FCC Test Report

Report No.:	RF191129E09
FCC ID:	PY319400470
Test Model:	RBR750
Series Model:	RBS750
Received Date:	Nov. 29, 2019
Test Date:	Jan. 08 ~ Jan. 13, 2020
Issued Date:	Jan. 14, 2020
Applicant:	NETGEAR, INC.
Address:	350 East Plumeria Drive, San Jose, CA 95134, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location (1):	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN
FCC Registration / Designation Number(1):	788550 / TW0003
Test Location (2):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan.
FCC Registration / Designation Number(2):	723255 / TW2022

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF191129E09	Original release.	Jan. 14, 2020

1 Certificate of Conformity

Product:	Orbi Router, Orbi Satellite
Brand:	NETGEAR
Test Model:	RBR750
Series Model:	RBS750
Sample Status:	Engineering sample
Applicant:	NETGEAR, INC.
Test Date:	Jan. 08 ~ Jan. 13, 2020
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10:2013

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

Prepared by : Pettie Chen , **Date:** Jan. 14, 2020

Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Jan. 14, 2020

Bruce Chen / Senior Project Engineer

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 -7.89dB at 24.99609MHz.
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 2383.00MHz.
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 not a standard connector.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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	1.8 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.0 dB
	30MHz ~ 1GHz	4.9 dB
Radiated Emissions above 1 GHz	1 GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	4.9 dB
	18GHz ~ 40GHz	5.2 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Orbi Router, Orbi Satellite
Brand	NETGEAR
Test Model	RBR750
Series Model	RBS750
Model Difference	Refer to Note for more details
Sample Status	Engineering sample
Power Supply Rating	12Vdc (adapter)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/40): up to MCS15 802.11n (VHT20/40): up to MCS9 802.11ax: up to MCS11
Operating Frequency	2412~2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), 802.11n (VHT20), 802.11ax (HE20): 11 802.11n (HT40), 802.11n (VHT40), 802.11ax (HE40): 7
Output Power	CDD Mode: 958.897mW Beamforming Mode: 646.447mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Cable Supplied	1.8m non-shielded RJ45 cable without core

Note:

1. All models are electrically identical except software firmware. Model: RBR750 is the representative for final test.

Brand	Product Name	Model	Difference
NETGEAR	Orbi Router	RBR750	Function: Master WAN port*1; LAN port*3
	Orbi Satellite	RBS750	Function: Master + Client LAN port*2

2. The EUT uses following adapters.

Adapter 1	
Brand	NETGEAR
Model	2ABL030F1 NJ
P/N	332-10948-01
Input Power	100-120Vac, 50/60Hz, 1.0A
Output Power	12.0V, 2.5A
Power Cable	1.8m non-shielded power cable without core

Adapter 2	
Brand	NETGEAR
Model	AD2067F10
P/N	332-11509-01
Input Power	100-120Vac, 50/60Hz, 1.0A
Output Power	12.0V, 2.5A
Power Cable	1.8m non-shielded power cable without core

Adapter 3	
Brand	NETGEAR
Model	AD2067M20
P/N	332-11074-01
Input Power	100-240Vac, 50/60Hz, 1.0A
Output Power	12.0V, 2.5A
Power Cable	1.8m non-shielded power cable without core

*After pre-testing, Adapter 3 is the worst case for the final tests.

3. The EUT uses following antennas.

Antenna Type	Dipole	
Antenna Connector	i-pex(MHF)	
Directional Gain (dBi)		
2.4GHz Band	5GHz U-NII-1	5GHz U-NII-3
5.46	5.67	6.94

4. Spurious emission of the simultaneous operation (WLAN 2.4GHz and 5.0GHz) has been evaluated and no non-compliance was found.
5. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX Function	Beamforming
802.11b	2TX	Not Support
802.11g	2TX	Not Support
802.11n (HT20)	2TX	Support
802.11n (HT40)	2TX	Support
802.11n (VHT20)	2TX	Support
802.11n (VHT40)	2TX	Support
802.11ax (HE20)	2TX	Support
802.11ax (HE40)	2TX	Support

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40 on 802.11n mode and HE20/HE40 on 802.11ax mode. Therefore the investigated worst case is the representative mode in test report. (Final test mode refer section 3.2.1)

* For 802.11n/ax, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), 802.11n (VHT20), 802.11ax (HE20):

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), 802.11n (VHT40), 802.11ax (HE40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	Power from adapter 3

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 is designed to be positioned on the X-plane only.
2. Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.

Radiated Emission Test (Above 1GHz):

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

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	-
	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	-
	802.11ax (HE20)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0	-
	802.11ax (HE40)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0	-

Radiated Emission Test (Below 1GHz):

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

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
-	802.11b	1 to 11	6	DSSS	DBPSK	1.0	-

Power Line Conducted Emission Test:

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

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
-	802.11b	1 to 11	6	DSSS	DBPSK	1.0	-

Antenna Port Conducted Measurement:

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

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

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	-
	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	-
	802.11n (VHT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	-
	802.11n (VHT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	-
	802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0	-
	802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0	-

*802.11n (VHT20), 802.11n (VHT40) are for Conducted Output Power Measurement only.

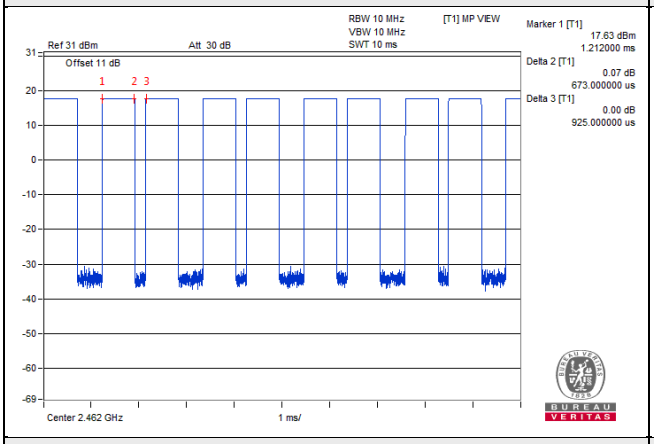
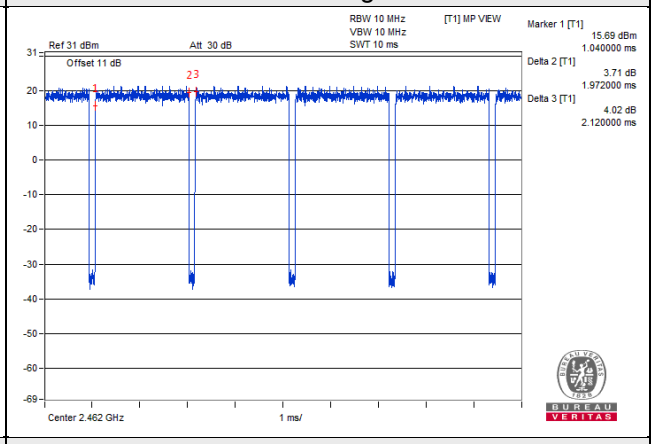
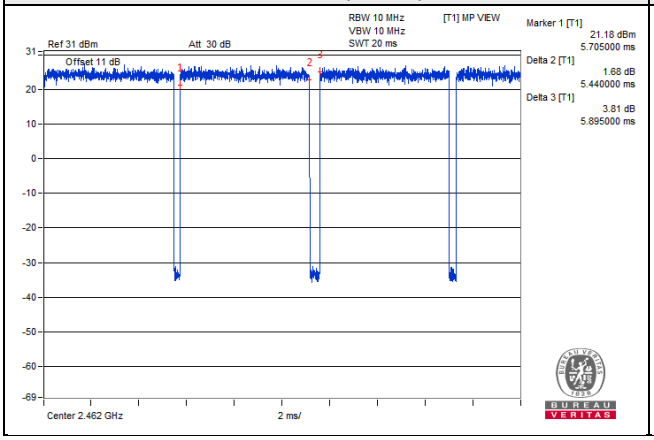
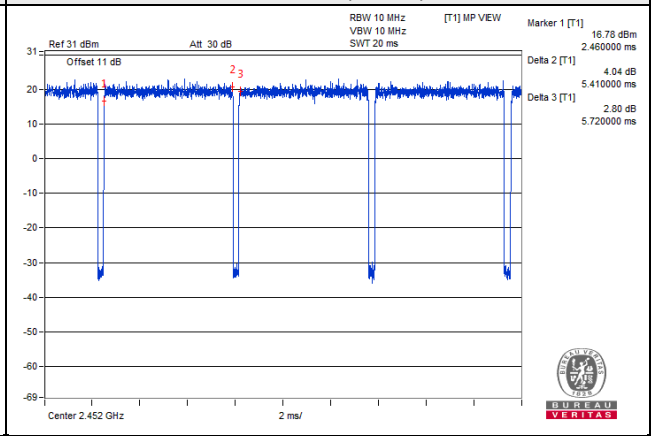
Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	22 deg. C, 67% RH	120Vac, 60Hz	Kevin Ko
RE<1G	22 deg. C, 67% RH	120Vac, 60Hz	Kevin Ko
PLC	23 deg. C, 76% RH	120Vac, 60Hz	Andy Ho
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Alan Wu

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is < 98%, duty factor is required.

802.11b: Duty cycle = 0.673/0.925 = 0.728, Duty factor = 10 * log (1/0.728) = 1.38
802.11g: Duty cycle = 1.972/2.12 = 0.93, Duty factor = 10 * log (1/0.93) = 0.31
802.11ax (HE20): Duty cycle = 5.44/5.895 = 0.923, Duty factor = 10 * log (1/0.923) = 0.35
802.11ax (HE40): Duty cycle = 5.41/5.72 = 0.946, Duty factor = 10 * log (1/0.946) = 0.24

802.11b	802.11g
	
802.11ax (HE20)	802.11ax (HE40)
	

3.4 Description of Support Units

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

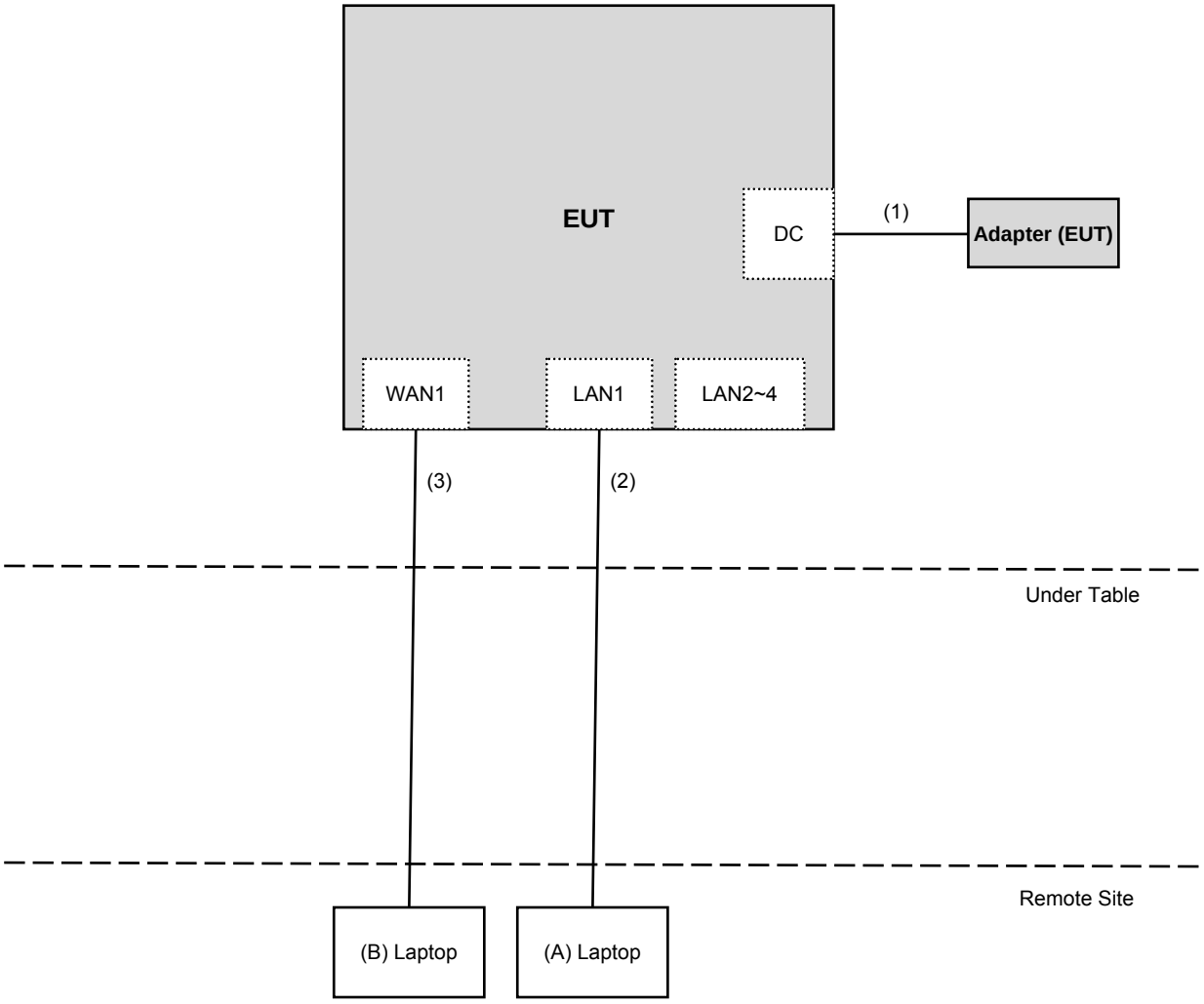
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC Approved	-
B.	Laptop	DELL	E5430	GM1SKV1	FCC DoC Approved	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	1.8	N	0	Accessory of EUT
2.	RJ45 cable	1	10	N	0	-
3.	RJ45 cable	1	10	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test standard:
FCC Part 15, Subpart C (15.247)
ANSI C63.10-2013

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

References Test Guidance:
KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 30, 2019	May 29, 2020
Loop Antenna Electro-Metrics	EM-6879	264	Jan. 22, 2019	Jan. 21, 2020
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Oct. 23, 2019	Oct. 22, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 11, 2019	Nov. 10, 2020
RF Cable	8D	966-4-1	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-2	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-3	Mar. 19, 2019	Mar. 18, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Sep. 26, 2019	Sep. 25, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980385	Aug. 15, 2019	Aug. 14, 2020
RF Cable	EMC104-SM-SM-1200	160923	Jan. 28, 2019	Jan. 27, 2020
RF Cable	104 RF cable	131215	Jan. 10, 2019	Jan. 09, 2020
			Jan. 09, 2020	Jan. 08, 2021
RF Cable	EMC104-SM-SM-6000	180418	May 03, 2019	May 02, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Hsinchu 966 Chamber No. 4.

