

## TEST REPORT

Test report no.: 1-4401/12-01-02



### Testing laboratory

**CETECOM ICT Services GmbH**  
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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

**Cochlear Limited**  
1 University Avenue  
Macquarie University NSW 2109 / AUSTRALIA  
Phone: +61 2 94 28 65 15  
Fax: -/-  
Contact: Bronwyn Evans  
e-mail: [bevans@cochlear.com](mailto:bevans@cochlear.com)  
Phone: +61 2 94 28 65 15

### Manufacturer

**Cochlear Limited**  
14 Mars Road, Lane Cove  
NSW 2066 Sydney / AUSTRALIA

### 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:** Sound Processor  
**Model name:** CP802 / DP802  
**FCC ID:** WTOP802  
**IC:** 8039A-P802  
**Frequency:** ISM band 2400 MHz to 2483.5 MHz  
lowest channel 2402 MHz – highest channel 2482 MHz  
**Technology tested:** GFSK  
**Antenna:** Integrated antenna  
**Power Supply:** 3.0 V DC by external battery adapter (2\*AAA)  
**Temperature Range:** +5°C to +50 °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:

[Signature box]

Marco Bertolino  
Testing Manager

### Test performed:

[Signature box]

Andreas Luckenbill

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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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In no case this test report can be considered as a Letter of Approval.

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:	2012-02-09
Date of receipt of test item:	2012-02-13
Start of test:	2012-02-14
End of test:	2012-03-21
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

#### 4 Test environment

Temperature:	$T_{nom}$	+22 °C during room temperature tests
	$T_{max}$	+50 °C during high temperature tests
	$T_{min}$	+5 °C during low temperature tests
Relative humidity content:		30 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	$V_{nom}$	3.0 V DC by external battery adapter (2*AAA)
	$V_{max}$	4.5 V
	$V_{min}$	2.0 V

#### 5 Test item

Kind of test item	:	Sound Processor
Type identification	:	CP802 / DP802
S/N serial number	:	Rad. #101010 1391855 W Cond. #101010 1391596 W
HW hardware status	:	Build W
SW software status	:	Radio compliance Firmware for SPICE
Frequency band [MHz]	:	ISM band 2400 MHz to 2483.5 MHz (lowest channel 2402 MHz – highest channel 2482 MHz)
Type of modulation	:	GFSK
Number of channels	:	41
Antenna	:	Integrated antenna
Power supply	:	3.0 V DC by external battery adapter (2*AAA)
Temperature range	:	+5°C to +50 °C

#### 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	Passed	2012-04-02	-/-

Test specification clause	Test case	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Results (max.)
CFR 15.35(c) RSS Gen (Issue 3) / 4.5	Timing of the transmitter	Nominal	Nominal	TX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not limited
RSS Gen (Issue 3) / 4.6.1	99% - Occupied Bandwidth	Nominal	Nominal	TX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not limited
§15.249(a)(e) RSS-210 / A2.9(a)	Maximum field strength	Nominal	Nominal	TX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.249(d) RSS-210 / A2.9(a)(b)	Band edge compliance radiated	Nominal	Nominal	TX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.249(d) RSS-210 / A2.9(a)(b)	TX spurious emissions radiated	Nominal	Nominal	TX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.109 RSS-Gen	RX spurious emissions radiated	Nominal	Nominal	Idle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.209(a) RSS-Gen	Spurious emissions radiated < 30 MHz	Nominal	Nominal	TX/Idle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.107(a) RSS-Gen	Spurious emissions conducted < 30 MHz	Nominal	Nominal	TX/Idle	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	complies

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

## 8 RF measurements

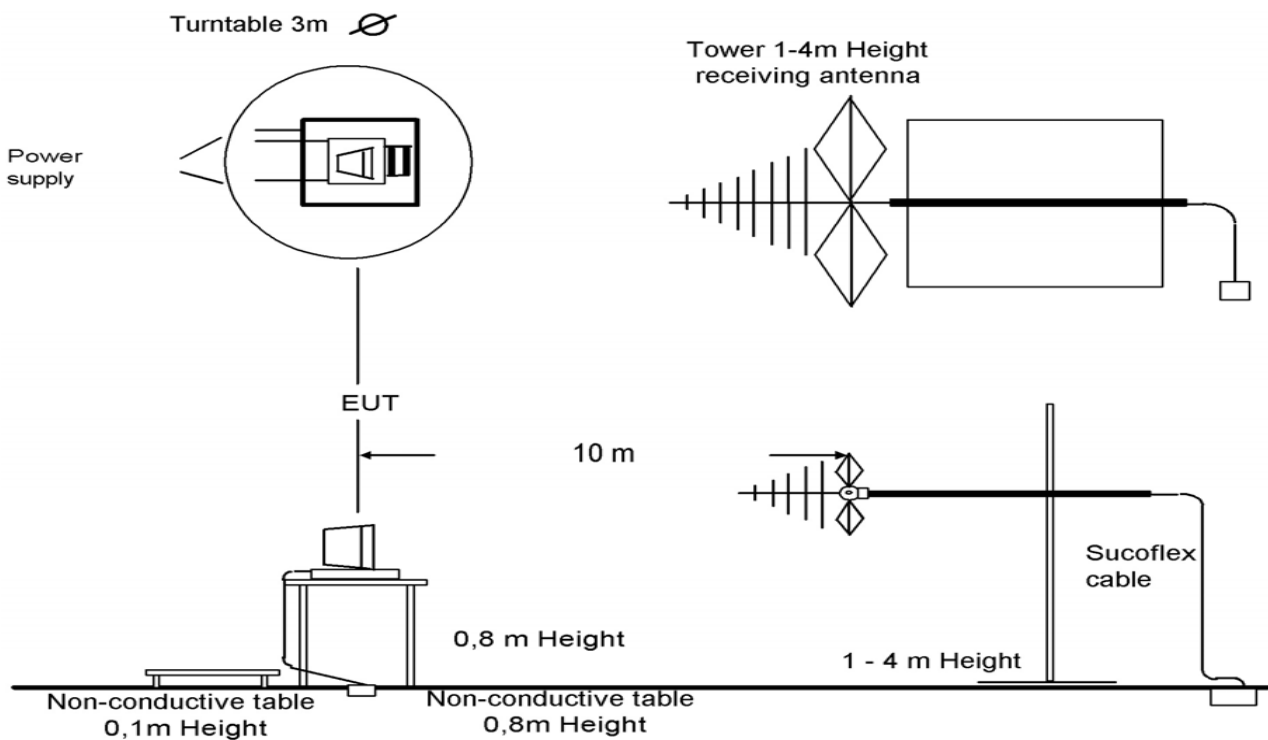
### 8.1 Description of test setup

#### 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 C63.10-2009 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 C63.10-2009 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

The EUT is powered by an external power supply with nominal voltage or with battery.

## 8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

Test mode:  Special software is used.  
EUT is transmitting pseudo random data by itself

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

Test report number	:	1-4401/12-01-02
Equipment model number	:	CP802 / DP802
Certification number	:	8039A-P802
Manufacturer (complete address)	:	Cochlear Limited 14 Mars Road, Lane Cove NSW 2066 Sydney / AUSTRALIA
Tested to radio standards specification no.	:	RSS 210, Issue 8
Open area test site IC No.	:	IC 3462C-1
Frequency range	:	ISM band 2400 MHz to 2483.5 MHz (lowest channel 2402 MHz, highest channel 2482 MHz)
RF-field strength [dB $\mu$ V/m @ 3 m] (max.)	:	73.37 dB $\mu$ V/m
Occupied bandwidth (99%-BW) [kHz]	:	2040 kHz
Type of modulation	:	Digital Transmission System using GFSK modulation
Emission designator (TRC-43)	:	2M04FXD
Antenna information	:	Integrated antenna
Transmitter spurious (worst case) [dB $\mu$ V/m @ 3m]:		43 @ 12 GHz (noise floor)
Receiver spurious (worst case) [dB $\mu$ V/m @ 3m]	:	43 @ 12 GHz (noise floor)

#### 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:

2012-04-02

Date

Andreas Luckenbill

Name



Signature



## 9 Measurement results

### 9.1 Timing of the transmitter

**Limits:**

FCC	IC
Timing of the transmitter	
<p>(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.</p>	

**Specified by the vendor:**

The protocol foresees in 901us pulse rate and the duration per emission is approx.  $50\mu s + [(1+4+8+2) * 8\text{bits} / 2\text{Mbps}] = 110\mu s$ .  
 Thus  $20 * \log((111 * 0.110[\text{ms}]) / 100\text{ms}) = 20 * \log(12.21\%) = -18.26\text{dB}$

**Result:**

Transmit time (Tx on) within 100 ms =  $111 * 0.110 \text{ ms} = 12.21 \text{ ms}$   
 Assumed Transmit time (Tx on) within 100 ms for further calculations: 12.21 ms

The peak-to-average correction factor [dB] is calculated with  $20\text{Log} [\text{Tx on} / 100\text{ms}]$ .

**Result:**

peak-to-average correction factor [dB]: -18.27

## 9.2 Spectrum bandwidth – 99% bandwidth

### Description:

Measurement of the 99% bandwidth of the modulated signal.

### Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	10 kHz
Video bandwidth:	10 kHz
Span:	3 MHz
Trace-Mode:	Max Hold

### Limits:

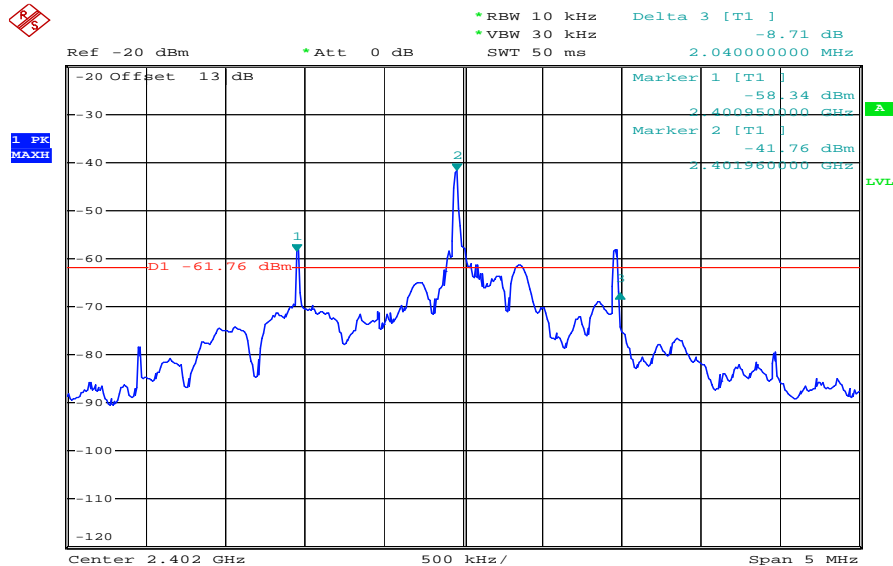
FCC	IC
Spectrum Bandwidth – 99% Bandwidth	
Required for emission designator	

### Results:

Modulation Frequency	99% BANDWIDTH [kHz]		
	2402 MHz	2442 MHz	2482 MHz
ISM band 2400 MHz to 2483.5 MHz	2040	2030	2040
Measurement uncertainty	± 30 kHz		

**Plots:**

**Plot 1: lowest channel**



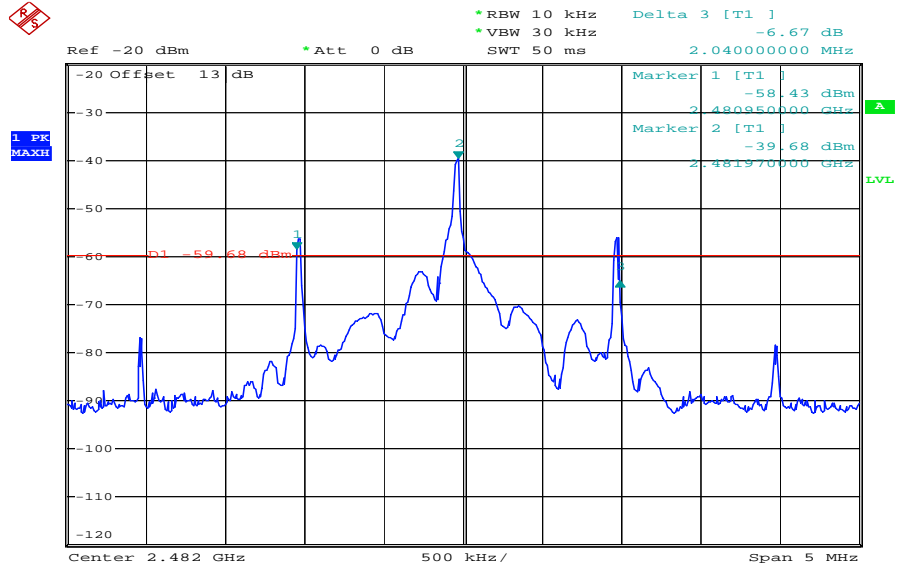
Date: 15.MAR.2012 10:06:42

**Plot 2: middle channel**



Date: 15.MAR.2012 10:08:02

Plot 3: highest channel



Date: 15.MAR.2012 10:09:28

### 9.3 Maximum field strength

#### Description:

Measurement of the maximum field strength radiated.

#### Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	1 MHz
Span:	3 MHz
Trace-Mode:	Max Hold
Measurement distance:	3 m

#### Limits:

FCC	IC
Maximum field strength	
The field strength of emissions of intentional radiators shall comply with the following: Field strength of fundamental: 50 mV/m / (94 dB $\mu$ V/m) @ 3 m (AVG) 500 mV/m / (114 dB $\mu$ V/m) @ 3 m (Peak)	

#### Result:

Modulation Frequency	Maximum field strength [dB $\mu$ V/m]		
	2402 MHz	2442 MHz	2482 MHz
Peak	91.64	90.29	89.44
AVG*)	73.37	72.02	71.17
Measurement uncertainty	$\pm 3$ dB		

\*) Average value calculated with duty cycle correction factor. (see chapter 9.1)

**Result: The result of the measurement is passed.**

## 9.4 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 lowest channel for the lower restricted band and to highest channel for the upper restricted band. Measurement distance is 3m.

### Measurement:

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

### Limits:

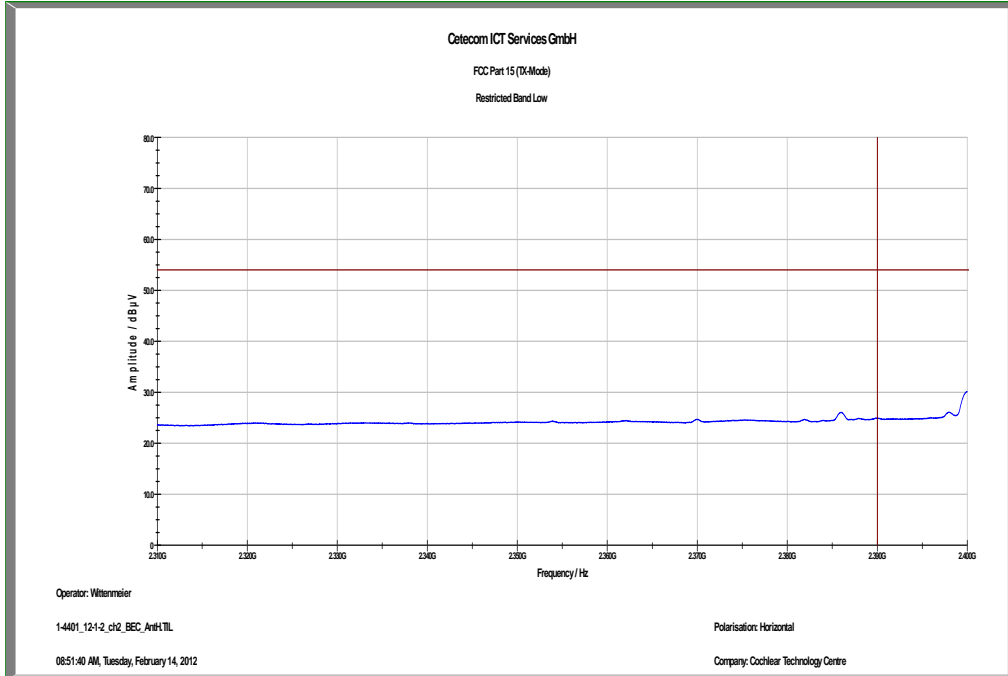
FCC	IC
Band Edge Compliance Radiated	
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209 / RSS GEN, whichever is the lesser attenuation.	
54 dB $\mu$ V/m (AVG) / 74 dB $\mu$ V/m (PP)	

### Result:

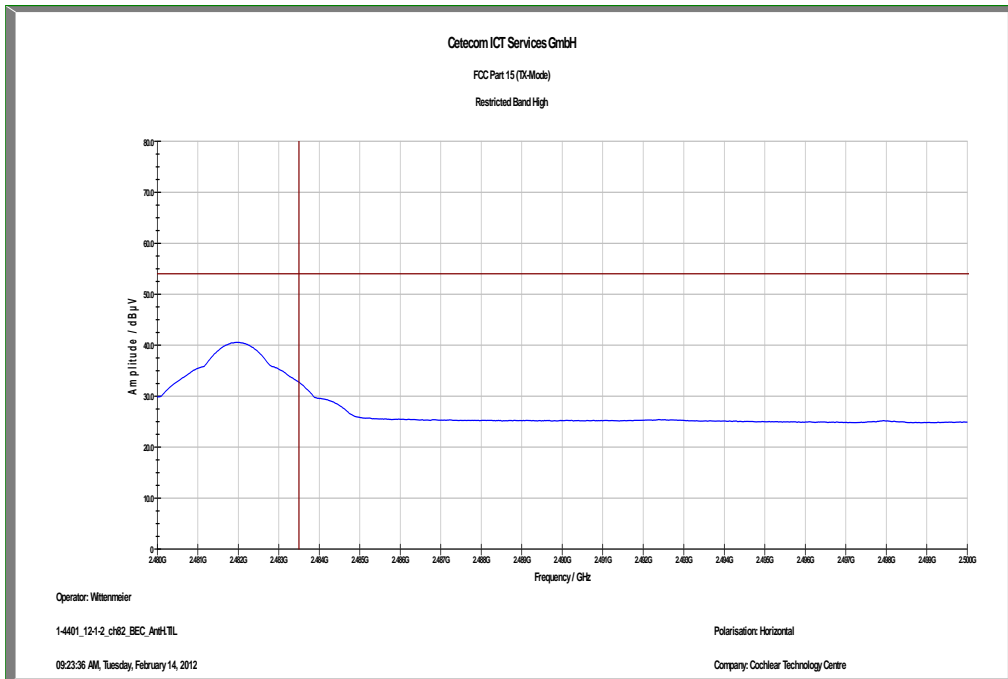
Modulation	Band Edge Compliance Radiated [dB $\mu$ V/m]
	GFSK
Lower Band Edge – Lowest Channel	< 54 dB $\mu$ V/m (see plots 1/3)
Upper Band Edge – Highest Channel	< 54 dB $\mu$ V/m (see plot 2/4)
Measurement uncertainty	$\pm$ 3 dB

**Plots:**

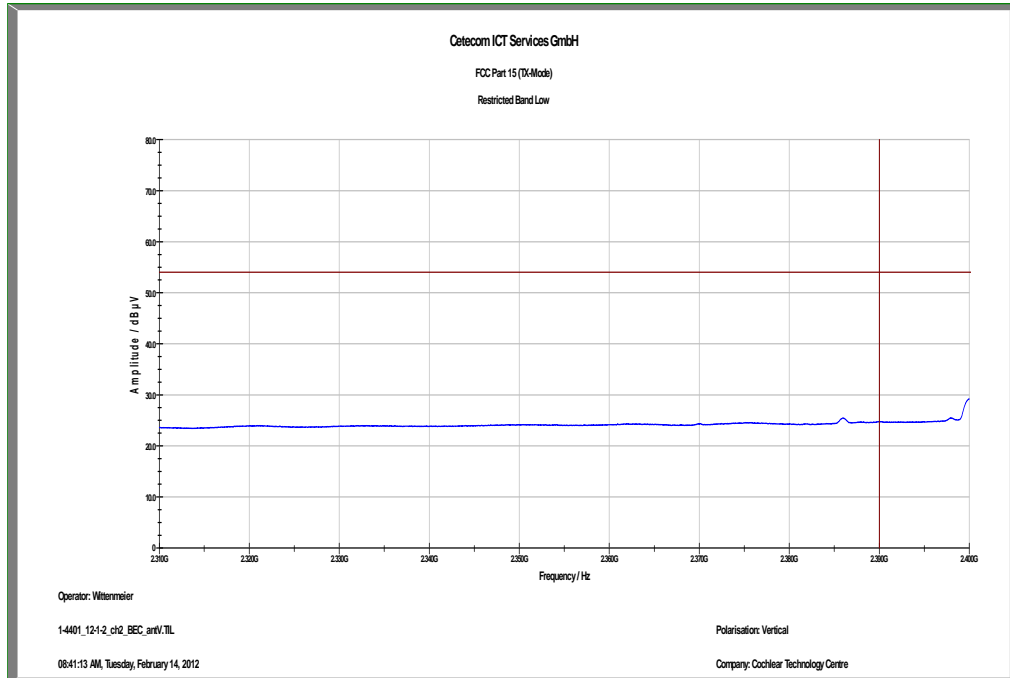
**Plot 1: lower band edge, horizontal polarization**



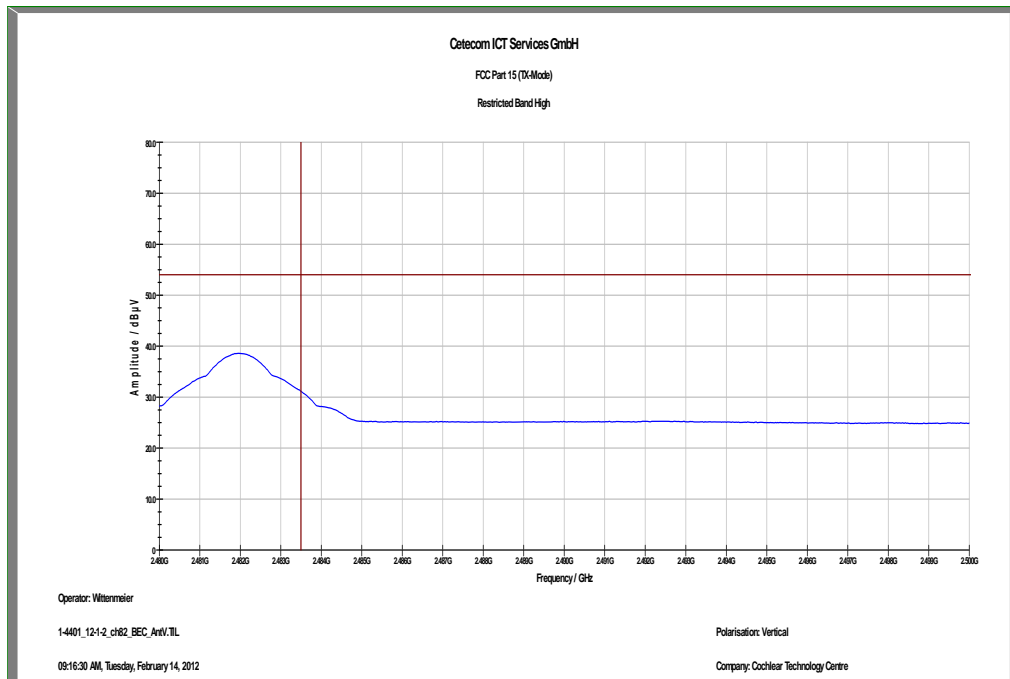
**Plot 2: upper band edge, horizontal polarization**



Plot 3: lower band edge, vertical polarization



Plot 4: upper band edge, vertical polarization



**Result:** The result of the measurement is passed.



## 9.5 TX spurious emissions radiated

### Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at lowest, middle and highest channel.

