FCC Test Report

Report No.: RF170809E07

FCC ID: YZKECW5211O

Test Model: ECW5211-O

Series Model: ECW5211-L, ECW5211-L2

Received Date: Aug. 09, 2017

Test Date: Sep. 20 to 23, 2017

Issued Date: Oct. 11, 2017

Applicant: Edgecore Networks Corporation

Address: No.1, Creation Rd. III, Hsinchu Science Park, Hsinchu 30077, Taiwan, R.O.C

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: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF170809E07	Original release.	Oct. 11, 2017

1 Certificate of Conformity

Product: 802.11ac Wireless Access Point

Brand: Edgecore

Test Model: ECW5211-O

Series Model: ECW5211-L, ECW5211-L2

Sample Status: ENGINEERING SAMPLE

Applicant: Edgecore Networks Corporation

Test Date: Sep. 20 to 23, 2017

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. 11, 2017
Mary Ko / Specialist

Approved by : _____ , **Date:** Oct. 11, 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 -4.85dB at 0.36484MHz.
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 2387MHz, 2390MHz, 2483.5MHz, 4874MHz.
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 i-pex 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	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.16 dB
	6GHz ~ 18GHz	4.91 dB
	18GHz ~ 40GHz	5.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	802.11ac Wireless Access Point
Brand	Edgecore
Test Model	ECW5211-O
Series Model	ECW5211-L, ECW5211-L2
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter or DC 48V from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 mode 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 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b/g, 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:** 864.046mW **5.18 ~ 5.24GHz:** **CDD Mode:** 349.188mW **Beamforming Mode:** 340.121mW **5.745 ~ 5.825GHz:** **CDD Mode:** 417.679mW **Beamforming Mode:** 371.724mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4GHz)	WLAN (5GHz)

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

Brand	Model Name	Difference
Edgecore	ECW5211-O	For marketing purpose.
	ECW5211-L	
	ECW5211-L2	

From the above models, model: **ECW5211-O** was selected as representative model for the test and its data was recorded in this report.

3. The EUT must be supplied with power adapter or POE (only for test not for sale) as below table.

Adapter		
Brand	Model No.	Spec.
APD	WA-12M12FU	AC Input : 100-240Vac, 50/60Hz, 0.5A DC Output : 12V, 1.0A DC Output cable: unshielded, 1.8m
POE (only for test not for sale)		
Brand	Model No.	Spec.
NA	GRT-480125A	AC Input: 100-240Vac, 50/60Hz DC Output: 48Vdc, 1250mA

4. For radiated emissions, the EUT was pre-tested under the following modes:

Test Mode	**Description**
Mode A	**Power from Adapter**
Mode B	Power from POE

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

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

Antenna No.	Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Connecter Type	Cable Length (mm)
Antenna 1	4.17	2.4~2.4835	Monopole	i-pex	180
	5.83	5.15~5.85			
Antenna 2	4.27	2.4~2.4835	Monopole	i-pex	160
	8.18	5.15~5.85			

6. The EUT incorporates a MIMO function.

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

Note:
1. All of modulation mode support beamforming function except 2.4GHz & 802.11a modulation mode.

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, 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	
1	√	√	√	√	Powered by adapter
2	-	-	√	-	Powered by POE

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

NOTE:
1. The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on X-plane.
2. "-"means no effect.

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:

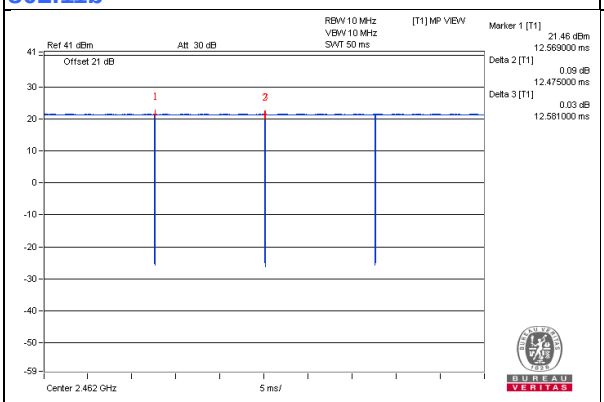
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	23deg. C, 62%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	25deg. C, 67%RH	120Vac, 60Hz	Jyunchun Lin
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 Duty Cycle of Test Signal

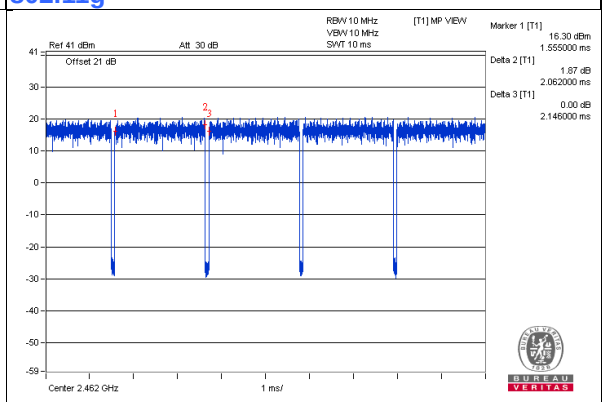
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 12.475/12.581 = 0.992
802.11g: Duty cycle = 2.062/2.146 = 0.961, Duty factor = 10 * log(1/0.961) = 0.17
802.11n (HT20): Duty cycle = 4.997/5.085 = 0.983
802.11n (HT40): Duty cycle = 2.423/2.506 = 0.967, Duty factor = 10 * log(1/0.967) = 0.15

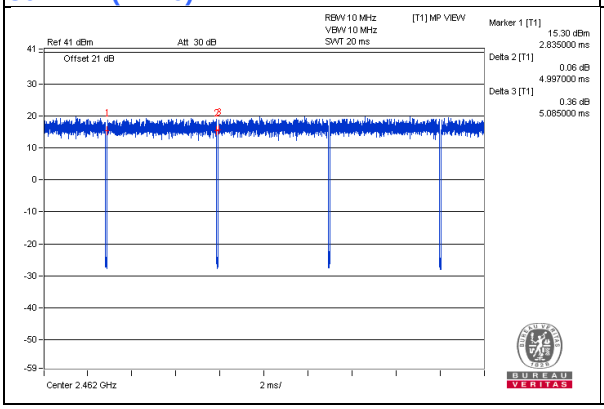
802.11b



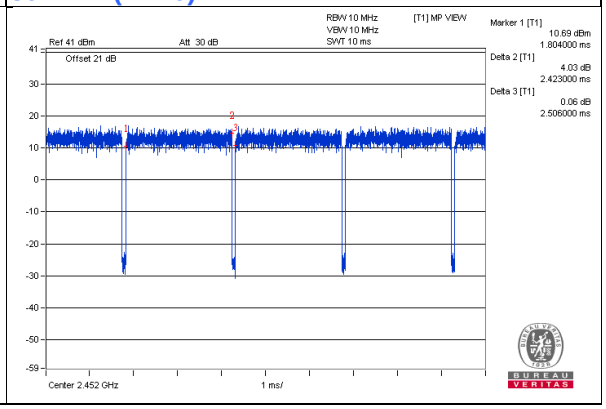
802.11g



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	HYV4VY1	FCC DoC	Provided by Lab
B.	Laptop	HP	Pavilion 14-ab023TU	5CD5340WXZ	NA	Provided by Lab
C.	iPod	Apple	MD778TA/A	CC4JMH7LF4T1	NA	Provided by Lab
D.	PoE Adapter	FoShanGreat	GRT-480125A	NA	NA	Supplied by client

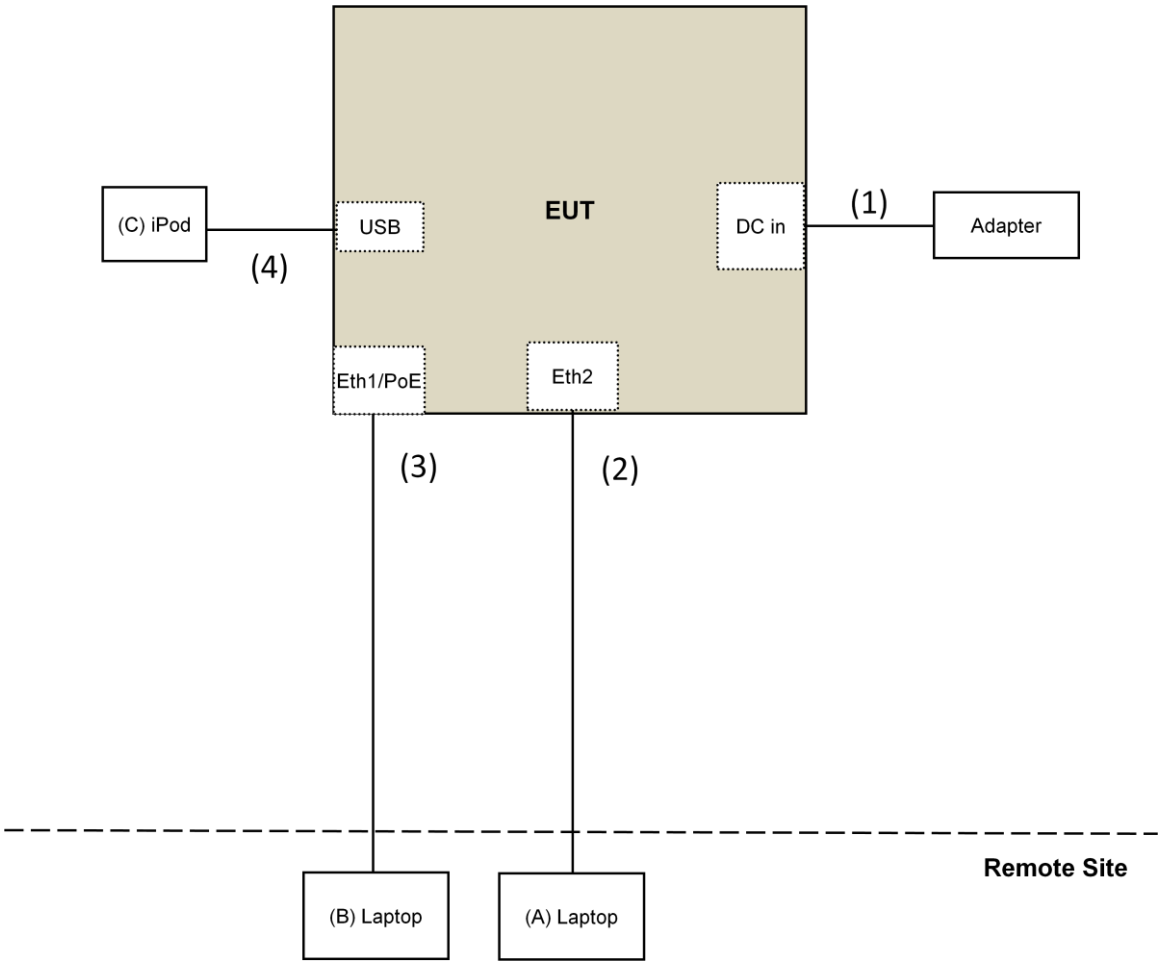
Note:

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

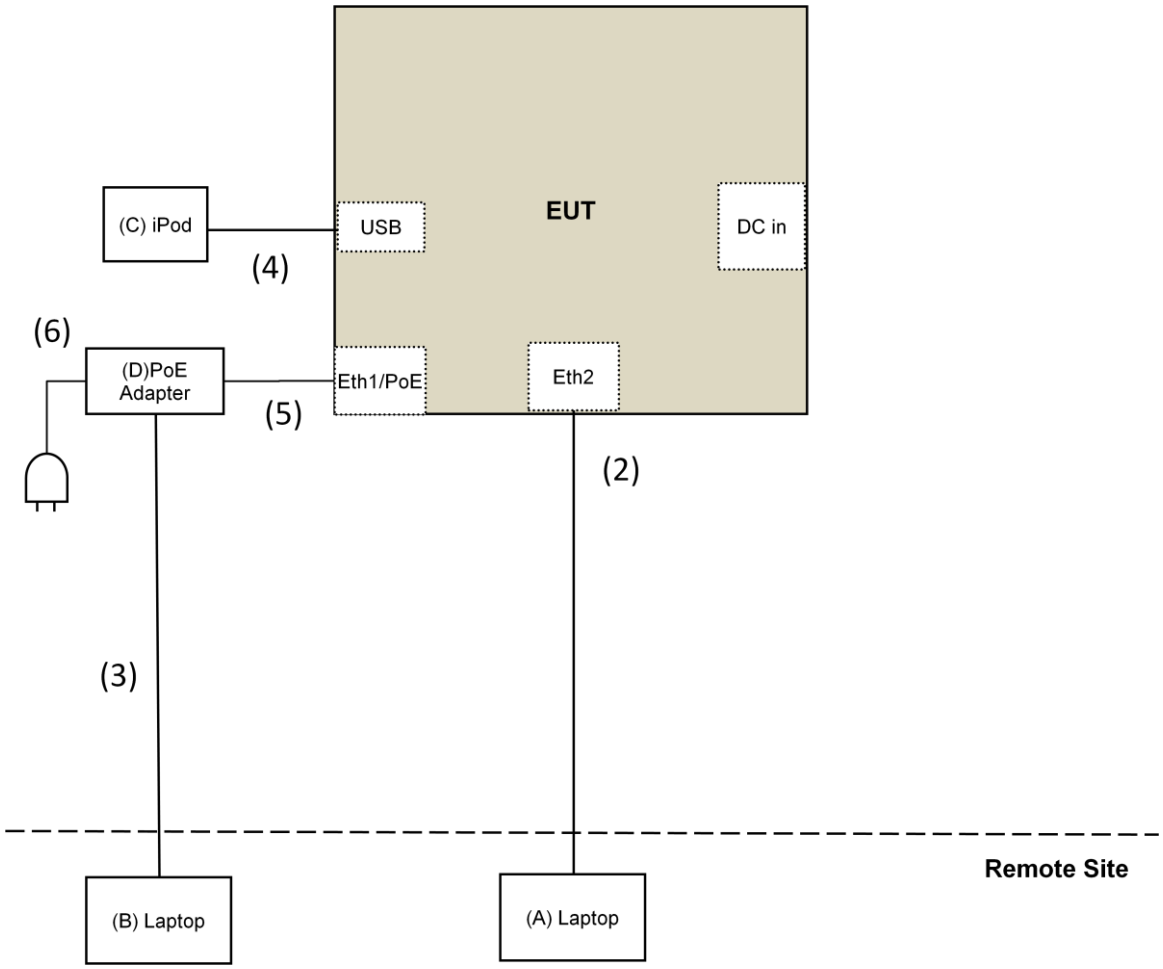
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	USB Cable	1	0.1	Yes	0	Provided by Lab
5.	RJ-45 Cable	1	3	No	0	Provided by Lab
6.	AC Cable	1	1.8	No	0	Provided by Lab

3.4.1 Configuration of System under Test

Mode 1:



Mode 2:


EUT
(C) iPod
USB
DC in
(4)
(6)
(D)PoE
Adapter
Eth1/PoE
Eth2
(5)
(2)
(3)
Remote Site
(B) Laptop
(A) Laptop

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 v04
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 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 Keysight	N9038A	MY54450088	July 08, 2017	July 07, 2018
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 10, 2016	Nov. 09, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150321	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSV40	100964	July 1, 2017	June 30, 2018
Power meter Anritsu	ML2495A	1014008	May 11, 2017	May 10, 2018
Power sensor Anritsu	MA2411B	0917122	May 11, 2017	May 10, 2018

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. 4.
4. The FCC Designation Number is TW2022.
5. The CANADA Site Registration No. is 20331-2.
6. Loop antenna was used for all emissions below 30 MHz.
7. Tested Date: Sep. 20 to 21, 2017.

