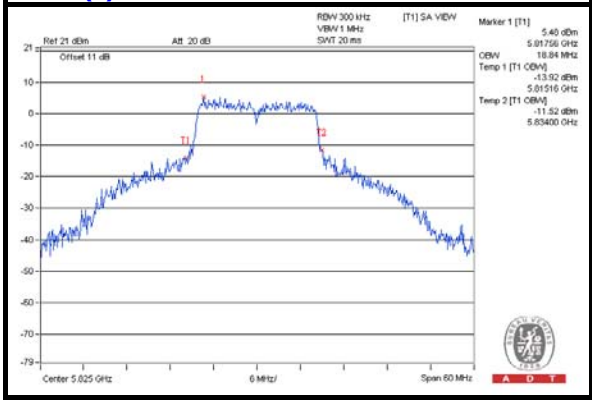


Chain(0) : CH157



Chain(0) : CH165

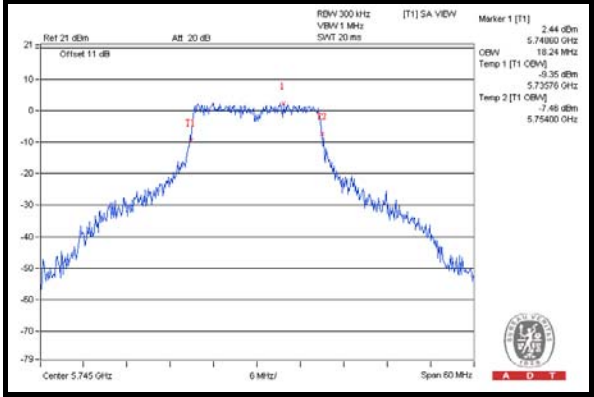


Chain(1) : CH149	Chain(1) : CH157
	
Chain(1) : CH165	
	

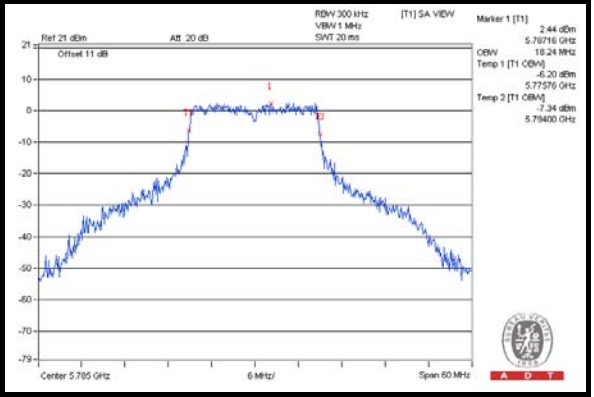
802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
149	5745	18.24	18.00
157	5785	18.24	18.12
165	5825	18.72	18.24

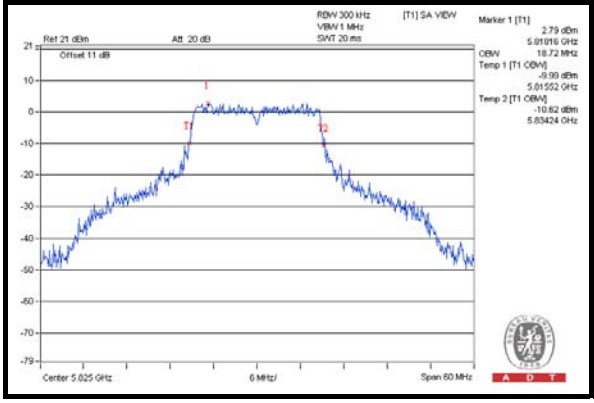
Chain(0) : CH149

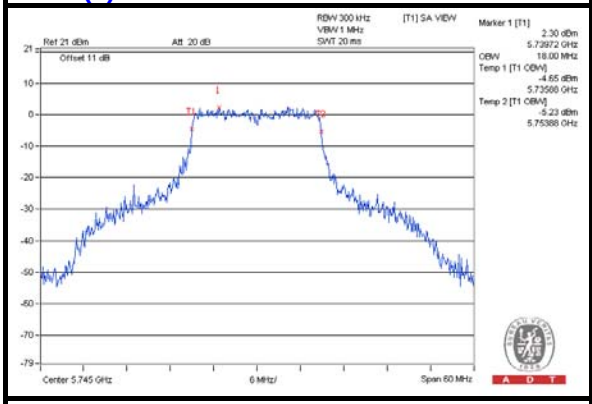
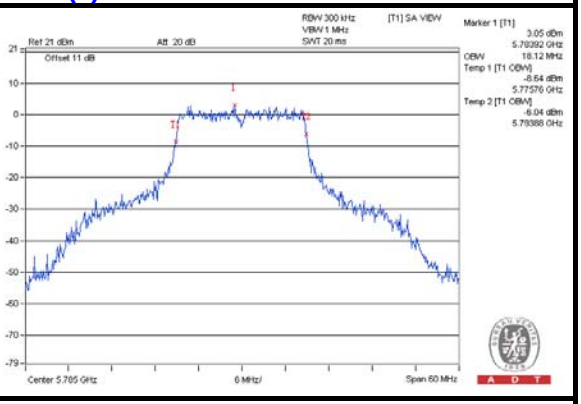
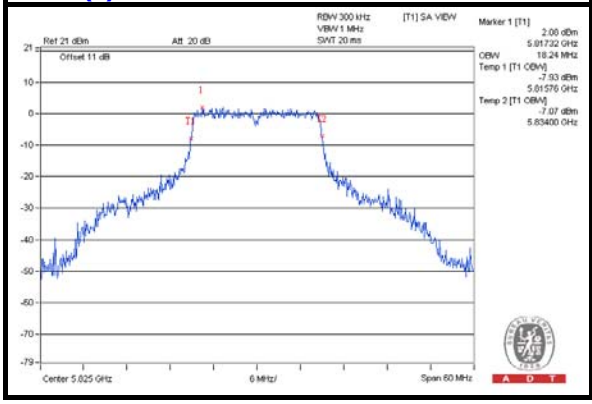


Chain(0) : CH157



Chain(0) : CH165

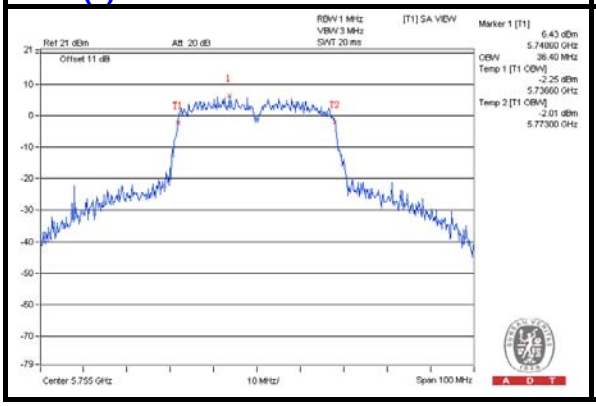


Chain(1) : CH149	Chain(1) : CH157
	
Chain(1) : CH165	
	

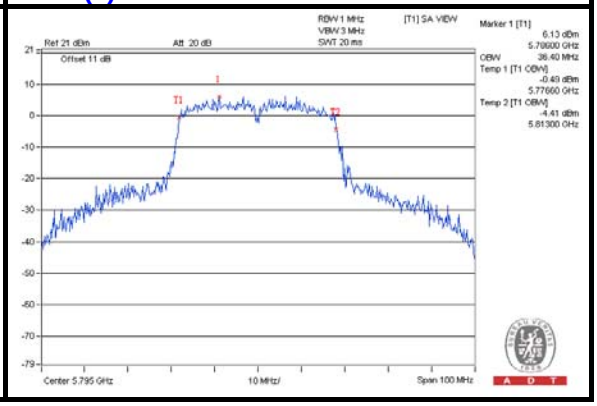
802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
151	5755	36.40	36.40
159	5795	36.40	36.60