### Measurement:

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

### Limits:

FCC	IC	
TX spurious emissions radiated		
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209 / RSS GEN, whichever is the lesser attenuation.		
§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			2442 MHz			2482 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]
No critical peaks detected!			No critical peaks detected!			No critical peaks detected!		
Measurement uncertainty			± 3 dB					

**Result:** The result of the measurement is passed.

**Plot 1: Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**

Common Information

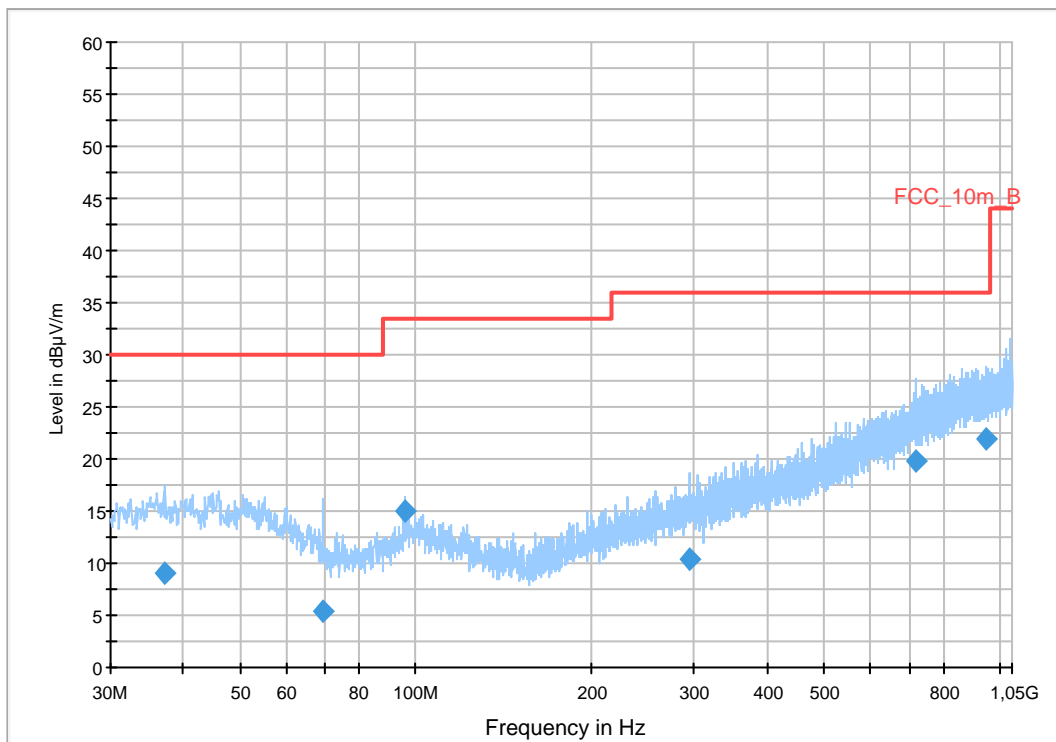
EUT: CP802  
 Serial Number: #101010; 1391855 W  
 Test Description: FCC part 15C class B  
 Operating Conditions: cont. TX @ 2402 MHz  
 Operator Name: Wolsdorfer  
 Comment: battery powered 3V DC

Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBµV/m

**Subrange**                      **Step Size**                      **Detectors**                      **IF BW**                      **Meas. Time**                      **Preamp**  
 30 MHz - 2 GHz                      60 kHz                      QPK                      120 kHz                      1 s                      20 dB

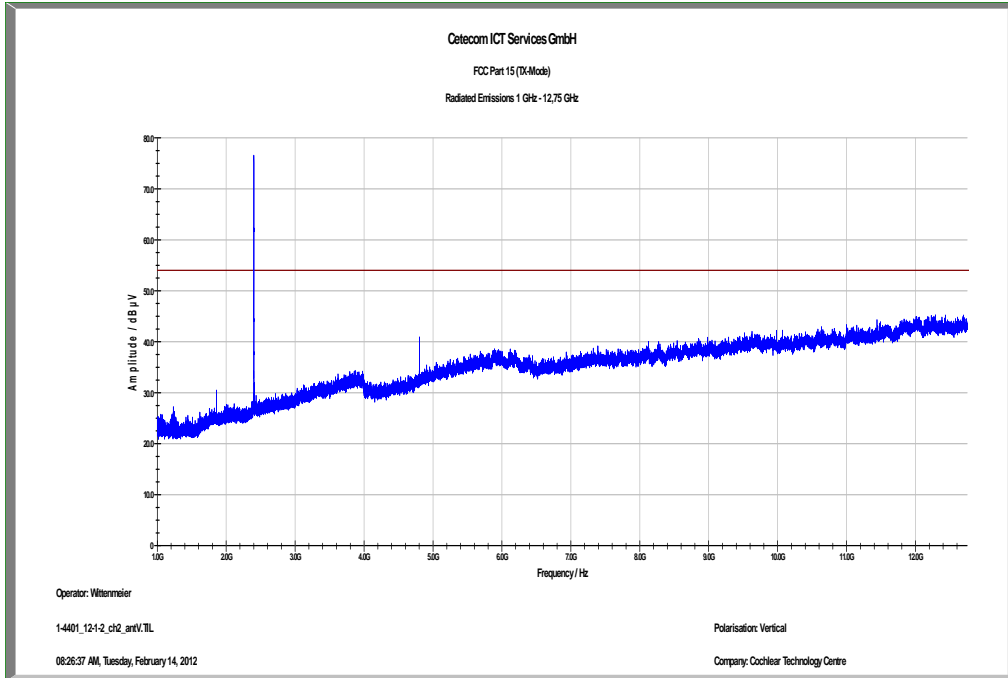
FCC\_10m(B)\_3



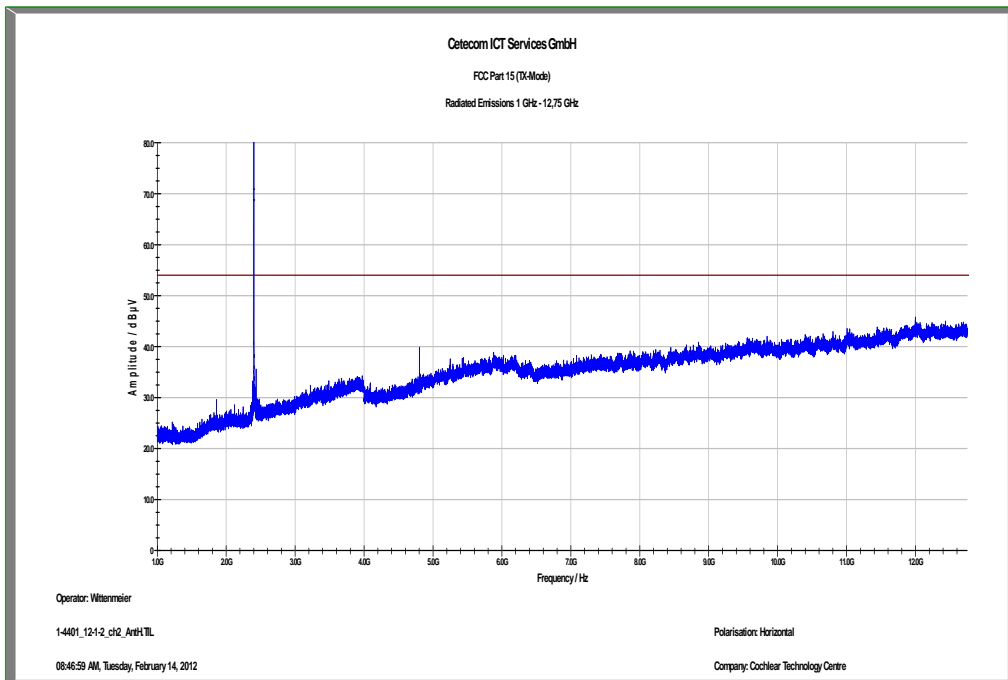
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
37.211400	9.1	1000.0	120.000	113.0	H	196.0	13.2	20.9	30.0	
69.430950	5.3	1000.0	120.000	157.0	H	106.0	9.4	24.7	30.0	
95.980050	14.9	1000.0	120.000	170.0	V	260.0	11.4	18.6	33.5	
293.682000	10.3	1000.0	120.000	98.0	V	174.0	14.4	25.7	36.0	
719.254500	19.7	1000.0	120.000	170.0	H	-3.0	23.0	16.3	36.0	
947.519700	21.9	1000.0	120.000	170.0	V	-3.0	25.3	14.1	36.0	

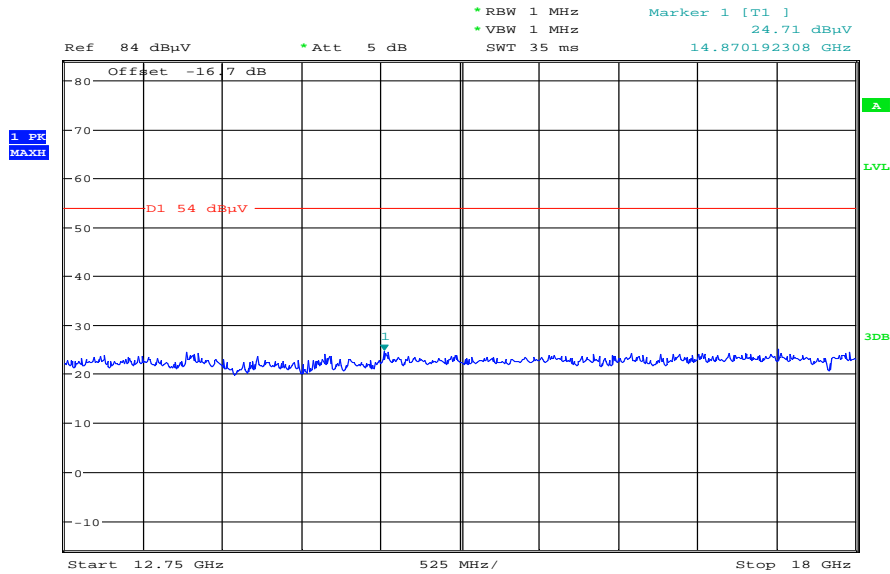
Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical polarization



Plot 3: Lowest channel, 1 GHz to 12.75 GHz, horizontal polarization

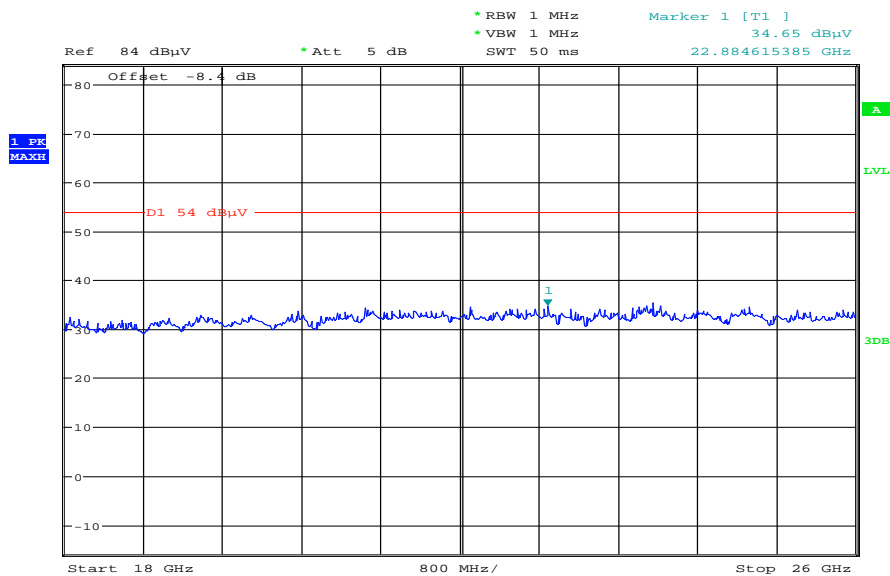


Plot 4: Lowest channel, 12 GHz to 18 GHz, vertical & horizontal polarization



Date: 14.FEB.2012 15:44:50

Plot 5: Lowest channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 14.FEB.2012 16:04:21

