

## TEST REPORT

Test report no.: 1-4562/12-01-03-D



### Testing laboratory

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#### Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS). The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01  
Area of Testing: Radio/Satellite Communications

### Applicant

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### Manufacturer

**Philips Medizin Systeme Böblingen GmbH**  
Hewlett-Packard-Strasse 2  
71034 Böblingen / GERMANY

### Test standard/s

47 CFR Part 15 Title 47 of the Code of Federal Regulations; Chapter I  
Part 15 - Radio frequency devices  
RSS - 210 Issue 8 Spectrum Management and Telecommunications - Radio Standards Specification  
Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands):  
Category I Equipment

For further applied test standards please refer to section 3 of this test report.

### Test Item

**Kind of test item:** Wireless Respiration Rate and Pulse Measuring Device with Short Range Radio Module  
**Model name:** 865218  
**FCC ID:** PQC-SRRBV2  
**IC:** 3549C-SRRBV2  
**Frequency:** 2400 – 2483.5 MHz  
**Technology tested:** Proprietary  
**Antenna:** Integrated chip antenna  
**Power Supply:** 3.6 V DC by Li-Ion battery  
**Oper. Temperature Range:** 0°C to + 40°C



This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

### Test report authorised:

Stefan Bös  
Senior Testing Manager

### Test performed:

Tobias Wittenmeier

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## 2 General information

### 2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

### 2.2 Application details

Date of receipt of order:	2012-03-19
Date of receipt of test item:	2012-05-10
Start of test:	2012-05-10
End of test:	2012-05-10
Person(s) present during the test:	-/-

## 3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
47 CFR Part 2	2008-10	Title 47 of the Code of Federal Regulations; Chapter I Federal Communications Commission Frequency allocations and radio treaty matters; general rules and regulations

#### 4 Test environment

Operating Temperature:	$T_{nom}$	+22 °C during room temperature tests
	$T_{max}$	+40 °C during high temperature tests
	$T_{min}$	0 °C during low temperature tests
Relative humidity content:		55 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	$V_{nom}$	3.6 V DC by Li-Ion battery
	$V_{max}$	-/- V
	$V_{min}$	-/- V

#### 5 Test item

Kind of test item	:	Wireless Respiration Rate and Pulse Measuring Device with Short Range Radio Module
Type identification	:	865218
S/N serial number	:	XY15000154
HW hardware status	:	1143
SW software status	:	A.30.37
Frequency band [MHz]	:	2400 – 2483.5 MHz
Type of modulation	:	OQPSK
Number of channels	:	16; lowest channel = ch 11; highest channel = ch 26
Antenna	:	Integrated chip antenna
Power supply	:	3.6 V DC by Li-Ion battery
Operating Temperature range	:	0°C to + 40°C

Max. power radiated (EIRP): 3.92 dBm (2.47 mW)

#### SAR/RF Exposure Statement:

According to the FCC and IC regulations SAR/RF exposure tests are not required because the maximum radiated output power of the Short Range Radio module is 2.47 mW. This value is far below the SAR/RF exposure limit of 25 mW (60/F[GHz]).

#### 6 Test laboratories sub-contracted

None

## 7 Summary of measurement results

- No deviations from the technical specifications were ascertained
- There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15 RSS 210, Issue 8, Annex 8	Passed	2012-11-20	Delta-Test according customers demand

Test specification clause	Test case	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Remark
§15.247(b)(4) RSS 210 / A8.4(2)	Antenna gain	Nominal	Nominal	-/-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-/-
§15.247(e) RSS 210 / A8.2(b)	Power spectral density	Nominal	Nominal	-/-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-/-
§15.247(a)(1) RSS 210 / A8.1(b)	Carrier frequency separation	Nominal	Nominal	-/-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-/-
§15.247(a)(1) RSS 210 / A8.1(d)	Number of hopping channels	Nominal	Nominal	-/-	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-/-
§15.247(a)(1) (iii) RSS 210 / A8.3(1)	Time of occupancy (dwell time)	Nominal	Nominal	-/-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-/-
§15.247(a)(1) RSS 210 / A8.2(a)	Spectrum bandwidth of a FHSS system 20dB bandwidth	Nominal	Nominal	-/-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-/-
§15.247(b)(1) RSS-210 / A8.4(2)	Maximum output power	Nominal	Nominal	OQSK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.247(d) RSS-210 / A8.5	Band edge compliance conducted	Nominal	Nominal	-/-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-/-
§15.205 RSS-210 / A8.5	Band edge compliance radiated	Nominal	Nominal	OQPSK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions conducted	Nominal	Nominal	-/-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-/-
§15.247(d) RSS-210 / A8.5	TX spurious emissions radiated	Nominal	Nominal	OQPSK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.109 RSS-Gen.	RX spurious emissions radiated	Nominal	Nominal	-/-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.209(a) RSS-Gen	TX spurious emissions radiated < 30 MHz	Nominal	Nominal	OQPSK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.107(a)	Conducted emissions < 30 MHz	Nominal	Nominal	OQPSK/RX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies

**Note:** NA = Not Applicable; NP = Not Performed

See section 8.2 for rationale why tests have not been performed

## 8 RF measurements

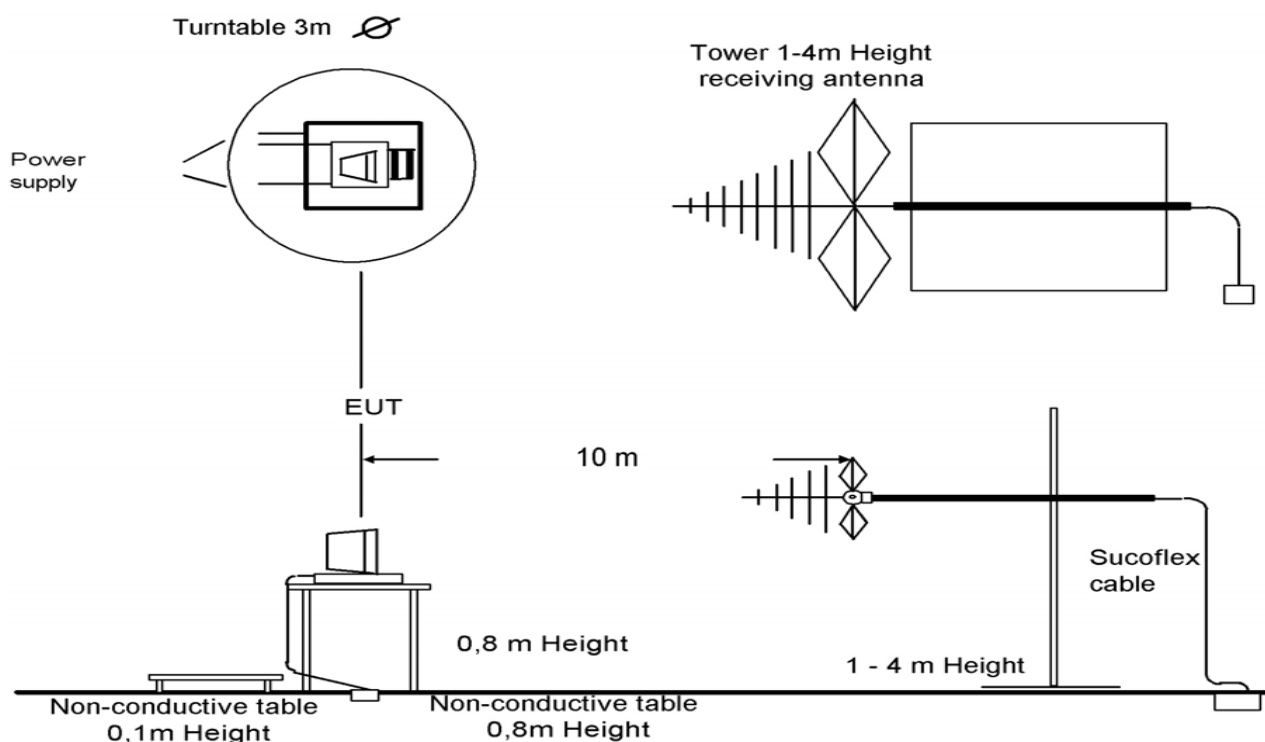
### 8.1 Description of test setup

#### 8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2009 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2009 clause 4.2.

Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



Picture 1: Diagram radiated measurements

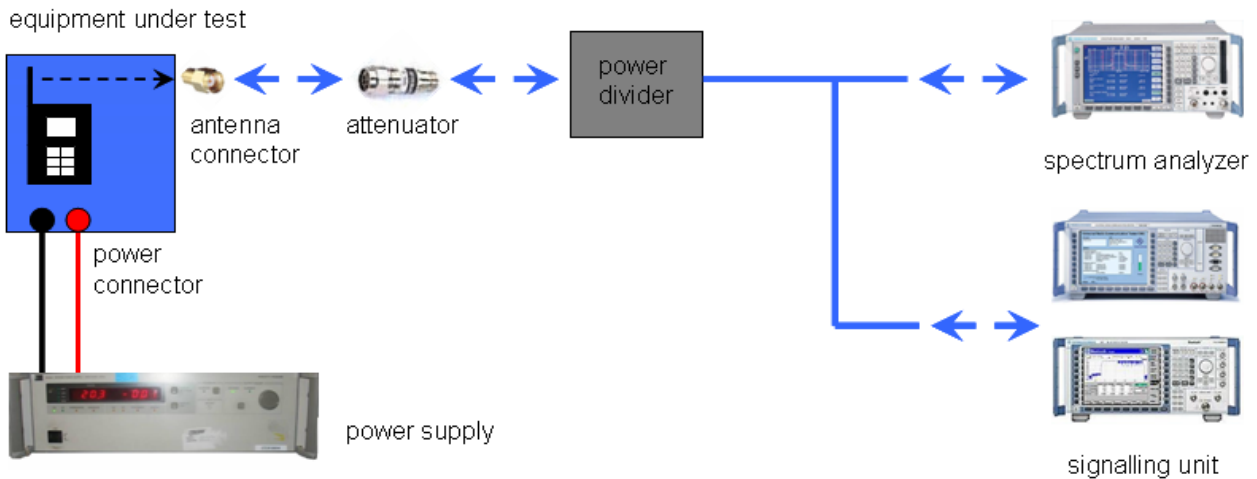
9 kHz – 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

All measurements are done in accordance with the Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems DA 00-705 and Appendix A "BLUETOOTH® APPROVALS"

The EUT is powered by an external power supply with nominal voltage. The signalling is performed from outside the chamber with a signalling unit (CMU200 or other) by air link using signalling antenna.

## 8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

## 8.2 Additional comments

The full test suite has been performed on the IntelliVue CL SpO2 Pod radio module and these tests have been documented in test report 1-1775-01-08B/09. This report contains only tests deemed to be necessary in the new host device, because both host devices contain the same radio module. Test cases referring to a module specific parameter which cannot be influenced by a host system have not been repeated.

The EUT provided a special test mode for RF- Measurements. In this test mode the duty cycle was 100%. For the radiated delta measurements the power level was set to 0 dBm with a modulated carrier. All necessary adjustments were made by RISP Test Tool, provided by the customer.

### 8.3 RSP100 test report cover sheet / performance test data

Test report number	:	1-4562/12-01-03-D
Equipment model number	:	865218
Certification number	:	3549C-SRRBV2
Manufacturer (complete address)	:	Philips Medizin Systeme Böblingen GmbH Hewlett-Packard-Strasse 2 71034 Böblingen / GERMANY
Tested to radio standards specification no.	:	RSS 210, Issue 8, Annex 8
Open area test site IC No.	:	IC 3462C-1
Frequency range	:	ISM band 2400 MHz to 2483.5 MHz (lowest channel 2405 MHz, highest channel 2480 MHz)
RF-power [W] (max.)	:	EIRP: 2.47 mW
Occupied bandwidth (99%-BW) [kHz]	:	see test report 1-1775-01-08B/09
Type of modulation	:	OQPSK
Emission designator (TRC-43)	:	Not performed; see test report 1-1775-01-08B/09
Antenna information	:	Integrated chip antenna
Transmitter spurious (worst case) [dB $\mu$ V/m @ 3m]:		51.01 @ 890 MHz
Receiver spurious (worst case) [dB $\mu$ V/m @ 3m]:		21.90 @ 924 MHz

#### ATTESTATION:

#### DECLARATION OF COMPLIANCE:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

#### Laboratory manager:

2012-11-20

Date

Tobias Wittenmeier

Name



Signature



## 9 Measurement results

### 9.1 Antenna Gain

Not performed

### 9.2 Power spectral density

Not performed

### 9.3 Carrier frequency separation

Not performed

### 9.4 Number of hopping channels

Not applicable, no hopping system

### 9.5 Time of occupancy (dwell time)

Not applicable, no hopping system

### 9.6 Spectrum bandwidth of a FHSS system – 20 dB bandwidth

Not applicable

## 9.7 Maximum output power

**Description:**

Measurement of the maximum output power radiated. EUT in single channel mode.

