

FCC Test Report

Report No.: RF150513C20

FCC ID: E2K-APL290B7

Test Model: APL29-0B7

Received Date: May 13, 2015

Test Date: May 28 ~ Jun. 02, 2015

Issued Date: Jun. 05, 2015

Applicant: Dell Inc.

Address: One Dell Way, Round Rock, Texas 78682, USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

Test Location: No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes	9
3.2.1 Test Mode Applicability and Tested Channel Detail	10
3.3 Duty Cycle of Test Signal	12
3.4 Description of Support Units	13
3.4.1 Configuration of System under Test	13
3.5 General Description of Applied Standards	14
4 Test Types and Results	14
4.1 Radiated Emission and Bandedge Measurement	15
4.1.1 Limits of Radiated Emission and Bandedge Measurement	15
4.1.2 Test Instruments	16
4.1.3 Test Procedures	17
4.1.4 Deviation from Test Standard	17
4.1.5 Test Set Up	18
4.1.6 EUT Operating Conditions	18
4.1.7 Test Results	19
4.2 Conducted Emission Measurement	32
4.2.1 Limits of Conducted Emission Measurement	32
4.2.2 Test Instruments	32
4.2.3 Test Procedures	33
4.2.4 Deviation from Test Standard	33
4.2.5 Test Setup	33
4.2.6 EUT Operating Conditions	33
4.2.7 Test Results	34
4.3 6dB Bandwidth Measurement	36
4.3.1 Limits of 6dB Bandwidth Measurement	36
4.3.2 Test Setup	36
4.3.3 Test Instruments	36
4.3.4 Test Procedure	36
4.3.5 Deviation from Test Standard	36
4.3.6 EUT Operating Conditions	36
4.3.7 Test Result	37
4.4 Conducted Output Power Measurement	39
4.4.1 Limits of Conducted Output Power Measurement	39
4.4.2 Test Setup	39
4.4.3 Test Instruments	39
4.4.4 Test Procedures	39
4.4.5 Deviation from Test Standard	39
4.4.6 EUT Operating Conditions	39
4.4.7 Test Results	40
4.5 Power Spectral Density Measurement	42
4.5.1 Limits of Power Spectral Density Measurement	42
4.5.2 Test Setup	42
4.5.3 Test Instruments	42
4.5.4 Test Procedure	42
4.5.5 Deviation from Test Standard	42
4.5.6 EUT Operating Condition	42

4.5.7 Test Results	43
4.6 Conducted Out of Band Emission Measurement.....	46
4.6.1 Limits of Conducted Out of Band Emission Measurement	46
4.6.2 Test Setup.....	46
4.6.3 Test Instruments	46
4.6.4 Test Procedure	46
4.6.5 Deviation from Test Standard	46
4.6.6 EUT Operating Condition	46
4.6.7 Test Results	47
5 Pictures of Test Arrangements.....	59
Appendix – Information on the Testing Laboratories	60



A D T

Release Control Record

Issue No.	Description	Date Issued
RF150513C20	Original release	Jun. 05, 2015

1 Certificate of Conformity

Product: Wireless Network Security Appliance

Brand: DELL, DELL SONICWALL, SONICWALL (Refer to item 3.1 for more details)

Test Model: APL29-0B7

Sample Status: Engineering sample

Applicant: Dell Inc.

Test Date: May 28 ~ Jun. 02, 2015

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2009

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

Prepared by : Polly Chien, **Date:** Jun. 05, 2015
Polly Chien / Specialist

Approved by : Ken Liu, **Date:** Jun. 05, 2015
Ken Liu / Senior Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -17.34dB at 0.42370MHz
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.1dB at 2390.00MHz, 2483.50MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	Pass	Meet the requirement of limit.
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is R-SMA & TNC not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Network Security Appliance
Brand	DELL, DELL SONICWALL, SONICWALL (Refer to note for more details)
Test Model	APL29-0B7
Status of EUT	Engineering sample
Power Supply Rating	12Vdc (Adapter)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	902.894mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Data Cable Supplied	1.8m non-shielded RJ45 cable without core

Note:

1. The following brands are are for marketing purpose.

Brand	Model	Difference
SONICWALL DELL SONICWALL DELL	APL29-0B7	For marketing purpose.

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

Modulation Mode	TX Function
802.11b	3TX
802.11g	3TX
802.11n (HT20)	3TX
802.11n (HT40)	3TX

3. The following antennas were provided to the EUT.

No.	Type	Gain(dBi)		Connector
		2.4GHz Band	5GHz Band	
1	DIPOLE	2.5	2.5	TNC
2	DIPOLE	2.5	2.5	TNC
3	DIPOLE	3	3	R-SMA

4. The EUT consumes power from the following adapters.

Adapter 1	
Brand	AMIGO
Model	AMS118-1203000F2
Input Power	100-240Vac, 50/60Hz, 1.0A Max
Output Power	12Vdc, 3.0A
Power Line	AC 1.75m non-shielded power line without core DC 1.5m power cable with 1 core attached on adapter

Adapter 2	
Brand	Sunny COMPUTER TECHNOLOGY CO.,LTD.
Model	SYS1546-3612-T3
Input Power	100-240Vac, 50-60Hz, 1.5A Max
Output Power	12Vdc, 3.0A, 36W MAX
Power Line	AC 1.75m non-shielded power line without core DC 1.85m power cable with 1 core attached on adapter

*After pre-tested two of adapters found adapter 1 was the worst case, therefore chosen for final tests and presented in the test report.

3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

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

Radiated Emission Test (Above 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

Radiated Emission Test (Below 1GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	1 to 11	6	OFDM	BPSK	7.2

Power Line Conducted Emission Test:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	1 to 11	6	OFDM	BPSK	7.2

Antenna Port Conducted Measurement:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE _≥ 1G	22deg. C, 67%RH	120Vac, 60Hz	Jones Chang
RE _{<} 1G	22deg. C, 67%RH	120Vac, 60Hz	Jones Chang
PLC	20deg. C, 70%RH	120Vac, 60Hz	Jones Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Antony Lee

3.3 Duty Cycle of Test Signal

802.11b: Duty cycle of test signal is > 98 %, duty factor is not required.

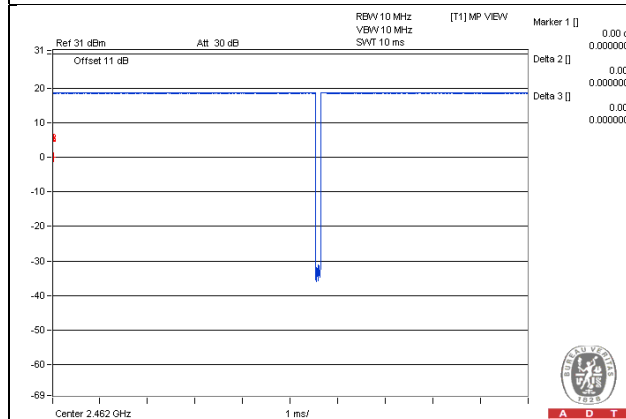
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11g: Duty cycle = $2.020/2.115 = 0.955$, Duty factor = $10 * \log(1/0.955) = 0.20$

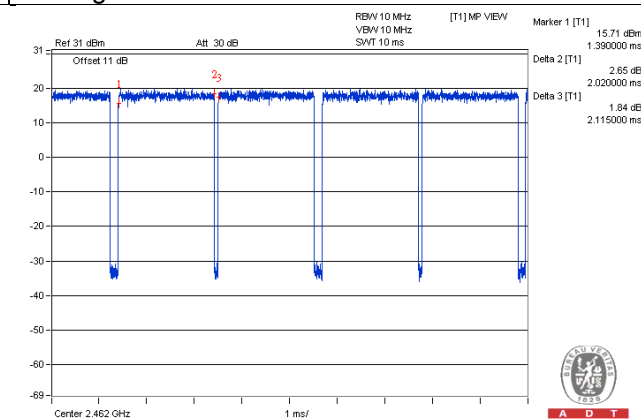
802.11n (HT20): Duty cycle = $1.888/2.020 = 0.935$, Duty factor = $10 * \log(1/0.935) = 0.29$

802.11n (HT40): Duty cycle = $0.924/0.997 = 0.927$, Duty factor = $10 * \log(1/0.927) = 0.33$

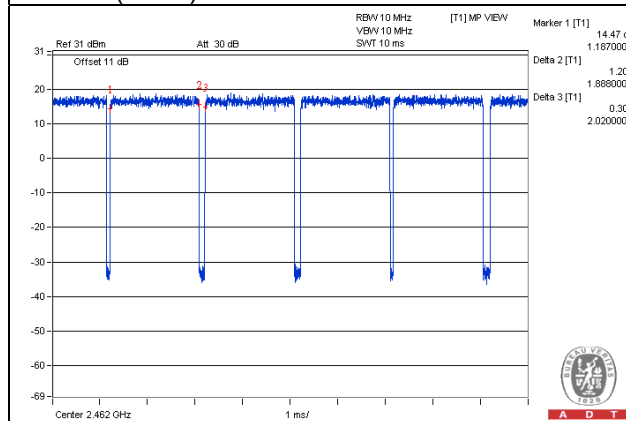
802.11b



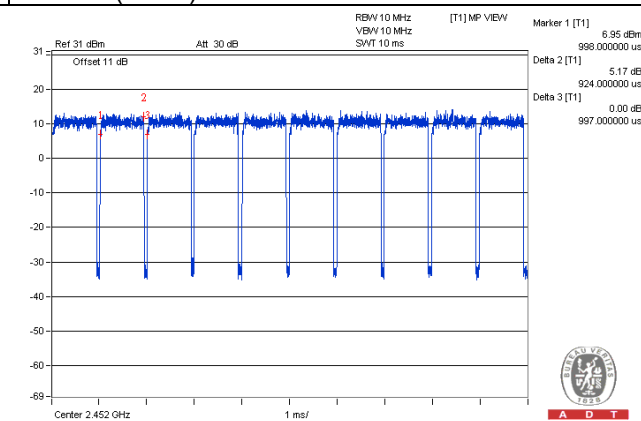
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

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

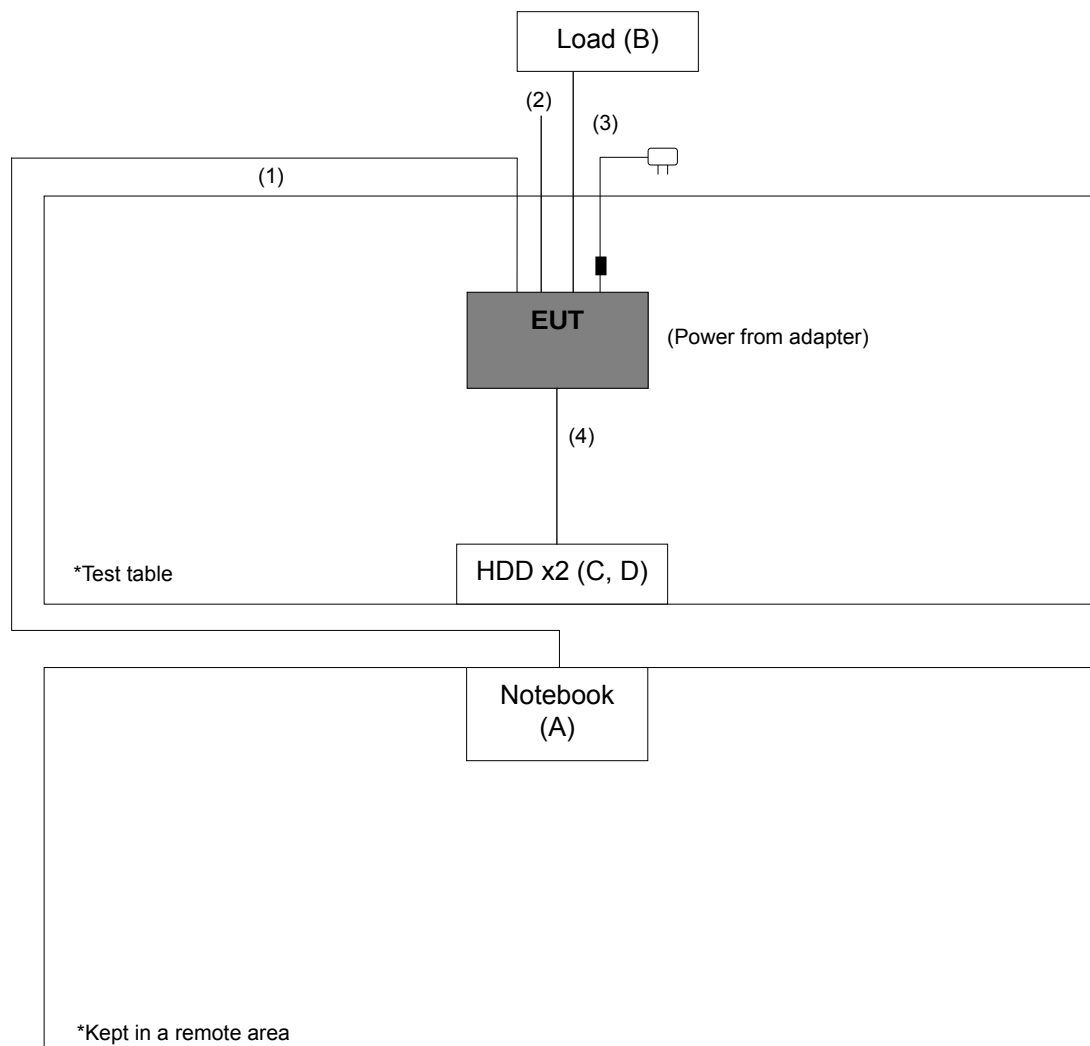
No.	Product	Brand	Model No.	Serial No.	FCC ID
A	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved
B	Load	NA	NA	NA	NA
C	USB 3.0 HDD	TOSHIBA	V63700-B	53E2CFNUTSX4	NA
D	USB 3.0 HDD	TOSHIBA	V63700-B	633APITLTSX4	NA

No.	Signal Cable Description Of The Above Support Units
1	3m RJ45 cable.
2	1.5m non-shielded console cable w/o core
3	1.8m RJ45 cable X8.
4	0.5m USB cable w/o core x2

Note:

1. All power cords of the above support units are non-shielded (1.8 m).
2. Item A acted as a communication partner to transfer data.
3. The console cable was provided by the client.

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10: 2009

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Apr. 10, 2015	Apr. 09, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Aug. 29, 2014	Aug. 28, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Feb. 05, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	9120D	209	Feb. 09, 2015	Feb. 08, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8447D	2944A10738	Oct.18, 2014	Oct. 17, 2015
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2014	Aug. 21, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 22, 2014	Aug. 21, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6 +309224/4	Aug. 22, 2014	Aug. 21, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
High Speed Power Meter	ML2495A	0824011	Jul. 26, 2014	Jul. 25, 2015
Power Sensor	MA2411B	0738171	Jul. 26, 2014	Jul. 25, 2015

- 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 HwaYa Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. 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:

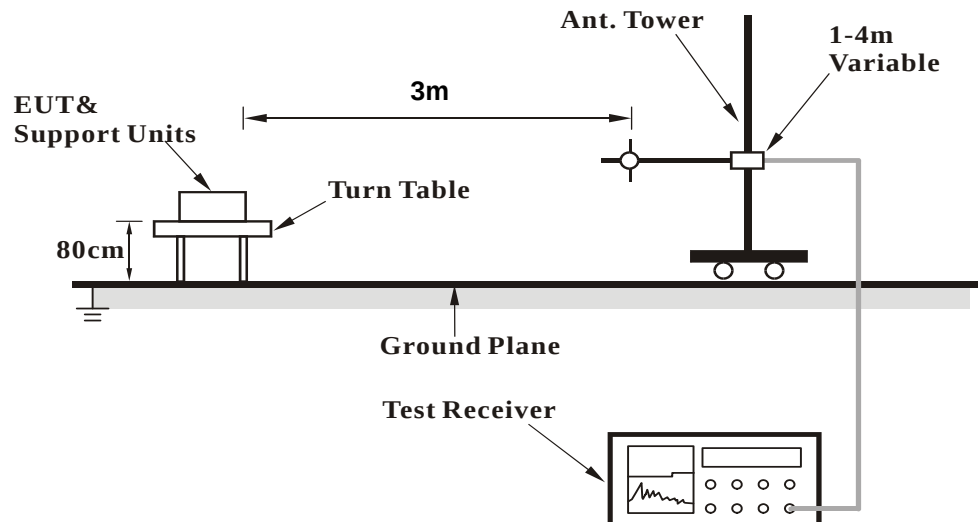
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

