FCC Test Report

Report No.:	RF160902E01
FCC ID:	U8G-P1AC8
Test Model:	Surf SOHO MK-III
Series Model:	Pismo AC8, SOHO-AC-T, Surf SOHO
Received Date:	Sep. 02, 2016
Test Date:	Sep. 15 to Oct. 01, 2016
Issued Date:	Oct. 24, 2016
Applicant:	Pismo Labs Technology Limited
Address:	FLAT/RM A5, 5/F, HK SPINNERS IND BLDG PHASE 6, 481 CASTLE PEAK ROAD, CHEUNG SHA WAN, HONG KONG.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, 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.

Testing Laboratory
2022

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Release Control Record

Issue No.	Description	Date Issued
RF160902E01	Original release.	Oct. 24, 2016

1 Certificate of Conformity

Product:	Pepwave / Peplink / Pismo Labs Wireless Product
Brand:	Pepwave / Peplink / Pismo
Test Model:	Surf SOHO MK-III
Series Model:	Pismo AC8, SOHO-AC-T, Surf SOHO
Sample Status:	ENGINEERING SAMPLE
Applicant:	Pismo Labs Technology Limited
Test Date:	Sep. 15 to Oct. 01, 2016
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10: 2013

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

Prepared by : _____ , **Date:** Oct. 24, 2016

Wendy Wu / Specialist

Approved by : _____ , **Date:** Oct. 24, 2016

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -2.58dB at 0.43825MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 4824.00MHz, 2390.00MHz, 2360.00MHz, 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is RSMA not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.83 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.72 dB
	6GHz ~ 18GHz	4.00 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Pepwave / Peplink / Pismo Labs Wireless Product
Brand	Pepwave / Peplink / Pismo
Test Model	Surf SOHO MK-III
Series Model	Pismo AC8, SOHO-AC-T, Surf SOHO
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 in 2.4GHz band
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	**2.4GHz:** 2.412GHz ~ 2.462GHz **5GHz:** 5.18GHz ~ 5.24GHz, 5.745GHz ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20),VHT20: 11 802.11n (HT40), VHT40: 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:** 850.531mW **5GHz:** **5.18GHz ~ 5.24GHz:** 214.299mW **5.745GHz ~ 5.825GHz:** 189.083mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The EUT has below model names, which are identical to each other in all aspects except for the following:

Product name	Brand	Model	Difference
Pepwave / Peplink / Pismo Labs Wireless Product	Pepwave / Peplink / Pismo	Surf SOHO	For marketing requirement
		Pismo AC8	
		SOHO-AC-T	
		Surf SOHO MK-III	

From the above models, model: **Surf SOHO MK-III** was selected as representative model for the test and its data was recorded in this report.

2. There are WLAN and WWAN(3G) technology used for the EUT.
3. EUT could be applied with a plug in USB cellular device.

4. The EUT must be supplied with a power adapter as following table:

Brand	Model No.	Spec.
Ten Pao	S040QM1200300	Input: 100-240Vac, 50/60Hz, 1.0A Output: 12Vdc, 3000mA DC output cable (Unshielded, 1.5m with one core)

5. Simultaneously transmission condition.

Condition	**Technology**		
1	WLAN (2.4GHz)	WLAN (5GHz)	WWAN (USB cellular device)
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.			

6. The antennas provided to the EUT, please refer to the following table:

Antenna No.	Chain No.	Brand	Model	Antenna Net Gain(dBi)	Frequency range (GHz ~ GHz)	Antenna Type	Connecter Type	Cable Length (mm)	Cable Loss (dB)	Antenna Gain(dBi) <excluding cable loss>
1	Chain 0	SmartAnt	SAA06-220690-V1	1.4	2.4~2.4835	Dipole	R-SMA	210	1.6	**3**
				3.9	5.15~5.35					**5.5**
				4.4	5.35~5.85					**6**
2	Chain 1	SmartAnt	SAA06-220690-V1	1.8	2.4~2.4835	Dipole	R-SMA	150	1.2	**3**
				4.3	5.15~5.35					**5.5**
				4.8	5.35~5.85					**6**
3	Chain 2	SmartAnt	SAA06-220690-V1	2	2.4~2.4835	Dipole	R-SMA	120	1	**3**
				4.5	5.15~5.35					**5.5**
				5	5.35~5.85					**6**

7. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	3TX	3RX
802.11g	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
VHT20	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
VHT40	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11ac (VHT20)	MCS0~8 Nss=1	3TX	3RX
	MCS0~8 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
802.11ac (VHT40)	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
802.11ac (VHT80)	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX

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

3.2 Description of Test Modes

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

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

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Radiated Emission Test (Above 1GHz):

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

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

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

Radiated Emission Test (Below 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

Power Line Conducted Emission Test:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

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

Test Condition:

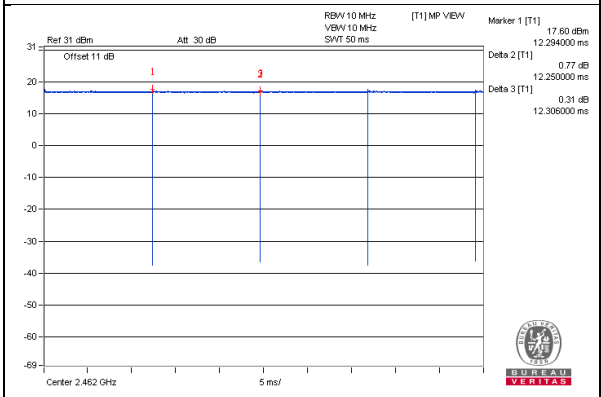
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 66%RH	120Vac, 60Hz	Weiwei Lo
RE<1G	25deg. C, 70%RH	120Vac, 60Hz	Andy Ho
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Tim Ho

3.3 Duty Cycle of Test Signal

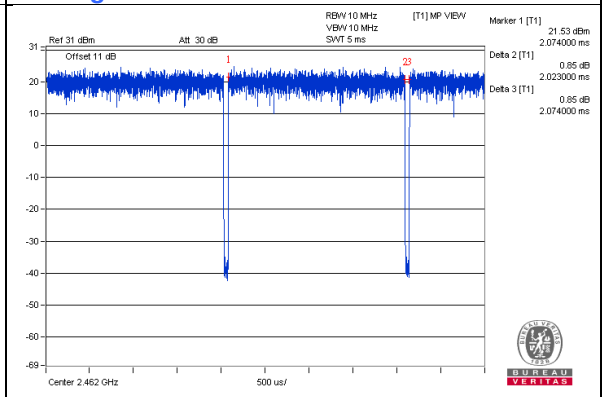
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 12.25/12.306 = 0.995
802.11g: Duty cycle = 2.023/2.074 = 0.975, Duty factor = 10 * log(1/0.975) = 0.11
802.11n (HT20): Duty cycle = 1.886/1.958 = 0.963, Duty factor = 10 * log(1/0.963) = 0.16
802.11n (HT40): Duty cycle = 0.927/0.967 = 0.959, Duty factor = 10 * log(1/0.959) = 0.18

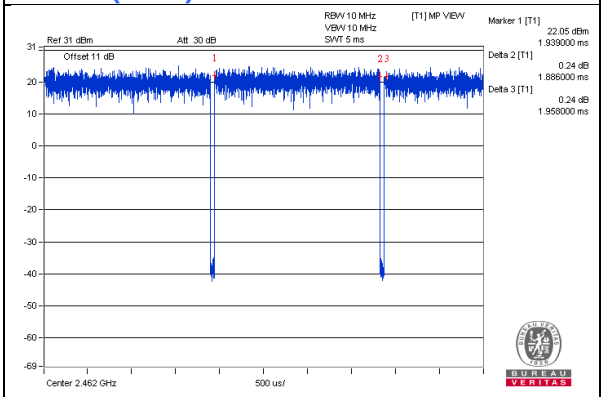
802.11b



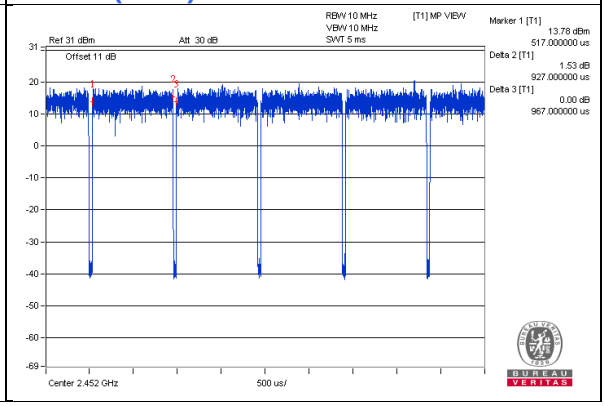
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6440	F9LYQ32	FCC DoC	Provided by Lab
B.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
C.	3G Dongle	D-Link	DWM-156	Q2011A4000812	KA2WM156A2	Provided by Lab

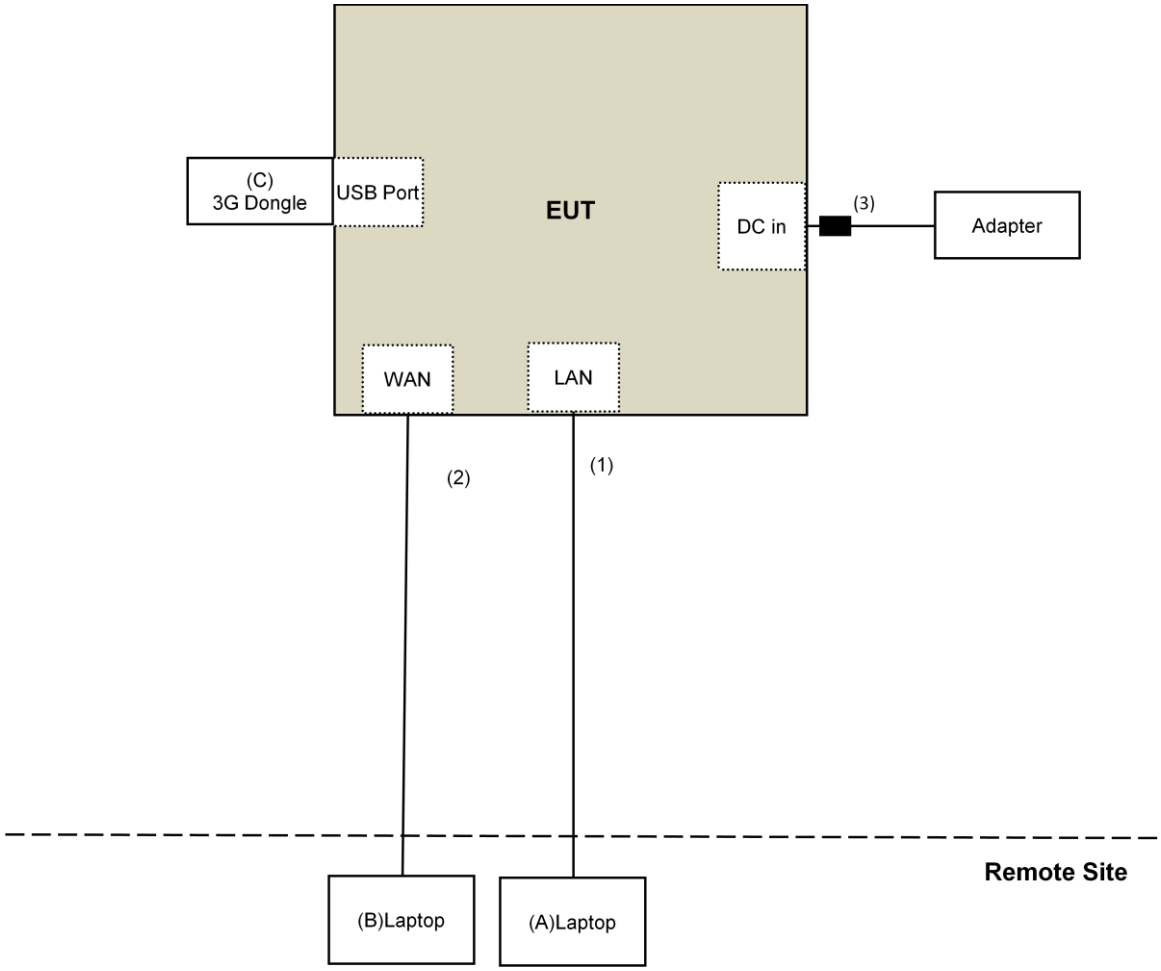
Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	DC Cable	1	1.5	No	1	Supplied by client

Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test



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 (15.247)
KDB 558074 D01 DTS Meas Guidance v03r05
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 16, 2015	Dec. 15, 2016
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-04	Nov. 11, 2015	Nov. 10, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Jan. 07, 2016	Jan. 06, 2017
RF Cable	8D-FB	CHHCAB-001-1 CHHCAB-001-2	Oct. 04, 2015	Oct. 03, 2016
	RF-141	CHHCAB-004	Oct. 04, 2015	Oct. 03, 2016
Horn_Antenna FT-RF	HA-07M18G-NF	0000220091110	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 27, 2015	Oct. 26, 2016
RF Cable	NA	131206 131213 131215 SNMY23685/4	Jan. 15, 2016	Jan. 14, 2017
Spectrum Analyzer Agilent	E4446A	MY48250254	Nov. 25, 2015	Nov. 24, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 11, 2015	Dec. 10, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Jan. 18, 2016	Jan. 17, 2017
RF Cable	SUCOFLEX 102	36442/2 36434/2	Dec. 10, 2015	Dec.09, 2016
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table CT	CM100	NA	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-WD02	NA	NA
Spectrum Analyzer R&S	FSP40	100060	May 11, 2016	May 10, 2017
Power meter Anritsu	ML2495A	1014008	May 5, 2016	May 4, 2017
Power sensor Anritsu	MA2411B	0917122	May 5, 2016	May 4, 2017

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
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. Loop antenna was used for all emissions below 30 MHz.
7. Tested Date: Sep. 15 to Oct. 01, 2016

4.1.3 Test Procedures

For Radiated emission below 30MHz

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. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case 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.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

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

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

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

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

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

Note:

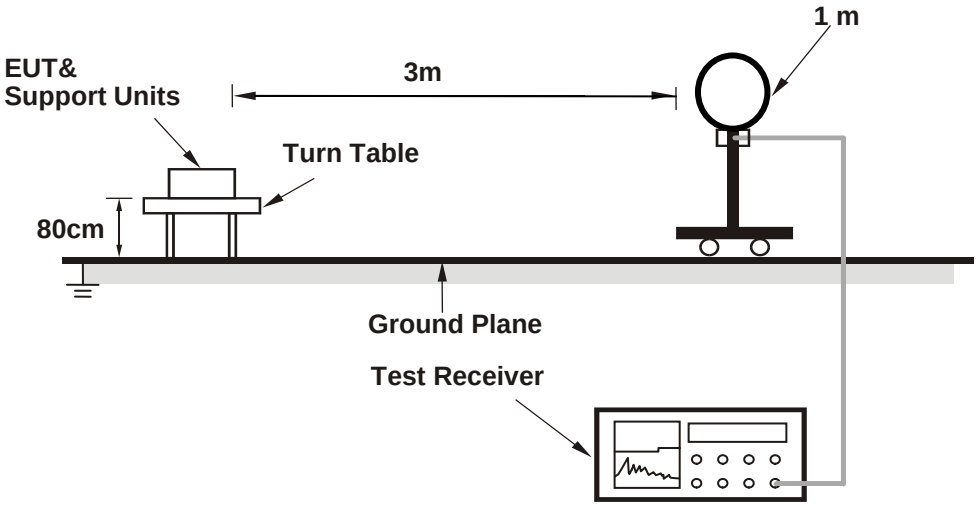
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.

4.1.4 Deviation from Test Standard

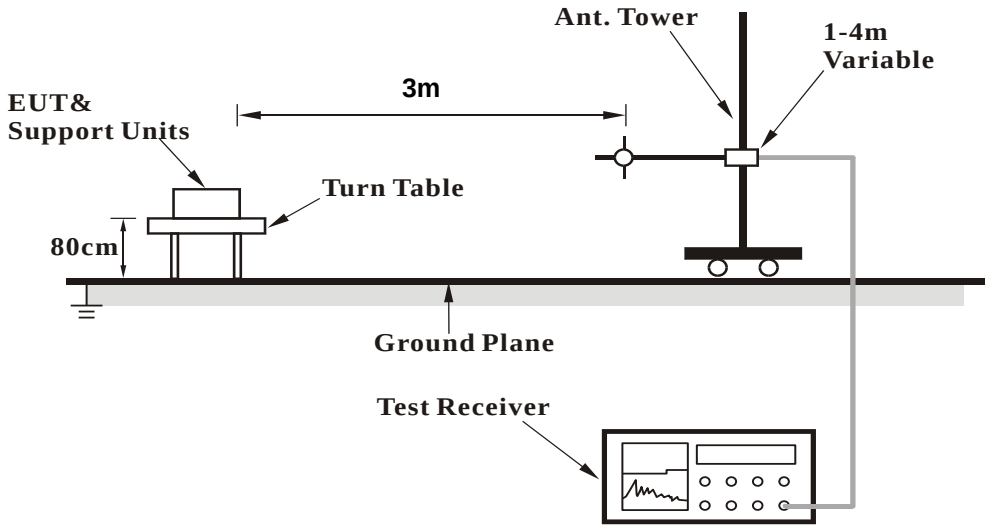
No deviation.

4.1.5 Test Setup

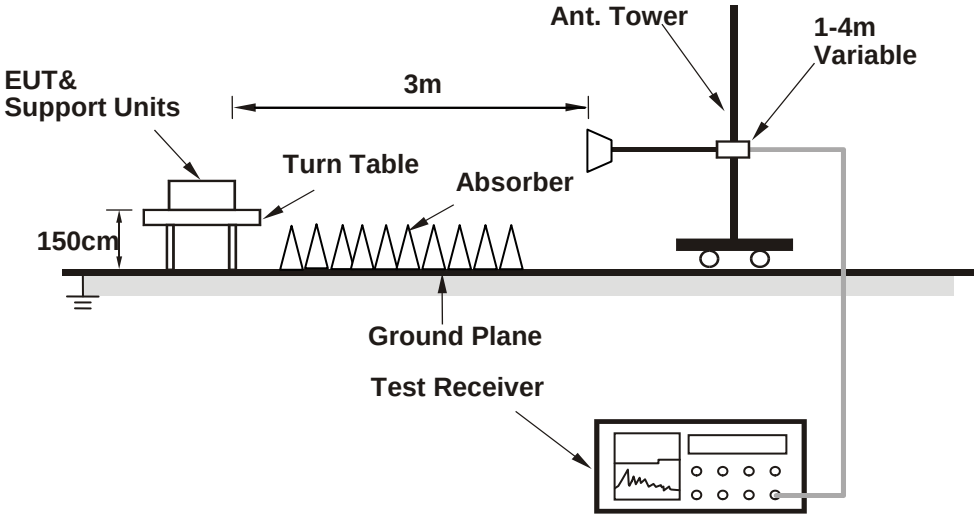
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with the laptop which is placed on remote site.
b. Contorlling software (Atheros Radio Test 2 (ART2-GUI)) has been activated to set the EUT on specific status.

