FCC Test Report

Report No.: RF160613C30

FCC ID: TVE-281BB022

Test Model: FAP-U421EV, FAP-U423EV

Series Model: FortiAP-U421EVxxxxxx, FAP-U421EVxxxxxx, FORTIAP-U421EVxxxxxx, FortiAP-U423EVxxxxxx, FAP-U423EVxxxxxx, FORTIAP-U423EVxxxxxx (where “x” can be used as “A-Z” or “0-9” or “-“ or blank for software changes or marketing purposes only) (refer to item 3.1 for more details)

Received Date: Jun. 13, 2016

Test Date: Jun. 21 ~ Jul. 04, 2016

Issued Date: Jul. 05, 2016

Applicant: Fortinet Inc.

Address: 899 Kifer Road Sunnyvale, CA 94086 USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.
The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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Release Control Record

Issue No.	Description	Date Issued
RF160613C30	Original release.	Jul. 05, 2016

1 Certificate of Conformity

Product: Secured Wireless Access Point

Brand: Fortinet Inc.

Test Model: FAP-U421EV, FAP-U423EV

Series Model: FortiAP-U421EVxxxxxx, FAP-U421EVxxxxxx, FORTIAP-U421EVxxxxxx, FortiAP-U423EVxxxxxx, FAP-U423EVxxxxxx, FORTIAP-U423EVxxxxxx (where "x" can be used as "A-Z" or "0-9" or "-" or blank for software changes or marketing purposes only) (refer to item 3.1 for more details)

Sample Status: Engineering sample

Applicant: Fortinet Inc.

Test Date: Jun. 21 ~ Jul. 04, 2016

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2013

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

Prepared by : _____ , **Date:** Jul. 05, 2016
Suntee Liu / Specialist

Approved by : _____ , **Date:** Jul. 05, 2016
Ken Liu / Senior 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 -3.75dB at 0.52130MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00, 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX or RPSMA not a standard connector.

3 General Information

3.1 General Description of EUT

Product	Secured Wireless Access Point
Brand	Fortinet Inc.
Test Model	FAP-U421EV, FAP-U423EV
Series Model	FortiAP-U421EVxxxxxx, FAP-U421EVxxxxxx, FORTIAP-U421EVxxxxxx, FortiAP-U423EVxxxxxx, FAP-U423EVxxxxxx, FORTIAP-U423EVxxxxxx (where "x" can be used as "A-Z" or "0-9" or "-" or blank for software changes or marketing purposes only) (refer to Note for more details)
Model Difference	Refer to Note
Sample Status	Engineering sample
Power Supply Rating	12Vdc (adapter) 54Vdc (POE)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 600Mbps
Operating Frequency	2412~2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	275.713mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Cable Supplied	NA

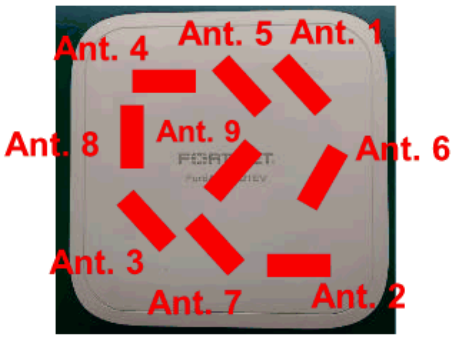
Note:

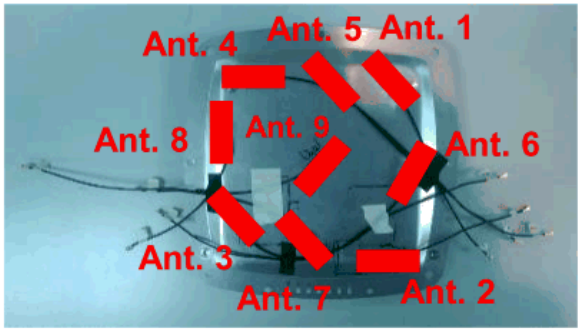
1. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Modulation Mode	TX Function
802.11a	4TX
802.11n (HT20)	4TX
802.11n (HT40)	4TX
802.11ac (VHT20)	4TX
802.11ac (VHT40)	4TX
802.11ac (VHT80)	4TX

2. The EUT uses following antennas.

Antenna Type	Printed	Antenna Connector	IPEX
Gain (dBi)	Frequency (MHz)		
	2400~2500	5150~5850	
WLAN Internal Ant. 1	3.81	-	
WLAN Internal Ant. 2	3.98	-	
WLAN Internal Ant. 3	3.47	-	
WLAN Internal Ant. 4	3.75	-	
WLAN Internal Ant. 5	-	5.65	
WLAN Internal Ant. 6	-	5.50	
WLAN Internal Ant. 7	-	5.84	
WLAN Internal Ant. 8	-	5.84	
Gain (dBi)	Frequency (MHz)		
	2400	2450	2500
BT Internal Ant. 9	2.56	2.91	2.62





Antenna Type	Dipole	Antenna Connector	RPSMA
Gain (dBi)	Frequency (MHz)		
	2400~2500	5150~5850	
WLAN External Ant.	4.42	3	

3. All models are listed as below (where “x” can be used as “A-Z” or “0-9” or “-“ or blank for software changes or marketing purposes only). Models FAP-U421EV and FAP-U423EV are the representatives for final test.

Brand	Model	Difference
Fortinet Inc.	FortiAP-U421EVxxxxxx	Internal antenna
	FAP-U421EVxxxxxx	
	FORTIAP-U421EVxxxxxx	
	FortiAP-U423EVxxxxxx	External antenna
	FAP-U423EVxxxxxx	
	FORTIAP-U423EVxxxxx	

4. WLAN 2.4GHz and WLAN 5GHz and BT technologies can transmit at same time.
5. Spurious emission of the simultaneous operation (WLAN 2.4GHz and WLAN 5GHz and BT) has been evaluated and no non-compliance was found.

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	
A	√	√	√	√	Internal antenna, Power from adapter
B	-	√	√	-	Internal antenna, Power from POE
C	√	√	√	-	External antenna, Power from adapter
D	-	√	√	-	External antenna, Power from 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 3 axis. The worst case was found when positioned on Y-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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Date Rate (Mbps)
A, C	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A, C	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A, C	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A, C	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Date Rate (Mbps)
A, B, C, D	802.11n (HT20)	1 to 11	6	OFDM	BPSK	7.2

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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Date Rate (Mbps)
A, B, C, D	802.11n (HT20)	1 to 11	6	OFDM	BPSK	7.2

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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Date Rate (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0

Test Condition:

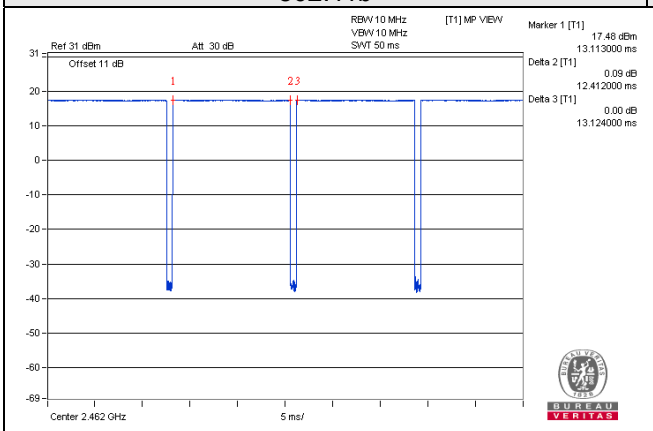
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	19 deg. C, 70% RH 16 deg. C, 70% RH	120Vac, 60Hz	Jones Chang Nick Hsu
RE<1G	18 deg. C, 70% RH	120Vac, 60Hz	Nick Hsu
PLC	18 deg. C, 70% RH	120Vac, 60Hz	Nick Hsu
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Leo Tsai

3.3 Duty Cycle of Test Signal

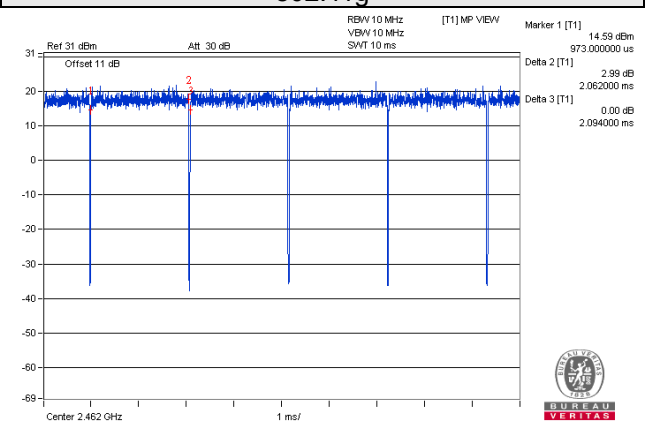
Duty cycle of test signal is ≥ 98%, duty factor is not required.
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 12.412/13.124 = 0.946, Duty factor = 10 * log(1/0.946) = 0.24
802.11g: Duty cycle = 2.062/2.094 = 0.985
802.11n (HT20): Duty cycle = 1.92/2.03 = 0.946, Duty factor = 10 * log(1/0.946) = 0.24
802.11n (HT40): Duty cycle = 0.94/1.042 = 0.902, Duty factor = 10 * log(1/0.902) = 0.45

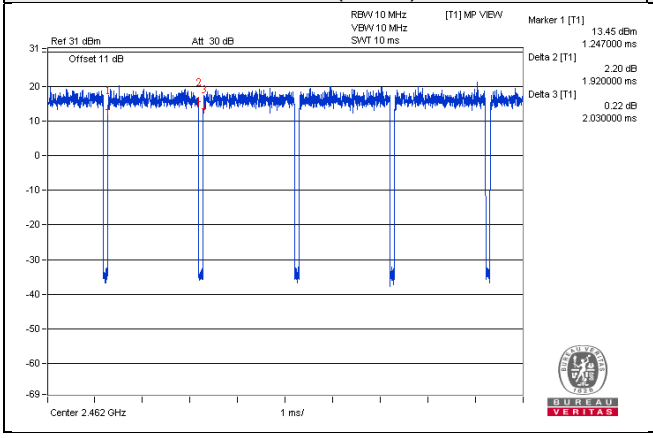
802.11b



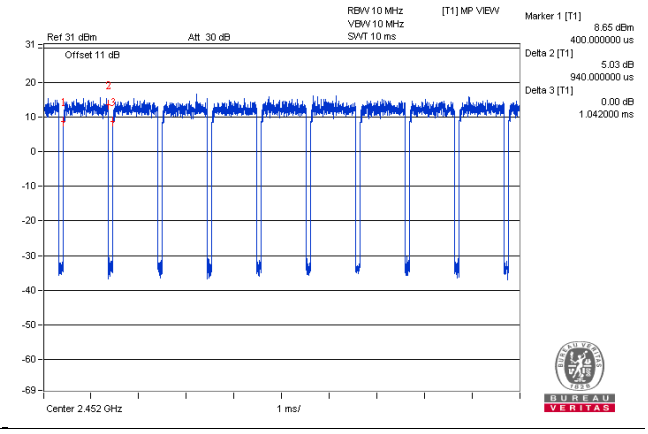
802.11g



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.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	Load	NA	NA	NA	NA	-
C.	Flash	Transcend	8GB	NA	NA	-
D.	Adapter	Asian Power Devices Inc.	WA-36A12R	NA	NA	Option of EUT I/P: 100-240Vac, 50-60Hz, 0.9A Max. O/P: 12Vdc, 3A 1.8m DC cable with 1 core
E.	POE	EnGenius	EPA5006GAT	NA	NA	Option of EUT I/P: 100-240Vac, 50-60Hz, 0.8A O/P: 54Vdc, 0.6A 0.5m power cable w/o core

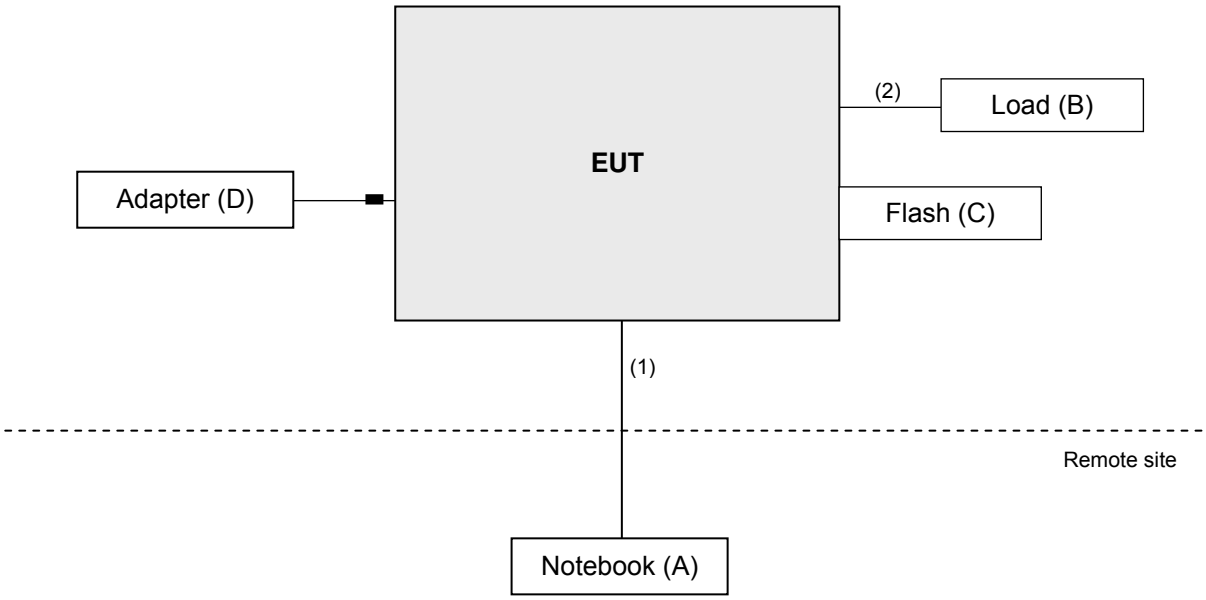
Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

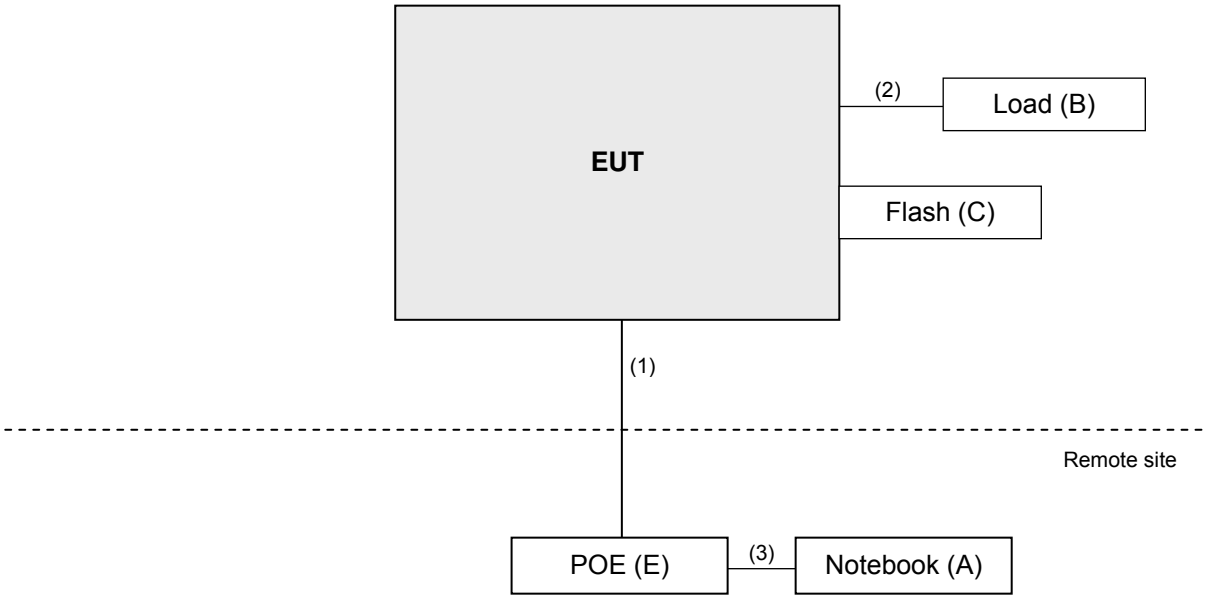
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45	1	5	N	0	-
2.	RJ45	2	1	N	0	-
3.	RJ45	1	1.8	N	0	-

3.4.1 Configuration of System under Test

Mode A, C



Mode B, D



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
558074 D01 DTS Meas Guidance v03r05
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 30dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Apr. 18, 2016	Apr. 17, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Sep. 02, 2015	Sep. 01, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	9120D	209	Jan. 20, 2016	Jan. 19, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Preamplifier Agilent	8447D	2944A10738	Oct.18, 2015	Oct. 17, 2016
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2015	Aug. 21, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (214378)	Aug. 22, 2015	Aug. 21, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 106	Cable-CH3-03 (309224+12738)	Aug. 22, 2015	Aug. 21, 2016
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2015	Jul. 08, 2016
Power Sensor	MA2411B	0738171	Jul. 09, 2015	Jul. 08, 2016

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 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:

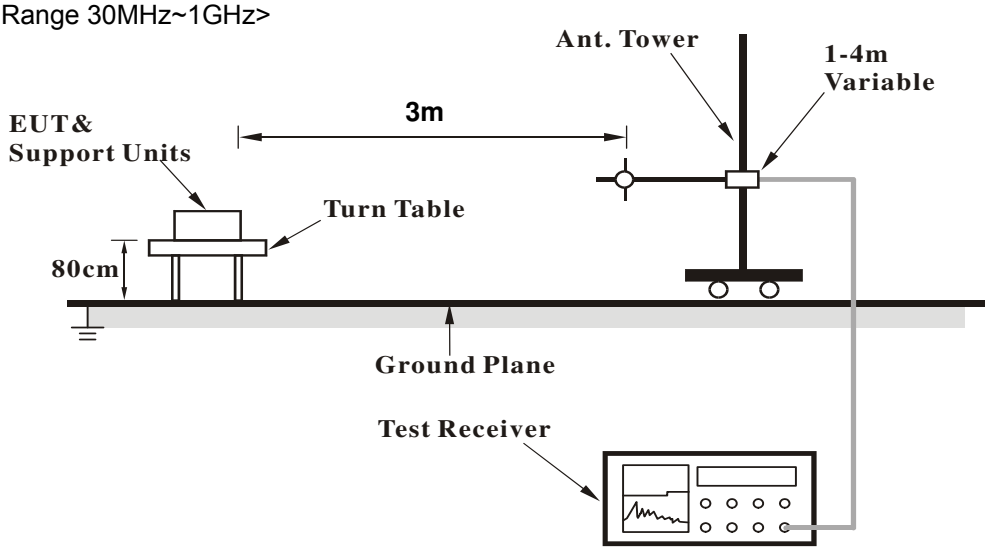
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

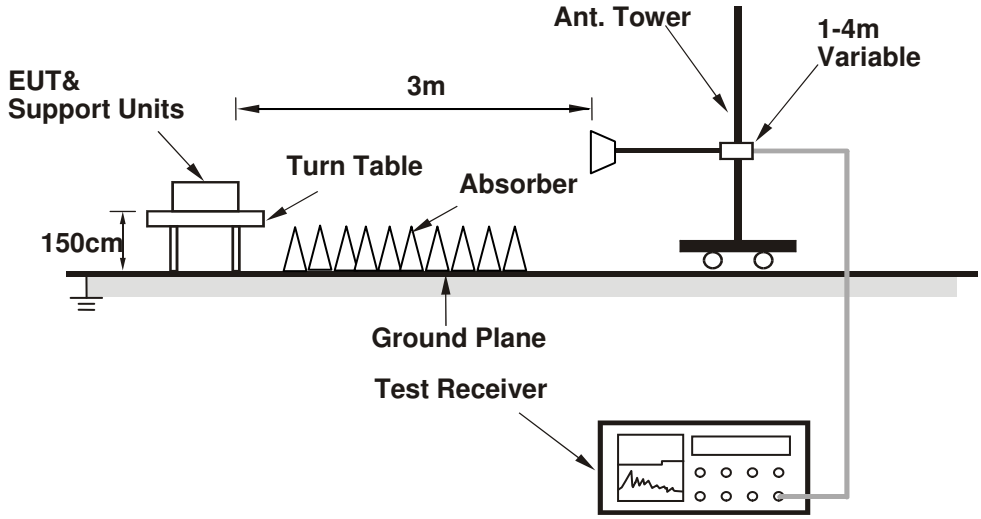
No deviation.

4.1.5 Test Setup

<Frequency Range 30MHz~1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz Data:

Mode A

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	65.3 PK	74.0	-8.7	2.32 H	37	32.5	32.8
2	2390.00	52.4 AV	54.0	-1.6	2.32 H	37	19.6	32.8
3	*2412.00	118.2 PK			2.01 H	44	85.3	32.9
4	*2412.00	114.3 AV			2.01 H	44	81.4	32.9
5	2487.00	59.3 PK	74.0	-14.7	1.46 H	350	26.3	33.0
6	2487.00	50.4 AV	54.0	-3.6	1.46 H	350	17.4	33.0
7	4824.00	50.1 PK	74.0	-23.9	2.19 H	273	44.2	5.9
8	4824.00	40.7 AV	54.0	-13.3	2.19 H	273	34.8	5.9
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	61.8 PK	74.0	-12.2	2.72 V	352	29.0	32.8
2	2390.00	51.4 AV	54.0	-2.6	2.72 V	352	18.6	32.8
3	*2412.00	114.3 PK			2.74 V	20	81.4	32.9
4	*2412.00	110.4 AV			2.74 V	20	77.5	32.9
5	2487.00	56.8 PK	74.0	-17.2	2.50 V	88	23.8	33.0
6	2487.00	47.0 AV	54.0	-7.0	2.50 V	88	14.0	33.0
7	4824.00	48.0 PK	74.0	-26.0	1.73 V	320	42.1	5.9
8	4824.00	36.6 AV	54.0	-17.4	1.73 V	320	30.7	5.9

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)
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	57.2 PK	74.0	-16.8	1.62 H	37	24.4	32.8
2	2390.00	46.8 AV	54.0	-7.2	1.62 H	37	14.0	32.8
3	*2437.00	118.7 PK			1.62 H	37	85.8	32.9
4	*2437.00	114.9 AV			1.62 H	37	82.0	32.9
5	2483.50	57.5 PK	74.0	-16.5	1.70 H	19	24.5	33.0
6	2483.50	48.0 AV	54.0	-6.0	1.70 H	19	15.0	33.0
7	4874.00	52.5 PK	74.0	-21.5	2.19 H	355	46.5	6.0
8	4874.00	44.2 AV	54.0	-9.8	2.19 H	355	38.2	6.0
9	7311.00	59.0 PK	74.0	-15.0	2.90 H	290	45.7	13.3
10	7311.00	52.1 AV	54.0	-1.9	2.90 H	290	38.8	13.3
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	55.9 PK	74.0	-18.1	2.70 V	18	23.1	32.8
2	2390.00	45.8 AV	54.0	-8.2	2.70 V	18	13.0	32.8
3	*2437.00	115.0 PK			2.70 V	18	82.1	32.9
4	*2437.00	111.2 AV			2.70 V	18	78.3	32.9
5	2483.50	57.1 PK	74.0	-16.9	2.50 V	20	24.1	33.0
6	2483.50	47.0 AV	54.0	-7.0	2.50 V	20	14.0	33.0
7	4874.00	51.5 PK	74.0	-22.5	1.68 V	322	45.5	6.0
8	4874.00	43.9 AV	54.0	-10.1	1.68 V	322	37.9	6.0
9	7311.00	59.4 PK	74.0	-14.6	1.86 V	0	46.1	13.3
10	7311.00	52.3 AV	54.0	-1.7	1.86 V	0	39.0	13.3

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)
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	118.0 PK			1.99 H	41	85.1	32.9
2	*2462.00	114.3 AV			1.99 H	41	81.4	32.9
3	2483.50	64.9 PK	74.0	-9.1	1.48 H	42	31.9	33.0
4	2483.50	52.8 AV	54.0	-1.2	1.48 H	42	19.8	33.0
5	4924.00	50.9 PK	74.0	-23.1	1.74 H	206	44.9	6.0
6	4924.00	41.4 AV	54.0	-12.6	1.74 H	206	35.4	6.0
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	*2462.00	113.7 PK			2.70 V	320	80.8	32.9
2	*2462.00	110.3 AV			2.70 V	320	77.4	32.9
3	2483.50	63.6 PK	74.0	-10.4	2.65 V	0	30.6	33.0
4	2483.50	51.3 AV	54.0	-2.7	2.65 V	0	18.3	33.0
5	4924.00	51.5 PK	74.0	-22.5	1.68 V	330	45.5	6.0
6	4924.00	44.3 AV	54.0	-9.7	1.68 V	330	38.3	6.0

