

VARIANNT FCC TEST REPORT

(PART 24)

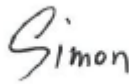

Applicant:	Fibocom Wireless Inc.
Address:	1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China.

Manufacturer or Supplier:	Fibocom Wireless Inc.
Address:	1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China.
Product:	LTE module
Brand Name:	Fibocom
Model Name:	L850-GLL
FCC ID:	ZMOL850GLL
Date of tests:	Sep. 10, 2021 ~ Sep. 13, 2021

The tests have been carried out according to the requirements of the following standard:

☒ **FCC PART 24, Subpart E** ☒ **FCC PART 2**
☒ **ANSI/TIA/EIA-603-D** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
	
Date: Jan. 24, 2022	Date: Jan. 24, 2022

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions> and is intended 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. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; 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.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170106C02-1	Original release	Feb. 21, 2017
RF190122W003-2	Based on the original report RF170106C02-1 change FCC ID	Jan. 17, 2019
W7L-220113W001RF02	Based on the original report RF190122W003-2 Update components , Update LTE band 30	Jan. 24, 2022

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2		
STANDARD SECTION	TEST TYPE	RESULT
§2.1046	Coducted Output Power	(See Note 2)
§24.232(c)	Equivalent Isotropic Radiated Power	(See Note 2)
§2.1055 §24.235	Frequency Stability	(See Note 2)
§2.1049	Occupied Bandwidth	(See Note 2)
§24.232(d)	Peak to average ratio	(See Note 2)
§24.238(a)(b)	Band Edge Measurements	(See Note 2)
§2.1051 §24.238(a)(b)	Conducted Spurious Emissions	(See Note 2)
§2.1053 §24.238(a)(b)	Radiated Spurious Emissions	Compliance (See Note 1)

NOTE:

1. Per the change notice provide by manufactory, the difference is updating components. All the change no effect any RF parameter. Only Radiated Spurious Emissions is verified, all other the data are reused from the original report.
2. Please refer to original report RF170106C02-1

1.1 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	UNCERTAINTY
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions & Radiated Power (30MHz~1GMHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GMHz ~6GMHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GMHz ~18GMHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GMHz ~40GMHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Band Edge Measurements	$\pm 4.70\text{dB}$
Peak to average ratio	$\pm 0.76\text{dB}$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



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1.2 TEST SITE AND INSTRUMENTS

NOTE: 1. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	LTE module	
BRAND NAME	Fibocom	
MODEL NAME	L850-GLL	
NOMINAL VOLTAGE	3.3Vdc (Form Host Equipment)	
MODULATION TYPE	WCDMA: BPSK LTE Band 2: QPSK, 16QAM	
FREQUENCY RANGE	GSM/GPRS, EDGE	1850.2MHz ~ 1909.8MHz
	WCDMA	1852.4MHz ~ 1907.6MHz
	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
	WCDMA	428.84mW
MAX. EIRP POWER	LTE Band 2 Channel Bandwidth: 1.4MHz	209.07mW
	LTE Band 2 Channel Bandwidth: 3MHz	215.43mW
	LTE Band 2 Channel Bandwidth: 5MHz	220.44mW
	LTE Band 2 Channel Bandwidth: 10MHz	226.62mW
	LTE Band 2 Channel Bandwidth: 15MHz	231.37mW
	LTE Band 2 Channel Bandwidth: 20MHz	235.67mW
	LTE Band 2 Channel Bandwidth: 20MHz	235.67mW

EMISSION DESIGNATOR	WCDMA	4M14F9W
	LTE Band 2 Channel Bandwidth: 1.4MHz	1M09G7D
	LTE Band 2 Channel Bandwidth: 3MHz	2M70G7D
	LTE Band 2 Channel Bandwidth: 5MHz	4M50W7D
	LTE Band 2 Channel Bandwidth: 10MHz	9M90G7D
	LTE Band 2 Channel Bandwidth: 15MHz	13M4G7D
	LTE Band 2 Channel Bandwidth: 20MHz	18M0G7D
ANTENNA TYPE	External Antenna	
HW VERSION	V1.0.4	
SW VERSION	18500.5001.00.05.27.12	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	
EXTREME TEMPERATURE	-10-55 °C	
EXTREME VOLTAGE	3.4V- 4.4V	

