

Report No.: RF191129E10

FCC ID: RRC4000LG

Test Model: C4000LG

Received Date: Nov. 29, 2019

Test Date: Dec. 03 to 13, 2019

Issued Date: Dec. 30, 2019

Applicant: Alpha Networks Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RF191129E10	Original release.	Dec. 30, 2019

1 Certificate of Conformity

Product: VDSL2 integrated access device (IAD)

Brand: CenturyLink

Test Model: C4000LG

Sample Status: ENGINEERING SAMPLE

Applicant: Alpha Networks Inc.

Test Date: Dec. 03 to 13, 2019

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

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

Prepared by : Phoenix Huang, **Date:** Dec. 30, 2019
Phoenix Huang / Specialist

Approved by : Clark Lin, **Date:** Dec. 30, 2019
Clark Lin / Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.17 dB at 0.15000 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2 dB at 2390.00 MHz and 2483.50 MHz.
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.

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
Conducted emissions	-	3.1 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.0 dB
	30MHz ~ 1GHz	4.9 dB
Radiated Emissions above 1 GHz	1GHz ~ 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	VDSL2 integrated access device (IAD)
Brand	CenturyLink
Test Model	C4000LG
Status of EUT	ENGINEERING SAMPLE
Temperature Operating Range	0°C ~ 40°C
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz band 1024QAM for OFDMA in 11ax HE mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 866.7 Mbps 802.11ax: up to 1201.0 Mbps
Operating Frequency	2.4GHz: 2.412 ~ 2.462 GHz 5GHz: 5.18 ~ 5.24 GHz, 5.745 ~ 5.825 GHz
Number of Channel	2.4GHz: 802.11b, 802.11g, 802.11n (HT20), VHT20, 80211ax (HE20): 11 802.11n (HT40), VHT40, 80211ax (HE40): 7 5GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 80211ax (HE20): 9 802.11n (HT40), 802.11ac (VHT40), 80211ax (HE40): 4 802.11ac (VHT80), 80211ax (HE80): 2
Output Power	Non-Beamforming Mode: 2.412 ~ 2.462 GHz: 928.995 mW 5.18 ~ 5.24 GHz: 881.497 mW 5.745 ~ 5.825 GHz: 982.568 mW Beamforming Mode: 2.412 ~ 2.462 GHz: 841.422 mW 5.18 ~ 5.24 GHz: 811.019 mW 5.745 ~ 5.825 GHz: 769.064 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	Refer to Note

Note:

1. Simultaneously transmission condition.

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

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

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

Frequency Range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4 ~ 2.5	5.1	PCB	i-pex(MHF)
5.15 ~ 5.25	6.3		
5.25 ~ 5.35	7.6		
5.47 ~ 5.725	6.4		
5.725 ~ 5.85	7.1		

Note: More detailed information, please refer to antenna specification.

3. The EUT must be supplied with a power adapter as following table:

No.	Brand	Model No.	Spec.	Plug
1	Asian Power Devices Inc	WA-30P12FU	AC Input: 100-240Vac, 0.9A, 50-60Hz DC Output: 12V, 2.5A DC Output Cable: 1.83m, Unshielded	US
2	LEADER ELECTRONICS INC.	ML30B1120250-A1	AC Input: 100-120Vac, 0.8A, 50/60Hz DC Output: 12V, 2.5A DC Output Cable: 1.83m, Unshielded	US

Note: From the above conditions, the conducted emissions and radiated emissions worse case was found in **Adapter No. 2**. Therefore only the test data of the mode was recorded in this report.

4. The data cable supplied as following table:

Product	Brand	Color	Quantity	Remark
RJ45 Cable	Nien-Yi/Hunter	Yellow	1	1.83M, unshielded
		White	1	1.83M, unshielded
RJ14 Cable		Green	1	3.66M, unshielded

5. The EUT incorporates a MIMO function:

2.4GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11b	1TX (Fixed Chain 0)	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
VHT20	2TX	2RX
VHT40	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
5GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11a	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ac (VHT80)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX

Note:

1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
 2. The EUT support Beamforming and Non-Beamforming mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
 3. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz), VHT mode for 20MHz (40MHz) and 802.11ax mode for 20MHz (40MHz), therefore the manufacturer will control the power for 802.11n mode is the same as the VHT or more lower than it and investigated worst case to representative mode in test report. (Final test mode refer to section 3.2.1)
6. 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), VHT20, 802.11ax (HE20):

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

7 channels are provided for 802.11n (HT40), VHT40, 802.11ax (HE40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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.

Non-Beamforming Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Parameter
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1Mb/s
802.11g	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6Mb/s
802.11ax (HE20)	1 to 11	1, 2, 6, 10, 11	OFDMA	BPSK	MCS0
802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	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.

Non-Beamforming Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Parameter
802.11g	1 to 11	6	OFDM	BPSK	6Mb/s

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.

Non-Beamforming Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Parameter
802.11g	1 to 11	6	OFDM	BPSK	6Mb/s

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.

Non-Beamforming Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Parameter
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1Mb/s
802.11g	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	6Mb/s
VHT20 (for output power)	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	MCS0
VHT40 (for output power)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0
802.11ax (HE20)	1 to 11	1, 2, 6, 10, 11	OFDMA	BPSK	MCS0
802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0
Beamforming Mode (output power only)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Parameter
VHT20	1 to 11	1, 2, 6, 10, 11	OFDM	BPSK	MCS0
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	MCS0
802.11ax (HE20)	1 to 11	1, 2, 6, 10, 11	OFDMA	BPSK	MCS0
802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 69%RH	120Vac, 60Hz	Jeff Lee
RE<1G	23deg. C, 64%RH	120Vac, 60Hz	Tom Yang
PLC	23deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

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

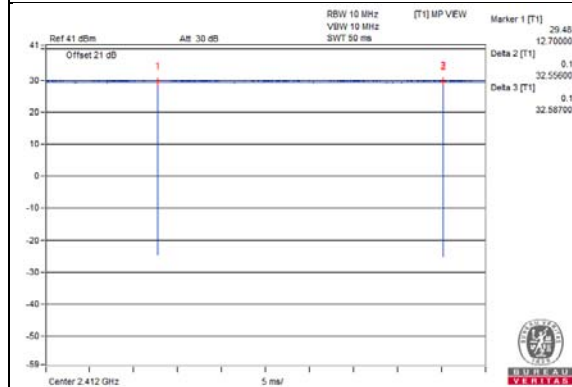
802.11b: Duty cycle = $32.556/32.587 = 0.999$

802.11g: Duty cycle = $5.385/5.44 = 0.99$

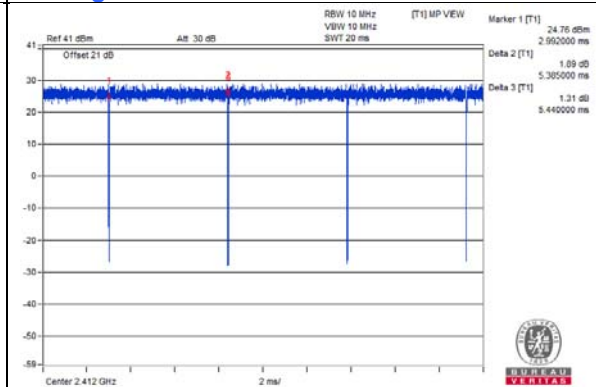
802.11ax (HE20): Duty cycle = $3.792/3.83 = 0.99$

802.11ax (HE40): Duty cycle = $1.918/1.945 = 0.986$

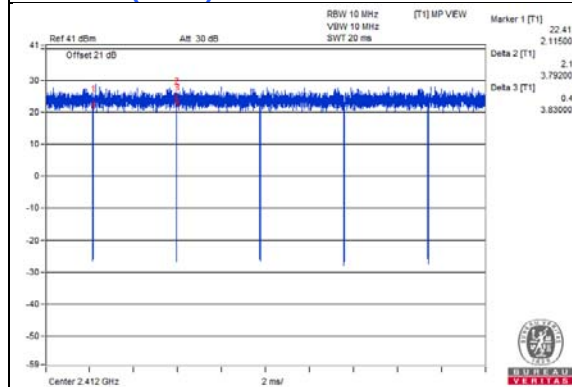
802.11b



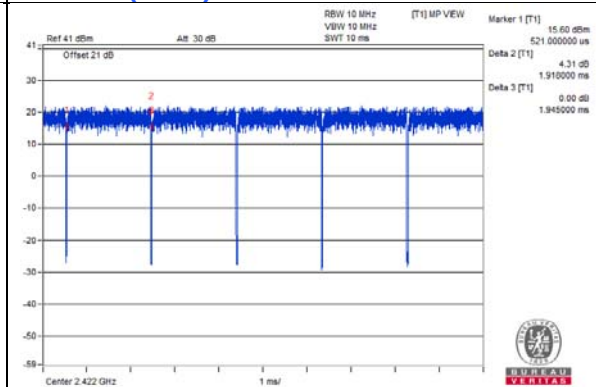
802.11g



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.

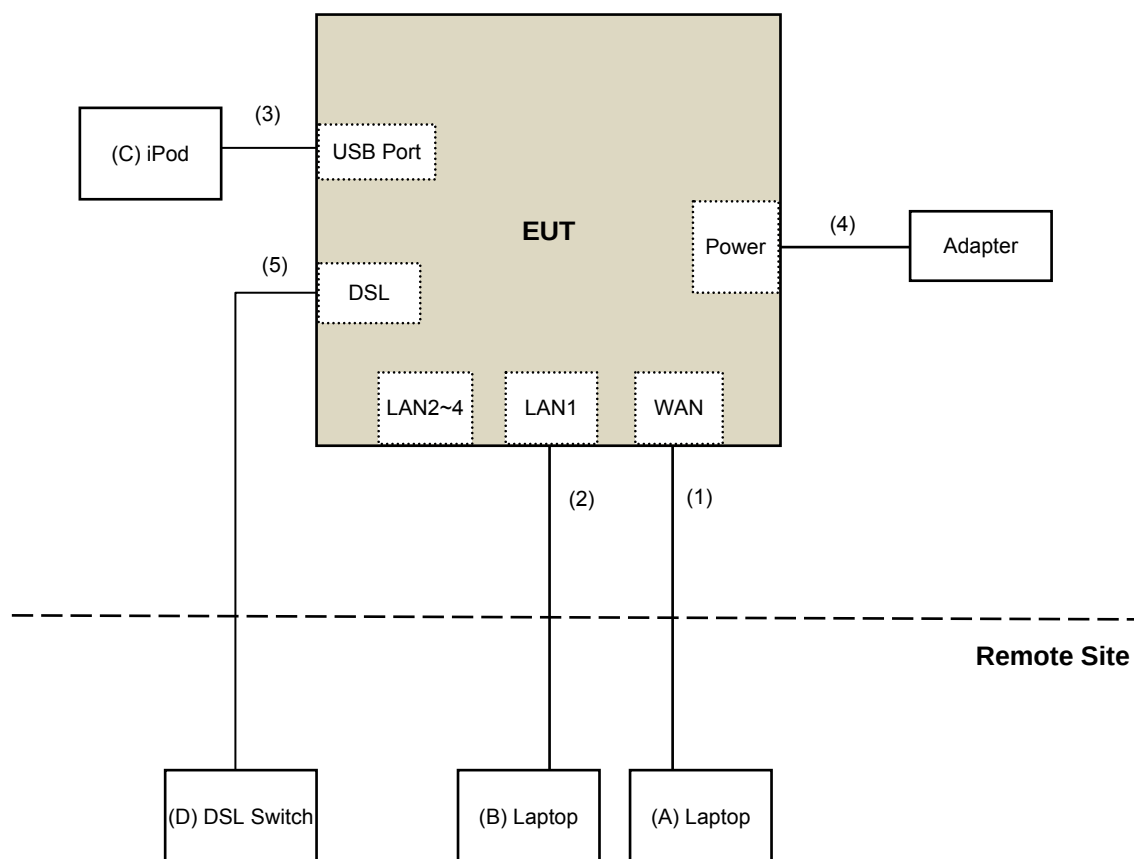
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Laptop	DELL	E6420	FCC DoC	Provided by Lab
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	iPod	Apple	MC749TA/A	CC4DM9M8DFDM	NA	Provided by Lab
D.	DSL Switch	D-LINK	DAS-3626	NA	NA	Supplied by client

