

FCC Test Report (Co-Located)

Report No.: RF191211C28-6 R1

FCC ID: 2AEDS110LTEWIFI

Test Model: SD-WAN 110-LTE-WiFi

Received Date: Dec. 11, 2019

Test Date: Feb. 05, 2020 ~ Mar. 03, 2020

Issued Date: Apr. 07, 2020

Applicant: CITRIX SYSTEMS,INC

Address: 4988 Great America Parkway Santa Clara,CA 95054 USA

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

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, Taiwan

**FCC Registration /
Designation Number:** 788550 / TW0003



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results.....	5
2.1 Measurement Uncertainty.....	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes.....	10
3.2.1 Test Mode Applicability and Tested Channel Detail.....	12
3.3 Description of Support Units	13
3.3.1 Configuration of System under Test	13
3.4 General Description of Applied Standards.....	14
4 Test Types and Results	15
4.1 Radiated Emission Measurement.....	15
4.1.1 Limits of Radiated Emission Measurement	15
4.1.2 Test Instruments	16
4.1.3 Test Procedures.....	18
4.1.4 Deviation from Test Standard	19
4.1.5 Test Set Up	20
4.1.6 EUT Operating Conditions.....	21
4.1.7 Test Results	22
5 Pictures of Test Arrangements.....	58
Appendix – Information of the Testing Laboratories	59

Release Control Record

Issue No.	Description	Date Issued
RF191211C28-6	Original Release	Mar. 04, 2020
RF191211C28-6 R1	Revise Applicant information, FCC ID, Product name, Test Model and Brand	Apr. 07, 2020

1 Certificate of Conformity

Product: Networking device

Brand: **CITRIX**

Test Model: SD-WAN 110-LTE-WiFi

Sample Status: Engineering Sample

Applicant: CITRIX SYSTEMS, INC

Test Date: Feb. 05, 2020 ~ Mar. 03, 2020

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, H, F, L
FCC Part 90, Subpart I, S
FCC Part 2
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 :

Lena Wang

, **Date:** Apr. 07, 2020

Lena Wang / Specialist

Approved by :

Dylan Chiou

, **Date:** Apr. 07, 2020

Dylan Chiou / Project Engineer

2 Summary of Test Results

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, H, F, L FCC Part 90, Subpart I, S FCC Part 2			
FCC Clause	Test Item	Result	Remarks
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.14 dB at 2389.91 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.16 dB at 5150 MHz.
2.1053 22.917	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -36.33 dB at 95.07 MHz.
2.1053 24.238	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -18.39 dB at 5640.00 MHz.
2.1053 27.53(g)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -2.89 dB at 10720.00 MHz.
2.1053 90.691	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -36.76 dB at 84.54 MHz.

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- This test report shows that colocation requirements are investigated and no emissions were recorded over the appropriate limits.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Networking device			
Brand	CITRIX®			
Test Model	SD-WAN 110-LTE-WiFi			
Status of EUT	Engineering Sample			
Power Supply Rating	12 Vdc (adapter)			
Modulation Type	WLAN	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM		
	WCDMA	QPSK		
	LTE	QPSK, 16QAM		
Operating Frequency	WLAN	2412 ~ 2462 MHz 5180 ~ 5240 MHz, 5745 ~ 5825 MHz		
	WCDMA	WCDMA Band II	1852.4 ~ 1907.6 MHz	
		WCDMA Band IV	1712.4 ~ 1752.6 MHz	
		WCDMA Band V	826.4 ~ 846.6 MHz	
	LTE	LTE Band 2	Channel Bandwidth: 1.4 MHz	1850.7 ~ 1909.3 MHz
			Channel Bandwidth: 3 MHz	1851.5 ~ 1908.5 MHz
			Channel Bandwidth: 5 MHz	1852.5 ~ 1907.5 MHz
			Channel Bandwidth: 10 MHz	1855.0 ~ 1905.0 MHz
			Channel Bandwidth: 15 MHz	1857.5 ~ 1902.5 MHz
			Channel Bandwidth: 20 MHz	1860.0 ~ 1900.0 MHz
		LTE Band 4	Channel Bandwidth: 1.4 MHz	1710.7 ~ 1754.3 MHz
			Channel Bandwidth: 3 MHz	1711.5 ~ 1753.5 MHz
			Channel Bandwidth: 5 MHz	1712.5 ~ 1752.5 MHz
			Channel Bandwidth: 10 MHz	1715.0 ~ 1750.0 MHz
			Channel Bandwidth: 15 MHz	1717.5 ~ 1747.5 MHz
			Channel Bandwidth: 20 MHz	1720.0 ~ 1745.0 MHz
		LTE Band 5	Channel Bandwidth: 1.4 MHz	824.7 ~ 848.3 MHz
			Channel Bandwidth: 3 MHz	825.5 ~ 847.5 MHz
			Channel Bandwidth: 5 MHz	826.5 ~ 846.5 MHz
			Channel Bandwidth: 10 MHz	829 ~ 844 MHz
		LTE Band 7	Channel Bandwidth: 5 MHz	2502.5 ~ 2567.5 MHz
			Channel Bandwidth: 10 MHz	2505 ~ 2565 MHz
			Channel Bandwidth: 15 MHz	2507.5 ~ 2562.5 MHz
			Channel Bandwidth: 20 MHz	2510 ~ 2560 MHz
		LTE Band 12	Channel Bandwidth: 1.4 MHz	699.7 ~ 715.3 MHz
			Channel Bandwidth: 3 MHz	700.5 ~ 714.5 MHz
			Channel Bandwidth: 5 MHz	701.5 ~ 713.5 MHz
			Channel Bandwidth: 10 MHz	704.0 ~ 711.0 MHz
		LTE Band 13	Channel Bandwidth: 5 MHz	779.5 ~ 784.5 MHz
			Channel Bandwidth: 10 MHz	782.0 MHz
		LTE Band 25	Channel Bandwidth: 1.4 MHz	1850.7 ~ 1914.3 MHz
			Channel Bandwidth: 3 MHz	1851.5 ~ 1913.5 MHz
			Channel Bandwidth: 5 MHz	1852.5 ~ 1912.5 MHz
			Channel Bandwidth: 10 MHz	1855.0 ~ 1910.0 MHz
			Channel Bandwidth: 15 MHz	1857.5 ~ 1907.5 MHz
			Channel Bandwidth: 20 MHz	1860.0 ~ 1905.0 MHz

3. The antenna information is listed as below.

Antenna Type	Manufacturer	Model	Antenna Connector	Antenna Gain	
				WLAN 2.4 GHz	WLAN 5 GHz
Dipole	Taoglas	FXP.830.07.0100C	i-pex(MHF)	2.6	5.0
	Ethertronics	1001932FT	i-pex(MHF)	2.5	4.4

Antenna Type	Manufacturer	Parts Number	Antenna Connector	Antenna Gain									
				WCDMA II / LTE 2	WCDMA IV / LTE 4	WCDMA V / LTE5	LTE 7	LTE 12	LTE 13	LTE 25	LTE 26	LTE 38	LTE 41
Dipole	Ethertronics	1004112-C003	SMA(M)	4.5	4.5	1.18	4	1.18	1.18	4.5	1.18	4	4
	Taoglas	TG.30.8113	SMA(M)	3.1	2.7	1.5	2.7	2.6	2.6	3.1	1.5	2.7	2.7

* After pre-test only the worst configuration was chosen for the final test and recorded in this report.

4. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	AOEM	ADS0248T-U120200	I/P: 100-240 Vac, 50-60 Hz, 0.6 A O/P: 12.0 Vdc, 2.0 A Cable: 1.46m cable w/o core

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

3.2 Description of Test Modes

WLAN 2.4GHz:

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), 802.11n (HT40):

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

WLAN 5GHz:

For 5180 ~ 5240 MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

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

Channel	Frequency (MHz)
42	5210

For 5745 ~ 5825 MHz:

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

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

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

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 1 GHz

Note: Radiated Emission and Conducted Out-Band Emission test items chosen the worst maximum power 2.4G and 5G Radio channel.

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
-	802.11g + WCDMA Band V	2402 ~ 2462 、 826.4 ~ 846.6	1 to 11 、 4132 to 4233	1 + 4233	OFDM 、 QPSK
	802.11g + LTE Band 2	2402 ~ 2462 、 1860.0 ~ 1900.0	1 to 11 、 18700 to 19100	1 + 18900	OFDM 、 QPSK
	802.11g + LTE Band 26	2402 ~ 2462 、 819	1 to 11 、 26740	1 + 26740	OFDM 、 QPSK
	802.11g + LTE Band 41	2402 ~ 2462 、 2506.0 ~ 2680.0	1 to 11 、 39750 to 41490	1 + 40620	OFDM 、 QPSK
	802.11ac (VHT80) + WCDMA Band V	5150-5240 、 826.4 ~ 846.6	42 、 4132 to 4233	42 + 4233	OFDM 、 QPSK
	802.11ac (VHT80) + LTE Band 2	5150-5240 、 1860.0 ~ 1900.0	42 、 18700 to 19100	42 + 18900	OFDM 、 QPSK
	802.11ac (VHT80) + LTE Band 26	5150-5240 、 819	42 、 26740	42 + 26740	OFDM 、 QPSK
	802.11ac (VHT80) + LTE Band 41	5150-5240 、 2506.0 ~ 2680.0	42 、 39750 to 41490	42 + 40620	OFDM 、 QPSK

Radiated Emission Test (Below 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	Data Rate (Mbps)
-	WLAN 2.4G 802.11b	2412 ~ 2462	1 to 11	1	OFDM	1
-	WLAN 5G 802.11ac (VHT80)	5150-5240	42	42	OFDM	29.3

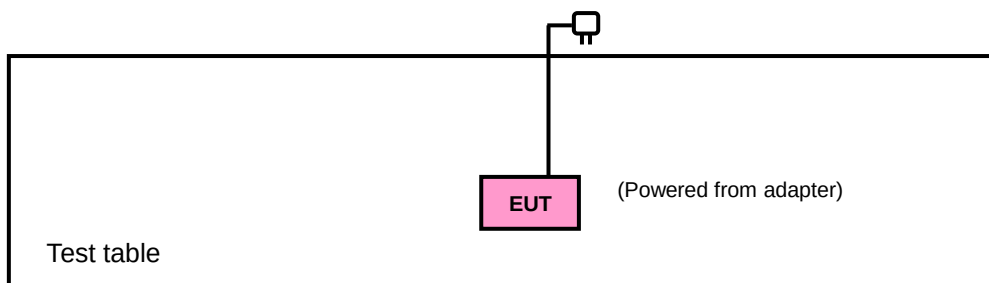
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	25 deg. C, 65 % RH	3.8Vdc	Karl Lee, Harry Hsueh
RE<1G	25 deg. C, 65 % RH	3.8Vdc	Karl Lee

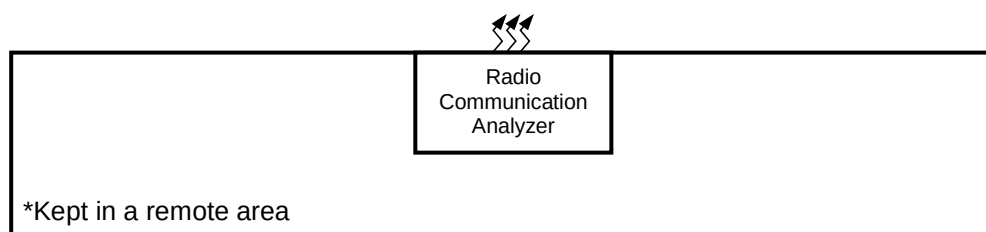
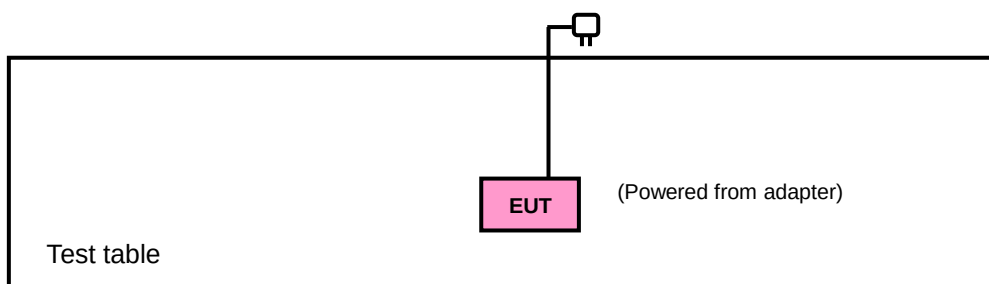
3.3 Description of Support Units

3.3.1 Configuration of System under Test

For WLAN



For WWAN



3.4 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:

FCC Part 15, Subpart C (15.247)

FCC Part 15, Subpart E (15.407)

ANSI C63.10-2013

FCC 47 CFR Part 2

FCC 47 CFR Part 22

FCC 47 CFR Part 24

FCC 47 CFR Part 27

FCC 47 CFR Part 90

ANSI 63.26-2015

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

References Test Guidance:

KDB 558074 D01 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 971168 D02 Misc Rev Approv License Devices v02r01

ANSI/TIA/EIA-603-E 2016

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.

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.

For WCDMA & LTE

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 is equal to -13 dBm.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2019	Mar. 17, 2020
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 12, 2019	Dec. 11, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
Broadband Horn Antenna SCHWARZBECK	BBHA 9170	148	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 08, 2019	Nov. 07, 2020
Fixed Attenuator WORKEN	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Loop Antenna	EM-6879	269	Sep. 16, 2019	Sep. 15, 2020
Preamplifier EMCI	EMC001340	980201	Oct. 14, 2019	Oct. 13, 2020
Preamplifier EMCI	EMC 012645	980115	Oct. 08, 2019	Oct. 07, 2020
Preamplifier EMCI	EMC 184045	980116	Oct. 08, 2019	Oct. 07, 2020
Preamplifier EMCI	EMC 330H	980112	Oct. 08, 2019	Oct. 07, 2020
Power Meter Anritsu	ML2495A	1012010	Sep. 04, 2019	Sep. 03, 2020
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2019	Sep. 03, 2020
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 08, 2019	Oct. 07, 2020
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
DC Power Supply Topward	33010D	807748	NA	NA

Communications Tester- Wireless Agilent	8960 Series 10	MY53201073	Jul. 01, 2019	Jun. 30, 2021
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 19, 2019	Aug. 18, 2021
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 06, 2019	Sep. 05, 2020

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 10.

