



Test report No:
NIE: 64326REM.002

Test report

FCC Rules and Regulations CFR 47, Part 15,
Subpart B (10-1-19 Edition) & ICES-003 Issue 6
(January 2016, Updated April 2019)

(*) Identification of item tested	GPS multisports watch
(*) Trademark	Polar
(*) Model and /or type reference	Vantage V2
Other identification of the product	HW version: 00782155 SW version: 0.2.4 FCC ID: INW4A IC: 6248A-4A
(*) Features	Bluetooth LE, GNSS
Manufacturer	POLAR ELECTRO OY Professorintie 5, 90440 Kempele, Finland
Test method requested, standard	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 (Updated 04-2019)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López Martín EMC Consumer & RF Lab. Manager
Date of issue	2020-06-29
Report template No	FDT08_22 (*) "Data provided by the client"

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2020.06.29
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Competences and guarantees

DEKRA Testing and Certification 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 is a FCC recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report, FCC designation number ES0004.

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

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.

DEKRA Testing and Certification 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.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification.
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.

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 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 under 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
64326E/001	GPS multisports watch	Vantage V2	---	2020-05-22
64326E/004	USB carding cable	---	---	2020-05-22

Test sample description

Ports..... :	Port name and description		Cable				
			Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾	
	USB port		0.8	☒	☐	☐	
N/A			☐	☐	☐		
Supplementary information to the ports..... :	N/A						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
☒ DC: 3.85Vdc.							
Rated Power	1.33W						
Clock frequencies..... :	32MHz, 26MHz, 32.768kHz.						
Other parameters	N/A						
Software version	0.2.4						
Hardware version	00782155						
Dimensions in cm (W x H x D) :	Ø 47mm, tickness 15mm, weight 34g.						
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	
	N/A						
Accessories (not part of the test item)..... :	Description				Type	Code	
	N/A						
Documents as provided by the applicant..... :	Description				File version	Issue date	
	N/A						

⁽³⁾ Only for Medical Equipment

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)	2020-06-01
Date (finish)	2020-06-11

Document history

Report number	Date	Description
64326REM.002	2020-06-29	First release

List of

List of equipment used during the test

Control Number	Description	Model	Manufacturer	Next Calibration
1650	THREE-PHASE ARTIFICIAL V-NETWORK 100A	NNLK8121	SCHWARZBECK	2021-09-24
1999	EMI TEST RECEIVER 20Hz-26.5GHz	ESIB 26	ROHDE AND SCHWARZ	2021-08-13
3548	USB TEMPERATURE AND HUMIDITY SENSOR	HUMIDIPROBE	PICO TECHNOLOGY	2021-04-29
7746	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2022-07-11
7816	EMI TEST RECEIVER 1Hz-26.5GHz	ESW26	ROHDE AND SCHWARZ	2021-09-05

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: Miguel Quesada & Juan Manuel Pino.

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 MHz – 1000 MHz)	P	---
Radiated emission. Electromagnetic field measure (1 GHz – 12.75 GHz)	P	---
Radiated emission. Electromagnetic field measure (12.75 GHz – 26 GHz)	N/A	(1)
Continuous conducted emission (150 KHz – 30 MHz)	P	---
<u>Supplymentary information and remarks:</u> (1) Range: $f > 12.75$ GHz. Test required only if the 5th harmonics of the maximum internal work frequency EUT is higher than 12.75GHz.		

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. Airplane mode. Charging battery. Transferring data to the PC. Power supply: 5Vdc by USB (through a laptop powered by 115Vac.). Worst case

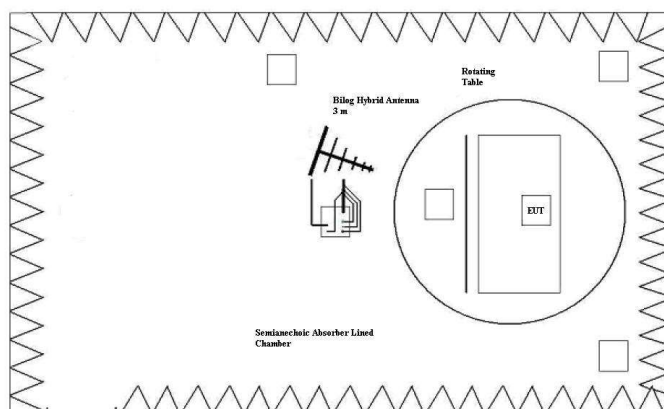
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition), Secs. 15.109; ICES-003 (January 2016, updated April 2019)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition), Secs. 15.109; ICES-003 (January 2016, updated April 2019)