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	USB Cable	1	0.1	Yes	0	Provided by Lab
4.	DC Cable	1	1.83	No	0	Supplied by client
5.	RJ-14 Cable	1	10	No	0	Provided by Lab

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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 03, 2019	July 02, 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
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
Spectrum Analyzer R&S	FSV40	100964	June 04, 2019	June 03, 2020
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020

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 966 Chamber No. 4.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Dec. 04 to 13, 2019

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

Note:

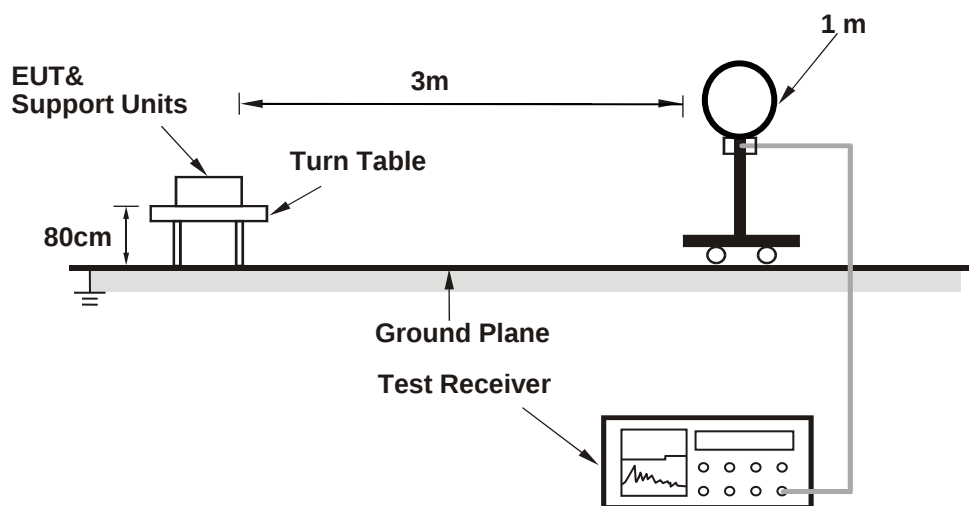
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

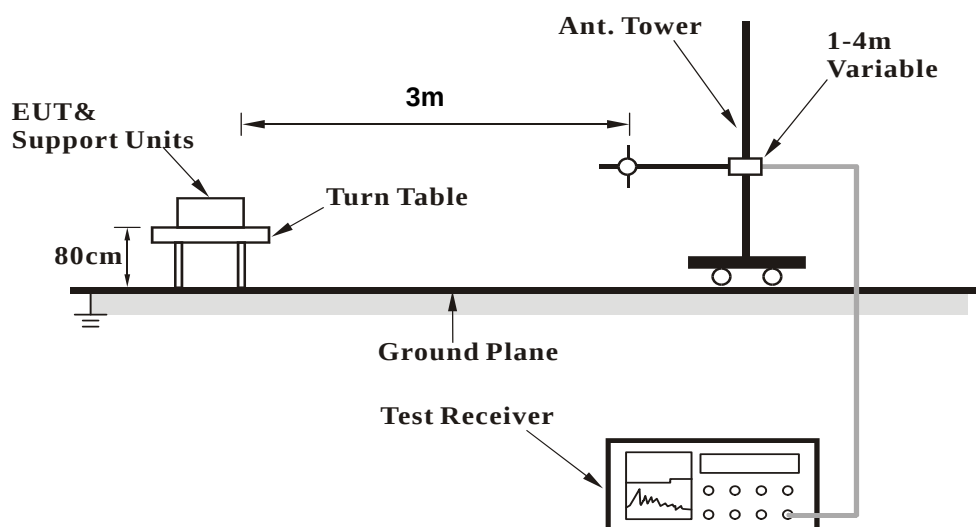
No deviation.

4.1.5 Test Setup

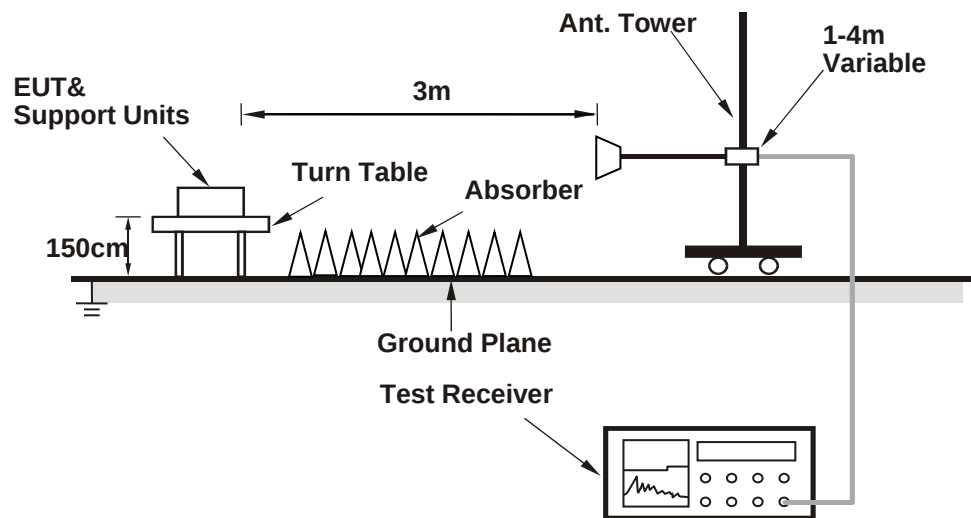
For Radiated emission below 30MHz



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 (Intel DUT Ver.610.23) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.2 PK	74.0	-18.8	3.46 H	353	56.9	-1.7
2	2390.00	43.2 AV	54.0	-10.8	3.46 H	353	44.9	-1.7
3	*2412.00	106.6 PK			3.44 H	320	108.4	-1.8
4	*2412.00	103.9 AV			3.44 H	320	105.7	-1.8
5	4824.00	43.0 PK	74.0	-31.0	1.95 H	124	40.9	2.1
6	4824.00	39.1 AV	54.0	-14.9	1.95 H	124	37.0	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	60.7 PK	74.0	-13.3	1.51 V	199	62.4	-1.7
2	2390.00	52.7 AV	54.0	-1.3	1.51 V	199	54.4	-1.7
3	*2412.00	114.5 PK			1.51 V	199	116.3	-1.8
4	*2412.00	111.9 AV			1.51 V	199	113.7	-1.8
5	4824.00	44.9 PK	74.0	-29.1	1.81 V	112	42.8	2.1
6	4824.00	39.0 AV	54.0	-15.0	1.81 V	112	36.9	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	55.1 PK	74.0	-18.9	3.55 H	356	56.8	-1.7
2	2390.00	43.2 AV	54.0	-10.8	3.55 H	356	44.9	-1.7
3	*2437.00	106.9 PK			3.41 H	332	108.7	-1.8
4	*2437.00	104.0 AV			3.41 H	332	105.8	-1.8
5	2483.50	56.6 PK	74.0	-17.4	3.47 H	354	58.3	-1.7
6	2483.50	44.8 AV	54.0	-9.2	3.47 H	354	46.5	-1.7
7	4874.00	43.2 PK	74.0	-30.8	1.87 H	96	41.0	2.2
8	4874.00	39.2 AV	54.0	-14.8	1.87 H	96	37.0	2.2
9	7311.00	44.2 PK	74.0	-29.8	1.00 H	328	35.2	9.0
10	7311.00	31.5 AV	54.0	-22.5	1.00 H	328	22.5	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	61.9 PK	74.0	-12.1	1.56 V	200	63.6	-1.7
2	2390.00	53.1 AV	54.0	-0.9	1.56 V	200	54.8	-1.7
3	*2437.00	113.2 PK			1.56 V	200	115.0	-1.8
4	*2437.00	110.1 AV			1.56 V	200	111.9	-1.8
5	2483.50	57.5 PK	74.0	-16.5	1.56 V	200	59.2	-1.7
6	2483.50	46.8 AV	54.0	-7.2	1.56 V	200	48.5	-1.7
7	4874.00	44.6 PK	74.0	-29.4	1.91 V	118	42.4	2.2
8	4874.00	38.7 AV	54.0	-15.3	1.91 V	118	36.5	2.2
9	7311.00	46.8 PK	74.0	-27.2	1.00 V	328	37.8	9.0
10	7311.00	33.4 AV	54.0	-20.6	1.00 V	328	24.4	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.2 PK			3.41 H	336	109.0	-1.8
2	*2462.00	104.3 AV			3.41 H	336	106.1	-1.8
3	2483.50	56.4 PK	74.0	-17.6	3.51 H	350	58.1	-1.7
4	2483.50	44.5 AV	54.0	-9.5	3.51 H	350	46.2	-1.7
5	4924.00	42.9 PK	74.0	-31.1	1.89 H	108	40.6	2.3
6	4924.00	38.9 AV	54.0	-15.1	1.89 H	108	36.6	2.3
7	7386.00	44.4 PK	74.0	-29.6	1.00 H	343	35.1	9.3
8	7386.00	31.7 AV	54.0	-22.3	1.00 H	343	22.4	9.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.4 PK	74.0	-13.6	1.32 V	208	62.1	-1.7
2	2390.00	51.3 AV	54.0	-2.7	1.32 V	208	53.0	-1.7
3	*2462.00	114.8 PK			1.32 V	208	116.6	-1.8
4	*2462.00	112.6 AV			1.32 V	208	114.4	-1.8
5	2483.50	60.5 PK	74.0	-13.5	1.32 V	208	62.2	-1.7
6	2483.50	51.0 AV	54.0	-3.0	1.32 V	208	52.7	-1.7
7	4924.00	45.1 PK	74.0	-28.9	1.86 V	102	42.8	2.3
8	4924.00	39.2 AV	54.0	-14.8	1.86 V	102	36.9	2.3
9	7386.00	47.2 PK	74.0	-26.8	1.00 V	320	37.9	9.3
10	7386.00	33.6 AV	54.0	-20.4	1.00 V	320	24.3	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	55.8 PK	74.0	-18.2	3.47 H	331	57.5	-1.7
2	2390.00	43.4 AV	54.0	-10.6	3.47 H	331	45.1	-1.7
3	*2412.00	106.8 PK			3.47 H	331	108.6	-1.8
4	*2412.00	98.3 AV			3.47 H	331	100.1	-1.8
5	4824.00	41.3 PK	74.0	-32.7	1.91 H	104	39.2	2.1
6	4824.00	31.9 AV	54.0	-22.1	1.91 H	104	29.8	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	70.5 PK	74.0	-3.5	1.23 V	234	72.2	-1.7
2	2390.00	53.6 AV	54.0	-0.4	1.23 V	234	55.3	-1.7
3	*2412.00	115.4 PK			1.23 V	234	117.2	-1.8
4	*2412.00	106.1 AV			1.23 V	234	107.9	-1.8
5	4824.00	42.3 PK	74.0	-31.7	1.86 V	107	40.2	2.1
6	4824.00	36.2 AV	54.0	-17.8	1.86 V	107	34.1	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.7 PK	74.0	-18.3	3.42 H	332	57.4	-1.7
2	2390.00	43.3 AV	54.0	-10.7	3.42 H	332	45.0	-1.7
3	*2417.00	107.2 PK			3.42 H	332	109.0	-1.8
4	*2417.00	99.1 AV			3.42 H	332	100.9	-1.8
5	4834.00	40.7 PK	74.0	-33.3	1.96 H	90	38.6	2.1
6	4834.00	31.6 AV	54.0	-22.4	1.96 H	90	29.5	2.1
7	7251.00	42.2 PK	74.0	-31.8	1.00 H	341	33.4	8.8
8	7251.00	33.8 AV	54.0	-20.2	1.00 H	341	25.0	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	2390.00	68.5 PK	74.0	-5.5	1.08 V	308	70.2	-1.7
2	2390.00	53.7 AV	54.0	-0.3	1.08 V	308	55.4	-1.7
3	*2417.00	116.1 PK			1.08 V	308	117.9	-1.8
4	*2417.00	107.2 AV			1.08 V	308	109.0	-1.8
5	4834.00	40.6 PK	74.0	-33.4	1.71 V	117	38.5	2.1
6	4834.00	32.2 AV	54.0	-21.8	1.71 V	117	30.1	2.1
7	7251.00	42.0 PK	74.0	-32.0	1.00 V	327	33.2	8.8
8	7251.00	33.9 AV	54.0	-20.1	1.00 V	327	25.1	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	55.1 PK	74.0	-18.9	3.39 H	332	56.8	-1.7
2	2390.00	43.5 AV	54.0	-10.5	3.39 H	332	45.2	-1.7
3	*2437.00	114.1 PK			3.39 H	332	115.9	-1.8
4	*2437.00	105.0 AV			3.39 H	332	106.8	-1.8
5	2483.50	56.3 PK	74.0	-17.7	3.39 H	332	58.0	-1.7
6	2483.50	44.6 AV	54.0	-9.4	3.39 H	332	46.3	-1.7
7	4874.00	41.2 PK	74.0	-32.8	1.92 H	103	39.0	2.2
8	4874.00	32.1 AV	54.0	-21.9	1.92 H	103	29.9	2.2
9	7311.00	42.1 PK	74.0	-31.9	1.00 H	347	33.1	9.0
10	7311.00	33.5 AV	54.0	-20.5	1.00 H	347	24.5	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	64.1 PK	74.0	-9.9	1.10 V	295	65.8	-1.7
2	2390.00	53.0 AV	54.0	-1.0	1.10 V	295	54.7	-1.7
3	*2437.00	121.9 PK			1.10 V	295	123.7	-1.8
4	*2437.00	112.3 AV			1.10 V	295	114.1	-1.8
5	2483.50	64.1 PK	74.0	-9.9	1.10 V	295	65.8	-1.7
6	2483.50	51.7 AV	54.0	-2.3	1.10 V	295	53.4	-1.7
7	4874.00	40.2 PK	74.0	-33.8	1.77 V	106	38.0	2.2
8	4874.00	31.8 AV	54.0	-22.2	1.77 V	106	29.6	2.2
9	7311.00	42.2 PK	74.0	-31.8	1.00 V	328	33.2	9.0
10	7311.00	34.4 AV	54.0	-19.6	1.00 V	328	25.4	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2457.00	107.0 PK			3.36 H	340	108.8	-1.8
2	*2457.00	99.2 AV			3.36 H	340	101.0	-1.8
3	2483.50	55.9 PK	74.0	-18.1	3.36 H	340	57.6	-1.7
4	2483.50	44.2 AV	54.0	-9.8	3.36 H	340	45.9	-1.7
5	4914.00	41.7 PK	74.0	-32.3	1.97 H	96	39.4	2.3
6	4914.00	32.5 AV	54.0	-21.5	1.97 H	96	30.2	2.3
7	7371.00	41.6 PK	74.0	-32.4	1.00 H	360	32.5	9.1
8	7371.00	33.1 AV	54.0	-20.9	1.00 H	360	24.0	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	*2457.00	116.6 PK			1.11 V	320	118.4	-1.8
2	*2457.00	107.5 AV			1.11 V	320	109.3	-1.8
3	2483.50	68.1 PK	74.0	-5.9	1.11 V	320	69.8	-1.7
4	2483.50	53.5 AV	54.0	-0.5	1.11 V	320	55.2	-1.7
5	4914.00	39.9 PK	74.0	-34.1	1.76 V	92	37.6	2.3
6	4914.00	31.7 AV	54.0	-22.3	1.76 V	92	29.4	2.3
7	7371.00	42.5 PK	74.0	-31.5	1.07 V	340	33.4	9.1
8	7371.00	34.5 AV	54.0	-19.5	1.07 V	340	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.0 PK			3.50 H	327	108.8	-1.8
2	*2462.00	98.0 AV			3.50 H	327	99.8	-1.8
3	2483.50	56.0 PK	74.0	-18.0	3.50 H	327	57.7	-1.7
4	2483.50	44.1 AV	54.0	-9.9	3.50 H	327	45.8	-1.7
5	4924.00	40.6 PK	74.0	-33.4	1.89 H	114	38.3	2.3
6	4924.00	31.7 AV	54.0	-22.3	1.89 H	114	29.4	2.3
7	7386.00	42.5 PK	74.0	-31.5	1.00 H	358	33.2	9.3
8	7386.00	33.9 AV	54.0	-20.1	1.00 H	358	24.6	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	115.3 PK			2.46 V	188	117.1	-1.8
2	*2462.00	105.6 AV			2.46 V	188	107.4	-1.8
3	2483.50	70.8 PK	74.0	-3.2	2.46 V	188	72.5	-1.7
4	2483.50	53.6 AV	54.0	-0.4	2.46 V	188	55.3	-1.7
5	4924.00	40.3 PK	74.0	-33.7	1.73 V	103	38.0	2.3
6	4924.00	32.1 AV	54.0	-21.9	1.73 V	103	29.8	2.3
7	7386.00	42.2 PK	74.0	-31.8	1.12 V	339	32.9	9.3
8	7386.00	34.7 AV	54.0	-19.3	1.12 V	339	25.4	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

