FCC Test Report

Report No.:	RF180308E06
FCC ID:	2AMRIER2500TC1
Test Model:	ER2500T-NA-CAT1
Series Model:	ER2500T-VZ-CAT1
Received Date:	Mar. 08, 2018
Test Date:	Mar. 22 to 26, 2018
Issued Date:	Mar. 31, 2018
Applicant:	Connected IO, Inc.
Address:	573 University Ave, Los Gatos, CA 95032 U.S.A
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RF180308E06	Original release.	Mar. 31, 2018

1 Certificate of Conformity

Product:	M2M Router
Brand:	Connected IO, Inc.
Test Model:	ER2500T-NA-CAT1
Series Model:	ER2500T-VZ-CAT1
Sample Status:	ENGINEERING SAMPLE
Applicant:	Connected IO, Inc.
Test Date:	Mar. 22 to 26, 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 EMC characteristics under the conditions specified in this report.

Prepared by : Phoenix Huang , **Date:** Mar. 31, 2018

Phoenix Huang / Specialist

Approved by : , **Date:** Mar. 31, 2018

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -12.17dB at 0.39219MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2390.00MHz and 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	-	Antenna connector is SMA. (The device is professionally installed)
-	Occupied Bandwidth Measurement	-	Reference only

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	3.55 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.10 dB
	6GHz ~ 18GHz	4.85 dB
	18GHz ~ 40GHz	5.24 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	M2M Router
Brand	Connected IO, Inc.
Test Model	ER2500T-NA-CAT1
Series Model	ER2500T-VZ-CAT1
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	573.785mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1, Antenna x4
Data Cable Supplied	NA

Note:

1. This device must needs installed by professional service personnel.
2. The EUT has two model names, which are identical to each other in all aspects except for the following:

Brand	Model No.	Spec.
Connected IO, Inc.	ER2500T-NA-CAT1	Contain 3G/LTE module (Brand: Telit, Model No.: LE910-NA1, FCC ID: RI7LE910NAV2, IC: 5131A-LE910NAV2)
	ER2500T-VZ-CAT1	Contain LTE module (Brand: Telit, Model No.: LE910-SV1 FCC ID: RI7LE910SVV2, IC: 5131A-LE910SVV2)
Note: From the above models, the radiated emission worse case was found in model No.: ER2500T-NA-CAT1. Therefore only the test data of the mode was recorded in this report.		

3. The EUT must be supplied with a power adapter and following two different model names could be chosen:

No.	Brand	Model No.	Spec.
1	UMEC	UP0251M-12PA	Input: 100-240Vac, 0.6A, 50-60Hz Output: 12Vdc, 2A DC output cable (Unshielded, 1.5m)
2	LEADER	MU24AY120200-A1	Input: 100-240Vac, 0.7A, 50-60Hz Output: 12Vdc, 2A DC output cable (Unshielded, 1.5m)
Note: From the above adapters, the radiated emission worse case was found in Adapter No.: 1. Therefore only the test data of the mode was recorded in this report.			

4. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4GHz)	3G/LTE
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

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

WLAN					
Antenna No.	Chain No.	Antenna Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connecter Type
1	Chain 0	2	2.4~2.4835	Dipole	SMA
2	Chain 1	2	2.4~2.4835	Dipole	SMA
WWAN – 3G / LTE					
Antenna No.	Antenna Gain (dBi)		Frequency Range (MHz)	Antenna Type	Connecter Type
3	1		698~960	Dipole	SMA
	2		1710~2710		
4	1		698~960	Dipole	SMA
	2		1710~2710		

6. The EUT incorporates a MIMO function:

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX Fixed Chan 0	2RX
802.11g	6 ~ 54Mbps	1TX Fixed Chan 0	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX

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

3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	With Adapter No.: 1
2	-	-	√	-	With Adapter No.: 2

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 X-plane.
2. "-" means no effect.

Radiated Emission Test (Above 1GHz):

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

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

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

Radiated Emission Test (Below 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

Power Line Conducted Emission Test:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

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

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

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

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

Test Condition:

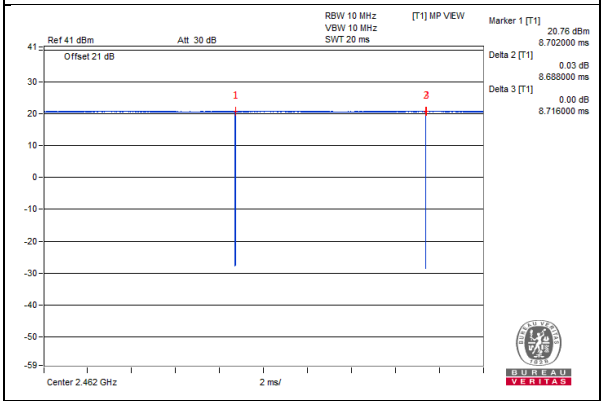
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	23deg. C, 68%RH	120Vac, 60Hz	Steven Chiang
RE<1G	21deg. C, 69%RH	120Vac, 60Hz	Steven Chiang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

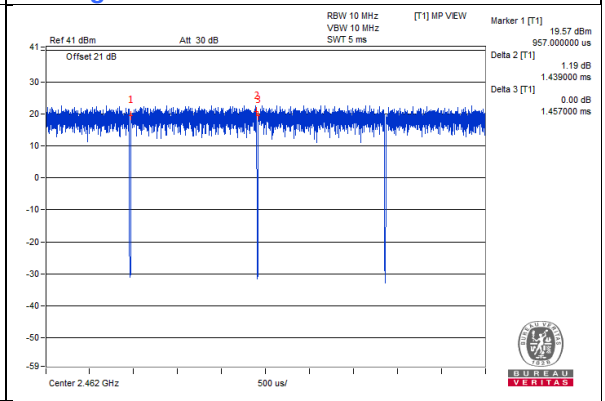
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 8.688/8.716 = 0.997
802.11g: Duty cycle = 1.439/1.457 = 0.988
802.11n (HT20): Duty cycle = 1.346/1.364 = 0.987
802.11n (HT40): Duty cycle = 0.666/0.684 = 0.974, Duty factor = 10 * log(1/ Duty cycle) = 0.12

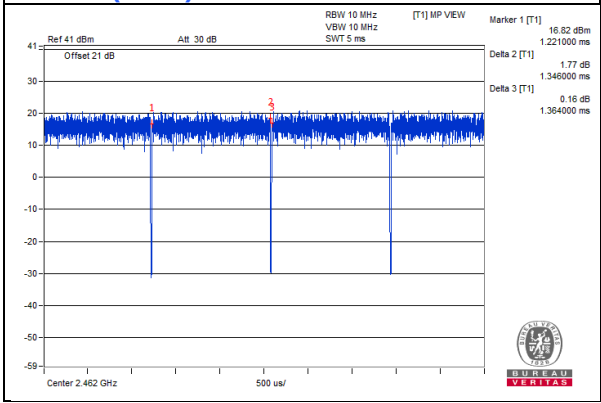
802.11b



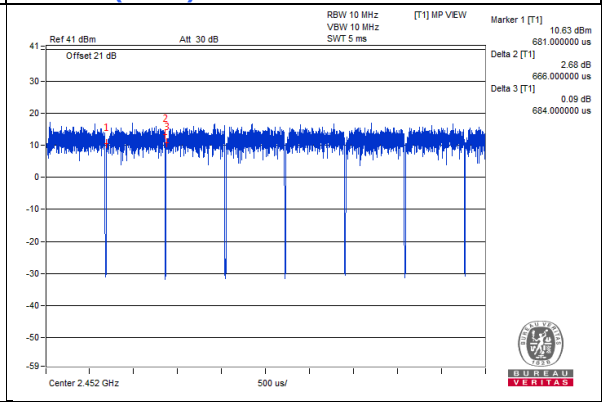
802.11g



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

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

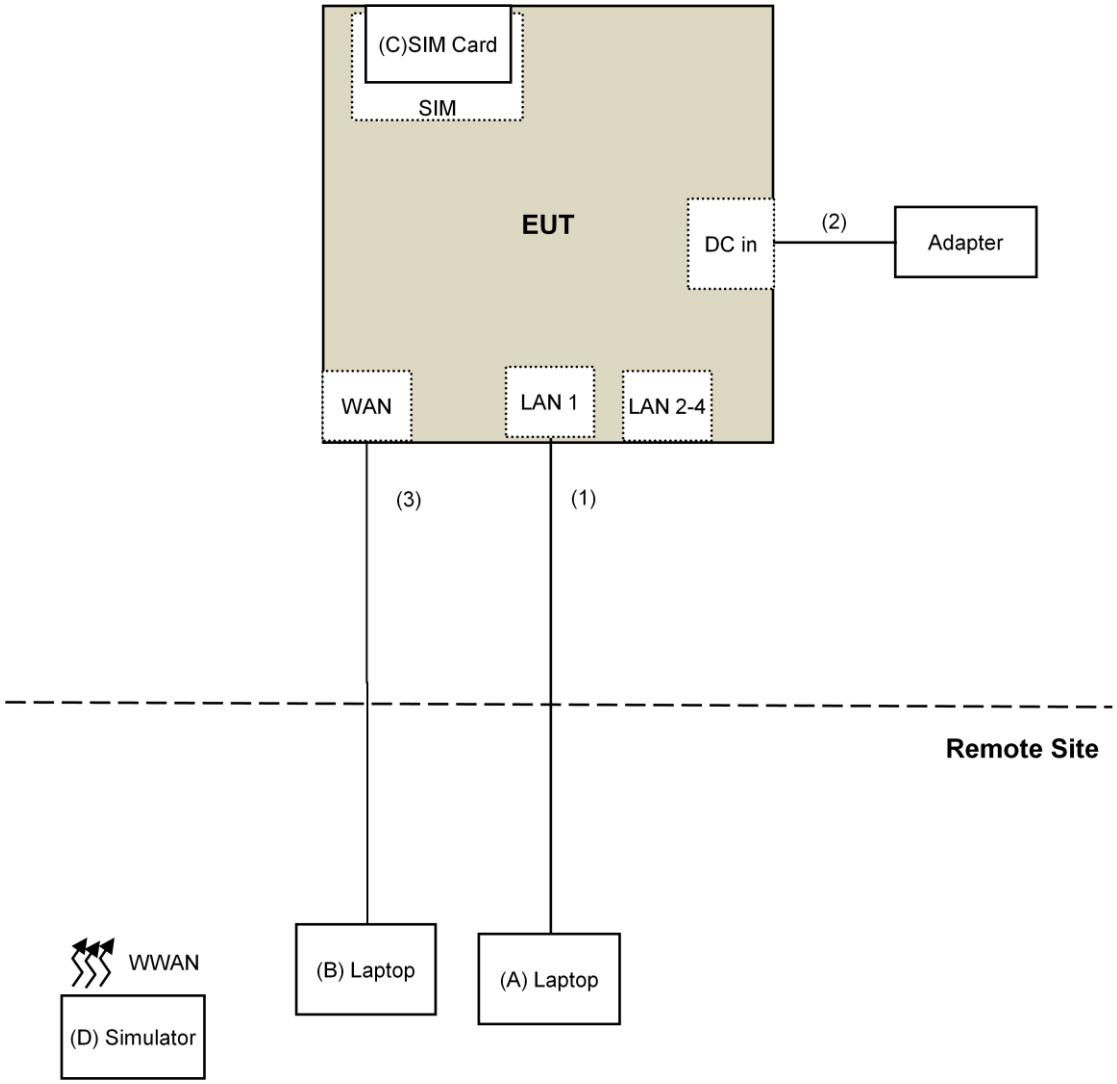
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E6420	482T3R1	FCC DoC	Provided by Lab
C.	SIM Card	NA	NA	NA	NA	Provided by Lab
D.	Simulator	R&S	CMW500	151084	NA	Provided by Lab

Note:

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

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

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 20dB below the highest level of the desired power:

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

Note:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 08, 2017	July 07, 2018
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980385	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150321	Jan. 29, 2018	Jan. 28, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160925	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer Agilent	E4446A	MY48250254	Nov. 21, 2017	Nov. 20, 2018
Power meter Anritsu	ML2495A	1014008	May 11, 2017	May 10, 2018
Power sensor Anritsu	MA2411B	0917122	May 11, 2017	May 10, 2018

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Mar. 22 to 26, 2018

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 detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

