

FCC Test Report

(Co-Located)

Report No.: RFBDTL-WTW-P21060469-3

FCC ID: VUI-TANG

Test Model: 84945296C

Received Date: Feb. 15, 2022

Test Date: Mar. 15 ~ Apr. 13, 2022

Issued Date: May 18, 2022

Applicant: PEGATRON CORPORATION

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

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FCC Registration /

Designation Number: 281270 / TW0032



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Release Control Record

Issue No.	Description	Date Issued
RFBDTL-WTW-P21060469-3	Original Release	May 18, 2022

1 Certificate of Conformity

Product: Telematics & Network Gateway (TANG)

Brand:



Test Model: 84945296C

Sample Status: DV

Applicant: PEGATRON CORPORATION

Test Date: Mar. 15 ~ Apr. 13, 2022

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
47 CFR FCC Part 15, Subpart E (Section 15.407)
FCC Part 22, Subpart H
FCC Part 24, Subpart E
FCC Part 27, Subpart C, F, H, L, M, N
FCC Part 90, Subpart I, R, S
ANSI 63.26-2015
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:** May 18, 2022
Pettie Chen / Senior Specialist

Approved by : Jeremy Lin , **Date:** May 18, 2022
Jeremy Lin / Project Engineer

2 Summary of Test Results

Applied Standard:	47 CFR FCC Part 15, Subpart C (Section 15.247) 47 CFR FCC Part 15, Subpart E (Section 15.407) FCC Part 22, Subpart H FCC Part 24, Subpart E FCC Part 27, Subpart C, F, H, L, M, N FCC Part 90, Subpart I, R, S ANSI 63.26-2015 ANSI C63.10:2013		
FCC Clause	Test Item	Result	Remarks
15.205 / 15.209 / 15.247(d) 15.407(b) (1/2/3/4(i/ii)/9) 2.1053 22.917 24.238 27.53(a) 27.53(c)/(f) 27.53(h) 27.53 (m)(4)(6) 90.543 (e)(f)	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -0.95 dB at 31.94MHz.

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) (±)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.00 dB
	30 MHz ~ 200 MHz	2.91 dB
	200 MHz ~ 1000 MHz	2.93 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.76 dB
	18 GHz ~ 40 GHz	1.77 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Telematics & Network Gateway (TANG)		
Brand			
Test Model	84945296C		
Status of EUT	DV		
Power Supply Rating	9-16Vdc		
Modulation Type	WLAN	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA	
Transfer Rate	WLAN	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 144.4Mbps (For 2.4G Band) 802.11n: up to 300Mbps (For 5G Band) VHT20: up to 173.3Mbps (For 2.4G Band) 802.11ac: up to 866.7Mbps (For 5G Band) 802.11ax: up to 286.8Mbps (For 2.4G Band) 802.11ax: up to 1201.0Mbps (For 5G Band)	
Operating Frequency	WLAN	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5180 ~ 5320MHz, 5500 ~ 5720MHz, 5745 ~ 5825MHz	
	LTE Band 2	Channel Bandwidth 1.4MHz	1850.7MHz ~ 1909.3MHz
		Channel Bandwidth 3MHz	1851.5MHz ~ 1908.5MHz
		Channel Bandwidth 5MHz	1852.5MHz ~ 1907.5MHz
		Channel Bandwidth 10MHz	1855.0MHz ~ 1905.0MHz
		Channel Bandwidth 15MHz	1857.5MHz ~ 1902.5MHz
		Channel Bandwidth 20MHz	1860.0MHz ~ 1900.0MHz
	LTE Band 4	Channel Bandwidth 1.4MHz	1710.7MHz ~ 1754.3MHz
		Channel Bandwidth 3MHz	1711.5MHz ~ 1753.5MHz
		Channel Bandwidth 5MHz	1712.5MHz ~ 1752.5MHz
		Channel Bandwidth 10MHz	1715.0MHz ~ 1750.0MHz
		Channel Bandwidth 15MHz	1717.5MHz ~ 1747.5MHz
		Channel Bandwidth 20MHz	1720.0MHz ~ 1745.0MHz
	LTE Band 5	Channel Bandwidth 1.4MHz	824.7MHz ~ 848.3MHz
		Channel Bandwidth 3MHz	825.5MHz ~ 847.5MHz
		Channel Bandwidth 5MHz	826.5MHz ~ 846.5MHz
		Channel Bandwidth 10MHz	829.0MHz ~ 844.0MHz
	LTE Band 7	Channel Bandwidth 5MHz	2502.5MHz ~ 2567.5MHz
		Channel Bandwidth 10MHz	2505.0MHz ~ 2565.0MHz
		Channel Bandwidth 15MHz	2507.5MHz ~ 2562.5MHz
Channel Bandwidth 20MHz		2510.0MHz ~ 2560.0MHz	

