

FCC TEST REPORT (15.247)

REPORT NO.: RF110907E02 R1

MODEL NO.: AR5B22

FCC ID: PPD-AR5B22

IC: 4104A-AR5B22

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ISSUED: Jan. 19, 2012

APPLICANT: Qualcomm Atheros, Inc.

ADDRESS: 1700 Technology Drive, San Jose, CA
95110

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

LAB ADDRESS: No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

TEST LOCATION (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110907E02	Original release	Dec. 15, 2011
RF110907E02 R1	1. Revised radiated emission test data of "11b" mode. 2. Revised all test data of "11b(Single chain)" mode. 3. Added detail information of combination mode on section 3.1.	Jan. 19, 2012



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1. CERTIFICATION

PRODUCT: PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card

BRAND NAME: Atheros

MODEL NO.: AR5B22

TEST SAMPLE: R&D SAMPLE

APPLICANT: Qualcomm Atheros, Inc.

TESTED: Sep. 13, 2011 to Jan. 18, 2012

STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003
ANSI C63.10-2009
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)

The above equipment (Model: AR5B22) 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, **DATE:** Jan. 19, 2012
(Midoli Peng, Specialist)

APPROVED BY : May Chen, **DATE:** Jan. 19, 2012
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz, 2412~2462MHz Band

APPLIED STANDARD: FCC Part 15, Subpart C ; RSS-210; RSS-Gen					
Standard Section			Test Type and Limit	Result	REMARK
RSS-210	RSS-Gen	FCC Part 15			
-	7.2.4	15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -11.70dB at 0.185MHz
A8.2(a)	4.6	15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
A8.4(4)	4.8	15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
A8.5	4.9	15.247(d)	Transmitter Radiated Emissions FCC Limit: Table 15.209 RSS-Gen Limit: Table 5, 6	PASS	Meet the requirement of limit Minimum passing margin is -0.5dB at 2390.0MHz
-	6.1	-	Receiver Radiated Emissions RSS-Gen Limit: Table 2	PASS	Meet the requirement of limit Minimum passing margin is -2.6dB at 199.93MHz
A8.2(b)	-	15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
A8.5	-	15.247(d)	Conducted Out-Band Emission Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit
	7.1.4	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 ; RSS-210; RSS-Gen					
Standard Section			Test Type and Limit	Result	REMARK
RSS-210	RSS-Gen	FCC Part 15			
-	7.2.4	15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -11.76dB at 0.185MHz
A8.2(a)	4.6	15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
A8.4(4)	4.8	15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
A8.5	4.9	15.247(d)	Transmitter Radiated Emissions FCC Limit: Table 15.209 RSS-Gen Limit: Table 5, 6	PASS	Meet the requirement of limit Minimum passing margin is -1.1dB at 11650.0MHz
-	6.1	-	Receiver Radiated Emissions RSS-Gen Limit: Table 2	PASS	Meet the requirement of limit Minimum passing margin is -1.3dB at 902.18MHz
A8.2(b)	-	15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
A8.5	-	15.247(d)	Conducted Out-Band Emission Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit
	7.1.4	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 "RF110907E02-2 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. (RF110907E02-1 R1).

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)	3.89 dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (18GHz -40GHz)	2.56 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
MODEL NO.	AR5B22
FCC ID	PPD-AR5B22
IC	4104A-AR5B22
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
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
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
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) For 15.247(5GHz) 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)

MAXIMUM OUTPUT POWER	For 15.407 802.11a: 96.9mW 802.11n (20MHz): 72.2mW 802.11n (40MHz): 62.7mW For 15.247(2.4GHz) 802.11b: 179.0mW 802.11g: 478.6mW 802.11n (20MHz): 470.0mW 802.11n (40MHz): 310.5mW For 15.247(5GHz) 802.11a: 205.1mW 802.11n (20MHz): 218.0mW 802.11n (40MHz): 214.4mW
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 "RF110907E02-2 R1">
- 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	78	FHSS	8DPSK
5 GHz (802.11n (20MHz)) + Bluetooth	149 to 165	165	OFDM	BPSK
	0 to 78	78	FHSS	8DPSK

4. 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.

5. For radiated : The EUT's antenna was pre-tested under the following modes:

Test Mode	Description
Mode A	X-Y axis
Mode B	Y-Z axis
Mode C	X-Z axis

From the above modes, the worst case was found in **Mode A**. 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

There is one set of antenna provided to this 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		

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

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)
A	802.11 b		√
B	802.11 b	√	√
C	802.11 g		√
D	802.11 g	√	√
E	802.11 a		√
F	802.11 a	√	√
G	802.11n(20MHz)	√	√
H	802.11n(40MHz)	√	√
COMBINATION MODE	OPERATION MODE	RX CHAIN(0)	RX CHAIN(1)
I	Receiver	√	√

Note: 1. The output power setting for each chain is different between 1x1 and 2x2 mode.
2. The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

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)	COMBINATION MODE
802.11g	1 to 11	6	OFDM	BPSK	6	C
For 5 GHz 802.11n (20MHz)	149 to 165	165	OFDM	BPSK	6.5	G

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 receiving mode had show equal or better than Tx mode during the pre-scan and hence the Tx mode data is re-used for Receiving-mode worst-case data.
- ☒ 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)	COMBINATION MODE
802.11g	1 to 11	6	OFDM	BPSK	6	C
For 5 GHz 802.11n (20MHz)	149 to 165	165	OFDM	BPSK	6.5	G

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 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)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	B
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	C
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	G
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13.5	H
For 2.4 GHz Receiver	1 to 11	1, 6, 11	-	-	-	I
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6	E, F
For 5 GHz 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5	G
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5	H
For 5 GHz Receiver	149 to 165	149, 157, 165	-	-	-	I

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)	COMBINATION MODE
802.11b	1 to 11	1, 11	DSSS	DBPSK	1	A, B
802.11g	1 to 11	1, 11	OFDM	BPSK	6	C, D
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	G
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	H
802.11a	149 to 165	149, 165	OFDM	BPSK	6	E, F
For 5 GHz 802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	6.5	G
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5	H

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)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A, B
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	C, D
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	G
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	H
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6	E, F
For 5 GHz 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5	G
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5	H

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	27deg. C, 62%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	23deg. C, 69%RH	120Vac, 60Hz	Evan Huang
RE ³ 1G	24deg. C, 64%RH 25deg. C, 70%RH 17deg. C, 61%RH	120Vac, 60Hz	Amos Chuang Evan Huang Nick Chang
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

ANSI C63.10-2009

Canada RSS-210 Issue 8 (2010-12)

Canada RSS-Gen Issue 3 (2010-12)

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

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.

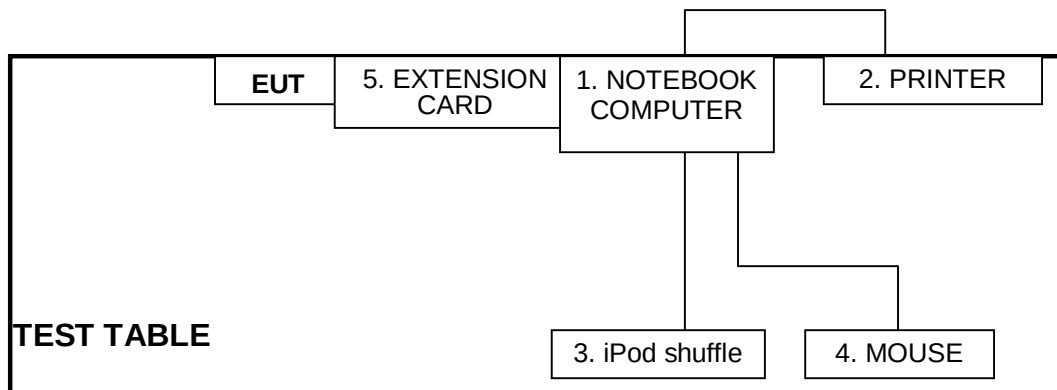
For conducted emission test					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP21L	CN-0GD366-70166-5B3-09ZX	QDS-BRCM1016
2	PRINTER	EPSON	LQ-300+II	G88Y074083	FCC DoC
3	iPod shuffle	Apple	MC749TA/A	CC4DN25WDFDM	FCC DoC
4	MOUSE	DELL	MOC5UO	I14066PK	FCC DoC
5	extension card	Atheros	NA	NA	NA
For other test items					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5C A-0448	PIW632500516610
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(0.1m)
4	USB cable(1.8m)
5	NA
For other test items	
No.	Signal cable description
1	NA
2	NA

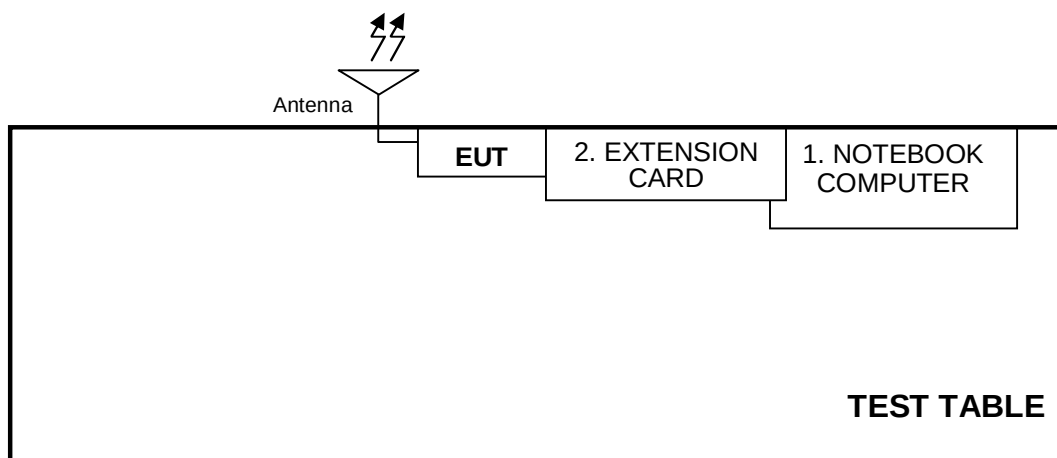
Note: The power cords of the above support units were unshielded (1.8m).

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 (dBμV)	
0.15-0.5 0.5-5 5-30	Quasi-peak	Average
	66 to 56	56 to 46
	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.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

Test date: Oct. 11, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2011	Mar. 08, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 03, 2010	Nov. 02, 2011
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Nov. 03, 2010	Nov. 02, 2011
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. C.
3. The VCCI Con C Registration No. is C-3611.

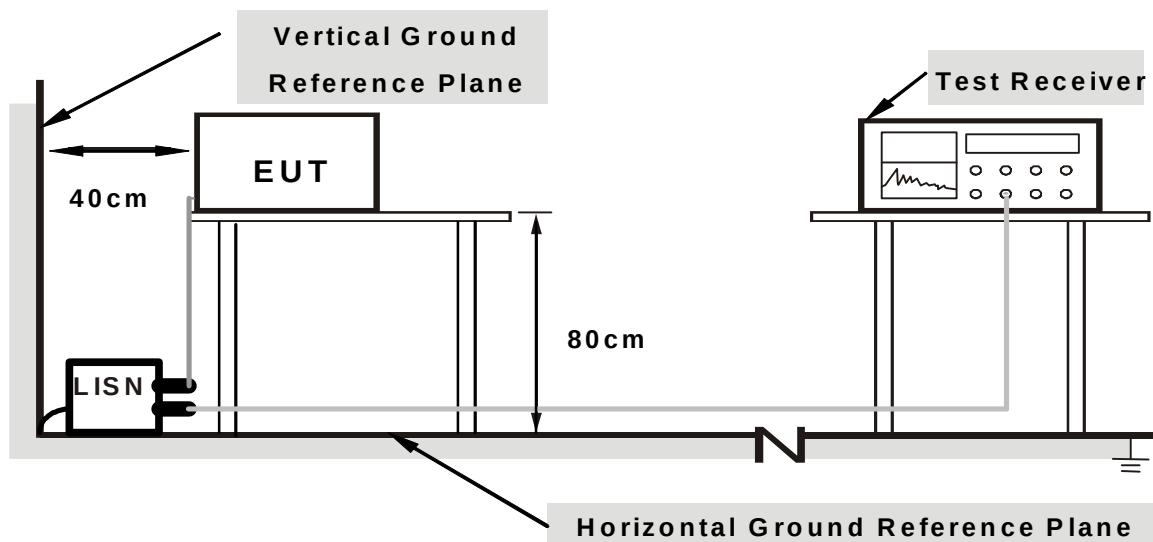
4.1.3 TEST PROCEDURES

- 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

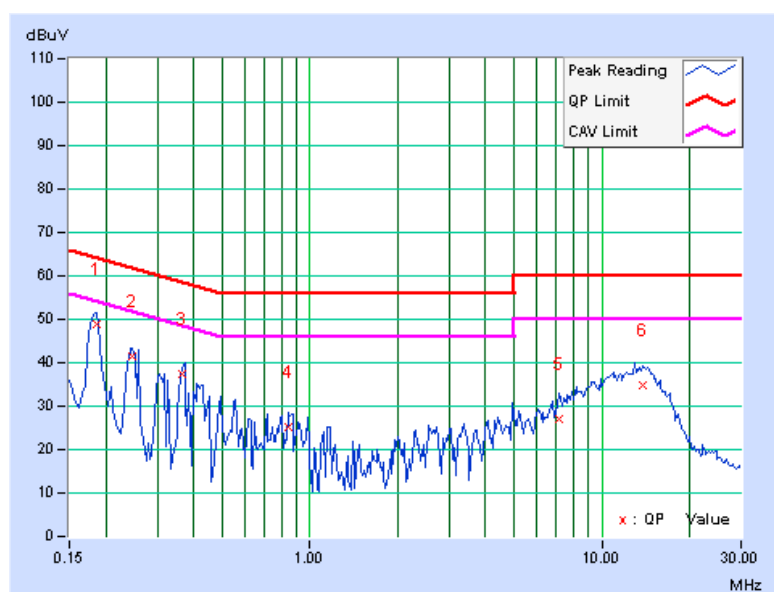
1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “artgui.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

PHASE	Line (L)	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	0.185	0.10	48.71	42.45	48.81	42.55	64.25	54.25	-15.44	-11.70
2	0.245	0.10	41.26	33.89	41.36	33.99	61.93	51.93	-20.56	-17.93
3	0.363	0.11	37.39	33.91	37.50	34.02	58.66	48.66	-21.16	-14.64
4	0.849	0.14	25.17	22.56	25.31	22.70	56.00	46.00	-30.69	-23.30
5	7.125	0.44	26.73	17.25	27.17	17.69	60.00	50.00	-32.83	-32.31
6	13.863	0.64	34.14	27.58	34.78	28.22	60.00	50.00	-25.22	-21.78

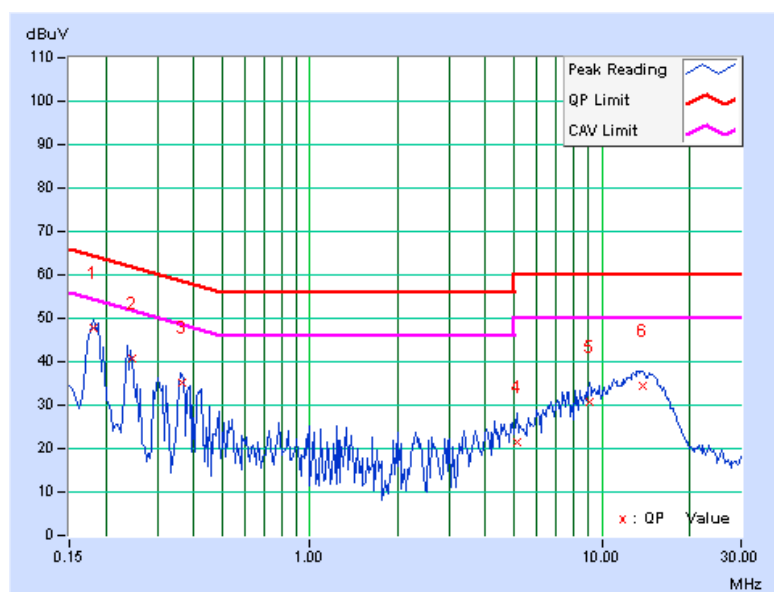
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + 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	0.181	0.08	47.73	41.48	47.81	41.56	64.43	54.43	-16.61	-12.86
2	0.246	0.09	40.79	34.56	40.88	34.65	61.90	51.90	-21.02	-17.25
3	0.367	0.11	34.91	31.72	35.02	31.83	58.57	48.57	-23.55	-16.74
4	5.148	0.27	21.38	8.91	21.65	9.18	60.00	50.00	-38.35	-40.82
5	9.078	0.38	30.25	21.38	30.63	21.76	60.00	50.00	-29.37	-28.24
6	13.883	0.51	33.89	26.98	34.40	27.49	60.00	50.00	-25.60	-22.51

- 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.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

For transmitter part:

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209(RSS-Gen table 5, 6) as following:

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.
4. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.

For receiver part:

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

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. 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.

4.2.2 TEST INSTRUMENTS

Below 1GHz<Test date: Sep. 13, 2011>

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
LIG NEX1 Test Receiver	ER-265	L09068005	Oct. 25, 2010	Oct. 24, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 28, 2011	Feb. 27, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 16, 2010	Nov. 15, 2011
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 22, 2010	Nov. 21, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 28, 2010	Dec. 27, 2011
RF Cable	NA	CHHCAB_001	Oct. 08, 2010	Oct. 07, 2011
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.



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Above 1GHz<11g & 11n - Test date: Oct. 17, 2011>:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 16, 2010	Nov. 15, 2011
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 22, 2010	Nov. 21, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 27, 2010	Dec. 26, 2011
RF Cable	NA	CHGCAB_001	Oct. 07, 2011	Oct. 06, 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. G.

4. The FCC Site Registration No. is 966073.

5. The VCCI Site Registration No. is G-137.

6. The CANADA Site Registration No. is IC 7450H-2.

**A D T****Above 1GHz<11b - Test date: Jan. 18, 2012>:**

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. 28, 2011	Feb. 27, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 14, 2011	Apr. 13, 2012
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.

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.

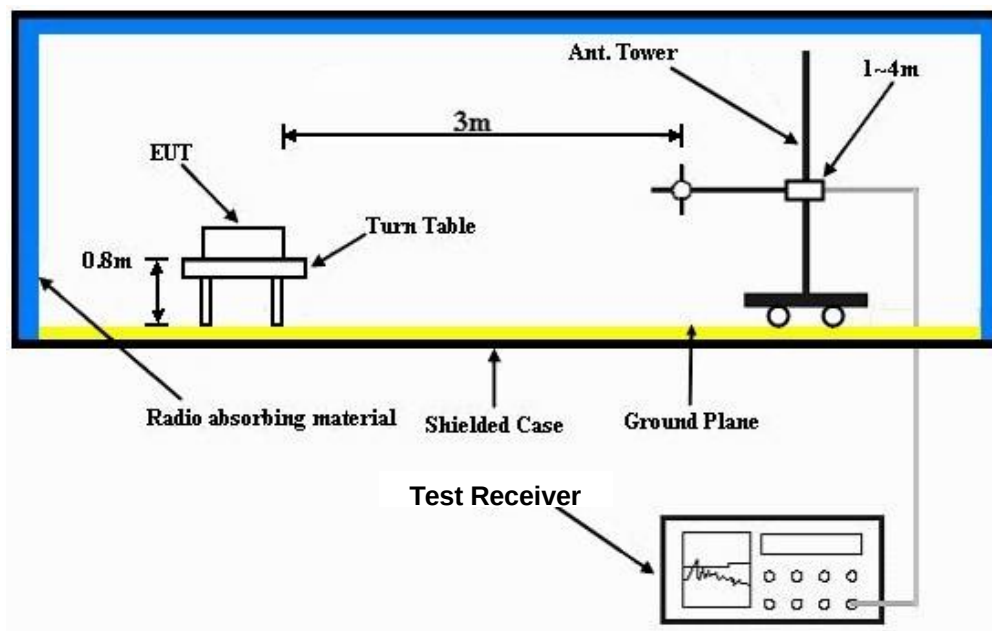
NOTE:

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 1MHz and video bandwidth is 3MHz for Peak detection(PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 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 (FOR TRANSMITTER PART)

BELOW 1GHz WORST-CASE DATA: Single chain - 802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH	TESTED BY	Even Huang

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	99.51	40.2 QP	43.5	-3.3	1.75 H	360	30.90	9.26
2	199.93	41.0 QP	43.5	-2.6	1.25 H	358	29.73	11.22
3	300.00	37.0 QP	46.0	-9.0	1.00 H	359	21.79	15.18
4	497.65	36.5 QP	46.0	-9.5	1.75 H	233	16.99	19.48
5	600.44	41.0 QP	46.0	-5.0	1.25 H	267	19.43	21.60
6	799.75	37.4 QP	46.0	-8.6	1.00 H	303	12.95	24.47
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	35.33	35.1 QP	40.0	-4.9	1.00 V	288	21.72	13.37
2	99.99	31.9 QP	43.5	-11.6	2.00 V	209	22.63	9.31
3	300.00	34.9 QP	46.0	-11.1	2.00 V	251	19.75	15.18
4	497.53	34.2 QP	46.0	-11.8	1.00 V	233	14.69	19.48
5	901.24	40.6 QP	46.0	-5.4	1.50 V	64	14.77	25.80
6	939.01	41.5 QP	46.0	-4.5	1.25 V	121	15.24	26.24

- 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 WORST-CASE DATA

802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 61%RH	TESTED BY	Nick Chang

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	2387.20	61.0 PK	74.0	-13.0	1.34 H	90	29.12	31.88
2	2387.20	52.8 AV	54.0	-1.2	1.34 H	90	20.92	31.88
3	*2412.00	107.5 PK			1.32 H	119	75.55	31.95
4	*2412.00	104.7 AV			1.32 H	119	72.75	31.95
5	4824.00	55.9 PK	74.0	-18.1	1.06 H	87	14.68	41.22
6	4824.00	52.8 AV	54.0	-1.2	1.06 H	87	11.58	41.22
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.27	60.2 PK	74.0	-13.8	1.30 V	160	28.33	31.87
2	2386.27	50.6 AV	54.0	-3.4	1.30 V	160	18.73	31.87
3	*2412.00	104.2 PK			1.69 V	171	72.25	31.95
4	*2412.00	102.0 AV			1.69 V	171	70.05	31.95
5	4824.00	56.1 PK	74.0	-17.9	1.17 V	12	14.88	41.22
6	4824.00	52.8 AV	54.0	-1.2	1.17 V	12	11.58	41.22

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 61%RH	TESTED BY	Nick Chang

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	109.7 PK			1.31 H	91	77.66	32.04
2	*2437.00	107.6 AV			1.31 H	91	75.56	32.04
3	4874.00	56.4 PK	74.0	-17.6	1.26 H	73	15.04	41.36
4	4874.00	52.8 AV	54.0	-1.2	1.26 H	73	11.44	41.36
5	7311.00	58.5 PK	74.0	-15.5	1.66 H	60	12.83	45.67
6	7311.00	52.3 AV	54.0	-1.7	1.66 H	60	6.63	45.67
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	104.8 PK			1.25 V	153	72.76	32.04
2	*2437.00	102.4 AV			1.25 V	153	70.36	32.04
3	4874.00	56.2 PK	74.0	-17.8	1.19 V	15	14.84	41.36
4	4874.00	52.8 AV	54.0	-1.2	1.19 V	15	11.44	41.36
5	7311.00	57.9 PK	74.0	-16.1	1.64 V	72	12.23	45.67
6	7311.00	51.9 AV	54.0	-2.1	1.64 V	72	6.23	45.67

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



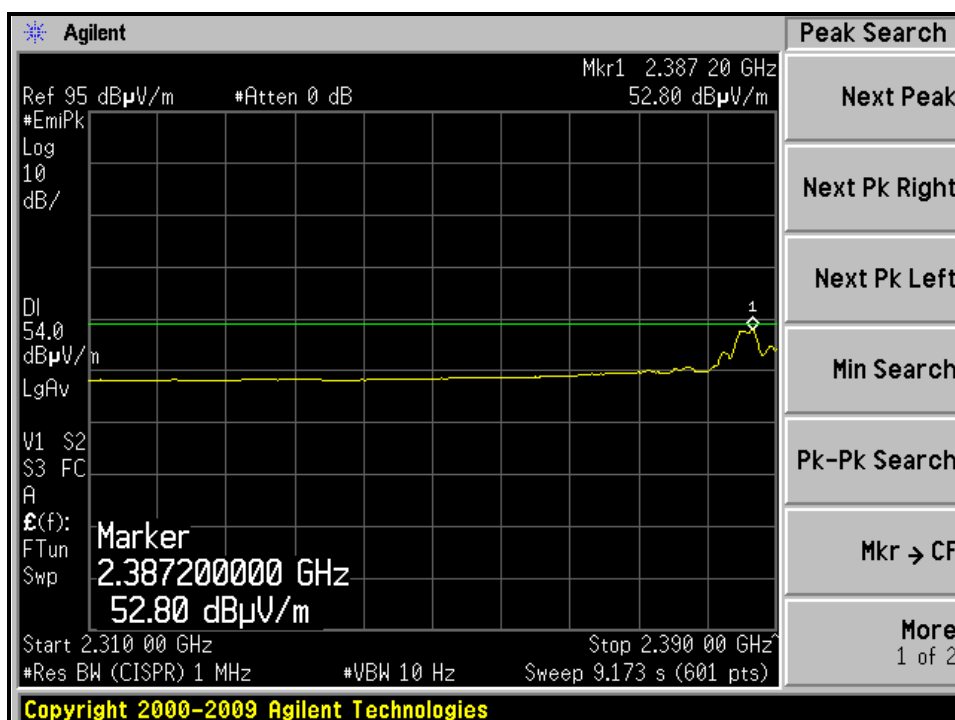
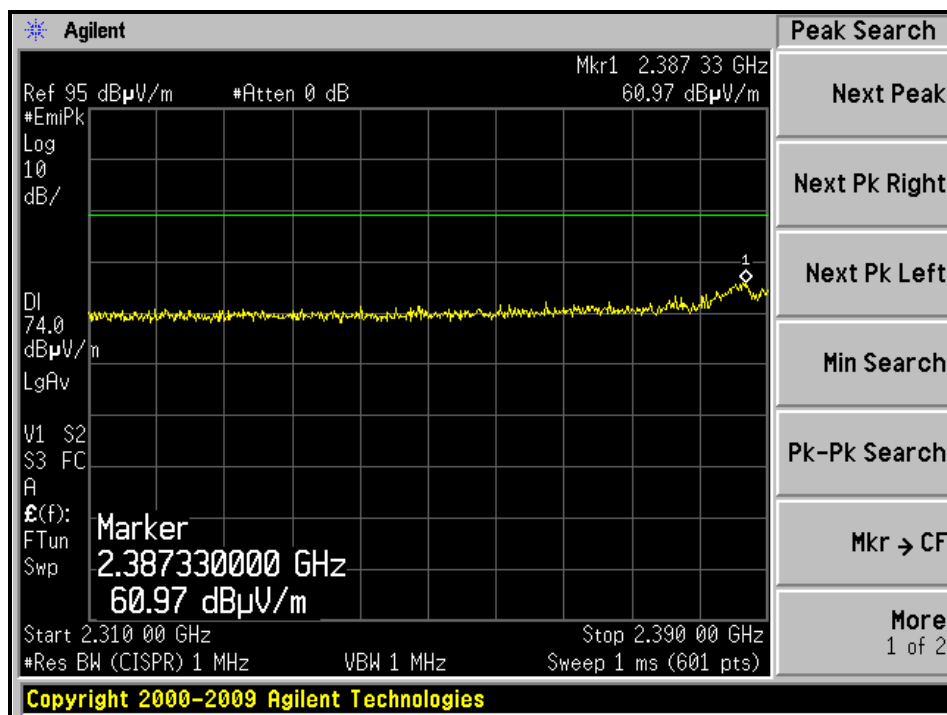
A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 61%RH	TESTED BY	Nick Chang

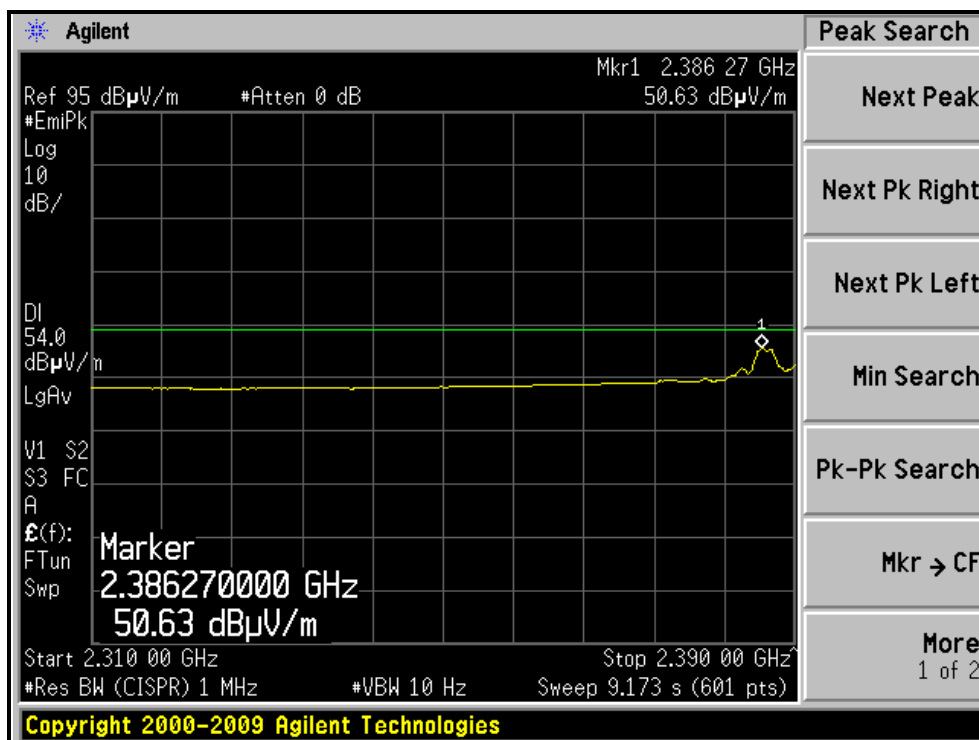
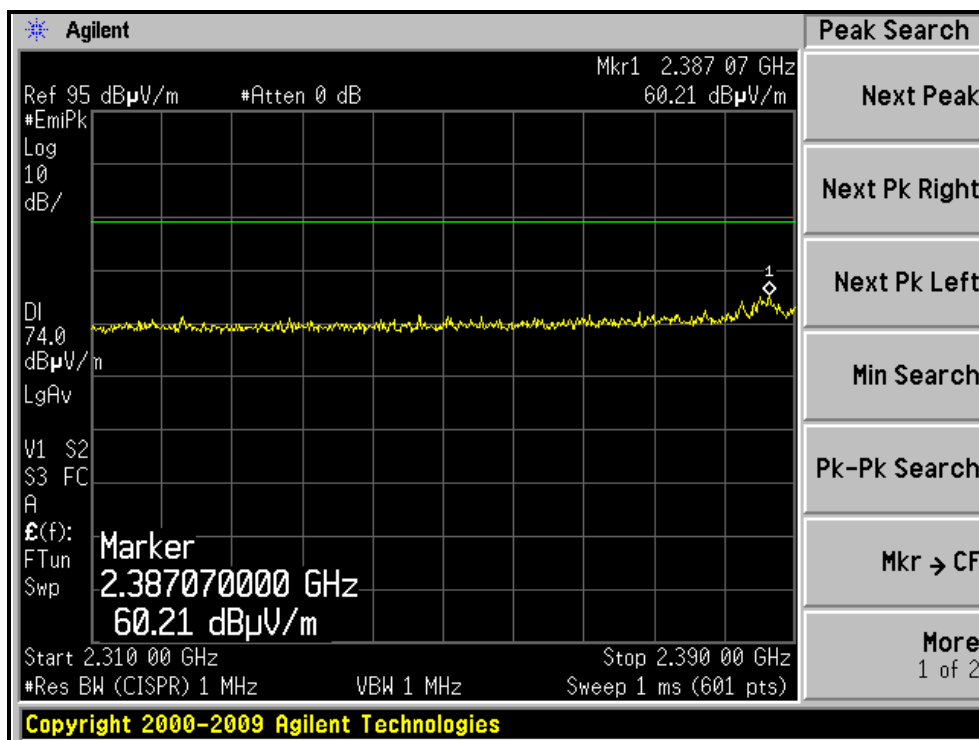
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.1 PK			1.31 H	91	76.98	32.12
2	*2462.00	107.0 AV			1.31 H	91	74.88	32.12
3	2498.37	59.7 PK	74.0	-14.3	1.31 H	90	27.46	32.24
4	2498.37	47.5 AV	54.0	-6.5	1.31 H	90	15.26	32.24
5	4924.00	55.3 PK	74.0	-18.7	1.27 H	73	13.82	41.48
6	4924.00	51.6 AV	54.0	-2.4	1.27 H	73	10.12	41.48
7	7386.00	57.8 PK	74.0	-16.2	1.56 H	60	11.89	45.91
8	7386.00	50.8 AV	54.0	-3.2	1.56 H	60	4.89	45.91
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	104.1 PK			1.25 V	153	71.98	32.12
2	*2462.00	101.8 AV			1.25 V	153	69.68	32.12
3	2498.43	58.2 PK	74.0	-15.8	1.24 V	150	25.96	32.24
4	2498.43	45.2 AV	54.0	-8.8	1.24 V	150	12.96	32.24
5	4924.00	56.8 PK	74.0	-17.2	1.29 V	12	15.32	41.48
6	4924.00	53.0 AV	54.0	-1.0	1.29 V	12	11.52	41.48
7	7386.00	57.6 PK	74.0	-16.4	1.65 V	63	11.69	45.91
8	7386.00	49.0 AV	54.0	-5.0	1.65 V	63	3.09	45.91

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.

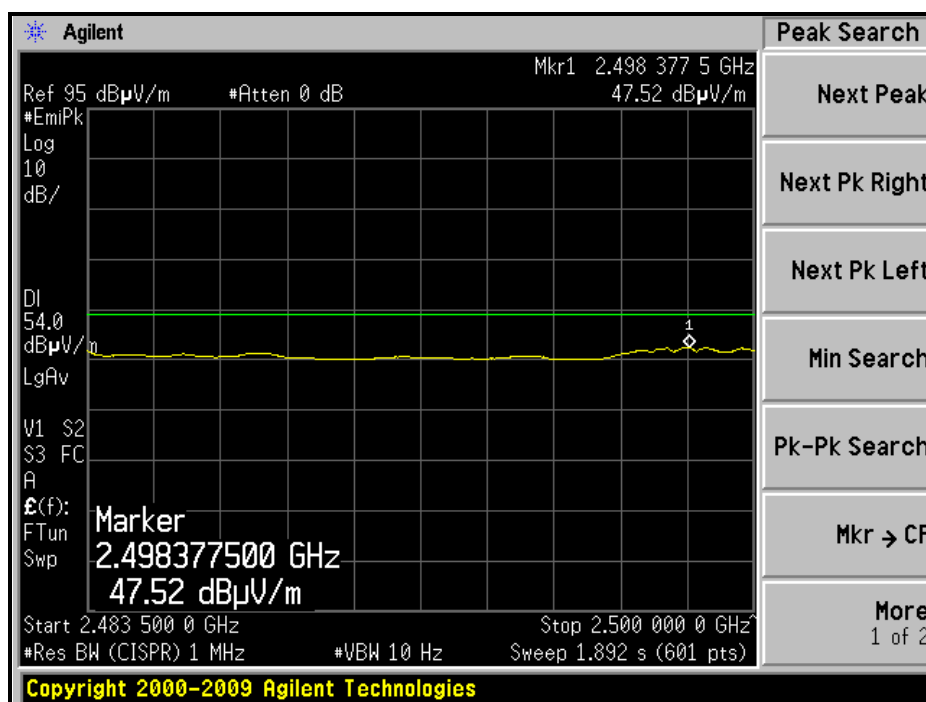
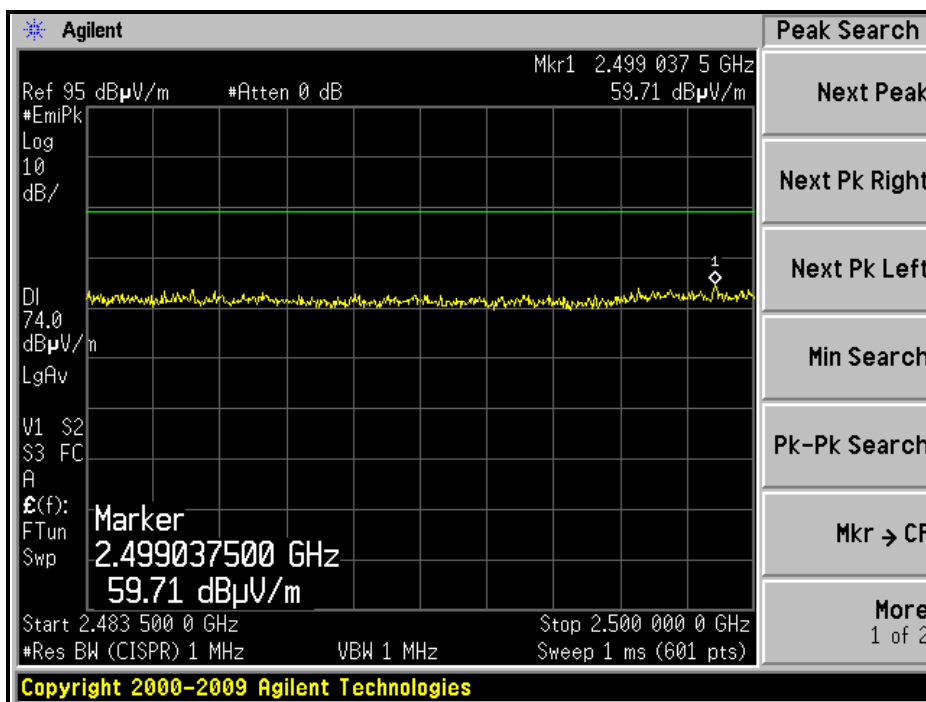
RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL)



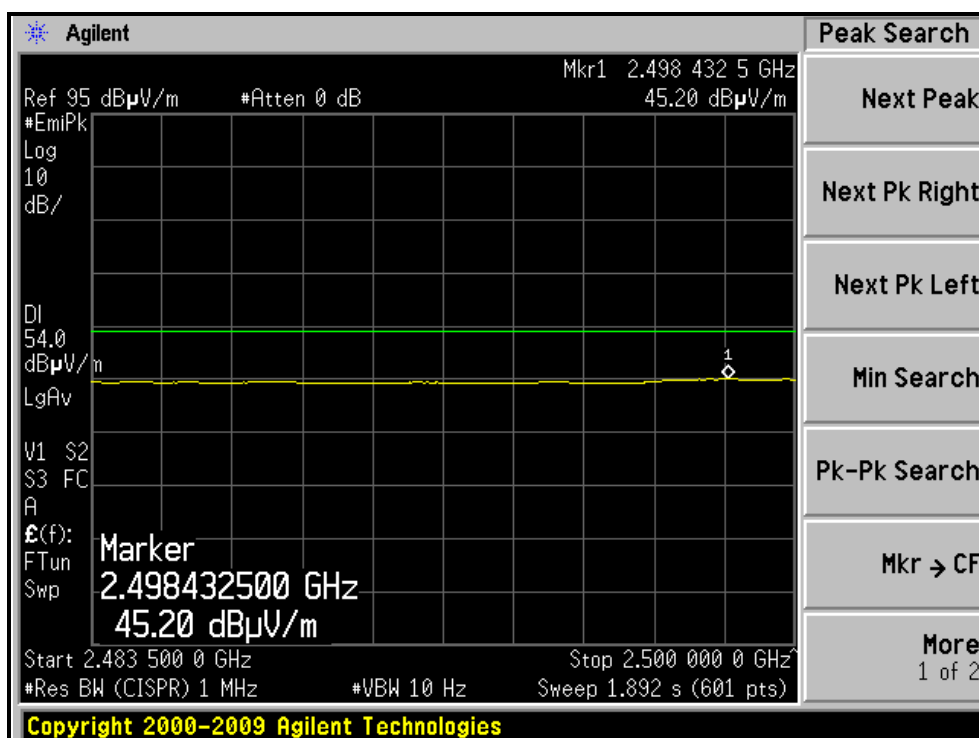
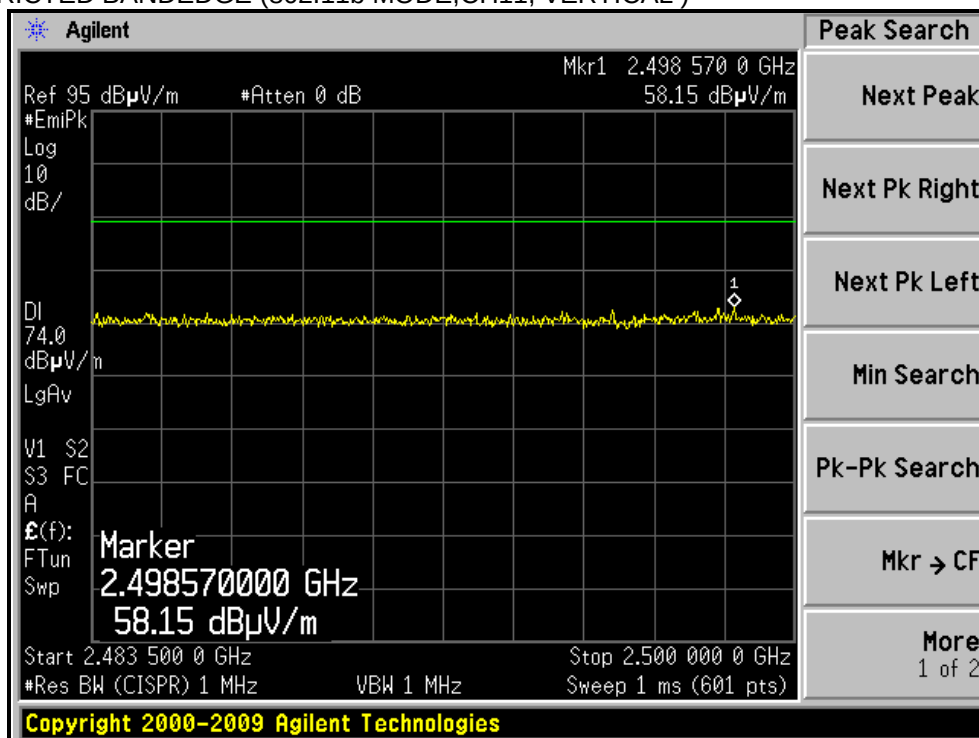
RESTRICTED BANDEDGE (802.11b MODE,CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL)



802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

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	69.1 PK	74.0	-4.9	1.07 H	331	37.89	31.21
2	2390.00	53.4 AV	54.0	-0.6	1.07 H	331	22.19	31.21
3	*2412.00	106.4 PK			1.00 H	331	75.13	31.27
4	*2412.00	95.5 AV			1.00 H	331	64.23	31.27
5	4824.00	51.9 PK	74.0	-22.1	1.00 H	78	12.48	39.42
6	4824.00	44.6 AV	54.0	-9.4	1.00 H	78	5.18	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	69.5 PK	74.0	-4.5	1.45 V	184	38.29	31.21
2	2390.00	53.2 AV	54.0	-0.8	1.45 V	184	21.99	31.21
3	*2412.00	105.4 PK			1.11 V	11	74.13	31.27
4	*2412.00	95.0 AV			1.11 V	11	63.73	31.27
5	4824.00	52.1 PK	74.0	-21.9	1.00 V	50	12.68	39.42
6	4824.00	47.3 AV	54.0	-6.7	1.00 V	50	7.88	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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

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	70.1 PK	74.0	-3.9	1.20 H	135	38.89	31.21
2	2390.00	49.5 AV	54.0	-4.5	1.20 H	135	18.29	31.21
3	*2437.00	115.9 PK			1.29 H	256	84.56	31.34
4	*2437.00	104.2 AV			1.29 H	256	72.86	31.34
5	2483.50	69.1 PK	74.0	-4.9	1.14 H	129	37.64	31.46
6	2483.50	48.4 AV	54.0	-5.6	1.14 H	129	16.94	31.46
7	4874.00	51.9 PK	74.0	-22.1	1.00 H	80	12.28	39.62
8	4874.00	45.5 AV	54.0	-8.5	1.00 H	80	5.88	39.62
9	7311.00	51.6 PK	74.0	-22.4	1.58 H	130	7.50	44.10
10	7311.00	43.7 AV	54.0	-10.3	1.58 H	130	-0.40	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	2390.00	64.4 PK	74.0	-9.6	1.00 V	212	33.19	31.21
2	2390.00	49.3 AV	54.0	-4.7	1.00 V	212	18.09	31.21
3	*2437.00	112.1 PK			1.37 V	185	80.76	31.34
4	*2437.00	100.3 AV			1.37 V	185	68.96	31.34
5	2483.50	70.0 PK	74.0	-4.0	1.34 V	189	38.54	31.46
6	2483.50	48.5 AV	54.0	-5.5	1.34 V	189	17.04	31.46
7	4874.00	52.0 PK	74.0	-22.0	1.04 V	51	12.38	39.62
8	4874.00	47.5 AV	54.0	-6.5	1.04 V	51	7.88	39.62
9	7311.00	51.8 PK	74.0	-22.2	1.05 V	33	7.70	44.10
10	7311.00	46.6 AV	54.0	-7.4	1.05 V	33	2.50	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.



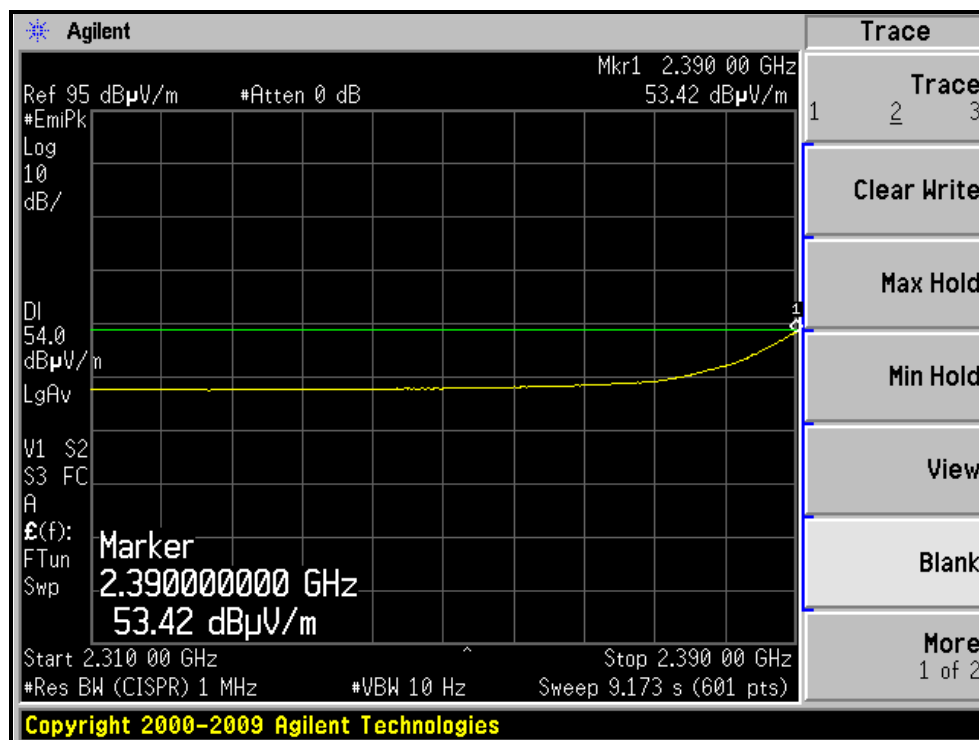
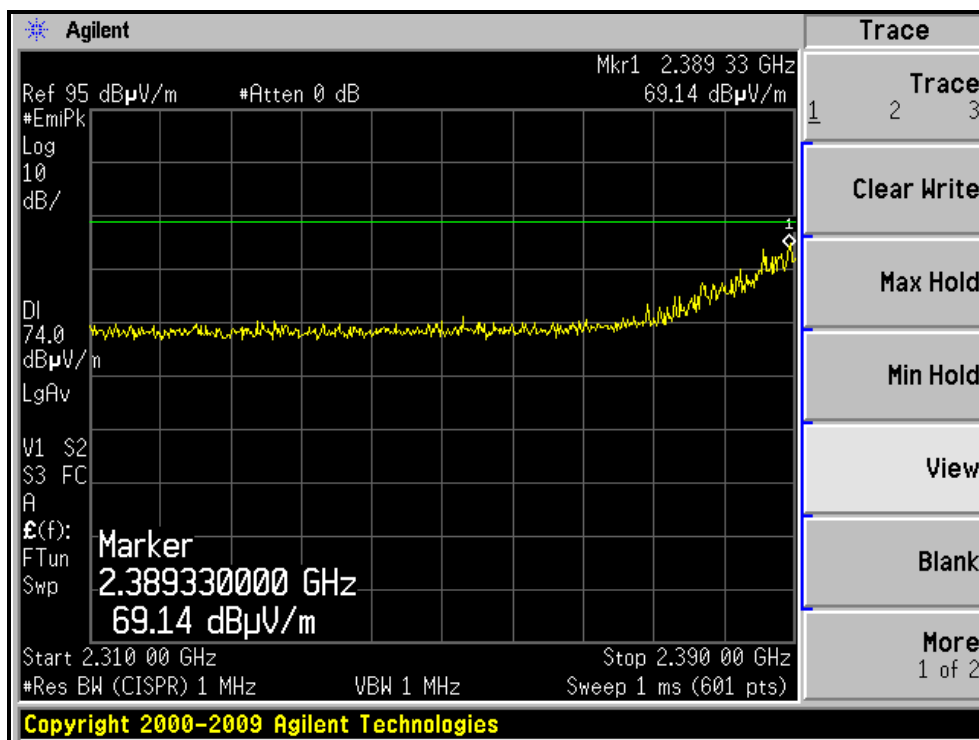
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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

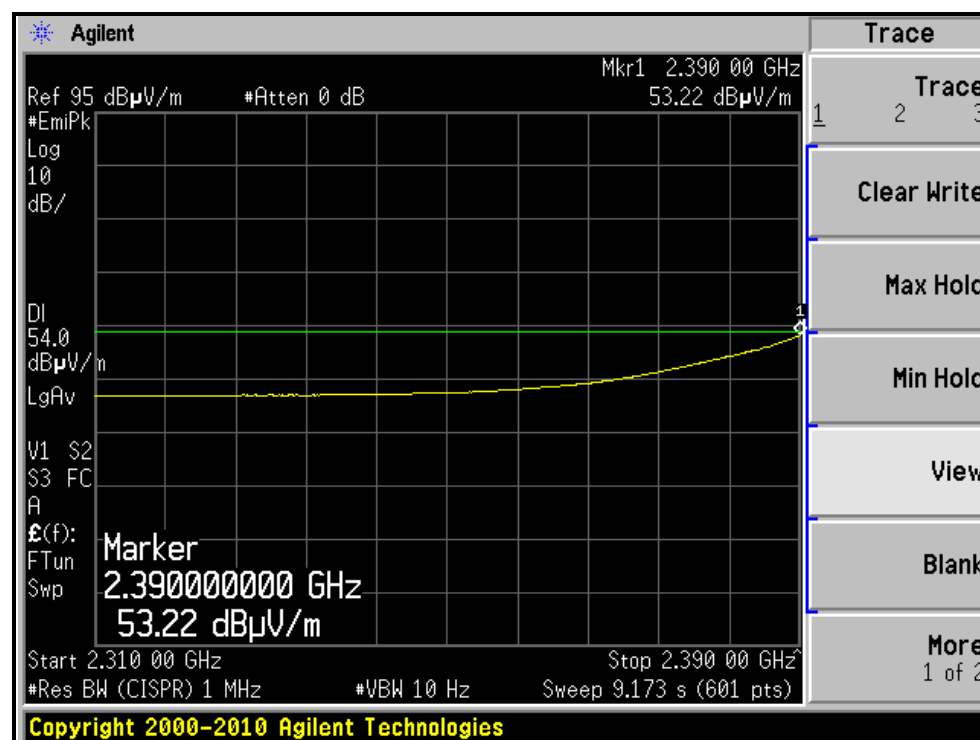
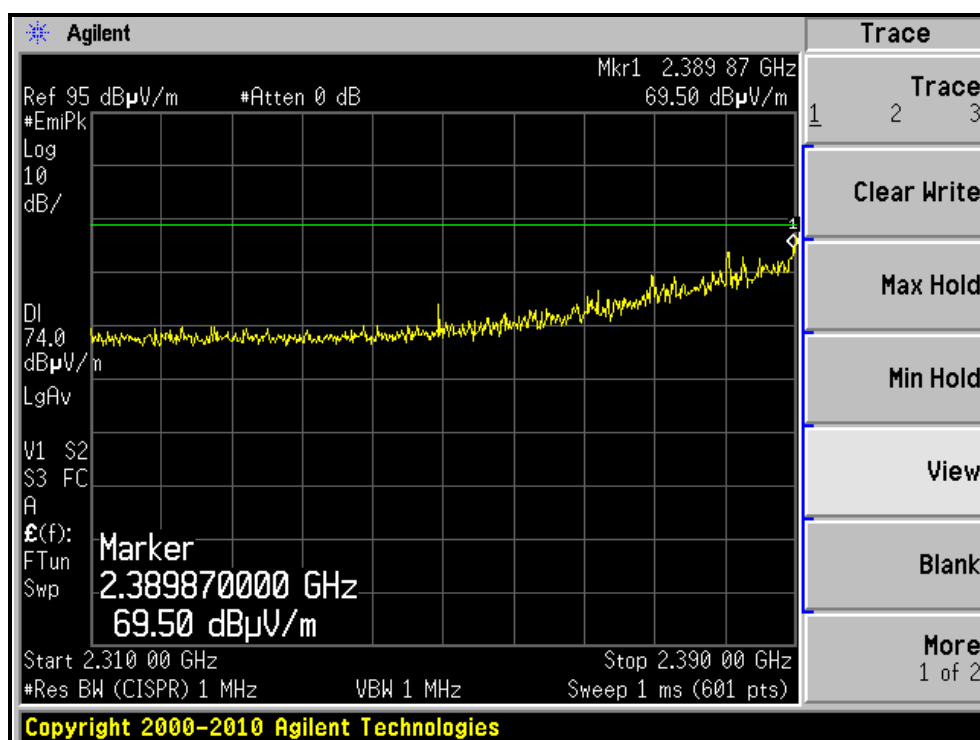
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NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.1 PK			1.05 H	324	74.70	31.40
2	*2462.00	95.2 AV			1.05 H	324	63.80	31.40
3	2483.50	73.2 PK	74.0	-0.8	1.00 H	324	41.74	31.46
4	2483.50	52.9 AV	54.0	-1.1	1.00 H	324	21.44	31.46
5	4924.00	51.8 PK	74.0	-22.2	1.00 H	69	11.98	39.82
6	4924.00	44.4 AV	54.0	-9.6	1.00 H	69	4.58	39.82
7	7386.00	51.3 PK	74.0	-22.7	1.57 H	127	7.12	44.18
8	7386.00	43.3 AV	54.0	-10.7	1.57 H	127	-0.88	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	105.4 PK			1.11 V	28	74.00	31.40
2	*2462.00	94.4 AV			1.11 V	28	63.00	31.40
3	2483.50	72.9 PK	74.0	-1.1	1.64 V	0	41.44	31.46
4	2483.50	53.4 AV	54.0	-0.6	1.64 V	0	21.94	31.46
5	4924.00	52.0 PK	74.0	-22.0	1.05 V	56	12.18	39.82
6	4924.00	47.3 AV	54.0	-6.7	1.05 V	56	7.48	39.82
7	7386.00	52.3 PK	74.0	-21.7	1.05 V	33	8.12	44.18
8	7386.00	45.8 AV	54.0	-8.2	1.05 V	33	1.62	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.

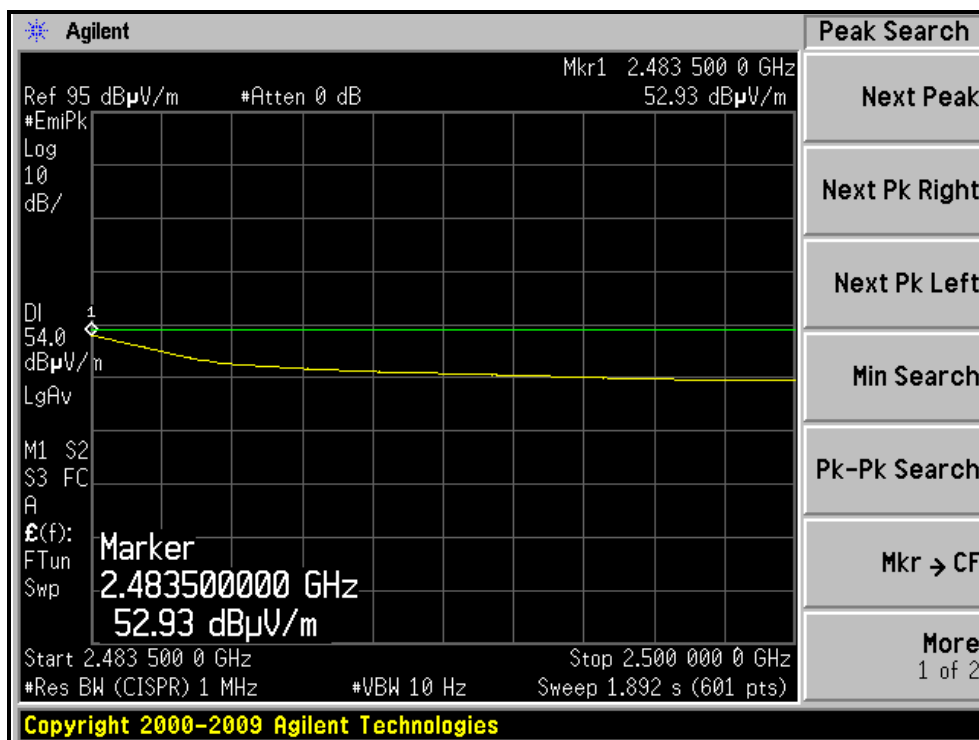
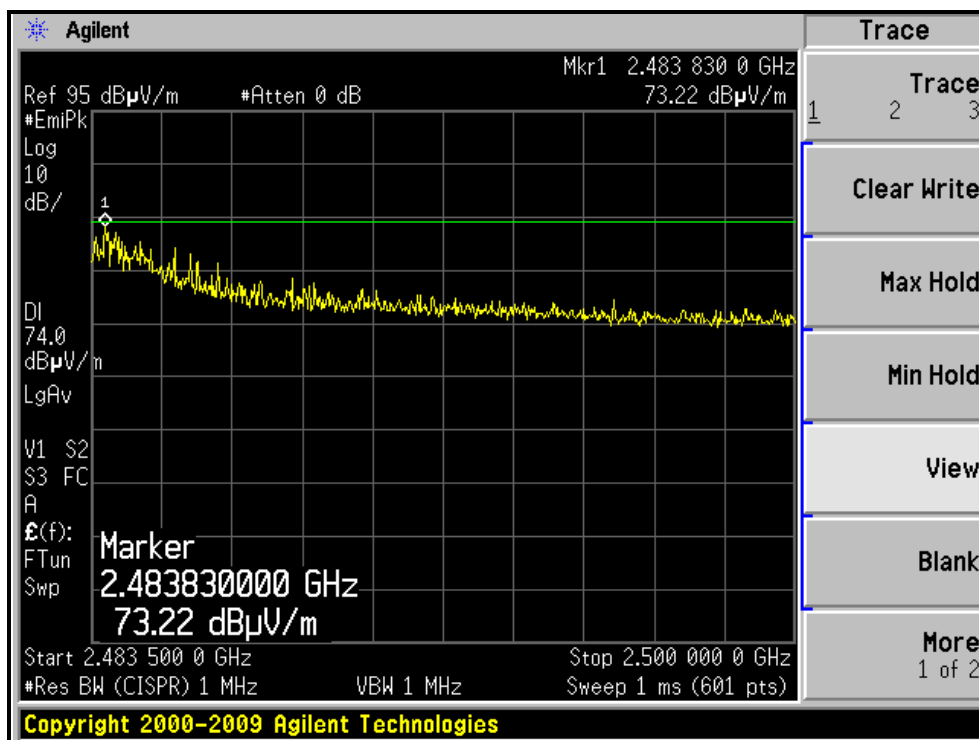
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)



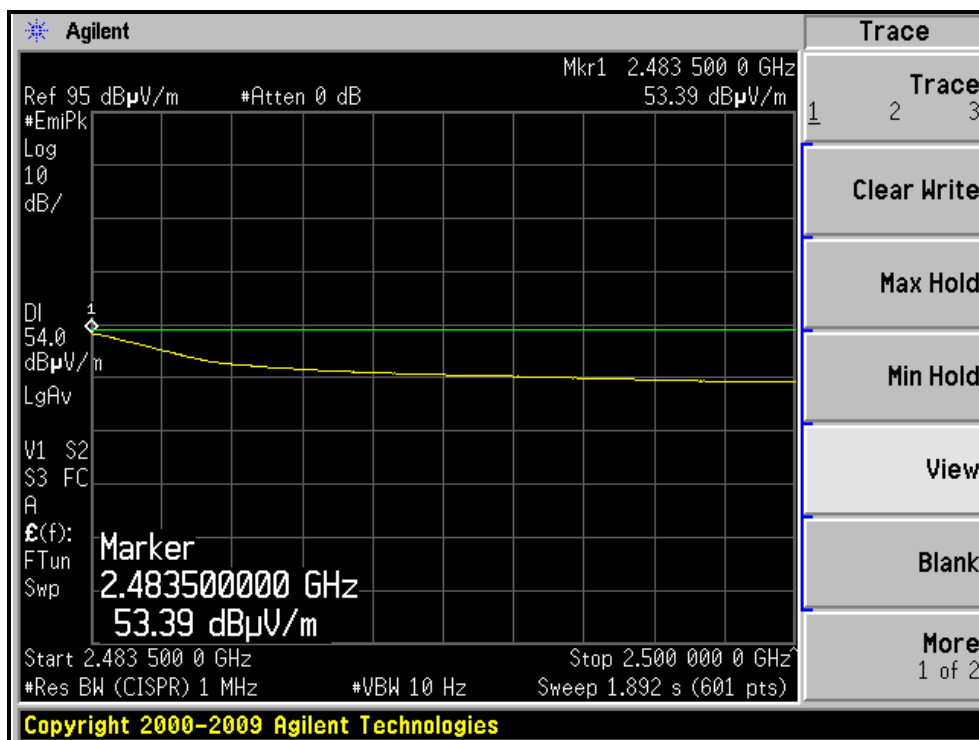
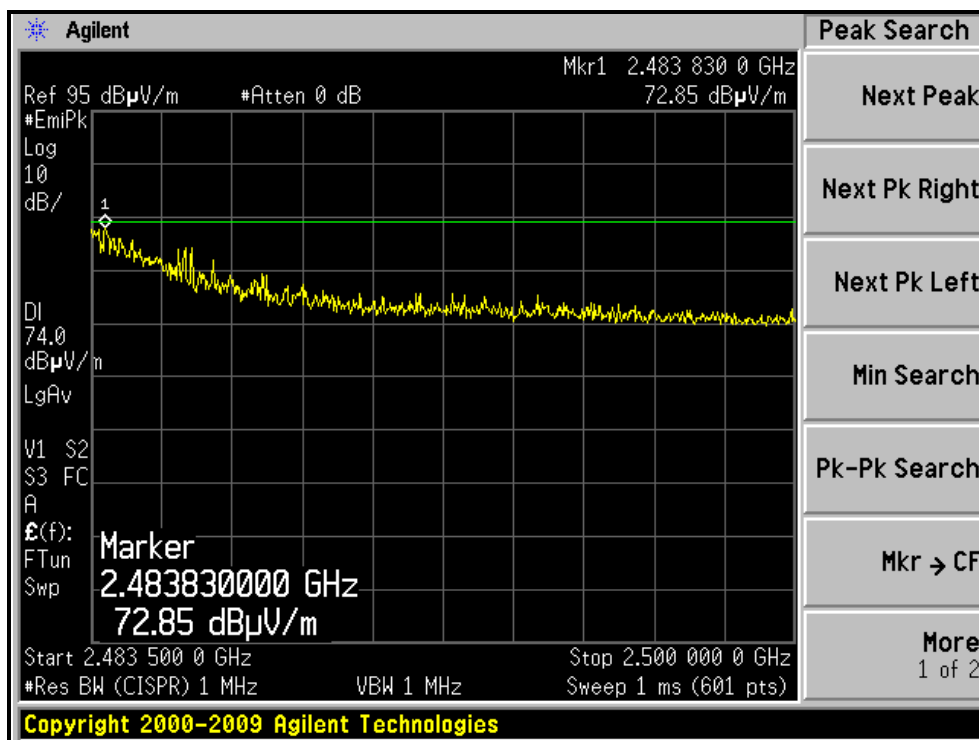
RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)



802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

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	70.1 PK	74.0	-3.9	1.33 H	75	38.89	31.21
2	2390.00	53.3 AV	54.0	-0.7	1.33 H	75	22.09	31.21
3	*2412.00	110.0 PK			1.36 H	86	78.73	31.27
4	*2412.00	99.3 AV			1.36 H	86	68.03	31.27
5	4824.00	58.1 PK	74.0	-15.9	1.00 H	68	18.68	39.42
6	4824.00	42.3 AV	54.0	-11.7	1.00 H	68	2.88	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	2390.00	66.1 PK	74.0	-7.9	1.22 V	215	34.89	31.21
2	2390.00	49.5 AV	54.0	-4.5	1.22 V	215	18.29	31.21
3	*2412.00	109.3 PK			1.00 V	183	78.03	31.27
4	*2412.00	98.0 AV			1.00 V	183	66.73	31.27
5	4824.00	56.2 PK	74.0	-17.8	1.05 V	60	16.78	39.42
6	4824.00	43.3 AV	54.0	-10.7	1.05 V	60	3.88	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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	116.9 PK			1.31 H	89	85.56	31.34
2	*2437.00	105.7 AV			1.31 H	89	74.36	31.34
3	2483.50	72.5 PK	74.0	-1.5	1.30 H	81	41.04	31.46
4	2483.50	48.9 AV	54.0	-5.1	1.30 H	81	17.44	31.46
5	4874.00	59.9 PK	74.0	-14.1	1.00 H	70	20.28	39.62
6	4874.00	44.8 AV	54.0	-9.2	1.00 H	70	5.18	39.62
7	7311.00	57.7 PK	74.0	-16.3	1.00 H	157	13.60	44.10
8	7311.00	44.7 AV	54.0	-9.3	1.00 H	157	0.60	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	114.8 PK			1.00 V	172	83.46	31.34
2	*2437.00	103.5 AV			1.00 V	172	72.16	31.34
3	2483.50	73.3 PK	74.0	-0.7	1.21 V	160	41.84	31.46
4	2483.50	53.3 AV	54.0	-0.7	1.21 V	160	21.84	31.46
5	4874.00	58.9 PK	74.0	-15.1	1.05 V	52	19.28	39.62
6	4874.00	47.1 AV	54.0	-6.9	1.05 V	52	7.48	39.62
7	7311.00	60.2 PK	74.0	-13.8	1.05 V	70	16.10	44.10
8	7311.00	47.1 AV	54.0	-6.9	1.05 V	70	3.00	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.



