

FCC Test Report (WLAN)

Report No.: RF150107E07B

FCC ID: PPD-QCNFA364AH

Test Model: QCNFA364A

Received Date: Jan. 26, 2015

Test Date: Feb. 06 to 11, 2015 and May 07, 2015

Issued Date: May 12, 2015

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Release Control Record

Issue No.	Description	Date Issued
RF150107E07B	Original release.	May 12, 2015

1 Certificate of Conformity

Product: 802.11a/b/g/n/ac + BT 4.1 M.2 2230 Type Card

Brand: Qualcomm Atheros

Test Model: QCNFA364A

Sample Status: ENGINEERING SAMPLE

Applicant: Qualcomm Atheros, Inc.

Test Date: Feb. 06 to 11, 2015 and May 07, 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 : Phoenix Huang , **Date:** May 12, 2015
Phoenix Huang / Specialist

Approved by : May Chen , **Date:** May 12, 2015
May Chen / 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 -16.14dB at 1.96875MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -3.0dB at 4924.00MHz & 4944.00MHz.
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 IPEX not a standard connector.

NOTE: 1. For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.725GHz 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 and 5.47~5.725GHz RF parameters was recorded in another test report.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz for Chamber G	3.65 dB
	1GHz ~ 6GHz for Chamber H	3.72 dB
	6GHz ~ 18GHz for Chamber G	3.88 dB
	6GHz ~ 18GHz for Chamber H	4.00 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (WLAN)

Product	802.11a/b/g/n/ac + BT 4.1 M.2 2230 Type Card
Brand	Qualcomm Atheros
Test Model	QCNFA364A
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc form host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	For 15.407 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.72GHz For 15.247 2.412 ~ 2.472GHz, 5.745 ~ 5.825GHz
Number of Channel	For 15.407 20 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 10 for 802.11n (HT40), 802.11ac (VHT40) 5 for 802.11ac (VHT80) For 15.247 (2.4GHz) 13 for 802.11b/g, 802.11n (HT20), VHT20 9 for 802.11n (HT40), VHT40 For 15.247 (5GHz) 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	For 15.407 802.11a: 106.283 mW 802.11ac (VHT20): 114.377mW 802.11ac (VHT40): 102.472mW 802.11ac (VHT80): 86.25mW For 15.247 (2.4GHz) 802.11b: 273.536mW 802.11g: 509.97mW VHT20: 503.893mW VHT40: 422.516mW For 15.247 (5GHz) 802.11a: 356.491mW 802.11ac (VHT20): 371.14mW 802.11ac (VHT40): 400.946mW 802.11ac (VHT80): 568.929mW
Antenna Type	See item 3.2
Antenna Connector	See item 3.2
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. There are Bluetooth technology and WLAN technology used for the EUT.
2. The EUT incorporates a 2T2R function.

2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
VHT20	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
VHT40	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
5GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
802.11ac (VHT40)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
802.11ac (VHT80)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.3.1)

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

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

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

4. WLAN/BT coexistence mode:

◆ 2x2 WLAN + BT:

- 5GHz 802.11a/an (or 11ac) transmit concurrent with BT.
- 2.4GHz: timely shared coexistence.

5. The emission (conducted & radiated emission) of the simultaneous operation (WiFi <5GHz> & 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
5 GHz (802.11ac (VHT40))	38 to 159	159	OFDM
+ Bluetooth (LE)	0 to 39	0	GFSK

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

3.2 Description of Antenna

The antenna gain was declared by client; please refer to the following table:

Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)	WNC	81-EBJ15.005	PIFA	3.00	Band 1&2: 2.56	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 4.76		Band 3: 1.74		
					Band 4: 4.76		Band 4: 1.79		
Chain (1)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 3.31		Band 3: 1.74		
					Band 4: 2.42		Band 4: 1.79		

Note: 1. Above antenna gains of antenna are Total (H+V).

3.3 Description of Test Modes

FOR 2.4GHz:

13 channels are provided for 802.11b, 802.11g and 802.11n (HT20), VHT20:

Channel	Frequency	Channel	Frequency
1	2412MHz	8	2447MHz
2	2417MHz	9	2452MHz
3	2422MHz	10	2457MHz
4	2427MHz	11	2462MHz
5	2432MHz	12	2467MHz
6	2437MHz	13	2472MHz
7	2442MHz		

9 channels are provided for 802.11n (HT40), VHT40:

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

FOR 5GHz (5745 ~ 5825MHz):

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.3.1 Test Mode Applicability and Tested Channel Detail

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	UE $\geq$ 1G	UE<1G	PLC	APCM	
-	√	√	√	√	-

Where **UE $\geq$ 1G:** Unwanted Emission above 1GHz **UE < 1G:** Unwanted Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

Unwanted 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	1
802.11g	1 to 13	1, 6, 11, 12, 13	OFDM	6
VHT20	1 to 13	1, 6, 11, 12, 13	OFDM	6.5
VHT40	3 to 11	3, 6, 9, 10, 11	OFDM	13.5

Unwanted 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11g	1 to 13	6	OFDM	6

Power Line Conducted Emission Test:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11g	1 to 13	6	OFDM	6

Bandedge Measurement:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	1
802.11g	1 to 13	1, 6, 11, 12, 13	OFDM	6
VHT20	1 to 13	1, 6, 11, 12, 13	OFDM	6.5
VHT40	3 to 11	3, 6, 9, 10, 11	OFDM	13.5

Antenna Port Conducted Measurement:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	1
802.11g	1 to 13	1, 6, 11, 12, 13	OFDM	6
VHT20	1 to 13	1, 6, 11, 12, 13	OFDM	6.5
VHT40	3 to 11	3, 6, 9, 10, 11	OFDM	13.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
UE $\geq$ 1G	22deg. C, 67%RH	120Vac, 60Hz	Robert Cheng
	23deg. C, 67%RH	120Vac, 60Hz	Robert Cheng
UE<1G	24deg. C, 68%RH	120Vac, 60Hz	Tim Ho
PLC	20deg. C, 60%RH	120Vac, 60Hz	Barry Lee
APCM	15deg. C, 57%RH	120Vac, 60Hz	Anderson Chen

FOR 5GHz (5745 ~ 5825MHz):

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

Where **RE≥1G**: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT40)	151 to 159	159	OFDM	BPSK	13.5

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT40)	151 to 159	159	OFDM	BPSK	13.5

Bandedge Measurement:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 165	OFDM	BPSK	6
802.11ac (VHT20)	149 to 165	149, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 165	OFDM	BPSK	6
802.11ac (VHT20)	149 to 165	149, 165	OFDM	BPSK	6.5
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)	155	155	OFDM	BPSK	29.3

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE $\geq$ 1G	24deg. C, 73%RH	120Vac, 60Hz	Robert Cheng
RE $<$ 1G	24deg. C, 68%RH	120Vac, 60Hz	Tim Ho
PLC	20deg. C, 60%RH	120Vac, 60Hz	Barry Lee
APCM	15deg. C, 78%RH	120Vac, 60Hz	Anderson Chen

3.4 Duty Cycle of Test Signal

2.4GHz Band:

If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

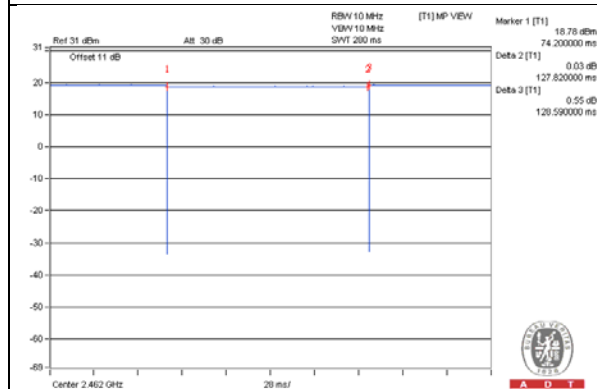
802.11b: Duty cycle = 127.82 ms/128.59 ms = 0.994

802.11g: Duty cycle = 21.45 ms/21.587 ms = 0.994

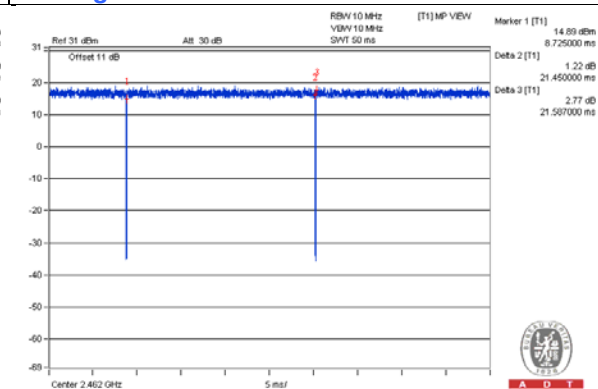
VHT20: Duty cycle = 19.787 ms/20.012 ms = 0.989

VHT40: Duty cycle = 9.5. ms/9.725 ms = 0.977, Duty factor = $10 * \log(1/0.977) = 0.1$

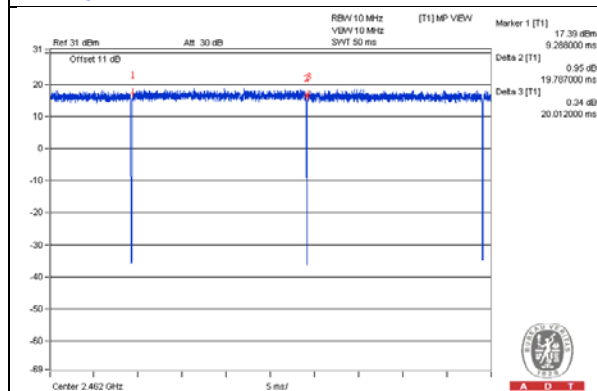
802.11b



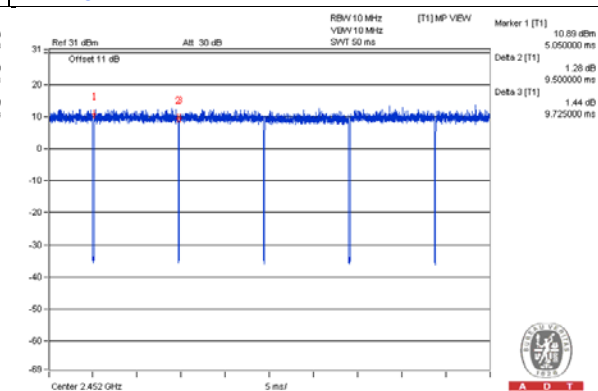
802.11g



VHT20



VHT40



5GHz Band:

If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

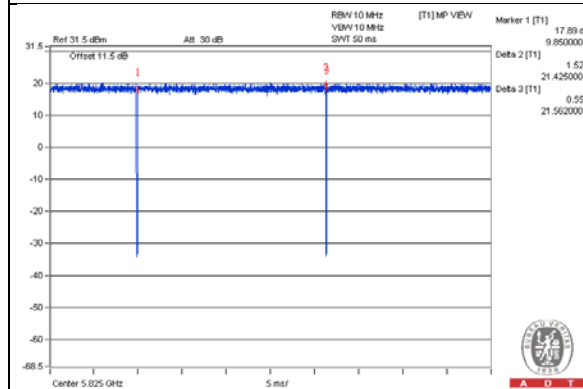
802.11a: Duty cycle = $21.425 \text{ ms} / 21.562 \text{ ms} = 0.994$

802.11ac (VHT20): Duty cycle = $19.787 \text{ ms} / 20 \text{ ms} = 0.989$

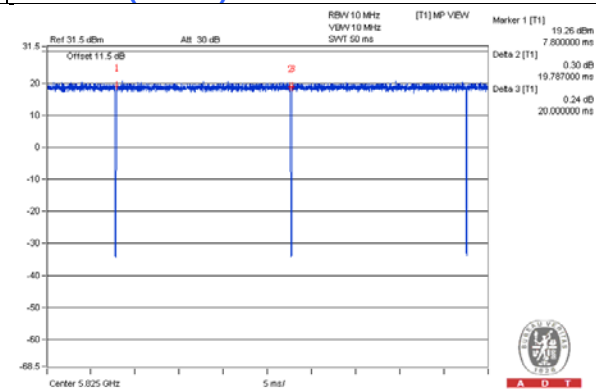
802.11ac (VHT40): Duty cycle = $9.54 \text{ ms} / 9.645 \text{ ms} = 0.989$

802.11ac (VHT80): Duty cycle = $4.425 \text{ ms} / 4.54 \text{ ms} = 0.975$, Duty factor = $10 * \log(1/0.975) = 0.11$

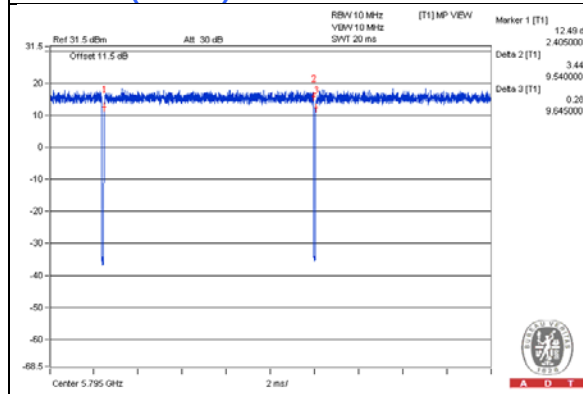
802.11a



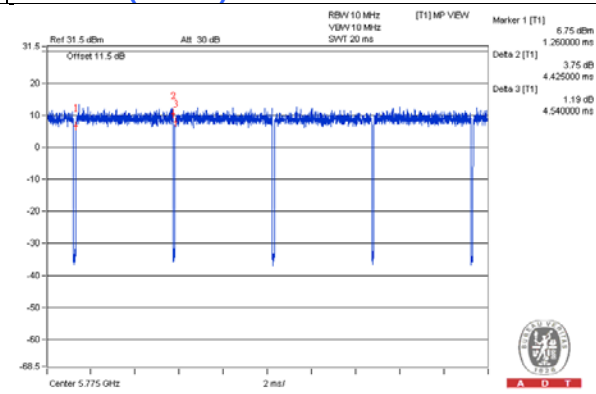
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



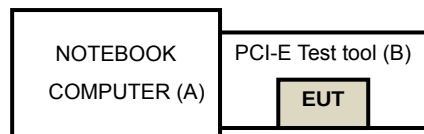
3.5 Description of Support Units

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

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
B	PCI-E Test tool	Qualcomm Atheros	NA	NA	NA	Supplied by Client

NOTE: All power cords of the above support units are non-shielded (1.8 m).

3.5.1 Configuration of System under Test



3.6 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

4 Test Types and Results (FOR 2.4GHz BAND)

4.1 Conducted Output Power Measurement

4.1.1 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,

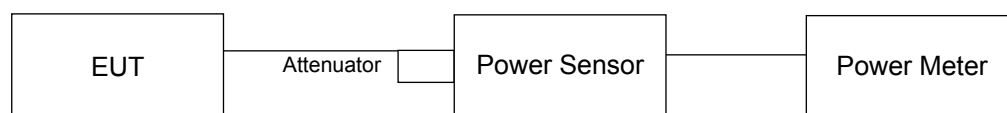
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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.

4.1.2 Test Setup



4.1.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power Sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 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. Tested date : Feb. 09, 2015

4.1.4 Test Procedures

The 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.

4.1.5 Deviation from Test Standard

No deviation.

4.1.6 EUT Operating Conditions

The software (QCart Version: 3.0.33.0) provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.1.7 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				
1	2412	20.81	20.65	236.649	23.74	29.37	Pass
6	2437	21.15	21.56	273.536	24.37	29.37	Pass
11	2462	21.36	20.65	252.918	24.03	29.37	Pass
12	2467	20.05	19.72	194.914	22.90	29.37	Pass
13	2472	13.20	12.99	40.8	16.11	29.37	Pass

NOTE: Directional gain = $3.62\text{dBi} + 10\log(2) = 6.63\text{dBi} > 6\text{dBi}$, therefore the limit needs to reduce, so the power limit shall be reduced to $30-(6.63-6) = 29.37\text{dBm}$.

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.85	22.07	314.174	24.97	29.37	Pass
6	2437	24.10	24.03	509.97	27.08	29.37	Pass
11	2462	21.07	21.36	264.711	24.23	29.37	Pass
12	2467	18.23	18.28	133.825	21.27	29.37	Pass
13	2472	8.69	8.63	14.691	11.67	29.37	Pass

NOTE: Directional gain = $3.62\text{dBi} + 10\log(2) = 6.63\text{dBi} > 6\text{dBi}$, therefore the limit needs to reduce, so the power limit shall be reduced to $30-(6.63-6) = 29.37\text{dBm}$.

VHT20

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.58	21.65	290.098	24.63	29.37	Pass
6	2437	23.74	24.27	503.893	27.02	29.37	Pass
11	2462	21.24	21.35	269.503	24.31	29.37	Pass
12	2467	17.76	18.02	123.091	20.90	29.37	Pass
13	2472	7.21	7.61	11.028	10.42	29.37	Pass

NOTE: Directional gain = $3.62\text{dBi} + 10\log(2) = 6.63\text{dBi} > 6\text{dBi}$, therefore the limit needs to reduce, so the power limit shall be reduced to $30-(6.63-6) = 29.37\text{dBm}$.

VHT40

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	18.19	18.14	131.08	21.18	29.37	Pass
6	2437	23.08	23.41	422.516	26.26	29.37	Pass
9	2452	17.17	17.39	106.947	20.29	29.37	Pass
10	2457	17.59	17.78	117.391	20.70	29.37	Pass
11	2462	8.97	9.08	15.98	12.04	29.37	Pass

NOTE: Directional gain = $3.62\text{dBi} + 10\log(2) = 6.63\text{dBi} > 6\text{dBi}$, therefore the limit needs to reduce, so the power limit shall be reduced to $30-(6.63-6) = 29.37\text{dBm}$.

FOR AVERAGE POWER

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	18.35	18.22	134.765	21.30
6	2437	18.57	18.95	150.469	21.77
11	2462	18.83	18.13	141.397	21.50
12	2467	17.45	17.23	108.435	20.35
13	2472	10.62	10.32	22.300	13.48

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	15.23	15.69	70.411	18.48
6	2437	18.74	18.57	146.762	21.67
11	2462	14.55	14.64	57.617	17.61
12	2467	11.63	11.85	29.866	14.75
13	2472	2.07	2.04	3.211	5.07

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	15.17	15.47	68.122	18.33
6	2437	18.58	19.12	153.769	21.87
11	2462	14.64	14.79	59.237	17.73
12	2467	11.67	11.72	29.548	14.71
13	2472	0.96	0.94	2.489	3.96

VHT40

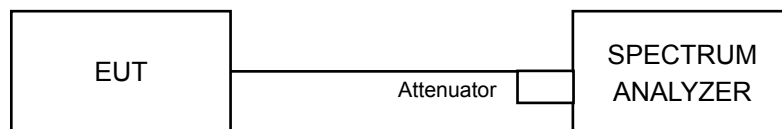
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	11.14	11.46	26.998	14.31
6	2437	16.79	17.21	100.355	20.02
9	2452	10.37	10.56	22.265	13.48
10	2457	10.80	10.76	23.935	13.79
11	2462	1.99	2.04	3.181	5.03

4.2 Power Spectral Density Measurement

4.2.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.2.2 Test Setup



4.2.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 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. Tested date :Feb. 09, 2015

4.2.4 Test Procedures

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

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

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

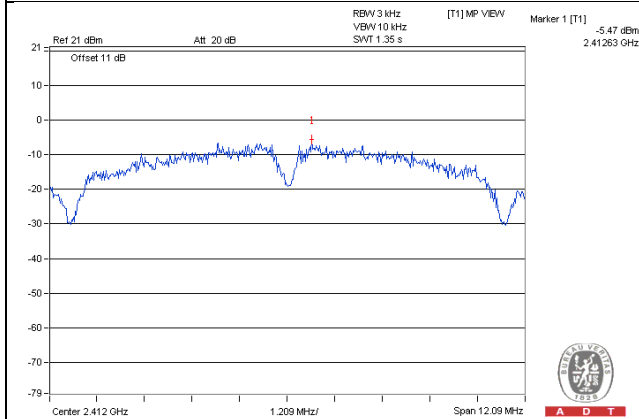
4.2.7 Test Results

802.11b

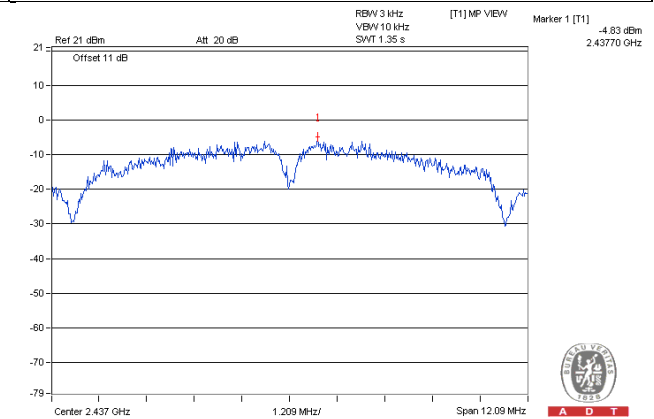
TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-5.47	3.01	-2.46	7.37	Pass
	6	2437	-4.83	3.01	-1.82	7.37	Pass
	11	2462	-5.77	3.01	-2.76	7.37	Pass
	12	2467	-7.22	3.01	-4.21	7.37	Pass
	13	2472	-14.03	3.01	-11.02	7.37	Pass
1	1	2412	-6.18	3.01	-3.17	7.37	Pass
	6	2437	-4.51	3.01	-1.50	7.37	Pass
	11	2462	-5.90	3.01	-2.89	7.37	Pass
	12	2467	-5.66	3.01	-2.65	7.37	Pass
	13	2472	-13.20	3.01	-10.19	7.37	Pass

NOTE: Directional gain = $3.62\text{dBi} + 10\log(2) = 6.63\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.63 - 6) = 7.37\text{dBm}$.

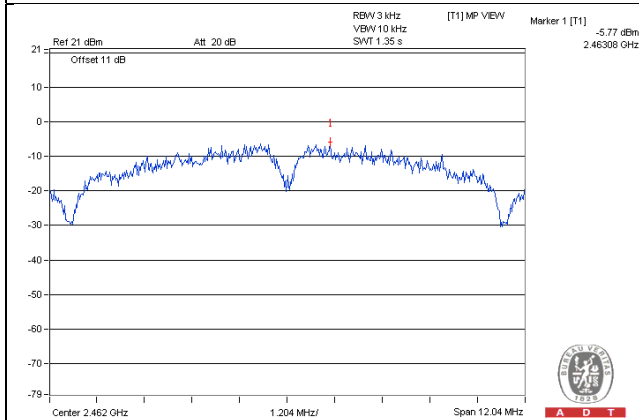
Chain 0 / CH1



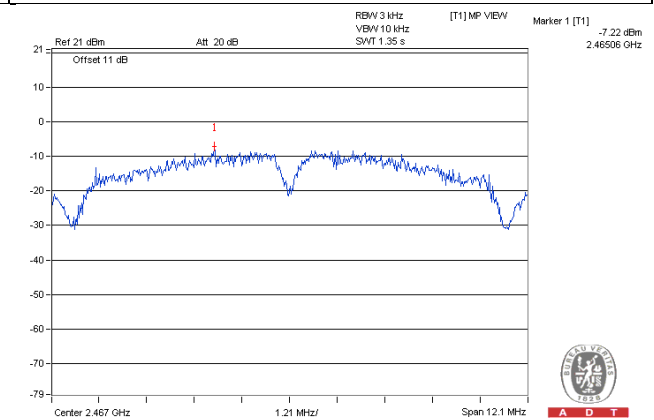
Chain 0 / CH6



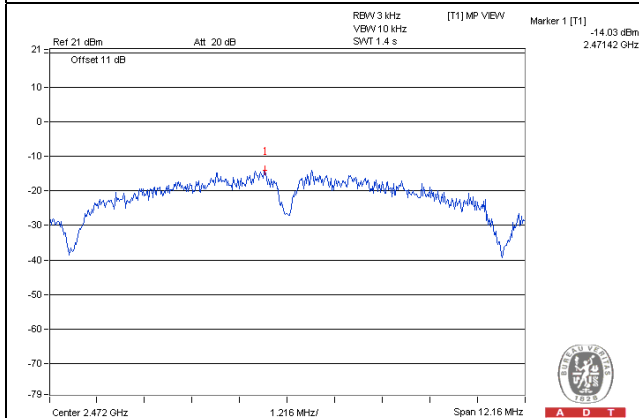
Chain 0 / CH11



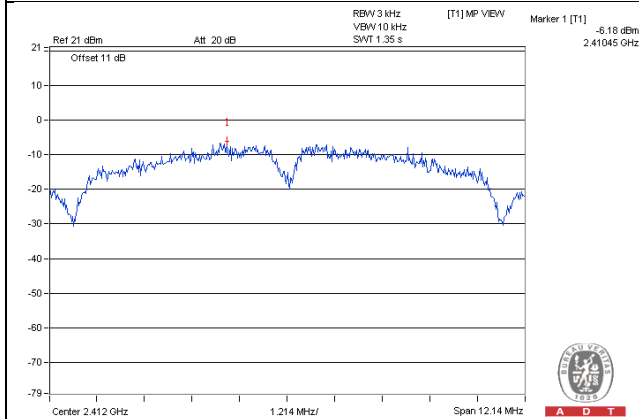
Chain 0 / CH12



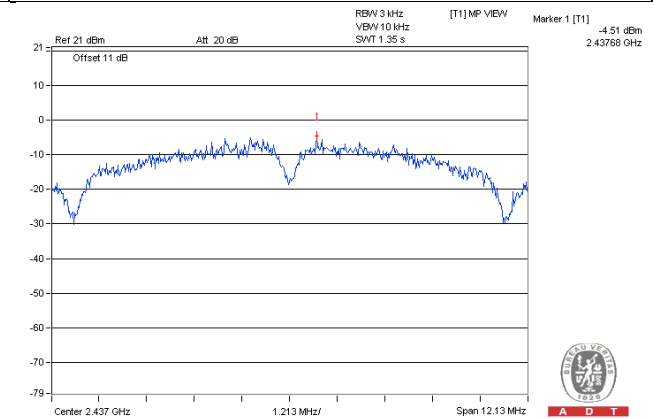
Chain 0 / CH13



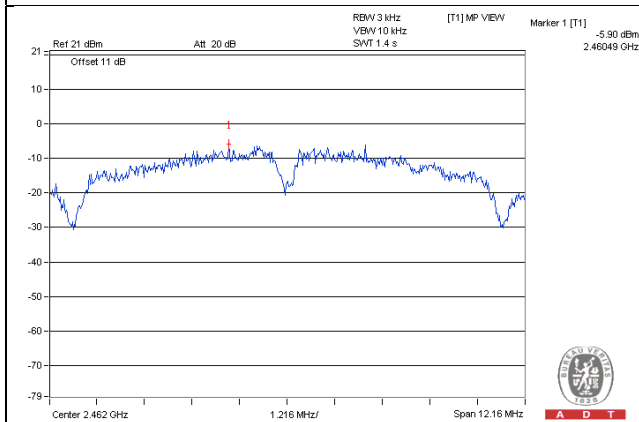
Chain 1/ CH1



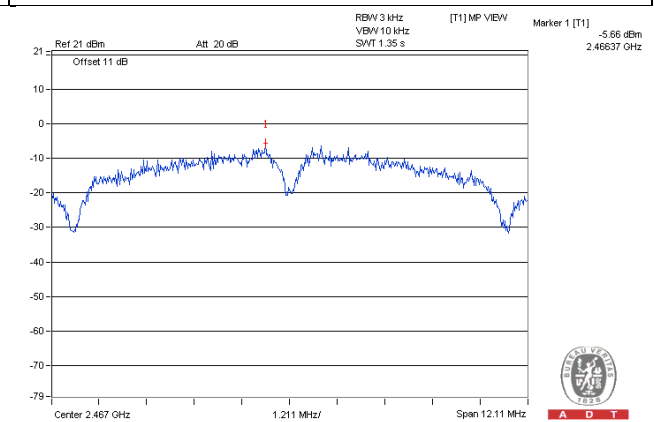
Chain 1/ CH6



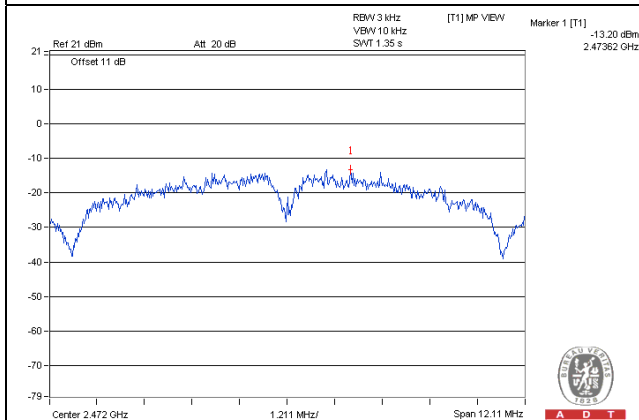
Chain 1/ CH11



Chain 1/ CH12



Chain 1/ CH13

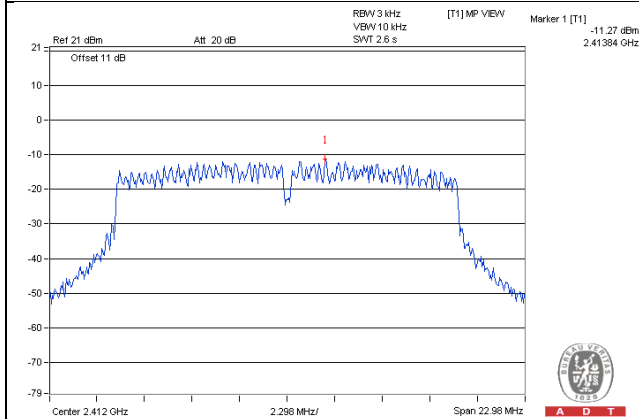


802.11g

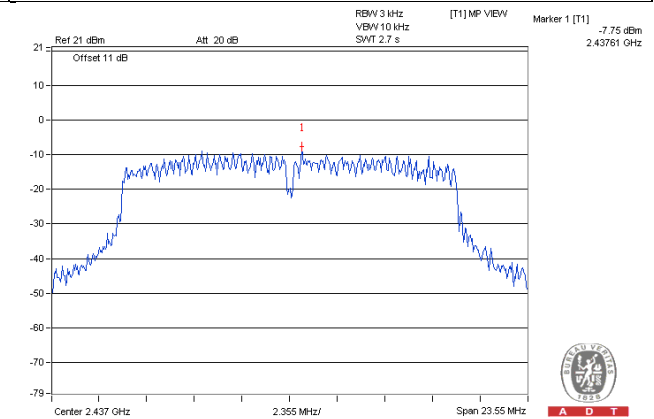
TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-11.27	3.01	-8.26	7.37	Pass
	6	2437	-7.75	3.01	-4.74	7.37	Pass
	11	2462	-12.47	3.01	-9.46	7.37	Pass
	12	2467	-15.45	3.01	-12.44	7.37	Pass
	13	2472	-24.94	3.01	-21.93	7.37	Pass
1	1	2412	-10.55	3.01	-7.54	7.37	Pass
	6	2437	-8.04	3.01	-5.03	7.37	Pass
	11	2462	-11.59	3.01	-8.58	7.37	Pass
	12	2467	-15.45	3.01	-12.44	7.37	Pass
	13	2472	-24.49	3.01	-21.48	7.37	Pass

NOTE: Directional gain = 3.62dBi + 10log(2) = 6.63dBi > 6dBi , so the power density limit shall be reduced to 8-(6.63-6) = 7.37dBm.