Operating Frequency	LTE Band 12	Channel Bandwidth 1.4MHz	699.7MHz ~ 715.3MHz
		Channel Bandwidth 3MHz	700.5MHz ~ 714.5MHz
		Channel Bandwidth 5MHz	701.5MHz ~ 713.5MHz
		Channel Bandwidth 10MHz	704.0MHz ~ 711.0MHz
	LTE Band 13	Channel Bandwidth 5MHz	779.5MHz ~ 784.5MHz
		Channel Bandwidth 10MHz	782.0MHz
	LTE Band 14	Channel Bandwidth 5MHz	790.5MHz ~ 795.5MHz
		Channel Bandwidth 10MHz	793MHz
	LTE Band 25	Channel Bandwidth 1.4MHz	1850.7 ~ 1914.3 MHz
		Channel Bandwidth 3MHz	1851.5 ~ 1913.5 MHz
		Channel Bandwidth 5MHz	1852.5 ~ 1912.5 MHz
		Channel Bandwidth 10MHz	1855.0 ~ 1910.0 MHz
		Channel Bandwidth 15MHz	1857.5 ~ 1907.5 MHz
		Channel Bandwidth 20MHz	1860.0 ~ 1905.0 MHz
	LTE Band 26	Channel Bandwidth 1.4MHz	824.7~848.3MHz
		Channel Bandwidth 3MHz	825.5~847.5MHz
		Channel Bandwidth 5MHz	826.5~846.5MHz
		Channel Bandwidth 10MHz	829.0~844.0MHz
		Channel Bandwidth 15MHz	831.5~841.5MHz
	LTE Band 66	Channel Bandwidth 1.4MHz	1710.7MHz ~ 1779.3MHz
		Channel Bandwidth 3MHz	1711.5MHz ~ 1778.5MHz
		Channel Bandwidth 5MHz	1712.5MHz ~ 1777.5MHz
		Channel Bandwidth 10MHz	1715.0MHz ~ 1775.0MHz
		Channel Bandwidth 15MHz	1717.5MHz ~ 1772.5MHz
		Channel Bandwidth 20MHz	1720.0MHz ~ 1770.0MHz
	LTE Band 71	Channel Bandwidth 5MHz	665.5MHz ~ 695.5MHz
		Channel Bandwidth 10MHz	668.0MHz ~ 693.0MHz
		Channel Bandwidth 15MHz	670.5MHz ~ 690.5MHz
Channel Bandwidth 20MHz		673.0MHz ~ 688.0MHz	

Number of Channel	WLAN	2412 ~ 2462MHz: 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 5180 ~ 5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 8 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2 5500 ~ 5720MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 12 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 6 802.11ac (VHT80), 802.11ax (HE80): 3 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 5 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1
Antenna Type	Refer to note	
Antenna Connector	Refer to note	
Accessory Device	NA	
Data Cable Supplied	NA	

Note:

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

Band	Modulation Mode	TX Function
2.4GHz	802.11b	2TX
	802.11g	2TX
	802.11n (HT20)	2TX
	VHT20	2TX
	802.11ax (HE20)	2TX
5GHz	802.11a	2TX
	802.11n (HT20)	2TX
	802.11n (HT40)	2TX
	802.11ac (VHT20)	2TX
	802.11ac (VHT40)	2TX
	802.11ac (VHT80)	2TX
	802.11ax (HE20)	2TX
	802.11ax (HE40)	2TX
802.11ax (HE80)	2TX	

2. The antenna information is listed as below.

Type	PIFA				
Connector	Fakra				
Model	85115088				
Frequency (GHz)	2.4~2.4835	5.15~5.25	5.25~5.35	5.47~5.725	5.725~5.85
Gain (dBi)	1.7	1.8	2.7	2.4	1.5

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

WLAN

For 2.4GHz

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

For 5180 ~ 5320MHz:

8 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz
54	5270 MHz	62	5310 MHz

2 channels are provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
42	5210MHz	58	5290MHz

For 5500 ~ 5720MHz:

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

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

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz
138	5690 MHz		

For 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To		Description
	RE \geq 1G	RE<1G	
-	√	√	-

Where RE \geq 1G: Radiated Emission above 1 GHz RE<1G: Radiated Emission below 1GHz

NOTE:

1. For radiated emission (below 1GHz) test item, the worst radiated emission mode was selected.

Radiated Emission Test (Above 1 GHz):

- 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	Freq. Range (MHz)	Available Channel	Tested Channel	Modulation Technology
-	LTE Band 25 (BW: 5MHz) + LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz) + WLAN 2.4GHz 802.11ax (HE20)	1852.5-1912.5	26065 to 26665	26365 +	QPSK
		1712.5-1752.5	19975 to 20375	20175 +	QPSK
		1712.5-1777.5	131997 to 132647	132322 +	QPSK
		2412-2462	1 to 11	11	OFDMA
-	LTE Band 25 (BW: 5MHz) + LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz) + WLAN 5GHz 802.11n (HT20)	1852.5-1912.5	26065 to 26665	26365 +	QPSK
		1712.5-1752.5	19975 to 20375	20175 +	QPSK
		1712.5-1777.5	131997 to 132647	132322 +	QPSK
		5180-5825	36 to 165	144	OFDM

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	Freq. Range (MHz)	Available Channel	Tested Channel	Modulation Technology
-	LTE Band 25 (BW: 5MHz) + LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz) + WLAN 2.4GHz 802.11ax (HE20)	1852.5-1912.5	26065 to 26665	26365 +	QPSK
		1712.5-1752.5	19975 to 20375	20175 +	QPSK
		1712.5-1777.5	131997 to 132647	132322 +	QPSK
		2412-2462	1 to 11	11	OFDMA
-	LTE Band 25 (BW: 5MHz) + LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz) + WLAN 5GHz 802.11n (HT20)	1852.5-1912.5	26065 to 26665	26365 +	QPSK
		1712.5-1752.5	19975 to 20375	20175 +	QPSK
		1712.5-1777.5	131997 to 132647	132322 +	QPSK
		5180-5825	36 to 165	144	OFDM

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE \geq 1G	22 deg. C, 64 % RH	12Vdc	Edison Lee
RE<1G	21 deg. C, 67 % RH	12Vdc	Edison Lee

3.3 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.