4.1.7 Test Results

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	2320.00	63.7 PK	74.0	-10.3	1.58 H	184	63.2	0.5
2	2320.00	47.1 AV	54.0	-6.9	1.58 H	184	46.6	0.5
3	*2412.00	100.7 PK			1.58 H	184	99.6	1.1
4	*2412.00	98.9 AV			1.58 H	184	97.8	1.1
5	4824.00	53.7 PK	74.0	-20.3	1.75 H	196	43.0	10.7
6	4824.00	43.5 AV	54.0	-10.5	1.75 H	196	32.8	10.7
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	2320.00	65.1 PK	74.0	-8.9	1.79 V	178	64.6	0.5
2	2320.00	47.6 AV	54.0	-6.4	1.79 V	178	47.1	0.5
3	*2412.00	113.1 PK			1.79 V	179	112.0	1.1
4	*2412.00	110.7 AV			1.79 V	179	109.6	1.1
5	4824.00	58.2 PK	74.0	-15.8	1.67 V	96	47.5	10.7
6	**4824.00**	**53.9 AV**	**54.0**	**-0.1**	**1.67 V**	**96**	**43.2**	**10.7**

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2320.00	58.3 PK	74.0	-15.7	1.64 H	179	57.8	0.5
2	2320.00	39.3 AV	54.0	-14.7	1.64 H	179	38.8	0.5
3	*2437.00	100.5 PK			1.64 H	179	99.4	1.1
4	*2437.00	98.3 AV			1.64 H	179	97.2	1.1
5	2483.50	46.7 PK	74.0	-27.3	1.64 H	179	45.4	1.3
6	2483.50	33.8 AV	54.0	-20.2	1.64 H	179	32.5	1.3
7	4874.00	52.4 PK	74.0	-21.6	1.70 H	198	41.7	10.7
8	4874.00	42.7 AV	54.0	-11.3	1.70 H	198	32.0	10.7
9	7311.00	57.1 PK	74.0	-16.9	1.66 H	330	41.9	15.2
10	7311.00	44.6 AV	54.0	-9.4	1.66 H	330	29.4	15.2
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	2320.00	65.7 PK	74.0	-8.3	1.76 V	178	65.2	0.5
2	2320.00	47.2 AV	54.0	-6.8	1.76 V	178	46.7	0.5
3	*2437.00	112.9 PK			1.76 V	179	111.8	1.1
4	*2437.00	110.1 AV			1.76 V	179	109.0	1.1
5	2483.50	54.1 PK	74.0	-19.9	1.76 V	179	52.8	1.3
6	2483.50	41.7 AV	54.0	-12.3	1.76 V	179	40.4	1.3
7	4874.00	58.2 PK	74.0	-15.8	1.77 V	95	47.5	10.7
8	4874.00	53.6 AV	54.0	-0.4	1.77 V	95	42.9	10.7
9	7311.00	58.7 PK	74.0	-15.3	1.64 V	100	43.5	15.2
10	7311.00	45.0 AV	54.0	-9.0	1.64 V	100	29.8	15.2

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) 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	*2462.00	100.5 PK			1.65 H	193	99.4	1.1
2	*2462.00	98.5 AV			1.65 H	193	97.4	1.1
3	2483.50	49.8 PK	74.0	-24.2	1.65 H	193	48.5	1.3
4	2483.50	36.9 AV	54.0	-17.1	1.65 H	193	35.6	1.3
5	4924.00	53.2 PK	74.0	-20.8	1.76 H	193	42.4	10.8
6	4924.00	43.2 AV	54.0	-10.8	1.76 H	193	32.4	10.8
7	7386.00	57.5 PK	74.0	-16.5	1.60 H	322	42.0	15.5
8	7386.00	44.7 AV	54.0	-9.3	1.60 H	322	29.2	15.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.9 PK			1.99 V	179	111.8	1.1
2	*2462.00	110.3 AV			1.99 V	179	109.2	1.1
3	2483.50	57.2 PK	74.0	-16.8	1.99 V	179	55.9	1.3
4	2483.50	44.8 AV	54.0	-9.2	1.99 V	179	43.5	1.3
5	4924.00	57.7 PK	74.0	-16.3	1.77 V	92	46.9	10.8
6	4924.00	53.4 AV	54.0	-0.6	1.77 V	92	42.6	10.8
7	7386.00	58.9 PK	74.0	-15.1	1.60 V	86	43.4	15.5
8	7386.00	45.2 AV	54.0	-8.8	1.60 V	86	29.7	15.5

REMARKS:

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

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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	2390.00	61.0 PK	74.0	-13.0	1.64 H	194	60.1	0.9
2	2390.00	46.0 AV	54.0	-8.0	1.64 H	194	45.1	0.9
3	*2412.00	106.9 PK			1.64 H	194	105.8	1.1
4	*2412.00	96.7 AV			1.64 H	194	95.6	1.1
5	4824.00	59.2 PK	74.0	-14.8	1.75 H	206	48.5	10.7
6	4824.00	44.6 AV	54.0	-9.4	1.75 H	206	33.9	10.7
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	68.4 PK	74.0	-5.6	1.94 V	183	67.5	0.9
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.94 V**	**183**	**53.0**	**0.9**
3	*2412.00	119.3 PK			1.94 V	183	118.2	1.1
4	*2412.00	108.5 AV			1.94 V	183	107.4	1.1
5	4824.00	66.6 PK	74.0	-7.4	1.97 V	335	55.9	10.7
6	4824.00	52.5 AV	54.0	-1.5	1.97 V	335	41.8	10.7

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.8 PK	74.0	-13.2	1.68 H	206	59.9	0.9
2	2390.00	43.4 AV	54.0	-10.6	1.68 H	206	42.5	0.9
3	*2437.00	107.8 PK			1.68 H	206	106.7	1.1
4	*2437.00	97.1 AV			1.68 H	206	96.0	1.1
5	2483.50	56.2 PK	74.0	-17.8	1.68 H	206	54.9	1.3
6	2483.50	42.1 AV	54.0	-11.9	1.68 H	206	40.8	1.3
7	4874.00	53.4 PK	74.0	-20.6	1.74 H	202	42.7	10.7
8	4874.00	43.6 AV	54.0	-10.4	1.74 H	202	32.9	10.7
9	7311.00	57.5 PK	74.0	-16.5	1.58 H	325	42.3	15.2
10	7311.00	44.5 AV	54.0	-9.5	1.58 H	325	29.3	15.2
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	68.2 PK	74.0	-5.8	2.01 V	182	67.3	0.9
2	2390.00	51.3 AV	54.0	-2.7	2.01 V	182	50.4	0.9
3	*2437.00	120.2 PK			2.01 V	182	119.1	1.1
4	*2437.00	108.9 AV			2.01 V	182	107.8	1.1
5	2483.50	63.6 PK	74.0	-10.4	2.01 V	182	62.3	1.3
6	2483.50	50.0 AV	54.0	-4.0	2.01 V	182	48.7	1.3
7	4874.00	66.1 PK	74.0	-7.9	1.97 V	335	55.4	10.7
8	4874.00	53.7 AV	54.0	-0.3	1.97 V	335	43.0	10.7
9	7311.00	58.6 PK	74.0	-15.4	1.90 V	330	43.4	15.2
10	7311.00	45.7 AV	54.0	-8.3	1.90 V	330	30.5	15.2

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) 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	*2462.00	106.9 PK			1.64 H	215	105.8	1.1
2	*2462.00	96.5 AV			1.64 H	215	95.4	1.1
3	2483.50	62.4 PK	74.0	-11.6	1.64 H	215	61.1	1.3
4	2483.50	45.4 AV	54.0	-8.6	1.64 H	215	44.1	1.3
5	4924.00	52.7 PK	74.0	-21.3	1.74 H	206	41.9	10.8
6	4924.00	43.2 AV	54.0	-10.8	1.74 H	206	32.4	10.8
7	7386.00	57.7 PK	74.0	-16.3	1.55 H	330	42.2	15.5
8	7386.00	44.9 AV	54.0	-9.1	1.55 H	330	29.4	15.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	119.3 PK			1.91 V	181	118.2	1.1
2	*2462.00	108.3 AV			1.91 V	181	107.2	1.1
3	2483.50	69.8 PK	74.0	-4.2	1.91 V	181	68.5	1.3
4	2483.50	53.3 AV	54.0	-0.7	1.91 V	181	52.0	1.3
5	4924.00	68.6 PK	74.0	-5.4	1.96 V	336	57.8	10.8
6	**4924.00**	**53.9 AV**	**54.0**	**-0.1**	**1.96 V**	**336**	**43.1**	**10.8**
7	7386.00	58.5 PK	74.0	-15.5	1.87 V	340	43.0	15.5
8	7386.00	45.8 AV	54.0	-8.2	1.87 V	340	30.3	15.5

REMARKS:

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

802.11n (HT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) 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	2360.00	53.5 PK	74.0	-20.5	1.60 H	230	52.7	0.8
2	2360.00	43.4 AV	54.0	-10.6	1.60 H	230	42.6	0.8
3	2390.00	63.1 PK	74.0	-10.9	1.60 H	230	62.2	0.9
4	2390.00	45.2 AV	54.0	-8.8	1.60 H	230	44.3	0.9
5	*2412.00	109.5 PK			1.60 H	230	108.4	1.1
6	*2412.00	97.1 AV			1.60 H	230	96.0	1.1
7	4824.00	53.5 PK	74.0	-20.5	1.75 H	210	42.8	10.7
8	4824.00	44.1 AV	54.0	-9.9	1.75 H	210	33.4	10.7
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	2360.00	60.9 PK	74.0	-13.1	1.95 V	180	60.1	0.8
2	2360.00	51.3 AV	54.0	-2.7	1.95 V	180	50.5	0.8
3	2390.00	70.5 PK	74.0	-3.5	1.95 V	180	69.6	0.9
4	2390.00	53.1 AV	54.0	-0.9	1.95 V	180	52.2	0.9
5	*2412.00	116.9 PK			1.95 V	180	115.8	1.1
6	*2412.00	105.0 AV			1.95 V	180	103.9	1.1
7	4824.00	63.3 PK	74.0	-10.7	1.79 V	333	52.6	10.7
8	4824.00	49.1 AV	54.0	-4.9	1.79 V	333	38.4	10.7

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2360.00	64.2 PK	74.0	-9.8	1.65 H	242	63.4	0.8
2	2360.00	46.0 AV	54.0	-8.0	1.65 H	242	45.2	0.8
3	*2437.00	107.4 PK			1.65 H	242	106.3	1.1
4	*2437.00	96.7 AV			1.65 H	242	95.6	1.1
5	2483.50	55.7 PK	74.0	-18.3	1.65 H	242	54.4	1.3
6	2483.50	42.8 AV	54.0	-11.2	1.65 H	242	41.5	1.3
7	4874.00	52.8 PK	74.0	-21.2	1.80 H	207	42.1	10.7
8	4874.00	43.6 AV	54.0	-10.4	1.80 H	207	32.9	10.7
9	7311.00	58.2 PK	74.0	-15.8	1.51 H	320	43.0	15.2
10	7311.00	45.3 AV	54.0	-8.7	1.51 H	320	30.1	15.2
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	2360.00	71.6 PK	74.0	-2.4	2.08 V	180	70.8	0.8
2	**2360.00**	**53.9 AV**	**54.0**	**-0.1**	**2.08 V**	**180**	**53.1**	**0.8**
3	*2437.00	119.8 PK			2.08 V	180	118.7	1.1
4	*2437.00	108.5 AV			2.08 V	180	107.4	1.1
5	2483.50	63.1 PK	74.0	-10.9	2.08 V	180	61.8	1.3
6	2483.50	50.7 AV	54.0	-3.3	2.08 V	180	49.4	1.3
7	4874.00	66.1 PK	74.0	-7.9	1.74 V	332	55.4	10.7
8	4874.00	52.5 AV	54.0	-1.5	1.74 V	332	41.8	10.7
9	7311.00	58.2 PK	74.0	-15.8	1.70 V	330	43.0	15.2
10	7311.00	45.7 AV	54.0	-8.3	1.70 V	330	30.5	15.2

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) 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	*2462.00	107.2 PK			1.68 H	249	106.1	1.1
2	*2462.00	97.0 AV			1.68 H	249	95.9	1.1
3	2483.50	61.1 PK	74.0	-12.9	1.68 H	249	59.8	1.3
4	2483.50	45.8 AV	54.0	-8.2	1.68 H	249	44.5	1.3
5	4924.00	52.3 PK	74.0	-21.7	1.82 H	216	41.5	10.8
6	4924.00	43.1 AV	54.0	-10.9	1.82 H	216	32.3	10.8
7	7386.00	58.1 PK	74.0	-15.9	1.46 H	309	42.6	15.5
8	7386.00	44.9 AV	54.0	-9.1	1.46 H	309	29.4	15.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	119.6 PK			2.03 V	177	118.5	1.1
2	*2462.00	108.8 AV			2.03 V	177	107.7	1.1
3	2483.50	68.5 PK	74.0	-5.5	2.03 V	177	67.2	1.3
4	2483.50	53.7 AV	54.0	-0.3	2.03 V	177	52.4	1.3
5	4924.00	67.8 PK	74.0	-6.2	1.75 V	335	57.0	10.8
6	4924.00	52.9 AV	54.0	-1.1	1.75 V	335	42.1	10.8
7	7386.00	58.5 PK	74.0	-15.5	1.70 V	360	43.0	15.5
8	7386.00	45.0 AV	54.0	-9.0	1.70 V	360	29.5	15.5

REMARKS:

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

802.11n (HT40)

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	2390.00	61.7 PK	74.0	-12.3	1.67 H	251	60.8	0.9
2	2390.00	45.6 AV	54.0	-8.4	1.67 H	251	44.7	0.9
3	*2422.00	96.2 PK			1.67 H	251	95.2	1.0
4	*2422.00	86.2 AV			1.67 H	251	85.2	1.0
5	4844.00	51.8 PK	74.0	-22.2	1.80 H	228	41.0	10.8
6	4844.00	42.8 AV	54.0	-11.2	1.80 H	228	32.0	10.8
7	7266.00	58.2 PK	74.0	-15.8	1.44 H	320	43.1	15.1
8	7266.00	44.8 AV	54.0	-9.2	1.44 H	320	29.7	15.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.1 PK	74.0	-4.9	2.00 V	183	68.2	0.9
2	2390.00	53.5 AV	54.0	-0.5	2.00 V	183	52.6	0.9
3	*2422.00	108.6 PK			2.00 V	183	107.6	1.0
4	*2422.00	98.0 AV			2.00 V	183	97.0	1.0
5	4844.00	53.8 PK	74.0	-20.2	1.82 V	335	43.0	10.8
6	4844.00	53.4 AV	54.0	-0.6	1.82 V	335	42.6	10.8
7	7266.00	57.8 PK	74.0	-16.2	1.82 V	335	42.7	15.1
8	7266.00	46.1 AV	54.0	-7.9	1.82 V	335	31.0	15.1

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.6 PK	74.0	-19.4	1.70 H	257	53.7	0.9
2	2390.00	41.5 AV	54.0	-12.5	1.70 H	257	40.6	0.9
3	*2437.00	100.0 PK			1.70 H	257	98.9	1.1
4	*2437.00	89.1 AV			1.70 H	257	88.0	1.1
5	2483.50	54.2 PK	74.0	-19.8	1.70 H	257	52.9	1.3
6	2483.50	40.2 AV	54.0	-13.8	1.70 H	257	38.9	1.3
7	4874.00	53.3 PK	74.0	-20.7	1.77 H	187	42.6	10.7
8	4874.00	43.5 AV	54.0	-10.5	1.77 H	187	32.8	10.7
9	7311.00	57.6 PK	74.0	-16.4	1.59 H	312	42.4	15.2
10	7311.00	44.6 AV	54.0	-9.4	1.59 H	312	29.4	15.2
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	70.0 PK	74.0	-4.0	1.96 V	175	69.1	0.9
2	2390.00	53.6 AV	54.0	-0.4	1.96 V	175	52.7	0.9
3	*2437.00	112.3 PK			1.96 V	175	111.2	1.1
4	*2437.00	101.9 AV			1.96 V	175	100.8	1.1
5	2483.50	61.6 PK	74.0	-12.4	1.96 V	175	60.3	1.3
6	2483.50	47.7 AV	54.0	-6.3	1.96 V	175	46.4	1.3
7	4874.00	62.4 PK	74.0	-11.6	1.89 V	340	51.7	10.7
8	4874.00	49.4 AV	54.0	-4.6	1.89 V	340	38.7	10.7
9	7311.00	58.2 PK	74.0	-15.8	1.90 V	360	43.0	15.2
10	7311.00	45.5 AV	54.0	-8.5	1.90 V	360	30.3	15.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	100.4 PK			1.70 H	255	99.3	1.1
2	*2452.00	90.3 AV			1.70 H	255	89.2	1.1
3	2483.50	64.7 PK	74.0	-9.3	1.70 H	255	63.4	1.3
4	2483.50	46.0 AV	54.0	-8.0	1.70 H	255	44.7	1.3
5	4904.00	53.0 PK	74.0	-21.0	1.76 H	173	42.2	10.8
6	4904.00	43.5 AV	54.0	-10.5	1.76 H	173	32.7	10.8
7	7356.00	57.7 PK	74.0	-16.3	1.56 H	317	42.3	15.4
8	7356.00	45.0 AV	54.0	-9.0	1.56 H	317	29.6	15.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	112.8 PK			1.94 V	335	111.7	1.1
2	*2452.00	102.1 AV			1.94 V	335	101.0	1.1
3	2483.50	72.1 PK	74.0	-1.9	1.94 V	178	70.8	1.3
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.94 V**	**178**	**52.6**	**1.3**
5	4904.00	62.0 PK	74.0	-12.0	1.92 V	335	51.2	10.8
6	4904.00	49.5 AV	54.0	-4.5	1.92 V	335	38.7	10.8
7	7356.00	57.9 PK	74.0	-16.1	1.92 V	210	42.5	15.4
8	7356.00	45.2 AV	54.0	-8.8	1.92 V	210	29.8	15.4

REMARKS:

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

Below 1GHz Data:

802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	109.69	34.6 QP	43.5	-8.9	1.50 H	91	45.4	-10.8
2	299.90	38.6 QP	46.0	-7.4	1.00 H	216	45.2	-6.6
3	375.00	39.6 QP	46.0	-6.4	1.00 H	75	44.3	-4.7
4	499.99	36.4 QP	46.0	-9.6	2.00 H	360	37.9	-1.5
5	624.97	39.5 QP	46.0	-6.5	1.50 H	329	38.2	1.3
6	949.66	38.0 QP	46.0	-8.0	1.00 H	154	31.1	6.9
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	54.23	34.0 QP	40.0	-6.0	1.50 V	193	42.3	-8.3
2	125.01	34.3 QP	43.5	-9.2	1.00 V	352	43.9	-9.6
3	375.00	37.8 QP	46.0	-8.2	1.00 V	360	42.5	-4.7
4	499.99	37.0 QP	46.0	-9.0	1.00 V	250	38.5	-1.5
5	625.00	39.0 QP	46.0	-7.0	1.50 V	23	37.7	1.3
6	874.99	41.6 QP	46.0	-4.4	1.00 V	338	36.4	5.2

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 09, 2016	May 08, 2017
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Aug. 31, 2016	Aug. 30, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 13, 2016	June 12, 2017
RF Cable	5D-FB	COACAB-002	Mar. 04, 2016	Mar. 03, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-003	Sep. 13, 2016	Sep. 12, 2017
50 ohms Terminator	N/A	04	Nov. 18, 2015	Nov. 17, 2016
50 ohms Terminator	50	3	Oct. 21, 2015	Oct. 20, 2016
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 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: Sep. 15, 2016

4.2.3 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.

