FCC Test Report

Report No.:	RF160901E04
FCC ID:	Z3M-E2100
Test Model:	E2100
Received Date:	Sep. 01, 2016
Test Date:	Oct. 24 to 25, 2016
Issued Date:	Jan. 04, 2017
Applicant:	Greenwave Systems Pte. Ltd.
Address:	10 Science Park Road, #02-07/08, The Alpha (Science Park II), Singapore 117684
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.

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Release Control Record

Issue No.	Description	Date Issued
RF160901E04	Original release.	Jan. 04, 2017

1 Certificate of Conformity

Product:	Wi-Fi Extender
Brand:	NA
Test Model:	E2100
Sample Status:	MASS-PRODUCTION
Applicant:	Greenwave Systems Pte. Ltd.
Test Date:	Oct. 24 to 25, 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 : Nico Liu , **Date:** Jan. 04, 2017

Nico Liu / Specialist

Approved by : , **Date:** Jan. 04, 2017

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 -6.06 dB at 0.25938 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1 dB at 2390.00, 2483.5 MHz.
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 i-pex(MHF) is 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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.83 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.36 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.47 dB
	6GHz ~ 18GHz	3.75 dB
	18GHz ~ 40GHz	3.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wi-Fi Extender
Brand	NA
Test Model	E2100
Status of EUT	MASS-PRODUCTION
Power Supply Rating	DC 12V from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz.
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a / g: up to 54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	**For 15.247:** 2.412 ~ 2.462GHz
	For 15.407: 5.18~5.24GHz, 5.26~5.32GHz, 5.50~5.70GHz, 5.745~5.825GHz
Number of Channel	**For 15.247:** 802.11b, 802.11g, 802.11n (HT20), VHT20: 11 802.11n (HT40), VHT40: 7
	For 15.407: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 25 802.11n (HT40), 802.11ac (VHT40): 12 802.11ac (VHT80): 6
Output Power	**For 15.247:** 896.52mW **For 15.407:** **CDD Mode :** 5180-5240MHz : 767.196mW 5260-5320MHz : 249.65mW 5500-5700MHz : 231.867mW 5745-5825MHz : 897.877mW **SDM Mode :** 5180-5240MHz : 767.196mW 5260-5320MHz : 249.65mW 5500-5700MHz : 230.622mW 5745-5825MHz : 819.587mW **BF Mode :** 5180-5240MHz : 767.196mW 5260-5320MHz : 249.65mW 5500-5700MHz : 230.622mW 5745-5825MHz : 819.587mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	NA

Note:

1. The EUT has two kind of 5GHz filter. Detail as described in table below:

Item	Supplier	Remark	Description
SKU #1	Sangshin	W+S	5GHz filter passive filter (pin to pin & same design)
SKU #2	Partron	W+P	5GHz filter passive filter (pin to pin & same design)

From the above items, SKU #1 was selected as representative type for the test and its data was recorded in this report.

2. The EUT has three radio transceivers as below table:

Radio	Band	Remark
Radio 1	2.4GHz	-
Radio 2	5GHz<U-NII-1 & U-NII-2A>	Client function : U-NII-1 & U-NII-2A Master function : U-NII- 1
Radio 3	5GHz<U-NII-2C & U-NII-3>	Client function : U-NII-2C & U-NII-3 Master function : U-NII-3
Remark: This device can support different category application which switched to master mode or client mode by software.		

3. Simultaneously transmission condition.

Condition	**Technology**		
1	WLAN (2.4GHz)	WLAN (5GHz <U-NII-1 & U-NII-2A>)	WLAN (5GHz <U-NII-2C & U-NII-3>)
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.			

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

Brand	Model No.	Spec.
NA	MU36-D120300-A1	Input: 100-240Vac, 50-60Hz, 1.5A Output: 12Vdc, 3A DC output cable (Unshielded, 1.8m)

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

No.	PCB Chain No	Brand	Antenna Gain(dBi) Including cable loss	Frequency range (GHz~GHz)	Antenna Type	Connector type	Cable Length (mm)
2G-1	Chain2	WNC	4.62	2.4~2.4835	Dipole	i-pex(MHF)	75
2G-2	Chain1	WNC	3.33	2.4~2.4835	Dipole	i-pex(MHF)	52
2G-3	Chain0	WNC	3.63	2.4~2.4835	Dipole	i-pex(MHF)	187
5G-5	Chain3	WNC	3.24	5.15~5.25	Dipole	i-pex(MHF)	171
			3.24	5.25~5.35			
5G-6	Chain2	WNC	4.39	5.15~5.25	Dipole	i-pex(MHF)	187
			4.58	5.25~5.35			
5G-7	Chain1	WNC	3.68	5.15~5.25	Dipole	i-pex(MHF)	228
			3.62	5.25~5.35			
5G-8	Chain0	WNC	4.63	5.15~5.25	Dipole	i-pex(MHF)	237
			4.07	5.25~5.35			
5G-1	Chain3	WNC	3.45	5.47~5.725	Dipole	i-pex(MHF)	171
			3.45	5.725~5.85			
5G-2	Chain2	WNC	4.28	5.47~5.725	Dipole	i-pex(MHF)	187
			4.47	5.725~5.85			
5G-3	Chain1	WNC	4.01	5.47~5.725	Dipole	i-pex(MHF)	228
			3.54	5.725~5.85			
5G-4	Chain0	WNC	2.71	5.47~5.725	Dipole	i-pex(MHF)	237
			2.95	5.725~5.85			

6. 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	MCS0~8 Nss=1	3TX	3RX
	MCS0~8 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
VHT40	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	4TX	4RX
802.11n (HT20)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX

	MCS 24~31	4TX	4RX
802.11n (HT40)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
802.11ac (VHT20)	MCS0~8 Nss=1	4TX	4RX
	MCS0~8 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~8 Nss=4	4TX	4RX
802.11ac (VHT40)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX
802.11ac (VHT80)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

7. 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):

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

7 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

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)
802.11b	1 to 11	6	DSSS	DBPSK	1

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)
802.11b	1 to 11	6	DSSS	DBPSK	1

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

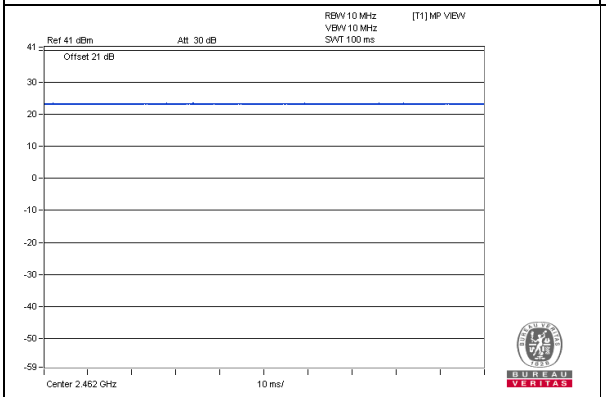
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 68%RH	120Vac, 60Hz	JyunChun Lin
RE<1G	23deg. C, 62%RH	120Vac, 60Hz	JyunChun Lin
PLC	25deg. C, 68%RH	120Vac, 60Hz	Bear Lee
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

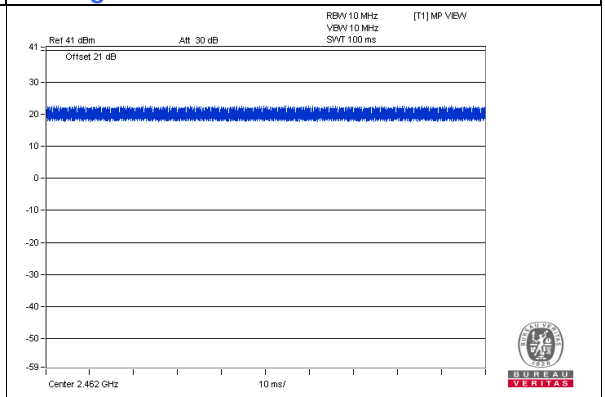
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.

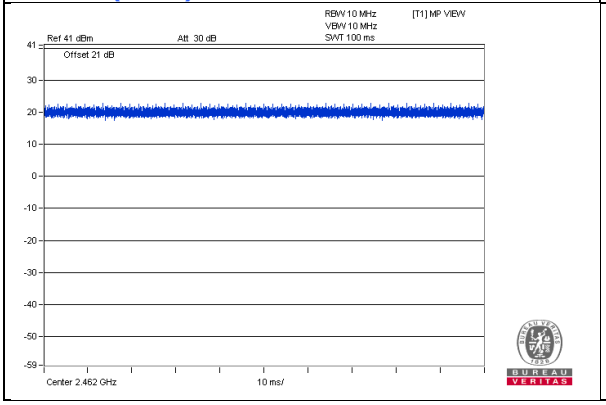
802.11b



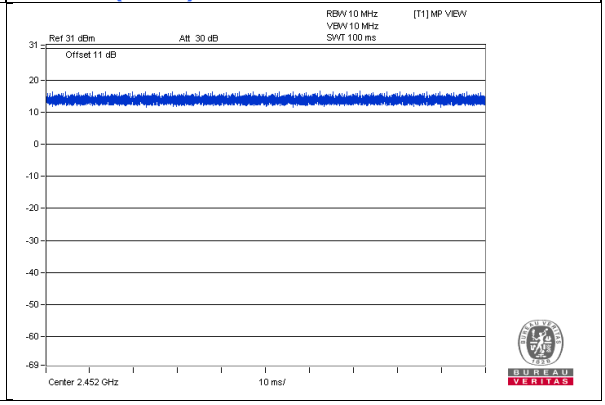
802.11g



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.

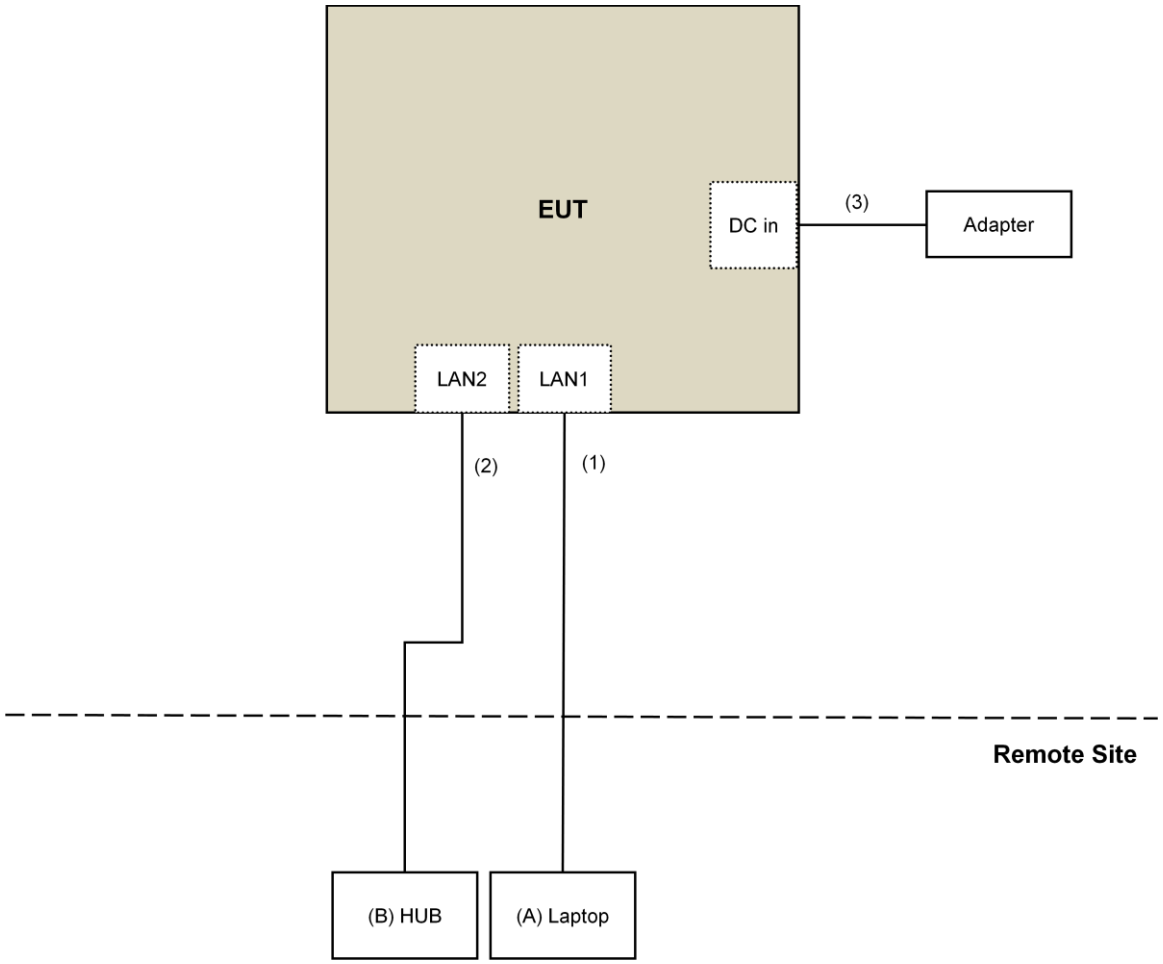
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
B.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab

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	1.8	No	0	Supplied by client

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the 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.

