

Recognized by the  
Federal Communications Commission  
Anechoic chamber registration no.: 90462 (FCC)  
Anechoic chamber registration no.: IC 3463A-1  
TCB ID: DE 0001



Accredited by the  
German Accreditation Council  
DAR-Registration Number  
DAT-P-176/94-D1



## Accredited Bluetooth® Test Facility (BQTF)

Test report no. : 1-0648-01-26/08 B  
Applicant : televic nv.  
Type : Confidea WCAP  
Test Standard : FCC Part 15.247  
RSS 210 Issue 7  
FCC ID : WM7CONFIDEAWCAP  
IC Certification No. : 7932A-CONFIDEAWAP

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## Table of contents

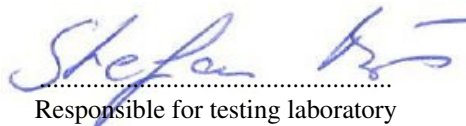
<b>1. ADMINISTRATIVE DATA .....</b>	<b>3</b>
1.1. ADMINISTRATIVE DATA OF THE TEST FACILITY .....	3
1.1.1 Identification of the testing laboratory .....	3
1.1.2 Organizational items.....	3
1.1.3 Applicant´s details .....	4
1.2. ADMINISTRATIVE DATA OF MANUFACTURER / MEMBER .....	4
1.3. DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT) .....	5
1.3.1 EUT: Type, S/N etc. ....	5
1.3.2 If RF component testing only, description of additional used HW/SW.....	5
1.3.3 Additional EUT information For IC Canada (appendix 2).....	6
1.3.4 EUT operating modes.....	7
1.3.5 Extreme conditions testing values.....	7
<b>2 TEST STANDARD &amp; SUMMARY LIST OF ALL PERFORMED TEST CASES .....</b>	<b>8</b>
<b>3 RF MEASUREMENT TESTING .....</b>	<b>9</b>
3.1 DESCRIPTION OF TEST SET-UP.....	9
3.1.1 Radiated measurements .....	9
3.1.2 Conducted measurements .....	9
3.2 REFERENCED DOCUMENTS .....	10
3.3 ADDITIONAL COMMENTS.....	10
3.4 ANTENNA GAIN .....	10
3.5 PEAK POWER SPECTRAL DENSITY §15.247(E).....	11
3.6 SPECTRUM BANDWIDTH OF AN OFDM SYSTEM §15.247(A2) .....	13
3.7 MAXIMUM OUTPUT POWER (CONDUCTED) (OFDM) §15.247 (B) (3).....	18
3.8 MAX. PEAK OUTPUT POWER §15.247 (B) (3).....	21
3.9 BAND-EDGE COMPLIANCE OF CONDUCTED EMISSIONS §15.247 (D) .....	22
3.10 BAND-EDGE COMPLIANCE OF RADIATED EMISSIONS (OFDM) §15.205 .....	24
3.11 SPURIOUS EMISSIONS - CONDUCTED (TRANSMITTER) §15.247 (D).....	25
3.12 SPURIOUS EMISSIONS - RADIATED (TRANSMITTER) §15.209 .....	35
3.13 SPURIOUS EMISSIONS - RADIATED RECEIVER §15.109 / 209 .....	47
3.14 SPURIOUS EMISSIONS - RADIATED <30 MHZ §15.209 .....	52
3.15 CONDUCTED EMISSIONS <30 MHZ §15.107/207 .....	53
<b>4 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS .....</b>	<b>55</b>
<b>5 PHOTOGRAPHS OF TEST SITE .....</b>	<b>59</b>
<b>6 PHOTOGRAPHS OF EQUIPMENT UNDER TEST .....</b>	<b>61</b>

## 1. Administrative data

### 1.1. Administrative data of the test facility

#### 1.1.1 Identification of the testing laboratory

Company name:	Cetecom ICT Services GmbH
Address:	Untertürkheimerstr. 6-10 D-66117 Saarbruecken Germany
Laboratory accreditation:	DAR-Registration No. DAT-P-176/94-D1 Bluetooth Qualification Test Facility (BQTF)
Responsible for testing laboratory:	Stefan Bös, Marco Bertolino Phone: +49 681 598 0 Fax: +49 681 598 9075 email: info@ict.cetecom.de



Responsible for testing laboratory  
(Stefan Bös)

#### 1.1.2 Organizational items

Reference No.:	1-0648-01-26/08
Order No.:	-/-
Responsible for test report and project leader:	Stefan Bös, Marco Bertolino
Receipt of EUT:	2008-08-18
Date(s) of test:	2008-08-18 to 2008-08-28
Date of report:	2009-01-22
Number of report pages:	76
-----	
Version of template:	1.6



Responsible for test report  
(Marco Bertolino)

Note:

The test results of this test report relate exclusively to the item tested as specified in this report. The 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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During the test no hardware and software changes are allowed to be performed at the EUT.

### 1.1.3 Applicant's details

Name:	televic nv.
Street:	Leo Bekaertlaan 1
Town:	8870 Izegem
Country:	BELGIUM
Telephone:	+32 51 30 30 45
Fax:	+32 51 33 18 86
Contact:	John Gesquiere
E-mail:	j.gesquiere@televic.com
Telephone:	+32 51 30 30 45

### 1.2 Administrative data of manufacturer / member

Name:	televic nv.
Street:	Leo Bekaertlaan 1
Town:	8870 Izegem
Country:	BELGIUM
Telephone:	+32 51 30 30 45
Fax:	+32 51 33 18 86
Contact:	John Gesquiere
E-mail:	j.gesquiere@televic.com
Telephone:	+32 51 30 30 45

### 1.3 Description of the Equipment under test (EUT)

#### 1.3.1 EUT: Type, S/N etc.

Product name		Description	S/N serial number	HW hardware status	SW software status
Confidea WCAP		Wireless Discussion System 2.4 / 5 GHz	0x13 mac:0x000E3D 100003	01.01	01.02
Frequency Band [MHz]	Type of Modulation	Number of channels	Antenna	Power Supply	Temperature Range
5725 - 5855	OFDM	4	Rod antenna	115 V / 24 V AC / DC power supply	-20°C to +55°C

#### 1.3.2 If RF component testing only, description of additional used HW/SW

	Product name	Product ID	Description	S/N serial number	HW hardware status	SW software status
1	--	--	--	--	--	--
2	--	--	--	--	--	--

# SRD-Testreport

CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 6 of 76

## 1.3.3 Additional EUT information For IC Canada (appendix 2)

IC Certification Number:	<b>7932A-CONFIDEAWAP</b>
Model Name:	<b>Confidea WCAP</b>
Manufacturer (complete Address):	<b>televic nv. Leo Bekaertlaan 1 8870 Izegem BELGIUM</b>
Tested to Radio Standards Specification (RSS) No.:	<b>RSS-210 Issue 7</b>
Open Area Test Site Industry Canada Number:	<b>IC 3463A-1</b>
Frequency Range (or fixed frequency) [MHz]:	<b>5725 MHz – 5855 MHz</b>
RF: Power [W] (max):	<b>OFDM: Rad. EIRP: 100.00 mW Conducted : 83.95 mW</b>
Antenna Type:	<b>Rod antenna</b>
Occupied Bandwidth (99% BW) [MHz]:	<b>OFDM 6 dB: 16.50 OFDM 20 dB: 19.32 OFDM 26 dB: 20.70</b>
Type of Modulation:	<b>OFDM</b>
Emission Designator (TRC-43):	<b>19M3G7D (OFDM) (20dB)</b>
Transmitter Spurious (worst case) [dB $\mu$ V/m in 3m]:	<b>50.33 @ 36.93 GHz PP</b>
Receiver Spurious (worst case) [dB $\mu$ V/m in 3m]:	<b>50.83 @ 37.20 GHz PP</b>

### ATTESTATION:

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

Signature:

Test engineer: Marco Bertolino      Date: 2009-01-22

### 1.3.4 EUT operating modes

EUT operating mode no.*)	Description of operating modes	Additional information
Op. 0	Normal mode	Normal temperature and power source conditions
Op. 1		low temperature, low power source conditions
Op. 3		low temperature, high power source conditions
Op. 4		high temperature, low power source conditions
Op. 5		high temperature, high power source conditions

\*) EUT operating mode no. is used to simplify the test report.

### 1.3.5 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T <sub>nom</sub>	°C	<b>20</b>
Nominal Humidity	H <sub>nom</sub>	%	<b>54</b>
Nominal Power Source	V <sub>nom</sub>	V	<b>115 V / 24 V</b>

Type of power source: **AC / DC power supply**

Deviations from these values are reported in chapter 2

## 2 Test standard & summary list of all performed test cases

TC identifier	Description	verdict	date	Remark
RF-Testing	FCC Part 15 §15.247 - CANADA RSS-210	passed	2009-01-22	-/-

Test Specification Clause	Test Case	Pass	Fail	Not applicable	Not performed
None	Antenna Gain	Yes			
§15.247 (e)	Peak power spectral density	Yes			
§15.247(a2)	Spectrum Bandwidth of an OFDMSystem 6dB/20dB/26dB BW	Yes			
§ 15.247 (b) (3)	Maximum output power (conducted)	Yes			
§ 15.247 (b) (3)	Max. peak output power (radiated)	Yes			
§15.247 d)	Band-edge compliance of conducted emissions	Yes			
§15.205	Band-edge compliance of radiated emissions	Yes			
§15.247 (d)	Spurious Emission - conducted (Transmitter)	Yes			
§ 15.209	Spurious Emission -radiated (Transmitter)	Yes			
§ 15.247 (d)	Spurious Emissions-radiated (Receiver)	Yes			
§ 15.209	Spurious Emissions-radiated <30 MHz	Yes			
§ 15.107/207	Conducted Emissions <30 MHz	Yes			



## 3 RF measurement testing

### 3.1 Description of test set-up

#### 3.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 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 C63.4-2003 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 set-ups 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 C63.4-2003 clause 4.2.

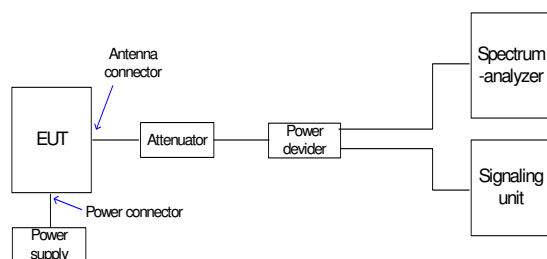
Antennas are confirmed with ANSI C63.2-1996 item 15.

- 9 kHz - 150 MHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.
- 150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.
- 30 MHz - 200 MHz: Quasi Peak measurement, 120 kHz Bandwidth, bi-conical antenna
- 200MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, log periodic antenna
- >1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.209 and 15.207

#### 3.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is connected to the spectrum analyzer. The specific losses for signal path are first checked within a calibration. The measurement readings on the 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.



### 3.2 Referenced Documents

Confidea: Reference document for the initiation of the EUT's and further important settings.  
This document is provided by televic n.v.!

### 3.3 Additional comments

All measurements are performed in high power mode with max. duty cycle.