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:

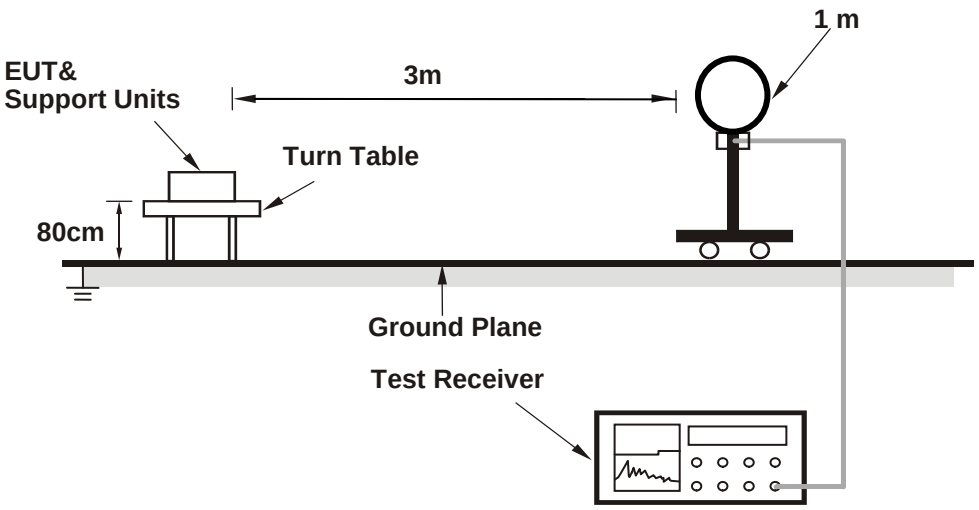
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

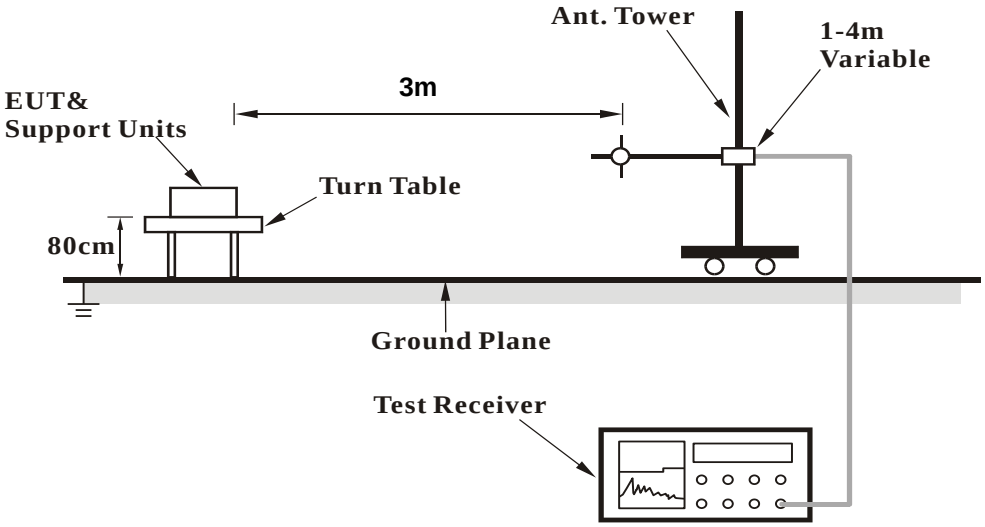
No deviation.

4.1.5 Test Setup

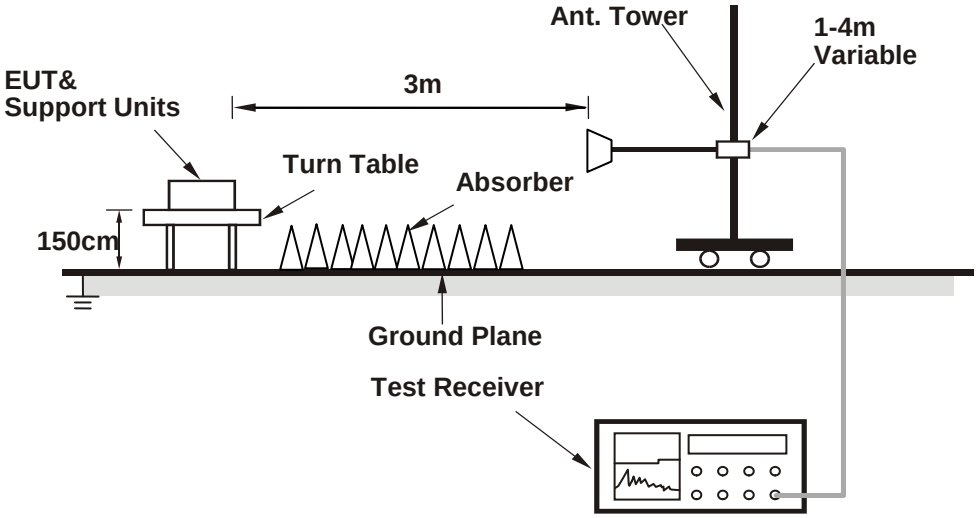
For Radiated emission below 30MHz



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 (QRCT[Ver 3.0.187.0]) 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	2387.00	58.5 PK	74.0	-15.5	3.66 H	264	59.8	-1.3
2	2387.00	48.8 AV	54.0	-5.2	3.66 H	264	50.1	-1.3
3	*2412.00	111.2 PK			3.66 H	264	112.3	-1.1
4	*2412.00	108.9 AV			3.66 H	264	110.0	-1.1
5	4824.00	53.5 PK	74.0	-20.5	3.07 H	0	50.3	3.2
6	4824.00	51.2 AV	54.0	-2.8	3.07 H	0	48.0	3.2
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	2387.00	61.5 PK	74.0	-12.5	3.73 V	220	62.8	-1.3
2	**2387.00**	**53.9 AV**	**54.0**	**-0.1**	**3.73 V**	**220**	**55.2**	**-1.3**
3	*2412.00	116.7 PK			3.73 V	220	117.8	-1.1
4	*2412.00	114.4 AV			3.73 V	220	115.5	-1.1
5	4824.00	49.3 PK	74.0	-24.7	2.11 V	236	46.1	3.2
6	4824.00	47.2 AV	54.0	-6.8	2.11 V	236	44.0	3.2

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 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	55.5 PK	74.0	-18.5	3.69 H	249	56.8	-1.3
2	2390.00	42.7 AV	54.0	-11.3	3.69 H	249	44.0	-1.3
3	*2437.00	111.0 PK			3.69 H	249	112.2	-1.2
4	*2437.00	108.7 AV			3.69 H	249	109.9	-1.2
5	2483.50	56.7 PK	74.0	-17.3	3.69 H	249	57.7	-1.0
6	2483.50	43.3 AV	54.0	-10.7	3.69 H	249	44.3	-1.0
7	4874.00	55.5 PK	74.0	-18.5	3.03 H	2	52.2	3.3
8	**4874.00**	**53.9 AV**	**54.0**	**-0.1**	**3.03 H**	**2**	**50.6**	**3.3**
9	7311.00	47.7 PK	74.0	-26.3	2.48 H	270	37.9	9.8
10	7311.00	40.5 AV	54.0	-13.5	2.48 H	270	30.7	9.8

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	57.9 PK	74.0	-16.1	3.73 V	223	59.2	-1.3
2	2390.00	44.6 AV	54.0	-9.4	3.73 V	223	45.9	-1.3
3	*2437.00	116.5 PK			3.73 V	223	117.7	-1.2
4	*2437.00	114.2 AV			3.73 V	223	115.4	-1.2
5	2483.50	58.2 PK	74.0	-15.8	3.73 V	223	59.2	-1.0
6	2483.50	45.2 AV	54.0	-8.8	3.73 V	223	46.2	-1.0
7	4874.00	51.3 PK	74.0	-22.7	2.13 V	221	48.0	3.3
8	4874.00	49.8 AV	54.0	-4.2	2.13 V	221	46.5	3.3
9	7311.00	49.8 PK	74.0	-24.2	2.11 V	294	40.0	9.8
10	7311.00	44.3 AV	54.0	-9.7	2.11 V	294	34.5	9.8

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 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	111.3 PK			3.67 H	265	112.4	-1.1
2	*2462.00	109.0 AV			3.67 H	265	110.1	-1.1
3	2483.50	57.5 PK	74.0	-16.5	3.67 H	265	58.5	-1.0
4	2483.50	45.7 AV	54.0	-8.3	3.67 H	265	46.7	-1.0
5	4924.00	55.0 PK	74.0	-19.0	3.17 H	350	51.5	3.5
6	4924.00	53.5 AV	54.0	-0.5	3.17 H	350	50.0	3.5
7	7386.00	47.0 PK	74.0	-27.0	2.48 H	270	37.1	9.9
8	7386.00	38.5 AV	54.0	-15.5	2.48 H	270	28.6	9.9
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	*2462.00	116.8 PK			4.00 V	220	117.9	-1.1
2	*2462.00	114.4 AV			4.00 V	220	115.5	-1.1
3	2483.50	60.5 PK	74.0	-13.5	4.00 V	220	61.5	-1.0
4	2483.50	50.7 AV	54.0	-3.3	4.00 V	220	51.7	-1.0
5	4924.00	50.6 PK	74.0	-23.4	2.08 V	210	47.1	3.5
6	4924.00	49.4 AV	54.0	-4.6	2.08 V	210	45.9	3.5
7	7386.00	49.0 PK	74.0	-25.0	2.13 V	300	39.1	9.9
8	7386.00	43.0 AV	54.0	-11.0	2.13 V	300	33.1	9.9

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.

802.11g

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	63.1 PK	74.0	-10.9	3.68 H	265	64.4	-1.3
2	2390.00	49.0 AV	54.0	-5.0	3.68 H	265	50.3	-1.3
3	*2412.00	107.3 PK			3.68 H	265	108.4	-1.1
4	*2412.00	97.4 AV			3.68 H	265	98.5	-1.1
5	4824.00	53.6 PK	74.0	-20.4	3.21 H	360	50.4	3.2
6	4824.00	41.3 AV	54.0	-12.7	3.21 H	360	38.1	3.2
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	67.9 PK	74.0	-6.1	4.00 V	250	69.2	-1.3
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**4.00 V**	**250**	**55.2**	**-1.3**
3	*2412.00	112.8 PK			4.00 V	250	113.9	-1.1
4	*2412.00	102.8 AV			4.00 V	250	103.9	-1.1
5	4824.00	49.2 PK	74.0	-24.8	2.14 V	219	46.0	3.2
6	4824.00	36.7 AV	54.0	-17.3	2.14 V	219	33.5	3.2

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 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	65.6 PK	74.0	-8.4	3.69 H	258	66.9	-1.3
2	2390.00	48.8 AV	54.0	-5.2	3.69 H	258	50.1	-1.3
3	*2437.00	112.3 PK			3.69 H	258	113.5	-1.2
4	*2437.00	102.5 AV			3.69 H	258	103.7	-1.2
5	2483.50	62.9 PK	74.0	-11.1	3.69 H	258	63.9	-1.0
6	2483.50	46.6 AV	54.0	-7.4	3.69 H	258	47.6	-1.0
7	4874.00	58.5 PK	74.0	-15.5	3.17 H	350	55.2	3.3
8	4874.00	46.2 AV	54.0	-7.8	3.17 H	350	42.9	3.3
9	7311.00	46.3 PK	74.0	-27.7	2.48 H	270	36.5	9.8
10	7311.00	33.6 AV	54.0	-20.4	2.48 H	270	23.8	9.8
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	70.5 PK	74.0	-3.5	4.00 V	250	71.8	-1.3
2	2390.00	53.7 AV	54.0	-0.3	4.00 V	250	55.0	-1.3
3	*2437.00	117.8 PK			4.00 V	250	119.0	-1.2
4	*2437.00	107.9 AV			4.00 V	250	109.1	-1.2
5	2483.50	67.8 PK	74.0	-6.2	4.00 V	250	68.8	-1.0
6	2483.50	51.6 AV	54.0	-2.4	4.00 V	250	52.6	-1.0
7	4874.00	54.1 PK	74.0	-19.9	2.13 V	221	50.8	3.3
8	4874.00	41.6 AV	54.0	-12.4	2.13 V	221	38.3	3.3
9	7311.00	49.7 PK	74.0	-24.3	2.11 V	294	39.9	9.8
10	7311.00	37.1 AV	54.0	-16.9	2.11 V	294	27.3	9.8

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 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	106.5 PK			3.70 H	265	107.6	-1.1
2	*2462.00	96.6 AV			3.70 H	265	97.7	-1.1
3	2483.50	64.0 PK	74.0	-10.0	3.70 H	265	65.0	-1.0
4	2483.50	48.6 AV	54.0	-5.4	3.70 H	265	49.6	-1.0
5	4924.00	53.4 PK	74.0	-20.6	3.17 H	350	49.9	3.5
6	4924.00	41.2 AV	54.0	-12.8	3.17 H	350	37.7	3.5
7	7386.00	44.0 PK	74.0	-30.0	2.44 H	277	34.1	9.9
8	7386.00	31.1 AV	54.0	-22.9	2.44 H	277	21.2	9.9
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	*2462.00	112.0 PK			4.00 V	218	113.1	-1.1
2	*2462.00	102.0 AV			4.00 V	218	103.1	-1.1
3	2483.50	68.9 PK	74.0	-5.1	4.00 V	218	69.9	-1.0
4	2483.50	53.5 AV	54.0	-0.5	4.00 V	218	54.5	-1.0
5	4924.00	48.6 PK	74.0	-25.4	2.11 V	233	45.1	3.5
6	4924.00	36.3 AV	54.0	-17.7	2.11 V	233	32.8	3.5
7	7386.00	44.9 PK	74.0	-29.1	2.06 V	285	35.0	9.9
8	7386.00	32.1 AV	54.0	-21.9	2.06 V	285	22.2	9.9

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.