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

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 30dB 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	MY51210105	July 06, 2016	July 05, 2017
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-03	Nov. 11, 2015	Nov. 10, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Jan. 04, 2016	Jan. 03, 2017
RF Cable	8D-FB	CHGCAB-001-1 CHGCAB-001-2	Oct. 02, 2016	Oct. 01, 2017
	RF-141	CHGCAB-004	Oct. 02, 2016	Oct. 01, 2017
Horn_Antenna FT-RF	HA-07M18G-NF	0000320091110	Jan. 19, 2016	Jan. 18, 2017
Pre-Amplifier Agilent	8449B	3008A02578	June 22, 2016	June 21, 2017
RF Cable	NA	131205 131216 131217 SNMY23684/4	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-WD01	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 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. 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. Loop antenna was used for all emissions below 30 MHz.
8. Tested Date:Oct. 24 to 25, 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:

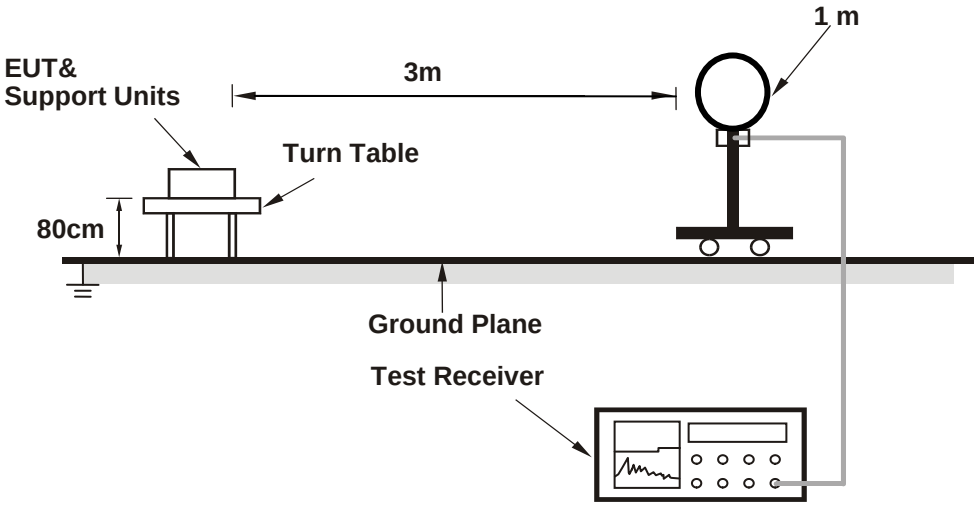
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

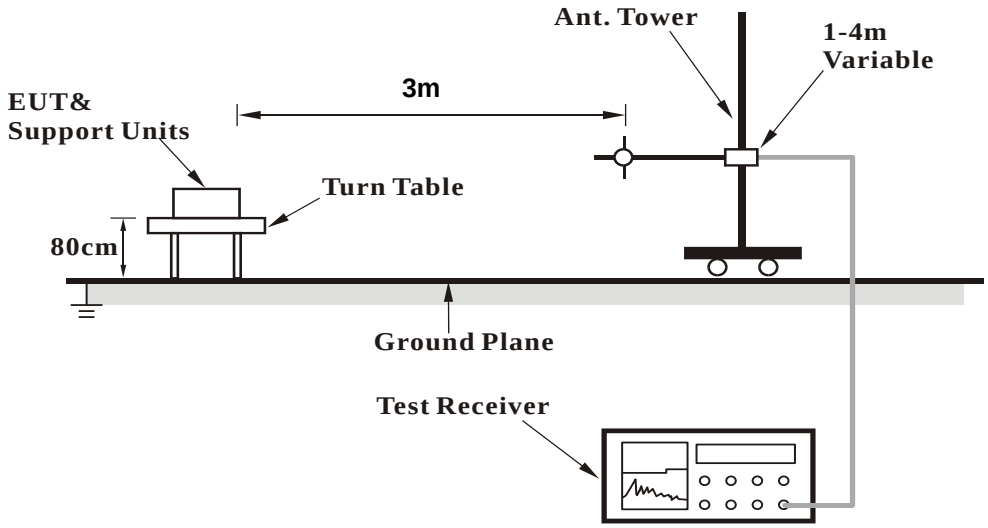
No deviation.

4.1.5 Test Setup

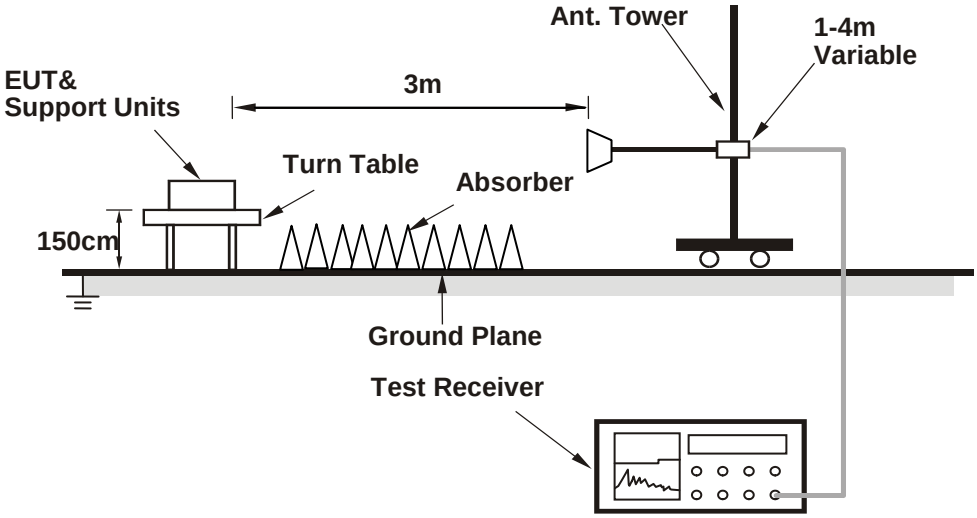
For Radiated emission below 30MHz



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. The communication partner run test program “Telnet paste command .txt” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

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	2390.00	63.3 PK	74.0	-10.7	2.18 H	83	67.5	-4.2
2	2390.00	53.6 AV	54.0	-0.4	2.18 H	83	57.8	-4.2
3	*2412.00	114.1 PK			2.18 H	83	118.2	-4.1
4	*2412.00	111.7 AV			2.18 H	83	115.8	-4.1
5	4824.00	54.2 PK	74.0	-19.8	1.93 H	284	51.9	2.3
6	4824.00	44.2 AV	54.0	-9.8	1.93 H	284	41.9	2.3
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	62.6 PK	74.0	-11.4	1.29 V	291	66.8	-4.2
2	2390.00	51.8 AV	54.0	-2.2	1.29 V	291	56.0	-4.2
3	*2412.00	110.9 PK			1.29 V	291	115.0	-4.1
4	*2412.00	108.5 AV			1.29 V	291	112.6	-4.1
5	4824.00	54.3 PK	74.0	-19.7	2.20 V	109	52.0	2.3
6	4824.00	46.1 AV	54.0	-7.9	2.20 V	109	43.8	2.3

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	58.4 PK	74.0	-15.6	1.89 H	94	62.6	-4.2
2	2390.00	48.2 AV	54.0	-5.8	1.89 H	94	52.4	-4.2
3	*2437.00	118.6 PK			1.89 H	94	122.6	-4.0
4	*2437.00	115.8 AV			1.89 H	94	119.8	-4.0
5	2483.50	59.7 PK	74.0	-14.3	1.89 H	94	63.7	-4.0
6	2483.50	48.8 AV	54.0	-5.2	1.89 H	94	52.8	-4.0
7	4874.00	54.4 PK	74.0	-19.6	1.91 H	274	51.9	2.5
8	4874.00	44.7 AV	54.0	-9.3	1.91 H	274	42.2	2.5
9	7311.00	57.8 PK	74.0	-16.2	1.50 H	200	48.9	8.9
10	7311.00	45.4 AV	54.0	-8.6	1.50 H	200	36.5	8.9
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	2390.00	58.4 PK	74.0	-15.6	1.58 V	288	62.6	-4.2
2	2390.00	46.7 AV	54.0	-7.3	1.58 V	288	50.9	-4.2
3	*2437.00	117.4 PK			1.58 V	288	121.4	-4.0
4	*2437.00	114.7 AV			1.58 V	288	118.7	-4.0
5	2483.50	60.5 PK	74.0	-13.5	1.58 V	288	64.5	-4.0
6	2483.50	47.3 AV	54.0	-6.7	1.58 V	288	51.3	-4.0
7	4874.00	54.7 PK	74.0	-19.3	2.14 V	123	52.2	2.5
8	4874.00	46.4 AV	54.0	-7.6	2.14 V	123	43.9	2.5
9	7311.00	57.4 PK	74.0	-16.6	1.50 V	77	48.5	8.9
10	7311.00	45.4 AV	54.0	-8.6	1.50 V	77	36.5	8.9

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	116.3 PK			2.13 H	109	120.4	-4.1
2	*2462.00	113.9 AV			2.13 H	109	118.0	-4.1
3	2483.50	64.9 PK	74.0	-9.1	2.13 H	109	68.9	-4.0
4	2483.50	53.4 AV	54.0	-0.6	2.13 H	109	57.4	-4.0
5	4924.00	54.6 PK	74.0	-19.4	1.87 H	259	52.1	2.5
6	4924.00	44.6 AV	54.0	-9.4	1.87 H	259	42.1	2.5
7	7386.00	57.5 PK	74.0	-16.5	1.51 H	190	48.2	9.3
8	7386.00	45.1 AV	54.0	-8.9	1.51 H	190	35.8	9.3
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	115.4 PK			1.89 V	110	119.5	-4.1
2	*2462.00	113.0 AV			1.89 V	110	117.1	-4.1
3	2483.50	63.2 PK	74.0	-10.8	1.89 V	110	67.2	-4.0
4	2483.50	52.7 AV	54.0	-1.3	1.89 V	110	56.7	-4.0
5	4924.00	54.3 PK	74.0	-19.7	2.19 V	124	51.8	2.5
6	4924.00	46.2 AV	54.0	-7.8	2.19 V	124	43.7	2.5
7	7386.00	57.1 PK	74.0	-16.9	1.48 V	90	47.8	9.3
8	7386.00	45.3 AV	54.0	-8.7	1.48 V	90	36.0	9.3

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	66.9 PK	74.0	-7.1	2.22 H	293	71.1	-4.2
2	2390.00	53.6 AV	54.0	-0.4	2.22 H	293	57.8	-4.2
3	*2412.00	113.8 PK			2.22 H	293	117.9	-4.1
4	*2412.00	104.1 AV			2.22 H	293	108.2	-4.1
5	4824.00	54.3 PK	74.0	-19.7	1.85 H	258	52.0	2.3
6	4824.00	44.6 AV	54.0	-9.4	1.85 H	258	42.3	2.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.2 PK	74.0	-7.8	1.91 V	95	70.4	-4.2
2	2390.00	51.8 AV	54.0	-2.2	1.91 V	95	56.0	-4.2
3	*2412.00	110.6 PK			1.91 V	95	114.7	-4.1
4	*2412.00	100.9 AV			1.91 V	95	105.0	-4.1
5	4824.00	54.7 PK	74.0	-19.3	2.25 V	118	52.4	2.3
6	4824.00	46.5 AV	54.0	-7.5	2.25 V	118	44.2	2.3

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) 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	63.9 PK	74.0	-10.1	1.82 H	256	68.1	-4.2
2	2390.00	50.5 AV	54.0	-3.5	1.82 H	256	54.7	-4.2
3	*2437.00	118.3 PK			1.82 H	256	122.3	-4.0
4	*2437.00	110.3 AV			1.82 H	256	114.3	-4.0
5	2483.50	58.3 PK	74.0	-15.7	1.82 H	256	62.3	-4.0
6	2483.50	47.1 AV	54.0	-6.9	1.82 H	256	51.1	-4.0
7	4874.00	54.1 PK	74.0	-19.9	1.88 H	250	51.6	2.5
8	4874.00	44.3 AV	54.0	-9.7	1.88 H	250	41.8	2.5
9	7311.00	58.0 PK	74.0	-16.0	1.50 H	193	49.1	8.9
10	7311.00	45.4 AV	54.0	-8.6	1.50 H	193	36.5	8.9
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	2390.00	63.2 PK	74.0	-10.8	1.85 V	99	67.4	-4.2
2	2390.00	48.7 AV	54.0	-5.3	1.85 V	99	52.9	-4.2
3	*2437.00	115.1 PK			1.85 V	99	119.1	-4.0
4	*2437.00	107.1 AV			1.85 V	99	111.1	-4.0
5	2483.50	57.6 PK	74.0	-16.4	1.85 V	99	61.6	-4.0
6	2483.50	45.3 AV	54.0	-8.7	1.85 V	99	49.3	-4.0
7	4874.00	54.1 PK	74.0	-19.9	2.22 V	109	51.6	2.5
8	4874.00	46.1 AV	54.0	-7.9	2.22 V	109	43.6	2.5
9	7311.00	56.6 PK	74.0	-17.4	1.43 V	101	47.7	8.9
10	7311.00	44.9 AV	54.0	-9.1	1.43 V	101	36.0	8.9

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	114.7 PK			2.15 H	254	118.8	-4.1
2	*2462.00	104.1 AV			2.15 H	254	108.2	-4.1
3	2483.50	69.6 PK	74.0	-4.4	2.15 H	254	73.6	-4.0
4	2483.50	53.5 AV	54.0	-0.5	2.15 H	254	57.5	-4.0
5	4924.00	54.5 PK	74.0	-19.5	1.88 H	250	52.0	2.5
6	4924.00	44.6 AV	54.0	-9.4	1.88 H	250	42.1	2.5
7	7386.00	58.3 PK	74.0	-15.7	1.50 H	179	49.0	9.3
8	7386.00	45.9 AV	54.0	-8.1	1.50 H	179	36.6	9.3
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	111.5 PK			1.91 V	105	115.6	-4.1
2	*2462.00	100.9 AV			1.91 V	105	105.0	-4.1
3	2483.50	68.9 PK	74.0	-5.1	1.91 V	105	72.9	-4.0
4	2483.50	51.7 AV	54.0	-2.3	1.91 V	105	55.7	-4.0
5	4924.00	53.5 PK	74.0	-20.5	2.26 V	110	51.0	2.5
6	4924.00	45.7 AV	54.0	-8.3	2.26 V	110	43.2	2.5
7	7386.00	57.0 PK	74.0	-17.0	1.41 V	114	47.7	9.3
8	7386.00	45.4 AV	54.0	-8.6	1.41 V	114	36.1	9.3

