



Test report No:
NIE: 56962REM.002

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B
(10-1-17 Edition) &
ICES-003 (January 2016, Updated April 2017)

Identification of item tested	GPS Sports watch with wrist based heartrate	
Trademark	Polar	
Model and /or type reference	3A	
Other identification of the product	S/N: F8203A1300582 Hw version: 00769657.00 Sw version: 0.23.0 FCC ID: INW3A IC: 6248A-3A	
Features	BLE, GPS, GLONASS	
Manufacturer	POLAR ELECTRO OY Professorintie 5 90440, Kempele, FINLAND	
Test method requested, standard	FCC CFR 47, Part 15, Subpart B (10-1-17 Edition) & ICES-003 (January 2016, updated April 2017)	
Summary	IN COMPLIANCE	
Approved by (name / position & signature)	Rafael López EMC LAB Manager	 RAFAEL LÓPEZ MARTÍN 2018.07.18 13:42:54 +02'00'
Date of issue	2018-06-26	
Report template No	FDT08_21	

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Competences and guarantees

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DEKRA Testing and Certification 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 at the time of performance of the test.

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

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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 and the Accreditation Bodies.

Uncertainty

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

The total uncertainty of the measurement system for the measured conducted disturbance characteristics of EUT from 150kHz to 30 MHz is $I = \pm 3,9$ dB for quasi-peak measurements, $I = \pm 3,2$ dB for average 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 26 GHz is $I = \pm 2,6$ dB for peaks and average measurements ($k = 2$)

Data provided by the client

The test sample consists of a GPS sports watch with Bluetooth low-energy connectivity and wrist-based heartrate.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: The client.

Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
56962B/010	USB adaptor	---	---	2018-05-21
56962B/030	Sport watch	3A	F8203A1300582	2018-05-21

Test sample description

Ports..... :	Port name and description	Cable					
		Specified length [m]	Attached during test	Shielded			
			☐	☐			
			☐	☐			
			☐	☐			
			☐	☐			
			☐	☐			
			☐	☐			
Supplementary information to the ports..... :							
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 5Vdc (From a USB port)					
☐	DC:						
Rated Power							
Clock frequencies							
Other parameters..... :							

Software version	0.23.0		
Hardware version	00769657.00		
Dimensions in cm (W x H x D)			
Mounting position	☐	Table top equipment	
	☐	Wall/Ceiling mounted equipment	
	☐	Floor standing equipment	
	☒	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

Identification of the client

POLAR ELECTRO OY
Professorintie 5
90440, Kempele, FINLAND

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2018-05-24
Date (finish)	2018-06-01

Document history

Report number	Date	Description
56962REM.002	2018-06-26	First release

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. = 860 mbar Max. = 1060 mbar

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. = 860 mbar Max. = 1060 mbar

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. = 860 mbar Max. = 1060 mbar

Remarks and comments

The test have been performed by the technical personnel: Ismael Gamarro, Antonio Ruiz, David Rubio & Miguel Quesada.

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

Emission Test		
Requirement – Test case	Verdict	Remark
Radiated emission. Electromagnetic field measure (30 KHz – 1000 MHz)	P	N/A
Radiated emission. Electromagnetic field measure (1 GHz – 18 GHz)	P	N/A
Radiated emission. Electromagnetic field measure (18 GHz – 26 GHz)	P	N/A
Continuous conducted emission (150 KHz – 30 MHz)	P	N/A
<u>Supplementary information and remarks:</u>		

Appendix A: Test results

Appendix A Content

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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:

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. Bluetooth OFF. GPS and GNSS in RX mode. Transferring data via USB. ANSI Setup. Charging batteries. Power supply: 5Vdc (by USB port).