**Measurement:**

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	3 MHz
Resolution bandwidth:	3 MHz
Span:	3 MHz
Trace-Mode:	Max Hold

**Limits:**

FCC	IC
CFR Part 15.247 (b)(1)	RSS 210, Issue 8, A 8.4(2)
Maximum output power	
[Conducted: 0.125 W – antenna gain max. 6 dBi] Systems using more than 75 hopping channels: Conducted: 1.0 W – antenna gain max. 6 dBi	

**Results:**

Modulation Frequency	Maximum output power radiated – EIRP [dBm]		
	2405 MHz	2445 MHz	2480 MHz
OQPSK	3.92	3.22	1.85
Measurement uncertainty	± 3 dB		

**Result:** Passed

## 9.8 Band edge compliance conducted

Not performed

## 9.9 Band edge compliance radiated

### Description:

Measurement of the radiated band edge compliance. The EUT is turned in the position that results in the maximum level at the band edge. Then a sweep over the corresponding restricted band is performed. The EUT is set to single channel mode and the transmit channel is channel 00 for the lower restricted band and channel 78 for the upper restricted band. The measurement is repeated for all modulations. Measurement distance is 3m.

### Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	10 Hz
Resolution bandwidth:	1 MHz
Span:	Lower Band: 2300 – 2400 MHz Upper Band: 2480 – 2500 MHz
Trace-Mode:	Max Hold

### Limits:

FCC	IC
CFR Part 15.205	RSS 210, Issue 8, A 8.5
Band edge compliance radiated	
<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).</p>	
54 dB $\mu$ V/m AVG	

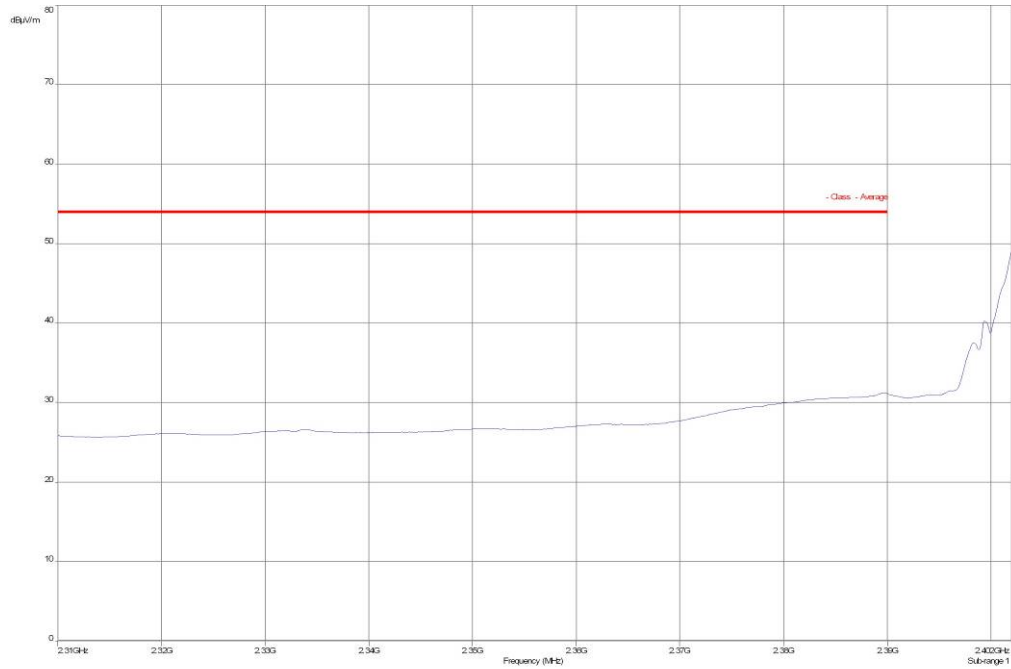
### Results:

Scenario	Band edge compliance radiated [dB $\mu$ V/m]		
	GFSK	Pi/4 DQPSK	8DPSK
Modulation			
Lower restricted band	< 54	-/-	-/-
Upper restricted band	< 54	-/-	-/-
Measurement uncertainty	$\pm$ 3 dB		

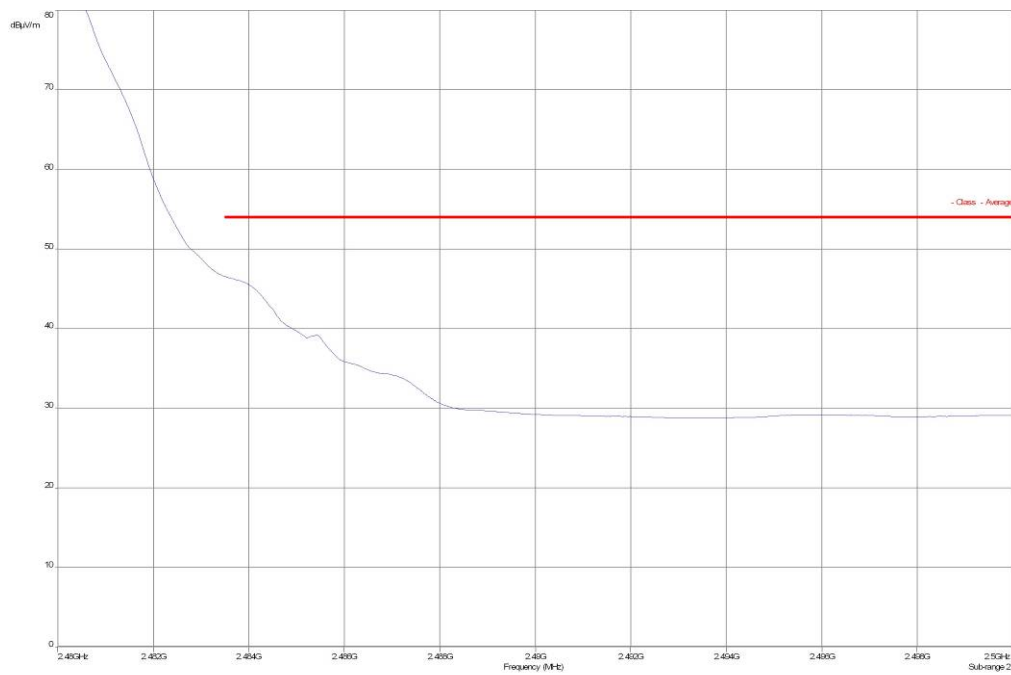
**Result:** Passed

**Plots:**

**Plot 1:** Lower band edge, OQPSK modulation, horizontal & vertical polarization



**Plot 2:** Upper band edge, OQPSK modulation, horizontal & vertical polarization



## 9.10 TX spurious emissions conducted

Not performed

## 9.11 TX spurious emissions radiated

### Description:

Measurement of the radiated spurious emissions in transmit mode. The EUT is set to single channel mode and the transmit channel is channel 11, channel 19 and channel 26. The measurement is performed in the mode with the highest output power.

### Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak / RMS
Sweep time:	Auto
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 25 GHz
Trace-Mode:	Max Hold
Measured Modulation:	OQPSK

The modulation with the highest output power was used to perform the transmitter spurious emissions. If spurious were detected a re-measurement was performed on the detected frequency with each modulation.

### Limits:

FCC		IC	
CFR Part 15.247(d)		RSS 210, Issue 8, A 8.5	
TX spurious emissions radiated			
<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).</p>			
§15.209			
Frequency (MHz)	Field strength (dBµV/m)	Measurement distance	
30 – 88	30.0	10	
88 – 216	33.5	10	
216 – 960	36.0	10	
Above 960	54.0	3	

**Results:**

TX spurious emissions radiated [dB $\mu$ V/m]								
2402 MHz			2441 MHz			2480 MHz		
F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [dB $\mu$ V/m]
4809	RMS	51.01	4889	RMS	47.97	4819	RMS	38.62
			5435	RMS	41.27			
Measurement uncertainty			$\pm 3$ dB					

**Result:** Passed



**Plots:**

**Plot 1:** 30 MHz to 1 GHz, TX mode, channel 11, vertical & horizontal polarization

**Hardware Setup: EMI radiated\Electric Field (NOS) – [EMI radiated]**

Subrange 1	
Frequency Range:	30 MHz – 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table : Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

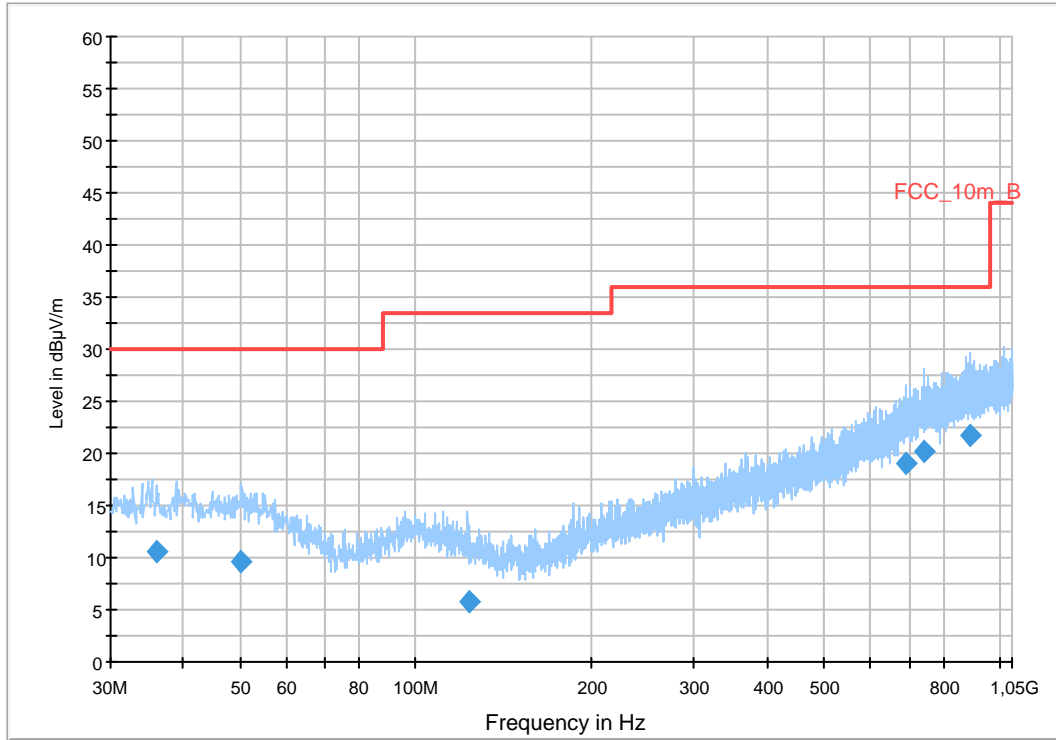
**Common Information**

EUT:	IntelliVue CL Respiration Pod
Serial Number:	XY15000154
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	cont. TX Ch. 11 (2405 MHz)
Operator Name:	Hennemann
Comment:	battery powered

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup:	Electric Field (NOS)				
Receiver:	[ESCI 3]				
Level Unit:	dBµV/m				
<b>Subrange</b>	<b>Step Size</b>	<b>Detectors</b>	<b>IF BW</b>	<b>Meas. Time</b>	<b>Preamp</b>
30 MHz – 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