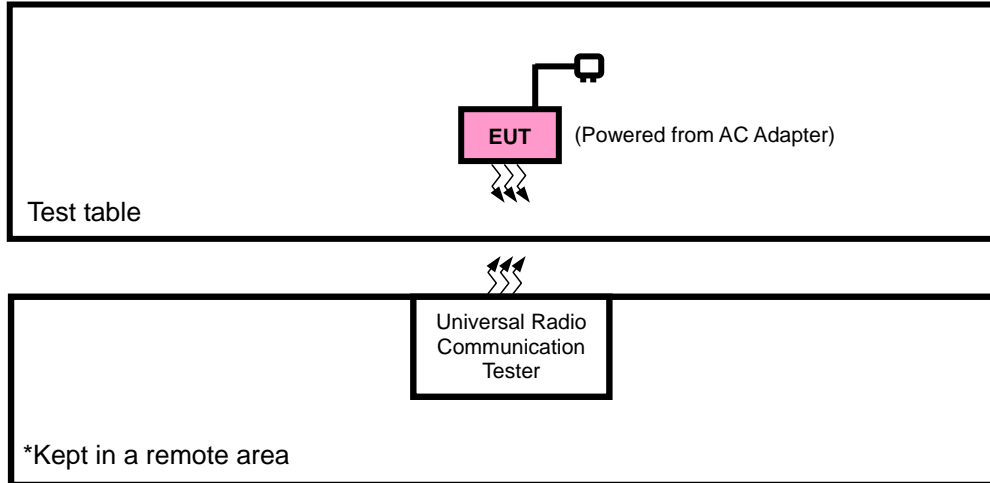
NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST





2.3 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	Kikusui/JP	PMX18-5A	0000001	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m

2.4 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

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

3 TEST TYPES AND RESULTS

3.1 RADIATED EMISSION MEASUREMENT

3.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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 .

3.1.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m 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 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. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}.$

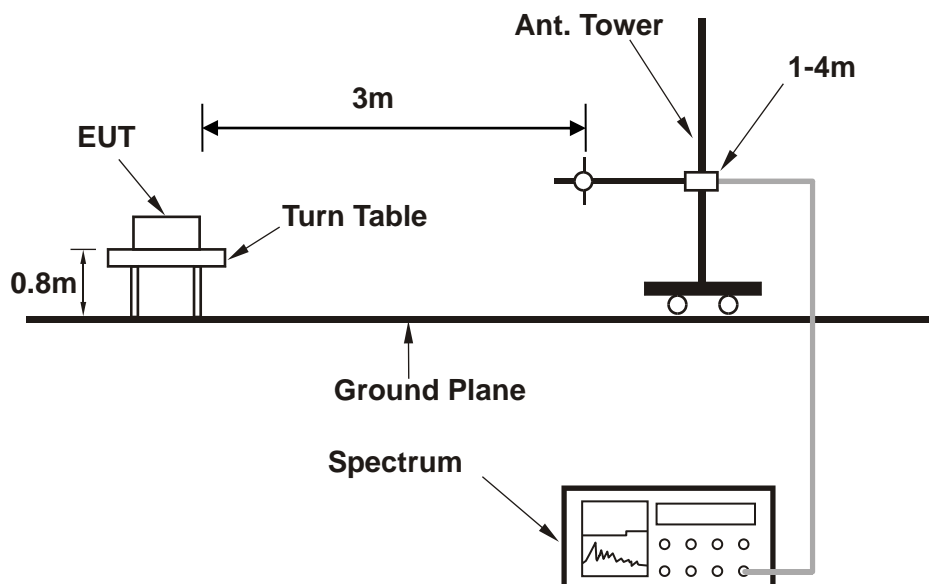
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.1.3 DEVIATION FROM TEST STANDARD