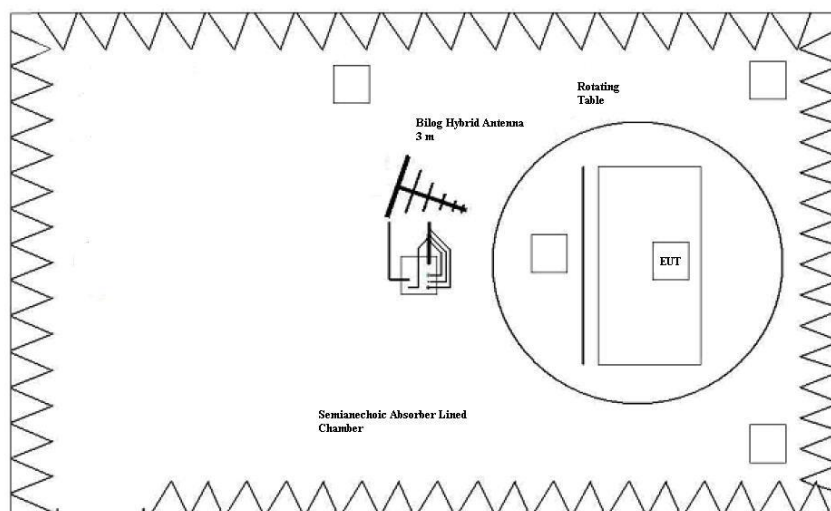
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-17 Edition), Secs. 15.109; ICES-003 (January 2016, updated April 2017) & ANSI C63.4 (2014)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-17 Edition), Secs. 15.109; ICES-003 (January 2016, updated April 2017) & ANSI C63.4 (2014)

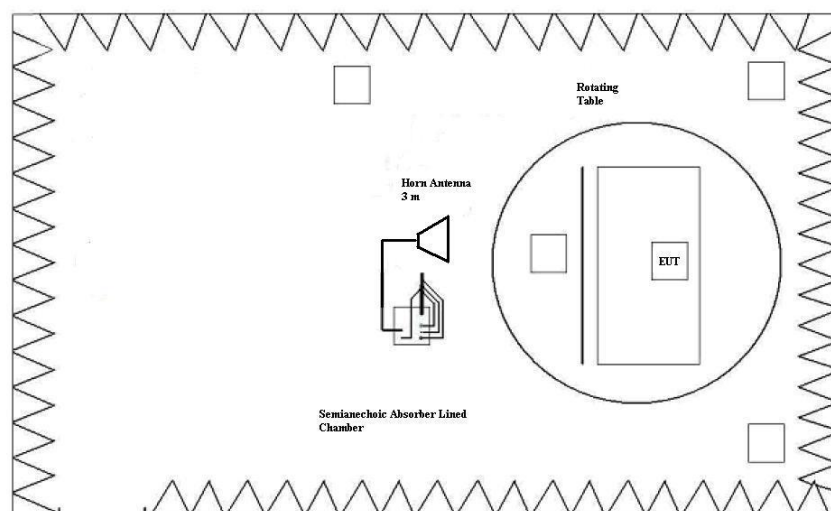
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-17 Edition), Secs. 15.109 & ICES-003 (January 2016, updated April 2017) in the frequency range 30 MHz to 18 GHz for class B equipments.

Frequency range (MHz)	QP Limit for 3 m		PK Limit for 3 m
	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)
30 to 88	100	40	---
88 to 216	150	43.5	---
216 to 960	200	46	---
Above 960	500	54	74



Setup for measurements < 1GHz.



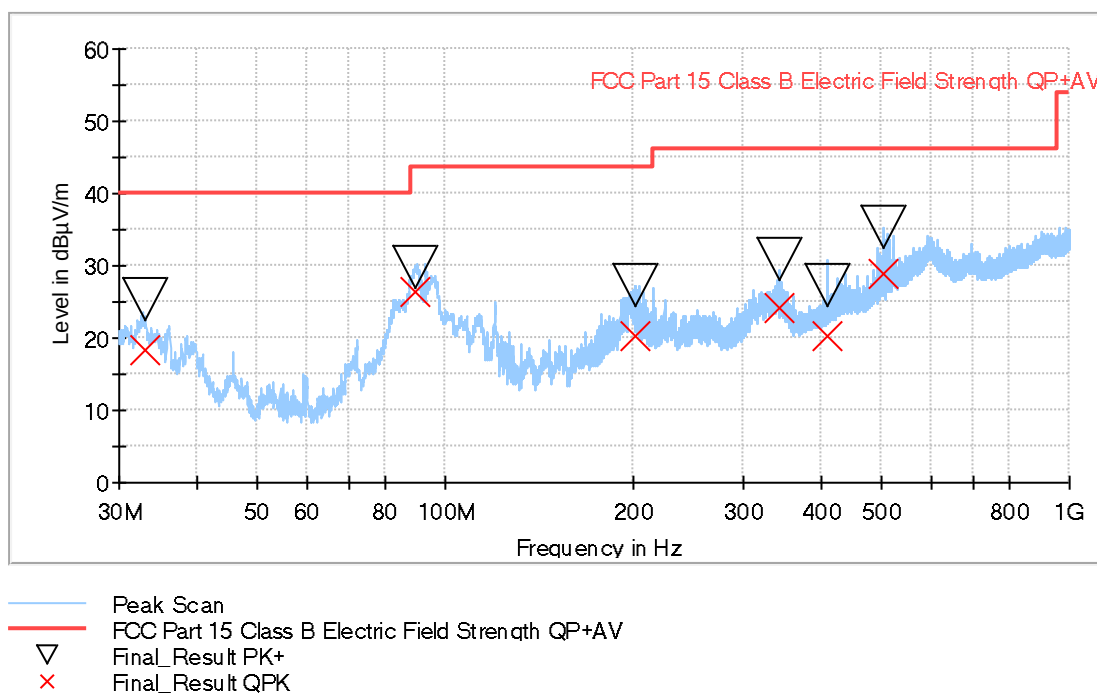
Setup for measurements > 1GHz.

