

FCC TEST REPORT (15.247)

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MODEL NO.: AR5BMD22

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IC: 4104A-AR5BMD22

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120120E03	Original release	Apr. 17, 2012
RF120120E03 R1	Add Bluetooth(LE mode) test	May 03, 2012
RF120120E03 R2	Modify the version of the standard	May 07, 2012

1. CERTIFICATION

PRODUCT: 802.11 a/b/g/n + BT Combo Card
BRAND NAME: Atheros
MODEL NO.: AR5BMD22
TEST SAMPLE: R&D SAMPLE
APPLICANT: Qualcomm Atheros, Inc.
TESTED: Feb. 06 to Apr. 12, 2012
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4:2003
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)

The above equipment (Model: AR5BMD22) 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 : 
(Midoli Peng, Specialist) **DATE:** May 07, 2012

APPROVED BY : 
(May Chen, Deputy Manager) **DATE:** May 07, 2012

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 -14.88dB at 0.16562MHz
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2386.00MHz
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(Bluetooth(LE mode)), 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 -14.73dB at 0.16475MHz
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.7dB at 166.00MHz
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 -14.74dB at 0.16472MHz
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.8dB at 166.00MHz
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:

1. There are Bluetooth technology and WLAN technology used for the EUT. (The Bluetooth test data please refer "RF120120E03-2 R1")
2. For WLAN: 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. (RF120120E03-1 R1 & RF120120E03-3).

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	2.45 dB
Radiated emissions (30MHz-1GHz)	5.69 dB
Radiated emissions (1GHz -6GHz)	5.12 dB
Radiated emissions (6GHz -18GHz)	5.32 dB
Radiated emissions (18GHz -40GHz)	5.37 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	802.11 a/b/g/n + BT Combo Card
MODEL NO.	AR5BMD22
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 DSSS
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n (20MHz, 800ns GI): up to 130Mbps 802.11n (20MHz, 400ns GI): up to 144.4Mbps 802.11n (40MHz, 800ns GI) : up to 270Mbps 802.11n (40MHz, 400ns GI) : up to 300Mbps Bluetooth(LE mode): 1Mbps
OPERATING FREQUENCY	For 15.407 802.11a: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.58GHz & 5.66~5.7GHz
	For 15.247 802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.745 ~ 5.825GHz Bluetooth(LE mode): 2.402 ~ 2.480GHz
NUMBER OF CHANNEL	For 15.407 16 for 802.11a, 802.11n (20MHz) 7 for 802.11n (40MHz)
	For 15.247(2.4GHz) 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 40 (37 hopping + 3 advertising channel) for Bluetooth(LE mode)
	For 15.247(5GHz) 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)

MAXIMUM OUTPUT POWER	For 15.407 802.11a: 52.481mW 802.11n (20MHz): 42.273mW 802.11n (40MHz): 42.760mW For 15.247(2.4GHz) 802.11b: 129.439mW 802.11g: 335.783mW 802.11n (20MHz): 320.670mW 802.11n (40MHz): 263.652mW Bluetooth(LE mode): 2.630 mW For 15.247(5GHz) 802.11a: 232.305mW 802.11n (20MHz): 176.315mW 802.11n (40MHz): 176.315mW
ANTENNA TYPE	See item 3.2
ANTENNA CONNECTOR	See item 3.2
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

- There are Bluetooth technology and WLAN technology used for the EUT. <the Bluetooth test data please refer "RF120120E03-2 R2">
- The device has three configurations (working mode)
 - WLAN only (2x2 MIMO)
 - BT+WLAN (2x2 MIMO) with reduced power on WLAN
 - BT+WLAN (1x1 mode on a/b/g only, chain 0 is used for BT and chain 1 is used for WLAN)
- Spurious Emission (radiated emission) of the simultaneous operation (WiFi & Bluetooth) have been evaluated and no non-compliance found. The detail combinations of transmitters / frequencies / modes as below table

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type
2.4 GHz (802.11g) + Bluetooth	1 to 11	6	OFDM	BPSK
	0 to 78	0	FHSS	8DPSK
5 GHz (802.11a) + Bluetooth	149 to 165	149	OFDM	BPSK
	0 to 78	0	FHSS	8DPSK

4. The EUT is 2 * 2 MIMO with 11n beam forming function.

MODULATION MODE	TX/Rx FUNCTION
802.11b	1Tx/1Rx(Diversity) or 2Tx/2Rx
802.11g	1Tx/1Rx(Diversity) or 2Tx/2Rx
802.11a	1Tx/1Rx(Diversity) or 2Tx/2Rx
802.11n (20MHz)	2Tx/2Rx
802.11n (40MHz)	2Tx/2Rx

5. 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.

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:

No.	Brand	Model	Antenna Type	Connector	Antenna Gain (dBi)< included cable loss>			
					For 2.4GHz	For 5GHz (5.15~5.35)	For 5GHz (5.47~5.725)	For 5GHz (5.725~5.850)
1&2	WNC	81.EBJ15.005	PIFA	IPEX	3.62	3.08	4.76	4.76

Cable Loss:

No.	Brand	Model	Cable Loss(dB)				Cable Length
			For 2.4GHz	For 5GHz (5.15~5.35)	For 5GHz (5.47~5.725)	For 5GHz (5.725~5.850)	
1&2	WNC	81-EBJ15.005	1.15	1.70	1.74	1.79	300

Note: Above antenna gains of antenna are Total (H+V).

3.3 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

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

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

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

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

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



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Operated in 5725 ~ 5850MHz band:

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

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 (40MHz):

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	RE < 1G	RE ³ 1G	APCM	OB	
-	√	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ³ 1G: Radiated 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**.

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).
- ☒ The investigation has been done for the worst-case (1x1 vs. 2x2) on harmonics and band-edge to find out the worst-case for the final tests.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6
Bluetooth LE	0 to 39	0	FHSS	GFSK (LE mode)	1
802.11a	149 to 165	149	OFDM	BPSK	6

RADIATED 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).
- ☒ The investigation has been done for the worst-case (1x1 vs. 2x2) on harmonics and band-edge to find out the worst-case for the final tests.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6
Bluetooth LE	0 to 39	0	FHSS	GFSK (LE mode)	1
802.11a	149 to 165	149	OFDM	BPSK	6

RADIATED EMISSION TEST (ABOVE 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).
- ☒ The measurement was separately on 1x1 and 2x2 for a/b/g mode.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Bluetooth LE	0 to 39	0, 19, 39	FHSS	GFSK (LE mode)	1
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ The measurement was separately on 1x1 and 2x2 for a/b/g mode.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Bluetooth LE	0 to 39	0, 19, 39	FHSS	GFSK (LE mode)	1
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	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).
- ☒ The measurement was separately on 1x1 and 2x2 for a/b/g mode.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Bluetooth LE	0 to 39	0, 39	FHSS	GFSK (LE mode)	1
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
For 5 GHz 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	26deg. C, 68%RH	120Vac, 60Hz	Kyle Huang
RE<1G	22deg. C, 64%RH	120Vac, 60Hz	Frank Liu
RE ³ 1G	24deg. C, 71%RH	120Vac, 60Hz	Frank Liu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang



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3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (Section 15.247)

ANSI C63.4:2003

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.



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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.

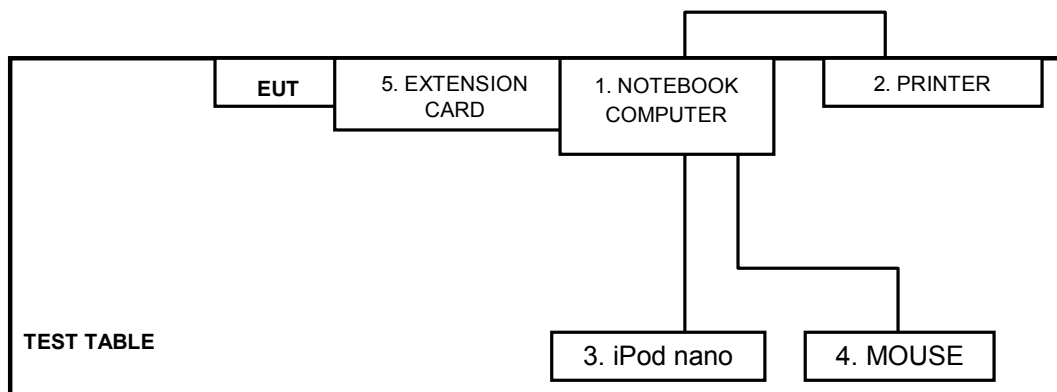
For conducted emission test					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	E5420	CHHYLQ1	FCC DoC
2	PRINTER	EPSON	LQ-300+II	G88Y074086	FCC DoC
3	iPod nano	Apple	A1137	5K7170JBUPR	FCC DoC
4	MOUSE	DELL	MO56UO	349003988	NA
5	EXTENSION CARD	Atheros	NA	NA	NA
For other test items					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	Lenovo	0769	L3-be248 08/01	FCC DoC
2	EXTENSION CARD	Atheros	NA	NA	NA

For conducted emission test	
No.	Signal cable description
1	NA
2	USB cable(1.8m)
3	USB cable(1m)
4	USB cable(1.8m)
5	NA
For other test items	
No.	Signal cable description
1	NA
2	NA

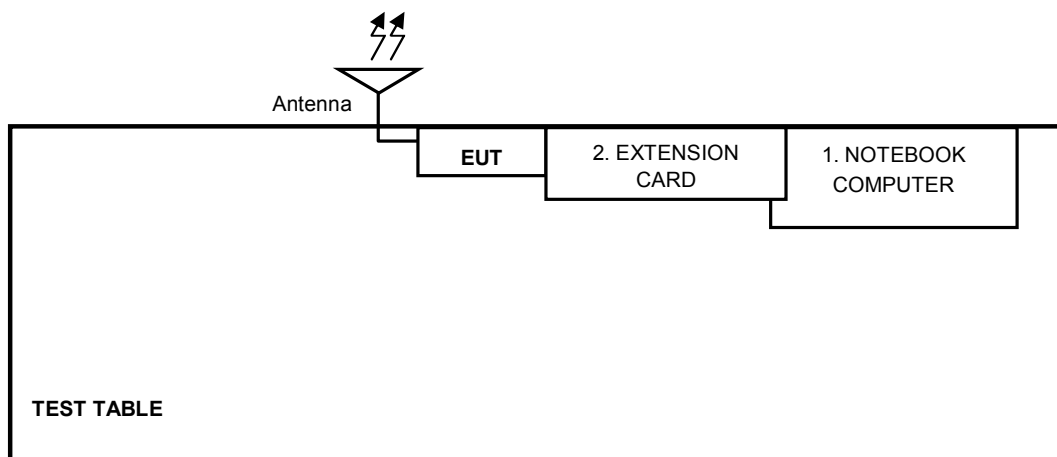
Note: The power cords of the above support units were unshielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST

For conducted emission test



For other test items



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

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 02, 2011	Mar. 01, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 20, 2011	Sep. 19, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 10, 2011	June 09, 2012
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 06, 2011	Aug. 05, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: Feb. 06, 2012



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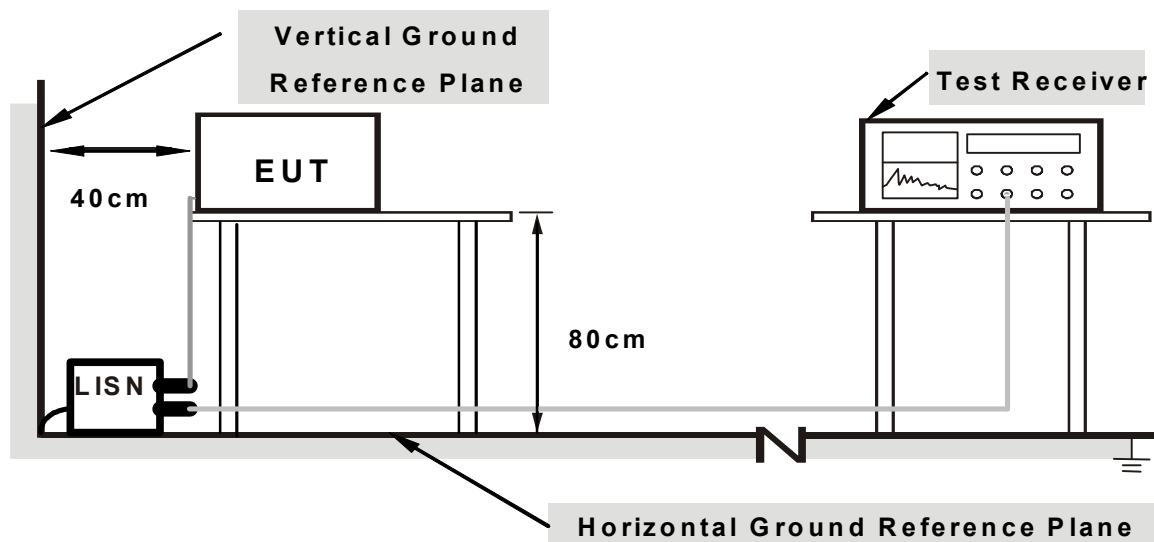
4.1.3 TEST PROCEDURES

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.1.6 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 “artgui.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

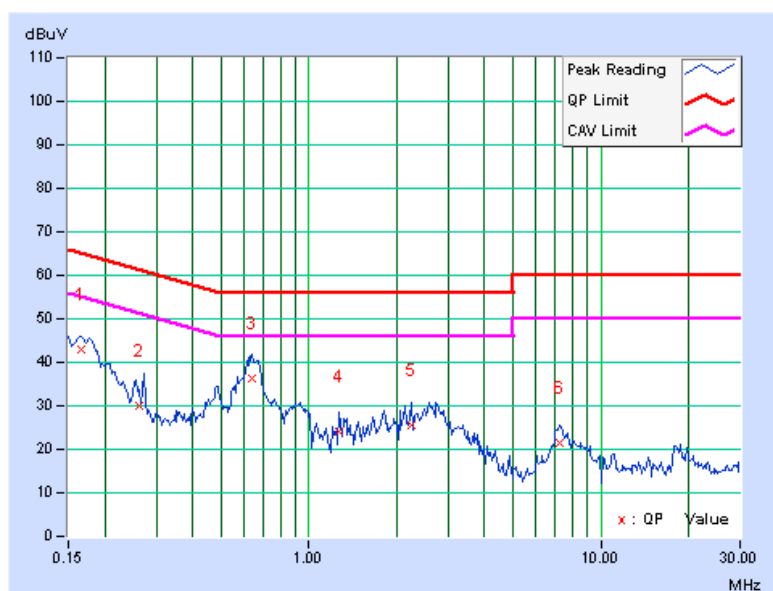
4.1.7 TEST RESULTS (WLAN mode)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.06	42.97	40.10	43.03	40.16	65.18	55.18	-22.15	-15.02
2	0.26372	0.06	29.99	15.63	30.05	15.69	61.31	51.31	-31.26	-35.62
3	0.63828	0.08	36.25	22.48	36.33	22.56	56.00	46.00	-19.67	-23.44
4	1.27344	0.11	23.93	16.35	24.04	16.46	56.00	46.00	-31.96	-29.54
5	2.23828	0.19	25.28	19.16	25.47	19.35	56.00	46.00	-30.53	-26.65
6	7.25781	0.37	21.22	14.64	21.59	15.01	60.00	50.00	-38.41	-34.99

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.

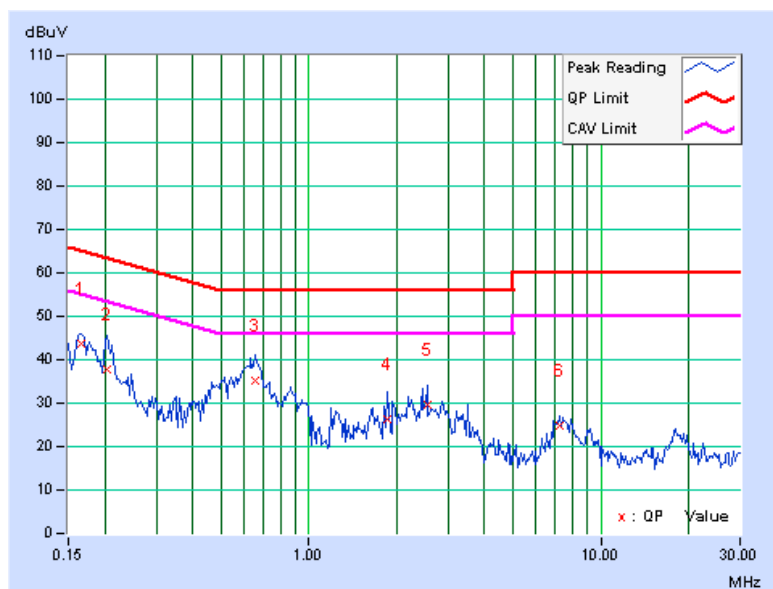


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.07	43.71	40.23	43.78	40.30	65.18	55.18	-21.40	-14.88
2	0.20469	0.07	37.57	28.01	37.64	28.08	63.42	53.42	-25.78	-25.34
3	0.65391	0.08	35.15	21.84	35.23	21.92	56.00	46.00	-20.77	-24.08
4	1.86719	0.16	25.99	18.20	26.15	18.36	56.00	46.00	-29.85	-27.64
5	2.53906	0.20	29.49	21.28	29.69	21.48	56.00	46.00	-26.31	-24.52
6	7.25781	0.35	24.36	17.14	24.71	17.49	60.00	50.00	-35.29	-32.51

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.



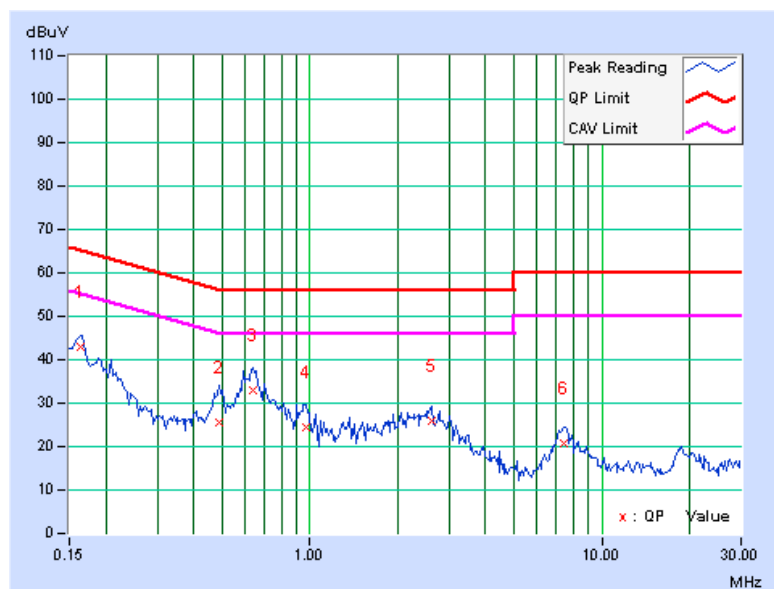
4.1.8 TEST RESULTS (BT<LE> mode)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor [dB]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB]	AV. [dB]
1	0.16475	0.06	42.89	40.43	42.95	40.49	65.22	55.22	-22.27	-14.73
2	0.48984	0.07	25.59	16.57	25.66	16.64	56.17	46.17	-30.51	-29.53
3	0.63828	0.08	32.95	20.58	33.03	20.66	56.00	46.00	-22.97	-25.34
4	0.97031	0.09	24.29	14.75	24.38	14.84	56.00	46.00	-31.62	-31.16
5	2.60547	0.21	25.67	19.70	25.88	19.91	56.00	46.00	-30.12	-26.09
6	7.43359	0.37	20.25	13.38	20.62	13.75	60.00	50.00	-39.38	-36.25

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.

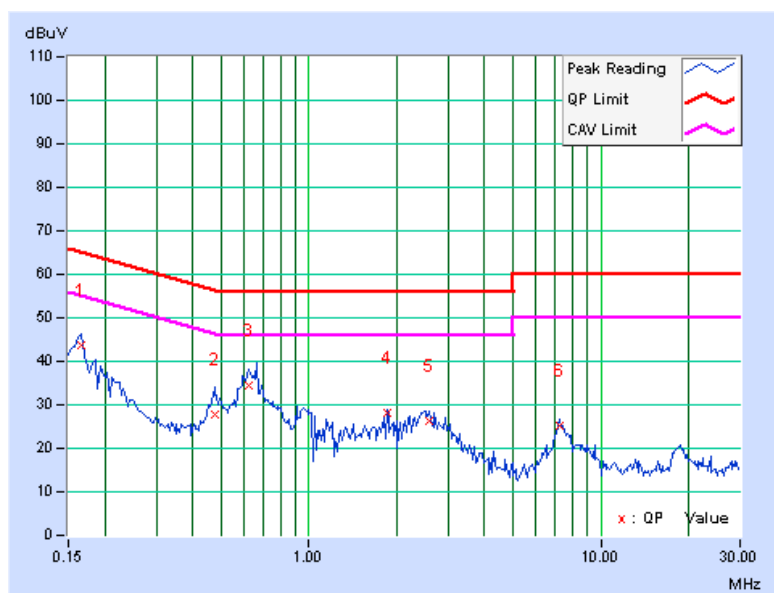


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.07	43.57	40.29	43.64	40.36	65.18	55.18	-21.54	-14.82
2	0.47422	0.08	27.81	18.57	27.89	18.65	56.44	46.44	-28.55	-27.79
3	0.61875	0.08	34.21	22.66	34.29	22.74	56.00	46.00	-21.71	-23.26
4	1.84766	0.16	27.88	17.97	28.04	18.13	56.00	46.00	-27.96	-27.87
5	2.59766	0.20	26.02	20.74	26.22	20.94	56.00	46.00	-29.78	-25.06
6	7.19141	0.34	24.96	18.60	25.30	18.94	60.00	50.00	-34.70	-31.06

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.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

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4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 29, 2011	Aug. 28, 2012
Agilent Pre-Selector	N9039A	MY46520310	Aug. 29, 2011	Aug. 28, 2012
Agilent Signal Generator	N5181A	MY49060347	July 25, 2011	July 24, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 27, 2012	Feb. 26, 2013
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 06, 2012	Apr. 05, 2013
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 23, 2011	Nov. 22, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 27, 2011	Dec. 26, 2012
RF Cable	NA	CHHCAB_001	Oct. 08, 2011	Oct. 07, 2012
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	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: Apr. 10 to 13, 2012

4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 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.

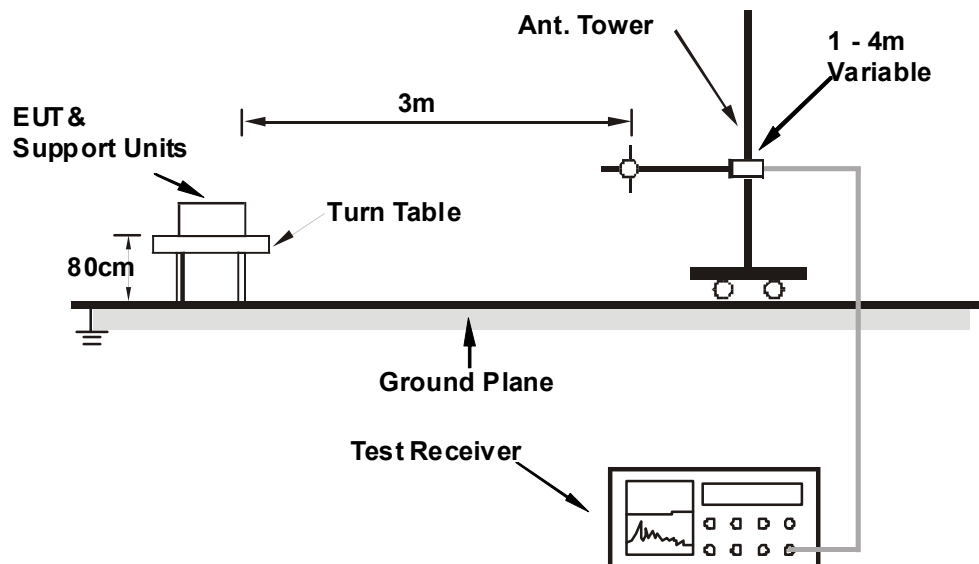
NOTE:

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS (WLAN MODE)

BELOW 1GHz WORST-CASE DATA

Multiple chain - 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	166.00	42.8 QP	43.5	-0.8	1.76 H	360	28.57	14.18
2	358.62	35.1 QP	46.0	-10.9	2.00 H	292	18.14	16.93
3	398.29	43.4 QP	46.0	-2.6	1.00 H	244	25.23	18.19
4	697.07	43.8 QP	46.0	-2.2	2.00 H	264	19.79	23.99
5	796.67	40.0 QP	46.0	-6.0	1.00 H	245	14.12	25.89
6	896.14	41.9 QP	46.0	-4.1	1.00 H	180	14.21	27.66
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	143.80	38.4 QP	43.5	-5.1	2.00 V	295	24.12	14.32
2	166.54	37.6 QP	43.5	-6.0	2.00 V	303	23.40	14.15
3	298.82	41.7 QP	46.0	-4.3	1.50 V	277	26.59	15.10
4	323.81	34.3 QP	46.0	-11.7	2.00 V	360	18.45	15.87
5	359.93	37.2 QP	46.0	-8.8	2.00 V	360	20.23	16.97
6	399.72	43.2 QP	46.0	-2.8	1.30 V	306	24.97	18.23

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.

ABOVE 1GHz WORST-CASE DATA

Single chain - 802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.30	61.3 PK	74.0	-12.7	1.18 H	90	30.10	31.20
2	2386.30	53.5 AV	54.0	-0.5	1.18 H	90	22.30	31.20
3	*2412.00	109.4 PK			1.20 H	118	78.13	31.27
4	*2412.00	107.0 AV			1.20 H	118	75.73	31.27
5	4824.00	54.0 PK	74.0	-20.0	1.28 H	56	14.58	39.42
6	4824.00	49.3 AV	54.0	-4.7	1.28 H	56	9.88	39.42
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	2386.30	59.4 PK	74.0	-14.6	1.06 V	269	28.20	31.20
2	2386.30	51.3 AV	54.0	-2.7	1.06 V	269	20.10	31.20
3	*2412.00	105.9 PK			1.04 V	287	74.63	31.27
4	*2412.00	103.3 AV			1.04 V	287	72.03	31.27
5	4824.00	54.6 PK	74.0	-19.4	1.69 V	244	15.18	39.42
6	4824.00	50.0 AV	54.0	-4.0	1.69 V	244	10.58	39.42

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.8 PK			1.24 H	84	78.46	31.34
2	*2437.00	107.3 AV			1.24 H	84	75.96	31.34
3	4874.00	52.1 PK	74.0	-21.9	1.23 H	58	12.48	39.62
4	4874.00	46.0 AV	54.0	-8.0	1.23 H	58	6.38	39.62
5	7311.00	54.4 PK	74.0	-19.6	1.00 H	56	10.30	44.10
6	7311.00	46.0 AV	54.0	-8.0	1.00 H	56	1.90	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.2 PK			1.45 V	131	74.86	31.34
2	*2437.00	103.8 AV			1.45 V	131	72.46	31.34
3	4874.00	53.6 PK	74.0	-20.4	1.68 V	286	13.98	39.62
4	4874.00	48.3 AV	54.0	-5.7	1.68 V	286	8.68	39.62
5	7311.00	57.6 PK	74.0	-16.4	1.54 V	58	13.50	44.10
6	7311.00	51.4 AV	54.0	-2.6	1.54 V	58	7.30	44.10

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.1 PK			1.16 H	91	78.70	31.40
2	*2462.00	107.7 AV			1.16 H	91	76.30	31.40
3	2487.70	60.3 PK	74.0	-13.7	1.14 H	89	28.83	31.47
4	2487.70	52.9 AV	54.0	-1.1	1.14 H	89	21.43	31.47
5	4924.00	49.7 PK	74.0	-24.3	1.33 H	64	9.88	39.82
6	4924.00	43.0 AV	54.0	-11.0	1.33 H	64	3.18	39.82
7	7386.00	53.4 PK	74.0	-20.6	1.03 H	136	9.22	44.18
8	7386.00	43.0 AV	54.0	-11.0	1.03 H	136	-1.18	44.18

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.2 PK			1.46 V	130	73.80	31.40
2	*2462.00	103.0 AV			1.46 V	130	71.60	31.40
3	2487.80	59.3 PK	74.0	-14.7	1.46 V	125	27.83	31.47
4	2487.80	51.2 AV	54.0	-2.8	1.46 V	125	19.73	31.47
5	4924.00	53.4 PK	74.0	-20.6	1.18 V	261	13.58	39.82
6	4924.00	47.4 AV	54.0	-6.6	1.18 V	261	7.58	39.82
7	7386.00	55.1 PK	74.0	-18.9	1.03 V	63	10.92	44.18
8	7386.00	48.5 AV	54.0	-5.5	1.03 V	63	4.32	44.18

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.

Single chain - 802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.0 PK	74.0	-2.0	1.17 H	74	40.79	31.21
2	2390.00	53.2 AV	54.0	-0.8	1.17 H	74	21.99	31.21
3	*2412.00	108.5 PK			1.17 H	77	77.23	31.27
4	*2412.00	97.8 AV			1.17 H	77	66.53	31.27
5	4824.00	45.2 PK	74.0	-28.8	1.31 H	59	5.78	39.42
6	4824.00	35.3 AV	54.0	-18.7	1.31 H	59	-4.12	39.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.9 PK	74.0	-15.1	1.41 V	123	27.69	31.21
2	2390.00	48.6 AV	54.0	-5.4	1.41 V	123	17.39	31.21
3	*2412.00	103.0 PK			1.47 V	118	71.73	31.27
4	*2412.00	92.6 AV			1.47 V	118	61.33	31.27
5	4824.00	47.6 PK	74.0	-26.4	1.13 V	259	8.18	39.42
6	4824.00	37.8 AV	54.0	-16.2	1.13 V	259	-1.62	39.42

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 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	2390.00	59.7 PK	74.0	-14.3	1.13 H	79	28.49	31.21
2	2390.00	47.3 AV	54.0	-6.7	1.13 H	79	16.09	31.21
3	*2437.00	112.1 PK			1.18 H	92	80.76	31.34
4	*2437.00	101.7 AV			1.18 H	92	70.36	31.34
5	2483.50	66.8 PK	74.0	-7.2	1.13 H	90	35.34	31.46
6	2483.50	46.7 AV	54.0	-7.3	1.13 H	90	15.24	31.46
7	4874.00	52.6 PK	74.0	-21.4	1.24 H	63	12.98	39.62
8	4874.00	41.6 AV	54.0	-12.4	1.24 H	63	1.98	39.62
9	7311.00	51.7 PK	74.0	-22.3	1.04 H	122	7.60	44.10
10	7311.00	41.2 AV	54.0	-12.8	1.04 H	122	-2.90	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.1 PK			1.44 V	120	76.76	31.34
2	*2437.00	97.1 AV			1.44 V	120	65.76	31.34
3	4874.00	55.4 PK	74.0	-18.6	1.17 V	254	15.78	39.62
4	4874.00	43.1 AV	54.0	-10.9	1.17 V	254	3.48	39.62
5	7311.00	50.7 PK	74.0	-23.3	1.04 V	59	6.60	44.10
6	7311.00	40.6 AV	54.0	-13.4	1.04 V	59	-3.50	44.10

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.1 PK			1.18 H	90	75.70	31.40
2	*2462.00	96.7 AV			1.18 H	90	65.30	31.40
3	2483.50	73.3 PK	74.0	-0.7	1.15 H	89	41.84	31.46
4	2483.50	53.3 AV	54.0	-0.7	1.15 H	89	21.84	31.46
5	4924.00	44.3 PK	74.0	-29.7	1.29 H	63	4.48	39.82
6	4924.00	34.3 AV	54.0	-19.7	1.29 H	63	-5.52	39.82
7	7386.00	51.4 PK	74.0	-22.6	1.06 H	123	7.22	44.18
8	7386.00	41.1 AV	54.0	-12.9	1.06 H	123	-3.08	44.18

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.7 PK			1.44 V	120	69.30	31.40
2	*2462.00	91.2 AV			1.44 V	120	59.80	31.40
3	2483.50	59.4 PK	74.0	-14.6	1.46 V	124	27.94	31.46
4	2483.50	49.3 AV	54.0	-4.7	1.46 V	124	17.84	31.46
5	4924.00	46.2 PK	74.0	-27.8	1.12 V	263	6.38	39.82
6	4924.00	36.3 AV	54.0	-17.7	1.12 V	263	-3.52	39.82
7	7386.00	51.3 PK	74.0	-22.7	1.52 V	58	7.12	44.18
8	7386.00	41.6 AV	54.0	-12.4	1.52 V	58	-2.58	44.18

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.

Multiple chain - 802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.00	60.9 PK	74.0	-13.1	1.29 H	137	29.70	31.20
2	2386.00	53.9 AV	54.0	-0.1	1.29 H	137	22.70	31.20
3	*2412.00	108.1 PK			1.29 H	137	76.83	31.27
4	*2412.00	106.2 AV			1.29 H	137	74.93	31.27
5	4824.00	54.4 PK	74.0	-19.6	1.29 H	55	14.98	39.42
6	4824.00	49.1 AV	54.0	-4.9	1.29 H	55	9.68	39.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.3 PK	74.0	-15.7	1.53 V	192	27.09	31.21
2	2390.00	49.2 AV	54.0	-4.8	1.53 V	192	17.99	31.21
3	*2412.00	105.4 PK			1.54 V	183	74.13	31.27
4	*2412.00	103.2 AV			1.54 V	183	71.93	31.27
5	4824.00	53.7 PK	74.0	-20.3	1.33 V	242	14.28	39.42
6	4824.00	49.8 AV	54.0	-4.2	1.33 V	242	10.38	39.42

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.3 PK			1.24 H	134	76.96	31.34
2	*2437.00	106.4 AV			1.24 H	134	75.06	31.34
3	4874.00	52.1 PK	74.0	-21.9	1.00 H	56	12.48	39.62
4	4874.00	46.3 AV	54.0	-7.7	1.00 H	56	6.68	39.62
5	7311.00	53.1 PK	74.0	-20.9	1.18 H	267	9.00	44.10
6	7311.00	42.6 AV	54.0	-11.4	1.18 H	267	-1.50	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.5 PK			1.51 V	179	74.16	31.34
2	*2437.00	103.6 AV			1.51 V	179	72.26	31.34
3	4874.00	53.0 PK	74.0	-21.0	1.03 V	263	13.38	39.62
4	4874.00	48.1 AV	54.0	-5.9	1.03 V	263	8.48	39.62
5	7311.00	54.4 PK	74.0	-19.6	1.55 V	58	10.30	44.10
6	7311.00	46.8 AV	54.0	-7.2	1.55 V	58	2.70	44.10

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.2 PK			1.21 H	126	76.80	31.40
2	*2462.00	106.3 AV			1.21 H	126	74.90	31.40
3	2483.50	59.2 PK	74.0	-14.8	1.14 H	74	27.74	31.46
4	2483.50	49.0 AV	54.0	-5.0	1.14 H	74	17.54	31.46
5	4924.00	50.8 PK	74.0	-23.2	1.26 H	60	10.98	39.82
6	4924.00	42.2 AV	54.0	-11.8	1.26 H	60	2.38	39.82
7	7386.00	52.3 PK	74.0	-21.7	1.00 H	63	8.12	44.18
8	7386.00	41.8 AV	54.0	-12.2	1.00 H	63	-2.38	44.18

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.2 PK			1.54 V	169	73.80	31.40
2	*2462.00	103.4 AV			1.54 V	169	72.00	31.40
3	2483.50	54.6 PK	74.0	-19.4	1.53 V	213	23.14	31.46
4	2483.50	45.3 AV	54.0	-8.7	1.53 V	213	13.84	31.46
5	4924.00	51.9 PK	74.0	-22.1	1.16 V	260	12.08	39.82
6	4924.00	44.9 AV	54.0	-9.1	1.16 V	260	5.08	39.82
7	7386.00	54.4 PK	74.0	-19.6	1.52 V	73	10.22	44.18
8	7386.00	44.0 AV	54.0	-10.0	1.52 V	73	-0.18	44.18

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.

Multiple chain - 802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.6 PK	74.0	-5.4	1.29 H	126	37.39	31.21
2	2390.00	52.8 AV	54.0	-1.2	1.29 H	126	21.59	31.21
3	*2412.00	108.1 PK			1.27 H	126	76.83	31.27
4	*2412.00	98.4 AV			1.27 H	126	67.13	31.27
5	4824.00	46.3 PK	74.0	-27.7	1.21 H	56	6.88	39.42
6	4824.00	36.4 AV	54.0	-17.6	1.21 H	56	-3.02	39.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.3 PK	74.0	-15.7	1.51 V	230	27.09	31.21
2	2390.00	48.4 AV	54.0	-5.6	1.51 V	230	17.19	31.21
3	*2412.00	105.3 PK			1.56 V	133	74.03	31.27
4	*2412.00	95.4 AV			1.56 V	133	64.13	31.27
5	4824.00	47.8 PK	74.0	-26.2	1.13 V	263	8.38	39.42
6	4824.00	37.6 AV	54.0	-16.4	1.13 V	263	-1.82	39.42

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	113.6 PK			1.24 H	127	82.26	31.34
2	*2437.00	103.4 AV			1.24 H	127	72.06	31.34
3	4874.00	52.6 PK	74.0	-21.4	1.26 H	73	12.98	39.62
4	4874.00	41.3 AV	54.0	-12.7	1.26 H	73	1.68	39.62
5	7311.00	52.6 PK	74.0	-21.4	1.00 H	66	8.50	44.10
6	7311.00	40.7 AV	54.0	-13.3	1.00 H	66	-3.40	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.6 PK			1.55 V	137	79.26	31.34
2	*2437.00	100.3 AV			1.55 V	137	68.96	31.34
3	4874.00	52.9 PK	74.0	-21.1	1.13 V	213	13.28	39.62
4	4874.00	41.7 AV	54.0	-12.3	1.13 V	213	2.08	39.62
5	7311.00	53.4 PK	74.0	-20.6	1.54 V	60	9.30	44.10
6	7311.00	41.2 AV	54.0	-12.8	1.54 V	60	-2.90	44.10

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.6 PK			1.26 H	121	77.20	31.40
2	*2462.00	98.8 AV			1.26 H	121	67.40	31.40
3	2483.50	73.1 PK	74.0	-0.9	1.15 H	105	41.64	31.46
4	2483.50	52.9 AV	54.0	-1.1	1.15 H	105	21.44	31.46
5	4924.00	47.6 PK	74.0	-26.4	1.24 H	79	7.78	39.82
6	4924.00	36.7 AV	54.0	-17.3	1.24 H	79	-3.12	39.82
7	7386.00	52.8 PK	74.0	-21.2	1.00 H	69	8.62	44.18
8	7386.00	40.9 AV	54.0	-13.1	1.00 H	69	-3.28	44.18
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.2 PK			1.54 V	127	73.80	31.40
2	*2462.00	95.3 AV			1.54 V	127	63.90	31.40
3	2483.50	57.3 PK	74.0	-16.7	1.46 V	236	25.84	31.46
4	2483.50	47.6 AV	54.0	-6.4	1.46 V	236	16.14	31.46
5	4924.00	47.2 PK	74.0	-26.8	1.16 V	247	7.38	39.82
6	4924.00	37.2 AV	54.0	-16.8	1.16 V	247	-2.62	39.82
7	7386.00	53.2 PK	74.0	-20.8	1.59 V	73	9.02	44.18
8	7386.00	41.1 AV	54.0	-12.9	1.59 V	73	-3.08	44.18

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.

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.1 PK	74.0	-2.9	1.30 H	101	39.89	31.21
2	2390.00	52.6 AV	54.0	-1.4	1.30 H	101	21.39	31.21
3	*2412.00	106.2 PK			1.30 H	101	74.93	31.27
4	*2412.00	96.3 AV			1.30 H	101	65.03	31.27
5	4824.00	47.3 PK	74.0	-26.7	1.21 H	83	7.88	39.42
6	4824.00	36.4 AV	54.0	-17.6	1.21 H	83	-3.02	39.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.6 PK	74.0	-15.4	1.56 V	231	27.39	31.21
2	2390.00	48.3 AV	54.0	-5.7	1.56 V	231	17.09	31.21
3	*2412.00	103.7 PK			1.51 V	129	72.43	31.27
4	*2412.00	93.4 AV			1.51 V	129	62.13	31.27
5	4824.00	47.8 PK	74.0	-26.2	1.14 V	253	8.38	39.42
6	4824.00	37.6 AV	54.0	-16.4	1.14 V	253	-1.82	39.42

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.4 PK			1.27 H	104	80.06	31.34
2	*2437.00	101.3 AV			1.27 H	104	69.96	31.34
3	4874.00	50.6 PK	74.0	-23.4	1.33 H	76	10.98	39.62
4	4874.00	40.3 AV	54.0	-13.7	1.33 H	76	0.68	39.62
5	7311.00	52.6 PK	74.0	-21.4	1.00 H	33	8.50	44.10
6	7311.00	40.7 AV	54.0	-13.3	1.00 H	33	-3.40	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.2 PK			1.54 V	133	76.86	31.34
2	*2437.00	98.3 AV			1.54 V	133	66.96	31.34
3	4874.00	52.5 PK	74.0	-21.5	1.13 V	202	12.88	39.62
4	4874.00	41.3 AV	54.0	-12.7	1.13 V	202	1.68	39.62
5	7311.00	53.6 PK	74.0	-20.4	1.52 V	49	9.50	44.10
6	7311.00	41.2 AV	54.0	-12.8	1.52 V	49	-2.90	44.10

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.9 PK			1.28 H	104	74.50	31.40
2	*2462.00	96.1 AV			1.28 H	104	64.70	31.40
3	2483.50	72.0 PK	74.0	-2.0	1.15 H	92	40.54	31.46
4	2483.50	53.0 AV	54.0	-1.0	1.15 H	92	21.54	31.46
5	4924.00	47.5 PK	74.0	-26.5	1.27 H	87	7.68	39.82
6	4924.00	36.8 AV	54.0	-17.2	1.27 H	87	-3.02	39.82
7	7386.00	53.0 PK	74.0	-21.0	1.01 H	60	8.82	44.18
8	7386.00	41.1 AV	54.0	-12.9	1.01 H	60	-3.08	44.18
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.6 PK			1.59 V	124	72.20	31.40
2	*2462.00	93.3 AV			1.59 V	124	61.90	31.40
3	2483.50	56.9 PK	74.0	-17.1	1.55 V	246	25.44	31.46
4	2483.50	47.3 AV	54.0	-6.7	1.55 V	246	15.84	31.46
5	4924.00	47.3 PK	74.0	-26.7	1.15 V	249	7.48	39.82
6	4924.00	37.4 AV	54.0	-16.6	1.15 V	249	-2.42	39.82
7	7386.00	52.9 PK	74.0	-21.1	1.55 V	65	8.72	44.18
8	7386.00	40.8 AV	54.0	-13.2	1.55 V	65	-3.38	44.18

REMARKS:

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



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802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.9 PK	74.0	-7.1	1.31 H	138	35.69	31.21
2	2390.00	53.1 AV	54.0	-0.9	1.31 H	138	21.89	31.21
3	*2422.00	101.9 PK			1.33 H	138	70.60	31.30
4	*2422.00	91.5 AV			1.33 H	138	60.20	31.30
5	4844.00	43.9 PK	74.0	-30.1	1.36 H	83	4.40	39.50
6	4844.00	33.6 AV	54.0	-20.4	1.36 H	83	-5.90	39.50
7	7266.00	52.4 PK	74.0	-21.6	1.00 H	46	8.34	44.06
8	7266.00	40.3 AV	54.0	-13.7	1.00 H	46	-3.76	44.06
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.3 PK	74.0	-16.7	1.56 V	247	26.09	31.21
2	2390.00	47.6 AV	54.0	-6.4	1.56 V	247	16.39	31.21
3	*2422.00	99.4 PK			1.54 V	166	68.10	31.30
4	*2422.00	89.3 AV			1.54 V	166	58.00	31.30
5	4844.00	44.3 PK	74.0	-29.7	1.16 V	243	4.80	39.50
6	4844.00	34.5 AV	54.0	-19.5	1.16 V	243	-5.00	39.50
7	7266.00	52.7 PK	74.0	-21.3	1.56 V	57	8.64	44.06
8	7266.00	40.4 AV	54.0	-13.6	1.56 V	57	-3.66	44.06

REMARKS:

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.6 PK	74.0	-2.4	1.32 H	94	40.39	31.21
2	2390.00	53.5 AV	54.0	-0.5	1.32 H	94	22.29	31.21
3	*2437.00	103.6 PK			1.29 H	114	72.26	31.34
4	*2437.00	94.1 AV			1.29 H	114	62.76	31.34
5	4874.00	43.9 PK	74.0	-30.1	1.32 H	75	4.28	39.62
6	4874.00	33.5 AV	54.0	-20.5	1.32 H	75	-6.12	39.62
7	7311.00	51.8 PK	74.0	-22.2	1.00 H	32	7.70	44.10
8	7311.00	39.8 AV	54.0	-14.2	1.00 H	32	-4.30	44.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.8 PK	74.0	-9.2	1.39 V	229	33.59	31.21
2	2390.00	48.4 AV	54.0	-5.6	1.39 V	229	17.19	31.21
3	*2437.00	102.4 PK			1.55 V	159	71.06	31.34
4	*2437.00	92.7 AV			1.55 V	159	61.36	31.34
5	2483.50	63.2 PK	74.0	-10.8	1.53 V	148	31.74	31.46
6	2483.50	48.2 AV	54.0	-5.8	1.53 V	148	16.74	31.46
7	4874.00	44.7 PK	74.0	-29.3	1.22 V	240	5.08	39.62
8	4874.00	34.9 AV	54.0	-19.1	1.22 V	240	-4.72	39.62
9	7311.00	53.1 PK	74.0	-20.9	1.57 V	46	9.00	44.10
10	7311.00	40.8 AV	54.0	-13.2	1.57 V	46	-3.30	44.10

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	102.1 PK			1.25 H	92	70.72	31.38
2	*2452.00	91.9 AV			1.25 H	92	60.52	31.38
3	2483.50	68.2 PK	74.0	-5.8	1.25 H	92	36.74	31.46
4	2483.50	53.1 AV	54.0	-0.9	1.25 H	92	21.64	31.46
5	4904.00	44.3 PK	74.0	-29.7	1.29 H	85	4.56	39.74
6	4904.00	33.6 AV	54.0	-20.4	1.29 H	85	-6.14	39.74
7	7356.00	51.6 PK	74.0	-22.4	1.01 H	44	7.45	44.15
8	7356.00	39.4 AV	54.0	-14.6	1.01 H	44	-4.75	44.15
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	99.3 PK			1.51 V	159	67.92	31.38
2	*2452.00	89.6 AV			1.51 V	159	58.22	31.38
3	2483.50	57.1 PK	74.0	-16.9	1.51 V	243	25.64	31.46
4	2483.50	47.3 AV	54.0	-6.7	1.51 V	243	15.84	31.46
5	4904.00	45.5 PK	74.0	-28.5	1.24 V	248	5.76	39.74
6	4904.00	35.4 AV	54.0	-18.6	1.24 V	248	-4.34	39.74
7	7356.00	53.3 PK	74.0	-20.7	1.52 V	39	9.15	44.15
8	7356.00	40.8 AV	54.0	-13.2	1.52 V	39	-3.35	44.15

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.

4.2.8 TEST RESULTS (BT <LE> MODE)

BELOW 1GHz WORST-CASE DATA

CHANNEL	TX Channel 0	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)	CORRECTI ON FACTOR (dB/m)
1	166.00	42.8 QP	43.5	-0.7	1.29 H	153	28.85	13.96
2	358.62	35.3 QP	46.0	-10.7	2.00 H	213	18.46	16.80
3	398.29	43.3 QP	46.0	-2.7	1.00 H	73	25.49	17.82
4	697.07	43.4 QP	46.0	-2.6	1.76 H	243	19.51	23.93
5	796.67	40.3 QP	46.0	-5.7	1.00 H	259	14.44	25.85
6	896.14	41.4 QP	46.0	-4.6	1.00 H	187	13.99	27.44
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)	CORRECTI ON FACTOR (dB/m)
1	145.90	38.6 QP	43.5	-4.9	1.66 V	219	24.27	14.36
2	168.00	37.1 QP	43.5	-6.4	1.48 V	337	23.03	14.09
3	304.63	41.4 QP	46.0	-4.6	1.56 V	23	26.14	15.29
4	320.00	34.8 QP	46.0	-11.2	1.84 V	213	19.09	15.75
5	360.10	37.2 QP	46.0	-8.8	1.90 V	43	20.19	16.98
6	400.13	43.3 QP	46.0	-2.7	1.24 V	343	25.05	18.24

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.

ABOVE 1GHz DATA

CHANNEL	TX Channel 0	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)	CORRECTI ON FACTOR (dB/m)
1	2387.30	57.0 PK	74.0	-17.0	1.29 H	121	25.79	31.21
2	2387.30	44.7 AV	54.0	-9.3	1.29 H	121	13.49	31.21
3	*2402.00	99.1 PK			1.29 H	121	67.85	31.25
4	*2402.00	88.1 AV			1.29 H	121	56.85	31.25
5	4804.00	47.1 PK	74.0	-26.9	1.44 H	15	7.75	39.35
6	4804.00	35.6 AV	54.0	-18.4	1.44 H	15	-3.75	39.35
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)	CORRECTI ON FACTOR (dB/m)
1	2322.00	56.8 PK	74.0	-17.2	1.00 V	198	25.77	31.03
2	2322.00	46.1 AV	54.0	-7.9	1.00 V	198	15.07	31.03
3	*2402.00	99.3 PK			1.00 V	198	68.05	31.25
4	*2402.00	88.2 AV			1.00 V	198	56.95	31.25
5	4804.00	47.7 PK	74.0	-26.3	1.11 V	260	8.35	39.35
6	4804.00	35.3 AV	54.0	-18.7	1.11 V	260	-4.05	39.35

REMARKS:

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



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CHANNEL	TX Channel 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)	CORRECTI ON FACTOR (dB/m)
1	*2440.00	97.9 PK			1.30 H	99	66.56	31.34
2	*2440.00	87.0 AV			1.30 H	99	55.66	31.34
3	4880.00	46.8 PK	74.0	-27.2	1.46 H	7	7.16	39.64
4	4880.00	35.5 AV	54.0	-18.5	1.46 H	7	-4.14	39.64
5	7320.00	52.3 PK	74.0	-21.7	1.27 H	198	8.19	44.11
6	7320.00	42.2 AV	54.0	-11.8	1.27 H	198	-1.91	44.11
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)	CORRECTI ON FACTOR (dB/m)
1	*2440.00	96.9 PK			1.00 V	180	65.56	31.34
2	*2440.00	86.1 AV			1.00 V	180	54.76	31.34
3	4880.00	49.1 PK	74.0	-24.9	1.09 V	293	9.46	39.64
4	4880.00	35.6 AV	54.0	-18.4	1.09 V	293	-4.04	39.64
5	7320.00	52.2 PK	74.0	-21.8	1.11 V	313	8.09	44.11
6	7320.00	42.1 AV	54.0	-11.9	1.11 V	313	-2.01	44.11

REMARKS:

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



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CHANNEL	TX Channel 39	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)	CORRECTI ON FACTOR (dB/m)
1	*2480.00	98.5 PK			1.29 H	110	67.05	31.45
2	*2480.00	87.3 AV			1.29 H	110	55.85	31.45
3	2495.00	57.1 PK	74.0	-16.9	1.29 H	110	25.61	31.49
4	2495.00	45.1 AV	54.0	-8.9	1.29 H	110	13.61	31.49
5	4960.00	46.6 PK	74.0	-27.4	1.50 H	20	6.63	39.97
6	4960.00	35.8 AV	54.0	-18.2	1.50 H	20	-4.17	39.97
7	7440.00	51.4 PK	74.0	-22.6	1.26 H	179	7.16	44.24
8	7440.00	42.3 AV	54.0	-11.7	1.26 H	179	-1.94	44.24

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)	CORRECTI ON FACTOR (dB/m)
1	*2480.00	96.5 PK			1.00 V	207	65.05	31.45
2	*2480.00	85.7 AV			1.00 V	207	54.25	31.45
3	2494.90	56.3 PK	74.0	-17.7	1.00 V	207	24.81	31.49
4	2494.90	44.8 AV	54.0	-9.2	1.00 V	207	13.31	31.49
5	4960.00	49.3 PK	74.0	-24.7	1.08 V	276	9.33	39.97
6	4960.00	35.8 AV	54.0	-18.2	1.08 V	276	-4.17	39.97
7	7440.00	51.9 PK	74.0	-22.1	1.11 V	323	7.66	44.24
8	7440.00	42.1 AV	54.0	-11.9	1.11 V	323	-2.14	44.24

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.