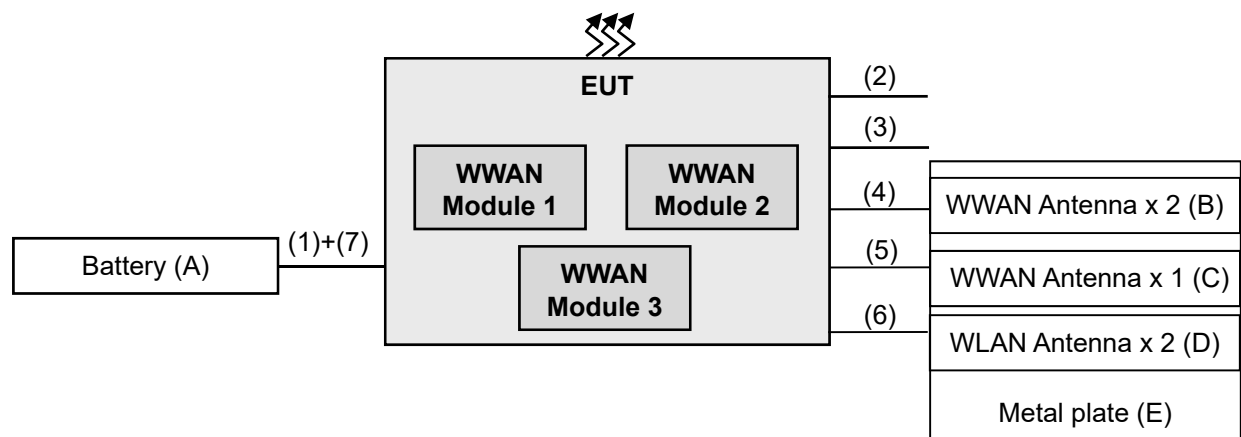
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Battery	YUASA	75D23R-CMF II	NA	NA	-
B.	WWAN Antenna x 2	Continental	85004262	NA	NA	Provided by client
C.	WWAN Antenna x 1	Continental	85004261	NA	NA	Provided by client
D.	WLAN Antenna x 2	TE	85115088	NA	NA	Provided by client
E.	Metal plate	NA	NA	NA	NA	Provided by client

Note:

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

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Power cable	1	2	N	0	Provided by client 2M (With Power Supply 0.85M Cable, 0.3M Cable, 1.8M Cable)
2.	Combo B cable	1	5.2	N	0	Provided by client
3.	Combo A cable	1	5.2	N	0	Provided by client
4.	Rosenberger Harness_TANG LTE	2	2.35	N	0	Provided by client
5.	Rosenberger Harness_TANG LTE/GNSS	1	2.35	N	0	Provided by client
6.	Rosenberger Harness_TANG WiFi	2	0.15	N	0	Provided by client
7.	Power cable	1	2	N	0	-

3.4 Configuration of System under Test



3.5 General Description of Applied Standards

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

Test standard:

47 CFR FCC Part 15, Subpart C (Section 15.247)

47 CFR FCC Part 15, Subpart E (Section 15.407)

FCC Part 22, Subpart H

FCC Part 24, Subpart E

FCC Part 27, Subpart C, F, H, L, M, N

FCC Part 90, Subpart I, R, S

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

ANSI C63.10:2013

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 789033 D02 General UNII Test Procedure New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 971168 D02 Misc Rev Approv License Devices 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 Measurement

4.1.1 Limits of Radiated Emission Measurement

For WLAN:

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 20 dB below the highest level of the desired power:

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

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 1000 MHz, 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 20 dB under any condition of modulation.

Limits of Unwanted Emission Out of the Restricted Bands

Applicable To		Limit	
789033 D02 General UNII Test Procedures New Rules v02r01		Field Strength at 3 m	
		PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
Frequency Band	Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
5150~5250 MHz	15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)
5250~5350 MHz	15.407(b)(2)		
5470~5725 MHz	15.407(b)(3)		
5725~5850 MHz	<input checked="" type="checkbox"/> 15.407(b)(4)(i)	PK:-27 (dBm/MHz) ^{*1} PK:10 (dBm/MHz) ^{*2} PK:15.6 (dBm/MHz) ^{*3} PK:27 (dBm/MHz) ^{*4}	PK: 68.2 (dBµV/m) ^{*1} PK:105.2 (dBµV/m) ^{*2} PK: 110.8 (dBµV/m) ^{*3} PK:122.2 (dBµV/m) ^{*4}
	<input type="checkbox"/> 15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
^{*1} beyond 75 MHz or more above of the band edge. ^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. ^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. ^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.			

Note:

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where } P \text{ is the eirp (Watts).}$$

For WWAN

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Rohde & Schwarz	ESR3	102783	Dec. 21, 2021	Dec. 20, 2022
Spectrum Analyzer KEYSIGHT	N9020B	MY60110513	Dec. 24, 2021	Dec. 23, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-1214	Oct. 27, 2021	Oct. 26, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1170	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	9170-995	Nov. 14, 2021	Nov. 13, 2022
Loop Antenna EMCI	EM-6879	269	Sep. 16, 2021	Sep. 15, 2022
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier EMCI	EMC330N	980798	Jan. 17, 2022	Jan. 16, 2023
Preamplifier EMCI	EMC118A45SE	980809	Dec. 30, 2021	Dec. 29, 2022
Preamplifier EMCI	EMC184045SE	980786	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC104-SM-SM- (9000+2000+1000)	201244+ 201232+ 210103	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMCCFD400-NM- NM-(9000+300+500)	201251+ 201249+ 201248	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC101G-KM-KM- (5000+3000+2000)	201261+201258+ 201249	Jan. 17, 2022	Jan. 16, 2023
Software BV ADT	ADT_Radiated_V7.6. 15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFA-515BSN	NA	NA	NA
Turn Table Max-Full	MFT-201SS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208676	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 04, 2021	Sep. 03, 2022
DC Power Supply Keysight	U8002A	MY56330015	NA	NA
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100979	Mar. 29, 2021	Mar. 28, 2022
			Mar. 25, 2022	Mar. 24, 2023
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 24, 2021	Dec. 23, 2022

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 WM Chamber 9.