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)
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	72.1 PK	74.0	-1.9	1.83 H	33	39.3	32.8
2	2390.00	50.6 AV	54.0	-3.4	1.83 H	33	17.8	32.8
3	*2412.00	114.4 PK			2.26 H	34	81.5	32.9
4	*2412.00	104.8 AV			2.26 H	34	71.9	32.9
5	4824.00	49.1 PK	74.0	-24.9	1.75 H	196	43.2	5.9
6	4824.00	35.3 AV	54.0	-18.7	1.75 H	196	29.4	5.9
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	65.7 PK	74.0	-8.3	2.56 V	328	32.9	32.8
2	2390.00	50.0 AV	54.0	-4.0	2.56 V	328	17.2	32.8
3	*2412.00	110.7 PK			2.56 V	328	77.8	32.9
4	*2412.00	101.5 AV			2.56 V	328	68.6	32.9
5	4824.00	48.5 PK	74.0	-25.5	1.80 V	1	42.6	5.9
6	4824.00	35.8 AV	54.0	-18.2	1.80 V	1	29.9	5.9

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)
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	*2437.00	118.9 PK			1.93 H	39	86.0	32.9
2	*2437.00	109.6 AV			1.93 H	39	76.7	32.9
3	4874.00	49.7 PK	74.0	-24.3	2.22 H	342	43.7	6.0
4	4874.00	36.7 AV	54.0	-17.3	2.22 H	342	30.7	6.0
5	7311.00	71.6 PK	74.0	-2.4	2.98 H	294	58.3	13.3
6	7311.00	52.5 AV	54.0	-1.5	2.98 H	294	39.2	13.3
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	*2437.00	114.5 PK			2.75 V	23	81.6	32.9
2	*2437.00	105.1 AV			2.75 V	23	72.2	32.9
3	4874.00	50.4 PK	74.0	-23.6	1.70 V	322	44.4	6.0
4	4874.00	37.7 AV	54.0	-16.3	1.70 V	322	31.7	6.0
5	7311.00	71.7 PK	74.0	-2.3	1.73 V	0	58.4	13.3
6	7311.00	52.2 AV	54.0	-1.8	1.73 V	0	38.9	13.3

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)
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			2.20 H	32	83.4	32.9
2	*2462.00	105.3 AV			2.20 H	32	72.4	32.9
3	**2483.50**	**73.0 PK**	**74.0**	**-1.0**	**1.73 H**	**39**	**40.0**	**33.0**
4	2483.50	52.1 AV	54.0	-1.9	1.73 H	39	19.1	33.0
5	4924.00	47.0 PK	74.0	-27.0	1.60 H	186	41.0	6.0
6	4924.00	35.5 AV	54.0	-18.5	1.60 H	186	29.5	6.0
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	*2462.00	112.6 PK			2.64 V	13	79.7	32.9
2	*2462.00	101.9 AV			2.64 V	13	69.0	32.9
3	2483.50	70.8 PK	74.0	-3.2	2.50 V	1	37.8	33.0
4	2483.50	50.1 AV	54.0	-3.9	2.50 V	1	17.1	33.0
5	4924.00	48.8 PK	74.0	-25.2	1.77 V	333	42.8	6.0
6	4924.00	36.3 AV	54.0	-17.7	1.77 V	333	30.3	6.0

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)
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**	**73.0 PK**	**74.0**	**-1.0**	**1.90 H**	**37**	**40.2**	**32.8**
2	2390.00	51.8 AV	54.0	-2.2	1.90 H	37	19.0	32.8
3	*2412.00	114.7 PK			2.27 H	45	81.8	32.9
4	*2412.00	104.4 AV			2.27 H	45	71.5	32.9
5	4824.00	47.2 PK	74.0	-26.8	1.80 H	245	41.3	5.9
6	4824.00	34.6 AV	54.0	-19.4	1.80 H	245	28.7	5.9
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	70.0 PK	74.0	-4.0	2.84 V	348	37.2	32.8
2	2390.00	50.3 AV	54.0	-3.7	2.84 V	348	17.5	32.8
3	*2412.00	110.1 PK			2.26 V	14	77.2	32.9
4	*2412.00	99.5 AV			2.26 V	14	66.6	32.9
5	4824.00	48.0 PK	74.0	-26.0	2.31 V	128	42.1	5.9
6	4824.00	34.8 AV	54.0	-19.2	2.31 V	128	28.9	5.9

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)
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	*2437.00	119.3 PK			2.18 H	40	86.4	32.9
2	*2437.00	109.0 AV			2.18 H	40	76.1	32.9
3	4874.00	48.3 PK	74.0	-25.7	1.82 H	176	42.3	6.0
4	4874.00	37.3 AV	54.0	-16.7	1.82 H	176	31.3	6.0
5	7311.00	67.9 PK	74.0	-6.1	3.24 H	288	54.6	13.3
6	7311.00	52.8 AV	54.0	-1.2	3.24 H	288	39.5	13.3
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	*2437.00	114.8 PK			2.60 V	14	81.9	32.9
2	*2437.00	104.8 AV			2.60 V	14	71.9	32.9
3	4874.00	49.7 PK	74.0	-24.3	1.88 V	9	43.7	6.0
4	4874.00	36.5 AV	54.0	-17.5	1.88 V	9	30.5	6.0
5	7311.00	67.1 PK	74.0	-6.9	1.83 V	0	53.8	13.3
6	7311.00	52.1 AV	54.0	-1.9	1.83 V	0	38.8	13.3

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)
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	115.5 PK			2.17 H	38	82.6	32.9
2	*2462.00	105.5 AV			2.17 H	38	72.6	32.9
3	2483.50	72.6 PK	74.0	-1.4	1.80 H	32	39.6	33.0
4	2483.50	51.4 AV	54.0	-2.6	1.80 H	32	18.4	33.0
5	4924.00	47.7 PK	74.0	-26.3	1.93 H	353	41.7	6.0
6	4924.00	35.7 AV	54.0	-18.3	1.93 H	353	29.7	6.0
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	*2462.00	111.6 PK			2.62 V	16	78.7	32.9
2	*2462.00	101.3 AV			2.62 V	16	68.4	32.9
3	2483.50	69.6 PK	74.0	-4.4	2.90 V	0	36.6	33.0
4	2483.50	50.5 AV	54.0	-3.5	2.90 V	0	17.5	33.0
5	4924.00	47.4 PK	74.0	-26.6	2.67 V	193	41.4	6.0
6	4924.00	35.2 AV	54.0	-18.8	2.67 V	193	29.2	6.0

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)
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	67.4 PK	74.0	-6.6	2.36 H	43	34.6	32.8
2	2390.00	52.4 AV	54.0	-1.6	2.36 H	43	19.6	32.8
3	*2422.00	109.6 PK			2.25 H	299	76.7	32.9
4	*2422.00	99.2 AV			2.25 H	299	66.3	32.9
5	4844.00	47.8 PK	74.0	-26.2	1.93 H	229	42.0	5.8
6	4844.00	34.7 AV	54.0	-19.3	1.93 H	229	28.9	5.8
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	65.6 PK	74.0	-8.4	3.09 V	0	32.8	32.8
2	2390.00	51.1 AV	54.0	-2.9	3.09 V	0	18.3	32.8
3	*2422.00	106.6 PK			2.34 V	318	73.7	32.9
4	*2422.00	96.3 AV			2.34 V	318	63.4	32.9
5	4844.00	47.7 PK	74.0	-26.3	2.60 V	160	41.9	5.8
6	4844.00	34.7 AV	54.0	-19.3	2.60 V	160	28.9	5.8

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)
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	71.4 PK	74.0	-2.6	1.83 H	35	38.6	32.8
2	2390.00	52.4 AV	54.0	-1.6	1.83 H	35	19.6	32.8
3	*2437.00	113.8 PK			1.81 H	43	80.9	32.9
4	*2437.00	103.2 AV			1.81 H	43	70.3	32.9
5	2483.50	69.9 PK	74.0	-4.1	1.94 H	41	36.9	33.0
6	2483.50	51.7 AV	54.0	-2.3	1.94 H	41	18.7	33.0
7	4874.00	48.2 PK	74.0	-25.8	2.09 H	223	42.2	6.0
8	4874.00	35.2 AV	54.0	-18.8	2.09 H	223	29.2	6.0
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	2390.00	69.8 PK	74.0	-4.2	2.83 V	346	37.0	32.8
2	2390.00	51.9 AV	54.0	-2.1	2.83 V	346	19.1	32.8
3	*2437.00	111.0 PK			2.76 V	343	78.1	32.9
4	*2437.00	100.1 AV			2.76 V	343	67.2	32.9
5	2483.50	71.6 PK	74.0	-2.4	2.90 V	353	38.6	33.0
6	2483.50	50.6 AV	54.0	-3.4	2.90 V	353	17.6	33.0
7	4874.00	47.9 PK	74.0	-26.1	2.72 V	205	41.9	6.0
8	4874.00	35.1 AV	54.0	-18.9	2.72 V	205	29.1	6.0

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)
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	110.7 PK			1.97 H	37	77.7	33.0
2	*2452.00	100.9 AV			1.97 H	37	67.9	33.0
3	2483.50	72.2 PK	74.0	-1.8	1.95 H	38	39.2	33.0
4	2483.50	50.6 AV	54.0	-3.4	1.95 H	38	17.6	33.0
5	4904.00	48.2 PK	74.0	-25.8	2.38 H	173	42.3	5.9
6	4904.00	35.2 AV	54.0	-18.8	2.38 H	173	29.3	5.9
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	107.3 PK			2.26 V	321	74.3	33.0
2	*2452.00	97.8 AV			2.26 V	321	64.8	33.0
3	2483.50	68.5 PK	74.0	-5.5	2.66 V	0	35.5	33.0
4	2483.50	48.2 AV	54.0	-5.8	2.66 V	0	15.2	33.0
5	4904.00	48.1 PK	74.0	-25.9	2.19 V	131	42.2	5.9
6	4904.00	35.3 AV	54.0	-18.7	2.19 V	131	29.4	5.9

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Mode C

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	57.4 PK	74.0	-16.6	1.48 H	97	24.6	32.8
2	2390.00	45.2 AV	54.0	-8.8	1.48 H	97	12.4	32.8
3	*2412.00	101.8 PK			1.55 H	314	68.9	32.9
4	*2412.00	98.0 AV			1.55 H	314	65.1	32.9
5	2487.00	56.6 PK	74.0	-17.4	1.68 H	221	23.6	33.0
6	2487.00	45.5 AV	54.0	-8.5	1.68 H	221	12.5	33.0
7	4824.00	47.4 PK	74.0	-26.6	1.87 H	169	41.5	5.9
8	4824.00	34.8 AV	54.0	-19.2	1.87 H	169	28.9	5.9
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	64.4 PK	74.0	-9.6	1.52 V	268	31.6	32.8
2	2390.00	52.7 AV	54.0	-1.3	1.52 V	268	19.9	32.8
3	*2412.00	116.2 PK			1.96 V	51	83.3	32.9
4	*2412.00	112.3 AV			1.96 V	51	79.4	32.9
5	2487.00	59.2 PK	74.0	-14.8	1.62 V	213	26.2	33.0
6	2487.00	50.9 AV	54.0	-3.1	1.62 V	213	17.9	33.0
7	4824.00	48.1 PK	74.0	-25.9	1.81 V	103	42.2	5.9
8	4824.00	35.9 AV	54.0	-18.1	1.81 V	103	30.0	5.9

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)
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	*2437.00	104.6 PK			1.75 H	312	71.7	32.9
2	*2437.00	100.7 AV			1.75 H	312	67.8	32.9
3	4874.00	48.6 PK	74.0	-25.4	1.77 H	212	42.6	6.0
4	4874.00	35.7 AV	54.0	-18.3	1.77 H	212	29.7	6.0
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	*2437.00	120.3 PK			1.46 V	198	87.4	32.9
2	*2437.00	116.4 AV			1.46 V	198	83.5	32.9
3	4874.00	48.5 PK	74.0	-25.5	1.51 V	49	42.5	6.0
4	4874.00	38.1 AV	54.0	-15.9	1.51 V	49	32.1	6.0

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)
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	103.3 PK			1.11 H	347	70.4	32.9
2	*2462.00	99.5 AV			1.11 H	347	66.6	32.9
3	2483.50	57.8 PK	74.0	-16.2	1.35 H	291	24.8	33.0
4	2483.50	45.9 AV	54.0	-8.1	1.35 H	291	12.9	33.0
5	4924.00	48.3 PK	74.0	-25.7	1.87 H	152	42.3	6.0
6	4924.00	35.5 AV	54.0	-18.5	1.87 H	152	29.5	6.0
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	*2462.00	117.9 PK			1.08 V	50	85.0	32.9
2	*2462.00	114.1 AV			1.08 V	50	81.2	32.9
3	2483.50	64.2 PK	74.0	-9.8	1.85 V	203	31.2	33.0
4	2483.50	52.8 AV	54.0	-1.2	1.85 V	203	19.8	33.0
5	4924.00	49.1 PK	74.0	-24.9	1.60 V	96	43.1	6.0
6	4924.00	37.1 AV	54.0	-16.9	1.60 V	96	31.1	6.0

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)
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	56.8 PK	74.0	-17.2	1.21 H	235	24.0	32.8
2	2390.00	45.6 AV	54.0	-8.4	1.21 H	235	12.8	32.8
3	*2412.00	103.1 PK			1.48 H	232	70.2	32.9
4	*2412.00	92.7 AV			1.48 H	232	59.8	32.9
5	2487.00	56.8 PK	74.0	-17.2	1.44 H	190	23.8	33.0
6	2487.00	45.3 AV	54.0	-8.7	1.44 H	190	12.3	33.0
7	4824.00	47.4 PK	74.0	-26.6	1.46 H	128	41.5	5.9
8	4824.00	34.4 AV	54.0	-19.6	1.46 H	128	28.5	5.9
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	72.6 PK	74.0	-1.4	1.60 V	263	39.8	32.8
2	2390.00	51.9 AV	54.0	-2.1	1.60 V	263	19.1	32.8
3	*2412.00	116.4 PK			1.46 V	318	83.5	32.9
4	*2412.00	106.7 AV			1.46 V	318	73.8	32.9
5	2487.00	59.3 PK	74.0	-14.7	1.50 V	290	26.3	33.0
6	2487.00	52.1 AV	54.0	-1.9	1.50 V	290	19.1	33.0
7	4824.00	48.0 PK	74.0	-26.0	2.53 V	217	42.1	5.9
8	4824.00	35.1 AV	54.0	-18.9	2.53 V	217	29.2	5.9

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)
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	56.0 PK	74.0	-18.0	1.12 H	323	23.2	32.8
2	2390.00	45.2 AV	54.0	-8.8	1.12 H	323	12.4	32.8
3	*2437.00	108.4 PK			1.50 H	358	75.5	32.9
4	*2437.00	98.9 AV			1.50 H	358	66.0	32.9
5	2483.50	57.7 PK	74.0	-16.3	1.31 H	346	24.7	33.0
6	2483.50	45.2 AV	54.0	-8.8	1.31 H	346	12.2	33.0
7	4874.00	47.3 PK	74.0	-26.7	1.36 H	238	41.3	6.0
8	4874.00	34.7 AV	54.0	-19.3	1.36 H	238	28.7	6.0
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	2390.00	69.3 PK	74.0	-4.7	1.75 V	221	36.5	32.8
2	2390.00	49.4 AV	54.0	-4.6	1.75 V	221	16.6	32.8
3	*2437.00	122.8 PK			1.62 V	222	89.9	32.9
4	*2437.00	113.1 AV			1.62 V	222	80.2	32.9
5	2483.50	66.3 PK	74.0	-7.7	1.70 V	224	33.3	33.0
6	2483.50	49.6 AV	54.0	-4.4	1.70 V	224	16.6	33.0
7	4874.00	50.0 PK	74.0	-24.0	2.01 V	235	44.0	6.0
8	4874.00	36.6 AV	54.0	-17.4	2.01 V	235	30.6	6.0

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)
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	101.7 PK			1.51 H	4	68.8	32.9
2	*2462.00	92.0 AV			1.51 H	4	59.1	32.9
3	2483.50	57.8 PK	74.0	-16.2	1.29 H	14	24.8	33.0
4	2483.50	45.5 AV	54.0	-8.5	1.29 H	14	12.5	33.0
5	4924.00	47.5 PK	74.0	-26.5	1.43 H	82	41.5	6.0
6	4924.00	35.1 AV	54.0	-18.9	1.43 H	82	29.1	6.0
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	*2462.00	116.1 PK			1.84 V	315	83.2	32.9
2	*2462.00	106.4 AV			1.84 V	315	73.5	32.9
3	2483.50	72.2 PK	74.0	-1.8	1.68 V	221	39.2	33.0
4	2483.50	52.0 AV	54.0	-2.0	1.68 V	221	19.0	33.0
5	4924.00	48.1 PK	74.0	-25.9	1.72 V	232	42.1	6.0
6	4924.00	35.5 AV	54.0	-18.5	1.72 V	232	29.5	6.0

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)
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	61.3 PK	74.0	-12.7	1.60 H	350	28.5	32.8
2	2390.00	45.6 AV	54.0	-8.4	1.60 H	350	12.8	32.8
3	*2412.00	102.7 PK			1.79 H	352	69.8	32.9
4	*2412.00	92.0 AV			1.79 H	352	59.1	32.9
5	2487.00	56.6 PK	74.0	-17.4	1.44 H	337	23.6	33.0
6	2487.00	45.3 AV	54.0	-8.7	1.44 H	337	12.3	33.0
7	4824.00	47.0 PK	74.0	-27.0	1.61 H	253	41.1	5.9
8	4824.00	34.4 AV	54.0	-19.6	1.61 H	253	28.5	5.9
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	72.2 PK	74.0	-1.8	1.93 V	170	39.4	32.8
2	2390.00	51.3 AV	54.0	-2.7	1.93 V	170	18.5	32.8
3	*2412.00	114.9 PK			1.40 V	320	82.0	32.9
4	*2412.00	105.3 AV			1.40 V	320	72.4	32.9
5	2487.00	60.1 PK	74.0	-13.9	1.52 V	12	27.1	33.0
6	2487.00	51.1 AV	54.0	-2.9	1.52 V	12	18.1	33.0
7	4824.00	47.3 PK	74.0	-26.7	1.38 V	244	41.4	5.9
8	4824.00	34.2 AV	54.0	-19.8	1.38 V	244	28.3	5.9

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)
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	56.8 PK	74.0	-17.2	1.52 H	8	24.0	32.8
2	2390.00	45.3 AV	54.0	-8.7	1.52 H	8	12.5	32.8
3	*2437.00	107.9 PK			1.51 H	358	75.0	32.9
4	*2437.00	97.8 AV			1.51 H	358	64.9	32.9
5	2483.50	56.8 PK	74.0	-17.2	1.65 H	342	23.8	33.0
6	2483.50	45.3 AV	54.0	-8.7	1.65 H	342	12.3	33.0
7	4874.00	46.6 PK	74.0	-27.4	1.35 H	184	40.6	6.0
8	4874.00	34.6 AV	54.0	-19.4	1.35 H	184	28.6	6.0
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	2390.00	70.1 PK	74.0	-3.9	1.39 V	101	37.3	32.8
2	2390.00	49.6 AV	54.0	-4.4	1.39 V	101	16.8	32.8
3	*2437.00	120.0 PK			1.49 V	96	87.1	32.9
4	*2437.00	109.9 AV			1.49 V	96	77.0	32.9
5	2483.50	68.1 PK	74.0	-5.9	1.42 V	98	35.1	33.0
6	2483.50	48.5 AV	54.0	-5.5	1.42 V	98	15.5	33.0
7	4874.00	47.5 PK	74.0	-26.5	1.59 V	194	41.5	6.0
8	4874.00	35.3 AV	54.0	-18.7	1.59 V	194	29.3	6.0

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)
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	103.1 PK			1.52 H	133	70.2	32.9
2	*2462.00	92.2 AV			1.52 H	133	59.3	32.9
3	2483.50	59.0 PK	74.0	-15.0	1.47 H	133	26.0	33.0
4	2483.50	45.7 AV	54.0	-8.3	1.47 H	133	12.7	33.0
5	4924.00	47.1 PK	74.0	-26.9	1.63 H	120	41.1	6.0
6	4924.00	34.9 AV	54.0	-19.1	1.63 H	120	28.9	6.0
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	*2462.00	115.2 PK			1.56 V	45	82.3	32.9
2	*2462.00	105.1 AV			1.56 V	45	72.2	32.9
3	2483.50	72.2 PK	74.0	-1.8	1.48 V	226	39.2	33.0
4	2483.50	51.3 AV	54.0	-2.7	1.48 V	226	18.3	33.0
5	4924.00	48.0 PK	74.0	-26.0	1.43 V	162	42.0	6.0
6	4924.00	35.0 AV	54.0	-19.0	1.43 V	162	29.0	6.0

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)
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	56.7 PK	74.0	-17.3	1.34 H	345	23.9	32.8
2	2390.00	45.5 AV	54.0	-8.5	1.34 H	345	12.7	32.8
3	*2422.00	97.2 PK			1.50 H	356	64.3	32.9
4	*2422.00	87.3 AV			1.50 H	356	54.4	32.9
5	4844.00	46.7 PK	74.0	-27.3	1.39 H	297	40.9	5.8
6	4844.00	34.2 AV	54.0	-19.8	1.39 H	297	28.4	5.8
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	64.7 PK	74.0	-9.3	1.52 V	217	31.9	32.8
2	2390.00	52.9 AV	54.0	-1.1	1.52 V	217	20.1	32.8
3	*2422.00	110.8 PK			1.55 V	93	77.9	32.9
4	*2422.00	100.9 AV			1.55 V	93	68.0	32.9
5	4844.00	46.8 PK	74.0	-27.2	1.70 V	93	41.0	5.8
6	4844.00	34.3 AV	54.0	-19.7	1.70 V	93	28.5	5.8

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)
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	57.4 PK	74.0	-16.6	1.59 H	354	24.6	32.8
2	2390.00	45.6 AV	54.0	-8.4	1.59 H	354	12.8	32.8
3	*2437.00	100.9 PK			1.51 H	358	68.0	32.9
4	*2437.00	90.5 AV			1.51 H	358	57.6	32.9
5	2483.50	57.6 PK	74.0	-16.4	1.54 H	348	24.6	33.0
6	2483.50	45.5 AV	54.0	-8.5	1.54 H	348	12.5	33.0
7	4874.00	47.3 PK	74.0	-26.7	1.69 H	251	41.3	6.0
8	4874.00	34.5 AV	54.0	-19.5	1.69 H	251	28.5	6.0
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	2390.00	70.5 PK	74.0	-3.5	1.55 V	224	37.7	32.8
2	2390.00	52.2 AV	54.0	-1.8	1.55 V	224	19.4	32.8
3	*2437.00	113.1 PK			1.50 V	93	80.2	32.9
4	*2437.00	102.8 AV			1.50 V	93	69.9	32.9
5	2483.50	69.8 PK	74.0	-4.2	1.66 V	219	36.8	33.0
6	2483.50	50.3 AV	54.0	-3.7	1.66 V	219	17.3	33.0
7	4874.00	46.6 PK	74.0	-27.4	1.34 V	135	40.6	6.0
8	4874.00	34.5 AV	54.0	-19.5	1.34 V	135	28.5	6.0

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)
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	100.6 PK			1.60 H	135	67.6	33.0
2	*2452.00	90.1 AV			1.60 H	135	57.1	33.0
3	2483.50	59.0 PK	74.0	-15.0	1.68 H	136	26.0	33.0
4	2483.50	45.6 AV	54.0	-8.4	1.68 H	136	12.6	33.0
5	4904.00	46.7 PK	74.0	-27.3	1.62 H	86	40.8	5.9
6	4904.00	33.9 AV	54.0	-20.1	1.62 H	86	28.0	5.9
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	110.9 PK			1.87 V	135	77.9	33.0
2	*2452.00	101.9 AV			1.87 V	135	68.9	33.0
3	2483.50	72.2 PK	74.0	-1.8	1.97 V	231	39.2	33.0
4	2483.50	51.6 AV	54.0	-2.4	1.97 V	231	18.6	33.0
5	4904.00	46.9 PK	74.0	-27.1	1.70 V	182	41.0	5.9
6	4904.00	34.6 AV	54.0	-19.4	1.70 V	182	28.7	5.9

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Below 1GHz Worst-Case Data: 802.11n (HT20)