TESTED SAMPLE:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CRmmnnRRPP: CR, Radiated Condition; mm: Sample number; nn: Operation mode; RR: Range; PP: Polarization.

CRmmnnRRPP	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz. (ANSI Setup)	P
CR0101HR1_PH	Range: 1 GHz - 18 GHz. Horizontal Polarization. (ANSI Setup)	P
CR0101HR1_PV	Range: 1 GHz - 18 GHz. Vertical Polarization. (ANSI Setup)	P
CR0101HR2_PH	Range: 18 GHz - 26 GHz. Horizontal Polarization. (ANSI Setup)	P
CR0101HR2_PV	Range: 18 GHz - 26 GHz. Vertical Polarization. (ANSI Setup)	P

Radiated Emission. CR0101LR ANSI SETUP

Project: 56962REM.002
Company: POLAR ELECTRO OY
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth OFF. GPS and GNSS in RX mode. Transferring data via USB. ANSI Setup. Charging batteries. Power supply: 5Vdc (by USB port).



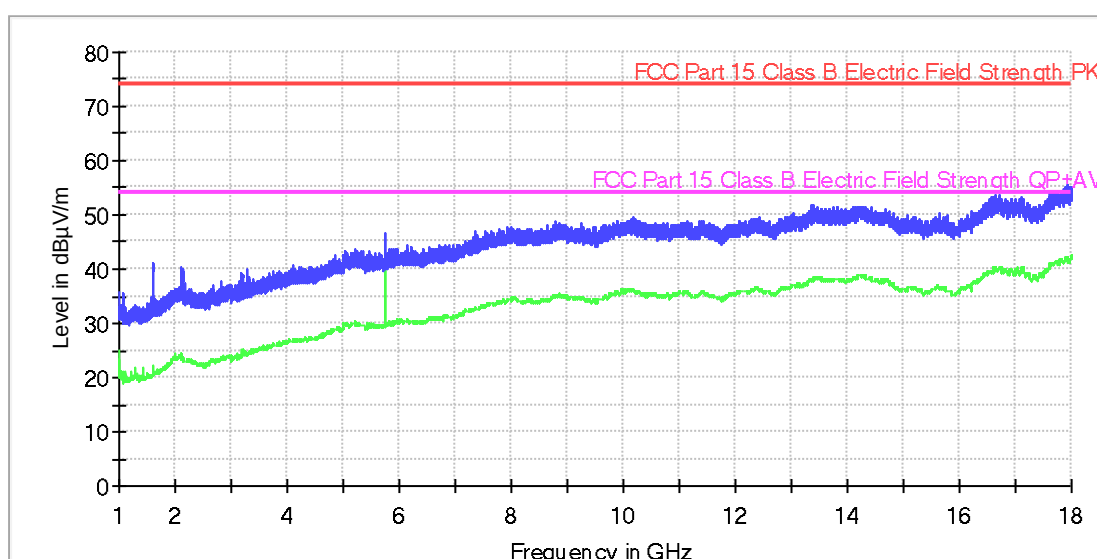
Maximizations

Frequency (MHz)	MaxPeak (dBμV/m)	QuasiPeak (dBμV/m)	Height (cm)	Pol
33.065000	25.38	18.45	151.0	V
89.585000	29.71	26.43	111.0	V
202.065000	27.18	20.24	137.0	H
342.230000	30.87	24.26	166.0	V
408.110000	27.30	20.27	106.0	V
504.150000	35.25	28.99	140.0	V

Radiated Emission. CR0101HR1_PH ANSI SETUP

Project: 56962REM.002
Company: POLAR ELECTRO OY
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth OFF. GPS and GNSS in RX mode. Transferring data via USB. ANSI Setup. Charging batteries. Power supply: 5Vdc (by USB port). Horizontal polarization.