4.1.3 Test Procedures

For WLAN:

For Radiated Emission below 30 MHz

- 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 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) 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 detected 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 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
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 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

For WWAN

- a. In the semi-anechoic chamber, EUT placed on the 0.8m (below or equal 1GHz) and/or 1.5m (above 1GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- b. 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.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following C63.26 section 5.5 and 5.2.7
 - $EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
 - $ERP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

Note:

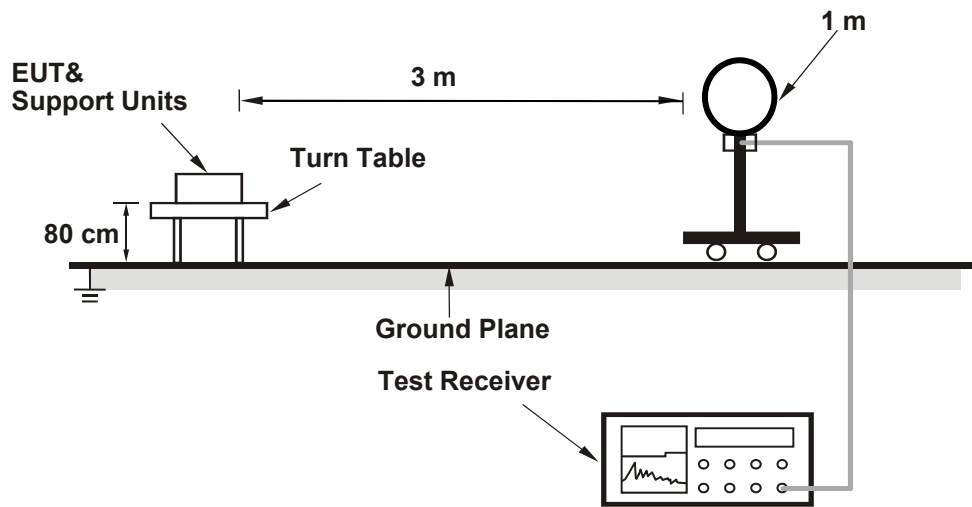
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.1.4 Deviation from Test Standard

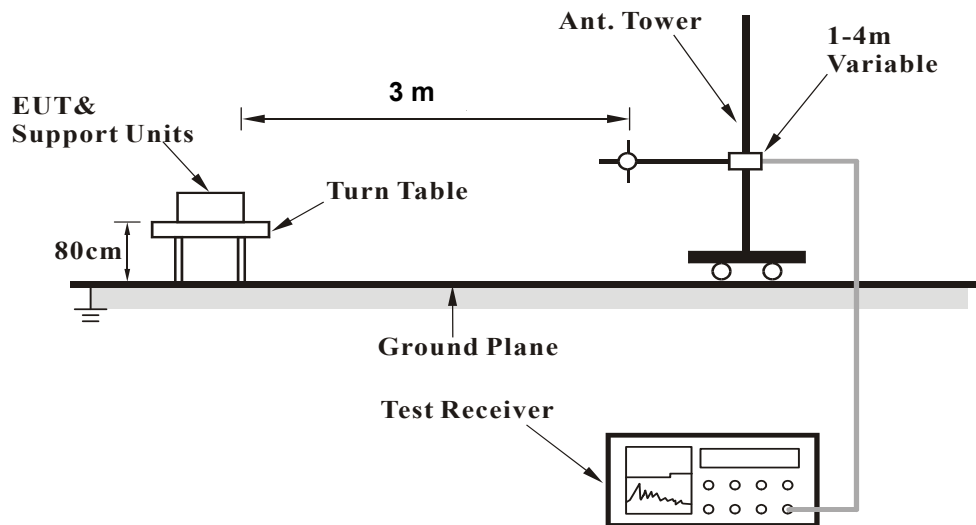
No deviation.

4.1.5 Test Set Up

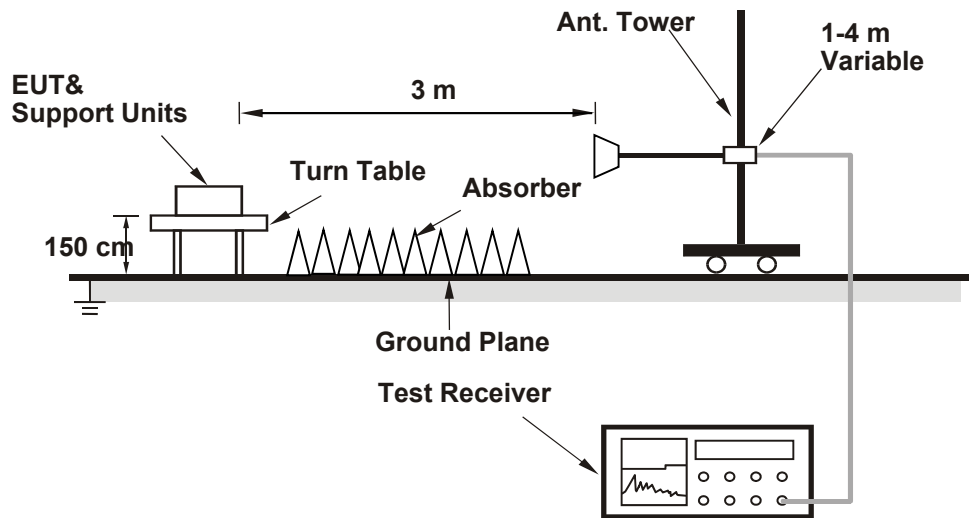
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

4.1.6 EUT Operating Conditions

- a. The EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1 GHz Data :

LTE Band 25 + LTE Band 4 + LTE Band 66 + WLAN 2.4GHz 802.11ax (HE20)

RF Mode	TX LTE Band 25 (BW: 5MHz)	Channel	CH 26365 (1882.5MHz)
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3765.00	-50.67	-13.00	-37.67	1.30 H	144	44.67	-95.34
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3765.00	-50.03	-13.00	-37.03	2.09 V	319	45.31	-95.34

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz)	Channel	CH 20175 (1732.5MHz)+ CH 132322 (1745.0MHz)
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3465.00	-49.47	-13.00	-36.47	1.06 H	8	47.23	-96.70
2	3490.00	-51.05	-13.00	-38.05	1.85 H	133	45.55	-96.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3465.00	-48.34	-13.00	-35.34	1.52 V	31	48.36	-96.70
2	3490.00	-49.81	-13.00	-36.81	1.10 V	49	46.79	-96.60

