

FCC Test Report

Report No.: RF180131D11

FCC ID: KA2CSH100A1

Test Model: DCS-H100

Received Date: Jan. 31, 2018

Test Date: Feb. 12 ~ 27, 2018

Issued Date: Mar. 2, 2018

Applicant: D-Link Corporation

Address: 289 Xinhua 3rd RD Neihu district Taipei Taiwan

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.)

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Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes	8
3.2.1 Test Mode Applicability and Tested Channel Detail	9
3.3 Duty Cycle of Test Signal	11
3.4 Description of Support Units	12
3.4.1 Configuration of System under Test	12
3.5 General Description of Applied Standards	13
4 Test Types and Results	14
4.1 Radiated Emission and Bandedge Measurement	14
4.1.1 Limits of Radiated Emission and Bandedge Measurement	14
4.1.2 Test Instruments	15
4.1.3 Test Procedures	16
4.1.4 Deviation from Test Standard	16
4.1.5 Test Setup	17
4.1.6 EUT Operating Conditions	18
4.1.7 Test Results	19
4.2 Conducted Emission Measurement	40
4.2.1 Limits of Conducted Emission Measurement	40
4.2.2 Test Instruments	40
4.2.3 Test Procedures	41
4.2.4 Deviation from Test Standard	41
4.2.5 Test Setup	41
4.2.6 EUT Operating Conditions	41
4.2.7 Test Results	42
4.3 6dB Bandwidth Measurement	44
4.3.1 Limits of 6dB Bandwidth Measurement	44
4.3.2 Test Setup	44
4.3.3 Test Instruments	44
4.3.4 Test Procedure	44
4.3.5 Deviation from Test Standard	44
4.3.6 EUT Operating Conditions	44
4.3.7 Test Result	45
4.4 Conducted Output Power Measurement	47
4.4.1 Limits of Conducted Output Power Measurement	47
4.4.2 Test Setup	47
4.4.3 Test Instruments	47
4.4.4 Test Procedures	47
4.4.5 Deviation from Test Standard	47
4.4.6 EUT Operating Conditions	47
4.4.7 Test Results	48
4.5 Power Spectral Density Measurement	49
4.5.1 Limits of Power Spectral Density Measurement	49
4.5.2 Test Setup	49
4.5.3 Test Instruments	49
4.5.4 Test Procedure	49
4.5.5 Deviation from Test Standard	49

4.5.6 EUT Operating Condition	49
4.5.7 Test Results	50
4.6 Conducted Out of Band Emission Measurement.....	52
4.6.1 Limits of Conducted Out of Band Emission Measurement.....	52
4.6.2 Test Setup.....	52
4.6.3 Test Instruments	52
4.6.4 Test Procedure	52
4.6.5 Deviation from Test Standard	52
4.6.6 EUT Operating Condition	52
4.6.7 Test Results	52
5 Pictures of Test Arrangements.....	60
Appendix – Information on the Testing Laboratories	61

Release Control Record

Issue No.	Description	Date Issued
RF180131D11	Original release.	Mar. 1, 2018

1 Certificate of Conformity

Product: Hub for Battery Cam

Brand: D-Link Corporation

Test Model: DCS-H100

Sample Status: Engineering sample

Applicant: D-Link Corporation

Test Date: Feb. 12 ~ 27, 2018

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 RF characteristics under the conditions specified in this report.

Prepared by : Annie Chang, **Date:** Mar. 1, 2018
Annie Chang / Senior Specialist

Approved by : Rex Lai, **Date:** Mar. 1, 2018
Rex Lai / Associate Technical 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 -15.70dB at 0.32969MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.99dB at 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 I-PEX not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.77 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.38 dB
	30MHz ~ 1000MHz	5.54 dB
Radiated Emissions above 1 GHz	Above 1GHz	5.48 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Hub for Battery Cam
Brand	D-Link Corporation
Test Model	DCS-H100
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
Output Power	457.267mW
Antenna Type	PIFA Antenna with 2.53dBi gain
Antenna Connector	I-PEX
Accessory Device	N/A
Data Cable Supplied	N/A

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX Function
802.11b	1TX
802.11g	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

2. The EUT use following adapter:

Brand	Model No.	Specification
D-Link	WB-18D12R	AC I/P: 100-240Vac, 50-60Hz, 0.5A Max. DC O/P: 12Vdc, 1.5A AC 2 Pin, Non-shielded DC cable (1.4m).

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

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

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 (40MHz):

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 $\geq$ 1G	RE $<$ 1G	PLC	APCM	
-	√	√	√	√	-

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

Radiated Emission Test (Above 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 2, 6, 10, 11	DSSS	DBPSK	1
-	802.11g	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6
-	802.11n (20MHz)	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6.5
-	802.11n (40MHz)	3 to 9	3, 4, 6, 8, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	6	DSSS	DBPSK	1

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	6	DSSS	DBPSK	1

Antenna Port Conducted Measurement:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Output Power						
EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 2, 6, 10, 11	DSSS	DBPSK	1
-	802.11g	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6
-	802.11n (20MHz)	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6.5
-	802.11n (40MHz)	3 to 9	3, 4, 6, 8, 9	OFDM	BPSK	13.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE$\geq$1G	14deg. C, 78%RH	120Vac, 60Hz	James Wei
RE$<$1G	14deg. C, 78%RH	120Vac, 60Hz	StarItaly Wu
PLC	20deg. C, 80%RH	120Vac, 60Hz	StarItaly Wu
APCM	25deg. C, 76%RH	120Vac, 60Hz	Saxon Lee

3.3 Duty Cycle of Test Signal

If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

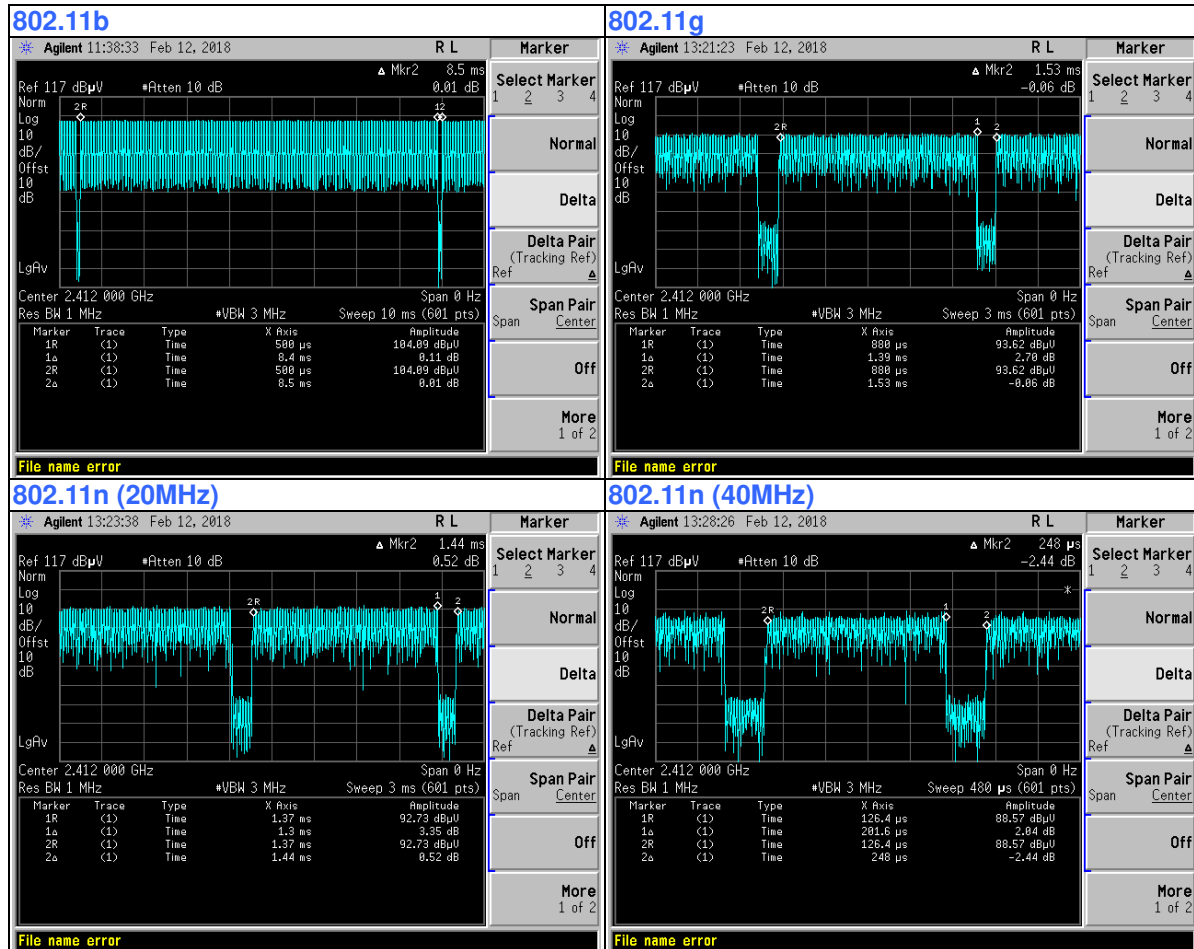
If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11b: Duty cycle of test signal is 98.8 %

802.11g: Duty cycle = $1.39/1.53 = 0.908$, Duty factor = $10 * \log(1/0.908) = 0.42$

802.11n (20MHz): Duty cycle = $1.3/1.44 = 0.903$, Duty factor = $10 * \log(1/0.903) = 0.44$

802.11n (40MHz): Duty cycle = $0.201/0.248 = 0.810$, Duty factor = $10 * \log(1/0.810) = 0.92$



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 PC	DELL	PP27L	8SNZ12S	FCC DoC Approved	Provided by Lab

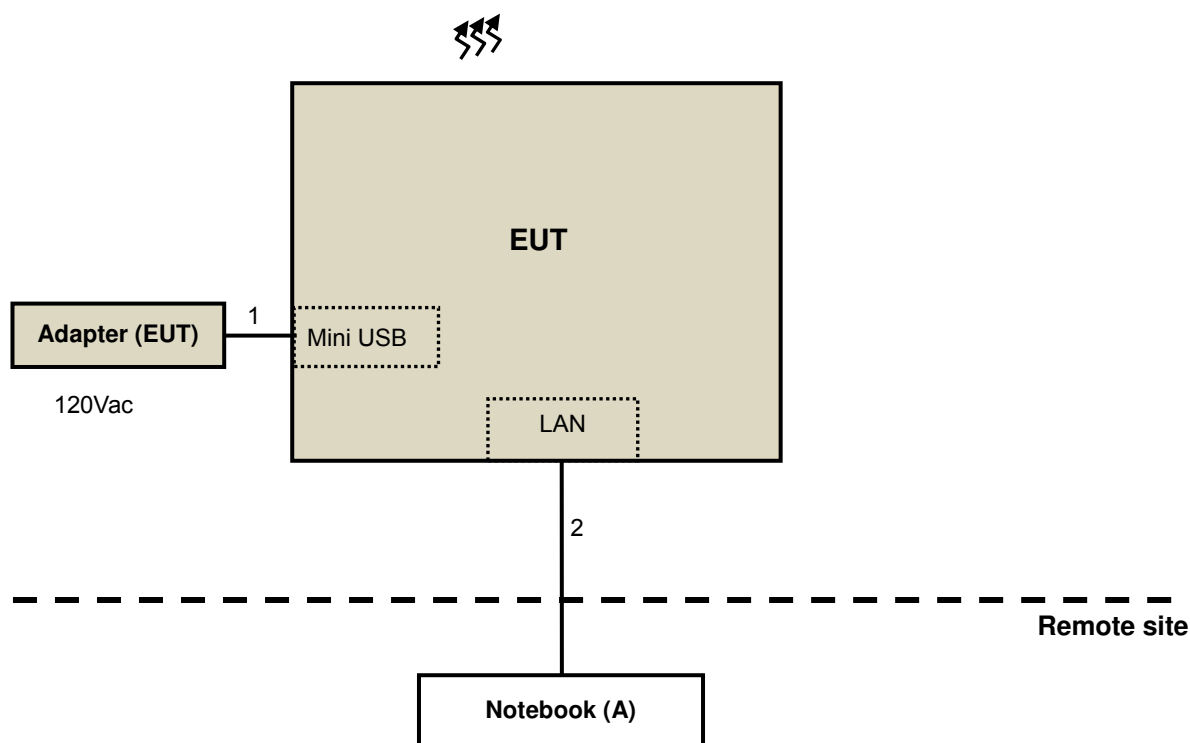
Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	1.4	N	0	Supplied by client
2.	LAN cable	1	10	N	0	Provided by Lab

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 DTS Meas Guidance v04
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

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

NOTE:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 21, 2017	Feb. 20, 2018
			Feb. 21, 2018	Feb. 20, 2019
HP Preamplifier	8449B	3008A01201	Feb. 22, 2017	Feb. 21, 2018
			Feb. 22, 2018	Feb. 21, 2019
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Feb. 21, 2017	Feb. 20, 2018
			Feb. 21, 2018	Feb. 20, 2019
Agilent TEST RECEIVER	N9038A	MY51210129	Feb. 6, 2018	Feb. 5, 2019
Schwarzbeck Antenna	VULB 9168	139	Nov. 29, 2017	Nov. 28, 2018
Schwarzbeck Antenna	VHBA 9123	480	May 19, 2017	May 18, 2019
Schwarzbeck Horn Antenna	BBHA-9170	212	Dec. 1, 2017	Nov. 30, 2018
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Dec. 1, 2017	Nov. 30, 2018
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.5	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF104	CABLE-CH6	Aug. 14, 2017	Aug. 13, 2018
SUHNER RF cable With 3dB PAD	SF102	Cable-CH8-3.6m	Aug. 14, 2017	Aug. 13, 2018
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	May 31, 2017	May 30, 2018
KEYSIGHT Spectrum Analyzer	N9030A	MY54490260	Jul. 26, 2017	Jul. 25, 2018
Loop Antenna EMCI	LPA600	270	Aug. 11, 2017	Aug. 10, 2019
EMCO Horn Antenna	3115	00028257	Nov. 30, 2017	Nov. 29, 2018
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 29, 2017	Sep. 28, 2018
Anritsu Power Sensor	MA2411B	0738404	Apr. 24, 2017	Apr. 23, 2018
Anritsu Power Meter	ML2495A	0842014	Apr. 24, 2017	Apr. 23, 2018

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
 2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in Chamber No. 6.
 4. The Industry Canada Reference No. IC 7450E-6.