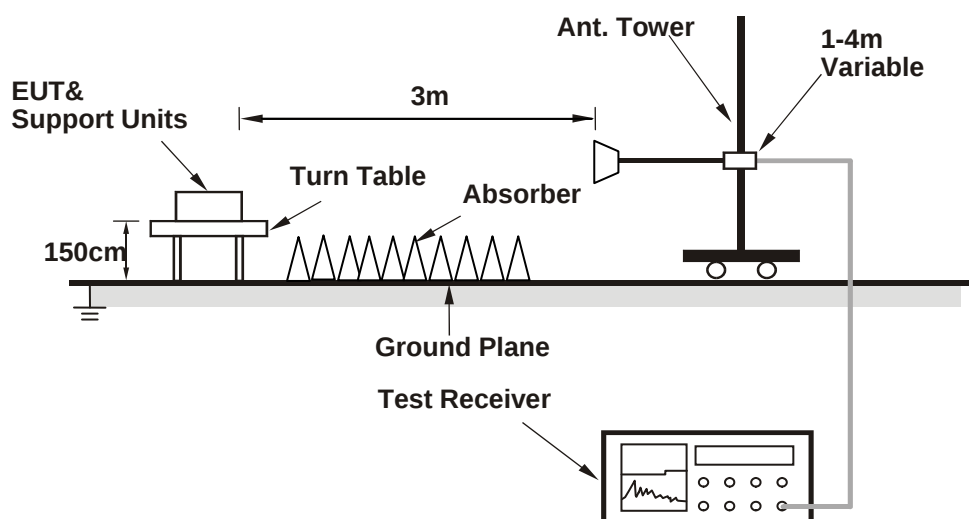
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1GHz Data:

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.00	61.9 PK	74.0	-12.1	1.56 H	356	29.40	32.50
2	2386.00	52.4 AV	54.0	-1.6	1.56 H	356	19.90	32.50
3	*2412.00	117.4 PK			1.72 H	26	84.80	32.60
4	*2412.00	114.4 AV			1.72 H	26	81.80	32.60
5	4824.00	53.9 PK	74.0	-20.1	1.76 H	172	48.00	5.90
6	4824.00	52.7 AV	54.0	-1.3	1.76 H	172	46.80	5.90
7	#7236.00	57.9 PK	74.0	-16.1	1.13 H	14	46.10	11.80
8	#7236.00	51.3 AV	54.0	-2.7	1.13 H	14	39.50	11.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.00	62.0 PK	74.0	-12.0	1.03 V	261	29.50	32.50
2	2389.00	51.9 AV	54.0	-2.1	1.03 V	261	19.40	32.50
3	*2412.00	115.7 PK			1.00 V	251	83.10	32.60
4	*2412.00	112.4 AV			1.00 V	251	79.80	32.60
5	4824.00	51.5 PK	74.0	-22.5	1.19 V	79	45.60	5.90
6	4824.00	45.8 AV	54.0	-8.2	1.19 V	79	39.90	5.90
7	#7236.00	56.2 PK	74.0	-17.8	1.02 V	82	44.40	11.80
8	#7236.00	48.2 AV	54.0	-5.8	1.02 V	82	36.40	11.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	117.6 PK			1.53 H	359	84.90	32.70
2	*2437.00	114.2 AV			1.53 H	359	81.50	32.70
3	4874.00	54.7 PK	74.0	-19.3	2.03 H	13	48.80	5.90
4	4874.00	52.8 AV	54.0	-1.2	2.03 H	13	46.90	5.90
5	7311.00	59.3 PK	74.0	-14.7	1.57 H	8	47.60	11.70
6	7311.00	52.1 AV	54.0	-1.9	1.57 H	8	40.40	11.70
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	109.2 PK			2.11 V	250	76.50	32.70
2	*2437.00	106.4 AV			2.11 V	250	73.70	32.70
3	4874.00	50.3 PK	74.0	-23.7	1.95 V	20	44.40	5.90
4	4874.00	40.4 AV	54.0	-13.6	1.95 V	20	34.50	5.90
5	7311.00	52.6 PK	74.0	-21.4	1.07 V	19	40.90	11.70
6	7311.00	40.3 AV	54.0	-13.7	1.07 V	19	28.60	11.70

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.4 PK			1.67 H	0	82.80	32.60
2	*2462.00	112.2 AV			1.67 H	0	79.60	32.60
3	2483.50	58.1 PK	74.0	-15.9	1.67 H	0	25.40	32.70
4	2483.50	47.8 AV	54.0	-6.2	1.67 H	0	15.10	32.70
5	4924.00	57.6 PK	74.0	-16.4	2.08 H	12	51.60	6.00
6	4924.00	52.5 AV	54.0	-1.5	2.08 H	12	46.50	6.00
7	7386.00	54.2 PK	74.0	-19.8	1.21 H	356	42.60	11.60
8	7386.00	41.1 AV	54.0	-12.9	1.21 H	356	29.50	11.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.2 PK			1.45 V	251	75.60	32.60
2	*2462.00	104.3 AV			1.45 V	251	71.70	32.60
3	2483.50	57.8 PK	74.0	-16.2	1.42 V	240	25.10	32.70
4	2483.50	46.2 AV	54.0	-7.8	1.42 V	240	13.50	32.70
5	4924.00	51.4 PK	74.0	-22.6	1.10 V	64	45.40	6.00
6	4924.00	44.6 AV	54.0	-9.4	1.10 V	64	38.60	6.00
7	7386.00	53.1 PK	74.0	-20.9	1.05 V	99	41.50	11.60
8	7386.00	39.9 AV	54.0	-14.1	1.05 V	99	28.30	11.60

REMARKS:

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

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.3 PK	74.0	-2.7	1.06 H	2	38.80	32.50
2	2390.00	52.1 AV	54.0	-1.9	1.06 H	2	19.60	32.50
3	*2412.00	114.4 PK			1.39 H	0	81.80	32.60
4	*2412.00	104.9 AV			1.39 H	0	72.30	32.60
5	4824.00	50.4 PK	74.0	-23.6	1.23 H	288	44.50	5.90
6	4824.00	37.3 AV	54.0	-16.7	1.23 H	288	31.40	5.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.6 PK	74.0	-15.4	1.60 V	25	26.10	32.50
2	2390.00	47.4 AV	54.0	-6.6	1.60 V	25	14.90	32.50
3	*2412.00	108.3 PK			1.68 V	243	75.70	32.60
4	*2412.00	97.7 AV			1.68 V	243	65.10	32.60
5	4824.00	48.7 PK	74.0	-25.3	1.11 V	229	42.80	5.90
6	4824.00	35.8 AV	54.0	-18.2	1.11 V	229	29.90	5.90

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.6 PK	74.0	-3.4	1.08 H	357	38.10	32.50
2	2390.00	52.2 AV	54.0	-1.8	1.08 H	357	19.70	32.50
3	*2437.00	120.7 PK			1.36 H	8	88.00	32.70
4	*2437.00	111.7 AV			1.36 H	8	79.00	32.70
5	2483.50	62.5 PK	74.0	-11.5	1.84 H	17	29.80	32.70
6	2483.50	50.2 AV	54.0	-3.8	1.84 H	17	17.50	32.70
7	4824.00	55.6 PK	74.0	-18.4	1.38 H	12	49.70	5.90
8	4824.00	41.7 AV	54.0	-12.3	1.38 H	12	35.80	5.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.4 PK	74.0	-12.6	1.90 V	269	28.90	32.50
2	2390.00	48.0 AV	54.0	-6.0	1.90 V	269	15.50	32.50
3	*2437.00	112.6 PK			1.92 V	266	79.90	32.70
4	*2437.00	103.6 AV			1.92 V	266	70.90	32.70
5	2483.50	60.0 PK	74.0	-14.0	1.92 V	266	27.30	32.70
6	2483.50	46.7 AV	54.0	-7.3	1.92 V	266	14.00	32.70
7	4874.00	48.9 PK	74.0	-25.1	1.23 V	66	43.00	5.90
8	4874.00	35.8 AV	54.0	-18.2	1.23 V	66	29.90	5.90

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.5 PK			1.35 H	161	82.90	32.60
2	*2462.00	105.7 AV			1.35 H	161	73.10	32.60
3	2483.50	68.8 PK	74.0	-5.2	1.49 H	358	36.10	32.70
4	2483.50	52.2 AV	54.0	-1.8	1.49 H	358	19.50	32.70
5	4924.00	50.6 PK	74.0	-23.4	1.37 H	168	44.60	6.00
6	4924.00	37.7 AV	54.0	-16.3	1.37 H	168	31.70	6.00
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	109.0 PK			1.00 V	269	76.40	32.60
2	*2462.00	99.5 AV			1.00 V	269	66.90	32.60
3	2483.50	61.1 PK	74.0	-12.9	1.00 V	263	28.40	32.70
4	2483.50	48.6 AV	54.0	-5.4	1.00 V	263	15.90	32.70
5	4824.00	47.9 PK	74.0	-26.1	1.10 V	69	42.00	5.90
6	4824.00	35.0 AV	54.0	-19.0	1.10 V	69	29.10	5.90

REMARKS:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.2 PK	74.0	-3.8	1.38 H	14	37.70	32.50
2	2390.00	52.9 AV	54.0	-1.1	1.38 H	14	20.40	32.50
3	*2412.00	114.0 PK			1.54 H	19	81.40	32.60
4	*2412.00	104.4 AV			1.54 H	19	71.80	32.60
5	4824.00	48.5 PK	74.0	-25.5	1.95 H	17	42.60	5.90
6	4824.00	35.6 AV	54.0	-18.4	1.95 H	17	29.70	5.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.6 PK	74.0	-10.4	1.01 V	254	31.10	32.50
2	2390.00	49.4 AV	54.0	-4.6	1.01 V	254	16.90	32.50
3	*2412.00	107.2 PK			1.00 V	254	74.60	32.60
4	*2412.00	97.9 AV			1.00 V	254	65.30	32.60
5	4824.00	47.9 PK	74.0	-26.1	1.23 V	45	42.00	5.90
6	4824.00	34.7 AV	54.0	-19.3	1.23 V	45	28.80	5.90

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.2 PK	74.0	-4.8	1.55 H	18	36.70	32.50
2	2390.00	52.1 AV	54.0	-1.9	1.55 H	18	19.60	32.50
3	*2437.00	121.0 PK			1.49 H	0	88.30	32.70
4	*2437.00	111.0 AV			1.49 H	0	78.30	32.70
5	2483.50	69.7 PK	74.0	-4.3	1.33 H	8	37.00	32.70
6	2483.50	52.0 AV	54.0	-2.0	1.33 H	8	19.30	32.70
7	4874.00	50.1 PK	74.0	-23.9	1.59 H	33	44.20	5.90
8	4874.00	37.5 AV	54.0	-16.5	1.59 H	33	31.60	5.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.1 PK	74.0	-14.9	1.03 V	250	26.60	32.50
2	2390.00	48.5 AV	54.0	-5.5	1.03 V	250	16.00	32.50
3	*2437.00	114.4 PK			1.28 V	254	81.70	32.70
4	*2437.00	105.1 AV			1.28 V	254	72.40	32.70
5	2483.50	58.8 PK	74.0	-15.2	1.00 V	256	26.10	32.70
6	2483.50	48.5 AV	54.0	-5.5	1.00 V	256	15.80	32.70
7	4874.00	48.4 PK	74.0	-25.6	1.13 V	221	42.50	5.90
8	4874.00	35.5 AV	54.0	-18.5	1.13 V	221	29.60	5.90

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.4 PK			1.44 H	22	80.80	32.60
2	*2462.00	103.3 AV			1.44 H	22	70.70	32.60
3	2483.50	68.2 PK	74.0	-5.8	1.31 H	19	35.50	32.70
4	2483.50	52.9 AV	54.0	-1.1	1.31 H	19	20.20	32.70
5	4924.00	49.2 PK	74.0	-24.8	1.86 H	66	43.20	6.00
6	4924.00	36.1 AV	54.0	-17.9	1.86 H	66	30.10	6.00
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	105.3 PK			1.20 V	85	72.70	32.60
2	*2462.00	95.7 AV			1.20 V	85	63.10	32.60
3	2483.50	58.4 PK	74.0	-15.6	1.03 V	250	25.70	32.70
4	2483.50	47.5 AV	54.0	-6.5	1.03 V	250	14.80	32.70
5	4924.00	47.9 PK	74.0	-26.1	1.37 V	96	41.90	6.00
6	4924.00	34.8 AV	54.0	-19.2	1.37 V	96	28.80	6.00

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.0 PK	74.0	-8.0	1.39 H	3	33.50	32.50
2	2390.00	52.7 AV	54.0	-1.3	1.39 H	3	20.20	32.50
3	*2422.00	107.4 PK			1.51 H	20	74.80	32.60
4	*2422.00	98.2 AV			1.51 H	20	65.60	32.60
5	4844.00	48.7 PK	74.0	-25.3	1.72 H	43	42.80	5.90
6	4844.00	35.7 AV	54.0	-18.3	1.72 H	43	29.80	5.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.6 PK	74.0	-15.4	1.19 V	251	26.10	32.50
2	2390.00	47.5 AV	54.0	-6.5	1.19 V	251	15.00	32.50
3	*2422.00	100.5 PK			1.00 V	265	67.90	32.60
4	*2422.00	90.5 AV			1.00 V	265	57.90	32.60
5	4844.00	47.6 PK	74.0	-26.4	1.20 V	222	41.70	5.90
6	4844.00	34.4 AV	54.0	-19.6	1.20 V	222	28.50	5.90

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.6 PK	74.0	-7.4	1.05 H	9	34.10	32.50
2	2390.00	52.5 AV	54.0	-1.5	1.05 H	9	20.00	32.50
3	*2437.00	112.1 PK			1.19 H	359	79.40	32.70
4	*2437.00	102.0 AV			1.19 H	359	69.30	32.70
5	2483.50	63.6 PK	74.0	-10.4	1.31 H	351	30.90	32.70
6	2483.50	50.2 AV	54.0	-3.8	1.31 H	351	17.50	32.70
7	4874.00	49.4 PK	74.0	-24.6	1.39 H	130	43.50	5.90
8	4874.00	36.3 AV	54.0	-17.7	1.39 H	130	30.40	5.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.0 PK	74.0	-15.0	1.03 V	254	26.50	32.50
2	2390.00	47.8 AV	54.0	-6.2	1.03 V	254	15.30	32.50
3	*2437.00	103.8 PK			1.00 V	265	71.10	32.70
4	*2437.00	94.7 AV			1.00 V	265	62.00	32.70
5	2483.50	58.5 PK	74.0	-15.5	1.10 V	266	25.80	32.70
6	2483.50	47.6 AV	54.0	-6.4	1.10 V	266	14.90	32.70
7	4874.00	48.3 PK	74.0	-25.7	1.19 V	231	42.40	5.90
8	4874.00	35.1 AV	54.0	-18.9	1.19 V	231	29.20	5.90

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	109.0 PK			1.35 H	355	76.30	32.70
2	*2452.00	99.2 AV			1.35 H	355	66.50	32.70
3	2483.50	67.2 PK	74.0	-6.8	1.00 H	18	34.50	32.70
4	2483.50	52.7 AV	54.0	-1.3	1.00 H	18	20.00	32.70
5	4904.00	48.7 PK	74.0	-25.3	1.56 H	67	42.90	5.80
6	4904.00	35.6 AV	54.0	-18.4	1.56 H	67	29.80	5.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	100.1 PK			1.28 V	262	67.40	32.70
2	*2452.00	91.2 AV			1.28 V	262	58.50	32.70
3	2483.50	58.8 PK	74.0	-15.2	1.00 V	265	26.10	32.70
4	2483.50	48.6 AV	54.0	-5.4	1.00 V	265	15.90	32.70
5	4924.00	47.5 PK	74.0	-26.5	1.29 V	212	41.50	6.00
6	4924.00	34.6 AV	54.0	-19.4	1.29 V	212	28.60	6.00

REMARKS:

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

Below 1GHz Worst-Case Data:

802.11n (HT20)

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	80.45	31.1 QP	40.0	-8.9	1.50 H	249	49.50	-18.40
2	313.77	29.0 QP	46.0	-17.0	1.00 H	67	41.20	-12.20
3	500.42	33.5 QP	46.0	-12.5	1.50 H	198	41.90	-8.40
4	624.85	34.3 QP	46.0	-11.7	1.00 H	192	39.90	-5.60
5	751.23	37.1 QP	46.0	-8.9	1.00 H	138	40.30	-3.20
6	875.67	39.7 QP	46.0	-6.3	1.50 H	194	40.80	-1.10
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	39.55	35.4 QP	40.0	-4.6	1.00 V	9	50.50	-15.10
2	49.45	34.7 QP	40.0	-5.3	1.00 V	342	49.10	-14.40
3	59.06	37.8 QP	40.0	-2.2	1.50 V	2	52.30	-14.50
4	624.85	34.5 QP	46.0	-11.5	1.50 V	176	40.10	-5.60
5	751.23	36.3 QP	46.0	-9.7	1.00 V	165	39.50	-3.20
6	875.67	39.4 QP	46.0	-6.6	1.00 V	182	40.50	-1.10

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 11, 2014	Nov. 10, 2015
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 02, 2015	Mar. 01, 2016
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 21, 2014	Jul. 20, 2015
Software ADT	BV ADT_Conc_ V7.3.7.3	NA	NA	NA

