

RF MPE REPORT

Report No.: SET2023-00842

Product Name: Fault Circuit Indicator

Model No.: JYZ-HW-GSM

FCC ID: 2A9ZW-JYZ-HW-GSM

Applicant: Four-Faith Smart Power Technology Co., Ltd.

Address: 11 / F, building A06, phase III, software park, Jimei District, Xiamen City

Dates of Testing: 12/21/2022 - 01/11/2023

Issued by: CCIC Southern Testing Co., Ltd.

Lab Location: Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China.

Tel: 86 755 26627338 **Fax:** 86 755 26627238

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Test Report

Product Fault Circuit Indicator

Brand Name Four-Faith

Trade Name Four-Faith

Applicant Four-Faith Smart Power Technology Co., Ltd.

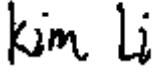
Applicant Address 11 / F, building A06, phase III, software park, Jimei District, Xiamen City

Manufacturer Four-Faith Electronic Technology Co., Ltd.

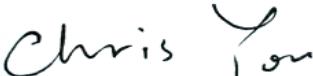
Manufacturer Address Fifth Floor, No. 11-8, Butang Middle Road, Xiamen Torch High-tech Zone (Tongxiang) Industrial Base

Test Standards 47 CFR Part 2.1091

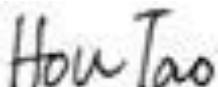
Test Result Pass

Tested by  2023.01.13

Kim Li, Test Engineer

Reviewed by  2023.01.13

Chris You, Senior Engineer

Approved by  2023.01.13

Tao Hou, Manager

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Change History		
Issue	Date	Reason for change
1.0	2023.01.13	First edition

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Fault Circuit Indicator	
Model No.	JYZ-HW-GSM	
Hardware Version	MB-JYZ-HW-GSM V1.0	
Software Version	JYZ_GSM-D_232_FF85900000052250_v0.0.6_20220701.bin	
EUT supports Radios application	GSM850/PCS1900 WCDMA Band 2/5 LTE Band 2/4/5/28/66	
Frequency Range(Tx)	GSM 850: 824MHz~849MHz PCS 1900: 1850MHz~1910MHz	
	WCDMA 850: 824MHz~849MHz WCDMA 1900: 1850MHz~1910MHz	
	LTE Band 2: 1850MHz~1910MHz	
	LTE Band 4: 1710MHz~1755MHz	
	LTE Band 5: 824MHz~849MHz	
	LTE Band 28: 703MHz~748MHz	
Bandwidth	GSM850/PCS1900:	200KHz
	WCDMA B2/5:	5MHz
	LTE Band 2/4/66:	1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
	LTE Band 5:	1.4MHz/3MHz/5MHz/10MHz
	LTE Band 28:	3MHz/5MHz/10MHz/15MHz/20MHz
Modulation Type	GSM	GPRS: GMSK EDGE: GMSK / 8PSK
	WCDMA	WCDMA: QPSK(Uplink) HSDPA: QPSK(Uplink) HSUPA: QPSK(Uplink)
	LTE	QPSK/16QAM/64QAM(downlink only)
Antenna gain	GSM 850: -0.74 dBi	PCS 1900: -1.01 dBi,
	WCDMA 850: -0.74 dBi	WCDMA 1900: -1.01 dBi,
	LTE Band 2: -0.91 dBi	LTE Band 4: -1.45 dBi
	LTE Band 5: -0.74 dBi	LTE Band 28: -2.93 dBi
	LTE Band 66: -1.45 dBi	
Antenna Type	Internal Antenna	

Note: The report data quoted the conduction data of module FCC ID: 2AJYU-8PY A001.

1.2. EUT Description

EUT has been tested according to the following standards.

No.	Identity	Document Title
1	47 CFR Part 1	Practice and Procedure
2	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
3	KDB 447498 D01 General RF Exposure Guidance v06	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
4	OET Bulletin 65 Edition 97-01	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

1.3. Laboratory Facilities

FCC-Registration No.: 406086

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until April 19th, 2023.

ISED Registration: 11185A-1

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Jun. 30th, 2023.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

1.4. Laboratory Location

Company Name:	CCIC Southern Testing Co., Ltd.	
Address:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, District, Shenzhen, Guangdong, China	Nanshan

2. Technical Requirements Specification in CFR Title 47 Part 2.1091

2.1. Exposure Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b).

Table 1 to § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	< 6
3.0-30	1824/f	4.89/f	*(900/f ²)	< 6
30-300	61.4	0.163	1.0	< 6
300-1500	/	/	f/300	< 6
1500-100,000	/	/	5	< 6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	< 30
1.34-30	824/f	2.19/f	*(180/f ²)	< 30
30-300	27.5	0.073	0.2	< 30
300-1500	/	/	f/1500	< 30
1500-100,000	/	/	1.0	< 30

Note: f = frequency in MHz. * = Plane-wave equivalent power density.

2.2. Predication of MPE limit at a given distance

Refer to formulas on page 19 of OET Bulletin 65, Edition 97-01.

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW)

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units, e.g., cm)

2.3. Evaluation Results

Worst-Case mode Conducted Output Power Results for WWAN

Band	Frequency (MHz)	Maximum Output power(dBm)	Max Tune up power (dBm)	Max Tune up power (mW)
GSM 850	824.2	25.07	25±1	398.11
PCS 1900	1850.2	22.07	22±1	199.53
WCDMA 850	836.6	23.68	23±1	251.19
WCDMA 1900	1880.0	22.72	22±1	199.53
LTE Band 2	1908.5	23.29	23±1	251.19
LTE Band 4	1717.5	23.67	23±1	251.19
LTE Band 5	824.7	24.74	24±1	316.23
LTE Band 28	743.0	23.93	23±1	251.19
LTE Band 66	1775.0	23.70	23±1	251.19

For GSM duty cycle =1/8

Calculation results: Worst-Case mode

Band	Max Tune up power (dBm)	Antenna Gain (dBi)	Distance (cm)	Result (mW/cm ²)	Power Density (mW/cm ²)	Ratio
GSM 850	26.0	-0.74	20	0.067	0.55	0.122
PCS 1900	23.0	-1.01	20	0.031	1.00	0.031
WCDMA 850	24.0	-0.74	20	0.042	0.56	0.075
WCDMA 1900	23.0	-1.01	20	0.031	1.00	0.031
LTE Band 2	24.0	-0.91	20	0.041	1.00	0.041
LTE Band 4	24.0	-1.45	20	0.036	1.00	0.036
LTE Band 5	25.0	-0.74	20	0.053	0.55	0.096
LTE Band 28	24.0	-2.93	20	0.025	0.50	0.050
LTE Band 66	24.0	-1.45	20	0.036	1.00	0.036

2.4. Conclusion

According to the KDB 447498 D01 General RF Exposure Guidance v06 section 7.2 determine the device is exclusion from SAR test.

** END OF REPORT **