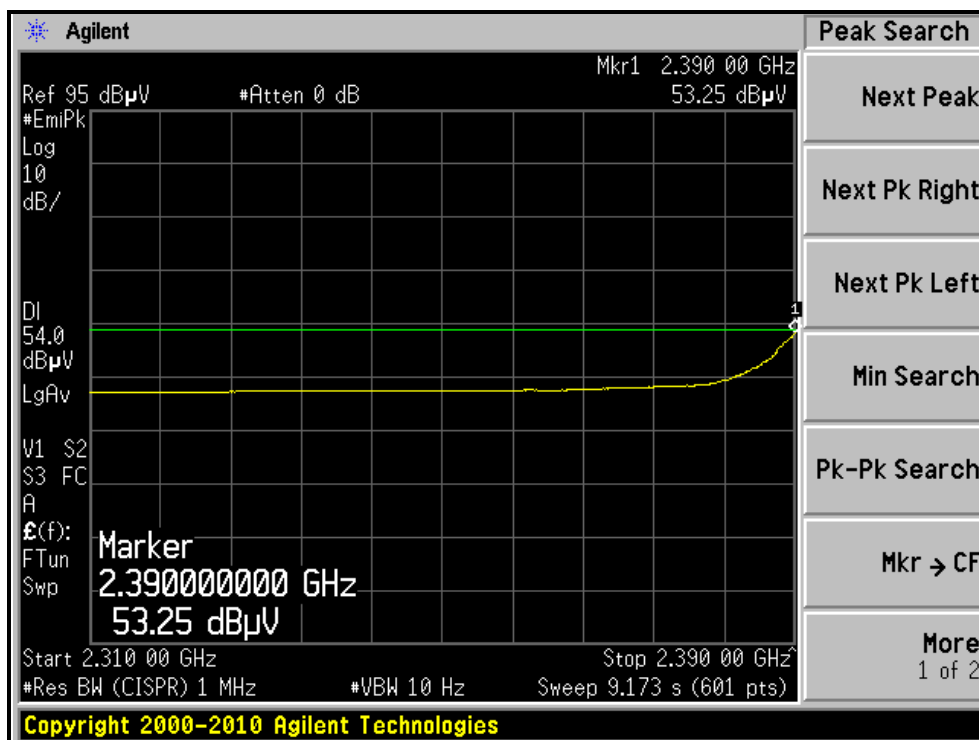
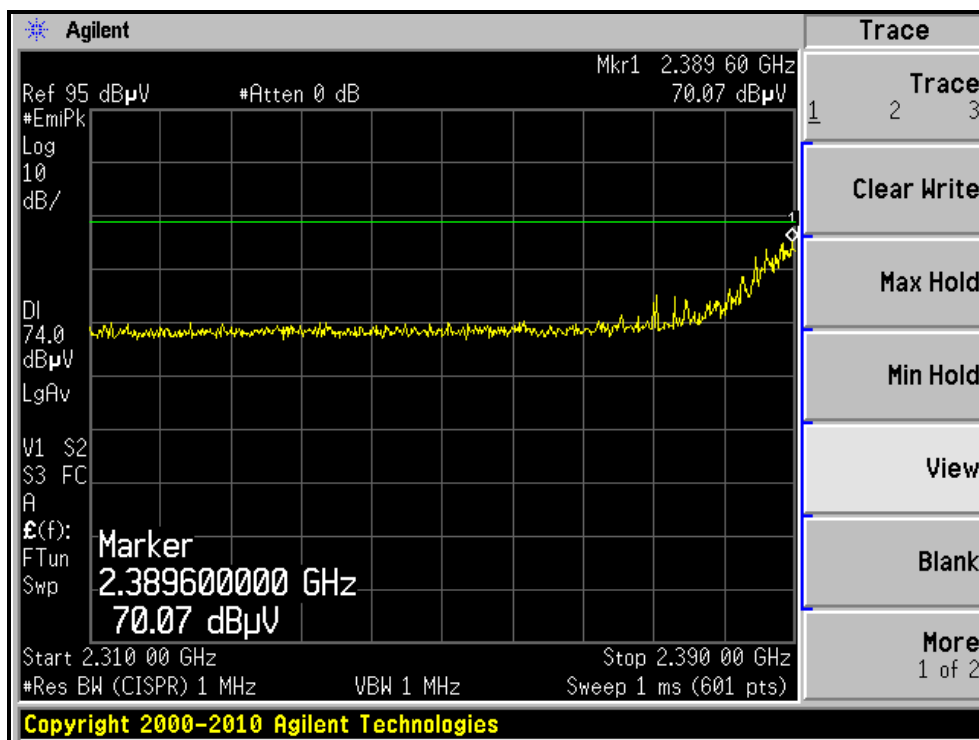
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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

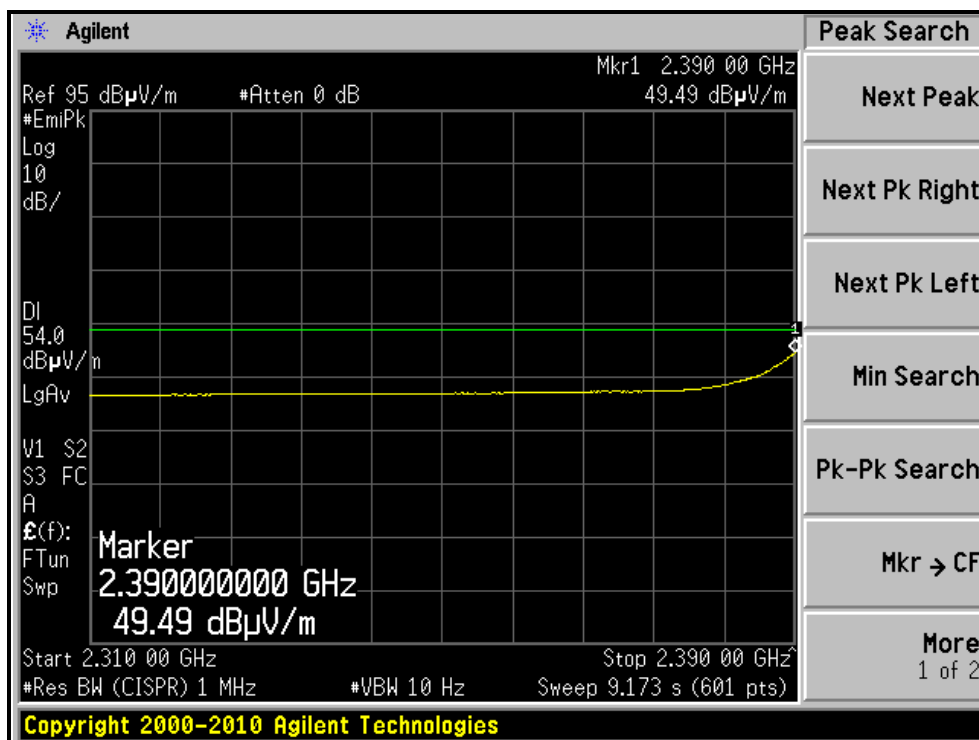
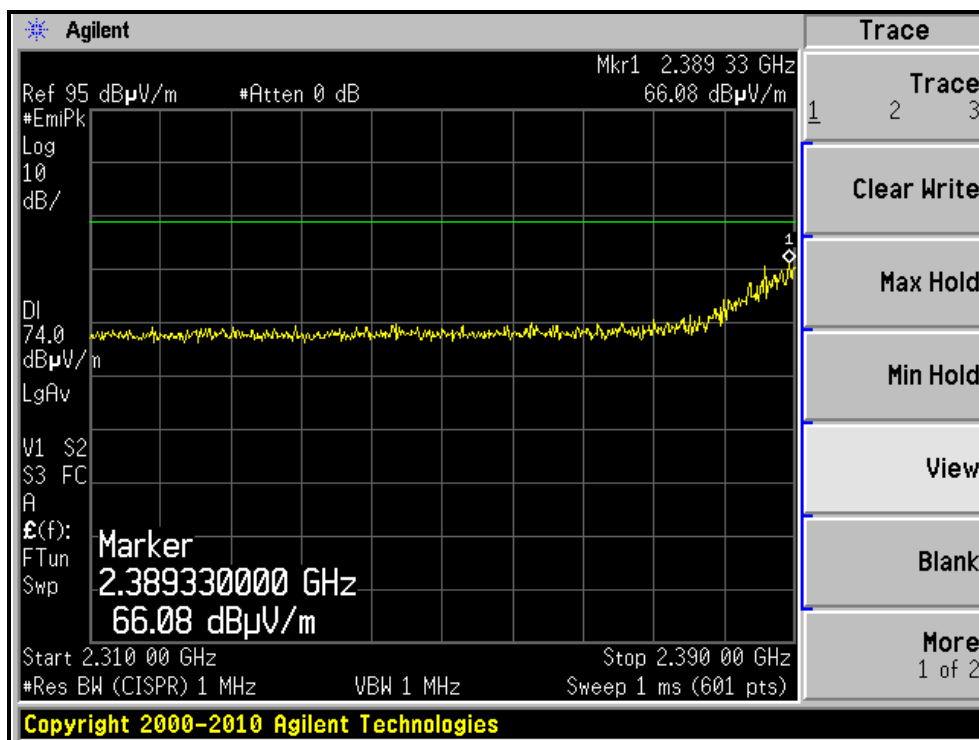
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.6 PK			1.30 H	83	77.20	31.40
2	*2462.00	98.3 AV			1.30 H	83	66.90	31.40
3	2483.50	71.6 PK	74.0	-2.4	1.28 H	102	40.14	31.46
4	2483.50	53.3 AV	54.0	-0.7	1.28 H	102	21.84	31.46
5	4924.00	58.1 PK	74.0	-15.9	1.00 H	72	18.28	39.82
6	4924.00	42.3 AV	54.0	-11.7	1.00 H	72	2.48	39.82
7	7386.00	57.6 PK	74.0	-16.4	1.00 H	156	13.42	44.18
8	7386.00	42.1 AV	54.0	-11.9	1.00 H	156	-2.08	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	106.7 PK			1.00 V	174	75.30	31.40
2	*2462.00	95.6 AV			1.00 V	174	64.20	31.40
3	2483.50	71.1 PK	74.0	-2.9	1.21 V	166	39.64	31.46
4	2483.50	51.8 AV	54.0	-2.2	1.21 V	166	20.34	31.46
5	4924.00	57.7 PK	74.0	-16.3	1.06 V	51	17.88	39.82
6	4924.00	44.6 AV	54.0	-9.4	1.06 V	51	4.78	39.82
7	7386.00	61.1 PK	74.0	-12.9	1.05 V	70	16.92	44.18
8	7386.00	46.8 AV	54.0	-7.2	1.05 V	70	2.62	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.

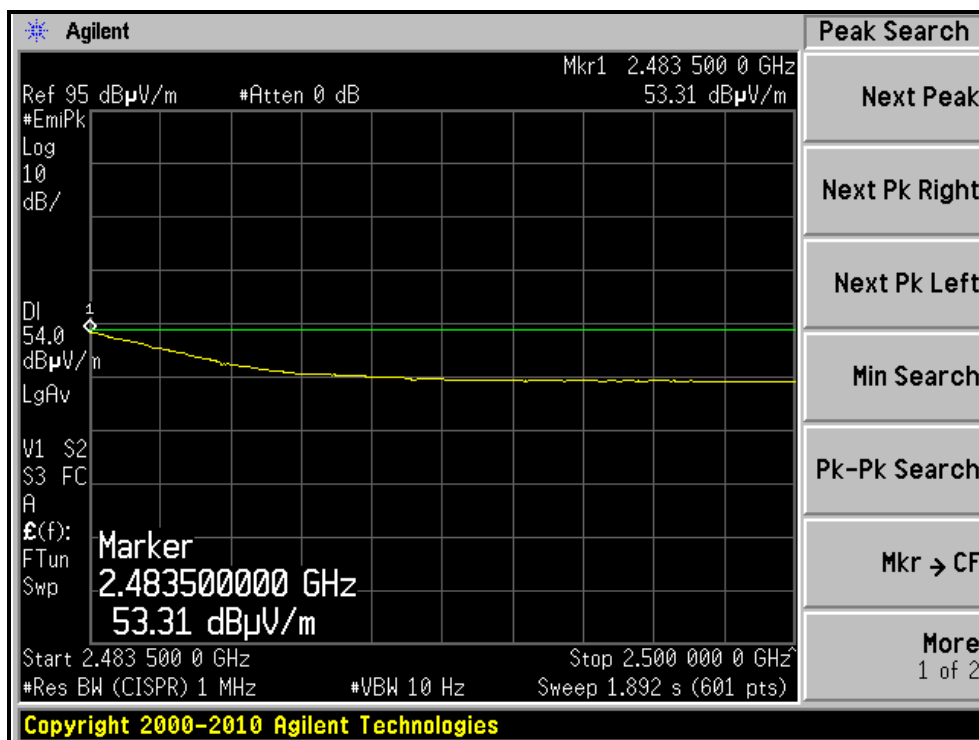
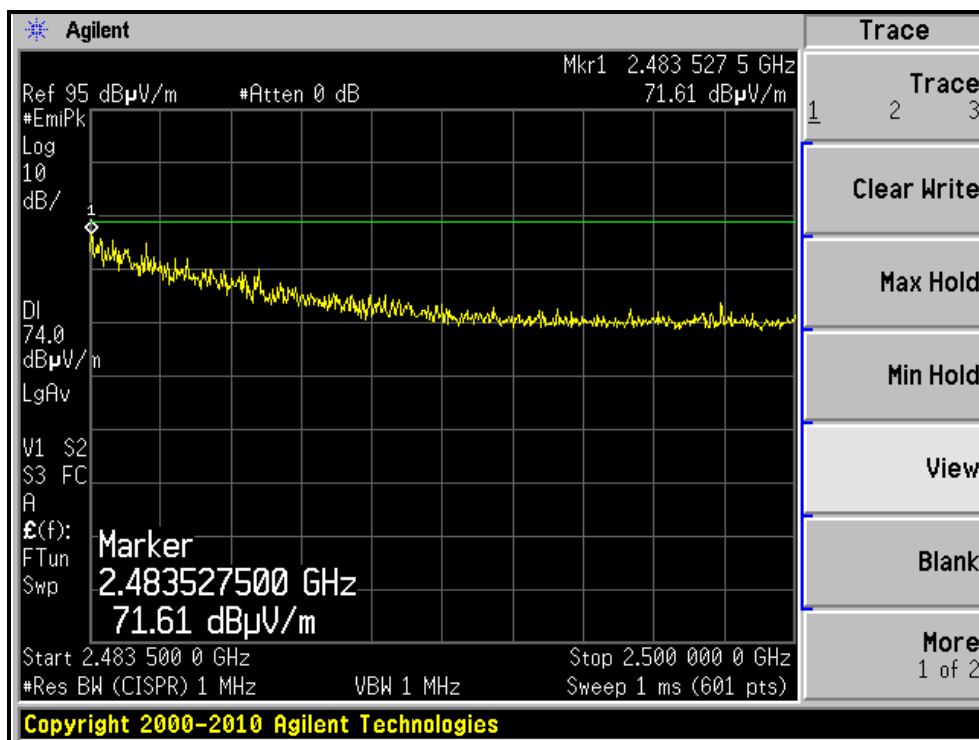
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, HORIZONTAL)



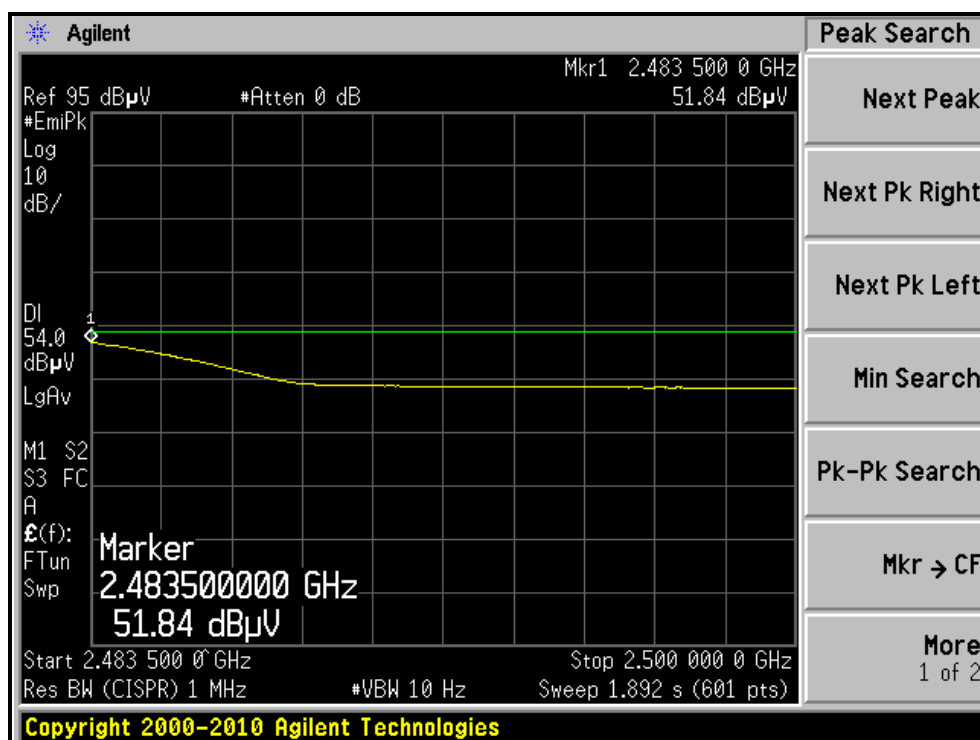
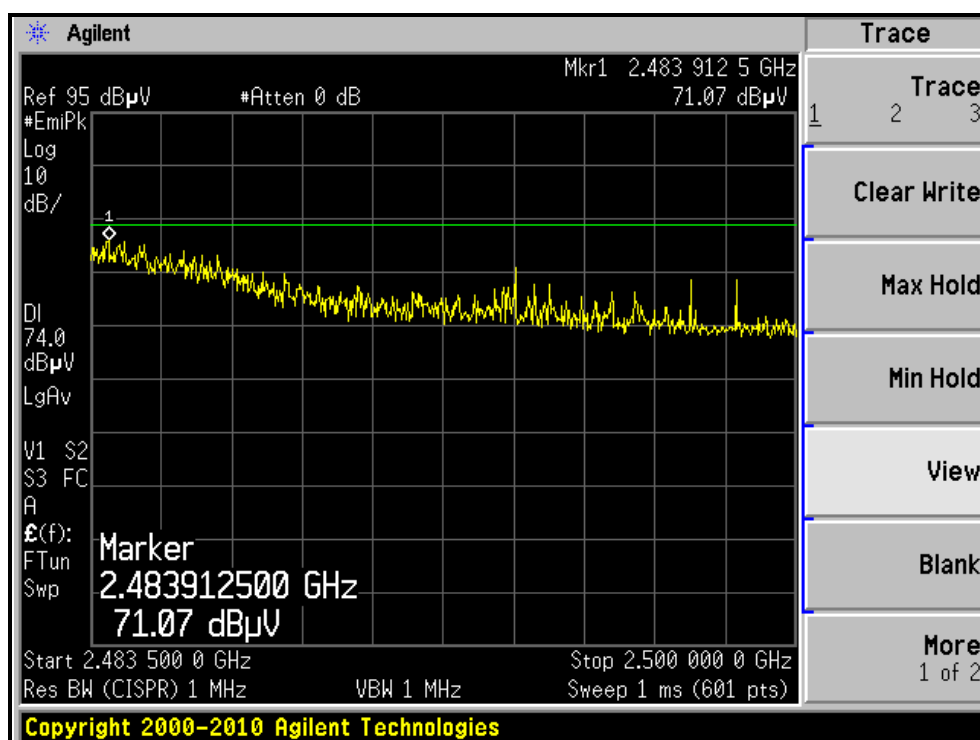
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, VERTICAL)



802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.0 PK	74.0	-1.0	1.34 H	94	41.79	31.21
2	2390.00	52.9 AV	54.0	-1.1	1.34 H	94	21.69	31.21
3	*2422.00	104.0 PK			1.33 H	84	72.70	31.30
4	*2422.00	91.9 AV			1.33 H	84	60.60	31.30
5	4844.00	46.5 PK	74.0	-27.5	1.00 H	70	7.00	39.50
6	4844.00	36.1 AV	54.0	-17.9	1.00 H	70	-3.40	39.50
7	7266.00	50.3 PK	74.0	-23.7	1.00 H	154	6.24	44.06
8	7266.00	38.9 AV	54.0	-15.1	1.00 H	154	-5.16	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	65.7 PK	74.0	-8.3	1.21 V	156	34.49	31.21
2	2390.00	50.9 AV	54.0	-3.1	1.21 V	156	19.69	31.21
3	*2422.00	102.0 PK			1.00 V	185	70.70	31.30
4	*2422.00	90.4 AV			1.00 V	185	59.10	31.30
5	4844.00	46.3 PK	74.0	-27.7	1.06 V	64	6.80	39.50
6	4844.00	35.8 AV	54.0	-18.2	1.06 V	64	-3.70	39.50
7	7266.00	49.8 PK	74.0	-24.2	1.05 V	71	5.74	44.06
8	7266.00	38.9 AV	54.0	-15.1	1.05 V	71	-5.16	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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

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	72.5 PK	74.0	-1.5	1.31 H	126	41.29	31.21
2	2390.00	53.5 AV	54.0	-0.5	1.31 H	126	22.29	31.21
3	*2437.00	107.8 PK			1.33 H	88	76.46	31.34
4	*2437.00	96.3 AV			1.33 H	88	64.96	31.34
5	2483.50	72.4 PK	74.0	-1.6	1.30 H	145	40.94	31.46
6	2483.50	53.4 AV	54.0	-0.6	1.30 H	145	21.94	31.46
7	4874.00	46.8 PK	74.0	-27.2	1.00 H	69	7.18	39.62
8	4874.00	36.1 AV	54.0	-17.9	1.00 H	69	-3.52	39.62
9	7311.00	50.2 PK	74.0	-23.8	1.00 H	155	6.10	44.10
10	7311.00	39.7 AV	54.0	-14.3	1.00 H	155	-4.40	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	2390.00	65.7 PK	74.0	-8.3	1.22 V	145	34.49	31.21
2	2390.00	50.3 AV	54.0	-3.7	1.22 V	145	19.09	31.21
3	*2437.00	105.6 PK			1.00 V	175	74.26	31.34
4	*2437.00	94.2 AV			1.00 V	175	62.86	31.34
5	2483.50	69.0 PK	74.0	-5.0	1.17 V	160	37.54	31.46
6	2483.50	50.2 AV	54.0	-3.8	1.17 V	160	18.74	31.46
7	4874.00	47.9 PK	74.0	-26.1	1.06 V	60	8.28	39.62
8	4874.00	35.8 AV	54.0	-18.2	1.06 V	60	-3.82	39.62
9	7311.00	50.9 PK	74.0	-23.1	1.05 V	75	6.80	44.10
10	7311.00	39.3 AV	54.0	-14.7	1.05 V	75	-4.80	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.



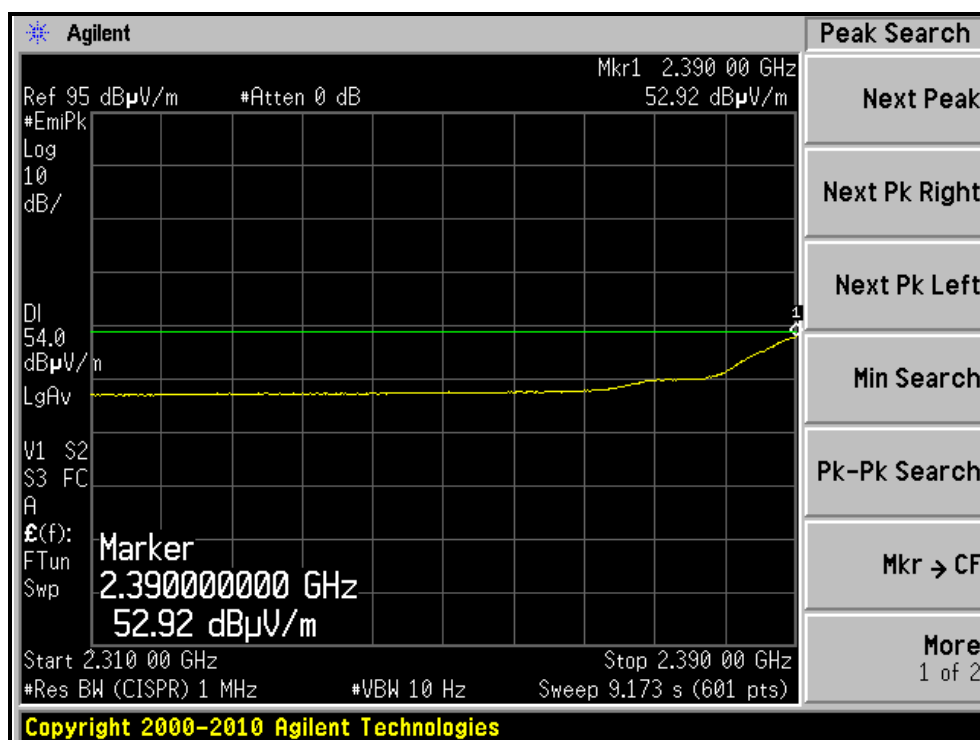
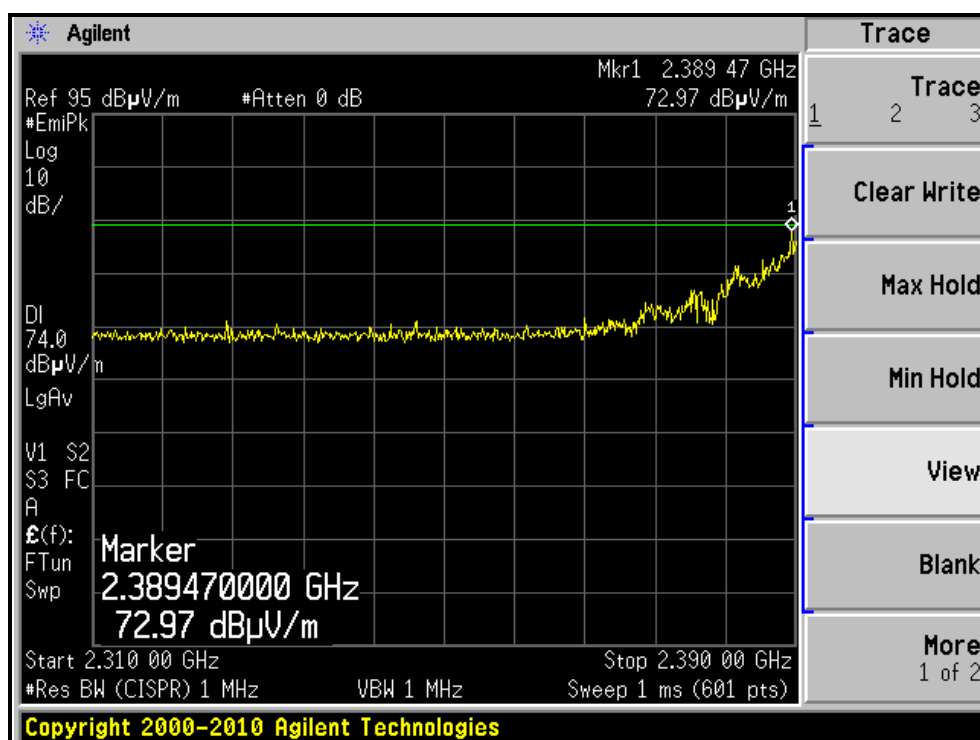
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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

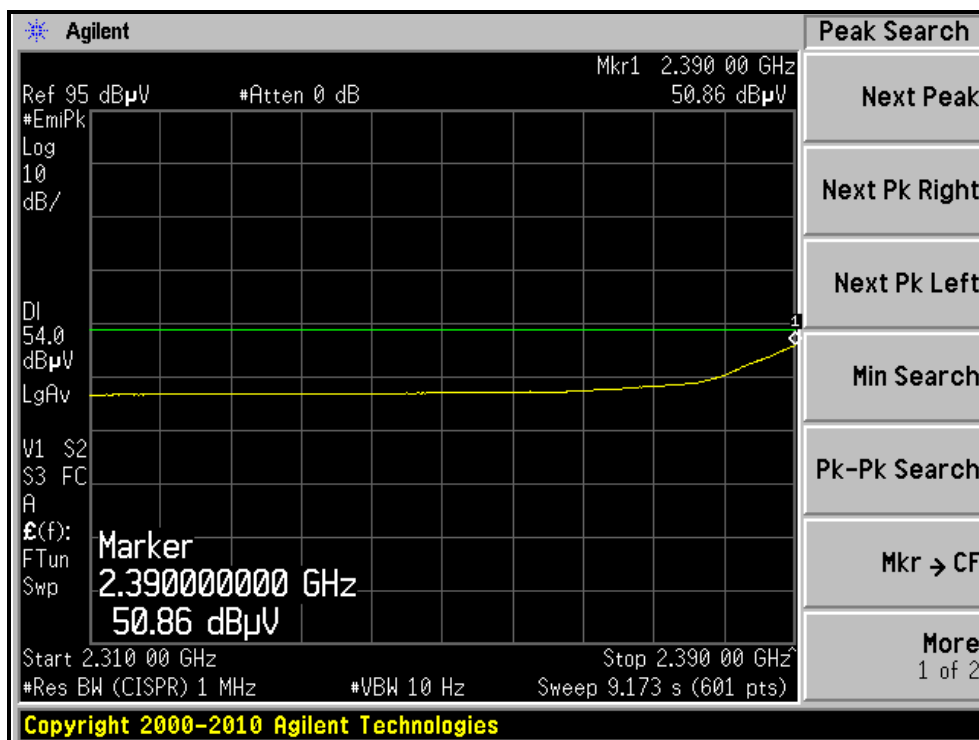
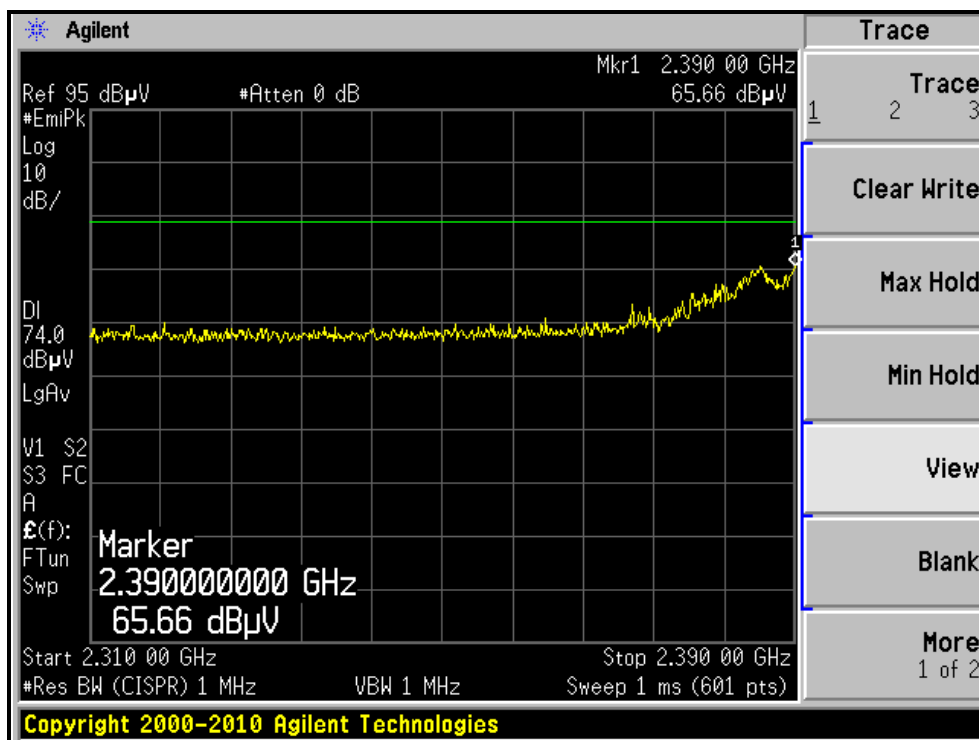
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NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.9 PK			1.31 H	85	73.52	31.38
2	*2452.00	93.1 AV			1.31 H	85	61.72	31.38
3	2483.50	70.2 PK	74.0	-3.8	1.30 H	80	38.74	31.46
4	2483.50	53.4 AV	54.0	-0.6	1.30 H	80	21.94	31.46
5	4904.00	46.9 PK	74.0	-27.1	1.00 H	70	7.16	39.74
6	4904.00	36.7 AV	54.0	-17.3	1.00 H	70	-3.04	39.74
7	7356.00	49.2 PK	74.0	-24.8	1.00 H	157	5.05	44.15
8	7356.00	39.6 AV	54.0	-14.4	1.00 H	157	-4.55	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	102.4 PK			1.00 V	163	71.02	31.38
2	*2452.00	90.7 AV			1.00 V	163	59.32	31.38
3	2483.50	71.3 PK	74.0	-2.7	1.20 V	156	39.84	31.46
4	2483.50	53.0 AV	54.0	-1.0	1.20 V	156	21.54	31.46
5	4904.00	47.9 PK	74.0	-26.1	1.04 V	61	8.16	39.74
6	4904.00	36.1 AV	54.0	-17.9	1.04 V	61	-3.64	39.74
7	7356.00	49.1 PK	74.0	-24.9	1.05 V	77	4.95	44.15
8	7356.00	38.9 AV	54.0	-15.1	1.05 V	77	-5.25	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.

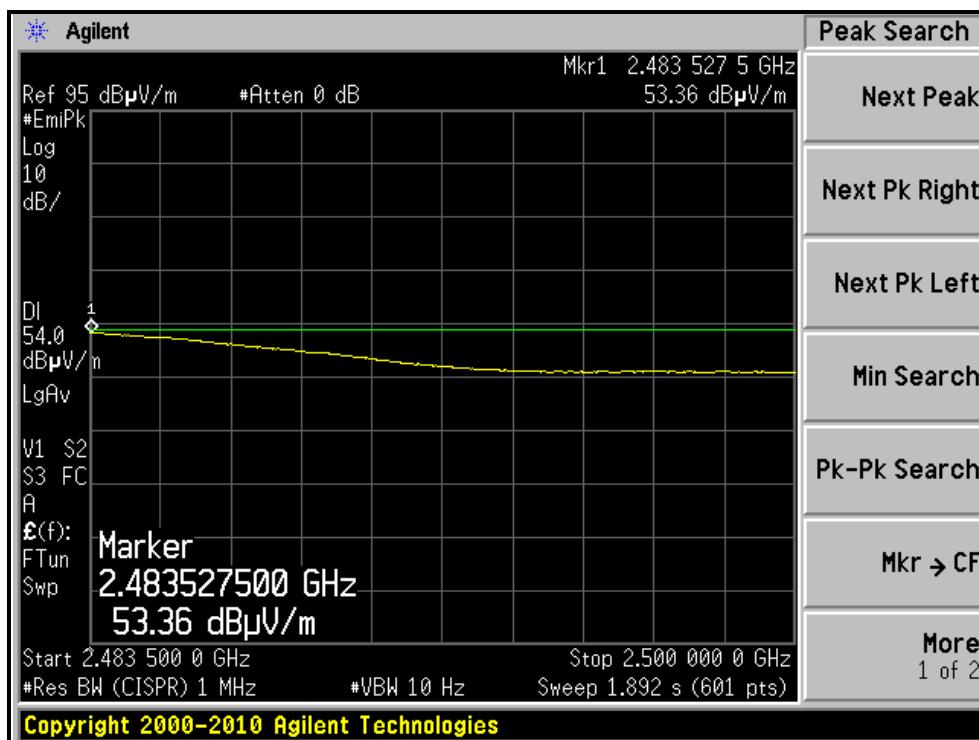
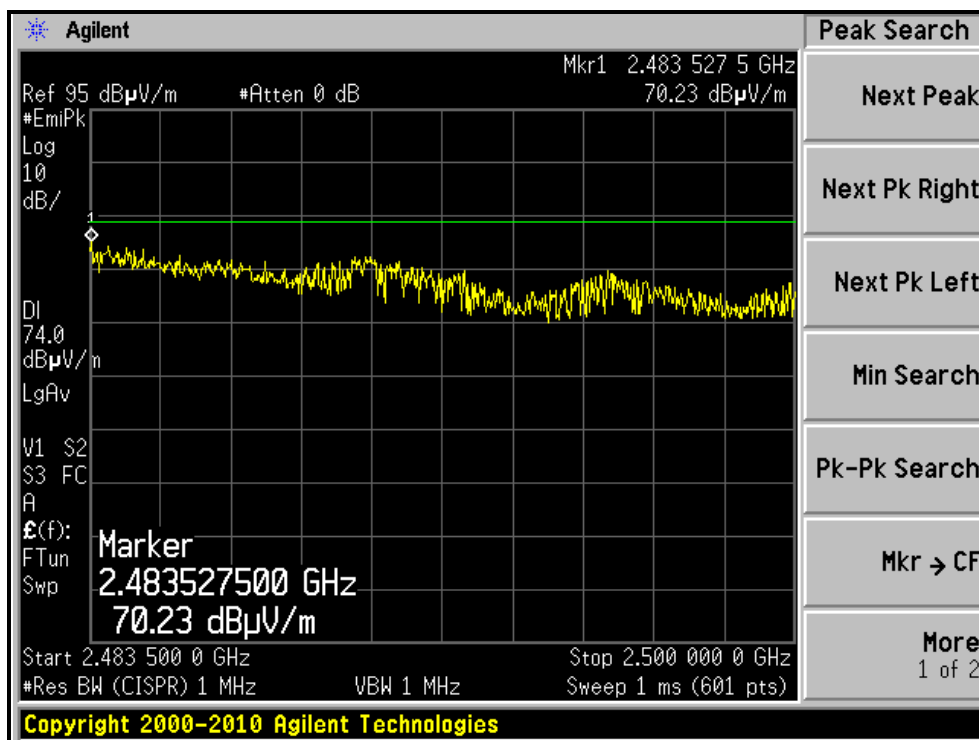
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, HORIZONTAL)



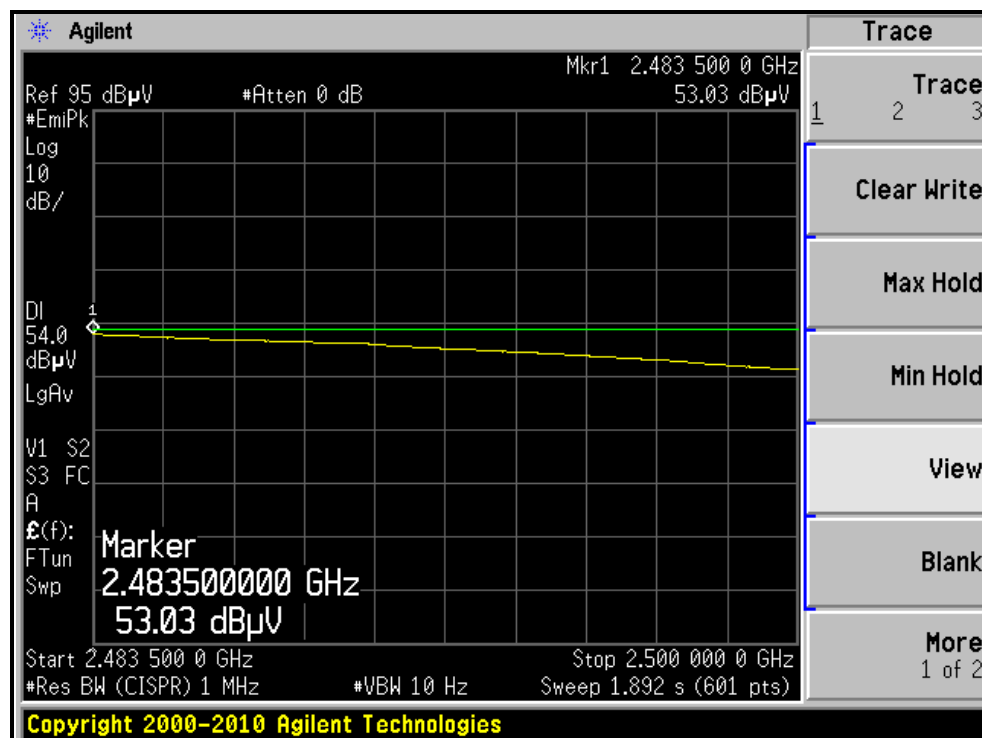
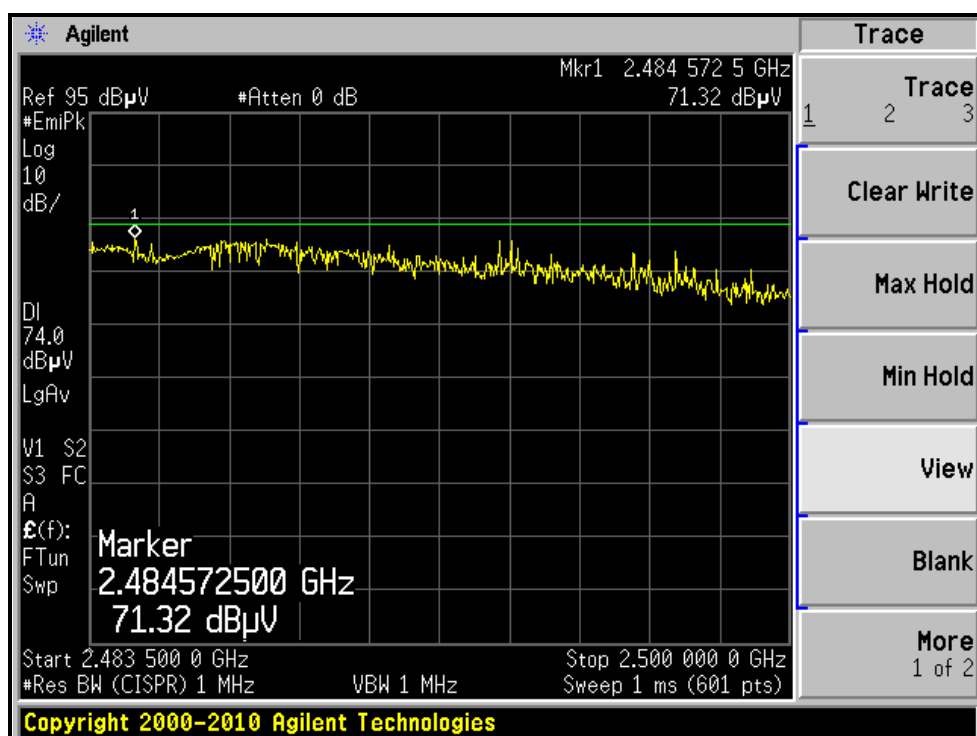
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, VERTICAL)



RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH9, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH9, VERTICAL)



4.2.8 TEST RESULTS (FOR RECEIVER PART)

BELOW 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH	TESTED BY	Even Huang

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	99.51	40.2 QP	43.5	-3.3	1.75 H	360	30.90	9.26
2	199.93	41.0 QP	43.5	-2.6	1.25 H	358	29.73	11.22
3	300.00	37.0 QP	46.0	-9.0	1.00 H	359	21.79	15.18
4	497.65	36.5 QP	46.0	-9.5	1.75 H	233	16.99	19.48
5	600.44	41.0 QP	46.0	-5.0	1.25 H	267	19.43	21.60
6	799.75	37.4 QP	46.0	-8.6	1.00 H	303	12.95	24.47
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	35.33	35.1 QP	40.0	-4.9	1.00 V	288	21.72	13.37
2	99.99	31.9 QP	43.5	-11.6	2.00 V	209	22.63	9.31
3	300.00	34.9 QP	46.0	-11.1	2.00 V	251	19.75	15.18
4	497.53	34.2 QP	46.0	-11.8	1.00 V	233	14.69	19.48
5	901.24	40.6 QP	46.0	-5.4	1.50 V	64	14.77	25.80
6	939.01	41.5 QP	46.0	-4.5	1.25 V	121	15.24	26.24

- 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 WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

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	1608.00	38.5 PK	74.0	-35.5	1.00 H	95	10.25	28.25
2	1608.00	27.3 AV	54.0	-26.7	1.00 H	95	-0.95	28.25
3	3216.00	41.8 PK	74.0	-32.2	1.00 H	47	8.44	33.36
4	3216.00	33.4 AV	54.0	-20.6	1.00 H	47	0.04	33.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1608.00	37.5 PK	74.0	-36.5	1.00 V	67	9.25	28.25
2	1608.00	25.5 AV	54.0	-28.5	1.00 V	67	-2.75	28.25
3	3216.00	41.4 PK	74.0	-32.6	1.00 V	153	8.04	33.36
4	3216.00	31.2 AV	54.0	-22.8	1.00 V	153	-2.16	33.36

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

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	1624.67	38.6 PK	74.0	-35.4	1.00 H	91	10.26	28.34
2	1624.67	28.3 AV	54.0	-25.7	1.00 H	91	-0.04	28.34
3	3249.33	40.4 PK	74.0	-33.6	1.00 H	45	6.94	33.46
4	3249.33	32.5 AV	54.0	-21.5	1.00 H	45	-0.96	33.46
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	1624.67	38.2 PK	74.0	-35.8	1.00 V	62	9.86	28.34
2	1624.67	26.5 AV	54.0	-27.5	1.00 V	62	-1.84	28.34
3	3249.33	41.2 PK	74.0	-32.8	1.00 V	158	7.74	33.46
4	3249.33	32.1 AV	54.0	-21.9	1.00 V	158	-1.36	33.46

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 7.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Amos Chuang

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	1641.33	38.3 PK	74.0	-35.7	1.00 H	97	9.88	28.42
2	1641.33	28.1 AV	54.0	-25.9	1.00 H	97	-0.32	28.42
3	3282.67	40.9 PK	74.0	-33.1	1.00 H	40	7.35	33.55
4	3282.67	32.9 AV	54.0	-21.1	1.00 H	40	-0.65	33.55
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	1641.33	36.8 PK	74.0	-37.2	1.00 V	66	8.38	28.42
2	1641.33	26.1 AV	54.0	-27.9	1.00 V	66	-2.32	28.42
3	3282.67	40.1 PK	74.0	-33.9	1.00 V	155	6.55	33.55
4	3282.67	30.2 AV	54.0	-23.8	1.00 V	155	-3.35	33.55

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

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Test date: Oct. 18, 2011 to Jan. 18, 2012

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

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

4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

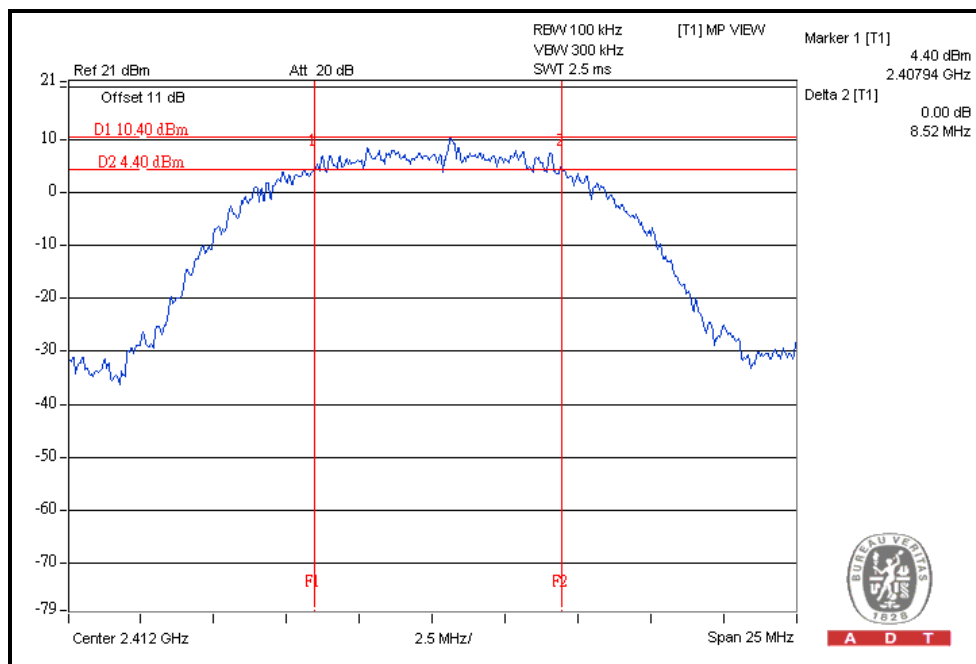
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

Single chain - 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.52	0.5	PASS
6	2437	9.38	0.5	PASS
11	2462	9.19	0.5	PASS

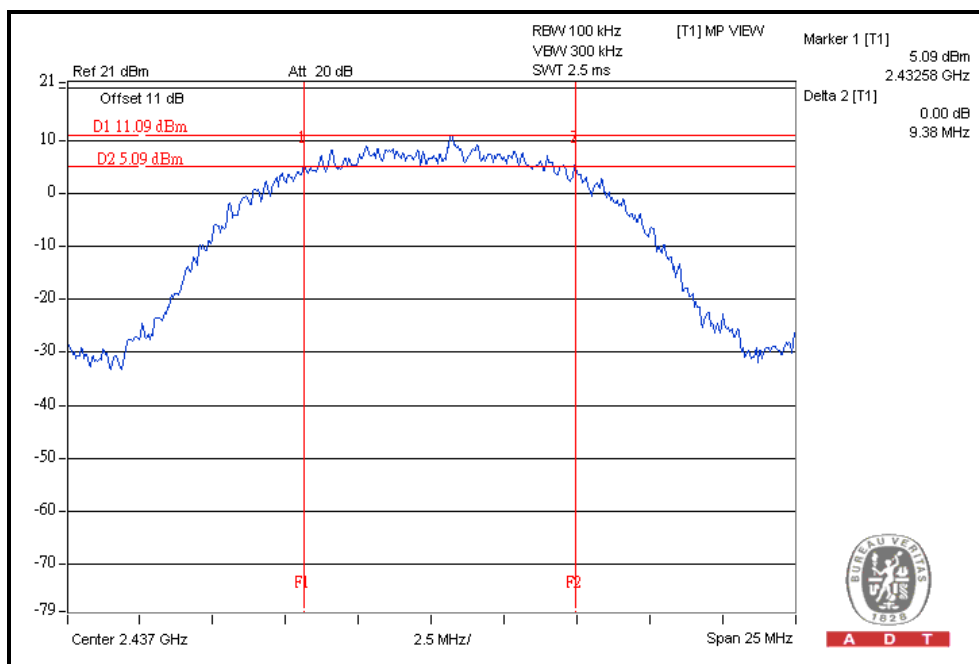
CH1



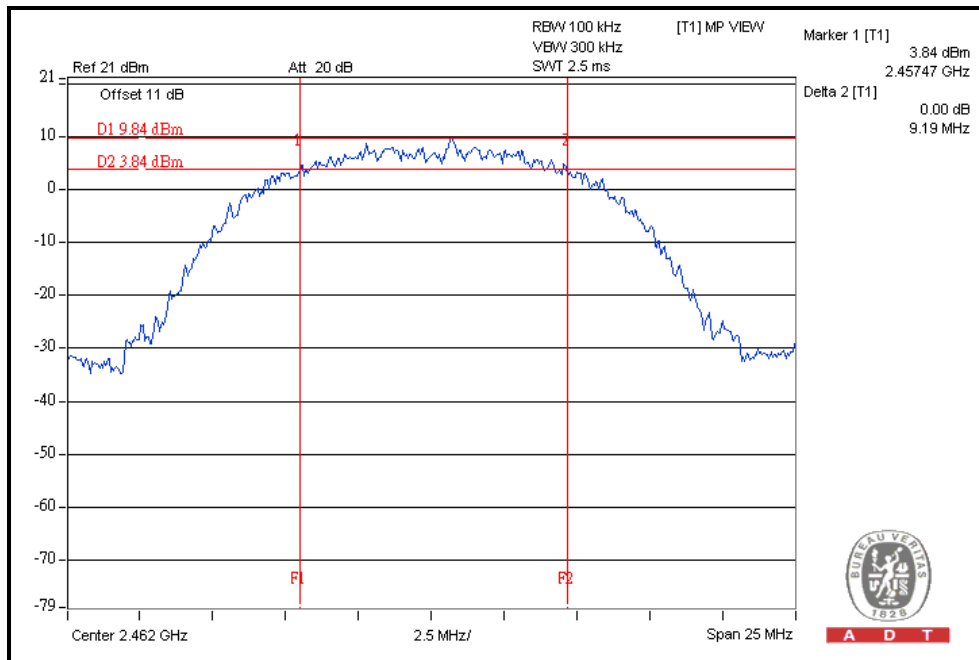


A D T

CH6



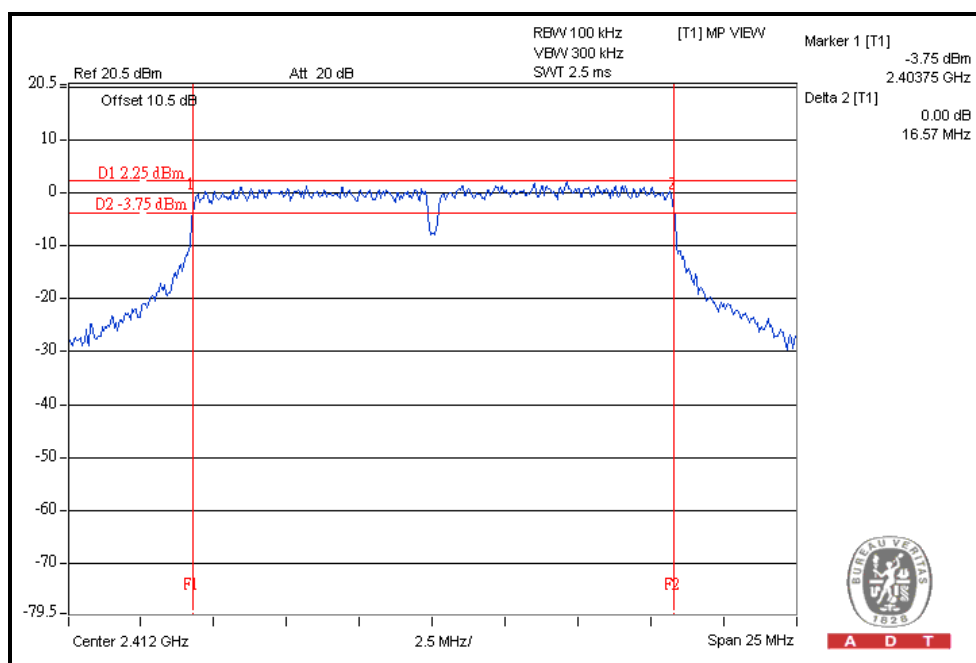
CH11



Single chain - 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.57	0.5	PASS
6	2437	16.61	0.5	PASS
11	2462	16.61	0.5	PASS

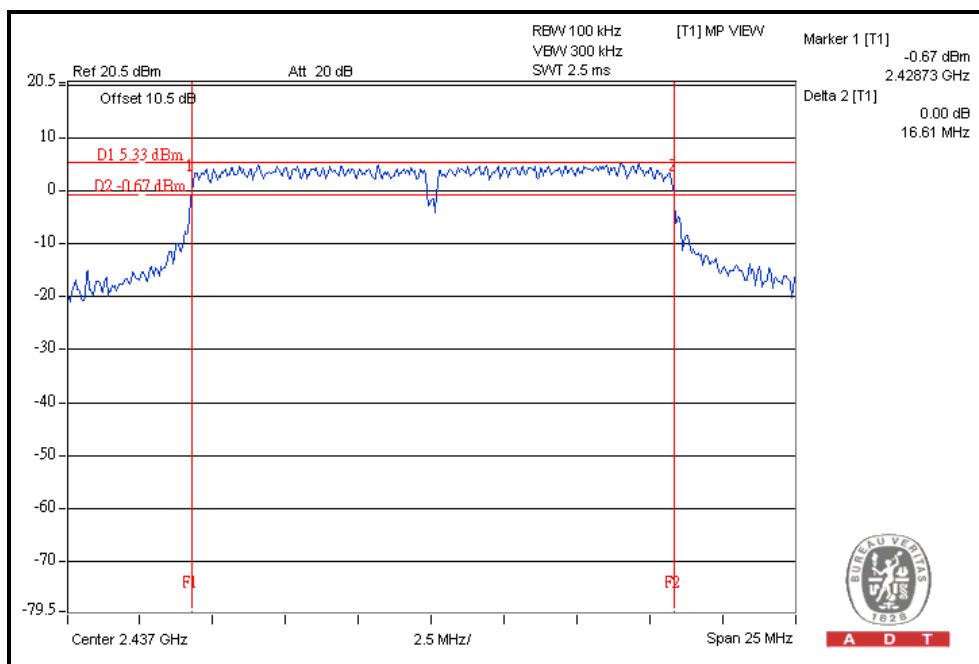
CH1



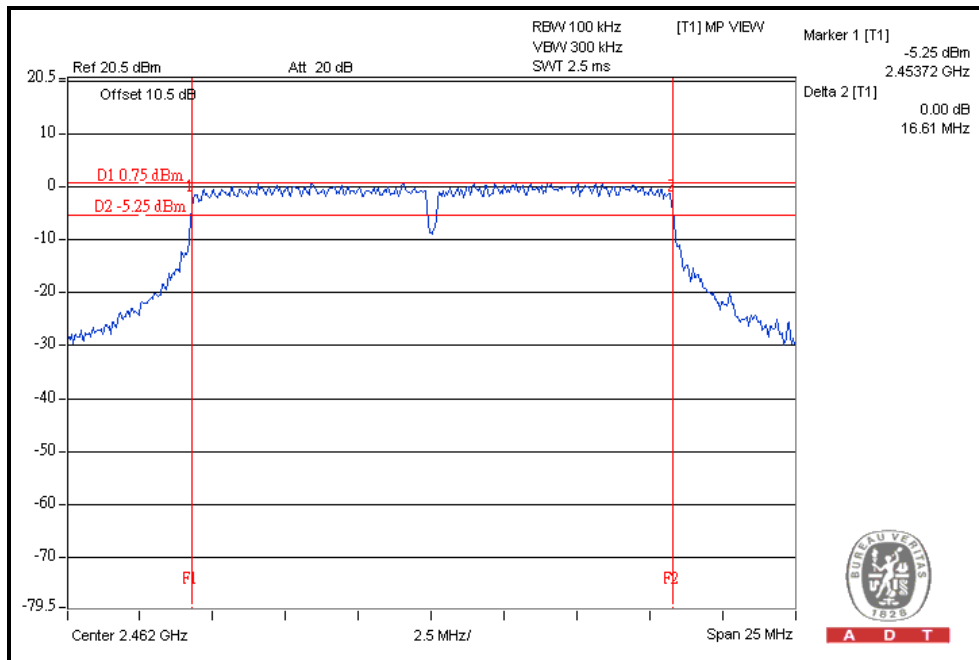


A D T

CH6



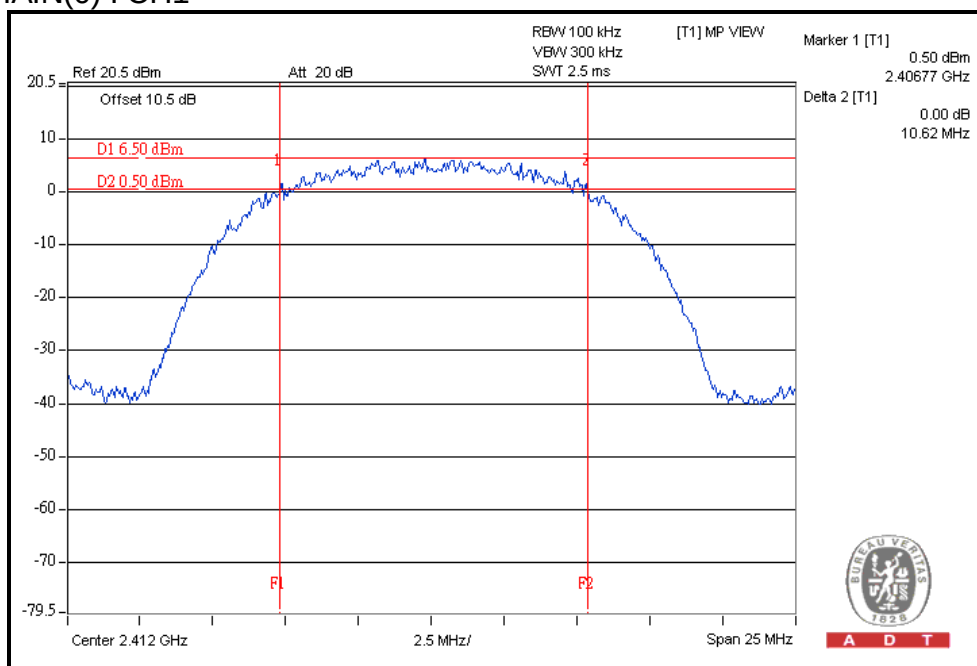
CH11



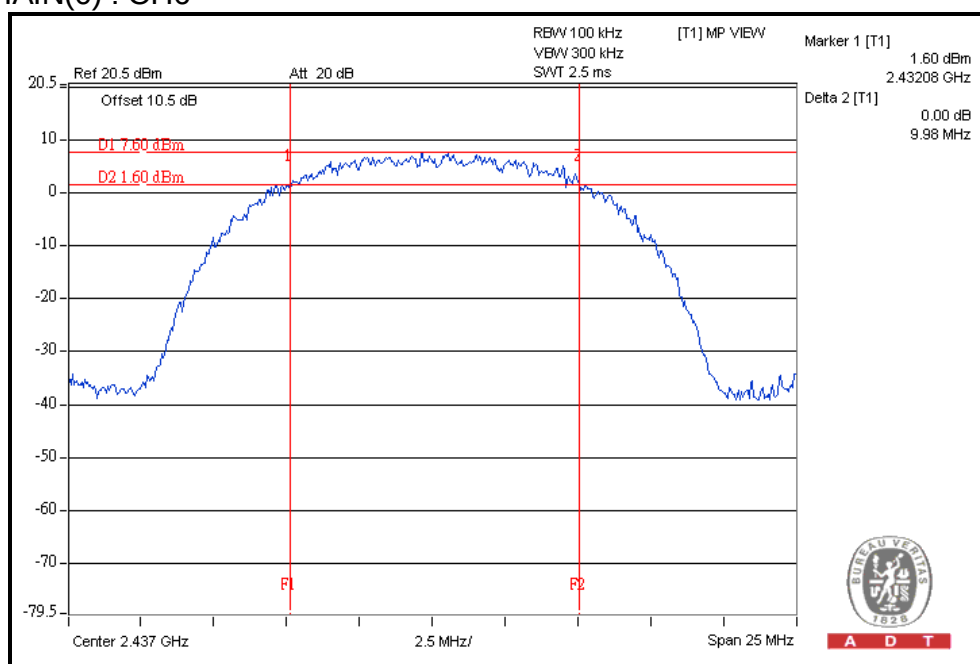
Multiple chain - 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	10.62	10.58	0.5	PASS
6	2437	9.98	10.42	0.5	PASS
11	2462	10.01	10.10	0.5	PASS