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	2390.00	66.6 PK	74.0	-7.4	2.28 H	286	70.8	-4.2
2	2390.00	53.6 AV	54.0	-0.4	2.28 H	286	57.8	-4.2
3	*2412.00	114.1 PK			2.28 H	286	118.2	-4.1
4	*2412.00	104.3 AV			2.28 H	286	108.4	-4.1
5	4824.00	54.3 PK	74.0	-19.7	1.87 H	238	52.0	2.3
6	4824.00	44.6 AV	54.0	-9.4	1.87 H	238	42.3	2.3
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	65.8 PK	74.0	-8.2	1.67 V	80	70.0	-4.2
2	2390.00	51.9 AV	54.0	-2.1	1.67 V	80	56.1	-4.2
3	*2412.00	113.7 PK			1.67 V	80	117.8	-4.1
4	*2412.00	103.3 AV			1.67 V	80	107.4	-4.1
5	4824.00	54.1 PK	74.0	-19.9	2.28 V	139	51.8	2.3
6	4824.00	46.3 AV	54.0	-7.7	2.28 V	139	44.0	2.3

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	63.6 PK	74.0	-10.4	1.77 H	245	67.8	-4.2
2	2390.00	50.3 AV	54.0	-3.7	1.77 H	245	54.5	-4.2
3	*2437.00	117.7 PK			1.77 H	245	121.7	-4.0
4	*2437.00	109.8 AV			1.77 H	245	113.8	-4.0
5	2483.50	58.5 PK	74.0	-15.5	1.77 H	245	62.5	-4.0
6	2483.50	47.4 AV	54.0	-6.6	1.77 H	245	51.4	-4.0
7	4874.00	54.0 PK	74.0	-20.0	1.86 H	242	51.5	2.5
8	4874.00	44.3 AV	54.0	-9.7	1.86 H	242	41.8	2.5
9	7311.00	58.4 PK	74.0	-15.6	1.49 H	174	49.5	8.9
10	7311.00	46.1 AV	54.0	-7.9	1.49 H	174	37.2	8.9
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	2390.00	62.9 PK	74.0	-11.1	1.67 V	83	67.1	-4.2
2	2390.00	48.5 AV	54.0	-5.5	1.67 V	83	52.7	-4.2
3	*2437.00	114.5 PK			1.67 V	83	118.5	-4.0
4	*2437.00	106.6 AV			1.67 V	83	110.6	-4.0
5	2483.50	57.8 PK	74.0	-16.2	1.67 V	83	61.8	-4.0
6	2483.50	45.6 AV	54.0	-8.4	1.67 V	83	49.6	-4.0
7	4874.00	54.3 PK	74.0	-19.7	2.24 V	125	51.8	2.5
8	4874.00	46.2 AV	54.0	-7.8	2.24 V	125	43.7	2.5
9	7311.00	57.1 PK	74.0	-16.9	1.41 V	124	48.2	8.9
10	7311.00	45.4 AV	54.0	-8.6	1.41 V	124	36.5	8.9

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	114.8 PK			2.16 H	261	118.9	-4.1
2	*2462.00	104.2 AV			2.16 H	261	108.3	-4.1
3	2483.50	69.1 PK	74.0	-4.9	2.16 H	261	73.1	-4.0
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**2.16 H**	**261**	**57.9**	**-4.0**
5	4924.00	54.4 PK	74.0	-19.6	1.82 H	234	51.9	2.5
6	4924.00	44.5 AV	54.0	-9.5	1.82 H	234	42.0	2.5
7	7386.00	58.9 PK	74.0	-15.1	1.53 H	164	49.6	9.3
8	7386.00	46.5 AV	54.0	-7.5	1.53 H	164	37.2	9.3
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	111.9 PK			1.74 V	77	116.0	-4.1
2	*2462.00	101.9 AV			1.74 V	77	106.0	-4.1
3	2483.50	63.3 PK	74.0	-10.7	1.74 V	77	67.3	-4.0
4	2483.50	50.2 AV	54.0	-3.8	1.74 V	77	54.2	-4.0
5	4924.00	54.4 PK	74.0	-19.6	2.30 V	117	51.9	2.5
6	4924.00	46.4 AV	54.0	-7.6	2.30 V	117	43.9	2.5
7	7386.00	57.3 PK	74.0	-16.7	1.45 V	134	48.0	9.3
8	7386.00	45.7 AV	54.0	-8.3	1.45 V	134	36.4	9.3

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	67.8 PK	74.0	-6.2	2.28 H	254	72.0	-4.2
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**2.28 H**	**254**	**58.1**	**-4.2**
3	*2422.00	110.3 PK			2.28 H	254	114.4	-4.1
4	*2422.00	100.5 AV			2.28 H	254	104.6	-4.1
5	4844.00	54.1 PK	74.0	-19.9	1.87 H	226	51.8	2.3
6	4844.00	44.5 AV	54.0	-9.5	1.87 H	226	42.2	2.3
7	7266.00	58.9 PK	74.0	-15.1	1.48 H	162	50.1	8.8
8	7266.00	46.5 AV	54.0	-7.5	1.48 H	162	37.7	8.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.2 PK	74.0	-10.8	1.84 V	285	67.4	-4.2
2	2390.00	50.3 AV	54.0	-3.7	1.84 V	285	54.5	-4.2
3	*2422.00	107.9 PK			1.84 V	285	112.0	-4.1
4	*2422.00	99.4 AV			1.84 V	285	103.5	-4.1
5	4844.00	54.8 PK	74.0	-19.2	2.28 V	115	52.5	2.3
6	4844.00	46.6 AV	54.0	-7.4	2.28 V	115	44.3	2.3
7	7266.00	57.2 PK	74.0	-16.8	1.40 V	145	48.4	8.8
8	7266.00	45.9 AV	54.0	-8.1	1.40 V	145	37.1	8.8

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	67.4 PK	74.0	-6.6	1.68 H	330	71.6	-4.2
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.68 H**	**330**	**58.1**	**-4.2**
3	*2437.00	111.4 PK			1.68 H	330	115.4	-4.0
4	*2437.00	101.4 AV			1.68 H	330	105.4	-4.0
5	2483.50	66.8 PK	74.0	-7.2	1.68 H	330	70.8	-4.0
6	2483.50	51.4 AV	54.0	-2.6	1.68 H	330	55.4	-4.0
7	4874.00	54.3 PK	74.0	-19.7	1.85 H	236	51.8	2.5
8	4874.00	44.8 AV	54.0	-9.2	1.85 H	236	42.3	2.5
9	7311.00	58.8 PK	74.0	-15.2	1.49 H	170	49.9	8.9
10	7311.00	46.6 AV	54.0	-7.4	1.49 H	170	37.7	8.9
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	2390.00	66.7 PK	74.0	-7.3	1.81 V	276	70.9	-4.2
2	2390.00	52.1 AV	54.0	-1.9	1.81 V	276	56.3	-4.2
3	*2437.00	108.2 PK			1.81 V	276	112.2	-4.0
4	*2437.00	98.2 AV			1.81 V	276	102.2	-4.0
5	2483.50	66.1 PK	74.0	-7.9	1.81 V	276	70.1	-4.0
6	2483.50	49.6 AV	54.0	-4.4	1.81 V	276	53.6	-4.0
7	4874.00	54.7 PK	74.0	-19.3	2.29 V	131	52.2	2.5
8	4874.00	46.7 AV	54.0	-7.3	2.29 V	131	44.2	2.5
9	7311.00	57.6 PK	74.0	-16.4	1.38 V	140	48.7	8.9
10	7311.00	46.3 AV	54.0	-7.7	1.38 V	140	37.4	8.9

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) 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	*2452.00	105.7 PK			2.79 H	306	109.8	-4.1
2	*2452.00	98.7 AV			2.79 H	306	102.8	-4.1
3	2483.50	65.0 PK	74.0	-9.0	2.79 H	306	69.0	-4.0
4	2483.50	51.5 AV	54.0	-2.5	2.79 H	306	55.5	-4.0
5	4904.00	54.6 PK	74.0	-19.4	1.80 H	237	52.1	2.5
6	4904.00	45.3 AV	54.0	-8.7	1.80 H	237	42.8	2.5
7	7356.00	58.7 PK	74.0	-15.3	1.51 H	185	49.5	9.2
8	7356.00	46.5 AV	54.0	-7.5	1.51 H	185	37.3	9.2
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	*2452.00	109.3 PK			1.87 V	293	113.4	-4.1
2	*2452.00	99.1 AV			1.87 V	293	103.2	-4.1
3	2483.50	67.0 PK	74.0	-7.0	1.87 V	293	71.0	-4.0
4	2483.50	53.3 AV	54.0	-0.7	1.87 V	293	57.3	-4.0
5	4904.00	55.3 PK	74.0	-18.7	2.34 V	121	52.8	2.5
6	4904.00	47.2 AV	54.0	-6.8	2.34 V	121	44.7	2.5
7	7356.00	57.8 PK	74.0	-16.2	1.35 V	128	48.6	9.2
8	7356.00	46.6 AV	54.0	-7.4	1.35 V	128	37.4	9.2

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.

Below 1GHz Data:

802.11b

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9MHz ~ 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	288.00	36.7 QP	46.0	-9.3	1.00 H	73	44.5	-7.8
2	296.00	38.8 QP	46.0	-7.2	1.00 H	54	46.3	-7.5
3	464.03	33.1 QP	46.0	-12.9	2.00 H	122	36.1	-3.0
4	500.01	35.8 QP	46.0	-10.2	1.50 H	133	38.4	-2.6
5	695.98	32.6 QP	46.0	-13.4	1.00 H	43	31.2	1.4
6	856.00	35.1 QP	46.0	-10.9	1.00 H	33	31.5	3.6
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	92.37	32.7 QP	43.5	-10.8	1.00 V	211	46.4	-13.7
2	288.02	32.1 QP	46.0	-13.9	1.50 V	233	39.9	-7.8
3	296.00	36.8 QP	46.0	-9.2	1.50 V	235	44.3	-7.5
4	464.03	32.6 QP	46.0	-13.4	1.00 V	104	35.6	-3.0
5	499.99	34.7 QP	46.0	-11.3	1.00 V	32	37.3	-2.6
6	874.99	33.8 QP	46.0	-12.2	1.00 V	326	29.9	3.9

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	EMC-03	Sep. 29, 2016	Sep. 28, 2017
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 2017
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:Oct. 25, 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.

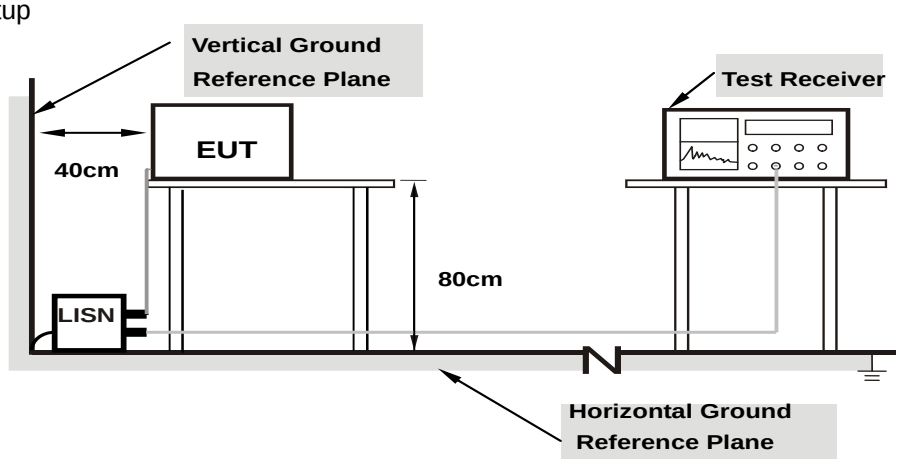
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

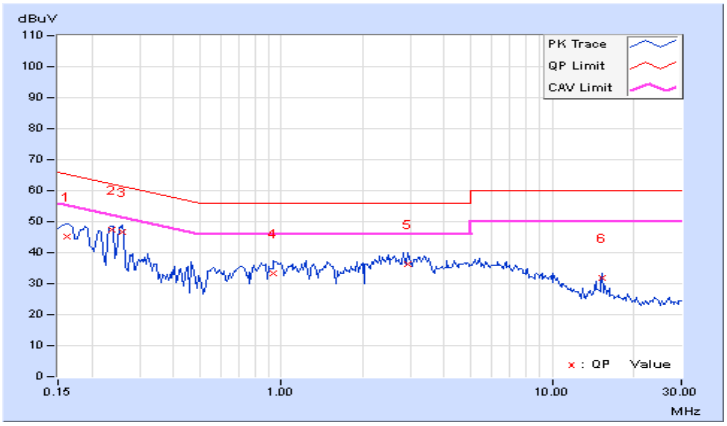
4.2.7 Test Results

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

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.16172	10.24	35.10	23.46	45.34	33.70	65.38	55.38	-20.04	-21.68
0.23594	10.25	37.09	33.69	47.34	43.94	62.24	52.24	-14.90	-8.30
0.25938	**10.25**	**36.50**	**35.14**	**46.75**	**45.39**	**61.45**	**51.45**	**-14.70**	**-6.06**
0.93906	10.28	23.22	18.74	33.50	29.02	56.00	46.00	-22.50	-16.98
2.93359	10.47	25.68	18.89	36.15	29.36	56.00	46.00	-19.85	-16.64
15.32031	11.12	20.67	13.49	31.79	24.61	60.00	50.00	-28.21	-25.39

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.