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:

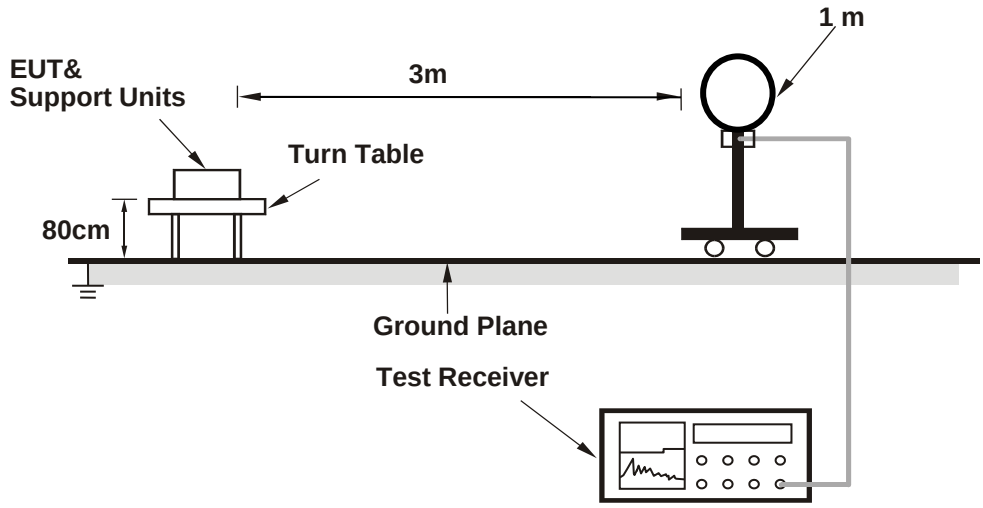
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. (802.11b: RBW = 1MHz, VBW = 3kHz; 802.11g: RBW = 1MHz, VBW = 1kHz; 802.11n (VHT20): RBW = 1MHz, VBW = 1kHz; 802.11n (VHT40): RBW = 1MHz, VBW =1kHz)
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

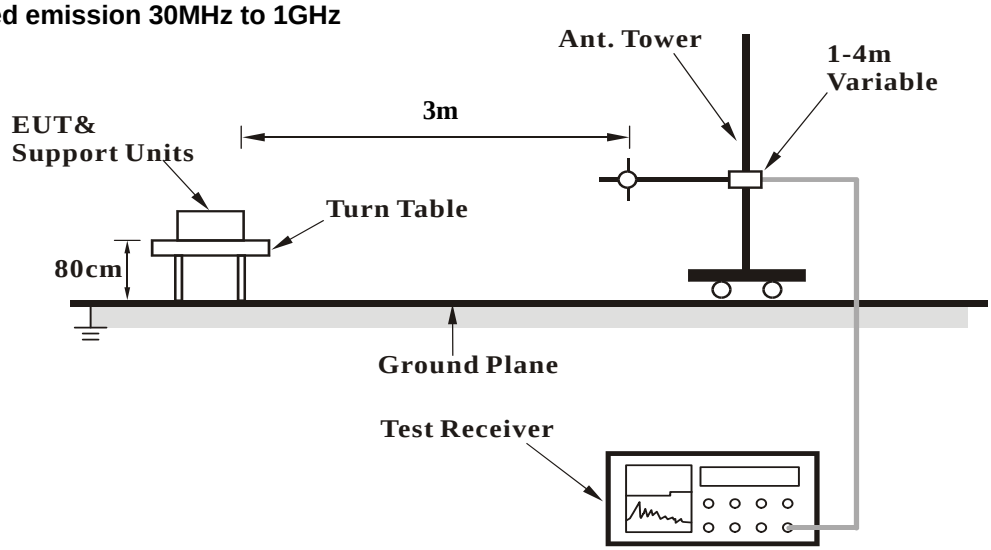
No deviation.

4.1.5 Test Setup

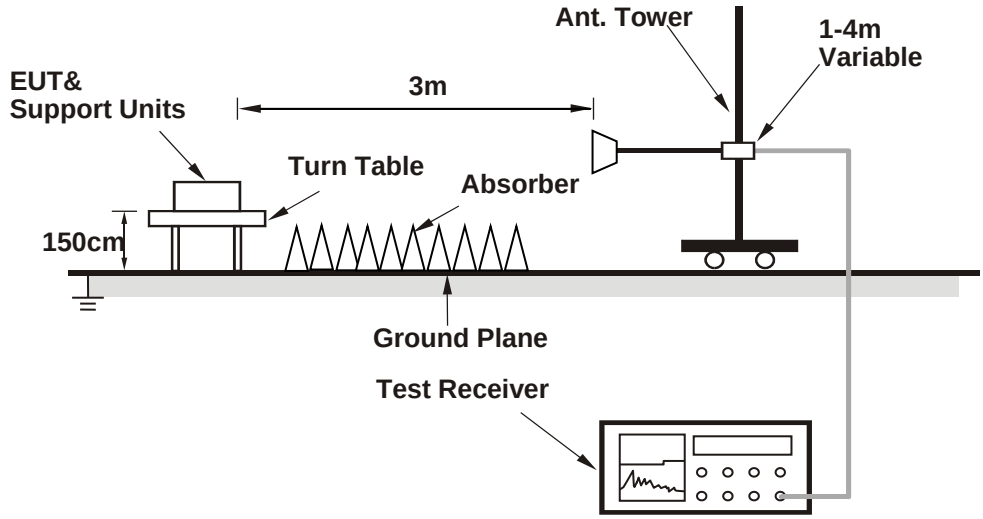
For Radiated emission below 30MHz



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. Placed the EUT on the testing table and power from notebook.
b. Prepared 2 notebooks to act as a communication partner.
c. The communication partner connected with EUT via RJ45 cables and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".
e. The necessary accessories enable the system in full functions.

4.1.7 Test Results

Above 1GHz worst-Case 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	50.4 PK	74.0	-23.6	2.37 H	173	52.1	-1.7
2	2390.00	41.8 AV	54.0	-12.2	2.37 H	173	43.5	-1.7
3	*2412.00	108.2 PK			2.37 H	173	110.0	-1.8
4	*2412.00	106.4 AV			2.37 H	173	108.2	-1.8
5	4824.00	41.8 PK	74.0	-32.2	2.29 H	259	39.7	2.1
6	4824.00	37.9 AV	54.0	-16.1	2.29 H	259	35.8	2.1
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	62.4 PK	74.0	-11.6	1.21 V	213	64.1	-1.7
2	2390.00	53.7 AV	54.0	-0.3	1.21 V	213	55.4	-1.7
3	*2412.00	121.3 PK			1.21 V	213	123.1	-1.8
4	*2412.00	119.1 AV			1.21 V	213	120.9	-1.8
5	4824.00	42.7 PK	74.0	-31.3	2.04 V	242	40.6	2.1
6	4824.00	37.5 AV	54.0	-16.5	2.04 V	242	35.4	2.1

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) 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	47.2 PK	74.0	-26.8	1.16 H	256	48.9	-1.7
2	2390.00	36.2 AV	54.0	-17.8	1.16 H	256	37.9	-1.7
3	*2437.00	108.8 PK			1.16 H	256	110.6	-1.8
4	*2437.00	106.4 AV			1.16 H	256	108.2	-1.8
5	2483.50	44.2 PK	74.0	-29.8	1.16 H	256	45.9	-1.7
6	2483.50	35.6 AV	54.0	-18.4	1.16 H	256	37.3	-1.7
7	4874.00	42.6 PK	74.0	-31.4	1.38 H	117	40.4	2.2
8	4874.00	38.1 AV	54.0	-15.9	1.38 H	117	35.9	2.2
9	7311.00	44.9 PK	74.0	-29.1	1.96 H	199	35.9	9.0
10	7311.00	35.0 AV	54.0	-19.0	1.96 H	199	26.0	9.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.9 PK	74.0	-14.1	1.27 V	213	61.6	-1.7
2	2390.00	48.4 AV	54.0	-5.6	1.27 V	213	50.1	-1.7
3	*2437.00	121.2 PK			1.27 V	213	123.0	-1.8
4	*2437.00	119.4 AV			1.27 V	213	121.2	-1.8
5	2483.50	57.3 PK	74.0	-16.7	1.27 V	213	59.0	-1.7
6	2483.50	48.1 AV	54.0	-5.9	1.27 V	213	49.8	-1.7
7	4874.00	41.4 PK	74.0	-32.6	1.84 V	276	39.2	2.2
8	4874.00	38.5 AV	54.0	-15.5	1.84 V	276	36.3	2.2
9	7311.00	45.3 PK	74.0	-28.7	1.47 V	61	36.3	9.0
10	7311.00	34.3 AV	54.0	-19.7	1.47 V	61	25.3	9.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	107.5 PK			1.52 H	316	109.3	-1.8
2	*2462.00	105.3 AV			1.52 H	316	107.1	-1.8
3	2483.50	54.6 PK	74.0	-19.4	1.52 H	316	56.3	-1.7
4	2483.50	44.8 AV	54.0	-9.2	1.52 H	316	46.5	-1.7
5	4924.00	40.2 PK	74.0	-33.8	2.92 H	222	37.9	2.3
6	4924.00	34.4 AV	54.0	-19.6	2.92 H	222	32.1	2.3
7	7386.00	44.6 PK	74.0	-29.4	1.48 H	123	35.3	9.3
8	7386.00	33.1 AV	54.0	-20.9	1.48 H	123	23.8	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	*2462.00	120.3 PK			1.00 V	205	122.1	-1.8
2	*2462.00	118.3 AV			1.00 V	205	120.1	-1.8
3	2483.50	59.8 PK	74.0	-14.2	1.00 V	205	61.5	-1.7
4	2483.50	53.6 AV	54.0	-0.4	1.00 V	205	55.3	-1.7
5	4924.00	41.8 PK	74.0	-32.2	1.33 V	11	39.5	2.3
6	4924.00	37.9 AV	54.0	-16.1	1.33 V	11	35.6	2.3
7	7386.00	44.9 PK	74.0	-29.1	2.76 V	331	35.6	9.3
8	7386.00	34.9 AV	54.0	-19.1	2.76 V	331	25.6	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.

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.7 PK	74.0	-20.3	1.89 H	44	55.4	-1.7
2	2390.00	40.9 AV	54.0	-13.1	1.89 H	44	42.6	-1.7
3	*2412.00	106.4 PK			1.89 H	44	108.2	-1.8
4	*2412.00	96.8 AV			1.89 H	44	98.6	-1.8
5	4824.00	41.5 PK	74.0	-32.5	2.18 H	66	39.4	2.1
6	4824.00	37.8 AV	54.0	-16.2	2.18 H	66	35.7	2.1
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	65.9 PK	74.0	-8.1	1.16 V	211	67.6	-1.7
2	2390.00	53.6 AV	54.0	-0.4	1.16 V	211	55.3	-1.7
3	*2412.00	118.5 PK			1.16 V	211	120.3	-1.8
4	*2412.00	109.1 AV			1.16 V	211	110.9	-1.8
5	4824.00	41.6 PK	74.0	-32.4	1.79 V	37	39.5	2.1
6	4824.00	37.7 AV	54.0	-16.3	1.79 V	37	35.6	2.1

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) 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	49.7 PK	74.0	-24.3	1.86 H	228	51.4	-1.7
2	2390.00	37.9 AV	54.0	-16.1	1.86 H	228	39.6	-1.7
3	*2437.00	109.0 PK			1.86 H	228	110.8	-1.8
4	*2437.00	99.9 AV			1.86 H	228	101.7	-1.8
5	2483.50	52.2 PK	74.0	-21.8	1.86 H	228	53.9	-1.7
6	2483.50	41.1 AV	54.0	-12.9	1.86 H	228	42.8	-1.7
7	4874.00	41.4 PK	74.0	-32.6	2.40 H	208	39.2	2.2
8	4874.00	38.4 AV	54.0	-15.6	2.40 H	208	36.2	2.2
9	7311.00	45.6 PK	74.0	-28.4	2.27 H	28	36.6	9.0
10	7311.00	34.9 AV	54.0	-19.1	2.27 H	28	25.9	9.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.5 PK	74.0	-11.5	1.28 V	216	64.2	-1.7
2	2390.00	50.3 AV	54.0	-3.7	1.28 V	216	52.0	-1.7
3	*2437.00	121.8 PK			1.28 V	216	123.6	-1.8
4	*2437.00	112.6 AV			1.28 V	216	114.4	-1.8
5	2483.50	64.9 PK	74.0	-9.1	1.28 V	216	66.6	-1.7
6	2483.50	53.6 AV	54.0	-0.4	1.28 V	216	55.3	-1.7
7	4874.00	42.0 PK	74.0	-32.0	1.31 V	139	39.8	2.2
8	4874.00	38.7 AV	54.0	-15.3	1.31 V	139	36.5	2.2
9	7311.00	44.5 PK	74.0	-29.5	1.70 V	181	35.5	9.0
10	7311.00	35.4 AV	54.0	-18.6	1.70 V	181	26.4	9.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	104.4 PK			1.68 H	301	106.2	-1.8
2	*2462.00	95.3 AV			1.68 H	301	97.1	-1.8
3	2483.50	52.0 PK	74.0	-22.0	1.68 H	301	53.7	-1.7
4	2483.50	40.9 AV	54.0	-13.1	1.68 H	301	42.6	-1.7
5	4924.00	41.9 PK	74.0	-32.1	1.46 H	359	39.6	2.3
6	4924.00	37.3 AV	54.0	-16.7	1.46 H	359	35.0	2.3
7	7386.00	44.6 PK	74.0	-29.4	2.31 H	104	35.3	9.3
8	7386.00	35.4 AV	54.0	-18.6	2.31 H	104	26.1	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	*2462.00	117.1 PK			1.11 V	212	118.9	-1.8
2	*2462.00	108.1 AV			1.11 V	212	109.9	-1.8
3	2483.50	64.9 PK	74.0	-9.1	1.11 V	212	66.6	-1.7
4	2483.50	53.6 AV	54.0	-0.4	1.11 V	212	55.3	-1.7
5	4924.00	42.7 PK	74.0	-31.3	1.61 V	212	40.4	2.3
6	4924.00	37.7 AV	54.0	-16.3	1.61 V	212	35.4	2.3
7	7386.00	44.6 PK	74.0	-29.4	1.76 V	174	35.3	9.3
8	7386.00	34.6 AV	54.0	-19.4	1.76 V	174	25.3	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.