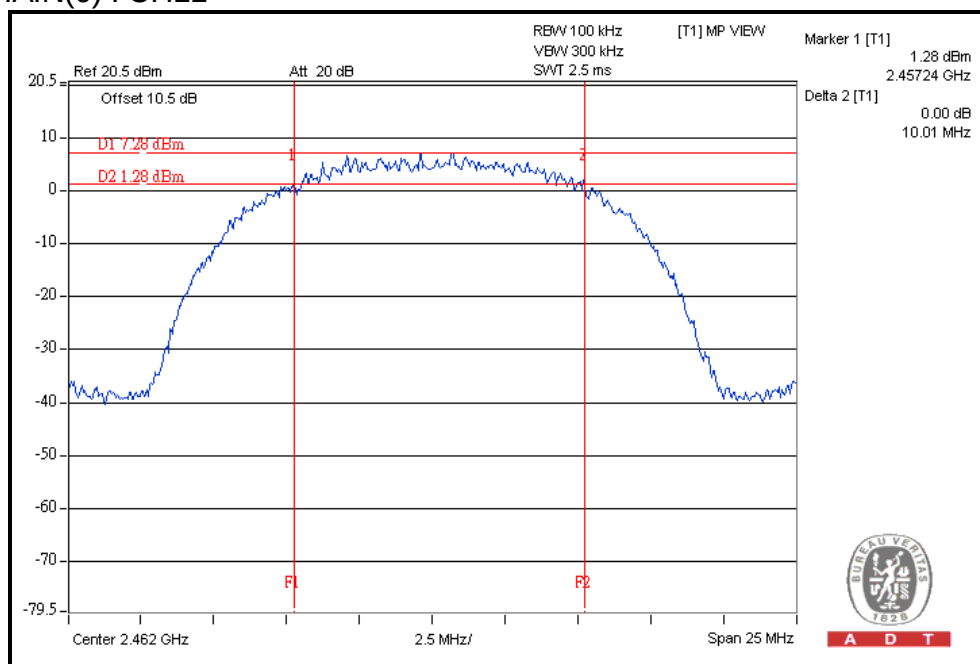
For CHAIN(0) : CH1



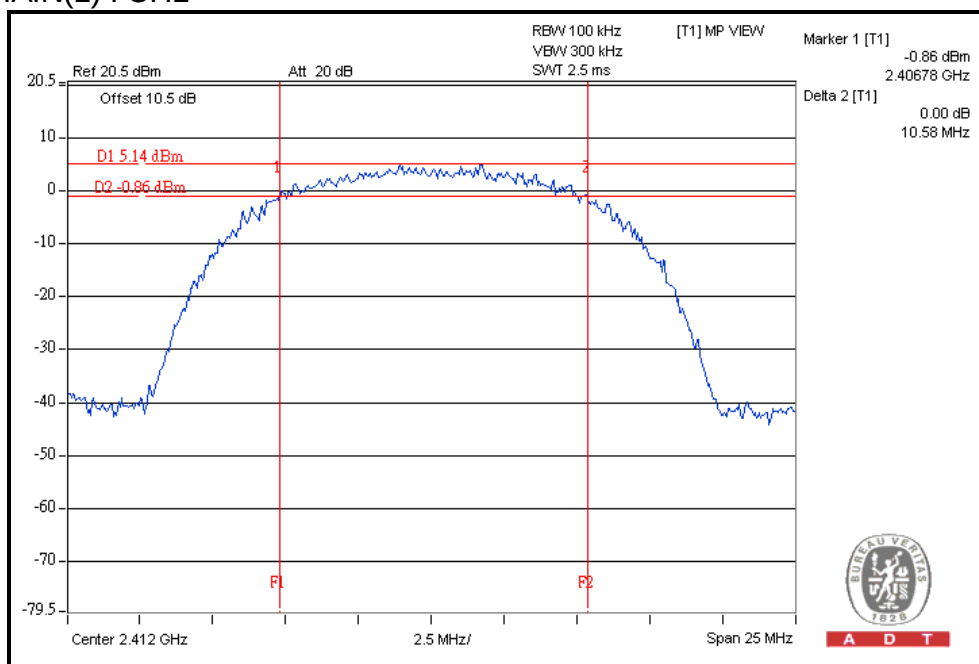
For CHAIN(0) : CH6



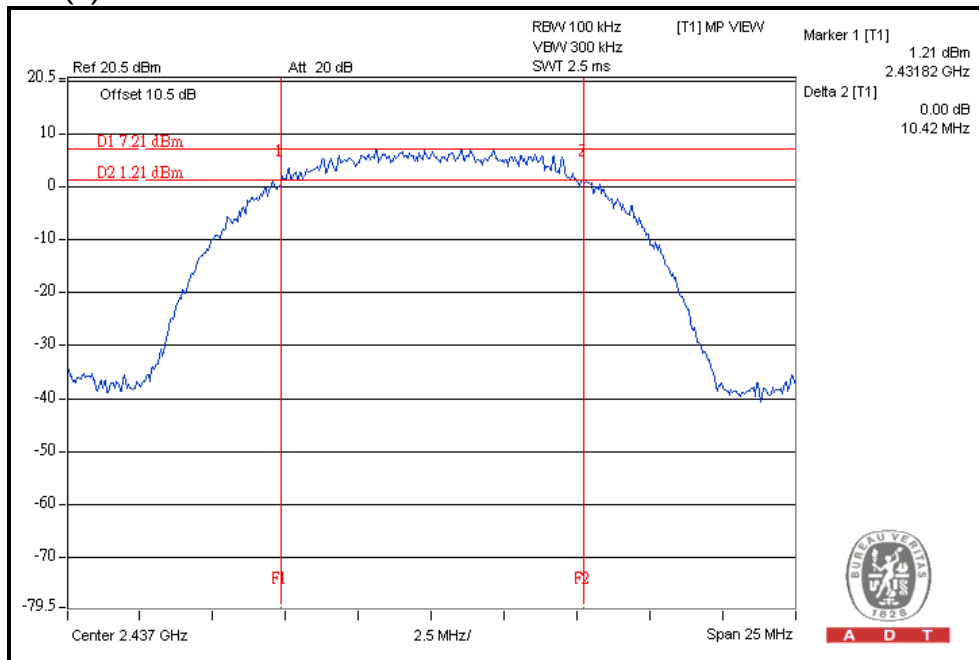
For CHAIN(0) : CH11



For CHAIN(1) : CH1



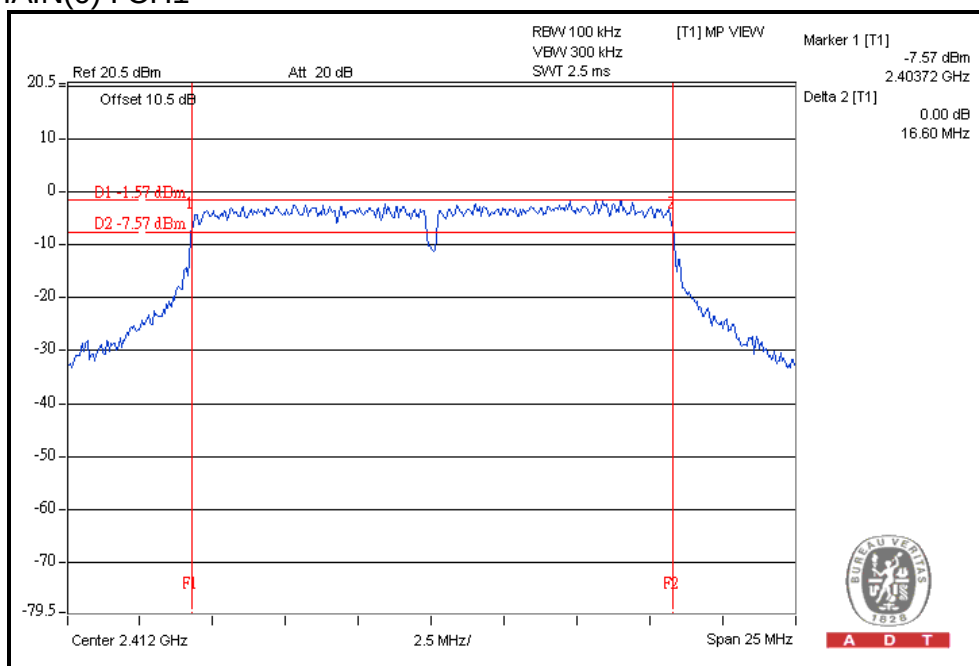
For CHAIN(1) : CH6



Multiple chain - 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	16.60	16.61	0.5	PASS
6	2437	16.62	16.60	0.5	PASS
11	2462	16.63	16.60	0.5	PASS

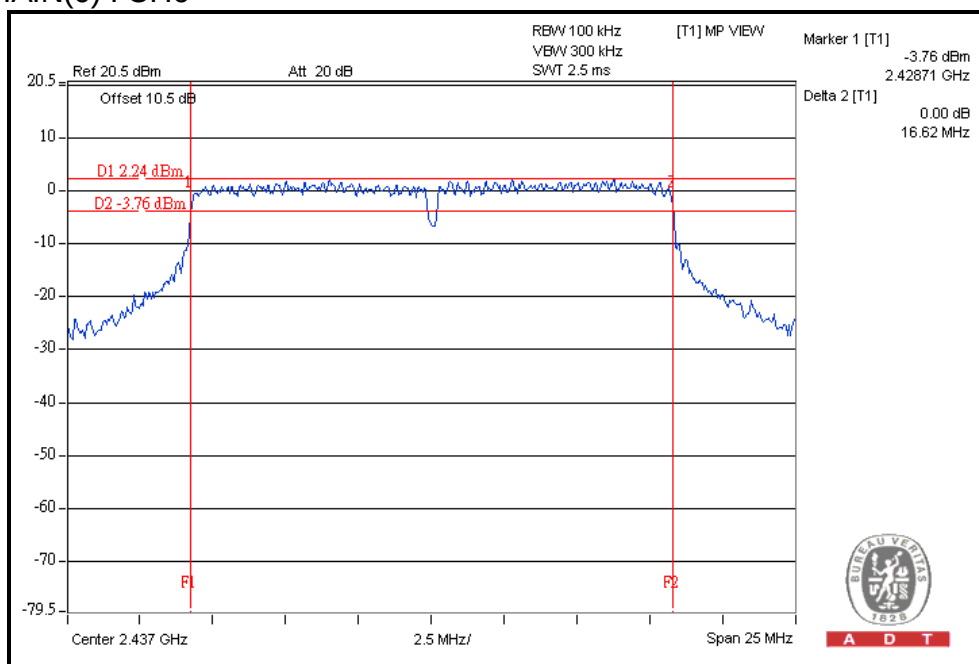
For CHAIN(0) : CH1



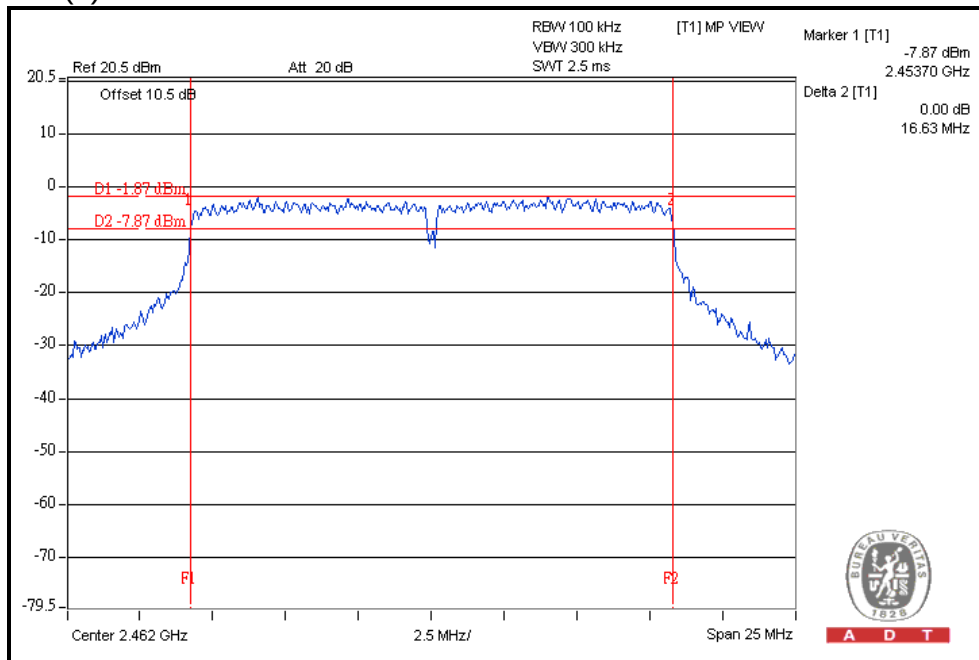


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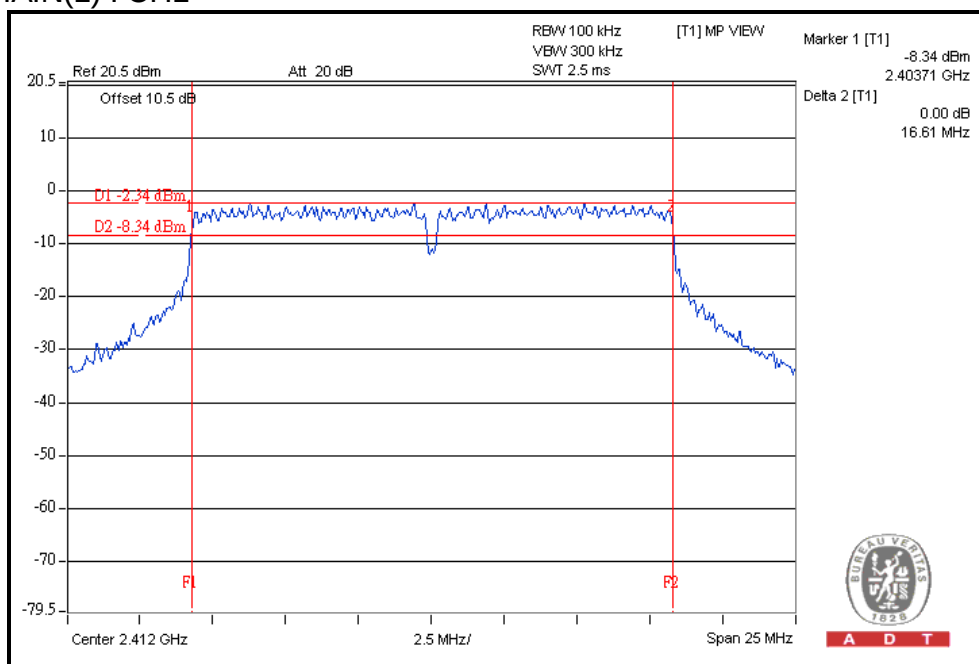
For CHAIN(0) : CH6



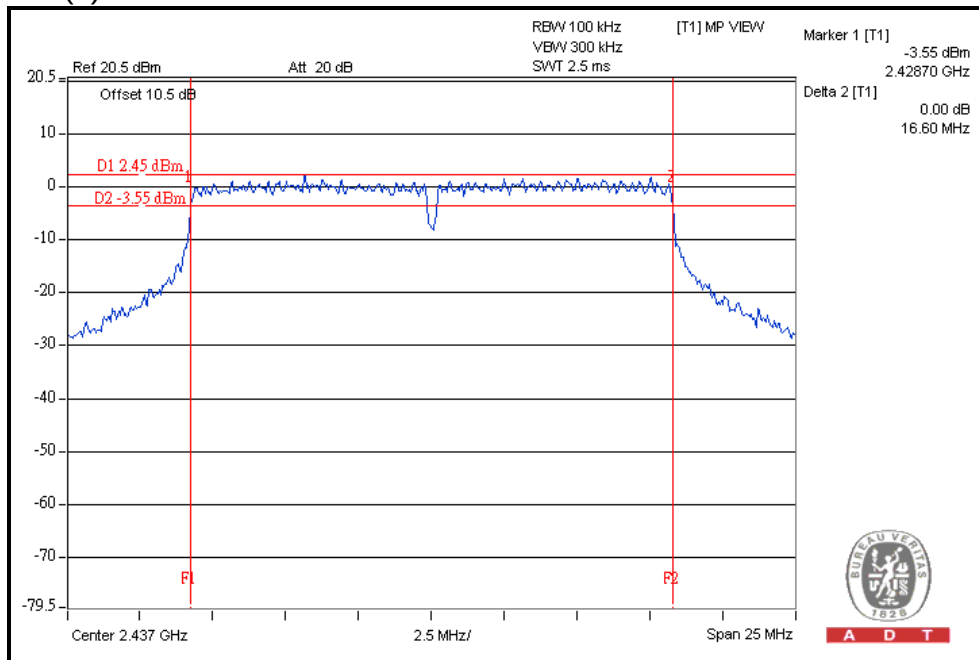
For CHAIN(0) : CH11



For CHAIN(1) : CH1



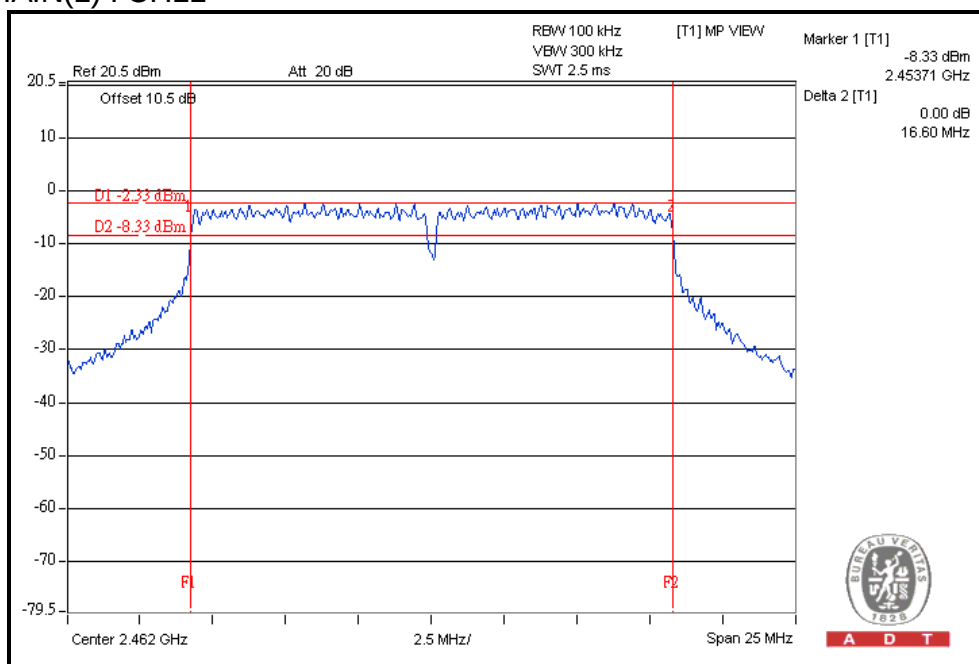
For CHAIN(1) : CH6





A D T

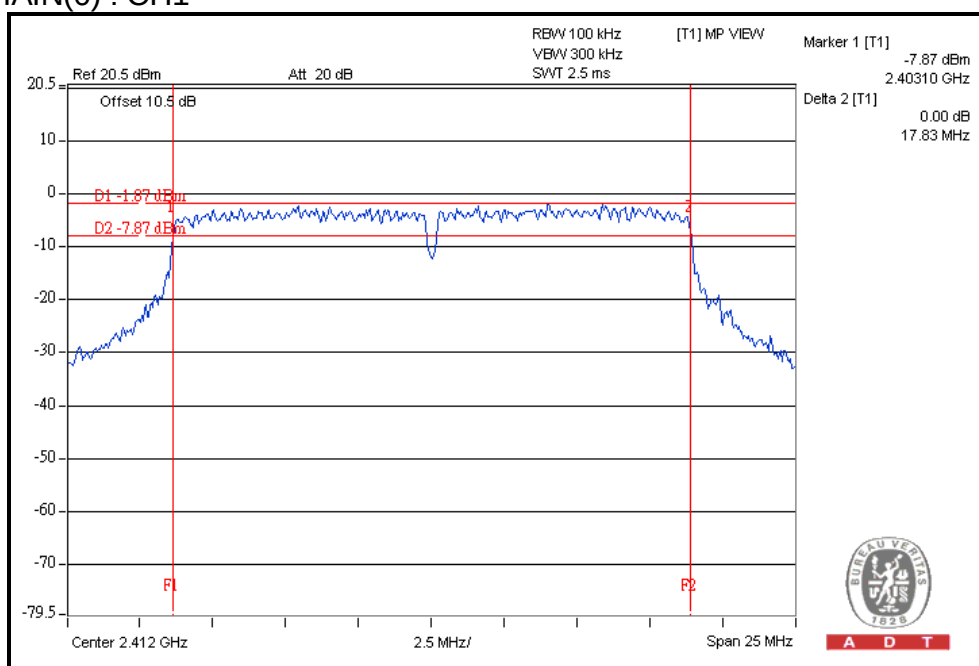
For CHAIN(1) : CH11



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	17.83	17.83	0.5	PASS
6	2437	17.84	17.85	0.5	PASS
11	2462	17.87	17.86	0.5	PASS

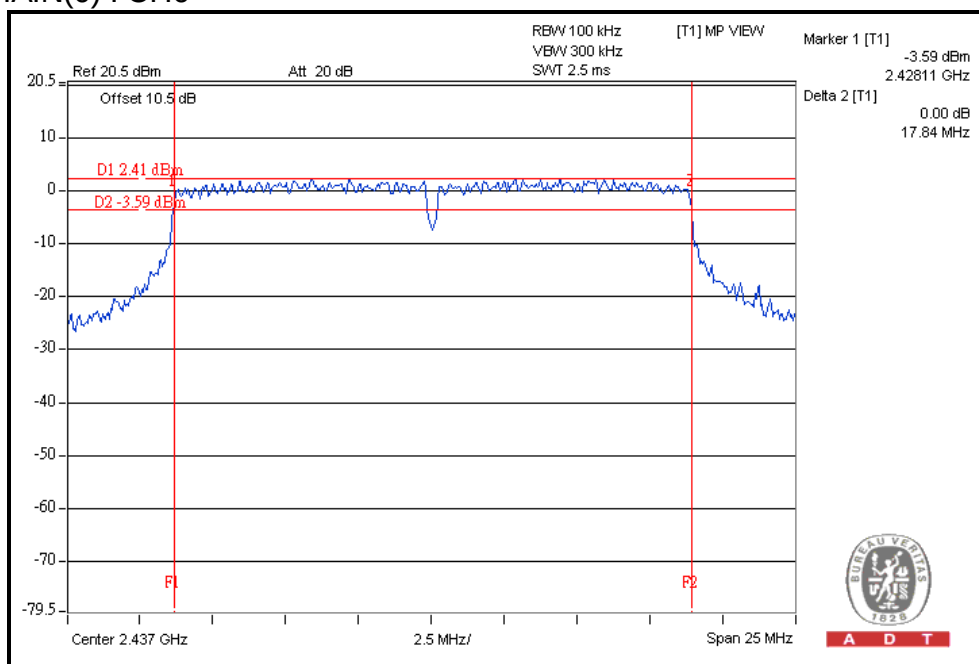
For CHAIN(0) : CH1



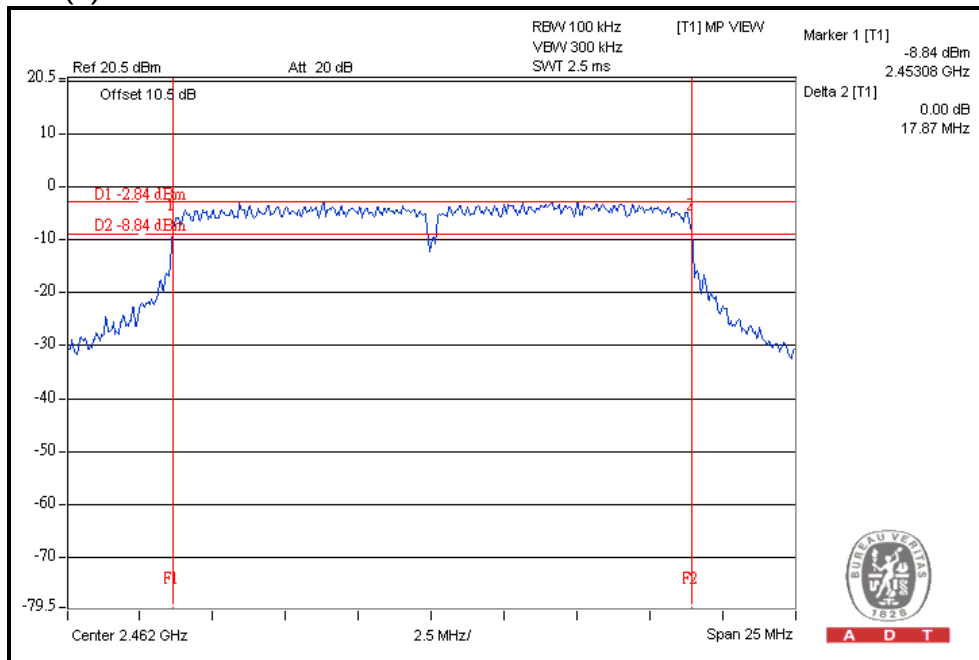


A D T

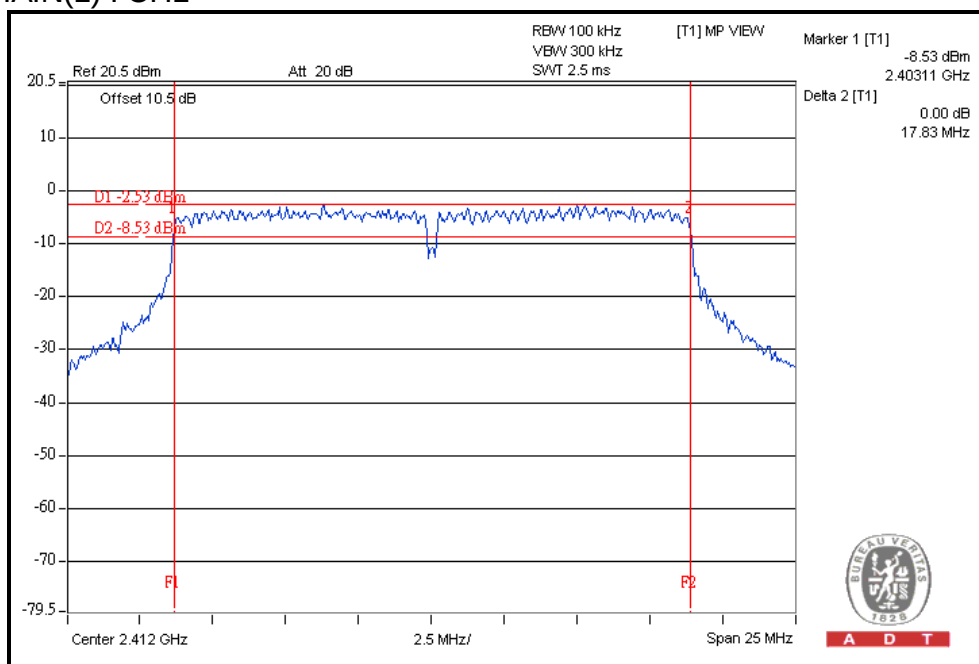
For CHAIN(0) : CH6



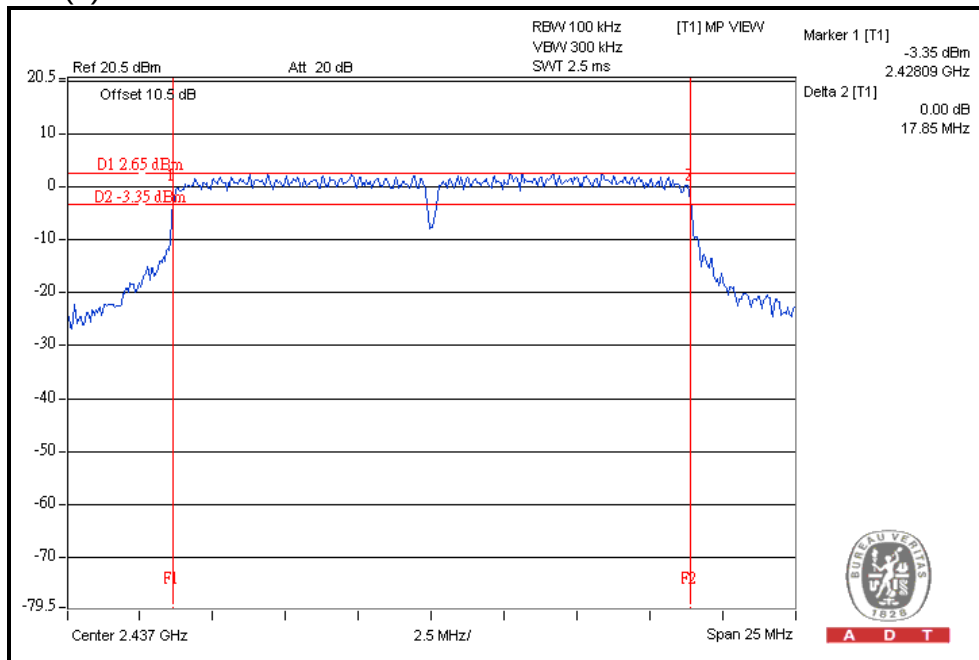
For CHAIN(0) : CH11



For CHAIN(1) : CH1



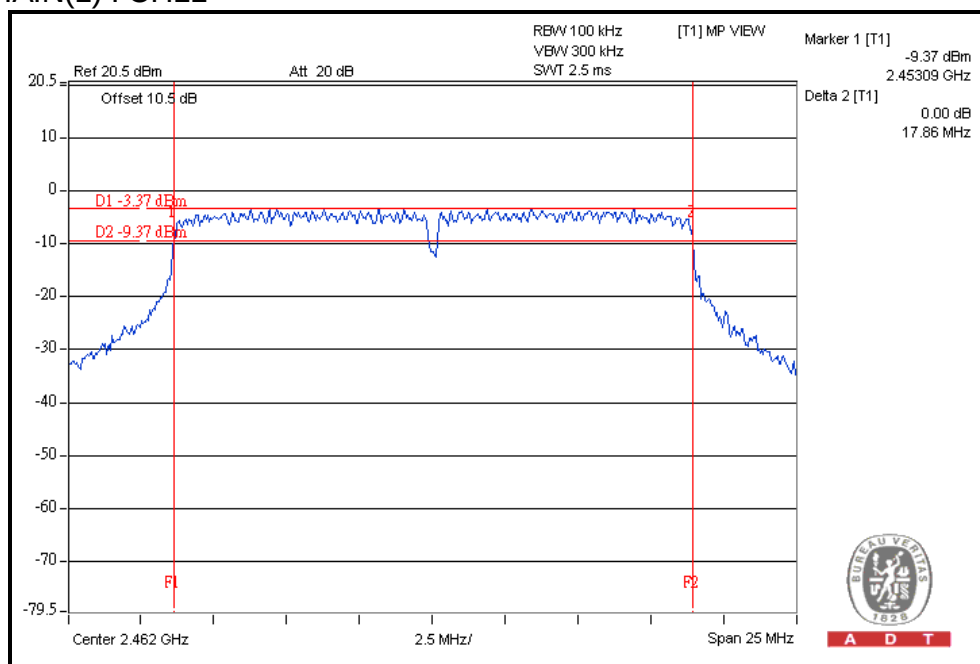
For CHAIN(1) : CH6





A D T

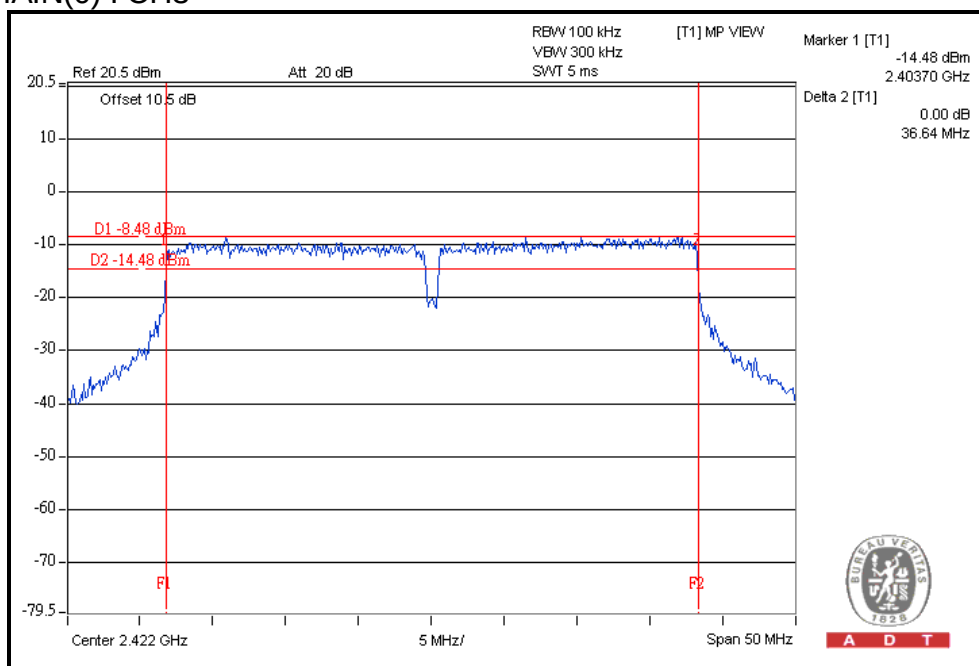
For CHAIN(1) : CH11



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
3	2422	36.64	36.64	0.5	PASS
6	2437	36.70	36.66	0.5	PASS
9	2452	36.68	36.68	0.5	PASS

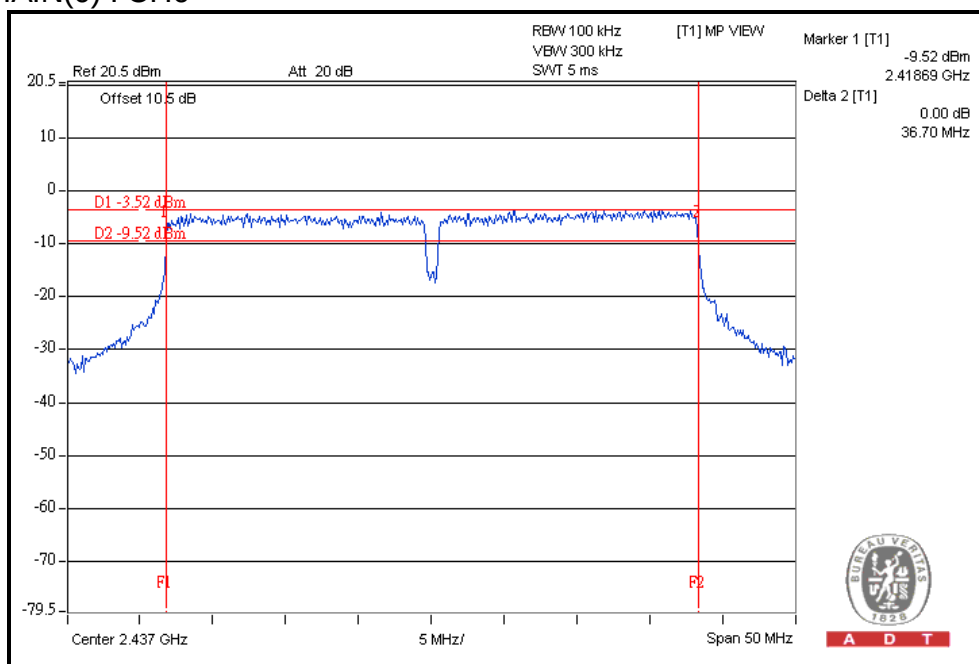
For CHAIN(0) : CH3



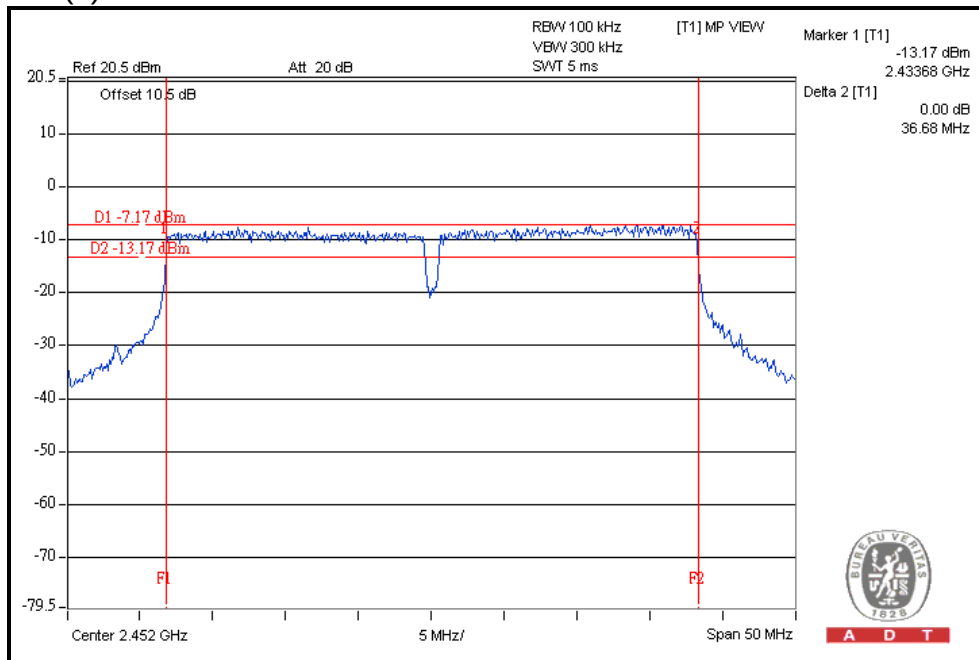


A D T

For CHAIN(0) : CH6



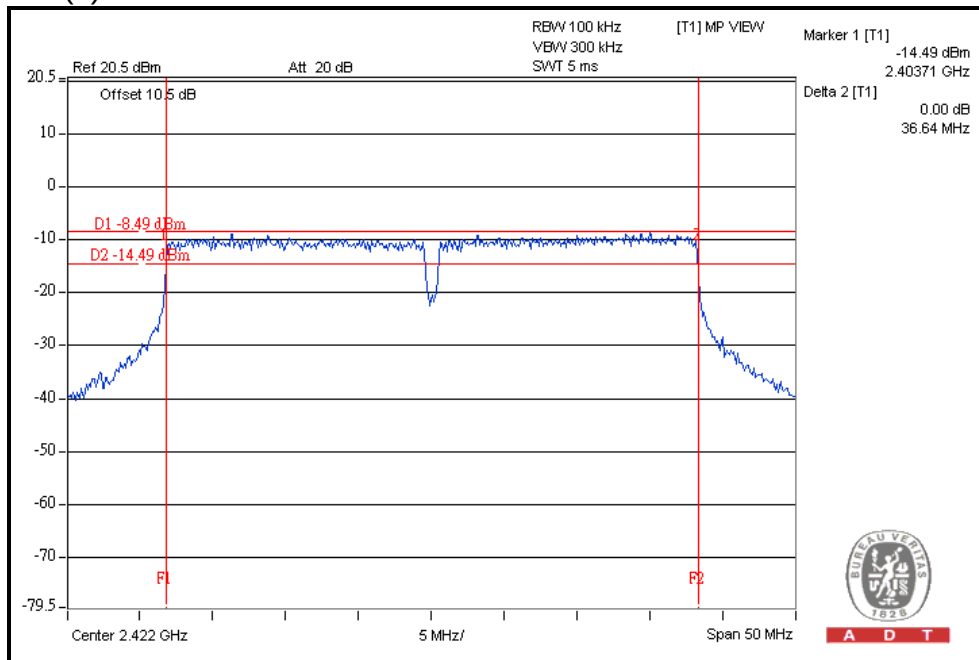
For CHAIN(0) : CH9



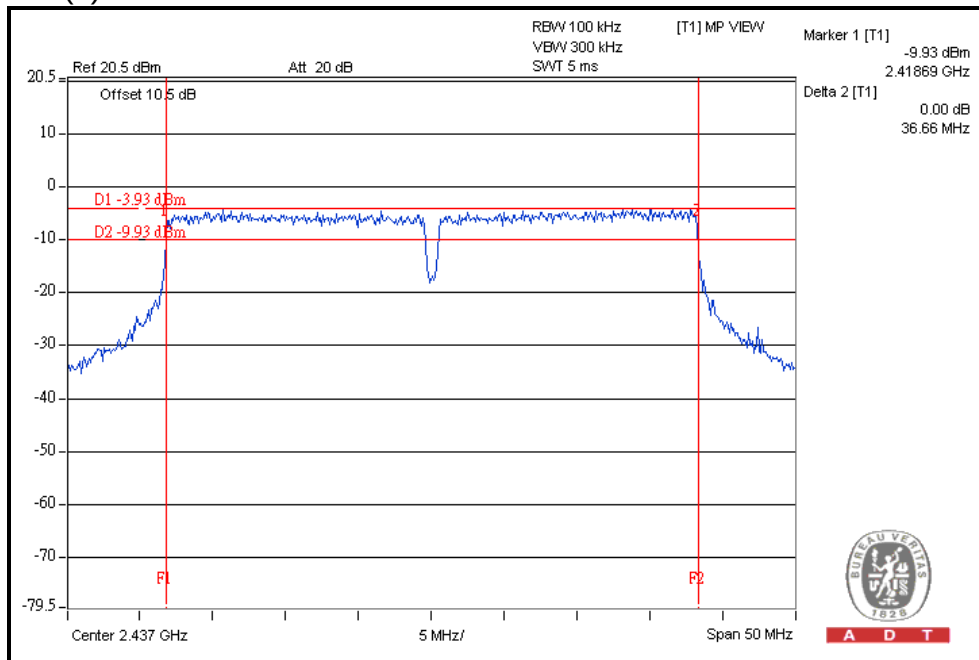


A D T

For CHAIN(1) : CH3



For CHAIN(1) : CH6



Ref 20.5 dBm Att 20 dB RBW 100 kHz VBW 300 kHz SWT 5 ms [T1] MP VIEW

Offset 10.5 dB

D1 -7.26 dBm

D2 -13.26 dBm

Marker 1 [T1] -13.26 dBm 2.43368 GHz

Delta 2 [T1] 0.00 dB 36.68 MHz

Center 2.452 GHz Span 50 MHz

5 MHz/

F1 F2

BUREAU VERITAS 1928

A D T

4.4 99% BANDWIDTH MEASUREMENT

4.4.1 TEST INSTRUMENTS

Test date: Oct. 18, 2011 to Jan. 18, 2012

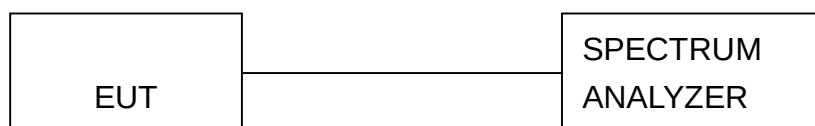
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

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 300kHz RBW and 1MHz VBW.

4.4.3 TEST SETUP



4.4.4 EUT OPERATING CONDITIONS

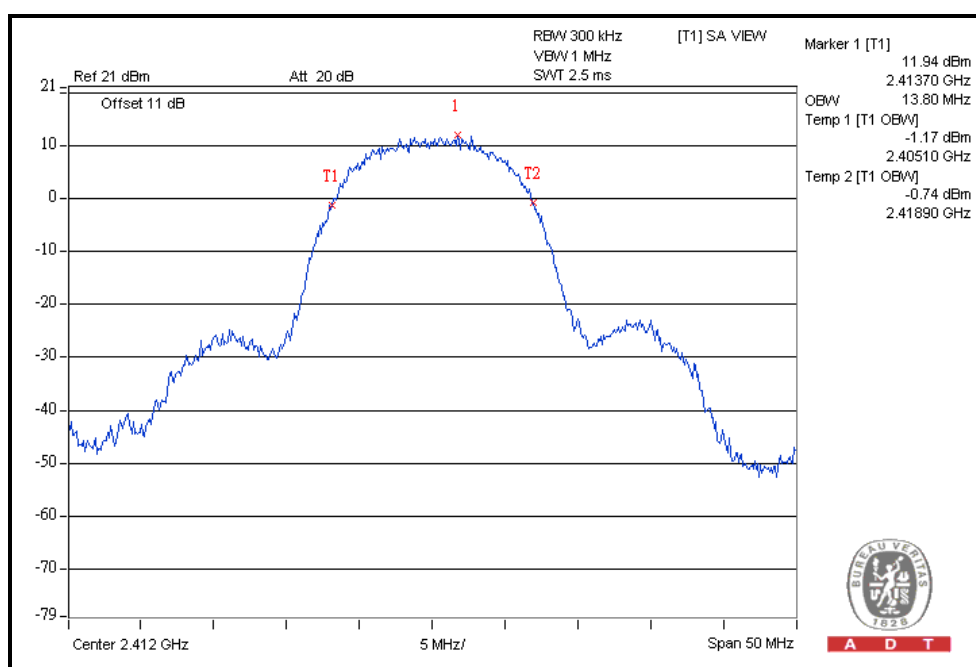
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.5 TEST RESULTS

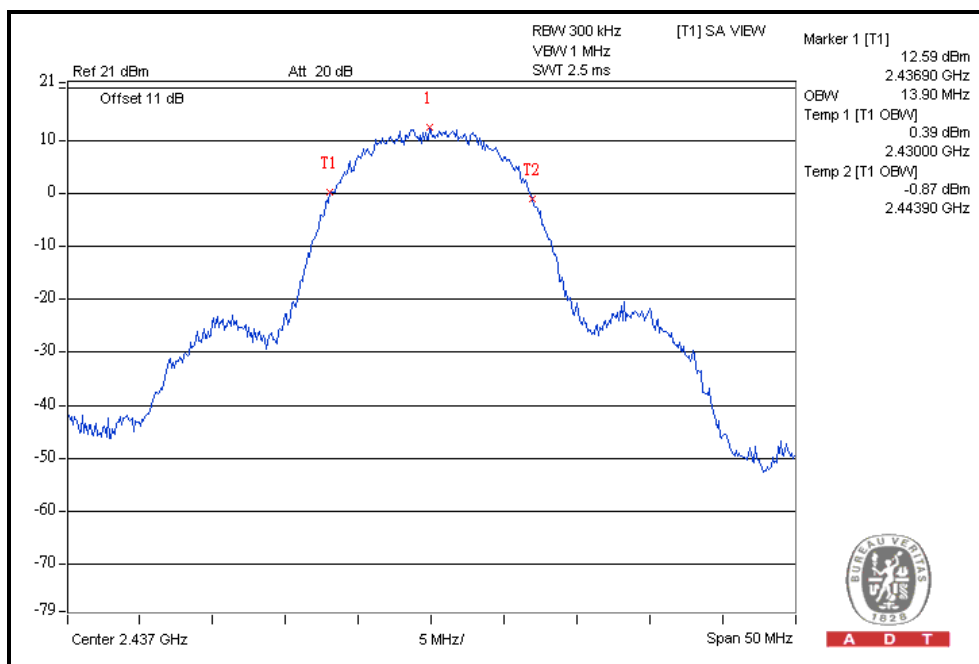
Single chain - 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)
1	2412	13.80
6	2437	13.90
11	2462	13.80

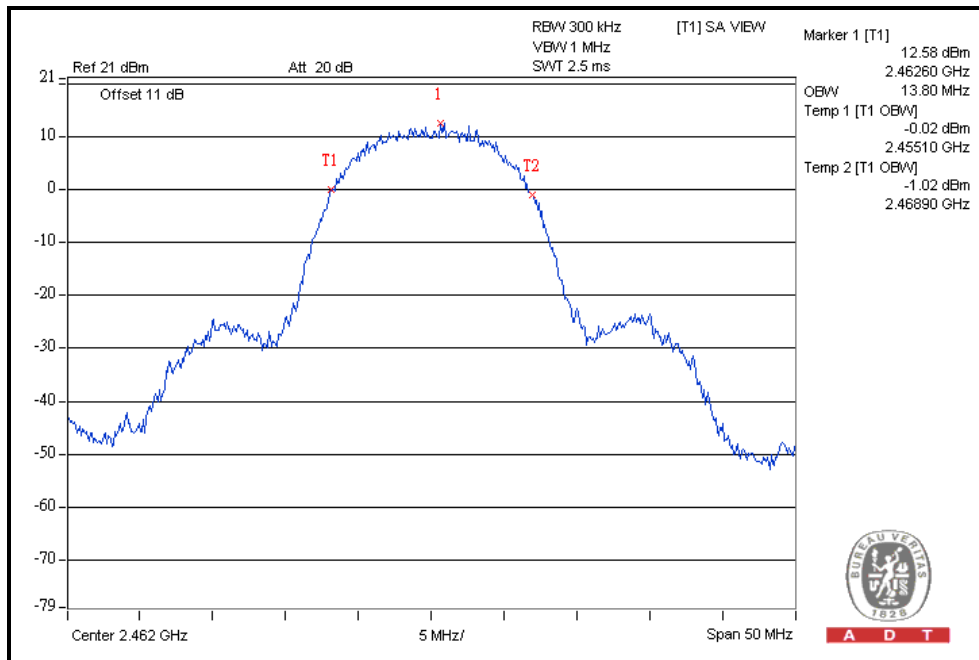
CH1



CH6



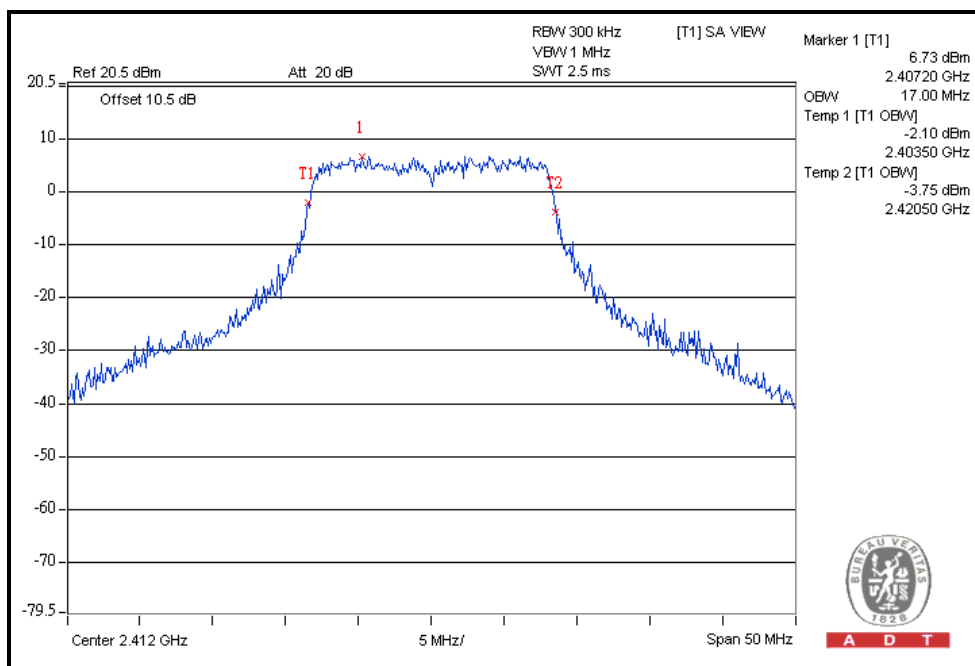
CH11



Single chain - 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)
1	2412	17.00
6	2437	18.20
11	2462	17.10

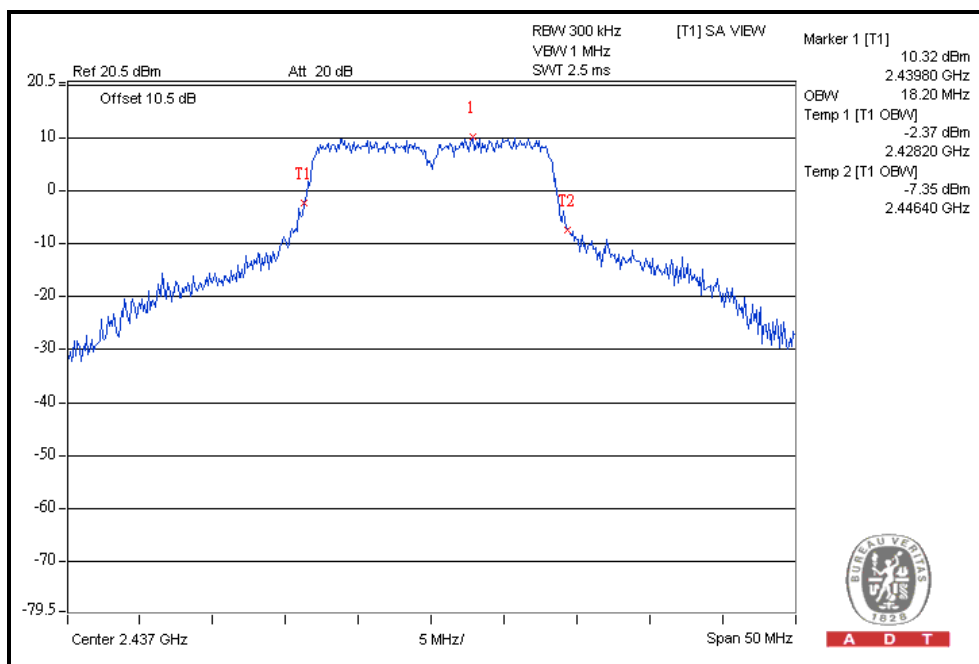
CH1





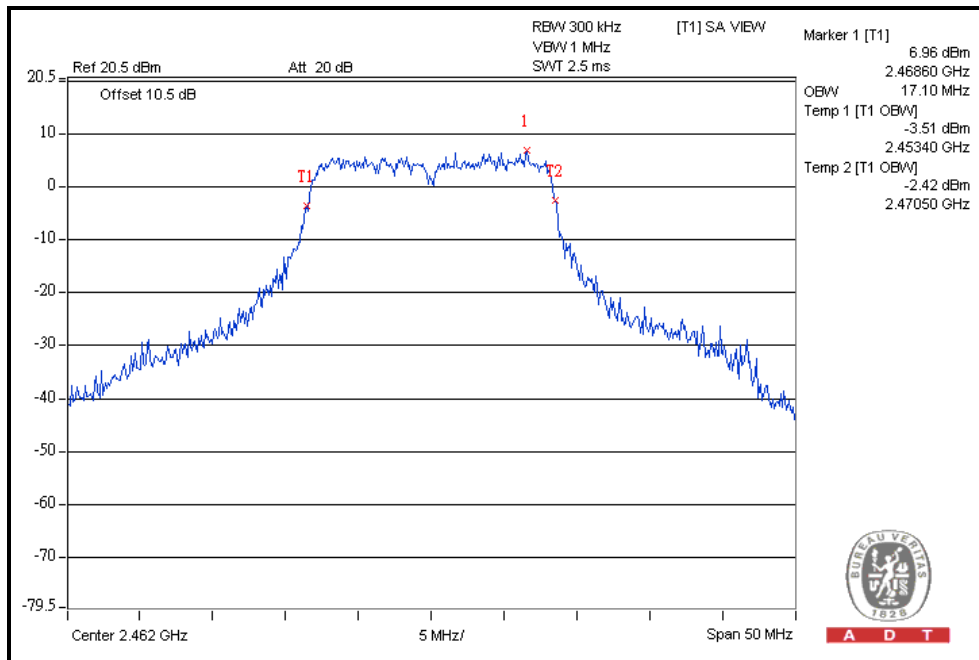
A D T

CH6



A D T

CH11

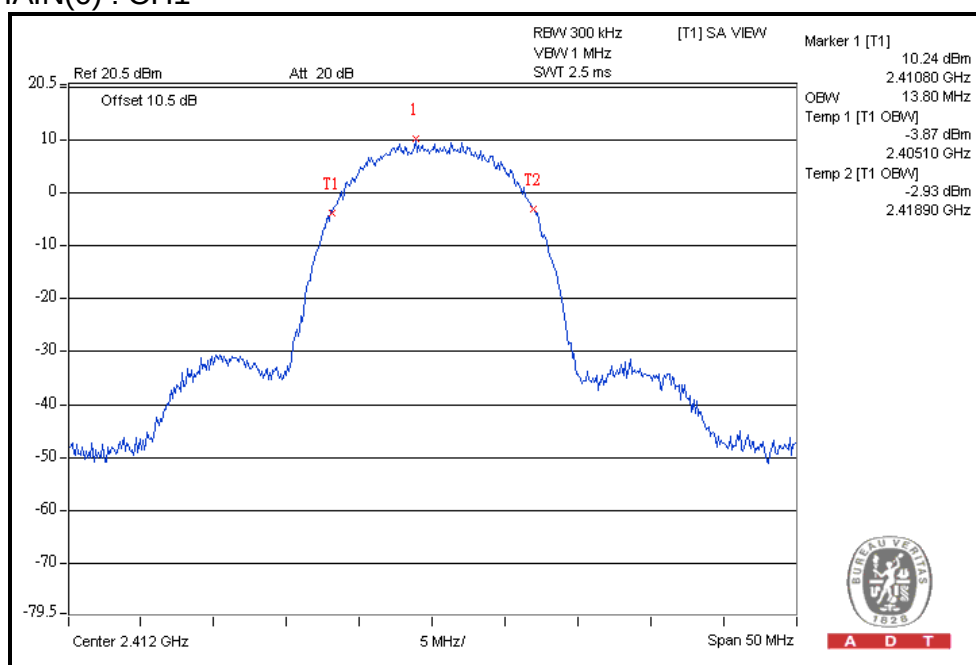


A D T

Multiple chain - 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	13.80	13.80
6	2437	13.70	13.80
11	2462	13.80	13.80

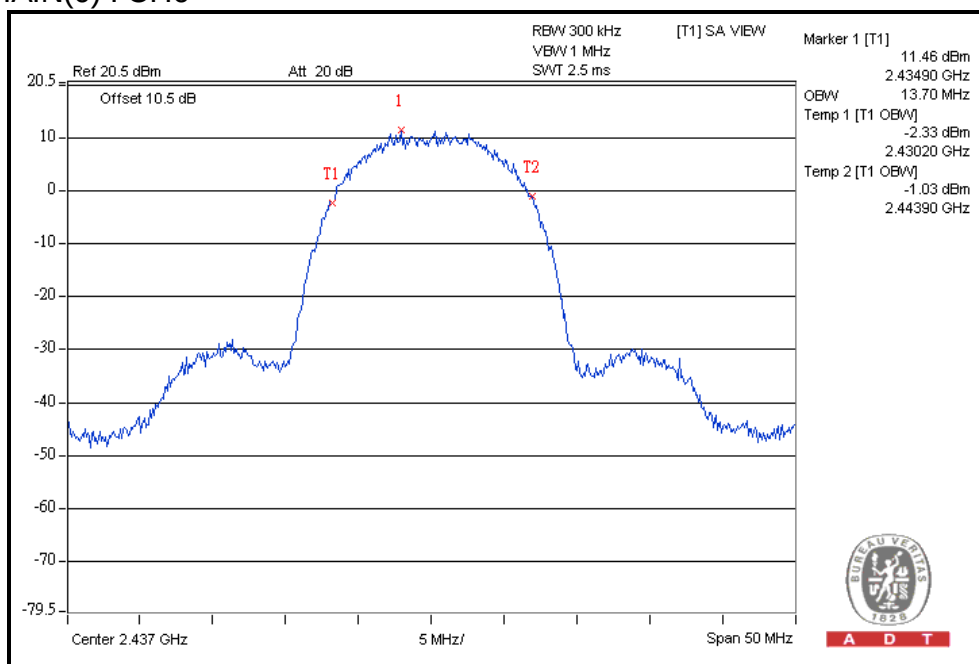
For CHAIN(0) : CH1



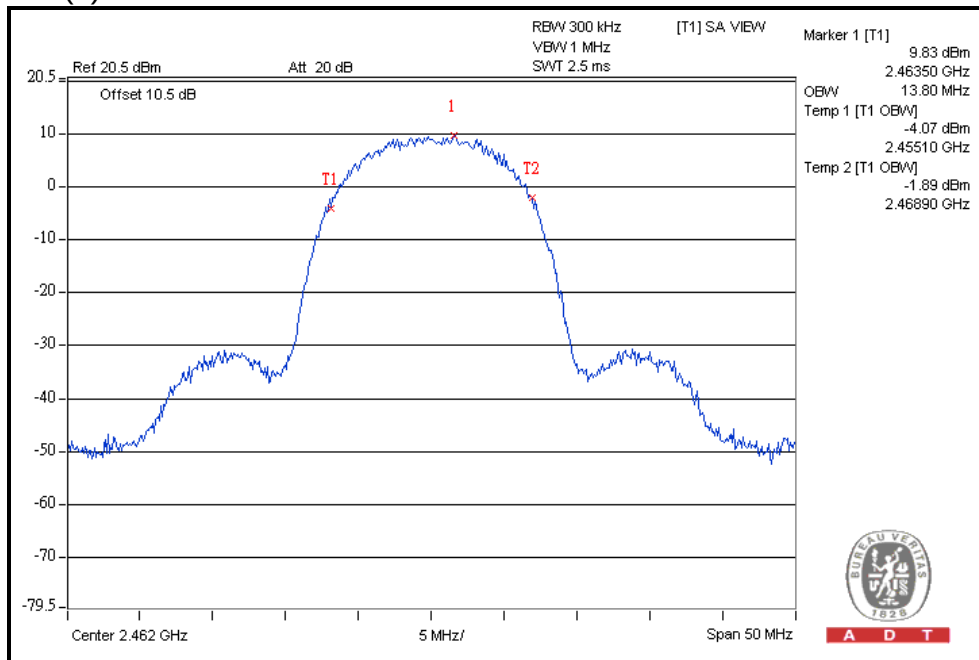


A D T

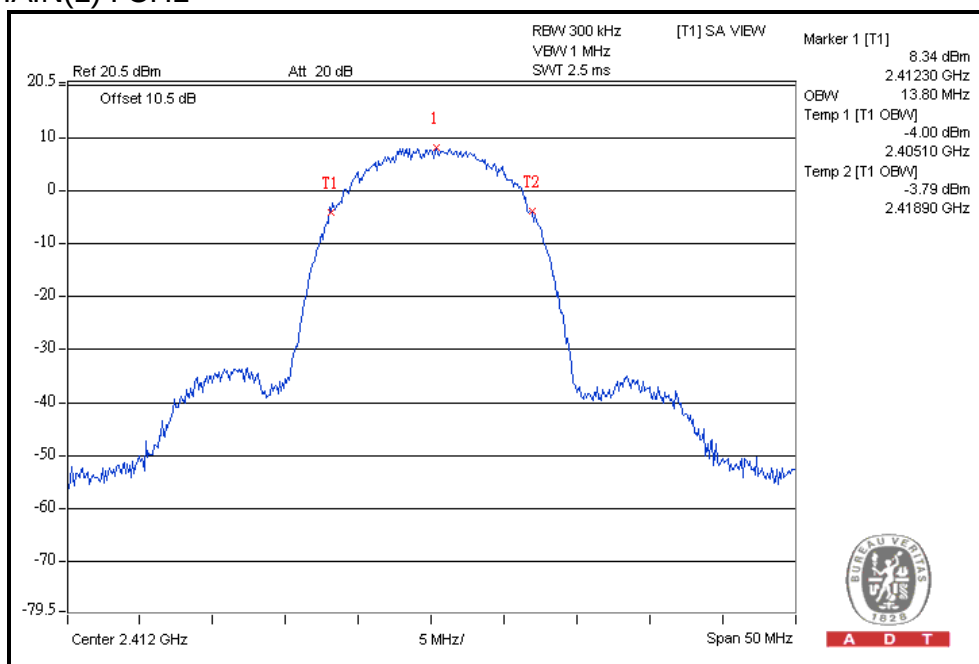
For CHAIN(0) : CH6



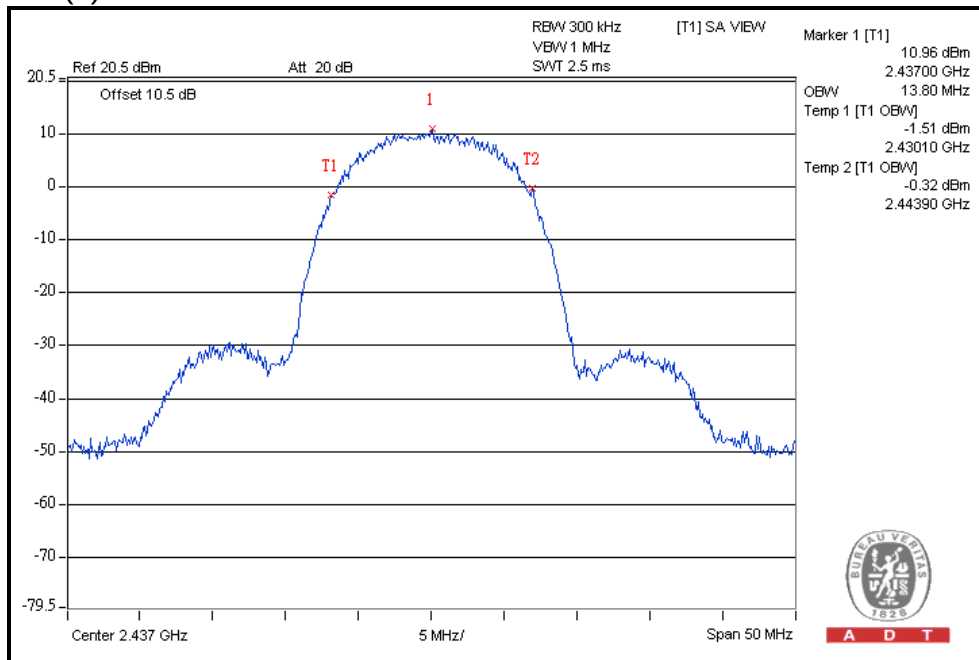
For CHAIN(0) : CH11



For CHAIN(1) : CH1



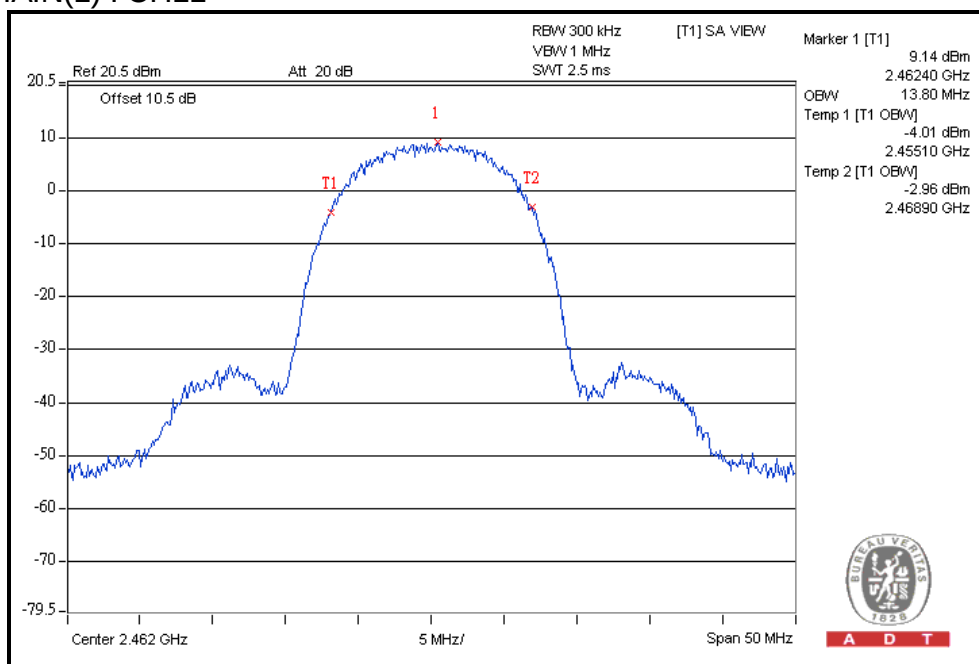
For CHAIN(1) : CH6





A D T

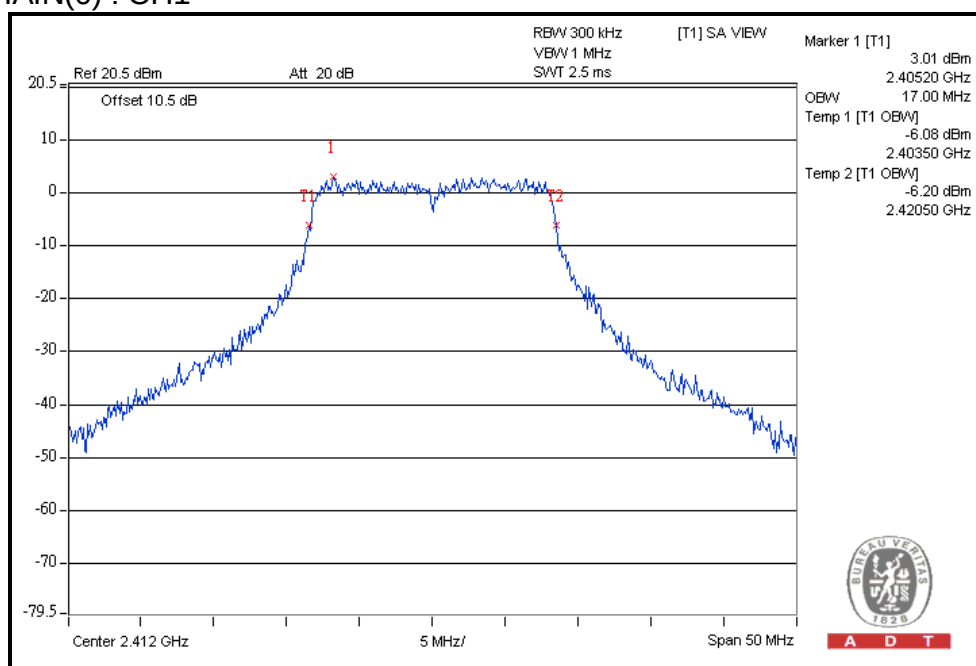
For CHAIN(1) : CH11



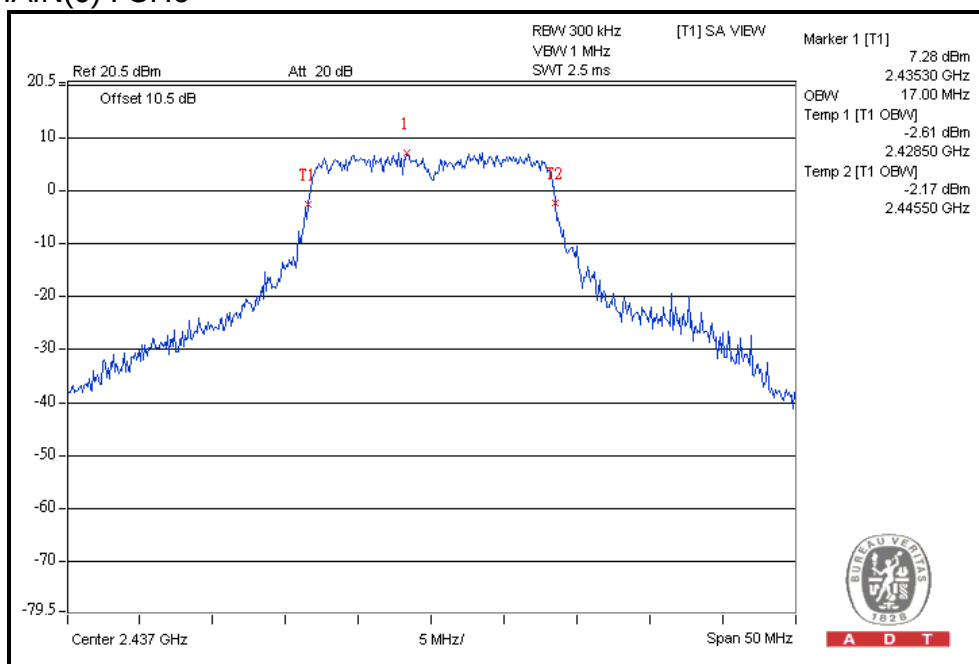
Multiple chain - 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	17.00	16.90
6	2437	17.00	17.00
11	2462	17.00	16.90