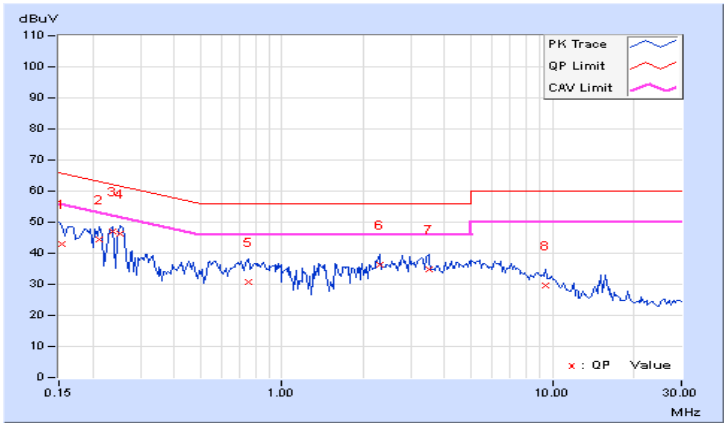


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.28	32.67	20.40	42.95	30.68	65.79	55.79	-22.84	-25.11
2	0.21250	10.22	34.04	29.21	44.26	39.43	63.11	53.11	-18.85	-13.68
3	0.23594	10.23	36.68	32.80	46.91	43.03	62.24	52.24	-15.33	-9.21
4	0.25156	10.24	36.01	31.44	46.25	41.68	61.71	51.71	-15.46	-10.03
5	0.75156	10.38	20.53	13.01	30.91	23.39	56.00	46.00	-25.09	-22.61
6	2.29297	10.43	25.70	19.13	36.13	29.56	56.00	46.00	-19.87	-16.44
7	3.49219	10.55	24.15	17.54	34.70	28.09	56.00	46.00	-21.30	-17.91
8	9.44531	10.85	18.72	13.82	29.57	24.67	60.00	50.00	-30.43	-25.33

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.

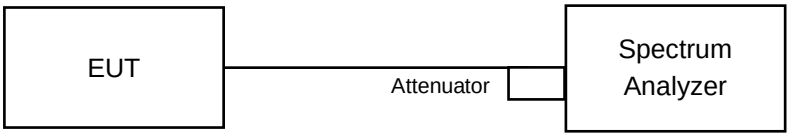


4.3 6dB Bandwidth Measurement

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	10.18	10.18	10.18	0.5	PASS
6	2437	10.17	10.17	10.17	0.5	PASS
11	2462	10.17	10.16	10.17	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	16.63	16.62	16.59	0.5	PASS
6	2437	16.52	16.50	16.53	0.5	PASS
11	2462	16.63	16.62	16.54	0.5	PASS

802.11n (HT20)

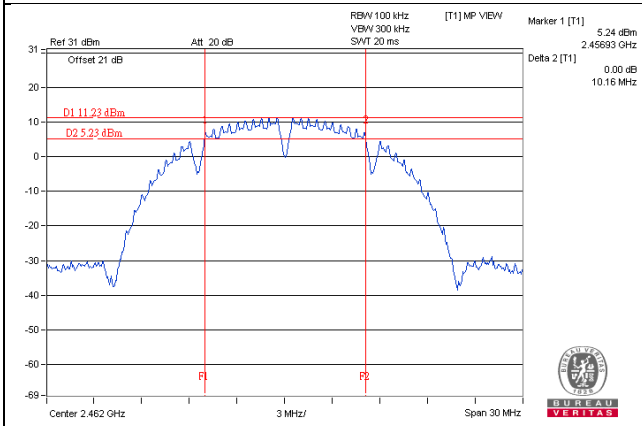
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	17.71	17.72	17.72	0.5	Pass
6	2437	17.75	17.79	17.75	0.5	Pass
11	2462	17.72	17.72	17.75	0.5	Pass

802.11n (HT40)

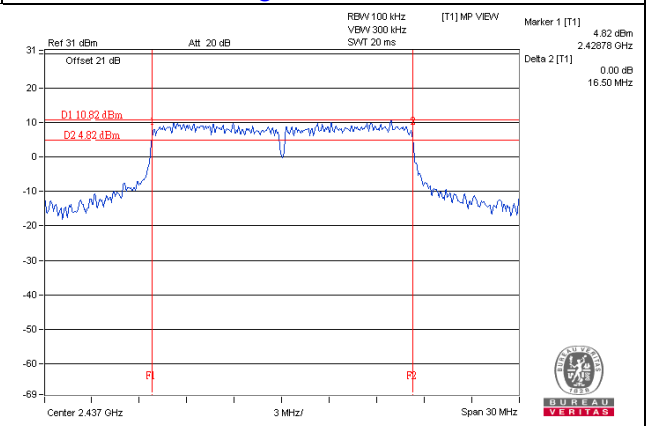
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
3	2422	36.58	36.59	36.59	0.5	Pass
6	2437	36.60	36.62	36.60	0.5	Pass
9	2452	36.61	36.61	36.60	0.5	Pass

Spectrum Plot of Worst Value

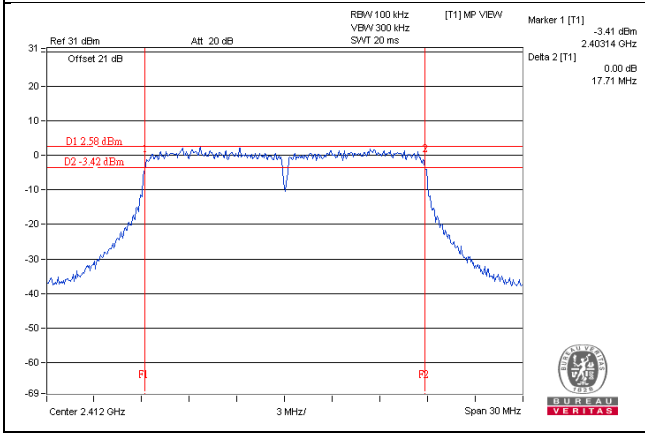
802.11b / Chain 1 : CH11



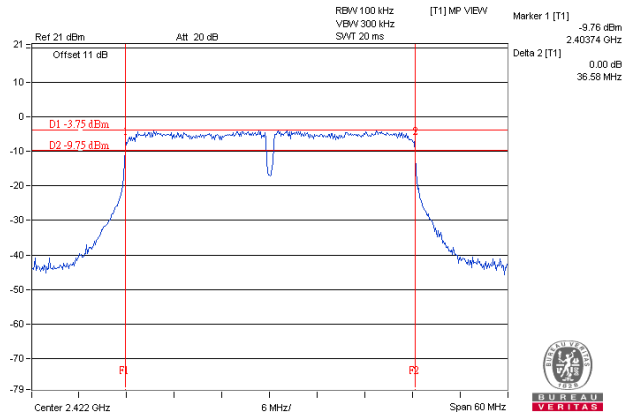
802.11g / Chain 1 : CH6



802.11n (HT20) / Chain 0 : CH1



802.11n (HT40) / Chain 0 : CH3



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

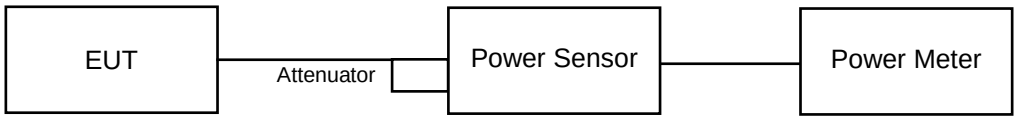
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the 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

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	21.48	21.73	21.48	430.146	26.34	30	Pass
6	2437	24.58	24.55	25.11	896.52	29.53	30	Pass
11	2462	21.45	22.14	22.28	472.363	26.74	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	17.22	17.75	17.63	170.232	22.31	30	Pass
6	2437	23.69	24.12	24.17	753.326	28.77	30	Pass
11	2462	17.41	17.66	17.59	170.838	22.33	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	17.27	17.34	17.18	159.773	22.04	30	Pass
6	2437	23.77	24.06	24.15	752.931	28.77	30	Pass
11	2462	17.15	17.65	17.55	166.975	22.23	30	Pass

802.11n (HT40)

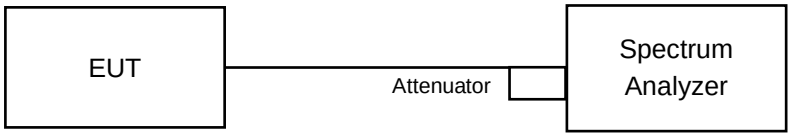
Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	14.70	15.04	14.38	88.843	19.49	30	Pass
6	2437	18.14	18.43	18.22	201.2	23.04	30	Pass
9	2452	14.42	14.78	14.77	87.722	19.43	30	Pass

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 instrument center frequency to DTS channel center frequency.
b) Set span to at least 1.5 times the OBW.
c) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz. .
d) Set VBW ≥3 x RBW.
e) Detector = power averaging (RMS) or sample detector (when RMS not available).
f) Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g) Sweep time = auto couple.
h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
i) Use the peak marker function to determine the maximum amplitude level.

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	-11.09	4.77	-6.32	5.35	Pass
	6	2437	-8.68	4.77	-3.91	5.35	Pass
	11	2462	-11.30	4.77	-6.53	5.35	Pass
1	1	2412	-10.63	4.77	-5.86	5.35	Pass
	6	2437	-7.91	4.77	-3.14	5.35	Pass
	11	2462	-10.51	4.77	-5.74	5.35	Pass
2	1	2412	-11.87	4.77	-7.10	5.35	Pass
	6	2437	-8.50	4.77	-3.73	5.35	Pass
	11	2462	-10.74	4.77	-5.97	5.35	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.65dBi > 6dBi , so the power limit shall be reduced to 8-(8.65-6) = 5.35dBm.

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	-16.71	4.77	-11.94	5.35	Pass
	6	2437	-8.27	4.77	-3.50	5.35	Pass
	11	2462	-16.22	4.77	-11.45	5.35	Pass
1	1	2412	-16.02	4.77	-11.25	5.35	Pass
	6	2437	-8.18	4.77	-3.41	5.35	Pass
	11	2462	-16.10	4.77	-11.33	5.35	Pass
2	1	2412	-15.57	4.77	-10.80	5.35	Pass
	6	2437	-8.92	4.77	-4.15	5.35	Pass
	11	2462	-15.25	4.77	-10.48	5.35	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.65dBi > 6dBi , so the power limit shall be reduced to 8-(8.65-6) = 5.35dBm.

802.11n (HT20)

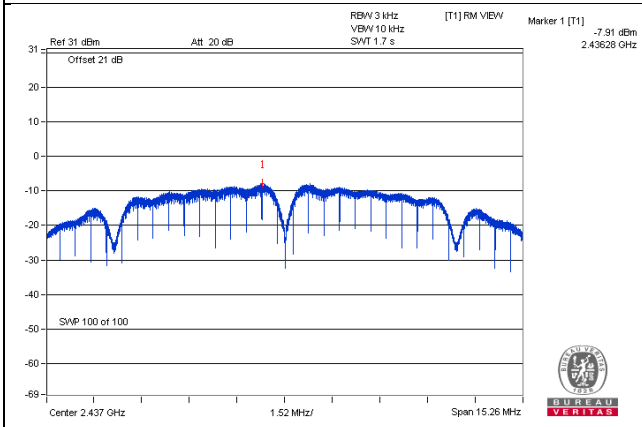
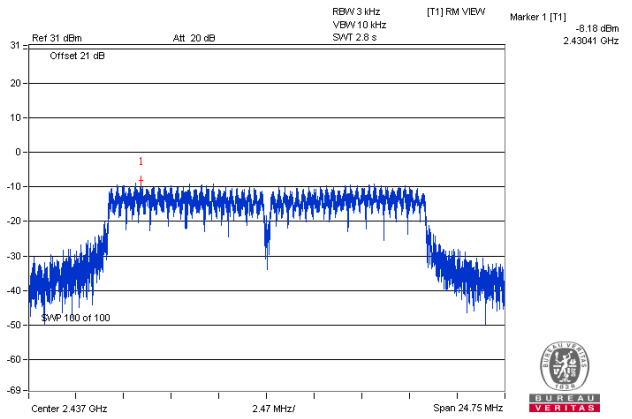
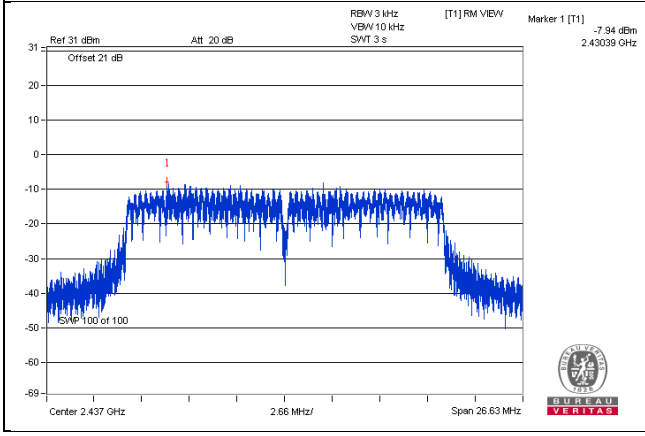
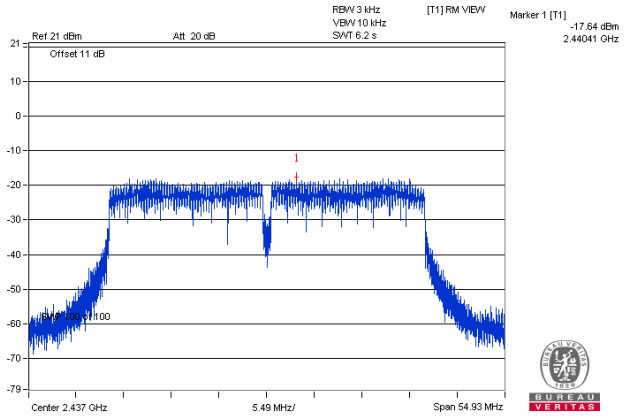
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-16.15	4.77	-11.38	5.35	Pass
	6	2437	-7.94	4.77	-3.17	5.35	Pass
	11	2462	-15.89	4.77	-11.12	5.35	Pass
1	1	2412	-15.27	4.77	-10.50	5.35	Pass
	6	2437	-9.73	4.77	-4.96	5.35	Pass
	11	2462	-16.94	4.77	-12.17	5.35	Pass
2	1	2412	-15.38	4.77	-10.61	5.35	Pass
	6	2437	-8.48	4.77	-3.71	5.35	Pass
	11	2462	-15.19	4.77	-10.42	5.35	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.65dBi > 6dBi , so the power limit shall be reduced to 8-(8.65-6) = 5.35dBm.