**Plot 6: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization**

**Common Information**

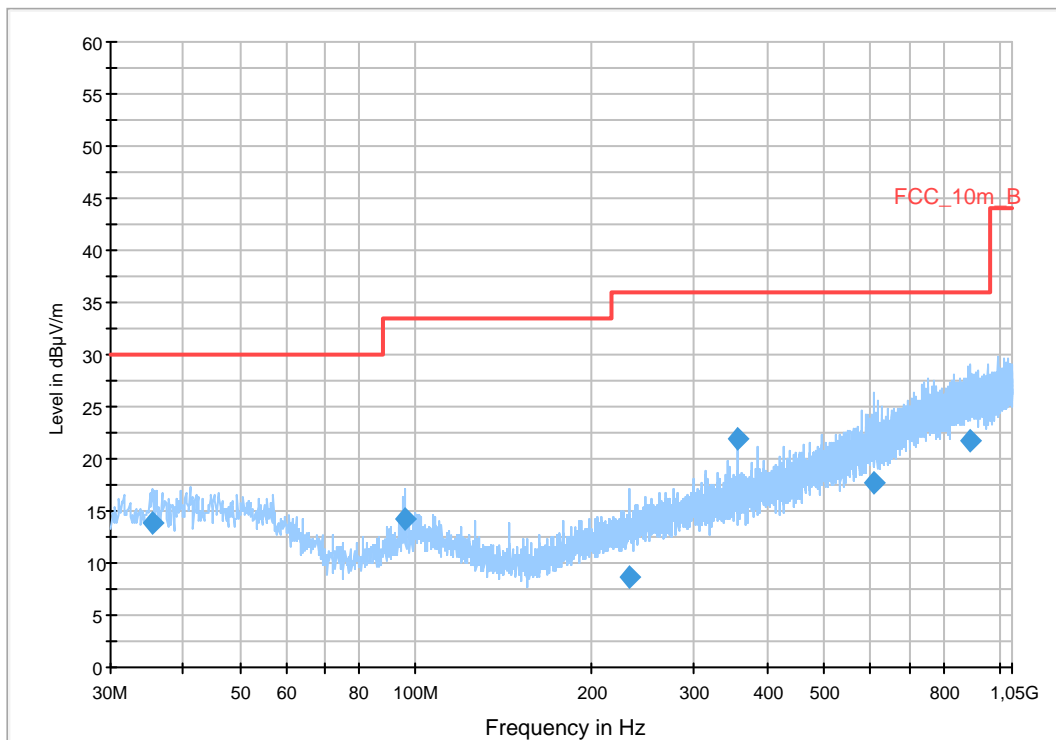
EUT: CP802  
 Serial Number: #101010; 1391855 W  
 Test Description: FCC part 15C class B  
 Operating Conditions: cont. TX @ 2442 MHz  
 Operator Name: Wolsdorfer  
 Comment: battery powered 3V DC

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

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBµV/m

**Subrange**                      **Step Size**                      **Detectors**                      **IF BW**                      **Meas. Time**                      **Preamp**  
 30 MHz - 2 GHz                      60 kHz                      QPK                      120 kHz                      1 s                      20 dB

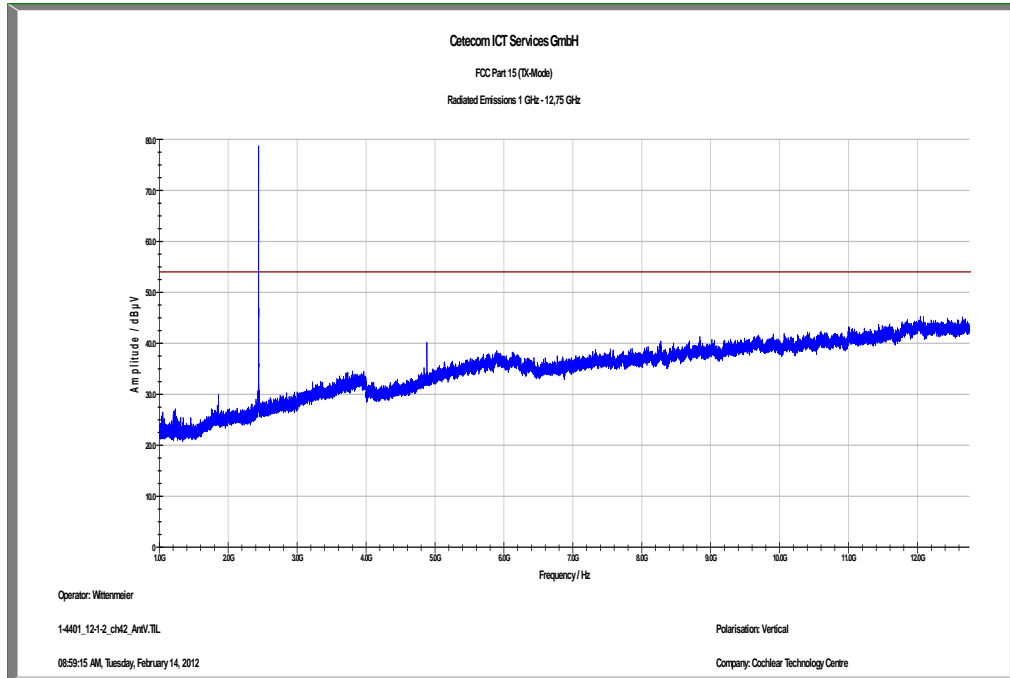
FCC\_10m(B)\_3



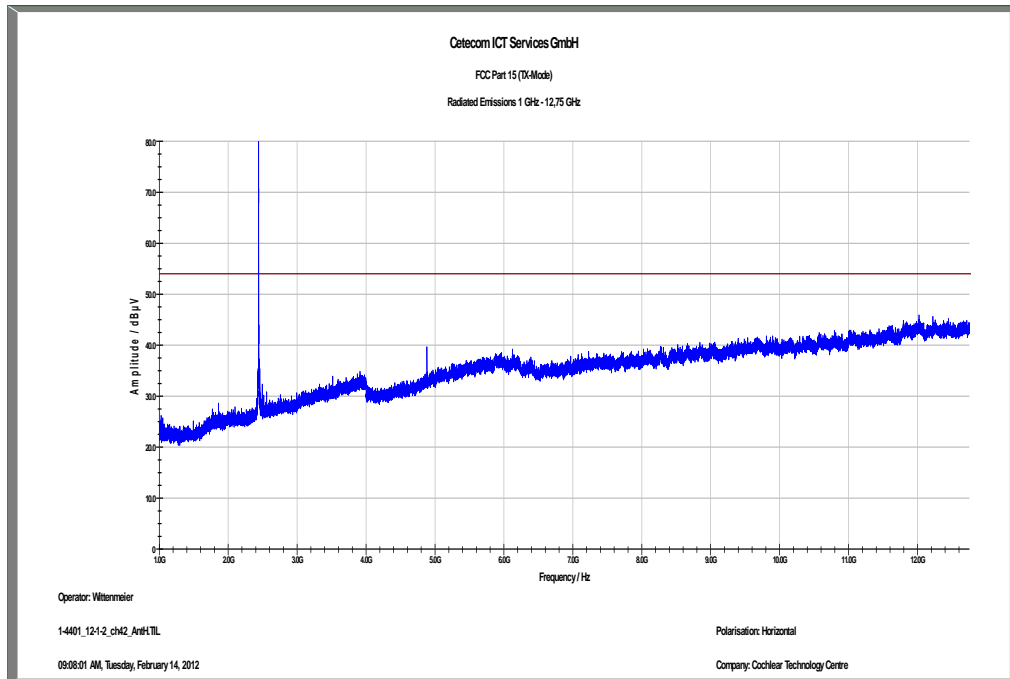
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.464650	13.9	1000.0	120.000	98.0	V	76.0	13.1	16.1	30.0	
96.016800	14.2	1000.0	120.000	170.0	V	283.0	11.4	19.3	33.5	
232.914300	8.6	1000.0	120.000	113.0	H	91.0	12.8	27.4	36.0	
355.801650	21.9	1000.0	120.000	98.0	V	102.0	16.2	14.1	36.0	
611.067000	17.7	1000.0	120.000	98.0	H	78.0	20.9	18.3	36.0	
888.353250	21.8	1000.0	120.000	170.0	V	102.0	25.1	14.2	36.0	

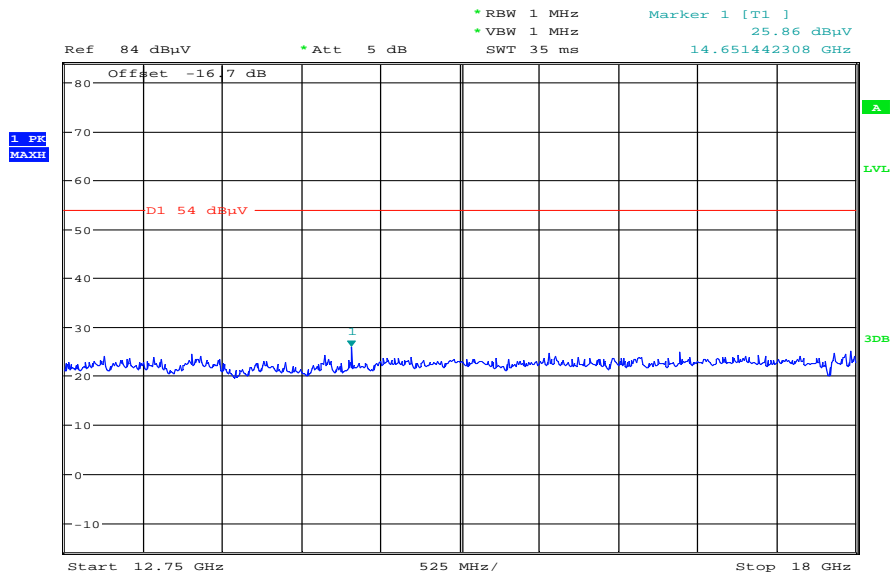
Plot 7: Middle channel, 1 GHz to 12.75 GHz, vertical polarization



Plot 8: Middle channel, 1 GHz to 12.75 GHz, horizontal polarization

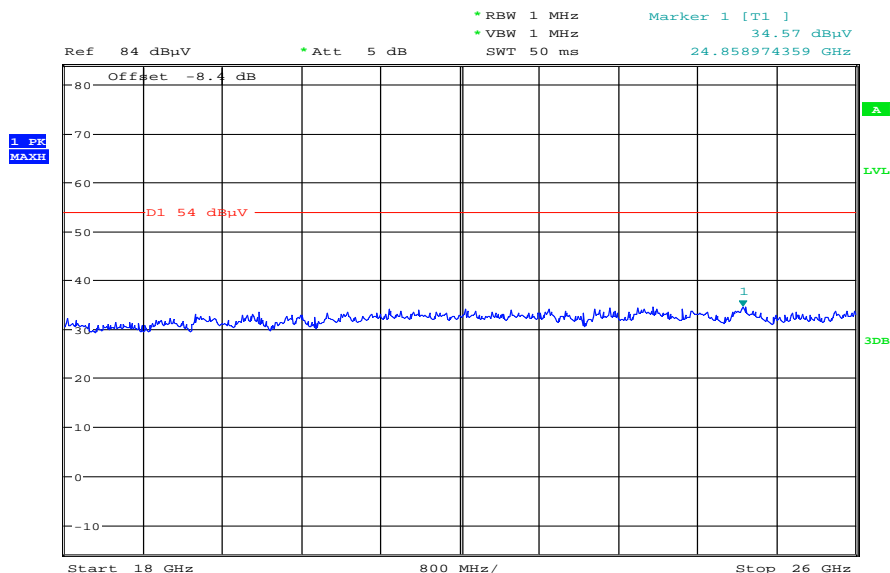


Plot 9: Middle channel, 12 GHz to 18 GHz, vertical & horizontal polarization



Date: 14.FEB.2012 15:45:29

Plot 10: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 14.FEB.2012 16:05:00



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

**Common Information**

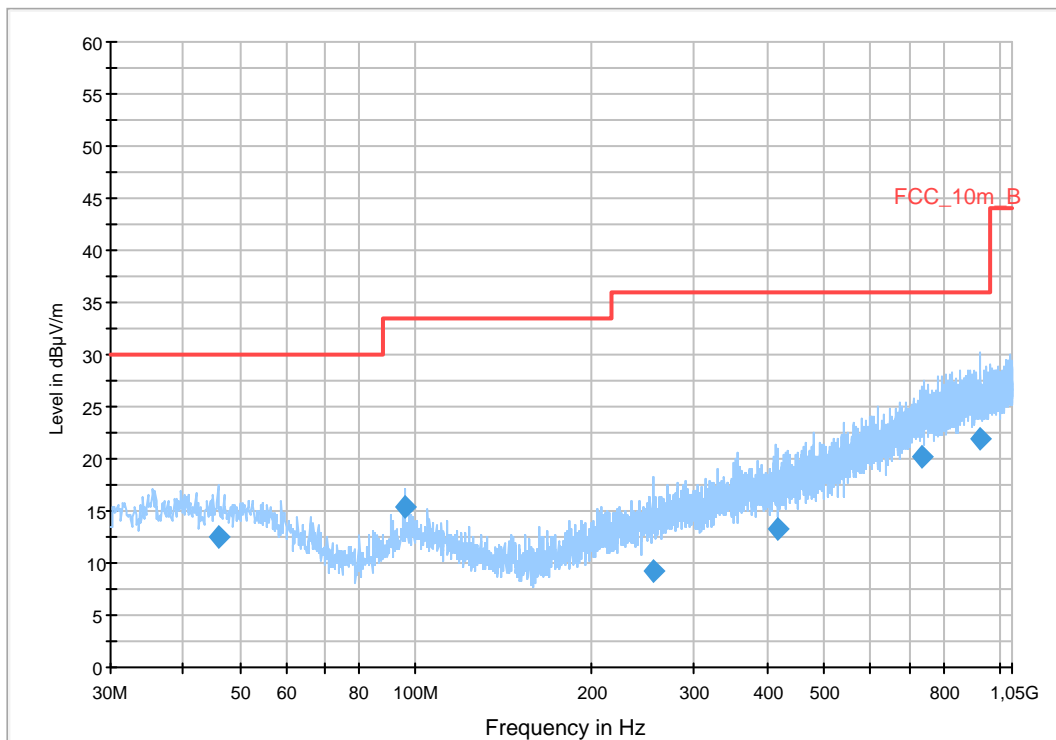
EUT: CP802  
 Serial Number: #101010; 1391855 W  
 Test Description: FCC part 15C class B  
 Operating Conditions: cont. TX @ 2482 MHz  
 Operator Name: Wolsdorfer  
 Comment: battery powered 3V DC