802.11ax (HE20)

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	55.0 PK	74.0	-19.0	3.38 H	320	56.7	-1.7
2	2390.00	42.8 AV	54.0	-11.2	3.38 H	320	44.5	-1.7
3	*2412.00	106.7 PK			3.38 H	320	108.5	-1.8
4	*2412.00	98.4 AV			3.38 H	320	100.2	-1.8
5	4824.00	40.9 PK	74.0	-33.1	1.90 H	108	38.8	2.1
6	4824.00	31.7 AV	54.0	-22.3	1.90 H	108	29.6	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	70.0 PK	74.0	-4.0	2.12 V	240	71.7	-1.7
2	2390.00	53.8 AV	54.0	-0.2	2.12 V	240	55.5	-1.7
3	*2412.00	114.9 PK			2.12 V	240	116.7	-1.8
4	*2412.00	105.8 AV			2.12 V	240	107.6	-1.8
5	4824.00	40.0 PK	74.0	-34.0	1.84 V	93	37.9	2.1
6	4824.00	31.8 AV	54.0	-22.2	1.84 V	93	29.7	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.6 PK	74.0	-18.4	3.42 H	326	57.3	-1.7
2	2390.00	43.4 AV	54.0	-10.6	3.42 H	326	45.1	-1.7
3	*2417.00	107.2 PK			3.42 H	326	109.0	-1.8
4	*2417.00	99.2 AV			3.42 H	326	101.0	-1.8
5	4834.00	41.1 PK	74.0	-32.9	1.91 H	101	39.0	2.1
6	4834.00	31.9 AV	54.0	-22.1	1.91 H	101	29.8	2.1
7	7251.00	42.1 PK	74.0	-31.9	1.00 H	352	33.3	8.8
8	7251.00	33.3 AV	54.0	-20.7	1.00 H	352	24.5	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	2390.00	68.6 PK	74.0	-5.4	1.04 V	302	70.3	-1.7
2	2390.00	53.4 AV	54.0	-0.6	1.04 V	302	55.1	-1.7
3	*2417.00	115.2 PK			1.04 V	302	117.0	-1.8
4	*2417.00	106.3 AV			1.04 V	302	108.1	-1.8
5	4834.00	40.3 PK	74.0	-33.7	1.77 V	114	38.2	2.1
6	4834.00	31.9 AV	54.0	-22.1	1.77 V	114	29.8	2.1
7	7251.00	42.2 PK	74.0	-31.8	1.00 V	323	33.4	8.8
8	7251.00	34.2 AV	54.0	-19.8	1.00 V	323	25.4	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	54.9 PK	74.0	-19.1	3.41 H	318	56.6	-1.7
2	2390.00	42.8 AV	54.0	-11.2	3.41 H	318	44.5	-1.7
3	*2437.00	112.3 PK			3.41 H	318	114.1	-1.8
4	*2437.00	104.1 AV			3.41 H	318	105.9	-1.8
5	2483.50	56.7 PK	74.0	-17.3	3.41 H	318	58.4	-1.7
6	2483.50	44.9 AV	54.0	-9.1	3.41 H	318	46.6	-1.7
7	4874.00	41.5 PK	74.0	-32.5	1.86 H	106	39.3	2.2
8	4874.00	32.5 AV	54.0	-21.5	1.86 H	106	30.3	2.2
9	7311.00	42.2 PK	74.0	-31.8	1.00 H	351	33.2	9.0
10	7311.00	33.8 AV	54.0	-20.2	1.00 H	351	24.8	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	68.4 PK	74.0	-5.6	1.10 V	297	70.1	-1.7
2	2390.00	53.6 AV	54.0	-0.4	1.10 V	297	55.3	-1.7
3	*2437.00	120.6 PK			1.10 V	297	122.4	-1.8
4	*2437.00	111.9 AV			1.10 V	297	113.7	-1.8
5	2483.50	66.1 PK	74.0	-7.9	1.10 V	297	67.8	-1.7
6	2483.50	51.8 AV	54.0	-2.2	1.10 V	297	53.5	-1.7
7	4874.00	40.0 PK	74.0	-34.0	1.82 V	115	37.8	2.2
8	4874.00	31.5 AV	54.0	-22.5	1.82 V	115	29.3	2.2
9	7311.00	41.9 PK	74.0	-32.1	1.00 V	326	32.9	9.0
10	7311.00	34.0 AV	54.0	-20.0	1.00 V	326	25.0	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2457.00	107.7 PK			3.36 H	343	109.5	-1.8
2	*2457.00	99.7 AV			3.36 H	343	101.5	-1.8
3	2483.50	55.7 PK	74.0	-18.3	3.36 H	343	57.4	-1.7
4	2483.50	44.1 AV	54.0	-9.9	3.36 H	343	45.8	-1.7
5	4914.00	40.5 PK	74.0	-33.5	1.96 H	117	38.2	2.3
6	4914.00	31.6 AV	54.0	-22.4	1.96 H	117	29.3	2.3
7	7371.00	42.6 PK	74.0	-31.4	1.00 H	346	33.5	9.1
8	7371.00	34.0 AV	54.0	-20.0	1.00 H	346	24.9	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	*2457.00	114.4 PK			1.13 V	292	116.2	-1.8
2	*2457.00	105.8 AV			1.13 V	292	107.6	-1.8
3	2483.50	69.1 PK	74.0	-4.9	1.13 V	292	70.8	-1.7
4	2483.50	53.7 AV	54.0	-0.3	1.13 V	292	55.4	-1.7
5	4914.00	40.1 PK	74.0	-33.9	1.71 V	92	37.8	2.3
6	4914.00	31.4 AV	54.0	-22.6	1.71 V	92	29.1	2.3
7	7371.00	42.3 PK	74.0	-31.7	1.00 V	320	33.2	9.1
8	7371.00	34.3 AV	54.0	-19.7	1.00 V	320	25.2	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	103.6 PK			3.41 H	325	105.4	-1.8
2	*2462.00	96.4 AV			3.41 H	325	98.2	-1.8
3	2483.50	56.6 PK	74.0	-17.4	3.41 H	325	58.3	-1.7
4	2483.50	44.9 AV	54.0	-9.1	3.41 H	325	46.6	-1.7
5	4924.00	41.1 PK	74.0	-32.9	1.92 H	111	38.8	2.3
6	4924.00	32.3 AV	54.0	-21.7	1.92 H	111	30.0	2.3
7	7386.00	41.8 PK	74.0	-32.2	1.00 H	346	32.5	9.3
8	7386.00	33.1 AV	54.0	-20.9	1.00 H	346	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	112.2 PK			1.50 V	181	114.0	-1.8
2	*2462.00	103.8 AV			1.50 V	181	105.6	-1.8
3	2483.50	67.6 PK	74.0	-6.4	1.50 V	181	69.3	-1.7
4	2483.50	53.8 AV	54.0	-0.2	1.50 V	181	55.5	-1.7
5	4924.00	40.3 PK	74.0	-33.7	1.81 V	106	38.0	2.3
6	4924.00	32.2 AV	54.0	-21.8	1.81 V	106	29.9	2.3
7	7386.00	41.7 PK	74.0	-32.3	1.00 V	335	32.4	9.3
8	7386.00	34.1 AV	54.0	-19.9	1.00 V	335	24.8	9.3