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

2. The test was performed in HwaYa Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

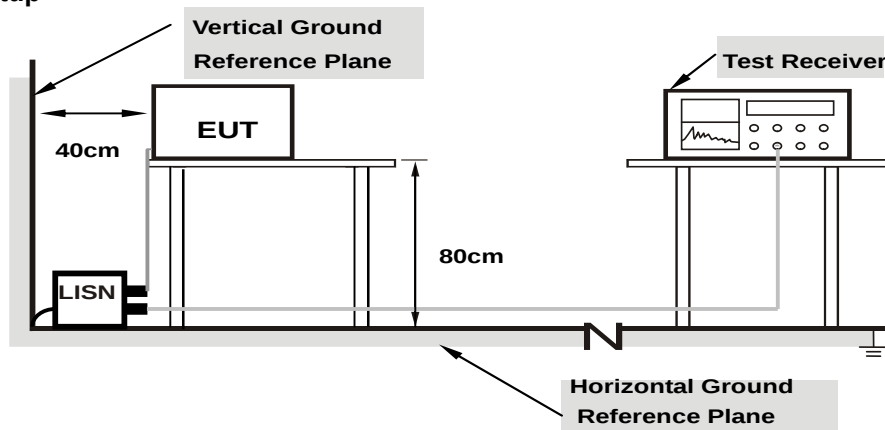
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

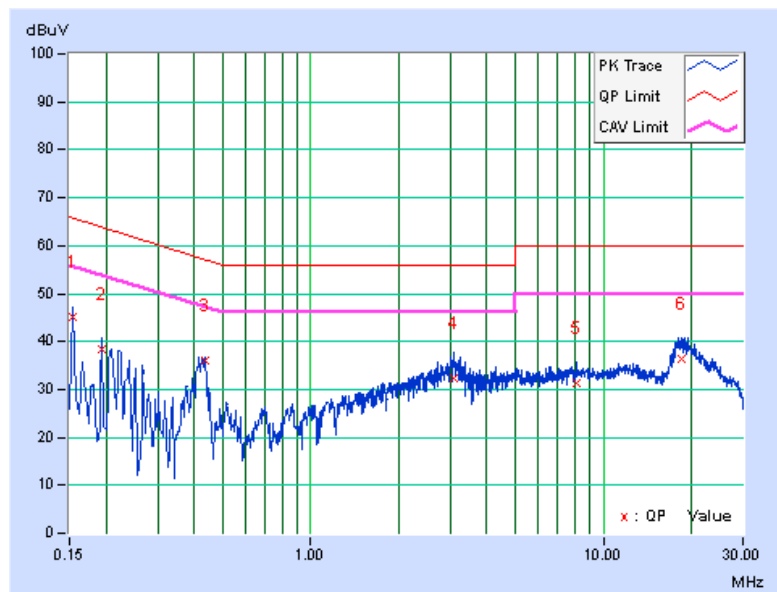
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.05	45.01	31.00	45.06	31.05	65.79	55.79	-20.73	-24.74
2	0.19301	0.06	38.48	21.45	38.54	21.51	63.91	53.91	-25.37	-32.40
3	0.43464	0.06	36.02	27.96	36.08	28.02	57.16	47.16	-21.08	-19.14
4	3.09814	0.16	32.32	24.27	32.48	24.43	56.00	46.00	-23.52	-21.57
5	8.14204	0.37	30.98	25.42	31.35	25.79	60.00	50.00	-28.65	-24.21
6	18.52700	0.83	35.64	30.33	36.47	31.16	60.00	50.00	-23.53	-18.84

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

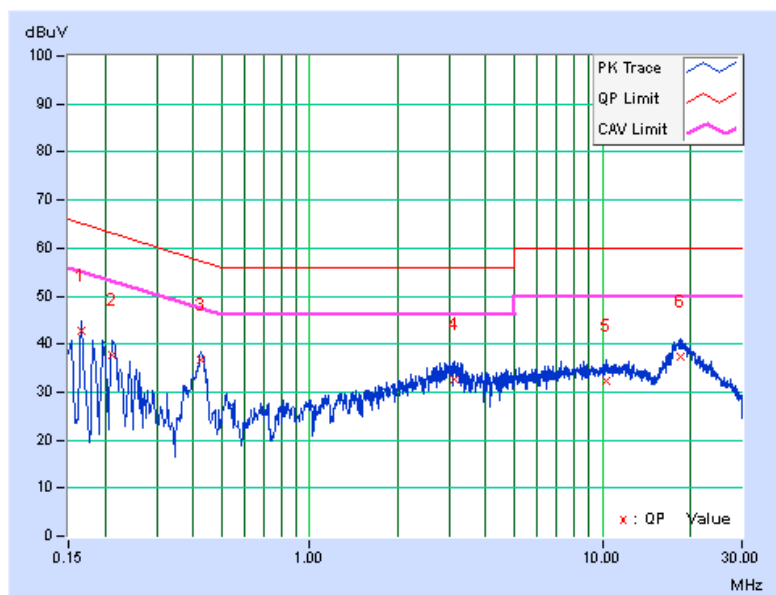


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16569	0.05	42.70	27.50	42.75	27.55	65.17	55.17	-22.42	-27.62
2	0.21256	0.05	37.52	23.16	37.57	23.21	63.10	53.10	-25.53	-29.89
3	0.42370	0.06	36.54	29.97	36.60	30.03	57.38	47.38	-20.77	-17.34
4	3.12551	0.16	32.48	24.80	32.64	24.96	56.00	46.00	-23.36	-21.04
5	10.36683	0.43	31.85	26.22	32.28	26.65	60.00	50.00	-27.72	-23.35
6	18.41752	0.68	36.62	31.49	37.30	32.17	60.00	50.00	-22.70	-17.83

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

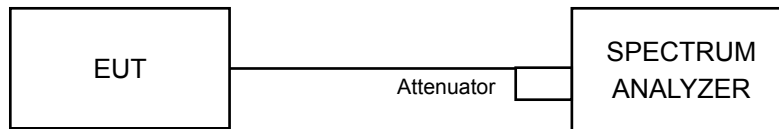


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Set resolution bandwidth (RBW) = 100kHz

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	7.10	7.56	7.09	0.5	Pass
6	2437	7.11	7.09	7.08	0.5	Pass
11	2462	7.09	7.09	7.10	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	16.38	16.37	15.97	0.5	Pass
6	2437	16.37	16.33	16.07	0.5	Pass
11	2462	16.38	16.37	16.39	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1	CHAIN 2		
1	2412	17.23	16.96	16.41	0.5	Pass
6	2437	17.33	16.92	16.38	0.5	Pass
11	2462	17.58	16.97	17.19	0.5	Pass

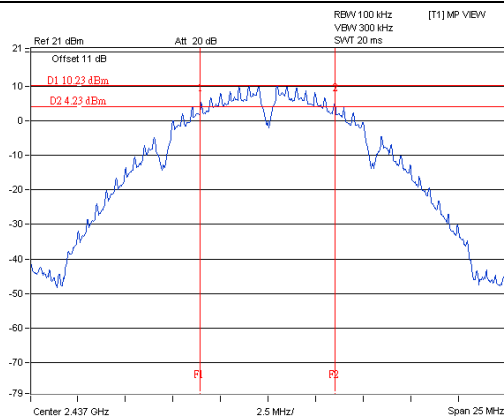
802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1	CHAIN 2		
3	2422	35.87	35.87	35.84	0.5	Pass
6	2437	35.59	35.82	35.80	0.5	Pass
9	2452	36.14	35.81	35.81	0.5	Pass

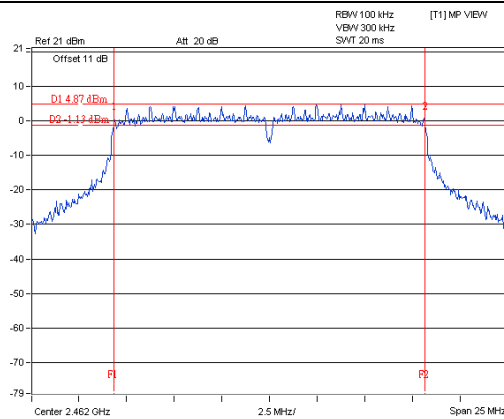
Spectrum Plot of Worst Value

802.11b

802.11g



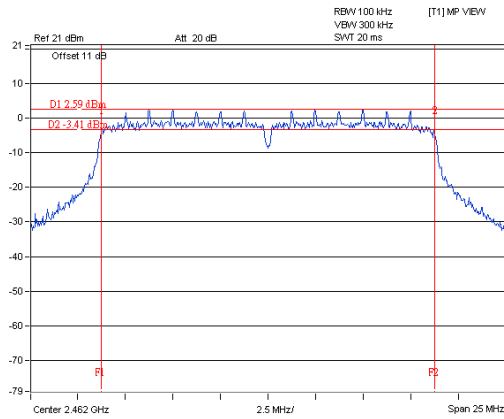
A D T



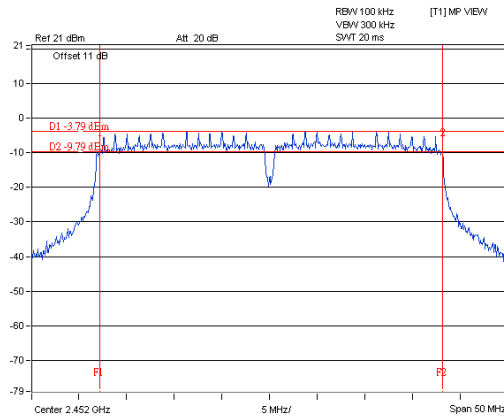
A D T

802.11n (HT20)

802.11n (HT40)



A D T



A D T

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

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

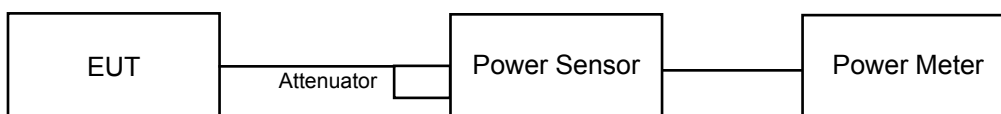
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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

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

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the power level.

- Set the RBW $\geq$ DTS bandwidth.
- Set VBW $\geq 3 \times$ RBW.
- Set span $\geq 3 \times$ RBW
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	20.64	20.81	22.08	397.818	26.00	30	Pass
6	2437	20.79	20.78	21.90	394.506	25.96	30	Pass
11	2462	19.38	19.41	20.58	288.281	24.60	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	19.07	19.74	20.57	288.938	24.61	30	Pass
6	2437	24.54	24.29	25.24	887.175	29.48	30	Pass
11	2462	20.39	20.64	24.41	501.332	27.00	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	18.21	18.56	19.90	235.725	23.72	30	Pass
6	2437	24.71	24.36	25.24	902.894	29.56	30	Pass
11	2462	19.36	19.56	20.81	297.167	24.73	30	Pass

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	14.61	14.83	16.06	99.681	19.99	30	Pass
6	2437	20.09	20.15	21.37	342.696	25.35	30	Pass
9	2452	16.13	16.34	17.52	140.567	21.48	30	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)			Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1	Chain 2		
1	2412	17.79	17.98	19.24	206.869	23.16
6	2437	17.91	17.82	19.12	203.994	23.10
11	2462	16.31	16.46	17.77	146.856	21.67

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)			Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1	Chain 2		
1	2412	13.41	14.07	15.16	80.265	19.05
6	2437	20.04	19.83	21.06	324.730	25.12
11	2462	14.63	14.76	15.98	98.591	19.94

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)			Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1	Chain 2		
1	2412	12.45	13.09	14.11	63.712	18.04
6	2437	19.89	19.68	21.34	326.540	25.14
11	2462	13.56	13.60	14.91	76.582	18.84

802.11n (HT40)

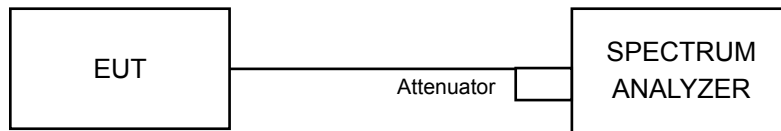
Chan.	Frequency (MHz)	Avg. Power (dBm)			Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1	Chain 2		
3	2422	8.75	9.11	10.22	26.166	14.18
6	2437	14.23	14.33	15.50	89.068	19.50
9	2452	10.45	10.26	11.71	36.534	15.63

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-3.05	4.77	1.72	6.56	Pass
	6	2437	-3.15	4.77	1.62	6.56	Pass
	11	2462	-5.62	4.77	-0.85	6.56	Pass
1	1	2412	-3.42	4.77	1.35	6.56	Pass
	6	2437	-2.88	4.77	1.89	6.56	Pass
	11	2462	-4.14	4.77	0.63	6.56	Pass
2	1	2412	-2.35	4.77	2.42	6.56	Pass
	6	2437	-2.82	4.77	1.95	6.56	Pass
	11	2462	-4.51	4.77	0.26	6.56	Pass

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10G1 / 20 + 10G2 / 20 + \dots + 10GN / 20) / 2/3] = 7.44 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $8 - (7.44 - 6) = 6.56 \text{ dBm}$.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-12.38	4.77	-7.61	6.56	Pass
	6	2437	-6.18	4.77	-1.41	6.56	Pass
	11	2462	-10.97	4.77	-6.20	6.56	Pass
1	1	2412	-11.04	4.77	-6.27	6.56	Pass
	6	2437	-5.80	4.77	-1.03	6.56	Pass
	11	2462	-10.53	4.77	-5.76	6.56	Pass
2	1	2412	-4.45	4.77	0.32	6.56	Pass
	6	2437	-4.39	4.77	0.38	6.56	Pass
	11	2462	-9.31	4.77	-4.54	6.56	Pass

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10G1 / 20 + 10G2 / 20 + \dots + 10GN / 20) / 2/3] = 7.44 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $8 - (7.44 - 6) = 6.56 \text{ dBm}$.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-13.88	4.77	-9.11	6.56	Pass
	6	2437	-5.93	4.77	-1.16	6.56	Pass
	11	2462	-12.76	4.77	-7.99	6.56	Pass
1	1	2412	-12.85	4.77	-8.08	6.56	Pass
	6	2437	-5.95	4.77	-1.18	6.56	Pass
	11	2462	-12.84	4.77	-8.07	6.56	Pass
2	1	2412	-11.58	4.77	-6.81	6.56	Pass
	6	2437	-5.32	4.77	-0.55	6.56	Pass
	11	2462	-11.11	4.77	-6.34	6.56	Pass

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10G1 / 20 + 10G2 / 20 + \dots + 10GN / 20)2/3] = 7.44 \text{ dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(7.44-6) = 6.56\text{dBm}$.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	3	2422	-20.06	4.77	-15.29	6.56	Pass
	6	2437	-15.72	4.77	-10.95	6.56	Pass
	9	2452	-18.80	4.77	-14.03	6.56	Pass
1	3	2422	-19.40	4.77	-14.63	6.56	Pass
	6	2437	-15.23	4.77	-10.46	6.56	Pass
	9	2452	-19.23	4.77	-14.46	6.56	Pass
2	3	2422	-17.72	4.77	-12.95	6.56	Pass
	6	2437	-13.68	4.77	-8.91	6.56	Pass
	9	2452	-16.81	4.77	-12.04	6.56	Pass

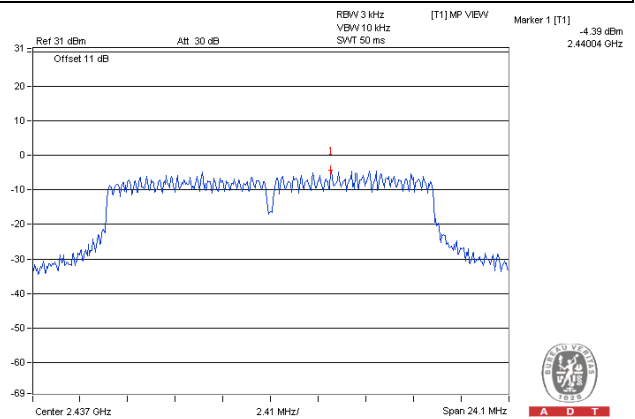
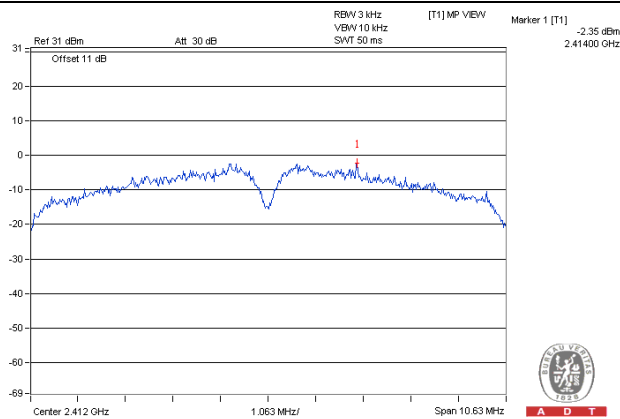
NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10G1 / 20 + 10G2 / 20 + \dots + 10GN / 20)2/3] = 7.44 \text{ dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(7.44-6) = 6.56\text{dBm}$.