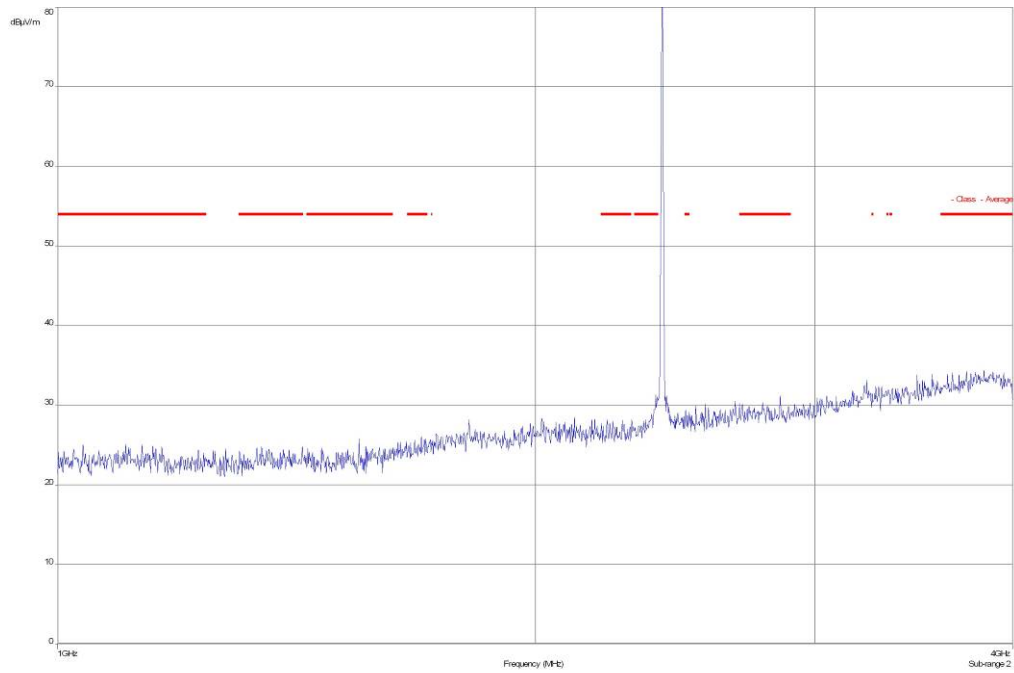
FCC\_10m(B)\_3



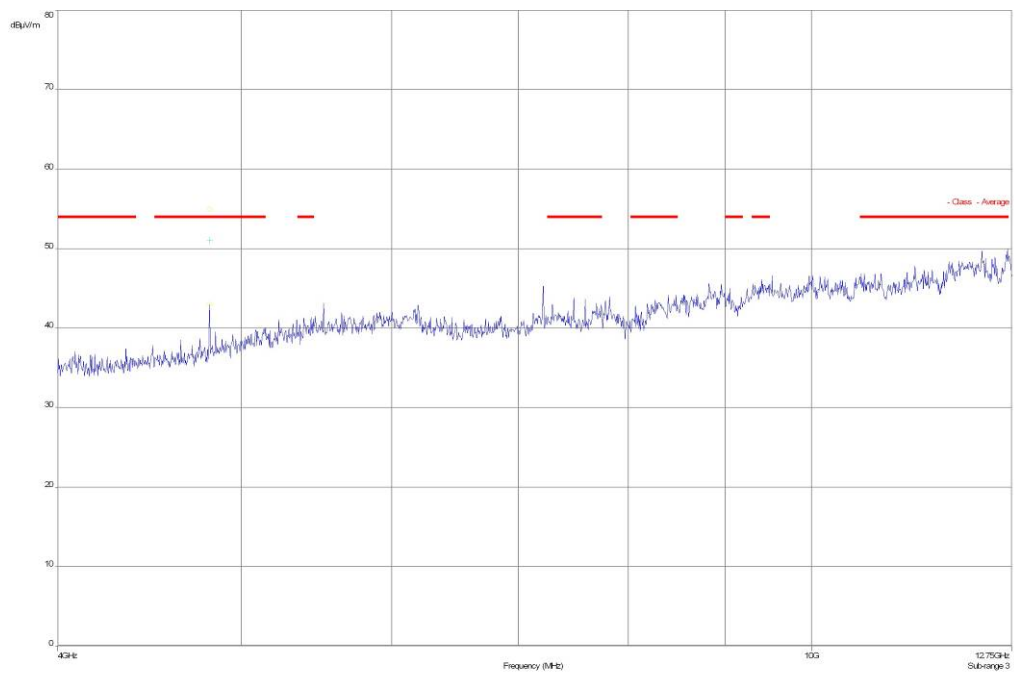
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.894100	10.6	1000.0	120.000	170.0	V	8.0	13.1	19.4	30.0	
50.109450	9.6	1000.0	120.000	170.0	H	-4.0	13.4	20.4	30.0	
123.226800	5.9	1000.0	120.000	170.0	H	-4.0	10.0	27.6	33.5	
692.409450	19.1	1000.0	120.000	146.0	V	-7.0	22.3	16.9	36.0	
738.965550	20.2	1000.0	120.000	143.0	H	8.0	23.4	15.8	36.0	
890.526900	21.8	1000.0	120.000	123.0	H	8.0	25.1	14.2	36.0	

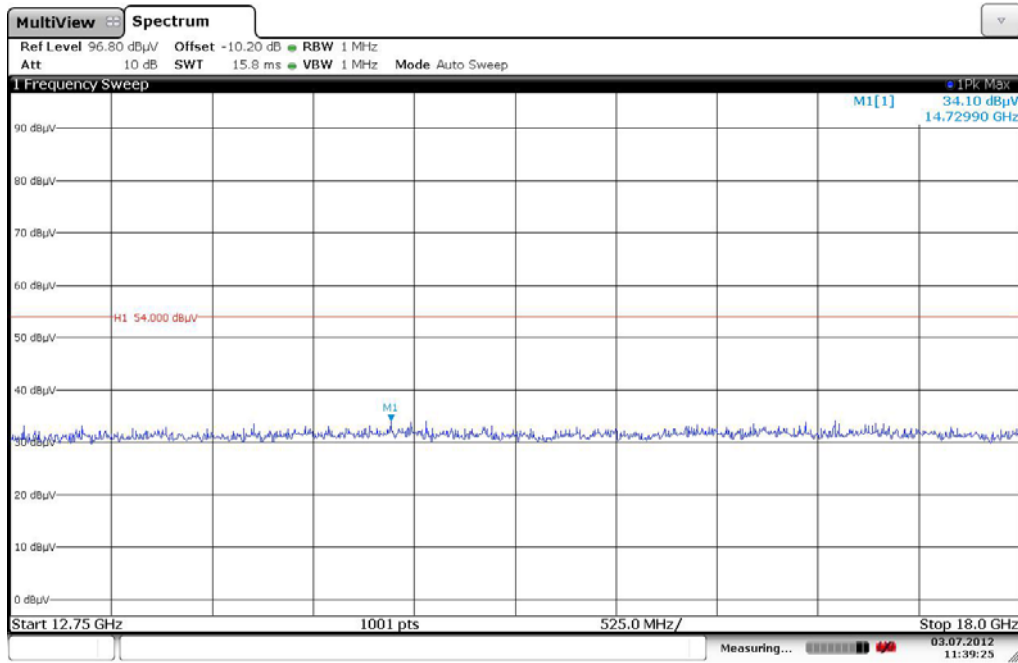
**Plot 2:** 1 GHz to 4 GHz, TX mode, channel 11, horizontal & vertical polarization



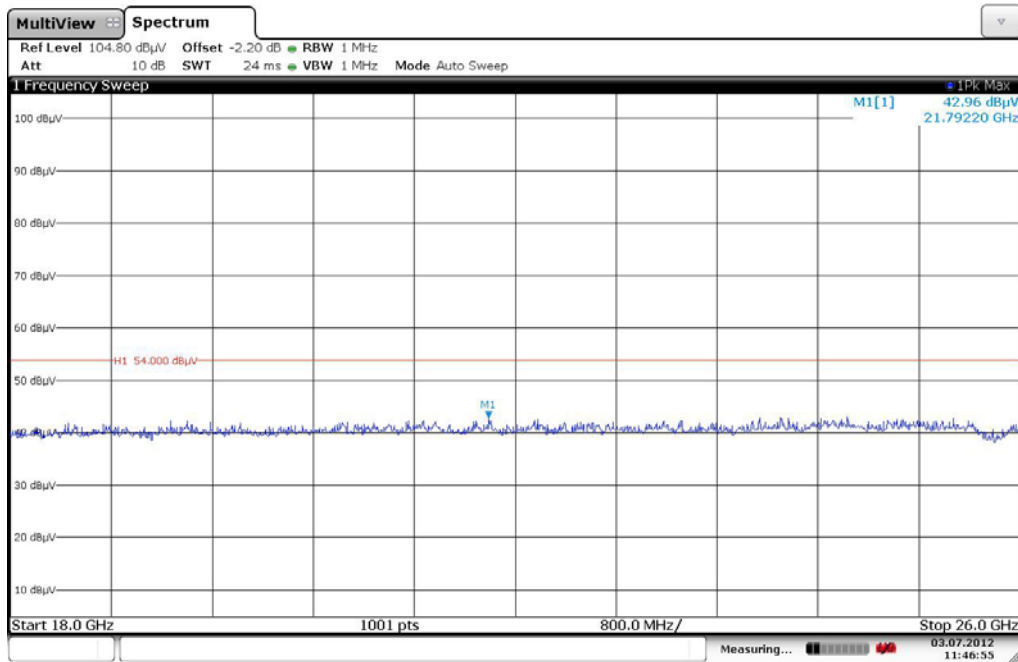
**Plot 3:** 4 GHz to 12.75 GHz, TX mode, channel 11, horizontal & vertical polarization



Plot 4: 12.75 GHz to 18 GHz, TX mode, channel 11, horizontal & vertical polarization



Plot 5: 18 GHz to 26 GHz, TX mode, channel 11, horizontal & vertical polarization



**Plot 6:** 30 MHz to 1 GHz, TX mode, channel 19, vertical & horizontal polarization

**Hardware Setup: EMI radiated\Electric Field (NOS) – [EMI radiated]**

Subrange 1	
Frequency Range:	30 MHz – 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table : Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

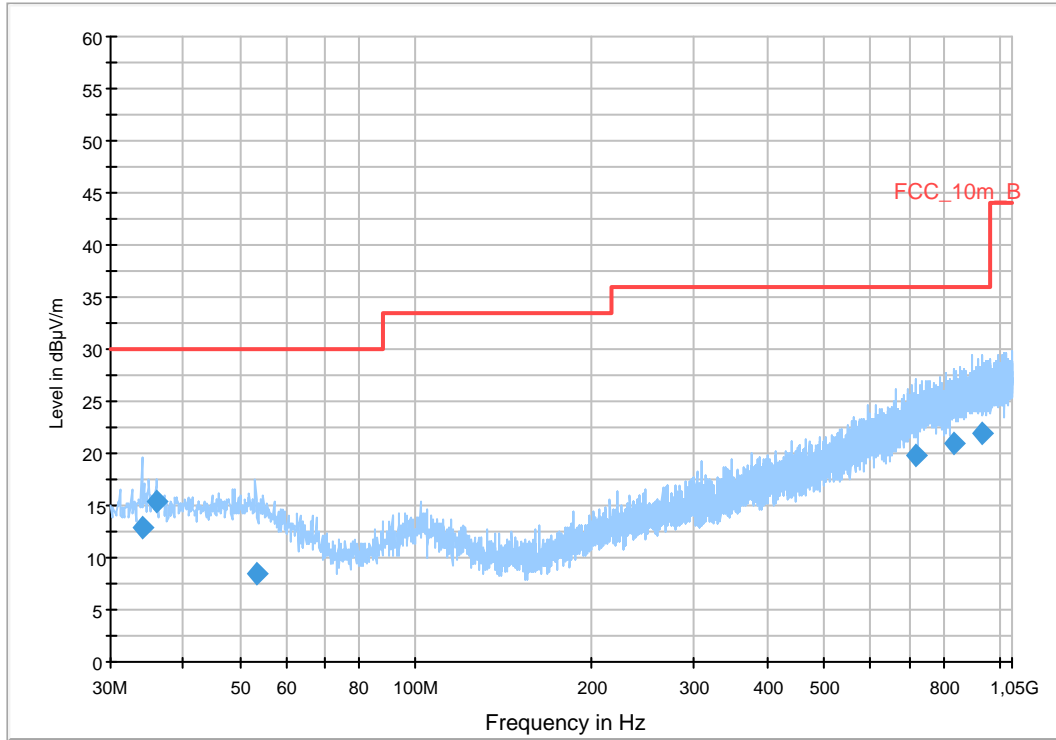
**Common Information**

EUT:	IntelliVue CL Respiration Pod
Serial Number:	XY15000154
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	cont. TX Ch. 19 (2440 MHz)
Operator Name:	Hennemann
Comment:	battery powered

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup:	Electric Field (NOS)				
Receiver:	[ESCI 3]				
Level Unit:	dBµV/m				
<b>Subrange</b>	<b>Step Size</b>	<b>Detectors</b>	<b>IF BW</b>	<b>Meas. Time</b>	<b>Preamp</b>
30 MHz – 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