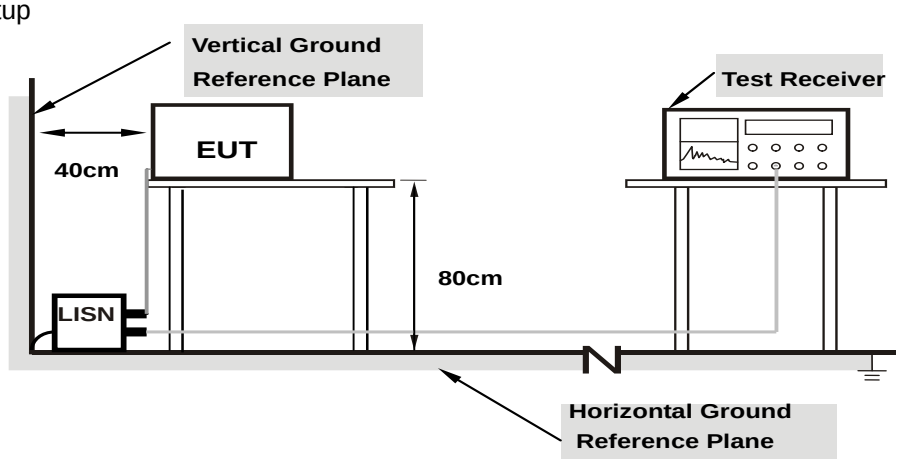
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

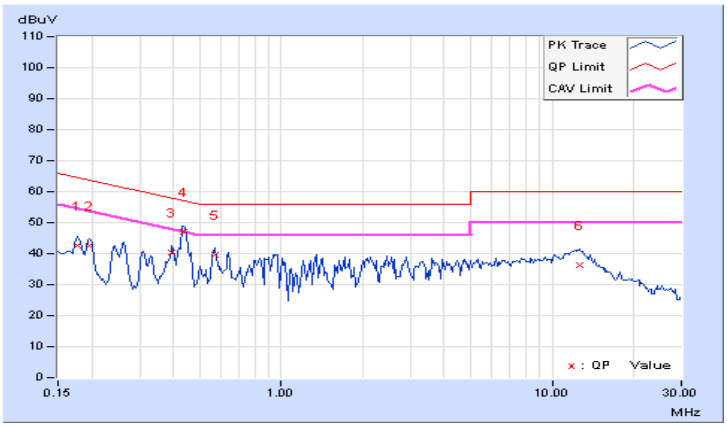
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	10.25	32.23	29.76	42.48	40.01	64.61	54.61	-22.13	-14.60
2	0.19687	10.25	32.27	30.00	42.52	40.25	63.74	53.74	-21.22	-13.49
3	0.39609	10.24	30.06	27.59	40.30	37.83	57.93	47.93	-17.63	-10.10
4	**0.43825**	**10.24**	**36.65**	**34.27**	**46.89**	**44.51**	**57.09**	**47.09**	**-10.20**	**-2.58**
5	0.57188	10.25	29.51	27.77	39.76	38.02	56.00	46.00	-16.24	-7.98
6	12.62500	10.96	25.50	20.53	36.46	31.49	60.00	50.00	-23.54	-18.51

REMARKS:

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

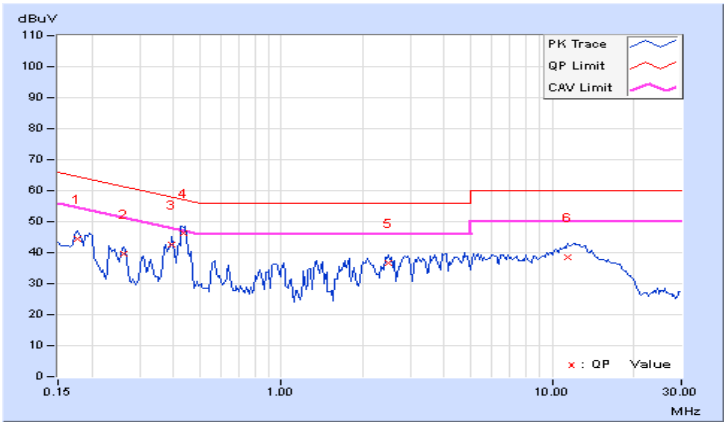


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	10.25	34.24	31.03	44.49	41.28	64.61	54.61	-20.12	-13.33
2	0.26328	10.25	29.25	26.50	39.50	36.75	61.33	51.33	-21.83	-14.58
3	0.39609	10.30	32.30	28.52	42.60	38.82	57.93	47.93	-15.33	-9.11
4	0.43584	10.31	36.14	32.89	46.45	43.20	57.14	47.14	-10.69	-3.94
5	2.47656	10.45	26.30	19.81	36.75	30.26	56.00	46.00	-19.25	-15.74
6	11.41797	10.95	27.70	23.03	38.65	33.98	60.00	50.00	-21.35	-16.02

REMARKS:

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

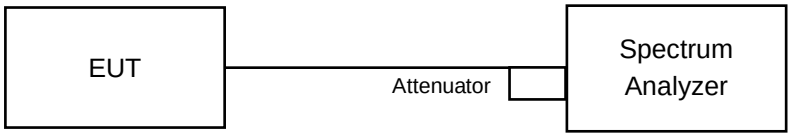


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	6.61	7.02	7.10	0.5	PASS
6	2437	7.58	8.07	7.11	0.5	PASS
11	2462	6.12	7.13	7.13	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	16.43	15.72	16.12	0.5	PASS
6	2437	15.77	16.36	16.34	0.5	PASS
11	2462	16.36	16.37	15.92	0.5	PASS

802.11n (HT20)

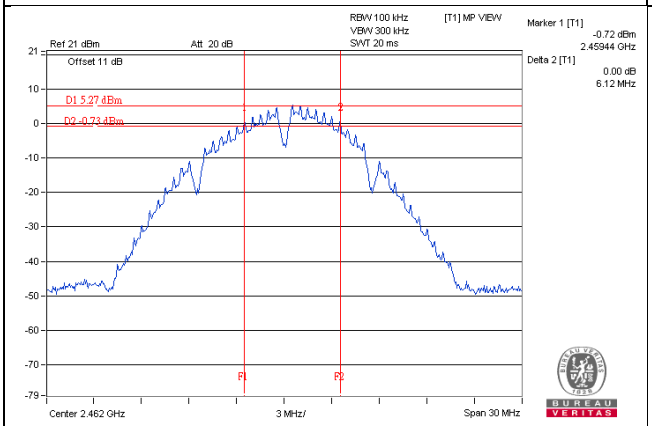
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	17.59	16.43	17.62	0.5	Pass
6	2437	17.00	16.53	17.63	0.5	Pass
11	2462	16.43	17.54	17.63	0.5	Pass

802.11n (HT40)

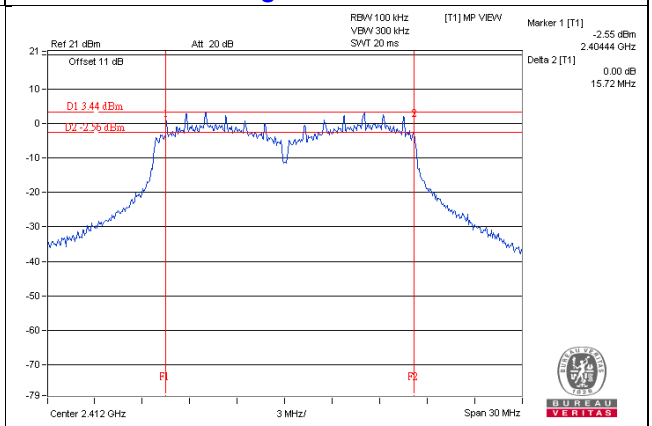
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
3	2422	35.84	35.29	35.59	0.5	Pass
6	2437	35.58	35.37	36.40	0.5	Pass
9	2452	35.84	36.14	35.86	0.5	Pass

Spectrum Plot of Worst Value

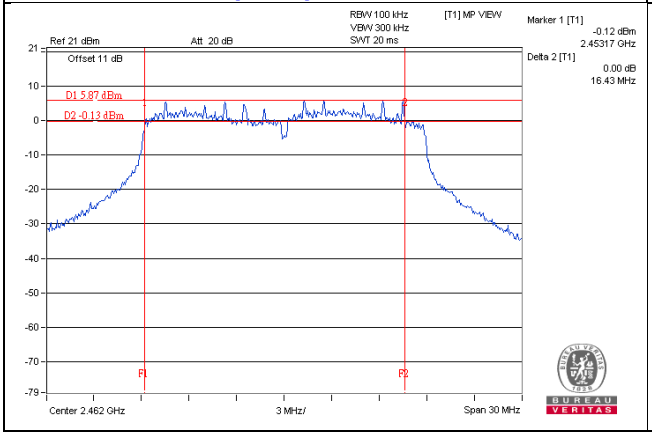
802.11b / Chain 0 : CH11



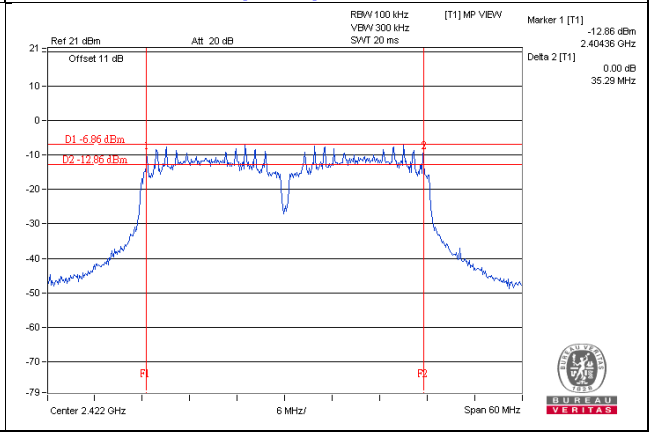
802.11g / Chain 1 : CH1



802.11n (HT20) / Chain 0 : CH11



802.11n (HT40) / Chain 1 : CH3



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

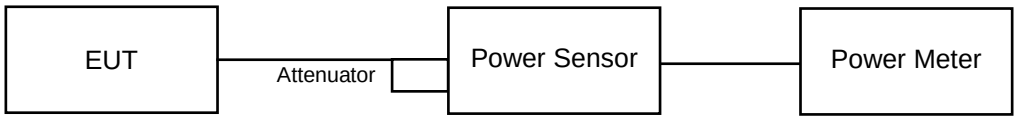
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	14.62	7.92	12.93	54.801	17.39	30	Pass
6	2437	15.28	9.67	13.13	63.556	18.03	30	Pass
11	2462	15.03	10.66	14.17	69.605	18.43	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	24.52	19.14	23.27	577.498	27.62	30	Pass
6	2437	25.52	21.73	25.38	850.531	29.30	30	Pass
11	2462	24.86	22.59	23.33	703.026	28.47	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	21.02	16.57	18.58	243.979	23.87	30	Pass
6	2437	22.73	18.96	24.17	527.42	27.22	30	Pass
11	2462	22.64	17.97	21.87	400.13	26.02	30	Pass

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	16.82	11.27	14.99	93.031	19.69	30	Pass
6	2437	21.27	18.13	22.18	364.177	25.61	30	Pass
9	2452	21.79	18.08	20.85	336.896	25.27	30	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)			Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1	Chain 2		
1	2412	11.60	5.27	10.21	28.314	14.52
6	2437	12.20	6.80	10.26	31.999	15.05
11	2462	12.14	7.70	11.31	35.777	15.54

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)			Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1	Chain 2		
1	2412	16.85	11.54	15.38	97.187	19.88
6	2437	17.77	12.86	16.20	120.848	20.82
11	2462	17.31	13.30	15.94	114.471	20.59

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)			Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1	Chain 2		
1	2412	12.80	8.55	11.72	41.075	16.14
6	2437	16.05	11.64	14.80	85.06	19.30
11	2462	15.81	11.67	15.31	86.759	19.38

802.11n (HT40)

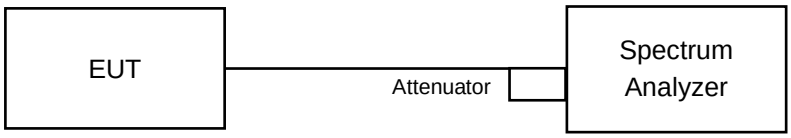
Chan.	Frequency (MHz)	Avg. Power (dBm)			Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1	Chain 2		
3	2422	9.03	4.38	8.45	17.738	12.49
6	2437	14.14	10.29	14.40	64.175	18.07
9	2452	14.51	10.73	13.97	65.025	18.13

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-9.61	4.77	-4.84	7.49	Pass
	6	2437	-9.99	4.77	-5.22	7.49	Pass
	11	2462	-8.90	4.77	-4.13	7.49	Pass
1	1	2412	-14.11	4.77	-9.34	7.49	Pass
	6	2437	-16.15	4.77	-11.38	7.49	Pass
	11	2462	-14.06	4.77	-9.29	7.49	Pass
2	1	2412	-11.41	4.77	-6.64	7.49	Pass
	6	2437	-10.66	4.77	-5.89	7.49	Pass
	11	2462	-10.07	4.77	-5.30	7.49	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 6.51dBi > 6dBi , so the power density limit shall be reduced to 8-(6.51-6) = 7.49dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-8.52	4.77	-3.75	7.49	Pass
	6	2437	-6.02	4.77	-1.25	7.49	Pass
	11	2462	-7.83	4.77	-3.06	7.49	Pass
1	1	2412	-11.49	4.77	-6.72	7.49	Pass
	6	2437	-13.20	4.77	-8.43	7.49	Pass
	11	2462	-9.36	4.77	-4.59	7.49	Pass
2	1	2412	-9.49	4.77	-4.72	7.49	Pass
	6	2437	-8.70	4.77	-3.93	7.49	Pass
	11	2462	-7.41	4.77	-2.64	7.49	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 6.51dBi > 6dBi , so the power density limit shall be reduced to 8-(6.51-6) = 7.49dBm.

802.11n (HT20)

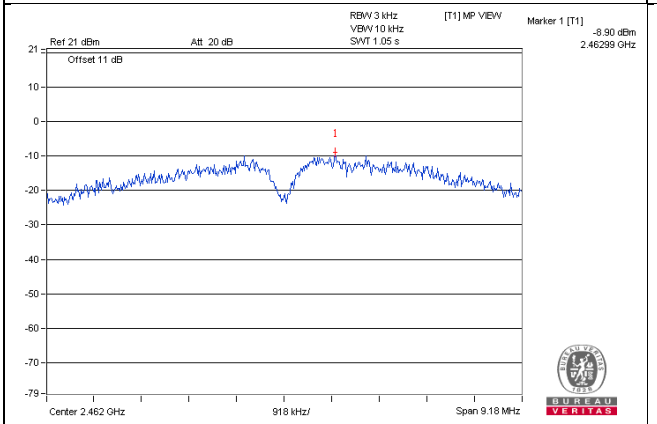
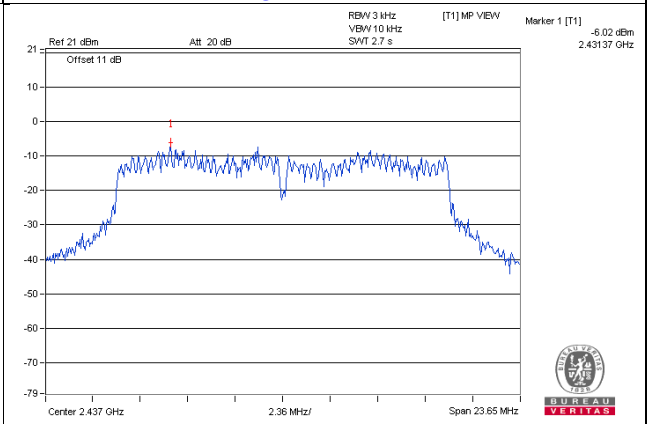
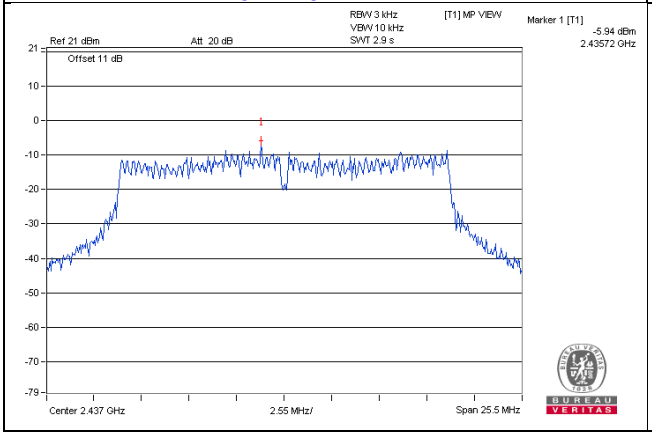
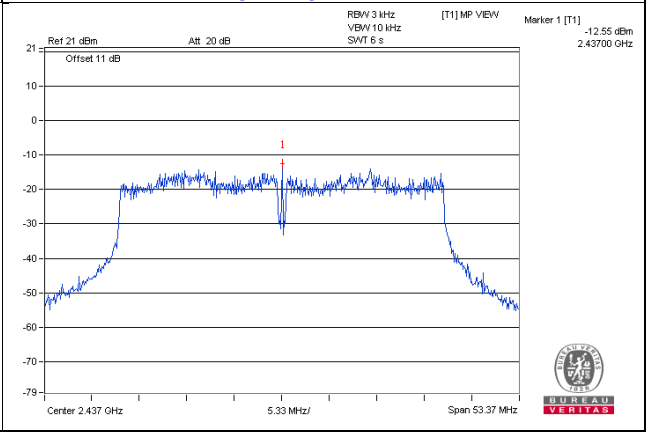
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-13.06	4.77	-8.29	7.49	Pass
	6	2437	-5.94	4.77	-1.17	7.49	Pass
	11	2462	-8.73	4.77	-3.96	7.49	Pass
1	1	2412	-16.83	4.77	-12.06	7.49	Pass
	6	2437	-11.36	4.77	-6.59	7.49	Pass
	11	2462	-11.13	4.77	-6.36	7.49	Pass
2	1	2412	-13.74	4.77	-8.97	7.49	Pass
	6	2437	-10.42	4.77	-5.65	7.49	Pass
	11	2462	-9.12	4.77	-4.35	7.49	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 6.51dBi > 6dBi , so the power density limit shall be reduced to 8-(6.51-6) = 7.49dBm.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-17.86	4.77	-13.09	7.49	Pass
	6	2437	-12.55	4.77	-7.78	7.49	Pass
	9	2452	-12.77	4.77	-8.00	7.49	Pass
1	3	2422	-22.71	4.77	-17.94	7.49	Pass
	6	2437	-17.27	4.77	-12.50	7.49	Pass
	9	2452	-15.70	4.77	-10.93	7.49	Pass
2	3	2422	-18.68	4.77	-13.91	7.49	Pass
	6	2437	-14.80	4.77	-10.03	7.49	Pass
	9	2452	-14.27	4.77	-9.50	7.49	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 6.51dBi > 6dBi , so the power density limit shall be reduced to 8-(6.51-6) = 7.49dBm.