802.11ax (HE20)

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	51.5 PK	74.0	-22.5	2.29 H	349	53.2	-1.7
2	2390.00	40.9 AV	54.0	-13.1	2.29 H	349	42.6	-1.7
3	*2412.00	109.2 PK			2.29 H	349	111.0	-1.8
4	*2412.00	95.8 AV			2.29 H	349	97.6	-1.8
5	4824.00	41.4 PK	74.0	-32.6	2.20 H	70	39.3	2.1
6	4824.00	37.3 AV	54.0	-16.7	2.20 H	70	35.2	2.1
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	64.5 PK	74.0	-9.5	1.18 V	212	66.2	-1.7
2	2390.00	53.8 AV	54.0	-0.2	1.18 V	212	55.5	-1.7
3	*2412.00	121.7 PK			1.18 V	212	123.5	-1.8
4	*2412.00	108.6 AV			1.18 V	212	110.4	-1.8
5	4824.00	42.3 PK	74.0	-31.7	1.48 V	223	40.2	2.1
6	4824.00	37.3 AV	54.0	-16.7	1.48 V	223	35.2	2.1

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) 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	53.6 PK	74.0	-20.4	2.06 H	100	55.3	-1.7
2	2390.00	41.3 AV	54.0	-12.7	2.06 H	100	43.0	-1.7
3	*2437.00	112.6 PK			2.06 H	100	114.4	-1.8
4	*2437.00	99.4 AV			2.06 H	100	101.2	-1.8
5	2483.50	51.8 PK	74.0	-22.2	2.06 H	100	53.5	-1.7
6	2483.50	37.0 AV	54.0	-17.0	2.06 H	100	38.7	-1.7
7	4874.00	42.4 PK	74.0	-31.6	2.01 H	248	40.2	2.2
8	4874.00	38.3 AV	54.0	-15.7	2.01 H	248	36.1	2.2
9	7311.00	44.3 PK	74.0	-29.7	2.32 H	236	35.3	9.0
10	7311.00	35.6 AV	54.0	-18.4	2.32 H	236	26.6	9.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.2 PK	74.0	-7.8	1.32 V	212	67.9	-1.7
2	2390.00	53.8 AV	54.0	-0.2	1.32 V	212	55.5	-1.7
3	*2437.00	124.7 PK			1.32 V	212	126.5	-1.8
4	*2437.00	111.8 AV			1.32 V	212	113.6	-1.8
5	2483.50	63.8 PK	74.0	-10.2	1.32 V	212	65.5	-1.7
6	2483.50	49.6 AV	54.0	-4.4	1.32 V	212	51.3	-1.7
7	4874.00	42.4 PK	74.0	-31.6	2.21 V	109	40.2	2.2
8	4874.00	37.4 AV	54.0	-16.6	2.21 V	109	35.2	2.2
9	7311.00	44.7 PK	74.0	-29.3	1.53 V	51	35.7	9.0
10	7311.00	34.9 AV	54.0	-19.1	1.53 V	51	25.9	9.0

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.5 PK			1.01 H	176	108.3	-1.8
2	*2462.00	94.4 AV			1.01 H	176	96.2	-1.8
3	2483.50	54.1 PK	74.0	-19.9	1.01 H	176	55.8	-1.7
4	2483.50	41.6 AV	54.0	-12.4	1.01 H	176	43.3	-1.7
5	4924.00	41.7 PK	74.0	-32.3	1.94 H	182	39.4	2.3
6	4924.00	37.5 AV	54.0	-16.5	1.94 H	182	35.2	2.3
7	7386.00	45.3 PK	74.0	-28.7	1.55 H	317	36.0	9.3
8	7386.00	35.5 AV	54.0	-18.5	1.55 H	317	26.2	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	*2462.00	119.5 PK			1.09 V	214	121.3	-1.8
2	*2462.00	106.5 AV			1.09 V	214	108.3	-1.8
3	2483.50	66.9 PK	74.0	-7.1	1.09 V	214	68.6	-1.7
4	2483.50	53.7 AV	54.0	-0.3	1.09 V	214	55.4	-1.7
5	4924.00	42.8 PK	74.0	-31.2	1.81 V	32	40.5	2.3
6	4924.00	38.5 AV	54.0	-15.5	1.81 V	32	36.2	2.3
7	7386.00	45.5 PK	74.0	-28.5	1.18 V	42	36.2	9.3
8	7386.00	34.4 AV	54.0	-19.6	1.18 V	42	25.1	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.

802.11ax (HE40)

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	2383.00	53.7 PK	74.0	-20.3	2.09 H	84	55.4	-1.7
2	2383.00	41.4 AV	54.0	-12.6	2.09 H	84	43.1	-1.7
3	2390.00	49.6 PK	74.0	-24.4	2.09 H	84	51.3	-1.7
4	2390.00	39.0 AV	54.0	-15.0	2.09 H	84	40.7	-1.7
5	*2422.00	102.5 PK			2.09 H	84	104.3	-1.8
6	*2422.00	91.4 AV			2.09 H	84	93.2	-1.8
7	4844.00	41.2 PK	74.0	-32.8	2.46 H	86	39.1	2.1
8	4844.00	37.8 AV	54.0	-16.2	2.46 H	86	35.7	2.1
9	7266.00	45.6 PK	74.0	-28.4	2.09 H	93	36.8	8.8
10	7266.00	35.0 AV	54.0	-19.0	2.09 H	93	26.2	8.8
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	2383.00	65.9 PK	74.0	-8.1	1.23 V	212	67.6	-1.7
2	**2383.00**	**53.9 AV**	**54.0**	**-0.1**	**1.23 V**	**212**	**55.6**	**-1.7**
3	2390.00	62.3 PK	74.0	-11.7	1.23 V	212	64.0	-1.7
4	2390.00	51.3 AV	54.0	-2.7	1.23 V	212	53.0	-1.7
5	*2422.00	114.6 PK			1.23 V	212	116.4	-1.8
6	*2422.00	104.1 AV			1.23 V	212	105.9	-1.8
7	4844.00	41.9 PK	74.0	-32.1	1.68 V	148	39.8	2.1
8	4844.00	37.9 AV	54.0	-16.1	1.68 V	148	35.8	2.1
9	7266.00	45.5 PK	74.0	-28.5	1.89 V	148	36.7	8.8
10	7266.00	34.9 AV	54.0	-19.1	1.89 V	148	26.1	8.8

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.1 PK	74.0	-20.9	2.50 H	98	54.8	-1.7
2	2390.00	40.8 AV	54.0	-13.2	2.50 H	98	42.5	-1.7
3	*2437.00	103.4 PK			2.50 H	98	105.2	-1.8
4	*2437.00	91.9 AV			2.50 H	98	93.7	-1.8
5	2483.50	52.8 PK	74.0	-21.2	2.50 H	98	54.5	-1.7
6	2483.50	38.9 AV	54.0	-15.1	2.50 H	98	40.6	-1.7
7	4874.00	41.3 PK	74.0	-32.7	1.47 H	64	39.1	2.2
8	4874.00	37.9 AV	54.0	-16.1	1.47 H	64	35.7	2.2
9	7311.00	45.6 PK	74.0	-28.4	2.61 H	318	36.6	9.0
10	7311.00	34.9 AV	54.0	-19.1	2.61 H	318	25.9	9.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.4 PK	74.0	-8.6	1.13 V	206	67.1	-1.7
2	2390.00	53.6 AV	54.0	-0.4	1.13 V	206	55.3	-1.7
3	*2437.00	115.9 PK			1.13 V	206	117.7	-1.8
4	*2437.00	104.9 AV			1.13 V	206	106.7	-1.8
5	2483.50	64.9 PK	74.0	-9.1	1.13 V	206	66.6	-1.7
6	2483.50	51.1 AV	54.0	-2.9	1.13 V	206	52.8	-1.7
7	4874.00	42.5 PK	74.0	-31.5	2.15 V	310	40.3	2.2
8	4874.00	38.6 AV	54.0	-15.4	2.15 V	310	36.4	2.2
9	7311.00	44.3 PK	74.0	-29.7	1.25 V	282	35.3	9.0
10	7311.00	35.0 AV	54.0	-19.0	1.25 V	282	26.0	9.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
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	102.6 PK			2.03 H	169	104.4	-1.8
2	*2452.00	89.3 AV			2.03 H	169	91.1	-1.8
3	2483.50	55.0 PK	74.0	-19.0	2.03 H	169	56.7	-1.7
4	2483.50	40.8 AV	54.0	-13.2	2.03 H	169	42.5	-1.7
5	4904.00	41.7 PK	74.0	-32.3	2.09 H	214	39.5	2.2
6	4904.00	37.6 AV	54.0	-16.4	2.09 H	214	35.4	2.2
7	7356.00	45.2 PK	74.0	-28.8	1.22 H	338	36.1	9.1
8	7356.00	34.5 AV	54.0	-19.5	1.22 H	338	25.4	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	*2452.00	114.7 PK			1.23 V	213	116.5	-1.8
2	*2452.00	102.3 AV			1.23 V	213	104.1	-1.8
3	2483.50	67.3 PK	74.0	-6.7	1.23 V	213	69.0	-1.7
4	2483.50	53.6 AV	54.0	-0.4	1.23 V	213	55.3	-1.7
5	4904.00	41.4 PK	74.0	-32.6	2.12 V	18	39.2	2.2
6	4904.00	38.7 AV	54.0	-15.3	2.12 V	18	36.5	2.2
7	7356.00	44.4 PK	74.0	-29.6	1.13 V	146	35.3	9.1
8	7356.00	34.5 AV	54.0	-19.5	1.13 V	146	25.4	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.

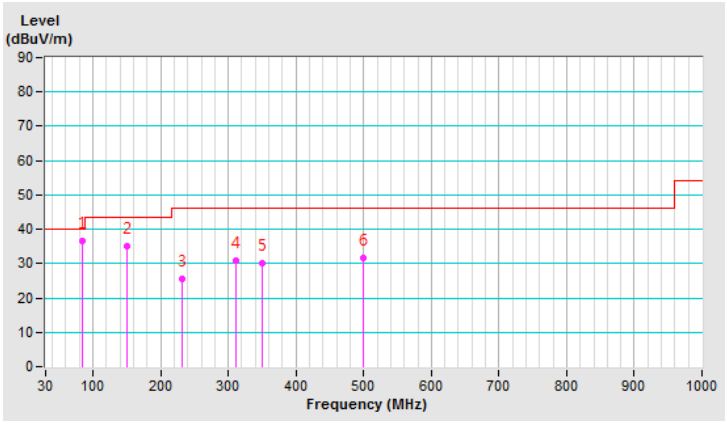
Below 1GHz worst-case data: 802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	85.02	36.7 QP	40.0	-3.3	3.00 H	174	50.3	-13.6
2	150.47	35.1 QP	43.5	-8.4	2.00 H	114	42.7	-7.6
3	230.81	25.5 QP	46.0	-20.5	1.00 H	40	35.6	-10.1
4	311.93	30.8 QP	46.0	-15.2	1.00 H	15	37.2	-6.4
5	351.02	30.2 QP	46.0	-15.8	1.00 H	360	36.0	-5.8
6	499.99	31.7 QP	46.0	-14.3	2.00 H	316	33.4	-1.7

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. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20dB below the permissible value to be report.

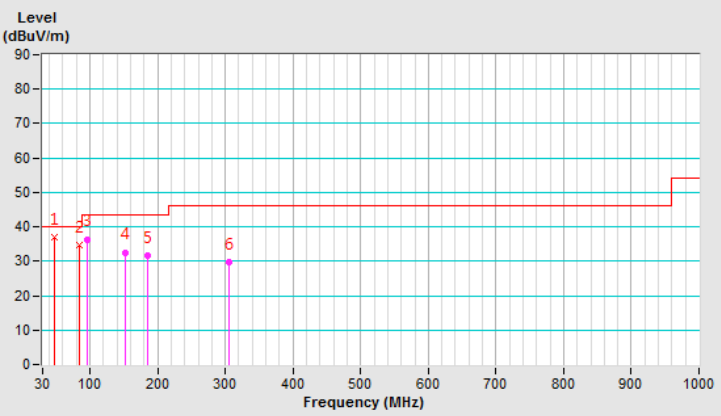


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.00	36.9 QP	40.0	-3.1	1.00 V	75	44.8	-7.9
2	84.27	34.7 QP	40.0	-5.3	1.00 V	51	48.2	-13.5
3	96.88	36.4 QP	43.5	-7.1	1.00 V	12	49.1	-12.7
4	151.54	32.6 QP	43.5	-10.9	1.00 V	327	40.3	-7.7
5	186.15	31.6 QP	43.5	-11.9	1.00 V	284	41.7	-10.1
6	305.53	29.6 QP	46.0	-16.4	2.00 V	345	36.2	-6.6

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. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 27, 2019	Sep. 26, 2020
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 14, 2019	Mar. 13, 2020
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Hsinchu Conduction 1.

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.

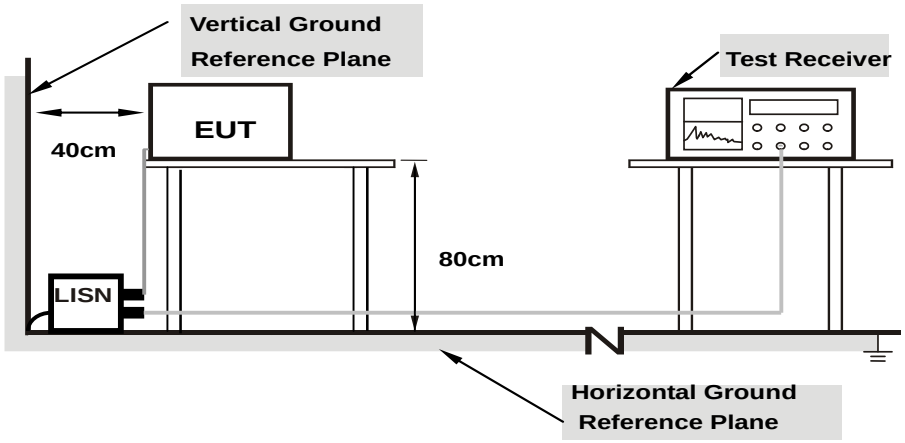
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

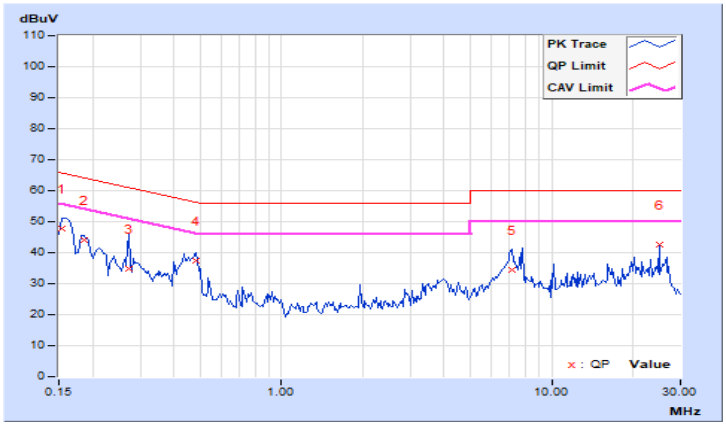
Worst-case data: 802.11b

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	0.15391	9.99	37.97	22.92	47.96	32.91	65.79	55.79	-17.83	-22.88
2	0.18516	9.99	33.96	22.11	43.95	32.10	64.25	54.25	-20.30	-22.15
3	0.27109	9.99	24.74	15.56	34.73	25.55	61.08	51.08	-26.35	-25.53
4	0.48203	10.01	27.25	22.30	37.26	32.31	56.30	46.30	-19.04	-13.99
5	7.14063	10.46	24.07	18.59	34.53	29.05	60.00	50.00	-25.47	-20.95
6	**24.99609**	**11.55**	**30.96**	**30.56**	**42.51**	**42.11**	**60.00**	**50.00**	**-17.49**	**-7.89**

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.