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 $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

For WCDMA & LTE

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) 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 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- c. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15 \text{ dB}.$

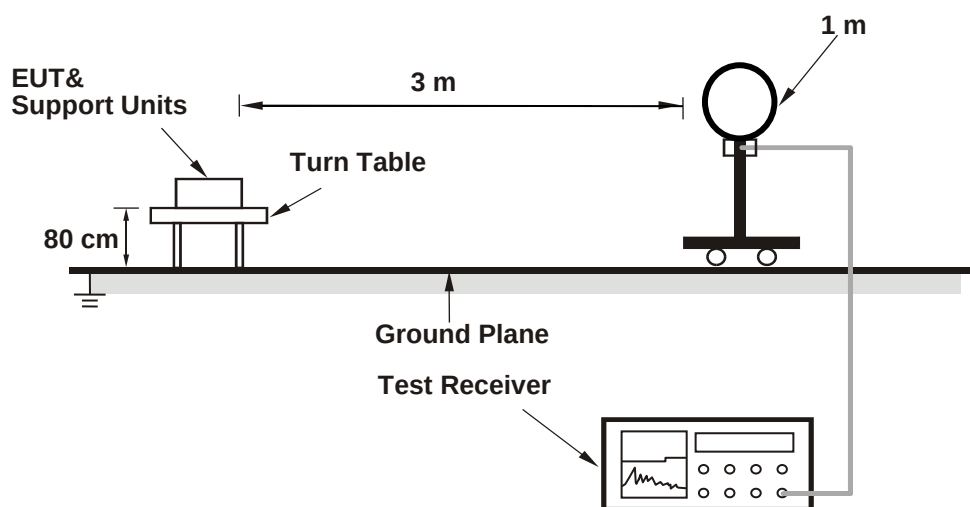
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.1.4 Deviation from Test Standard

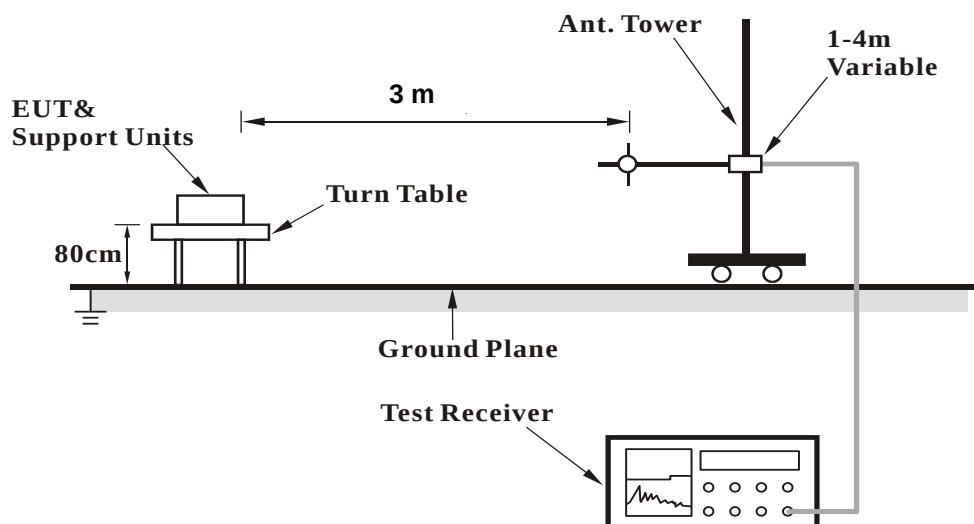
No deviation.

4.1.5 Test Set Up

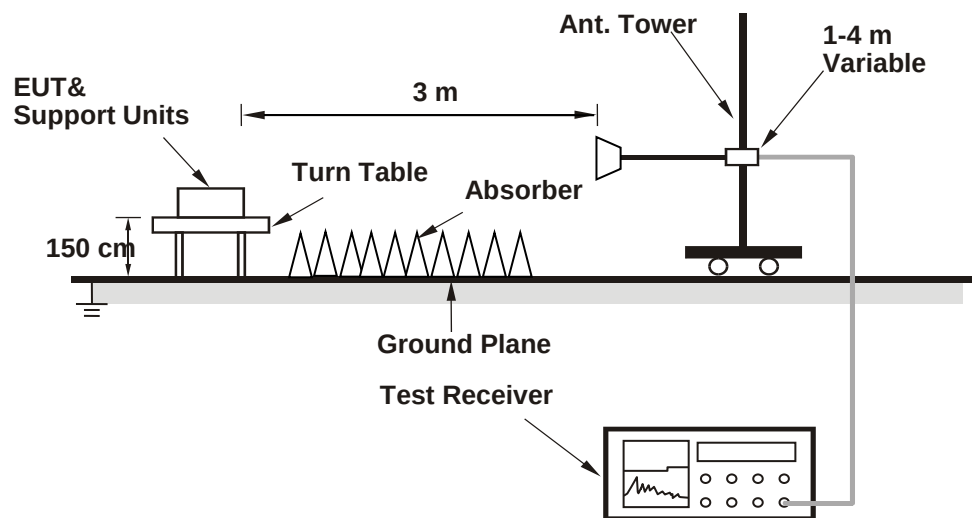
<Radiated Emission below 30 MHz>



<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

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

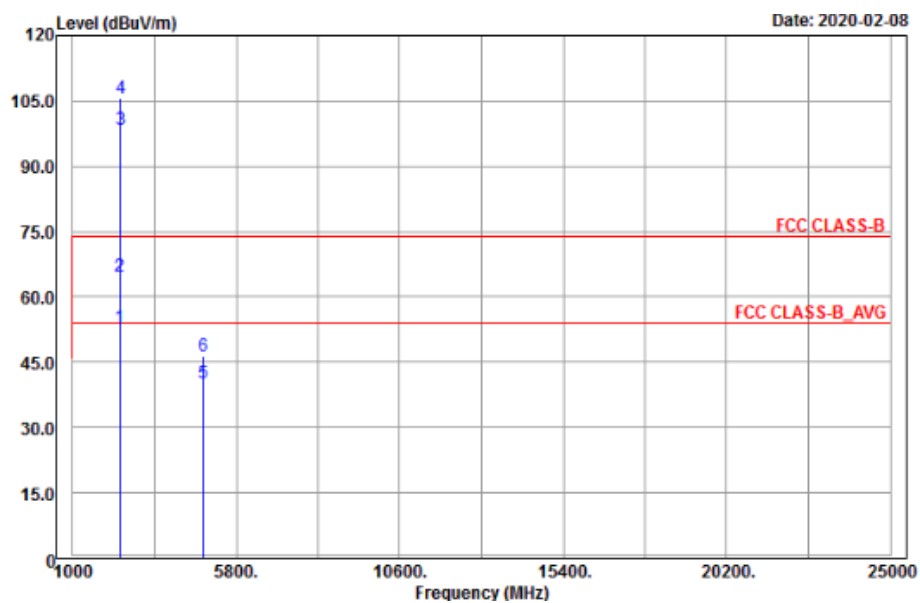
Above 1 GHz Data :

WLAN 2.4G

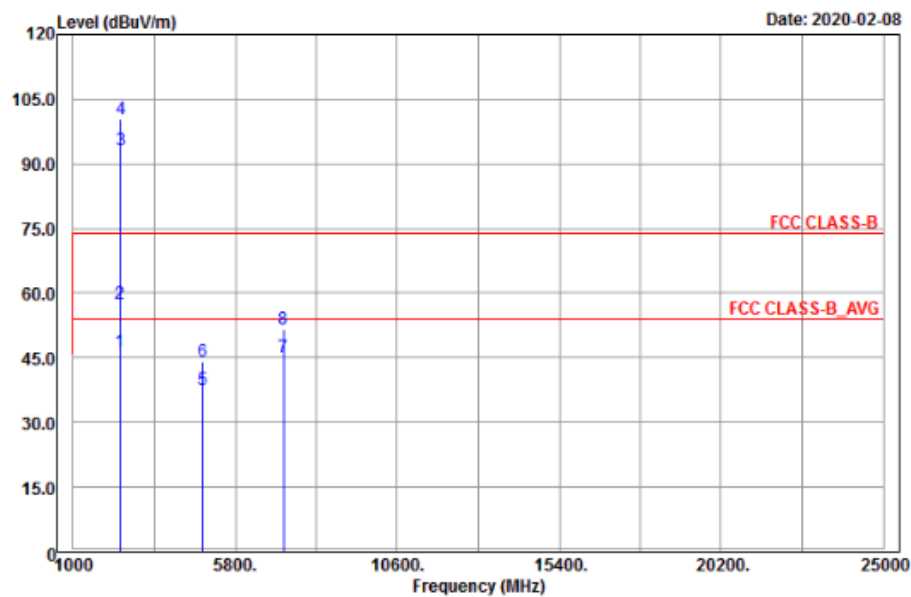
802.11g + WCDMA Band V

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Harry Hsueh

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.71	52.81	47.81	5	54	-1.19	157	108	Average
2389.71	64.85	59.85	5	74	-9.15	157	108	Peak
2412	98.52	93.46	5.06			157	108	Average
2412	105.68	100.62	5.06			157	108	Peak
4824	40.26	29.97	10.29	54	-13.74	136	117	Average
4824	46.58	36.29	10.29	74	-27.42	136	117	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	46.57	41.56	5.01	54	-7.43	115	184	Average
2389.94	57.47	52.46	5.01	74	-16.53	115	184	Peak
2412	93.25	88.19	5.06			105	187	Average
2412	100.34	95.28	5.06			105	187	Peak
4824	37.68	27.39	10.29	54	-16.32	127	112	Average
4824	44.24	33.95	10.29	74	-29.76	127	112	Peak
7236	45.17	32.69	12.48	54	-8.83	109	241	Average
7236	51.82	39.34	12.48	74	-22.18	109	241	Peak

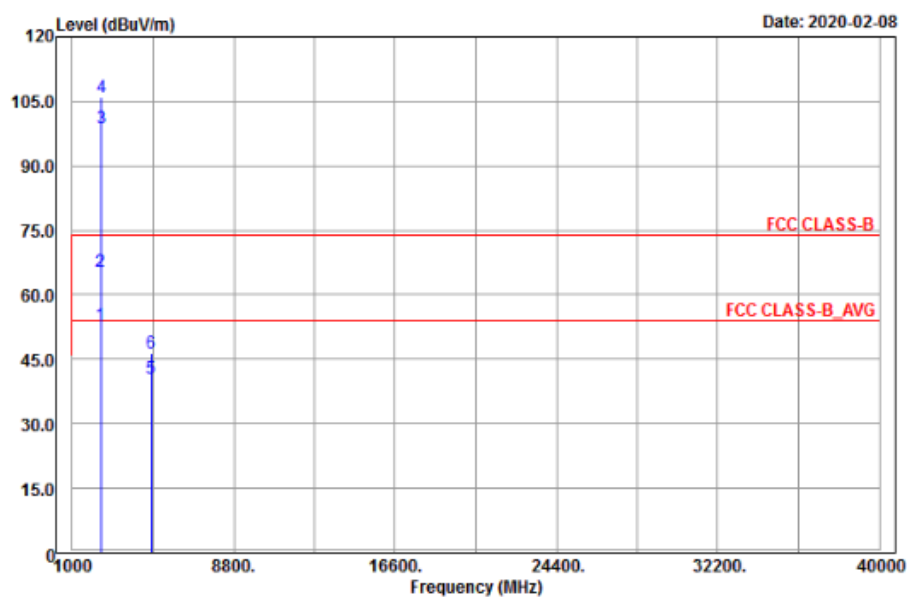
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

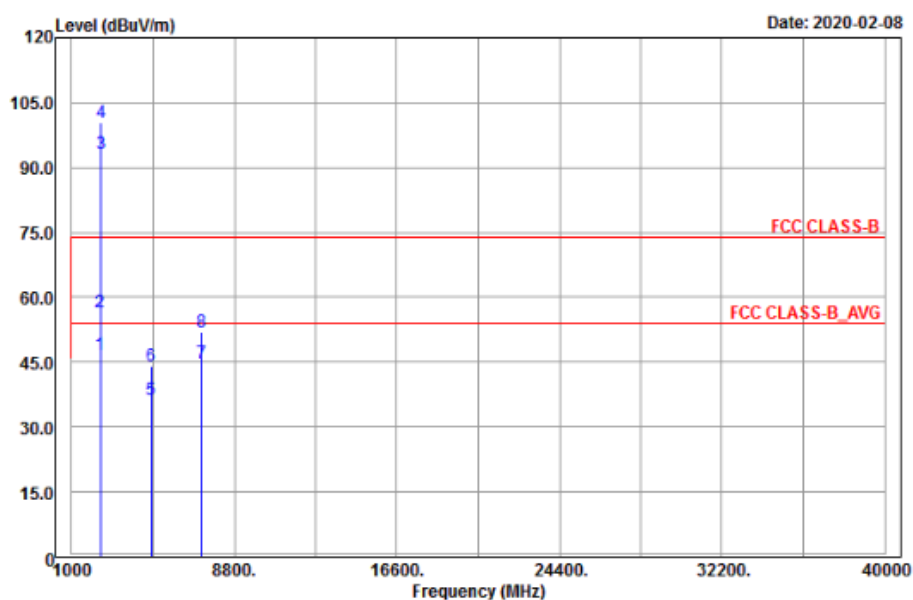
802.11g + LTE Band 2

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Harry Hsueh

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.91	52.86	47.85	5.01	54	-1.14	154	133	Average
2389.91	65.38	60.37	5.01	74	-8.62	154	133	Peak
2412	98.63	93.57	5.06			157	107	Average
2412	105.86	100.8	5.06			157	107	Peak
4824	40.65	30.36	10.29	54	-13.35	132	49	Average
4824	46.29	36	10.29	74	-27.71	132	49	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.85	46.85	41.84	5.01	54	-7.15	112	275	Average
2389.85	56.54	51.53	5.01	74	-17.46	112	275	Peak
2412	93.29	88.23	5.06			115	253	Average
2412	100.26	95.2	5.06			115	253	Peak
4824	36.43	26.14	10.29	54	-17.57	182	301	Average
4824	43.98	33.69	10.29	74	-30.02	182	301	Peak
7236	44.78	32.3	12.48	54	-9.22	151	178	Average
7236	51.92	39.44	12.48	74	-22.08	151	178	Peak