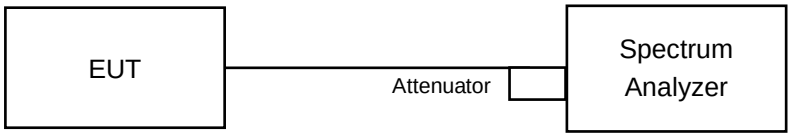
Spectrum Plot of Worst Value	
802.11b / Chain 0 : CH11	**802.11g / Chain 0 : CH6**
	
802.11n (HT20) / Chain 0 : CH6	**802.11n (HT40) / Chain 0 : CH6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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 OOBE

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.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

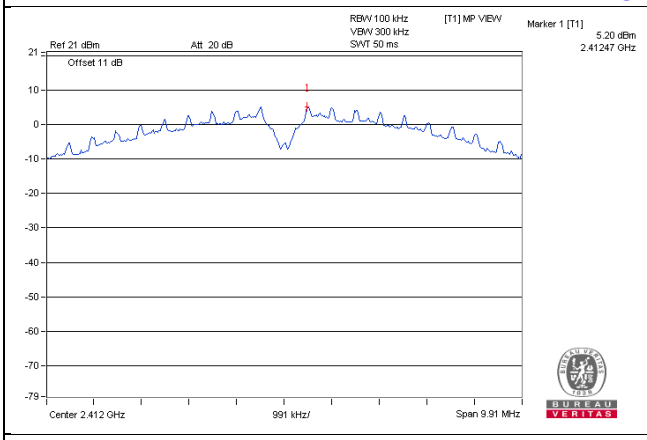
Same as Item 4.3.6

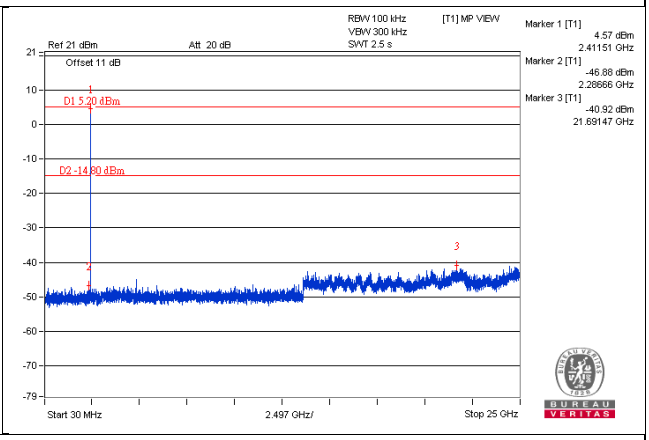
4.6.7 Test Results

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

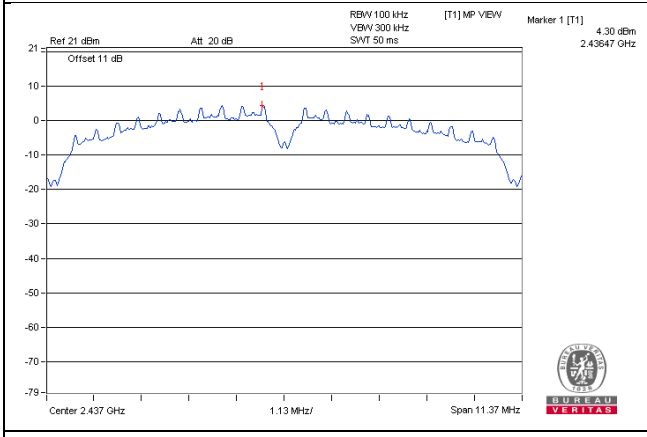
802.11b - CHAIN 0

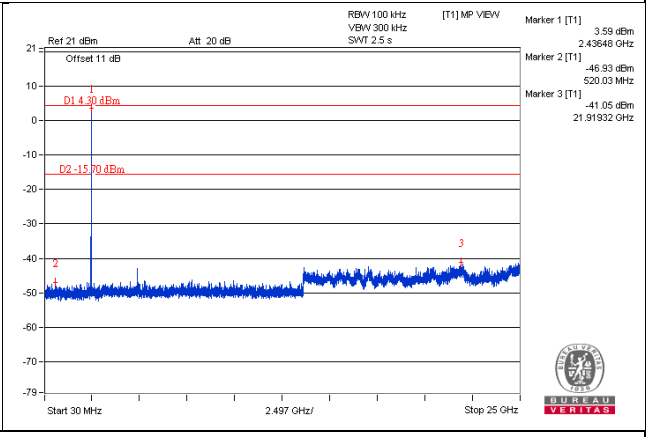
CH 1



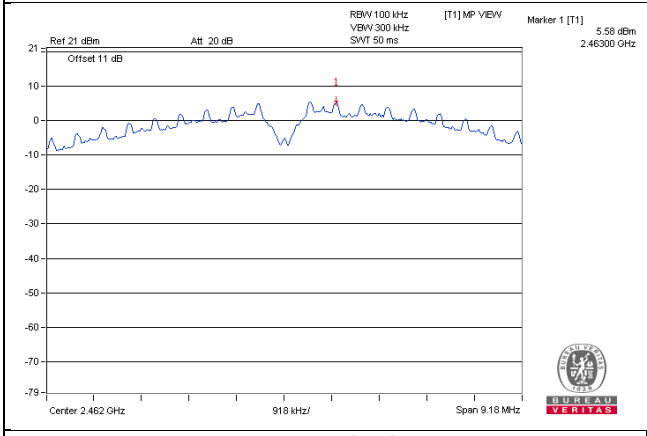


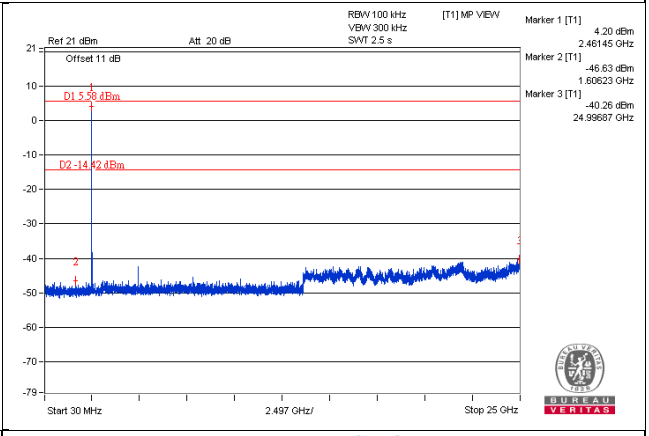
CH 6



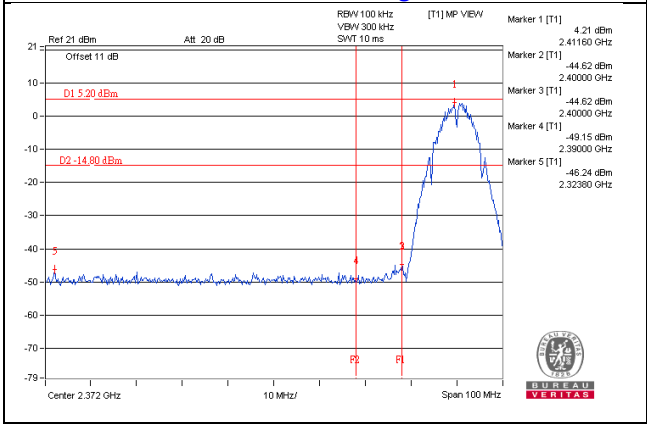


CH 11

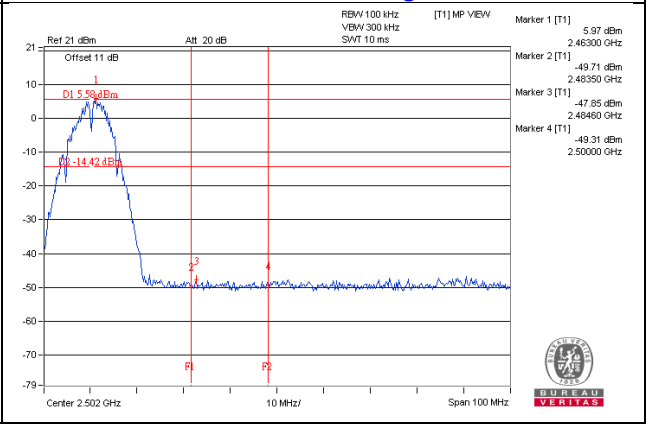




CH 1 Band edge

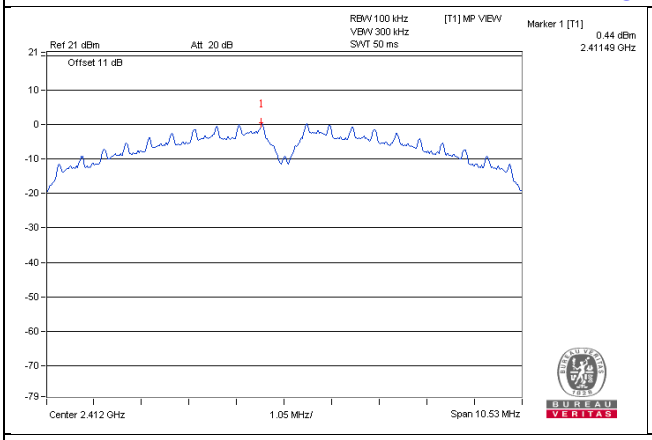


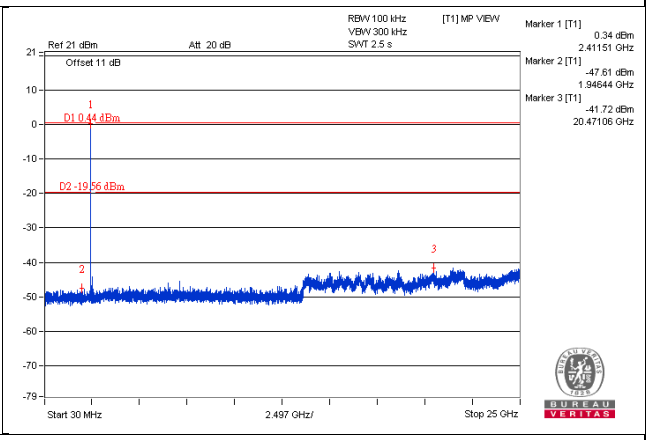
CH 11 Band edge



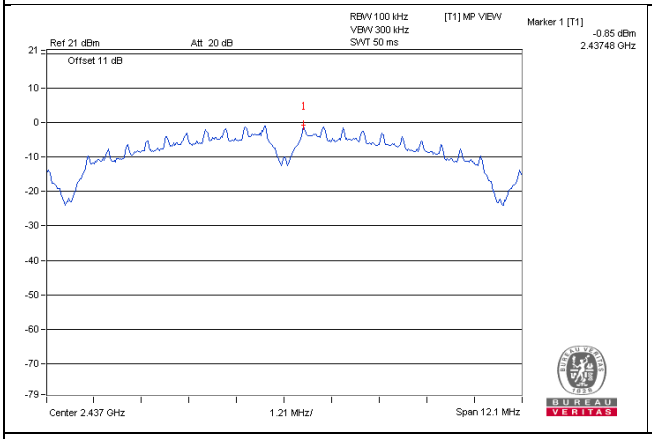
CHAIN 1

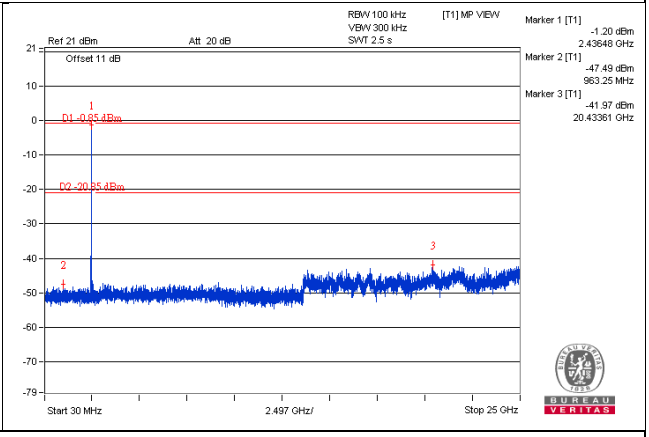
CH 1