### 3.4 Antenna gain

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.

	low channel (1) 5745 MHz	mid channel (2) 5765 MHz	high channel (4) 5805 MHz
Conducted power [dBm] <i>(measured)</i>	<b>19.24</b>	<b>19.24</b>	19.00
Radiated power [dBm] <i>(measured)</i>	19.48	19.84	<b>20.00</b>
Gain [dBi] <i>(calculated)</i>	0.24	0.60	<b>1.00</b>

Note:

The radiated and conducted output power are measured with the following settings:

- Peak detector
- 50 MHz RBW / 30 MHz VBW
- Span 50 MHz
- Max. hold mode

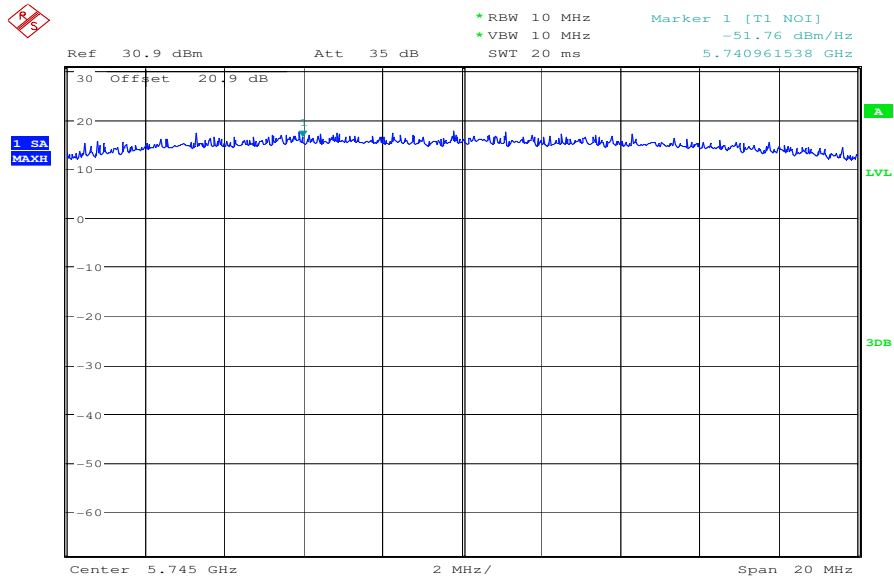
Limits:

Under normal test conditions only	max. 6 dBi
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### 3.5 Peak Power Spectral density

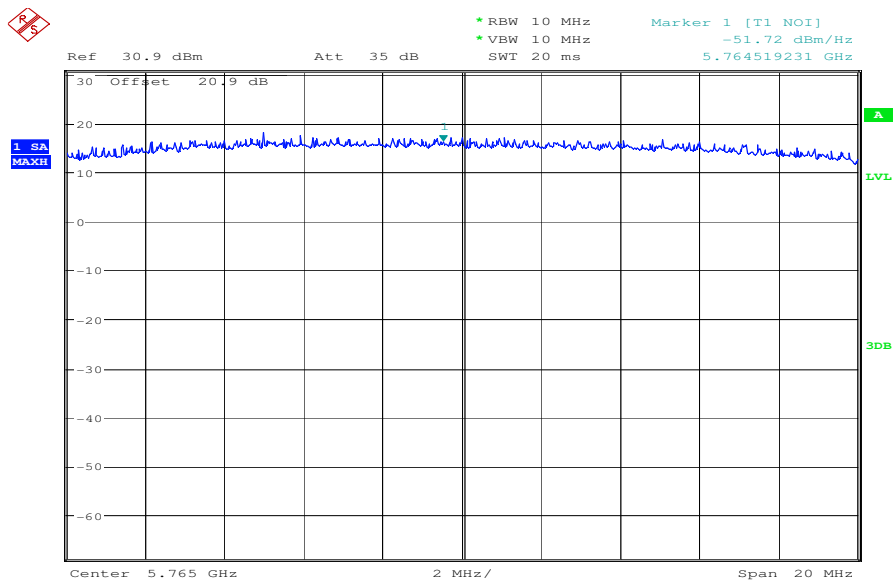
§15.247(e)

Plot 1: channel 1, 5745 MHz



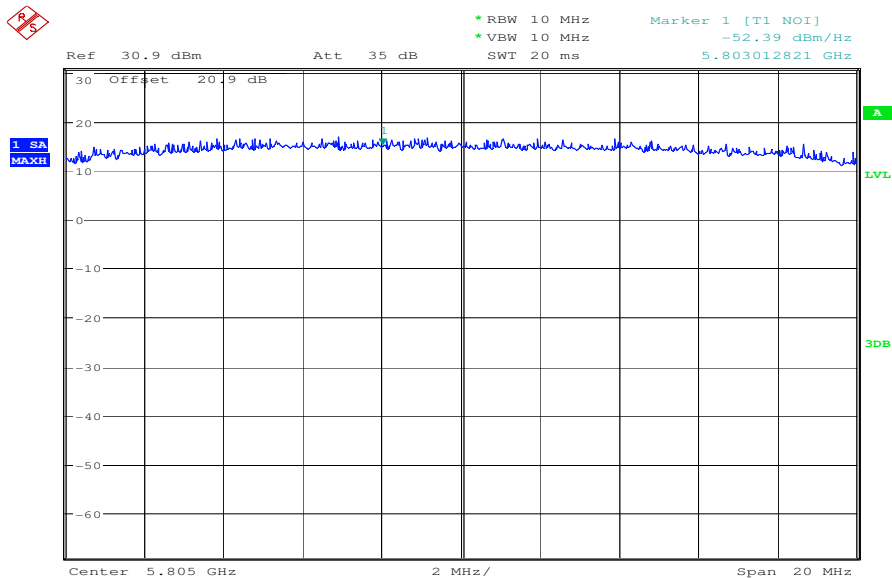
Date: 22.JAN.2009 14:01:10

Plot 2: channel 2, 5465 MHz



Date: 22.JAN.2009 14:22:46

Plot 3: channel 4, 5805 MHz



Date: 22.JAN.2009 14:41:12

Results: Plot 1: Power density : = -51.76 dBm / Hz = -16.96 dBm / 3 kHz  
 Plot 2: Power density : = -51.72 dBm / Hz = -16.92 dBm / 3 kHz  
 Plot 3: Power density : = -52.39 dBm / Hz = -17.59 dBm / 3 kHz

Correction factor from dBm / 3 kHz is +34.8 dB.

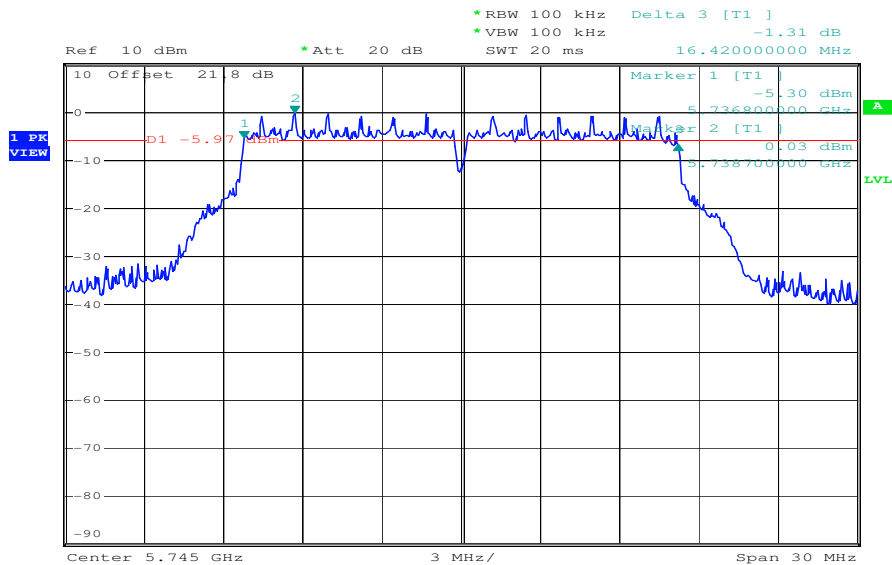
Limits :

Under normal test conditions only	For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmission
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### 3.6 Spectrum Bandwidth of an OFDM System

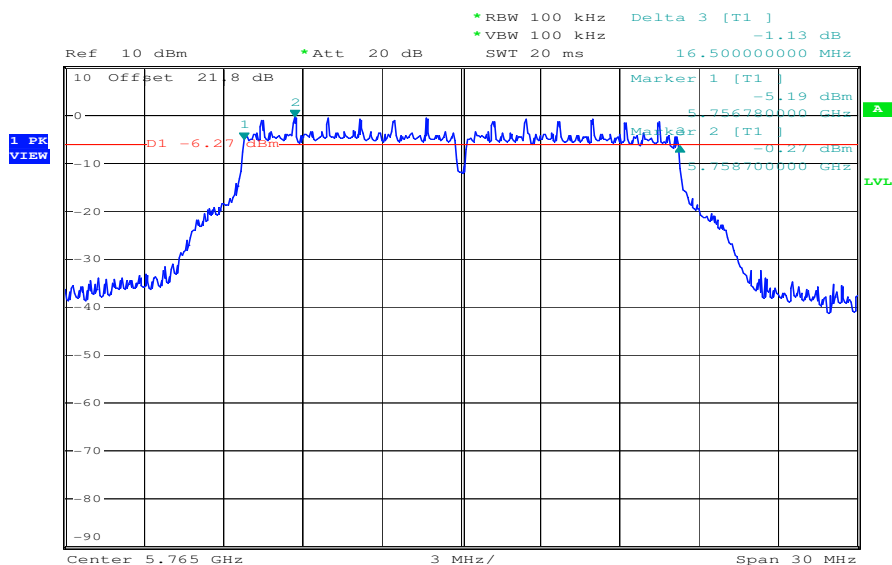
§15.247(a2)

Plot 1: 6 dB-Bandwidth (5745 MHz)



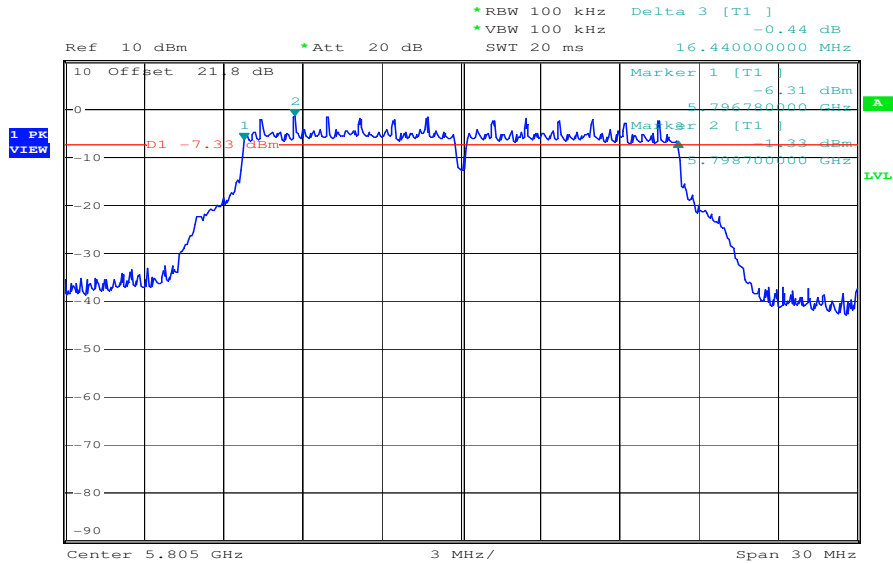
Date: 28.AUG.2008 07:20:17

Plot 2: 6 dB-Bandwidth (5765MHz)



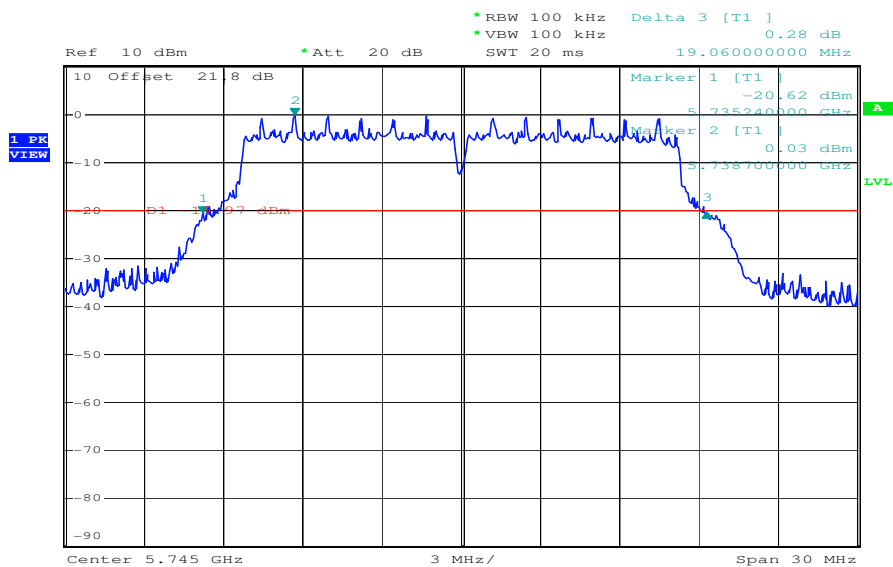
Date: 28.AUG.2008 07:14:07

Plot 3: 6 dB-Bandwidth (5805 MHz)



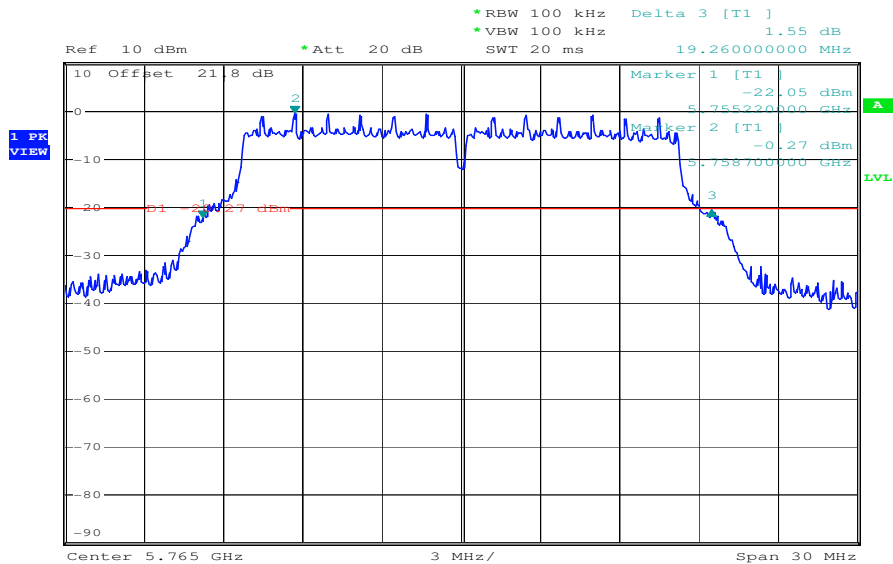
Date: 28.AUG.2008 07:09:04

Plot 4: 20 dB-Bandwidth (5745 MHz)



