DEKRA Testing and Certification, S.A.U.
Parque Tecnológico de Andalucía,
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
C.I.F. A29 507 456

ISED CABid: ES1909
Lab Company Number: 4621A

Test report No:
78661REM.002

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B and Subpart C 15.207 (10-1-23 Edition) & ICES-003 Issue 7 (October 2020)

(*) Identification of item tested	Wearable biosignals monitor
(*) Trademark	OXIPEBBLE
(*) Model and /or type reference	OXIPEBBLE 100
(*) Other identification of the product	FCC ID: 2A258-OP100P02 IC: 30461-OP100P02 HW version: P02 SW version: 3.0.0
(*) Features	Features supported: Bluetooth LE
Manufacturer	Acurable Limited Finsgate, 5-7 Cranwood Street, London EC1V 9EE, United Kingdom.
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B and Subpart C 15.207 (10-1-23 Edition) & ICES-003 Issue 7 (October 2020)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	José Manuel Gómez EMC Consumer & RF Lab. Manager Firmado digitalmente por 53680346W JOSE MANUEL GOMEZ (C:A29507456)
Date of issue	2024-07-02
Report template No	FDT08_24 (*) "Data provided by the client"

Index

ACRONYMS 3
COMPETENCES AND GUARANTEES 3
GENERAL CONDITIONS 3
UNCERTAINTY 3
DATA PROVIDED BY THE CLIENT 4
USAGE OF SAMPLES 5
TEST SAMPLE DESCRIPTION 6
IDENTIFICATION OF THE CLIENT 7
TESTING PERIOD AND PLACE 7
DOCUMENT HISTORY 7
ENVIRONMENTAL CONDITIONS 8
REMARKS AND COMMENTS 9
TESTING VERDICTS 9
LIST OF EQUIPMENT USED DURING THE TEST 9
SUMMARY 10
APPENDIX A: TEST RESULTS 11
DESCRIPTION OF THE OPERATION MODES 13
TEST STANDARDS VERSION APPLIED 14
TEST CASES DETAILS 15
FCC 47 CFR PART 15B 15
RE Radiated emission. Electromagnetic field measure 15
CE Continuous conducted emission 19

Acronyms

Acronym ID	Acronym Description
Code	EMC Test Code
Freq Rng	Frequency Range
MP	Measurement Point
OM	Operation Mode
S/	Sample
V	Verdict

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification S.A.U. is an FCC-recognized accredited testing laboratory with the appropriate scope of accreditation that covers the performed tests in this report, FCC designation number ES0004.

DEKRA Testing and Certification S.A.U. is an ISED recognized accredited testing laboratory, CABid: ES1909, Company Number: 4621A, with the appropriate scope of accreditation that covers the performed tests in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is I = ± 4,9 dB for quasi-peak measurements, I = ± 4,6 dB for peak measurements (k= 2).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 12.75 GHz is I = ± 2,6 dB for peak and average measurements (k = 2).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").

2. The sample consists of a wearable biosignals monitor model OXIPEBBLE 100.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results. The laboratory is not responsible for such information and it is not covered by accreditation.

Usage of samples

Samples under test have been selected by: The client.

Id	Control Number	Description	Model	Serial Nº	Date of Reception	Application
S/01	75176B_2.1	USB Cable			2024-02-22	Element Under Test
	75176B_6.1	Wearable biosignals monitor	P02 V3.0.0 BLE OFF		2024-02-22	Element Under Test
	6162	AC/DC adapter	--	--	--	Auxiliary element

Id	Control Number	Description	Model	Serial Nº	Date of Reception	Application
S/02	75176B_2.1	USB Cable			2024-02-22	Element Under Test
	75176B_5.1	Wearable biosignals monitor	P02 V3.0.0 BLE ON		2024-02-22	Element Under Test
	6162	AC/DC adapter	--	--	--	Auxiliary element

Test sample description

Ports…… :	Port name and description	Cable					
		Specified max length [m]	Attached during test	Shielded	Coupled to patient(3)		
	Not provided data						
Supplementary information to the ports…… :	Not provided data						
Rated power supply .....:	Voltage and Frequency			Reference poles			
				L1	L2	L3	N	PE
		AC:						
	X	DC: 3.7Vdc. External USB (5Vdc).						
Rated Power .....:	Not provided data						
Clock frequencies.....:	Not provided data						
Other parameters .....:	Not provided data						
Software version .....:	3.0.0						
Hardware version .....:	P02						
Dimensions in cm (W x H x D) ....:	Not provided data						
Mounting position .....:		Table top equipment					
		Wall/Ceiling mounted equipment					
		Floor standing equipment					
		Hand-held equipment					
	X	Other: Body worn equipment					
Modules/parts.....:	Module/parts of test item		Type		Manufacturer		
	Not provided data						
Accessories (not part of the test item) .....:	Description		Type		Manufacturer		
	Not provided data						
Documents as provided by the applicant.....:	Description		File name		Issue date		
	User manual		AcuPebbleTM SA100+v2 User Manual, v1.1		2024-06-04		
	Risk Management File		Acurable, Risk Management Report, AcuPebble Ox100		2022-07-07		
	Test plan		Test plan – OxiPebble		2024-05-14		