Spectrum Plot of Worst Value

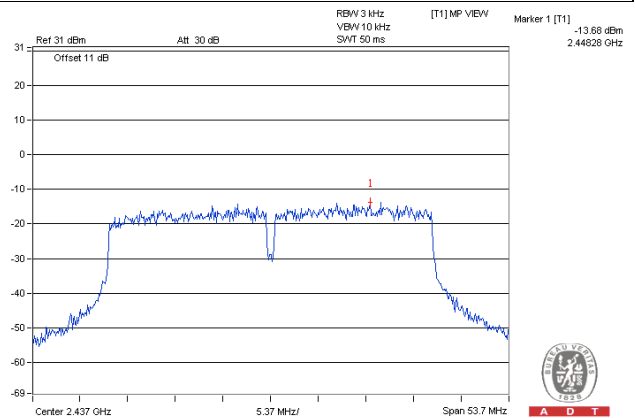
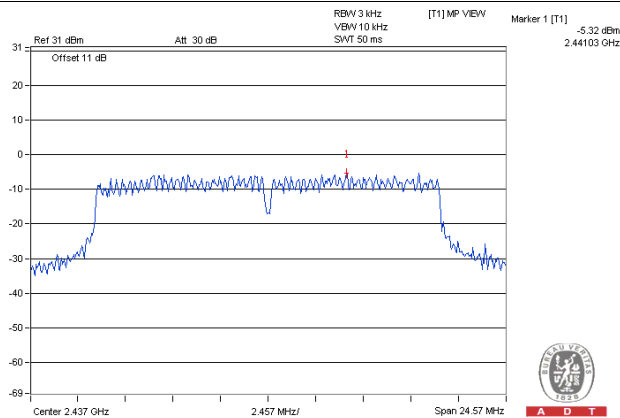
802.11b

802.11g



802.11n (HT20)

802.11n (HT40)

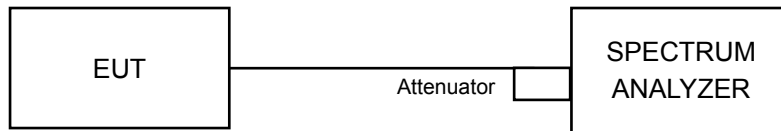


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Ensure that the number of measurement points $\geq$ span/RBW
4. According to measurement points to set differ measurement span.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.

4.6.5 Deviation from Test Standard

No deviation.

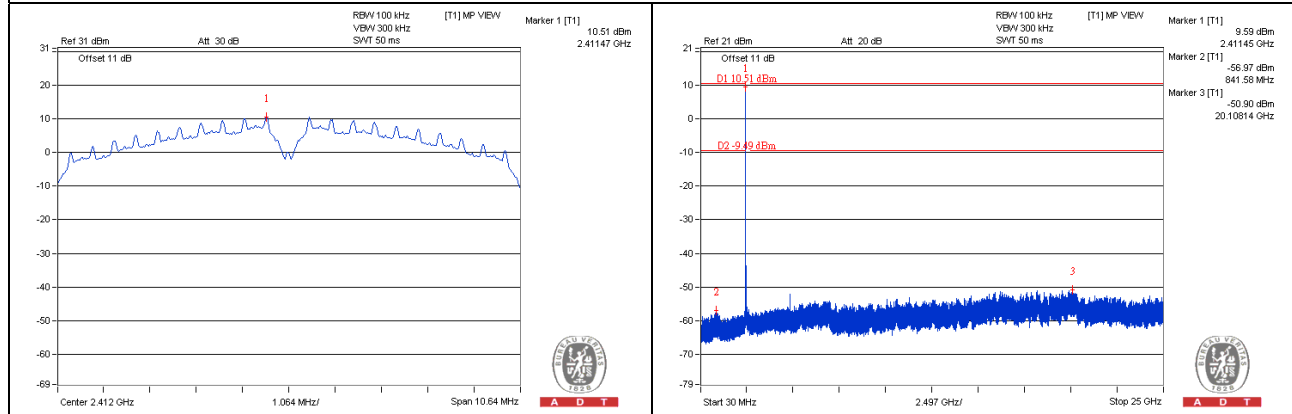
4.6.6 EUT Operating Condition

Same as Item 4.3.6

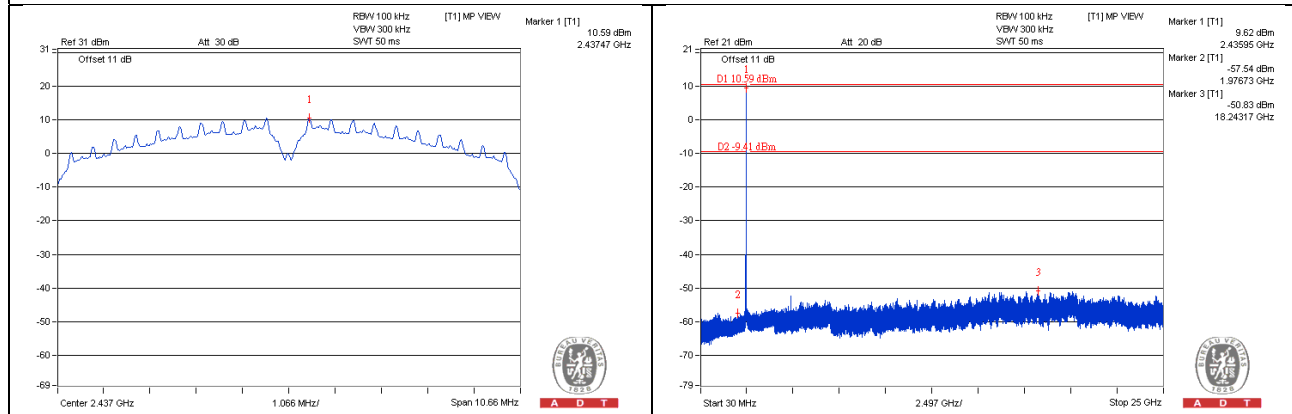
4.6.7 Test Results

802.11b CHAIN 0

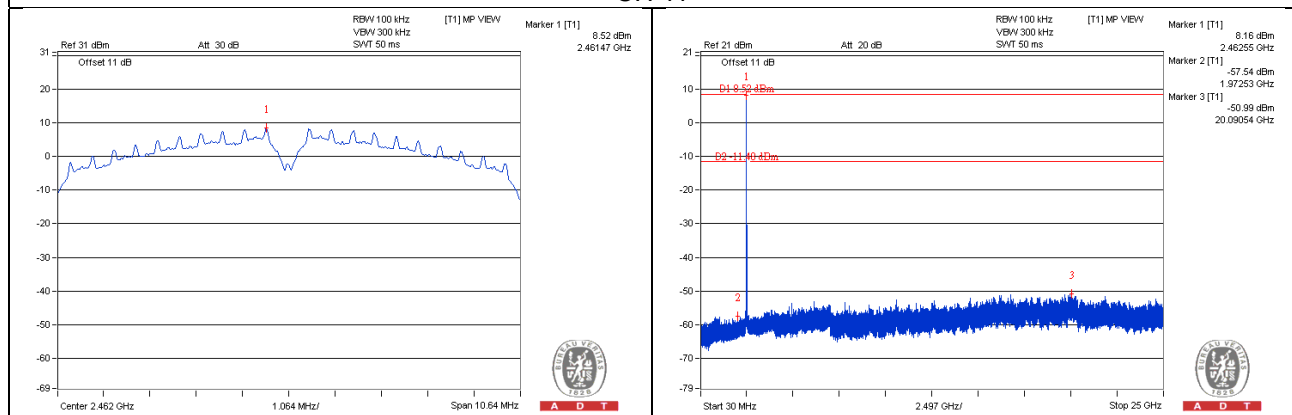
CH 1



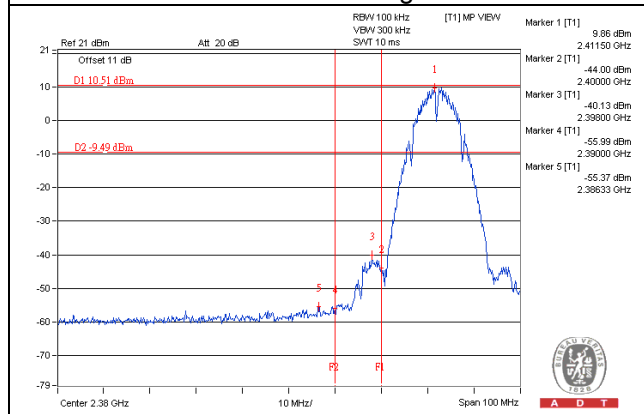
CH 6



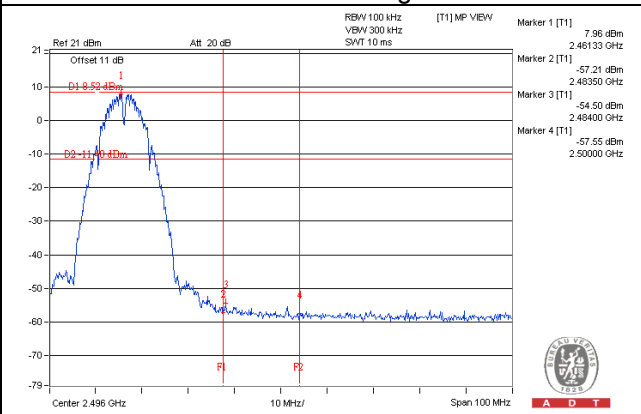
CH 11



CH 1 Band edge

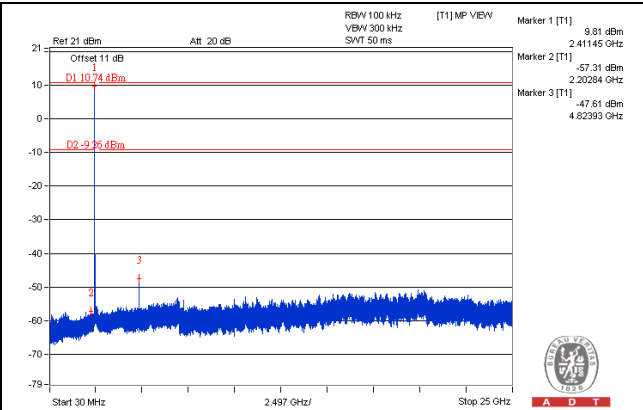
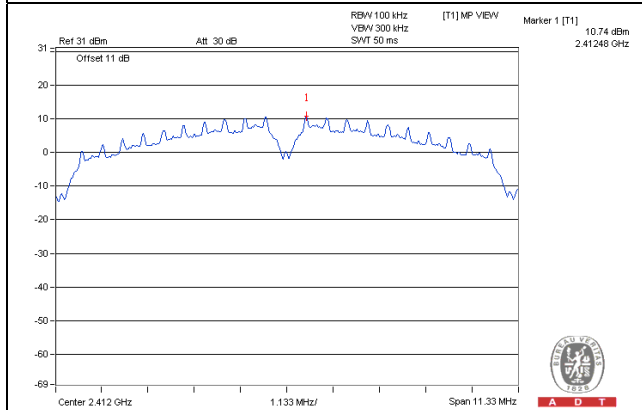


CH 11 Band edge

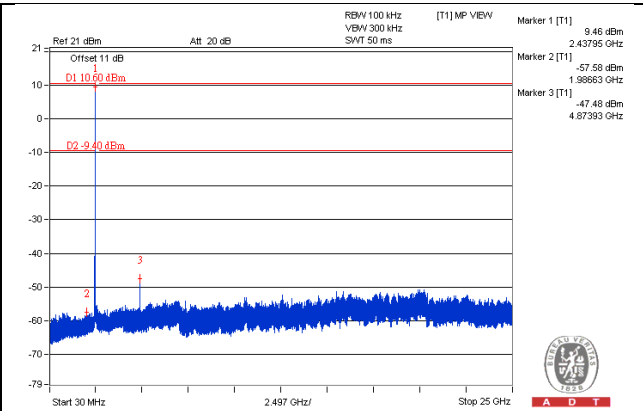
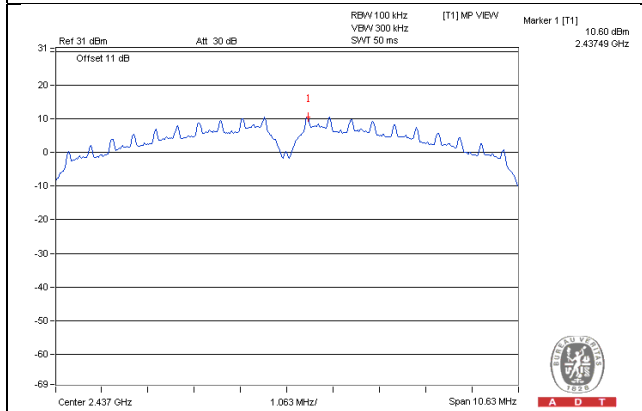


CHAIN 1

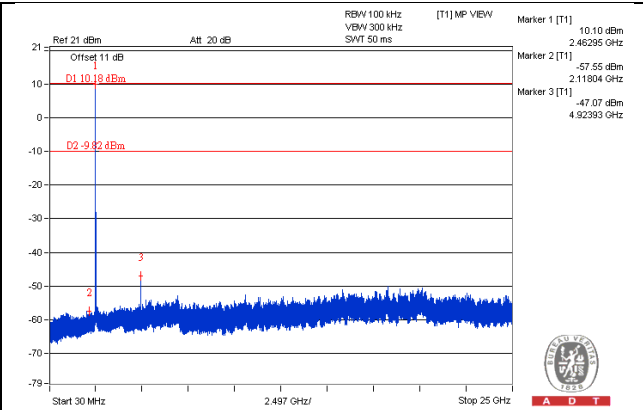
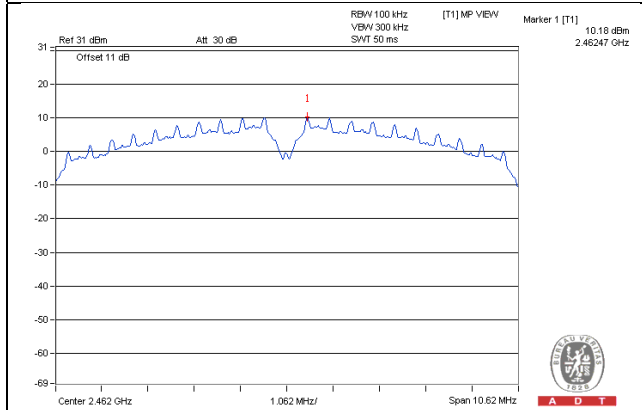
CH 1