ER EMI FCC 15 Class B (1-18GHz)



— Average Scan
— Peak Scan
— FCC Part 15 Class B Electric Field Strength PK
— FCC Part 15 Class B Electric Field Strength QP+AV

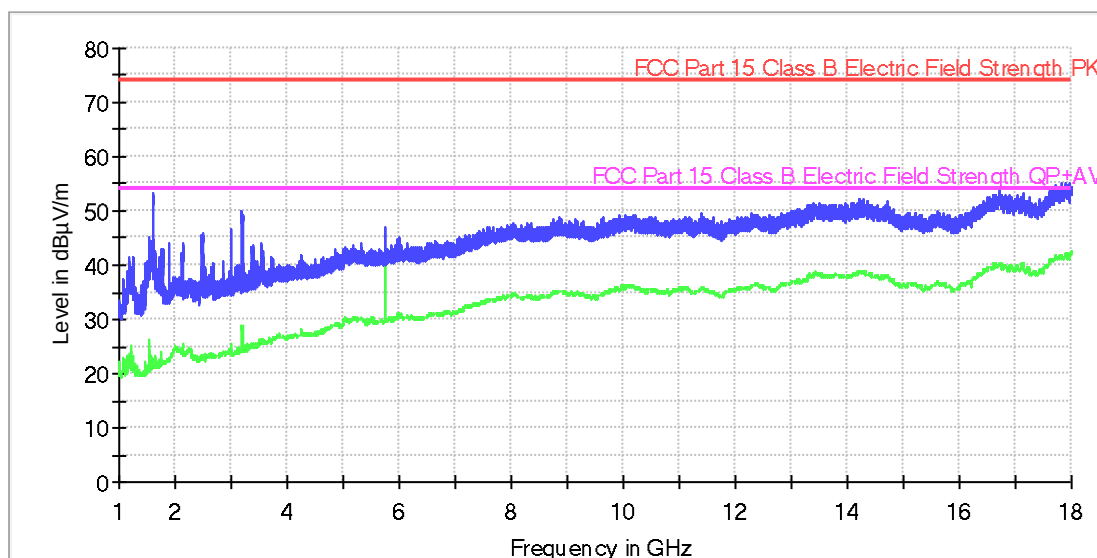
Subrange Maxima

Frequency (MHz)	Peak Scan (dBμV/m)	Average Scan (dBμV/m)
1000.000000	36.1	25.3
1599.200000	41.2	21.0
2123.600000	40.3	23.6
3157.200000	37.8	23.9
4095.200000	40.9	26.8
5203.600000	43.6	30.1
7523.200000	47.0	33.1
9890.000000	49.0	35.9
13395.200000	51.9	38.3
17912.400000	55.7	42.1

Radiated Emission. CR0101HR1_PV ANSI SETUP

Project: 56962REM.002
Company: POLAR ELECTRO OY
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth OFF. GPS and GNSS in RX mode. Transferring data via USB. ANSI Setup. Charging batteries. Power supply: 5Vdc (by USB port). Vertical polarization.

ER EMI FCC 15 Class B (1-18GHz)



— Average Scan
— Peak Scan
— FCC Part 15 Class B Electric Field Strength PK
— FCC Part 15 Class B Electric Field Strength QP+AV

