

FCC Test Report (WLAN)

Report No.: RF180430E08

FCC ID: SUZ-WB01

Test Model: WB01

Received Date: Apr. 30, 2018

Test Date: May 11 to 21, 2018

Issued Date: June 21, 2018

Applicant: Coretronic Corp.

Address: No. 11, Li Hsing Rd, Science-Based Industrial Park, Hsinchu, Taiwan.

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

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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
RF180430E08	Original release.	June 21, 2018

1 Certificate of Conformity

Product: WiFi 11a/b/g/n/ac 2T2R and BT4.0 Module

Brand: Coretronic

Test Model: WB01

Sample Status: ENGINEERING SAMPLE

Applicant: Coretronic Corp.

Test Date: May 11 to 21, 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 : Wendy Wu , **Date:** June 21, 2018
Wendy Wu / Specialist

Approved by : May Chen , **Date:** June 21, 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 -14.48dB at 0.20859MHz.
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, 2483.50MHz, 2488.00MHz.
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(MHF) 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	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.33 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 (WLAN)

Product	WiFi 11a/b/g/n/ac 2T2R and BT4.0 Module
Brand	Coretronic
Test Model	WB01
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	2.4GHz: 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 5GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	2.4GHz: 371.435mW 5GHz: 5.18 ~ 5.24GHz: 131.287mW 5.745 ~ 5.825GHz: 233.814mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. There are WLAN and Bluetooth technology used for the EUT.
2. Simultaneously transmission condition.

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

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

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

For WLAN					
Ant No.	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector Type	Cable Length
1	3.61	2.4~2.4835	FPCB	i-pex(MHF)	230mm
	5.55	5.15~5.85			
2	6.47	2.4~2.4835	FPCB	i-pex(MHF)	230mm
	3.94	5.15~5.85			
For Bluetooth					
Ant No.	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector Type	Cable Length
1	5.44	2.4~2.4835	FPCB	i-pex(MHF)	170mm

4. The EUT incorporates a MIMO function.

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

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

3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 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

NOTE: 1. The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

Radiated Emission Test (Above 1GHz):

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

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

Radiated Emission Test (Below 1GHz):

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

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

Power Line Conducted Emission Test:

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

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

Antenna Port Conducted Measurement:

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

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

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE $\geq$ 1G	20deg. C, 64%RH	120Vac, 60Hz	Eason Tseng
RE<1G	23deg. C, 67%RH	120Vac, 60Hz	Frank Chuang
PLC	23deg. C, 74%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 $\geq 98\%$, duty factor is not required.

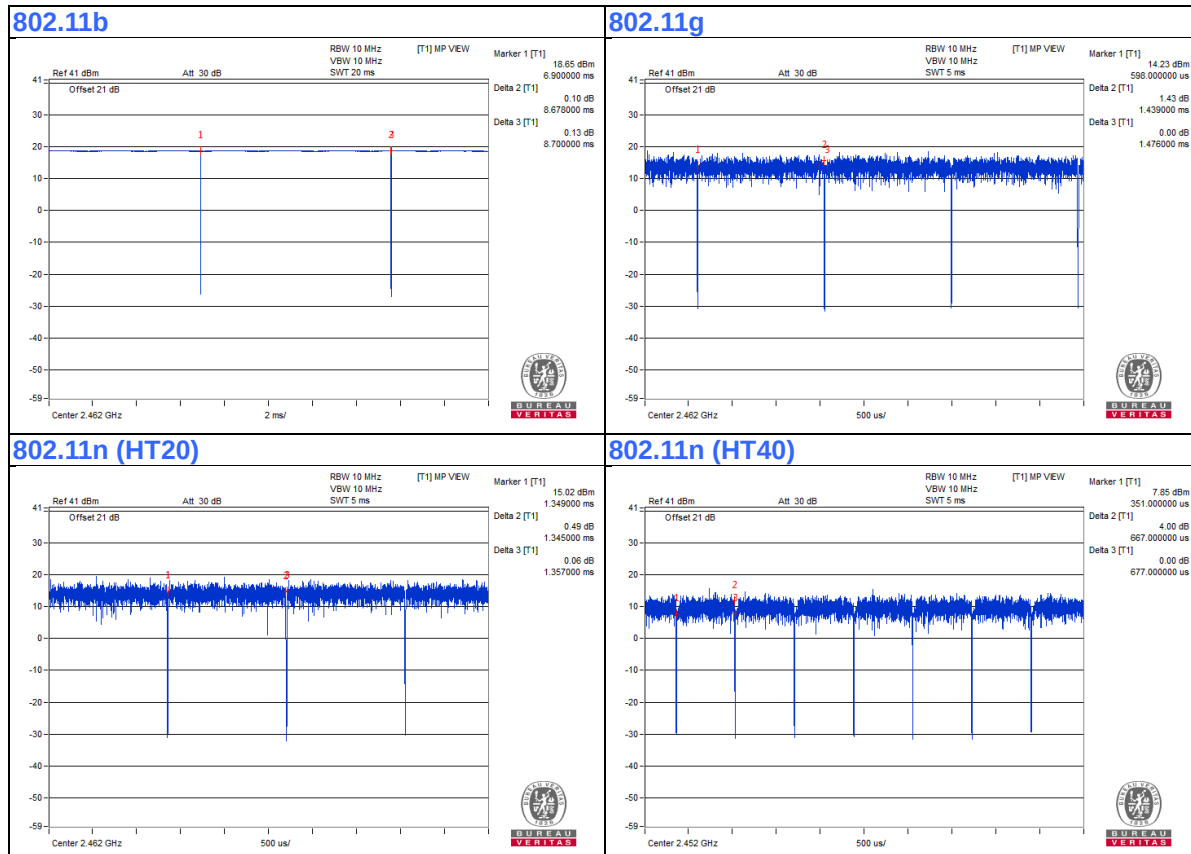
If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11b: Duty cycle = $8.678/8.7 = 0.997$

802.11g: Duty cycle = $1.439/1.476 = 0.975$, Duty factor = $10 * \log(1/0.975) = 0.11$

802.11n (HT20): Duty cycle = $1.345/1.357 = 0.991$

802.11n (HT40): Duty cycle = $0.667/0.677 = 0.985$



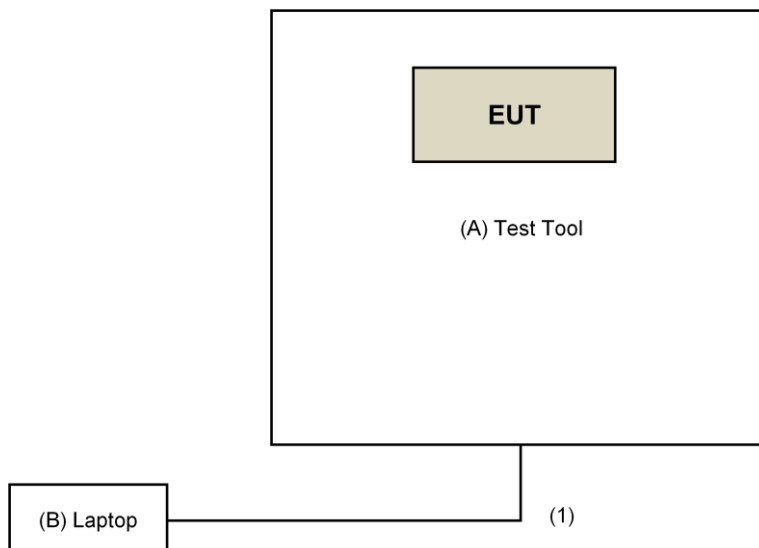
3.4 Description of Support Units

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.	Test Tool	NA	NA	NA	NA	Supplied by client
B.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB Cable	1	2	Yes	0	Supplied by client

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 DTS Meas Guidance 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	Mar. 21, 2018	Mar. 20, 2019
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
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Spectrum Analyzer R&S	FSV40	100964	July 1, 2017	June 30, 2018
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019

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: May 11 to 21, 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. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

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

For Radiated emission above 30MHz

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

Note:

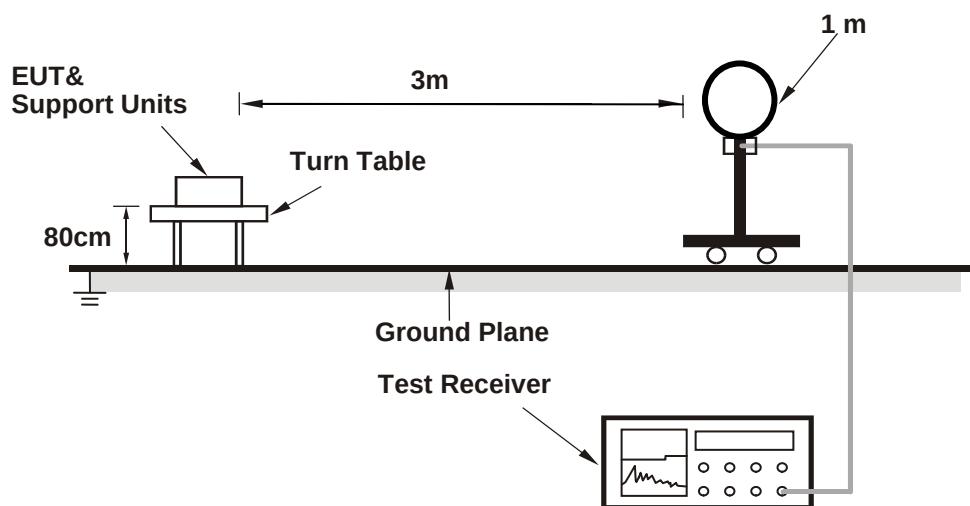
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (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

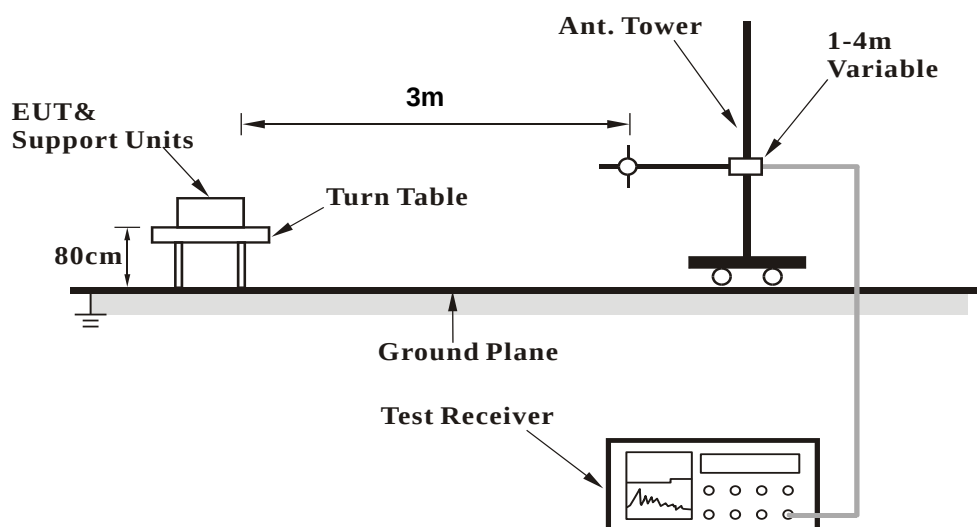
No deviation.

4.1.5 Test Setup

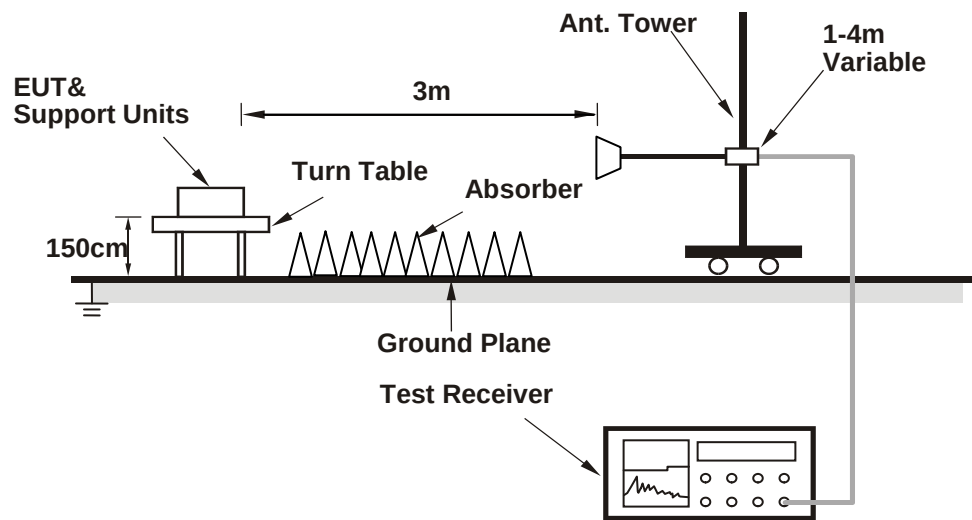
For Radiated emission below 30MHz



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

- Placed the EUT on the testing table.
- Controlling software (MT7662 QA V1.0.3.14) 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)
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	68.9 PK	74.0	-5.1	1.01 H	264	71.1	-2.2
2	2390.00	53.6 AV	54.0	-0.4	1.01 H	264	55.8	-2.2
3	*2412.00	111.8 PK			1.01 H	264	114.2	-2.4
4	*2412.00	109.5 AV			1.01 H	264	111.9	-2.4
5	4824.00	42.2 PK	74.0	-31.8	1.13 H	116	40.4	1.8
6	4824.00	36.9 AV	54.0	-17.1	1.13 H	116	35.1	1.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.7 PK	74.0	-14.3	3.66 V	23	61.9	-2.2
2	2390.00	47.5 AV	54.0	-6.5	3.66 V	23	49.7	-2.2
3	*2412.00	101.4 PK			3.66 V	23	103.8	-2.4
4	*2412.00	99.7 AV			3.66 V	23	102.1	-2.4
5	4824.00	39.3 PK	74.0	-34.7	1.26 V	240	37.5	1.8
6	4824.00	30.5 AV	54.0	-23.5	1.26 V	240	28.7	1.8