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	63.4 PK	74.0	-10.6	3.72 H	272	64.7	-1.3
2	2390.00	49.3 AV	54.0	-4.7	3.72 H	272	50.6	-1.3
3	*2412.00	107.0 PK			3.72 H	272	108.1	-1.1
4	*2412.00	97.1 AV			3.72 H	272	98.2	-1.1
5	4824.00	53.5 PK	74.0	-20.5	3.23 H	360	50.3	3.2
6	4824.00	41.4 AV	54.0	-12.6	3.23 H	360	38.2	3.2
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	68.1 PK	74.0	-5.9	3.98 V	252	69.4	-1.3
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**3.98 V**	**252**	**55.2**	**-1.3**
3	*2412.00	113.1 PK			3.98 V	252	114.2	-1.1
4	*2412.00	102.4 AV			3.98 V	252	103.5	-1.1
5	4824.00	49.3 PK	74.0	-24.7	2.11 V	232	46.1	3.2
6	4824.00	36.5 AV	54.0	-17.5	2.11 V	232	33.3	3.2

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 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	66.3 PK	74.0	-7.7	3.75 H	247	67.6	-1.3
2	2390.00	49.2 AV	54.0	-4.8	3.75 H	247	50.5	-1.3
3	*2437.00	112.2 PK			3.75 H	247	113.4	-1.2
4	*2437.00	102.4 AV			3.75 H	247	103.6	-1.2
5	2483.50	62.0 PK	74.0	-12.0	3.75 H	247	63.0	-1.0
6	2483.50	43.8 AV	54.0	-10.2	3.75 H	247	44.8	-1.0
7	4874.00	58.5 PK	74.0	-15.5	3.14 H	359	55.2	3.3
8	4874.00	46.3 AV	54.0	-7.7	3.14 H	359	43.0	3.3
9	7311.00	46.0 PK	74.0	-28.0	2.53 H	280	36.2	9.8
10	7311.00	33.2 AV	54.0	-20.8	2.53 H	280	23.4	9.8
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	73.4 PK	74.0	-0.6	3.58 V	256	74.7	-1.3
2	2390.00	53.7 AV	54.0	-0.3	3.58 V	256	55.0	-1.3
3	*2437.00	118.5 PK			3.58 V	256	119.7	-1.2
4	*2437.00	108.0 AV			3.58 V	256	109.2	-1.2
5	2483.50	66.9 PK	74.0	-7.1	3.58 V	256	67.9	-1.0
6	2483.50	48.5 AV	54.0	-5.5	3.58 V	256	49.5	-1.0
7	4874.00	54.3 PK	74.0	-19.7	2.09 V	213	51.0	3.3
8	4874.00	42.0 AV	54.0	-12.0	2.09 V	213	38.7	3.3
9	7311.00	49.8 PK	74.0	-24.2	2.11 V	308	40.0	9.8
10	7311.00	37.4 AV	54.0	-16.6	2.11 V	308	27.6	9.8

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 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	106.3 PK			3.73 H	278	107.4	-1.1
2	*2462.00	96.4 AV			3.73 H	278	97.5	-1.1
3	2483.50	64.5 PK	74.0	-9.5	3.73 H	278	65.5	-1.0
4	2483.50	48.6 AV	54.0	-5.4	3.73 H	278	49.6	-1.0
5	4924.00	53.7 PK	74.0	-20.3	3.18 H	359	50.2	3.5
6	4924.00	41.5 AV	54.0	-12.5	3.18 H	359	38.0	3.5
7	7386.00	43.7 PK	74.0	-30.3	2.42 H	275	33.8	9.9
8	7386.00	30.8 AV	54.0	-23.2	2.42 H	275	20.9	9.9
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	*2462.00	113.0 PK			4.00 V	218	114.1	-1.1
2	*2462.00	101.8 AV			4.00 V	218	102.9	-1.1
3	2483.50	69.5 PK	74.0	-4.5	4.00 V	218	70.5	-1.0
4	2483.50	53.5 AV	54.0	-0.5	4.00 V	218	54.5	-1.0
5	4924.00	48.2 PK	74.0	-25.8	2.15 V	241	44.7	3.5
6	4924.00	35.9 AV	54.0	-18.1	2.15 V	241	32.4	3.5
7	7386.00	44.4 PK	74.0	-29.6	2.07 V	287	34.5	9.9
8	7386.00	31.8 AV	54.0	-22.2	2.07 V	287	21.9	9.9

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.

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	63.6 PK	74.0	-10.4	3.75 H	275	64.9	-1.3
2	2390.00	49.2 AV	54.0	-4.8	3.75 H	275	50.5	-1.3
3	*2422.00	103.3 PK			3.75 H	275	104.6	-1.3
4	*2422.00	93.9 AV			3.75 H	275	95.2	-1.3
5	4844.00	52.5 PK	74.0	-21.5	3.21 H	351	49.2	3.3
6	4844.00	40.3 AV	54.0	-13.7	3.21 H	351	37.0	3.3
7	7266.00	43.6 PK	74.0	-30.4	2.38 H	261	33.8	9.8
8	7266.00	30.5 AV	54.0	-23.5	2.38 H	261	20.7	9.8
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	68.6 PK	74.0	-5.4	4.00 V	250	69.9	-1.3
2	2390.00	53.7 AV	54.0	-0.3	4.00 V	250	55.0	-1.3
3	*2422.00	108.5 PK			4.00 V	250	109.8	-1.3
4	*2422.00	99.1 AV			4.00 V	250	100.4	-1.3
5	4844.00	46.8 PK	74.0	-27.2	2.17 V	255	43.5	3.3
6	4844.00	34.6 AV	54.0	-19.4	2.17 V	255	31.3	3.3
7	7266.00	44.1 PK	74.0	-29.9	2.02 V	286	34.3	9.8
8	7266.00	30.9 AV	54.0	-23.1	2.02 V	286	21.1	9.8

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) 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	66.8 PK	74.0	-7.2	3.74 H	284	68.1	-1.3
2	2390.00	48.9 AV	54.0	-5.1	3.74 H	284	50.2	-1.3
3	*2437.00	105.1 PK			3.74 H	284	106.3	-1.2
4	*2437.00	95.5 AV			3.74 H	284	96.7	-1.2
5	2483.50	62.2 PK	74.0	-11.8	3.74 H	284	63.2	-1.0
6	2483.50	46.6 AV	54.0	-7.4	3.74 H	284	47.6	-1.0
7	4874.00	53.8 PK	74.0	-20.2	3.19 H	354	50.5	3.3
8	4874.00	41.5 AV	54.0	-12.5	3.19 H	354	38.2	3.3
9	7311.00	44.2 PK	74.0	-29.8	2.41 H	284	34.4	9.8
10	7311.00	30.9 AV	54.0	-23.1	2.41 H	284	21.1	9.8
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	71.8 PK	74.0	-2.2	4.00 V	250	73.1	-1.3
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**4.00 V**	**250**	**55.2**	**-1.3**
3	*2437.00	110.3 PK			4.00 V	250	111.5	-1.2
4	*2437.00	100.7 AV			4.00 V	250	101.9	-1.2
5	2483.50	67.0 PK	74.0	-7.0	4.00 V	250	68.0	-1.0
6	2483.50	51.5 AV	54.0	-2.5	4.00 V	250	52.5	-1.0
7	4874.00	47.7 PK	74.0	-26.3	2.12 V	270	44.4	3.3
8	4874.00	35.5 AV	54.0	-18.5	2.12 V	270	32.2	3.3
9	7311.00	44.6 PK	74.0	-29.4	2.09 V	273	34.8	9.8
10	7311.00	31.1 AV	54.0	-22.9	2.09 V	273	21.3	9.8

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 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	103.9 PK			3.78 H	291	105.0	-1.1
2	*2452.00	94.6 AV			3.78 H	291	95.7	-1.1
3	2483.50	68.2 PK	74.0	-5.8	3.78 H	291	69.2	-1.0
4	2483.50	49.0 AV	54.0	-5.0	3.78 H	291	50.0	-1.0
5	4904.00	52.5 PK	74.0	-21.5	3.19 H	353	49.0	3.5
6	4904.00	40.4 AV	54.0	-13.6	3.19 H	353	36.9	3.5
7	7356.00	43.6 PK	74.0	-30.4	2.38 H	288	33.7	9.9
8	7356.00	30.7 AV	54.0	-23.3	2.38 H	288	20.8	9.9
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	*2452.00	109.0 PK			4.00 V	240	110.1	-1.1
2	*2452.00	99.7 AV			4.00 V	240	100.8	-1.1
3	2483.50	73.1 PK	74.0	-0.9	4.00 V	240	74.1	-1.0
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**4.00 V**	**240**	**54.9**	**-1.0**
5	4904.00	47.1 PK	74.0	-26.9	2.15 V	246	43.6	3.5
6	4904.00	34.8 AV	54.0	-19.2	2.15 V	246	31.3	3.5
7	7356.00	44.8 PK	74.0	-29.2	2.08 V	292	34.9	9.9
8	7356.00	31.2 AV	54.0	-22.8	2.08 V	292	21.3	9.9

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.

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	35.97	34.1 QP	40.0	-5.9	3.00 H	190	43.5	-9.4
2	160.08	28.4 QP	43.5	-15.1	2.50 H	71	36.2	-7.8
3	244.37	36.6 QP	46.0	-9.4	1.00 H	61	46.3	-9.7
4	275.80	35.0 QP	46.0	-11.0	1.00 H	35	43.2	-8.2
5	349.93	33.7 QP	46.0	-12.3	1.00 H	131	40.2	-6.5
6	480.03	28.3 QP	46.0	-17.7	2.00 H	43	31.3	-3.0
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	97.58	29.8 QP	43.5	-13.7	1.00 V	246	42.8	-13.0
2	163.54	25.7 QP	43.5	-17.8	1.50 V	141	33.6	-7.9
3	266.39	31.7 QP	46.0	-14.3	1.00 V	360	40.6	-8.9
4	354.05	24.7 QP	46.0	-21.3	1.50 V	184	31.1	-6.4
5	480.01	25.2 QP	46.0	-20.8	2.00 V	353	28.2	-3.0
6	823.29	28.6 QP	46.0	-17.4	3.00 V	146	25.6	3.0

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	847124/029	Oct. 24, 2016	Oct. 23, 2017
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 26, 2016	Oct. 25, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 2017
RF Cable	5D-FB	COCCAB-001	Sep. 30, 2016	Sep. 29, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 18, 2017	June 17, 2018
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. 1.
3. Tested Date: Sep. 23, 2017.

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.

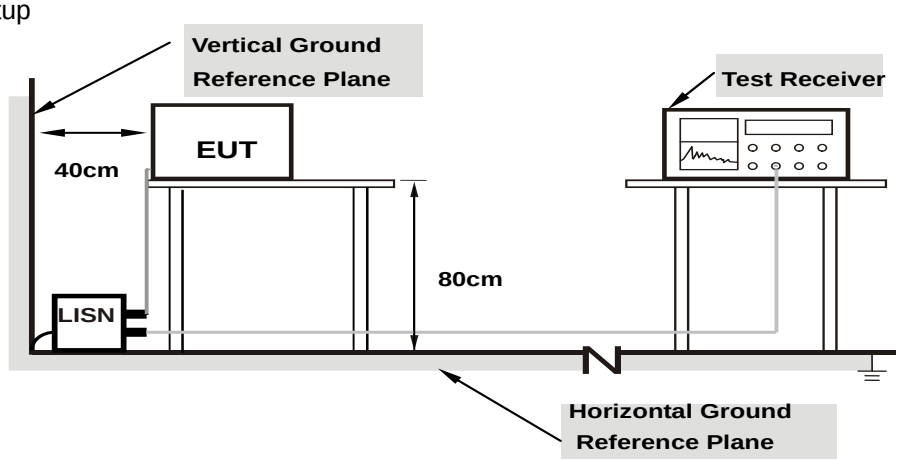
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

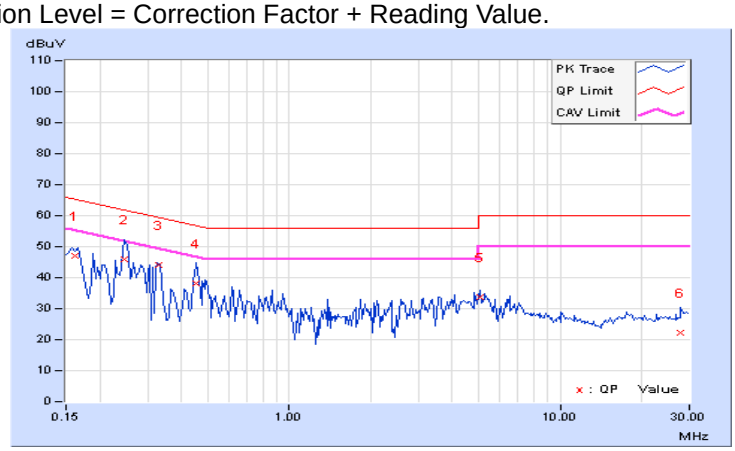
4.2.7 Test Results (Mode 1)

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	0.16169	10.08	36.85	31.81	46.93	41.89	65.38	55.38	-18.45	-13.49
2	0.24766	10.08	35.79	23.01	45.87	33.09	61.84	51.84	-15.97	-18.75
3	0.32778	10.10	34.07	30.33	44.17	40.43	59.51	49.51	-15.34	-9.08
4	0.45469	10.12	27.85	18.50	37.97	28.62	56.79	46.79	-18.82	-18.17
5	5.07031	10.44	23.29	9.63	33.73	20.07	60.00	50.00	-26.27	-29.93
6	27.94141	11.71	10.36	1.38	22.07	13.09	60.00	50.00	-37.93	-36.91

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.

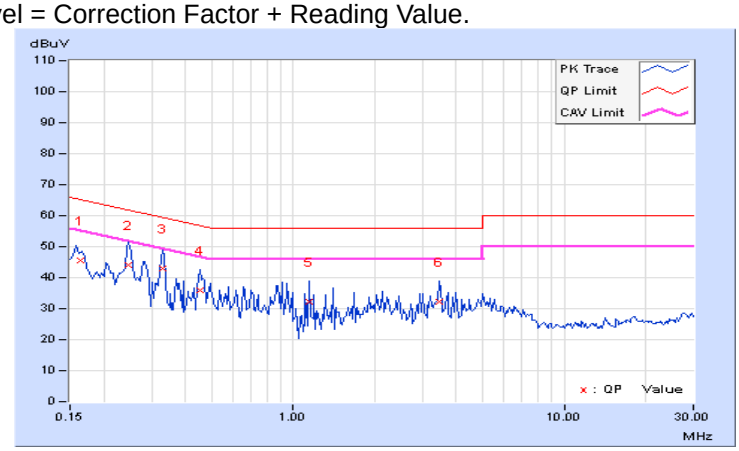


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16294	10.06	35.40	32.07	45.46	42.13	65.31	55.31	-19.85	-13.18
2	0.24466	10.06	34.10	21.43	44.16	31.49	61.94	51.94	-17.78	-20.45
3	0.32969	10.09	32.92	25.20	43.01	35.29	59.46	49.46	-16.45	-14.17
4	0.45469	10.12	25.94	14.13	36.06	24.25	56.79	46.79	-20.73	-22.54
5	1.15234	10.13	22.19	11.79	32.32	21.92	56.00	46.00	-23.68	-24.08
6	3.45313	10.25	21.80	10.92	32.05	21.17	56.00	46.00	-23.95	-24.83

REMARKS:

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



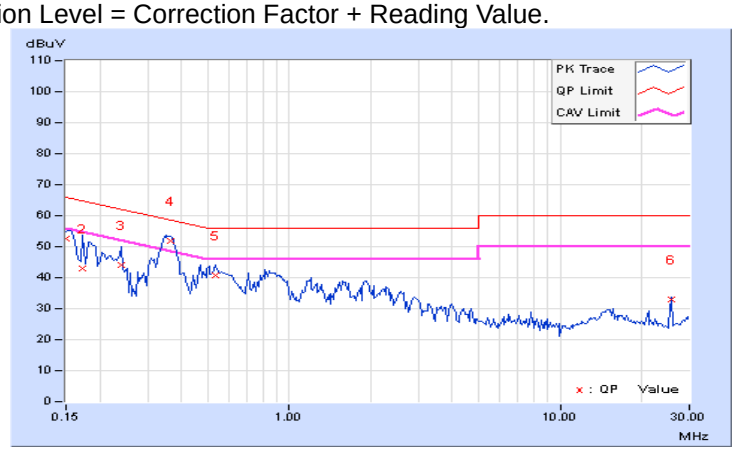
4.2.8 Test Results (Mode 2)

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	0.15000	10.07	42.65	30.76	52.72	40.83	66.00	56.00	-13.28	-15.17
2	0.17344	10.07	33.05	16.14	43.12	26.21	64.79	54.79	-21.67	-28.58
3	0.23984	10.07	34.01	28.61	44.08	38.68	62.10	52.10	-18.02	-13.42
4	0.36484	10.10	41.68	33.23	51.78	43.33	58.62	48.62	-6.84	-5.29
5	0.53281	10.12	30.68	22.68	40.80	32.80	56.00	46.00	-15.20	-13.20
6	25.87500	11.33	21.55	21.47	32.88	32.80	60.00	50.00	-27.12	-17.20

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.

