ACCREDITED
Certificate # 3939.01

VARIANT FCC TEST REPORT

(PART 90)

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 90, Subpart R, S** ☒ **ANSI/TIA/EIA-603- D**
☒ **FCC Part 2** ☒ **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
Simon Date: Jan. 24, 2022	Luke Lu Date: Jan. 24, 2022

TABLE OF CONTENTS

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170106C02-5	Original release	Feb. 21, 2017
RF190122W003-6	Based on the original report RF170106C02-5 change FCC ID	Jan. 17, 2019
W7L-220113W001RF06	Based on the original report RF190122W003-6 Update components，update LTE band 30 data	Jan. 24, 2022

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 90 & Part 2		
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**
§2.1046 §90.635(b)	Conducted Output Power	(See Note 2)
§2.1055 §90.213	Frequency Stability	(See Note 2)
§2.1049 §90.209	Occupied Bandwidth	(See Note 2)
§2.1051 §90.691	Emission Masks	(See Note 2)
§2.1051 §90.691	Conducted Spurious Emissions	(See Note 2)
§2.1053 §90.691	Radiated Spurious Emissions	(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 RF170106C02-5

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	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.66dB
Radiated emissions	9KHz ~ 30MHz	2.68dB
	30MHz ~ 1GMHz	3.26dB
	1GHz ~ 18GHz	4.48dB
	18GHz ~ 40GHz	4.12dB

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 22,21	Apr. 21,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-051	Feb. 14.20	Feb. 13.23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168692	Apr. 02,21	Apr. 01,22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 26, 21	Aug. 25, 22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 25,21	Feb. 24,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
Power Meter	Anritsu	ML2495A	1506002	Apr. 07,21	Apr. 06,22
Power Sensor	Anritsu	MA2411B	1339352	May. 07,21	May. 06,22
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 05,21	Mar. 04,22
Power Divider	MCLI/USA	PS2-15	24880	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.

3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 525120.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

EUT	LTE module	
BRAND NAME	Fibocom	
MODEL NAME	L850-GLL	
TYPE NUMBER	3.3Vdc (Form Host Equipment)	
MODULATION TECHNOLOGY	**LTE**	QPSK, 16QAM
FREQUENCY RANGE	**LTE Band 26 (Channel Bandwidth: 1.4MHz)**	814.7MHz ~ 823.3MHz
	LTE Band 26 (Channel Bandwidth: 3MHz)	815.5MHz ~ 822.5MHz
	LTE Band 26 (Channel Bandwidth: 5MHz)	816.5MHz ~ 821.5MHz
	LTE Band 26 (Channel Bandwidth: 10MHz)	819MHz
EMISSION DESIGNATOR	**LTE Band 26 (Channel Bandwidth: 1.4MHz)**	1M09G7D
	LTE Band 26 (Channel Bandwidth: 3MHz)	2M70G7D
	LTE Band 26 (Channel Bandwidth: 5MHz)	4M50W7D
	LTE Band 26 (Channel Bandwidth: 10MHz)	9M02G7D
MAX. ERP POWER	**LTE Band 26 (Channel Bandwidth: 1.4MHz)**	351.56mW
	LTE Band 26 (Channel Bandwidth: 3MHz)	354.81mW
	LTE Band 26 (Channel Bandwidth: 5MHz)	346.74mW
	LTE Band 26 (Channel Bandwidth: 10MHz)	213.80mW
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	