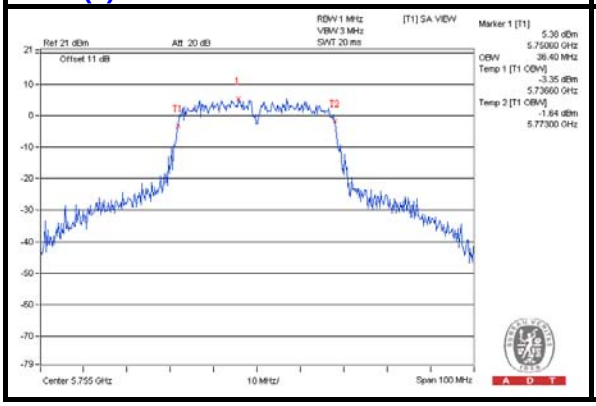
Chain(0) : CH151



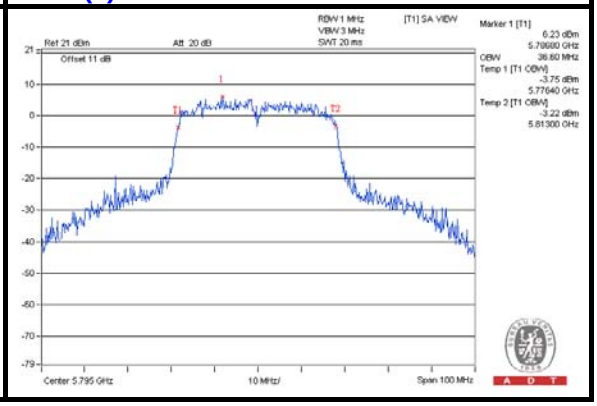
Chain(0) : CH159



Chain(1) : CH151



Chain(1) : CH159



5.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10, 2013

5.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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 –Unwanted Emission Level