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.8 PK	74.0	-14.2	1.03 H	263	62.0	-2.2
2	2390.00	51.8 AV	54.0	-2.2	1.03 H	263	54.0	-2.2
3	*2437.00	116.1 PK			1.03 H	263	118.7	-2.6
4	*2437.00	113.7 AV			1.03 H	263	116.3	-2.6
5	2483.50	58.6 PK	74.0	-15.4	1.03 H	263	61.0	-2.4
6	2483.50	51.1 AV	54.0	-2.9	1.03 H	263	53.5	-2.4
7	2488.00	60.8 PK	74.0	-13.2	1.03 H	263	63.2	-2.4
8	2488.00	53.9 AV	54.0	-0.1	1.03 H	263	56.3	-2.4
9	4874.00	43.8 PK	74.0	-30.2	1.42 H	283	41.8	2.0
10	4874.00	42.4 AV	54.0	-11.6	1.42 H	283	40.4	2.0
11	7311.00	45.8 PK	74.0	-28.2	2.36 H	129	37.4	8.4
12	7311.00	34.5 AV	54.0	-19.5	2.36 H	129	26.1	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.4 PK	74.0	-15.6	3.47 V	19	60.6	-2.2
2	2390.00	47.3 AV	54.0	-6.7	3.47 V	19	49.5	-2.2
3	*2437.00	106.7 PK			3.47 V	19	109.3	-2.6
4	*2437.00	103.2 AV			3.47 V	19	105.8	-2.6
5	2483.50	57.5 PK	74.0	-16.5	3.47 V	19	59.9	-2.4
6	2483.50	47.1 AV	54.0	-6.9	3.47 V	19	49.5	-2.4
7	2488.00	56.7 PK	74.0	-17.3	3.47 V	19	59.1	-2.4
8	2488.00	49.5 AV	54.0	-4.5	3.47 V	19	51.9	-2.4
9	4874.00	42.5 PK	74.0	-31.5	1.25 V	253	40.5	2.0
10	4874.00	37.8 AV	54.0	-16.2	1.25 V	253	35.8	2.0
11	7311.00	44.1 PK	74.0	-29.9	1.59 V	358	35.7	8.4
12	7311.00	32.2 AV	54.0	-21.8	1.59 V	358	23.8	8.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	110.9 PK			1.02 H	254	113.5	-2.6
2	*2462.00	107.6 AV			1.02 H	254	110.2	-2.6
3	2483.50	68.6 PK	74.0	-5.4	1.02 H	254	71.0	-2.4
4	2483.50	53.7 AV	54.0	-0.3	1.02 H	254	56.1	-2.4
5	4924.00	41.8 PK	74.0	-32.2	1.07 H	112	39.8	2.0
6	4924.00	36.5 AV	54.0	-17.5	1.07 H	112	34.5	2.0
7	7386.00	44.0 PK	74.0	-30.0	2.15 H	265	35.4	8.6
8	7386.00	31.9 AV	54.0	-22.1	2.15 H	265	23.3	8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.3 PK			3.54 V	11	102.9	-2.6
2	*2462.00	97.8 AV			3.54 V	11	100.4	-2.6
3	2483.50	60.2 PK	74.0	-13.8	3.54 V	11	62.6	-2.4
4	2483.50	48.4 AV	54.0	-5.6	3.54 V	11	50.8	-2.4
5	4924.00	38.5 PK	74.0	-35.5	2.28 V	34	36.5	2.0
6	4924.00	30.3 AV	54.0	-23.7	2.28 V	34	28.3	2.0
7	7386.00	43.1 PK	74.0	-30.9	1.53 V	329	34.5	8.6
8	7386.00	31.6 AV	54.0	-22.4	1.53 V	329	23.0	8.6

REMARKS:

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

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
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	72.7 PK	74.0	-1.3	1.23 H	263	74.9	-2.2
2	2390.00	53.9 AV	54.0	-0.1	1.23 H	263	56.1	-2.2
3	*2412.00	111.5 PK			1.23 H	263	113.9	-2.4
4	*2412.00	101.4 AV			1.23 H	263	103.8	-2.4
5	4824.00	42.8 PK	74.0	-31.2	1.02 H	292	41.0	1.8
6	4824.00	29.5 AV	54.0	-24.5	1.02 H	292	27.7	1.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.4 PK	74.0	-11.6	3.51 V	23	64.6	-2.2
2	2390.00	42.7 AV	54.0	-11.3	3.51 V	23	44.9	-2.2
3	*2412.00	106.7 PK			3.51 V	23	109.1	-2.4
4	*2412.00	96.8 AV			3.51 V	23	99.2	-2.4
5	4824.00	41.4 PK	74.0	-32.6	1.25 V	255	39.6	1.8
6	4824.00	29.1 AV	54.0	-24.9	1.25 V	255	27.3	1.8

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.5 PK	74.0	-2.5	1.00 H	262	73.7	-2.2
2	2390.00	50.6 AV	54.0	-3.4	1.00 H	262	52.8	-2.2
3	*2437.00	119.1 PK			1.00 H	262	121.7	-2.6
4	*2437.00	108.7 AV			1.00 H	262	111.3	-2.6
5	2483.50	73.8 PK	74.0	-0.2	1.00 H	262	76.2	-2.4
6	2483.50	53.5 AV	54.0	-0.5	1.00 H	262	55.9	-2.4
7	4874.00	43.0 PK	74.0	-31.0	1.05 H	289	41.0	2.0
8	4874.00	30.2 AV	54.0	-23.8	1.05 H	289	28.2	2.0
9	7311.00	39.9 PK	74.0	-34.1	1.53 H	106	31.5	8.4
10	7311.00	28.9 AV	54.0	-25.1	1.53 H	106	20.5	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.8 PK	74.0	-6.2	3.51 V	7	70.0	-2.2
2	2390.00	46.4 AV	54.0	-7.6	3.51 V	7	48.6	-2.2
3	*2437.00	108.4 PK			3.51 V	7	111.0	-2.6
4	*2437.00	98.4 AV			3.51 V	7	101.0	-2.6
5	2483.50	69.6 PK	74.0	-4.4	3.51 V	7	72.0	-2.4
6	2483.50	49.8 AV	54.0	-4.2	3.51 V	7	52.2	-2.4
7	4874.00	42.8 PK	74.0	-31.2	1.62 V	280	40.8	2.0
8	4874.00	30.2 AV	54.0	-23.8	1.62 V	280	28.2	2.0
9	7311.00	39.8 PK	74.0	-34.2	1.47 V	315	31.4	8.4
10	7311.00	28.7 AV	54.0	-25.3	1.47 V	315	20.3	8.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	111.4 PK			1.00 H	265	114.0	-2.6
2	*2462.00	101.3 AV			1.00 H	265	103.9	-2.6
3	2483.50	73.5 PK	74.0	-0.5	1.00 H	265	75.9	-2.4
4	2483.50	53.7 AV	54.0	-0.3	1.00 H	265	56.1	-2.4
5	4924.00	41.4 PK	74.0	-32.6	1.02 H	304	39.4	2.0
6	4924.00	28.9 AV	54.0	-25.1	1.02 H	304	26.9	2.0
7	7386.00	38.7 PK	74.0	-35.3	1.57 H	93	30.1	8.6
8	7386.00	28.4 AV	54.0	-25.6	1.57 H	93	19.8	8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.7 PK			3.46 V	25	108.3	-2.6
2	*2462.00	95.4 AV			3.46 V	25	98.0	-2.6
3	2483.50	61.9 PK	74.0	-12.1	3.46 V	25	64.3	-2.4
4	2483.50	41.5 AV	54.0	-12.5	3.46 V	25	43.9	-2.4
5	4924.00	40.4 PK	74.0	-33.6	1.21 V	252	38.4	2.0
6	4924.00	28.8 AV	54.0	-25.2	1.21 V	252	26.8	2.0
7	7386.00	37.6 PK	74.0	-36.4	1.62 V	360	29.0	8.6
8	7386.00	28.1 AV	54.0	-25.9	1.62 V	360	19.5	8.6

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)
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	73.7 PK	74.0	-0.3	1.03 H	280	75.9	-2.2
2	2390.00	52.9 AV	54.0	-1.1	1.03 H	280	55.1	-2.2
3	*2412.00	110.4 PK			1.03 H	280	112.8	-2.4
4	*2412.00	100.1 AV			1.03 H	280	102.5	-2.4
5	4824.00	42.8 PK	74.0	-31.2	1.03 H	307	41.0	1.8
6	4824.00	27.9 AV	54.0	-26.1	1.03 H	307	26.1	1.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.4 PK	74.0	-12.6	3.57 V	9	63.6	-2.2
2	2390.00	41.8 AV	54.0	-12.2	3.57 V	9	44.0	-2.2
3	*2412.00	100.3 PK			3.57 V	9	102.7	-2.4
4	*2412.00	90.4 AV			3.57 V	9	92.8	-2.4
5	4824.00	41.8 PK	74.0	-32.2	1.64 V	293	40.0	1.8
6	4824.00	26.9 AV	54.0	-27.1	1.64 V	293	25.1	1.8

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.9 PK	74.0	-7.1	1.01 H	272	69.1	-2.2
2	2390.00	49.2 AV	54.0	-4.8	1.01 H	272	51.4	-2.2
3	*2437.00	117.0 PK			1.01 H	272	119.6	-2.6
4	*2437.00	106.8 AV			1.01 H	272	109.4	-2.6
5	2483.50	73.9 PK	74.0	-0.1	1.01 H	272	76.3	-2.4
6	2483.50	50.3 AV	54.0	-3.7	1.01 H	272	52.7	-2.4
7	4874.00	43.4 PK	74.0	-30.6	1.00 H	304	41.4	2.0
8	4874.00	30.4 AV	54.0	-23.6	1.00 H	304	28.4	2.0
9	7311.00	40.1 PK	74.0	-33.9	1.56 H	110	31.7	8.4
10	7311.00	29.3 AV	54.0	-24.7	1.56 H	110	20.9	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.2 PK	74.0	-7.8	3.53 V	9	68.4	-2.2
2	2390.00	44.2 AV	54.0	-9.8	3.53 V	9	46.4	-2.2
3	*2437.00	106.4 PK			3.51 V	9	109.0	-2.6
4	*2437.00	96.7 AV			3.51 V	9	99.3	-2.6
5	2483.50	69.1 PK	74.0	-4.9	3.46 V	9	71.5	-2.4
6	2483.50	48.9 AV	54.0	-5.1	3.46 V	9	51.3	-2.4
7	4874.00	42.8 PK	74.0	-31.2	1.60 V	287	40.8	2.0
8	4874.00	30.1 AV	54.0	-23.9	1.60 V	287	28.1	2.0
9	7311.00	39.2 PK	74.0	-34.8	1.42 V	313	30.8	8.4
10	7311.00	28.4 AV	54.0	-25.6	1.42 V	313	20.0	8.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	109.6 PK			1.00 H	273	112.2	-2.6
2	*2462.00	99.4 AV			1.00 H	273	102.0	-2.6
3	2483.50	73.9 PK	74.0	-0.1	1.00 H	273	76.3	-2.4
4	2483.50	52.7 AV	54.0	-1.3	1.00 H	273	55.1	-2.4
5	4924.00	42.4 PK	74.0	-31.6	1.03 H	294	40.4	2.0
6	4924.00	27.5 AV	54.0	-26.5	1.03 H	294	25.5	2.0
7	7386.00	39.8 PK	74.0	-34.2	1.54 H	106	31.2	8.6
8	7386.00	28.9 AV	54.0	-25.1	1.54 H	106	20.3	8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.7 PK			3.54 V	21	102.3	-2.6
2	*2462.00	89.3 AV			3.54 V	21	91.9	-2.6
3	2483.50	60.8 PK	74.0	-13.2	3.54 V	21	63.2	-2.4
4	2483.50	41.4 AV	54.0	-12.6	3.54 V	21	43.8	-2.4
5	4924.00	41.6 PK	74.0	-32.4	1.59 V	291	39.6	2.0
6	4924.00	26.6 AV	54.0	-27.4	1.59 V	291	24.6	2.0
7	7386.00	37.7 PK	74.0	-36.3	1.47 V	325	29.1	8.6
8	7386.00	28.4 AV	54.0	-25.6	1.47 V	325	19.8	8.6