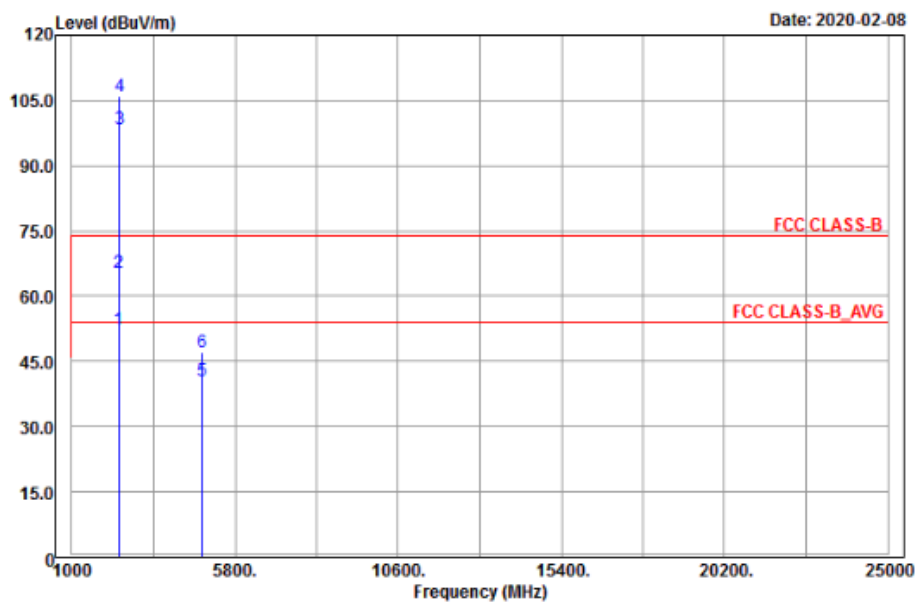
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

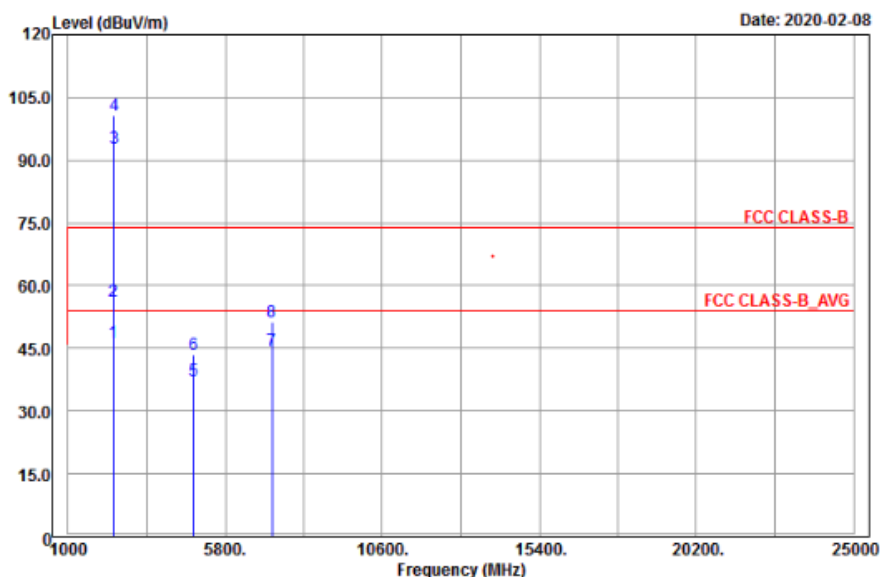
802.11g + LTE Band 26

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Harry Hsueh

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	52.23	47.22	5.01	54	-1.77	154	139	Average
2389.94	65.34	60.33	5.01	74	-8.66	154	139	Peak
2412	98.53	93.47	5.06			182	104	Average
2412	105.96	100.9	5.06			182	104	Peak
4824	40.62	30.33	10.29	54	-13.38	186	104	Average
4824	47.01	36.72	10.29	74	-26.99	186	104	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.87	46.53	41.52	5.01	54	-7.47	104	189	Average
2389.87	56.33	51.32	5.01	74	-17.67	104	189	Peak
2412	92.89	87.83	5.06			105	217	Average
2412	100.62	95.56	5.06			105	217	Peak
4824	37.15	26.86	10.29	54	-16.85	127	115	Average
4824	43.58	33.29	10.29	74	-30.42	127	115	Peak
7236	44.39	31.91	12.48	54	-9.61	158	124	Average
7236	51.39	38.91	12.48	74	-22.61	158	124	Peak

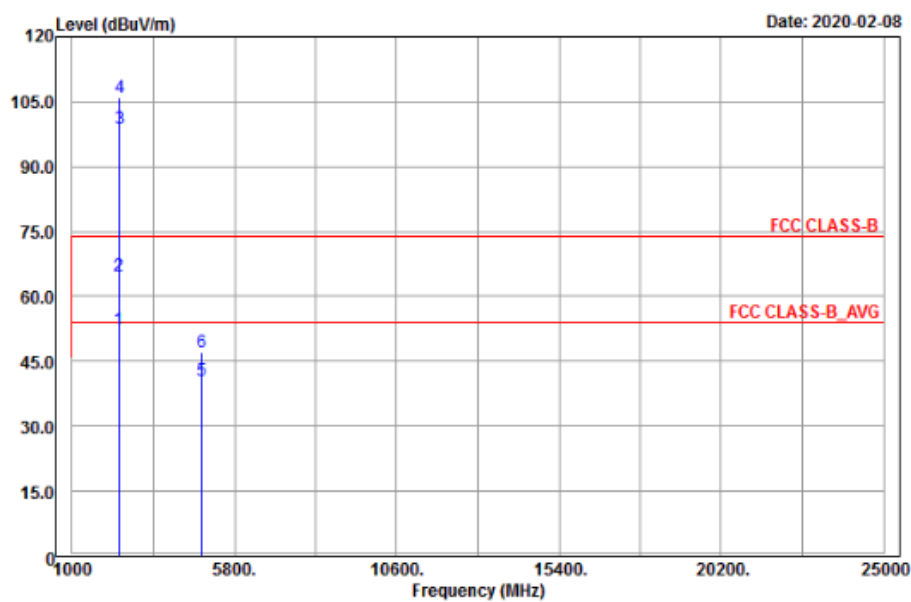
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

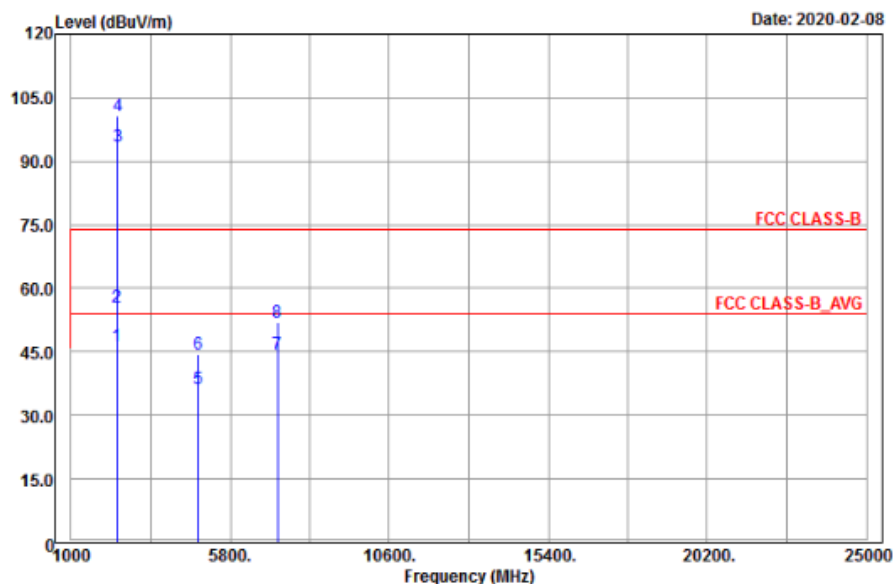
802.11g + LTE Band 41

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Harry Hsueh

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.9	52.28	47.27	5.01	54	-1.72	155	136	Average
2389.9	64.82	59.81	5.01	74	-9.18	155	136	Peak
2412	98.65	93.59	5.06			155	131	Average
2412	105.82	100.76	5.06			155	131	Peak
4824	40.65	30.36	10.29	54	-13.35	144	273	Average
4824	47.12	36.83	10.29	74	-26.88	144	273	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.86	46.53	41.52	5.01	54	-7.47	123	254	Average
2389.86	55.47	50.46	5.01	74	-18.53	123	254	Peak
2412	93.37	88.31	5.06			105	198	Average
2412	100.69	95.63	5.06			105	198	Peak
4824	36.27	25.98	10.29	54	-17.73	124	177	Average
4824	44.59	34.3	10.29	74	-29.41	124	177	Peak
7236	44.36	31.88	12.48	54	-9.64	118	217	Average
7236	52.03	39.55	12.48	74	-21.97	118	217	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

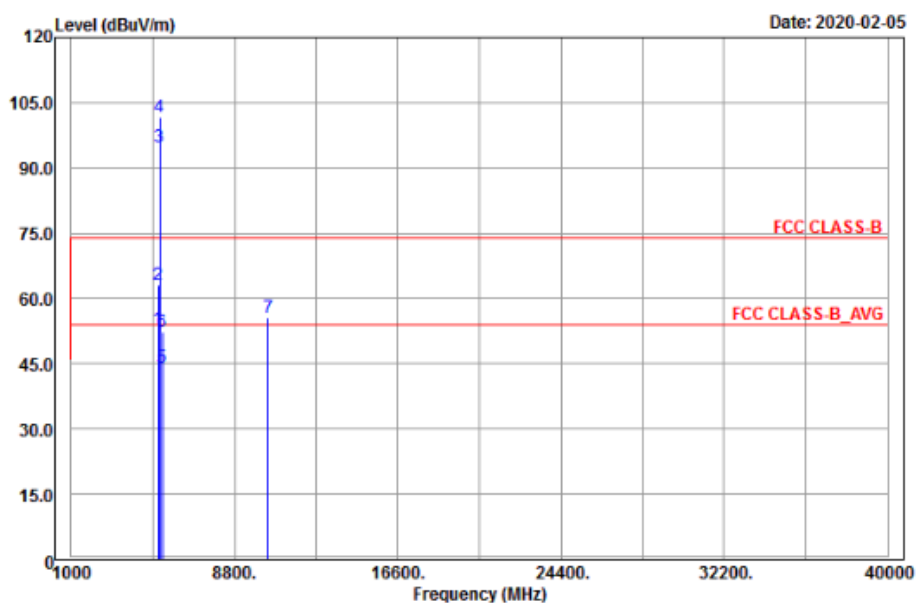
Above 1 GHz Data :

WLAN 5G

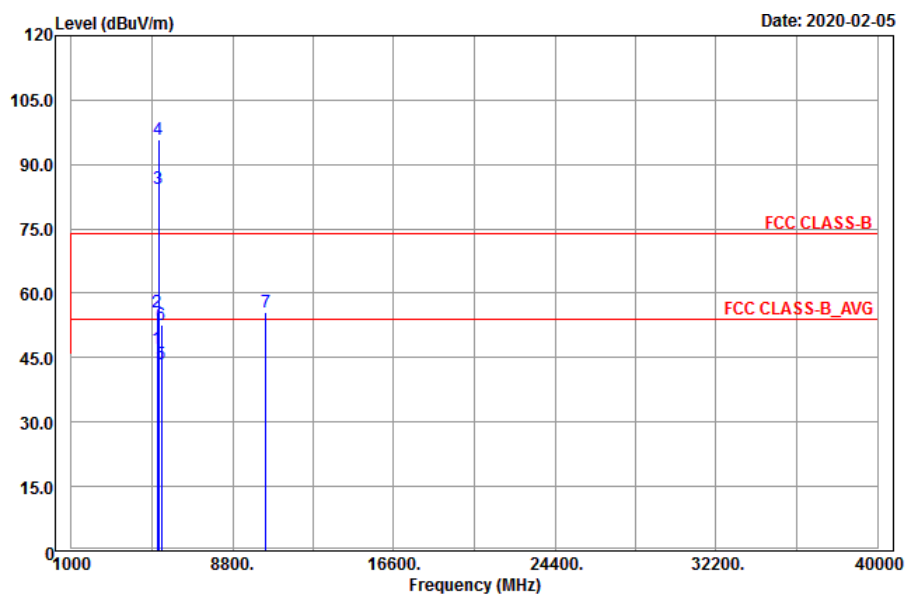
802.11ac (VHT80) + WCDMA Band V

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.84	42.79	10.05	54	-1.16	104	107	Average
5150	63.21	53.16	10.05	74	-10.79	104	107	Peak
5210	94.83	84.66	10.17			104	72	Average
5210	101.81	91.64	10.17			104	72	Peak
5350.81	44.29	34.06	10.23	54	-9.71	104	72	Average
5350.81	52.43	42.2	10.23	74	-21.57	104	72	Peak
*10420	55.62	39.46	16.16	68.2	-12.58	165	172	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.26	47.22	37.17	10.05	54	-6.78	106	19	Average
5146.26	55.52	45.47	10.05	74	-18.48	106	19	Peak
5210	84.34	74.17	10.17			106	16	Average
5210	95.82	85.65	10.17			106	16	Peak
5354.68	43.45	33.22	10.23	54	-10.55	106	16	Average
5354.68	52.63	42.4	10.23	74	-21.37	106	16	Peak
*10420	55.48	39.32	16.16	68.2	-12.72	124	87	Peak

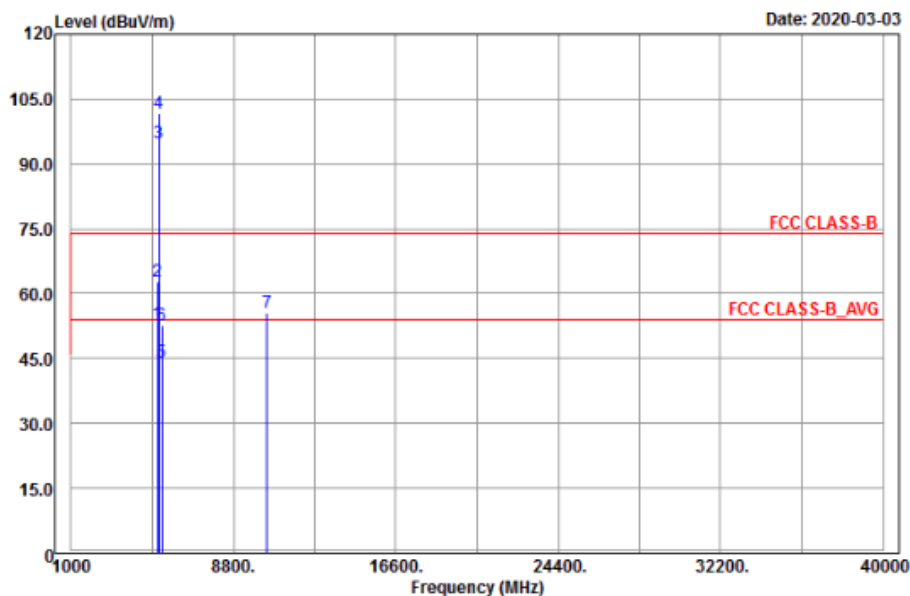
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