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

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBµV/m

**Subrange**                      **Step Size**                      **Detectors**                      **IF BW**                      **Meas. Time**                      **Preamp**  
 30 MHz - 2 GHz                      60 kHz                      QPK                      120 kHz                      1 s                      20 dB

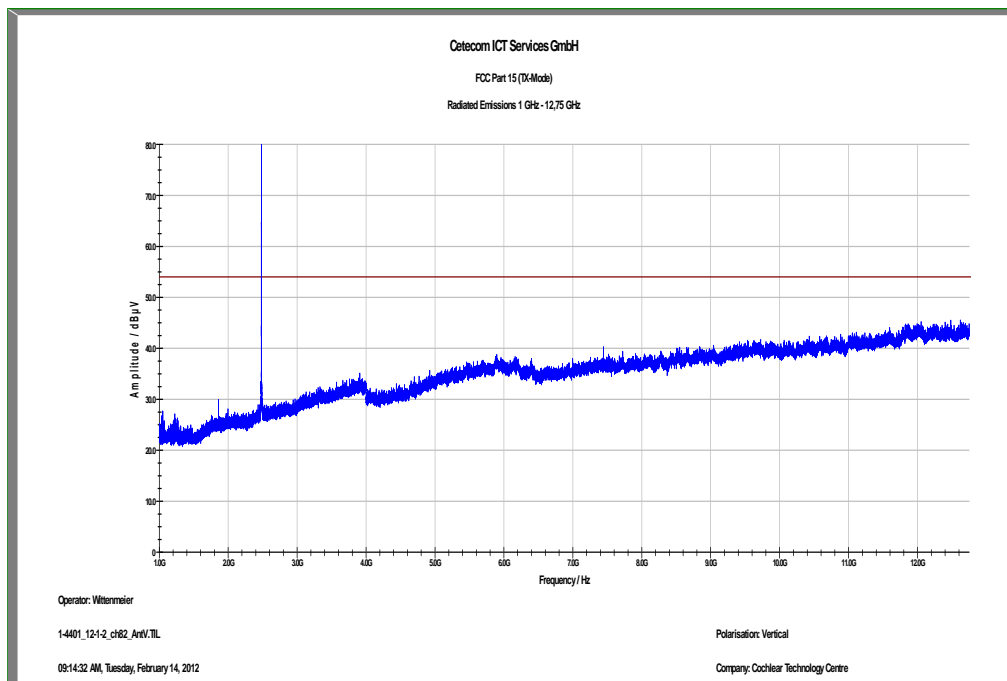
FCC\_10m(B)\_3



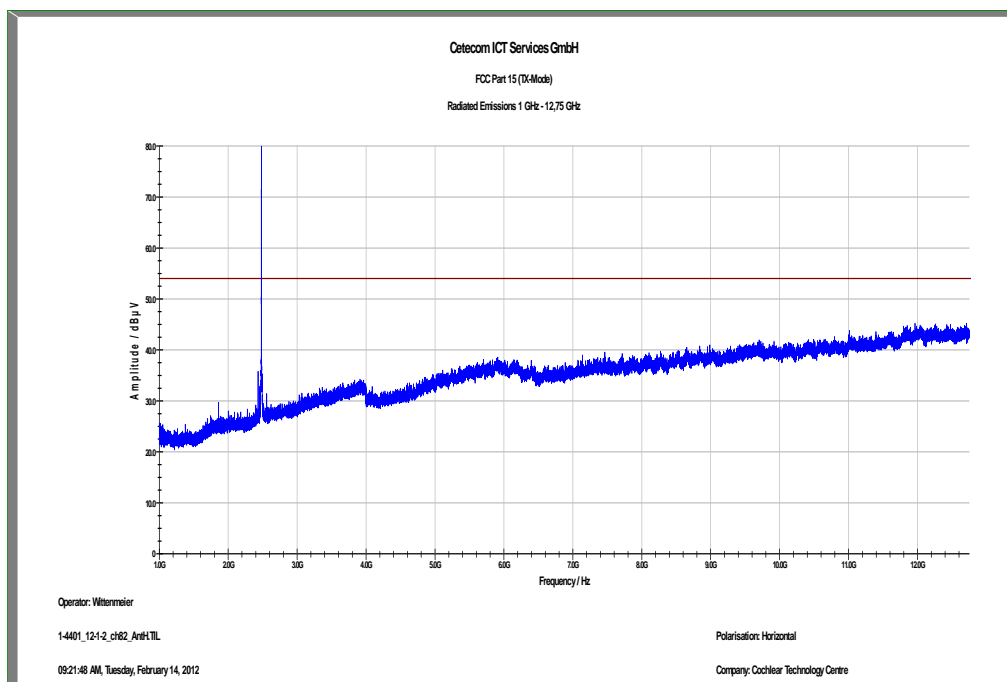
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
45.966300	12.5	1000.0	120.000	139.0	V	283.0	13.3	17.5	30.0	
95.998800	15.4	1000.0	120.000	128.0	V	-6.0	11.4	18.1	33.5	
255.676650	9.1	1000.0	120.000	115.0	H	184.0	13.5	26.9	36.0	
416.904900	13.3	1000.0	120.000	98.0	H	106.0	17.2	22.7	36.0	
734.423850	20.1	1000.0	120.000	170.0	H	264.0	23.3	15.9	36.0	
925.451700	22.0	1000.0	120.000	143.0	V	-7.0	25.3	14.0	36.0	

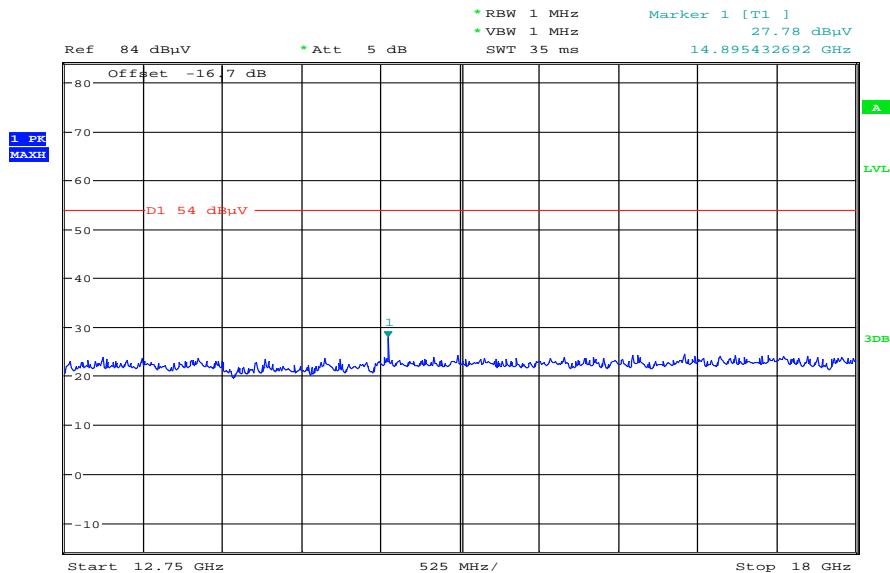
Plot 12: Highest channel, 1 GHz to 12.75 GHz, vertical polarization



Plot 13: Highest channel, 1 GHz to 12.75 GHz, horizontal polarization

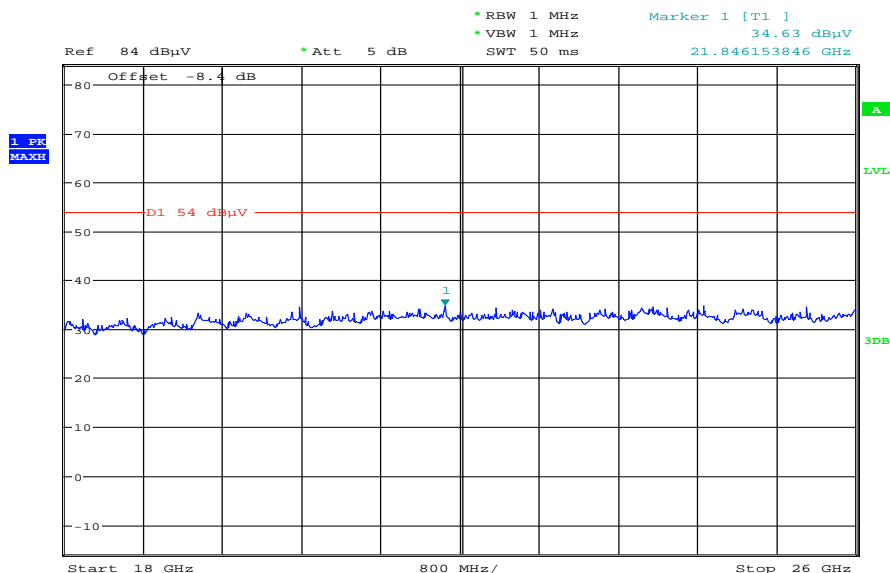


Plot 14: Highest channel, 12 GHz to 18 GHz, vertical & horizontal polarization



Date: 14.FEB.2012 15:46:05

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



Date: 14.FEB.2012 16:05:40

## 9.6 RX spurious emissions radiated

### Description:

Measurement of the radiated spurious emissions in idle/receive mode.

### Measurement:

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

### Limits:

FCC		IC
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:** The result of the measurement is passed.

**Plots: RX / Idle – mode**

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

**Common Information**

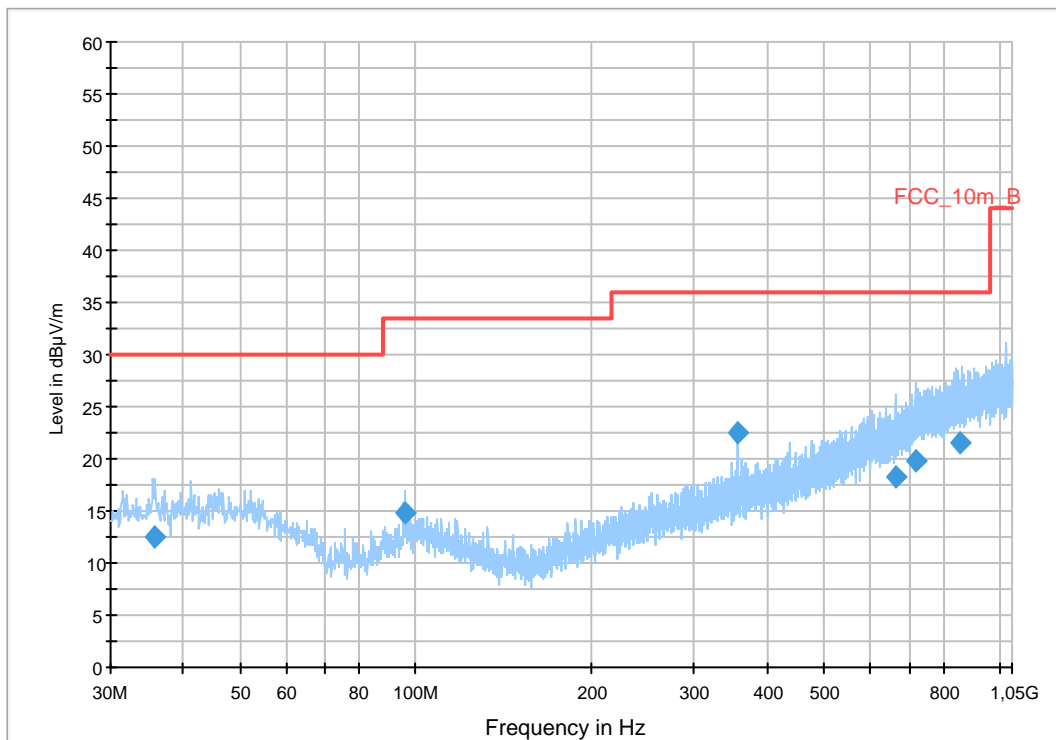
EUT: CP802  
 Serial Number: #101010; 1391855 W  
 Test Description: FCC part 15C class B  
 Operating Conditions: RX mode  
 Operator Name: Wolsdorfer  
 Comment: battery powered 3V DC