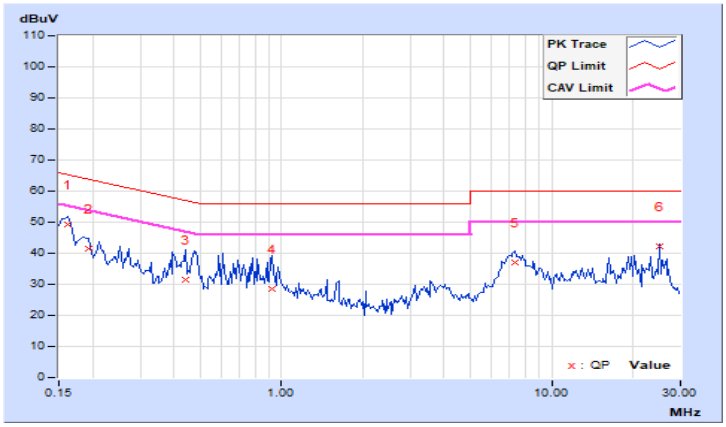


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16172	9.99	39.21	29.02	49.20	39.01	65.38	55.38	-16.18	-16.37
2	0.19297	9.99	31.38	20.46	41.37	30.45	63.91	53.91	-22.54	-23.46
3	0.44297	10.01	21.65	14.78	31.66	24.79	57.01	47.01	-25.35	-22.22
4	0.92344	10.04	18.59	12.45	28.63	22.49	56.00	46.00	-27.37	-23.51
5	7.34375	10.42	26.58	21.40	37.00	31.82	60.00	50.00	-23.00	-18.18
6	24.99609	11.23	30.96	30.77	42.19	42.00	60.00	50.00	-17.81	-8.00

Remarks:

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

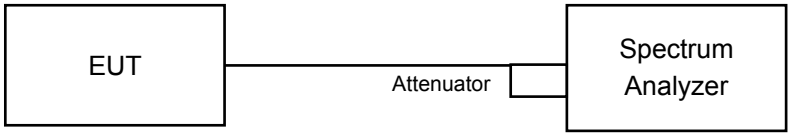


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	8.06	8.08	0.5	Pass
6	2437	8.10	8.10	0.5	Pass
11	2462	8.01	7.62	0.5	Pass

802.11g

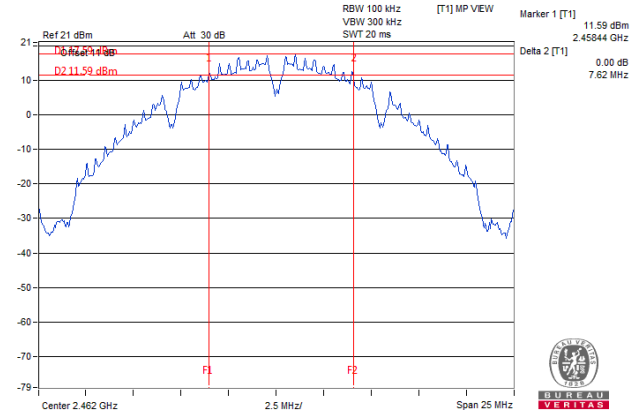
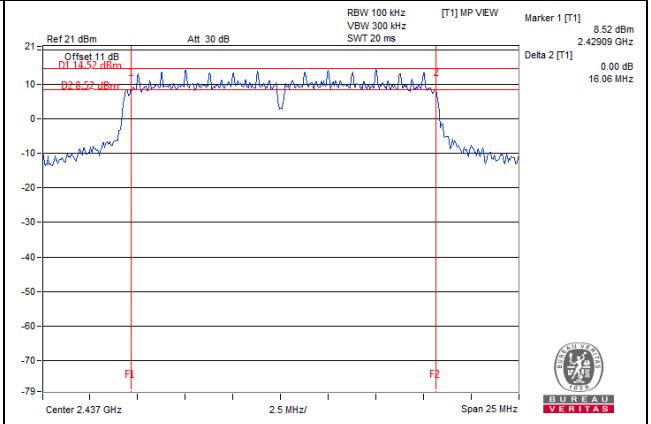
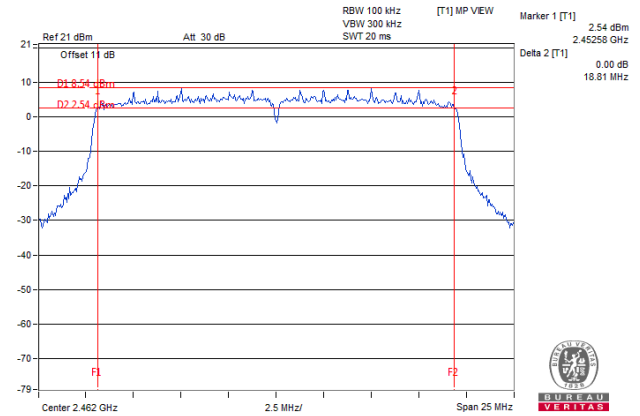
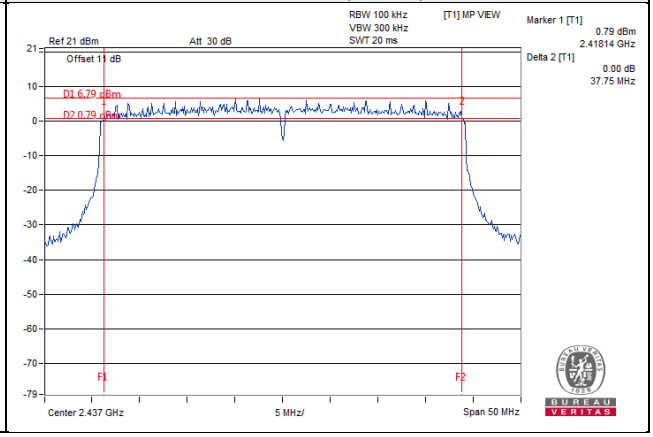
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.37	16.34	0.5	Pass
6	2437	16.06	16.33	0.5	Pass
11	2462	16.37	16.35	0.5	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	18.97	19.01	0.5	Pass
6	2437	18.82	18.98	0.5	Pass
11	2462	18.81	18.98	0.5	Pass

802.11ac (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	37.91	38.10	0.5	Pass
6	2437	37.75	38.08	0.5	Pass
9	2452	37.85	37.96	0.5	Pass

Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11ax (HE20)	802.11ax (HE40)
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

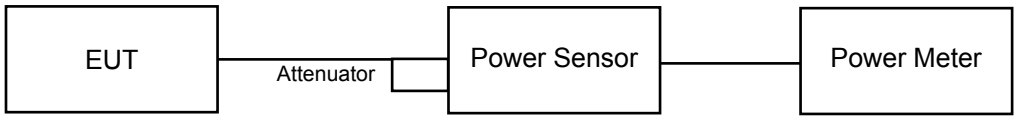
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as item 4.3.6.

4.4.7 Test Results

CDD Mode

802.11b

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	25.81	26.28	805.686	29.06	30	Pass
6	2437	26.66	26.95	**958.897**	29.82	30	Pass
11	2462	26.00	26.02	798.052	29.02	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.95	21.12	253.871	24.05	30	Pass
6	2437	25.50	25.47	707.946	28.50	30	Pass
11	2462	21.24	21.18	264.241	24.22	30	Pass

802.11n (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.76	20.99	244.727	23.89	30	Pass
6	2437	24.86	24.85	611.688	27.87	30	Pass
11	2462	19.94	19.90	196.352	22.93	30	Pass

802.11n (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.22	19.29	168.478	22.27	30	Pass
6	2437	21.01	20.89	248.927	23.96	30	Pass
9	2452	18.57	18.42	141.447	21.51	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.09	21.27	262.497	24.19	30	Pass
6	2437	25.11	25.08	646.447	28.11	30	Pass
11	2462	20.24	20.19	210.154	23.23	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.51	19.56	179.696	22.55	30	Pass
6	2437	21.29	21.16	265.203	24.24	30	Pass
9	2452	18.88	18.74	152.085	21.82	30	Pass

Beamforming Mode

802.11n (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.76	20.99	244.727	23.89	30	Pass
6	2437	24.86	24.85	611.688	27.87	30	Pass
11	2462	19.94	19.90	196.352	22.93	30	Pass

802.11n (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.22	19.29	168.478	22.27	30	Pass
6	2437	21.01	20.89	248.927	23.96	30	Pass
9	2452	18.57	18.42	141.447	21.51	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.09	21.27	262.497	24.19	30	Pass
6	2437	25.11	25.08	**646.447**	28.11	30	Pass
11	2462	20.24	20.19	210.154	23.23	30	Pass

802.11ax (HE40)

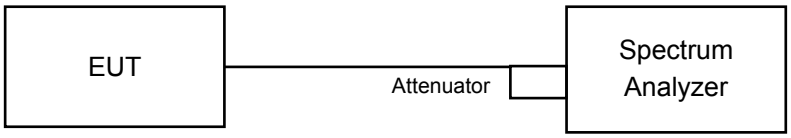
Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.51	19.56	179.696	22.55	30	Pass
6	2437	21.29	21.16	265.203	24.24	30	Pass
9	2452	18.88	18.74	152.085	21.82	30	Pass

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz band during any time interval of continuous transmission.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

For Average Power (Duty cycle ≥ 98%)
a) Set instrument center frequency to DTS channel center frequency.
b) Set span to at least 1.5 times the OBW.
c) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set VBW ≥3 x RBW.
e) Detector = power averaging (RMS) or sample detector (when RMS not available).
f) Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g) Sweep time = auto couple.
h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
i) Use the peak marker function to determine the maximum amplitude level.

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as item 4.3.6.

4.5.7 Test Results

802.11b

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-12.07	3.01	1.38	-7.68	8.00	Pass
	6	2437	-10.68	3.01	1.38	-6.29	8.00	Pass
	11	2462	-10.79	3.01	1.38	-6.40	8.00	Pass
1	1	2412	-12.42	3.01	1.38	-8.03	8.00	Pass
	6	2437	-11.07	3.01	1.38	-6.68	8.00	Pass
	11	2462	-12.51	3.01	1.38	-8.12	8.00	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.46dBi < 6dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11g

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-16.04	3.01	0.31	-12.72	8.00	Pass
	6	2437	-11.36	3.01	0.31	-8.04	8.00	Pass
	11	2462	-15.92	3.01	0.31	-12.60	8.00	Pass
1	1	2412	-15.94	3.01	0.31	-12.62	8.00	Pass
	6	2437	-11.64	3.01	0.31	-8.32	8.00	Pass
	11	2462	-15.96	3.01	0.31	-12.64	8.00	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.46dBi < 6dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-17.24	3.01	0.35	-13.88	8.00	Pass
	6	2437	-13.54	3.01	0.35	-10.18	8.00	Pass
	11	2462	-18.65	3.01	0.35	-15.29	8.00	Pass
1	1	2412	-17.18	3.01	0.35	-13.82	8.00	Pass
	6	2437	-13.66	3.01	0.35	-10.30	8.00	Pass
	11	2462	-17.97	3.01	0.35	-14.61	8.00	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.46dBi < 6dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

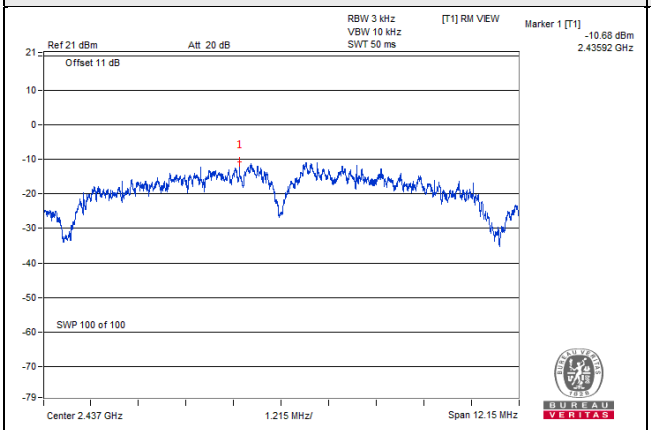
802.11ax (HE40)

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	3	2422	-21.89	3.01	0.24	-18.64	8.00	Pass
	6	2437	-20.02	3.01	0.24	-16.77	8.00	Pass
	9	2452	-22.68	3.01	0.24	-19.43	8.00	Pass
1	3	2422	-21.53	3.01	0.24	-18.28	8.00	Pass
	6	2437	-20.34	3.01	0.24	-17.09	8.00	Pass
	9	2452	-22.73	3.01	0.24	-19.48	8.00	Pass

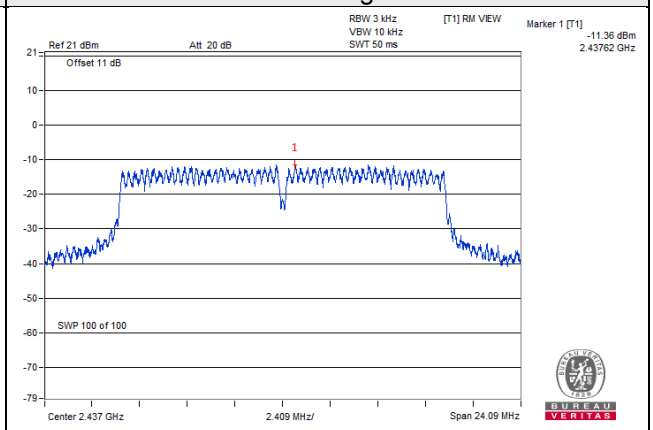
Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.46dBi < 6dBi, so the limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

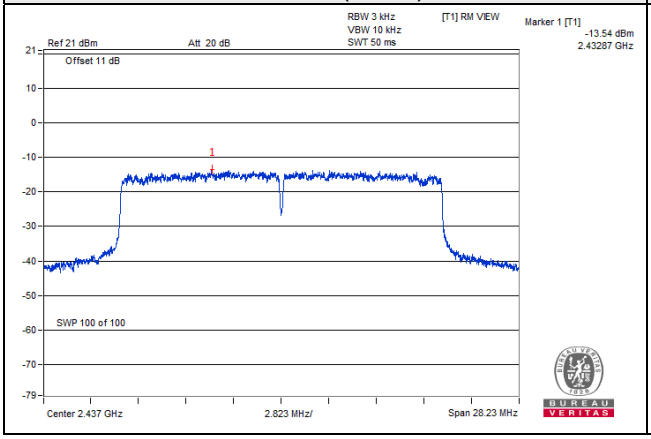
802.11b



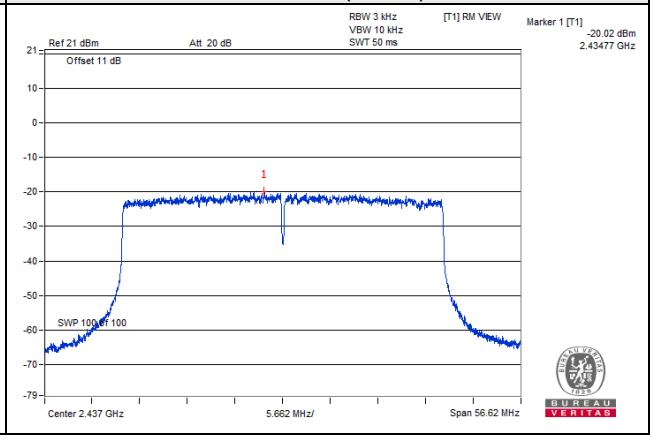
802.11g



802.11ax (HE20)



802.11ax (HE40)

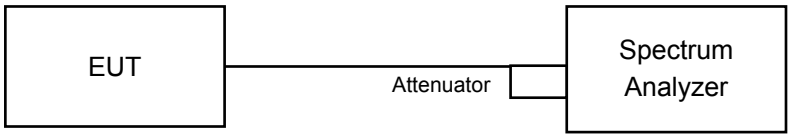


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

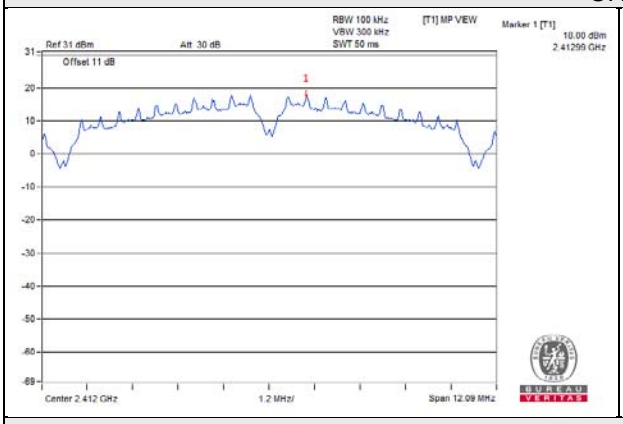
Same as item 4.3.6.

