

TEST REPORT

Ref. n.	MPETR_185702-0	Issue Date:	26/11/2024	Pages:	10
Test object	Type test according to Standards 47 CFR FCC Part 2 Subpart J §2.1093				
Applicant	DATALOGIC S.r.l. Via S. Vitalino 13 - 40012 Lippo Di Calderara Di Reno - Bologna - Italy Phone. +39 051 3147196 Fax +39 051 3147561				
Trade mark					
Manufacturer	DATALOGIC S.r.l.				
Product	Radio module				
Tested model	SIRIUS STAR RADIO, 915MHZ				
FCC Identification number	U4F-SIRIUS915				
Date of test samples receipt	16/10/2024				
No. of tested samples	1 – Sampled by the manufacturer				
Test date	12/11/2024				
Testing site	PRSLAB S.r.l. Unipersonale - Via Campagna 92 - 22020 Faloppio - Como - Italy				
FCC designation number	IT0012				
Test results	COMPLIANT				
Verifications carried out by	Daniele AOSANI Laboratory Engineer				
Approved by	Luana PARISI Reviewer				

The test results reported in this test report shall refer only to the samples tested.

The sample has been provided by the customer and the results apply to the sample as received.

This report may not be partially reproduced, except with the prior written permission of the issuing Laboratory.

PRS refuses any responsibility about information provided by the customer contained in this test report.

TABLE OF CONTENTS

0. RELEASE CONTROL RECORD	3
1. DECISION RULE	3
2. INFORMATION PROVIDED BY CUSTOMER.....	3
3. GENERAL REMARKS	3
4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT).....	4
4.1 EUT Identification	4
4.2 Radio module technical data	5
4.3 Ports identification.....	6
4.4 Modifications incorporated in E.U.T.....	6
4.5 Auxiliary equipment.....	6
5. REFERENCE STANDARDS	6
6. MEASUREMENTS AND CALCULATION RESULTS	7
6.1 SAR exemption.....	7
6.2 RF Exposure Conditions	7
6.3 FCC Calculation method and limits.....	7
6.4 RF Output Power.....	8
6.5 FCC Calculation results.....	9

0. RELEASE CONTROL RECORD

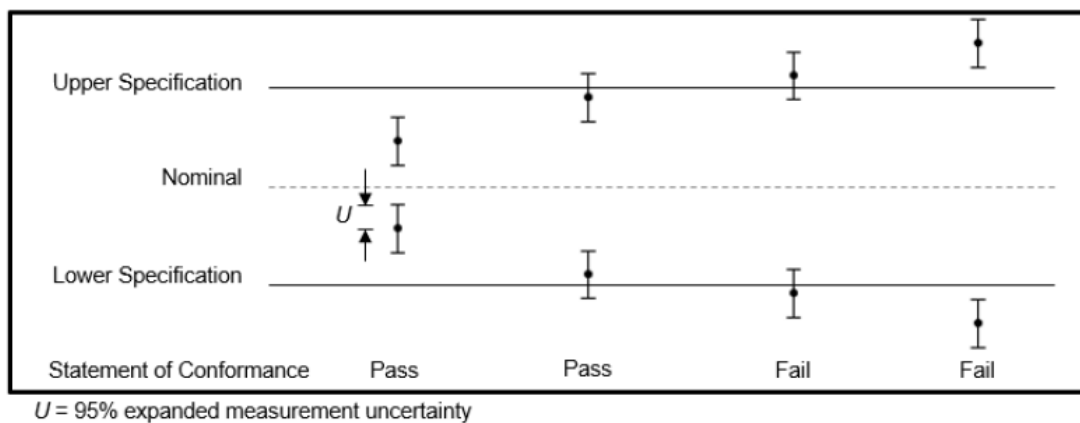
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
MPETR_185702-0	Original release	26/11/2024

This document is valid in last revision that deletes and replaces the previous one

1. DECISION RULE

PRS LAB specifies that, if the decision rules of conformity of the test results are not indicated in detail in the standard/s object of tests, it takes as a decision rule for the declaration of conformity the simple binary system ($w = 0$) stated in the ILAC-G8-09:2019 document.

The decision rule is applicable for all parts of standard



Statements of conformity are reported as:

- Pass: the measured value is below the acceptance limit, $AL=TL$.
- Fail: the measured value is above the acceptance limit, $AL=TL$.