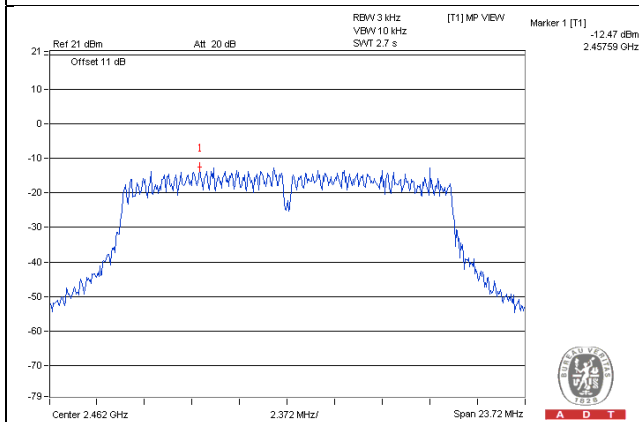
Chain 0 / CH1



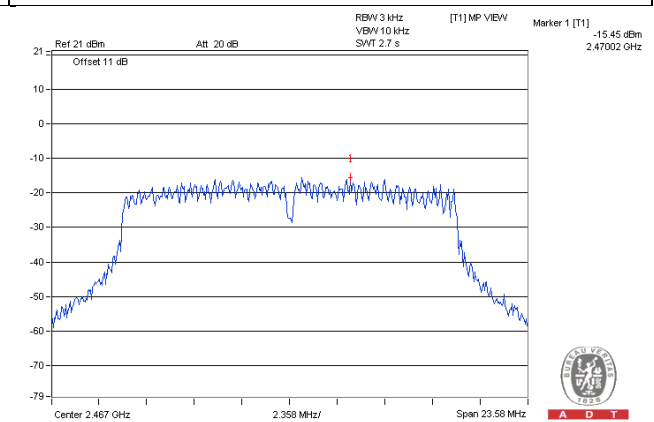
Chain 0 / CH6



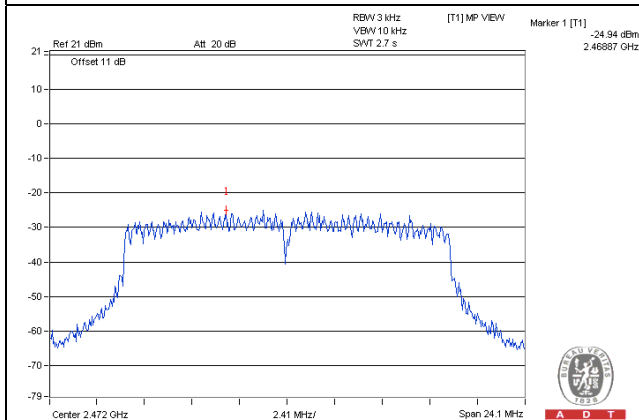
Chain 0 / CH11



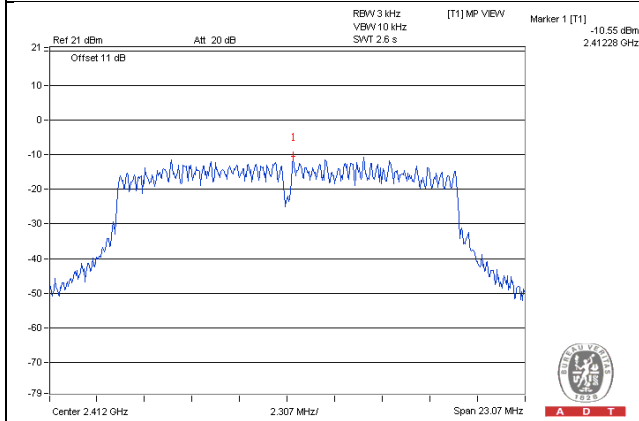
Chain 0 / CH12



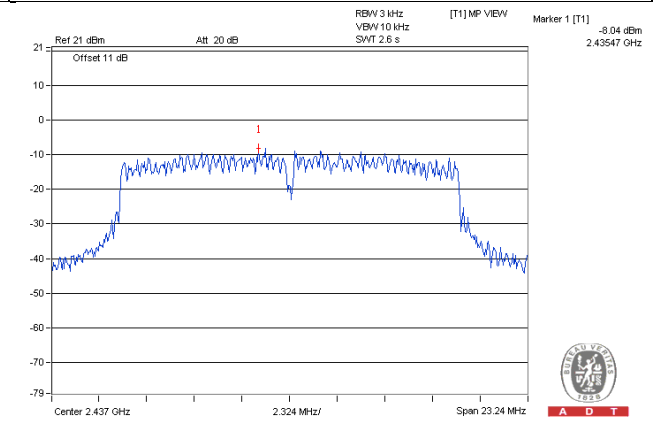
Chain 0 / CH13



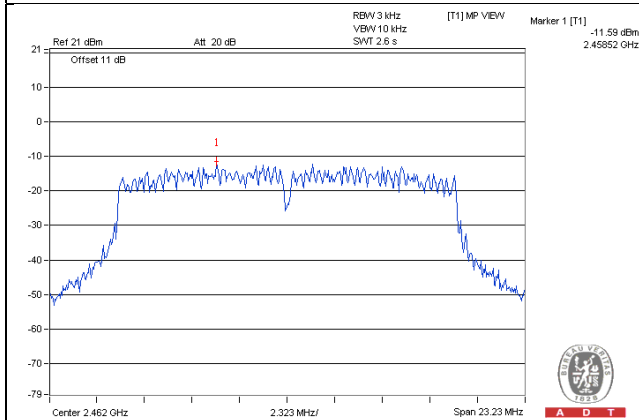
Chain 1/ CH1



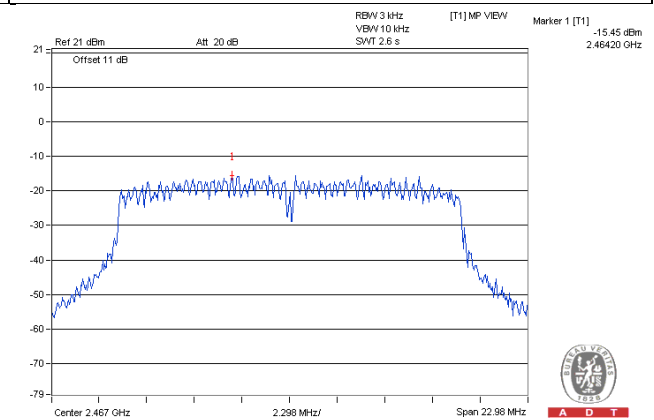
Chain 1/ CH6



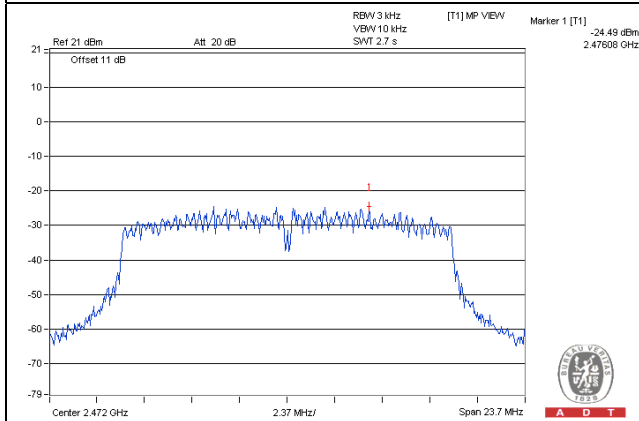
Chain 1/ CH11



Chain 1/ CH12



Chain 1/ CH13

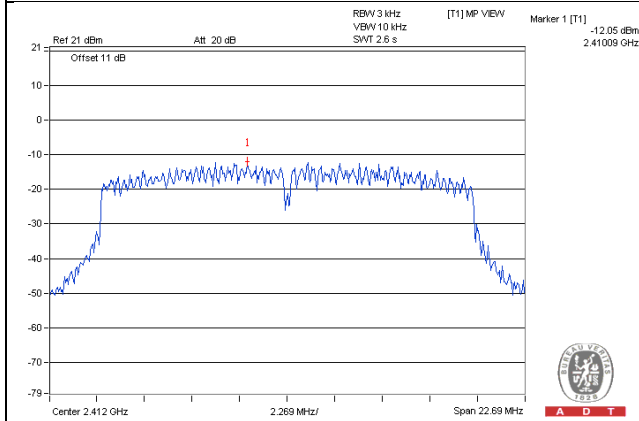


VHT20

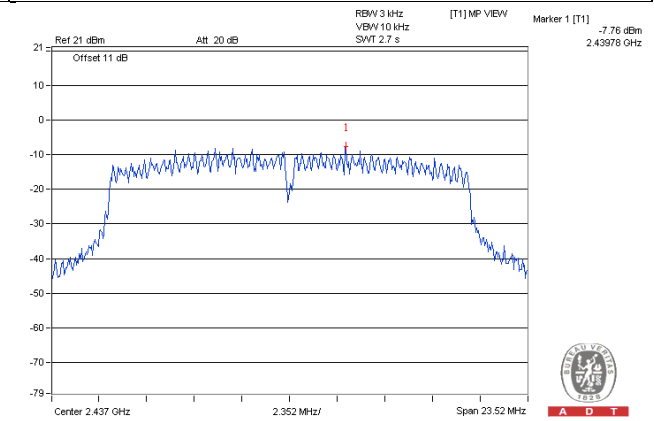
TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-12.05	3.01	-9.04	7.37	Pass
	6	2437	-7.76	3.01	-4.75	7.37	Pass
	11	2462	-12.77	3.01	-9.76	7.37	Pass
	12	2467	-15.29	3.01	-12.28	7.37	Pass
	13	2472	-26.17	3.01	-23.16	7.37	Pass
1	1	2412	-11.68	3.01	-8.67	7.37	Pass
	6	2437	-8.21	3.01	-5.20	7.37	Pass
	11	2462	-11.64	3.01	-8.63	7.37	Pass
	12	2467	-14.91	3.01	-11.90	7.37	Pass
	13	2472	-26.55	3.01	-23.54	7.37	Pass

NOTE: Directional gain = $3.62\text{dBi} + 10\log(2) = 6.63\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.63-6) = 7.37\text{dBm}$.

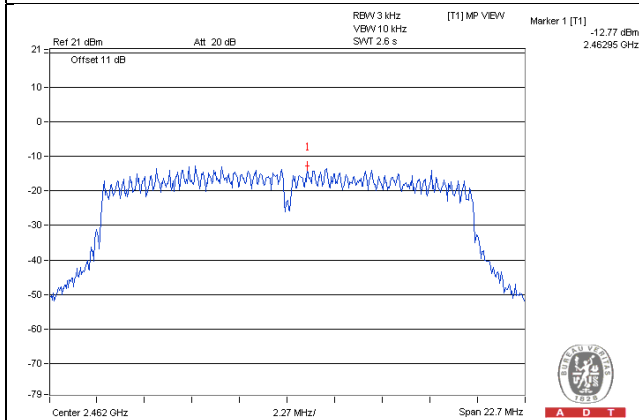
Chain 0 / CH1



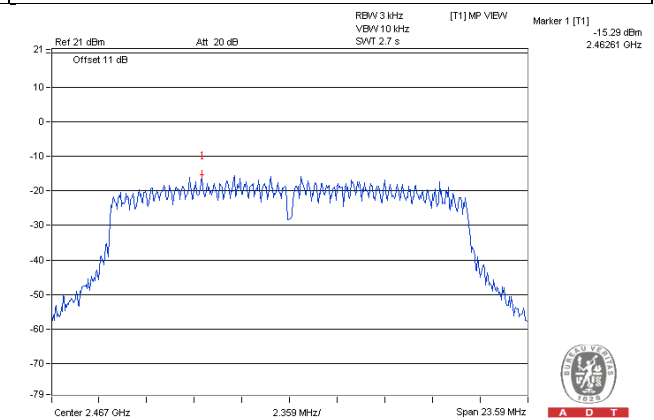
Chain 0 / CH6



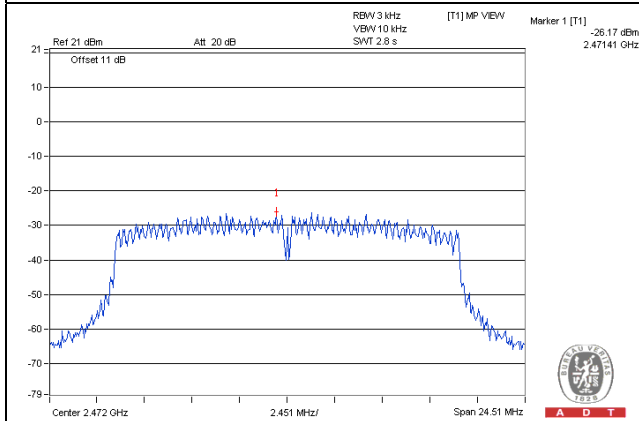
Chain 0 / CH11



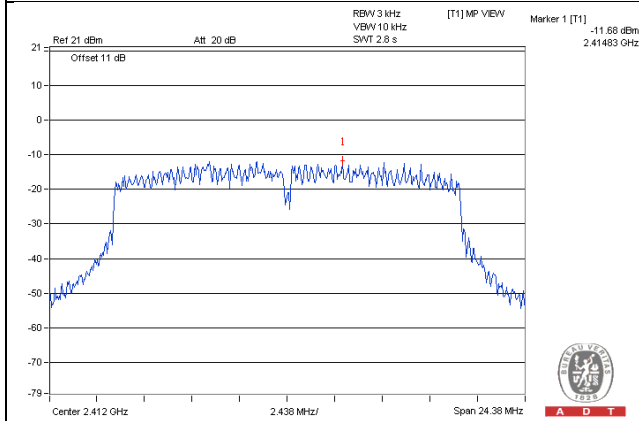
Chain 0 / CH12



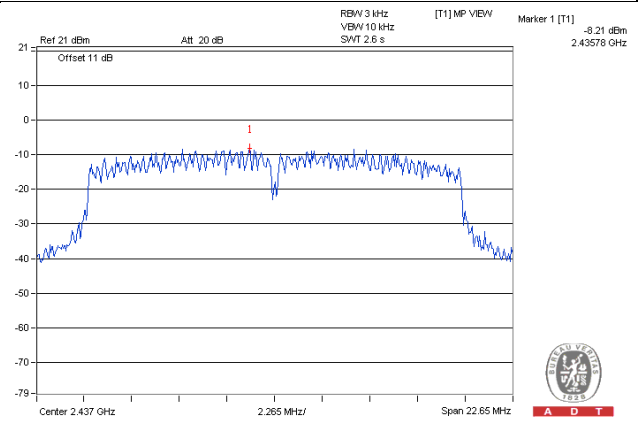
Chain 0 / CH13



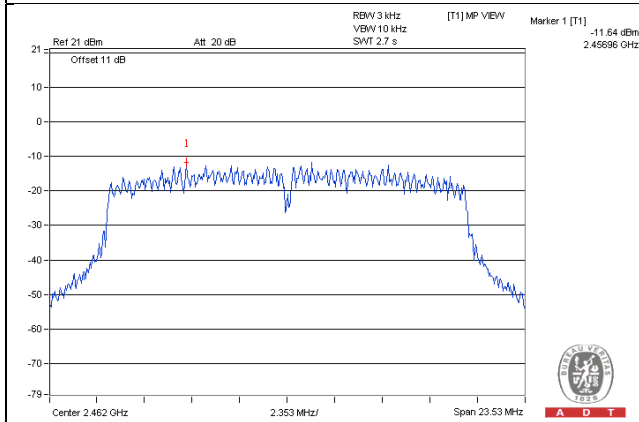
Chain 1/ CH1



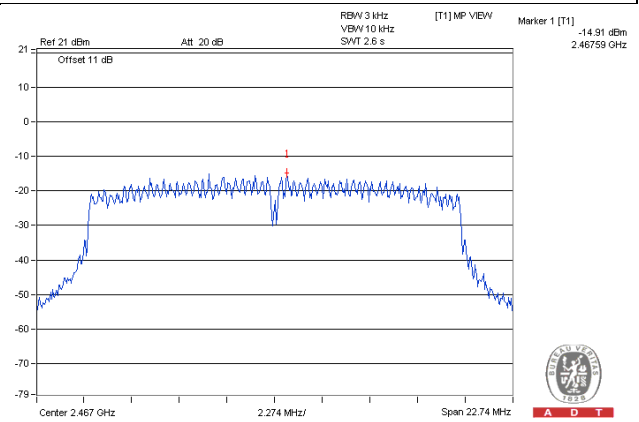
Chain 1/ CH6



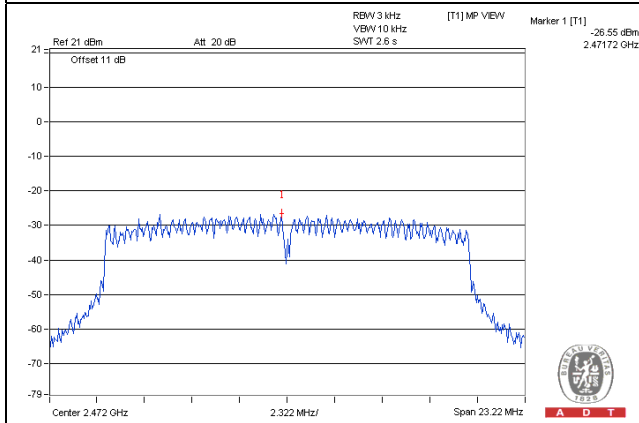
Chain 1/ CH11



Chain 1/ CH12



Chain 1/ CH13

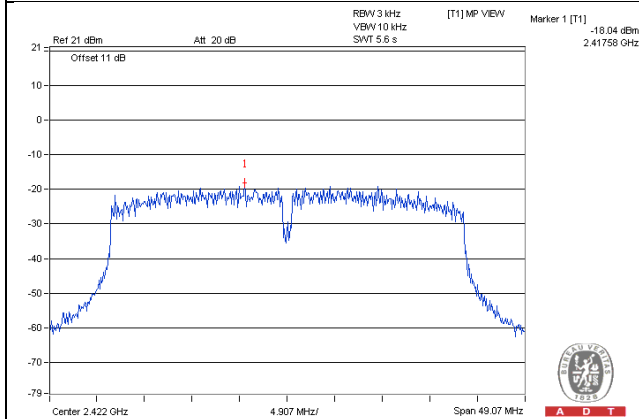


VHT40

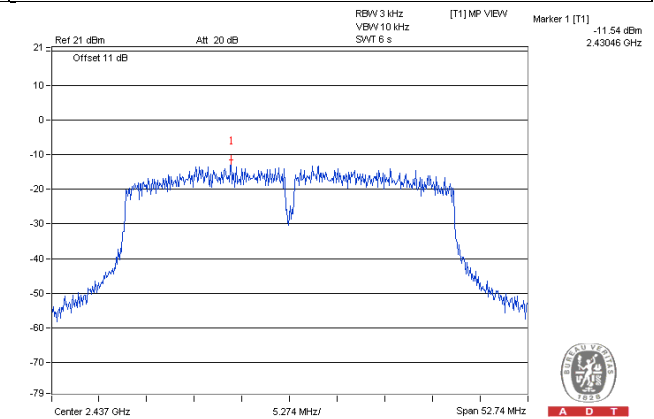
TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-18.04	3.01	-15.03	7.37	Pass
	6	2437	-11.54	3.01	-8.53	7.37	Pass
	9	2452	-19.53	3.01	-16.52	7.37	Pass
	10	2457	-19.19	3.01	-16.18	7.37	Pass
	11	2462	-27.88	3.01	-24.87	7.37	Pass
1	3	2422	-17.84	3.01	-14.83	7.37	Pass
	6	2437	-11.78	3.01	-8.77	7.37	Pass
	9	2452	-18.70	3.01	-15.69	7.37	Pass
	10	2457	-19.13	3.01	-16.12	7.37	Pass
	11	2462	-27.75	3.01	-24.74	7.37	Pass

NOTE: Directional gain = 3.62dBi + 10log(2) = 6.63dBi > 6dBi , so the power density limit shall be reduced to 8-(6.63-6) = 7.37dBm.

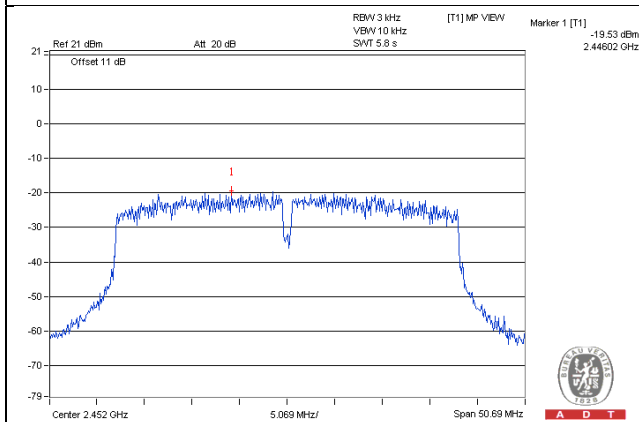
Chain 0 / CH3



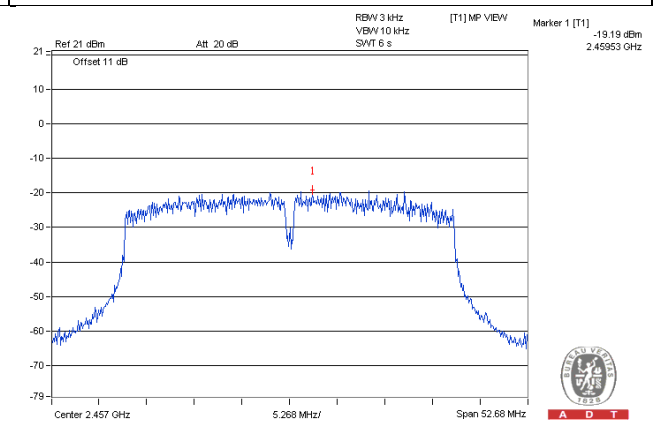
Chain 0 / CH6



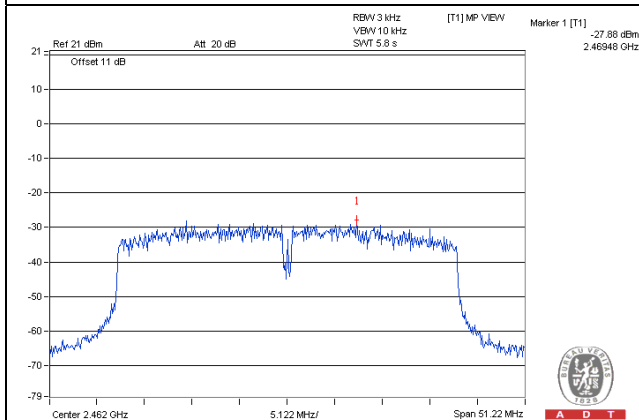
Chain 0 / CH9



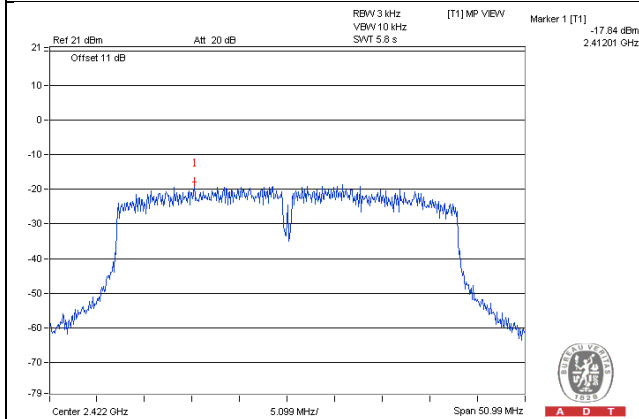
Chain 0 / CH10



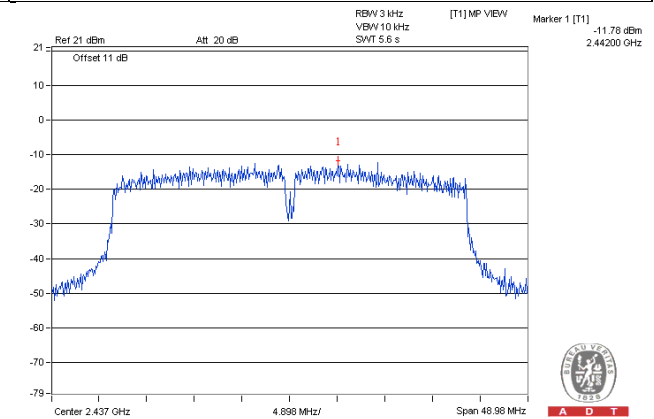
Chain 0 / CH11



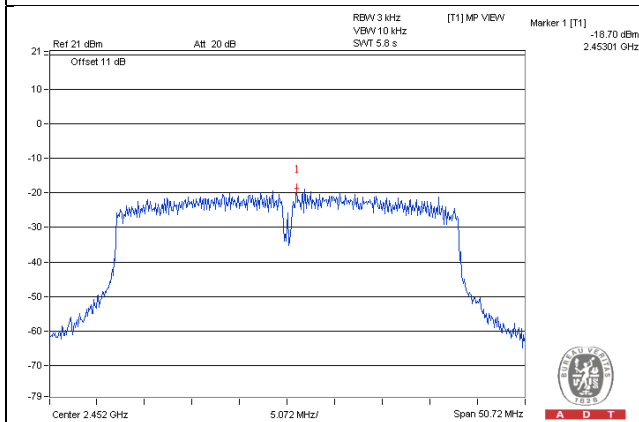
Chain 1/ CH3



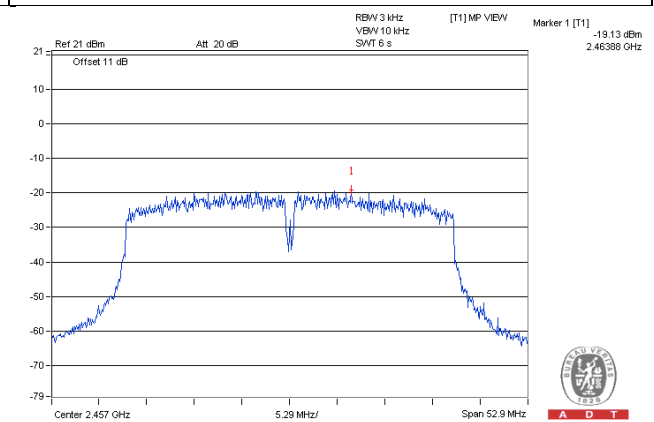
Chain 1/ CH6



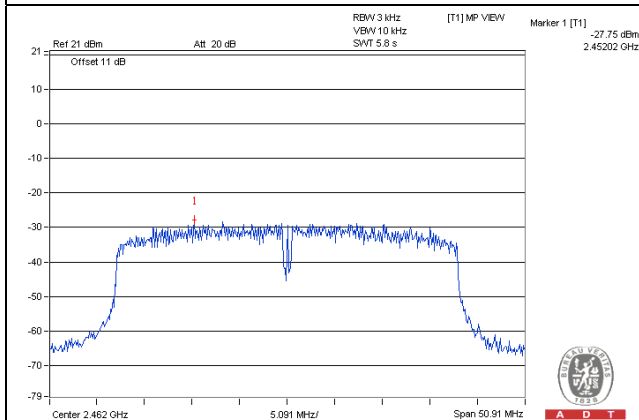
Chain 1/ CH9



Chain 1/ CH10



Chain 1/ CH11

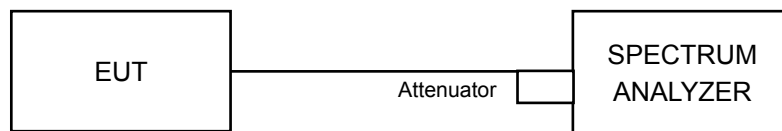


4.3 6dB Bandwidth Measurement

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 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. Tested date :Feb. 09, 2015

4.3.4 Test Procedures

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

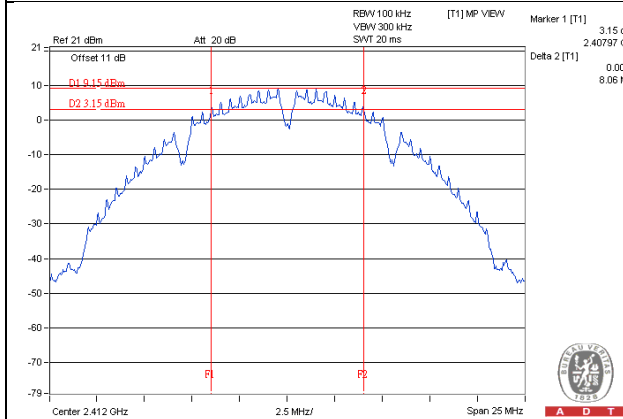
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results

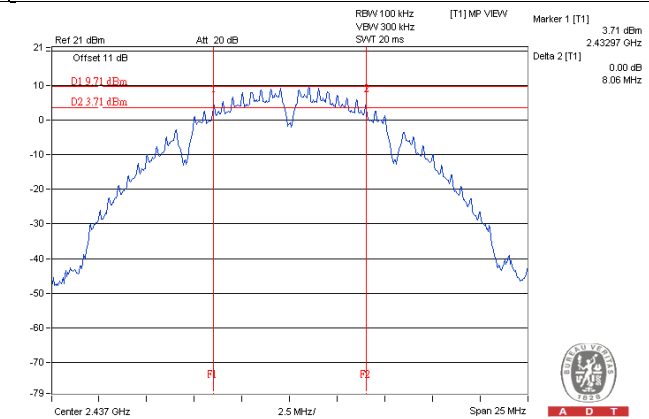
802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	8.06	8.10	0.5	Pass
6	2437	8.06	8.09	0.5	Pass
11	2462	8.03	8.11	0.5	Pass
12	2467	8.07	8.08	0.5	Pass
13	2472	8.11	8.08	0.5	Pass

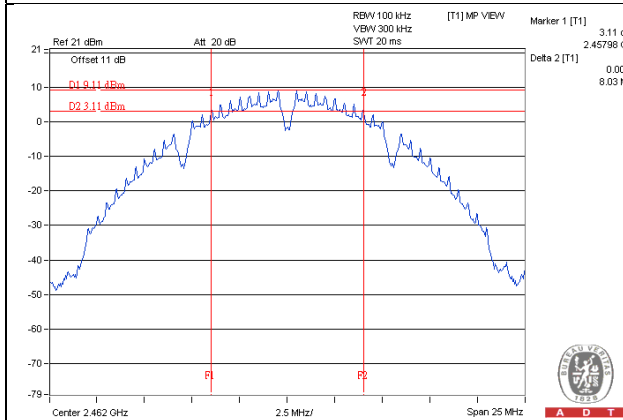
Chain 0 / CH1



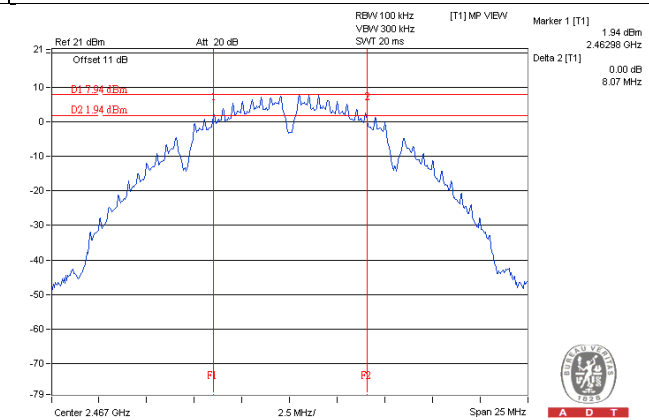
Chain 0 / CH6



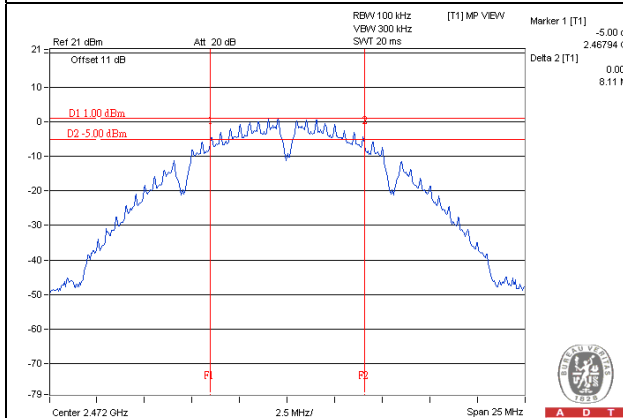
Chain 0 / CH11



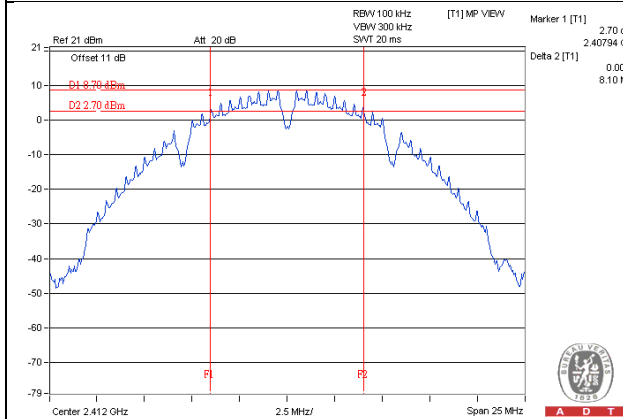
Chain 0 / CH12



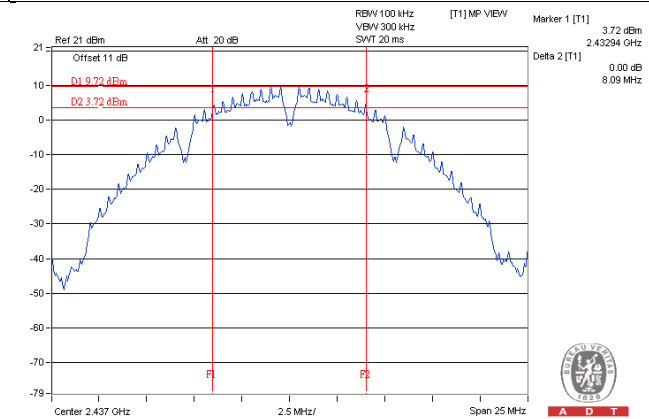
Chain 0 / CH13



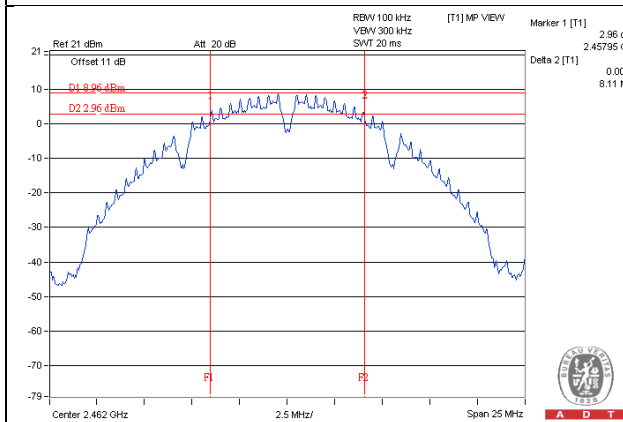
Chain 1/ CH1



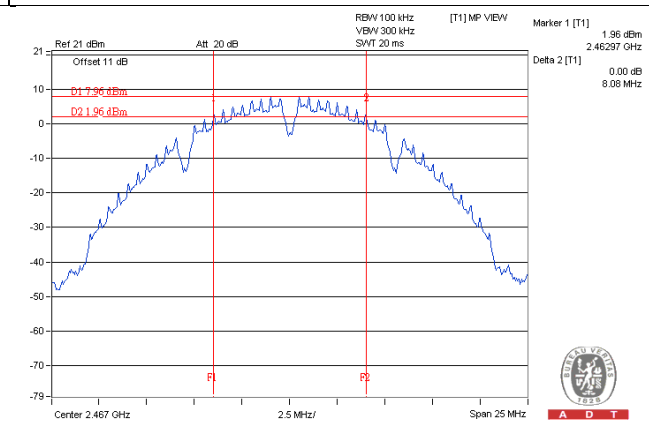
Chain 1/ CH6



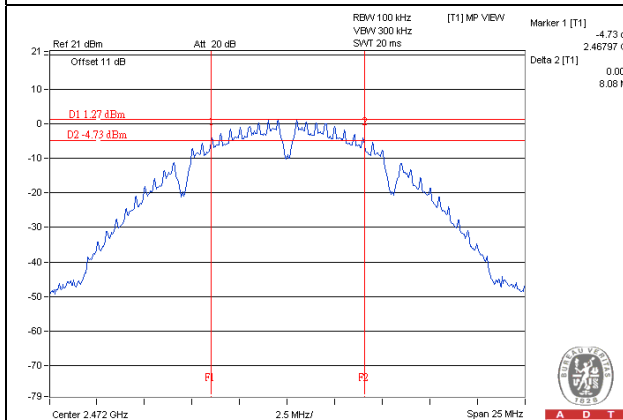
Chain 1/ CH11



Chain 1/ CH12



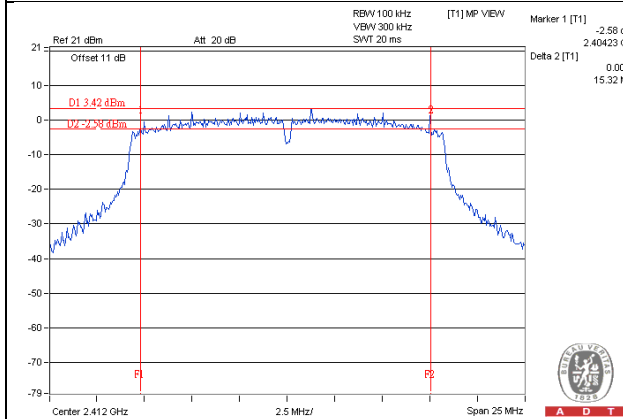
Chain 1/ CH13



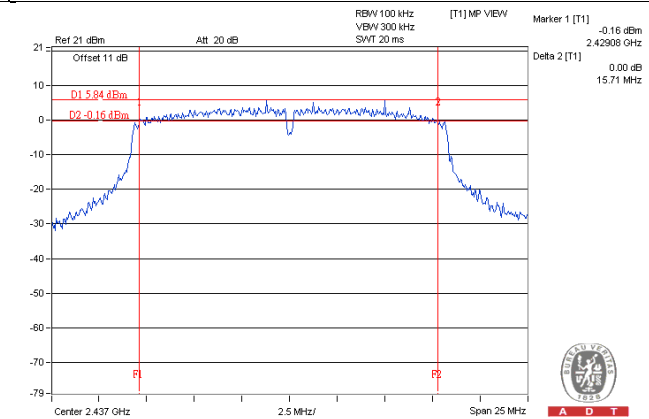
802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.32	15.38	0.5	Pass
6	2437	15.71	15.49	0.5	Pass
11	2462	15.81	15.49	0.5	Pass
12	2467	15.72	15.32	0.5	Pass
13	2472	16.07	15.80	0.5	Pass