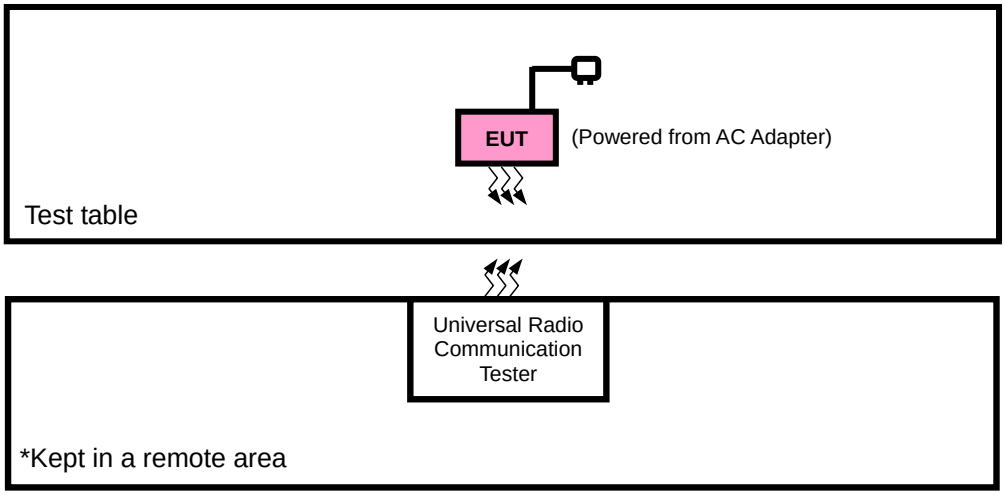
DATA CABLE	N/A
EXTREME TEMPERATURE	-10-55 ℃
EXTREME VOLTAGE	3.4V- 4.4V

NOTE:

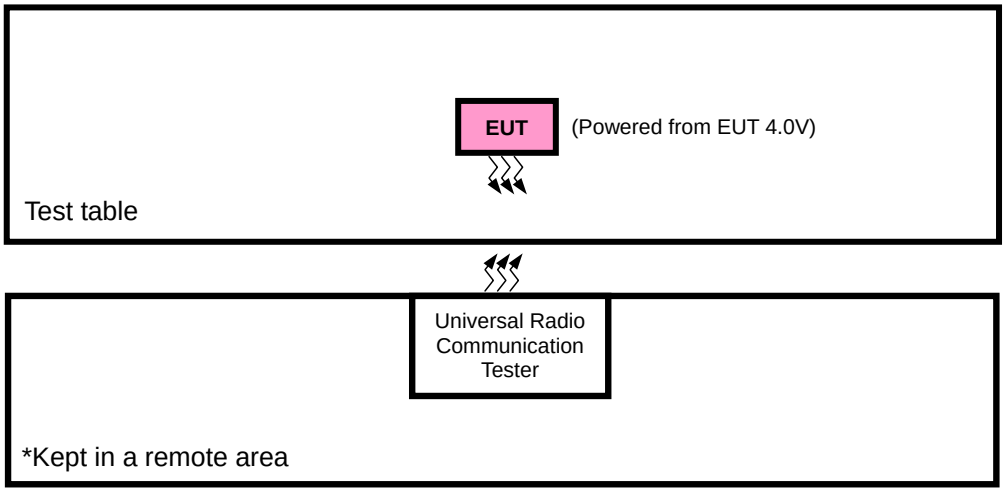
1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR CONDUCTED & E.R.P./E.I.R.P 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	LONG WEI	PS-6403D	010934269	N/A

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

2.4 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:

FCC 47 CFR Part 2

FCC 47 CFR Part 90

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. EIRP = Output power level of S.G – TX cable loss + 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 power = E.I.P.R power - 2.15dBi.