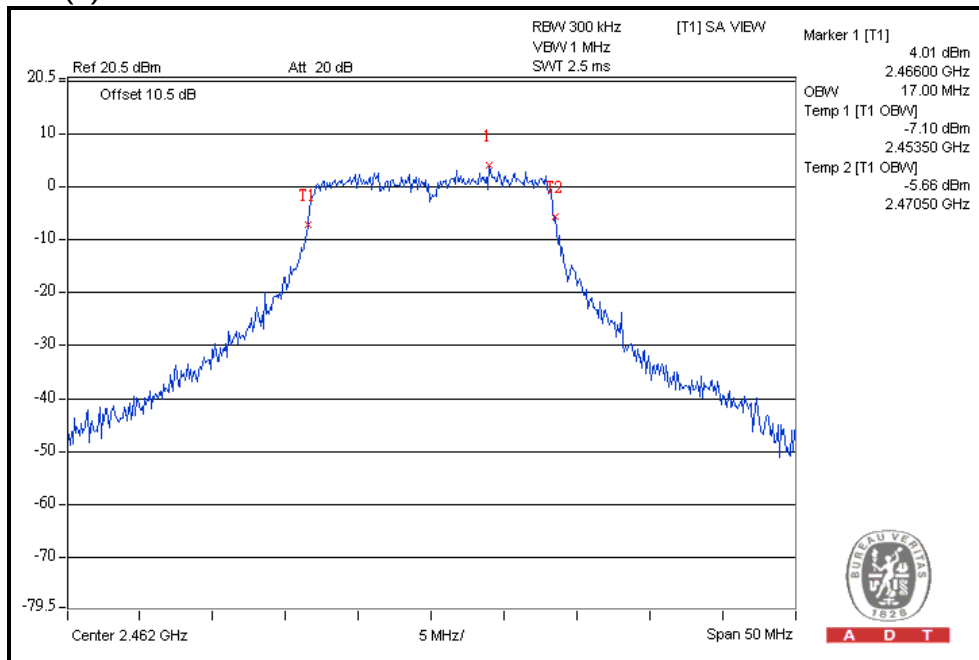
For CHAIN(0) : CH1



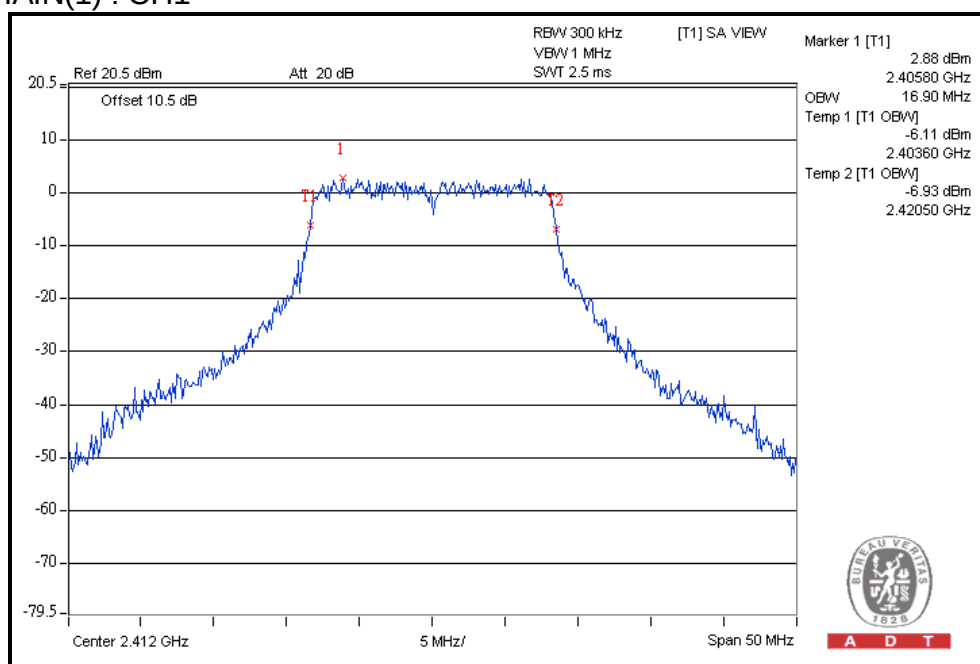
For CHAIN(0) : CH6



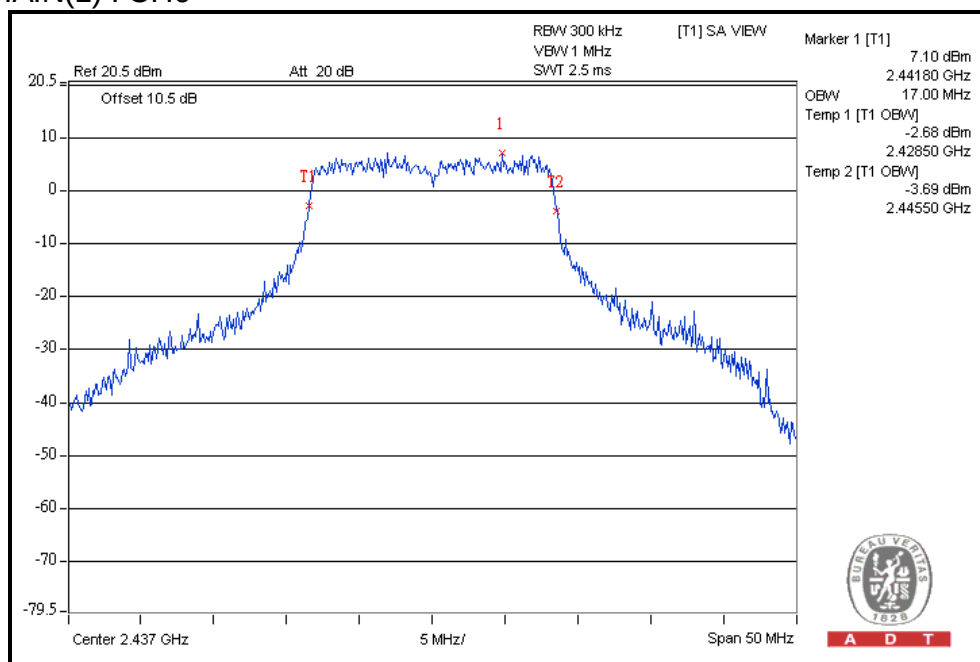
For CHAIN(0) : CH11



For CHAIN(1) : CH1



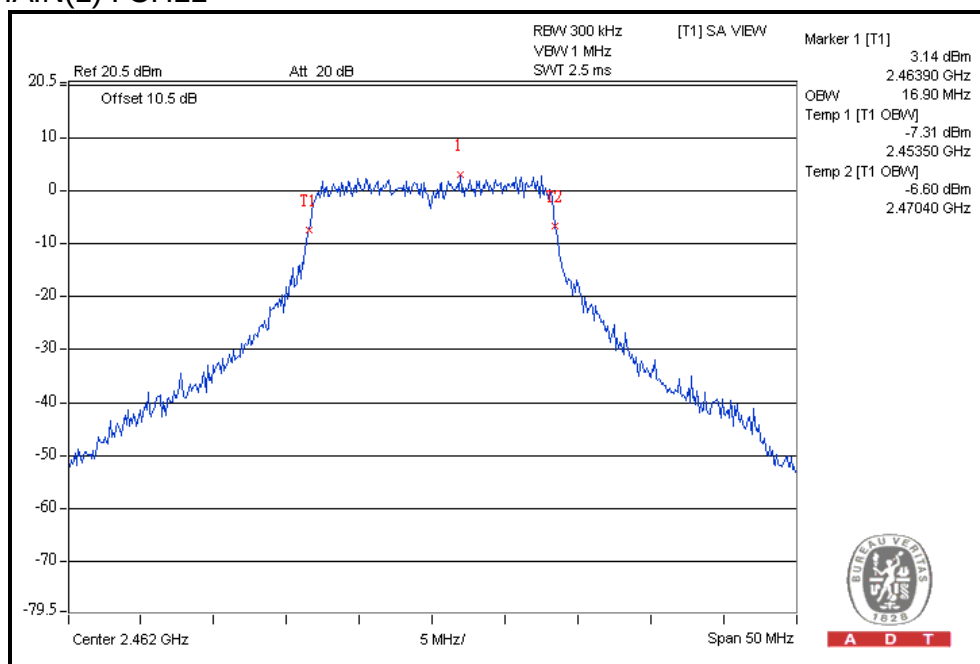
For CHAIN(1) : CH6





A D T

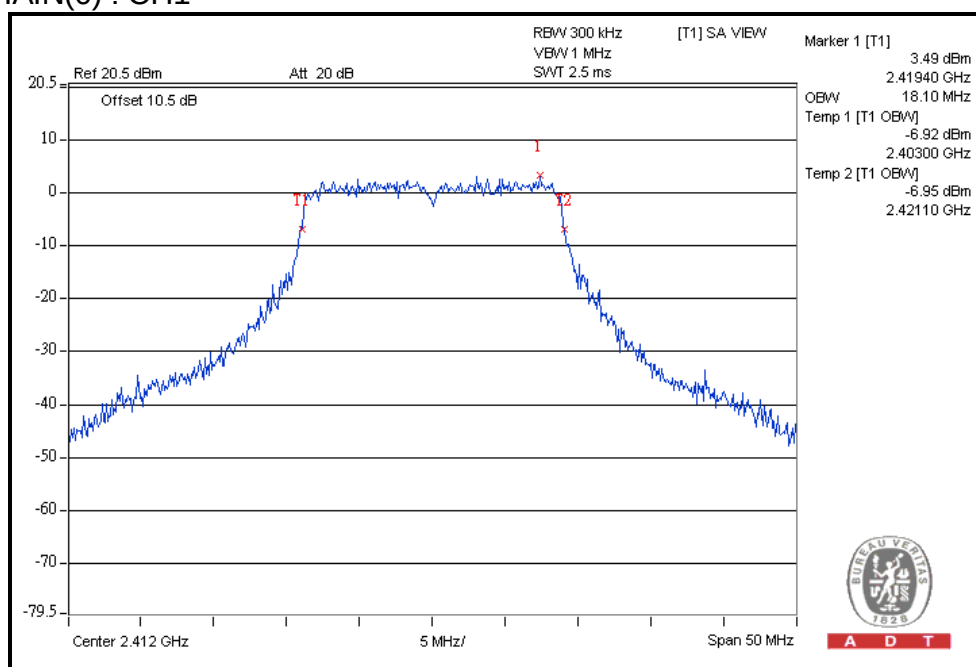
For CHAIN(1) : CH11



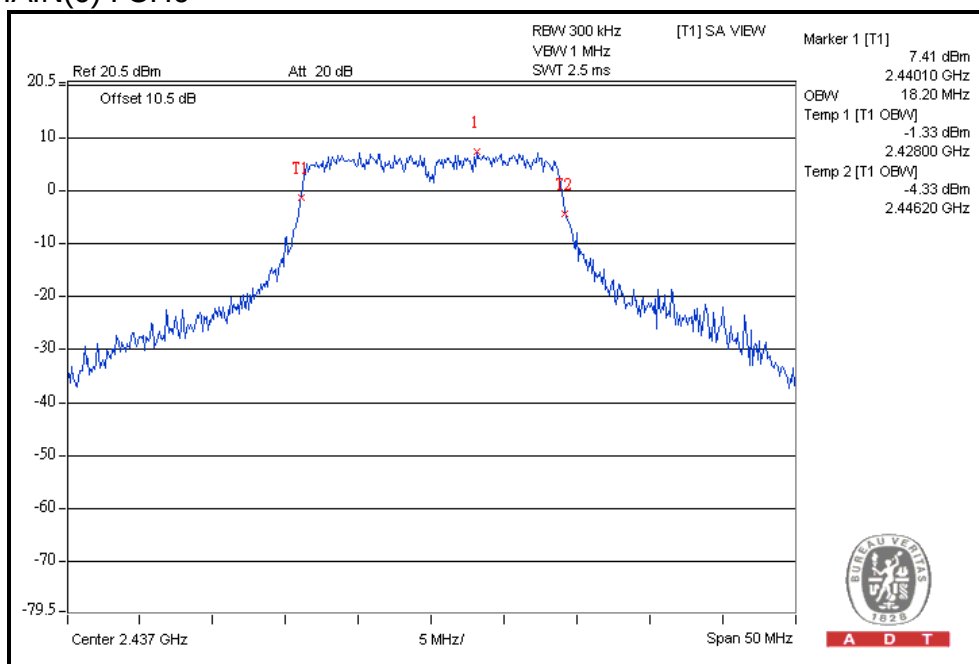
802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
1	2412	18.10	18.00
6	2437	18.20	18.20
11	2462	18.20	18.10

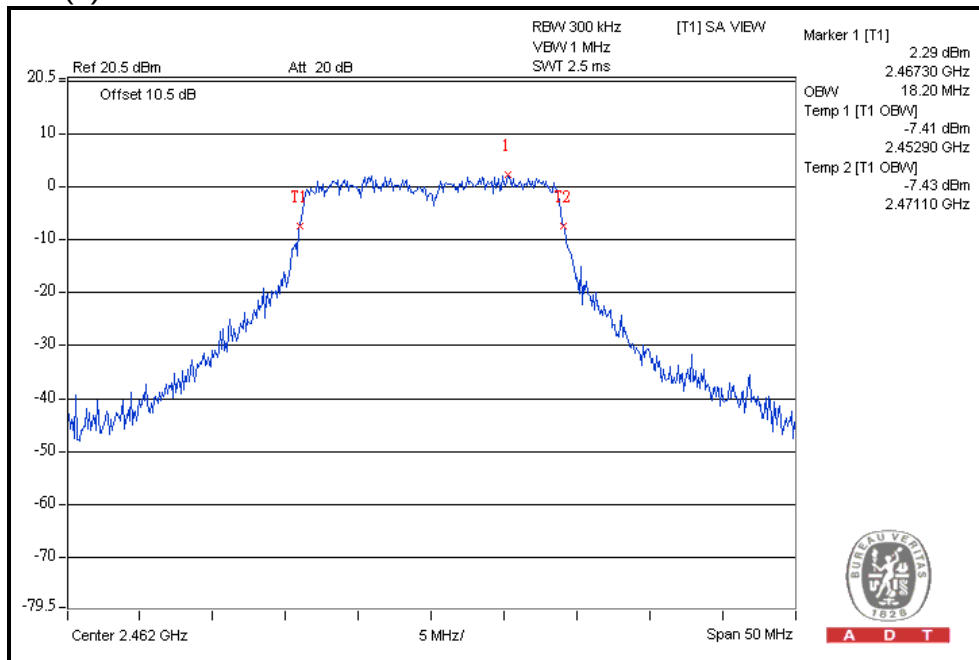
For CHAIN(0) : CH1



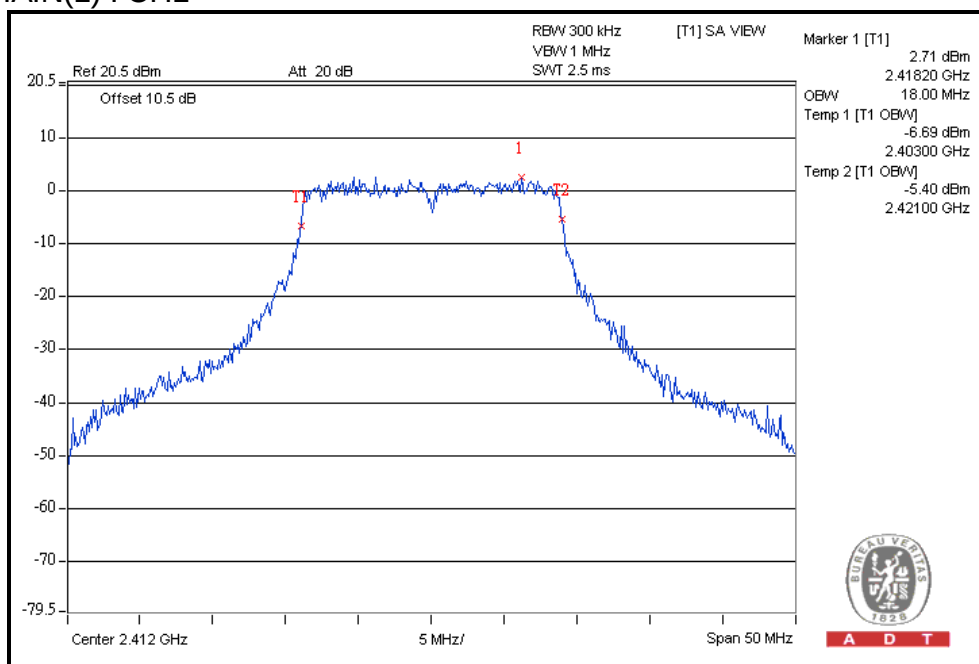
For CHAIN(0) : CH6



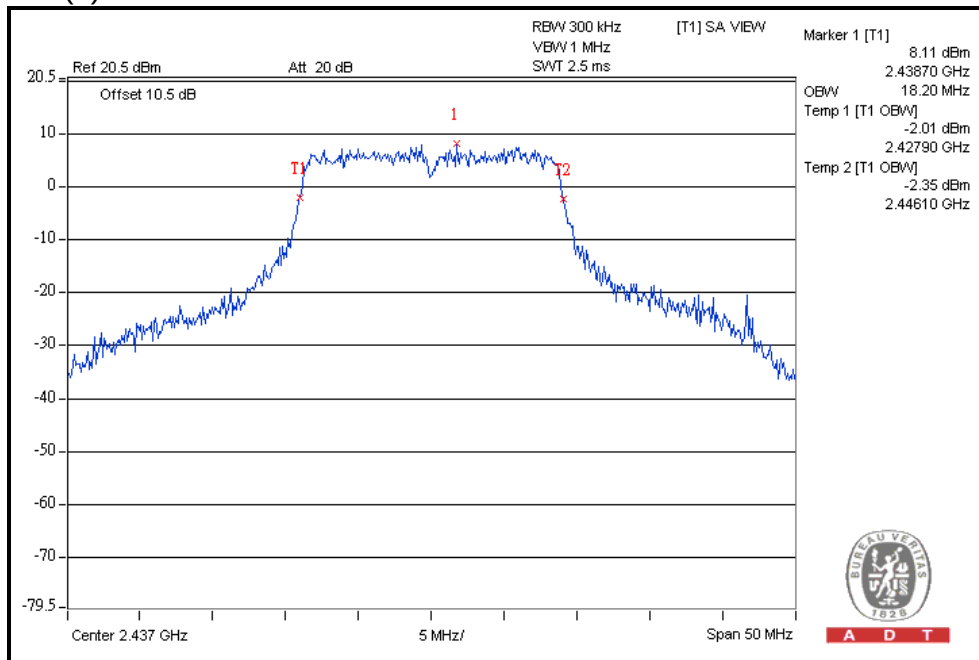
For CHAIN(0) : CH11



For CHAIN(1) : CH1



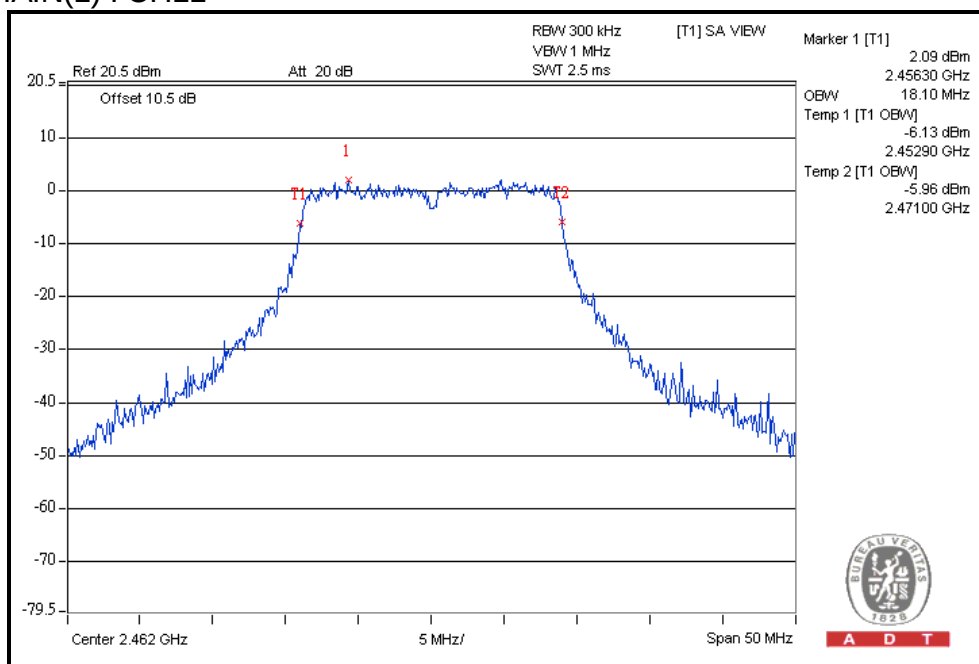
For CHAIN(1) : CH6





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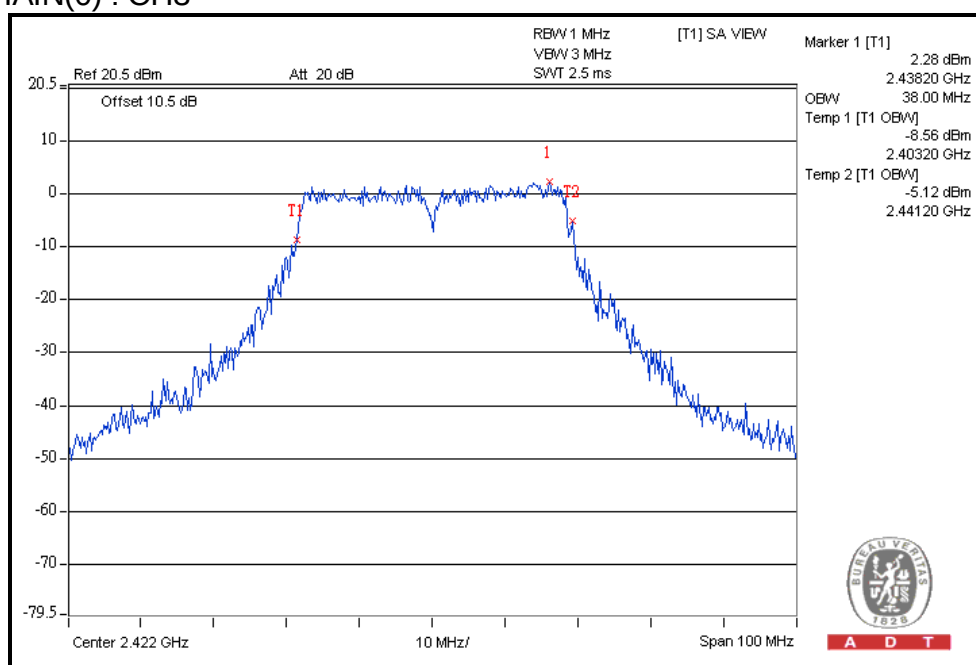
For CHAIN(1) : CH11



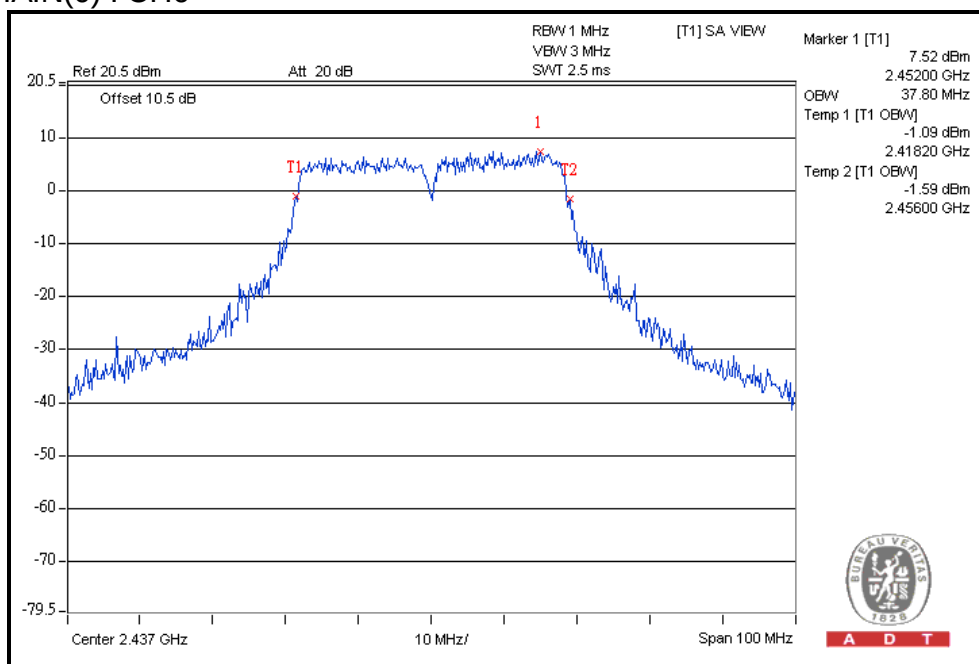
802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
3	2422	38.00	37.60
6	2437	37.80	38.00
9	2452	37.80	37.60

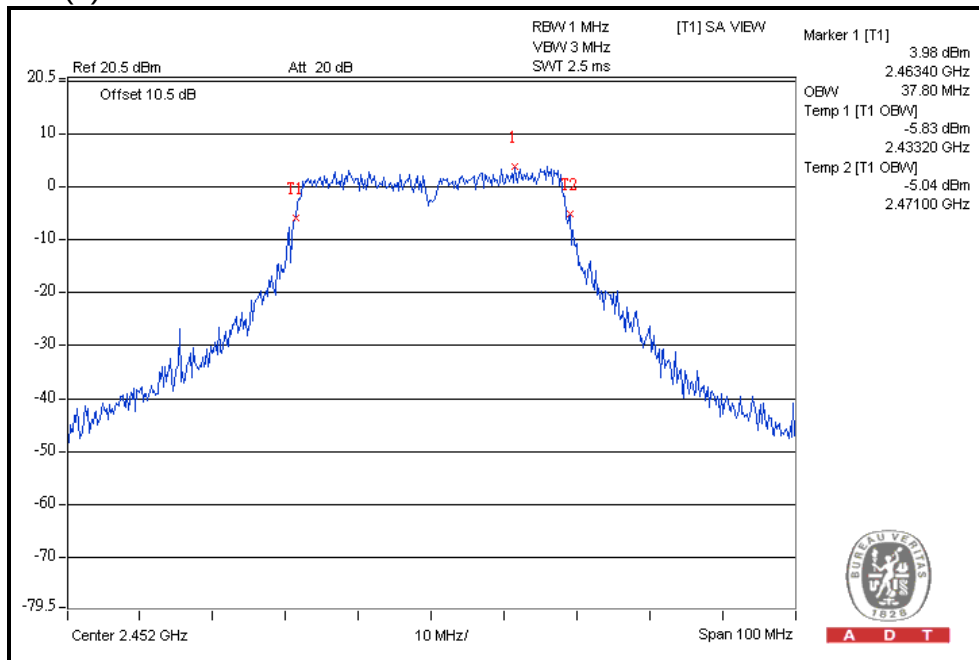
For CHAIN(0) : CH3



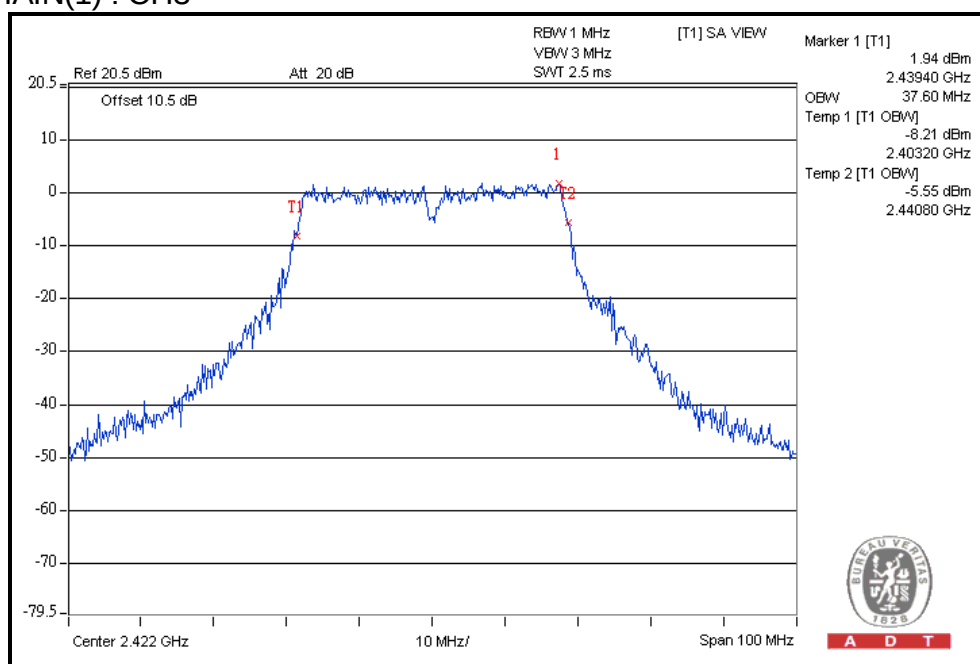
For CHAIN(0) : CH6



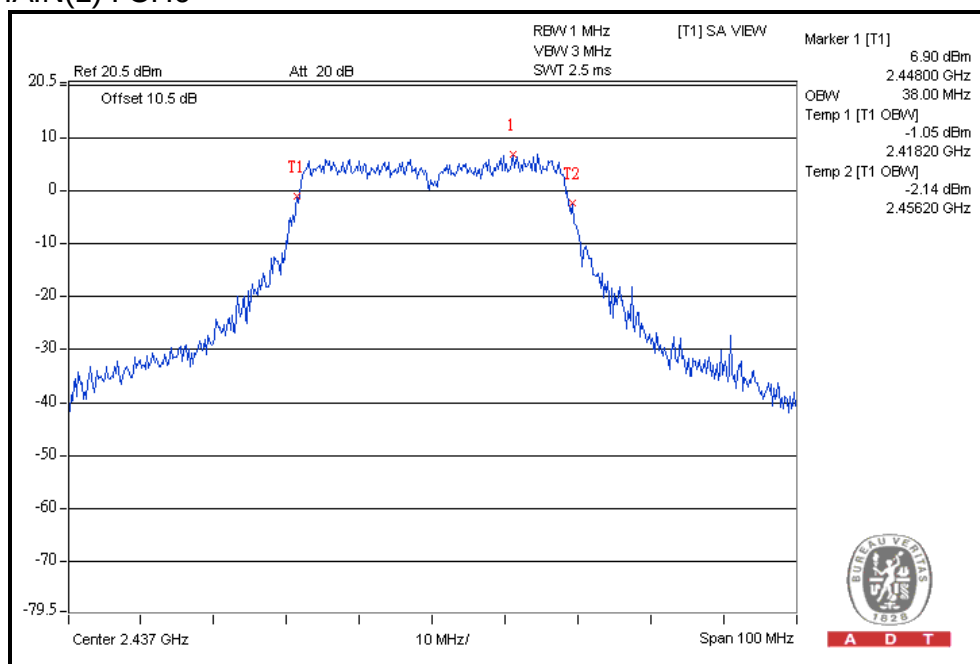
For CHAIN(0) : CH9



For CHAIN(1) : CH3



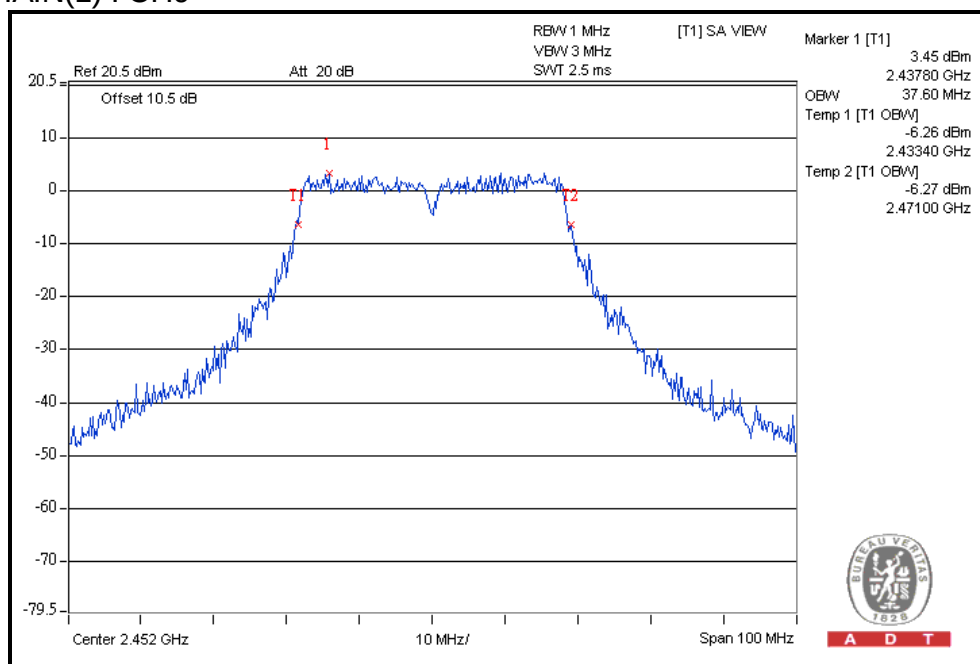
For CHAIN(1) : CH6





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For CHAIN(1) : CH9





A D T

4.5 MAXIMUM PEAK OUTPUT POWER

4.5.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.5.2 INSTRUMENTS

Test date: Oct. 18, 2011 to Jan. 18, 2012

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

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

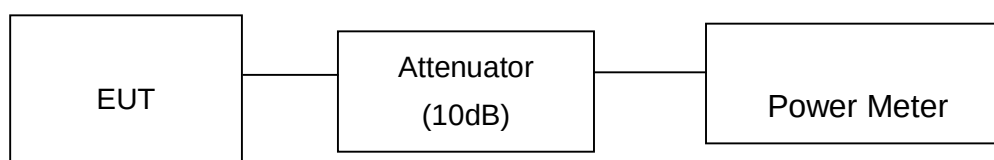
4.5.3 TEST PROCEDURES

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 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

Single chain - 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	97.7	19.9	30	PASS
6	2437	134.9	21.3	30	PASS
11	2462	123.0	20.9	30	PASS

Single chain - 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	346.7	25.4	30	PASS
6	2437	478.6	26.8	30	PASS
11	2462	323.6	25.1	30	PASS

Multiple chain - 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	19.9	19.1	179.0	22.5	29.37	PASS
6	2437	19.7	19.2	176.5	22.5	29.37	PASS
11	2462	19.5	18.9	166.8	22.2	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 OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	22.7	21.8	337.6	25.3	29.37	PASS
6	2437	23.7	23.6	463.5	26.7	29.37	PASS
11	2462	22.0	21.6	303.0	24.8	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) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	21.2	20.8	252.1	24.0	29.37	PASS
6	2437	24.0	23.4	470.0	26.7	29.37	PASS
11	2462	20.2	19.6	195.9	22.9	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) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	17.5	17.5	112.5	20.5	29.37	PASS
6	2437	22.2	21.6	310.5	24.9	29.37	PASS
9	2452	19.4	18.9	164.7	22.2	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.

4.6 AVERAGE OUTPUT POWER

4.6.1 FOR REFERENCE.

4.6.2 TEST INSTRUMENTS

Test date: Oct. 18, 2011 to Jan. 18, 2012

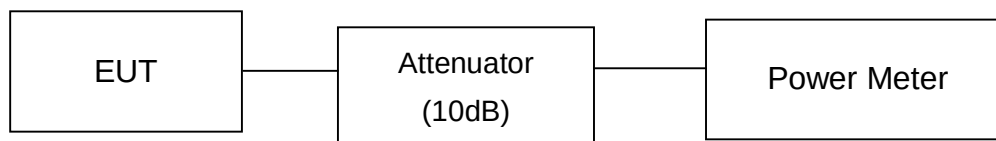
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Peak Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

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

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

Single chain - 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
1	2412	17.8
6	2437	19.8
11	2462	18.9

Single chain - 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
1	2412	16.1
6	2437	19.9
11	2462	15.9

Multiple chain - 802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	17.2	16.3	19.8
6	2437	17.2	16.3	19.8
11	2462	17.2	16.3	19.8

Multiple chain - 802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	13.2	12.3	15.8
6	2437	17.1	16.3	19.7
11	2462	12.5	12.2	15.4

802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
1	2412	13.0	12.6	15.8
6	2437	17.1	16.5	19.8
11	2462	12.0	11.4	14.7

802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
3	2422	9.5	9.0	12.3
6	2437	14.4	13.6	17.0
9	2452	11.3	10.6	14.0

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

Test date: Oct. 18, 2011 to Jan. 18, 2012

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

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

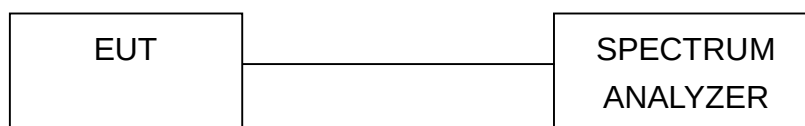
4.7.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



4.7.6 EUT OPERATING CONDITION

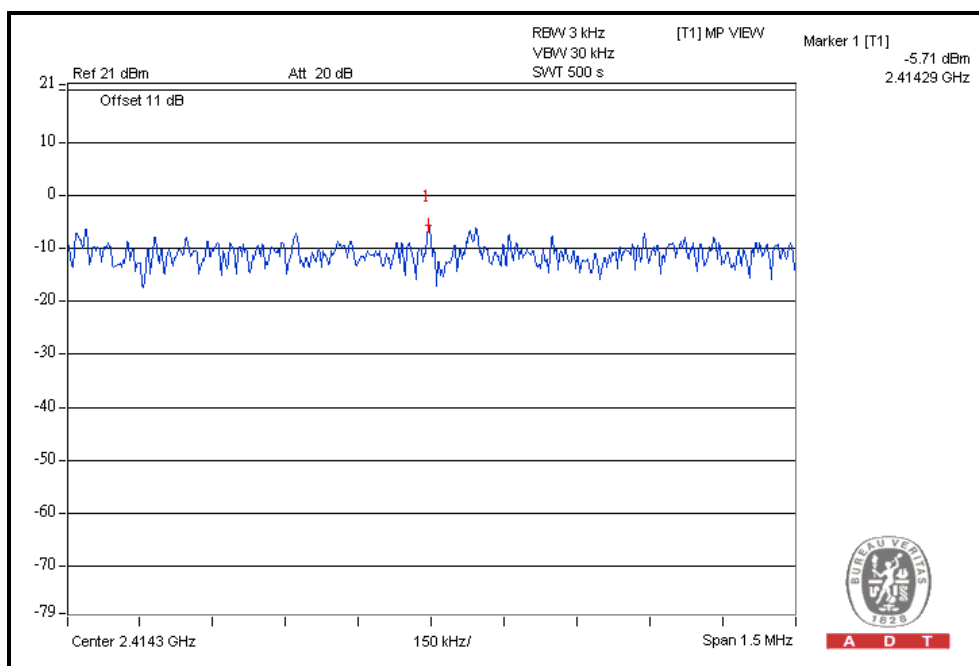
Same as Item 4.3.6

4.7.7 TEST RESULTS

Single chain - 802.11b DSSS MODULATION:

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS / FAIL
1	2412	-5.7	8	PASS
6	2437	-5.8	8	PASS
11	2462	-6.3	8	PASS

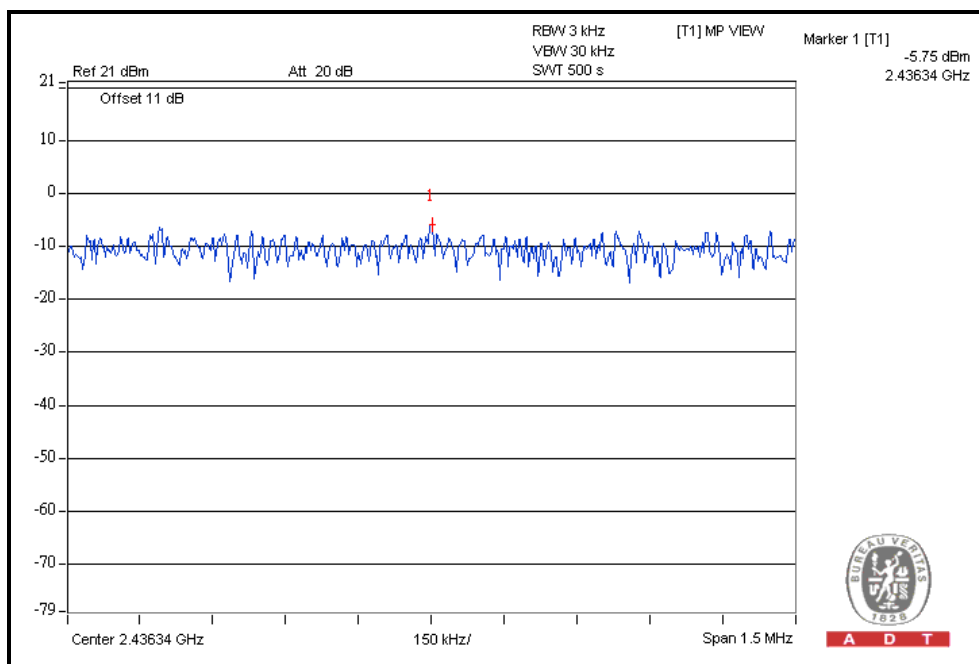
CH1



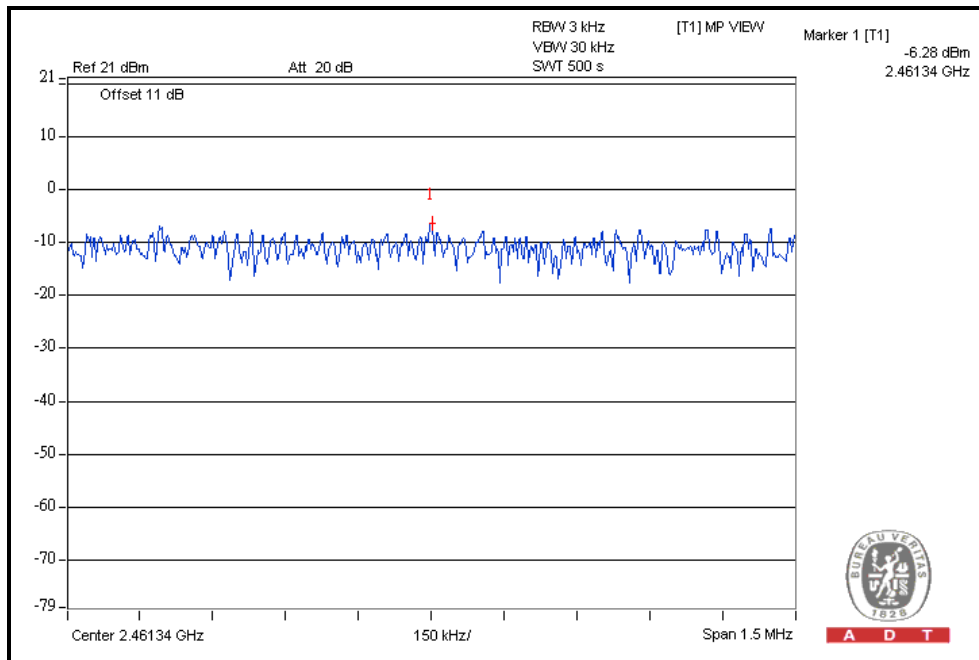


A D T

CH6



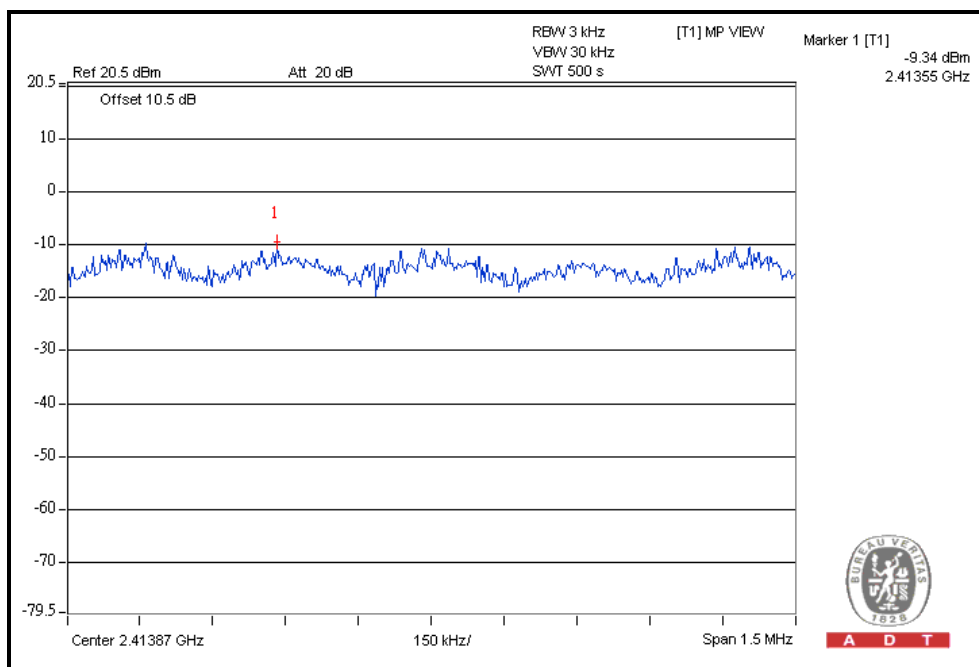
CH11



Single chain - 802.11g DSSS MODULATION:

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS / FAIL
1	2412	-9.3	8	PASS
6	2437	-6.5	8	PASS
11	2462	-10.2	8	PASS

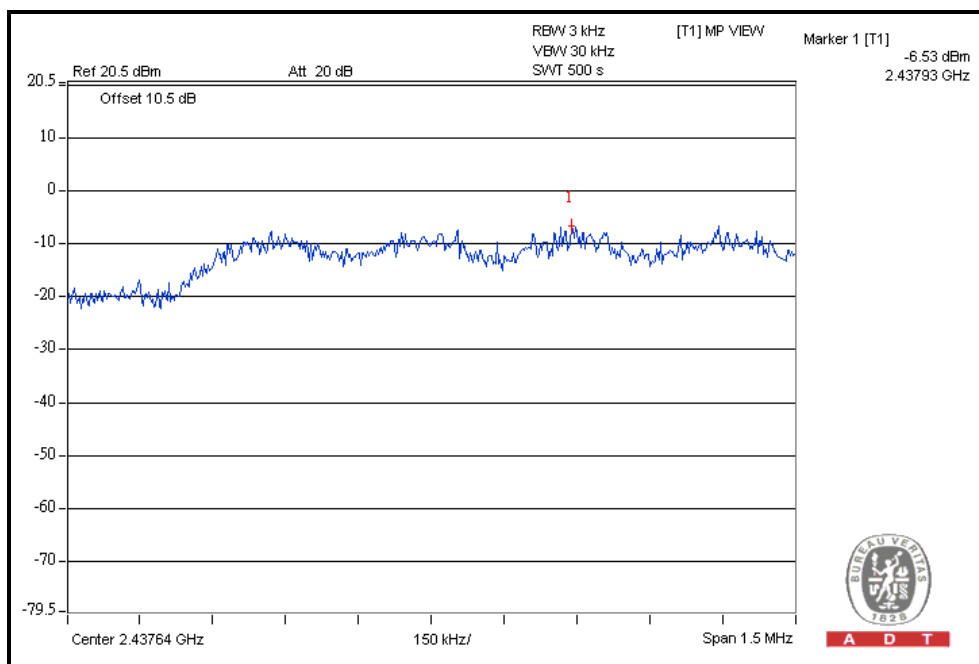
CH1



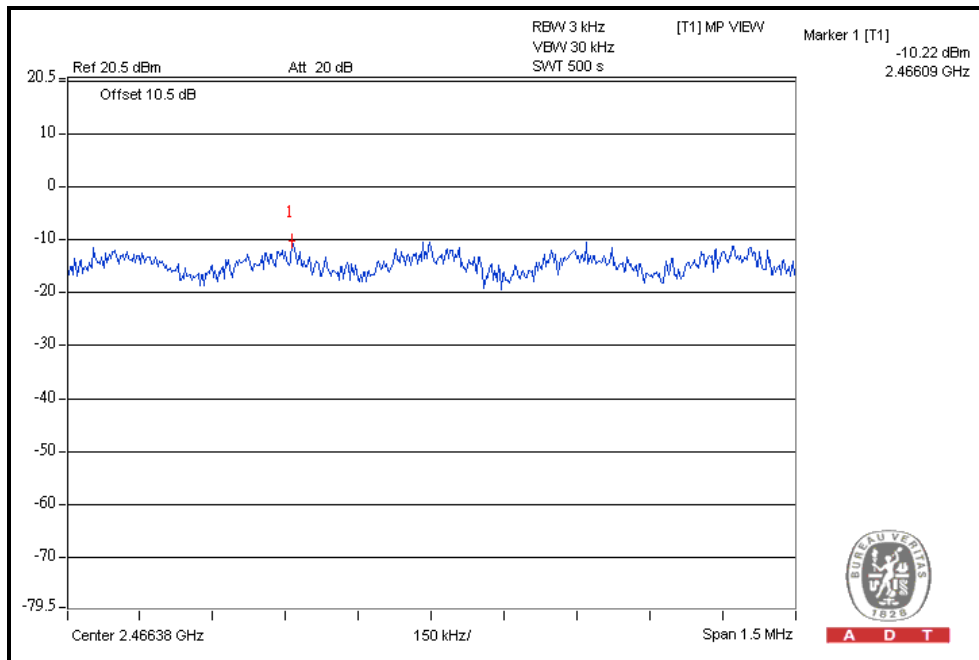


A D T

CH6



CH11



Multiple chain - 802.11b DSSS MODULATION:

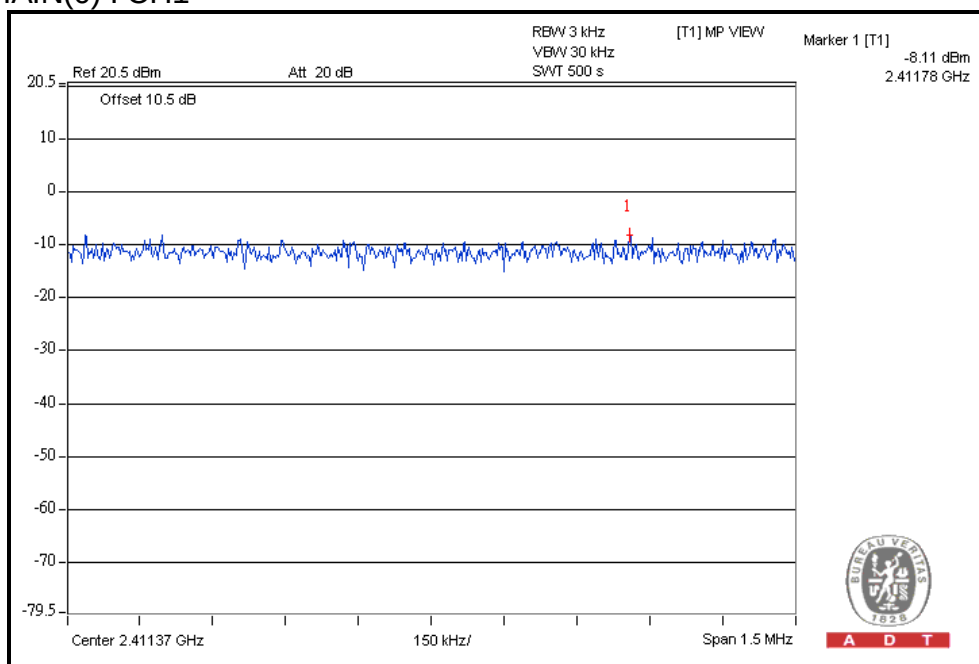
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-8.1	3.01	-5.1	7.37	PASS
	6	2437	-7.0	3.01	-4.0	7.37	PASS
	11	2462	-7.8	3.01	-4.8	7.37	PASS
1	1	2412	-8.3	3.01	-5.3	7.37	PASS
	6	2437	-5.5	3.01	-2.5	7.37	PASS
	11	2462	-8.0	3.01	-5.0	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.

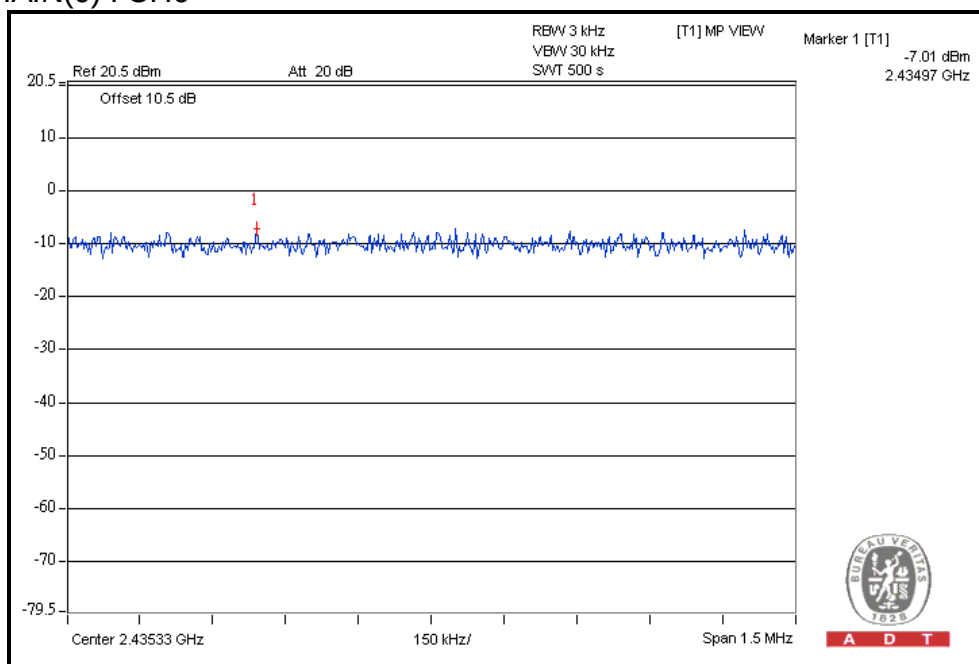
For CHAIN(0) : CH1



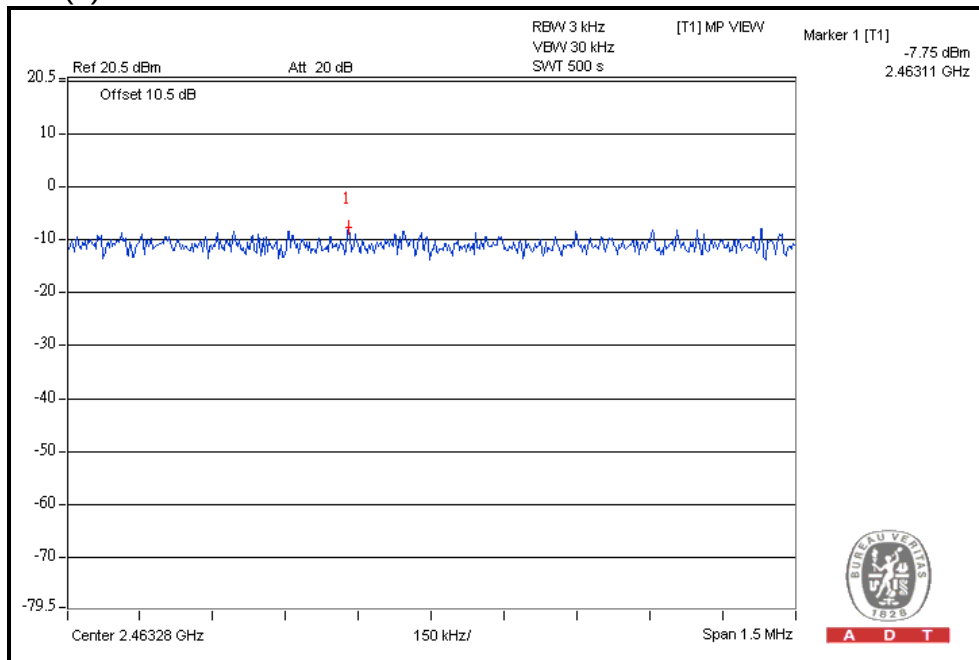


A D T

For CHAIN(0) : CH6



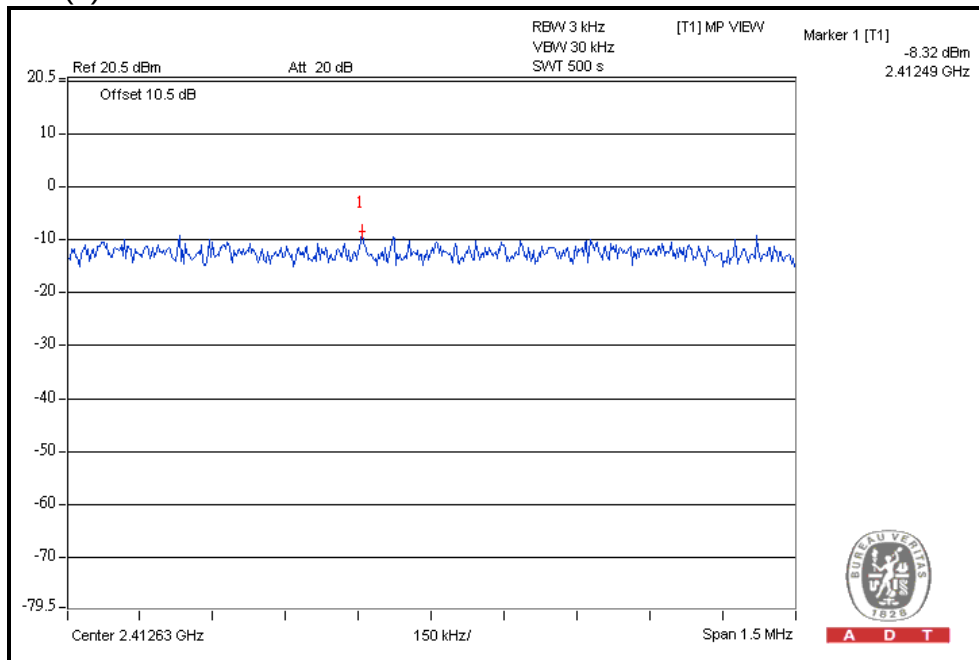
For CHAIN(0) : CH11



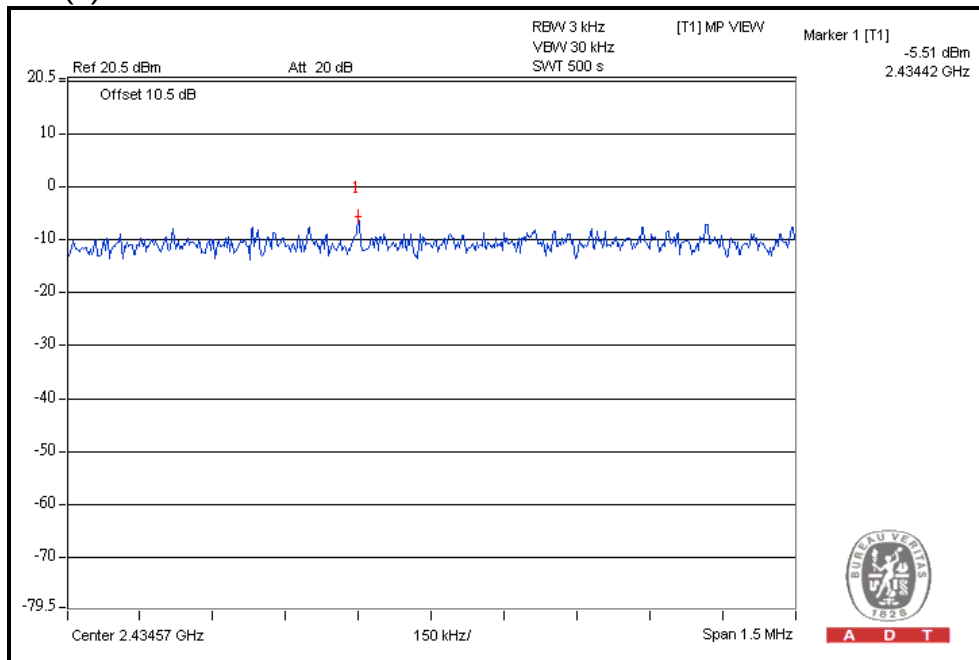


A D T

For CHAIN(1) : CH1



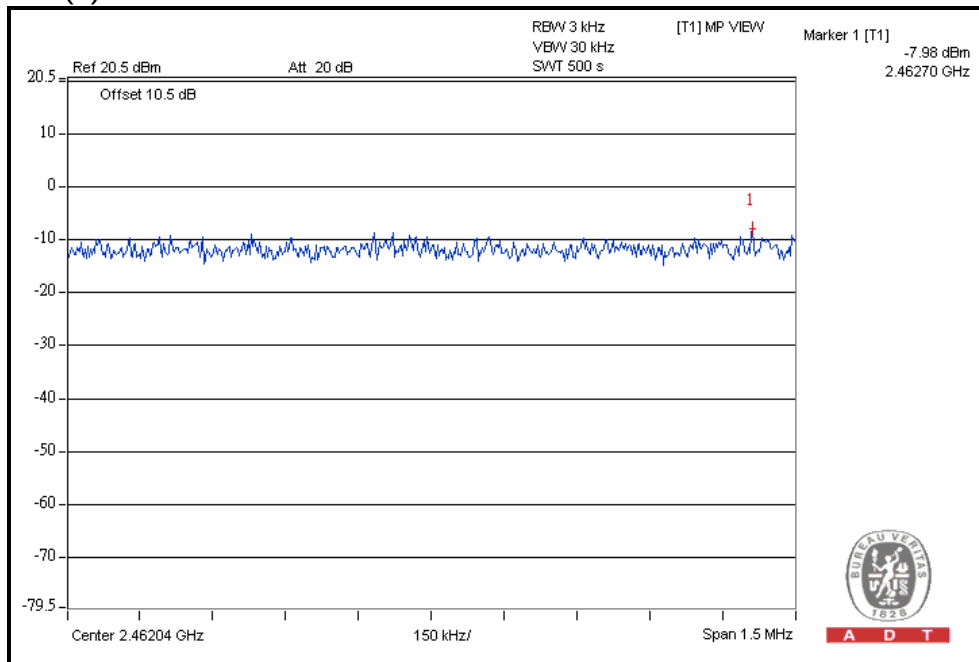
For CHAIN(1) : CH6





A D T

For CHAIN(1) : CH11



Multiple chain - 802.11g OFDM MODULATION:

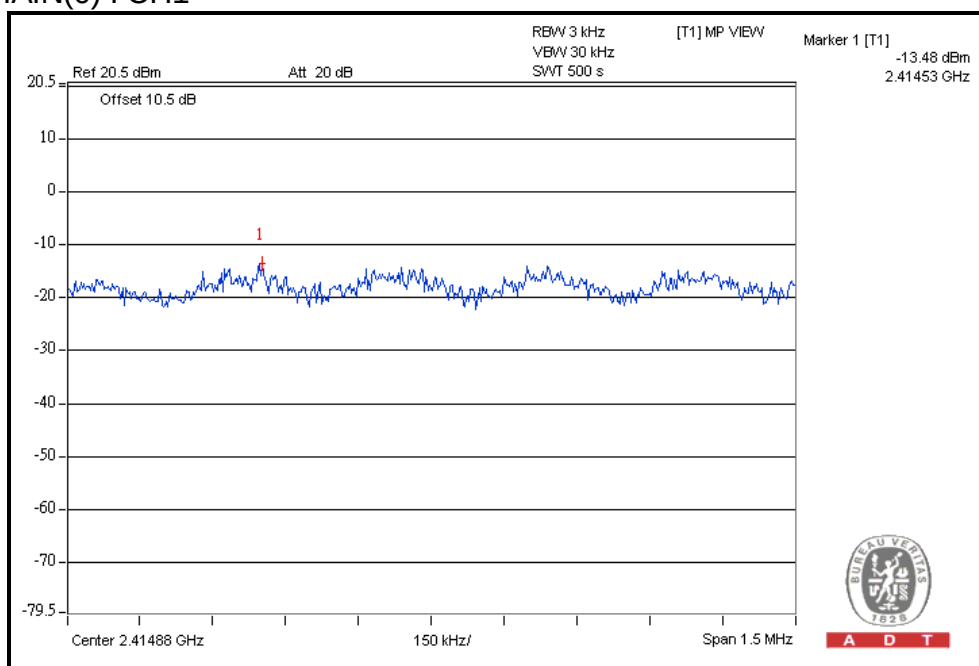
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-13.5	3.01	-10.5	7.37	PASS
	6	2437	-9.4	3.01	-6.4	7.37	PASS
	11	2462	-13.6	3.01	-10.6	7.37	PASS
1	1	2412	-14.0	3.01	-11.0	7.37	PASS
	6	2437	-9.9	3.01	-6.9	7.37	PASS
	11	2462	-13.7	3.01	-10.7	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.