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

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 EUT OPERATING CONDITION

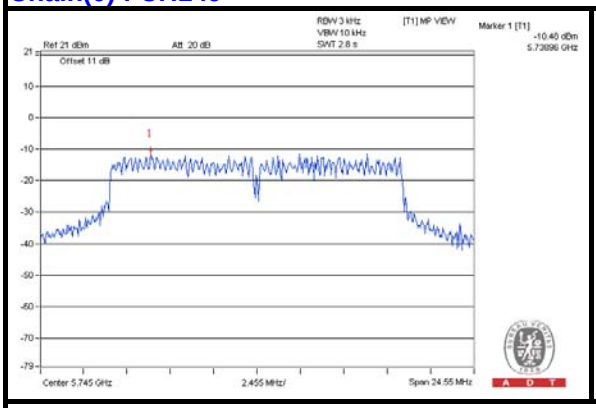
Same as Item 4.3.6

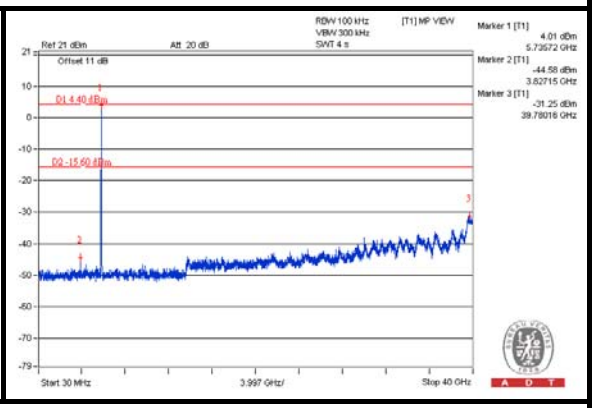
5.6.6 TEST RESULTS

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

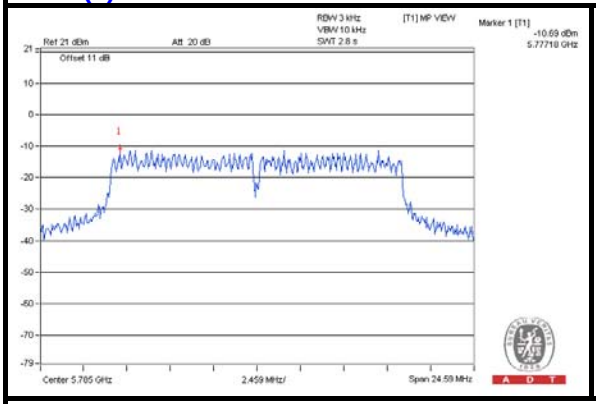
802.11a

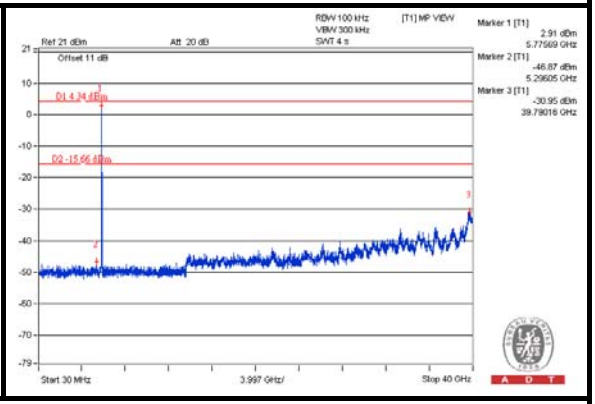
Chain(0) : CH149



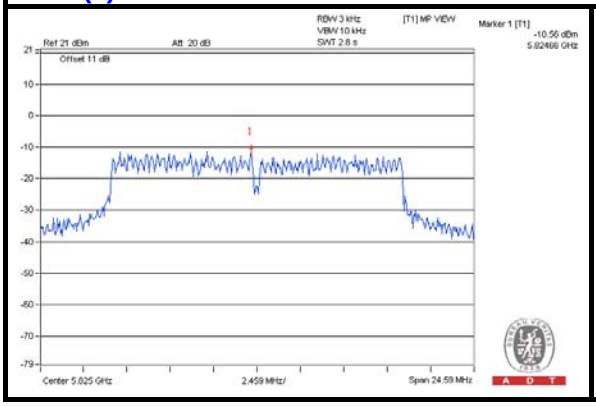


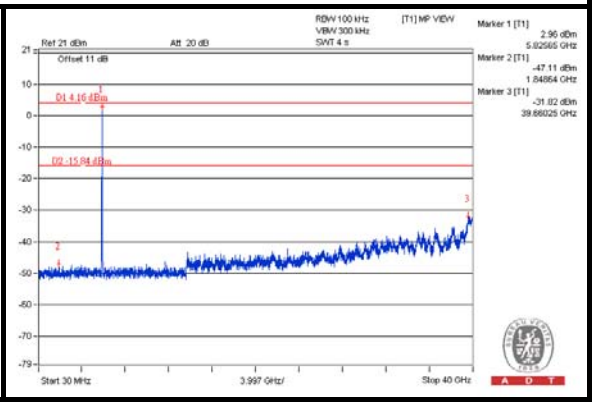
Chain(0) : CH 157





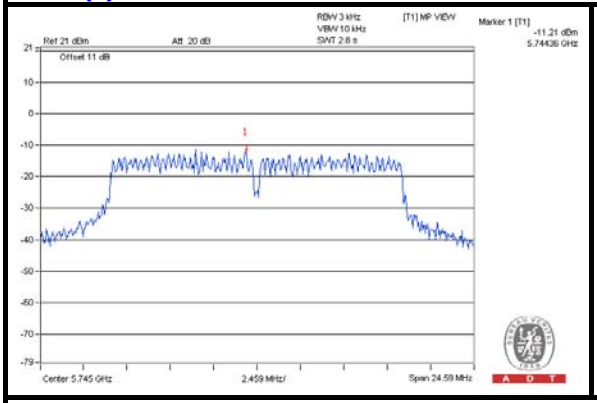
Chain(0) : CH 165

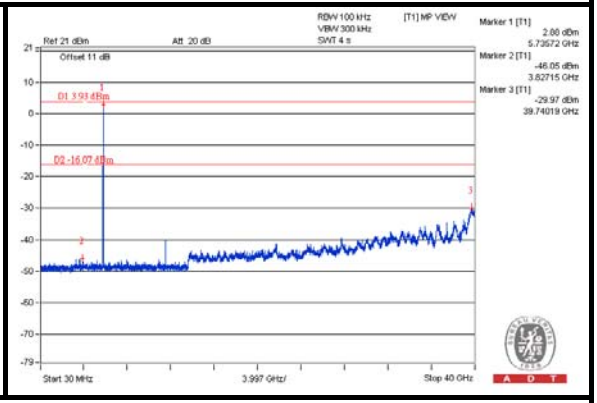




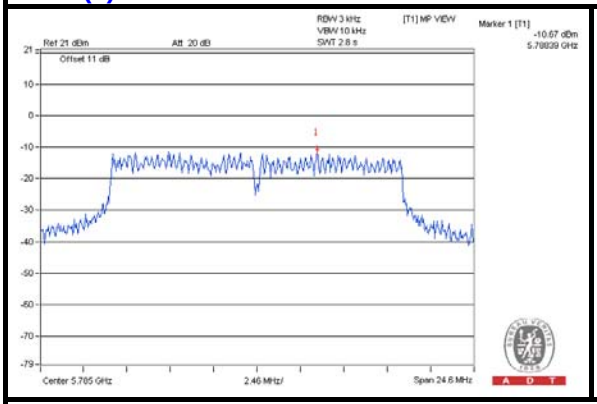
802.11a

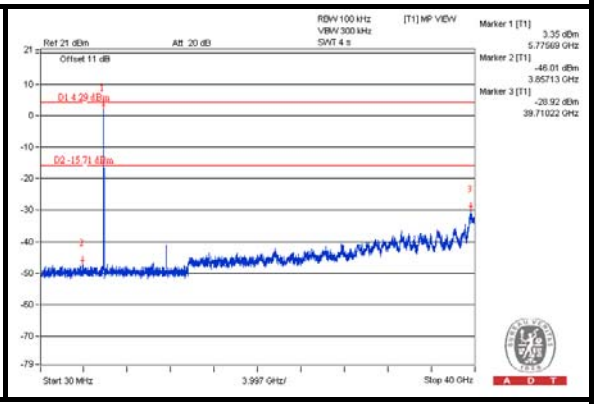
Chain(1) : CH149



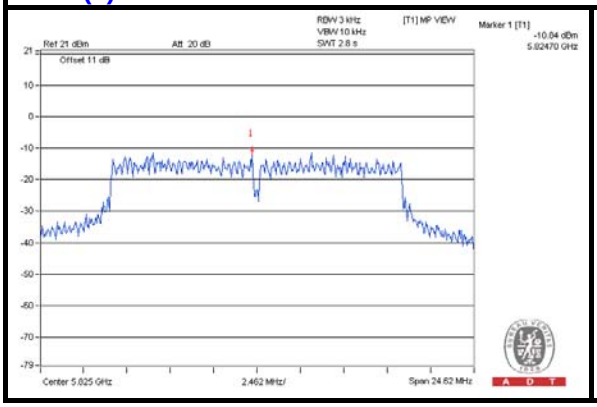


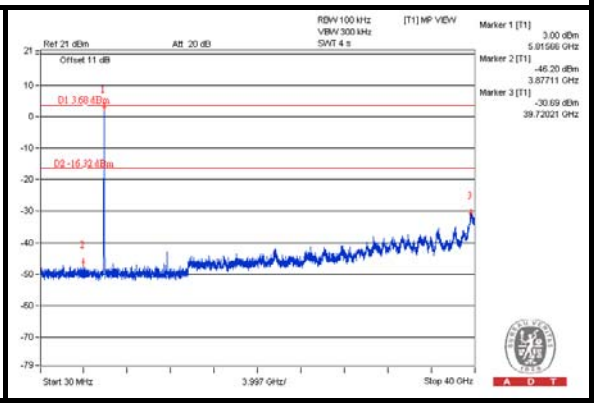
Chain(1) : CH 157





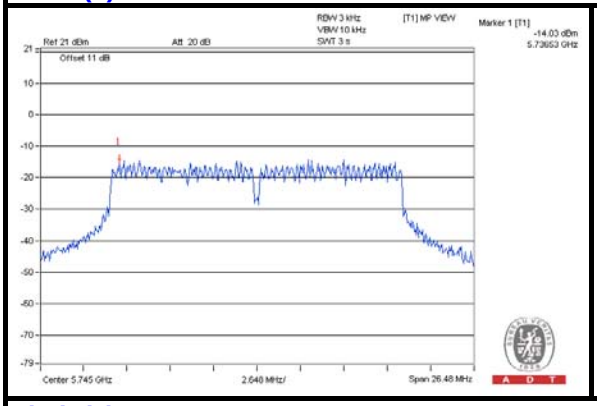
Chain(1) : CH 165

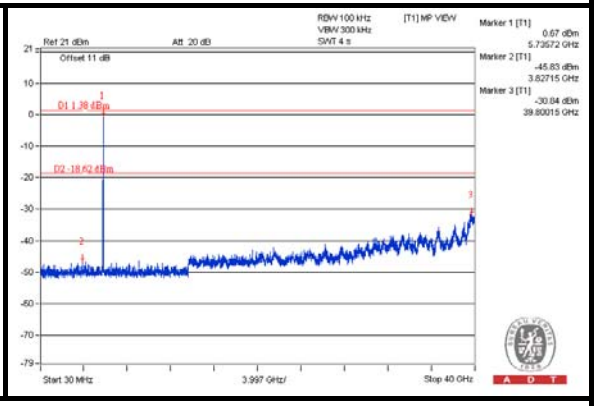




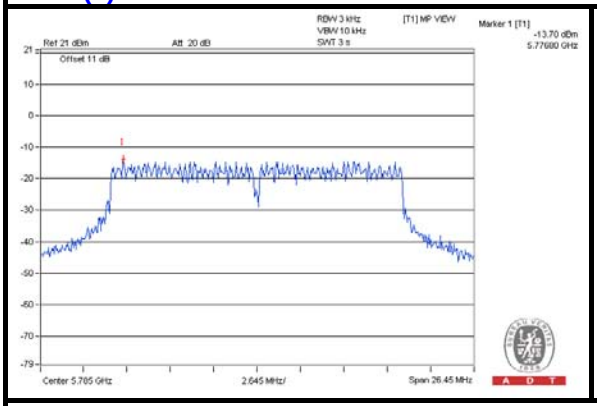
802.11n (HT20)