REMARKS:

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

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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	55.6 PK	74.0	-18.4	3.47 H	335	57.3	-1.7
2	2390.00	43.4 AV	54.0	-10.6	3.47 H	335	45.1	-1.7
3	*2422.00	100.1 PK			3.47 H	335	101.9	-1.8
4	*2422.00	90.6 AV			3.47 H	335	92.4	-1.8
5	4844.00	40.9 PK	74.0	-33.1	1.94 H	89	38.8	2.1
6	4844.00	32.0 AV	54.0	-22.0	1.94 H	89	29.9	2.1
7	7266.00	41.9 PK	74.0	-32.1	1.00 H	333	33.1	8.8
8	7266.00	33.4 AV	54.0	-20.6	1.00 H	333	24.6	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	2390.00	64.5 PK	74.0	-9.5	1.95 V	228	66.2	-1.7
2	2390.00	53.7 AV	54.0	-0.3	1.95 V	228	55.4	-1.7
3	*2422.00	110.9 PK			1.95 V	228	112.7	-1.8
4	*2422.00	100.3 AV			1.95 V	228	102.1	-1.8
5	4844.00	40.0 PK	74.0	-34.0	1.78 V	93	37.9	2.1
6	4844.00	31.8 AV	54.0	-22.2	1.78 V	93	29.7	2.1
7	7266.00	42.1 PK	74.0	-31.9	1.00 V	327	33.3	8.8
8	7266.00	34.3 AV	54.0	-19.7	1.00 V	327	25.5	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	55.2 PK	74.0	-18.8	3.49 H	332	56.9	-1.7
2	2390.00	43.1 AV	54.0	-10.9	3.49 H	332	44.8	-1.7
3	*2437.00	101.6 PK			3.49 H	332	103.4	-1.8
4	*2437.00	93.3 AV			3.49 H	332	95.1	-1.8
5	2483.50	57.3 PK	74.0	-16.7	3.49 H	332	59.0	-1.7
6	2483.50	45.3 AV	54.0	-8.7	3.49 H	332	47.0	-1.7
7	4874.00	41.9 PK	74.0	-32.1	1.91 H	94	39.7	2.2
8	4874.00	32.5 AV	54.0	-21.5	1.91 H	94	30.3	2.2
9	7311.00	41.7 PK	74.0	-32.3	1.00 H	357	32.7	9.0
10	7311.00	33.4 AV	54.0	-20.6	1.00 H	357	24.4	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	66.9 PK	74.0	-7.1	1.54 V	229	68.6	-1.7
2	2390.00	53.5 AV	54.0	-0.5	1.54 V	229	55.2	-1.7
3	*2437.00	112.5 PK			1.54 V	229	114.3	-1.8
4	*2437.00	103.2 AV			1.54 V	229	105.0	-1.8
5	2483.50	63.1 PK	74.0	-10.9	1.54 V	229	64.8	-1.7
6	2483.50	52.2 AV	54.0	-1.8	1.54 V	229	53.9	-1.7
7	4874.00	39.7 PK	74.0	-34.3	1.72 V	120	37.5	2.2
8	4874.00	31.5 AV	54.0	-22.5	1.72 V	120	29.3	2.2
9	7311.00	42.4 PK	74.0	-31.6	1.00 V	328	33.4	9.0
10	7311.00	34.4 AV	54.0	-19.6	1.00 V	328	25.4	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	100.9 PK			3.47 H	323	102.7	-1.8
2	*2452.00	91.3 AV			3.47 H	323	93.1	-1.8
3	2483.50	55.9 PK	74.0	-18.1	3.47 H	323	57.6	-1.7
4	2483.50	44.2 AV	54.0	-9.8	3.47 H	323	45.9	-1.7
5	4904.00	40.9 PK	74.0	-33.1	1.96 H	105	38.7	2.2
6	4904.00	31.7 AV	54.0	-22.3	1.96 H	105	29.5	2.2
7	7356.00	42.1 PK	74.0	-31.9	1.00 H	339	33.0	9.1
8	7356.00	33.8 AV	54.0	-20.2	1.00 H	339	24.7	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	111.7 PK			1.53 V	328	113.5	-1.8
2	*2452.00	100.9 AV			1.53 V	328	102.7	-1.8
3	2483.50	64.1 PK	74.0	-9.9	1.53 V	328	65.8	-1.7
4	2483.50	53.7 AV	54.0	-0.3	1.53 V	328	55.4	-1.7
5	4904.00	40.4 PK	74.0	-33.6	1.80 V	107	38.2	2.2
6	4904.00	32.0 AV	54.0	-22.0	1.80 V	107	29.8	2.2
7	7356.00	42.2 PK	74.0	-31.8	1.00 V	340	33.1	9.1
8	7356.00	34.5 AV	54.0	-19.5	1.00 V	340	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Below 1GHz Data:

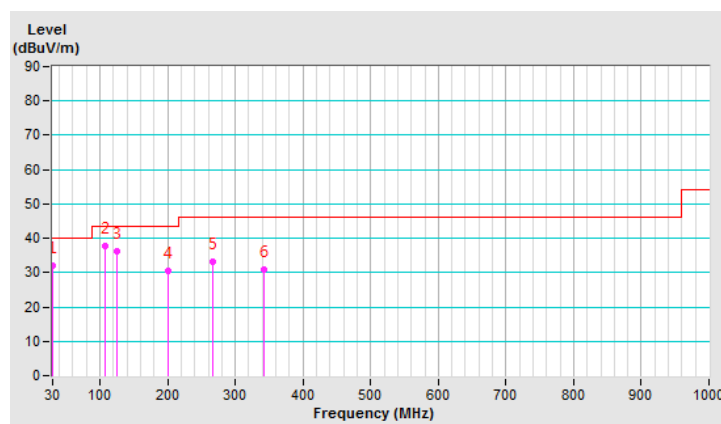
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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	30.15	31.9 QP	40.0	-8.1	2.00 H	158	41.0	-9.1
2	108.52	37.7 QP	43.5	-5.8	2.00 H	255	48.4	-10.7
3	125.01	36.3 QP	43.5	-7.2	2.00 H	86	45.8	-9.5
4	200.84	30.4 QP	43.5	-13.1	1.00 H	103	41.2	-10.8
5	267.12	33.2 QP	46.0	-12.8	1.00 H	208	41.3	-8.1
6	343.26	30.9 QP	46.0	-15.1	1.00 H	148	36.9	-6.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

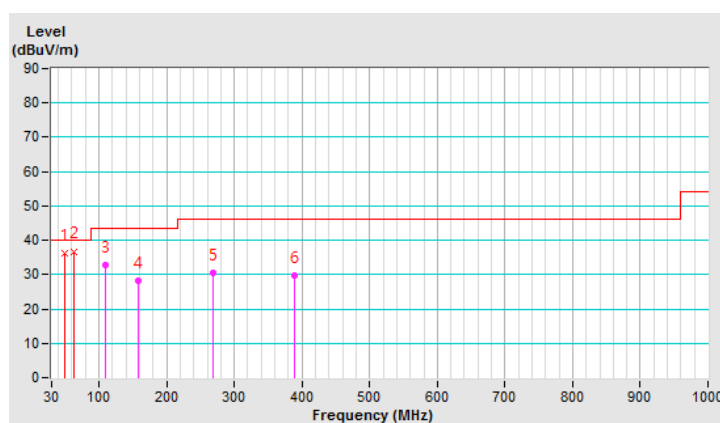


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	49.43	36.3 QP	40.0	-3.7	1.00 V	304	44.2	-7.9
2	62.89	36.8 QP	40.0	-3.2	1.00 V	4	45.7	-8.9
3	108.76	32.9 QP	43.5	-10.6	2.00 V	253	43.6	-10.7
4	158.62	28.3 QP	43.5	-15.2	1.00 V	174	36.1	-7.8
5	267.92	30.6 QP	46.0	-15.4	1.00 V	181	38.6	-8.0
6	388.97	29.7 QP	46.0	-16.3	1.50 V	360	34.2	-4.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB 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.	CALIBRATED DATE	CALIBRATED UNTIL
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 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: Dec. 03, 2019

4.2.3 Test Procedures

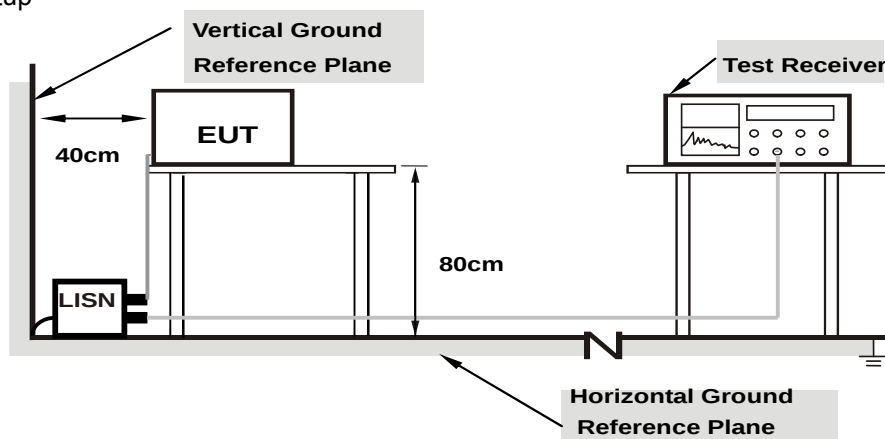
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

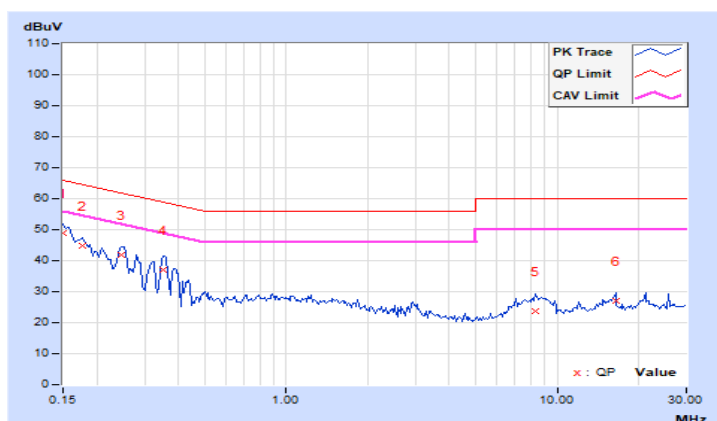
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.97	39.01	26.68	48.98	36.65	66.00	56.00	-17.02	-19.35
2	0.17734	9.97	34.72	22.75	44.69	32.72	64.61	54.61	-19.92	-21.89
3	0.24766	9.97	31.82	24.07	41.79	34.04	61.84	51.84	-20.05	-17.80
4	0.34922	9.98	27.17	20.06	37.15	30.04	58.98	48.98	-21.83	-18.94
5	8.34766	10.58	13.01	7.52	23.59	18.10	60.00	50.00	-36.41	-31.90
6	16.46484	11.17	15.76	13.66	26.93	24.83	60.00	50.00	-33.07	-25.17

