

ISED CABid: ES1909

Test report No:
NIE: 71042REM.002A2

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-20 Edition), Subpart C sect. 15.207 & ICES-003 Issue 7 (October 2020), RSS-Gen issue 5 (8.8)

(*) Identification of item tested	Bluetooth connected shaver
(*) Trademark	Philips
(*) Model and /or type reference	Series S7700 Tested model: S7786 Similar models not tested: S7782, S7787, S7788, S9502 & S9507
Other identification of the product	FCC ID: 2AICSS77A IC: 21912-S77 HW version: 2.0 SW version: 2100
(*) Features	Bluetooth Low Energy (5.1)
Manufacturer	Philips Oliemolenstraat 5, 9203 ZN Drachten. The Netherland.
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-20 Edition), Subpart C sect. 15.207 & ICES-003 Issue 7 (October 2020), RSS-Gen issue 5 (8.8)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Jose Manuel Gómez Industrial & Automotive EMC Lab. Manager
Date of issue	2022-05-13
Report template No	FDT08_23 (*) "Data provided by the client"

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Acronyms

Acronym ID	Acronym Description
Code	EMC Test Code
Freq Rng	Frequency Range
Line	Conducted Emissions - Tested Line
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, 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.

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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.
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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 conducted disturbance characteristics of EUT from 150 kHz to 30 MHz is $I = \pm 3,9$ dB for quasi-peak measurements, $I = \pm 3,2$ dB for peak measurements ($k = 2$).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is $I = \pm 4,9$ dB for quasi-peak measurements, $I = \pm 4,6$ 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 $I = \pm 2,6$ dB for peaks 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")

The sample consists of a Bluetooth connected shaver (with can be connected to a mobile application /App)

In the following page the manufacturer states similar models not tested with minor changes where there is no impact on the EMC/RF performance to be considered.

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.

Drachten (the Netherlands), 8th of April 2022

DECLARATION of EQUIVALENCE

Regarding the registration of the update of the shaver S7700 series in US (FCC ID **2AICSS77A**) and Canada (ISED **IC 21912-S77**) we state the following:

By means of this letter, we, Philips Consumer Lifestyle BV, declare that the following series of shavers are identical in electrical construction. These models have identical RF characteristics and specifications for Bluetooth Low Energy interface on the 2,4GHz band. Except for model name, type marking, cover edge/finishing of the outer bod and shaving system on top, which does not affect the Safety, EMC and Energy test results.

The change concerns a small update in the electronic design regarding the charging circuit. Reason for this is, due to component shortages, to enable a second source supplier for the charging IC. This version will remain on a 15 V charger. Same model numbers apply (S77xx).

For the rest, the design is the same as current S7000 shaver models (so hardware, electronics, dimensions, motor, Bluetooth antenna & protocols, shaving system, accessories etc.)

The devices with their differences are listed below:

Model	Differences
S7782	Colouring/finishing of the hardware/shaver body only
S7786	Colouring/finishing of the hardware/shaver body only
S7787	Colouring/finishing of the hardware/shaver body only
S7788	Colouring/finishing of the hardware/shaver body only
S9502	Colouring/finishing of the hardware/shaver body + shaving system only
S9507	Colouring/finishing of the hardware/shaver body + shaving system only

Please feel free to contact me in case you need any more information,

Yours sincerely,


M.L. PLATZER

Martijn Platzer

Quality Assurance Manager

Philips Consumer Lifestyle

Oliemolenstraat 5, 9203 ZN Drachten, The Netherlands

Email: Martijn.Platzer@philips.com



Usage of samples

Samples under test have been selected by: The client.