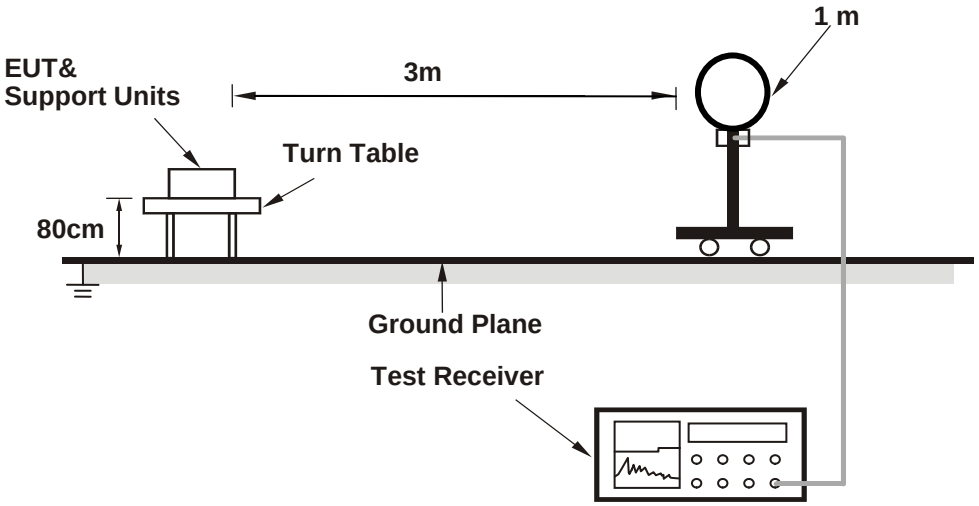
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

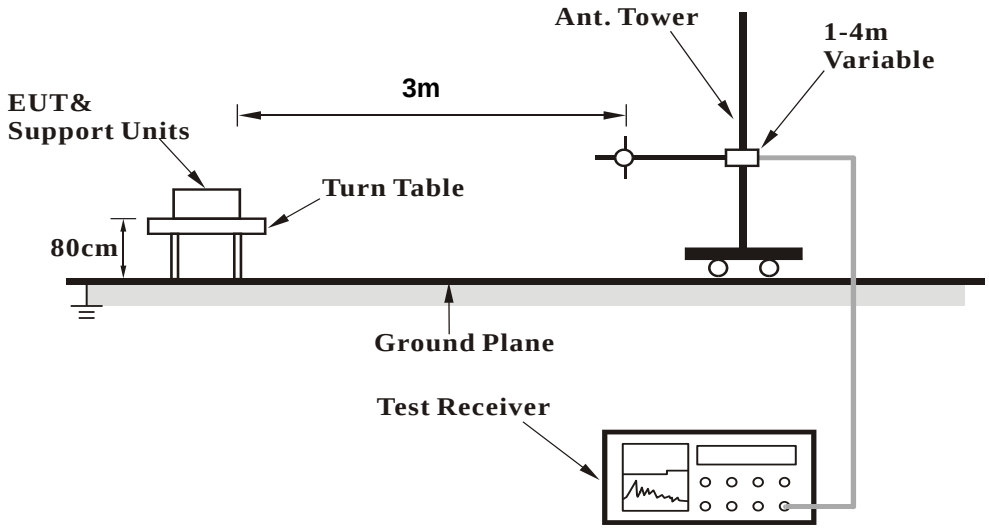
No deviation.

4.1.5 Test Setup

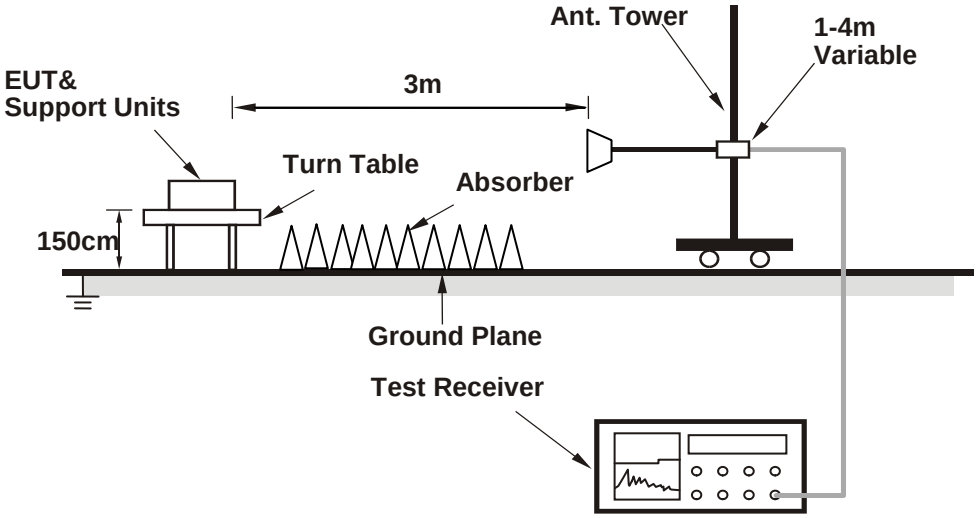
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (MT7620 V1.0.6.0) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data:

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.6 PK	74.0	-8.4	2.56 H	256	67.6	-2.0
2	2390.00	46.1 AV	54.0	-7.9	2.56 H	256	48.1	-2.0
3	*2412.00	98.3 PK			2.56 H	256	100.4	-2.1
4	*2412.00	96.2 AV			2.56 H	256	98.3	-2.1
5	4824.00	48.7 PK	74.0	-25.3	1.25 H	110	46.0	2.7
6	4824.00	47.4 AV	54.0	-6.6	1.25 H	110	44.7	2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.0 PK	74.0	-17.0	1.66 V	136	59.0	-2.0
2	2390.00	46.7 AV	54.0	-7.3	1.66 V	136	48.7	-2.0
3	*2412.00	108.2 PK			1.66 V	136	110.3	-2.1
4	*2412.00	105.8 AV			1.66 V	136	107.9	-2.1
5	4824.00	54.2 PK	74.0	-19.8	1.29 V	281	51.5	2.7
6	4824.00	53.6 AV	54.0	-0.4	1.29 V	281	50.9	2.7

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) 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	65.8 PK	74.0	-8.2	2.57 H	249	67.8	-2.0
2	2390.00	46.1 AV	54.0	-7.9	2.57 H	249	48.1	-2.0
3	*2437.00	101.4 PK			2.57 H	249	103.7	-2.3
4	*2437.00	97.9 AV			2.57 H	249	100.2	-2.3
5	2483.50	65.5 PK	74.0	-8.5	2.57 H	249	67.7	-2.2
6	2483.50	45.9 AV	54.0	-8.1	2.57 H	249	48.1	-2.2
7	4874.00	49.0 PK	74.0	-25.0	1.20 H	118	46.1	2.9
8	4874.00	47.8 AV	54.0	-6.2	1.20 H	118	44.9	2.9
9	7311.00	49.0 PK	74.0	-25.0	1.55 H	269	39.7	9.3
10	7311.00	43.7 AV	54.0	-10.3	1.55 H	269	34.4	9.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.9 PK	74.0	-19.1	1.53 V	133	56.9	-2.0
2	2390.00	41.7 AV	54.0	-12.3	1.53 V	133	43.7	-2.0
3	*2437.00	109.3 PK			1.53 V	133	111.6	-2.3
4	*2437.00	106.8 AV			1.53 V	133	109.1	-2.3
5	2483.50	54.7 PK	74.0	-19.3	1.53 V	133	56.9	-2.2
6	2483.50	41.3 AV	54.0	-12.7	1.53 V	133	43.5	-2.2
7	4874.00	54.4 PK	74.0	-19.6	1.13 V	265	51.5	2.9
8	4874.00	53.6 AV	54.0	-0.4	1.13 V	265	50.7	2.9
9	7311.00	51.8 PK	74.0	-22.2	1.51 V	238	42.5	9.3
10	7311.00	47.6 AV	54.0	-6.4	1.51 V	238	38.3	9.3

REMARKS:

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

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	99.3 PK			2.64 H	256	101.6	-2.3
2	*2462.00	96.8 AV			2.64 H	256	99.1	-2.3
3	2483.50	65.2 PK	74.0	-8.8	2.64 H	256	67.4	-2.2
4	2483.50	45.8 AV	54.0	-8.2	2.64 H	256	48.0	-2.2
5	4924.00	48.3 PK	74.0	-25.7	1.20 H	131	45.3	3.0
6	4924.00	47.0 AV	54.0	-7.0	1.20 H	131	44.0	3.0
7	7386.00	48.2 PK	74.0	-25.8	1.53 H	258	38.5	9.7
8	7386.00	43.1 AV	54.0	-10.9	1.53 H	258	33.4	9.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.9 PK			1.49 V	130	111.2	-2.3
2	*2462.00	106.4 AV			1.49 V	130	108.7	-2.3
3	2483.50	56.4 PK	74.0	-17.6	1.49 V	130	58.6	-2.2
4	2483.50	43.2 AV	54.0	-10.8	1.49 V	130	45.4	-2.2
5	4924.00	54.6 PK	74.0	-19.4	1.59 V	342	51.6	3.0
6	4924.00	53.8 AV	54.0	-0.2	1.59 V	342	50.8	3.0
7	7386.00	50.9 PK	74.0	-23.1	1.53 V	224	41.2	9.7
8	7386.00	46.8 AV	54.0	-7.2	1.53 V	224	37.1	9.7

REMARKS:

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

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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	65.3 PK	74.0	-8.7	2.60 H	249	67.3	-2.0
2	2390.00	46.0 AV	54.0	-8.0	2.60 H	249	48.0	-2.0
3	*2412.00	100.2 PK			2.60 H	249	102.3	-2.1
4	*2412.00	90.5 AV			2.60 H	249	92.6	-2.1
5	4824.00	50.1 PK	74.0	-23.9	1.20 H	111	47.4	2.7
6	4824.00	33.6 AV	54.0	-20.4	1.20 H	111	30.9	2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.9 PK	74.0	-6.1	1.63 V	136	69.9	-2.0
2	2390.00	53.6 AV	54.0	-0.4	1.63 V	136	55.6	-2.0
3	*2412.00	109.4 PK			1.63 V	136	111.5	-2.1
4	*2412.00	99.7 AV			1.63 V	136	101.8	-2.1
5	4824.00	52.0 PK	74.0	-22.0	1.00 V	138	49.3	2.7
6	4824.00	39.7 AV	54.0	-14.3	1.00 V	138	37.0	2.7

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.1 PK	74.0	-11.9	2.62 H	243	64.1	-2.0
2	2390.00	43.2 AV	54.0	-10.8	2.62 H	243	45.2	-2.0
3	*2437.00	107.5 PK			2.62 H	243	109.8	-2.3
4	*2437.00	97.3 AV			2.62 H	243	99.6	-2.3
5	2483.50	64.6 PK	74.0	-9.4	2.62 H	243	66.8	-2.2
6	2483.50	45.4 AV	54.0	-8.6	2.62 H	243	47.6	-2.2
7	4874.00	50.7 PK	74.0	-23.3	1.18 H	108	47.8	2.9
8	4874.00	34.1 AV	54.0	-19.9	1.18 H	108	31.2	2.9
9	7311.00	58.9 PK	74.0	-15.1	1.54 H	267	49.6	9.3
10	7311.00	44.8 AV	54.0	-9.2	1.54 H	267	35.5	9.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.5 PK	74.0	-5.5	1.39 V	125	70.5	-2.0
2	2390.00	51.2 AV	54.0	-2.8	1.39 V	125	53.2	-2.0
3	*2437.00	116.1 PK			1.39 V	125	118.4	-2.3
4	*2437.00	106.1 AV			1.39 V	125	108.4	-2.3
5	2483.50	69.4 PK	74.0	-4.6	1.39 V	125	71.6	-2.2
6	2483.50	53.6 AV	54.0	-0.4	1.39 V	125	55.8	-2.2
7	4874.00	52.3 PK	74.0	-21.7	1.00 V	149	49.4	2.9
8	4874.00	39.8 AV	54.0	-14.2	1.00 V	149	36.9	2.9
9	7311.00	61.7 PK	74.0	-12.3	1.51 V	237	52.4	9.3
10	7311.00	48.3 AV	54.0	-5.7	1.51 V	237	39.0	9.3

REMARKS:

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

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	99.0 PK			2.64 H	242	101.3	-2.3
2	*2462.00	91.3 AV			2.64 H	242	93.6	-2.3
3	2483.50	65.3 PK	74.0	-8.7	2.64 H	242	67.5	-2.2
4	2483.50	45.8 AV	54.0	-8.2	2.64 H	242	48.0	-2.2
5	4924.00	51.0 PK	74.0	-23.0	1.13 H	118	48.0	3.0
6	4924.00	34.1 AV	54.0	-19.9	1.13 H	118	31.1	3.0
7	7386.00	59.0 PK	74.0	-15.0	1.58 H	262	49.3	9.7
8	7386.00	45.2 AV	54.0	-8.8	1.58 H	262	35.5	9.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.8 PK			1.57 V	128	112.1	-2.3
2	*2462.00	100.1 AV			1.57 V	128	102.4	-2.3
3	2483.50	69.3 PK	74.0	-4.7	1.57 V	128	71.5	-2.2
4	2483.50	53.6 AV	54.0	-0.4	1.57 V	128	55.8	-2.2
5	4924.00	51.9 PK	74.0	-22.1	1.00 V	143	48.9	3.0
6	4924.00	39.7 AV	54.0	-14.3	1.00 V	143	36.7	3.0
7	7386.00	61.3 PK	74.0	-12.7	1.50 V	240	51.6	9.7
8	7386.00	48.2 AV	54.0	-5.8	1.50 V	240	38.5	9.7