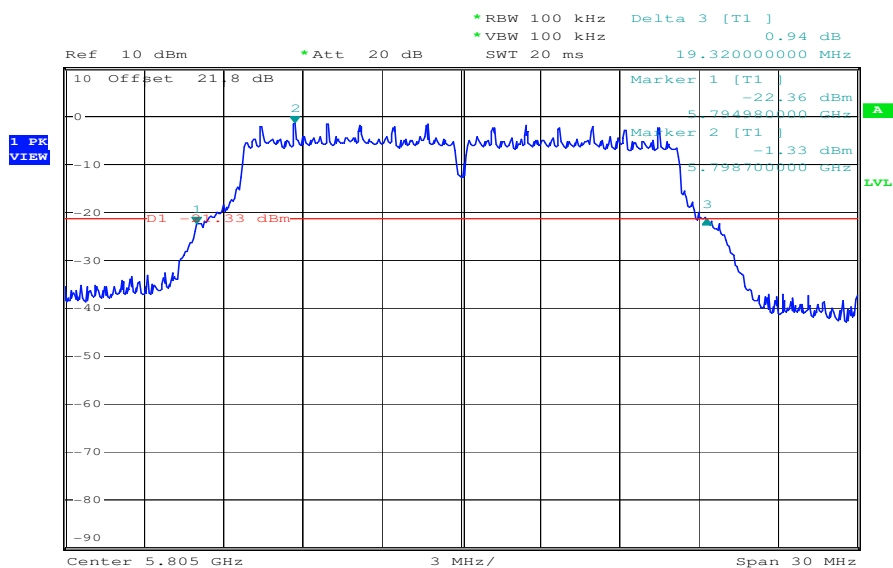
Date: 28.AUG.2008 07:21:37

Plot 5: 20 dB-Bandwidth (5765 MHz)



Date: 28.AUG.2008 07:17:07

Plot 6: 20 dB-Bandwidth (5805 MHz)



Date: 28.AUG.2008 07:10:06

# SRD-Testreport

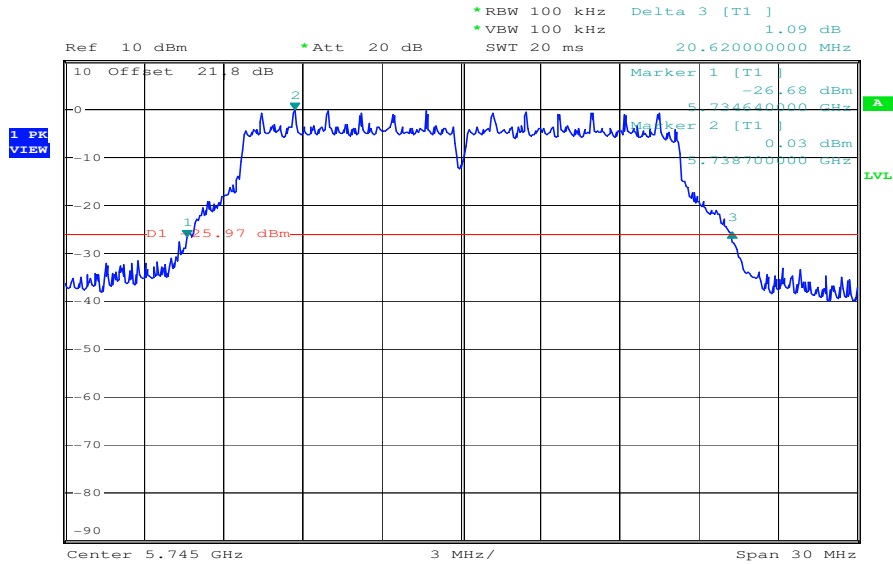
CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

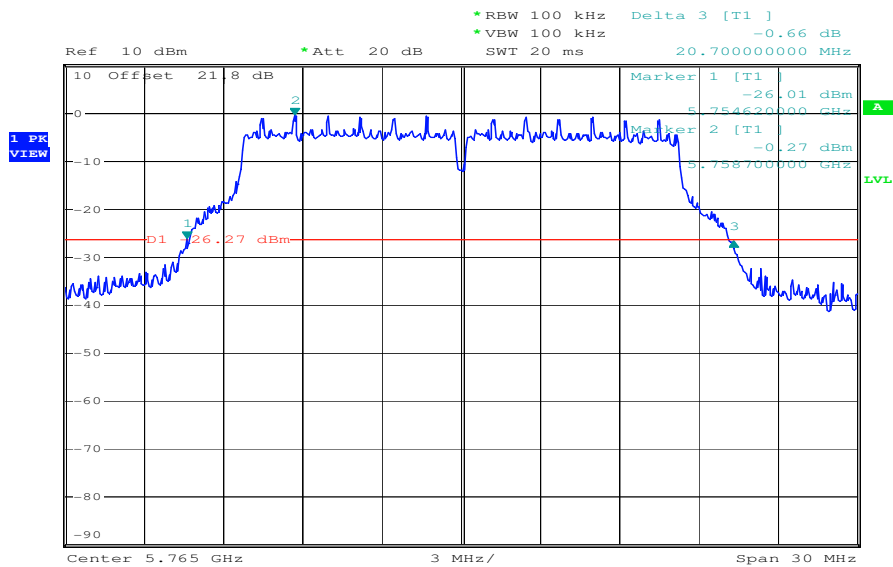
Page 16 of 76

Plot 7: 26 dB-Bandwidth (5745MHz)



Date: 28.AUG.2008 07:22:17

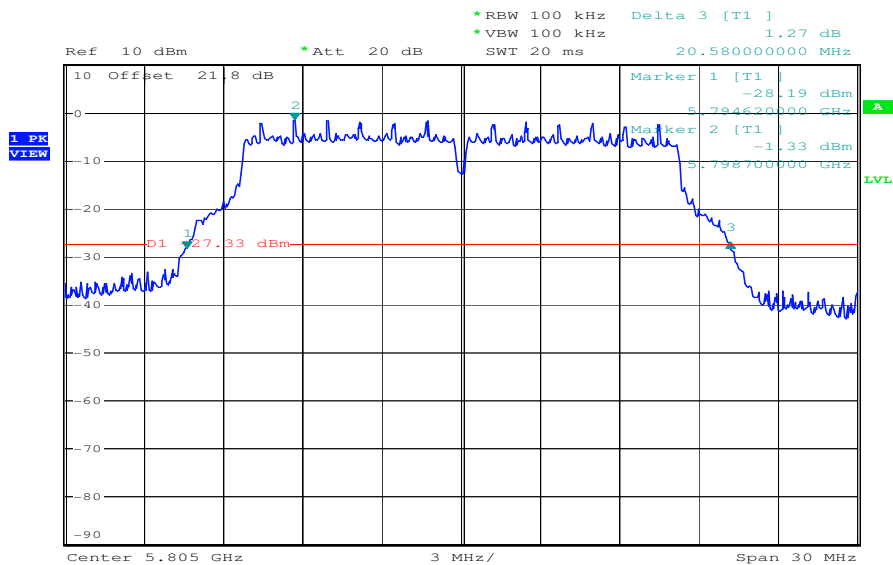
Plot 8: 26 dB-Bandwidth (5765 MHz)



Date: 28.AUG.2008 07:18:09



Plot 9: 26 dB-Bandwidth (5805 MHz)



Date: 28.AUG.2008 07:10:47

Results:

Test conditions	BANDWIDTH [MHz]		
	5745	5785	5825
Frequency [MHz]	5745	5785	5825
6 dB - Bandwidth	16.42	<b>16.50</b>	16.44
20 dB - Bandwidth	19.06	19.26	<b>19.32</b>
26 dB - Bandwidth	20.62	<b>20.70</b>	20.58
Measurement uncertainty	± 10 kHz		

RBW: 100 kHz / VBW 100 kHz

Limits :

Under normal test conditions only	> 500 KHz
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# SRD-Testreport

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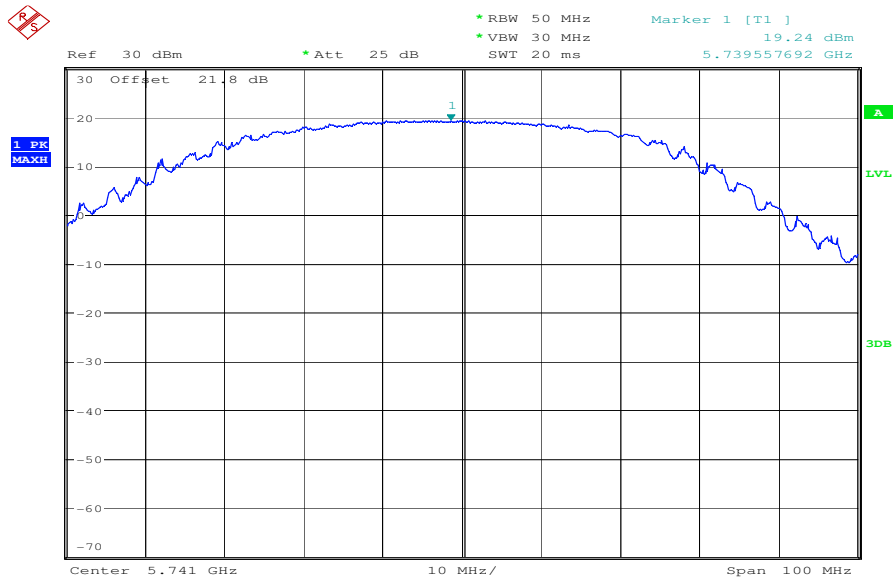
Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 18 of 76

## 3.7 Maximum output power (conducted) (OFDM)

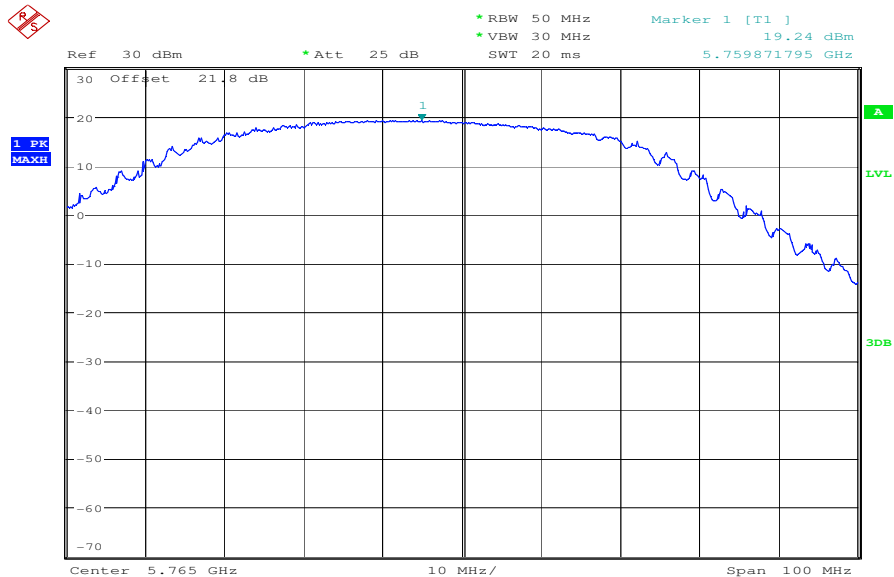
§15.247 (b) (3)