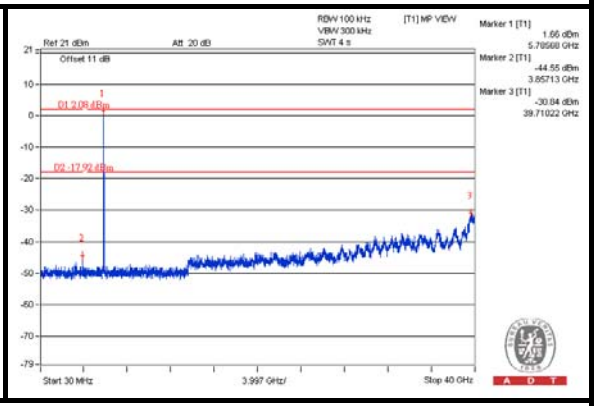
Chain(0) : CH149



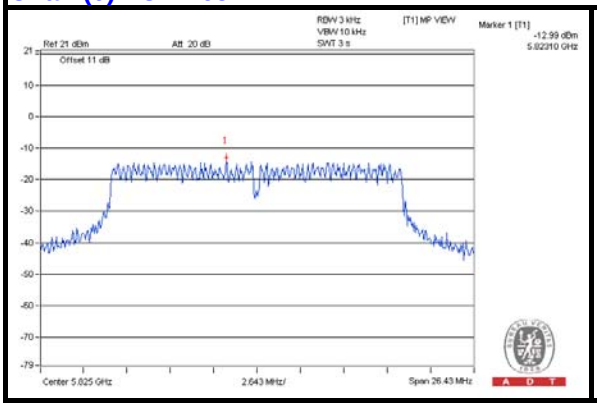


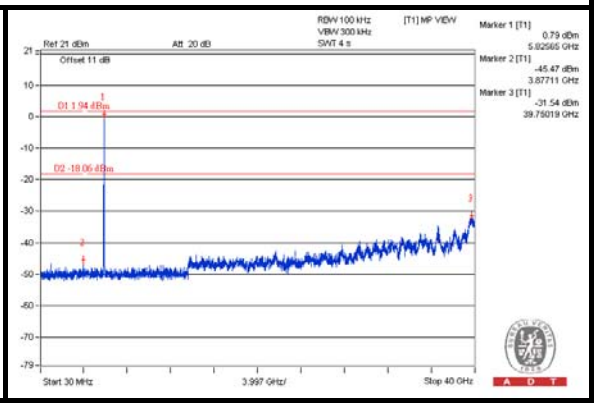
Chain(0) : CH 157





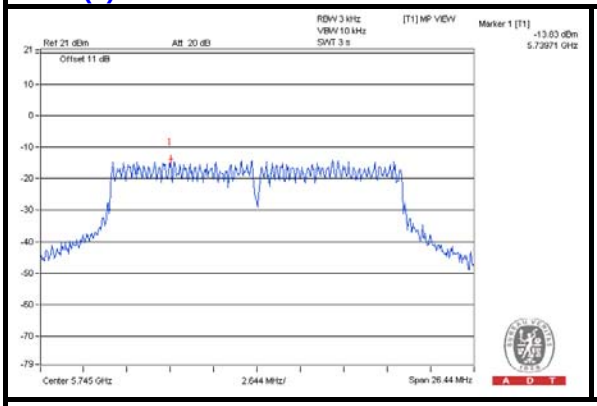
Chain(0) : CH 165

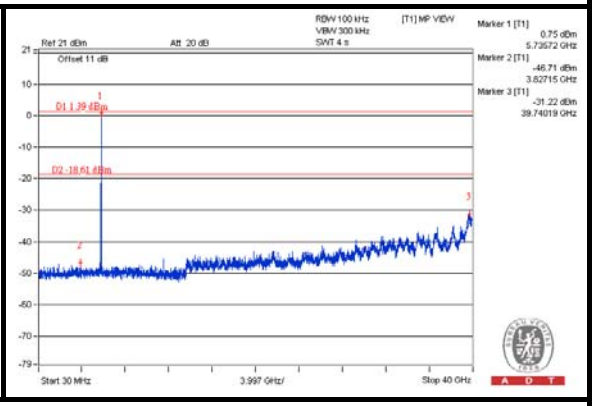




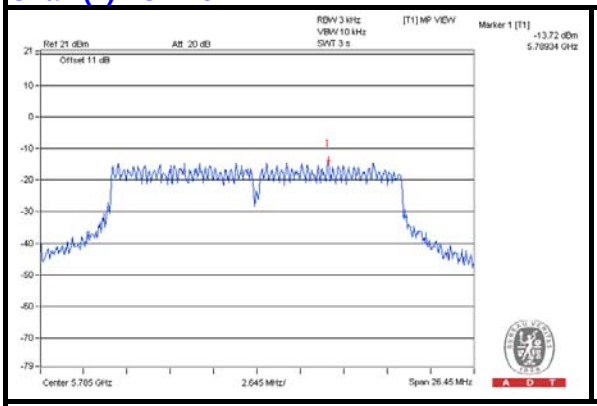
802.11n (HT20)

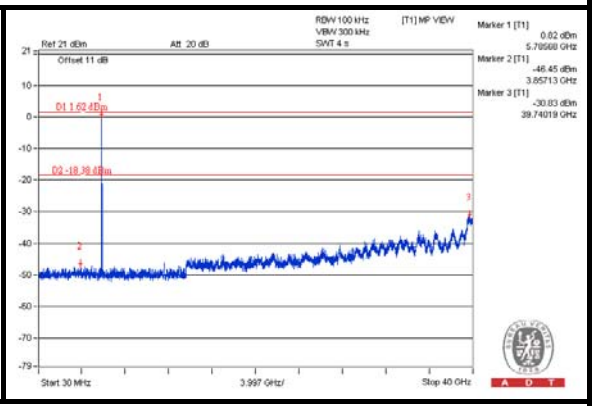
Chain(1) : CH149



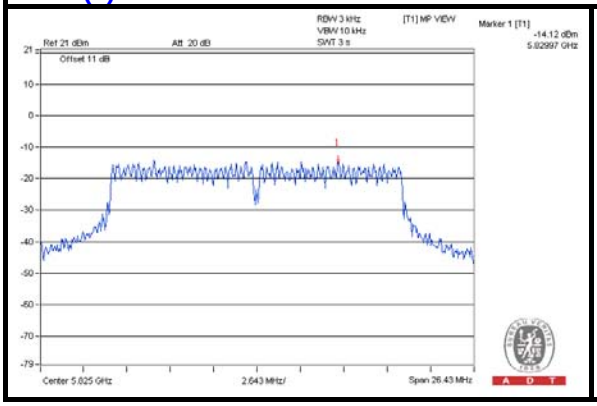


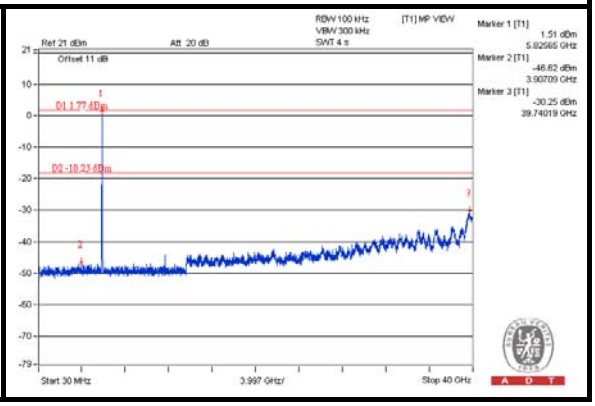
Chain(1) : CH 157





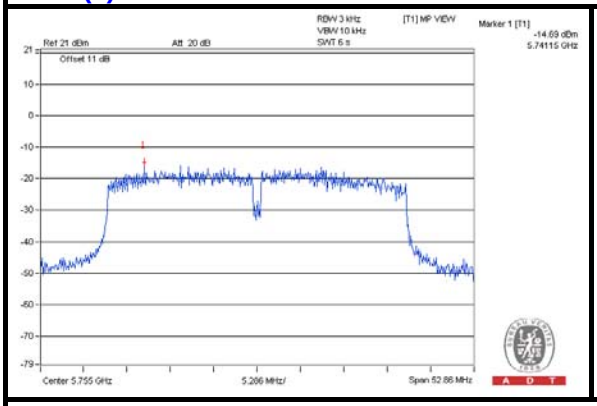
Chain(1) : CH 165

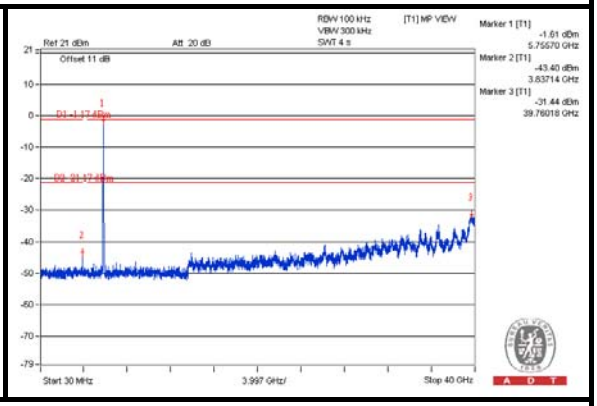




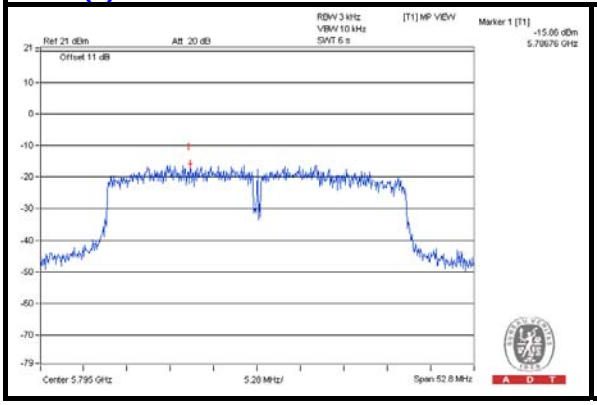
802.11n (HT40)