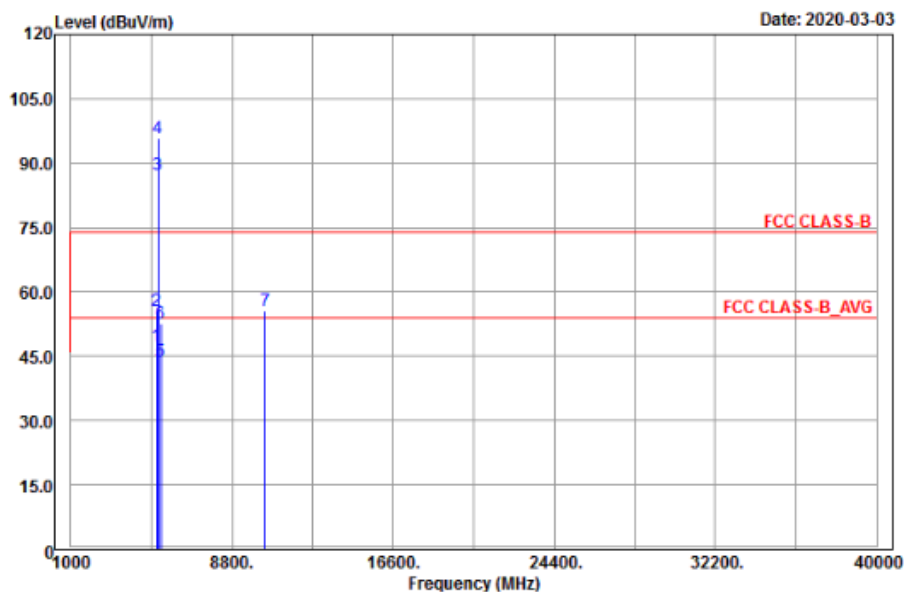
802.11ac (VHT80) + LTE Band 2

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.82	42.77	10.05	54	-1.18	103	104	Average
5150	62.76	52.71	10.05	74	-11.24	103	104	Peak
5210	94.85	84.68	10.17			102	85	Average
5210	101.78	91.61	10.17			102	85	Peak
5350.14	44.29	34.06	10.23	54	-9.71	102	85	Average
5350.14	52.58	42.35	10.23	74	-21.42	102	85	Peak
*10420	55.53	39.37	16.16	68.2	-12.67	174	132	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5146.29	47.25	37.2	10.05	54	-6.75	104	29	Average
5146.29	55.62	45.57	10.05	74	-18.38	104	29	Peak
5210	87.36	77.19	10.17			104	30	Average
5210	95.86	85.69	10.17			104	30	Peak
5352.61	43.66	33.43	10.23	54	-10.34	104	30	Average
5352.61	52.53	42.3	10.23	74	-21.47	104	30	Peak
*10420	55.47	39.31	16.16	68.2	-12.73	163	145	Peak

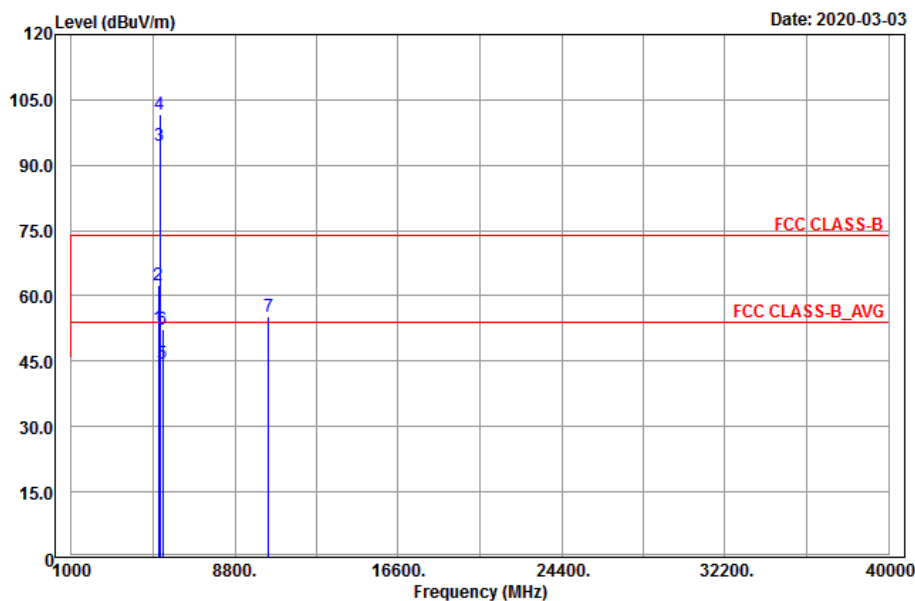
Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 5210 MHz: Fundamental Frequency
- The emission levels of other frequencies were very low against the limit

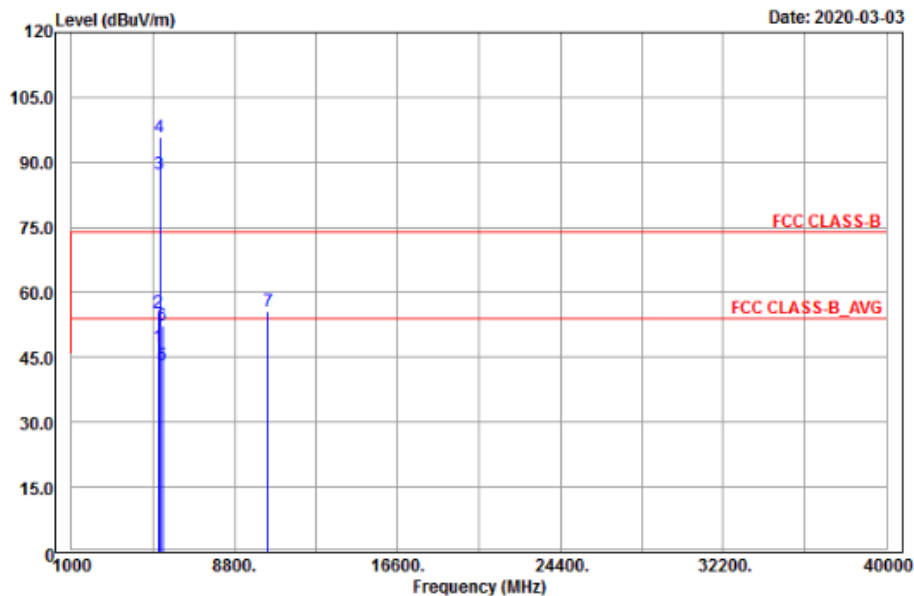
802.11ac (VHT80) + LTE Band 26

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5150	52.64	42.59	10.05	54	-1.36	101	114	Average
5150	62.58	52.53	10.05	74	-11.42	101	114	Peak
5210	94.64	84.47	10.17			101	106	Average
5210	101.65	91.48	10.17			101	106	Peak
5352.27	44.37	34.14	10.23	54	-9.63	101	106	Average
5352.27	52.45	42.22	10.23	74	-21.55	101	106	Peak
*10420	55.24	39.08	16.16	68.2	-12.96	152	78	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.68	47.26	37.21	10.05	54	-6.74	106	22	Average
5147.68	55.42	45.37	10.05	74	-18.58	106	22	Peak
5210	87.21	77.04	10.17			106	25	Average
5210	95.68	85.51	10.17			106	25	Peak
5353.82	43.21	32.98	10.23	54	-10.79	106	25	Average
5353.82	52.38	42.15	10.23	74	-21.62	106	25	Peak
*10420	55.44	39.28	16.16	68.2	-12.76	128	43	Peak

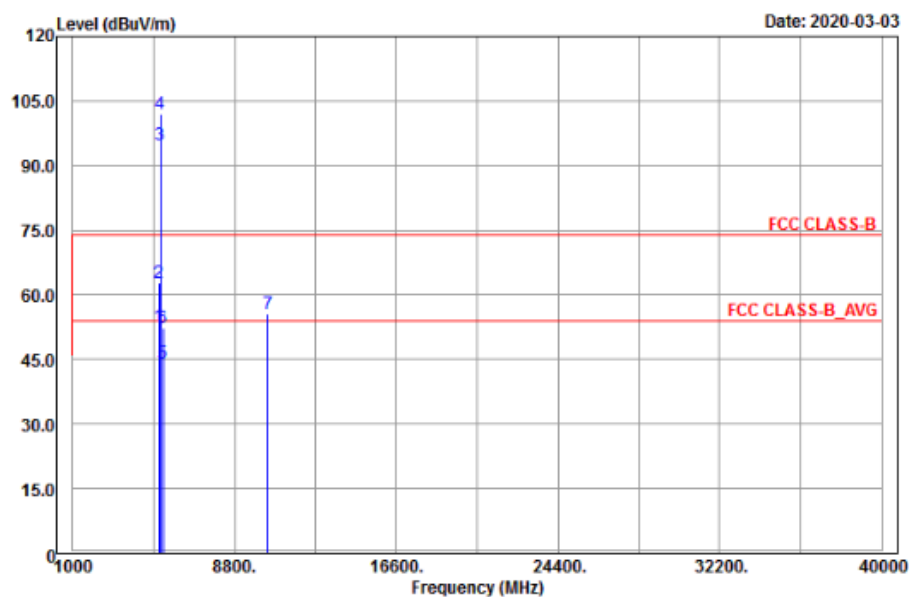
Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

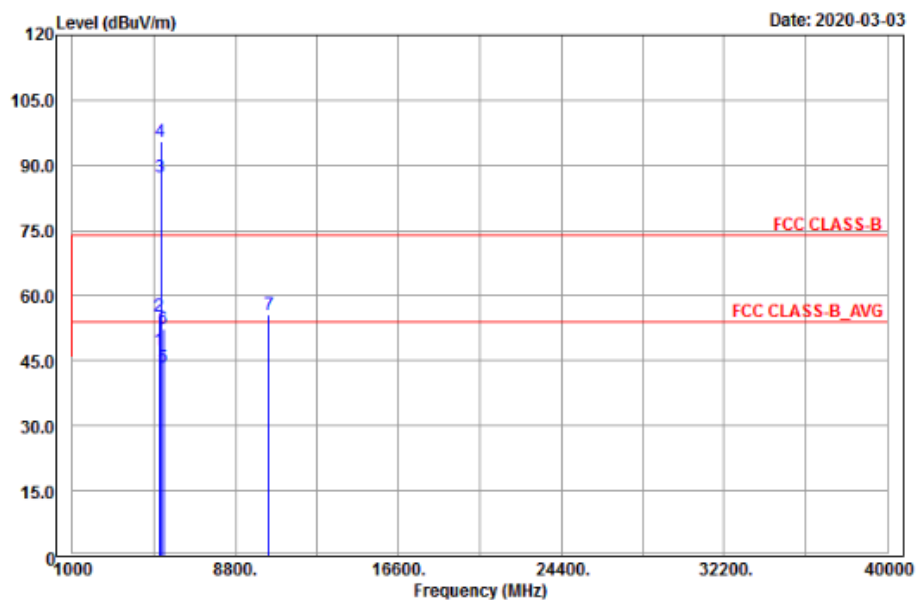
802.11ac (VHT80) + LTE Band 41

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	1 GHz ~ 40 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5149.86	52.74	42.69	10.05	54	-1.26	105	98	Average
5149.86	62.86	52.81	10.05	74	-11.14	105	98	Peak
5210	94.8	84.63	10.17			104	67	Average
5210	101.86	91.69	10.17			104	67	Peak
5351.68	44.17	33.94	10.23	54	-9.83	104	67	Average
5351.68	52.33	42.1	10.23	74	-21.67	104	67	Peak
*10420	55.64	39.48	16.16	68.2	-12.56	182	147	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
5147.25	47.43	37.38	10.05	54	-6.57	101	48	Average
5147.25	55.28	45.23	10.05	74	-18.72	101	48	Peak
5210	87.37	77.2	10.17			101	45	Average
5210	95.56	85.39	10.17			101	45	Peak
5350.62	43.59	33.36	10.23	54	-10.41	101	45	Average
5350.62	52.38	42.15	10.23	74	-21.62	101	45	Peak
*10420	55.48	39.32	16.16	68.2	-12.72	172	112	Peak

Remarks:

1. Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

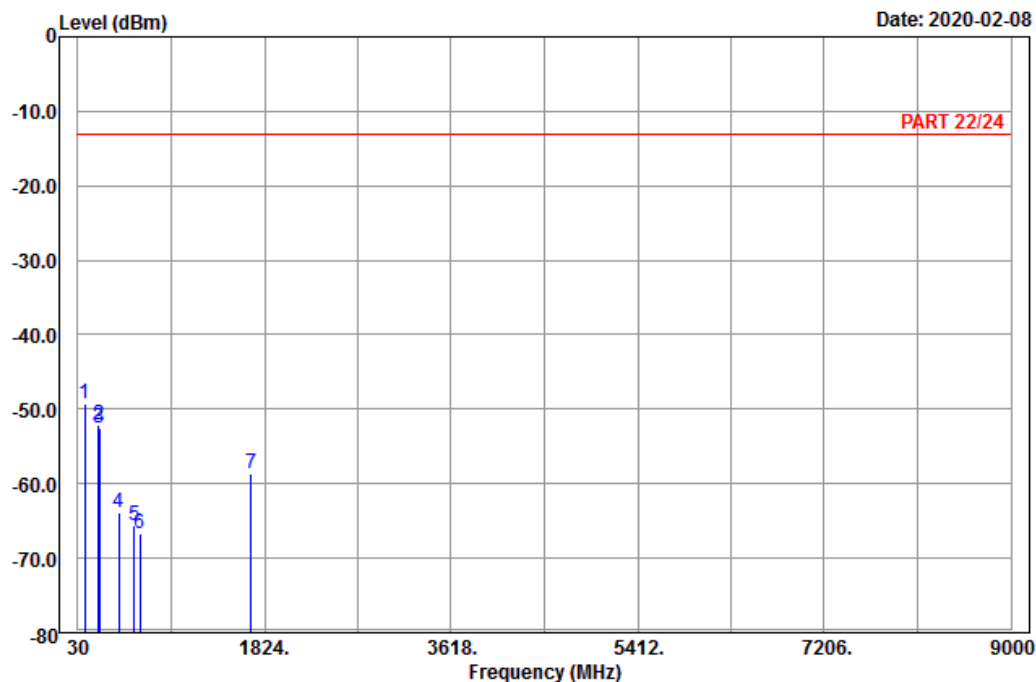
WCDMA Band V + 802.11g



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 7



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : 11G_TX_CH01+Band V_H-CH
Tested by: Charles Hsiao