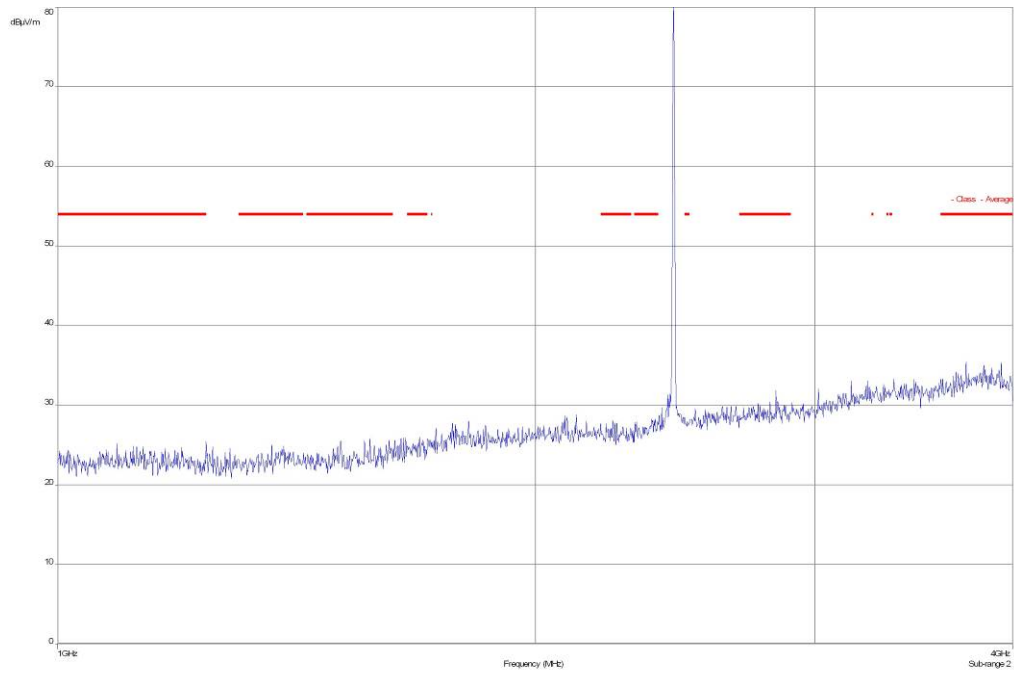
FCC\_10m(B)\_3



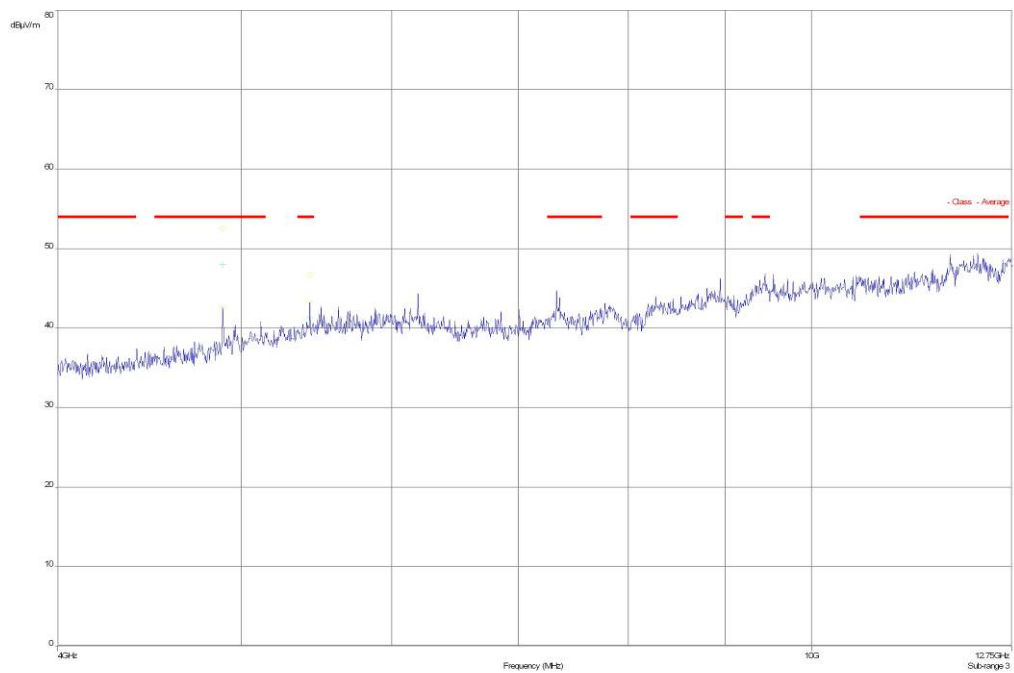
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
33.985800	12.9	1000.0	120.000	170.0	V	195.0	12.9	17.1	30.0	
36.027450	15.4	1000.0	120.000	170.0	V	13.0	13.1	14.6	30.0	
53.285250	8.5	1000.0	120.000	98.0	H	80.0	13.0	21.5	30.0	
717.304200	19.7	1000.0	120.000	170.0	V	261.0	22.9	16.3	36.0	
836.300700	21.0	1000.0	120.000	170.0	V	185.0	24.4	15.0	36.0	
929.554950	21.8	1000.0	120.000	170.0	H	106.0	25.3	14.2	36.0	

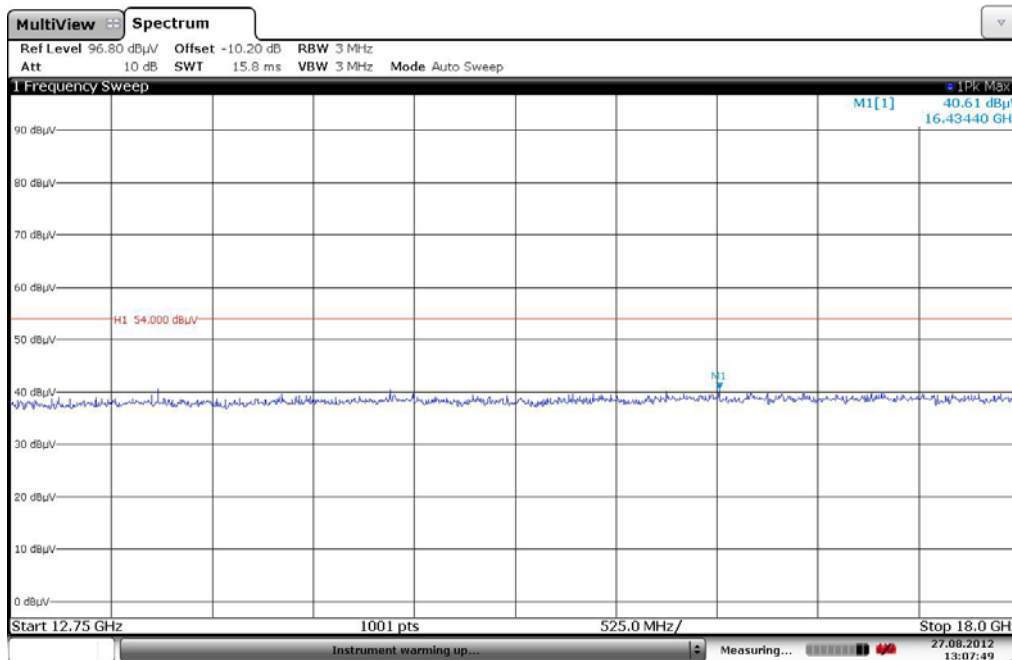
**Plot 7:** 1 GHz to 4 GHz, TX mode, channel 19, horizontal & vertical polarization



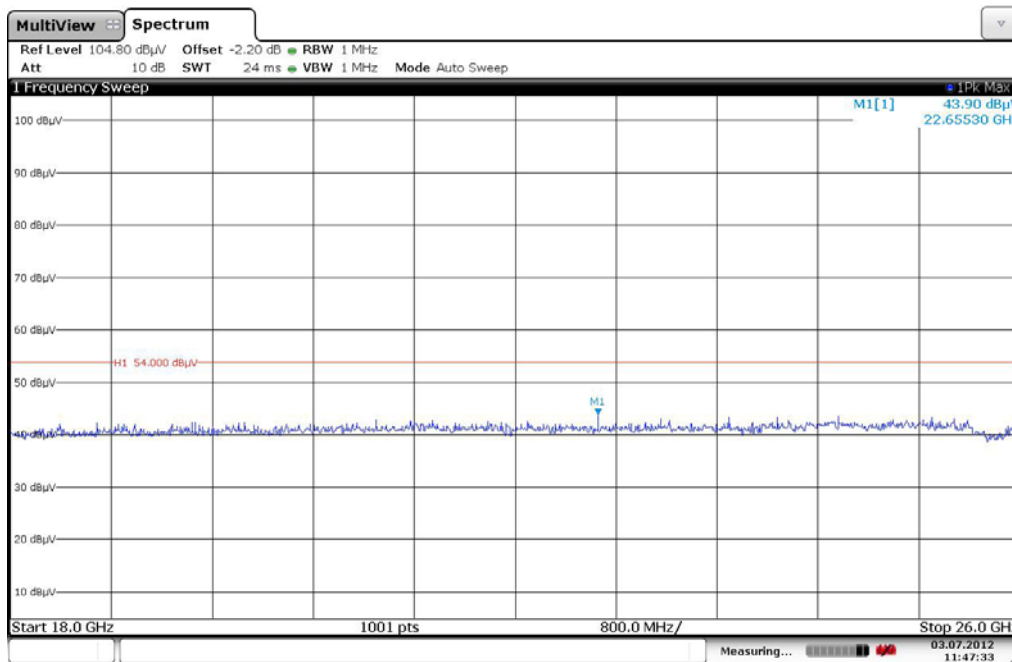
**Plot 8:** 4 GHz to 12.75 GHz, TX mode, channel 19, horizontal & vertical polarization



Plot 9: 12.75 GHz to 18 GHz, TX mode, channel 19, horizontal & vertical polarization



Plot 10: 18 GHz to 26 GHz, TX mode, channel 19, horizontal & vertical polarization





**Plot 11:** 30 MHz to 1 GHz, TX mode, channel 26, vertical & horizontal polarization

**Hardware Setup: EMI radiated\Electric Field (NOS) – [EMI radiated]**

Subrange 1	
Frequency Range:	30 MHz – 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table : Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

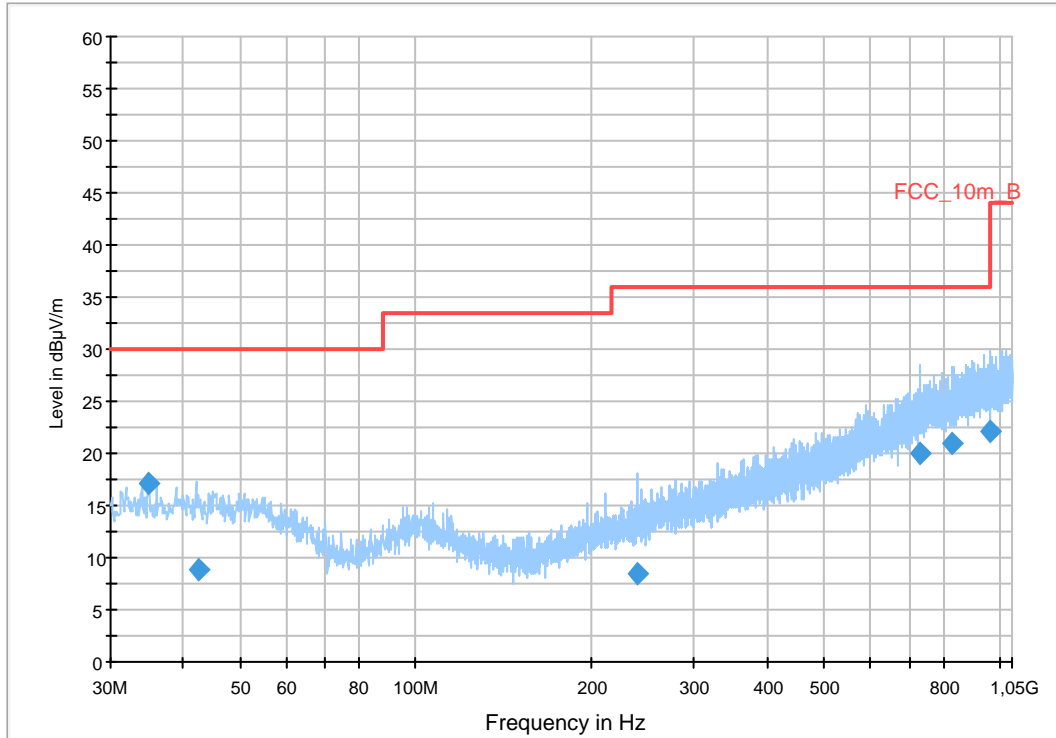
**Common Information**

EUT:	IntelliVue CL Respiration Pod
Serial Number:	XY15000154
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	cont. TX Ch. 26 (2480 MHz)
Operator Name:	Hennemann
Comment:	battery powered

**Scan Setup: STAN\_Fin [EMI radiated]**

Hardware Setup:	Electric Field (NOS)				
Receiver:	[ESCI 3]				
Level Unit:	dBµV/m				
<b>Subrange</b>	<b>Step Size</b>	<b>Detectors</b>	<b>IF BW</b>	<b>Meas. Time</b>	<b>Preamp</b>
30 MHz – 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