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

RF Mode	TX WLAN 2.4GHz 802.11ax (HE20)	Channel	CH 11 (2462MHz)
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.40 PK			1.77 H	20	73.44	31.96
2	*2462.00	94.24 AV			1.77 H	20	62.28	31.96
3	2483.50	62.81 PK	74.00	-11.19	1.77 H	20	30.80	32.01
4	2483.50	48.60 AV	54.00	-5.40	1.77 H	20	16.59	32.01
5	4924.00	48.72 PK	74.00	-25.28	1.30 H	327	45.48	3.24
6	4924.00	38.06 AV	54.00	-15.94	1.30 H	327	34.82	3.24

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	103.16 PK			1.58 V	359	71.20	31.96
2	*2462.00	92.14 AV			1.58 V	359	60.18	31.96
3	2483.50	62.53 PK	74.00	-11.47	1.58 V	359	30.52	32.01
4	2483.50	48.80 AV	54.00	-5.20	1.58 V	359	16.79	32.01
5	4924.00	48.90 PK	74.00	-25.10	1.69 V	255	45.66	3.24
6	4924.00	38.24 AV	54.00	-15.76	1.69 V	255	35.00	3.24

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.
6. " # " : The radiated frequency is out of the restricted band.

LTE Band 25 + LTE Band 4 + LTE Band 66 + WLAN 5GHz 802.11n (HT20)

RF Mode	TX LTE Band 25 (BW: 5MHz)	Channel	CH 26365 (1882.5MHz)
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3765.00	-50.74	-13.00	-37.74	1.27 H	149	44.60	-95.34
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3765.00	-49.94	-13.00	-36.94	2.17 V	325	45.40	-95.34

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

RF Mode	TX LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz) +	Channel	CH 20175 (1732.5MHz)+ CH 132322 (1745.0MHz)
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3465.00	-49.51	-13.00	-36.51	1.12 H	13	47.19	-96.70
2	3490.00	-51.11	-13.00	-38.11	1.76 H	129	45.49	-96.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	3465.00	-48.35	-13.00	-35.35	1.90 V	34	48.35	-96.70
2	3490.00	-49.88	-13.00	-36.88	1.09 V	47	46.72	-96.60

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

RF Mode	TX WLAN 5GHz 802.11n (HT20)	Channel	CH 144 (5720MHz)
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) 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	*5720.00	98.66 PK			2.33 H	208	57.27	41.39
2	*5720.00	91.05 AV			2.33 H	208	49.66	41.39
3	#5850.00	58.59 PK	68.20	-9.61	2.33 H	208	54.69	3.90
4	11440.00	57.54 PK	74.00	-16.46	1.48 H	172	48.55	8.99
5	11440.00	47.58 AV	54.00	-6.42	1.48 H	172	38.59	8.99

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	*5720.00	105.48 PK			2.18 V	172	64.09	41.39
2	*5720.00	97.81 AV			2.18 V	172	56.42	41.39
3	#5850.00	58.52 PK	68.20	-9.68	2.18 V	172	54.62	3.90
4	11440.00	58.49 PK	74.00	-15.51	1.88 V	190	49.50	8.99
5	11440.00	47.91 AV	54.00	-6.09	1.88 V	190	38.92	8.99

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.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz data

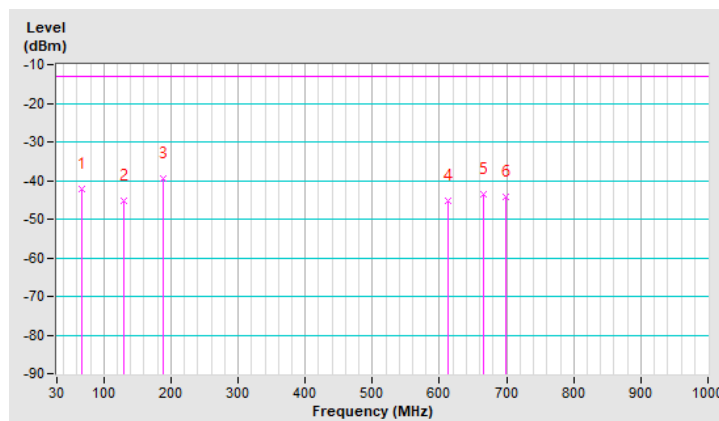
LTE Band 25 + LTE Band 4 + LTE Band 66 + WLAN 2.4GHz 802.11ax (HE20)

RF Mode	LTE Band 25	Channel	CH 26365 (1882.5MHz)
Frequency Range	Below 1000 MHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	67.83	-42.32	-13.00	-29.32	2.00 H	267	67.91	-110.23
2	129.91	-45.28	-13.00	-32.28	1.50 H	137	64.36	-109.64
3	189.08	-39.65	-13.00	-26.65	1.50 H	170	71.36	-111.01
4	612.00	-45.24	-13.00	-32.24	1.00 H	2	55.18	-100.42
5	665.35	-43.68	-13.00	-30.68	2.00 H	153	56.11	-99.79
6	699.30	-44.28	-13.00	-31.28	1.00 H	115	54.86	-99.14

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

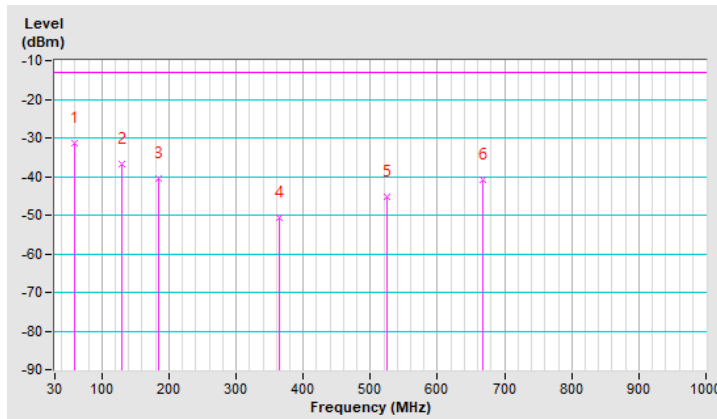


RF Mode	LTE Band 25	Channel	CH 26365 (1882.5MHz)
Frequency Range	Below 1000 MHz		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	59.10	-31.44	-13.00	-18.44	2.00 V	222	77.40	-108.84
2	129.91	-36.63	-13.00	-23.63	1.01 V	8	73.01	-109.64
3	184.23	-40.42	-13.00	-27.42	1.01 V	225	69.96	-110.38
4	364.65	-50.65	-13.00	-37.65	1.01 V	123	55.55	-106.20
5	525.67	-45.33	-13.00	-32.33	1.01 V	295	57.20	-102.53
6	668.26	-40.78	-13.00	-27.78	1.50 V	180	59.05	-99.83