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Both X and Y axes of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

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

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

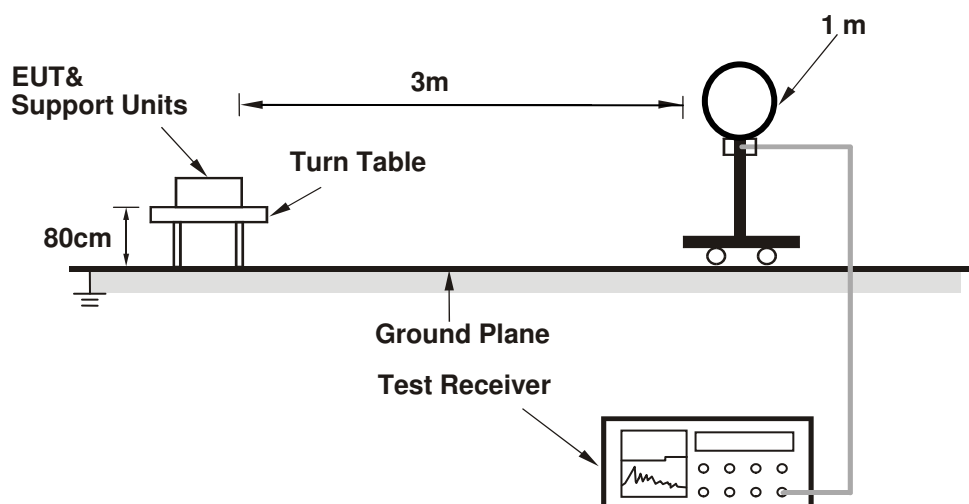
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

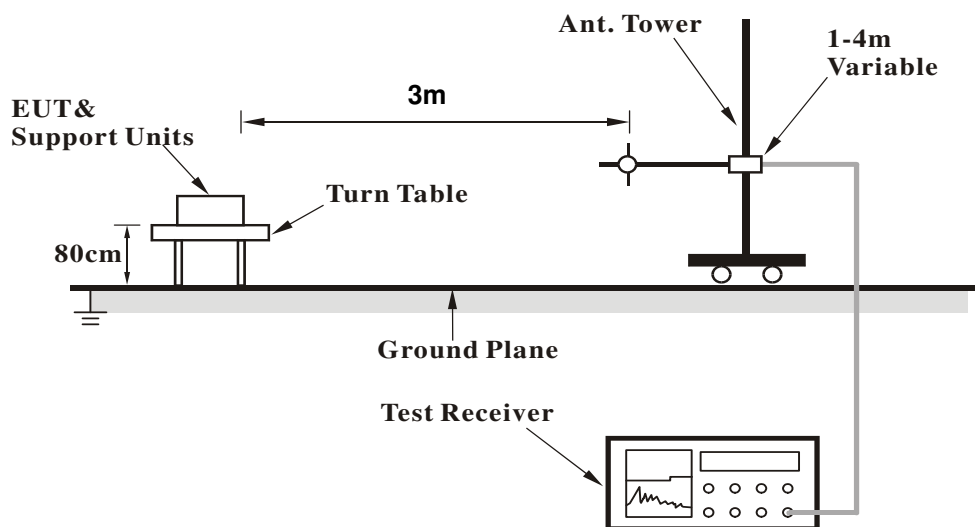
No deviation.

4.1.5 Test Setup

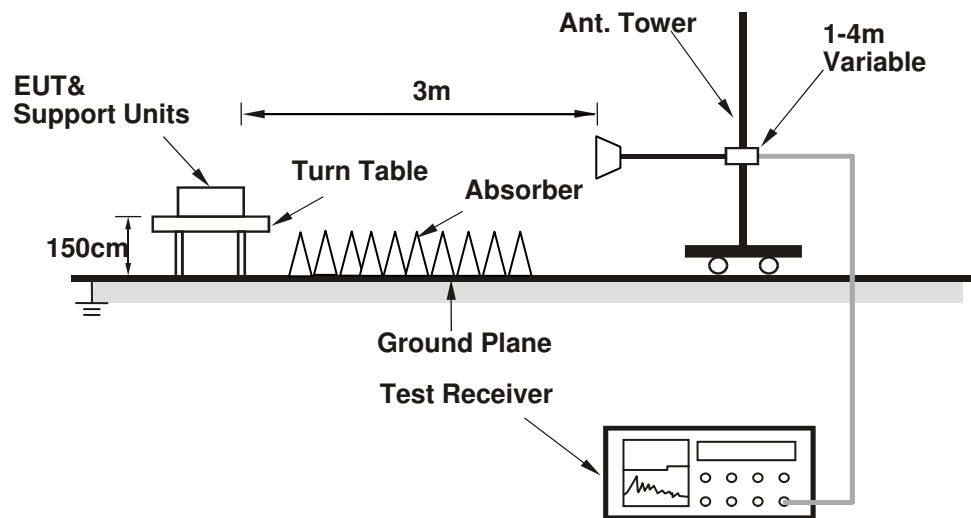
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Connected the EUT with the Adapter.
- Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

ABOVE 1GHz DATA

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.96 PK	74.00	-6.04	1.86 H	188	69.94	-1.98
2	2390.00	44.19 AV	54.00	-9.81	1.86 H	188	46.17	-1.98
3	*2412.00	108.55 PK			1.86 H	188	110.67	-2.12
4	*2412.00	104.79 AV			1.86 H	188	106.91	-2.12
5	4824.00	53.82 PK	74.00	-20.18	1.17 H	208	49.72	4.10
6	4824.00	52.11 AV	54.00	-1.89	1.17 H	208	48.01	4.10
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	69.30 PK	74.00	-4.70	1.00 V	121	71.28	-1.98
2	2390.00	45.76 AV	54.00	-8.24	1.00 V	121	47.74	-1.98
3	*2412.00	109.94 PK			1.00 V	121	112.06	-2.12
4	*2412.00	105.28 AV			1.00 V	121	107.40	-2.12
5	4824.00	55.09 PK	74.00	-18.91	1.61 V	320	50.99	4.10
6	4824.00	52.61 AV	54.00	-1.39	1.61 V	320	48.51	4.10

REMARKS:

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

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.30 PK	74.00	-10.70	2.11 H	184	65.28	-1.98
2	2390.00	41.35 AV	54.00	-12.65	2.11 H	184	43.33	-1.98
3	*2417.00	108.65 PK			2.11 H	184	110.81	-2.16
4	*2417.00	104.85 AV			2.11 H	184	107.01	-2.16
5	4834.00	53.42 PK	74.00	-20.58	1.35 H	201	49.27	4.15
6	4834.00	52.03 AV	54.00	-1.97	1.35 H	201	47.88	4.15
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	64.83 PK	74.00	-9.17	1.05 V	105	66.81	-1.98
2	2390.00	42.73 AV	54.00	-11.27	1.05 V	105	44.71	-1.98
3	*2417.00	110.08 PK			1.05 V	105	112.24	-2.16
4	*2417.00	105.51 AV			1.05 V	105	107.67	-2.16
5	4834.00	54.22 PK	74.00	-19.78	1.21 V	331	50.07	4.15
6	4834.00	52.68 AV	54.00	-1.32	1.21 V	331	48.53	4.15

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.75 PK			1.88 H	192	111.03	-2.28
2	*2437.00	104.93 AV			1.88 H	192	107.21	-2.28
3	4874.00	52.94 PK	74.00	-21.06	1.21 H	205	48.72	4.22
4	4874.00	51.85 AV	54.00	-2.15	1.21 H	205	47.63	4.22
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	110.48 PK			1.00 V	120	112.76	-2.28
2	*2437.00	106.33 AV			1.00 V	120	108.61	-2.28
3	4874.00	54.08 PK	74.00	-19.92	1.52 V	322	49.86	4.22
4	4874.00	52.38 AV	54.00	-1.62	1.52 V	322	48.16	4.22

REMARKS:

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

CHANNEL	TX Channel 10	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2457.00	108.61 PK			1.95 H	211	110.88	-2.27
2	*2457.00	104.85 AV			1.95 H	211	107.12	-2.27
3	2483.50	64.24 PK	74.00	-9.76	1.95 H	211	66.18	-1.94
4	2483.50	42.08 AV	54.00	-11.92	1.95 H	211	44.02	-1.94
5	4914.00	48.38 PK	74.00	-25.62	1.59 H	229	44.22	4.16
6	4914.00	46.43 AV	54.00	-7.57	1.59 H	229	42.27	4.16
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	*2457.00	110.32 PK			1.01 V	128	112.59	-2.27
2	*2457.00	106.16 AV			1.01 V	128	108.43	-2.27
3	2483.50	69.72 PK	74.00	-4.28	1.01 V	128	71.66	-1.94
4	2483.50	45.27 AV	54.00	-8.73	1.01 V	128	47.21	-1.94
5	4914.00	54.82 PK	74.00	-19.18	1.22 V	305	50.66	4.16
6	4914.00	52.45 AV	54.00	-1.55	1.22 V	305	48.29	4.16

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.61 PK			1.89 H	202	110.82	-2.21
2	*2462.00	104.83 AV			1.89 H	202	107.04	-2.21
3	2483.50	69.89 PK	74.00	-4.11	1.89 H	202	71.83	-1.94
4	2483.50	46.17 AV	54.00	-7.83	1.89 H	202	48.11	-1.94
5	4924.00	48.43 PK	74.00	-25.57	1.22 H	217	44.29	4.14
6	4924.00	46.30 AV	54.00	-7.70	1.22 H	217	42.16	4.14
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	110.17 PK			1.10 V	123	112.38	-2.21
2	*2462.00	106.10 AV			1.10 V	123	108.31	-2.21
3	2483.50	72.89 PK	74.00	-1.11	1.10 V	123	74.83	-1.94
4	2483.50	47.19 AV	54.00	-6.81	1.10 V	123	49.13	-1.94
5	4924.00	50.01 PK	74.00	-23.99	1.85 V	325	45.87	4.14
6	4924.00	47.08 AV	54.00	-6.92	1.85 V	325	42.94	4.14

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.92 PK	74.00	-3.08	1.85 H	189	72.90	-1.98
2	2390.00	44.42 AV	54.00	-9.58	1.85 H	189	46.40	-1.98
3	*2412.00	105.66 PK			1.85 H	189	107.78	-2.12
4	*2412.00	96.31 AV			1.85 H	189	98.43	-2.12
5	4824.00	44.28 PK	74.00	-29.72	1.29 H	186	40.18	4.10
6	4824.00	32.13 AV	54.00	-21.87	1.29 H	186	28.03	4.10
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	72.85 PK	74.00	-1.15	1.15 V	121	74.83	-1.98
2	2390.00	45.56 AV	54.00	-8.44	1.15 V	121	47.54	-1.98
3	*2412.00	106.16 PK			1.15 V	121	108.28	-2.12
4	*2412.00	96.92 AV			1.15 V	121	99.04	-2.12
5	4824.00	45.37 PK	74.00	-28.63	1.66 V	317	41.27	4.10
6	4824.00	33.43 AV	54.00	-20.57	1.66 V	317	29.33	4.10

REMARKS:

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

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.91 PK	74.00	-3.09	2.09 H	196	72.89	-1.98
2	2390.00	44.46 AV	54.00	-9.54	2.09 H	196	46.44	-1.98
3	*2417.00	107.73 PK			2.09 H	196	109.89	-2.16
4	*2417.00	99.01 AV			2.09 H	196	101.17	-2.16
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	72.98 PK	74.00	-1.02	2.29 V	84	74.96	-1.98
2	2390.00	45.03 AV	54.00	-8.97	2.29 V	84	47.01	-1.98
3	*2417.00	108.87 PK			2.29 V	84	111.03	-2.16
4	*2417.00	99.59 AV			2.29 V	84	101.75	-2.16