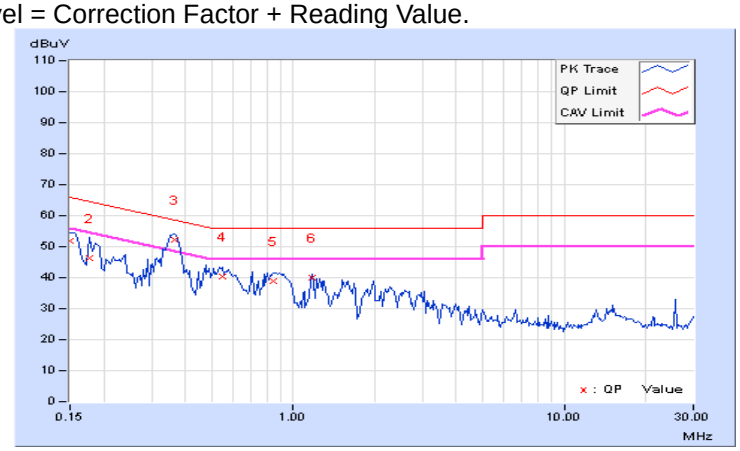


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.06	41.71	30.20	51.77	40.26	66.00	56.00	-14.23	-15.74
2	0.17734	10.04	36.30	24.34	46.34	34.38	64.61	54.61	-18.27	-20.23
3	**0.36484**	**10.09**	**42.17**	**33.68**	**52.26**	**43.77**	**58.62**	**48.62**	**-6.36**	**-4.85**
4	0.54844	10.10	30.40	21.63	40.50	31.73	56.00	46.00	-15.50	-14.27
5	0.84531	10.11	28.90	20.33	39.01	30.44	56.00	46.00	-16.99	-15.56
6	1.17578	10.12	29.70	24.13	39.82	34.25	56.00	46.00	-16.18	-11.75

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.

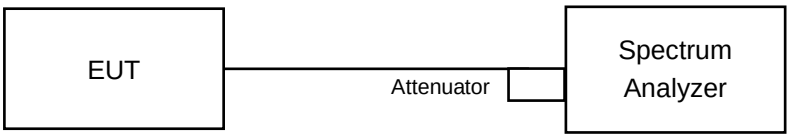


4.3 6dB Bandwidth Measurement

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 from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	7.64	7.65	0.5	PASS
6	2437	7.62	8.07	0.5	PASS
11	2462	8.15	9.57	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.40	16.40	0.5	PASS
6	2437	16.32	16.34	0.5	PASS
11	2462	16.40	16.40	0.5	PASS

802.11n (HT20)

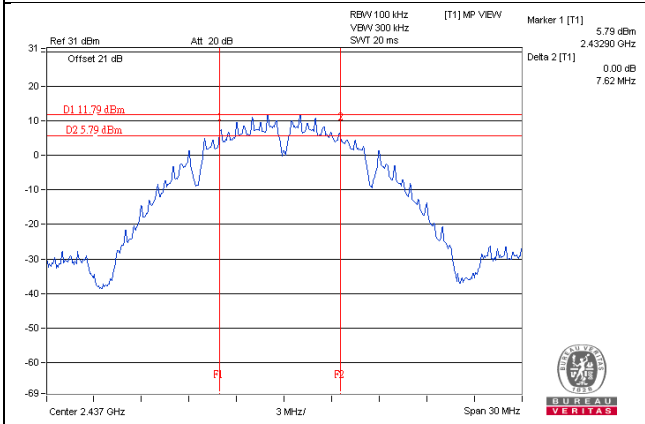
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.61	17.60	0.5	Pass
6	2437	17.37	17.62	0.5	Pass
11	2462	17.63	17.63	0.5	Pass

802.11n (HT40)

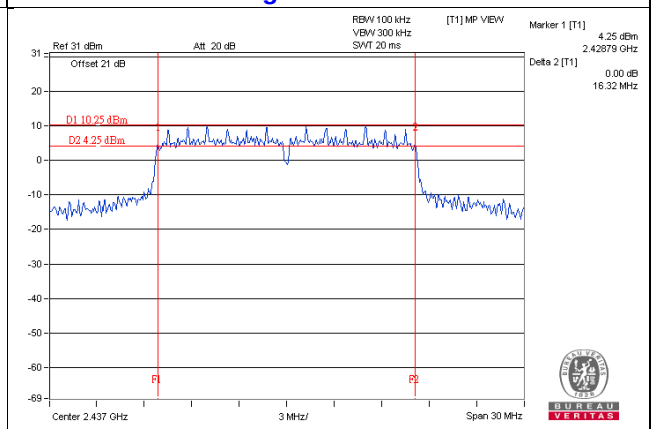
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.49	35.18	0.5	Pass
6	2437	35.35	35.39	0.5	Pass
9	2452	35.39	35.44	0.5	Pass

Spectrum Plot of Worst Value

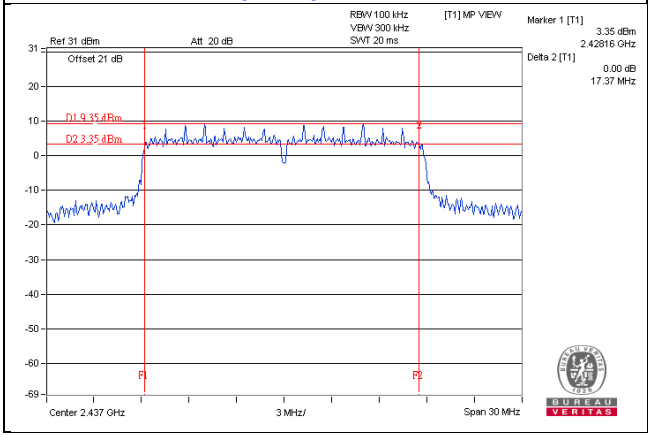
802.11b / Chain 0 : CH6



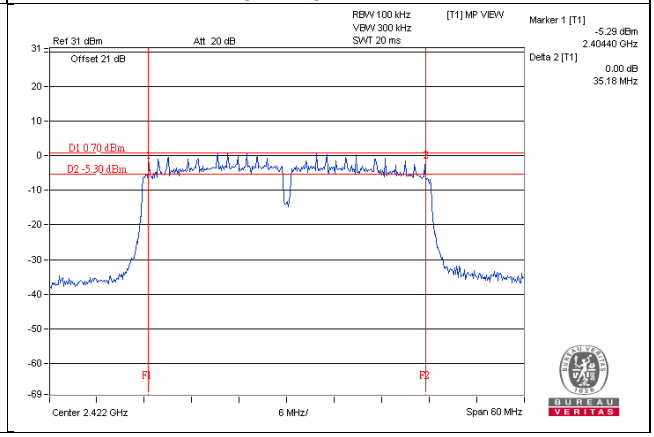
802.11g / Chain 0 : CH6



802.11n (HT20) / Chain 0 : CH6



802.11n (HT40) / Chain 1 : CH3



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

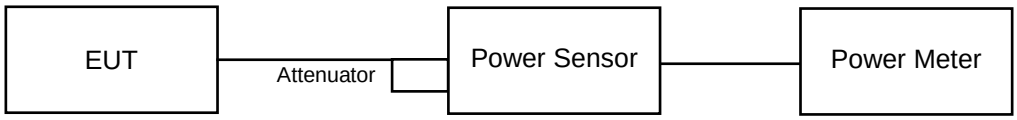
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.05	22.75	348.69	25.42	30.00	Pass
6	2437	22.18	22.62	348.006	25.42	30.00	Pass
11	2462	21.40	21.69	285.609	24.56	30.00	Pass

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	23.15	23.65	438.277	26.42	30.00	Pass
6	2437	26.33	26.38	864.046	29.37	30.00	Pass
11	2462	22.97	23.24	409.016	26.12	30.00	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.81	23.10	395.159	25.97	30.00	Pass
6	2437	26.06	26.18	818.599	29.13	30.00	Pass
11	2462	21.95	22.23	323.784	25.10	30.00	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	21.85	22.53	332.17	25.21	30.00	Pass
6	2437	24.45	24.55	563.714	27.51	30.00	Pass
9	2452	22.51	22.84	370.547	25.69	30.00	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	19.83	20.43	206.569	23.15
6	2437	20.05	20.40	210.806	23.24
11	2462	19.18	19.47	171.306	22.34

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	15.47	15.71	72.476	18.60
6	2437	21.05	21.29	261.936	24.18
11	2462	15.05	15.47	67.226	18.28

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.88	15.34	64.959	18.13
6	2437	20.56	20.90	236.79	23.74
11	2462	14.11	14.37	53.116	17.25

802.11n (HT40)

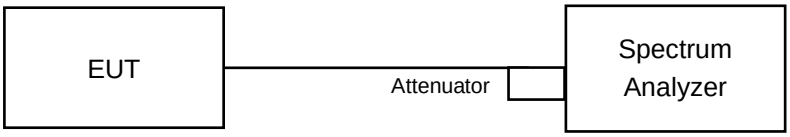
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	14.07	14.49	53.646	17.30
6	2437	16.25	16.36	85.421	19.32
9	2452	14.58	15.13	61.292	17.87

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz.

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=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-5.55	3.01	-2.54	6.77	Pass
	6	2437	-6.29	3.01	-3.28	6.77	Pass
	11	2462	-6.16	3.01	-3.15	6.77	Pass
1	1	2412	-5.25	3.01	-2.24	6.77	Pass
	6	2437	-4.65	3.01	-1.64	6.77	Pass
	11	2462	-7.12	3.01	-4.11	6.77	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.23dBi > 6dBi , so the power density limit shall be reduced to 8-(7.23-6) = 6.77dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-12.41	3.01	-9.40	6.77	Pass
	6	2437	-7.20	3.01	-4.19	6.77	Pass
	11	2462	-12.86	3.01	-9.85	6.77	Pass
1	1	2412	-11.59	3.01	-8.58	6.77	Pass
	6	2437	-6.74	3.01	-3.73	6.77	Pass
	11	2462	-12.98	3.01	-9.97	6.77	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.23dBi > 6dBi , so the power density limit shall be reduced to 8-(7.23-6) = 6.77dBm.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-13.23	3.01	-10.22	6.77	Pass
	6	2437	-7.70	3.01	-4.69	6.77	Pass
	11	2462	-13.44	3.01	-10.43	6.77	Pass
1	1	2412	-13.09	3.01	-10.08	6.77	Pass
	6	2437	-6.67	3.01	-3.66	6.77	Pass
	11	2462	-13.58	3.01	-10.57	6.77	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.23dBi > 6dBi , so the power density limit shall be reduced to 8-(7.23-6) = 6.77dBm.

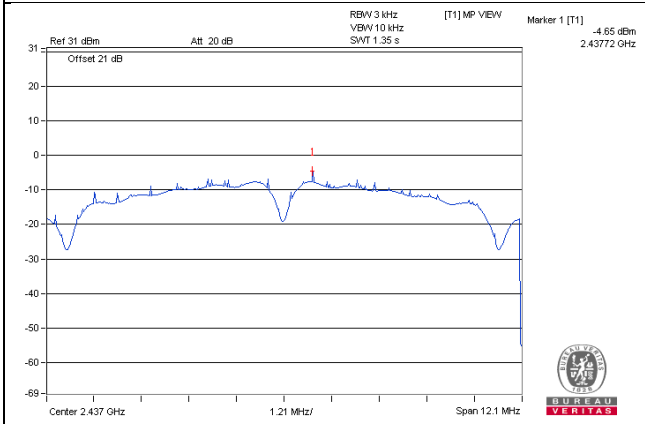
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-16.37	3.01	-13.36	6.77	Pass
	6	2437	-13.91	3.01	-10.90	6.77	Pass
	9	2452	-16.15	3.01	-13.14	6.77	Pass
1	3	2422	-15.89	3.01	-12.88	6.77	Pass
	6	2437	-12.39	3.01	-9.38	6.77	Pass
	9	2452	-15.01	3.01	-12.00	6.77	Pass

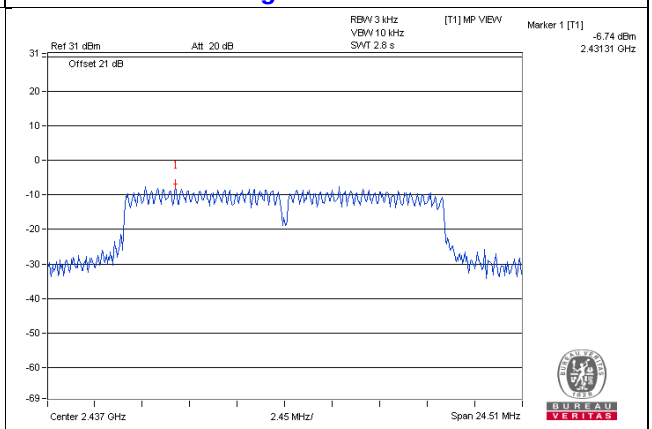
Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 7.23dBi > 6dBi , so the power density limit shall be reduced to 8-(7.23-6) = 6.77dBm.