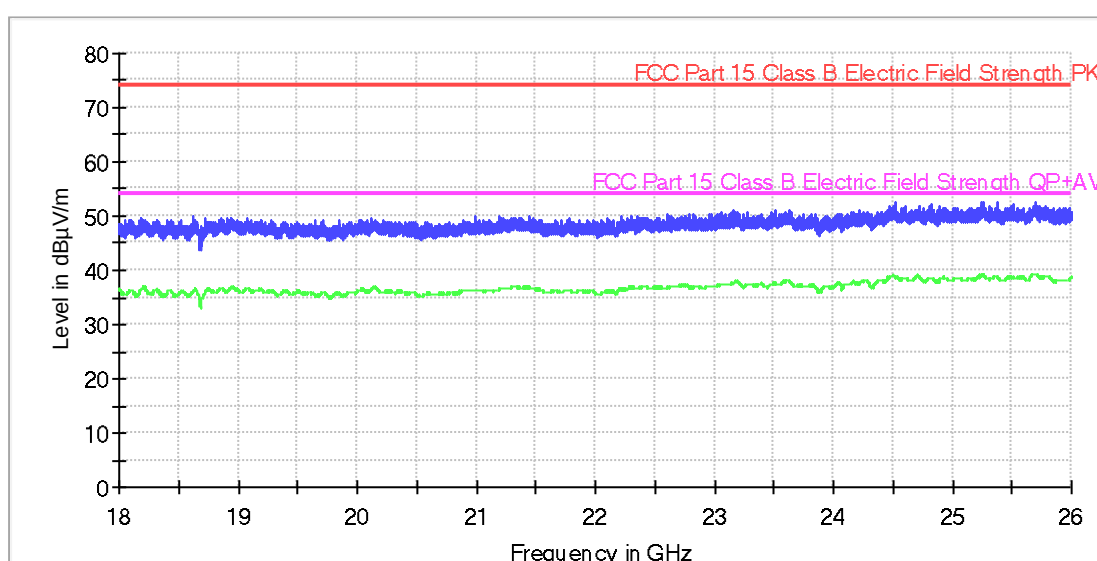
Subrange Maxima

Frequency (MHz)	PK+ CLRWR (dBμV/m)	AVG CLRWR (dBμV/m)
1238.800000	41.6	21.0
1596.800000	53.4	22.5
1893.600000	44.2	23.0
2988.000000	46.8	25.5
3191.600000	50.0	28.6
5326.000000	44.0	29.9
5760.000000	47.2	41.3
10037.200000	49.3	35.9
13392.800000	51.4	38.2
17980.400000	55.1	41.9

Radiated Emission. CR0101HR2_PH ANSI SETUP

Project: 56962REM.002
Company: POLAR ELECTRO OY
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Bluetooth OFF. GPS and GNSS in RX mode. Transferring data via USB. ANSI Setup. Charging batteries. Power supply: 5Vdc (by USB port). Horizontal polarization.

ER EMI FCC 15 Class B (18-26GHz)



— Average Scan
— Peak Scan
— FCC Part 15 Class B Electric Field Strength PK
— FCC Part 15 Class B Electric Field Strength QP+AV