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	109.65 PK			1.91 H	186	111.93	-2.28
2	*2437.00	100.30 AV			1.91 H	186	102.58	-2.28
3	4874.00	45.18 PK	74.00	-28.82	1.32 H	188	40.96	4.22
4	4874.00	32.79 AV	54.00	-21.21	1.32 H	188	28.57	4.22
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	110.34 PK			3.27 V	93	112.62	-2.28
2	*2437.00	101.03 AV			3.27 V	93	103.31	-2.28
3	4874.00	45.90 PK	74.00	-28.10	1.69 V	302	41.68	4.22
4	4874.00	33.94 AV	54.00	-20.06	1.69 V	302	29.72	4.22

REMARKS:

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

CHANNEL	TX Channel 10	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2457.00	106.76 PK			2.11 H	215	109.03	-2.27
2	*2457.00	98.45 AV			2.11 H	215	100.72	-2.27
3	2483.50	70.52 PK	74.00	-3.48	2.11 H	215	72.46	-1.94
4	2483.50	42.77 AV	54.00	-11.23	2.11 H	215	44.71	-1.94
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	*2457.00	108.20 PK			2.27 V	74	110.47	-2.27
2	*2457.00	99.17 AV			2.27 V	74	101.44	-2.27
3	2483.50	72.56 PK	74.00	-1.44	2.27 V	74	74.50	-1.94
4	2483.50	43.74 AV	54.00	-10.26	2.27 V	74	45.68	-1.94

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.63 PK			1.89 H	188	107.84	-2.21
2	*2462.00	96.21 AV			1.89 H	188	98.42	-2.21
3	2483.50	70.55 PK	74.00	-3.45	1.89 H	188	72.49	-1.94
4	2483.50	45.54 AV	54.00	-8.46	1.89 H	188	47.48	-1.94
5	4924.00	44.43 PK	74.00	-29.57	1.31 H	196	40.29	4.14
6	4924.00	32.25 AV	54.00	-21.75	1.31 H	196	28.11	4.14
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	106.13 PK			1.00 V	122	108.34	-2.21
2	*2462.00	97.06 AV			1.00 V	122	99.27	-2.21
3	2483.50	72.10 PK	74.00	-1.90	1.00 V	122	74.04	-1.94
4	2483.50	46.72 AV	54.00	-7.28	1.00 V	122	48.66	-1.94
5	4924.00	45.53 PK	74.00	-28.47	1.81 V	321	41.39	4.14
6	4924.00	33.61 AV	54.00	-20.39	1.81 V	321	29.47	4.14

REMARKS:

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

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.81 PK	74.00	-5.19	1.44 H	297	70.79	-1.98
2	2390.00	48.64 AV	54.00	-5.36	1.44 H	297	50.62	-1.98
3	*2412.00	106.12 PK			1.44 H	297	108.24	-2.12
4	*2412.00	95.67 AV			1.44 H	297	97.79	-2.12
5	4824.00	52.66 PK	74.00	-21.34	1.86 H	338	48.56	4.10
6	4824.00	37.56 AV	54.00	-16.44	1.86 H	338	33.46	4.10
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	72.95 PK	74.00	-1.05	1.00 V	101	74.93	-1.98
2	2390.00	52.97 AV	54.00	-1.03	1.00 V	101	54.95	-1.98
3	*2412.00	108.91 PK			1.00 V	101	111.03	-2.12
4	*2412.00	98.57 AV			1.00 V	101	100.69	-2.12
5	4824.00	49.75 PK	74.00	-24.25	1.38 V	114	45.65	4.10
6	4824.00	35.10 AV	54.00	-18.90	1.38 V	114	31.00	4.10

REMARKS:

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

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.61 PK	74.00	-10.39	2.28 H	197	65.59	-1.98
2	2390.00	42.63 AV	54.00	-11.37	2.28 H	197	44.61	-1.98
3	*2417.00	107.11 PK			2.28 H	197	109.27	-2.16
4	*2417.00	97.00 AV			2.28 H	197	99.16	-2.16
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.91 PK	74.00	-5.09	2.28 V	80	70.89	-1.98
2	2390.00	45.82 AV	54.00	-8.18	2.28 V	80	47.80	-1.98
3	*2417.00	110.58 PK			2.28 V	80	112.74	-2.16
4	*2417.00	100.04 AV			2.28 V	80	102.20	-2.16

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.90 PK			1.45 H	301	110.18	-2.28
2	*2437.00	97.34 AV			1.45 H	301	99.62	-2.28
3	4874.00	53.05 PK	74.00	-20.95	1.88 H	341	48.83	4.22
4	4874.00	37.81 AV	54.00	-16.19	1.88 H	341	33.59	4.22
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	111.33 PK			3.25 V	96	113.61	-2.28
2	*2437.00	100.19 AV			3.25 V	96	102.47	-2.28
3	4874.00	50.11 PK	74.00	-23.89	1.33 V	128	45.89	4.22
4	4874.00	35.49 AV	54.00	-18.51	1.33 V	128	31.27	4.22

REMARKS:

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

CHANNEL	TX Channel 10	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2457.00	106.72 PK			2.07 H	200	108.99	-2.27
2	*2457.00	96.70 AV			2.07 H	200	98.97	-2.27
3	2483.50	65.89 PK	74.00	-8.11	2.07 H	200	67.83	-1.94
4	2483.50	43.25 AV	54.00	-10.75	2.07 H	200	45.19	-1.94
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	*2457.00	109.90 PK			2.23 V	78	112.17	-2.27
2	*2457.00	99.62 AV			2.23 V	78	101.89	-2.27
3	2483.50	67.92 PK	74.00	-6.08	2.23 V	78	69.86	-1.94
4	2483.50	46.40 AV	54.00	-7.60	2.23 V	78	48.34	-1.94

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.01 PK			1.52 H	292	109.22	-2.21
2	*2462.00	96.50 AV			1.52 H	292	98.71	-2.21
3	2483.50	69.08 PK	74.00	-4.92	1.52 H	292	71.02	-1.94
4	2483.50	48.94 AV	54.00	-5.06	1.52 H	292	50.88	-1.94
5	4924.00	52.91 PK	74.00	-21.09	1.90 H	335	48.77	4.14
6	4924.00	37.63 AV	54.00	-16.37	1.90 H	335	33.49	4.14
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	110.68 PK			3.25 V	96	112.89	-2.21
2	*2462.00	99.30 AV			3.25 V	96	101.51	-2.21
3	2483.50	71.52 PK	74.00	-2.48	3.25 V	96	73.46	-1.94
4	2483.50	52.56 AV	54.00	-1.44	3.25 V	96	54.50	-1.94
5	4924.00	49.85 PK	74.00	-24.15	1.38 V	130	45.71	4.14
6	4924.00	35.25 AV	54.00	-18.75	1.38 V	130	31.11	4.14

REMARKS:

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

802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.14 PK	74.00	-7.86	1.23 H	202	68.12	-1.98
2	2390.00	50.19 AV	54.00	-3.81	1.23 H	202	52.17	-1.98
3	*2422.00	101.61 PK			1.23 H	202	103.80	-2.19
4	*2422.00	91.92 AV			1.23 H	202	94.11	-2.19
5	4844.00	45.48 PK	74.00	-28.52	1.19 H	206	41.29	4.19
6	4844.00	32.74 AV	54.00	-21.26	1.19 H	206	28.55	4.19
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	69.29 PK	74.00	-4.71	3.36 V	93	71.27	-1.98
2	2390.00	52.98 AV	54.00	-1.02	3.36 V	93	54.96	-1.98
3	*2422.00	104.89 PK			3.36 V	93	107.08	-2.19
4	*2422.00	95.92 AV			3.36 V	93	98.11	-2.19
5	4844.00	46.82 PK	74.00	-27.18	2.55 V	149	42.63	4.19
6	4844.00	34.47 AV	54.00	-19.53	2.55 V	149	30.28	4.19

REMARKS:

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

CHANNEL	TX Channel 4	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.20 PK	74.00	-9.80	2.01 H	188	66.18	-1.98
2	2390.00	50.03 AV	54.00	-3.97	2.01 H	188	52.01	-1.98
3	*2427.00	102.48 PK			2.01 H	188	104.71	-2.23
4	*2427.00	92.90 AV			2.01 H	188	95.13	-2.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.82 PK	74.00	-7.18	2.23 V	80	68.80	-1.98
2	2390.00	52.78 AV	54.00	-1.22	2.23 V	80	54.76	-1.98
3	*2427.00	106.37 PK			2.23 V	80	108.60	-2.23
4	*2427.00	96.96 AV			2.23 V	80	99.19	-2.23

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.63 PK			1.22 H	210	104.91	-2.28
2	*2437.00	93.00 AV			1.22 H	210	95.28	-2.28
3	4874.00	45.64 PK	74.00	-28.36	1.22 H	219	41.42	4.22
4	4874.00	33.10 AV	54.00	-20.90	1.22 H	219	28.88	4.22
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	106.45 PK			3.23 V	96	108.73	-2.28
2	*2437.00	96.93 AV			3.23 V	96	99.21	-2.28
3	4874.00	47.13 PK	74.00	-26.87	2.57 V	166	42.91	4.22
4	4874.00	34.76 AV	54.00	-19.24	2.57 V	166	30.54	4.22

REMARKS:

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

CHANNEL	TX Channel 8	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2447.00	102.46 PK			2.02 H	193	104.81	-2.35
2	*2447.00	92.80 AV			2.02 H	193	95.15	-2.35
3	2483.50	66.07 PK	74.00	-7.93	2.02 H	193	68.01	-1.94
4	2483.50	49.93 AV	54.00	-4.07	2.02 H	193	51.87	-1.94
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	*2447.00	106.37 PK			2.26 V	77	108.72	-2.35
2	*2447.00	96.84 AV			2.26 V	77	99.19	-2.35
3	2483.50	69.46 PK	74.00	-4.54	2.26 V	77	71.40	-1.94
4	2483.50	53.01 AV	54.00	-0.99	2.26 V	77	54.95	-1.94

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	101.25 PK			1.31 H	211	103.59	-2.34
2	*2452.00	91.00 AV			1.31 H	211	93.34	-2.34
3	2483.50	66.28 PK	74.00	-7.72	1.31 H	211	68.22	-1.94
4	2483.50	50.09 AV	54.00	-3.91	1.31 H	211	52.03	-1.94
5	4904.00	45.23 PK	74.00	-28.77	1.20 H	198	41.03	4.20
6	4904.00	32.47 AV	54.00	-21.53	1.20 H	198	28.27	4.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.45 PK			3.27 V	93	106.79	-2.34
2	*2452.00	94.93 AV			3.27 V	93	97.27	-2.34
3	2483.50	69.83 PK	74.00	-4.17	3.27 V	93	71.77	-1.94
4	2483.50	52.94 AV	54.00	-1.06	3.27 V	93	54.88	-1.94
5	4904.00	46.62 PK	74.00	-27.38	2.68 V	156	42.42	4.20
6	4904.00	34.31 AV	54.00	-19.69	2.68 V	156	30.11	4.20

REMARKS:

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

BELOW 1GHz WORST-CASE DATA

802.11b

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	120.00	27.12 QP	43.50	-16.38	2.00 H	110	38.47	-11.35
2	160.03	38.09 QP	43.50	-5.41	2.00 H	100	46.82	-8.73
3	200.05	25.67 QP	43.50	-17.83	2.00 H	306	37.30	-11.63
4	415.35	23.86 QP	46.00	-22.14	1.00 H	166	28.66	-4.80
5	632.06	25.04 QP	46.00	-20.96	2.00 H	0	24.70	0.34
6	876.37	28.66 QP	46.00	-17.34	3.00 H	360	24.25	4.41
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	133.15	25.10 QP	43.50	-18.40	2.00 V	360	35.27	-10.17
2	160.03	36.33 QP	43.50	-7.17	2.24 V	320	45.06	-8.73
3	382.07	19.90 QP	46.00	-26.10	3.12 V	35	25.41	-5.51
4	533.06	34.57 QP	46.00	-11.43	3.86 V	112	36.79	-2.22
5	799.98	34.50 QP	46.00	-11.50	2.45 V	360	31.19	3.31
6	874.95	28.59 QP	46.00	-17.41	2.02 V	322	24.17	4.42

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	100276	Apr. 10, 2017	Apr. 9, 2018
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ENV216	101197	May 22, 2017	May 21, 2018
LISN With Adapter (for EUT)	AD10	C10Ada-002	May 22, 2017	May 21, 2018
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Nov. 23, 2017	Nov. 22, 2018
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 9, 2017	May 8, 2018
Software	Cond_V7.3.7.4	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C10.01	Feb. 14, 2018	Feb. 13, 2019
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-011484	May 18, 2017	May 17, 2018
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 14, 2017	Nov. 13, 2018
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 14, 2017	Nov. 13, 2018

Notes: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in Shielded Room No. 10.