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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 : Apr. 12, 2012

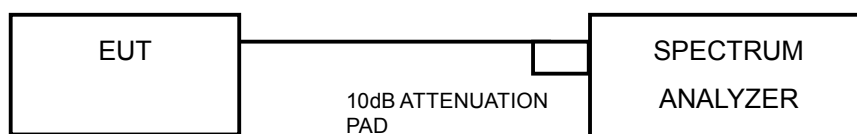
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
2. Set the video bandwidth (VBW) $\geq 3 \times$ 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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP





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4.3.6 EUT OPERATING CONDITIONS

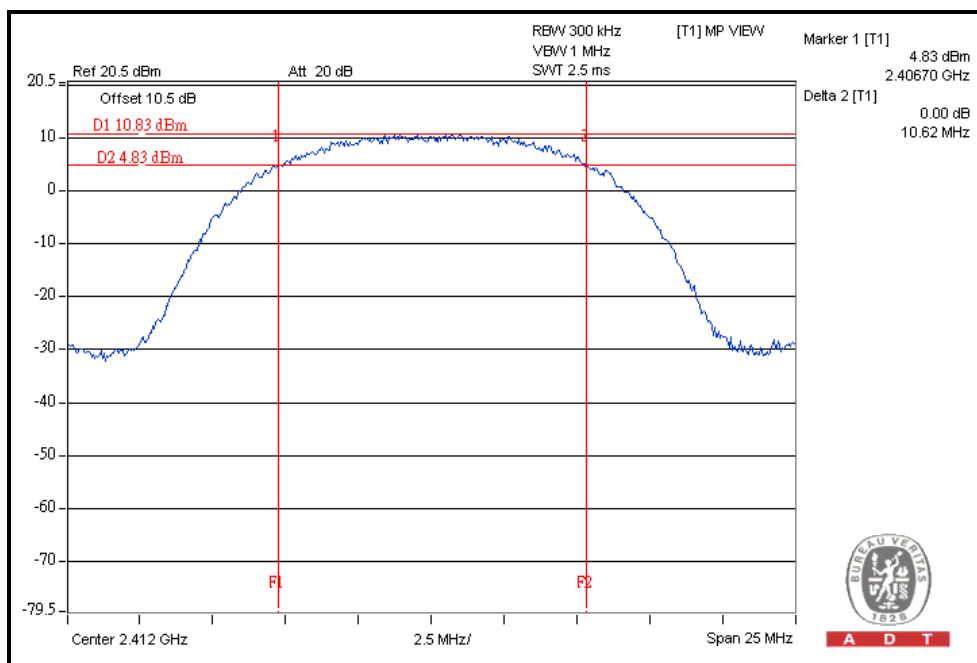
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS (WLAN MODE)

Single chain - 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.62	0.5	PASS
6	2437	10.54	0.5	PASS
11	2462	10.84	0.5	PASS

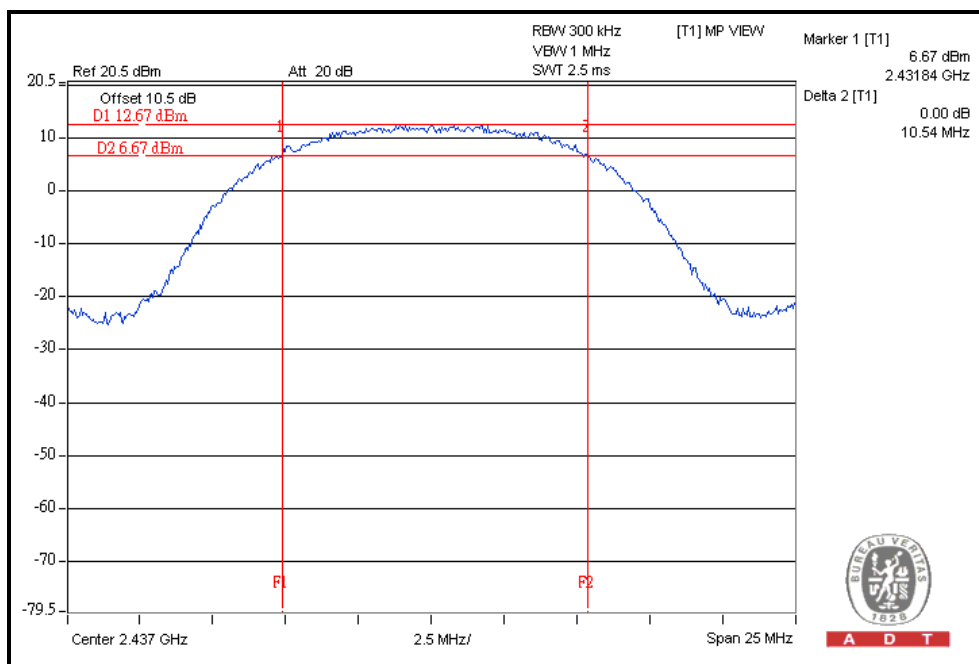
CH1





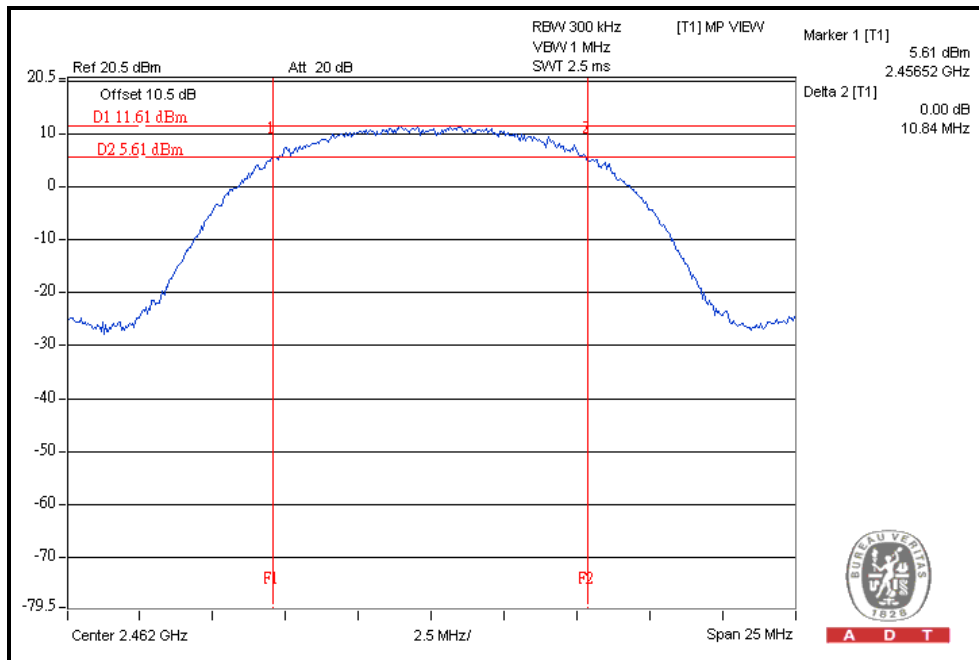
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CH6



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CH11

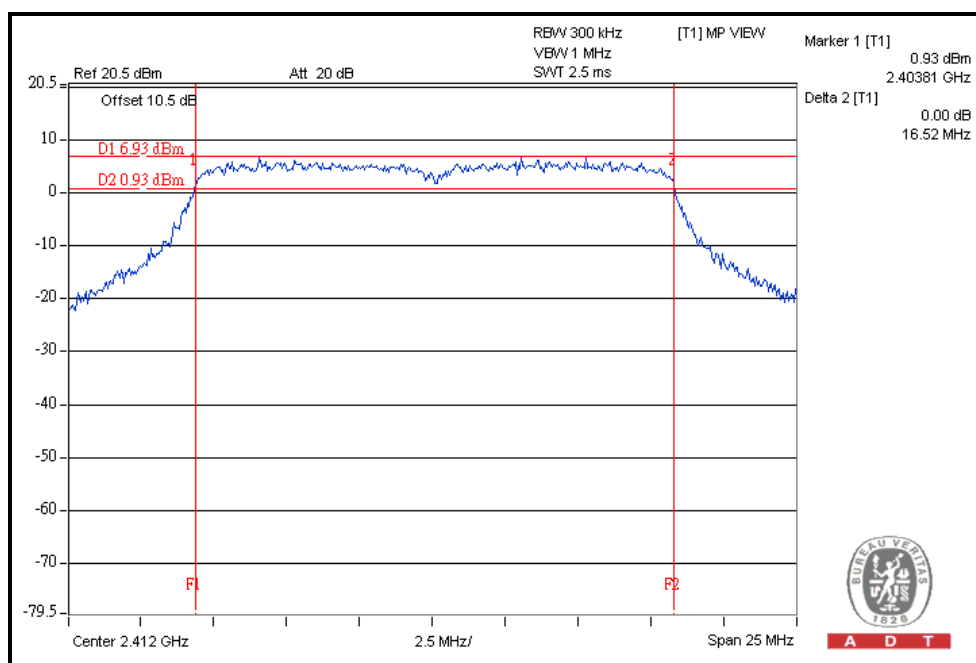


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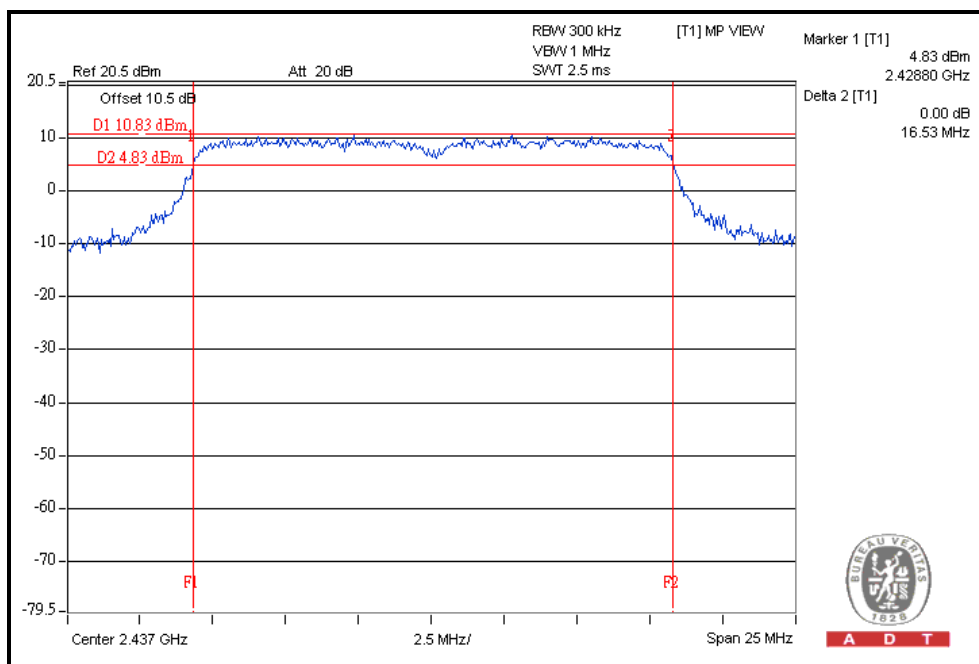
Single chain - 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.52	0.5	PASS
6	2437	16.53	0.5	PASS
11	2462	16.55	0.5	PASS

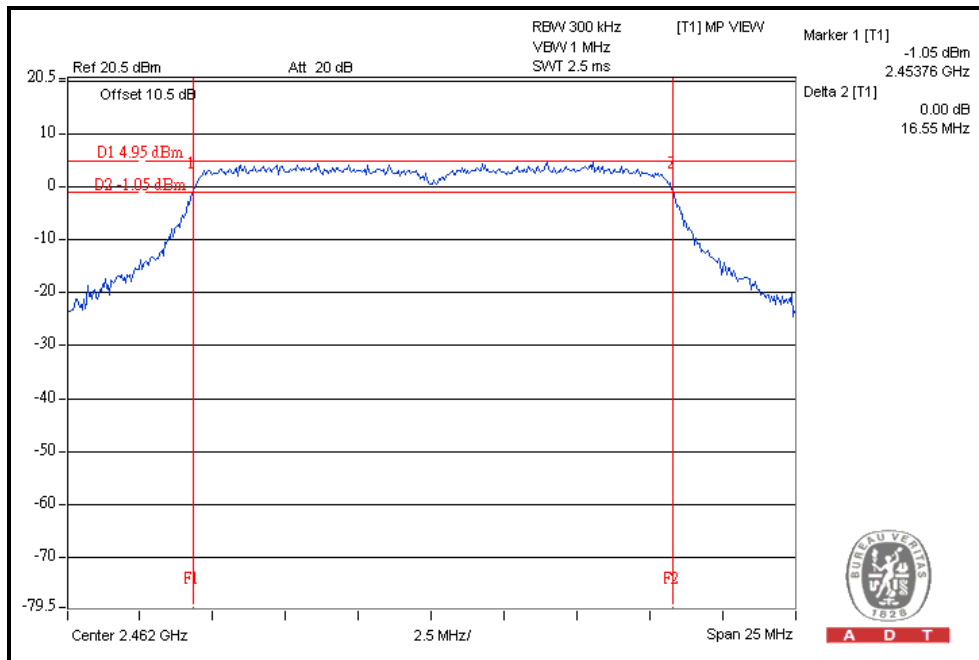
CH1



CH6



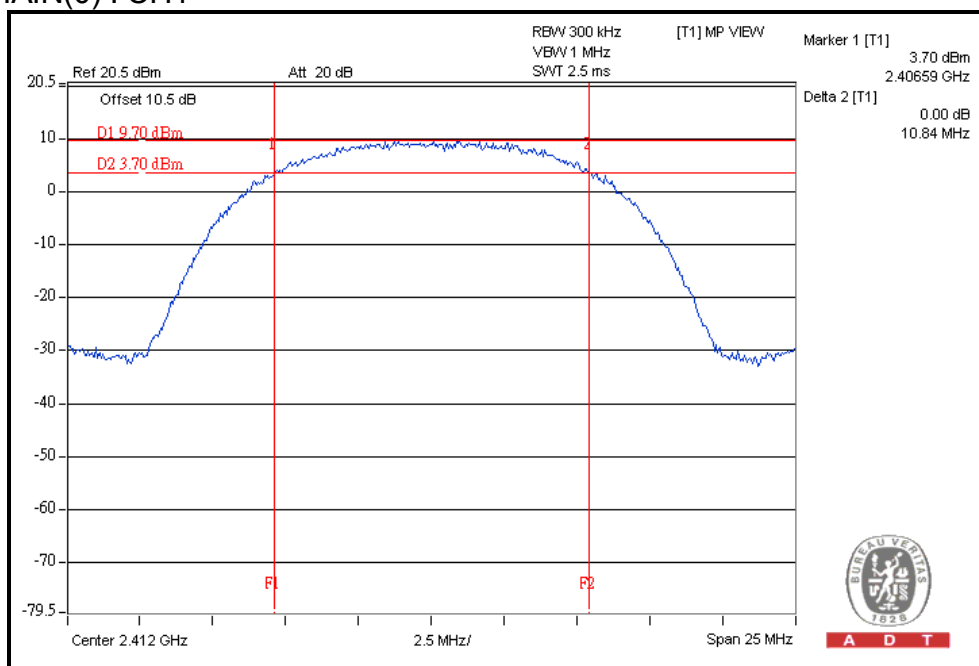
CH11



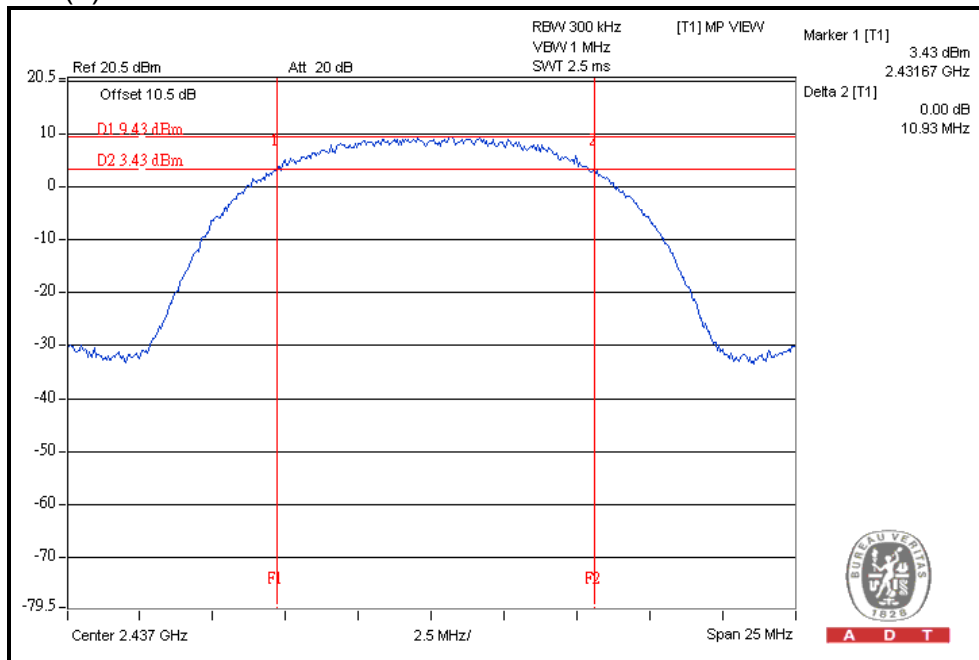
Multiple chain - 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	10.84	10.48	0.5	PASS
6	2437	10.93	10.70	0.5	PASS
11	2462	10.79	11.02	0.5	PASS

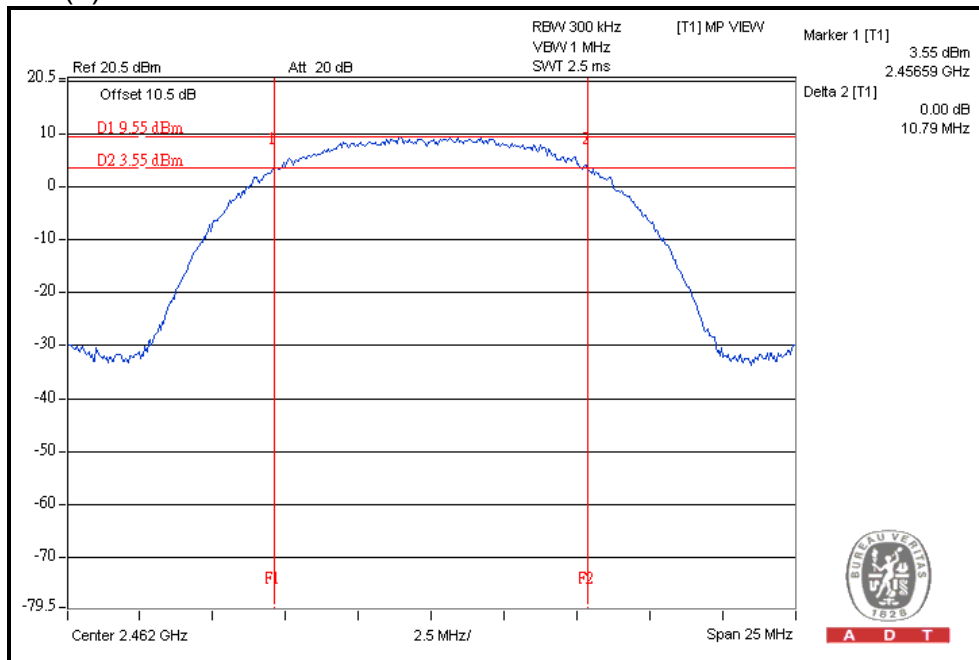
For CHAIN(0) : CH1



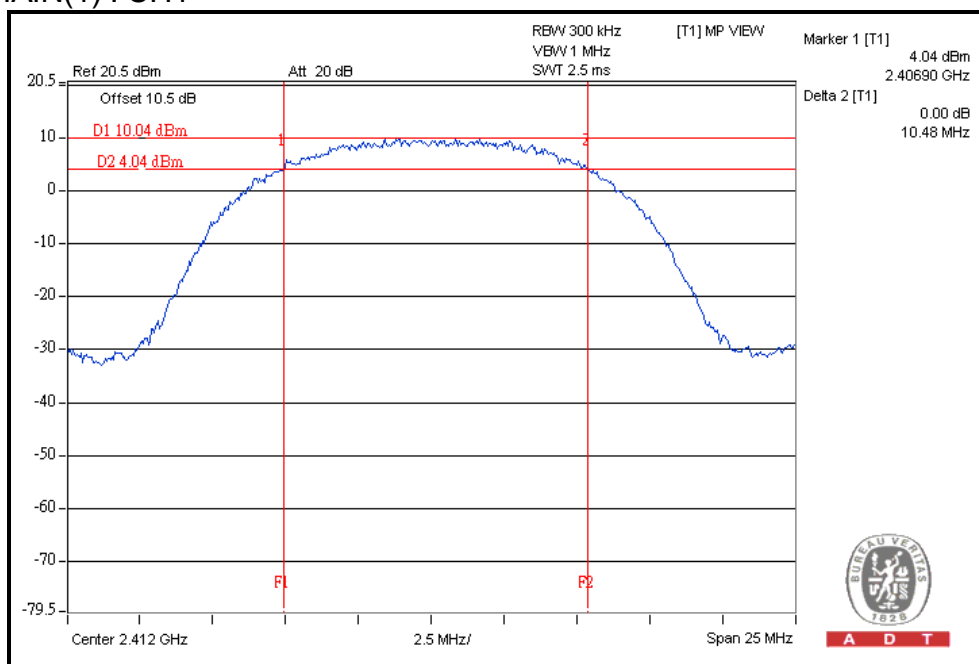
For CHAIN(0) : CH6



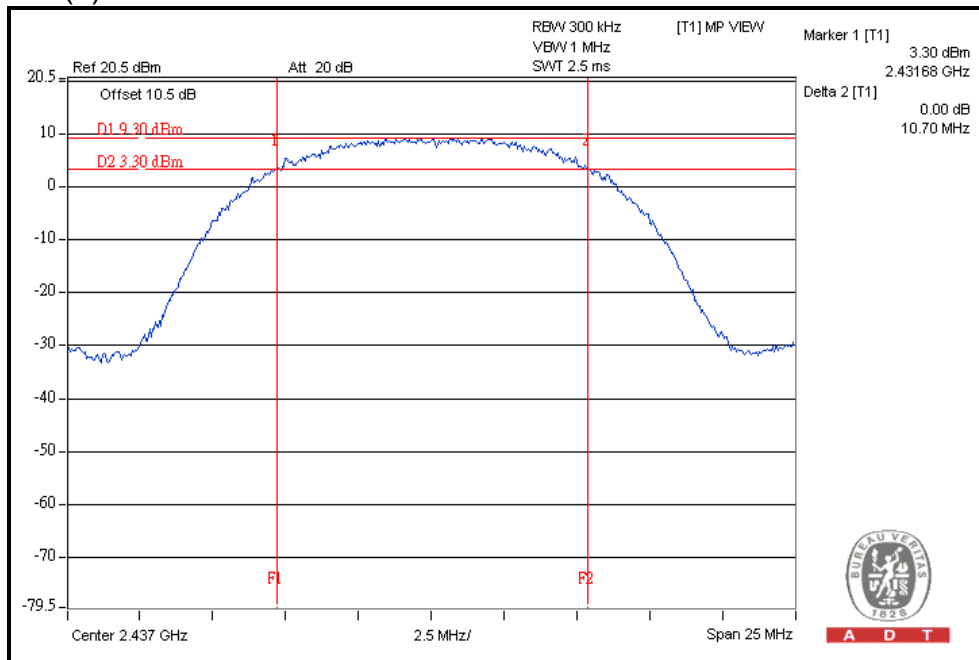
For CHAIN(0) : CH11



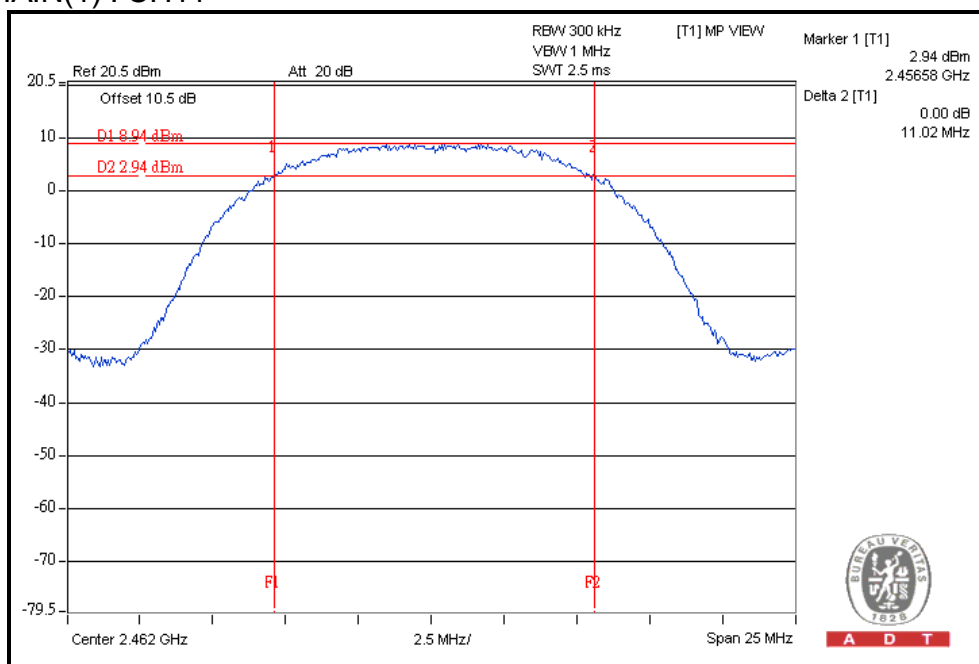
For CHAIN(1) : CH1



For CHAIN(1) : CH6



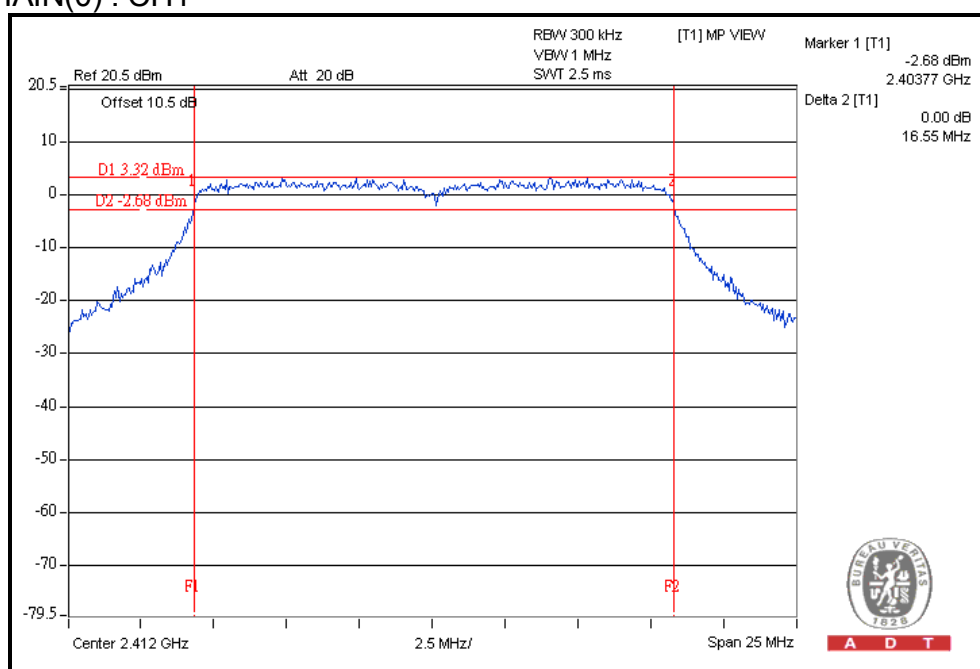
For CHAIN(1) : CH11



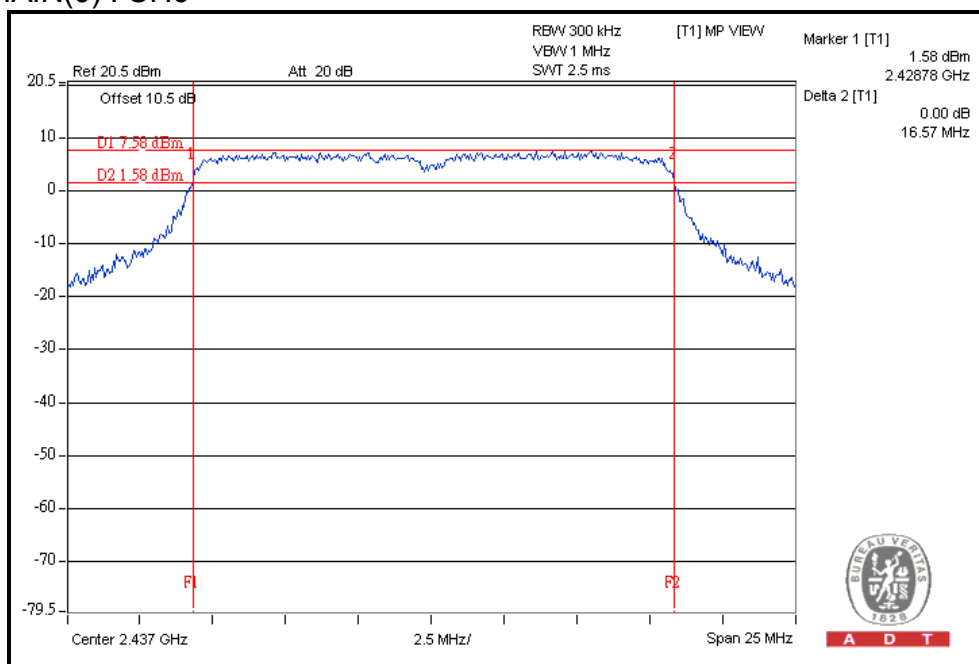
Multiple chain - 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	16.55	16.53	0.5	PASS
6	2437	16.57	16.60	0.5	PASS
11	2462	16.57	16.59	0.5	PASS

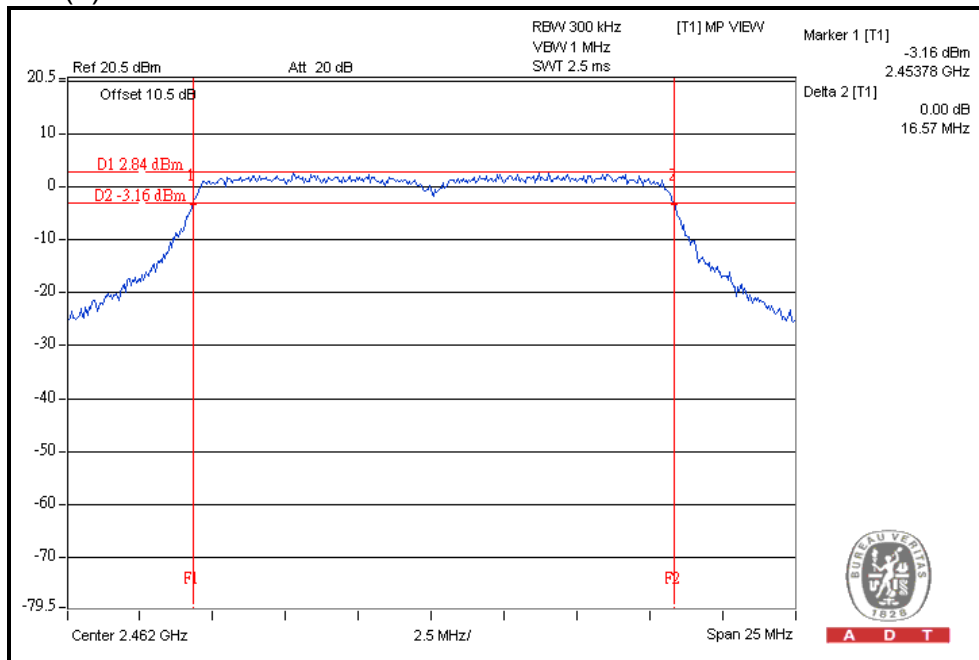
For CHAIN(0) : CH1



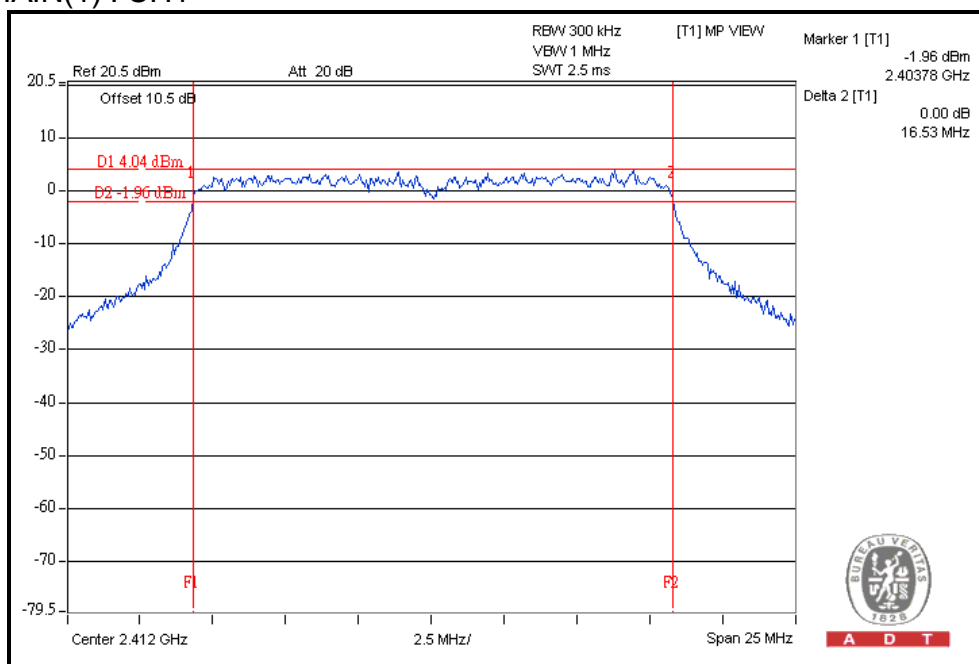
For CHAIN(0) : CH6



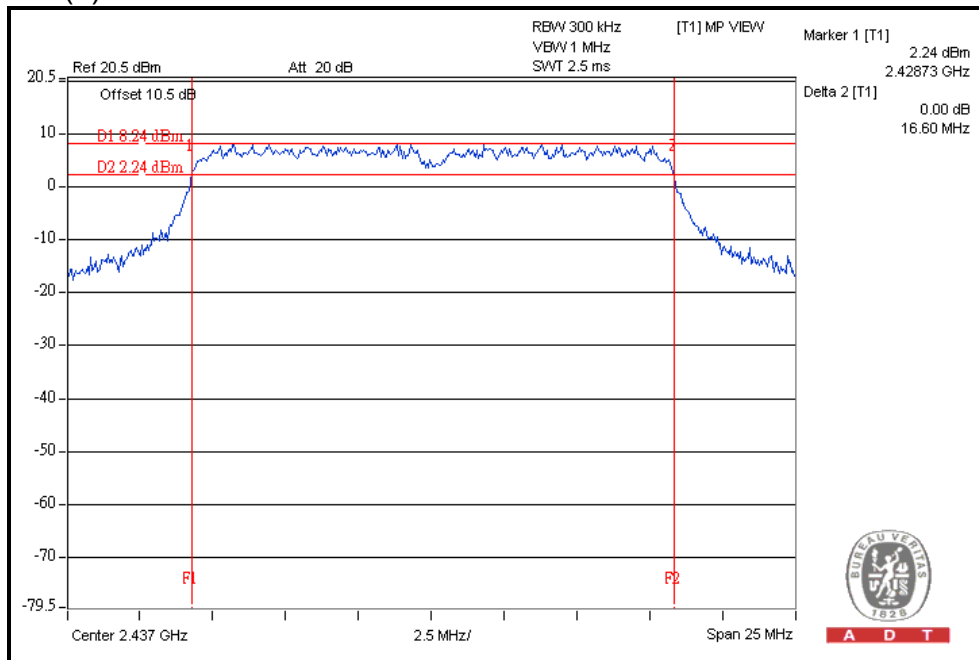
For CHAIN(0) : CH11



For CHAIN(1) : CH1



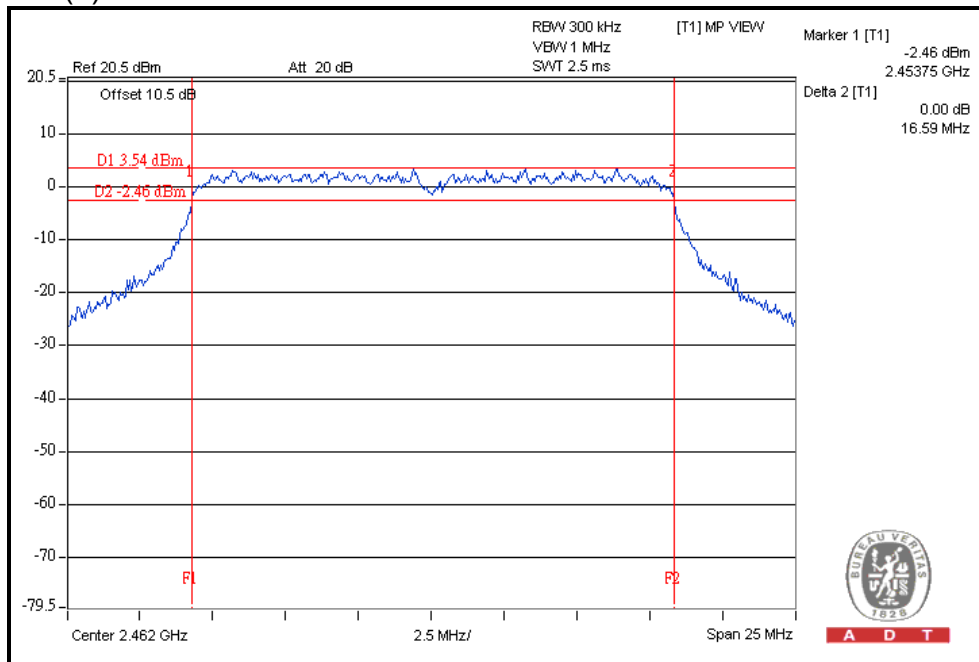
For CHAIN(1) : CH6





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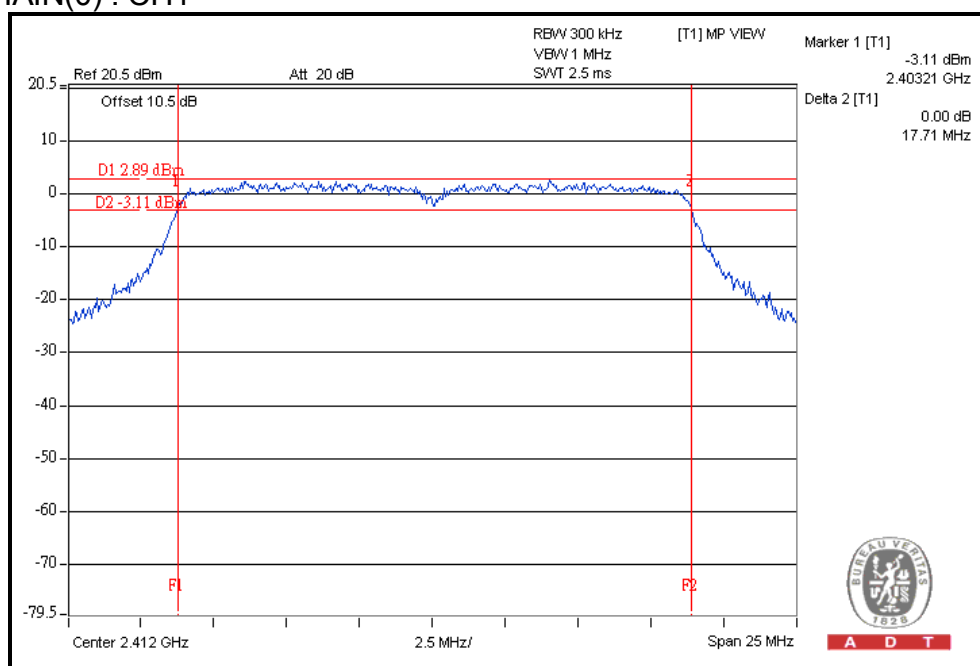
For CHAIN(1) : CH11



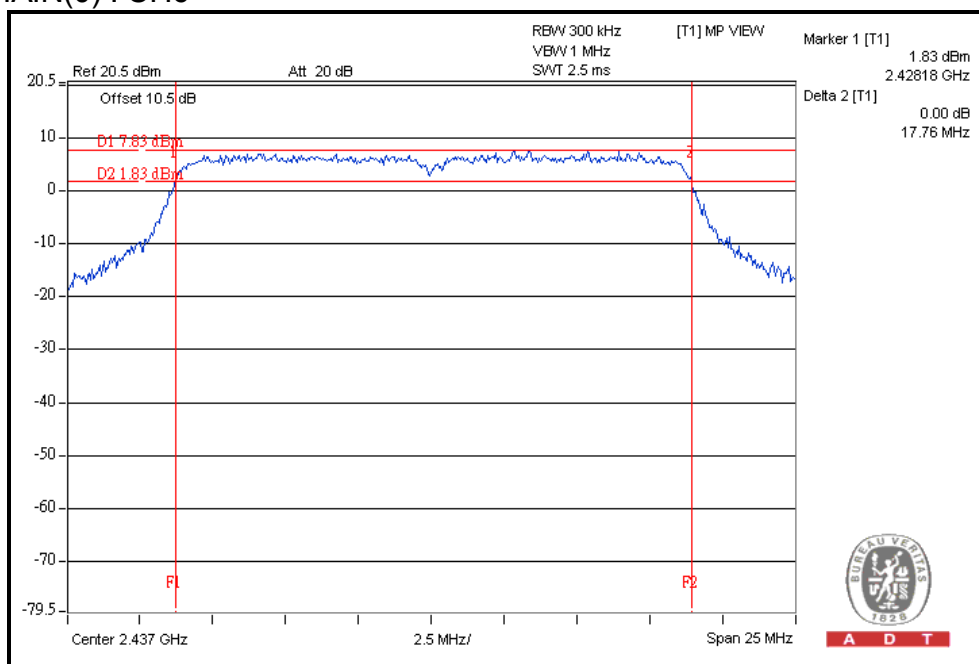
802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	17.71	17.81	0.5	PASS
6	2437	17.76	17.81	0.5	PASS
11	2462	17.78	17.81	0.5	PASS

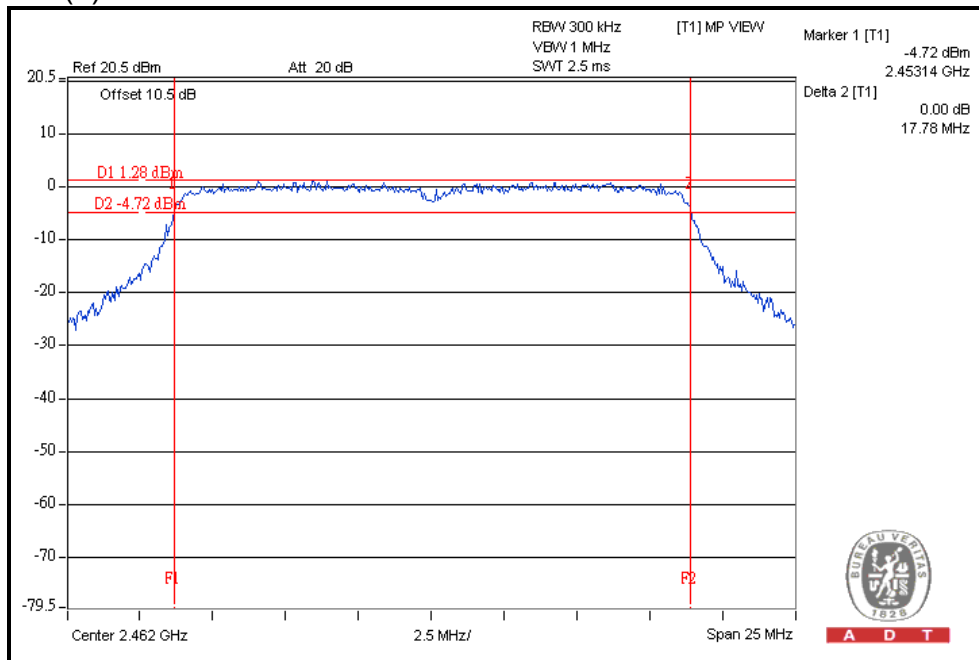
For CHAIN(0) : CH1



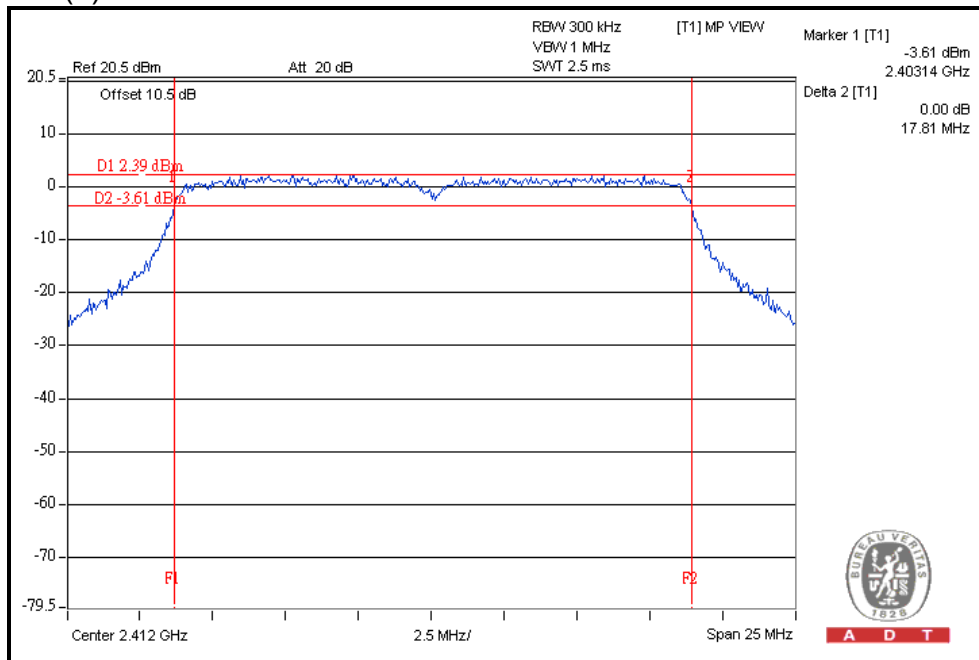
For CHAIN(0) : CH6



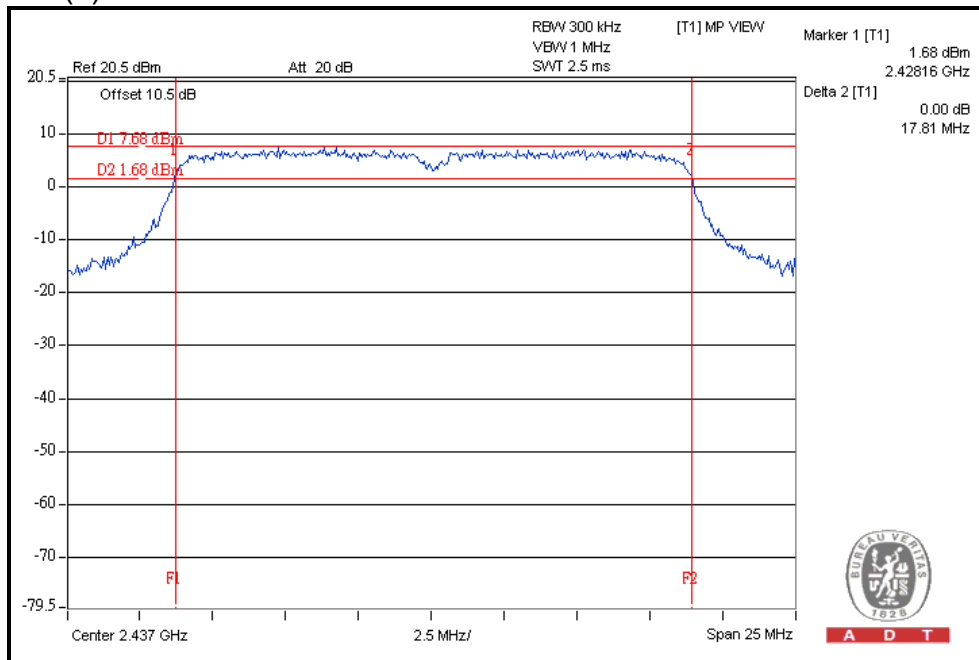
For CHAIN(0) : CH11



For CHAIN(1) : CH1



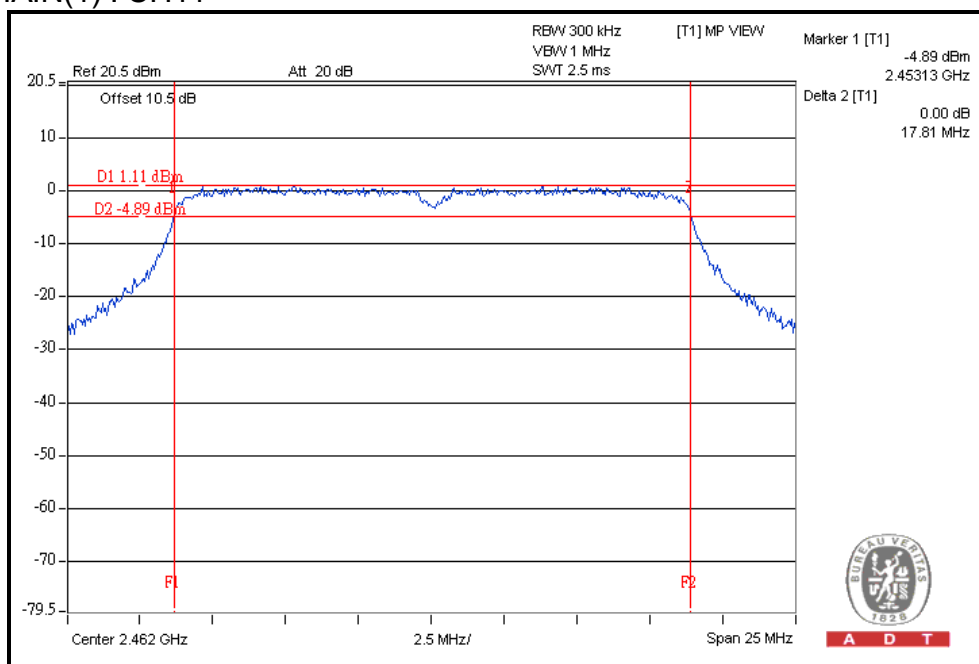
For CHAIN(1) : CH6





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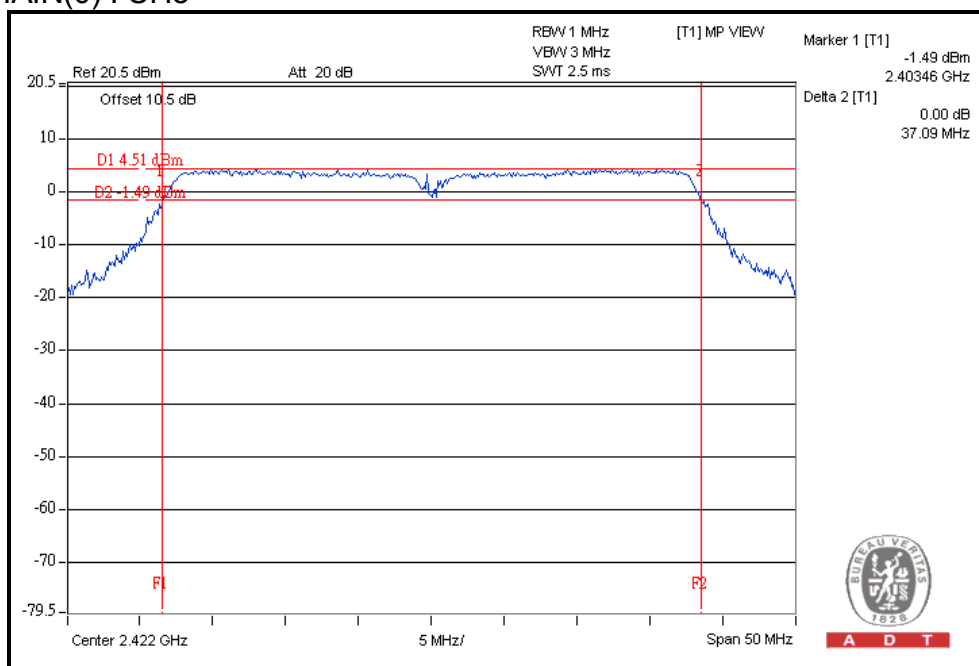
For CHAIN(1) : CH11



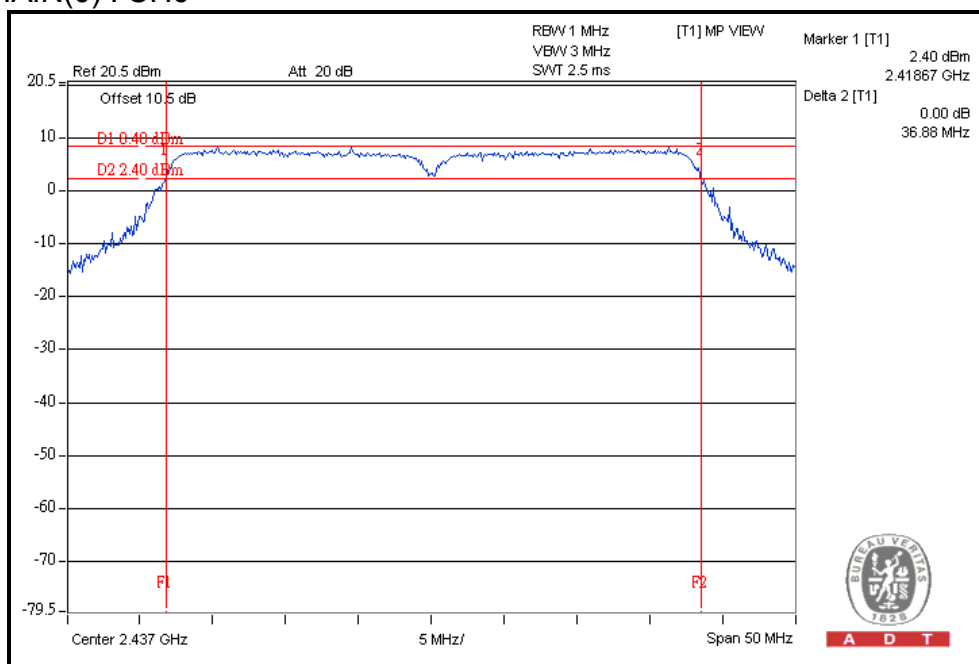
802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
3	2422	37.09	36.96	0.5	PASS
6	2437	36.88	36.94	0.5	PASS
9	2452	36.68	37.17	0.5	PASS

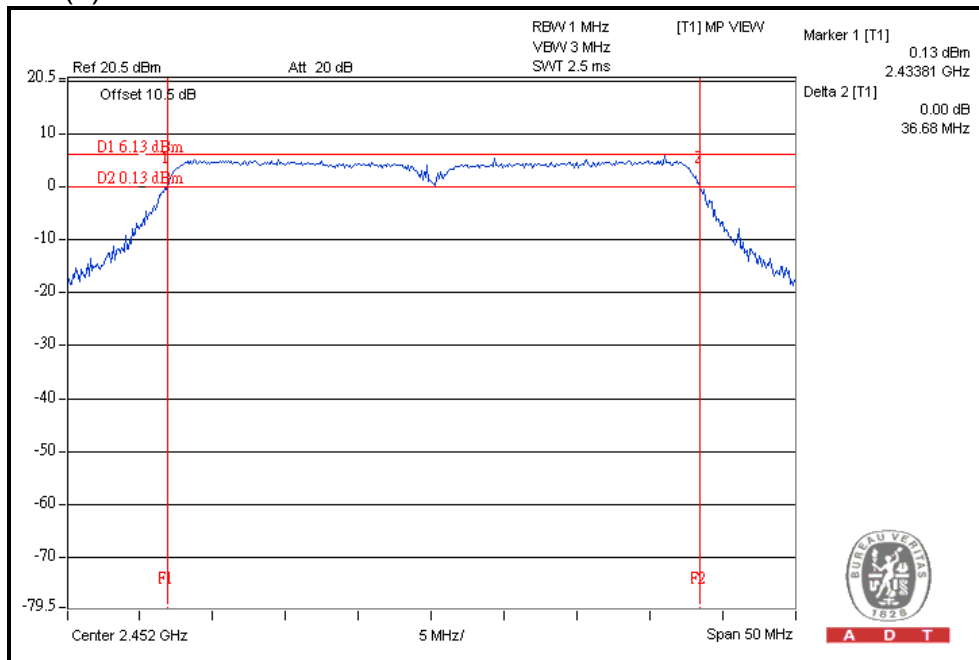
For CHAIN(0) : CH3



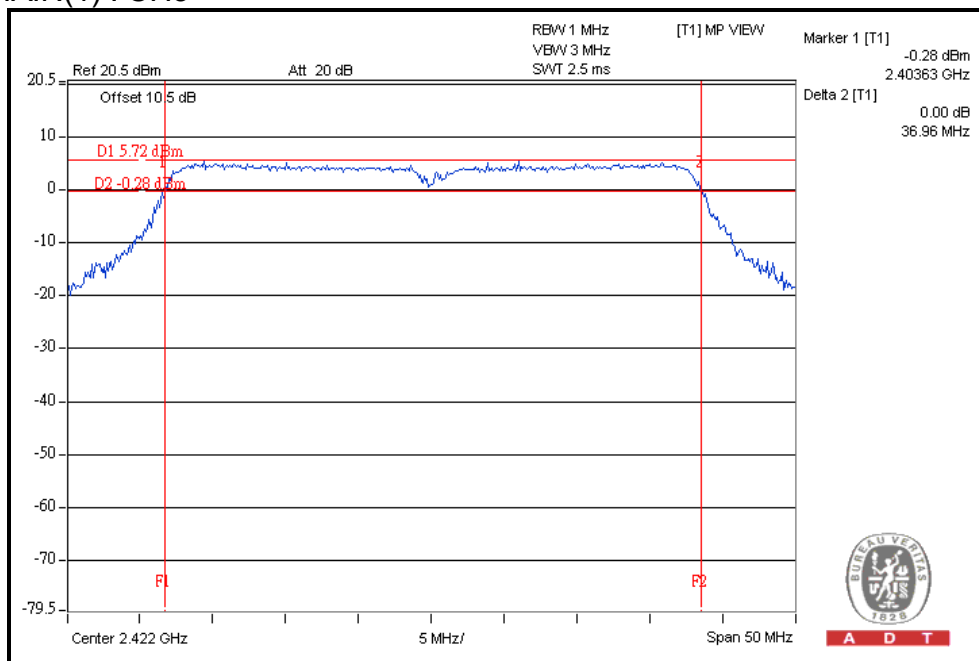
For CHAIN(0) : CH6



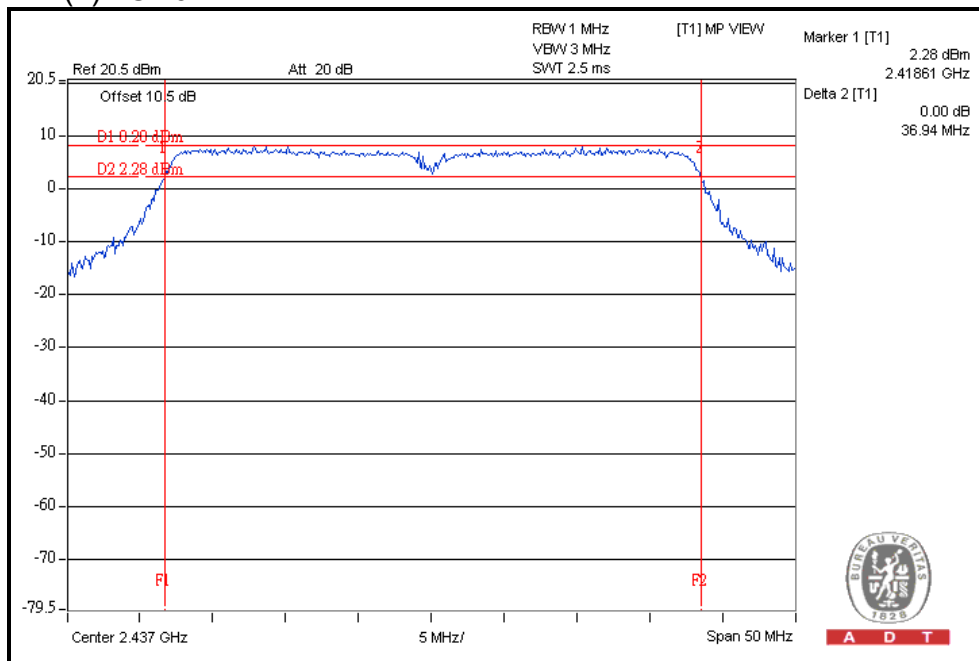
For CHAIN(0) : CH9



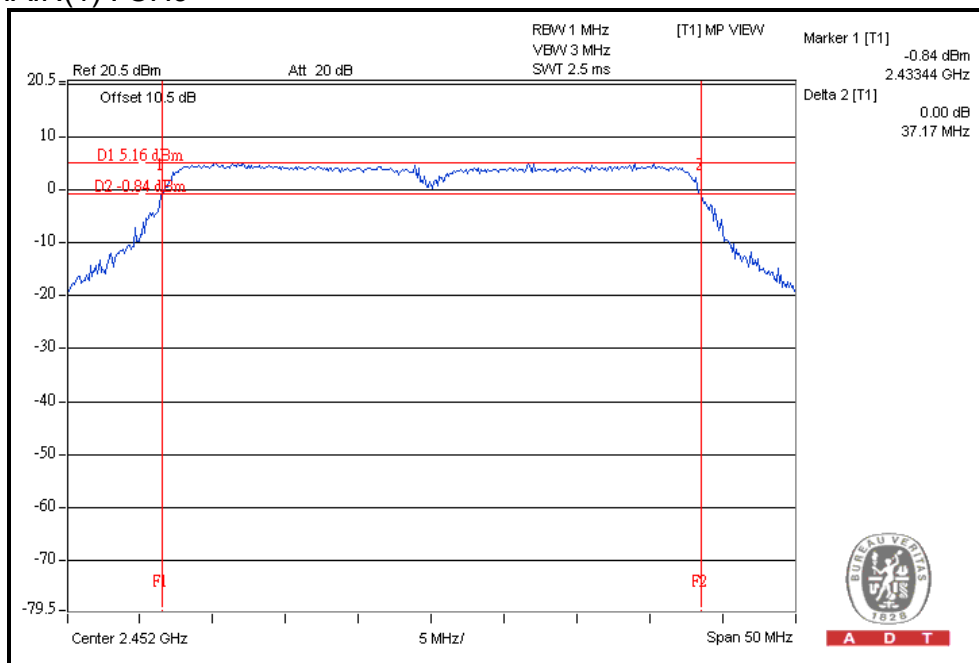
For CHAIN(1) : CH3



For CHAIN(1) : CH6



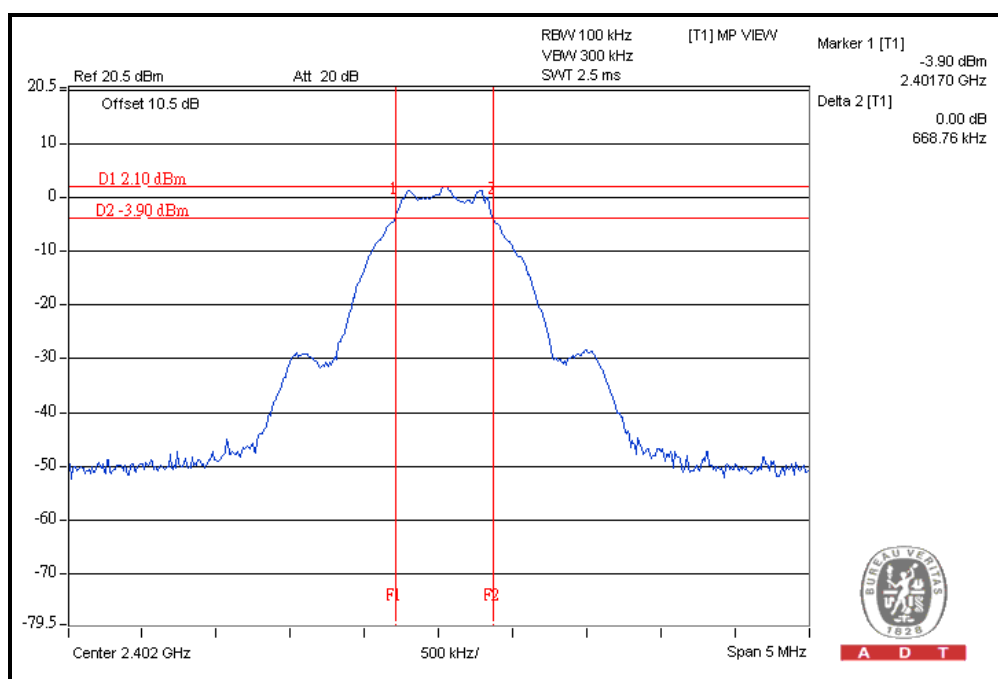
For CHAIN(1) : CH9



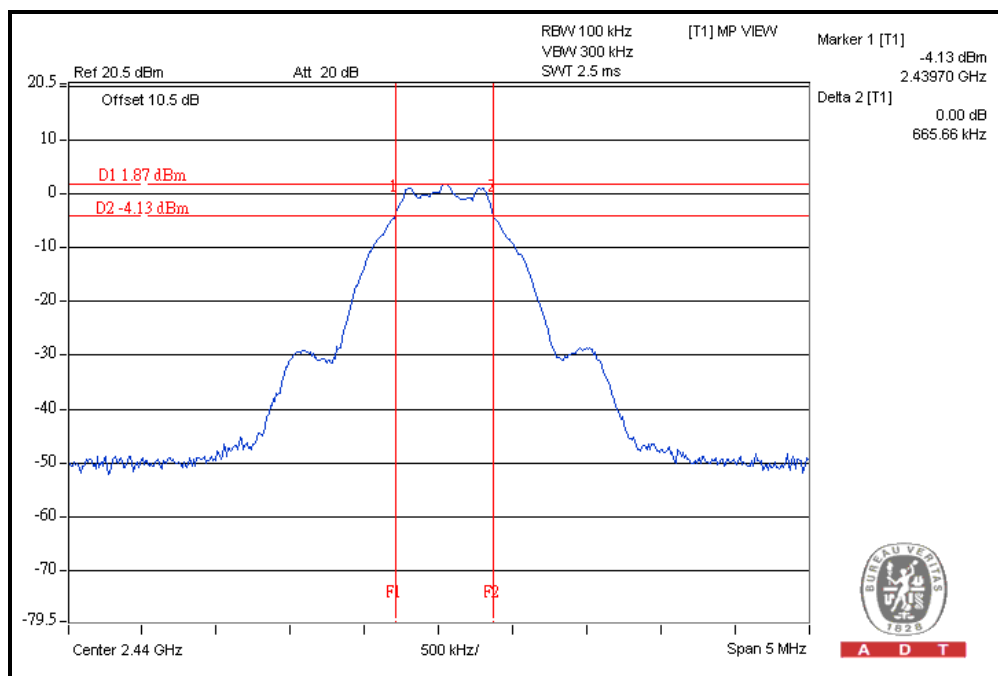
4.3.1 TEST RESULTS (BT<LE> MODE)