Id	Control Number	Description	Model	Serial N°	Date of Reception	Application
S/01	71042_10.1	AC/DC adapter	HQ8505	--	2022-01-31	Element Under Test
	71042_8.1	Shaver	S7786	--	2022-01-31	Element Under Test

Test sample description

Test Sample description (compulsory information for EMC and RF testing services)

Ports..... :	Port name and description		Cable				
			Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾	

Supplementary information to the							
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	X	AC: 115V.	X			X	
		AC:					
	X	DC: 3.6V. (Internal battery)					
	DC:						
Rated Power	---						
Clock frequencies.....	---						
Other parameters	---						
Software version	2100						
Hardware version	2.0						
Dimensions in cm (W x H x D)	---						
Mounting position		Table top equipment					
		Wall/Ceiling mounted equipment					
		Floor standing equipment					
	X	Hand-held equipment					
		Other:					
Modules/parts..... :	Module/parts of test item		Type		Manufacturer		

Accessories (not part of the test item)	Description		Type		Manufacturer		

Documents as provided by the applicant..... :	Description		File name		Issue date		

⁽³⁾ Only for Medical Equipment

Identification of the client

Philips
Oliemolenstraat 5, 9203 ZN Drachten.
The Netherland.

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2022-02-10
Date (finish)	2022-02-16

Document history

Report number	Date	Description
71042REM.002	2022-03-30	First release
71042REM.002A1	2022-04-12	First modification. A "Declaration of equivalence" between models provided by the manufacturer is included in the report. This report cancels and replaces the previous 71042REM.002.
71042REM.002A2	2022-05-13	Second modification. It is included in the report the reference to section FCC Subpart C, 15.207. and RSS-Gen issue 5 (8.8). This report cancels and replaces the previous 71042REM.002A1.

Environmental conditions

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

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

Remarks and comments

The tests have been performed by the technical personnel: Daniel Mejías Herrera and Victoria Olmedo Villalba.

Testing verdicts

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

List of equipment used during the test

Control No.	Equipment	Model	Manufacturer	Next Calibration
7853	EMI RECEIVER 10Hz-30MHz	PMM 9010F	NARDA	2023-12-03
7817	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2023-12-30
7763	HORN ANTENNA 1-18GHz	BBHA 9120D	SCHWARZBECK MESS-ELEKTRONIK	2022-11-15
7769	PREAMPLIFIER 30dB 500MHz-18GHz	BBV 9718 C	SCHWARZBECK	2023-03-25
7859	THREE-PHASE ARTIFICIAL NETWORK 32A	PMM L3-32	NARDA	2024-01-14
7826	ULTRALOG ANTENNA 30MHz-6GHz	HL562E_UPG	ROHDE AND SCHWARZ	2022-10-15

Summary

Test Specification.	Requirement – Test case	Verdict	Remark
FCC 47 CFR Part 15B ICES-003 (3.2.2)	RE Radiated emission. Electromagnetic field measure	Pass	
FCC 47 CFR Part 15B, 15.107 FCC 47 CFR Part 15C, 15.207 ICES-003 (3.2.1) RSS-Gen issue 5 (8.8)	CE Continuous conducted emission	Pass	
<u>Supplementary information and remarks:</u> None			

Appendix A: Test results

Appendix A content

DESCRIPTION OF THE OPERATION MODES 15

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RE Radiated emission. Electromagnetic field measure..... 17

CE Continuous conducted emission..... 21

Description of the operation modes

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes a failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

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

Id	Description
01	EUT ON. Charging battery. Bluetooth ON without communication established. Power supply: 115Vac.
02	EUT ON. Shaver working continuously. Bluetooth ON without communication established. Power supply: 3.6Vdc (internal battery).
03	EUT ON. Charging battery. Bluetooth ON with communication established. Power supply: 115Vac.

After a Radiated Emission preview, it is checked that the worst case is: operation mode 01. So this mode is selected for the Radiated Emission Test.