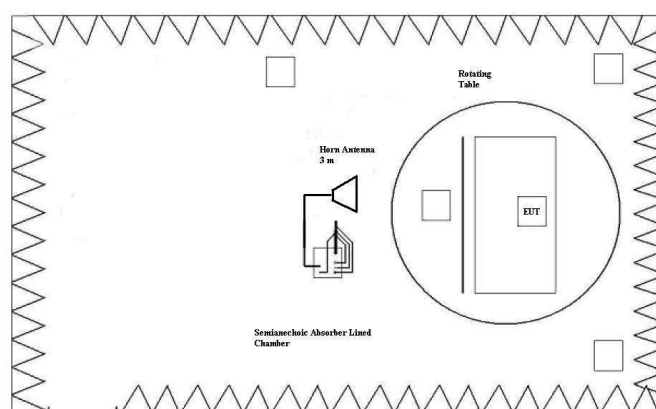
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-19 Edition), Secs. 15.109 & ICES-003 Issue 6 (Updated 04-2019)

Frequency of emission (MHz)	Field strength (microvolt/meter)
30-88	100
88-216	150
21-960	200
Above 960	500



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

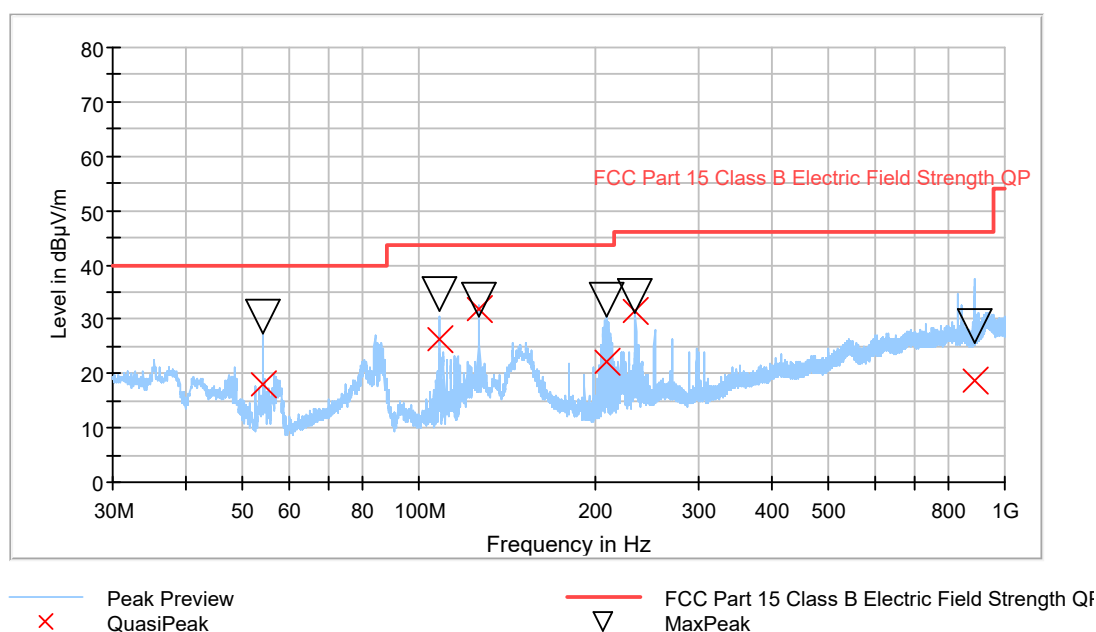
TESTED SAMPLE:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CRmmnnRRPP: CR, Radiated Condition; mm: Sample number; nn: Operation mode; RR: Range; PP: Polarization.