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

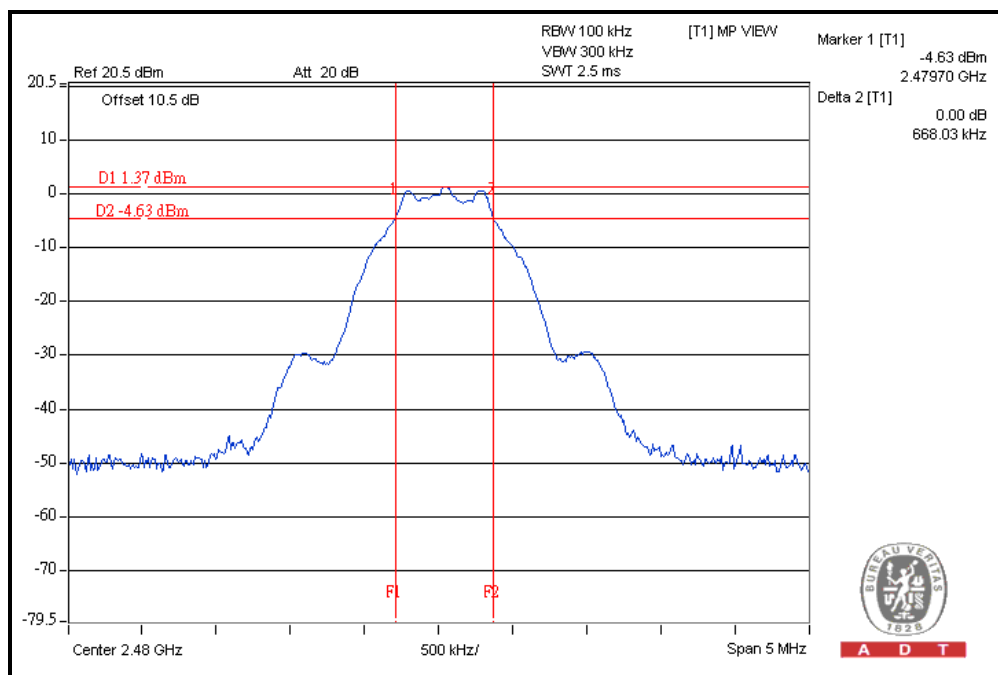
CH 0



CH 19



CH 39



4.4 OCCUPIED BANDWIDTH MEASUREMENT

4.4.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

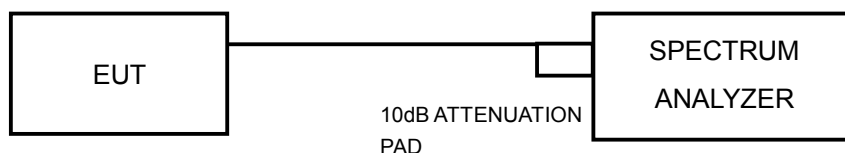
Note:

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 : Apr. 12, 2012

4.4.2 TEST PROCEDURE

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

4.4.3 TEST SETUP



4.4.4 EUT OPERATING CONDITIONS

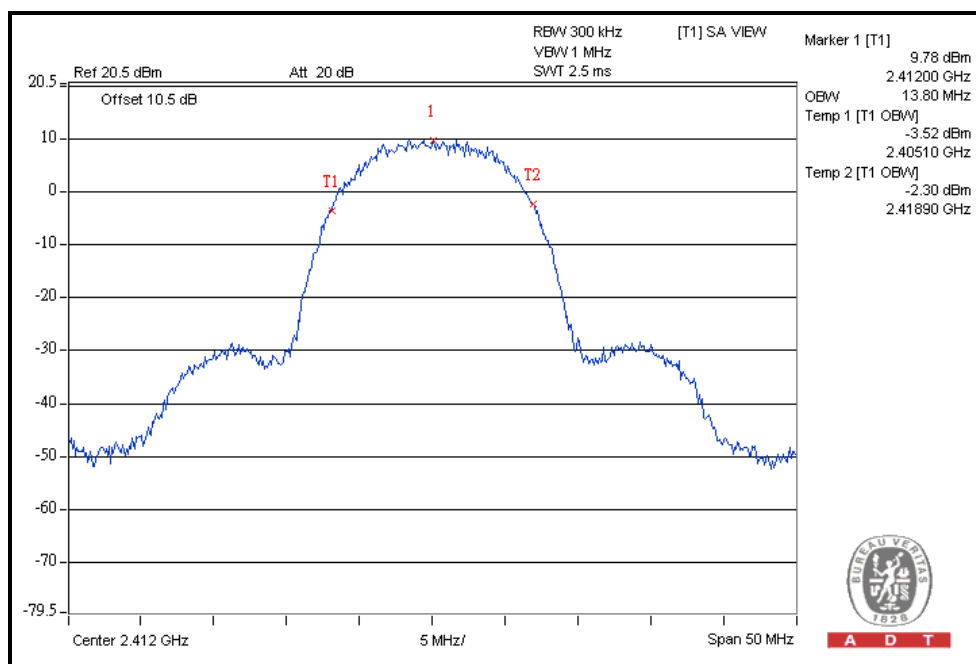
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.5 TEST RESULTS(WLAN MODE)

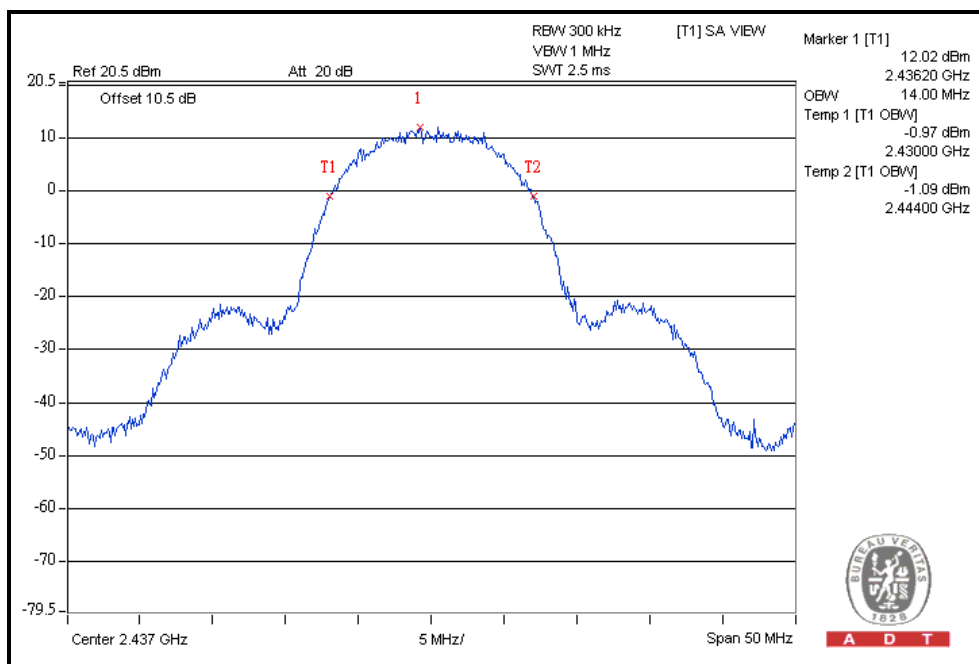
Single chain - 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
1	2412	13.80
6	2437	14.00
11	2462	14.00

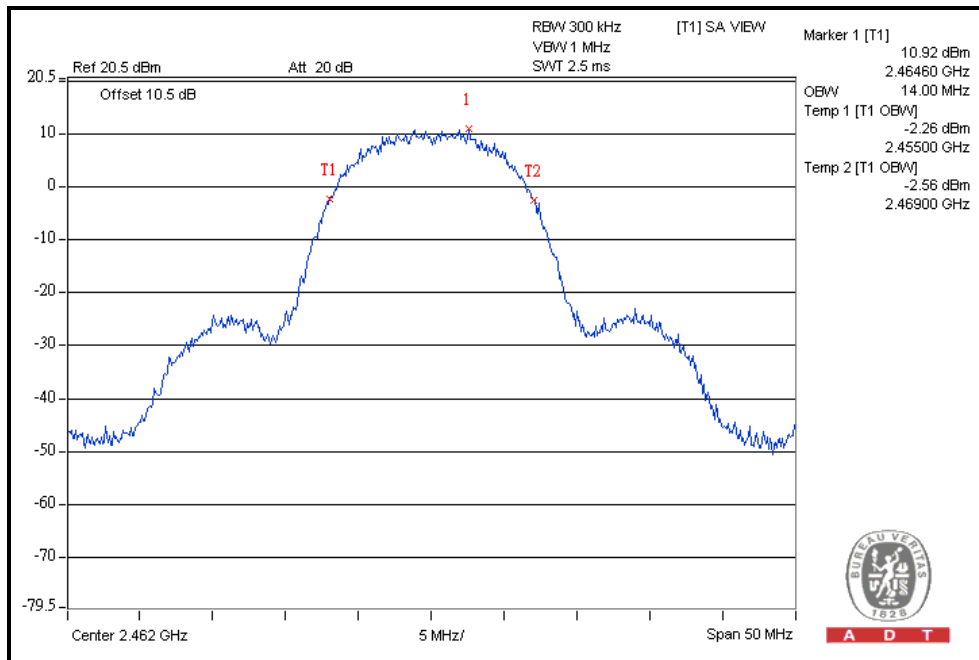
CH1



CH6



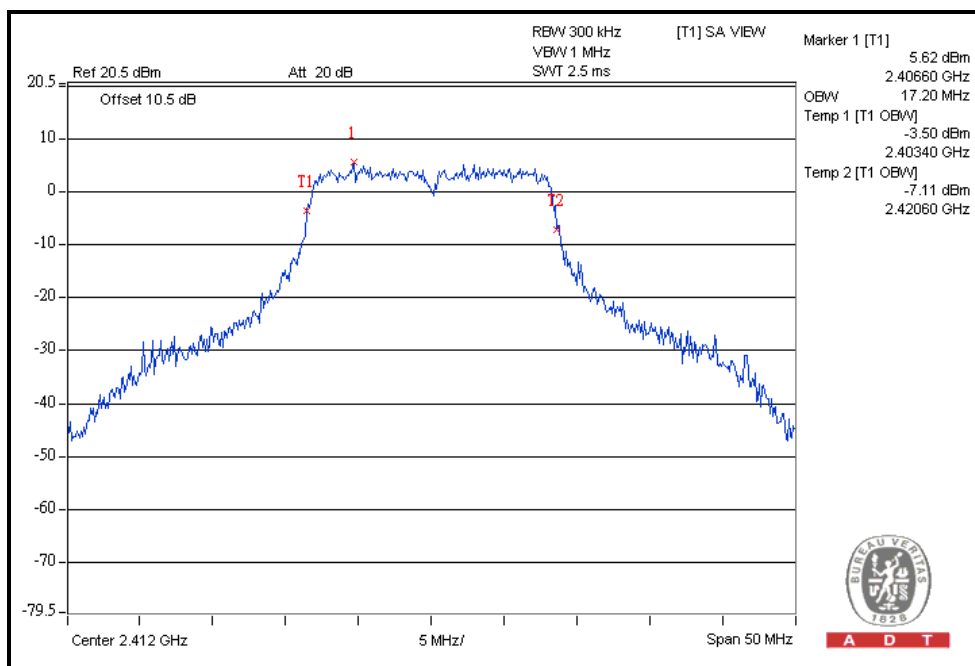
CH11



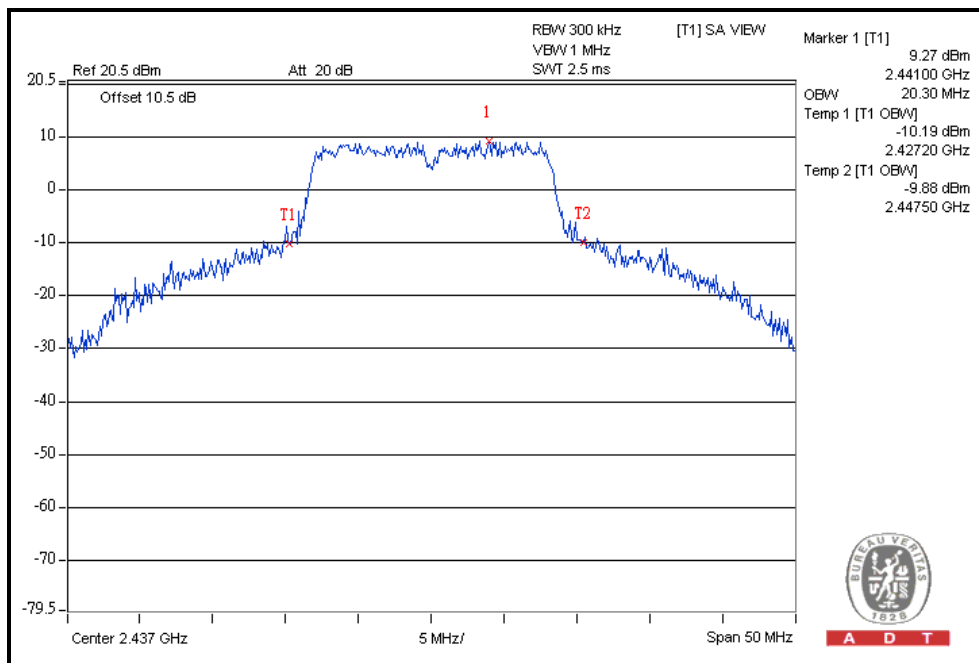
Single chain - 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
1	2412	17.20
6	2437	20.30
11	2462	17.00

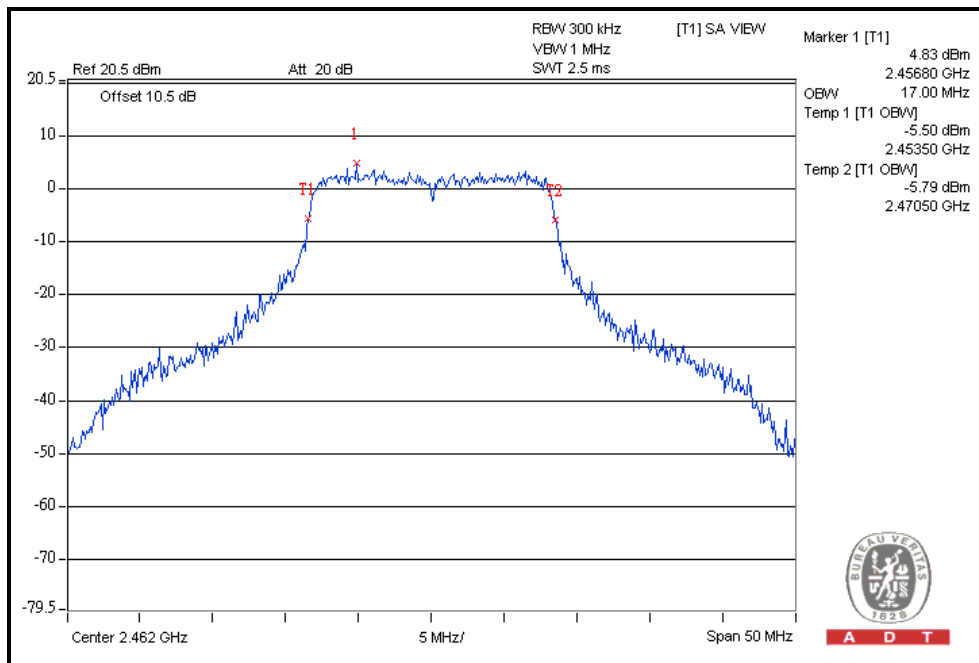
CH1



CH6



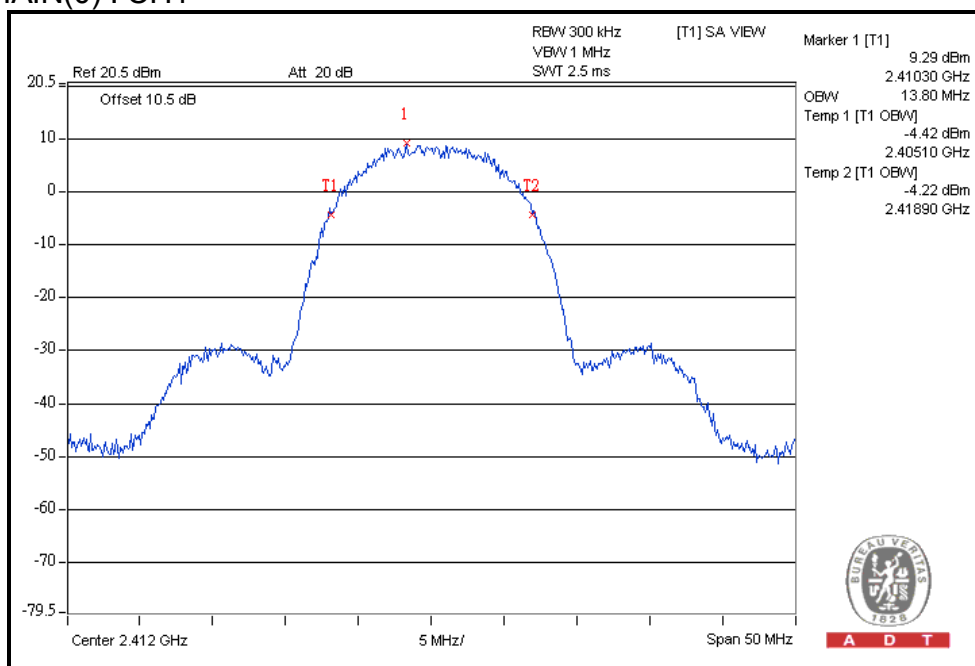
CH11



Multiple chain - 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	13.80	13.80
6	2437	13.80	13.80
11	2462	13.80	13.90

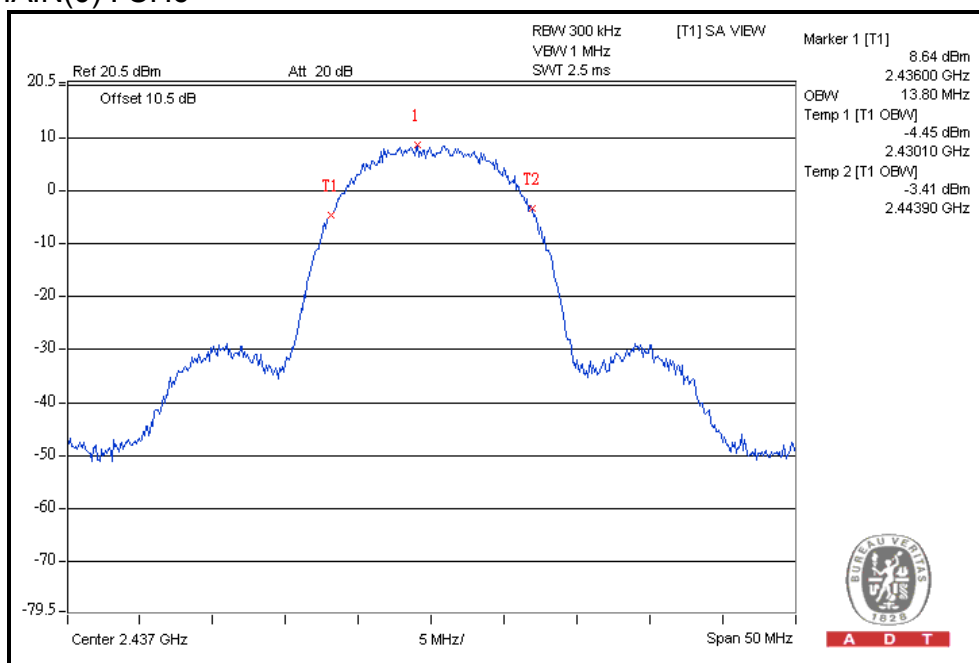
For CHAIN(0) : CH1



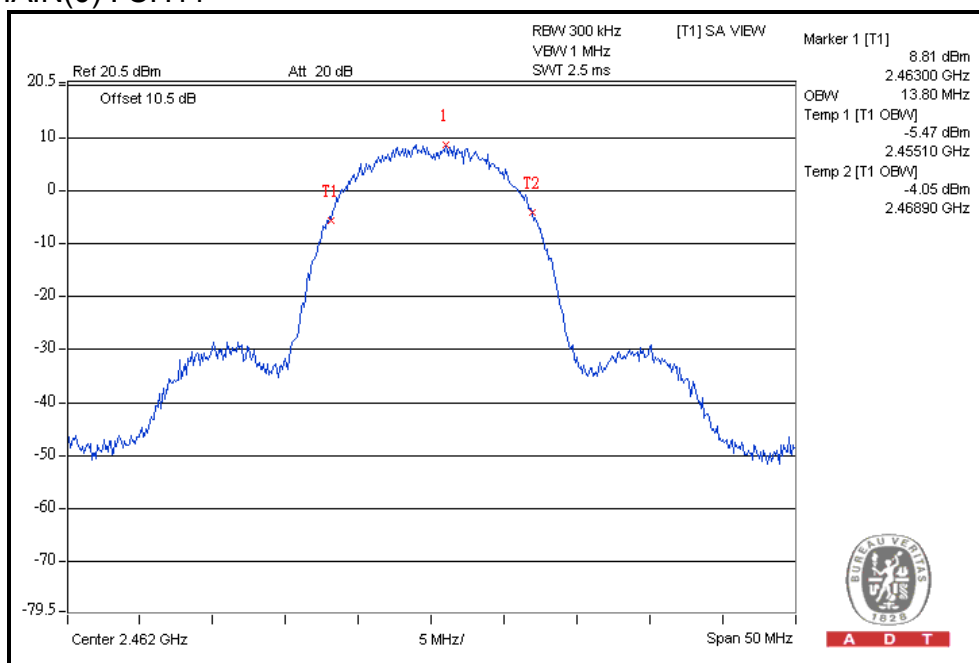


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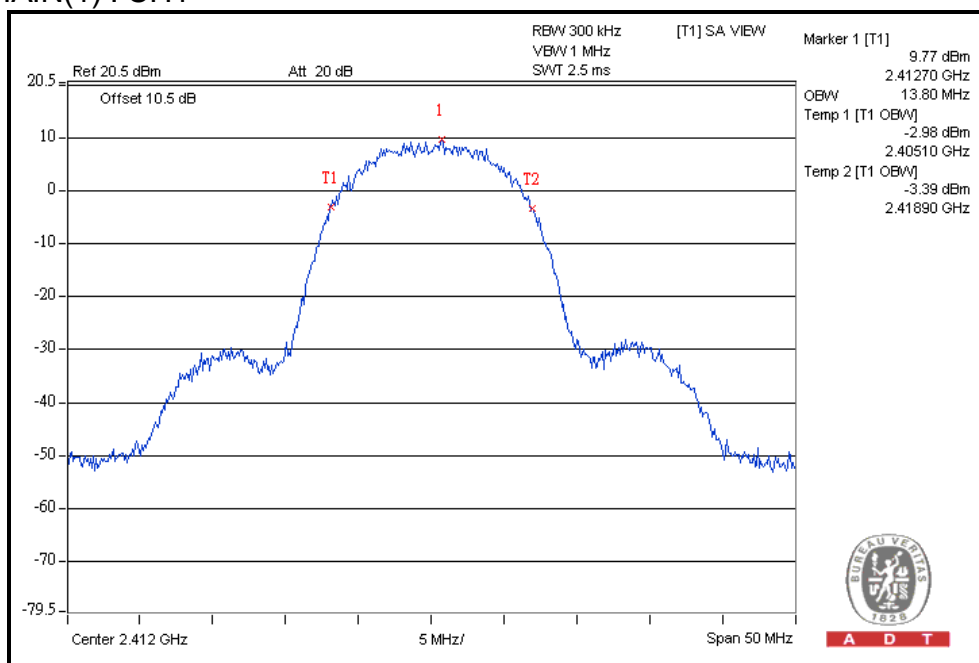
For CHAIN(0) : CH6



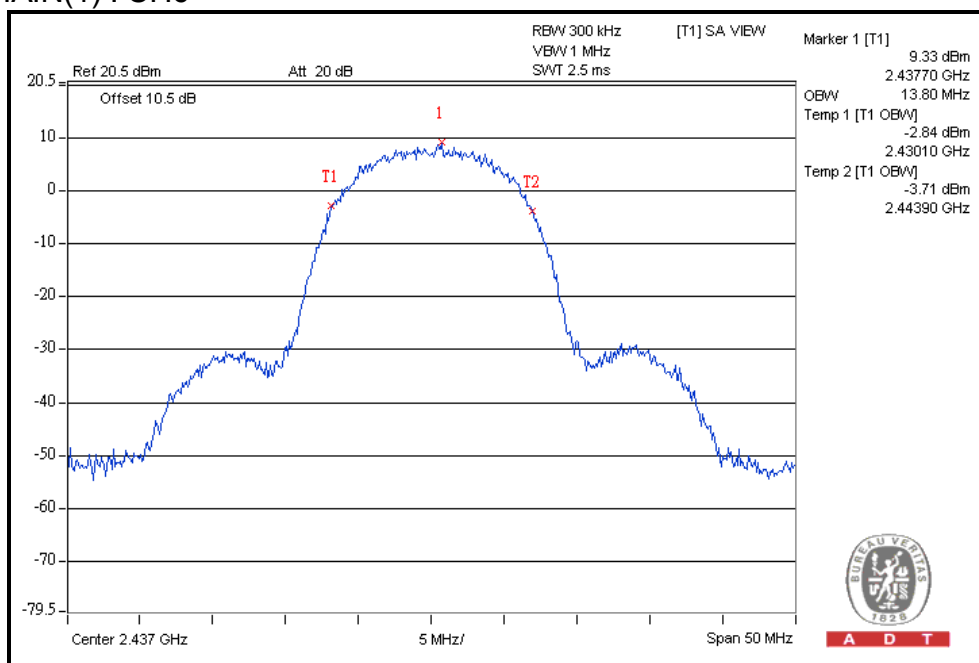
For CHAIN(0) : CH11



For CHAIN(1) : CH1



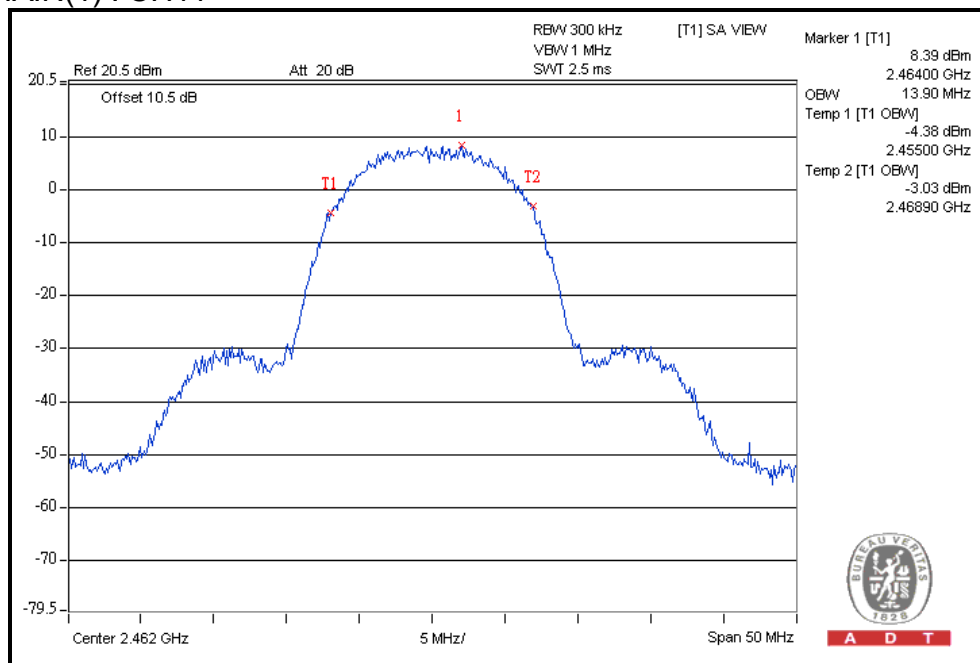
For CHAIN(1) : CH6





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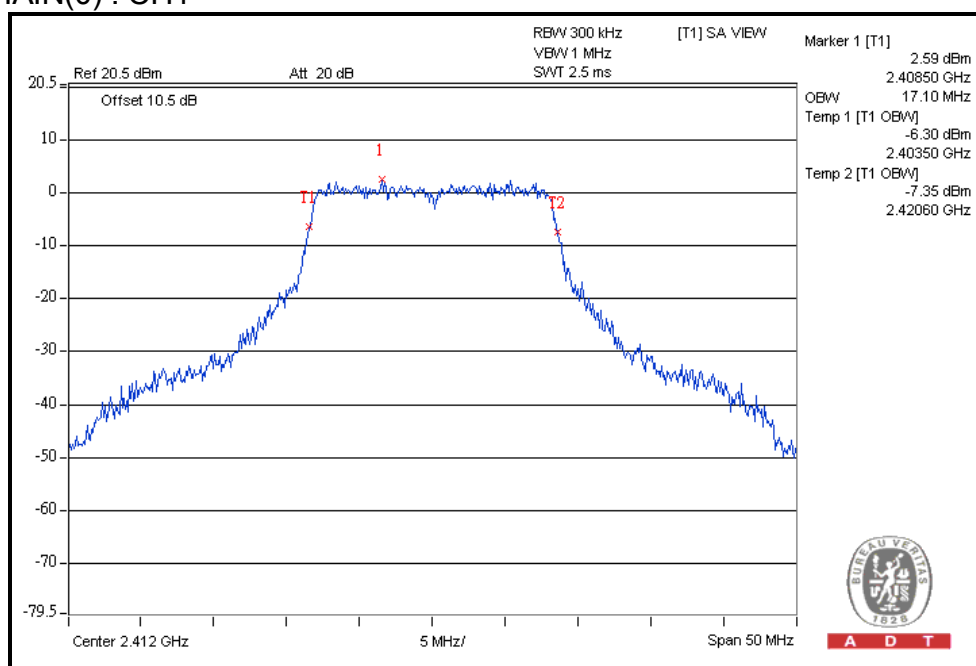
For CHAIN(1) : CH11



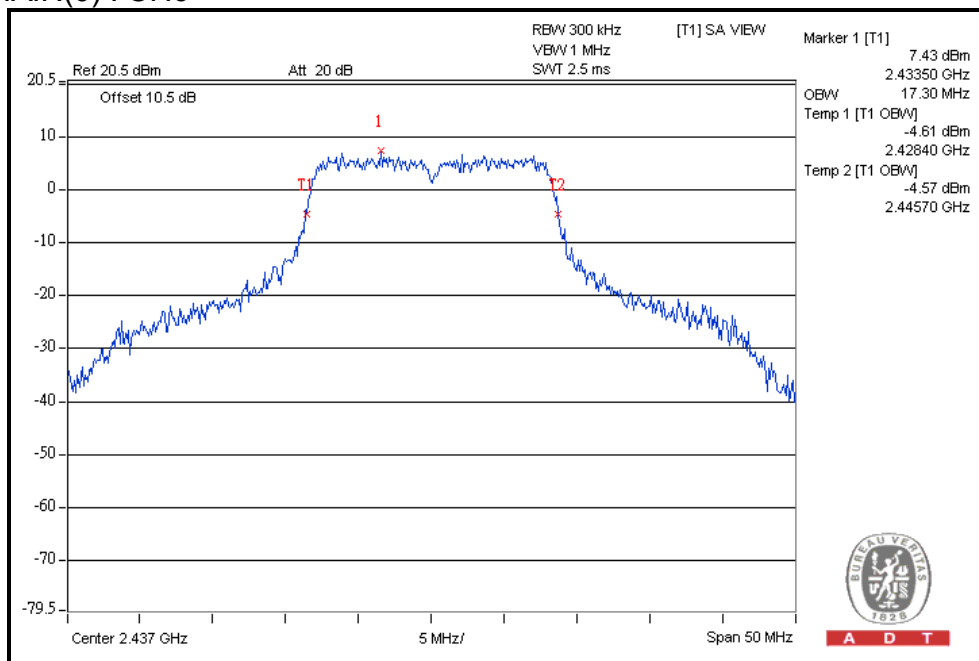
Multiple chain - 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	17.10	16.90
6	2437	17.30	17.30
11	2462	17.00	16.90

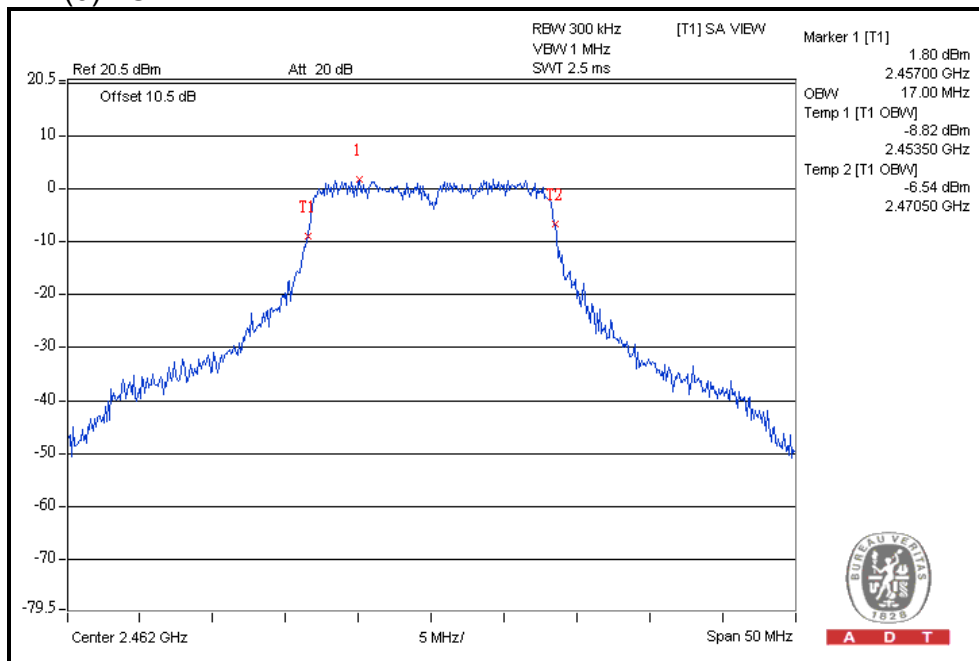
For CHAIN(0) : CH1



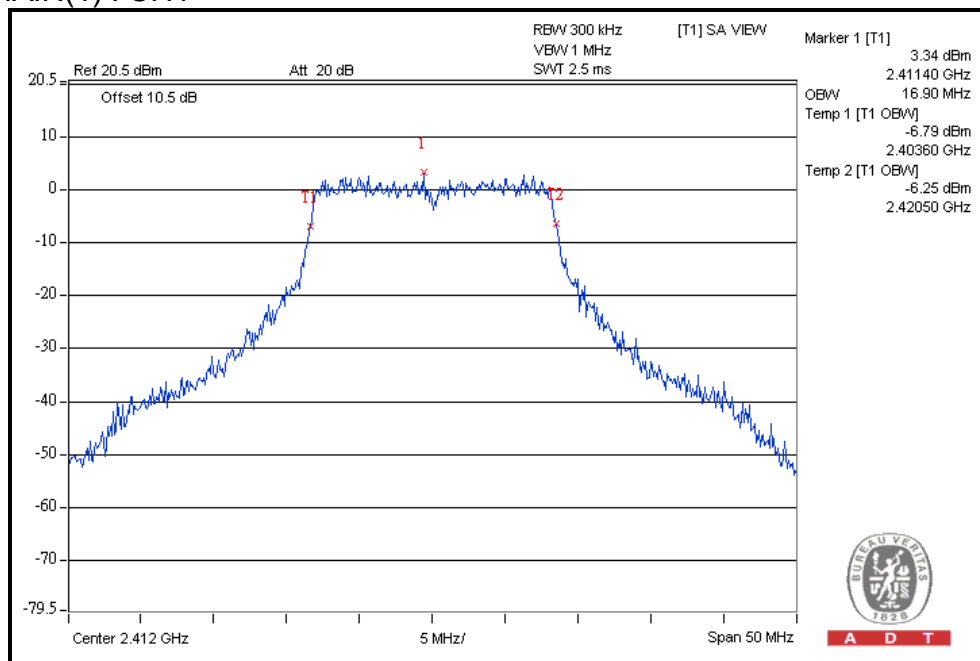
For CHAIN(0) : CH6



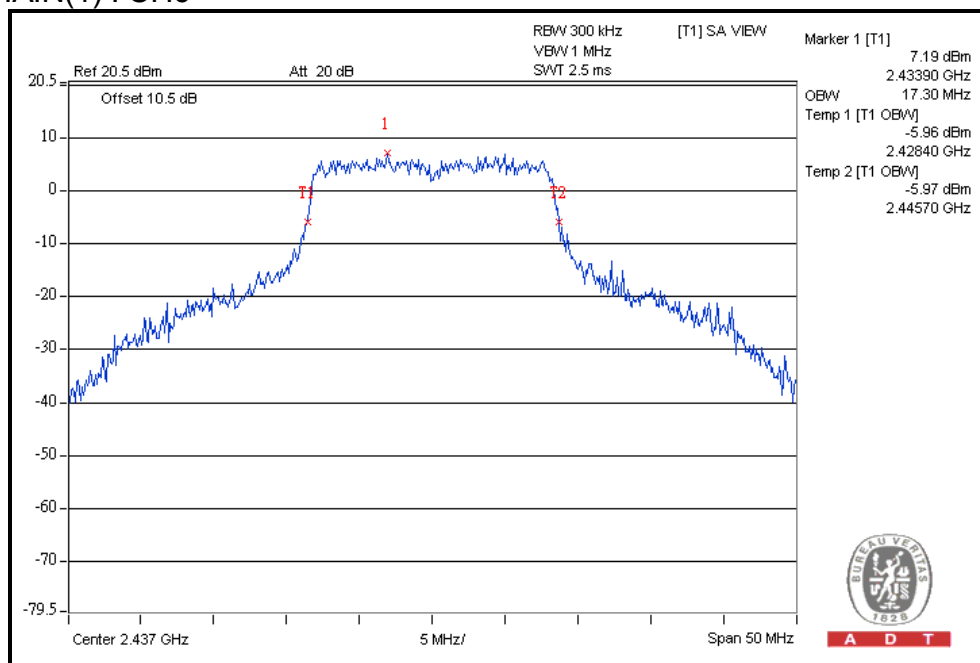
For CHAIN(0) : CH11



For CHAIN(1) : CH1



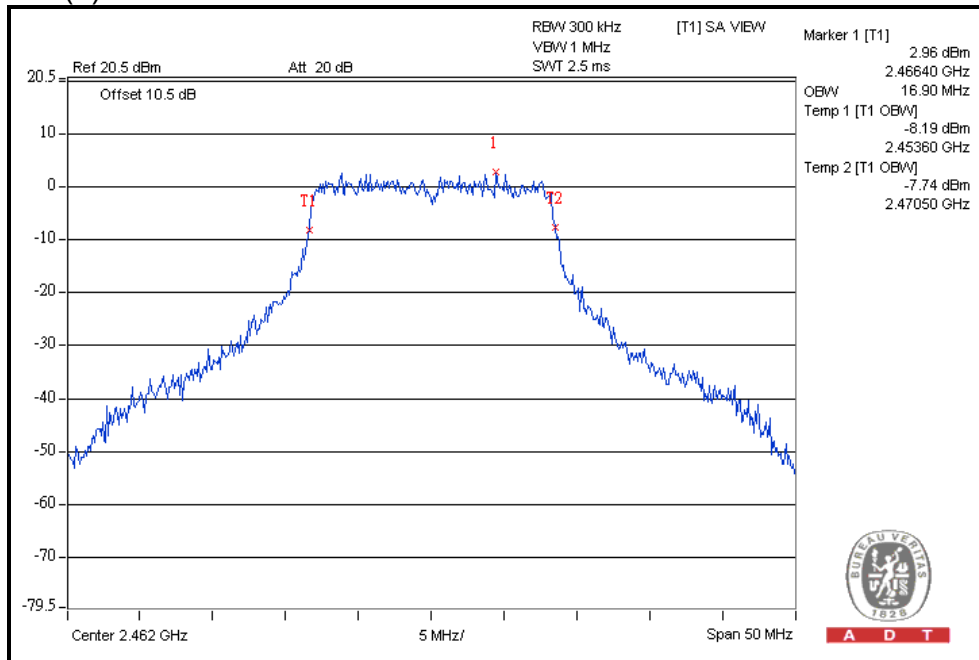
For CHAIN(1) : CH6





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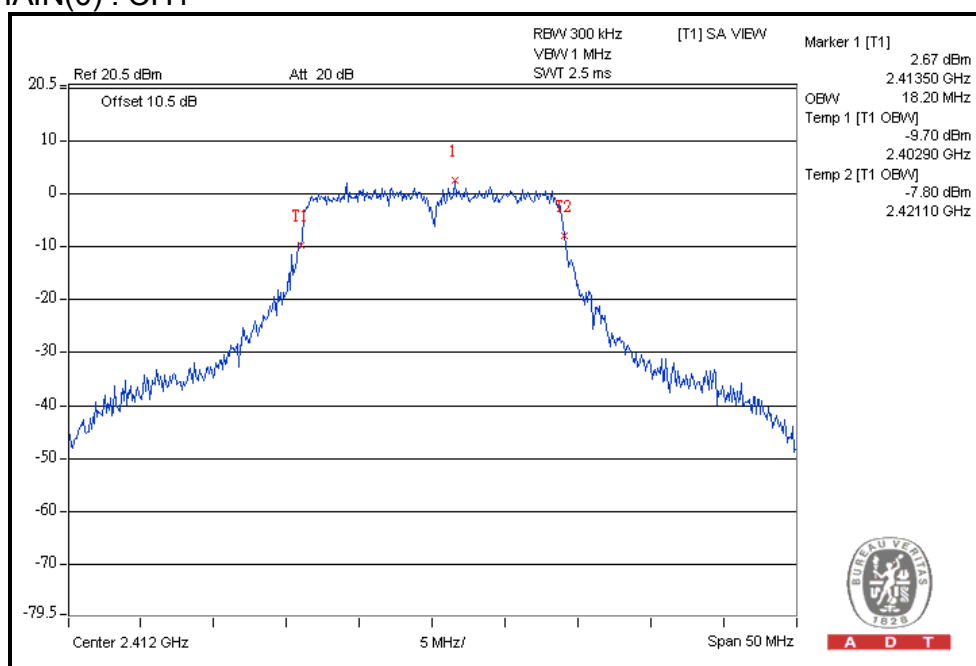
For CHAIN(1) : CH11



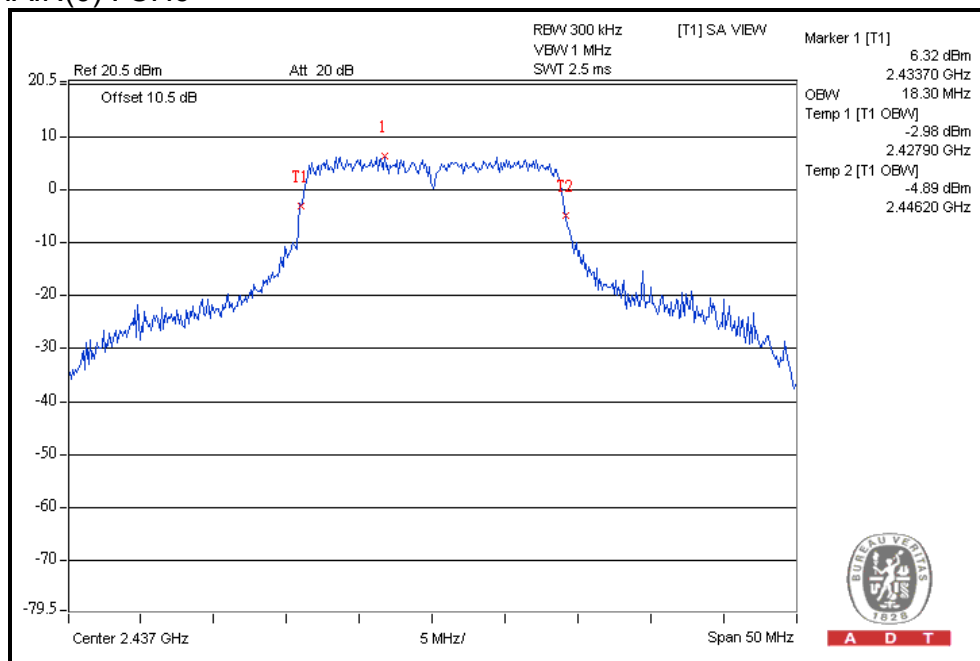
802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	18.20	18.00
6	2437	18.30	18.40
11	2462	18.10	18.00

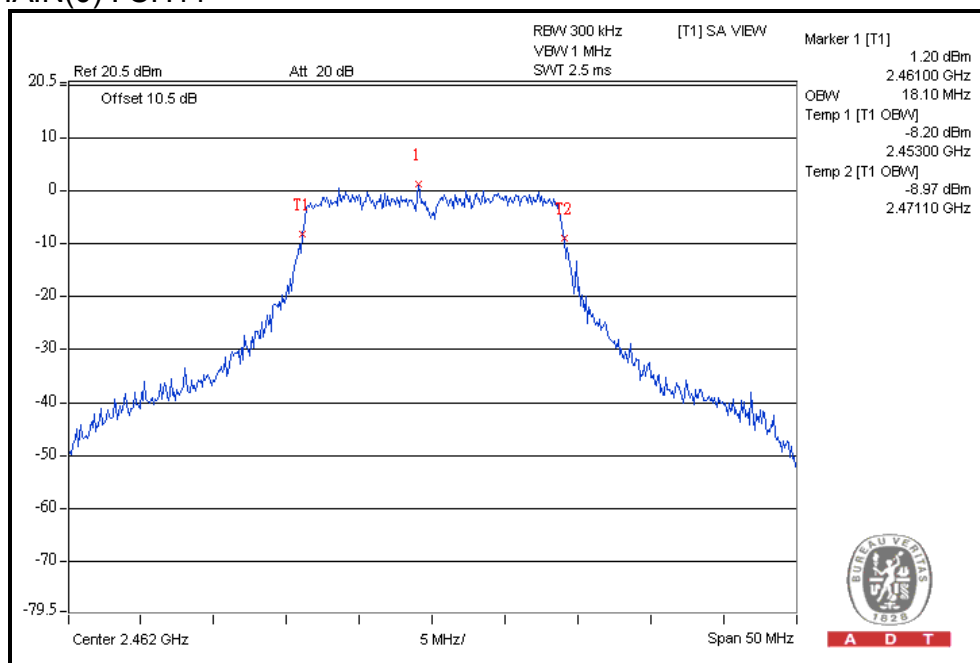
For CHAIN(0) : CH1



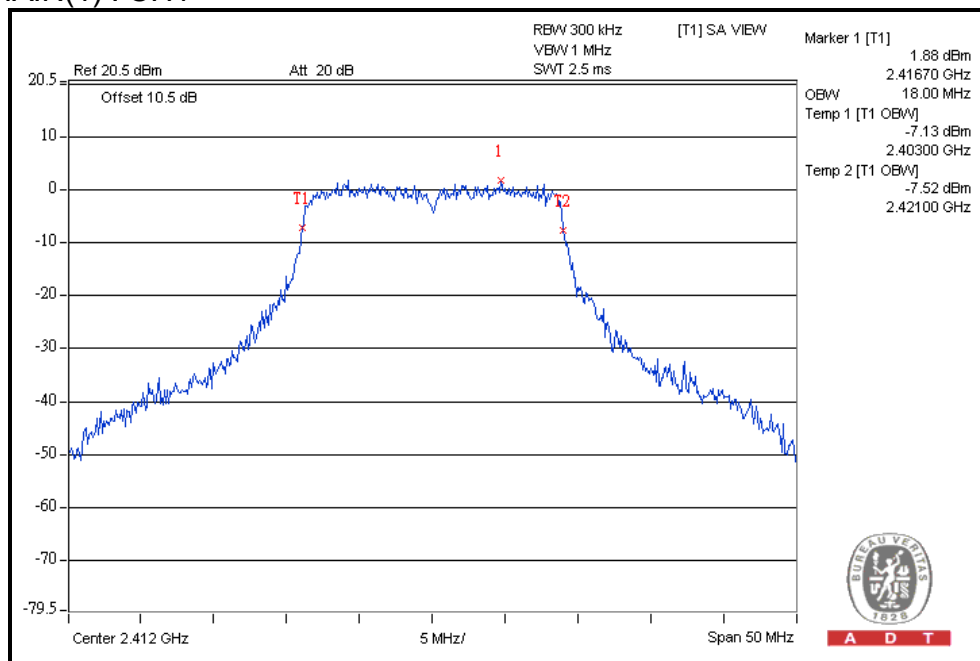
For CHAIN(0) : CH6



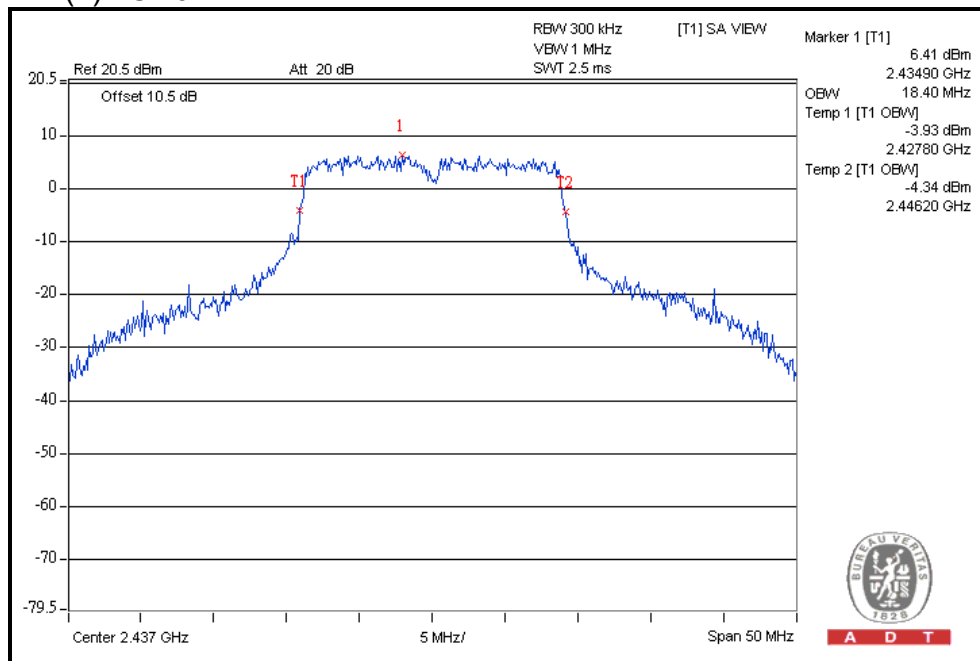
For CHAIN(0) : CH11



For CHAIN(1) : CH1



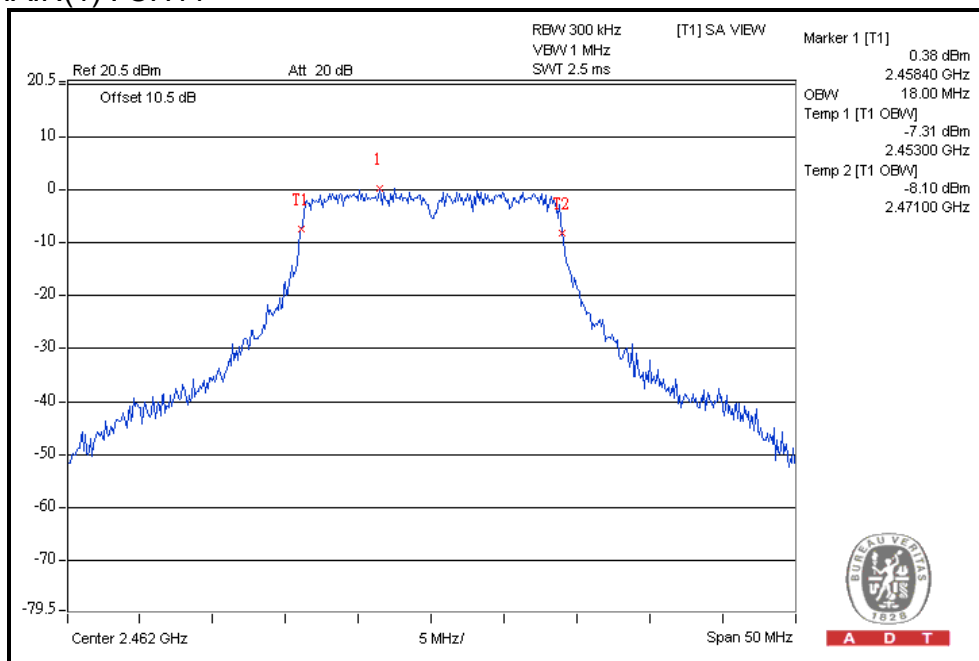
For CHAIN(1) : CH6





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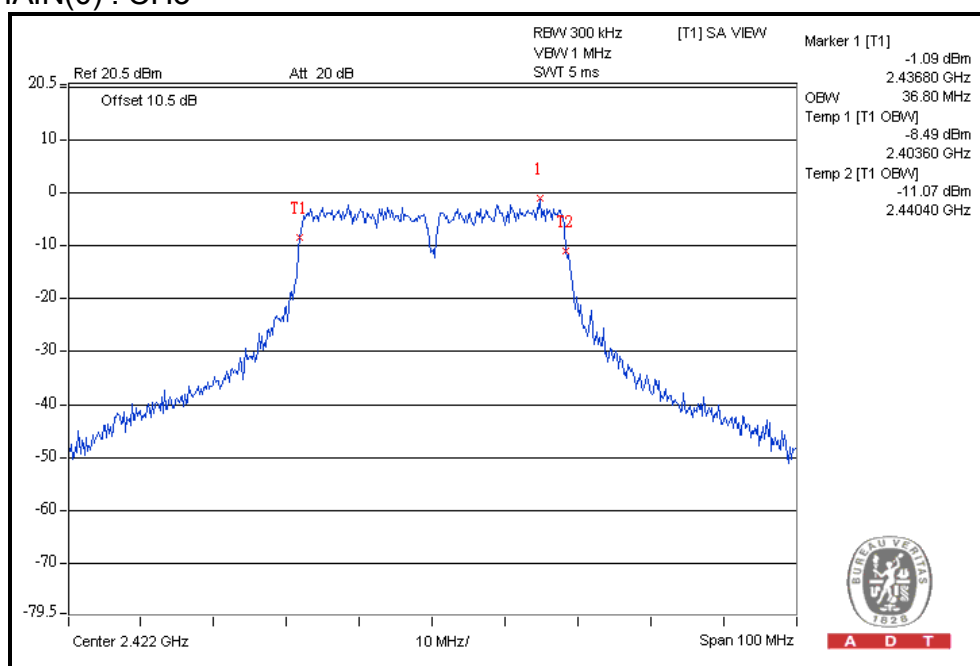
For CHAIN(1) : CH11



