

ASSESSMENT REPORT

No. AR18-0031792-02-1

performed in accordance with
INDUSTRY CANADA
Spectrum Management and Telecommunications Radio Standards Specification
RSS-102:2015
Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

PRODUCT	Bluetooth Low Energy module
MODEL(s) TESTED	BLUENRG-M2SA
IC ID	8976C- BNRGM2SA
TRADE MARK(s)	STMICROELECTRONICS

APPLICANT	STMicroelectronics - Via Olivetti, 2 I-20864 Agrate Brianza (MB)
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Tested by	Robertino Torri <i>[Laboratory technician]</i>	
Approved by	Giovanni Di Turi <i>[Laboratory manager]</i>	

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	2018-10-26	First edition Digital signed - AR18-0031792-02-1_TR_IC SAR Evaluation - STM - BLUENRG-M2SA

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	2018-09-28	(Item(s) sampled and sent by applicant)
IMQ reference samples	BEM	92584
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	2018-10-05	
TEST LOCATION		
Testing dates	/	
Testing laboratory.	IMQ S.p.A. - Via Quintiliano, 43 – I-20138 Milano	
Testing site	Via Quintiliano, 43 – I-20138 Milano	
ISED Canada test site registration number	8839A-2	
ENVIRONMENTAL CONDITIONING		
Parameter	Measured	
Ambient Temperature	24.0 °C	
Relative Humidity	47 %	
Atmospheric Pressure	1005 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. IMQ declines any responsibility derived from missing or wrong information provided aside by the applicant.		

2. REFERENCE DOCUMENT

	DOCUMENT	DATE	TITLE
<input checked="" type="checkbox"/>	RSS-102	2015	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

3. EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL DATA

MODEL (basic)	Description
BLUENRG-M2SA	Bluetooth Low Energy module
VARIANTS (derived)	Description
/	/

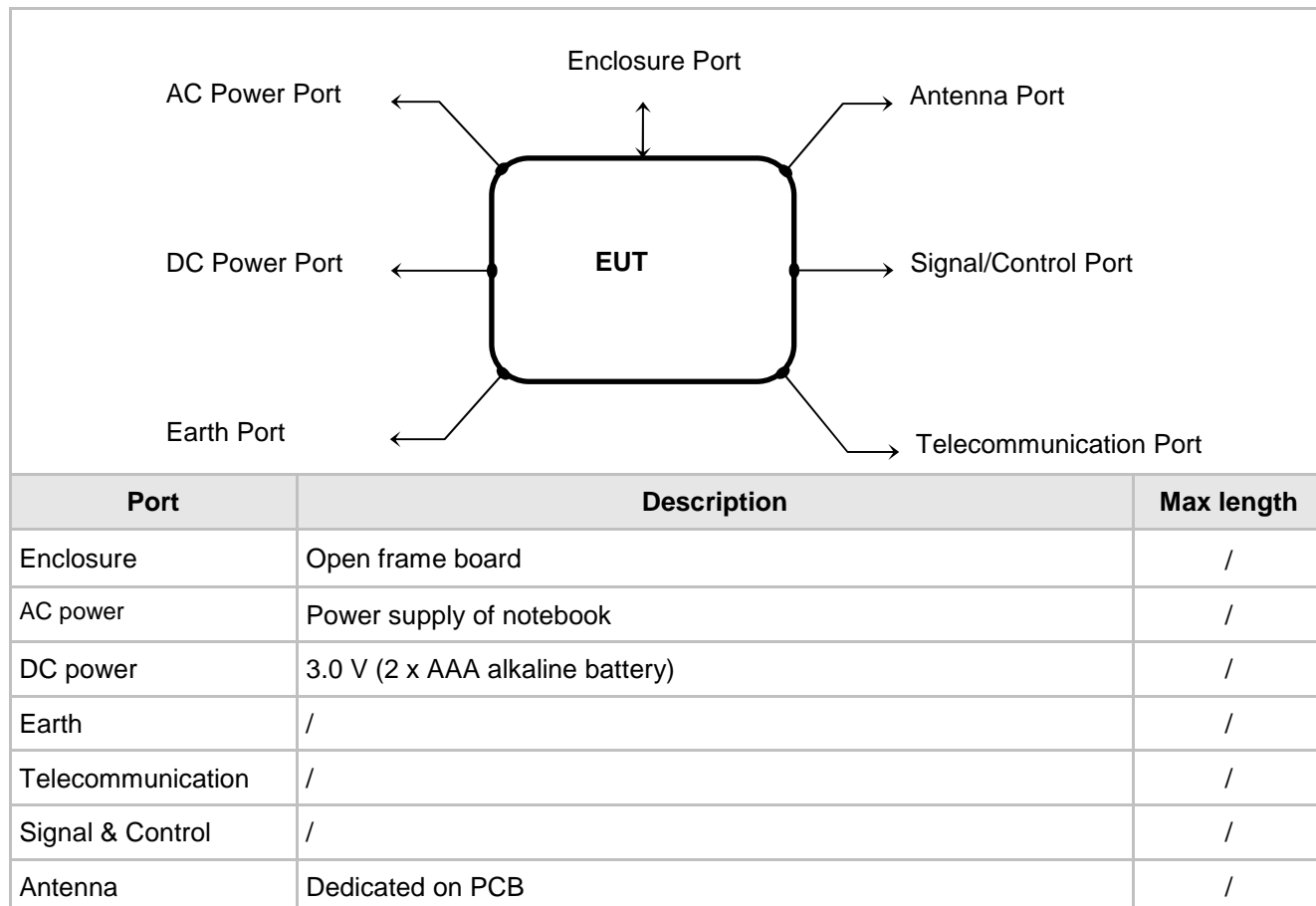
FCC ID	8976C- BNRGM2SA	897
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Manufacturer	STMicroelectronics - Via Olivetti, 2 - I-20864 Agrate Brianza (MB)
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Type of equipment	DTS - Digital transmission equipment (Bluetooth® Low Energy module)
Operating frequency	2400 ÷ 2483.5 MHz
Max RF radiated power	101.33 dBμV/m @3m
Modulation	GFSK
Channel	40 channel, 2MHz spaced from 2402 to 2480MHz
Antenna	2450AT18A100E of JOHANSON TECHNOLOGY
Remarks	None

