FCC TEST REPORT
(WLAN 15.247)

REPORT NO.:	RF140508E01
MODEL NO.:	QCNFA354
FCC ID:	PPD-QCNFA354
RECEIVED:	May 08, 2014
TESTED:	May 14 to July 02, 2014
ISSUED:	July 08, 2014

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

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

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140508E01	Original release	July 08, 2014

1. CERTIFICATION

PRODUCT:	802.11 a/b/g/n/ac+ BT 4.1 M.2 2226 Type Card
BRAND NAME:	Qualcomm Atheros
MODEL NO.:	QCNFA354
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Qualcomm Atheros, Inc.
TESTED:	May 14 to July 02, 2014
STANDARDS:	FCC Part 15, Subpart C (Section 15.247) ANSI C63.10-2009

The above equipment (Model: QCNFA354) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and was in compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** *July 08, 2014*

(Midoli Peng, Specialist)

APPROVED BY : _____ , **DATE:** *July 08, 2014*

(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -4.55dB at 0.17734MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.1dB at 166.29MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output 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. For the 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz RF parameters was recorded in another test report.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.43 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT(WLAN)

PRODUCT	802.11 a/b/g/n/ac+ BT 4.1 M.2 2226 Type Card
MODEL NO.	QCNFA354
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and 11n (BW20), 11n (BW40) mode of 2.4GHz Band
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 400Mbps 802.11ac: up to 866.7Mbps
OPERATING FREQUENCY	**For 15.407** 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.72GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
NUMBER OF CHANNEL	**For 15.407** 25 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 12 for 802.11n (HT40), 802.11ac (VHT40) 6 for 802.11ac (VHT80)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20), 802.11n_256QAM(BW20) 7 for 802.11n (HT40), 802.11n_256QAM(BW40)
MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 146.102 mW 802.11n (HT20): 142.408mW 802.11n (HT40): 152.979mW 802.11ac (VHT20): 158.619mW 802.11ac (VHT40): 155.846mW 802.11ac (VHT80): 93.161mW **For 15.247** 802.11b: 358.275mW 802.11g: 559.82mW 802.11n (HT20): 561.421mW 802.11n (HT40) : 393.258mW 802.11n_256QAM(BW20): 574.596mW 802.11n_256QAM(BW40): 398.123mW

ANTENNA TYPE	See item 3.2
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

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

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2Tx CDD / beamforming	2Rx
802.11g	6 ~ 54Mbps	2Tx CDD / beamforming	2Rx
802.11n (HT20) (2.4GHz)	MCS 0~7	2Tx CDD / beamforming	2Rx
	MCS 8~15	2Tx	2Rx
	MCS 0~8, Nss=1 (256QAM)	2Tx CDD / beamforming	2Rx
	MCS 0~8, Nss=2 (256QAM)	2Tx	2Rx
802.11n (HT40) (2.4GHz)	MCS 0~7	2Tx CDD / beamforming	2Rx
	MCS 8~15	2Tx	2Rx
	MCS 0~8, Nss=1 (256QAM)	2Tx CDD / beamforming	2Rx
	MCS 0~8, Nss=2 (256QAM)	2Tx	2Rx
802.11a	6 ~ 54Mbps	2Tx CDD / beamforming	2Rx
802.11n (HT20) (5GHz)	MCS 0~7	2Tx CDD / beamforming	2Rx
	MCS 8~15	2Tx / STBC	2Rx
802.11n (HT40) (5GHz)	MCS 0~7	2Tx CDD / beamforming	2Rx
	MCS 8~15	2Tx / STBC	2Rx
802.11ac (VHT20) (5GHz)	MCS 0~8, Nss=1	2Tx CDD / beamforming	2Rx
	MCS 0~8, Nss=2	2Tx / STBC	2Rx
802.11ac (VHT40) (5GHz)	MCS 0~8, Nss=1	2Tx CDD / beamforming	2Rx
	MCS 0~8, Nss=2	2Tx / STBC	2Rx
802.11ac (VHT80) (5GHz)	MCS 0~9, Nss=1	2Tx CDD / beamforming	2Rx
	MCS 0~9, Nss=2	2Tx / STBC	2Rx

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

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

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

4. Spurious Emission (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(VHT20)) + Bluetooth (GFSK)	36 to 165	120	OFDM
	0 to 78	78	FHSS

5. WLAN/BT coexistence mode:

2TX 5GHz WLAN (Main + Aux) + BT (Main) concurrent.

2TX 2.4GHz WLAN+ BT timely shared at Main antenna.

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

3.2 DESCRIPTION OF ANTENNA

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

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

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

2. All of antenna can be application for WLAN and Bluetooth.

3.3 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), 802.11n_256QAM(BW20):

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

7 channels are provided for 802.11n (HT 40), 802.11n_256QAM(BW40):

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

3.3.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	UE < 1G	UE ³ 1G	APCM	OB	
-	√	√	√	√	√	-

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

UE ³ 1G: Unwanted Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

Note 1. The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane.**

AC POWER LINE CONDUCTED EMISSION TEST:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11n_256QAM(BW20)	1 to 11	6	OFDM	6.5

UNWANTED EMISSION TEST (BELOW 1 GHz):

☒ Radiated versus Conducted Measurements

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11n_256QAM(BW20)	1 to 11	6	OFDM	6.5

UNWANTED EMISSION TEST (ABOVE 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
802.11n_256QAM(BW20)	1 to 11	1, 6, 11	OFDM	6.5
802.11n_256QAM(BW40)	3 to 9	3, 6, 9	OFDM	13.5

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5
802.11n_256QAM(BW20)	1 to 11	1, 6, 11	OFDM	6.5
802.11n_256QAM(BW40)	3 to 9	3, 6, 9	OFDM	13.5

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
802.11n_256QAM(BW20)	1 to 11	1, 6, 11	OFDM	6.5
802.11n_256QAM(BW40)	3 to 9	3, 6, 9	OFDM	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	27deg. C, 56%RH	120Vac, 60Hz	Ping Liu
RE<1G	26deg. C, 69%RH	120Vac, 60Hz	Gary Cheng
RE≥1G	24deg. C, 71%RH 28deg. C, 73%RH	120Vac, 60Hz	Gary Cheng Robert Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee
OB	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee

3.4 DUTY CYCLE OF TEST SIGNAL

If duty cycle of test signal is > 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

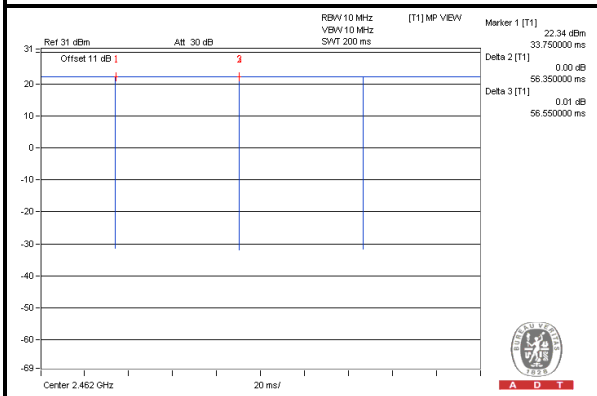
802.11b: Duty cycle = 56.35 ms/56.55 ms = 0.996

802.11g: Duty cycle = 9.38 ms/9.5 ms = 0.987

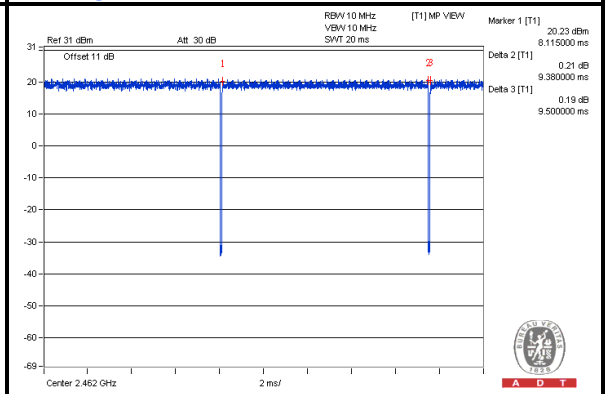
802.11n(HT20), 802.11n_256QAM(BW20) : Duty cycle = 8.67 ms/8.79 ms = 0.986

802.11n(HT40), 802.11n_256QAM(BW40) : Duty cycle = 4.208 ms/4.313 ms = 0.976, Duty factor = 10 * log(1/0.976) = 0.1

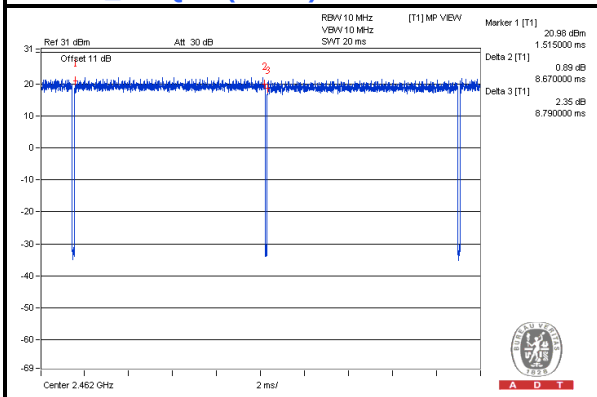
802.11b



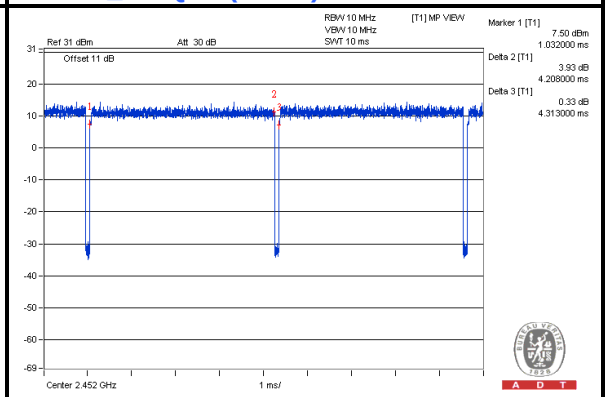
802.11g



802.11n_256QAM(BW20)



802.11n_256QAM(BW40)



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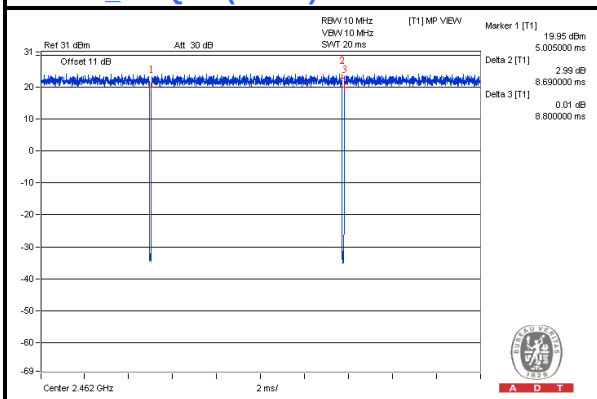
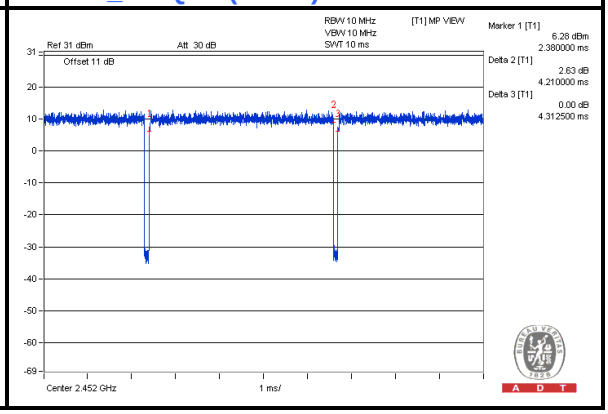


802.11n_256QAM(BW40)



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (Section 15.247)
558074 D01 DTS Meas Guidance v03r02
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2009

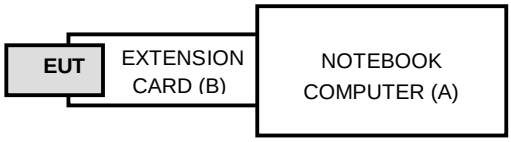
All test items have been performed and recorded as per the above standards.

3.6 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	GM1SKV1	FCC DoC	Provided by Lab
B	EXTENSION CARD	Qualcomm Atheros	NA	NA	NA	Supplied by Client

3.7 CONFIGURATION OF SYSTEM UNDER TEST



Note: 1. For Unwanted Emission test item: used 50ohm terminator on antenna port
2. For other test items : used antenna on antenna port

4. TEST TYPES AND RESULTS

4.1 CONDUCTED OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

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

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

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

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

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

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

4.1.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter 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 :July 02, 2014

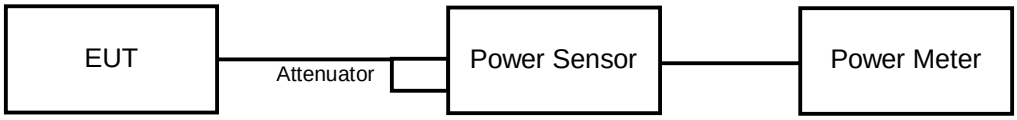
4.1.3 TEST PROCEDURES

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 peak power level.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



4.1.6 EUT OPERATING CONDITIONS

The software (QCRT Version3.0 29.0) 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

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	22.17	20.23	270.255	24.32	29.37	PASS
6	2437	23.41	21.43	358.275	25.54	29.37	PASS
11	2462	22.54	21.51	321.052	25.07	29.37	PASS

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

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	21.93	20.08	257.814	24.11	29.37	PASS
6	2437	24.51	24.43	559.82	27.48	29.37	PASS
11	2462	21.14	20.52	242.737	23.85	29.37	PASS

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

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	22.03	19.62	251.21	24.00	29.37	PASS
6	2437	24.63	24.33	561.421	27.49	29.37	PASS
11	2462	21.04	20.08	228.916	23.60	29.37	PASS

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

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	18.43	16.31	112.419	20.51	29.37	PASS
6	2437	23.39	22.43	393.258	25.95	29.37	PASS
9	2452	16.63	15.23	79.369	19.00	29.37	PASS

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

802.11n_256QAM(BW20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	22.16	19.72	258.193	24.12	29.37	PASS
6	2437	24.75	24.41	574.596	27.59	29.37	PASS
11	2462	21.23	20.06	234.13	23.69	29.37	PASS

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

802.11n_256QAM(BW40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	18.51	16.47	115.319	20.62	29.37	PASS
6	2437	23.47	22.45	398.123	26.00	29.37	PASS
9	2452	16.81	15.39	82.567	19.17	29.37	PASS

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

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	19.53	17.62	147.553	21.69
6	2437	20.53	19.01	192.596	22.85
11	2462	20.03	19.04	180.861	22.57

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.31	13.36	55.640	17.45
6	2437	20.36	19.27	193.171	22.86
11	2462	14.62	13.63	52.040	17.16

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.02	13.14	52.375	17.19
6	2437	20.14	19.01	182.892	22.62
11	2462	14.21	13.02	46.408	16.67

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	11.51	9.63	23.341	13.68
6	2437	17.28	15.75	91.040	19.59
9	2452	10.04	8.14	16.609	12.20

802.11n_256QAM(BW20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	15.14	13.26	53.843	17.31
6	2437	20.21	19.06	185.492	22.68
11	2462	14.37	13.22	48.342	16.84

802.11n_256QAM(BW40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	11.62	9.81	24.093	13.82
6	2437	17.34	15.81	92.307	19.65
9	2452	10.13	8.29	17.049	12.32

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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :July 02, 2014

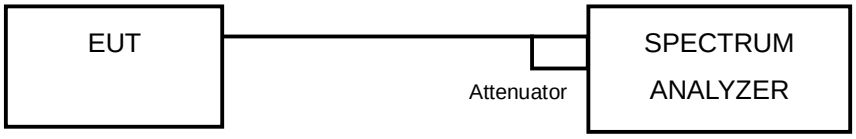
4.2.3 TEST PROCEDURE

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



4.2.6 EUT OPERATING CONDITION

Same as Item 4.1.6

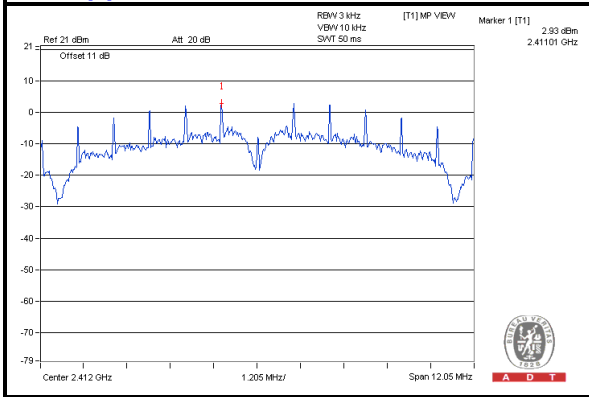
4.2.7 TEST RESULTS

802.11b

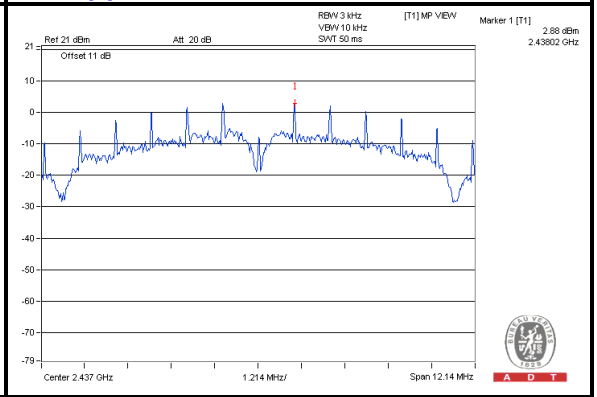
TX chain	Channel	FREQ. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	2.93	3.01	5.94	7.37	PASS
	6	2437	2.88	3.01	5.89	7.37	PASS
	11	2462	4.16	3.01	7.17	7.37	PASS
1	1	2412	0.60	3.01	3.61	7.37	PASS
	6	2437	2.11	3.01	5.12	7.37	PASS
	11	2462	2.52	3.01	5.53	7.37	PASS

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.

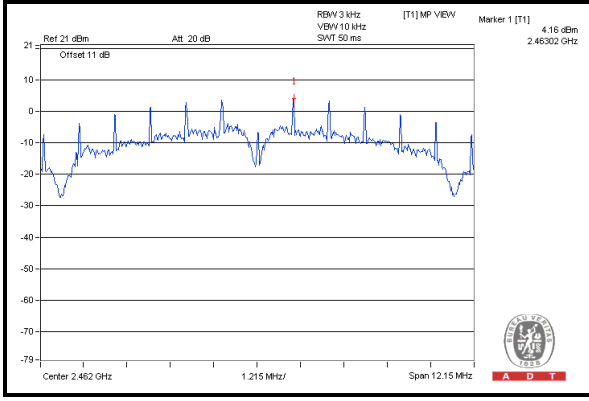
Chain(0) : CH1



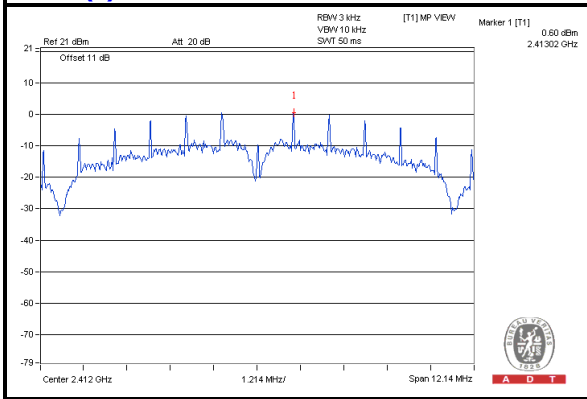
Chain(0) : CH6



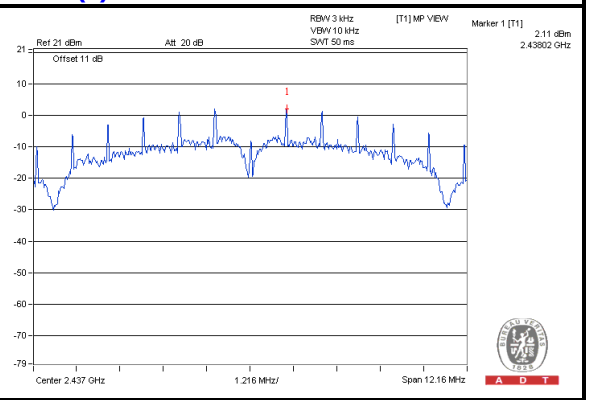
Chain(0) : CH11



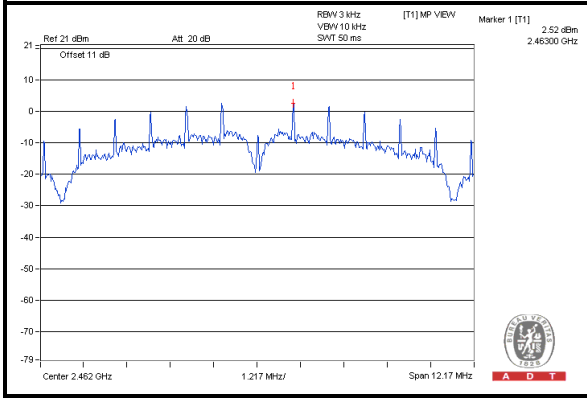
Chain(1) : CH1



Chain(1) : CH6



Chain(1) : CH11

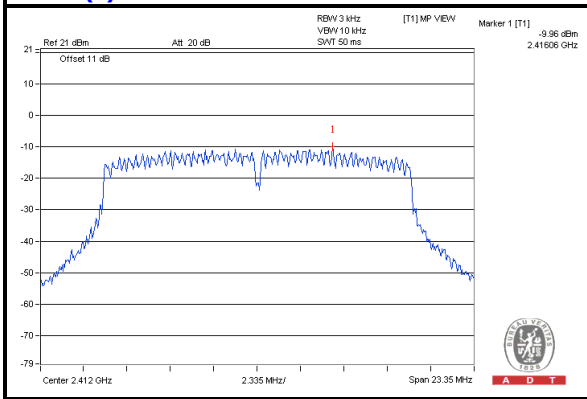


802.11g

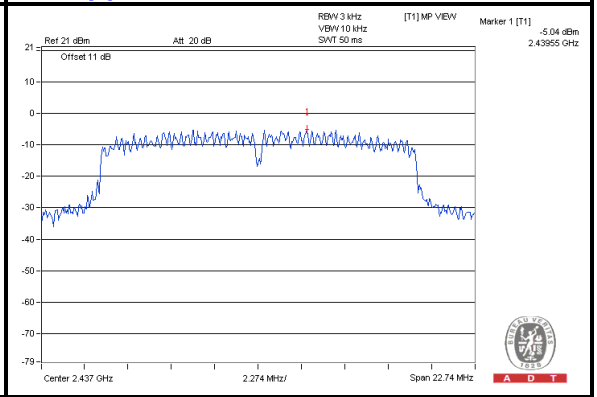
TX chain	Channel	FREQ. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-9.96	3.01	-6.95	7.37	PASS
	6	2437	-5.04	3.01	-2.03	7.37	PASS
	11	2462	-9.73	3.01	-6.72	7.37	PASS
1	1	2412	-12.17	3.01	-9.16	7.37	PASS
	6	2437	-5.68	3.01	-2.67	7.37	PASS
	11	2462	-11.61	3.01	-8.60	7.37	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.

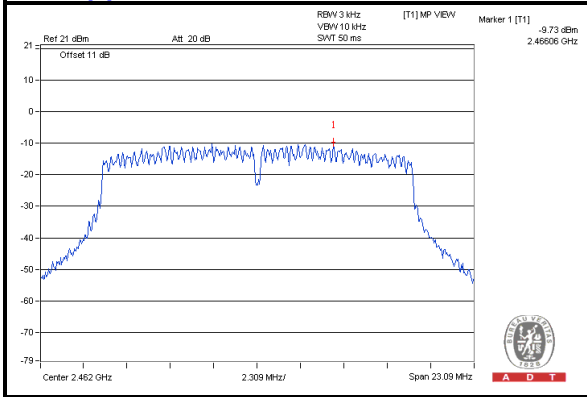
Chain(0) : CH1



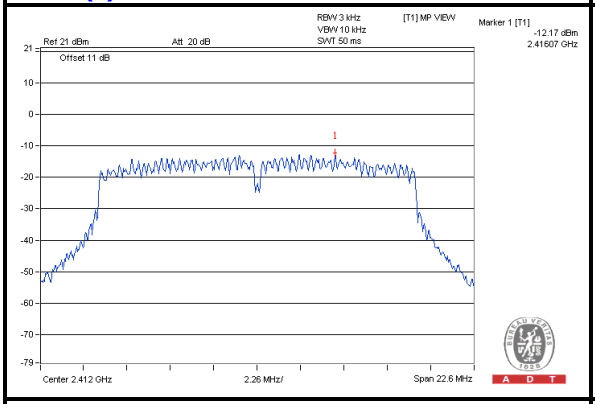
Chain(0) : CH6



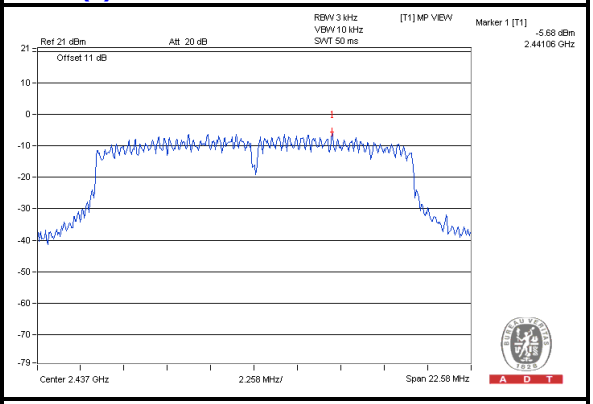
Chain(0) : CH11



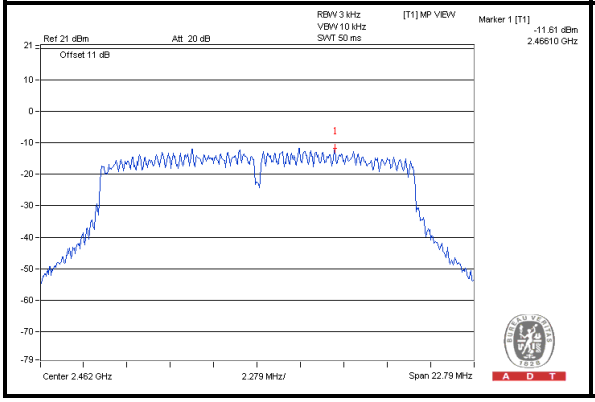
Chain(1) : CH1



Chain(1) : CH6



Chain(1) : CH11

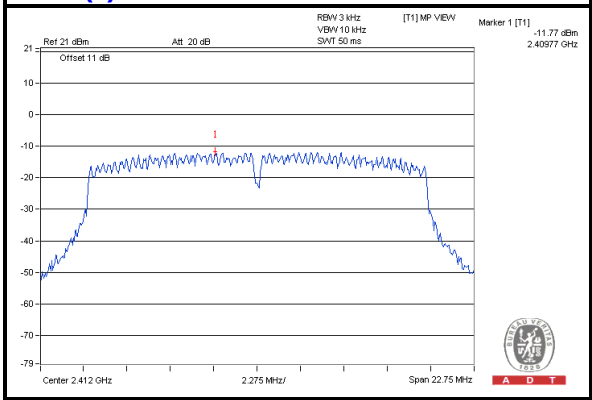


802.11n_256QAM(BW20)

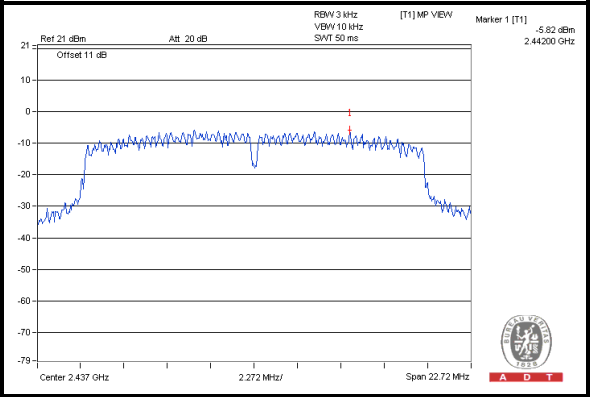
TX chain	Channel	FREQ. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-11.77	3.01	-8.76	7.37	PASS
	6	2437	-5.82	3.01	-2.81	7.37	PASS
	11	2462	-11.32	3.01	-8.31	7.37	PASS
1	1	2412	-13.82	3.01	-10.81	7.37	PASS
	6	2437	-6.68	3.01	-3.67	7.37	PASS
	11	2462	-13.39	3.01	-10.38	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.

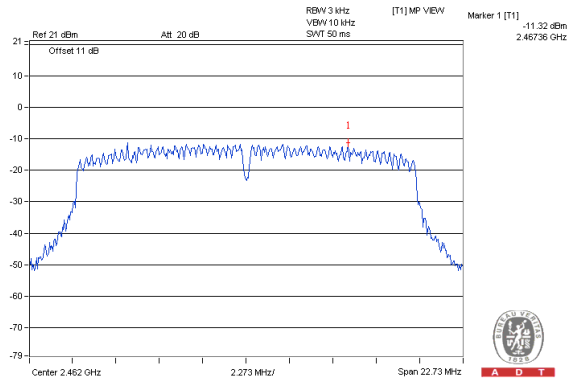
Chain(0) : CH1



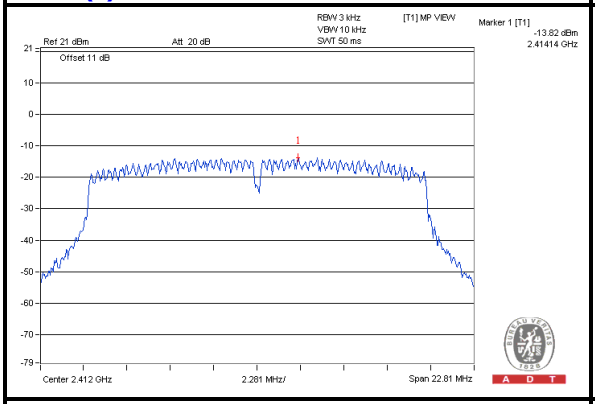
Chain(0) : CH6



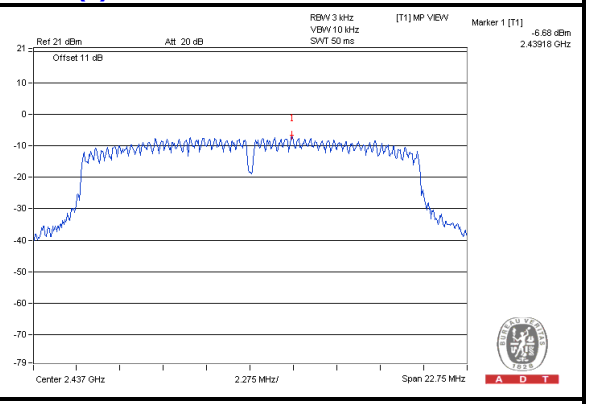
Chain(0) : CH11



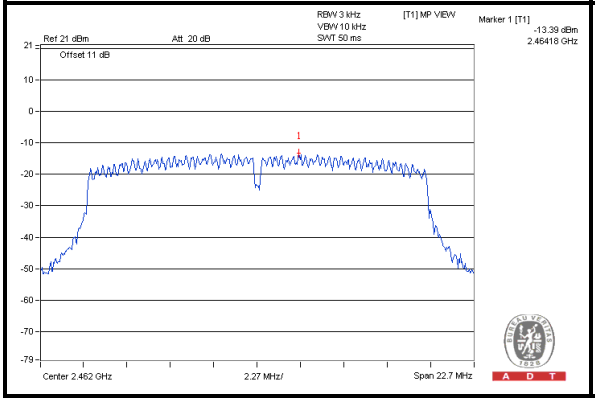
Chain(1) : CH1



Chain(1) : CH6



Chain(1) : CH11

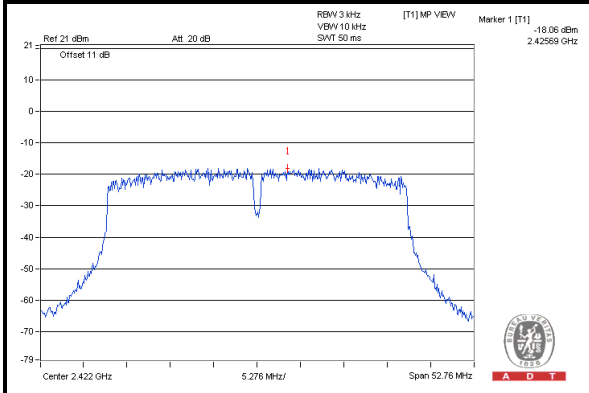


802.11n_256QAM(BW40)

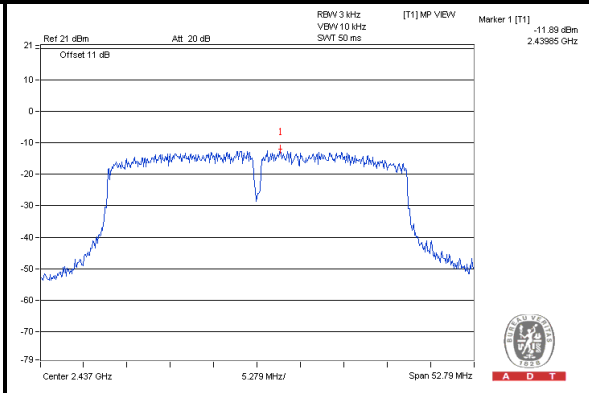
TX chain	Channel	FREQ. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	3	2422	-18.06	3.01	-15.05	7.37	PASS
	6	2437	-11.89	3.01	-8.88	7.37	PASS
	9	2452	-18.94	3.01	-15.93	7.37	PASS
1	3	2422	-19.86	3.01	-16.85	7.37	PASS
	6	2437	-13.17	3.01	-10.16	7.37	PASS
	9	2452	-20.67	3.01	-17.66	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.