Identification of the client

Acurable Limited
Finsgate, 5-7 Cranwood Street, London
EC1V 9EE, United Kingdom.

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2024-04-26
Date (finish)	2024-04-26

Document history

Report number	Date	Description
78661REM.002	2024-07-02	First release

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860mbar Max. = 1060mbar

Remarks and comments

The tests have been performed by the technical personnel: Jia Hao Luo Chen.

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P
Partial Passed	P*

List of equipment used during the test

Control Number	Description	Model	Manufacturer	Next Calibration
02932	HYBRID BILOG ANTENNA 30MHz-6GHz	JB6	SUNOL SCIENCES CORPORATION	2027-01-22
04848	EMC/RF MEASUREMENT SOFTWARE	EMC32	ROHDE AND SCHWARZ	---
05862	EMI TEST RECEIVER 9kHz-7GHz	ESR7	ROHDE AND SCHWARZ	2025-02-15
07549	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2025-04-24
07550	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2025-04-24
07822	EMC SOFTWARE	RADIMATION	DARE INSTRUMENTS	---
07853	EMI RECEIVER 10Hz-30MHz	PMM 9010F	NARDA	2026-04-05
07859	THREE-PHASE ARTIFICIAL NETWORK 32A	PMM L3-32	NARDA	2025-03-20
08130	SEMIANECHOIC ABSORBER LINED CHAMBER VI	P29419	ALBATROSS	---
08134	SHIELDED ROOM	P29419	ALBATROSS PROJECTS GMBH	---
08165	GROUNDED PLANE LAB-3	-		---

Summary

Test Specification	Requirement – Test case	Verdict	Remark
FCC CFR 47, Part 15, Subpart B and C 15.207 (10-1-23 Edition) & ICES-003 Issue 7 (October 2020)	RE Radiated emission. Electromagnetic field measure	P	(1)
	CE Continuous conducted emission	P	--

Supplementary information and remarks:

(1) Test required only to the 5th harmonics of the maximum internal work frequency in the EUT.

Appendix A: Test results

Appendix A content

DESCRIPTION OF THE OPERATION MODES 13

TEST STANDARDS VERSION APPLIED 14

TEST CASES DETAILS 15

FCC 47 CFR PART 15B 15

RE Radiated emission. Electromagnetic field measure 15

CE Continuous conducted emission 19

Description of the operation modes

The operation modes described in this paragraph constitute a functionality of the sample under test for itself.

The operation modes used by the samples to which the present report refers, are shown in the following table:

Id	Description
OM/01	EUT ON. Bluetooth Low Energy OFF and charging battery. Power supply: 5Vdc through AC/DC connected to 110Vac.
OM/02	EUT ON. Bluetooth Low Energy communication established with auxiliary device. Charging battery. Power supply: 5Vdc through AC/DC connected to 110Vac.

Test standards version applied

The product standards and test standards applied for each test cases are shown in the following table:

Product Test Standard	Test standard	Requirement – Test case
FCC CFR 47, Part 15, Subpart B and C 15.207 (10-1-23 Edition) & ICES-003 Issue 7 (October 2020)	ANSI C63.4 (2014)	RE Radiated emission.
	ANSI C63.4 (2014)	CE Continuous conducted emission

Test Cases Details

FCC 47 CFR Part 15B

RE Radiated emission. Electromagnetic field measure

Limits

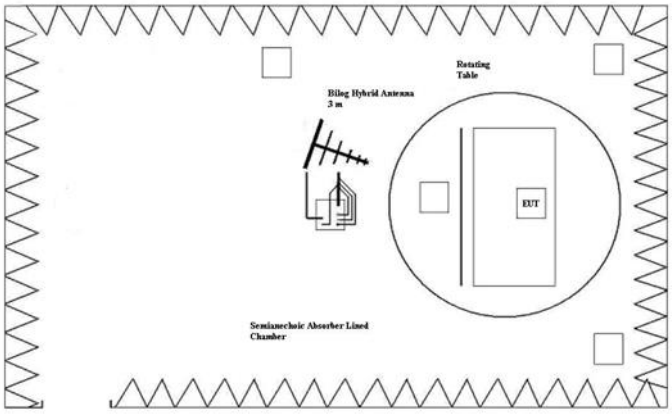
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according to the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-23 Edition), Secs. 15.109 & ICES-003 Issue 7 (October 2020)