4. TEST CONFIGURATION OF EQUIPMENT UNDER TEST

EUT PORTS



SUPPORT EQUIPMENT

Defined as equipment needed for correct operation or loading of the EUT, but not considered as tested:

Equipment	Manufacturer	Model
PC with dedicated software for RF transmission management	/	/
Evaluation board	STM	STEVAL-IDB007V1M

ELECTROMAGNETICALLY RELEVANT COMPONENTS

Component	No.	Manufacturer	Model
Bluetooth Low Energy module	1	STMICROELECTRONICS	PC87B V01

RFI SUPPRESSION DEVICES

Component	No.	Manufacturer	Model
/	/	/	/

EMI PROTECTION DEVICES

Component	No.	Manufacturer	Model
/	/	/	/

EUT TECHNICAL DOCUMENTATION

Document	Reference
/	/

5. 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.

REF. OF RSS 102	TITLE	RESULT
RSS 102 - § 2.5.1	RF humane exposure	PASS

6. TEST RESULTS

6.1 RF EXPOSURE EVALUATION

TEST REQUIREMENT

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1:

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Remark: If the operating frequency of the device is between two frequencies located in Table, linear interpolation is applied for the applicable separation distance.

Evaluation of Exemption Limit (separation distance 15mm)

Modulation	Max. Frequency (MHz)	Max. level measured at 3m. distance (dBm)	Max. measured e.i.r.p. (mW)	Exemption Limit (obtained by linear interpolation) (mW)
01	2402	5.27	3.365	15.15
20	2440	6.10	4.074	14.94
40	2480	5.12	3.251	15.15

Declared by manufacturer

Evaluation of Exemption Limit (separation distance 15mm)

Max. Frequency (MHz)	Max. radiated power (dBm)	Max. antenna gain (peak) (dBi)	Max. level.		Exemption Limit (obtained by linear interpolation) (mW)
			(dBm)	(mW)	
2402	8	+0.5	8.5	7.079	15.15
2440	8	+0.5	8.5	7.079	14.94
2480	8	+0.5	8.5	7.079	15.15

TEST RESULT

SAR evaluation is not required because the output power value is less than exemption limit.

END OF TEST REPORT