Definitions

- Guard Band (w): interval between a tolerance limit and a corresponding acceptance limit where length $w=|TL-AL|$.
- Tolerance Limit (TL) (Specification Limit): specified upper or lower bound of permissible values of a property.
- Acceptance Limit (AL): specified upper or lower bound of permissible measured quantity values.

2. INFORMATION PROVIDED BY CUSTOMER

- None

3. GENERAL REMARKS

- None

4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

4.1 EUT Identification

DESCRIPTION	Radio module
MODEL NAME	SIRIUS STAR RADIO, 915MHZ
FCC ID	U4F-SIRIUS915
SERIAL NO.	B24PAAFEY00001040
PRS LAB INTERNAL REFERENCE	BC 267/2024 3/15
TRADEMARK	
MANUFACTURER	DATALOGIC S.r.l.
COUNTRY OF MANUFACTURER	Italy
SINGLE UNIT OR SYSTEM	Single
POWER SOURCE	DC power from board
SUPPLY VOLTAGE	3.0 ÷ 3.6Vdc, Typical 3.3Vdc
OPERATING TEMPERATURE	-30°C ÷ +85°C
HARDWARE VERSION (Information provided by Customer)	A
FIRMWARE VERSION (Information provided by Customer)	A
DIMENSIONS	See photographic documentation
EUT STANDING	☒ WALL; ☐ CEILING; ☒ TABLE; ☐ FLOOR; ☐ RACK MOUNTED; ☐ BODY WORN; ☒ HANDELD; ☐ PORTABLE; ☐ MOBILE
HIGHEST INTERNAL FREQUENCY (Information provided by Customer)	☐ <108MHz; ☐ 108MHz<F<500MHz; ☒ 500MHz<F<1GHz; ☐ F>1GHz; F = 926.936MHz

4.2 Radio module technical data

ETS CATEGORY	Hybrid System device (DSS) - Transceiver
FREQUENCY BAND	From 902MHz to 928MHz
NUMBER OF CHANNELS	12
CHANNEL OCCUPIED BANDWIDTH	1.16MHz
CHANNEL SPACING	2.117MHz
TYPE OF MODULATION	NRZ
DATA RATE	500000 bit/s
ANTENNA TYPE (Information provided by Customer)	Flexible antenna with cable
ANTENNA GAIN (Information provided by Customer)	SRFI068H-100 with peak gain of 0.2dBi
ANTENNA MODEL (Information provided by Customer)	SRFI068V-100 with peak gain of 0.7dBi
ANTENNA MANUFACTURER (Information provided by Customer)	

ETS CATEGORY	Digital Transmission System (DTS) - Transceiver
FREQUENCY BAND	From 902MHz to 928MHz
WORKING FREQUENCY	910MHz
NUMBER OF CHANNELS	1
CHANNEL OCCUPIED BANDWIDTH	1.16MHz
CHANNEL SPACING	---
TYPE OF MODULATION	NRZ
DATA RATE	500000 bit/s
ANTENNA TYPE (Information provided by Customer)	Flexible antenna with cable
ANTENNA GAIN (Information provided by Customer)	SRFI068H-100 with peak gain of 0.2dBi
ANTENNA MODEL (Information provided by Customer)	SRFI068V-100 with peak gain of 0.7dBi
ANTENNA MANUFACTURER (Information provided by Customer)	

4.3 Ports identification

	PORT	DESCRIPTION	CONNECTION	NOTES
☐	Enclosure	Electronic board	---	---
☐	AC power port	Port not present	---	---
☒	DC power port	3.3Vdc	PIN stripe	---
☐	Signal/control port	Port not present	---	---
☐	Telecommunication port	Port not present	---	---
☒	Antenna port	☐ Internal; ☒ External	UFL	---

Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

4.4 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test:

- None

4.5 Auxiliary equipment

- Auxiliary laboratory laptop used to set radio channels.
- Auxiliary board to supply radio module and send command via USB connected to

5. REFERENCE STANDARDS

REFERENCE STANDARD	DESCRIPTION
47 CFR FCC Part 2 Subpart J §2.1093	Radiofrequency radiation exposure evaluation: portable devices.
47 CFR FCC Part 1 Subpart I §1.1310	Radiofrequency radiation exposure limits.
KDB 447498 D01 v06	RF Exposure procedures and equipment authorization policies for mobile and portable devices
ANSI C63.10:2020; ANSI C63.10:2020/Cor.1:2023	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

6. MEASUREMENTS AND CALCULATION RESULTS

6.1 SAR exemption

This device has been excluded from SAR testing based on source-based time-averaged conducted output power and KDB 447498 D01 section 4.3.1 1). This document serves as the RF exposure exhibit in the FCC Form 731 application in lieu of a SAR report.