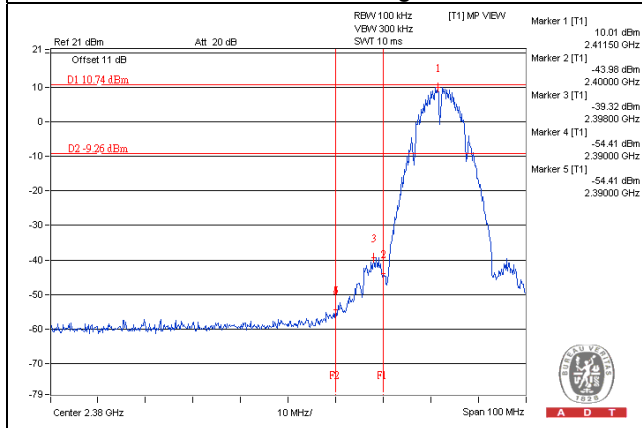
CH 6



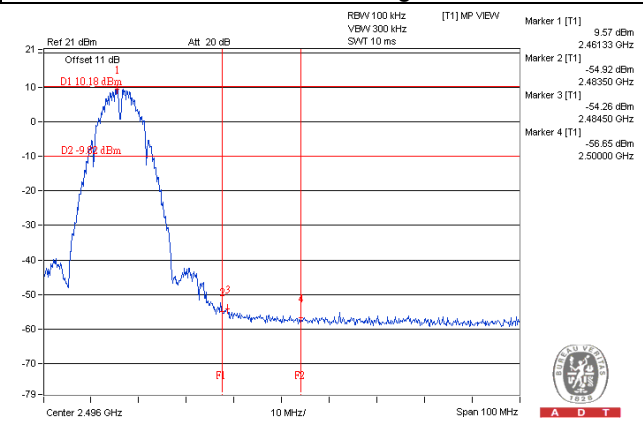
CH 11



CH 1 Band edge



CH 11 Band edge

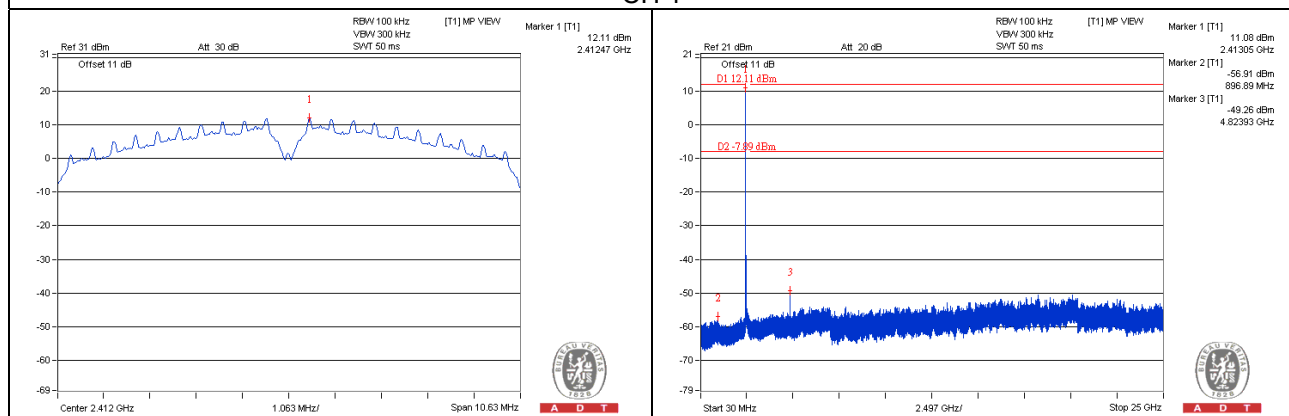




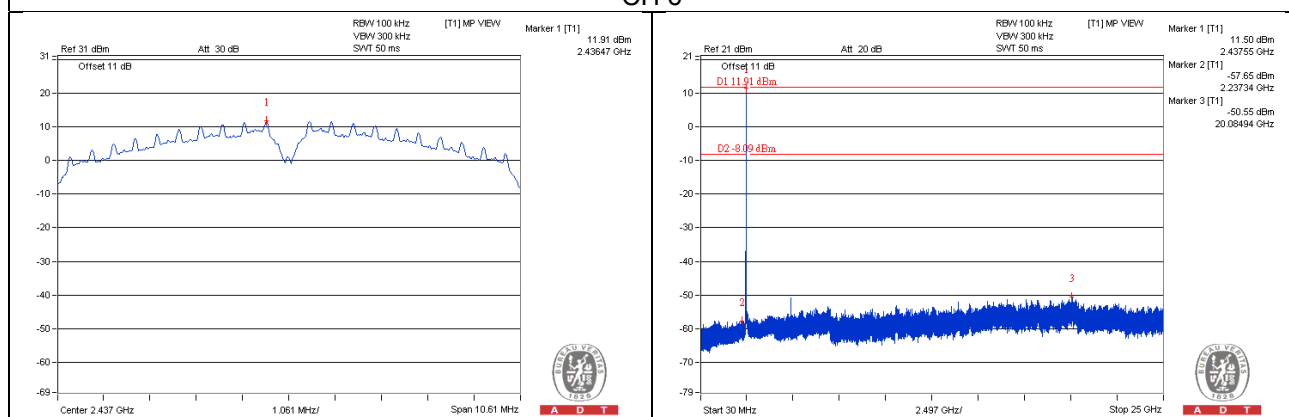
A D T

CHAIN 2

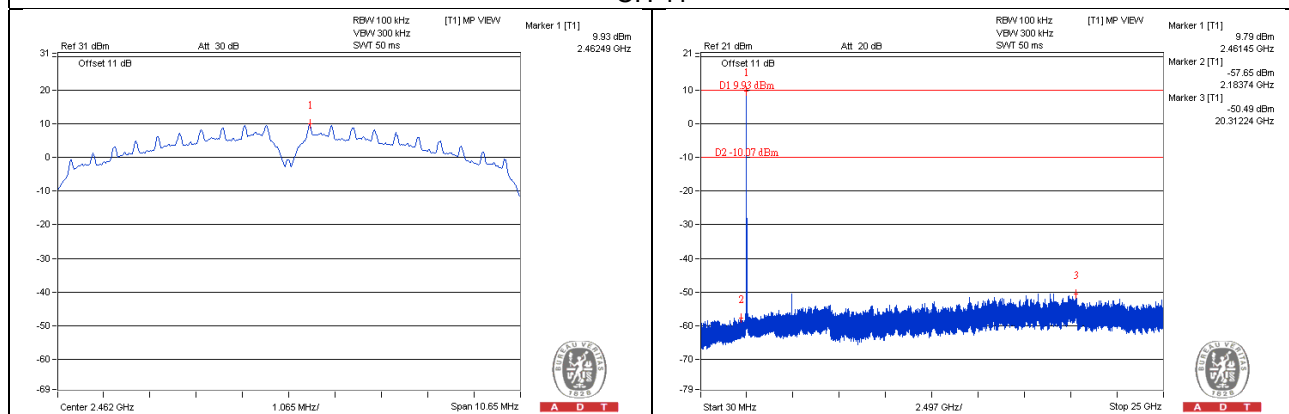
CH 1



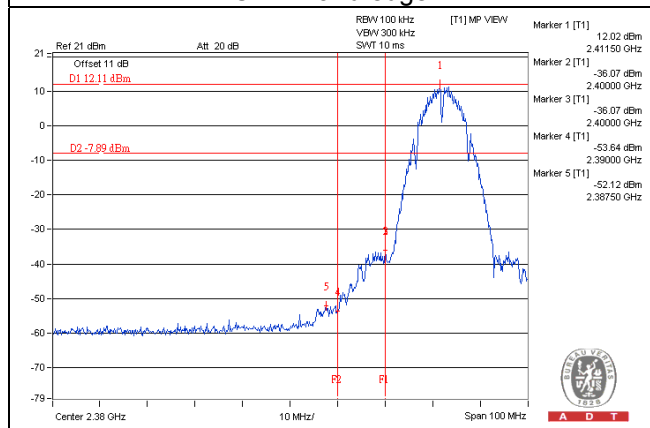
CH 6



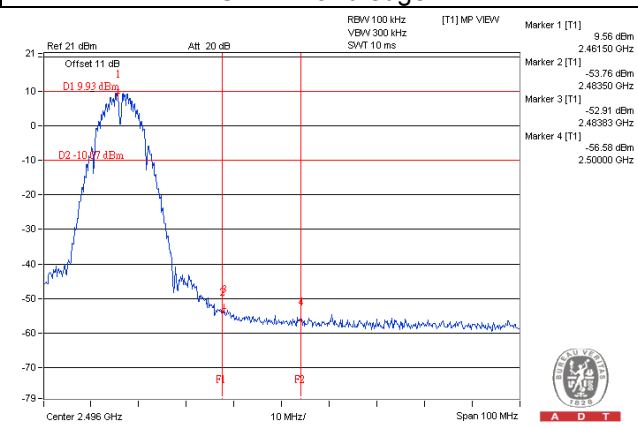
CH 11



CH 1 Band edge



CH 11 Band edge

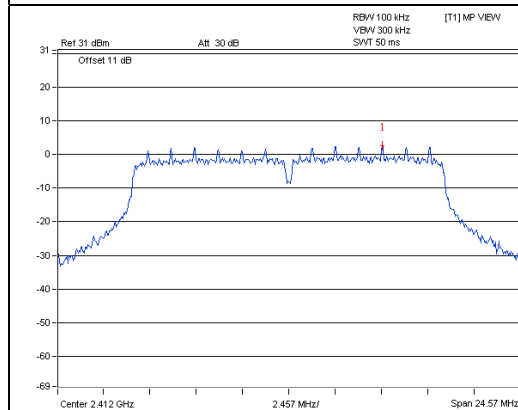




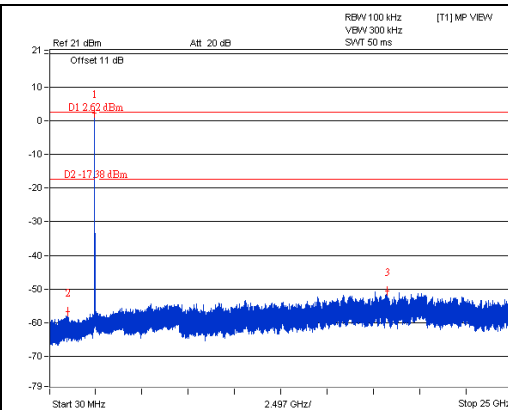
A D T

802.11g_CHAIN 0

CH 1

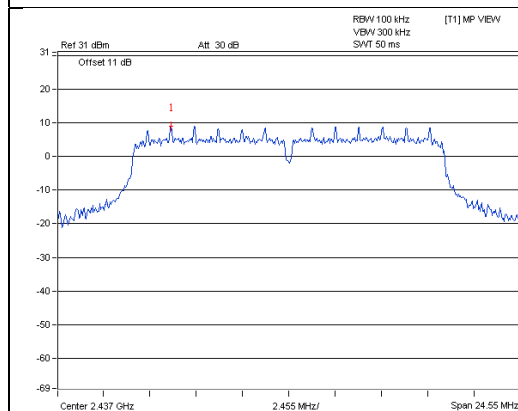


A D T

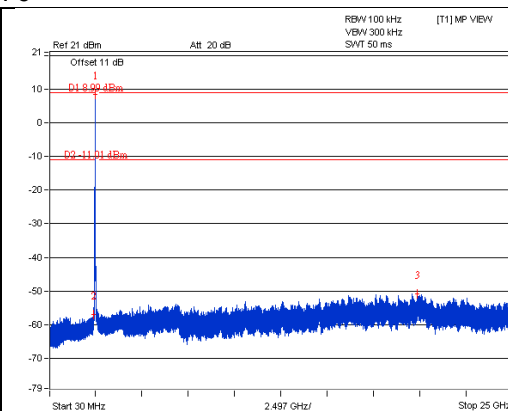


A D T

CH 6

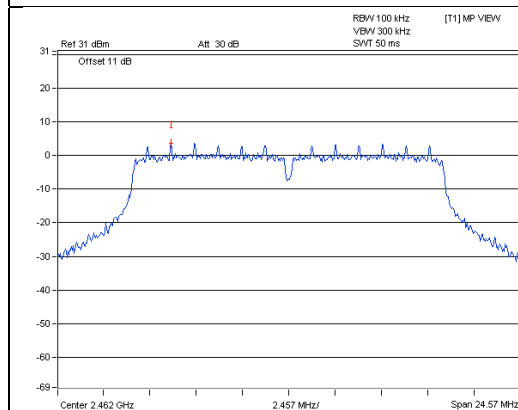


A D T

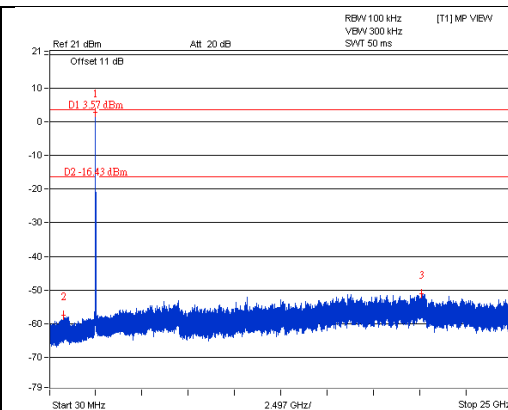


A D T

CH 11

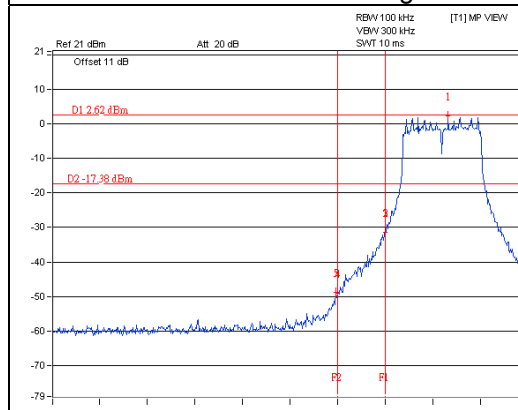


A D T



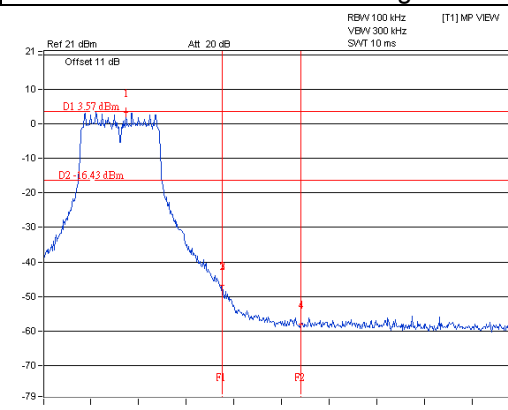
A D T

CH 1 Band edge



A D T

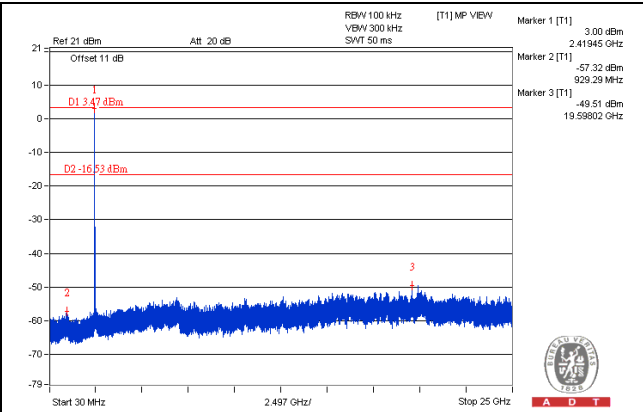
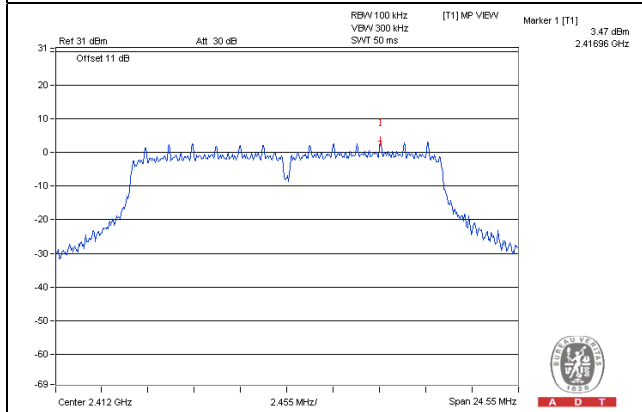
CH 11 Band edge



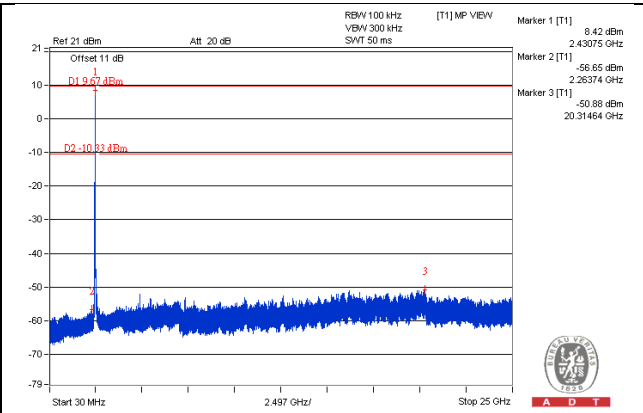
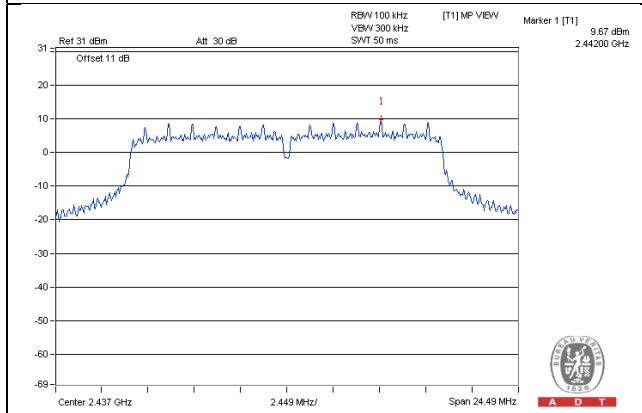
A D T

CHAIN 1

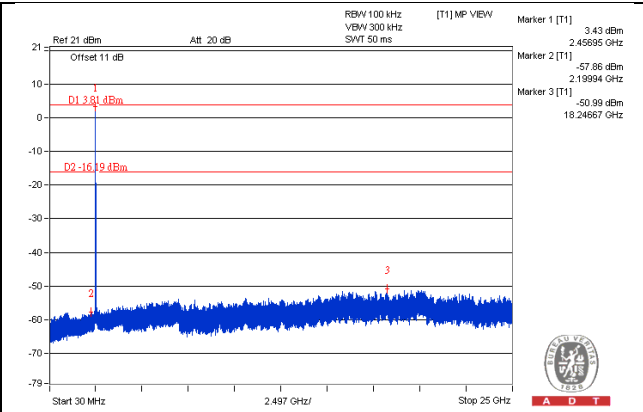
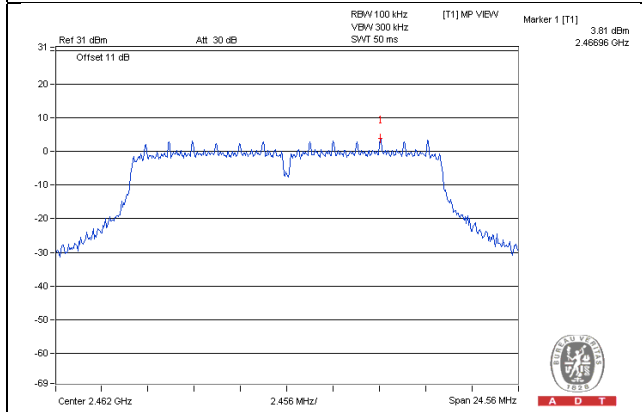
CH 1