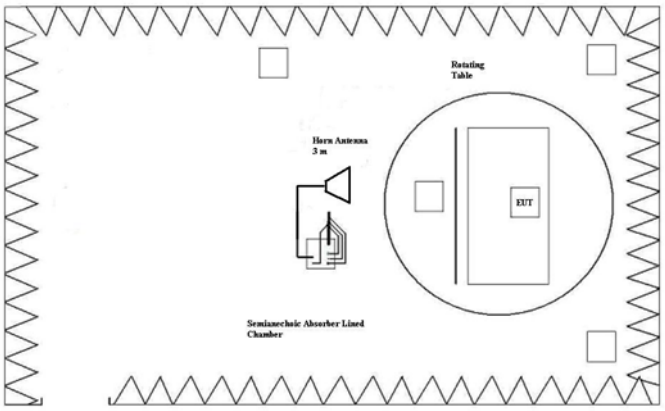
Frequency range (MHz)	FCC Part 15B		ICES-003 Issue 7		FCC Part 15B & ICES-003 Issue 7	
	QP Limit for 3 m		QP Limit for 3 m		PK Limit for 3 m	AVG Limit for 3 m
	(μV/m)	(dBμV/m)	(μV/m)	(dBμV/m)	(dBμV/m)	(dBμV/m)
30 to 88	100	40	100	40	---	---
88 to 216	150	43.5	150	43.5	---	---
216 to 230	200	46	200	46	---	---
230 to 960	200	46	224	47		
960 to 1000	500	54	500	54	---	---
Above 1000	---	---	---	---	74	54

Limits according to FCC Part 15B, are equal or more stringent than those of ICES-003 Issue 7.

Setup for measurements



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

Results

S/	OM	Code	Freq Rng (MHz)	V
01	OM/01	RE0101LR	[30, 1000]	P
01	OM/01	RE0101HR	[1000, 12750]	P