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

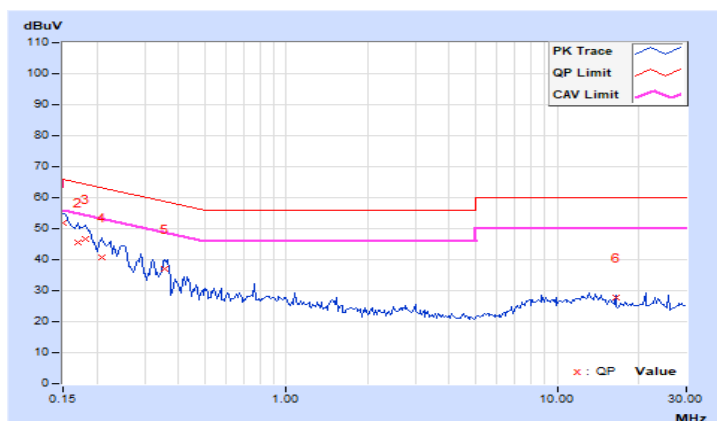


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.98	41.85	30.43	51.83	40.41	66.00	56.00	-14.17	-15.59
2	0.16953	9.98	35.43	22.96	45.41	32.94	64.98	54.98	-19.57	-22.04
3	0.18125	9.98	36.79	25.92	46.77	35.90	64.43	54.43	-17.66	-18.53
4	0.20859	9.98	30.92	21.12	40.90	31.10	63.26	53.26	-22.36	-22.16
5	0.35703	10.00	27.07	23.62	37.07	33.62	58.80	48.80	-21.73	-15.18
6	16.46484	10.99	16.89	15.05	27.88	26.04	60.00	50.00	-32.12	-23.96

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

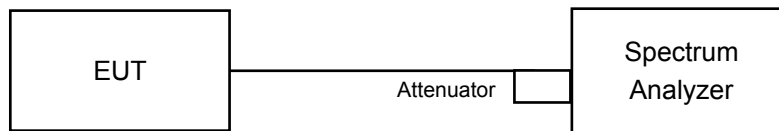


4.3 6dB Bandwidth Measurement

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 specific channel frequencies individually.

4.3.7 Test Result

Non-Beamforming Mode

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.14	0.5	Pass
6	2437	8.59	0.5	Pass
11	2462	8.57	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.63	16.60	0.5	Pass
2	2417	16.60	16.44	0.5	Pass
6	2437	16.64	16.60	0.5	Pass
10	2457	16.61	16.45	0.5	Pass
11	2462	16.65	16.45	0.5	Pass

802.11ax (HE20)

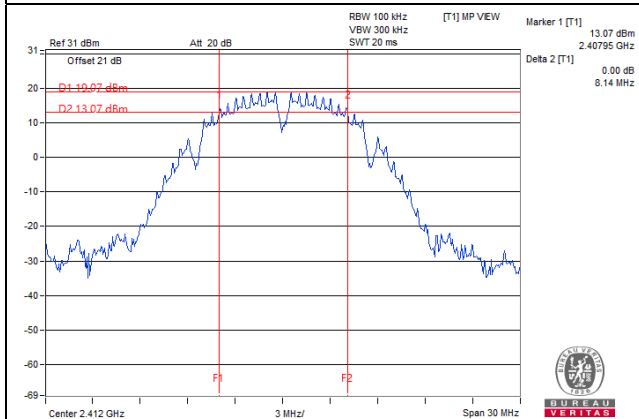
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	19.07	19.07	0.5	Pass
2	2417	19.09	19.14	0.5	Pass
6	2437	19.11	19.03	0.5	Pass
10	2457	19.08	19.05	0.5	Pass
11	2462	19.18	19.06	0.5	Pass

802.11ax (HE40)

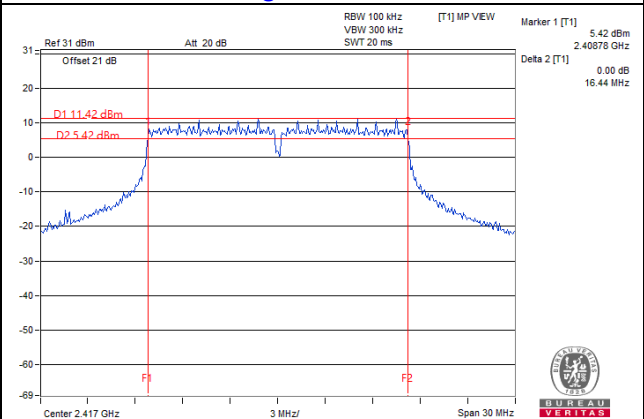
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	38.26	38.31	0.5	Pass
6	2437	38.24	38.34	0.5	Pass
9	2452	38.20	38.33	0.5	Pass

Spectrum Plot of Worst Value

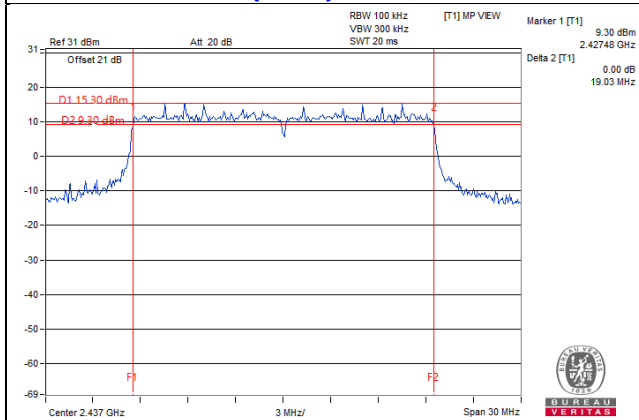
802.11b / CH1



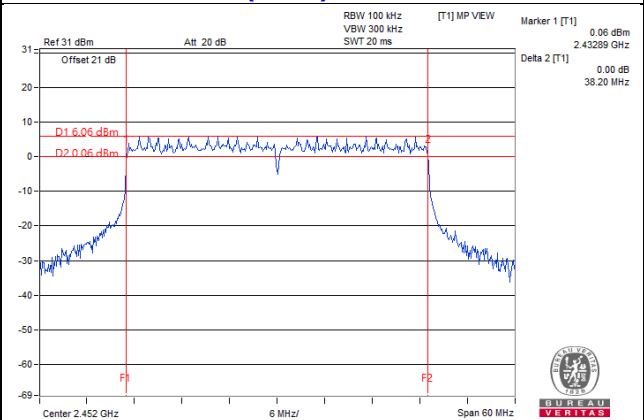
802.11g_Chain 1 / CH2



802.11ax (HE20)_Chain 1 / CH6



802.11ax (HE40)_Chain 0 / CH9



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

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

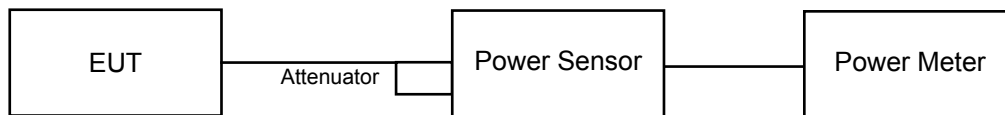
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

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

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

Non-Beamforming Mode

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	488.652	26.89	30	Pass
6	2437	478.63	26.80	30	Pass
11	2462	487.528	26.88	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.83	22.06	352.561	25.47	30	Pass
2	2417	24.32	23.55	496.86	26.96	30	Pass
6	2437	26.87	26.46	928.995	29.68	30	Pass
10	2457	24.33	23.58	499.053	26.98	30	Pass
11	2462	22.25	21.49	308.809	24.90	30	Pass

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.00	20.60	240.708	23.81	30	Pass
2	2417	22.63	22.30	353.055	25.48	30	Pass
6	2437	26.23	25.76	796.463	29.01	30	Pass
10	2457	22.70	22.28	355.253	25.51	30	Pass
11	2462	20.61	20.19	219.552	23.42	30	Pass

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.12	18.66	155.109	21.91	30	Pass
6	2437	21.41	21.17	269.275	24.30	30	Pass
9	2452	20.41	19.35	196	22.92	30	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.25	20.86	255.251	24.07	30	Pass
2	2417	22.77	22.36	361.421	25.58	30	Pass
6	2437	26.44	26.03	841.422	29.25	30	Pass
10	2457	22.76	22.32	359.407	25.56	30	Pass
11	2462	20.86	20.44	232.561	23.67	30	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.37	18.92	164.48	22.16	30	Pass
6	2437	21.62	21.44	284.527	24.54	30	Pass
9	2452	20.66	19.60	207.614	23.17	30	Pass

Beamforming Mode

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.00	20.60	240.708	23.81	30	Pass
2	2417	22.63	22.30	353.055	25.48	30	Pass
6	2437	26.18	25.76	791.658	28.99	30	Pass
10	2457	22.70	22.28	355.253	25.51	30	Pass
11	2462	20.59	20.23	219.99	23.42	30	Pass

Note: The directional gain = 5.1 dBi < 6 dBi, so the power limit shall not be reduced.

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.16	18.68	156.204	21.94	30	Pass
6	2437	21.40	21.20	269.864	24.31	30	Pass
9	2452	20.42	19.34	196.055	22.92	30	Pass

Note: The directional gain = 5.1 dBi < 6 dBi, so the power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.25	20.86	255.251	24.07	30	Pass
2	2417	22.77	22.36	361.421	25.58	30	Pass
6	2437	26.44	26.03	841.422	29.25	30	Pass
10	2457	22.76	22.32	359.407	25.56	30	Pass
11	2462	20.86	20.44	232.561	23.67	30	Pass

Note: The directional gain = 5.1 dBi < 6 dBi, so the power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.37	18.92	164.48	22.16	30	Pass
6	2437	21.62	21.44	284.527	24.54	30	Pass
9	2452	20.66	19.60	207.614	23.17	30	Pass

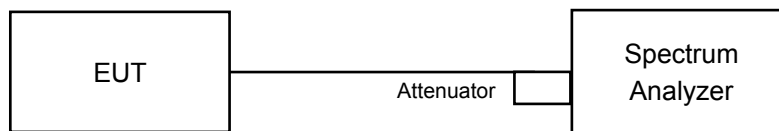
Note: The directional gain = 5.1 dBi < 6 dBi, so the power limit shall not be reduced.

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

- 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: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d. Set VBW $\geq 3 \times \text{RBW}$.
- e. Detector = power averaging (RMS) or sample detector (when RMS not available).
- f. Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- 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.

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

Non-Beamforming Mode

802.11b

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-3.09	8	Pass
6	2437	-2.47	8	Pass
11	2462	-0.90	8	Pass

Note: The directional gain = 5.1 dBi < 6 dBi, so the power density limit shall not be reduced.

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	-10.07	3.01	-7.06	8	Pass
	2	2427	-6.28	3.01	-3.27	8	Pass
	6	2437	-6.26	3.01	-3.25	8	Pass
	10	2457	-6.95	3.01	-3.94	8	Pass
	11	2462	-10.59	3.01	-7.58	8	Pass
1	1	2412	-10.60	3.01	-7.59	8	Pass
	2	2427	-10.73	3.01	-7.72	8	Pass
	6	2437	-7.41	3.01	-4.40	8	Pass
	10	2457	-10.18	3.01	-7.17	8	Pass
	11	2462	-10.02	3.01	-7.01	8	Pass

Note: The directional gain = 5.1 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20)

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	-11.12	3.01	-8.11	8	Pass
	2	2427	-11.21	3.01	-8.20	8	Pass
	6	2437	-6.67	3.01	-3.66	8	Pass
	10	2457	-11.05	3.01	-8.04	8	Pass
	11	2462	-11.48	3.01	-8.47	8	Pass
1	1	2412	-13.79	3.01	-10.78	8	Pass
	2	2427	-12.46	3.01	-9.45	8	Pass
	6	2437	-8.43	3.01	-5.42	8	Pass
	10	2457	-11.91	3.01	-8.90	8	Pass
	11	2462	-13.76	3.01	-10.75	8	Pass

Note: The directional gain = 5.1 dBi < 6 dBi, so the power density limit shall not be reduced.