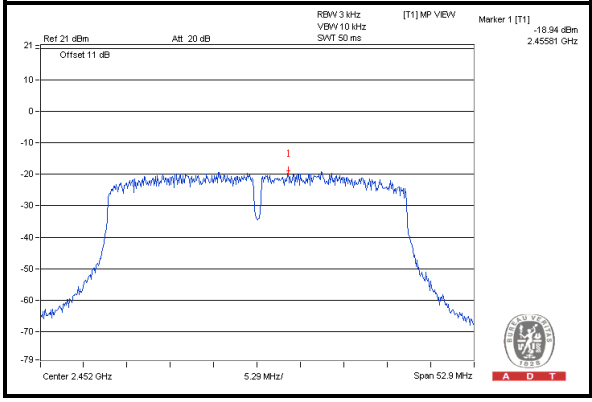
Chain(0) : CH3



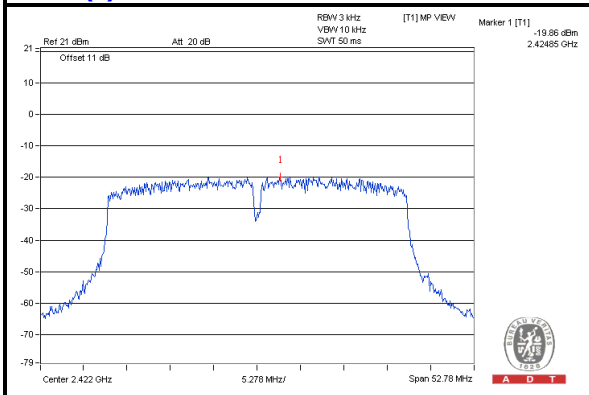
Chain(0) : CH6



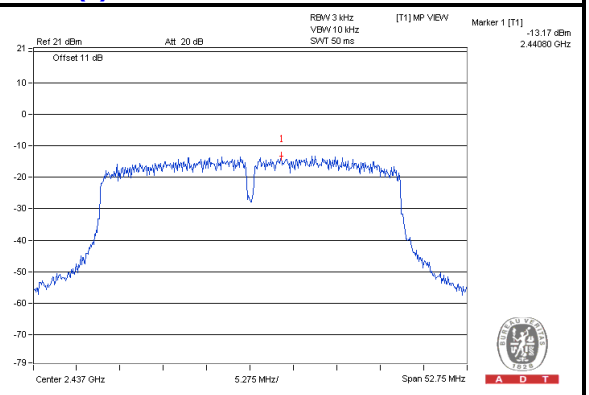
Chain(0) : CH9



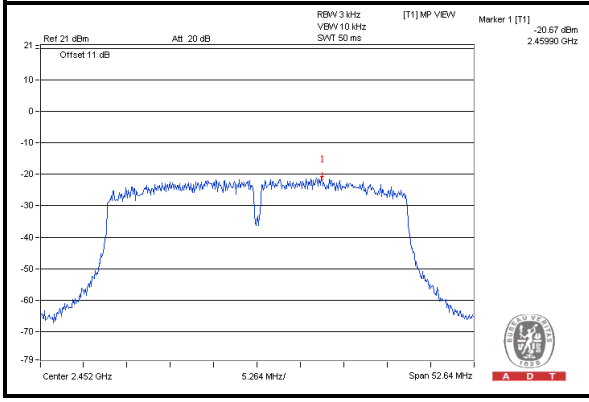
Chain(1) : CH3



Chain(1) : CH6



Chain(1) : CH9



4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :July 02, 2014

4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP

4.3.6 EUT OPERATING CONDITIONS

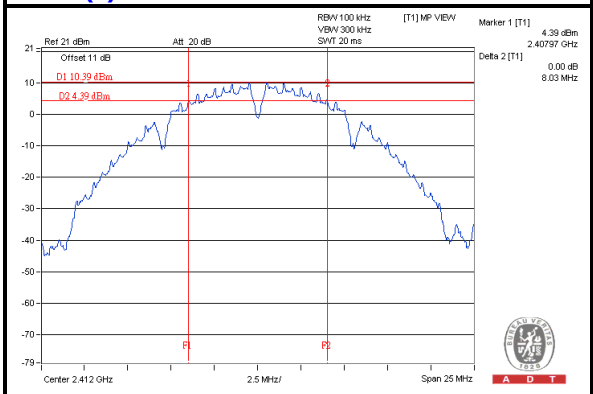
Same as Item 4.1.6

4.3.7 TEST RESULTS

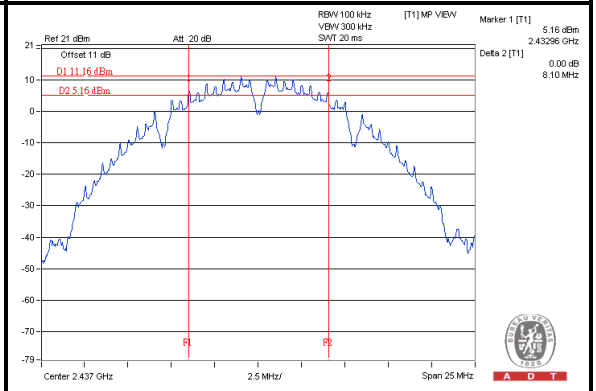
802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	8.03	8.10	0.5	PASS
6	2437	8.10	8.11	0.5	PASS
11	2462	8.10	8.11	0.5	PASS

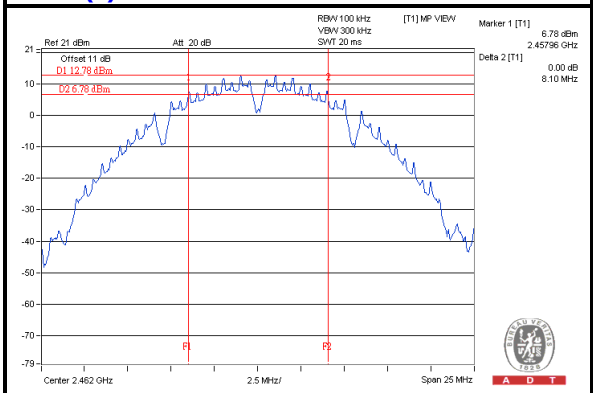
Chain(0) : CH1



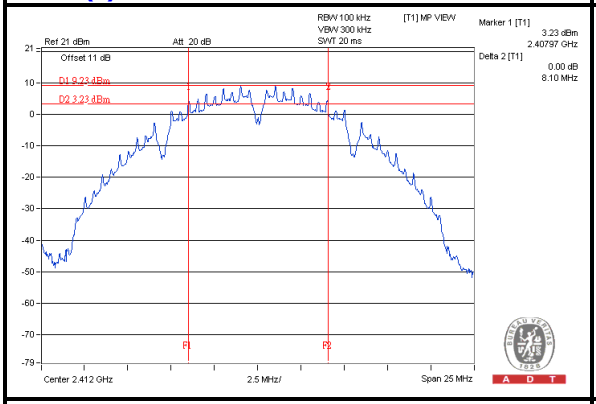
Chain(0) : CH6



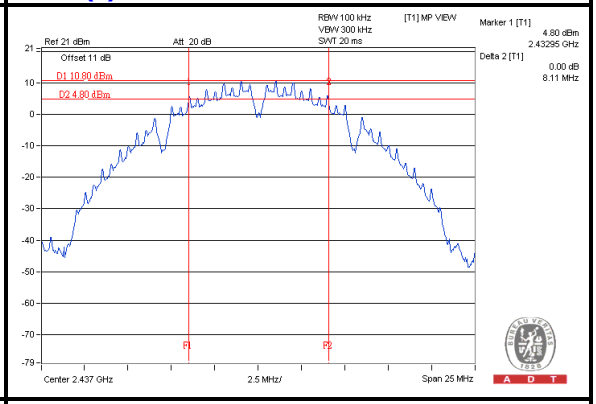
Chain(0) : CH11



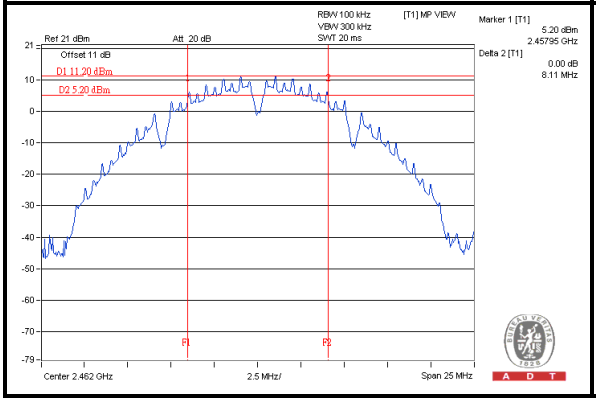
Chain(1) : CH1



Chain(1) : CH6



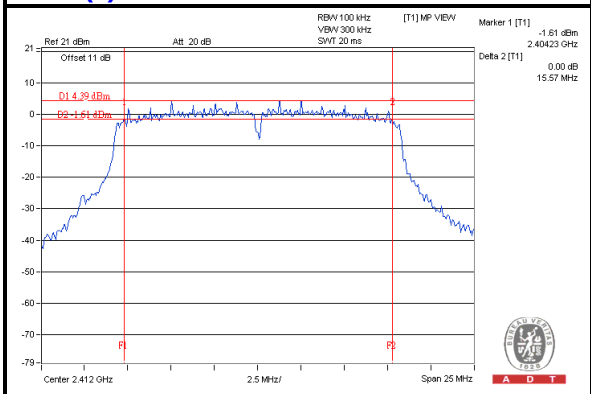
Chain(1) : CH11



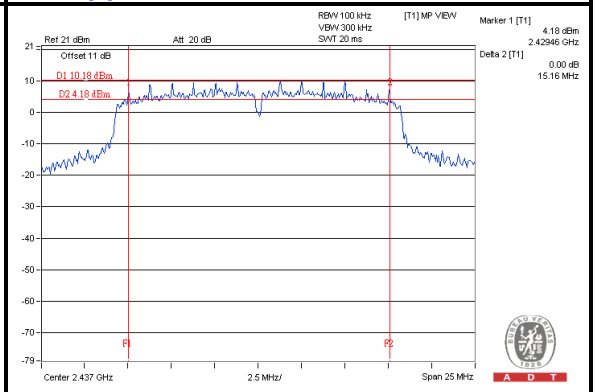
802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	15.57	15.07	0.5	PASS
6	2437	15.16	15.06	0.5	PASS
11	2462	15.40	15.20	0.5	PASS

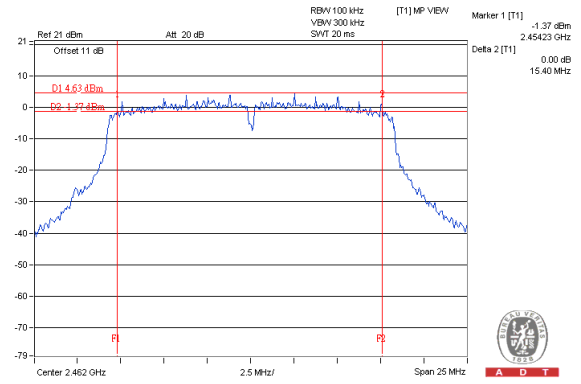
Chain(0) : CH1



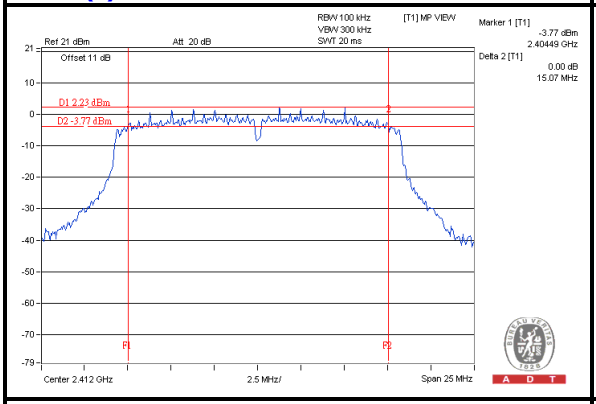
Chain(0) : CH6



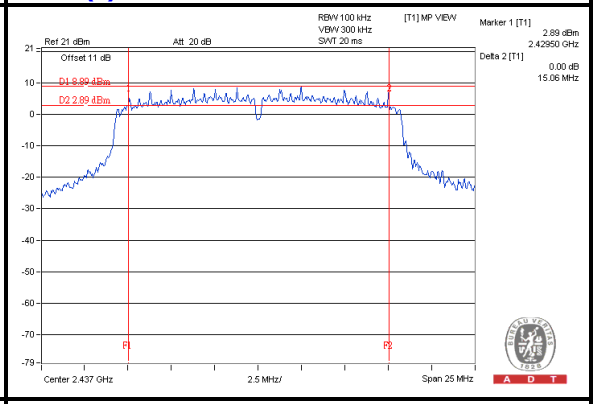
Chain(0) : CH11



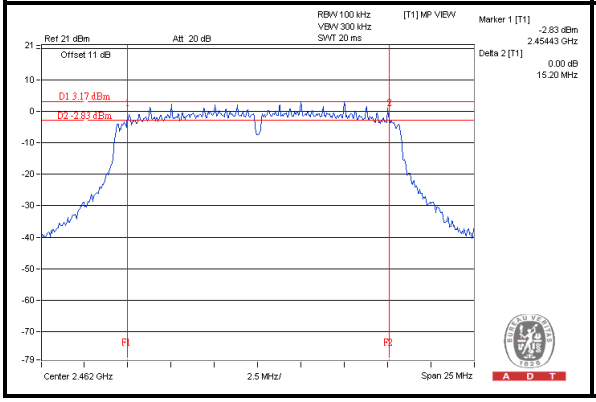
Chain(1) : CH1



Chain(1) : CH6



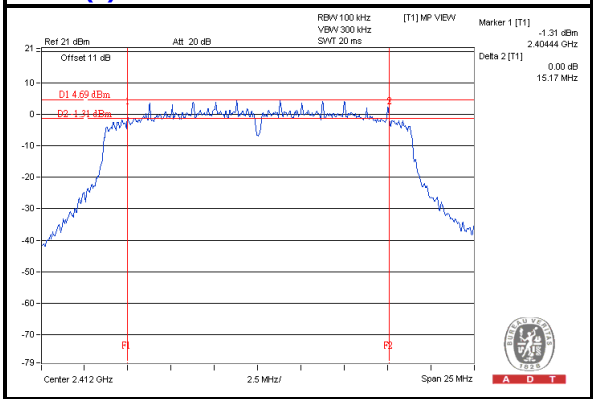
Chain(1) : CH11



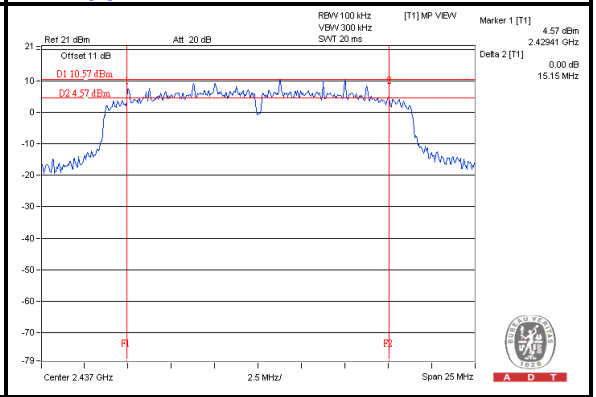
802.11n_256QAM(BW20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	15.17	15.21	0.5	PASS
6	2437	15.15	15.17	0.5	PASS
11	2462	15.16	15.14	0.5	PASS

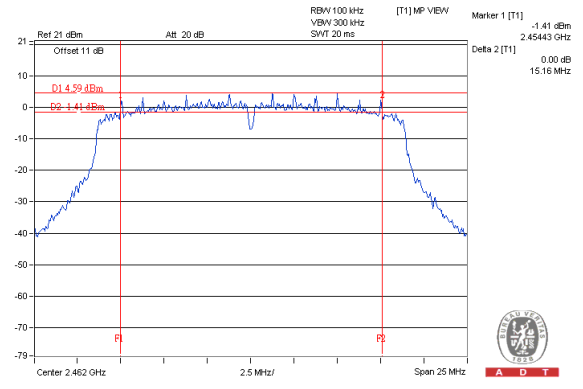
Chain(0) : CH1



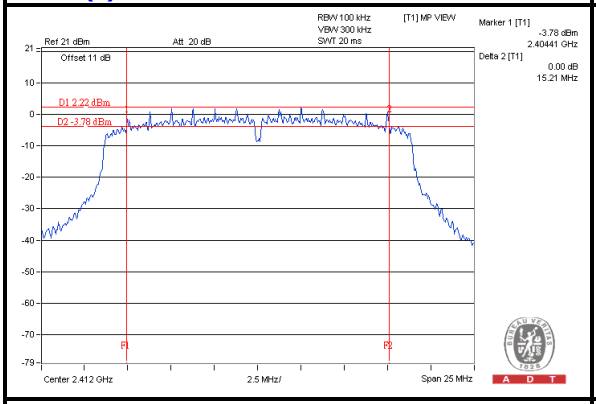
Chain(0) : CH6



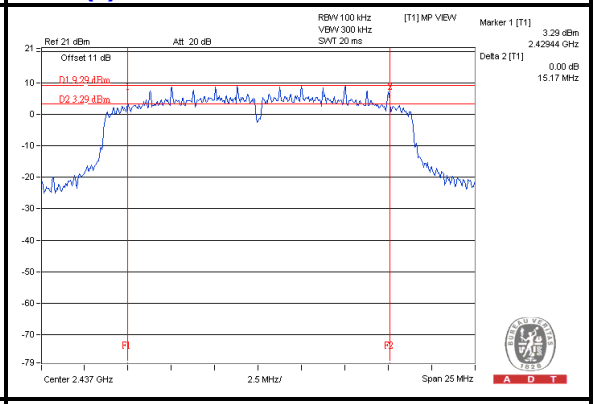
Chain(0) : CH11



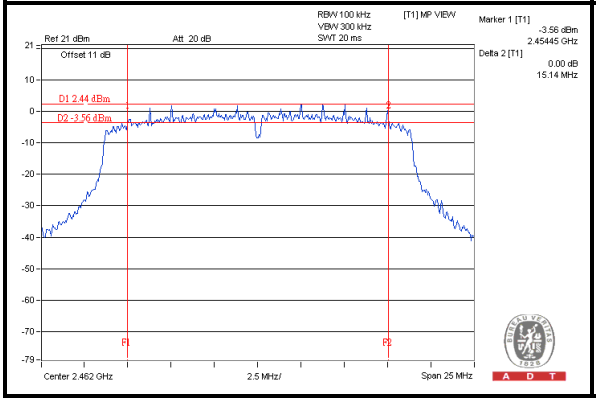
Chain(1) : CH1



Chain(1) : CH6



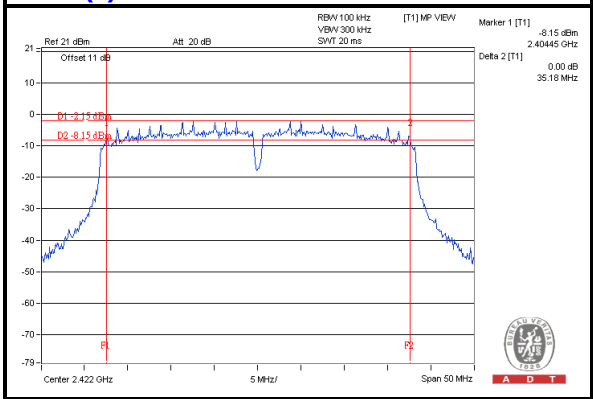
Chain(1) : CH11



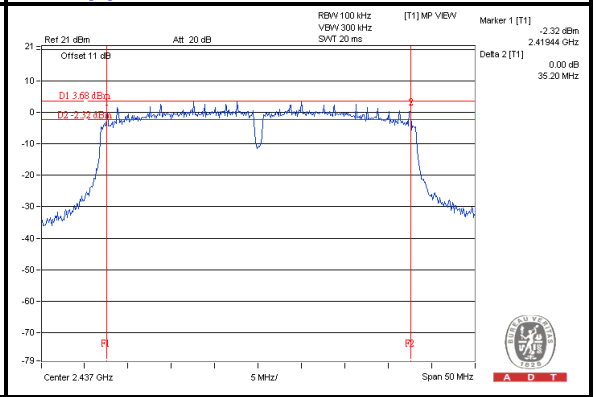
802.11n_256QAM(BW40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
3	2422	35.18	35.19	0.5	PASS
6	2437	35.20	35.17	0.5	PASS
9	2452	35.27	35.10	0.5	PASS

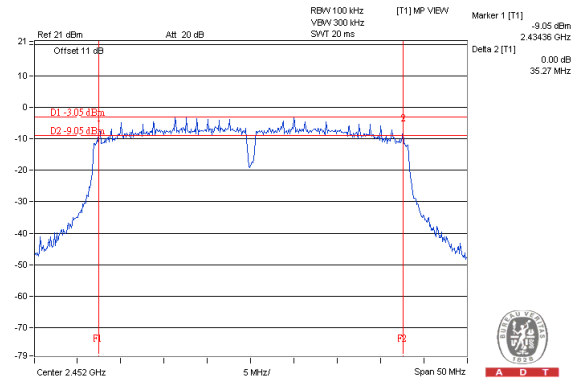
Chain(0) : CH3



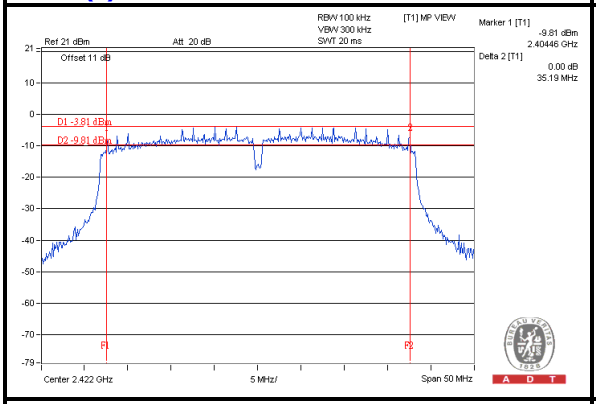
Chain(0) : CH6



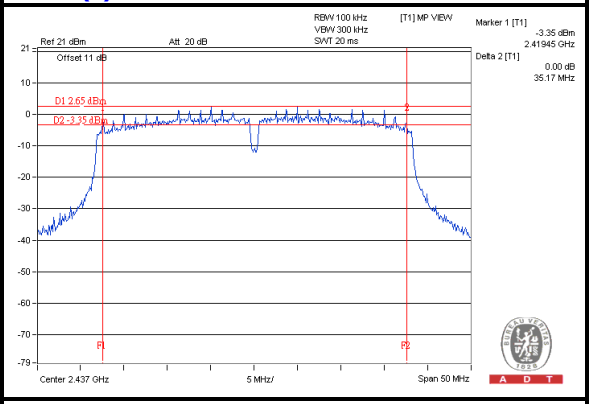
Chain(0) : CH9



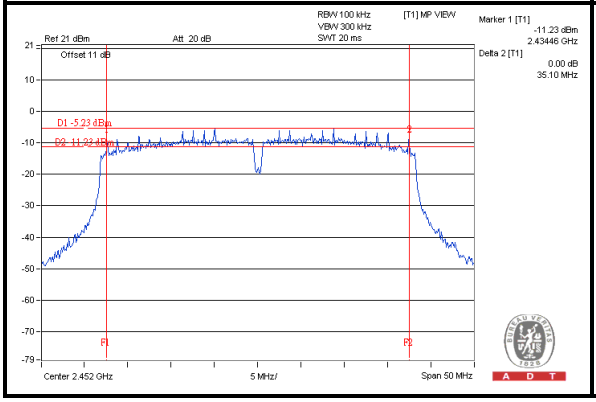
Chain(1) : CH3



Chain(1) : CH6



Chain(1) : CH9



4.4 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.4.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date :July 02, 2014

4.4.3 TEST PROCEDURE

Measurement Procedure - Reference Level

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

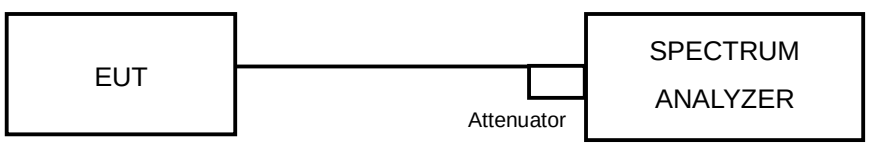
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. 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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 EUT OPERATING CONDITION