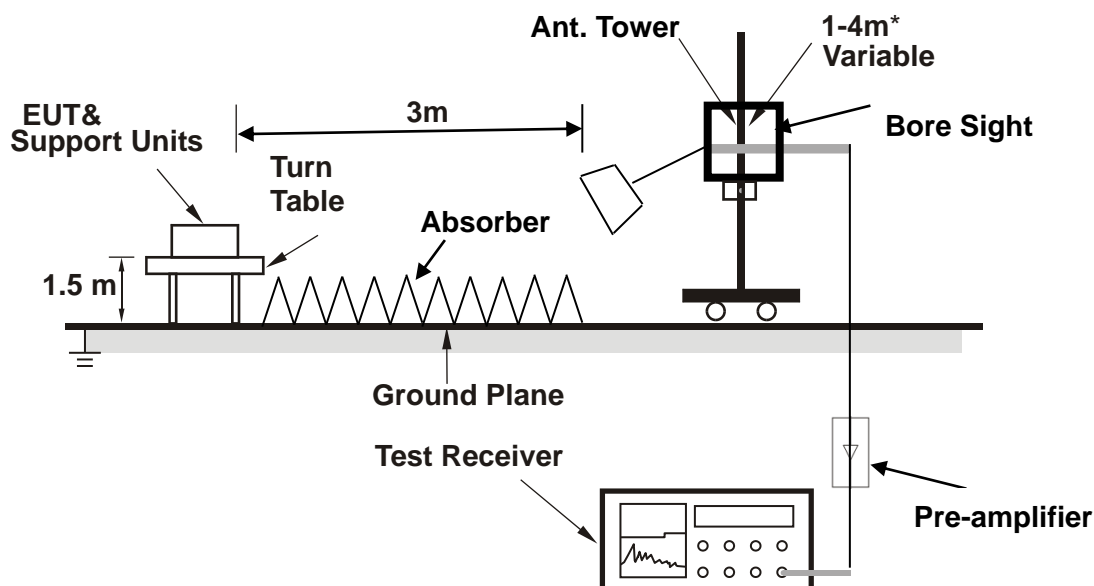
No deviation

3.1.4 TEST SETUP

< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

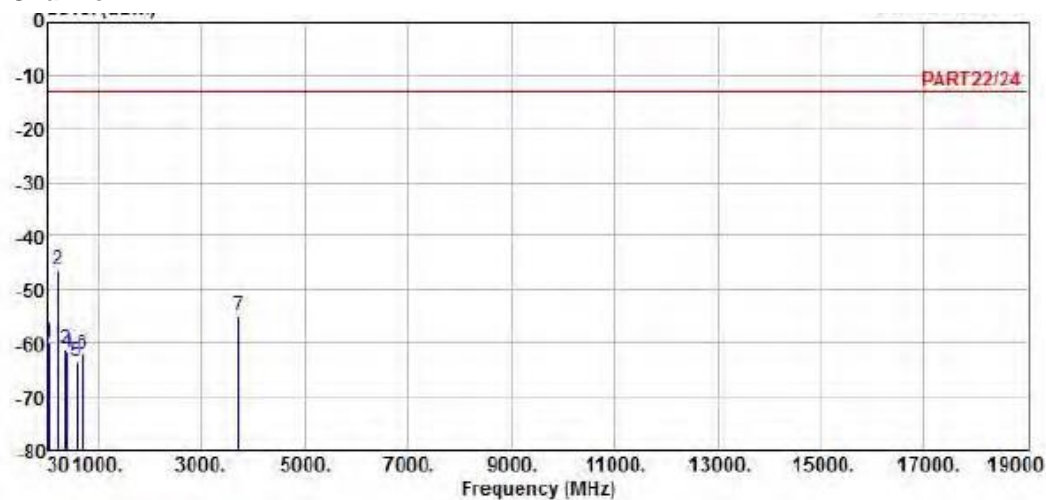
Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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

3.1.5 TEST RESULTS

WCDMA

LOW Channel



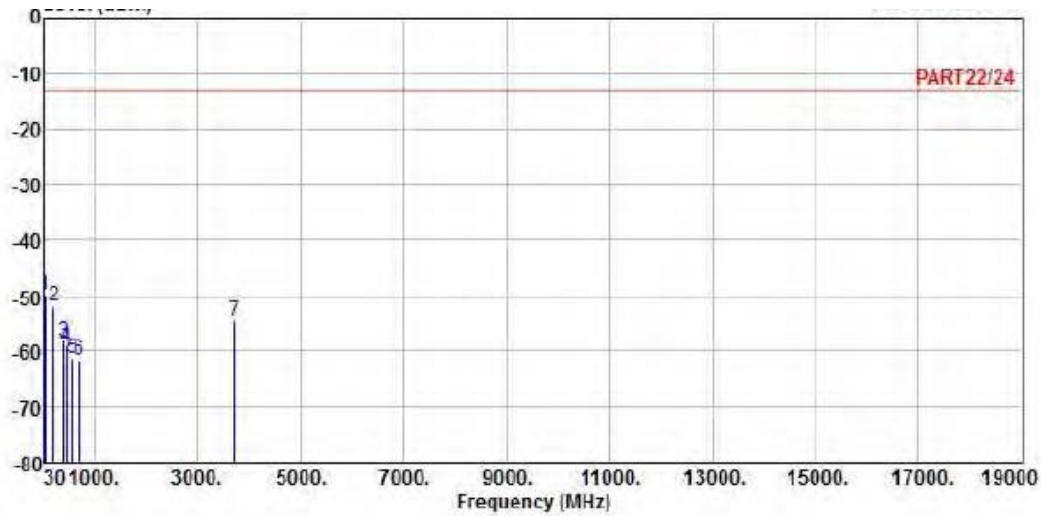
Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : WCDMA Band II_L-CH Link
Tested by: Gavin Wu