4.2.3 Test Procedures

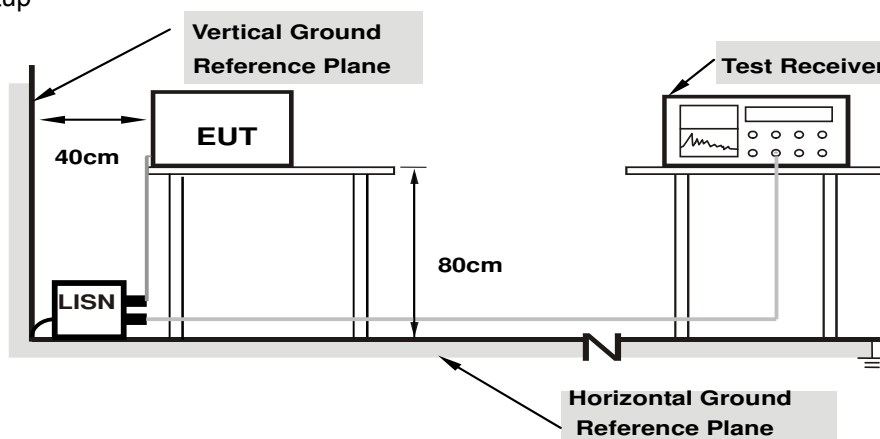
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: Support units were connected to second LISN.

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

4.2.6 EUT Operating Conditions

Same as item 4.1.6.

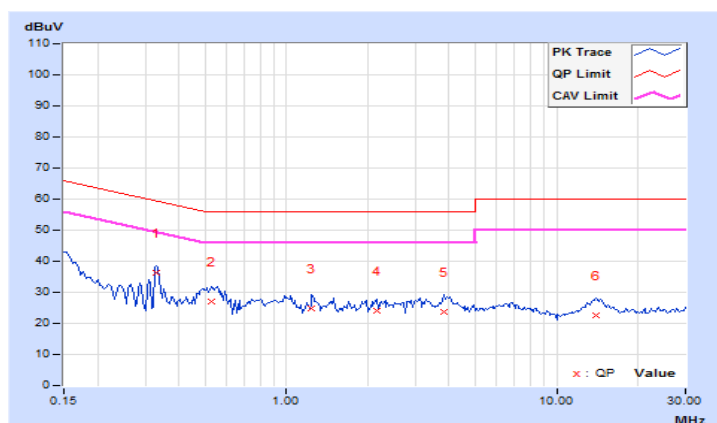
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.32969	9.74	26.65	24.02	36.39	33.76	59.46	49.46	-23.07	-15.70
2	0.52500	9.78	17.34	10.64	27.12	20.42	56.00	46.00	-28.88	-25.58
3	1.23438	9.90	14.82	9.70	24.72	19.60	56.00	46.00	-31.28	-26.40
4	2.16797	10.00	14.06	8.64	24.06	18.64	56.00	46.00	-31.94	-27.36
5	3.83594	10.05	13.81	6.48	23.86	16.53	56.00	46.00	-32.14	-29.47
6	14.01563	10.29	12.46	6.37	22.75	16.66	60.00	50.00	-37.25	-33.34

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

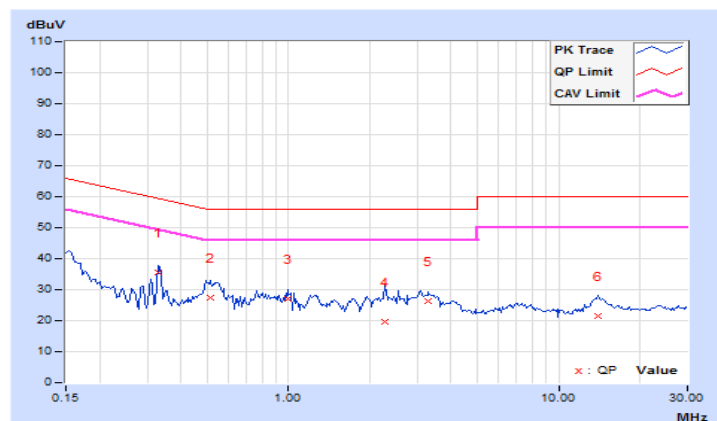


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.32969	9.78	25.95	23.47	35.73	33.25	59.46	49.46	-23.73	-16.21
2	0.51328	9.83	17.60	11.10	27.43	20.93	56.00	46.00	-28.57	-25.07
3	0.98984	9.89	17.16	8.81	27.05	18.70	56.00	46.00	-28.95	-27.30
4	2.28125	10.00	9.59	3.17	19.59	13.17	56.00	46.00	-36.41	-32.83
5	3.30469	10.05	16.18	4.99	26.23	15.04	56.00	46.00	-29.77	-30.96
6	14.04688	10.31	11.28	5.44	21.59	15.75	60.00	50.00	-38.41	-34.25

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

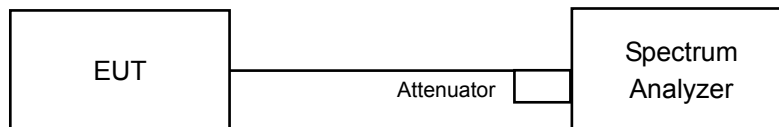


4.3 6dB Bandwidth Measurement

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

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- 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
1	2412	10.05	0.5	PASS
6	2437	9.58	0.5	PASS
11	2462	9.59	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.78	15.78	0.5	PASS
6	2437	15.73	15.73	0.5	PASS
11	2462	15.74	15.74	0.5	PASS

802.11n (20MHz)

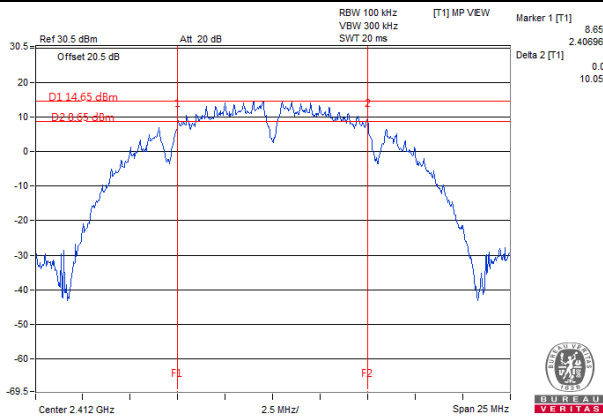
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.09	16.07	0.5	PASS
6	2437	16.07	16.07	0.5	PASS
11	2462	16.07	16.07	0.5	PASS

802.11n (40MHz)

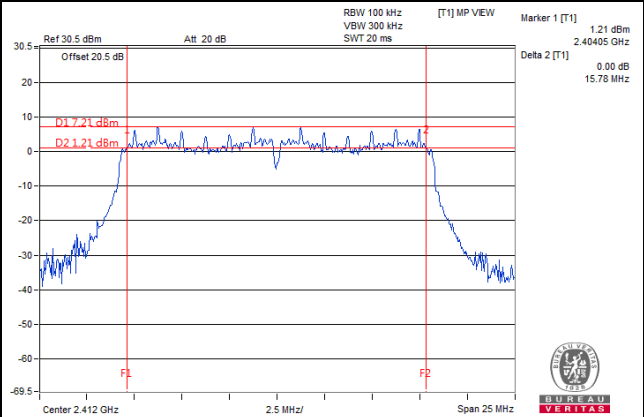
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.17	35.17	0.5	PASS
6	2437	35.16	35.15	0.5	PASS
9	2452	35.15	35.19	0.5	PASS

Spectrum Plot of Worst Value

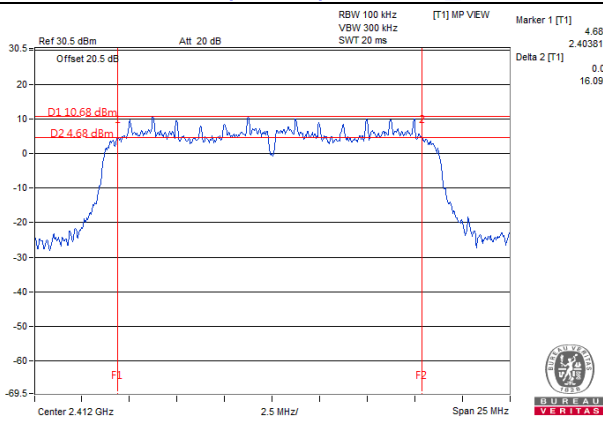
802.11b / CH1



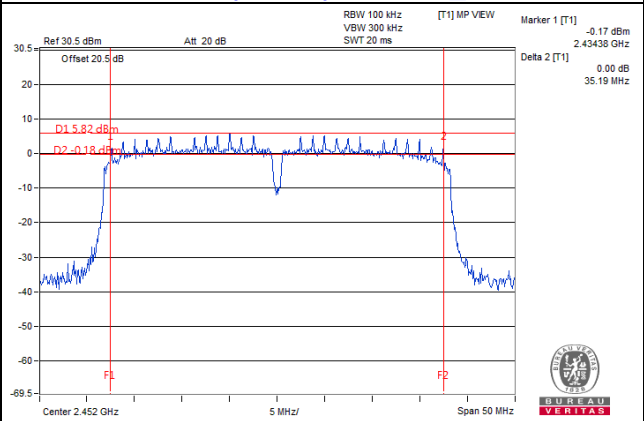
802.11g / Chain 0_CH1



802.11n (20MHz) / Chain 0_CH1



802.11n (40MHz) / Chain 1_CH9



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

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

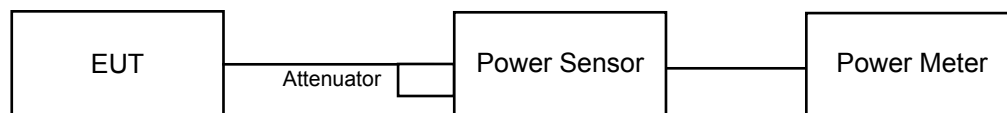
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	234.963	23.71
2	2417	244.343	23.88
6	2437	246.604	23.92
10	2457	240.991	23.82
11	2462	234.963	23.71

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.51	18.45	140.942	21.49	30	Pass
2	2417	22.41	22.62	356.991	25.53	30	Pass
6	2437	23.48	23.70	457.267	26.60	30	Pass
10	2457	21.93	22.10	318.136	25.03	30	Pass
11	2462	18.53	18.42	140.787	21.49	30	Pass

802.11n (20MHz)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.66	22.78	374.173	25.73	30	Pass
2	2417	22.64	22.71	370.292	25.69	30	Pass
6	2437	22.77	22.82	380.660	25.81	30	Pass
10	2457	22.49	22.62	360.229	25.57	30	Pass
11	2462	20.85	20.92	245.214	23.90	30	Pass

802.11n (40MHz)

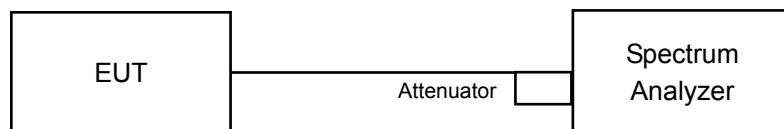
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.96	20.15	202.597	23.07	30	Pass
4	2427	22.04	22.09	321.764	25.08	30	Pass
6	2437	22.58	22.61	363.524	25.61	30	Pass
8	2447	22.00	22.10	320.670	25.06	30	Pass
9	2452	18.51	18.76	146.120	21.65	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

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-6.08	8	Pass
6	2437	-3.93	8	Pass
11	2462	-5.88	8	Pass

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-13.46	3.01	-10.45	8.00	Pass
	6	2437	-7.27	3.01	-4.26	8.00	Pass
	11	2462	-13.33	3.01	-10.32	8.00	Pass
1	1	2412	-12.73	3.01	-9.72	8.00	Pass
	6	2437	-9.38	3.01	-6.37	8.00	Pass
	11	2462	-14.66	3.01	-11.65	8.00	Pass

NOTE: Directional gain = 2.53dBi + 10log(2)=5.44dBi < 6dBi, so the power density limit is not reduced.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-9.50	3.01	-6.49	8.00	Pass
	6	2437	-9.26	3.01	-6.25	8.00	Pass
	11	2462	-10.81	3.01	-7.80	8.00	Pass
1	1	2412	-9.71	3.01	-6.70	8.00	Pass
	6	2437	-9.72	3.01	-6.71	8.00	Pass
	11	2462	-13.14	3.01	-10.13	8.00	Pass

NOTE: Directional gain = 2.53dBi + 10log(2)=5.44dBi < 6dBi, so the power density limit is not reduced.

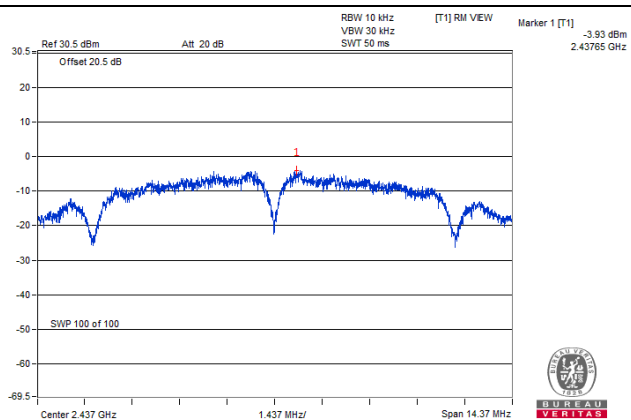
802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-15.24	3.01	-12.23	8.00	Pass
	6	2437	-11.22	3.01	-8.21	8.00	Pass
	9	2452	-16.99	3.01	-13.98	8.00	Pass
1	3	2422	-13.97	3.01	-10.96	8.00	Pass
	6	2437	-12.41	3.01	-9.40	8.00	Pass
	9	2452	-16.43	3.01	-13.42	8.00	Pass

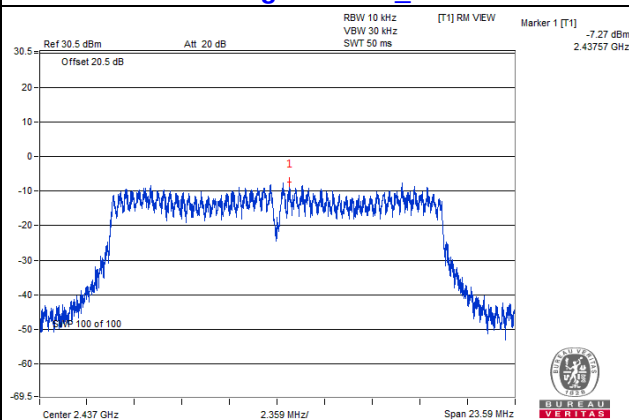
NOTE: Directional gain = 2.53dBi + 10log(2)=5.44dBi < 6dBi, so the power density limit is not reduced.