REMARKS:

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

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	68.0 PK	74.0	-6.0	2.63 H	252	70.0	-2.0
2	2390.00	47.9 AV	54.0	-6.1	2.63 H	252	49.9	-2.0
3	*2412.00	102.9 PK			2.63 H	252	105.0	-2.1
4	*2412.00	91.8 AV			2.63 H	252	93.9	-2.1
5	4824.00	50.9 PK	74.0	-23.1	1.15 H	101	48.2	2.7
6	4824.00	34.5 AV	54.0	-19.5	1.15 H	101	31.8	2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.6 PK	74.0	-0.4	1.00 V	221	75.6	-2.0
2	2390.00	53.5 AV	54.0	-0.5	1.00 V	221	55.5	-2.0
3	*2412.00	112.3 PK			1.00 V	221	114.4	-2.1
4	*2412.00	100.9 AV			1.00 V	221	103.0	-2.1
5	4824.00	52.3 PK	74.0	-21.7	1.00 V	152	49.6	2.7
6	4824.00	39.5 AV	54.0	-14.5	1.00 V	152	36.8	2.7

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.5 PK	74.0	-6.5	2.61 H	257	69.5	-2.0
2	2390.00	46.2 AV	54.0	-7.8	2.61 H	257	48.2	-2.0
3	*2437.00	112.0 PK			2.61 H	257	114.3	-2.3
4	*2437.00	100.2 AV			2.61 H	257	102.5	-2.3
5	2483.50	67.8 PK	74.0	-6.2	2.61 H	257	70.0	-2.2
6	2483.50	47.8 AV	54.0	-6.2	2.61 H	257	50.0	-2.2
7	4874.00	50.4 PK	74.0	-23.6	1.16 H	119	47.5	2.9
8	4874.00	33.9 AV	54.0	-20.1	1.16 H	119	31.0	2.9
9	7311.00	58.5 PK	74.0	-15.5	1.48 H	261	49.2	9.3
10	7311.00	44.6 AV	54.0	-9.4	1.48 H	261	35.3	9.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.8 PK	74.0	-0.2	1.00 V	220	75.8	-2.0
2	2390.00	52.0 AV	54.0	-2.0	1.00 V	220	54.0	-2.0
3	*2437.00	121.0 PK			1.00 V	220	123.3	-2.3
4	*2437.00	109.2 AV			1.00 V	220	111.5	-2.3
5	2483.50	73.2 PK	74.0	-0.8	1.00 V	220	75.4	-2.2
6	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.00 V**	**220**	**56.1**	**-2.2**
7	4874.00	52.5 PK	74.0	-21.5	1.03 V	145	49.6	2.9
8	4874.00	39.8 AV	54.0	-14.2	1.03 V	145	36.9	2.9
9	7311.00	61.6 PK	74.0	-12.4	1.48 V	242	52.3	9.3
10	7311.00	48.1 AV	54.0	-5.9	1.48 V	242	38.8	9.3

REMARKS:

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

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	103.7 PK			2.61 H	266	106.0	-2.3
2	*2462.00	92.8 AV			2.61 H	266	95.1	-2.3
3	2483.50	67.4 PK	74.0	-6.6	2.61 H	266	69.6	-2.2
4	2483.50	47.4 AV	54.0	-6.6	2.61 H	266	49.6	-2.2
5	4924.00	51.1 PK	74.0	-22.9	1.22 H	108	48.1	3.0
6	4924.00	34.5 AV	54.0	-19.5	1.22 H	108	31.5	3.0
7	7386.00	59.1 PK	74.0	-14.9	1.60 H	254	49.4	9.7
8	7386.00	44.9 AV	54.0	-9.1	1.60 H	254	35.2	9.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.2 PK			1.00 V	209	115.5	-2.3
2	*2462.00	102.1 AV			1.00 V	209	104.4	-2.3
3	2483.50	70.4 PK	74.0	-3.6	1.00 V	209	72.6	-2.2
4	2483.50	53.5 AV	54.0	-0.5	1.00 V	209	55.7	-2.2
5	4924.00	52.0 PK	74.0	-22.0	1.03 V	163	49.0	3.0
6	4924.00	39.6 AV	54.0	-14.4	1.03 V	163	36.6	3.0
7	7386.00	61.6 PK	74.0	-12.4	1.48 V	233	51.9	9.7
8	7386.00	48.2 AV	54.0	-5.8	1.48 V	233	38.5	9.7

REMARKS:

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

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	67.2 PK	74.0	-6.8	2.62 H	261	69.2	-2.0
2	2390.00	45.7 AV	54.0	-8.3	2.62 H	261	47.7	-2.0
3	*2422.00	97.5 PK			2.62 H	261	99.7	-2.2
4	*2422.00	88.9 AV			2.62 H	261	91.1	-2.2
5	4844.00	50.4 PK	74.0	-23.6	1.18 H	98	47.7	2.7
6	4844.00	33.7 AV	54.0	-20.3	1.18 H	98	31.0	2.7
7	7266.00	58.7 PK	74.0	-15.3	1.51 H	272	49.6	9.1
8	7266.00	44.7 AV	54.0	-9.3	1.51 H	272	35.6	9.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.6 PK	74.0	-5.4	1.00 V	221	70.6	-2.0
2	2390.00	53.6 AV	54.0	-0.4	1.00 V	221	55.6	-2.0
3	*2422.00	106.6 PK			1.00 V	221	108.8	-2.2
4	*2422.00	98.0 AV			1.00 V	221	100.2	-2.2
5	4844.00	52.0 PK	74.0	-22.0	1.00 V	156	49.3	2.7
6	4844.00	39.7 AV	54.0	-14.3	1.00 V	156	37.0	2.7
7	7266.00	61.9 PK	74.0	-12.1	1.54 V	238	52.8	9.1
8	7266.00	48.7 AV	54.0	-5.3	1.54 V	238	39.6	9.1

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.8 PK	74.0	-6.2	2.58 H	270	69.8	-2.0
2	2390.00	46.6 AV	54.0	-7.4	2.58 H	270	48.6	-2.0
3	*2437.00	102.1 PK			2.58 H	270	104.4	-2.3
4	*2437.00	93.5 AV			2.58 H	270	95.8	-2.3
5	2483.50	68.3 PK	74.0	-5.7	2.58 H	270	70.5	-2.2
6	2483.50	48.1 AV	54.0	-5.9	2.58 H	270	50.3	-2.2
7	4874.00	50.3 PK	74.0	-23.7	1.18 H	114	47.4	2.9
8	4874.00	33.9 AV	54.0	-20.1	1.18 H	114	31.0	2.9
9	7311.00	59.5 PK	74.0	-14.5	1.59 H	251	50.2	9.3
10	7311.00	45.2 AV	54.0	-8.8	1.59 H	251	35.9	9.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.6 PK	74.0	-5.4	1.00 V	227	70.6	-2.0
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.00 V**	**227**	**55.9**	**-2.0**
3	*2437.00	110.8 PK			1.00 V	227	113.1	-2.3
4	*2437.00	102.2 AV			1.00 V	227	104.5	-2.3
5	2483.50	64.0 PK	74.0	-10.0	1.00 V	227	66.2	-2.2
6	2483.50	49.4 AV	54.0	-4.6	1.00 V	227	51.6	-2.2
7	4874.00	52.6 PK	74.0	-21.4	1.00 V	155	49.7	2.9
8	4874.00	40.0 AV	54.0	-14.0	1.00 V	155	37.1	2.9
9	7311.00	61.5 PK	74.0	-12.5	1.56 V	221	52.2	9.3
10	7311.00	48.1 AV	54.0	-5.9	1.56 V	221	38.8	9.3

REMARKS:

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

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	98.8 PK			2.59 H	254	101.1	-2.3
2	*2452.00	90.4 AV			2.59 H	254	92.7	-2.3
3	2483.50	67.7 PK	74.0	-6.3	2.59 H	254	69.9	-2.2
4	2483.50	46.5 AV	54.0	-7.5	2.59 H	254	48.7	-2.2
5	4904.00	50.4 PK	74.0	-23.6	1.20 H	121	47.5	2.9
6	4904.00	34.1 AV	54.0	-19.9	1.20 H	121	31.2	2.9
7	7356.00	58.4 PK	74.0	-15.6	1.57 H	282	48.7	9.7
8	7356.00	44.3 AV	54.0	-9.7	1.57 H	282	34.6	9.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	107.7 PK			1.00 V	216	110.0	-2.3
2	*2452.00	99.3 AV			1.00 V	216	101.6	-2.3
3	2483.50	66.6 PK	74.0	-7.4	1.00 V	216	68.8	-2.2
4	2483.50	53.5 AV	54.0	-0.5	1.00 V	216	55.7	-2.2
5	4904.00	52.5 PK	74.0	-21.5	1.02 V	162	49.6	2.9
6	4904.00	39.8 AV	54.0	-14.2	1.02 V	162	36.9	2.9
7	7356.00	61.4 PK	74.0	-12.6	1.46 V	229	51.7	9.7
8	7356.00	48.2 AV	54.0	-5.8	1.46 V	229	38.5	9.7

REMARKS:

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

Below 1GHz Data:

802.11n (HT20)

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 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	99.02	33.1 QP	43.5	-10.4	1.50 H	288	45.5	-12.4
2	146.21	31.6 QP	43.5	-11.9	2.00 H	62	39.4	-7.8
3	250.00	36.1 QP	46.0	-9.9	1.00 H	65	45.1	-9.0
4	374.98	30.3 QP	46.0	-15.7	1.00 H	54	35.4	-5.1
5	499.99	32.2 QP	46.0	-13.8	1.50 H	36	34.5	-2.3
6	917.55	33.6 QP	46.0	-12.4	1.00 H	146	28.7	4.9
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	43.80	37.9 QP	40.0	-2.1	1.00 V	356	45.8	-7.9
2	111.48	32.9 QP	43.5	-10.6	1.50 V	0	43.4	-10.5
3	250.00	30.3 QP	46.0	-15.7	1.00 V	150	39.3	-9.0
4	375.00	29.6 QP	46.0	-16.4	1.50 V	360	34.7	-5.1
5	500.01	33.5 QP	46.0	-12.5	1.00 V	157	35.8	-2.3
6	749.98	31.8 QP	46.0	-14.2	2.00 V	360	29.3	2.5

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 2017	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
Fixed attenuator EMEC	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3 Tested Date: Mar. 22, 2018

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

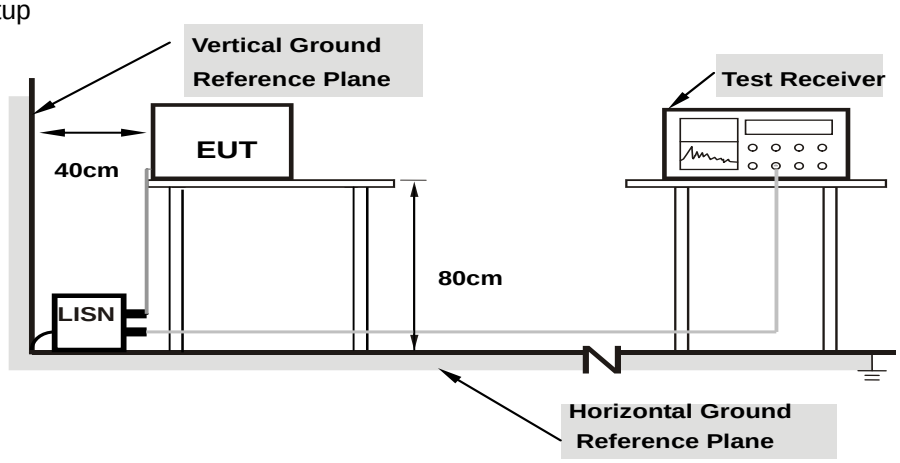
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

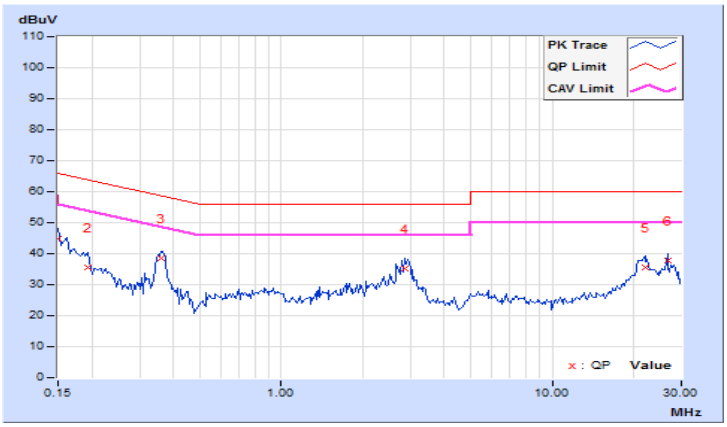
4.2.7 Test Results (Mode 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.05	34.83	16.05	44.88	26.10	66.00	56.00	-21.12	-29.90
2	0.19297	10.07	25.43	10.06	35.50	20.13	63.91	53.91	-28.41	-33.78
3	0.36094	10.11	28.31	20.38	38.42	30.49	58.71	48.71	-20.29	-18.22
4	2.85156	10.27	24.76	13.28	35.03	23.55	56.00	46.00	-20.97	-22.45
5	22.00391	11.42	24.25	15.79	35.67	27.21	60.00	50.00	-24.33	-22.79
6	26.60938	11.52	26.18	20.74	37.70	32.26	60.00	50.00	-22.30	-17.74