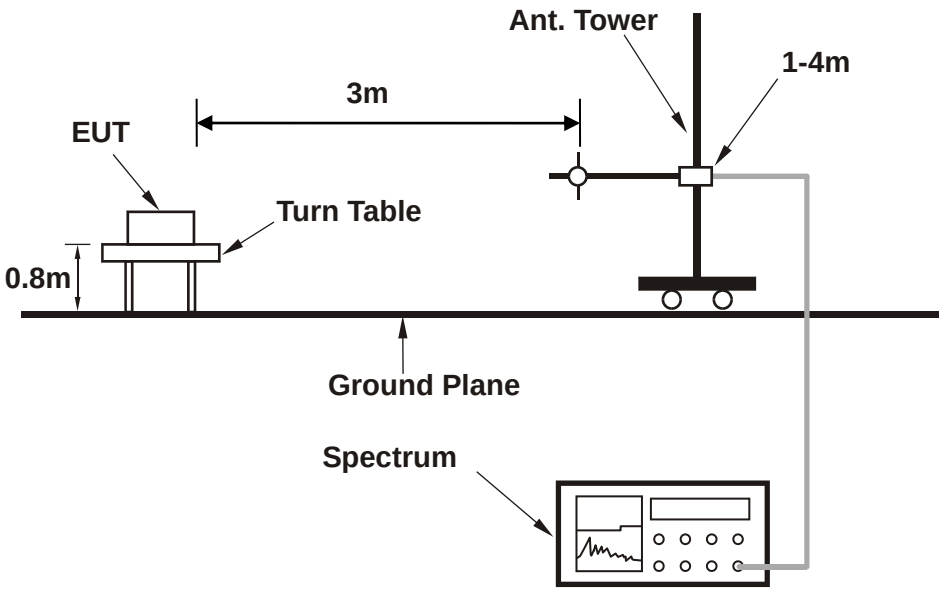
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.1.3 DEVIATION FROM TEST STANDARD

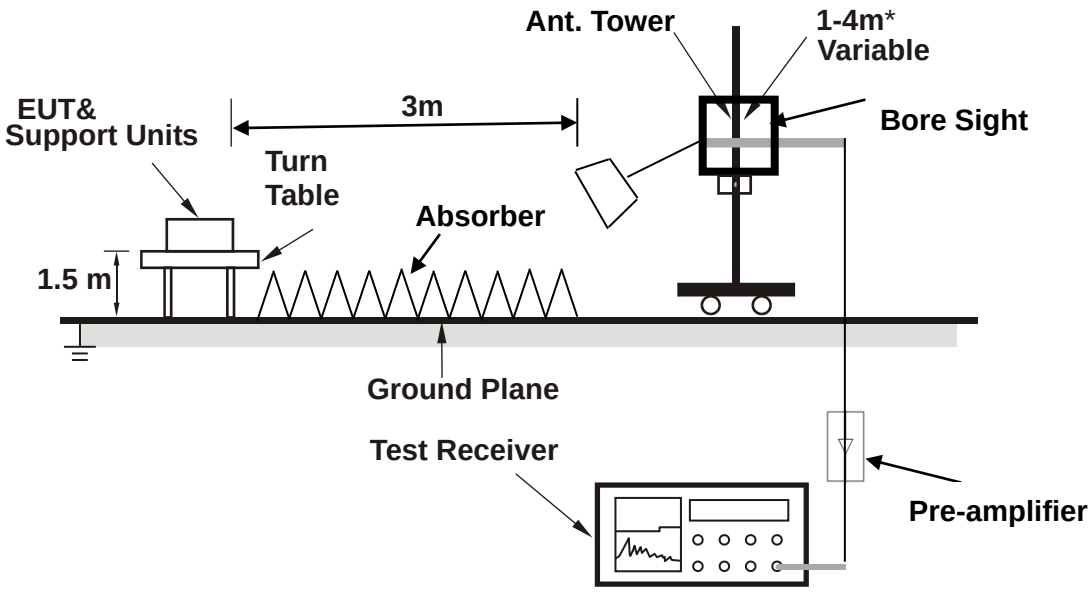
No deviation

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).