Spectrum Plot of Worst Value

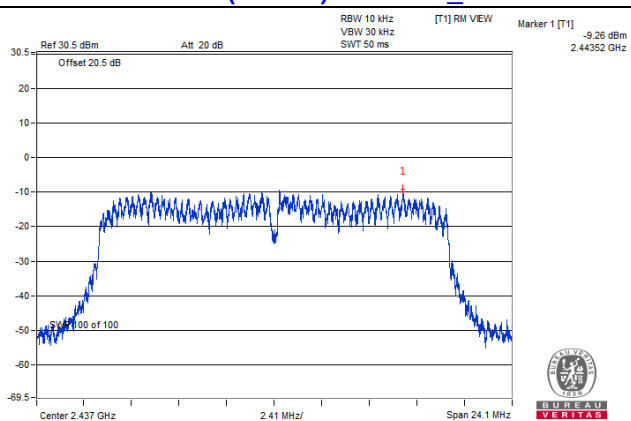
802.11b / CH6



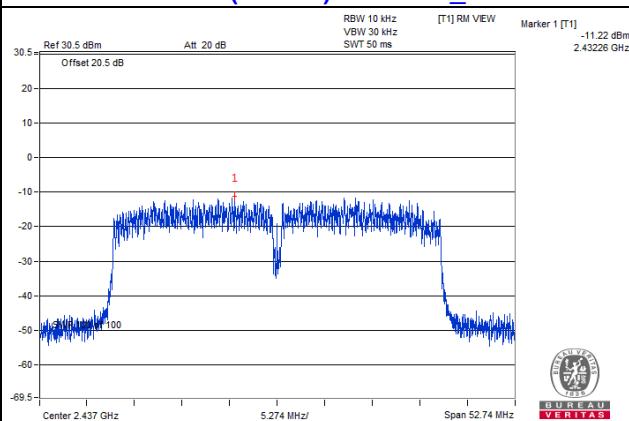
802.11g / Chain 0_CH6



802.11n (20MHz) / Chain 0_CH6



802.11n (40MHz) / Chain 0_CH6

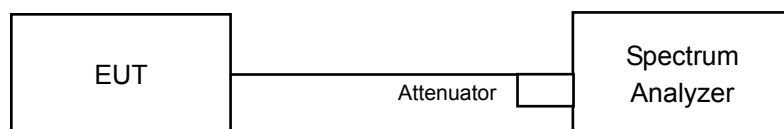


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 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 OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

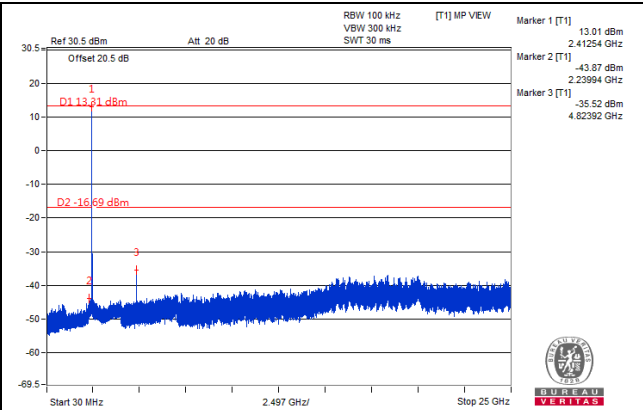
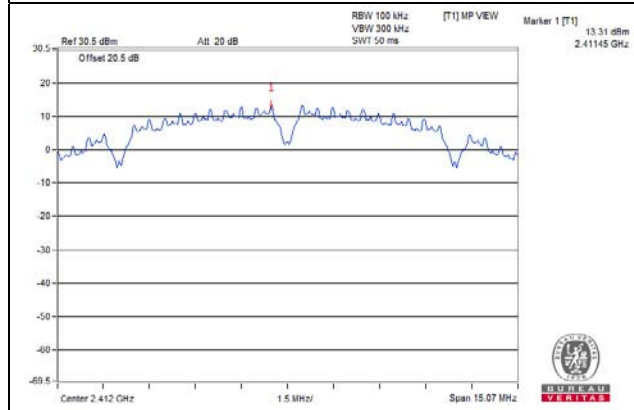
Same as Item 4.3.6

4.6.7 Test Results

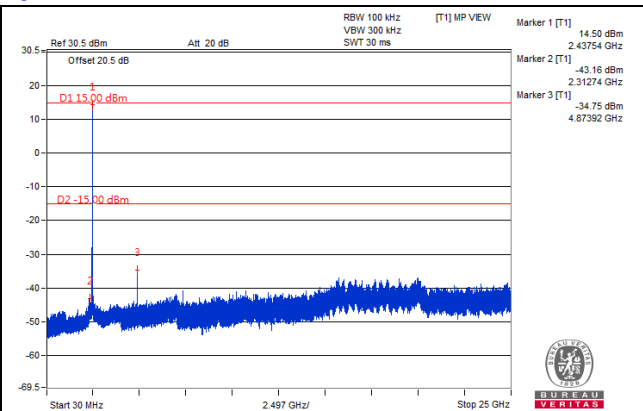
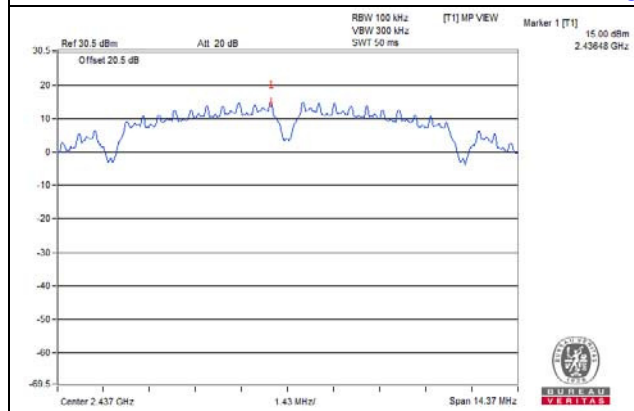
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b

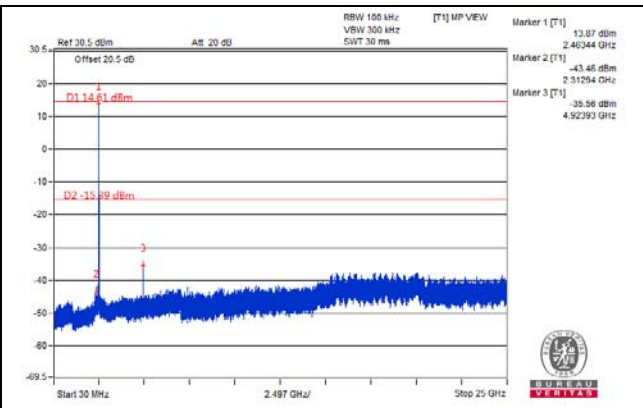
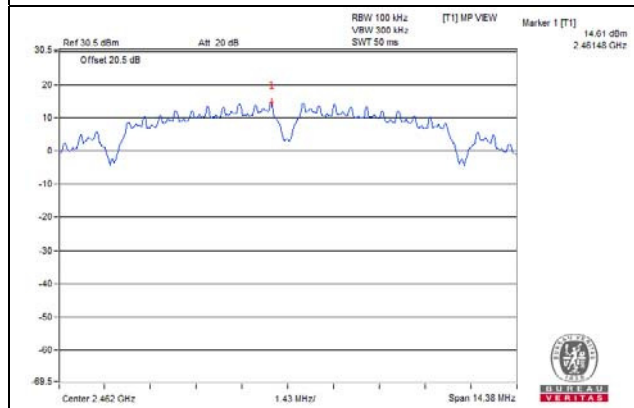
CH 1



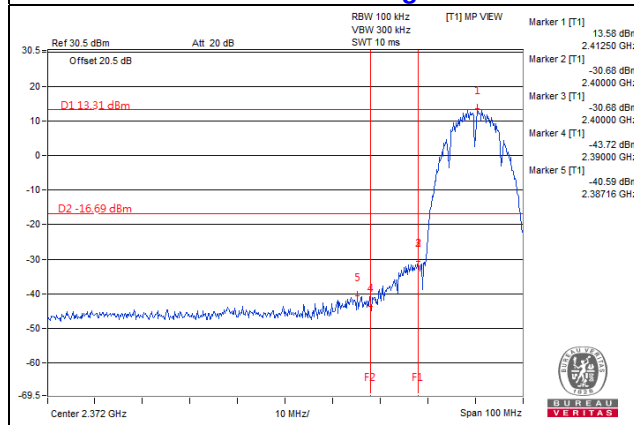
CH 6



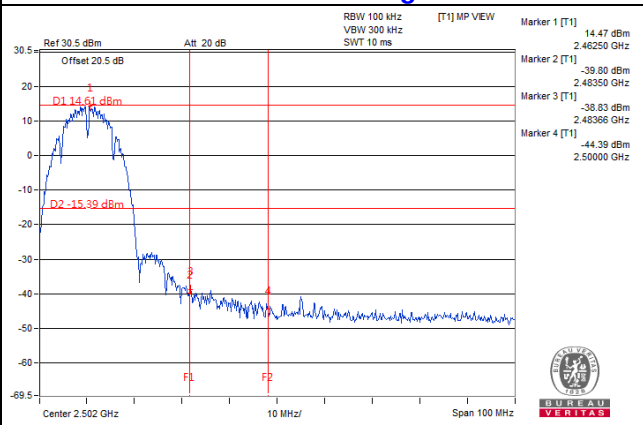
CH 11



CH 1 Band edge

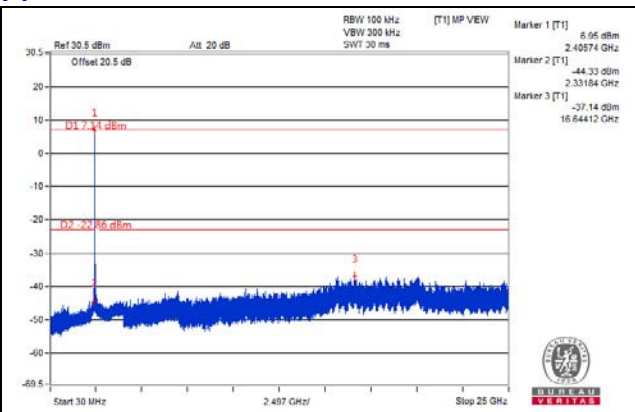
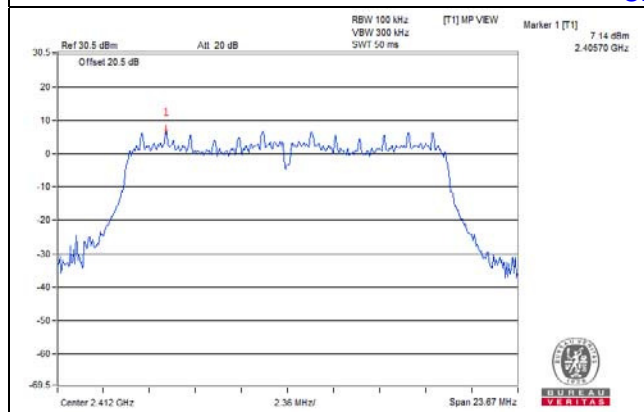


CH 11 Band edge

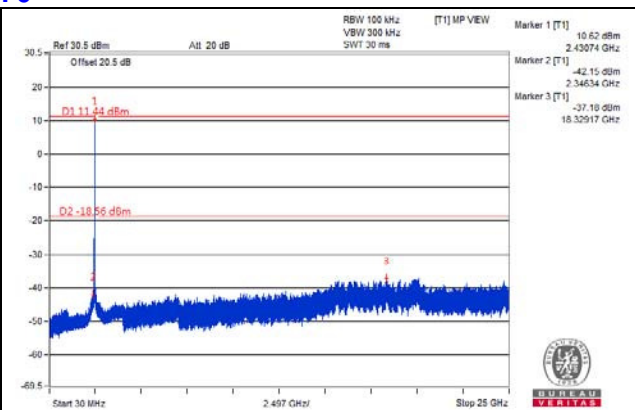
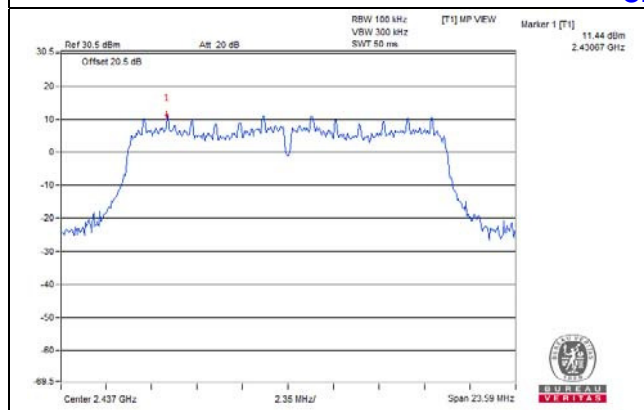