Plot 1: channel 1, 5745 MHz



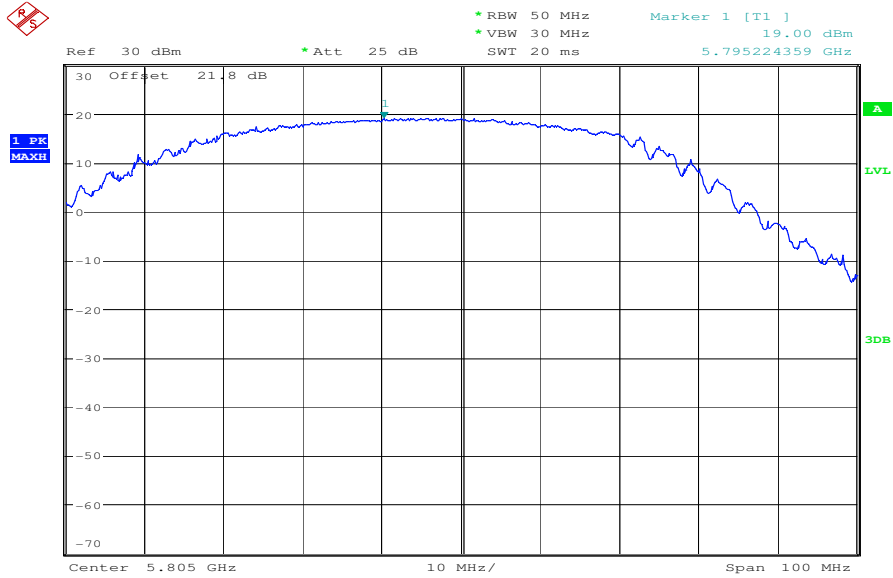
Date: 28.AUG.2008 08:05:24

Plot 2: channel 2, 5765 MHz



Date: 28.AUG.2008 08:07:20

Plot 3:



Date: 28.AUG.2008 08:08:47

Results:

Test conditions		Max. peak output power [dBm]		
Frequency [MHz]		5745	5785	5825
T <sub>nom</sub>	V <sub>nom</sub>	<b>19.24</b>	<b>19.24</b>	19.00
Measurement uncertainty		±3dB		

Under normal test conditions only, for frequency range 5725 - 5850 MHz	Max. 1.0 Watt / 30 dBm
--	------------------------

## MPE calculation

These equations are generally accurate in the far field of an antenna but will over predict power density in the near field, where they could be used for making a “worst case” prediction.

$$S = PG/4\pi R^2$$

where S = power density ( in appropriate units, e.g. mW/cm<sup>2</sup>)  
P = power input to the antenna (in appropriate units e.g. mW)  
G = power gain of the antenna in the direction of interest relative to the isotropic radiator  
R = distance to the center of radiation of the antenna (appropriate units e.g. cm)

Or

$$S = EIRP/4\pi R^2$$

where EIRP = equivalent isotropically radiated power

### Calculation:

(Calculated for max. EIRP)

EIRP: 20 dBm = 100 mW

calculated at distance of 20 cm:

power density =  $100 / 4\pi 20^2 = 0.0199 \text{ mW/ cm}^2$

Limit:

1mW/ cm <sup>2</sup> is the reference level for general public exposure according to the OET Bulletin 65, Edition 97-01 Table 1.
---

### 3.8 Max. peak output power

§15.247 (b) (3)

Results:

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		5745	5785	5825
T <sub>nom</sub>	V <sub>nom</sub>	19.24 cond	19.24 cond	19.00 cond
		19.48 rad	19.84 rad	20.00 rad
Measurement uncertainty		±3dB		

RBW: 50 MHz / VBW: 20 MHz

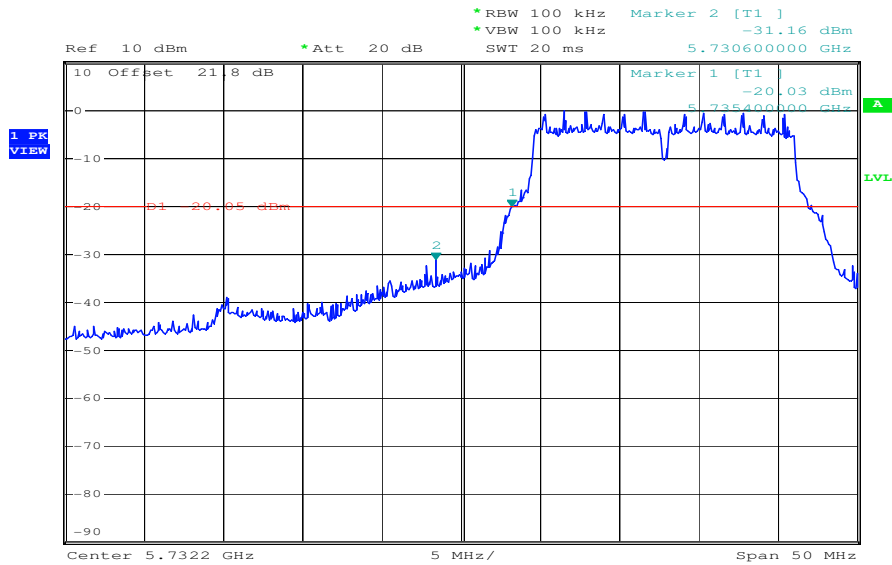
Limits:

Under normal test conditions only, for frequency range 5725 - 5850 MHz	Max. 1.0 Watt / 30 dBm
--	------------------------

### 3.9 Band-edge compliance of conducted emissions

§15.247 (d)

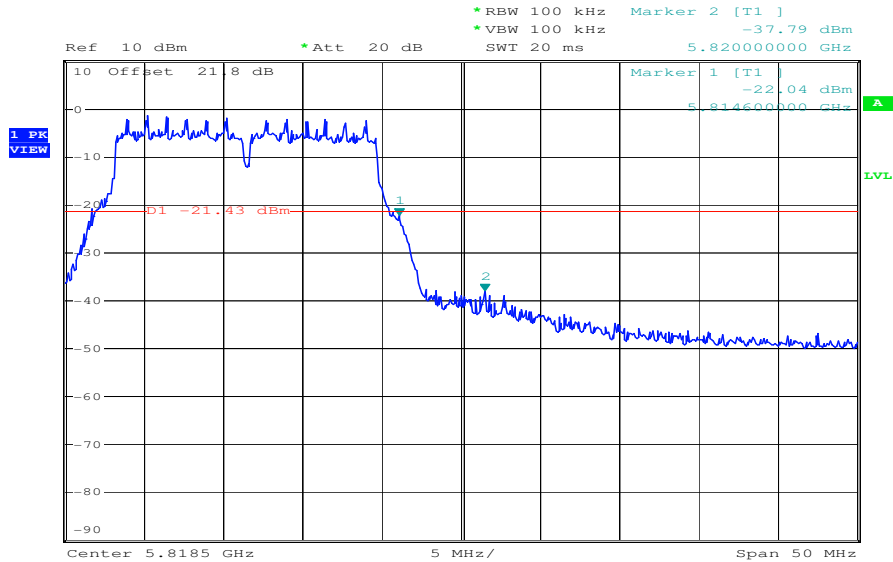
Plot 1: lowest channel, 5745 MHz



Date: 28.AUG.2008 07:28:08

The -20dBc point is at 5735.40 MHz

Plot 2: highest channel, 5805 MHz



Date: 28.AUG.2008 07:30:20

The -20dBc point is at 5814.60 MHz

Limits:

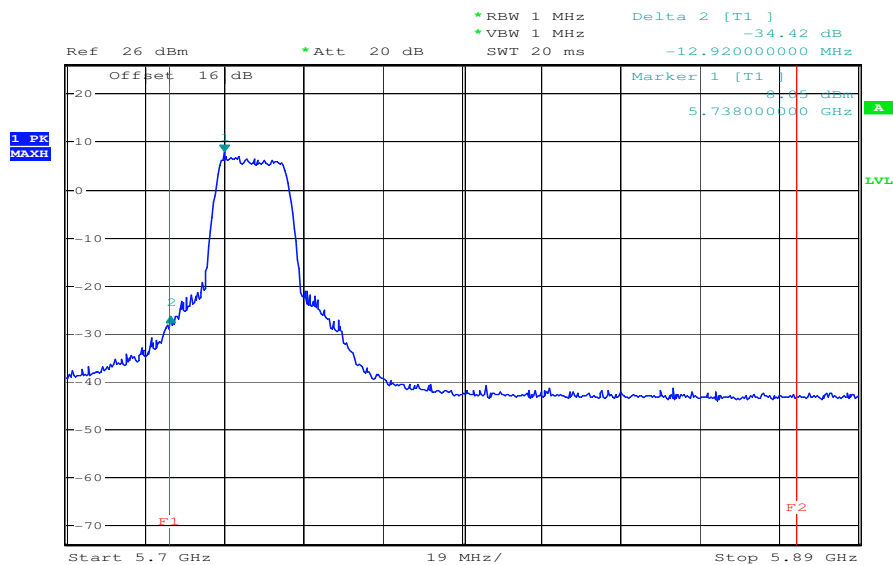
<p>Under normal test conditions only</p>	<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz 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>
--	---

### 3.10 Band-edge compliance of radiated emissions (OFDM)

§15.205

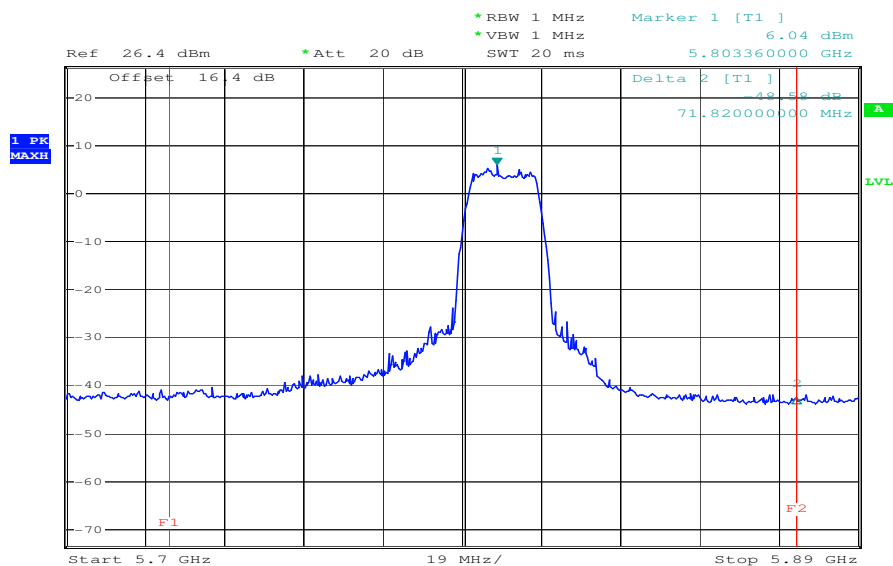
There are no restricted bands besides the tested frequency range.

5745 MHz



Date: 20.AUG.2008 14:26:18

5805 MHz



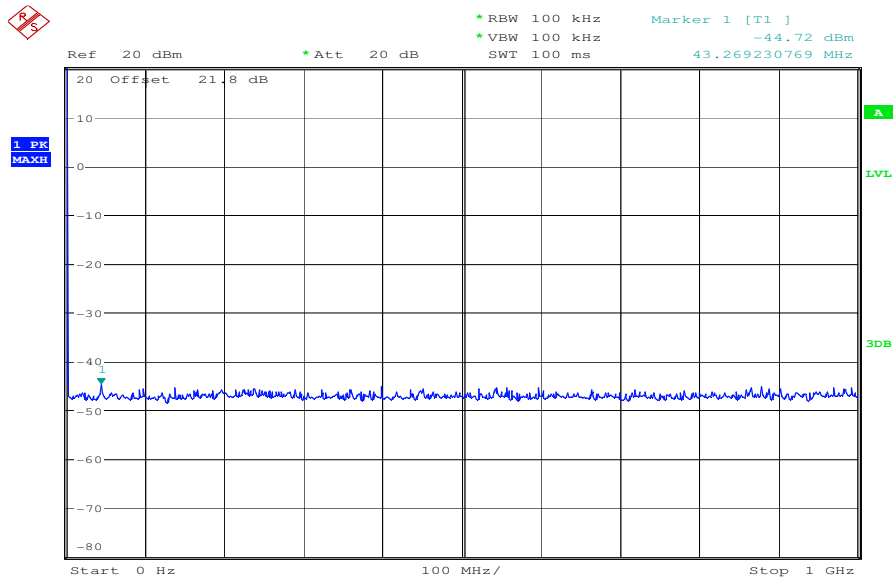
Date: 20.AUG.2008 14:30:18



### 3.11 Spurious Emissions - conducted (Transmitter)

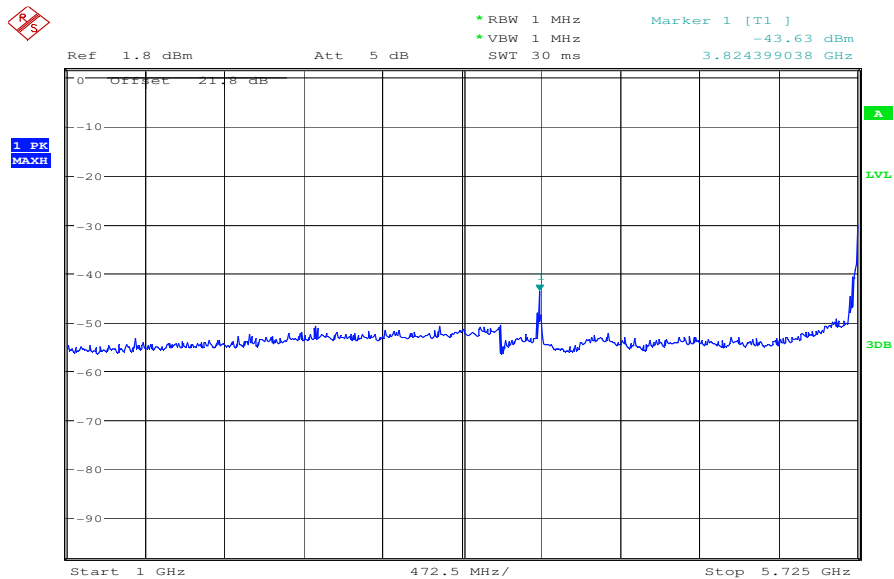
§15.247 (d)