		Read	Limit	Over	
Freq	Level	Level	Factor	Line	Limit Remark
MHz	dBm	dBm	dB	dBm	dB
1 pp	95.07	-49.33	-38.93	-10.40	-13.00 -36.33 Peak
2	225.48	-52.04	-46.21	-5.83	-13.00 -39.04 Peak
3	238.44	-52.60	-46.94	-5.66	-13.00 -39.60 Peak
4	421.80	-63.89	-60.66	-3.23	-13.00 -50.89 Peak
5	574.40	-65.61	-64.95	-0.66	-13.00 -52.61 Peak
6	629.70	-66.71	-66.81	0.10	-13.00 -53.71 Peak
7	1693.20	-58.67	-66.81	8.14	-13.00 -45.67 Peak

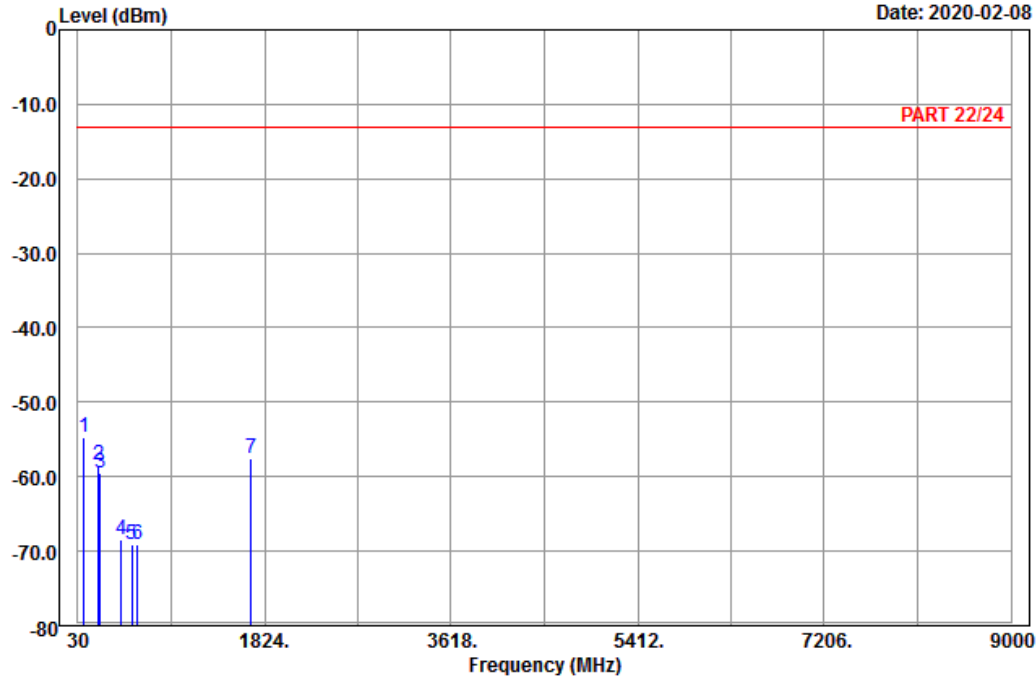


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 8

Date: 2020-02-08



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : 11G_TX_CH01+Band V_H-CH
Tested by: Charles Hsiao

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1 pp	89.94	-54.67	-44.00	-10.67	-13.00	-41.67	Peak
2	225.75	-58.37	-52.54	-5.83	-13.00	-45.37	Peak
3	241.14	-59.44	-53.82	-5.62	-13.00	-46.44	Peak
4	447.70	-68.44	-64.64	-3.80	-13.00	-55.44	Peak
5	545.00	-69.10	-67.08	-2.02	-13.00	-56.10	Peak
6	603.10	-69.01	-69.40	0.39	-13.00	-56.01	Peak
7	1693.20	-57.48	-65.62	8.14	-13.00	-44.48	Peak

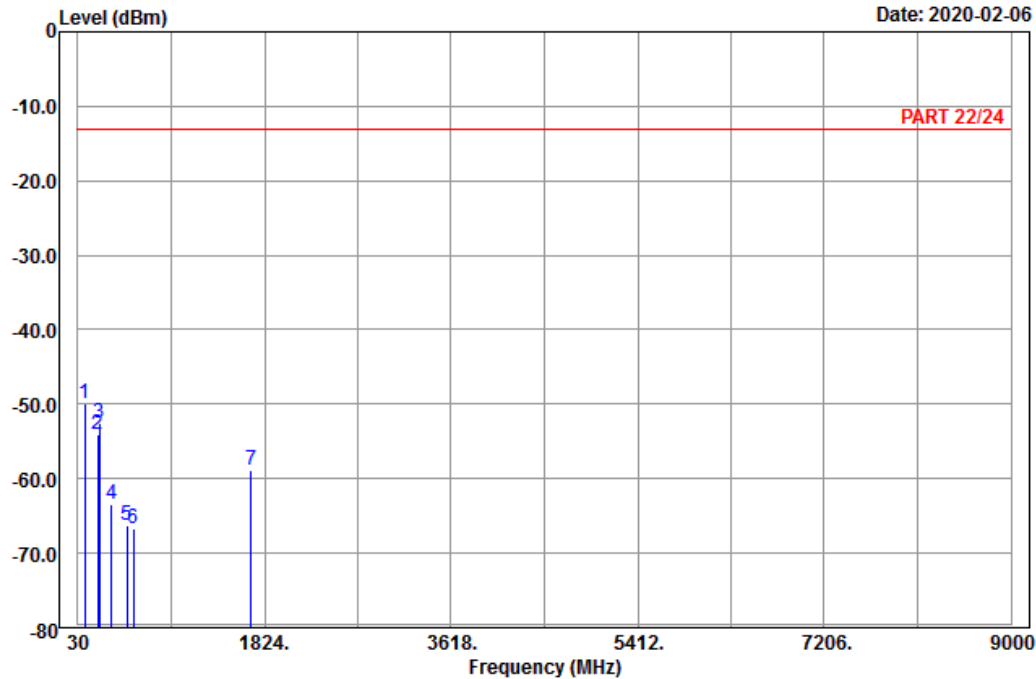
WCDMA Band V + 802.11ac (VHT80)



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 7



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : 11AC_VHT80_TX_CH42+Band V_H-CH
Tested by: Charles Hsiao

		Read	Limit	Over			
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp	96.42	-50.02	-39.68	-13.00	-37.02	-10.34 Peak
2		221.97	-54.10	-48.22	-13.00	-41.10	-5.88 Peak
3		238.44	-52.60	-46.94	-13.00	-39.60	-5.66 Peak
4		355.30	-63.46	-58.34	-13.00	-50.46	-5.12 Peak
5		500.20	-66.26	-60.98	-13.00	-53.26	-5.28 Peak
6		566.00	-66.74	-65.76	-13.00	-53.74	-0.98 Peak
7		1693.20	-58.78	-66.92	-13.00	-45.78	8.14 Peak

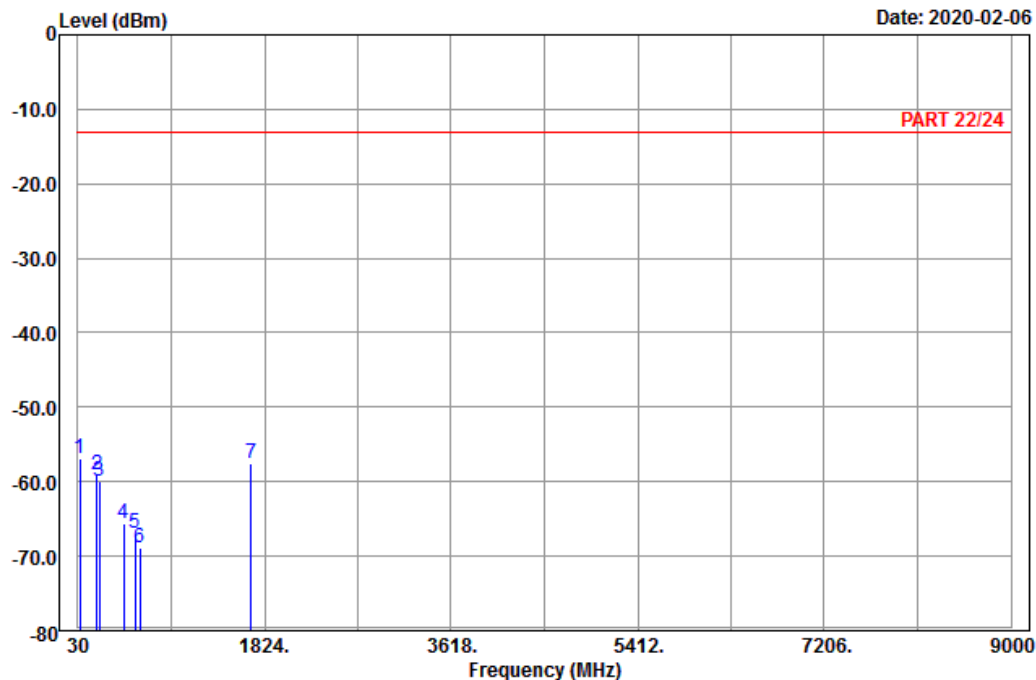


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 8

Date: 2020-02-06



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : 11AC_VHT80_TX_CH42+Band V_H-CH
Tested by: Charles Hsiao

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	46.74	-56.87	-44.07	-13.00	-43.87	-12.80	Peak
2	216.57	-58.99	-53.03	-13.00	-45.99	-5.96	Peak
3	238.17	-59.98	-54.32	-13.00	-46.98	-5.66	Peak
4	467.30	-65.66	-61.32	-13.00	-52.66	-4.34	Peak
5	579.30	-66.83	-66.37	-13.00	-53.83	-0.46	Peak
6	623.40	-68.90	-69.06	-13.00	-55.90	0.16	Peak
7	1693.20	-57.50	-65.64	-13.00	-44.50	8.14	Peak

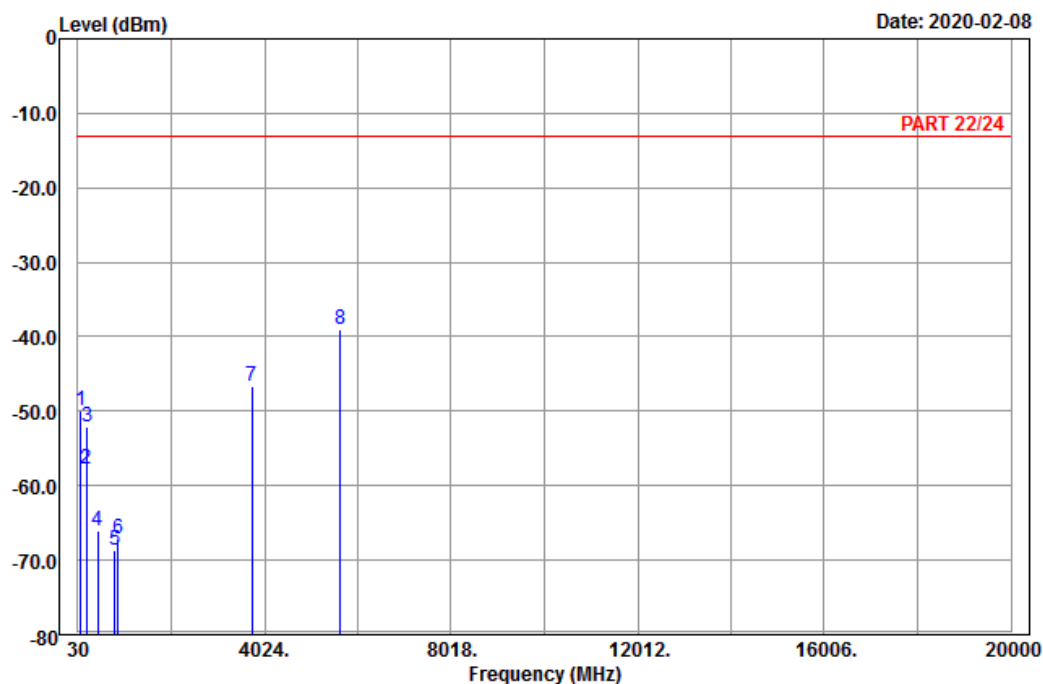
LTE Band 2 (BW: 20MHz) + 802.11g



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 13



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : 11G_TX_CH01+LTE_Band 2_M-CH
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	84.00	-49.96	-38.63	-11.33	-13.00	-36.96	Peak
2	207.39	-57.66	-51.58	-6.08	-13.00	-44.66	Peak
3	229.26	-52.19	-46.40	-5.79	-13.00	-39.19	Peak
4	458.20	-66.13	-62.06	-4.07	-13.00	-53.13	Peak
5	828.50	-68.71	-70.40	1.69	-13.00	-55.71	Peak
6	895.70	-67.19	-69.94	2.75	-13.00	-54.19	Peak
7	3760.00	-46.55	-62.69	16.14	-13.00	-33.55	Peak
8 pp	5640.00	-39.02	-59.49	20.47	-13.00	-26.02	Peak