Mode A

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	57.12	31.5 QP	40.0	-8.5	1.99 H	316	46.1	-14.6
2	136.84	27.1 QP	43.5	-16.4	1.99 H	253	42.0	-14.9
3	214.61	28.8 QP	43.5	-14.7	1.00 H	147	44.8	-16.0
4	307.93	26.4 QP	46.0	-19.6	1.00 H	284	38.3	-11.9
5	399.31	24.1 QP	46.0	-21.9	1.99 H	171	34.3	-10.2
6	900.94	36.0 QP	46.0	-10.0	1.00 H	140	35.9	0.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.42	36.1 QP	40.0	-3.9	1.10 V	291	51.8	-15.7
2	62.95	35.2 QP	40.0	-4.8	1.00 V	276	50.3	-15.1
3	140.72	30.2 QP	43.5	-13.3	1.00 V	9	44.7	-14.5
4	195.16	34.0 QP	43.5	-9.5	1.50 V	310	50.4	-16.4
5	325.43	24.0 QP	46.0	-22.0	1.00 V	59	35.6	-11.6
6	722.07	31.8 QP	46.0	-14.2	1.00 V	107	35.5	-3.7

Remarks:

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

Mode B

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	57.12	31.3 QP	40.0	-8.7	2.00 H	237	45.9	-14.6
2	88.23	29.0 QP	43.5	-14.5	2.00 H	269	48.8	-19.8
3	160.17	25.3 QP	43.5	-18.2	2.00 H	246	39.1	-13.8
4	210.72	32.2 QP	43.5	-11.3	1.00 H	140	48.5	-16.3
5	379.87	27.7 QP	46.0	-18.3	2.00 H	140	38.2	-10.5
6	900.94	33.3 QP	46.0	-12.7	1.50 H	143	33.2	0.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.08	36.3 QP	40.0	-3.7	1.05 V	156	51.8	-15.5
2	64.90	30.7 QP	40.0	-9.3	1.50 V	8	46.0	-15.3
3	140.72	27.2 QP	43.5	-16.3	1.00 V	185	41.7	-14.5
4	210.72	28.7 QP	43.5	-14.8	1.00 V	109	45.0	-16.3
5	729.84	33.3 QP	46.0	-12.7	1.00 V	97	36.6	-3.3
6	900.94	37.6 QP	46.0	-8.4	1.00 V	176	37.5	0.1

Remarks:

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

Mode C

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	57.12	30.6 QP	40.0	-9.4	1.99 H	354	45.2	-14.6
2	94.06	27.9 QP	43.5	-15.6	1.50 H	230	47.5	-19.6
3	140.72	34.1 QP	43.5	-9.4	1.50 H	58	48.6	-14.5
4	160.17	27.4 QP	43.5	-16.1	1.50 H	244	41.2	-13.8
5	216.55	28.8 QP	46.0	-17.2	1.00 H	144	44.8	-16.0
6	290.43	28.8 QP	46.0	-17.2	1.00 H	164	41.2	-12.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.40	33.3 QP	40.0	-6.7	1.01 V	354	47.8	-14.5
2	62.95	28.5 QP	40.0	-11.5	1.01 V	13	43.6	-15.1
3	144.61	27.2 QP	43.5	-16.3	1.01 V	10	41.4	-14.2
4	183.50	25.5 QP	43.5	-18.0	1.51 V	95	41.1	-15.6
5	298.21	26.7 QP	46.0	-19.3	1.51 V	147	39.0	-12.3
6	337.10	28.8 QP	46.0	-17.2	1.51 V	187	40.2	-11.4

Remarks:

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

Mode D

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	43.51	25.8 QP	40.0	-14.2	1.51 H	112	40.6	-14.8
2	57.12	30.0 QP	40.0	-10.0	2.00 H	15	44.6	-14.6
3	90.17	28.5 QP	43.5	-15.0	2.00 H	257	48.2	-19.7
4	140.72	26.6 QP	43.5	-16.9	2.00 H	113	41.1	-14.5
5	210.72	28.1 QP	43.5	-15.4	1.00 H	244	44.4	-16.3
6	294.32	28.7 QP	46.0	-17.3	1.00 H	166	41.1	-12.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.68	36.4 QP	40.0	-3.6	1.00 V	9	51.8	-15.4
2	90.17	24.9 QP	43.5	-18.6	1.00 V	120	44.6	-19.7
3	142.67	26.6 QP	43.5	-16.9	1.00 V	262	40.9	-14.3
4	191.28	23.6 QP	43.5	-19.9	1.00 V	236	40.0	-16.4
5	296.27	27.5 QP	46.0	-18.5	1.49 V	83	39.8	-12.3
6	337.10	29.5 QP	46.0	-16.5	1.49 V	205	40.9	-11.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 16, 2015	Nov. 15, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 26, 2015	Dec. 25, 2016
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 26, 2016	Feb. 25, 2017
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 24, 2015	Jul. 23, 2016
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

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) were 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

4.2.7 Test Results

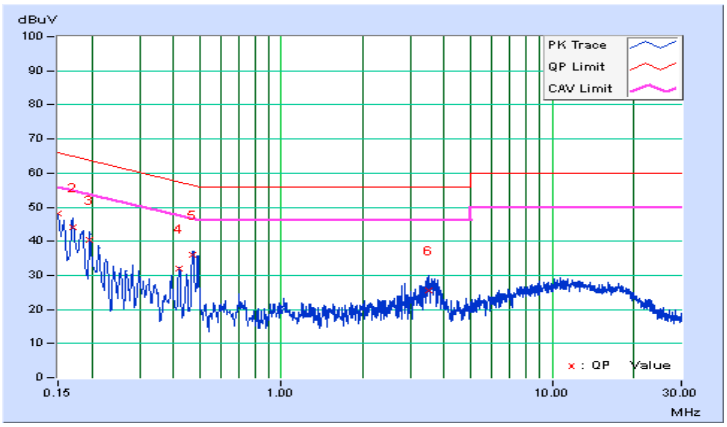
Worst-Case Data: 802.11n (HT20)

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

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.07	38.10	25.99	48.17	36.06	66.00	56.00	-17.83	-19.94
2	0.16955	10.08	33.90	23.17	43.98	33.25	64.98	54.98	-21.00	-21.73
3	0.19692	10.08	30.26	18.07	40.34	28.15	63.74	53.74	-23.40	-25.59
4	0.42000	10.17	21.96	20.22	32.13	30.39	57.45	47.45	-25.32	-17.06
5	0.47287	10.18	25.89	24.30	36.07	34.48	56.46	46.46	-20.39	-11.98
6	3.51651	10.45	15.27	6.31	25.72	16.76	56.00	46.00	-30.28	-29.24

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.

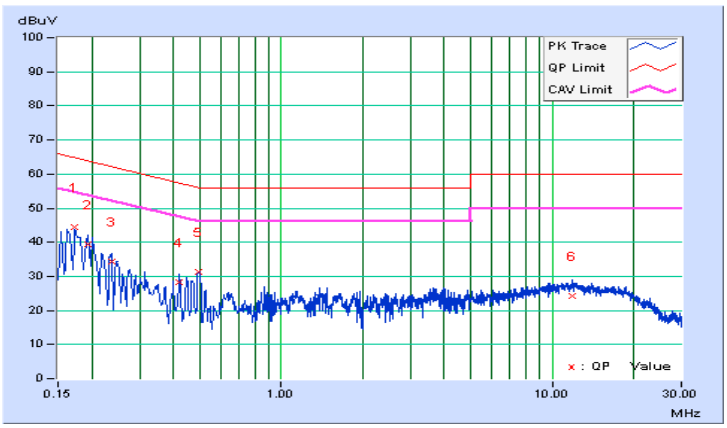


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17346	10.08	34.25	20.75	44.33	30.83	64.79	54.79	-20.46	-23.96
2	0.19305	10.08	29.21	17.71	39.29	27.79	63.90	53.90	-24.61	-26.11
3	0.23602	10.11	24.32	10.61	34.43	20.72	62.24	52.24	-27.81	-31.52
4	0.42000	10.24	18.19	15.86	28.43	26.10	57.45	47.45	-29.02	-21.35
5	0.49408	10.25	20.93	17.72	31.18	27.97	56.10	46.10	-24.92	-18.13
6	11.91519	10.98	13.37	7.92	24.35	18.90	60.00	50.00	-35.65	-31.10

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.

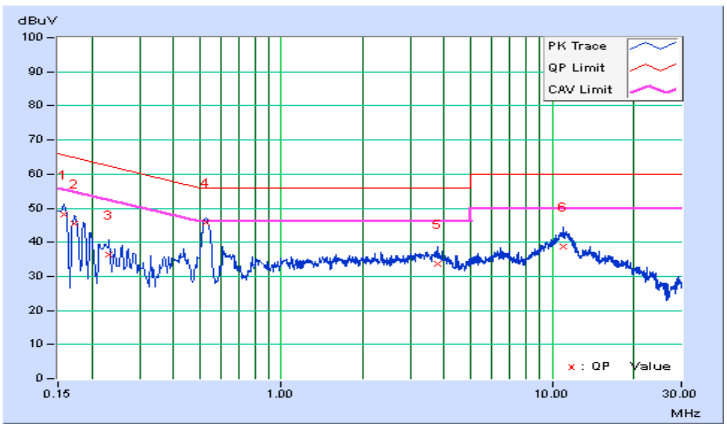


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15760	10.08	38.16	22.20	48.24	32.28	65.59	55.59	-17.35	-23.31
2	0.17346	10.08	35.51	22.04	45.59	32.12	64.79	54.79	-19.20	-22.67
3	0.23211	10.09	26.43	15.90	36.52	25.99	62.37	52.37	-25.85	-26.38
4	0.52682	10.20	35.62	29.76	45.82	39.96	56.00	46.00	-10.18	-6.04
5	3.75893	10.46	23.16	18.06	33.62	28.52	56.00	46.00	-22.38	-17.48
6	11.02371	10.83	27.86	22.94	38.69	33.77	60.00	50.00	-21.31	-16.23

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.

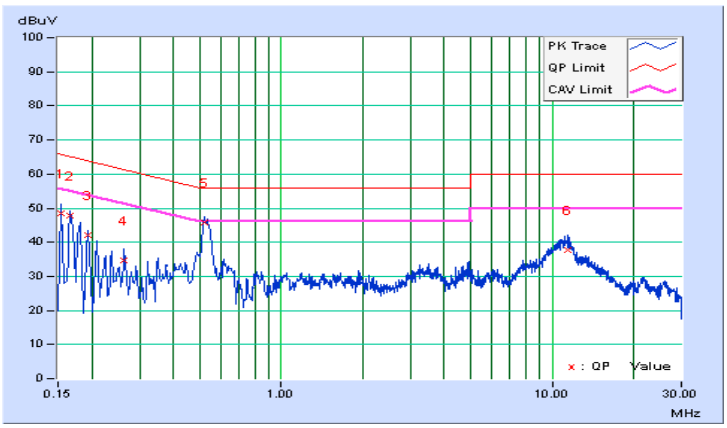


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.08	38.27	22.71	48.35	32.79	65.79	55.79	-17.44	-23.00
2	0.16564	10.08	37.59	24.89	47.67	34.97	65.18	55.18	-17.51	-20.21
3	0.19305	10.08	32.06	20.56	42.14	30.64	63.90	53.90	-21.76	-23.26
4	0.26346	10.13	24.46	16.26	34.59	26.39	61.32	51.32	-26.73	-24.93
5	**0.52130**	**10.25**	**35.67**	**32.00**	**45.92**	**42.25**	**56.00**	**46.00**	**-10.08**	**-3.75**
6	11.40689	10.94	26.71	21.39	37.65	32.33	60.00	50.00	-22.35	-17.67

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.

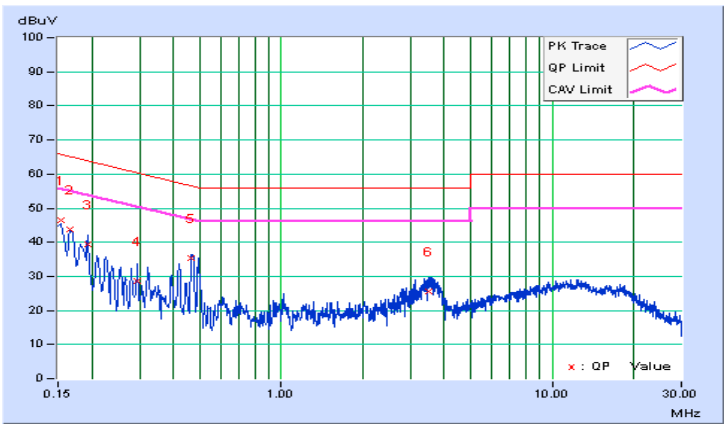


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	C		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.08	36.45	25.71	46.53	35.79	65.79	55.79	-19.26	-20.00
2	0.16569	10.08	33.82	22.30	43.90	32.38	65.17	55.17	-21.27	-22.79
3	0.19305	10.08	29.27	19.21	39.35	29.29	63.90	53.90	-24.55	-24.61
4	0.29467	10.12	18.62	9.65	28.74	19.77	60.39	50.39	-31.65	-30.62
5	0.46669	10.18	25.01	22.60	35.19	32.78	56.57	46.57	-21.38	-13.79
6	3.48914	10.44	15.20	6.22	25.64	16.66	56.00	46.00	-30.36	-29.34

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.

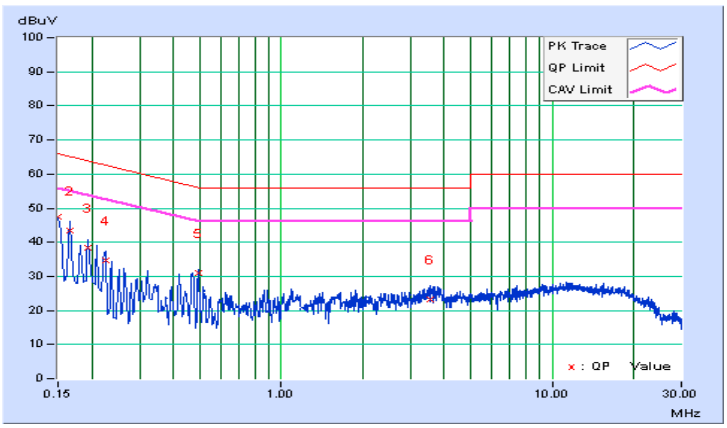


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	C		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	37.27	24.29	47.35	34.37	66.00	56.00	-18.65	-21.63
2	0.16569	10.08	33.35	20.34	43.43	30.42	65.17	55.17	-21.74	-24.75
3	0.19301	10.08	28.44	16.86	38.52	26.94	63.91	53.91	-25.39	-26.97
4	0.22429	10.10	24.60	11.42	34.70	21.52	62.66	52.66	-27.96	-31.14
5	0.49408	10.25	20.58	18.12	30.83	28.37	56.10	46.10	-25.27	-17.73
6	3.55170	10.55	12.71	5.96	23.26	16.51	56.00	46.00	-32.74	-29.49

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.

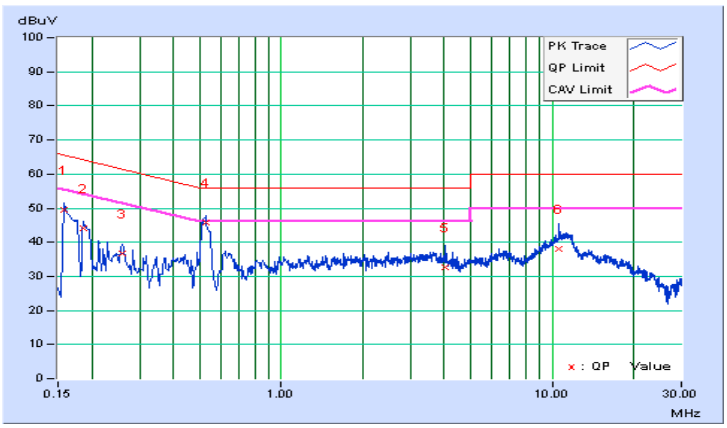


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	D		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15782	10.08	39.45	23.13	49.53	33.21	65.58	55.58	-16.05	-22.37
2	0.18557	10.08	34.07	20.46	44.15	30.54	64.23	54.23	-20.08	-23.69
3	0.25932	10.11	26.70	18.61	36.81	28.72	61.45	51.45	-24.64	-22.73
4	0.52536	10.20	35.70	29.72	45.90	39.92	56.00	46.00	-10.10	-6.08
5	4.02872	10.47	22.28	17.17	32.75	27.64	56.00	46.00	-23.25	-18.36
6	10.59359	10.81	27.23	22.43	38.04	33.24	60.00	50.00	-21.96	-16.76

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.

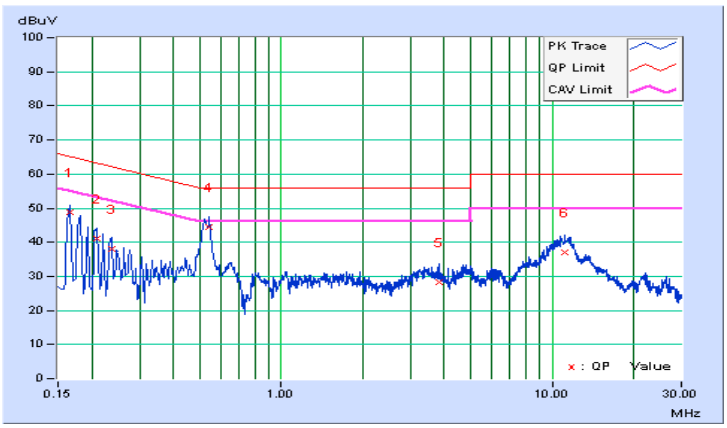


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	D		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16564	10.08	38.78	25.46	48.86	35.54	65.18	55.18	-16.32	-19.64
2	0.20783	10.09	30.96	17.26	41.05	27.35	63.29	53.29	-22.24	-25.94
3	0.23586	10.11	27.86	17.31	37.97	27.42	62.24	52.24	-24.27	-24.82
4	0.54100	10.25	34.30	29.73	44.55	39.98	56.00	46.00	-11.45	-6.02
5	3.84132	10.57	17.57	11.42	28.14	21.99	56.00	46.00	-27.86	-24.01
6	11.14883	10.93	26.25	21.09	37.18	32.02	60.00	50.00	-22.82	-17.98

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.

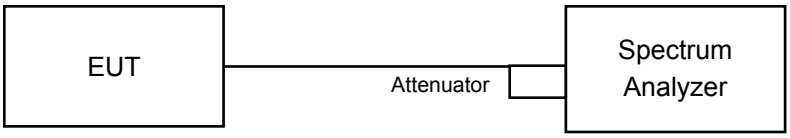


4.3 6dB Bandwidth Measurement

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	Chain 2	Chain 3		
1	2412	8.12	8.12	8.55	9.06	0.5	Pass
6	2437	8.56	8.57	9.03	8.60	0.5	Pass
11	2462	8.60	8.11	9.05	8.12	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	16.43	16.42	16.40	16.42	0.5	Pass
6	2437	16.42	16.40	16.39	16.41	0.5	Pass
11	2462	16.42	16.41	16.40	16.40	0.5	Pass

802.11n (HT20)

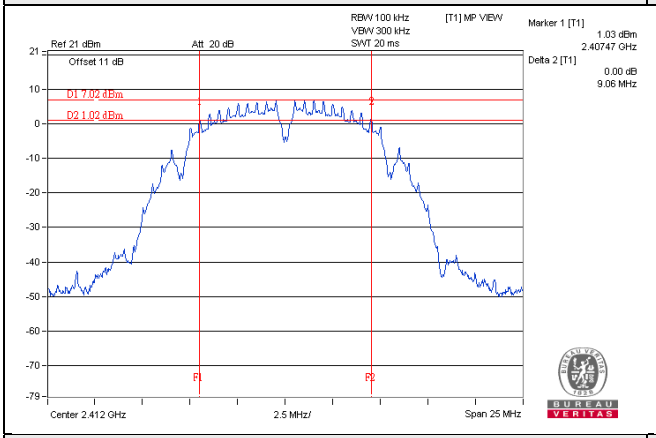
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	17.66	17.67	17.65	17.65	0.5	Pass
6	2437	17.62	17.66	17.63	17.63	0.5	Pass
11	2462	17.64	17.66	17.66	17.65	0.5	Pass

802.11n (HT40)

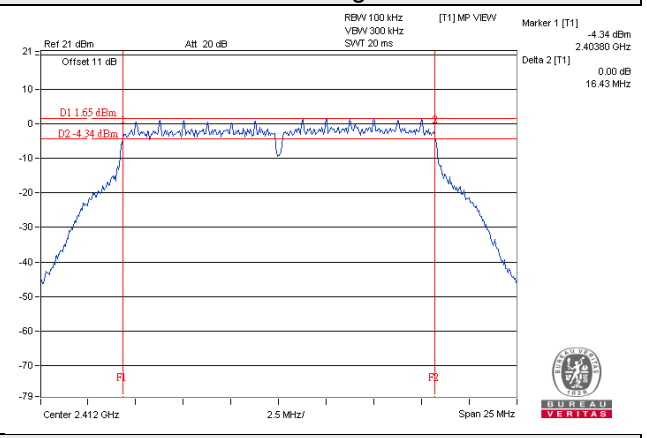
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
3	2422	36.43	36.42	36.42	36.41	0.5	Pass
6	2437	36.39	36.46	36.39	36.40	0.5	Pass
9	2452	36.40	36.45	36.42	36.14	0.5	Pass

Spectrum Plot of Worst Value

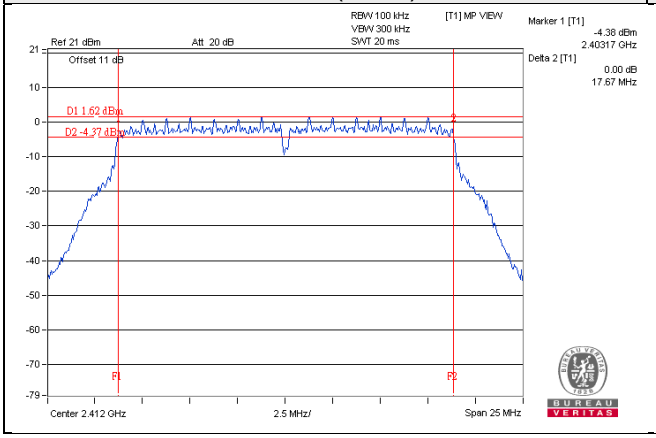
802.11b



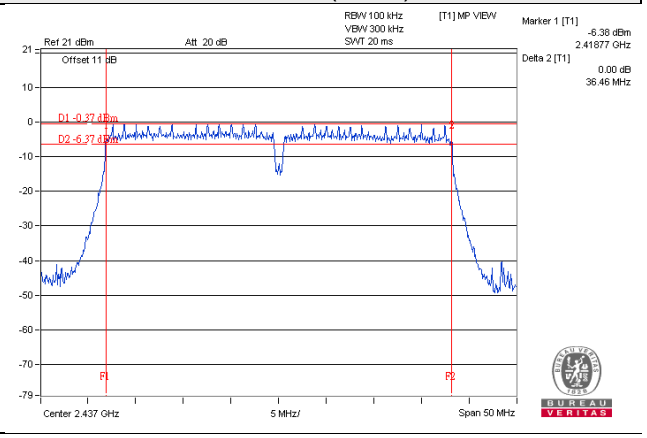
802.11g



802.11n (HT20)



802.11n (HT40)



4.4 Conducted Output Power Measurement

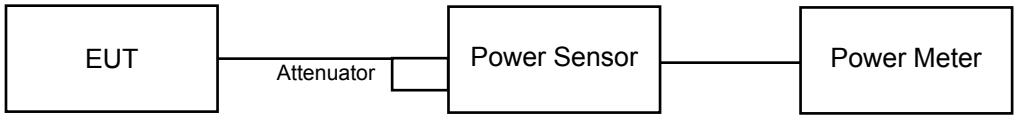
4.4.1 Limits of Conducted Output Power Measurement

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 NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

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

4.4.2 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 4.3.6.

4.4.7 Test Results

Average Power:

802.11b

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	15.11	15.47	15.01	15.88	138.093	21.40	30	Pass
6	2437	17.65	18.10	18.57	18.21	260.942	24.17	30	Pass
11	2462	15.75	15.55	15.80	16.71	158.376	22.00	30	Pass

802.11g

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	13.09	13.15	13.14	13.86	85.952	19.34	30	Pass
6	2437	17.66	17.99	18.65	17.92	256.522	24.09	30	Pass
11	2462	13.19	12.91	13.03	13.77	84.302	19.26	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	12.57	13.03	13.16	13.33	80.392	19.05	30	Pass
6	2437	17.96	18.39	18.75	18.40	**275.713**	24.40	30	Pass
11	2462	13.69	12.99	13.23	13.71	87.829	19.44	30	Pass

802.11n (HT40)

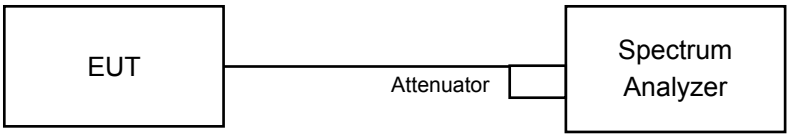
Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	11.20	12.41	11.74	11.83	60.770	17.84	30	Pass
6	2437	14.11	14.88	14.99	15.27	121.725	20.85	30	Pass
9	2452	12.68	13.51	12.77	13.20	80.790	19.07	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

For AVG. power (duty cycle ≥ 98%)
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.