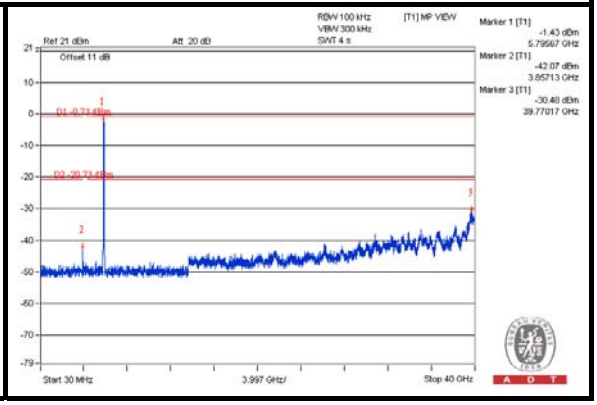
Chain(0) : CH 151





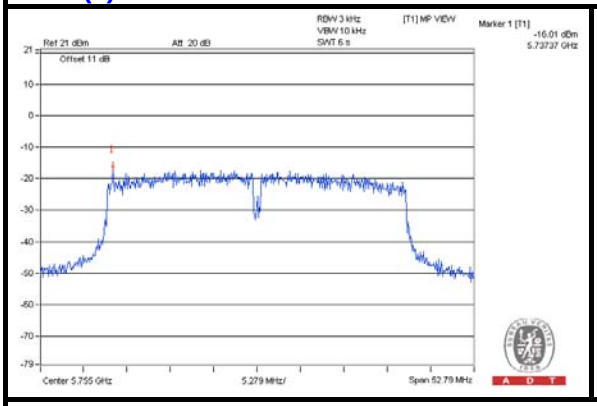
Chain(0) : CH 159

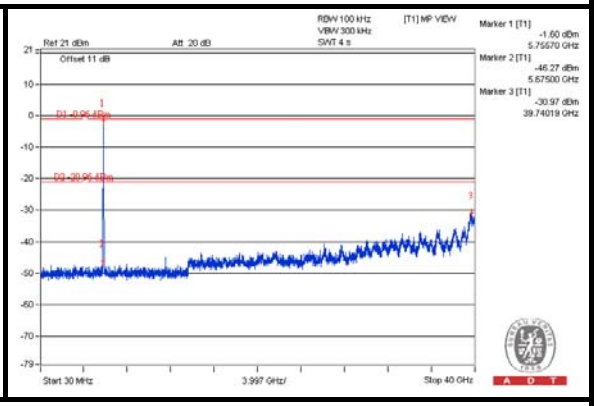




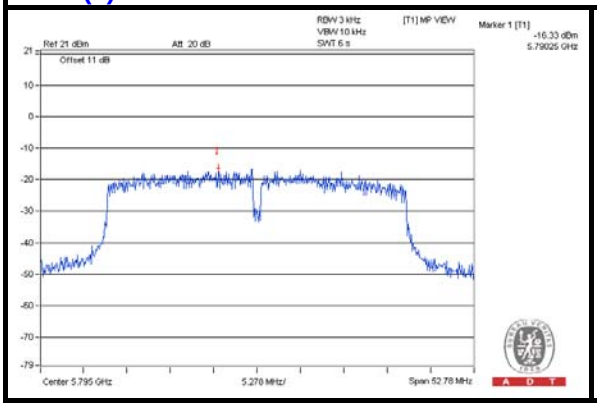
802.11n (HT40)

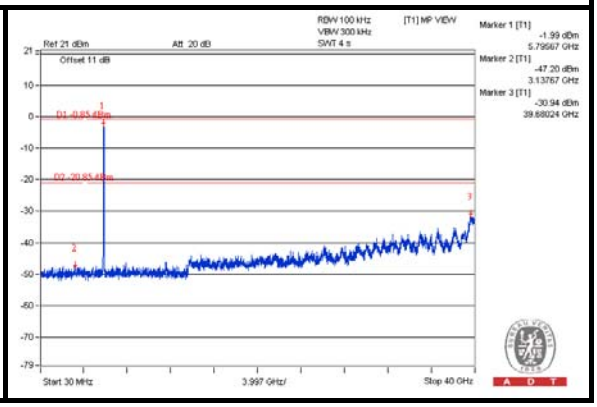
Chain(1) : CH 151





Chain(1) : CH 159





5.7 UNWANTED EMISSION MEASUREMENT (RADIATED VERSUS CONDUCTED)

5.7.1 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.

5.7.2 TEST INSTRUMENTS

Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29,2013	Jan. 28,2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 26, 2012	June 25, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Apr. 09, 2012	Apr. 08, 2013
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 19, 2012	Nov. 18, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Feb. 26, 2013

Above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: June 06, 2013

5.7.3 TEST PROCEDURES

For Below 1GHz test:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

NOTE:

2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

For Above 1GHz test:

Following FCC KDB 558074 D01 DTS Meas. Guidance :

Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT
c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater
d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)

e. For all of Radiation emission test

e-1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

e-3. 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.

e-4. 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-5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

e-6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin 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 of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

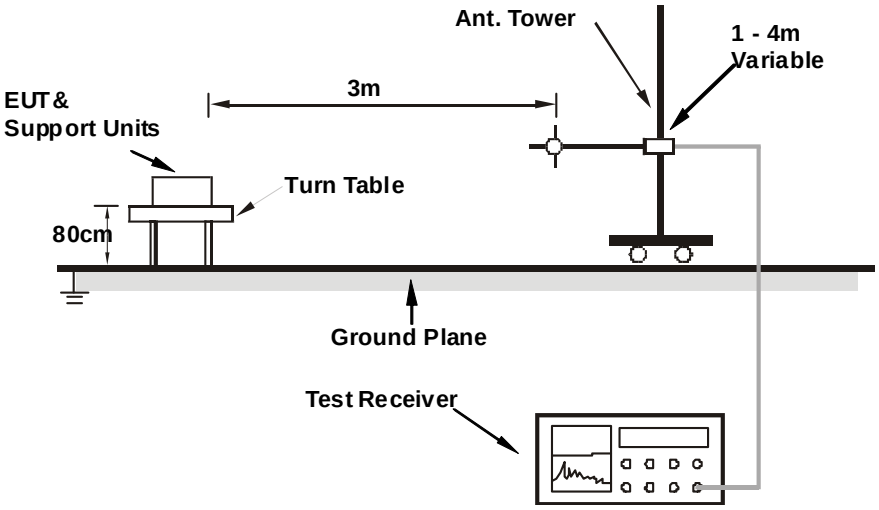
5.7.4 DEVIATION FROM TEST STANDARD

No deviation

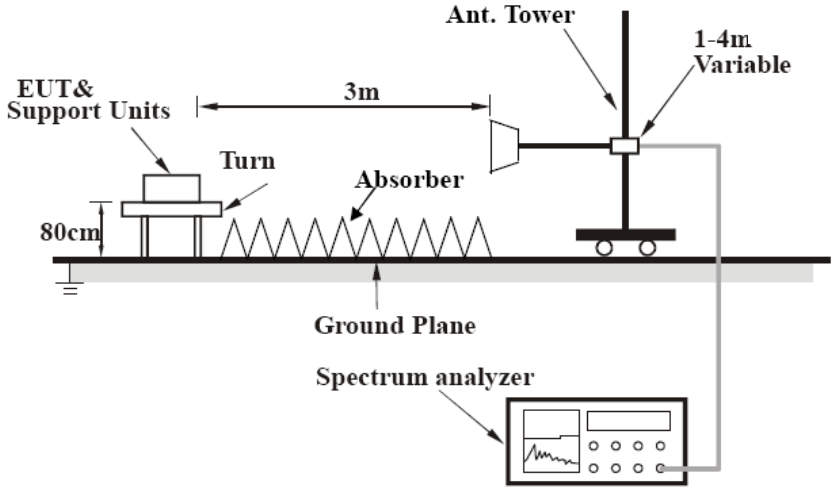
5.7.5 TEST SETUP

For radiated configuration:

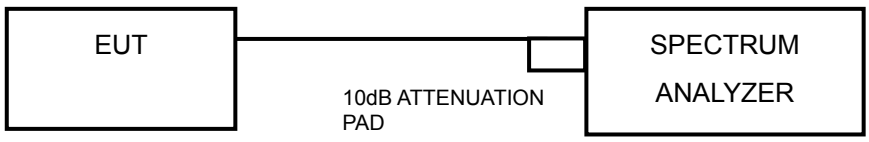
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



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

5.7.6 EUT OPERATING CONDITIONS

Same as the 4.7.6

5.7.7 TEST RESULTS (RADIATED MEASUREMENT)

Radiated versus Conducted Measurement	
☐ Conducted measurement	☒ Radiated measurement
For Radiated measurement: The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) For Conducted measurement: The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