CRmmnnRRPP	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz.	P
CR0101HR_PH	Range: 1 GHz – 12.75 GHz. Horizontal polarization.	P
CR0101HR_PV	Range: 1 GHz – 12.75 GHz. Vertical polarization.	P

Radiated Emission. CR0101LR

Project: 64326REM.002
Company: POLAR OY
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Airplane mode. Charging battery. Transferring data to the PC.
Power supply: 5Vdc by USB (through a laptop powered by 115Vac.). Worst case

Full Spectrum



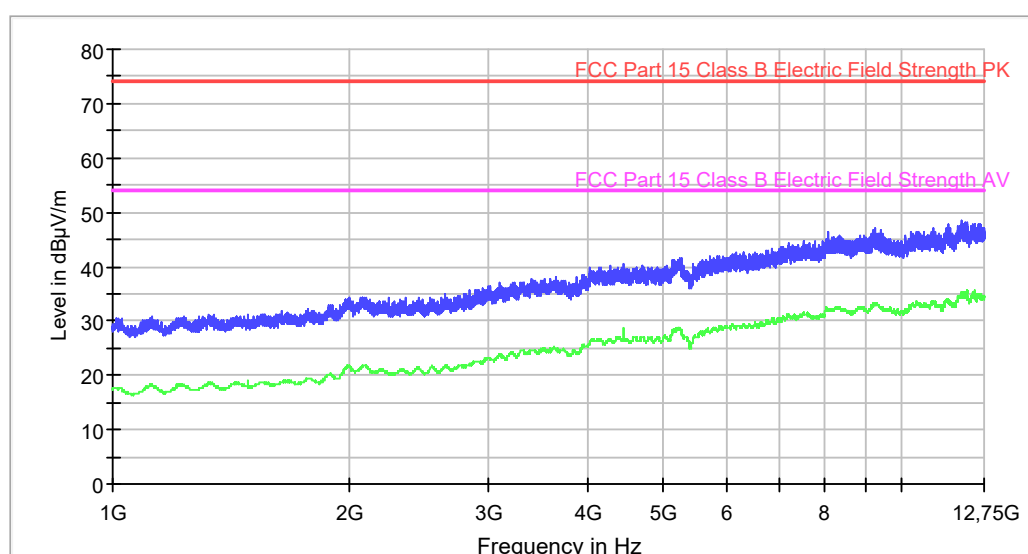
Maximizations

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Azimuth (deg)
54.076000	18.00	30.45	40.00	22.00	V	79.0
108.180000	26.21	34.70	43.52	17.31	H	-180.0
126.199000	31.71	33.71	43.52	11.81	H	4.0
209.245000	22.23	33.59	43.52	21.29	H	221.0
234.389000	31.47	34.17	46.00	14.53	H	90.0
888.249000	18.60	28.73	46.00	27.40	V	235.0

Radiated Emission. CR0101HR_PH

Project: 64326REM.002
 Company: POLAR OY
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. Airplane mode. Charging battery. Transferring data to the PC.
 Power supply: 5Vdc by USB (through a laptop powered by 115Vac.). Worst case.
 Horizontal Polarization