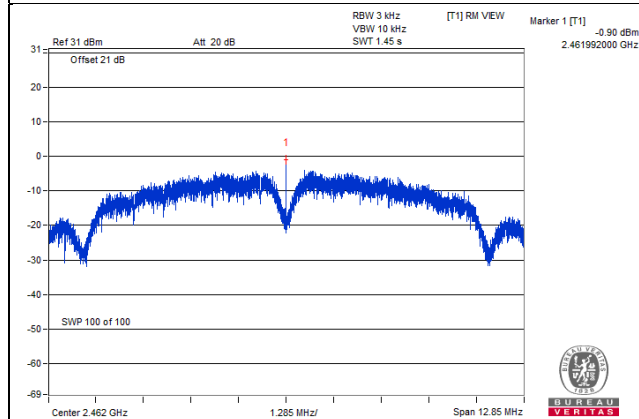
802.11ax (HE40)

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	-17.45	3.01	-14.44	8	Pass
	6	2437	-14.39	3.01	-11.38	8	Pass
	9	2452	-14.43	3.01	-11.42	8	Pass
1	3	2422	-16.40	3.01	-13.39	8	Pass
	6	2437	-15.60	3.01	-12.59	8	Pass
	9	2452	-16.39	3.01	-13.38	8	Pass

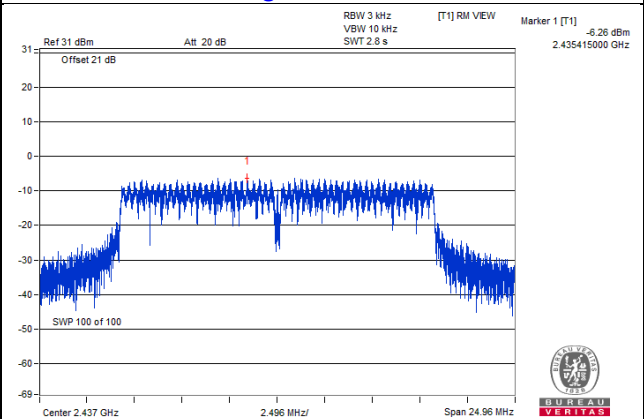
Note: The directional gain = 5.1 dBi < 6 dBi, so the power density limit shall not be reduced.

Spectrum Plot of Worst Value

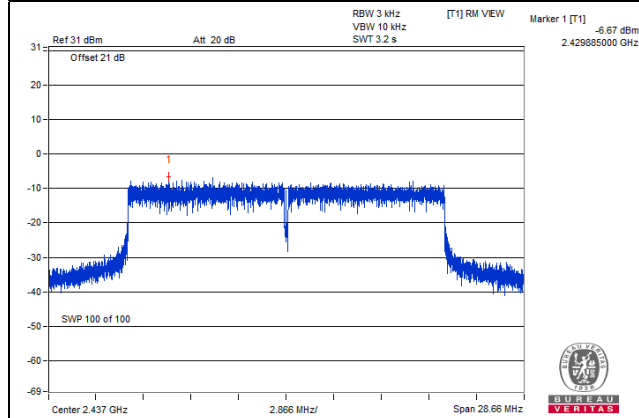
802.11b / CH11



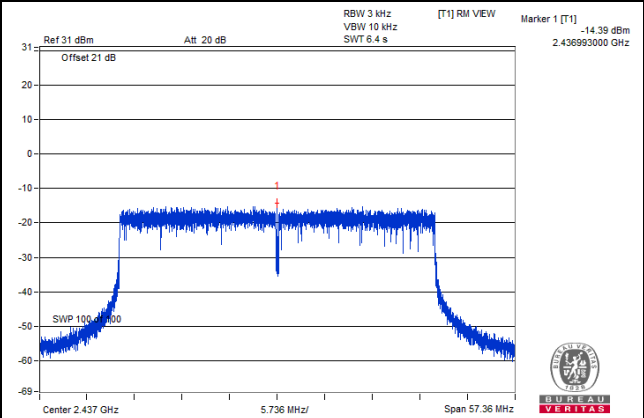
802.11g_Chain 0 / CH6



802.11ax (HE20)_Chain 0 / CH6



802.11ax (HE40)_Chain 0 / CH6

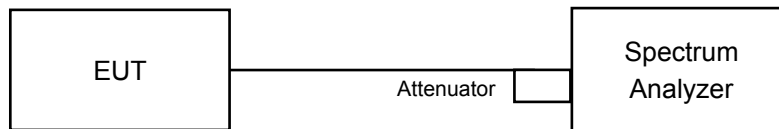


4.6 Conducted Out of Band Emission Measurement

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.

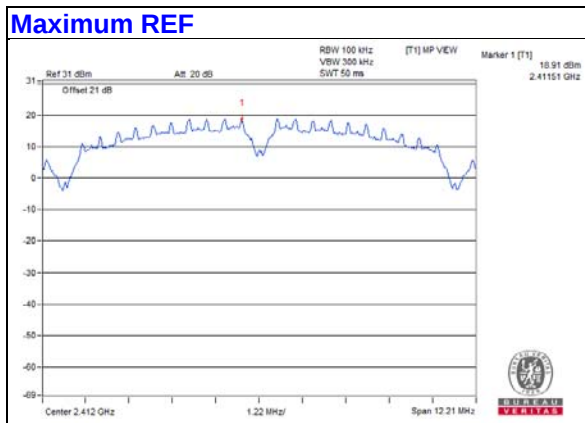
4.6.6 EUT Operating Condition

Same as Item 4.3.6

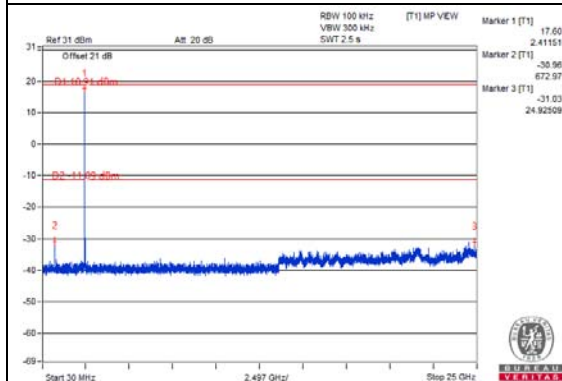
4.6.7 Test Results

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

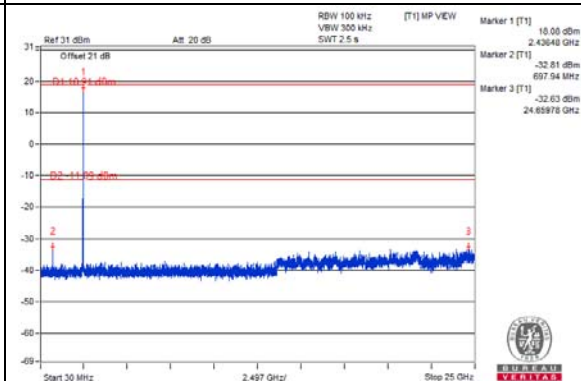
802.11b



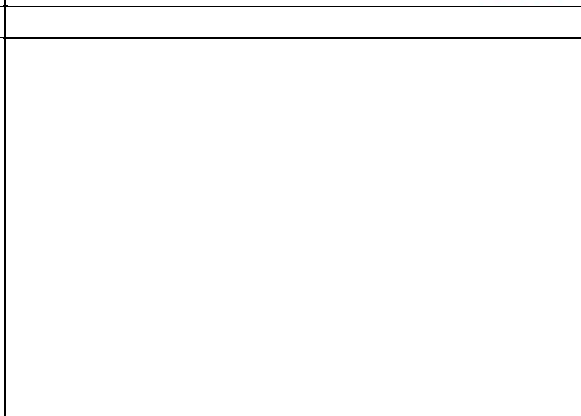
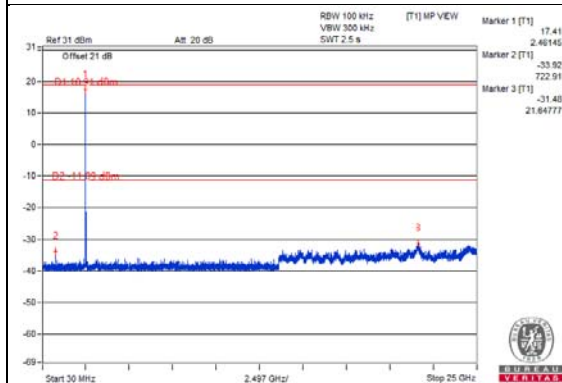
CH 1