For AVG. power (duty cycle < 98%)
a) Measure the duty cycle (x).
b) Set instrument center frequency to DTS channel center frequency.
c) Set span to at least 1.5 times the OBW.
d) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
e) Set VBW ≥3 x RBW.
f) Detector = power averaging (RMS) or sample detector (when RMS not available).
g) Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h) Sweep time = auto couple.
i) Do not use sweep triggering. Allow sweep to “free run”.
j) Employ trace averaging (RMS) mode over a minimum of 100 traces.
k) Use the peak marker function to determine the maximum amplitude level.
l) Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as 4.3.6

4.5.7 Test Results

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=4) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass/Fail
0	1	2412	-10.73	6.02	0.24	-4.47	4	Pass
	6	2437	-10.03	6.02	0.24	-3.77	4	Pass
	11	2462	-11.76	6.02	0.24	-5.50	4	Pass
1	1	2412	-13.01	6.02	0.24	-6.75	4	Pass
	6	2437	-9.78	6.02	0.24	-3.52	4	Pass
	11	2462	-12.57	6.02	0.24	-6.31	4	Pass
2	1	2412	-12.63	6.02	0.24	-6.37	4	Pass
	6	2437	-9.61	6.02	0.24	-3.35	4	Pass
	11	2462	-12.60	6.02	0.24	-6.34	4	Pass
3	1	2412	-12.92	6.02	0.24	-6.66	4	Pass
	6	2437	-9.62	6.02	0.24	-3.36	4	Pass
	11	2462	-12.63	6.02	0.24	-6.37	4	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 3.98dBi + 10log(4) = 10dBi > 6dBi, so the limit shall be reduced to 8-(10-6) = 4dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=4) dB	Total PSD (dBm)	Limit (dBm)	Pass/Fail
0	1	2412	-17.87	6.02	-11.85	4	Pass
	6	2437	-13.13	6.02	-7.11	4	Pass
	11	2462	-17.00	6.02	-10.98	4	Pass
1	1	2412	-17.78	6.02	-11.76	4	Pass
	6	2437	-12.30	6.02	-6.28	4	Pass
	11	2462	-18.02	6.02	-12.00	4	Pass
2	1	2412	-17.79	6.02	-11.77	4	Pass
	6	2437	-12.59	6.02	-6.57	4	Pass
	11	2462	-17.88	6.02	-11.86	4	Pass
3	1	2412	-17.56	6.02	-11.54	4	Pass
	6	2437	-12.68	6.02	-6.66	4	Pass
	11	2462	-17.41	6.02	-11.39	4	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 3.98dBi + 10log(4) = 10dBi > 6dBi, so the limit shall be reduced to 8-(10-6) = 4dBm.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=4) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass/Fail
0	1	2412	-18.98	6.02	0.24	-12.72	4	Pass
	6	2437	-13.52	6.02	0.24	-7.26	4	Pass
	11	2462	-18.72	6.02	0.24	-12.46	4	Pass
1	1	2412	-18.03	6.02	0.24	-11.77	4	Pass
	6	2437	-13.03	6.02	0.24	-6.77	4	Pass
	11	2462	-18.44	6.02	0.24	-12.18	4	Pass
2	1	2412	-18.02	6.02	0.24	-11.76	4	Pass
	6	2437	-12.87	6.02	0.24	-6.61	4	Pass
	11	2462	-18.07	6.02	0.24	-11.81	4	Pass
3	1	2412	-18.51	6.02	0.24	-12.25	4	Pass
	6	2437	-12.56	6.02	0.24	-6.30	4	Pass
	11	2462	-18.14	6.02	0.24	-11.88	4	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 3.98dBi + 10log(4) = 10dBi > 6dBi, so the limit shall be reduced to 8-(10-6) = 4dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

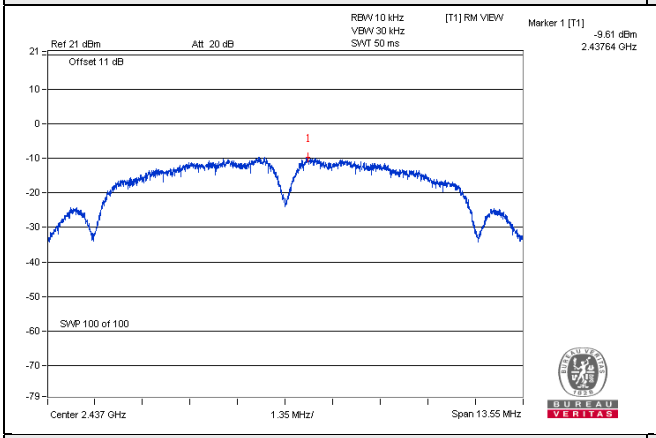
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=4) dB	Duty Factor	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass/Fail
0	3	2422	-23.86	6.02	0.45	-17.39	4	Pass
	6	2437	-20.78	6.02	0.45	-14.31	4	Pass
	9	2452	-22.86	6.02	0.45	-16.39	4	Pass
1	3	2422	-22.42	6.02	0.45	-15.95	4	Pass
	6	2437	-20.13	6.02	0.45	-13.66	4	Pass
	9	2452	-21.50	6.02	0.45	-15.03	4	Pass
2	3	2422	-22.82	6.02	0.45	-16.35	4	Pass
	6	2437	-19.84	6.02	0.45	-13.37	4	Pass
	9	2452	-20.78	6.02	0.45	-14.31	4	Pass
3	3	2422	-22.90	6.02	0.45	-16.43	4	Pass
	6	2437	-19.51	6.02	0.45	-13.04	4	Pass
	9	2452	-21.27	6.02	0.45	-14.80	4	Pass

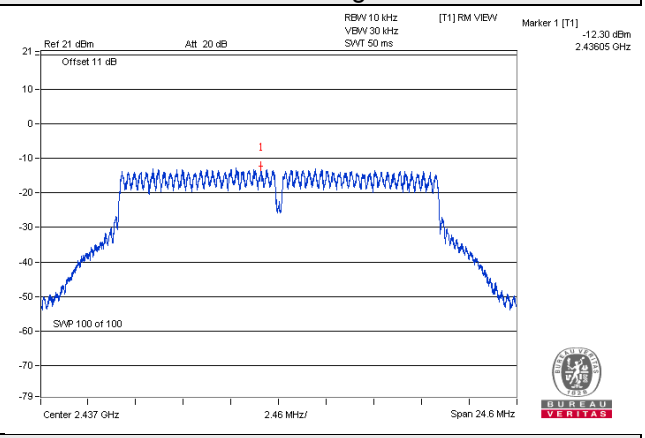
Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 3.98dBi + 10log(4) = 10dBi > 6dBi, so the limit shall be reduced to 8-(10-6) = 4dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

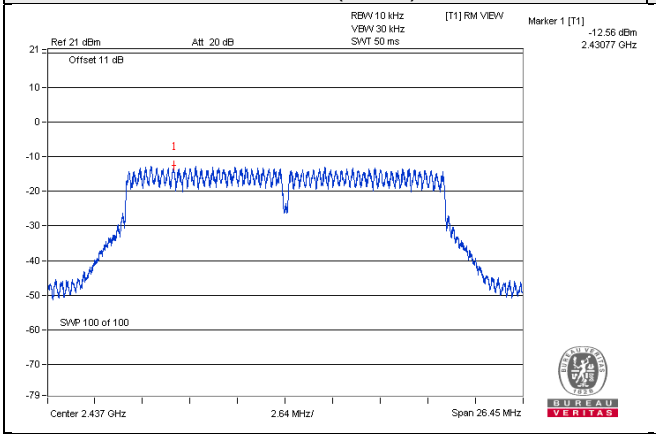
802.11b



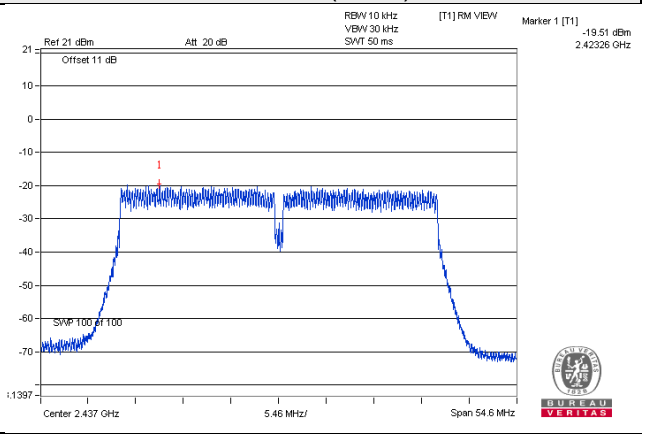
802.11g



802.11n (HT20)



802.11n (HT40)

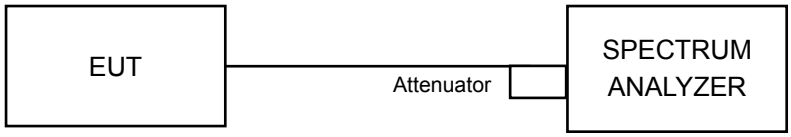


4.6 Conducted Out of Band Emission Measurement

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

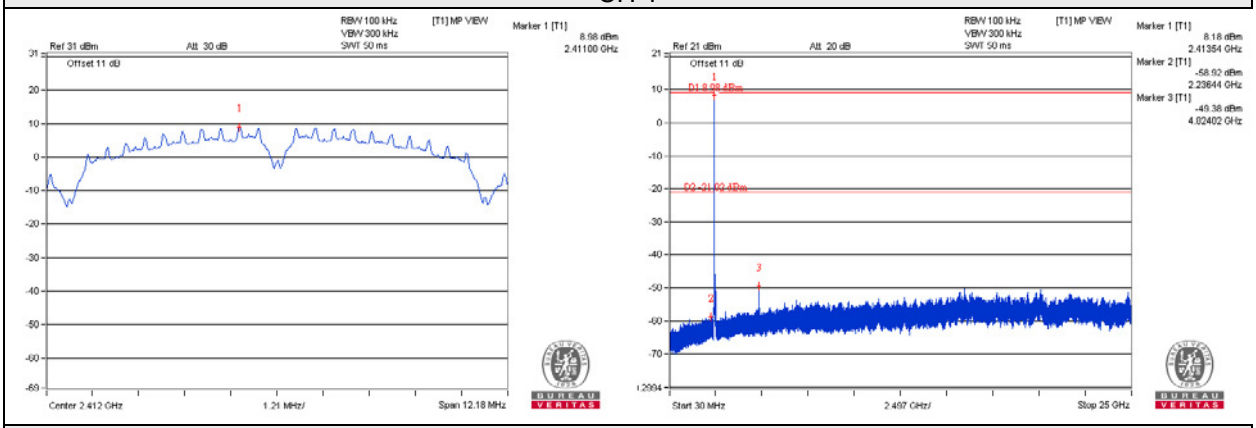
Same as 4.3.6

4.6.7 Test Results

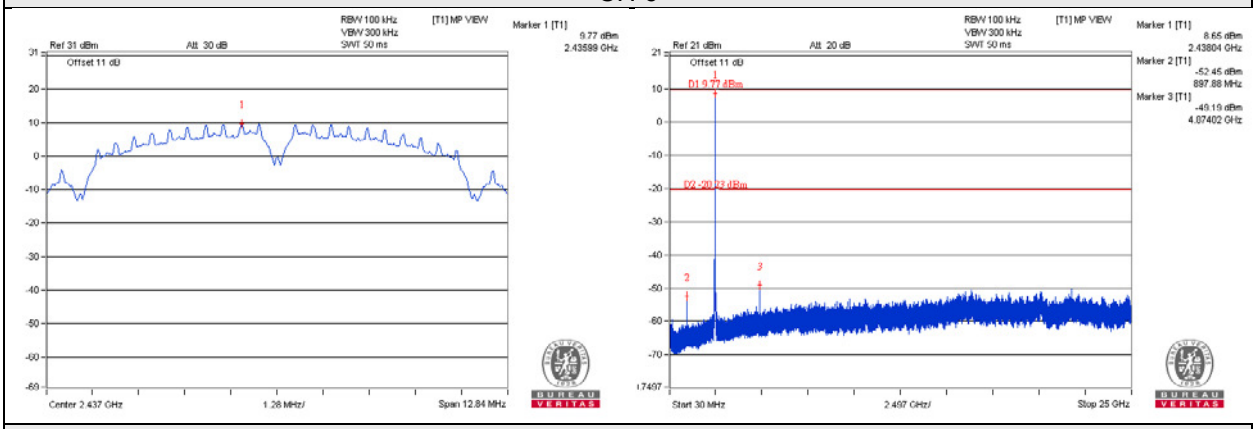
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b_Chain 0