Plot 1: channel 1, 5745 MHz



Date: 28.AUG.2008 08:13:50

Plot 2: channel 1, 5745 MHz



Date: 28.AUG.2008 09:03:11

# SRD-Testreport

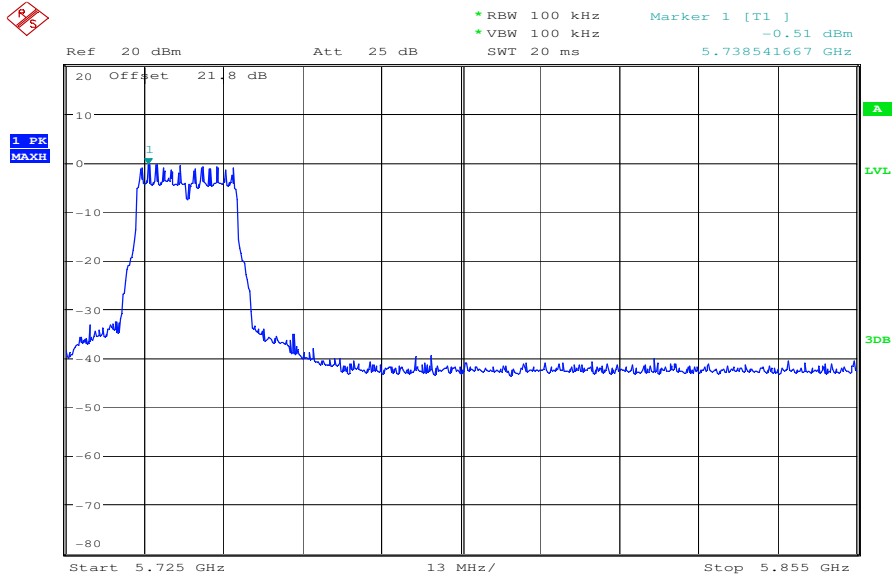
CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

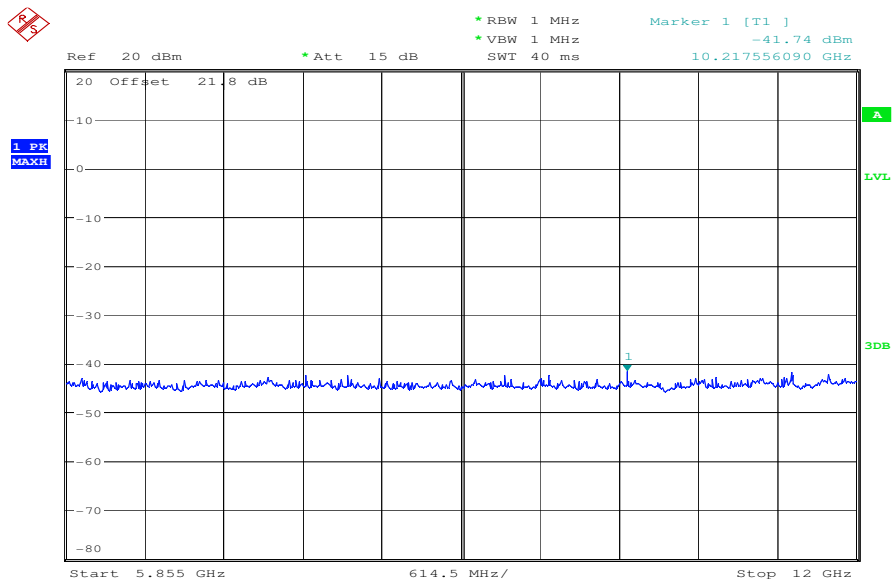
Page 26 of 76

Plot 3: channel 1, 5745 MHz



Date: 28.AUG.2008 09:05:09

Plot 4: channel 1, 5745 MHz



Date: 28.AUG.2008 09:10:47

# SRD-Testreport

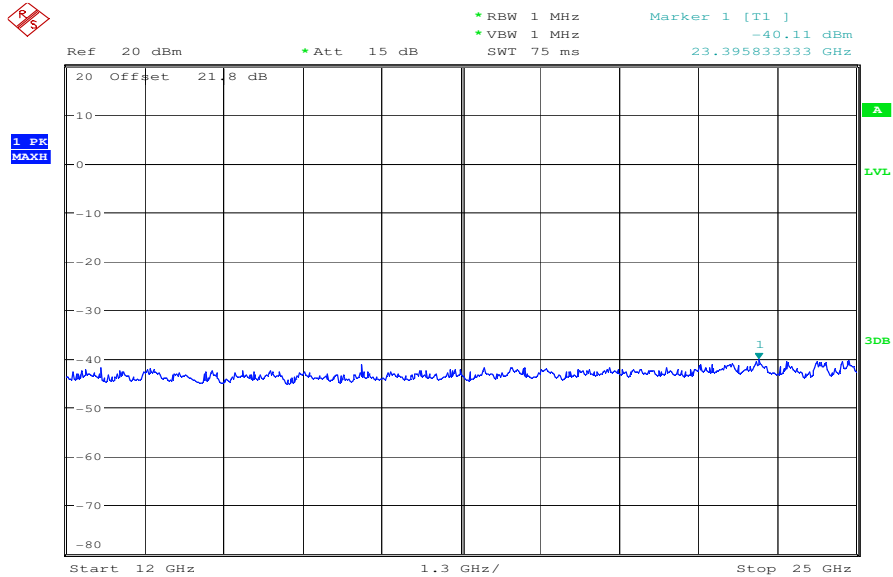
CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

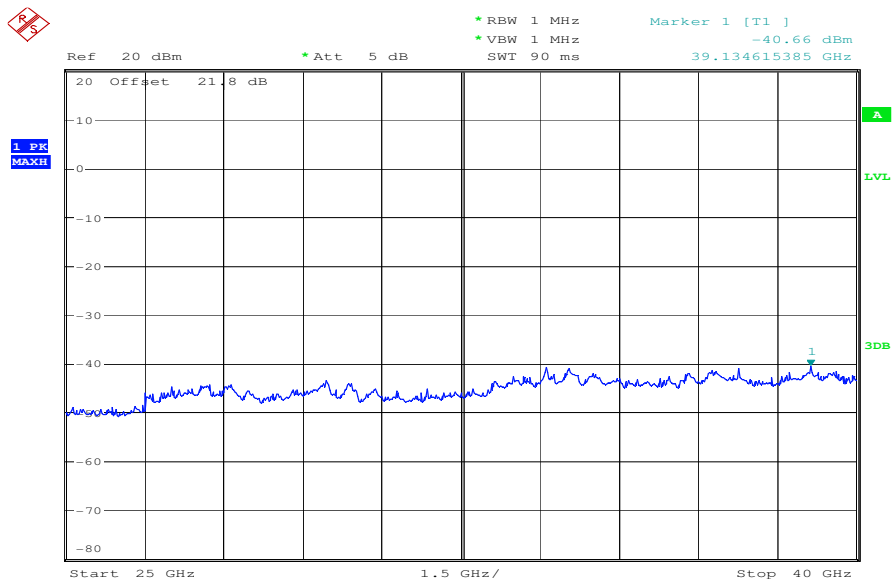
Page 27 of 76

Plot 5: channel 1, 5745 MHz



Date: 28.AUG.2008 09:11:49

Plot 6: channel 1, 5745 MHz



Date: 28.AUG.2008 09:17:49

# SRD-Testreport

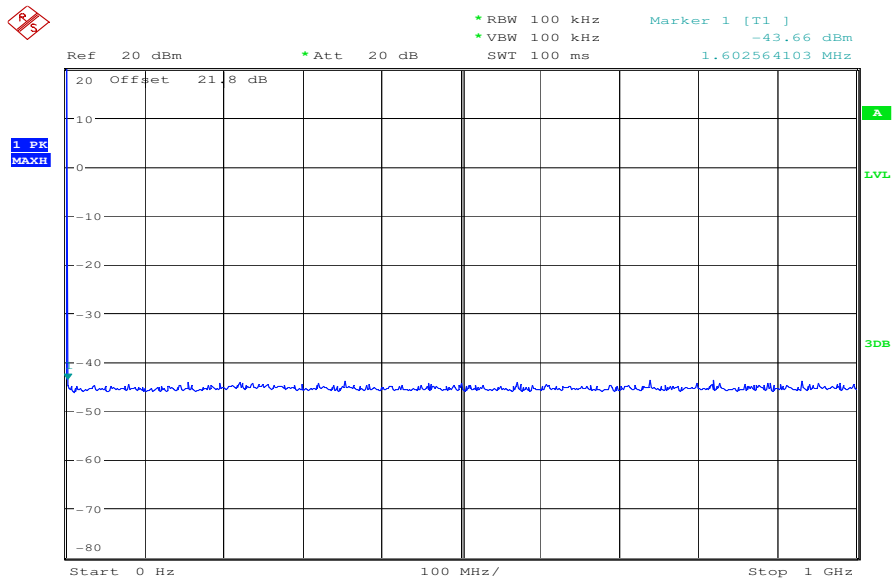
CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

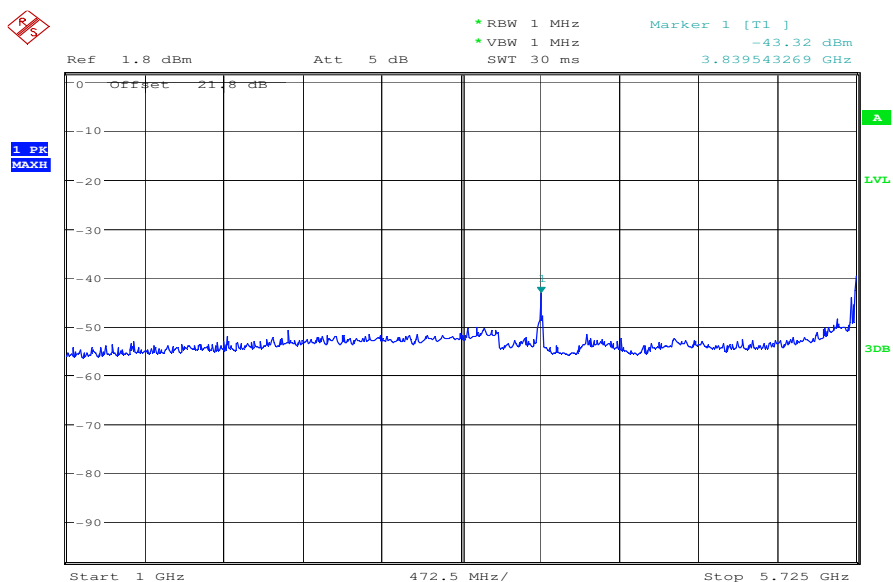
Page 28 of 76

Plot 7: channel 2, 5765 MHz



Date: 28.AUG.2008 08:48:52

Plot 8: channel 2, 5765 MHz



Date: 28.AUG.2008 09:02:31

# SRD-Testreport

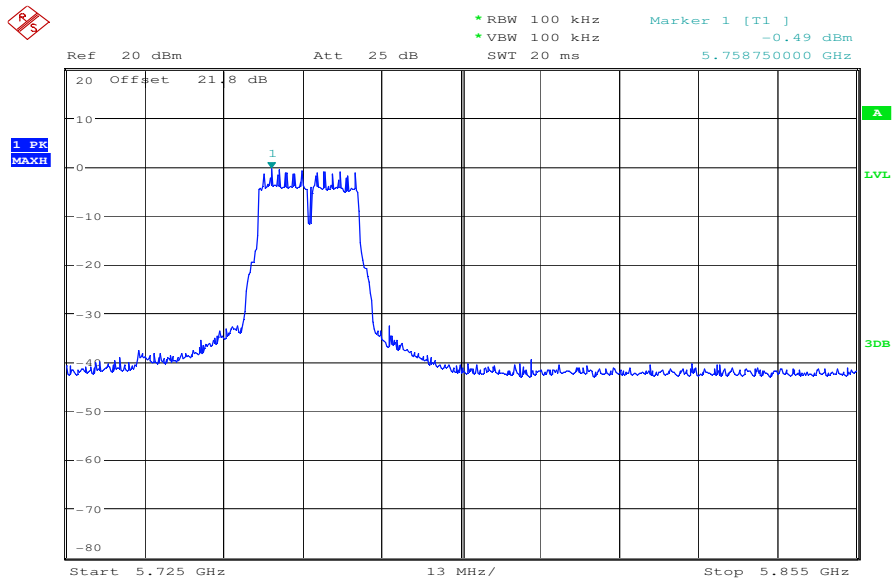
CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