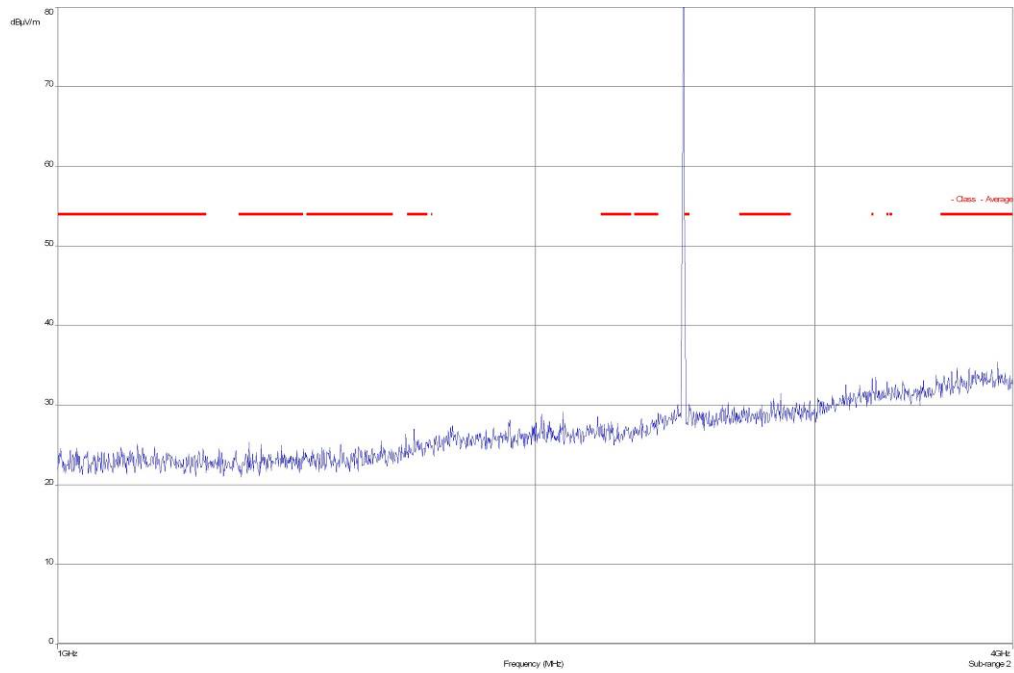
FCC\_10m(B)\_3



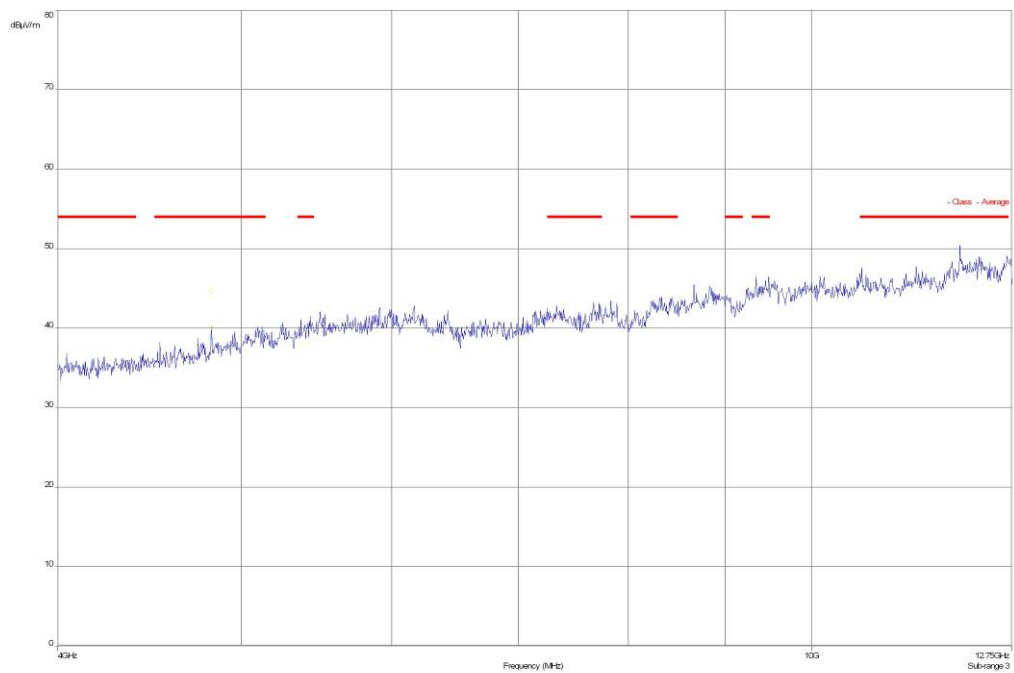
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
34.993350	17.1	1000.0	120.000	98.0	V	8.0	13.0	12.9	30.0	
42.333450	8.9	1000.0	120.000	113.0	V	182.0	13.4	21.1	30.0	
239.284500	8.5	1000.0	120.000	155.0	H	88.0	13.0	27.5	36.0	
729.961800	20.0	1000.0	120.000	170.0	H	172.0	23.2	16.0	36.0	
831.040650	21.0	1000.0	120.000	170.0	H	8.0	24.3	15.0	36.0	
959.579700	22.0	1000.0	120.000	124.0	V	-7.0	25.4	14.0	36.0	

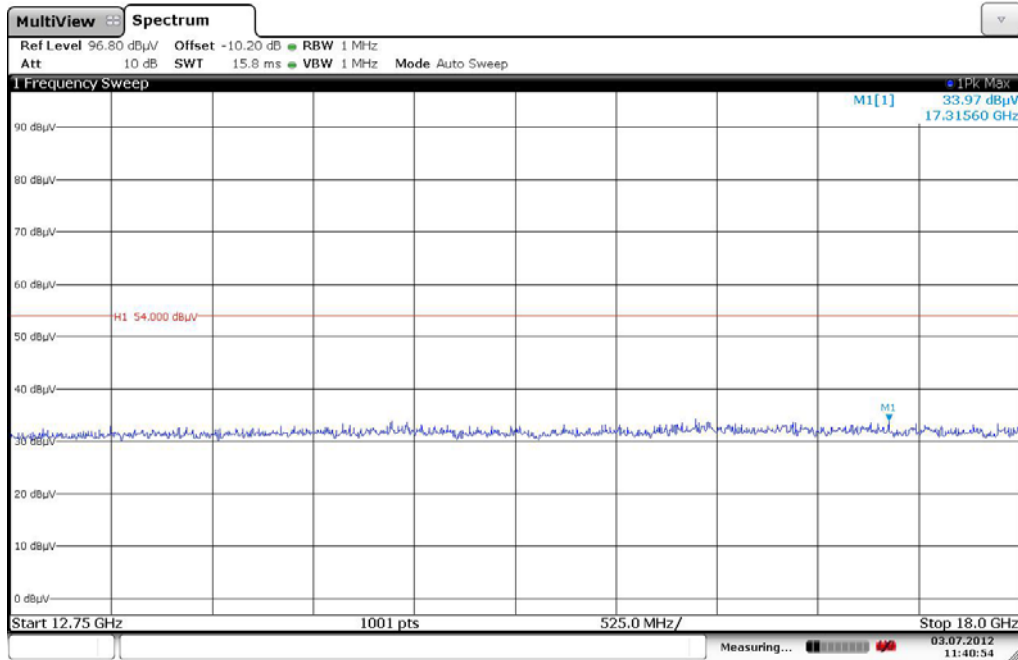
**Plot 12:** 1 GHz to 4 GHz, TX mode, channel 26, horizontal & vertical polarization



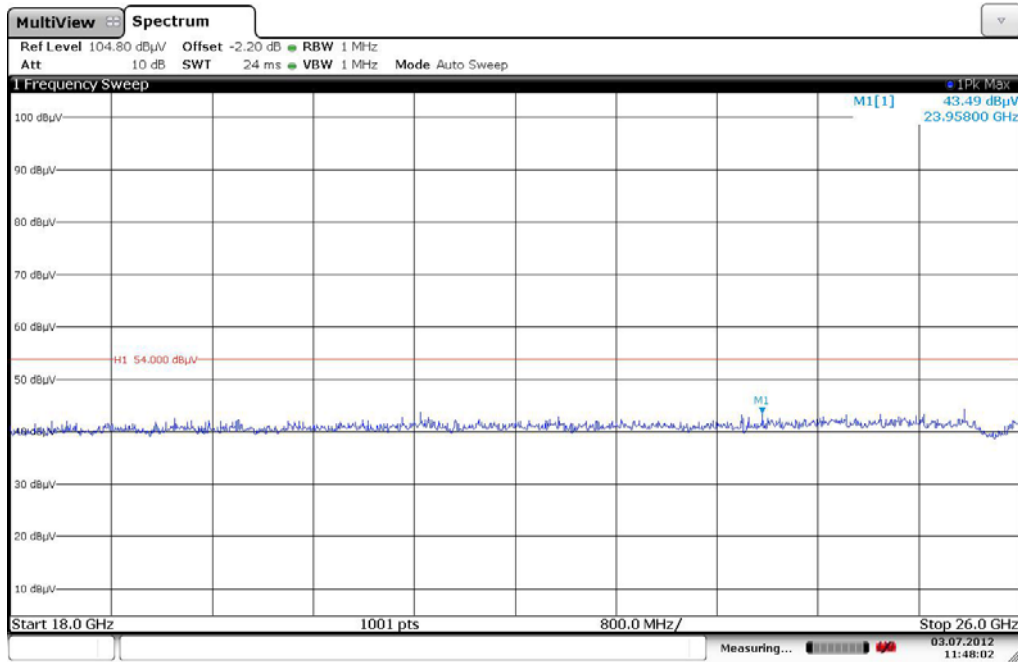
**Plot 13:** 4 GHz to 12.75 GHz, TX mode, channel 26, horizontal & vertical polarization



Plot 14: 12.75 GHz to 18 GHz, TX mode, channel 26, horizontal & vertical polarization



Plot 15: 18 GHz to 26 GHz, TX mode, channel 26, horizontal & vertical polarization



## 9.12 RX spurious emissions radiated

### Description:

Measurement of the radiated spurious emissions in idle/receive mode. The EUT is detached so all oscillators are active.

### Measurement:

Measurement parameter	
Detector:	Peak / Quasi peak
Sweep time:	Auto
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Span:	30 MHz to 25 GHz
Trace-Mode:	Max Hold

### Limits:

FCC		IC	
CFR Part 15.109		RSS Gen, Issue 2, 4.10	
RX Spurious Emissions Radiated			
Frequency (MHz)	Field strength (dB $\mu$ V/m)	Measurement distance	
30 – 88	30.0	10	
88 – 216	33.5	10	
216 – 960	36.0	10	
Above 960	54.0	3	

### Results:

RX spurious emissions radiated [dB $\mu$ V/m]		
F [MHz]	Detector	Level [dB $\mu$ V/m]
No critical peaks detected		
Measurement uncertainty	±3 dB	

**Result: Passed**

**Plot 1:** 30 MHz to 1 GHz, RX mode, vertical & horizontal polarization

**Hardware Setup:** EMI radiated\Electric Field (NOS) – [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz – 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113
Antenna Tower:	Correction Table : Cable_EN_1GHz (1005) Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

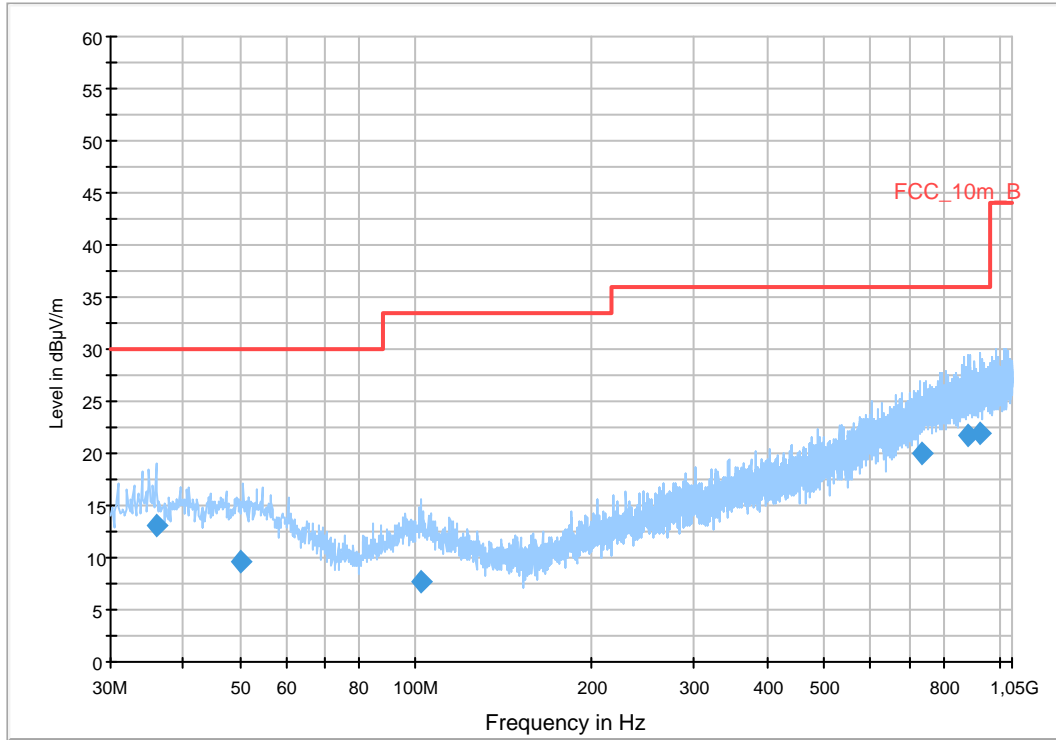
**Common Information**

EUT:	IntelliVue CL Respiration Pod
Serial Number:	XY15000154
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	RX
Operator Name:	Hennemann
Comment:	battery powered