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	-22.16	4.77	-17.39	5.35	Pass
	6	2437	-17.78	4.77	-13.01	5.35	Pass
	9	2452	-22.09	4.77	-17.32	5.35	Pass
1	3	2422	-20.77	4.77	-16.00	5.35	Pass
	6	2437	-17.64	4.77	-12.87	5.35	Pass
	9	2452	-21.89	4.77	-17.12	5.35	Pass
2	3	2422	-21.53	4.77	-16.76	5.35	Pass
	6	2437	-18.40	4.77	-13.63	5.35	Pass
	9	2452	-21.38	4.77	-16.61	5.35	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.65dBi > 6dBi , so the power limit shall be reduced to 8-(8.65-6) = 5.35dBm.

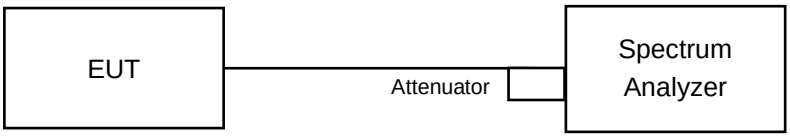
Spectrum Plot of Worst Value	
802.11b / Chain 1 : CH6	**802.11g / Chain 1 : CH6**
	
802.11n (HT20) / Chain 0 : CH6	**802.11n (HT40) / Chain 1 : CH6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB 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

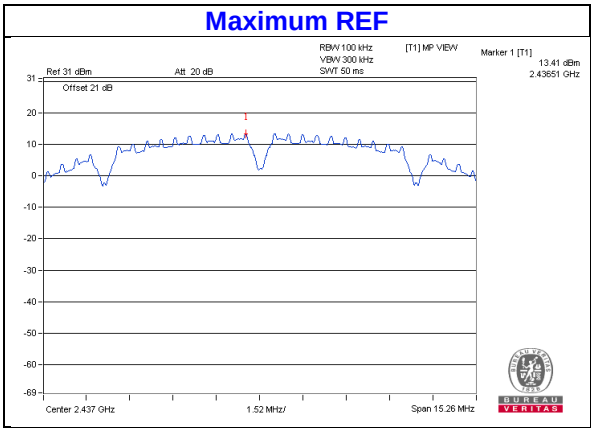
Same as Item 4.3.6

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 30dB offset below D1. It shows compliance with the requirement.