	Freq	Level	Read	Limit	Over		
	MHz	dBm	Level	Line	Limit	Factor	Remark
			dBm	dBm	dB	dB	
1	40.67	-59.83	-59.95	-13.00	-46.83	0.12	Peak
2 pp	222.06	-46.43	-39.31	-13.00	-33.43	-7.12	Peak
3	364.65	-61.10	-54.95	-13.00	-48.10	-6.15	Peak
4	401.51	-61.81	-55.88	-13.00	-48.81	-5.93	Peak
5	567.38	-63.40	-61.28	-13.00	-50.40	-2.12	Peak
6	709.00	-62.10	-62.17	-13.00	-49.10	0.07	Peak
7	3704.80	-55.05	-46.88	-13.00	-42.05	-8.17	Peak



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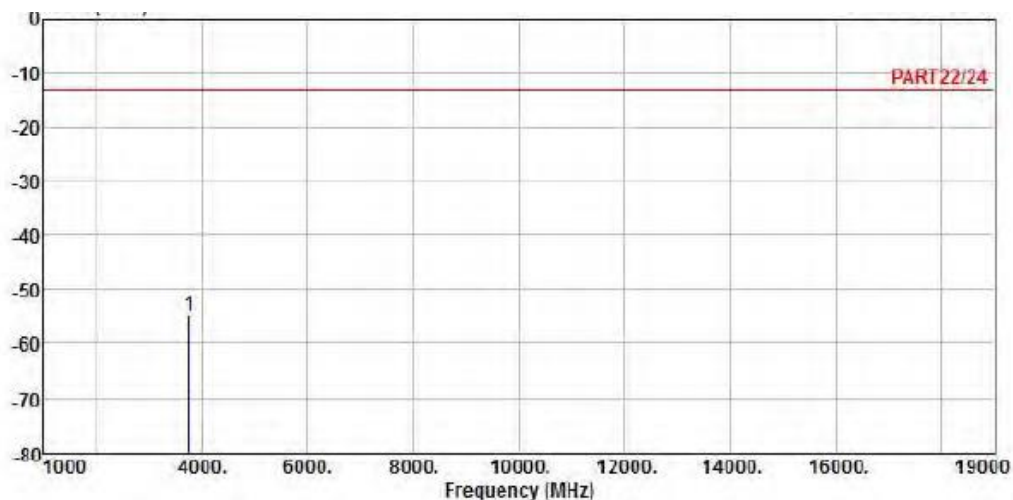
Test Report No.: W7L-220113W001RF02



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : WCDMA Band II_L-CH Link
Tested by: Gavin Wu

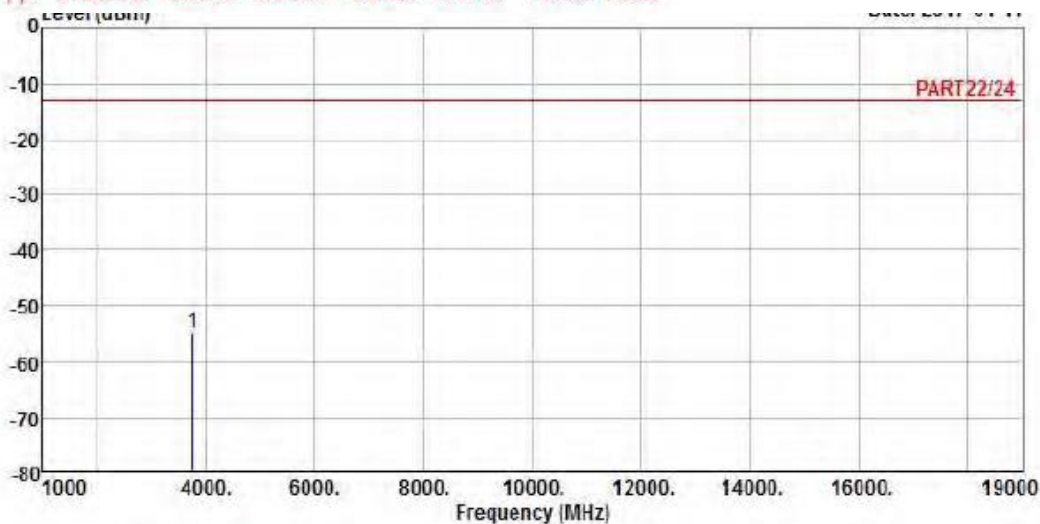
		Read	Limit	Over			
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	41.64	-49.66	-49.25	-13.00	-36.66	-0.41	Peak
2	207.51	-51.67	-43.96	-13.00	-38.67	-7.71	Peak
3	400.54	-58.28	-52.34	-13.00	-45.28	-5.94	Peak
4	453.89	-59.13	-53.65	-13.00	-46.13	-5.48	Peak
5	554.77	-61.42	-58.77	-13.00	-48.42	-2.65	Peak
6	701.24	-61.59	-61.51	-13.00	-48.59	-0.08	Peak
7	3704.80	-54.33	-46.16	-13.00	-41.33	-8.17	Peak