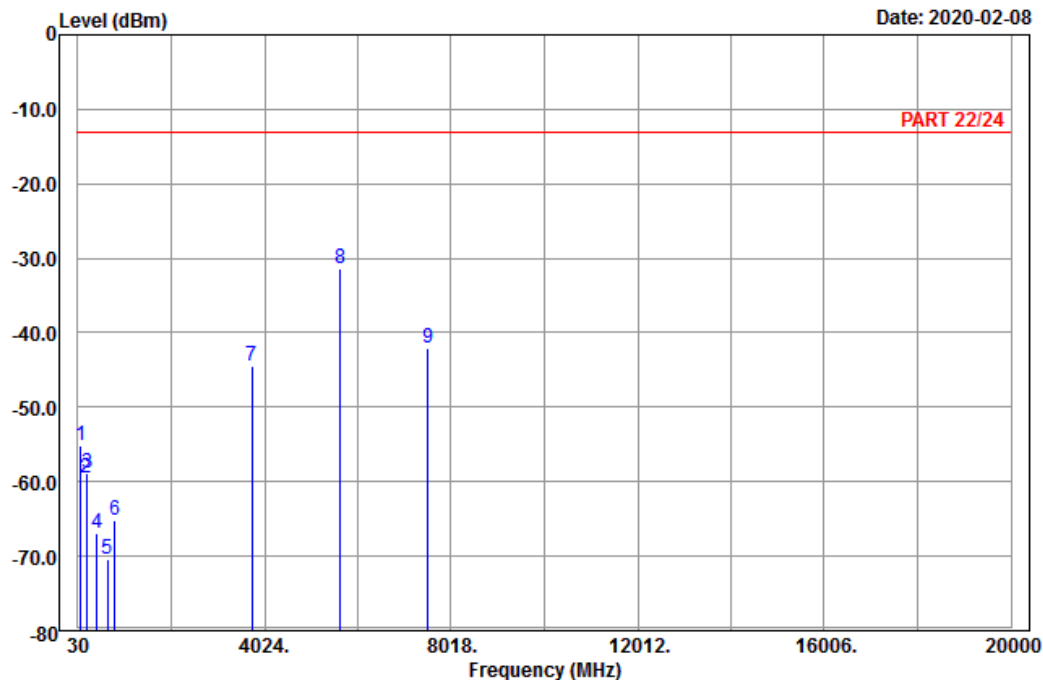


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 14

Date: 2020-02-08



Site : 966 chamber 1

Condition: PART 22/24 Vertical

Remark : 11G_TX_CH01+LTE_Band 2_M-CH

Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	89.67	-55.08	-44.41	-10.67	-13.00	-42.08	Peak
2	217.11	-59.48	-53.53	-5.95	-13.00	-46.48	Peak
3	229.26	-58.77	-52.98	-5.79	-13.00	-45.77	Peak
4	435.10	-67.02	-63.49	-3.53	-13.00	-54.02	Peak
5	671.70	-70.42	-70.18	-0.24	-13.00	-57.42	Peak
6	813.10	-65.17	-67.04	1.87	-13.00	-52.17	Peak
7	3760.00	-44.48	-60.62	16.14	-13.00	-31.48	Peak
8 pp	5640.00	-31.39	-51.86	20.47	-13.00	-18.39	Peak
9	7520.00	-42.15	-64.83	22.68	-13.00	-29.15	Peak

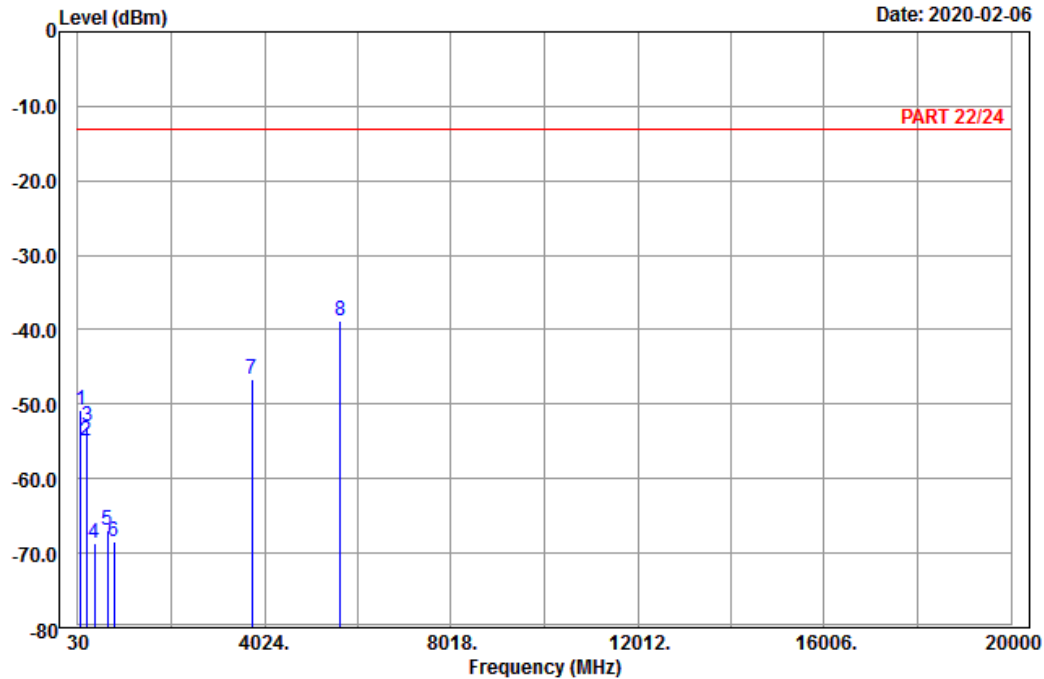
LTE Band 2 (BW: 20MHz) + 802.11ac (VHT80)



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 13



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : 11AC_VHT80_TX_CH42+LTE_Band 2_M-CH
Tested by: Karl Lee

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	97.50	-50.78	-40.55	-13.00	-37.78	-10.23	Peak
2	218.73	-54.91	-48.99	-13.00	-41.91	-5.92	Peak
3	226.56	-53.02	-47.20	-13.00	-40.02	-5.82	Peak
4	379.80	-68.58	-64.81	-13.00	-55.58	-3.77	Peak
5	657.00	-66.86	-66.69	-13.00	-53.86	-0.17	Peak
6	797.00	-68.35	-70.17	-13.00	-55.35	1.82	Peak
7	3760.00	-46.56	-62.70	-13.00	-33.56	16.14	Peak
8 pp	5640.00	-38.78	-59.25	-13.00	-25.78	20.47	Peak

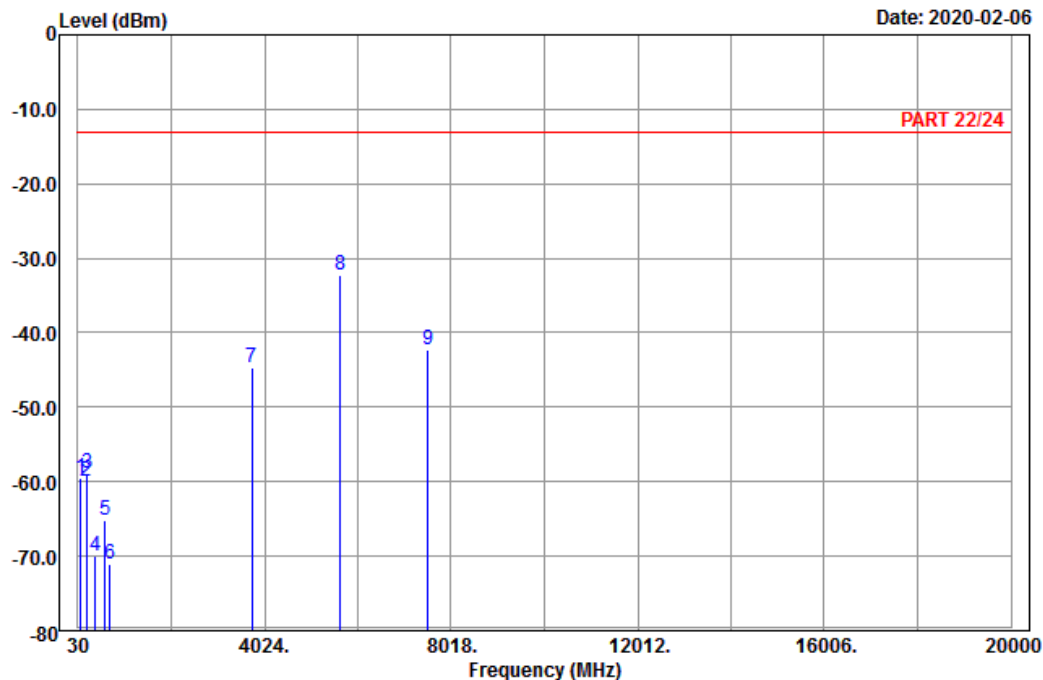


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 14

Date: 2020-02-06



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : 11AC_VHT80_TX_CH42+LTE_Band 2_M-CH
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	98.04	-59.61	-49.38	-13.00	-46.61	-10.23	Peak
2	214.14	-60.05	-54.06	-13.00	-47.05	-5.99	Peak
3	227.64	-58.80	-52.99	-13.00	-45.80	-5.81	Peak
4	395.20	-69.92	-66.92	-13.00	-56.92	-3.00	Peak
5	610.10	-65.21	-65.53	-13.00	-52.21	0.32	Peak
6	710.20	-71.00	-70.44	-13.00	-58.00	-0.56	Peak
7	3760.00	-44.65	-60.79	-13.00	-31.65	16.14	Peak
8 pp	5640.00	-32.16	-52.63	-13.00	-19.16	20.47	Peak
9	7520.00	-42.22	-64.90	-13.00	-29.22	22.68	Peak

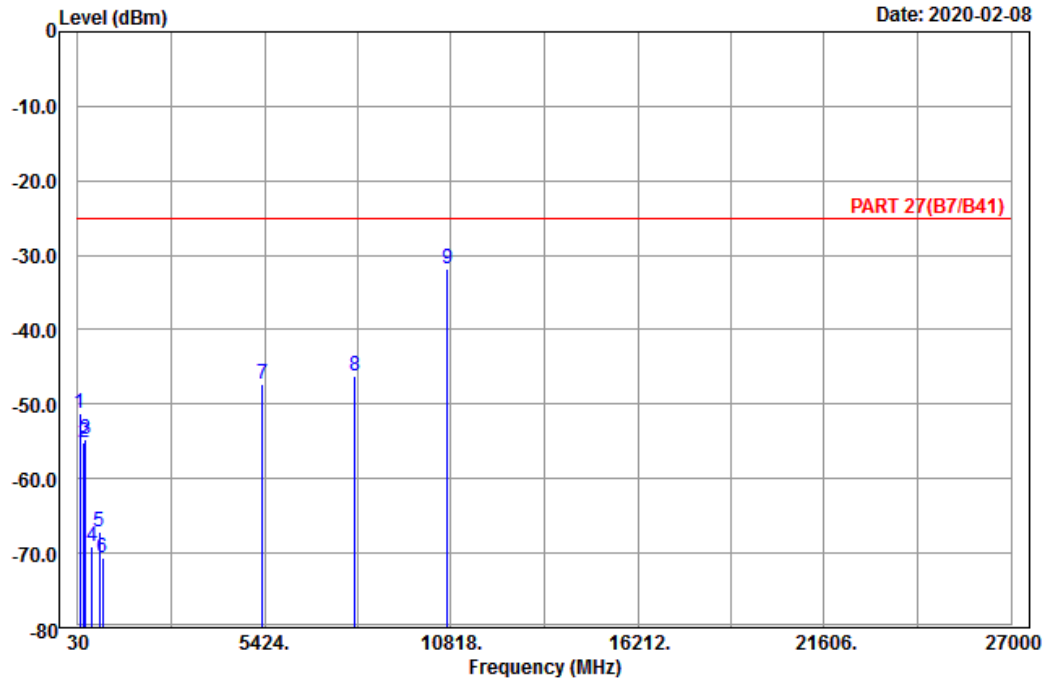
LTE Band 41 (BW: 20MHz) + 802.11g



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 13



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : 11G_TX_CH01+LTE_Band 41_H-CH
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	98.31	-51.30	-41.07	-10.23	-25.00	-26.30	Peak
2	216.57	-55.21	-49.25	-5.96	-25.00	-30.21	Peak
3	245.46	-54.61	-49.04	-5.57	-25.00	-29.61	Peak
4	451.90	-69.07	-65.17	-3.90	-25.00	-44.07	Peak
5	659.80	-67.10	-66.92	-0.18	-25.00	-42.10	Peak
6	755.70	-70.52	-69.59	-0.93	-25.00	-45.52	Peak
7	5360.00	-47.25	-67.55	20.30	-25.00	-22.25	Peak
8	8040.00	-46.32	-70.07	23.75	-25.00	-21.32	Peak
9 pp	10720.00	-31.74	-58.82	27.08	-25.00	-6.74	Peak

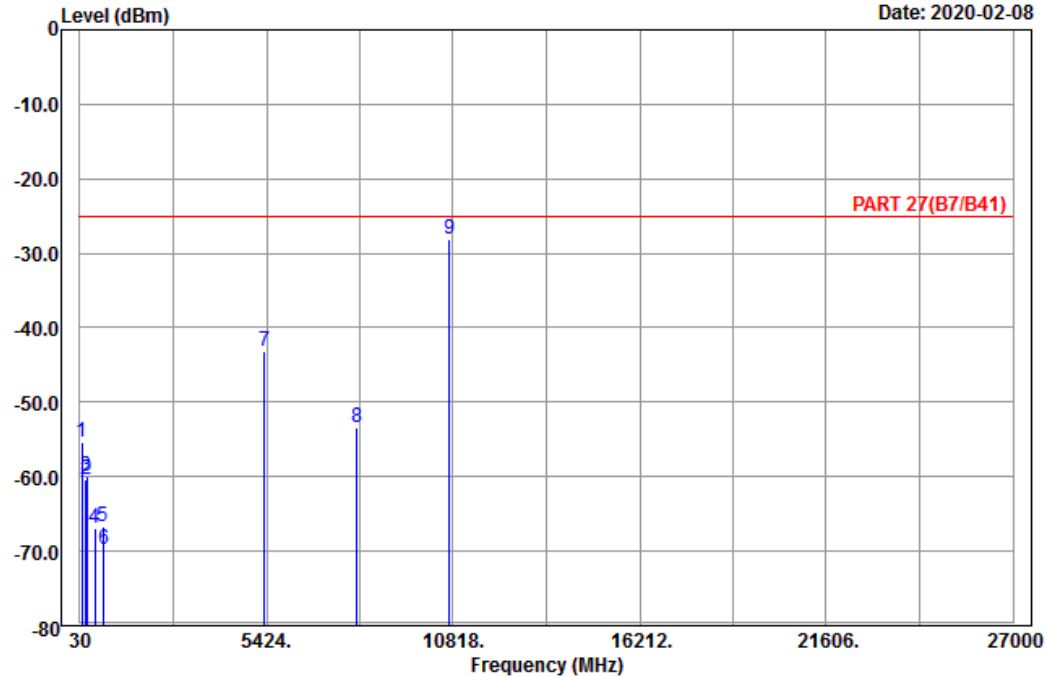


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 14

Date: 2020-02-08



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : 11G_TX_CH01+LTE_Band 41_H-CH
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	93.99	-55.39	-44.94	-10.45	-25.00	-30.39	Peak
2	215.76	-60.44	-54.48	-5.96	-25.00	-35.44	Peak
3	240.87	-60.04	-54.40	-5.64	-25.00	-35.04	Peak
4	458.90	-66.98	-62.89	-4.09	-25.00	-41.98	Peak
5	696.90	-66.71	-66.35	-0.36	-25.00	-41.71	Peak
6	715.80	-69.85	-69.18	-0.67	-25.00	-44.85	Peak
7 pk	5360.00	-43.18	-63.48	20.30	-25.00	-18.18	Peak
8	8040.00	-53.33	-77.08	23.75	-25.00	-28.33	Peak
9 pp	10720.00	-28.02	-55.10	27.08	-25.00	-3.02	Average