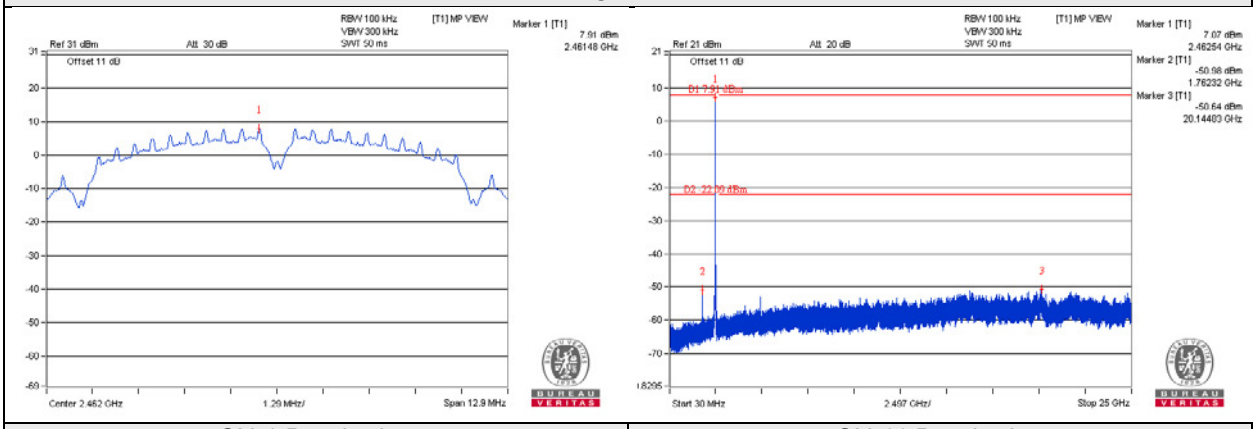
CH 1



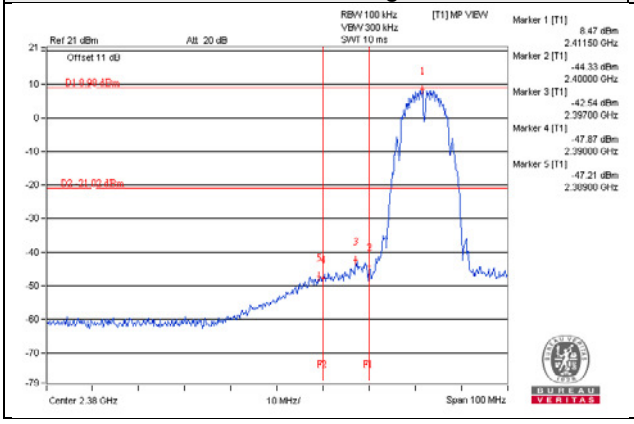
CH 6



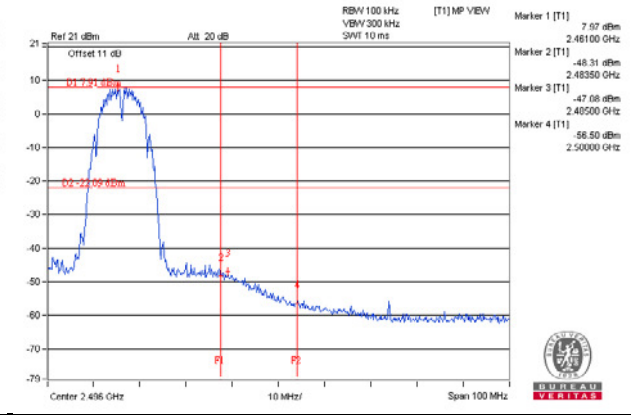
CH 11



CH 1 Band edge

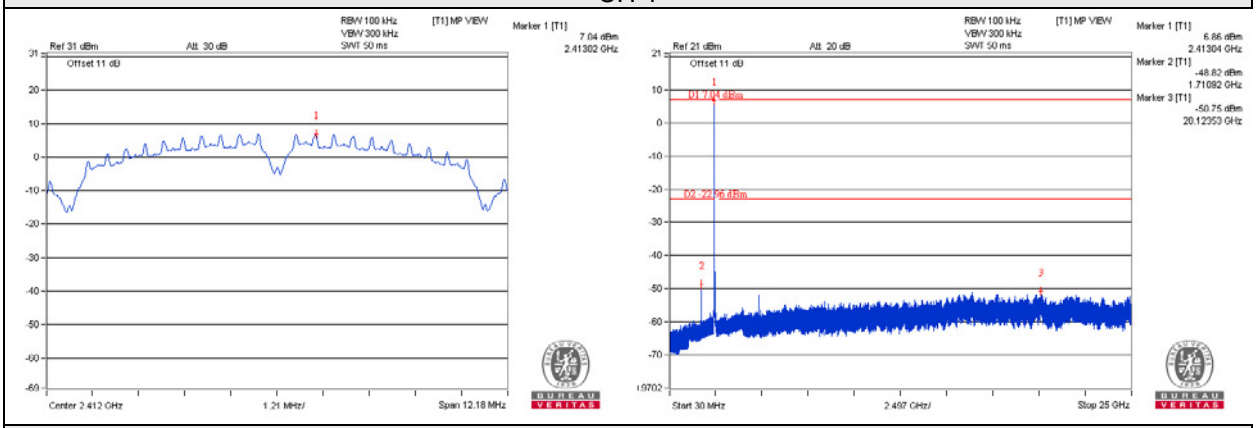


CH 11 Band edge

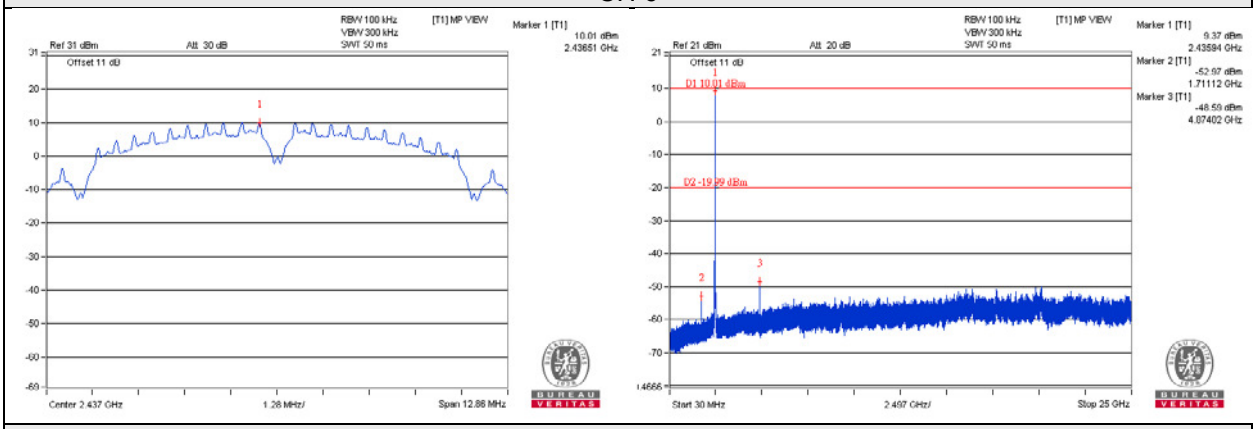


802.11b_Chain 1

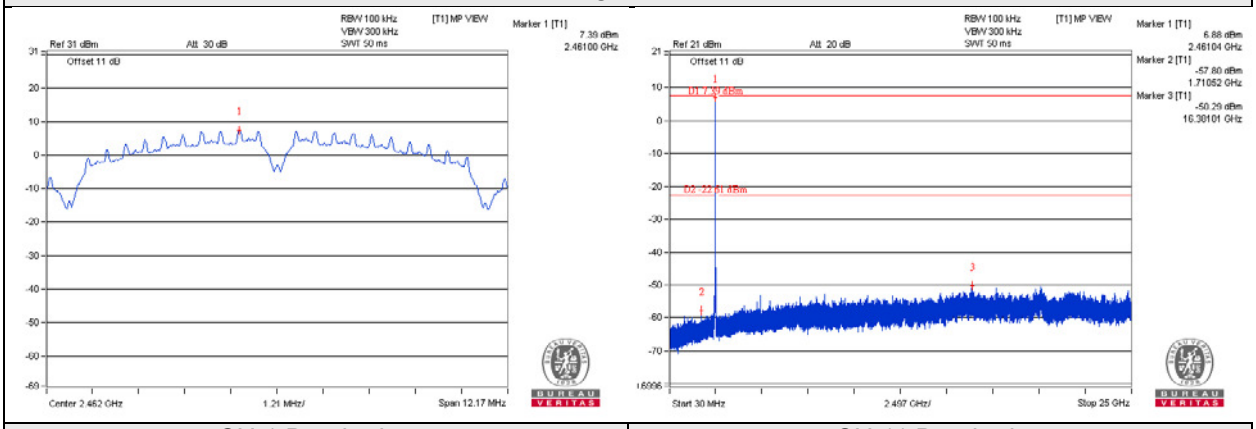
CH 1



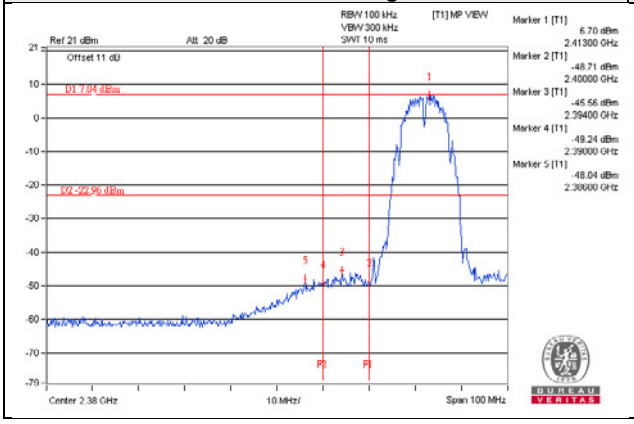
CH 6



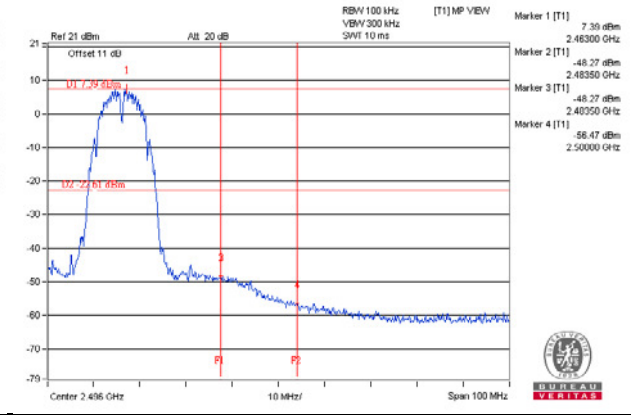
CH 11



CH 1 Band edge

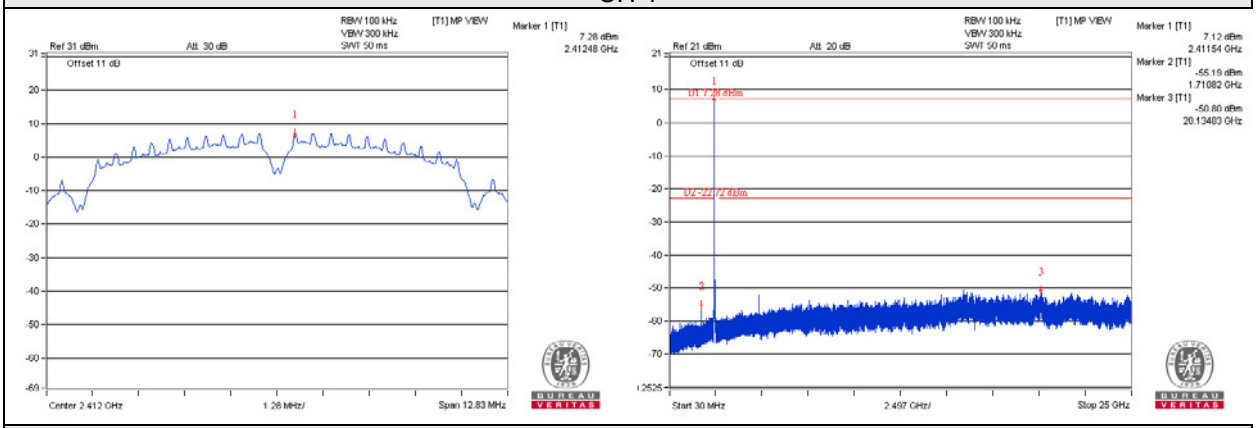


CH 11 Band edge

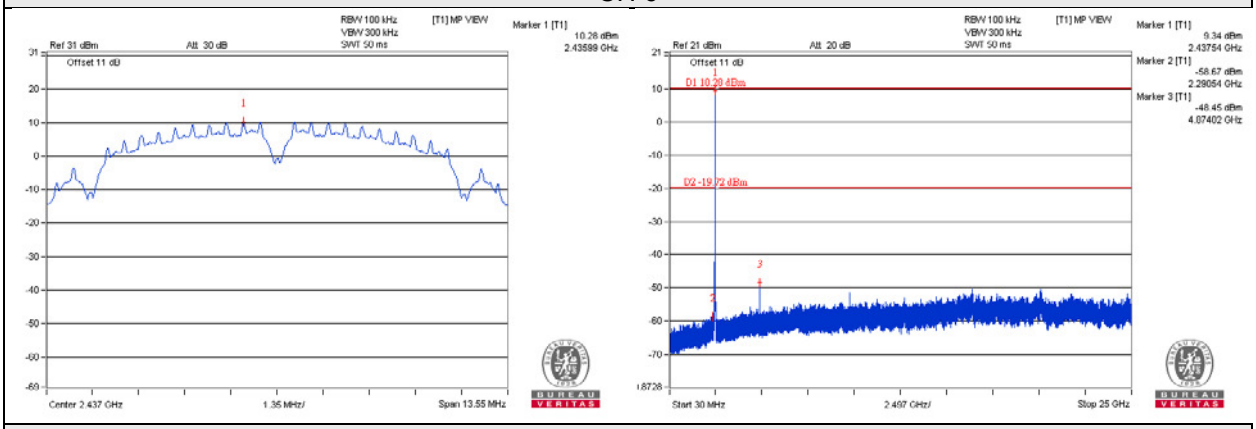


802.11b_Chain 2

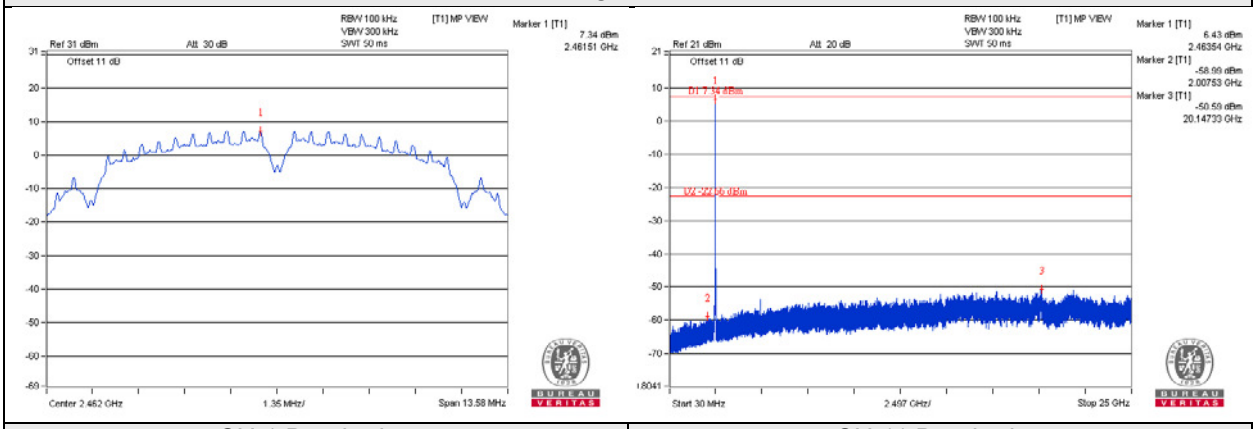
CH 1



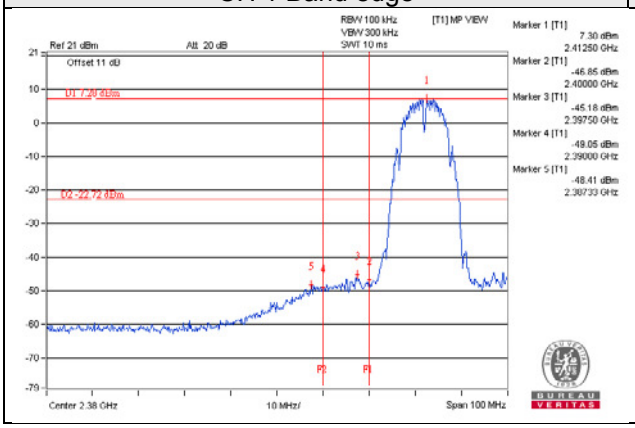
CH 6



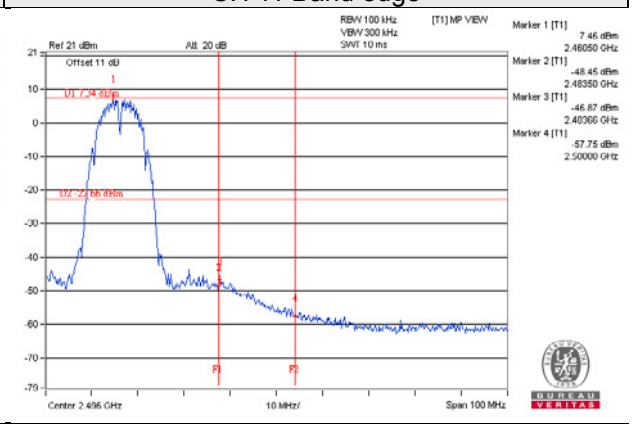
CH 11



CH 1 Band edge

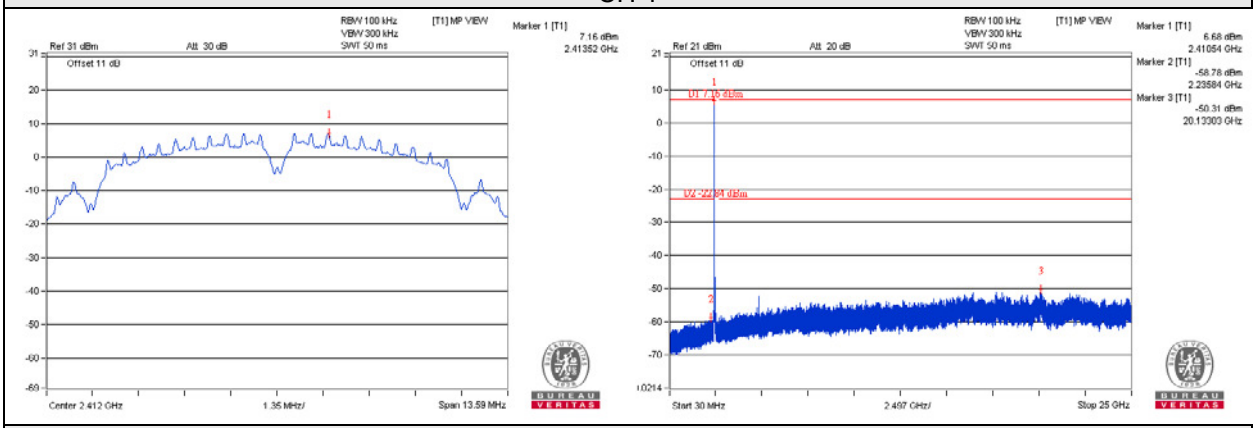


CH 11 Band edge

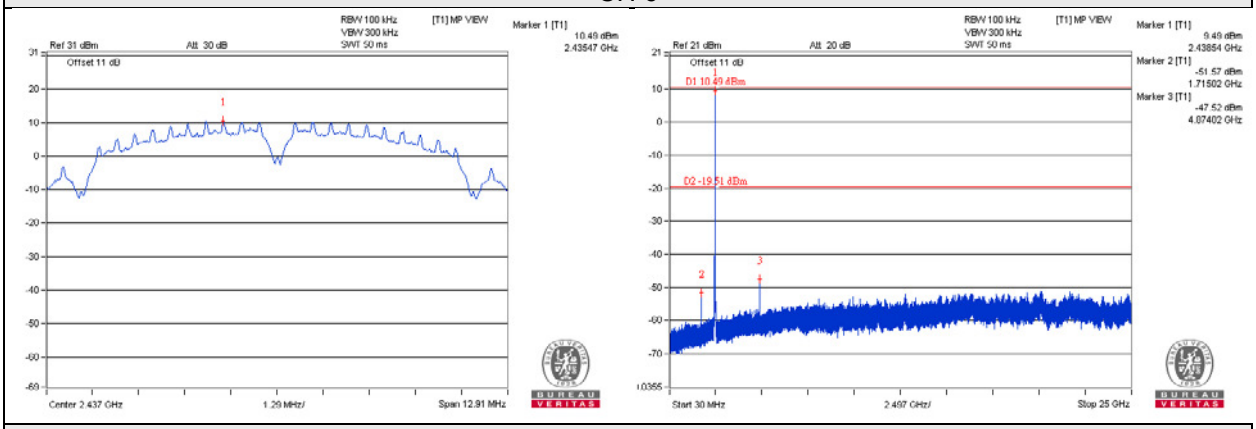


802.11b_Chain 3

CH 1



CH 6



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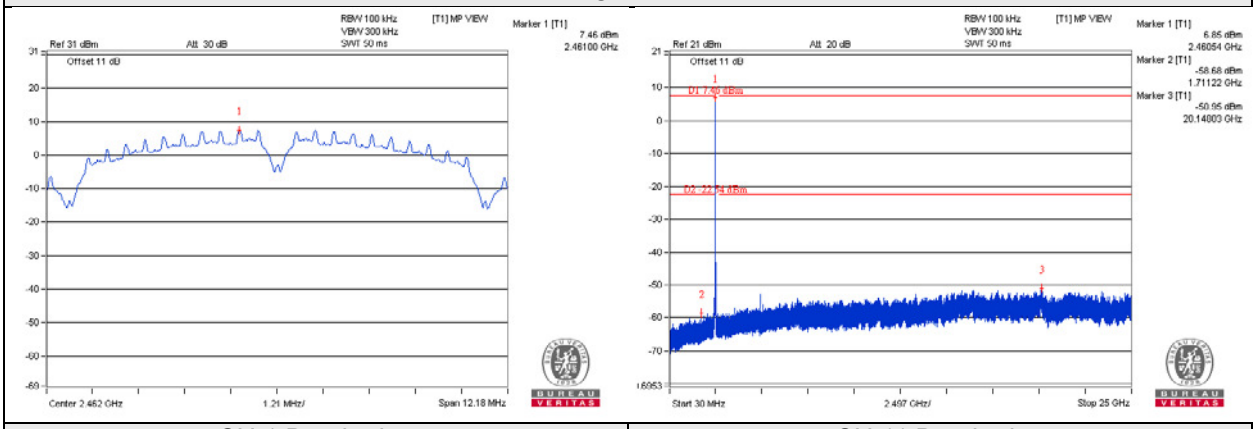
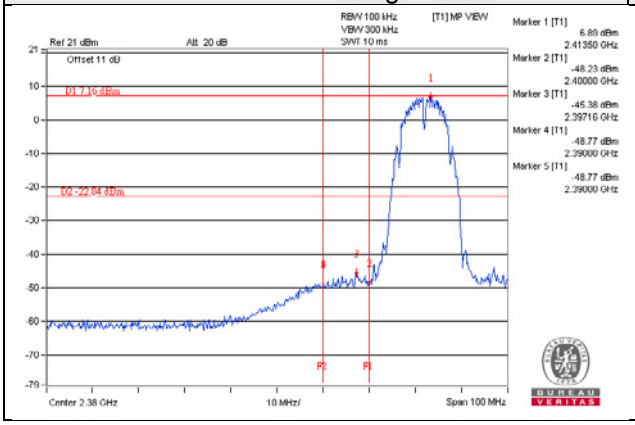
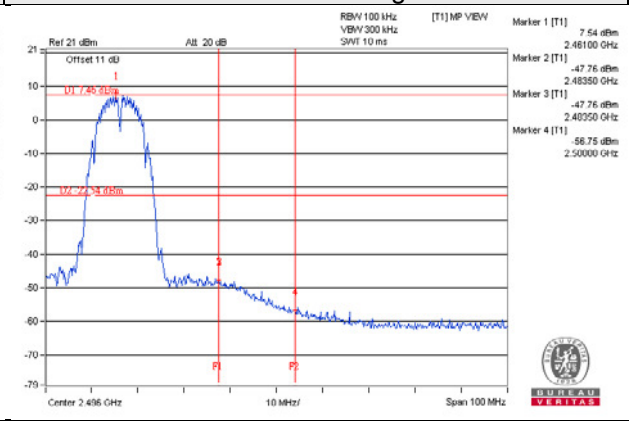