802.11g: CHAIN 0

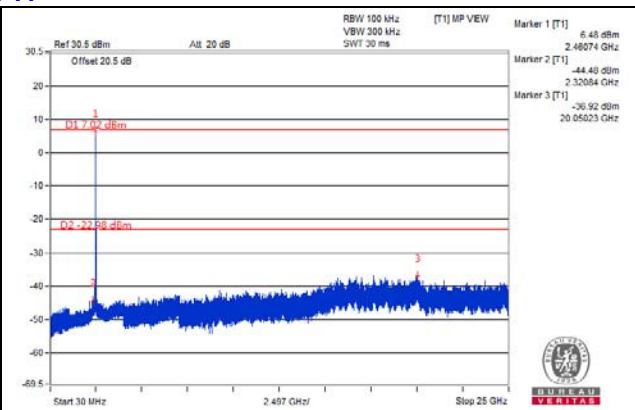
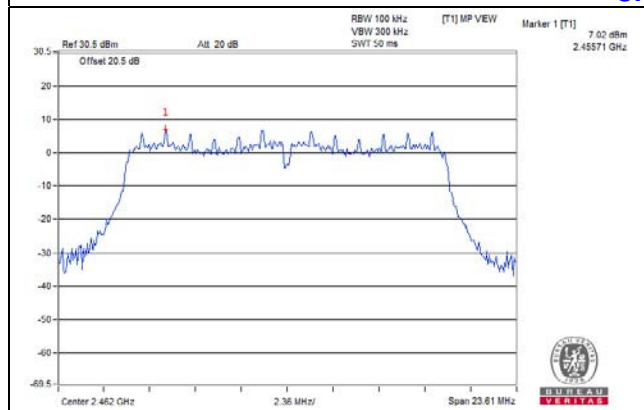
CH 1



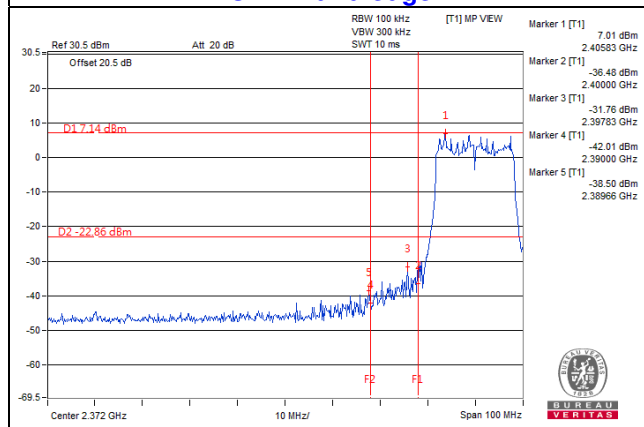
CH 6



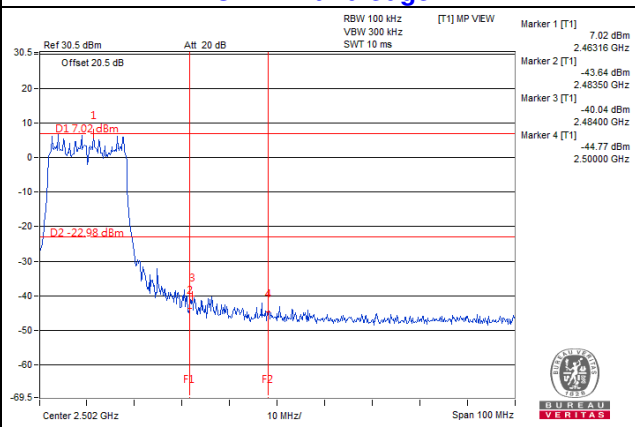
CH 11



CH 1 Band edge

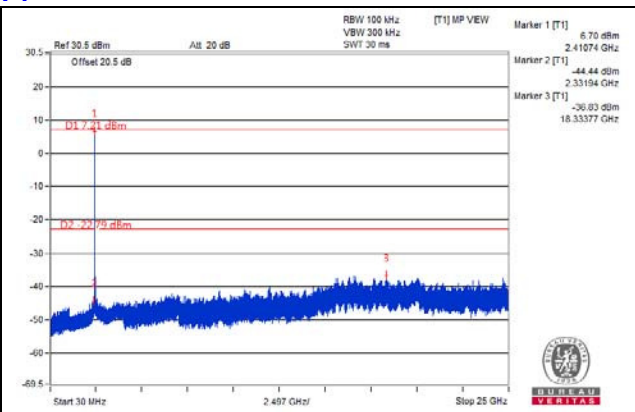
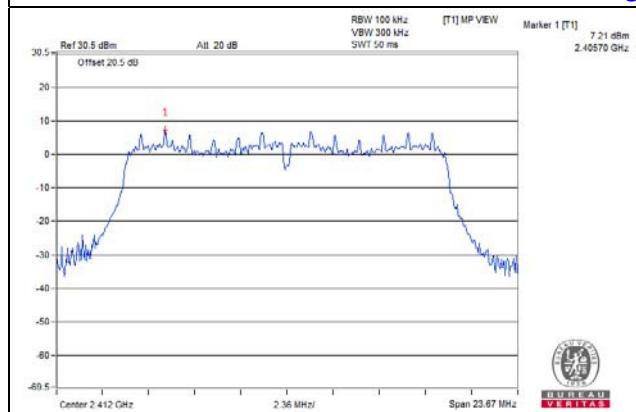


CH 11 Band edge

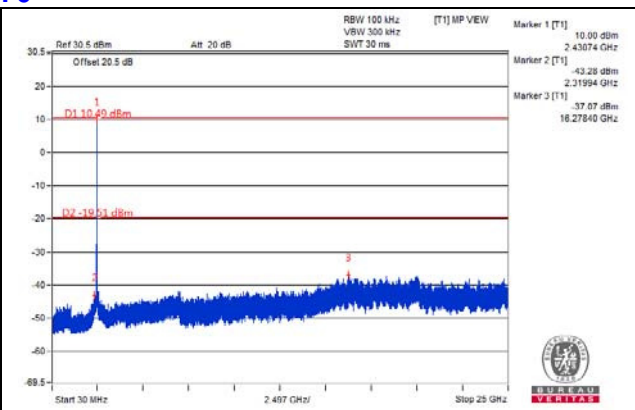
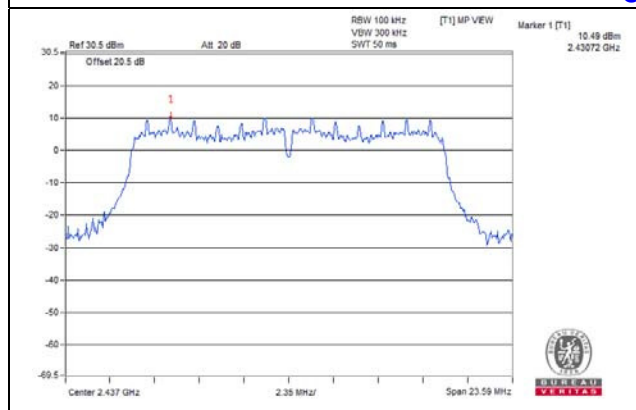


802.11g: CHAIN 1

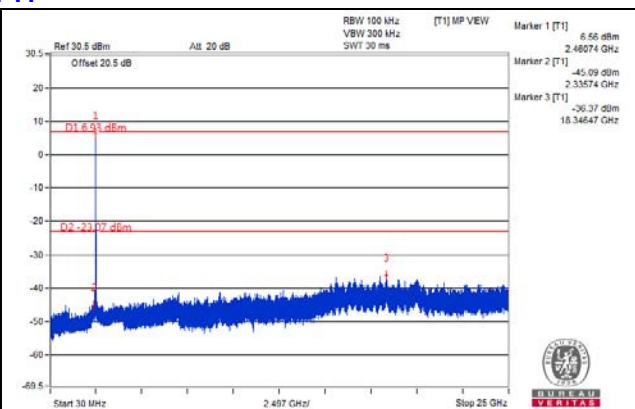
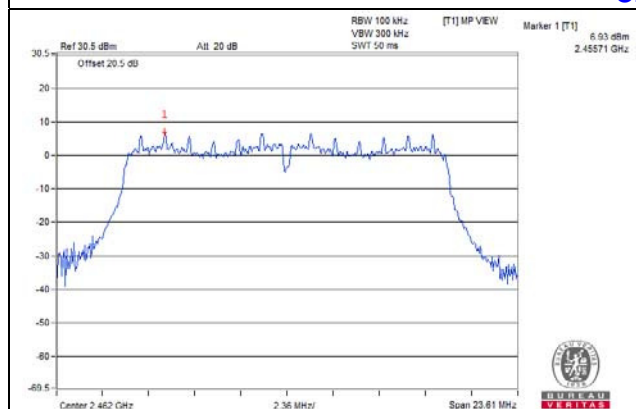
CH 1



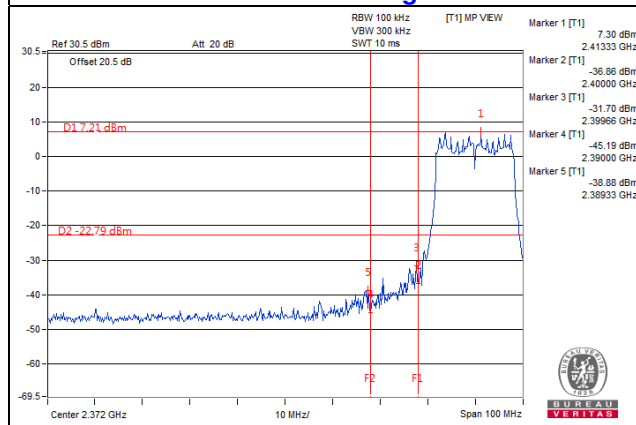
CH 6



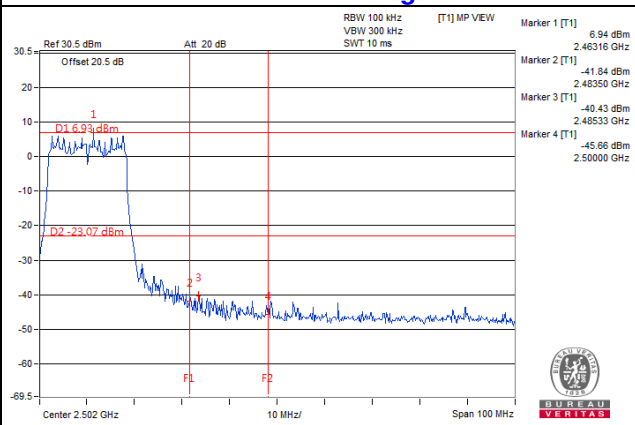
CH 11



CH 1 Band edge

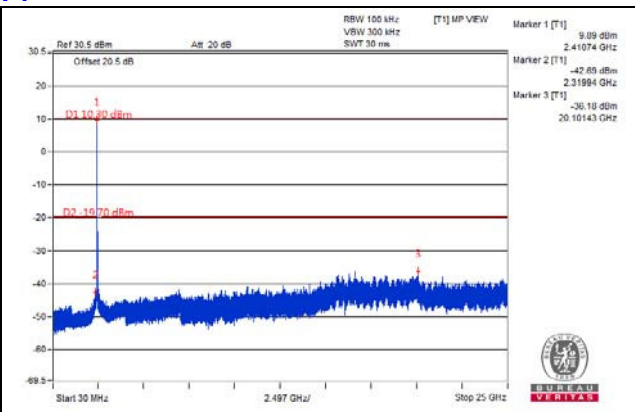
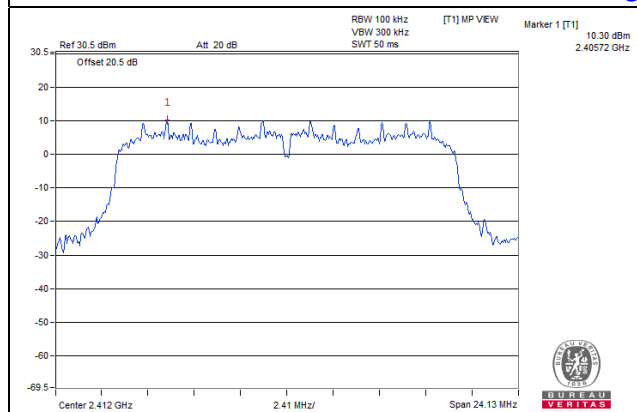


