



AT4 wireless S.A.
 Parque Tecnológico de Andalucía,
 c/ Severo Ochoa nº 2
 29590 Campanillas/ Málaga/ España
 Tel. 952 61 91 00 - Fax 952 61 91 13
 MÁLAGA, C.I.F. A29 507 456
 Registro Mercantil Tomo 3693 Libro 2604
 Folio 174 Hoja MA3729

TEST REPORT

REFERENCE STANDARD:

FCC Rules and Regulations 47 CFR Part 15, Subpart B

FCC Rules and Regulations 47 CFR Part 15, Subpart B: Limits and methods of measurements for radio frequency devices. Unintentional radiators

NIE :	34828REM.002
Approved by (name / position & signature)	Rafael López EMC Manager
Elaboration date	2011-12-20
Identification of item tested	Polar H7 Heart Rate Sensor
Trademark	Polar
Model and/or type reference	H7
Other identification of the product	S/N : F147X00000002 HW Version: 1.0 SW Version: RC-7
Features	Bluetooth Low Energy V. 4.0.
Description	Heart Rate Sensor, HRP, HRS and Battery profile supported.
Applicant	POLAR ELECTRO OY.
Address..... :	Professorintie 5, 90440 Kempele, FINLAND
CIF/NIF/Passport..... :	VAT FI02099112
Contact person..... :	Pertti Harmaala
Telephone / Fax..... :	+358 8 5202100 / +358 8 5202220
e-mail..... :	pertti.harmaala@polar.fi

Test samples supplier	POLAR ELECTRO OY.
Address	Professorintie 5, 90440 Kempele, FINLAND
CIF/NIF/Passport.....	VAT FI02099112
Contact person.....	Perti Harmaala
Telephone / Fax	+358 8 5202100 / +358 8 5202220
e-mail.....	perti.harmaala@polar.fi
Manufacturer	POLAR ELECTRO OY.
Address	Professorintie 5, 90440 Kempele, FINLAND
CIF/NIF/Passport.....	VAT FI02099112
Contact person.....	Perti Harmaala
Telephone / Fax	+358 8 5202100 / +358 8 5202220
e-mail.....	perti.harmaala@polar.fi
Test method requested	
Standard.....	FCC Rules and Regulations 47 CFR Part 15
Test procedure.....	PEEM103
Report template No.....	FDT08_12
IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of AT4 wireless S.A.	

INDEX

Competences and guarantees	4
General conditions	4
Usage of samples	5
Testing period.....	5
Environmental conditions	6
Summary.....	7
Remarks and comments	7
Testing verdicts.....	7
APPENDIX A.....	8 Pages

Competences and guarantees

This certificate of conformity was issued in accordance with the decision N° 3/2000 of the Joint Committee established under the Agreement on Mutual Recognition between the European Community and the United States of America. By this decision, AT4 wireless can act as Conformity Assessment Body (CAB) on Electromagnetic Compatibility. This Certificate applies to the samples listed at technical reports.

This laboratory is designed by the Federal Communications Commission (ES0004)

AT4 wireless is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, AT4 wireless has a calibration and maintenance programme for its measurement equipment.

AT4 wireless 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 AT4 wireless at the time of performance of the test.

AT4 wireless 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.

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 AT4 wireless.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the following AT4 wireless's internal documents:

1. PODT000: Procedure for the measure uncertainty calculation.

Usage of samples

Samples undergoing test have been selected by: The Client.

Sample S/01 is composed of the following elements:

<u>Control N°</u>	<u>Description</u>	<u>Model</u>	<u>Serial N°</u>	<u>Date of reception</u>
33716/03	Polar H7 Heart Rate Sensor	H7	F147X00000002	2011-12-02

Samples S/01 has undergone the next test(s):

1. Radiated emission, electromagnetic field:
Standard: FCC Rules and Regulations 47 CFR Part 15
Method: FCC Rules and Regulations 47 CFR Part 15, Subpart B (Class B)

Testing period

The performed test started on 2011-12-07 and finished on the same day.

The tests have been performed at AT4 wireless.