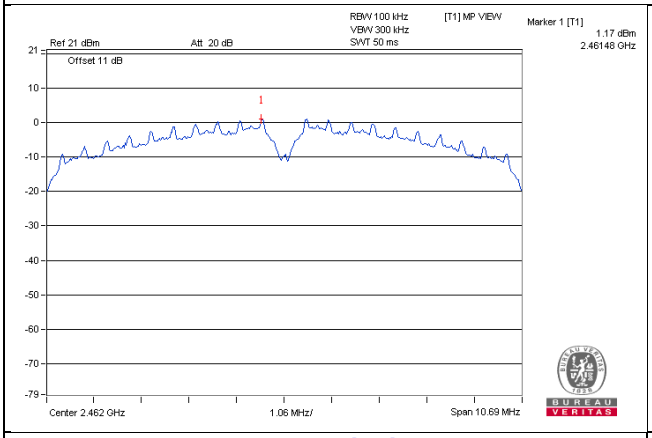


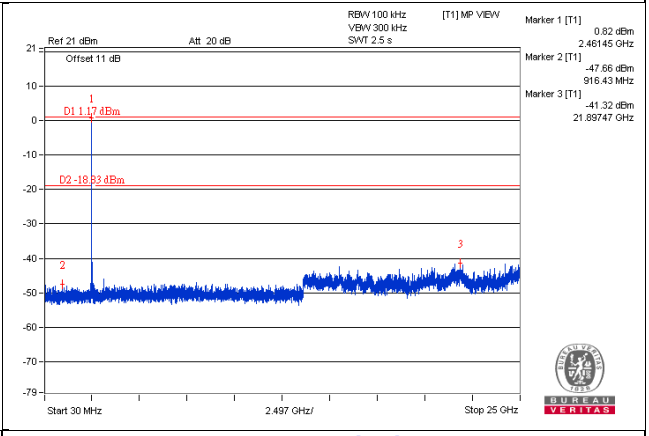
CH 6



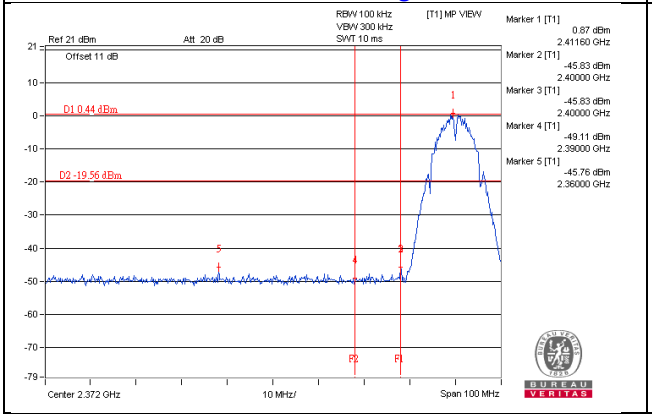


CH 11

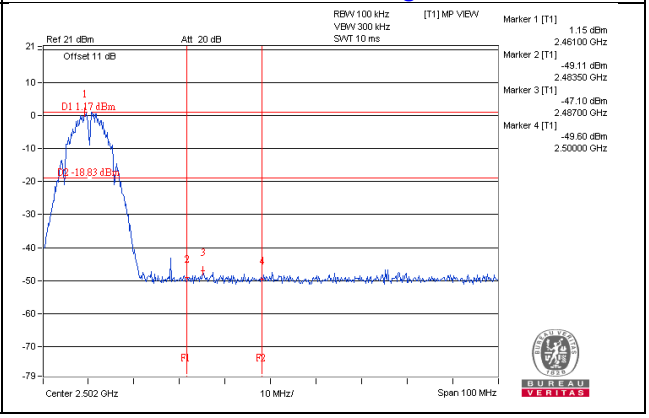




CH 1 Band edge

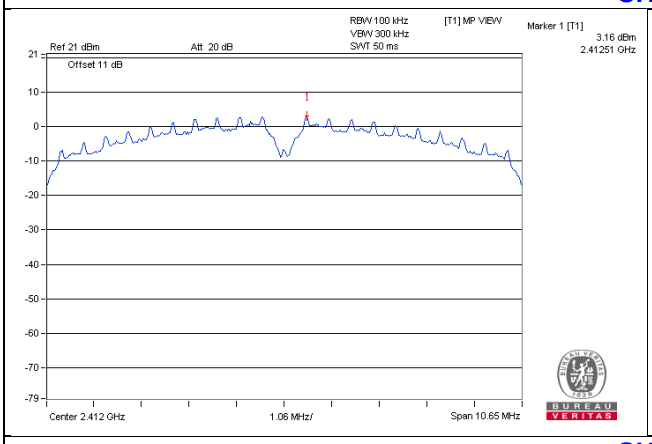


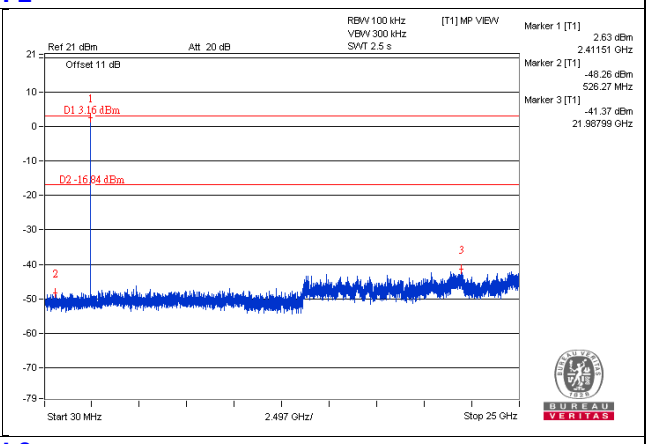
CH 11 Band edge



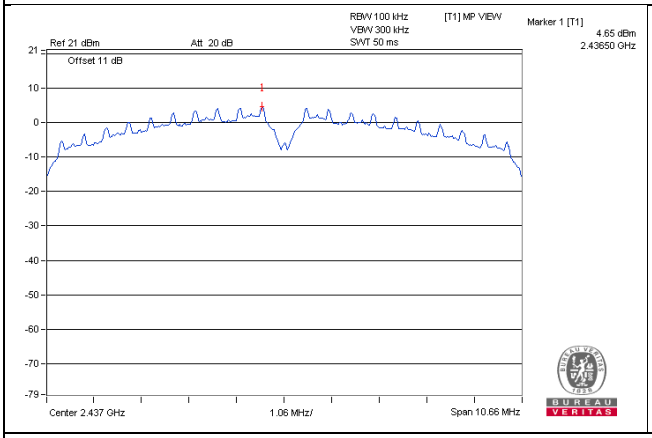
CHAIN 2

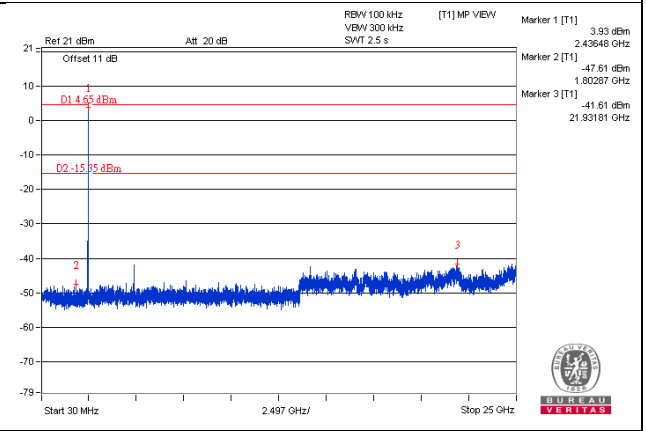
CH 1



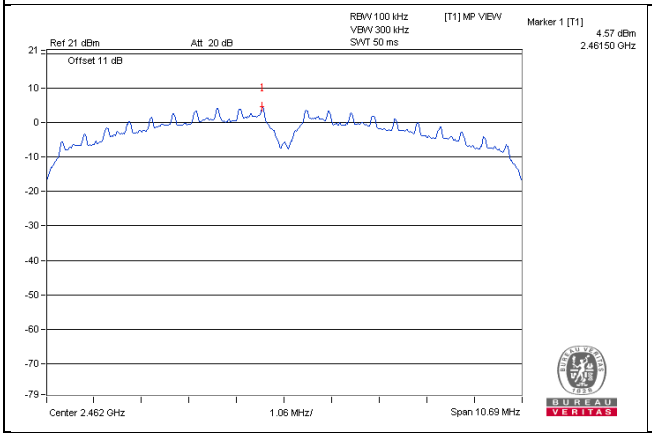


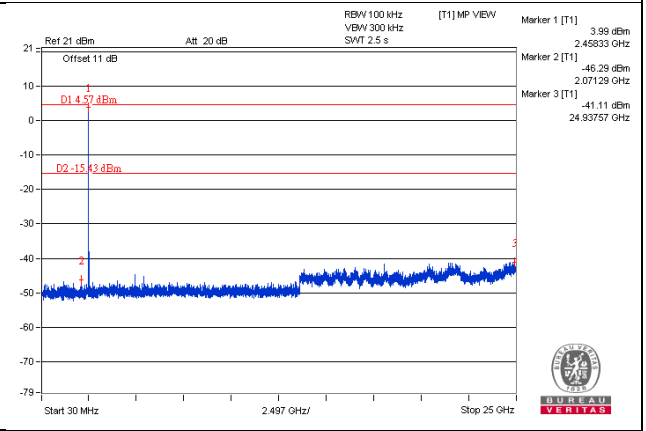
CH 6



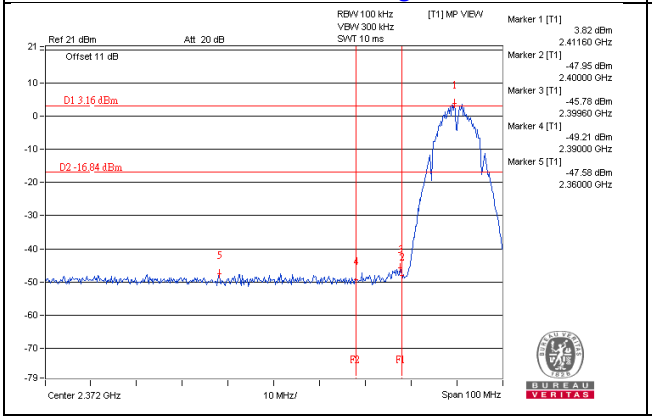


CH 11

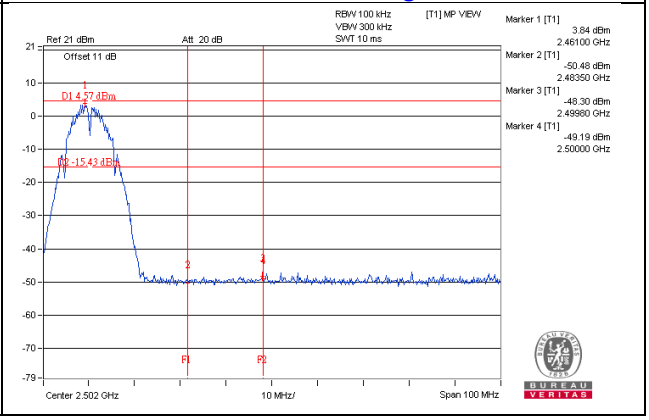




CH 1 Band edge

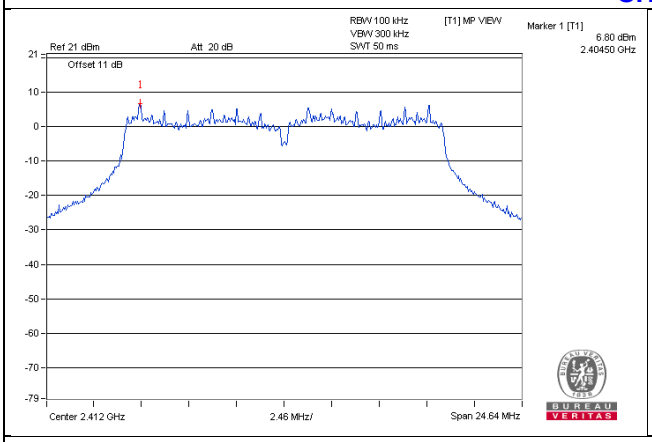


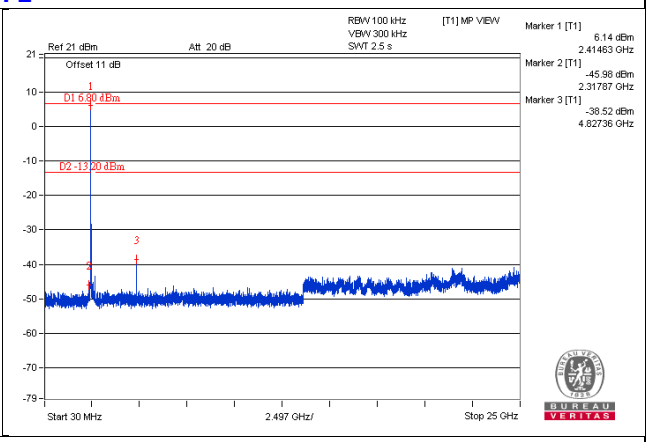
CH 11 Band edge



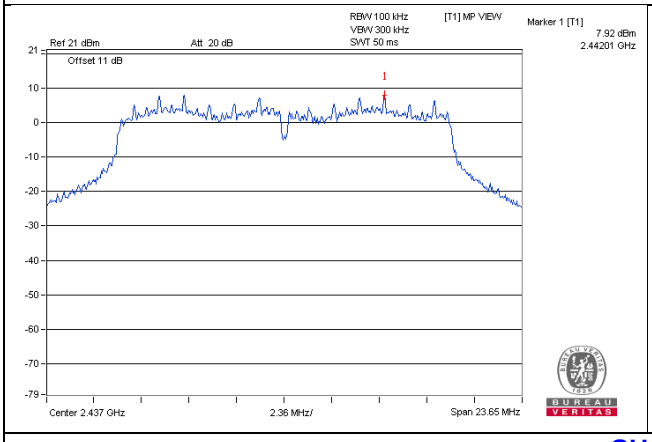
802.11g - CHAIN 0

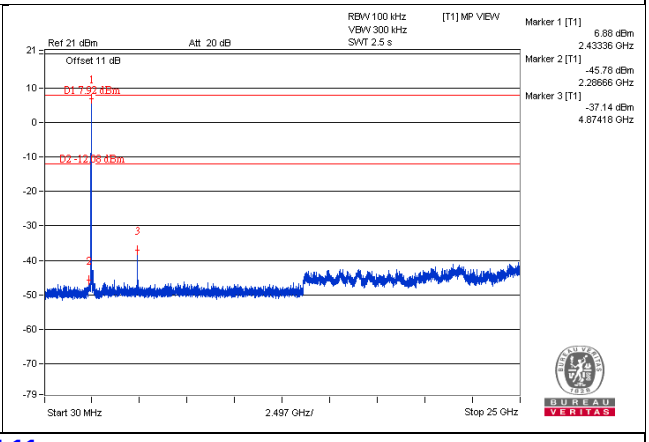
CH 1



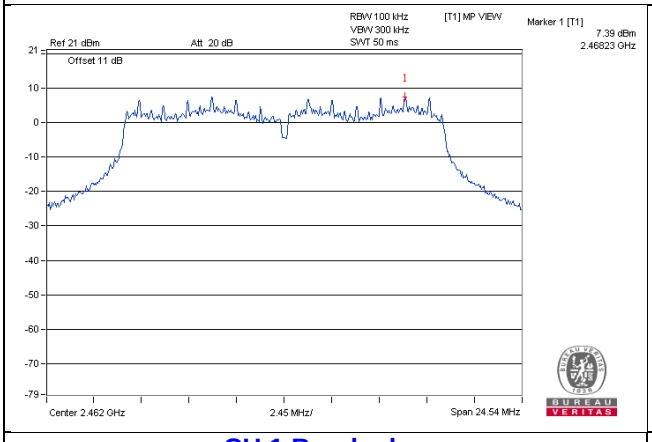


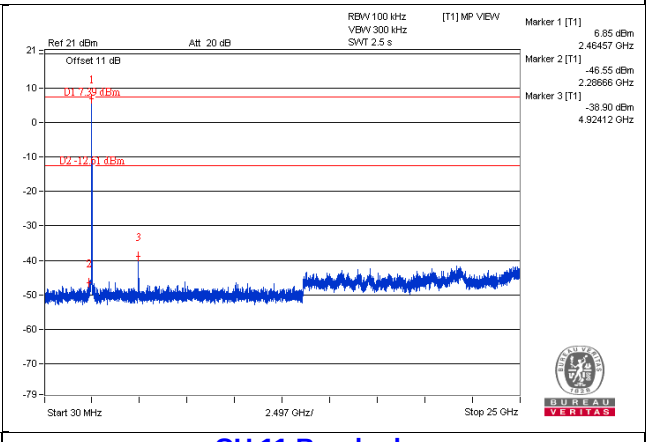
CH 6



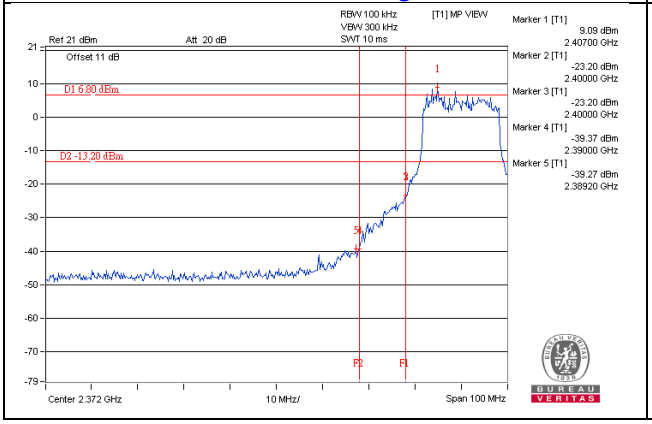


CH 11

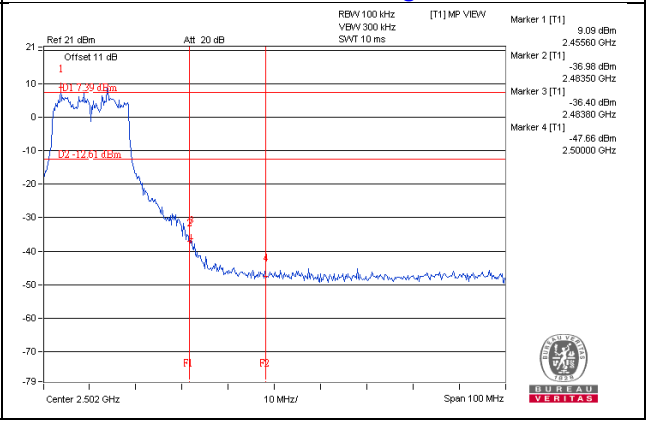




CH 1 Band edge

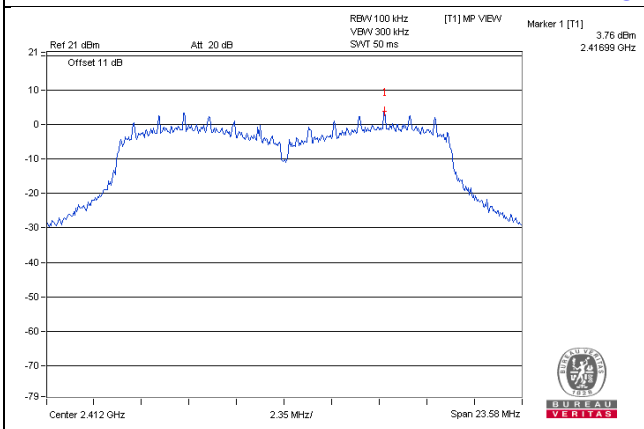


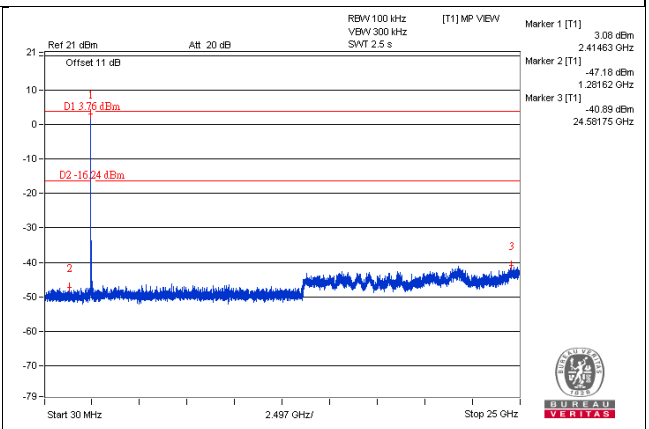