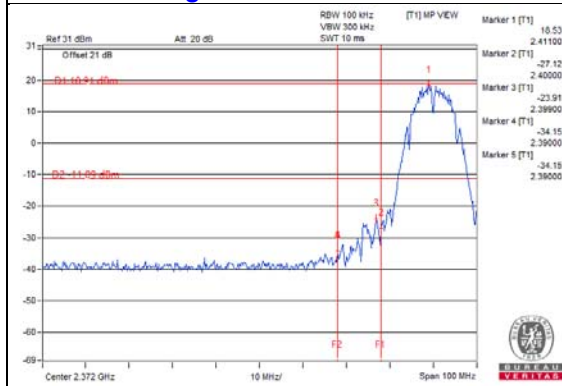
CH 6



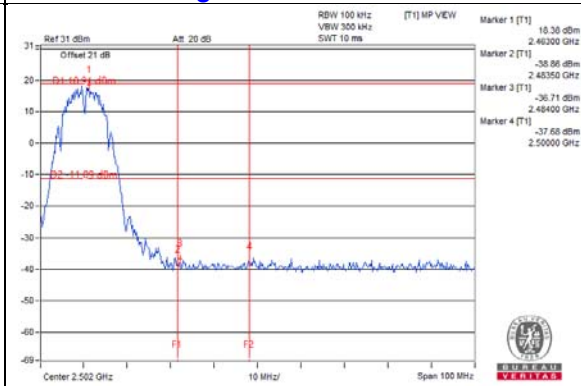
CH 11



CH 1 Band edge

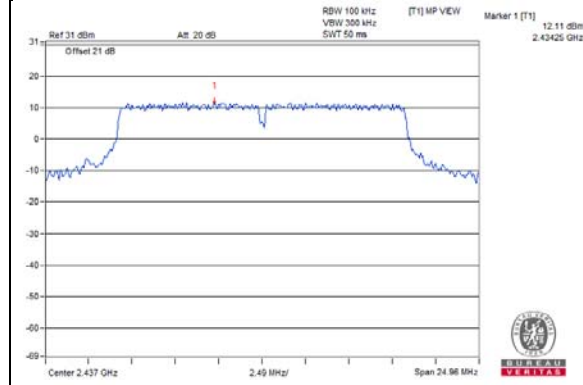


CH 11 Band edge



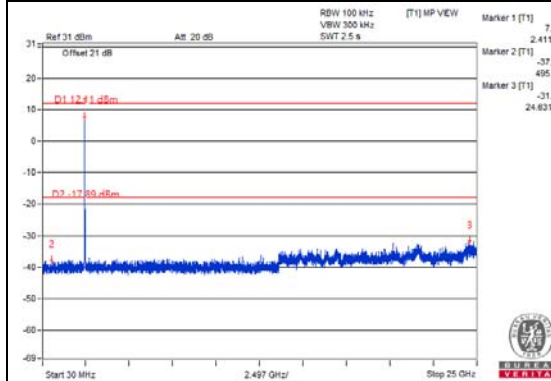
802.11g

Maximum REF

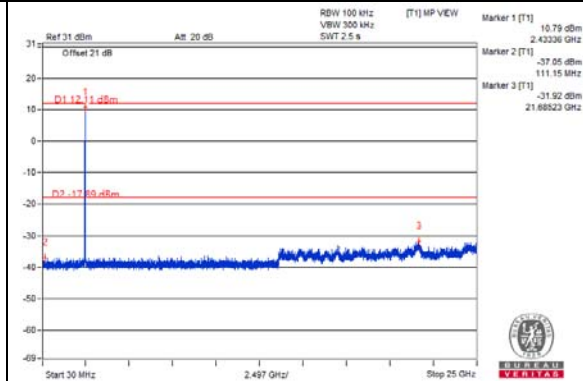


Chain 0

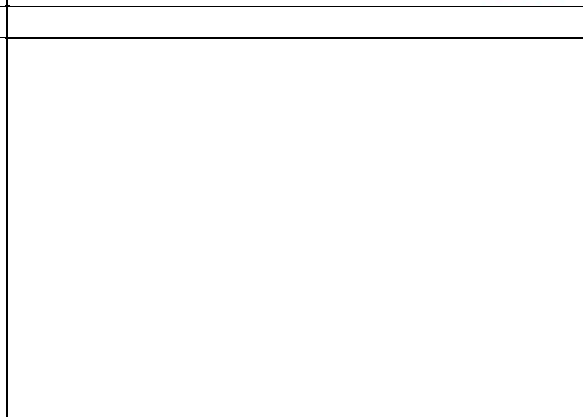
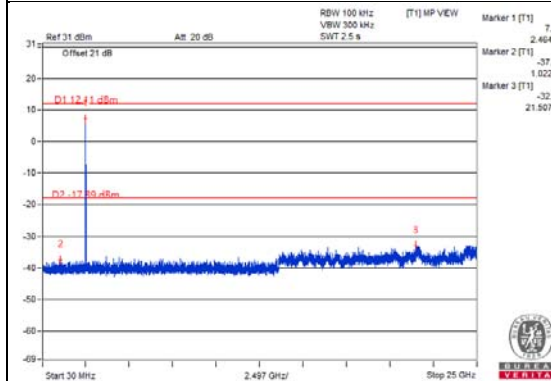
CH 1



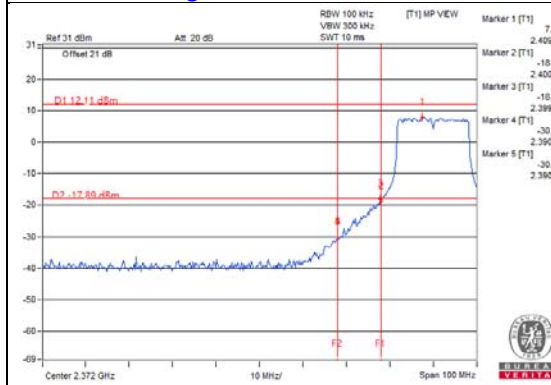
CH 6



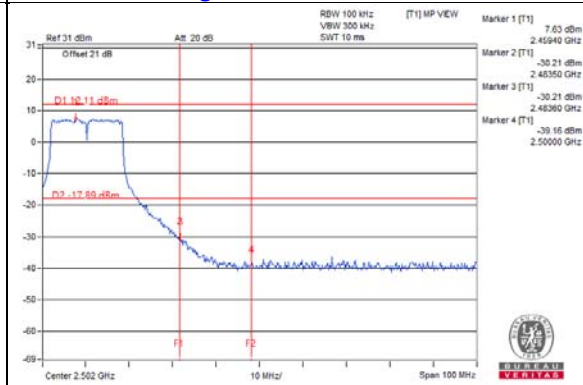
CH 11



CH 1 Band edge

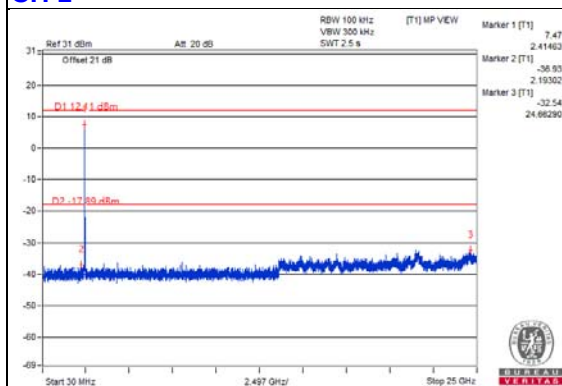


CH 11 Band edge

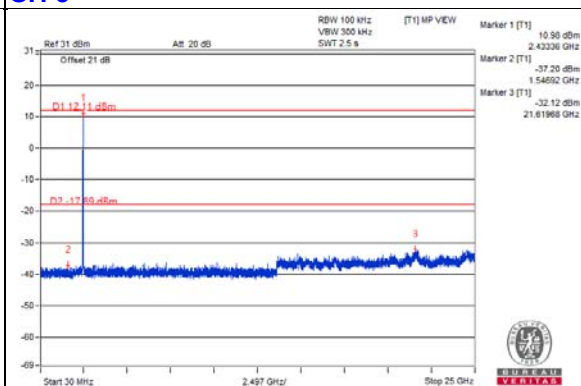


Chain 1

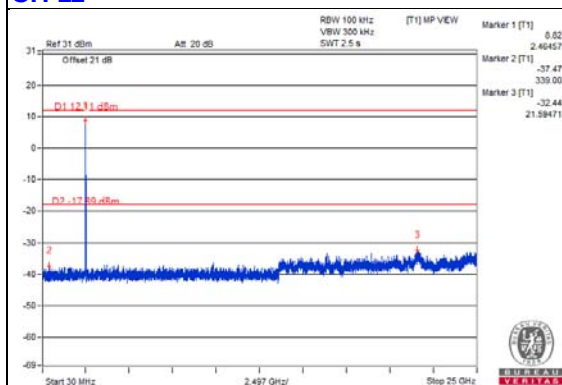
CH 1



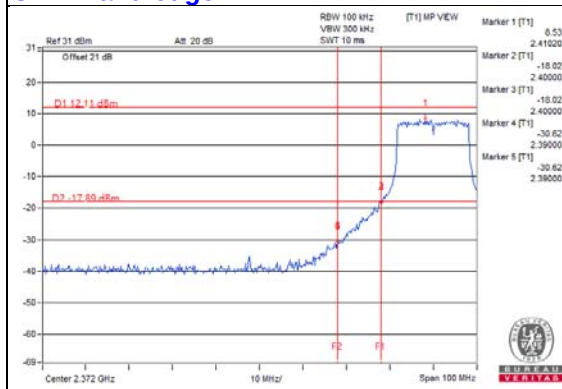
CH 6



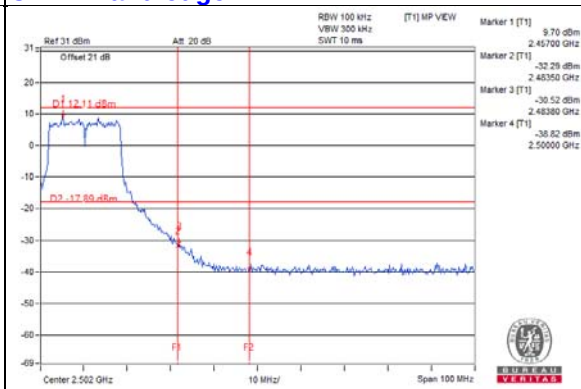
CH 11



CH 1 Band edge

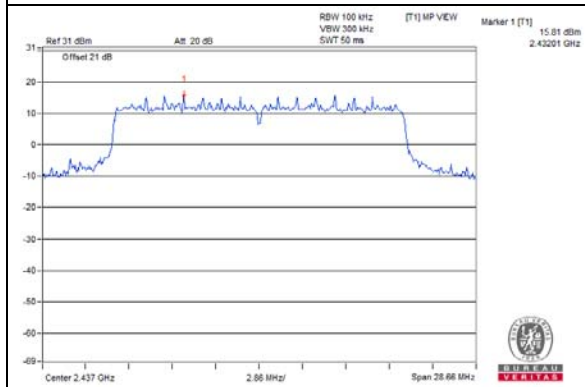


CH 11 Band edge



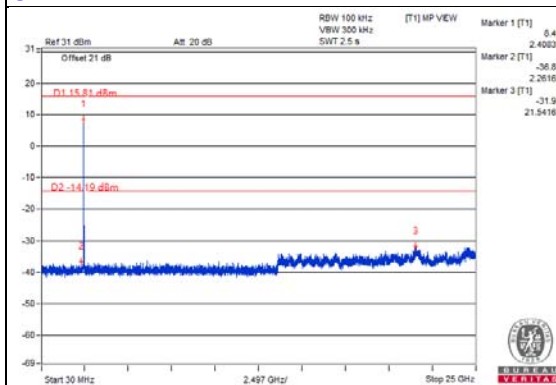
802.11ax (HE20)