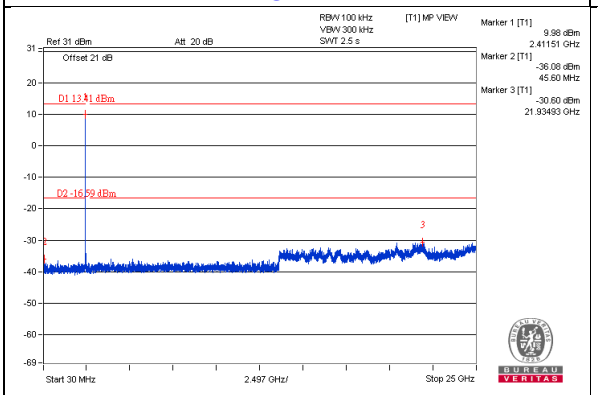
802.11b

Maximum REF

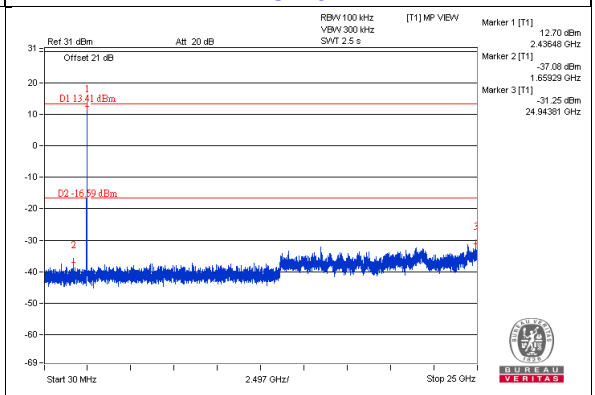


CHAIN 0

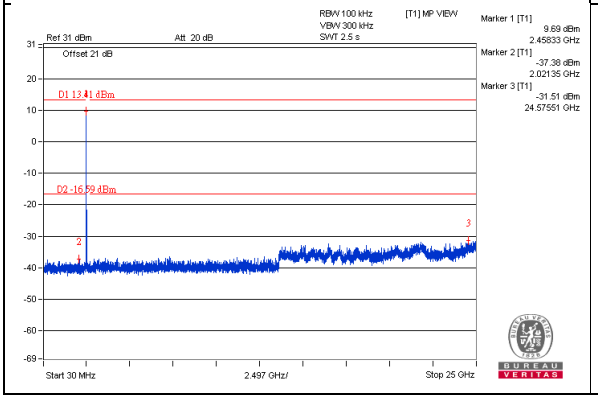
CH 1



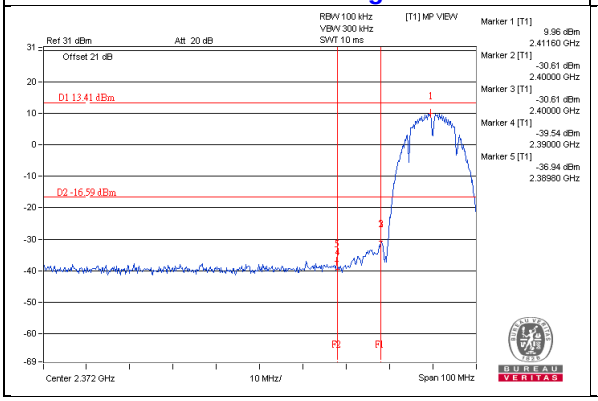
CH 6



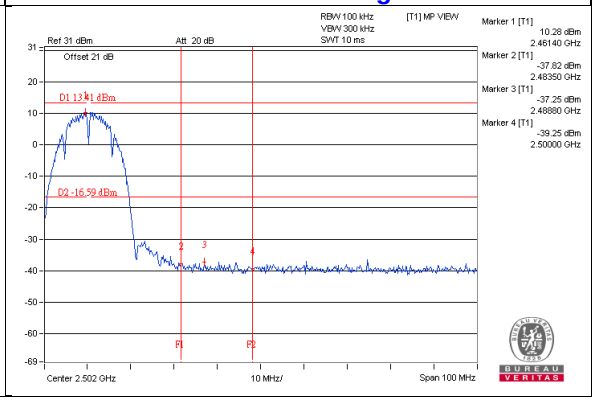
CH 11



CH 1 Band edge

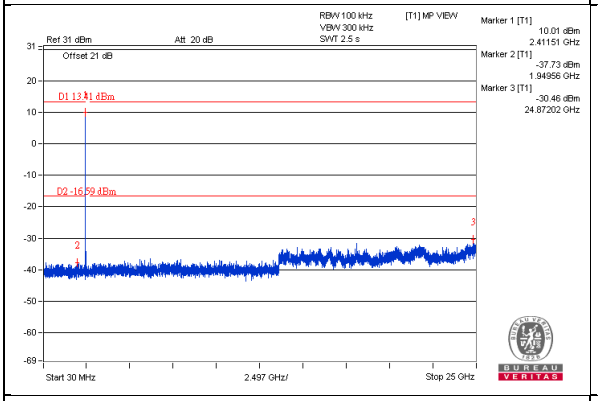


CH 11 Band edge

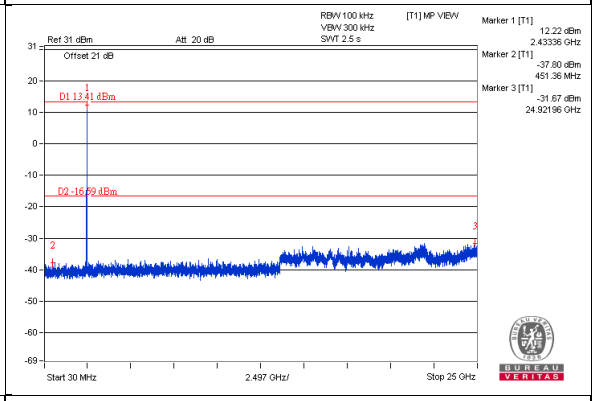


CHAIN 1

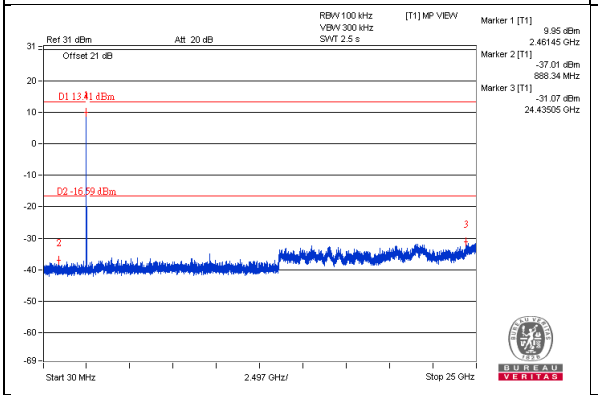
CH 1



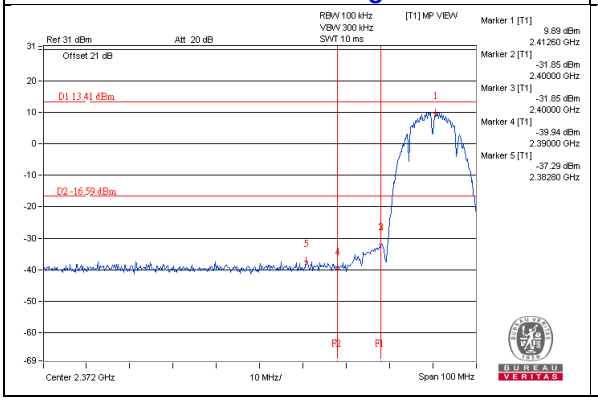
CH 6



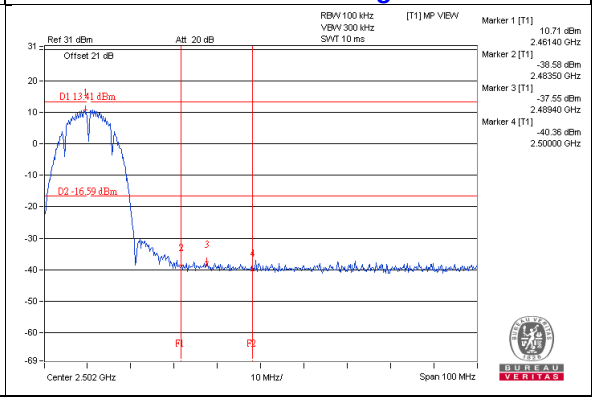
CH 11



CH 1 Band edge

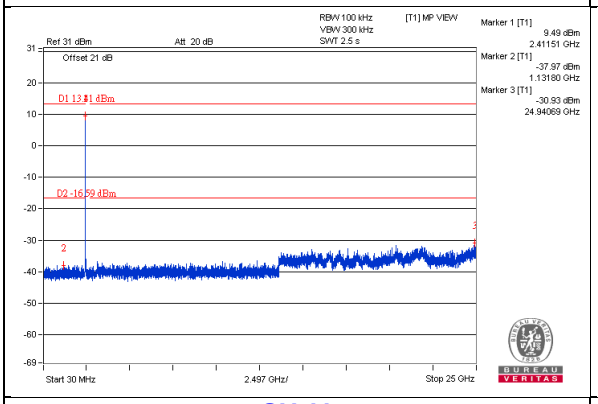


CH 11 Band edge

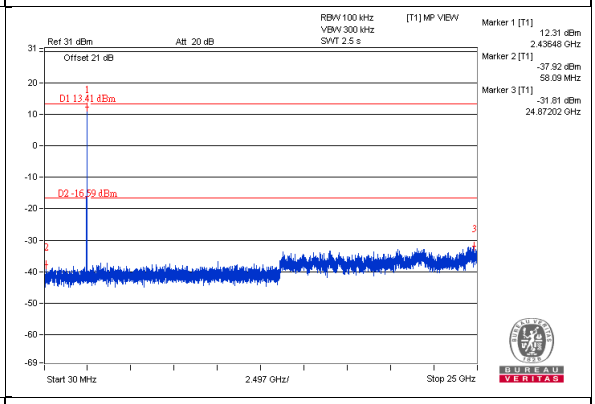


CHAIN 2

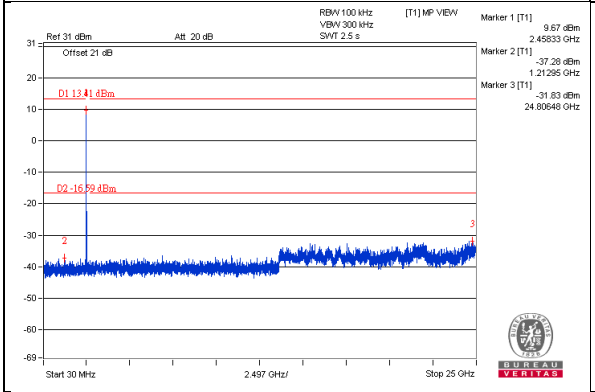
CH 1



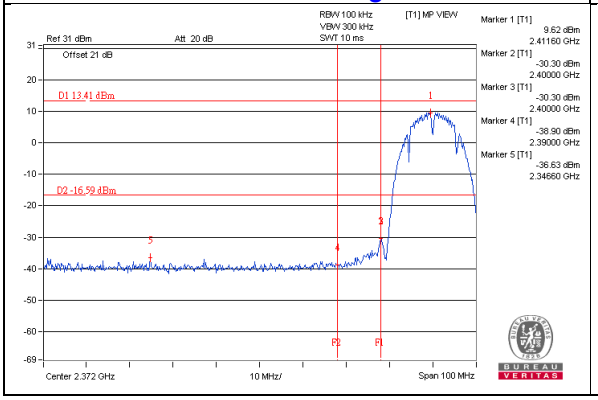
CH 6



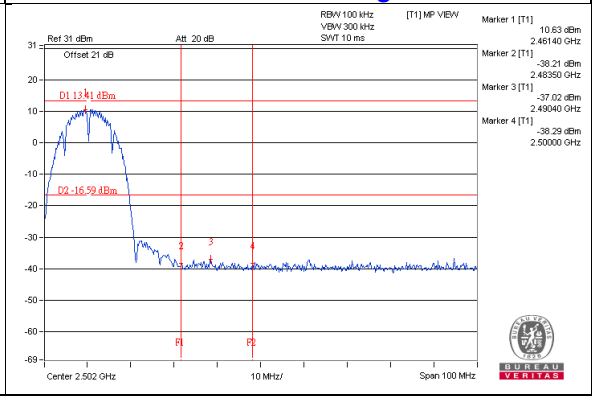
CH 11



CH 1 Band edge

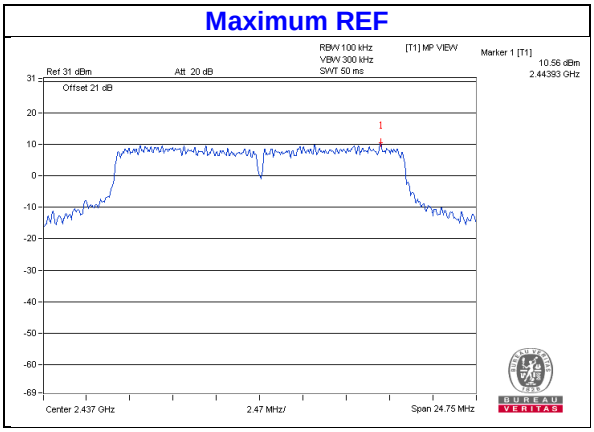


CH 11 Band edge



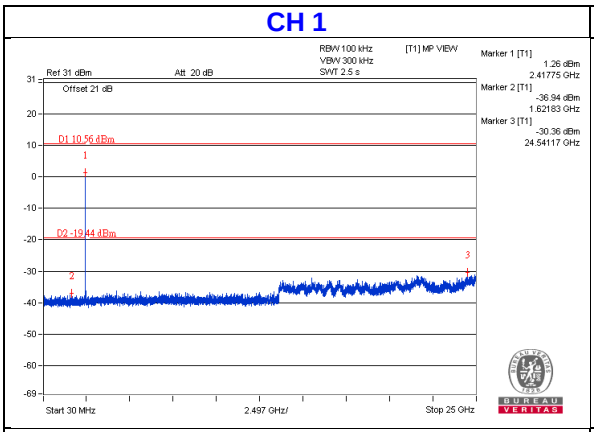
802.11g

Maximum REF

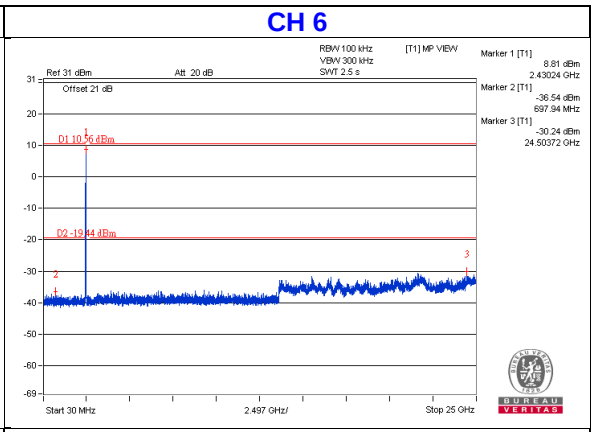


CHAIN 0

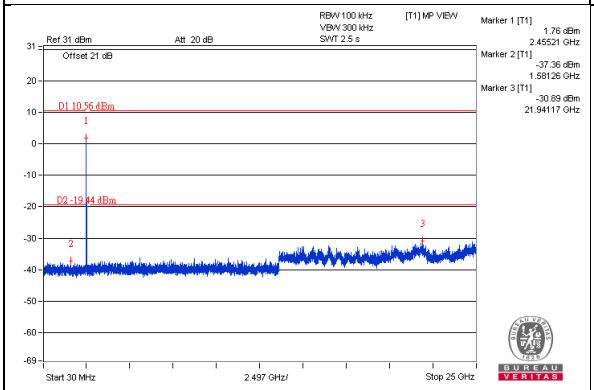
CH 1



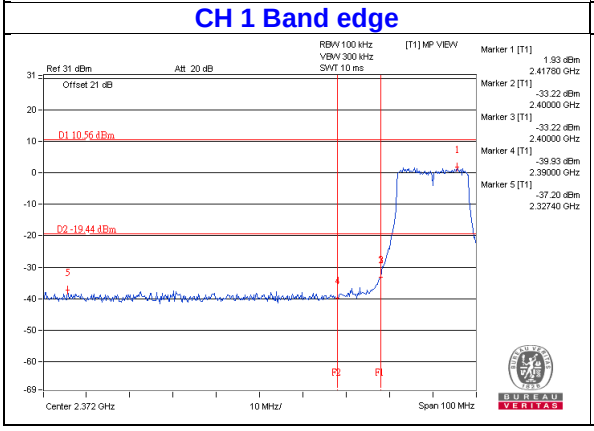
CH 6



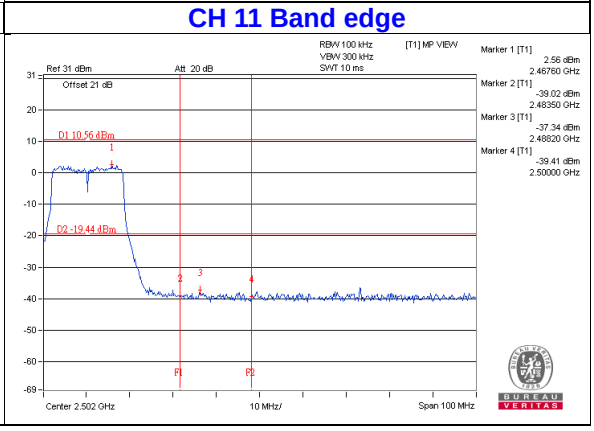
CH 11



CH 1 Band edge

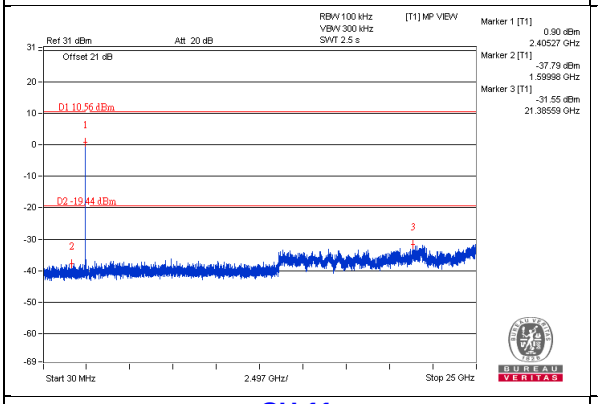


CH 11 Band edge

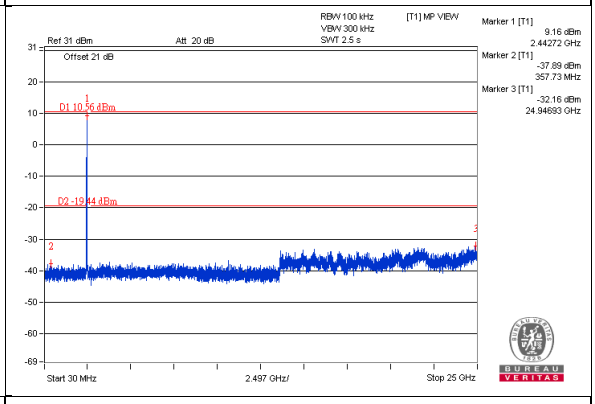


CHAIN 1

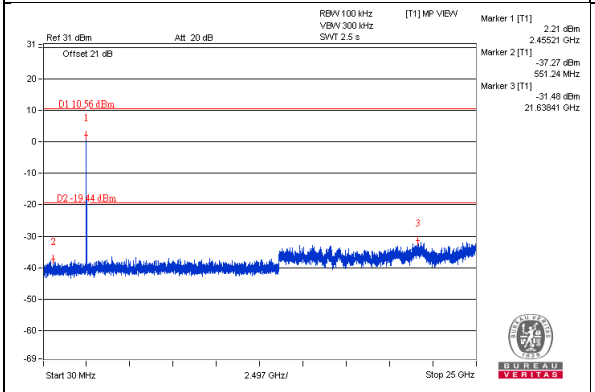
CH 1



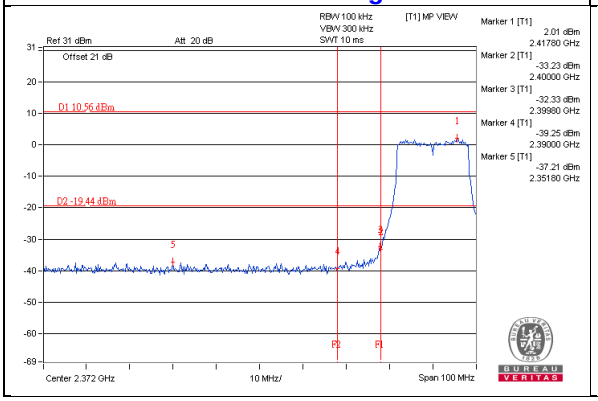
CH 6



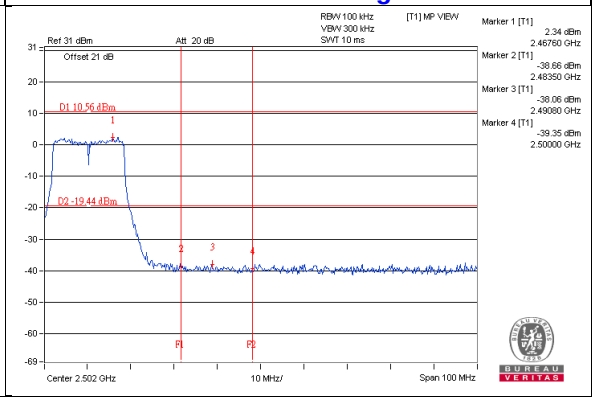
CH 11