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)
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	73.7 PK	74.0	-0.3	1.01 H	265	75.9	-2.2
2	2390.00	53.9 AV	54.0	-0.1	1.01 H	265	56.1	-2.2
3	*2422.00	106.8 PK			1.01 H	265	109.3	-2.5
4	*2422.00	96.1 AV			1.01 H	265	98.6	-2.5
5	4844.00	41.2 PK	74.0	-32.8	1.03 H	324	39.4	1.8
6	4844.00	29.6 AV	54.0	-24.4	1.03 H	324	27.8	1.8
7	7266.00	40.5 PK	74.0	-33.5	1.49 H	100	32.3	8.2
8	7266.00	28.9 AV	54.0	-25.1	1.49 H	100	20.7	8.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.8 PK	74.0	-8.2	3.51 V	5	68.0	-2.2
2	2390.00	45.7 AV	54.0	-8.3	3.51 V	5	47.9	-2.2
3	*2422.00	96.4 PK			3.51 V	5	98.9	-2.5
4	*2422.00	87.5 AV			3.51 V	5	90.0	-2.5
5	4844.00	40.3 PK	74.0	-33.7	1.64 V	300	38.5	1.8
6	4844.00	29.4 AV	54.0	-24.6	1.64 V	300	27.6	1.8
7	7266.00	39.5 PK	74.0	-34.5	1.38 V	303	31.3	8.2
8	7266.00	28.5 AV	54.0	-25.5	1.38 V	303	20.3	8.2

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
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	72.7 PK	74.0	-1.3	1.00 H	262	74.9	-2.2
2	2390.00	52.8 AV	54.0	-1.2	1.00 H	262	55.0	-2.2
3	*2437.00	109.2 PK			1.00 H	262	111.8	-2.6
4	*2437.00	98.5 AV			1.00 H	262	101.1	-2.6
5	2483.50	73.8 PK	74.0	-0.2	1.00 H	262	76.2	-2.4
6	2483.50	53.9 AV	54.0	-0.1	1.00 H	262	56.3	-2.4
7	4874.00	42.5 PK	74.0	-31.5	1.04 H	323	40.5	2.0
8	4874.00	29.8 AV	54.0	-24.2	1.04 H	323	27.8	2.0
9	7311.00	42.1 PK	74.0	-31.9	1.45 H	115	33.7	8.4
10	7311.00	29.4 AV	54.0	-24.6	1.45 H	115	21.0	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.9 PK	74.0	-7.1	3.53 V	13	69.1	-2.2
2	2390.00	46.8 AV	54.0	-7.2	3.53 V	13	49.0	-2.2
3	*2437.00	97.6 PK			3.53 V	13	100.2	-2.6
4	*2437.00	88.7 AV			3.53 V	13	91.3	-2.6
5	2483.50	67.5 PK	74.0	-6.5	3.53 V	13	69.9	-2.4
6	2483.50	47.4 AV	54.0	-6.6	3.53 V	13	49.8	-2.4
7	4874.00	41.4 PK	74.0	-32.6	1.56 V	277	39.4	2.0
8	4874.00	29.5 AV	54.0	-24.5	1.56 V	277	27.5	2.0
9	7311.00	40.8 PK	74.0	-33.2	1.46 V	300	32.4	8.4
10	7311.00	28.7 AV	54.0	-25.3	1.46 V	300	20.3	8.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	105.8 PK			1.00 H	266	108.4	-2.6
2	*2452.00	95.6 AV			1.00 H	266	98.2	-2.6
3	2483.50	73.4 PK	74.0	-0.6	1.00 H	266	75.8	-2.4
4	2483.50	53.9 AV	54.0	-0.1	1.00 H	266	56.3	-2.4
5	4904.00	40.4 PK	74.0	-33.6	1.10 H	319	38.4	2.0
6	4904.00	29.2 AV	54.0	-24.8	1.10 H	319	27.2	2.0
7	7356.00	39.8 PK	74.0	-34.2	1.49 H	107	31.2	8.6
8	7356.00	28.7 AV	54.0	-25.3	1.49 H	107	20.1	8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	95.5 PK			3.51 V	5	98.1	-2.6
2	*2452.00	86.9 AV			3.51 V	5	89.5	-2.6
3	2483.50	65.1 PK	74.0	-8.9	3.51 V	5	67.5	-2.4
4	2483.50	45.3 AV	54.0	-8.7	3.51 V	5	47.7	-2.4
5	4904.00	39.4 PK	74.0	-34.6	1.66 V	288	37.4	2.0
6	4904.00	28.7 AV	54.0	-25.3	1.66 V	288	26.7	2.0
7	7356.00	39.1 PK	74.0	-34.9	1.38 V	326	30.5	8.6
8	7356.00	28.5 AV	54.0	-25.5	1.38 V	326	19.9	8.6

REMARKS:

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

Below 1GHz Data:

802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	51.99	23.2 QP	40.0	-16.8	2.00 H	360	31.1	-7.9
2	200.02	26.1 QP	43.5	-17.4	1.00 H	243	37.2	-11.1
3	250.02	24.6 QP	46.0	-21.4	1.50 H	288	33.5	-8.9
4	438.13	27.1 QP	46.0	-18.9	1.00 H	46	29.9	-2.8
5	600.00	34.7 QP	46.0	-11.3	1.00 H	277	33.9	0.8
6	832.38	37.1 QP	46.0	-8.9	2.00 H	195	32.6	4.5
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	52.16	23.7 QP	40.0	-16.3	2.00 V	296	31.6	-7.9
2	283.92	20.4 QP	46.0	-25.6	1.00 V	8	27.9	-7.5
3	442.76	25.4 QP	46.0	-20.6	2.00 V	333	28.1	-2.7
4	600.00	36.0 QP	46.0	-10.0	2.00 V	49	35.2	0.8
5	767.44	30.8 QP	46.0	-15.2	1.00 V	172	27.4	3.4
6	871.43	33.0 QP	46.0	-13.0	2.00 V	138	28.1	4.9

REMARKS:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	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: May 19, 2018

4.2.3 Test Procedures

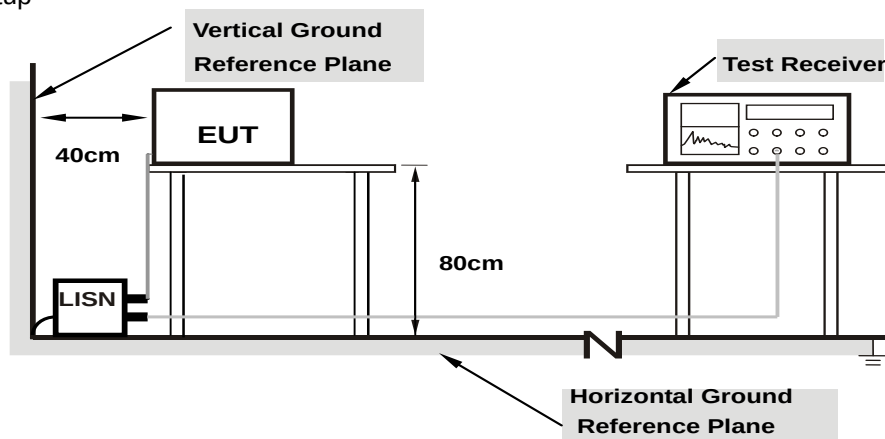
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

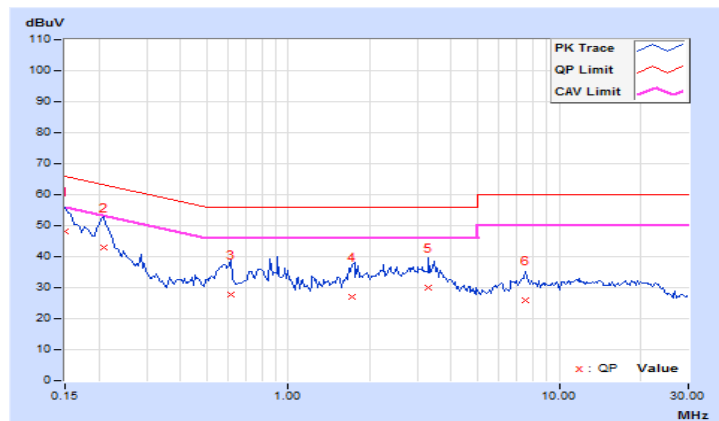
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.03	38.20	18.10	48.23	28.13	66.00	56.00	-17.77	-27.87
2	0.20859	10.06	33.08	28.72	43.14	38.78	63.26	53.26	-20.12	-14.48
3	0.61094	10.12	17.52	8.26	27.64	18.38	56.00	46.00	-28.36	-27.62
4	1.71875	10.18	16.76	11.37	26.94	21.55	56.00	46.00	-29.06	-24.45
5	3.29297	10.24	19.70	14.31	29.94	24.55	56.00	46.00	-26.06	-21.45
6	7.47656	10.43	15.57	10.74	26.00	21.17	60.00	50.00	-34.00	-28.83

Remarks:

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

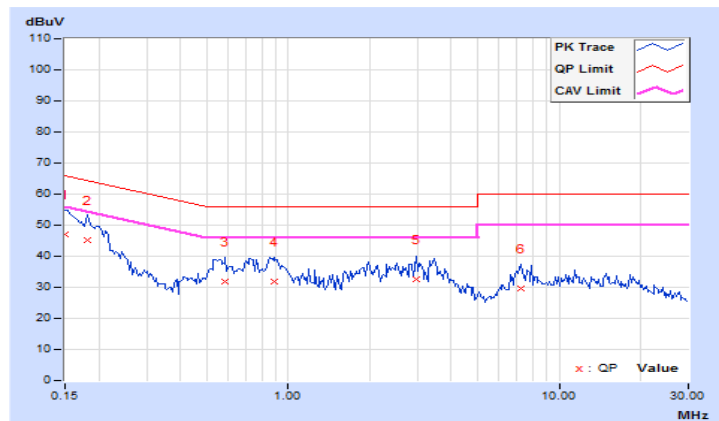


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.94	37.26	20.99	47.20	30.93	66.00	56.00	-18.80	-25.07
2	0.18125	9.95	35.09	13.61	45.04	23.56	64.43	54.43	-19.39	-30.87
3	0.58750	10.01	21.85	12.31	31.86	22.32	56.00	46.00	-24.14	-23.68
4	0.88438	10.02	21.99	10.08	32.01	20.10	56.00	46.00	-23.99	-25.90
5	2.97266	10.10	22.60	14.92	32.70	25.02	56.00	46.00	-23.30	-20.98
6	7.19141	10.27	19.40	10.24	29.67	20.51	60.00	50.00	-30.33	-29.49

Remarks:

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

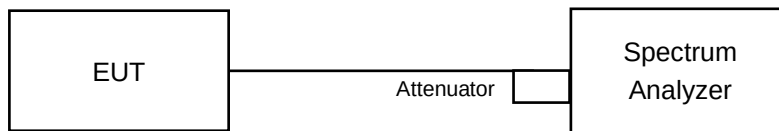


4.3 6dB Bandwidth Measurement

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
		Chain 0	Chain 1		
1	2412	10.11	10.11	0.5	Pass
6	2437	10.13	10.15	0.5	Pass
11	2462	10.06	10.07	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.33	16.29	0.5	Pass
6	2437	16.42	16.40	0.5	Pass
11	2462	16.33	16.35	0.5	Pass

802.11n (HT20)

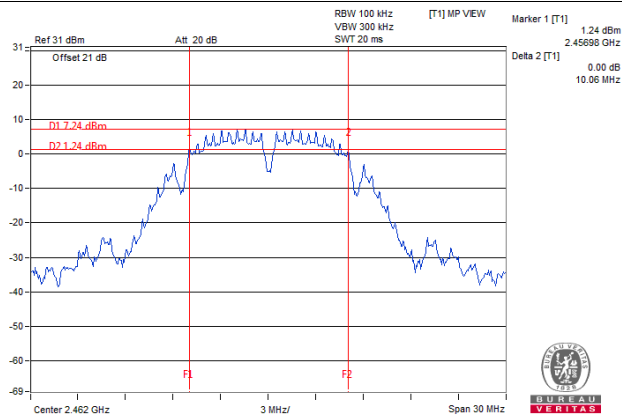
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.97	17.08	0.5	Pass
6	2437	17.59	17.61	0.5	Pass
11	2462	16.71	17.00	0.5	Pass

802.11n (HT40)

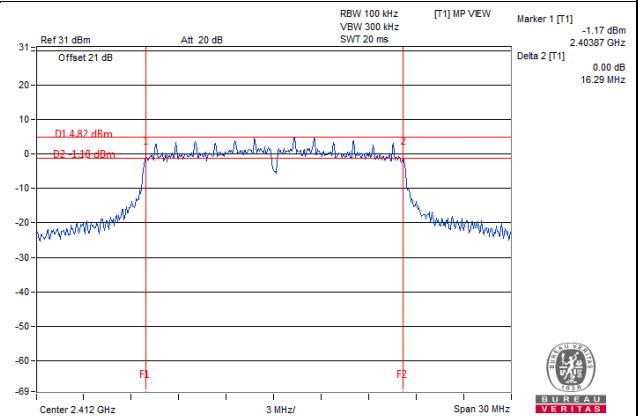
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.44	35.51	0.5	Pass
6	2437	35.33	35.51	0.5	Pass
9	2452	35.51	35.54	0.5	Pass

