

FCC RF Test Report

APPLICANT	: Fibocom Wireless Inc.
EQUIPMENT	: 5G Module
BRAND NAME	: Fibocom
MODEL NAME	: FM350-GL
FCC ID	: ZMOFM350GL
STANDARD	: 47 CFR Part 2, 90(R)
CLASSIFICATION	: PCS Licensed Transmitter (PCB)

The product was received on Mar. 08, 2021 and completely tested on Apr. 13, 2021. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.

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Reviewed by: Derreck Chen / Supervisor

Fire Shih

ACCREDITED Cert #5145.01

Approved by: Eric Shih / Manager

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APPENDIX A. TEST RESULTS OF RADIATED TEST

APPENDIX B. TEST SETUP PHOTOGRAPHS



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG130810D	Rev. 01	Initial issue of report	Apr. 28, 2021



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark				
	§2.1053				Under limit				
3.4	§90.543 (e)(3)	Radiated Spurious Emission	< 43+10log ₁₀ (P[Watts])	PASS	23.91 dB at				
	§90.543 (f)				1581.500 MHz				
Declara	Declaration of Conformity:								
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.									
Comments and Explanations:									
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.									



1 General Description

1.1 Applicant

Fibocom Wireless Inc.

1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.2 Manufacturer

Fibocom Wireless Inc.

1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.3 Feature of Equipment Under Test

Product Feature					
Equipment	5G Module				
Brand Name	Fibocom				
Model Name	FM350-GL				
FCC ID	ZMOFM350GL				
Tx Frequency	LTE Band 14: 788 MHz ~ 798 MHz				
Rx Frequency	LTE Band 14: 758 MHz ~ 768 MHz				
Bandwidth	5MHz / 10MHz				
Type of Modulation	QPSK / 16QAM / 64QAM / 256QAM				
IMEI Code	862146050037108				
HW Version	V1.0.6				
SW Version	81600.0000.09.03.03				
EUT Stage	Identical Prototype				

Remark:

- 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
- 2. This is a variant report for FM350-GL. For model change note, please refer the product equality declaration exhibit submitted. According to the differences, only the related test cases were verified from original test report (Sporton Report Number FG051802D).



1.4 Testing Site

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International (Shenzhen) Inc.						
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103 TEL: +86-755-33202398						
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.				
	03CH03-SZ	CN1256	421272				

1.5 Test Software

ltem	Site	Manufacturer	Name	Version
1.	03CH03-SZ	AUDIX	E3	6.2009-8-24

1.6 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, Part 90(R)
- ANSI C63.26
- KDB 971168 D01 Power Meas License Digital Systems v03r01
- KDB 412172 D01 Determining ERP and EIRP v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.



2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port radiated test items listed below are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Conducted	Conducted		Bandwidth (MHz)			Modulation			RB #			Test Channel					
Test Cases	Banu	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	М	н
Radiated																	
Spurious	14	-	-	v	v	-	-	v				v			v	v	v
Emission																	
	1. T	he ma	ark "v	/" m	eans	that t	his c	onfigura	ition is ch	nosen for	testing						
	2. The mark "-" means that this bandwidth is not supported.																
	3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious											us					
Note	emission test under different RB size/offset and modulations in exploratory test. Subsequently,																
	only the worst case emissions are reported.																
	4. For modulation of 256QAM, the maximum power of 256QAM is lower than other modulation																
	(0	QPSK	/16C	AM/	64Q/	λM), t	heref	ore, aco	cording to	o engine	ering eval	uatio	n, we	choos	e hig	her	
	р	ower	(QPS	SK/1	6QAN	Л/640	QAM)	to perfo	orm all te	sts and s	show in th	e rep	ort				



2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

ltem	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Test jig	N/A	N/A	N/A	N/A	N/A



3 Radiated Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 For radiated test from 30MHz to 1GHz



3.2.2 For radiated test above 1GHz



3.3 Test Result of Radiated Test

Please refer to Appendix A.