CH 1 Band edge

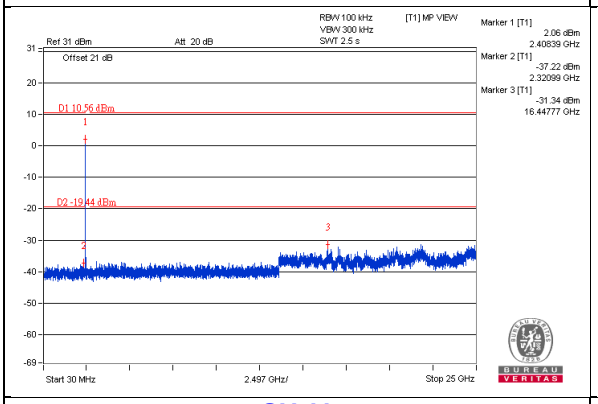


CH 11 Band edge

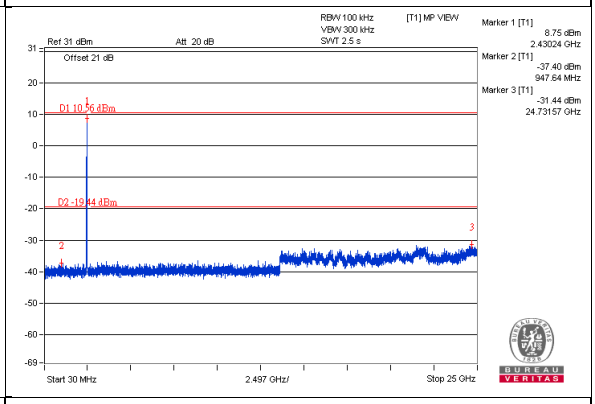


CHAIN 2

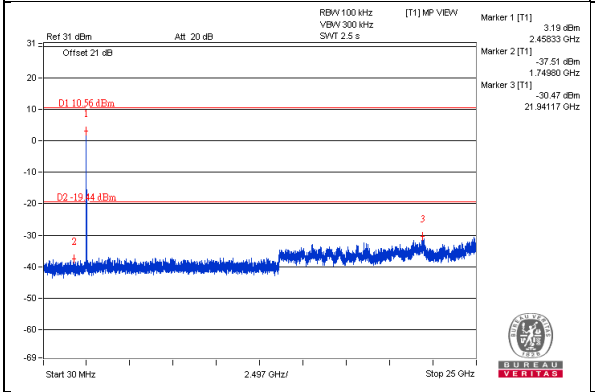
CH 1



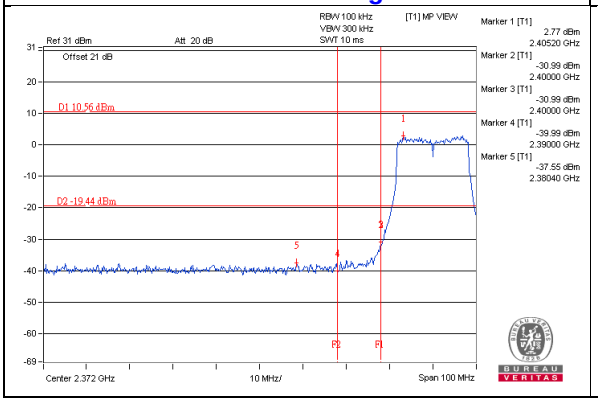
CH 6



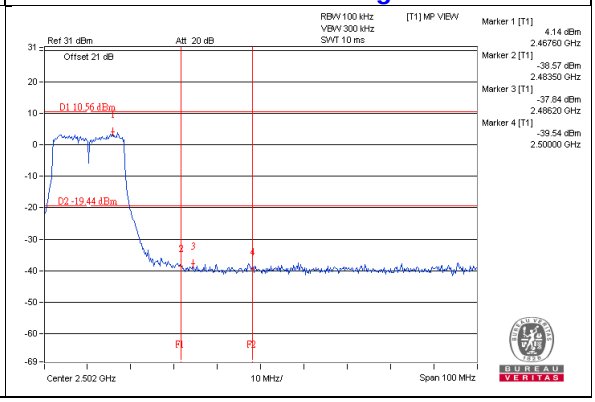
CH 11



CH 1 Band edge

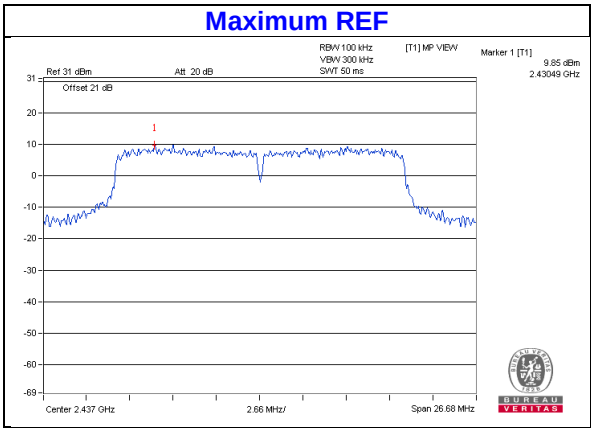


CH 11 Band edge



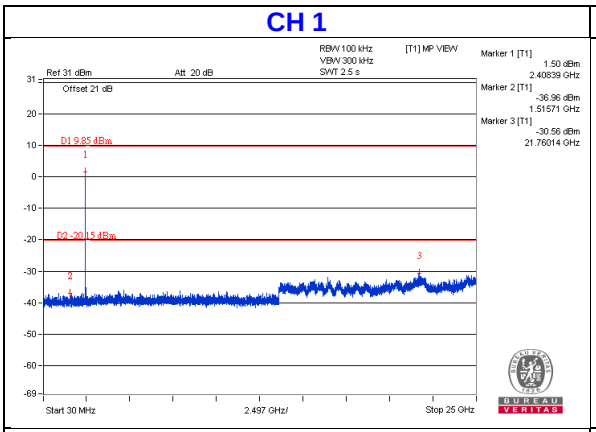
802.11n (HT20)

Maximum REF

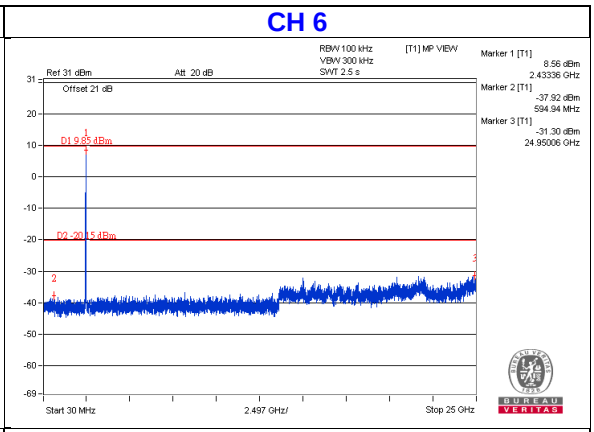


CHAIN 0

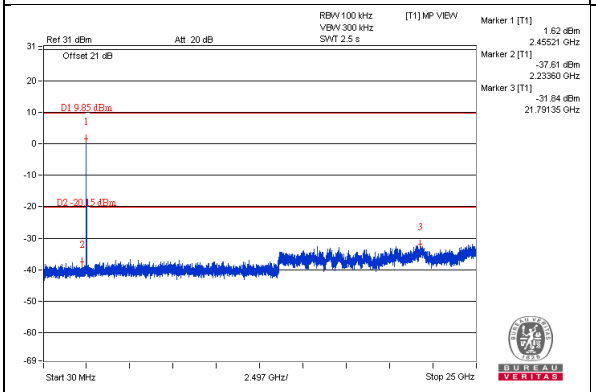
CH 1



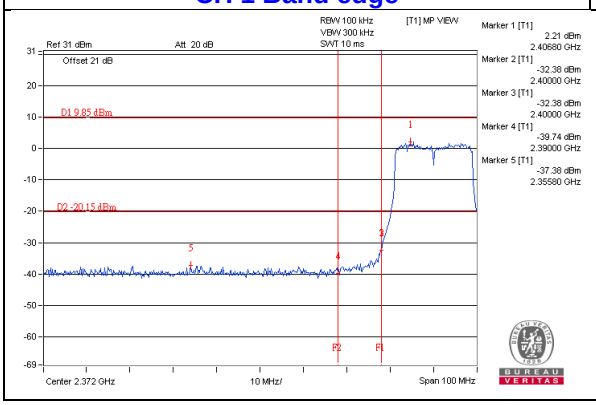
CH 6



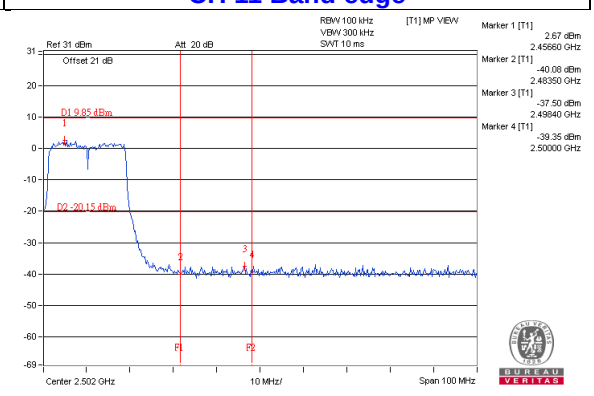
CH 11



CH 1 Band edge

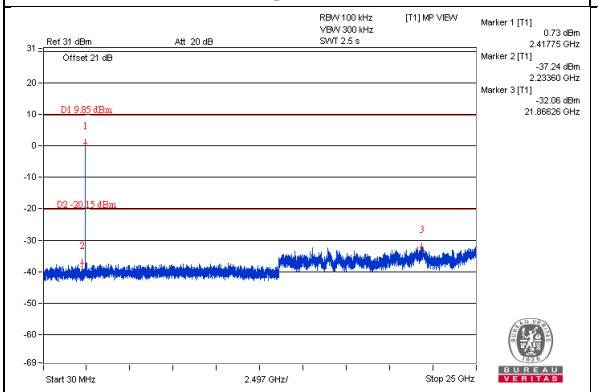


CH 11 Band edge



CHAIN 1

CH 1



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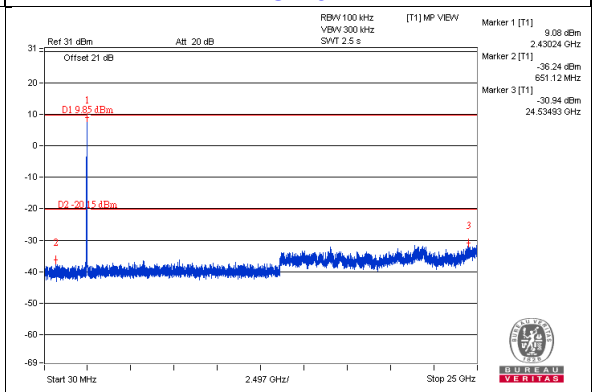

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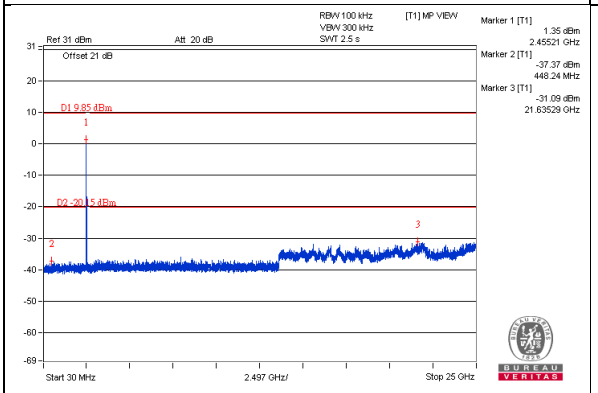

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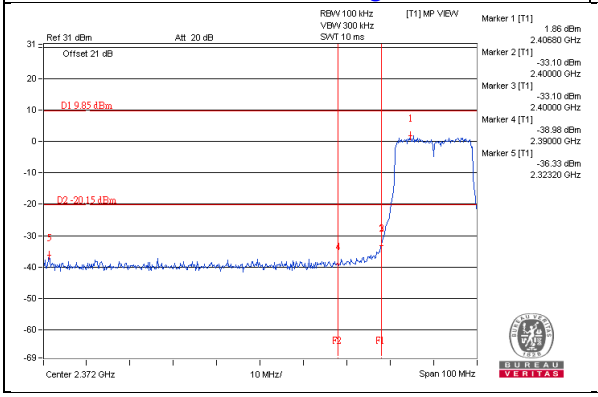

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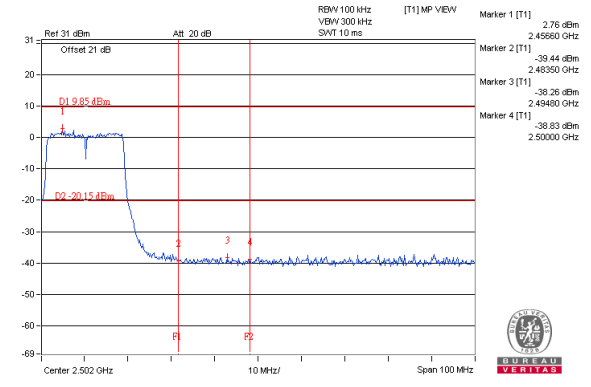
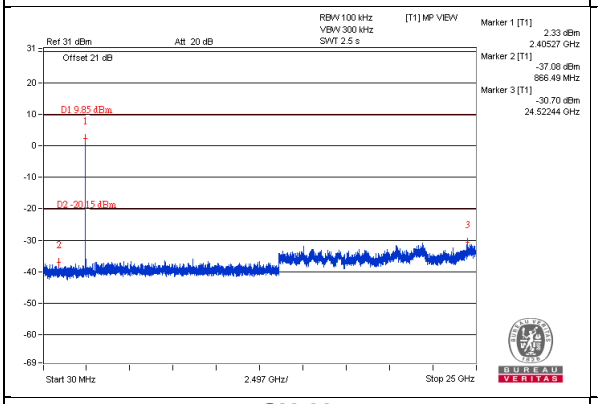


CHAIN 2

CH 1



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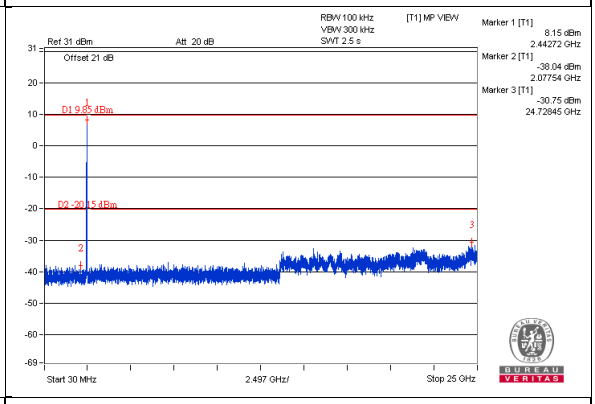

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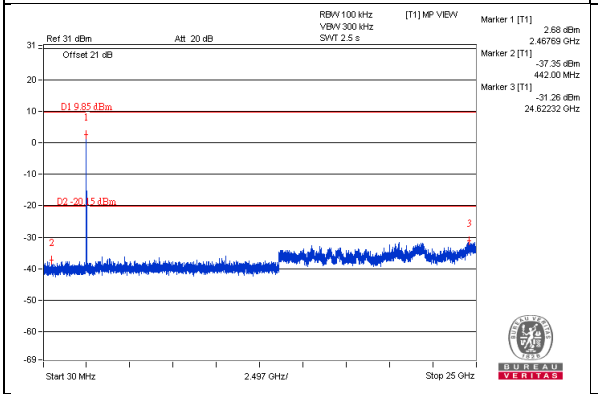
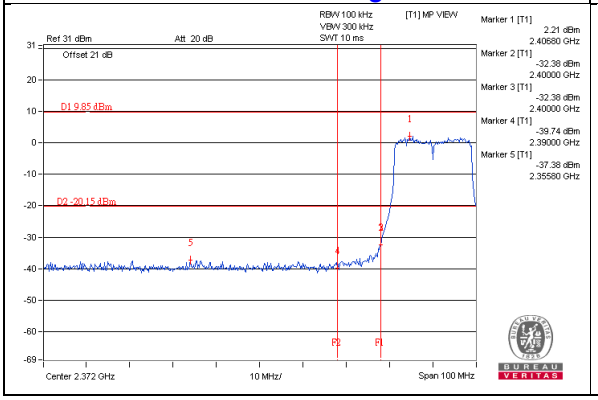
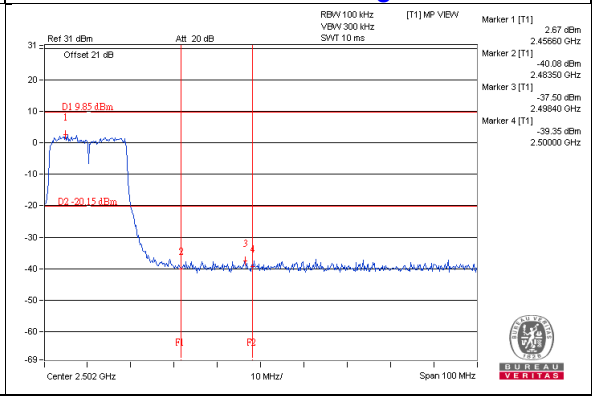