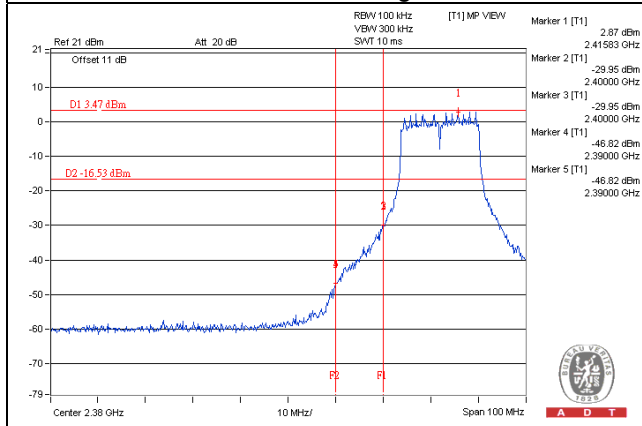
CH 6



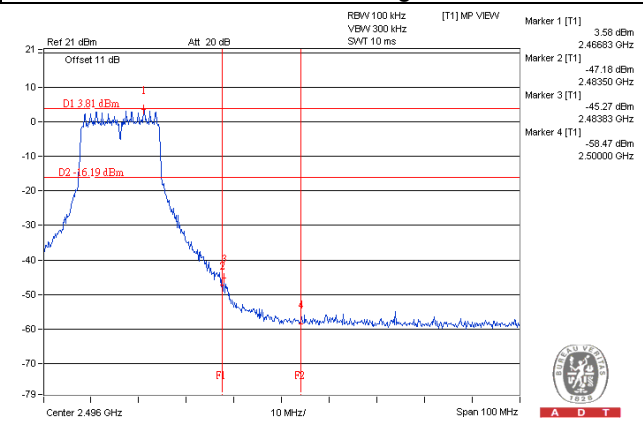
CH 11



CH 1 Band edge

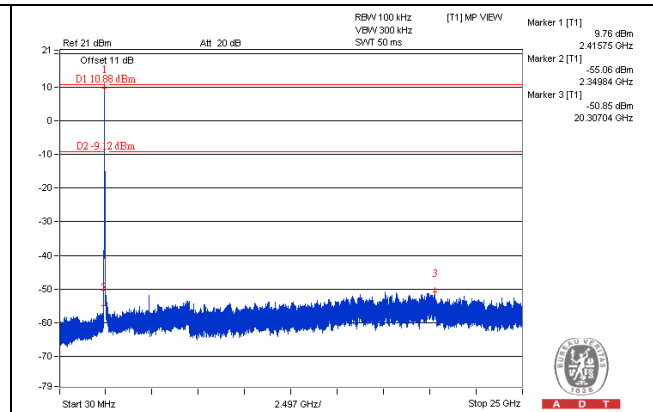
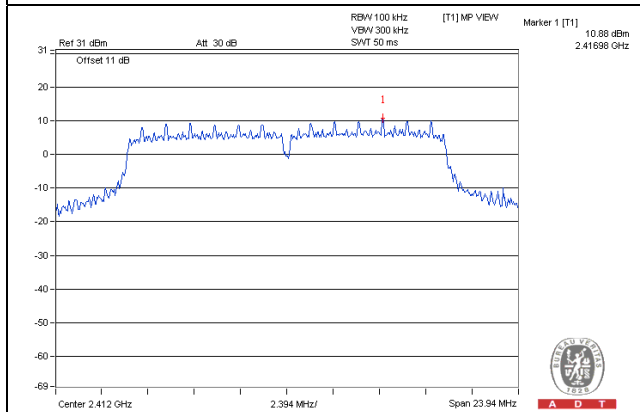


CH 11 Band edge

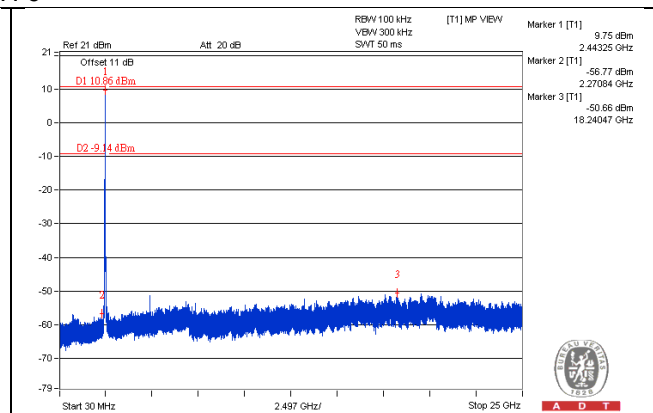
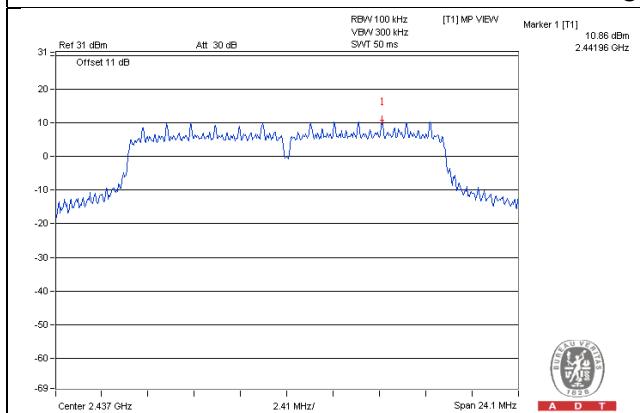


CHAIN 2

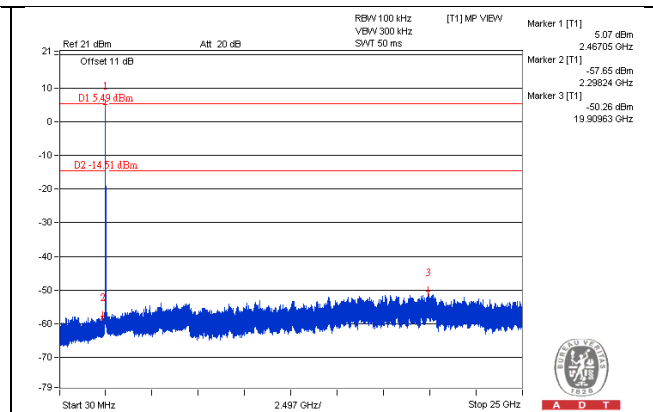
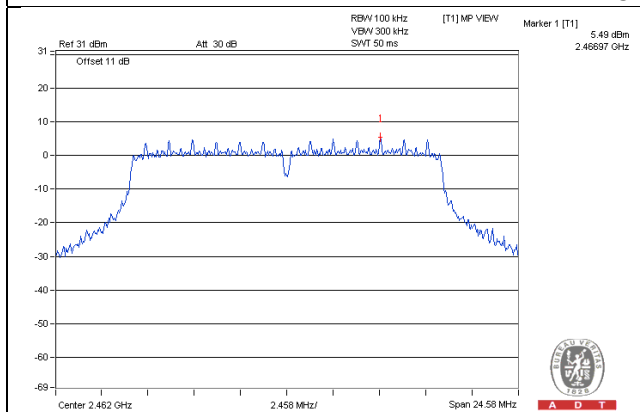
CH 1



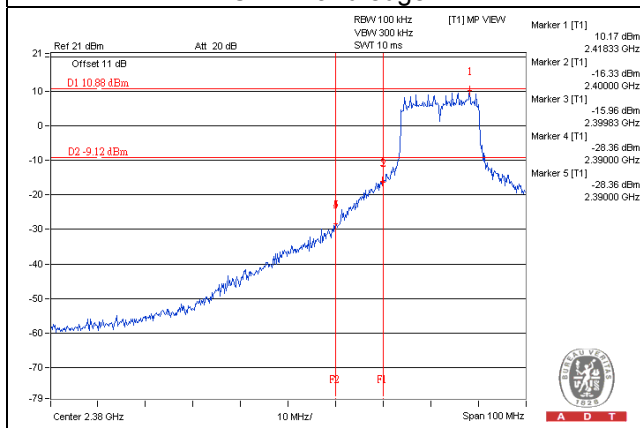
CH 6



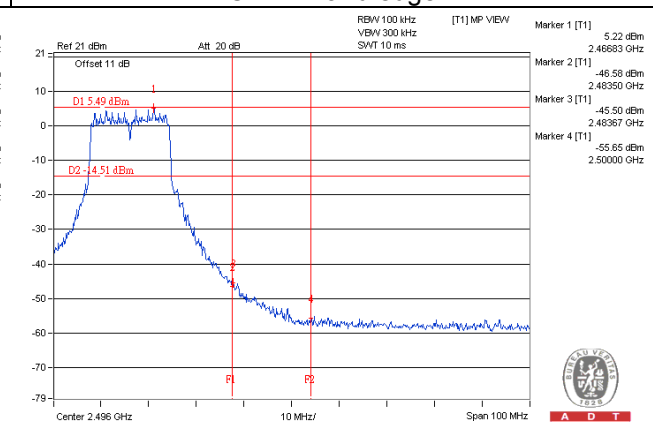
CH 11



CH 1 Band edge

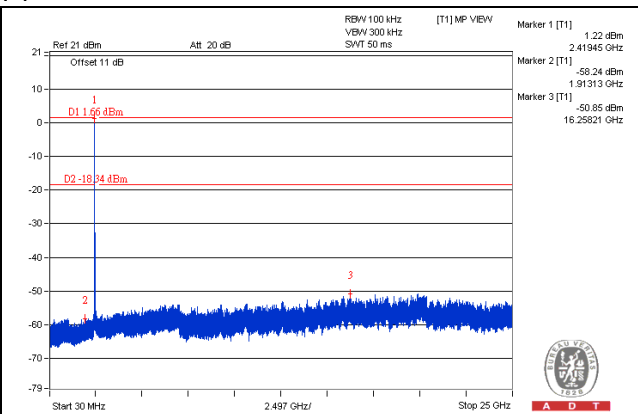
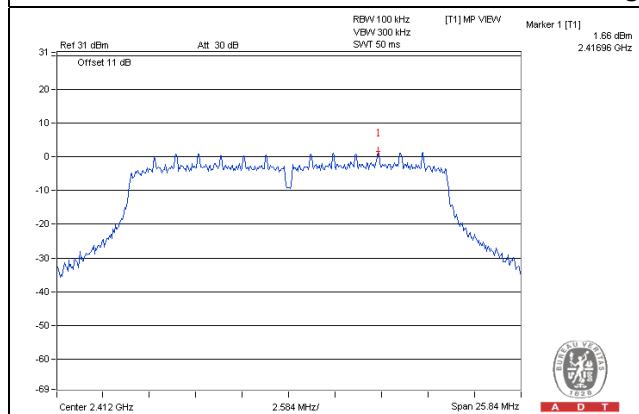


CH 11 Band edge

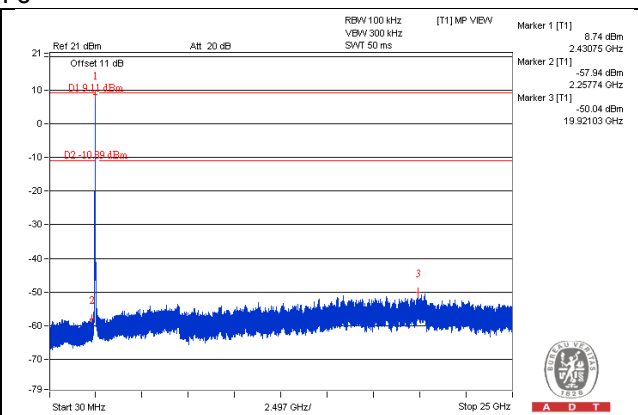
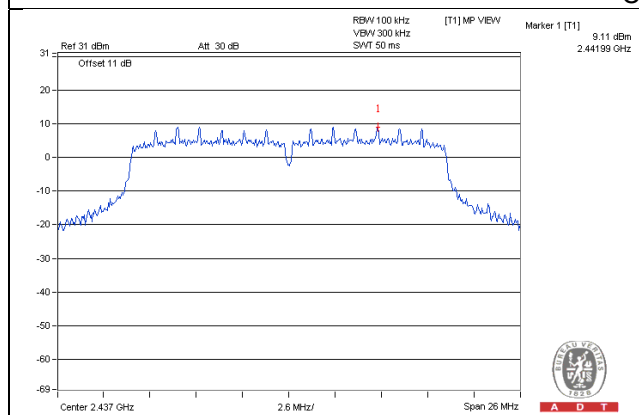


802.11n (HT20)_CHAIN 0

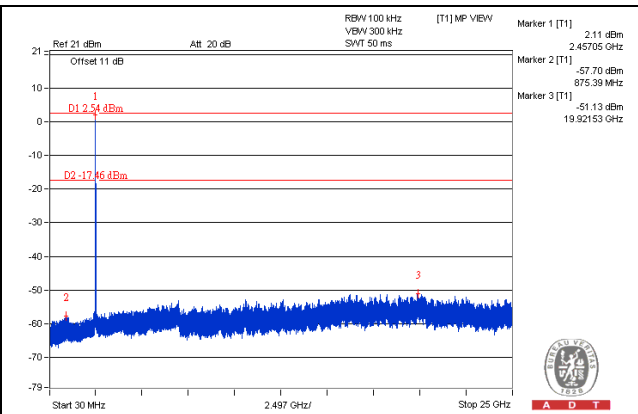
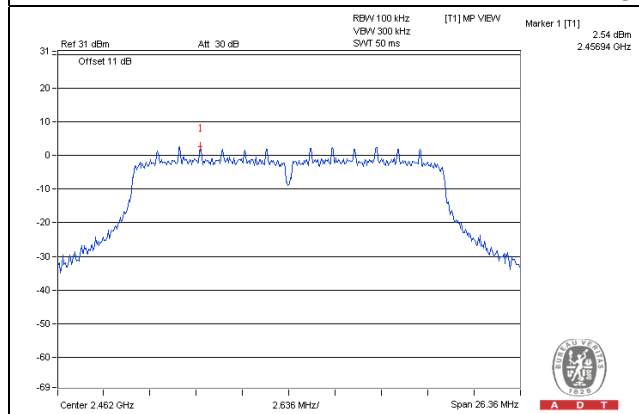
CH 1



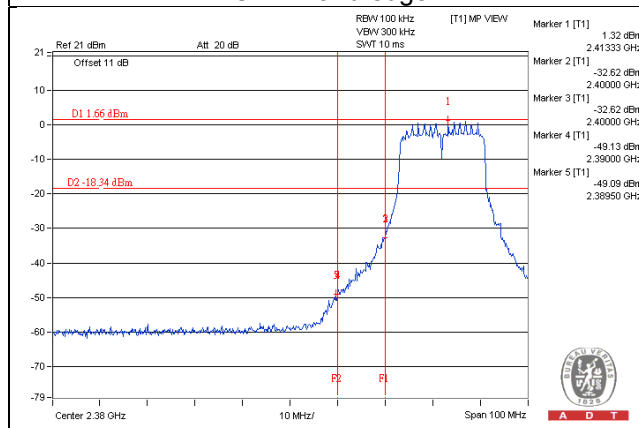
CH 6



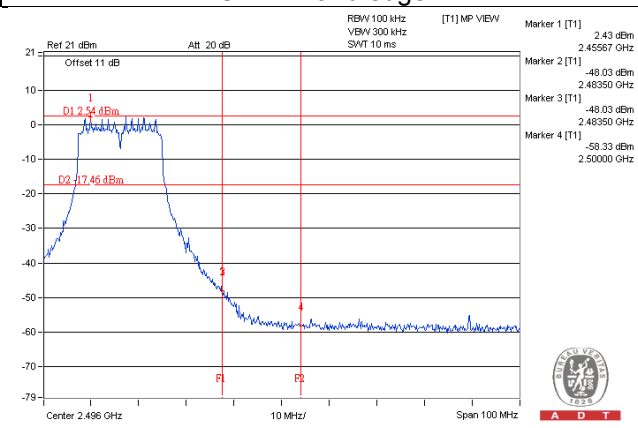
CH 11



CH 1 Band edge

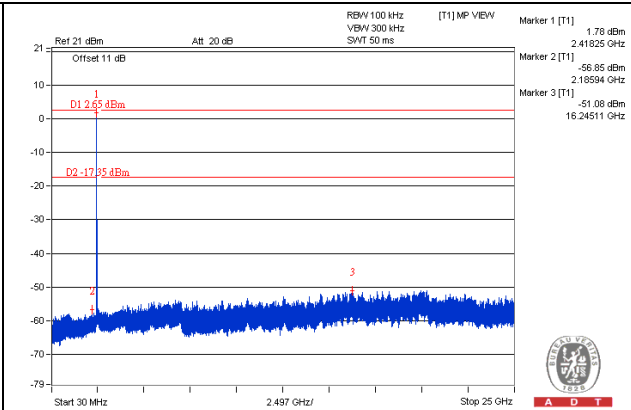
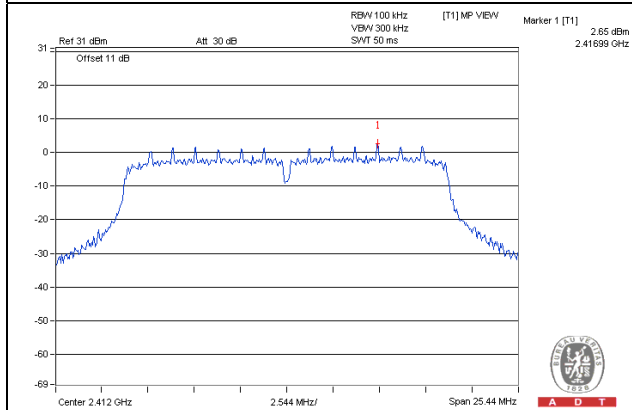