Spectrum Plot of Worst Value

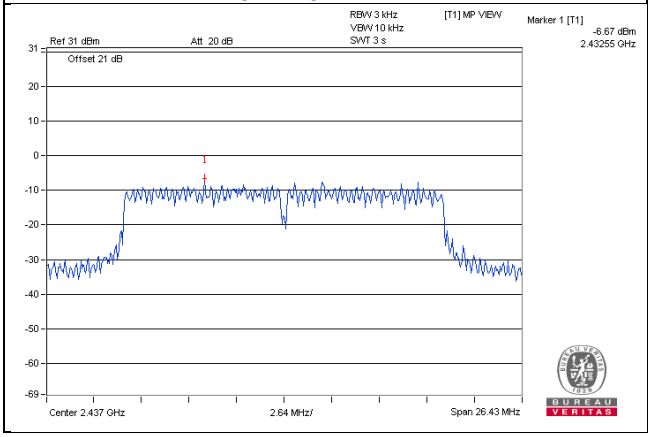
802.11b / Chain 1 : CH6



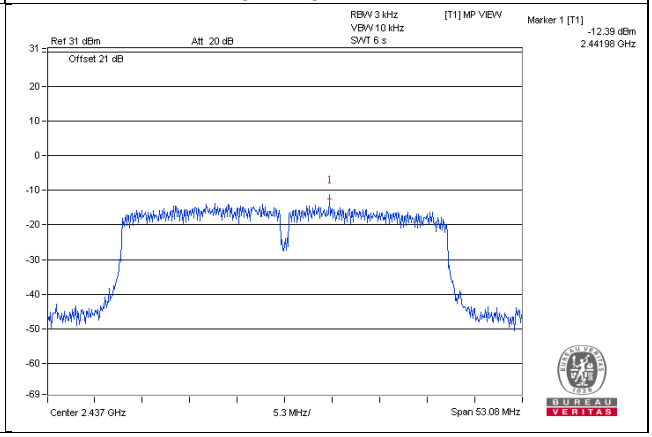
802.11g / Chain 1 : CH6



802.11n (HT20) / Chain 1 : CH6



802.11n (HT40) / Chain 1 : CH6

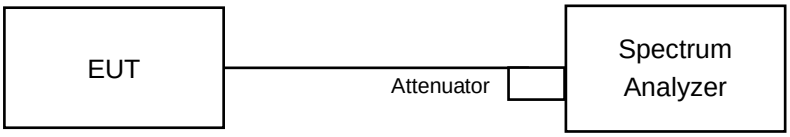


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 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

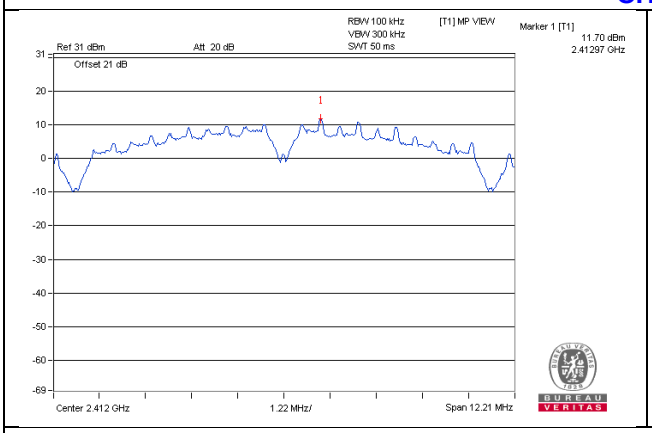
Same as Item 4.3.6

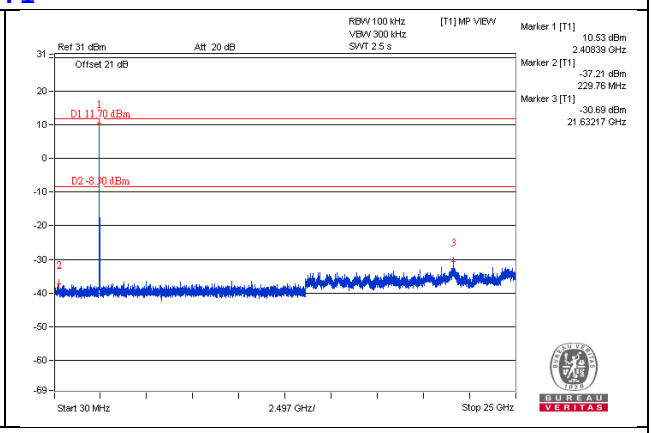
4.6.7 Test Results

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.

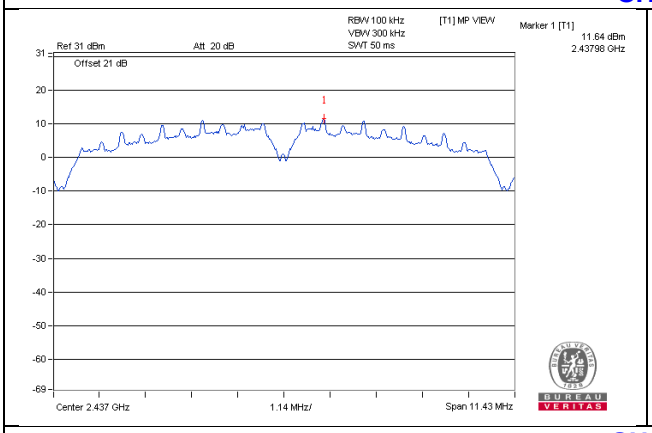
802.11b
CHAIN 0

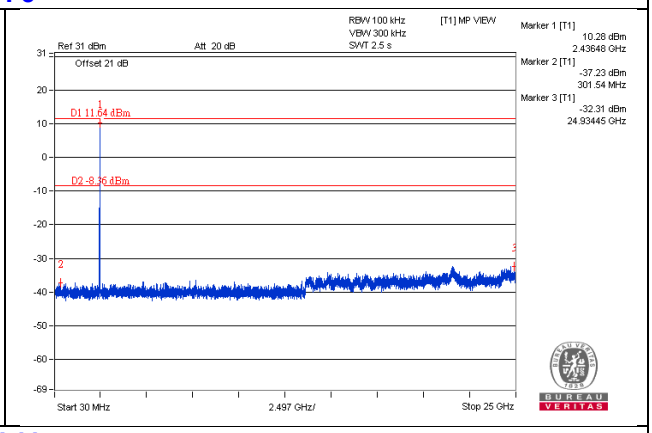
CH 1



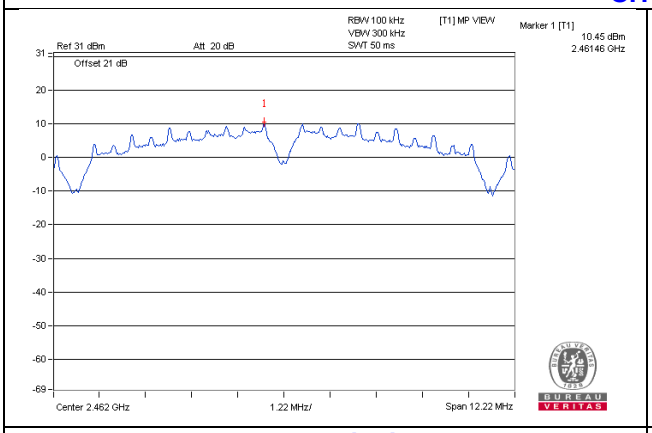


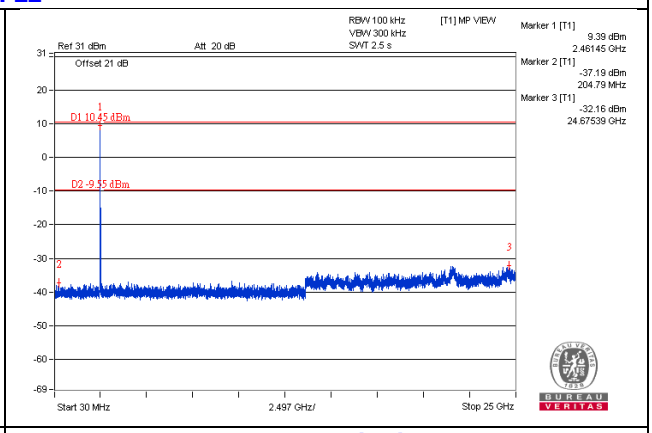
CH 6



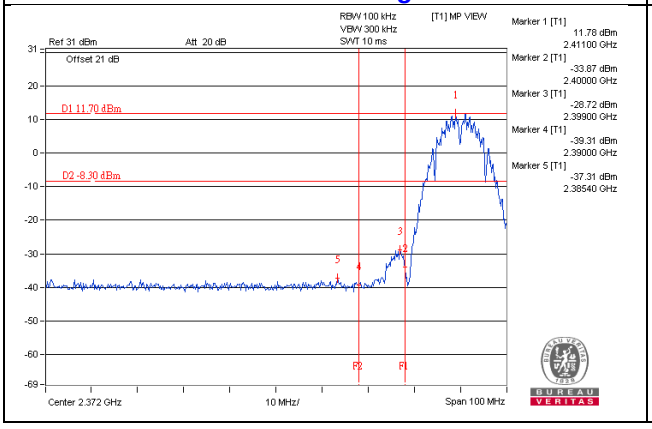


CH 11

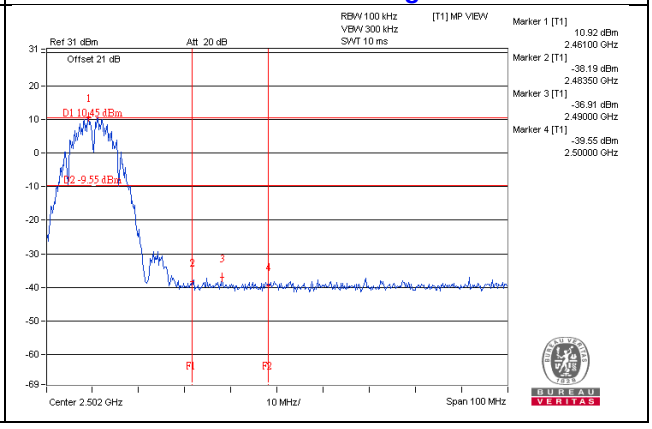




CH 1 Band edge

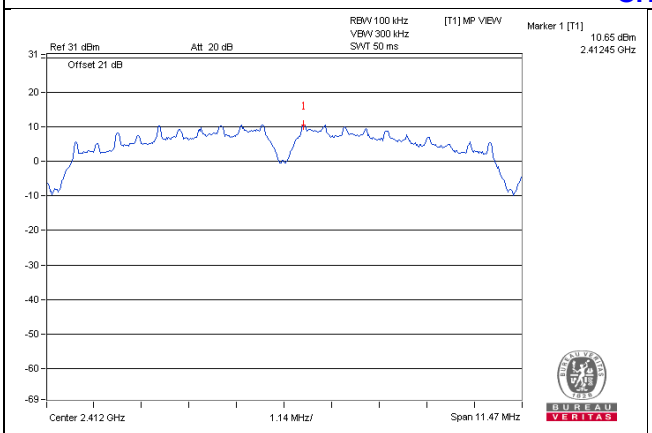


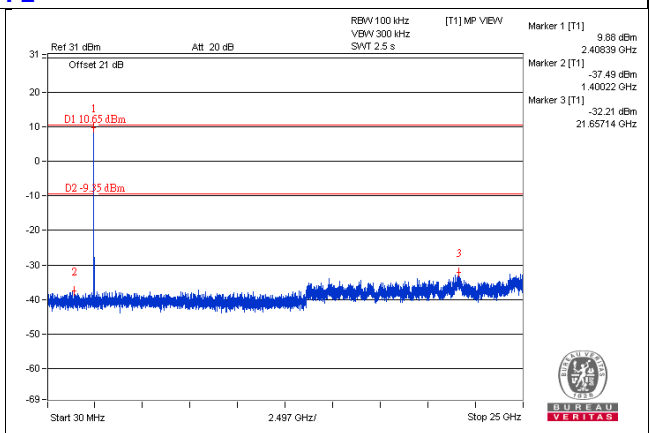
CH 11 Band edge



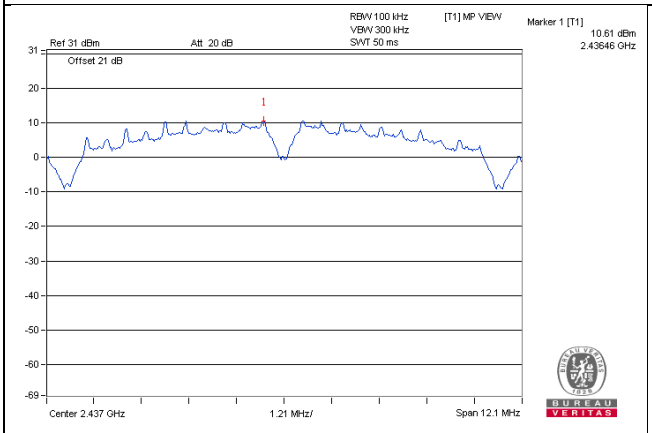
CHAIN 1

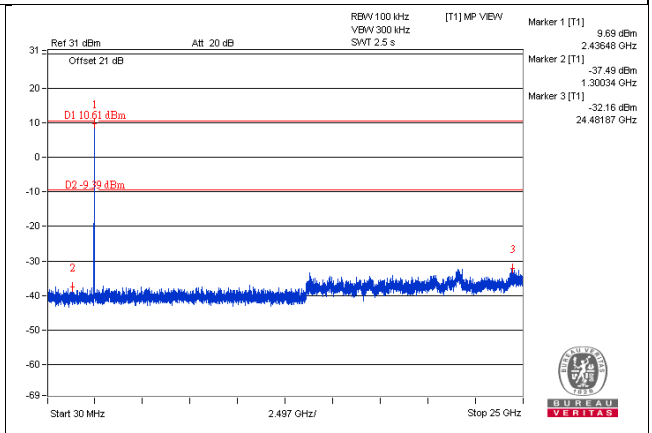
CH 1



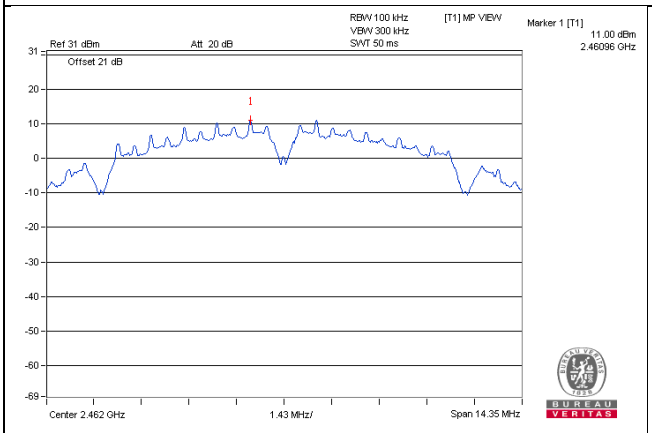


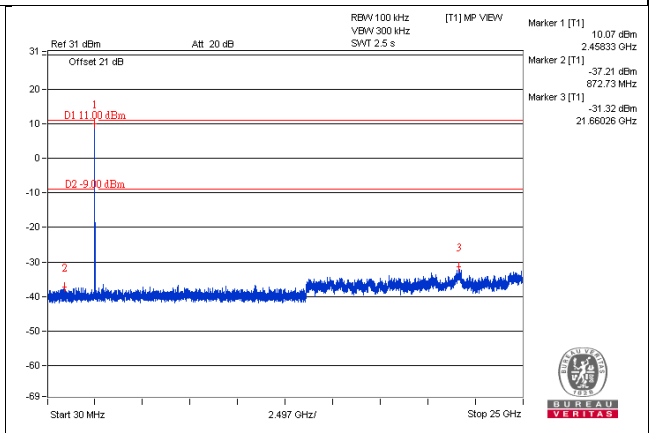
CH 6



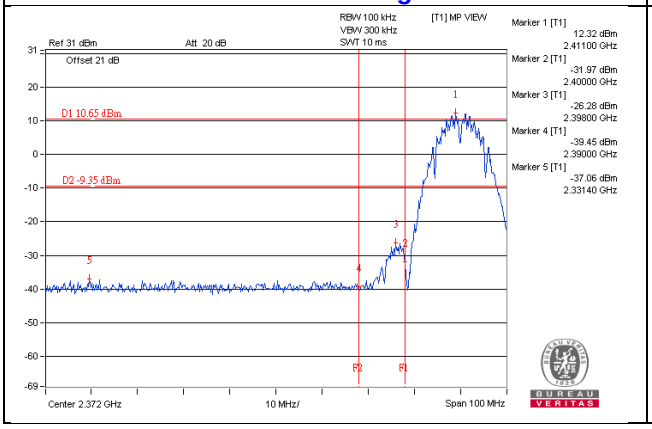


CH 11

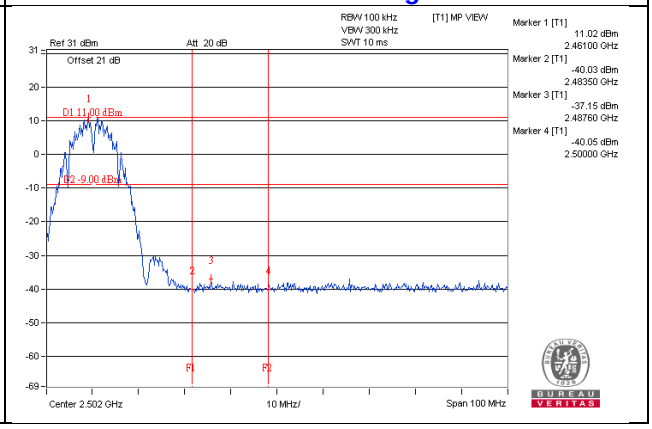




CH 1 Band edge



CH 11 Band edge



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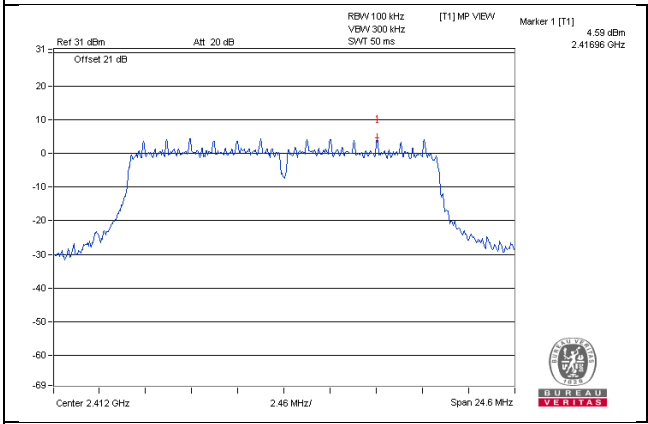