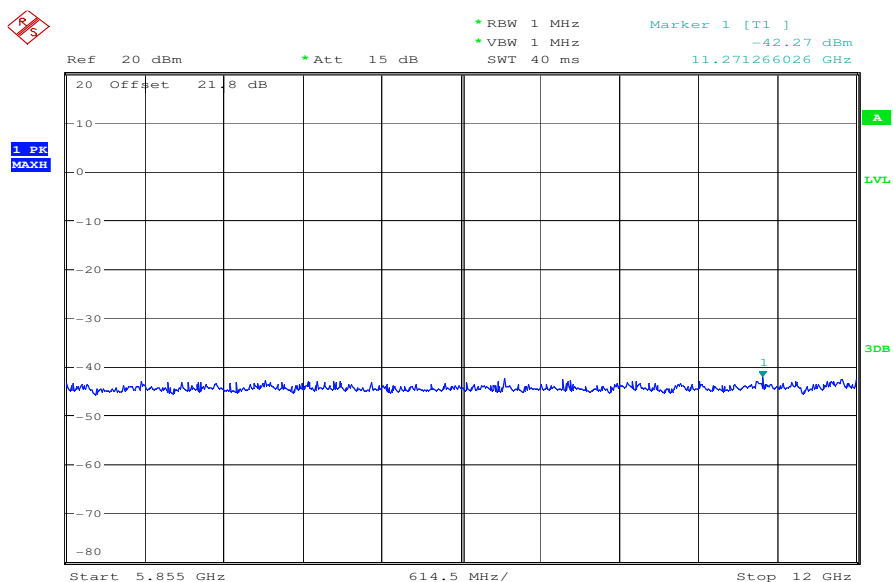
Page 29 of 76

Plot 9: channel 2, 5765 MHz



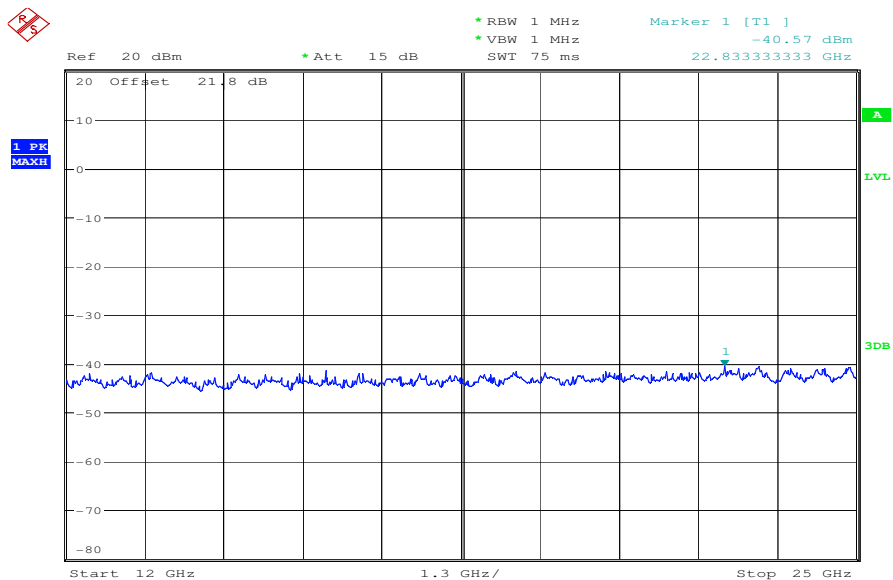
Date: 28.AUG.2008 09:05:59

Plot 10: channel 2, 5765 MHz



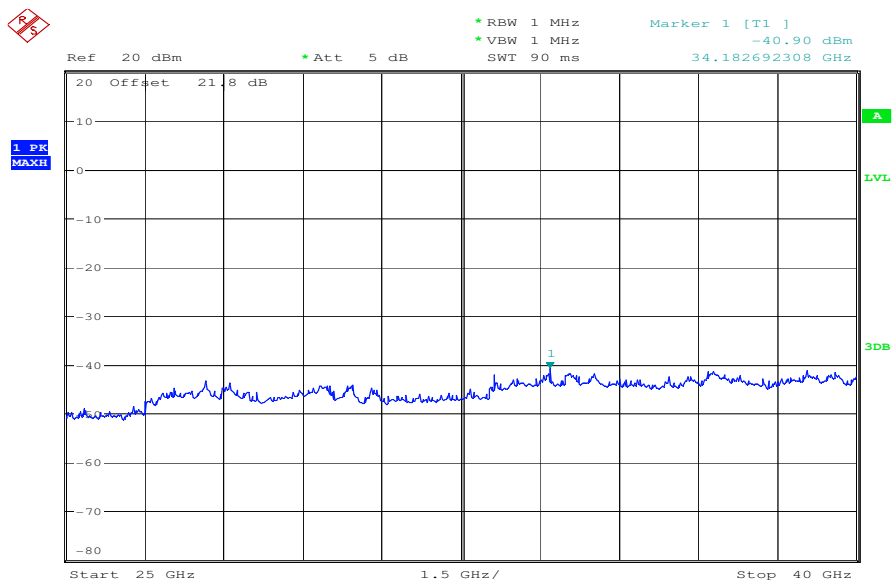
Date: 28.AUG.2008 09:09:47

Plot 11: channel 2, 5765 MHz



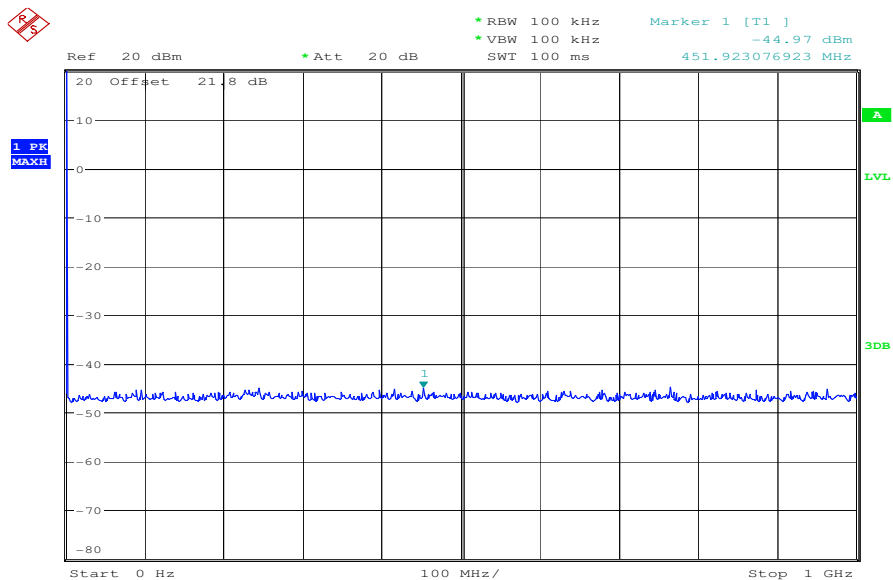
Date: 28.AUG.2008 09:13:12

Plot 12: channel 2, 5765 MHz



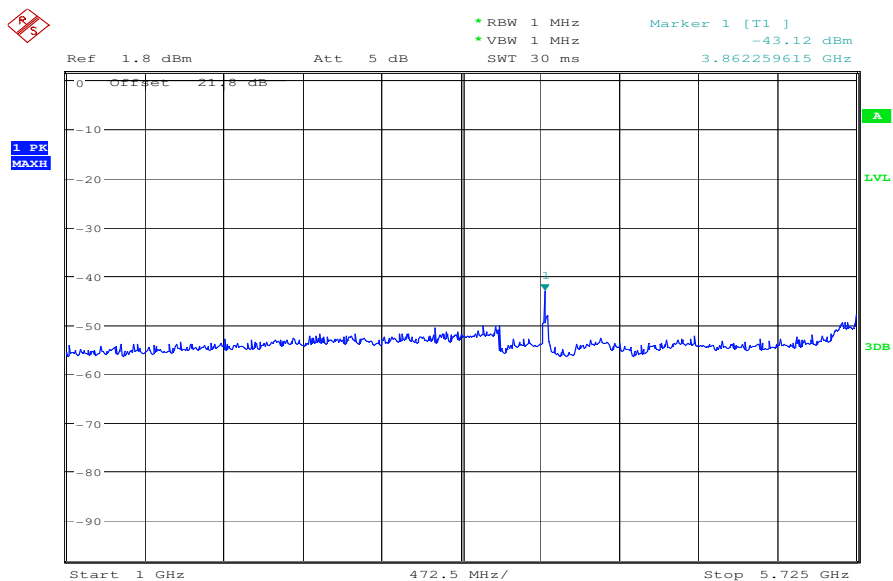
Date: 28.AUG.2008 09:16:37

Plot 13: channel 4, 5805 MHz



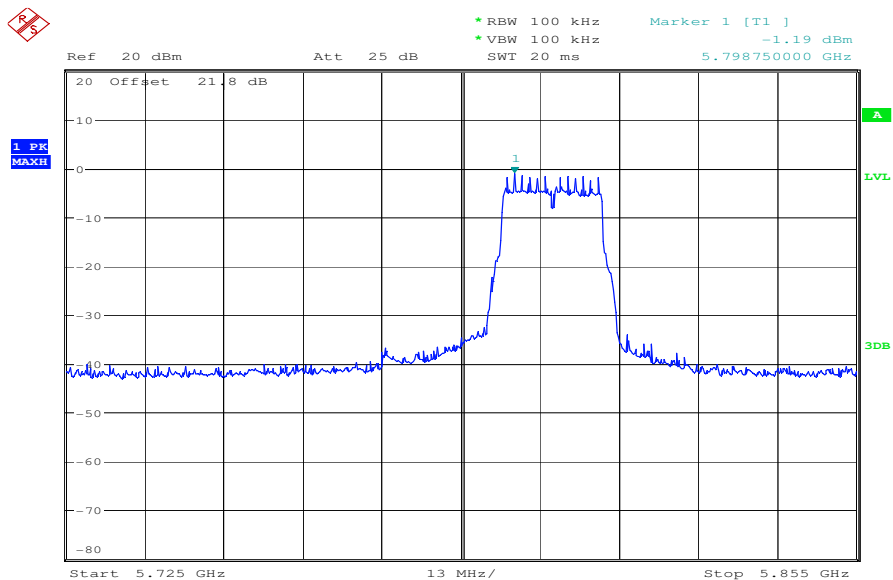
Date: 28.AUG.2008 08:50:58

Plot 14: channel 4, 5805 MHz



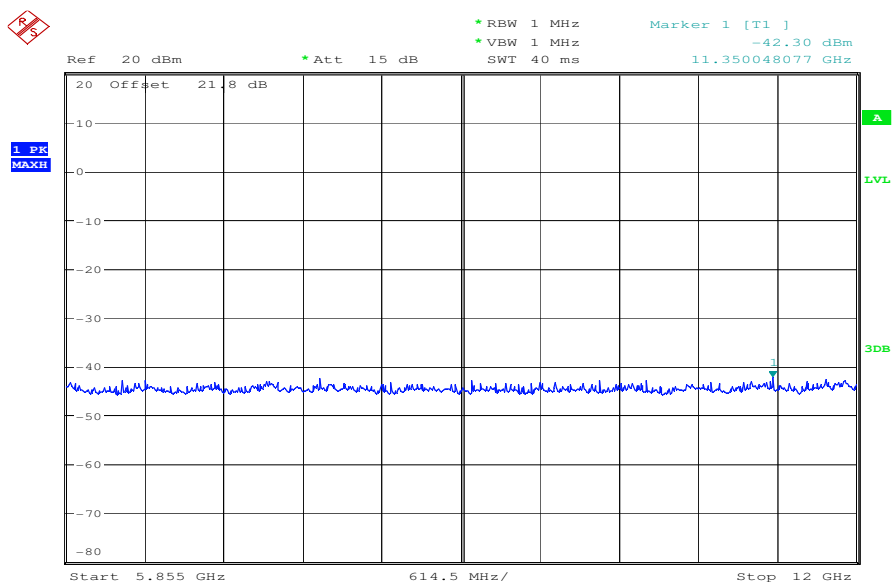
Date: 28.AUG.2008 09:01:35

Plot 15: channel 4, 5805 MHz



Date: 28.AUG.2008 09:07:20

Plot 16: channel 4, 5805 MHz



Date: 28.AUG.2008 09:08:43



# SRD-Testreport

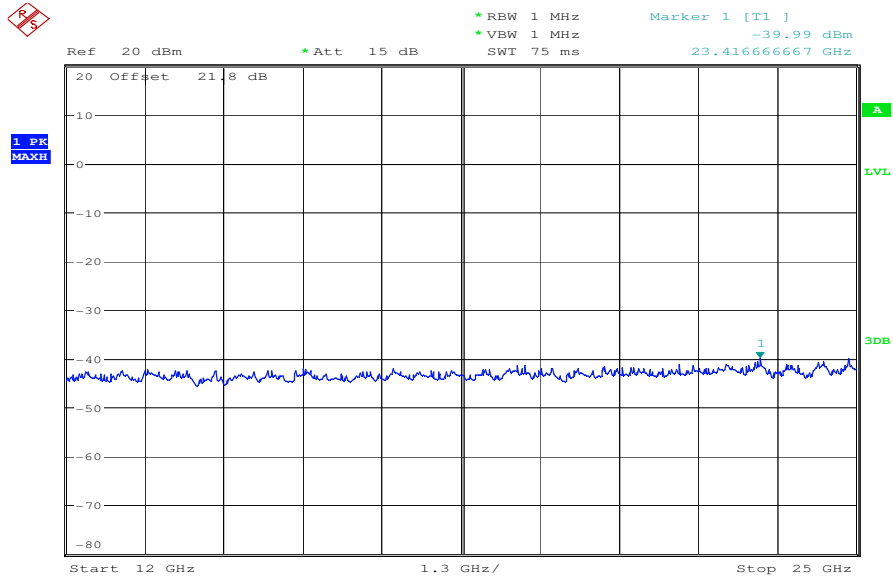
CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

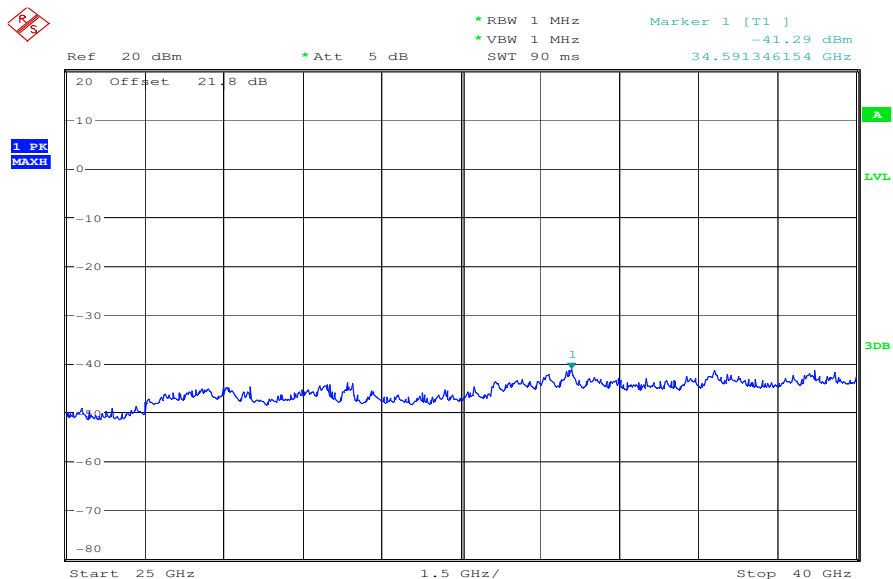
Page 33 of 76

Plot 17: channel 4, 5805 MHz



Date: 28.AUG.2008 09:13:58

Plot 18: channel 4, 5805 MHz



Date: 28.AUG.2008 09:14:49

Result & Limits

Emission Limitations (worst case)					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emmission power	actual attenuation below frequency of operation [dB]	results
5745	100 kHz	-0.51	30 dBm		Operating frequency
No critical peaks detected.			-20 dBc		passed
5785	100 kHz	-0.49	30 dBm		Operating frequency
No critical peaks detected.			-20 dBc		passed
5825	100 kHz	-1.19	30 dBm		Operating frequency
No critical peaks detected.			-20 dBc		passed
Measurement uncertainty		± 3dB			

RBW : 100 kHz VBW: 100 kHz < 1 GHz / band

RBW: 1 MHz VBW: 1 MHz > 1 GHz

Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. 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)).
-----------------------------------	--

Note: For emissions that fall into restricted bands you find the radiated emissions later in the report.

## 3.12 Spurious Emissions - radiated (Transmitter)

§15.209

Plot 1: 0.03 - 1 GHz (lowest channel)

### Information

EUT: SCDw 9000 AP + FRA012-S24-1 + confidea CIV + FRA030E-S15-I

Serial Number: 0x11 + R301212401 + 19 + R33E11501

Test Description: FCC @ 10 m

Operating Conditions: Transmit bottom frequency (5745 MHz)

Operator Name: Folz

Comment: Powered with AC 115V/ 60 Hz

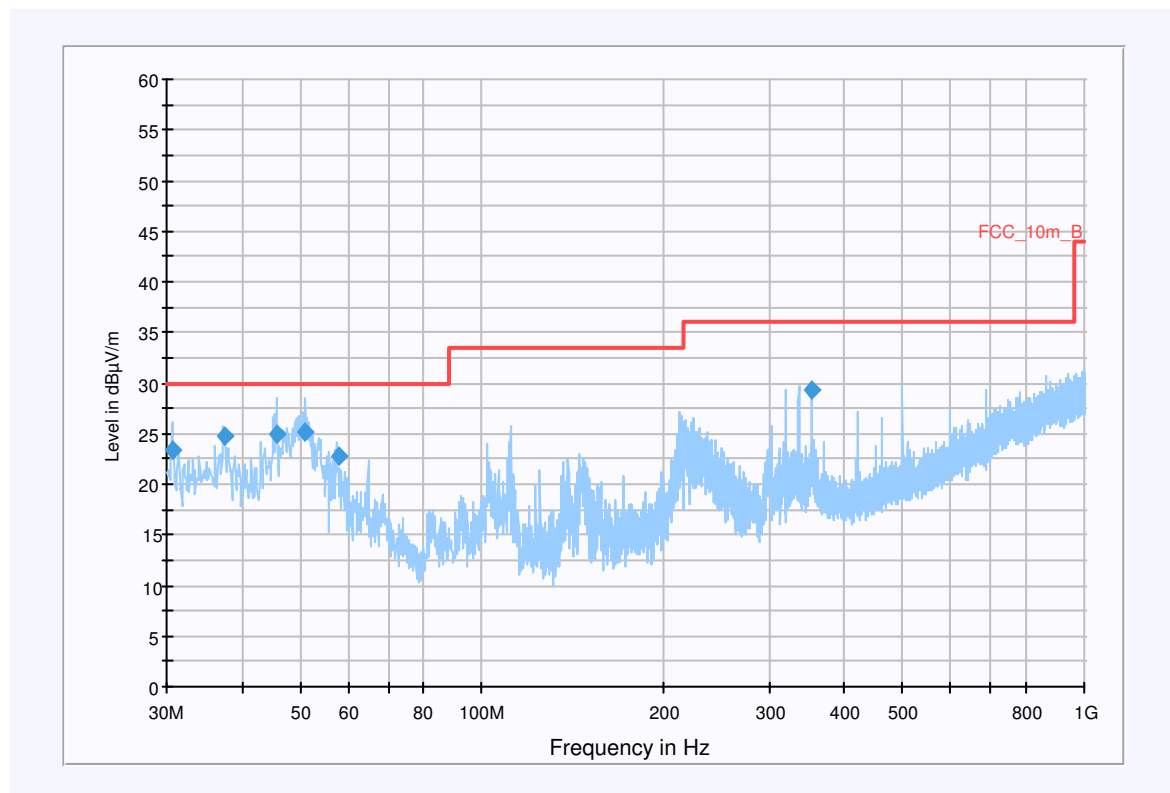
### Scan Setup: FCC\_Fin [EMI radiated]

Hardware Setup: EMI radiated\Electric Field (NOS)

Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

### FCC\_10m(B)\_4



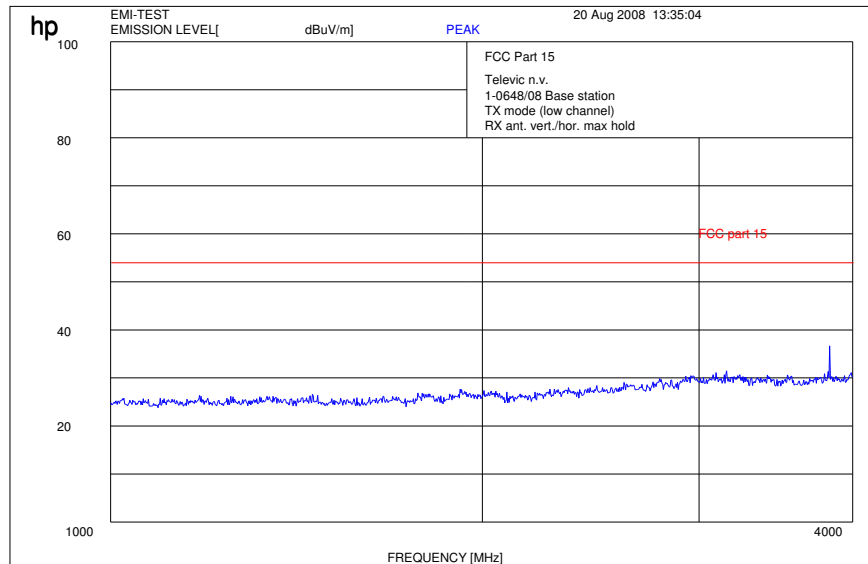
### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.654400	23.4	15000.000	120.000	100.0	V	240.0	12.7	6.6	30.0	
37.378500	24.7	15000.000	120.000	127.0	V	50.0	13.4	5.3	30.0	
45.767000	24.9	15000.000	120.000	128.0	V	159.0	13.5	5.1	30.0	
50.991700	25.2	15000.000	120.000	100.0	V	219.0	13.5	4.8	30.0	
57.738950	22.7	15000.000	120.000	100.0	V	249.0	12.5	7.3	30.0	
352.240650	29.4	15000.000	120.000	100.0	V	278.0	16.2	6.6	36.0	

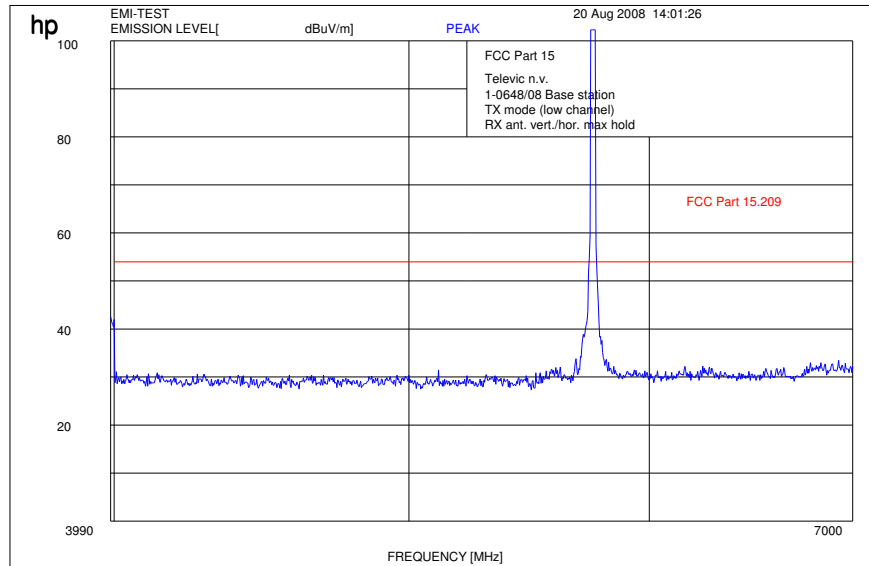
Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30MHz - 2GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 3.32, CAL 07.01.2009
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW ---, CAL 08.04.2010 Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cabel with switch (0408)
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