CH 1 Band edge

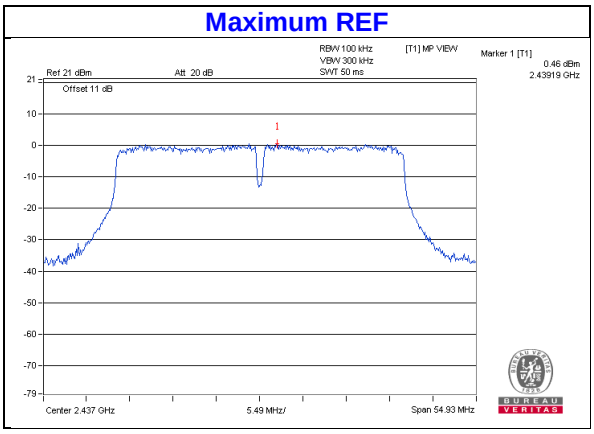


CH 11 Band edge



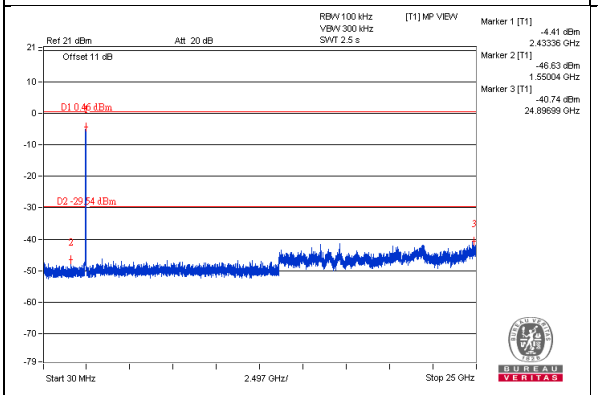
802.11n (HT40)

Maximum REF



CHAIN 0

CH 3



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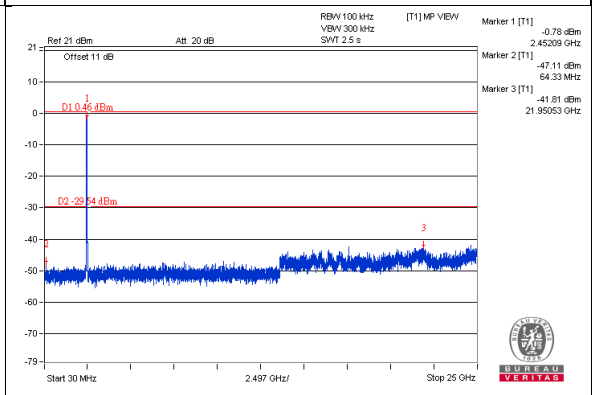
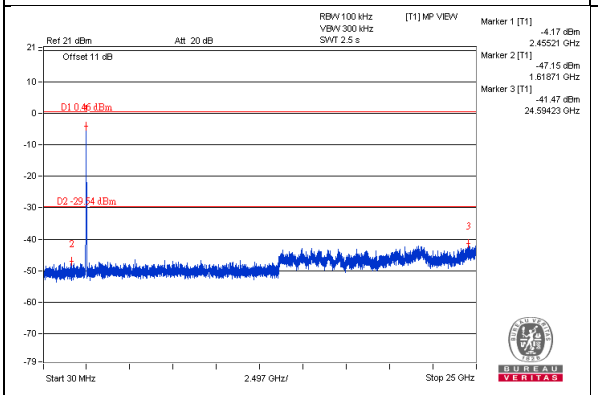
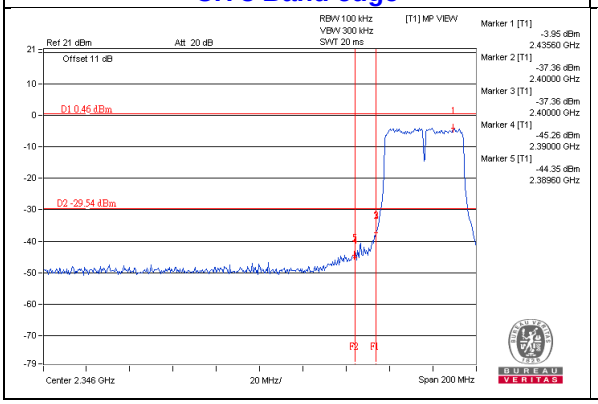


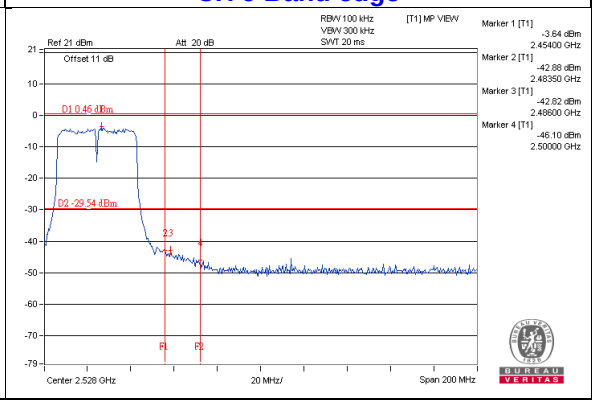
CH 9



CH 3 Band edge

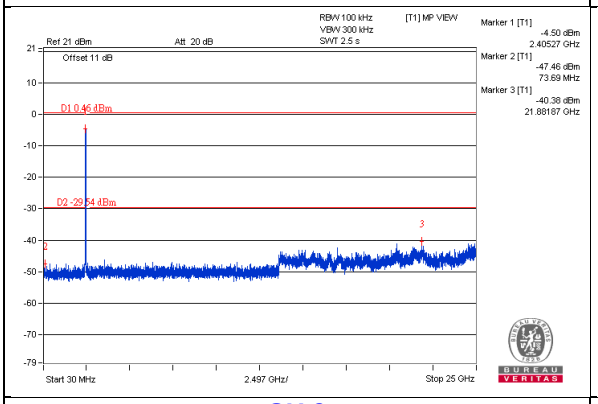


CH 9 Band edge



CHAIN 1

CH 3



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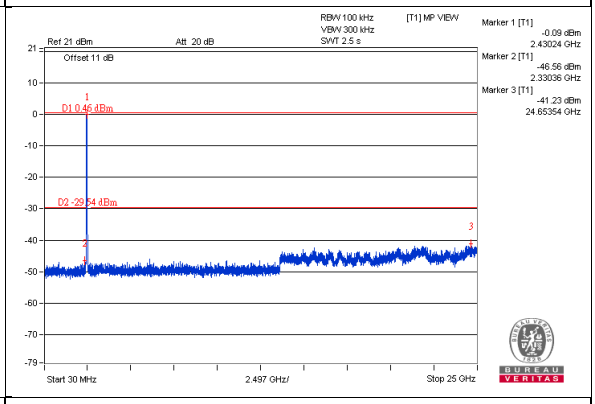

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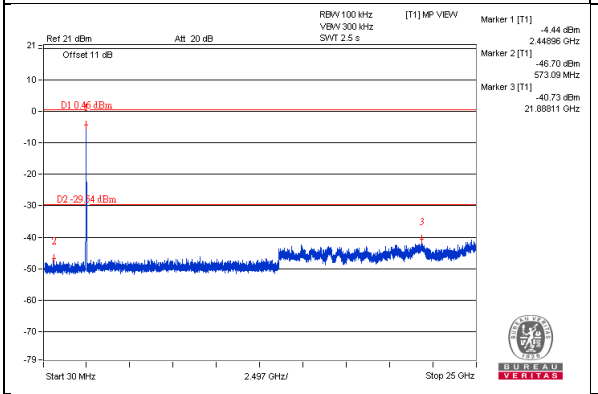

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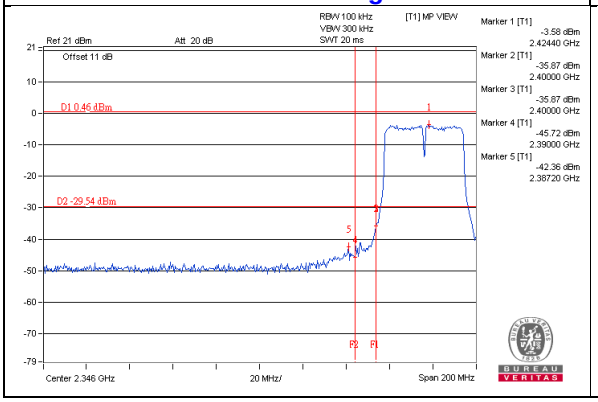

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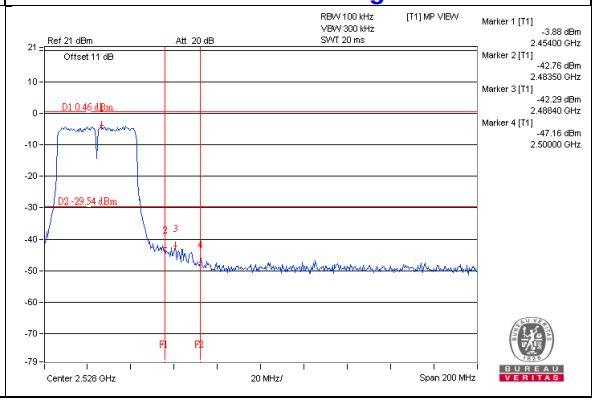
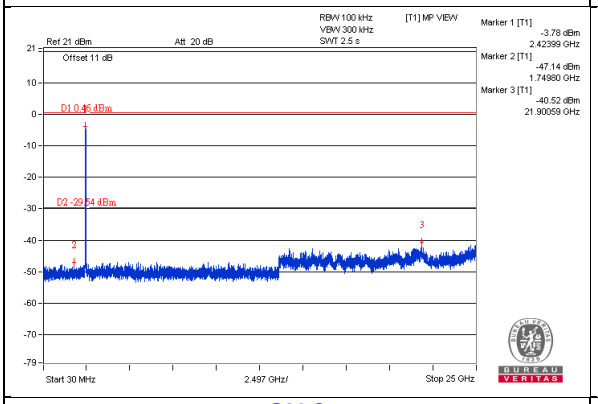


CHAIN 2

CH 3



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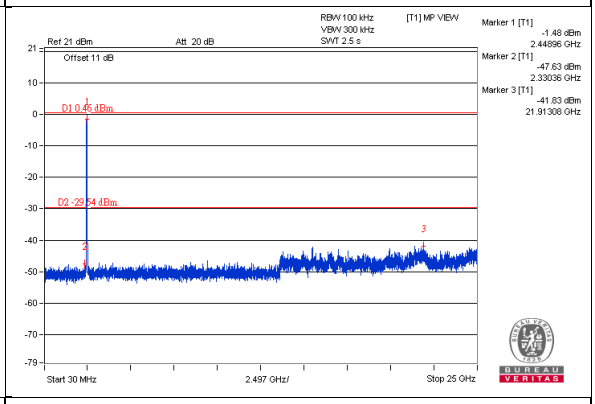

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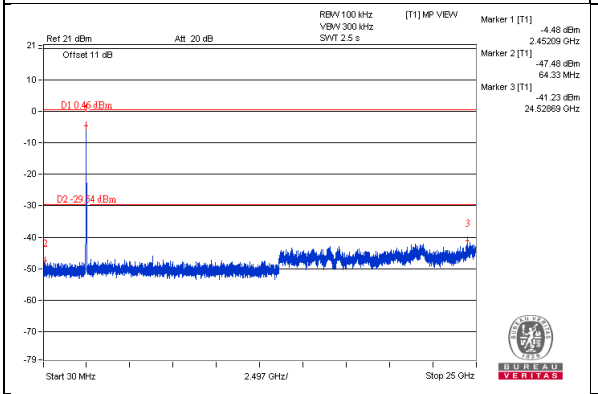

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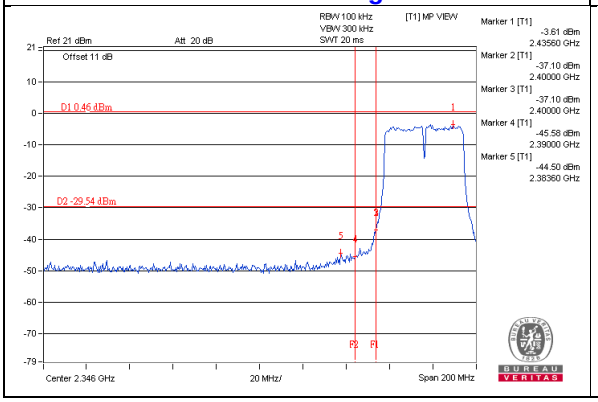

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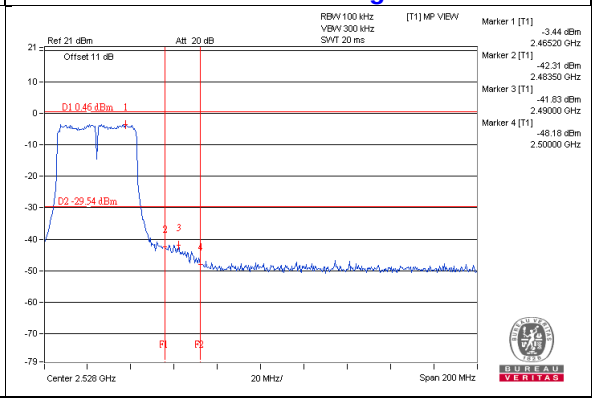

5 Pictures of Test Arrangements

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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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.

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