Middle Channel



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : WCDMA Band II_M-CH Link
Tested by: Gavin Wu

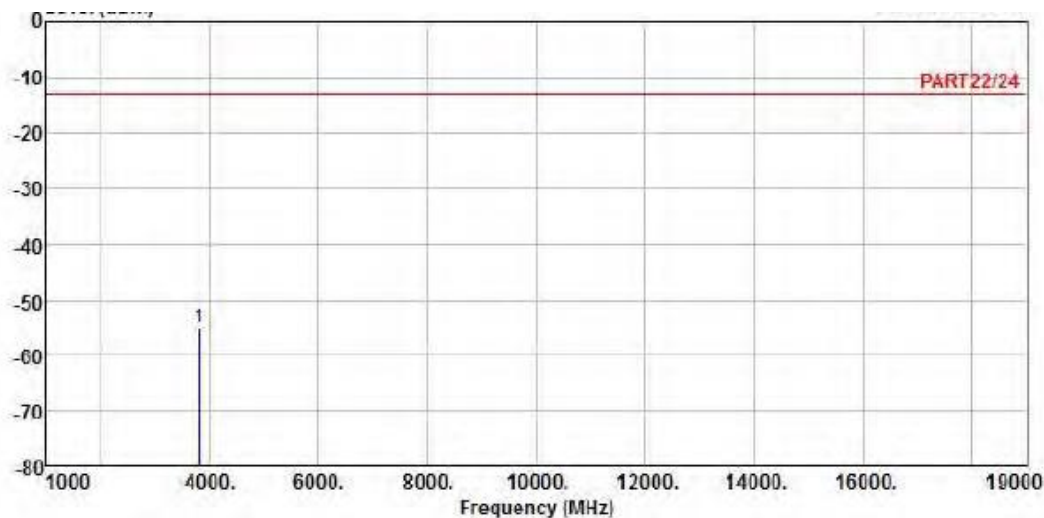
Freq	Level	Read	Limit	Over		
MHz	dBm	Level	Line	Limit	Factor	Remark
		dBm	dBm	dB	dB	
1 pp	3760.00	-54.91	-46.85	-13.00	-41.91	-8.06 Peak



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : WCDMA Band II_M-CH Link
Tested by: Gavin Wu

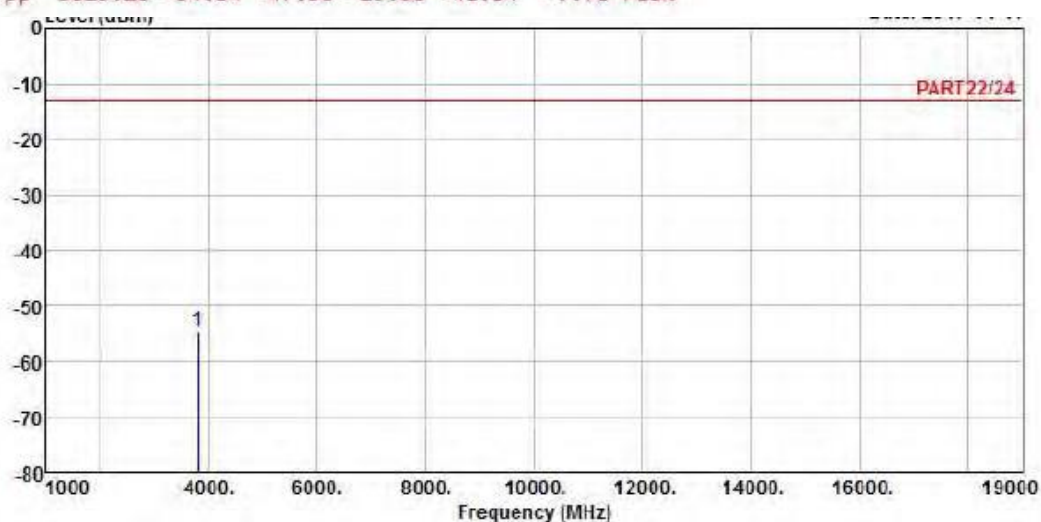
Freq	Level	Read	Limit	Over		
MHz	dBm	Level	Line	Limit	Factor	Remark
		dBm	dBm	dB	dB	
1 pp	3760.00	-54.90	-46.84	-13.00	-41.90	-8.06 Peak

High Channel



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : WCDMA Band II_H-CH Link
Tested by: Gavin Wu

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3815.20	-54.84	-47.06	-13.00	-41.84	-7.78	Peak