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. = 20 % Max. = 80 %
Shielding effectiveness	> 100 dB
Electric insulation	> 10 k Ω
Reference resistance to earth	< 0,5 Ω

In the semianechoic chamber (21 meters x 11 meters x 8 meters), the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 30 °C
Relative humidity	Min. = 45 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 k Ω
Reference resistance to earth	< 0,5 Ω
Normal site attenuation (NSA)	< ± 4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Field homogeneity	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 1000 MHz).

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

Temperature	Min. = 15 °C Max. = 30 °C
Relative humidity	Min. = 45 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 k Ω
Reference resistance to earth	< 0,5 Ω

Summary

Considering the results of the performed test according to standard **FCC Rules and Regulations 47 CFR Part 15, Subpart B**, the items under test are **IN COMPLIANCE** with the requested specifications specified in the standard.

NOTE: The results presented in this Test Report apply only to the particular item under test established in page 1 of this document, as presented for test on the date(s) shown in section, "USAGE OF SAMPLES, TESTING PERIOD AND ENVIRONMENTAL CONDITIONS".

Remarks and comments

The tests have been realized by the technical personnel: Margarita Haro.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1 GHz is $I = \pm 4,57$ dB for quasi-peak measurements, $I = \pm 4,48$ dB for peak measurements ($k = 2$) and from 1 to 12,75 GHz is $I = \pm 3,43$ dB for average and peak measurements.

Testing verdicts

Not applicable: NA

Pass.....: P

Fail: F

Not measured.....: NM

APPENDIX A

Test Result

APPENDIX A CONTENT:

DESCRIPTION OF THE OPERATION MODES.....	9
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE.	10

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.

In the following table appears the operation modes used by the samples tested to that it refers the present test report.

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. Equipment in normal operation mode. Power supply: Internal battery.

RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE.

LIMITS:	Product standard:	FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B
	Test standard:	FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B

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 in the frequency range 30 MHz to 26 GHz, for Class B equipment, which is a transmitter in a band over 500 MHz, was:

Frequency range (MHz)	Limit for 3 m ($\mu\text{V/m}$)	Limit for 3 m (dB $\mu\text{V/m}$)
30 to 88	100	40
88 to 216	150	43,52
216 to 960	200	46,02
Above 960	500	53,98

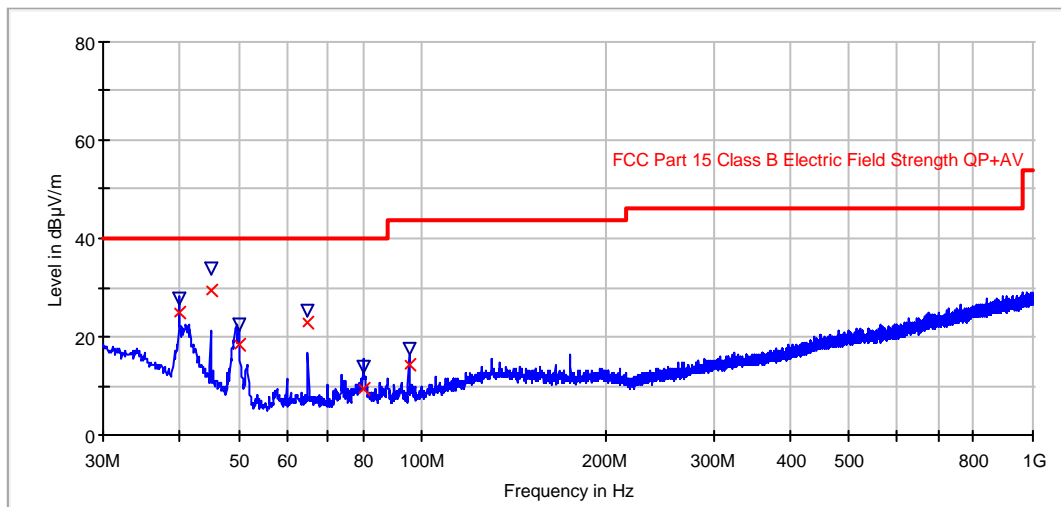
TESTED SAMPLES:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS :	CRmmnn: CR, Radiation Condition; mm: Sample number; nn: Operation mode, xx: Polarisation, zz : Range