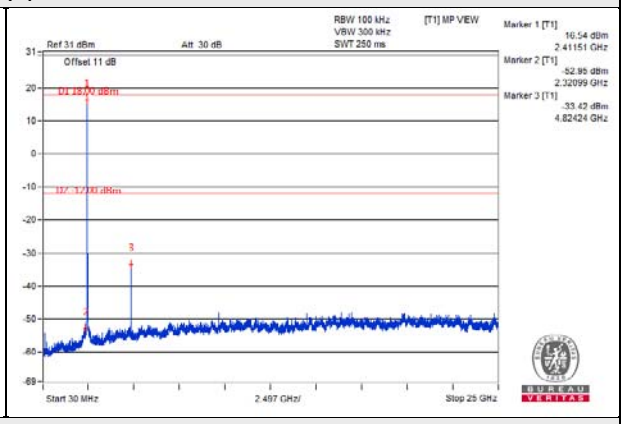
4.6.7 Test Results

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

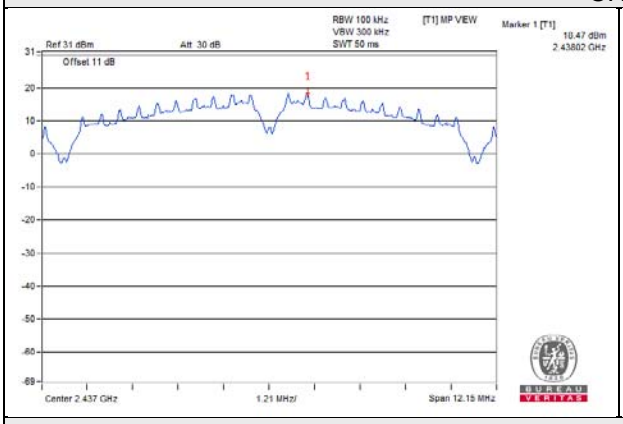
802.11b_Chain 0

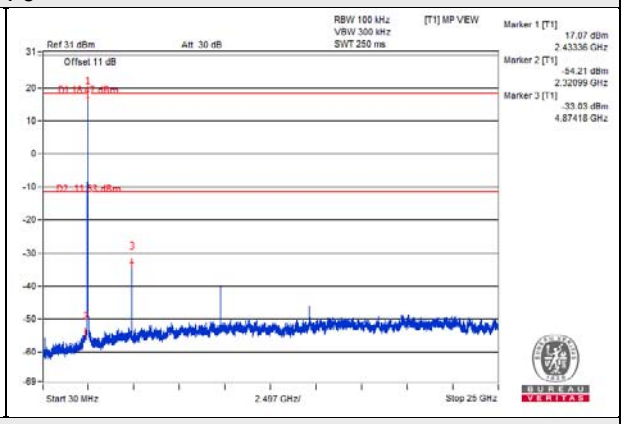
CH 1



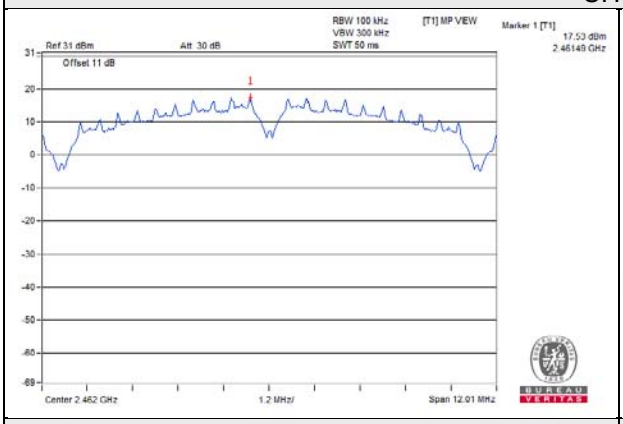


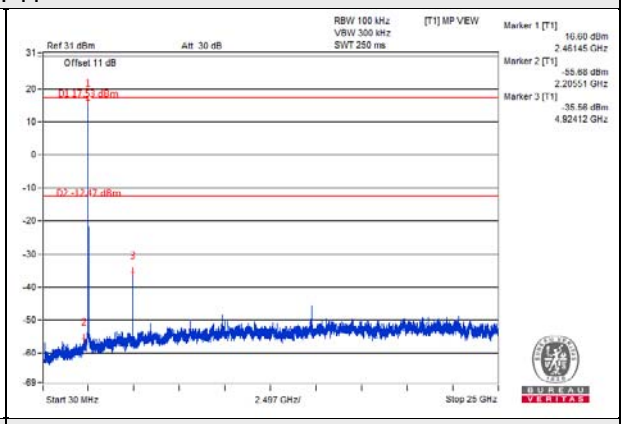
CH 6



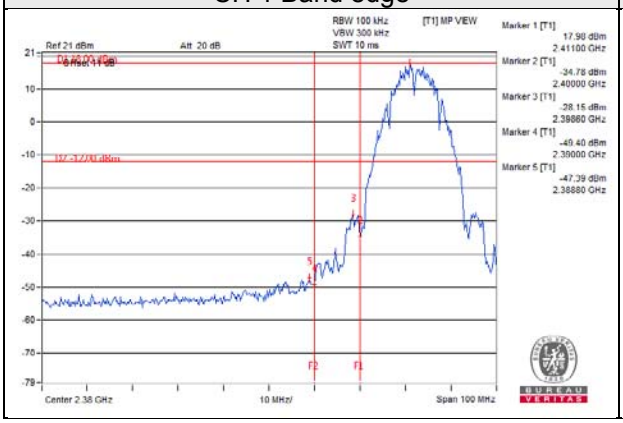


CH 11

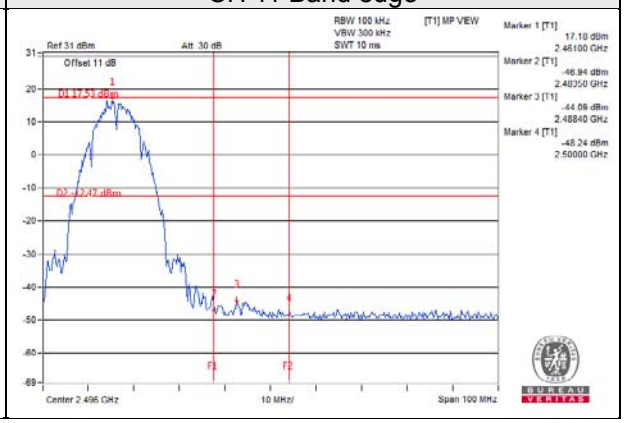




CH 1 Band edge

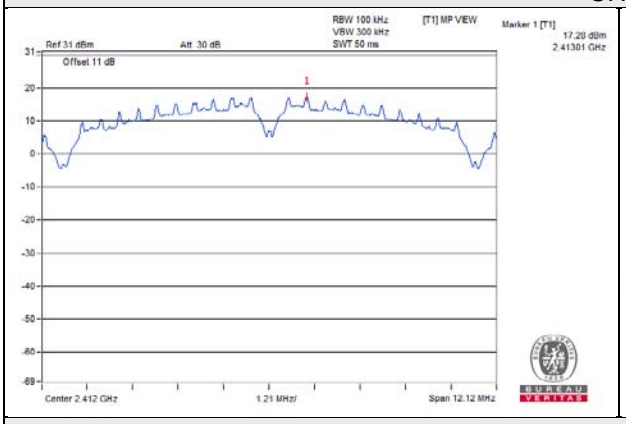


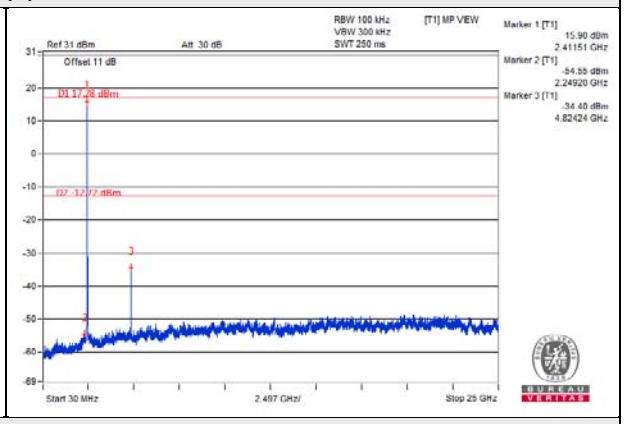
CH 11 Band edge



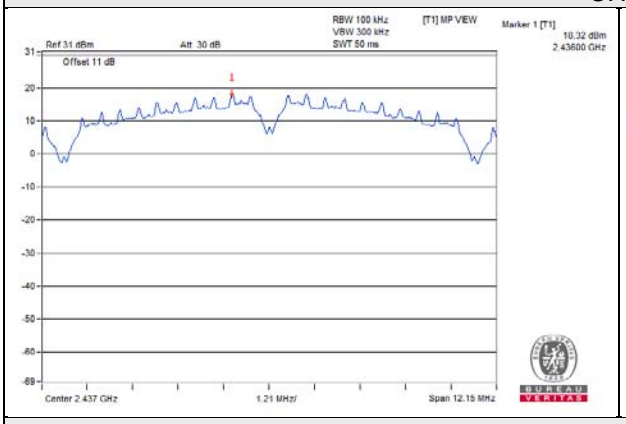
802.11b_Chain 1

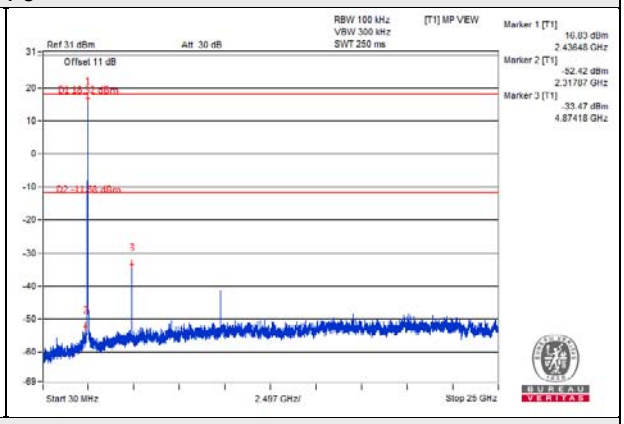
CH 1



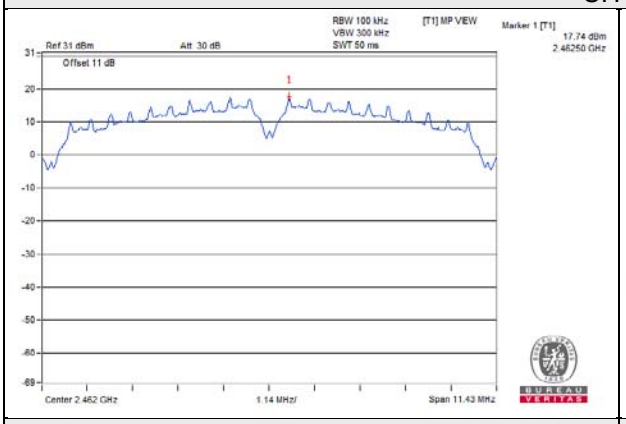


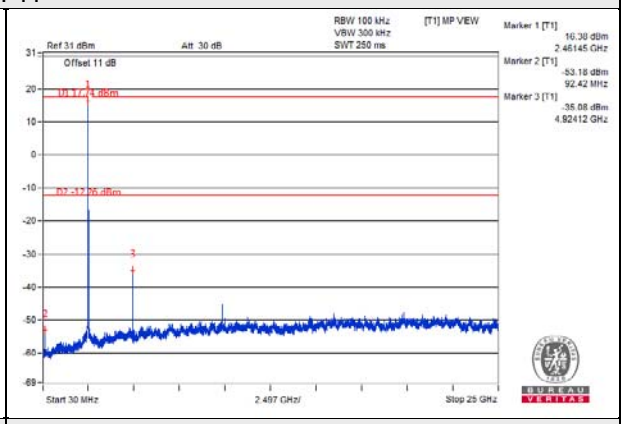
CH 6



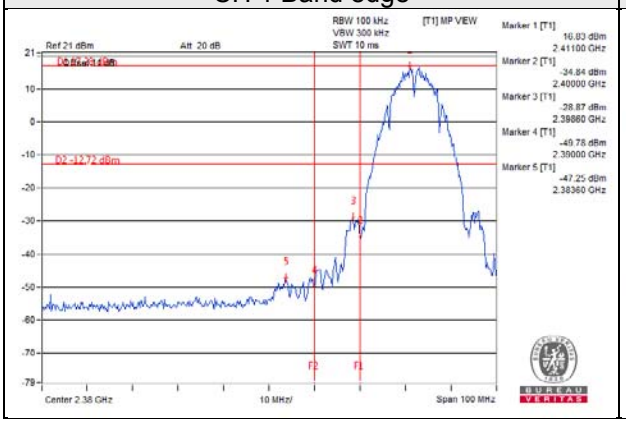


CH 11

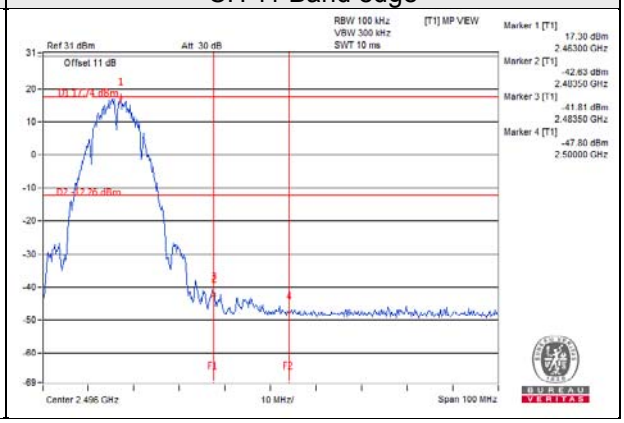




CH 1 Band edge

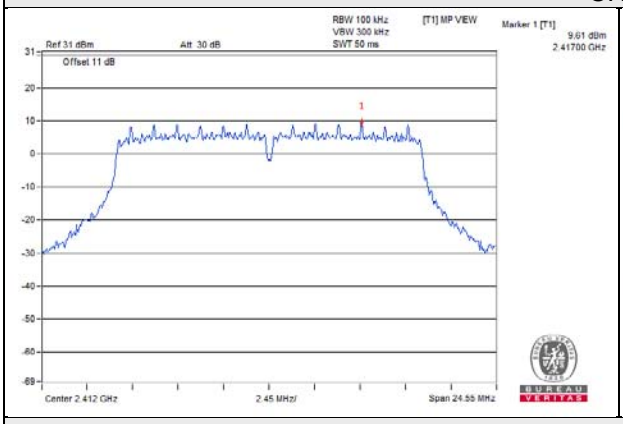