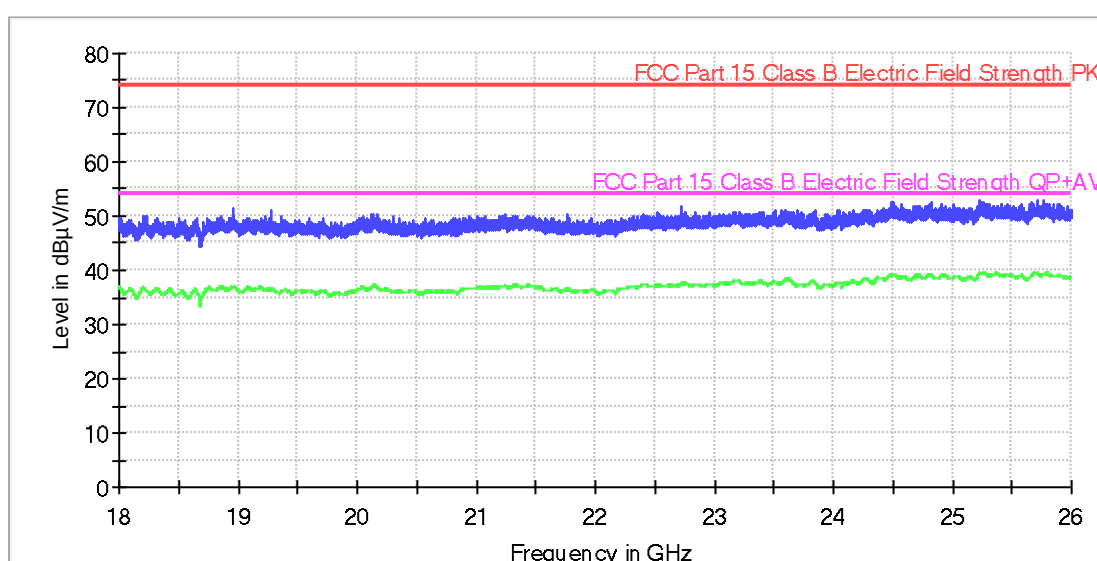
Subrange Maxima

Frequency (MHz)	Peak Scan (dBμV/m)	Average Scan (dBμV/m)
18624.000000	49.9	36.3
18948.400000	49.7	36.7
19712.800000	49.4	35.9
20118.000000	49.5	36.4
20995.600000	50.1	36.3
22223.200000	50.1	36.5
23166.400000	51.0	37.8
23506.800000	51.0	37.6
24517.600000	52.4	38.8
25258.400000	52.6	39.1

Radiated Emission. CR0101HR2_PV ANSI SETUP

Project: 56962REM.002
Company: POLAR ELECTRO OY
Sample: S/01
Operation mode: OM#01
Description: EUT ON. BLE OFF. GPS and GNSS in RX mode. Transferring data via USB. ANSI Setup. Equipment charging batteries. Power supply: 5Vdc (by USB port). Auxiliary PC for ANSI Setup powered 115Vac. Vertical polarization.

ER EMI FCC 15 Class B (18-26GHz)



— Average Scan
— Peak Scan
— FCC Part 15 Class B Electric Field Strength PK
— FCC Part 15 Class B Electric Field Strength QP+AV

Subrange Maxima

Frequency (MHz)	Peak Scan (dBμV/m)	Average Scan (dBμV/m)
18229.200000	50.0	36.4
18956.800000	51.6	37.1
20058.000000	49.9	36.8
20164.400000	50.3	37.1
21248.000000	50.4	37.1
22408.800000	50.4	37.4
22724.000000	51.7	37.5
23570.800000	51.2	37.8
24817.600000	52.6	39.2
25708.000000	52.9	39.5

CONTINUOUS CONDUCTED EMISSION

LIMITS:	Product standard :	FCC CFR 47, Part 15, Subpart B (10-1-17 Edition), Secs. 15.107; ICES-003 Issue 6 (January 2016, updated April 2017) & ANSI C63.4 (2014)
	Test standard :	FCC CFR 47, Part 15, Subpart B (10-1-17 Edition), Secs. 15.107; ICES-003 Issue 6 (January 2016, updated April 2017) & ANSI C63.4 (2014)

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 (10-1-17 Edition), Secs. 15.107 & ICES-003 (January 2016, updated April 2017), in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range (MHz)	Limit (dB μ V)	
	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.

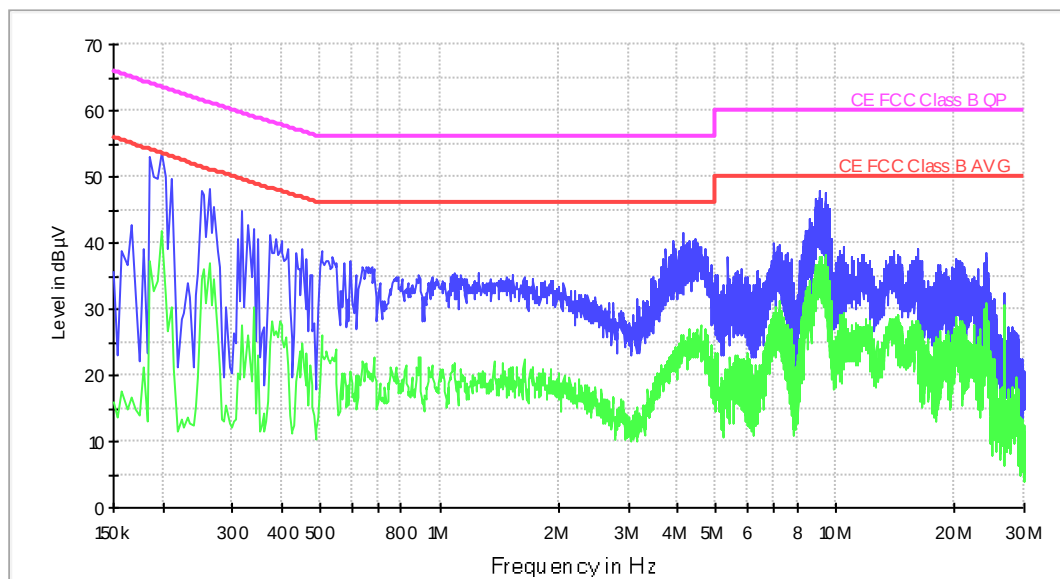
TESTED SAMPLES:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CCmmnnhh: CC, Conducted Condition; mm: Sample number; nn: Operation mode; hh: wire