Maximum REF

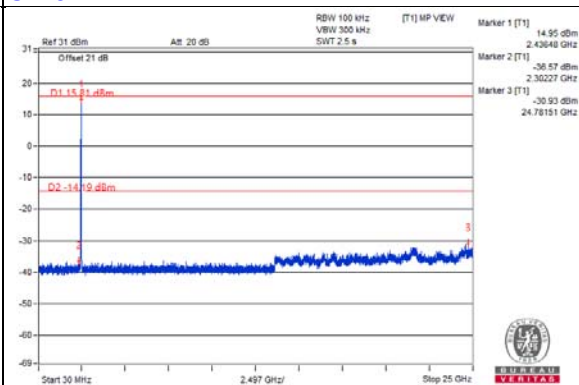


Chain 0

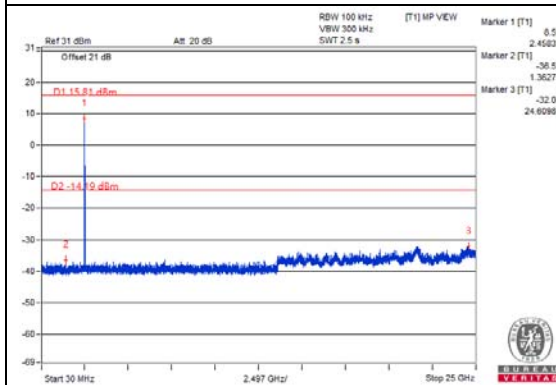
CH 1



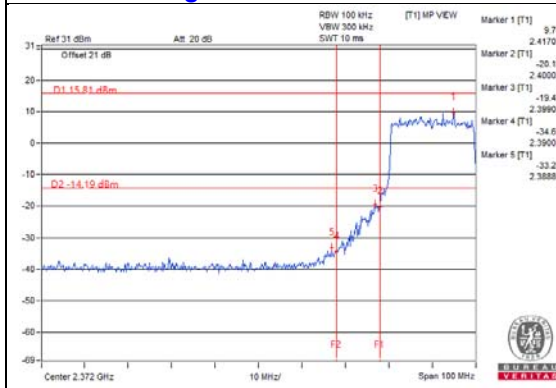
CH 6



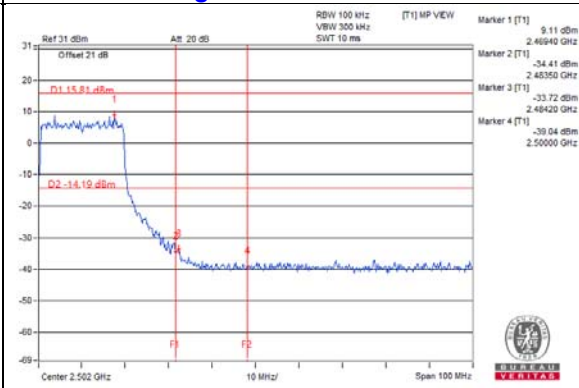
CH 11



CH 1 Band edge

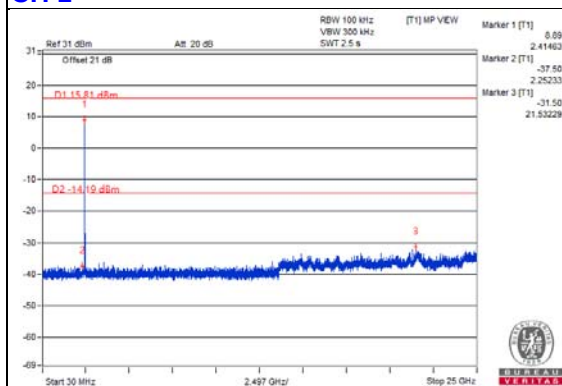


CH 11 Band edge

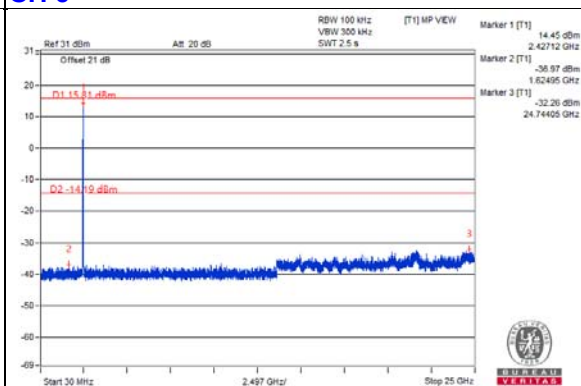


Chain 1

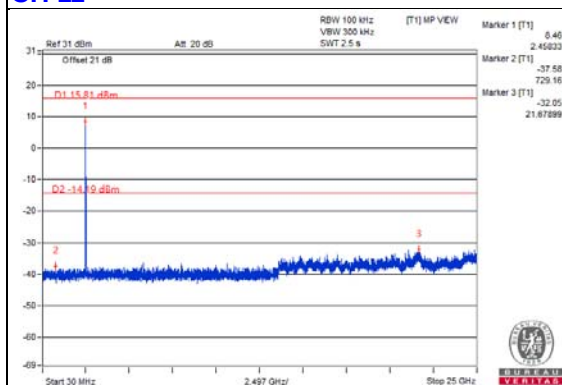
CH 1



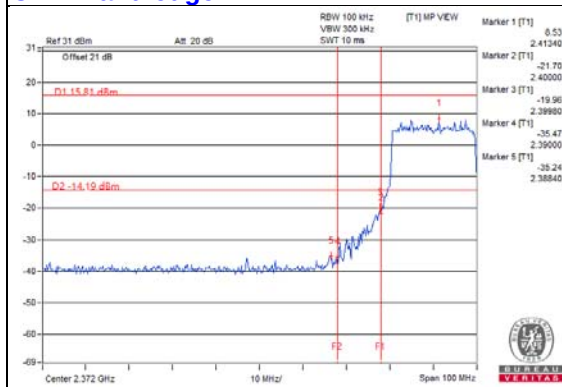
CH 6



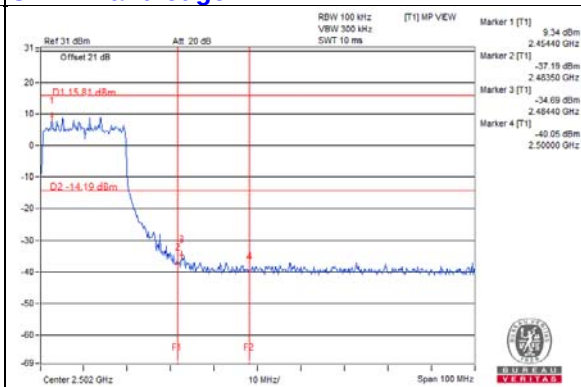
CH 11



CH 1 Band edge

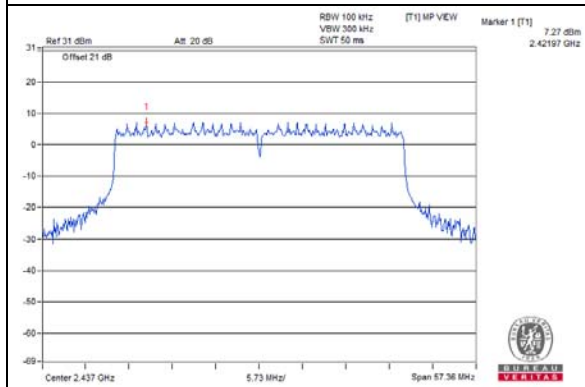


CH 11 Band edge



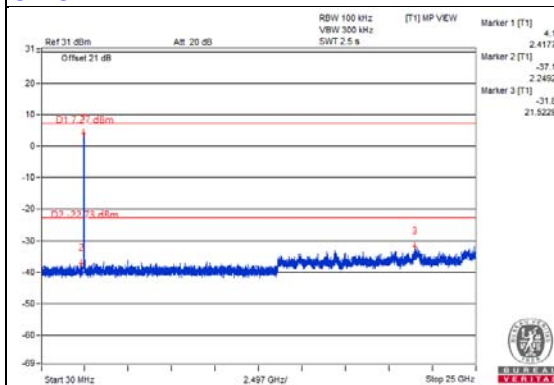
802.11ax (HE40)

Maximum REF

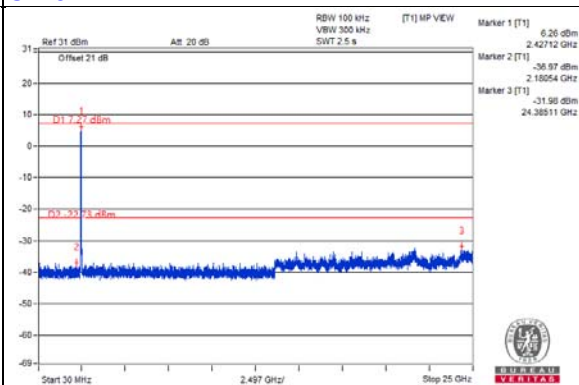


Chain 0

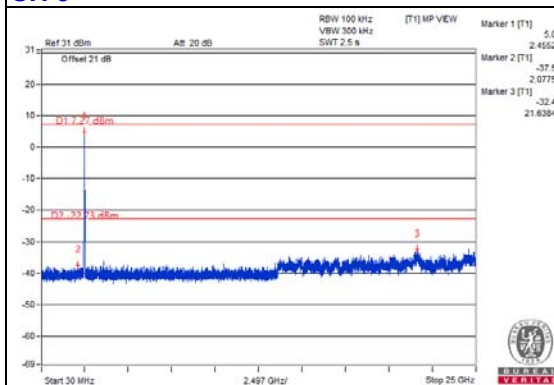
CH 3



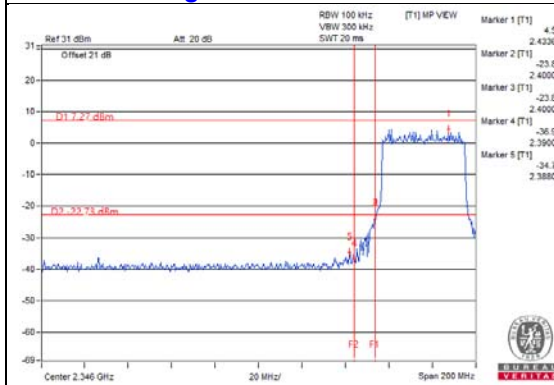
CH 6



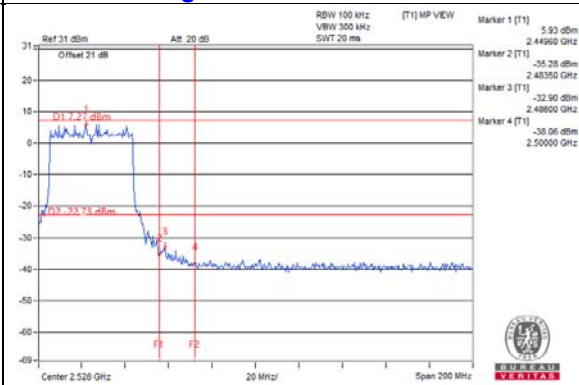
CH 9



CH 3 Band edge

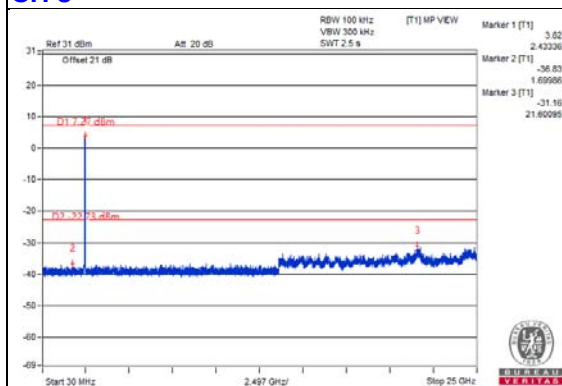


CH 9 Band edge

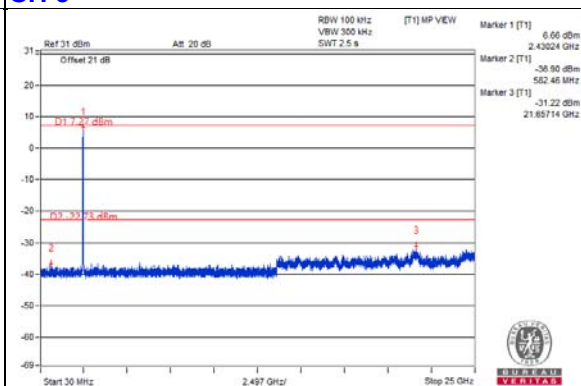


Chain 1

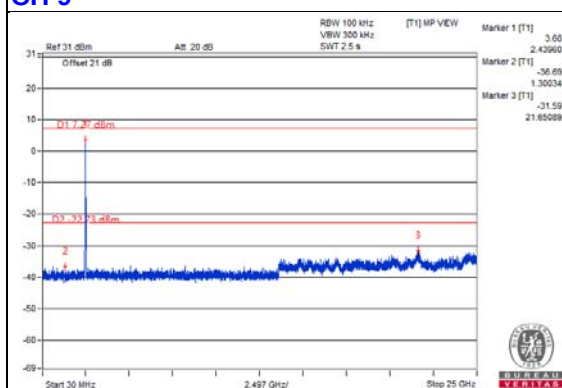
CH 3



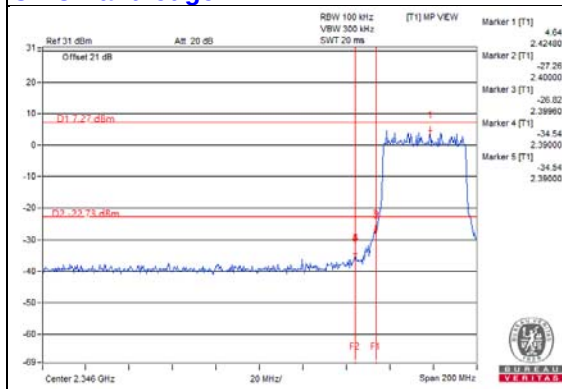
CH 6



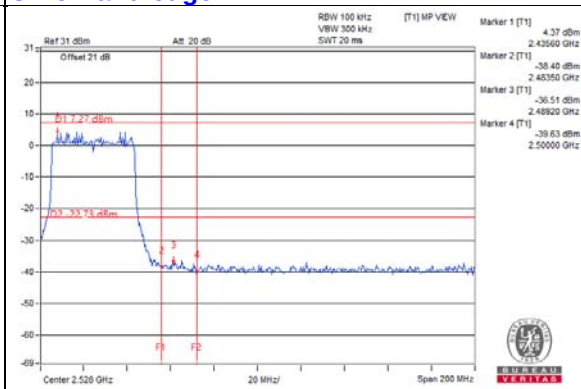
CH 9



CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information 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 according to ISO/IEC 17025.

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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