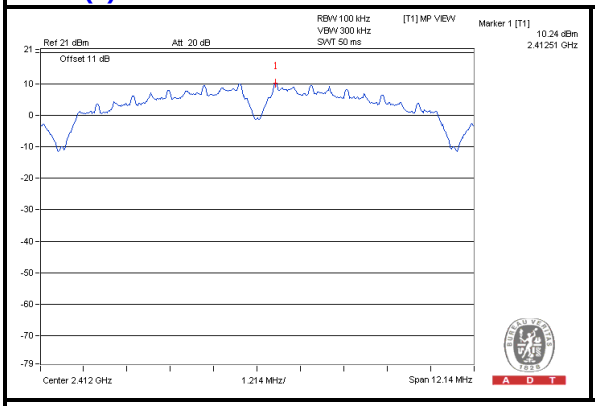


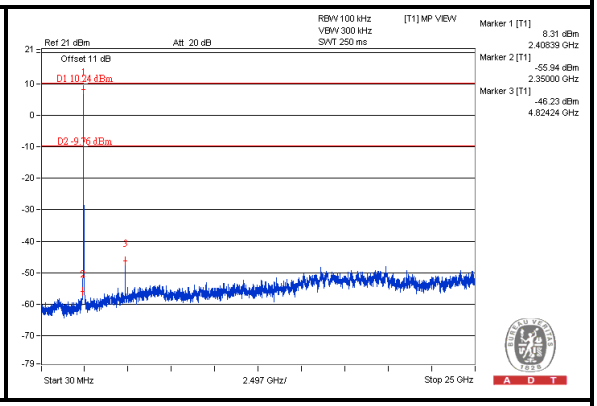
4.4.6 TEST RESULTS

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

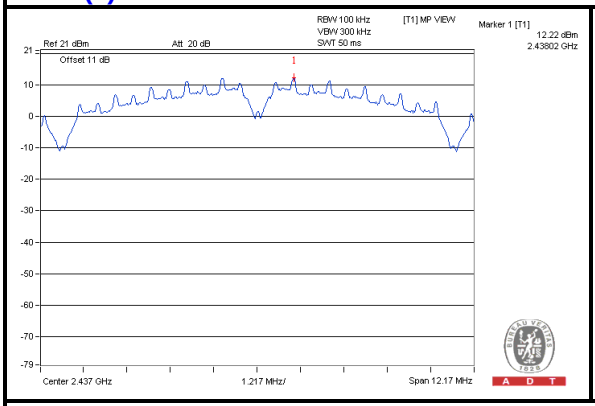
802.11b

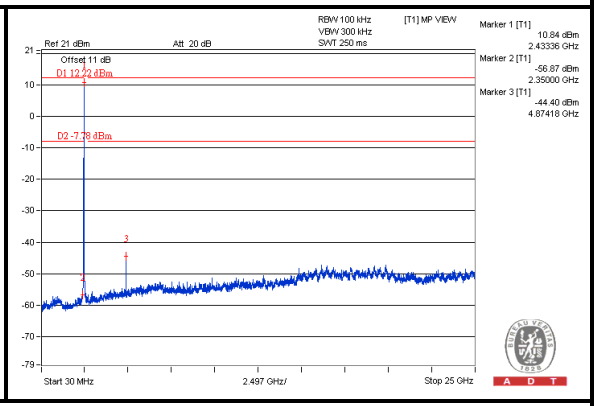
Chain(0) : CH 1



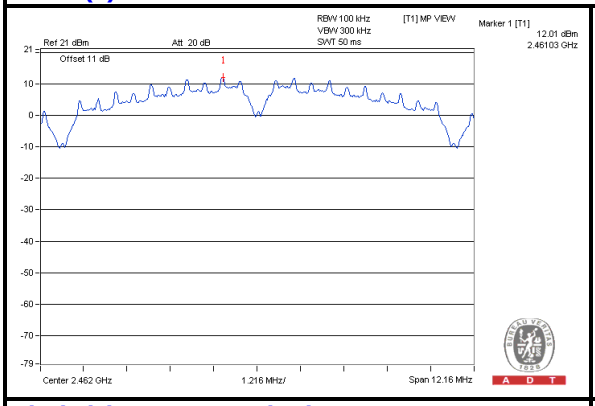


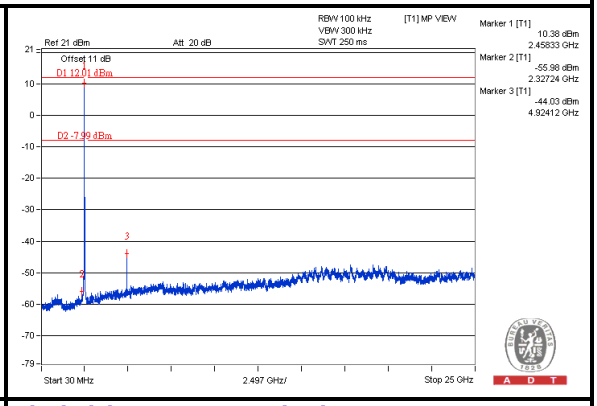
Chain(0) : CH 6



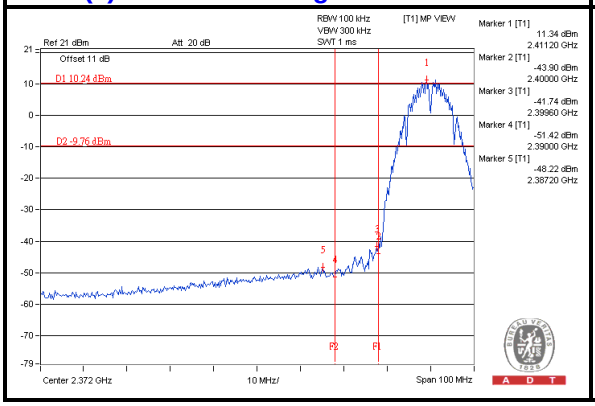


Chain(0) : CH 11

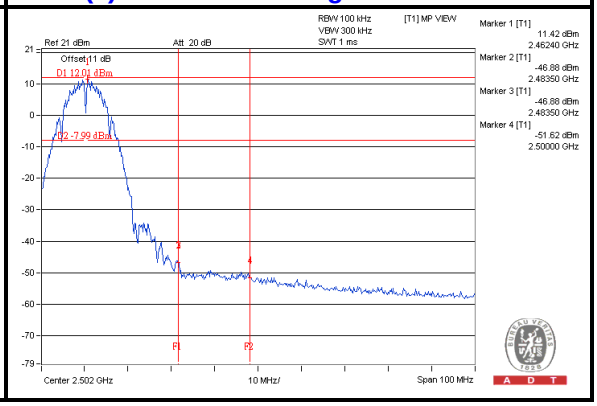




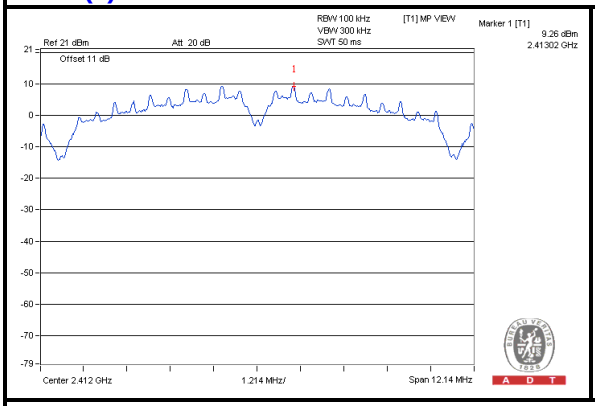
Chain(0) : CH 1 Band edge

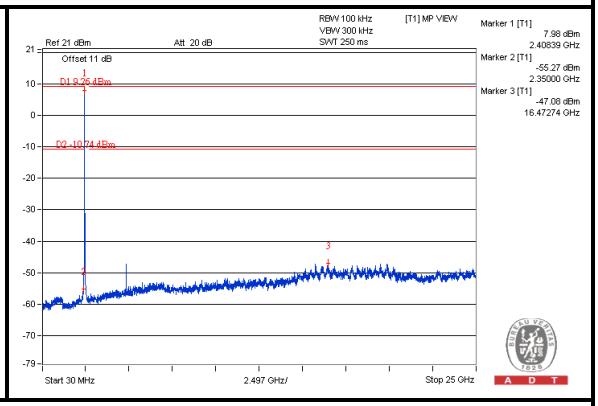


Chain(0) : CH 11 Band edge

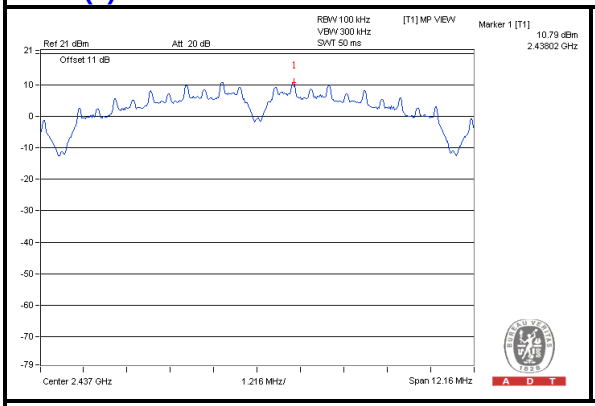


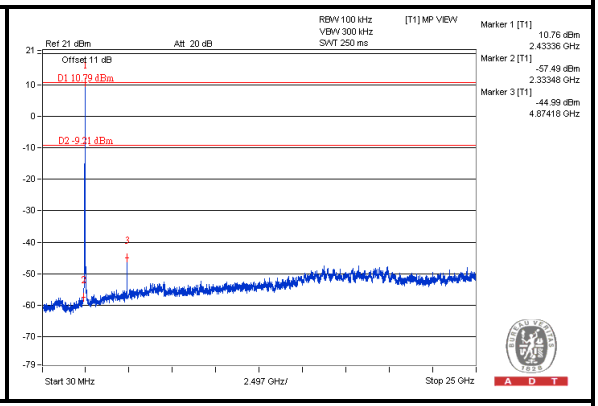
Chain(1) : CH 1



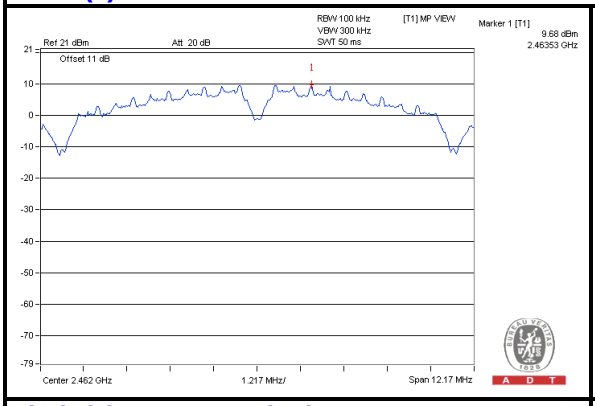


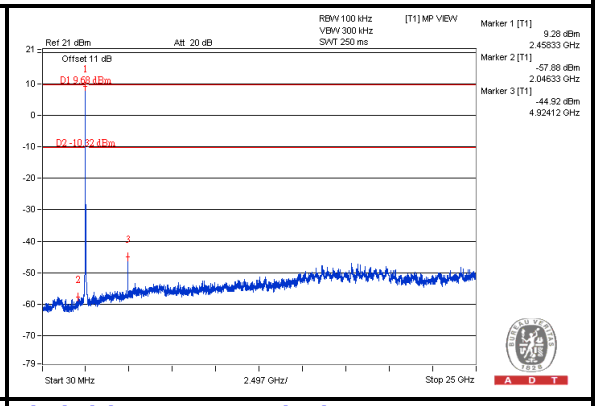
Chain(1) : CH 6



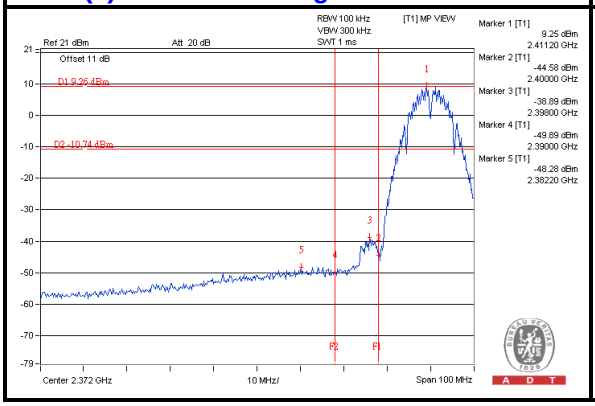


Chain(1) : CH 11

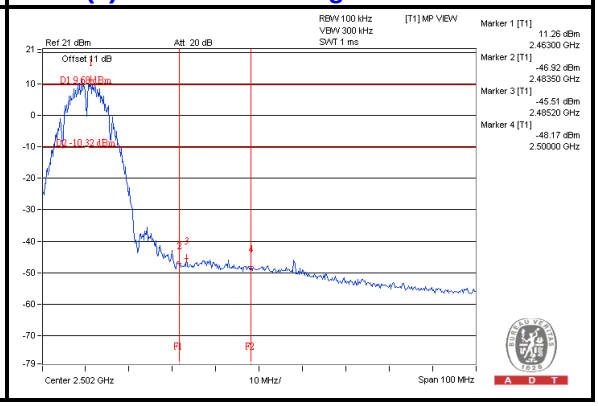




Chain(1) : CH 1 Band edge

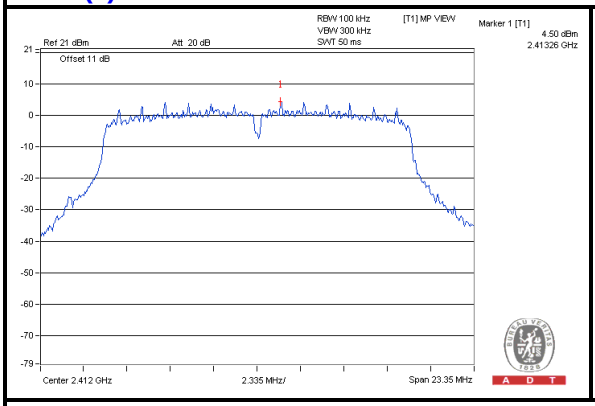


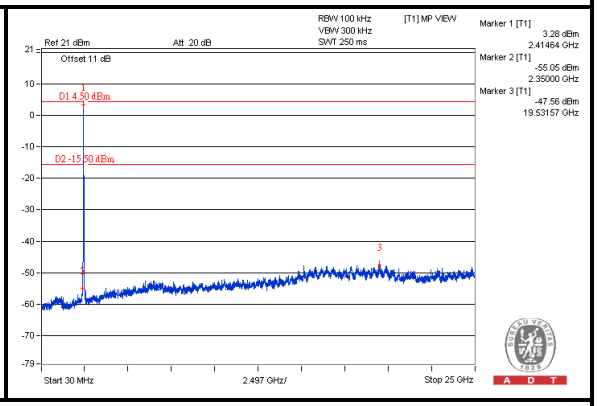
Chain(1) : CH 11 Band edge



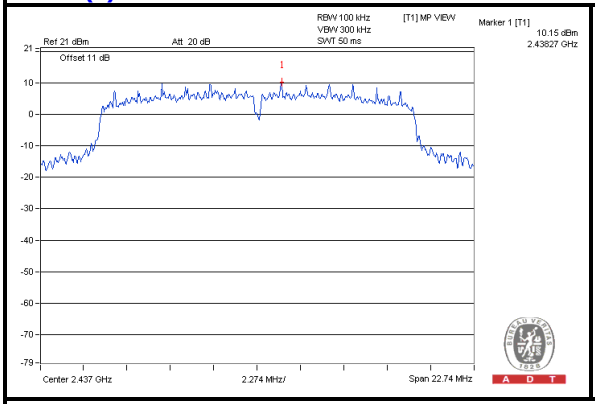
802.11g

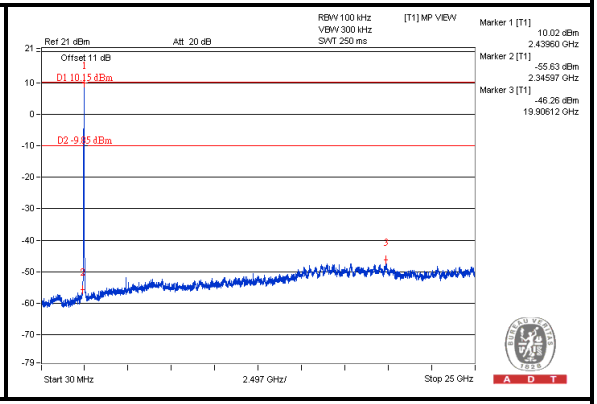
Chain(0) : CH 1



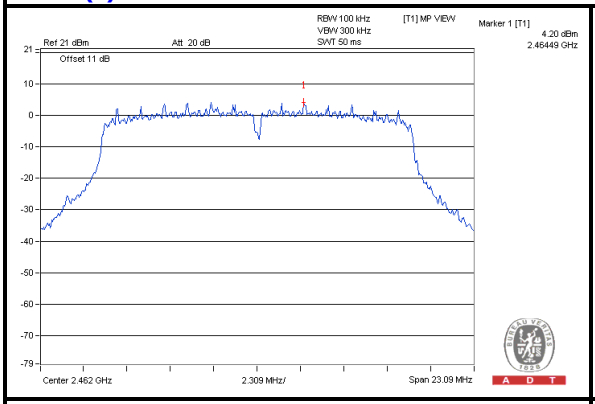


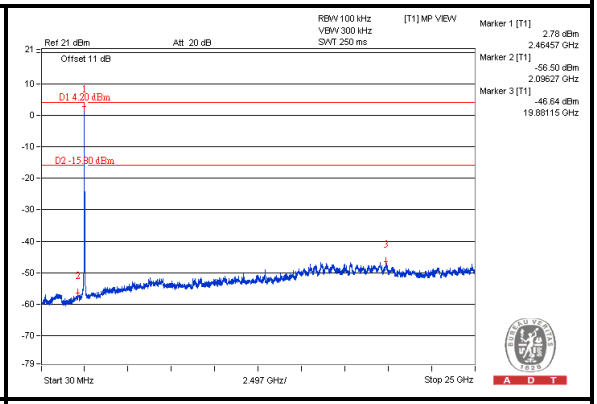
Chain(0) : CH 6



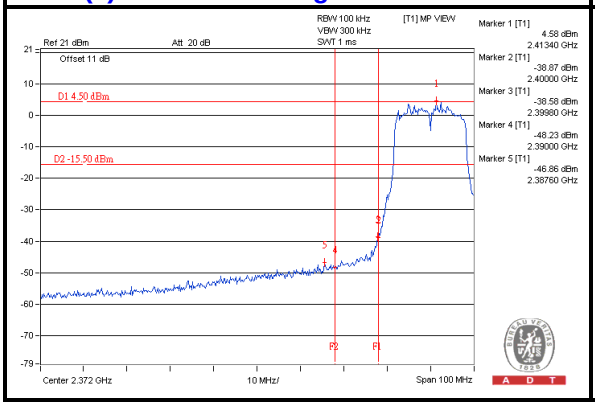


Chain(0) : CH 11

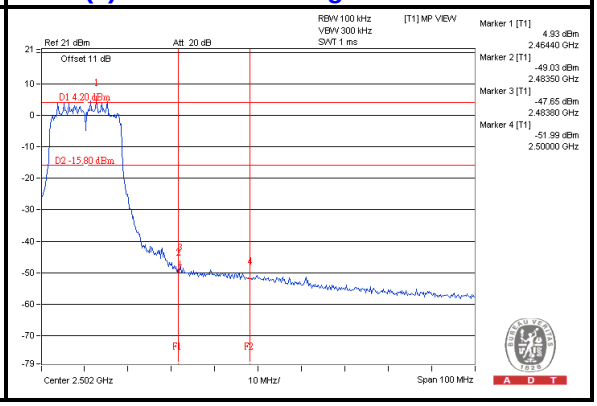




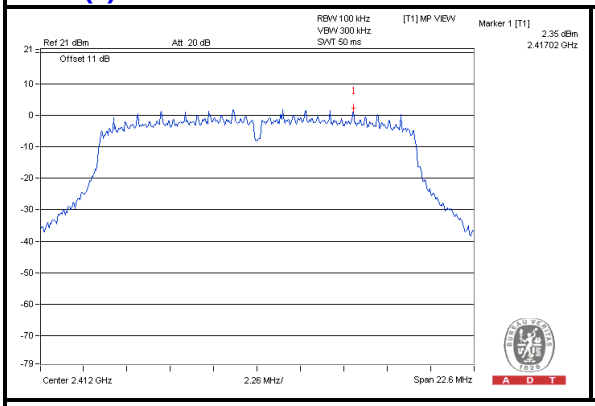
Chain(0) : CH 1 Band edge

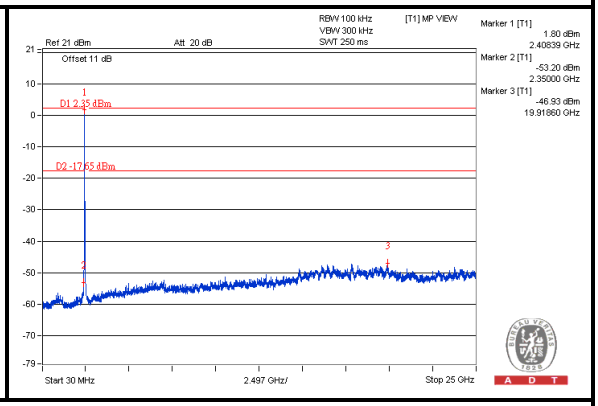


Chain(0) : CH 11 Band edge

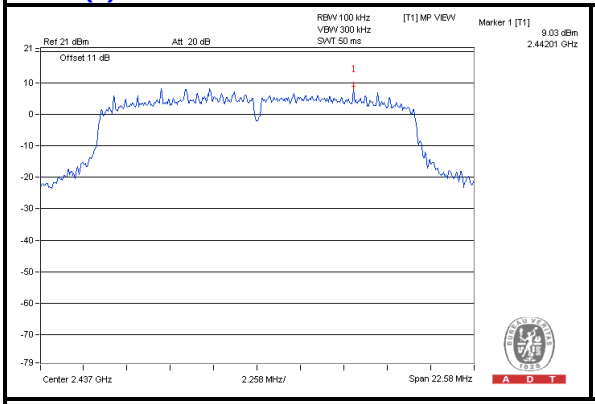


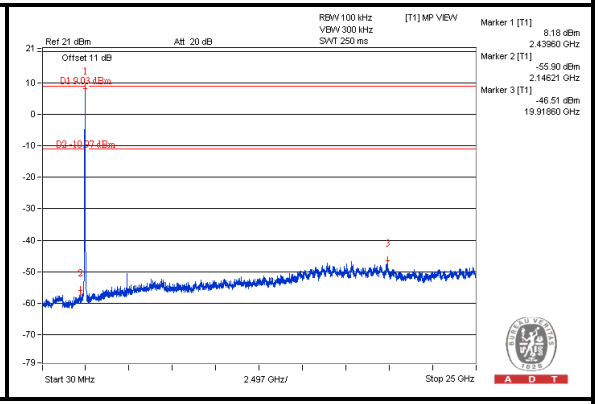
Chain(1) : CH 1



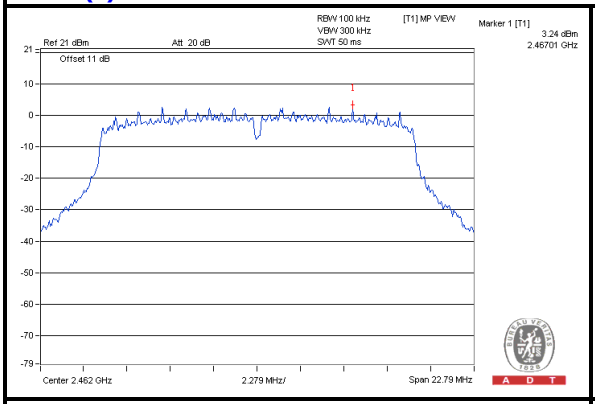


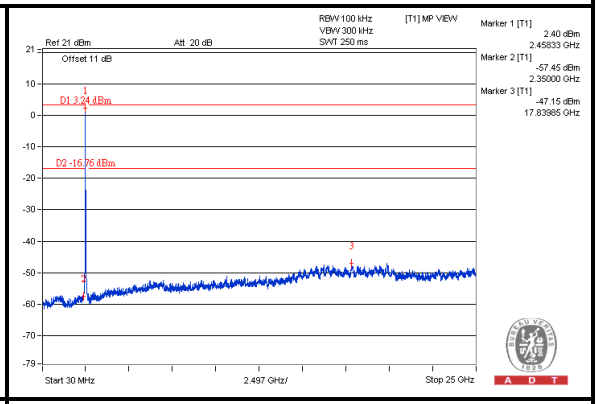
Chain(1) : CH 6



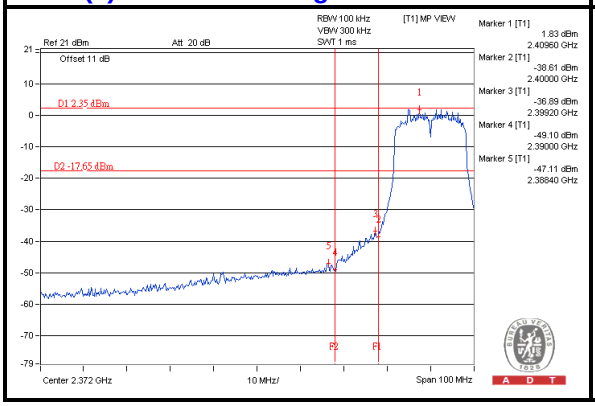


Chain(1) : CH 11

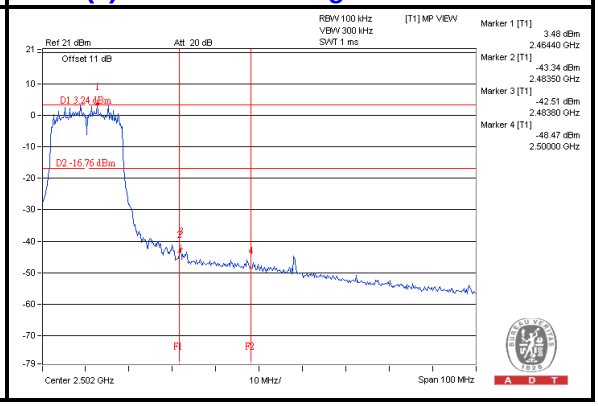




Chain(1) : CH 1 Band edge

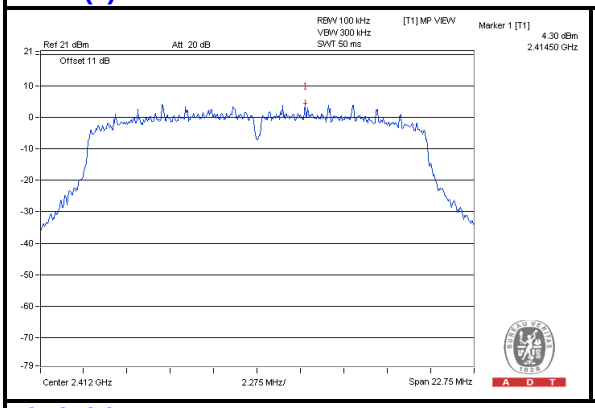


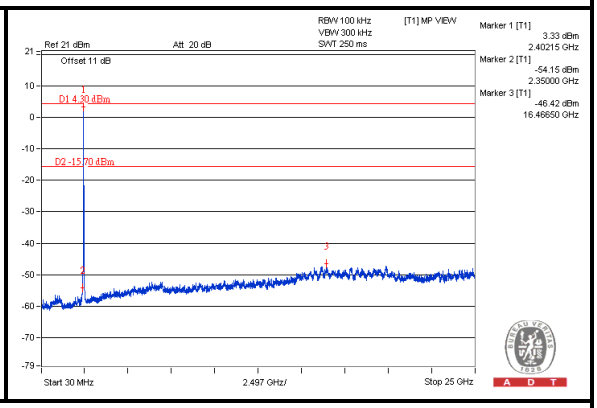
Chain(1) : CH 11 Band edge



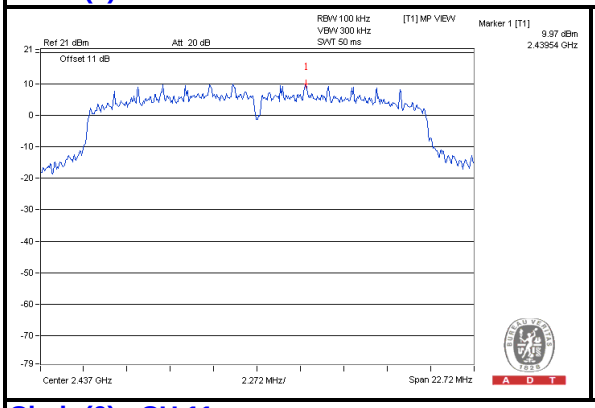
802.11n_256QAM(BW20)

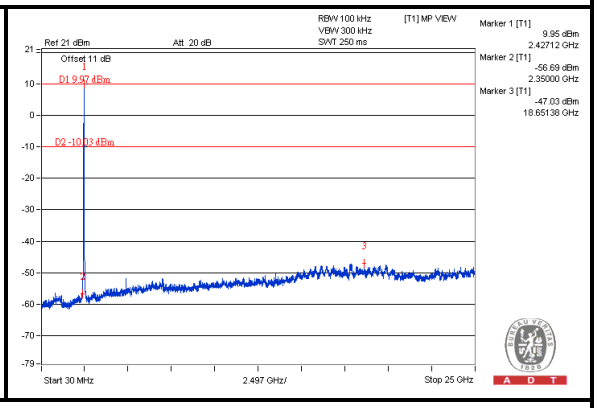
Chain(0) : CH 1



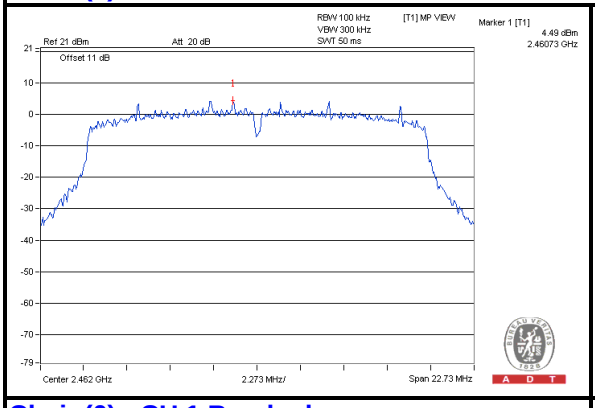


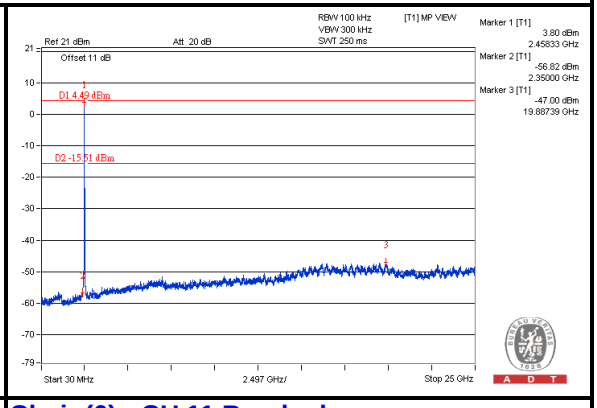
Chain(0) : CH 6



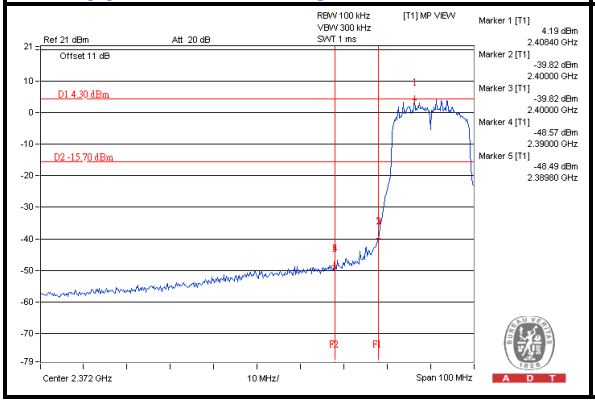


Chain(0) : CH 11

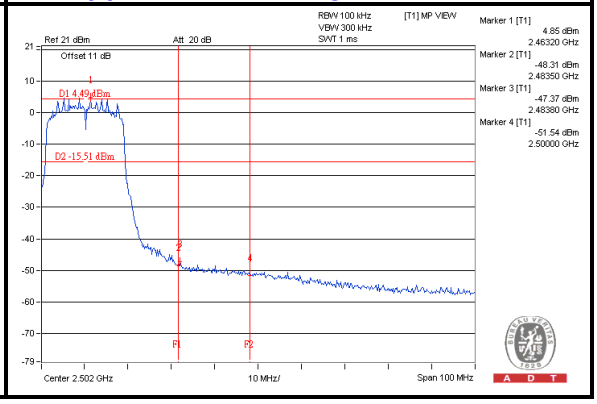




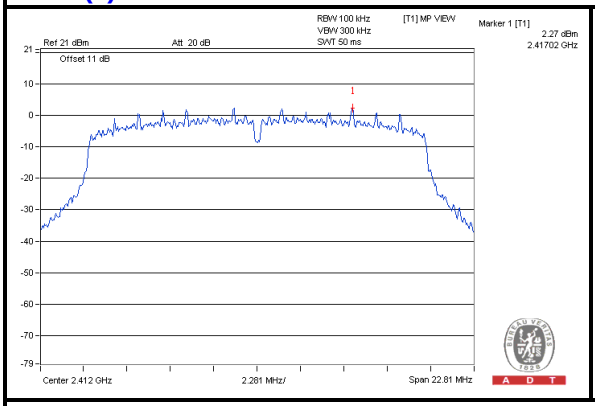
Chain(0) : CH 1 Band edge

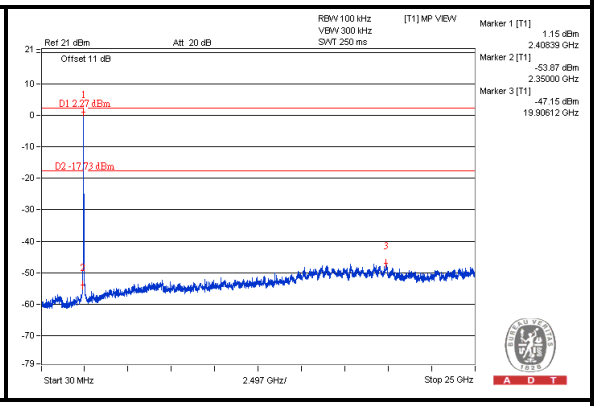


Chain(0) : CH 11 Band edge

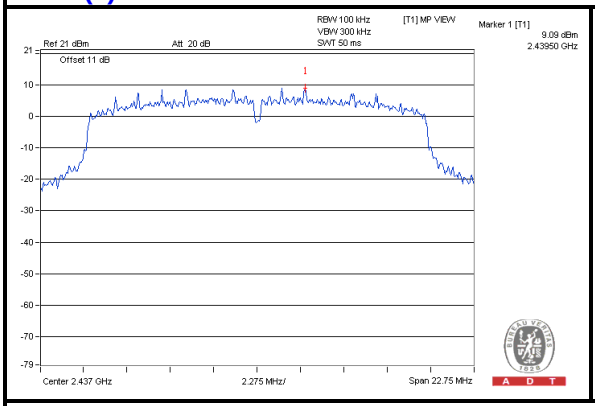


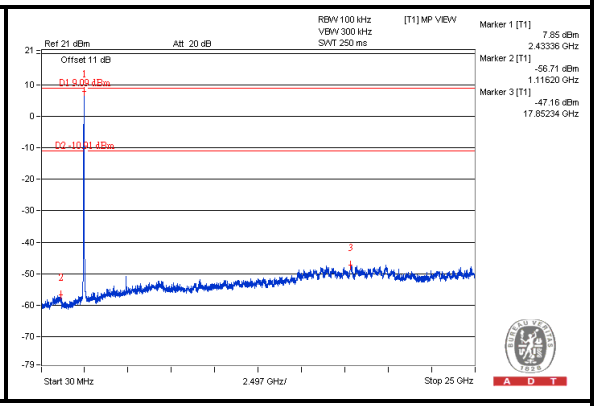
Chain(1) : CH 1



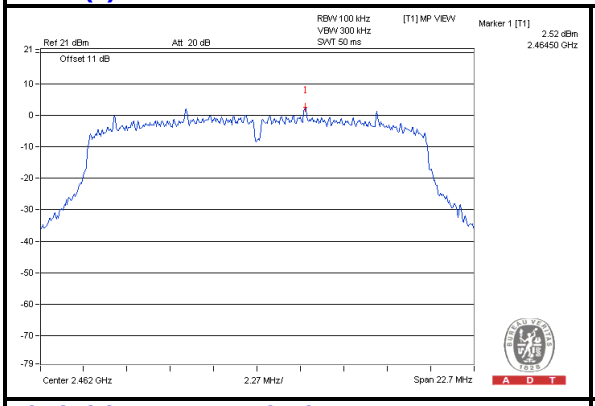


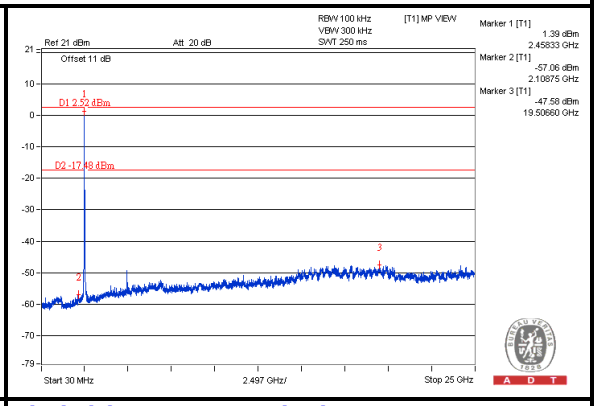
Chain(1) : CH 6



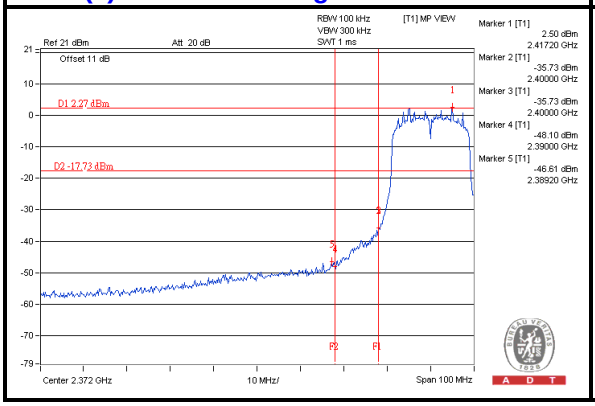


Chain(1) : CH 11

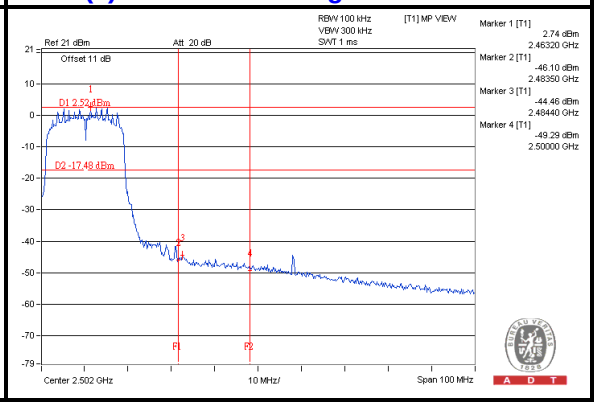




Chain(1) : CH 1 Band edge

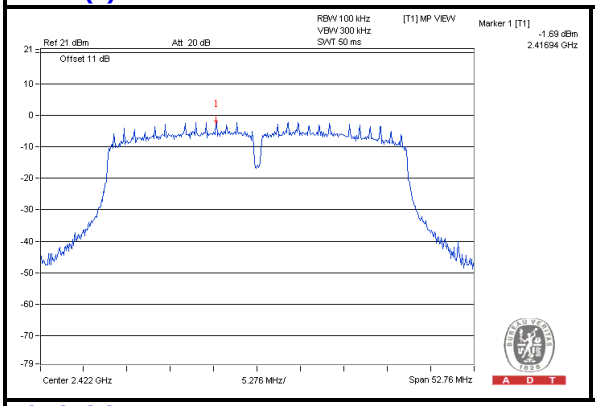


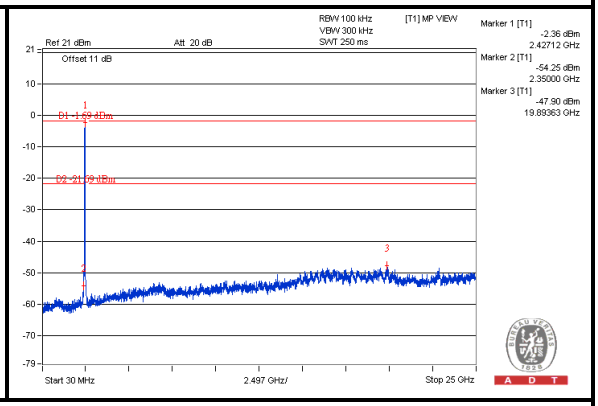
Chain(1) : CH 11 Band edge



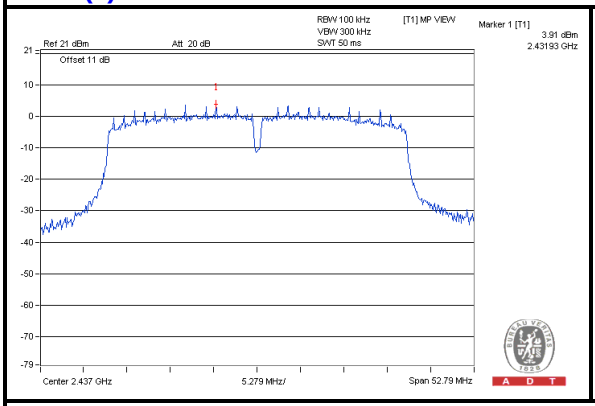
802.11n_256QAM(BW40)