CH 11 Band edge

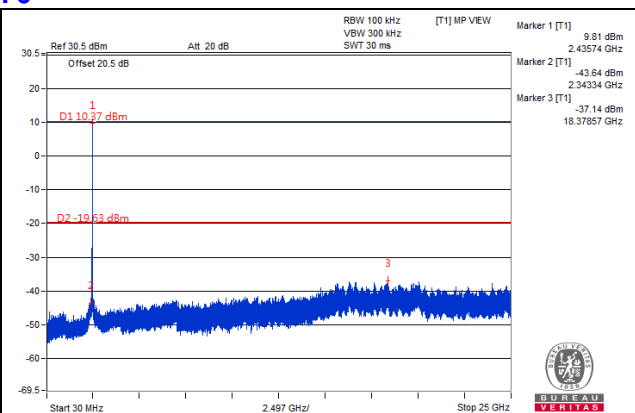
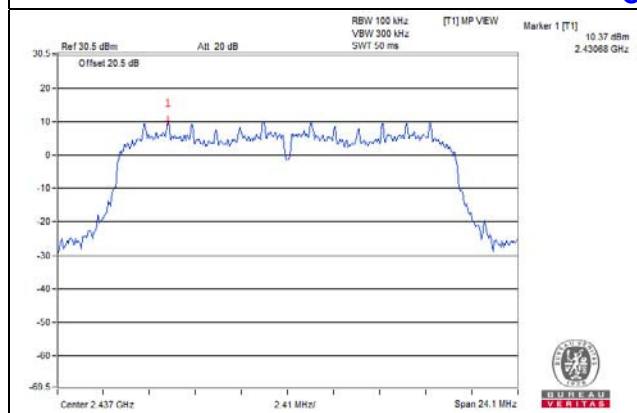


802.11n (20MHz): CHAIN 0

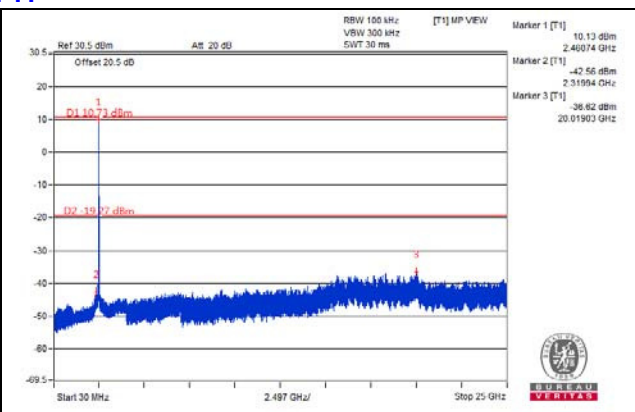
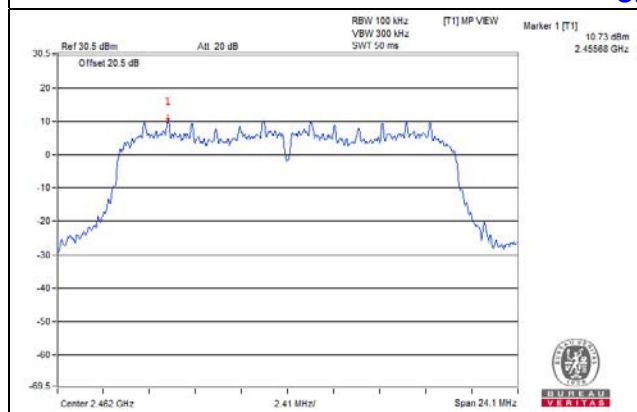
CH 1



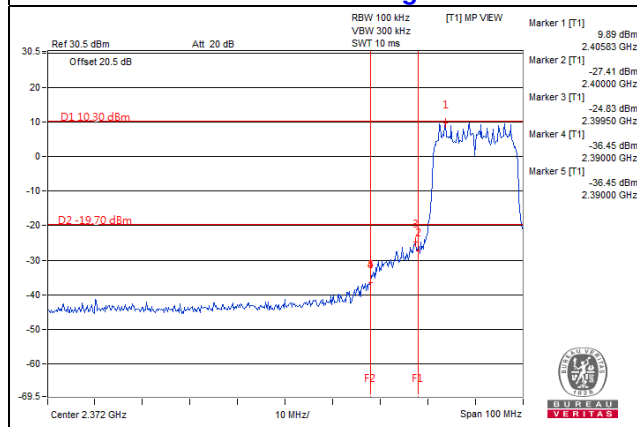
CH 6



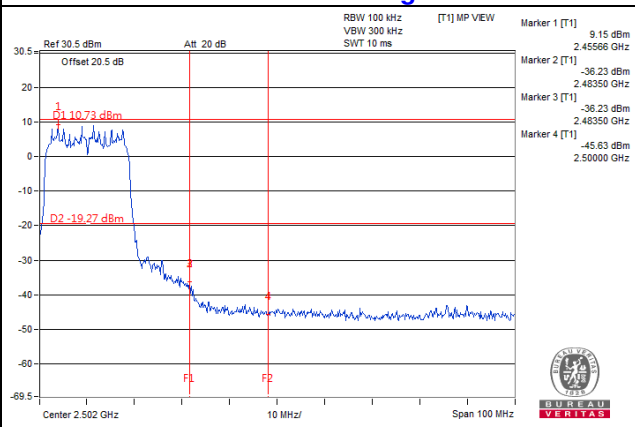
CH 11



CH 1 Band edge

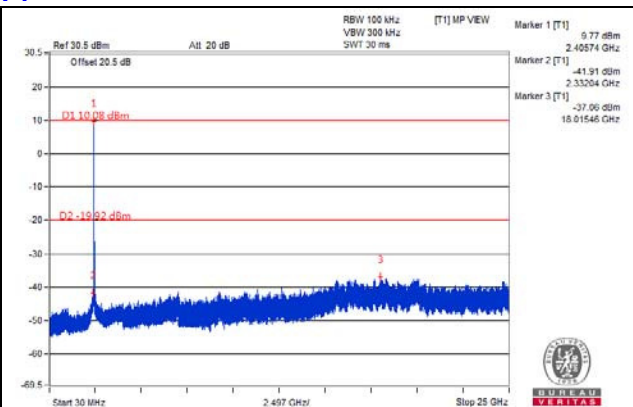
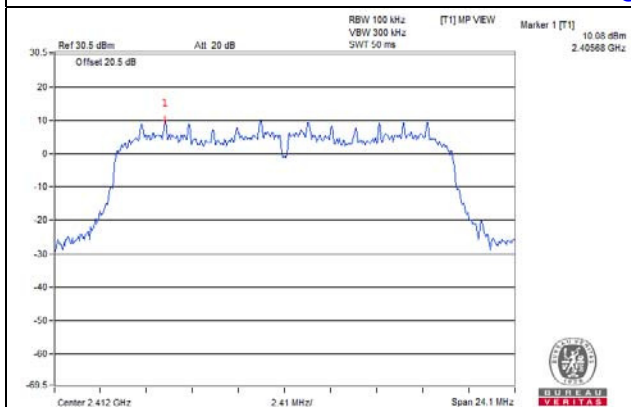


CH 11 Band edge

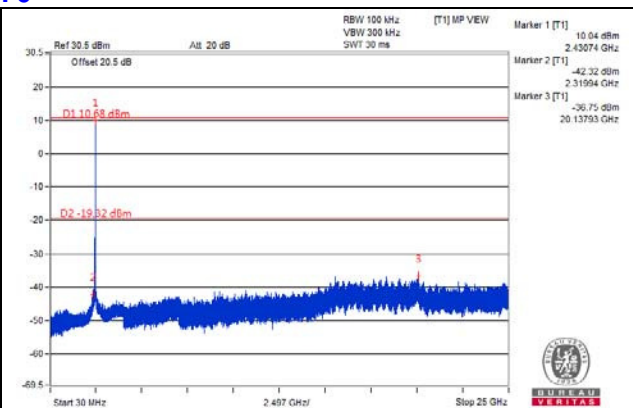
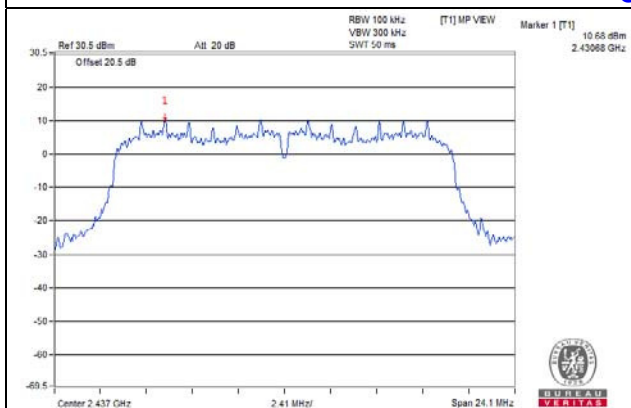


802.11n (20MHz): CHAIN 1

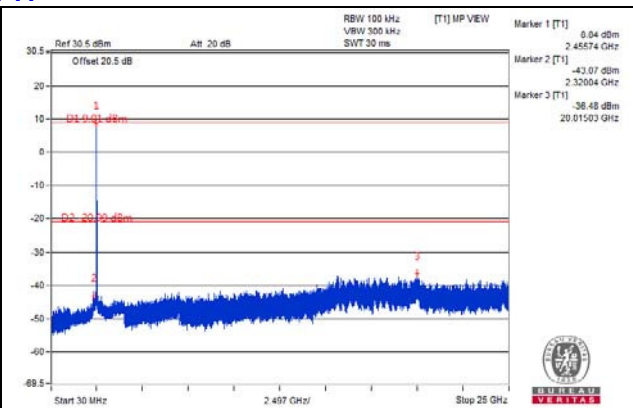
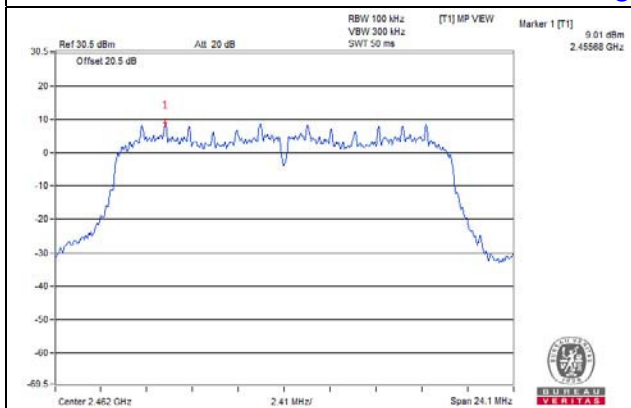
CH 1