CH 11 Band edge

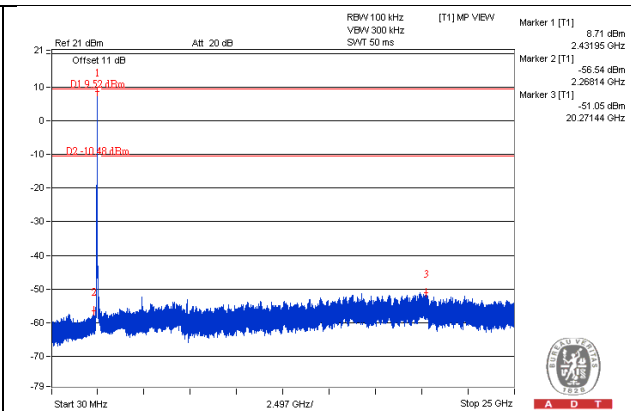
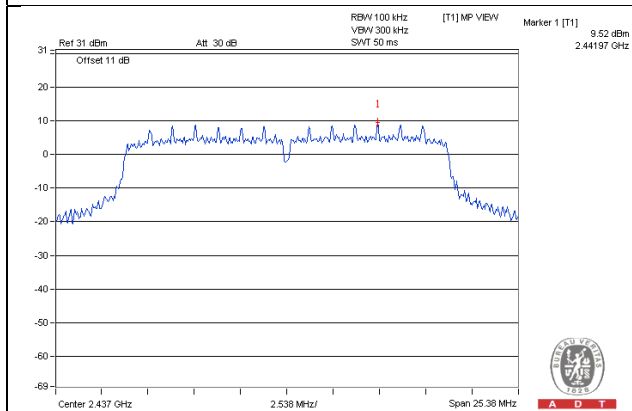


CHAIN 1

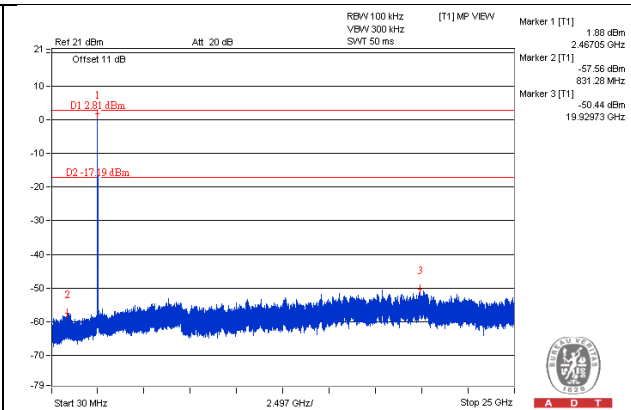
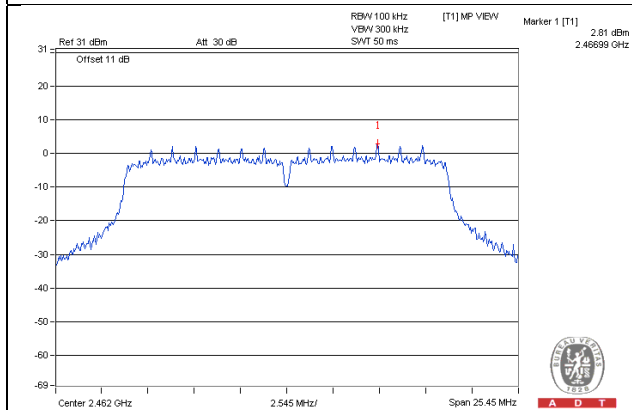
CH 1



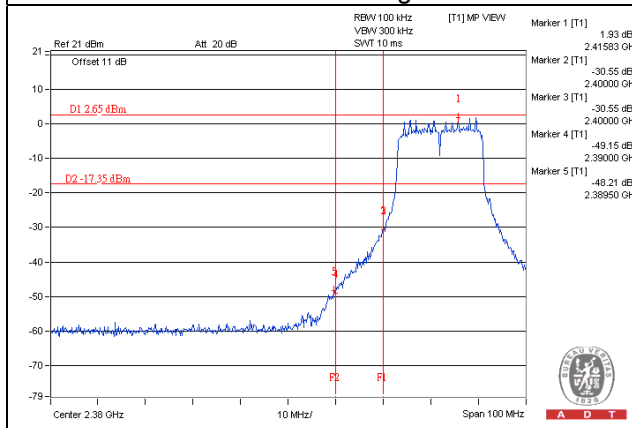
CH 6



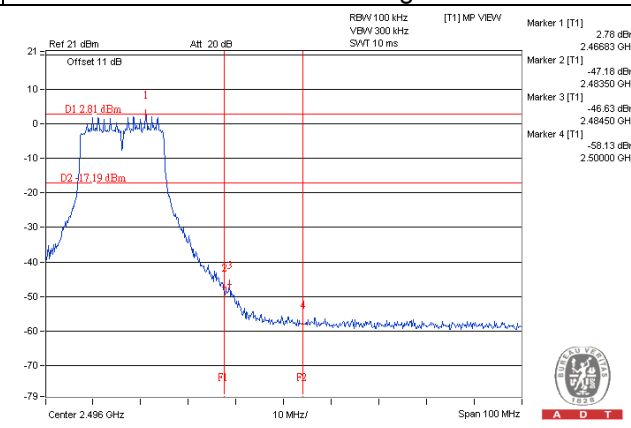
CH 11



CH 1 Band edge

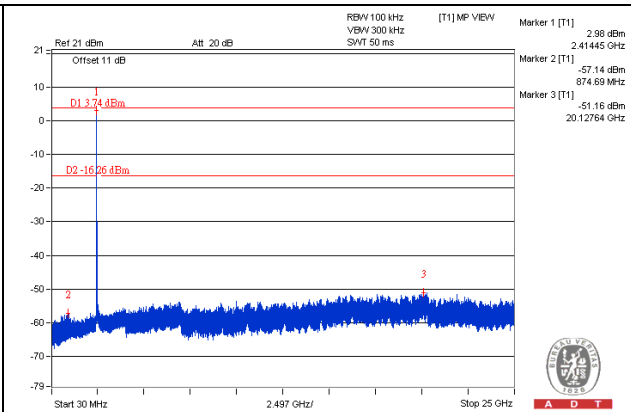
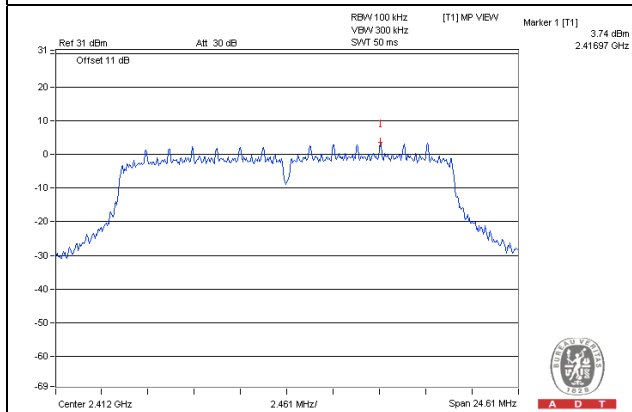


CH 11 Band edge

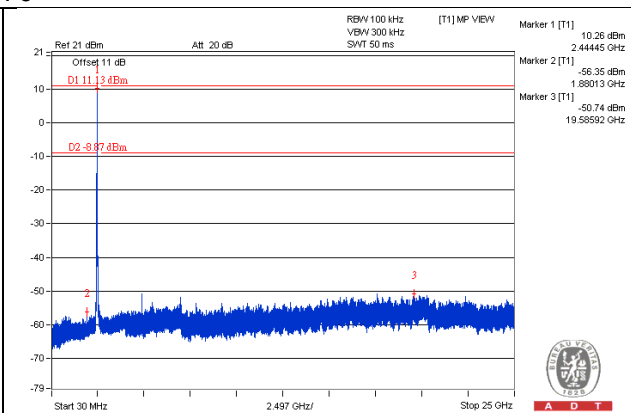
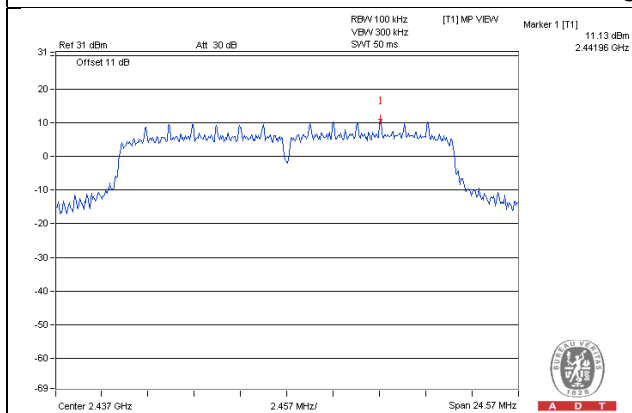


CHAIN 2

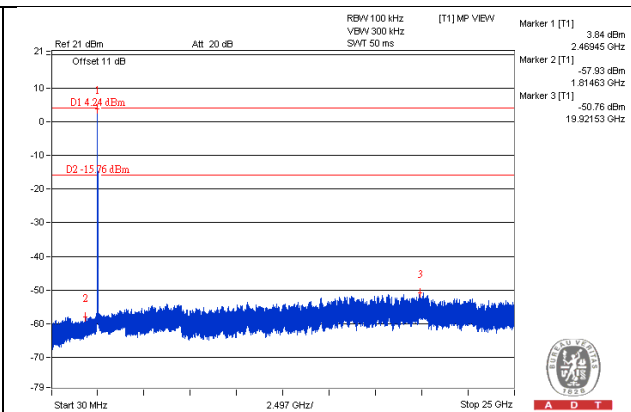
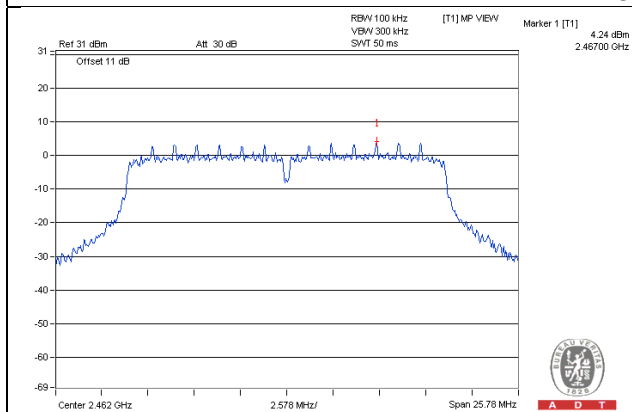
CH 1



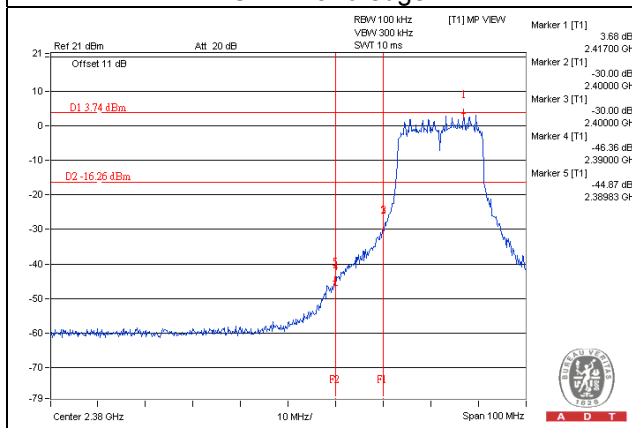
CH 6



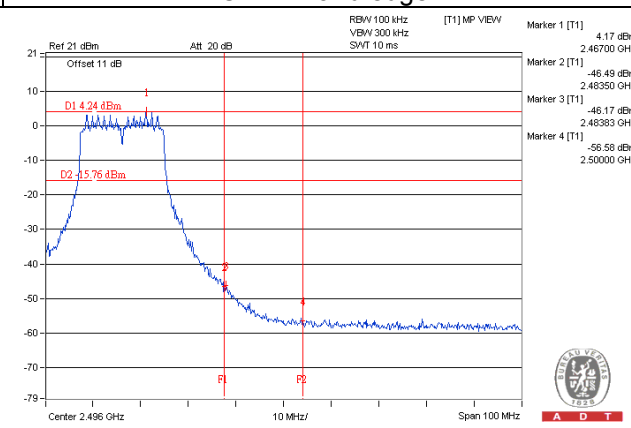
CH 11



CH 1 Band edge

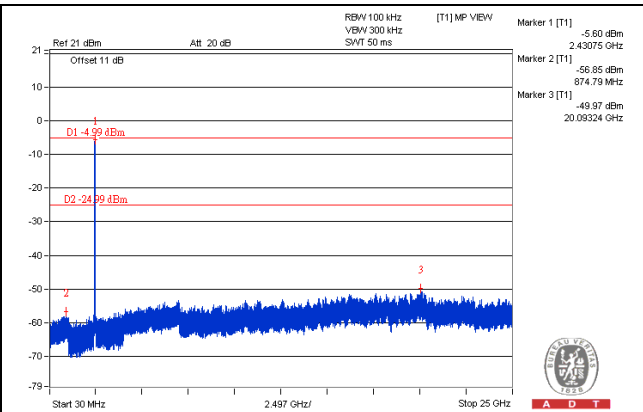
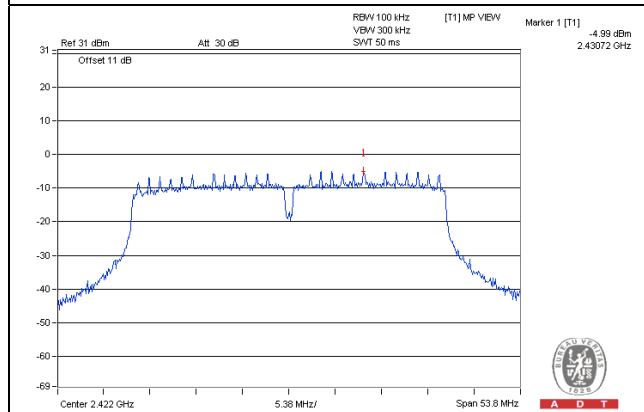


CH 11 Band edge

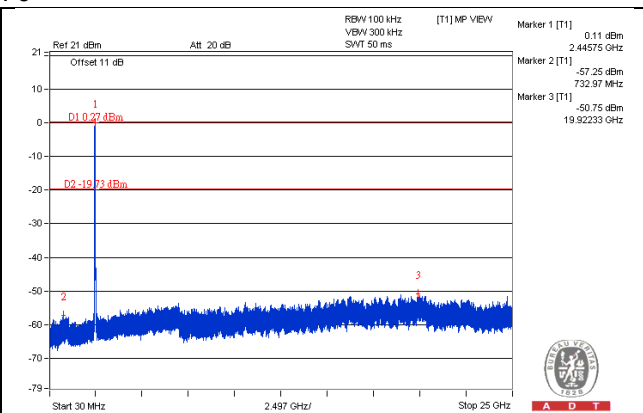
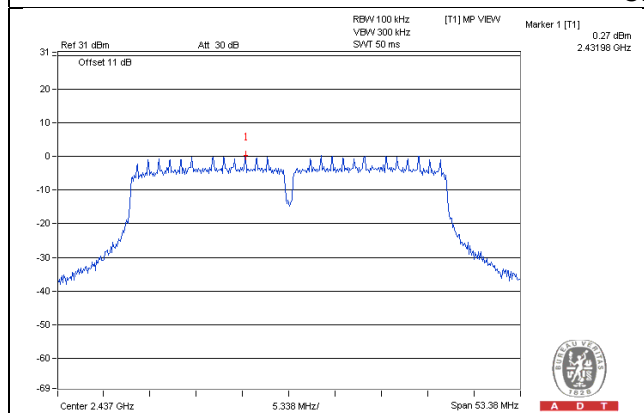