Spectrum Plot of Worst Value

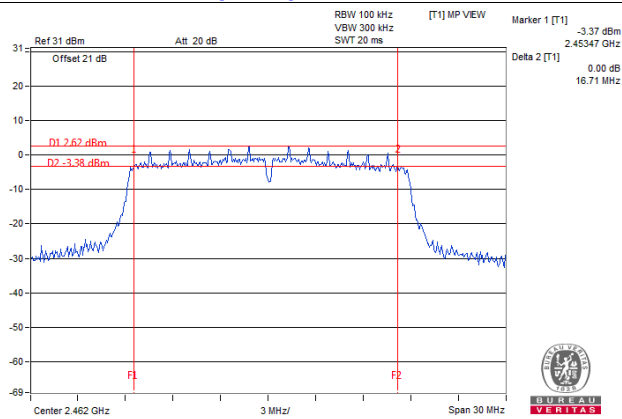
802.11b / Chain 0 : CH11



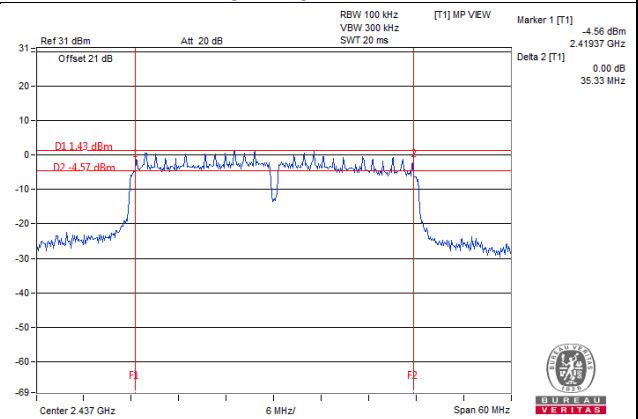
802.11g / Chain 1 : CH1



802.11n (HT20) / Chain 0 : CH11



802.11n (HT40) / Chain 0 : CH6



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

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

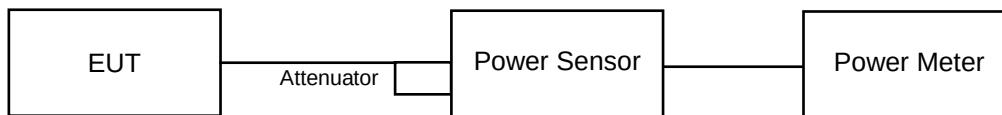
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

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

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak 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.

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

FOR PEAK POWER

802.11b

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.92	20.81	218.679	23.40	29.53	Pass
6	2437	22.18	22.56	345.498	25.38	29.53	Pass
11	2462	19.31	20.12	188.112	22.74	29.53	Pass

Note: 1. The max gain is 6.47dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to $30 - (6.47 - 6) = 29.53\text{dBm}$.

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.37	21.41	247.25	23.93	29.53	Pass
6	2437	22.51	22.86	371.435	25.70	29.53	Pass
11	2462	19.53	20.23	195.182	22.90	29.53	Pass

Note: 1. The max gain is 6.47dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to $30 - (6.47 - 6) = 29.53\text{dBm}$.

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.95	20.31	206.254	23.14	29.53	Pass
6	2437	22.45	22.64	359.446	25.56	29.53	Pass
11	2462	19.23	20.12	186.555	22.71	29.53	Pass

Note: 1. The max gain is 6.47dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to $30 - (6.47 - 6) = 29.53\text{dBm}$.

802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	18.95	19.96	177.607	22.49	29.53	Pass
6	2437	20.32	20.85	229.266	23.60	29.53	Pass
9	2452	18.21	19.56	156.587	21.95	29.53	Pass

Note: 1. The max gain is 6.47dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to $30 - (6.47 - 6) = 29.53\text{dBm}$.

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	17.85	18.42	130.456	21.15
6	2437	20.78	21.36	256.447	24.09
11	2462	16.85	17.84	109.231	20.38

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.92	15.32	65.087	18.13
6	2437	20.35	20.74	226.97	23.56
11	2462	13.41	14.20	48.231	16.83

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.05	14.32	52.45	17.20
6	2437	19.94	20.36	207.271	23.17
11	2462	13.43	13.65	45.203	16.55

802.11n (HT40)

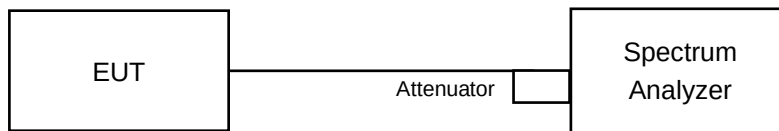
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	12.71	13.12	39.176	15.93
6	2437	15.03	15.56	67.817	18.31
9	2452	11.81	12.45	32.75	15.15

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- 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 = peak.
- 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

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	-6.72	3.01	-3.71	5.83	Pass
	6	2437	-3.23	3.01	-0.22	5.83	Pass
	11	2462	-7.07	3.01	-4.06	5.83	Pass
1	1	2412	-5.98	3.01	-2.97	5.83	Pass
	6	2437	-1.86	3.01	1.15	5.83	Pass
	11	2462	-6.43	3.01	-3.42	5.83	Pass

Note: 1. Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 8.17\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.17-6) = 5.83\text{dBm}$.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-11.06	3.01	-8.05	5.83	Pass
	6	2437	-6.32	3.01	-3.31	5.83	Pass
	11	2462	-13.60	3.01	-10.59	5.83	Pass
1	1	2412	-10.72	3.01	-7.71	5.83	Pass
	6	2437	-2.67	3.01	0.34	5.83	Pass
	11	2462	-11.36	3.01	-8.35	5.83	Pass

Note: 1. Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 8.17\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.17-6) = 5.83\text{dBm}$.

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	-11.78	3.01	-8.77	5.83	Pass
	6	2437	-6.51	3.01	-3.50	5.83	Pass
	11	2462	-12.31	3.01	-9.30	5.83	Pass
1	1	2412	-11.20	3.01	-8.19	5.83	Pass
	6	2437	-5.23	3.01	-2.22	5.83	Pass
	11	2462	-13.02	3.01	-10.01	5.83	Pass

Note: 1. Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 8.17\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.17-6) = 5.83\text{dBm}$.

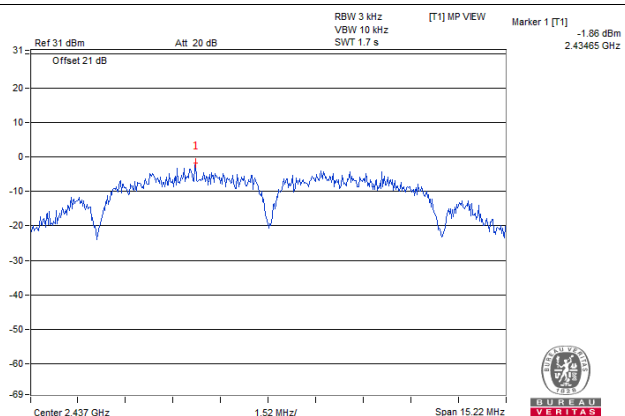
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-16.94	3.01	-13.93	5.83	Pass
	6	2437	-13.91	3.01	-10.90	5.83	Pass
	9	2452	-16.59	3.01	-13.58	5.83	Pass
1	3	2422	-15.35	3.01	-12.34	5.83	Pass
	6	2437	-12.45	3.01	-9.44	5.83	Pass
	9	2452	-16.86	3.01	-13.85	5.83	Pass

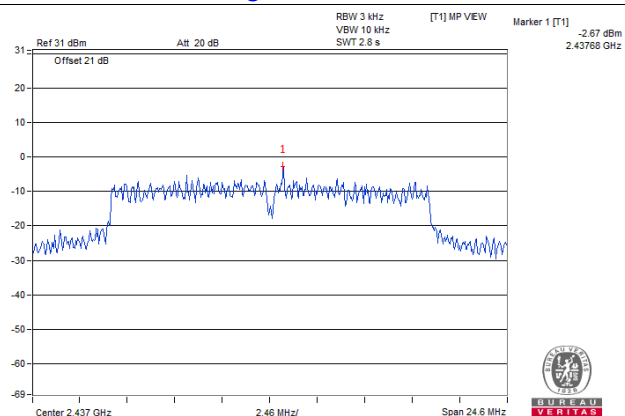
Note: 1. Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 8.17\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(8.17-6) = 5.83\text{dBm}$.

Spectrum Plot of Worst Value

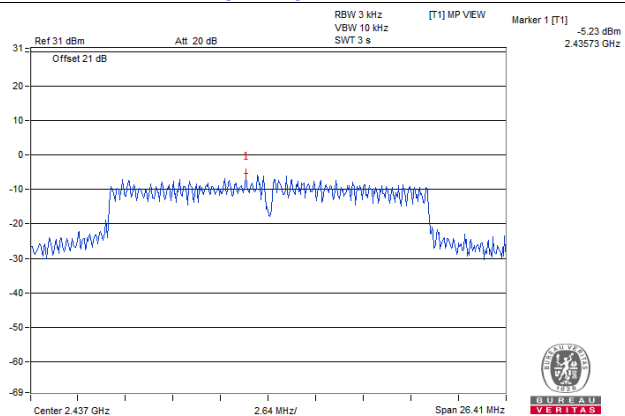
802.11b / Chain 1 : CH6



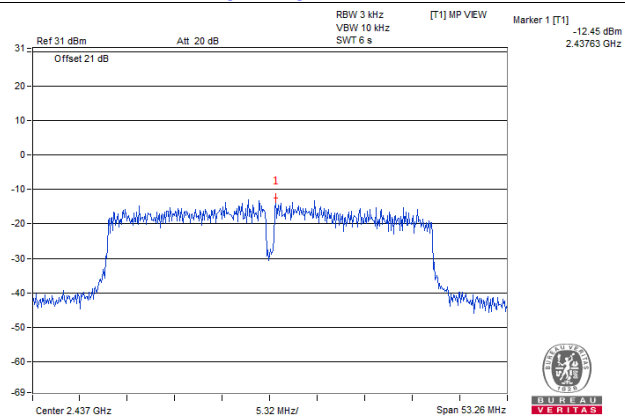
802.11g / Chain 1 : CH6



802.11n (HT20) / Chain 1 : CH6



802.11n (HT40) / Chain 1 : CH6

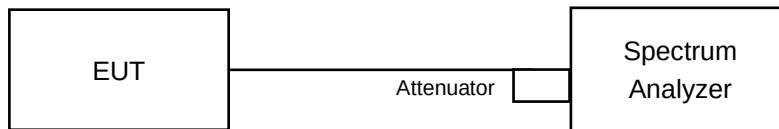


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

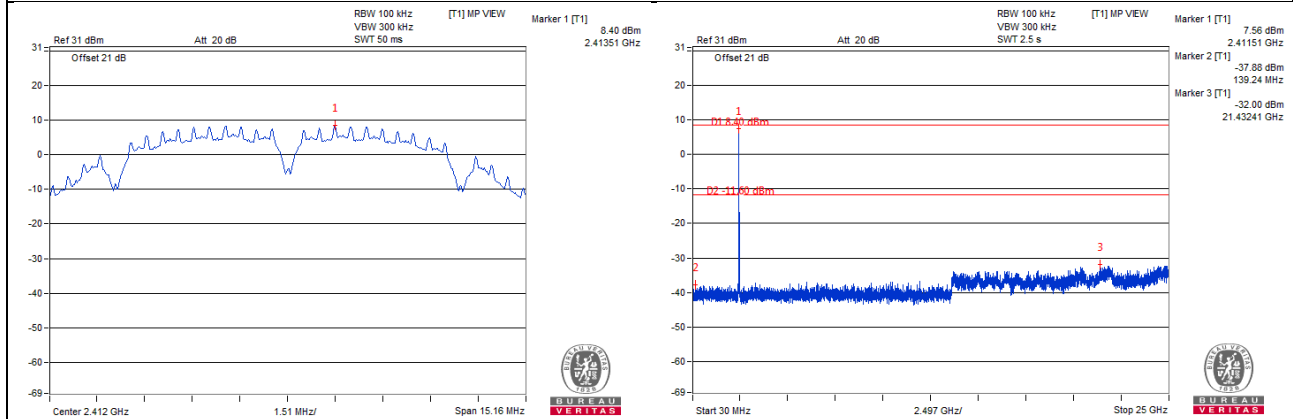
Same as Item 4.3.6

4.6.7 Test Results

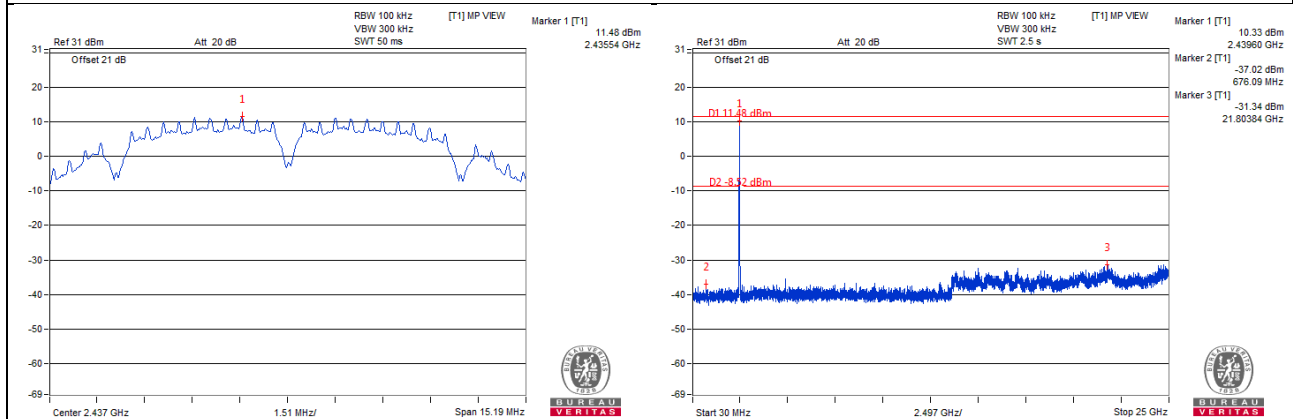
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b - Chain 0