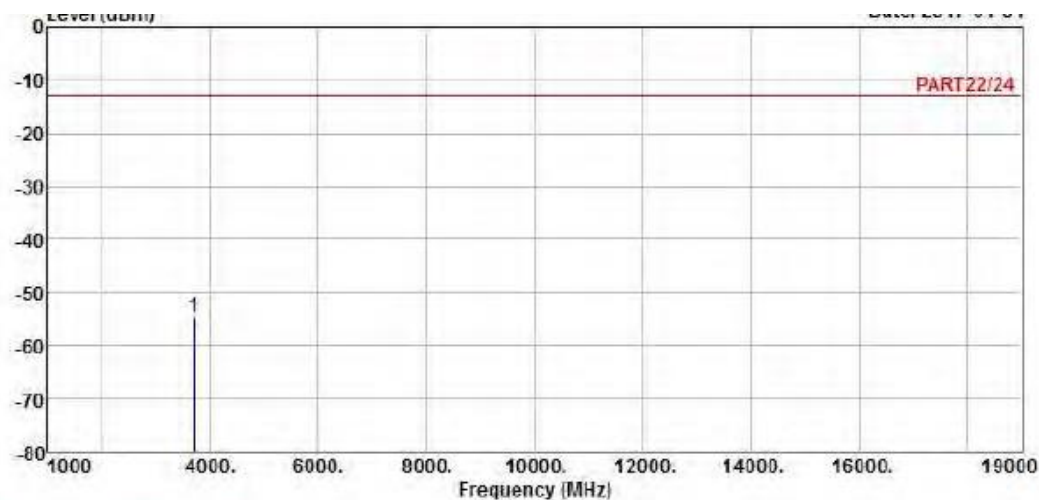
Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : WCDMA Band II_H-CH Link
Tested by: Gavin Wu

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3815.20	-54.69	-46.91	-13.00	-41.69	-7.78	Peak

LTE Band 2

CHANNEL BANDWIDTH: 20MHz / QPSK

Low Channel



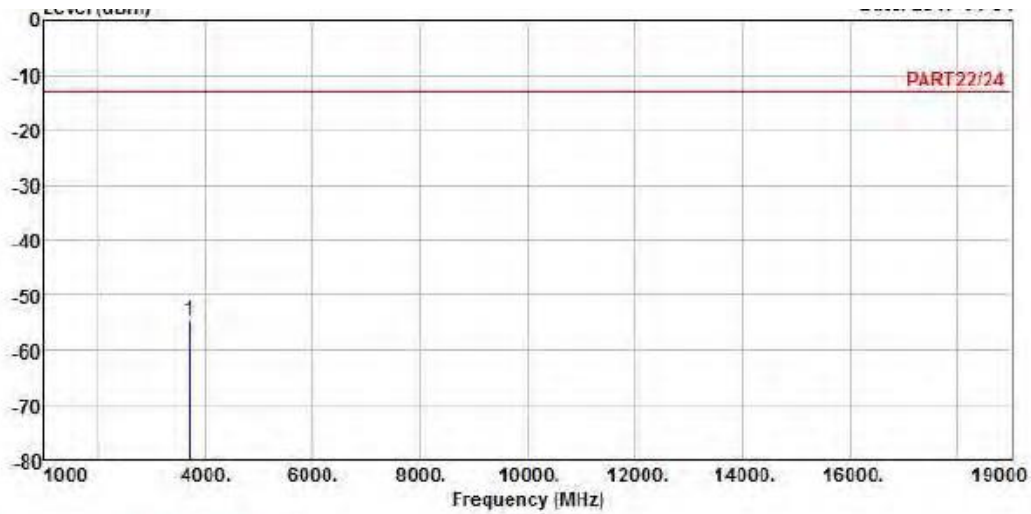
Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band II_QPSK_20M_L-CH Link
Tested by: Geetaz Yang

Freq	Level	Read Limit		Over		Factor	Remark
		Level	Line	Limit	Limit		
MHz	dBm	dBm	dBm	dB	dB	dB	
1 pp 3720.00	-54.53	-46.40	-13.00	-41.53	-8.13	Peak	



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Test Report No.: W7L-220113W001RF02