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

Hardware Setup: Electric Field (NOS)  
 Receiver: [ESCI 3]  
 Level Unit: dBµV/m

**Subrange**                      **Step Size**                      **Detectors**                      **IF BW**                      **Meas. Time**                      **Preamp**  
 30 MHz - 2 GHz                      60 kHz                      QPK                      120 kHz                      1 s                      20 dB

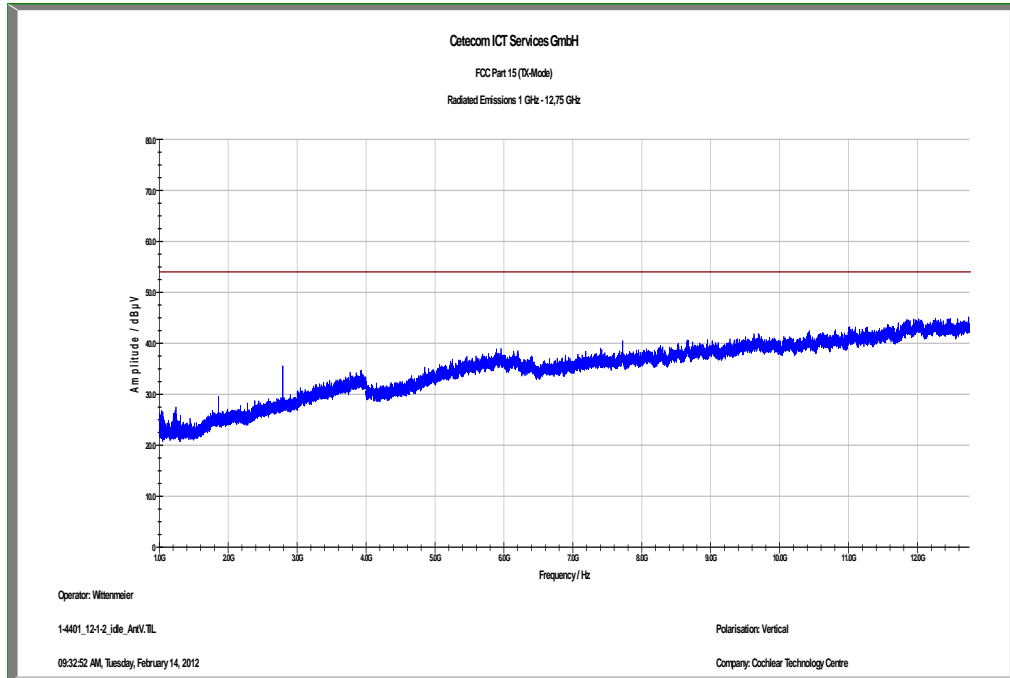
FCC\_10m(B)\_3



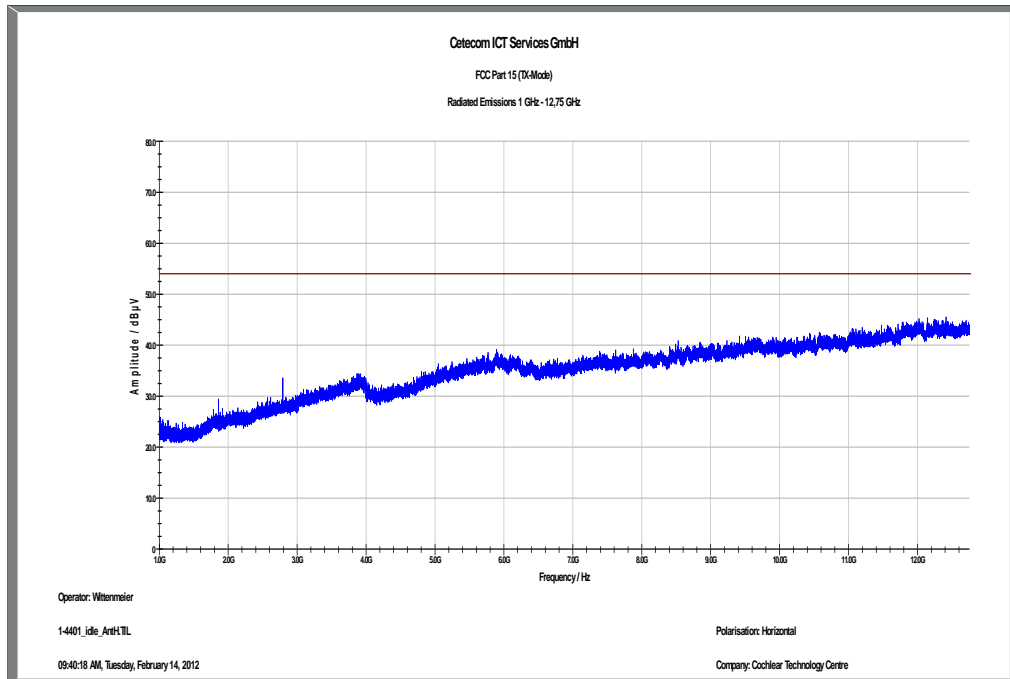
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.798850	12.5	1000.0	120.000	170.0	V	8.0	13.1	17.5	30.0	
96.004800	14.9	1000.0	120.000	170.0	V	92.0	11.4	18.6	33.5	
355.778250	22.4	1000.0	120.000	98.0	V	92.0	16.2	13.6	36.0	
663.667050	18.3	1000.0	120.000	170.0	V	-7.0	21.5	17.7	36.0	
718.831050	19.9	1000.0	120.000	170.0	H	94.0	22.9	16.1	36.0	
858.402750	21.5	1000.0	120.000	170.0	V	179.0	24.7	14.5	36.0	

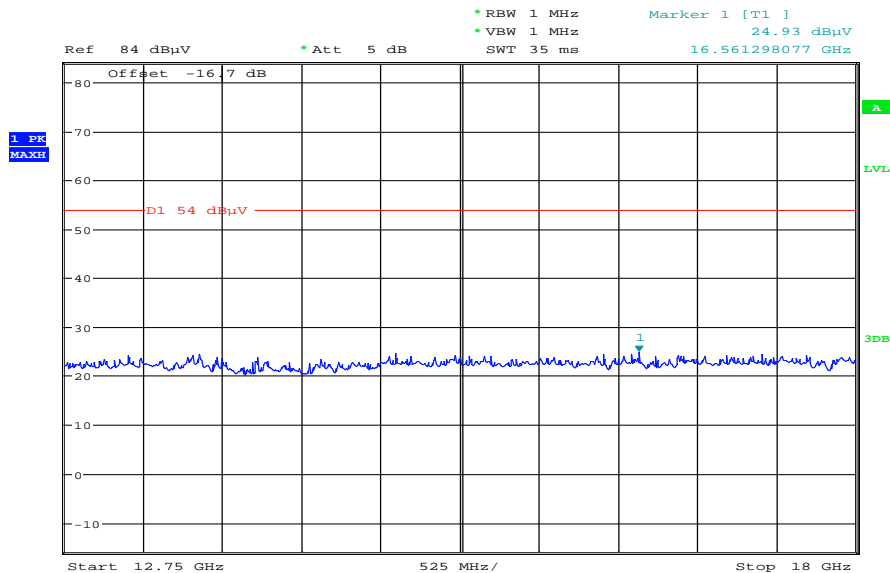
Plot 2: 1 GHz to 12.75 GHz, vertical polarization



Plot 3: 1 GHz to 12.75 GHz, horizontal polarization

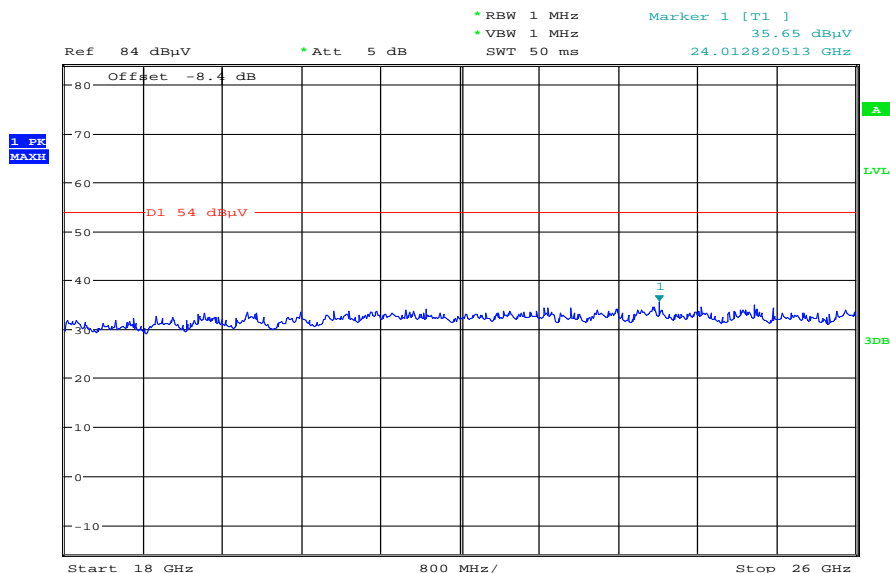


Plot 4: 12 GHz to 18 GHz, vertical & horizontal polarization



Date: 14.FEB.2012 15:46:52

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



Date: 14.FEB.2012 16:06:24

## 9.7 Spurious emissions radiated < 30 MHz

### Description:

Measurement of the radiated spurious emissions in transmit mode below 30 MHz. The EUT is set to lowest, middle and highest channel. 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	
Resolution bandwidth:	F < 150 kHz:	1 kHz
	F > 150 kHz:	100 kHz
Video bandwidth:	F < 150 kHz:	200 Hz
	F > 150 kHz:	9 kHz
Span:	9 kHz to 30 MHz	
Trace-Mode:	Max Hold	

### Limits:

FCC		IC	
Spurious Emissions Radiated < 30 MHz			
Frequency (MHz)	Field Strength (dB $\mu$ V/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:

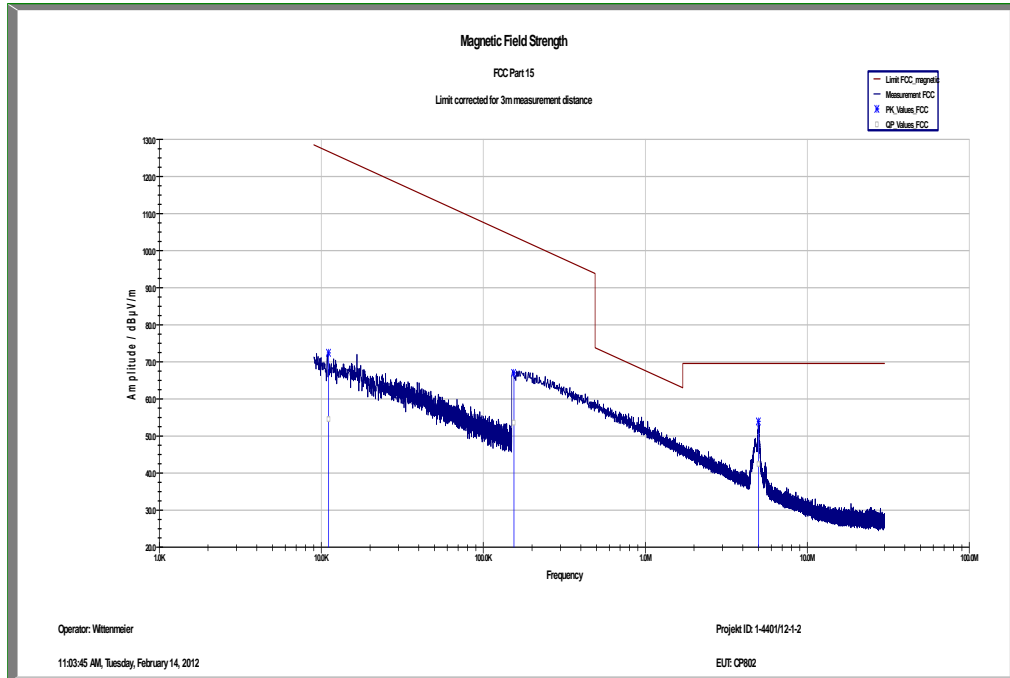
Spurious Emissions Radiated < 30 MHz [dB $\mu$ V/m]								
2402 MHz			2442 MHz			2482 MHz		
F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [dB $\mu$ V/m]
No critical peaks detected!			No critical peaks detected!			No critical peaks detected!		
Measurement uncertainty			± 3 dB					