CH 1 Band edge

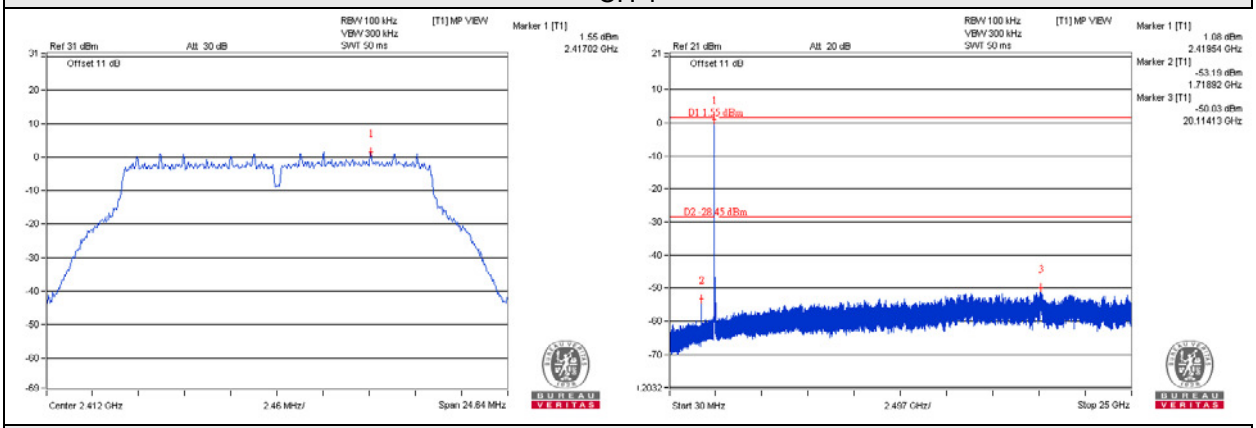


CH 11 Band edge

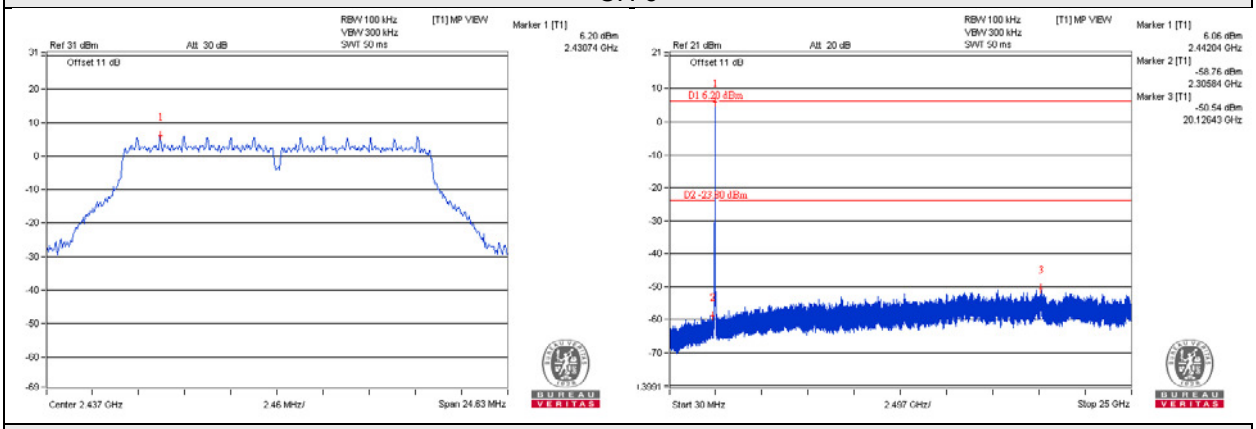


802.11g_Chain 0

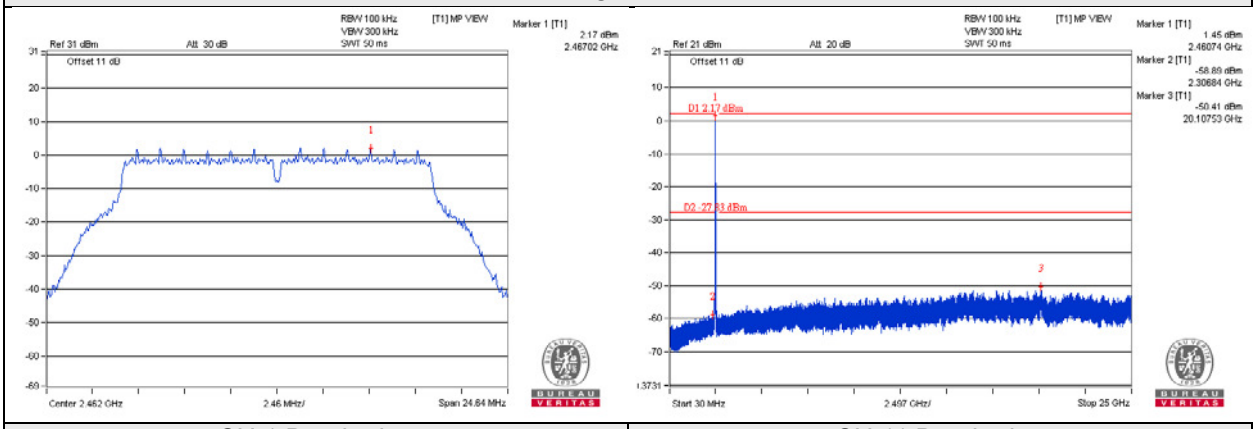
CH 1



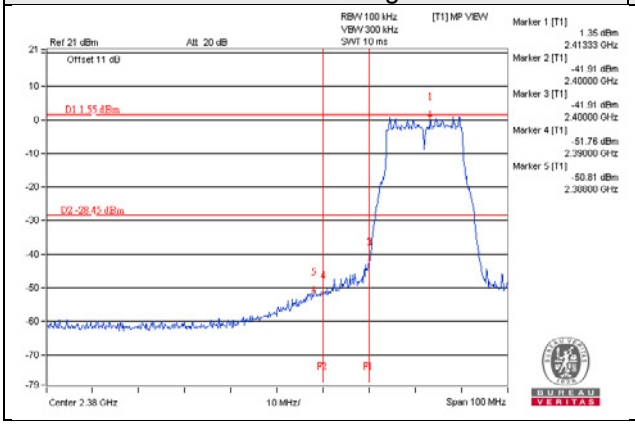
CH 6



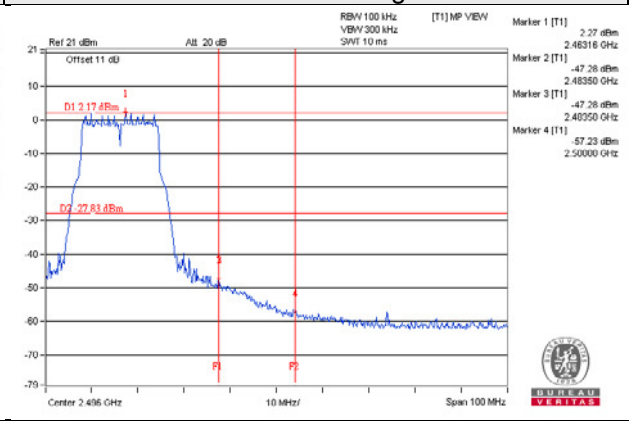
CH 11



CH 1 Band edge

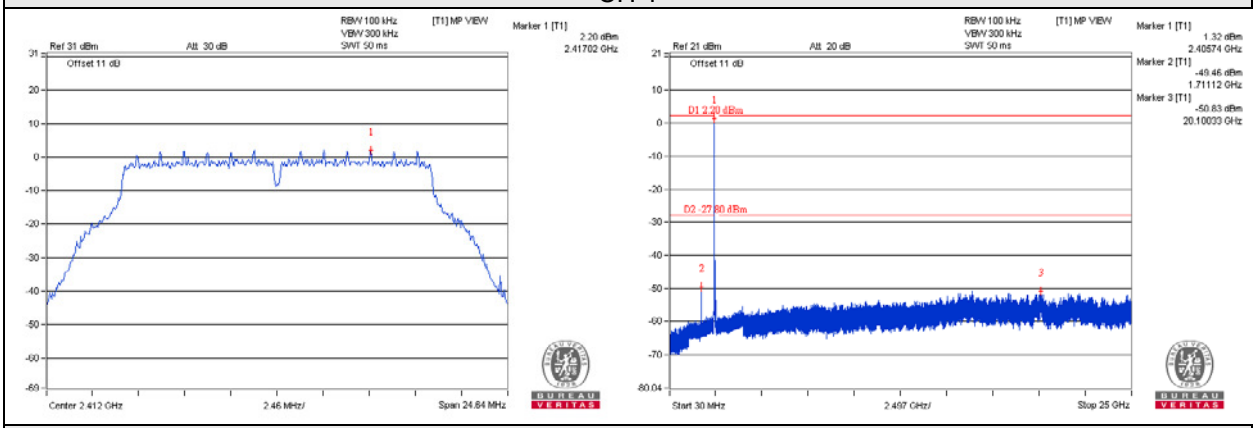


CH 11 Band edge

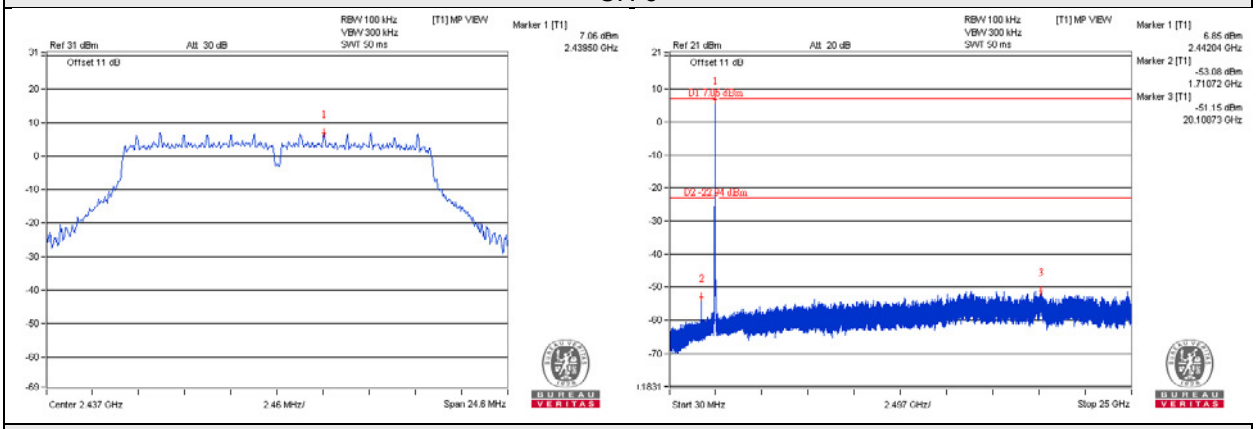


802.11g_Chain 1

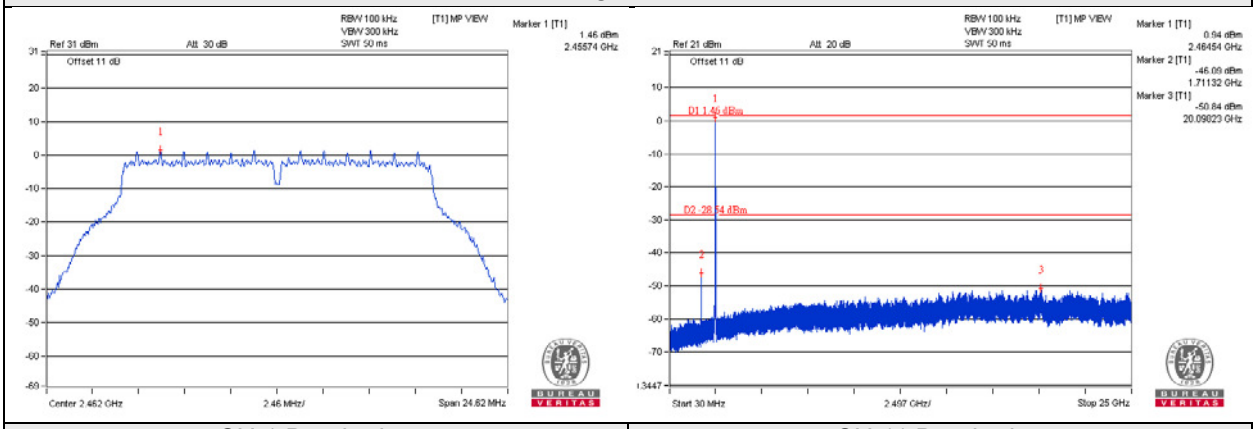
CH 1



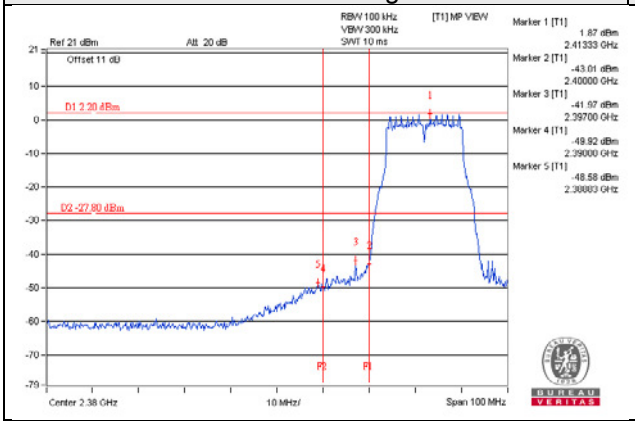
CH 6



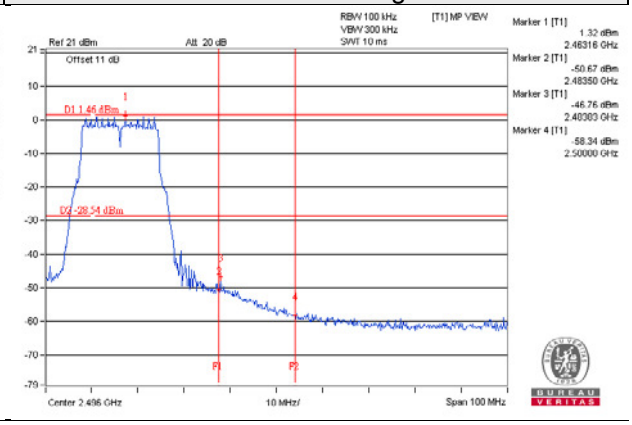
CH 11



CH 1 Band edge

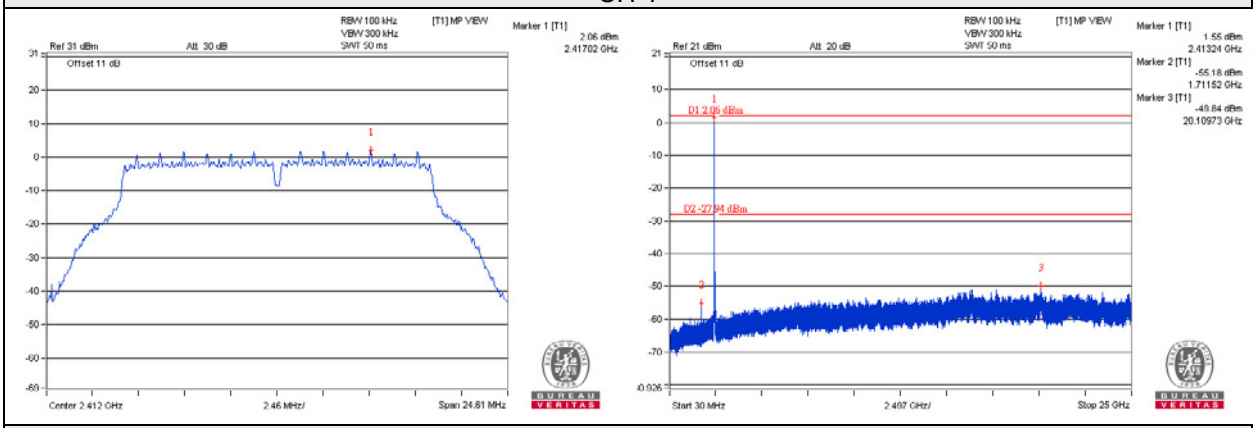


CH 11 Band edge

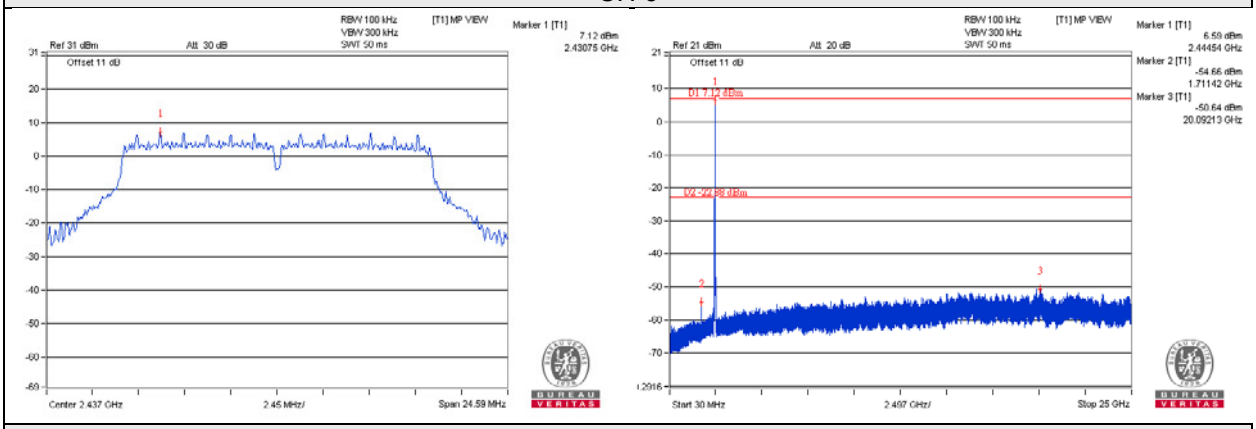


802.11g_Chain 2

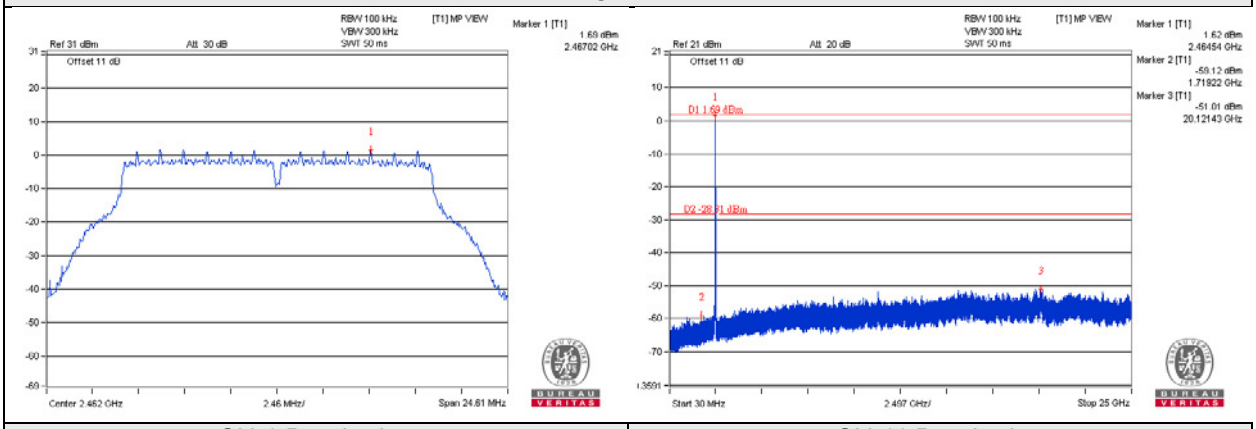
CH 1



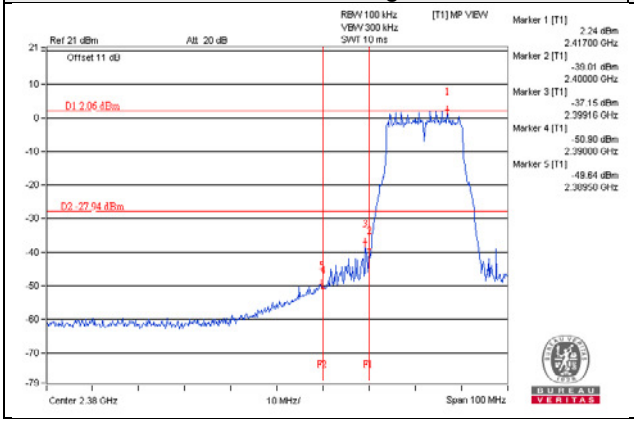
CH 6



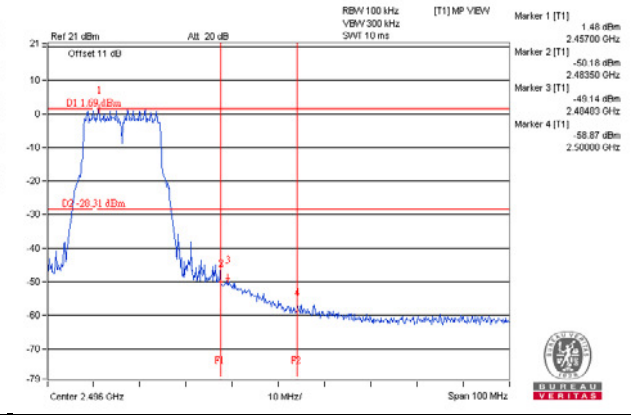
CH 11



CH 1 Band edge

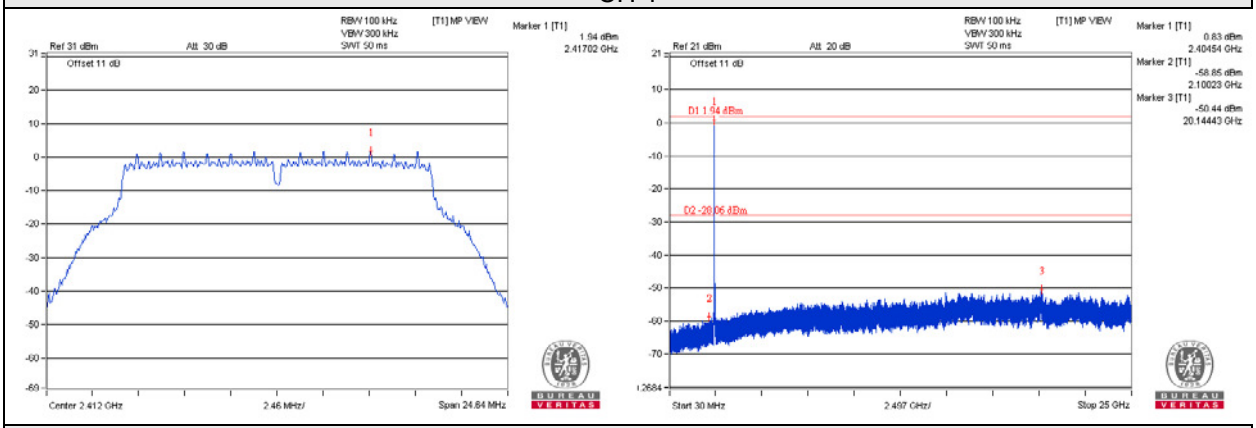


CH 11 Band edge

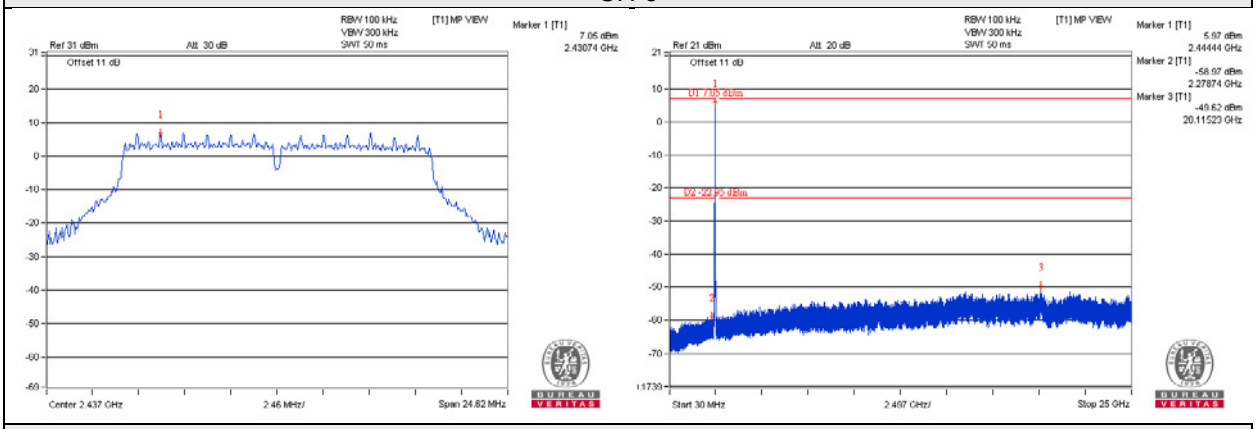


802.11g_Chain 3

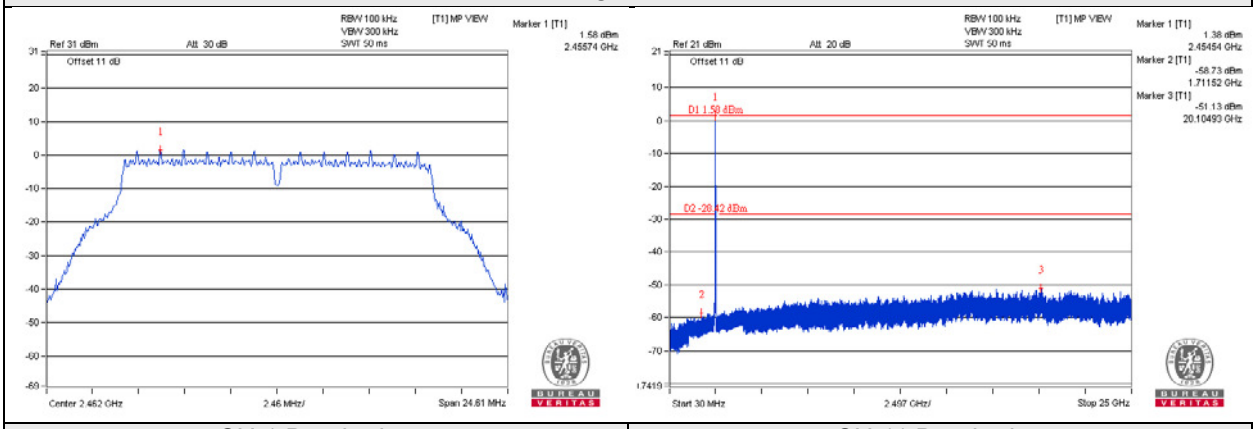
CH 1



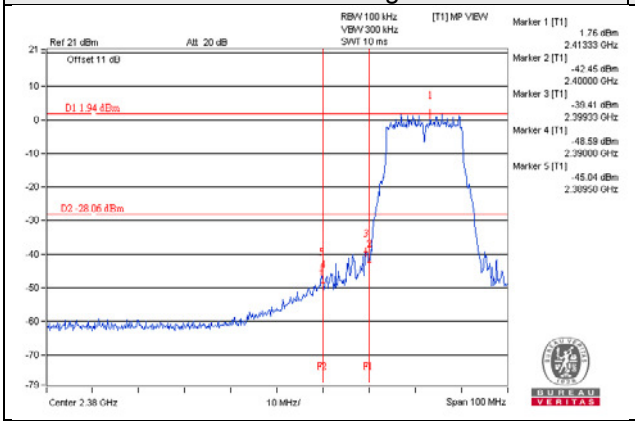
CH 6



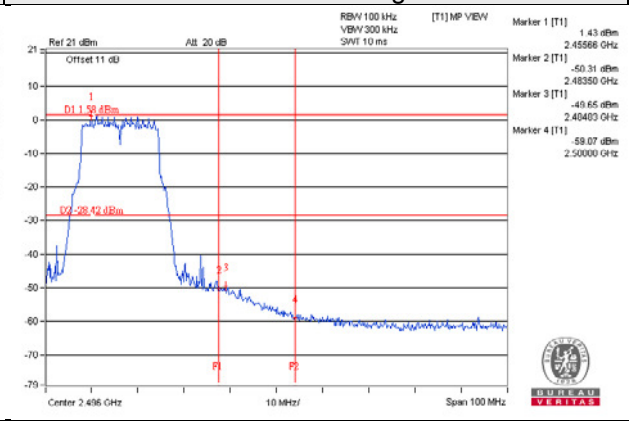
CH 11



CH 1 Band edge

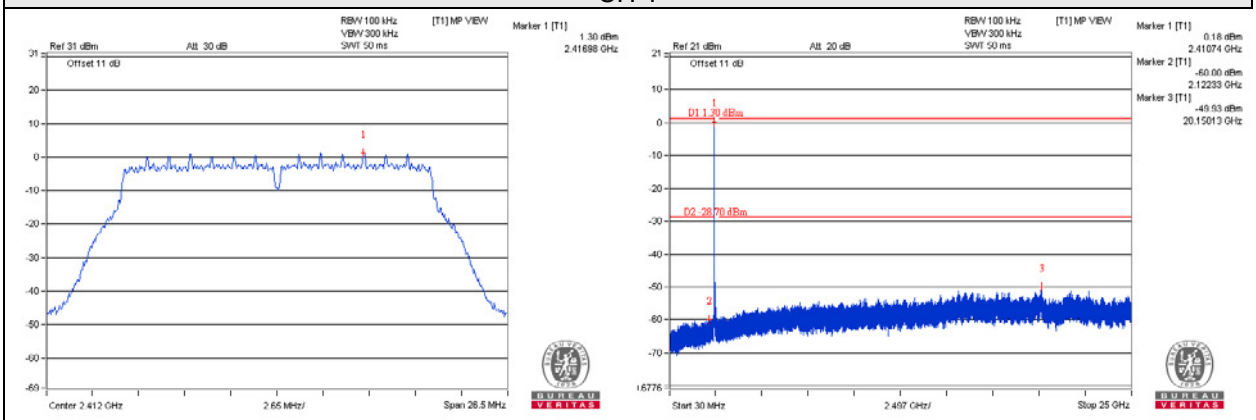


CH 11 Band edge

