Spot Check Evaluation

APPLICANT	**:**	**Quectel Wireless Solutions Co., Ltd.**
EQUIPMENT	**:**	**Wi-Fi & Bluetooth Module**
BRAND NAME	**:**	**Quectel**
MODEL NAME	**:**	**FCS850R**
FCC ID	**:**	**XMR2023FCS850R**
STANDARD	**:**	**47 CFR Part 15 Subpart C §15.247** **47 CFR Part 15 Subpart E §15.407**

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in 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 Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED Cert #5145.02

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
330102	Rev. 01	Initial issue of report	Jun. 08, 2023

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account. 2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

Quectel Wireless Solutions Co., Ltd.
Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

1.2 Manufacturer

Quectel Wireless Solutions Co., Ltd.
Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Wi-Fi & Bluetooth Module
Brand Name	Quectel
Model Name	FCS850R
FCC ID	XMR2023FCS850R
SN Code	Conducted: YY230218000045 Radiation: YY230218000046
HW Version	R1.0
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Testing Site

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH06-KS TH01-KS	CN1257	314309

1.6 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH06-KS	AUDIX	E3	6.2009-8-24al

1.7 Applicable Standards

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

- FCC KDB 484596 D01 Referencing Test Data v01
- 47 CFR Part 15 Subpart C §15.247
- 47 CFR Part 15 Subpart E §15.407
- ANSI C63.10-2013
- ANSI C63.26-2015

2 Re-use of Measured Data

2.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: FCS850R, FCC ID: XMR2023FCS850R) is electrically identical to the reference device (Model: FCS850R-B, FCC ID: XMR2023FCS850RB) for the portions of the circuitry corresponding to the data being re-used. Based on their similarity, the FCC Part 15C (equipment class: DTS) and FCC Part 15E (equipment class: NII) reuse the original model's result and do spot-check, following the FCC KDB 484596 D01 Referencing Test Data v01.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: XMR2023FCS850R.

2.2 Model Difference Information

The **main** difference between FCC ID: XMR2023FCS850RB and FCC ID: XMR2023FCS850R is as below:
FCS850R Bluetooth Antenna is 2pin and FCS850R-B Bluetooth Antenna is 12pin. The details of similarity and difference can be found in the confidential documents (FCS850R_Operational Description of Product Equality Declaration).

2.3 Reference detail Section:

Rule Part	Equipment Class	Frequency Band (MHz)	Reference FCC ID (Parent)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)	Report Title/Section
15C	DTS (WLAN)	2400~2483.5	XMR2023FCS850RB	Original Grant	FR2D2912C	XMR2023FCS850R	All sections applicable
15E	NII	5180~5240	XMR2023FCS850RB	Original Grant	FR2D2912D	XMR2023FCS850R	All sections applicable
		5260~5320	XMR2023FCS850RB	Original Grant	FR2D2912D	XMR2023FCS850R	All sections applicable
		5500~5700	XMR2023FCS850RB	Original Grant	FR2D2912D	XMR2023FCS850R	All sections applicable
		5745~5825	XMR2023FCS850RB	Original Grant	FR2D2912E	XMR2023FCS850R	All sections applicable
		5260~5320 5500~5700	XMR2023FCS850RB	Original Grant	FZ2D2912	XMR2023FCS850R	All sections applicable

2.4 Spot Check Verification Data Section

Conducted power test and radiated spurious emission test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

All test procedures follow the related section of parent report.