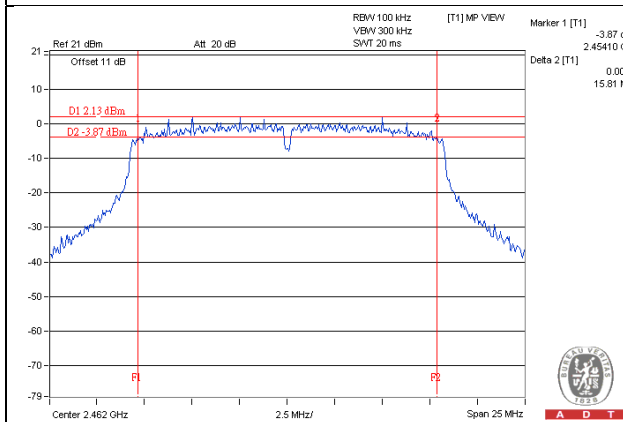
Chain 0 / CH1



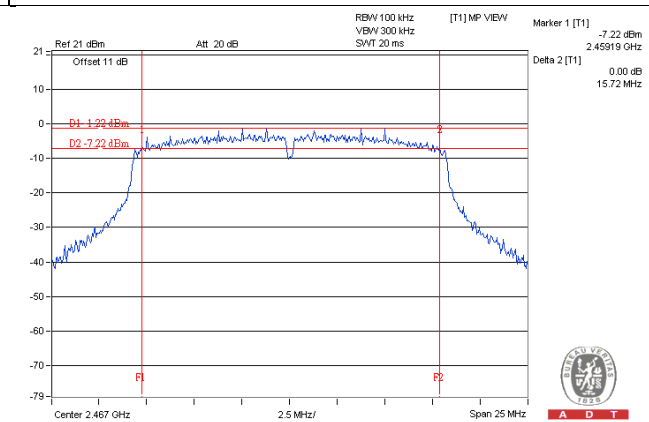
Chain 0 / CH6



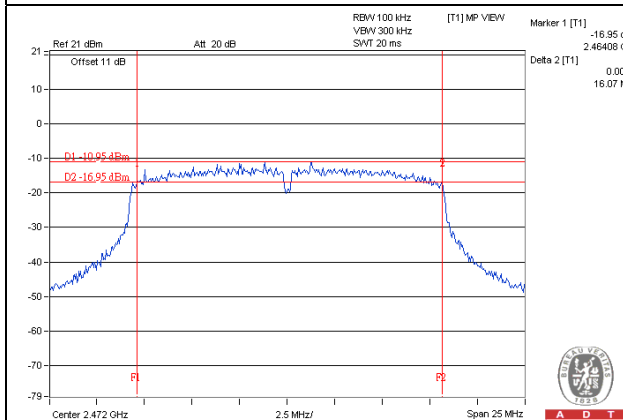
Chain 0 / CH11



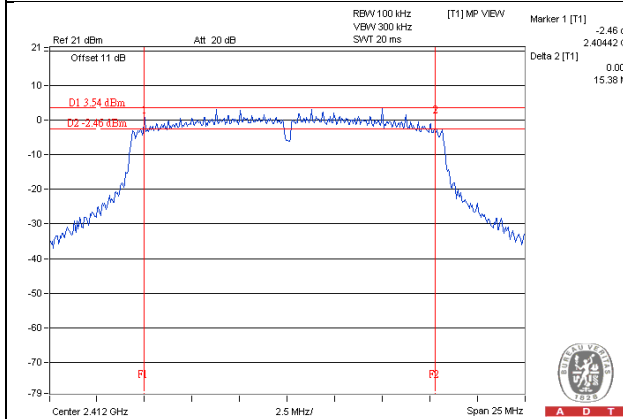
Chain 0 / CH12



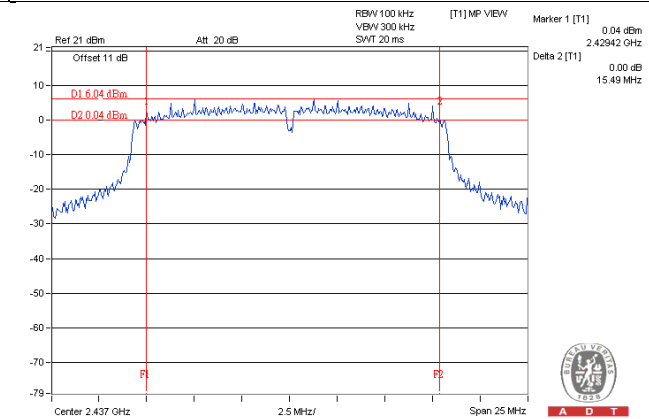
Chain 0 / CH13



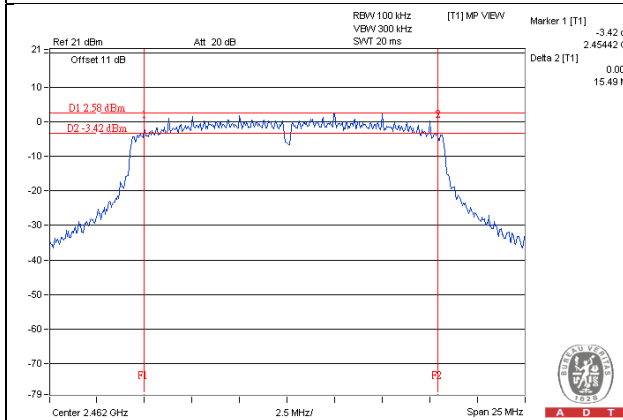
Chain 1/ CH1



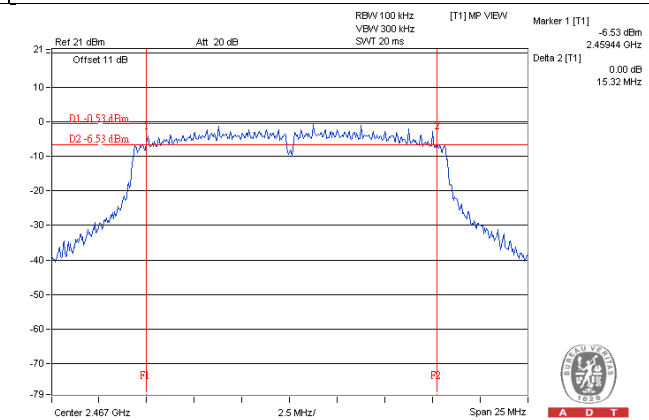
Chain 1/ CH6



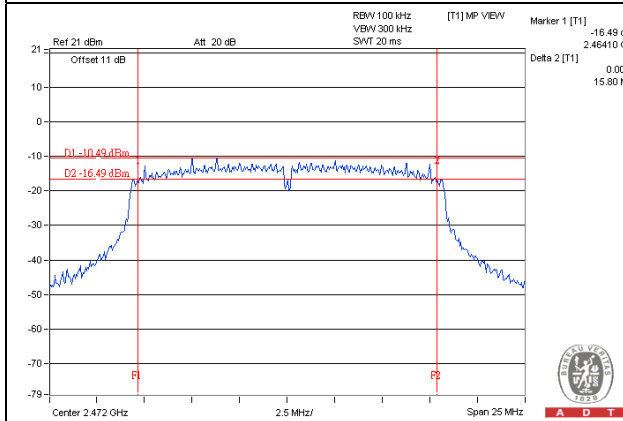
Chain 1/ CH11



Chain 1/ CH12



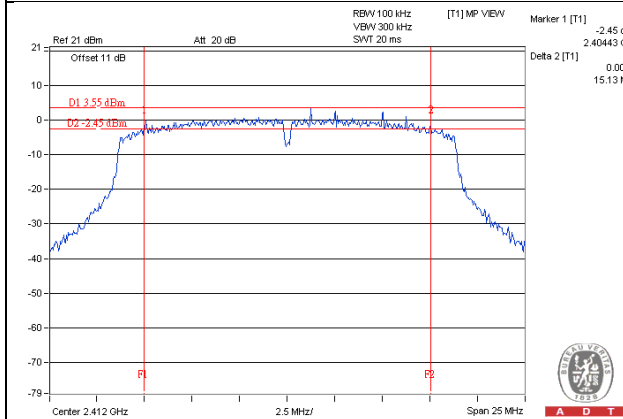
Chain 1/ CH13



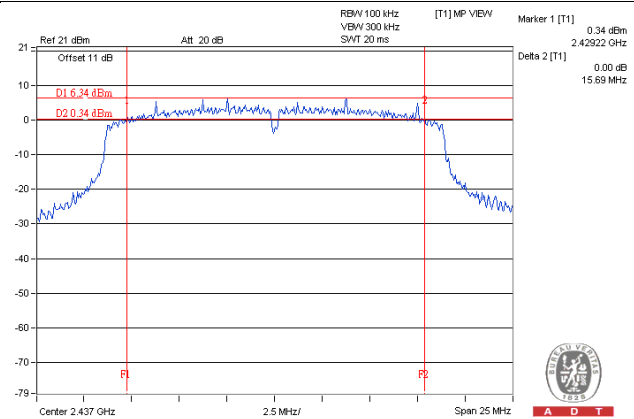
VHT20

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.13	16.26	0.5	Pass
6	2437	15.69	15.11	0.5	Pass
11	2462	15.14	15.69	0.5	Pass
12	2467	15.73	15.16	0.5	Pass
13	2472	16.34	15.48	0.5	Pass

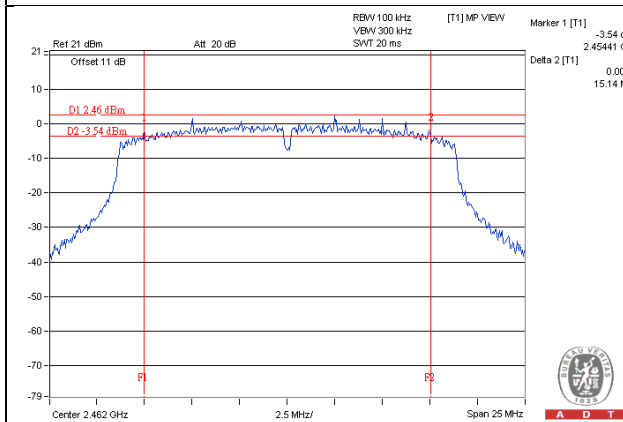
Chain 0 / CH1



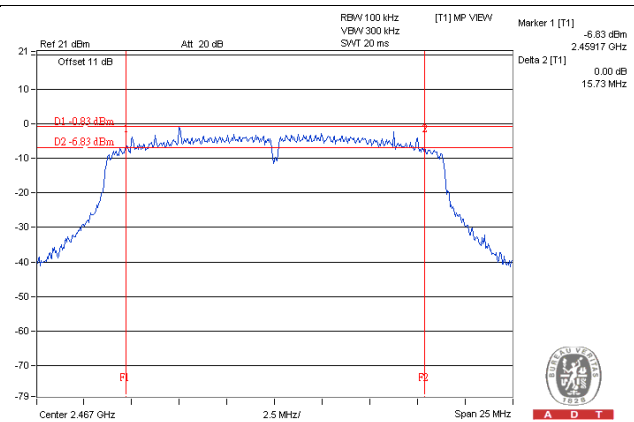
Chain 0 / CH6



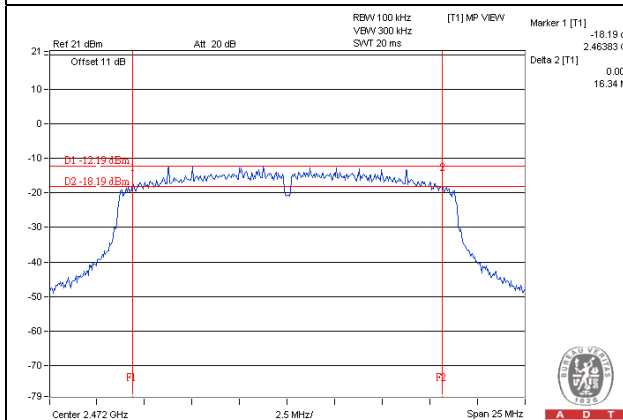
Chain 0 / CH11



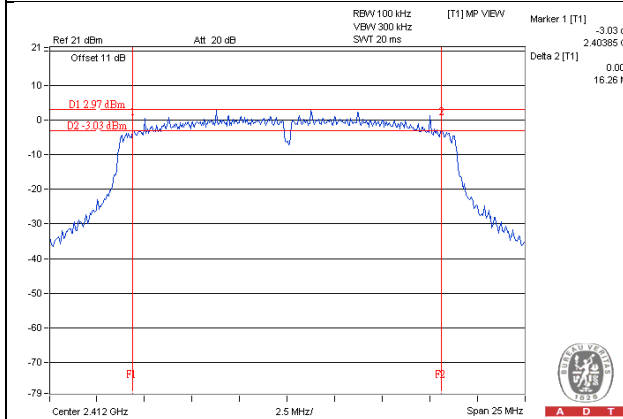
Chain 0 / CH12



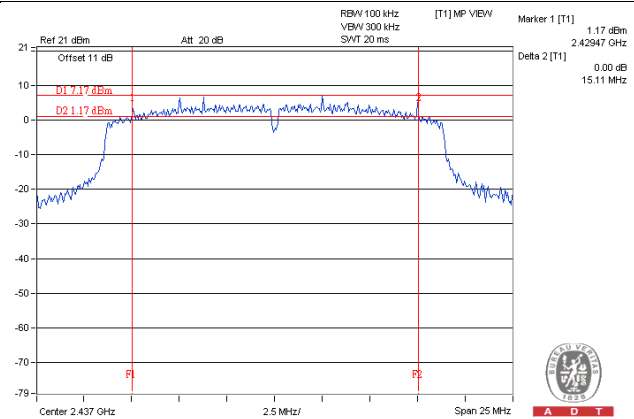
Chain 0 / CH13



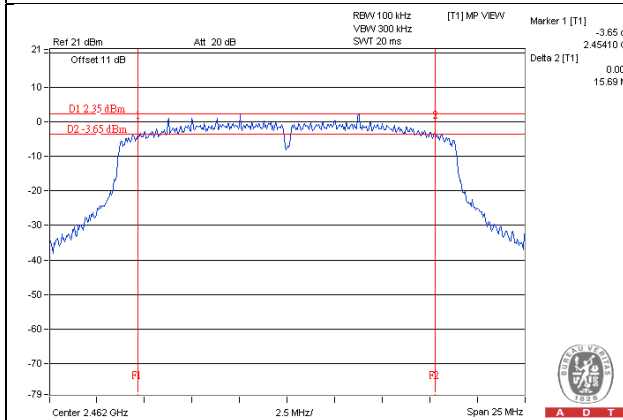
Chain 1/ CH1



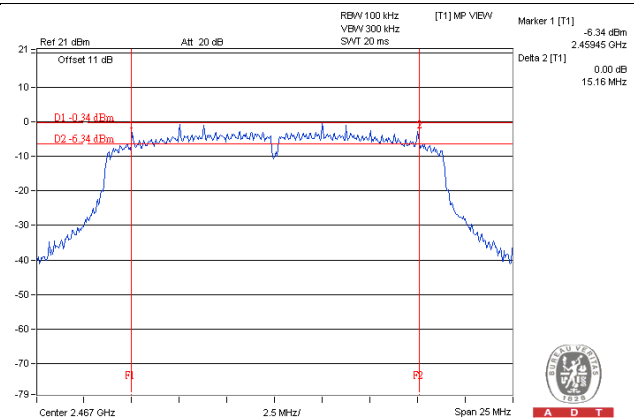
Chain 1/ CH6



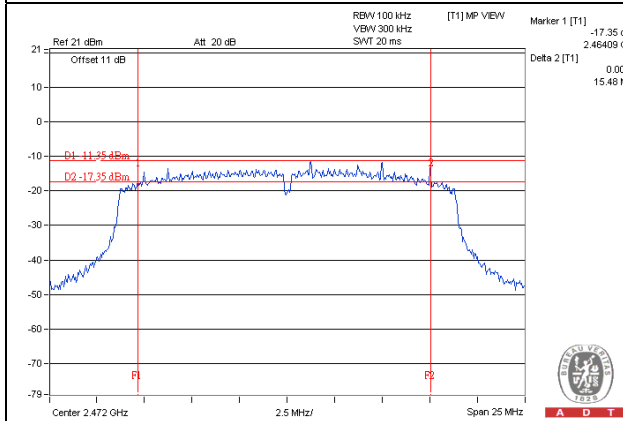
Chain 1/ CH11



Chain 1/ CH12



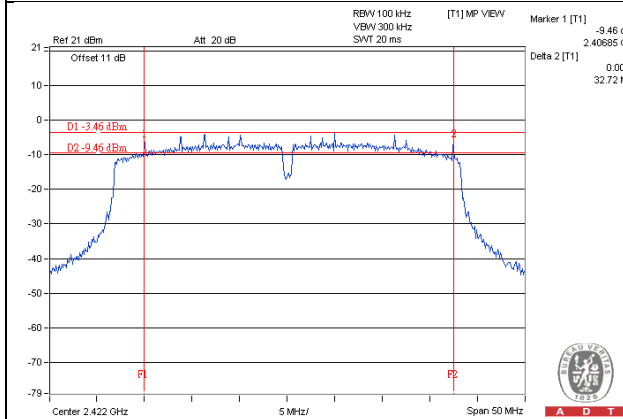
Chain 1/ CH13



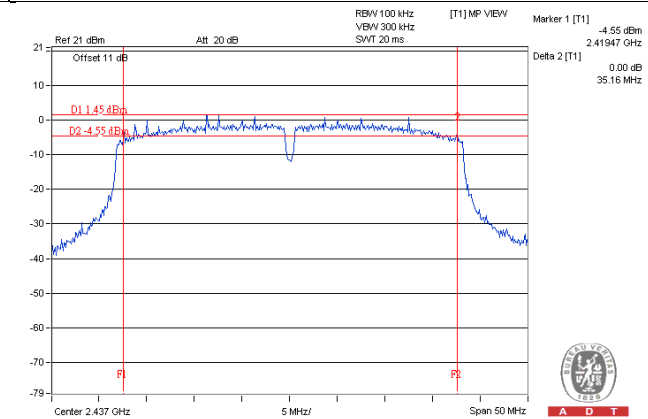
VHT40

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	32.72	34.00	0.5	Pass
6	2437	35.16	32.66	0.5	Pass
9	2452	33.80	33.81	0.5	Pass
10	2457	35.12	35.27	0.5	Pass
11	2462	34.15	33.95	0.5	Pass

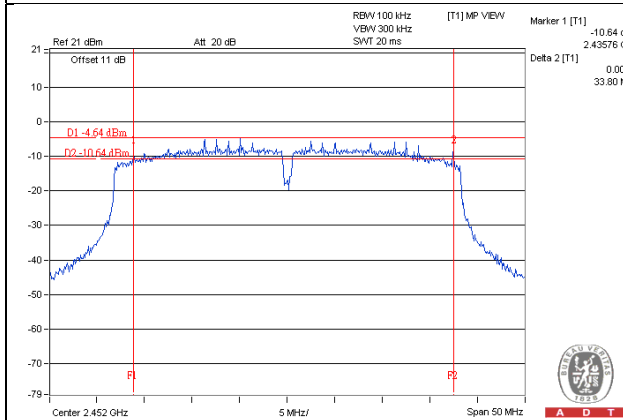
Chain 0 / CH3



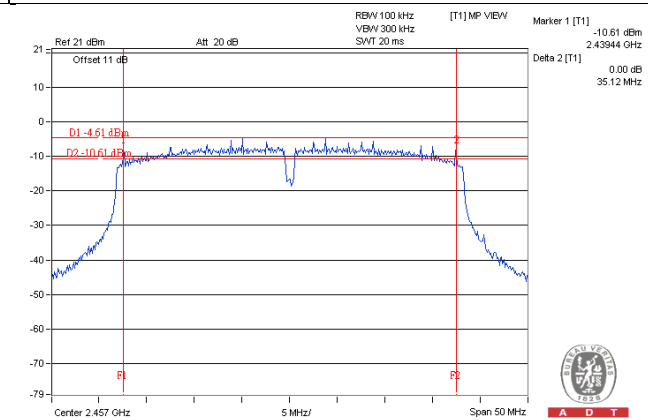
Chain 0 / CH6



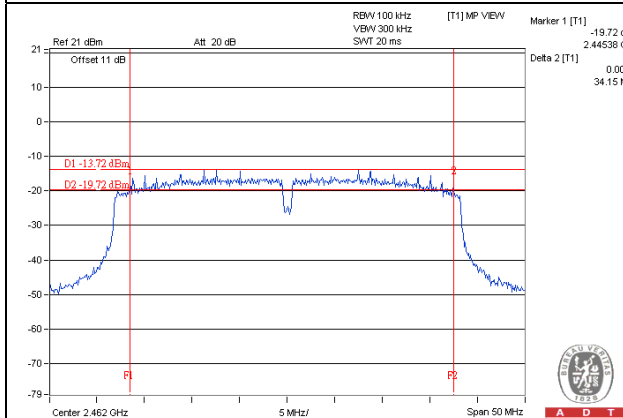
Chain 0 / CH9



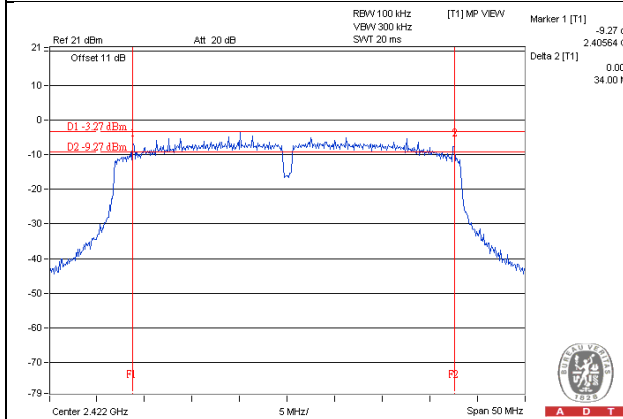
Chain 0 / CH10



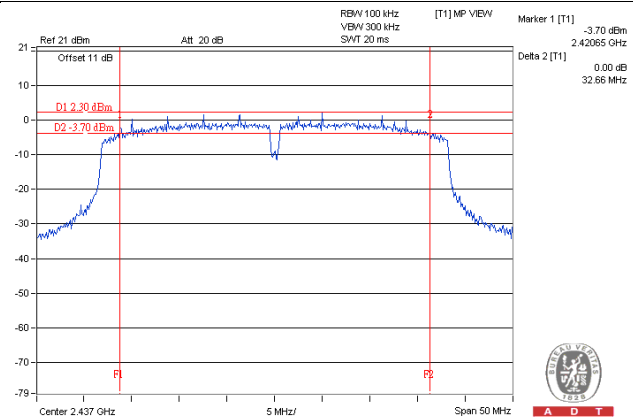
Chain 0 / CH11



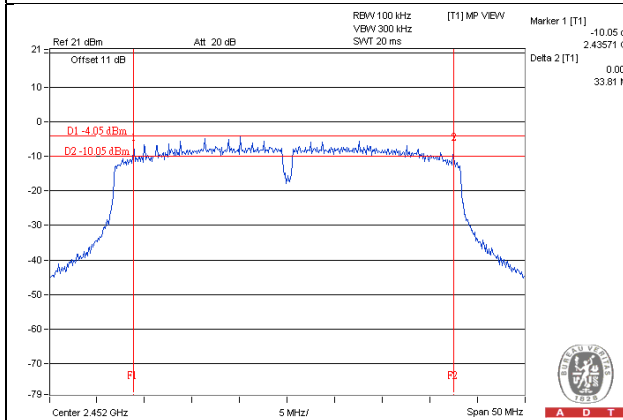
Chain 1/ CH3



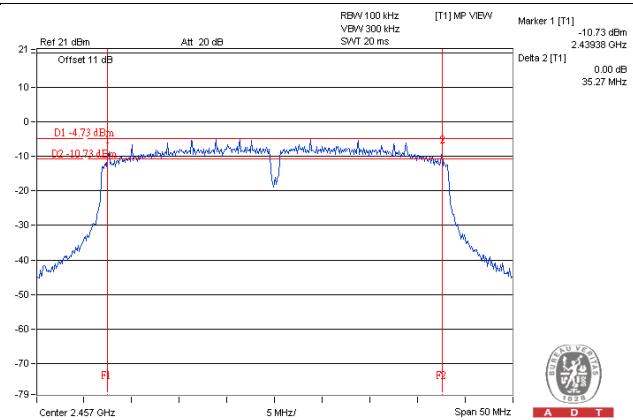
Chain 1/ CH6



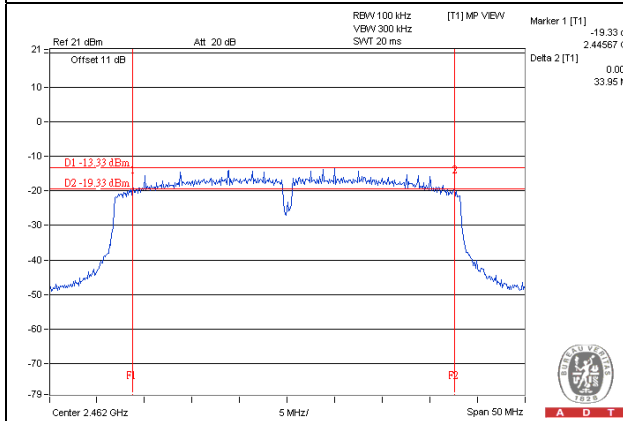
Chain 1/ CH9



Chain 1/ CH10



Chain 1/ CH11

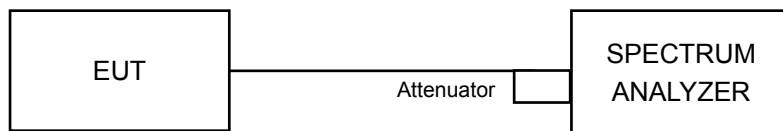


4.4 Conducted Out of Band Emission Measurement

4.4.1 Limits of Conducted Out of Band Emission Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 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. Tested date :Feb. 09, 2015

4.4.4 Test Procedures

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

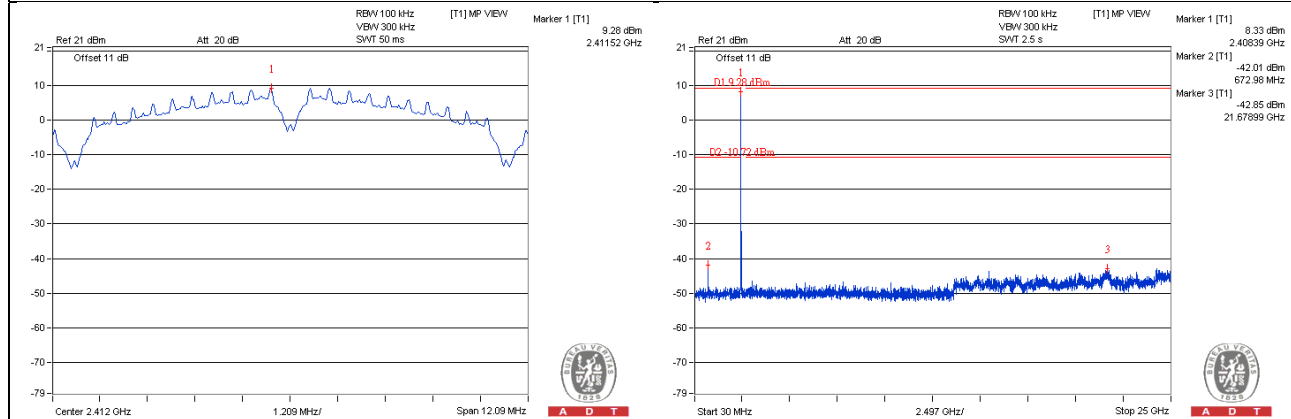
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.7 Test Results

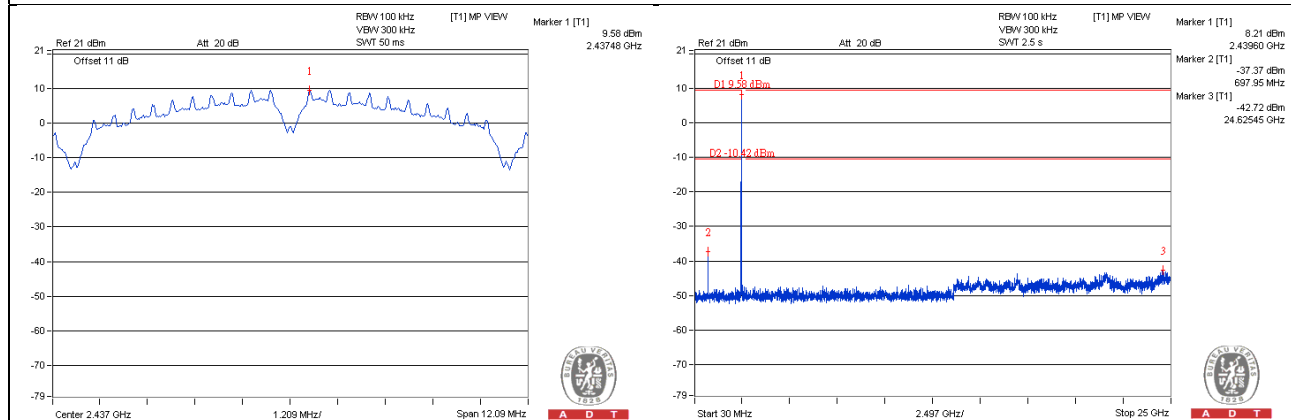
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b Chain 0