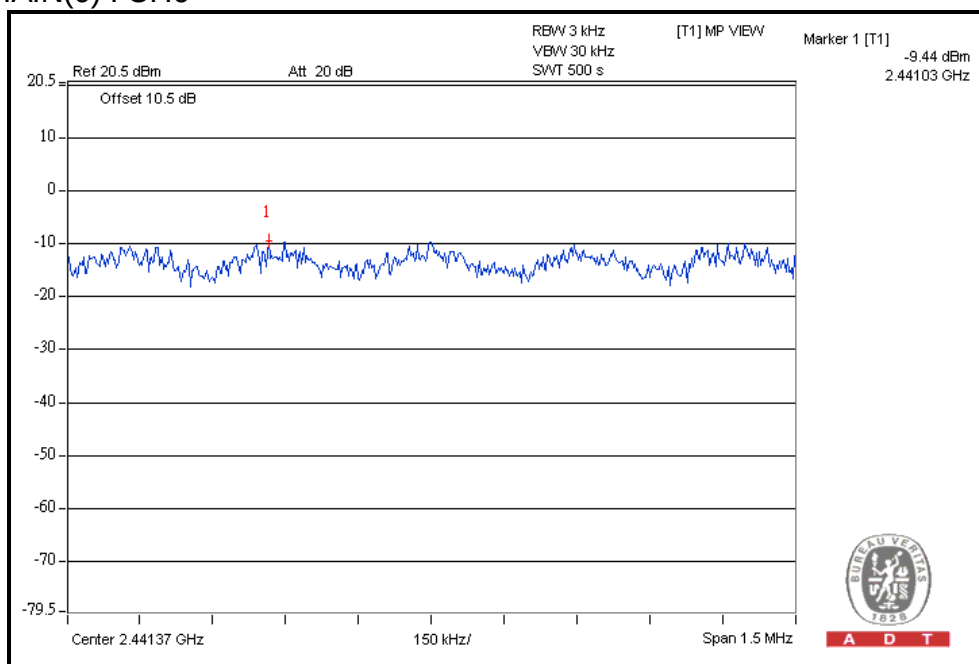
For CHAIN(0) : CH1



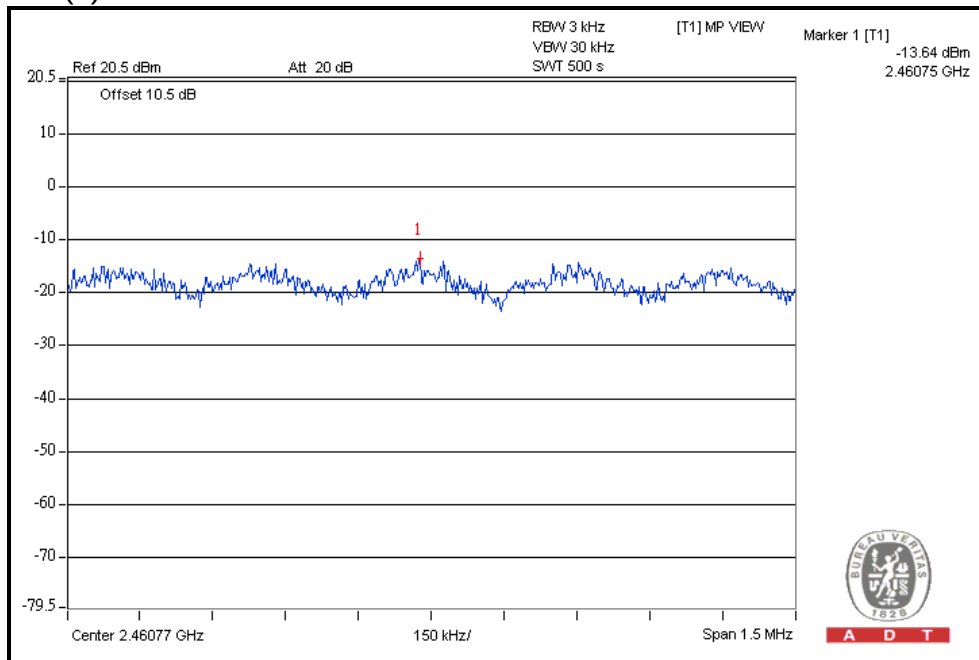


A D T

For CHAIN(0) : CH6



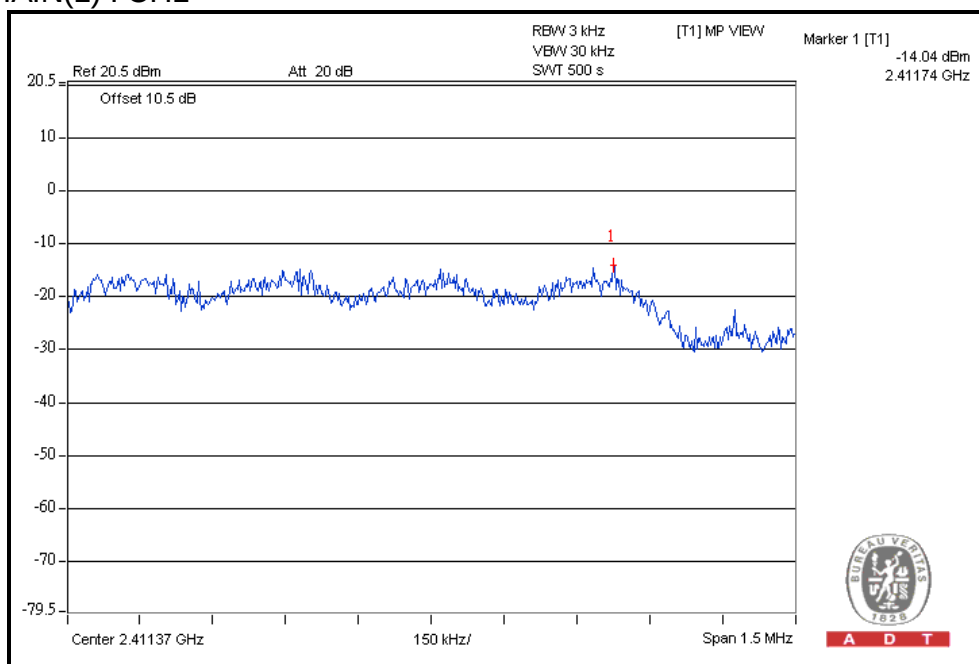
For CHAIN(0) : CH11



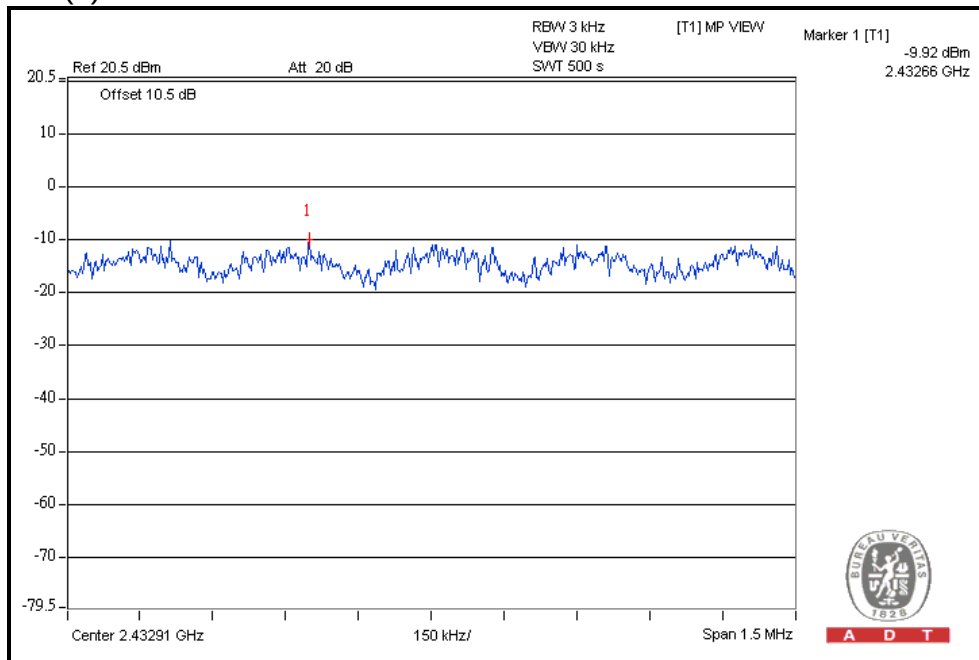


A D T

For CHAIN(1) : CH1



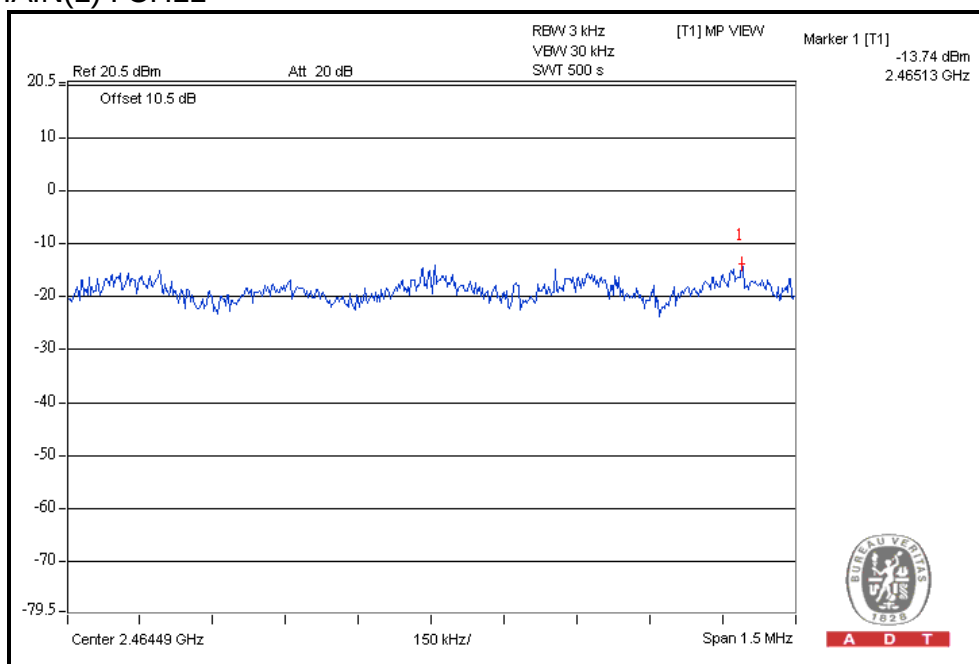
For CHAIN(1) : CH6





A D T

For CHAIN(1) : CH11



802.11n (20MHz) OFDM MODULATION:

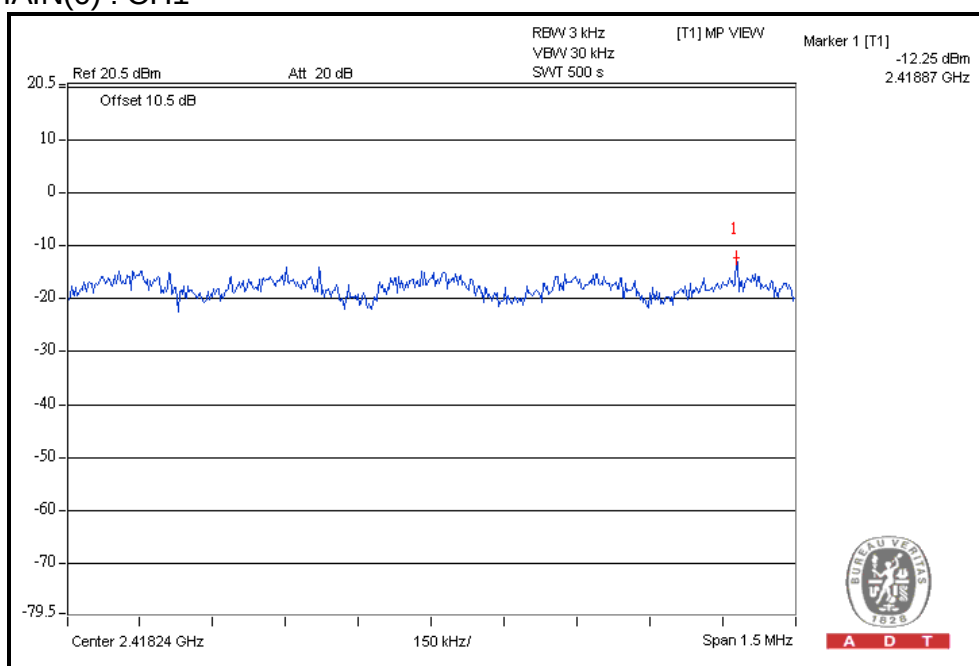
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-12.3	3.01	-9.3	7.37	PASS
	6	2437	-8.5	3.01	-5.5	7.37	PASS
	11	2462	-15.3	3.01	-12.3	7.37	PASS
1	1	2412	-15.0	3.01	-12.0	7.37	PASS
	6	2437	-8.0	3.01	-5.0	7.37	PASS
	11	2462	-14.5	3.01	-11.5	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.

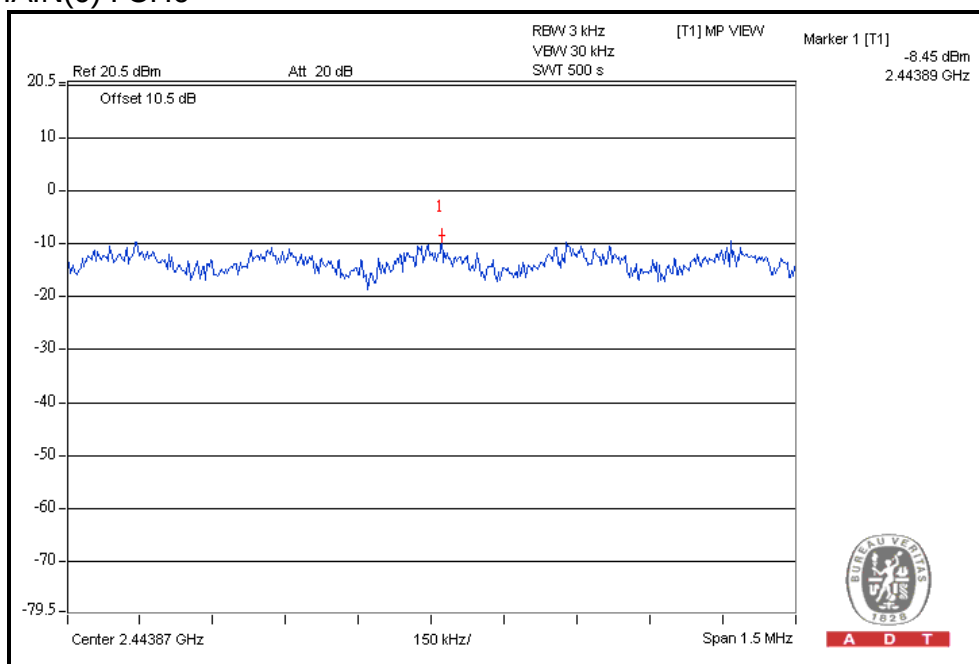
For CHAIN(0) : CH1



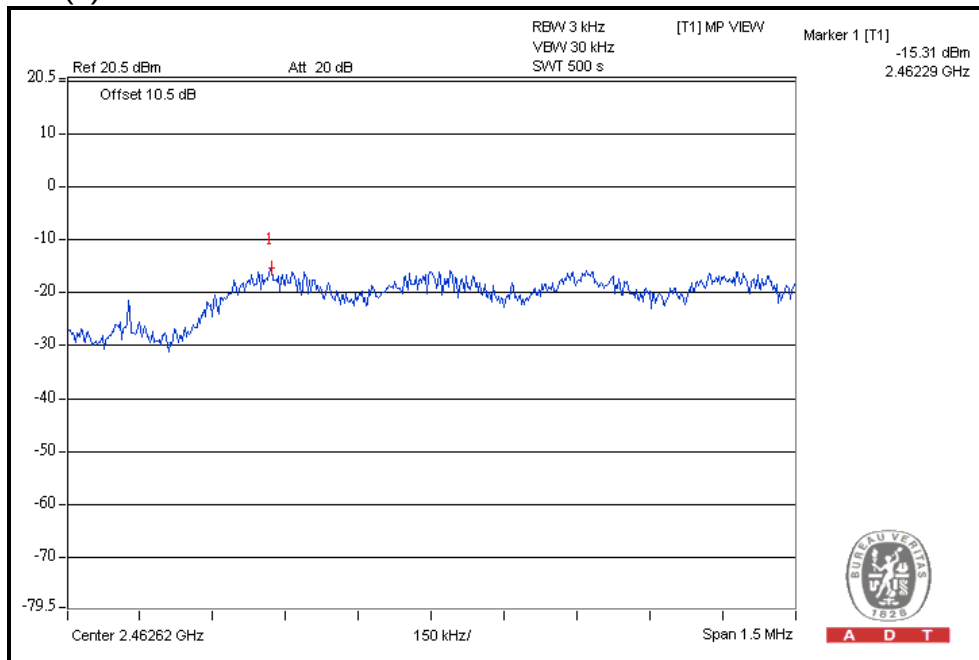


A D T

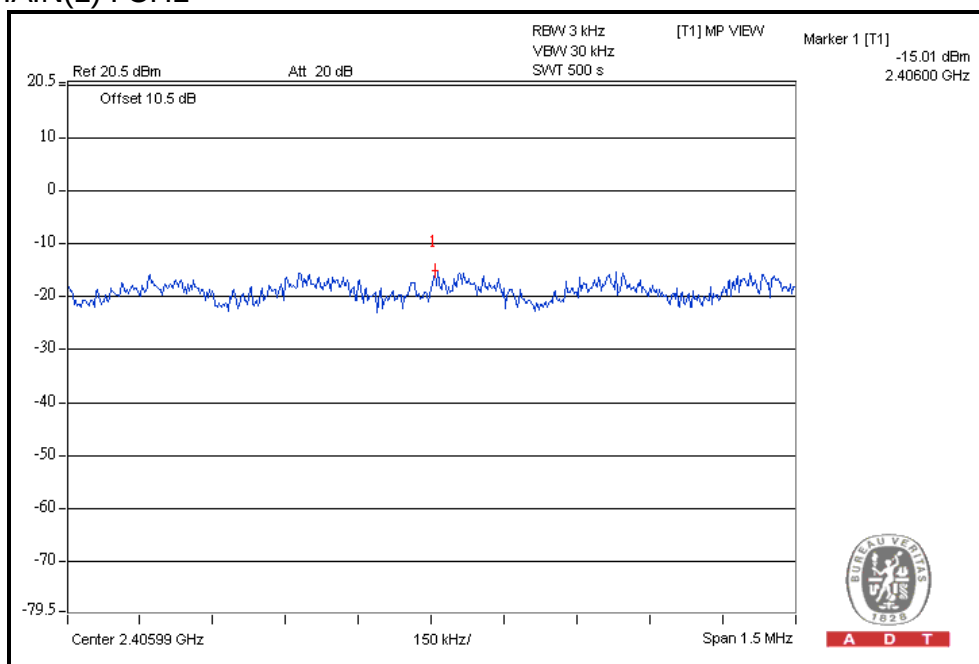
For CHAIN(0) : CH6



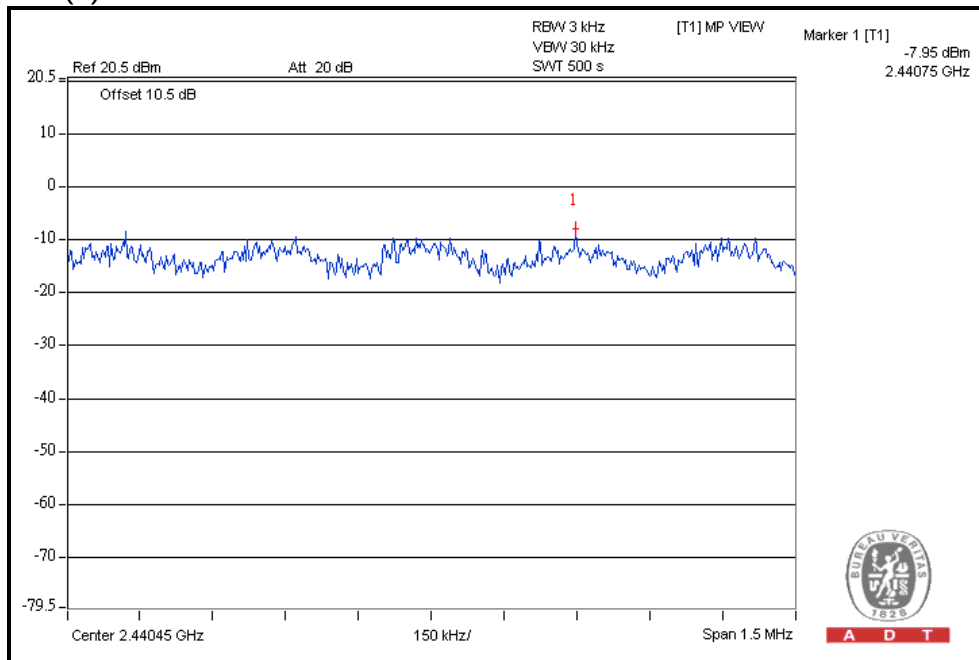
For CHAIN(0) : CH11



For CHAIN(1) : CH1



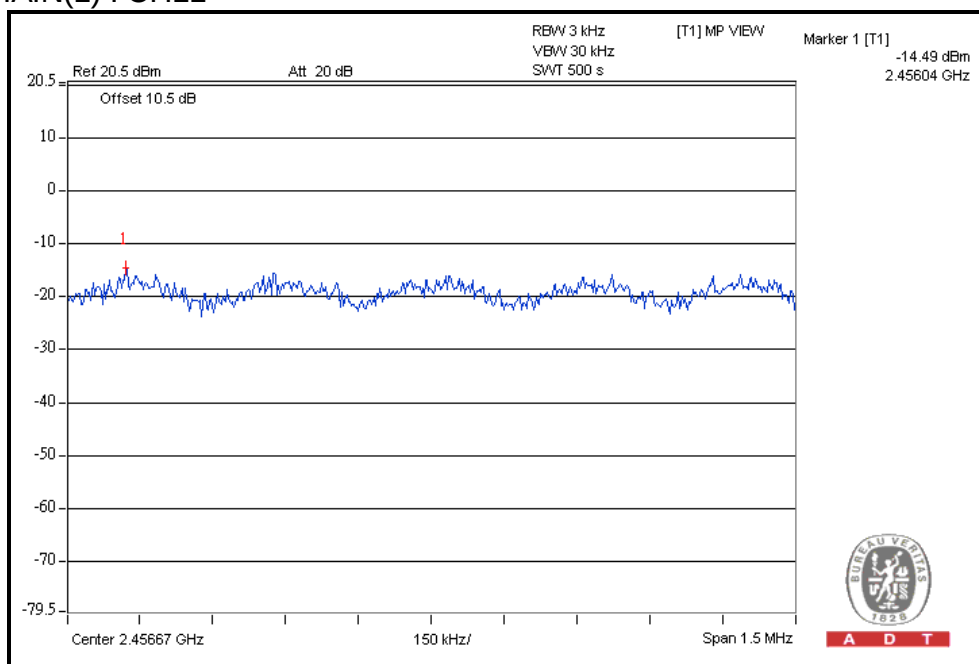
For CHAIN(1) : CH6





A D T

For CHAIN(1) : CH11



802.11n (40MHz) OFDM MODULATION:

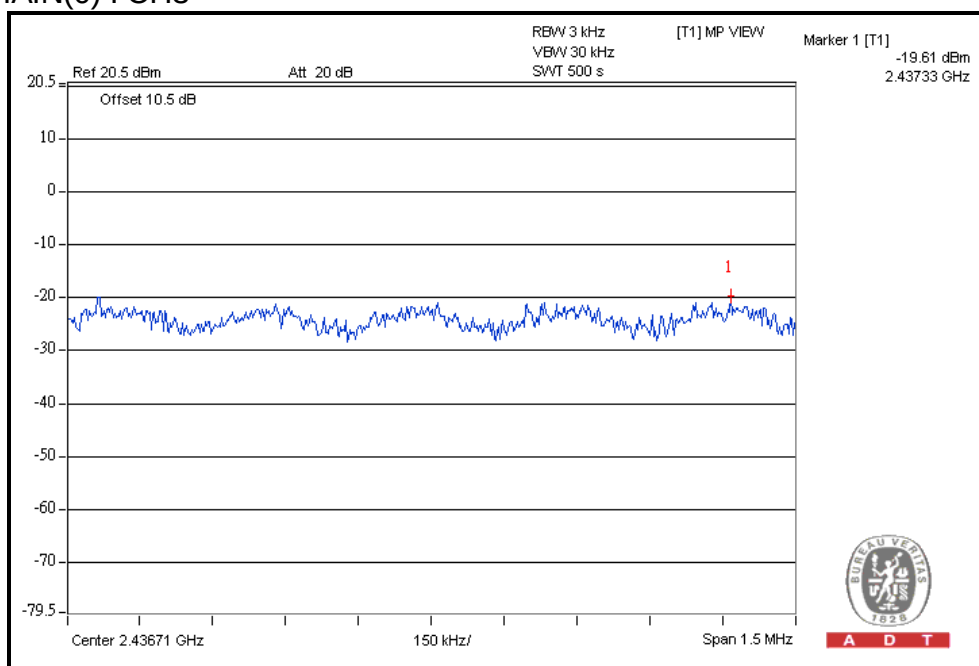
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-19.6	3.01	-16.6	7.37	PASS
	6	2437	-15.8	3.01	-12.8	7.37	PASS
	9	2452	-18.9	3.01	-16.0	7.37	PASS
1	3	2422	-20.9	3.01	-17.9	7.37	PASS
	6	2437	-15.6	3.01	-12.6	7.37	PASS
	9	2452	-19.3	3.01	-16.3	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.

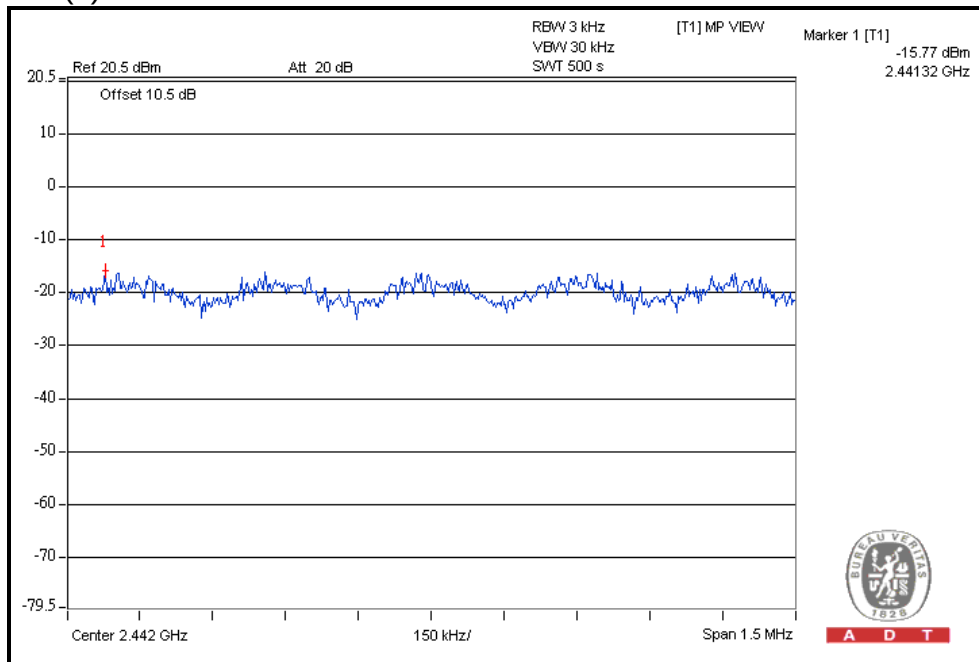
For CHAIN(0) : CH3



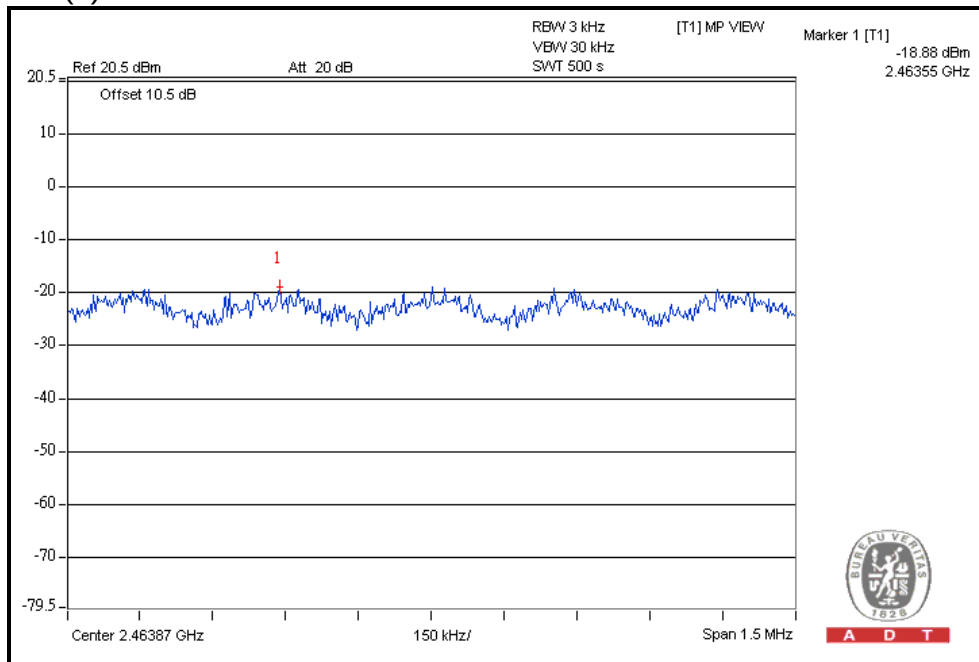


A D T

For CHAIN(0) : CH6



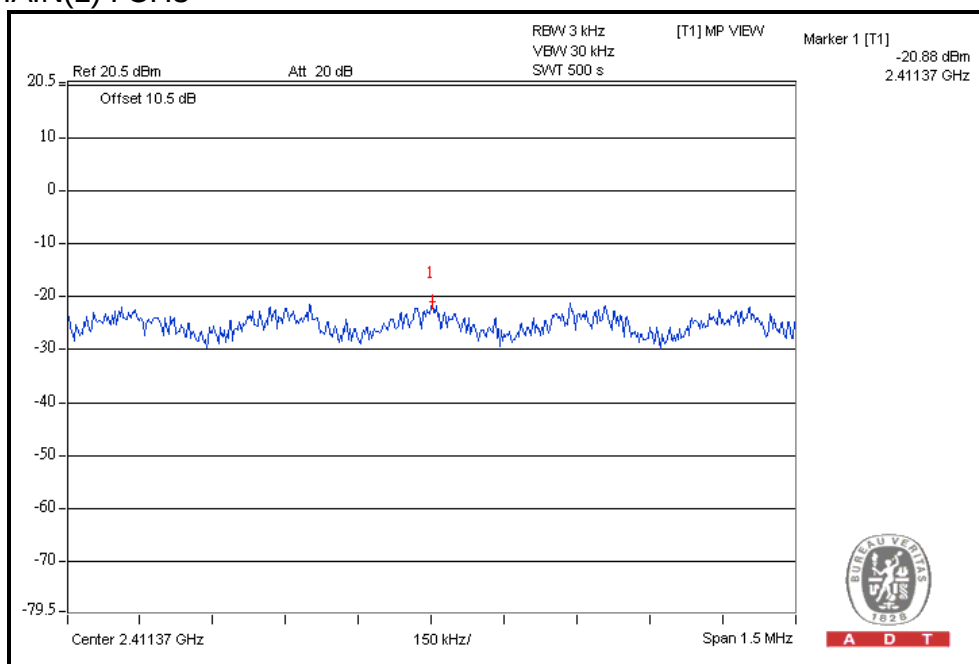
For CHAIN(0) : CH9





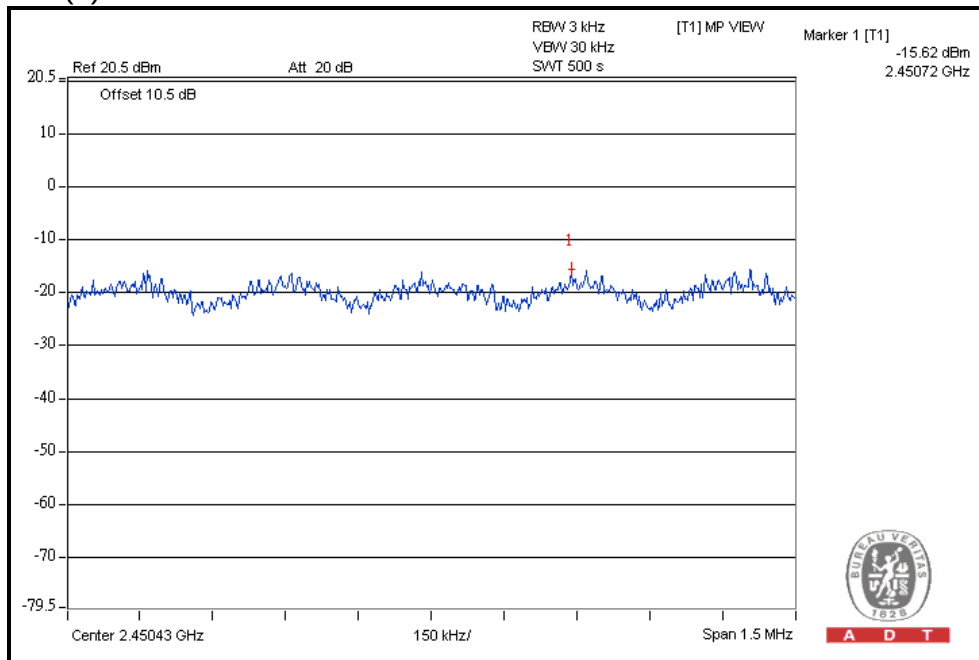
A D T

For CHAIN(1) : CH3



A D T

For CHAIN(1) : CH6

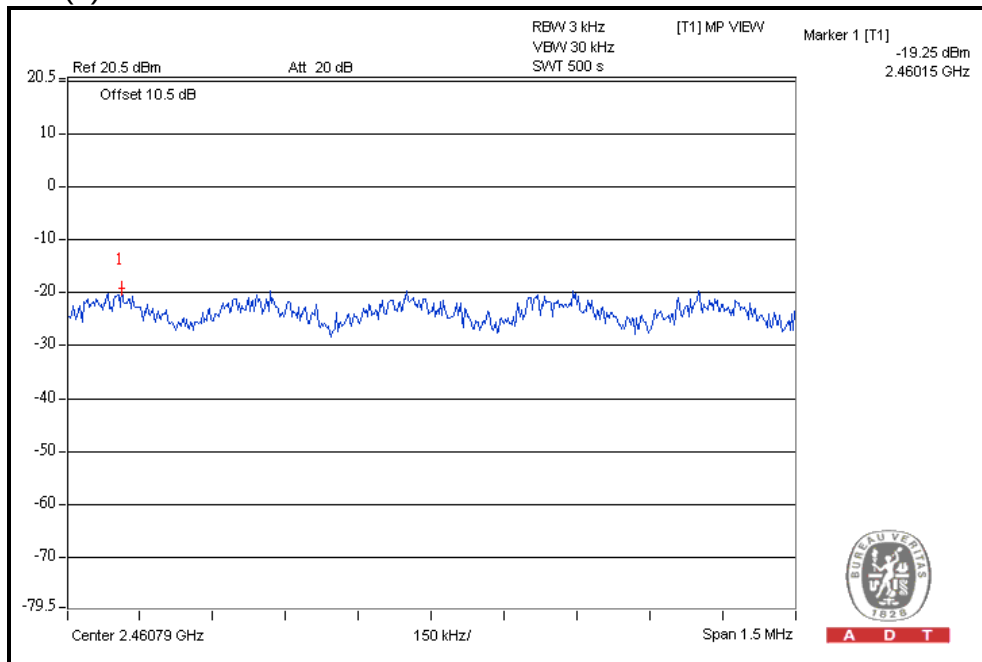


A D T



A D T

For CHAIN(1) : CH9





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

Test date: Oct. 18, 2011 to Jan. 18, 2012

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

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

4.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set RBW of spectrum analyzer to 100kHz and VBW of spectrum analyzer to 300kHz with suitable frequency span including 100MHz or 200MHz bandwidth from band edge. The band edges were measured and recorded.

The spectrum plots (RBW = 100kHz, VBW = 300kHz) are attached on the following pages.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 EUT OPERATING CONDITION

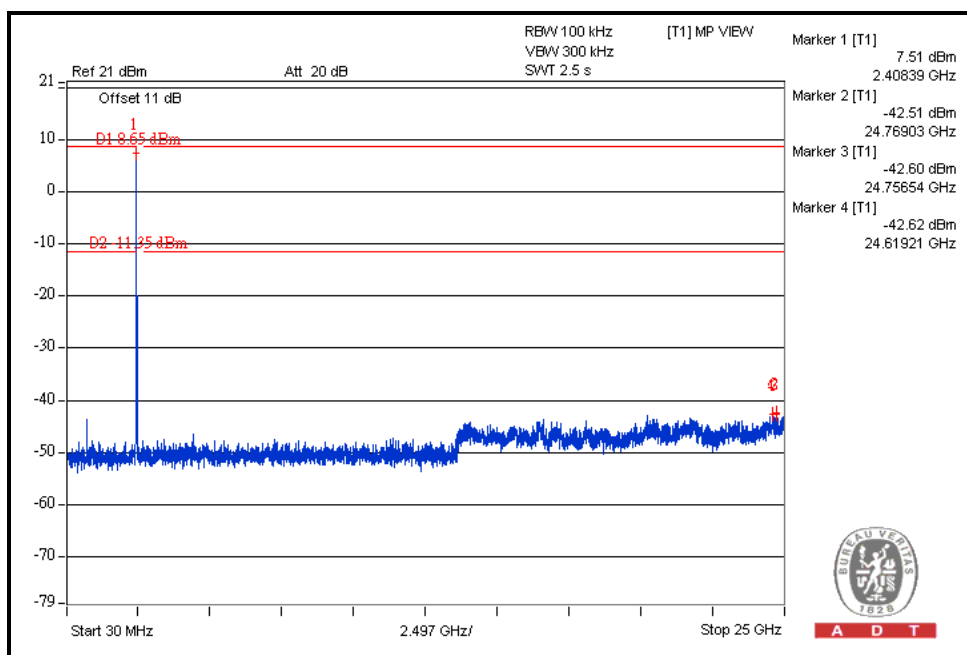
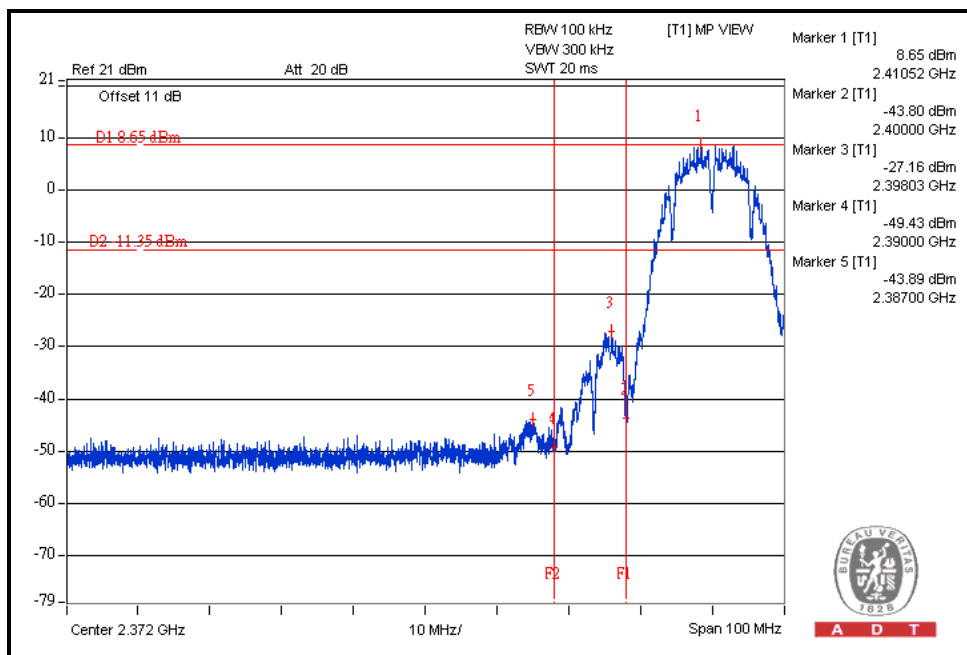
Same as Item 4.3.6

4.8.6 TEST RESULTS

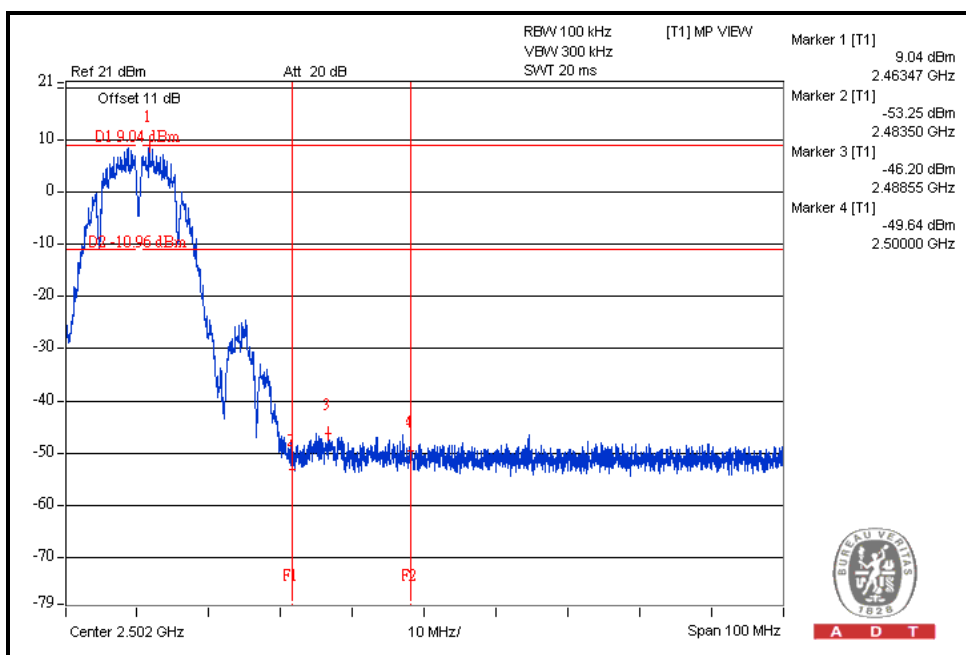
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

Performing measurements: Measure and add 10 log(N) dB Single chain - 802.11b DSSS MODULATION:

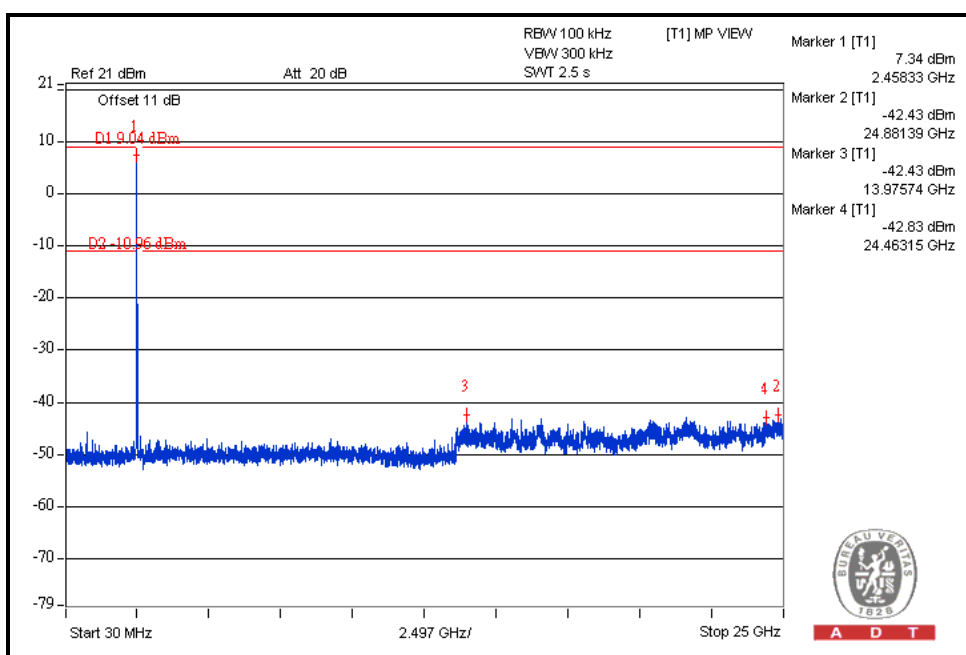
CH1



CH11



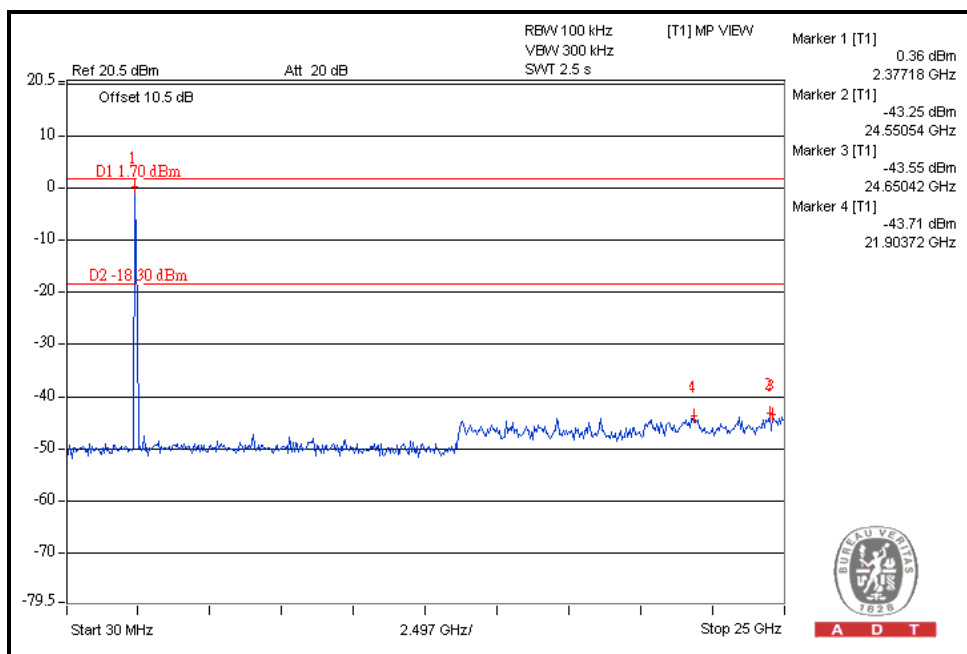
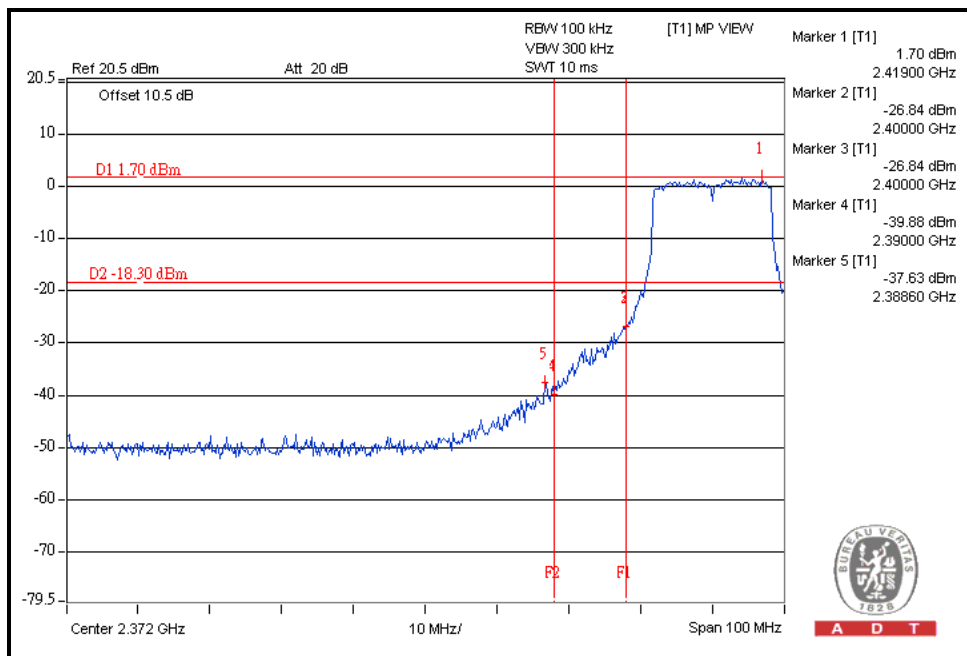
A D T



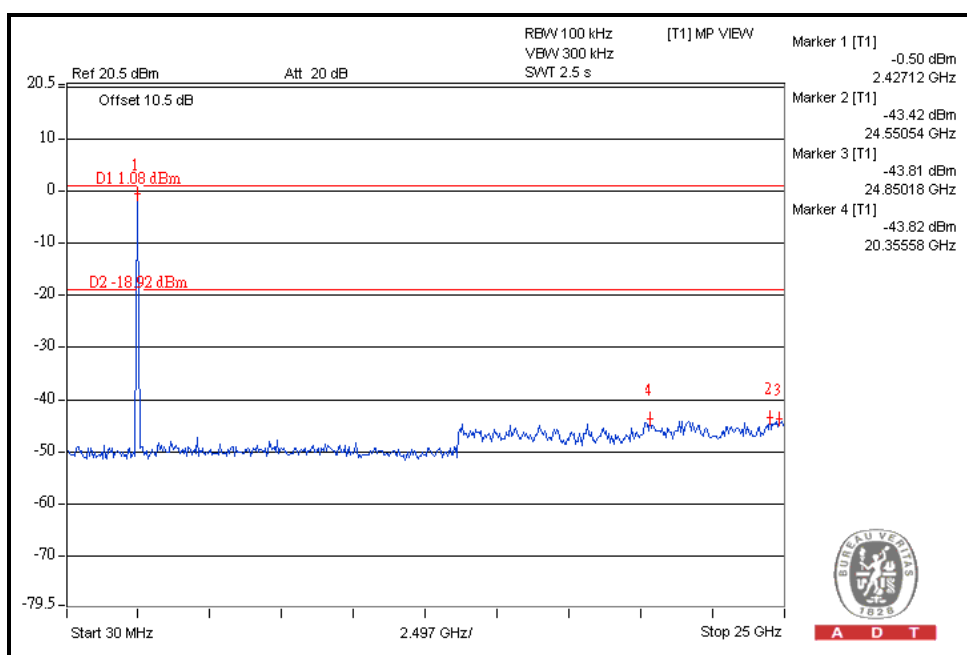
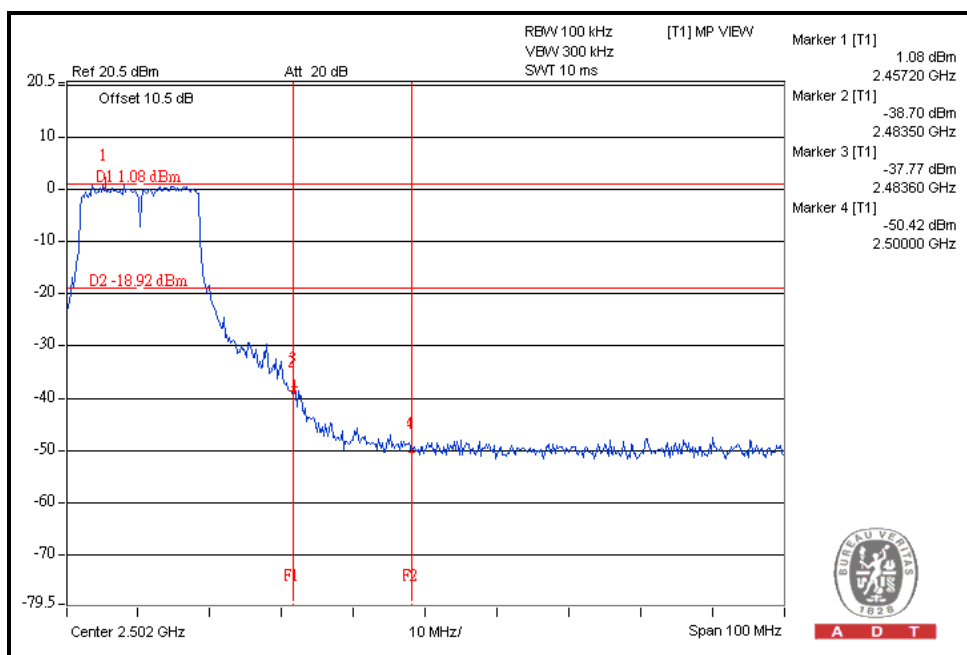
A D T

Single chain - 802.11g OFDM MODULATION:

CH1

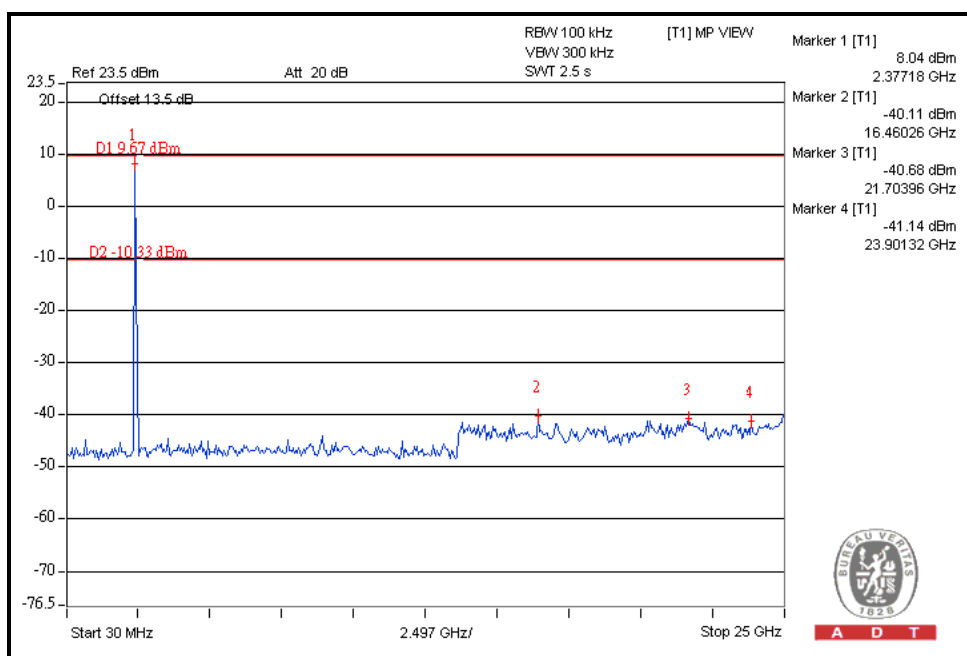
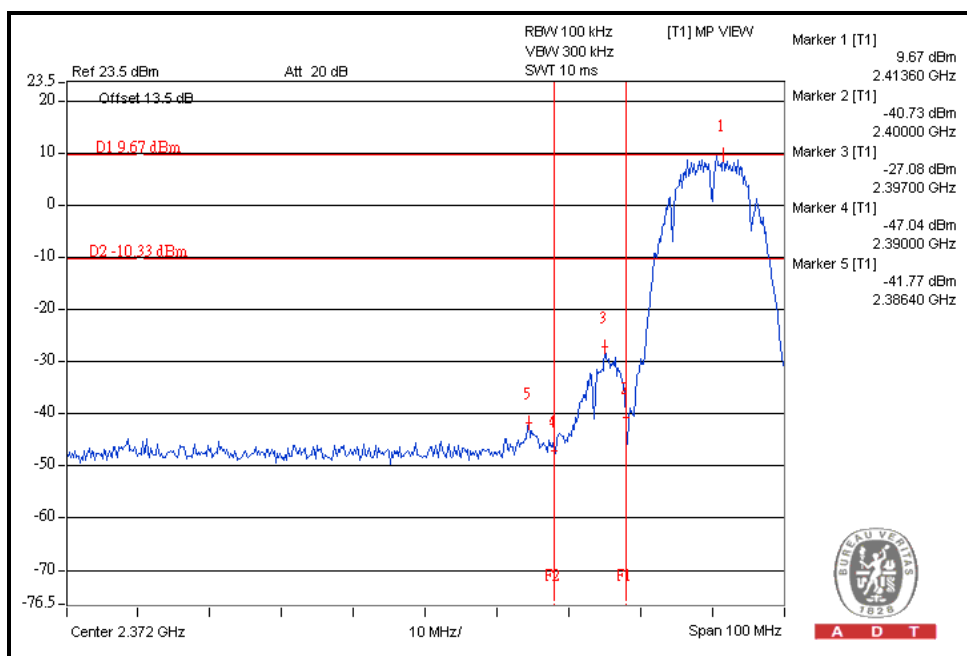


CH11

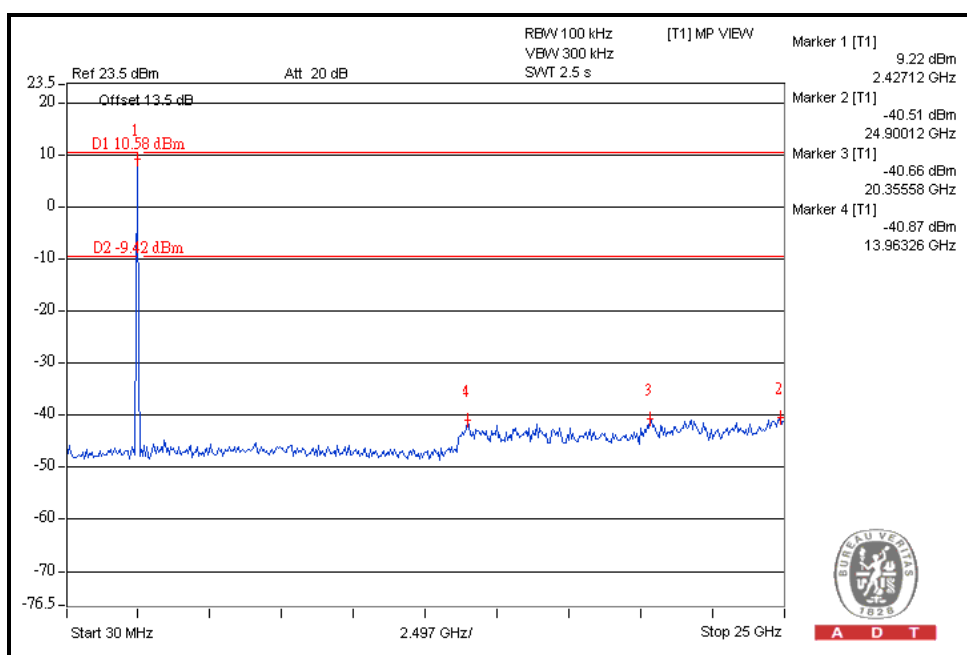
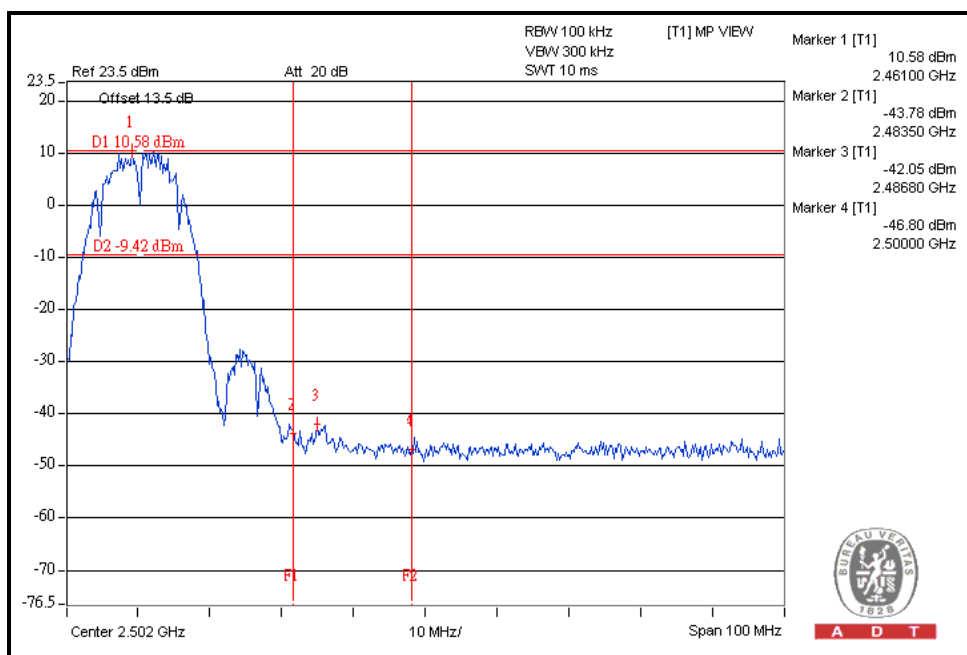


Multiple chain - 802.11b DSSS MODULATION:

CH1

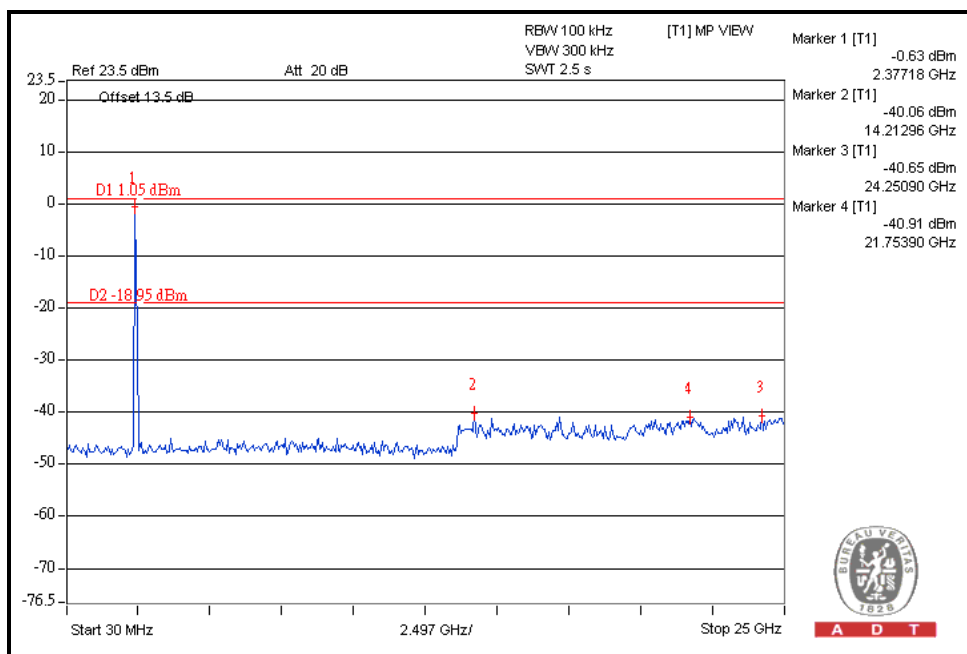
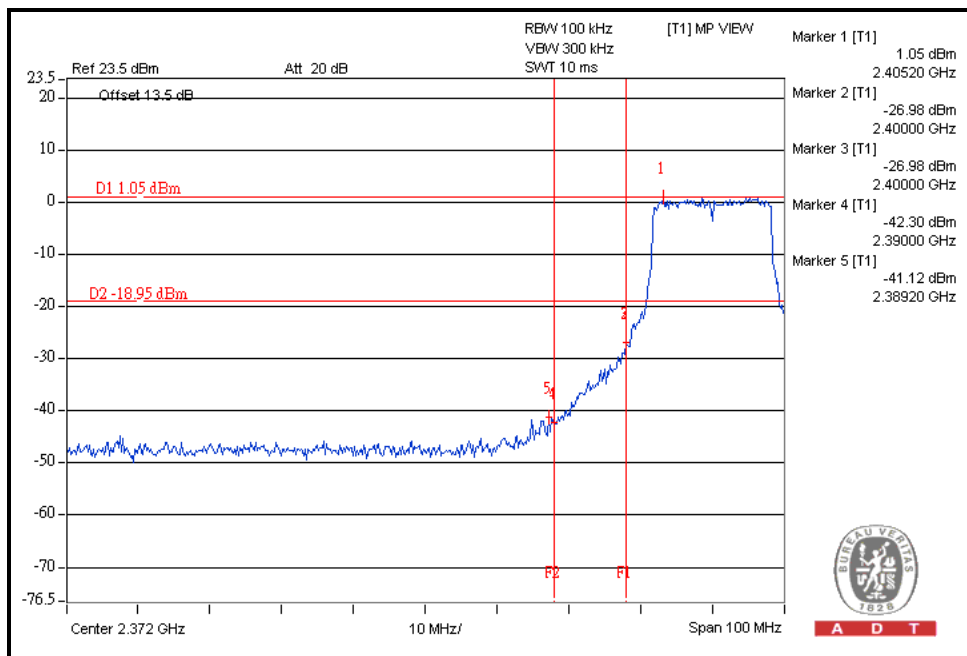


CH11

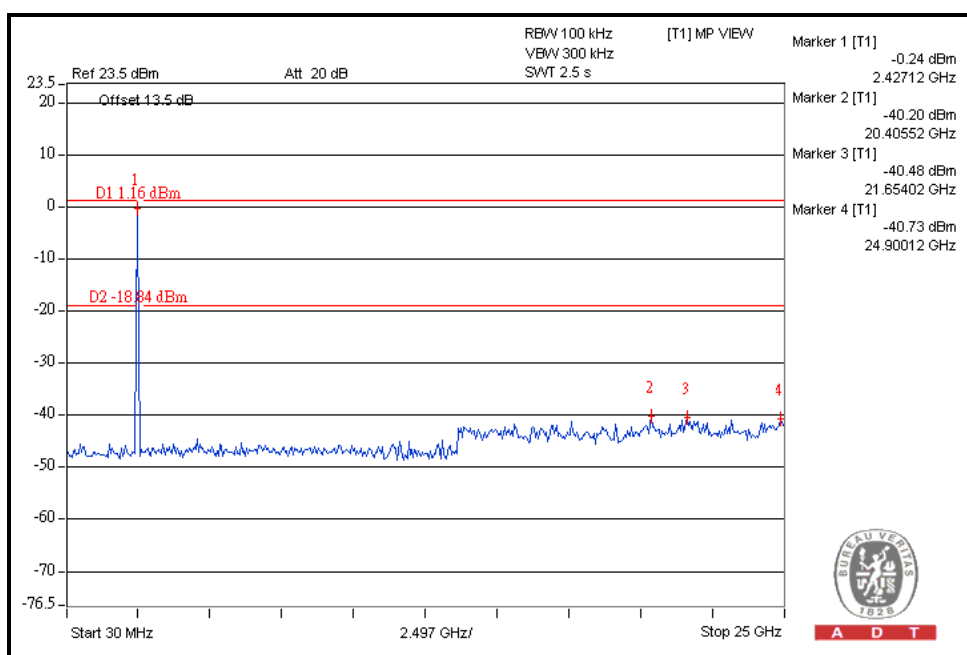
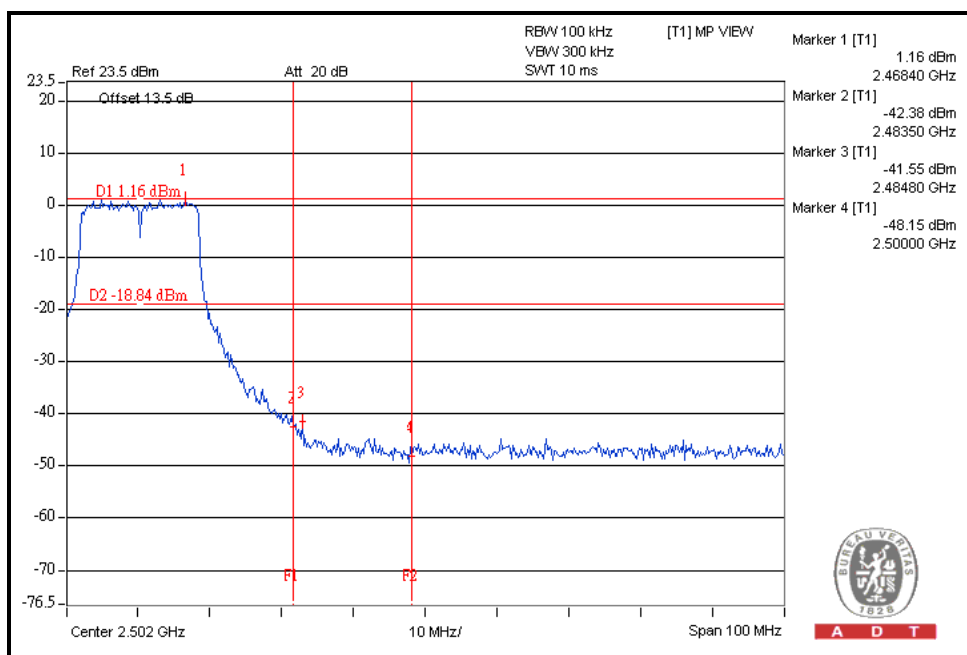


Multiple chain - 802.11g OFDM MODULATION:

CH1

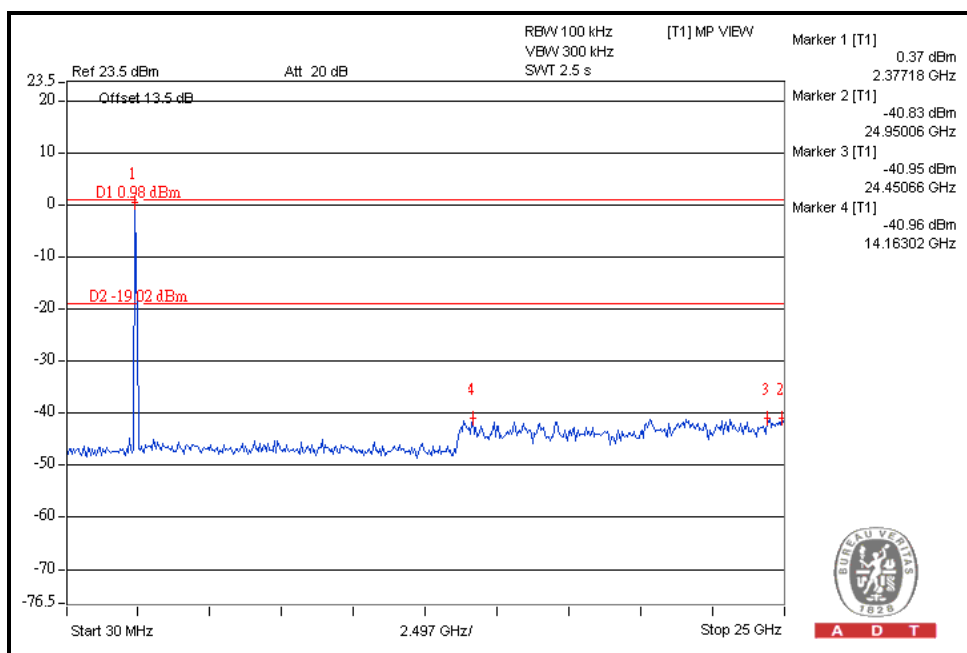
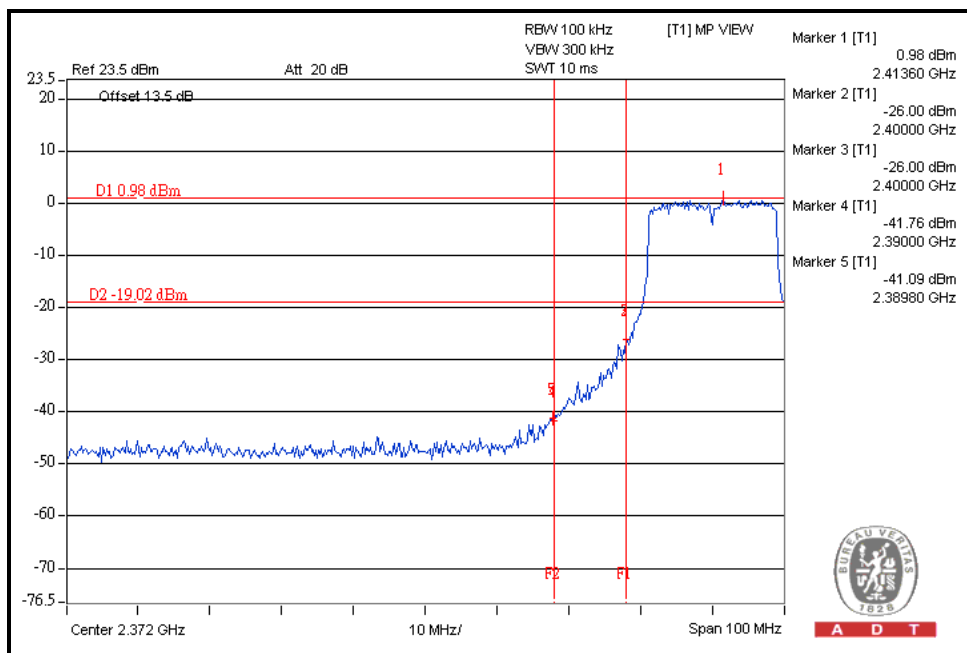


CH11

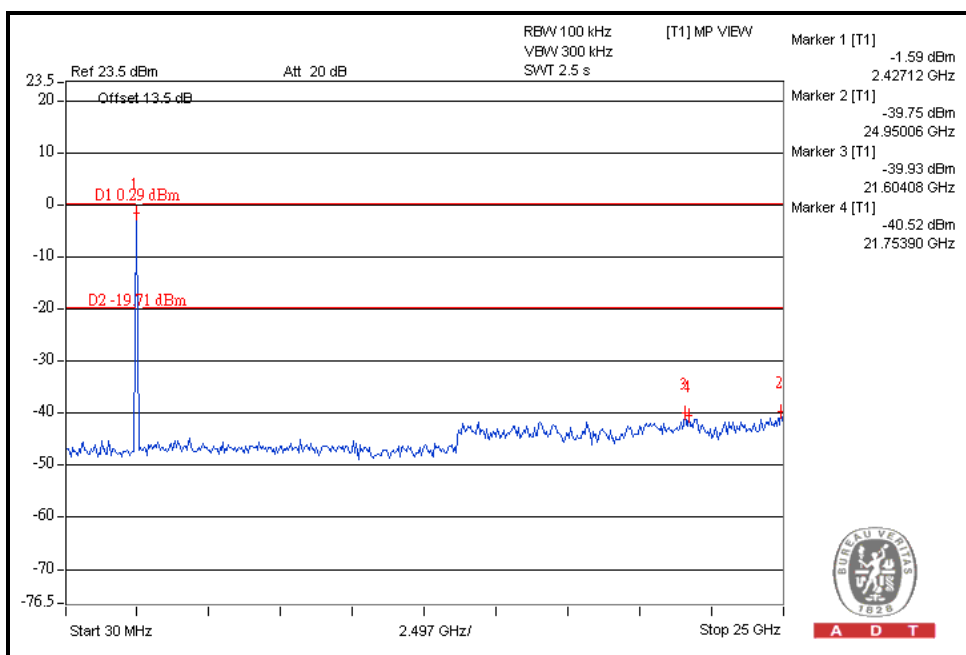
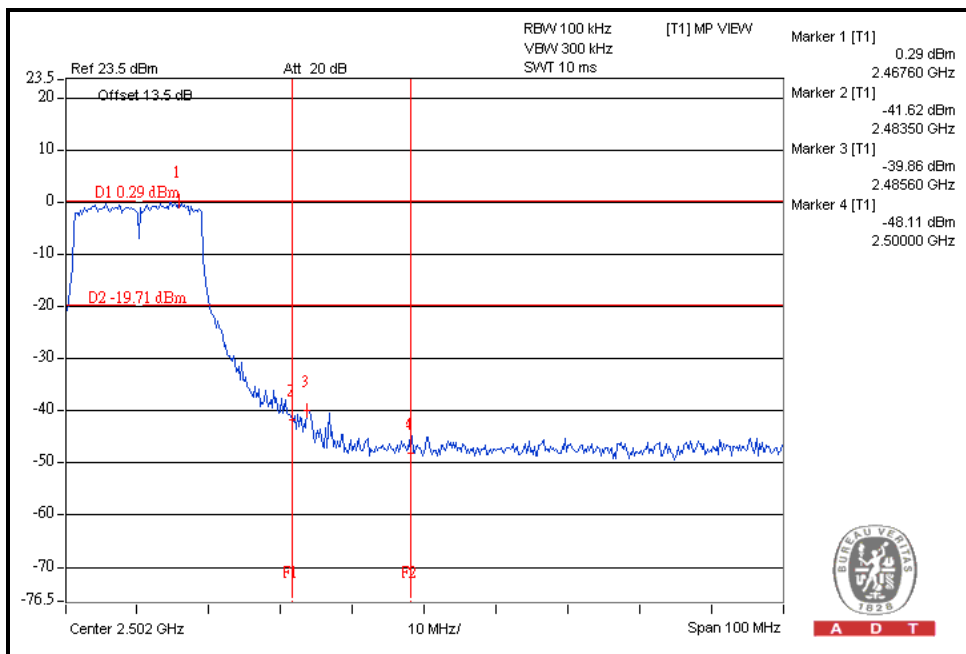


802.11n (20MHz) OFDM MODULATION:

CH1

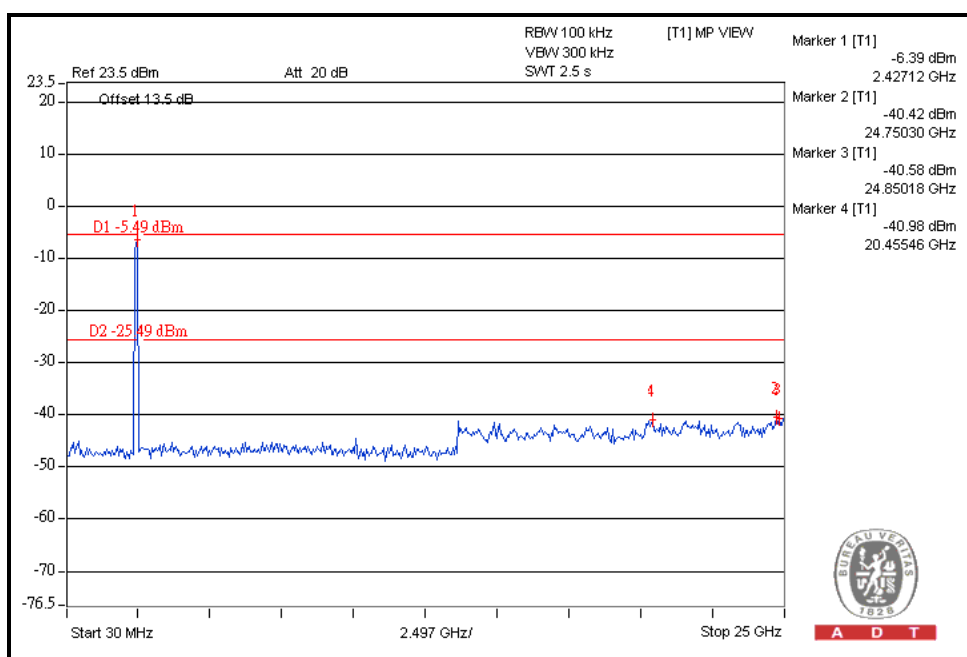
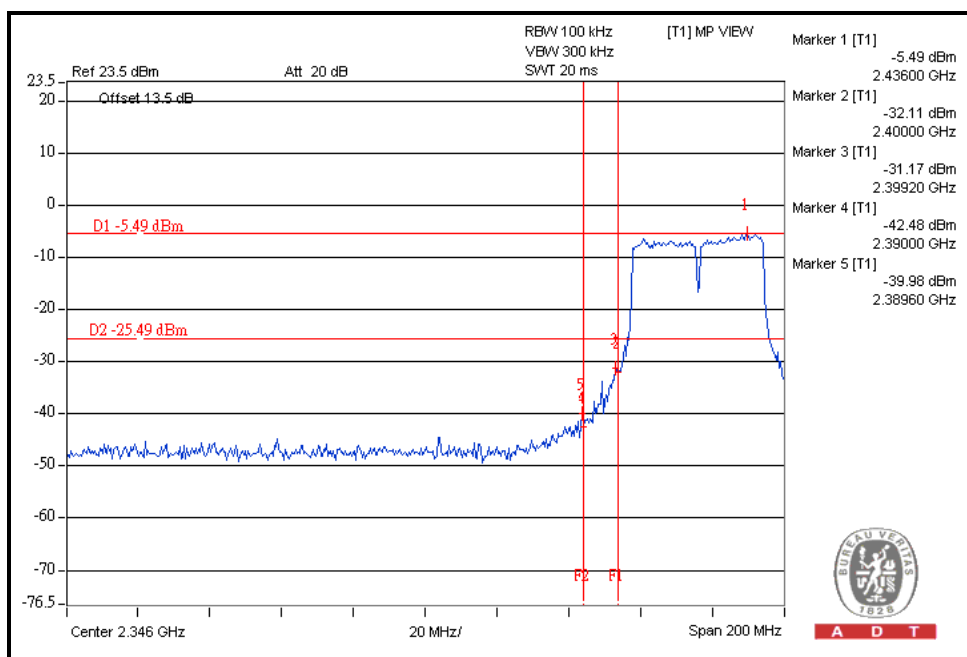


CH11

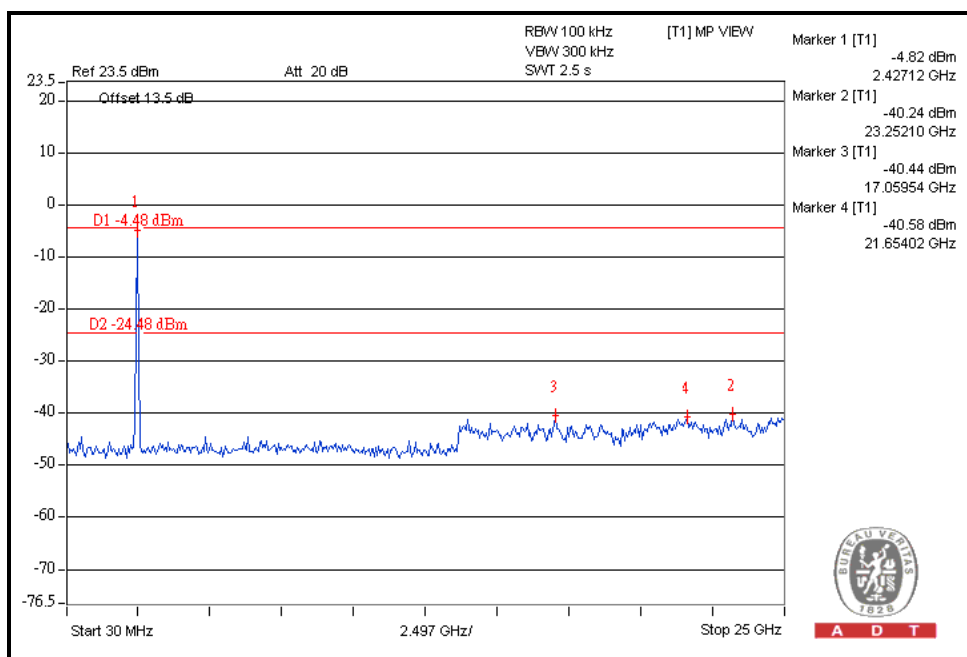
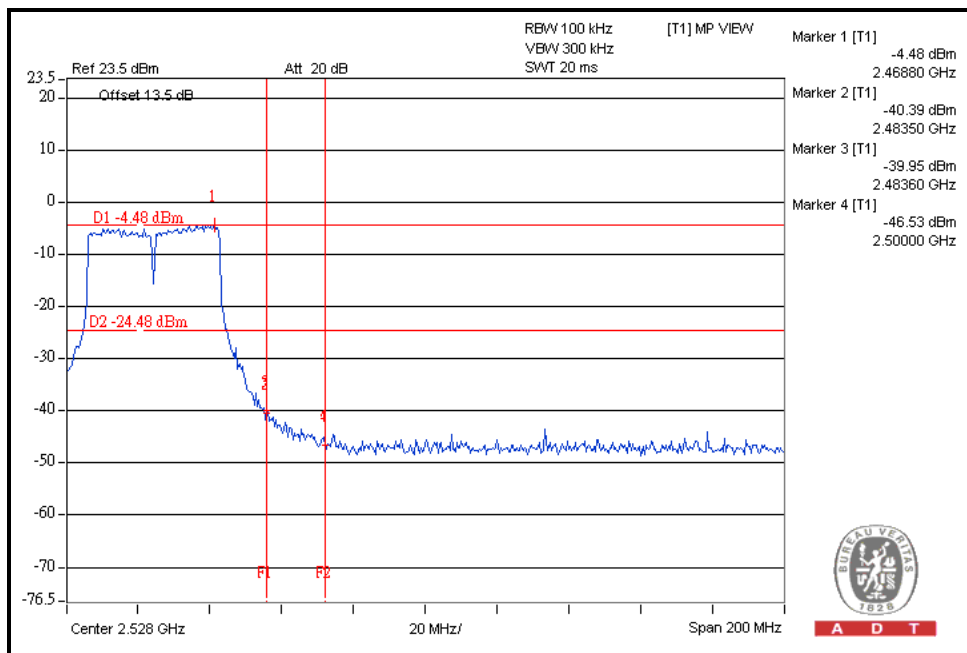


802.11n (40MHz) OFDM MODULATION:

CH3



CH9



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.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.1.2 TEST INSTRUMENTS

Test date: Oct. 11, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2011	Mar. 08, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 03, 2010	Nov. 02, 2011
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Nov. 03, 2010	Nov. 02, 2011
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. C.
- 3 The VCCI Con C Registration No. is C-3611.



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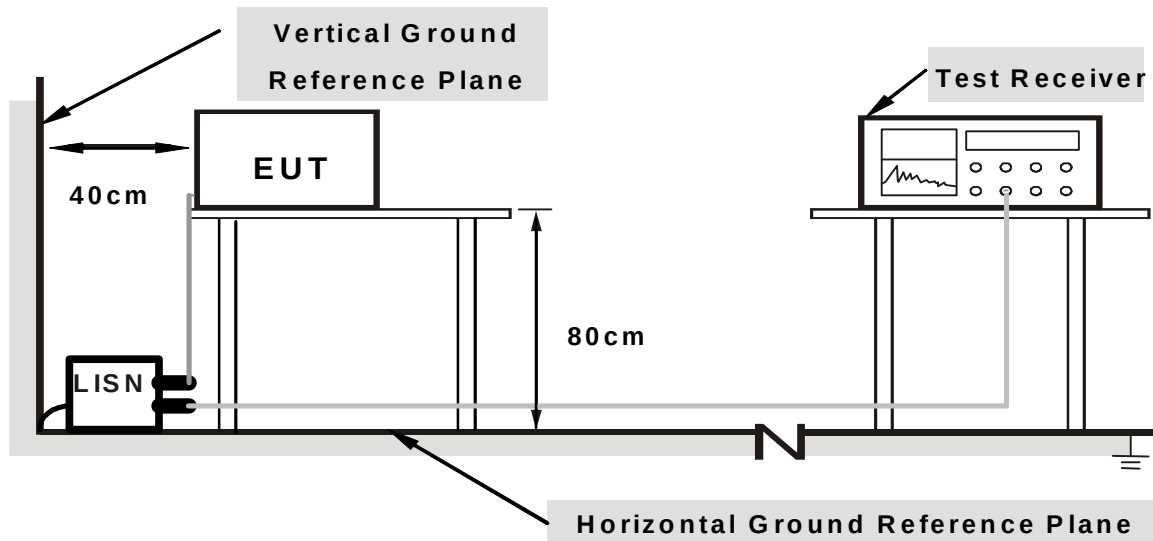
5.1.3 TEST PROCEDURES

- 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

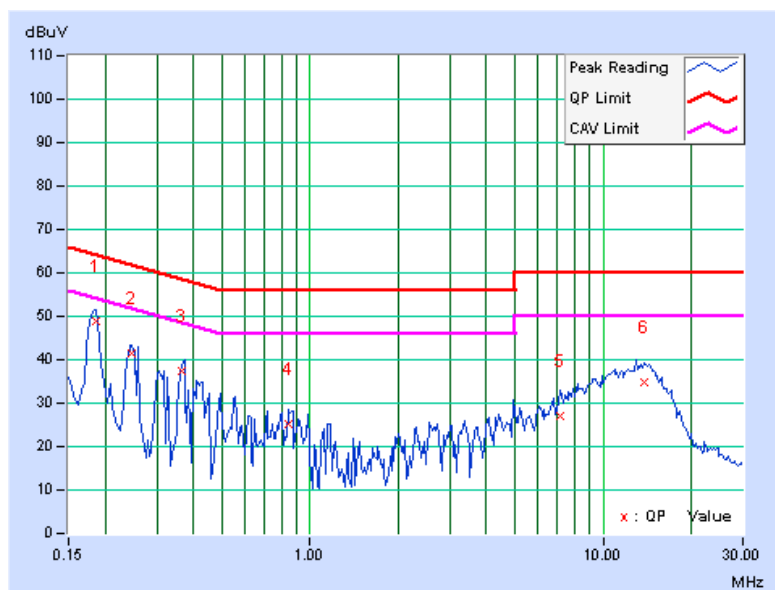
Same as the 4.1.6

5.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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	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	0.185	0.10	48.63	42.40	48.73	42.50	64.25	54.25	-15.53	-11.76
2	0.245	0.10	41.24	33.87	41.34	33.97	61.93	51.93	-20.59	-17.96
3	0.363	0.11	37.38	33.90	37.49	34.01	58.66	48.66	-21.17	-14.65
4	0.849	0.14	25.00	22.41	25.14	22.55	56.00	46.00	-30.86	-23.45
5	7.125	0.44	26.64	17.00	27.08	17.44	60.00	50.00	-32.92	-32.56
6	13.863	0.64	34.06	27.56	34.70	28.20	60.00	50.00	-25.30	-21.80

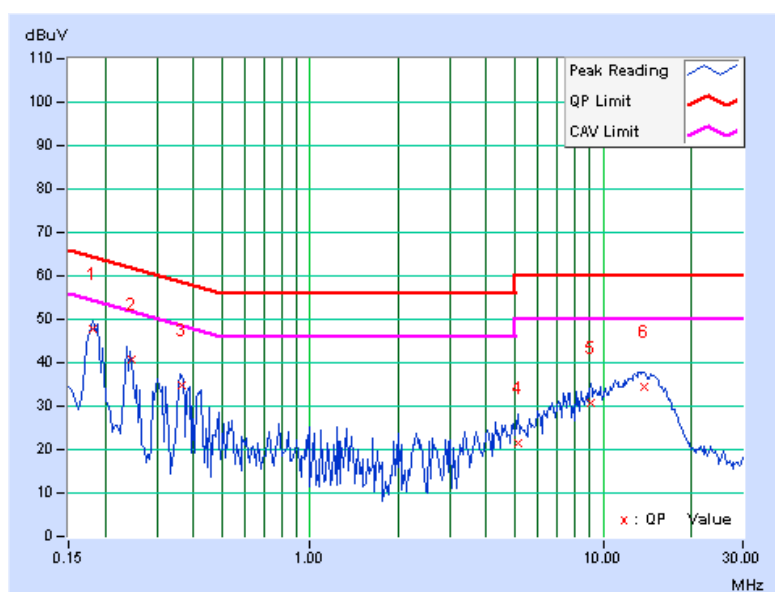
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor + 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	0.181	0.08	47.65	41.45	47.73	41.53	64.43	54.43	-16.69	-12.89
2	0.246	0.09	40.76	34.54	40.85	34.63	61.90	51.90	-21.05	-17.27
3	0.367	0.11	34.80	31.69	34.91	31.80	58.57	48.57	-23.66	-16.77
4	5.148	0.27	21.35	8.82	21.62	9.09	60.00	50.00	-38.38	-40.91
5	9.078	0.38	30.20	21.33	30.58	21.71	60.00	50.00	-29.42	-28.29
6	13.883	0.51	33.83	26.89	34.34	27.40	60.00	50.00	-25.66	-22.60

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



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

For transmitter part:

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209(RSS-Gen table 5, 6) as following:

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.
4. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.

For receiver part:

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

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. 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.

5.2.2 TEST INSTRUMENTS

Below 1GHz<Test date: Sep. 13, 2011>

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
LIG NEX1 Test Receiver	ER-265	L09068005	Oct. 25, 2010	Oct. 24, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 28, 2011	Feb. 27, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 16, 2010	Nov. 15, 2011
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 22, 2010	Nov. 21, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 28, 2010	Dec. 27, 2011
RF Cable	NA	CHHCAB_001	Oct. 08, 2010	Oct. 07, 2011
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.



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Above 1GHz<Test date: Dec. 05, 2011>:

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. 28, 2011	Feb. 27, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 22, 2011	Nov. 21, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 28, 2010	Dec. 27, 2011
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.

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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

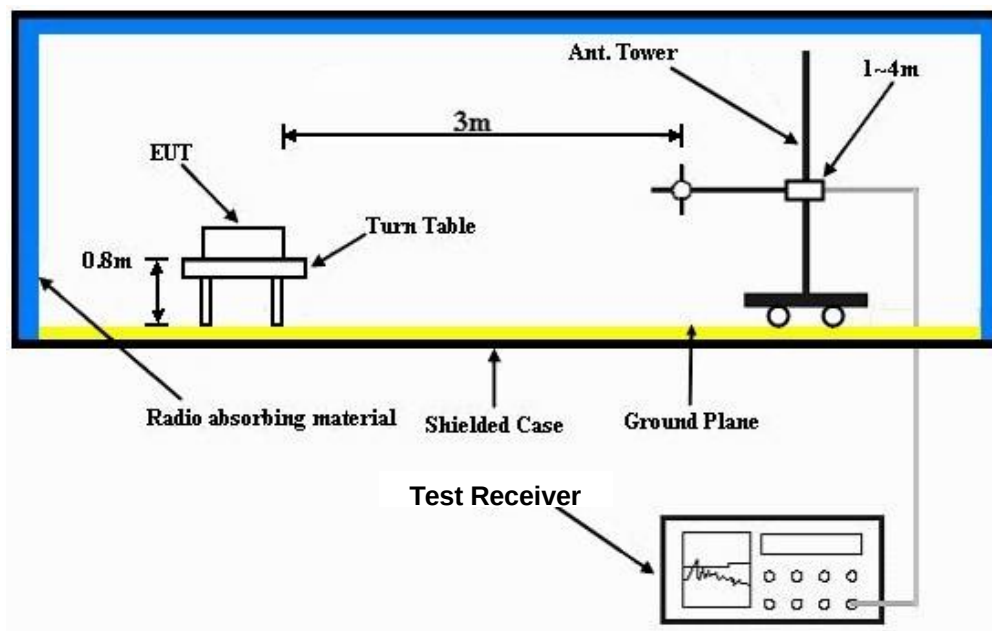
NOTE:

1. The resolution bandwidth 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.

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 (FOR TRANSMITTER PART)

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH	TESTED BY	Evan Huang

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	35.33	34.2 QP	40.0	-5.8	1.00 H	333	20.82	13.37
2	199.94	36.5 QP	43.5	-7.0	1.75 H	272	25.26	11.21
3	497.65	33.5 QP	46.0	-12.5	1.00 H	236	14.02	19.48
4	600.44	37.6 QP	46.0	-8.4	1.00 H	198	15.97	21.60
5	799.87	37.3 QP	46.0	-8.7	1.25 H	322	12.79	24.48
6	902.18	44.7 QP	46.0	-1.3	1.25 H	77	18.86	25.82
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	35.60	34.4 QP	40.0	-5.6	1.00 V	201	21.00	13.40
2	101.00	32.2 QP	43.5	-11.4	1.50 V	226	22.69	9.46
3	199.97	37.1 QP	43.5	-6.4	1.75 V	293	25.87	11.21
4	600.42	41.2 QP	46.0	-4.8	1.00 V	188	19.56	21.60
5	799.72	37.2 QP	46.0	-8.8	1.25 V	327	12.70	24.47
6	953.34	36.3 QP	46.0	-9.7	1.25 V	118	9.86	26.41

- 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 OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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	107.8 PK			1.64 H	123	66.46	41.34
2	*5745.00	97.7 AV			1.64 H	123	56.36	41.34
3	11490.00	58.9 PK	74.0	-15.1	1.41 H	290	11.48	47.42
4	11490.00	47.4 AV	54.0	-6.6	1.41 H	290	-0.02	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	111.4 PK			1.00 V	84	70.06	41.34
2	*5745.00	101.1 AV			1.00 V	84	59.76	41.34
3	11490.00	63.3 PK	74.0	-10.7	1.65 V	350	15.88	47.42
4	11490.00	52.6 AV	54.0	-1.4	1.65 V	350	5.18	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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	108.1 PK			1.69 H	119	66.70	41.40
2	*5785.00	98.4 AV			1.69 H	119	57.00	41.40
3	11570.00	59.6 PK	74.0	-14.4	1.39 H	313	12.11	47.49
4	11570.00	47.8 AV	54.0	-6.2	1.39 H	313	0.31	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	111.0 PK			1.01 V	102	69.60	41.40
2	*5785.00	99.2 AV			1.01 V	102	57.80	41.40
3	11570.00	63.7 PK	74.0	-10.3	1.65 V	356	16.21	47.49
4	11570.00	52.8 AV	54.0	-1.2	1.65 V	356	5.31	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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	107.8 PK			1.71 H	130	66.35	41.45
2	*5825.00	96.7 AV			1.71 H	130	55.25	41.45
3	11650.00	59.3 PK	74.0	-14.7	1.30 H	318	11.74	47.56
4	11650.00	47.9 AV	54.0	-6.1	1.30 H	318	0.34	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	110.1 PK			1.00 V	108	68.65	41.45
2	*5825.00	98.8 AV			1.00 V	108	57.35	41.45
3	11650.00	64.1 PK	74.0	-9.9	1.66 V	357	16.54	47.56
4	11650.00	52.9 AV	54.0	-1.1	1.66 V	357	5.34	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 OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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	109.9 PK			1.79 H	120	68.56	41.34
2	*5745.00	100.0 AV			1.79 H	120	58.66	41.34
3	11490.00	57.4 PK	74.0	-16.6	1.81 H	147	9.98	47.42
4	11490.00	46.0 AV	54.0	-8.0	1.81 H	147	-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	*5745.00	113.1 PK			1.00 V	80	71.76	41.34
2	*5745.00	102.1 AV			1.00 V	80	60.76	41.34
3	11490.00	65.3 PK	74.0	-8.7	1.50 V	0	17.88	47.42
4	11490.00	51.9 AV	54.0	-2.1	1.50 V	0	4.48	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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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			1.76 H	105	69.10	41.40
2	*5785.00	100.0 AV			1.76 H	105	58.60	41.40
3	11570.00	57.3 PK	74.0	-16.7	1.81 H	133	9.81	47.49
4	11570.00	45.9 AV	54.0	-8.1	1.81 H	133	-1.59	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	112.3 PK			1.01 V	110	70.90	41.40
2	*5785.00	101.0 AV			1.01 V	110	59.60	41.40
3	11570.00	65.7 PK	74.0	-8.3	1.59 V	0	18.21	47.49
4	11570.00	52.2 AV	54.0	-1.8	1.59 V	0	4.71	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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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	110.0 PK			1.75 H	106	68.55	41.45
2	*5825.00	99.4 AV			1.75 H	106	57.95	41.45
3	11650.00	57.2 PK	74.0	-16.8	1.76 H	111	9.64	47.56
4	11650.00	45.5 AV	54.0	-8.5	1.76 H	111	-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	111.9 PK			1.02 V	88	70.45	41.45
2	*5825.00	101.8 AV			1.02 V	88	60.35	41.45
3	11650.00	65.5 PK	74.0	-8.5	1.30 V	179	17.94	47.56
4	11650.00	51.8 AV	54.0	-2.2	1.30 V	179	4.24	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) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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	110.2 PK			1.79 H	127	68.86	41.34
2	*5745.00	99.9 AV			1.79 H	127	58.56	41.34
3	11490.00	56.7 PK	74.0	-17.3	1.79 H	131	9.28	47.42
4	11490.00	45.7 AV	54.0	-8.3	1.79 H	131	-1.72	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	113.2 PK			1.00 V	97	71.86	41.34
2	*5745.00	102.2 AV			1.00 V	97	60.86	41.34
3	11490.00	63.8 PK	74.0	-10.2	1.80 V	359	16.38	47.42
4	11490.00	52.4 AV	54.0	-1.6	1.80 V	359	4.98	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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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	110.1 PK			1.78 H	126	68.70	41.40
2	*5785.00	99.4 AV			1.78 H	126	58.00	41.40
3	11570.00	57.4 PK	74.0	-16.6	1.78 H	138	9.91	47.49
4	11570.00	45.9 AV	54.0	-8.1	1.78 H	138	-1.59	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	112.8 PK			1.00 V	98	71.40	41.40
2	*5785.00	102.2 AV			1.00 V	98	60.80	41.40
3	11570.00	64.2 PK	74.0	-9.8	1.43 V	83	16.71	47.49
4	11570.00	52.2 AV	54.0	-1.8	1.43 V	83	4.71	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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	108.5 PK			1.79 H	129	67.05	41.45
2	*5825.00	98.2 AV			1.79 H	129	56.75	41.45
3	11650.00	56.7 PK	74.0	-17.3	1.79 H	124	9.14	47.56
4	11650.00	45.1 AV	54.0	-8.9	1.79 H	124	-2.46	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	111.3 PK			1.00 V	97	69.85	41.45
2	*5825.00	100.7 AV			1.00 V	97	59.25	41.45
3	11650.00	65.1 PK	74.0	-8.9	1.04 V	348	17.54	47.56
4	11650.00	51.8 AV	54.0	-2.2	1.04 V	348	4.24	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.



A D T

802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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	108.5 PK			1.79 H	126	67.14	41.36
2	*5755.00	97.1 AV			1.79 H	126	55.74	41.36
3	11510.00	58.9 PK	74.0	-15.1	1.37 H	305	11.46	47.44
4	11510.00	48.6 AV	54.0	-5.4	1.37 H	305	1.16	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	110.8 PK			1.00 V	98	69.44	41.36
2	*5755.00	99.2 AV			1.00 V	98	57.84	41.36
3	11510.00	62.9 PK	74.0	-11.1	1.81 V	358	15.46	47.44
4	11510.00	52.2 AV	54.0	-1.8	1.81 V	358	4.76	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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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	107.9 PK			1.79 H	126	66.49	41.41
2	*5795.00	96.3 AV			1.79 H	126	54.89	41.41
3	11590.00	59.6 PK	74.0	-14.4	1.36 H	304	12.10	47.50
4	11590.00	47.9 AV	54.0	-6.1	1.36 H	304	0.40	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	110.4 PK			1.00 V	267	68.99	41.41
2	*5795.00	98.8 AV			1.00 V	267	57.39	41.41
3	11590.00	62.7 PK	74.0	-11.3	1.04 V	348	15.20	47.50
4	11590.00	52.1 AV	54.0	-1.9	1.04 V	348	4.60	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.

5.2.8 TEST RESULTS (FOR RECEIVER PART)

BELOW 1GHz DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH	TESTED BY	Evan Huang

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	35.33	34.2 QP	40.0	-5.8	1.00 H	333	20.82	13.37
2	199.94	36.5 QP	43.5	-7.0	1.75 H	272	25.26	11.21
3	497.65	33.5 QP	46.0	-12.5	1.00 H	236	14.02	19.48
4	600.44	37.6 QP	46.0	-8.4	1.00 H	198	15.97	21.60
5	799.87	37.3 QP	46.0	-8.7	1.25 H	322	12.79	24.48
6	902.18	44.7 QP	46.0	-1.3	1.25 H	77	18.86	25.82
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	35.60	34.4 QP	40.0	-5.6	1.00 V	201	21.00	13.40
2	101.00	32.2 QP	43.5	-11.4	1.50 V	226	22.69	9.46
3	199.97	37.1 QP	43.5	-6.4	1.75 V	293	25.87	11.21
4	600.42	41.2 QP	46.0	-4.8	1.00 V	188	19.56	21.60
5	799.72	37.2 QP	46.0	-8.8	1.25 V	327	12.70	24.47
6	953.34	36.3 QP	46.0	-9.7	1.25 V	118	9.86	26.41

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 17.7GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

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	46.6 PK	74.0	-27.4	1.25 H	260	11.15	35.45
2	3830.00	42.9 AV	54.0	-11.1	1.25 H	260	7.45	35.45
3	7660.00	57.7 PK	74.0	-16.3	1.34 H	245	13.14	44.56
4	7660.00	46.7 AV	54.0	-7.3	1.34 H	245	2.14	44.56
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	3830.00	52.9 PK	74.0	-21.1	1.35 V	347	17.45	35.45
2	3830.00	44.5 AV	54.0	-9.5	1.35 V	347	9.05	35.45
3	7660.00	54.1 PK	74.0	-19.9	1.12 V	165	9.54	44.56
4	7660.00	42.6 AV	54.0	-11.4	1.12 V	165	-1.96	44.56

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 17.7GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	3856.67	46.7 PK	74.0	-27.3	1.21 H	250	11.15	35.55
2	3856.67	42.8 AV	54.0	-11.2	1.21 H	250	7.25	35.55
3	7713.33	57.5 PK	74.0	-16.5	1.30 H	249	12.87	44.63
4	7713.33	46.6 AV	54.0	-7.4	1.30 H	249	1.97	44.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	3856.67	52.8 PK	74.0	-21.2	1.31 V	334	17.25	35.55
2	3856.67	44.5 AV	54.0	-9.5	1.31 V	334	8.95	35.55
3	7713.33	54.1 PK	74.0	-19.9	1.10 V	177	9.47	44.63
4	7713.33	42.6 AV	54.0	-11.4	1.10 V	177	-2.03	44.63

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 17.7GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	3883.33	46.8 PK	74.0	-27.2	1.22 H	264	11.15	35.65
2	3883.33	42.7 AV	54.0	-11.3	1.22 H	264	7.05	35.65
3	7766.67	57.6 PK	74.0	-16.4	1.34 H	241	12.88	44.72
4	7766.67	46.5 AV	54.0	-7.5	1.34 H	241	1.78	44.72
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	3883.33	53.3 PK	74.0	-20.7	1.28 V	342	17.65	35.65
2	3883.33	44.8 AV	54.0	-9.2	1.28 V	342	9.15	35.65
3	7766.67	54.5 PK	74.0	-19.5	1.14 V	184	9.78	44.72
4	7766.67	42.9 AV	54.0	-11.1	1.14 V	184	-1.82	44.72

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.

5.3 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

Test date: Oct. 18 to Dec. 05, 2011

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

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

5.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

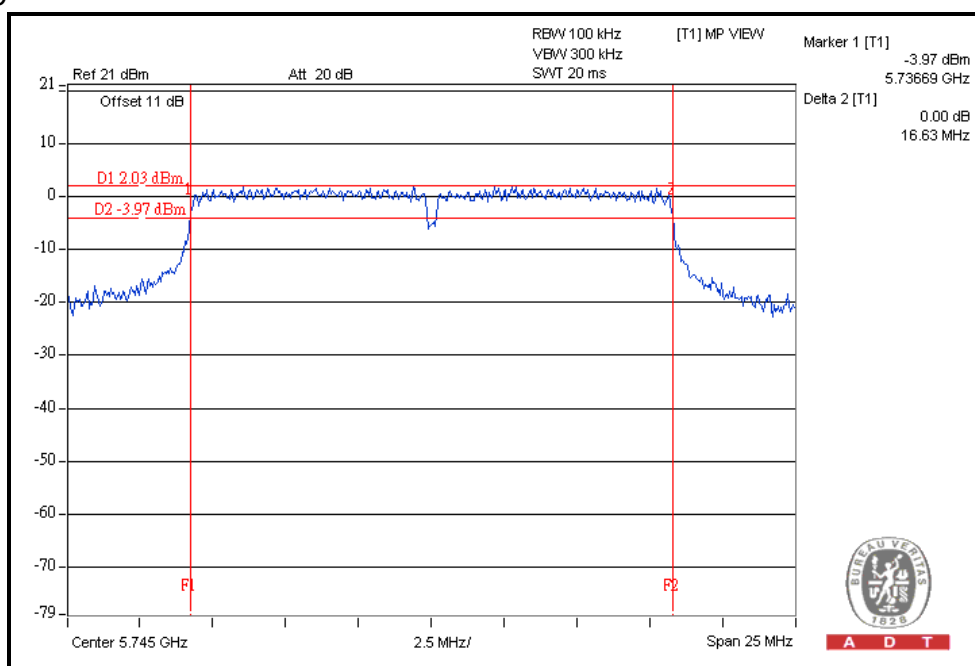
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.3.7 TEST RESULTS

Single chain - 802.11a OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.63	0.5	PASS
157	5785	16.62	0.5	PASS
165	5825	16.61	0.5	PASS

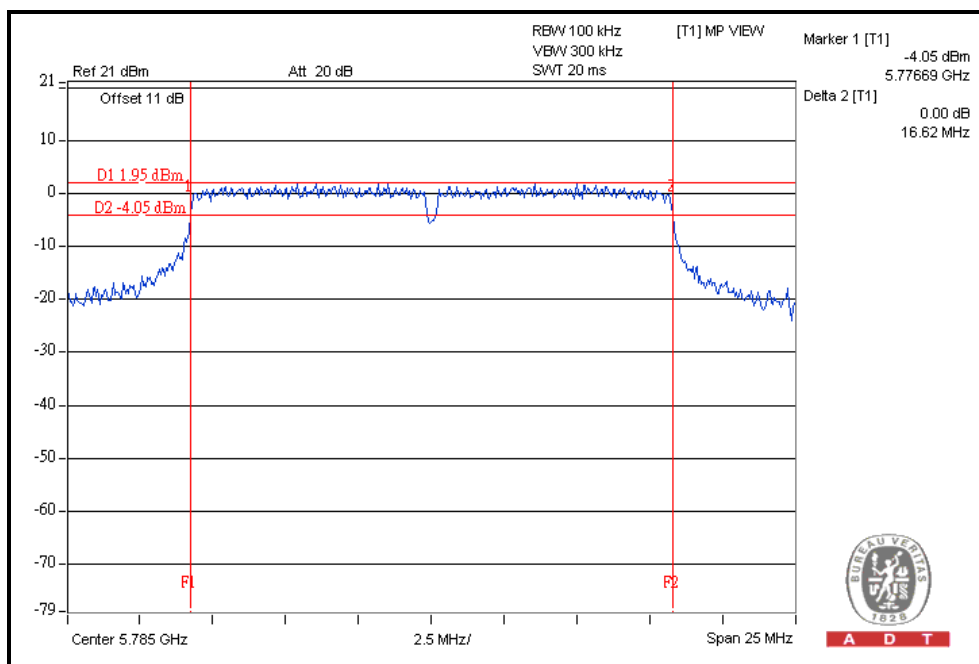
CH149



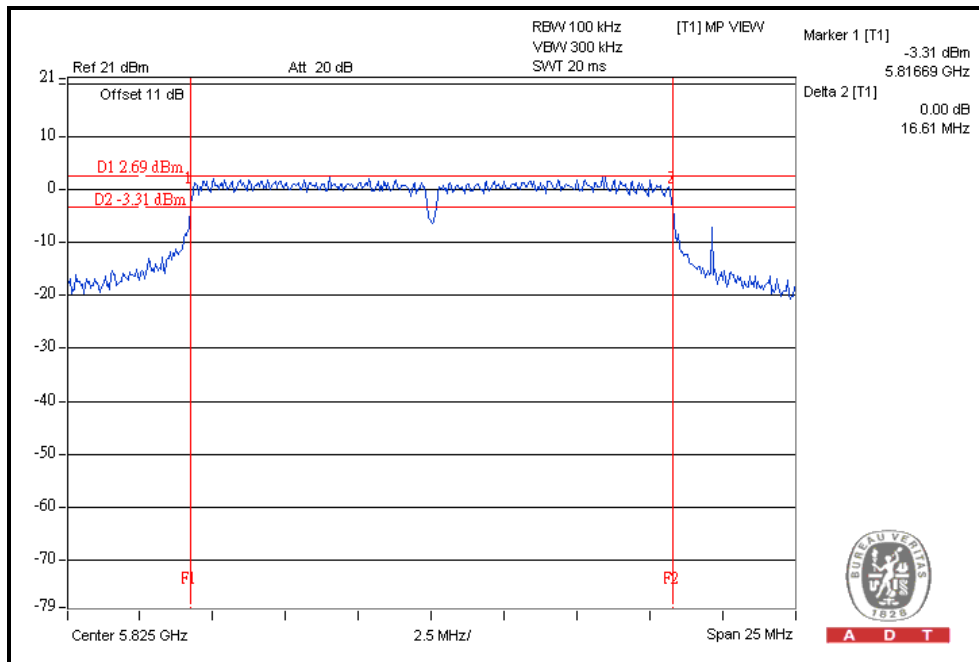


A D T

CH157



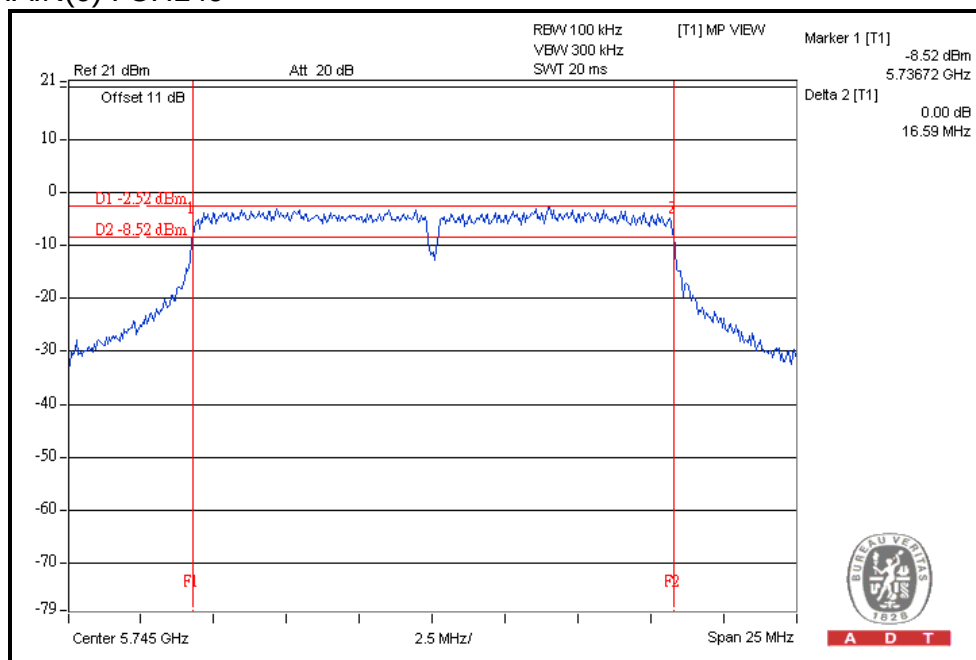
CH165



Multiple chain - 802.11a OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
149	5745	16.59	16.62	0.5	PASS
157	5785	16.61	16.60	0.5	PASS
165	5825	16.63	16.62	0.5	PASS

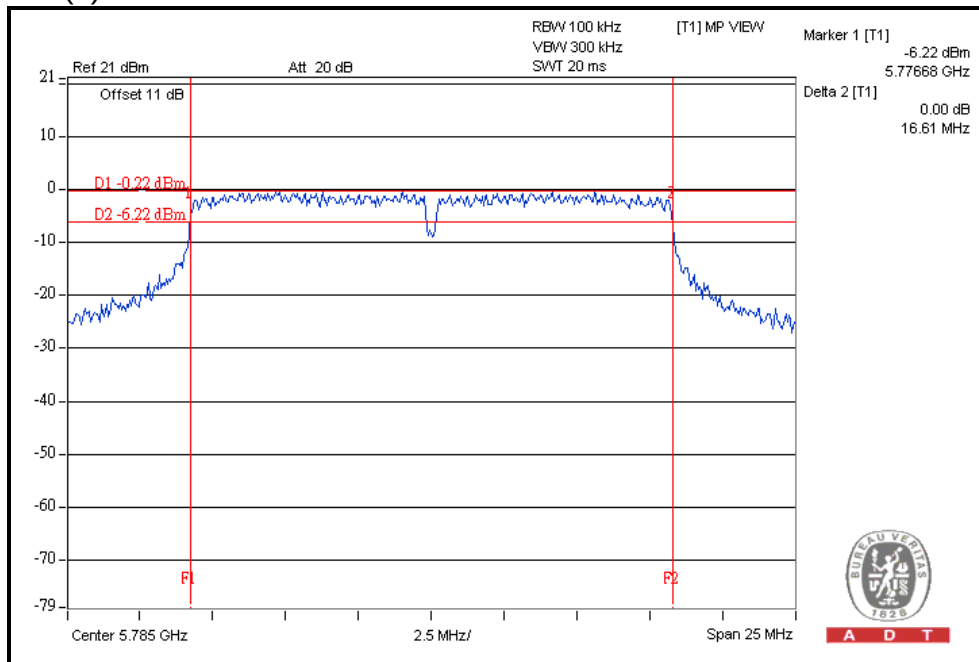
For CHAIN(0) : CH149



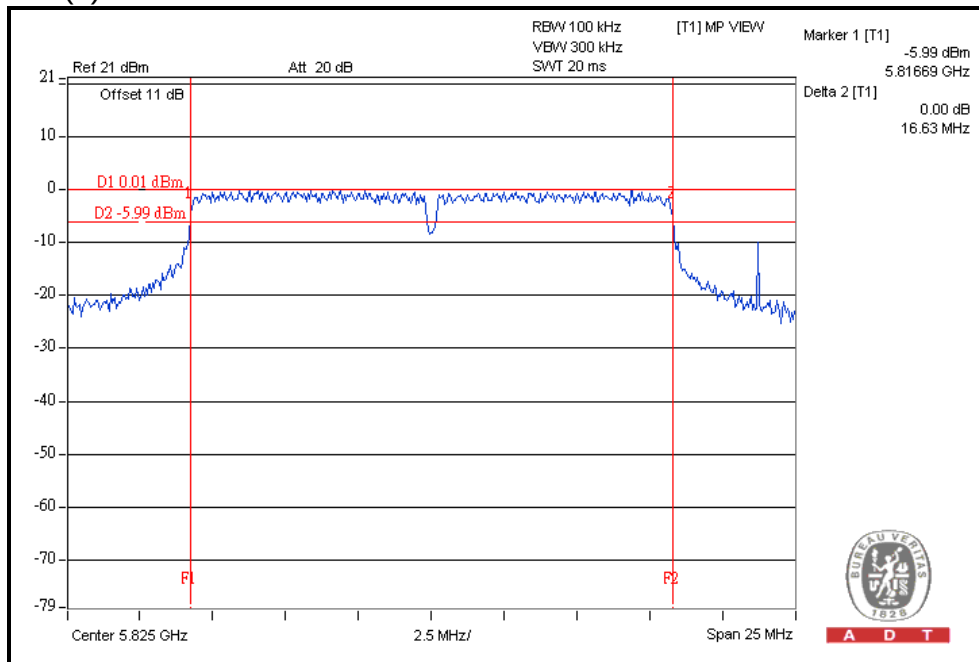


A D T

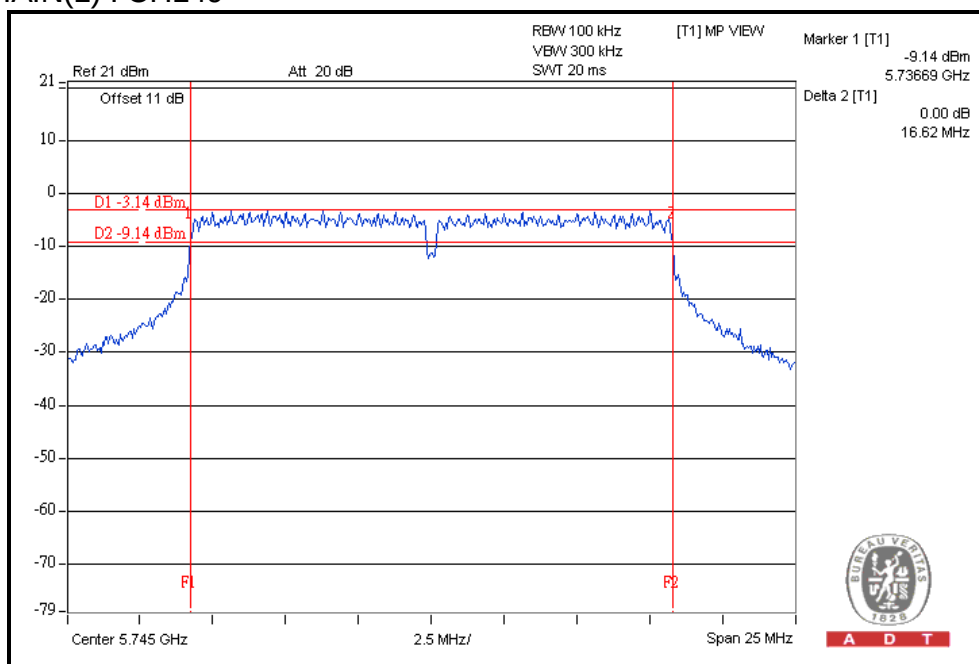
For CHAIN(0) : CH157



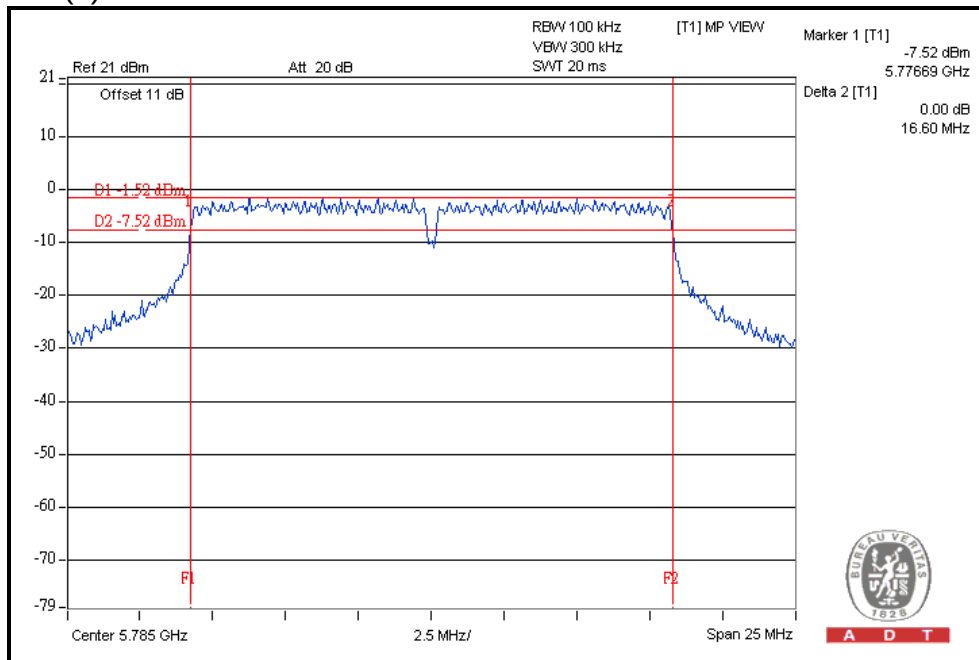
For CHAIN(0) : CH165



For CHAIN(1) : CH149



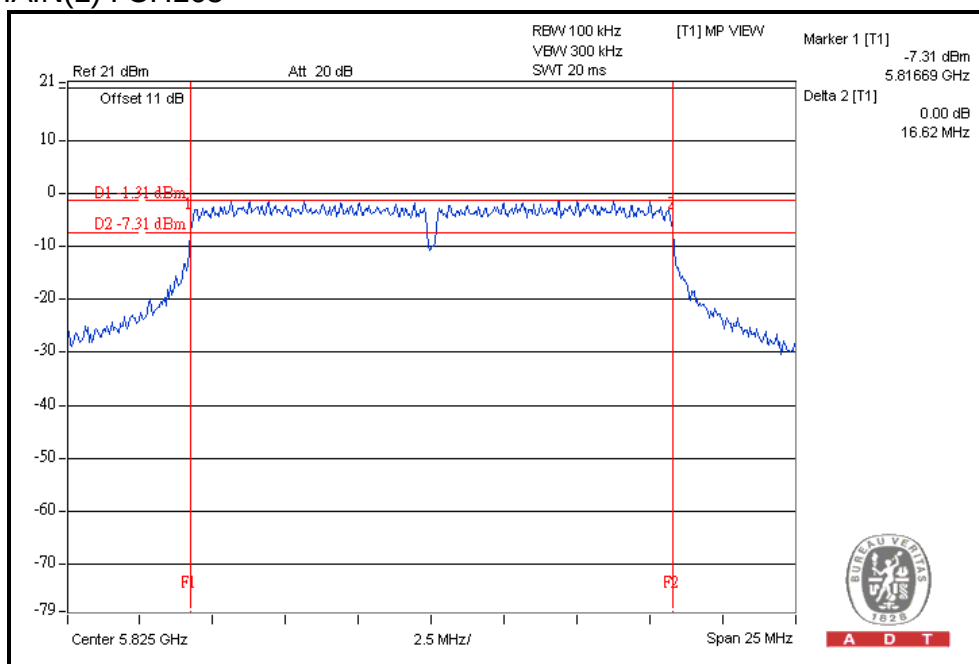
For CHAIN(1) : CH157





A D T

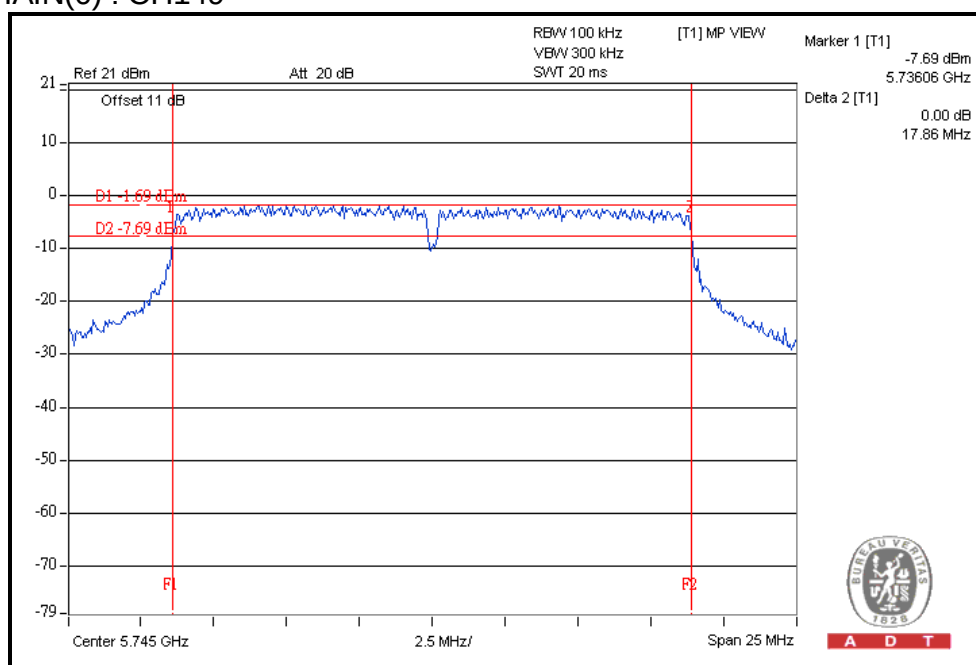
For CHAIN(1) : CH165



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
149	5745	17.86	17.84	0.5	PASS
157	5785	17.83	17.85	0.5	PASS
165	5825	17.87	17.85	0.5	PASS