**Scan Setup:** STAN\_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)				
Receiver:	[ESCI 3]				
Level Unit:	dBµV/m				
<b>Subrange</b>	<b>Step Size</b>	<b>Detectors</b>	<b>IF BW</b>	<b>Meas. Time</b>	<b>Preamp</b>
30 MHz – 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

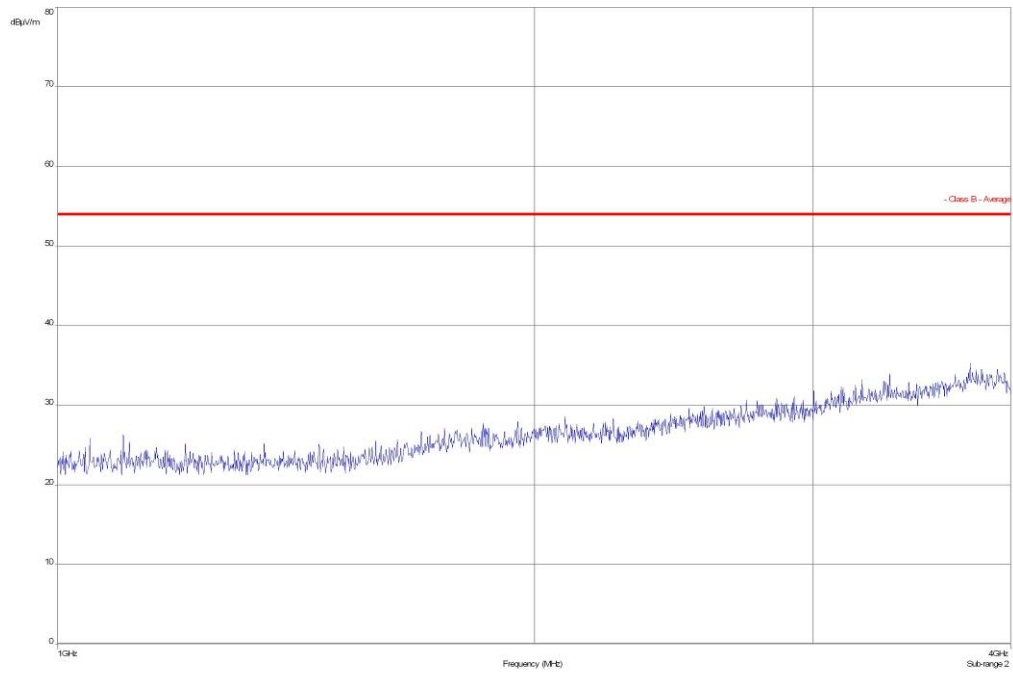
FCC\_10m(B)\_3



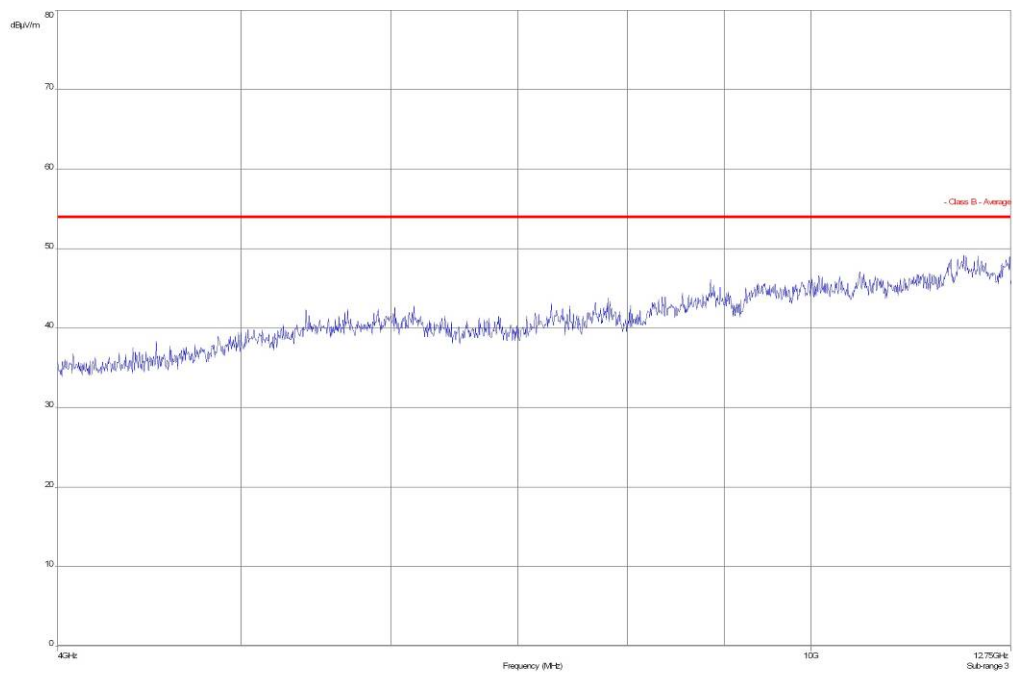
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.943600	13.1	1000.0	120.000	170.0	V	181.0	13.1	16.9	30.0	
50.224950	9.7	1000.0	120.000	98.0	V	261.0	13.4	20.3	30.0	
102.189300	7.8	1000.0	120.000	170.0	H	106.0	11.7	25.7	33.5	
733.173900	20.1	1000.0	120.000	170.0	V	8.0	23.3	15.9	36.0	
880.240500	21.8	1000.0	120.000	170.0	V	8.0	24.9	14.2	36.0	
924.351450	21.9	1000.0	120.000	170.0	V	195.0	25.3	14.1	36.0	

**Plot 2:** 1 GHz to 4 GHz, RX mode, horizontal & vertical polarization

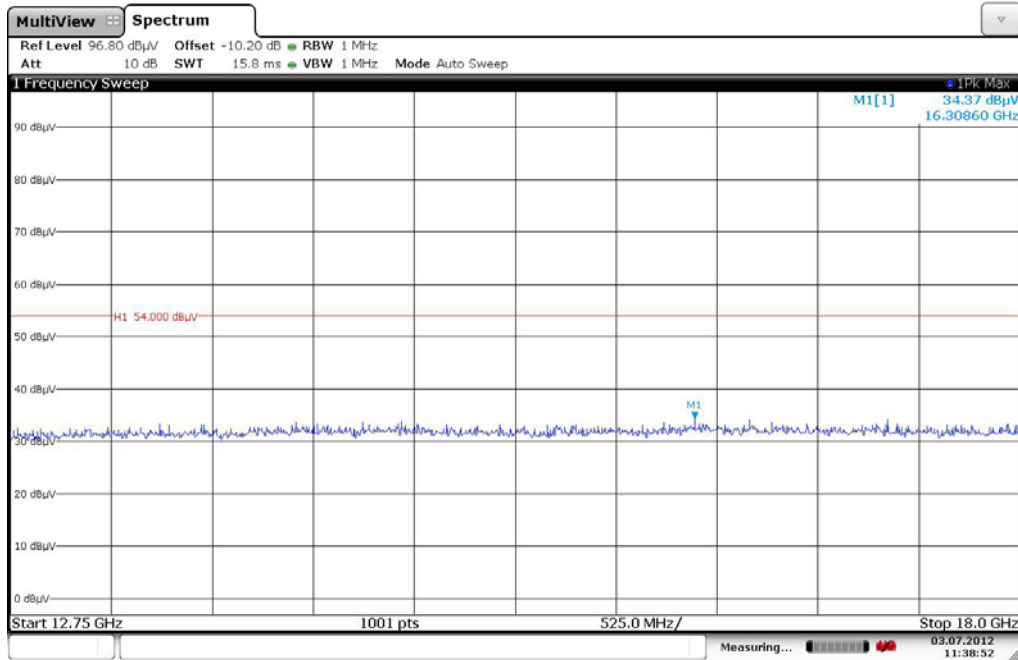


**Plot 3:** 4 GHz to 12.75 GHz, RX mode, horizontal & vertical polarization

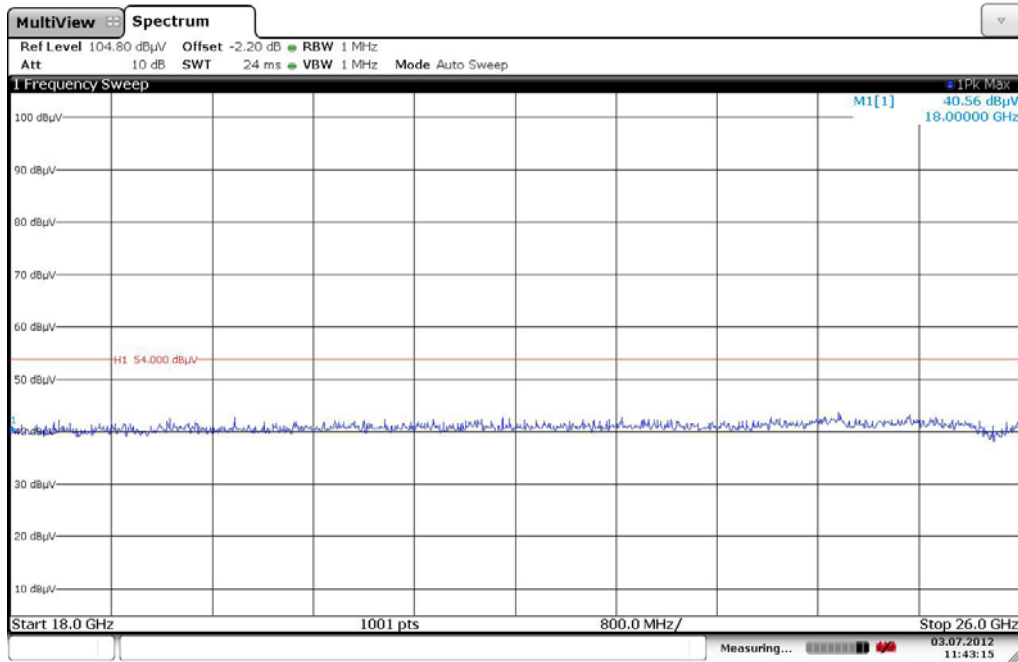




Plot 4: 12.75 GHz to 18 GHz, RX mode, horizontal & vertical polarization



Plot 5: 18 GHz to 26 GHz, RX mode, horizontal & vertical polarization



### 9.13 TX spurious emissions radiated < 30 MHz

**Description:**

Measurement of the radiated spurious emissions in transmit mode below 30 MHz. The EUT is set to single channel mode and the transmit channel is channel 39. This measurement is representative for all channels and modes. If critical peaks are found channel 00 and channel 78 will be measured too. The measurement is performed in the mode with the highest output power. The limits are recalculated to a measurement distance of 3 m with 40 dB/decade according CFR Part 2.