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 Rules and Regulations CFR 47, Part 15, Subpart B (10-1-20 Edition), Subpart C sect. 15.207 & ICES-003 Issue 7 (October 2020), RSS- Gen issue 5 (8.8)	ANSI C63.4 (2014)	RE Radiated emission.
	ANSI C63.4 (2014)	CE Continuous conducted emission

Test Cases Details

RE Radiated emission. Electromagnetic field measure

Limits of interference Class B

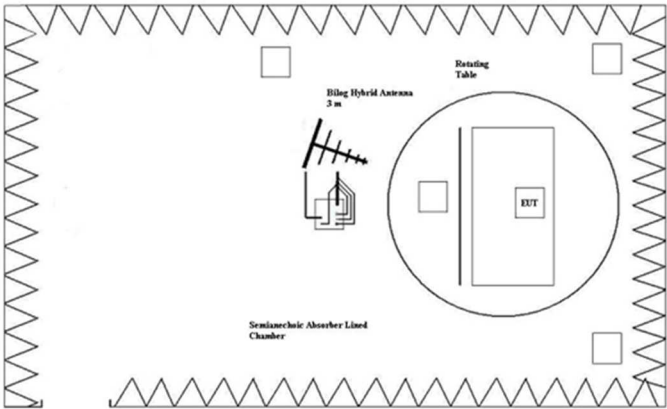
The applied limit for radiated emissions, 3 m distance, according to the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B, Secs. 15.109 & ICES-003 Issue 7.

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

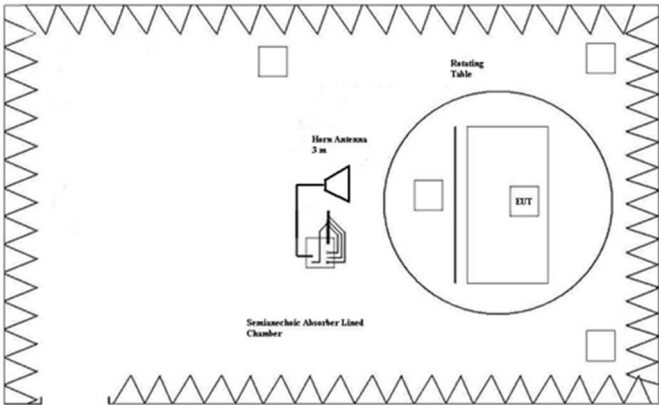
NOTE: FCC QP and AVG limits are in concordance with RSS-Gen Issue 5 (March 2019), Secs. 7.1 and 7.3.

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)	Comments	V
01	01	RE0101LR	[30, 1000]		P
01	01	RE0101HR	[1000, 12750]		P

Verdict

Pass

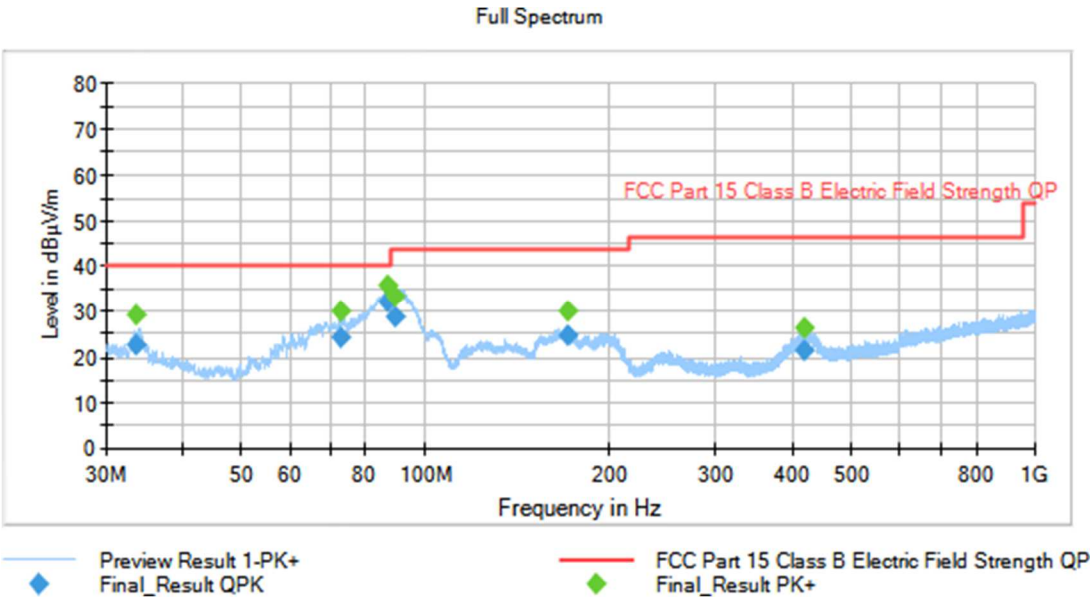
Attachments

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

Sample ID: S/01

Operation Mode: 01. EUT ON. Charging battery. Bluetooth ON without communication established. Power supply: 115Vac..