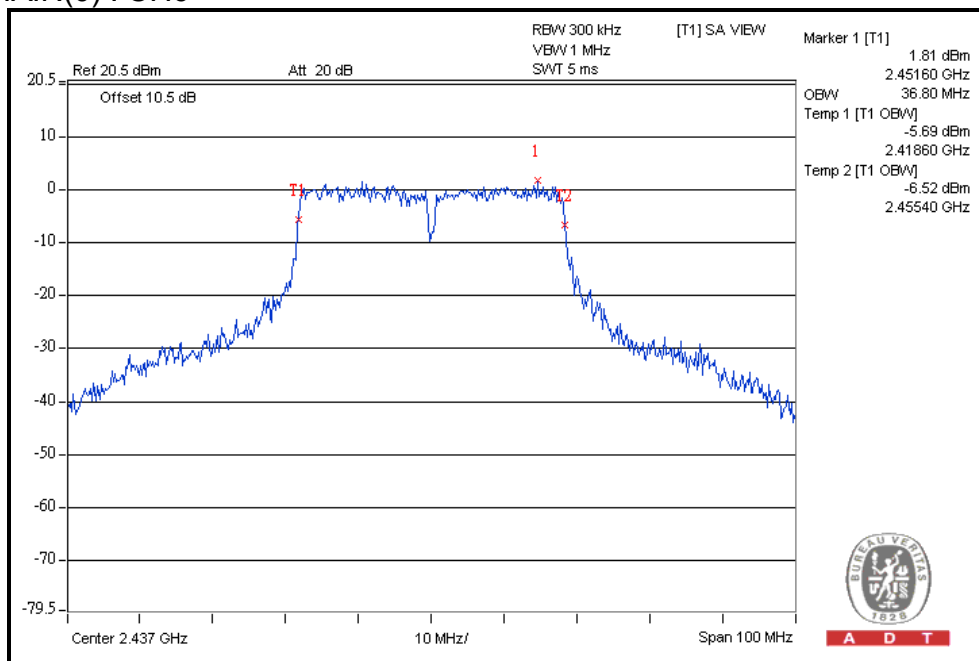
802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
3	2422	36.80	36.40
6	2437	36.80	36.60
9	2452	36.60	36.40

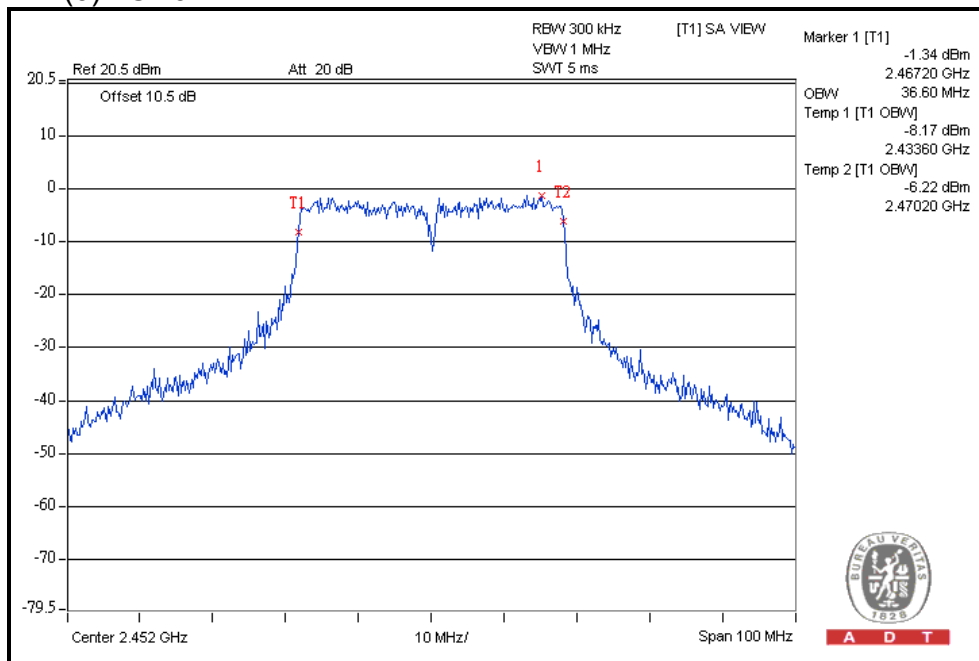
For CHAIN(0) : CH3



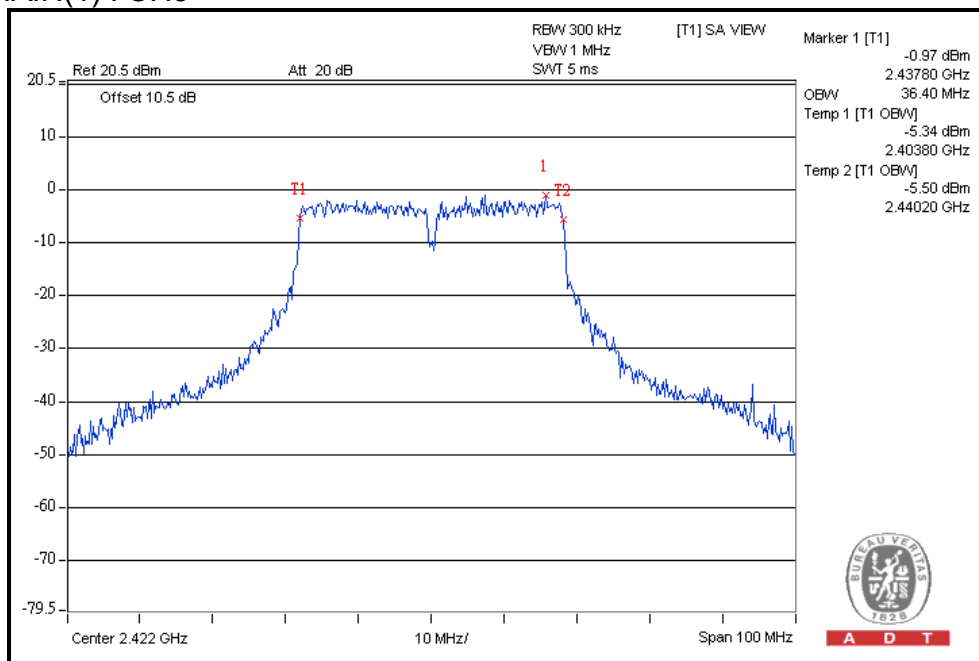
For CHAIN(0) : CH6



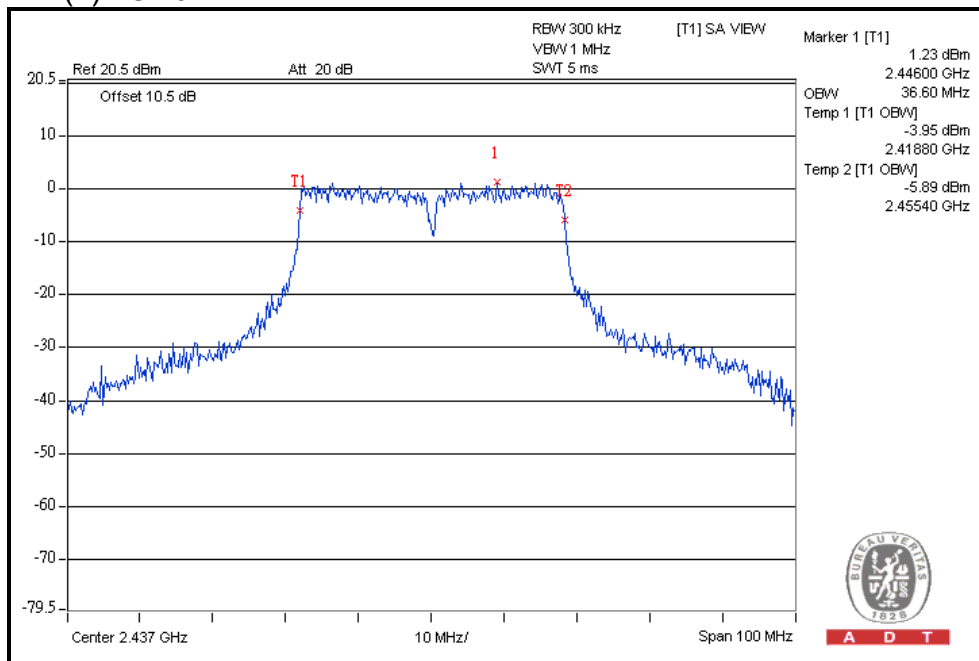
For CHAIN(0) : CH9



For CHAIN(1) : CH3



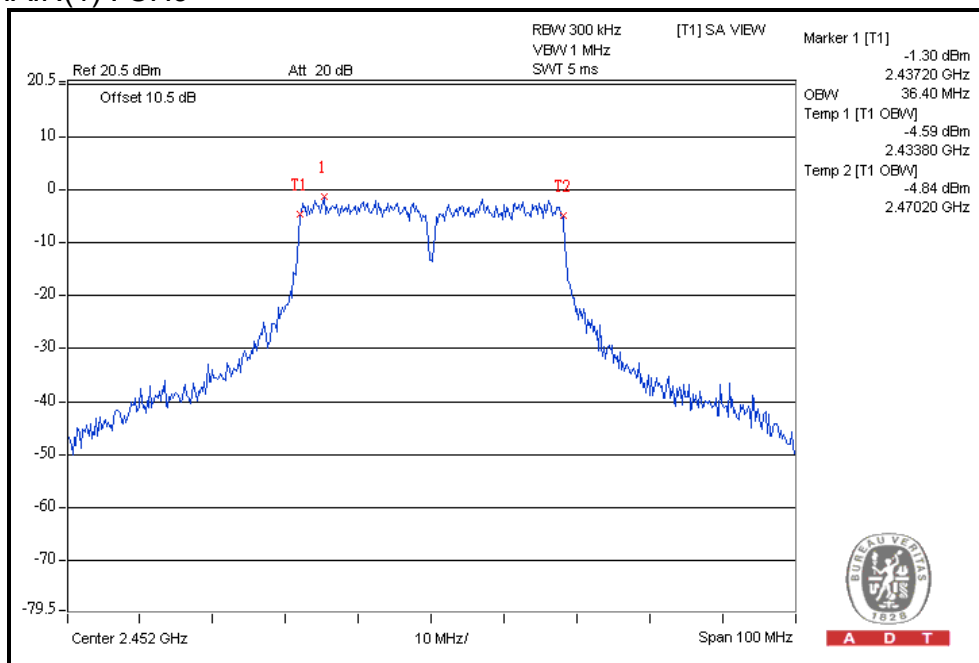
For CHAIN(1) : CH6





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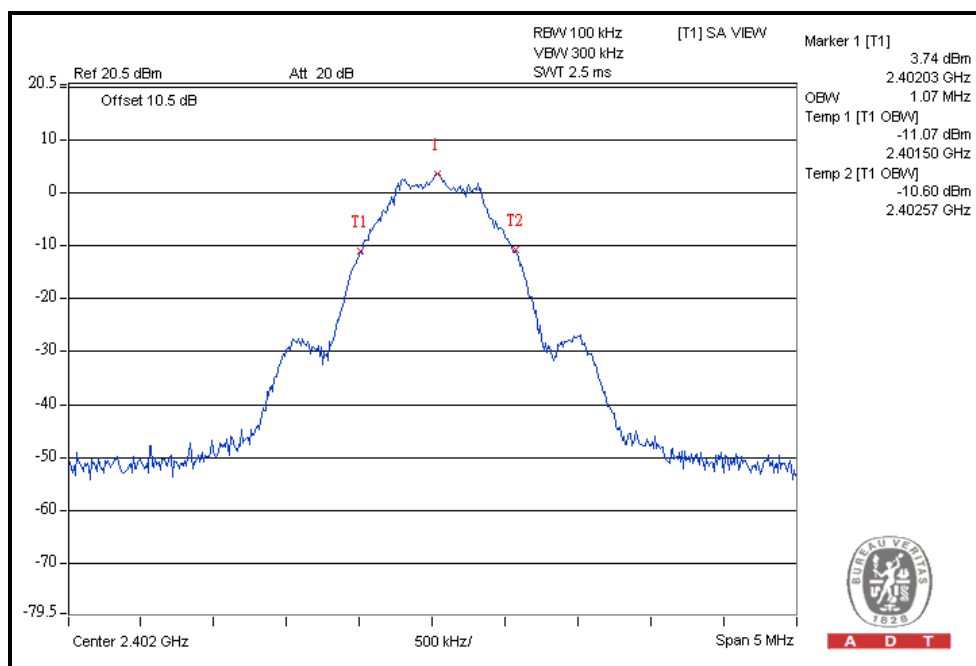
For CHAIN(1) : CH9



4.4.1 TEST RESULTS(BT<LE> MODE)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
0	2402	1.07
19	2440	1.06
39	2480	1.06

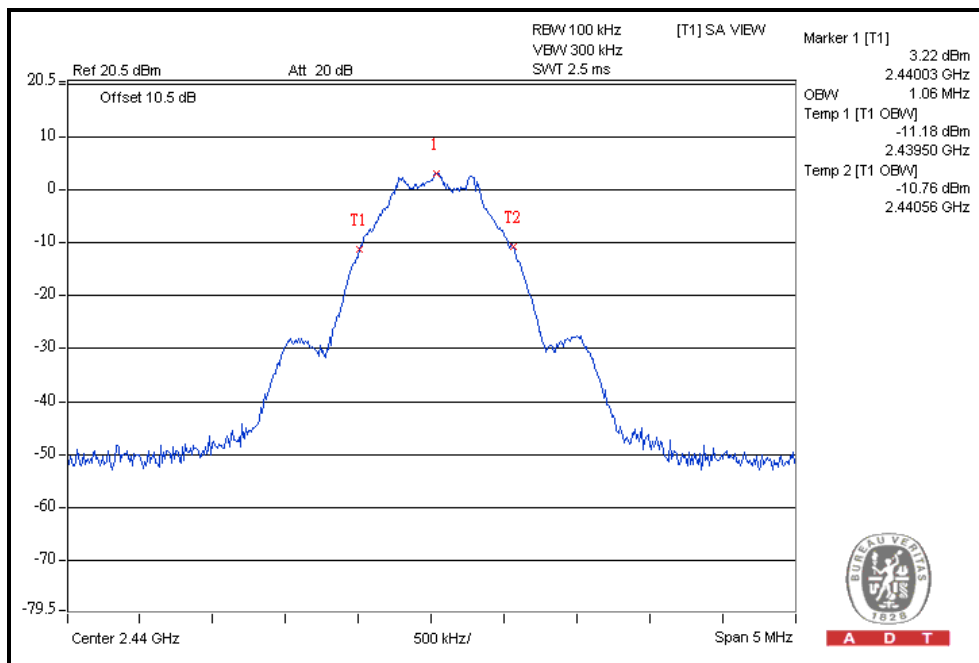
CH0



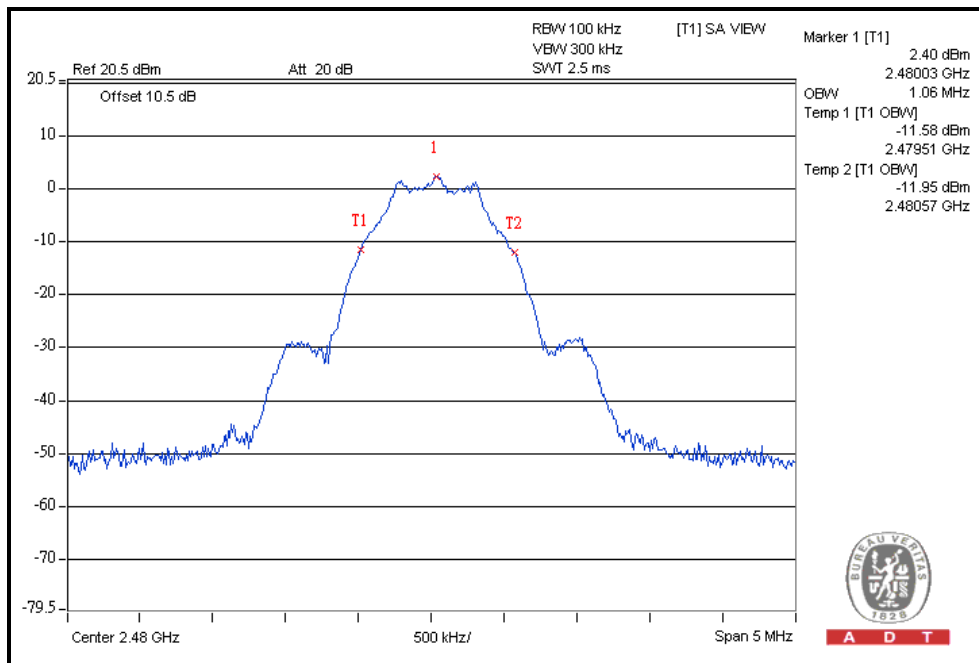


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CH19



CH39



4.5 CONDUCTED OUTPUT POWER

4.5.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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

4.5.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Peak Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

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 : Apr. 12, 2012

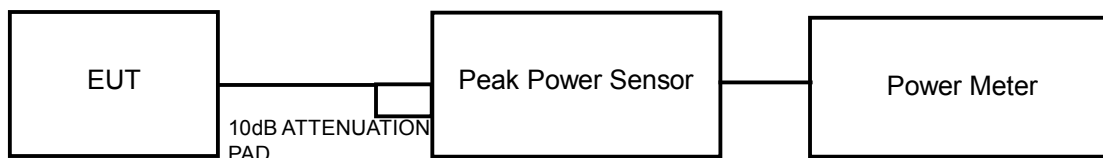
4.5.3 TEST PROCEDURES

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.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.5.7 TEST RESULTS (WLAN MODE)

Single chain - 802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	100.000	20.00	30	PASS
6	2437	125.893	21.00	30	PASS
11	2462	109.648	20.40	30	PASS

Single chain - 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	181.970	22.60	30	PASS
6	2437	263.027	24.20	30	PASS
11	2462	100.000	20.00	30	PASS

Multiple chain - 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	17.80	18.40	129.439	21.12	29.37	PASS
6	2437	17.90	18.20	127.729	21.06	29.37	PASS
11	2462	17.80	18.10	124.821	20.96	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.

Multiple chain - 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	19.00	20.00	179.433	22.54	29.37	PASS
6	2437	22.20	22.30	335.783	25.26	29.37	PASS
11	2462	18.70	18.80	149.989	21.76	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 (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	18.30	19.20	150.784	21.78	29.37	PASS
6	2437	22.00	22.10	320.670	25.06	29.37	PASS
11	2462	17.70	18.10	123.449	20.91	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 (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	18.80	19.20	159.034	22.01	29.37	PASS
6	2437	21.20	21.20	263.652	24.21	29.37	PASS
9	2452	19.00	19.30	164.547	22.16	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.

4.5.1 TEST RESULTS (BT<LE> MODE)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
0	2402	2.630	4.20	30	PASS
19	2440	2.317	3.65	30	PASS
39	2480	1.945	2.89	30	PASS

4.6 AVERAGE OUTPUT POWER

4.6.1 FOR REFERENCE.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Average Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

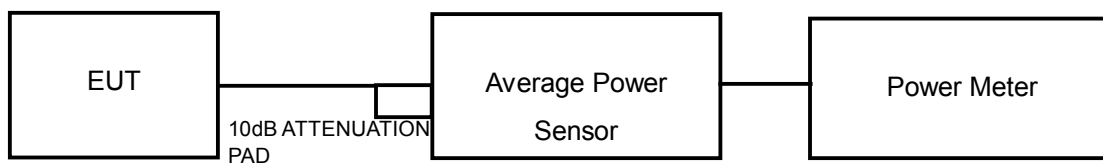
Note:

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 : Apr. 12, 2012

4.6.3 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.

4.6.4 TEST SETUP



4.6.5 EUT OPERATING CONDITIONS

Same as Item 4.3.5

4.6.6 TEST RESULTS (WLAN MODE)

Single chain - 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
1	2412	18.0
6	2437	19.2
11	2462	18.5

Single chain - 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
1	2412	15.0
6	2437	19.0
11	2462	12.7

Multiple chain - 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	15.8	16.2	19.0
6	2437	16.1	16.2	19.2
11	2462	15.8	16.0	18.9

Multiple chain - 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	11.3	11.6	14.5
6	2437	16.1	16.1	19.1
11	2462	10.6	11.1	13.9

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	10.7	10.6	13.7
6	2437	16.1	16.0	19.1
11	2462	9.6	9.5	12.6

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
3	2422	10.5	10.8	13.7
6	2437	13.7	13.3	16.5
9	2452	10.5	10.3	13.4



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4.6.7 TEST RESULTS (BT<LE> MODE)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
0	2402	4.41
19	2440	3.71
39	2480	2.92

4.7 POWER SPECTRAL DENSITY MEASUREMENT

4.7.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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 : Apr. 12, 2012

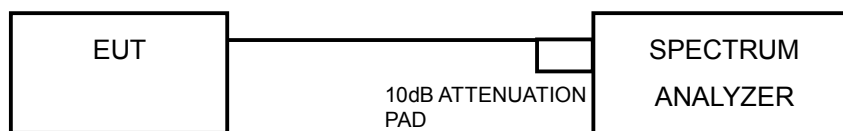
4.7.3 TEST PROCEDURE

1. Set the RBW = 100 kHz, VBW =300 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 power level in any 100 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



4.7.6 EUT OPERATING CONDITION

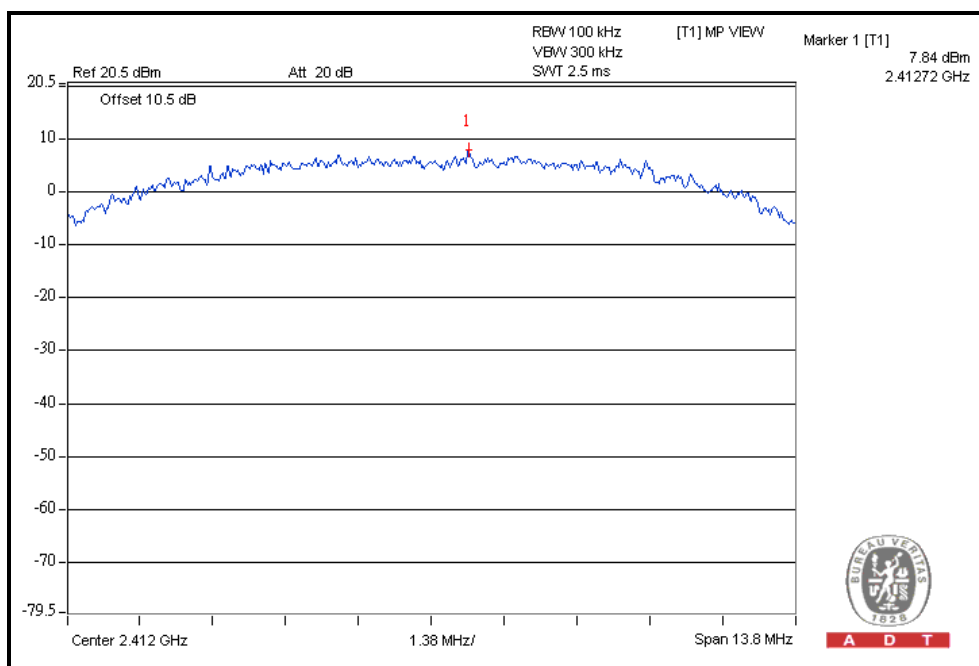
Same as Item 4.3.6

4.7.7 TEST RESULTS(WLAN MODE)

Single chain - 802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	7.84	-7.39	8	PASS
6	2437	10.51	-4.72	8	PASS
11	2462	9.42	-5.81	8	PASS

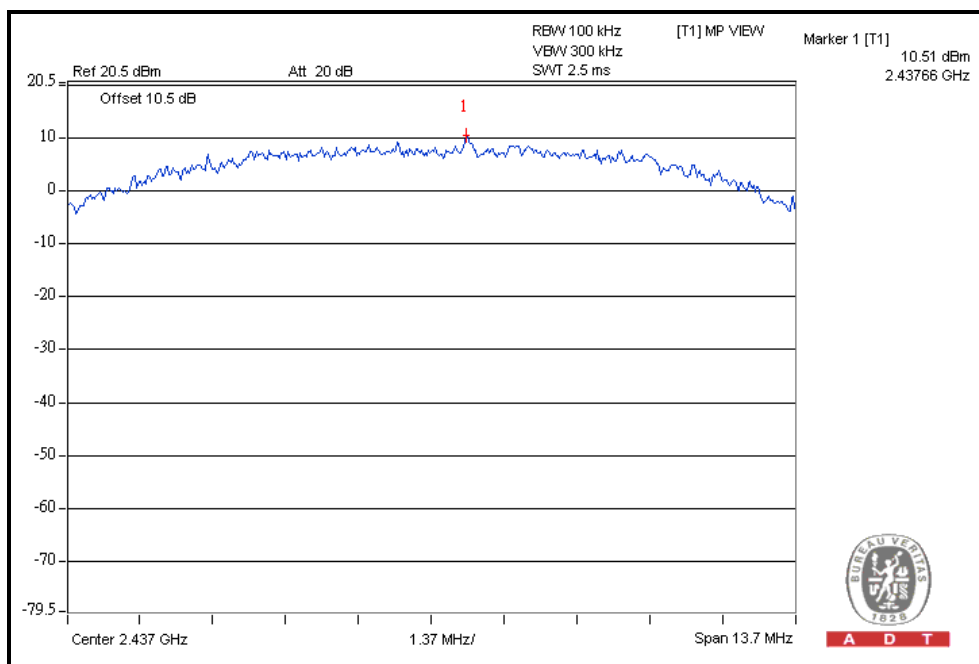
CH1



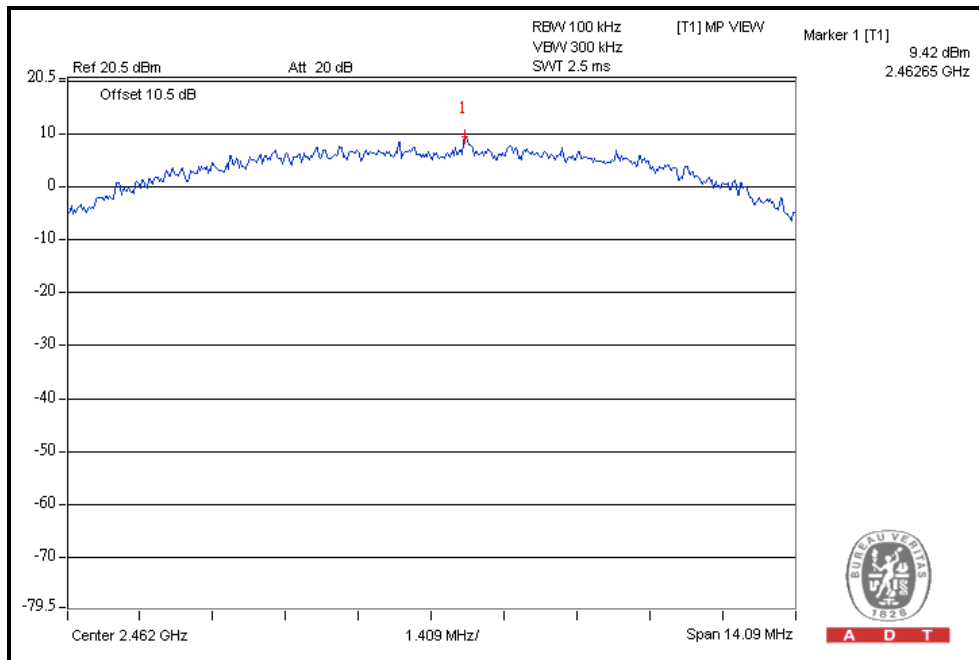


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CH6



CH11



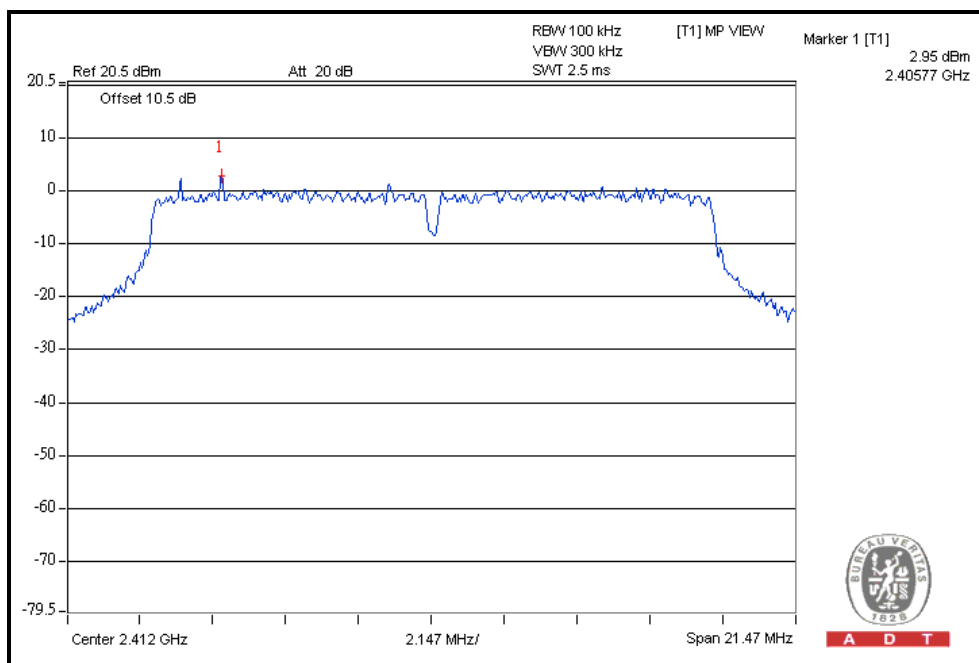


A D T

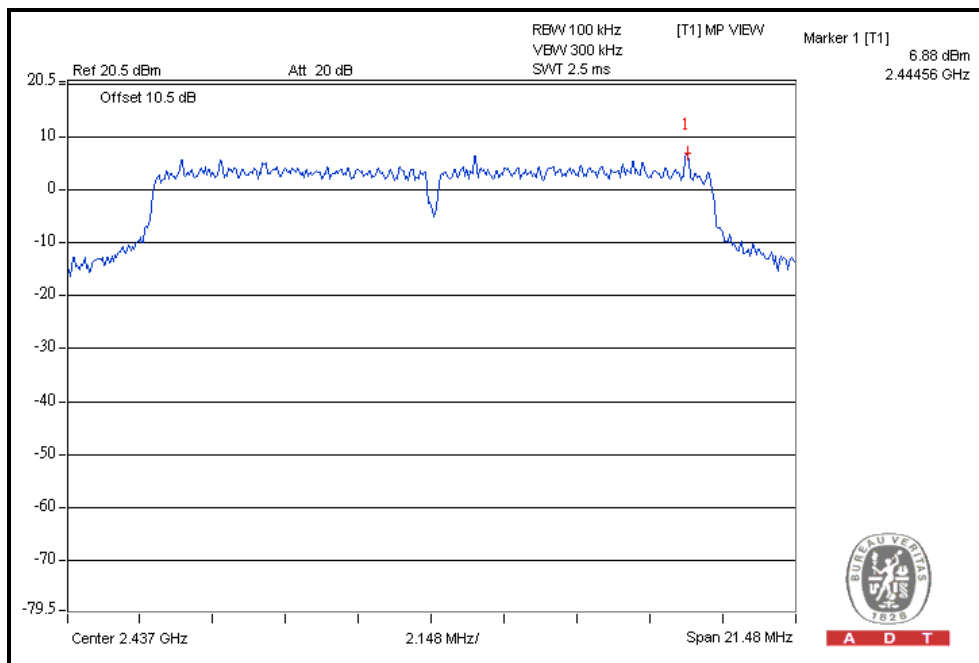
Single chain - 802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	2.95	-12.28	8	PASS
6	2437	6.88	-8.35	8	PASS
11	2462	1.63	-13.60	8	PASS

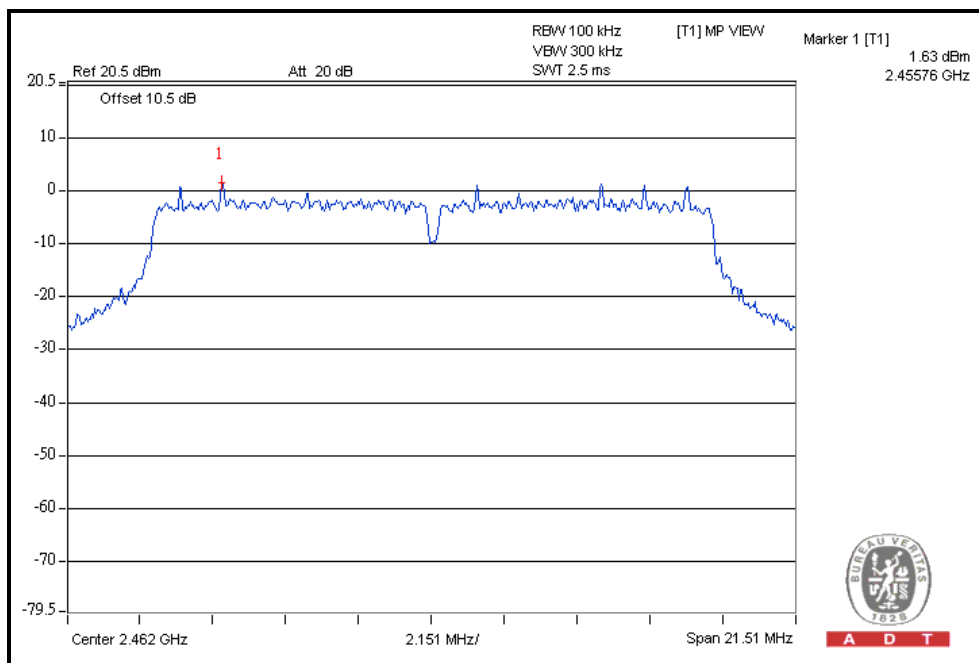
CH1



CH6



CH11



Multiple chain - 802.11b

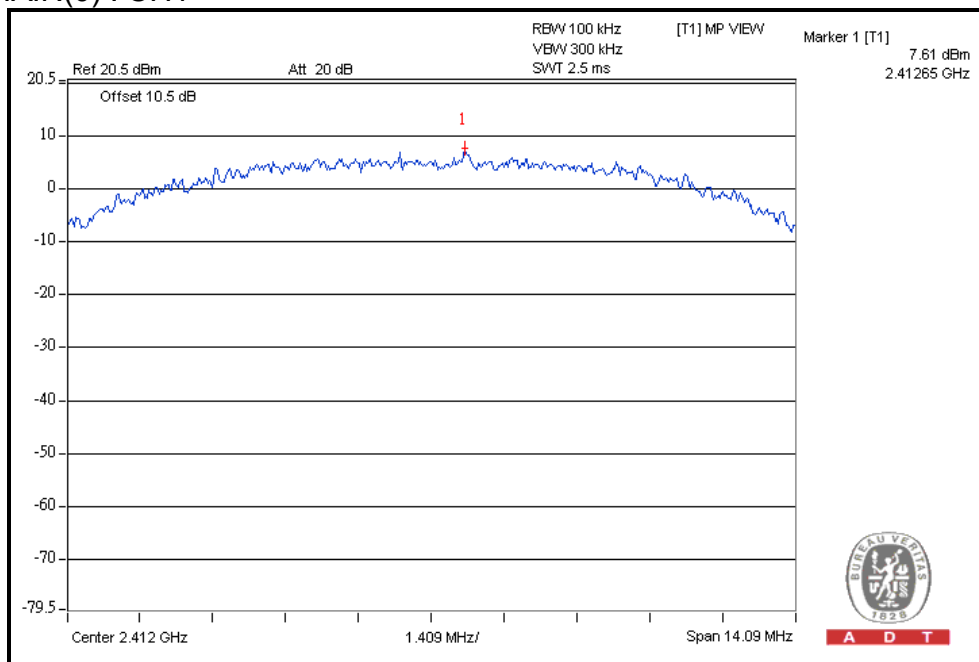
TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	7.61	-7.62	3.01	-4.61	7.37	PASS
	6	2437	7.48	-7.75	3.01	-4.74	7.37	PASS
	11	2462	7.10	-8.13	3.01	-5.12	7.37	PASS
1	1	2412	7.85	-7.38	3.01	-4.37	7.37	PASS
	6	2437	7.29	-7.94	3.01	-4.93	7.37	PASS
	11	2462	7.02	-8.20	3.01	-5.19	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.

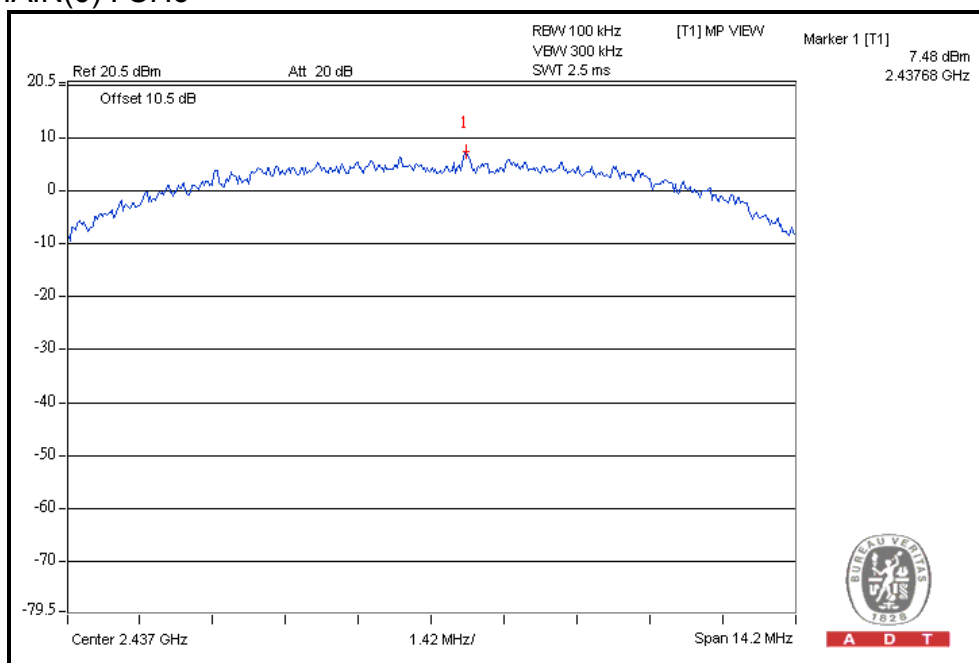
For CHAIN(0) : CH1



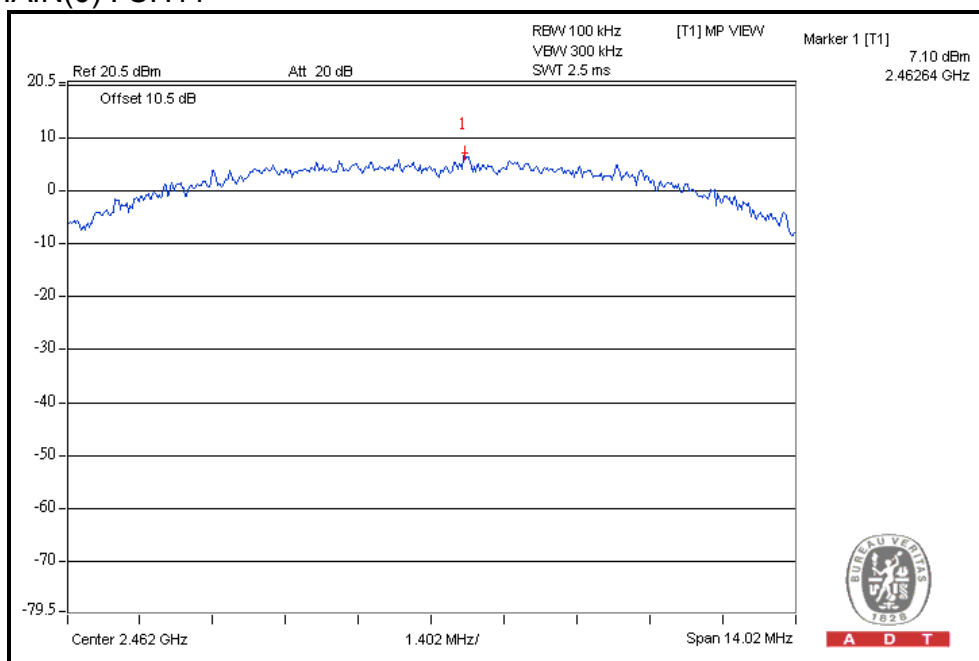


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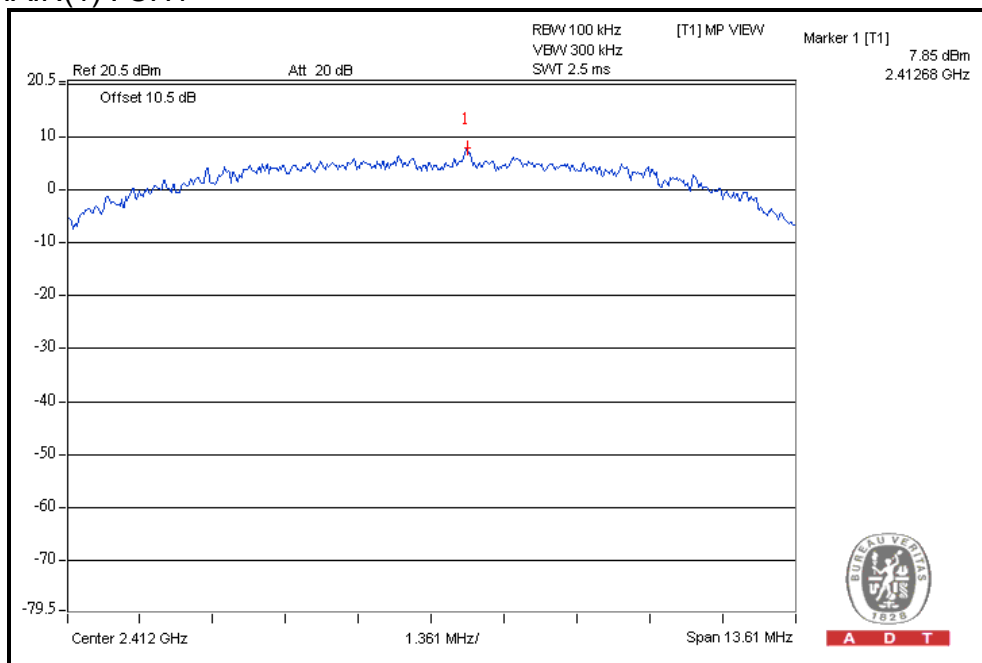
For CHAIN(0) : CH6



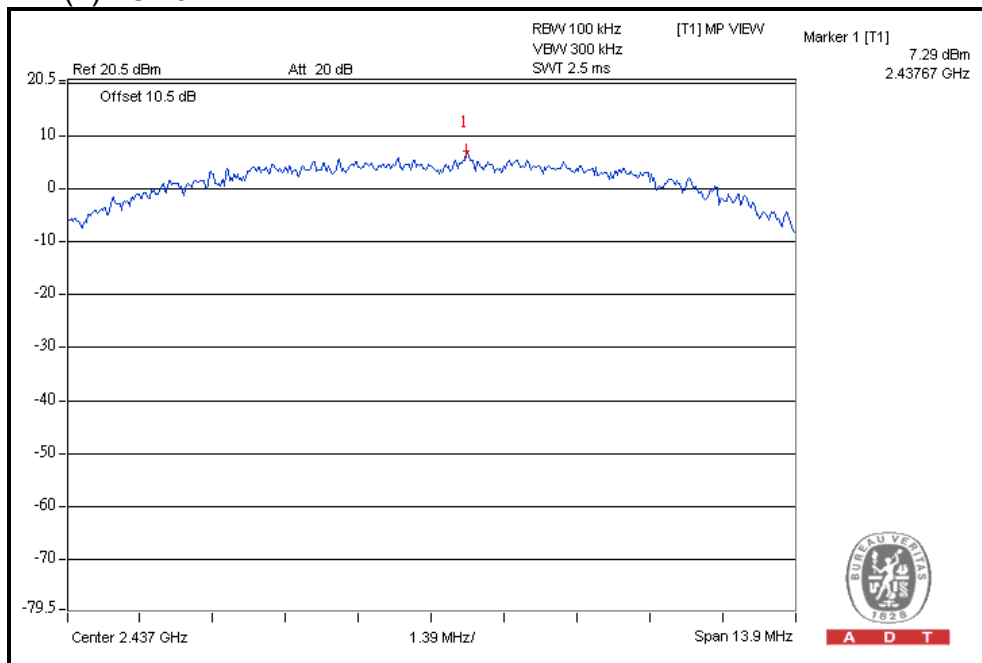
For CHAIN(0) : CH11



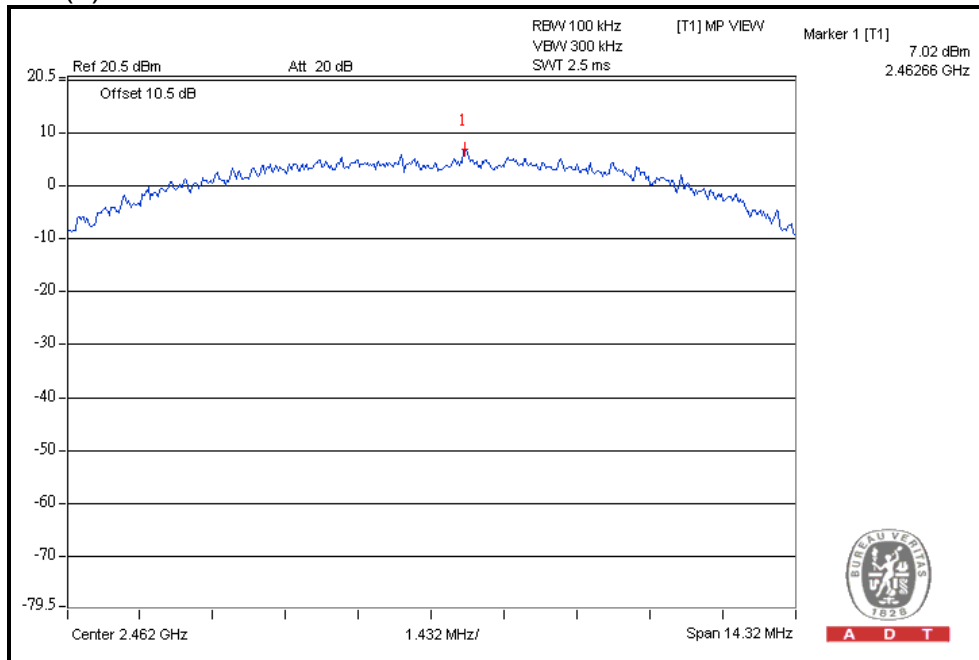
For CHAIN(1) : CH1



For CHAIN(1) : CH6



For CHAIN(1) : CH11



Multiple chain - 802.11g

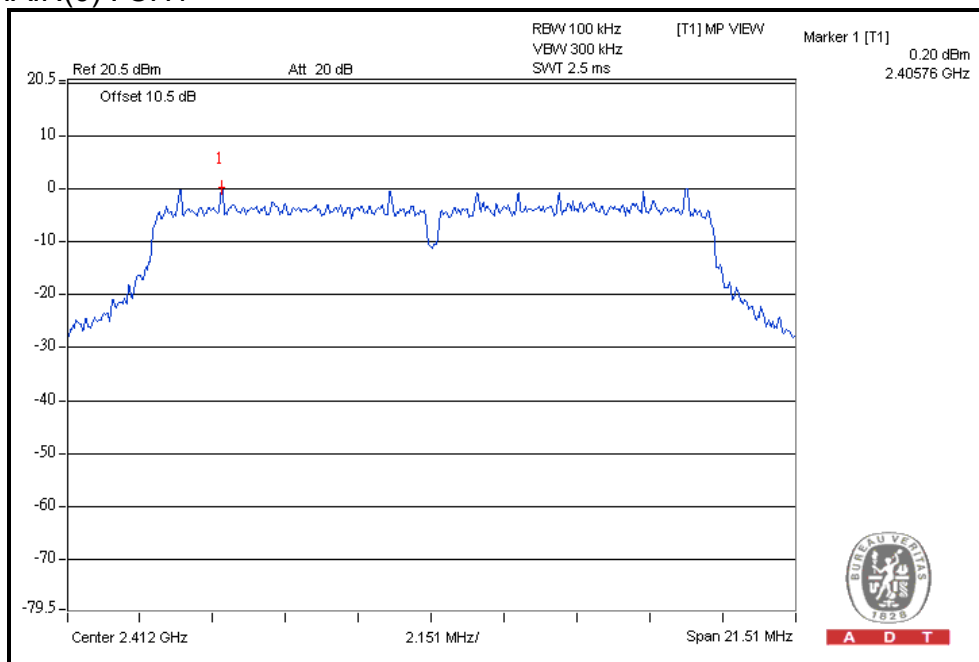
TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	0.20	-15.03	3.01	-12.02	7.37	PASS
	6	2437	4.80	-10.43	3.01	-7.42	7.37	PASS
	11	2462	-0.23	-15.46	3.01	-12.45	7.37	PASS
1	1	2412	0.20	-15.03	3.01	-12.02	7.37	PASS
	6	2437	5.27	-9.96	3.01	-6.95	7.37	PASS
	11	2462	-0.35	-15.58	3.01	-12.57	7.37	PASS