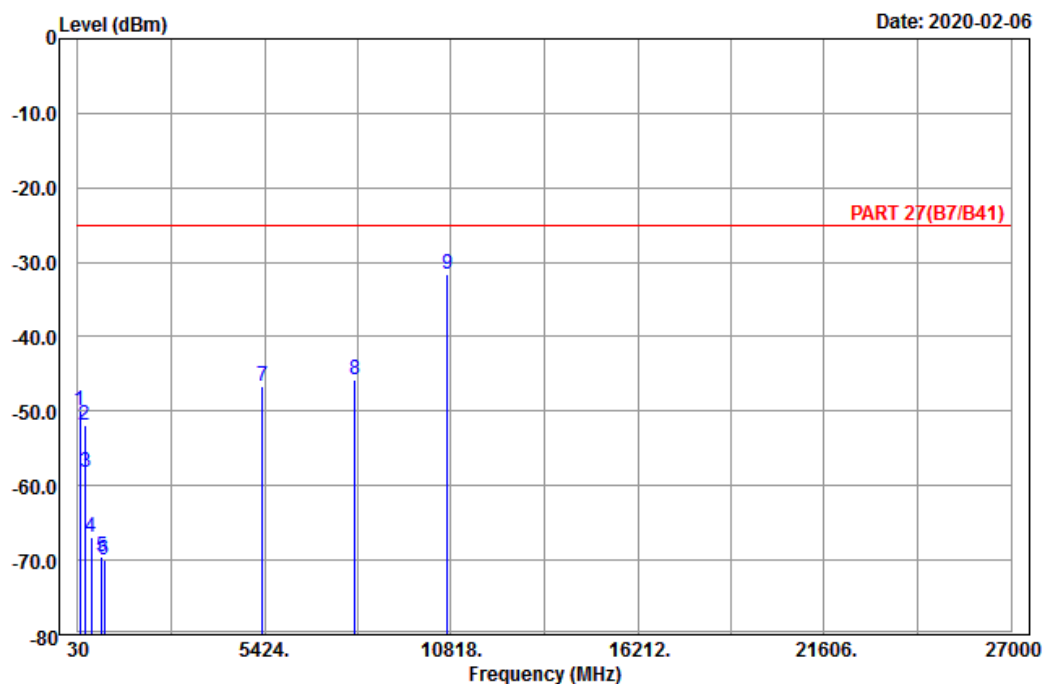
LTE Band 41 (BW: 20MHz) + 802.11ac (VHT80)



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 13



Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : 11AC_VHT80_TX_CH42+LTE_Band 41_H-CH
Tested by: Karl Lee

		Read	Limit	Over			
Freq	Level	Level	Line	Limit	Factor	Remark	
MHz	dBm	dBm	dBm	dB	dB		
1	96.42	-49.91	-39.57	-25.00	-24.91	-10.34	Peak
2	225.21	-51.90	-46.05	-25.00	-26.90	-5.85	Peak
3	248.70	-58.26	-52.73	-25.00	-33.26	-5.53	Peak
4	411.30	-66.86	-63.86	-25.00	-41.86	-3.00	Peak
5	710.90	-69.56	-68.98	-25.00	-44.56	-0.58	Peak
6	785.10	-69.93	-70.92	-25.00	-44.93	0.99	Peak
7	5360.00	-46.65	-66.95	-25.00	-21.65	20.30	Peak
8	8040.00	-45.71	-69.46	-25.00	-20.71	23.75	Peak
9 pp	10720.00	-31.55	-58.63	-25.00	-6.55	27.08	Peak

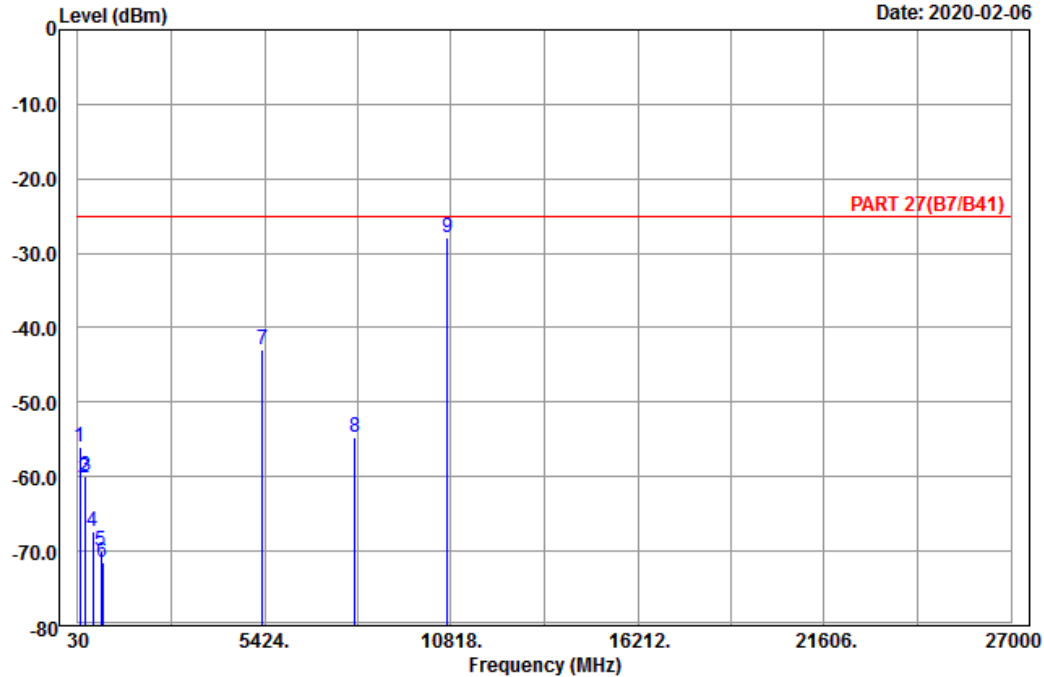


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 14

Date: 2020-02-06



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : 11AC_VHT80_TX_CH42+LTE_Band 41_H-CH
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	94.80	-55.97	-45.57	-25.00	-30.97	-10.40	Peak
2	219.81	-60.17	-54.26	-25.00	-35.17	-5.91	Peak
3	241.68	-60.04	-54.42	-25.00	-35.04	-5.62	Peak
4	457.50	-67.43	-63.36	-25.00	-42.43	-4.07	Peak
5	699.00	-69.88	-69.51	-25.00	-44.88	-0.37	Peak
6	745.90	-71.40	-70.16	-25.00	-46.40	-1.24	Peak
7 pk	5360.00	-42.85	-63.15	-25.00	-17.85	20.30	Peak
8	8040.00	-54.62	-78.37	-25.00	-29.62	23.75	Peak
9 pp	10720.00	-27.89	-54.97	-25.00	-2.89	27.08	Average

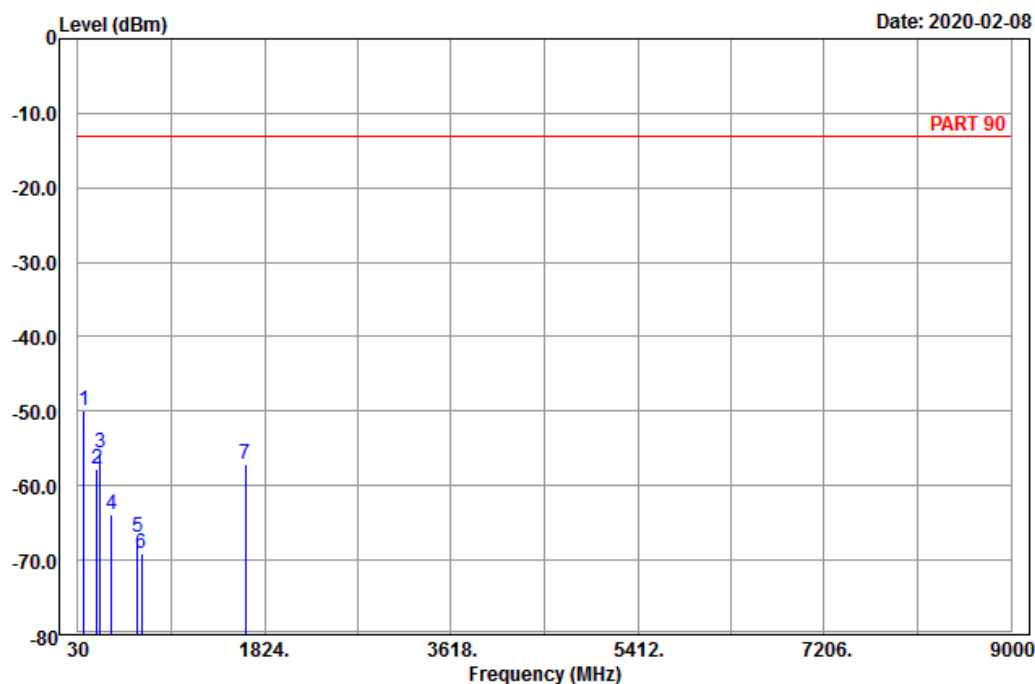
LTE Band 26 (BW: 10MHz) + 802.11g



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9



Site : 966 chamber 1

Condition: PART 90 Horizontal

Remark : 11G_TX_CH01+LTE_Band 26_M-CH

Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	pp	85.08	-50.01	-38.79	-11.22	-13.00	-37.01 Peak
2		210.09	-57.76	-51.72	-6.04	-13.00	-44.76 Peak
3		247.08	-55.54	-49.99	-5.55	-13.00	-42.54 Peak
4		356.70	-63.94	-58.92	-5.02	-13.00	-50.94 Peak
5		599.60	-66.93	-67.32	0.39	-13.00	-53.93 Peak
6		644.40	-69.07	-69.00	-0.07	-13.00	-56.07 Peak
7		1638.00	-57.06	-64.62	7.56	-13.00	-44.06 Peak

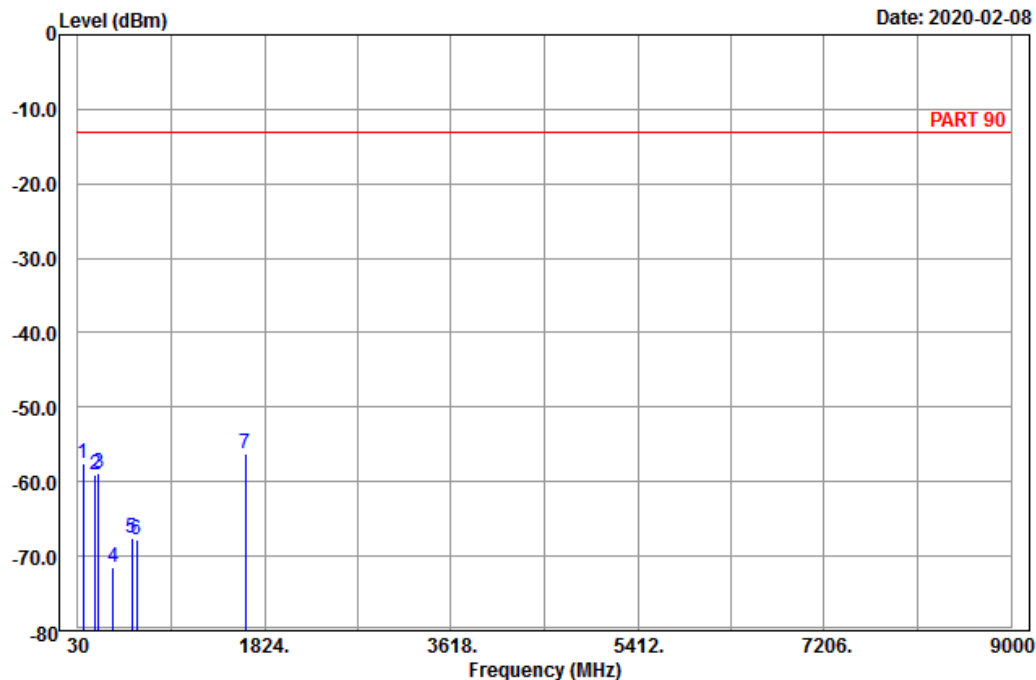


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2020-02-08



Site : 966 chamber 1
Condition: PART 90 Vertical
Remark : 11G_TX_CH01+LTE_Band 26_M-CH
Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBm	dBm	dB	dBm	dB	
1	81.84	-57.58	-45.92	-11.66	-13.00	-44.58	Peak
2	200.10	-58.97	-52.79	-6.18	-13.00	-45.97	Peak
3	227.10	-58.89	-53.07	-5.82	-13.00	-45.89	Peak
4	371.40	-71.52	-67.28	-4.24	-13.00	-58.52	Peak
5	549.20	-67.48	-65.75	-1.73	-13.00	-54.48	Peak
6	596.80	-67.70	-67.97	0.27	-13.00	-54.70	Peak
7 pp	1638.00	-56.28	-63.84	7.56	-13.00	-43.28	Peak