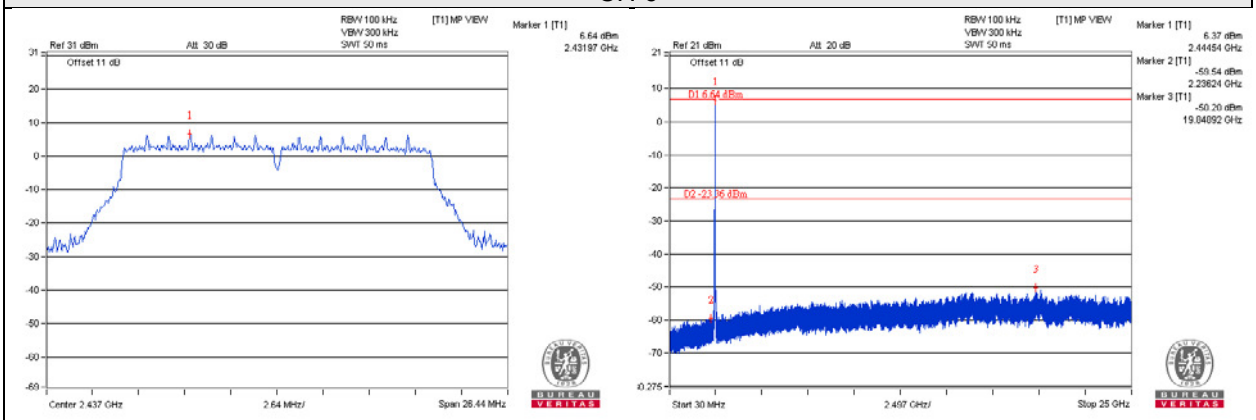


802.11n (HT20)_Chain 0

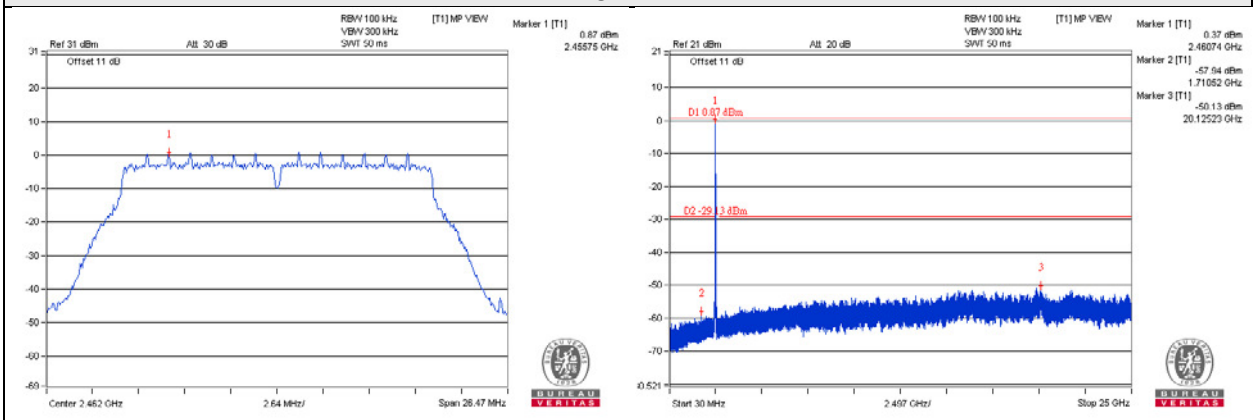
CH 1



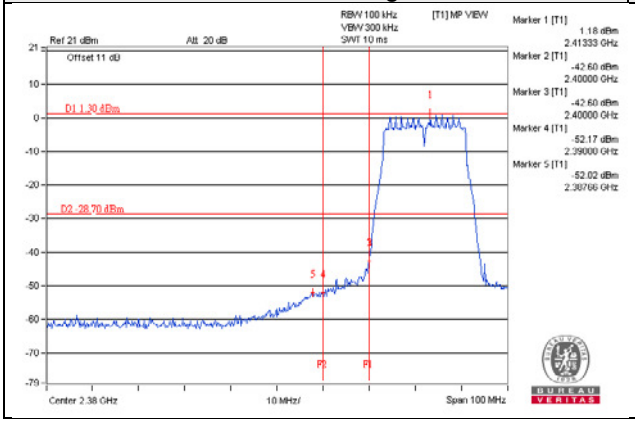
CH 6



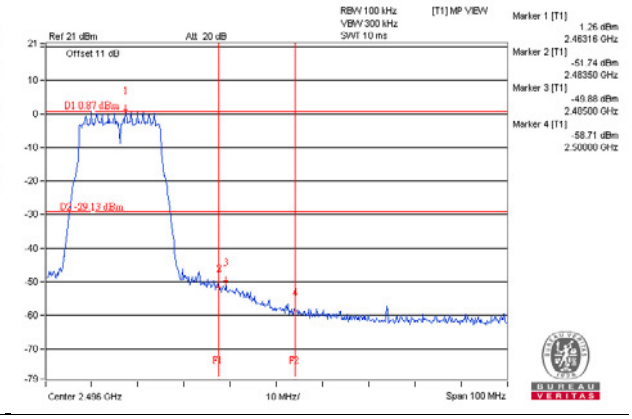
CH 11



CH 1 Band edge

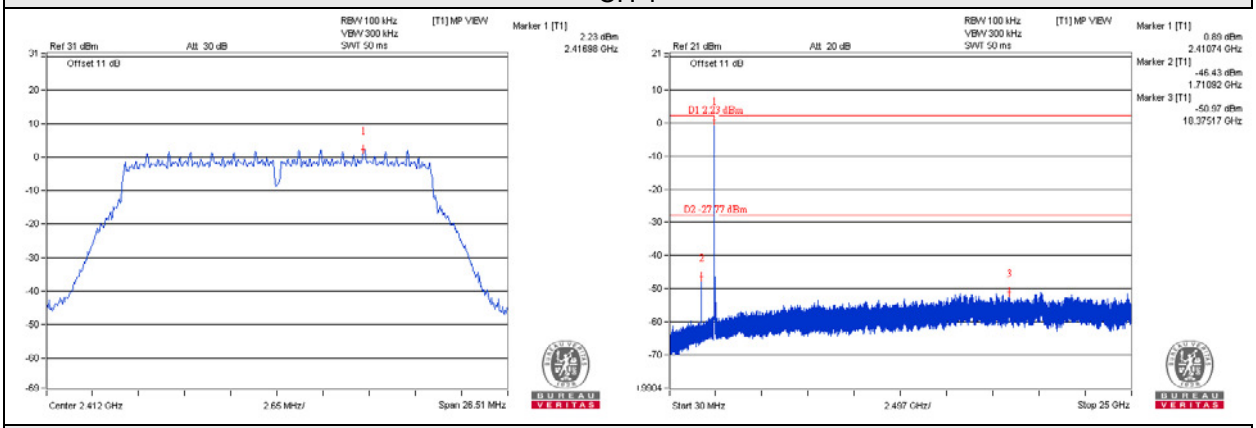


CH 11 Band edge

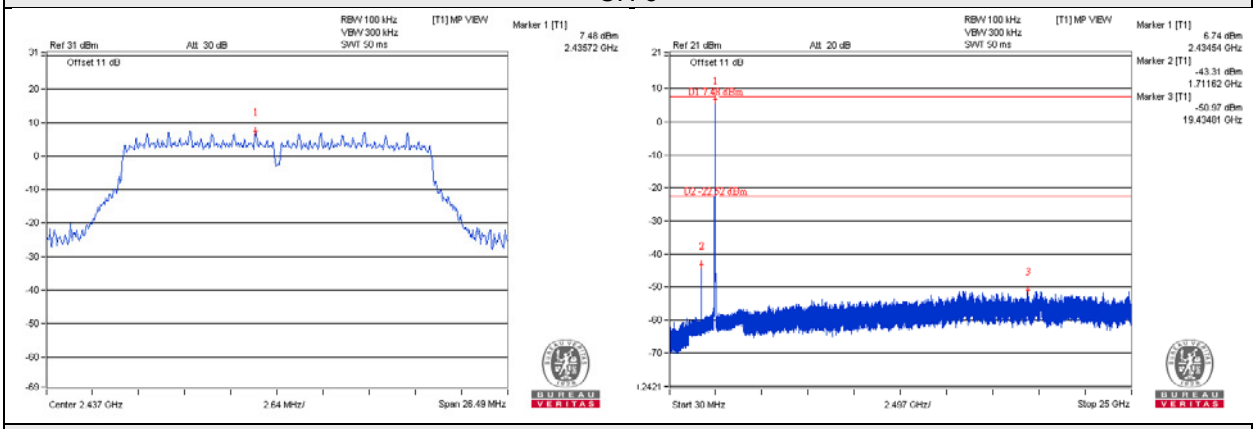


802.11n (HT20)_Chain 1

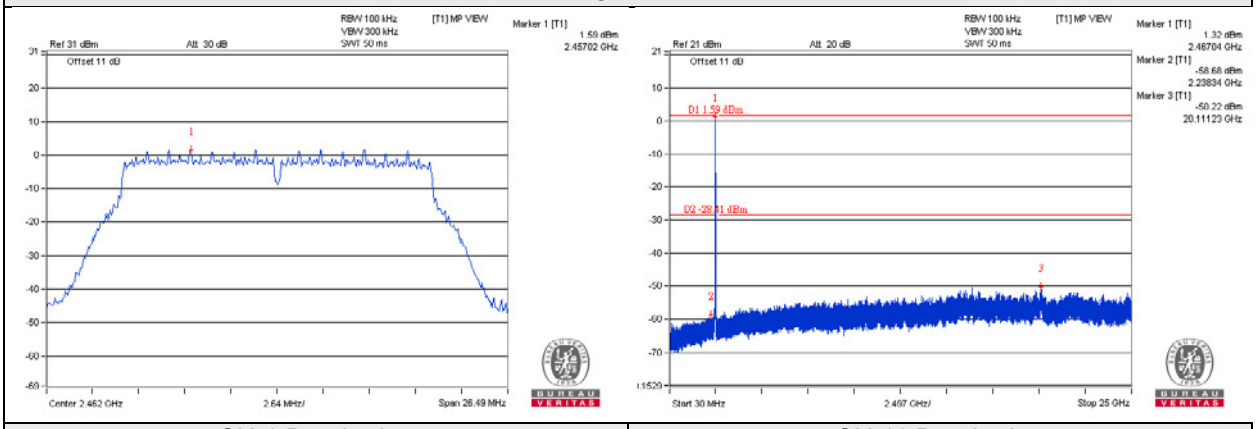
CH 1



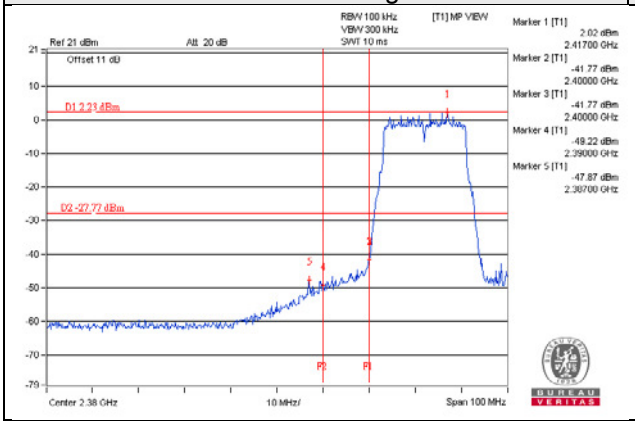
CH 6



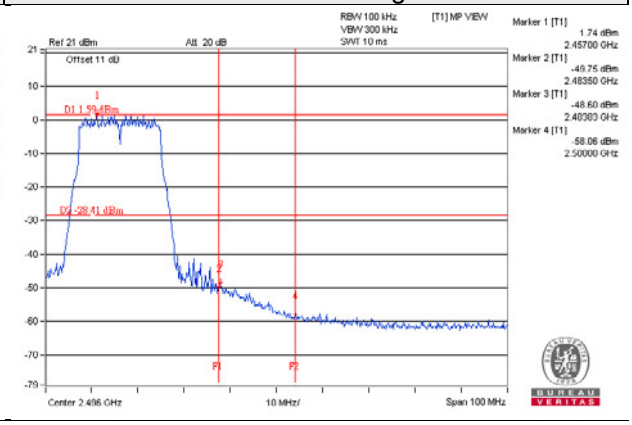
CH 11



CH 1 Band edge

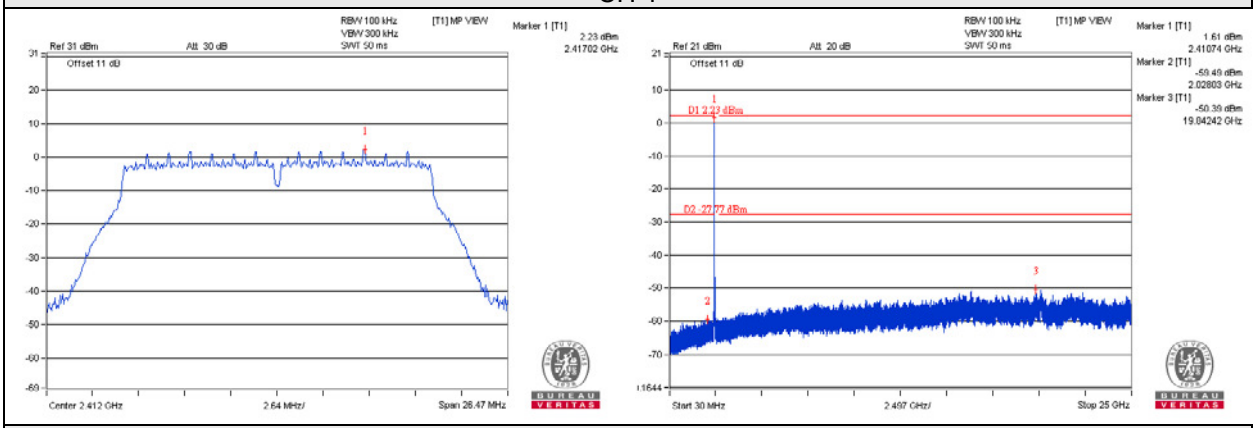


CH 11 Band edge

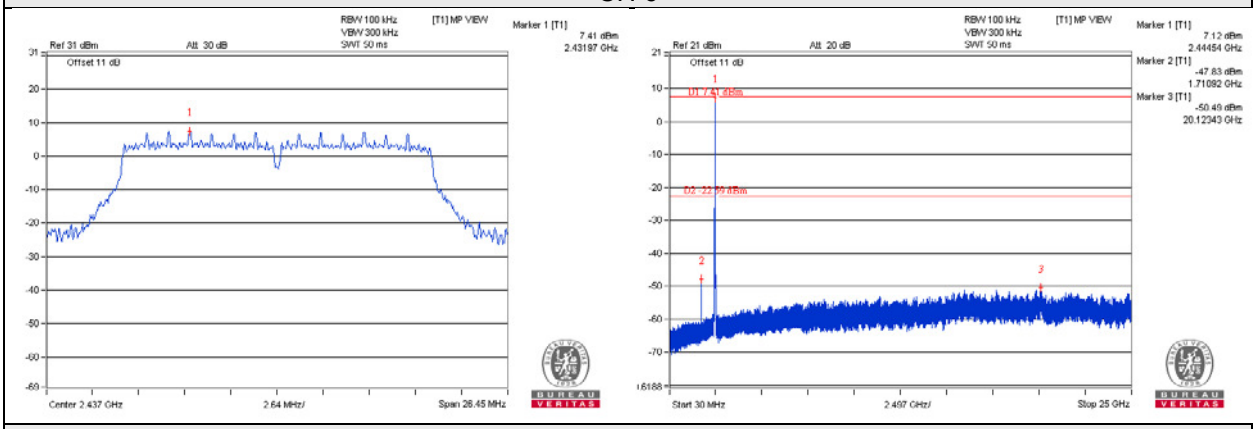


802.11n (HT20)_Chain 2

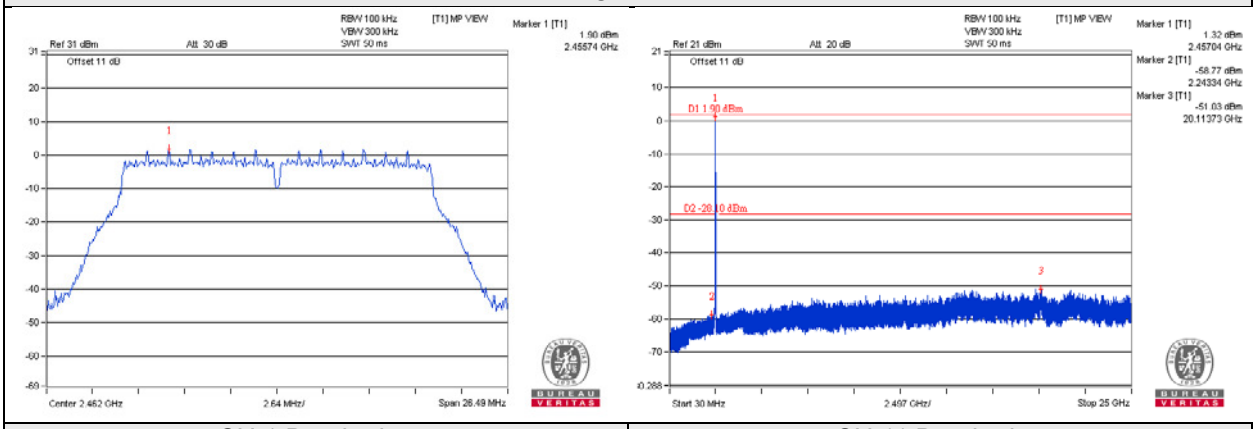
CH 1



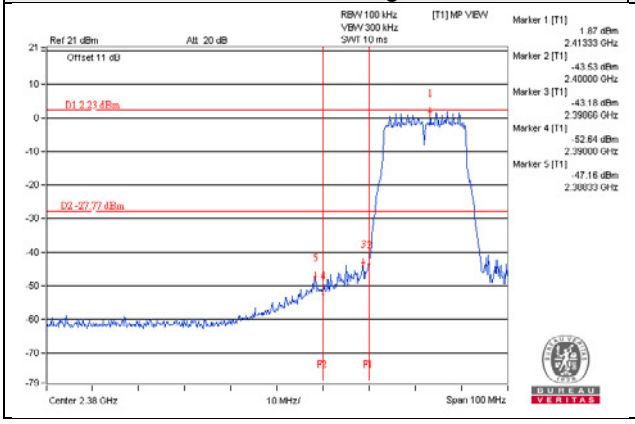
CH 6



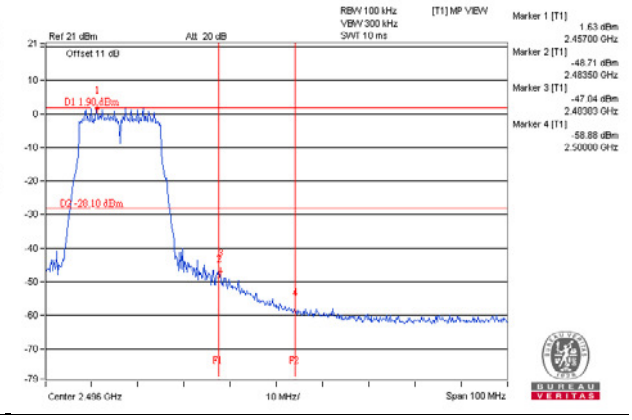
CH 11



CH 1 Band edge

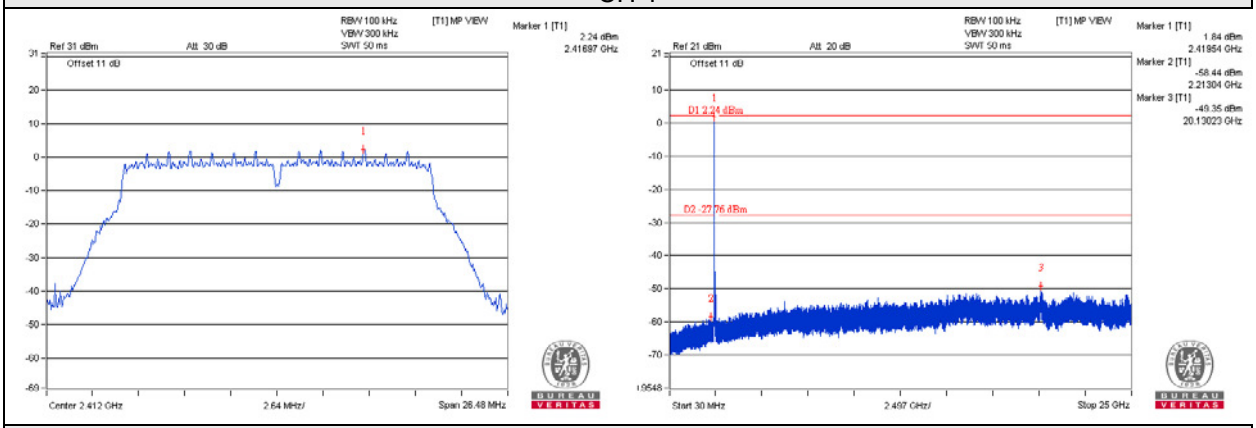


CH 11 Band edge

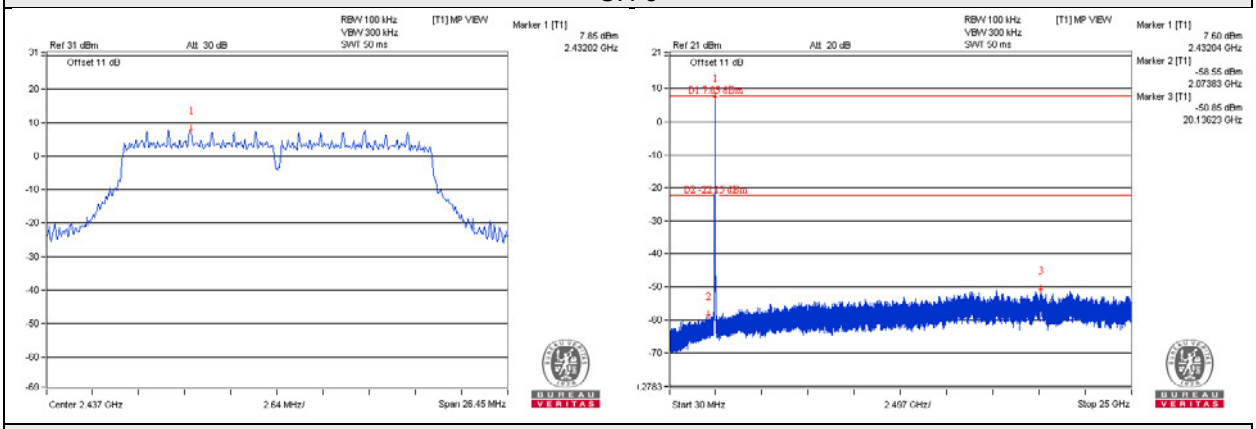


802.11n (HT20)_Chain 3

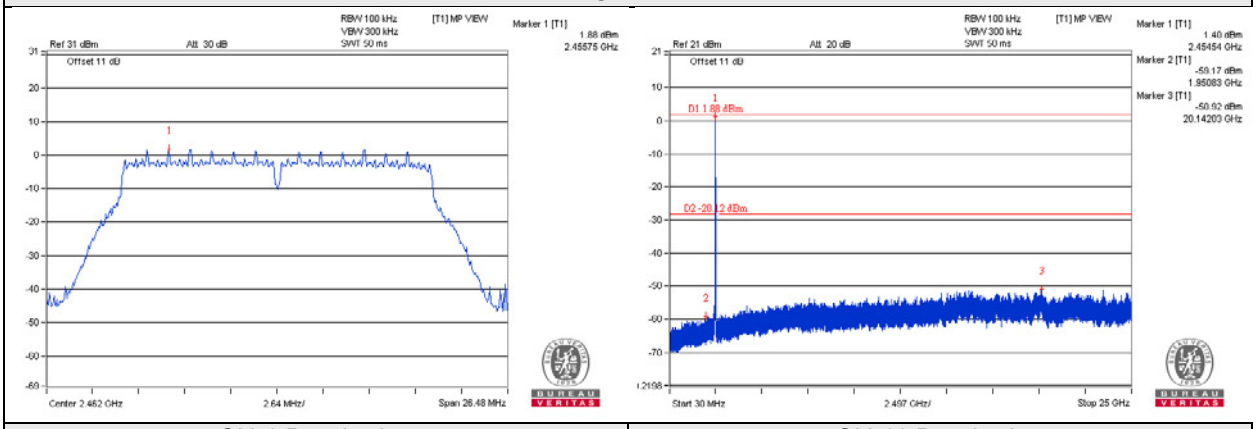
CH 1



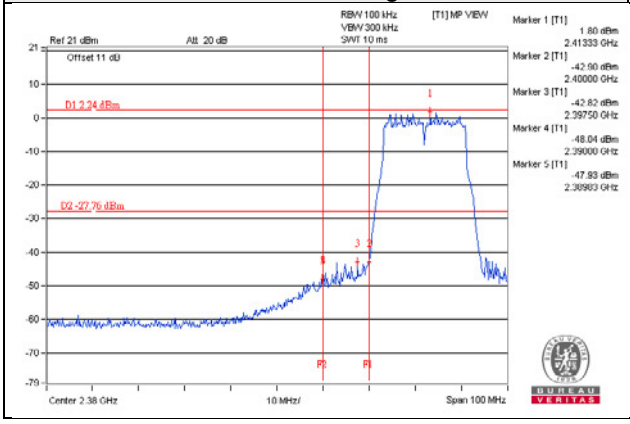
CH 6



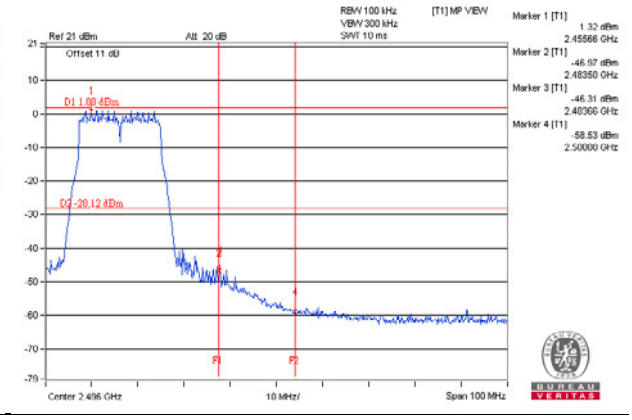
CH 11



CH 1 Band edge

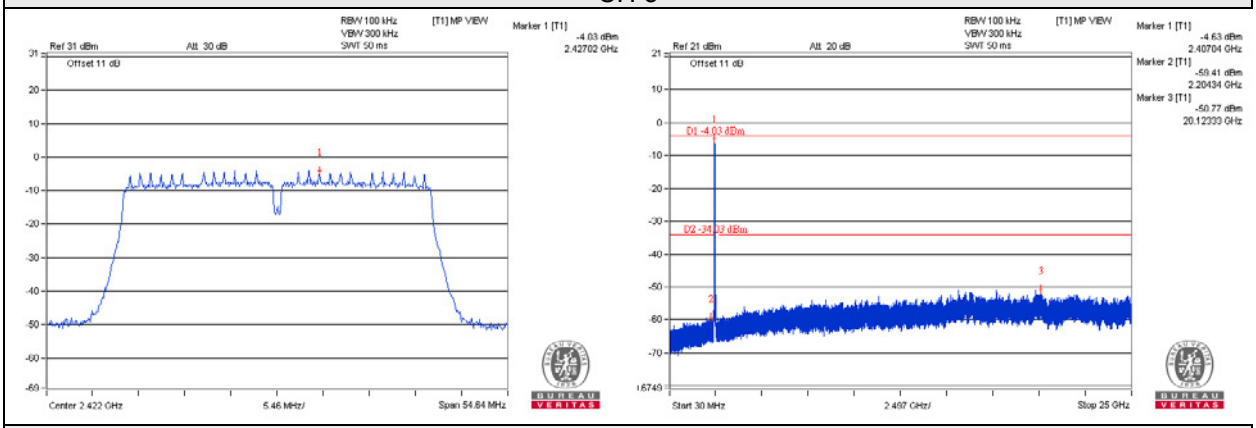


CH 11 Band edge

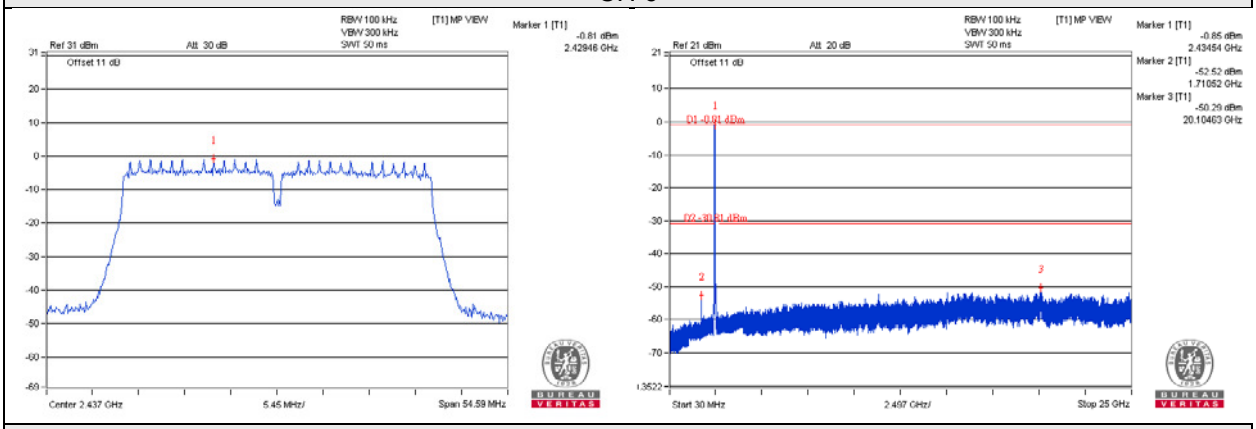


802.11n (HT40)_Chain 0