Remarks:

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

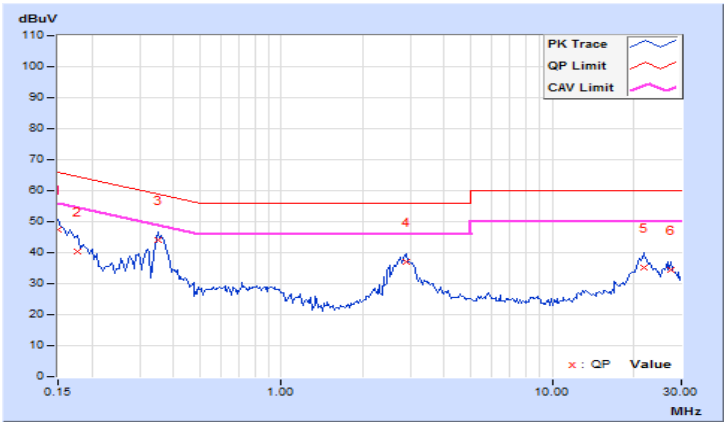


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.95	37.59	21.68	47.54	31.63	66.00	56.00	-18.46	-24.37
2	0.17734	9.96	30.57	15.22	40.53	25.18	64.61	54.61	-24.08	-29.43
3	0.34922	10.01	34.21	25.93	44.22	35.94	58.98	48.98	-14.76	-13.04
4	2.89844	10.14	26.84	14.14	36.98	24.28	56.00	46.00	-19.02	-21.72
5	21.74609	11.19	24.11	15.97	35.30	27.16	60.00	50.00	-24.70	-22.84
6	27.34375	11.27	23.11	16.87	34.38	28.14	60.00	50.00	-25.62	-21.86

Remarks:

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



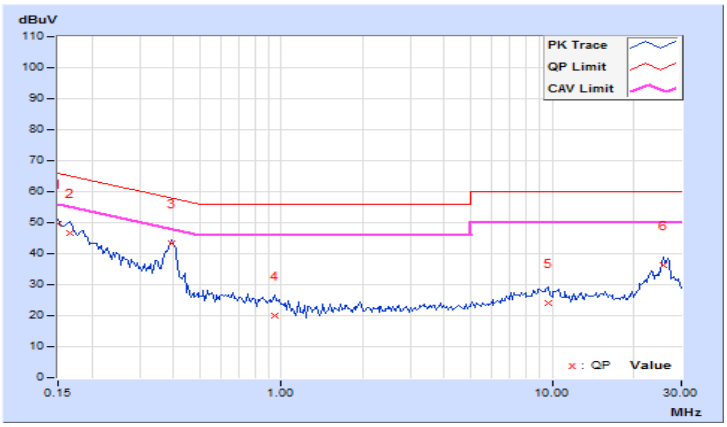
4.2.8 Test Results (Mode 2)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.05	39.64	23.70	49.69	33.75	66.00	56.00	-16.31	-22.25
2	0.16562	10.05	36.69	21.36	46.74	31.41	65.18	55.18	-18.44	-23.77
3	**0.39219**	**10.12**	**33.27**	**25.73**	**43.39**	**35.85**	**58.02**	**48.02**	**-14.63**	**-12.17**
4	0.94297	10.17	9.88	-1.15	20.05	9.02	56.00	46.00	-35.95	-36.98
5	9.71875	10.69	13.52	7.79	24.21	18.48	60.00	50.00	-35.79	-31.52
6	25.69531	11.49	24.70	19.81	36.19	31.30	60.00	50.00	-23.81	-18.70

Remarks:

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

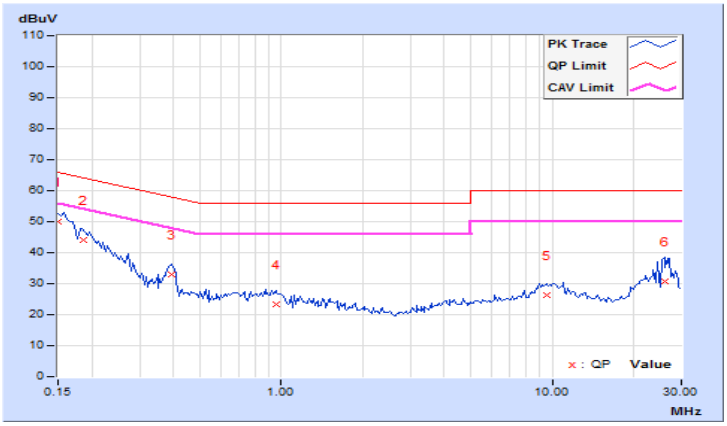


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.95	40.17	24.91	50.12	34.86	66.00	56.00	-15.88	-21.14
2	0.18516	9.97	34.24	17.77	44.21	27.74	64.25	54.25	-20.04	-26.51
3	0.39219	10.02	23.07	17.06	33.09	27.08	58.02	48.02	-24.93	-20.94
4	0.95469	10.04	13.45	6.82	23.49	16.86	56.00	46.00	-32.51	-29.14
5	9.55078	10.51	15.77	10.10	26.28	20.61	60.00	50.00	-33.72	-29.39
6	25.92969	11.24	19.34	9.43	30.58	20.67	60.00	50.00	-29.42	-29.33

Remarks:

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

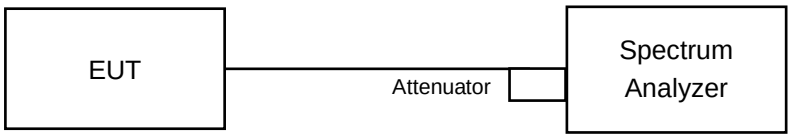


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation 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	10.10	0.5	Pass
6	2437	9.64	0.5	Pass
11	2462	9.84	0.5	Pass

802.11g

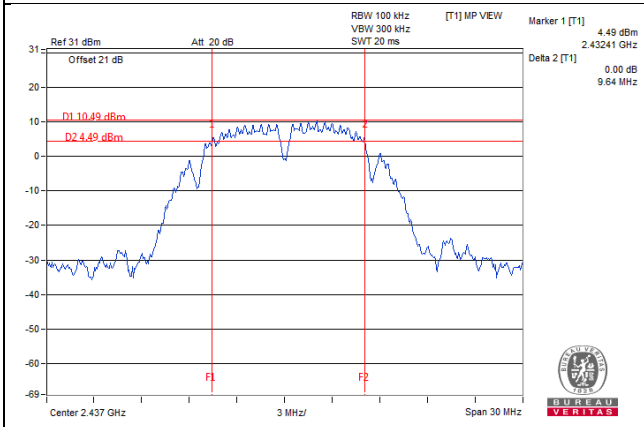
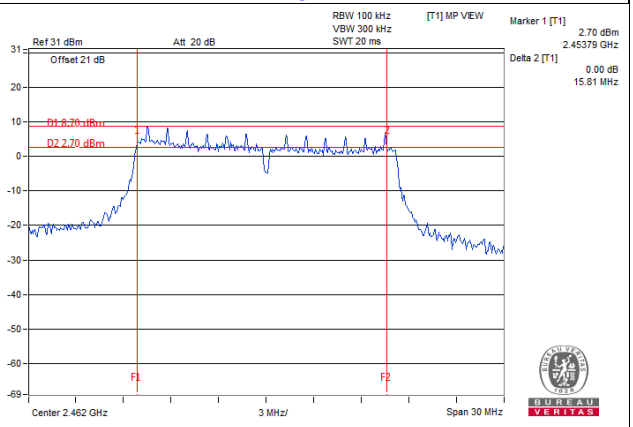
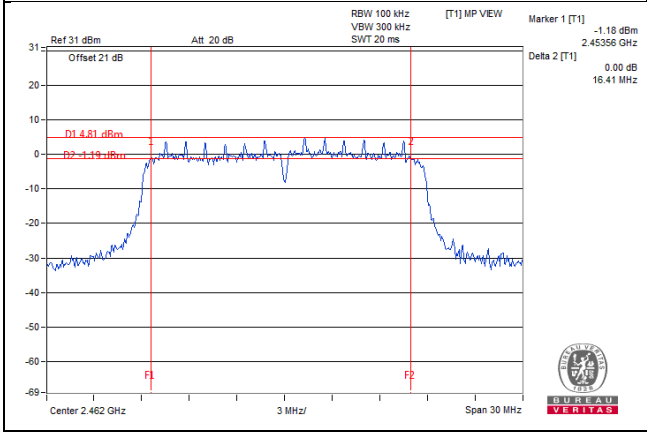
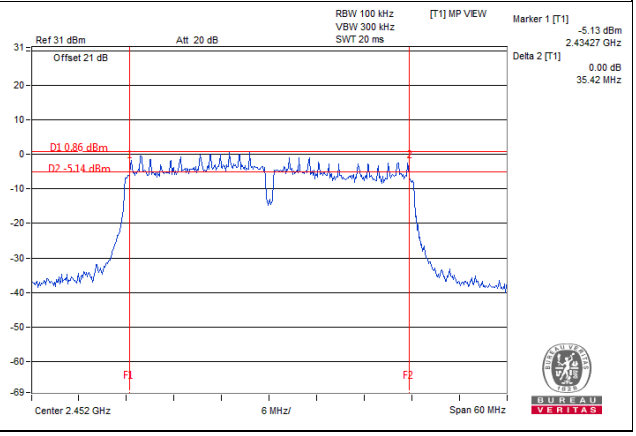
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.38	0.5	Pass
6	2437	16.16	0.5	Pass
11	2462	15.81	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.95	17.10	0.5	Pass
6	2437	16.99	17.36	0.5	Pass
11	2462	16.76	16.41	0.5	Pass

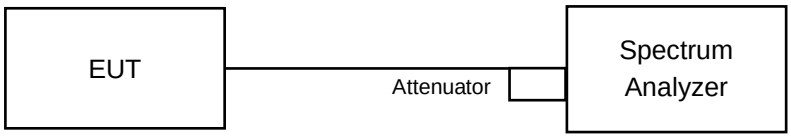
802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	36.00	35.95	0.5	Pass
6	2437	35.90	35.84	0.5	Pass
9	2452	35.42	35.65	0.5	Pass

Spectrum Plot of Worst Value	
802.11b / CH6	**802.11g / CH11**
	
802.11n (HT20) _Chain 1 / CH11	**802.11n (HT40) _Chain 0 / CH9**
	

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Deviation from Test Standard

No deviation.

4.4.5 EUT Operating Conditions

Same as Item 4.3.6.

4.4.6 Test Results

802.11b

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
1	2412	12.36
6	2437	12.48
11	2462	12.48

802.11g

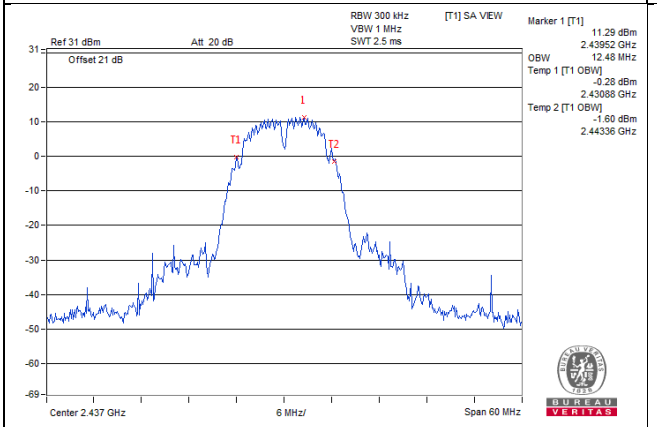
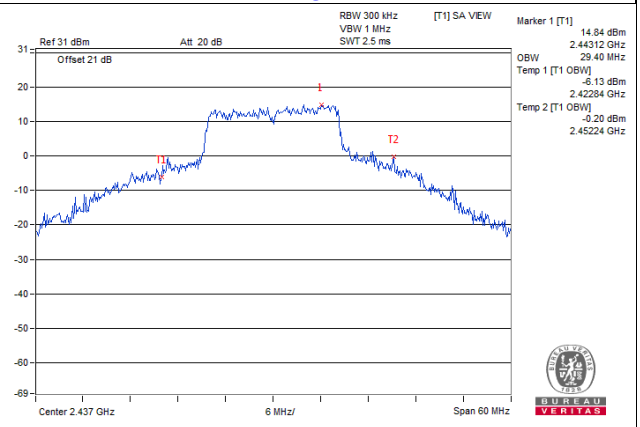
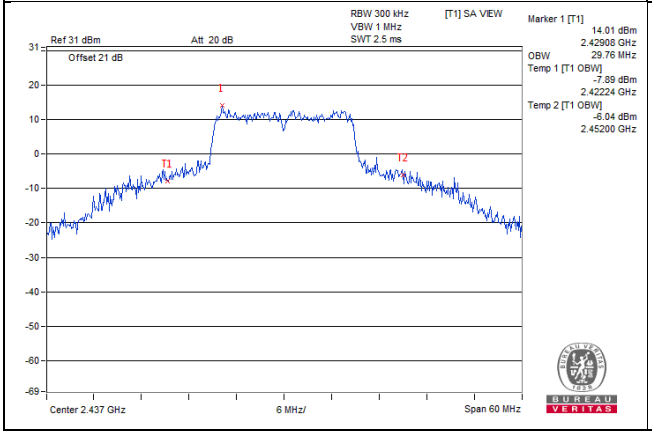
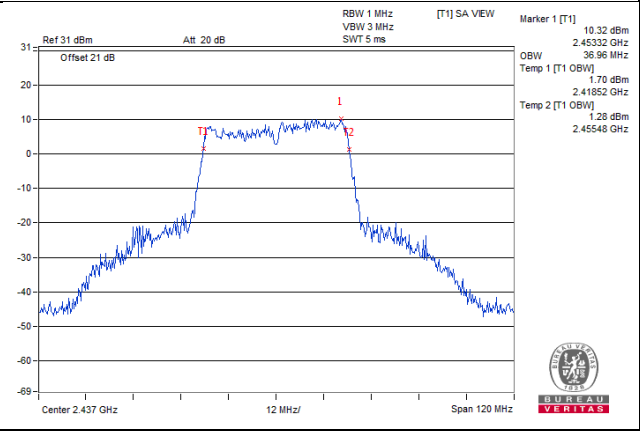
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
1	2412	16.80
6	2437	29.40
11	2462	17.04