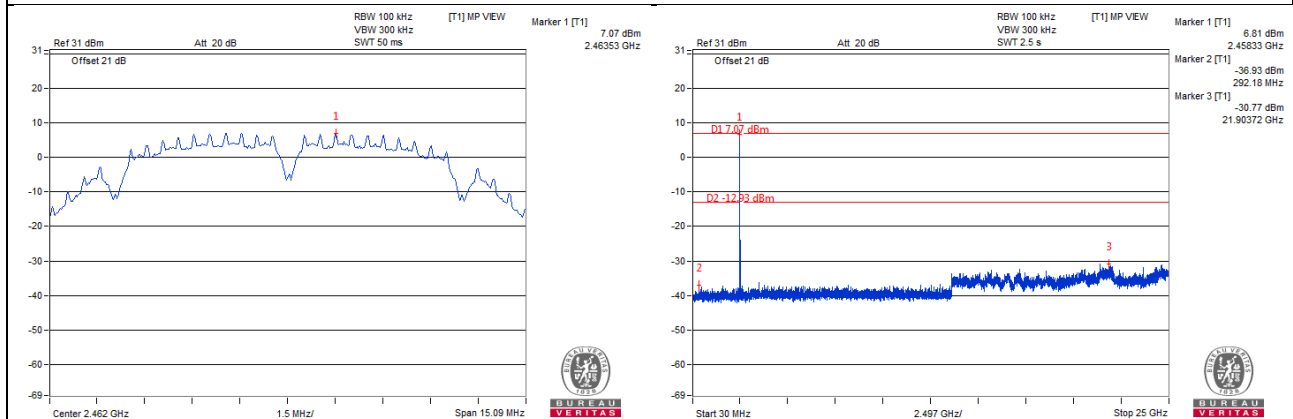
CH 1



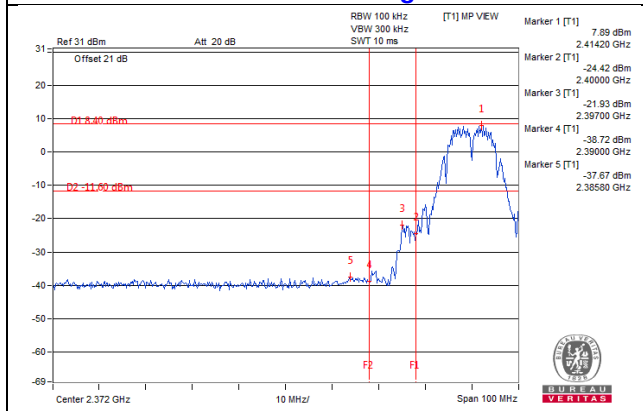
CH 6



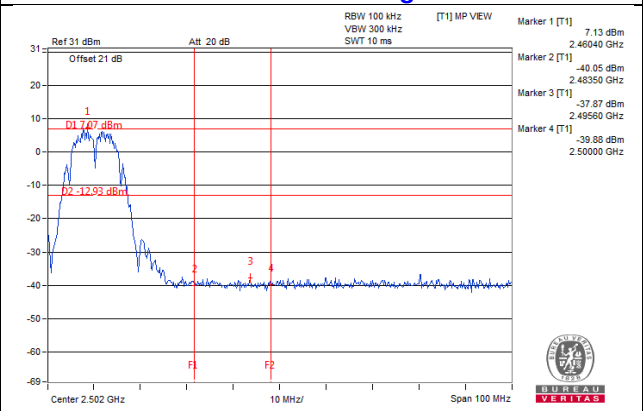
CH 11



CH 1 Band edge

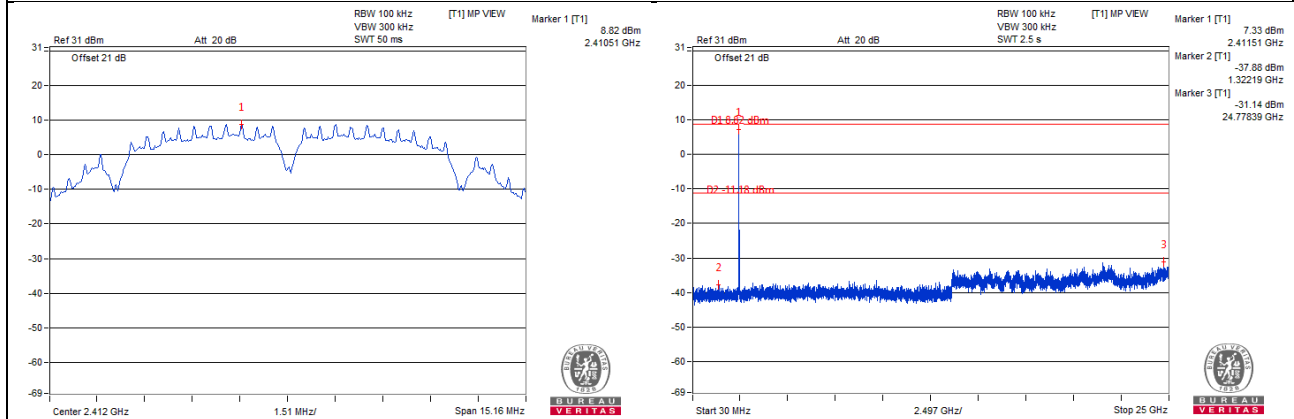


CH 11 Band edge

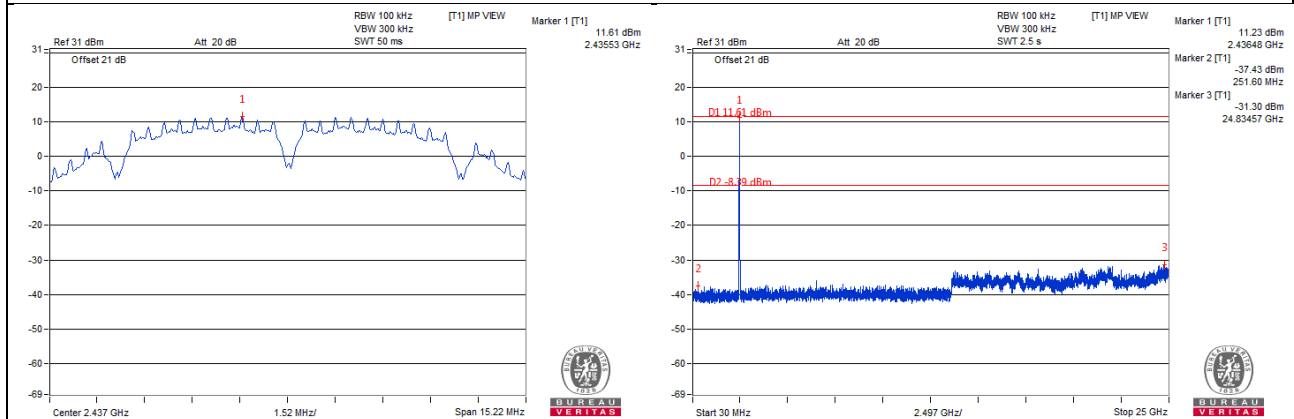


Chain 1

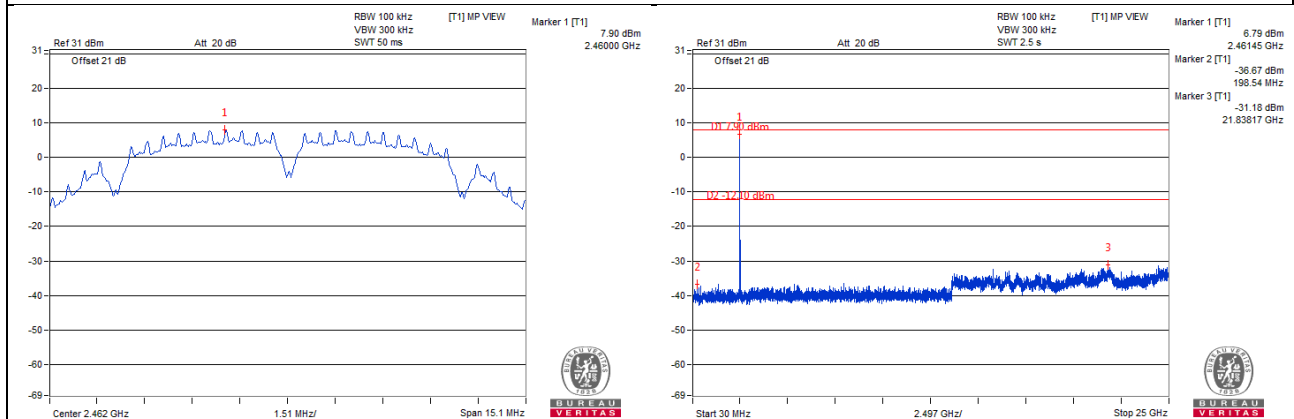
CH 1



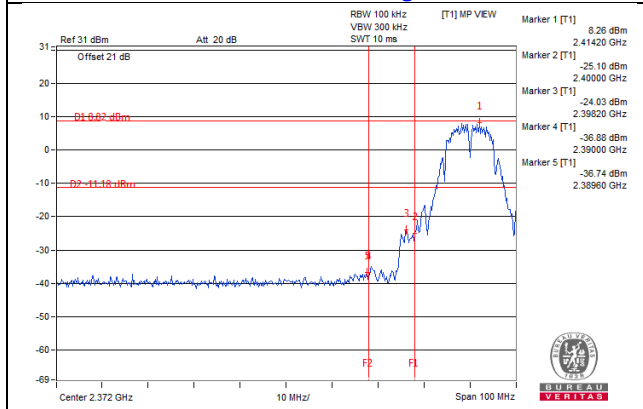
CH 6



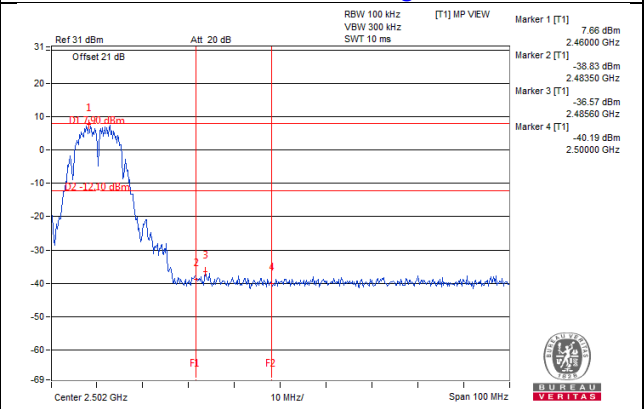
CH 11



CH 1 Band edge

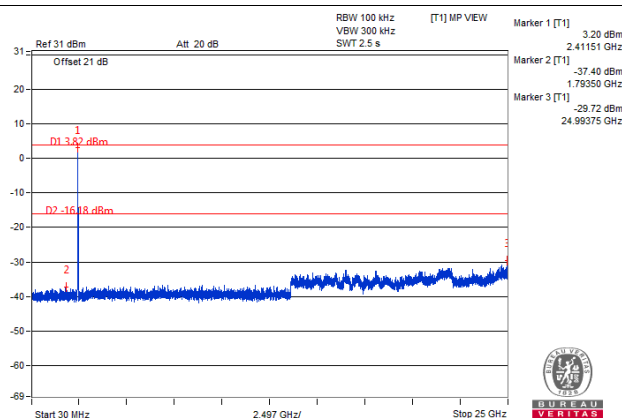
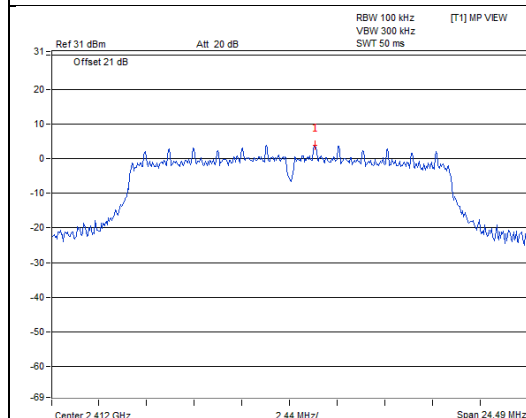