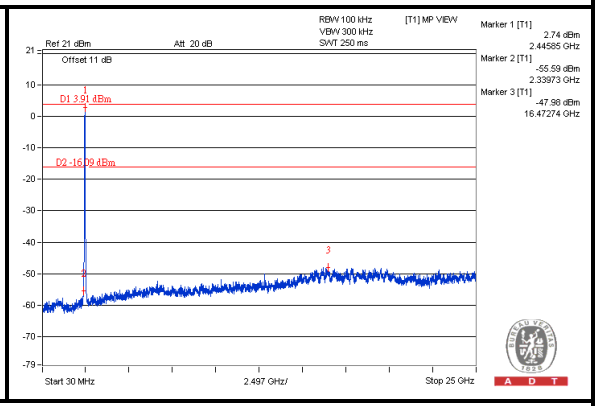
Chain(0) : CH 3



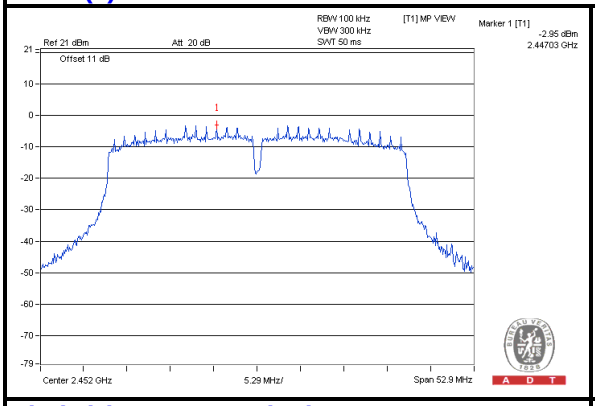


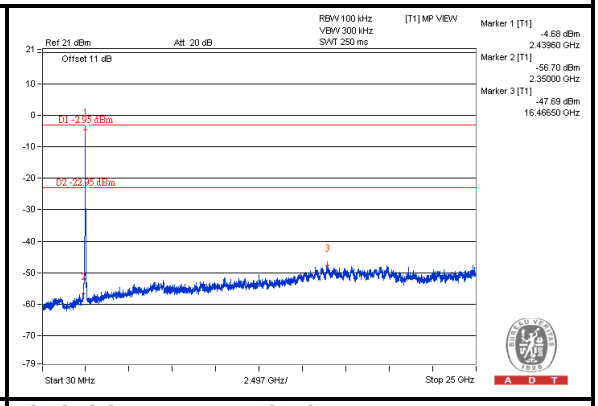
Chain(0) : CH 6



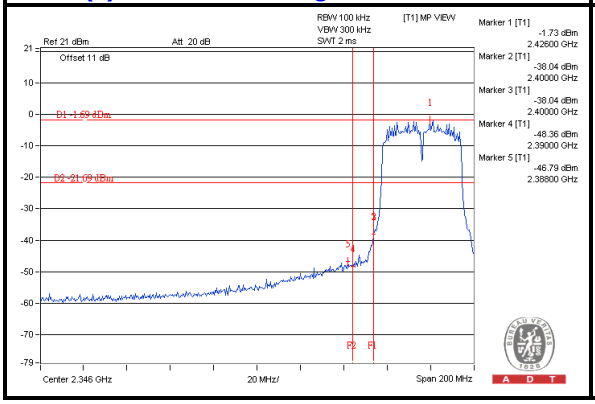


Chain(0) : CH 9

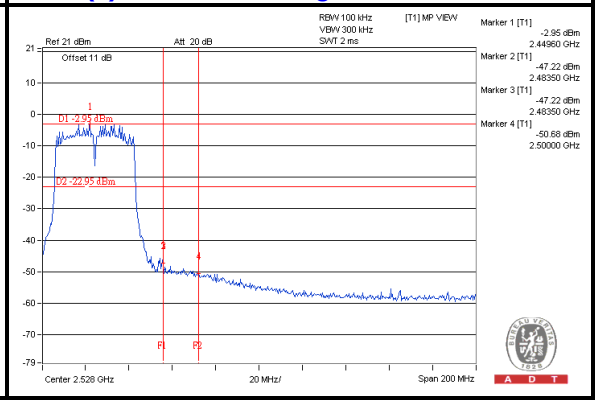




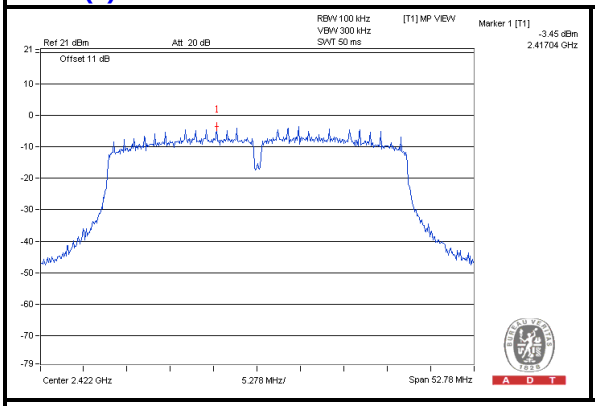
Chain(0) : CH 3 Band edge

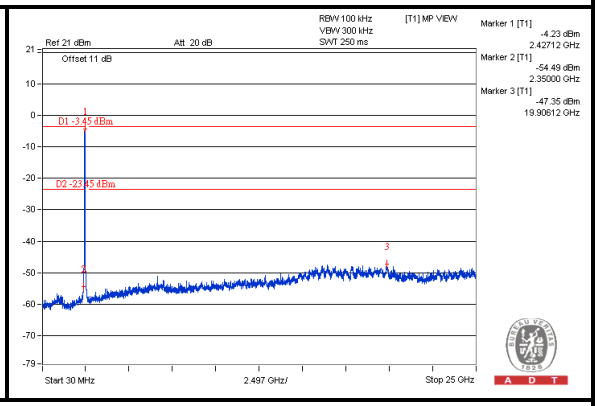


Chain(0) : CH 9 Band edge

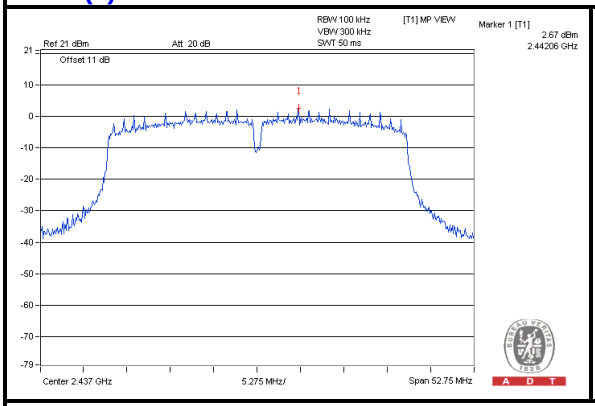


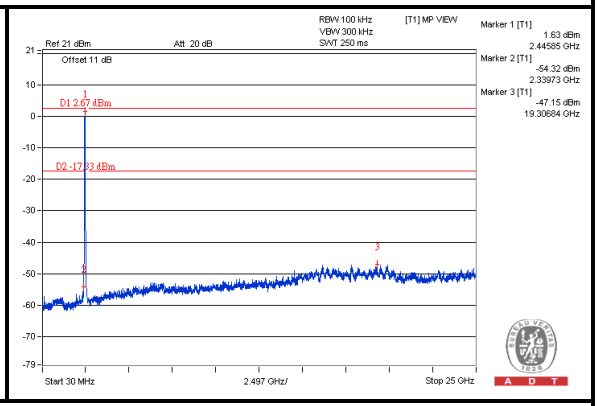
Chain(1) : CH 3



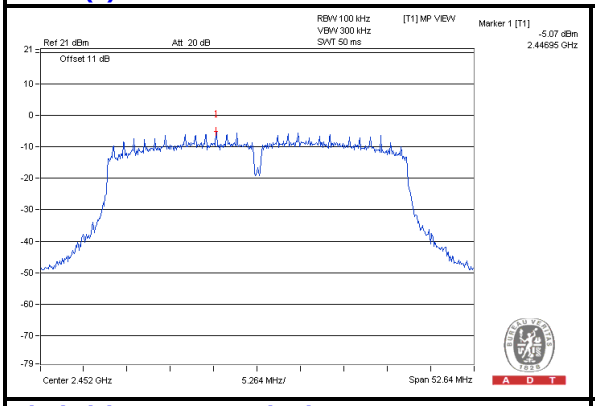


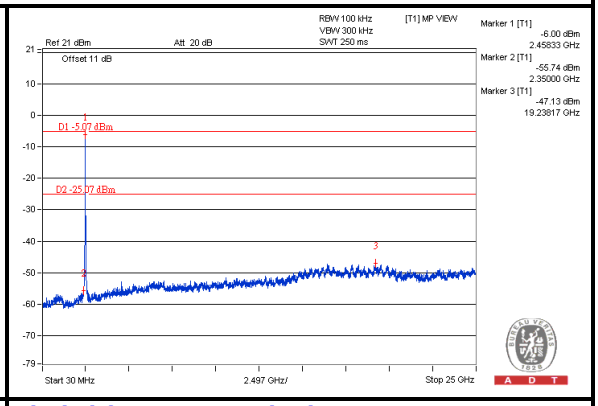
Chain(1) : CH 6



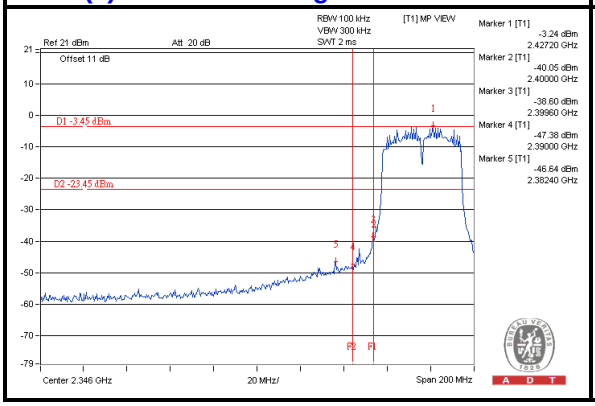


Chain(1) : CH 9

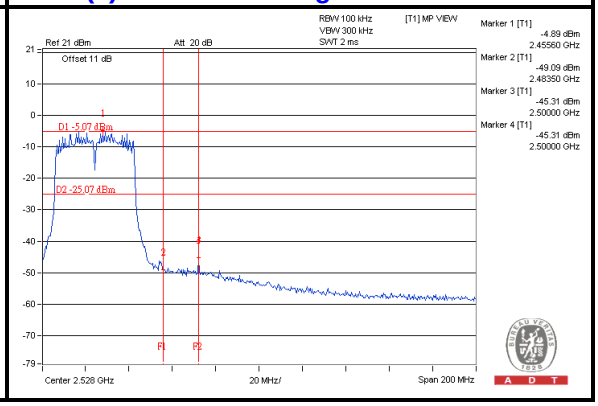




Chain(1) : CH 3 Band edge



Chain(1) : CH 9 Band edge



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

Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 15, 2014	Jan. 14, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: June 07, 2014

Above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21, 2014	Jan. 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: July 02, 2014

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. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

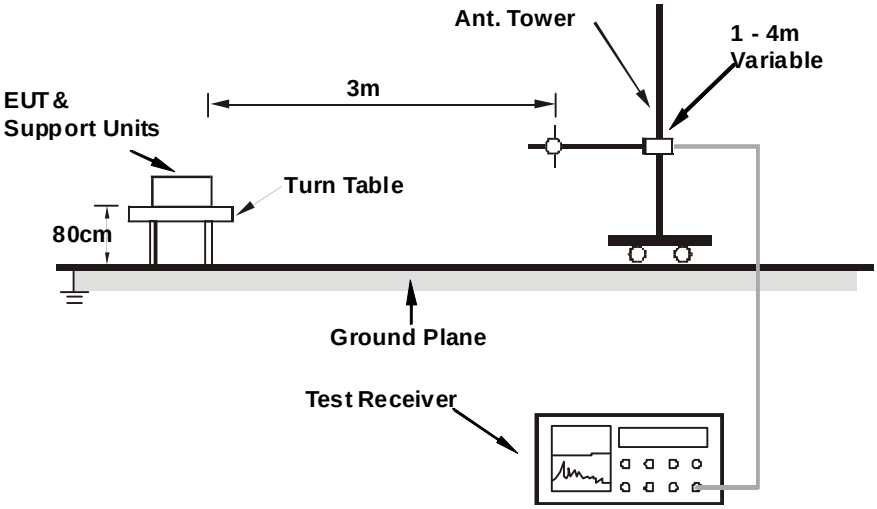
4.5.4 DEVIATION FROM TEST STANDARD

No deviation

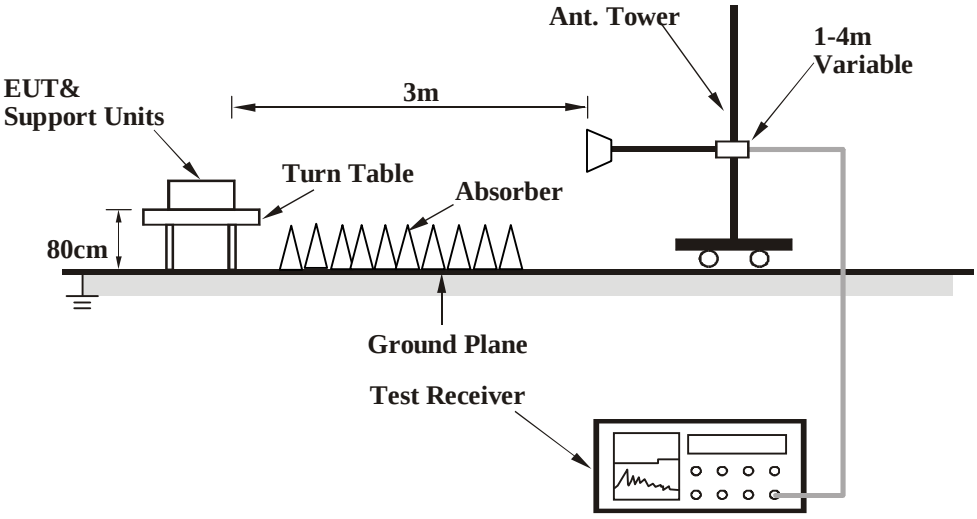
4.5.5 TEST SETUP

For radiated configuration:

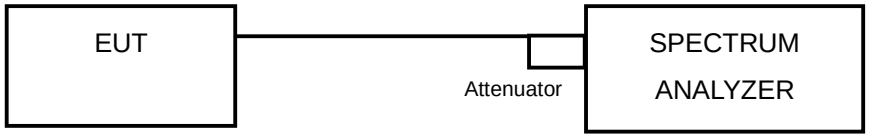
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



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

4.5.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “QCRT Version3.0 29.0” 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

For Radiated measurement:

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

For Conducted measurement:

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

Radiated test was done with 50ohm terminator on antenna port

BELOW 1GHz WORST-CASE DATA

802.11n_256QAM(BW20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	**166.29**	**40.4 QP**	**43.5**	**-3.1**	**1.50 H**	**153**	**53.34**	**-12.91**
2	232.78	39.3 QP	46.0	-6.8	1.50 H	331	53.79	-14.54
3	240.01	38.4 QP	46.0	-7.7	1.00 H	0	52.15	-13.80
4	287.97	32.6 QP	46.0	-13.4	1.00 H	0	44.77	-12.13
5	432.02	36.2 QP	46.0	-9.8	2.00 H	126	44.28	-8.09
6	798.24	40.5 QP	46.0	-5.5	1.00 H	158	41.47	-0.97
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	144.05	26.3 QP	43.5	-17.2	1.00 V	117	38.94	-12.68
2	165.99	35.1 QP	43.5	-8.4	1.00 V	150	47.98	-12.88
3	232.39	30.7 QP	46.0	-15.3	1.00 V	189	45.36	-14.62
4	240.00	31.2 QP	46.0	-14.8	1.00 V	172	45.02	-13.80
5	432.02	32.8 QP	46.0	-13.2	1.50 V	118	40.90	-8.09
6	796.64	40.3 QP	46.0	-5.7	1.50 V	5	41.25	-0.95

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

ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	4824.00	51.5 PK	74.0	-22.5	1.57 H	270	45.79	5.71
2	4824.00	46.6 AV	54.0	-7.4	1.57 H	270	40.89	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	52.7 PK	74.0	-21.3	1.19 V	317	46.99	5.71
2	4824.00	48.2 AV	54.0	-5.8	1.19 V	317	42.49	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	51.8 PK	74.0	-22.2	1.54 H	269	45.90	5.90
2	4874.00	46.6 AV	54.0	-7.4	1.54 H	269	40.70	5.90
3	7311.00	54.5 PK	74.0	-19.5	1.00 H	293	41.33	13.17
4	7311.00	40.8 AV	54.0	-13.2	1.00 H	293	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	51.8 PK	74.0	-22.2	1.20 V	301	45.90	5.90
2	4874.00	46.4 AV	54.0	-7.6	1.20 V	301	40.50	5.90
3	7311.00	54.7 PK	74.0	-19.3	1.00 V	25	41.53	13.17
4	7311.00	41.4 AV	54.0	-12.6	1.00 V	25	28.23	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	52.9 PK	74.0	-21.1	1.50 H	270	46.79	6.11
2	4924.00	46.8 AV	54.0	-7.2	1.50 H	270	40.69	6.11
3	7386.00	54.5 PK	74.0	-19.5	1.00 H	292	41.32	13.18
4	7386.00	40.7 AV	54.0	-13.3	1.00 H	292	27.52	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	51.9 PK	74.0	-22.1	1.25 V	307	45.79	6.11
2	4924.00	47.2 AV	54.0	-6.8	1.25 V	307	41.09	6.11
3	7386.00	54.6 PK	74.0	-19.4	1.05 V	33	41.42	13.18
4	7386.00	41.3 AV	54.0	-12.7	1.05 V	33	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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	4824.00	47.2 PK	74.0	-26.8	1.00 H	232	41.49	5.71
2	4824.00	33.7 AV	54.0	-20.3	1.00 H	232	27.99	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	45.6 PK	74.0	-28.4	1.00 V	35	39.89	5.71
2	4824.00	33.4 AV	54.0	-20.6	1.00 V	35	27.69	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	45.8 PK	74.0	-28.2	1.00 H	244	39.90	5.90
2	4874.00	33.5 AV	54.0	-20.5	1.00 H	244	27.60	5.90
3	7311.00	54.1 PK	74.0	-19.9	1.00 H	302	40.93	13.17
4	7311.00	40.3 AV	54.0	-13.7	1.00 H	302	27.13	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	47.6 PK	74.0	-26.4	1.02 V	24	41.70	5.90
2	4874.00	34.0 AV	54.0	-20.0	1.02 V	24	28.10	5.90
3	7311.00	54.4 PK	74.0	-19.6	1.00 V	37	41.23	13.17
4	7311.00	40.8 AV	54.0	-13.2	1.00 V	37	27.63	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	46.4 PK	74.0	-27.6	1.00 H	246	40.29	6.11
2	4924.00	33.0 AV	54.0	-21.0	1.00 H	246	26.89	6.11
3	7386.00	54.3 PK	74.0	-19.7	1.00 H	301	41.12	13.18
4	7386.00	40.3 AV	54.0	-13.7	1.00 H	301	27.12	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	47.6 PK	74.0	-26.4	1.00 V	35	41.49	6.11
2	4924.00	33.9 AV	54.0	-20.1	1.00 V	35	27.79	6.11
3	7386.00	54.2 PK	74.0	-19.8	1.01 V	53	41.02	13.18
4	7386.00	40.4 AV	54.0	-13.6	1.01 V	53	27.22	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

802.11n_256QAM(BW20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	47.3 PK	74.0	-26.7	1.04 H	237	41.59	5.71
2	4824.00	33.7 AV	54.0	-20.3	1.04 H	237	27.99	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	4874.00	45.8 PK	74.0	-28.2	1.03 V	34	39.90	5.90
2	4874.00	33.4 AV	54.0	-20.6	1.03 V	34	27.50	5.90
3	7311.00	54.5 PK	74.0	-19.5	1.13 V	9	41.33	13.17
4	7311.00	41.7 AV	54.0	-12.3	1.13 V	9	28.53	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 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4874.00	47.2 PK	74.0	-26.8	1.06 H	233	13.93	33.27
2	4874.00	34.9 AV	54.0	-19.1	1.06 H	233	1.63	33.27
3	7311.00	53.5 PK	74.0	-20.5	1.18 H	286	14.19	39.31
4	7311.00	41.5 AV	54.0	-12.5	1.18 H	286	2.19	39.31
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	45.8 PK	74.0	-28.2	1.03 V	34	12.53	33.27
2	4874.00	33.4 AV	54.0	-20.6	1.03 V	34	0.13	33.27
3	7311.00	54.5 PK	74.0	-19.5	1.13 V	9	15.19	39.31
4	7311.00	41.7 AV	54.0	-12.3	1.13 V	9	2.39	39.31

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	45.1 PK	74.0	-28.9	1.00 H	254	38.99	6.11
2	4924.00	32.9 AV	54.0	-21.1	1.00 H	254	26.79	6.11
3	7386.00	54.6 PK	74.0	-19.4	1.11 H	307	41.42	13.18
4	7386.00	40.5 AV	54.0	-13.5	1.11 H	307	27.32	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	4924.00	47.4 PK	74.0	-26.6	1.00 V	36	41.29	6.11
2	4924.00	33.8 AV	54.0	-20.2	1.00 V	36	27.69	6.11
3	7386.00	55.0 PK	74.0	-19.0	1.14 V	24	41.82	13.18
4	7386.00	41.3 AV	54.0	-12.7	1.14 V	24	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

802.11n_256QAM(BW40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	4844.00	45.0 PK	74.0	-29.0	1.00 H	252	39.22	5.78
2	4844.00	32.9 AV	54.0	-21.1	1.00 H	252	27.12	5.78
3	7266.00	54.8 PK	74.0	-19.2	1.09 H	289	41.60	13.20
4	7266.00	41.1 AV	54.0	-12.9	1.09 H	289	27.90	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	47.7 PK	74.0	-26.3	1.02 V	42	41.92	5.78
2	4844.00	34.5 AV	54.0	-19.5	1.02 V	42	28.72	5.78
3	7266.00	55.4 PK	74.0	-18.6	1.16 V	32	42.20	13.20
4	7266.00	41.4 AV	54.0	-12.6	1.16 V	32	28.20	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	46.8 PK	74.0	-27.2	1.00 H	237	40.90	5.90
2	4874.00	32.9 AV	54.0	-21.1	1.00 H	237	27.00	5.90
3	7311.00	53.5 PK	74.0	-20.5	1.13 H	296	40.33	13.17
4	7311.00	41.5 AV	54.0	-12.5	1.13 H	296	28.33	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	45.7 PK	74.0	-28.3	1.00 V	25	39.80	5.90
2	4874.00	33.0 AV	54.0	-21.0	1.00 V	25	27.10	5.90
3	7311.00	54.0 PK	74.0	-20.0	1.07 V	47	40.83	13.17
4	7311.00	41.7 AV	54.0	-12.3	1.07 V	47	28.53	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	44.7 PK	74.0	-29.3	1.02 H	259	38.68	6.02
2	4904.00	32.6 AV	54.0	-21.4	1.02 H	259	26.58	6.02
3	7356.00	54.9 PK	74.0	-19.1	1.14 H	318	41.72	13.18
4	7356.00	40.9 AV	54.0	-13.1	1.14 H	318	27.72	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	47.2 PK	74.0	-26.8	1.06 V	44	41.18	6.02
2	4904.00	33.9 AV	54.0	-20.1	1.06 V	44	27.88	6.02
3	7356.00	55.2 PK	74.0	-18.8	1.12 V	9	42.02	13.18
4	7356.00	41.3 AV	54.0	-12.7	1.12 V	9	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

4.5.8 TEST RESULTS (CONDUCTED MEASUREMENT)

Radiated versus Conducted Measurement	
☒Conducted measurement	☐Radiated measurement

For Radiated measurement:

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

For Conducted measurement:

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

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

BELOW 1GHz WORST-CASE DATA

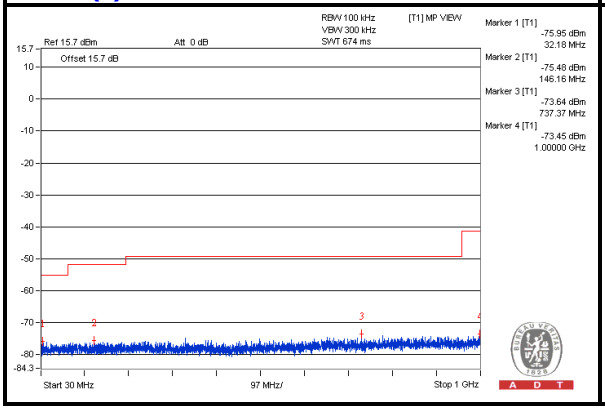
802.11n_256QAM(BW20) - Channel 6

Conducted spurious emission table

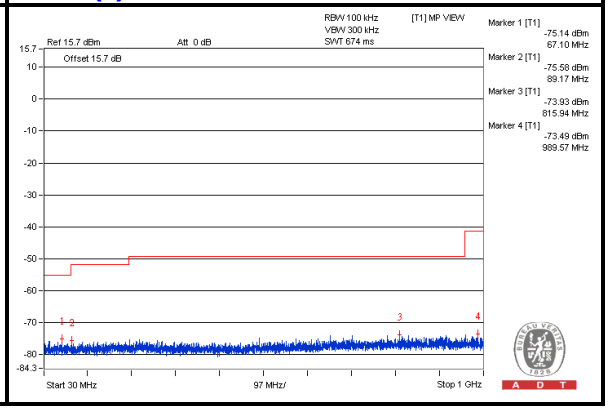
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	40.9125	28.22	40	-11.78	-77.68	-75.86	6.63	-67.04
2	166.285	28.46	43.5	-15.04	-76.02	-76.9	6.63	-66.8
3	239.52	28.86	46	-17.14	-76.8	-75.39	6.63	-66.4
4	586.295	28.73	46	-17.27	-77.73	-75.03	6.63	-66.53
5	662.1975	30.6	46	-15.4	-74.59	-74.02	6.63	-64.66
6	1000	30.29	54	-23.71	-73.45	-76.21	6.63	-64.97

Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)



Chain (1)



ABOVE 1GHz DATA

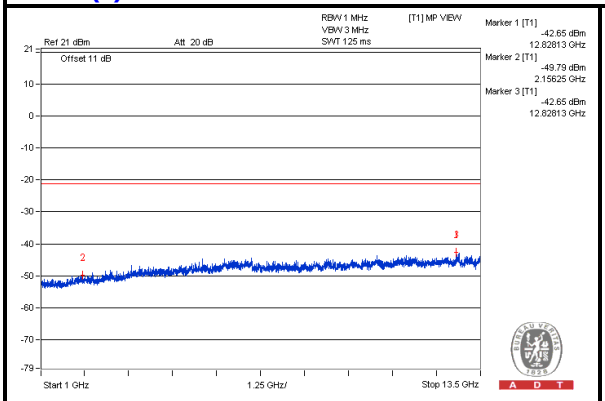
802.11b - Channel 1

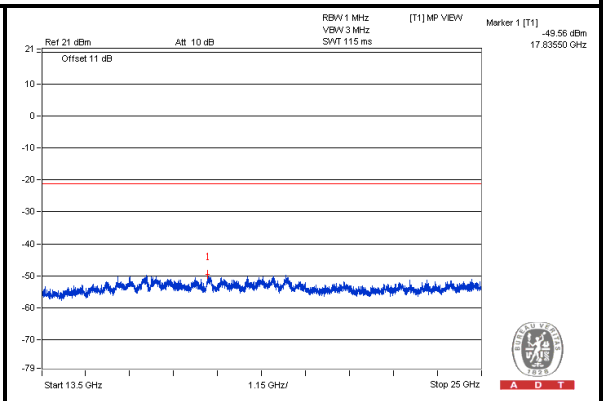
Conducted spurious emission table

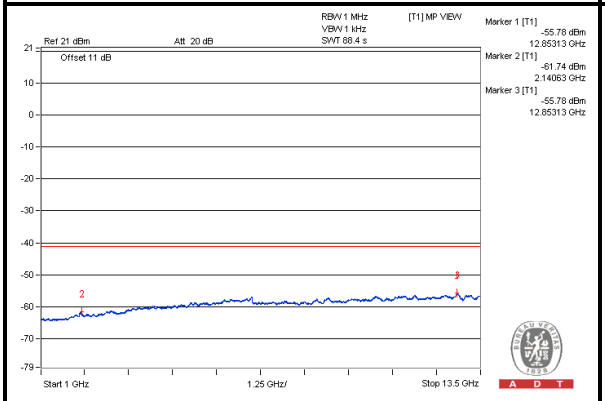
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1606.25 PK	52.45	74	-21.55	-52.33	-52.58	6.63	-42.81
2	1612.5 AV	41.05	54	-12.95	-64.09	-63.62	6.63	-54.21
3	4818.75 PK	56.65	74	-17.35	-47.87	-48.67	6.63	-38.61
4	4821.875 AV	45.63	54	-8.37	-59.96	-58.67	6.63	-49.63

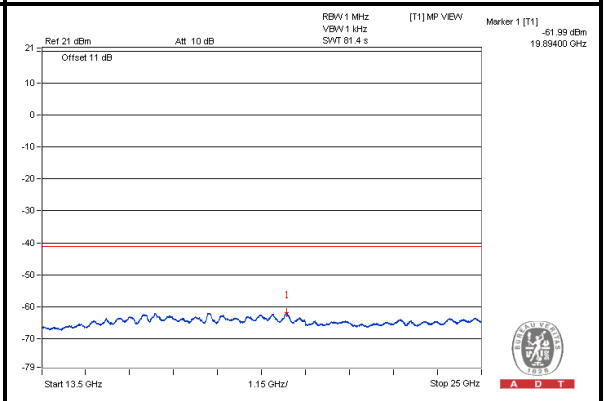
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