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	300.00	40.7 QP	46.0	-5.3	1.00 H	34	25.37	15.29
2	366.56	43.3 QP	46.0	-2.7	2.00 H	268	26.29	17.00
3	398.06	42.7 QP	46.0	-3.3	2.00 H	261	24.86	17.81
4	497.65	41.7 QP	46.0	-4.3	2.00 H	360	21.38	20.33
5	600.33	43.9 QP	46.0	-2.2	1.00 H	268	21.19	22.66
6	796.08	43.1 QP	46.0	-2.9	1.50 H	266	17.30	25.84
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	99.99	34.0 QP	43.5	-9.5	2.00 V	301	24.15	9.88
2	299.89	38.7 QP	46.0	-7.3	1.50 V	264	23.43	15.29
3	366.56	39.5 QP	46.0	-6.5	2.00 V	294	22.46	17.00
4	398.06	38.8 QP	46.0	-7.2	2.00 V	294	20.98	17.81
5	**600.32**	**44.3 QP**	**46.0**	**-1.7**	**1.00 V**	**220**	**21.61**	**22.66**
6	799.98	42.3 QP	46.0	-3.7	1.00 V	299	16.42	25.92

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

Radiated test was done with 50ohm terminator on antenna port

ABOVE 1GHz DATA

802.11a

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

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	52.7 PK	74.0	-21.3	1.00 H	334	51.14	1.56
2	3830.00	42.7 AV	54.0	-11.3	1.00 H	334	41.14	1.56
3	11490.00	57.4 PK	74.0	-16.6	1.40 H	87	42.89	14.51
4	11490.00	46.3 AV	54.0	-7.7	1.40 H	87	31.79	14.51
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	53.4 PK	74.0	-20.6	1.00 V	137	51.84	1.56
2	3830.00	42.7 AV	54.0	-11.3	1.00 V	137	41.14	1.56
3	11490.00	57.7 PK	74.0	-16.3	1.36 V	94	43.19	14.51
4	11490.00	46.5 AV	54.0	-7.5	1.36 V	94	31.99	14.51

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The limit value is defined as per 15.247.

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	3856.67	53.2 PK	74.0	-20.8	1.00 H	216	51.52	1.68
2	3856.67	42.7 AV	54.0	-11.3	1.00 H	216	41.02	1.68
3	11570.00	58.1 PK	74.0	-15.9	1.34 H	83	43.56	14.54
4	11570.00	46.9 AV	54.0	-7.1	1.34 H	83	32.36	14.54
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	3856.67	53.2 PK	74.0	-20.8	1.00 V	225	51.52	1.68
2	3856.67	42.7 AV	54.0	-11.3	1.00 V	225	41.02	1.68
3	11570.00	57.5 PK	74.0	-16.5	1.36 V	87	42.96	14.54
4	11570.00	46.3 AV	54.0	-7.7	1.36 V	87	31.76	14.54

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The limit value is defined as per 15.247.

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	3883.33	53.1 PK	74.0	-20.9	1.00 H	217	51.30	1.80
2	3883.33	42.6 AV	54.0	-11.4	1.00 H	217	40.80	1.80
3	11650.00	58.1 PK	74.0	-15.9	1.32 H	84	43.25	14.85
4	11650.00	46.7 AV	54.0	-7.3	1.32 H	84	31.85	14.85
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	3883.33	53.3 PK	74.0	-20.7	1.00 V	216	51.50	1.80
2	3883.33	42.8 AV	54.0	-11.2	1.00 V	216	41.00	1.80
3	11650.00	57.8 PK	74.0	-16.2	1.34 V	107	42.95	14.85
4	11650.00	46.4 AV	54.0	-7.6	1.34 V	107	31.55	14.85

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The limit value is defined as per 15.247.

802.11n (HT20)

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

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	53.1 PK	74.0	-20.9	1.00 H	207	50.29	2.81
2	3830.00	42.5 AV	54.0	-11.5	1.00 H	207	39.69	2.81
3	11490.00	58.1 PK	74.0	-15.9	1.39 H	109	43.59	14.51
4	11490.00	46.7 AV	54.0	-7.3	1.39 H	109	32.19	14.51
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	53.1 PK	74.0	-20.9	1.02 V	223	50.29	2.81
2	3830.00	42.5 AV	54.0	-11.5	1.02 V	223	39.69	2.81
3	11490.00	57.1 PK	74.0	-16.9	1.31 V	91	42.59	14.51
4	11490.00	46.0 AV	54.0	-8.0	1.31 V	91	31.49	14.51

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The limit value is defined as per 15.247.

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	3856.67	52.5 PK	74.0	-21.5	1.02 H	206	49.57	2.93
2	3856.67	42.2 AV	54.0	-11.8	1.02 H	206	39.27	2.93
3	11570.00	57.8 PK	74.0	-16.2	1.31 H	84	43.26	14.54
4	11570.00	46.7 AV	54.0	-7.3	1.31 H	84	32.16	14.54
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	3856.67	53.1 PK	74.0	-20.9	1.05 V	234	50.17	2.93
2	3856.67	42.8 AV	54.0	-11.2	1.05 V	234	39.87	2.93
3	11570.00	57.9 PK	74.0	-16.1	1.31 V	110	43.36	14.54
4	11570.00	46.9 AV	54.0	-7.1	1.31 V	110	32.36	14.54

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The limit value is defined as per 15.247.

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	3883.33	52.6 PK	74.0	-21.4	1.00 H	222	49.55	3.05
2	3883.33	42.1 AV	54.0	-11.9	1.00 H	222	39.05	3.05
3	11650.00	57.6 PK	74.0	-16.4	1.42 H	99	42.75	14.85
4	11650.00	46.5 AV	54.0	-7.5	1.42 H	99	31.65	14.85
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	3883.33	53.6 PK	74.0	-20.4	1.00 V	218	50.55	3.05
2	3883.33	42.9 AV	54.0	-11.1	1.00 V	218	39.85	3.05
3	11650.00	57.7 PK	74.0	-16.3	1.40 V	102	42.85	14.85
4	11650.00	46.7 AV	54.0	-7.3	1.40 V	102	31.85	14.85

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The limit value is defined as per 15.247.

802.11n (HT40)

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

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	11510.00	57.5 PK	74.0	-16.5	1.37 H	107	43.03	14.47
2	11510.00	46.2 AV	54.0	-7.8	1.37 H	107	31.73	14.47
3	11570.00	57.8 PK	74.0	-16.2	1.31 H	84	43.26	14.54
4	11570.00	46.7 AV	54.0	-7.3	1.31 H	84	32.16	14.54
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	11510.00	57.8 PK	74.0	-16.2	1.35 V	94	43.33	14.47
2	11510.00	46.7 AV	54.0	-7.3	1.35 V	94	32.23	14.47
3	11570.00	57.9 PK	74.0	-16.1	1.31 V	110	43.36	14.54
4	11570.00	46.9 AV	54.0	-7.1	1.31 V	110	32.36	14.54

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The limit value is defined as per 15.247.

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	3863.33	52.6 PK	74.0	-21.4	1.05 H	207	49.64	2.96
2	3863.33	42.4 AV	54.0	-11.6	1.05 H	207	39.44	2.96
3	11590.00	57.4 PK	74.0	-16.6	1.35 H	97	42.84	14.56
4	11590.00	46.2 AV	54.0	-7.8	1.35 H	97	31.64	14.56
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	3863.33	53.4 PK	74.0	-20.6	1.00 V	209	50.44	2.96
2	3863.33	42.7 AV	54.0	-11.3	1.00 V	209	39.74	2.96
3	11590.00	58.2 PK	74.0	-15.8	1.33 V	105	43.64	14.56
4	11590.00	46.9 AV	54.0	-7.1	1.33 V	105	32.34	14.56

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The limit value is defined as per 15.247.

5.7.8 TEST RESULTS (CONDUCTED MEASUREMENT)

Radiated versus Conducted Measurement	
☒ Conducted measurement	☐ Radiated measurement

For Radiated measurement:

The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation)

For Conducted measurement:

The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

Conducted Measurement Factor
a. The composite gain will be used when signal support the correlated signal. (Composite gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 4.76dBi) b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. c. For the band edge the gain for the specific band may have been used. d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For f = 30 – 1000 MHz, add 4.7 dB. Note: The conducted emission test was considered some factor to compute test result.