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

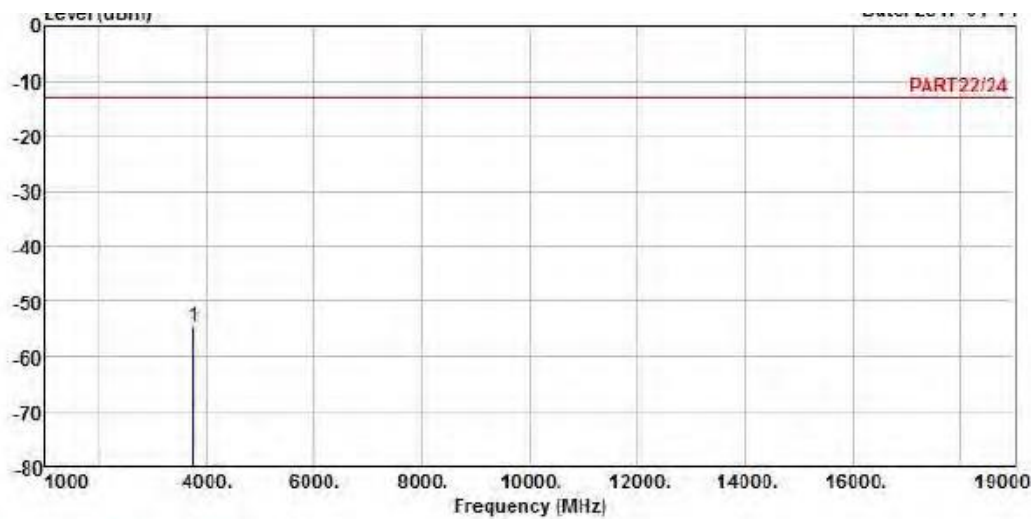
Remak : LTE Band II_QPSK_20M_L-CH Link

Tested by: Geetaz Yang

Freq	Level	Read Level	Limit Line	Over Limit Factor	Remark
MHz	dBm	dBm	dBm	dB	dB

1 pp 3720.00 -54.53 -46.40 -13.00 -41.53 -8.13 Peak

Middle Channel



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band II_QPSK_20M_M-CH Link

Tested by: Geetaz Yang

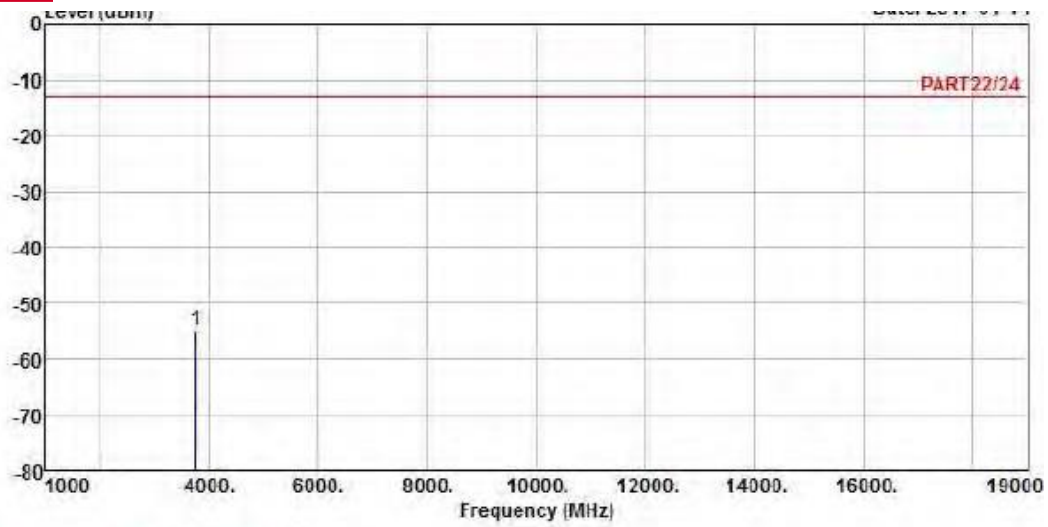
Freq	Level	Read Level	Limit Line	Over Limit Factor	Remark
MHz	dBm	dBm	dBm	dB	dB

1 pp 3760.00 -54.61 -46.55 -13.00 -41.61 -8.06 Peak



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Test Report No.: W7L-220113W001RF02



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band II_QPSK_20M_M-CH Link
Tested by: Geetaz Yang

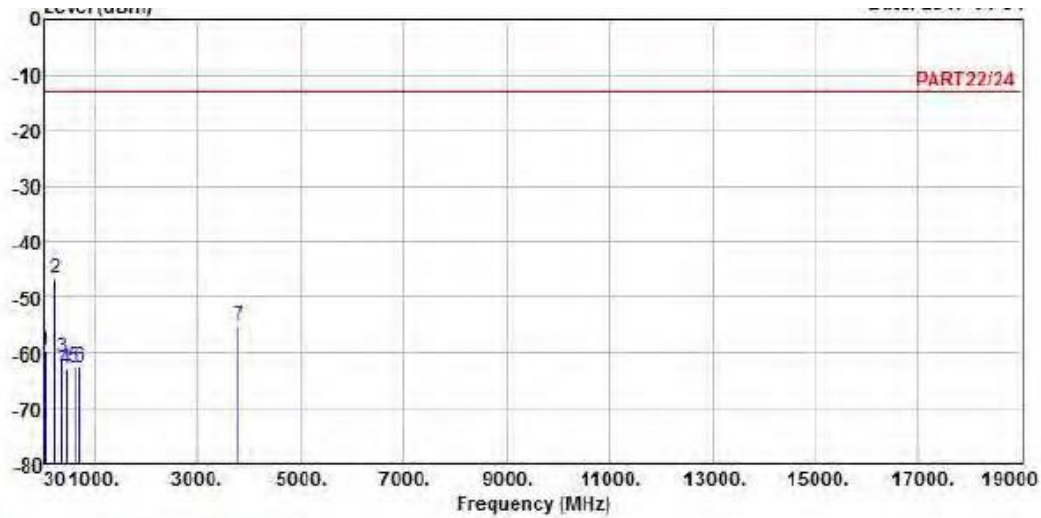
Freq	Level	Read	Limit	Over	Factor	Remark
		Level	Line	Limit		
MHz	dBm	dBm	dBm	dB	dB	
1 pp 3760.00	-54.96	-46.90	-13.00	-41.96	-8.06	Peak