Summary for power and RSE spot check for each rule entry and technology is listed as below:

Test Item	Mode	XMR2023FCS850RB Parent Worst mode Test Result	XMR2023FCS850R Variant Check Test Result	Difference (dB)
Conducted Power (dBm)	802.11b	22.27	21.85	-0.42
	802.11g	28.10	28.05	-0.05
	11n HT20	28.40	28.02	-0.38
	11n HT40	27.47	27.43	-0.04
	11a, 5.2GHz	18.09	18.04	-0.05
	11a, 5.3GHz	20.53	20.36	-0.17
	11a, 5.5GHz	21.45	21.11	-0.34
	11a, 5.8GHz	21.27	21.18	-0.09
	11n HT20, 5.2GHz	18.90	18.79	-0.11
	11n HT20, 5.3GHz	20.05	19.88	-0.17
	11n HT20, 5.5GHz	20.17	19.90	-0.27
	11n HT20, 5.8GHz	19.74	19.73	-0.01
	11n HT40, 5.2GHz	19.72	19.51	-0.21
	11n HT40, 5.3GHz	19.97	19.44	-0.53
	11n HT40, 5.5GHz	20.31	20.00	-0.31
	11n HT40, 5.8GHz	19.88	19.38	-0.5
	11ac VHT20, 5.2GHz	19.02	18.83	-0.19
	11ac VHT20, 5.3GHz	20.10	19.92	-0.18
	11ac VHT20, 5.5GHz	20.23	19.96	-0.27
	11ac VHT20, 5.8GHz	19.81	19.79	-0.02
	11ac VHT40, 5.2GHz	19.76	19.58	-0.18
	11ac VHT40, 5.3GHz	19.99	19.49	-0.5
	11ac VHT40, 5.5GHz	20.34	20.02	-0.32
	11ac VHT40, 5.8GHz	19.96	19.44	-0.52
	11ac VHT80, 5.2GHz	14.80	14.32	-0.48
	11ac VHT80, 5.3GHz	19.17	18.72	-0.45
	11ac VHT80, 5.5GHz	19.18	19.02	-0.16
	11ac VHT80, 5.8GHz	19.26	18.79	-0.47

Test Item	Mode	XMR2023FCS850RB Parent Worst Result	XMR2023FCS850R Variant Check Result	Difference (dB)
Radiated Spurious Emission (dBμV/m)	802.11n HT20	50.95	47.52	-3.43

Conclusion:
Conducted Power and Radiated spurious emission test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result, the test data from the original model is representative for the variant model. The power level and RSE spot check are shown within expected level compliant to limit line.

We are using output power measurements from the original parent model reports to list on the grant.

The same DFS detection mechanism/software is used in the variant. Hence, there is no spot check data for DFS EUD hand-shaking mechanism.

We confirm that the test data reuse policy of FCC KDB 484596 D01 Referencing Test Data v01 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.

3 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 12, 2022	May 25, 2023	Oct. 11, 2023	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 04, 2023	May 25, 2023	Jan. 03, 2024	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 04, 2023	May 25, 2023	Jan. 03, 2024	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Max 30dBm	Oct. 13, 2022	May 18, 2023	Oct. 12, 2023	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY60242126	10Hz-44GHz	Oct. 13, 2022	May 18, 2023	Oct. 12, 2023	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 16, 2022	May 18, 2023	Oct. 15, 2023	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	49921	30MHz-1GHz	May 24, 2022	May 18, 2023	May 23, 2023	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 06, 2023	May 18, 2023	Apr. 05, 2024	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 08, 2023	May 18, 2023	Jan. 07, 2024	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	380827	9KHz ~1GHZ	Jul. 11, 2022	May 18, 2023	Jul. 10, 2023	Radiation (03CH06-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2023	May 18, 2023	Jan. 04, 2024	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2082395	1Ghz-18Ghz	Jan. 05, 2023	May 18, 2023	Jan. 04, 2024	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270319	500MHz~26.5GHz	Oct. 12, 2022	May 18, 2023	Oct. 12, 2023	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 18, 2023	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 18, 2023	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 18, 2023	NCR	Radiation (03CH06-KS)

NCR: No Calibration Required.

4 Measurement Uncertainty

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 Conducted Measurement

Test Item	Uncertainty
Conducted Power	±0.46 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.26dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.02dB

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.26dB

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