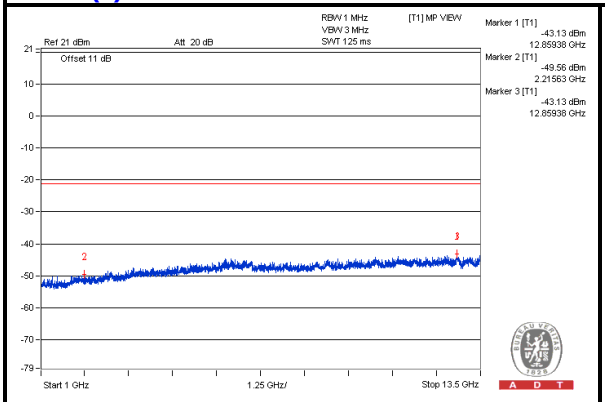


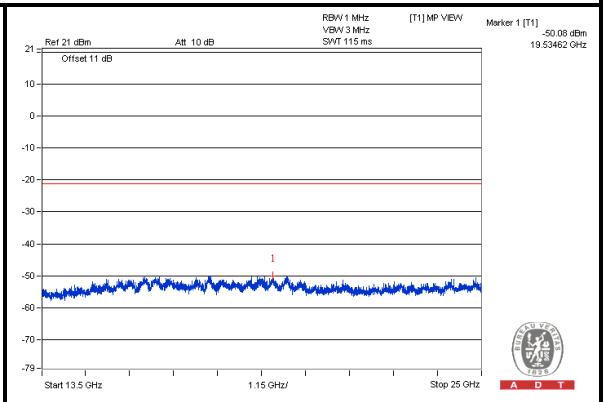


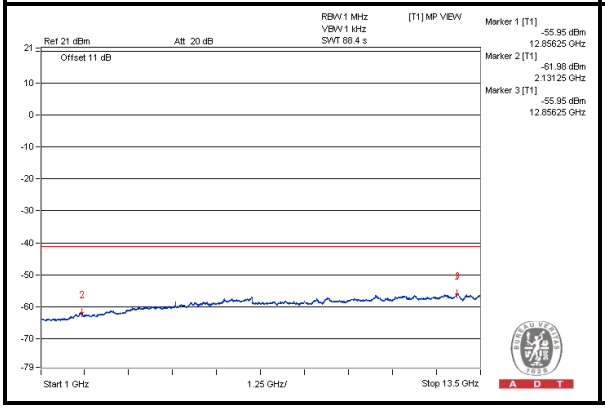


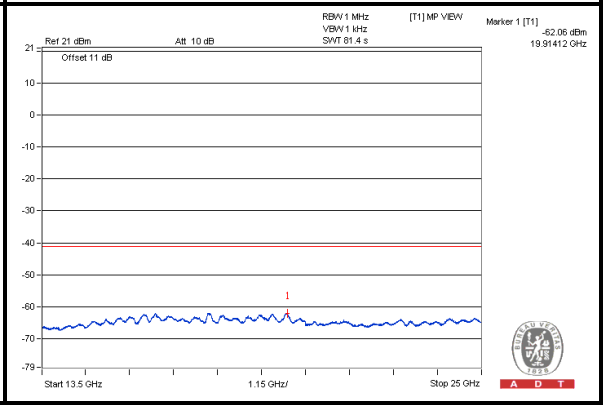


Chain (1)







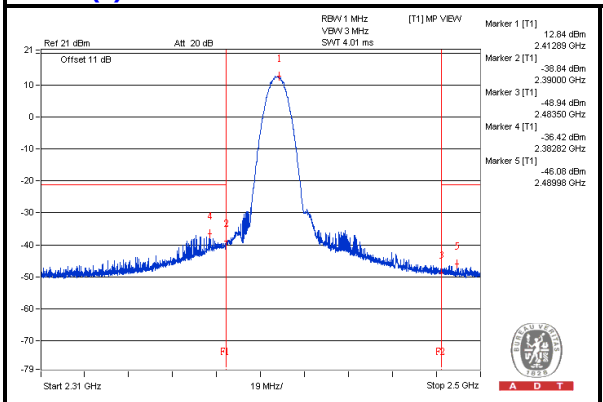


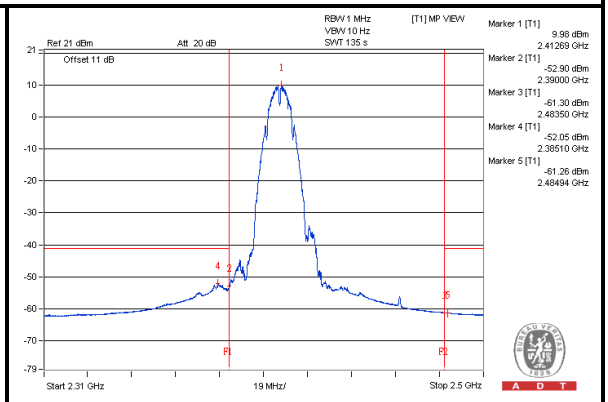
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.23 PK	69.85	74	-4.15	-40.15	-32.77	6.63	-25.41
2	2385.0975 AV	51.3	54	-2.7	-52.05	-56.05	6.63	-43.96
3	2489.9775 PK	58	74	-16	-46.08	-47.9	6.63	-37.26
4	2484.61 AV	43.83	54	-10.17	-61.31	-60.85	6.63	-51.43

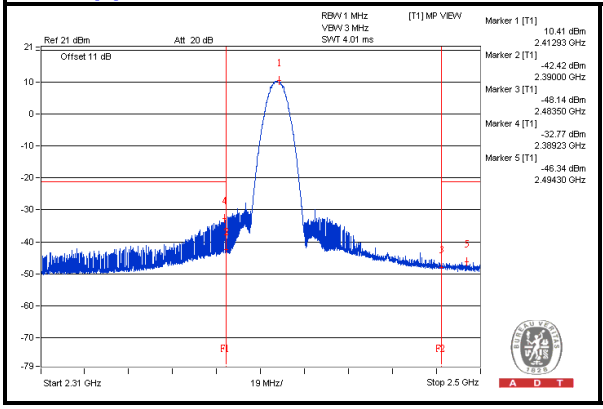
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

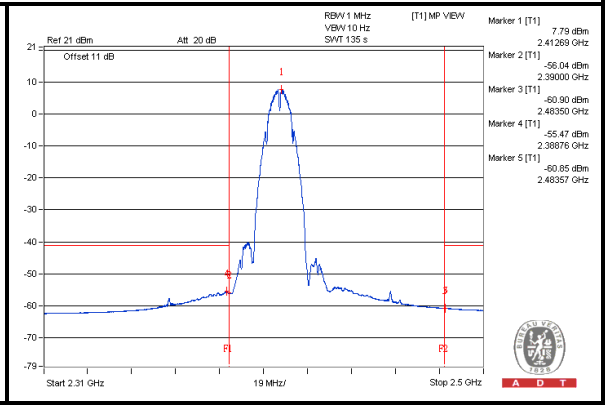
Chain (0)





Chain (1)





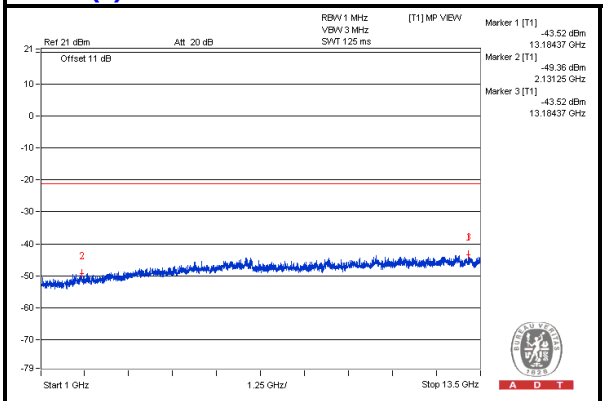
802.11b - Channel 6

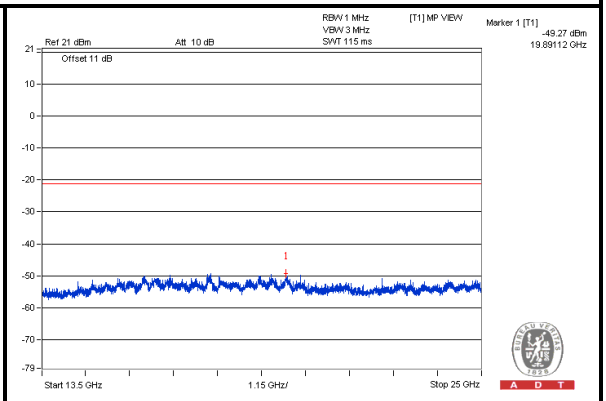
Conducted spurious emission table

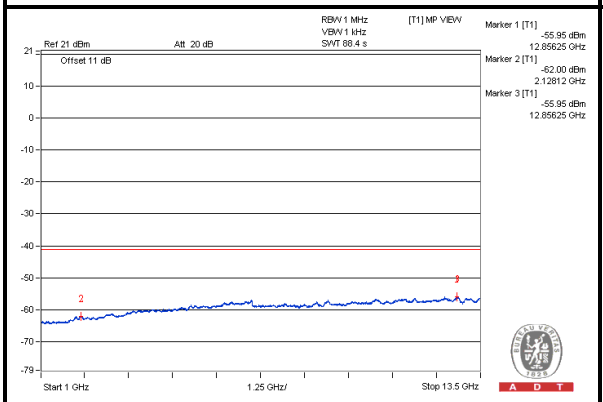
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1615.625 PK	52.75	74	-21.25	-52.3	-52	6.63	-42.51
2	1628.125 AV	41.03	54	-12.97	-64.04	-63.71	6.63	-54.23
3	4884.375 PK	57.29	74	-16.71	-47.53	-47.7	6.63	-37.97
4	4871.875 AV	45.76	54	-8.24	-60.28	-58.24	6.63	-49.5
5	7296.875 PK	58.15	74	-15.85	-46.38	-47.15	6.63	-37.11
6	7296.875 AV	46.23	54	-7.77	-58.6	-58.74	6.63	-49.03

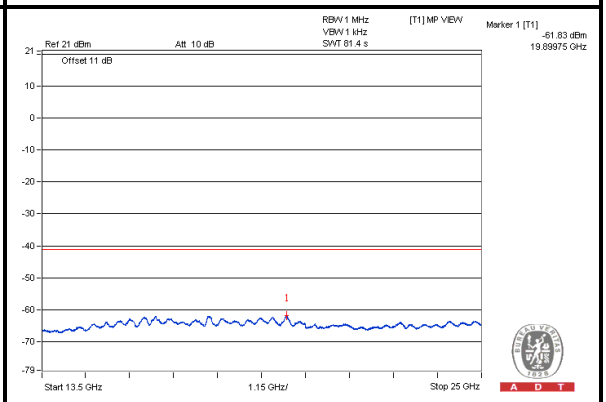
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

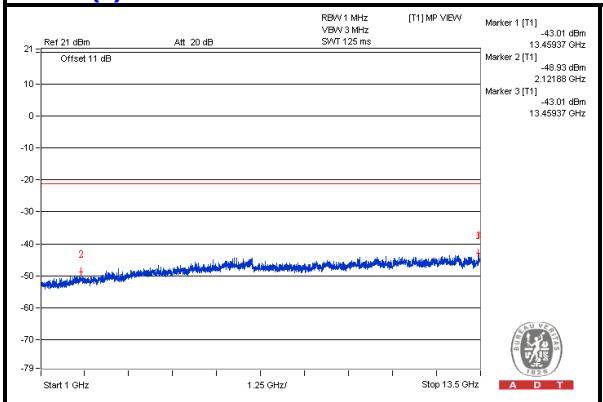


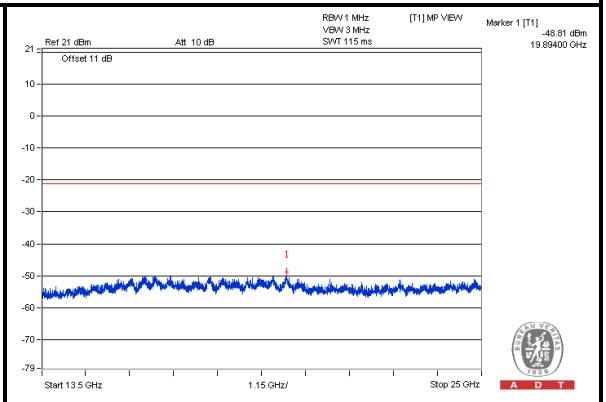


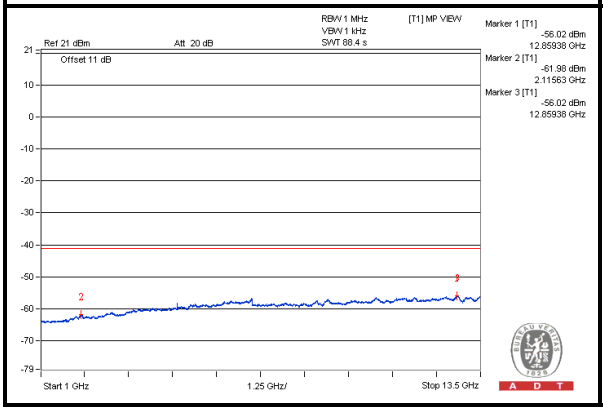


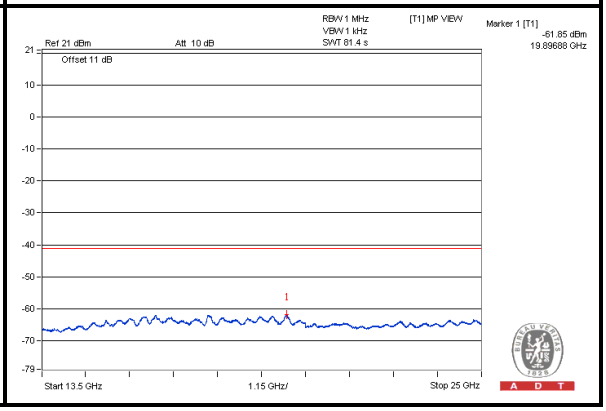


Chain (1)







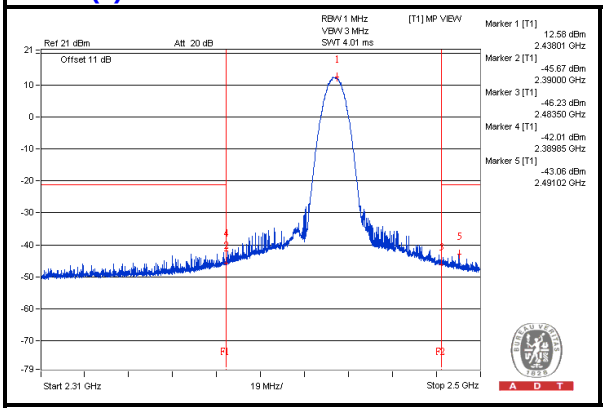


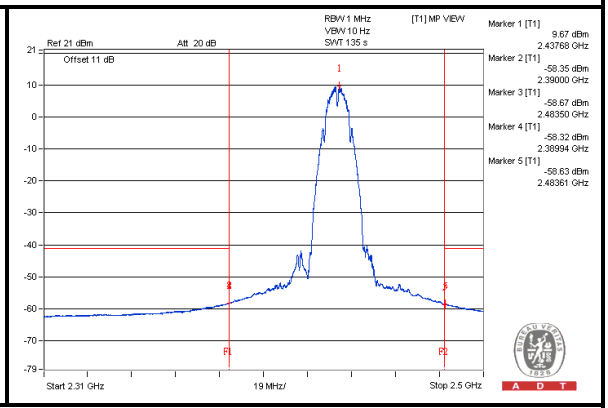
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.42 PK	62.85	74	-11.15	-44.46	-40.51	6.63	-32.41
2	2388.8975 AV	46.83	54	-7.17	-58.63	-57.58	6.63	-48.43
3	2485.2275 PK	60.66	74	-13.34	-45.08	-43.54	6.63	-34.6
4	2484.895 AV	48.36	54	-5.64	-58.9	-55.02	6.63	-46.9

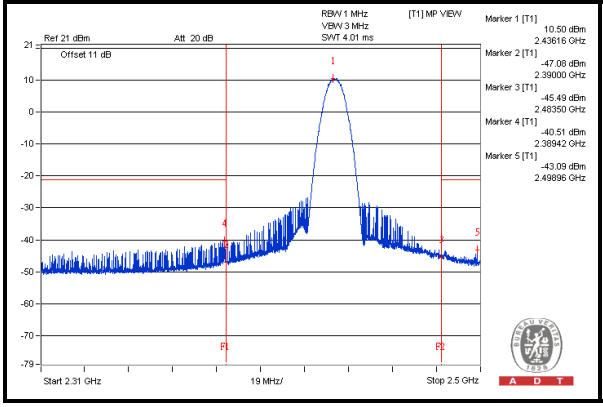
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

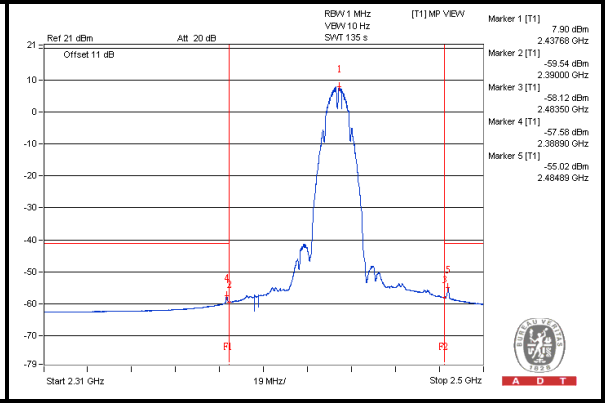
Chain (0)





Chain (1)





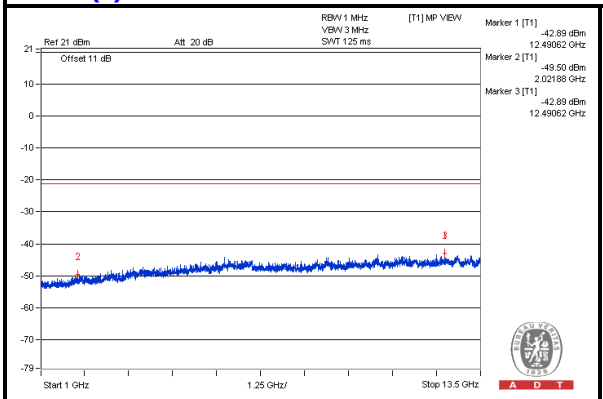
802.11b - Channel 11

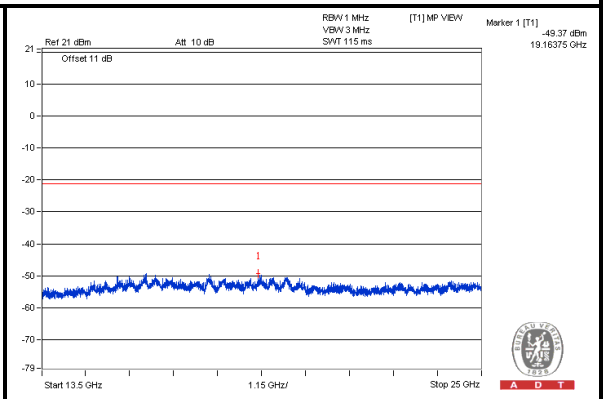
Conducted spurious emission table

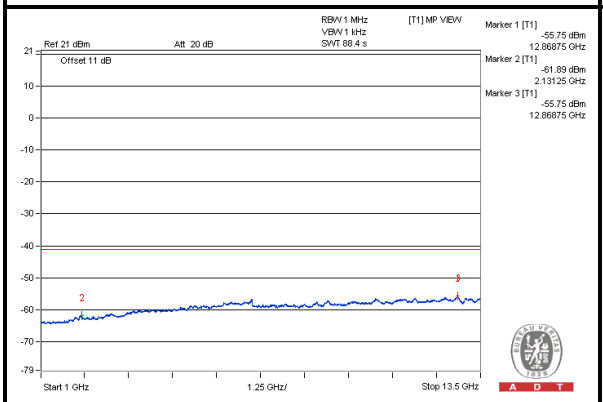
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4921.875 PK	57.22	74	-16.78	-47.92	-47.46	6.63	-38.04
2	4921.875 AV	47.91	54	-6.09	-59.8	-55.3	6.63	-47.35
3	7403.125 PK	57.57	74	-16.43	-47.05	-47.62	6.63	-37.69
4	7400 AV	45.99	54	-8.01	-58.85	-58.98	6.63	-49.27

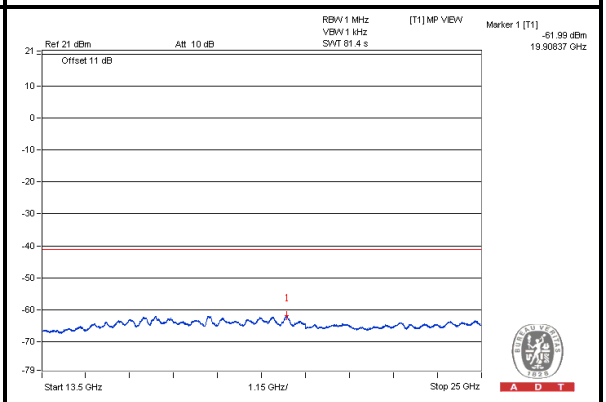
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

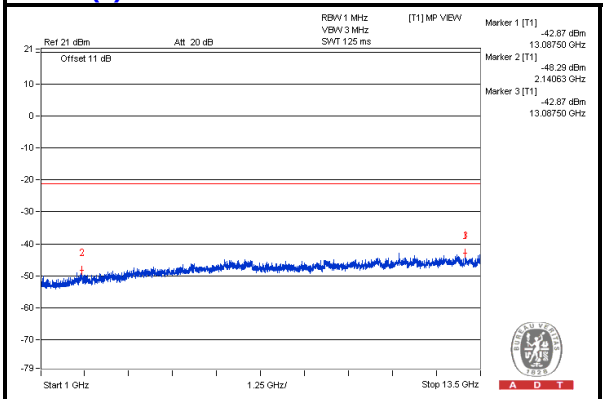


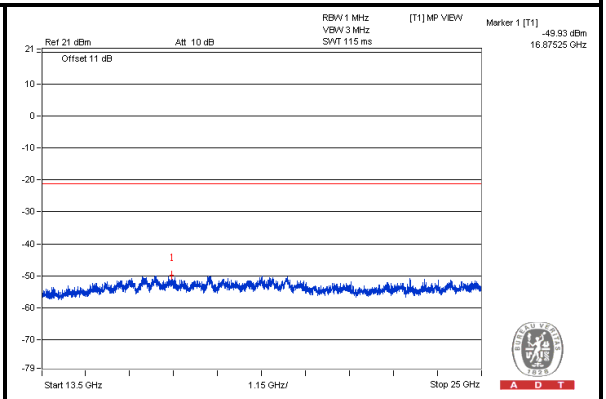


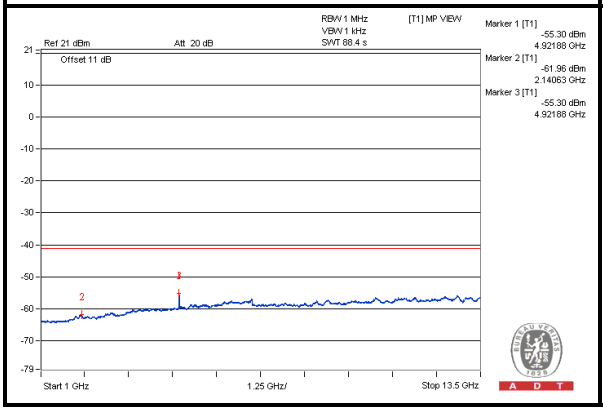


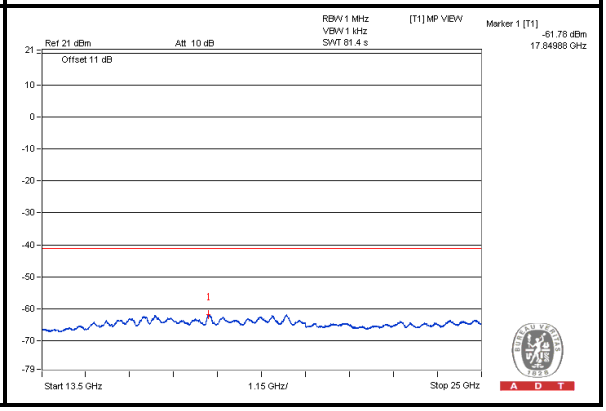


Chain (1)







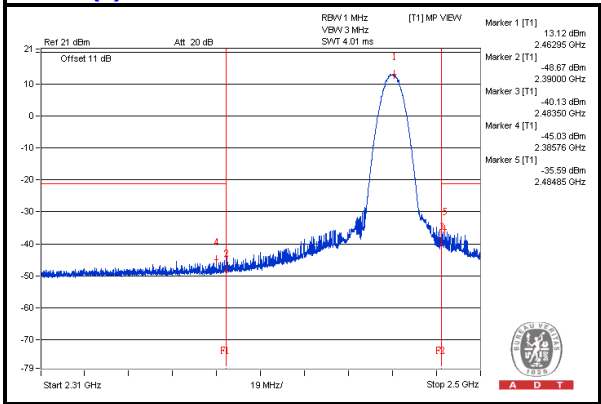


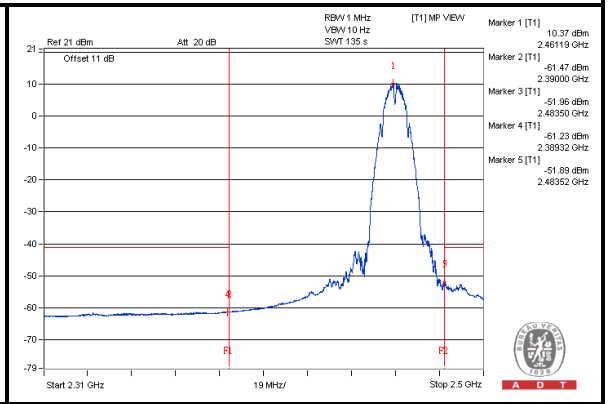
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2386.95 PK	60.29	74	-13.71	-46.09	-43.51	6.63	-34.97
2	2389.325 AV	43.24	54	-10.76	-61.23	-62.14	6.63	-52.02
3	2487.2225 PK	71	74	-3	-37.81	-31.88	6.63	-24.26
4	2483.5175 AV	51.93	54	-2.07	-51.89	-54.42	6.63	-43.33

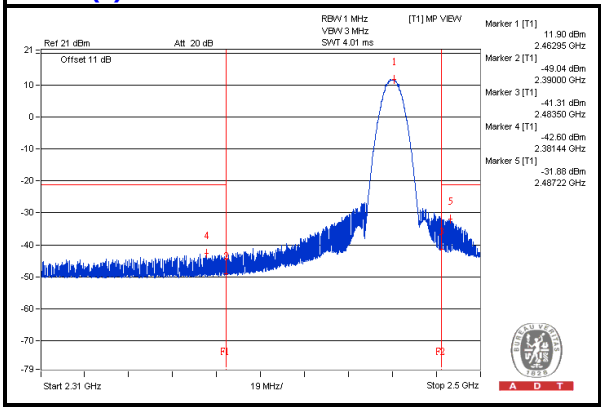
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

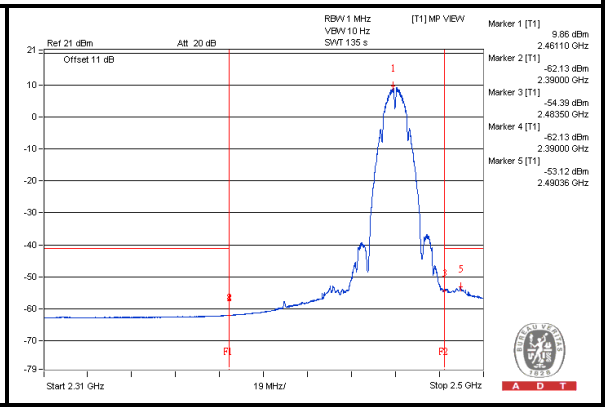
Chain (0)





Chain (1)





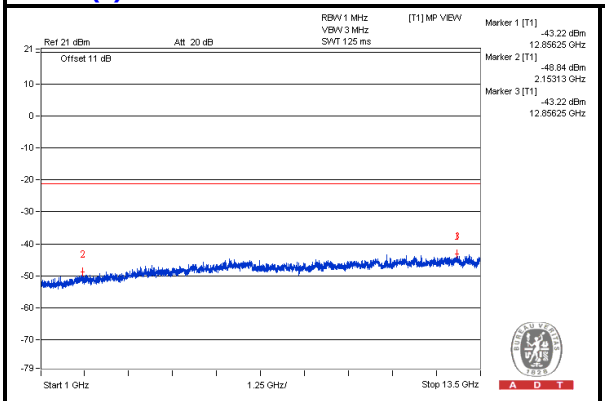
802.11g - Channel 1

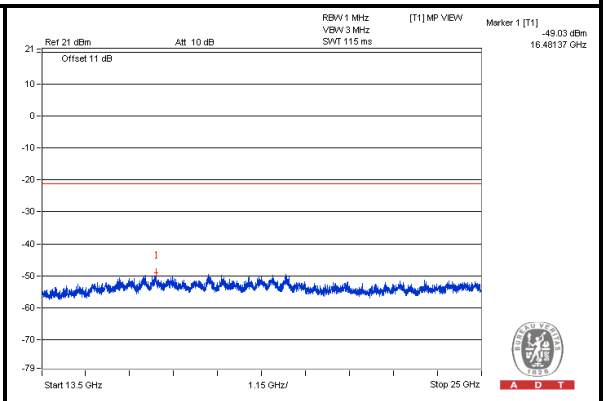
Conducted spurious emission table

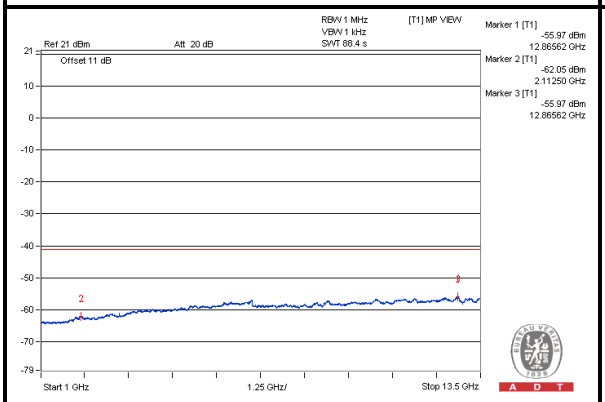
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1593.75 PK	52.7	74	-21.3	-53.12	-51.44	6.63	-42.56
2	1621.875 AV	41.01	54	-12.99	-63.64	-64.16	6.63	-54.25
3	4831.25 PK	56.99	74	-17.01	-47.72	-48.11	6.63	-38.27
4	4821.875 AV	45.04	54	-8.96	-59.81	-59.91	6.63	-50.22

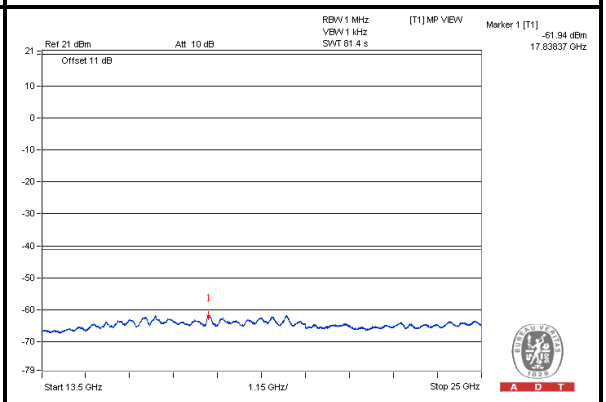
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

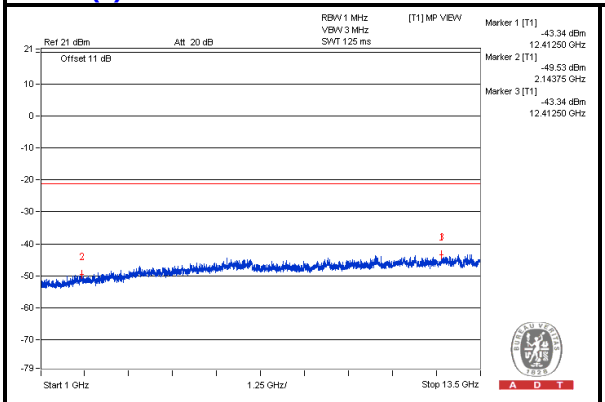


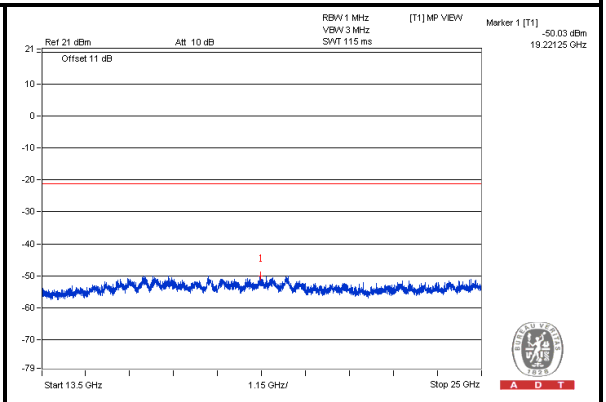


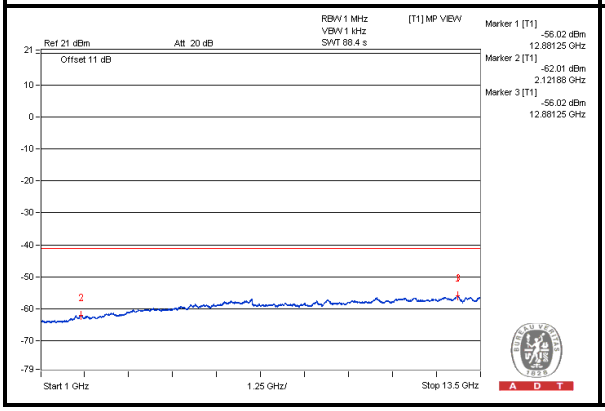


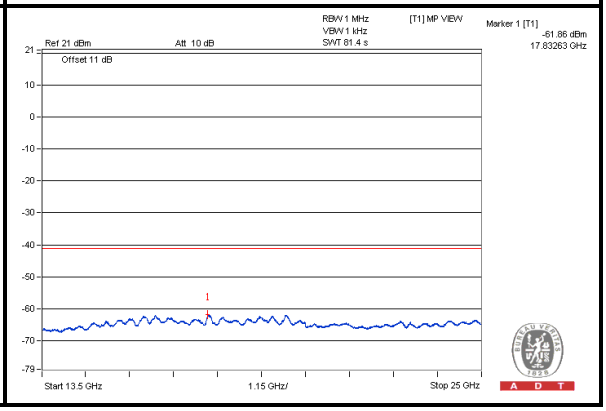


Chain (1)