CRmmnn	Description	Result
CR0101	EUT ON. Equipment in normal operation mode. Range 30 - 1000 MHz.	P
CR0101_PH_RB	EUT ON. Equipment in normal operation mode. Range 1 – 18 GHz. Horizontal polarization.	P
CR0101_PV_RB	EUT ON. Equipment in normal operation mode. Range 1 – 18 GHz. Vertical polarization.	P
CR0101_PH_RA	EUT ON. Equipment in normal operation mode. Range 18 – 26 GHz. Horizontal polarization.	P
CR0101_PV_RA	EUT ON. Equipment in normal operation mode. Range 18 – 26 GHz. Vertical polarization.	P

Radiated Emission: CR0101 (30MHz to 1GHz)

Project: 34828REM.002
 Company: POLAR ELECTRO OY
 Sample: S/01
 Operation mode: OM#01
 Setup: EMI radiated
 Mode: EUT ON. Equipment in normal operation mode.

FCC class B Bilog Hybrid



— Limit QP + AVG — Measurement PK × QuasiPeak ▽ MaxPeak

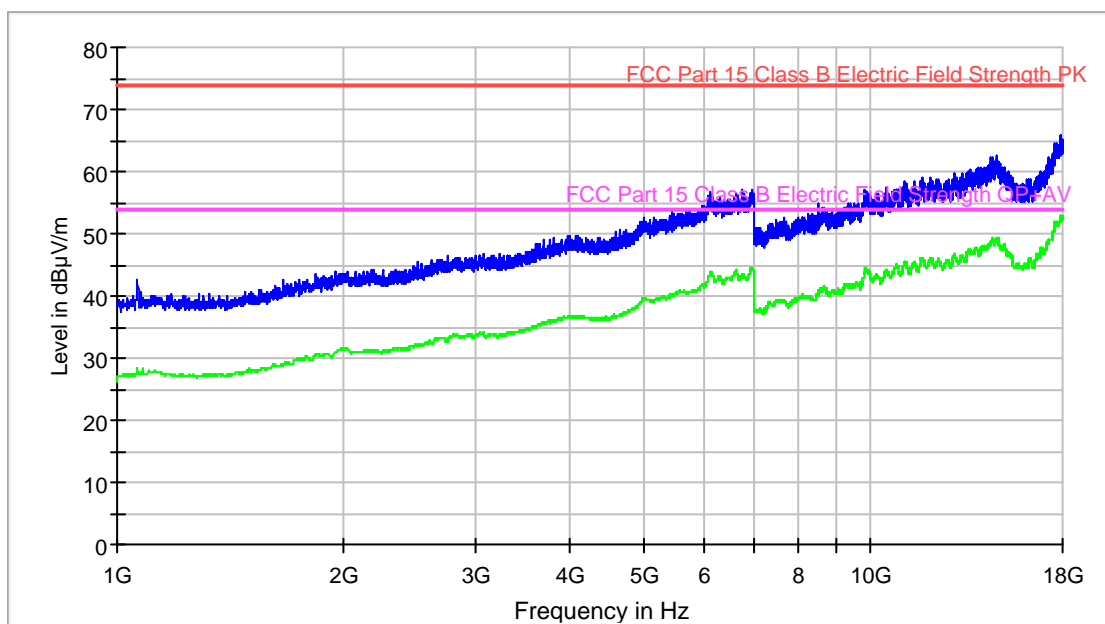
Maximized

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)
40.003006	24.9	27.7	106.00	V	78.0
44.984970	29.6	33.9	98.00	V	83.0
49.999800	18.2	22.5	107.00	V	43.0
64.992986	23.0	25.5	98.00	V	237.0
79.984970	9.2	13.9	113.00	V	74.0
94.990982	14.2	17.7	112.00	V	288.0

Radiated Emission: CR0101_PH_RB (1GHz to 12,5GHz)

Project: 34828REM.002
 Company: POLAR ELECTRO OY
 Sample: S/01
 Operation mode: OM#01
 Setup: EMI radiated
 Mode: EUT ON. Equipment in normal operation mode. Horizontal polarization.

