

TEST REPORT

No. AR21-0069489-02

performed in accordance with

FCC Rules: Code of Federal Regulations (CFR) no. 47
Part 15 Subpart C Section 15.247

PRODUCT	Bluetooth Low Energy module integrated in SCLAK keypad
MODEL(s) TESTED	1086/2
FCC ID	REA10862
TRADE MARK(s)	URMET

APPLICANT	URMET S.p.A. ~ Via Bologna, 188/c ~ I-10154 TORINO
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Tested by	Robertino Torri [Laboratory technician]	
Approved by	Roberto Colombo [Laboratory manager]	

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	2021-11-04	First edition Digital signed - AR21-0069489-02_TR_RF Exposure _URMET - 1086_2

The results of tests and checks reported in this Test Report refer exclusively to the samples tested and described in the Report itself.

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1. GENERAL DATA

SAMPLE		
Samples received on	2021-09-10	(Item(s) sampled and sent by applicant)
IMQ reference samples	BEM	105566
Samples tested No.	1	
Object under analysis recognition	Not carried out Except where stated, characteristics of products were taken from client description and were not verified by the laboratory	
Date of acceptance of test item	2021-09-13	
TEST LOCATION		
Testing dates	2021-09-17	
Testing laboratory.	IMQ S.p.A. - Via Quintiliano, 43 – I-20138 Milano	
Testing site	Via Quintiliano, 43 – I-20138 Milano	
ENVIRONMENTAL CONDITIONING		
Parameter	Measured	
Ambient Temperature	24.6 ÷ 27.7 °C	
Relative Humidity	46 ÷ 53 %	
Atmospheric Pressure	994 ÷ 997 mbar	
The laboratory is monitored by a continuous environmental conditions measurements system. Temperature, humidity and pressure data are recorded on a weekly basis and stored in local archive.		
REMARKS		
Throughout this report a point is used as the decimal separator. The ability or reliability of this product to perform its intended function in a particular application has not been investigated. Unless otherwise specified, warnings, installation instruction and/or user manual provided with the sample have been checked in Italian or English version only. IMQ declines any responsibility derived from missing or wrong information provided aside by the applicant.		

2. REFERENCE DOCUMENT

	DOCUMENT	DATE	TITLE
☒	47 CFR Part 15	2015	Radio Frequency Device
☒	447498 D01 v06	2015	RF exposure procedures and equipment authorization policies for mobile and portable devices

3. EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL DATA (according to manufacturer declaration)

MODEL (basic)	Description
1086/2	Bluetooth Low Energy module integrated in SCLAK keypad
VARIANTS (derived)	Description
/	/

FCC ID	REA10862
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Manufacturer	URMET S.p.A. ~ Via Bologna, 188/c ~ I-10154 TORINO
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Type of equipment	DTS - Digital transmission equipment (Bluetooth® Low Energy module)
Operating frequency	2402 ÷ 2480 MHz
Max RF radiated power	91.33 dBµV/m @3m
Modulation	GFSK
Channel	40 channel, 2MHz spaced from 2402 to 2480MHz
Antenna	PCB Antenna (SMD Antenna) A5839 Antenova 2.1 dBi max
Remarks	None

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1(lower)	2402	2	2404	3	2406	4	2408
5	2410	6	2412	7	2414	8	2416
9	2418	10	2420	11	2422	12	2424
13	2426	14	2428	15	2430	16	2432
17	2434	18	2436	19	2438	20(middle)	2440
21	2442	22	2444	23	2446	24	2448
25	2450	26	2452	27	2454	28	2456
29	2458	30	2460	31	2462	32	2464
33	2466	34	2468	35	2470	36	2472
37	2474	38	2476	39	2478	40(higher)	2480

4. SUMMARY OF TEST RESULTS

POSSIBLE TEST CASE VERDICTS	
Test object meets the requirement	PASS
Test object does not meet the requirement	FAIL
Test case does not apply to the test object	N.A.
Test not performed	N.P.

CFR47 Part 15	TITLE	RESULT
§ 15.247(i), § 47CFR 1.1307(b)(1)	RF humane exposure	PASS

7. TEST RESULTS

7.1 RF EXPOSURE EVALUATION

TEST REQUIREMENT	
Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines § 1.1307(b)(1).	
EUT classification (fixed, mobile or portable devices)	Portable according to § 2.1093(b) of this Chapter
LIMITS	According to § 2.1093 of this Chapter, by means of the following guidelines: OET Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies (447498 D01 General RF Exposure Guidance v06)
Testing dates	2020-08-06

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

447498 D01 General RF Exposure Guidance v06 – Appendix A

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

The test separation distances ≥ 5 mm is applied to determine SAR test exclusion.

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

447498 D01 General RF Exposure Guidance v06 § 4.3

Frequency (MHz)	Conducted power (dBm)	Tune-up tolerance (dB)	Antenna gain (dBi)	Max total power (dBm)	Max total power (mW)
2402	-0.03	+3/-4	2.1	5.07	3.21

Max total power (mW)	Distance (mm)	$\frac{\text{max. power (mW)}}{\text{min. distance (mm)}} \times \sqrt{f(\text{GHz})}$	Limits for SAR Test Exclusion Thresholds (mW)	
			for head	for extremity
3	5	0.9	10	25

TEST RESULT

This value is less than the low threshold limit for extremity. No SAR test is required.

Maximum radiated power was taken into consideration to establish the worst case aggregate maximum output power.

TEST REQUIREMENT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines § 1.1307(b)(1).

EUT classification (fixed, mobile or portable devices)	Fixed
LIMITS	According to § 1.1310 Table 1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)
Testing dates	2021-09-20

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)
(A) Limits for Occupational/Controlled Exposure				
0.3–3.0	614	1.63	* 100	6
3.0–30	1842/f	4.89/f	* 900/f ²	6
30–300	61.4	0.163	1.0	6
300–1,500			f/300	6
1,500–100,000			5	6
(B) 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
300–1,500			f/1500	30
1,500–100,000			1.0	30

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

TEST METHOD:

The distance from the device's transmitting antenna where the exposure level reaches the maximum permitted limit is calculated using the general equation:

$$S = P \cdot G / 4\pi R^2$$

Where:

S = Power Density (mW/cm²)

P = Conducted power (mW)

G = Linear power gain relative to isotropic radiator (numeric gain)

R = Distance (cm)

RF Exposure evaluation

Low threshold limit		
Exposure category	Frequency range f/MHz	Limit value (mW/cm ²)
General population	2.400 ÷ 2.480	1

MEASUREMENTS RESULTS

Max total power (conducted) (dBm)	Max total power (mW)	Power density @ 20 cm (mW/cm ²)	Limits (mW/cm ²)
3	2.00	0.00040	1

TEST RESULT

This value is less than the low threshold limit corresponding to the general population exposure category and therefore no SAR test is required.

END OF TEST REPORT