6.2 RF Exposure Conditions

The radio module **SIRIUS STAR RADIO, 915MHZ** is a communication device based on Hybrid and Digital transmission technology intended to be used in multiple portable and fixed applications. It is necessary a calculation for portable use demonstrating that the transmitter can be excluded from SAR testing.

6.3 FCC Calculation method and limits

Exclusion Threshold Extremity SAR: 7.5 (10-g extremity SAR):

$$\frac{EIRP}{d} * \sqrt{f} \leq 7.5$$

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 (for 1-g body SAR) or 7.5 (for 10-g extremity SAR)

where respectively

f RF channel transmit frequency (GHz)

EIRP Effective Isotropic Radiated Power (mW)

d Evaluation distance (mm)

The result is rounded to one decimal place for comparison

6.4 RF Output Power

EUT has the following operating configuration:

- EUT in DSS hybrid transmission, flexible antenna of two types.
- EUT in DTS transmission at frequency 910MHz, flexible antenna of two types.
 - **SRFI068H-100** with peak gain of 0.2dBi
 - **SRFI068V-100** with peak gain of 0.7dBi

SRFI068H-100 Antenna				
Mode	Frequency	Antenna Gain	EIRP	EIRP
	MHz	dBi	dBm	mW
DSS Channel 1	903.649	0.2	14.78	30.06
DSS Channel 6	914.234	0.2	14.84	30.48
DSS Channel 12	926.936	0.2	14.84	30.48
DTS Mode	910.000	0.2	14.74	29.79

SRFI068H-100 Antenna				
Mode	Frequency	Antenna Gain	EIRP	EIRP
	MHz	dBi	dBm	mW
DSS Channel 1	903.649	0.7	15.28	33.73
DSS Channel 6	914.234	0.7	15.34	34.20
DSS Channel 12	926.936	0.7	15.34	34.20
DTS Mode	910.000	0.7	15.24	33.42

6.5 FCC Calculation results

Calculation for the worst-case transmission with antenna SRFI068H-100 and antenna SRFI068V-100.

Antenna SRFI068H-100

Technology Hybrid system (DSS)
Frequency 914.234MHz (channel 6)
Measured Output Power (included tune up tolerance): 30.48mW
Minimum test separation distance: 5mm

Exclusion Threshold Extremity SAR: 7.5 (10-g extremity SAR)

$$\frac{30.48mW}{5mm} * \sqrt{0.914} = 5.83 \leq 7.5$$

Technology Digital transmission system (DTS)
Frequency 910.00MHz
Measured Output Power (included tune up tolerance): 29.79mW
Minimum test separation distance: 5mm

Exclusion Threshold Extremity SAR: 7.5 (10-g extremity SAR)

$$\frac{29.79mW}{5mm} * \sqrt{0.910} = 5.68 \leq 7.5$$

Antenna SRFI068V-100

Technology Hybrid system (DSS)
Frequency 914.234MHz (channel 6)
Measured Output Power (included tune up tolerance): 34.20mW
Minimum test separation distance: 5mm

Exclusion Threshold Extremity SAR: 7.5 (10-g extremity SAR)

$$\frac{34.20mW}{5mm} * \sqrt{0.914} = 6.54 \leq 7.5$$

Technology Digital transmission system (DTS)
Frequency 910.00MHz
Measured Output Power (included tune up tolerance): 33.42mW
Minimum test separation distance: 5mm

Exclusion Threshold Extremity SAR: 7.5 (10-g extremity SAR)

$$\frac{33.42mW}{5mm} * \sqrt{0.910} = 6.38 \leq 7.5$$

RESULT: The device is excluded from SAR testing.

END OF TEST REPORT