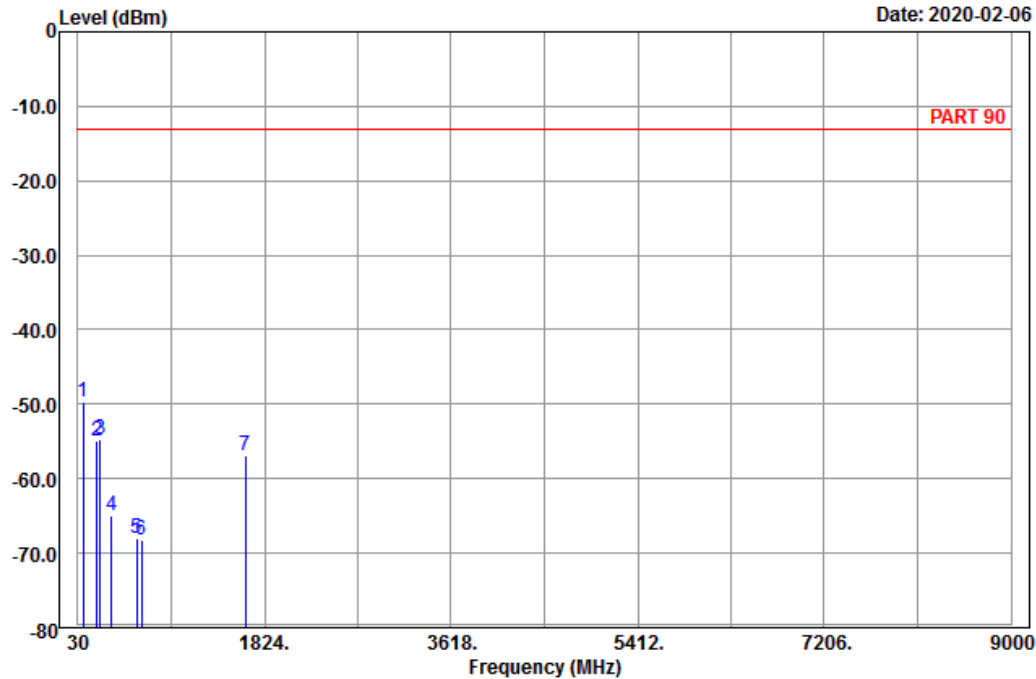
LTE Band 26 (BW: 10MHz) + 802.11ac (VHT80)



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9



Site : 966 chamber 1
Condition: PART 90 Horizontal
Remark : 11AC_VHT80_TX_CH42+LTE_Band 26_M-CH
Tested by: Karl Lee

		Read	Limit	Over			
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	pp	84.54	-49.76	-38.43	-13.00	-36.76	-11.33 Peak
2		214.14	-55.00	-49.01	-13.00	-42.00	-5.99 Peak
3		243.03	-54.73	-49.13	-13.00	-41.73	-5.60 Peak
4		353.20	-64.90	-59.68	-13.00	-51.90	-5.22 Peak
5		594.00	-68.09	-68.24	-13.00	-55.09	0.15 Peak
6		640.20	-68.13	-68.11	-13.00	-55.13	-0.02 Peak
7		1638.00	-56.92	-64.48	-13.00	-43.92	7.56 Peak

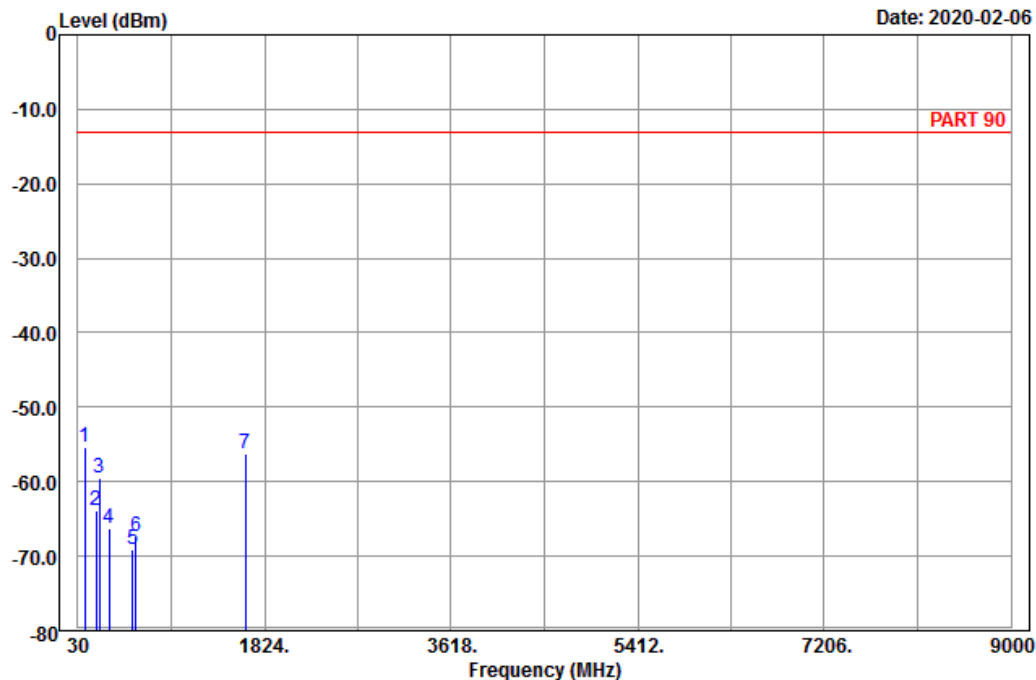


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2020-02-06



Site : 966 chamber 1
Condition: PART 90 Vertical
Remark : 11AC_VHT80_TX_CH42+LTE_Band 26_M-CH
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	93.99	-55.47	-45.02	-13.00	-42.47	-10.45	Peak
2	201.99	-63.84	-57.68	-13.00	-50.84	-6.16	Peak
3	233.04	-59.49	-53.75	-13.00	-46.49	-5.74	Peak
4	333.60	-66.36	-60.79	-13.00	-53.36	-5.57	Peak
5	555.50	-69.06	-67.64	-13.00	-56.06	-1.42	Peak
6	590.50	-67.29	-67.32	-13.00	-54.29	0.03	Peak
7	1638.00	-56.17	-63.73	-13.00	-43.17	7.56	Peak

9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

WLAN 2.4G

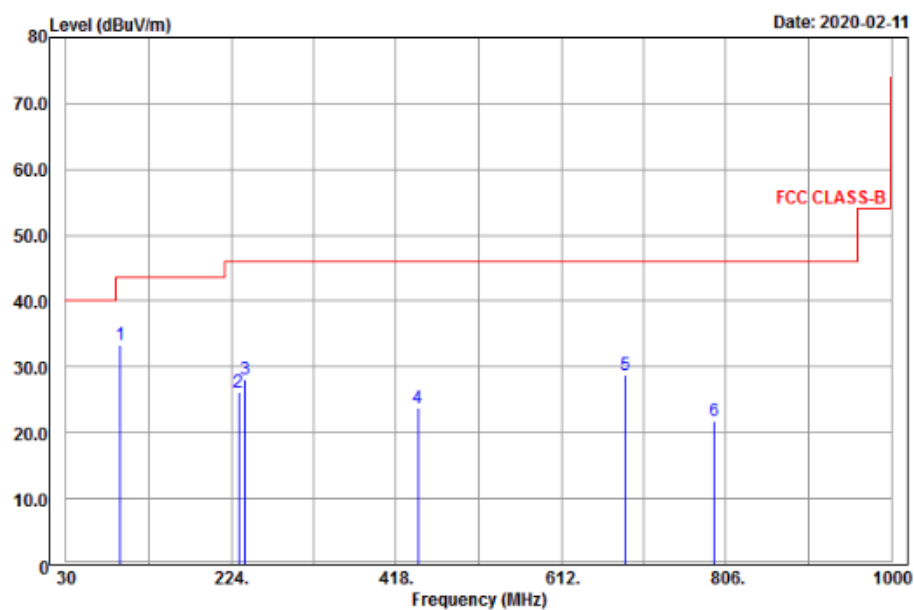
EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
93.99	33.29	51.37	-18.08	43.5	-10.21	134	255	Peak
233.04	26.26	43.56	-17.3	46	-19.74	105	185	Peak
240.06	28.19	45.22	-17.03	46	-17.81	197	8	Peak
443.5	23.74	37.11	-13.37	46	-22.26	188	255	Peak
687.8	28.85	38.19	-9.34	46	-17.15	105	190	Peak
792.1	21.82	29.62	-7.8	46	-24.18	121	13	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
91.83	37.05	55.62	-18.57	43.5	-6.45	134	197	Peak
221.97	26.27	44.03	-17.76	46	-19.73	105	226	Peak
243.57	24.23	41.2	-16.97	46	-21.77	187	8	Peak
390.3	24.81	38.91	-14.1	46	-21.19	105	2	Peak
599.6	23.43	34	-10.57	46	-22.57	164	322	Peak
899.9	26.38	32.32	-5.94	46	-19.62	124	241	Peak

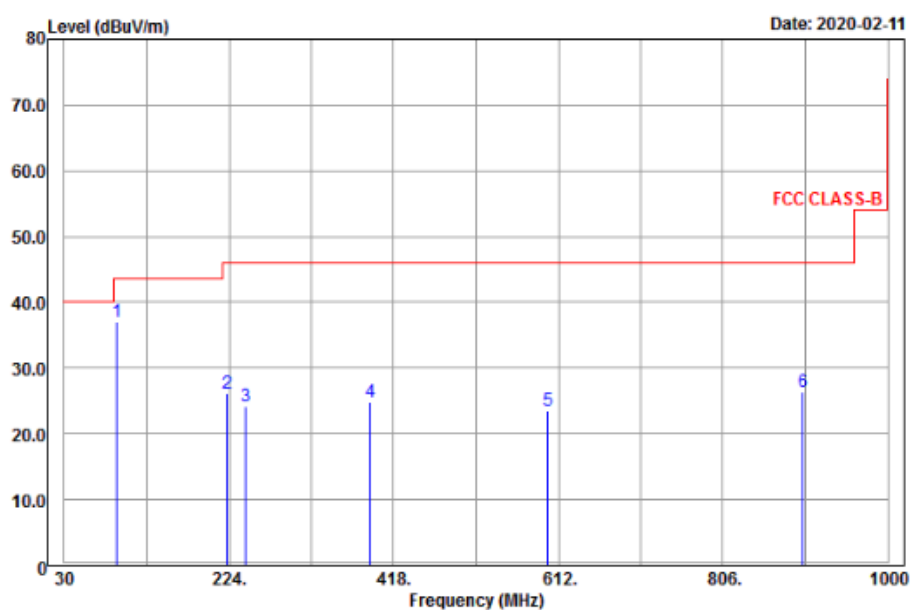
Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- The emission levels of other frequencies were very low against the limit

Horizontal



Vertical



WLAN 5G

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
94.53	32.93	50.78	-17.85	43.5	-10.57	153	258	Peak
200.37	29.46	47.7	-18.24	43.5	-14.04	164	110	Peak
235.47	28.65	45.88	-17.23	46	-17.35	154	177	Peak
458.2	27.36	40.52	-13.16	46	-18.64	166	254	Peak
700.4	22.37	31.6	-9.23	46	-23.63	126	55	Peak
848.8	23.62	30.45	-6.83	46	-22.38	180	144	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
37.76	27.5	39.77	-12.27	40	-12.5	102	92	Peak
53.28	18.9	30.75	-11.85	40	-21.1	100	2	Peak
169.68	17.28	29.63	-12.35	43.5	-26.22	117	335	Peak
464.56	23.59	29.74	-6.15	46	-22.41	136	247	Peak
670.2	28.61	29.91	-1.3	46	-17.39	126	155	Peak
887.48	33.27	30.51	2.76	46	-12.73	130	69	Peak

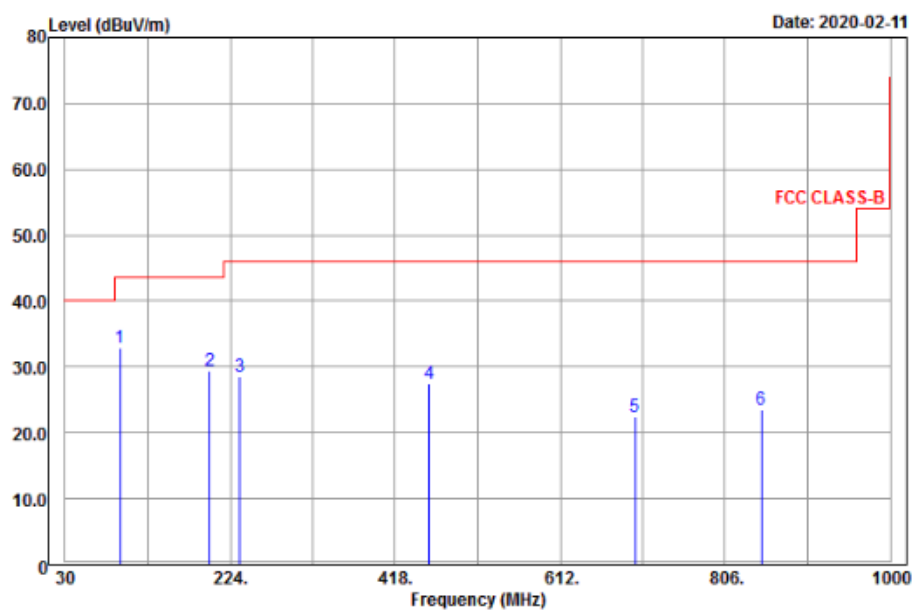
Remarks:

1. Emission Level = Read Level + Factor

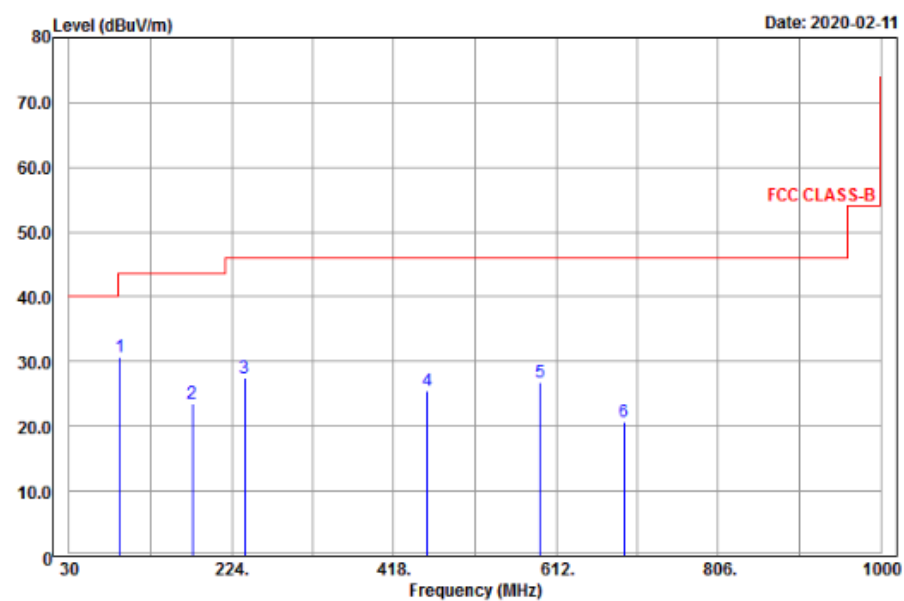
Margin value = Emission level – Limit value

2. The emission levels of other frequencies were very low against the limit

Horizontal



Vertical



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.

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

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

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.

--- END ---