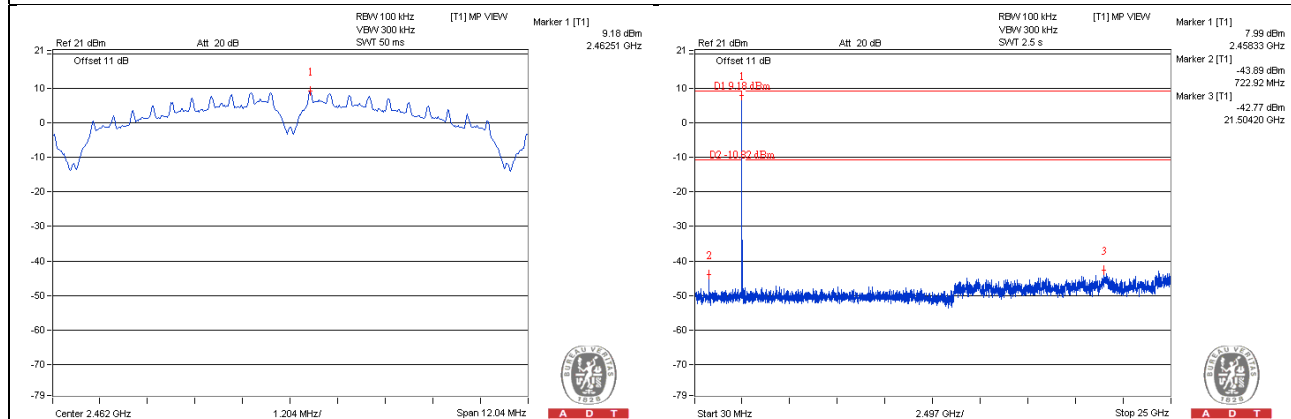
CH 1



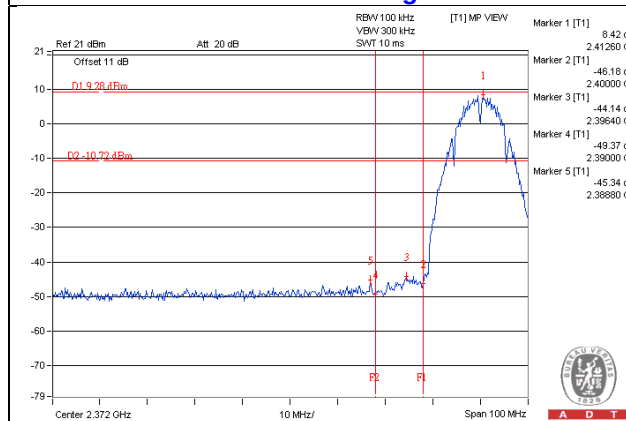
CH 6



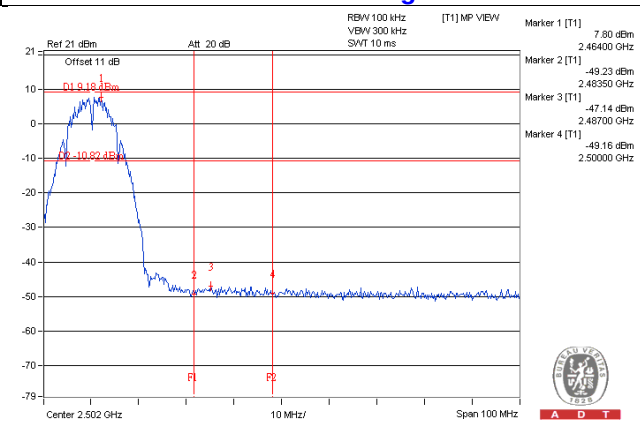
CH 11



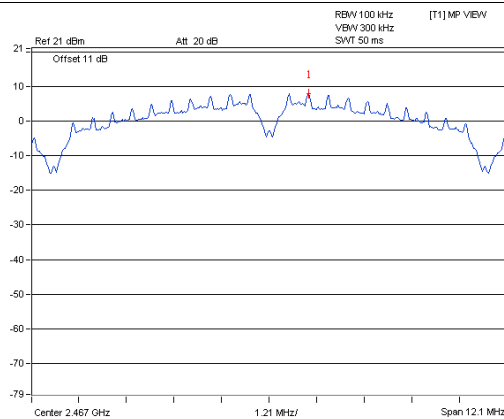
CH 1 Band edge



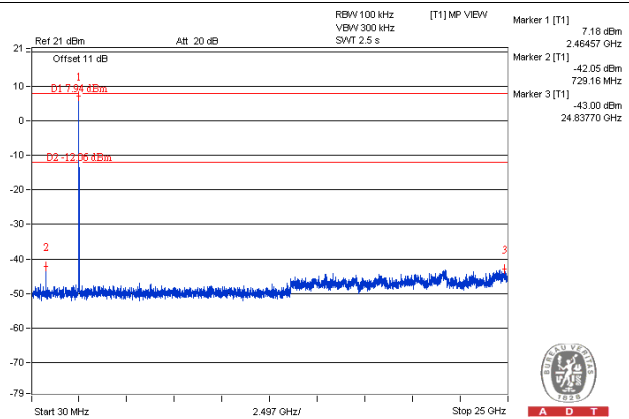
CH 11 Band edge



CH 12

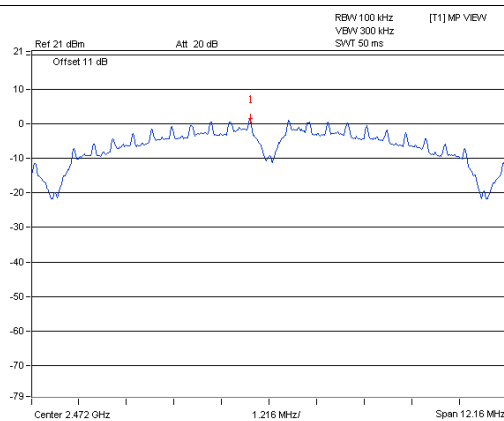


A D T

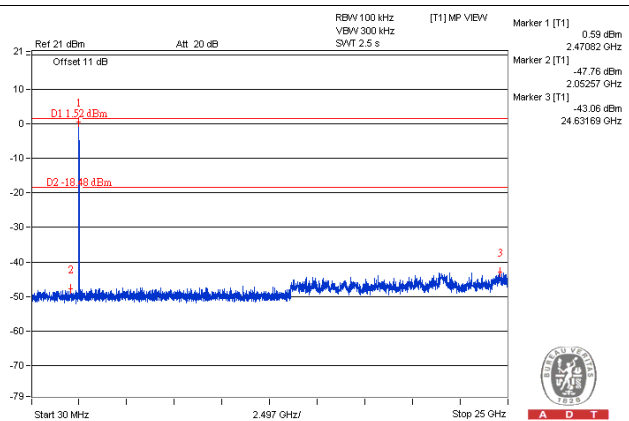


A D T

CH 13

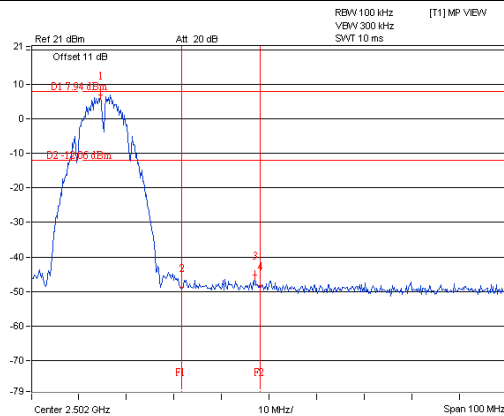


A D T



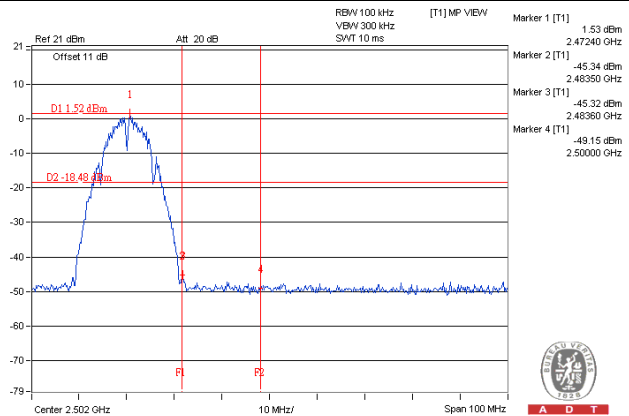
A D T

CH 12 Band edge



A D T

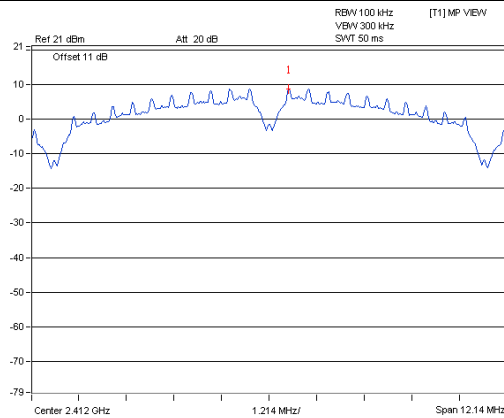
CH 13 Band edge



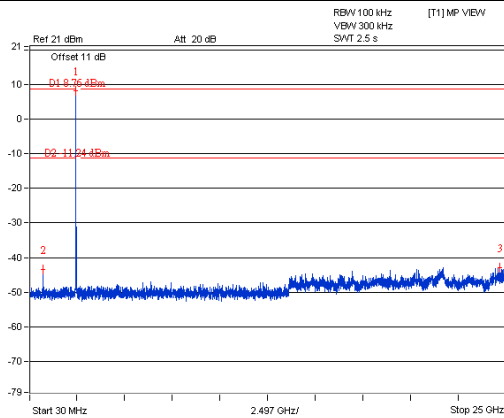
A D T

Chain 1

CH 1

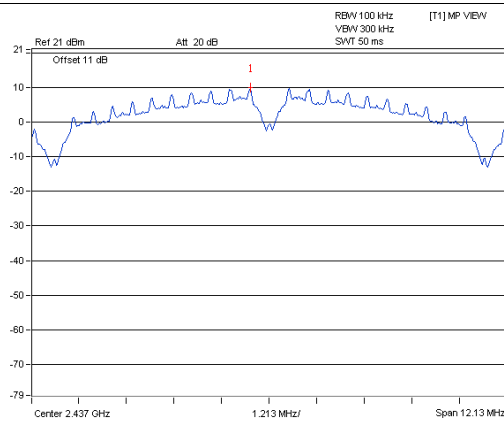


A D T

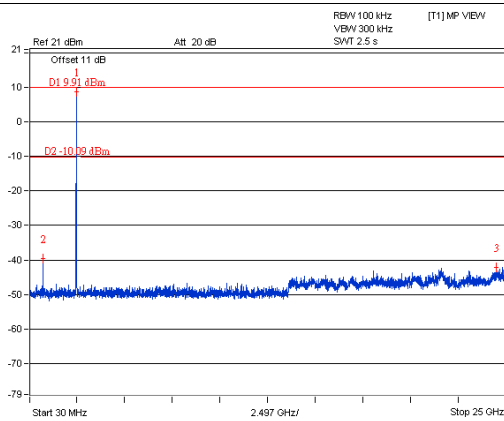


A D T

CH 6

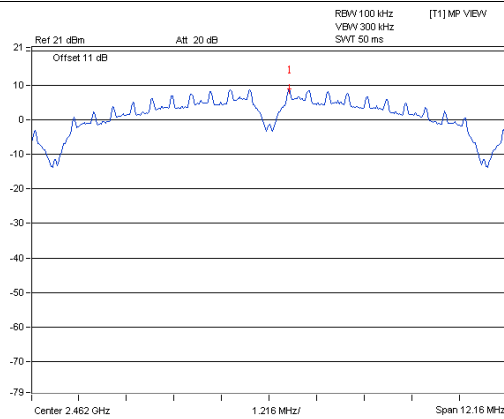


A D T

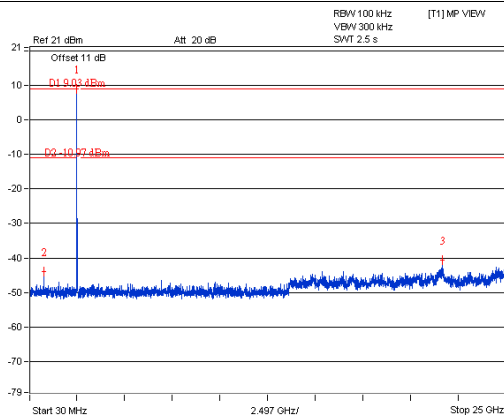


A D T

CH 11

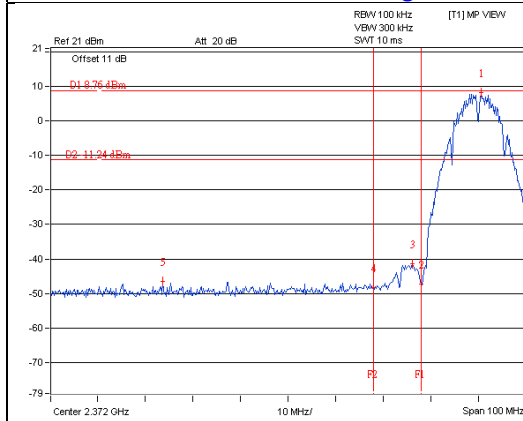


A D T



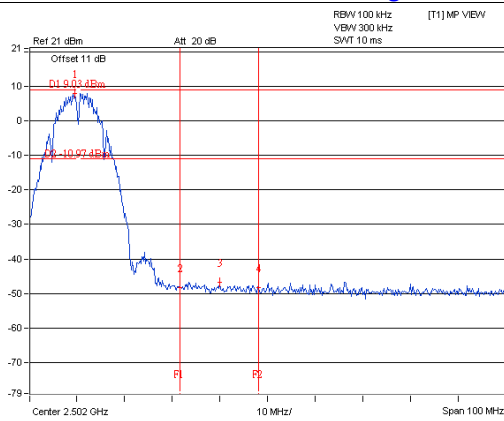
A D T

CH 1 Band edge



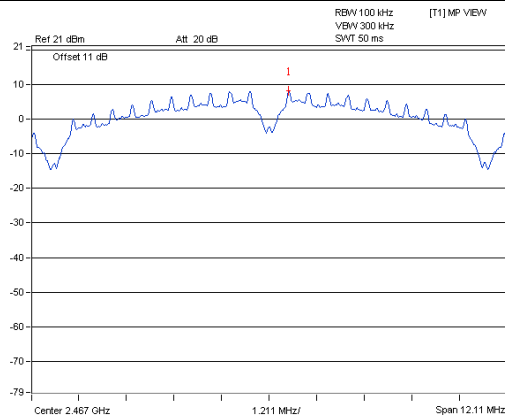
A D T

CH 11 Band edge

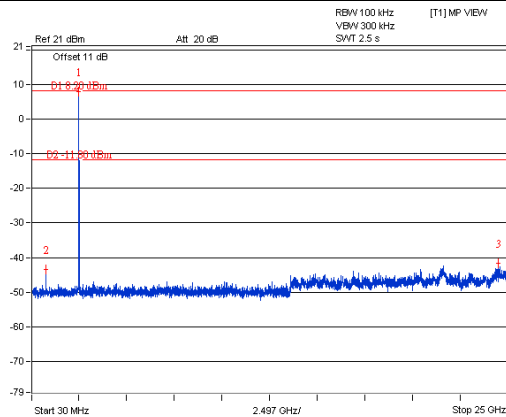


A D T

CH 12

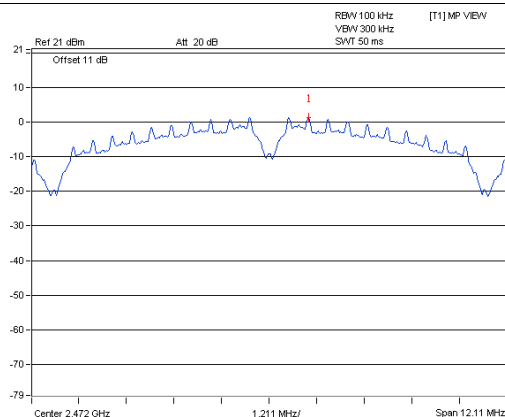


A D T

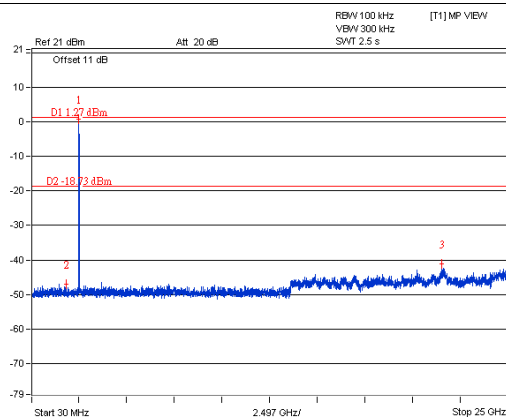


A D T

CH 13

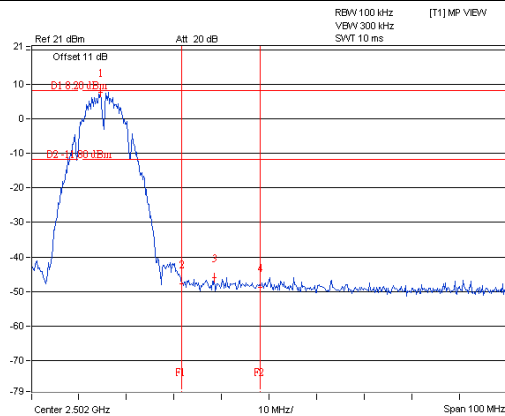


A D T



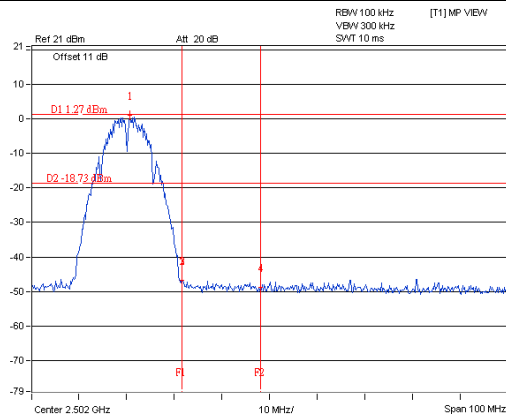
A D T

CH 12 Band edge



A D T

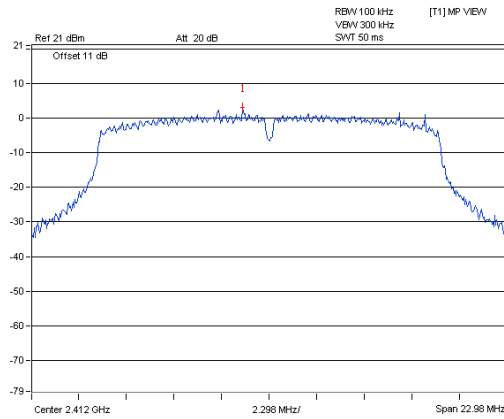
CH 13 Band edge



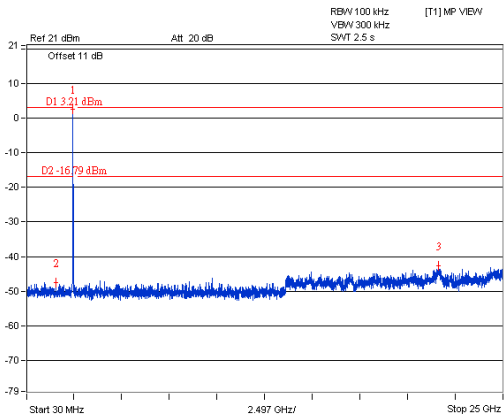
A D T

802.11g Chain 0

CH 1

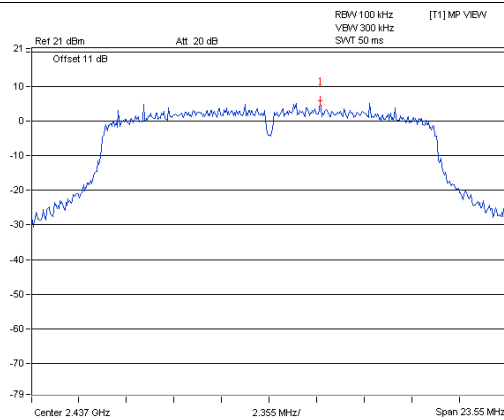


A D T

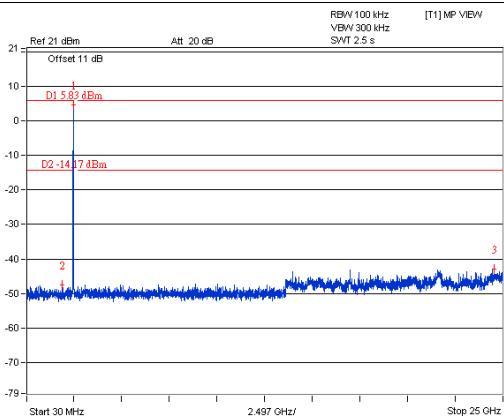


A D T

CH 6

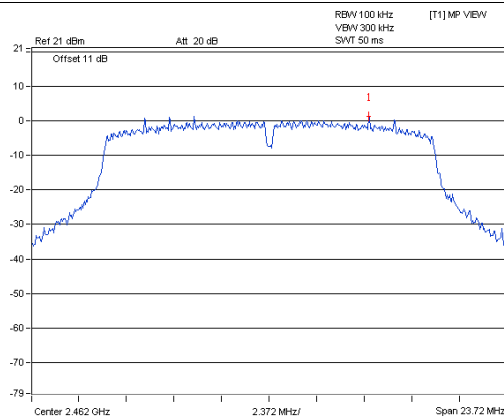


A D T

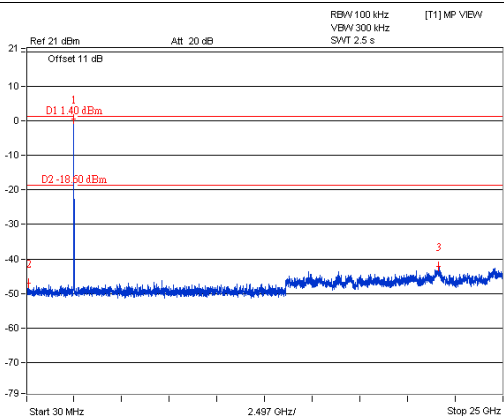


A D T

CH 11

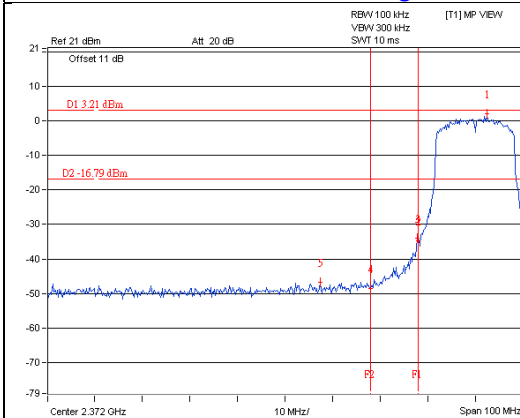


A D T



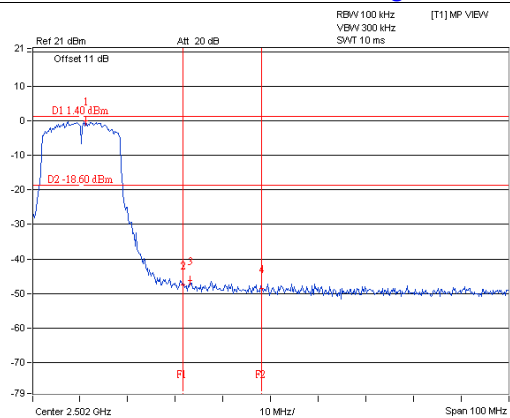
A D T

CH 1 Band edge



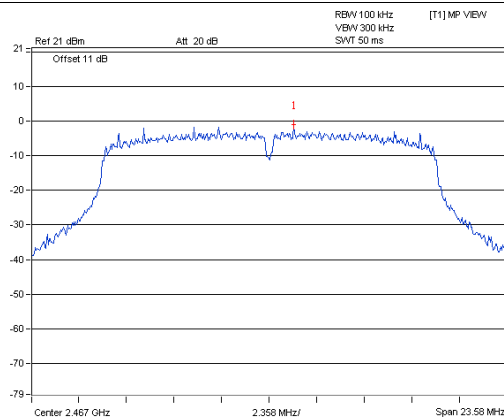
A D T

CH 11 Band edge

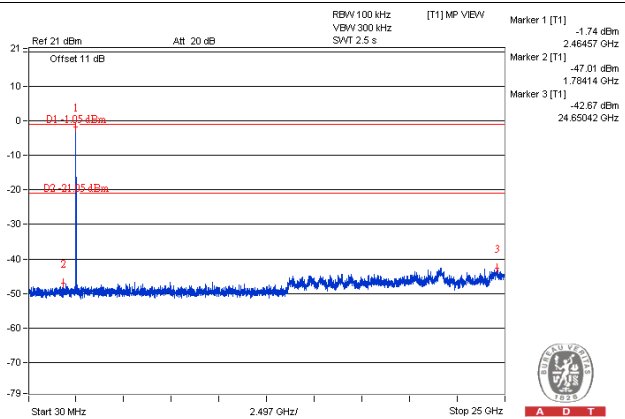


A D T

CH 12

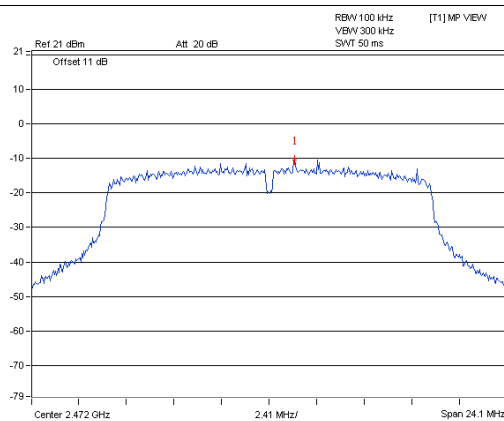


A D T

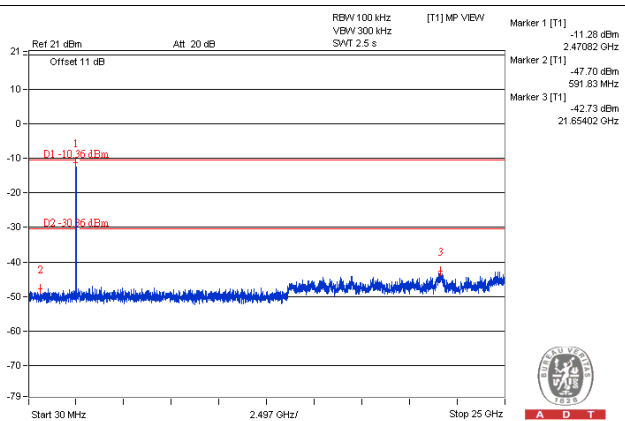


A D T

CH 13

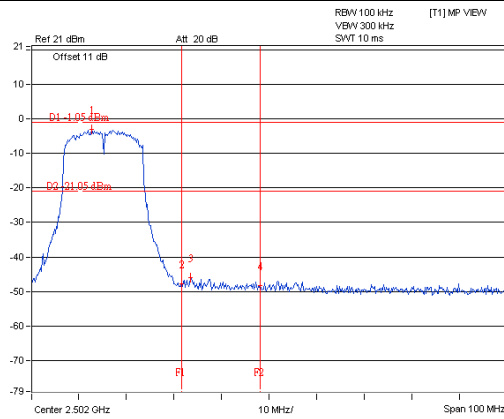


A D T



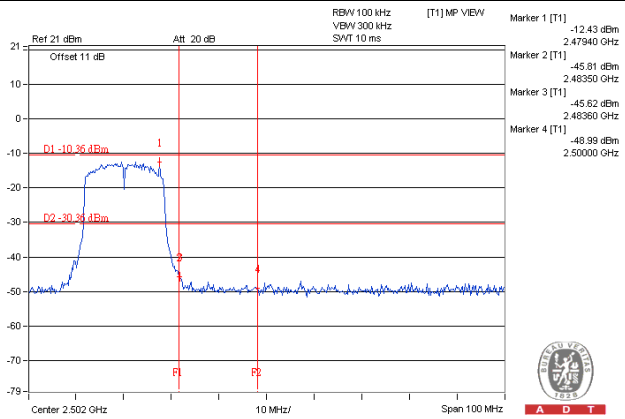
A D T

CH 12 Band edge



A D T

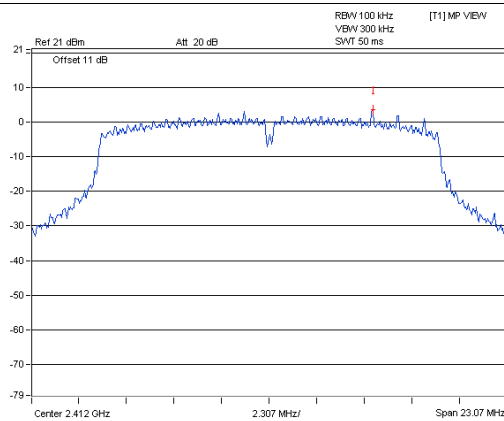
CH 13 Band edge



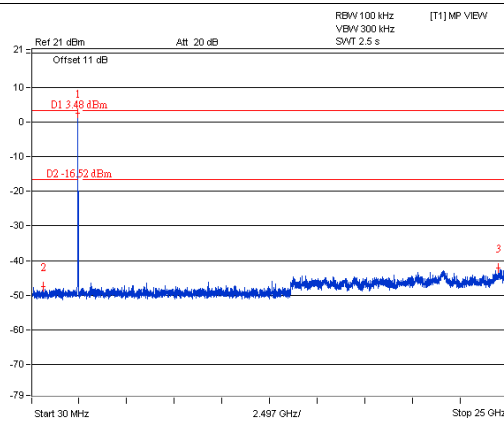
A D T

Chain 1

CH 1



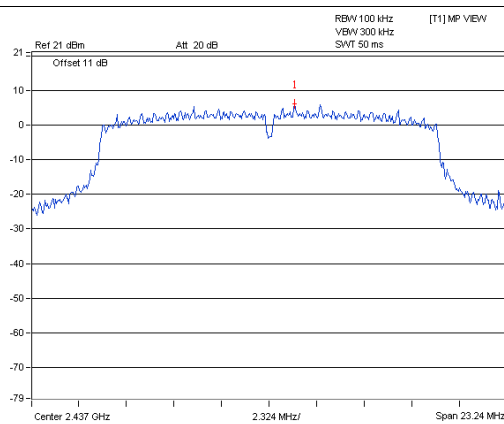
A D T



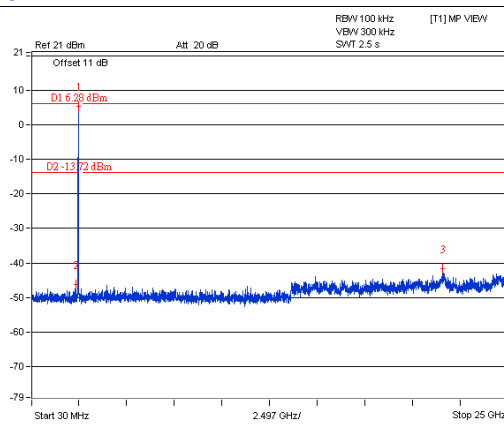
A D T

Marker 1 [T1] 2.71 dBm
2.40839 GHz
Marker 2 [T1] -47.44 dBm
573.10 MHz
Marker 3 [T1] -42.10 dBm
24.54430 GHz

CH 6



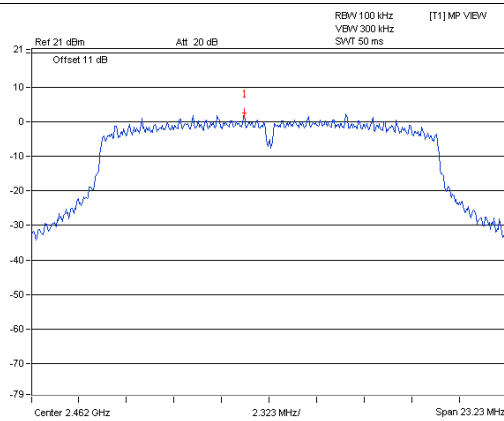
A D T



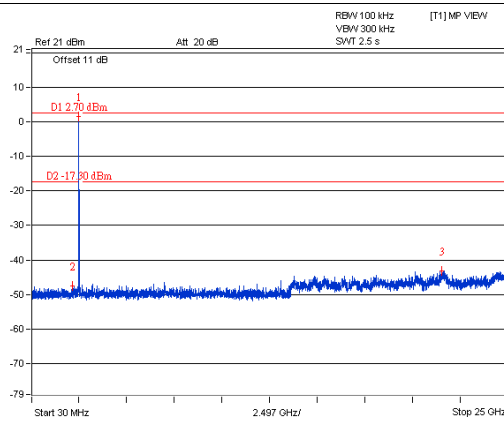
A D T

Marker 1 [T1] 5.28 dBm
2.43960 GHz
Marker 2 [T1] -46.34 dBm
2.28979 GHz
Marker 3 [T1] -41.58 dBm
21.62281 GHz

CH 11



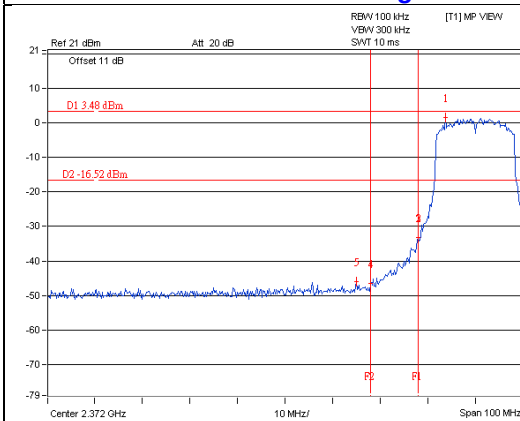
A D T



A D T

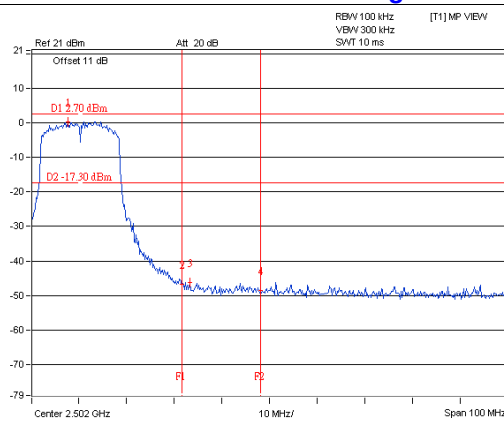
Marker 1 [T1] 1.59 dBm
2.45833 GHz
Marker 2 [T1] -47.51 dBm
2.10875 GHz
Marker 3 [T1] -43.08 dBm
21.56662 GHz

CH 1 Band edge



A D T

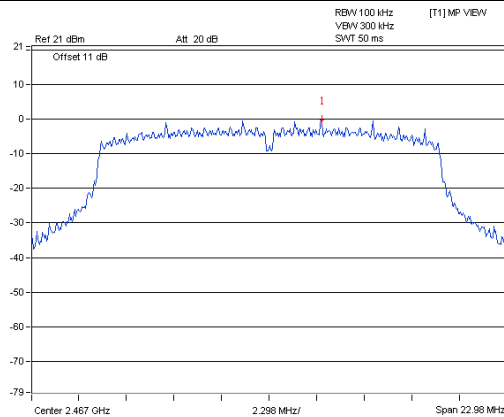
CH 11 Band edge



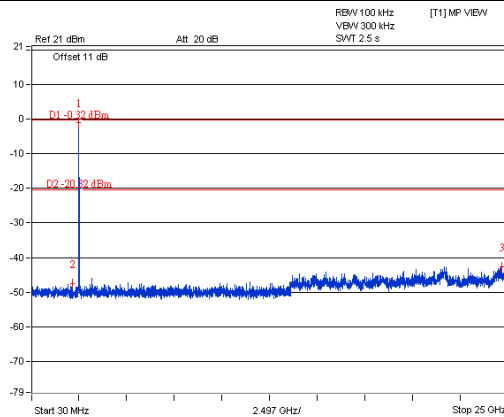
A D T

Marker 1 [T1] 0.40 dBm
2.45940 GHz
Marker 2 [T1] -46.87 dBm
2.48350 GHz
Marker 3 [T1] -46.16 dBm
2.48520 GHz
Marker 4 [T1] -48.85 dBm
2.50000 GHz