For CHAIN(0) : CH149



Ref 21 dBm Att 20 dB REBW 100 kHz VBW 300 kHz SWT 20 ms [T1] MP VIEW

Offset 11 dB

D1 0.06 dBm

D2 -5.94 dBm

F1 F2

Center 5.785 GHz 2.5 MHz/ Span 25 MHz

Marker 1 [T1] -5.94 dBm 5.77607 GHz

Delta 2 [T1] 0.00 dB 17.83 MHz

BUREAU VERITAS 1828

A D T

Ref 21 dBm Att 20 dB RBW 100 kHz VBW 300 kHz SWT 20 ms [T1] MP VIEW

Marker 1 [T1] -5.24 dBm 5.81605 GHz

Delta 2 [T1] 0.00 dB 17.87 MHz

Offset 11 dB

D1 0.76 dBm

D2 -5.24 dBm

F1 F2

Center 5.825 GHz 2.5 MHz/ Span 25 MHz

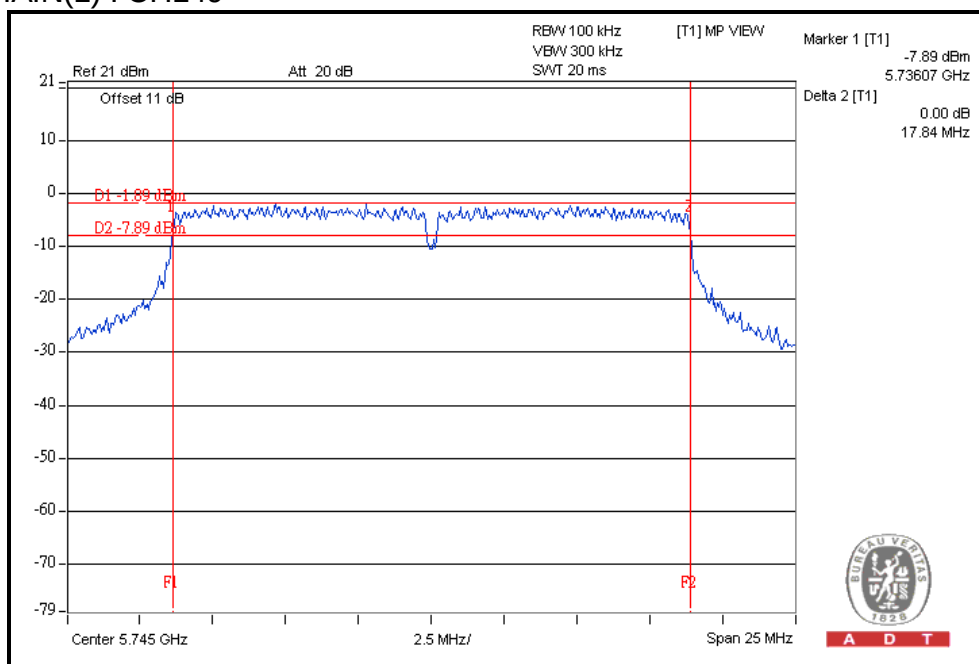
BUREAU VERITAS 1828

A D T

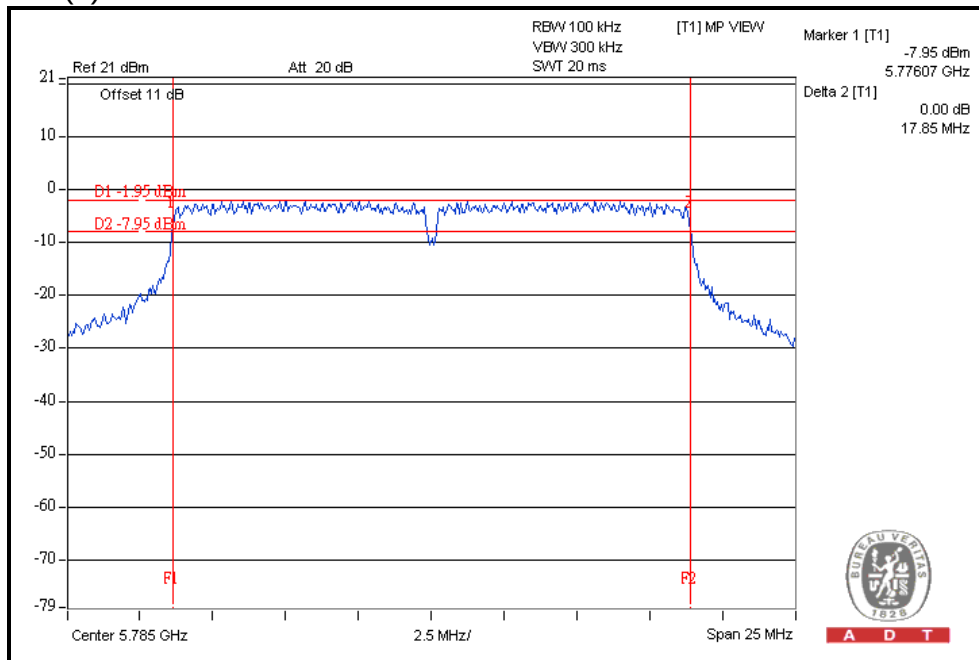


A D T

For CHAIN(1) : CH149



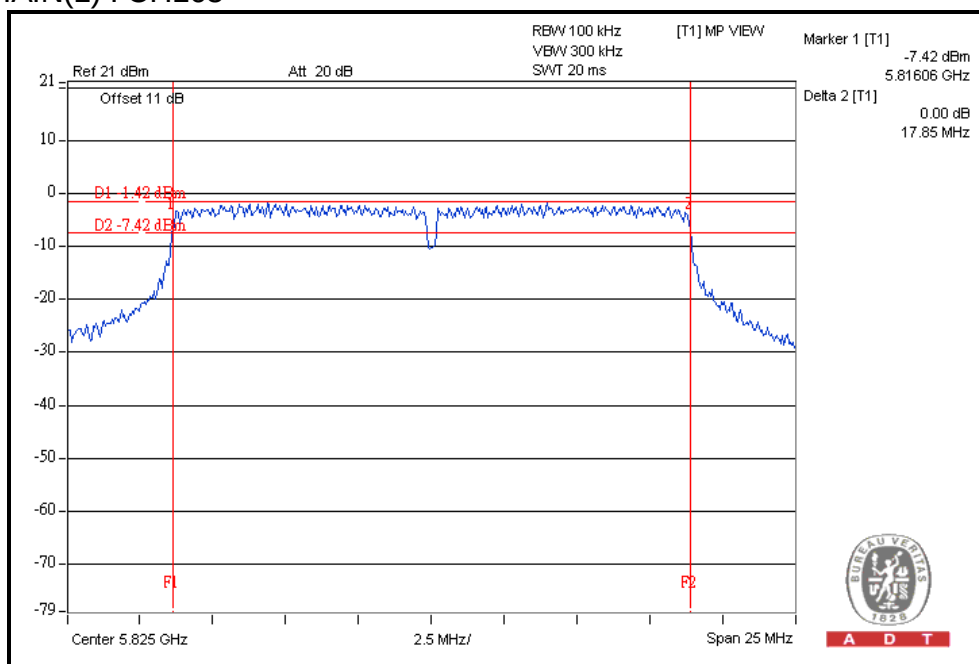
For CHAIN(1) : CH157





A D T

For CHAIN(1) : CH165

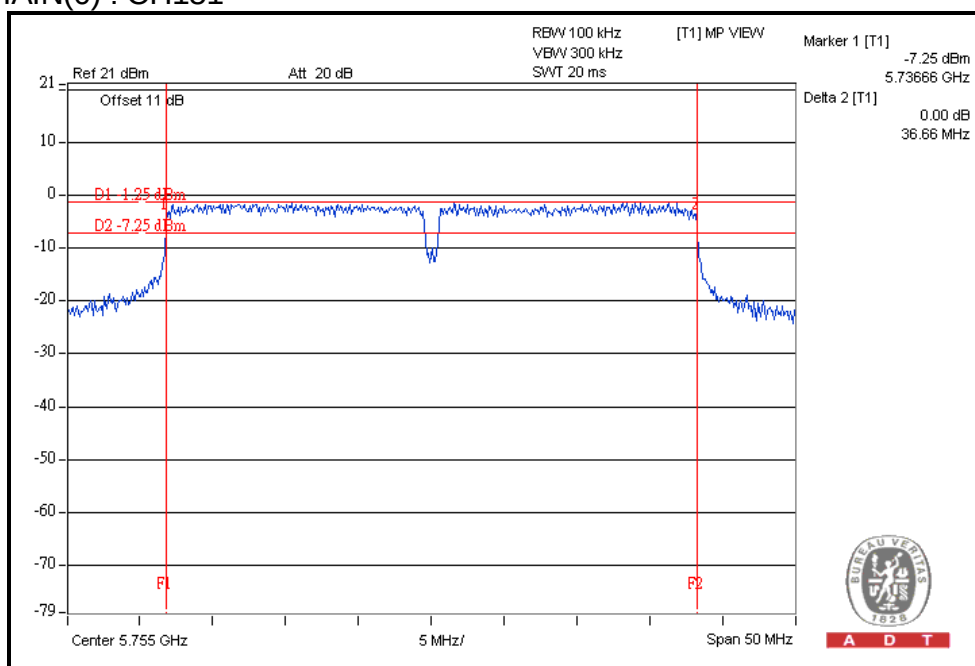


A D T

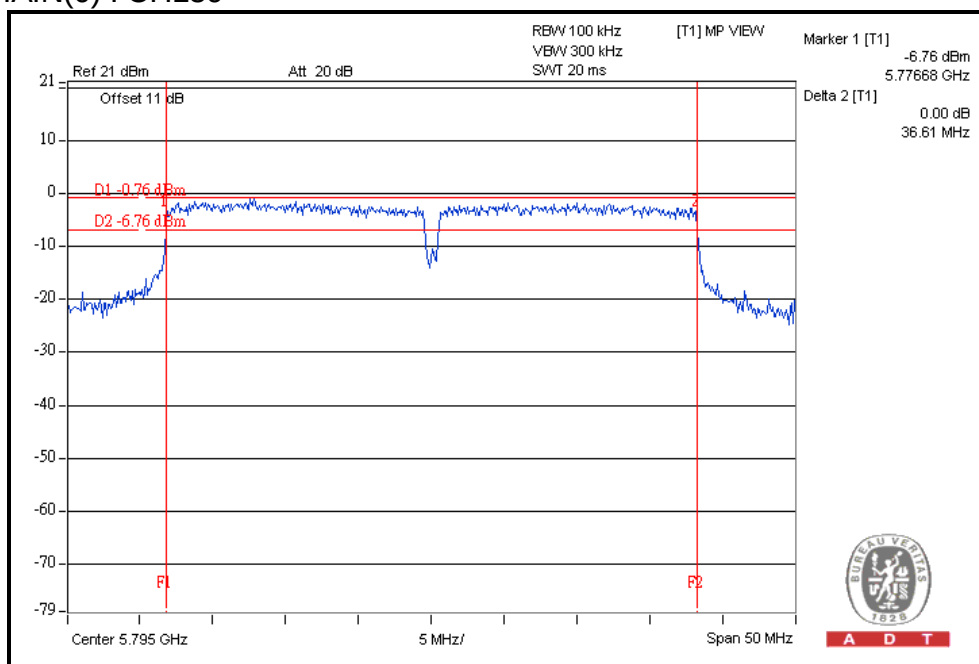
802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
151	5755	36.66	36.63	0.5	PASS
159	5795	36.61	36.66	0.5	PASS

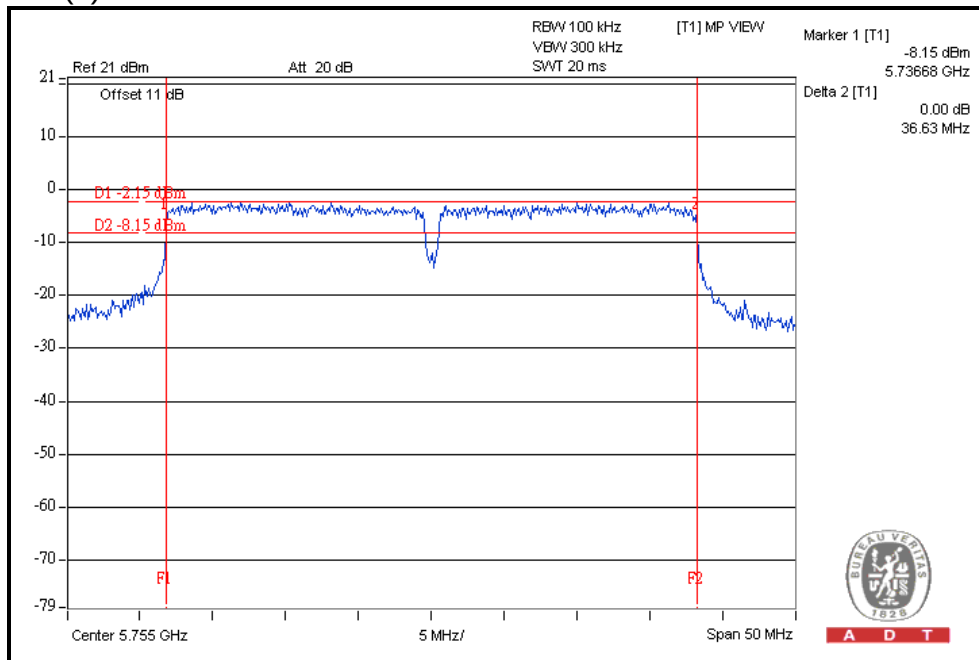
For CHAIN(0) : CH151



For CHAIN(0) : CH159



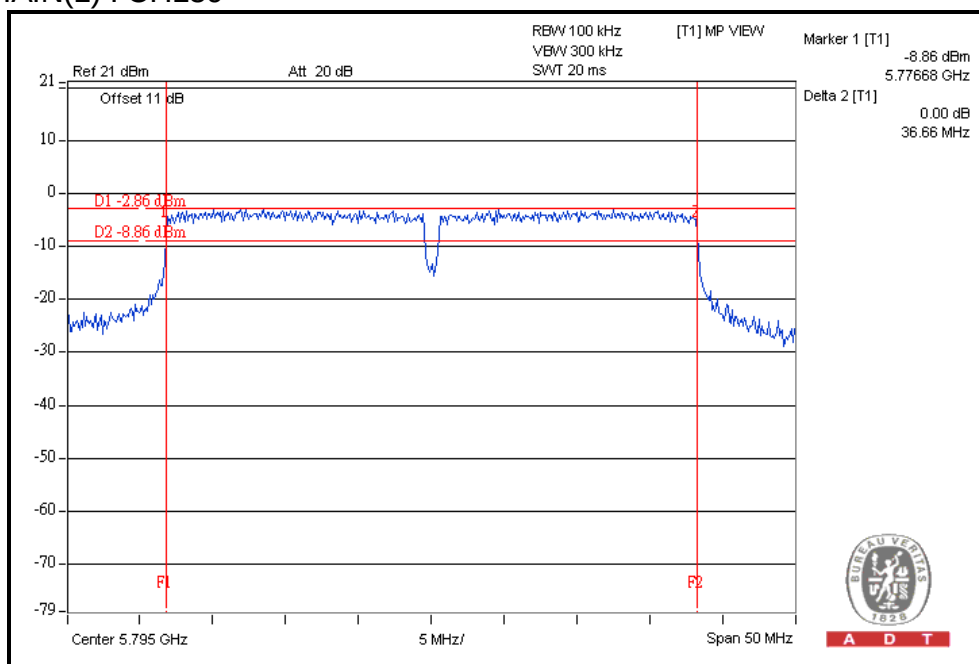
For CHAIN(1) : CH151





A D T

For CHAIN(1) : CH159



5.4 99% BANDWIDTH MEASUREMENT

5.4.1 TEST INSTRUMENTS

Test date: Oct. 18 to Dec. 05, 2011

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

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

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 300kHz RBW and 1MHz VBW or 1MHz RBW and 3MHz VBW.

5.4.3 TEST SETUP



5.4.4 EUT OPERATING CONDITIONS

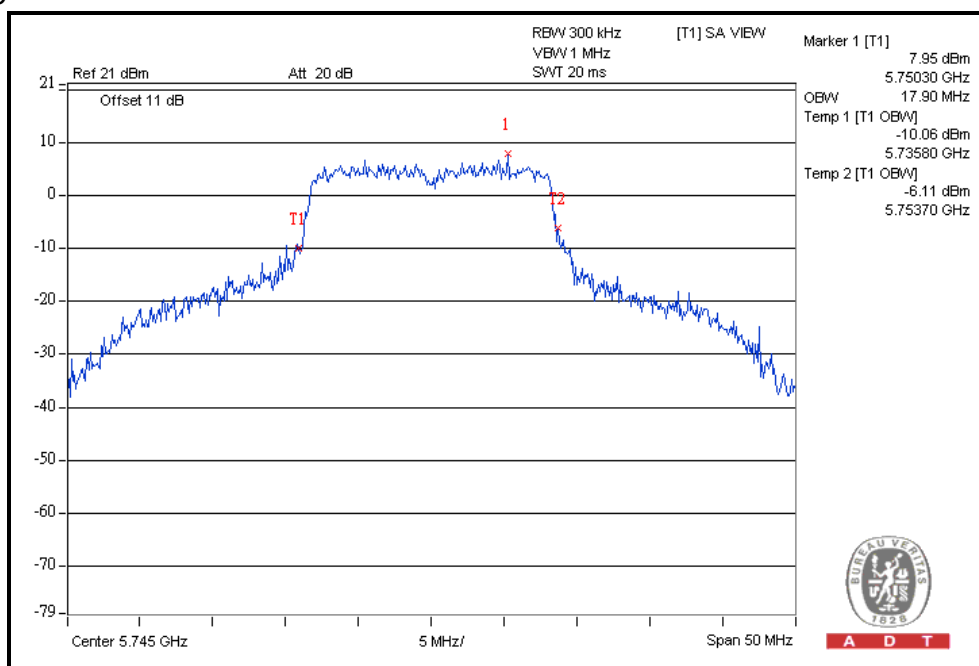
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.4.5 TEST RESULTS

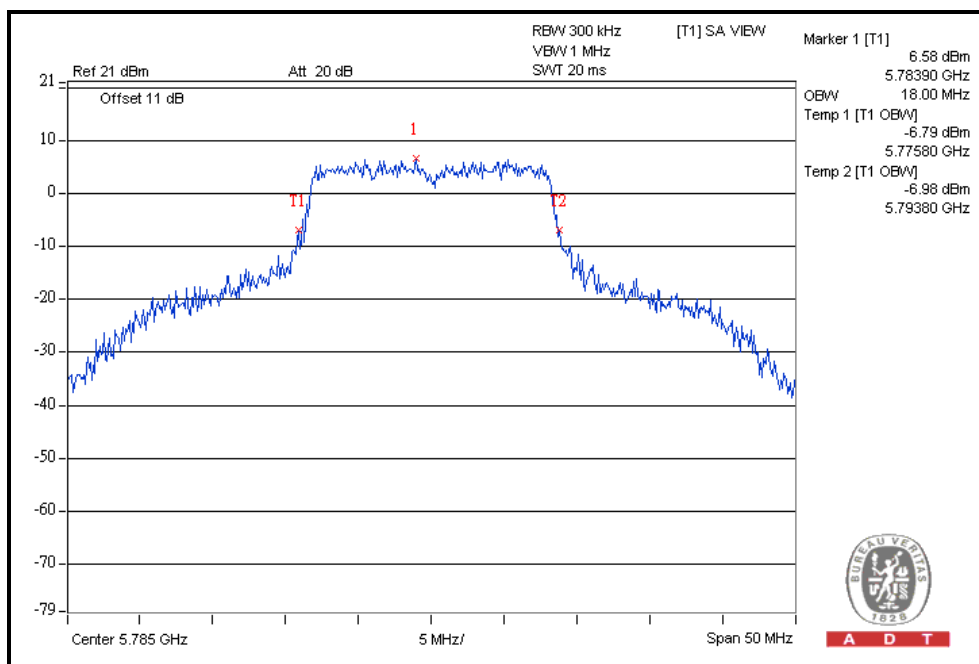
Single chain - 802.11a OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)
149	5745	17.90
157	5785	18.00
165	5825	19.40

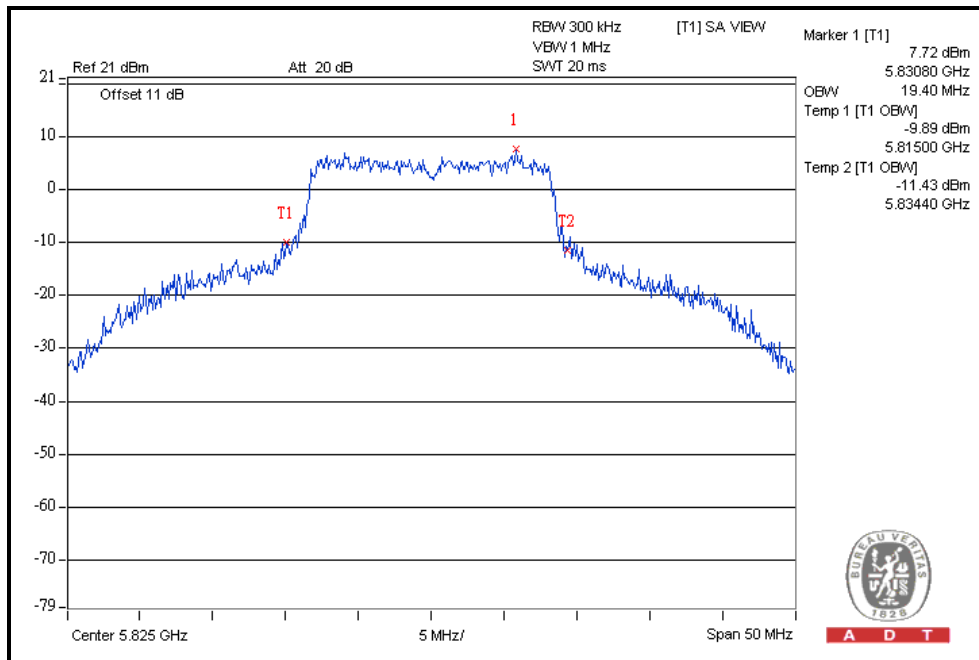
CH149



CH157



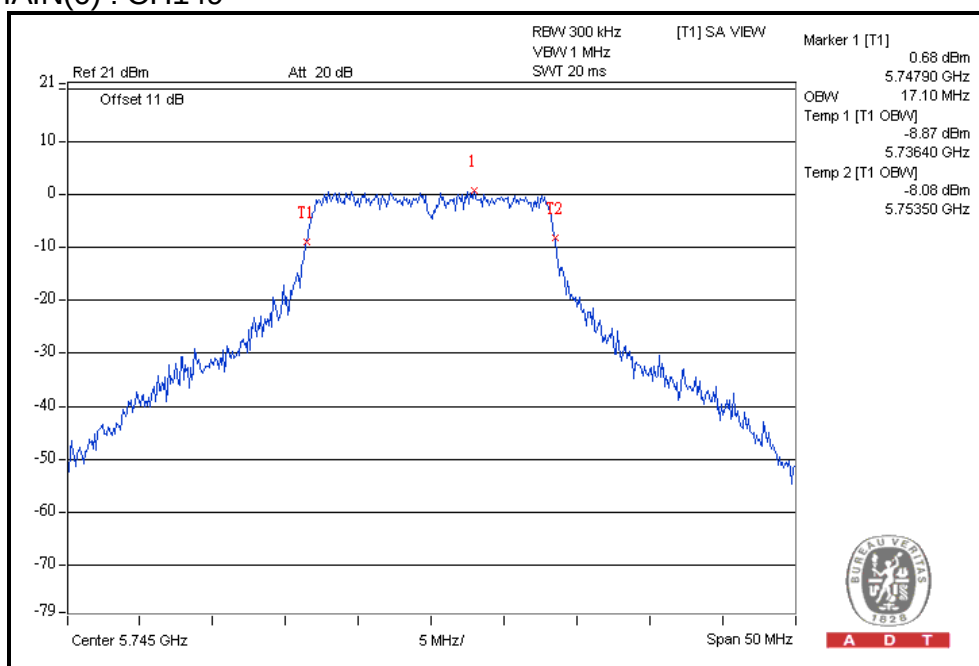
CH165



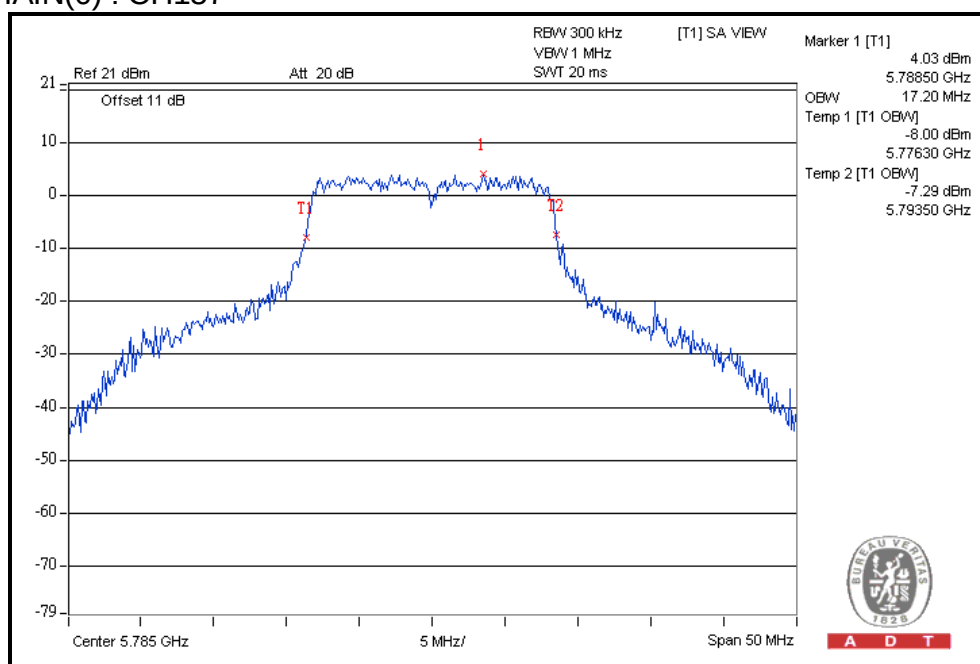
Multiple chain - 802.11a OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
149	5745	17.10	17.10
157	5785	17.20	17.10
165	5825	17.60	17.10

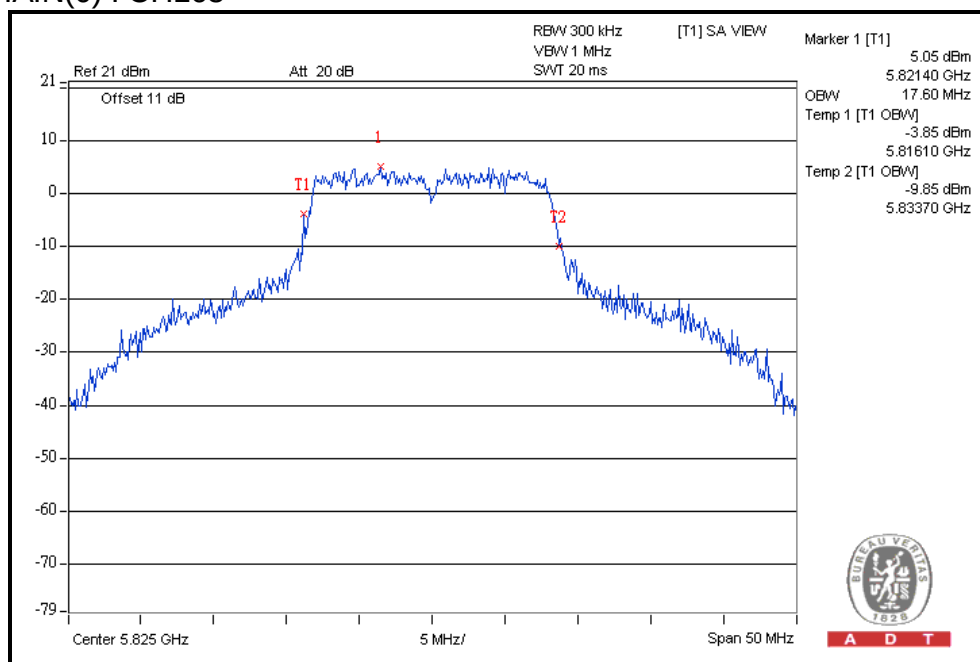
For CHAIN(0) : CH149



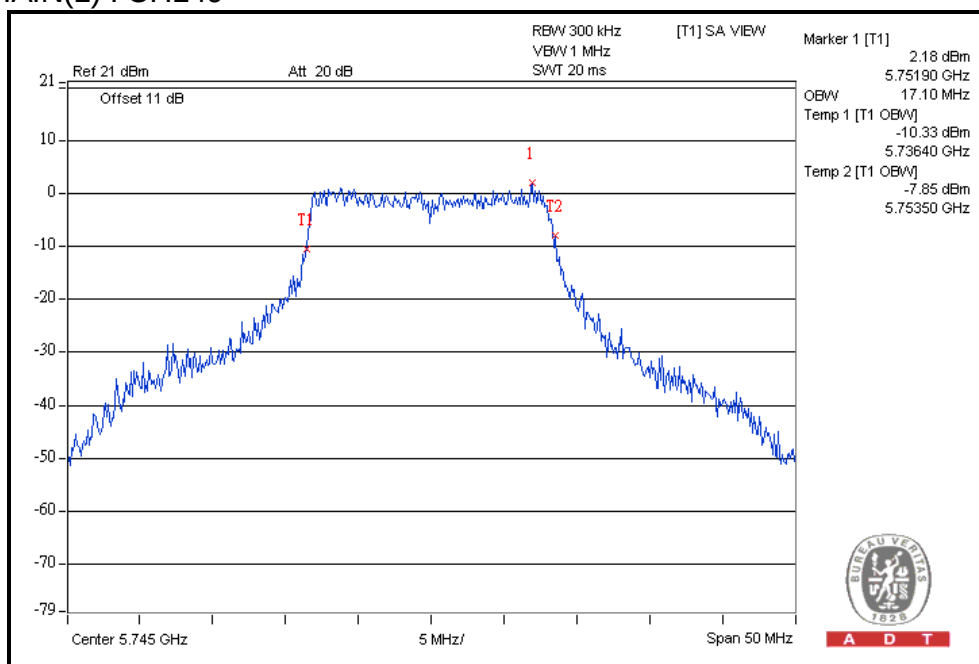
For CHAIN(0) : CH157



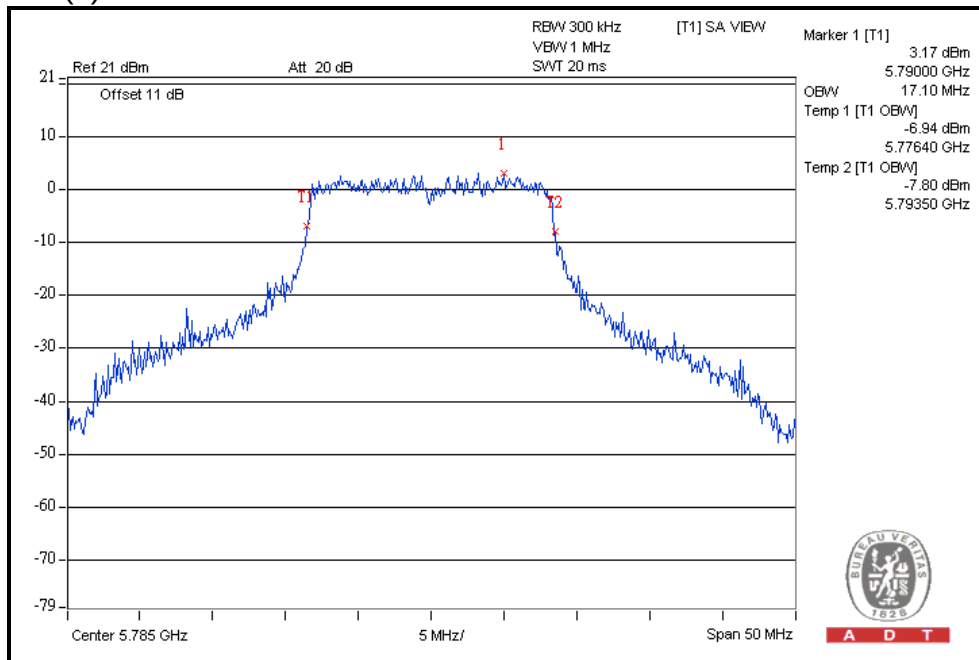
For CHAIN(0) : CH165



For CHAIN(1) : CH149



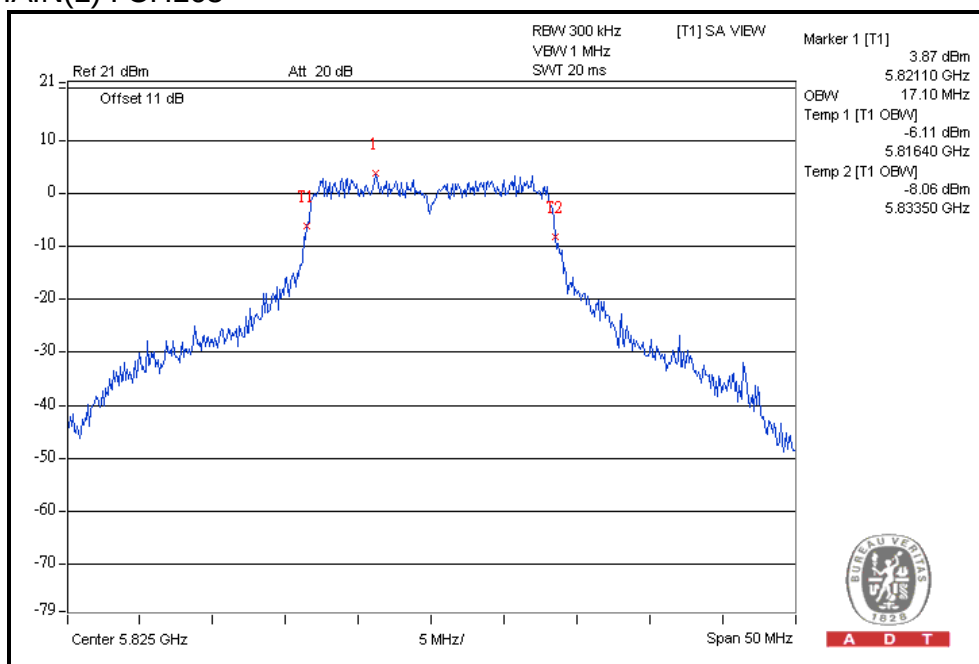
For CHAIN(1) : CH157





A D T

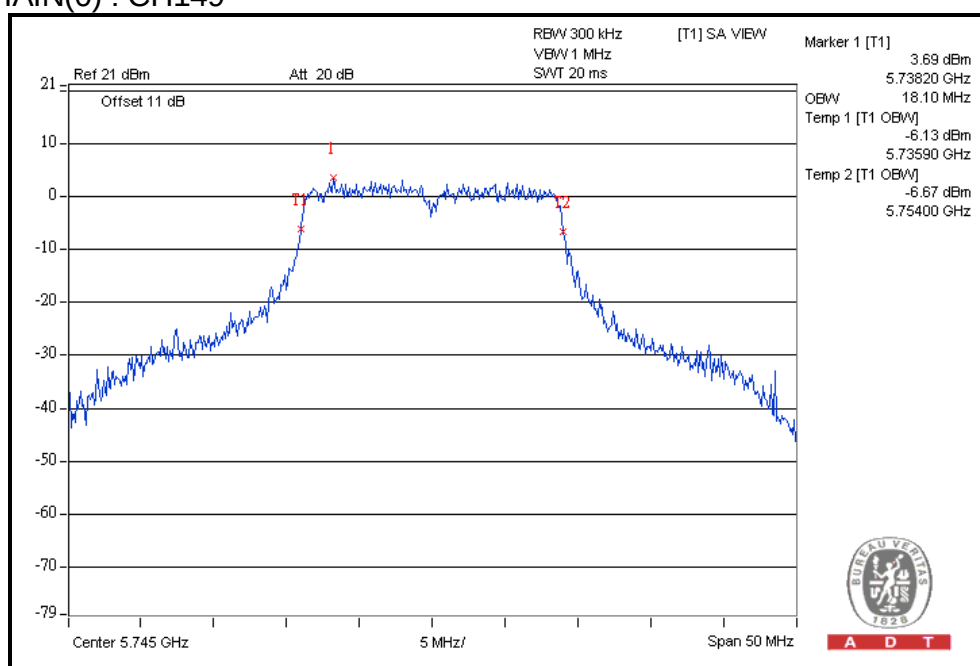
For CHAIN(1) : CH165



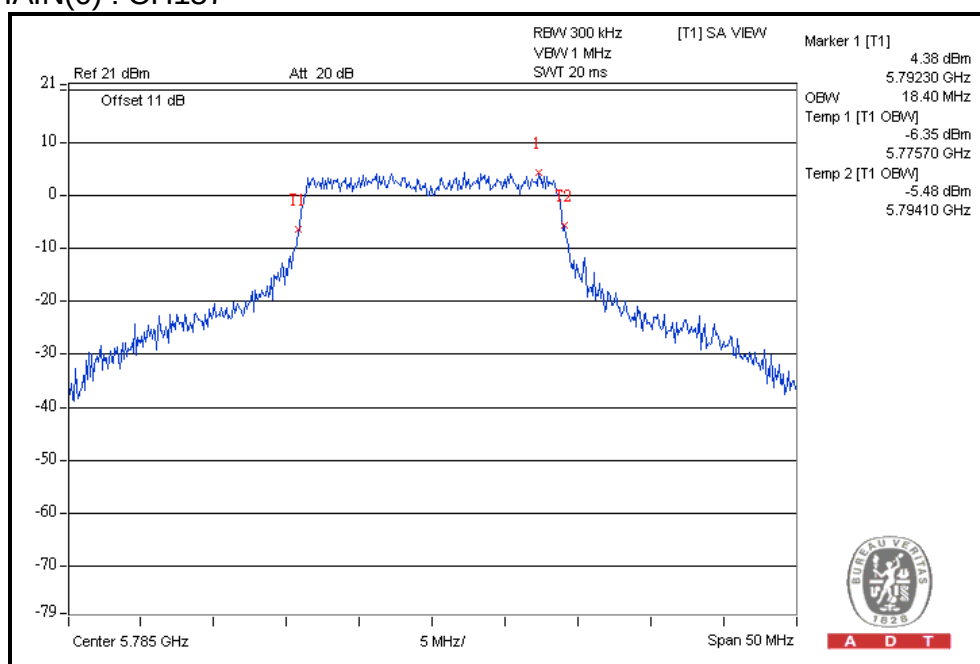
802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
149	5745	18.10	18.20
157	5785	18.40	18.40
165	5825	19.70	18.20

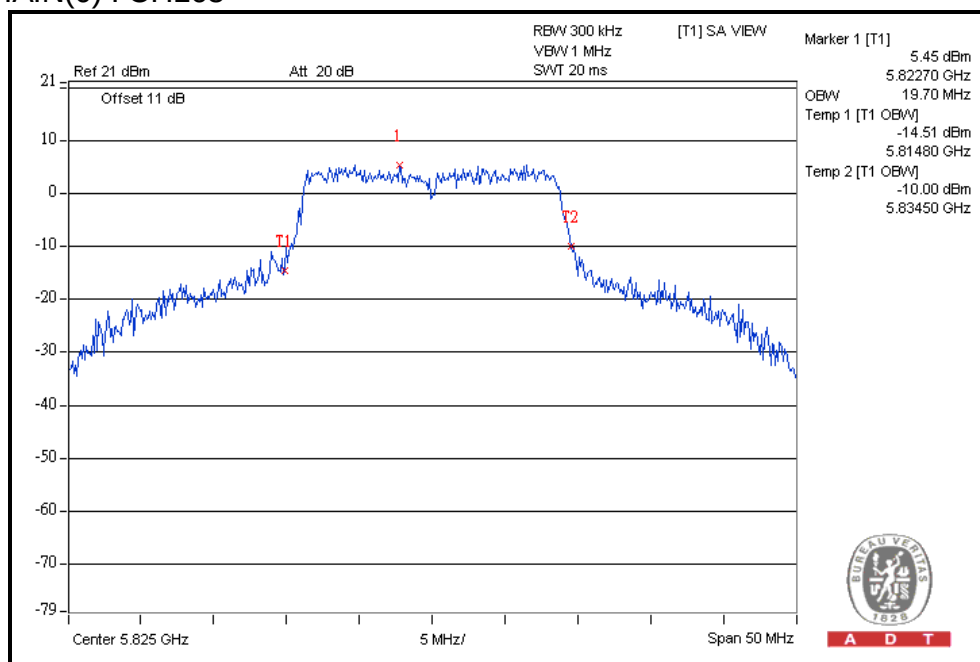
For CHAIN(0) : CH149



For CHAIN(0) : CH157



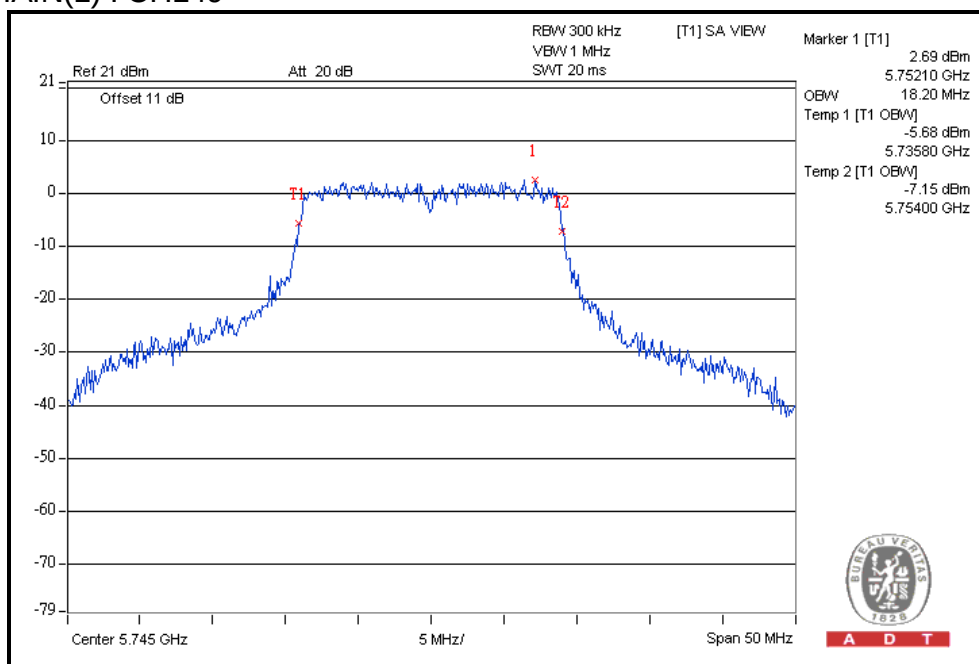
For CHAIN(0) : CH165



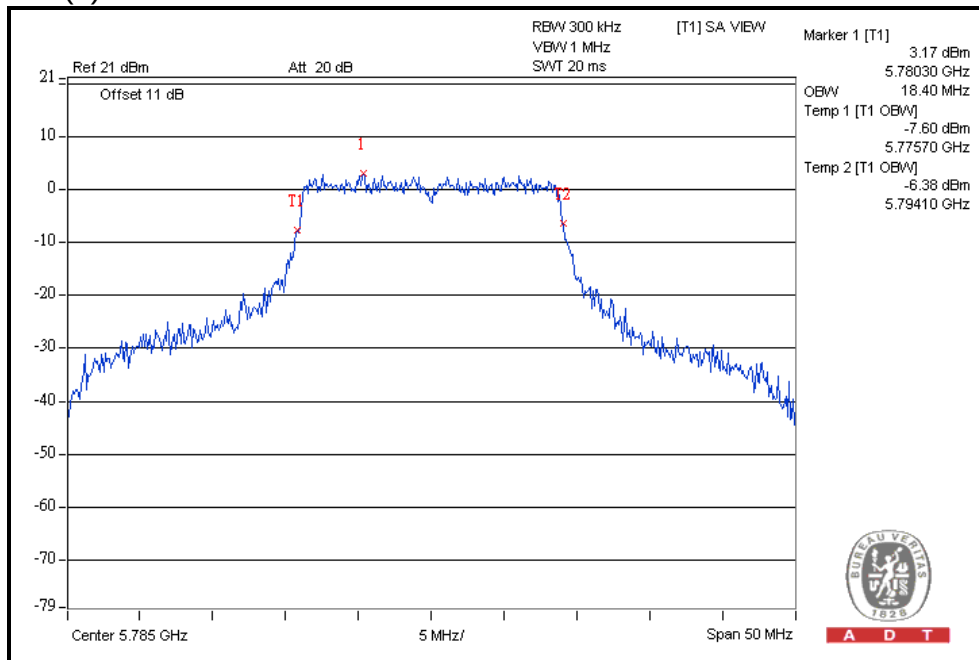


A D T

For CHAIN(1) : CH149



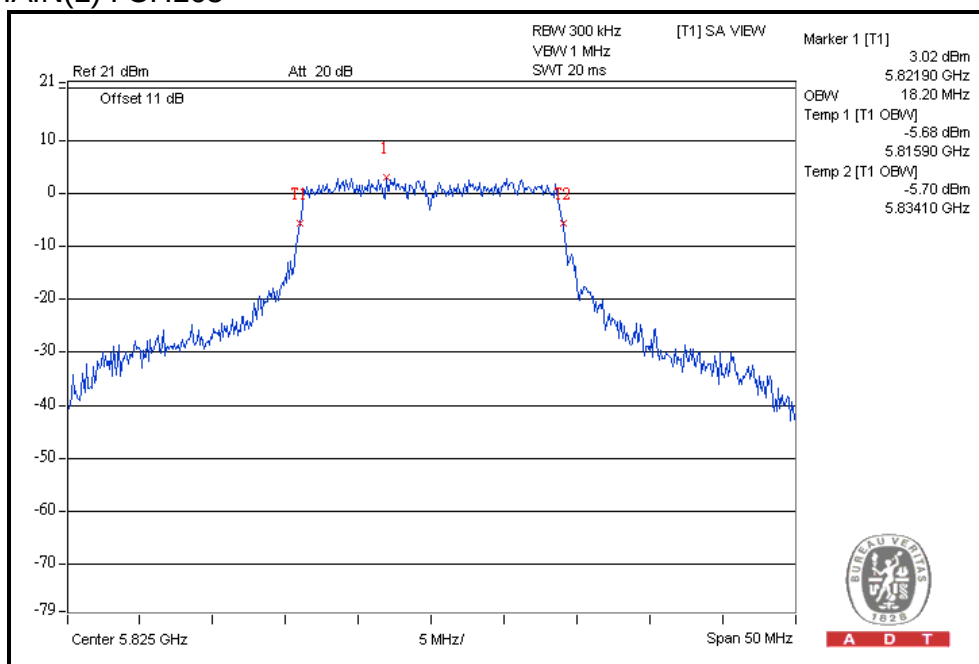
For CHAIN(1) : CH157





A D T

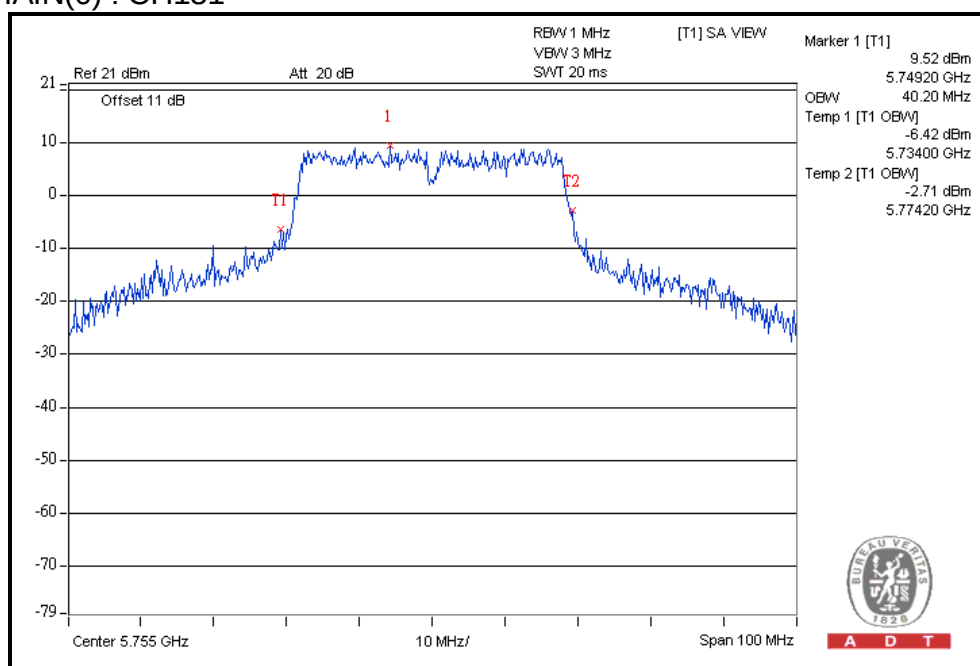
For CHAIN(1) : CH165



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	99% BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
151	5755	40.20	39.60
159	5795	40.40	38.00

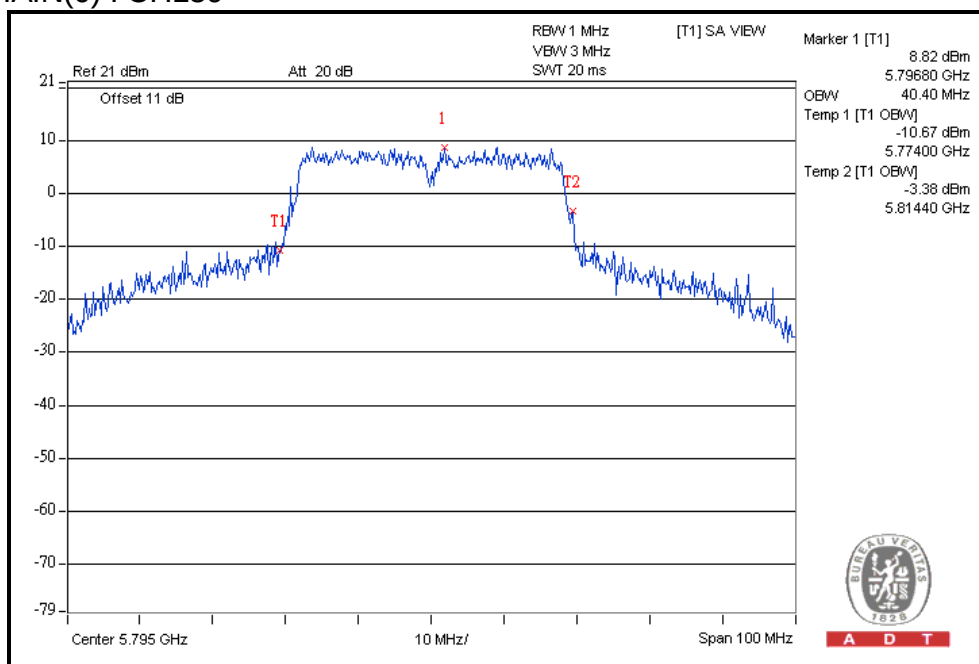
For CHAIN(0) : CH151



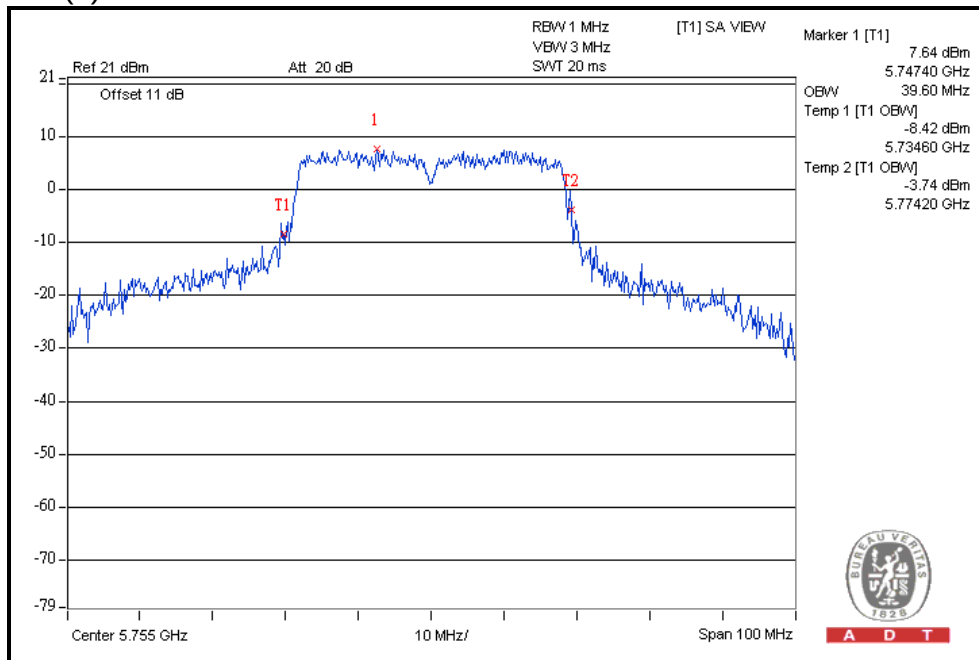


A D T

For CHAIN(0) : CH159



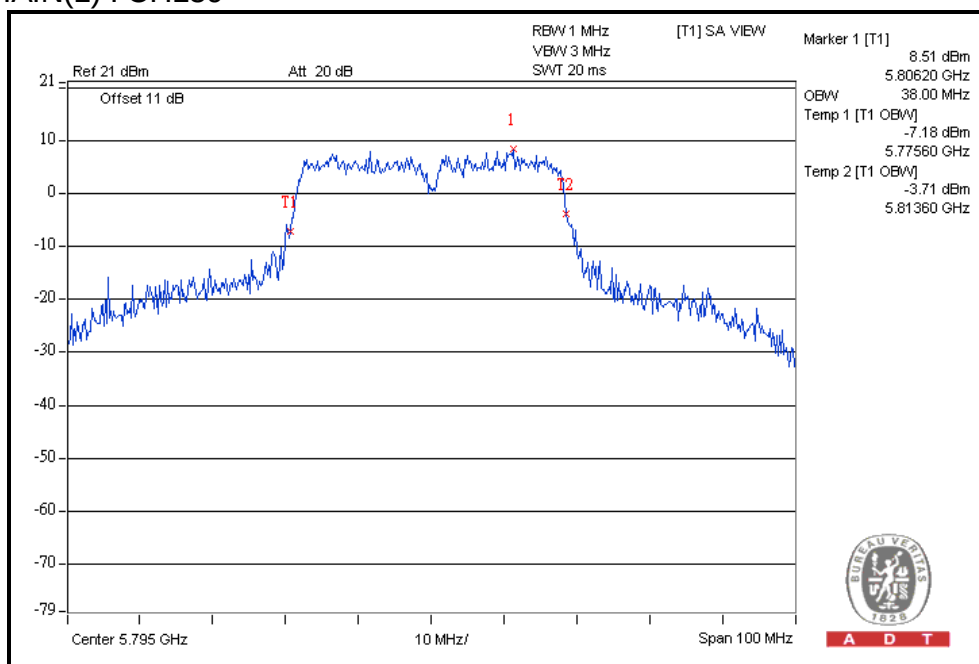
For CHAIN(1) : CH151





A D T

For CHAIN(1) : CH159



5.5 MAXIMUM PEAK OUTPUT POWER

5.5.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.5.2 INSTRUMENTS

Test date: Oct. 18 to Dec. 05, 2011

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

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

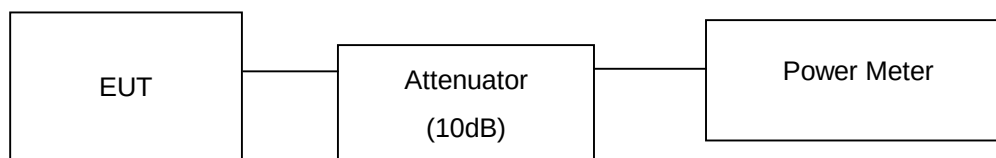
5.5.3 TEST PROCEDURES

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 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 OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
149	5745	158.5	22.0	30	PASS
157	5785	162.2	22.1	30	PASS
165	5825	158.5	22.0	30	PASS

Multiple chain - 802.11a OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	19.3	20.1	187.4	22.7	28.23	PASS
157	5785	19.4	20.3	194.2	22.9	28.23	PASS
165	5825	19.8	20.4	205.1	23.1	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) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
149	5745	19.9	20.1	200.1	23.0	28.23	PASS
157	5785	20.2	20.1	207.0	23.2	28.23	PASS
165	5825	20.8	19.9	218.0	23.4	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) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
151	5755	20.2	20.4	214.4	23.3	28.23	PASS
159	5795	20.0	20.2	204.7	23.1	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

Test date: Oct. 18 to Dec. 05, 2011

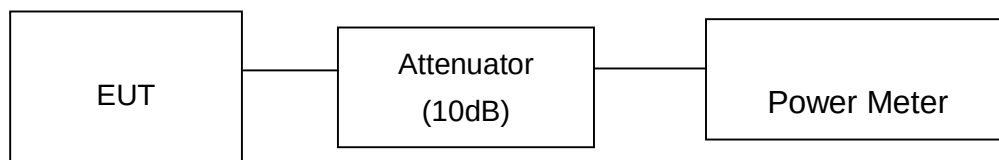
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Peak Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

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

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 OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)
149	5745	14.3
157	5785	14.7
165	5825	15.2

Multiple chain - 802.11a OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
149	5745	12.0	12.5	15.3
157	5785	12.1	12.6	15.4
165	5825	12.5	12.8	15.7

802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
149	5745	13.2	13.7	16.5
157	5785	13.8	14.0	16.9
165	5825	14.1	13.8	17.0

802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER OUTPUT (dBm)		AVERAGE POWER OUTPUT (dBm)
		Chain(0)	Chain(1)	
151	5755	14.2	14.3	17.3
159	5795	14.1	14.0	17.1

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

Test date: Oct. 18 to Dec. 05, 2011

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

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

5.7.3 TEST PROCEDURE

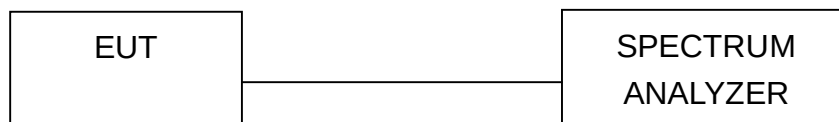
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

5.7.4 DEVIATION FROM TEST STANDARD

No deviation

5.7.5 TEST SETUP



5.7.6 EUT OPERATING CONDITION

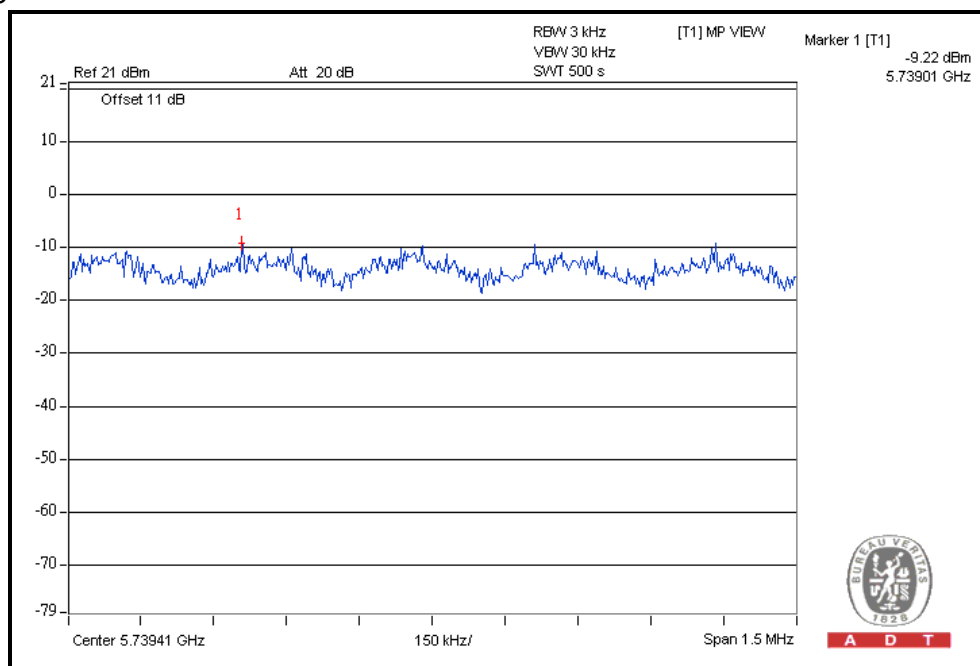
Same as Item 4.3.6

5.7.7 TEST RESULTS

Single chain - 802.11a OFDM MODULATION:

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS / FAIL
149	5745	-9.2	8	PASS
157	5785	-9.7	8	PASS
165	5825	-9.0	8	PASS

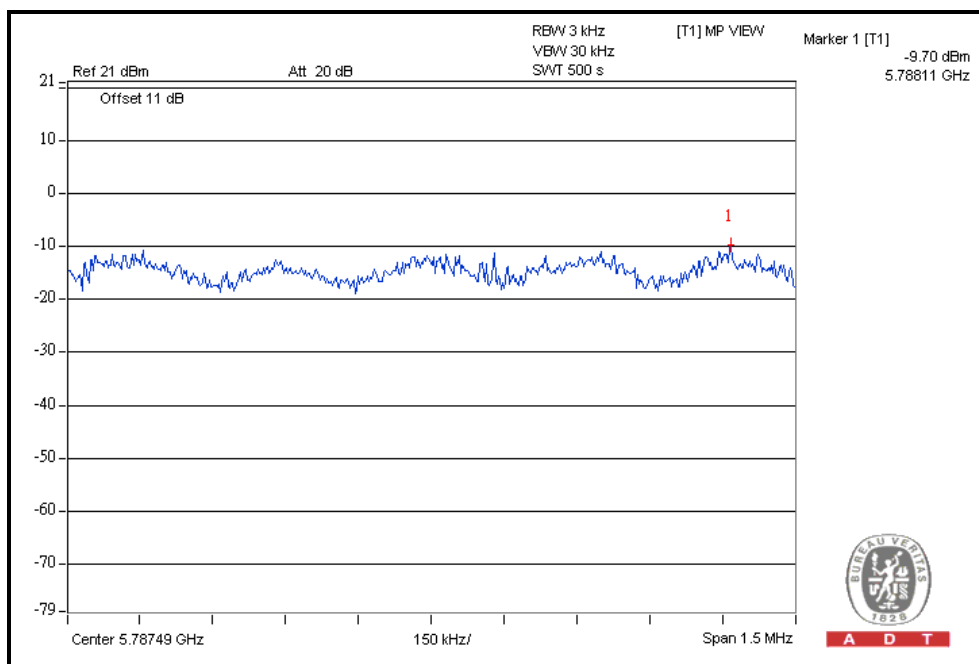
CH149



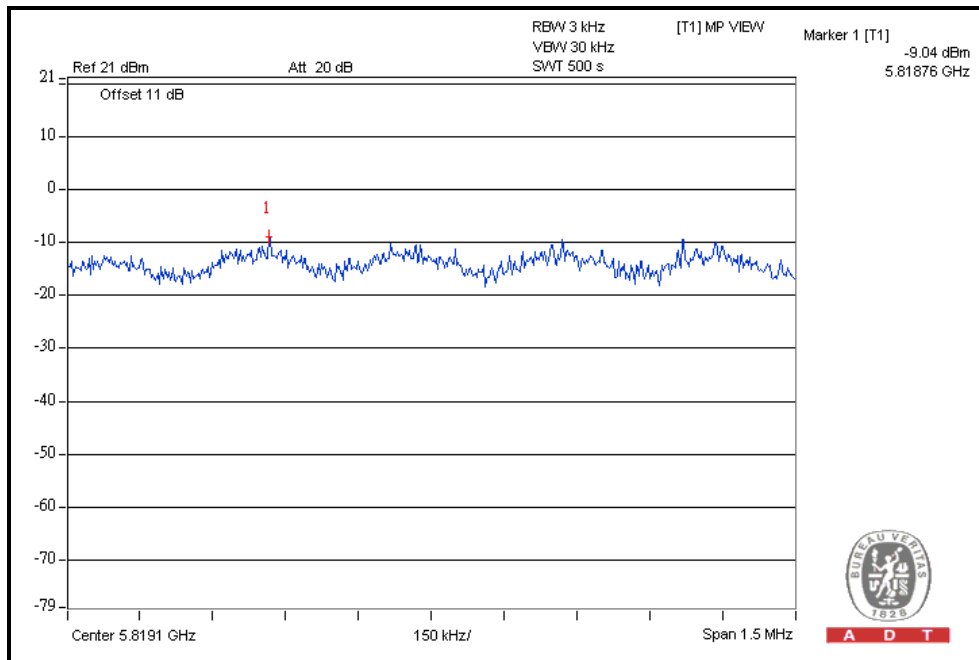


A D T

CH157



CH165



Multiple chain - 802.11a OFDM MODULATION:

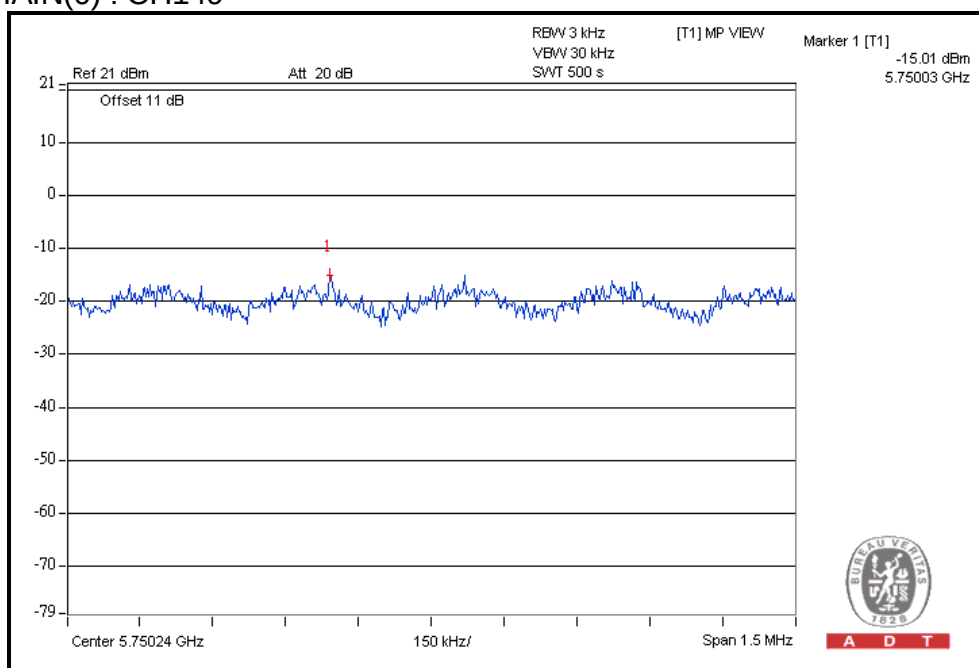
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-15.0	3.01	-12.0	6.23	PASS
	157	5785	-13.0	3.01	-10.0	6.23	PASS
	165	5825	-11.6	3.01	-8.6	6.23	PASS
1	149	5745	-15.6	3.01	-12.6	6.23	PASS
	157	5785	-13.5	3.01	-10.5	6.23	PASS
	165	5825	-13.7	3.01	-10.7	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.