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

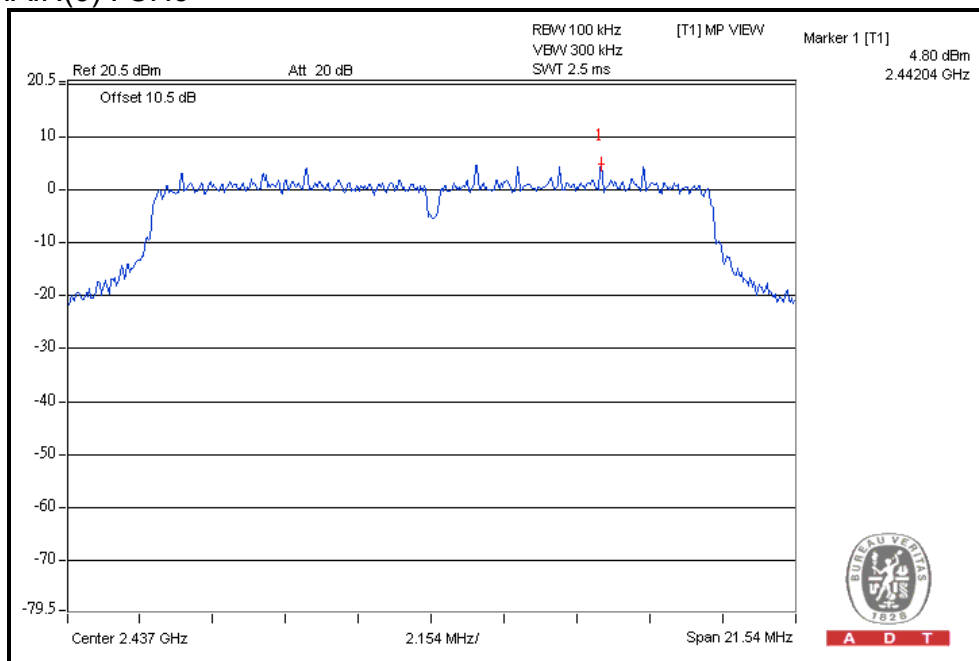
Effective Legacy Gain (dBi)=6.63

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

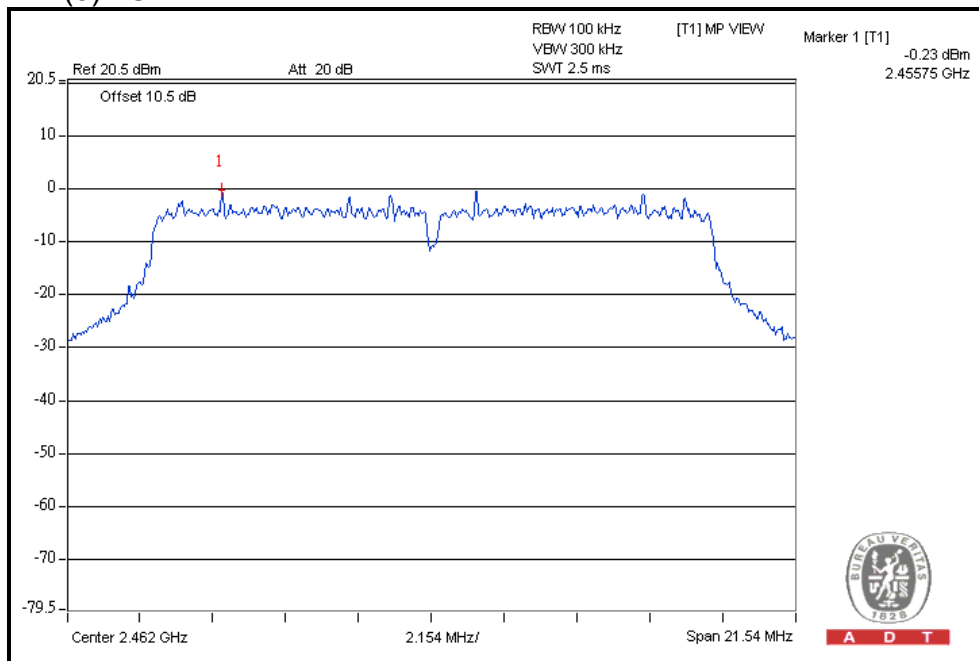
For CHAIN(0) : CH1



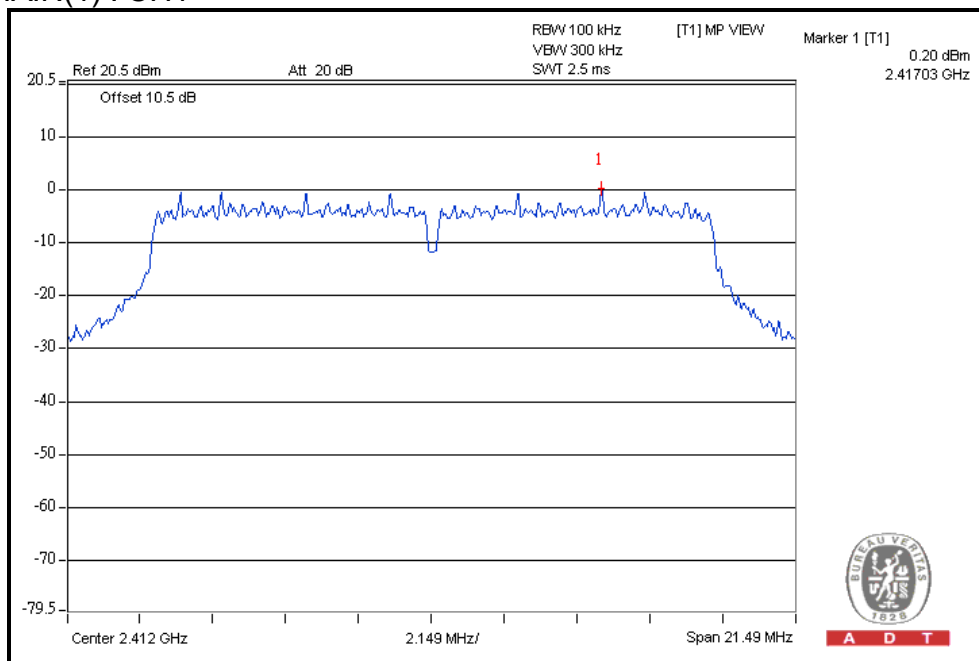
For CHAIN(0) : CH6



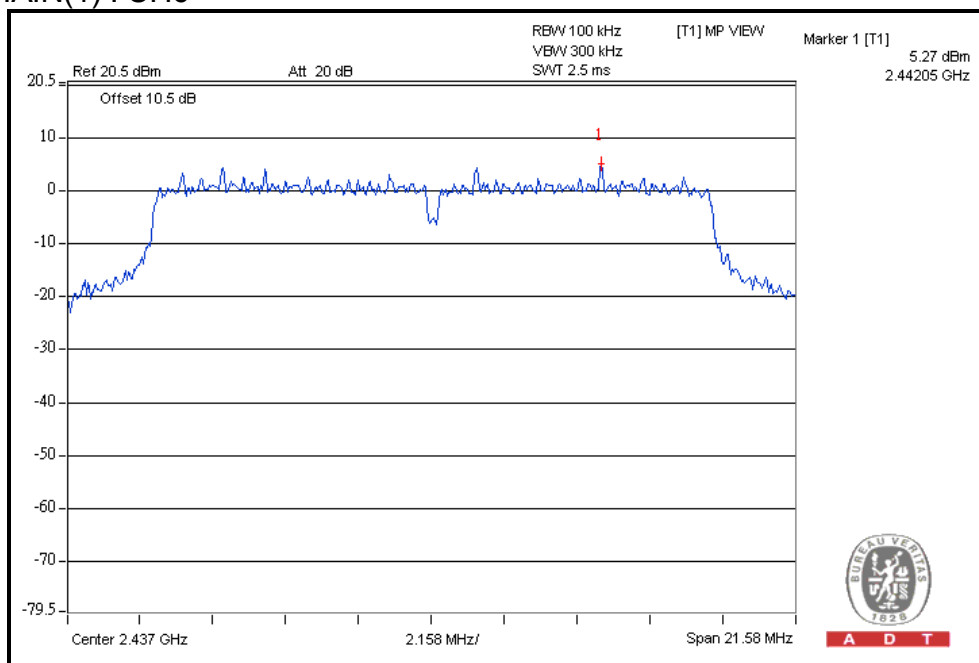
For CHAIN(0) : CH11



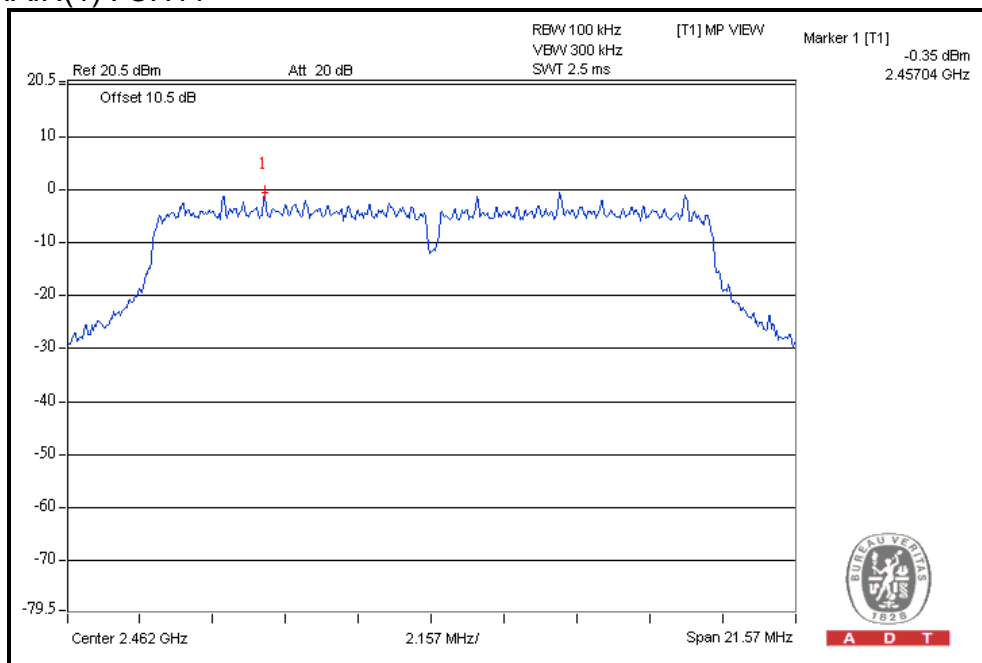
For CHAIN(1) : CH1



For CHAIN(1) : CH6



For CHAIN(1) : CH11



802.11n (20MHz)

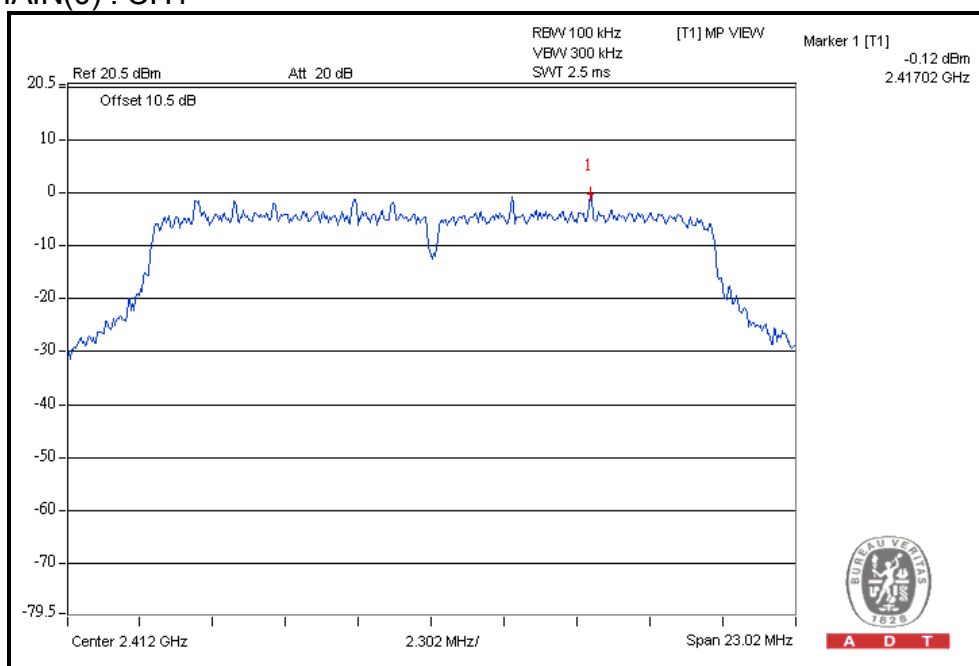
TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-0.12	-15.35	3.01	-12.34	7.37	PASS
	6	2437	4.37	-10.86	3.01	-7.85	7.37	PASS
	11	2462	-2.05	-17.28	3.01	-14.27	7.37	PASS
1	1	2412	-0.28	-15.51	3.01	-12.50	7.37	PASS
	6	2437	4.61	-10.62	3.01	-7.61	7.37	PASS
	11	2462	-1.45	-16.68	3.01	-13.67	7.37	PASS

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

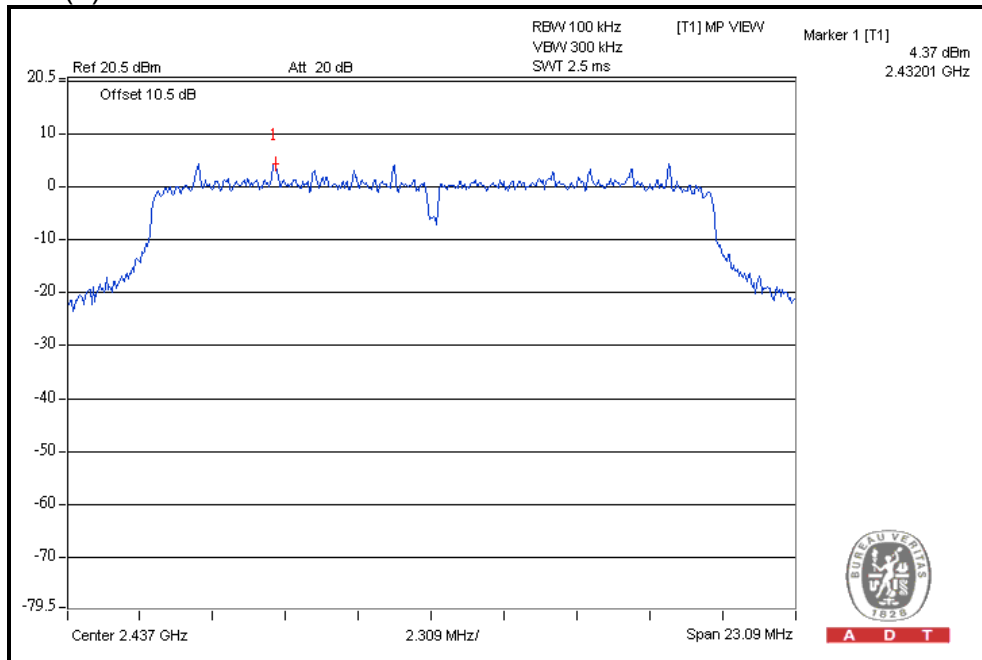
Effective Legacy Gain (dBi)= 6.63

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

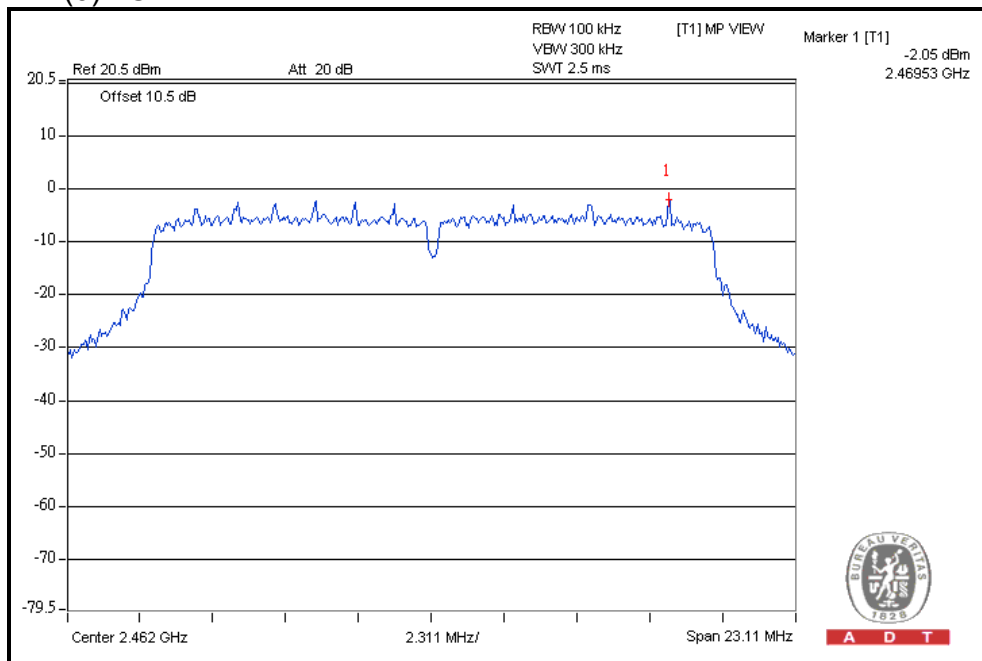
For CHAIN(0) : CH1



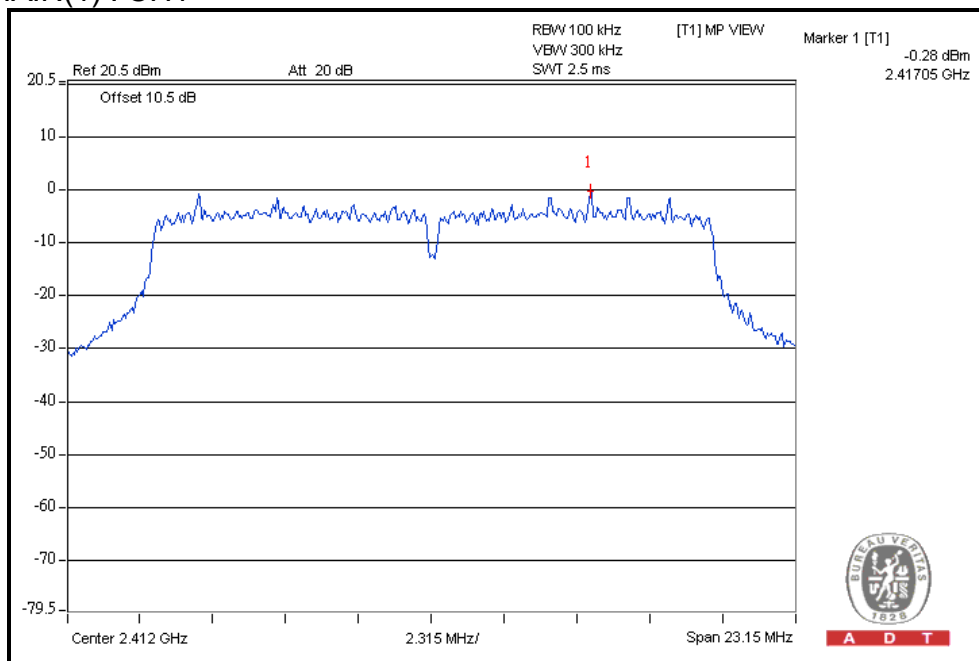
For CHAIN(0) : CH6



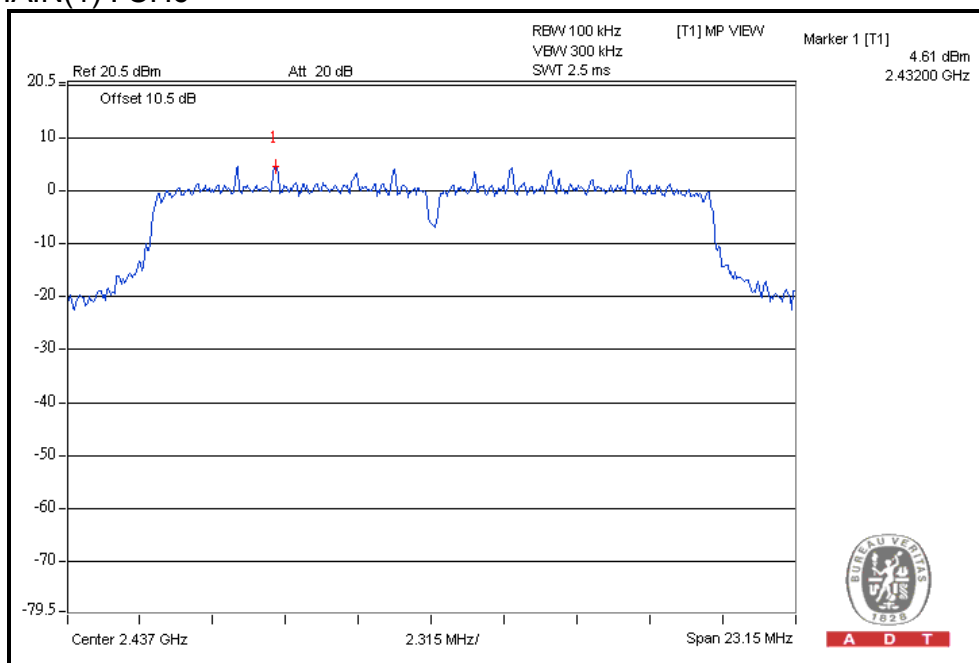
For CHAIN(0) : CH11



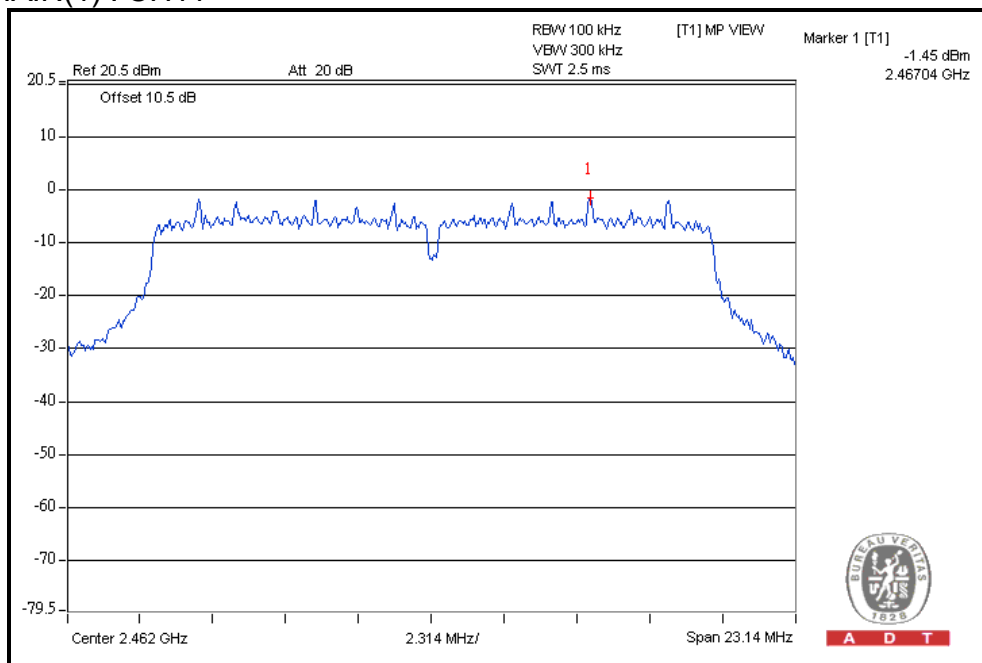
For CHAIN(1) : CH1



For CHAIN(1) : CH6



For CHAIN(1) : CH11



802.11n (40MHz)

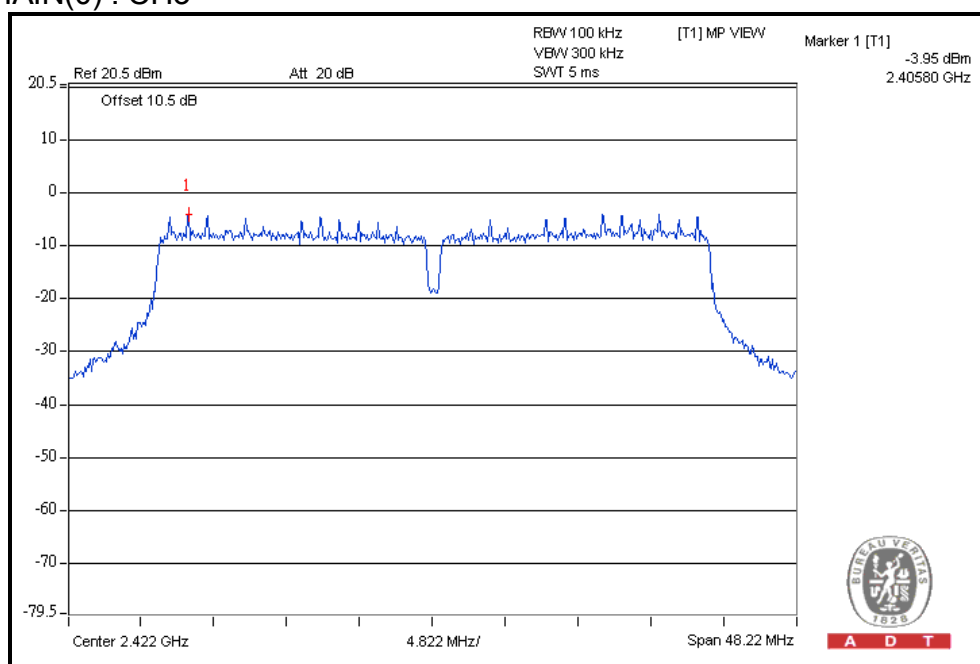
TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-3.95	-19.18	3.01	-16.17	7.37	PASS
	6	2437	-0.25	-15.48	3.01	-12.47	7.37	PASS
	9	2452	-3.13	-18.36	3.01	-15.35	7.37	PASS
1	3	2422	-3.32	-18.55	3.01	-15.54	7.37	PASS
	6	2437	-0.54	-15.77	3.01	-12.76	7.37	PASS
	9	2452	-3.38	-18.61	3.01	-15.60	7.37	PASS

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

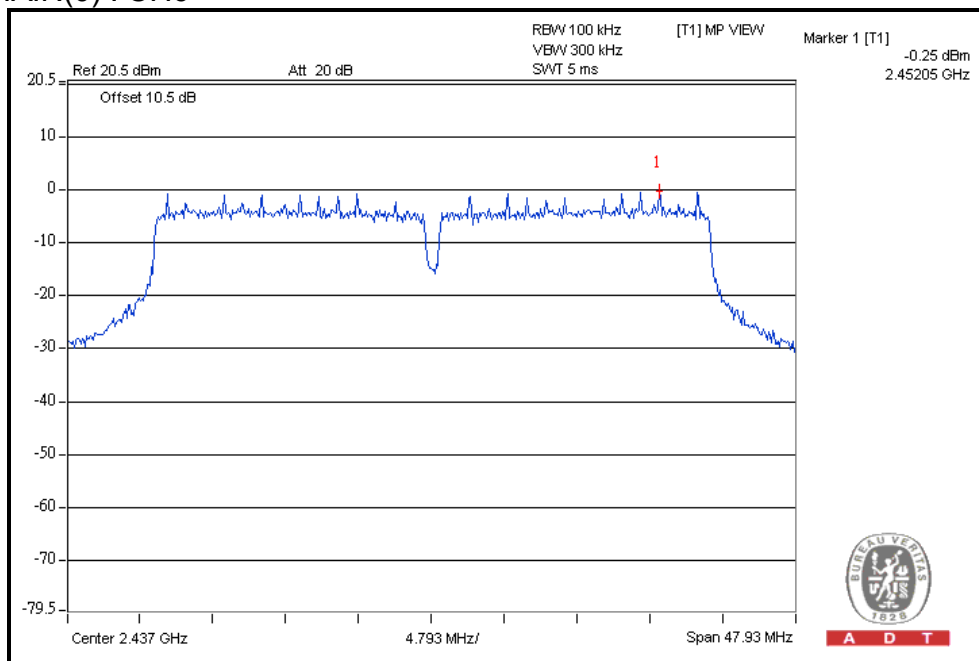
Effective Legacy Gain (dBi)= 6.63

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

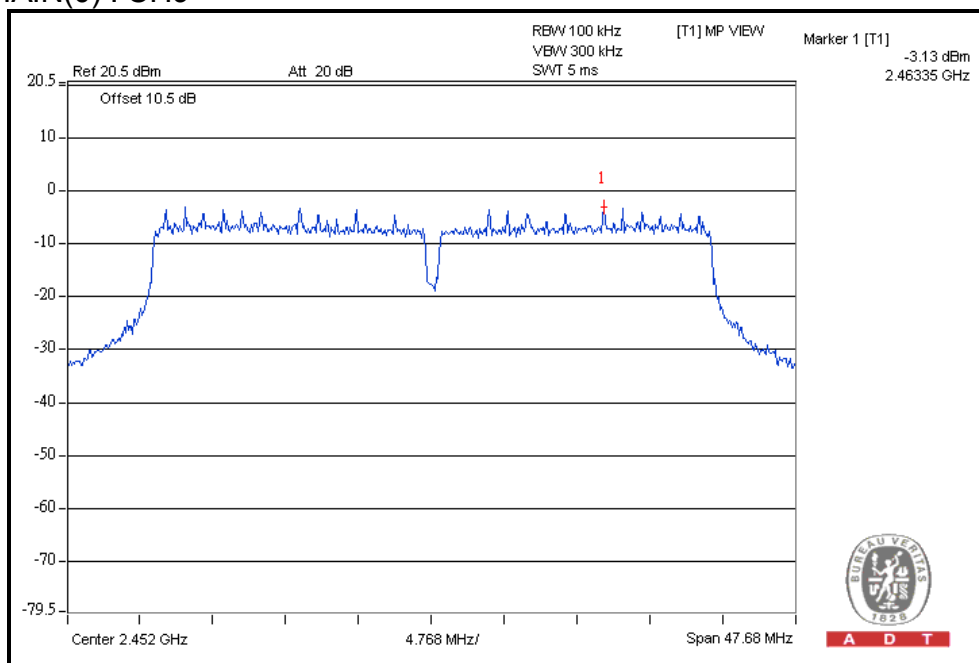
For CHAIN(0) : CH3



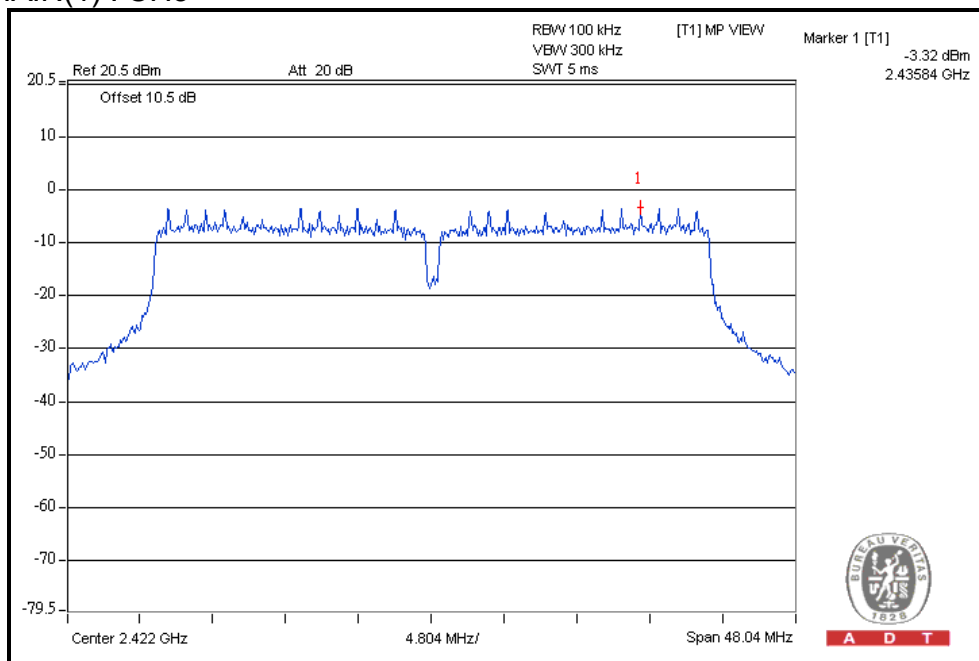
For CHAIN(0) : CH6



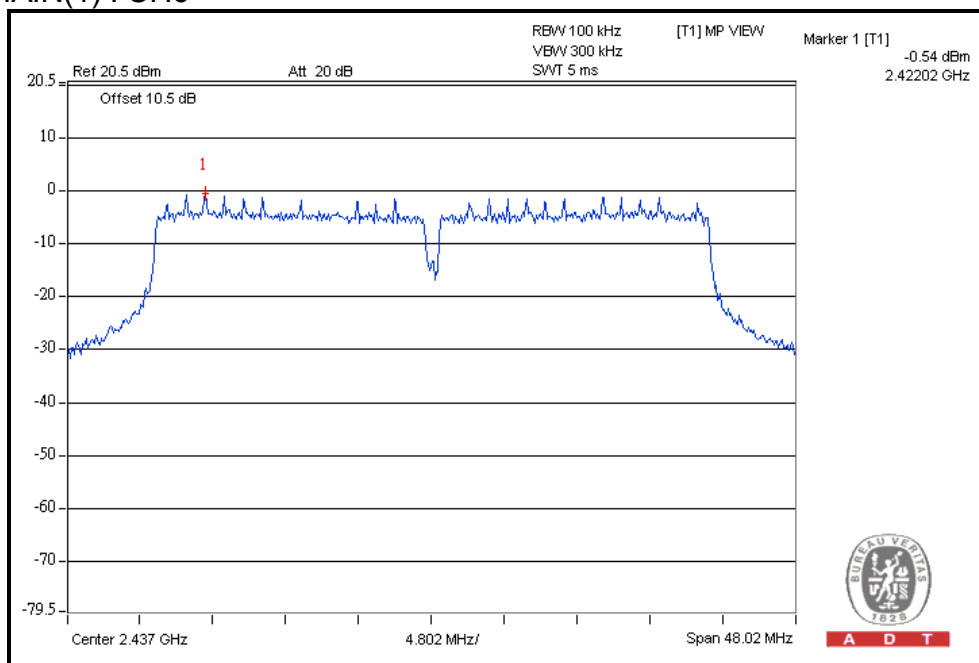
For CHAIN(0) : CH9



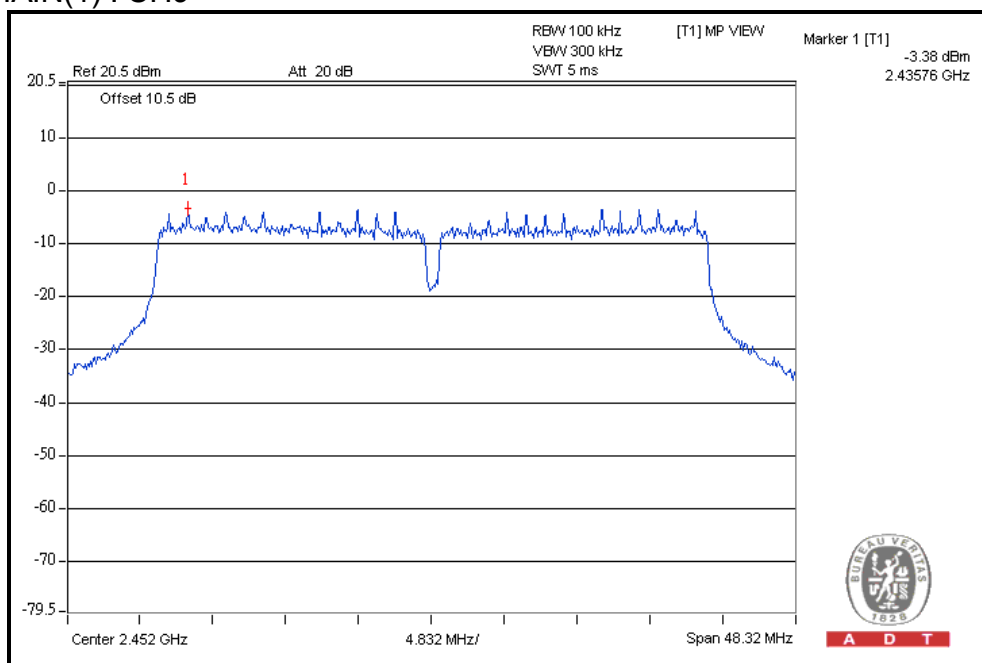
For CHAIN(1) : CH3



For CHAIN(1) : CH6



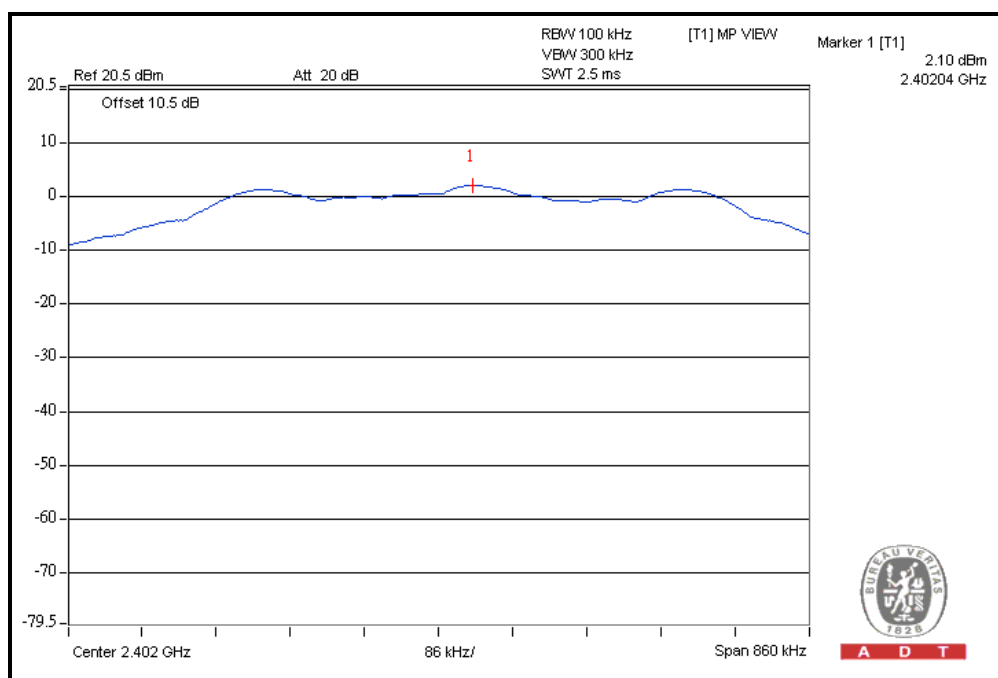
For CHAIN(1) : CH9



4.7.8 TEST RESULTS(BT<LE> MODE)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	2.10	-13.13	8	PASS
19	2440	1.87	-13.36	8	PASS
39	2480	1.38	-13.85	8	PASS

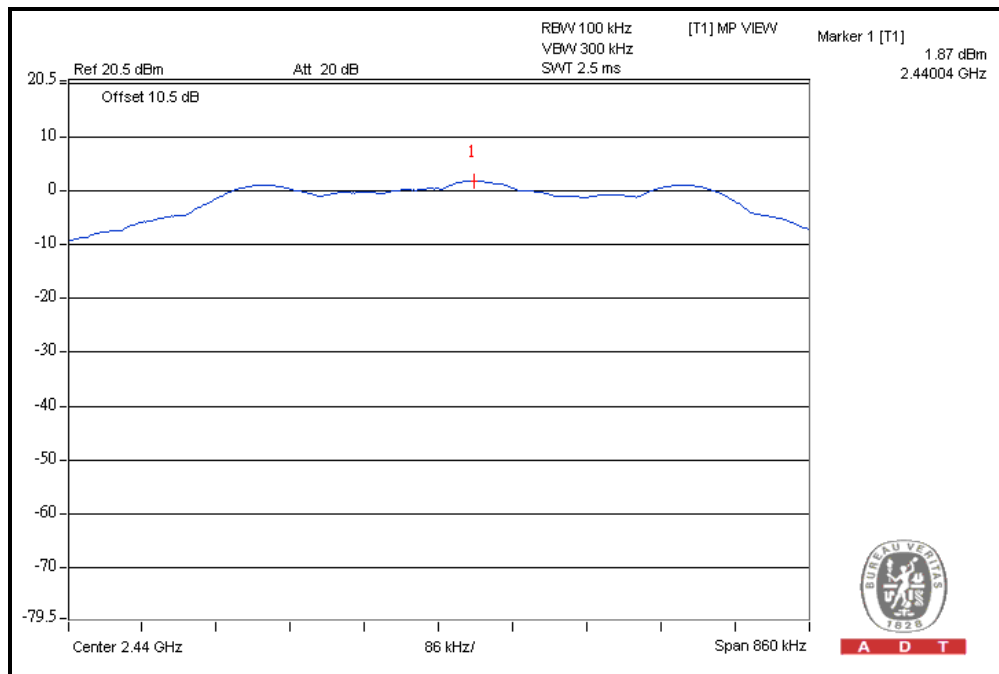
CH 0



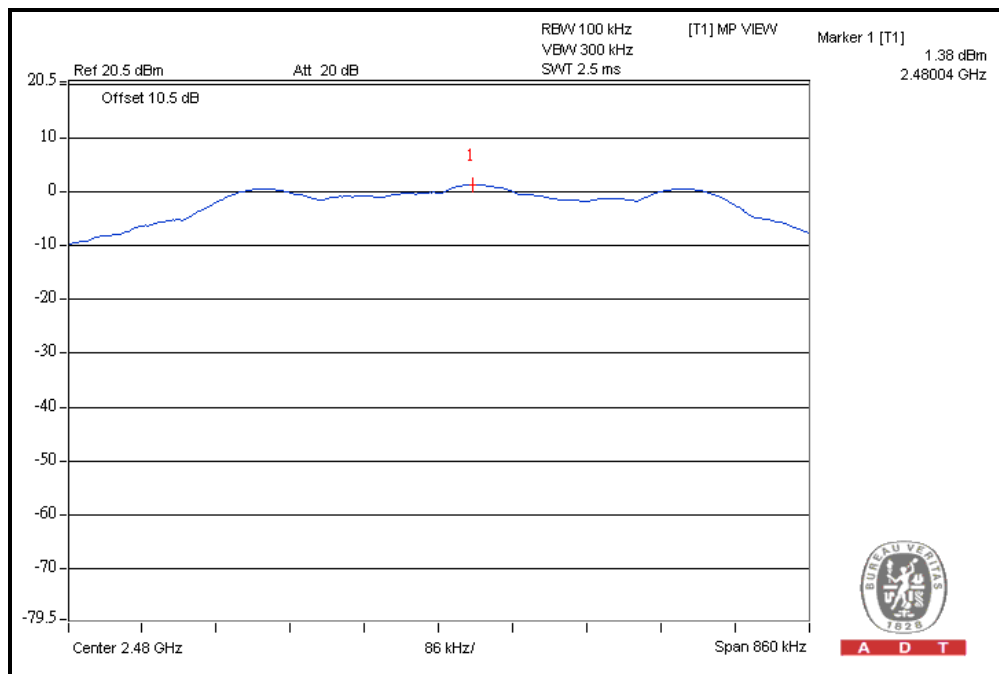


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CH 19



CH 39





A D T

4.8 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.8.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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 : Apr. 12, 2012

4.8.3 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

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

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.8.6 TEST RESULTS(WLAN MODE)

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

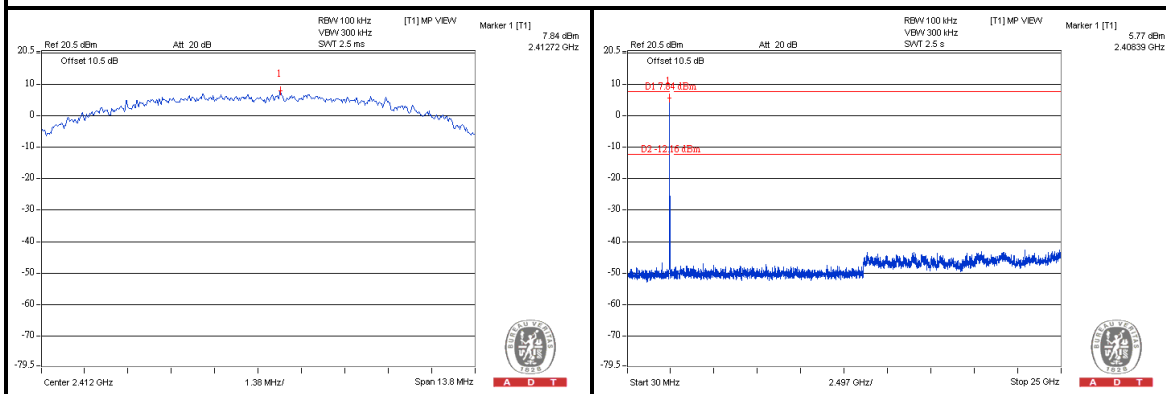
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



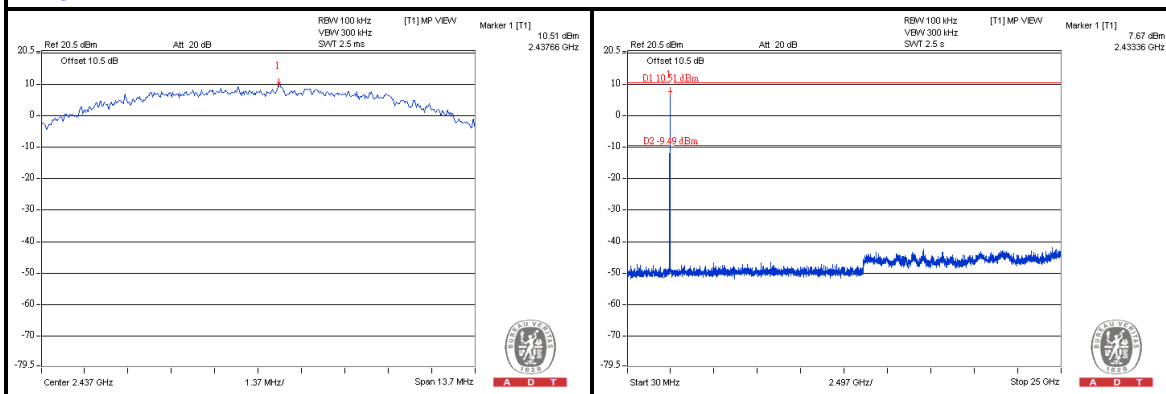
A D T

Single chain - 802.11b

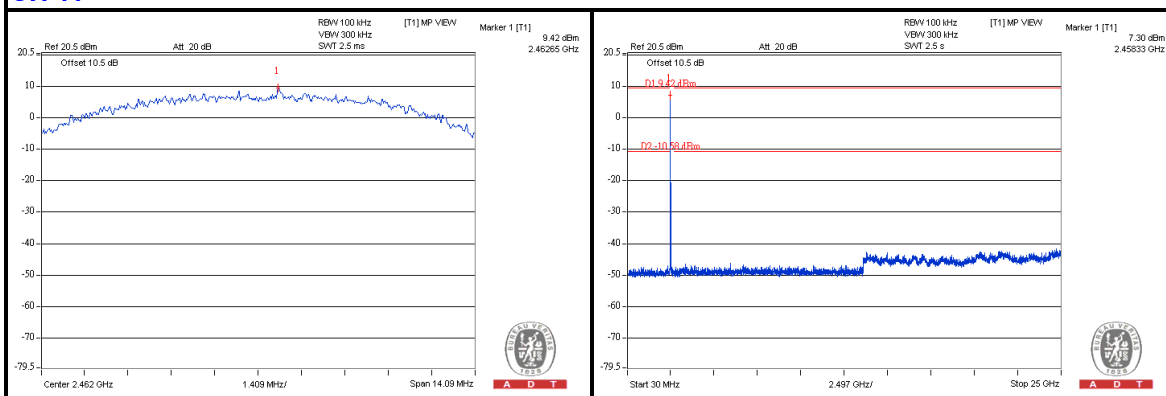
CH 1



CH 6



CH 11

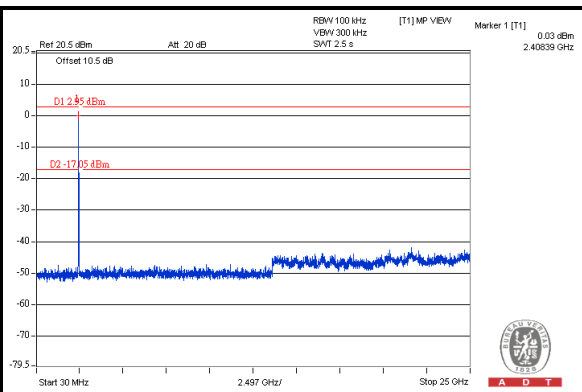
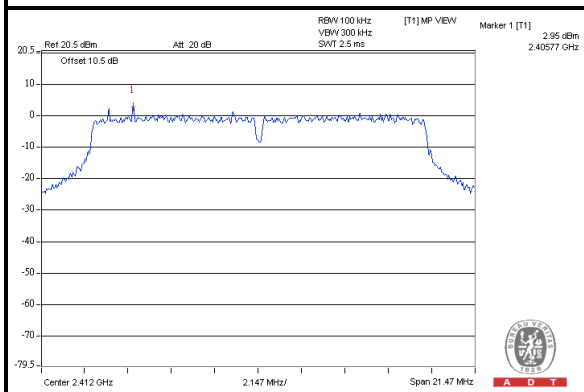




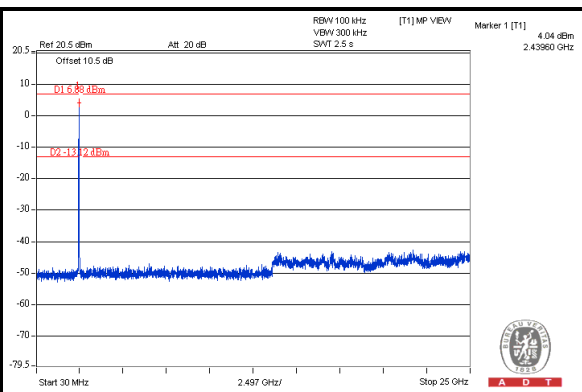
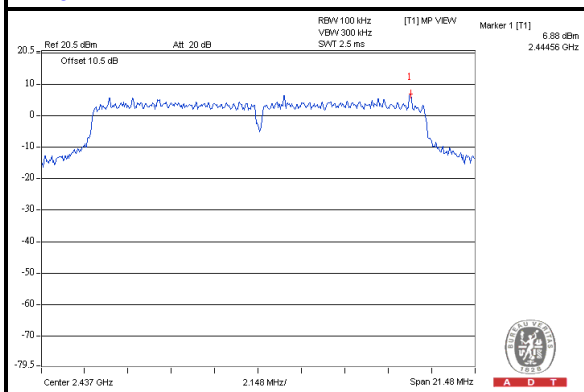
A D T

Single chain - 802.11g

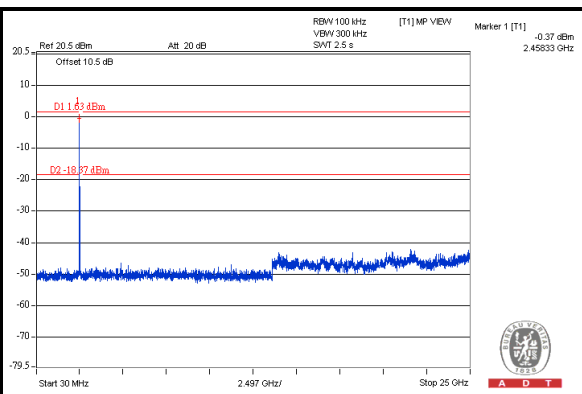
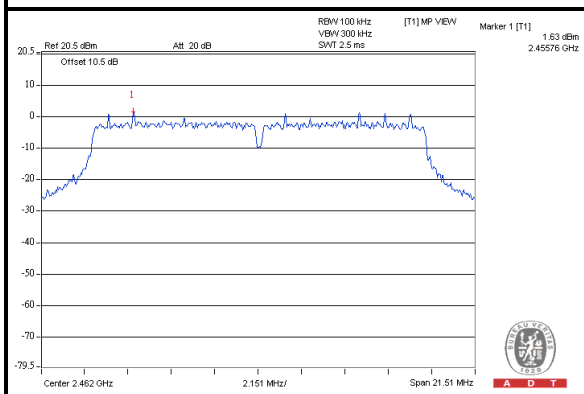
CH 1



CH 6



CH 11

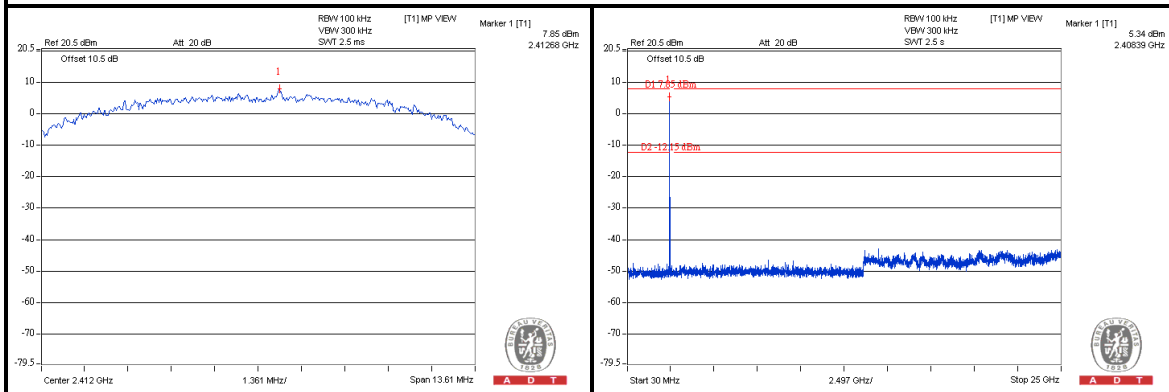




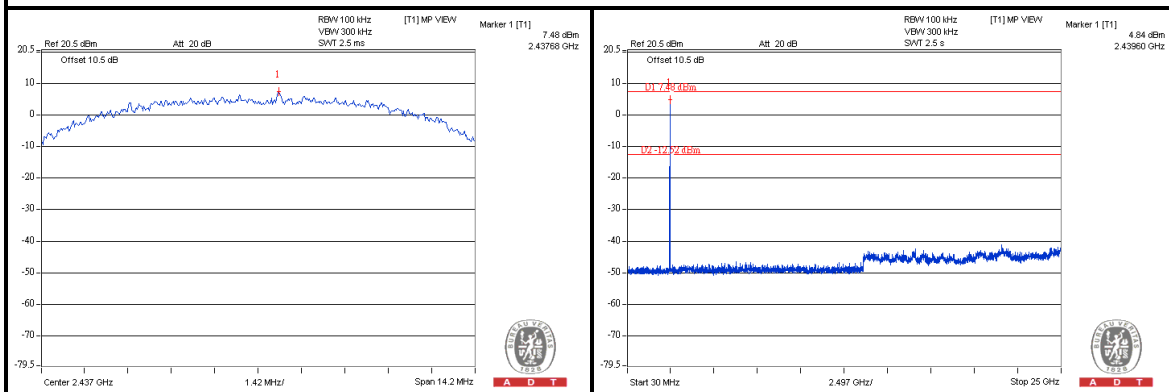
A D T

Multiple chain - 802.11b

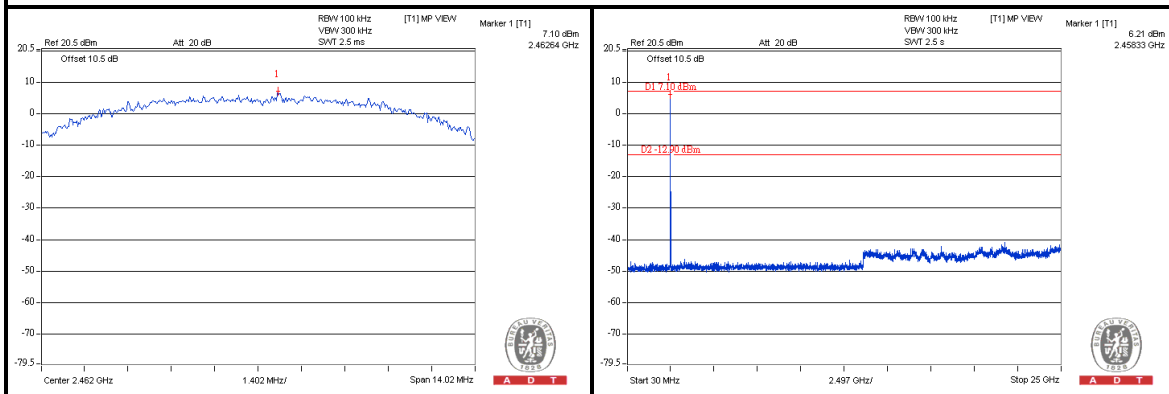
CH 1



CH 6



CH 11

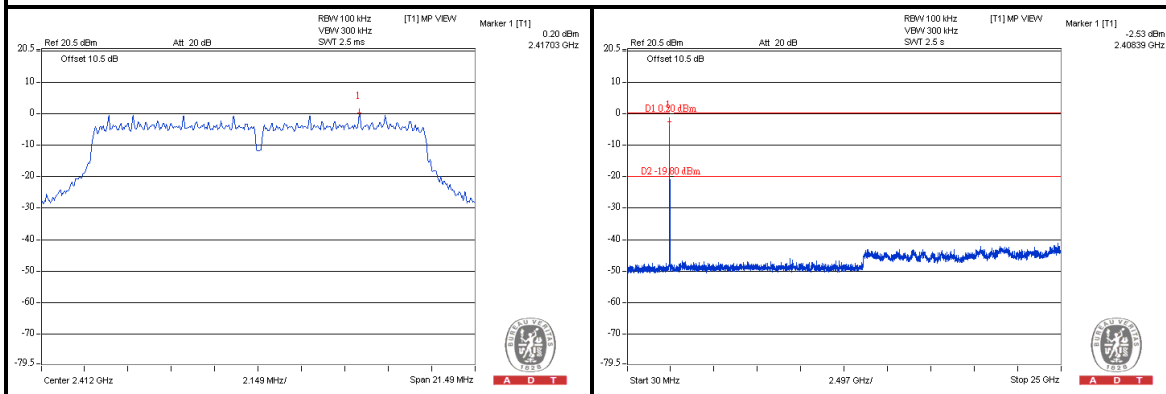




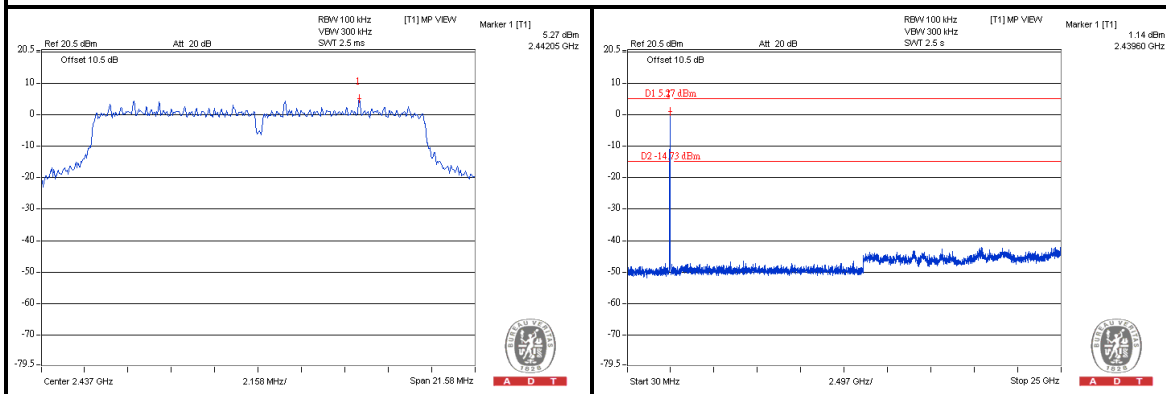
A D T

Multiple chain - 802.11g

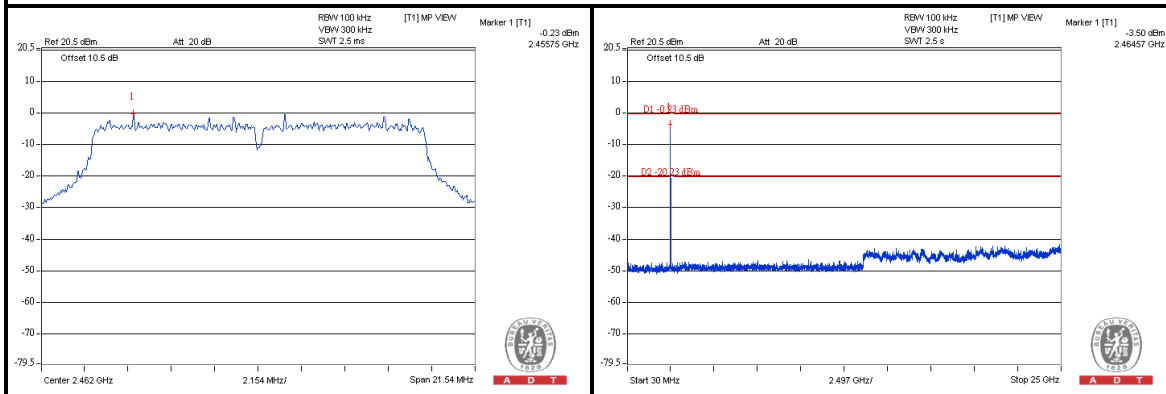
CH 1



CH 6



CH 11

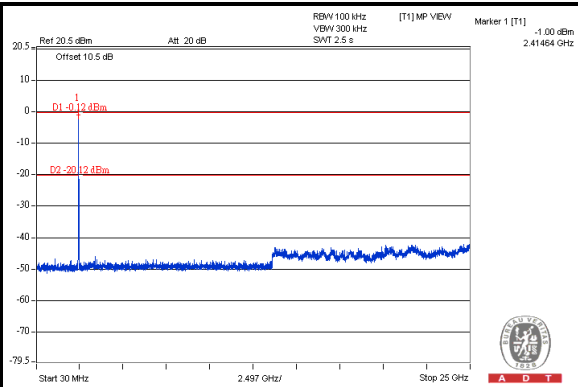
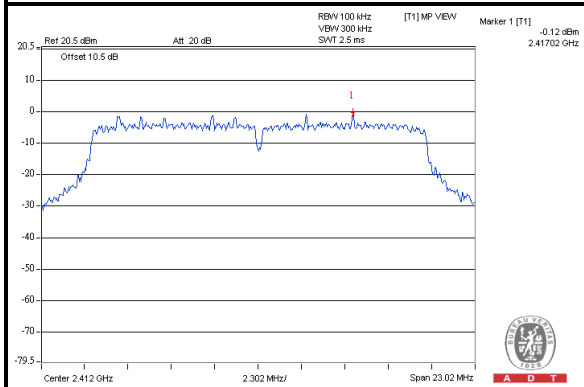