802.11n (HT40)_CHAIN 0

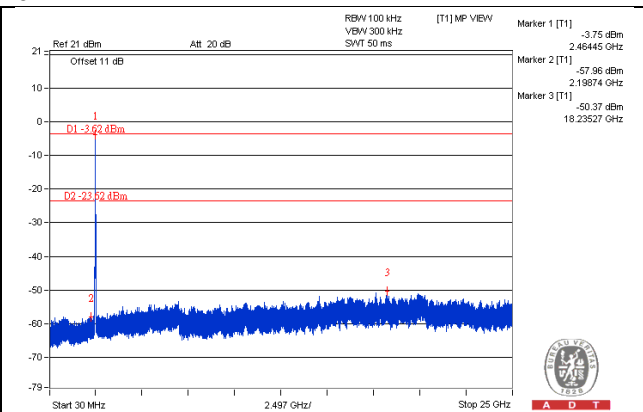
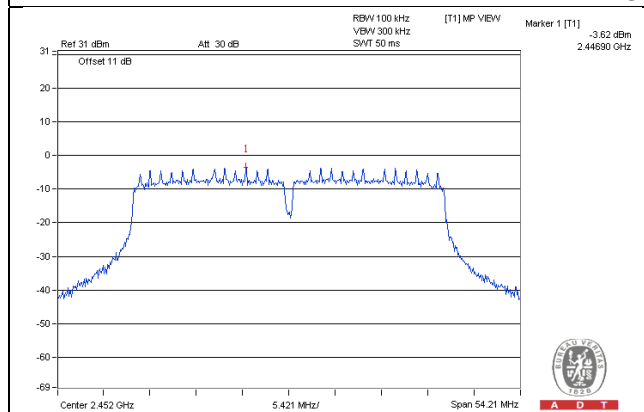
CH 3



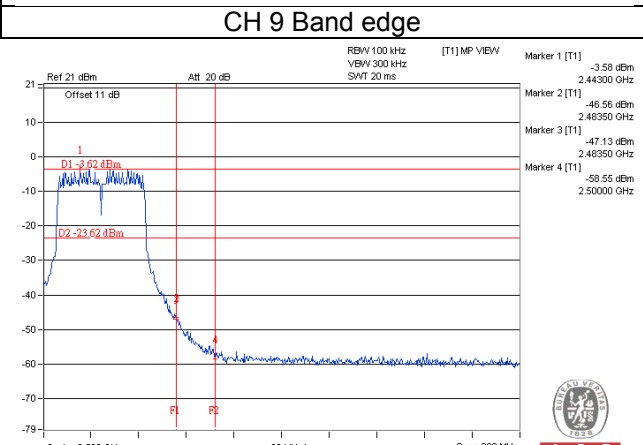
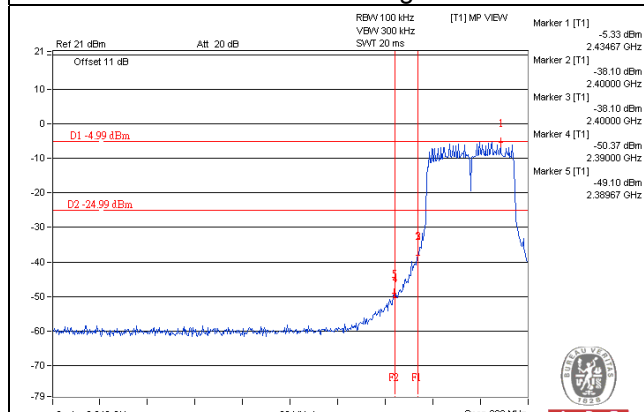
CH 6



CH 9



CH 3 Band edge

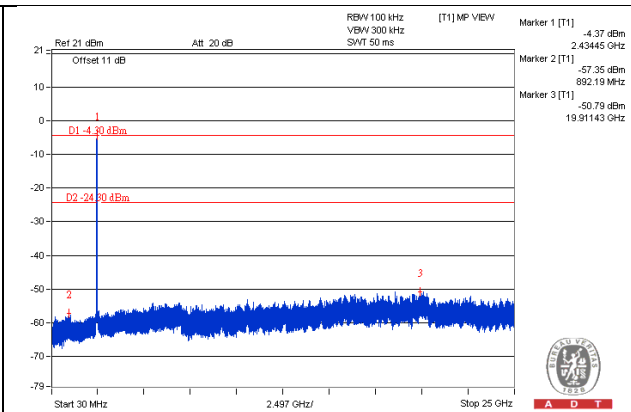
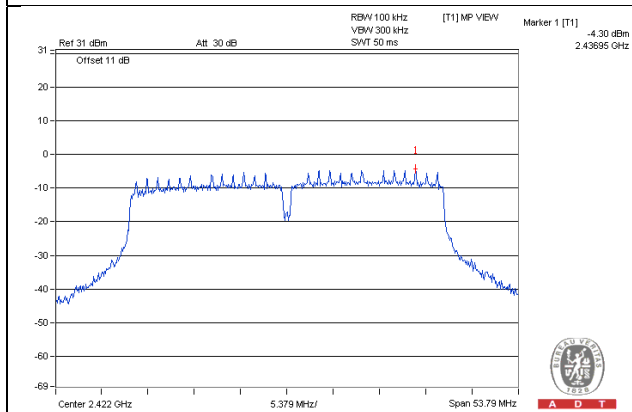




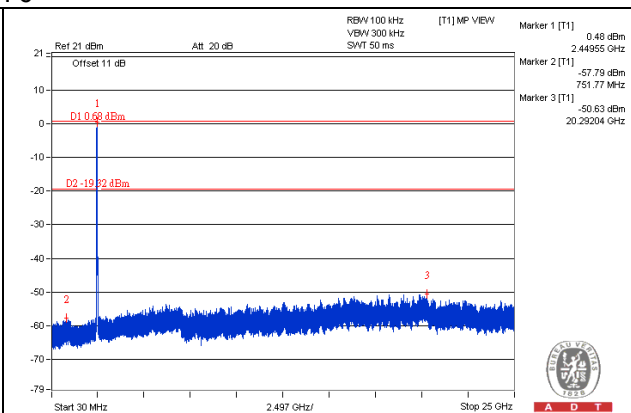
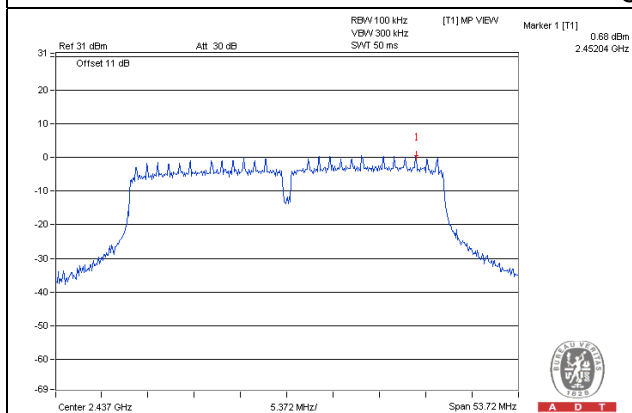
A D T

CHAIN 1

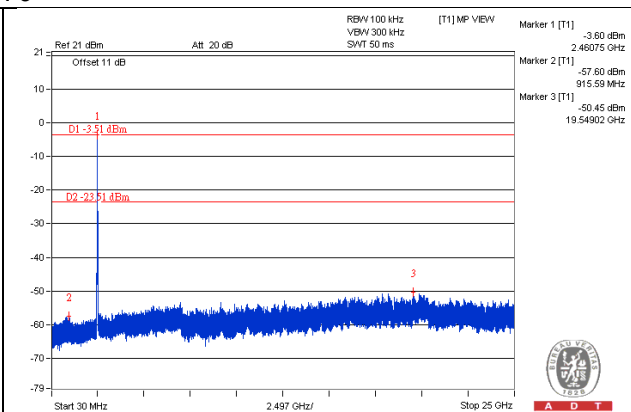
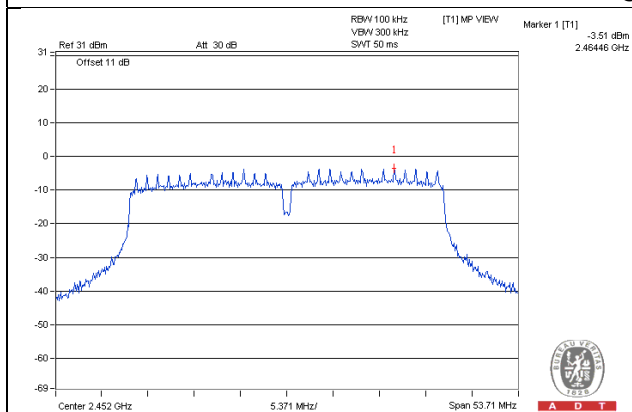
CH 3



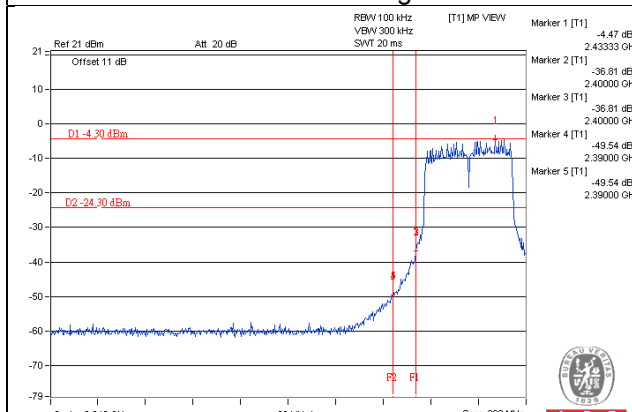
CH 6



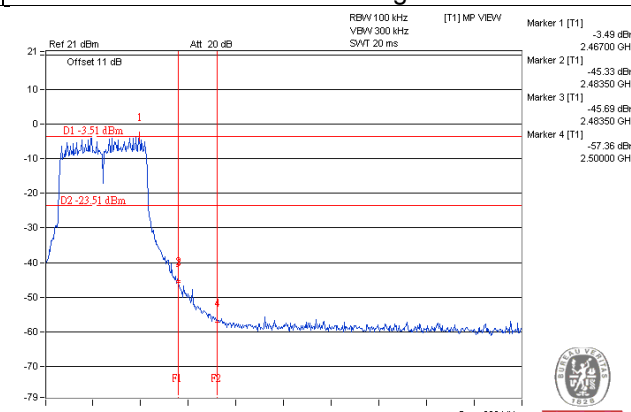
CH 9



CH 3 Band edge

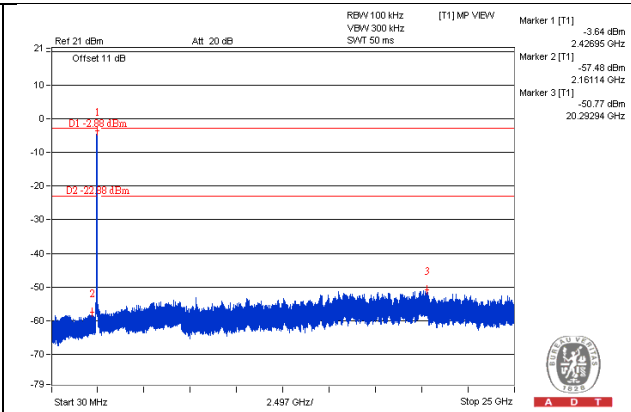
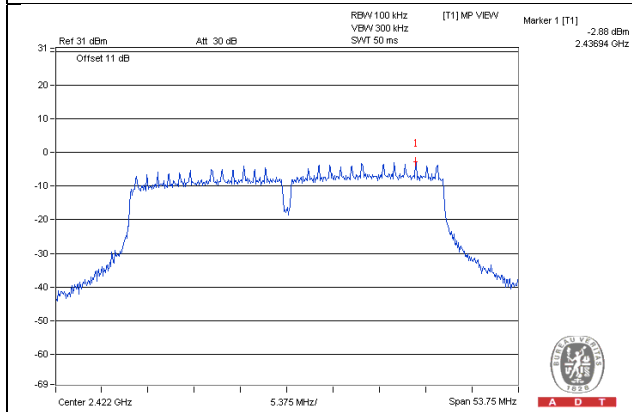


CH 9 Band edge

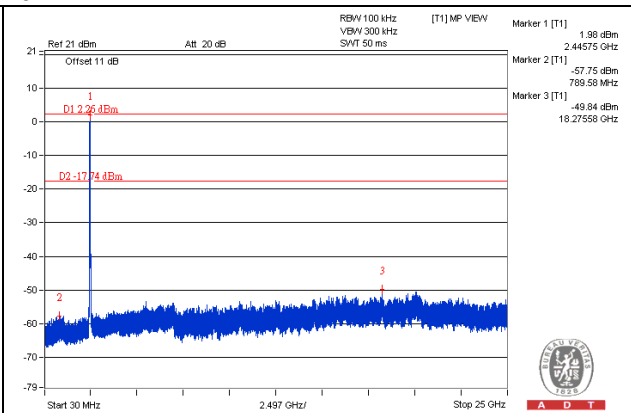
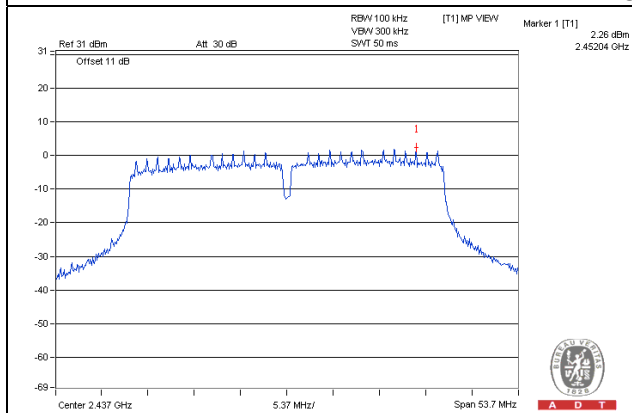


CHAIN 2

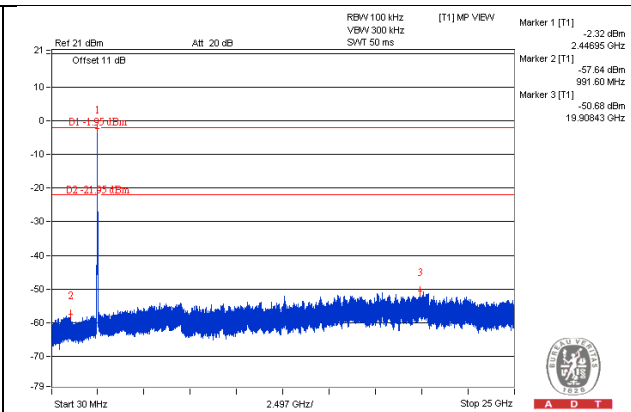
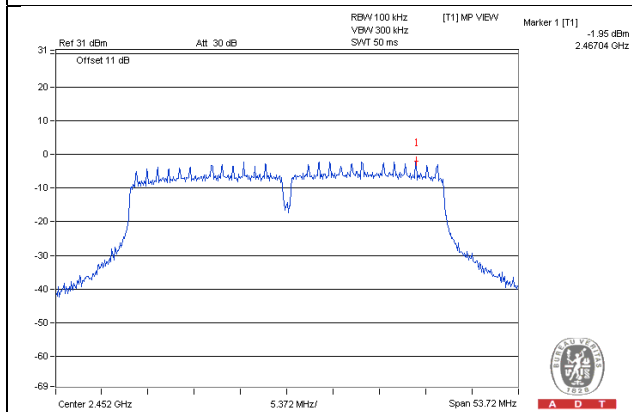
CH 3



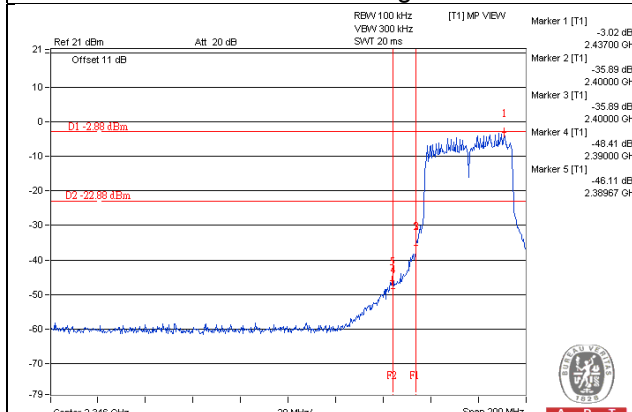
CH 6



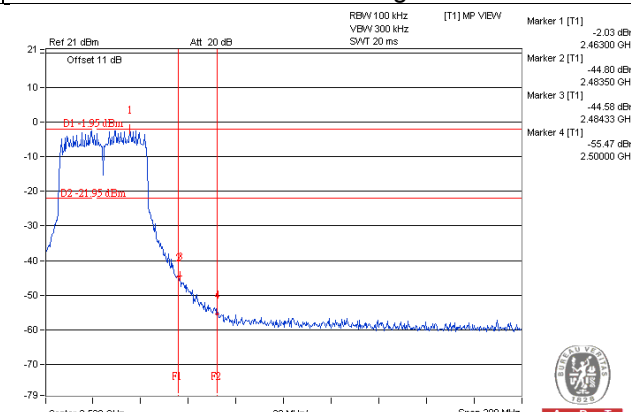
CH 9



CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---