ABOVE 1GHz DATA

802.11a

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
149	3828.125 PK	-34.07	-37.2	-32.35	-21.26	-11.09	PASS
	3828.125 AV	-37.44	-41.84	-36.09	-41.26	5.17	PASS*
	11490.625 PK	-40.8	-30.19	-29.83	-21.26	-8.57	PASS
	11493.75 AV	-51.66	-42.66	-42.15	-41.26	-0.89	PASS

802.11a

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
157	3856.25 PK	-34.56	-37.69	-32.84	-21.26	-11.58	PASS
	3856.25 AV	-37.64	-42.18	-36.33	-41.26	4.93	PASS*
	11568.75 PK	-40.08	-32.43	-31.74	-21.26	-10.48	PASS
	11571.875 AV	-49.66	-42.97	-42.13	-41.26	-0.87	PASS

802.11a

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
165	3884.375 PK	-35.15	-37	-32.97	-21.26	-11.71	PASS
	3881.25 AV	-37.79	-41.59	-36.28	-41.26	4.98	PASS *
	11653.125 PK	-36.93	-30.93	-29.96	-21.26	-8.7	PASS
	11650 AV	-49.78	-42.71	-41.93	-41.26	-0.67	PASS

*The unwanted emission at 3.8GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
149	3828.125 PK	-33.56	-38.01	-32.23	-21.26	-10.97	PASS
	3828.125 AV	-37.15	-42.43	-36.02	-41.26	5.24	PASS*
	11496.875 PK	-42.62	-35.95	-35.1	-21.26	-13.84	PASS
	11490.625 AV	-52.28	-46.94	-45.83	-41.26	-4.57	PASS

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
157	3856.25 PK	-33.57	-38.31	-32.31	-21.26	-11.05	PASS
	3856.25 AV	-37.04	-41.79	-35.79	-41.26	5.47*	PASS
	11571.875 PK	-41.97	-33.76	-33.15	-21.26	-11.89	PASS
	11571.875 AV	-52.59	-46.33	-45.41	-41.26	-4.15	PASS

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
165	3884.375 PK	-33.82	-36.81	-32.05	-21.26	-10.79	PASS
	3881.25 AV	-36.92	-42.32	-35.82	-41.26	5.44	PASS *
	11653.125 PK	-42.17	-34.16	-33.52	-21.26	-12.26	PASS
	11653.125 AV	-52.35	-46.49	-45.49	-41.26	-4.23	PASS

*The unwanted emission at 3.8GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
151	3837.5 PK	-34.49	-38.07	-32.91	-21.26	-11.65	PASS
	3834.375 AV	-38	-43.03	-36.81	-41.26	4.45	PASS*
	11518.75 PK	-42.63	-38.58	-37.14	-21.26	-15.88	PASS
	11512.5 AV	-52.69	-48.83	-47.33	-41.26	-6.07	PASS

802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
159	3862.5 PK	-33.78	-37.58	-32.27	-21.26	-11.01	PASS
	3862.5 AV	-37.15	-42.06	-35.93	-41.26	5.33	PASS *
	11593.75 PK	-42.8	-38.19	-36.9	-21.26	-15.64	PASS
	11593.75 AV	-52.9	-48.35	-47.04	-41.26	-5.78	PASS

*The unwanted emission at 3.8GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

5.8 AC POWER LINE CONDUCTED EMISSION MEASUREMENT

5.8.1 LIMITS OF AC POWER LINE CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 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 0.50 MHz.

5.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 08,2012	June 07,2013
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Mar. 14, 2013

5.8.3 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.

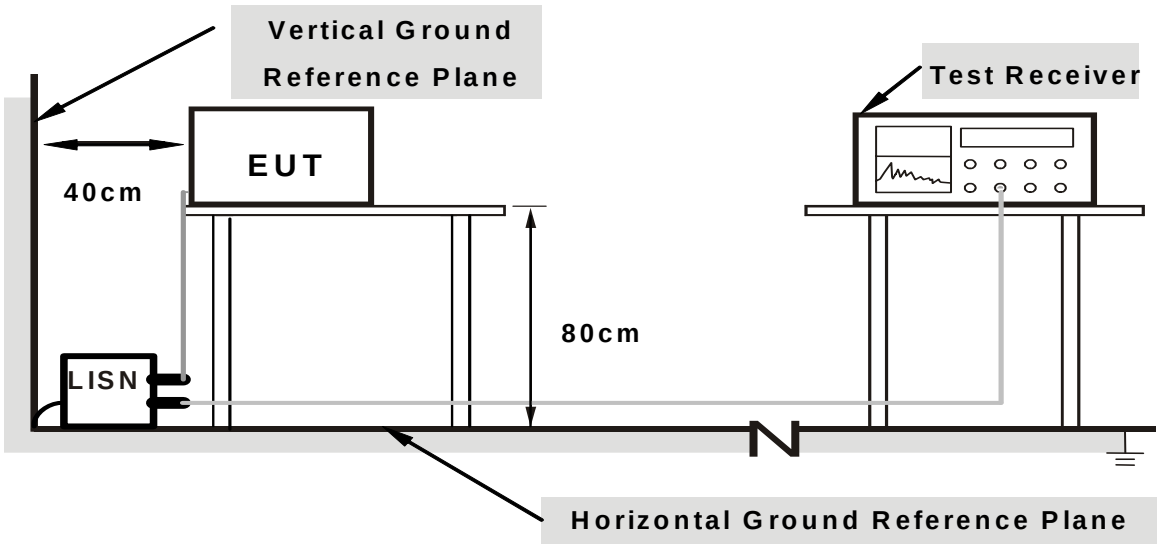
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit – 20dB) were not recorded.

5.8.4 DEVIATION FROM TEST STANDARD

No deviation

5.8.5 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 related item – Photographs of the Test Configuration.

5.8.6 EUT OPERATING CONDITIONS

Same as the 4.7.6

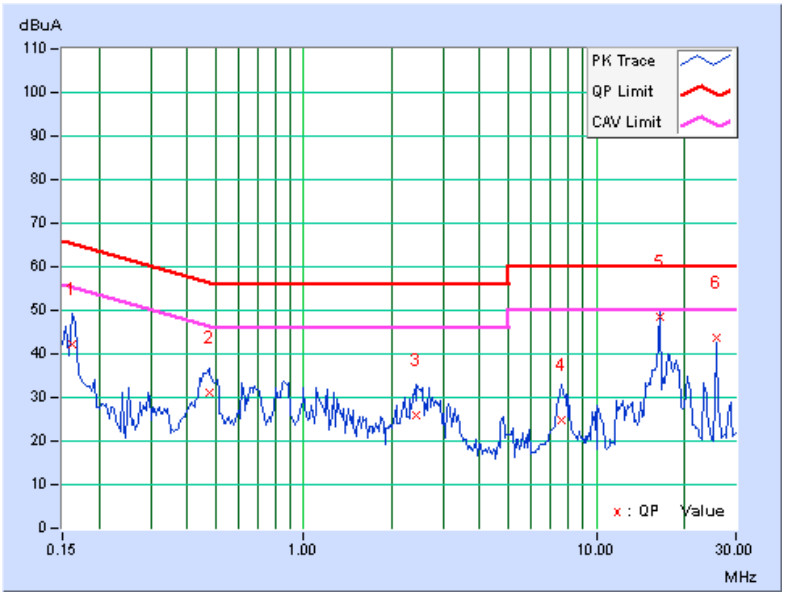
5.8.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.11	41.94	27.00	42.05	27.11	65.38	55.38	-23.33	-28.27
2	0.47422	0.16	31.08	21.51	31.24	21.67	56.44	46.44	-25.20	-24.77
3	2.42578	0.24	25.56	17.86	25.80	18.10	56.00	46.00	-30.20	-27.90
4	7.64063	0.45	24.51	17.39	24.96	17.84	60.00	50.00	-35.04	-32.16
5	16.46484	0.79	47.77	45.28	48.56	46.07	60.00	50.00	-11.44	-3.93
6	25.87109	1.09	42.50	41.14	43.59	42.23	60.00	50.00	-16.41	-7.77