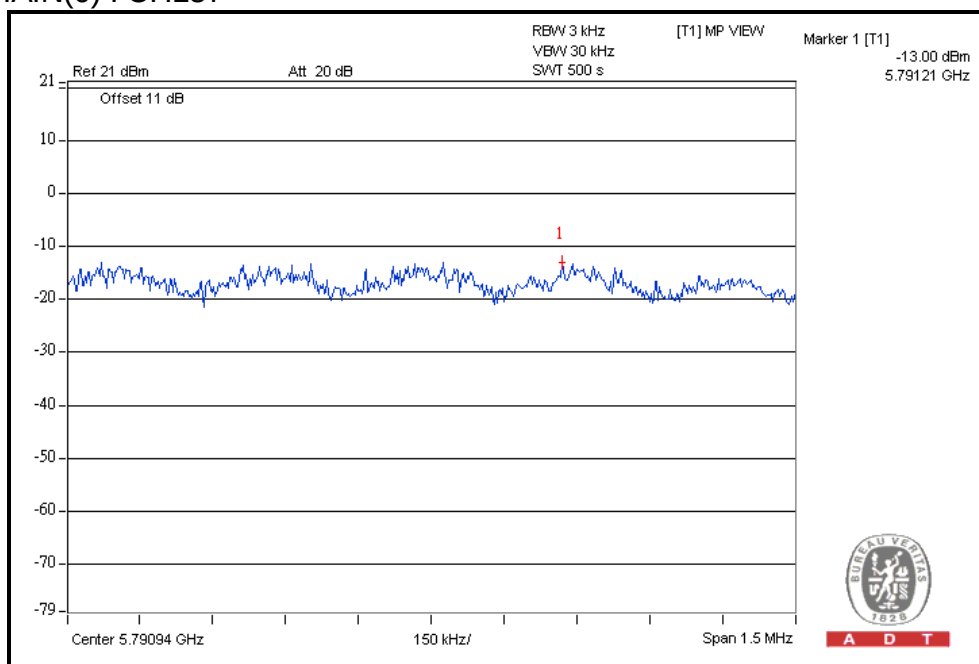
For CHAIN(0) : CH149



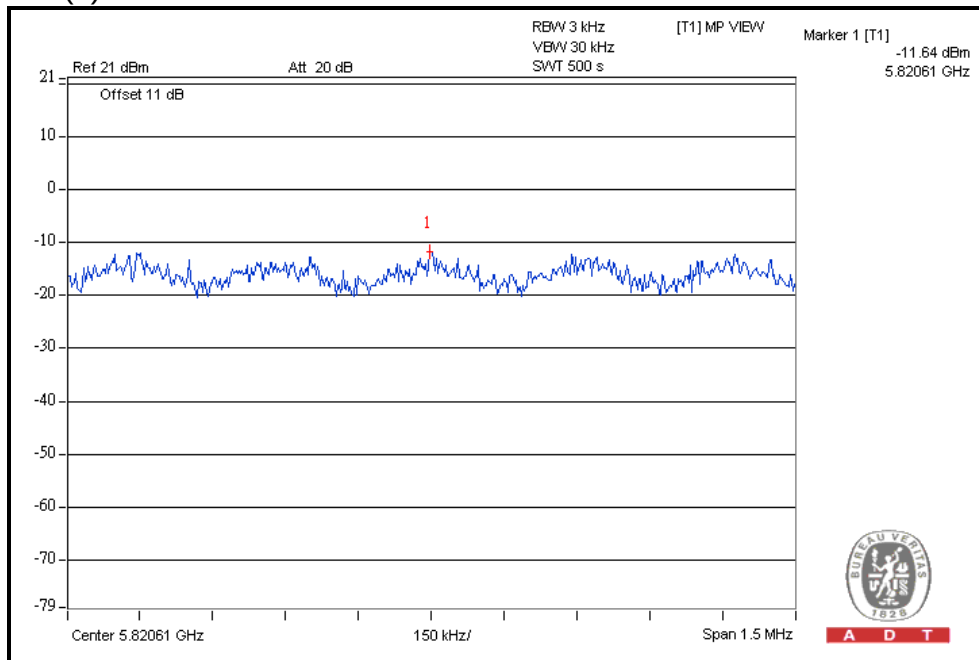


A D T

For CHAIN(0) : CH157



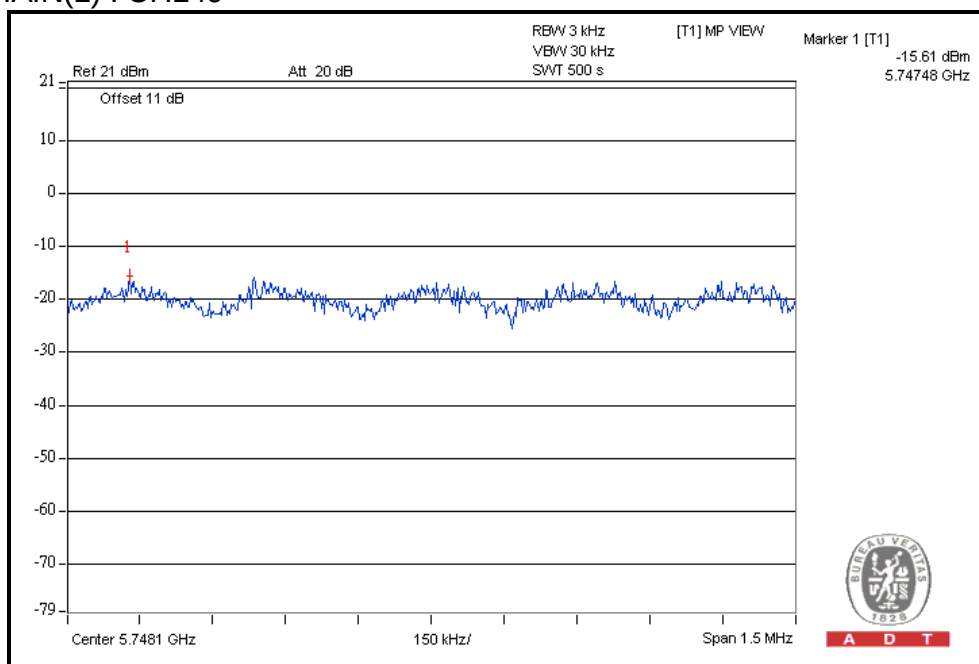
For CHAIN(0) : CH165





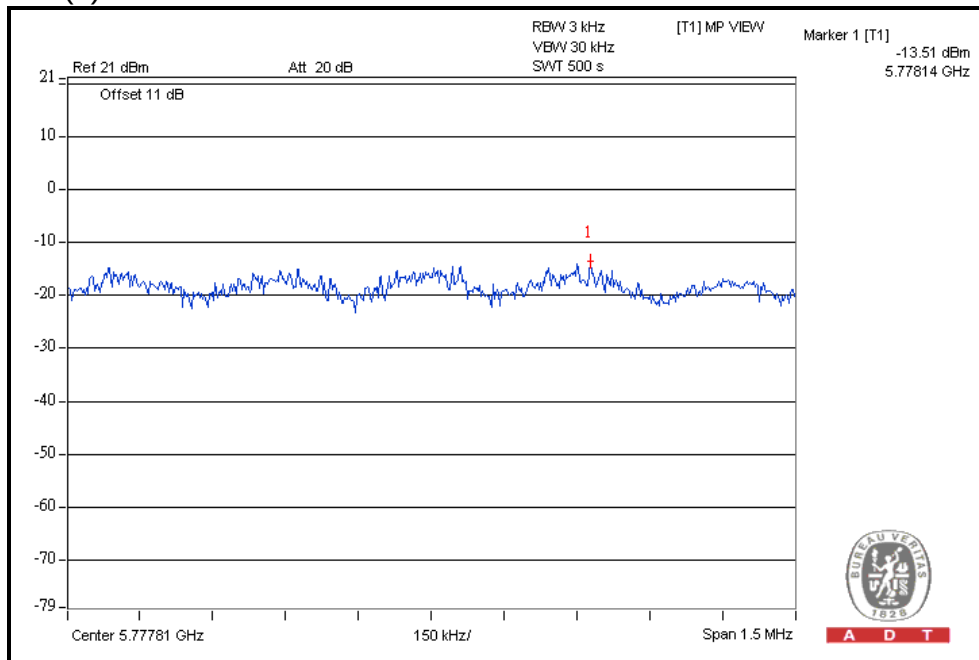
A D T

For CHAIN(1) : CH149



A D T

For CHAIN(1) : CH157

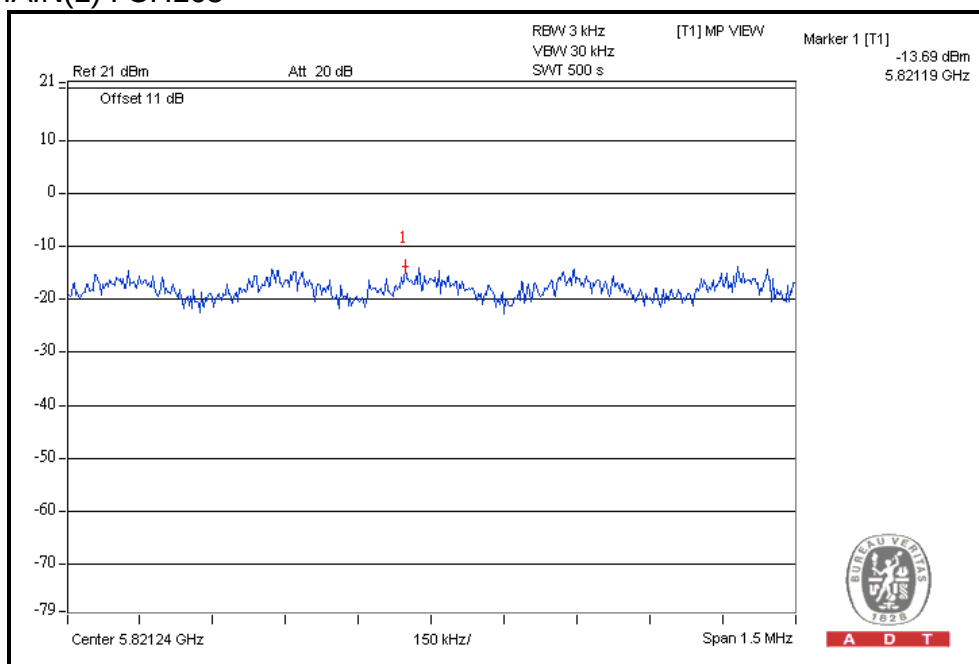


A D T



A D T

For CHAIN(1) : CH165



802.11n (20MHz) OFDM MODULATION:

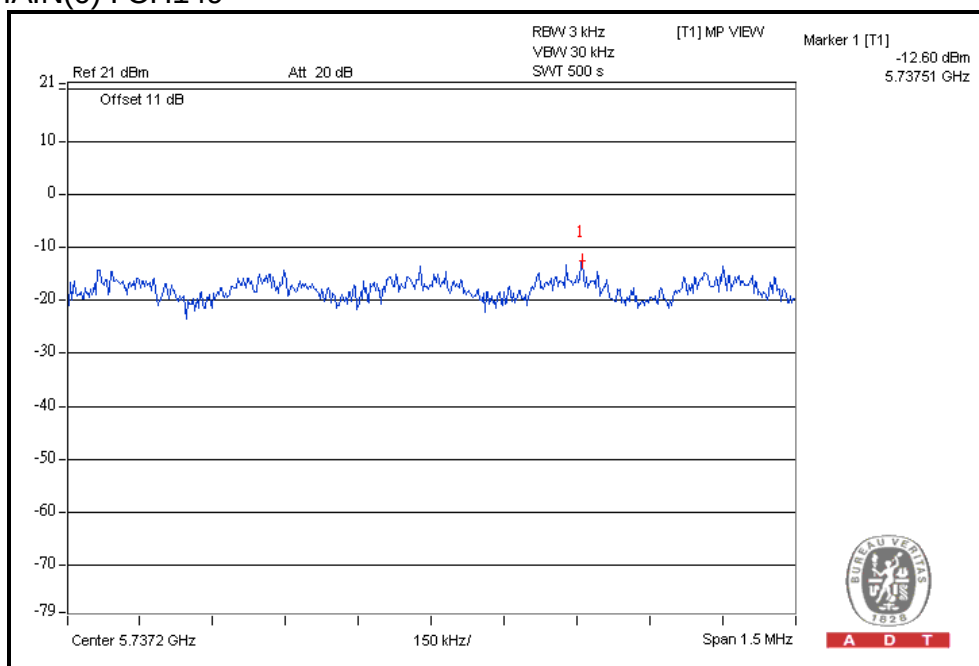
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-12.6	3.0	-9.6	7.23	PASS
	157	5785	-12.6	3.0	-9.6	7.23	PASS
	165	5825	-11.4	3.0	-8.4	7.23	PASS
1	149	5745	-13.5	3.0	-10.5	7.23	PASS
	157	5785	-13.2	3.0	-10.2	7.23	PASS
	165	5825	-12.9	3.0	-9.9	7.23	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.

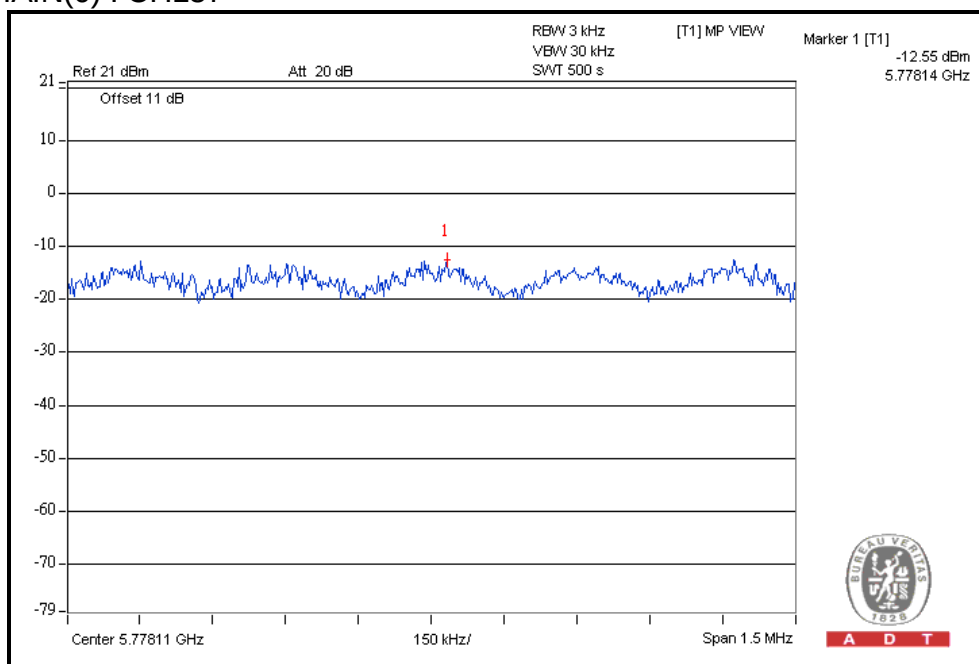
For CHAIN(0) : CH149



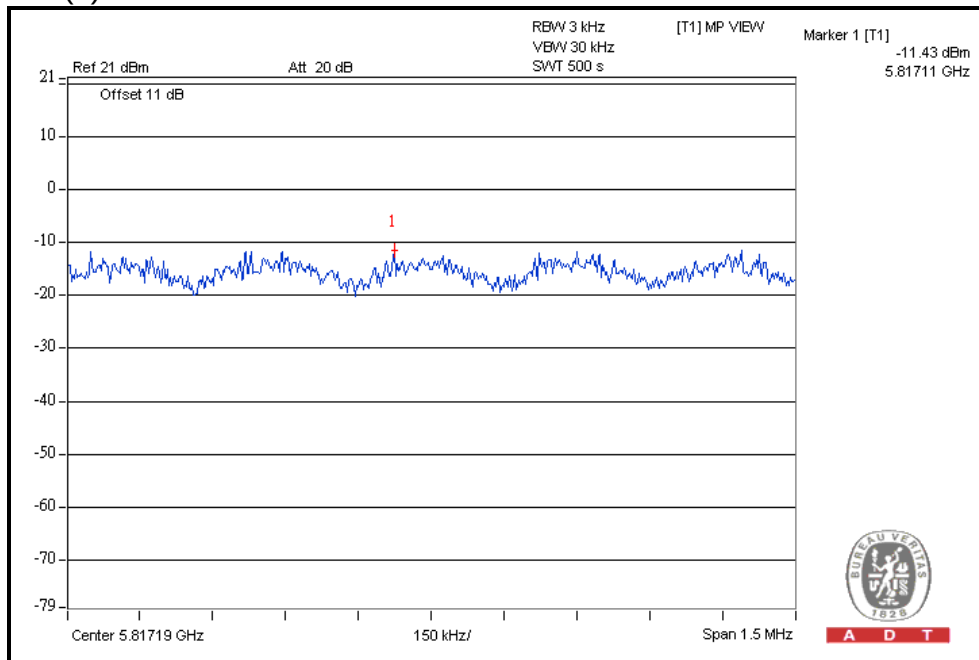


A D T

For CHAIN(0) : CH157



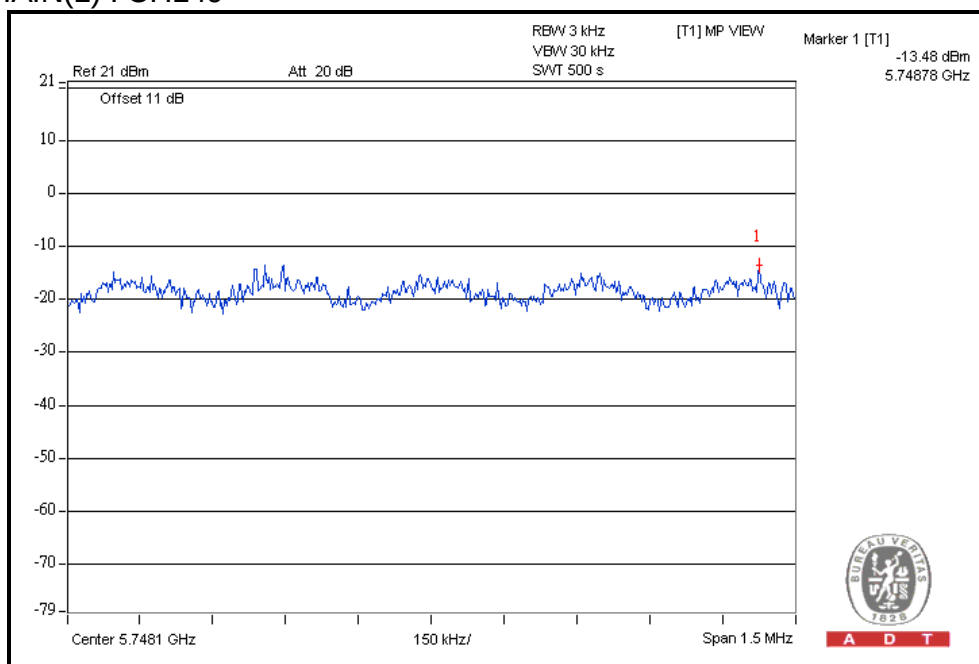
For CHAIN(0) : CH165



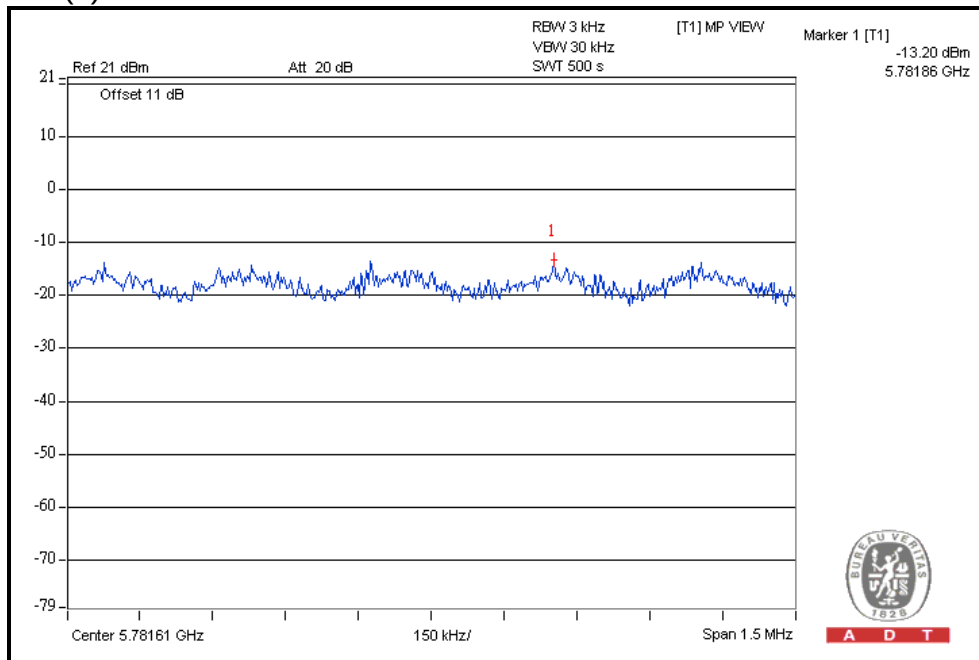


A D T

For CHAIN(1) : CH149



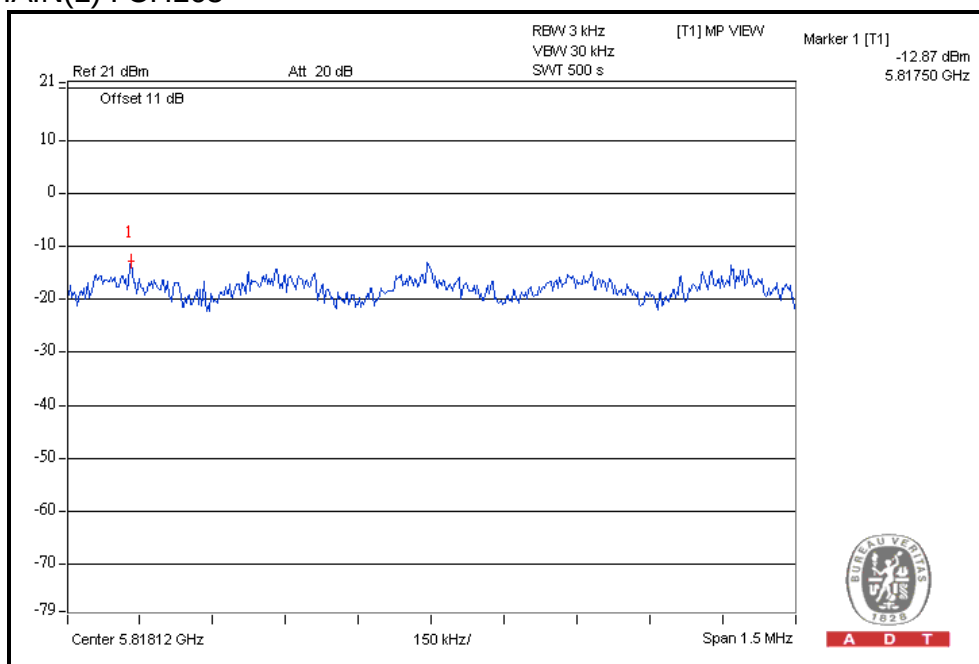
For CHAIN(1) : CH157





A D T

For CHAIN(1) : CH165



802.11n (40MHz) OFDM MODULATION:

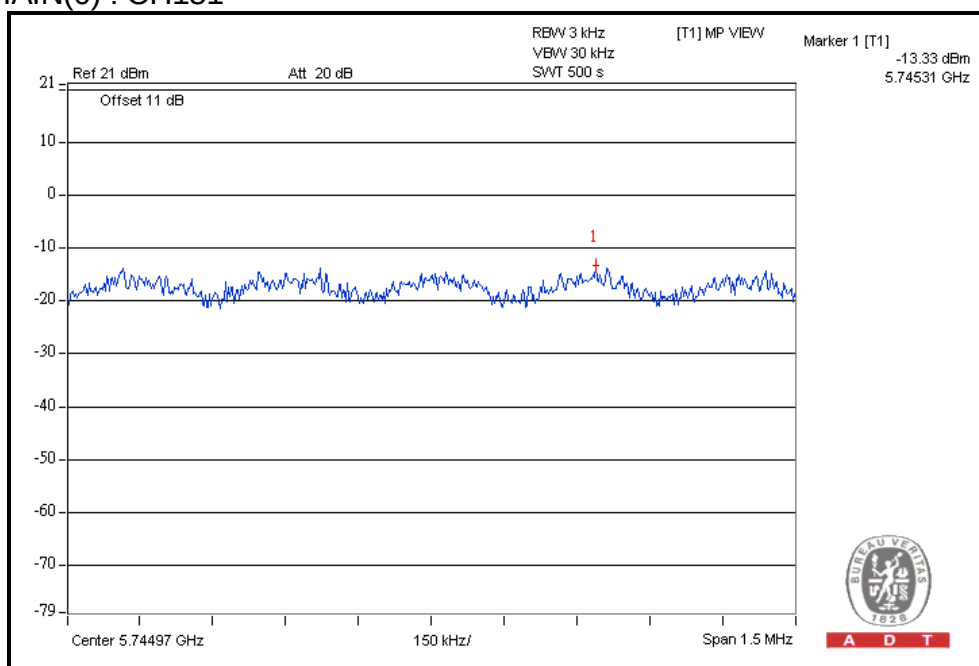
TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-13.3	3.0	-10.3	7.23	PASS
	159	5795	-13.2	3.0	-10.2	7.23	PASS
1	151	5755	-14.7	3.0	-11.7	7.23	PASS
	159	5795	-14.9	3.0	-11.9	7.23	PASS

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.

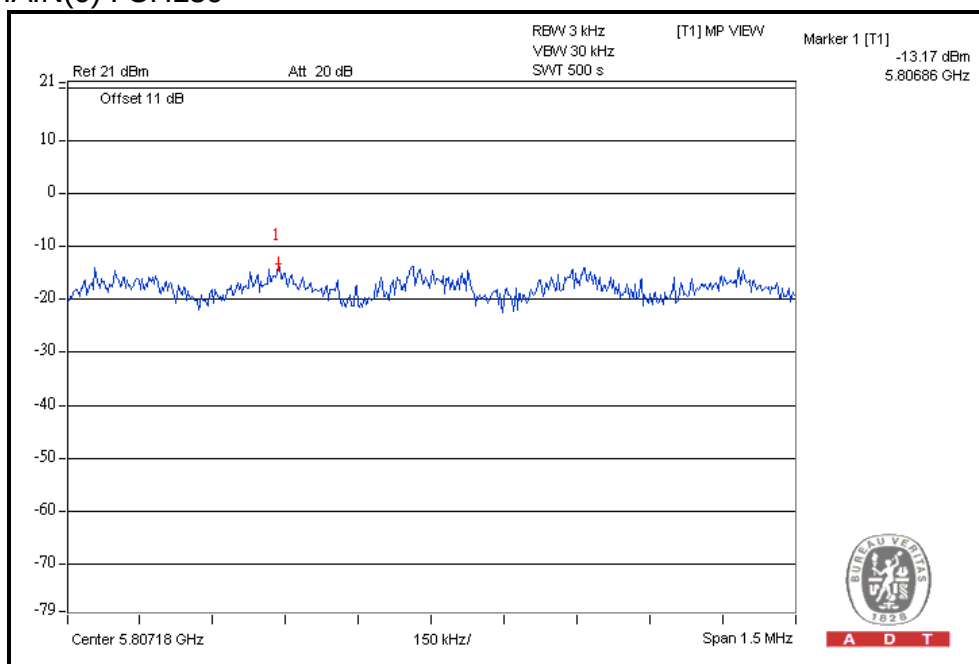
For CHAIN(0) : CH151



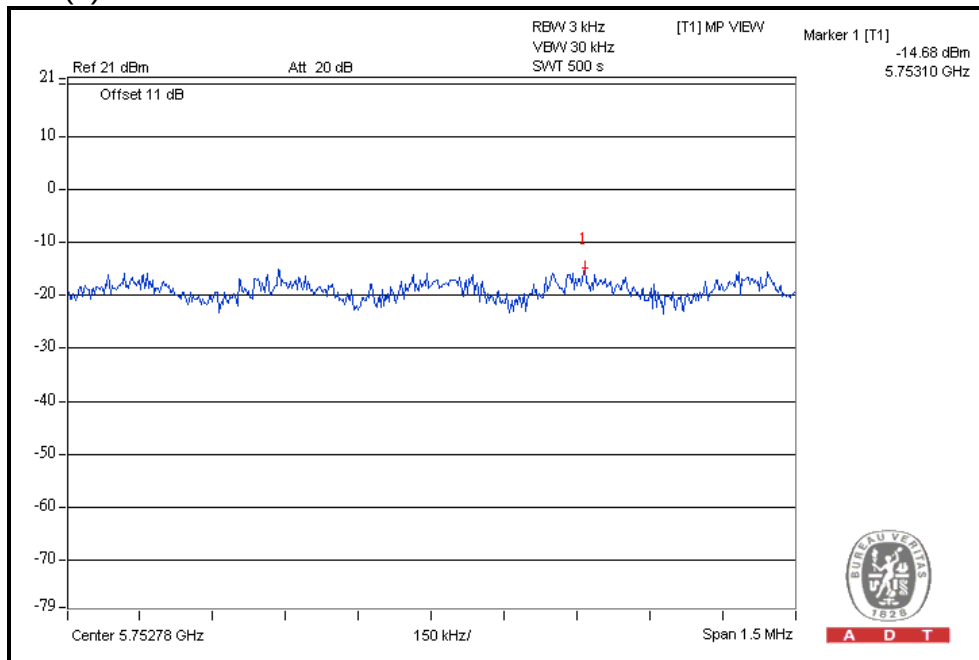


A D T

For CHAIN(0) : CH159



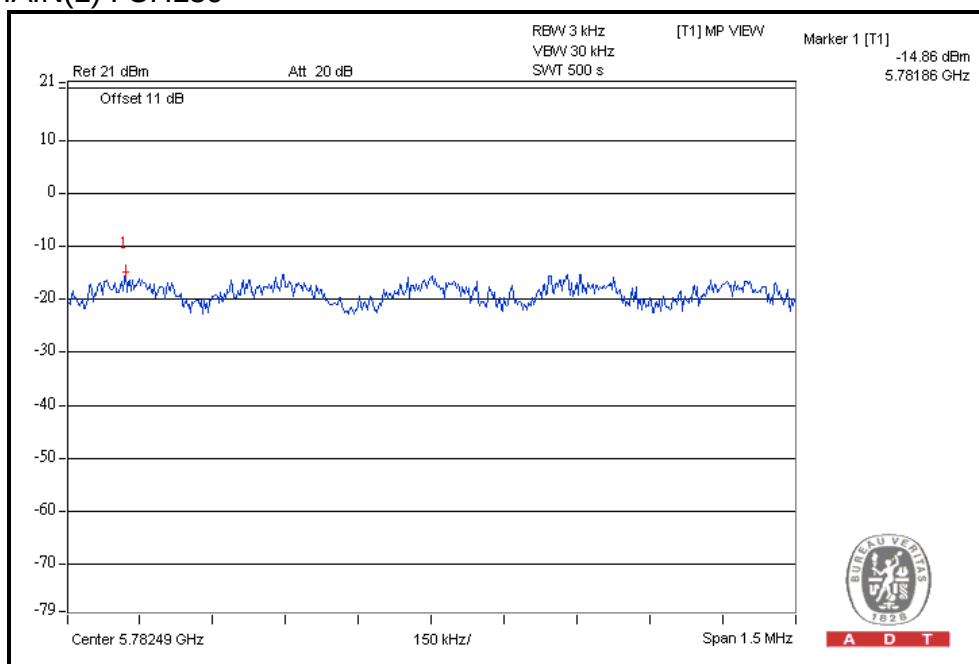
For CHAIN(1) : CH151





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

Test date: Oct. 18 to Dec. 05, 2011

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

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

5.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set RBW of spectrum analyzer to 100 kHz with suitable frequency span including 100MHz or 200MHz bandwidth from band edge. The band edges was measured and recorded.

5.8.4 DEVIATION FROM TEST STANDARD

No deviation

5.8.5 EUT OPERATING CONDITION

Same as Item 4.3.6

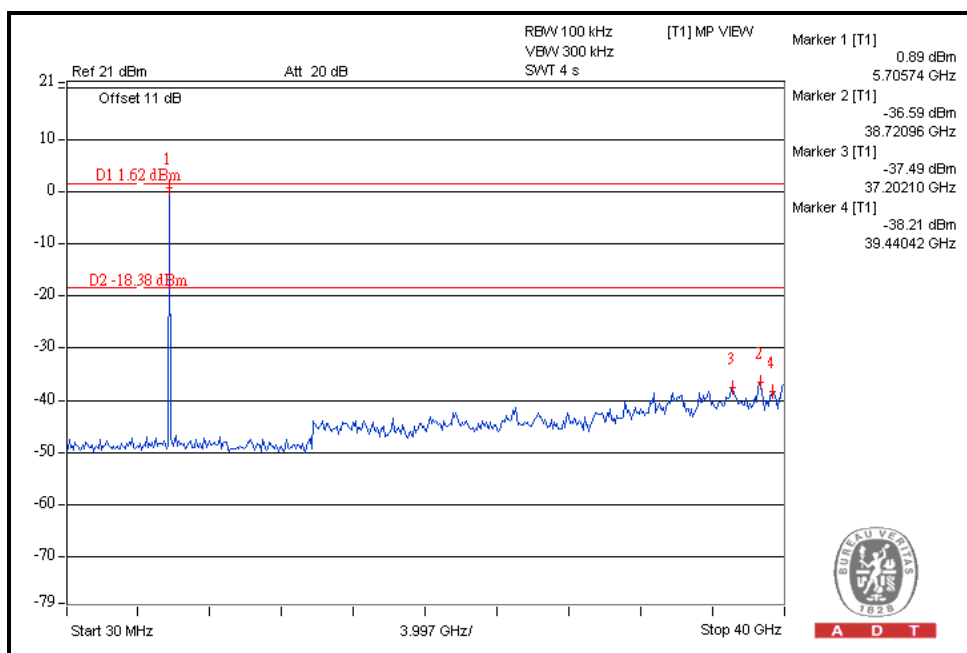
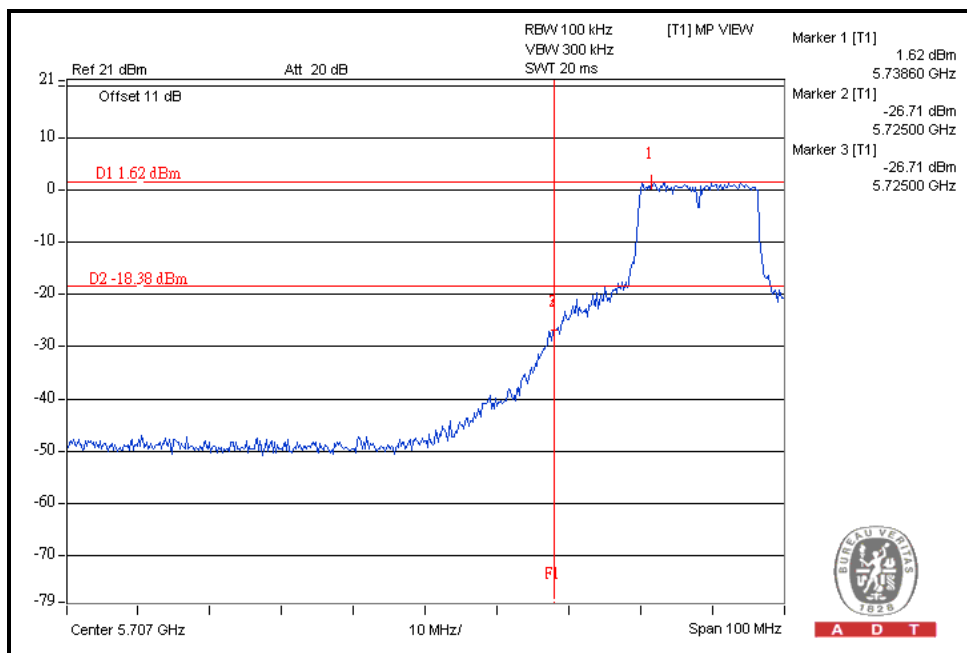
5.8.6 TEST RESULTS

The spectrum plots are attached on the following pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

Performing measurements: Measure and add 10 log(N) dB

Single chain - 802.11a OFDM MODULATION

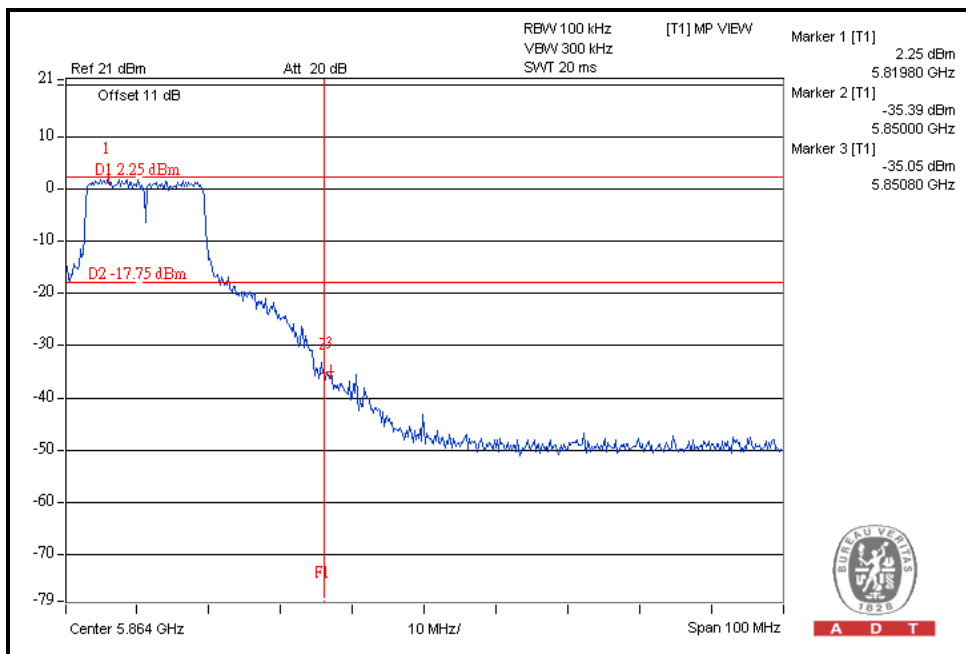
CH149



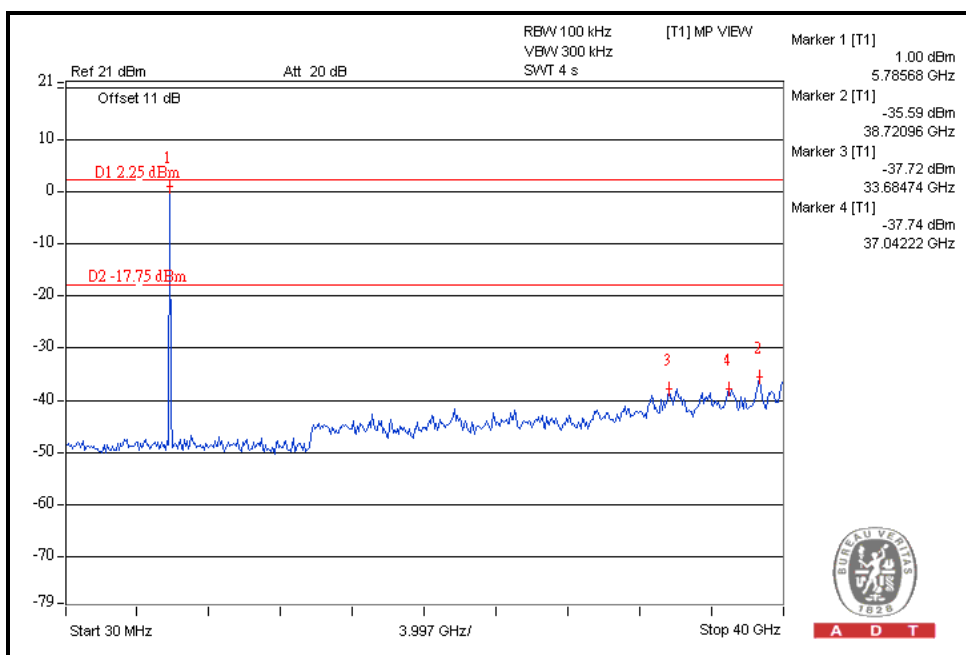


A D T

CH65



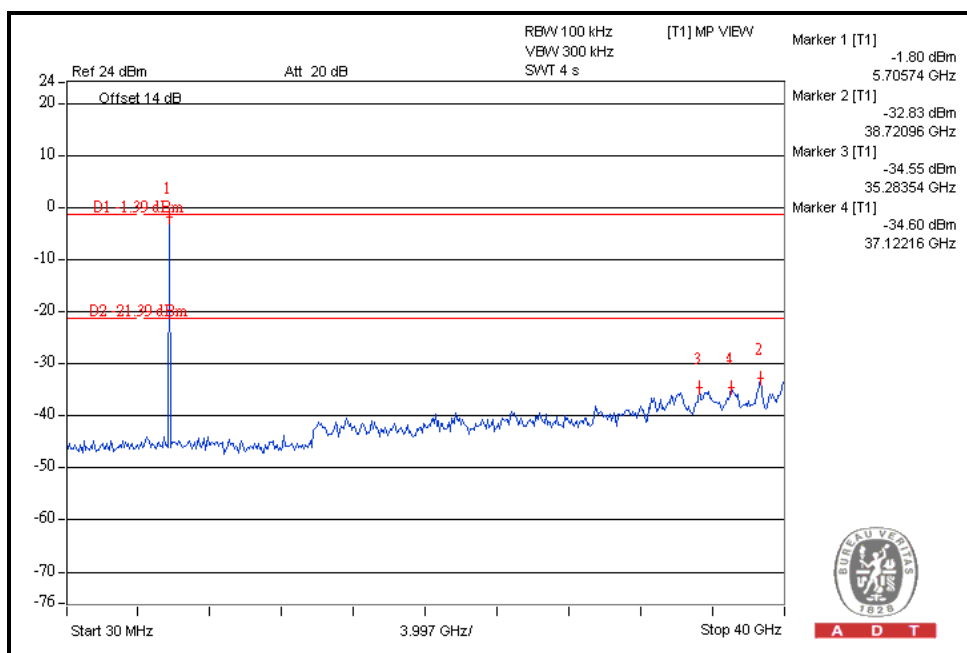
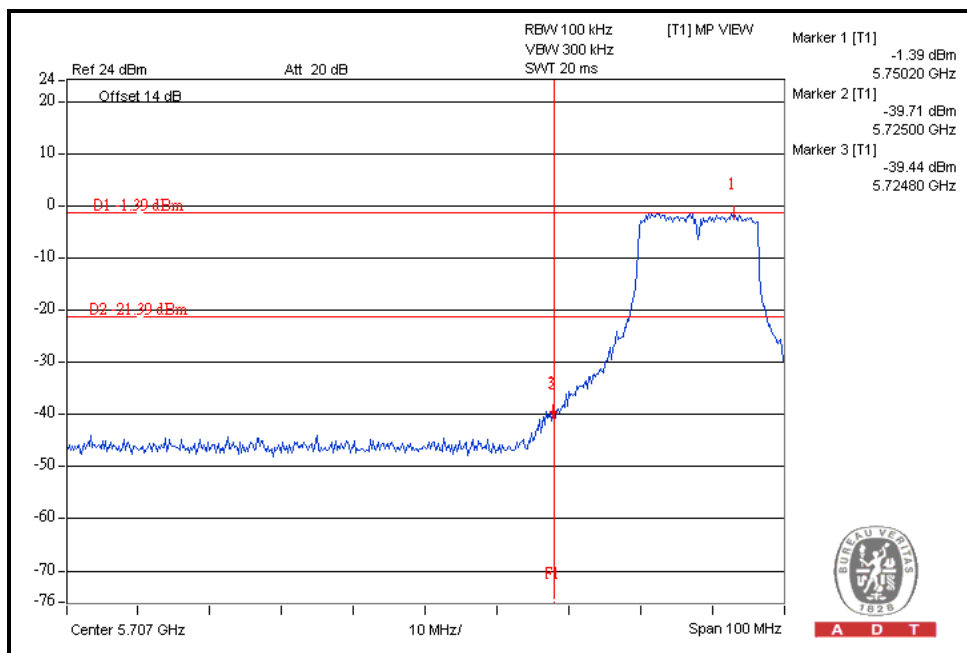
A D T



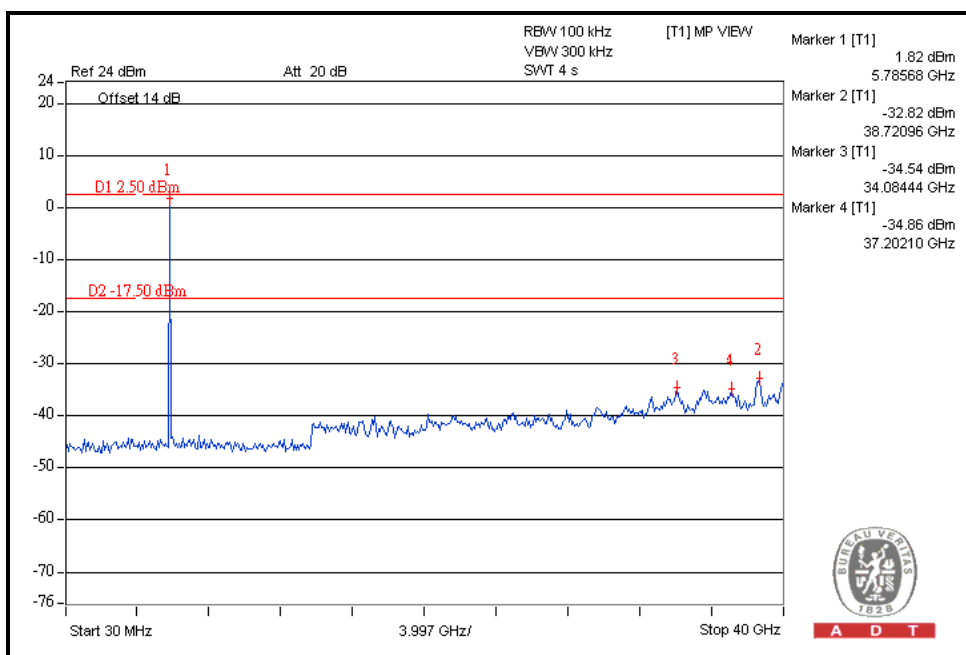
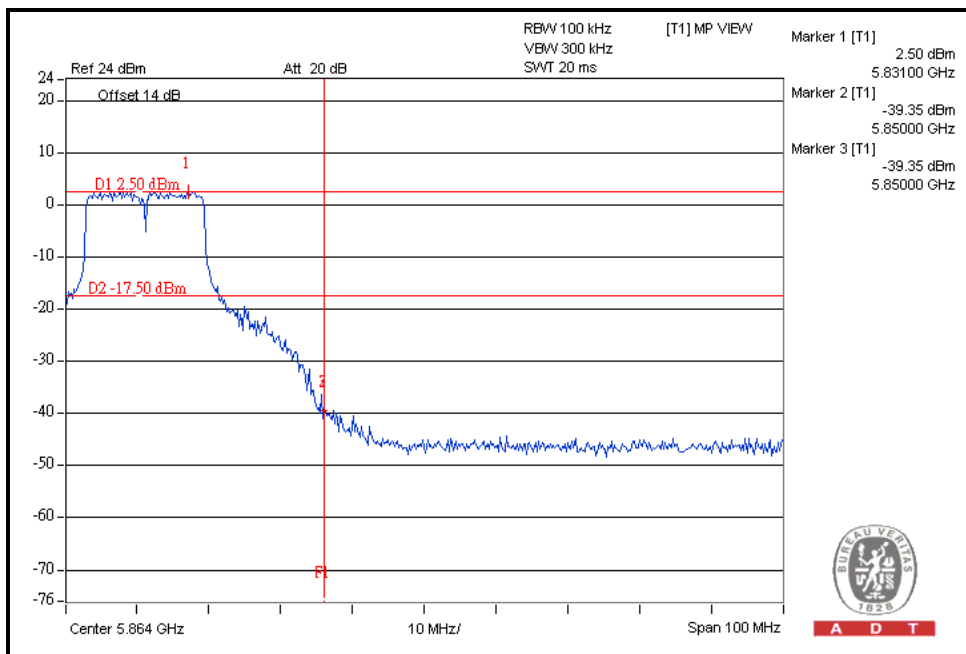
A D T

Multiple chain - 802.11a OFDM MODULATION

CH149

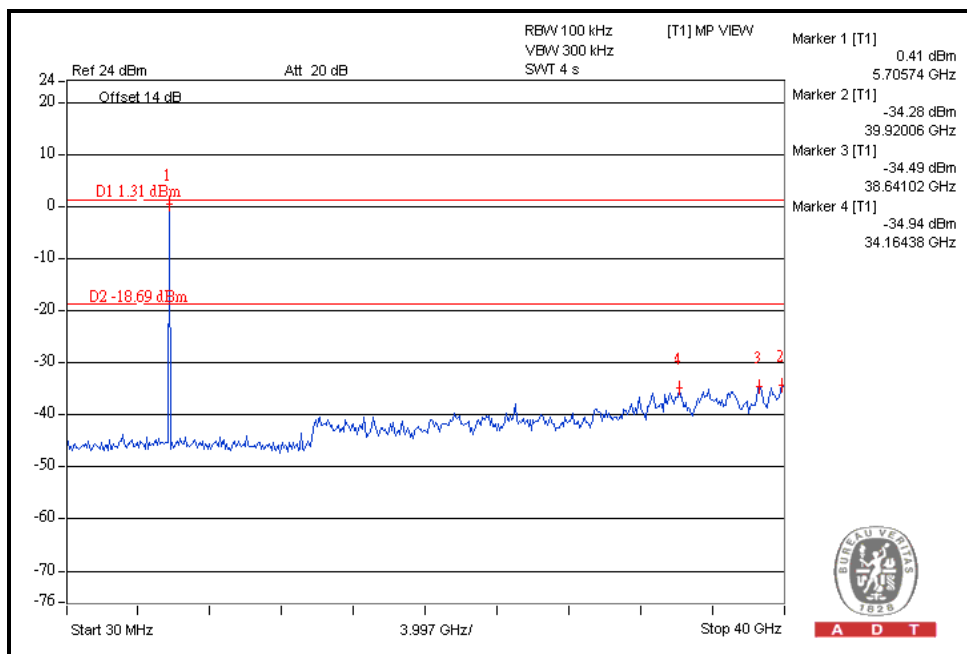
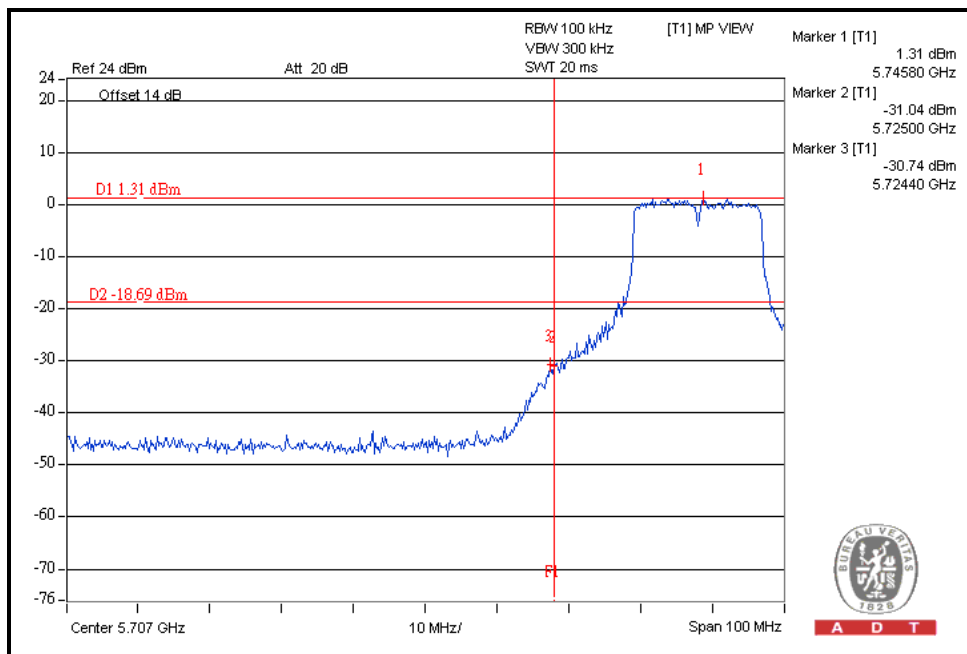


CH165



802.11n (20MHz) OFDM MODULATION:

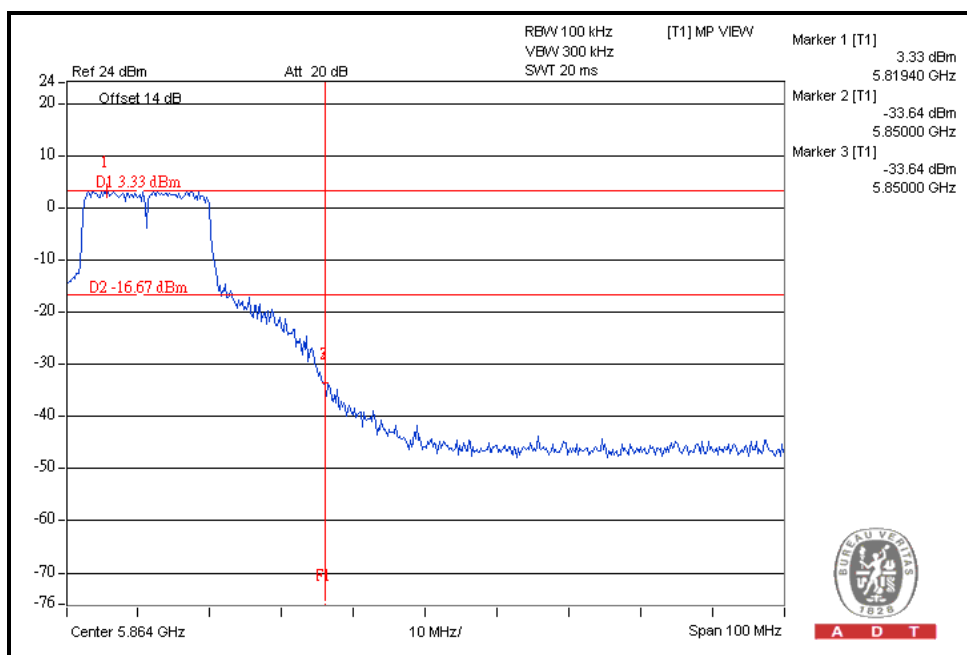
CH149



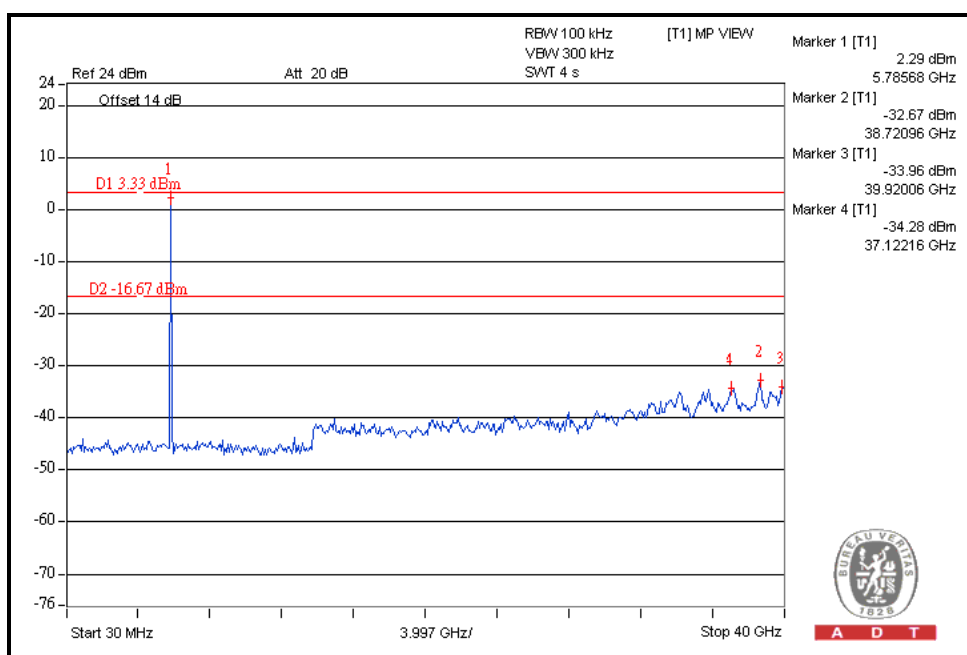


A D T

CH165



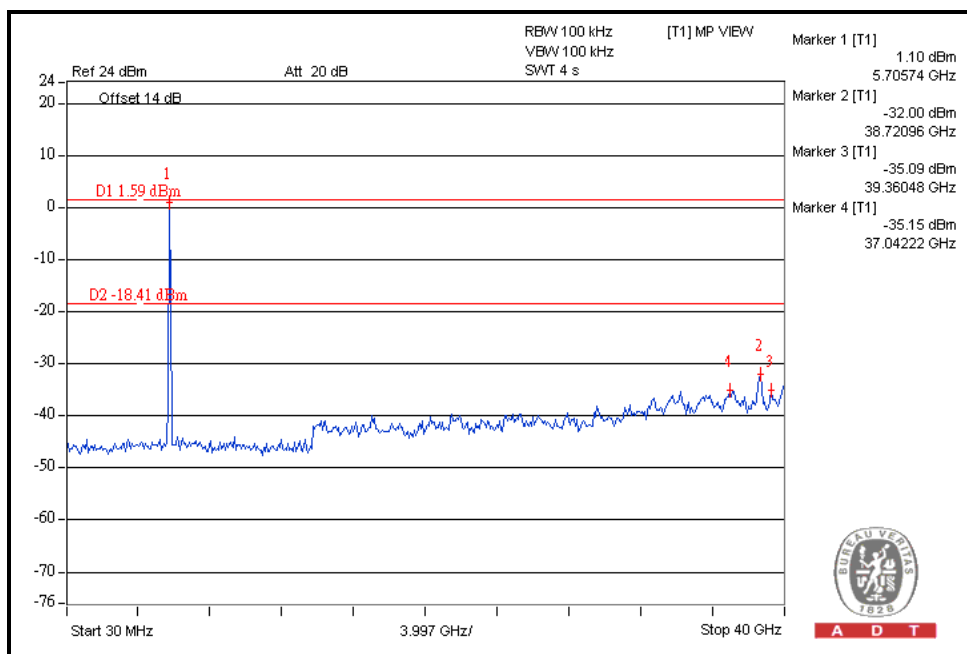
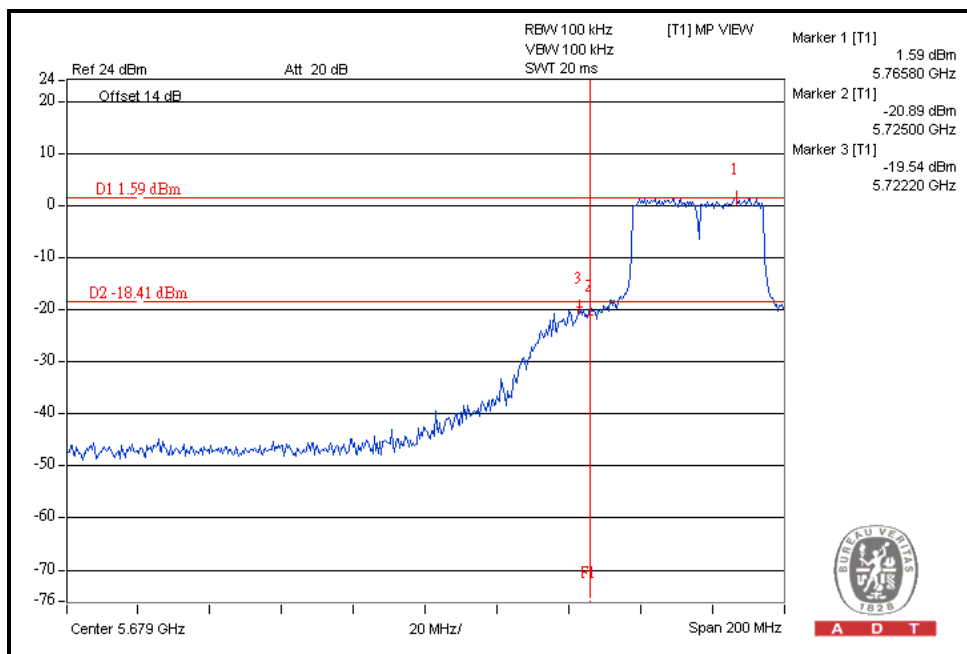
A D T



A D T

802.11n (40MHz) OFDM MODULATION:

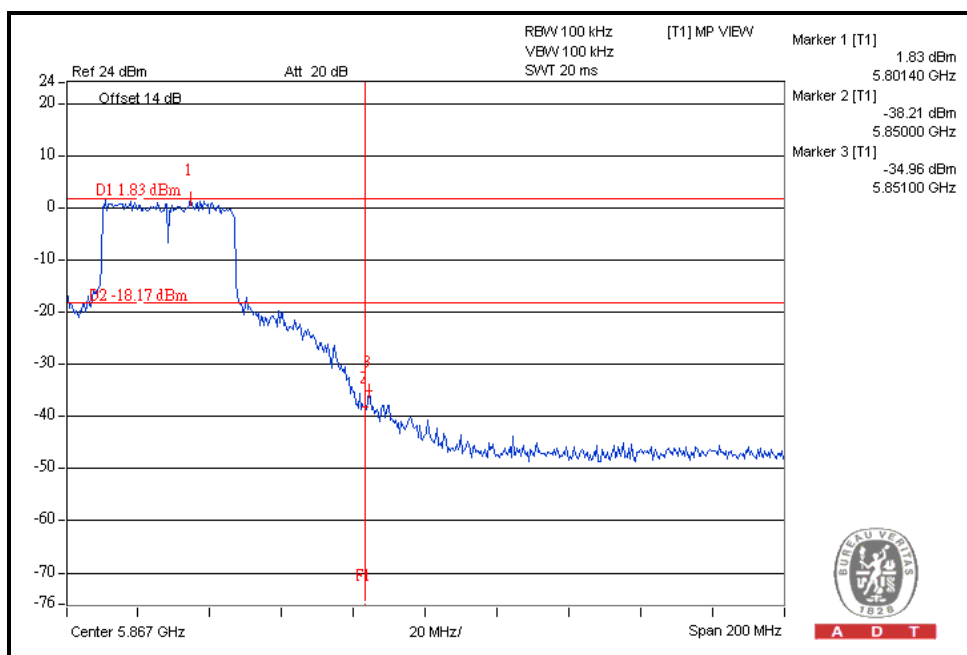
CH151



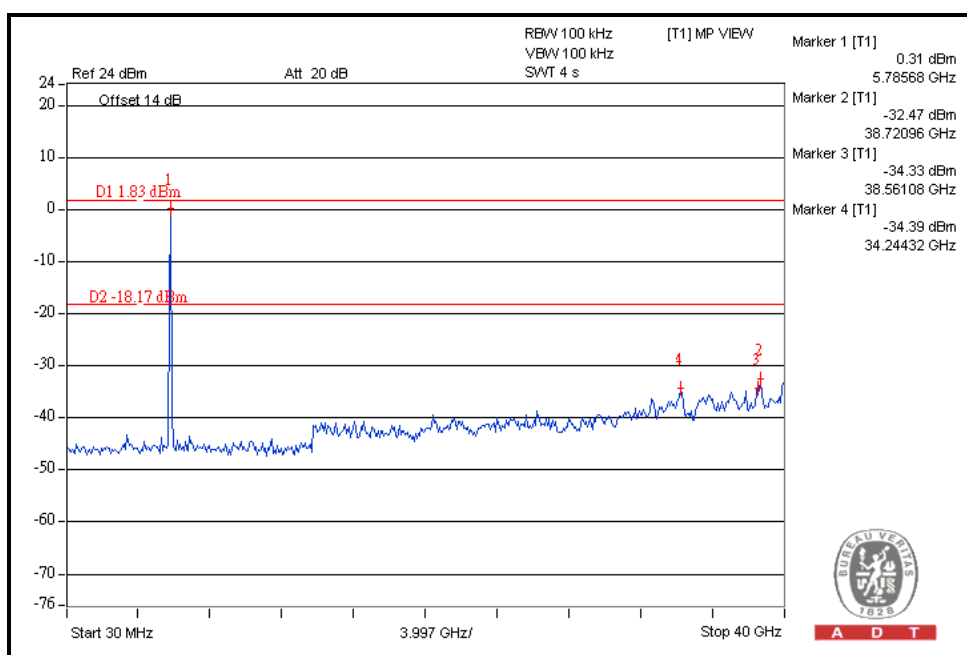


A D T

CH159



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6. 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: 886-3-3185050

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

7.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 ---