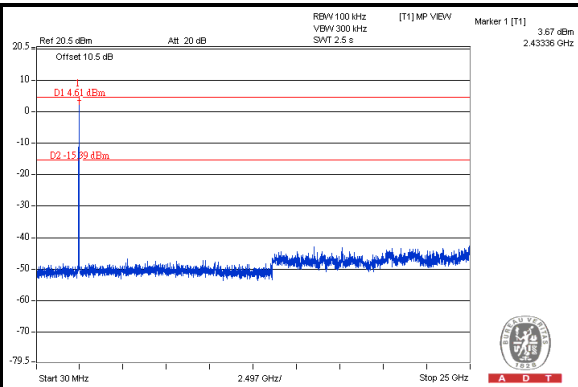
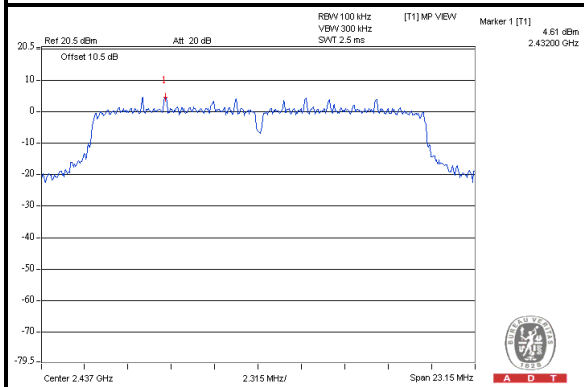
A D T

802.11n (20MHz)

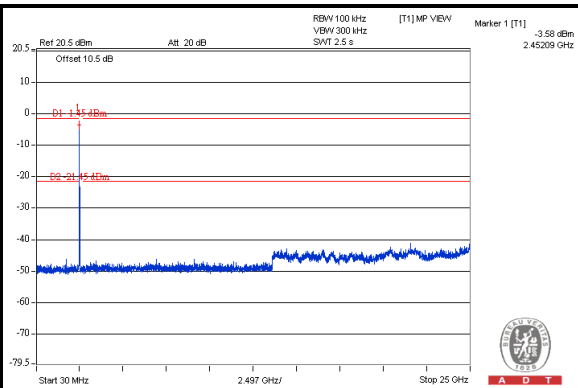
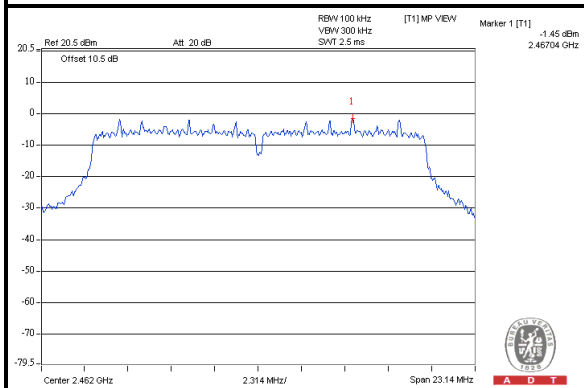
CH 1



CH 6



CH 11

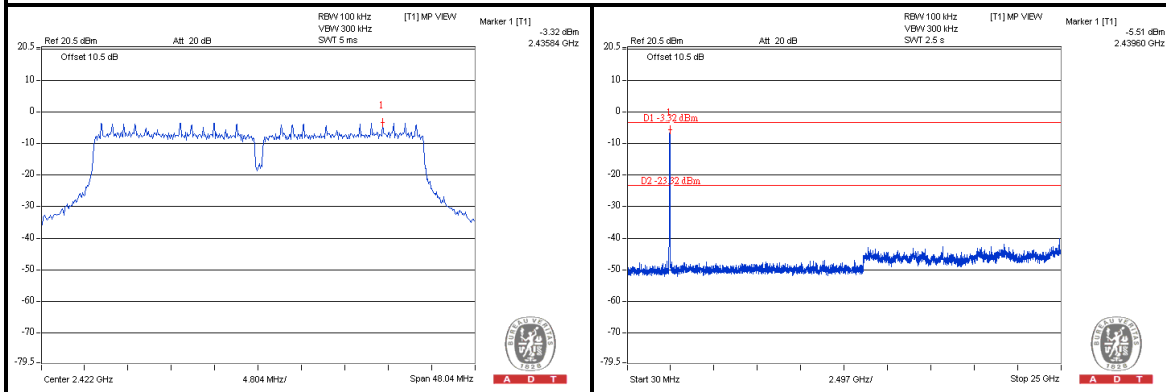




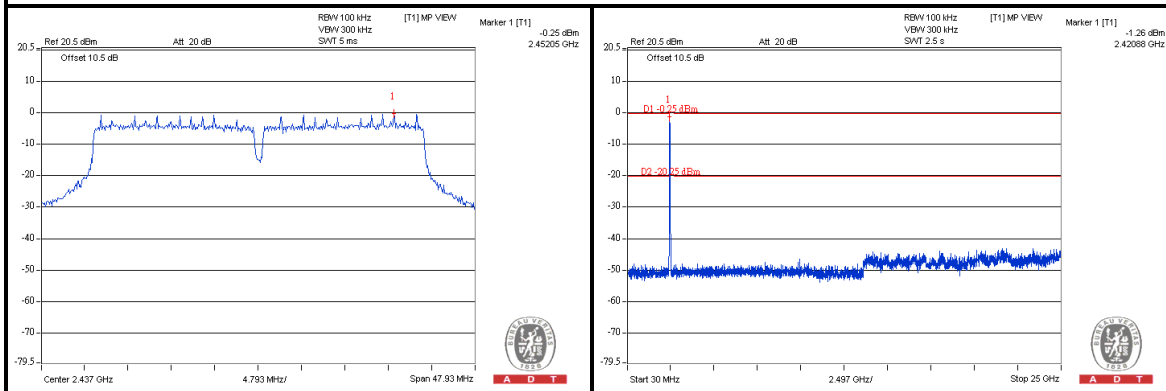
A D T

802.11n (40MHz)

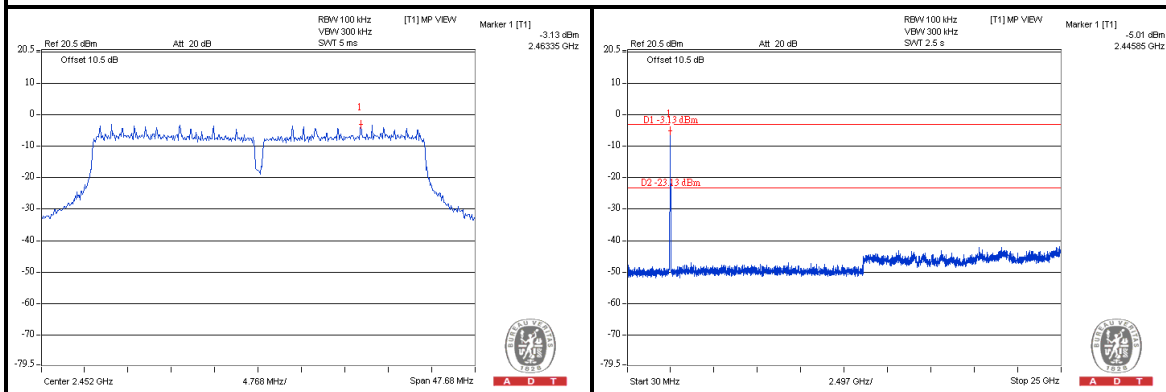
CH 3



CH 6

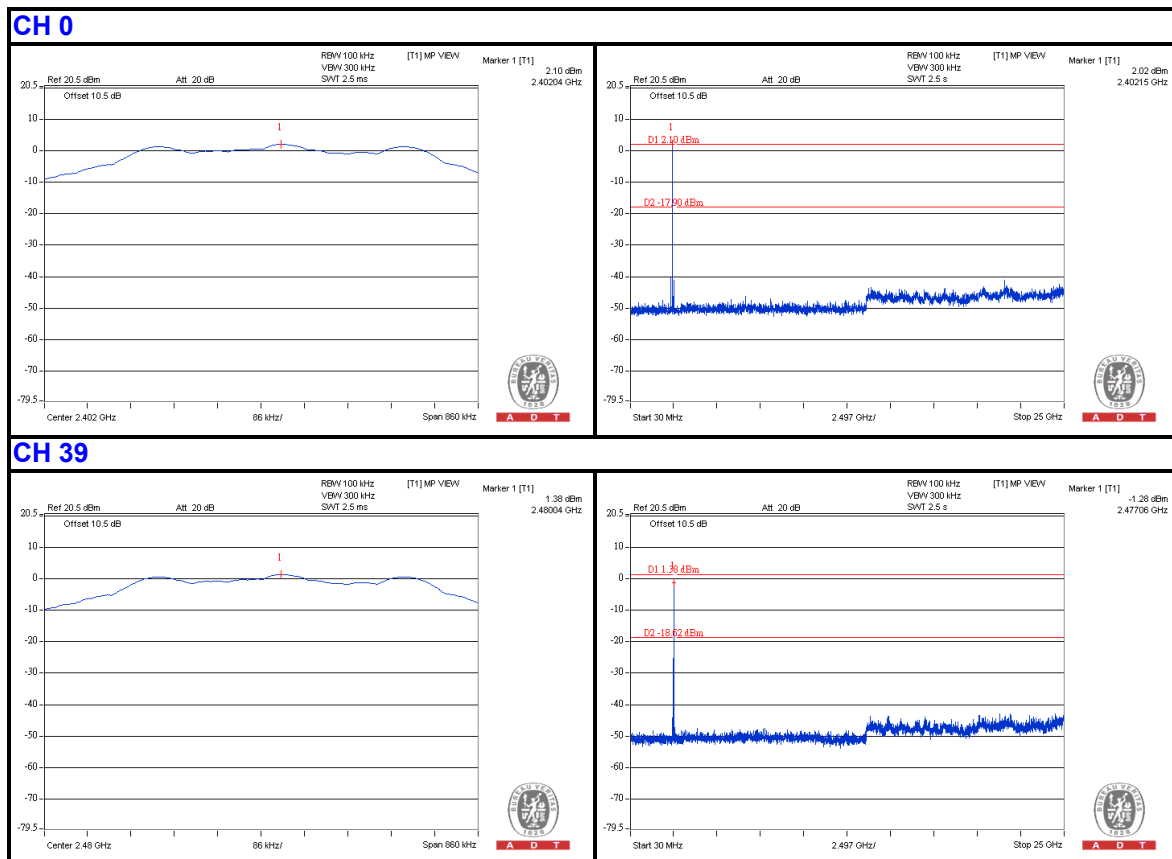


CH 9



4.8.7 TEST RESULTS (BT<LE> MODE)

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



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

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 02, 2011	Mar. 01, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 20, 2011	Sep. 19, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 10, 2011	June 09, 2012
RF Cable (JYEBAO)	5DFB	COACAB-002	Aug. 06, 2011	Aug. 05, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.
4. Tested Date: Feb. 06, 2012



A D T

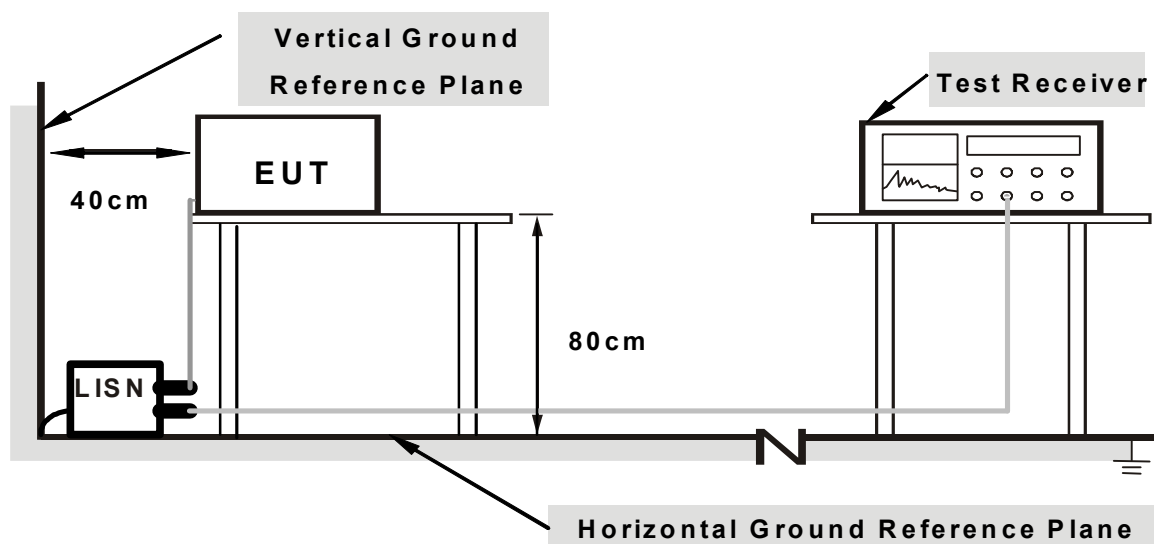
5.1.3 TEST PROCEDURES

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

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

5.1.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

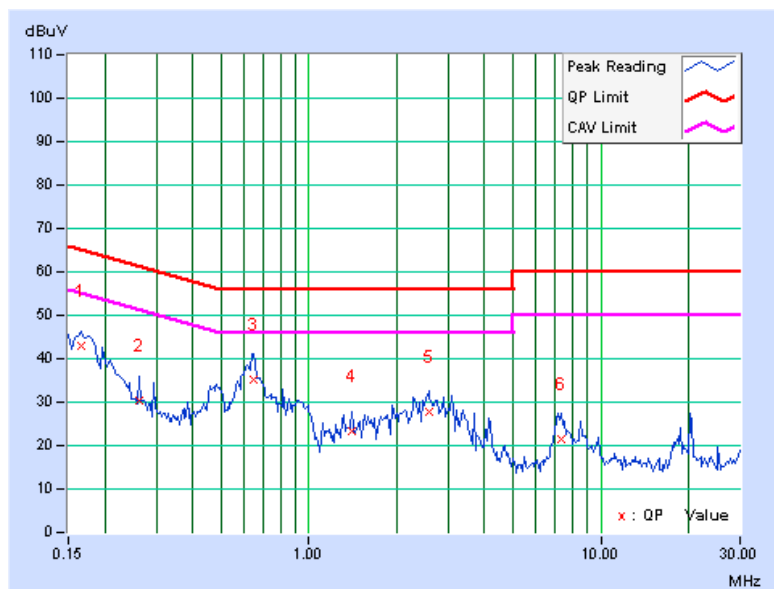
5.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.06	42.74	40.00	42.80	40.06	65.18	55.18	-22.38	-15.12
2	0.26328	0.06	30.30	15.75	30.36	15.81	61.33	51.33	-30.96	-35.51
3	0.65000	0.08	35.15	22.26	35.23	22.34	56.00	46.00	-20.77	-23.66
4	1.39844	0.13	23.20	16.62	23.33	16.75	56.00	46.00	-32.67	-29.25
5	2.58594	0.21	27.47	20.84	27.68	21.05	56.00	46.00	-28.32	-24.95
6	7.33984	0.37	21.05	14.61	21.42	14.98	60.00	50.00	-38.58	-35.02

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.

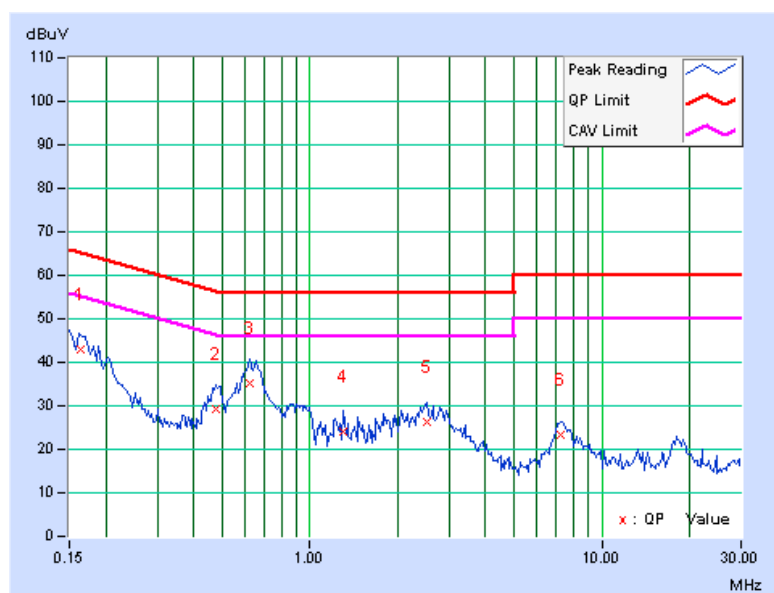


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. (dB)	AV. (dB)
1	0.16472	0.07	43.05	40.41	43.12	40.48	65.22	55.22	-22.10	-14.74
2	0.47813	0.08	29.28	18.39	29.36	18.47	56.37	46.37	-27.01	-27.90
3	0.61875	0.08	35.01	21.26	35.09	21.34	56.00	46.00	-20.91	-24.66
4	1.30859	0.11	24.12	16.09	24.23	16.20	56.00	46.00	-31.77	-29.80
5	2.51953	0.20	26.04	20.65	26.24	20.85	56.00	46.00	-29.76	-25.15
6	7.25000	0.35	23.03	16.23	23.38	16.58	60.00	50.00	-36.62	-33.42

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.



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

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



A D T

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 29, 2011	Aug. 28, 2012
Agilent Pre-Selector	N9039A	MY46520310	Aug. 29, 2011	Aug. 28, 2012
Agilent Signal Generator	N5181A	MY49060347	July 25, 2011	July 24, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 27, 2012	Feb. 26, 2013
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 06, 2012	Apr. 05 2013
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 23, 2011	Nov. 22, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 27, 2011	Dec. 26, 2012
RF Cable	NA	CHHCAB_001	Oct. 08, 2011	Oct. 07, 2012
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	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: Apr. 10 to 11, 2012

5.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 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.

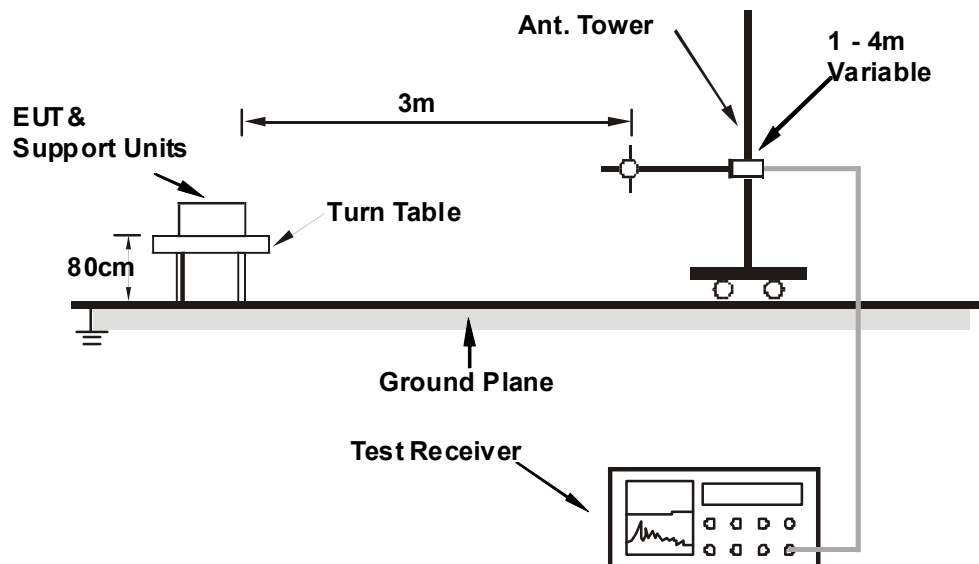
NOTE:

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

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

5.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

Multiple chain - 802.11a

CHANNEL	TX Channel 149	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	166.00	42.7 QP	43.5	-0.8	1.76 H	126	28.55	14.18
2	358.62	35.4 QP	46.0	-10.6	2.00 H	201	18.44	16.93
3	398.29	43.3 QP	46.0	-2.7	1.00 H	229	25.14	18.19
4	697.07	43.1 QP	46.0	-2.9	2.00 H	228	19.13	23.99
5	796.67	40.8 QP	46.0	-5.2	1.00 H	212	14.94	25.89
6	896.14	41.7 QP	46.0	-4.3	1.00 H	166	14.03	27.66
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	145.12	38.4 QP	43.5	-5.1	1.75 V	289	24.07	14.35
2	166.78	37.4 QP	43.5	-6.1	1.95 V	299	23.28	14.14
3	304.00	41.7 QP	46.0	-4.3	1.50 V	279	26.39	15.27
4	322.26	34.1 QP	46.0	-11.9	1.97 V	354	18.30	15.82
5	360.23	37.4 QP	46.0	-8.6	2.00 V	25	20.43	16.98
6	400.53	43.4 QP	46.0	-2.6	1.90 V	353	25.17	18.25

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.

ABOVE 1GHz DATA

Single chain - 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	56.2 PK	74.0	-17.8	1.21 H	108	20.75	35.45
2	3830.00	48.3 AV	54.0	-5.7	1.21 H	108	12.85	35.45
3	*5745.00	108.1 PK			1.41 H	109	66.76	41.34
4	*5745.00	98.3 AV			1.41 H	109	56.96	41.34
5	11490.00	57.8 PK	74.0	-16.2	1.49 H	175	10.38	47.42
6	11490.00	46.0 AV	54.0	-8.0	1.49 H	175	-1.42	47.42
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	55.3 PK	74.0	-18.7	1.00 V	110	19.85	35.45
2	3830.00	44.1 AV	54.0	-9.9	1.00 V	110	8.65	35.45
3	*5745.00	109.0 PK			1.00 V	94	67.66	41.34
4	*5745.00	99.5 AV			1.00 V	94	58.16	41.34
5	11490.00	57.8 PK	74.0	-16.2	1.23 V	12	10.38	47.42
6	11490.00	45.4 AV	54.0	-8.6	1.23 V	12	-2.02	47.42

REMARKS:

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

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	3856.70	57.7 PK	74.0	-16.3	1.20 H	107	22.15	35.55
2	3856.70	50.1 AV	54.0	-3.9	1.20 H	107	14.55	35.55
3	*5785.00	106.3 PK			1.00 H	66	64.90	41.40
4	*5785.00	96.4 AV			1.00 H	66	55.00	41.40
5	11570.00	57.9 PK	74.0	-16.1	1.48 H	181	10.41	47.49
6	11570.00	46.6 AV	54.0	-7.4	1.48 H	181	-0.89	47.49
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	106.0 PK			1.00 V	238	64.60	41.40
2	*5785.00	97.1 AV			1.00 V	238	55.70	41.40
3	11570.00	57.9 PK	74.0	-16.1	1.18 V	11	10.41	47.49
4	11570.00	45.4 AV	54.0	-8.6	1.18 V	11	-2.09	47.49

REMARKS:

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

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	3883.30	57.6 PK	74.0	-16.4	1.19 H	107	21.95	35.65
2	3883.30	51.3 AV	54.0	-2.7	1.19 H	107	15.65	35.65
3	*5825.00	107.6 PK			1.00 H	67	66.15	41.45
4	*5825.00	97.3 AV			1.00 H	67	55.85	41.45
5	11650.00	57.5 PK	74.0	-16.5	1.50 H	171	9.94	47.56
6	11650.00	46.1 AV	54.0	-7.9	1.50 H	171	-1.46	47.56
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	*5825.00	106.6 PK			1.00 V	239	65.15	41.45
2	*5825.00	96.7 AV			1.00 V	239	55.25	41.45
3	11650.00	58.1 PK	74.0	-15.9	1.19 V	9	10.54	47.56
4	11650.00	45.5 AV	54.0	-8.5	1.19 V	9	-2.06	47.56

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

Multiple chain - 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	*5745.00	111.4 PK			1.45 H	66	70.06	41.34
2	*5745.00	102.1 AV			1.45 H	66	60.76	41.34
3	11490.00	56.6 PK	74.0	-17.4	1.43 H	119	9.18	47.42
4	11490.00	44.6 AV	54.0	-9.4	1.43 H	119	-2.82	47.42
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	*5745.00	109.6 PK			1.42 V	238	68.26	41.34
2	*5745.00	100.3 AV			1.42 V	238	58.96	41.34
3	11490.00	55.8 PK	74.0	-18.2	1.00 V	266	8.38	47.42
4	11490.00	44.8 AV	54.0	-9.2	1.00 V	266	-2.62	47.42

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	110.5 PK			1.45 H	75	69.10	41.40
2	*5785.00	101.5 AV			1.45 H	75	60.10	41.40
3	11570.00	56.5 PK	74.0	-17.5	1.44 H	111	9.01	47.49
4	11570.00	45.3 AV	54.0	-8.7	1.44 H	111	-2.19	47.49
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	109.6 PK			1.44 V	236	68.20	41.40
2	*5785.00	102.0 AV			1.44 V	236	60.60	41.40
3	11570.00	55.9 PK	74.0	-18.1	1.01 V	281	8.41	47.49
4	11570.00	45.0 AV	54.0	-9.0	1.01 V	281	-2.49	47.49

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	111.9 PK			1.43 H	67	70.45	41.45
2	*5825.00	102.4 AV			1.43 H	67	60.95	41.45
3	11650.00	56.3 PK	74.0	-17.7	1.42 H	116	8.74	47.56
4	11650.00	45.5 AV	54.0	-8.5	1.42 H	116	-2.06	47.56
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	*5825.00	110.8 PK			1.39 V	238	69.35	41.45
2	*5825.00	101.3 AV			1.39 V	238	59.85	41.45
3	11650.00	56.2 PK	74.0	-17.8	1.06 V	291	8.64	47.56
4	11650.00	45.1 AV	54.0	-8.9	1.06 V	291	-2.46	47.56

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	109.4 PK			1.44 H	71	68.06	41.34
2	*5745.00	100.3 AV			1.44 H	71	58.96	41.34
3	11490.00	56.7 PK	74.0	-17.3	1.46 H	112	9.28	47.42
4	11490.00	44.7 AV	54.0	-9.3	1.46 H	112	-2.72	47.42
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	*5745.00	107.9 PK			1.40 V	236	66.56	41.34
2	*5745.00	99.0 AV			1.40 V	236	57.66	41.34
3	11490.00	55.5 PK	74.0	-18.5	1.06 V	288	8.08	47.42
4	11490.00	44.5 AV	54.0	-9.5	1.06 V	288	-2.92	47.42

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	110.7 PK			1.42 H	71	69.30	41.40
2	*5785.00	100.4 AV			1.42 H	71	59.00	41.40
3	11570.00	56.1 PK	74.0	-17.9	1.45 H	113	8.61	47.49
4	11570.00	44.6 AV	54.0	-9.4	1.45 H	113	-2.89	47.49
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	108.3 PK			1.40 V	242	66.90	41.40
2	*5785.00	99.2 AV			1.40 V	242	57.80	41.40
3	11570.00	55.5 PK	74.0	-18.5	1.11 V	301	8.01	47.49
4	11570.00	44.6 AV	54.0	-9.4	1.11 V	301	-2.89	47.49

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	109.9 PK			1.42 H	69	68.45	41.45
2	*5825.00	100.1 AV			1.42 H	69	58.65	41.45
3	11650.00	56.2 PK	74.0	-17.8	1.44 H	119	8.64	47.56
4	11650.00	45.8 AV	54.0	-8.2	1.44 H	119	-1.76	47.56
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	*5825.00	109.4 PK			1.36 V	256	67.95	41.45
2	*5825.00	100.0 AV			1.36 V	256	58.51	41.45
3	11650.00	55.5 PK	74.0	-18.5	1.09 V	296	7.94	47.56
4	11650.00	44.8 AV	54.0	-9.2	1.09 V	296	-2.76	47.56

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	107.8 PK			1.41 H	65	66.44	41.36
2	*5755.00	98.1 AV			1.41 H	65	56.74	41.36
3	11510.00	55.4 PK	74.0	-18.6	1.43 H	120	7.96	47.44
4	11510.00	43.8 AV	54.0	-10.2	1.43 H	120	-3.64	47.44
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	*5755.00	104.8 PK			1.46 V	256	63.44	41.36
2	*5755.00	95.4 AV			1.46 V	256	54.04	41.36
3	11510.00	55.3 PK	74.0	-18.7	1.06 V	287	7.86	47.44
4	11510.00	43.7 AV	54.0	-10.3	1.06 V	287	-3.74	47.44

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	108.3 PK			1.40 H	78	66.89	41.41
2	*5795.00	98.6 AV			1.40 H	78	57.19	41.41
3	11590.00	55.5 PK	74.0	-18.5	1.45 H	114	8.00	47.50
4	11590.00	43.7 AV	54.0	-10.3	1.45 H	114	-3.80	47.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	104.5 PK			1.48 V	243	63.09	41.41
2	*5795.00	95.0 AV			1.48 V	243	53.59	41.41
3	11590.00	55.8 PK	74.0	-18.2	1.05 V	295	8.30	47.50
4	11590.00	43.9 AV	54.0	-10.1	1.05 V	295	-3.60	47.50

REMARKS:

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



A D T

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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 : Apr. 12, 2012

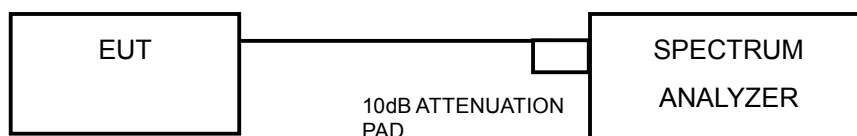
5.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
2. Set the video bandwidth (VBW) $\geq 3 \times$ 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

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP





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5.3.6 EUT OPERATING CONDITIONS

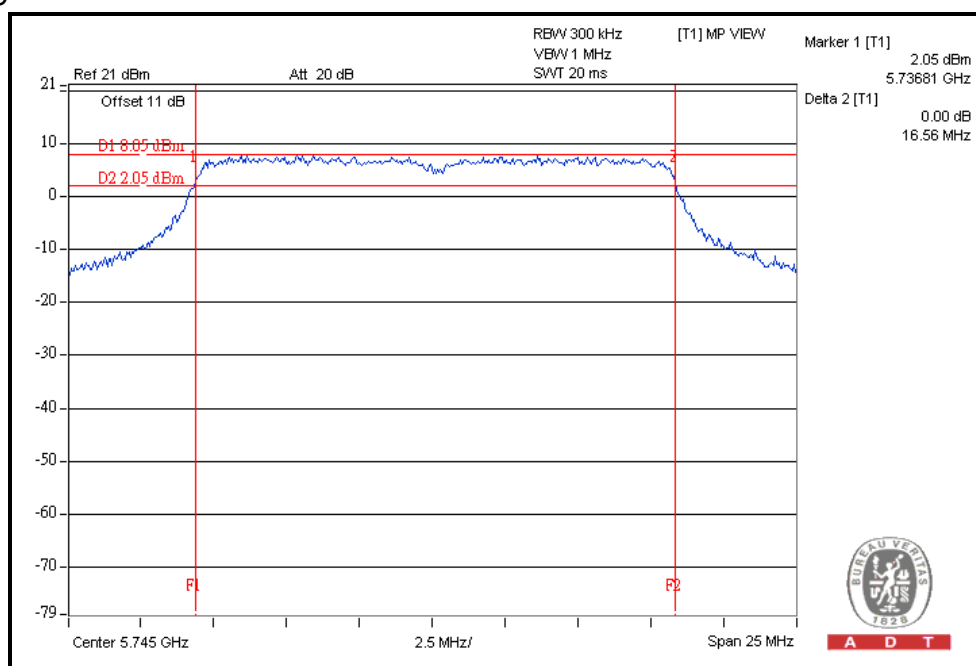
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.3.7 TEST RESULTS

Single chain - 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.56	0.5	PASS
157	5785	16.63	0.5	PASS
165	5825	16.68	0.5	PASS

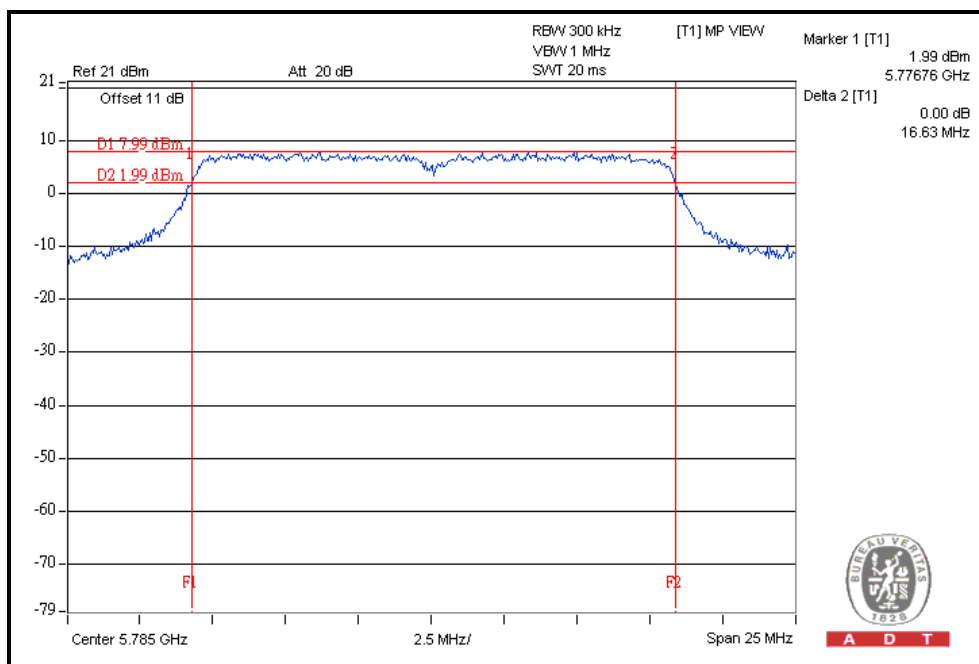
CH149



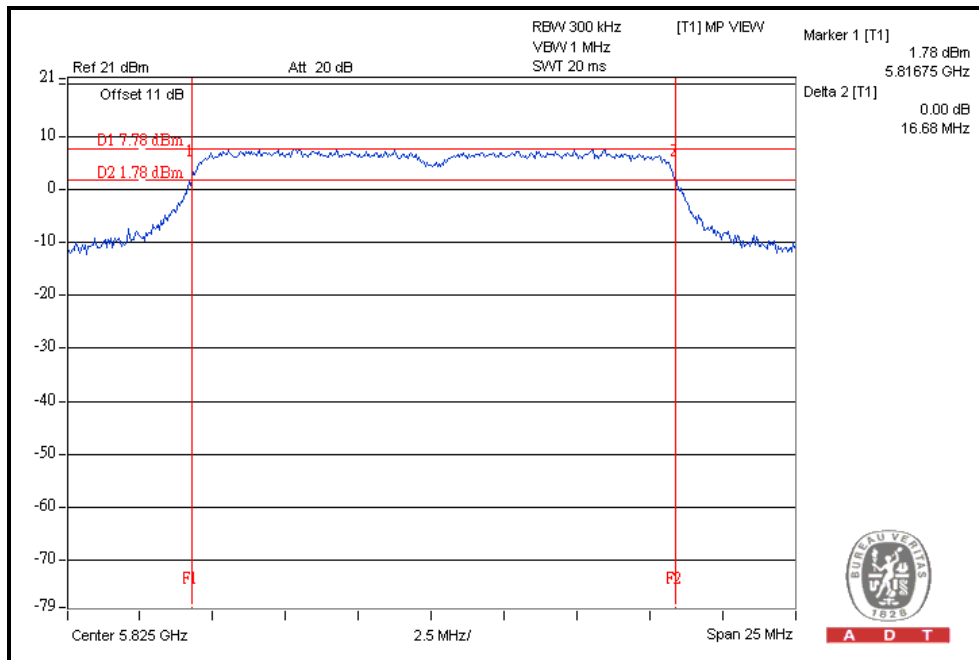


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CH157



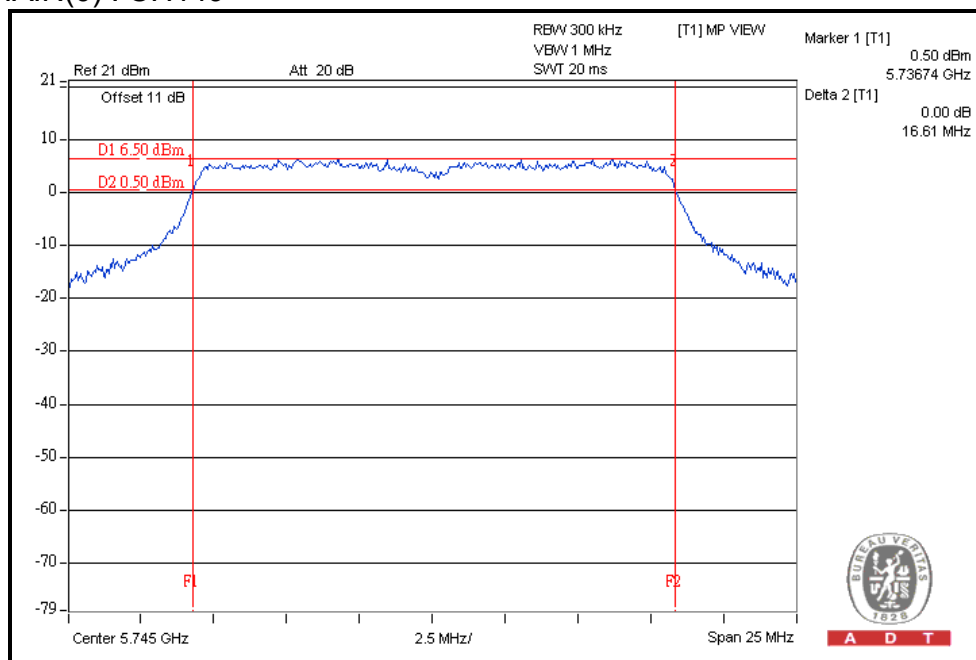
CH165



Multiple chain - 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
149	5745	16.61	16.60	0.5	PASS
157	5785	16.55	16.59	0.5	PASS
165	5825	16.57	16.58	0.5	PASS

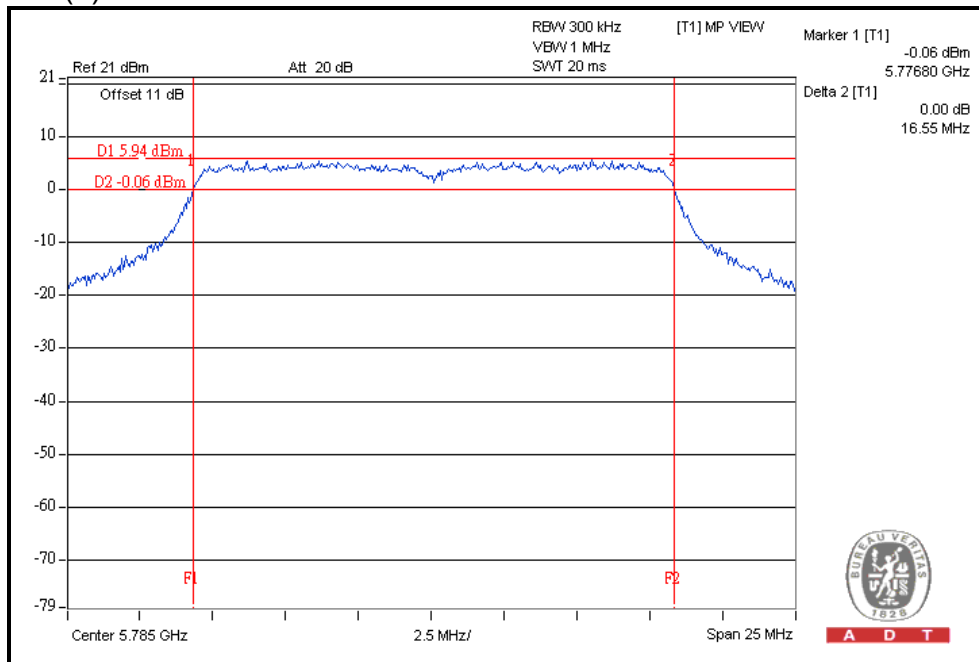
For CHAIN(0) : CH149



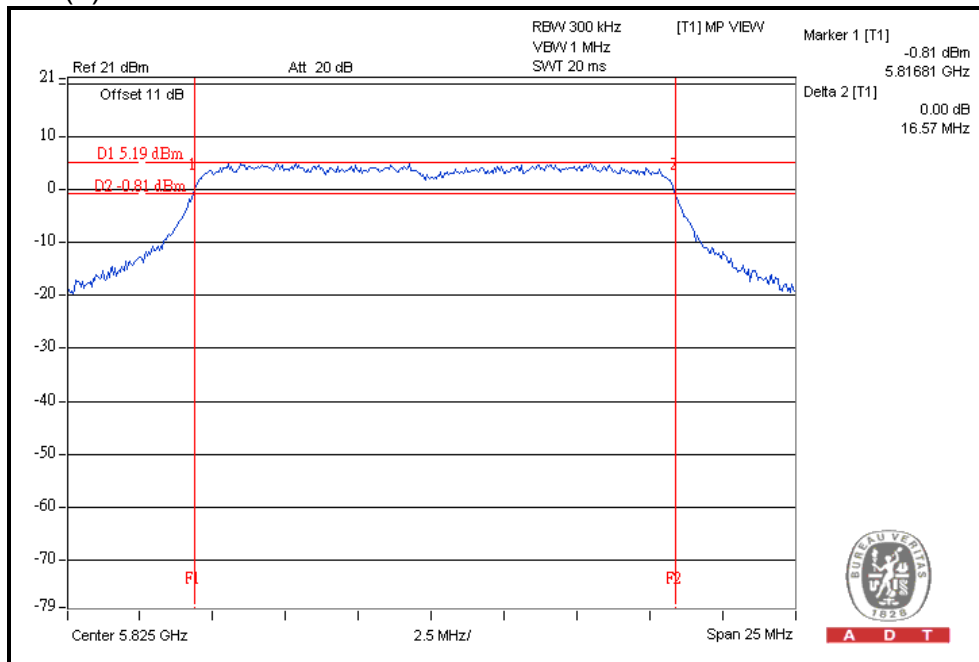


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For CHAIN(0) : CH157



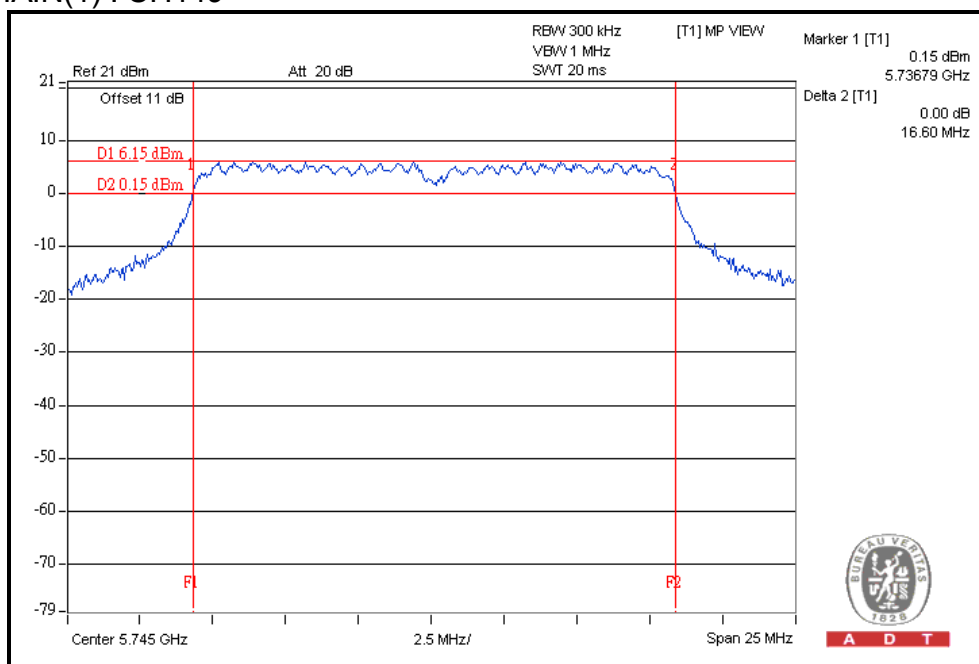
For CHAIN(0) : CH165



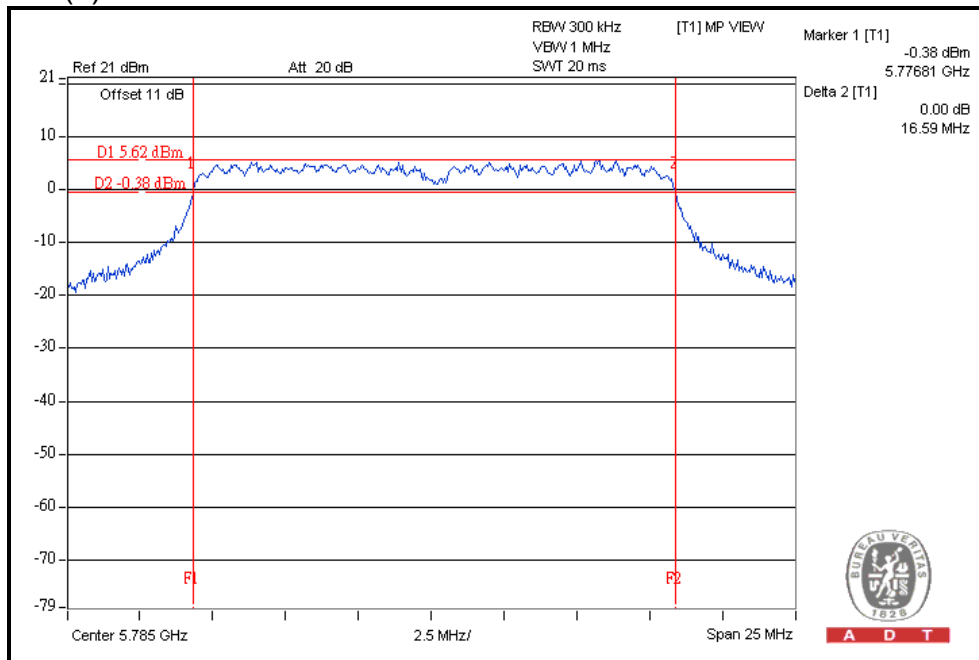


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For CHAIN(1) : CH149



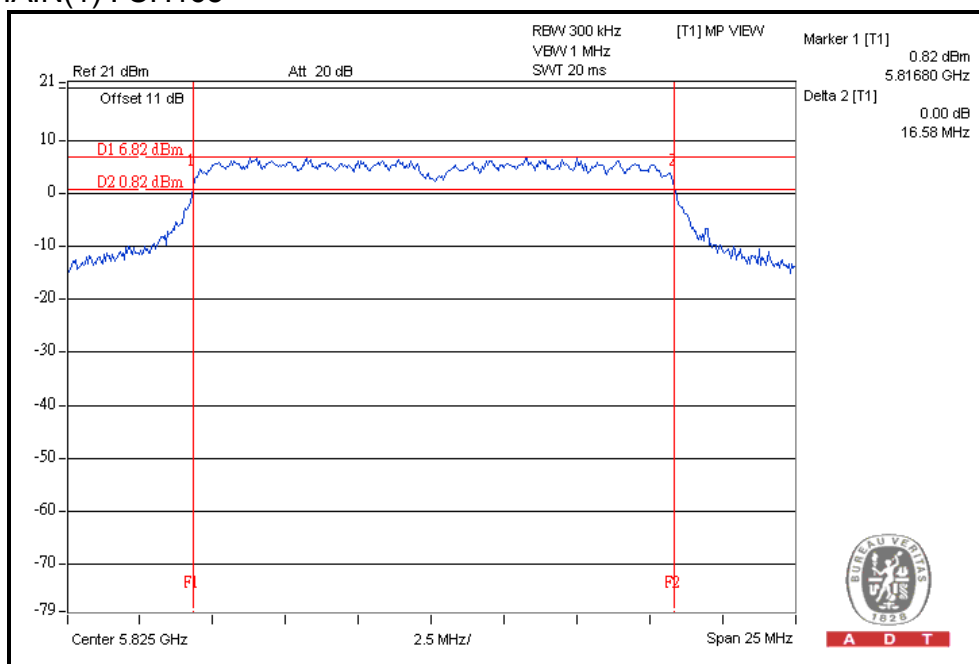
For CHAIN(1) : CH157





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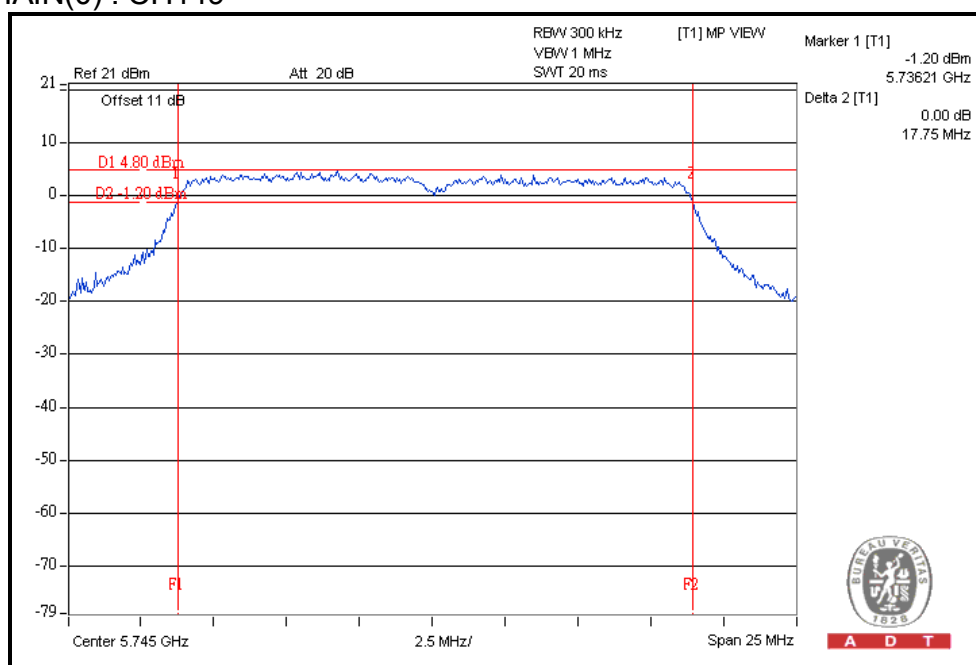
For CHAIN(1) : CH165



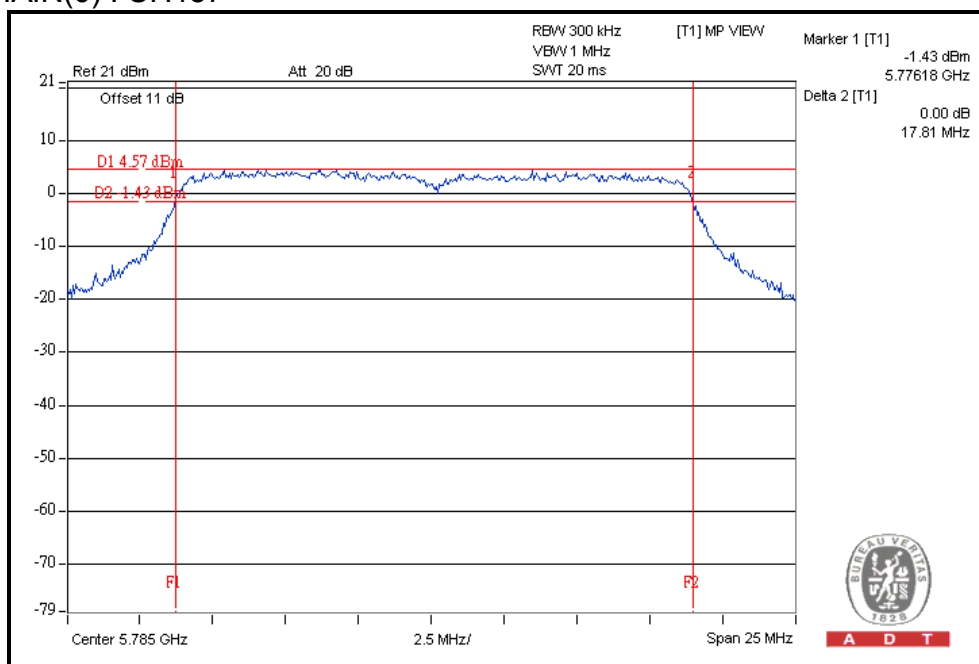
802.11n (20MHz):

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
149	5745	17.75	17.86	0.5	PASS
157	5785	17.81	17.87	0.5	PASS
165	5825	17.82	17.86	0.5	PASS