CH 12

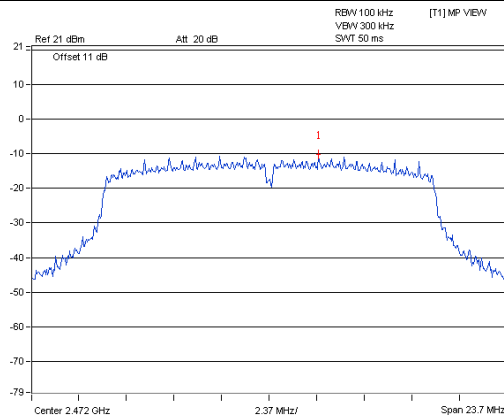


A D T

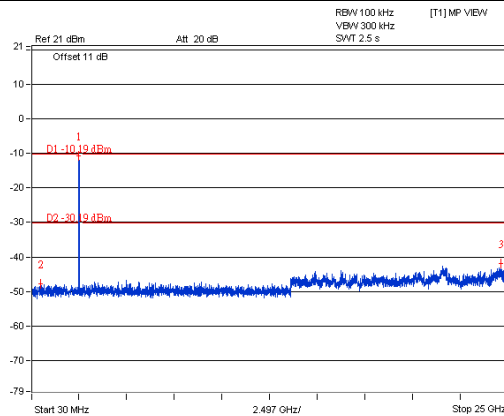


A D T

CH 13

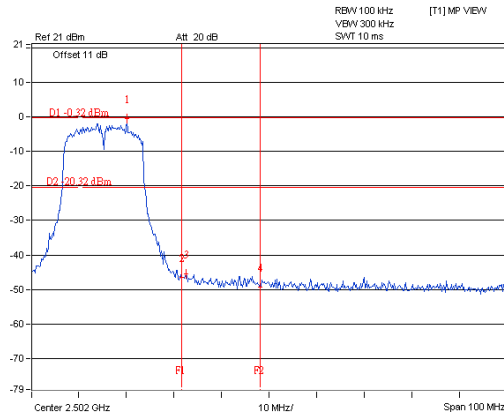


A D T



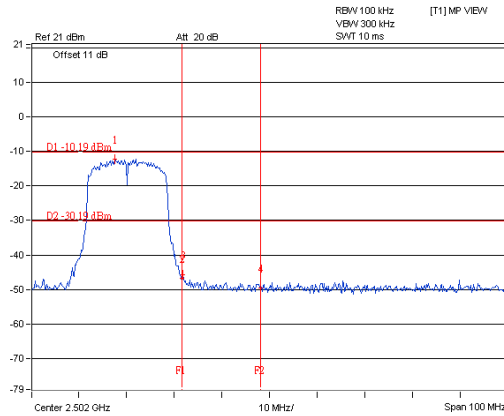
A D T

CH 12 Band edge



A D T

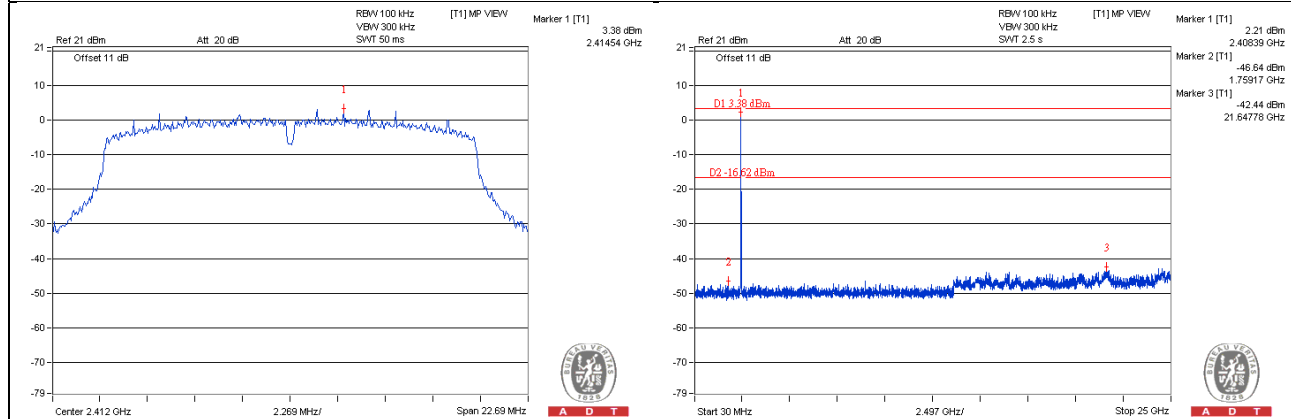
CH 13 Band edge



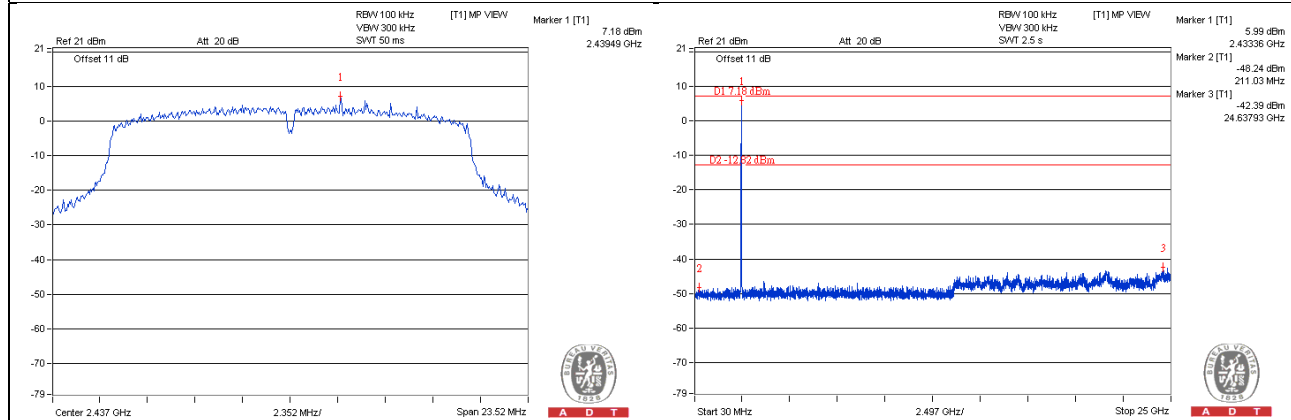
A D T

VHT20 Chain 0

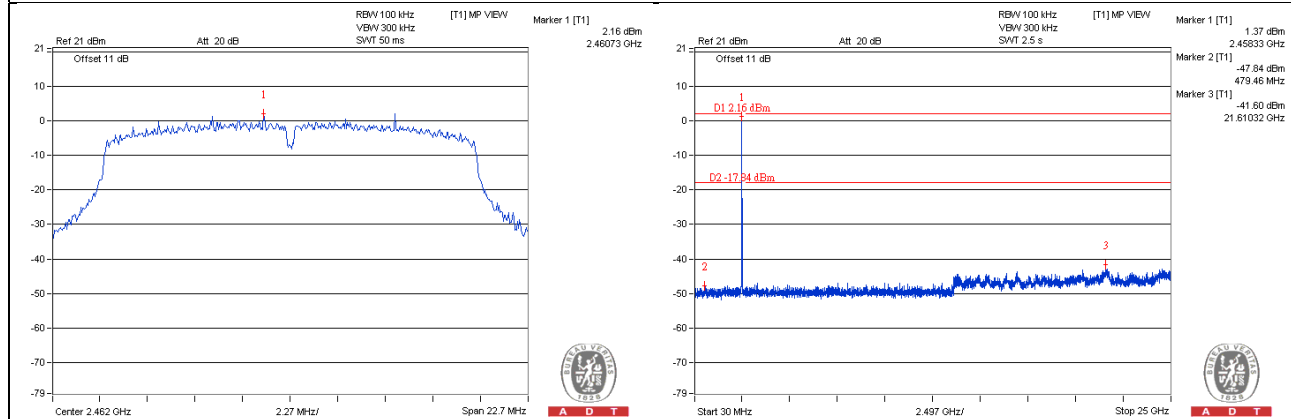
CH 1



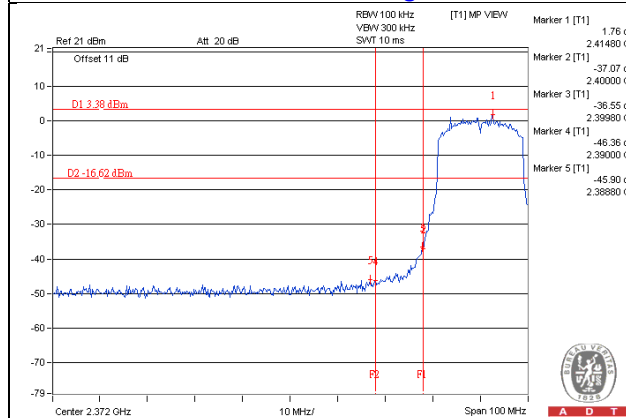
CH 6



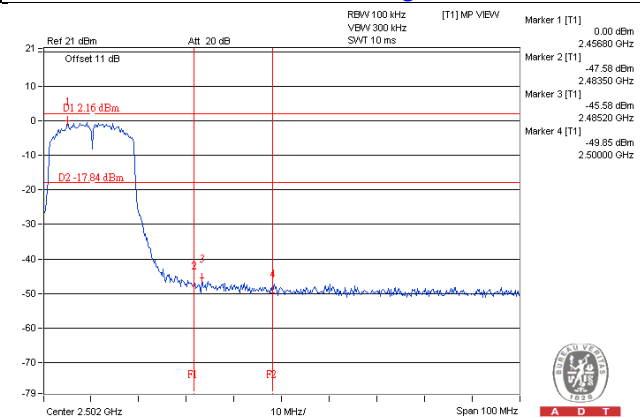
CH 11



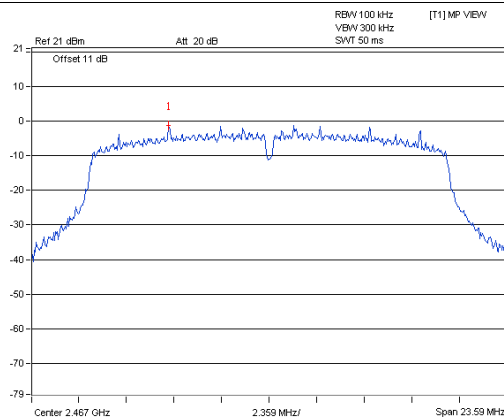
CH 1 Band edge



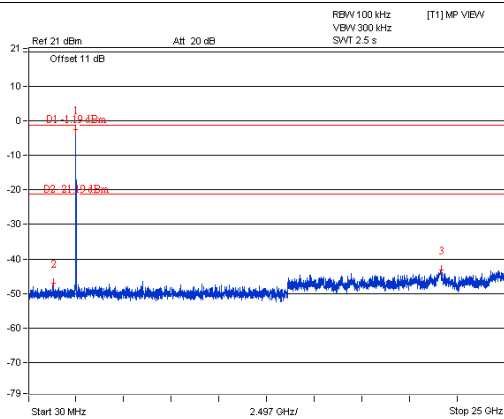
CH 11 Band edge



CH 12

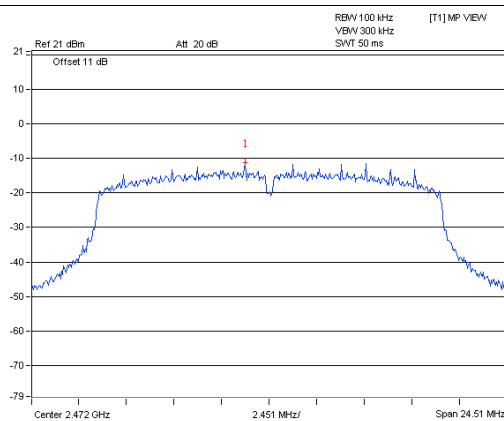


A D T

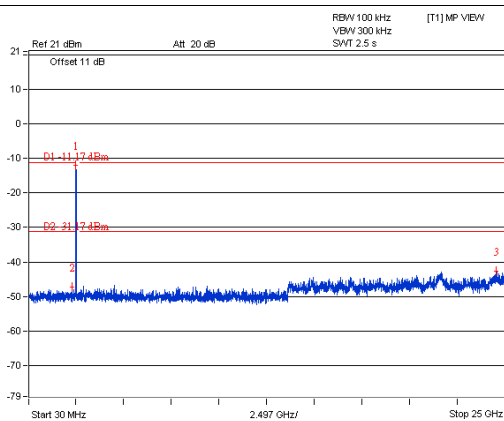


A D T

CH 13

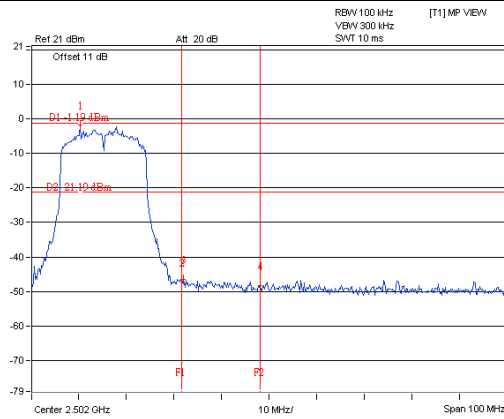


A D T



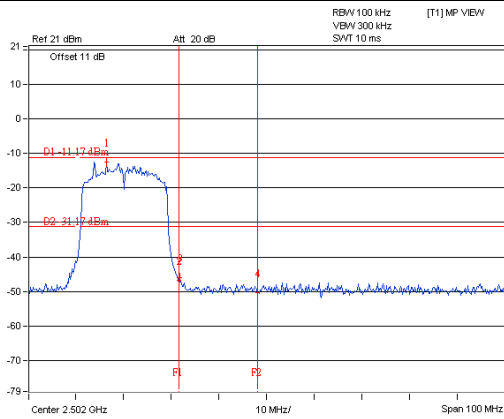
A D T

CH 12 Band edge



A D T

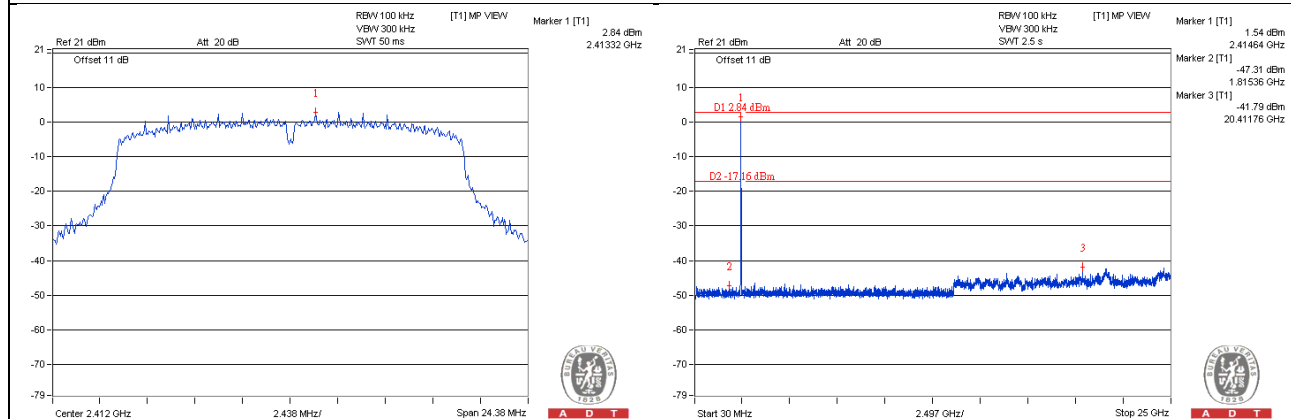
CH 13 Band edge



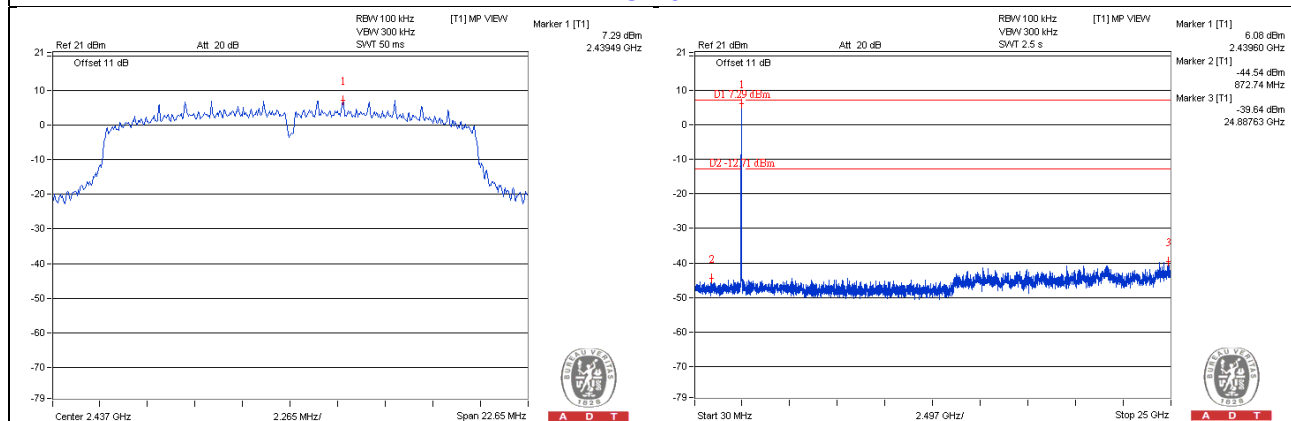
A D T

Chain 1

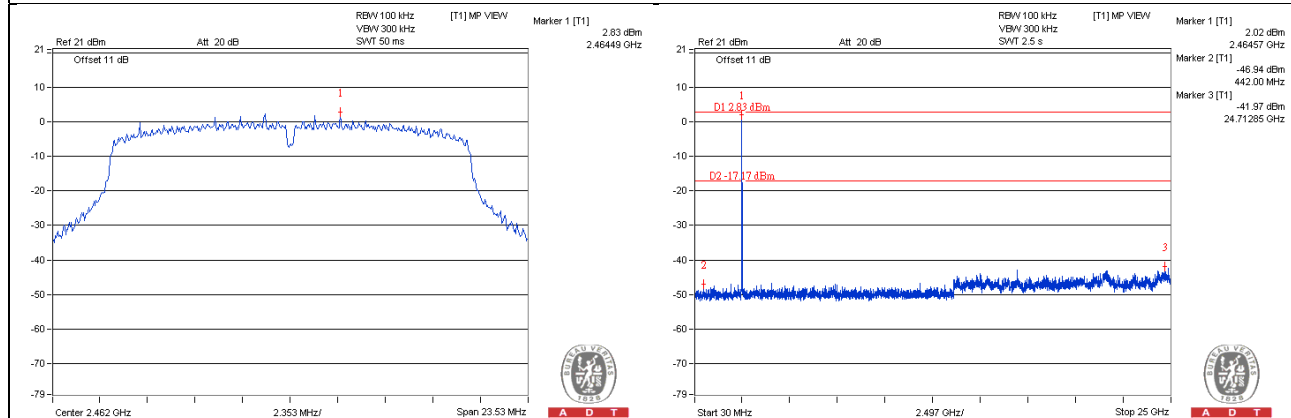
CH 1



CH 6

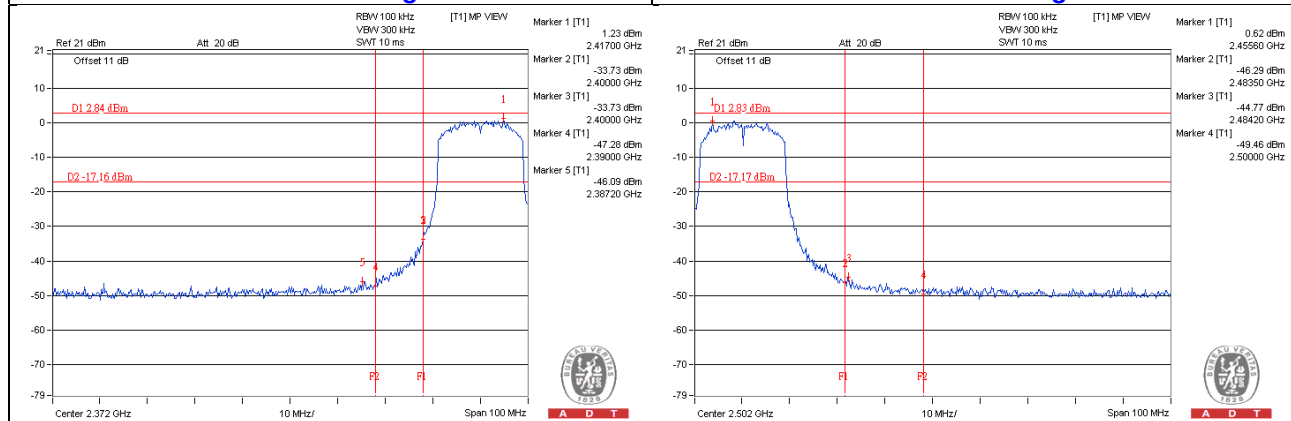


CH 11

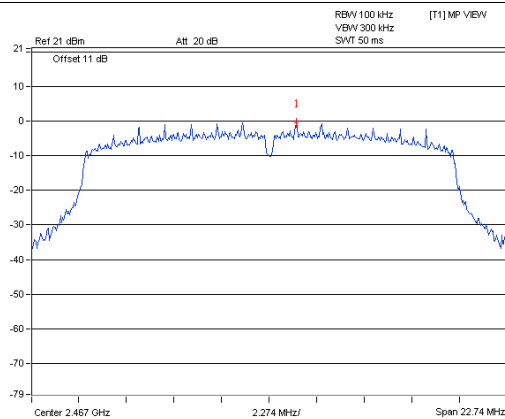


CH 1 Band edge

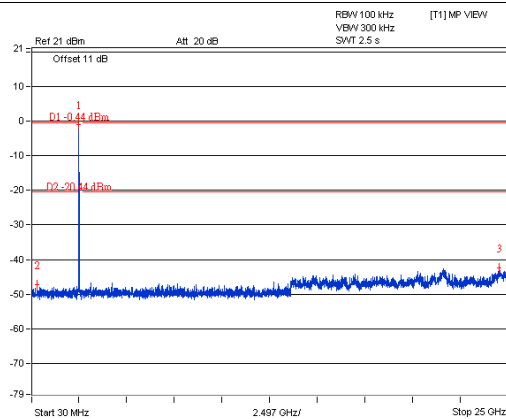
CH 11 Band edge



CH 12

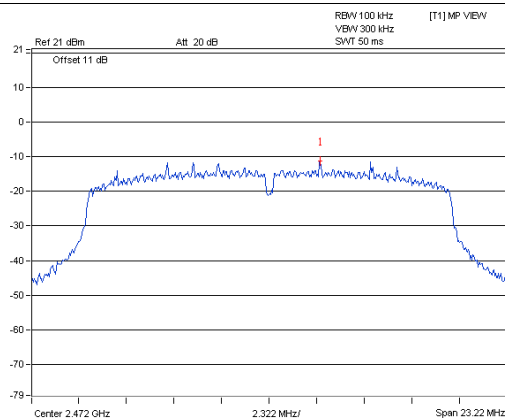


A D T

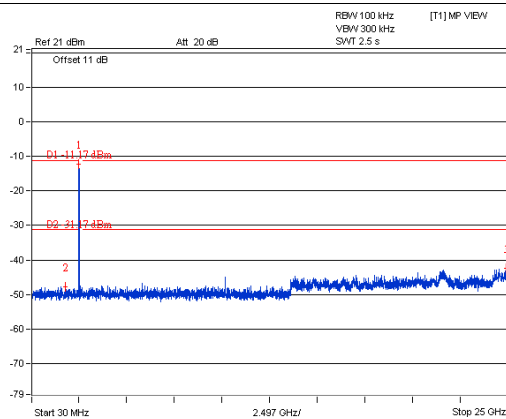


A D T

CH 13

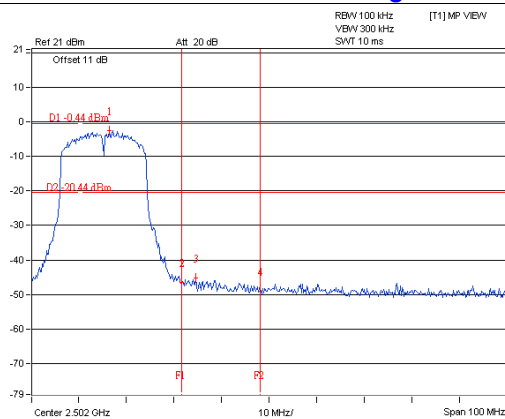


A D T



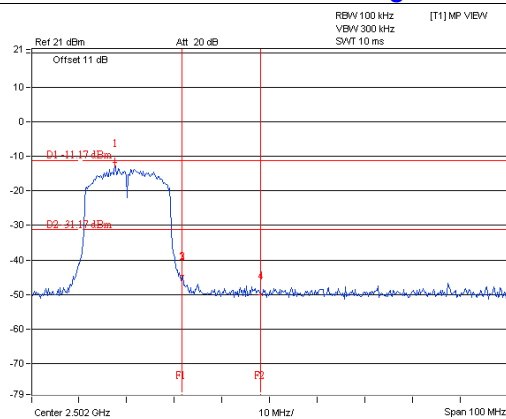
A D T

CH 12 Band edge



A D T

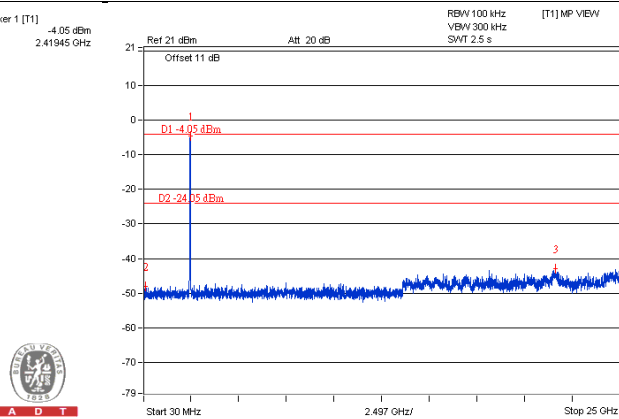
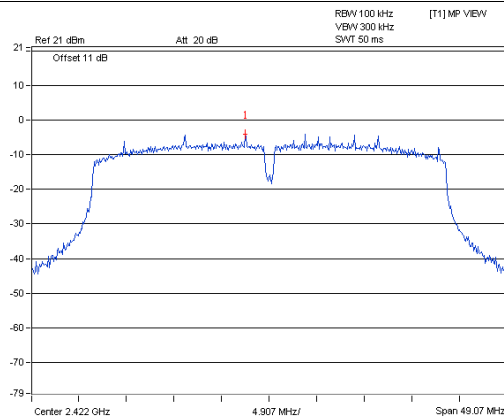
CH 13 Band edge



A D T

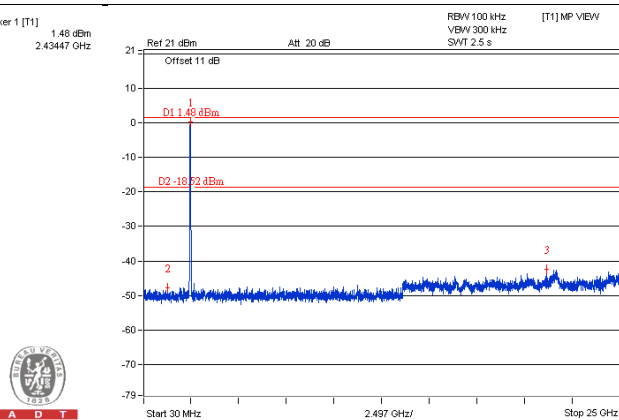
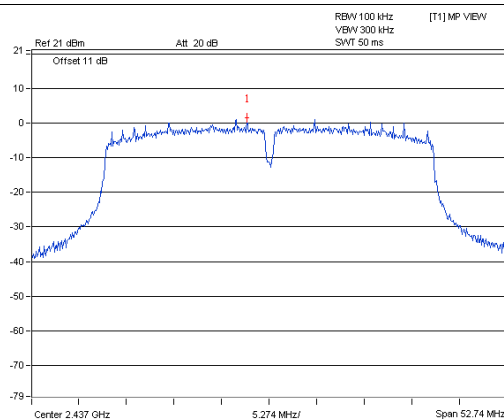
VHT40 Chain 0

CH 3



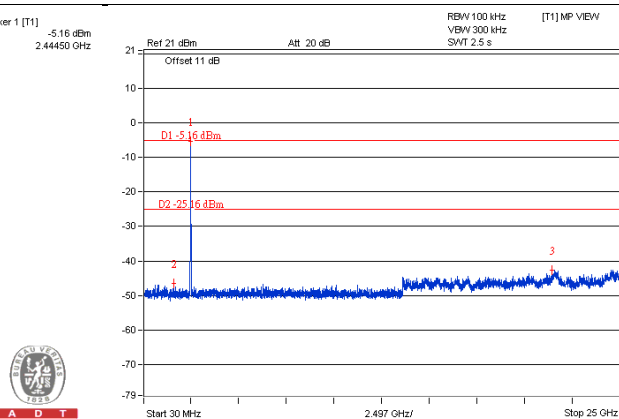
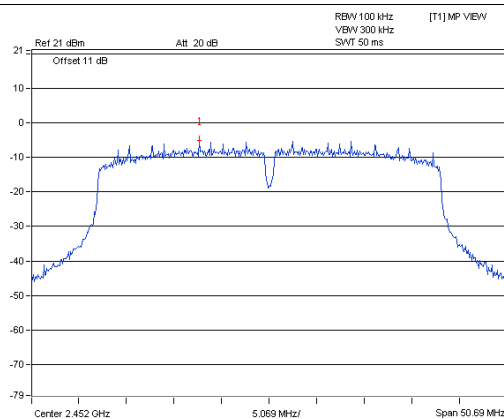
Marker 1 [T1]	-4.70 dBm
Marker 2 [T1]	-47.93 dBm
Marker 3 [T1]	-42.83 dBm
	21.62905 GHz

CH 6



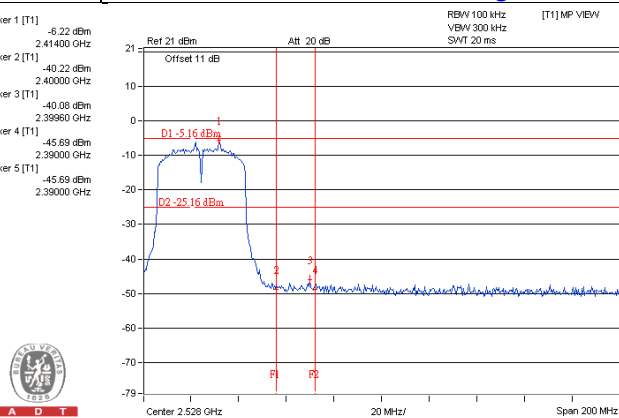
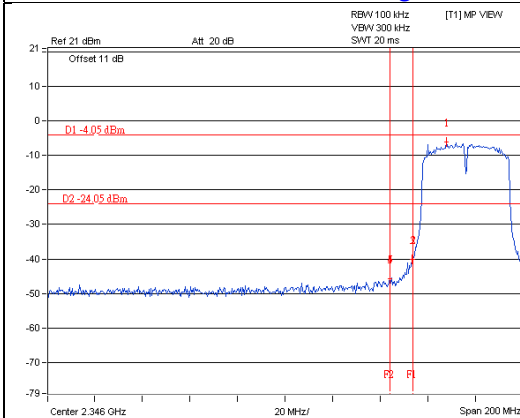
Marker 1 [T1]	0.16 dBm
Marker 2 [T1]	-47.91 dBm
Marker 3 [T1]	-42.51 dBm
	21.16710 GHz

CH 9



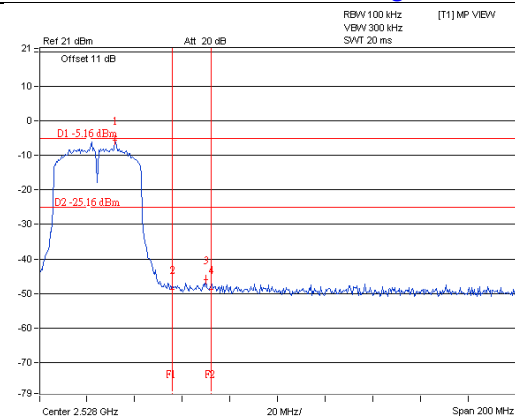
Marker 1 [T1]	-5.28 dBm
Marker 2 [T1]	-46.48 dBm
Marker 3 [T1]	-42.56 dBm
	21.48547 GHz

CH 3 Band edge



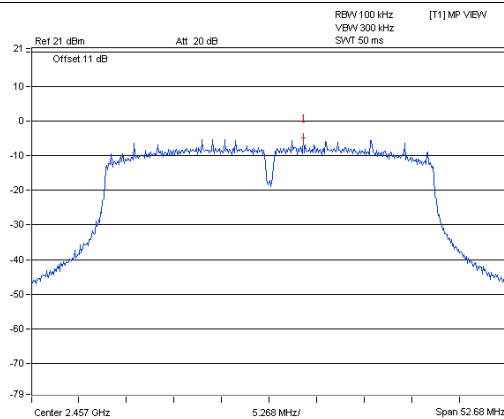
Marker 1 [T1]	-5.72 dBm
Marker 2 [T1]	-48.76 dBm
Marker 3 [T1]	-48.05 dBm
Marker 4 [T1]	-48.94 dBm
	2.50000 GHz

CH 9 Band edge

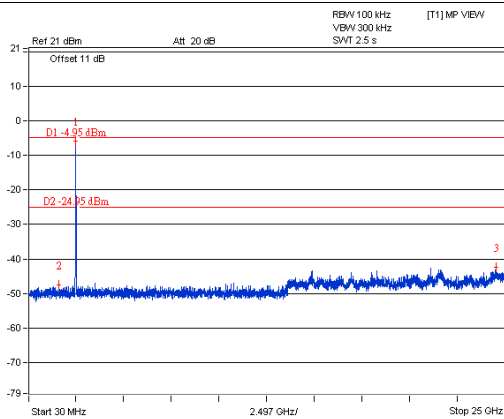


Marker 1 [T1]	-5.72 dBm
Marker 2 [T1]	-48.76 dBm
Marker 3 [T1]	-48.05 dBm
Marker 4 [T1]	-48.94 dBm
	2.50000 GHz

CH 10

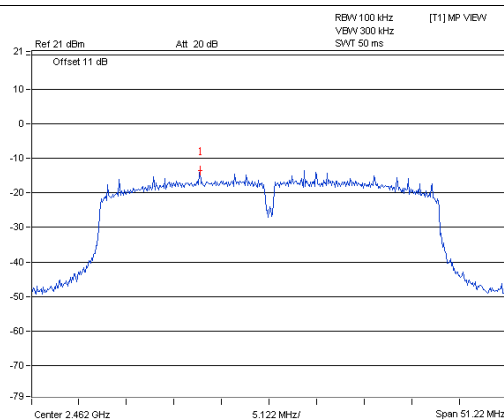


A D T

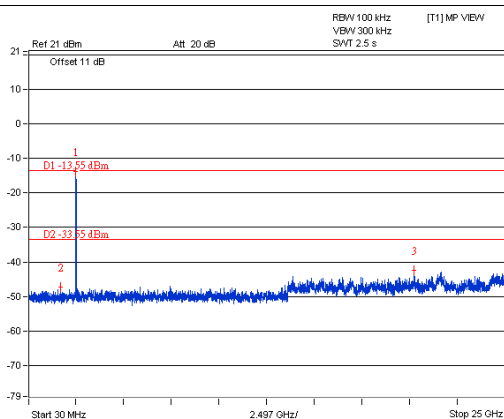


A D T

CH 11

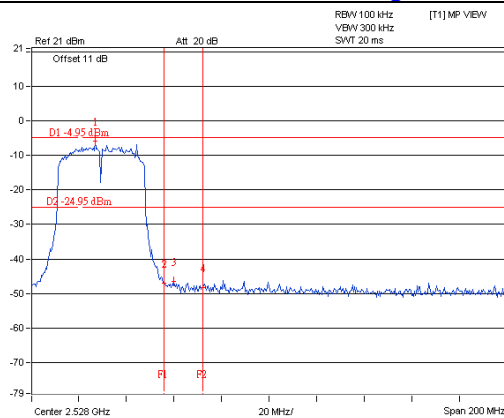


A D T



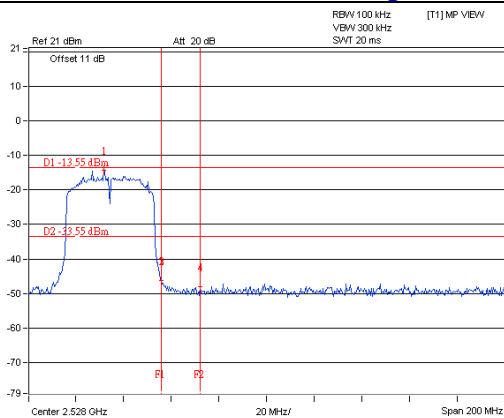
A D T

CH 10 Band edge



A D T

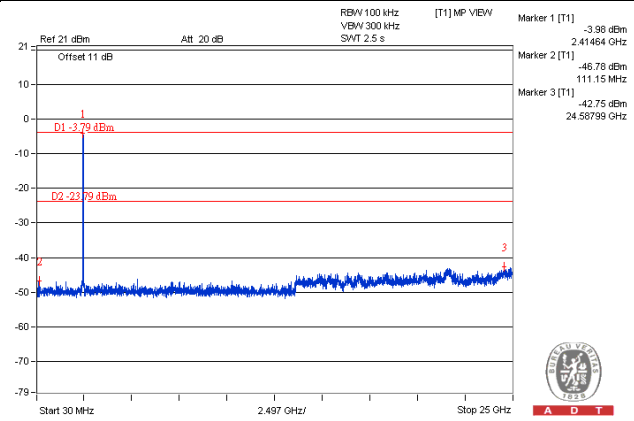
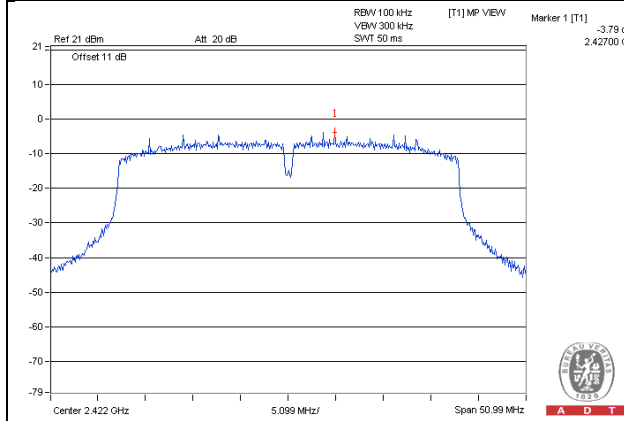
CH 11 Band edge