CH 11 Band edge



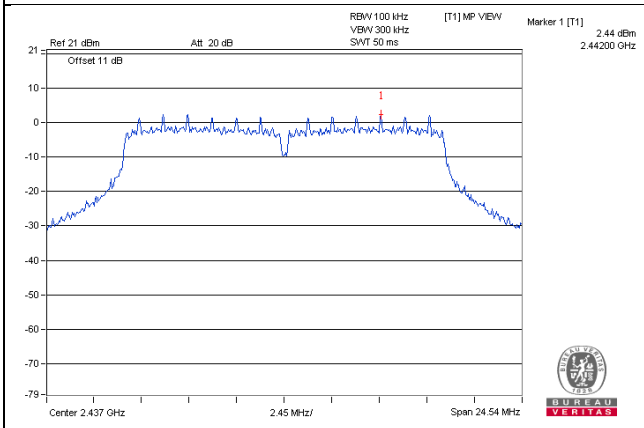
CHAIN 1

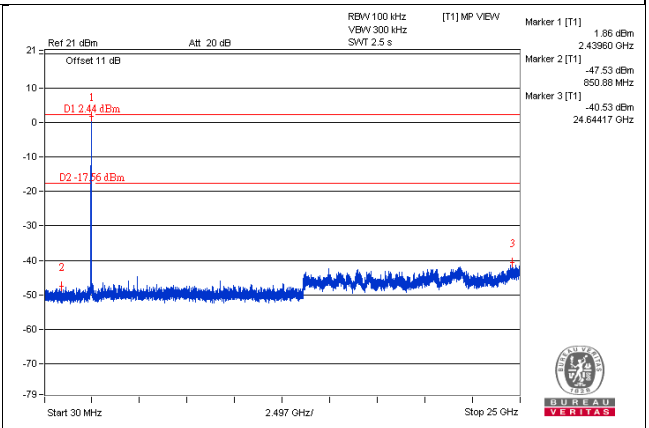
CH 1



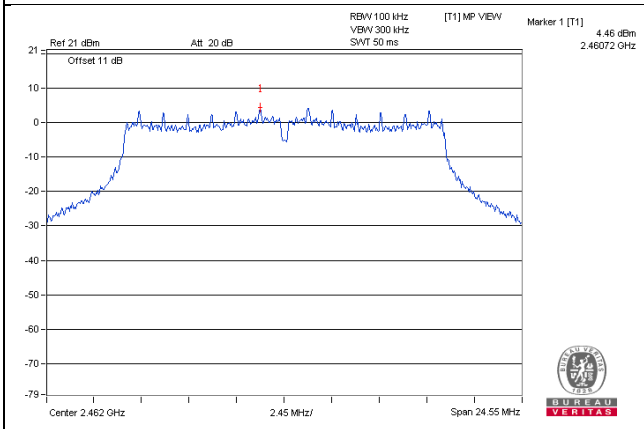


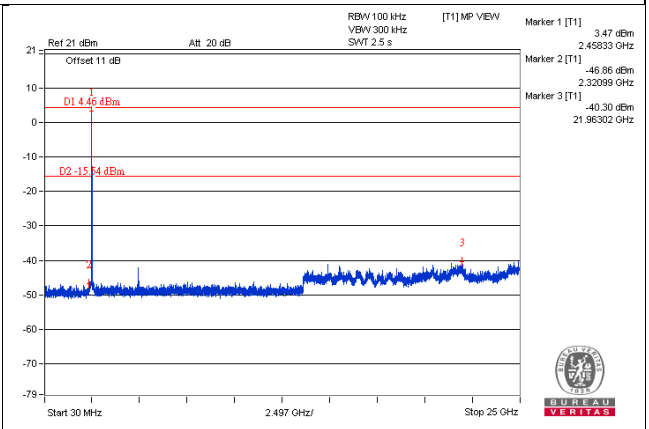
CH 6



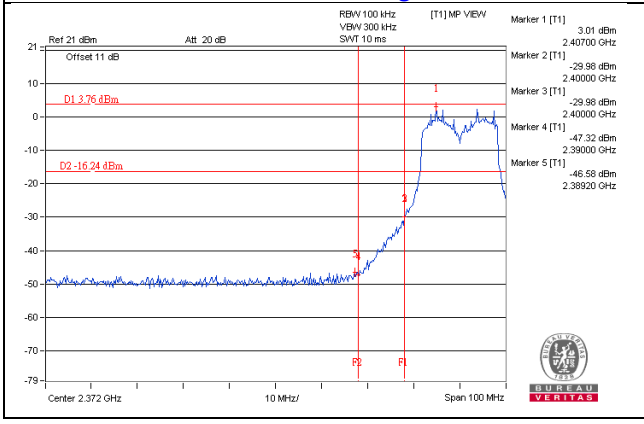


CH 11

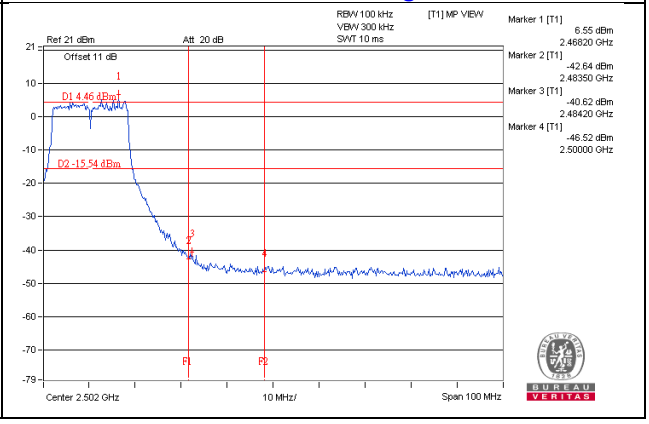




CH 1 Band edge

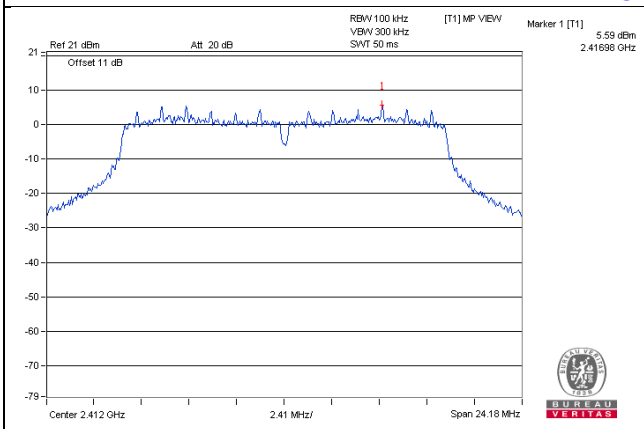


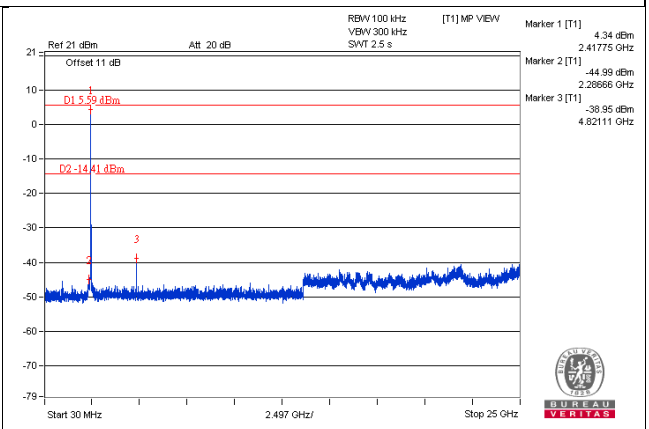
CH 11 Band edge



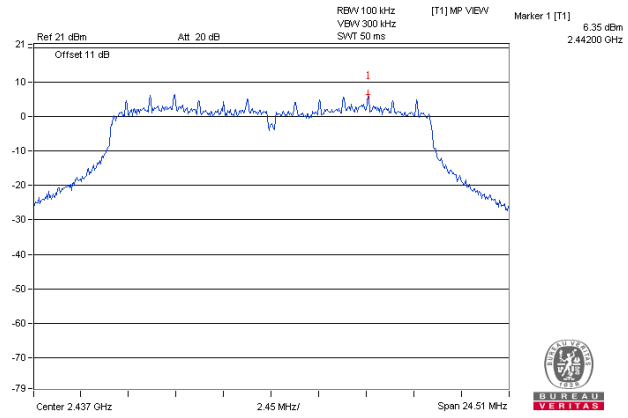
CHAIN 2

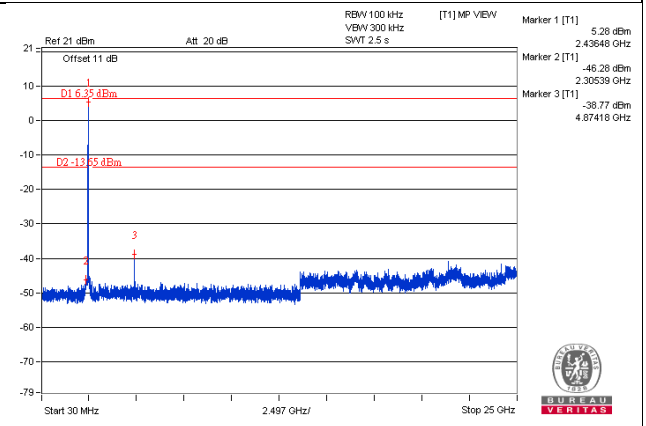
CH 1



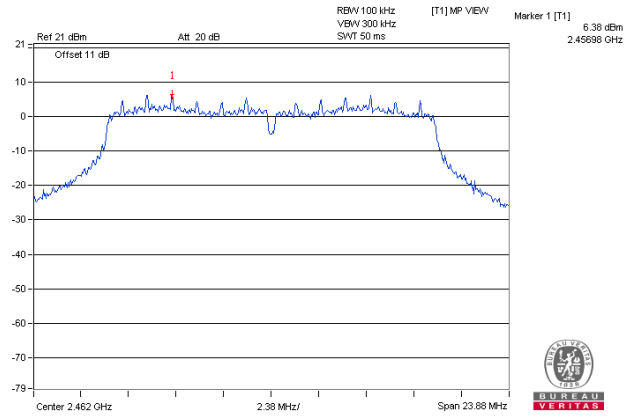


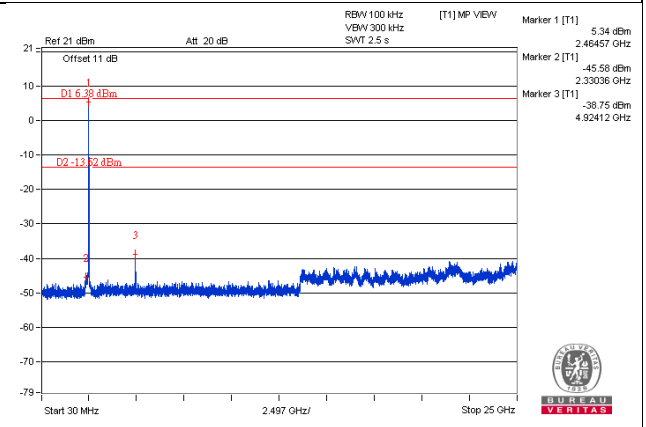
CH 6



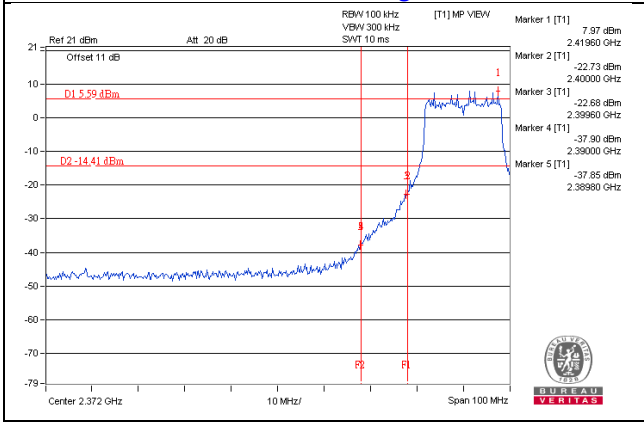


CH 11

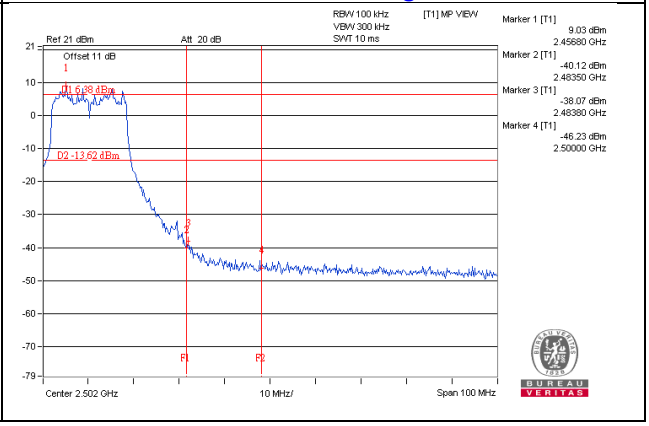




CH 1 Band edge

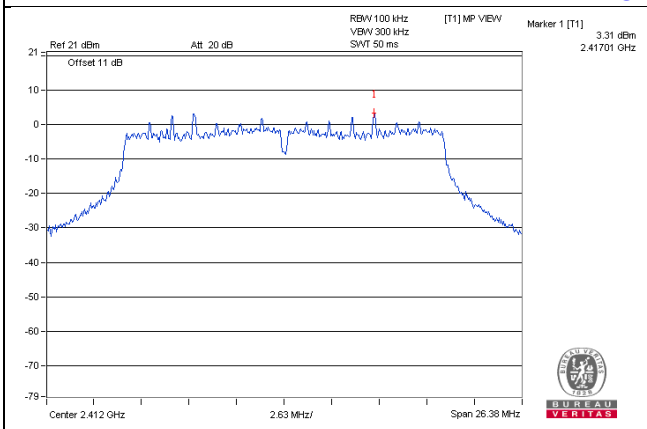


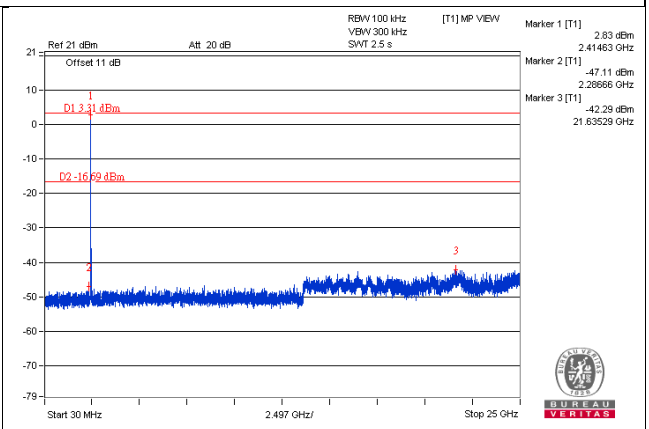
CH 11 Band edge



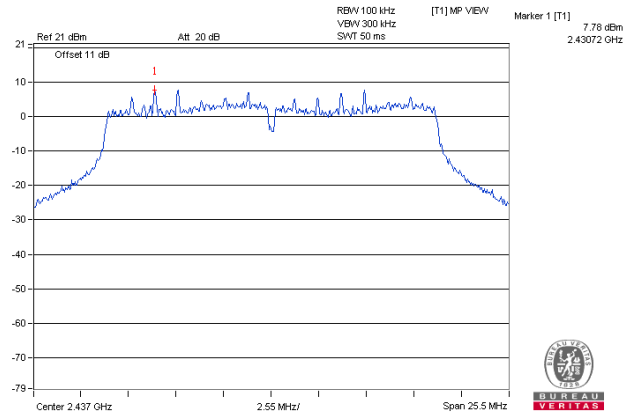
802.11n (HT20) - CHAIN 0

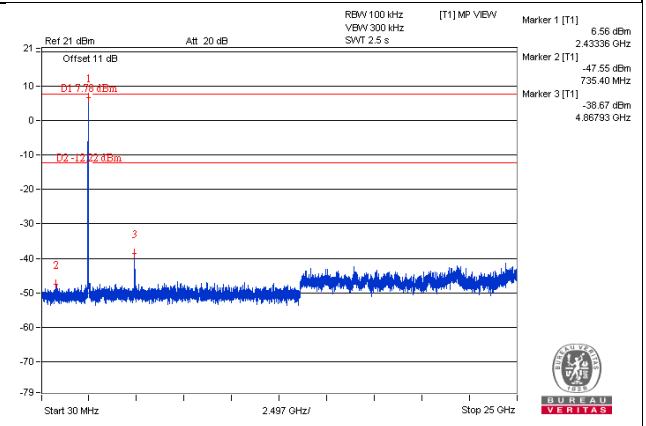
CH 1



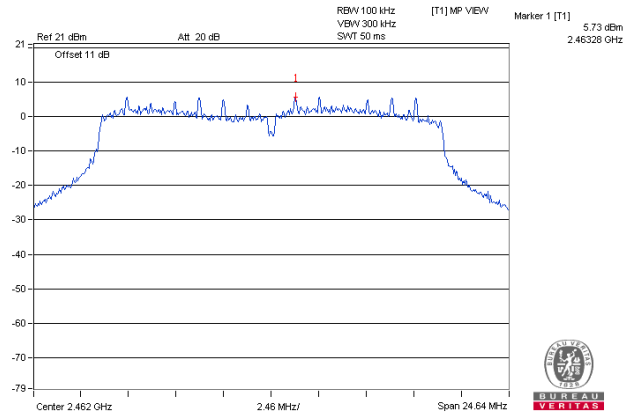


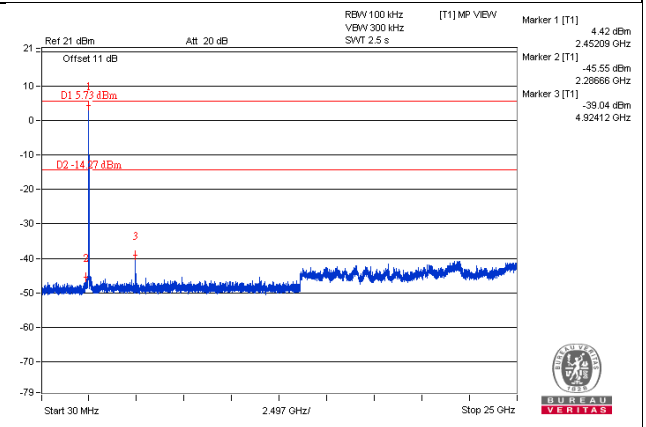
CH 6



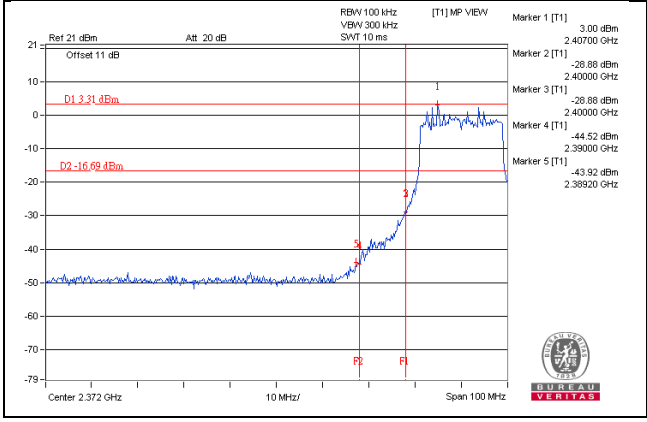


CH 11

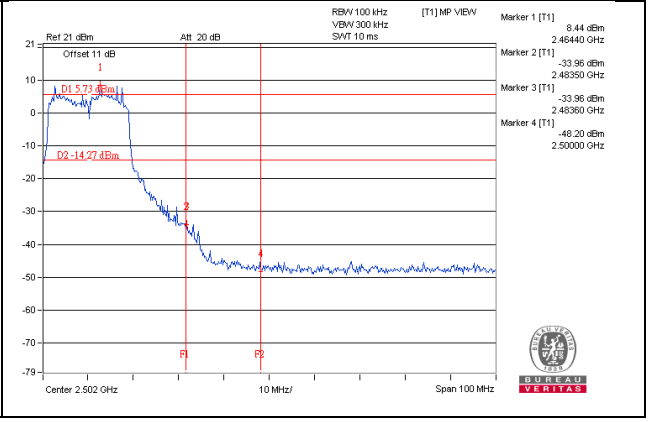