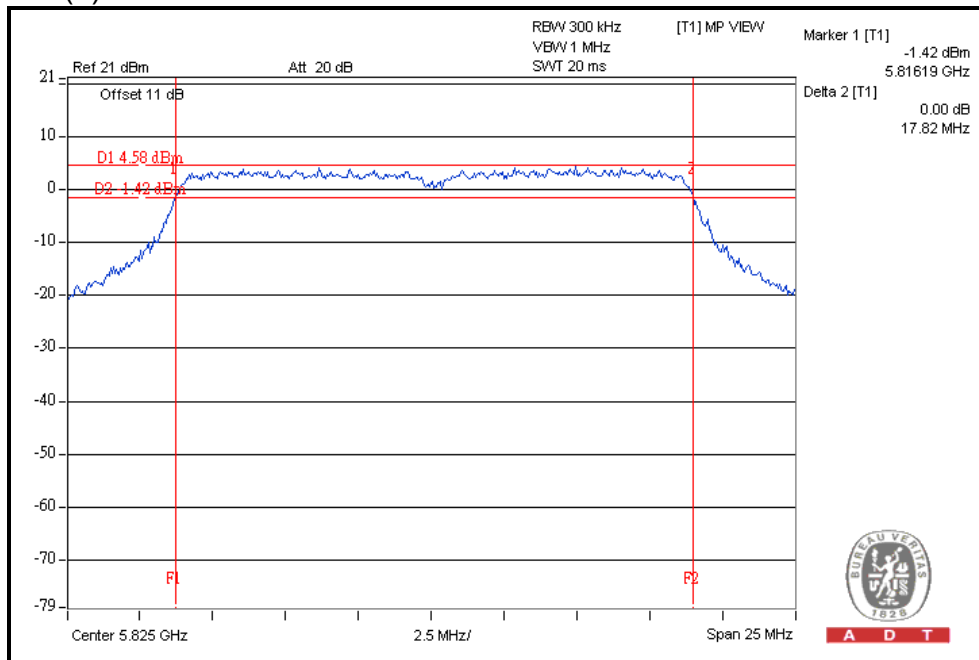
For CHAIN(0) : CH149



For CHAIN(0) : CH157



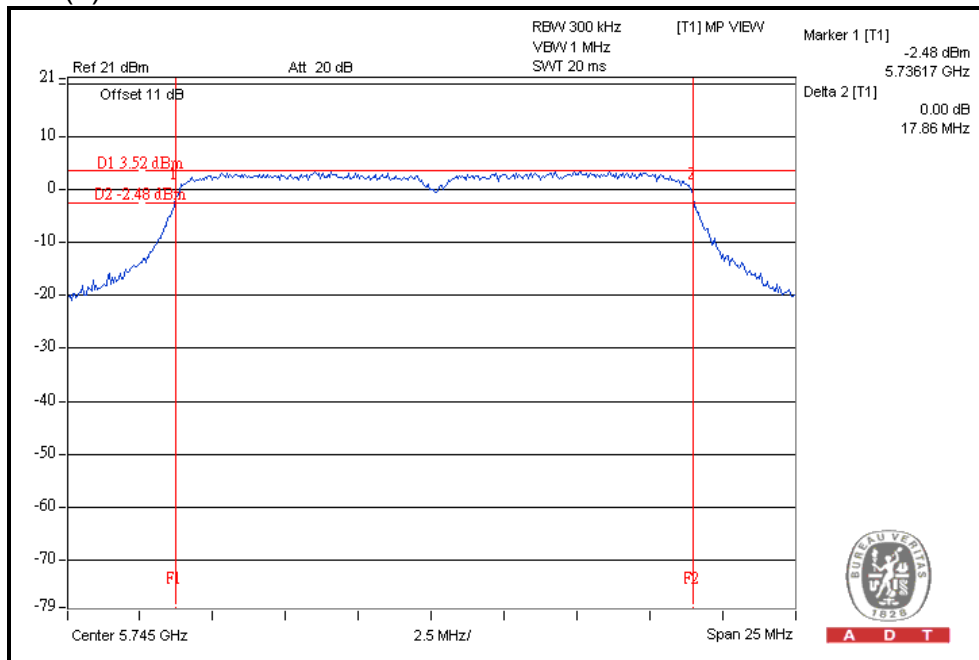
For CHAIN(0) : CH165



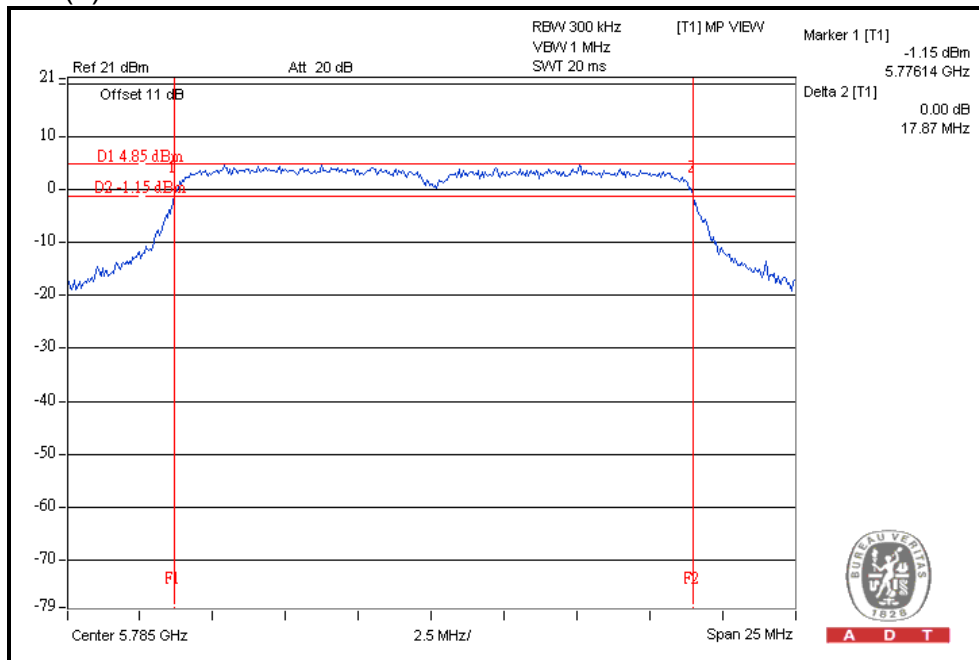


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For CHAIN(1) : CH149



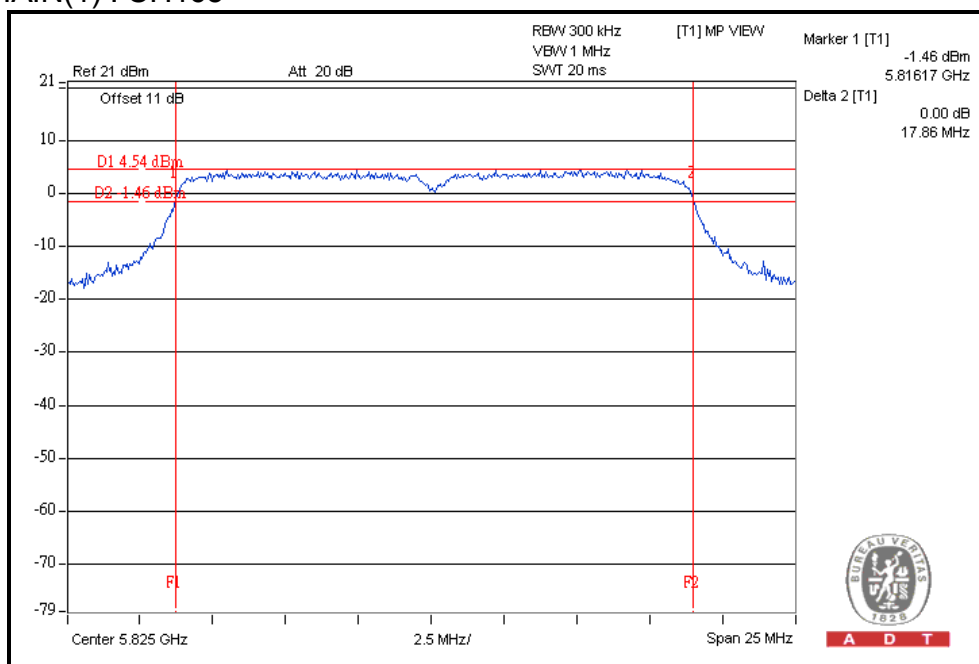
For CHAIN(1) : CH157





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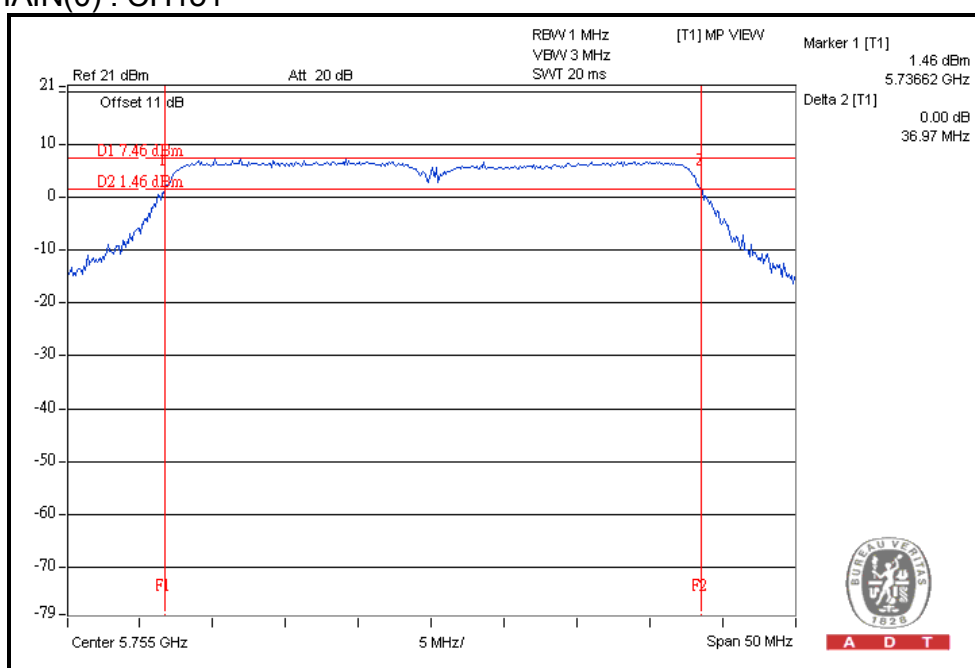
For CHAIN(1) : CH165



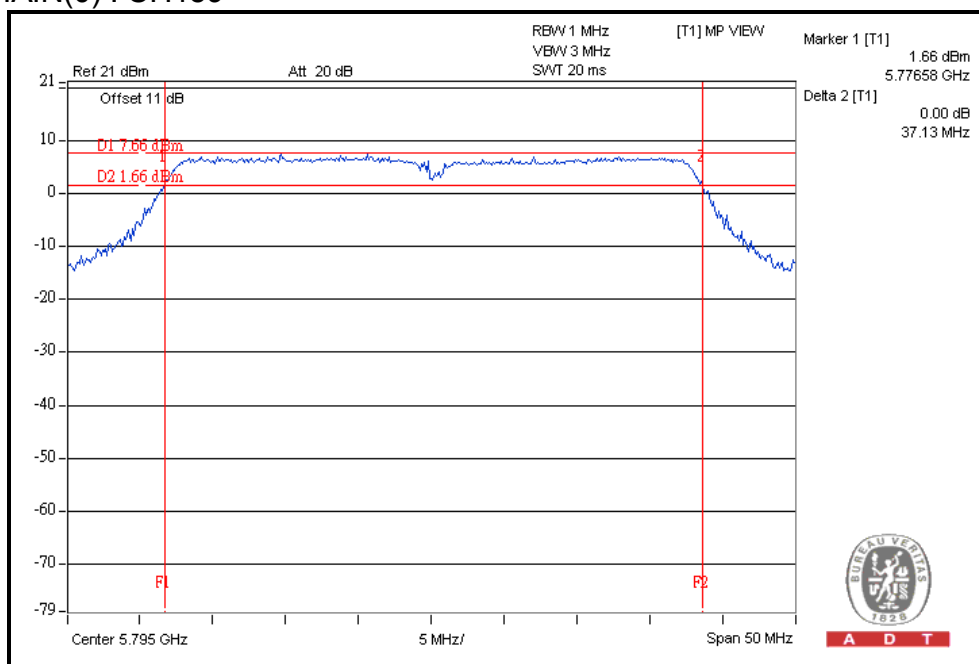
802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
151	5755	36.97	37.25	0.5	PASS
159	5795	37.13	37.04	0.5	PASS

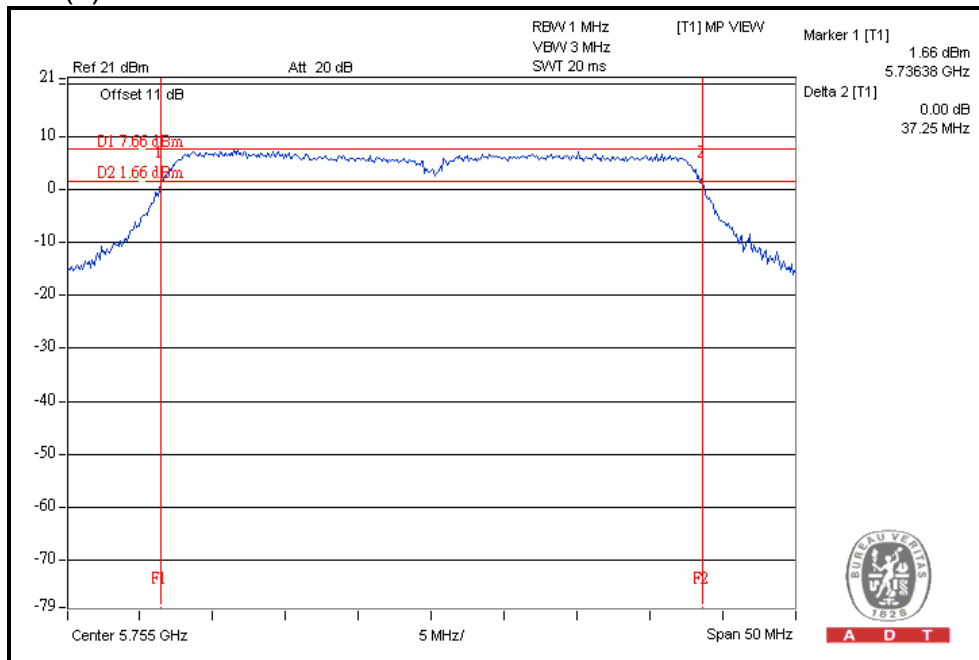
For CHAIN(0) : CH151



For CHAIN(0) : CH159



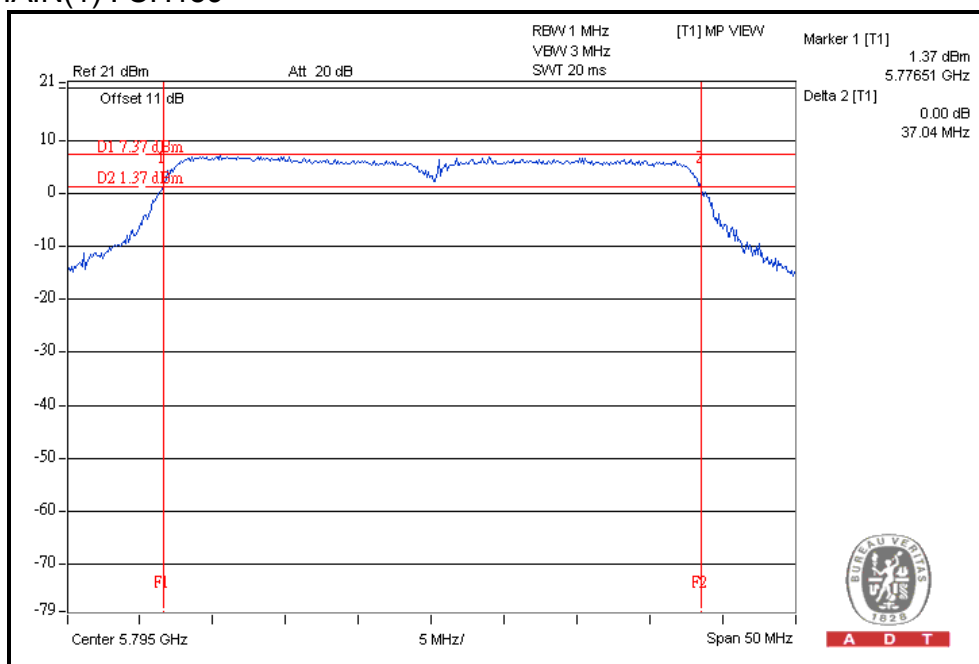
For CHAIN(1) : CH151





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For CHAIN(1) : CH159





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5.4 OCCUPIED BANDWIDTH MEASUREMENT

5.4.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

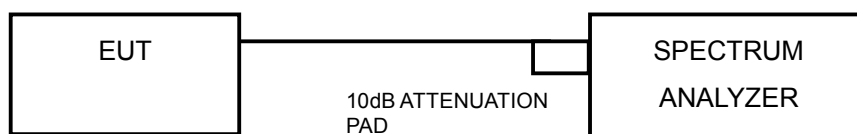
Note:

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 : Apr. 12, 2012

5.4.2 TEST PROCEDURE

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

5.4.3 TEST SETUP



5.4.4 EUT OPERATING CONDITIONS

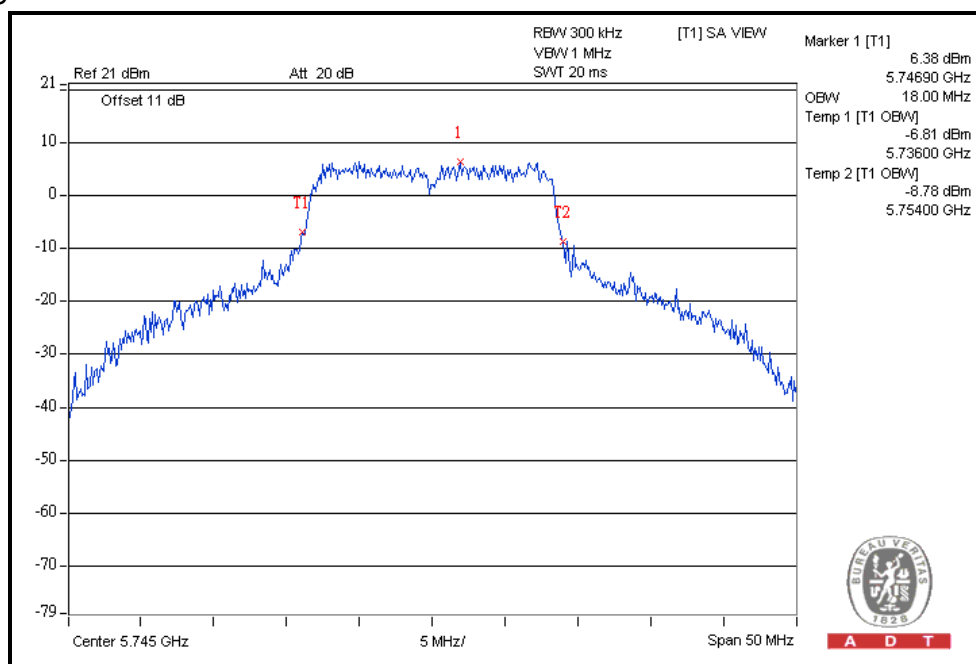
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.4.5 TEST RESULTS

Single chain - 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
149	5745	18.00
157	5785	19.50
165	5825	21.70

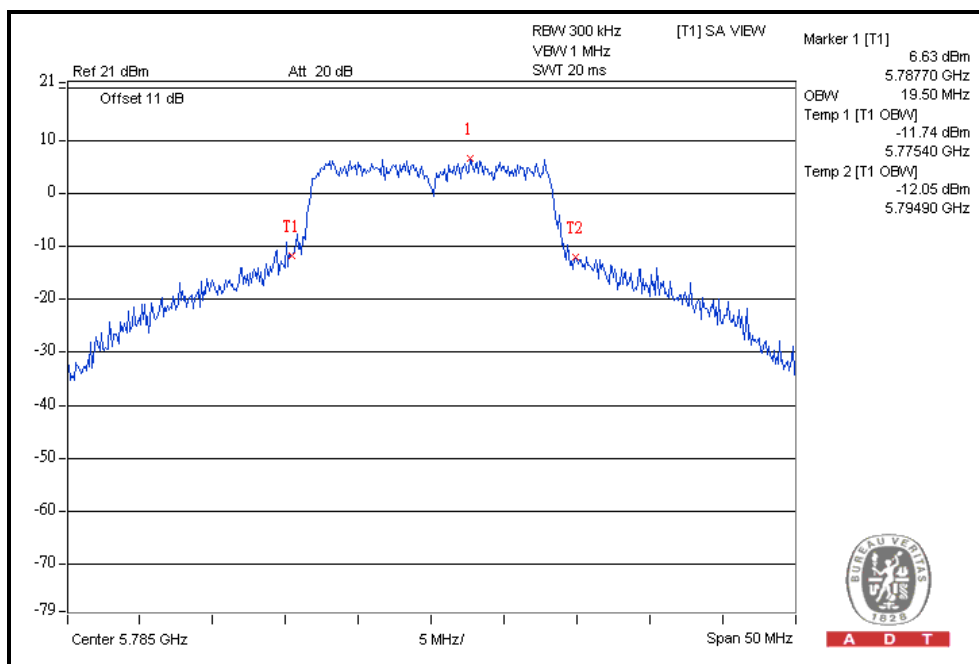
CH149



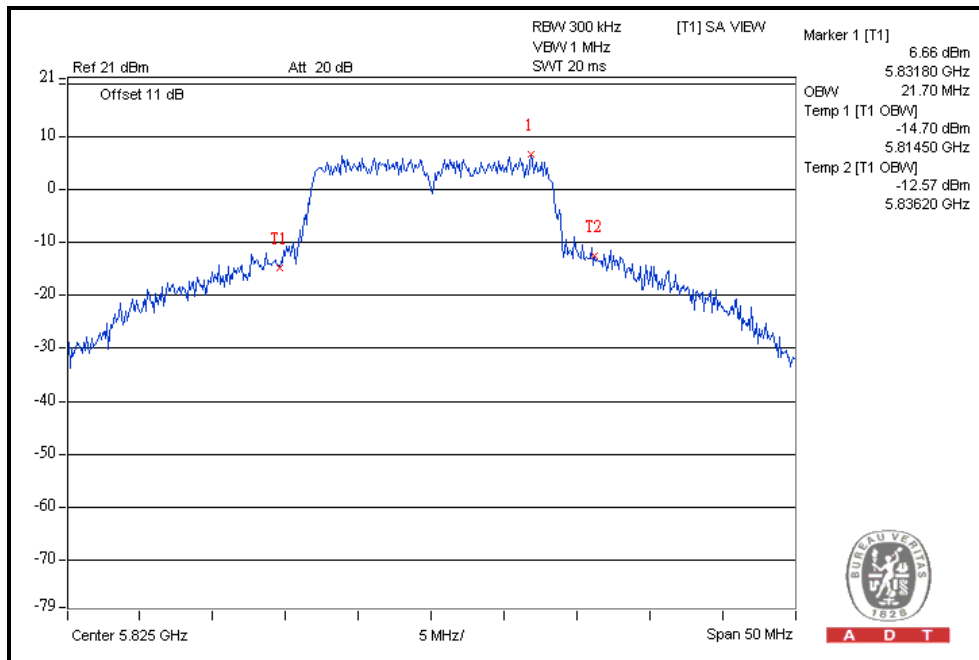


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CH157



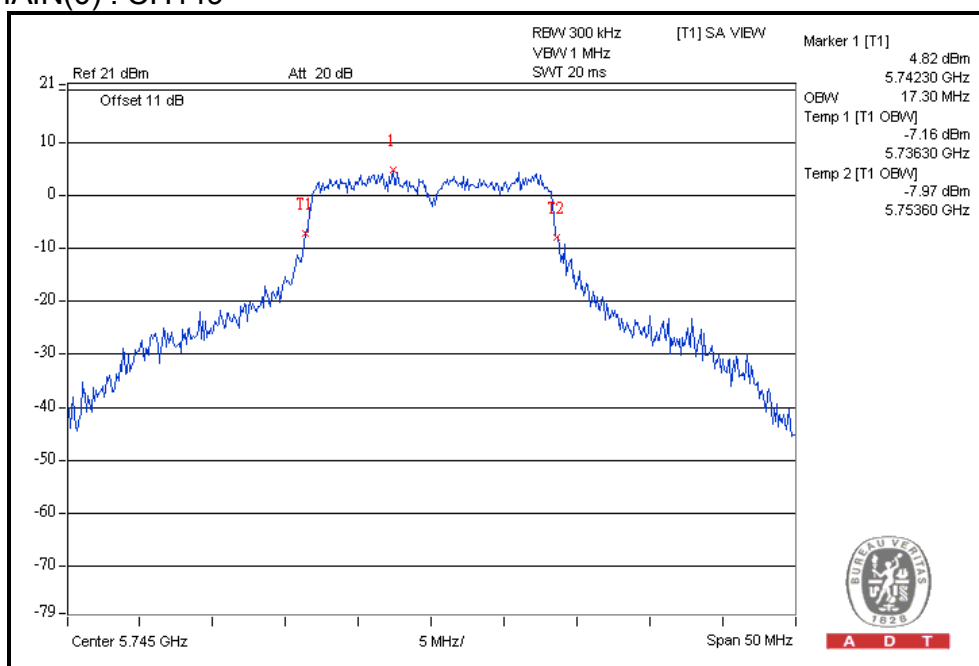
CH165



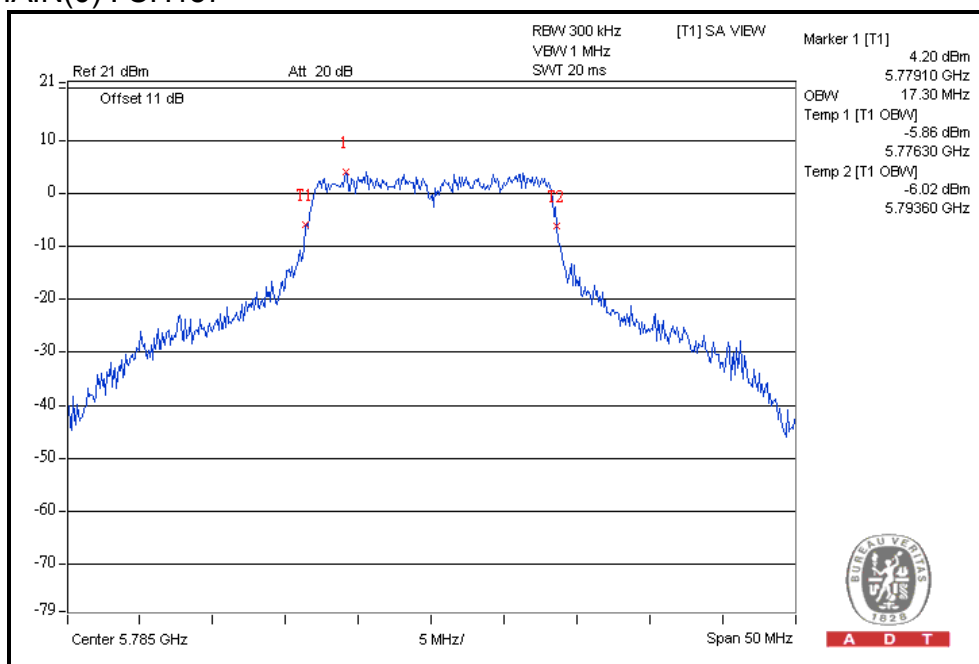
Multiple chain - 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
149	5745	17.30	17.10
157	5785	17.30	17.30
165	5825	17.40	19.40

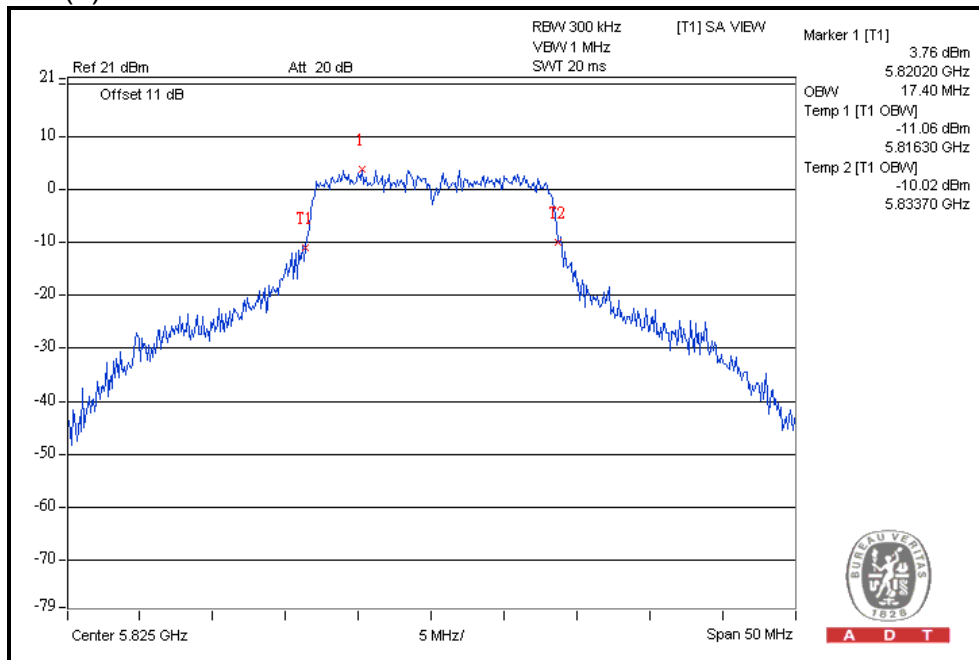
For CHAIN(0) : CH149



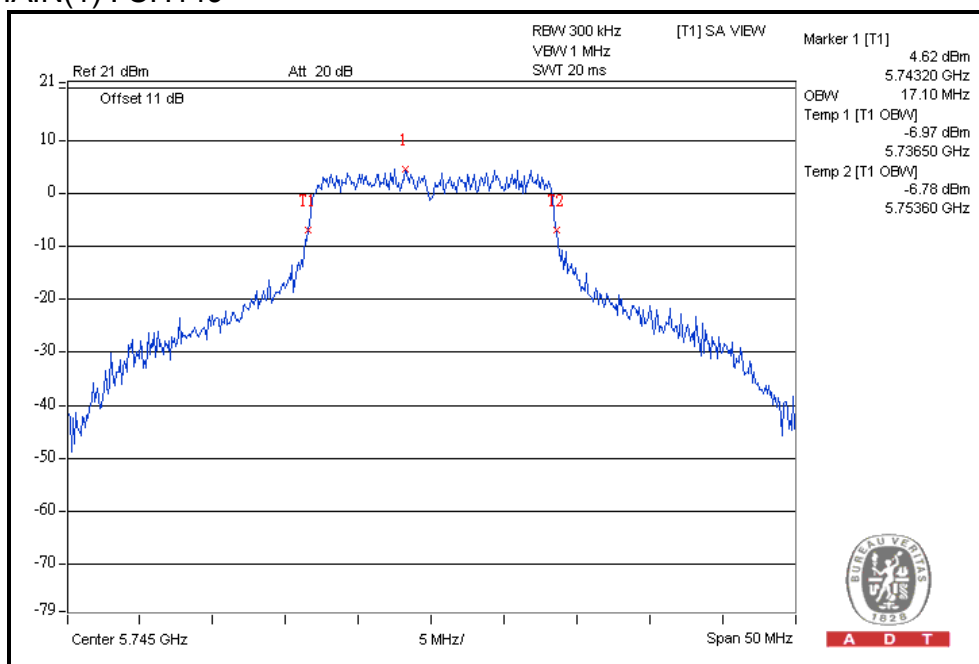
For CHAIN(0) : CH157



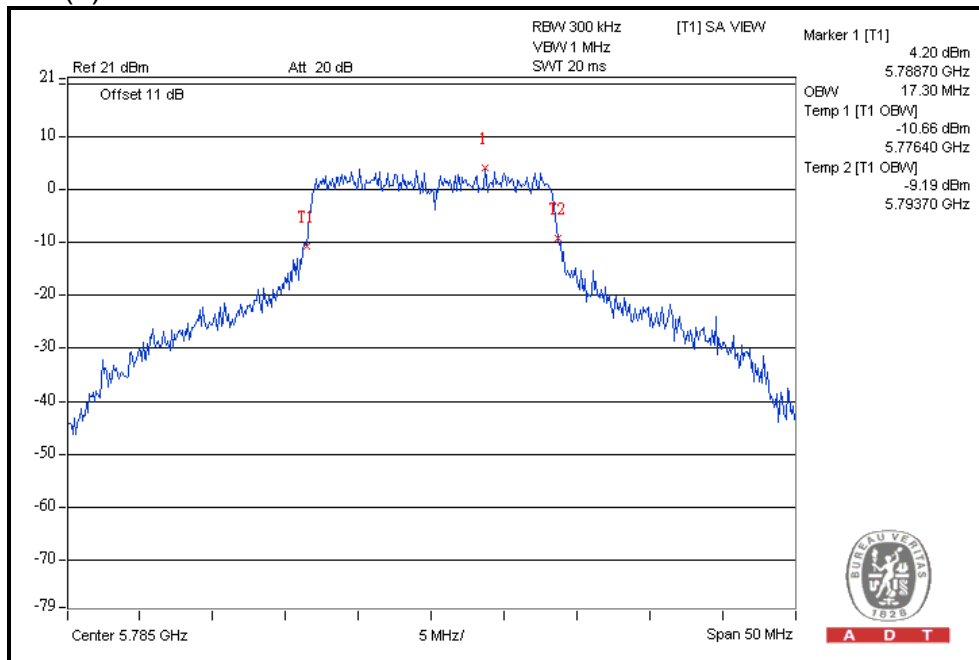
For CHAIN(0) : CH165



For CHAIN(1) : CH149



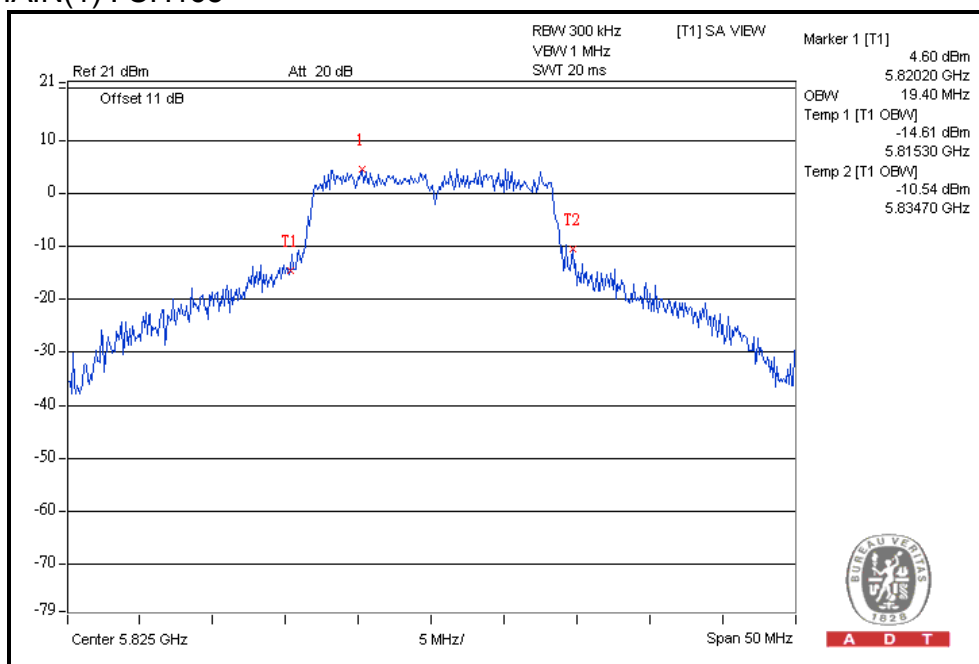
For CHAIN(1) : CH157





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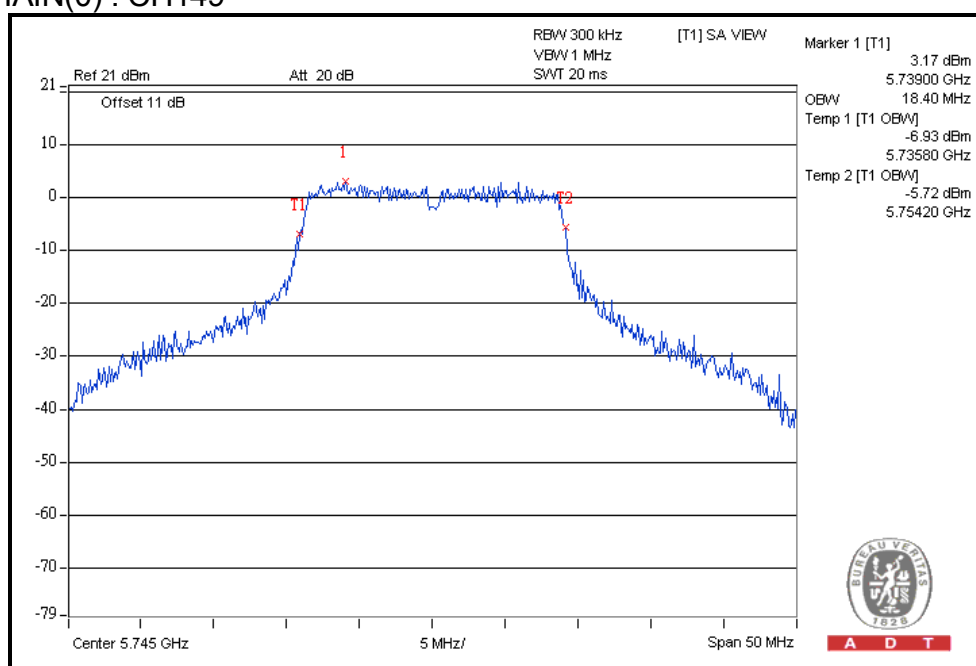
For CHAIN(1) : CH165



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
149	5745	18.40	18.20
157	5785	18.30	18.40
165	5825	18.20	18.70

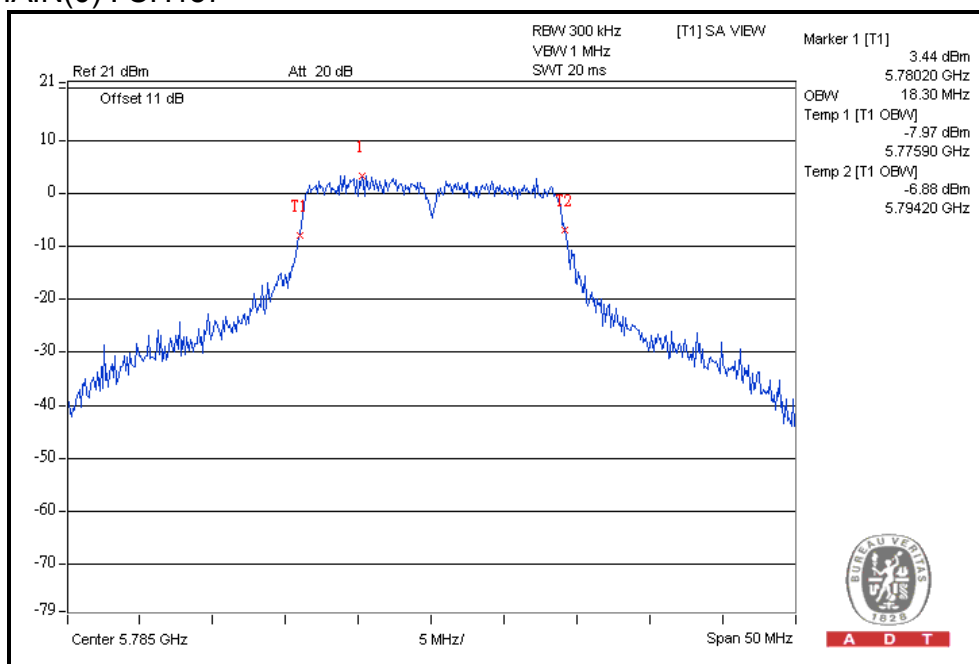
For CHAIN(0) : CH149



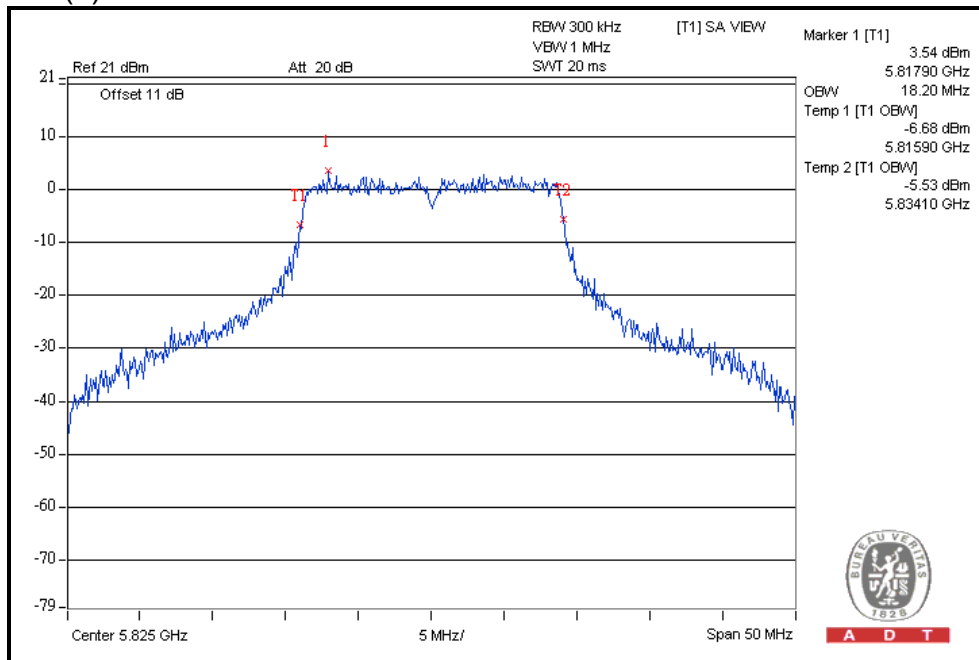


A D T

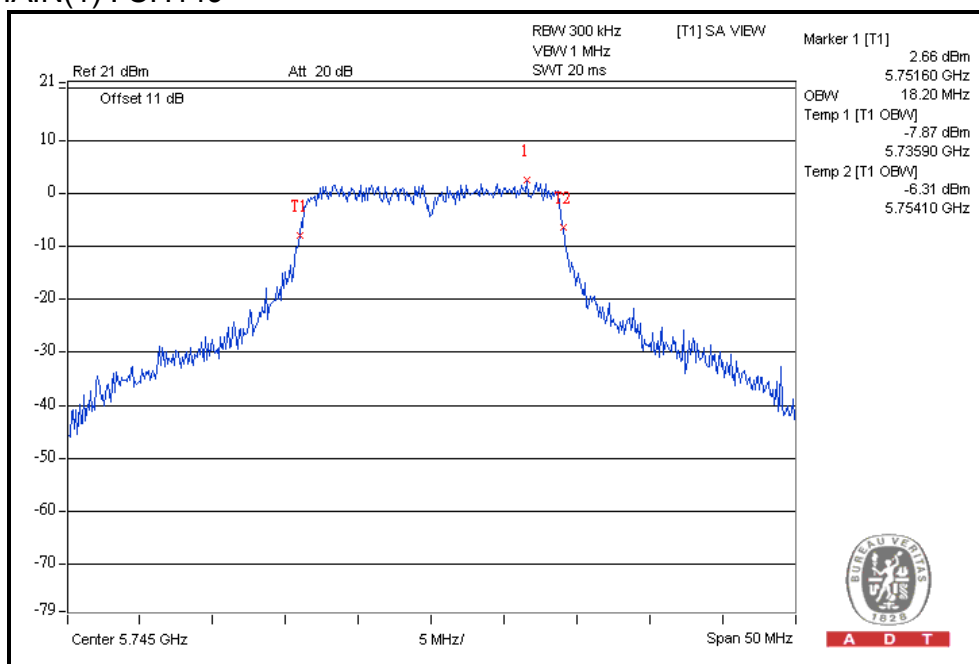
For CHAIN(0) : CH157



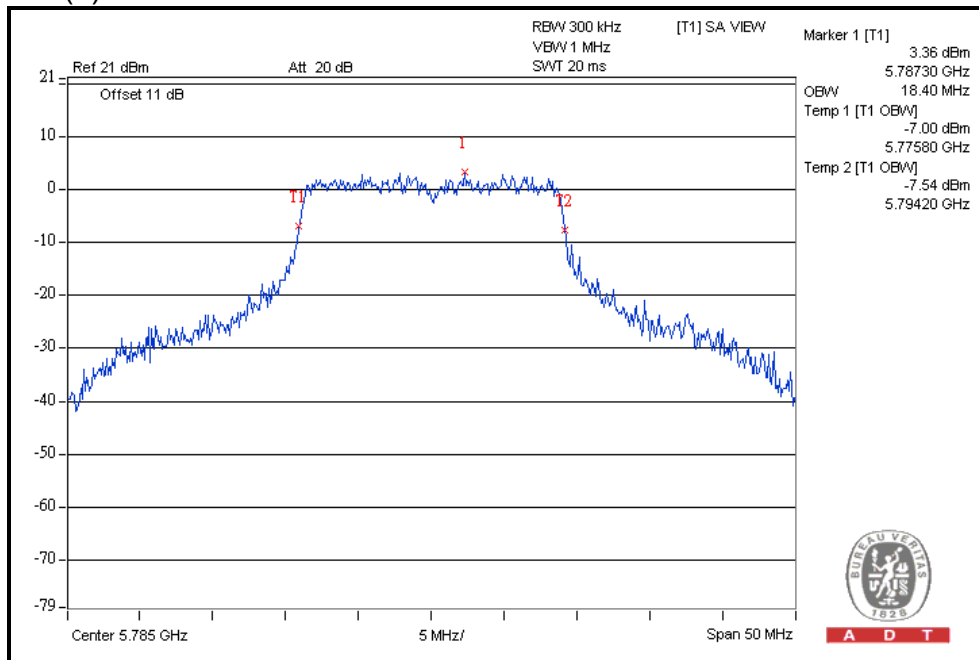
For CHAIN(0) : CH165



For CHAIN(1) : CH149



For CHAIN(1) : CH157



Ref 21 dBm Att 20 dB RBW 300 kHz VBW 1 MHz SWT 20 ms [T1] SA VIEW

Offset 11 dB

Marker 1 [T1] 3.30 dBm 5.82670 GHz OBW 18.70 MHz Temp 1 [T1 OBW] -11.19 dBm 5.81570 GHz Temp 2 [T1 OBW] -9.67 dBm 5.83440 GHz

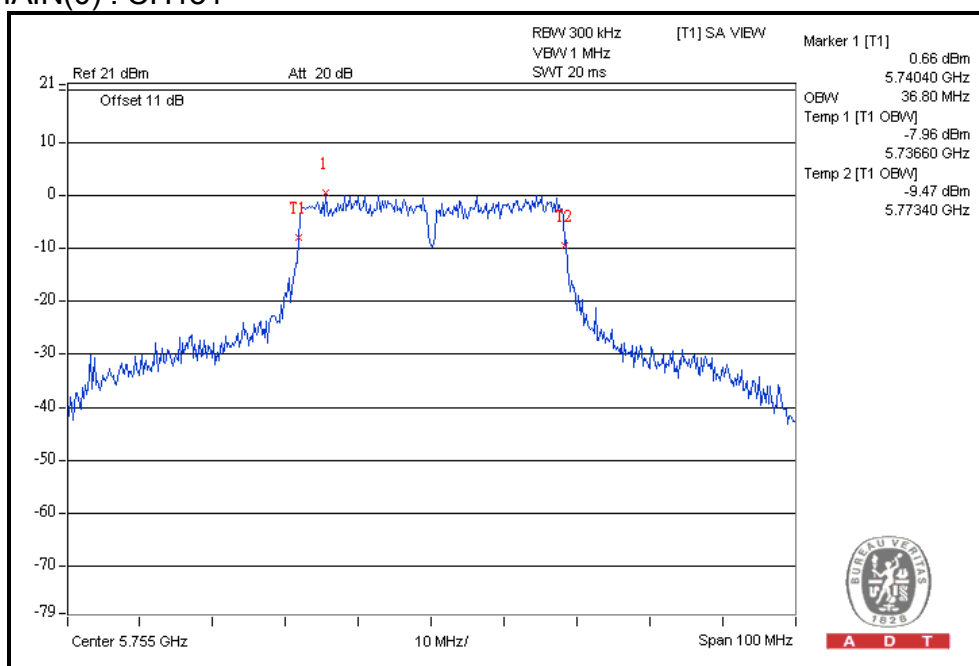
Center 5.825 GHz Span 50 MHz

BUREAU VERITAS

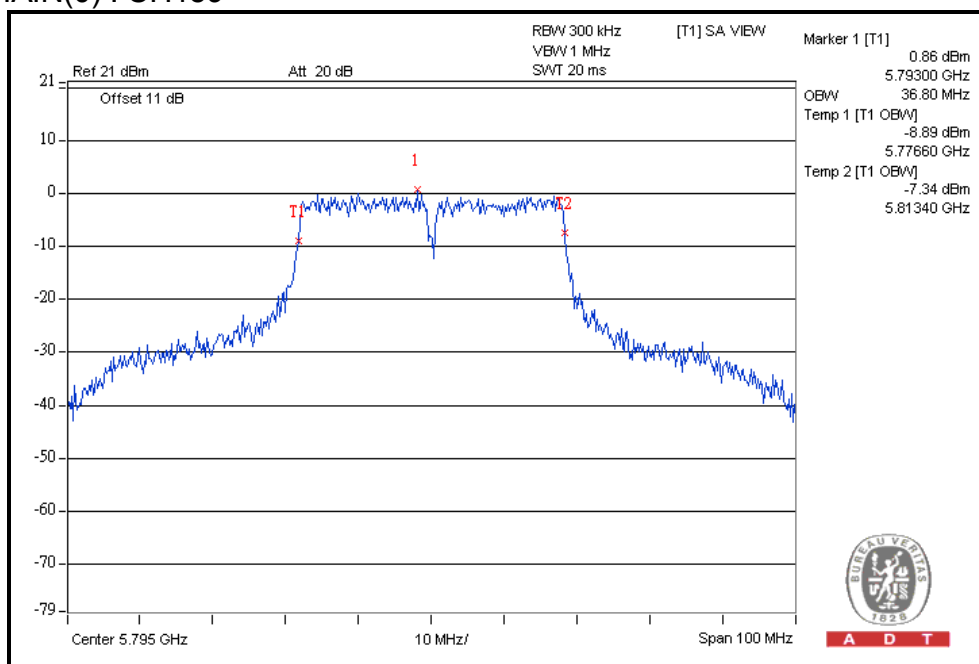
802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
151	5755	36.80	36.40
159	5795	36.80	37.00

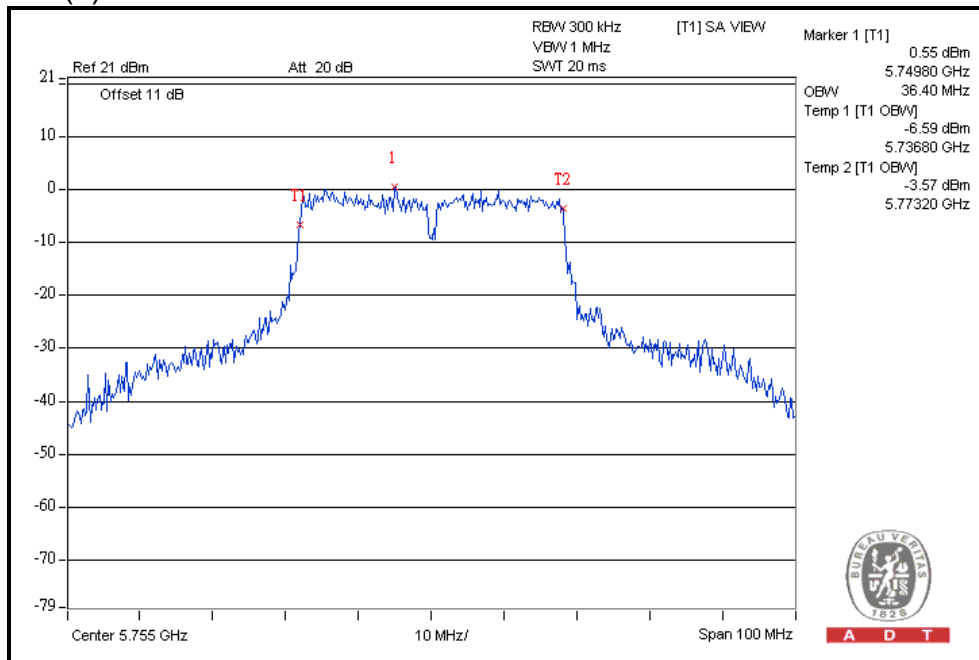
For CHAIN(0) : CH151



For CHAIN(0) : CH159



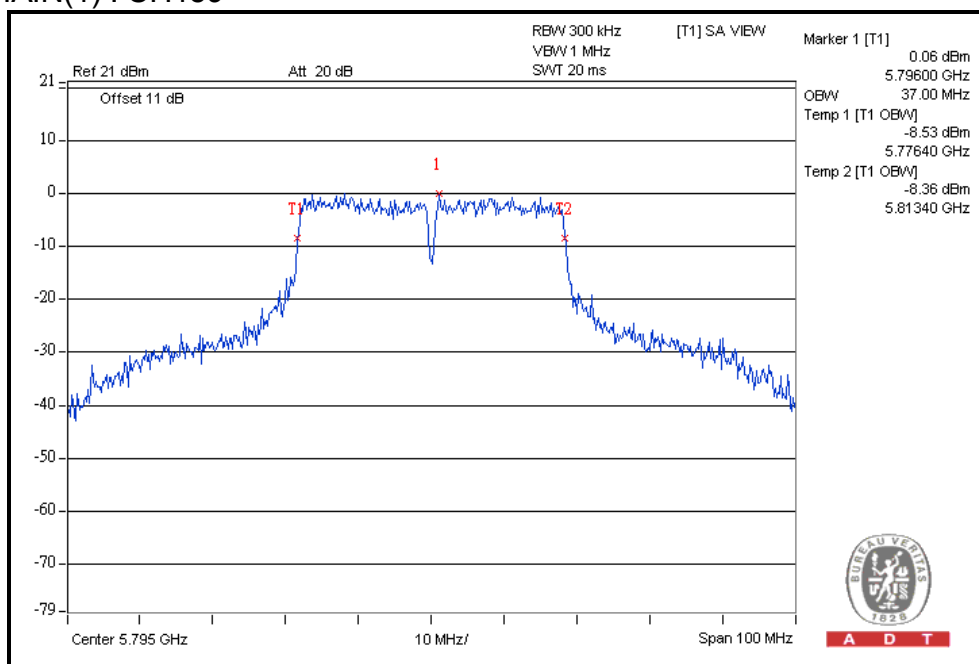
For CHAIN(1) : CH151





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For CHAIN(1) : CH159



5.5 CONDUCTED OUTPUT POWER

5.5.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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

5.5.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Peak Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

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 : Apr. 12, 2012

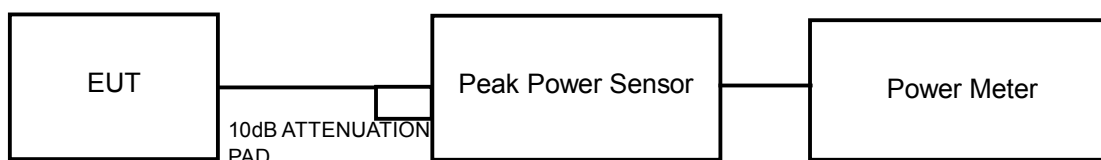
5.5.3 TEST PROCEDURES

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.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

5.5.7 TEST RESULTS

Single chain - 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
149	5745	154.882	21.90	30	PASS
157	5785	151.356	21.80	30	PASS
165	5825	144.544	21.60	30	PASS

Multiple chain - 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	20.70	20.60	232.305	23.66	28.23	PASS
157	5785	20.00	20.50	212.202	23.27	28.23	PASS
165	5825	19.80	20.80	215.725	23.34	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 (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	19.40	19.40	174.192	22.41	28.23	PASS
157	5785	19.60	19.30	176.315	22.46	28.23	PASS
165	5825	19.50	19.30	174.239	22.41	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 (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
151	5755	19.60	19.30	176.315	22.46	28.23	PASS
159	5795	19.40	19.30	172.210	22.36	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.

5.6 AVERAGE OUTPUT POWER

5.6.1 For reference.

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Average Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

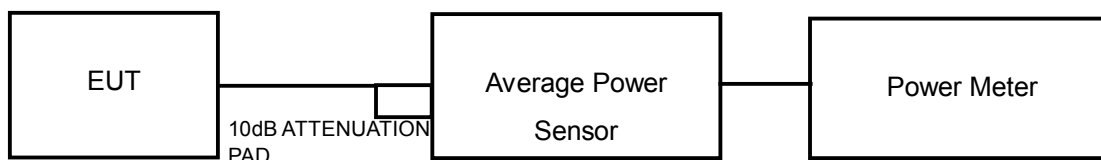
Note:

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 : Apr. 12, 2012

5.6.3 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.