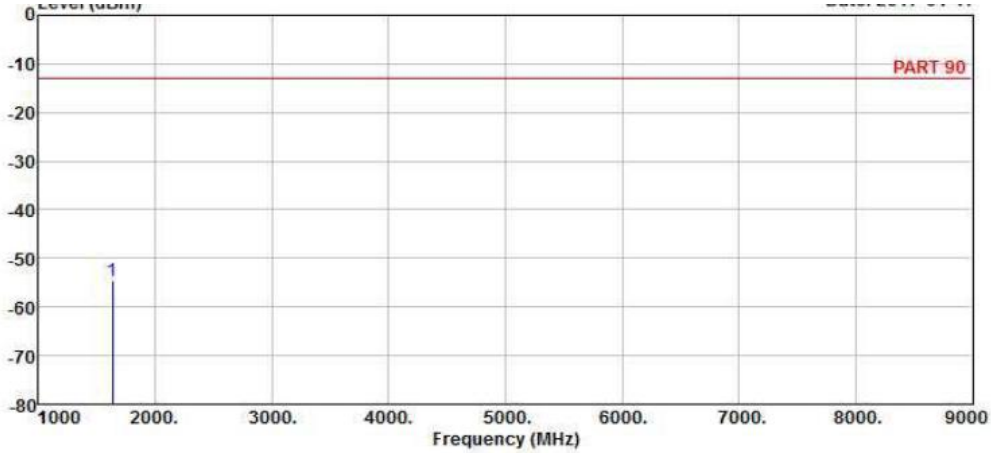
2.4.1

3.1.5 TEST RESULTS

LTE Band 26

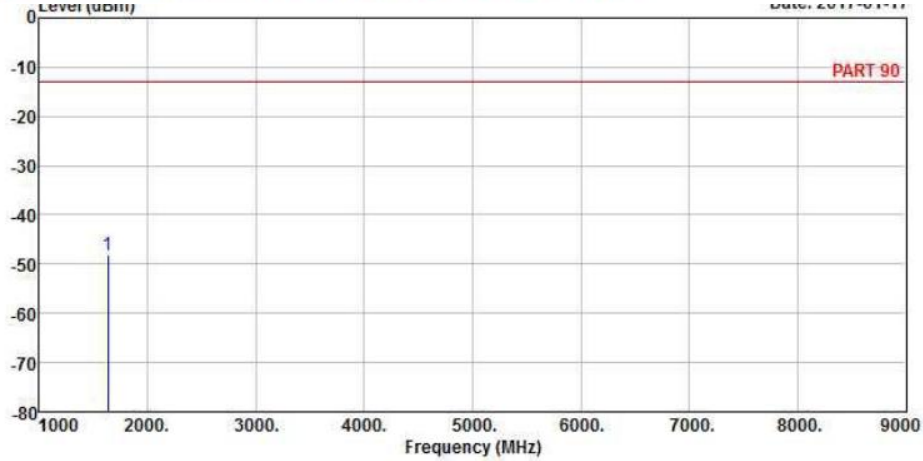
CHANNEL BANDWIDTH: 10MHz / QPSK

LOW Channel



Site : 966 Chamber 5
Condition: PART 90 HORIZONTAL
Remak : LTE Band 26 QPSK_10M_L-CH Link
Tested by: Getaz Yang

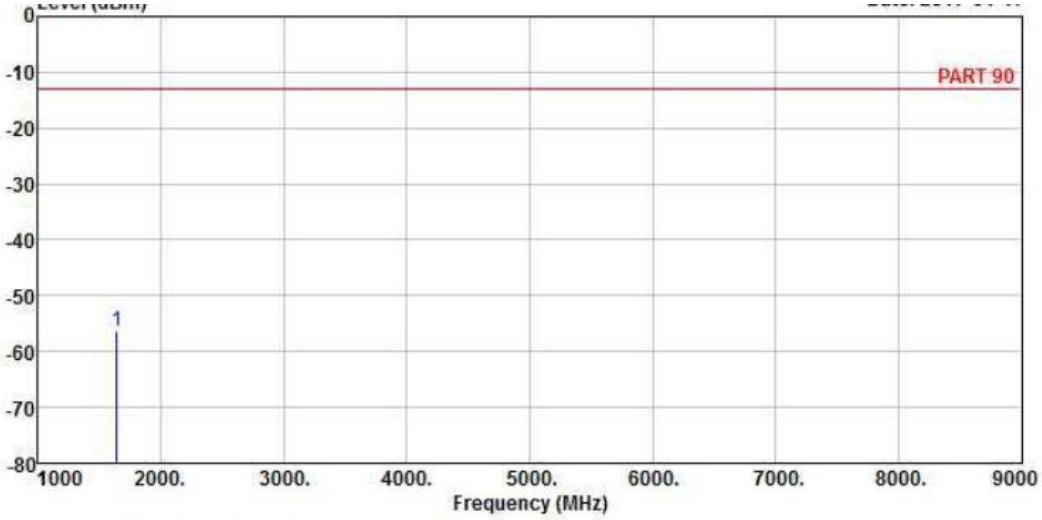
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1633.00	-54.74	-39.95	-13.00	-41.74	-14.79	Peak