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

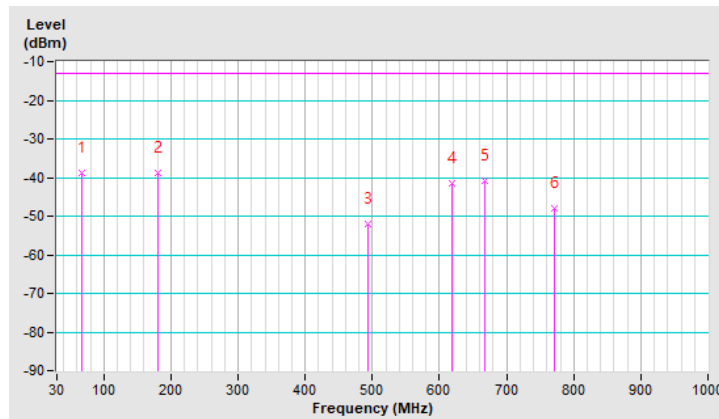


RF Mode	LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz)	Channel	CH 20175 (1732.5MHz)+ CH 132322 (1745.0MHz)
Frequency Range	Below 1000 MHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	66.89	-38.85	-13.00	-25.85	1.50 H	254	71.03	-109.88
2	180.32	-38.89	-13.00	-25.89	1.00 H	278	71.00	-109.89
3	493.69	-52.00	-13.00	-39.00	1.50 H	182	51.22	-103.22
4	619.00	-41.68	-13.00	-28.68	1.00 H	30	58.73	-100.41
5	667.32	-41.01	-13.00	-28.01	2.00 H	310	58.80	-99.81
6	771.11	-47.89	-13.00	-34.89	1.00 H	160	50.39	-98.28

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

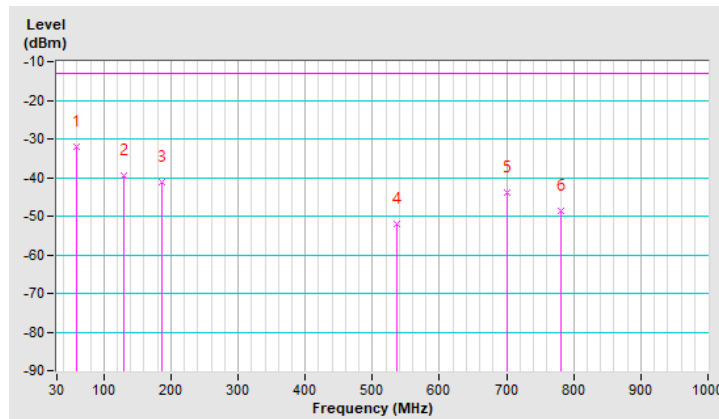


RF Mode	LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz)	Channel	CH 20175 (1732.5MHz)+ CH 132322 (1745.0MHz)
Frequency Range	Below 1000 MHz		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	59.22	-32.19	-13.00	-19.19	1.01 V	258	76.70	-108.89
2	129.22	-39.35	-13.00	-26.35	1.01 V	151	70.33	-109.68
3	186.20	-41.25	-13.00	-28.25	1.01 V	225	69.40	-110.65
4	536.85	-51.95	-13.00	-38.95	1.01 V	345	50.49	-102.44
5	701.39	-43.86	-13.00	-30.86	1.01 V	30	55.29	-99.15
6	780.20	-48.71	-13.00	-35.71	1.01 V	131	49.41	-98.12

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

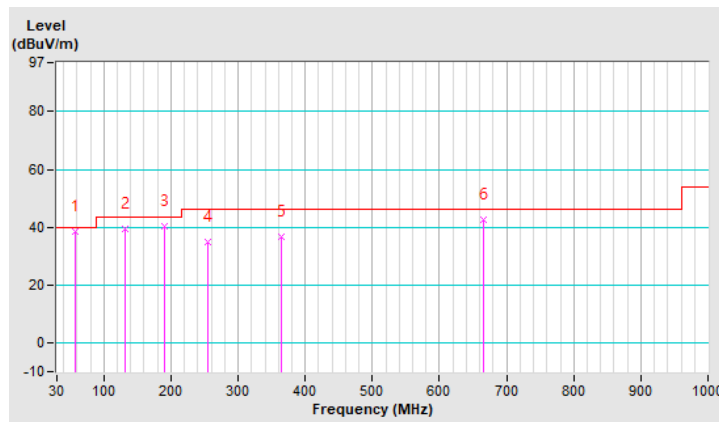


RF Mode	WLAN 2.4GHz 802.11ax (HE20)	Channel	CH 11 (2462MHz)
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	58.10	38.42 QP	40.00	-1.58	1.49 H	236	52.12	-13.70
2	130.85	39.40 QP	43.50	-4.10	1.49 H	225	53.65	-14.25
3	191.05	40.31 QP	43.50	-3.19	1.49 H	283	56.27	-15.96
4	255.33	34.81 QP	46.00	-11.19	1.00 H	95	48.87	-14.06
5	363.78	36.48 QP	46.00	-9.52	1.00 H	179	47.45	-10.97
6	665.25	42.72 QP	46.00	-3.28	1.00 H	231	47.25	-4.53

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 of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
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.