RE FCC Part 15 ClassB 1-12,75 GHz

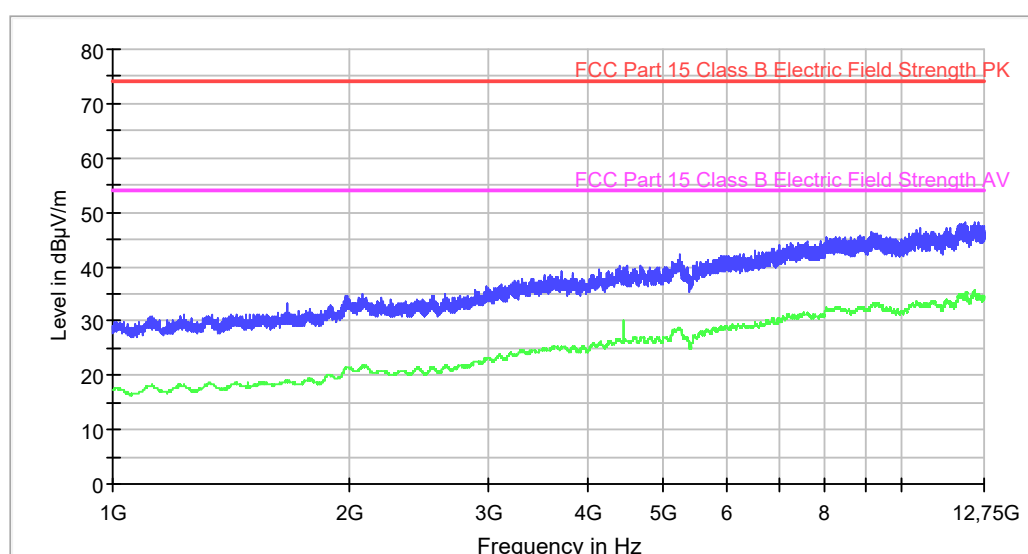


— Average Scan — Peak Scan
 — FCC Part 15 Class B Electric Field Strength PK — FCC Part 15 Class B Electric Field Strength AV

Radiated Emission. CR0101HR_PV

Project: 64326REM.002
 Company: POLAR OY
 Sample: S/01
 Operation mode: OM#01
 Description: EUT ON. Airplane mode. Charging battery. Transferring data to the PC.
 Power supply: 5Vdc by USB (through a laptop powered by 115Vac.). Worst case.
 Vertical Polarization

RE FCC Part 15 ClassB 1-12,75 GHz



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

CONTINUOUS CONDUCTED EMISSION

LIMITS:	Product standard :	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition), Secs. 15.107; ICES-003 Issue 6 (January 2016, updated April 2019)
	Test standard :	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition), Secs. 15.107; ICES-003 Issue 6 (January 2016, updated April 2019)

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 (10-1-19 Edition), Secs. 15.107 & ICES-003 Issue 6 (January 2019), in the frequency range 0,15 to 30 MHz, for Class A 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

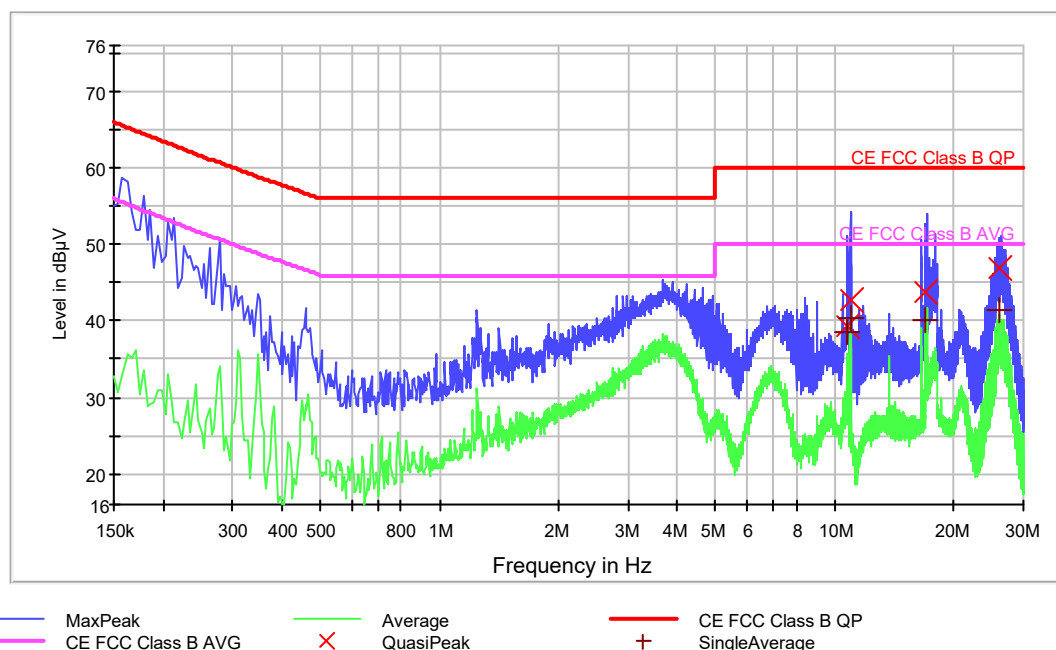
TESTED SAMPLES:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CCmmnnhh: CC, Conducted Condition; mm: Sample number; nn: Operation mode; hh: wire