CCmmnnhh	DESCRIPTION	RESULT
CC01010N	Range: 150kHz – 30MHz. Neutral wire noise.	P
CC0101L1	Range: 150kHz – 30MHz. Phase wire noise.	P

Conducted Emission. CC01010N

Project: 56962REM.002
Company: POLAR ELECTRO OY
Sample: S/01
Operation mode: OM#01
Description: EUT ON. BLE OFF. GPS and GNSS in RX mode. Transferring data via USB. ANSI Setup. Equipment charging batteries. Power supply: 5Vdc (by USB port). Auxiliary PC for ANSI Setup powered 115Vac. Neutral wire noise.

EC FCC Class B ESPI CC



— Peak Scan — Average Scan — CE FCC Class B AVG — CE FCC Class B QP

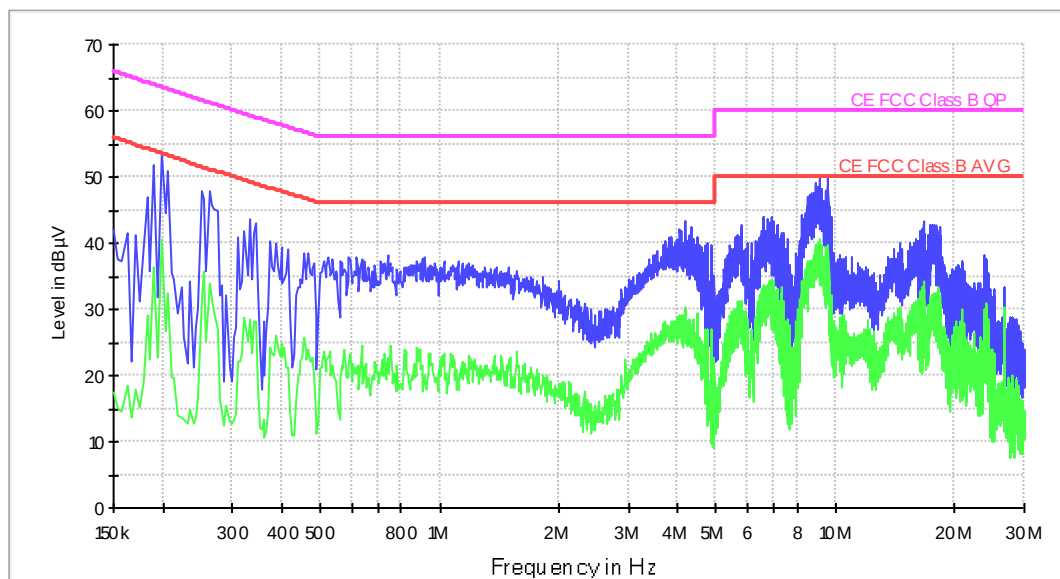
Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.198000	53.5	41.8
0.262000	48.2	37.0
0.450000	39.2	24.9
1.086000	35.5	20.9
1.254000	35.3	20.4
3.478000	34.7	18.7
4.114000	41.6	25.9
9.154000	47.9	37.4
10.450000	39.3	28.9
23.962000	38.5	29.7

Conducted Emission. CC0101L1

Project: 56962REM.002
Company: POLAR ELECTRO OY
Sample: S/01
Operation mode: OM#01
Description: EUT ON. BLE OFF. GPS and GNSS in RX mode. Transferring data via USB. ANSI Setup. Equipment charging batteries. Power supply: 5Vdc (by USB port). Auxiliary PC for ANSI Setup powered 115Vac. Phase wire noise.

EC FCC Class B ESPI CC



— Peak Scan — Average Scan — CE FCC Class B AVG — CE FCC Class B QP

Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.198000	53.6	40.6
0.262000	47.9	33.9
0.454000	38.6	25.8
0.738000	38.1	22.8
1.306000	36.5	21.5
3.550000	38.9	25.6
4.174000	43.3	30.3
9.562000	50.1	39.7
16.642000	43.3	34.1
18.054000	42.8	31.4