Sporton International (ShenZhen) Inc. TEL : 86-755-8637-9589 FAX : 86-755-8637-9595 FCC : ZMOFM350GL



3.4 Radiated Spurious Emission Measurement

3.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

3.4.2 Test Procedures

- 1. The testing follows ANSI C63.26 Section 5.5
- 1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
- 2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- 4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
- 5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
- 6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- 7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- 9. EIRP (dBm) = S.G. Power Tx Cable Loss + Tx Antenna Gain
- 10. ERP (dBm) = EIRP 2.15
- 11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

= P(W)- [43 + 10log(P)] (dB)

 $= [30 + 10\log(P)] (dBm) - [43 + 10\log(P)] (dB)$

= -13dBm.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY5515024 6	10Hz~44GHz;	Apr. 17, 2020	Apr. 13, 2021	Apr. 16, 2021	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Jun. 22, 2020	Apr. 13, 2021	Jun. 21, 2021	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBE CK	BBHA9120 D	9120D-1355	1GHz~18GHz	Apr. 30, 2020	Apr. 13, 2021	Apr. 29, 2021	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 17, 2020	Apr. 13, 2021	Oct. 16, 2021	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 21, 2020	Apr. 13, 2021	Jul. 20, 2021	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 23, 2020	Apr. 13, 2021	Apr. 22, 2021	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY3950130 2	500MHz~26.5G Hz	Dec. 25, 2020	Apr. 13, 2021	Dec. 24, 2021	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	6160100019 85	N/A	NCR	Apr. 13, 2021	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 13, 2021	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 13, 2021	NCR	Radiation (03CH03-SZ)

NCR: No Calibration Required



5 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.0dB

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.6dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of	2 0dD
Confidence of 95% (U = 2Uc(y))	3.0UD



Appendix A. Test Results of Radiated Test

Field Strength of Spurious Radiated

LTE Band 14 / 5MHz / QPSK / RB Size 1 Offset 0									
Bandwidth	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1576.5	-66.73	-42.15	-24.58	-73.35	-69.96	3.98	9.36	Н
	2364.75	-64.51	-13	-51.51	-75.18	-68.06	4.85	10.55	Н
	3153	-63.01	-13	-50.01	-76.02	-67.94	5.50	12.58	Н
	1576.5	-66.49	-42.15	-24.34	-73.34	-69.72	3.98	9.36	V
	2364.75	-64.07	-13	-51.07	-75.15	-67.62	4.85	10.55	V
	3153	-62.24	-13	-49.24	-75.81	-67.17	5.50	12.58	V
Middle	1581.5	-66.31	-42.15	-24.16	-72.87	-69.56	4.00	9.40	Н
	2372.25	-64.51	-13	-51.51	-75.15	-68.08	4.88	10.60	Н
	3163	-62.82	-13	-49.82	-75.87	-67.75	5.52	12.60	Н
	1581.5	-66.06	-42.15	-23.91	-72.86	-69.31	4.00	9.40	V
	2372.25	-63.97	-13	-50.97	-75.01	-67.54	4.88	10.60	V
	3163	-62.02	-13	-49.02	-75.64	-66.95	5.52	12.60	V
Highest	1586.5	-67.07	-42.15	-24.92	-73.58	-70.24	4.10	9.42	Н
	2379.75	-64.78	-13	-51.78	-75.38	-68.36	4.90	10.63	Н
	3173	-63.04	-13	-50.04	-76.13	-67.96	5.55	12.62	Н
	1586.5	-66.32	-42.15	-24.17	-73.06	-69.49	4.10	9.42	V
	2379.75	-64.04	-13	-51.04	-75.05	-67.62	4.90	10.63	V
	3173	-62.43	-13	-49.43	-76.10	-67.35	5.55	12.62	V
Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.									
Test Result				PASS					

LTE Band 14 / 10MHz / QPSK / RB Size 1 Offset 0									
Bandwidth	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1577	-66.50	-40	-26.50	-73.12	-69.75	4.00	9.40	Н
	2365.5	-60.46	-13	-47.46	-71.13	-64.03	4.88	10.60	Н
	3154	-62.87	-13	-49.87	-75.89	-67.80	5.52	12.60	Н
	1577	-66.44	-40	-26.44	-73.28	-69.69	4.00	9.40	V
	2365.5	-62.35	-13	-49.35	-73.42	-65.92	4.88	10.60	V
	3154	-62.29	-13	-49.29	-75.86	-67.22	5.52	12.60	V
Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.									
Test Result				PASS					