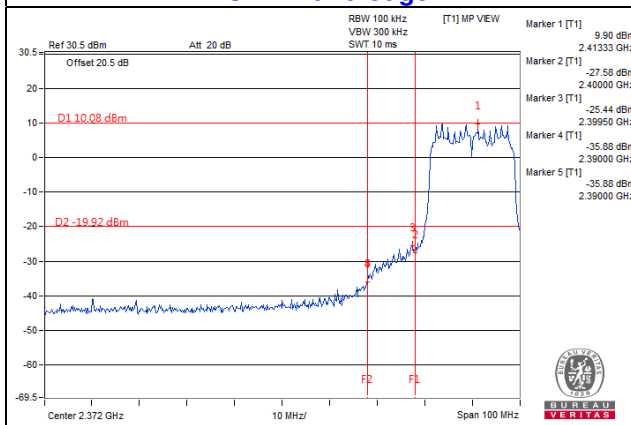
CH 6



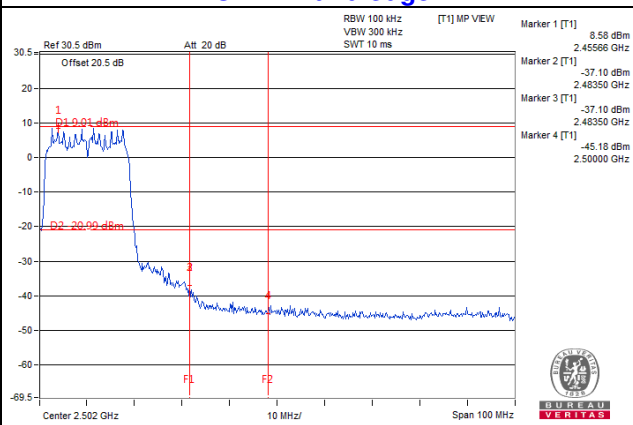
CH 11



CH 1 Band edge

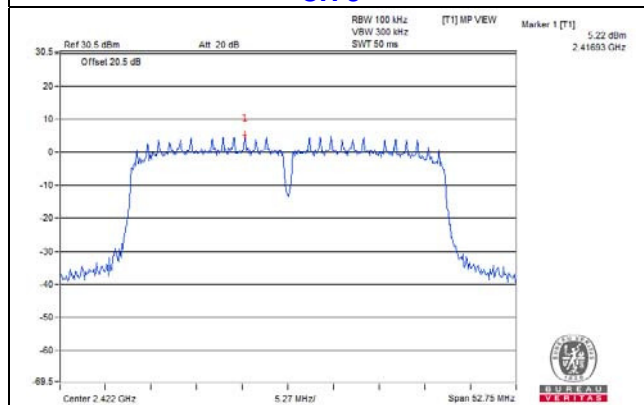


CH 11 Band edge

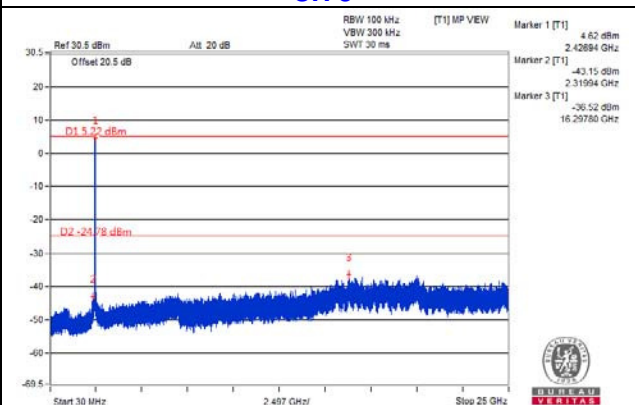


802.11n (40MHz): CHAIN 0

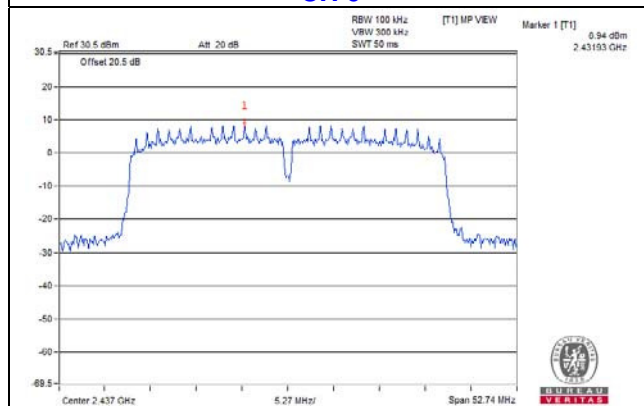
CH 3



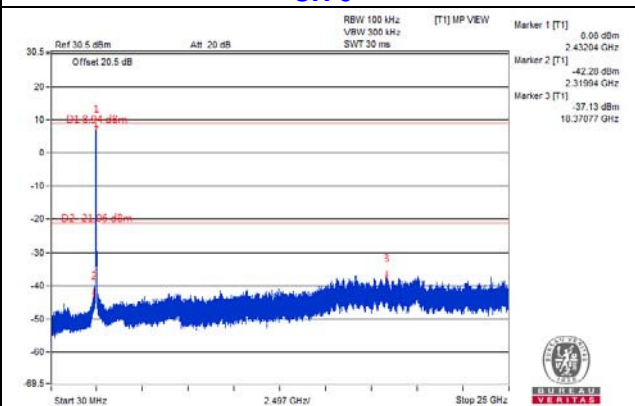
CH 3



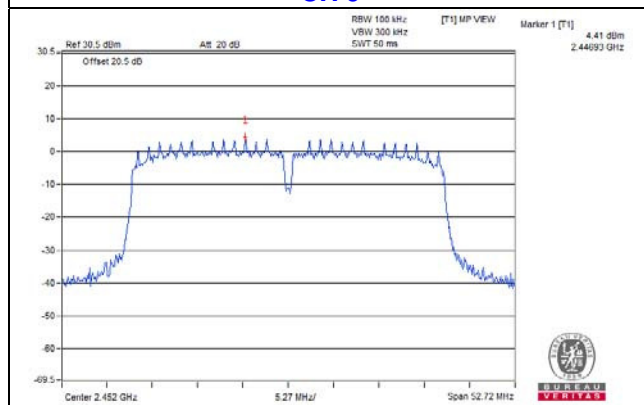
CH 6



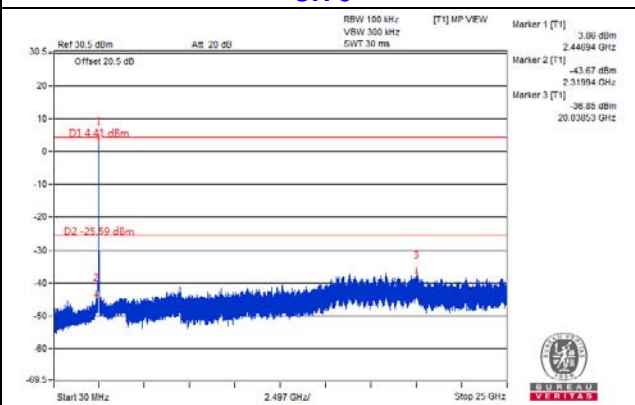
CH 6



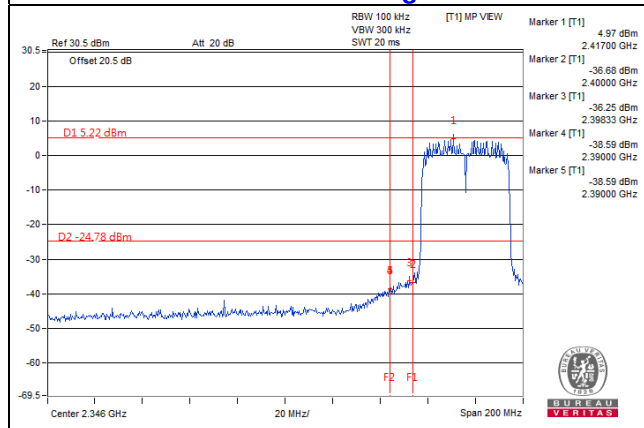
CH 9



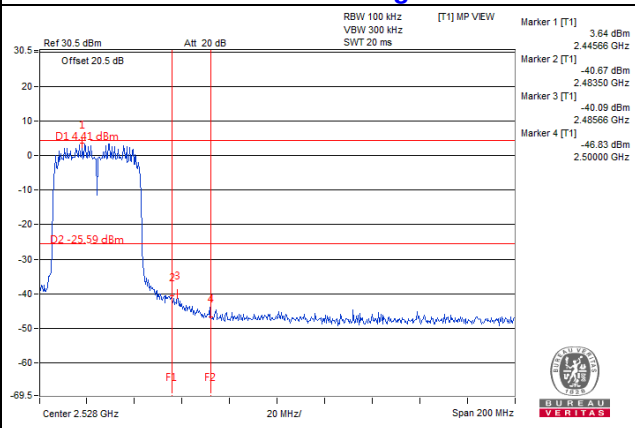
CH 9



CH 3 Band edge

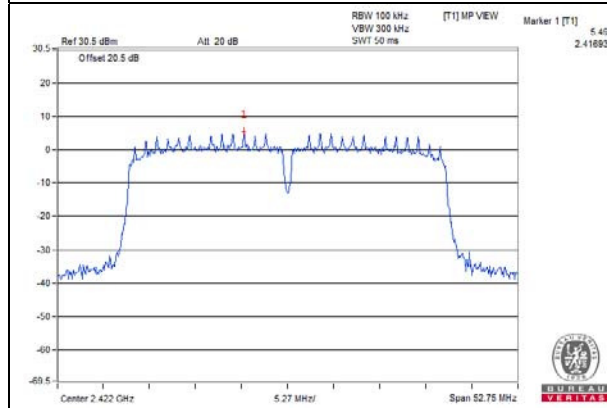


CH 9 Band edge

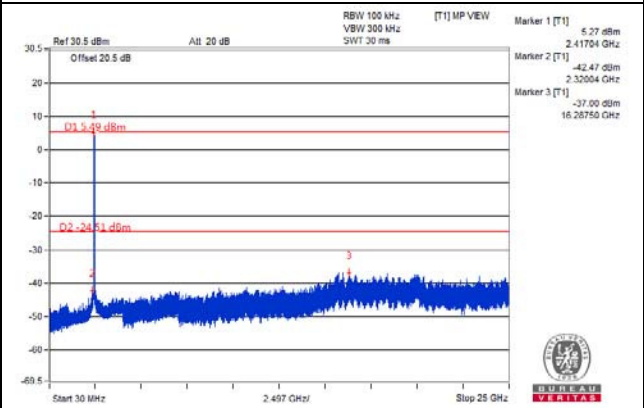


802.11n (40MHz): CHAIN 1

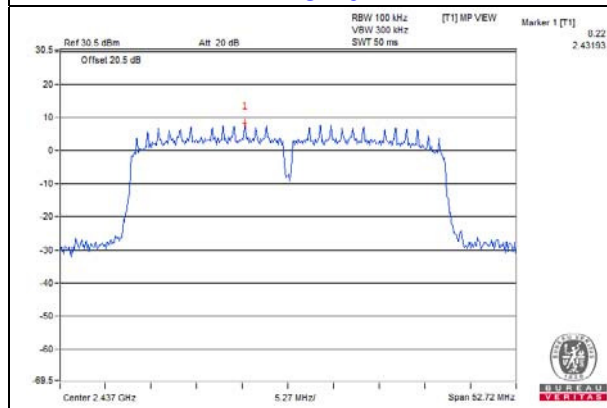
CH 3



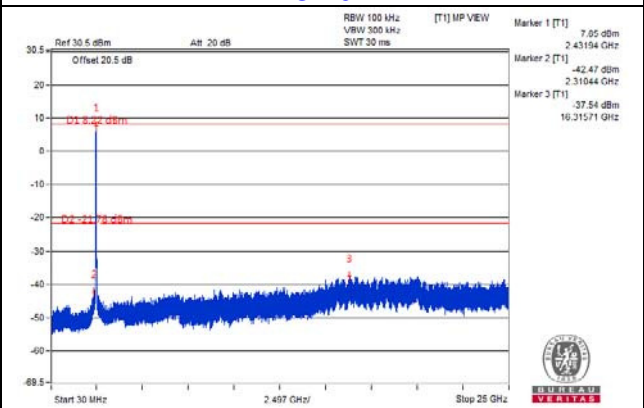
CH 3



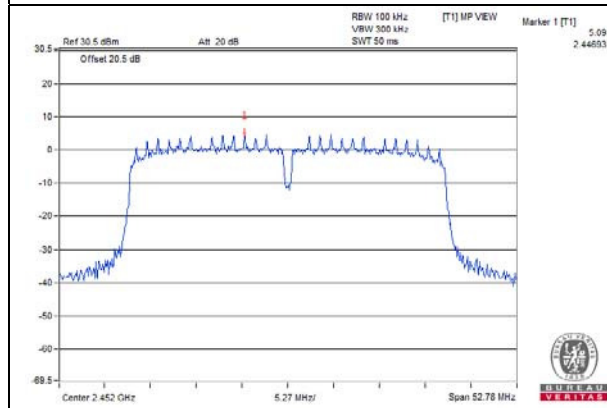
CH 6



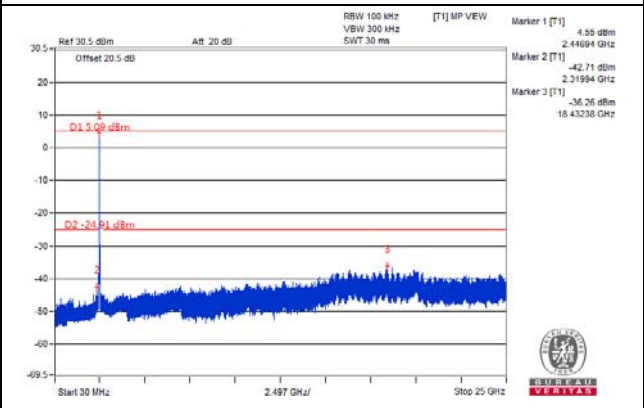
CH 6



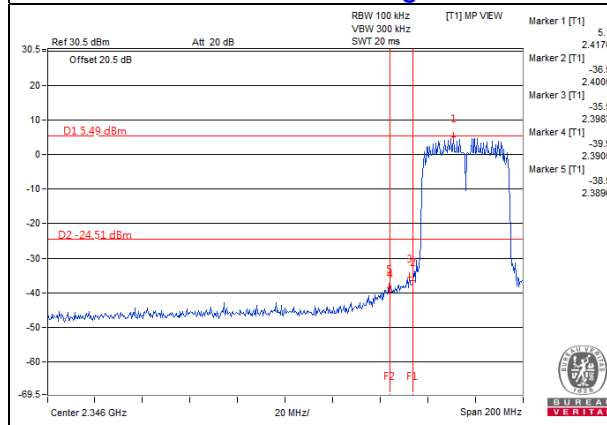
CH 9



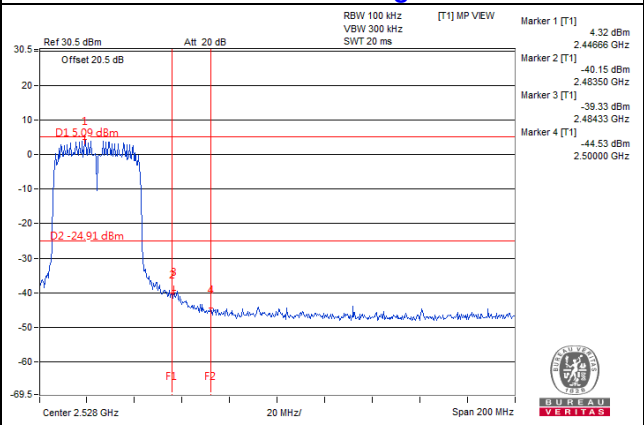
CH 9



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:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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