Verdict

Pass

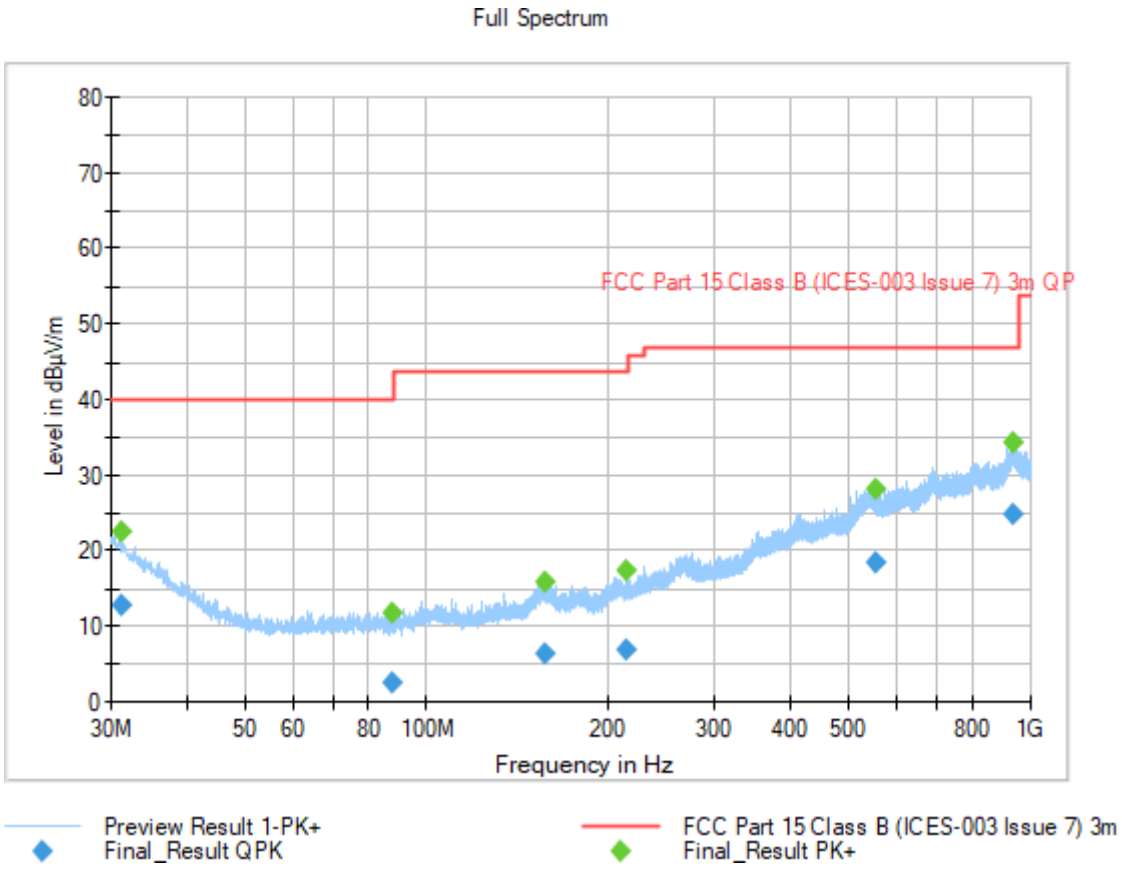
Attachments

EMC Test Code = RE0101LR Frequency Range MHz = [30, 1000]

Sample ID: S/01

Operation Mode: OM/01

Images:



Tables:

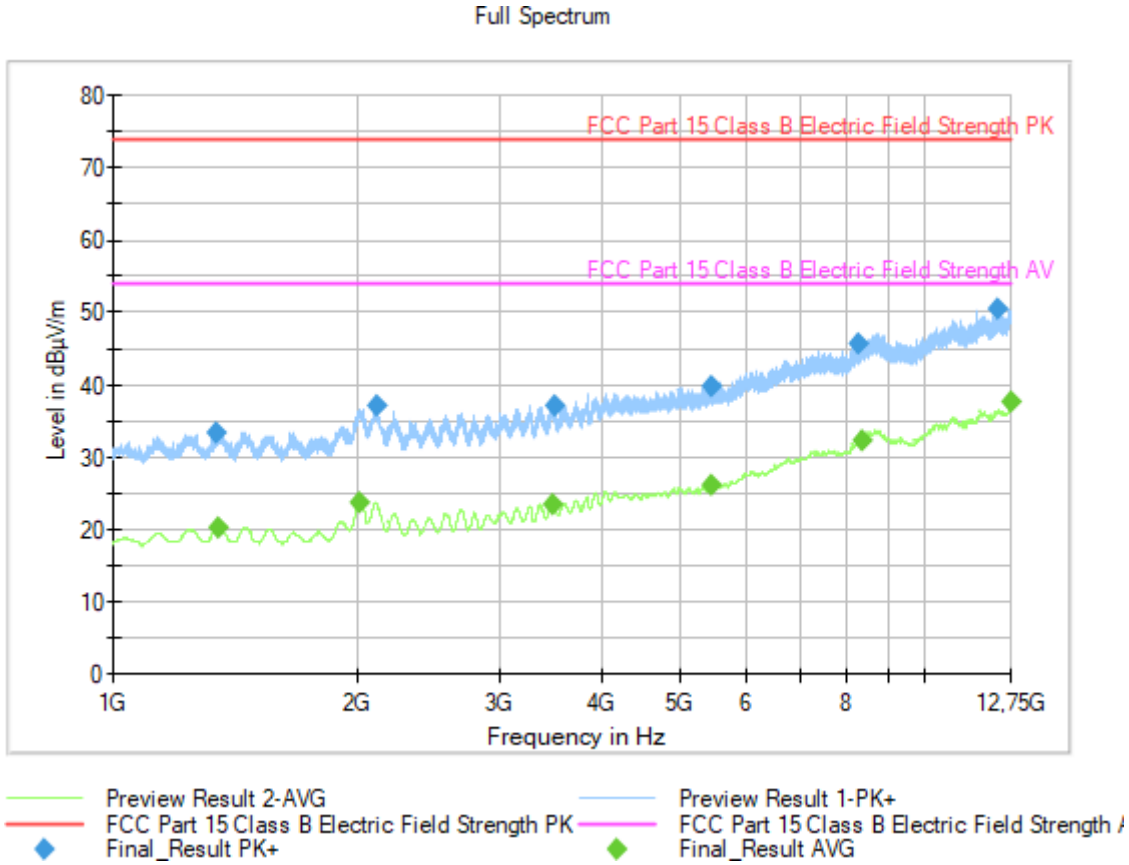
Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
31.158000	12.90	---	40.00	27.10	346.0	H	151.0
31.158000	---	22.56	---	---	346.0	H	151.0
87.543000	---	11.86	---	---	400.0	V	101.0
87.543000	2.54	---	40.00	37.46	400.0	V	101.0
157.277000	6.32	---	43.52	37.20	223.0	V	331.0
157.277000	---	15.99	---	---	223.0	V	331.0
213.935000	---	17.33	---	---	155.0	V	321.0
213.935000	6.94	---	43.52	36.58	155.0	V	321.0
553.108000	18.49	---	47.00	28.51	400.0	V	344.0
553.108000	---	28.21	---	---	400.0	V	344.0
932.432000	24.89	---	47.00	22.11	306.0	H	217.0
932.432000	---	34.30	---	---	306.0	H	217.0