CH 11 Band edge

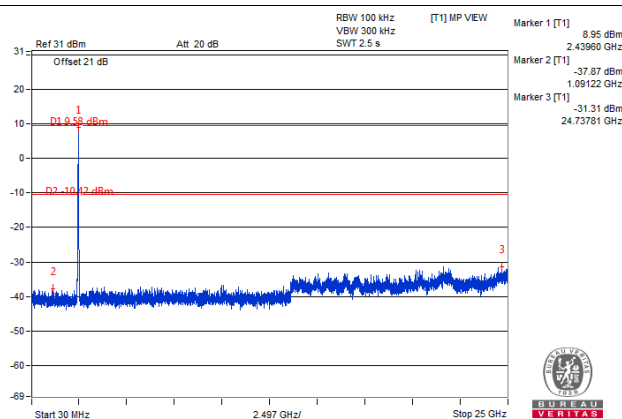
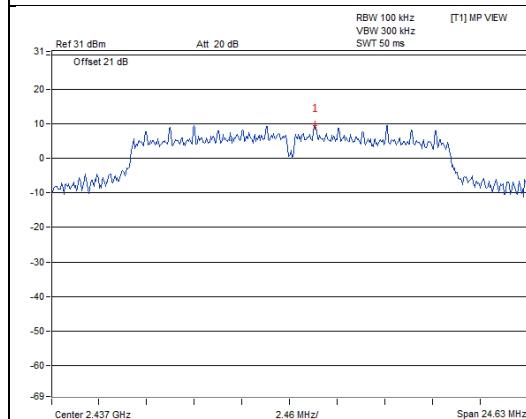


802.11g - Chain 0

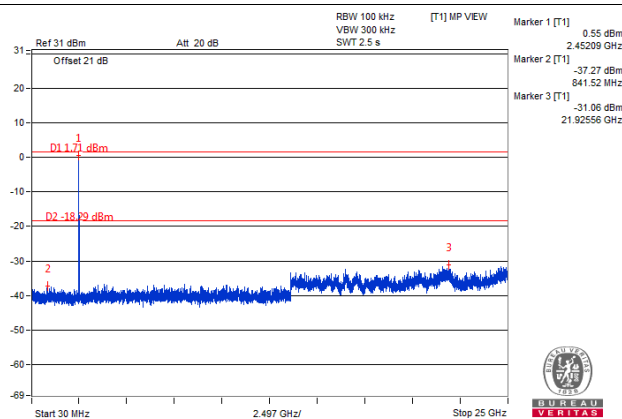
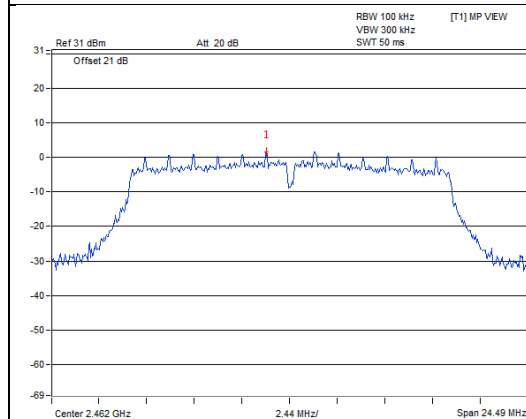
CH 1