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Test Report No.: W7L-220113W001RF02

High Channel



Site : 966 Chamber 5

Condition: PART22/24 HORIZONTAL

Remak : LTE Band II_QPSK_20M_H-CH Link

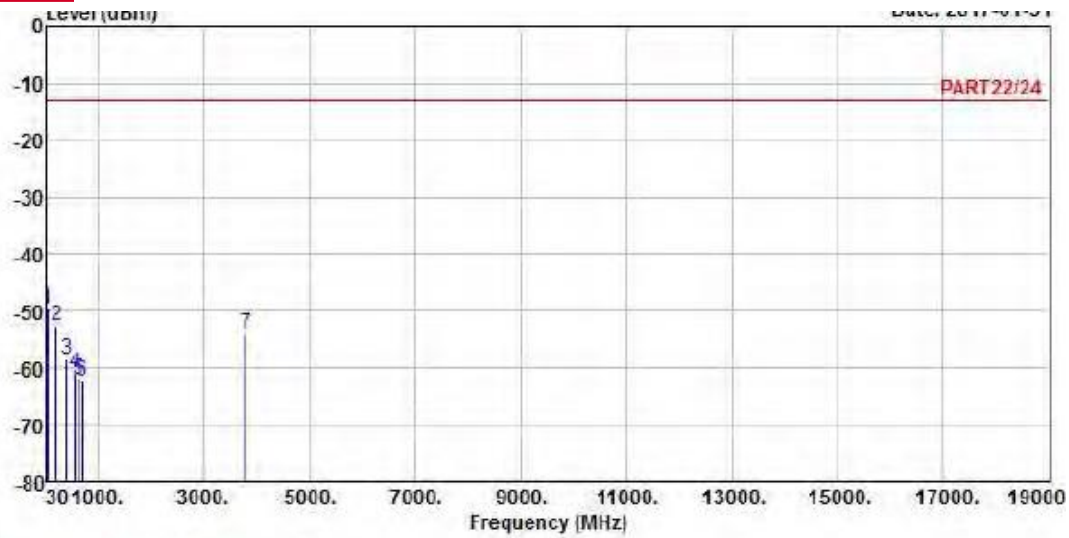
Tested by: Geetaz Yang

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	41.64	-59.62	-59.21	-13.00	-46.62	-0.41	Peak
2 pp	236.61	-46.52	-39.98	-13.00	-33.52	-6.54	Peak
3	366.59	-60.92	-54.78	-13.00	-47.92	-6.14	Peak
4	446.13	-62.74	-57.16	-13.00	-49.74	-5.58	Peak
5	606.18	-62.48	-61.71	-13.00	-49.48	-0.77	Peak
6	724.52	-62.56	-62.94	-13.00	-49.56	0.38	Peak
7	3800.00	-55.11	-47.33	-13.00	-42.11	-7.78	Peak



**BUREAU
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Test Report No.: W7L-220113W001RF02



Site : 966 Chamber 5

Condition: PART22/24 VERTICAL

Remak : LTE Band II_QPSK_20M_H-CH Link

Tested by: Geetaz Yang

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	41.64	-49.51	-49.10	-13.00	-36.51	-0.41	Peak
2	208.48	-52.40	-44.73	-13.00	-39.40	-7.67	Peak
3	398.60	-58.51	-52.56	-13.00	-45.51	-5.95	Peak
4	551.86	-60.71	-57.94	-13.00	-47.71	-2.77	Peak
5	634.31	-61.86	-61.02	-13.00	-48.86	-0.84	Peak
6	705.12	-62.38	-62.38	-13.00	-49.38	0.00	Peak
7	3800.00	-54.14	-46.36	-13.00	-41.14	-7.78	Peak



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4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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

Shenzhen EMC/RF Lab:

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Fax: +86-755-88696577

Email: customerservice.sw@bureauveritas.com

Web Site: www.adt.com.tw

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

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---