EMC Test Code = RE0101HR Frequency Range MHz = [1000, 12750]

Sample ID: S/01

Operation Mode: OM/01

Images:



Tables:

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1338.000000	33.39	---	73.97	40.58
1347.600000	---	20.38	53.97	33.59
2005.600000	---	23.70	53.97	30.27
2109.600000	37.10	---	73.97	36.87
3471.600000	---	23.63	53.97	30.34
3494.000000	37.29	---	73.97	36.68
5444.800000	39.77	---	73.97	34.20
5449.200000	---	26.10	53.97	27.87
8266.400000	45.75	---	73.97	28.22
8335.600000	---	32.42	53.97	21.55
12263.600000	50.70	---	73.97	23.27
12747.600000	---	37.60	53.97	16.37

CE Continuous conducted emission

Limits

Limits of interference Class B

The applied limit for continuous conducted emissions in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B and C (10-1-23 Edition), Secs. 15.107 and 15.207 & ICES-003 Issue 7 (October 2020), in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range	Limit (dBµV)	
(MHz)	Quasi-Peak	Average
0,15 to 0,5	66 – 56*	56 – 46*
0,5 to 5	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

Results

S/	OM	Code	Freq Rng (MHz)	Line	V
01	OM/01	CE01010N	[0.15, 30]	N	P
01	OM/01	CE0101L1	[0.15, 30]	L1	P
02	OM/02	CE02020N	[0.15, 30]	N	P
02	OM/02	CE0202L1	[0.15, 30]	L1	P

Verdict

Pass

Attachments

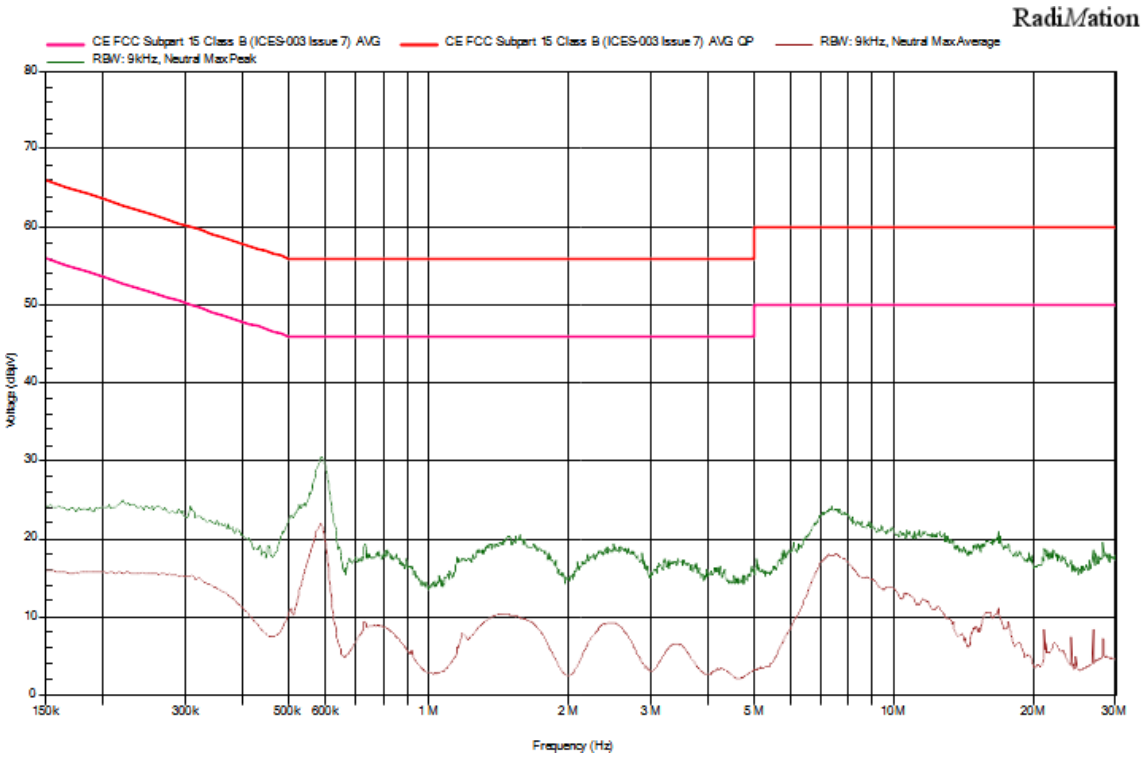
EMC Test Code = CE01010N Frequency Range MHz = [0.15, 30]