Images:

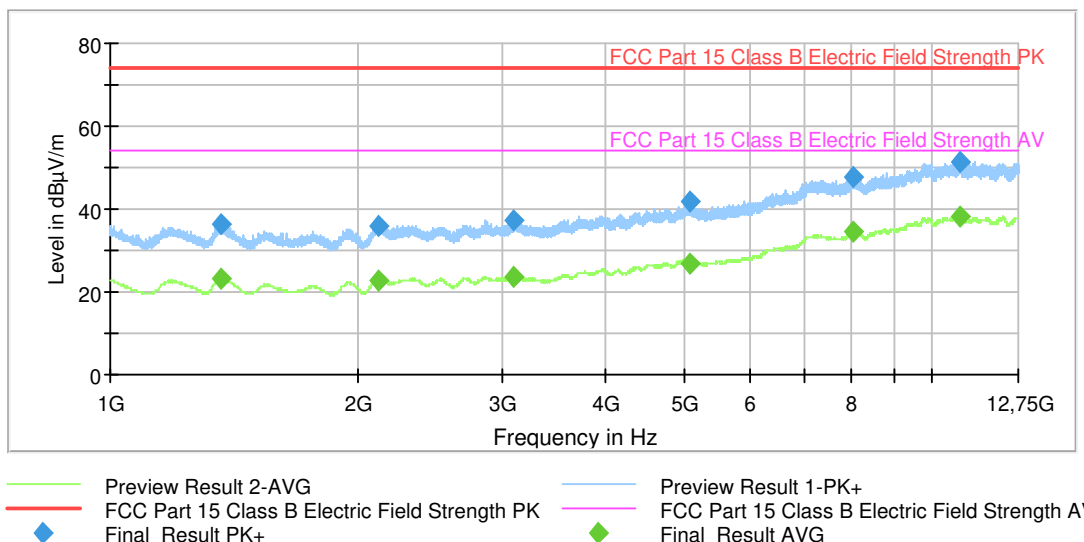


Documents:

Frequency(MHz)	QuasiPeak(dBµV/m)	MaxPeak(dBµV/m)	Limit(dBµV/m)	Margin(dB)	Height(cm)	Pol	Azimuth(deg)
33.637000	22.69	---	40.00	17.31	100.0	V	301.0
33.637000	---	29.30	---	---	100.0	V	301.0
72.610000	24.41	---	40.00	15.59	100.0	V	305.0
72.610000	---	29.96	---	---	100.0	V	305.0
86.815000	32.16	---	40.00	7.84	105.0	V	166.0
86.815000	---	36.03	---	---	105.0	V	166.0
89.495000	28.68	---	43.52	16.84	100.0	V	11.0
89.495000	---	33.28	---	---	100.0	V	11.0
171.010000	---	30.29	---	---	100.0	V	20.0
171.010000	24.91	---	43.52	18.61	100.0	V	20.0
419.119000	---	26.30	---	---	118.0	V	0.0
419.119000	21.40	---	46.00	24.60	118.0	V	0.0

Project: 71042REM.002
Company: PHILIPS CONSUMER LIFESTYLE B.V
Sample: S/01
Operation mode: 01
Graphical code: RE0101HR
Description: EUT ON. Charging battery. Bluetooth ON without communication established. Power supply: 115Vac.
Verdict: Passed

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1363.200000	---	23.36	53.97	30.61
1363.200000	36.17	---	73.97	37.80
2126.800000	---	22.85	53.97	31.12
2126.800000	36.13	---	73.97	37.84
3097.200000	---	23.44	53.97	30.53
3097.200000	37.44	---	73.97	36.53
5080.800000	41.61	---	73.97	32.36
5080.800000	---	26.82	53.97	27.15
8036.800000	47.79	---	73.97	26.18
8036.800000	---	34.67	53.97	19.30
10830.800000	---	38.32	53.97	15.65
10830.800000	51.31	---	73.97	22.66