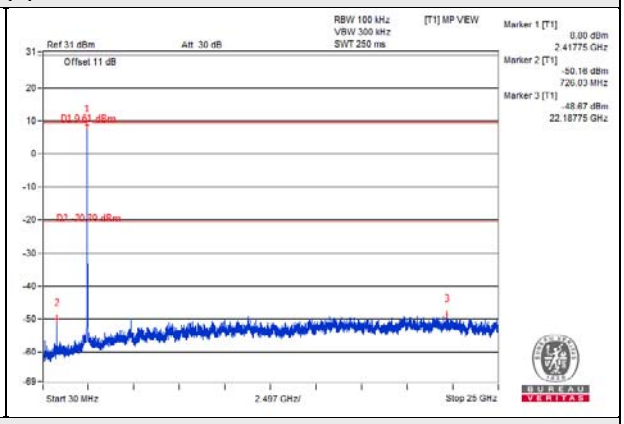
CH 11 Band edge



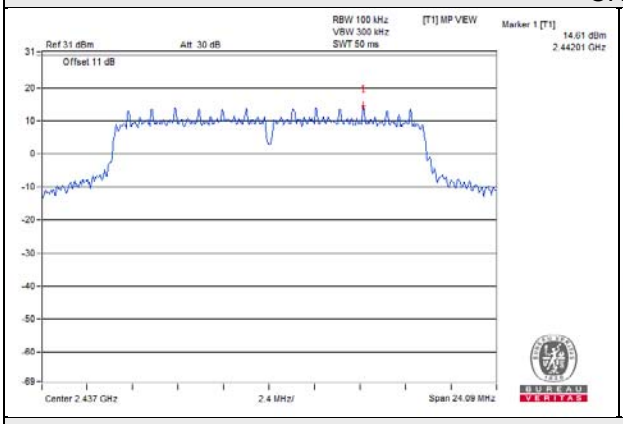
802.11g_Chain 0

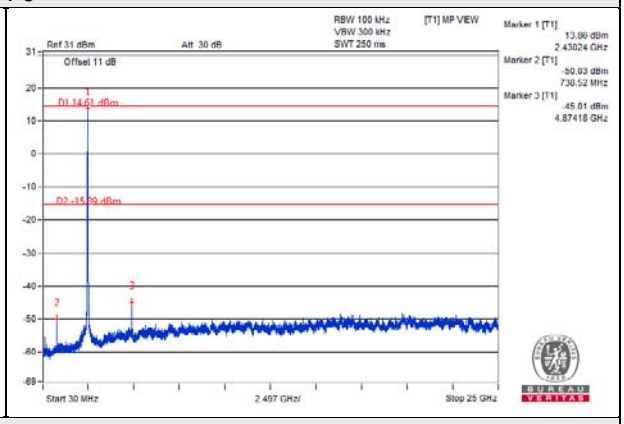
CH 1



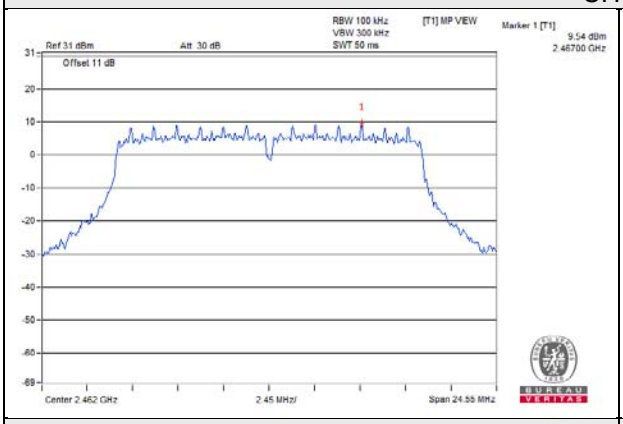


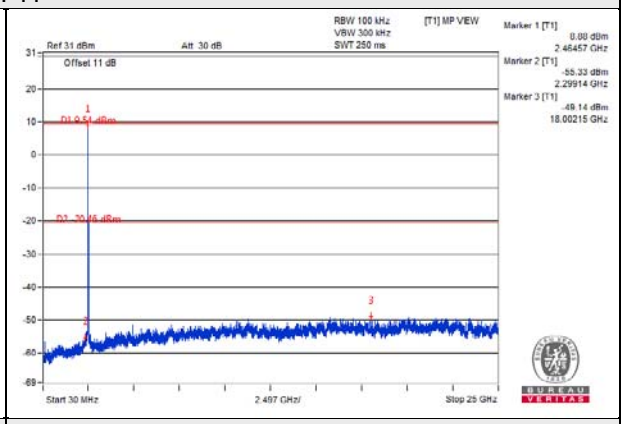
CH 6



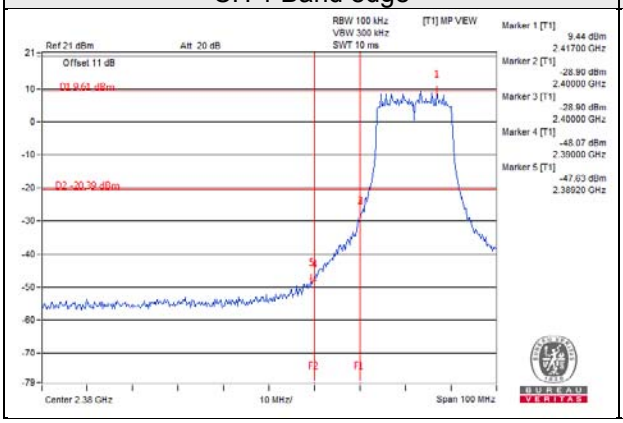


CH 11

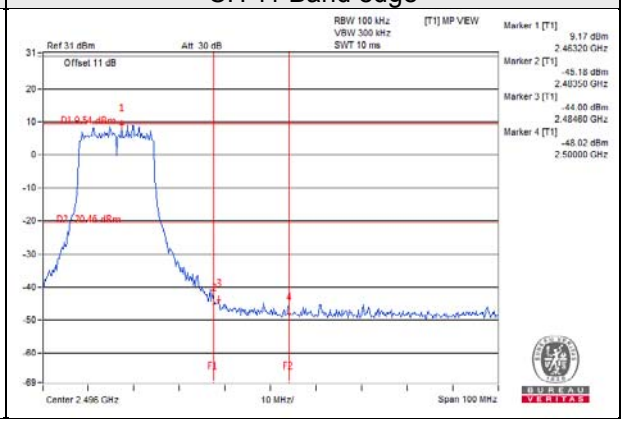




CH 1 Band edge

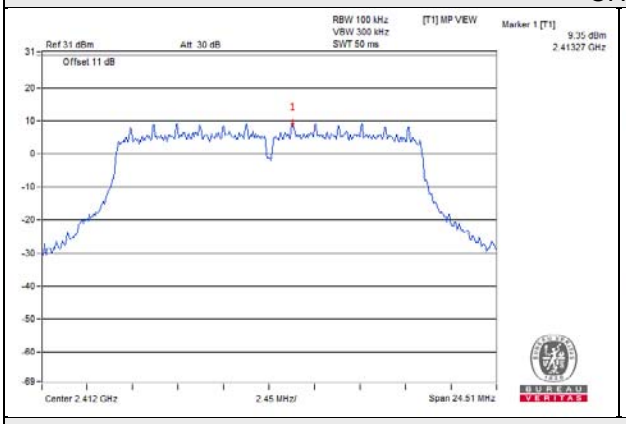


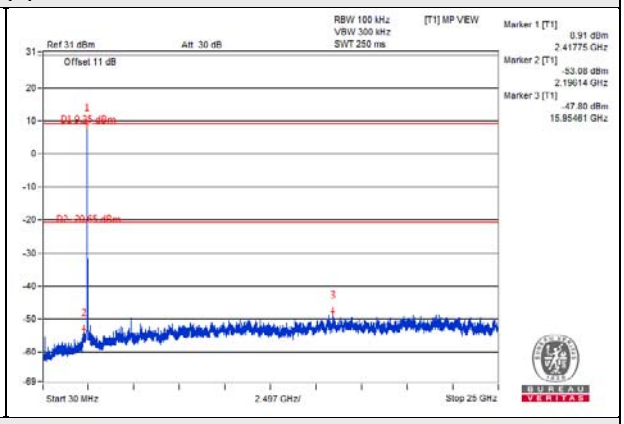
CH 11 Band edge



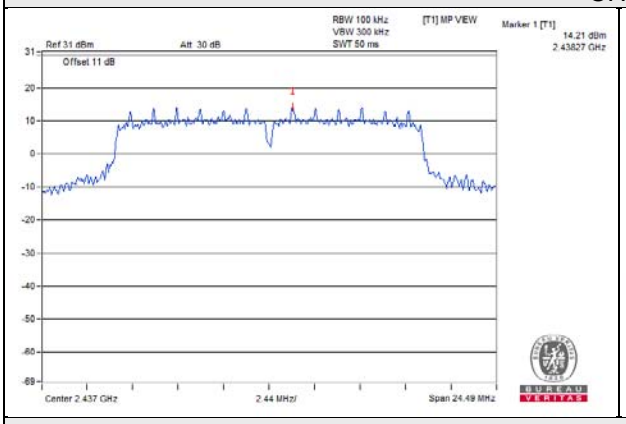
802.11g_Chain 1

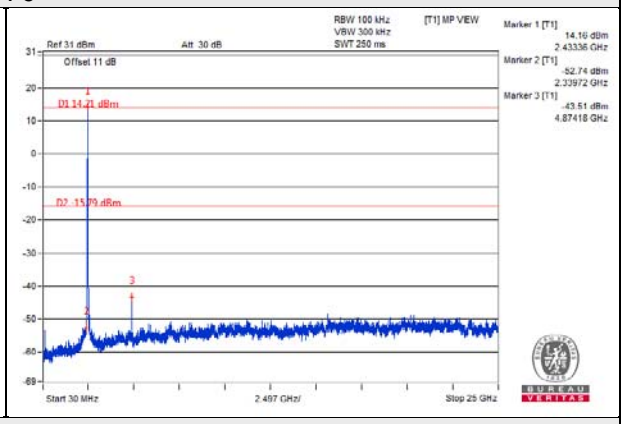
CH 1



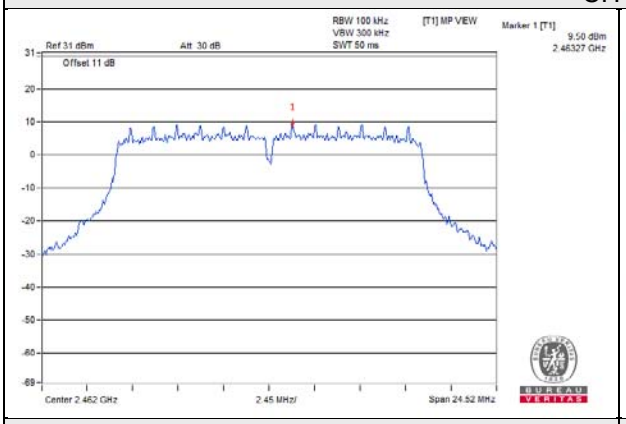


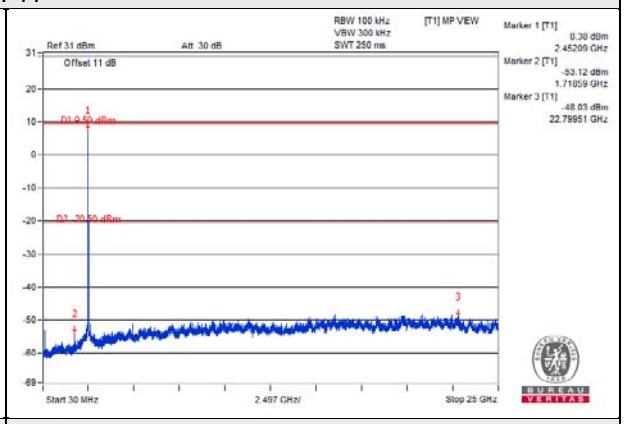
CH 6



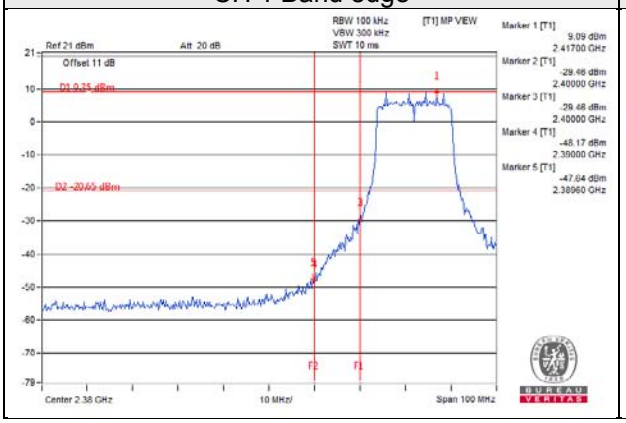


CH 11

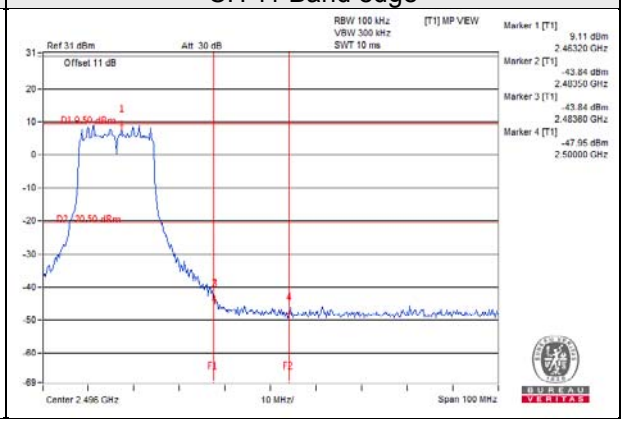




CH 1 Band edge

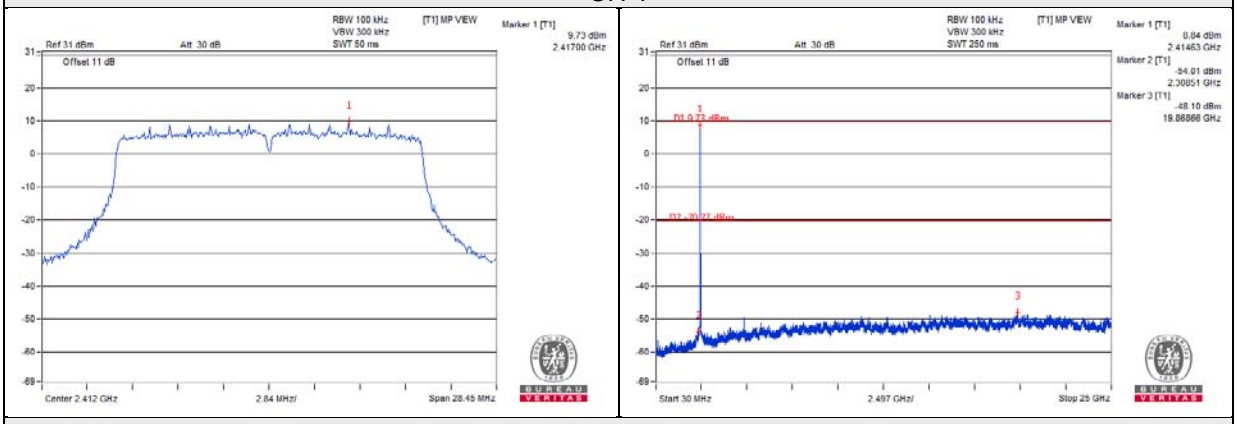


CH 11 Band edge

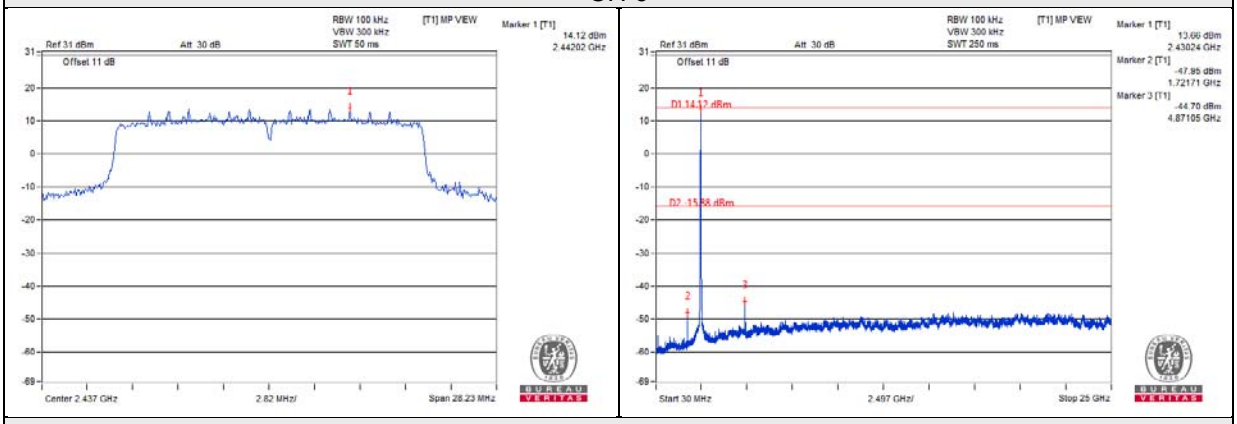


802.11ax (HE20)_Chain 0