**Result:** The result of the measurement is passed.

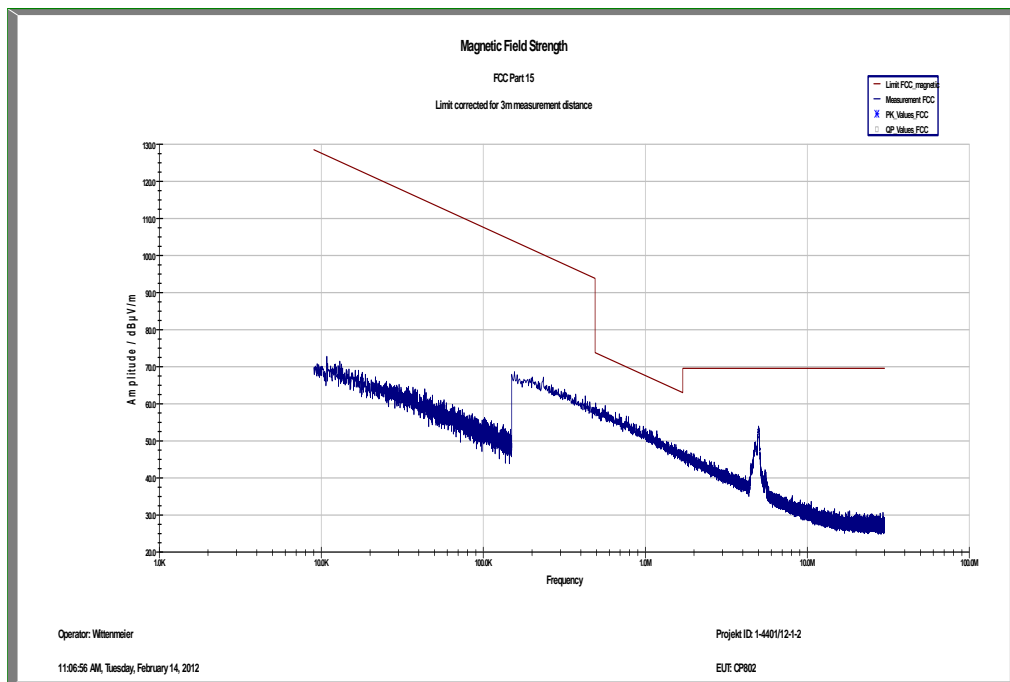


**Plots:**

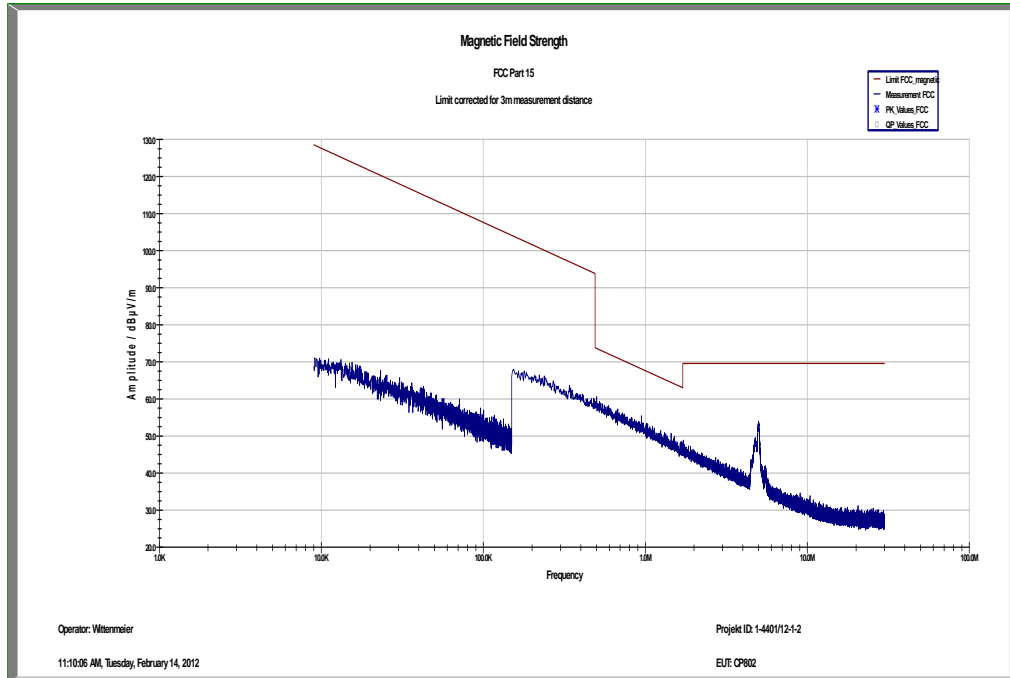
**Plot 1: 9 kHz to 30 MHz / lowest channel**



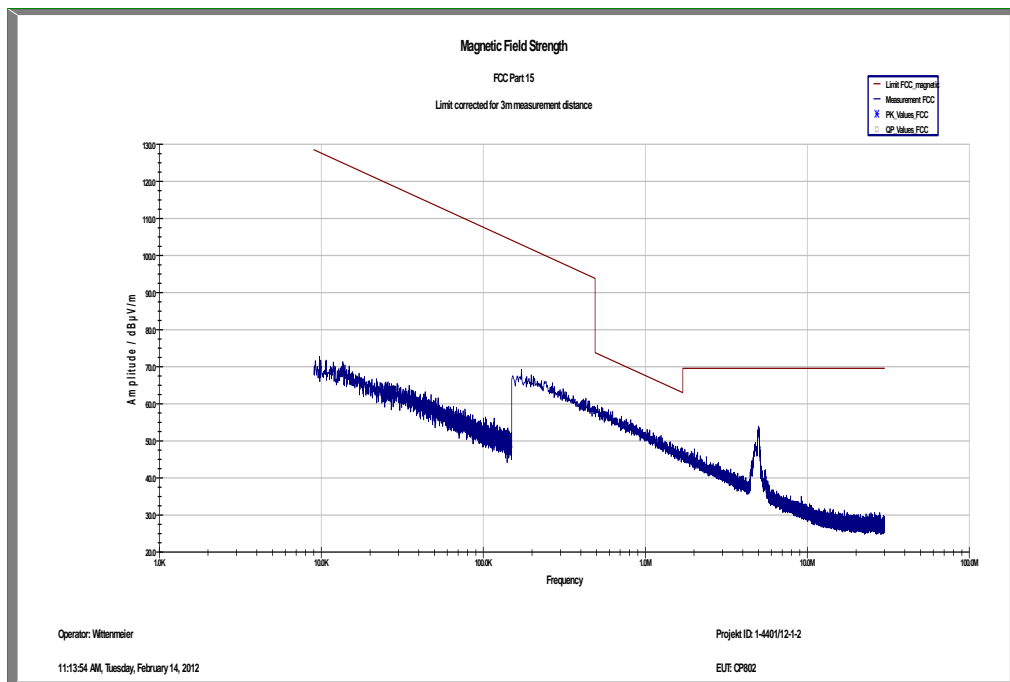
**Plot 2: 9 kHz to 30 MHz / middle channel**



Plot 3: 9 kHz to 30 MHz / highest channel



Plot 4: 9 kHz to 30 MHz / Idle mode



**9.8 Spurious emissions conducted < 30 MHz**

Not applicable!

## 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
11	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	viKI!	11.05.2011	11.05.2013
2	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
3	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
4	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
5	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
6	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
7	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
8	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
9	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
10	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
11	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	viKI!	08.09.2010	08.09.2012
12	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	viKI!	14.10.2011	14.10.2014
13	n. a.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	ve	01.07.2010	01.07.2012
14	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000787	ne		
15	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
16	11b	Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268	ev	10.03.2011	
17	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
18	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
19	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
20	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	04.01.2012	04.01.2014
21	n. a.	Analyzer-	ARS 16/1	SPS	A3509 07/0	300003314	k	14.07.2011	14.07.2013

		Reference-System (Harmonics and Flicker)			0205				
22	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
23	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
24	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
25	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
26	n. a.	TRIOLOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
27	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	06.01.2012	06.01.2014

**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
vlk!	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:

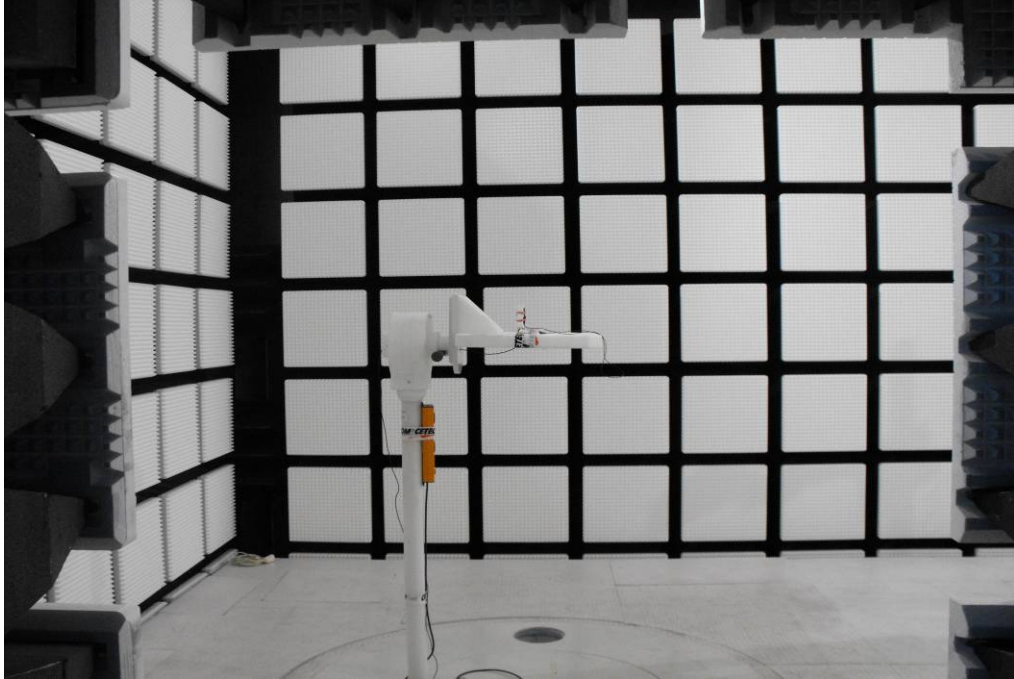


Photo 2:

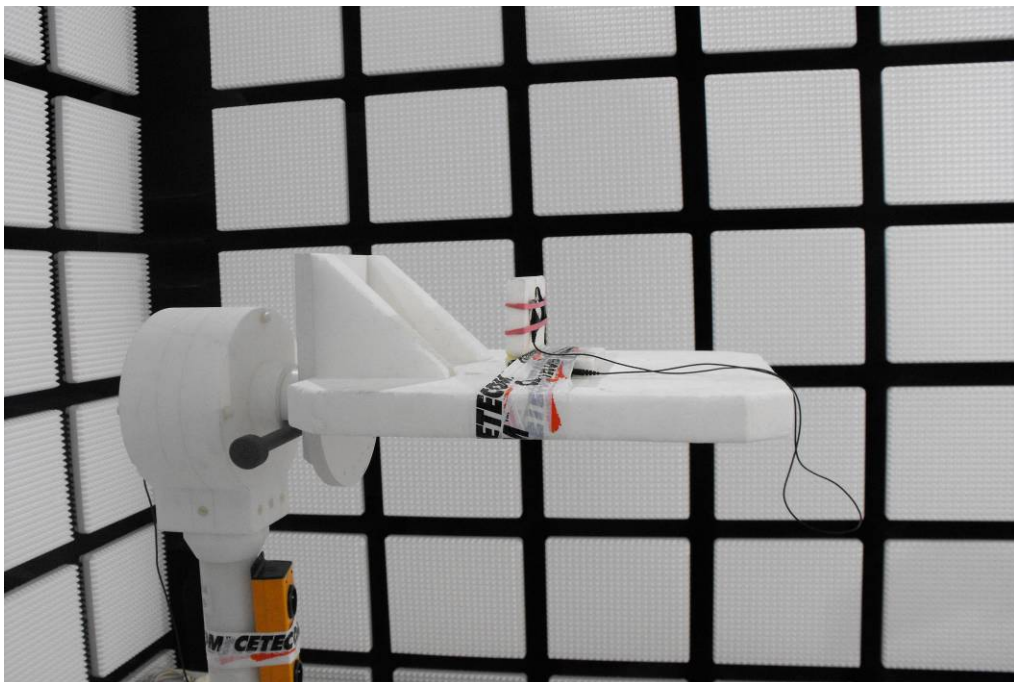


Photo 3:



Photo 4:





Photo 5:

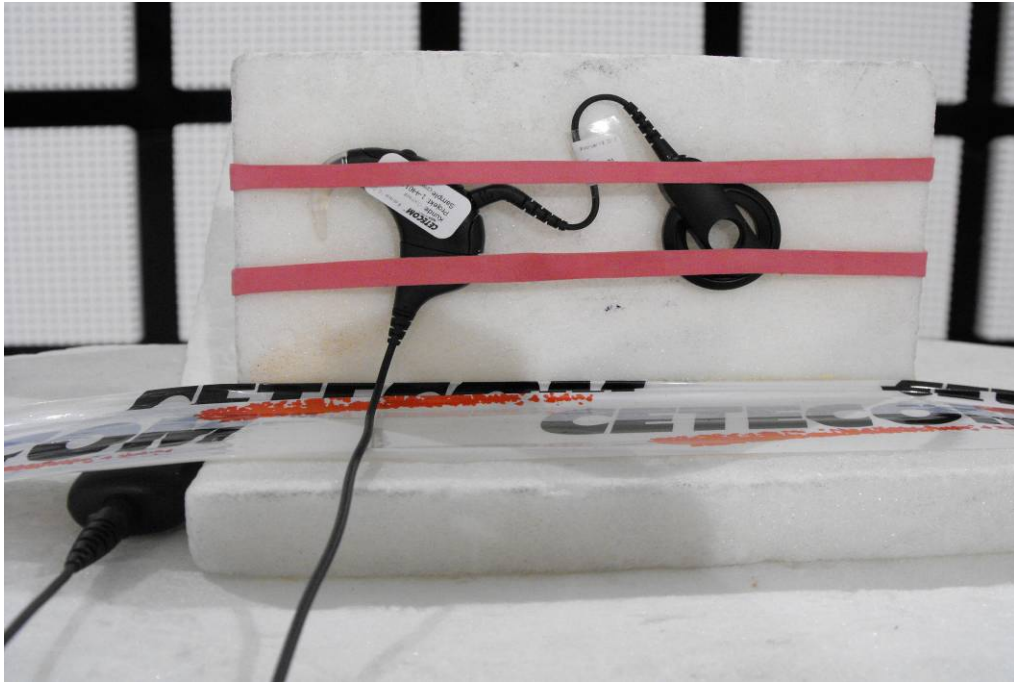


Photo 6:

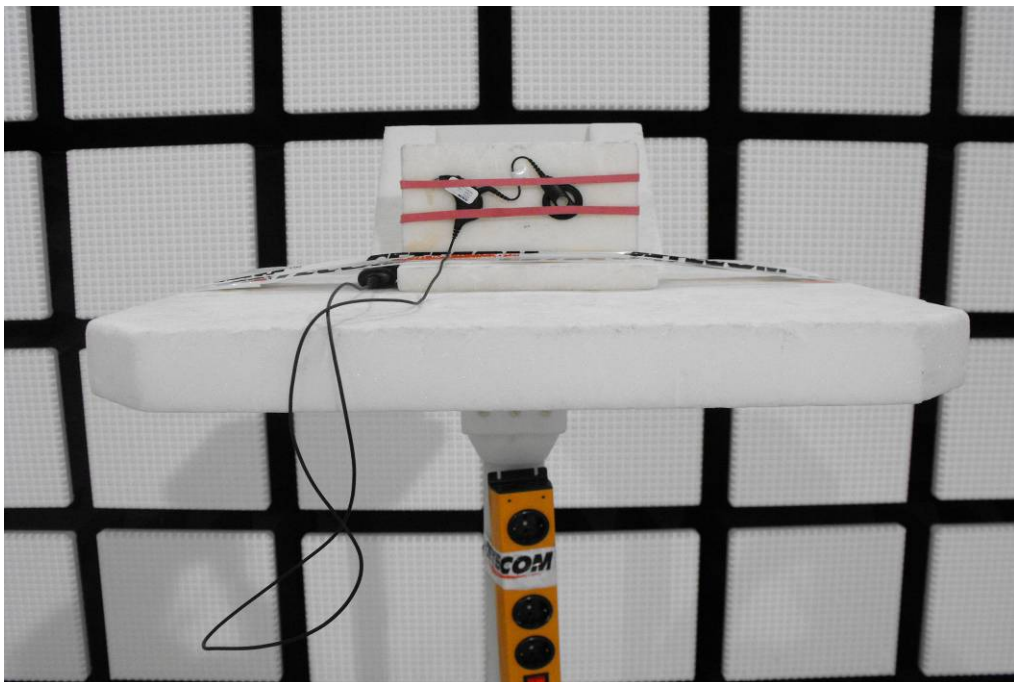




Photo 7:

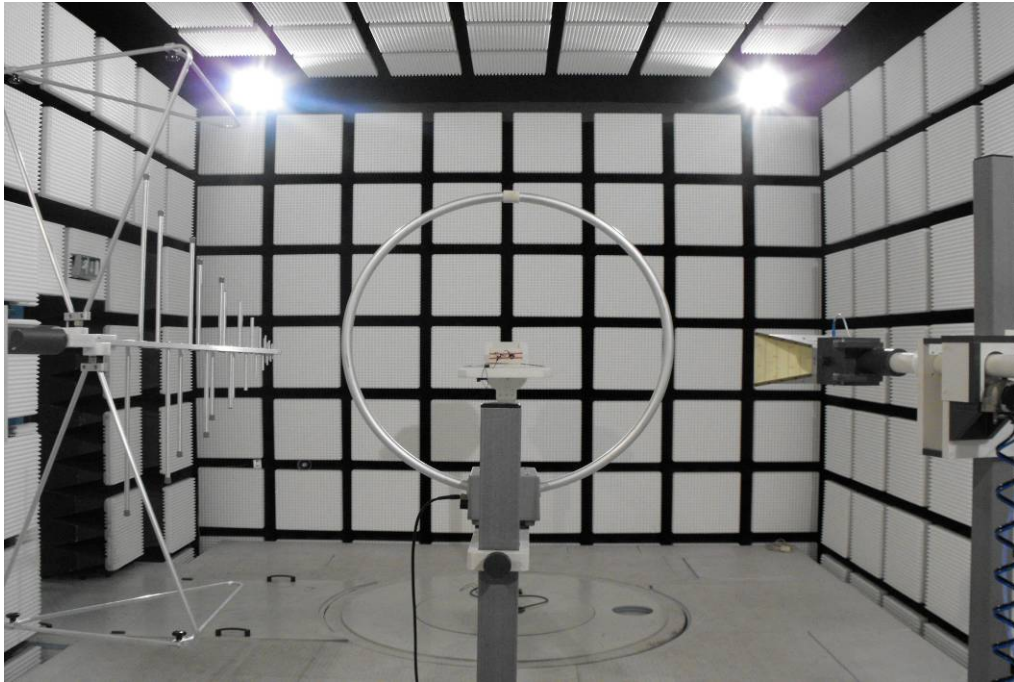
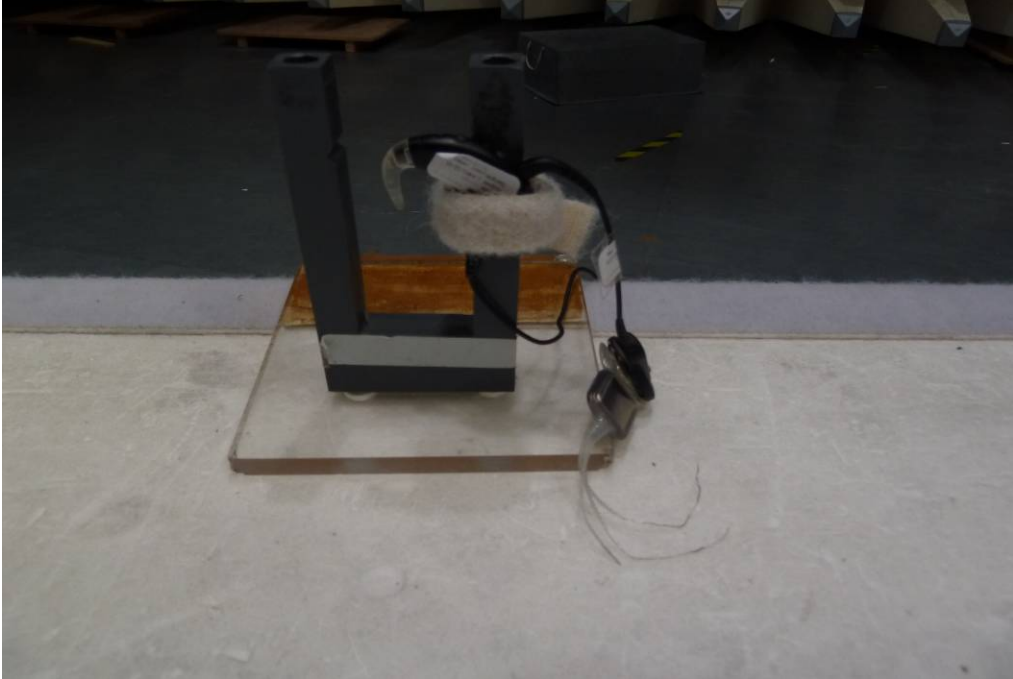


Photo 8:



Photo 9:





**Annex B External photographs of the EUT**

Photo documentation:

Photo 1:



Photo 2:





Photo 3:



Photo 4:



Photo 5:



Photo 6:





Photo 7:



Photo 8:



Photo 9:

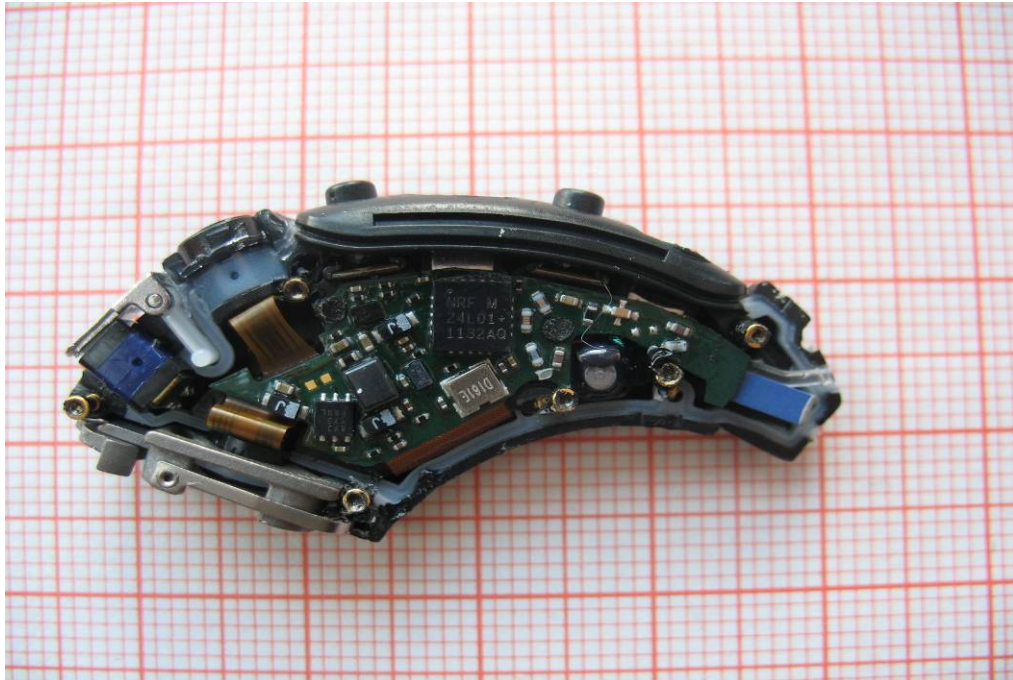




## Annex C Internal photographs of the EUT

Photo documentation:

Photo 1:





**Annex D Document history**

Version	Applied changes	Date of release
1.0	Initial release	2012-03-21

**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**



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)