CE Continuous conducted emission

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, Secs. 15.107, Subpart C, Secs. 15.207 & ICES-003 Issue 7, in the frequency range 0,15 to 30 MHz, for Class B equipment is:

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

Results

S/	OM	Code	Freq Rng (MHz)	Line	Comments	V
01	01	CE01010N	[0.15, 30]	N	Bluetooth signal ON.	P
01	01	CE0101L1	[0.15, 30]	L1	Bluetooth signal ON.	P

Note: It is was not possible to disable the Bluetooth signal during this test. In deed, it was checked that there was not significant differences in the conducted emissions between operation mode 01 and 03. So, the operation mode 01 is only reported as representative.

Verdict

Pass

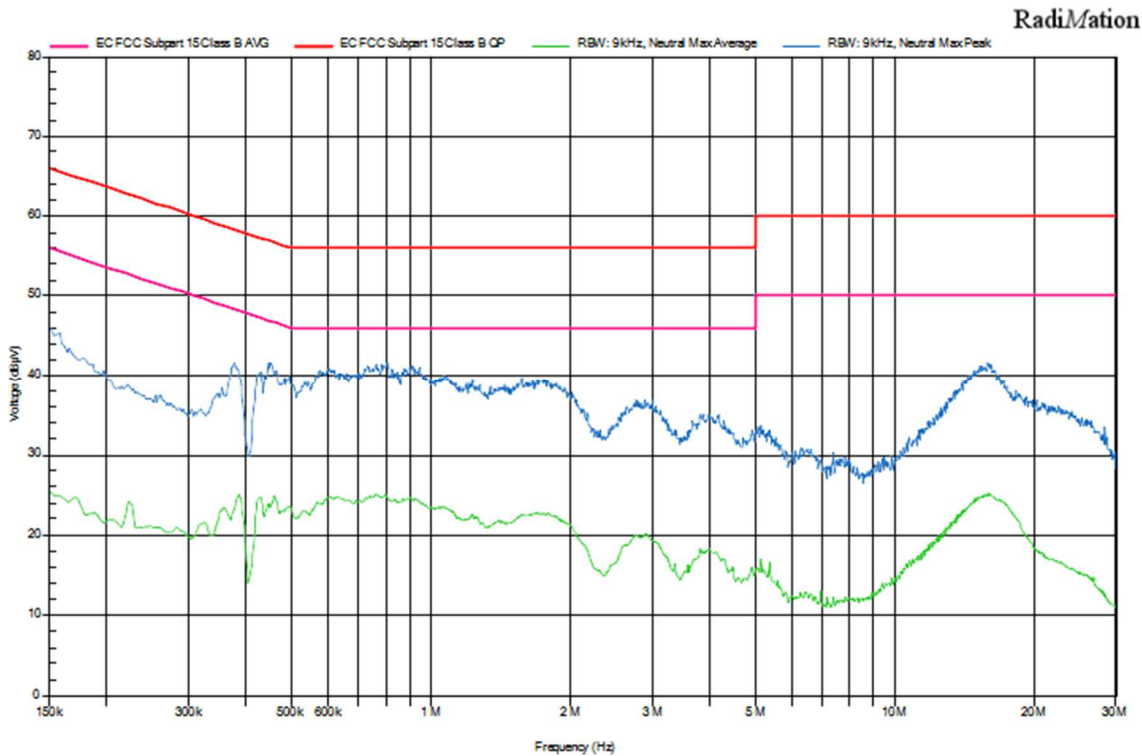
Attachments

EMC Test Code = CE01010N, Frequency Range MHz = [0.15, 30], Conducted Emissions - Tested Line = N

Sample ID: S/01

Operation Mode: 01. EUT ON. Charging battery. Bluetooth ON without communication established. Power supply: 115Vac..