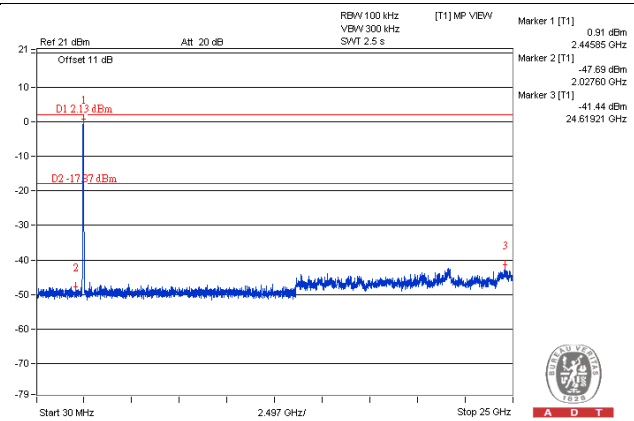
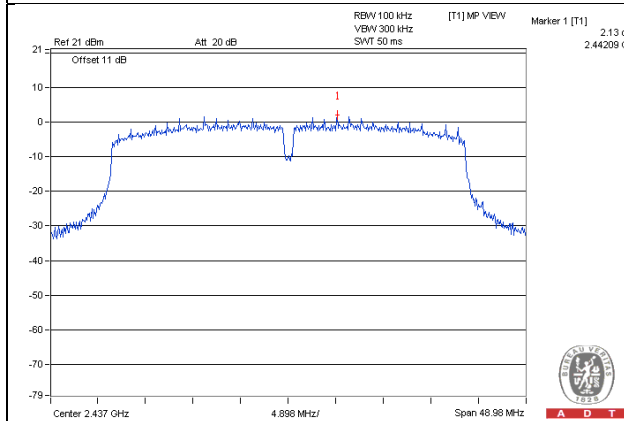
A D T

Chain 1

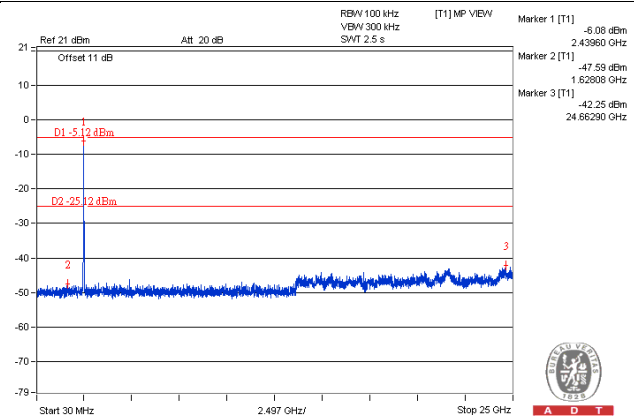
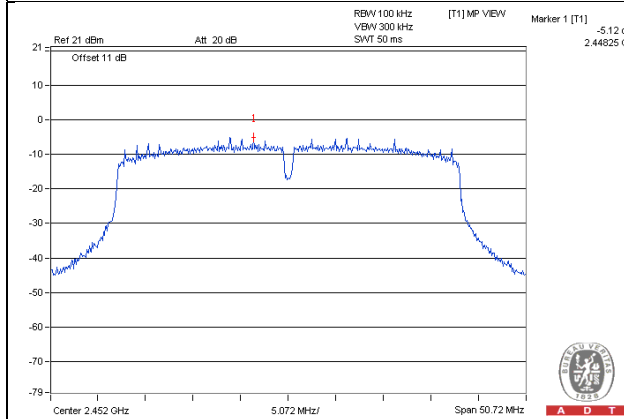
CH 3



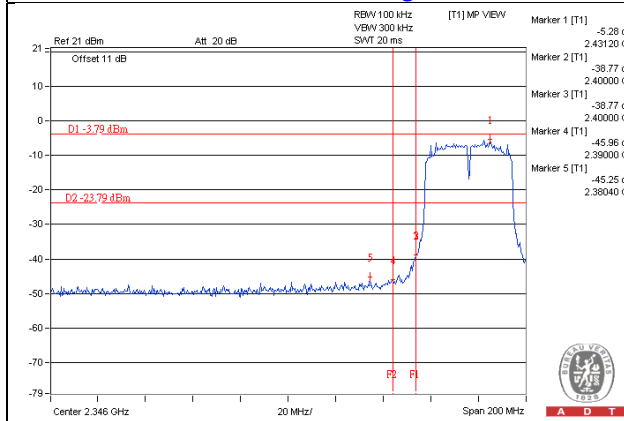
CH 6



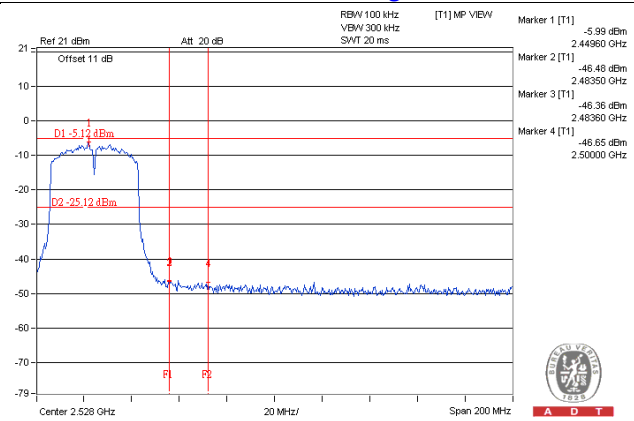
CH 9



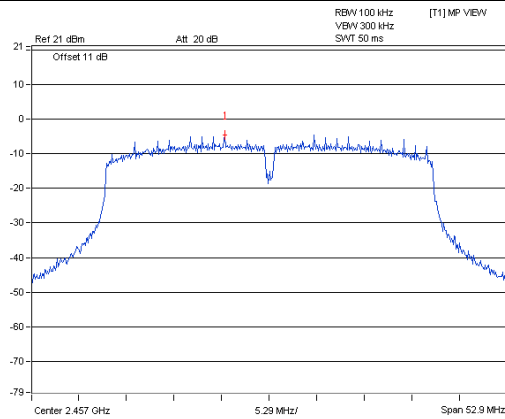
CH 3 Band edge



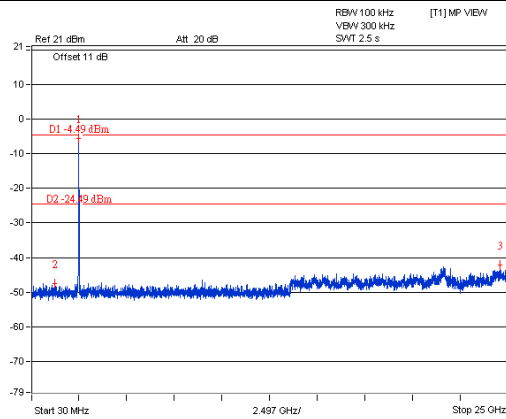
CH 9 Band edge



CH 10

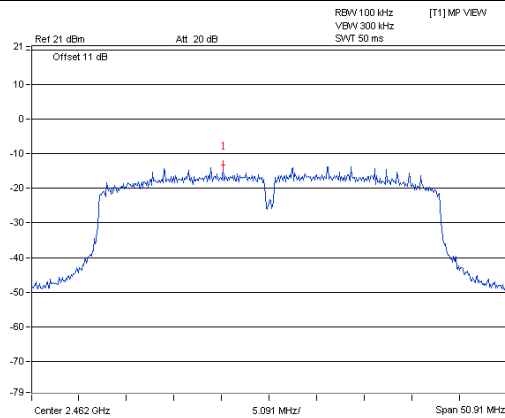


A D T

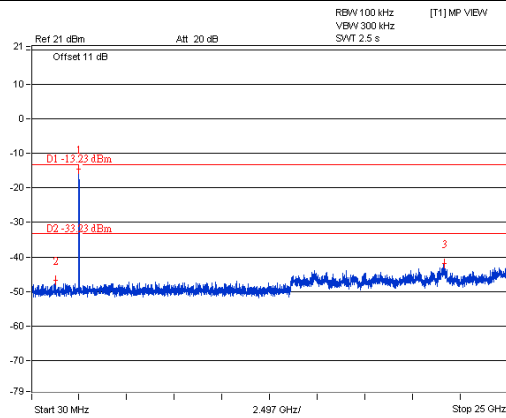


A D T

CH 11

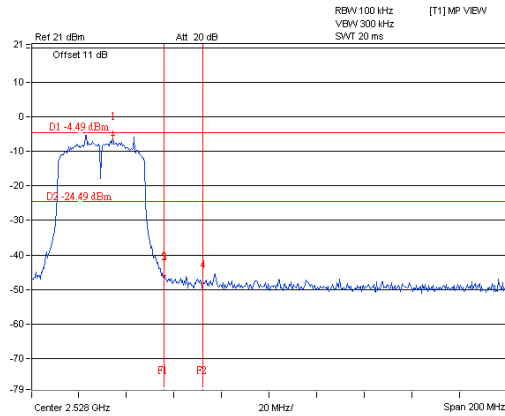


A D T



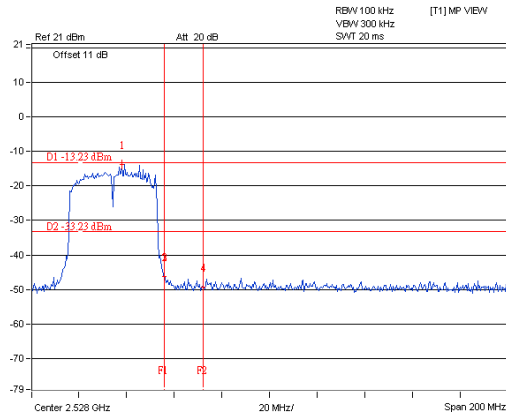
A D T

CH 10 Band edge



A D T

CH 11 Band edge



A D T

4.5 Unwanted Emission Measurement (Radiated Versus Conducted)

4.5.1 Limits of Unwanted Emission Measurement

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

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

NOTE:

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

4.5.2 Test Instruments

For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21,2014	July 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
- 5 The VCCI Site Registration No. is G-137.
- 6 The CANADA Site Registration No. is IC 7450H-2.
- 7 Tested Date: Feb. 06 to 11, 2015

4.5.3 Test Procedures

Following FCC KDB 558074 D01 DTS Meas. Guidance :

Radiated versus Conducted Measurements.

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

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test
 - e-1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
 - e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - e-3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
 - e-4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
 - e-5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 - e-6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

1. 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.

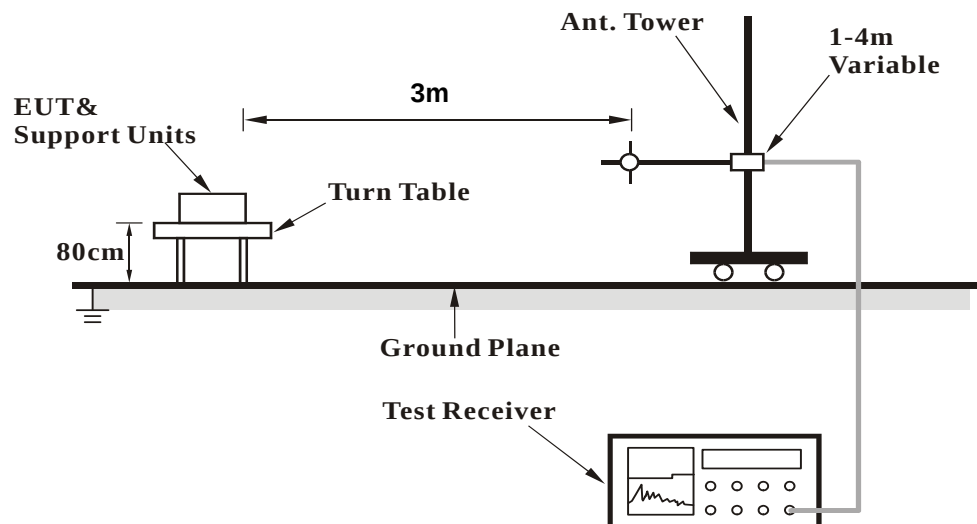
4.5.4 Deviation from Test Standard

C63.10:2009 requires a 0.8m EUT height above 1GHz, but in accordance with the FCC December 2014 TCB Conference call, a 1.5m EUT height is allowed.

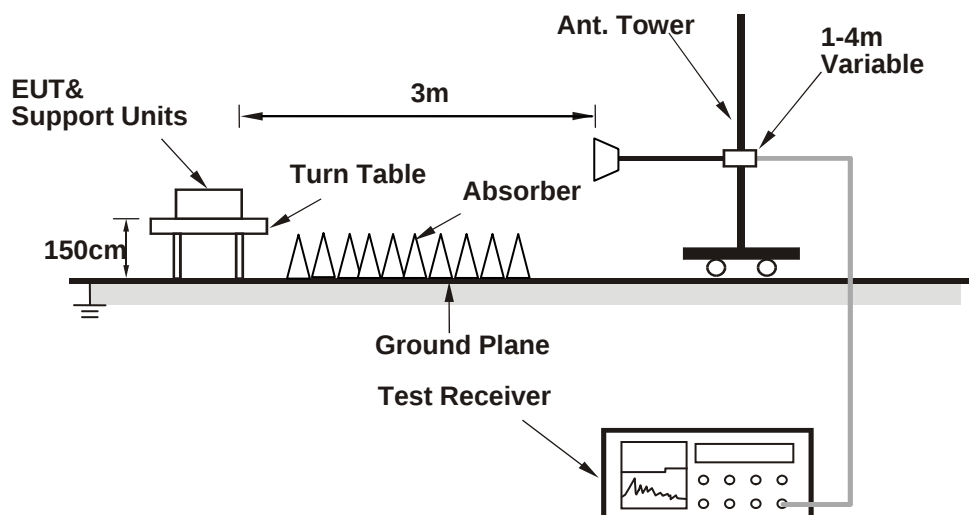
4.5.5 Test Setup

For radiated configuration:

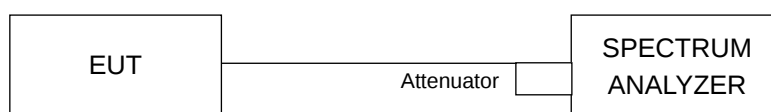
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



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

4.5.6 EUT Operating Conditions

1. Connect the EUT with the support unit A (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program "QCART Version: 3.0.33.0" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.5.7 Test Results (Radiated Measurement)

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

Radiated test was done with 50ohm terminator on antenna port

Above 1GHz Data

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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	4824.00	53.3 PK	74.0	-20.7	1.55 H	56	47.59	5.71
2	4824.00	49.4 AV	54.0	-4.6	1.55 H	56	43.69	5.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	53.2 PK	74.0	-20.8	1.57 V	53	47.49	5.71
2	4824.00	49.1 AV	54.0	-4.9	1.57 V	53	43.39	5.71

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	54.1 PK	74.0	-19.9	1.65 H	56	48.20	5.90
2	4874.00	50.5 AV	54.0	-3.5	1.65 H	56	44.60	5.90
3	7311.00	53.8 PK	74.0	-20.2	1.00 H	226	40.63	13.17
4	7311.00	40.8 AV	54.0	-13.2	1.00 H	226	27.63	13.17

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	54.5 PK	74.0	-19.5	1.72 V	54	48.60	5.90
2	4874.00	50.3 AV	54.0	-3.7	1.72 V	54	44.40	5.90
3	7311.00	54.1 PK	74.0	-19.9	1.07 V	262	40.93	13.17
4	7311.00	41.2 AV	54.0	-12.8	1.07 V	262	28.03	13.17

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	55.8 PK	74.0	-18.2	1.55 H	65	49.69	6.11
2	4924.00	51.0 AV	54.0	-3.0	1.55 H	65	44.89	6.11
3	7386.00	54.2 PK	74.0	-19.8	1.00 H	241	41.02	13.18
4	7386.00	41.2 AV	54.0	-12.8	1.00 H	241	28.02	13.18

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	4924.00	54.1 PK	74.0	-19.9	1.48 V	65	47.99	6.11
2	4924.00	50.1 AV	54.0	-3.9	1.48 V	65	43.99	6.11
3	7386.00	54.4 PK	74.0	-19.6	1.00 V	265	41.22	13.18
4	7386.00	41.3 AV	54.0	-12.7	1.00 V	265	28.12	13.18

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

CHANNEL	TX Channel 12	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	4934.00	55.0 PK	74.0	-19.0	1.50 H	57	48.85	6.15
2	4934.00	50.5 AV	54.0	-3.5	1.50 H	57	44.35	6.15
3	7401.00	54.7 PK	74.0	-19.3	1.02 H	233	41.53	13.17
4	7401.00	41.6 AV	54.0	-12.4	1.02 H	233	28.43	13.17

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	4934.00	54.3 PK	74.0	-19.7	1.47 V	60	48.15	6.15
2	4934.00	50.4 AV	54.0	-3.6	1.47 V	60	44.25	6.15
3	7401.00	54.4 PK	74.0	-19.6	1.02 V	272	41.23	13.17
4	7401.00	41.3 AV	54.0	-12.7	1.02 V	272	28.13	13.17

REMARKS:

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

CHANNEL	TX Channel 13	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	4944.00	56.0 PK	74.0	-18.0	1.52 H	66	49.81	6.19
2	4944.00	51.0 AV	54.0	-3.0	1.52 H	66	44.81	6.19
3	7416.00	54.6 PK	74.0	-19.4	1.00 H	243	41.45	13.15
4	7416.00	41.5 AV	54.0	-12.5	1.00 H	243	28.35	13.15

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	4944.00	54.2 PK	74.0	-19.8	1.48 V	66	48.01	6.19
2	4944.00	50.5 AV	54.0	-3.5	1.48 V	66	44.31	6.19
3	7416.00	55.2 PK	74.0	-18.8	1.00 V	272	42.05	13.15
4	7416.00	41.8 AV	54.0	-12.2	1.00 V	272	28.65	13.15

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

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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	4824.00	48.6 PK	74.0	-25.4	1.55 H	59	42.89	5.71
2	4824.00	34.9 AV	54.0	-19.1	1.55 H	59	29.19	5.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	48.3 PK	74.0	-25.7	1.49 V	55	42.59	5.71
2	4824.00	35.1 AV	54.0	-18.9	1.49 V	55	29.39	5.71

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	51.7 PK	74.0	-22.3	1.55 H	60	45.80	5.90
2	4874.00	38.4 AV	54.0	-15.6	1.55 H	60	32.50	5.90
3	7311.00	54.2 PK	74.0	-19.8	1.02 H	227	41.03	13.17
4	7311.00	40.9 AV	54.0	-13.1	1.02 H	227	27.73	13.17

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	51.6 PK	74.0	-22.4	1.48 V	65	45.70	5.90
2	4874.00	38.1 AV	54.0	-15.9	1.48 V	65	32.20	5.90
3	7311.00	53.9 PK	74.0	-20.1	1.00 V	252	40.73	13.17
4	7311.00	41.1 AV	54.0	-12.9	1.00 V	252	27.93	13.17

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	48.4 PK	74.0	-25.6	1.56 H	60	42.29	6.11
2	4924.00	34.9 AV	54.0	-19.1	1.56 H	60	28.79	6.11
3	7386.00	54.4 PK	74.0	-19.6	1.00 H	222	41.22	13.18
4	7386.00	41.2 AV	54.0	-12.8	1.00 H	222	28.02	13.18

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	4924.00	48.5 PK	74.0	-25.5	1.43 V	59	42.39	6.11
2	4924.00	35.1 AV	54.0	-18.9	1.43 V	59	28.99	6.11
3	7386.00	53.6 PK	74.0	-20.4	1.00 V	244	40.42	13.18
4	7386.00	41.1 AV	54.0	-12.9	1.00 V	244	27.92	13.18

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

CHANNEL	TX Channel 12	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	4934.00	48.0 PK	74.0	-26.0	1.60 H	64	41.85	6.15
2	4934.00	34.7 AV	54.0	-19.3	1.60 H	64	28.55	6.15
3	7401.00	54.5 PK	74.0	-19.5	1.04 H	216	41.33	13.17
4	7401.00	41.6 AV	54.0	-12.4	1.04 H	216	28.43	13.17

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	4934.00	48.0 PK	74.0	-26.0	1.45 V	56	41.85	6.15
2	4934.00	34.6 AV	54.0	-19.4	1.45 V	56	28.45	6.15
3	7401.00	53.3 PK	74.0	-20.7	1.00 V	230	40.13	13.17
4	7401.00	41.1 AV	54.0	-12.9	1.00 V	230	27.93	13.17

REMARKS:

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

CHANNEL	TX Channel 13	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	4944.00	48.4 PK	74.0	-25.6	1.58 H	67	42.21	6.19
2	4944.00	35.1 AV	54.0	-18.9	1.58 H	67	28.91	6.19
3	7416.00	54.4 PK	74.0	-19.6	1.05 H	223	41.25	13.15
4	7416.00	41.1 AV	54.0	-12.9	1.05 H	223	27.95	13.15

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	4944.00	48.9 PK	74.0	-25.1	1.47 V	66	42.71	6.19
2	4944.00	35.5 AV	54.0	-18.5	1.47 V	66	29.31	6.19
3	7416.00	53.8 PK	74.0	-20.2	1.00 V	231	40.65	13.15
4	7416.00	41.1 AV	54.0	-12.9	1.00 V	231	27.95	13.15

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

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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	4824.00	48.2 PK	74.0	-25.8	1.60 H	51	42.49	5.71
2	4824.00	34.8 AV	54.0	-19.2	1.60 H	51	29.09	5.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	48.4 PK	74.0	-25.6	1.53 V	65	42.69	5.71
2	4824.00	35.0 AV	54.0	-19.0	1.53 V	65	29.29	5.71

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	51.6 PK	74.0	-22.4	1.56 H	74	45.70	5.90
2	4874.00	38.4 AV	54.0	-15.6	1.56 H	74	32.50	5.90
3	7311.00	53.7 PK	74.0	-20.3	1.00 H	218	40.53	13.17
4	7311.00	40.5 AV	54.0	-13.5	1.00 H	218	27.33	13.17

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	51.4 PK	74.0	-22.6	1.48 V	50	45.50	5.90
2	4874.00	37.9 AV	54.0	-16.1	1.48 V	50	32.00	5.90
3	7311.00	54.0 PK	74.0	-20.0	1.00 V	239	40.83	13.17
4	7311.00	41.1 AV	54.0	-12.9	1.00 V	239	27.93	13.17

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	48.7 PK	74.0	-25.3	1.57 H	75	42.59	6.11
2	4924.00	35.2 AV	54.0	-18.8	1.57 H	75	29.09	6.11
3	7386.00	54.6 PK	74.0	-19.4	1.06 H	236	41.42	13.18
4	7386.00	41.3 AV	54.0	-12.7	1.06 H	236	28.12	13.18

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	4924.00	48.9 PK	74.0	-25.1	1.49 V	53	42.79	6.11
2	4924.00	35.2 AV	54.0	-18.8	1.49 V	53	29.09	6.11
3	7386.00	53.6 PK	74.0	-20.4	1.04 V	237	40.42	13.18
4	7386.00	40.8 AV	54.0	-13.2	1.04 V	237	27.62	13.18

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

CHANNEL	TX Channel 12	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	4934.00	48.6 PK	74.0	-25.4	1.53 H	87	42.45	6.15
2	4934.00	35.3 AV	54.0	-18.7	1.53 H	87	29.15	6.15
3	7401.00	54.0 PK	74.0	-20.0	1.05 H	224	40.83	13.17
4	7401.00	41.0 AV	54.0	-13.0	1.05 H	224	27.83	13.17

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	4934.00	49.4 PK	74.0	-24.6	1.46 V	59	43.25	6.15
2	4934.00	35.5 AV	54.0	-18.5	1.46 V	59	29.35	6.15
3	7401.00	53.3 PK	74.0	-20.7	1.07 V	251	40.13	13.17
4	7401.00	40.5 AV	54.0	-13.5	1.07 V	251	27.33	13.17

REMARKS:

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

CHANNEL	TX Channel 13	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	4944.00	49.2 PK	74.0	-24.8	1.58 H	59	43.01	6.19
2	4944.00	35.5 AV	54.0	-18.5	1.58 H	59	29.31	6.19
3	7416.00	54.0 PK	74.0	-20.0	1.10 H	248	40.85	13.15
4	7416.00	41.0 AV	54.0	-13.0	1.10 H	248	27.85	13.15

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	4944.00	49.5 PK	74.0	-24.5	1.52 V	43	43.31	6.19
2	4944.00	35.6 AV	54.0	-18.4	1.52 V	43	29.41	6.19
3	7416.00	53.3 PK	74.0	-20.7	1.04 V	232	40.15	13.15
4	7416.00	40.6 AV	54.0	-13.4	1.04 V	232	27.45	13.15

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

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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	4844.00	48.8 PK	74.0	-25.2	1.56 H	72	43.02	5.78
2	4844.00	35.2 AV	54.0	-18.8	1.56 H	72	29.42	5.78
3	7266.00	54.8 PK	74.0	-19.2	1.07 H	208	41.60	13.20
4	7266.00	41.5 AV	54.0	-12.5	1.07 H	208	28.30	13.20

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4844.00	48.4 PK	74.0	-25.6	1.42 V	72	42.62	5.78
2	4844.00	34.9 AV	54.0	-19.1	1.42 V	72	29.12	5.78
3	7266.00	53.7 PK	74.0	-20.3	1.02 V	259	40.50	13.20
4	7266.00	41.0 AV	54.0	-13.0	1.02 V	259	27.80	13.20

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	48.7 PK	74.0	-25.3	1.53 H	55	42.80	5.90
2	4874.00	35.2 AV	54.0	-18.8	1.53 H	55	29.30	5.90
3	7311.00	54.7 PK	74.0	-19.3	1.00 H	212	41.53	13.17
4	7311.00	41.6 AV	54.0	-12.4	1.00 H	212	28.43	13.17

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	48.7 PK	74.0	-25.3	1.47 V	49	42.80	5.90
2	4874.00	35.4 AV	54.0	-18.6	1.47 V	49	29.50	5.90
3	7311.00	53.4 PK	74.0	-20.6	1.05 V	255	40.23	13.17
4	7311.00	41.0 AV	54.0	-13.0	1.05 V	255	27.83	13.17

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4904.00	48.5 PK	74.0	-25.5	1.53 H	64	42.48	6.02
2	4904.00	35.3 AV	54.0	-18.7	1.53 H	64	29.28	6.02
3	7356.00	54.9 PK	74.0	-19.1	1.09 H	238	41.72	13.18
4	7356.00	41.5 AV	54.0	-12.5	1.09 H	238	28.32	13.18

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	4904.00	47.9 PK	74.0	-26.1	1.44 V	59	41.88	6.02
2	4904.00	34.6 AV	54.0	-19.4	1.44 V	59	28.58	6.02
3	7356.00	54.0 PK	74.0	-20.0	1.01 V	248	40.82	13.18
4	7356.00	41.4 AV	54.0	-12.6	1.01 V	248	28.22	13.18

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

CHANNEL	TX Channel 10	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	4914.00	48.8 PK	74.0	-25.2	1.53 H	60	42.73	6.07
2	4914.00	35.7 AV	54.0	-18.3	1.53 H	60	29.63	6.07
3	7371.00	54.8 PK	74.0	-19.2	1.11 H	251	41.63	13.17
4	7371.00	41.7 AV	54.0	-12.3	1.11 H	251	28.53	13.17

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	4914.00	47.5 PK	74.0	-26.5	1.46 V	65	41.43	6.07
2	4914.00	34.4 AV	54.0	-19.6	1.46 V	65	28.33	6.07
3	7371.00	53.5 PK	74.0	-20.5	1.00 V	247	40.33	13.17
4	7371.00	40.9 AV	54.0	-13.1	1.00 V	247	27.73	13.17

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	48.8 PK	74.0	-25.2	1.50 H	58	42.69	6.11
2	4924.00	35.3 AV	54.0	-18.7	1.50 H	58	29.19	6.11
3	7386.00	54.6 PK	74.0	-19.4	1.07 H	227	41.42	13.18
4	7386.00	41.1 AV	54.0	-12.9	1.07 H	227	27.92	13.18

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	4924.00	48.6 PK	74.0	-25.4	1.40 V	59	42.49	6.11
2	4924.00	35.1 AV	54.0	-18.9	1.40 V	59	28.99	6.11
3	7386.00	53.9 PK	74.0	-20.1	1.00 V	233	40.72	13.18
4	7386.00	41.4 AV	54.0	-12.6	1.00 V	233	28.22	13.18

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

Below 1GHz Data:

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	165.99	39.3 QP	43.5	-4.2	2.00 H	228	52.48	-13.22
2	247.69	39.3 QP	46.0	-6.7	1.00 H	284	53.32	-14.06
3	282.39	42.5 QP	46.0	-3.5	1.00 H	292	55.06	-12.60
4	432.02	39.3 QP	46.0	-6.7	2.00 H	217	47.78	-8.50
5	698.38	38.9 QP	46.0	-7.1	1.00 H	236	42.24	-3.33
6	898.01	41.8 QP	46.0	-4.2	1.00 H	162	41.69	0.14
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	122.78	38.4 QP	43.5	-5.1	2.00 V	293	53.14	-14.73
2	299.76	35.1 QP	46.0	-10.9	1.00 V	306	47.20	-12.09
3	499.53	41.5 QP	46.0	-4.5	1.50 V	199	48.74	-7.20
4	599.44	35.8 QP	46.0	-10.2	1.50 V	302	40.54	-4.72
5	697.07	35.6 QP	46.0	-10.4	2.00 V	306	38.92	-3.36
6	902.66	40.1 QP	46.0	-6.0	2.00 V	309	39.83	0.22

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

4.5.8 Test Results (Conducted Measurement)

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

Conducted Measurement Factor
a. The composite gain will be used when signal support the correlated signal. (Composite gain = $3.62\text{dBi} + 10\log(2) = 6.63\text{dBi}$) b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. c. For the band edge the gain for the specific band may have been used. d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For $f = 30 - 1000$ MHz, add 4.7 dB. Note: The conducted emission test was considered some factor to compute test result.