Conducted Emissions - Tested Line = N

Sample ID: S/01

Operation Mode: OM/01. Bluetooth Low Energy OFF and charging battery. Power supply: 5Vdc through AC/DC connected to 110Vac.

Images:



Tables:

Frequency (MHz)	Average (dBµV)	Peak (dBµV)	Line
0,22 MHz	15,5 dBµV	25 dBµV	N
0,59 MHz	21,6 dBµV	30,5 dBµV	N
0,731 MHz	9,4 dBµV	19,3 dBµV	N
1,434 MHz	10,4 dBµV	18,7 dBµV	N
1,567 MHz	9,8 dBµV	20,5 dBµV	N
2,593 MHz	8,5 dBµV	19,1 dBµV	N
3,505 MHz	6,2 dBµV	17,2 dBµV	N
7,27 MHz	17,9 dBµV	23,8 dBµV	N
16,747 MHz	11 dBµV	21 dBµV	N
28,195 MHz	5,8 dBµV	19,1 dBµV	N

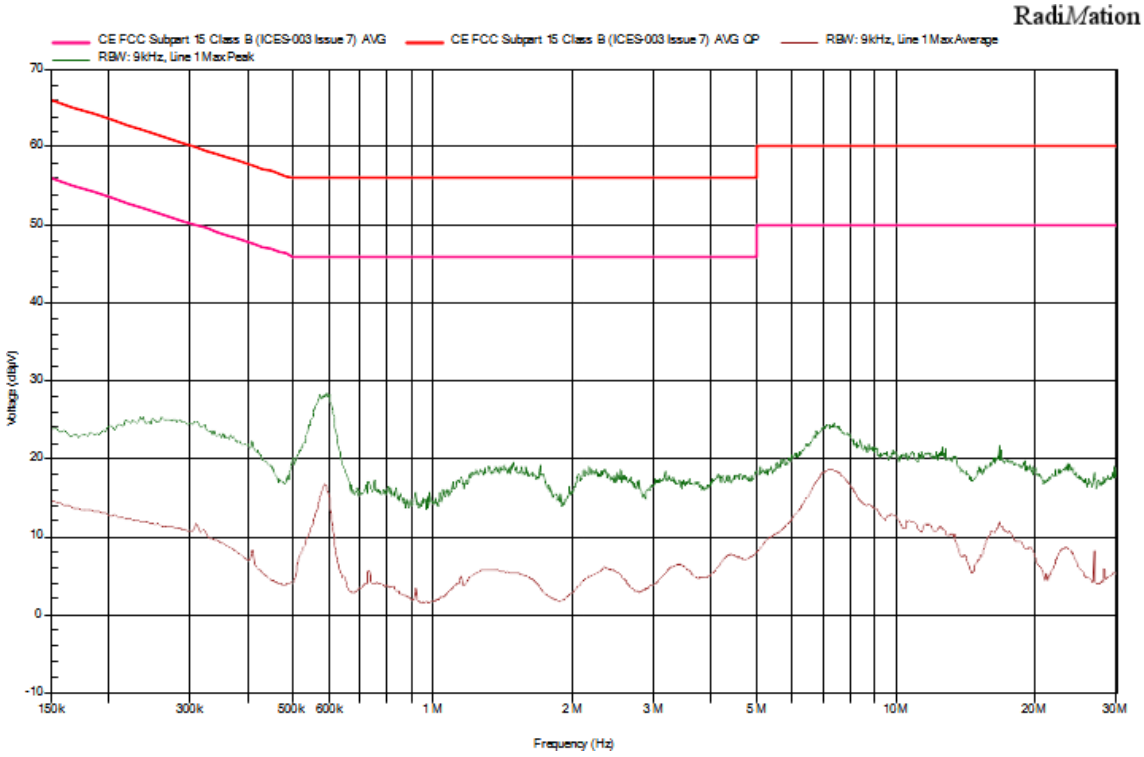
EMC Test Code = CE0101L1 Frequency Range MHz = [0.15, 30]

Conducted Emissions - Tested Line = L1

Sample ID: S/01

Operation Mode: OM/01. Bluetooth Low Energy OFF and charging battery. Power supply: 5Vdc through AC/DC connected to 110Vac.