Site : 966 Chamber 5
Condition: PART 90 VERTICAL
Remak : LTE Band 26 QPSK_10M_L-CH Link
Tested by: Getaz Yang

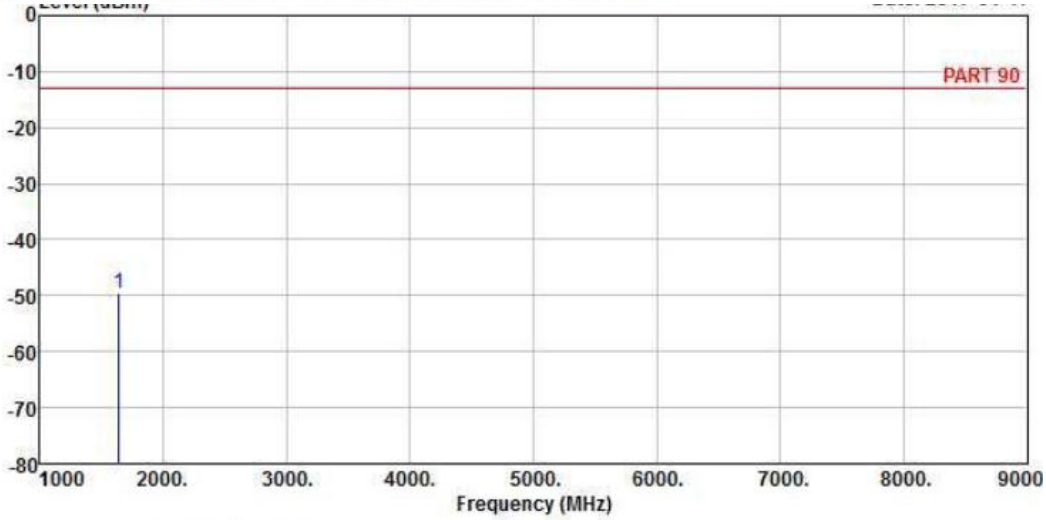
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1633.00	-48.06	-33.27	-13.00	-35.06	-14.79	Peak

Middle Channel



Site : 966 Chamber 5
Condition: PART 90 HORIZONTAL
Remak : LTE Band 26 QPSK_10M_M-CH Link
Tested by: Getaz Yang

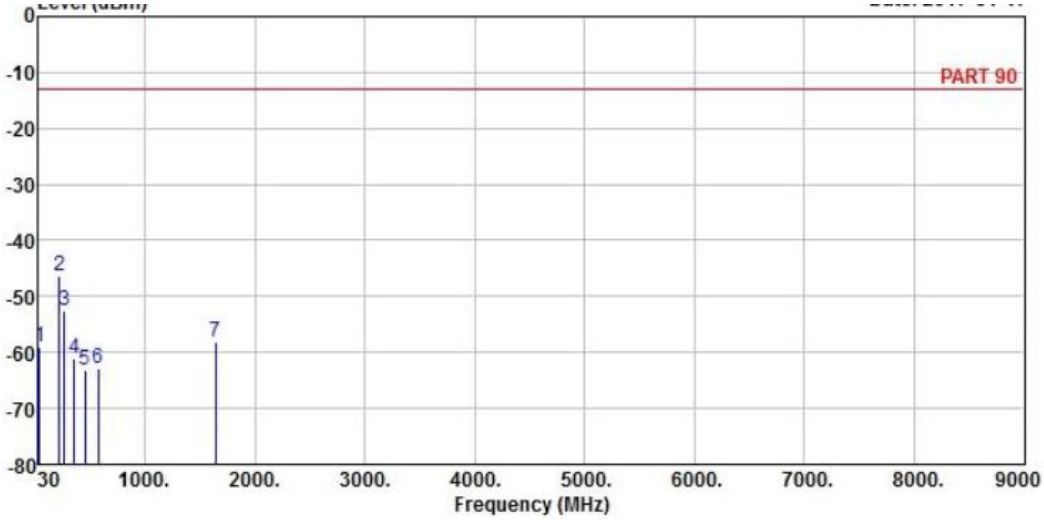
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1638.00	-56.32	-41.53	-13.00	-43.32	-14.79	Peak