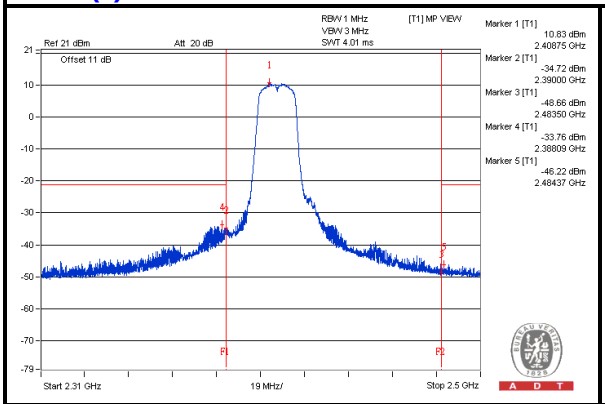


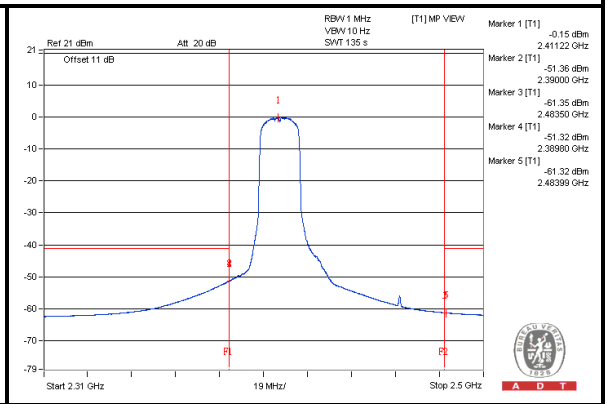
Bandedge table

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	70.82	74	-3.18	-34.54	-33.66	6.63	-24.44
2	2389.99 AV	52.36	54	-1.64	-51.36	-54.16	6.63	-42.9
3	2492.4 PK	57.92	74	-16.08	-48.63	-45.79	6.63	-37.34
4	2483.8025 AV	43.81	54	-10.19	-61.32	-60.87	6.63	-51.45

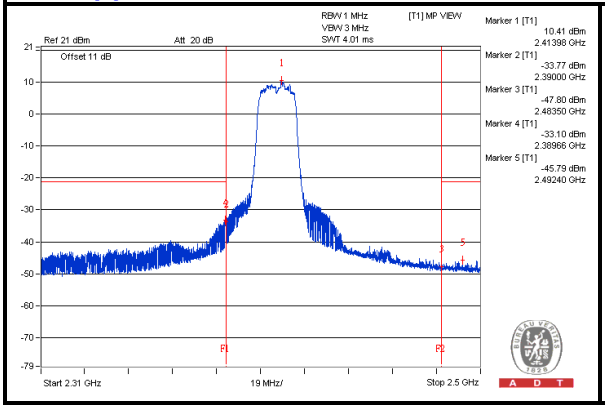
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

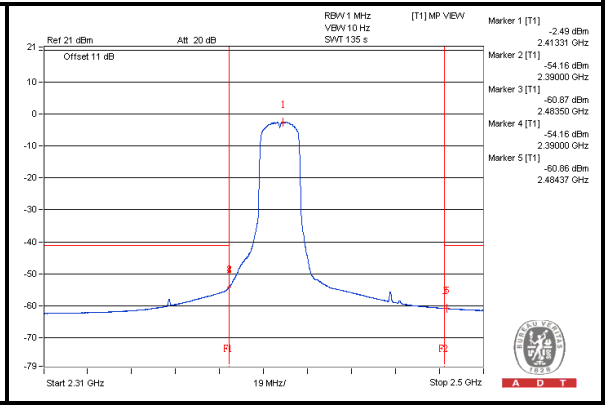
Chain (0)





Chain (1)





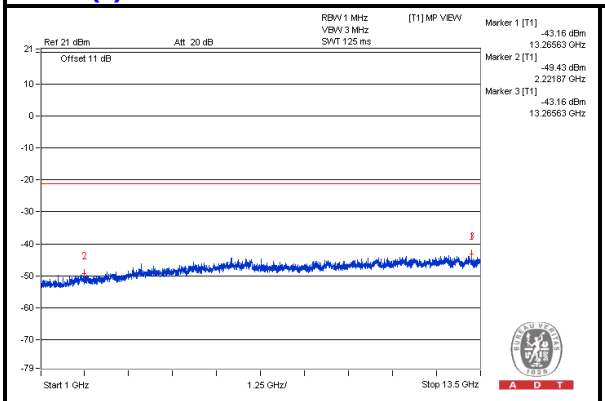
802.11g - Channel 6

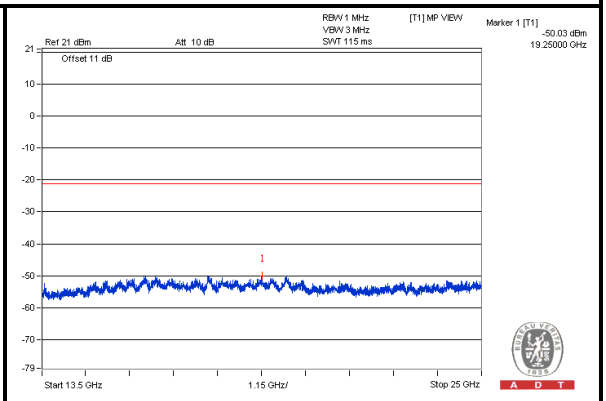
Conducted spurious emission table

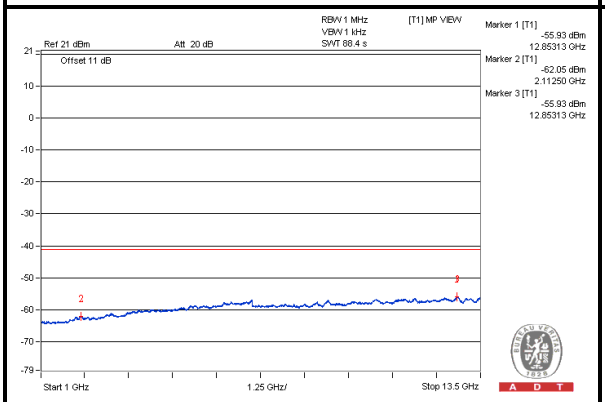
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1606.25 PK	53.15	74	-20.85	-50.59	-53.34	6.63	-42.11
2	1625 AV	40.99	54	-13.01	-63.87	-63.96	6.63	-54.27
3	4890.625 PK	56.76	74	-17.24	-47.67	-48.67	6.63	-38.5
4	4878.125 AV	44.96	54	-9.04	-60.2	-59.69	6.63	-50.3
5	7306.25 PK	58.62	74	-15.38	-46.86	-45.77	6.63	-36.64
6	7300 AV	46.25	54	-7.75	-58.79	-58.51	6.63	-49.01

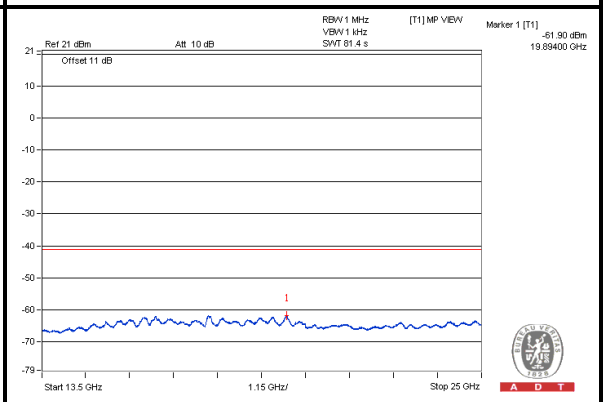
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

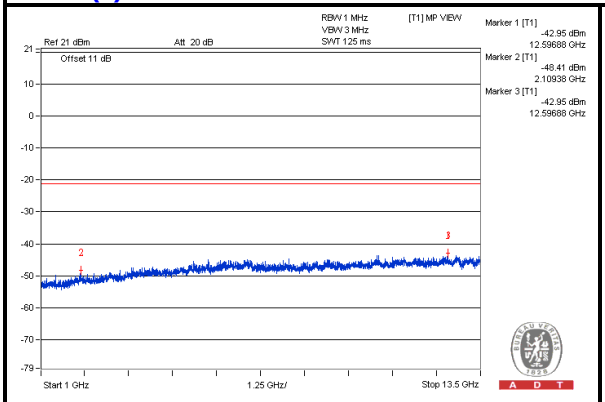


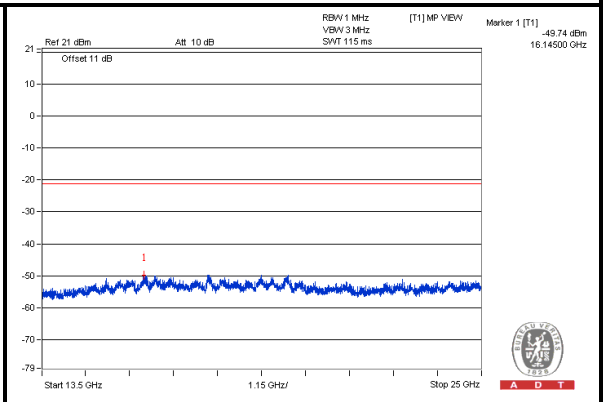


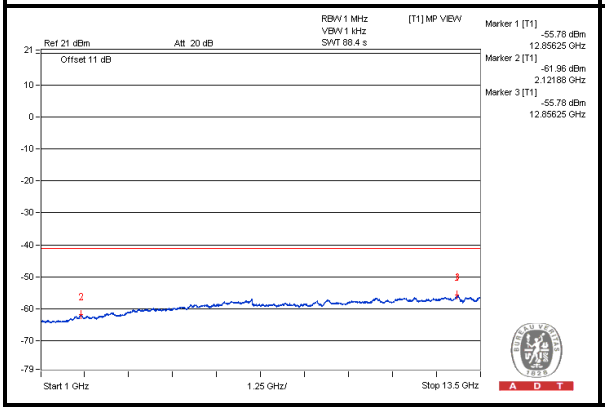


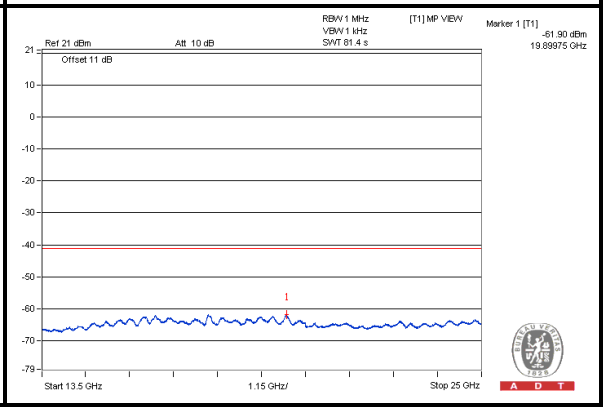


Chain (1)







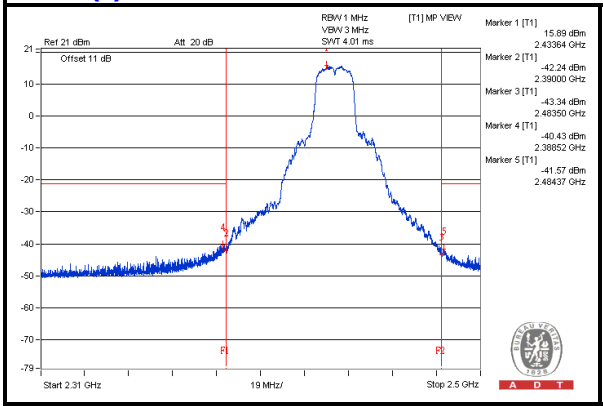


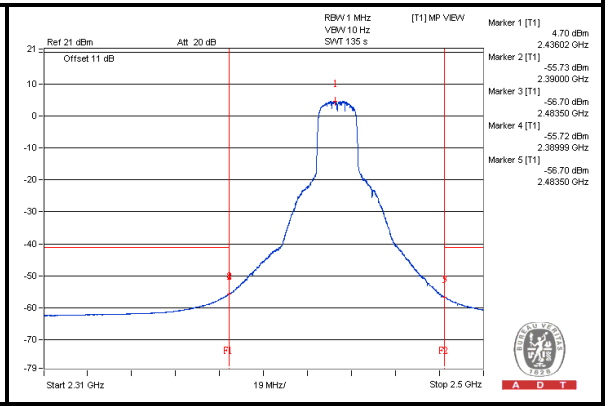
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.2775 PK	64.11	74	-9.89	-40.73	-40.86	6.63	-31.15
2	2388.9925 AV	47.99	54	-6.01	-56.28	-57.64	6.63	-47.27
3	2484.515 PK	63.53	74	-10.47	-42.35	-40.57	6.63	-31.73
4	2484.8475 AV	48.69	54	-5.31	-57.27	-55.36	6.63	-46.57

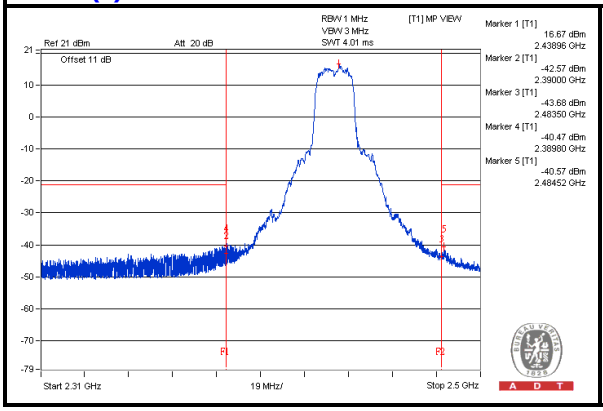
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

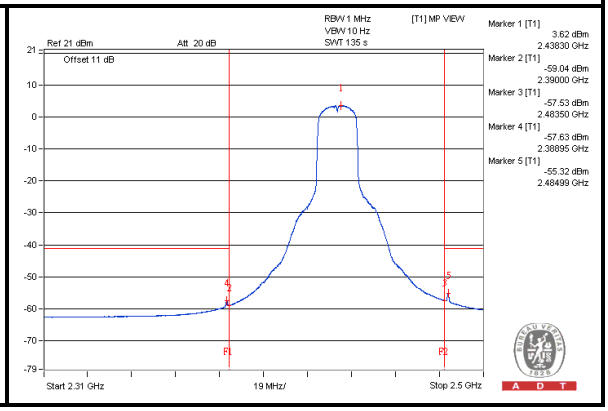
Chain (0)





Chain (1)





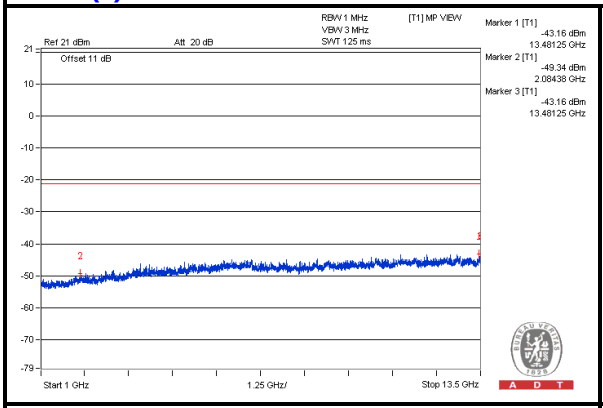
802.11g - Channel 11

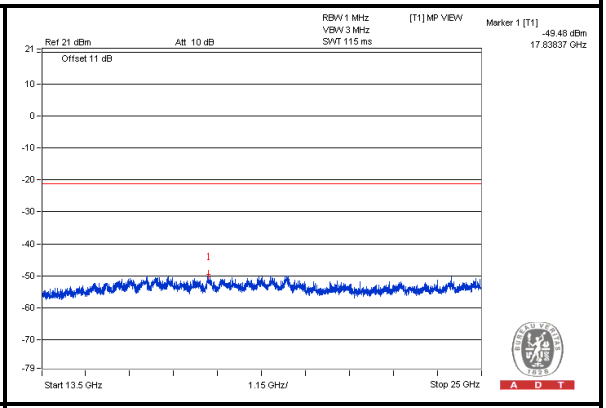
Conducted spurious emission table

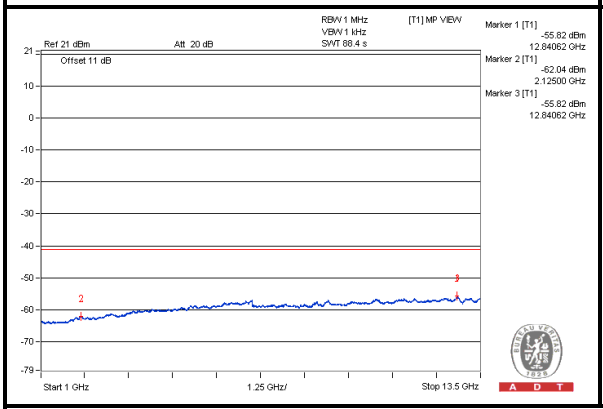
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4928.125 PK	57.22	74	-16.78	-47.52	-47.85	6.63	-38.04
2	4937.5 AV	45.14	54	-8.86	-59.79	-59.74	6.63	-50.12
3	7384.375 PK	58.22	74	-15.78	-45.64	-48.04	6.63	-37.04
4	7381.25 AV	45.92	54	-8.08	-59.07	-58.9	6.63	-49.34

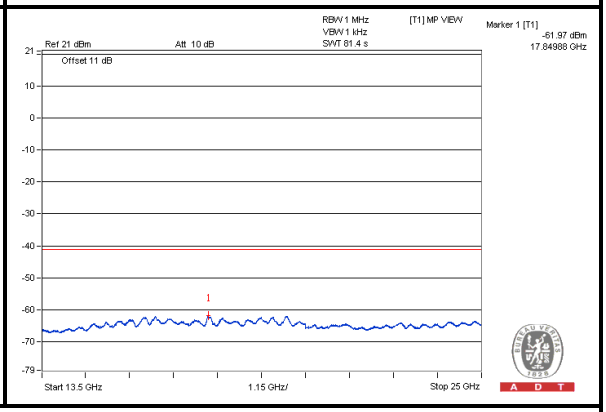
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

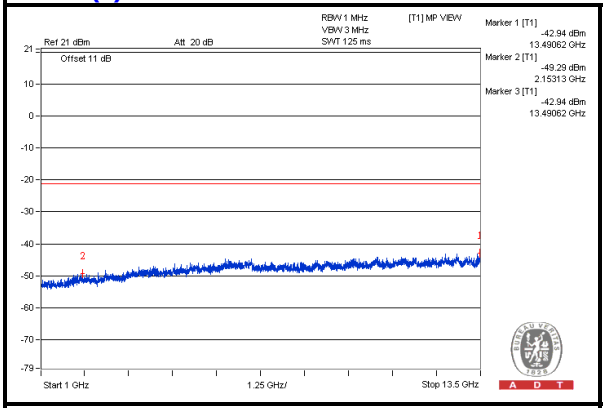


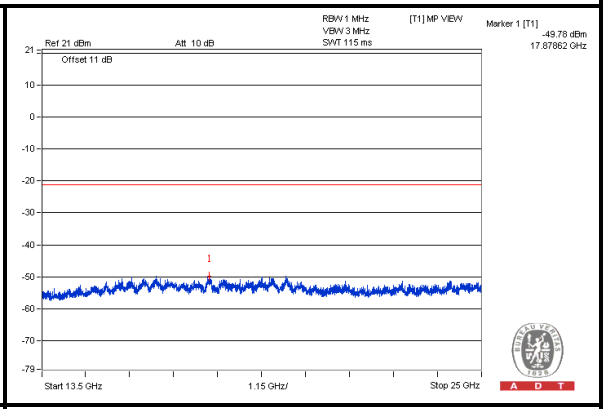


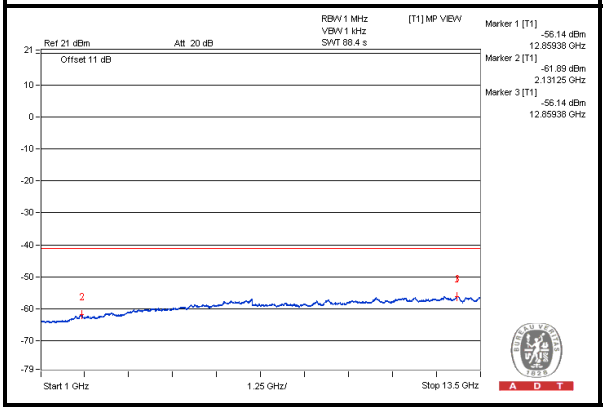


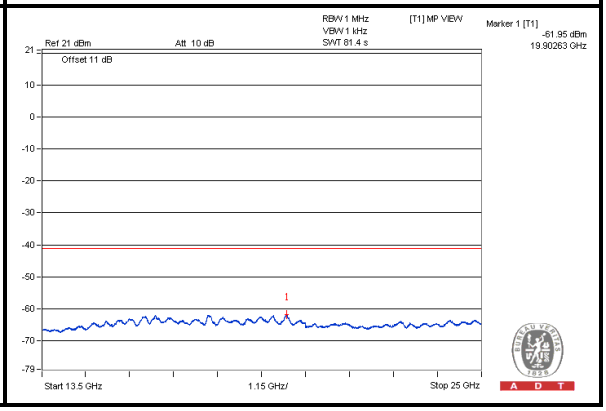


Chain (1)







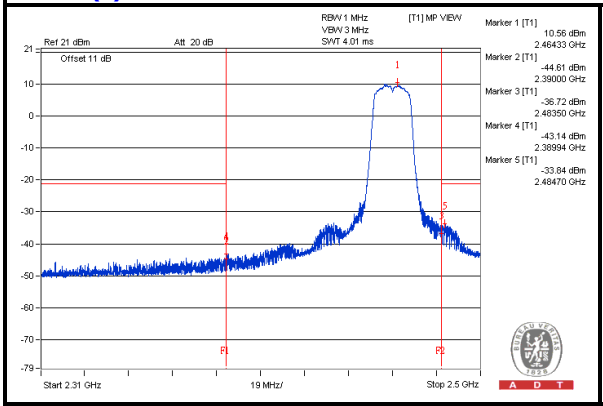


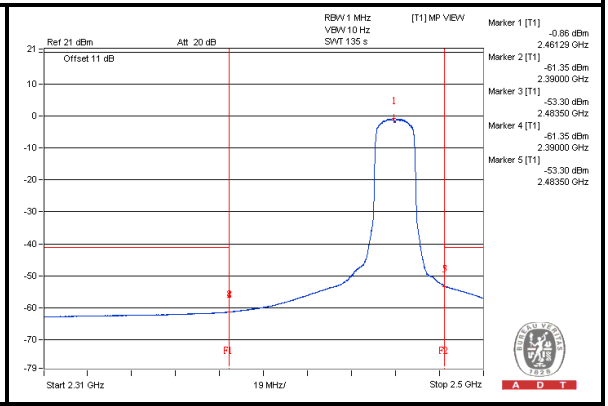
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.9425 PK	61.54	74	-12.46	-43.14	-43.59	6.63	-33.72
2	2389.6575 AV	43.19	54	-10.81	-61.36	-62.09	6.63	-52.07
3	2484.7525 PK	72.27	74	-1.73	-34.04	-31.57	6.63	-22.99
4	2483.5175 AV	51.69	54	-2.31	-53.31	-53.11	6.63	-43.57

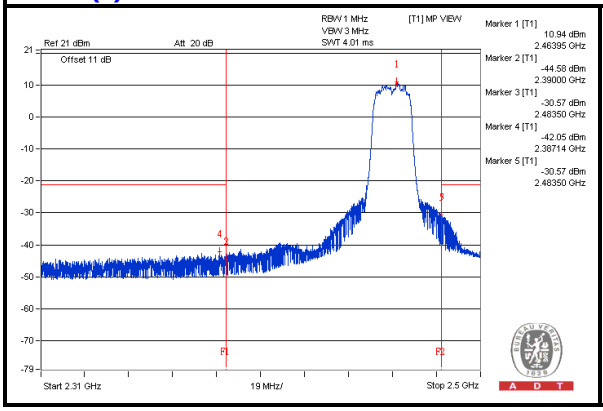
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

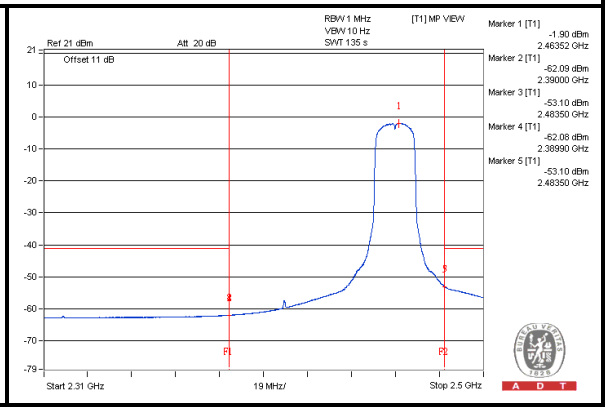
Chain (0)





Chain (1)





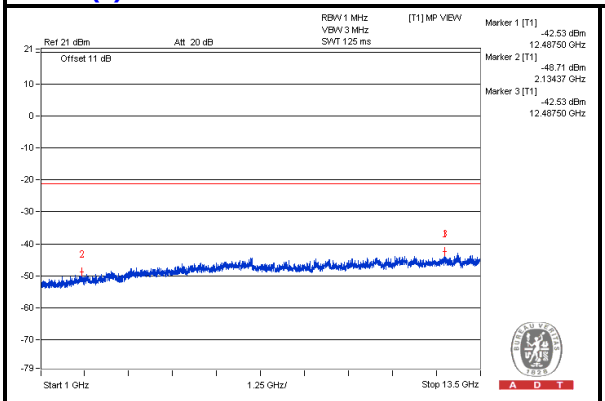
802.11n_256QAM(BW20) - Channel 1

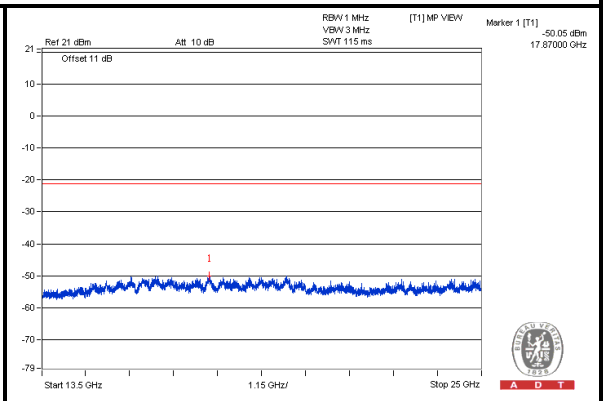
Conducted spurious emission table

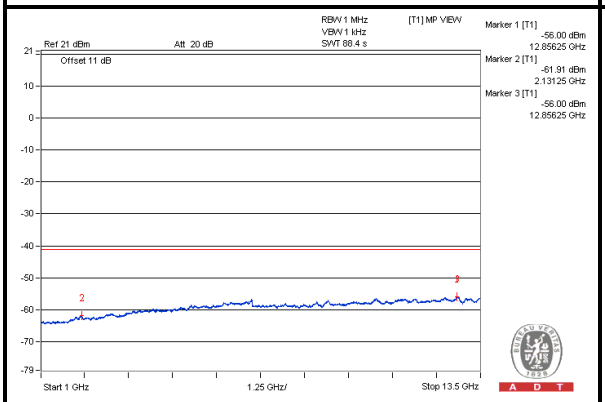
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1621.875 PK	53.25	74	-20.75	-51.52	-51.79	6.63	-42.01
2	1618.75 AV	40.94	54	-13.06	-63.97	-63.96	6.63	-54.32
3	4812.5 PK	56.71	74	-17.29	-47.27	-49.36	6.63	-38.55
4	4815.625 AV	45.03	54	-8.97	-59.92	-59.82	6.63	-50.23

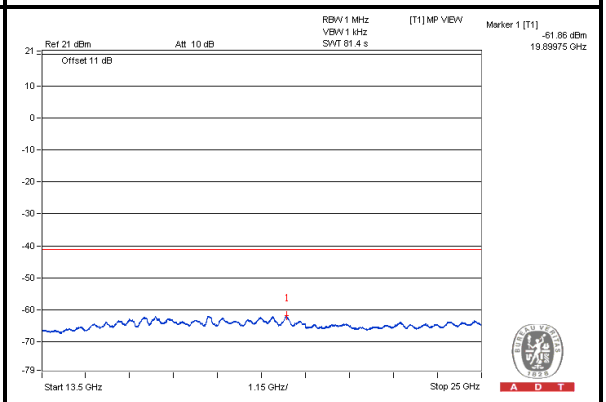
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

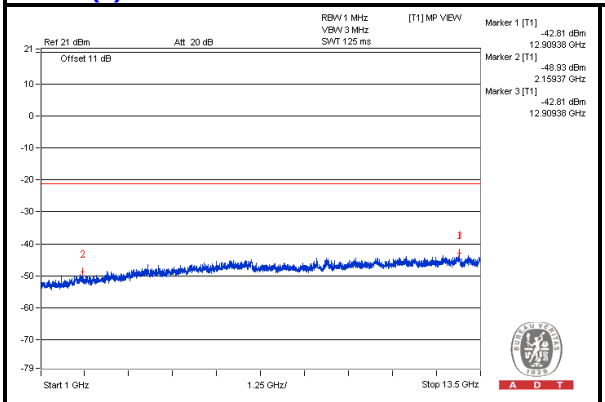


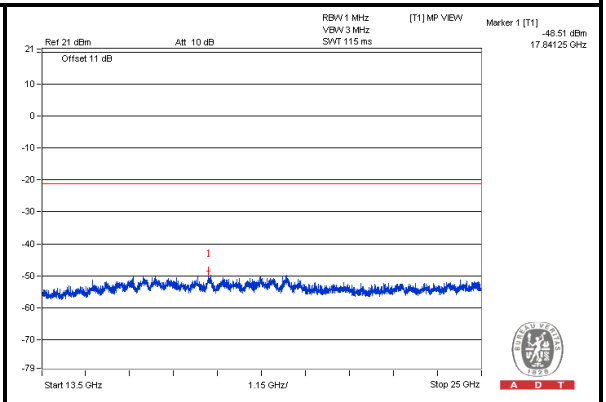


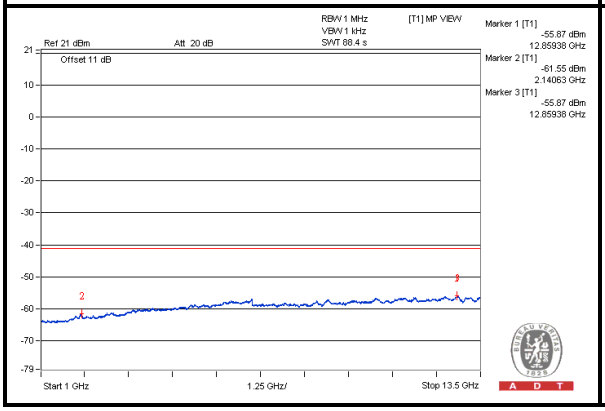


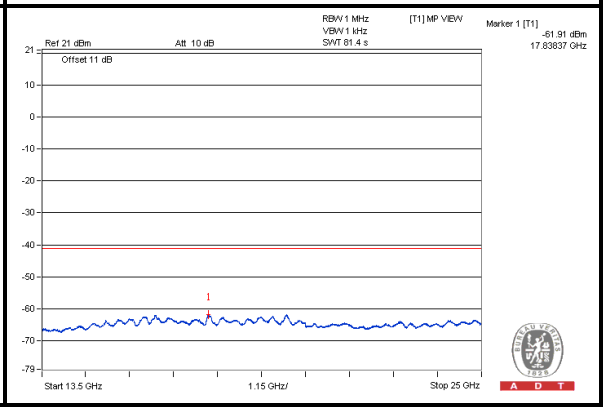


Chain (1)