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	17.64	18.00
6	2437	28.80	29.76
11	2462	17.88	17.64

802.11n (HT40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
3	2422	36.72	36.72
6	2437	36.96	36.72
9	2452	36.48	36.96

Spectrum Plot of Max Value	
802.11b / CH6	**802.11g / CH6**
	
802.11n (HT20) _Chain 1 / CH6	**802.11n (HT40) _Chain 0 / CH6**
	

4.5 Conducted Output Power Measurement

4.5.1 Limits of Conducted Output Power Measurement

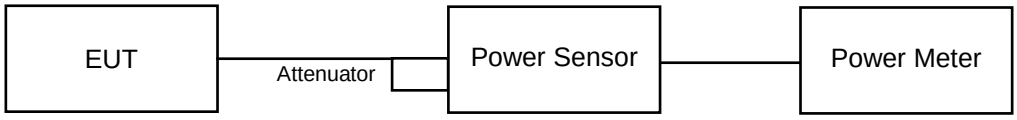
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For Peak Power

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

For Average Power

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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as Item 4.3.6.

4.5.7 Test Results

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	135.831	21.33	30	Pass
6	2437	206.063	23.14	30	Pass
11	2462	170.216	22.31	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	219.28	23.41	30	Pass
6	2437	327.341	25.15	30	Pass
11	2462	219.786	23.42	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.47	22.81	331.266	25.20	30	Pass
6	2437	24.32	24.82	573.785	27.59	30	Pass
11	2462	22.48	21.63	322.557	25.09	30	Pass

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	18.85	19.35	162.835	22.12	30	Pass
6	2437	21.68	22.43	322.216	25.08	30	Pass
9	2452	19.86	19.61	188.239	22.75	30	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	63.973	18.06
6	2437	108.893	20.37
11	2462	92.47	19.66

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	52.119	17.17
6	2437	214.289	23.31
11	2462	59.841	17.77

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.79	15.46	59.089	17.72
6	2437	22.17	22.56	345.118	25.38
11	2462	15.51	14.77	65.555	18.17

802.11n (HT40)

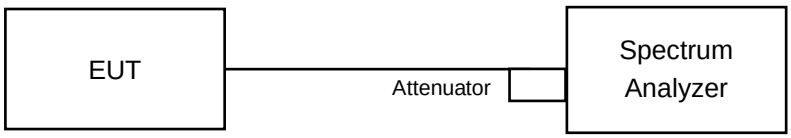
Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	10.61	11.27	24.905	13.96
6	2437	14.84	15.38	64.993	18.13
9	2452	11.55	11.71	29.114	14.64

4.6 Power Spectral Density Measurement

4.6.1 Limits of Power Spectral Density Measurement

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

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

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Same as Item 4.3.6

4.6.7 Test Results

802.11b

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-4.80	8	Pass
6	2437	-6.16	8	Pass
11	2462	-8.49	8	Pass

802.11g

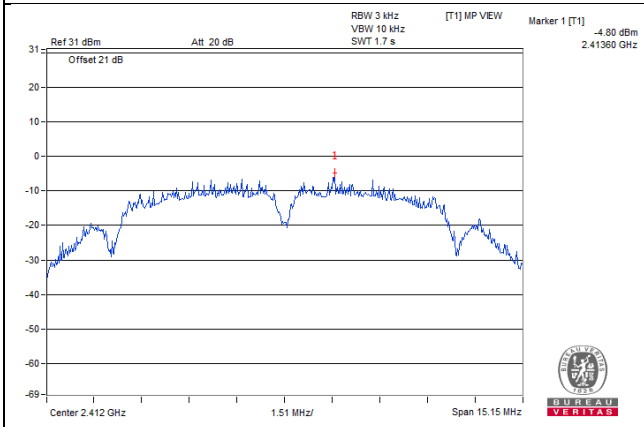
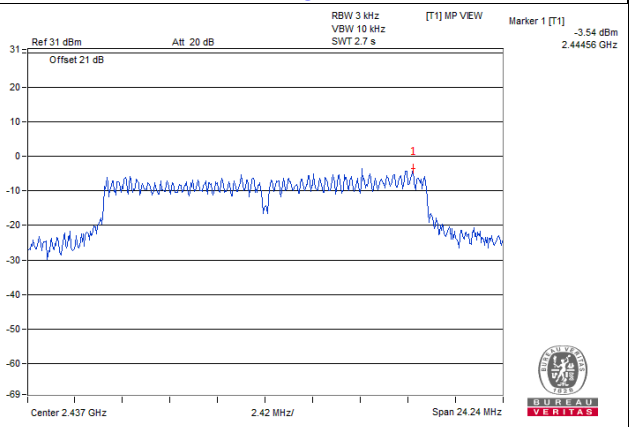
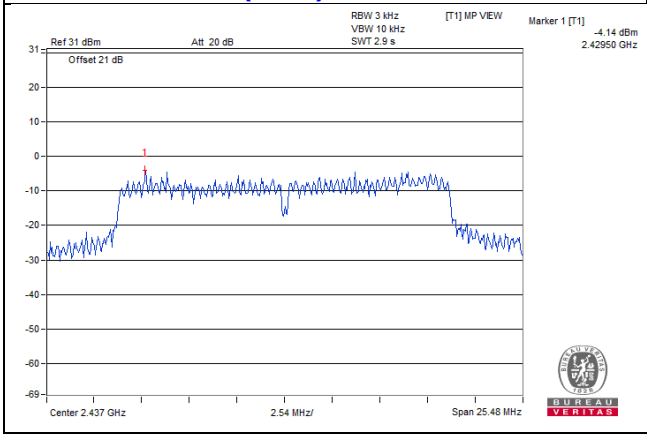
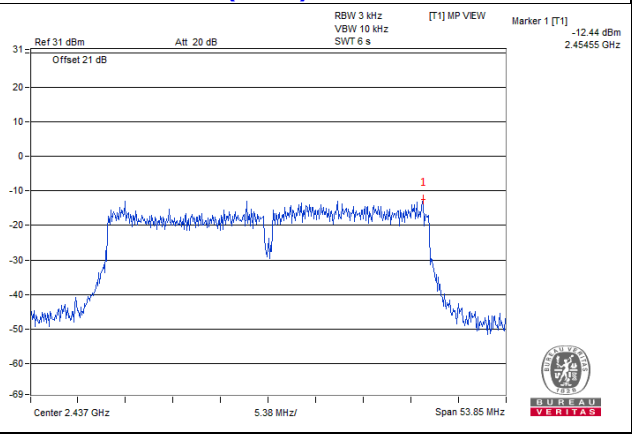
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-9.92	8	Pass
6	2437	-3.54	8	Pass
11	2462	-8.42	8	Pass

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-10.41	3.01	-7.40	8	Pass
	6	2437	-4.14	3.01	-1.13	8	Pass
	11	2462	-10.80	3.01	-7.79	8	Pass
1	1	2412	-10.43	3.01	-7.42	8	Pass
	6	2437	-5.22	3.01	-2.21	8	Pass
	11	2462	-9.87	3.01	-6.86	8	Pass

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-15.91	3.01	-12.90	8	Pass
	6	2437	-12.44	3.01	-9.43	8	Pass
	9	2452	-15.88	3.01	-12.87	8	Pass
1	3	2422	-16.16	3.01	-13.15	8	Pass
	6	2437	-13.16	3.01	-10.15	8	Pass
	9	2452	-15.58	3.01	-12.57	8	Pass

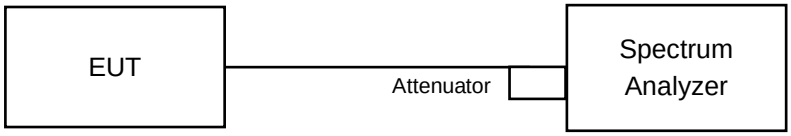
Spectrum Plot of Worst Value	
802.11b / CH1	**802.11g / CH6**
	
802.11n (HT20)_Chain 0 / CH6	**802.11n (HT40)_Chain 0 / CH6**
	

4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out of Band Emission Measurement

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

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 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.