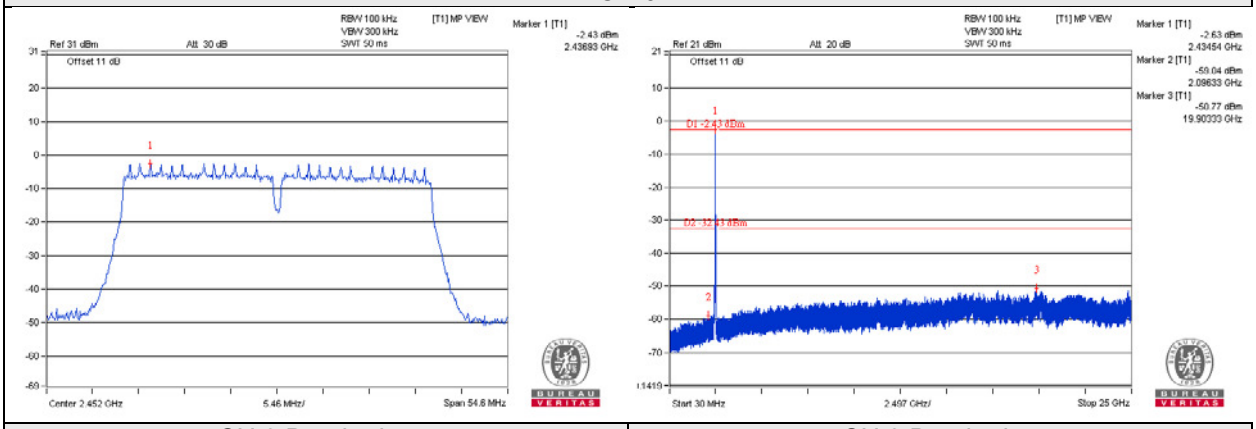
CH 3



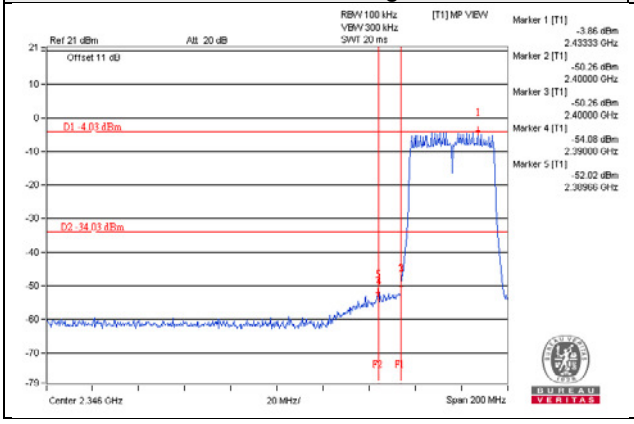
CH 6



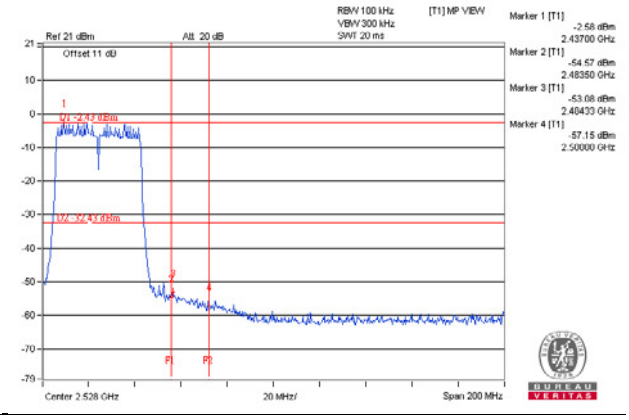
CH 9



CH 3 Band edge

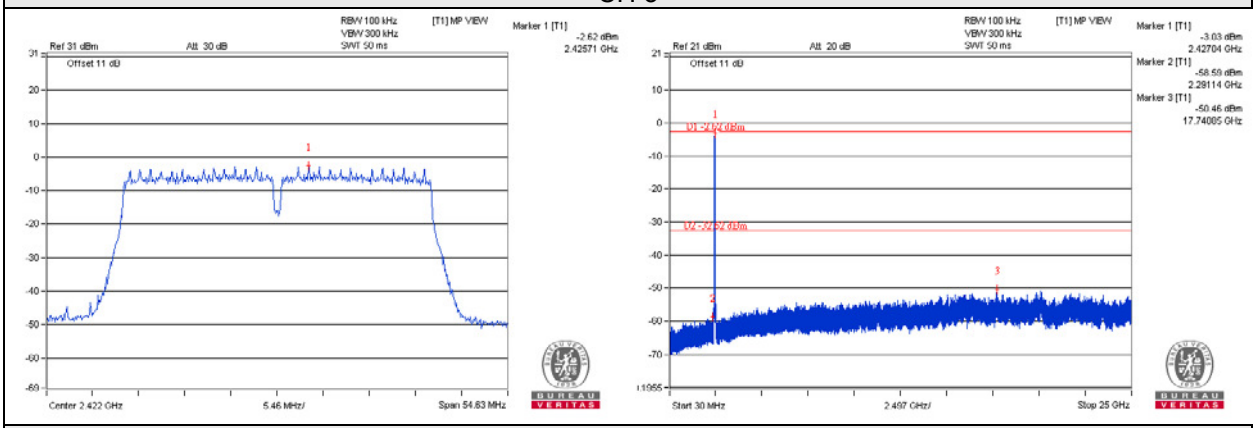


CH 9 Band edge

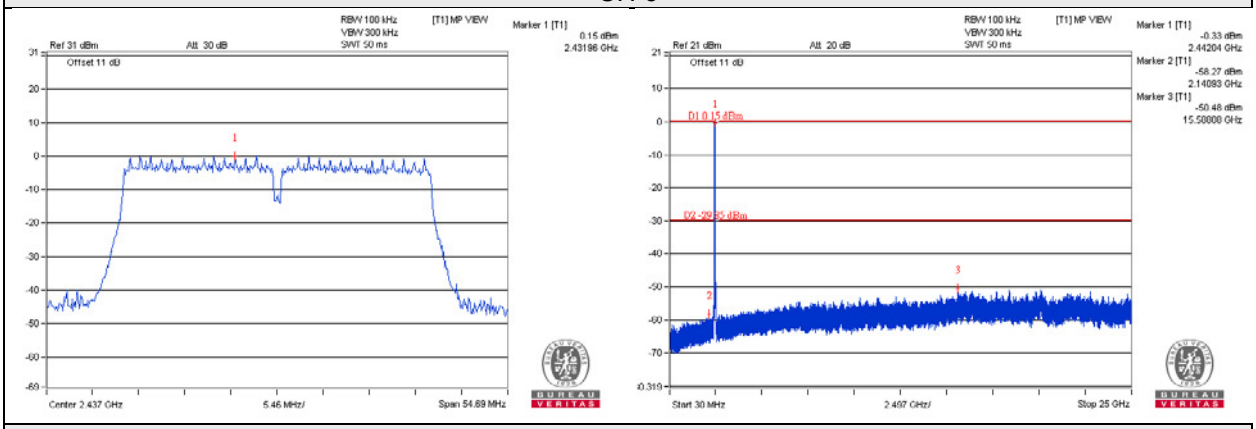


802.11n (HT40)_Chain 1

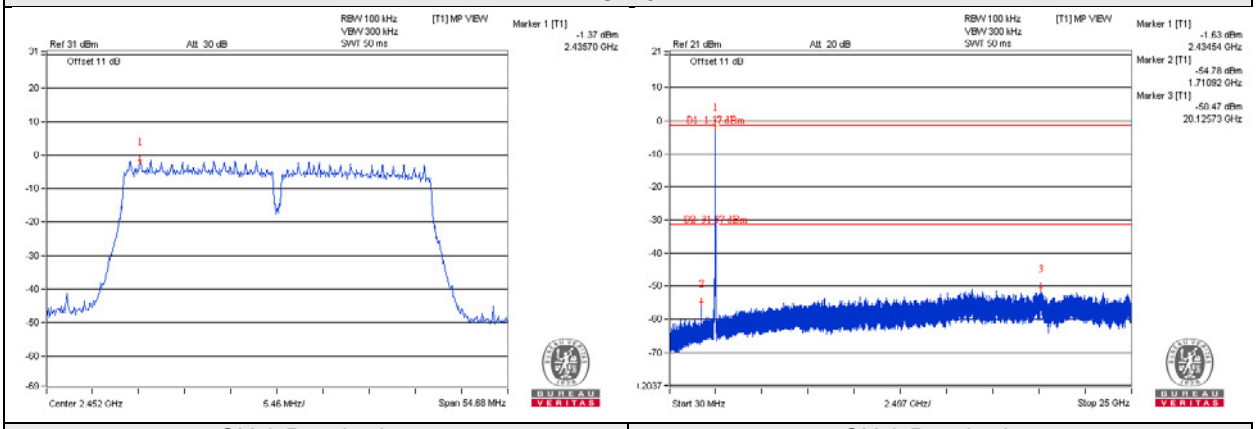
CH 3



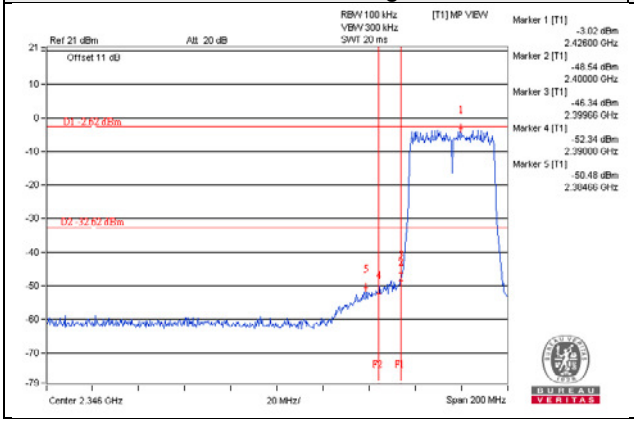
CH 6



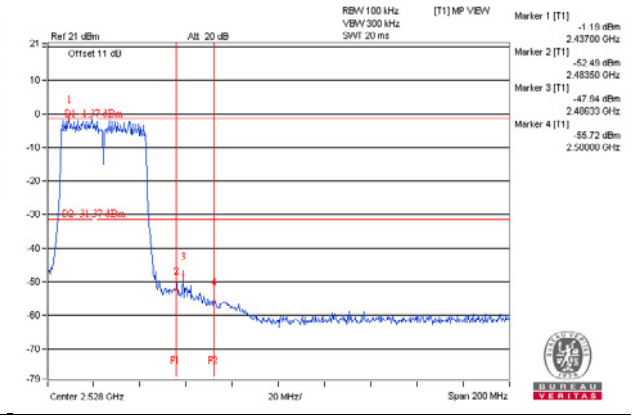
CH 9



CH 3 Band edge

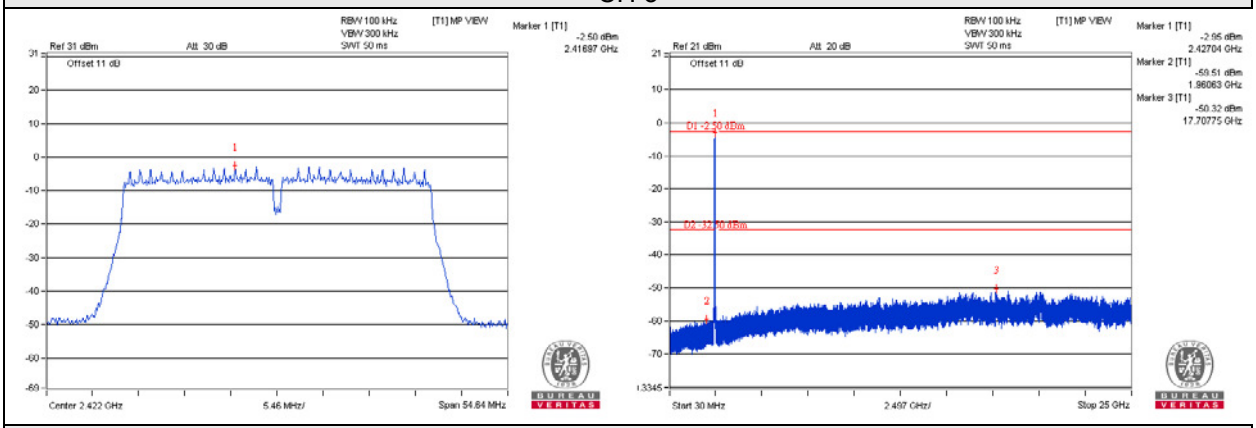


CH 9 Band edge

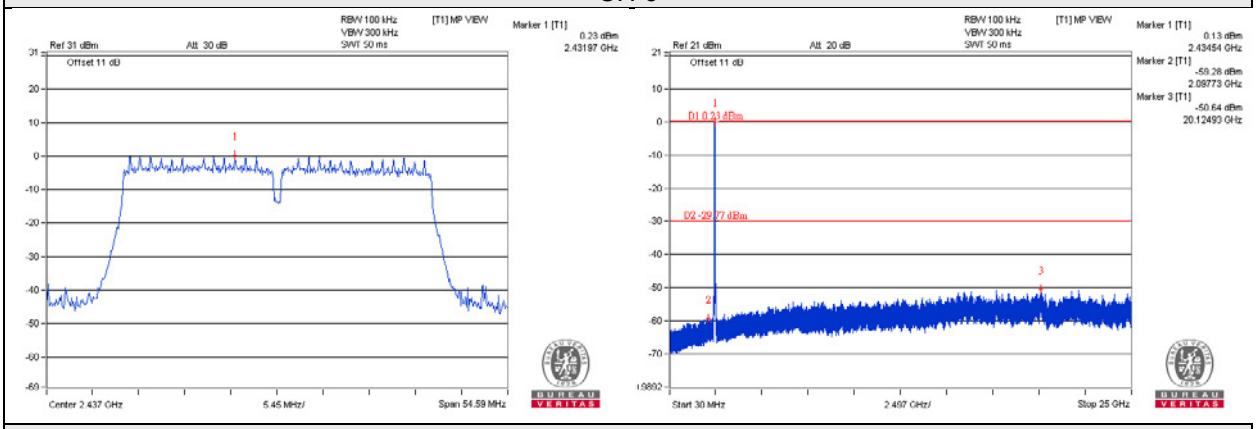


802.11n (HT40)_Chain 2

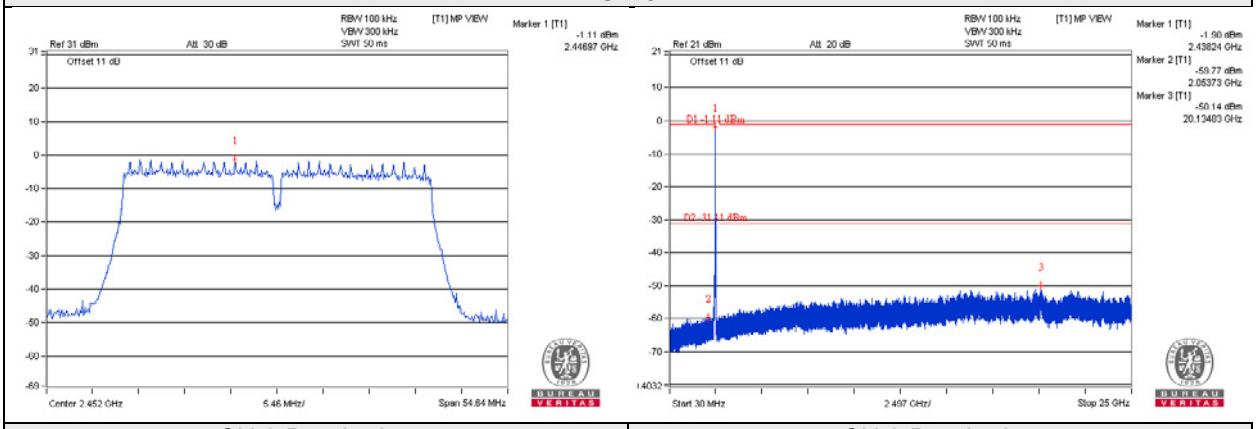
CH 3



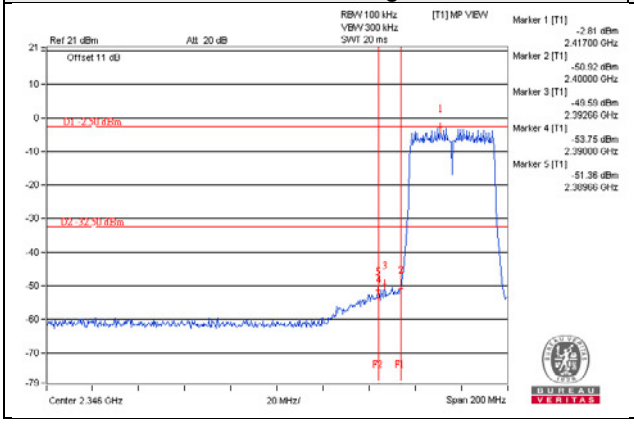
CH 6



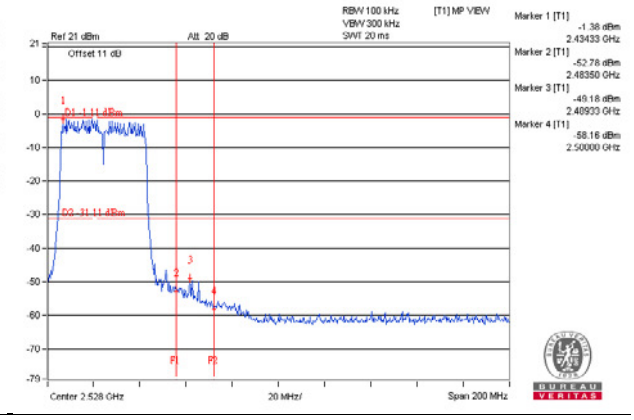
CH 9



CH 3 Band edge

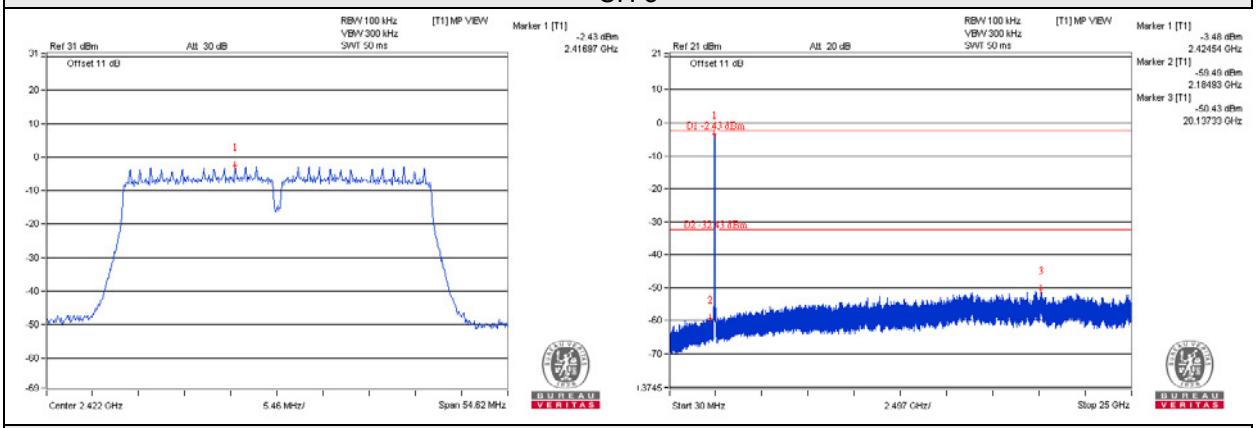


CH 9 Band edge

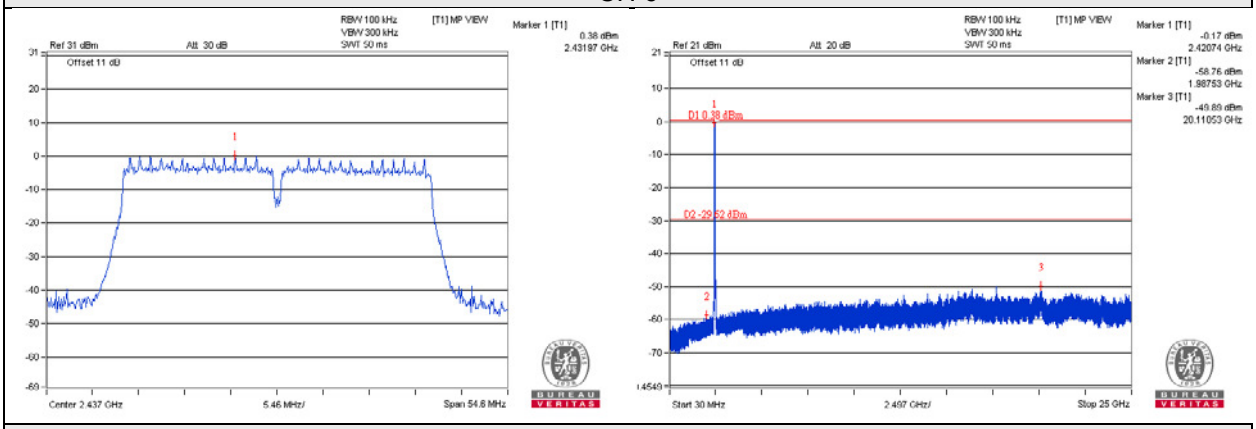


802.11n (HT40)_Chain 3

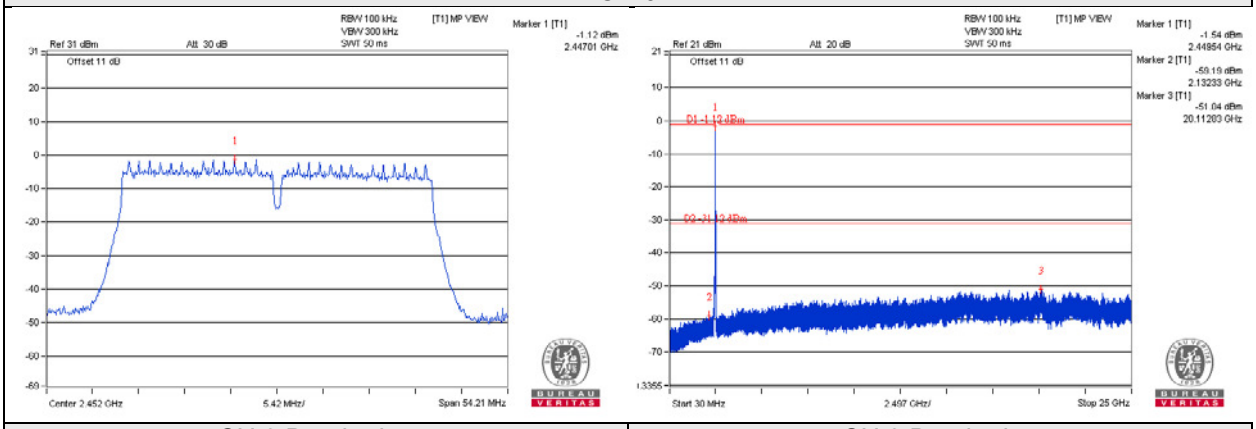
CH 3



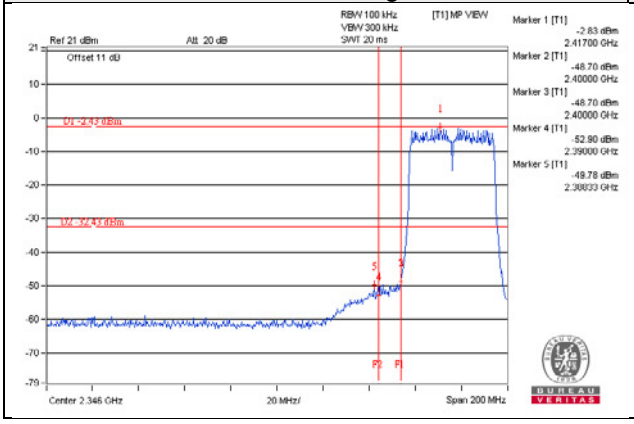
CH 6



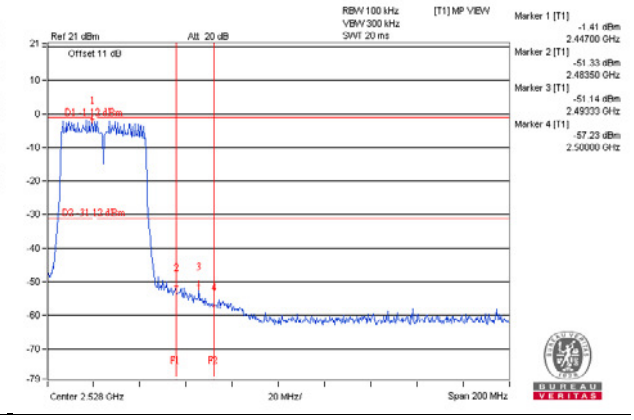
CH 9



CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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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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