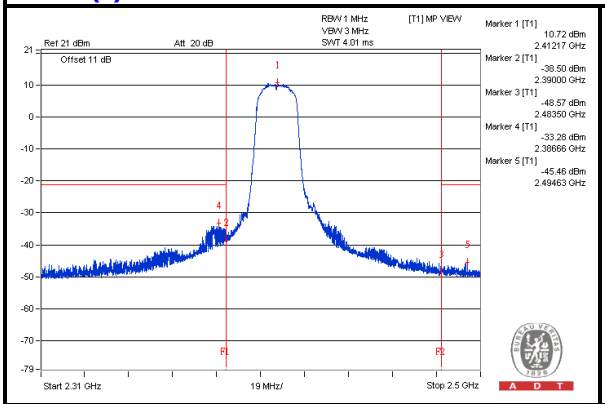


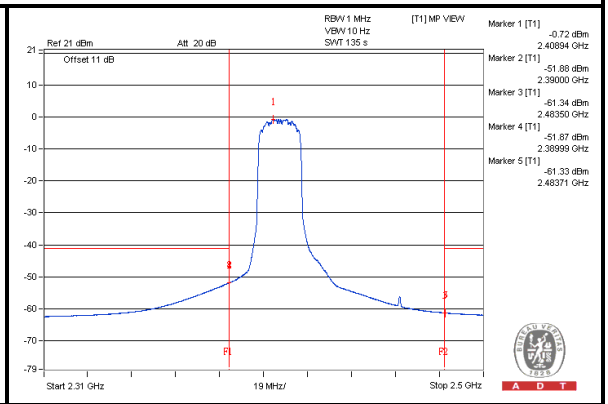
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.7525 PK	70.52	74	-3.48	-35.37	-33.57	6.63	-24.74
2	2389.99 AV	52.47	54	-1.53	-51.87	-53.08	6.63	-42.79
3	2486.415 PK	58.88	74	-15.12	-48.42	-44.48	6.63	-36.38
4	2483.7075 AV	43.8	54	-10.2	-61.33	-60.89	6.63	-51.46

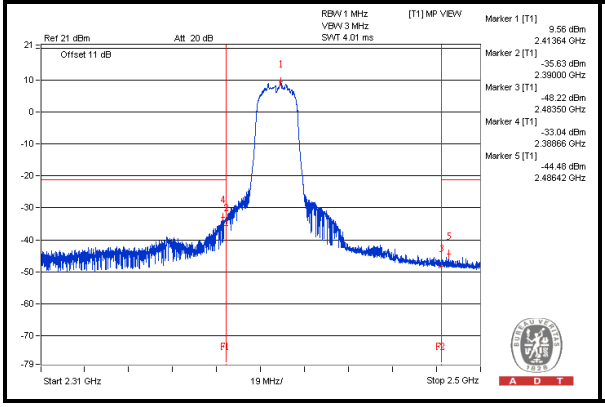
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

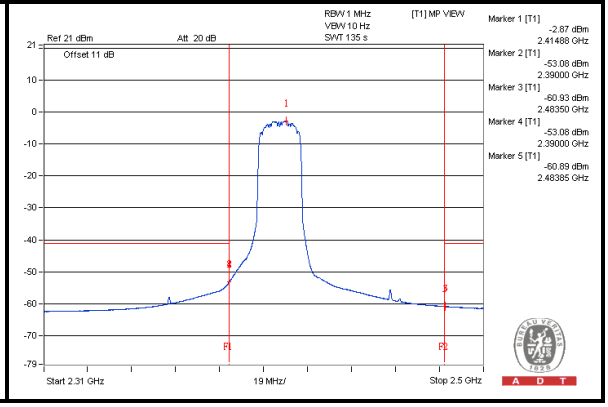
Chain (0)





Chain (1)





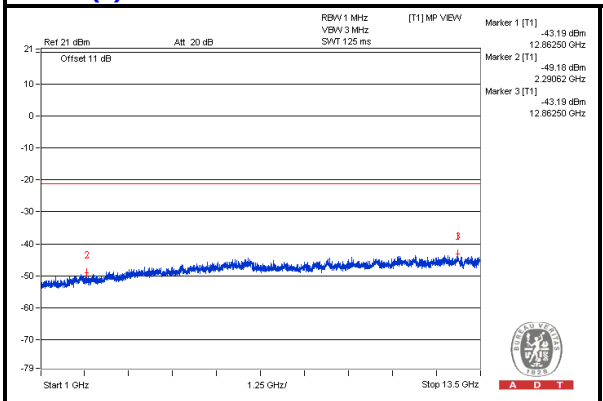
802.11n_256QAM(BW20) - Channel 6

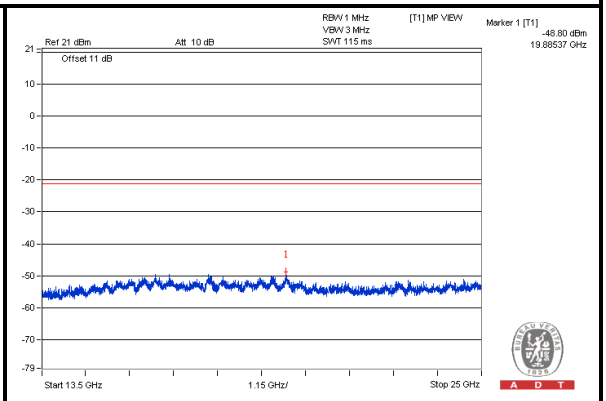
Conducted spurious emission table

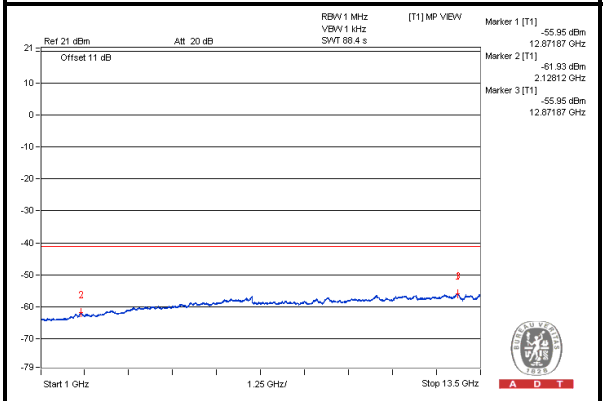
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1643.75 PK	53.01	74	-20.99	-51.6	-52.2	6.63	-42.25
2	1618.75 AV	41.09	54	-12.91	-63.72	-63.9	6.63	-54.17
3	4887.5 PK	56.38	74	-17.62	-48.87	-48.19	6.63	-38.88
4	4881.25 AV	44.92	54	-9.08	-60	-59.96	6.63	-50.34
5	7328.125 PK	58.2	74	-15.8	-46.69	-46.72	6.63	-37.06
6	7300 AV	46.22	54	-7.78	-58.64	-58.72	6.63	-49.04

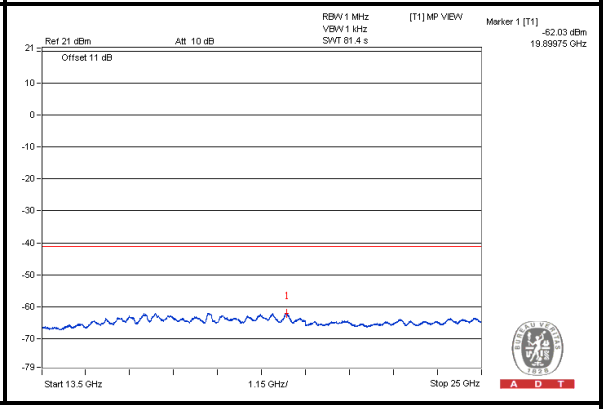
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

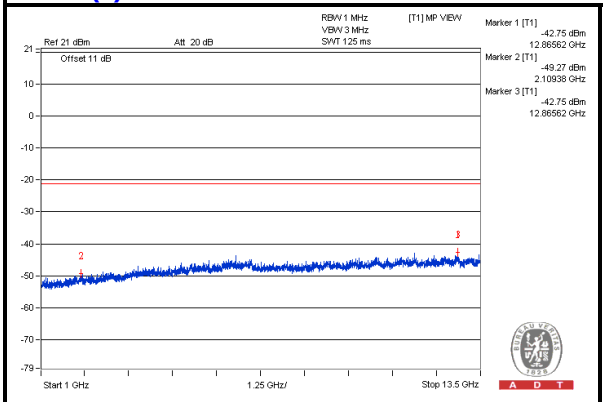


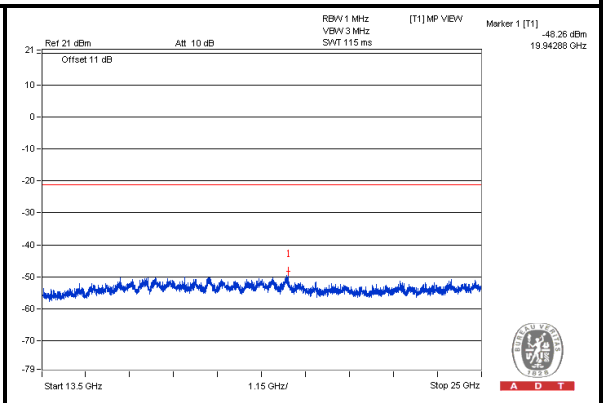


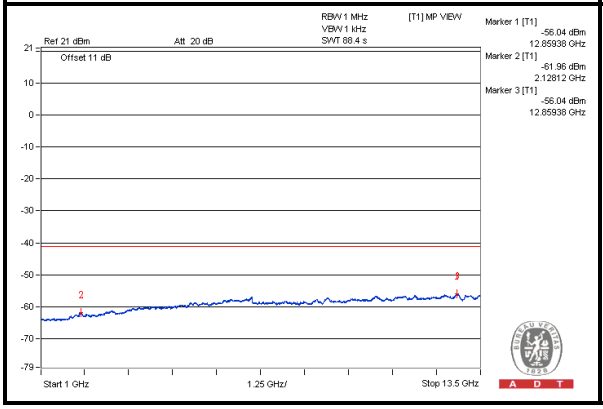


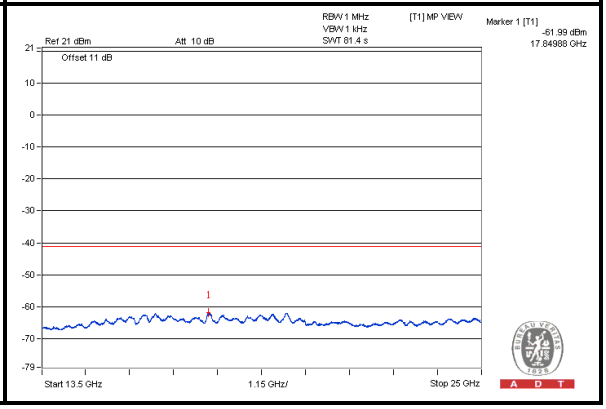


Chain (1)







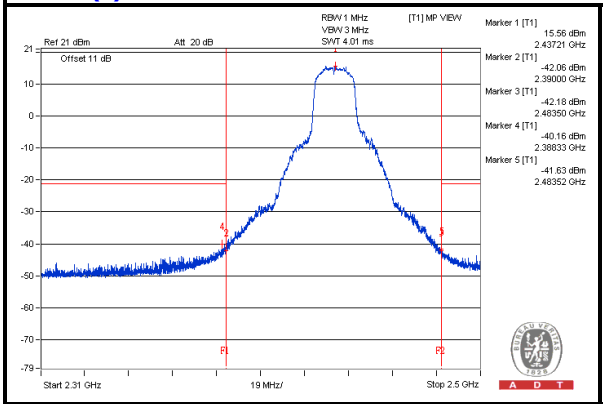


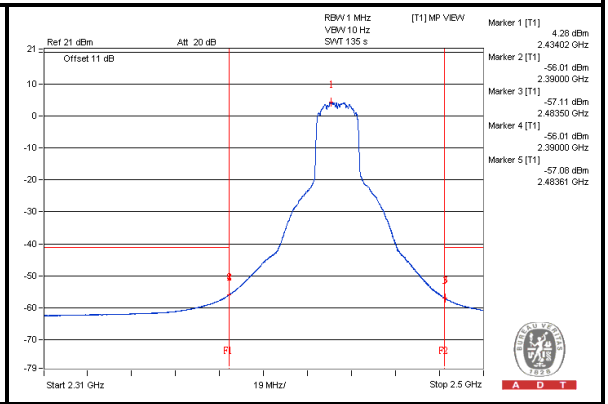
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.135 PK	64.34	74	-9.66	-41.75	-39.62	6.63	-30.92
2	2388.945 AV	47.88	54	-6.12	-56.47	-57.66	6.63	-47.38
3	2484.5625 PK	62.11	74	-11.89	-43.85	-41.94	6.63	-33.15
4	2484.99 AV	48.5	54	-5.5	-57.66	-55.43	6.63	-46.76

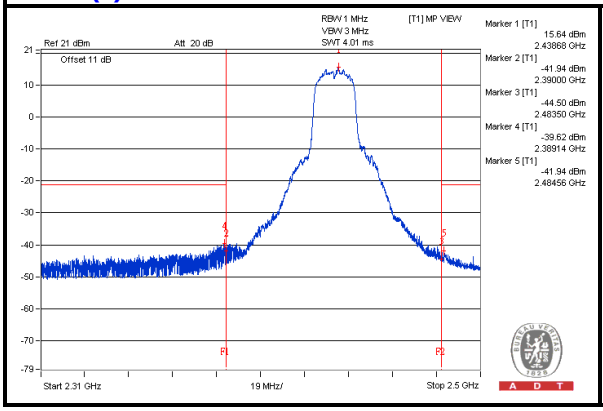
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

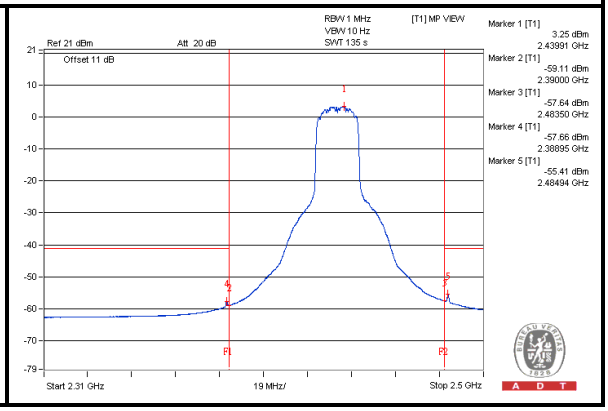
Chain (0)





Chain (1)





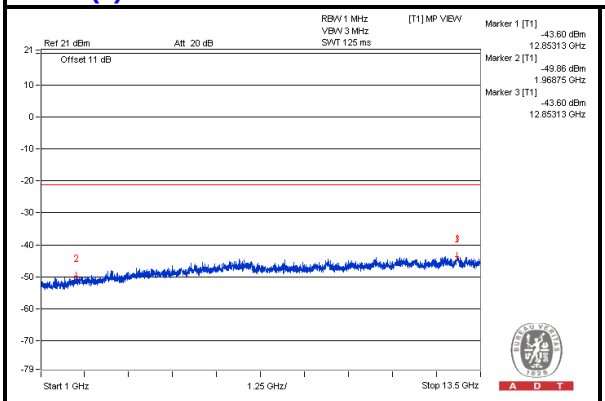
802.11n_256QAM(BW20) - Channel 11

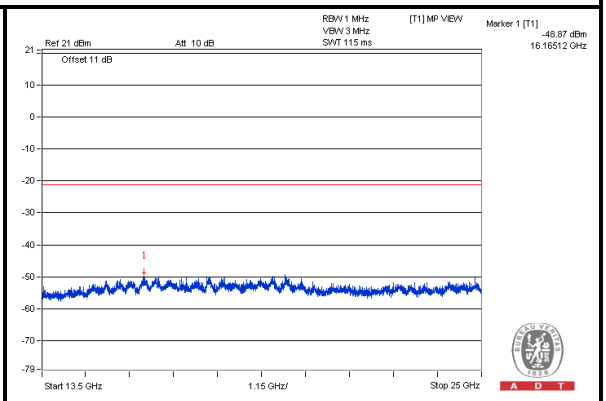
Conducted spurious emission table

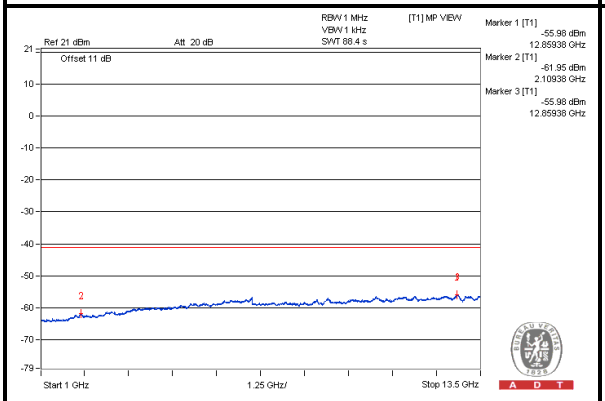
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1659.375 PK	53.59	74	-20.41	-50.46	-52.37	6.63	-41.67
2	1640.625 AV	41	54	-13	-63.87	-63.94	6.63	-54.26
3	4937.5 PK	58.19	74	-15.81	-47.58	-45.98	6.63	-37.07
4	4921.875 AV	45.31	54	-8.69	-59.75	-59.43	6.63	-49.95
5	7381.25 PK	57.48	74	-16.52	-47.04	-47.83	6.63	-37.78
6	7387.5 AV	46.01	54	-7.99	-58.78	-59.01	6.63	-49.25

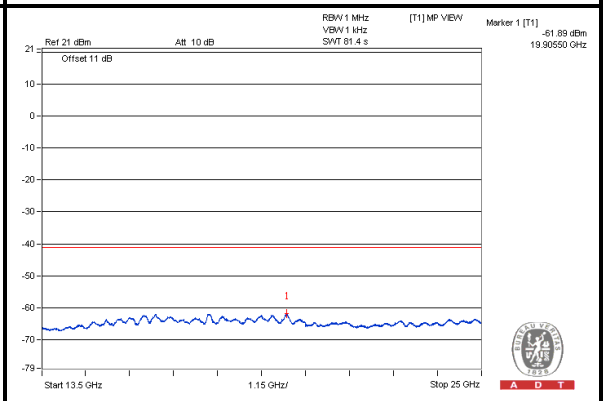
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

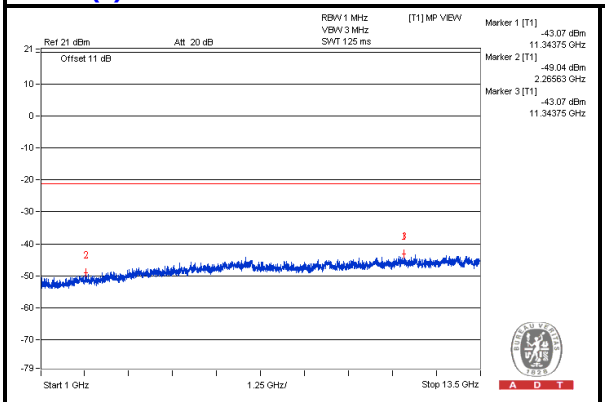


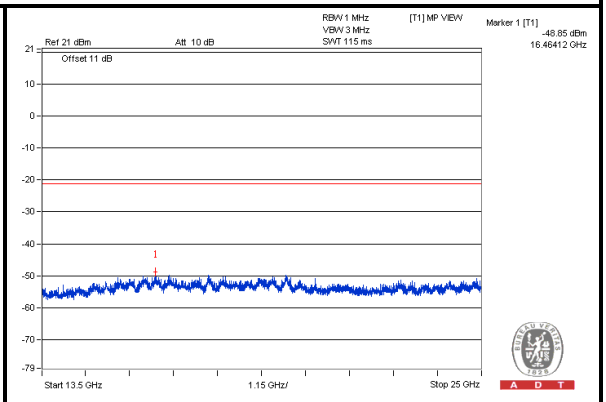


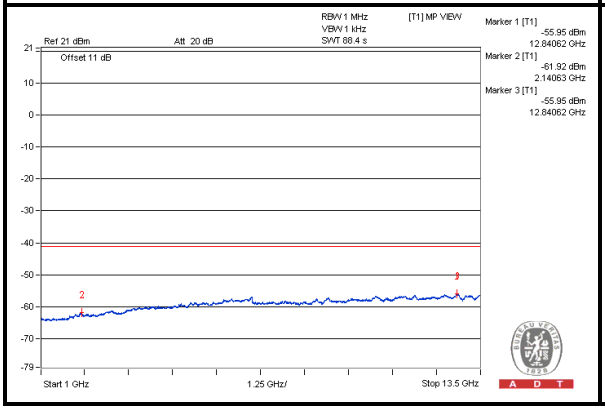


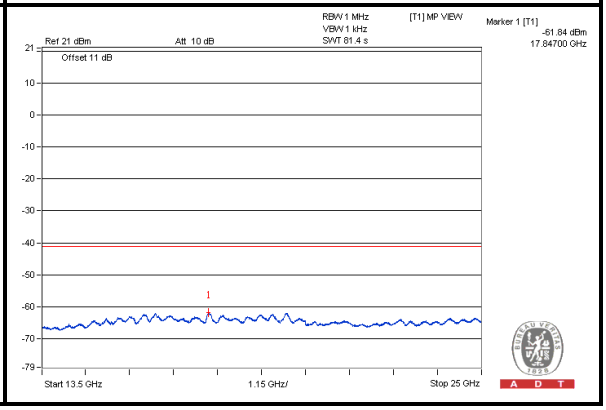


Chain (1)







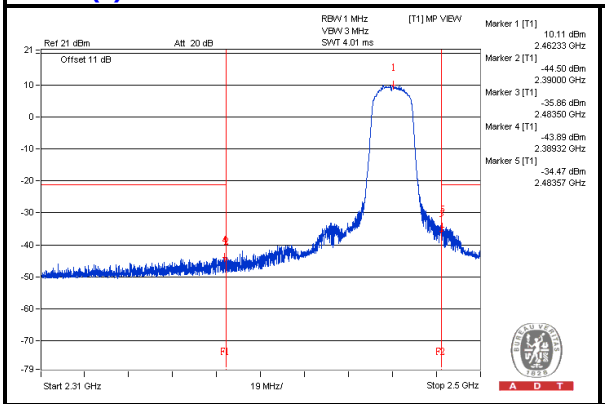


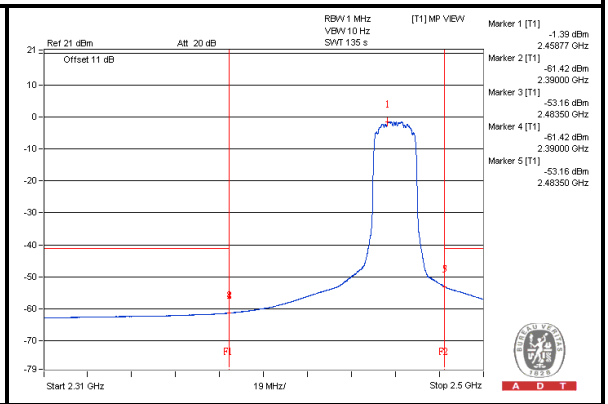
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.325 PK	61.41	74	-12.59	-43.89	-43.13	6.63	-33.85
2	2389.8 AV	43.2	54	-10.8	-61.4	-62.03	6.63	-52.06
3	2483.66 PK	72.46	74	-1.54	-36.07	-30.49	6.63	-22.8
4	2483.565 AV	51.92	54	-2.08	-53.17	-52.79	6.63	-43.34

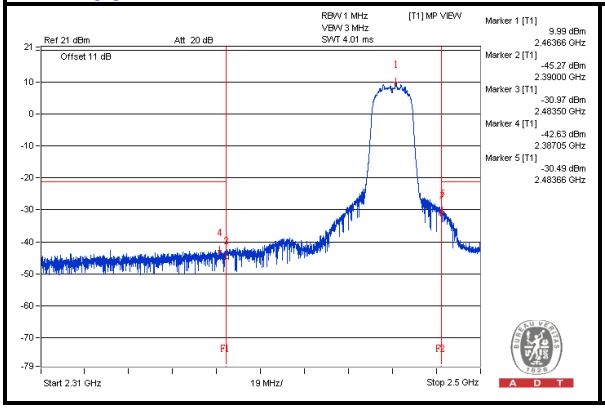
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

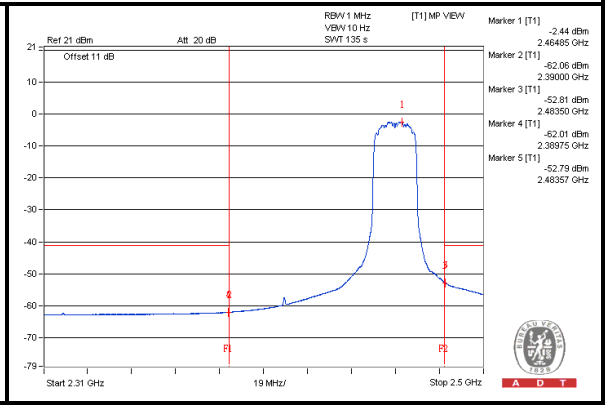
Chain (0)





Chain (1)





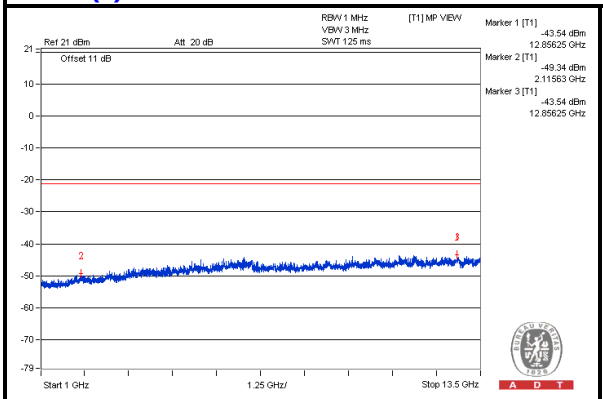
802.11n_256QAM(BW40) - Channel 3

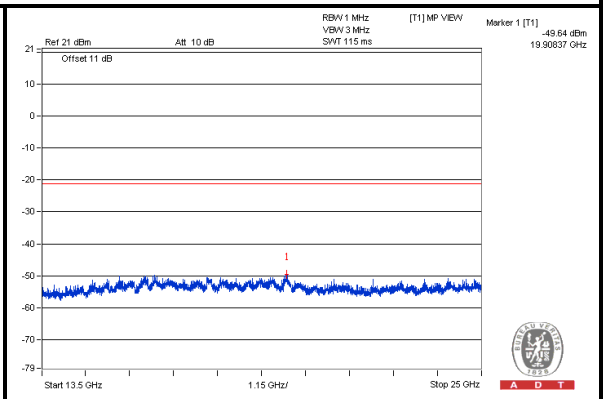
Conducted spurious emission table

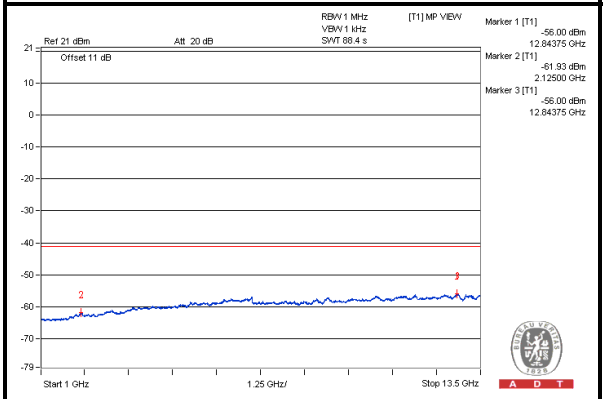
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1600 PK	52.67	74	-21.33	-52.47	-52	6.63	-42.59
2	1615.625 AV	40.95	54	-13.05	-63.81	-64.1	6.63	-54.31
3	4837.5 PK	57.03	74	-16.97	-49.12	-46.9	6.63	-38.23
4	4837.5 AV	44.79	54	-9.21	-60.14	-60.08	6.63	-50.47
5	7284.375 PK	58.07	74	-15.93	-47.15	-46.53	6.63	-37.19
6	7268.75 AV	46.11	54	-7.89	-58.79	-58.8	6.63	-49.15

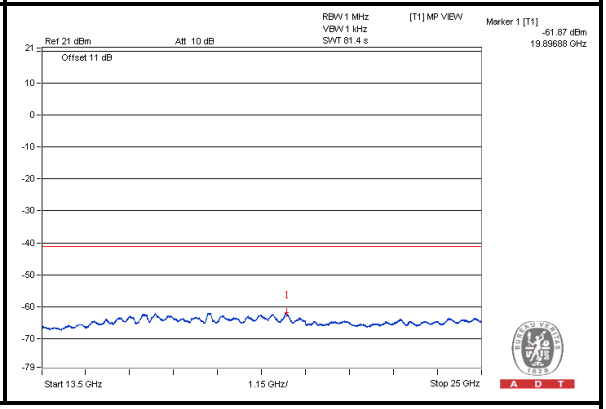
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

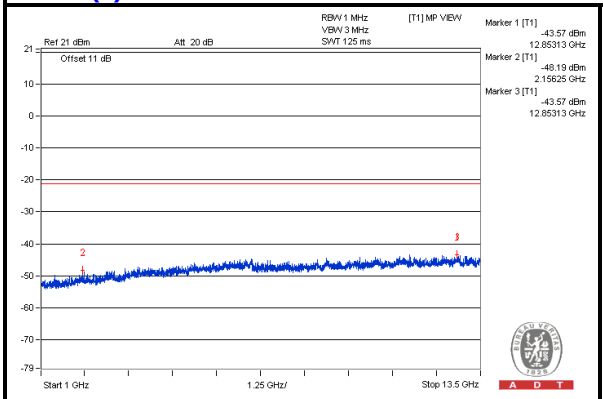


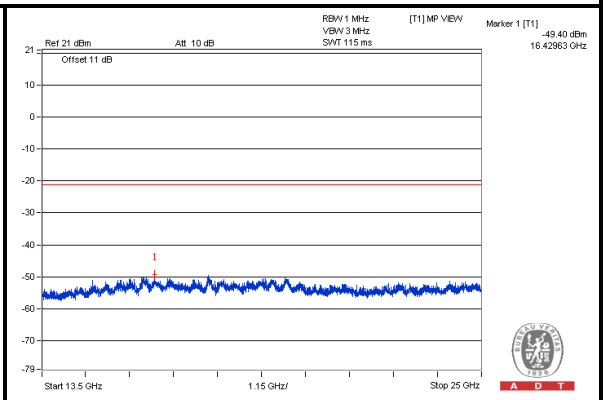


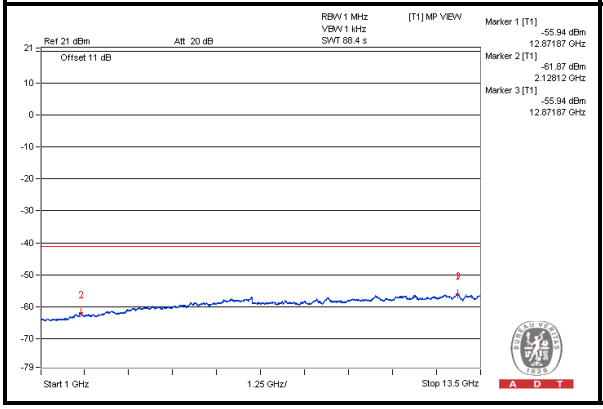


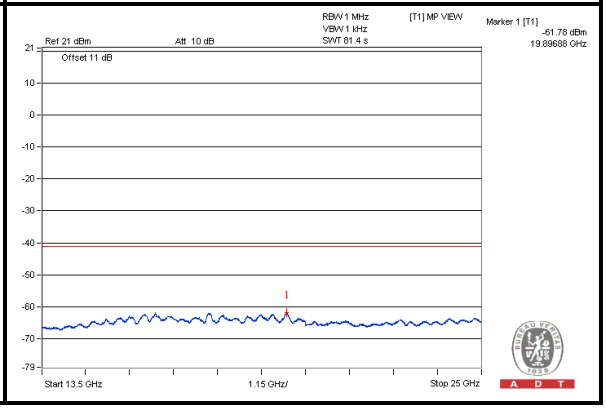


Chain (1)







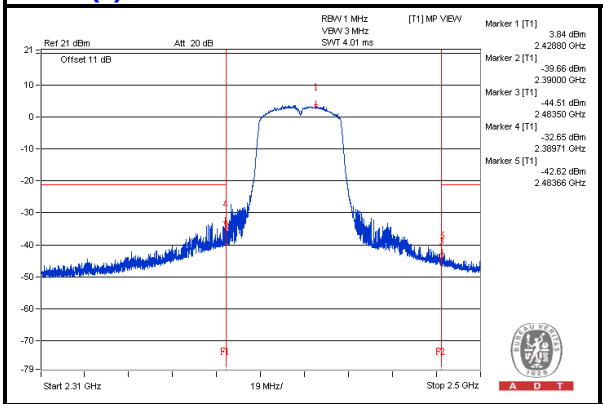


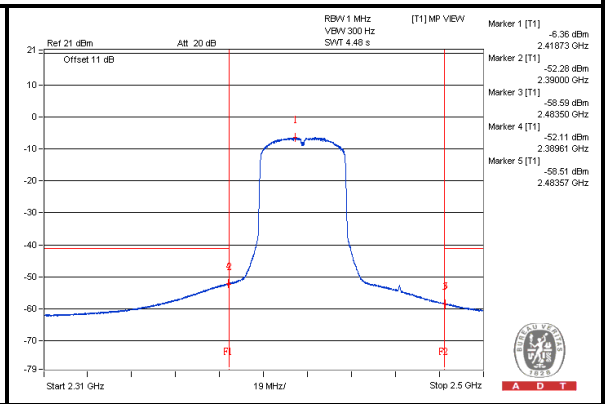
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2384.005 PK	70.22	74	-3.78	-33.14	-37.08	6.63	-25.04
2	2389.705 AV	52.14	54	-1.86	-52.24	-53.36	6.63	-43.12
3	2484.1825 PK	62.3	74	-11.7	-44.07	-41.51	6.63	-32.96
4	2483.565 AV	46.66	54	-7.34	-58.51	-57.99	6.63	-48.6