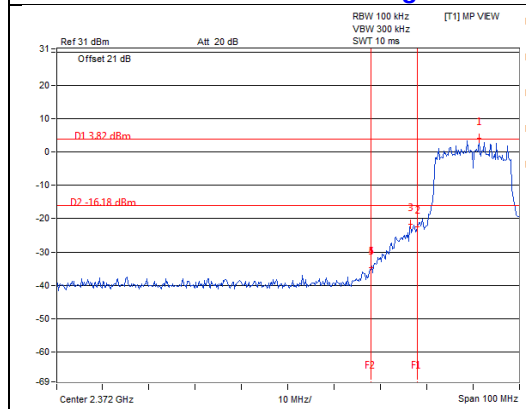
CH 6



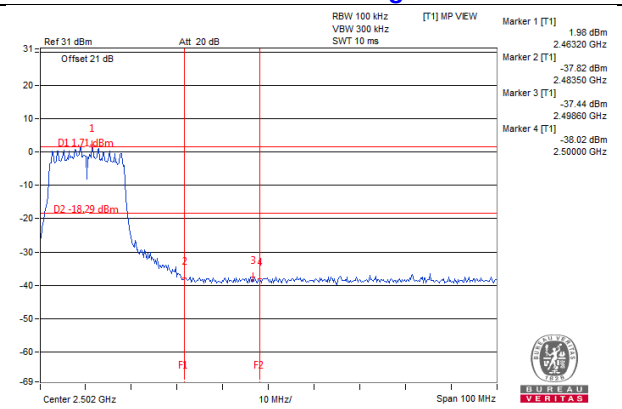
CH 11



CH 1 Band edge

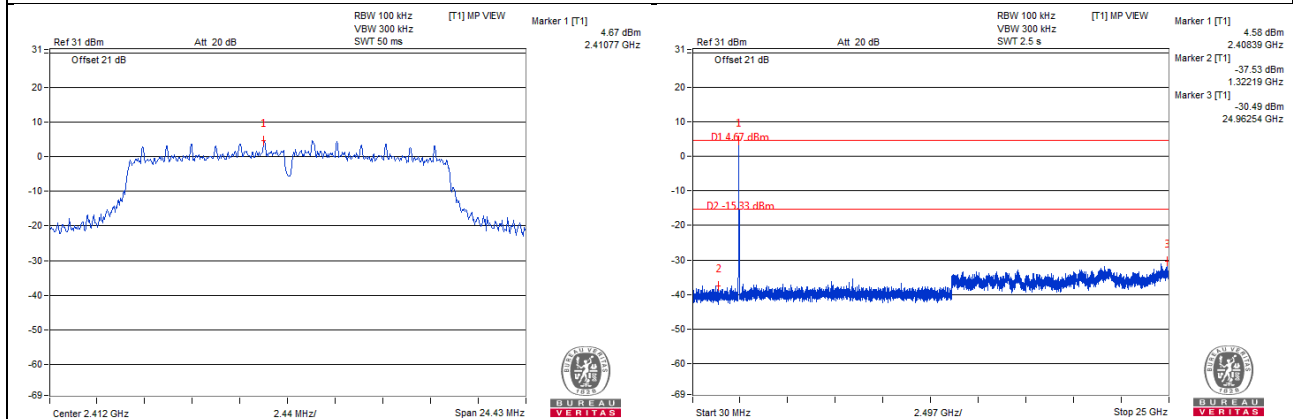


CH 11 Band edge

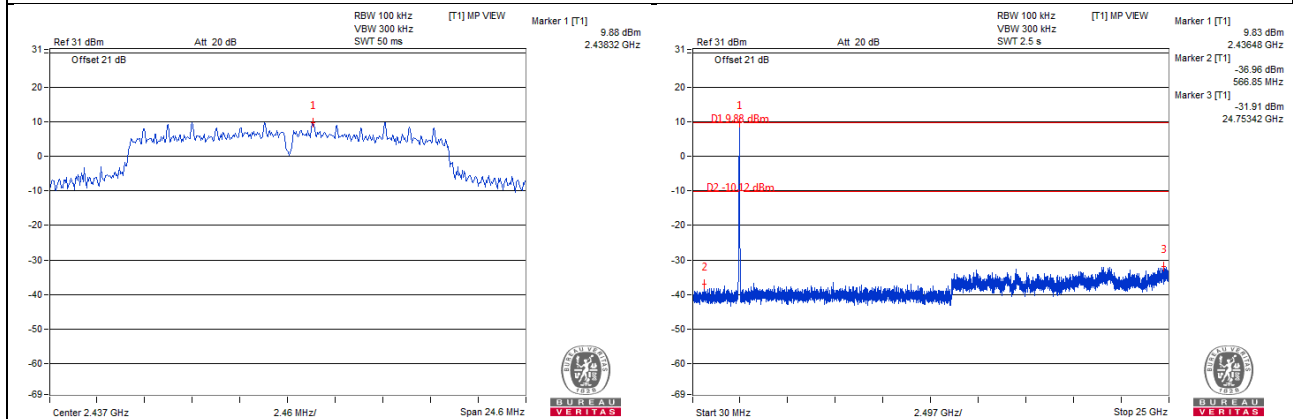


Chain 1

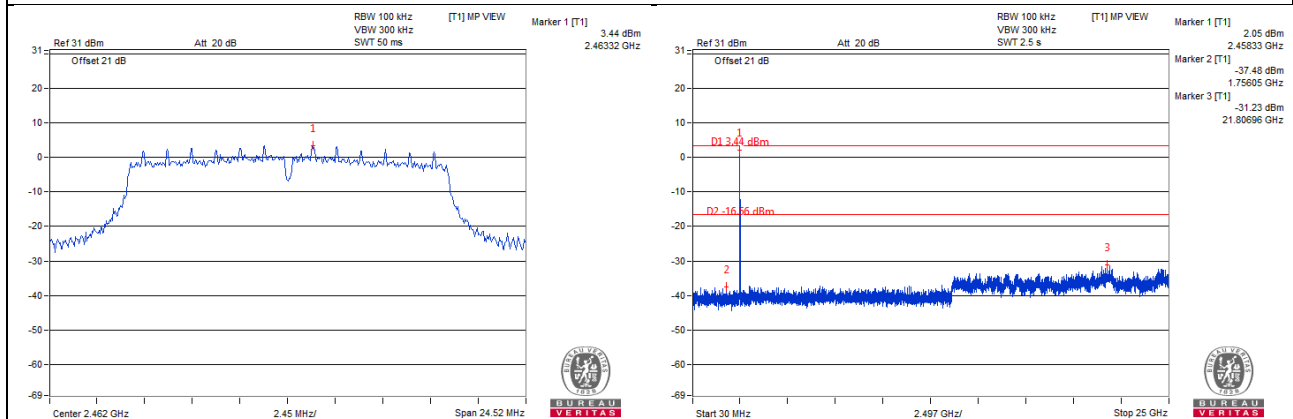
CH 1



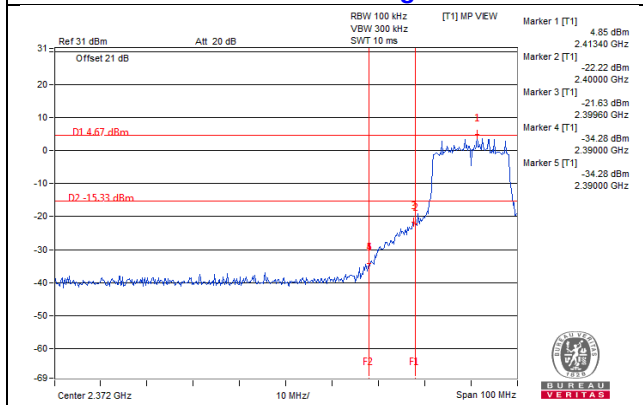
CH 6



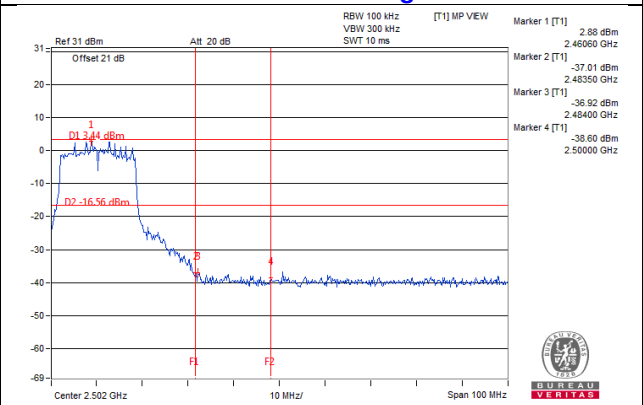
CH 11



CH 1 Band edge

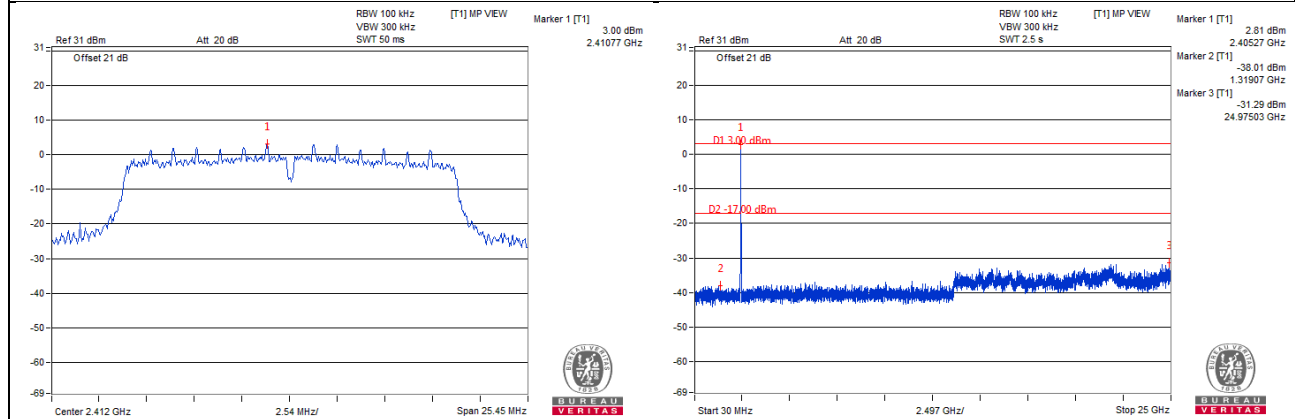


CH 11 Band edge

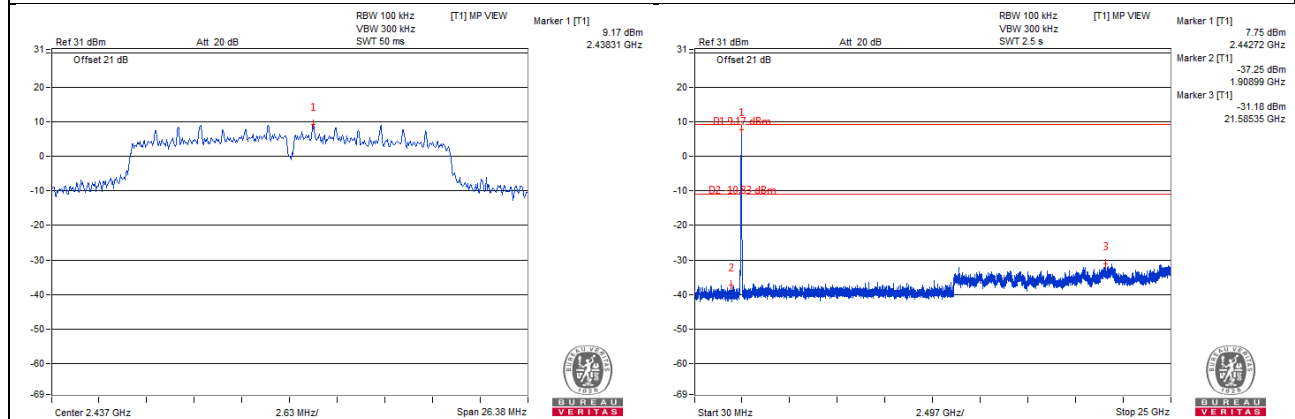


802.11n (HT20) - Chain 0

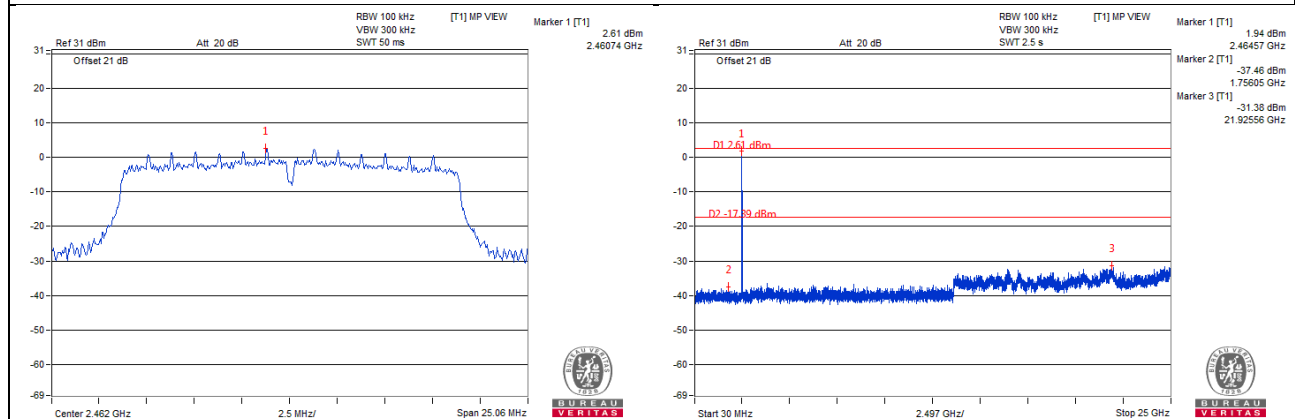
CH 1



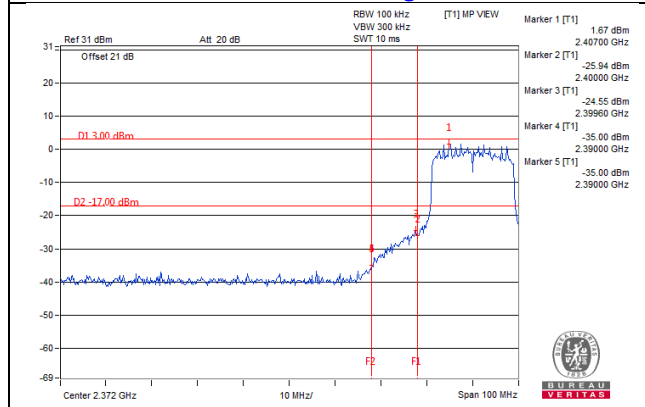
CH 6



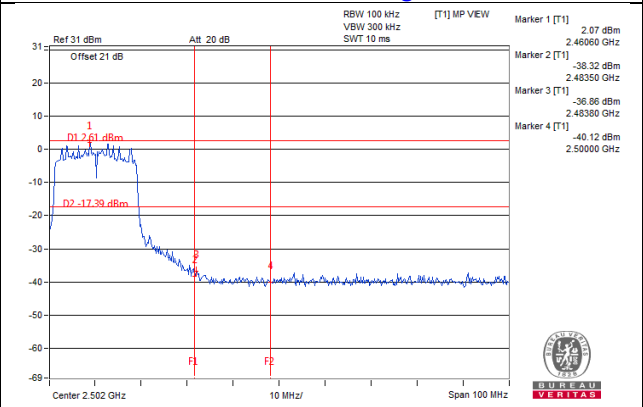
CH 11



CH 1 Band edge

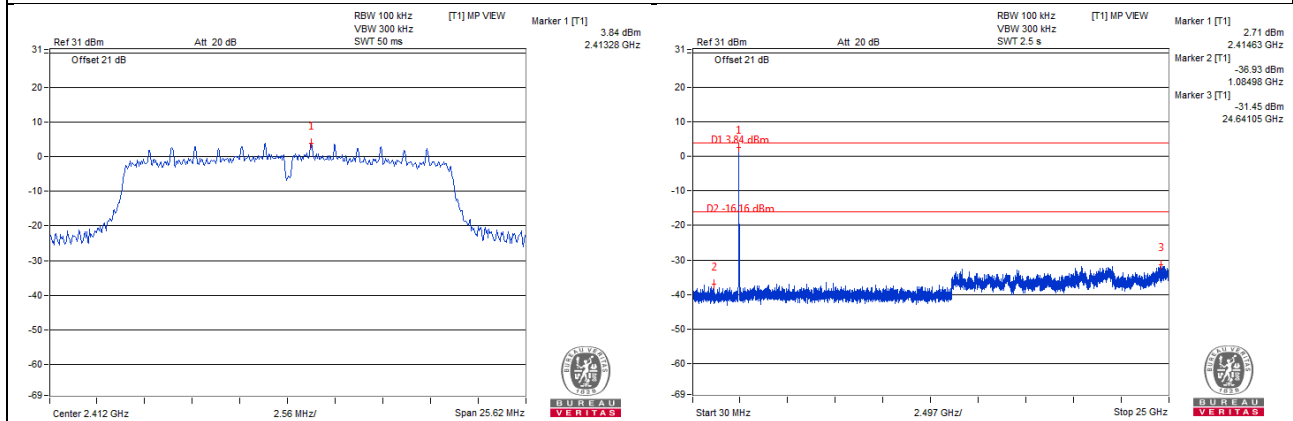


CH 11 Band edge

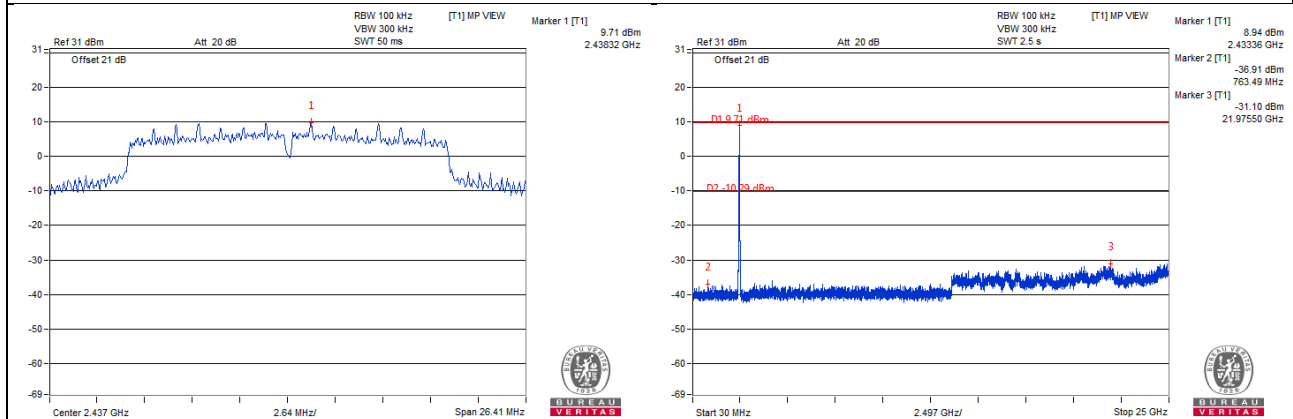


Chain 1

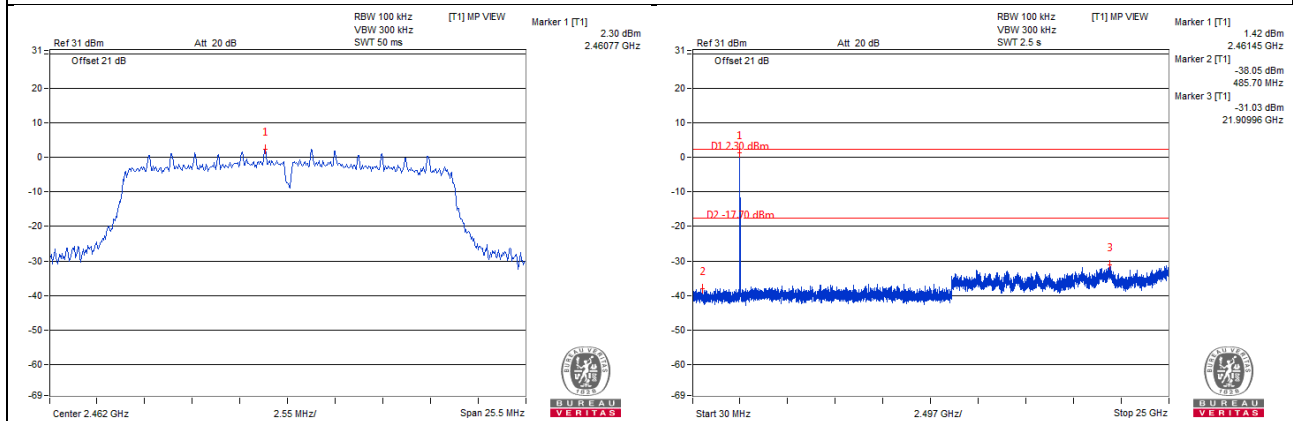
CH 1