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

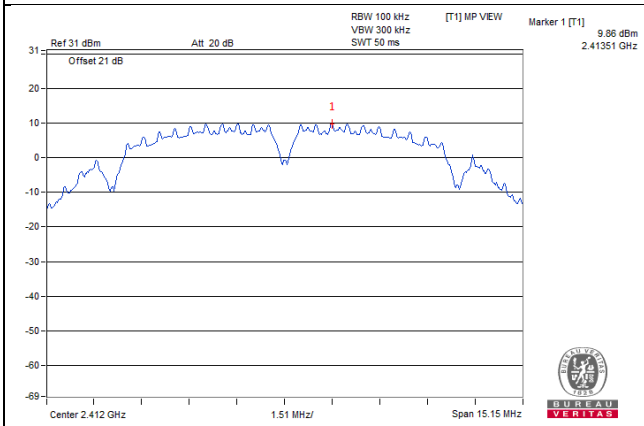
Same as Item 4.3.6

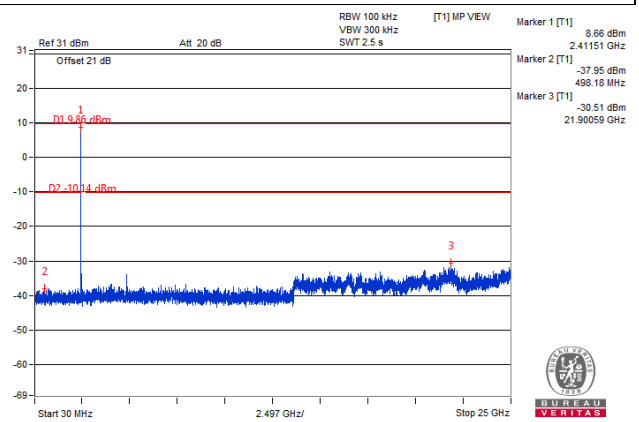
4.7.7 Test Results

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

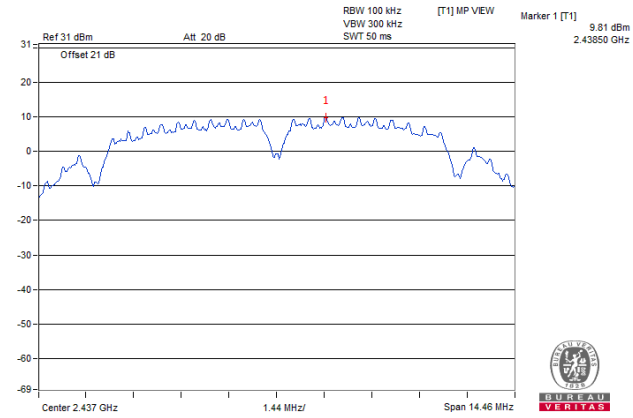
802.11b

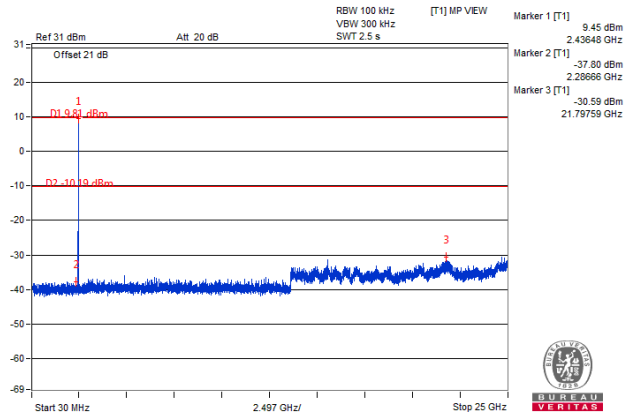
CH 1



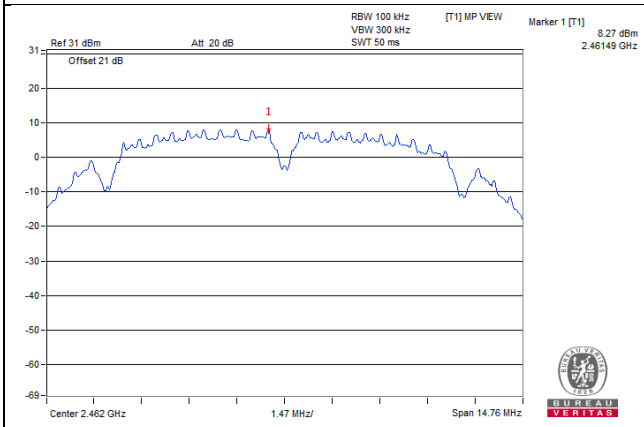


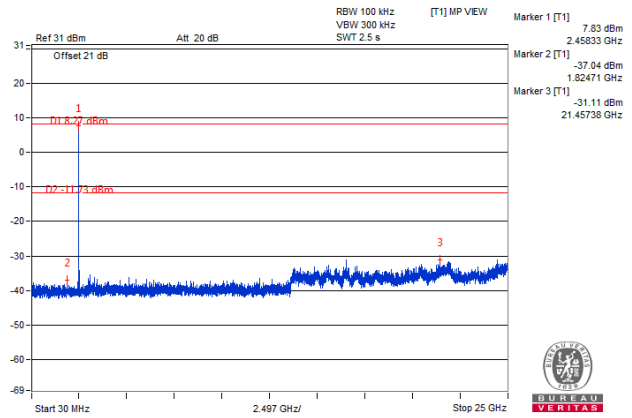
CH 6



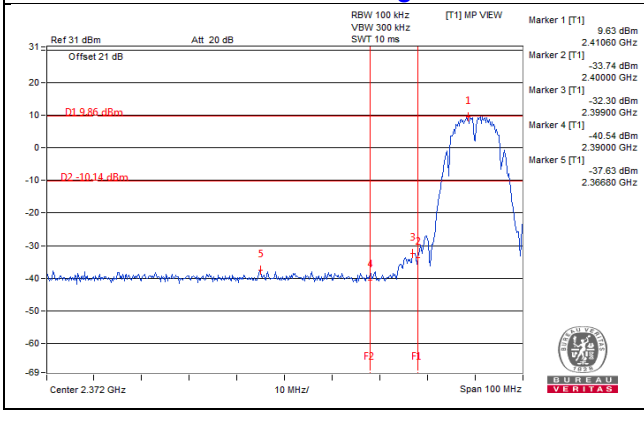


CH 11

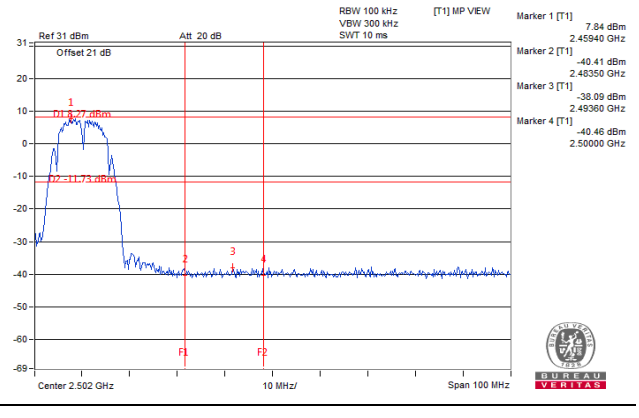




CH 1 Band edge

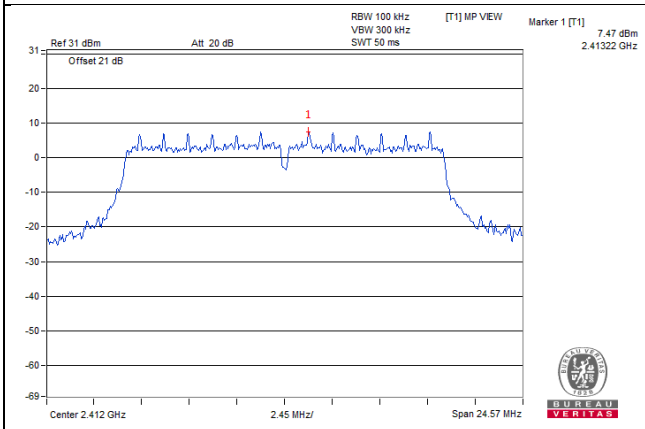


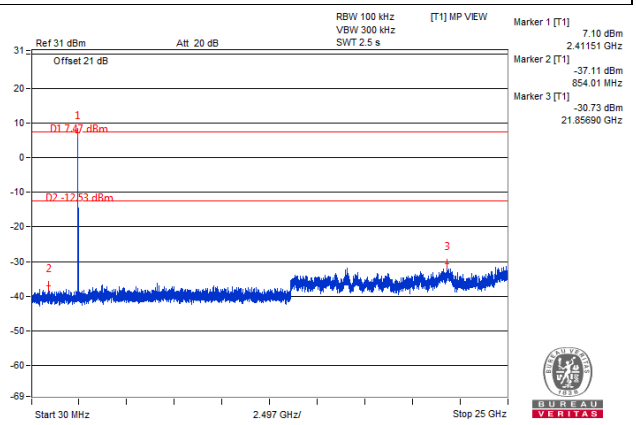
CH 11 Band edge



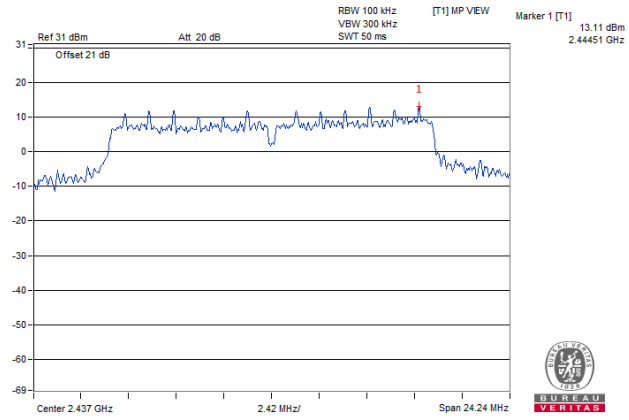
802.11g

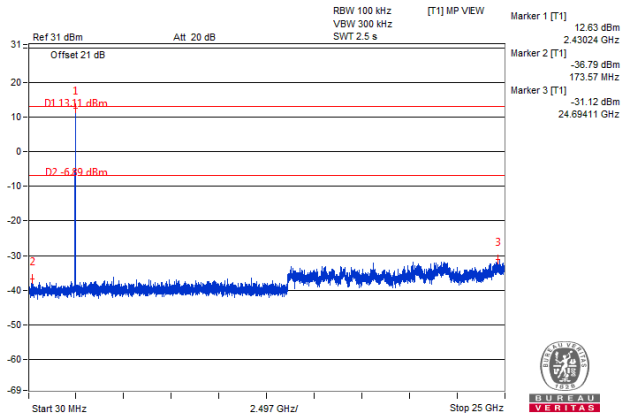
CH 1



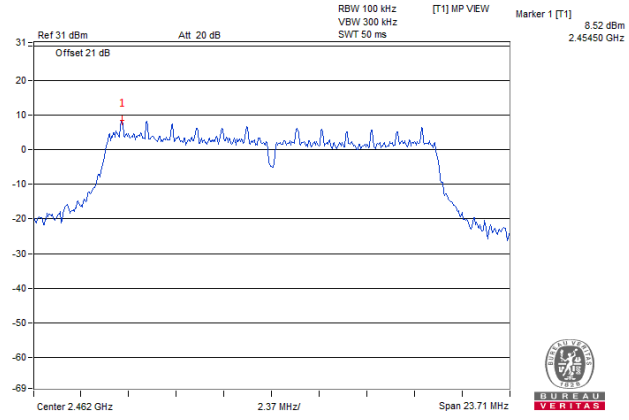


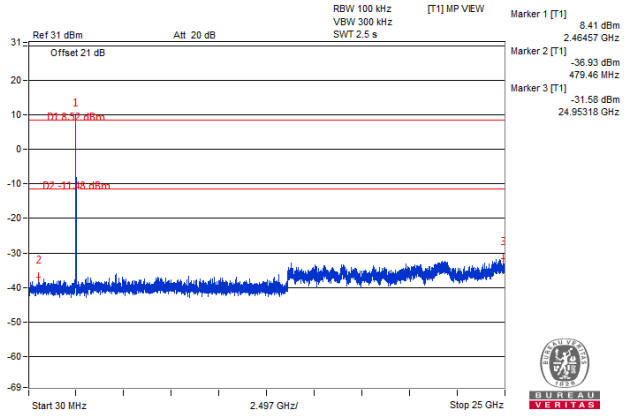
CH 6



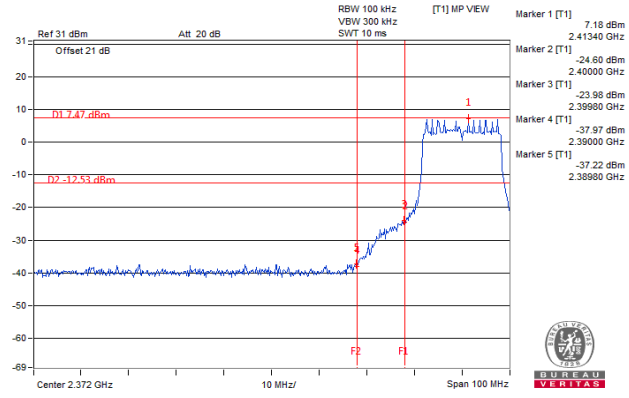


CH 11

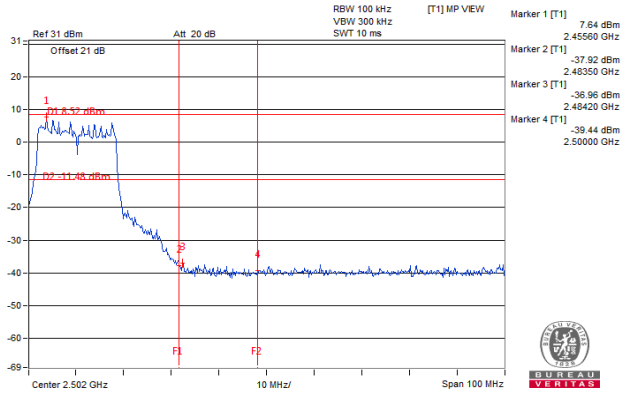




CH 1 Band edge