REMARKS:

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

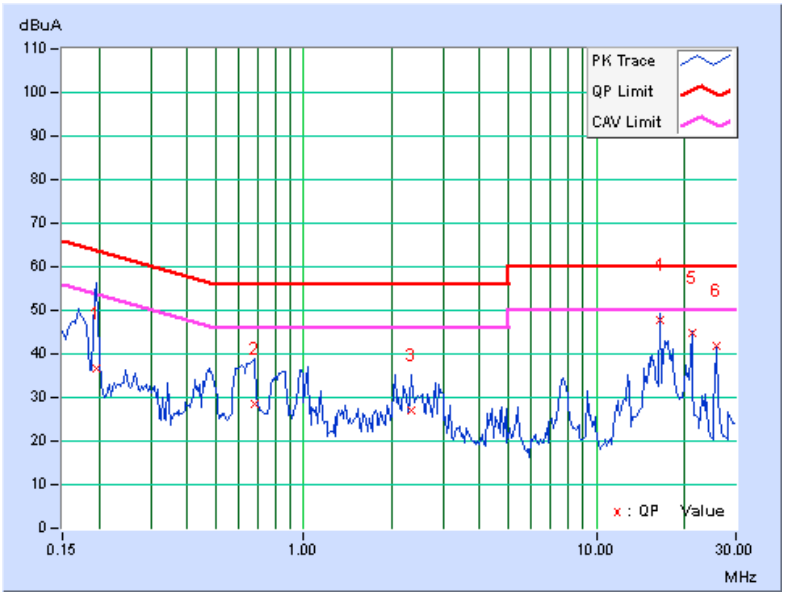


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.10	36.55	19.89	36.65	19.99	63.74	53.74	-27.09	-33.75
2	0.67734	0.16	28.31	17.57	28.47	17.73	56.00	46.00	-27.53	-28.27
3	2.32813	0.21	26.69	18.02	26.90	18.23	56.00	46.00	-29.10	-27.77
4	**16.46484**	**0.54**	**47.26**	**45.76**	**47.80**	**46.30**	**60.00**	**50.00**	**-12.20**	**-3.70**
5	21.16797	0.63	44.25	43.95	44.88	44.58	60.00	50.00	-15.12	-5.42
6	25.87109	0.74	40.99	40.63	41.73	41.37	60.00	50.00	-18.27	-8.63

REMARKS:

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



6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

7. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

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.bureauveritas-adt.com

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

8.APPENDIX A - RADIATED EMISSION MEASUREMENT(FOR 5GHZ, 5725~5850MHZ BAND)

8.1.1 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.

8.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated_V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: June 11, 2013

8.1.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

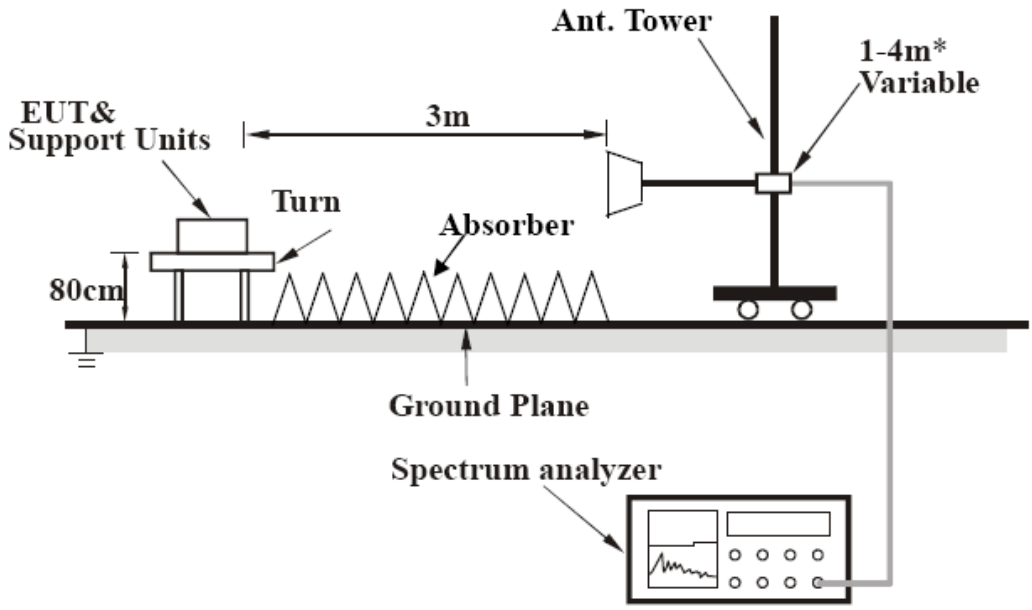
NOTE:

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

8.1.4 DEVIATION FROM TEST STANDARD

No deviation

8.1.5 TEST SETUP



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

8.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “Atheros Radio test 2_Version:2.3” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

8.1.7 TEST RESULTS

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	3830.00	52.7 PK	74.0	-21.3	1.00 H	334	51.14	1.56
2	3830.00	42.7 AV	54.0	-11.3	1.00 H	334	41.14	1.56
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	53.4 PK	74.0	-20.6	1.00 V	137	51.84	1.56
2	3830.00	42.7 AV	54.0	-11.3	1.00 V	137	41.14	1.56

REMARKS:

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

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	3856.67	53.2 PK	74.0	-20.8	1.00 H	216	51.52	1.68
2	3856.67	42.7 AV	54.0	-11.3	1.00 H	216	41.02	1.68
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	3856.67	53.2 PK	74.0	-20.8	1.00 V	225	51.52	1.68
2	3856.67	42.7 AV	54.0	-11.3	1.00 V	225	41.02	1.68

REMARKS:

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

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	3883.33	53.1 PK	74.0	-20.9	1.00 H	217	51.30	1.80
2	3883.33	42.6 AV	54.0	-11.4	1.00 H	217	40.80	1.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	3883.33	53.3 PK	74.0	-20.7	1.00 V	216	51.50	1.80
2	3883.33	42.8 AV	54.0	-11.2	1.00 V	216	41.00	1.80

REMARKS:

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

802.11n (HT20)

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

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	53.1 PK	74.0	-20.9	1.00 H	207	50.29	2.81
2	3830.00	42.5 AV	54.0	-11.5	1.00 H	207	39.69	2.81
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	53.1 PK	74.0	-20.9	1.02 V	223	50.29	2.81
2	3830.00	42.5 AV	54.0	-11.5	1.02 V	223	39.69	2.81

REMARKS:

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

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	3856.67	52.5 PK	74.0	-21.5	1.02 H	206	49.57	2.93
2	3856.67	42.2 AV	54.0	-11.8	1.02 H	206	39.27	2.93
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	3856.67	53.1 PK	74.0	-20.9	1.05 V	234	50.17	2.93
2	3856.67	42.8 AV	54.0	-11.2	1.05 V	234	39.87	2.93

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

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	3883.33	52.6 PK	74.0	-21.4	1.00 H	222	49.55	3.05
2	3883.33	42.1 AV	54.0	-11.9	1.00 H	222	39.05	3.05
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	3883.33	53.6 PK	74.0	-20.4	1.00 V	218	50.55	3.05
2	3883.33	42.9 AV	54.0	-11.1	1.00 V	218	39.85	3.05

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

802.11n (HT40)

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

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	3836.67	52.9 PK	74.0	-21.1	1.00 H	227	50.06	2.84
2	3836.67	42.4 AV	54.0	-11.6	1.00 H	227	39.56	2.84
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	3836.67	53.0 PK	74.0	-21.0	1.05 V	231	50.16	2.84
2	3836.67	42.6 AV	54.0	-11.4	1.05 V	231	39.76	2.84

REMARKS:

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

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	3863.33	52.6 PK	74.0	-21.4	1.05 H	207	49.64	2.96
2	3863.33	42.4 AV	54.0	-11.6	1.05 H	207	39.44	2.96
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	3863.33	53.4 PK	74.0	-20.6	1.00 V	209	50.44	2.96
2	3863.33	42.7 AV	54.0	-11.3	1.00 V	209	39.74	2.96

REMARKS:

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

9.APPENDIX B - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

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

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