CH 1 Band edge

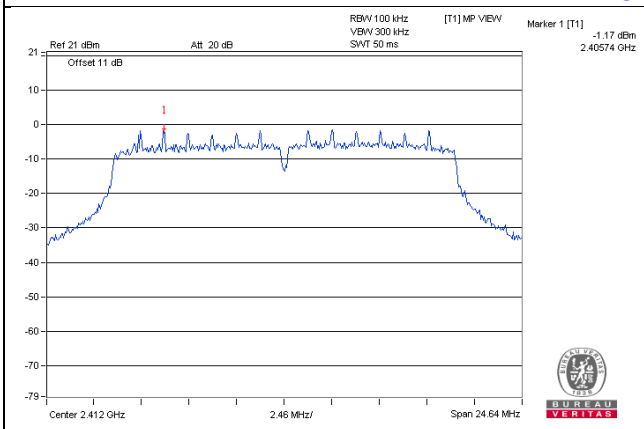


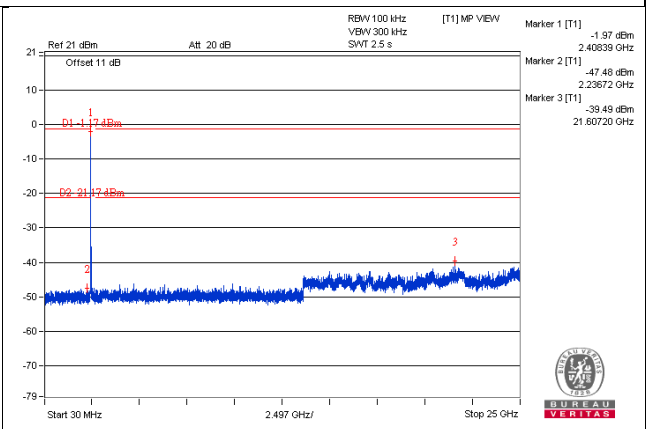
CH 11 Band edge



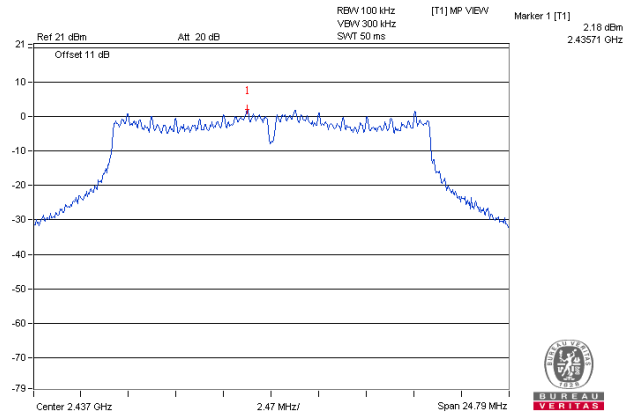
CHAIN 1

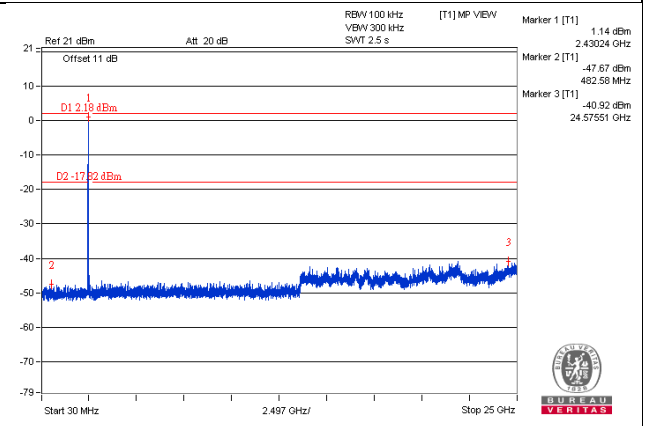
CH 1



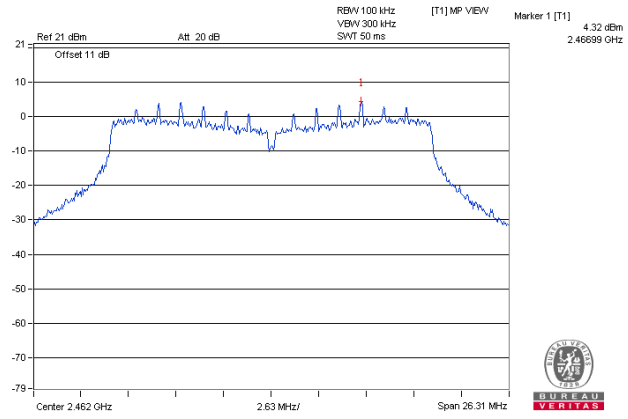


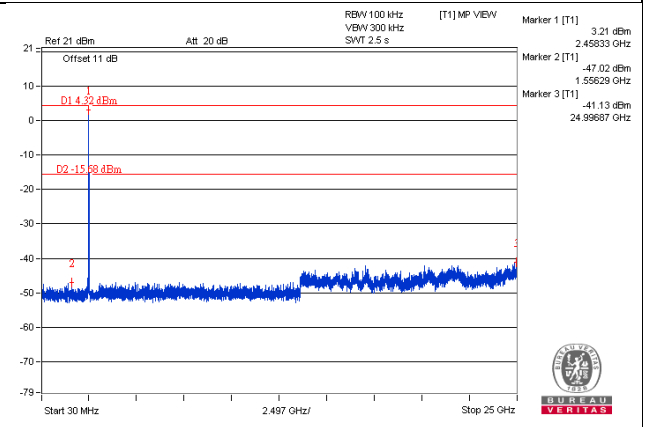
CH 6



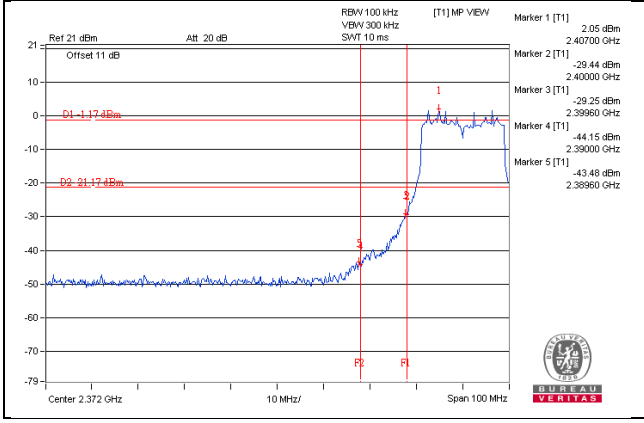


CH 11

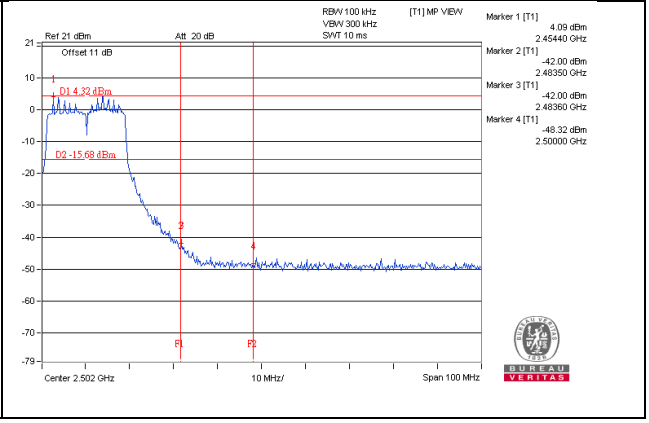




CH 1 Band edge

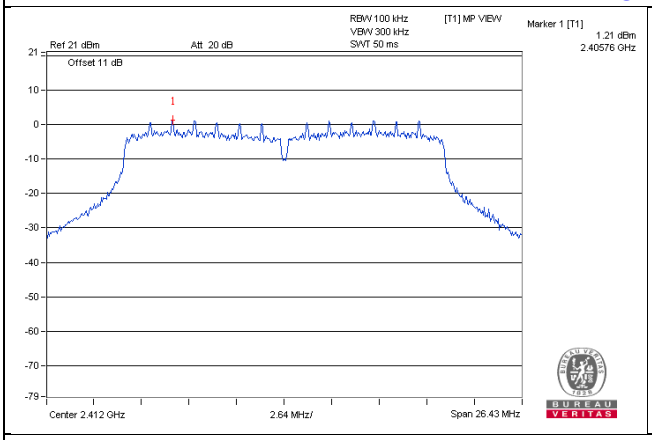


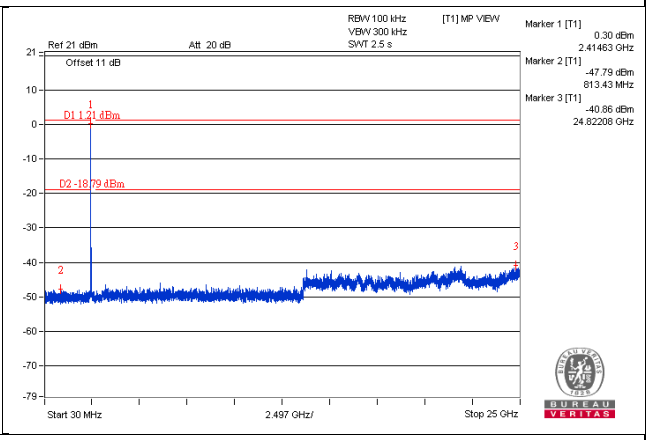
CH 11 Band edge



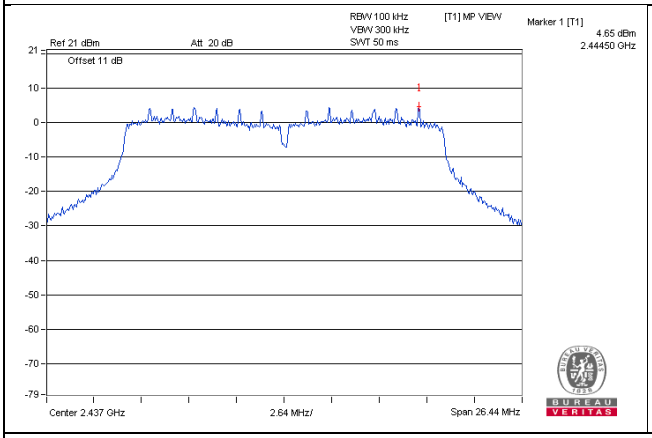
CHAIN 2

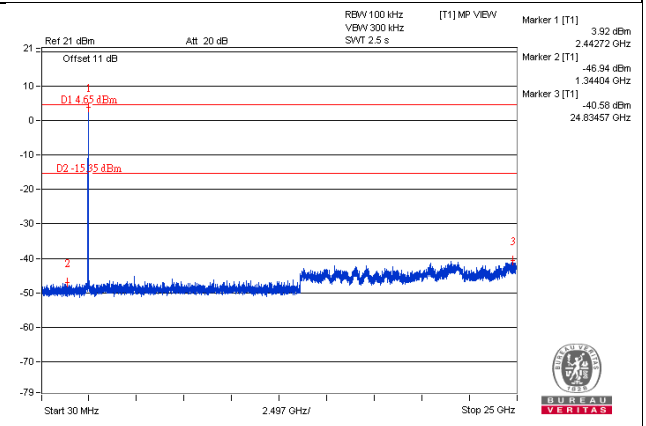
CH 1



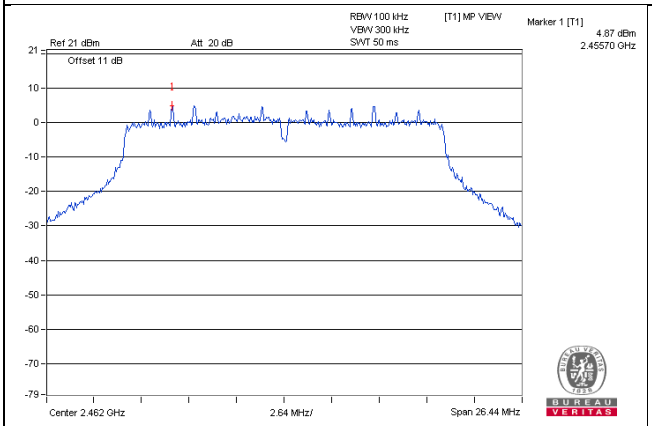


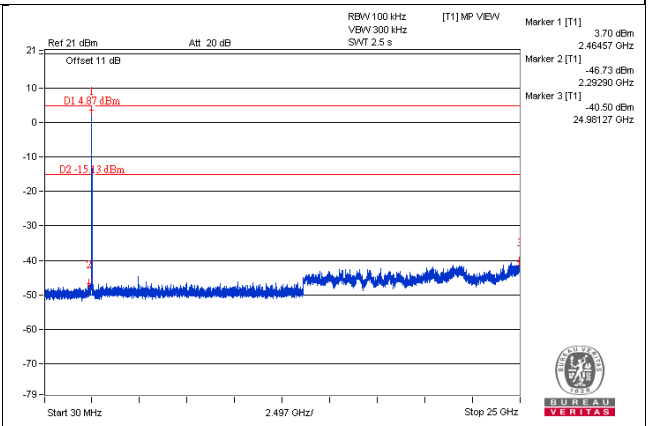
CH 6



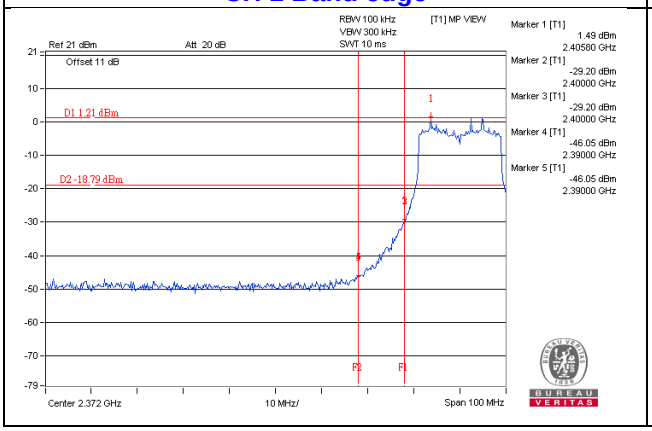


CH 11

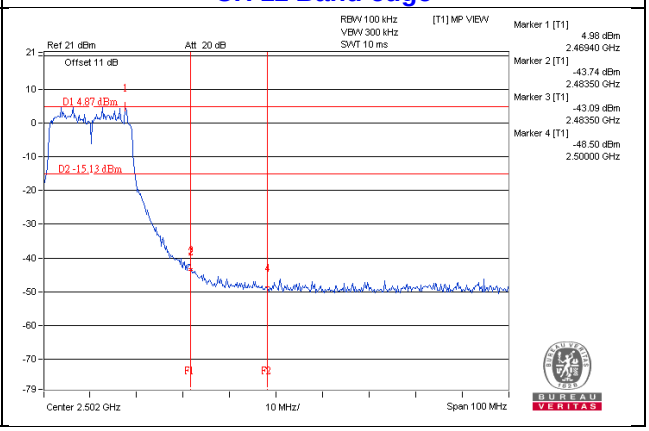




CH 1 Band edge

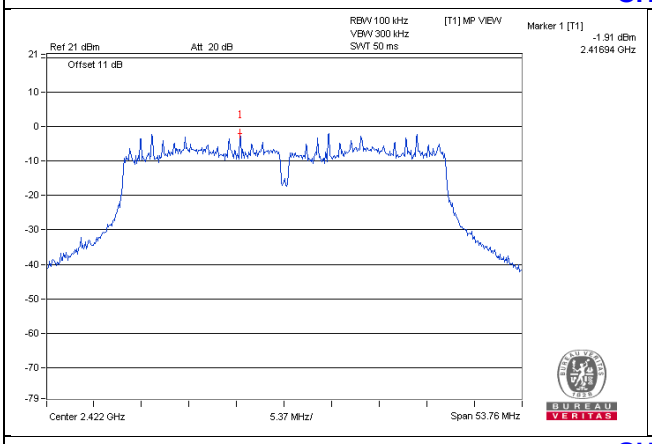


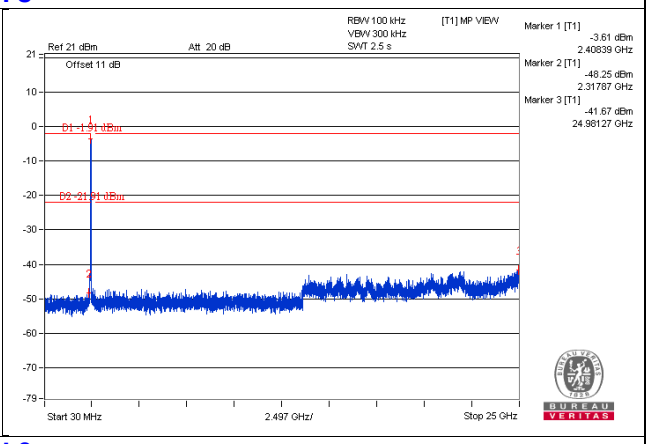
CH 11 Band edge



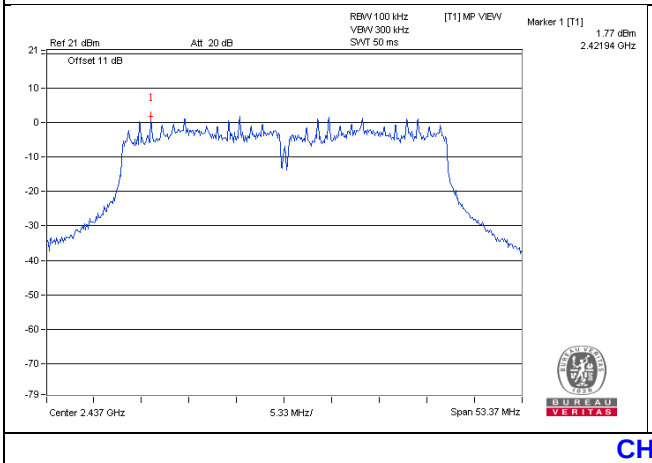
802.11n (HT40) - Chain 0

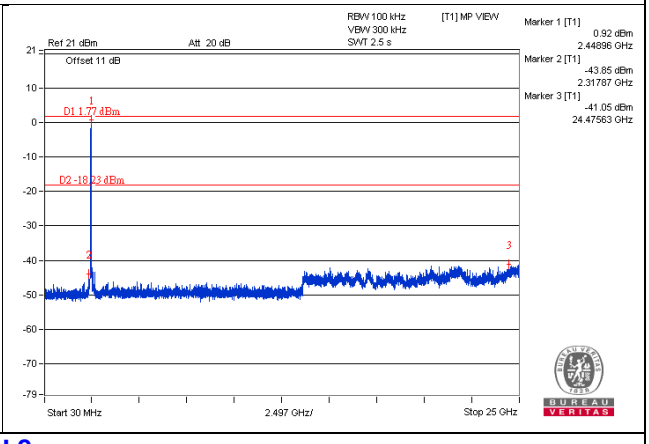
CH 3



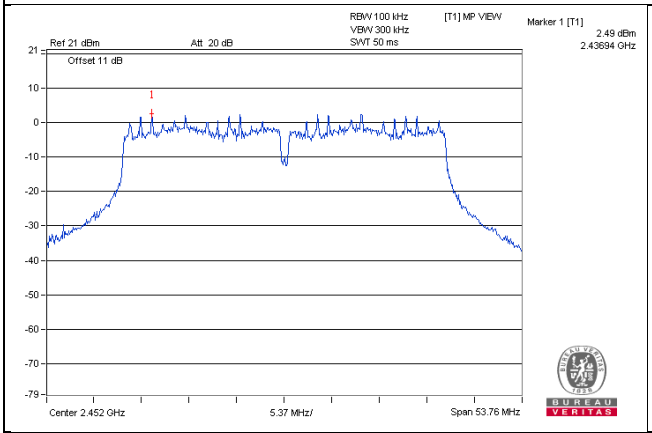