FCC 1-18GHz class B

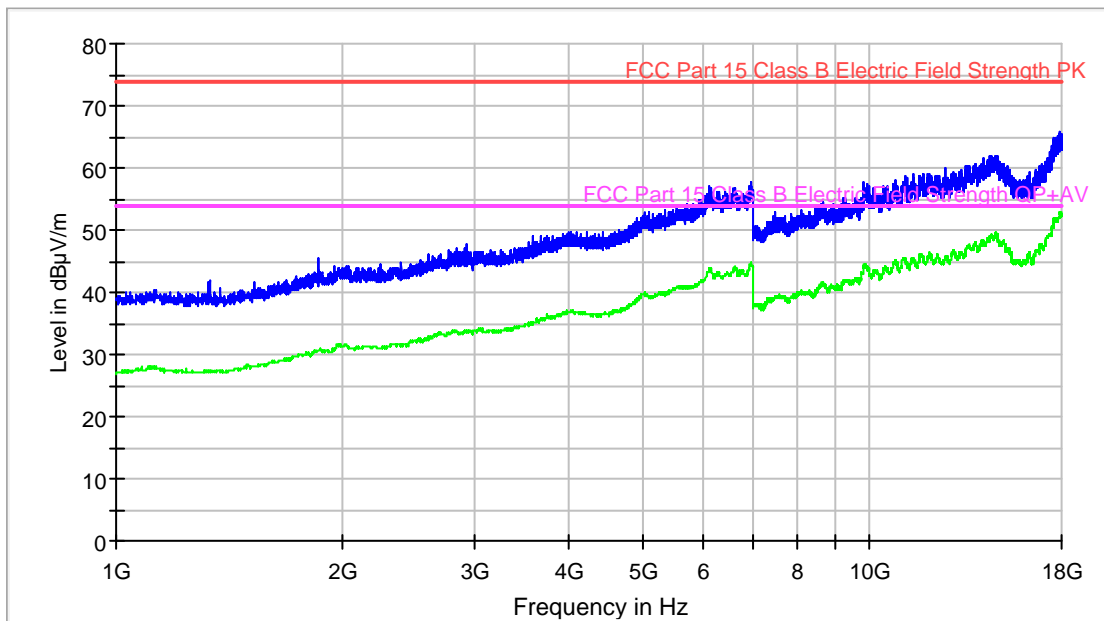


— Measurement PK
 — Measurement AVG
 — Limit PK
 — Limit QP+AV

Radiated Emission: CR0101_PV_RB (1GHz to 12,5GHz)

Project: 34828REM.002
 Company: POLAR ELECTRO OY
 Sample: S/01
 Operation mode: OM#01
 Setup: EMI radiated
 Mode: EUT ON. Equipment in normal operation mode. Vertical polarization.