Above 1GHz Data
802.11b - Channel 1

Conducted spurious emission table

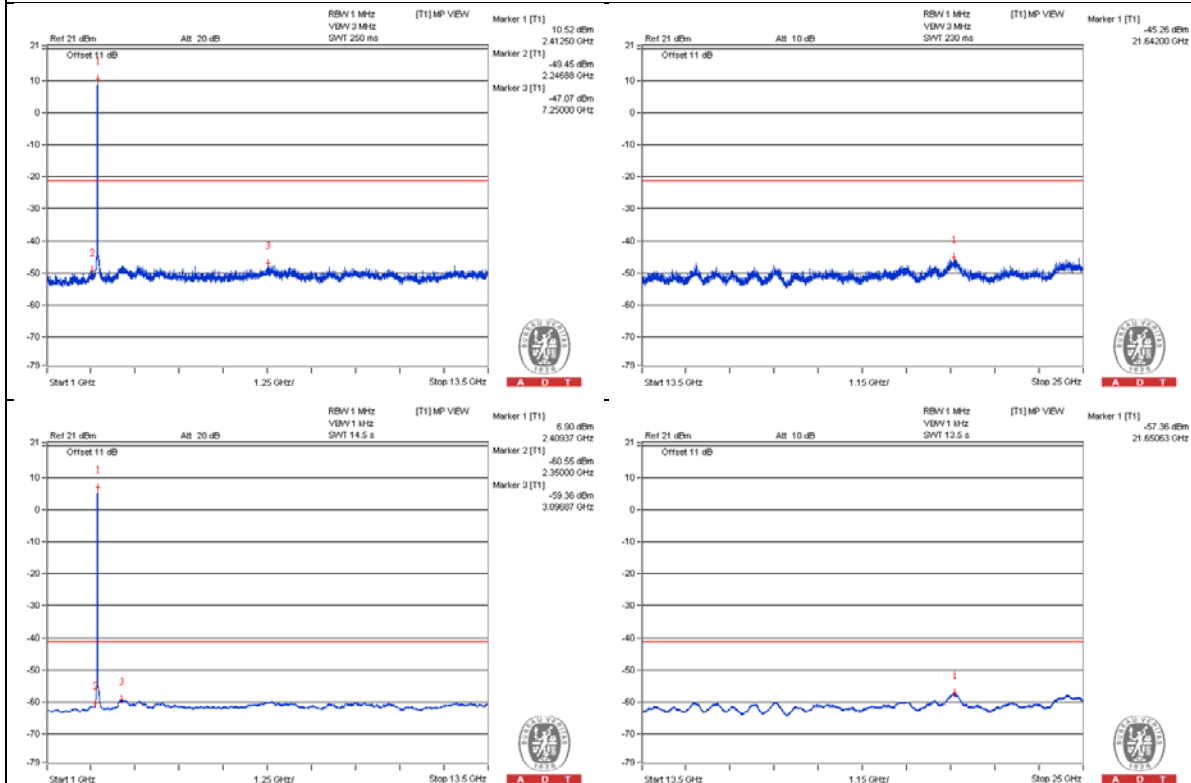
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1609.375 PK	52.1	74	-21.9	-53.29	-52.36	6.63	-43.16
2	1606.25 AV	41.81	54	-12.19	-63.15	-63.04	6.63	-53.45
3	4825 PK	54.49	74	-19.51	-50.83	-50.03	6.63	-40.77
4	4821.875 AV	45.4	54	-8.6	-61.48	-58.15	6.63	-49.86

Note :

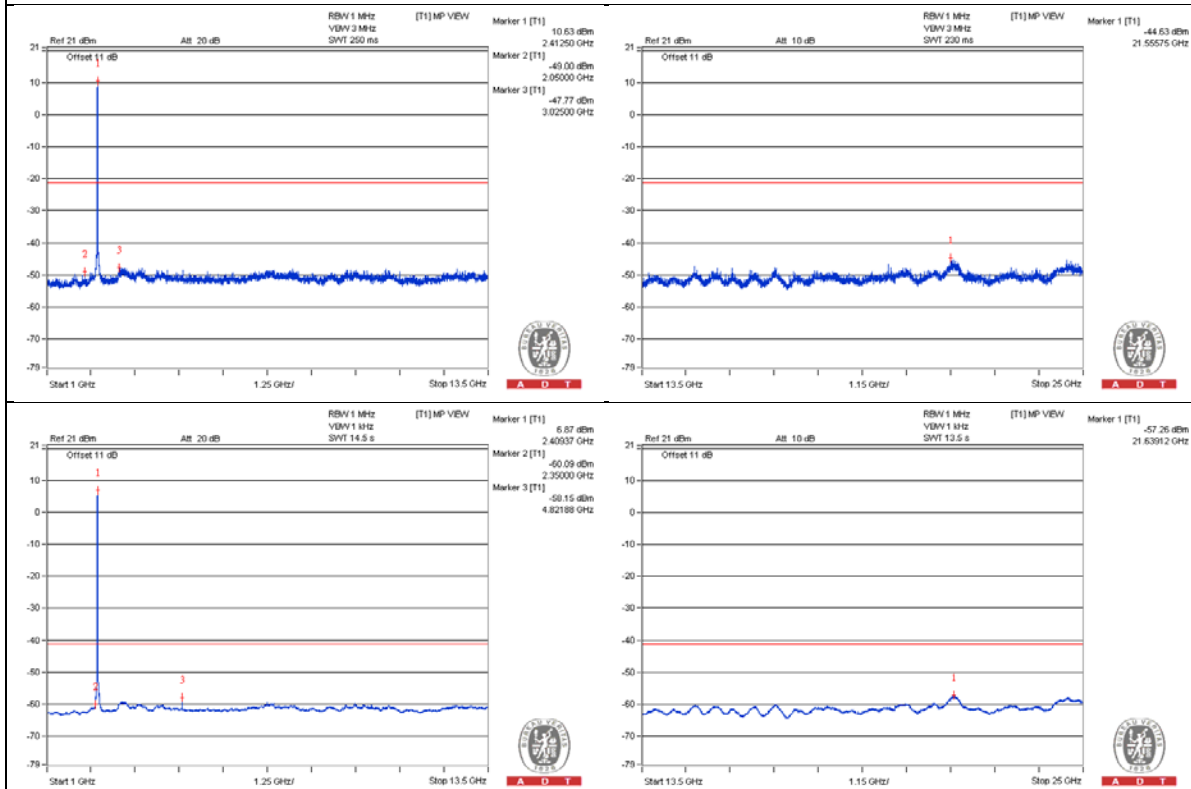
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



Bandedge table

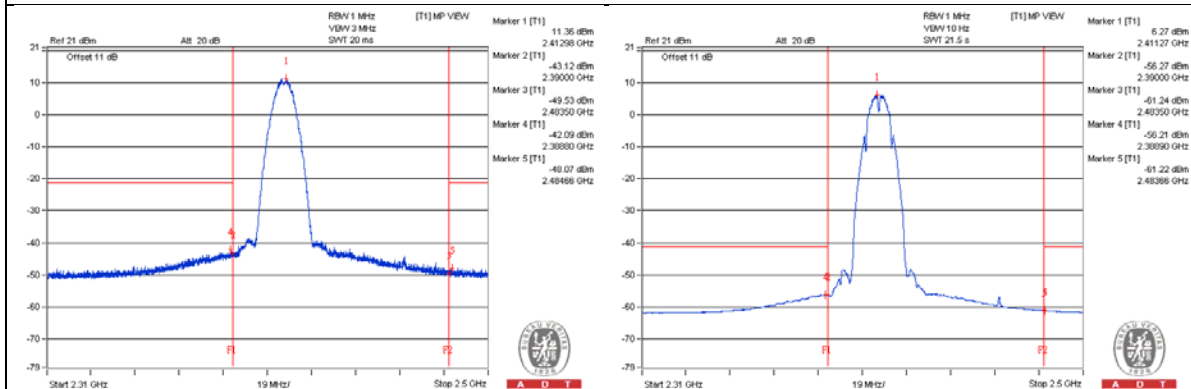
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2387.1875 PK	62.53	74	-11.47	-43.36	-41.56	6.63	-32.73
2	2389.99 AV	49.58	54	-4.42	-56.25	-54.55	6.63	-45.68
3	2484.4675 PK	56.56	74	-17.44	-48.92	-47.83	6.63	-38.7
4	2483.66 AV	43.81	54	-10.19	-61.22	-60.97	6.63	-51.45

Note :

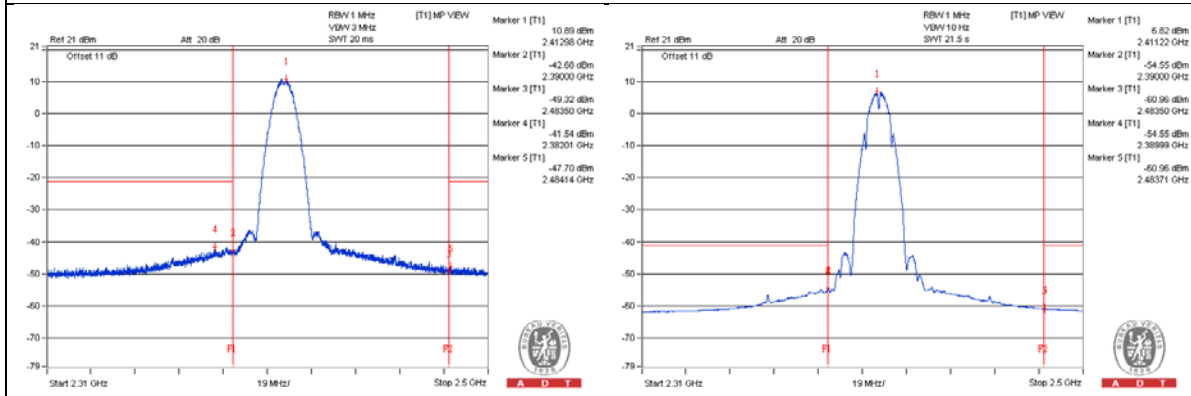
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11b - Channel 6

Conducted spurious emission table

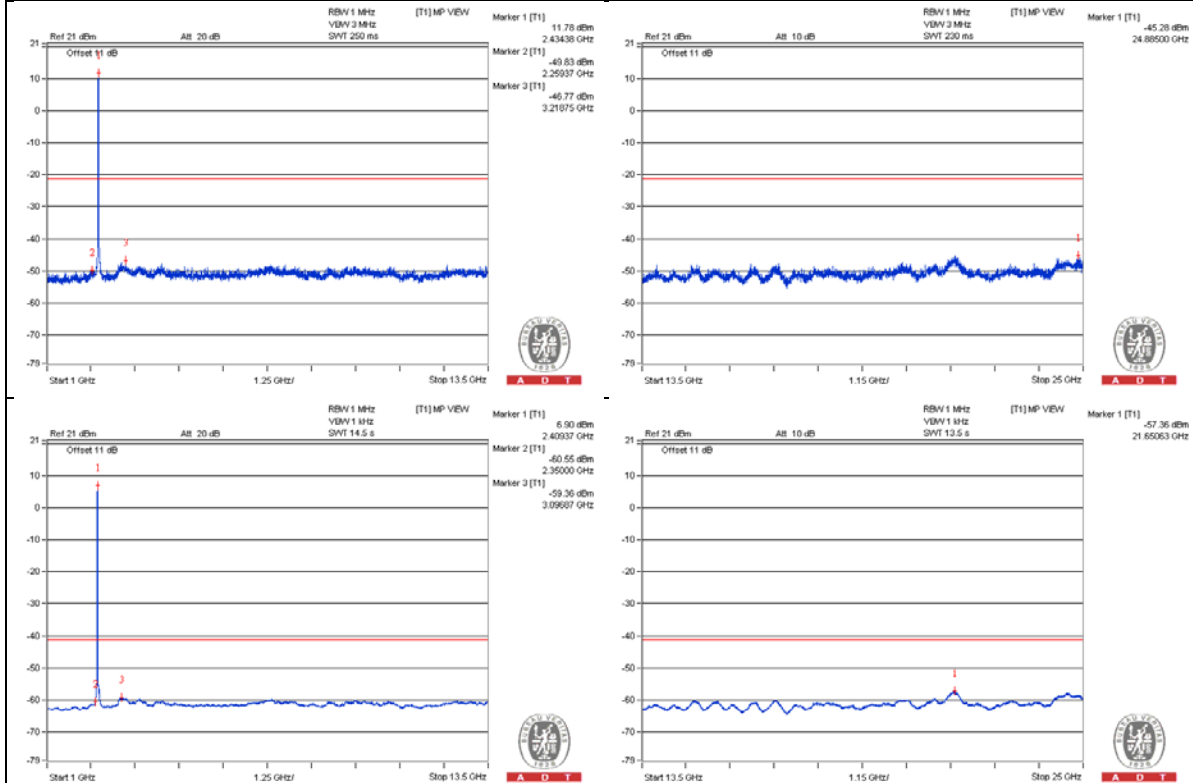
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1625 PK	51.37	74	-22.63	-53.19	-53.9	6.63	-43.89
2	1625 AV	41.91	54	-12.09	-63.05	-62.94	6.63	-53.35
3	4875 PK	54.65	74	-19.35	-50.41	-50.1	6.63	-40.61
4	4871.875 AV	45.77	54	-8.23	-61.73	-57.52	6.63	-49.49
5	7312.5 PK	56.07	74	-17.93	-48.87	-48.8	6.63	-39.19
6	7312.5 AV	45.17	54	-8.83	-60.32	-59.21	6.63	-50.09

Note :

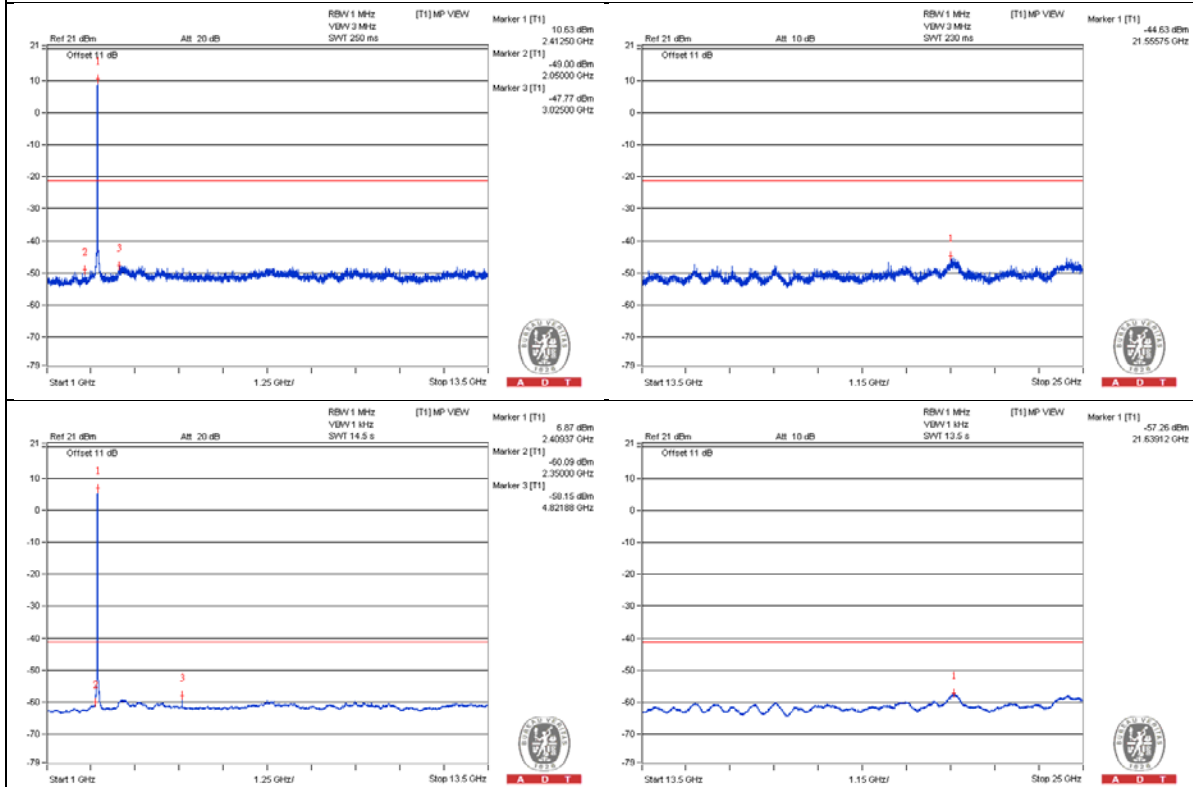
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



Bandedge table

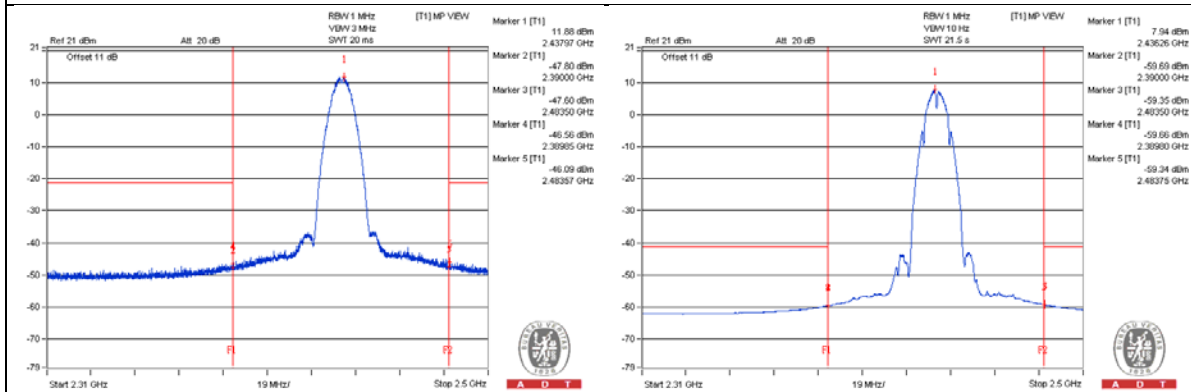
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2388.945 PK	58.69	74	-15.31	-46.98	-45.55	6.63	-36.57
2	2388.8975 AV	46.73	54	-7.27	-59.84	-56.96	6.63	-48.53
3	2483.9925 PK	58.57	74	-15.43	-46.96	-45.78	6.63	-36.69
4	2484.895 AV	46.47	54	-7.53	-59.47	-57.59	6.63	-48.79

Note :

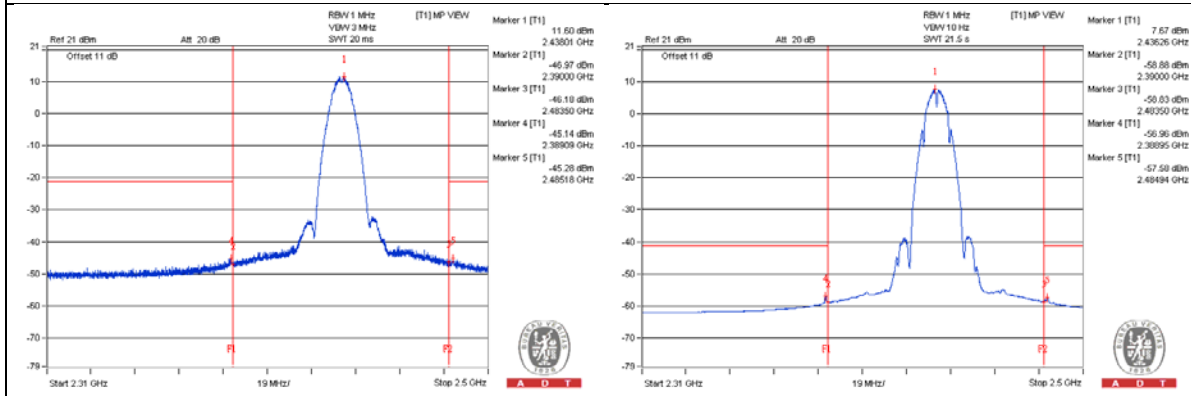
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11b - Channel 11

Conducted spurious emission table

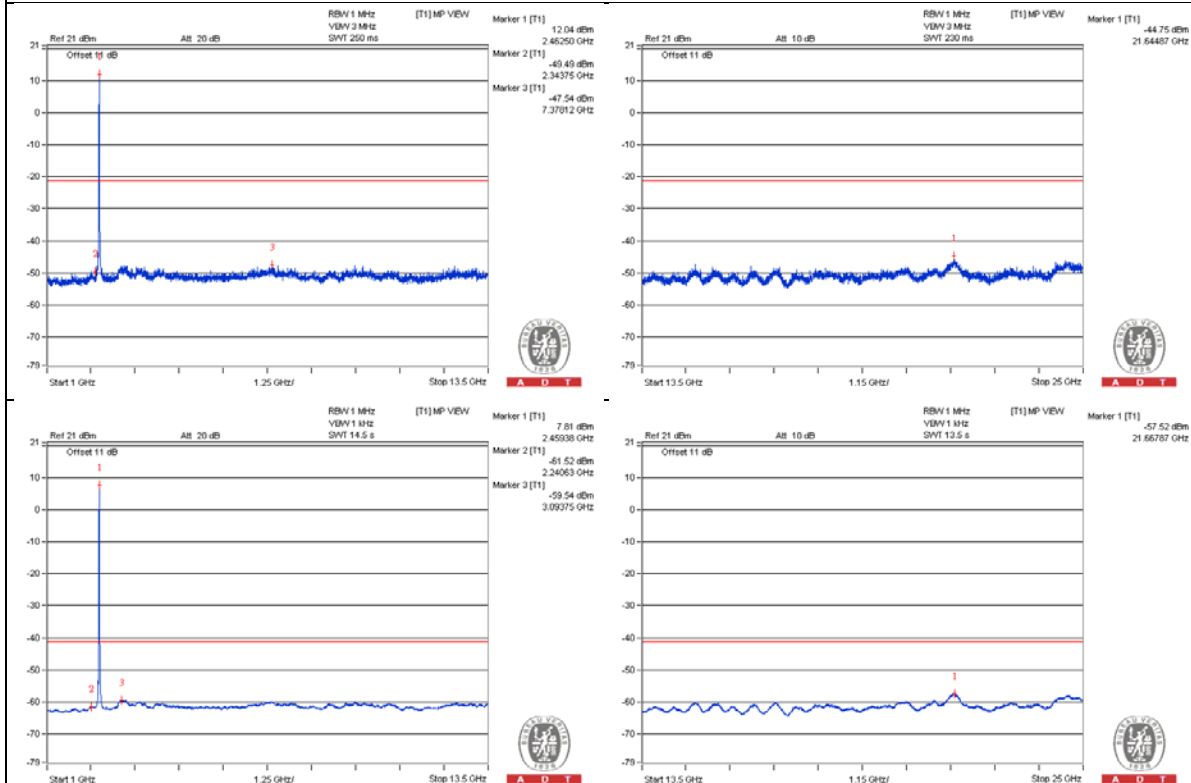
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4925 PK	53.89	74	-20.11	-51.37	-50.67	6.63	-41.37
2	4921.875 AV	45.07	54	-8.93	-61.64	-58.55	6.63	-50.19
3	7384.375 PK	56.07	74	-17.93	-49.23	-48.47	6.63	-39.19
4	7387.5 AV	44.75	54	-9.25	-60.29	-60.01	6.63	-50.51

Note :

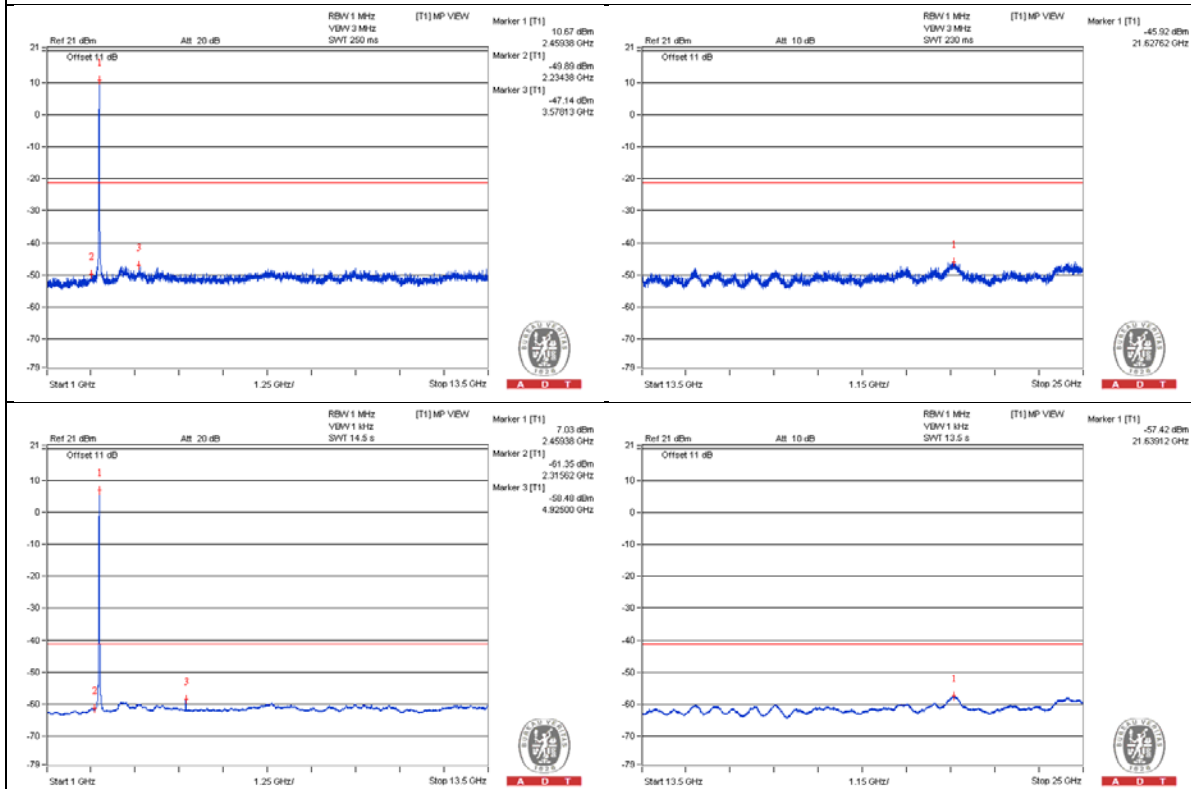
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



Bandedge table

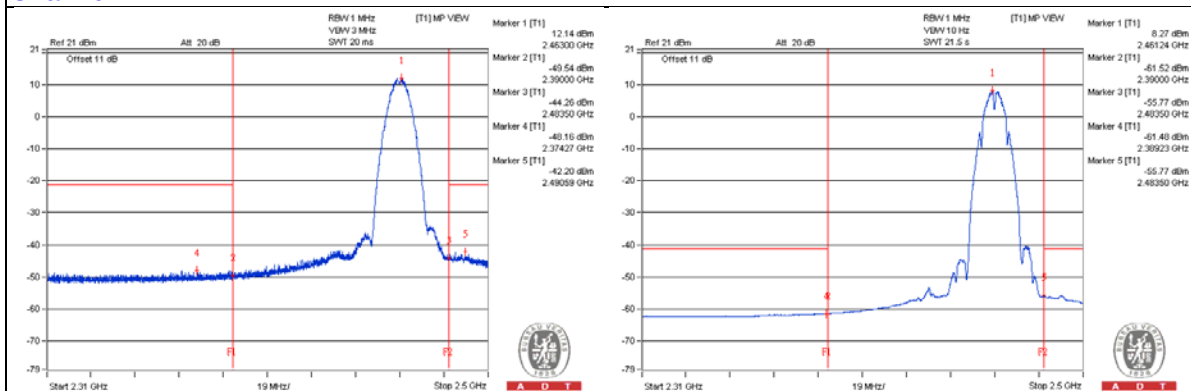
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2387.9 PK	56.57	74	-17.43	-48.71	-47.99	6.63	-38.69
2	2389.23 AV	43.53	54	-10.47	-61.48	-61.27	6.63	-51.73
3	2483.8025 PK	61.99	74	-12.01	-43.69	-42.25	6.63	-33.27
4	2483.5175 AV	49.5	54	-4.5	-55.78	-55.05	6.63	-45.76

Note :

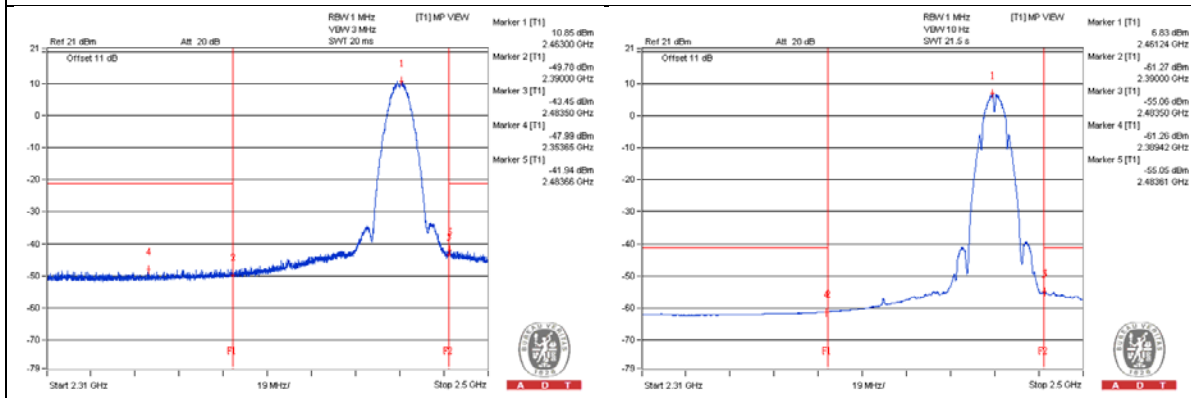
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11b - Channel 12

Conducted spurious emission table

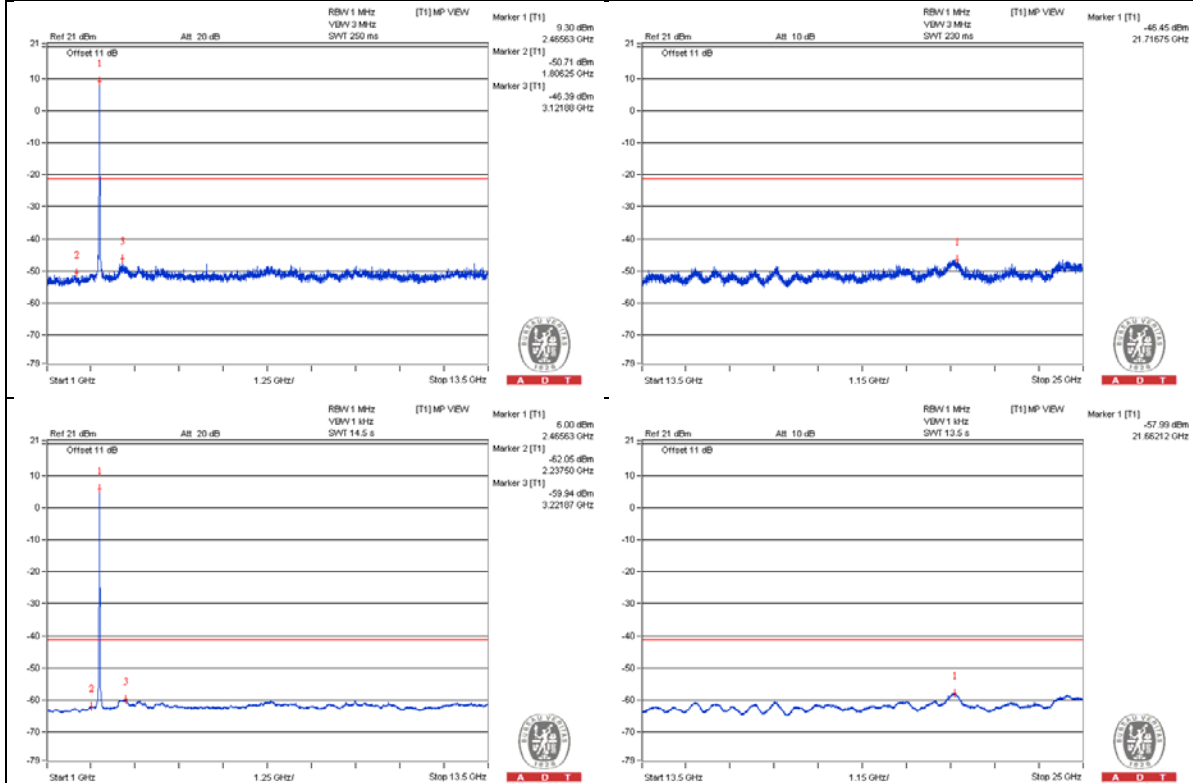
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4934.375 PK	53.6	74	-20.4	-52.08	-50.64	6.63	-41.66
2	4934.375 AV	44.13	54	-9.87	-62.55	-59.51	6.63	-51.13
3	7400 PK	54.8	74	-19.2	-49.82	-50.41	6.63	-40.46
4	7400 AV	43.98	54	-10.02	-61.02	-60.83	6.63	-51.28

Note :

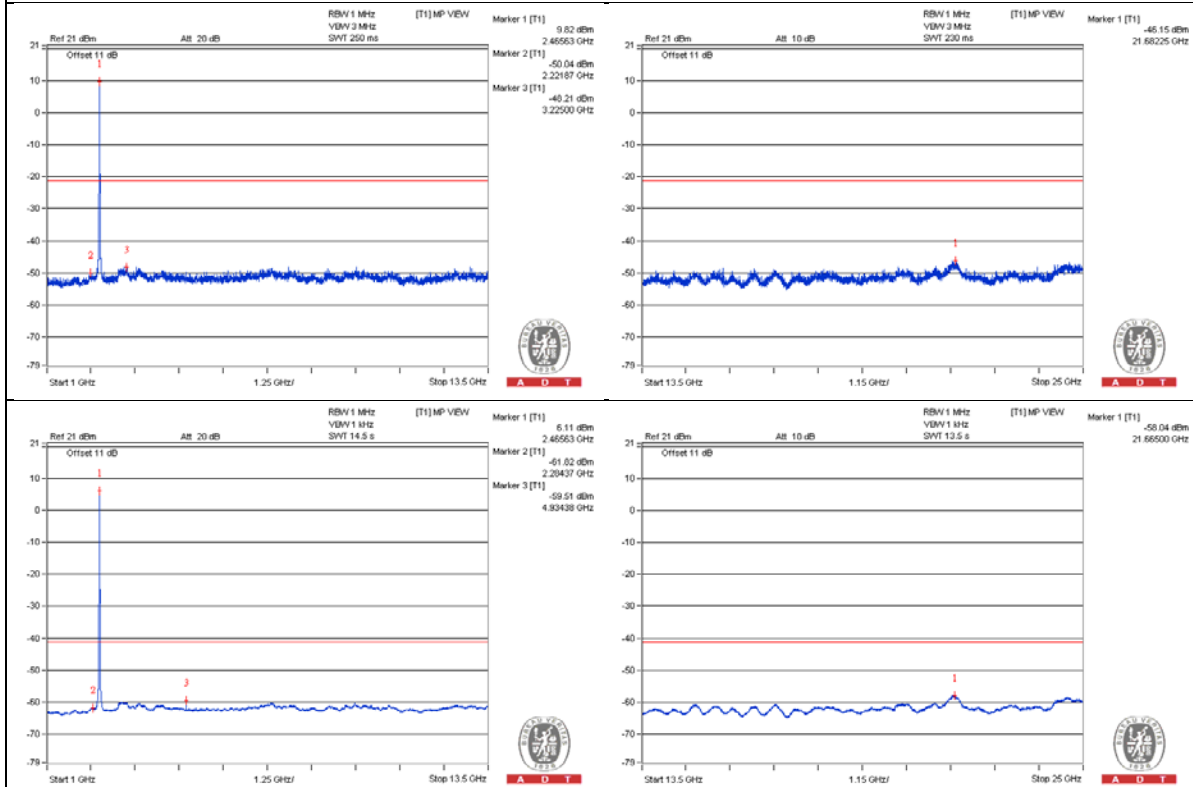
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



Bandedge table

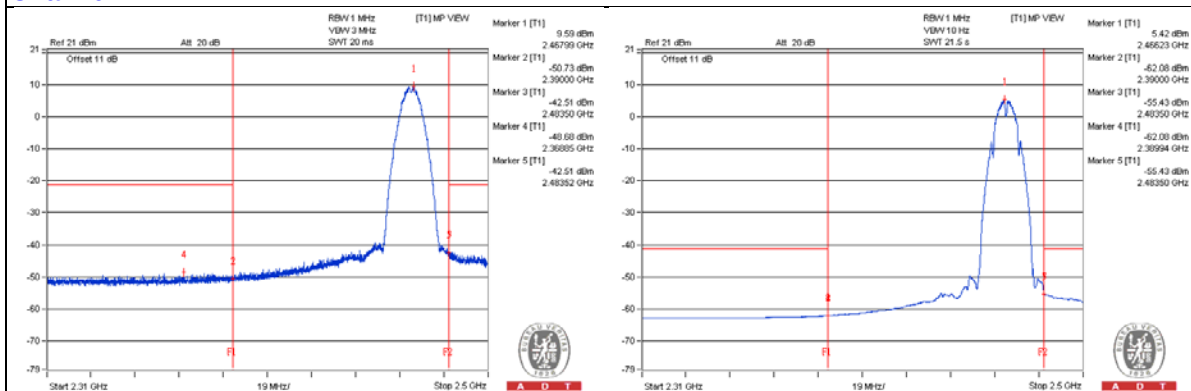
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2372.32 PK	55.85	74	-18.15	-50.22	-48.13	6.63	-39.41
2	2389.99 AV	43	54	-11	-62.08	-61.72	6.63	-52.26
3	2483.5175 PK	63.12	74	-10.88	-42.51	-41.16	6.63	-32.14
4	2483.5175 AV	50.92	54	-3.08	-55.48	-52.86	6.63	-44.34