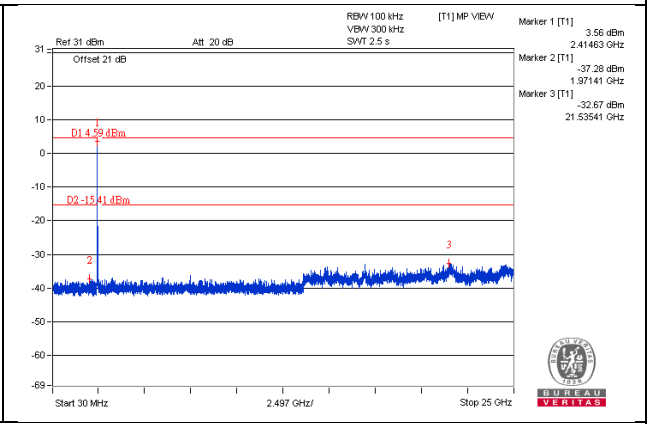

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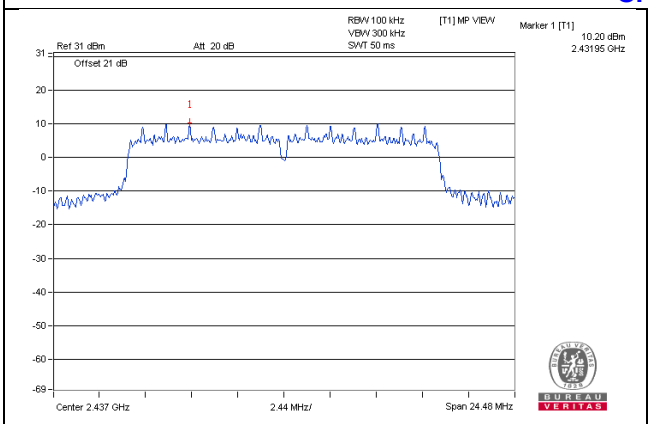

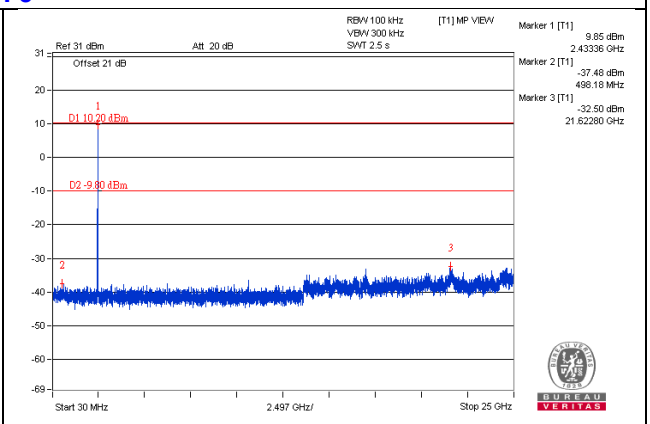

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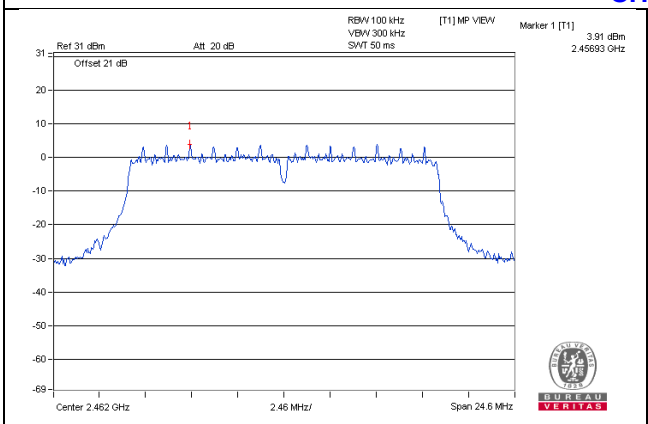

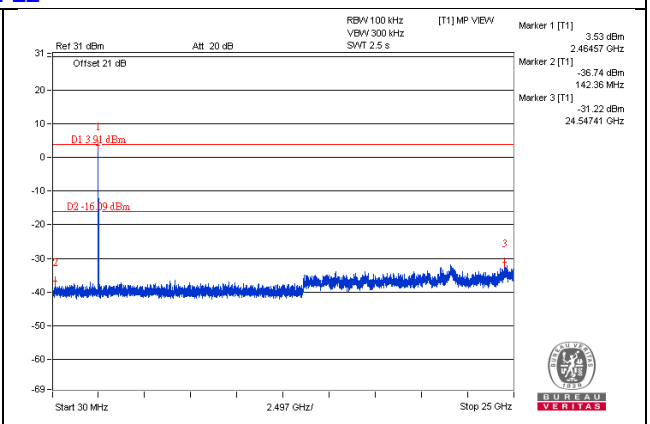

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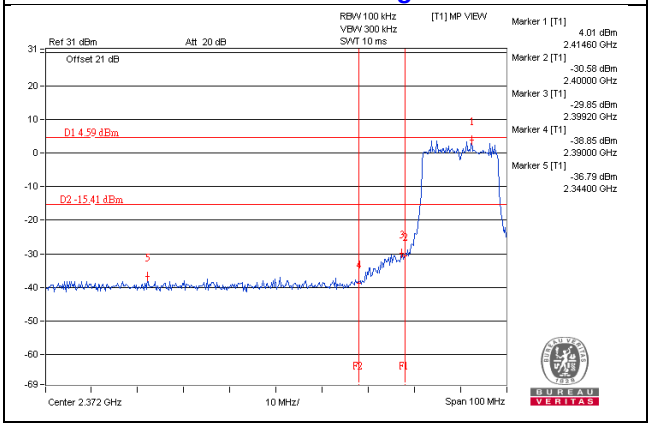

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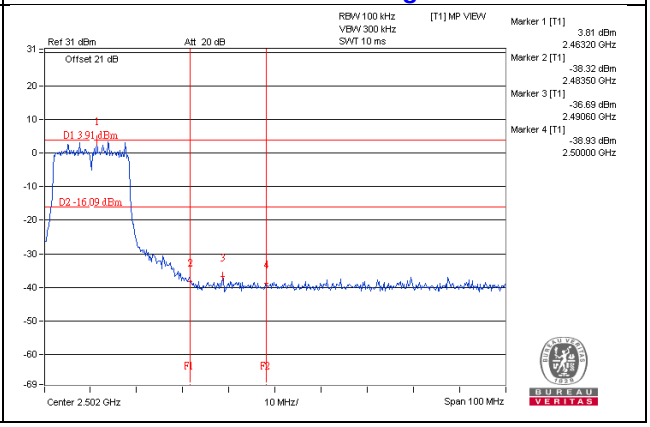

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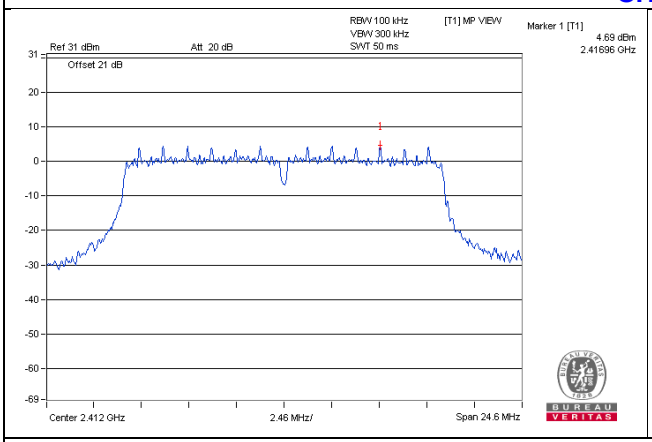

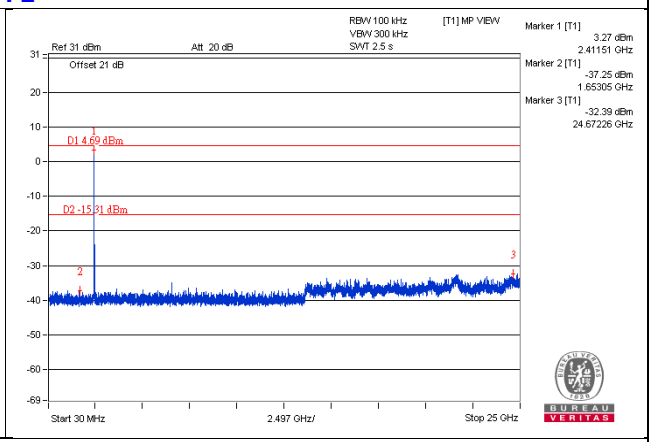

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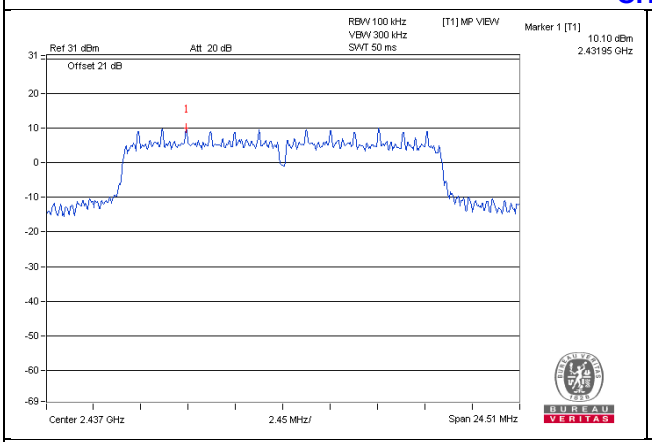

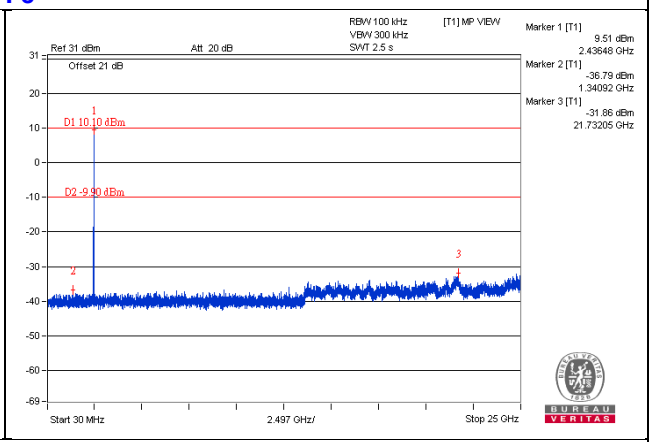

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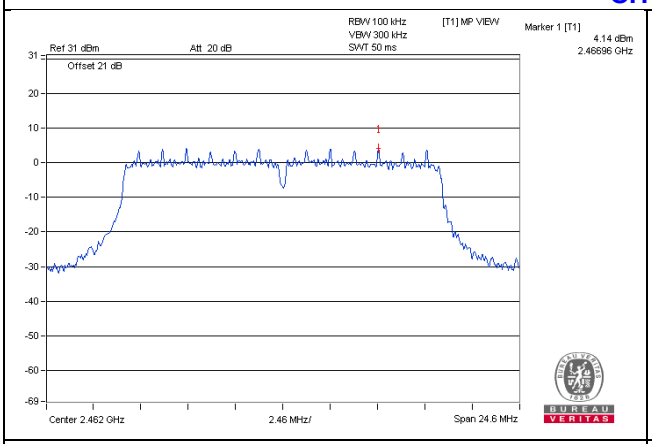

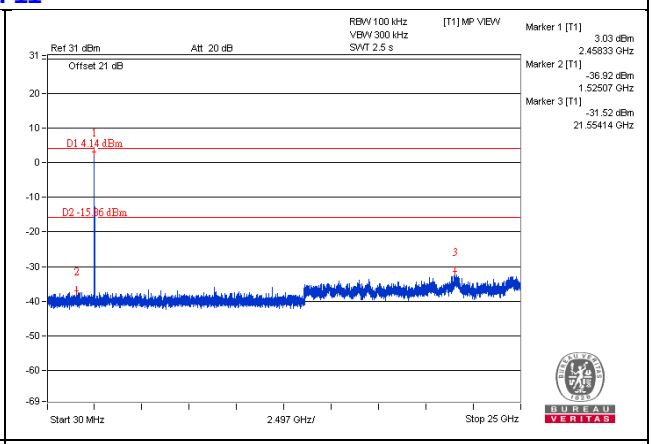

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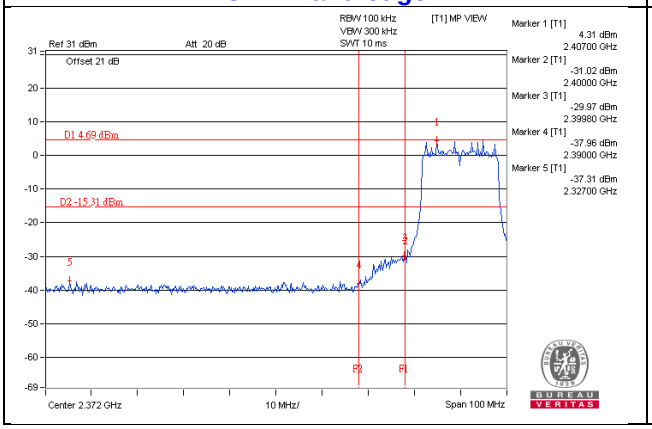

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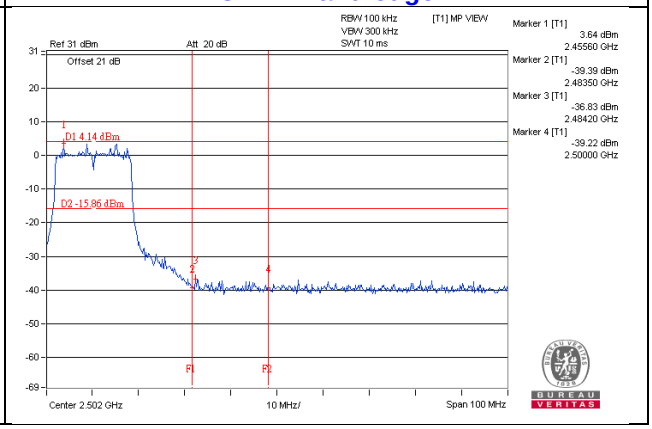