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

Conducted Emission. CC01010N

Project: 64326REM.002
Company: POLAR
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Airplane mode. Charging battery. Transferring data to the PC.
Power supply: 5Vdc by USB (through a laptop powered by 115Vac.). Worst case.
Neutral wire noise

EC FCC Class B ESPI CC



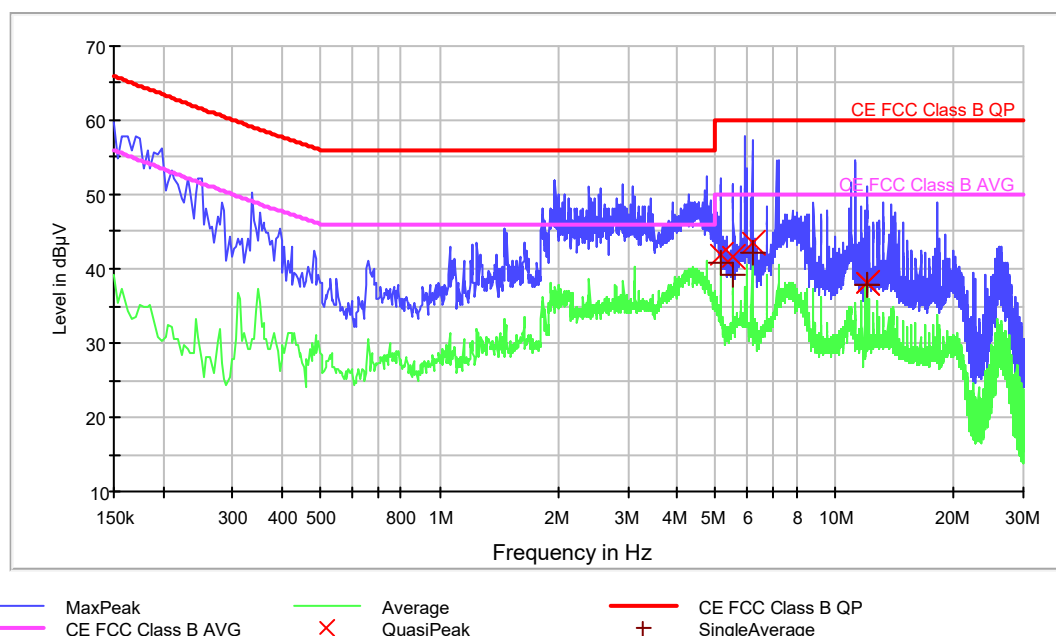
Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBμV)	Average-ClearWrite (dBμV)	Line
0.158000	58.6	32.7	N
0.278000	51.0	34.2	N
0.458000	41.7	29.0	N
1.246000	41.3	31.2	N
1.890000	39.6	27.5	N
3.566000	43.8	36.8	N
3.658000	45.2	37.2	N
8.450000	43.1	24.9	N
10.974000	54.3	36.4	N
17.978000	51.5	35.5	N

Conducted Emission. CC0101L1

Project: 64326REM.002
Company: POLAR
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Airplane mode. Charging battery. Transferring data to the PC.
Power supply: 5Vdc by USB (through a laptop powered by 115Vac.). Worst case.
Phase wire noise

EC FCC Class B ESPI CC



Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBμV)	Average-ClearWrite (dBμV)	Line
0.158000	58.6	32.7	L1
0.278000	51.0	34.2	L1
0.458000	41.7	29.0	L1
1.246000	41.3	31.2	L1
1.890000	39.6	27.5	L1
3.566000	43.8	36.8	L1
3.658000	45.2	37.2	L1
8.450000	43.1	24.9	L1
10.974000	54.3	36.4	L1
17.978000	51.5	35.5	L1