FCC 1-18GHz class B

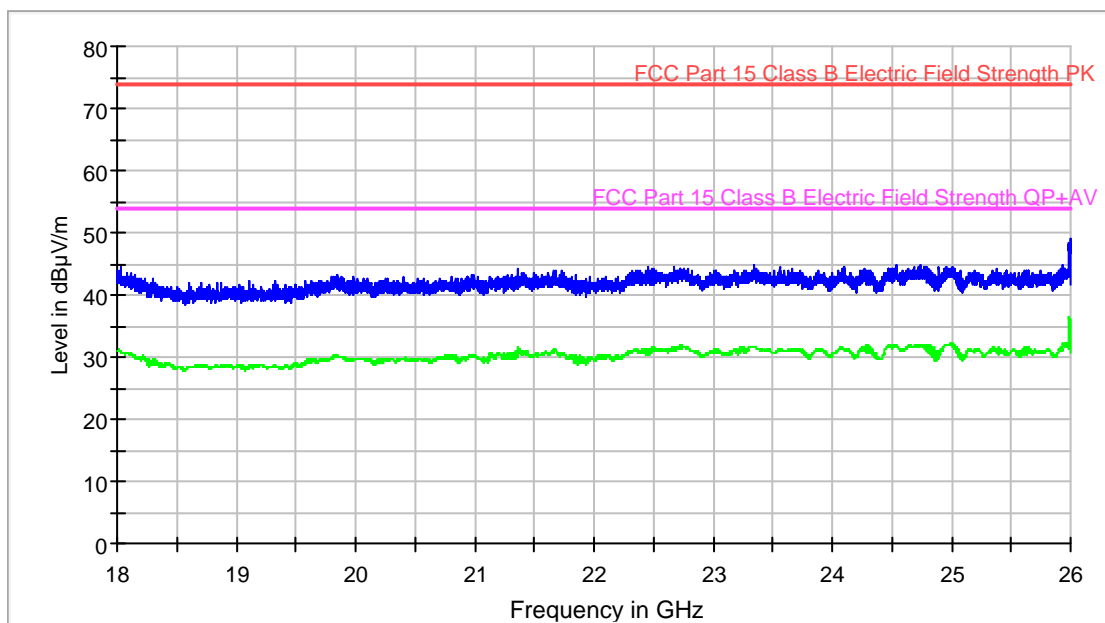


— Measurement PK
 — Measurement AVG
 — Limit PK
 — Limit QP+AV

Radiated Emission: CR0101_PH_RA (18GHz to 26GHz)

Project: 34828REM.002
 Company: POLAR ELECTRO OY
 Sample: S/01
 Operation mode: OM#01
 Setup: EMI radiated
 Mode: EUT ON. Equipment in normal operation mode. Horizontal polarization.

FCC 18-26GHz class B

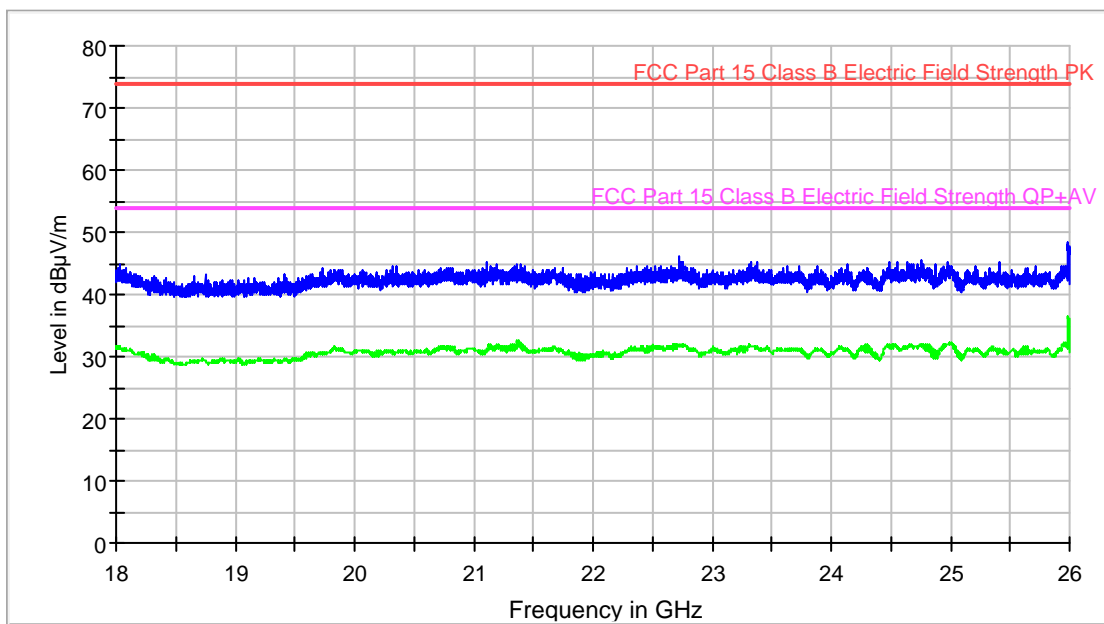


— Measurement PK — Measurement AVG — Limit PK — Limit QP+AV

Radiated Emission: CR0101_PV_RA (18GHz to 26GHz)

Project: 34828REM.002
 Company: POLAR ELECTRO OY
 Sample: S/01
 Operation mode: OM#01
 Setup: EMI radiated
 Mode: EUT ON. Equipment in normal operation mode. Vertical polarization.

FCC 18-26GHz class B



— Measurement PK
 — Measurement AVG
 — Limit PK
 — Limit QP+AV