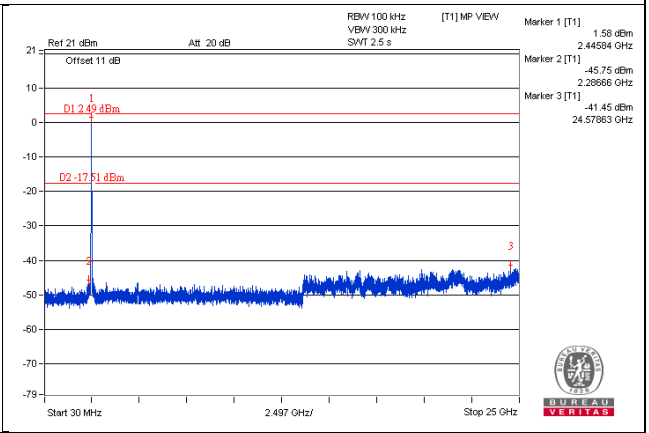
CH 6



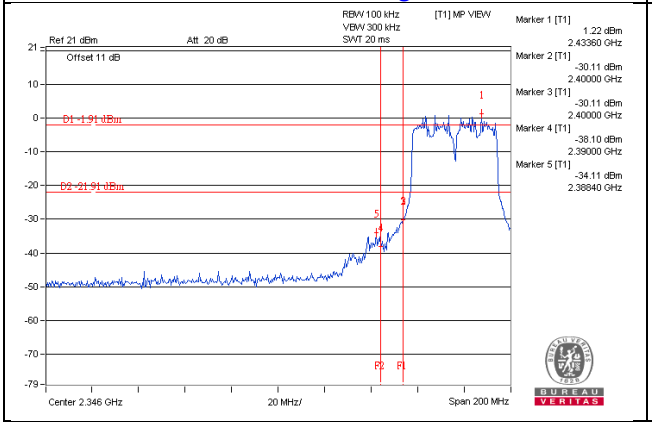


CH 9

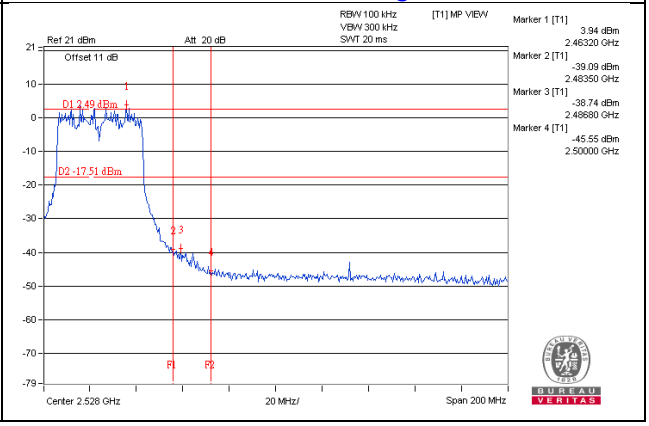




CH 3 Band edge

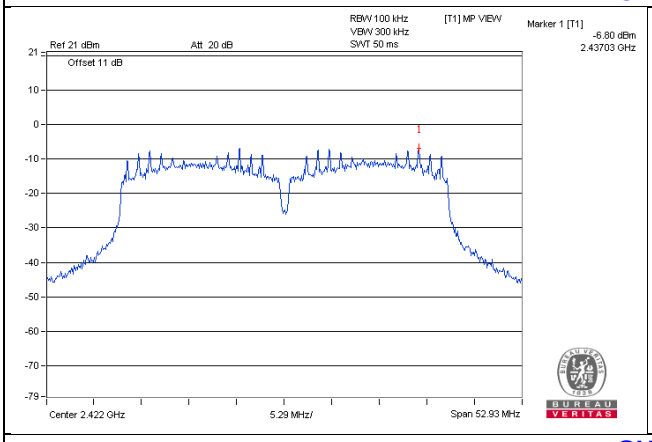


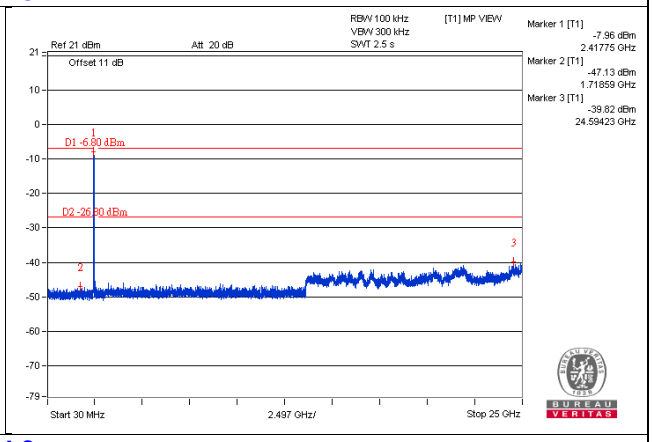
CH 9 Band edge



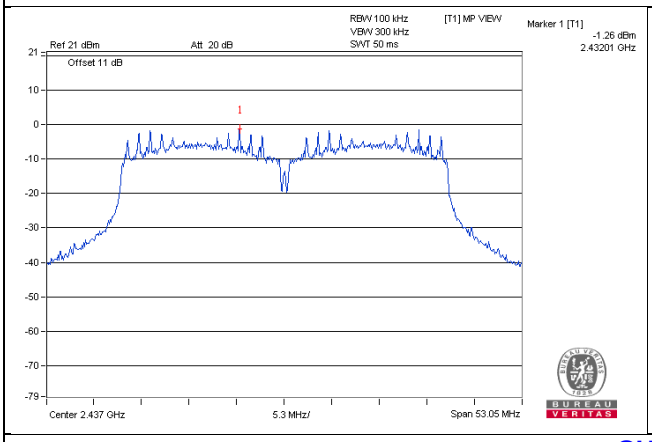
Chain 1

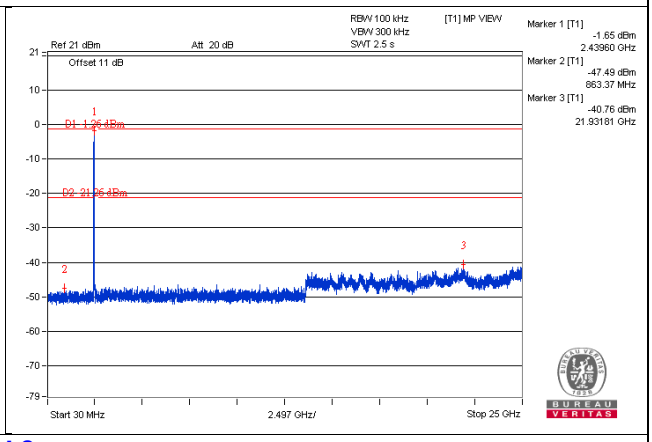
CH 3



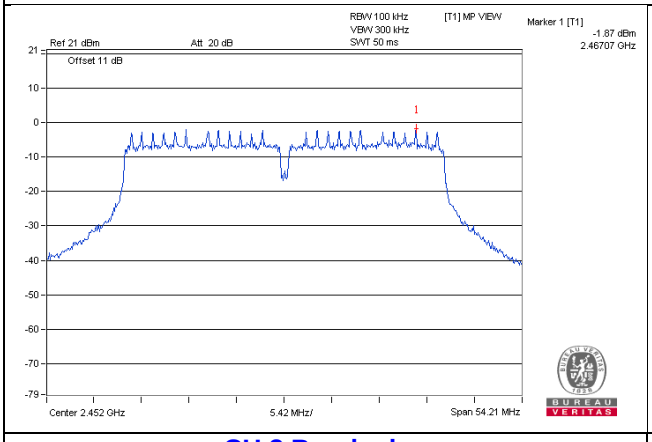


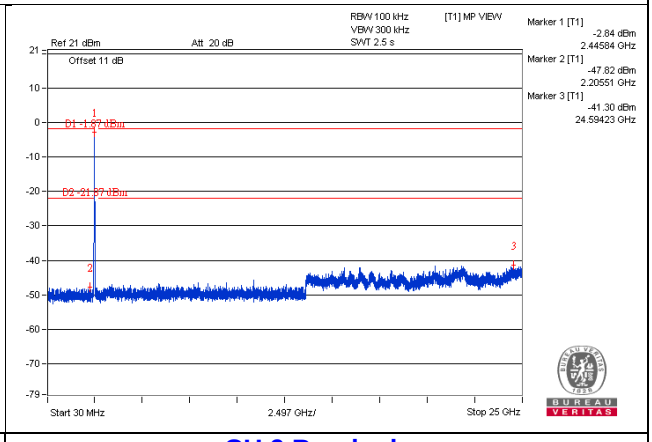
CH 6



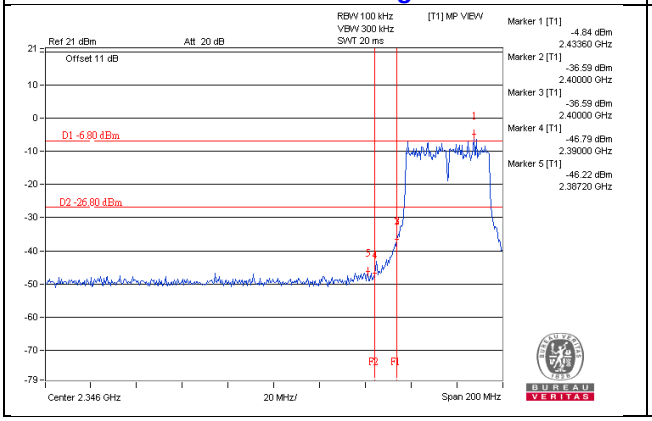


CH 9

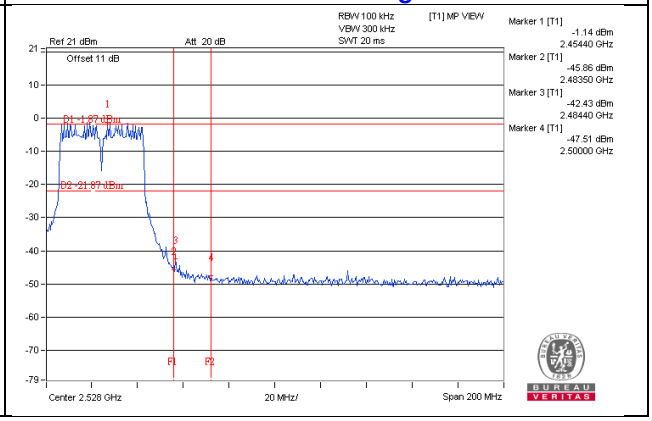




CH 3 Band edge

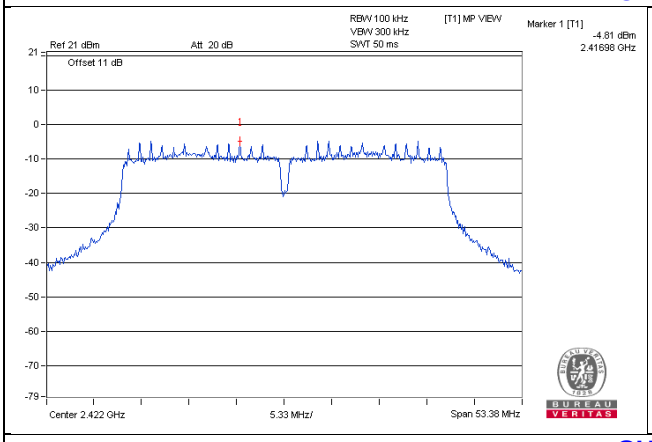


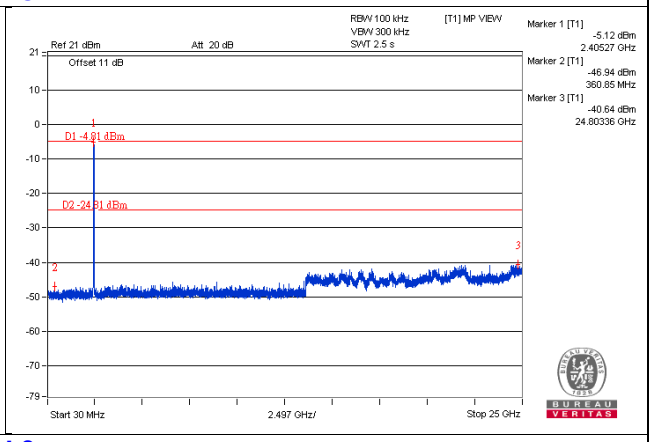
CH 9 Band edge



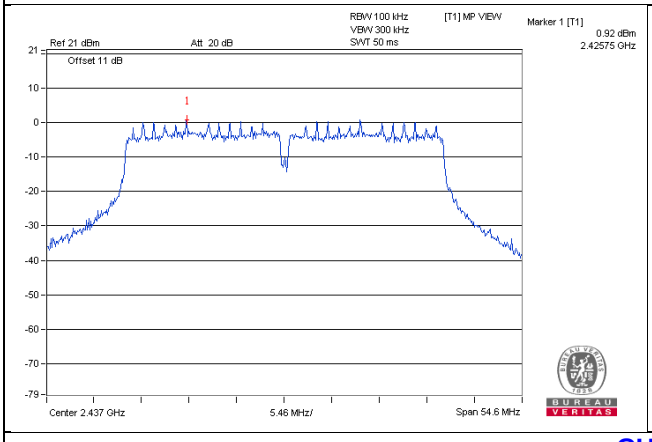
Chain 2

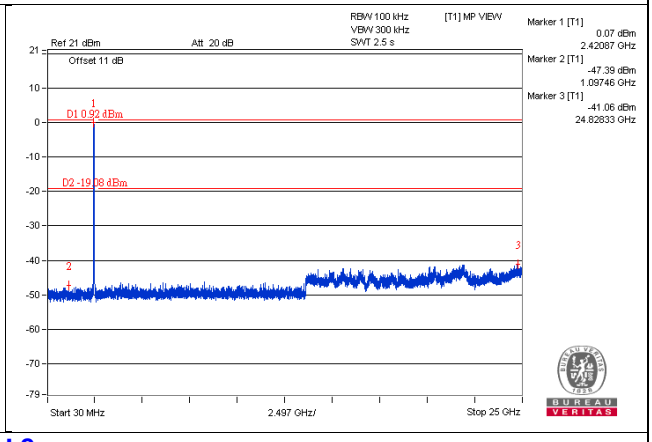
CH 3



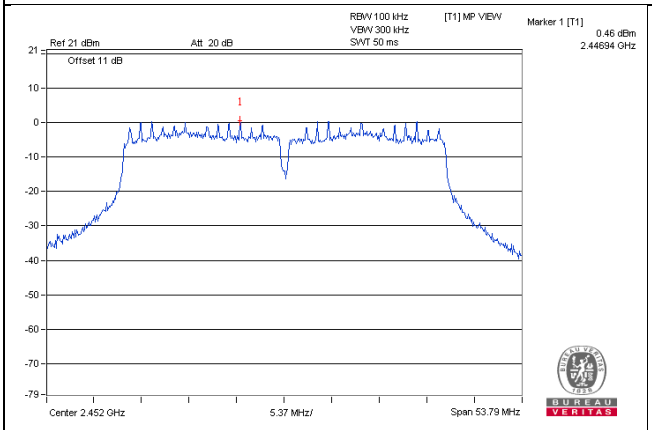


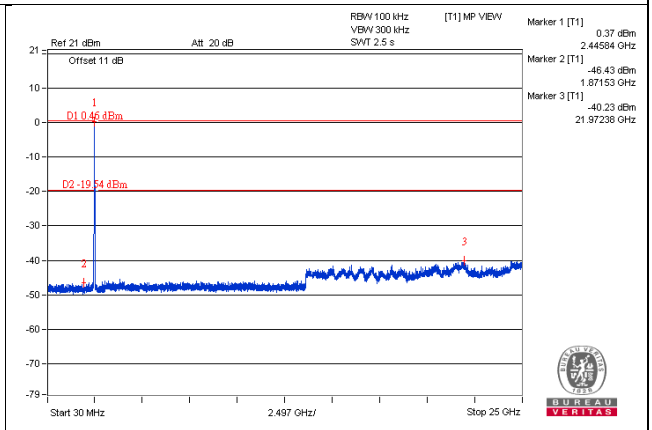
CH 6



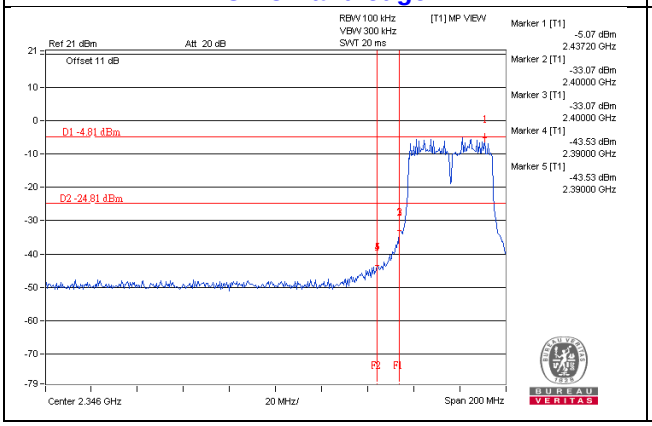


CH 9

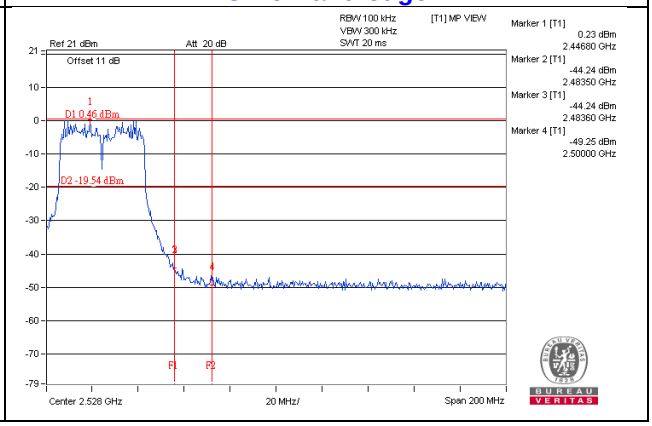




CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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

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