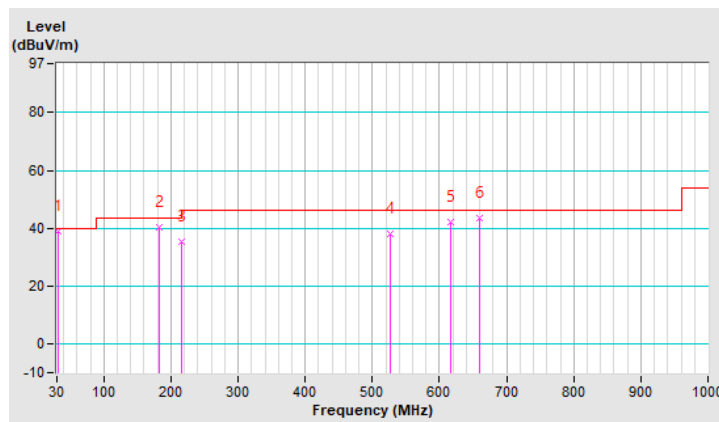


RF Mode	WLAN 2.4GHz 802.11ax (HE20)	Channel	CH 11 (2462MHz)
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	31.94	39.05 QP	40.00	-0.95	1.50 V	186	53.53	-14.48
2	183.26	40.24 QP	43.50	-3.26	1.00 V	234	55.22	-14.98
3	216.24	35.39 QP	46.00	-10.61	1.50 V	214	51.77	-16.38
4	527.61	38.07 QP	46.00	-7.93	1.00 V	329	45.34	-7.27
5	615.88	42.19 QP	46.00	-3.81	2.00 V	160	47.34	-5.15
6	660.50	43.66 QP	46.00	-2.34	1.00 V	73	48.26	-4.60

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 of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
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.



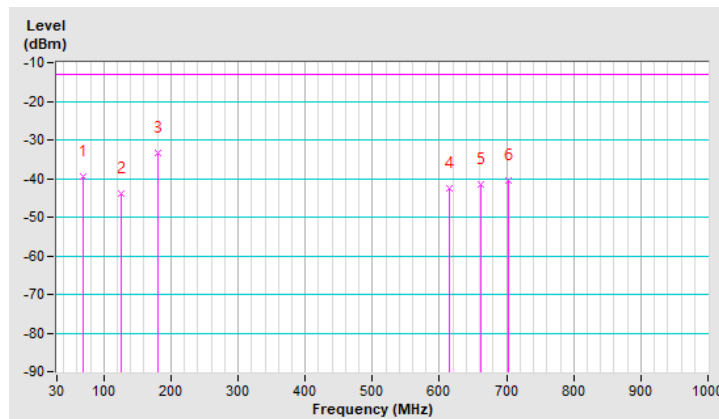
LTE Band 25 + LTE Band 4 + LTE Band 66 + WLAN 5GHz 802.11n (HT20)

RF Mode	LTE Band 25 (BW: 5MHz)	Channel	CH 26365 (1882.5MHz)
Frequency Range	Below 1000 MHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	68.83	-39.36	-13.00	-26.36	1.49 H	111	71.15	-110.51
2	125.03	-43.82	-13.00	-30.82	1.00 H	208	66.34	-110.16
3	180.08	-33.42	-13.00	-20.42	1.49 H	153	76.44	-109.86
4	614.91	-42.49	-13.00	-29.49	1.49 H	150	57.93	-100.42
5	662.44	-41.64	-13.00	-28.64	1.00 H	249	58.19	-99.83
6	702.21	-40.53	-13.00	-27.53	1.49 H	71	58.62	-99.15

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

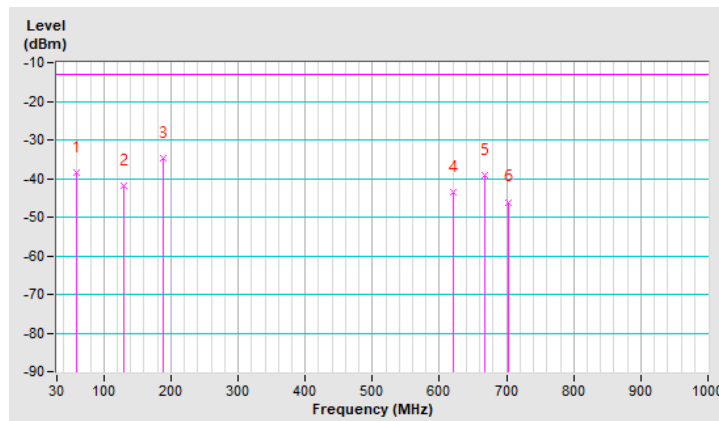


RF Mode	LTE Band 25 (BW: 5MHz)	Channel	CH 26365 (1882.5MHz)
Frequency Range	Below 1000 MHz		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	59.10	-38.38	-13.00	-25.38	2.00 V	222	70.46	-108.84
2	129.91	-42.00	-13.00	-29.00	1.49 V	119	67.64	-109.64
3	188.11	-34.88	-13.00	-21.88	1.49 V	164	76.07	-110.95
4	619.76	-43.47	-13.00	-30.47	1.49 V	161	56.93	-100.40
5	667.29	-39.09	-13.00	-26.09	1.00 V	246	60.72	-99.81
6	702.21	-46.10	-13.00	-33.10	1.00 V	137	53.05	-99.15

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

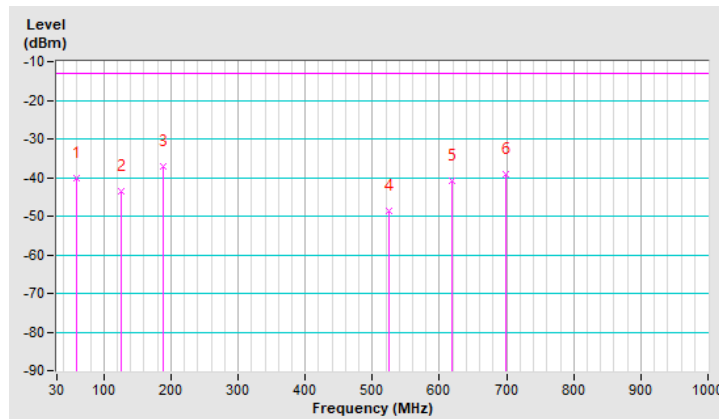


RF Mode	LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz)	Channel	CH 20175 (1732.5MHz)+ CH 132322 (1745.0MHz)
Frequency Range	Below 1000 MHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	59.10	-40.10	-13.00	-27.10	1.00 H	219	68.74	-108.84
2	126.03	-43.71	-13.00	-30.71	2.00 H	112	66.22	-109.93
3	189.08	-37.12	-13.00	-24.12	1.50 H	184	73.89	-111.01
4	524.70	-48.68	-13.00	-35.68	1.50 H	252	53.86	-102.54
5	617.82	-40.77	-13.00	-27.77	1.50 H	153	59.64	-100.41
6	699.30	-39.15	-13.00	-26.15	1.01 H	136	59.99	-99.14