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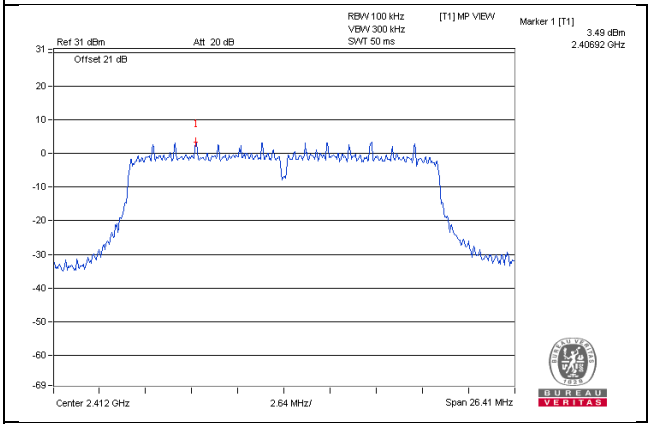

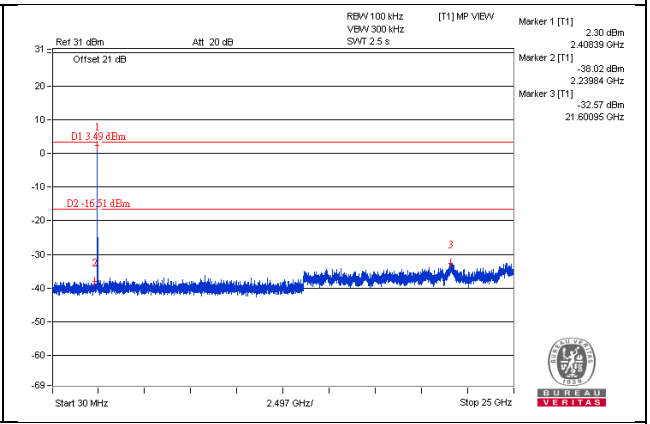

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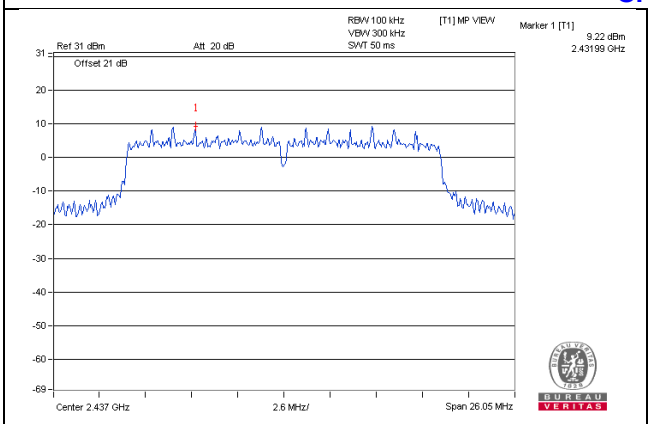

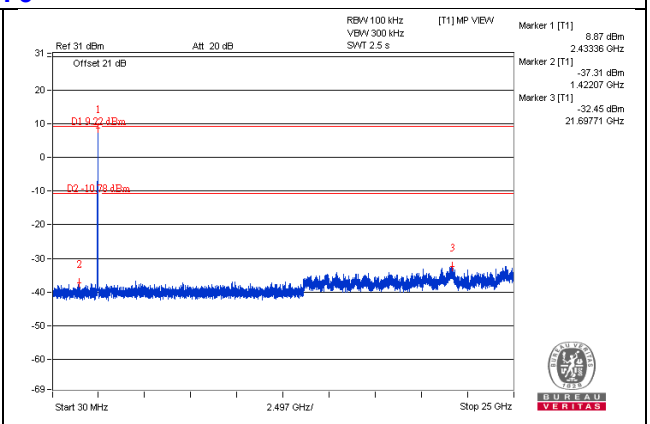

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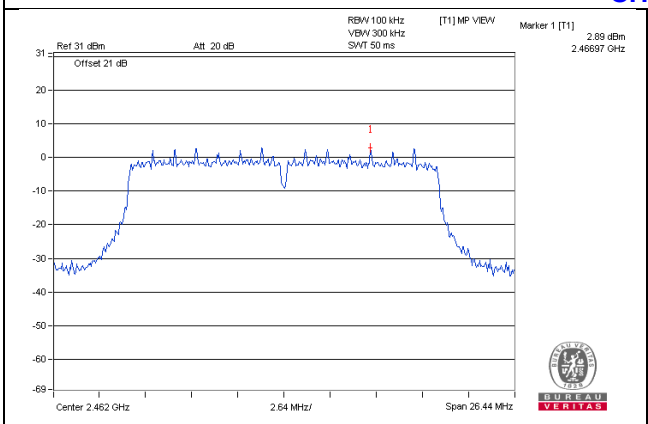

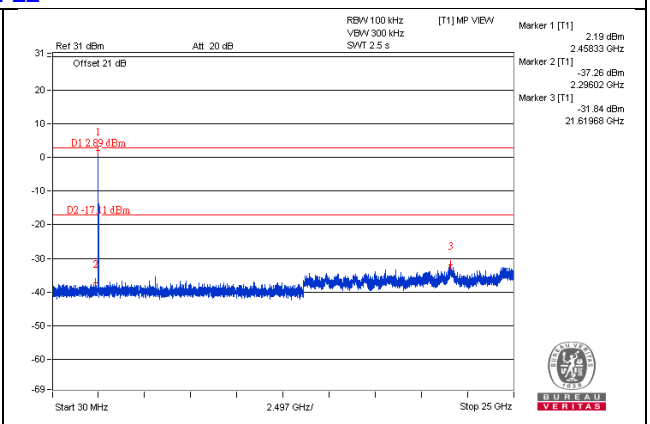

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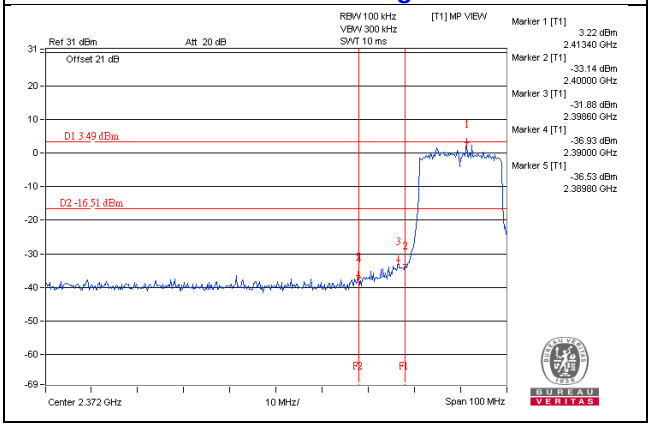

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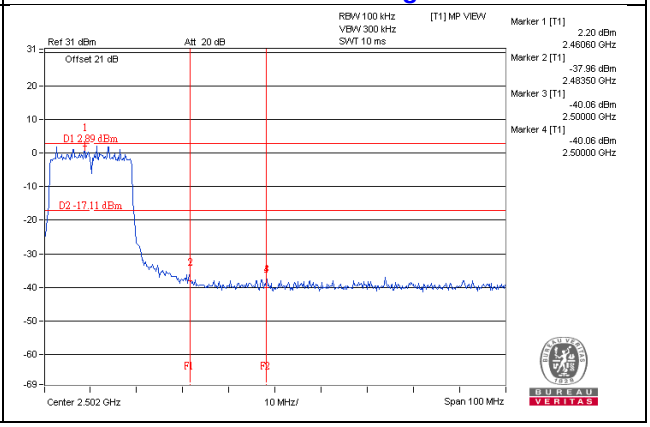
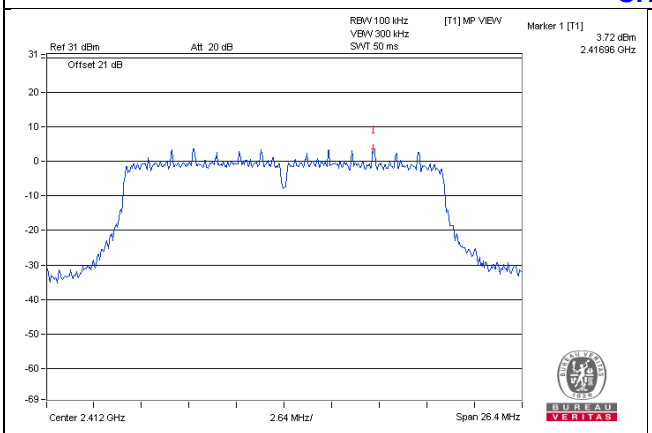
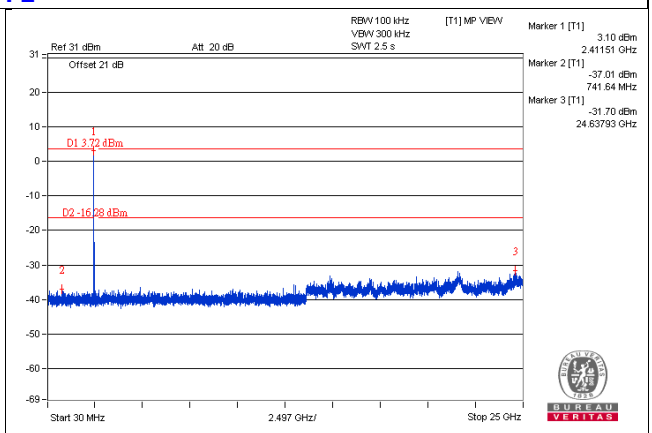


CHAIN 1

CH 1





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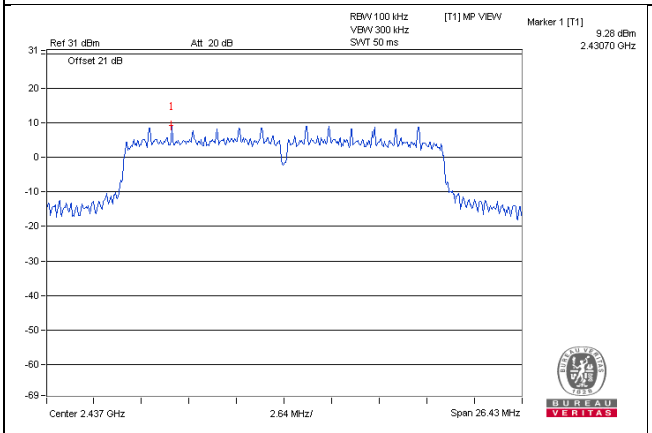

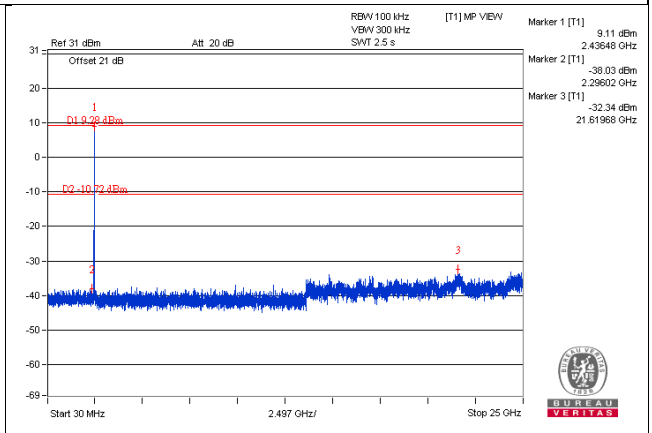

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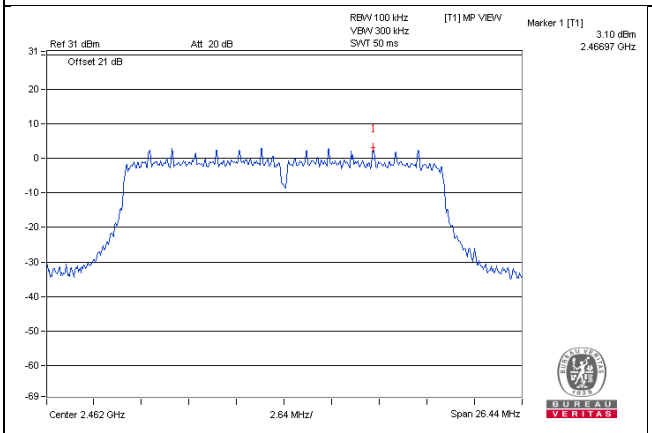

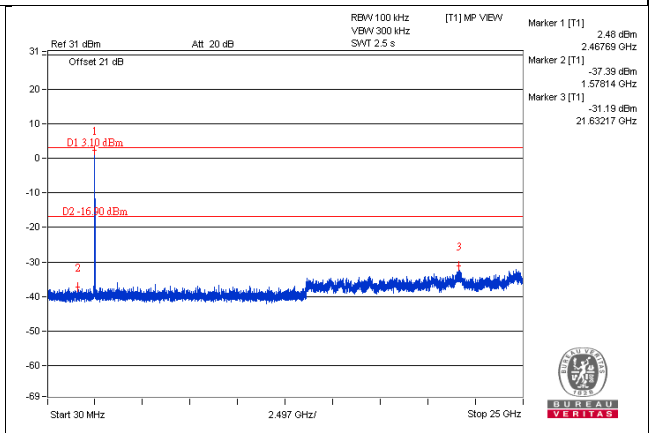

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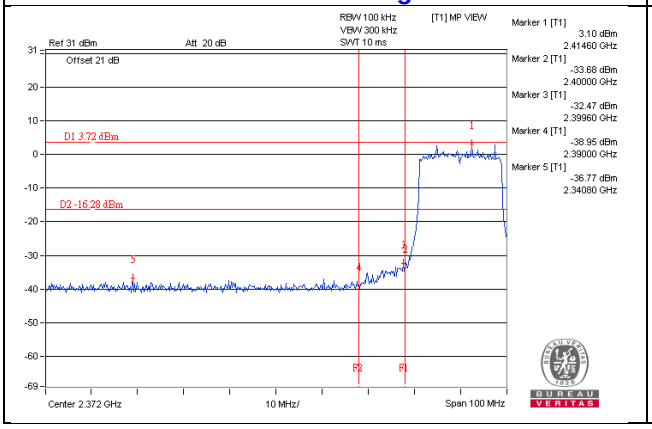

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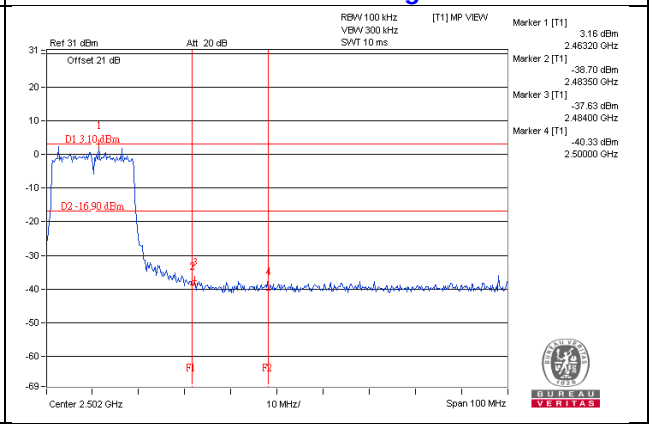