Images:



Documents:

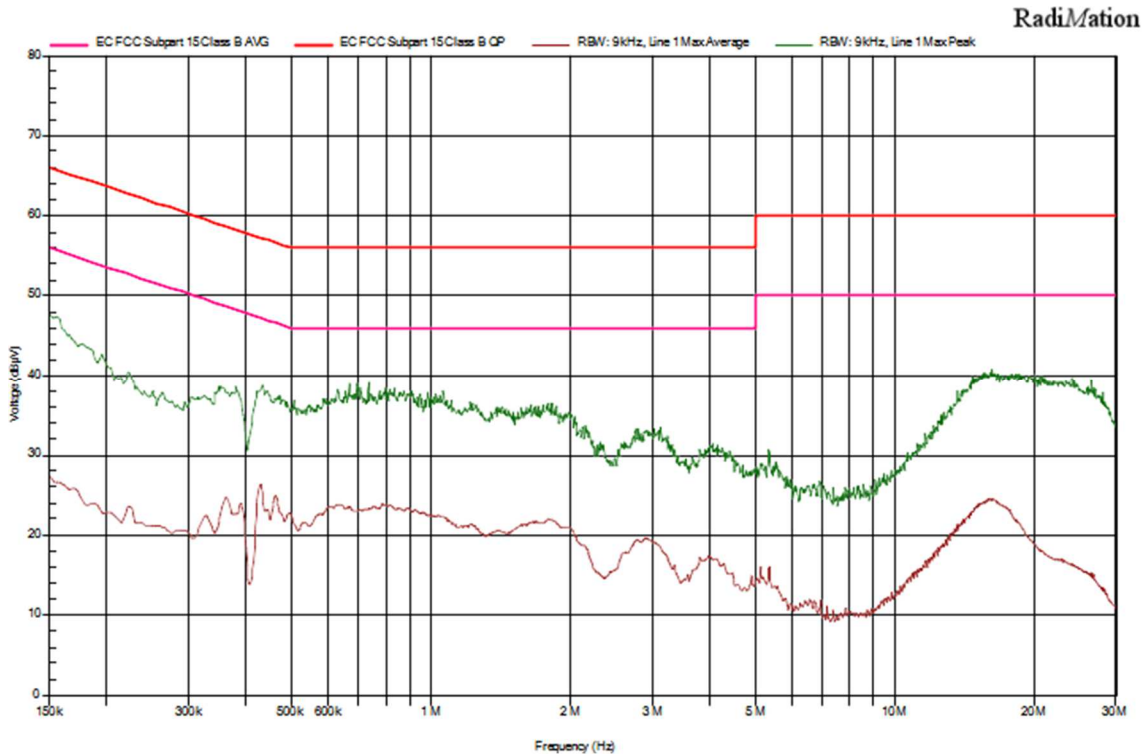
Frequency(MHz)	Average(dBµV)	Peak(dBµV)	Line
0,377 MHz	23,7 dBµV	41,2 dBµV	N
0,451 MHz	23,6 dBµV	41,6 dBµV	N
0,8 MHz	24,9 dBµV	41,2 dBµV	N
1,565 MHz	22,6 dBµV	39,7 dBµV	N
2,888 MHz	19,9 dBµV	36,3 dBµV	N
15,869 MHz	25 dBµV	41,6 dBµV	N

EMC Test Code = CE0101L1, Frequency Range MHz = [0.15, 30], Conducted Emissions - Tested Line = L1

Sample ID: S/01

Operation Mode: 01. EUT ON. Charging battery. Bluetooth ON without communication established. Power supply: 115Vac..

Images:



Documents:

Frequency(MHz)	Average(dBµV)	Peak(dBµV)	Line
0,15 MHz	27,3 dBµV	47,8 dBµV	L1
0,432 MHz	25,2 dBµV	38,8 dBµV	L1
0,694 MHz	23 dBµV	38,8 dBµV	L1
0,786 MHz	23,9 dBµV	37,3 dBµV	L1
1,788 MHz	22 dBµV	35,8 dBµV	L1
15,843 MHz	24,1 dBµV	40,1 dBµV	L1