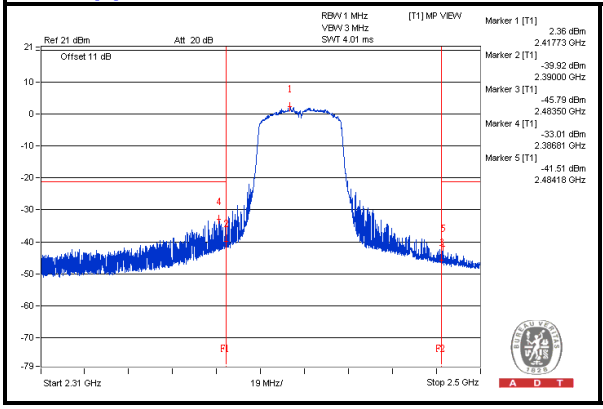
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

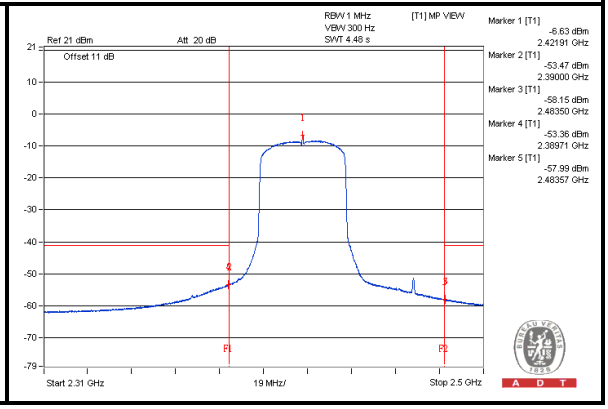
Chain (0)





Chain (1)





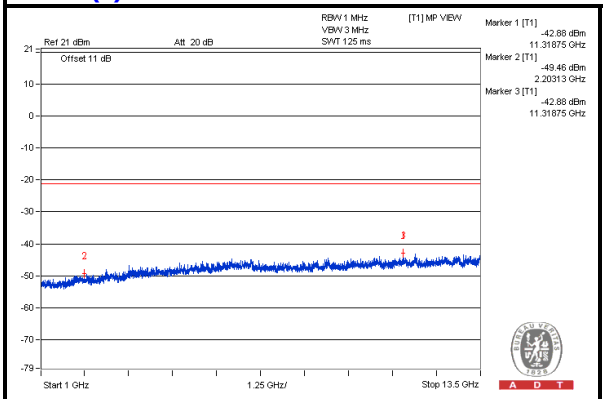
802.11n_256QAM(BW40) - Channel 6

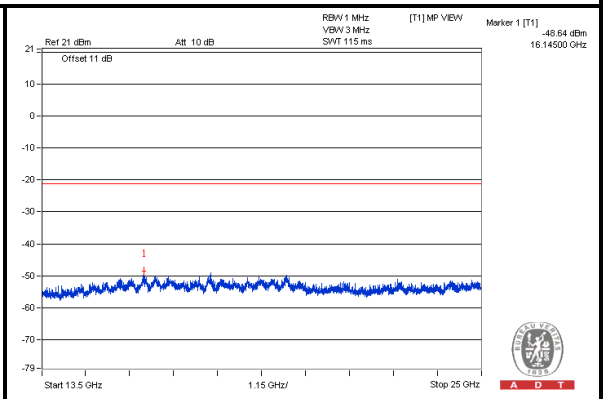
Conducted spurious emission table

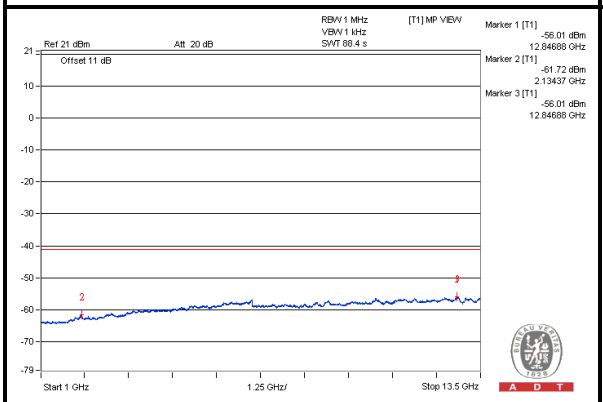
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1625 PK	52.82	74	-21.18	-51.81	-52.37	6.63	-42.44
2	1643.75 AV	40.97	54	-13.03	-63.96	-63.9	6.63	-54.29
3	4875 PK	57.38	74	-16.62	-47.38	-47.67	6.63	-37.88
4	4859.375 AV	44.92	54	-9.08	-60.02	-59.94	6.63	-50.34
5	7300 PK	58.57	74	-15.43	-47.68	-45.31	6.63	-36.69
6	7300 AV	46.27	54	-7.73	-58.53	-58.73	6.63	-48.99

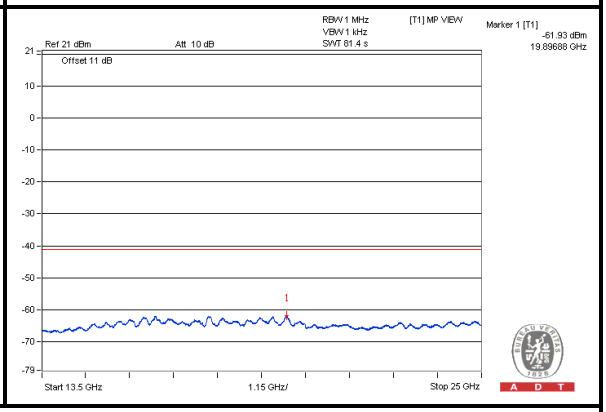
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

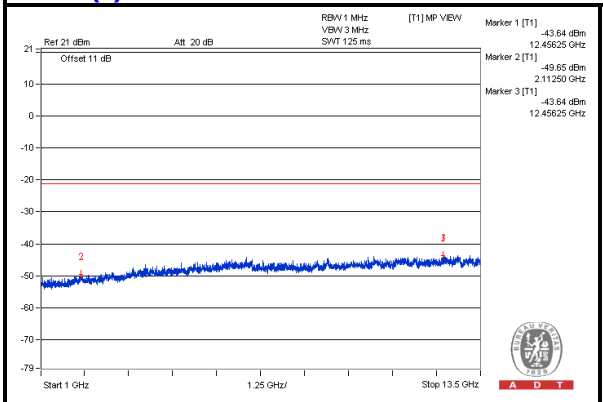


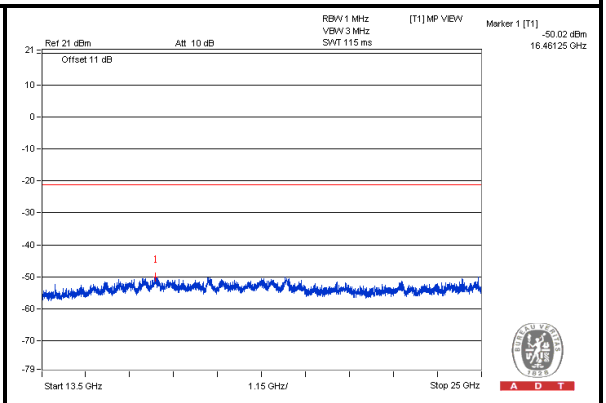


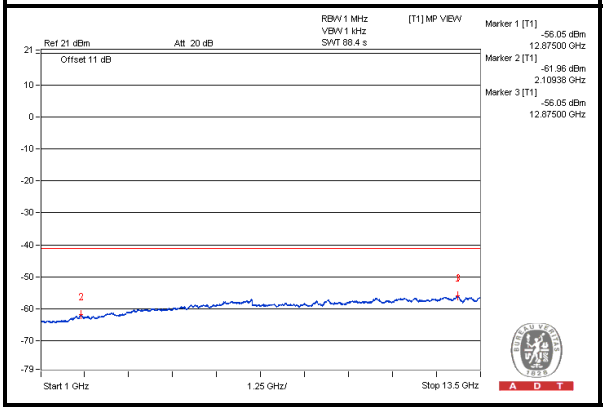


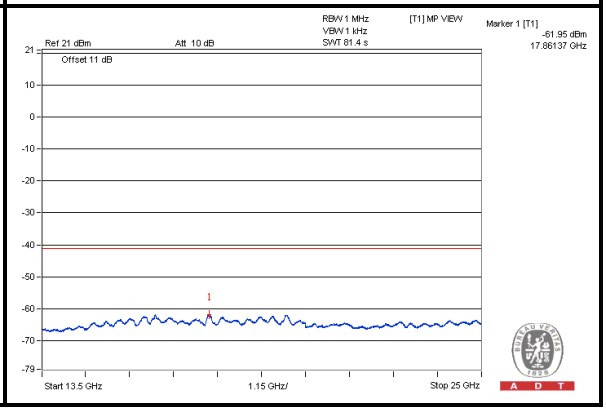


Chain (1)









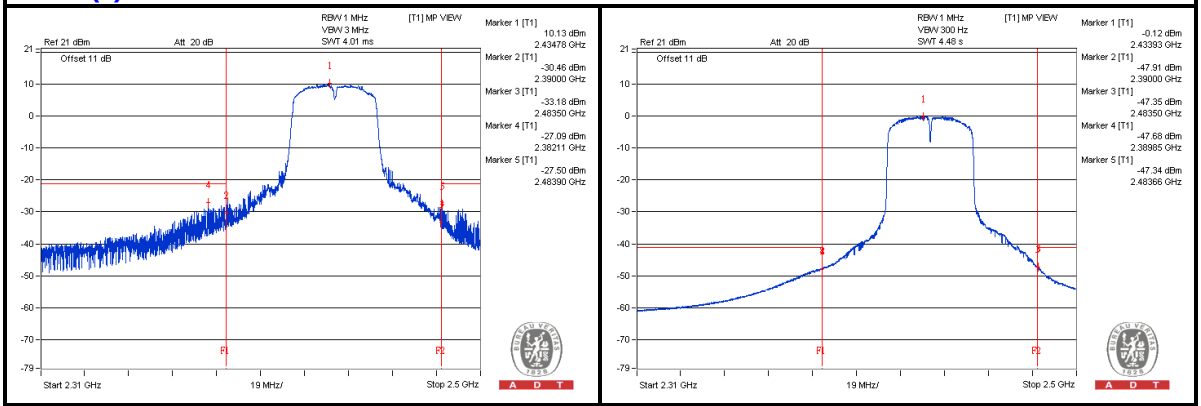
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2382.105 PK	75	74	*1	-27.09	-40.42	6.63	-20.26
2	2389.1825 AV	55.95	54	*1.95	-47.84	-50.45	6.63	-39.31
3	2483.8975 PK	74.9	74	*0.9	-27.5	-36.55	6.63	-20.36
4	2484.9425 AV	58.08	54	*4.08	-48.42	-45.66	6.63	-37.18

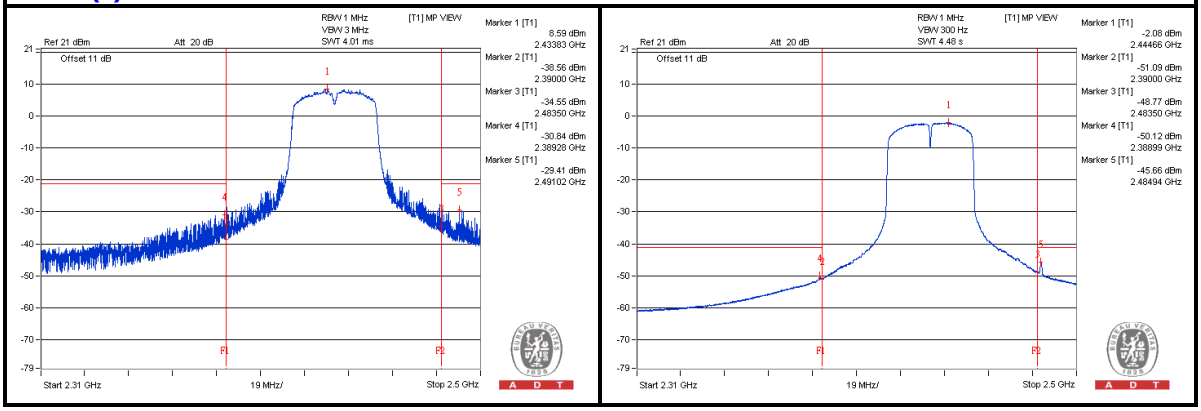
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

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

Chain (0)



Chain (1)



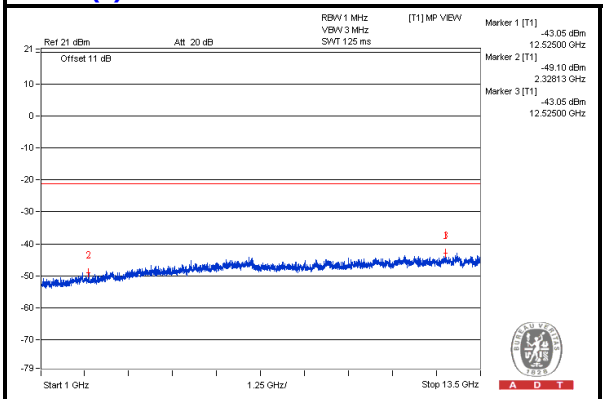
802.11n_256QAM(BW40) - Channel 9

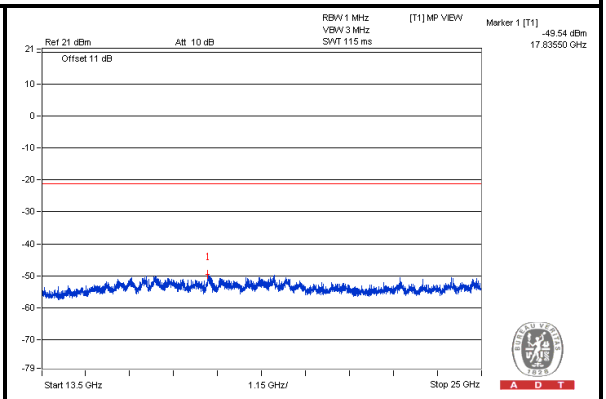
Conducted spurious emission table

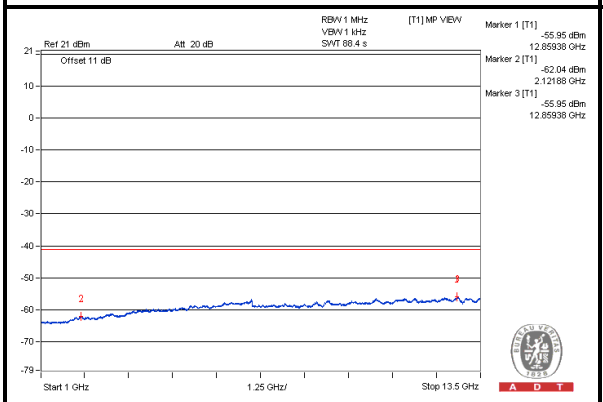
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	1621.875 PK	52.81	74	-21.19	-51.45	-52.84	6.63	-42.45
2	1653.125 AV	40.99	54	-13.01	-64.06	-63.77	6.63	-54.27
3	4903.125 PK	57.36	74	-16.64	-47.59	-47.49	6.63	-37.9
4	4918.75 AV	45.06	54	-8.94	-59.74	-59.95	6.63	-50.2
5	7343.75 PK	58.06	74	-15.94	-48.3	-45.75	6.63	-37.2
6	7368.75 AV	46	54	-8	-58.96	-58.85	6.63	-49.26

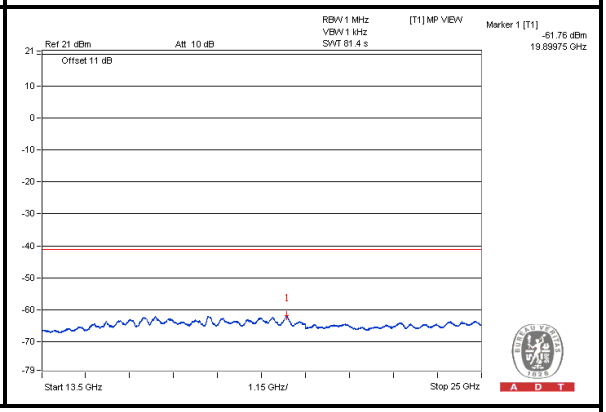
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain (0)

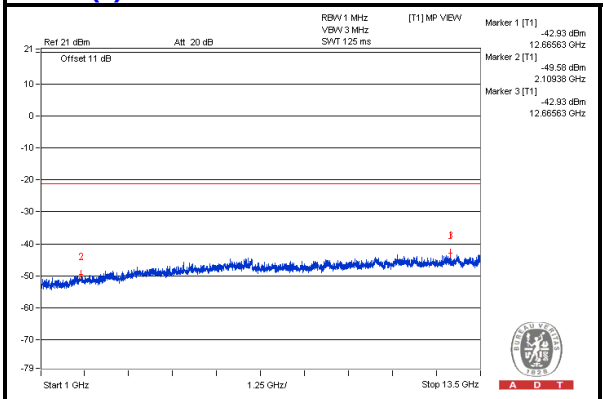


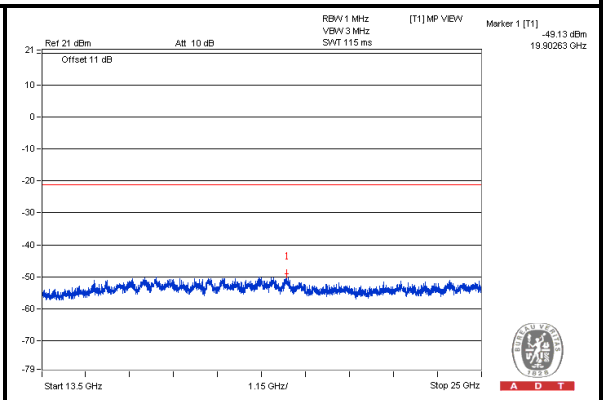


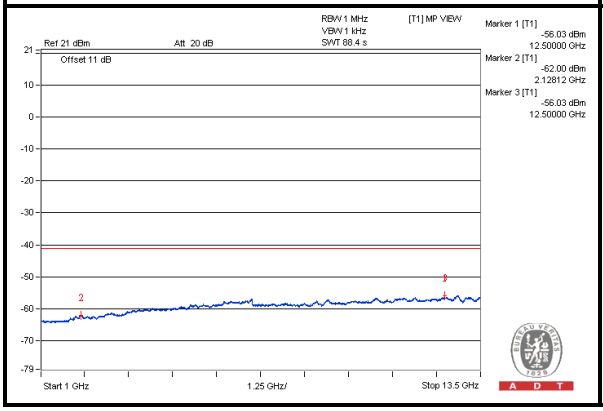


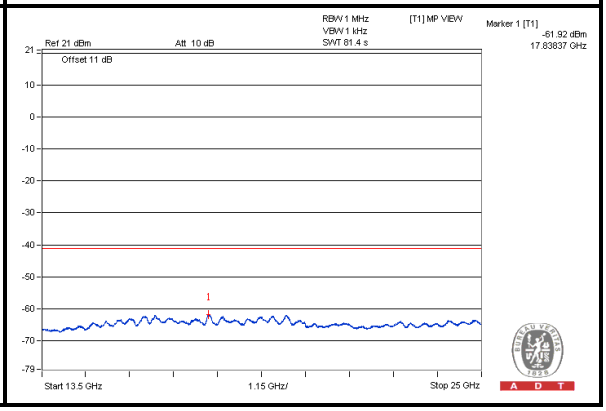


Chain (1)







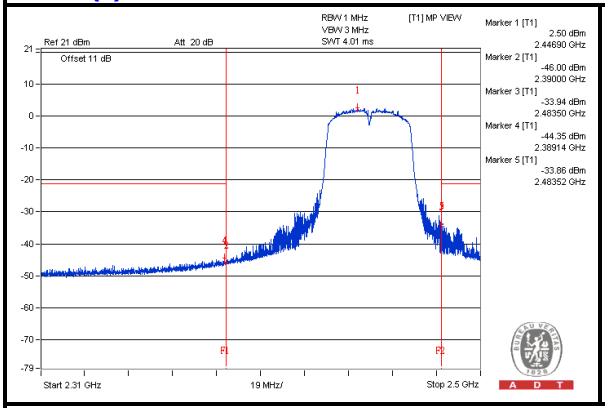


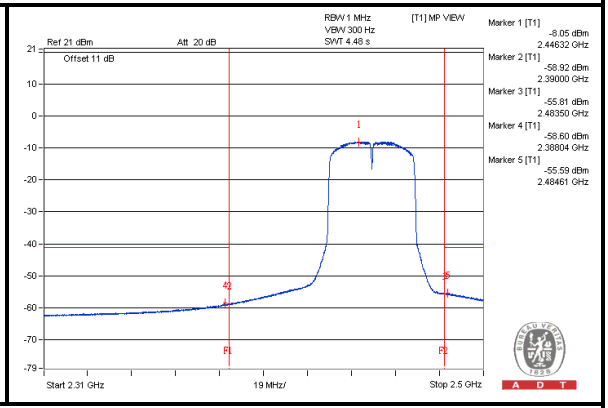
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.9425 PK	63.45	74	-10.55	-45.57	-39.37	6.63	-31.81
2	2388.1375 AV	45.76	54	-8.24	-58.61	-59.75	6.63	-49.5
3	2483.6125 PK	71.96	74	-2.04	-34.41	-31.85	6.63	-23.3
4	2500 AV	51.94	54	-2.06	-57.57	-50.77	6.63	-43.32

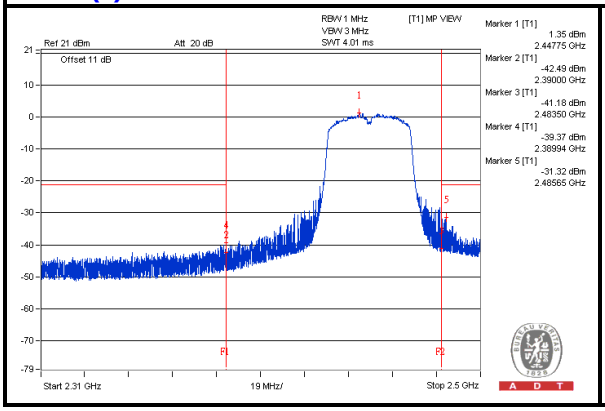
Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

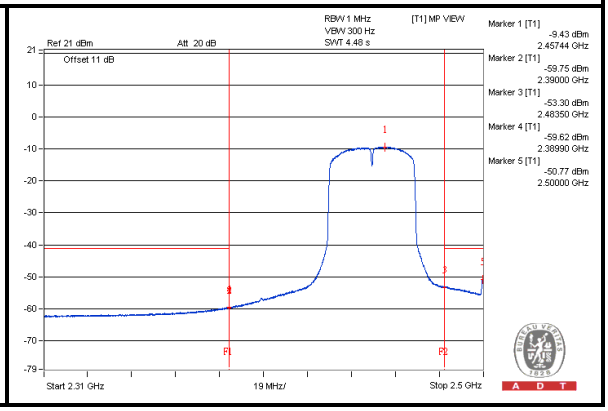
Chain (0)





Chain (1)





4.6 AC POWER LINE CONDUCTED EMISSION MEASUREMENT

4.6.1 LIMITS OF AC POWER LINE CONDUCTED EMISSION MEASUREMENT

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

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 12, 2013	Sep. 11, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10 , 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: May 14, 2014

4.6.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

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

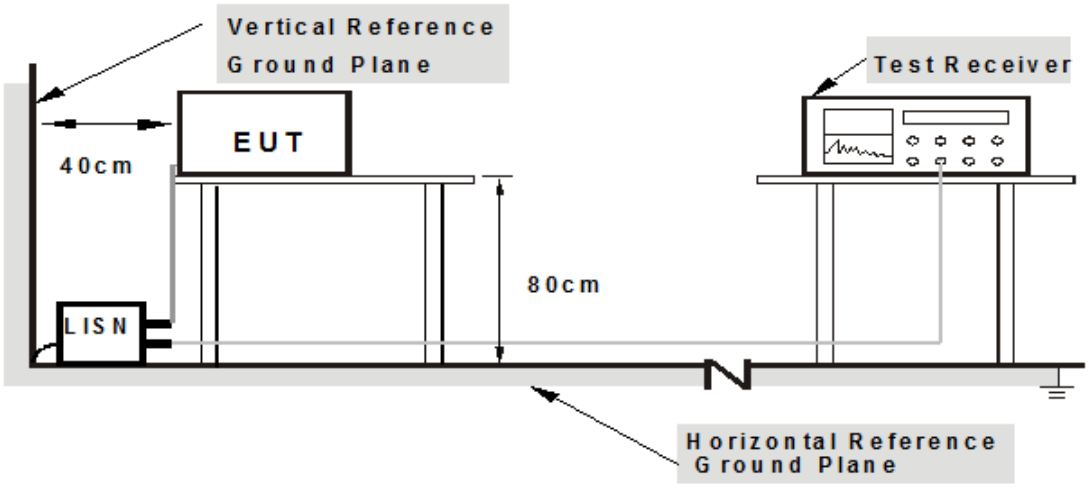
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

NOTE: The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



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

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

4.6.6 EUT OPERATING CONDITIONS

Same as Item 4.1.6

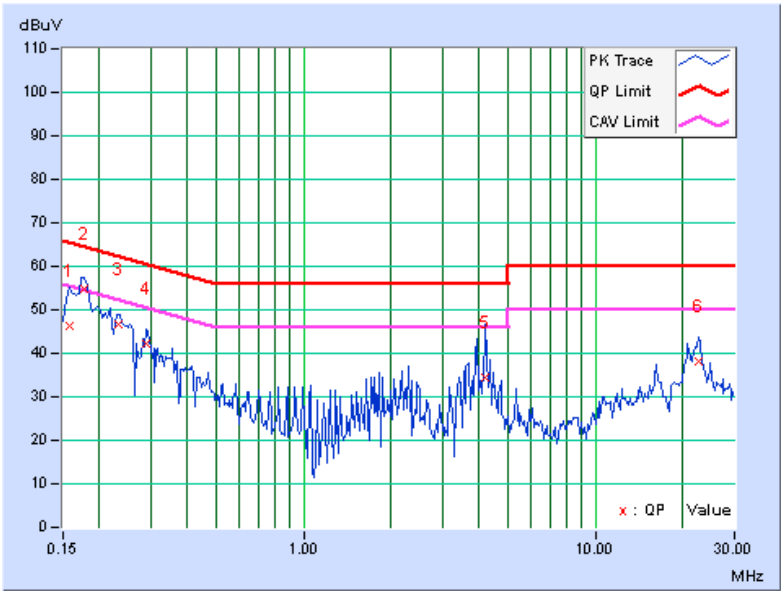
4.6.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.06	46.08	20.98	46.14	21.04	65.58	55.58	-19.44	-34.54
2	**0.17734**	**0.06**	**54.89**	**50.00**	**54.95**	**50.06**	**64.61**	**54.61**	**-9.66**	**-4.55**
3	0.23253	0.06	46.43	41.80	46.49	41.86	62.36	52.36	-15.87	-10.50
4	0.29063	0.06	42.02	35.80	42.08	35.86	60.51	50.51	-18.42	-14.64
5	4.21484	0.21	34.38	18.95	34.59	19.16	56.00	46.00	-21.41	-26.84
6	22.65234	0.74	37.46	30.64	38.20	31.38	60.00	50.00	-21.80	-18.62

REMARKS:

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

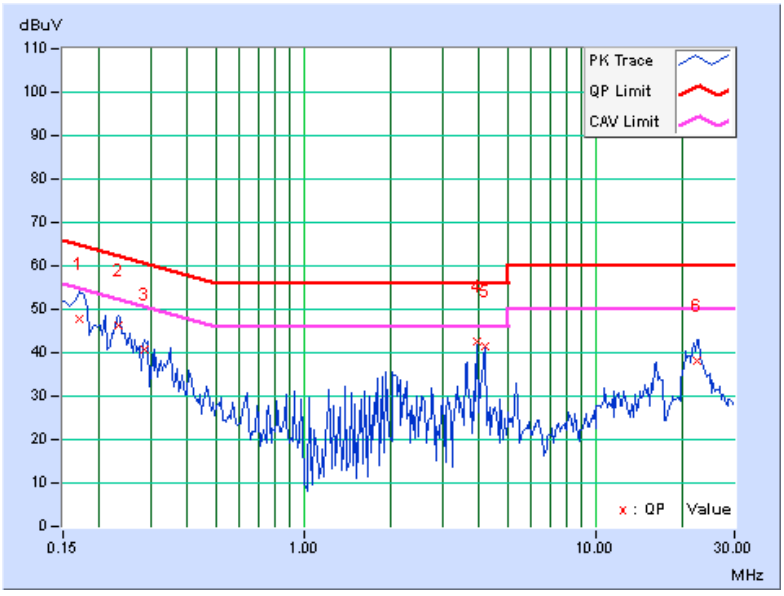


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	0.07	47.83	43.40	47.90	43.47	64.98	54.98	-17.09	-11.52
2	0.23203	0.06	46.29	41.35	46.35	41.41	62.38	52.38	-16.03	-10.97
3	0.28672	0.06	40.75	34.23	40.81	34.29	60.62	50.62	-19.80	-16.32
4	3.94531	0.20	42.30	28.55	42.50	28.75	56.00	46.00	-13.50	-17.25
5	4.17969	0.21	41.23	26.36	41.44	26.57	56.00	46.00	-14.56	-19.43
6	22.23047	0.72	37.60	31.78	38.32	32.50	60.00	50.00	-21.68	-17.50

REMARKS:

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



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

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

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

7.APPENDIX A - RADIATED EMISSION MEASUREMENT

7.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

7.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21, 2014	Jan. 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: July 02, 2014

7.1.3 TEST PROCEDURES

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

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

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

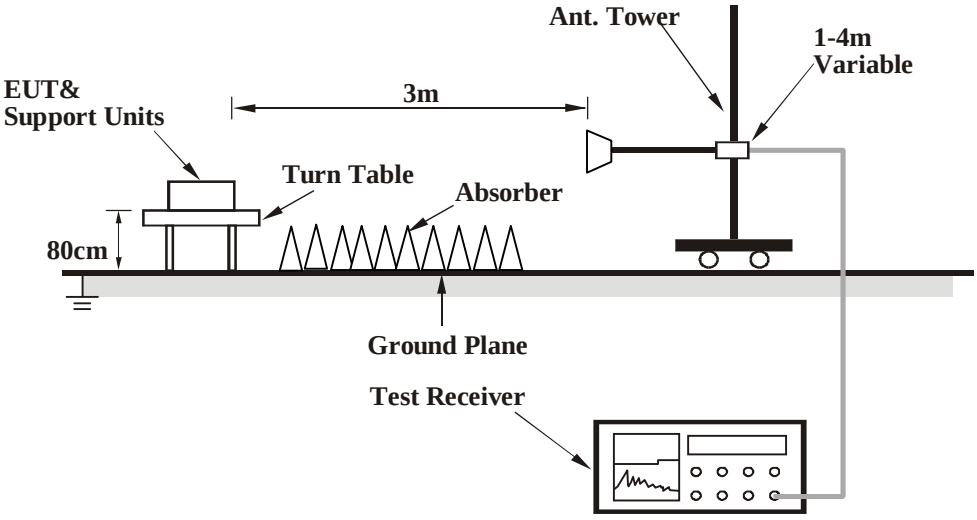
NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

7.1.4 DEVIATION FROM TEST STANDARD

No deviation

7.1.5 TEST SETUP



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

7.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “QCRT Version3.0 29.0” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

7.1.7 TEST RESULTS

802.11n_256QAM(BW40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	58.0 PK	74.0	-16.0	1.19 H	104	60.47	-2.47
2	2390.00	44.6 AV	54.0	-9.4	1.19 H	104	47.07	-2.47
3	2483.50	60.2 PK	74.0	-13.8	1.19 H	104	62.23	-2.03
4	2483.50	46.7 AV	54.0	-7.3	1.19 H	104	48.73	-2.03
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	65.4 PK	74.0	-8.6	1.15 V	164	67.87	-2.47
2	2390.00	50.3 AV	54.0	-3.7	1.15 V	164	52.77	-2.47
3	2483.50	64.1 PK	74.0	-9.9	1.15 V	164	66.13	-2.03
4	2483.50	49.2 AV	54.0	-4.8	1.15 V	164	51.23	-2.03

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. Margin value = Emission Level – Limit value

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

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

--- END ---