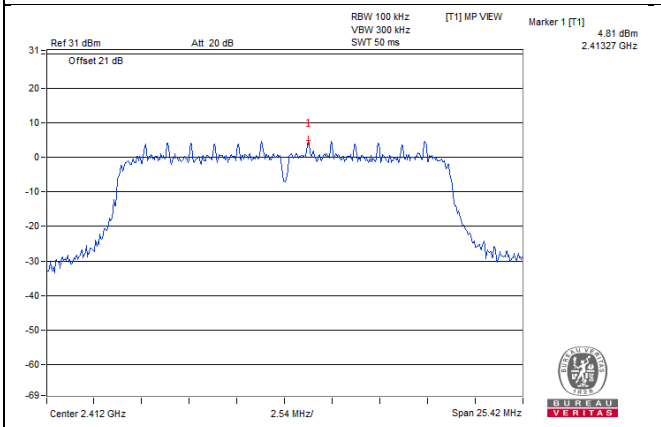


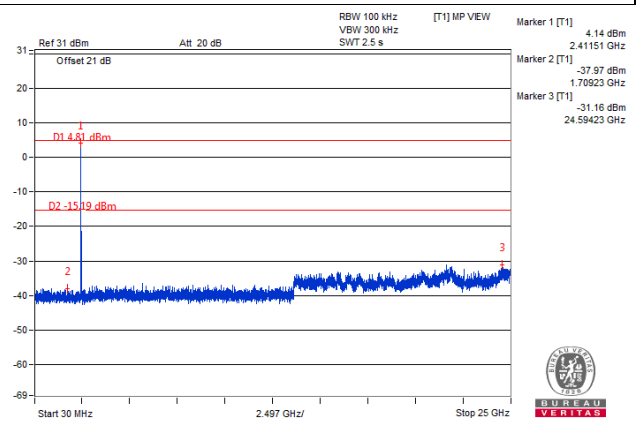
CH 11 Band edge



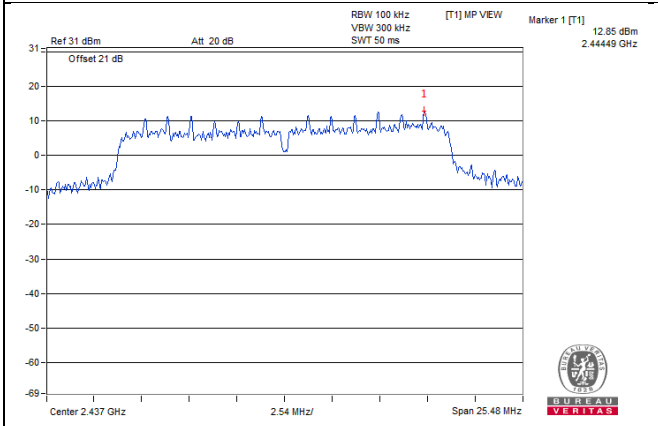
802.11n (HT20)
Chain 0

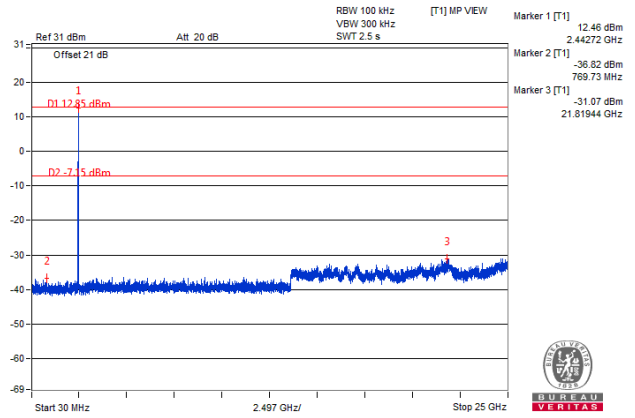
CH 1



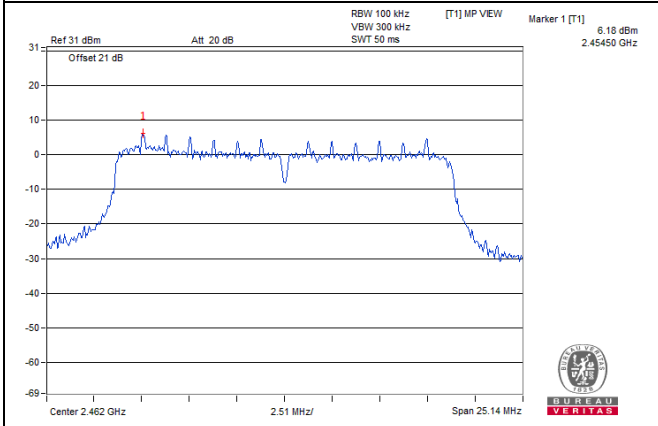


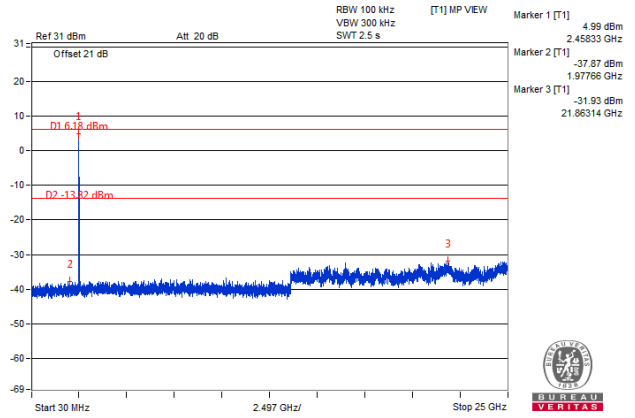
CH 6



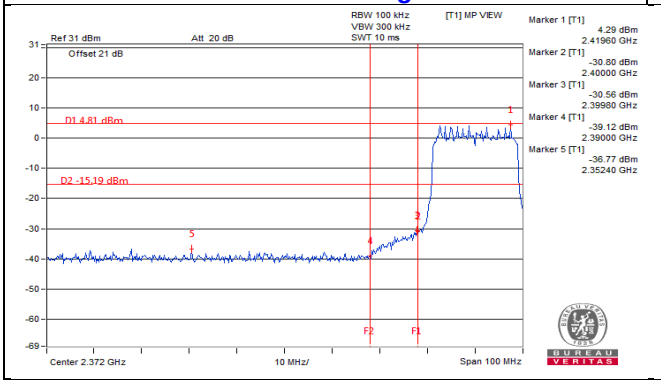


CH 11

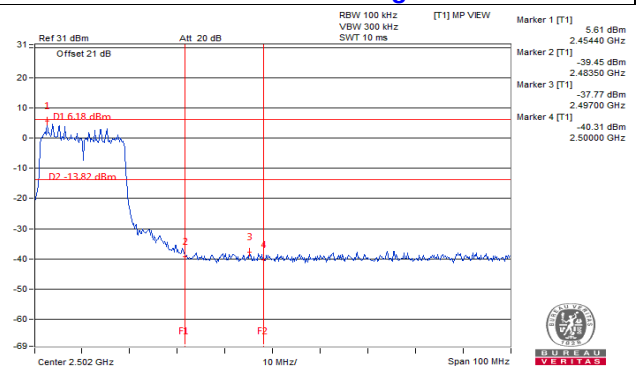




CH 1 Band edge

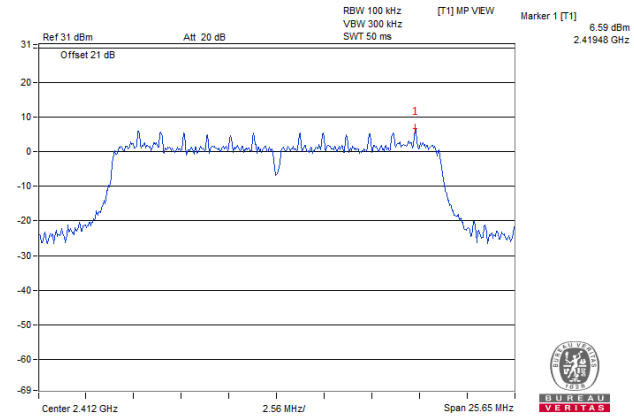


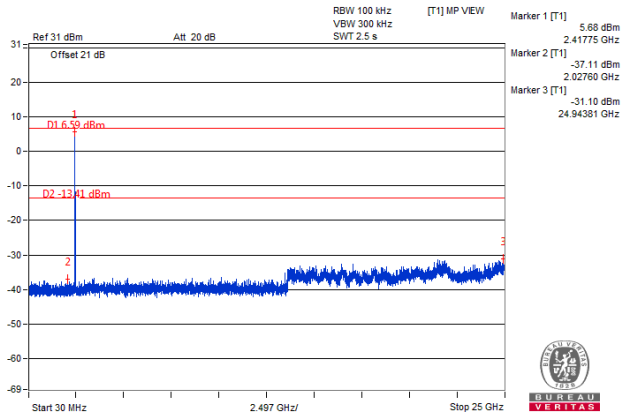
CH 11 Band edge



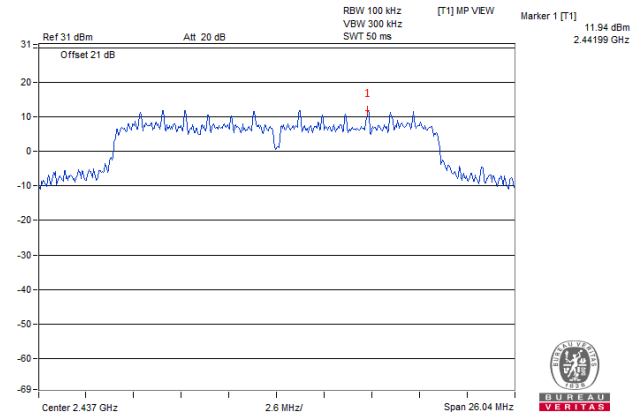
Chain 1

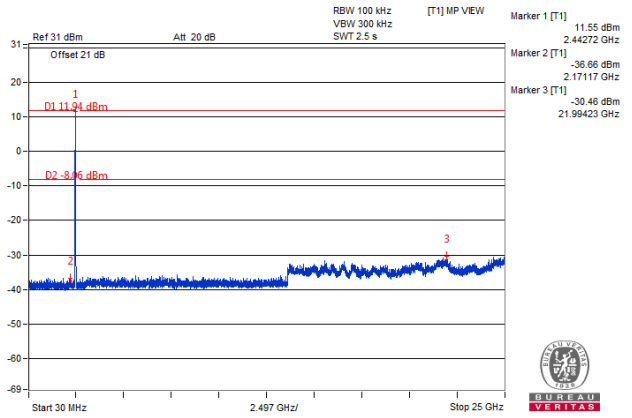
CH 1



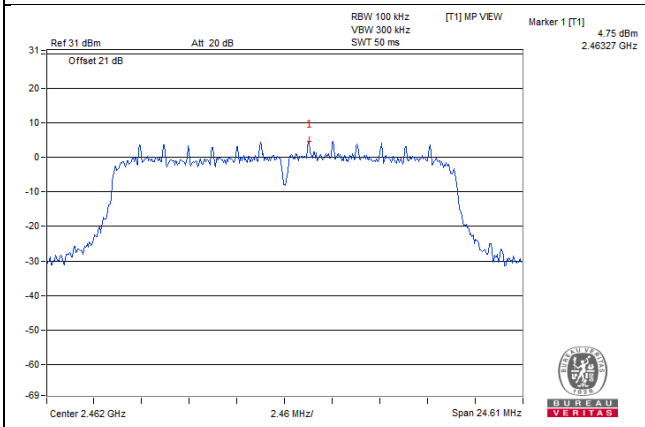


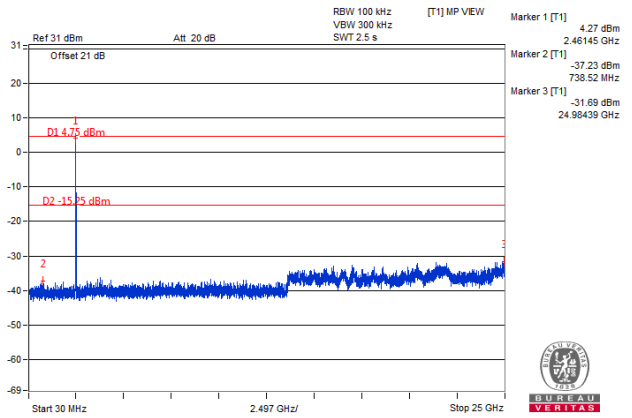
CH 6



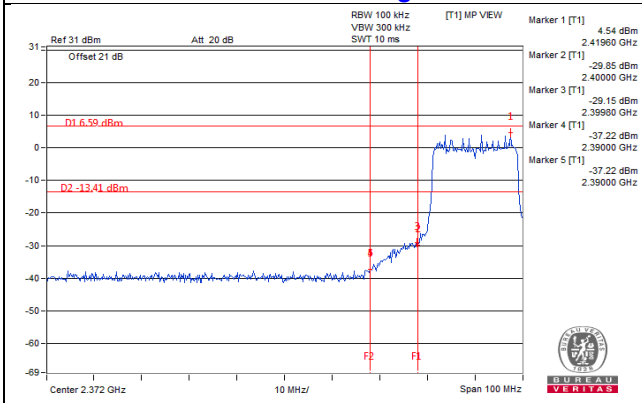


CH 11

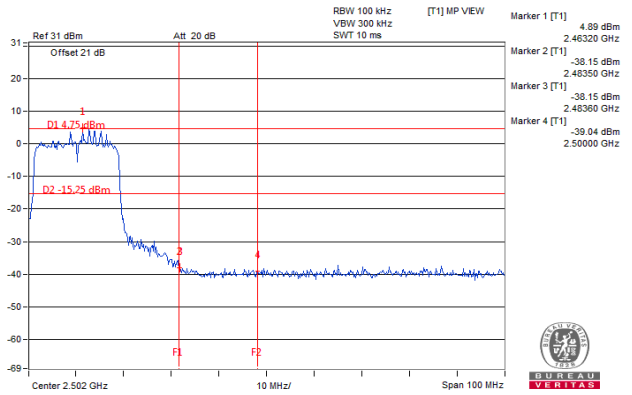




CH 1 Band edge



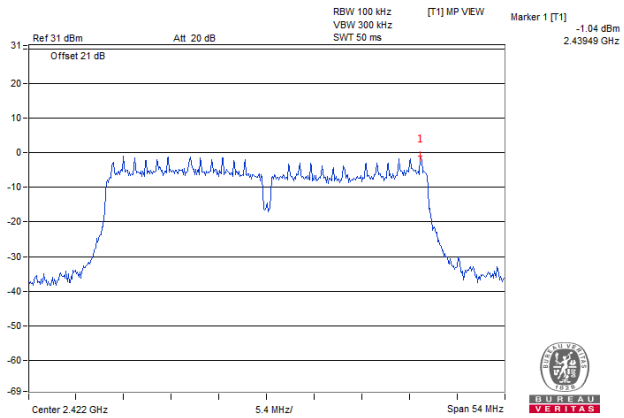
CH 11 Band edge

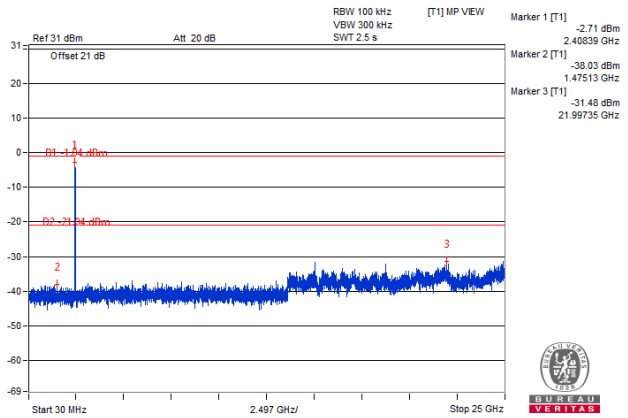


802.11n (HT40)