Images:



Tables:

Frequency (MHz)	Average (dBµV)	Peak (dBµV)	Line
0,262 MHz	11,3 dBµV	25,1 dBµV	L1
0,592 MHz	16,3 dBµV	28,5 dBµV	L1
0,729 MHz	5,7 dBµV	17,1 dBµV	L1
1,34 MHz	5,8 dBµV	17,8 dBµV	L1
1,495 MHz	5,2 dBµV	19,5 dBµV	L1
2,18 MHz	4,8 dBµV	18,8 dBµV	L1
3,178 MHz	5,2 dBµV	18,5 dBµV	L1
7,357 MHz	18,5 dBµV	24,6 dBµV	L1
16,749 MHz	11,9 dBµV	21,5 dBµV	L1
23,547 MHz	8,4 dBµV	19,5 dBµV	L1

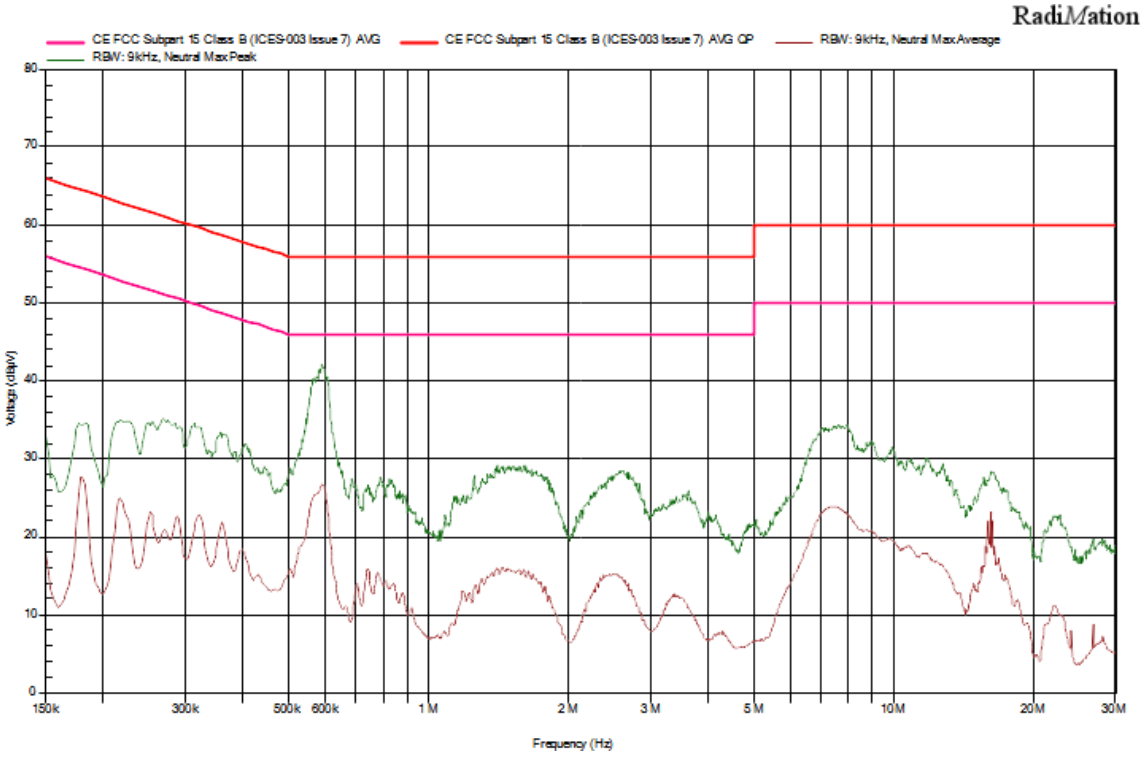
EMC Test Code = CE02020N Frequency Range MHz = [0.15, 30]

Conducted Emissions - Tested Line = N

Sample ID: S/02

Operation Mode: OM/02. EUT ON. Bluetooth Low Energy communication established with auxiliary device. Charging battery. Power supply: 5Vdc through AC/DC connected to 110Vac.