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

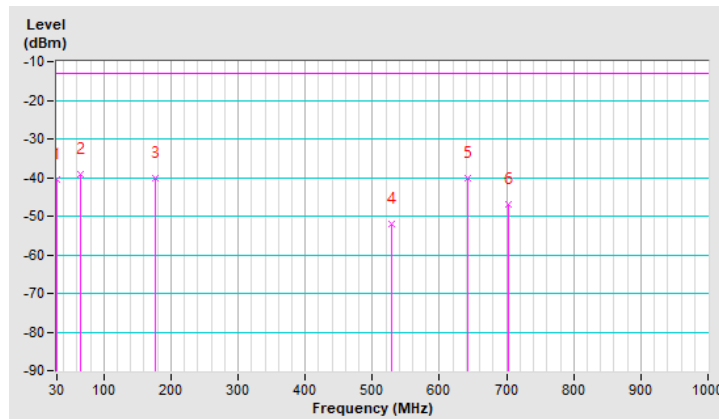


RF Mode	LTE Band 4 (BW: 5MHz) + LTE Band 66 (BW: 5MHz)	Channel	CH 20175 (1732.5MHz)+ CH 132322 (1745.0MHz)
Frequency Range	Below 1000 MHz		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	-40.53	-13.00	-27.53	1.50 V	9	71.29	-111.82
2	65.89	-39.28	-13.00	-26.28	1.01 V	244	72.90	-112.18
3	176.47	-40.10	-13.00	-27.10	1.01 V	258	71.42	-111.52
4	529.55	-52.16	-13.00	-39.16	2.00 V	335	52.50	-104.66
5	643.04	-40.21	-13.00	-27.21	1.01 V	301	61.86	-102.07
6	702.21	-46.83	-13.00	-33.83	2.00 V	21	54.47	-101.30

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

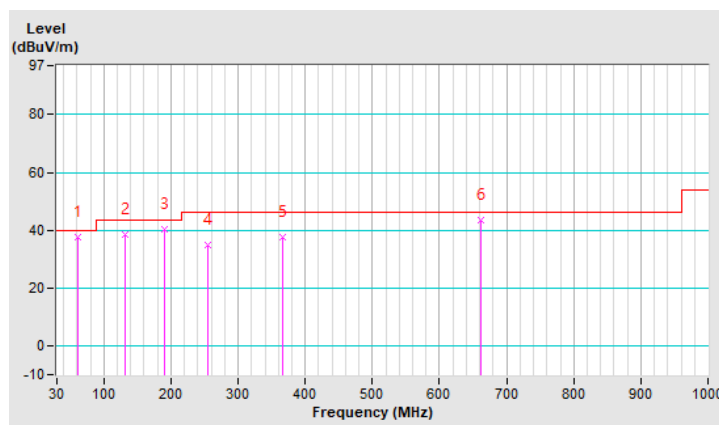


RF Mode	WLAN 5GHz 802.11n (HT20)	Channel	CH 144 (5720MHz)
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	62.01	37.69 QP	40.00	-2.31	1.00 H	284	51.80	-14.11
2	130.88	38.61 QP	43.50	-4.89	1.49 H	225	52.86	-14.25
3	190.05	40.35 QP	43.50	-3.15	1.49 H	283	56.27	-15.92
4	255.04	34.80 QP	46.00	-11.20	1.00 H	95	48.87	-14.07
5	366.59	37.62 QP	46.00	-8.38	2.00 H	179	48.47	-10.85
6	662.44	43.59 QP	46.00	-2.41	1.00 H	231	48.16	-4.57

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 of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
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.

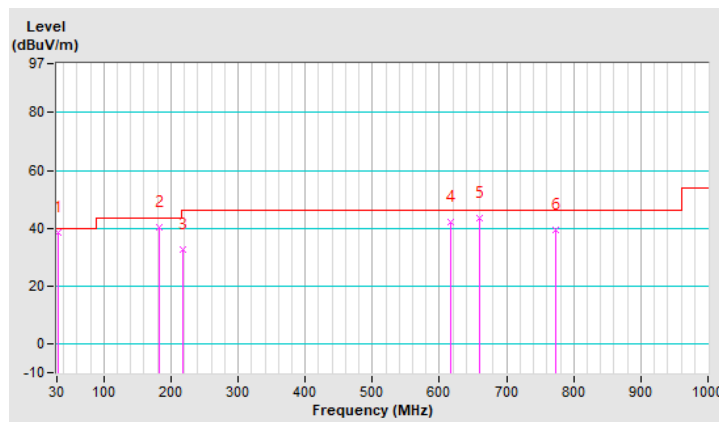


RF Mode	WLAN 5GHz 802.11n (HT20)	Channel	CH 144 (5720MHz)
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	31.94	38.52 QP	40.00	-1.48	1.50 V	186	53.00	-14.48
2	183.26	40.24 QP	43.50	-3.26	1.00 V	234	55.22	-14.98
3	218.18	32.70 QP	46.00	-13.30	1.50 V	201	49.10	-16.40
4	615.88	42.19 QP	46.00	-3.81	1.00 V	160	47.34	-5.15
5	660.50	43.66 QP	46.00	-2.34	2.00 V	73	48.26	-4.60
6	773.99	39.51 QP	46.00	-6.49	1.00 V	59	42.53	-3.02

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 of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
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.



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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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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