Note :

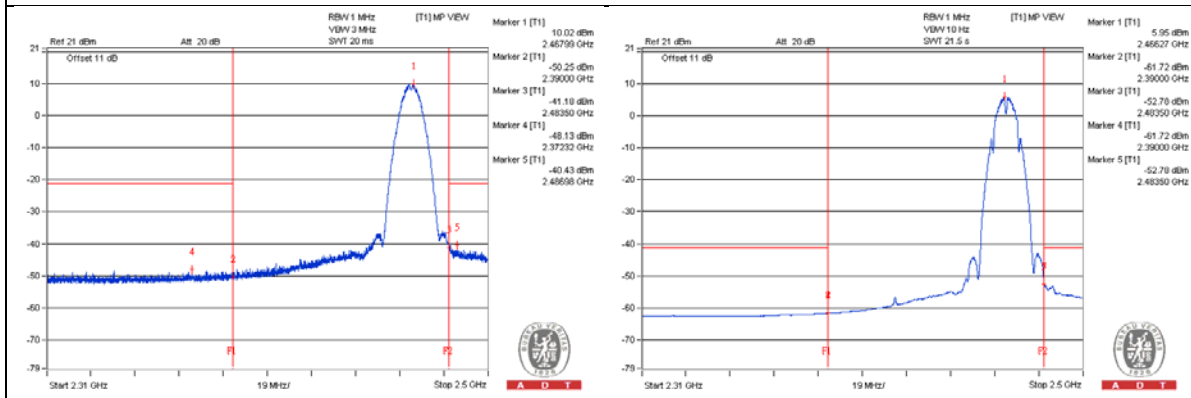
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11b - Channel 13

Conducted spurious emission table

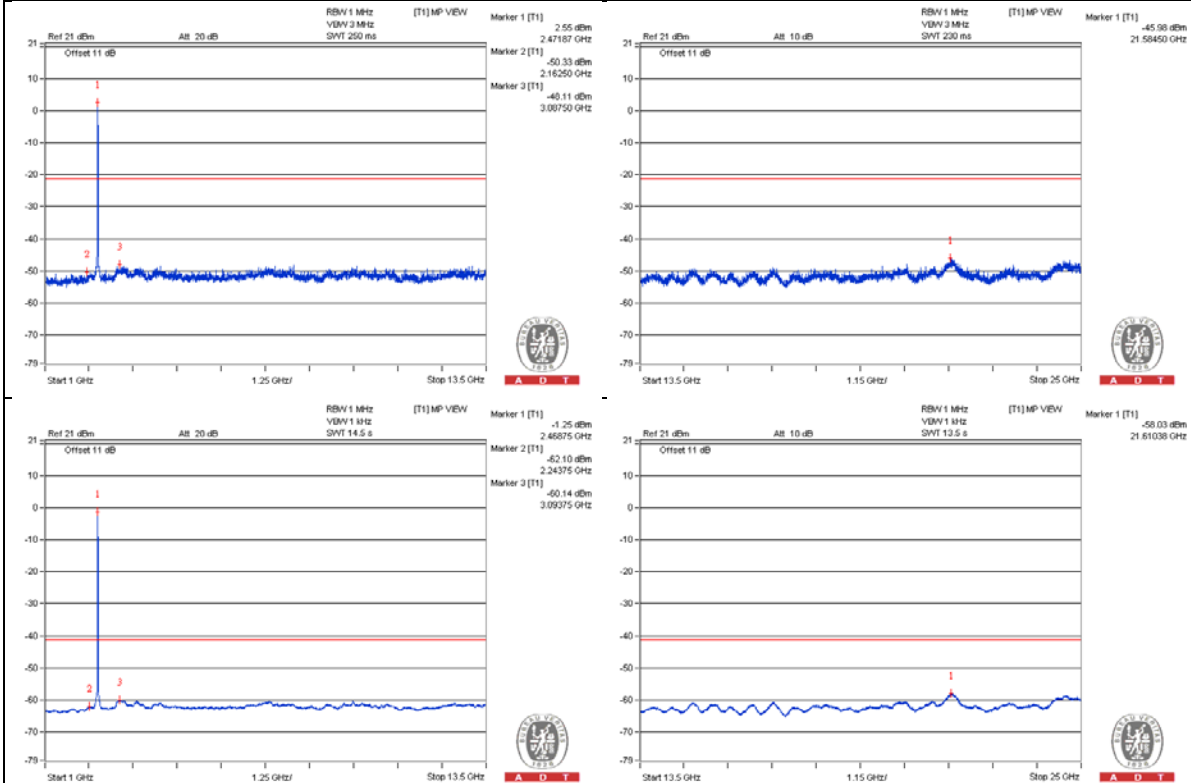
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4943.75 PK	52.73	74	-21.27	-52.14	-52.2	6.63	-42.53
2	4943.75 AV	42.35	54	-11.65	-62.5	-62.61	6.63	-52.91
3	7412.5 PK	55.38	74	-18.62	-49.21	-49.86	6.63	-39.88
4	7418.75 AV	44.13	54	-9.87	-60.75	-60.8	6.63	-51.13

Note :

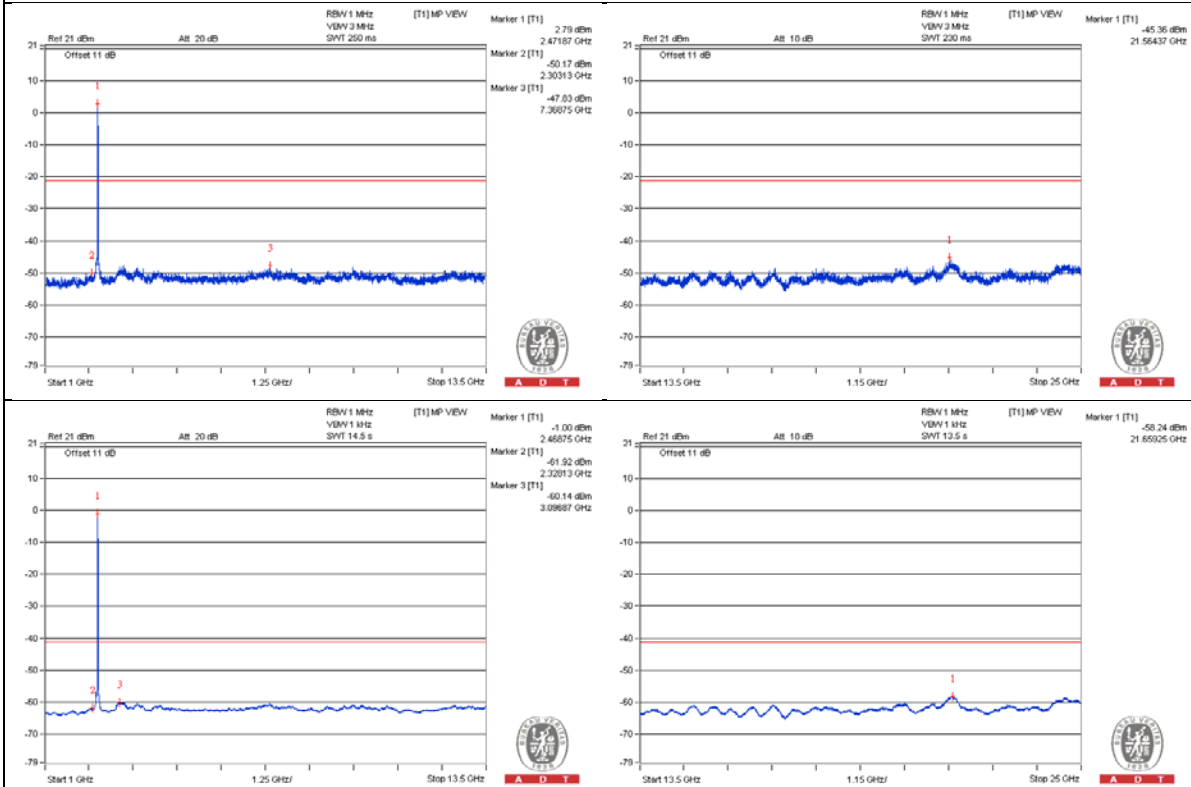
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



Bandedge table

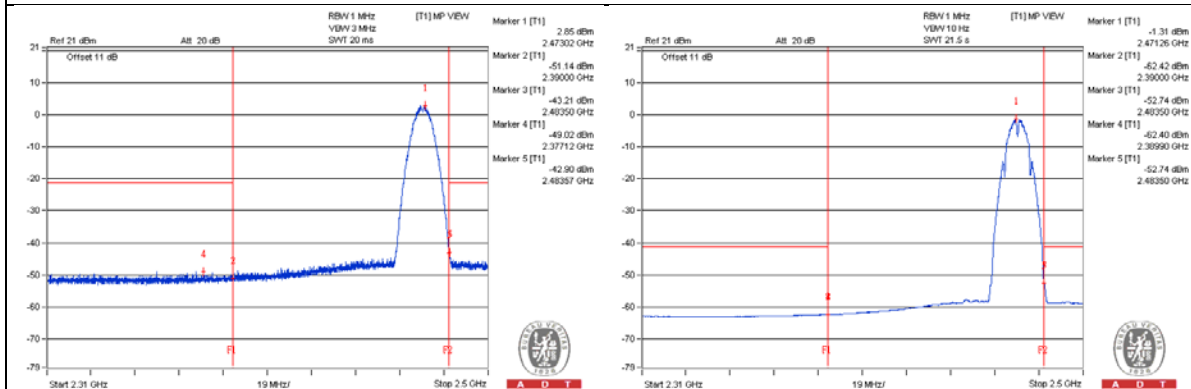
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2381.0125 PK	55.66	74	-18.34	-49.89	-48.68	6.63	-39.6
2	2389.895 AV	42.66	54	-11.34	-62.4	-62.08	6.63	-52.6
3	2483.5175 PK	62.79	74	-11.21	-43.46	-41.08	6.63	-32.47
4	2483.5175 AV	51.81	54	-2.19	-52.83	-53.37	6.63	-43.45

Note :

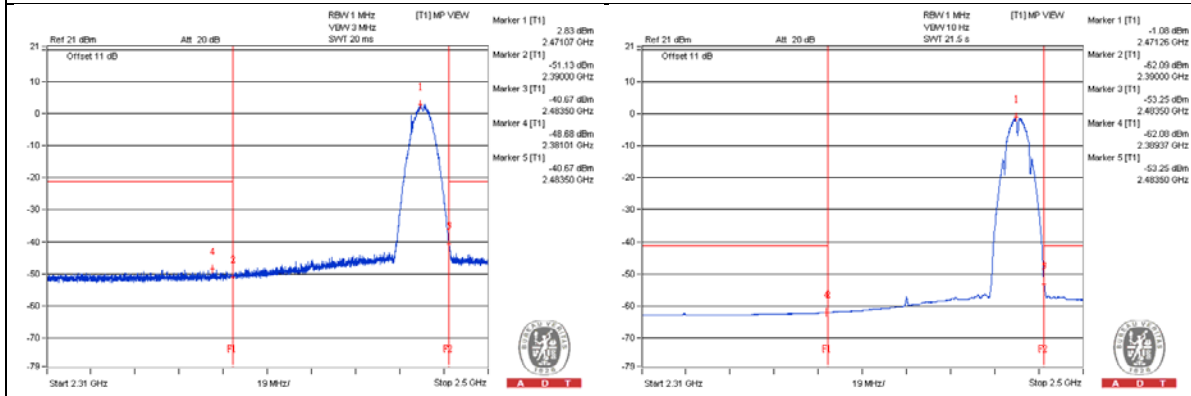
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11g - Channel 1

Conducted spurious emission table

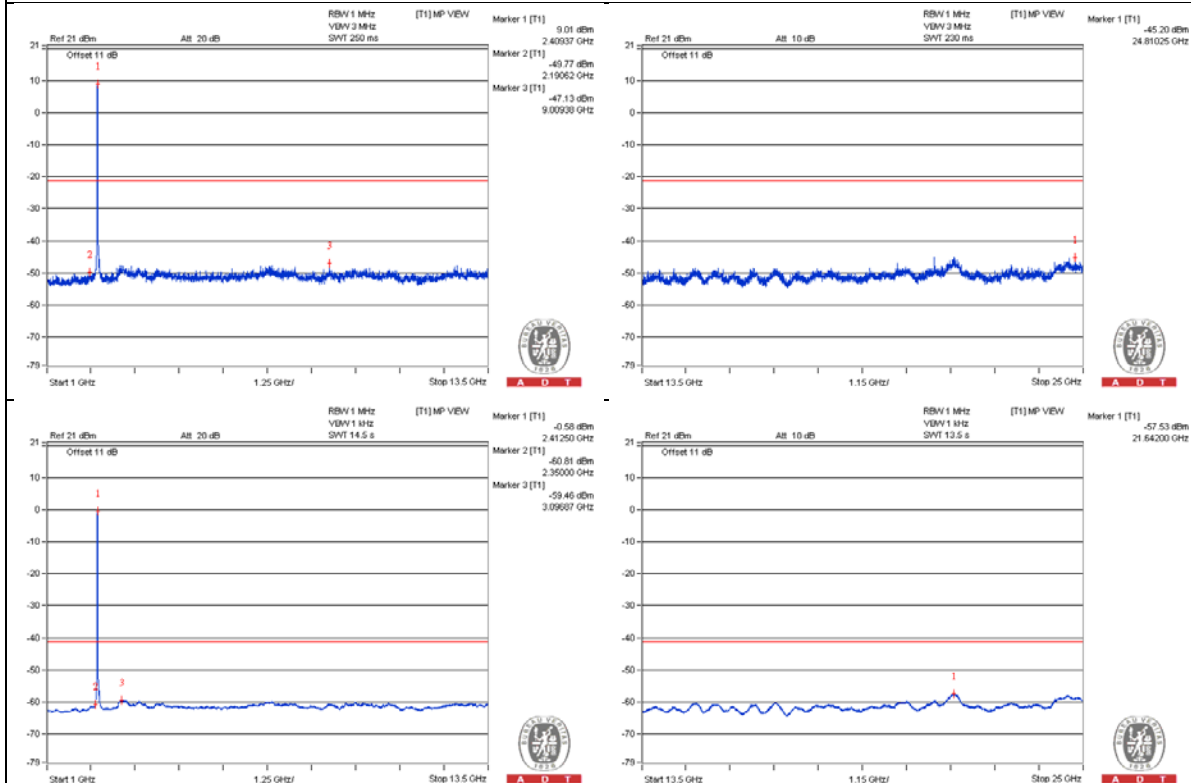
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1609.375 PK	52.91	74	-21.09	-52.21	-51.79	6.63	-42.35
2	1609.375 AV	41.85	54	-12.15	-63.05	-63.05	6.63	-53.41
3	4828.125 PK	54.38	74	-19.62	-50.76	-50.3	6.63	-40.88
4	4828.125 AV	43.36	54	-10.64	-61.41	-61.68	6.63	-51.9

Note :

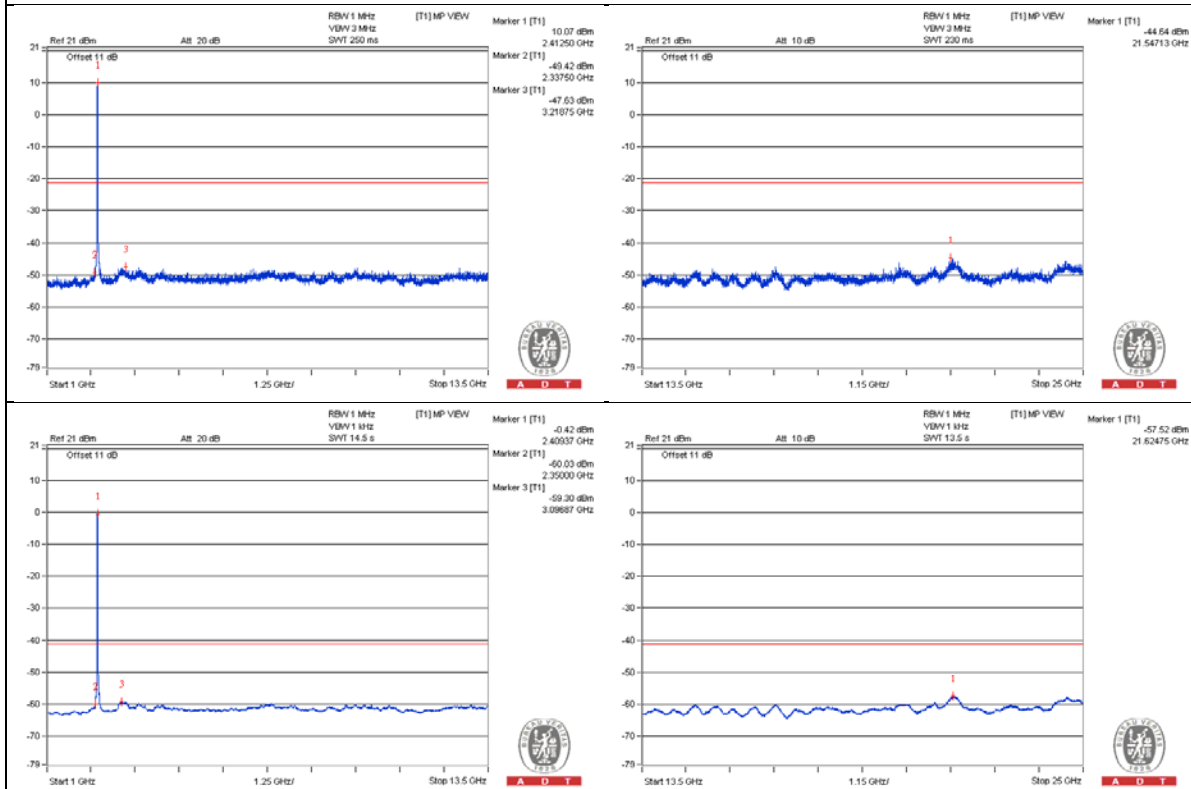
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



Bandedge table

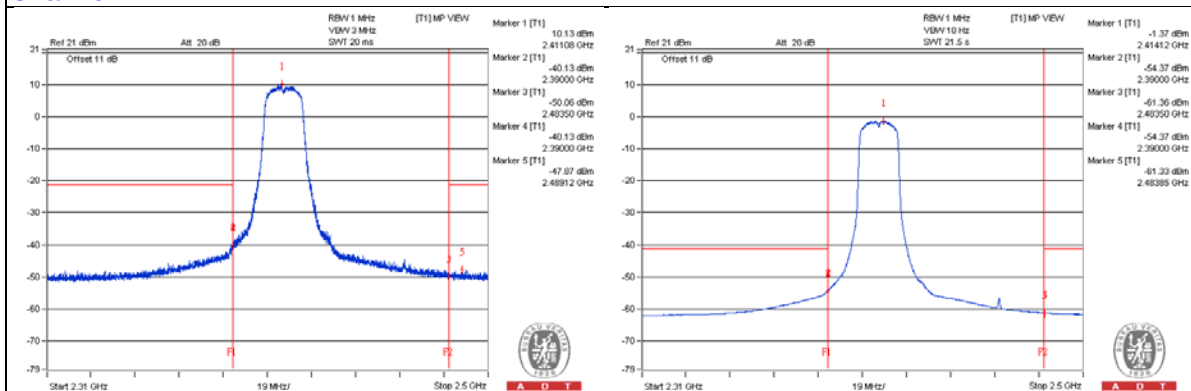
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.705 PK	65.5	74	-8.5	-40.2	-38.73	6.63	-29.76
2	2389.99 AV	51.08	54	-2.92	-54.37	-53.33	6.63	-44.18
3	2491.4975 PK	56.55	74	-17.45	-48.37	-48.33	6.63	-38.71
4	2483.5175 AV	43.75	54	-10.25	-61.37	-60.94	6.63	-51.51

Note :

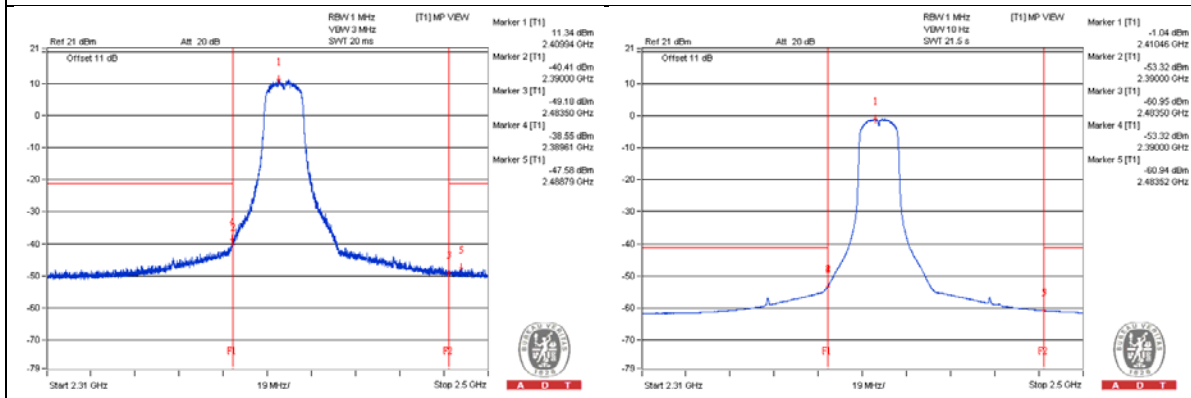
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11g - Channel 6

Conducted spurious emission table

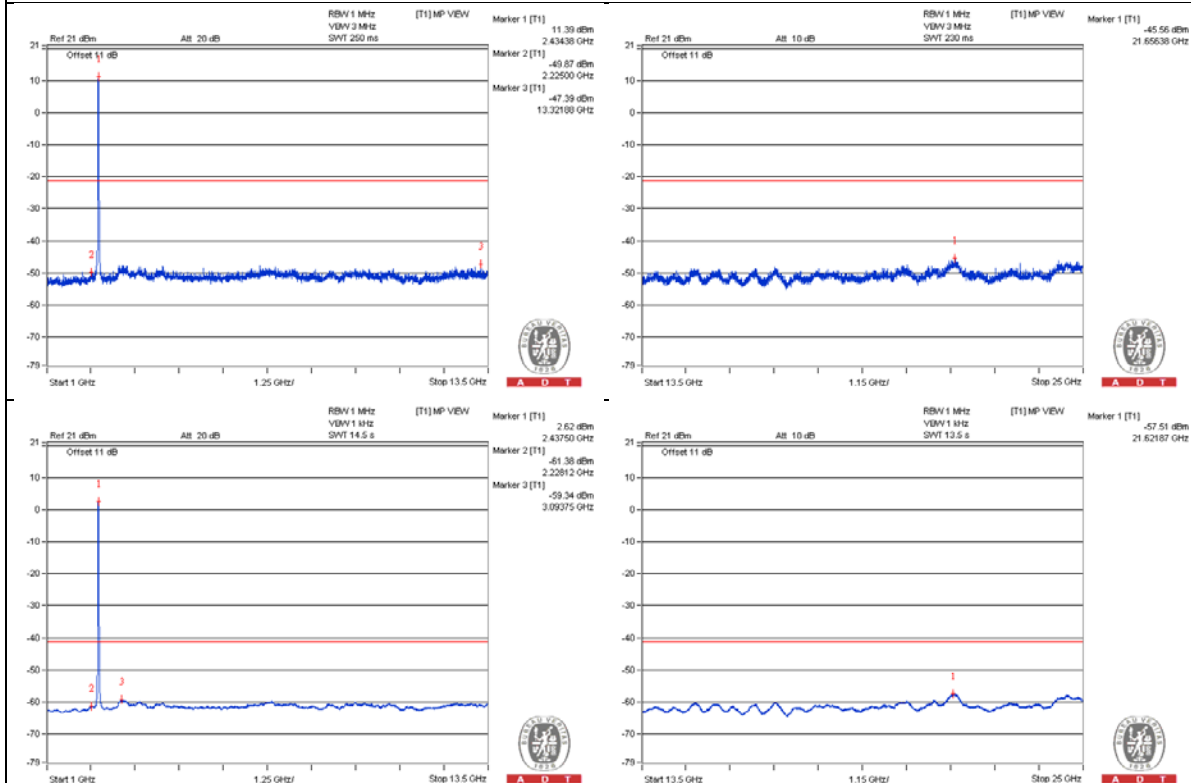
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1625 PK	51.75	74	-22.25	-53.08	-53.23	6.63	-43.51
2	1625 AV	41.85	54	-12.15	-63.04	-63.06	6.63	-53.41
3	4871.875 PK	54.29	74	-19.71	-50.18	-51.08	6.63	-40.97
4	4871.875 AV	43.45	54	-10.55	-61.64	-61.26	6.63	-51.81
5	7315.625 PK	55.77	74	-18.23	-49.16	-49.11	6.63	-39.49
6	7315.625 AV	44.87	54	-9.13	-60.31	-59.77	6.63	-50.39

Note :

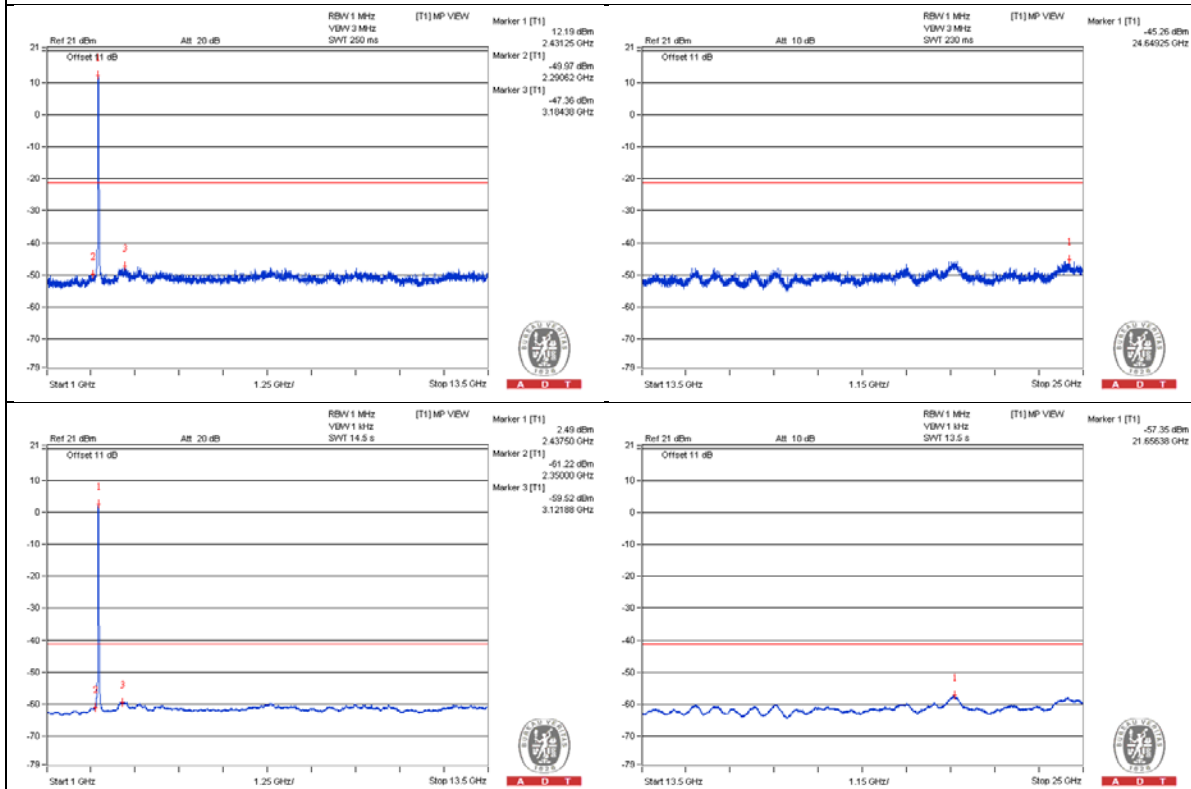
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



Bandedge table

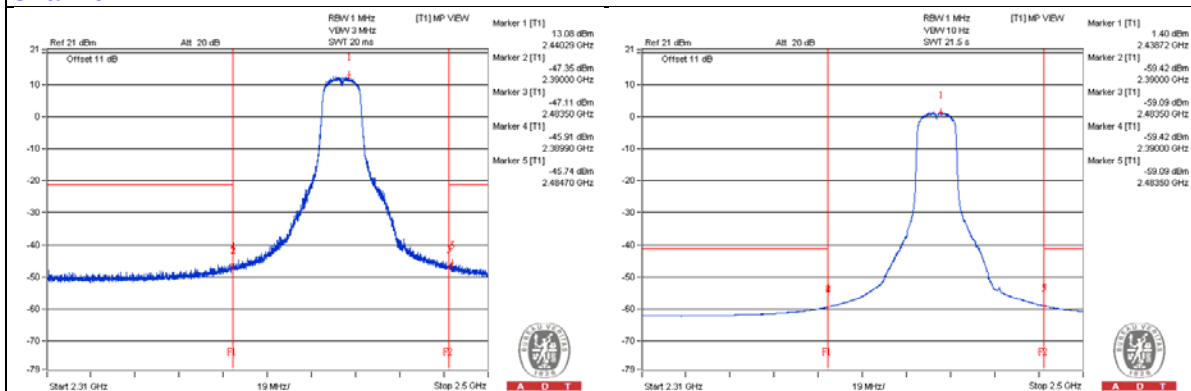
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.99 PK	58.97	74	-15.03	-47.28	-44.9	6.63	-36.29
2	2388.9925 AV	46.87	54	-7.13	-59.57	-56.9	6.63	-48.39
3	2484.705 PK	59.19	74	-14.81	-45.74	-45.68	6.63	-36.07
4	2484.99 AV	46.83	54	-7.17	-59.33	-57.09	6.63	-48.43

Note :

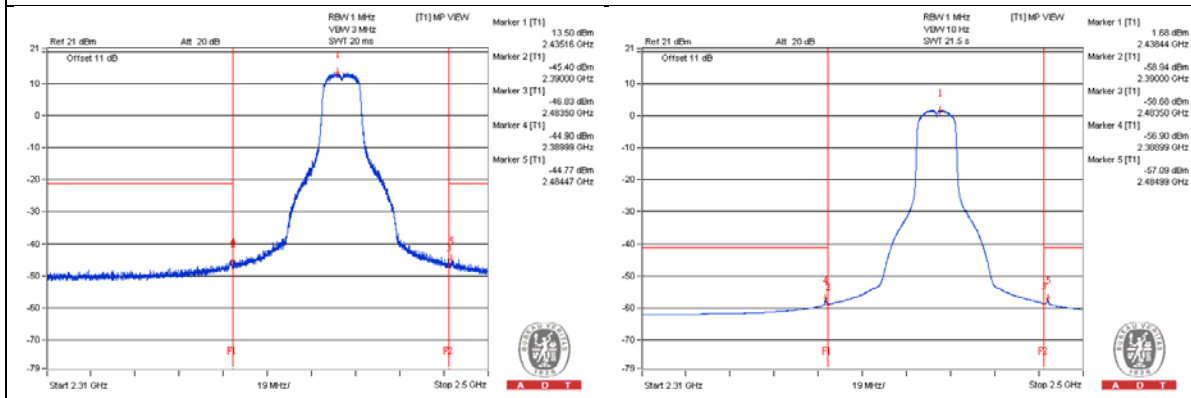
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11g - Channel 11

Conducted spurious emission table

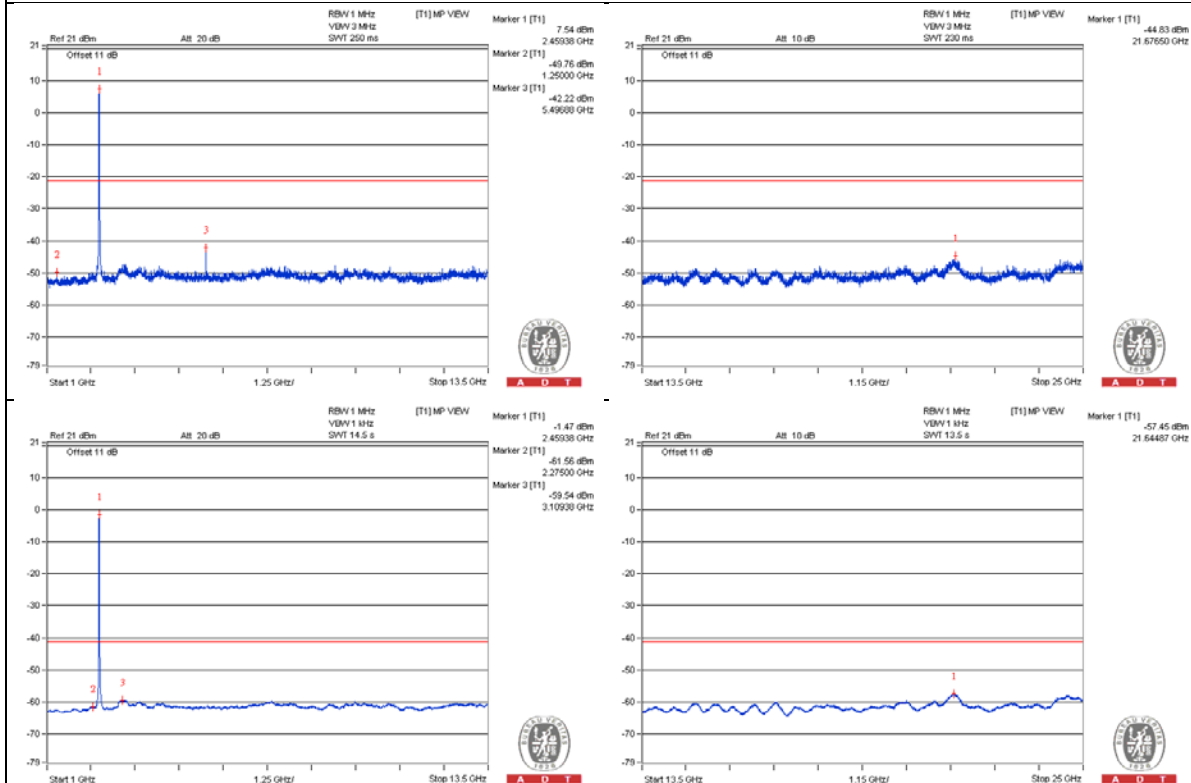
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4925 PK	52.83	74	-21.17	-51.96	-52.19	6.63	-42.43
2	4925 AV	43	54	-11	-62.08	-61.73	6.63	-52.26
3	7384.375 PK	56.01	74	-17.99	-49.04	-48.74	6.63	-39.25
4	7381.25 AV	44.76	54	-9.24	-60.24	-60.04	6.63	-50.5

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Chain 0



Chain 1