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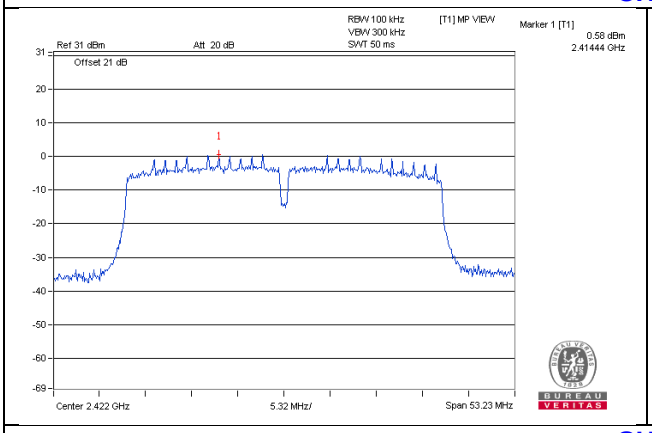

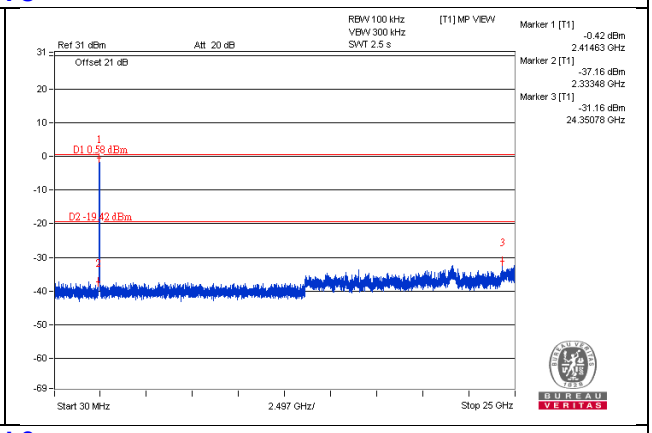

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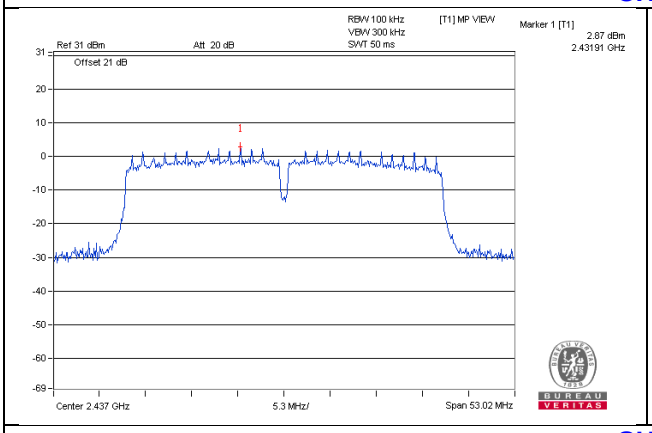

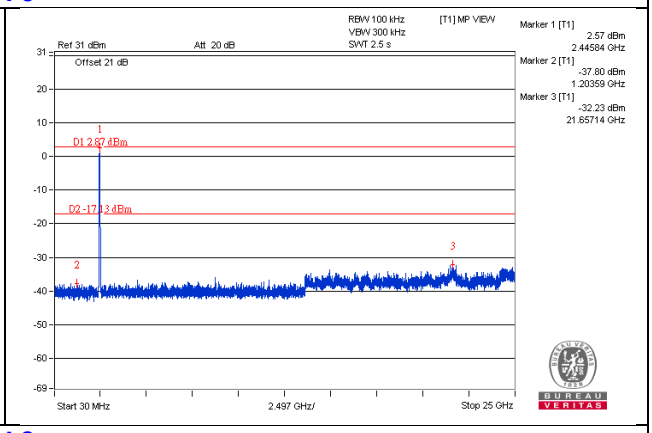

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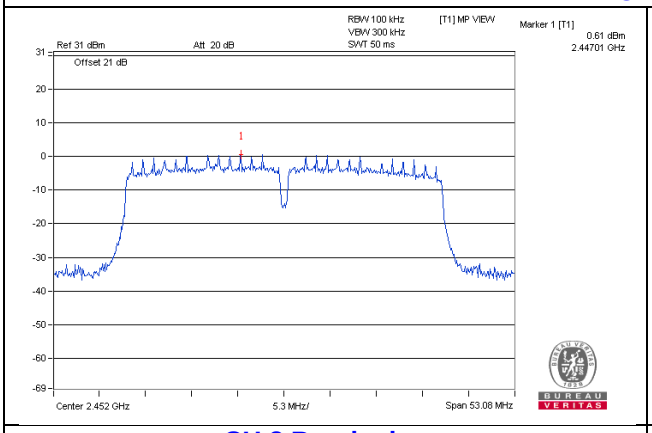

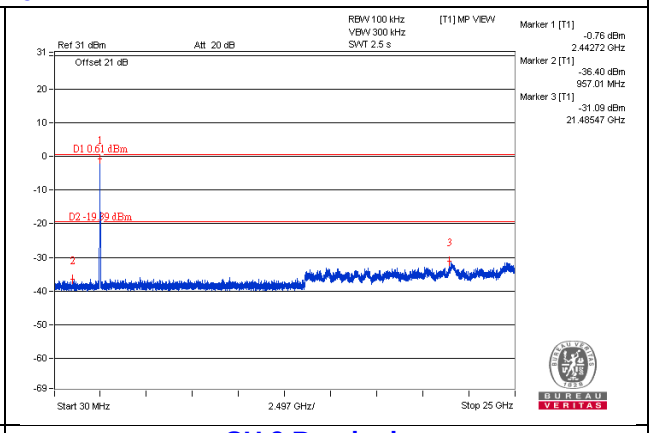

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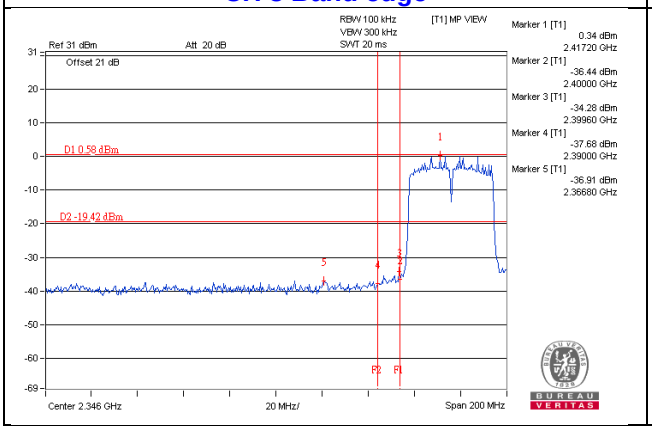

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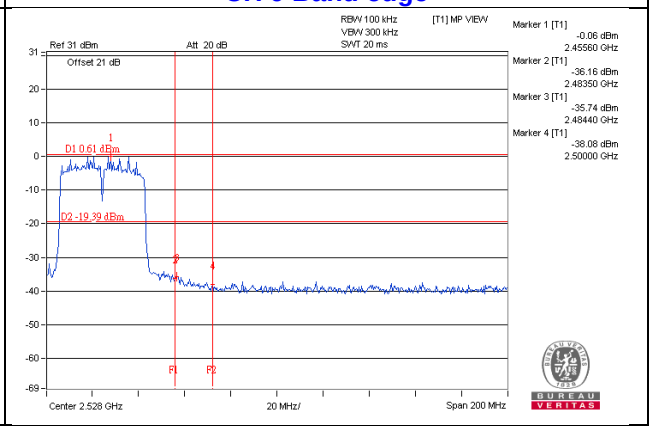
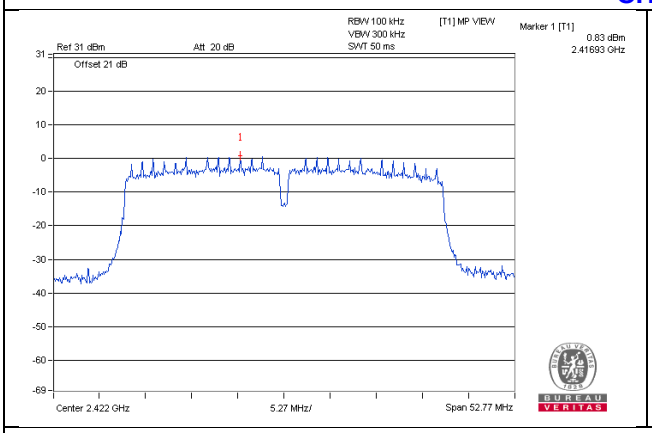
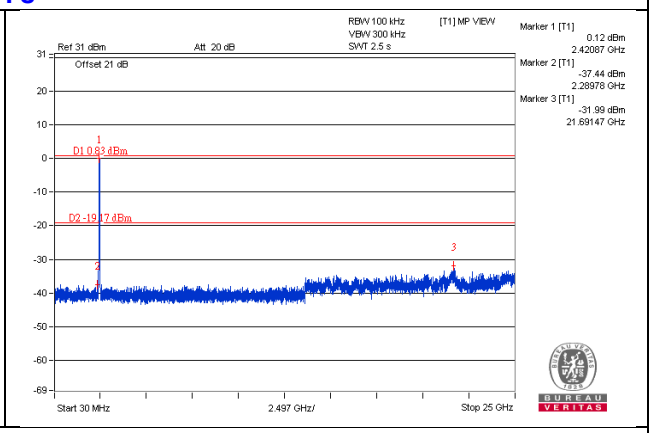


Chain 1

CH 3





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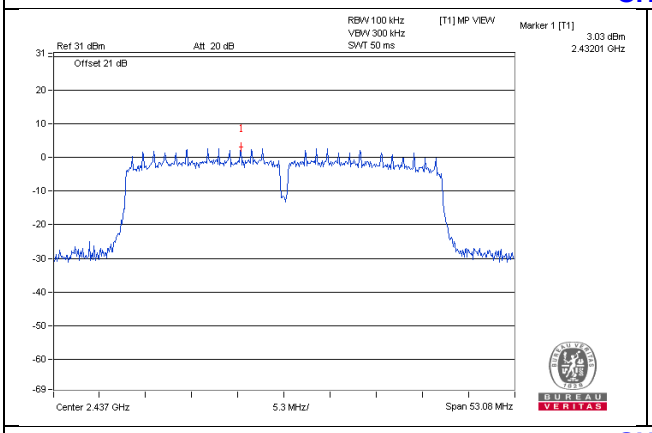

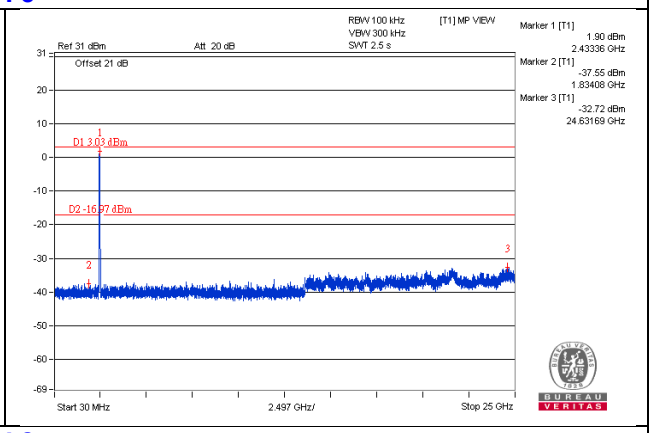

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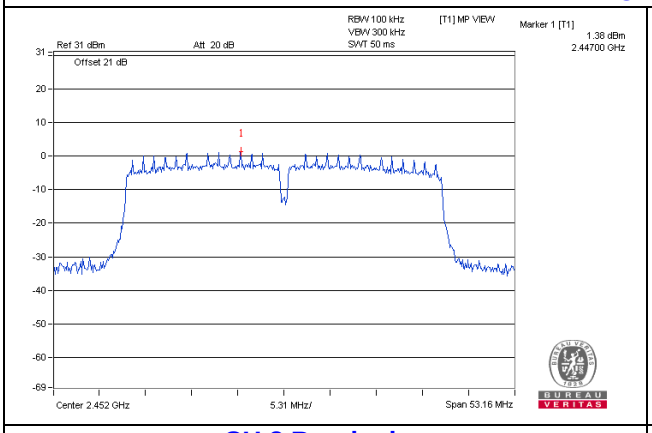

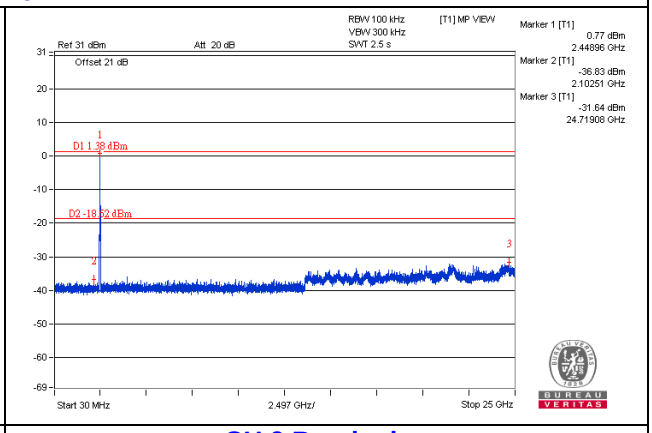

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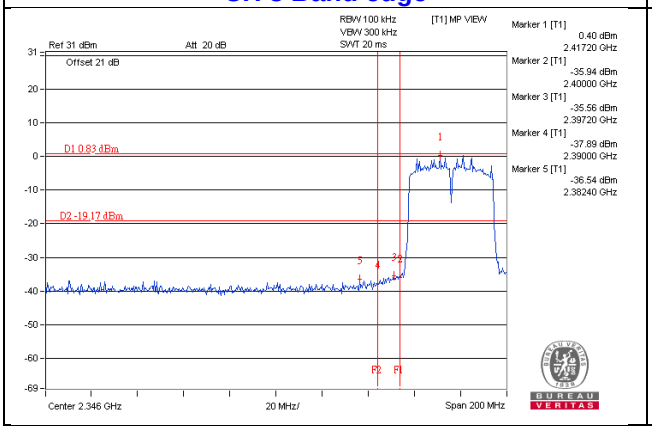

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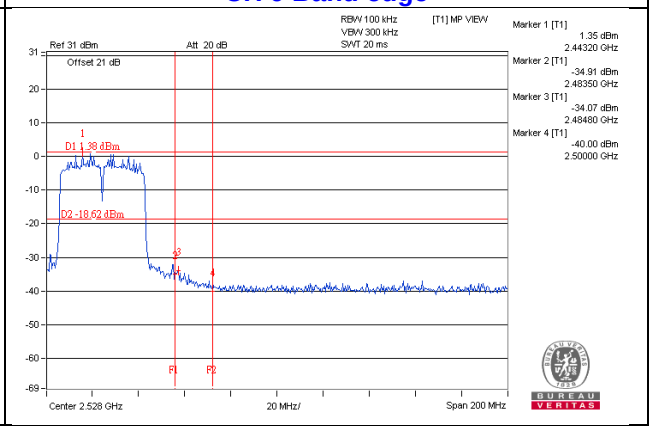

5 Pictures of Test Arrangements

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 FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

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

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

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

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