Site : 966 Chamber 5
Condition: PART 90 VERTICAL
Remak : LTE Band 26 QPSK_10M_M-CH Link
Tested by: Getaz Yang

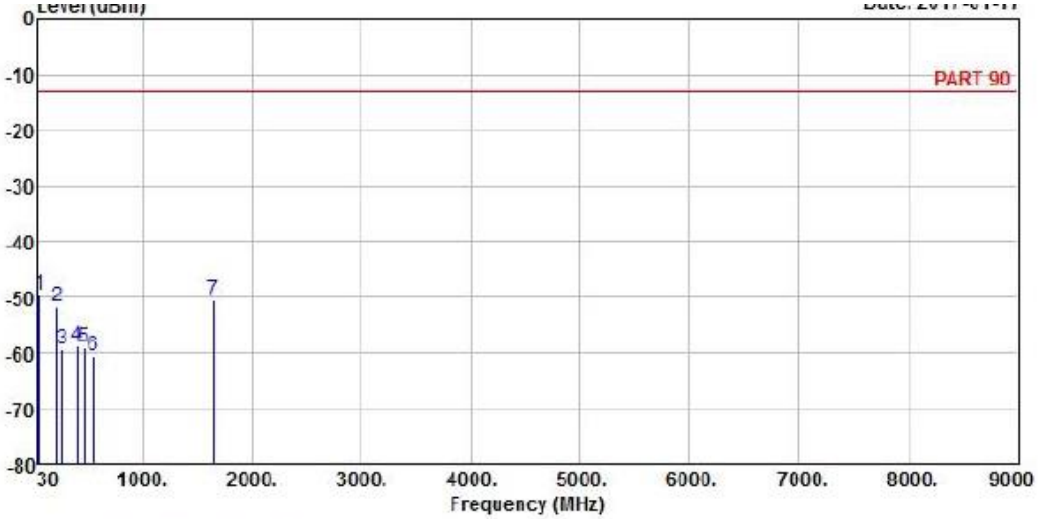
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1638.00	-49.45	-34.66	-13.00	-36.45	-14.79	Peak

High Channel



Site : 966 Chamber 5
Condition: PART 90 HORIZONTAL
Remak : LTE Band 26 QPSK_10M_H-CH Link
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	41.64	-59.18	-58.77	-13.00	-46.18	-0.41	Peak
2 pp	223.03	-46.41	-39.33	-13.00	-33.41	-7.08	Peak
3	265.71	-52.46	-46.15	-13.00	-39.46	-6.31	Peak
4	353.01	-61.25	-55.03	-13.00	-48.25	-6.22	Peak
5	451.95	-63.31	-57.80	-13.00	-50.31	-5.51	Peak
6	576.11	-62.82	-61.06	-13.00	-49.82	-1.76	Peak
7	1643.00	-58.18	-43.45	-13.00	-45.18	-14.73	Peak



Site : 966 Chamber 5
Condition: PART 90 VERTICAL
Remak : LTE Band 26 QPSK_10M_H-CH Link
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	41.64	-49.53	-49.12	-13.00	-36.53	-0.41	Peak
2	204.60	-51.75	-43.92	-13.00	-38.75	-7.83	Peak
3	251.16	-59.31	-53.30	-13.00	-46.31	-6.01	Peak
4	395.69	-58.65	-52.68	-13.00	-45.65	-5.97	Peak
5	454.86	-58.98	-53.52	-13.00	-45.98	-5.46	Peak
6	546.04	-60.42	-57.43	-13.00	-47.42	-2.99	Peak
7	1643.00	-50.46	-35.73	-13.00	-37.46	-14.73	Peak

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:
Tel: +86-755-88696566
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 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---