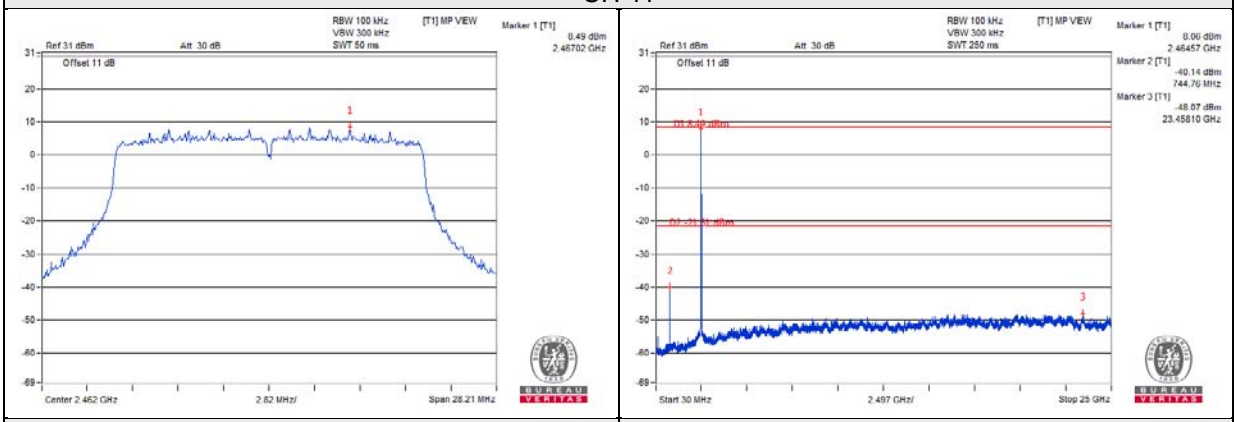
CH 1



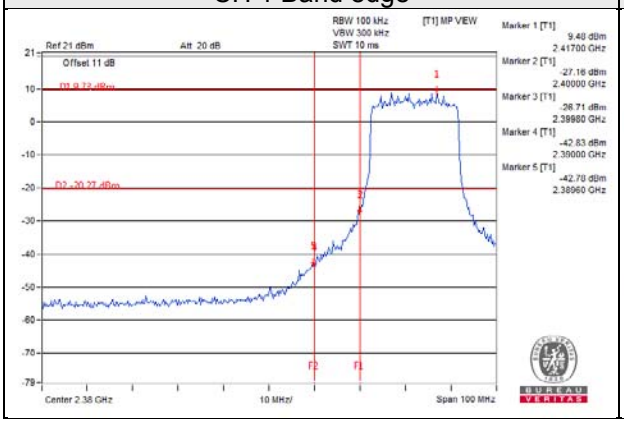
CH 6



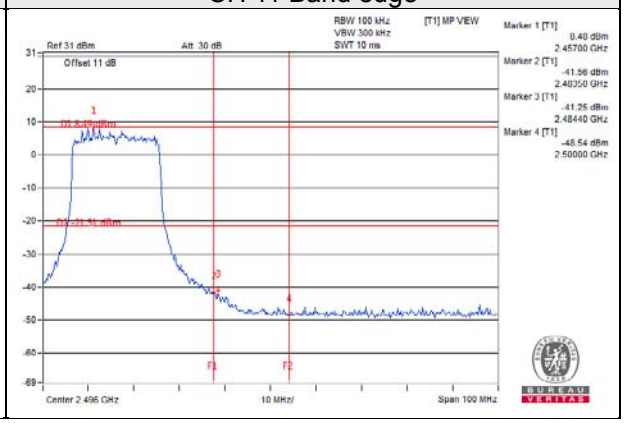
CH 11



CH 1 Band edge

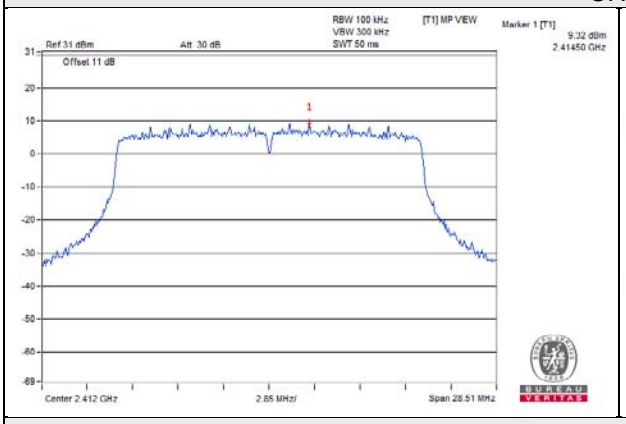


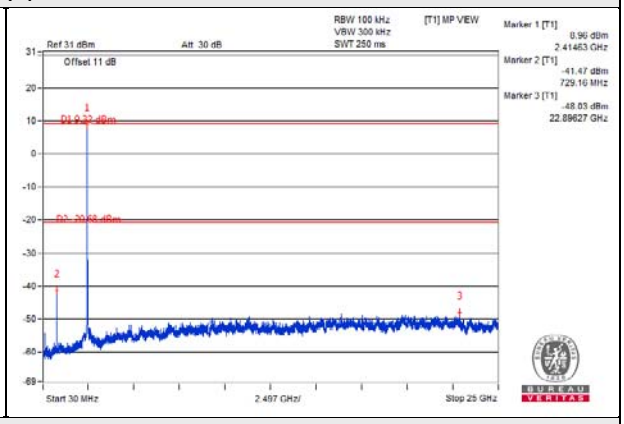
CH 11 Band edge



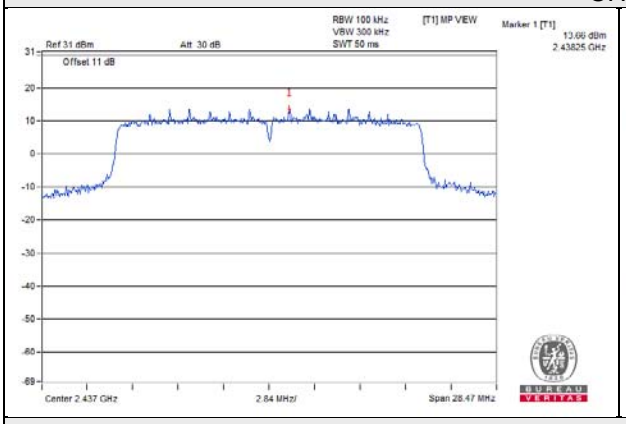
802.11ax (HE20)_Chain 1

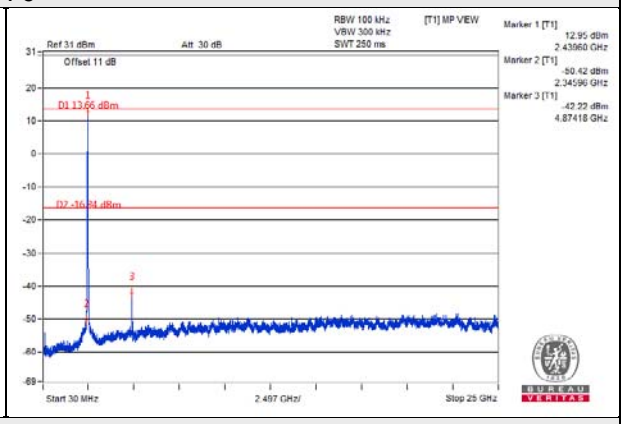
CH 1



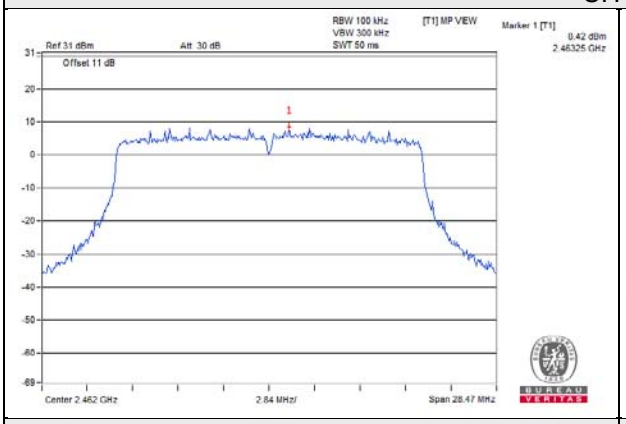


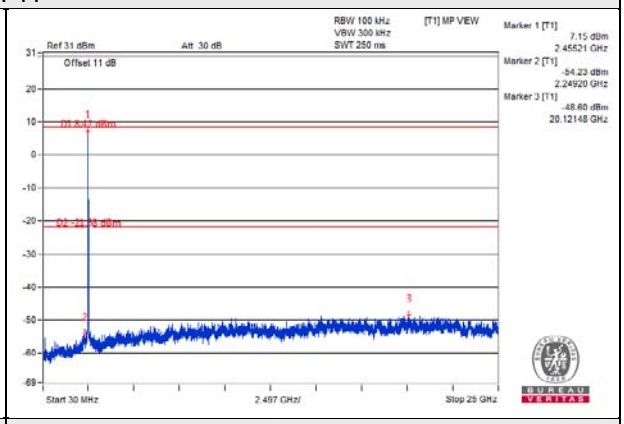
CH 6



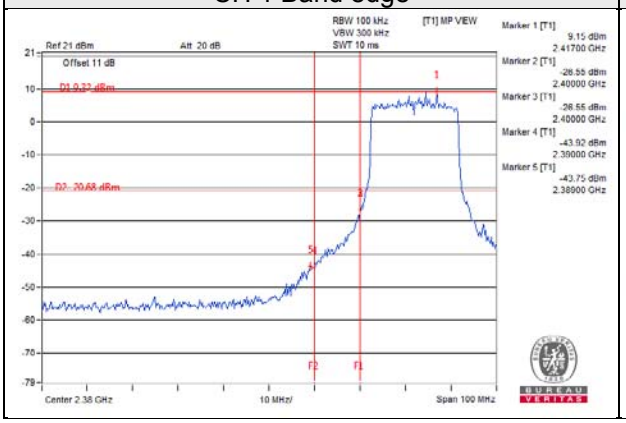


CH 11

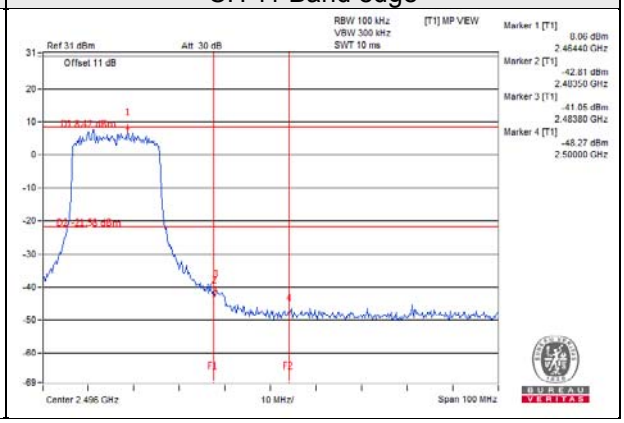




CH 1 Band edge

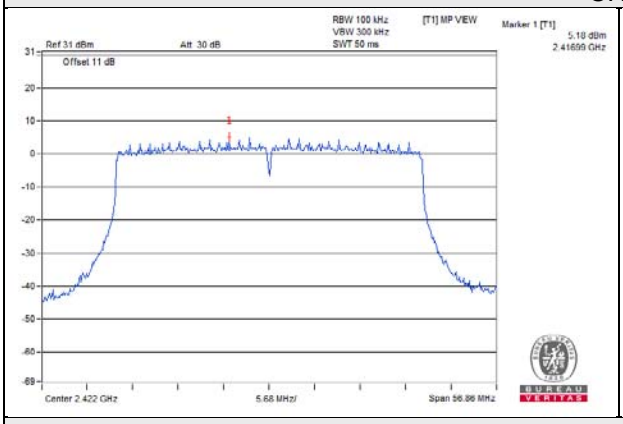


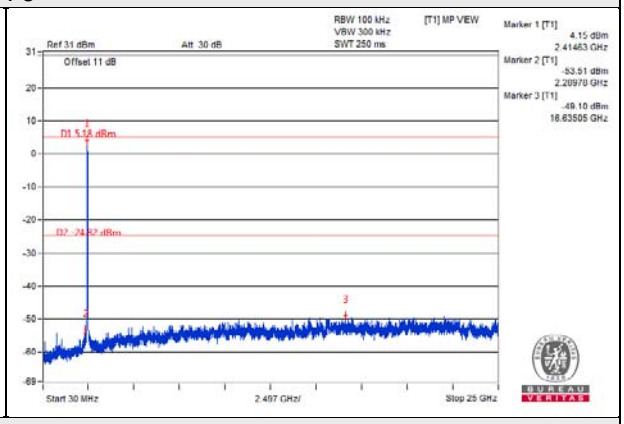
CH 11 Band edge



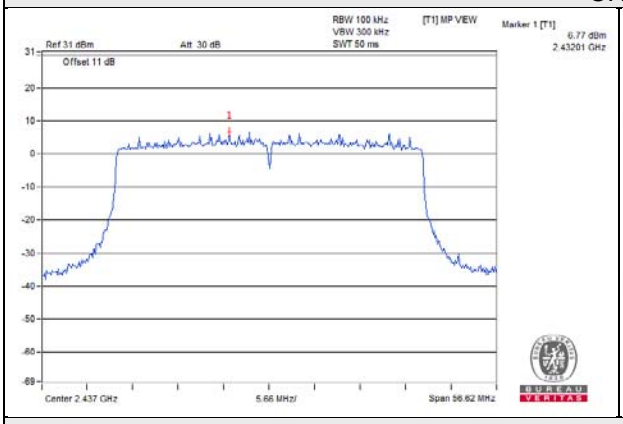
802.11ax (HE40)_Chain 0

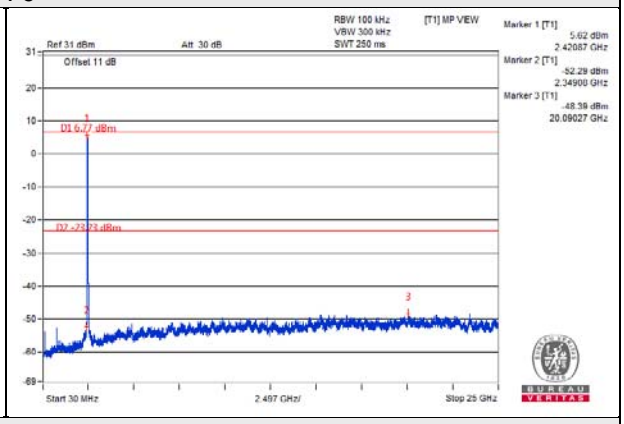
CH 3



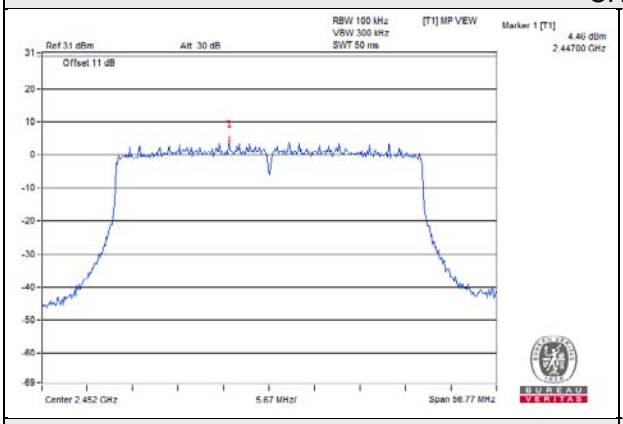


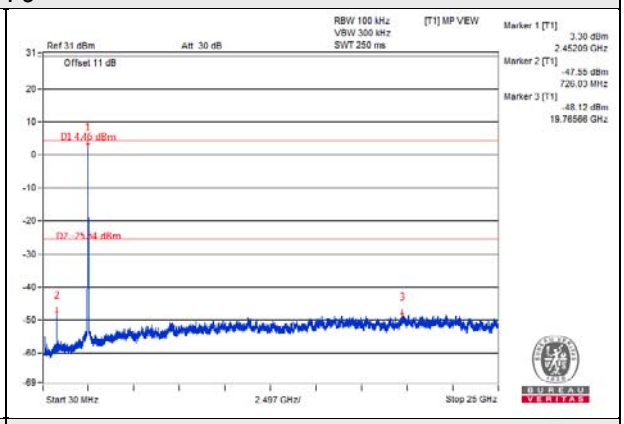
CH 6