Images:



Tables:

Frequency (MHz)	Average (dBµV)	Peak (dBµV)	Line
0,252 MHz	23,3 dBµV	34,3 dBµV	N
0,271 MHz	20,9 dBµV	35,1 dBµV	N
0,32 MHz	22,6 dBµV	34 dBµV	N
0,361 MHz	21,8 dBµV	33,2 dBµV	N
0,397 MHz	18,4 dBµV	31,3 dBµV	N
0,59 MHz	26,7 dBµV	42,1 dBµV	N
1,52 MHz	15,5 dBµV	28,8 dBµV	N
2,618 MHz	14,3 dBµV	28,5 dBµV	N
7,419 MHz	23,9 dBµV	33,4 dBµV	N
7,601 MHz	23,7 dBµV	34 dBµV	N

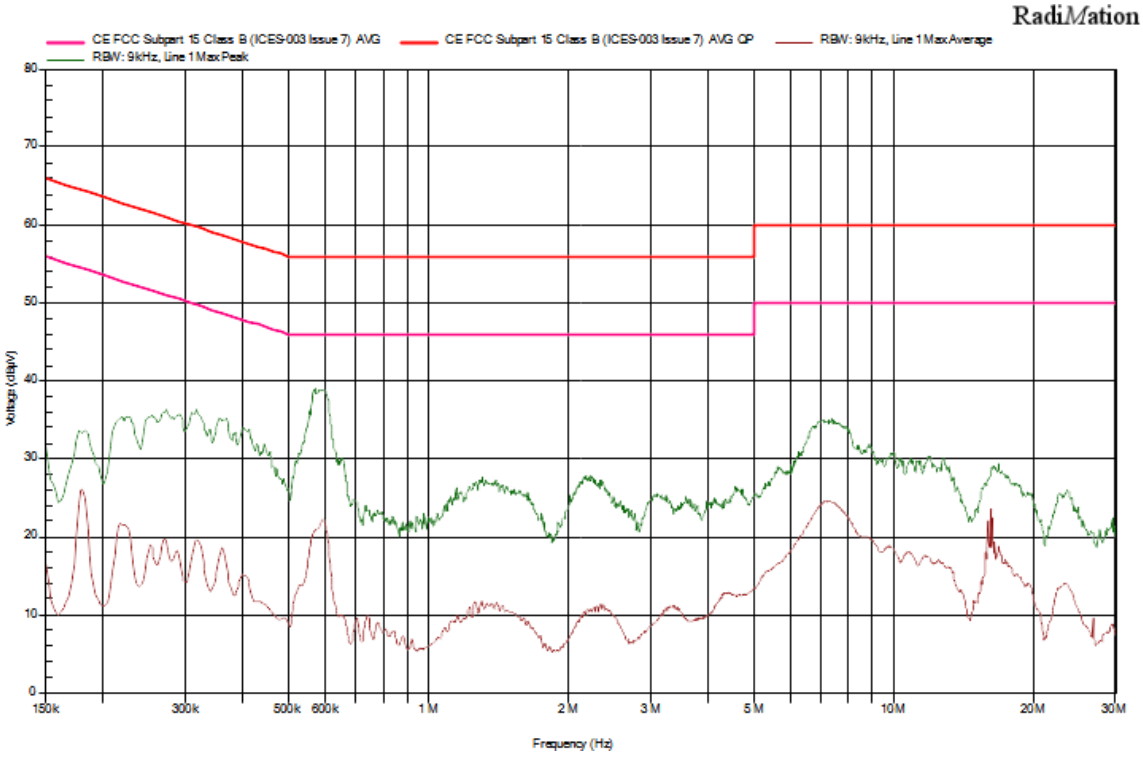
EMC Test Code = CE0202L1 Frequency Range MHz = [0.15, 30]

Conducted Emissions - Tested Line = L1

Sample ID: S/02

Operation Mode: OM/02. EUT ON. Bluetooth Low Energy communication established with auxiliary device. Charging battery. Power supply: 5Vdc through AC/DC connected to 110Vac.

Images:



Tables:

Frequency (MHz)	Average (dBµV)	Peak (dBµV)	Line
0,224 MHz	21,4 dBµV	35,4 dBµV	L1
0,273 MHz	19,3 dBµV	36,3 dBµV	L1
0,318 MHz	19,6 dBµV	36,4 dBµV	L1
0,361 MHz	18,6 dBµV	35 dBµV	L1
0,399 MHz	15,1 dBµV	34 dBµV	L1
0,592 MHz	22,2 dBµV	38,9 dBµV	L1
1,303 MHz	11,4 dBµV	27,6 dBµV	L1
2,195 MHz	10,6 dBµV	27,5 dBµV	L1
7,343 MHz	24,3 dBµV	34,9 dBµV	L1
11,831 MHz	17,3 dBµV	30,4 dBµV	L1