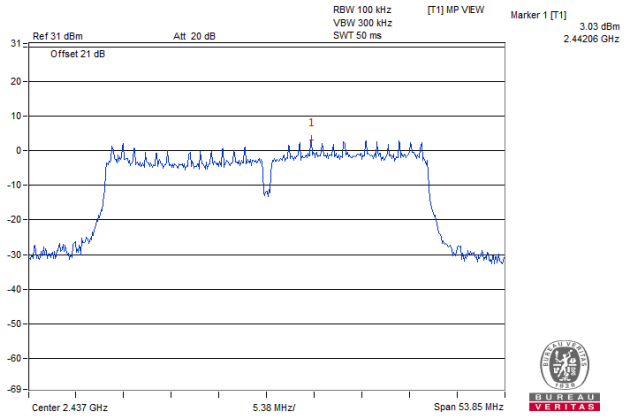
Chain 0

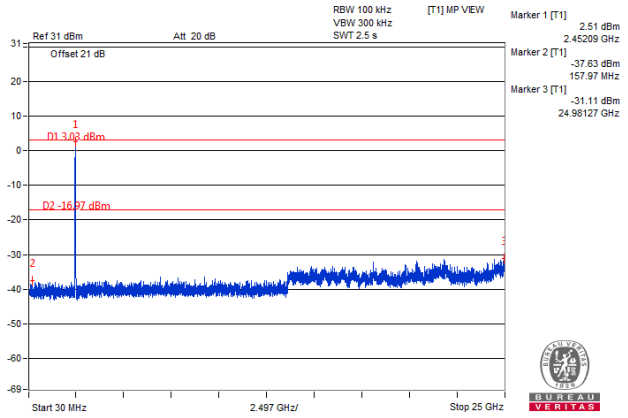
CH 3



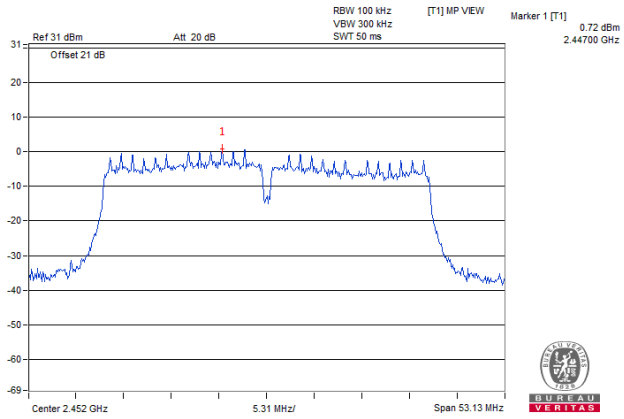


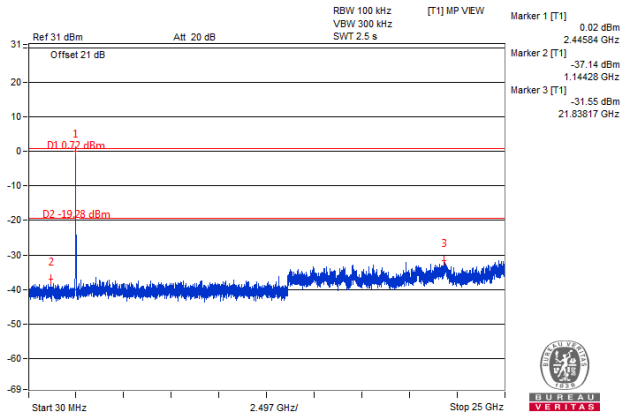
CH 6



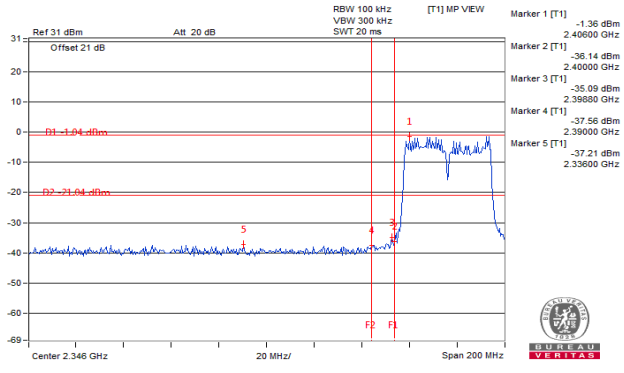


CH 9

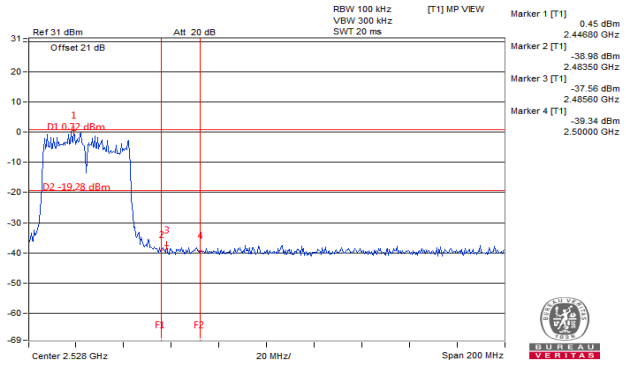




CH 3 Band edge

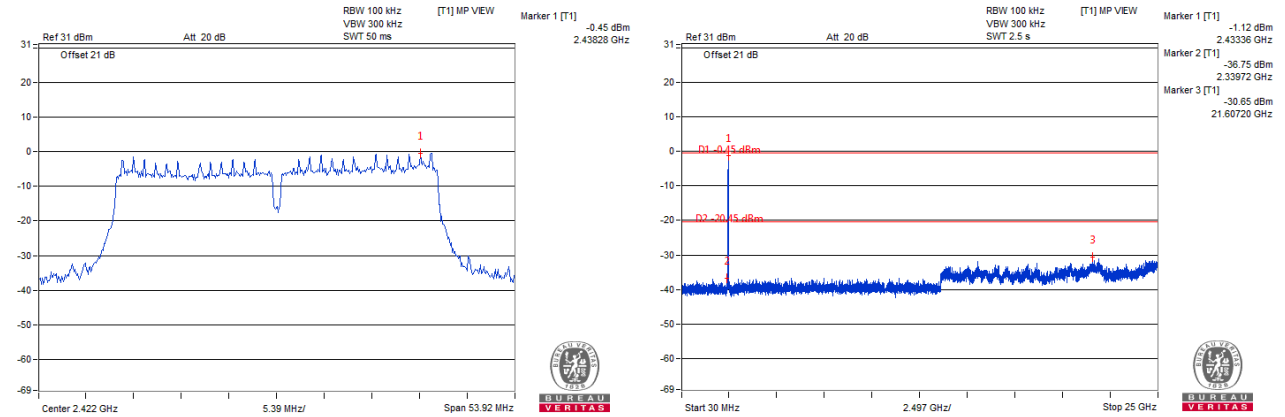


CH 9 Band edge

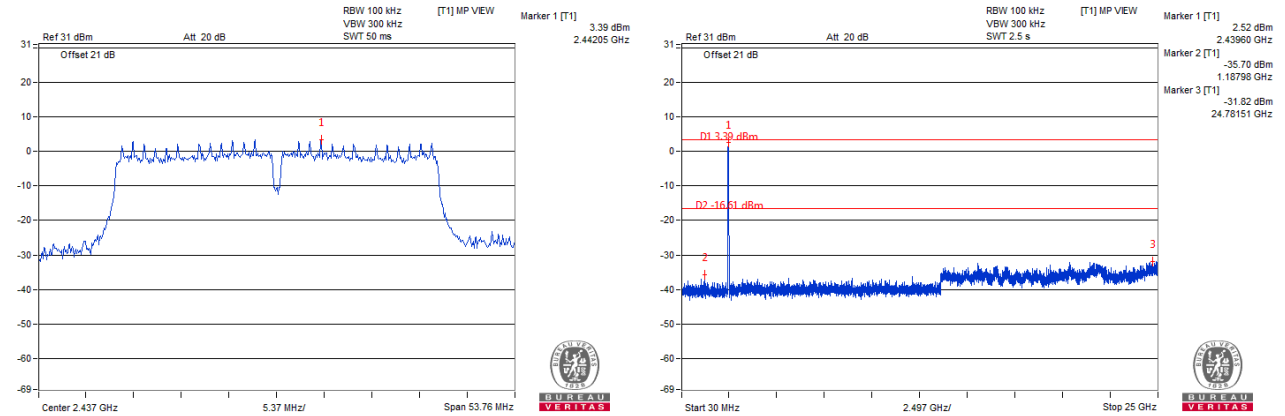


Chain 1

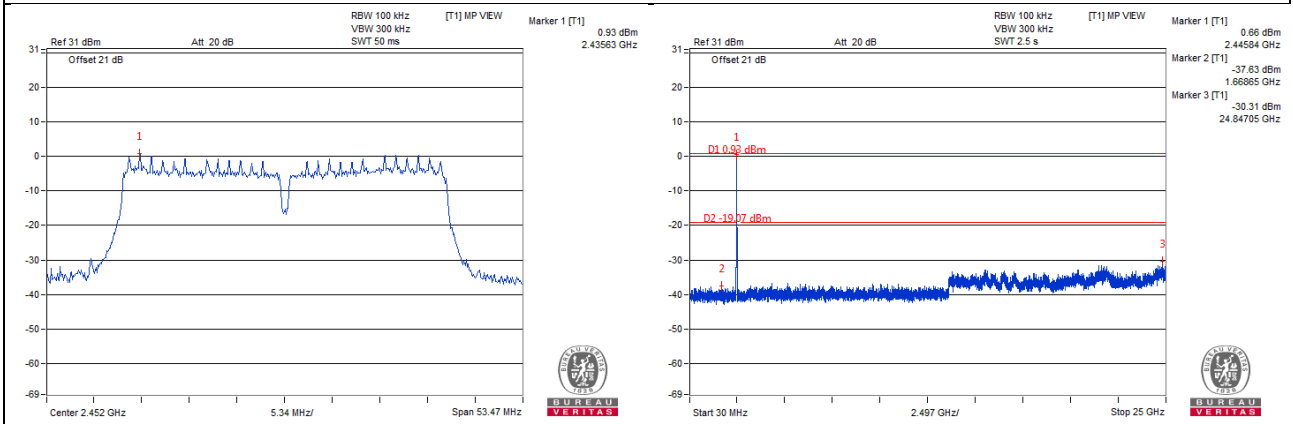
CH 3



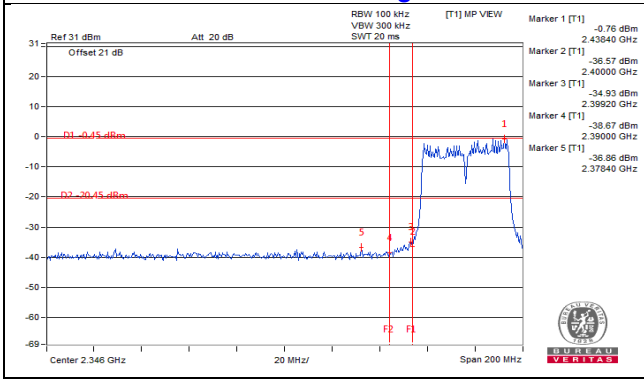
CH 6



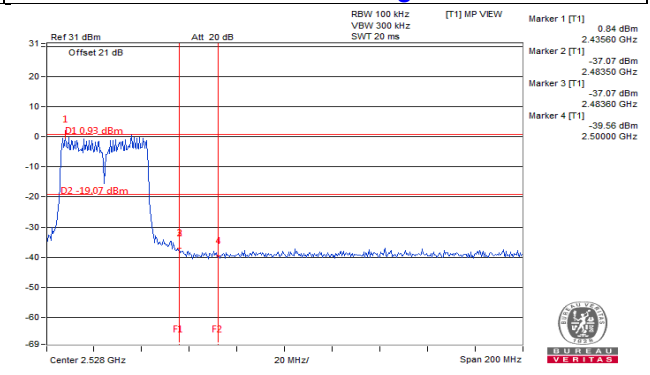
CH 9



CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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

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

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