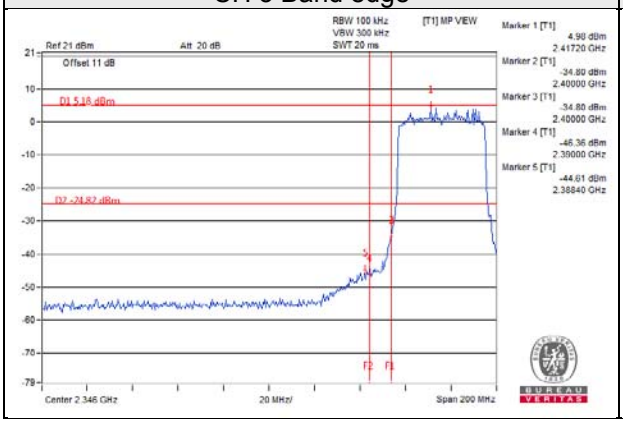


CH 9

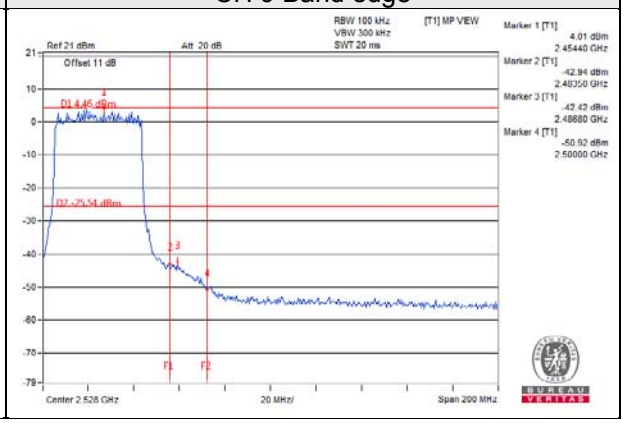




CH 3 Band edge

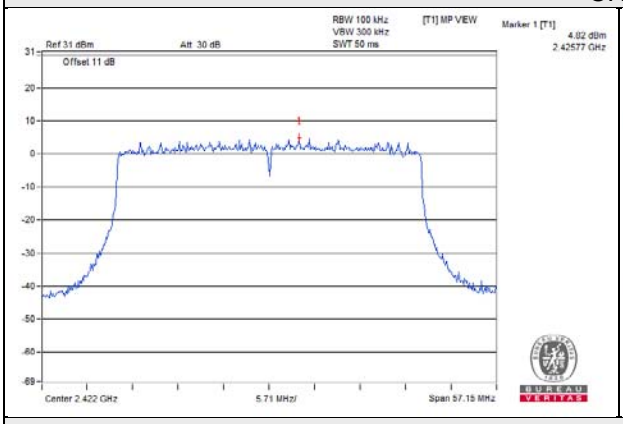


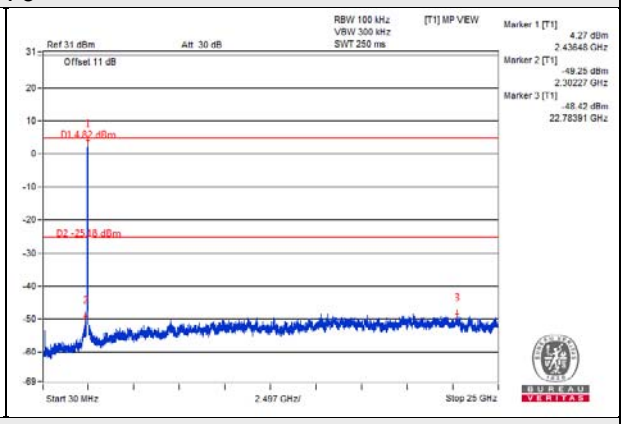
CH 9 Band edge



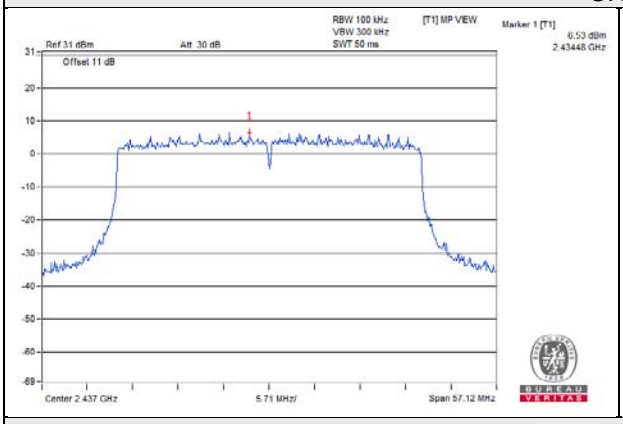
802.11ax (HE40)_Chain 1

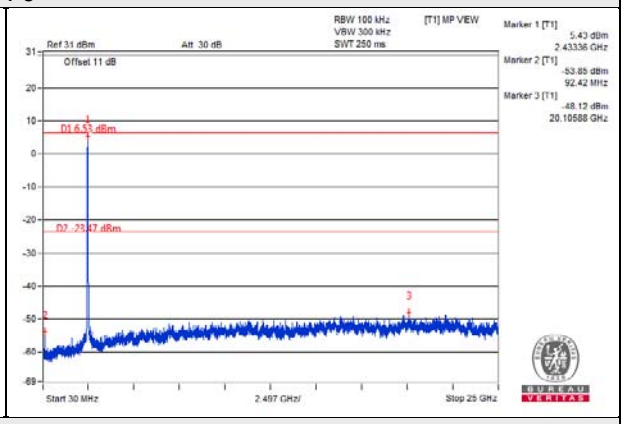
CH 3



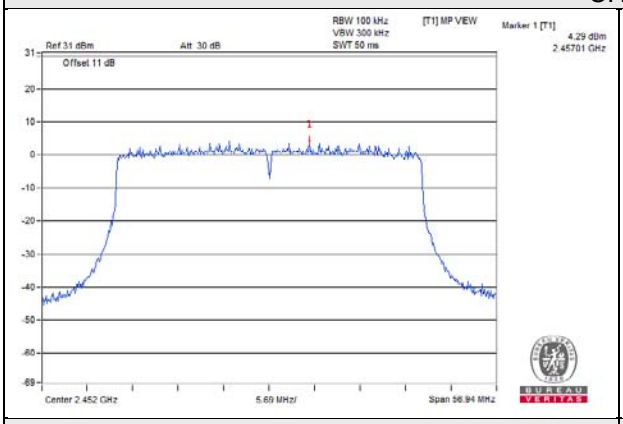


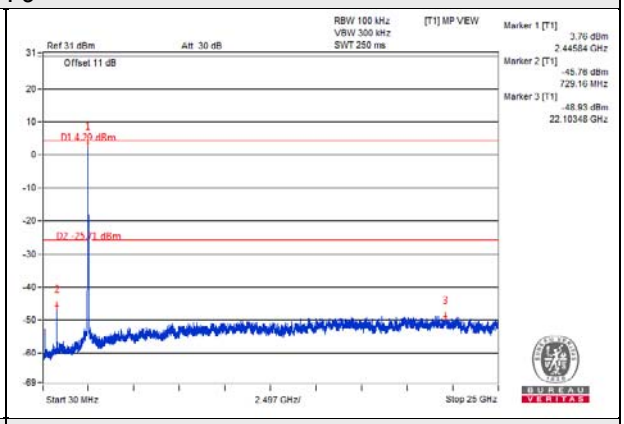
CH 6



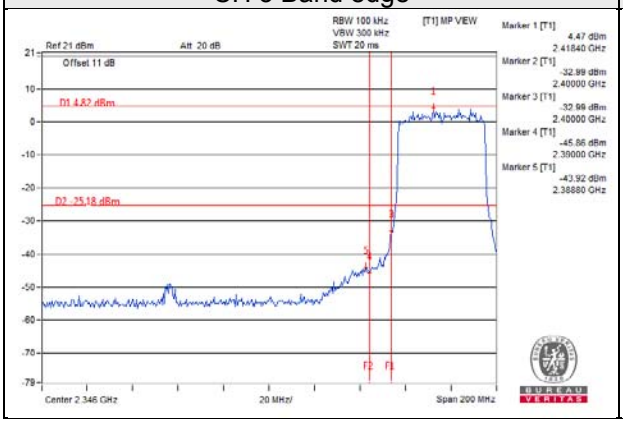


CH 9

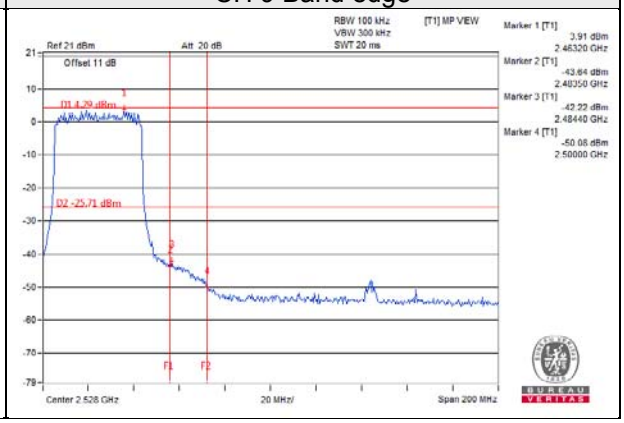




CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information of 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 and approved according to ISO/IEC 17025.

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

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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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