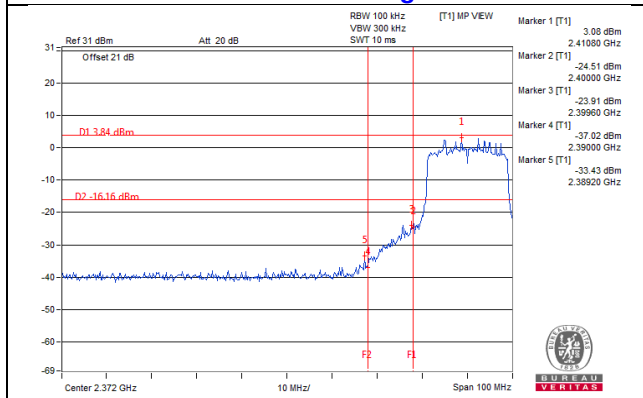
CH 6



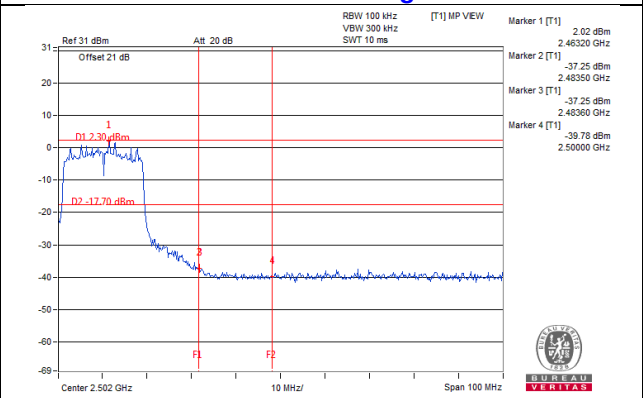
CH 11



CH 1 Band edge

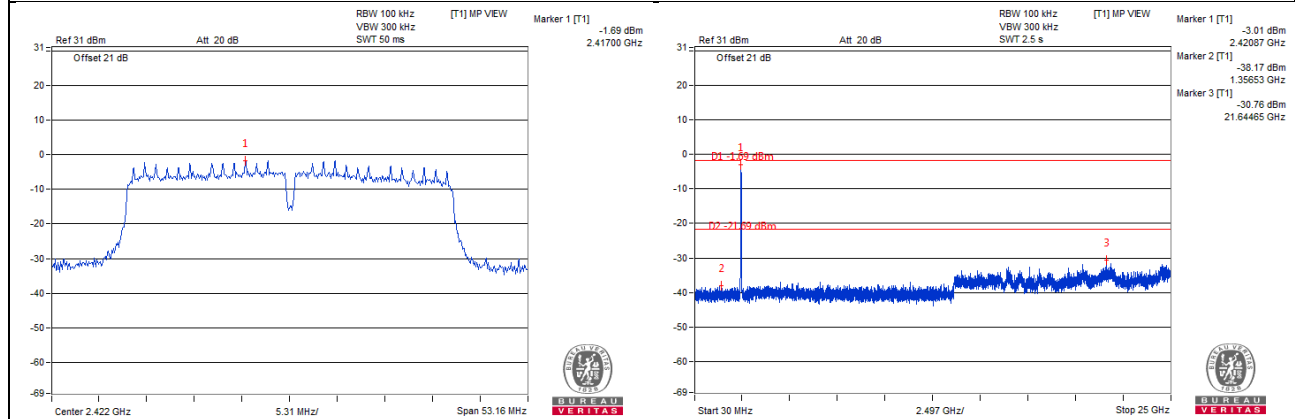


CH 11 Band edge

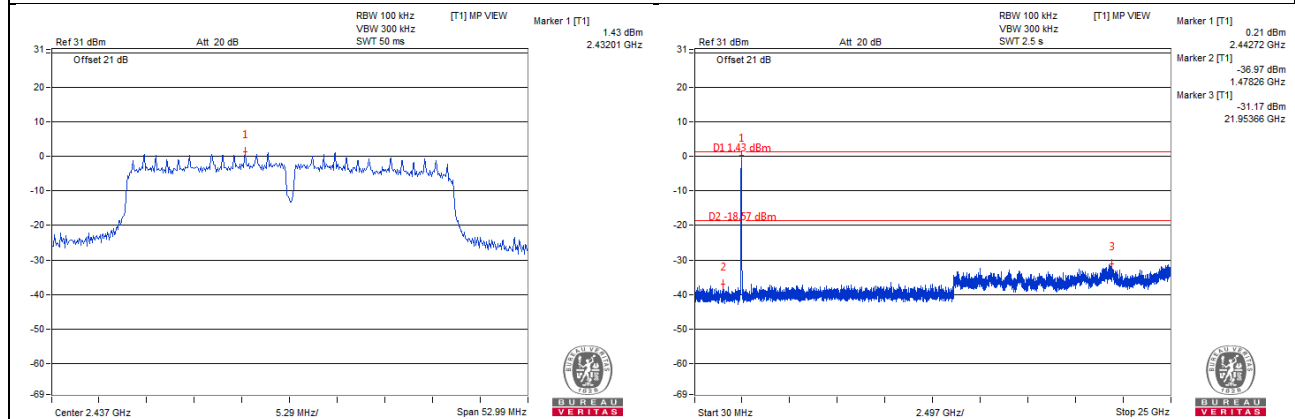


802.11n (HT40) - Chain 0

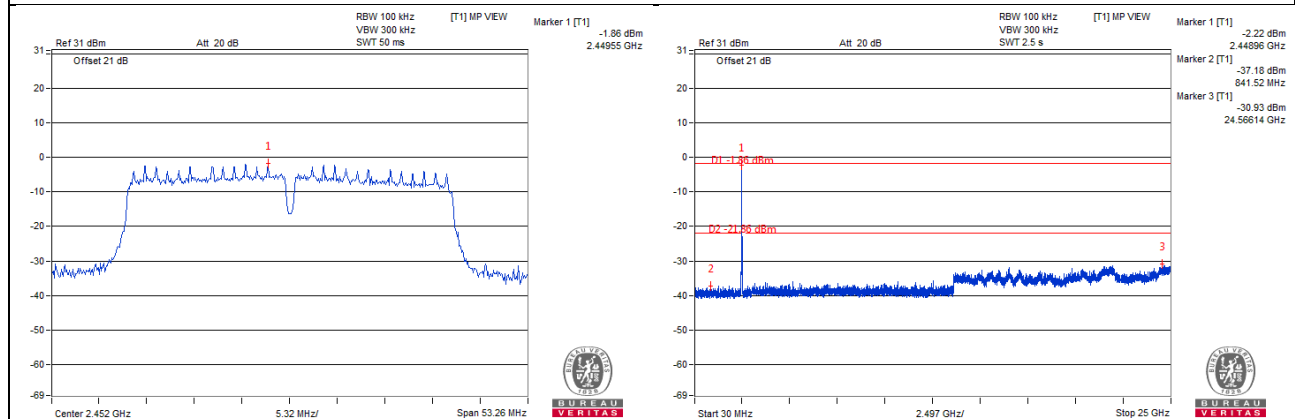
CH 3



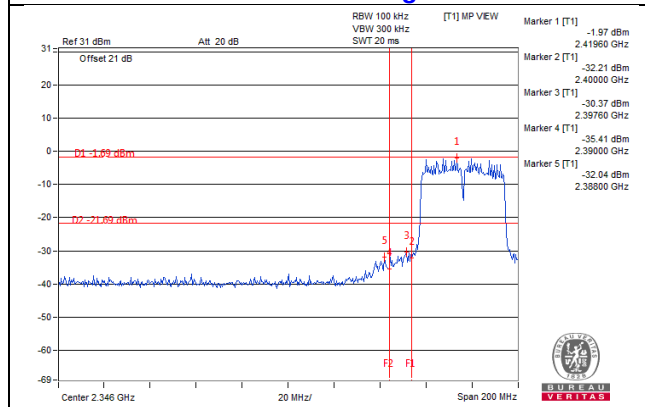
CH 6



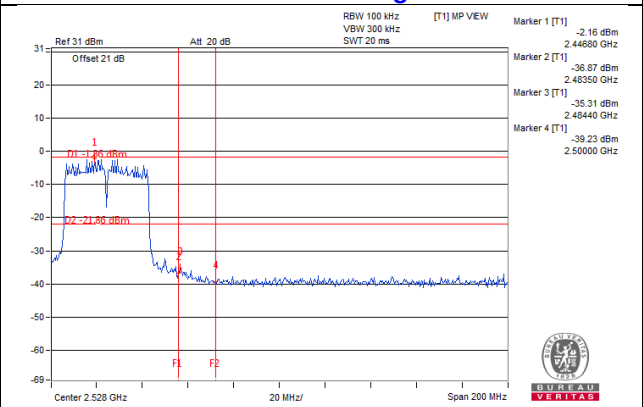
CH 9



CH 3 Band edge

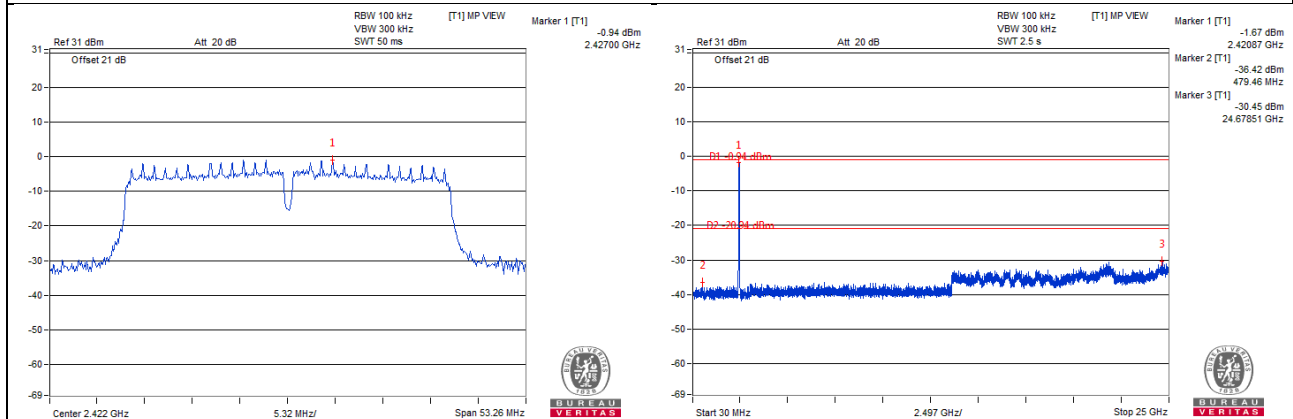


CH 9 Band edge

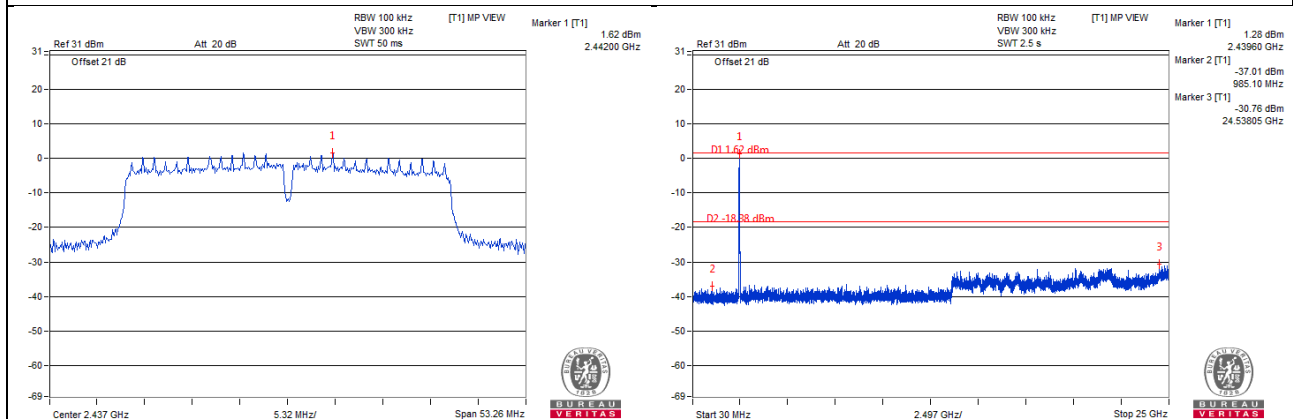


Chain 1

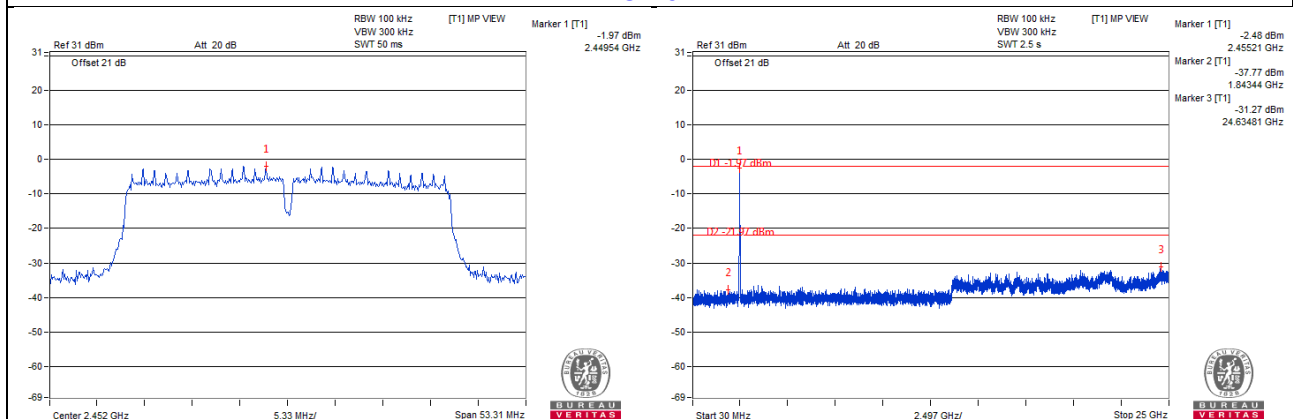
CH 3



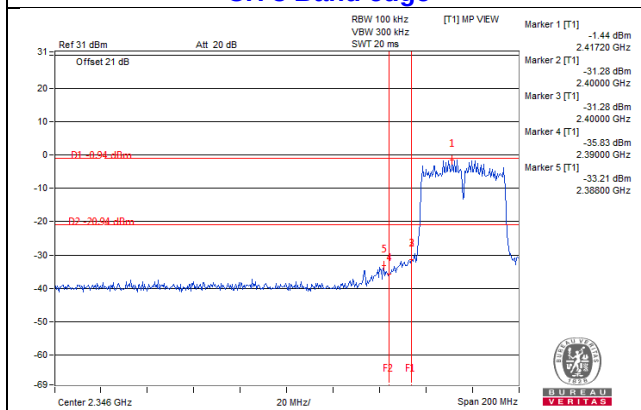
CH 6



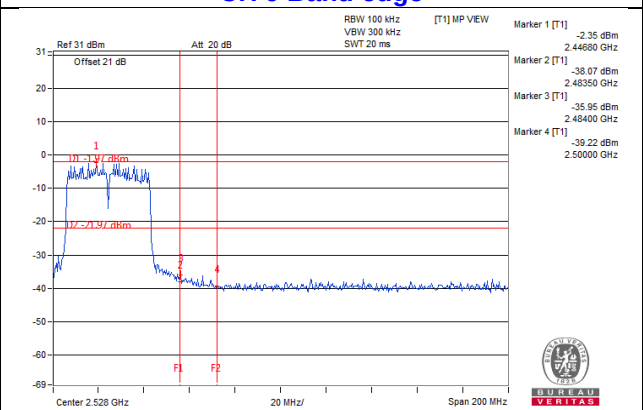
CH 9



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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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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