**Measurement:**

Measurement parameter	
Detector:	Peak / Quasi peak
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

**Limits:**

FCC		IC	
CFR Part 15.209(a)		RSS 210, Issue 8, 2.2	
TX spurious emissions radiated < 30 MHz			
Frequency (MHz)	Field strength (dBµV/m)	Measurement distance	
0.009 – 0.490	2400/F(kHz)	300	
0.490 – 1.705	24000/F(kHz)	30	
1.705 – 30.0	30	30	

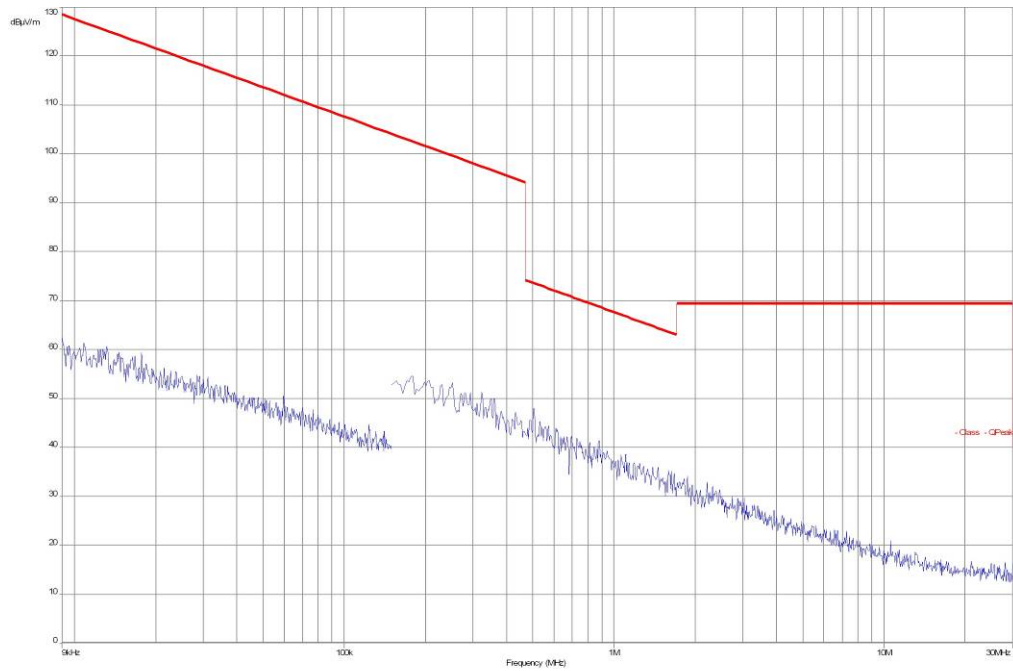
**Results:**

TX spurious emissions radiated < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
No critical peaks detected		
Measurement uncertainty	± 3 dB	

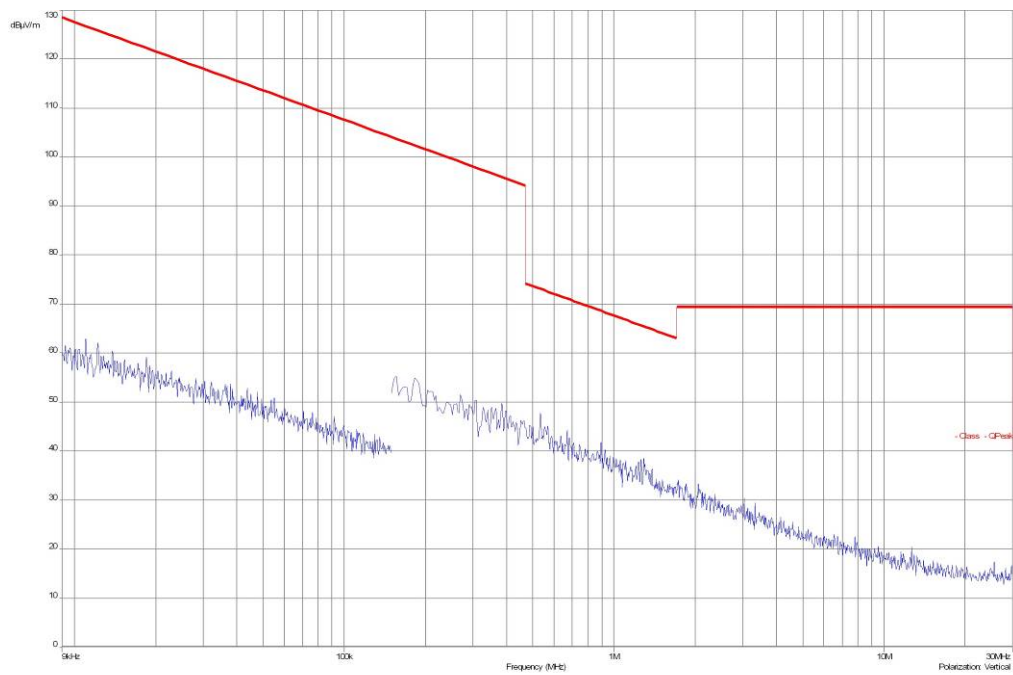
**Result: Passed**

**Plots:**

**Plot 1:** 9 kHz to 30 MHz, TX mode, channel 19



**Plot 4:** 9 kHz to 30 MHz, RX mode



### 9.14 TX spurious emissions conducted < 30 MHz

**Description:**

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to single channel mode and the transmit channel is channel 39. This measurement is representative for all channels and modes. If critical peaks are found channel 00 and channel 78 will be measured too. The measurement is performed in the mode with the highest output power. Both power lines, phase and neutral line, are measured. Found peaks are remeasured with average and quasi peak detection to show compliance to the limits.

**Measurement:**

Measurement parameter	
Detector:	Peak – Quasi peak / average
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

**Limits:**

FCC		IC	
CFR Part 15.107(a)		ICES-003, Issue 4	
TX spurious emissions conducted < 30 MHz			
Frequency (MHz)	Quasi-peak (dBµV/m)	Average (dBµV/m)	
0.15 – 0.5	66 to 56*	56 to 46*	
0.5 – 5	56	46	
5 – 30.0	60	50	

\*Decreases with the logarithm of the frequency

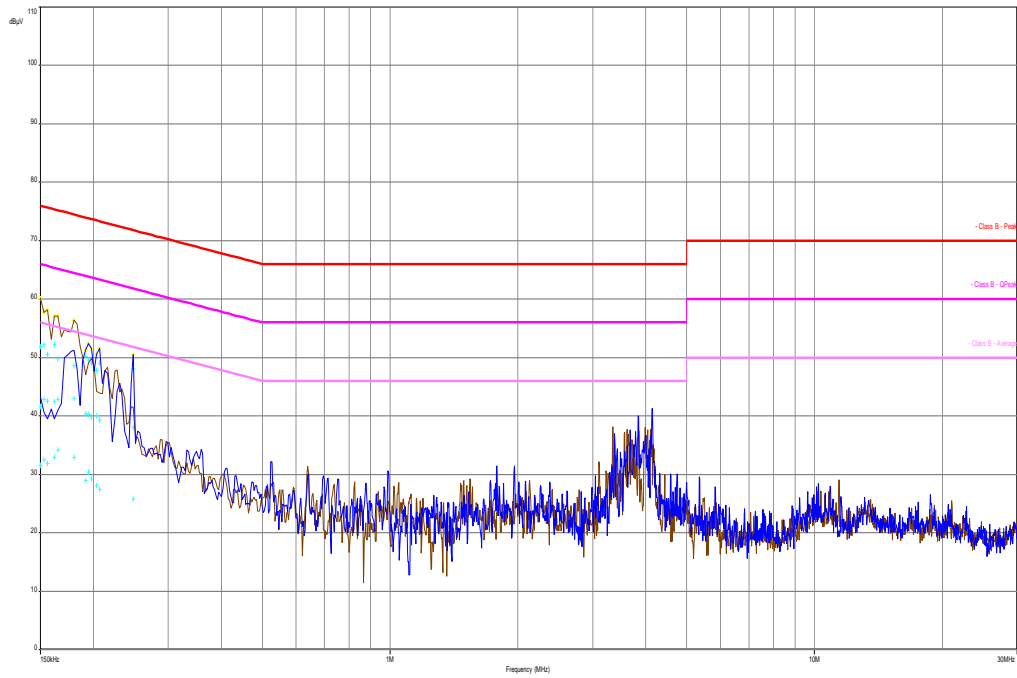
**Results:**

TX spurious emissions conducted < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
No critical peaks detected		
Measurement uncertainty		
± 3 dB		

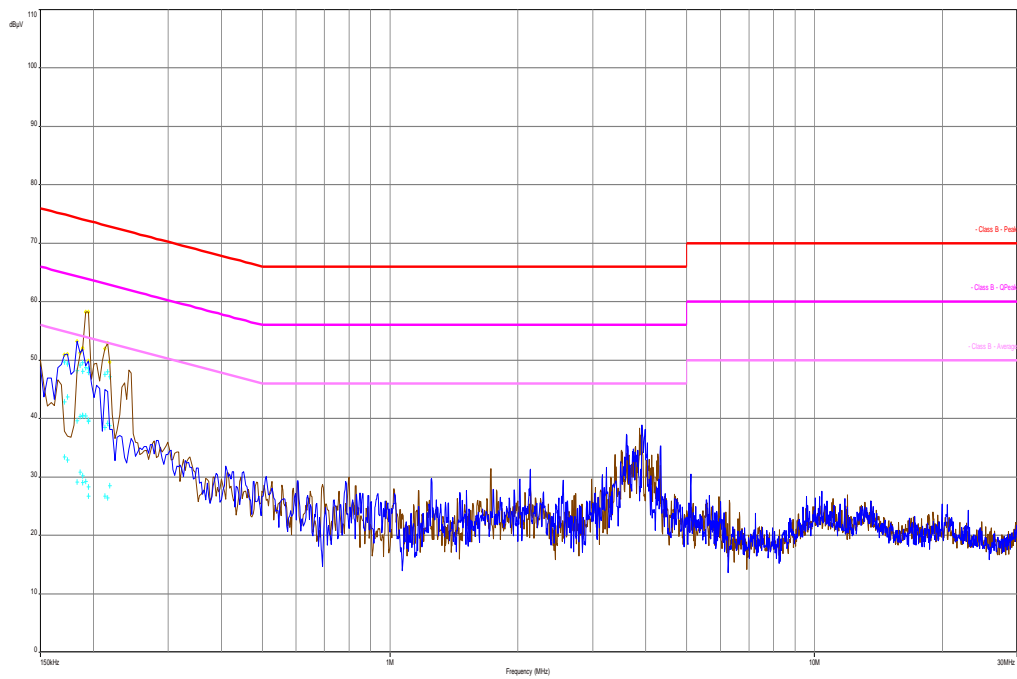
**Result: Passed**

**Plots:**

**Plot 1: 9 kHz to 30 MHz, TX mode, phase & neutral line**



**Plot 3: 9 kHz to 30 MHz, RX mode, phase & neutral line**



## 10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
2	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
3	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
4	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
5	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2012	06.01.2014
6	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
7	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
8	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
9	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
10	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
11	n. a.	Band Reject filter	WRCG185 5/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
12	n. a.	Band Reject filter	WRCG240 0/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
13	n. a.	Highpass Filter	WHKX2.9/1 8G-12SS	Wainwright	1	300003492	ev		
14	n. a.	Highpass Filter	WHK1.1/15 G-10SS	Wainwright	3	300003255	ev		
15	n. a.	Highpass Filter	WHKX7.0/1 8G-8SS	Wainwright	18	300003789	ne		
16	n. a.	RF Filter Section 9kHz – 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vKI!	08.09.2010	08.09.2012
17	n. a.	TRIOLOG Broadband Test-Antenna 30 MHz – 3 GHz	VULB9163	Schwarzbeck	371	300003854	vKI!	14.10.2011	14.10.2014
18	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	19.12.2011	19.12.2012

### Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vKI!	Attention: extended calibration interval	*)	next calibration ordered / currently in progress
NK!	Attention: not calibrated		

## 11 Observations

No observations exceeding those reported with the single test cases have been made.

## Annex A Photographs of the test setup

Photo documentation:

Photo 1:

Test setup for radiated emissions

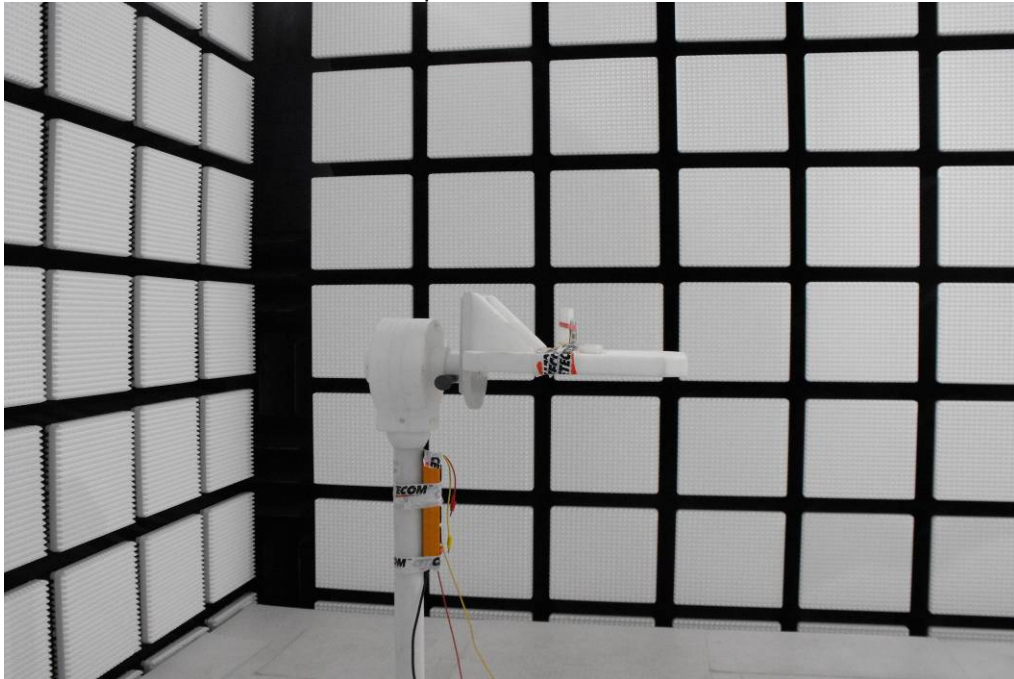


Photo 2:

Test setup for radiated emissions

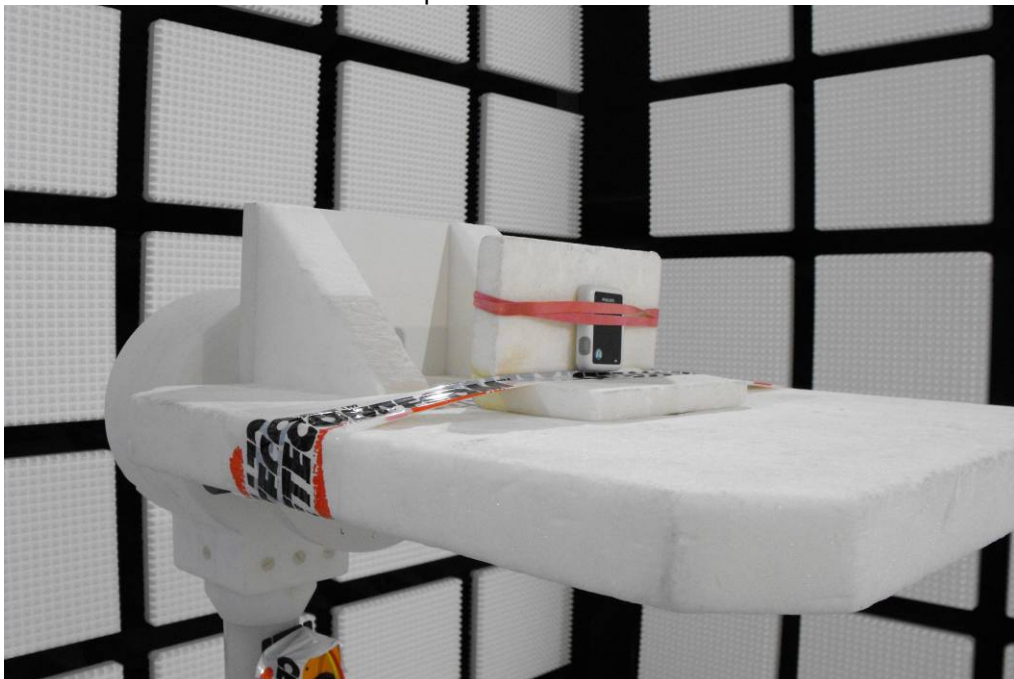




Photo 3:

Test setup for radiated emissions



Photo 4:

Test setup for radiated emissions



Photo 5:

Test setup for radiated emissions

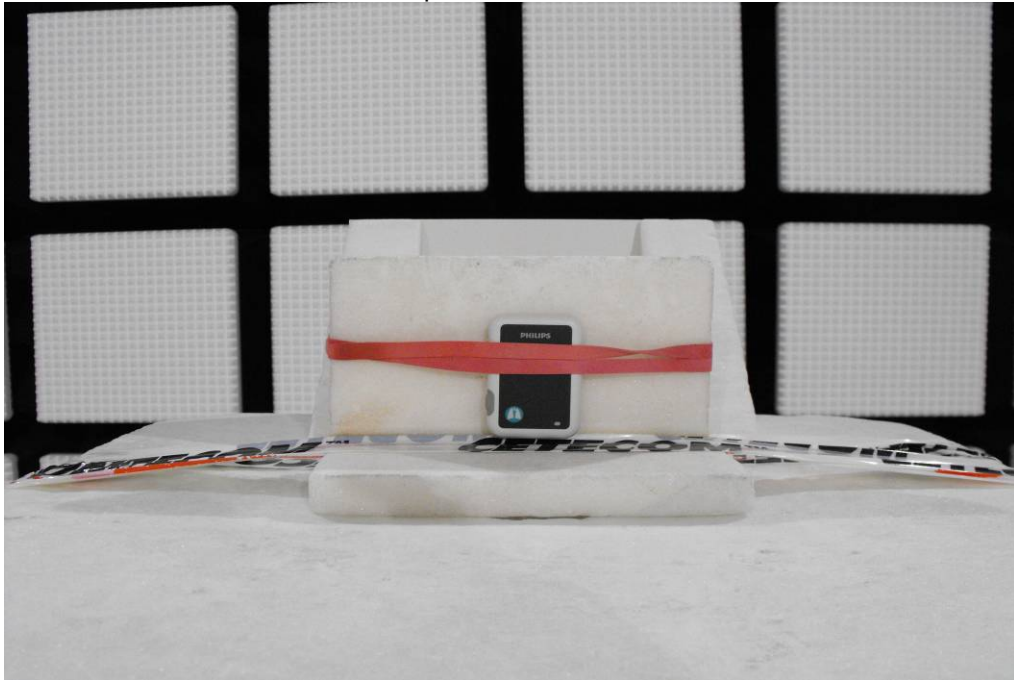


Photo 6:

Test setup for radiated emissions

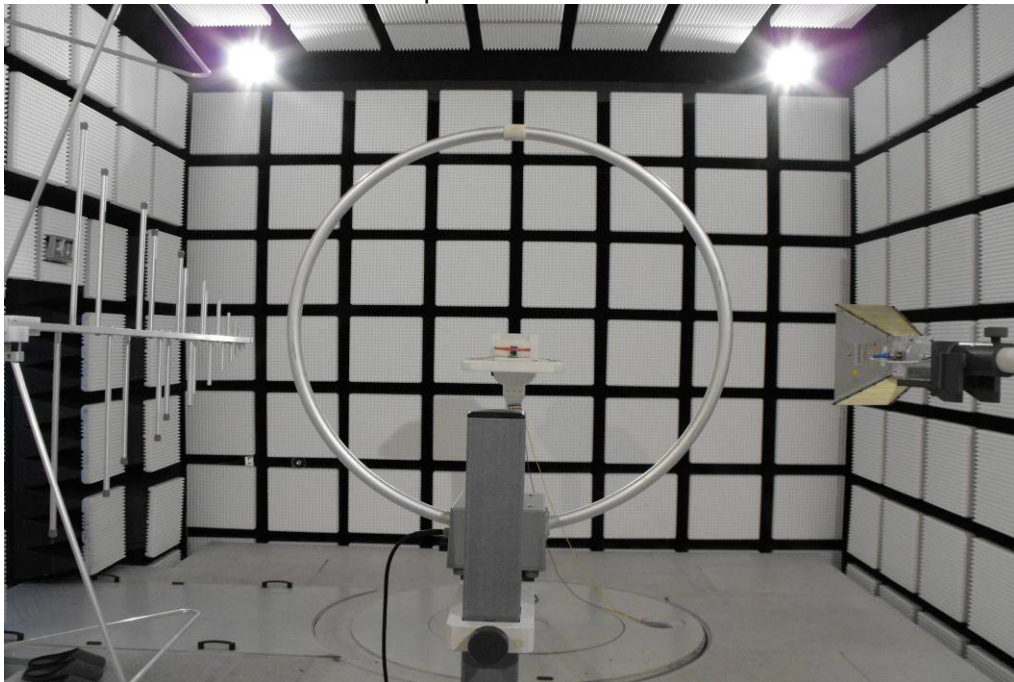


Photo 7:

Test setup for radiated emissions

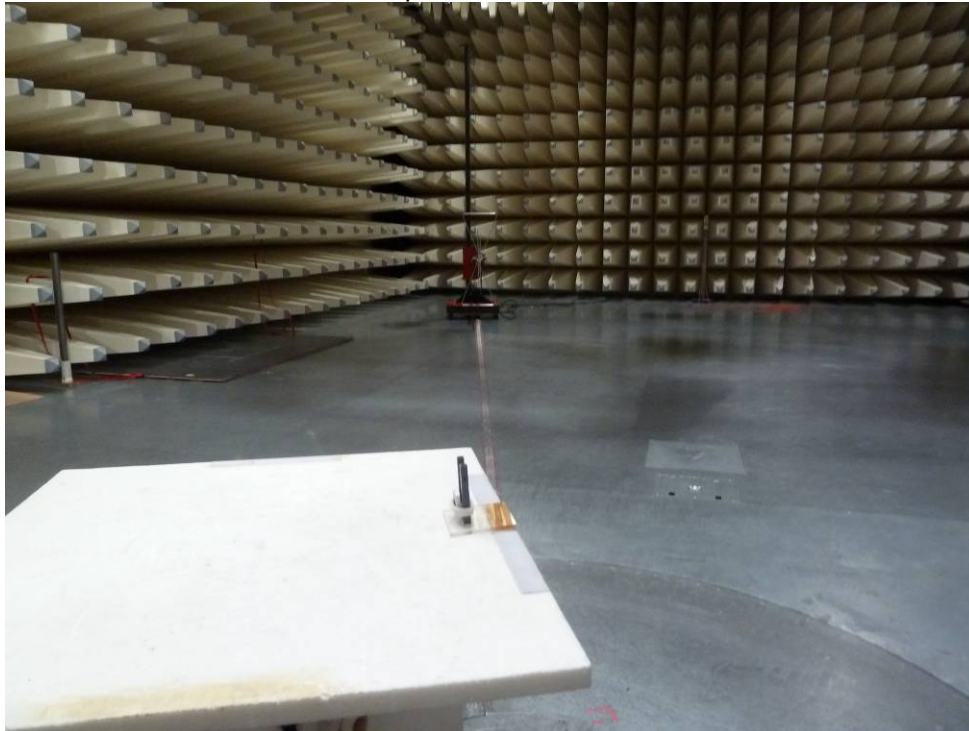


Photo 8:

Test setup for radiated emissions



Photo 9:

Test setup for conducted emissions



**Annex B External photographs of the EUT**

Photo documentation:

Photo 1:

Front view



Photo 2:

Rear view



Photo 3:

Right view



Photo 4:

Left view



Photo 5:

Top view



Photo 7:

USB Interface



**Annex C Internal photographs of the EUT**

Photo documentation:

Photo 1:



Photo 2:





## Annex D Document history

Version	Applied changes	Date of release
1.0	Initial release	2012-07-05
-A	Corrected serial number	2012-07-10
-B	Correction of the spurious measurements	2012-08-27
-C	Correction of model name	2012-11-07
-D	Correction of band edge compliance results	2012-11-20

## Annex E Further information

### Glossary

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software

**Annex F Accreditation Certificate**



Deutsche Akkreditierungsstelle GmbH  
German Accreditation Body

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV  
Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition

**Accreditation**



The Deutsche Akkreditierungsstelle GmbH (German Accreditation Body) attests that the testing laboratory

**CETECOM ICT Services GmbH**  
Untertürkheimer Straße 6-10  
66117 Saarbrücken

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields:

- Wired communications and DECT
- Acoustic
- Radio
- Shirt Range Devices (SRD)
- RFID
- WiMax and Richtfunk
- Mobile radio (GSM / DCS), Over the Air (OTA) Performance
- Electromagnetic Compatibility (EMC) incl. Automotive
- Product safety
- SAR and Hearing Aid Compatibility (HAC)
- Environmental simulation
- Smart Card Terminals
- Bluetooth
- Wi-Fi-Services

The accreditation certificate shall only apply in connection with the notice of accreditation of 13.04.2011 with the accreditation number D-PL-12076-01 and is valid until 03.09.2014. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 82 pages.

Registration number of the certificate: **D-PL-12076-01-01**

Frankfurt am Main, 13.04.2011

Dipl.-Ing. (FH) Dr. Egner  
Head of Division 2

This document is a translation. The definitive version is the original German accreditation certificate.  
[www.dakks.de](http://www.dakks.de)

Deutsche Akkreditierungsstelle GmbH

Office Berlin  
Spittelmarkt 10  
10117 Berlin

Office Frankfurt am Main  
Gartenstraße 6  
60594 Frankfurt am Main

Office Braunschweig  
Bundesallee 100  
38116 Braunschweig

The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAKKS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAKKS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008; p. 30). DAKKS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:  
EA: [www.european-accreditation.org](http://www.european-accreditation.org)  
ILAC: [www.ilac.org](http://www.ilac.org)  
IAF: [www.iaf.eu](http://www.iaf.eu)

Front side of certificate

Back side of certificate

**Note:**

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

[http://www.cetecom.com/fileadmin/de/CETECOM\\_D\\_Saarbruecken/accreditations\\_Jan\\_2010/DAKKS\\_Akkredi\\_Urk\\_EN17025-En\\_incl\\_Annex.pdf](http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkredi_Urk_EN17025-En_incl_Annex.pdf)