5.6.4 TEST SETUP



5.6.5 EUT OPERATING CONDITIONS

Same as Item 4.3.5

5.6.6 TEST RESULTS

Single chain - 802.11a :

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
149	5745	16.2
157	5785	16.2
165	5825	16.2

Multiple chain - 802.11a :

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
149	5745	13.4	13.0	16.2
157	5785	13.2	13.1	16.2
165	5825	13.2	13.0	16.1

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
149	5745	12.2	12.0	15.1
157	5785	12.3	12.1	15.2
165	5825	12.3	12.1	15.2

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
151	5755	12.4	12.0	15.2
159	5795	12.3	12.0	15.2



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5.7 POWER SPECTRAL DENSITY MEASUREMENT

5.7.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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 : Apr. 12, 2012

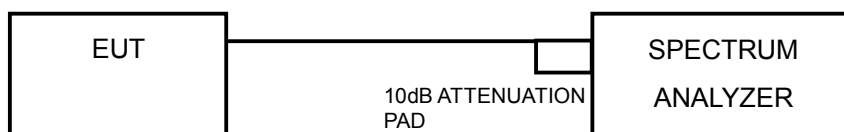
5.7.3 TEST PROCEDURE

1. Set the RBW = 100 kHz, VBW =300 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 power level in any 100 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

5.7.4 DEVIATION FROM TEST STANDARD

No deviation

5.7.5 TEST SETUP





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5.7.6 EUT OPERATING CONDITION

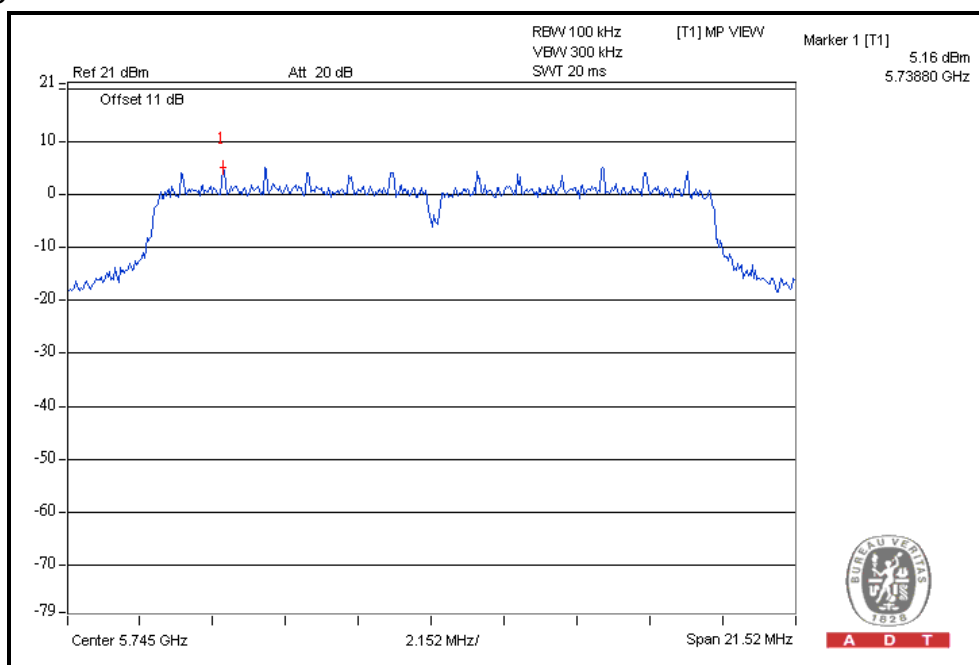
Same as Item 4.3.6

5.7.7 TEST RESULTS

Single chain - 802.11a

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	5.16	-10.07	8	PASS
157	5785	5.40	-9.83	8	PASS
165	5825	5.17	-10.06	8	PASS

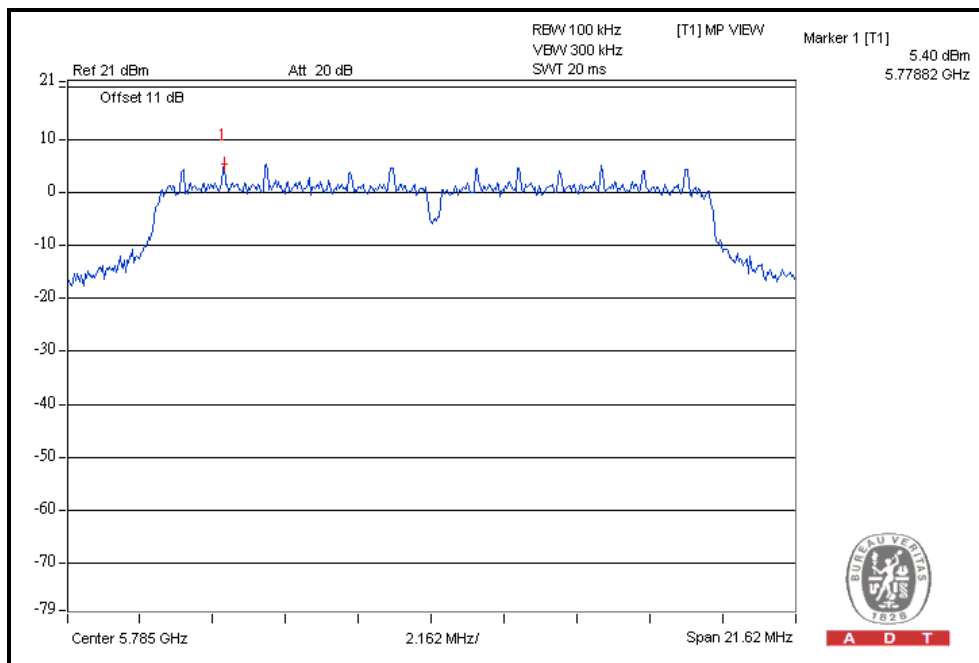
CH149



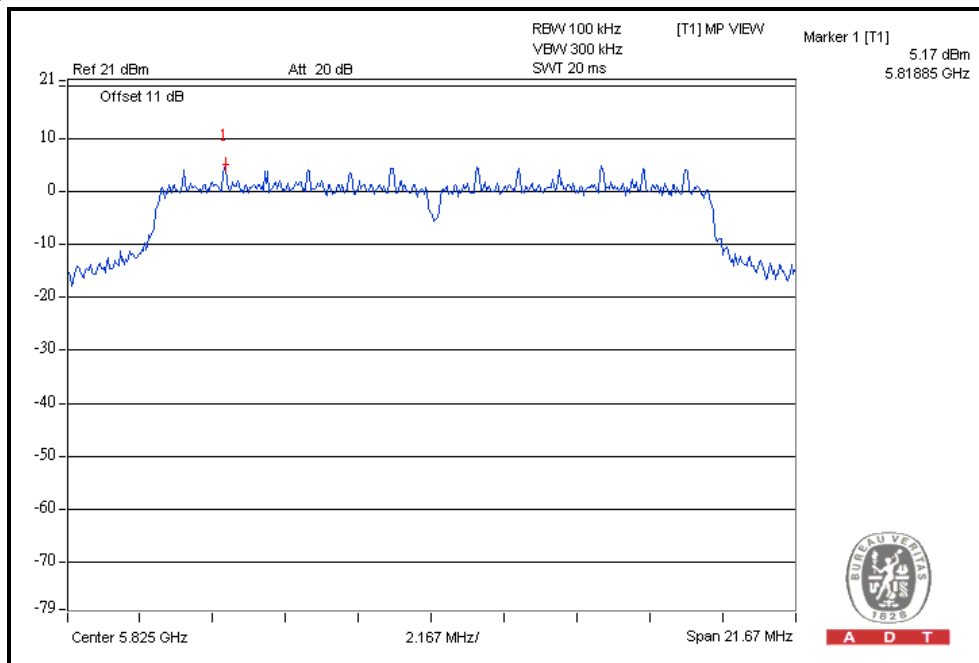


A D T

CH157



CH165



Multiple chain - 802.11a

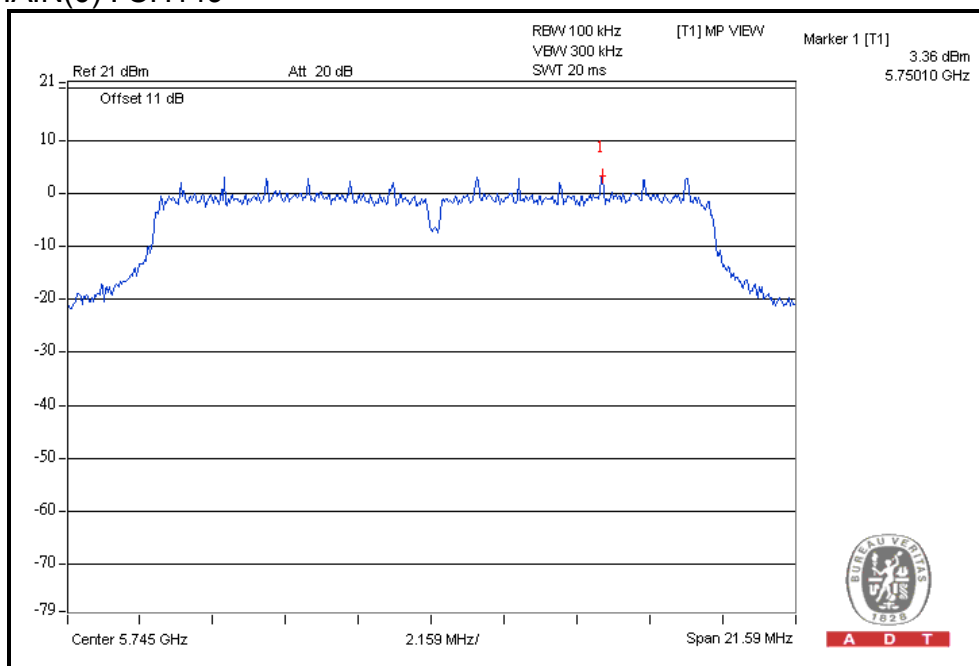
TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	3.36	-11.87	3.01	-8.86	6.23	PASS
	157	5785	2.28	-12.95	3.01	-9.94	6.23	PASS
	165	5825	2.32	-12.90	3.01	-9.89	6.23	PASS
1	149	5745	3.08	-12.15	3.01	-9.14	6.23	PASS
	157	5785	1.91	-13.32	3.01	-10.31	6.23	PASS
	165	5825	3.66	-11.57	3.01	-8.56	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.

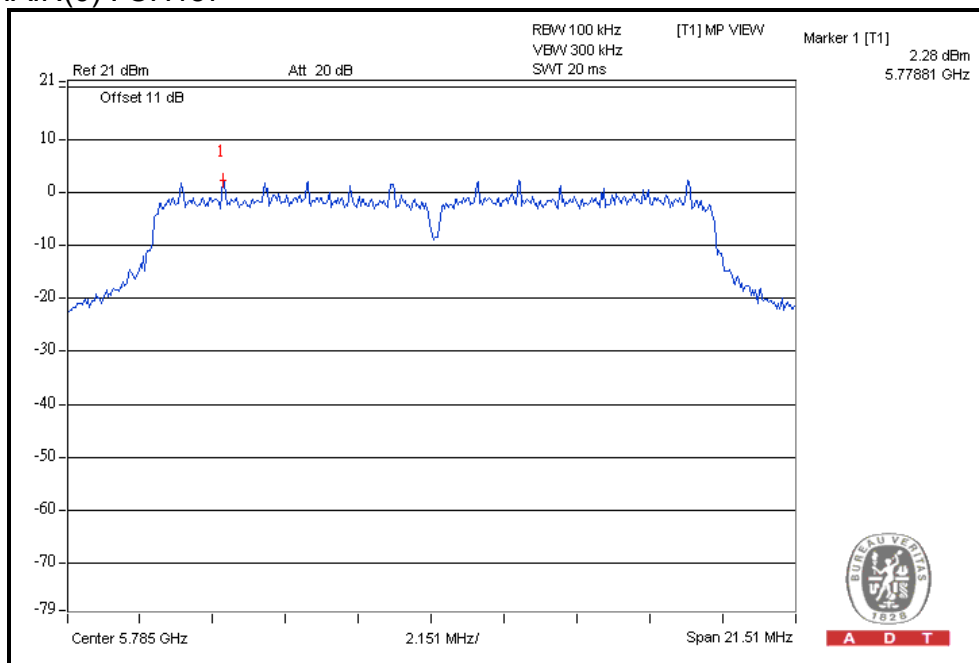
For CHAIN(0) : CH149



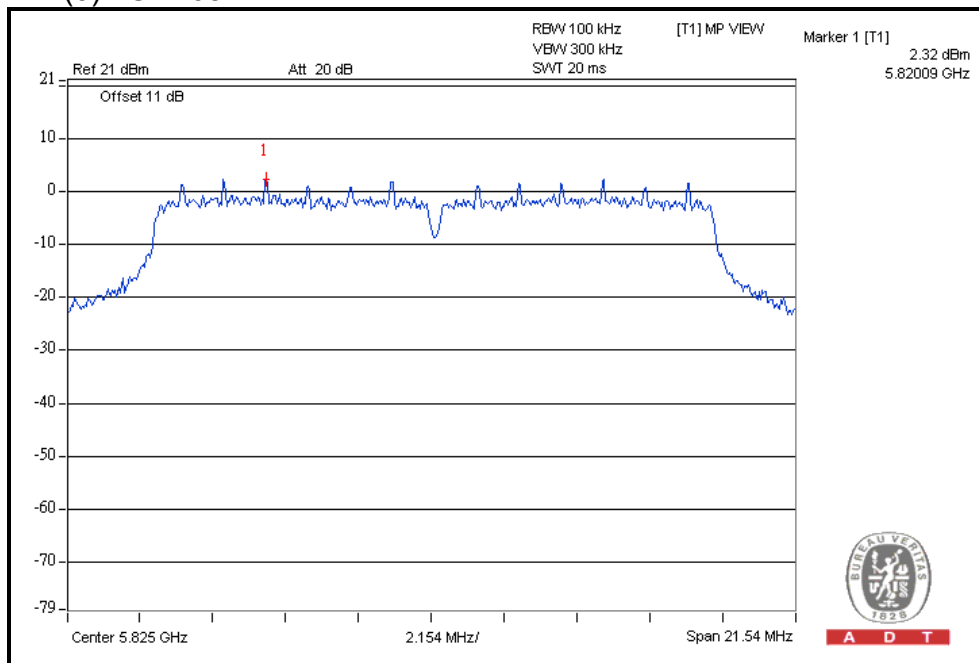


A D T

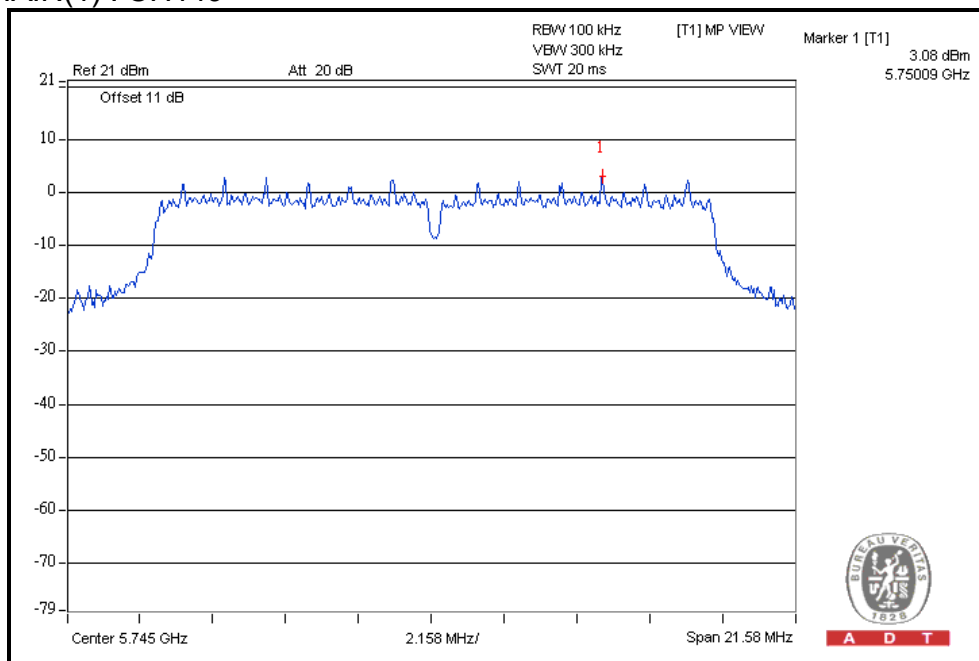
For CHAIN(0) : CH157



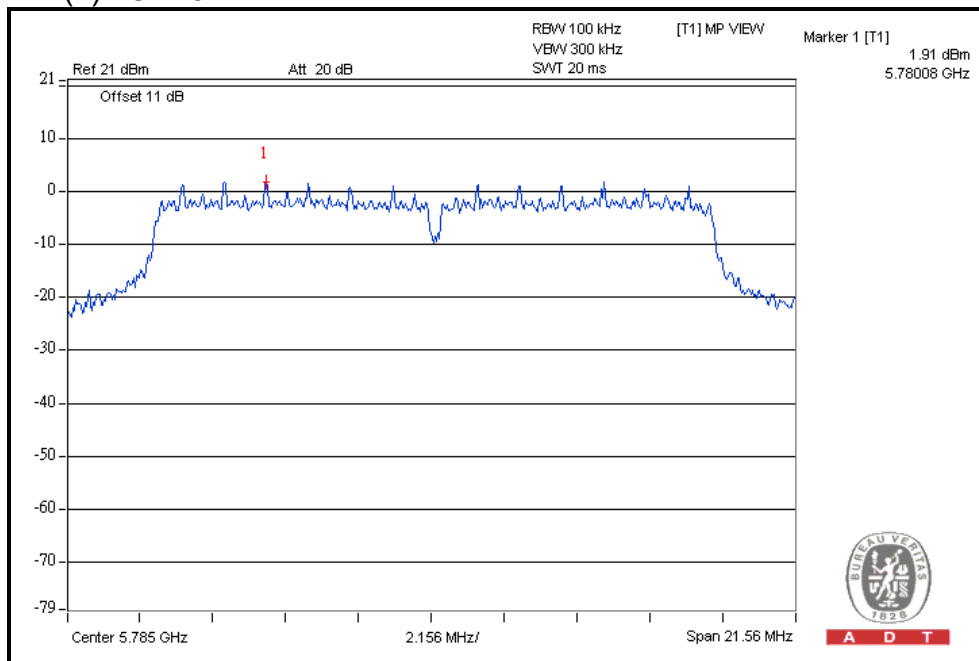
For CHAIN(0) : CH165



For CHAIN(1) : CH149



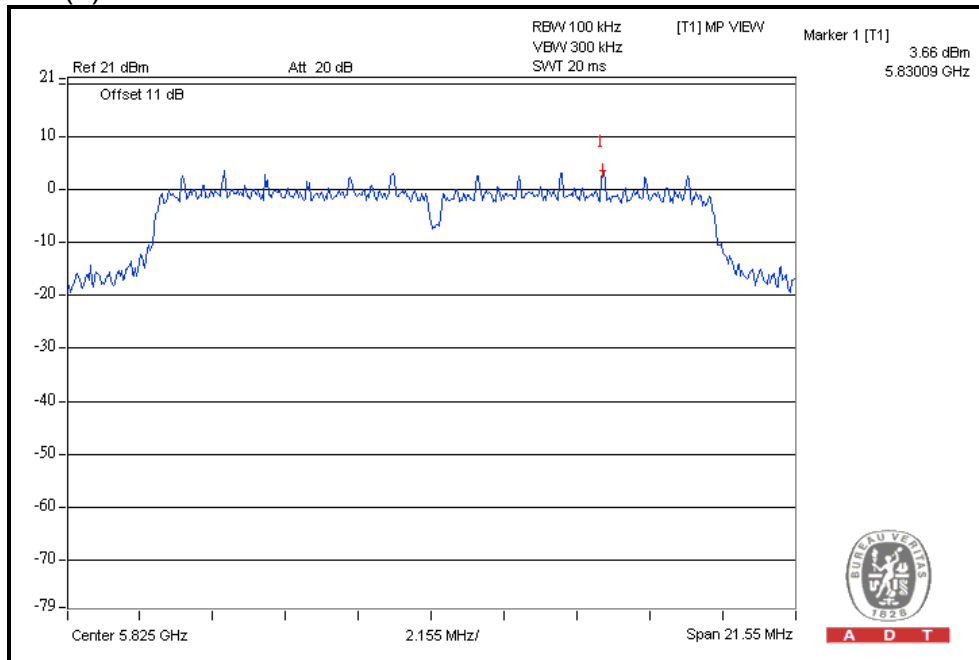
For CHAIN(1) : CH157





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For CHAIN(1) : CH165



802.11n (20MHz) OFDM MODULATION:

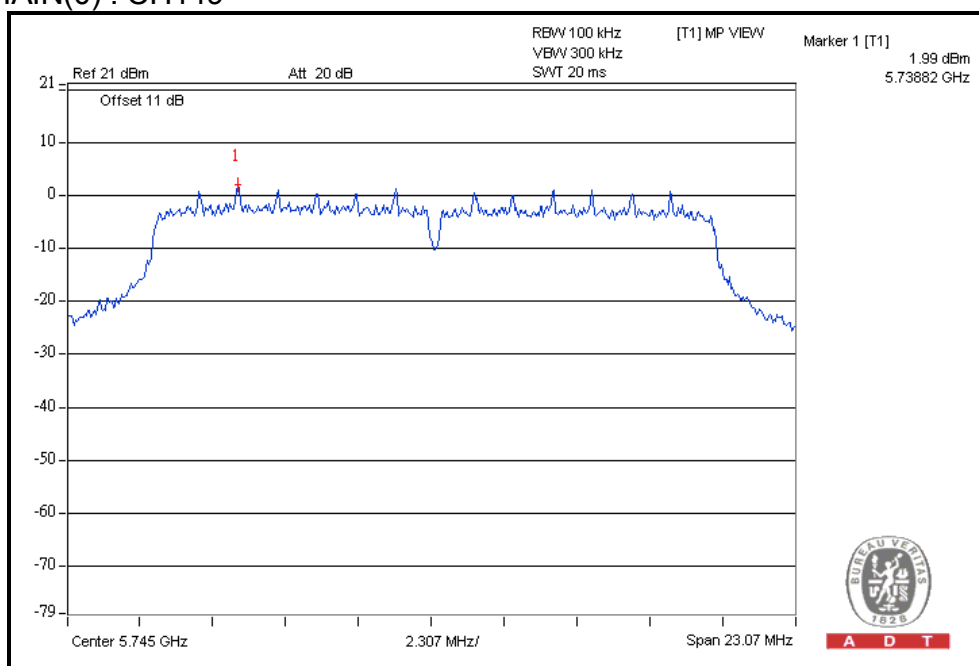
TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	1.99	-13.24	3.01	-10.23	6.23	PASS
	157	5785	2.16	-13.07	3.01	-10.06	6.23	PASS
	165	5825	1.44	-13.79	3.01	-10.78	6.23	PASS
1	149	5745	1.13	-14.10	3.01	-11.09	6.23	PASS
	157	5785	1.82	-13.41	3.01	-10.40	6.23	PASS
	165	5825	2.26	-12.97	3.01	-9.96	6.23	PASS

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

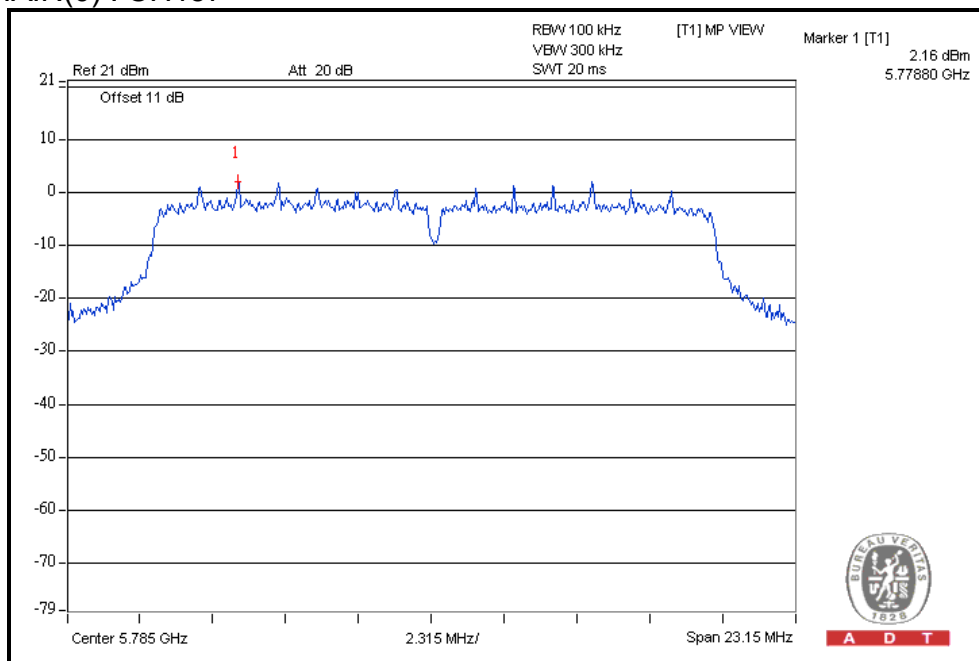
Effective Legacy Gain (dBi)=7.77

The effective legacy gain is 7.77dBi, therefore the limit needs to reduce.

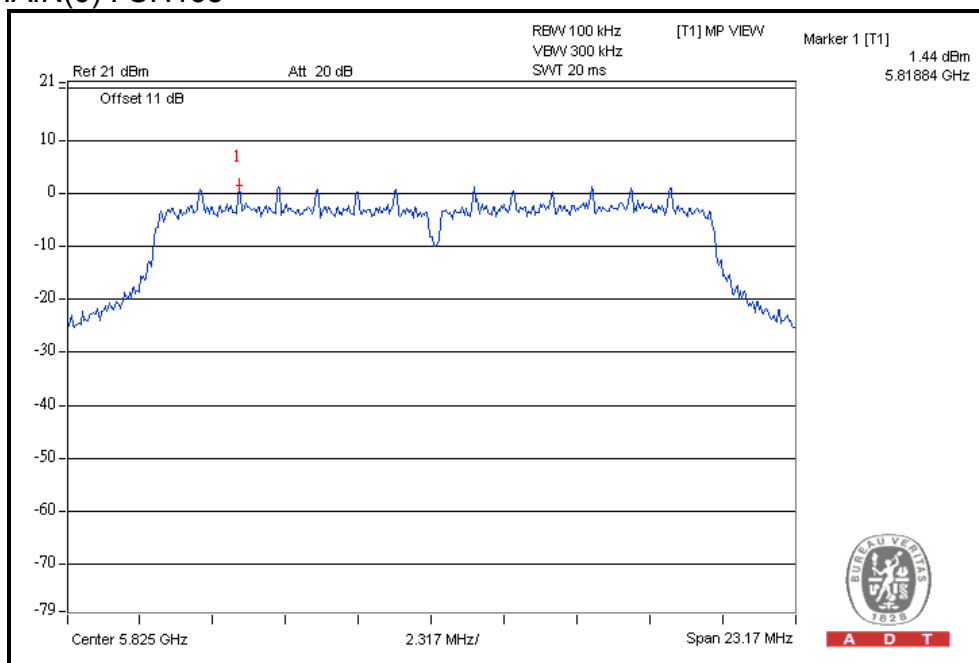
For CHAIN(0) : CH149



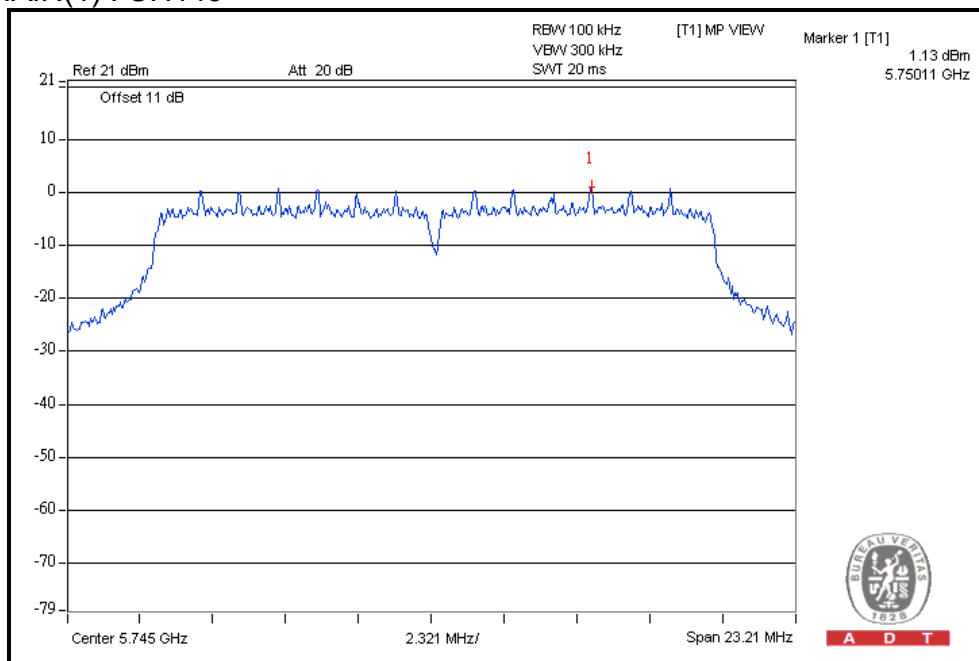
For CHAIN(0) : CH157



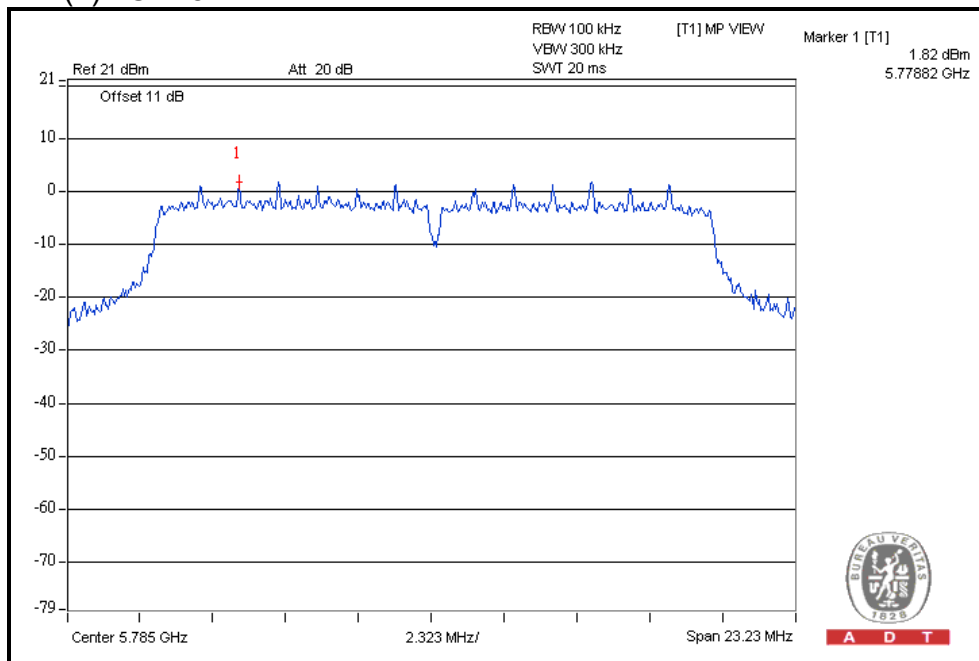
For CHAIN(0) : CH165



For CHAIN(1) : CH149



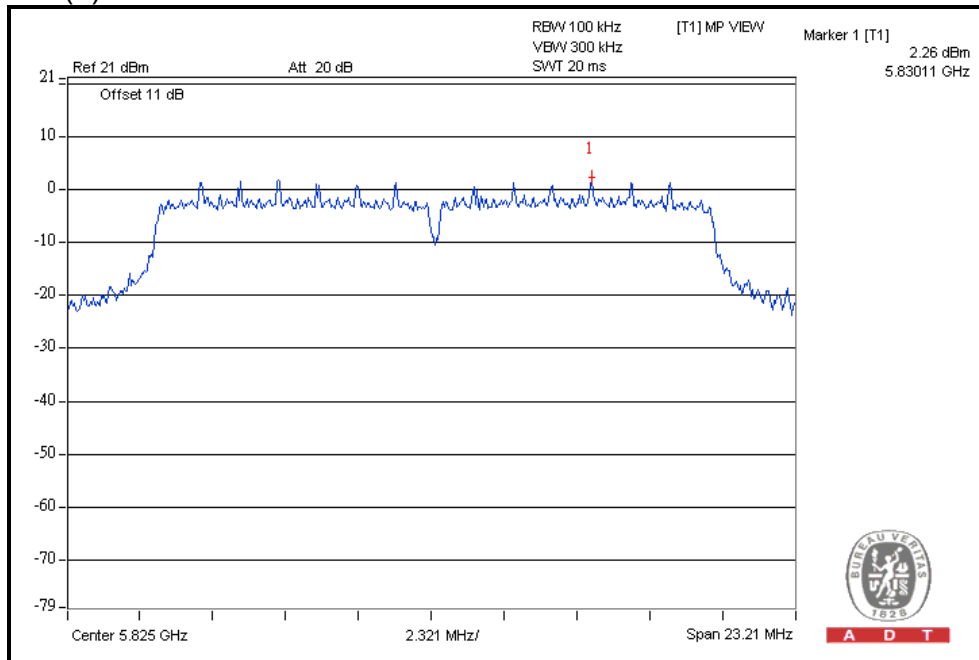
For CHAIN(1) : CH157





A D T

For CHAIN(1) : CH165



802.11n (40MHz)

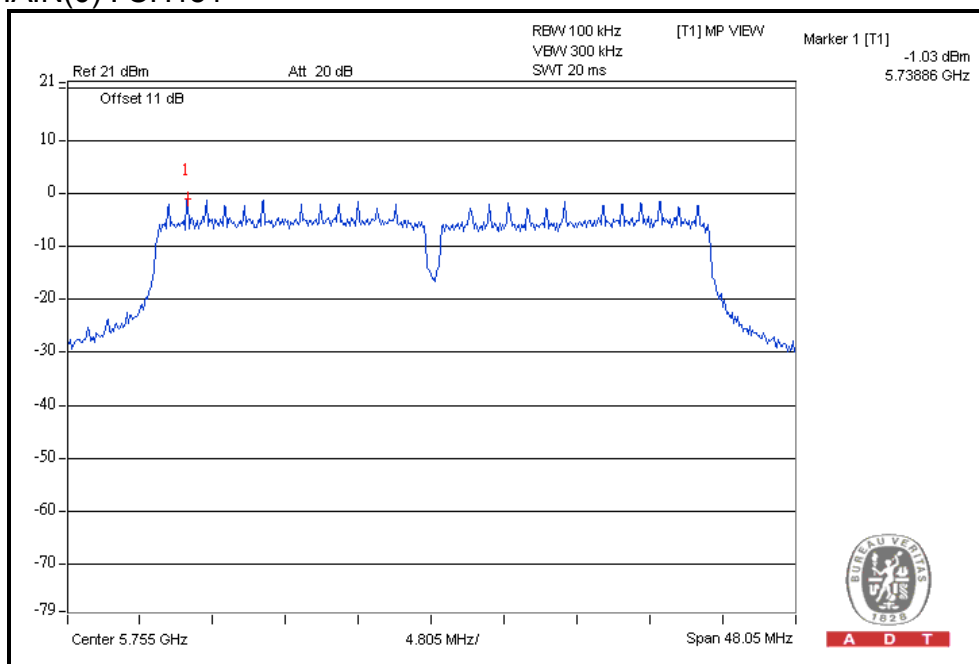
TX chain	Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-1.03	-16.26	3.01	-13.25	6.23	PASS
	159	5795	-0.90	-16.13	3.01	-13.12	6.23	PASS
1	151	5755	-0.82	-16.05	3.01	-13.04	6.23	PASS
	159	5795	-1.34	-16.57	3.01	-13.56	6.23	PASS

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

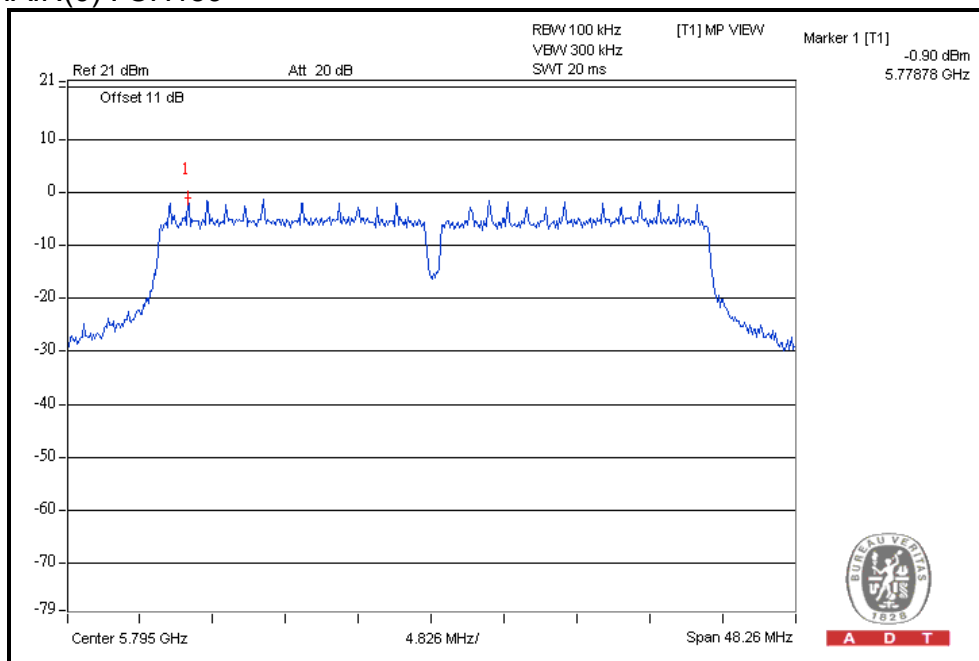
Effective Legacy Gain (dBi)=7.77

The effective legacy gain is 7.77dBi, therefore the limit needs to reduce.

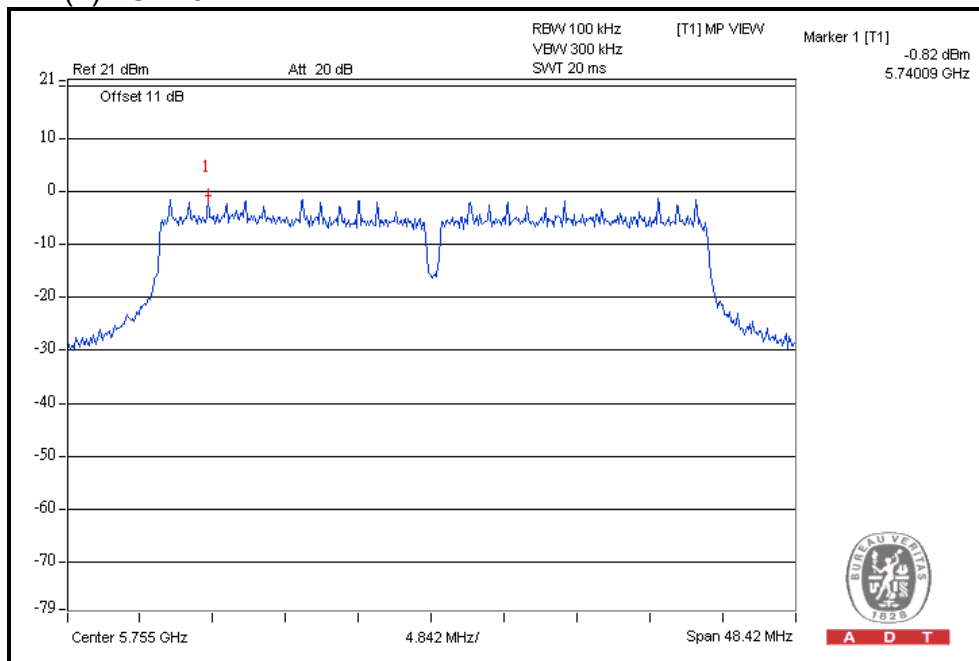
For CHAIN(0) : CH151



For CHAIN(0) : CH159



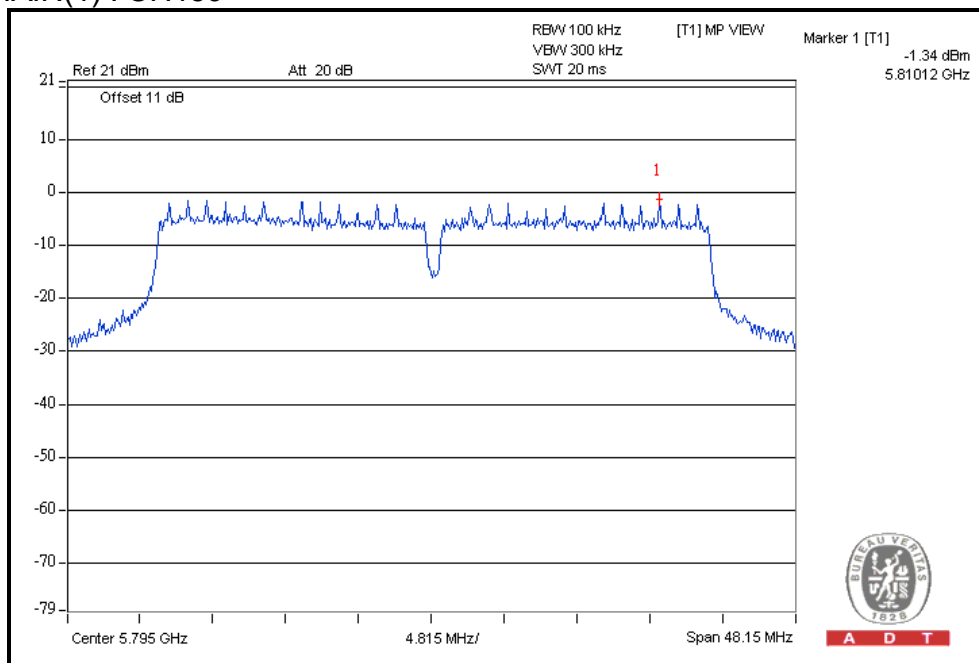
For CHAIN(1) : CH151





A D T

For CHAIN(1) : CH159



5.8 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.8.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

5.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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 : Apr. 12, 2012

5.8.3 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

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

5.8.4 DEVIATION FROM TEST STANDARD

No deviation

5.8.5 EUT OPERATING CONDITION

Same as Item 4.3.6

5.8.6 TEST RESULTS

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

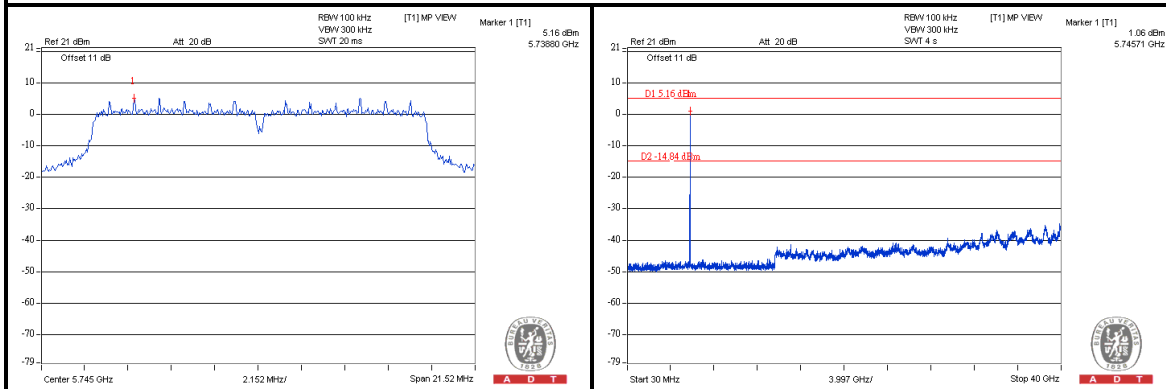
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



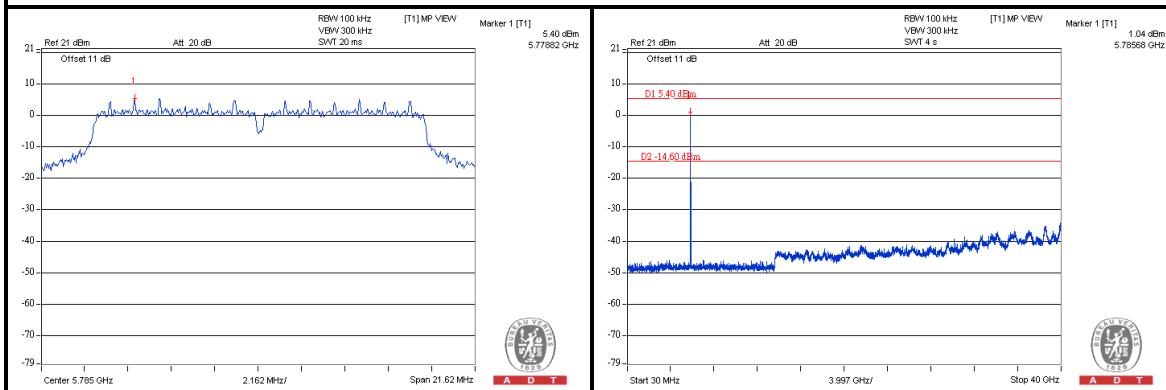
A D T

Single chain - 802.11a

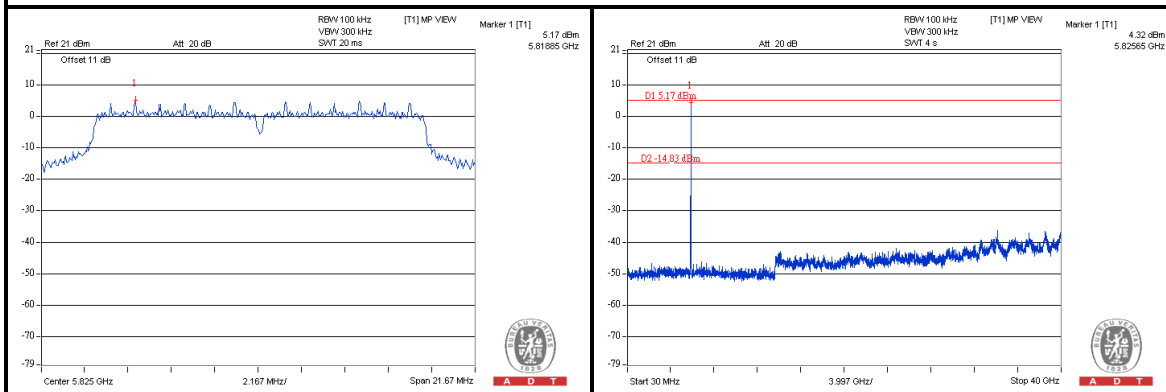
CH 149



CH 157



CH 165

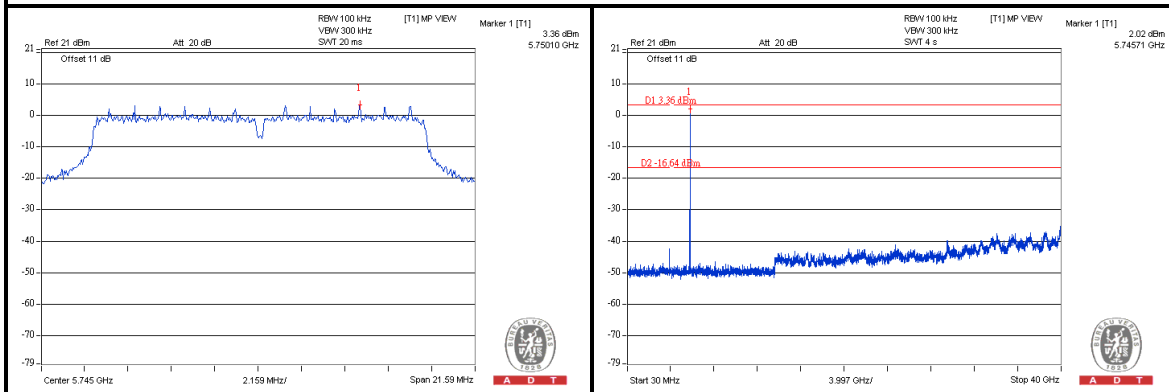




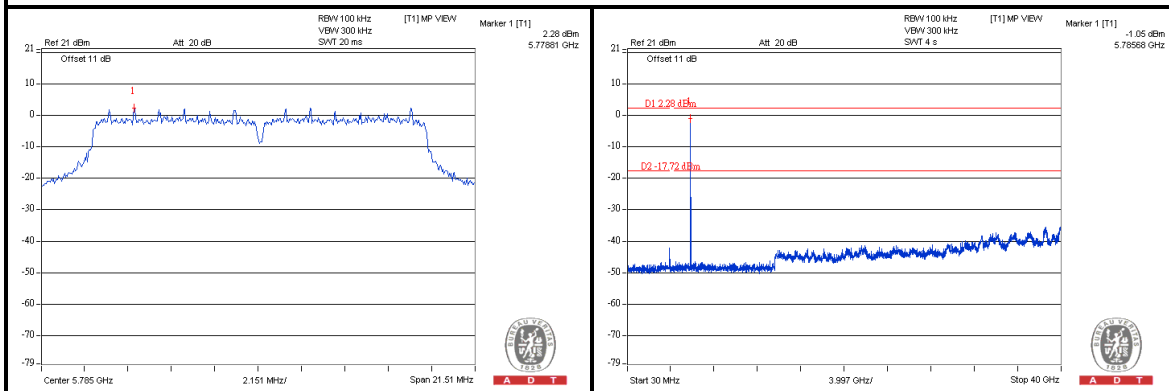
A D T

Multiple chain - 802.11a

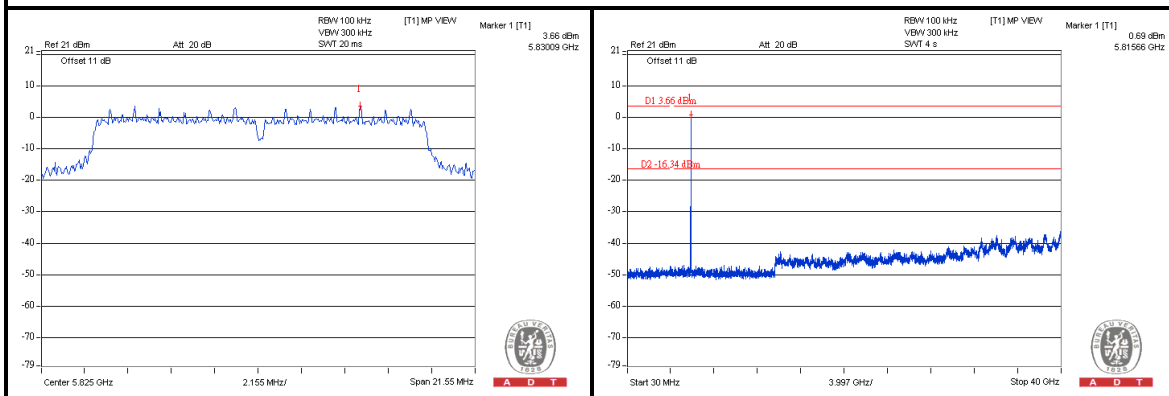
CH 149



CH 157



CH 165

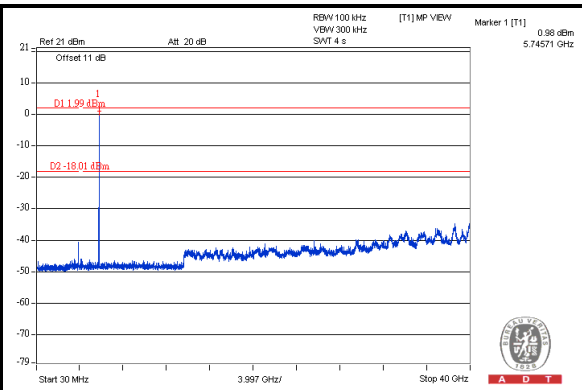
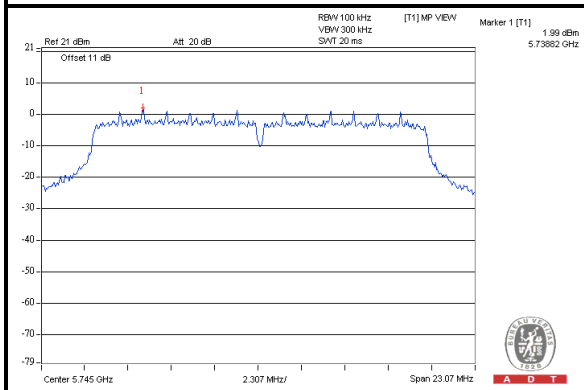




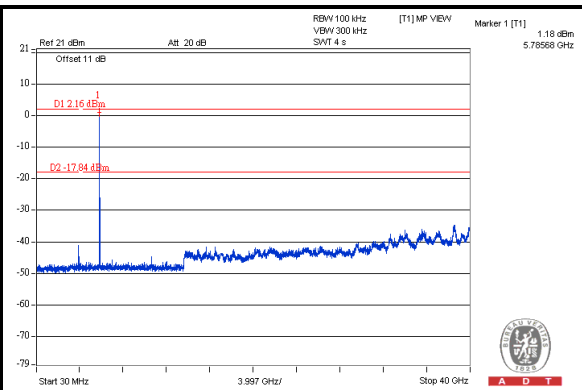
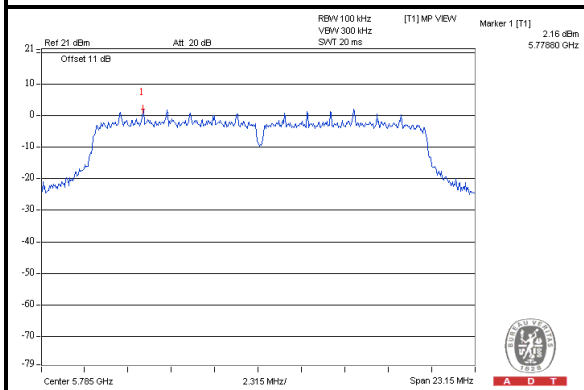
A D T

802.11n (20MHz) :

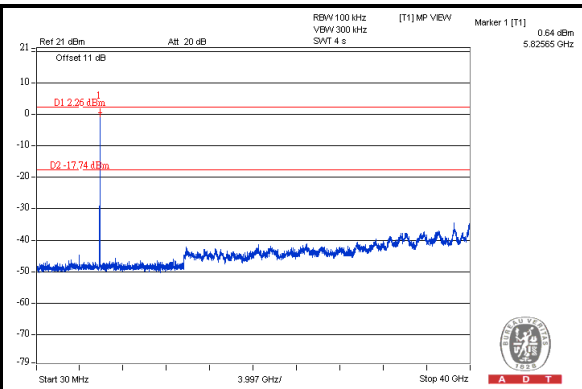
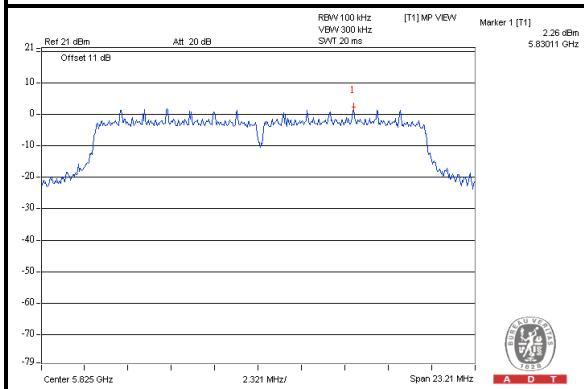
CH 149



CH 157



CH 165

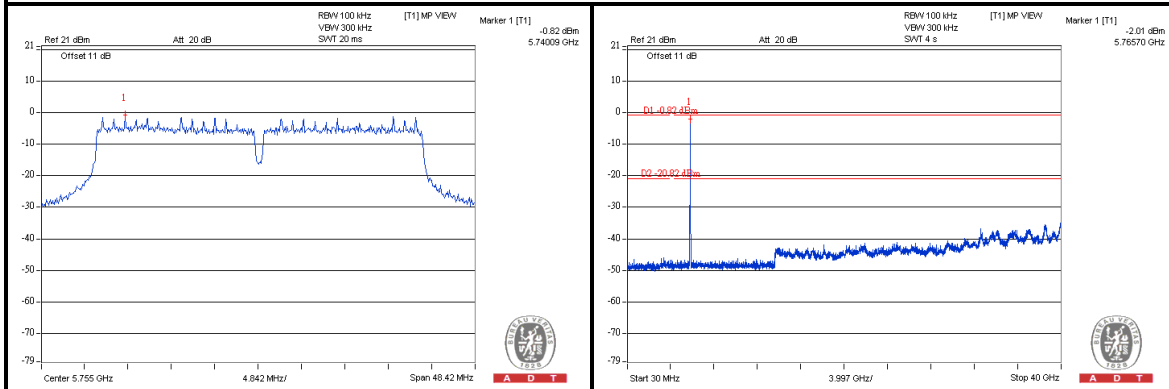




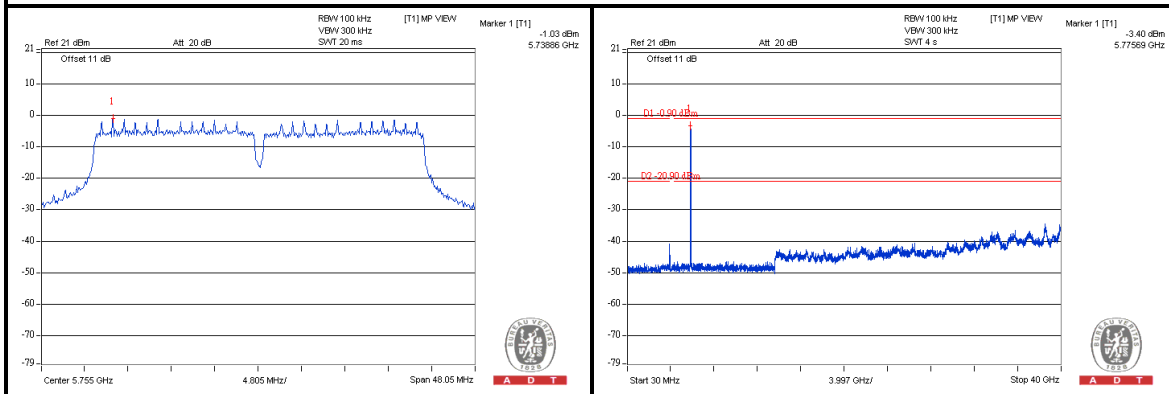
A D T

802.11n (40MHz)

CH 151



CH 159



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.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

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.adt.com.tw

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



A D T

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

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

--- END ---