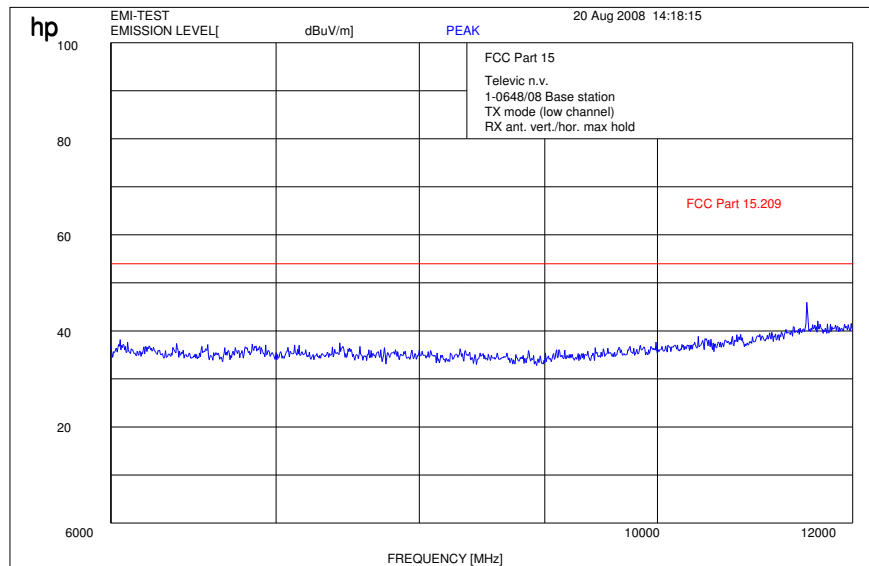
Plot 2: 1 GHz - 4 GHz (lowest channel)



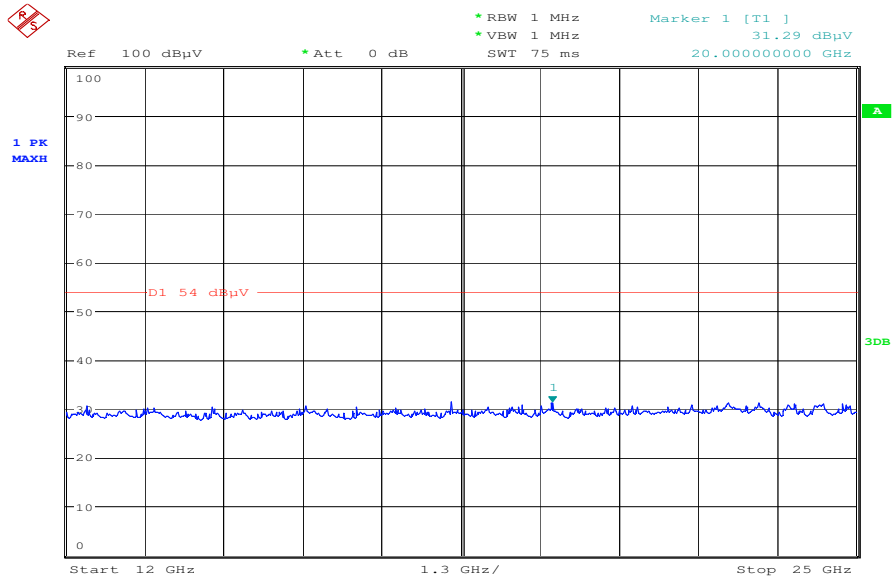
Plot 3: 4 GHz - 7 GHz (lowest channel)



Plot 4: 6 GHz - 12 GHz (lowest channel)

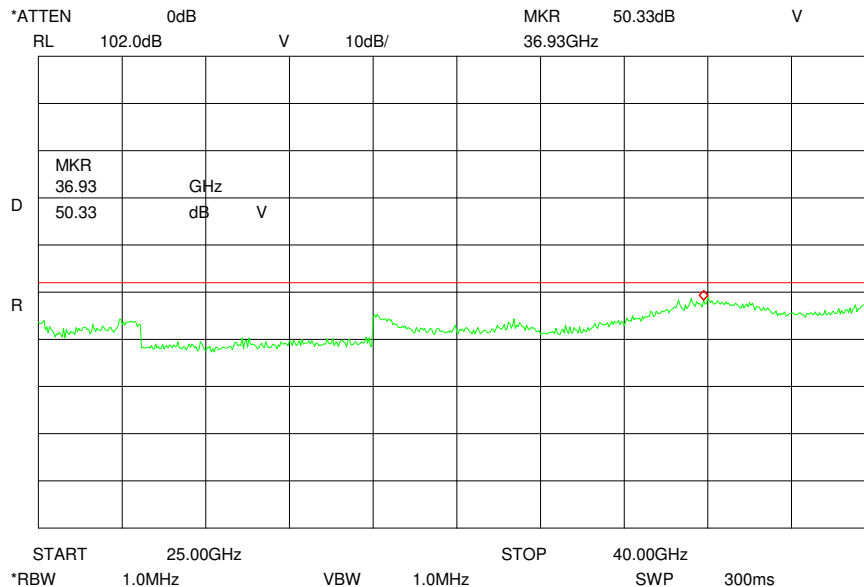


Plot 5: 12 - 25 GHz (valid for all three channels)



Date: 28.AUG.2008 09:53:40

Plot 6: 25 - 40 GHz (valid for all three channels)



# SRD-Testreport

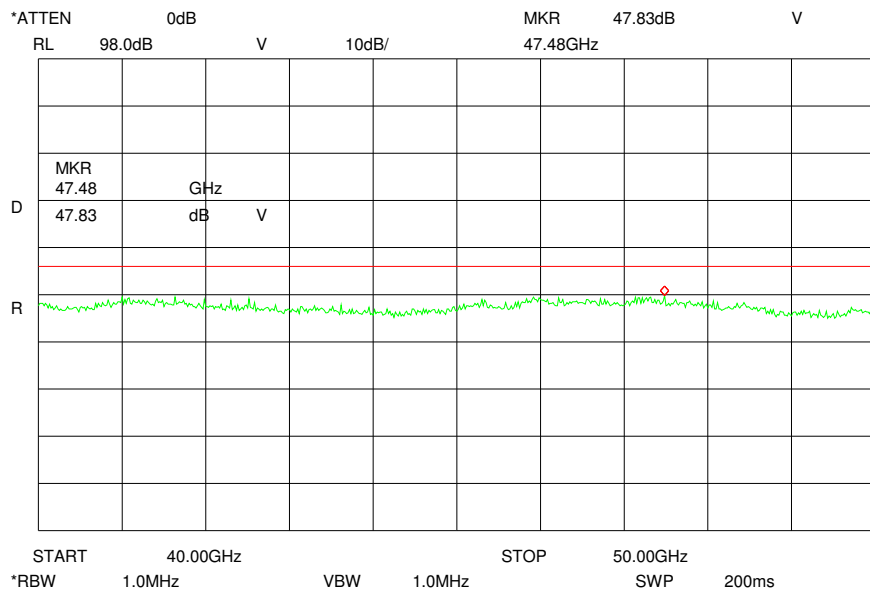
CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 39 of 76

Plot 7: 40 - 50 GHz (valid for all three channels)



Plot 8: 30 MHz to 1 GHz (middle channel)

## Information

EUT: SCDw 9000 AP + FRA012-S24-1 + confidea CIV + FRA030E-S15-I

Serial Number: 0x11 + R301212401 + 19 + R33E11501

Test Description: FCC @ 10 m

Operating Conditions: Transmit mid frequency (5765 MHz)

Operator Name: Folz

Comment: Powered with AC 115V/ 60 Hz

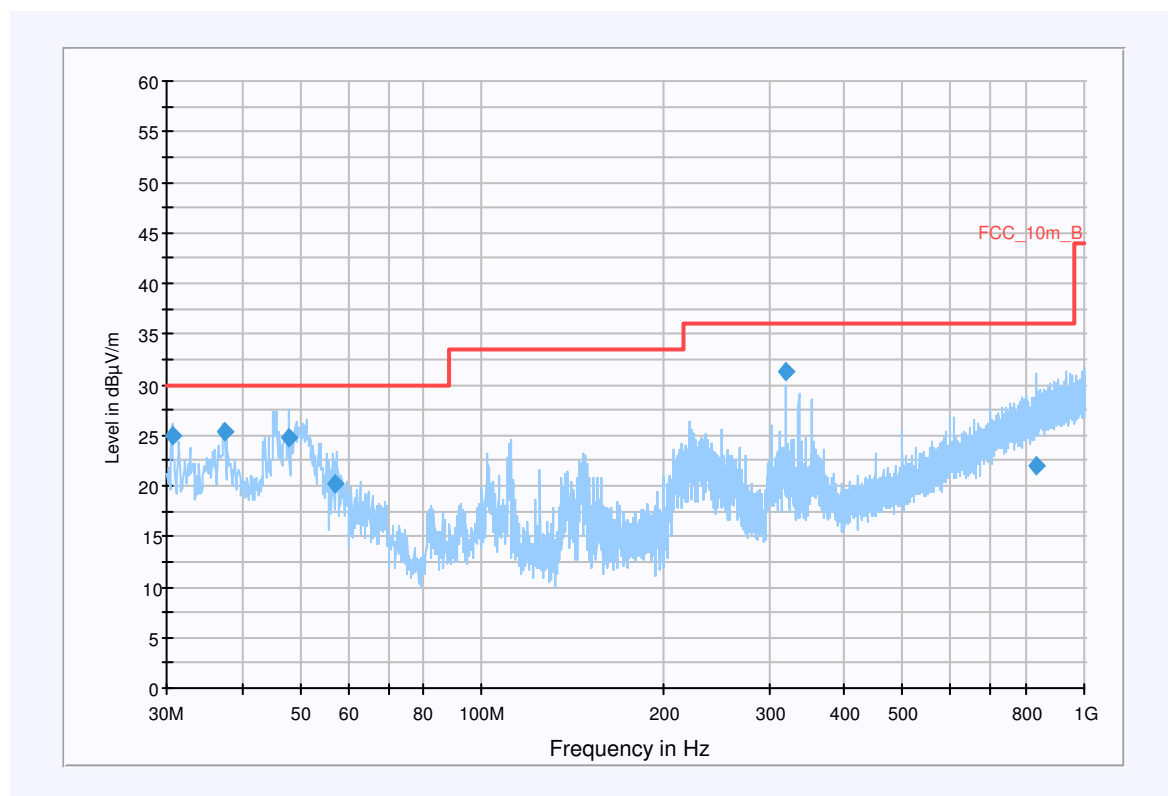
## Scan Setup: FCC\_Fin [EMI radiated]

Hardware Setup: EMI radiated\Electric Field (NOS)

Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

## FCC\_10m(B)\_4



## Final Measurement Detector 1

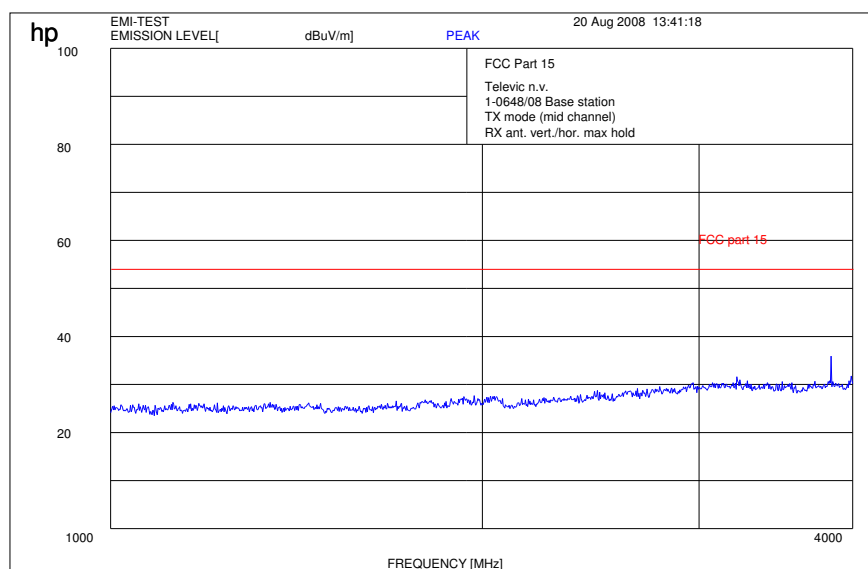
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.616300	25.0	15000.000	120.000	100.0	V	143.0	12.7	5.0	30.0	
37.375650	25.4	15000.000	120.000	100.0	V	23.0	13.4	4.6	30.0	
47.831250	24.7	15000.000	120.000	100.0	V	231.0	13.6	5.3	30.0	
57.088850	20.2	15000.000	120.000	100.0	V	144.0	12.6	9.8	30.0	
319.474650	31.3	15000.000	120.000	100.0	V	277.0	15.3	4.7	36.0	
830.203250	22.1	15000.000	120.000	115.0	H	131.0	25.0	13.9	36.0	



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

Subrange 1	
Frequency Range:	30MHz - 2GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 3.32, CAL 07.01.2009
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW ---, CAL 08.04.2010 Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cabel with switch (0408)
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

Plot 9: 1 GHz to 4 GHz (middle channel)



# SRD-Testreport

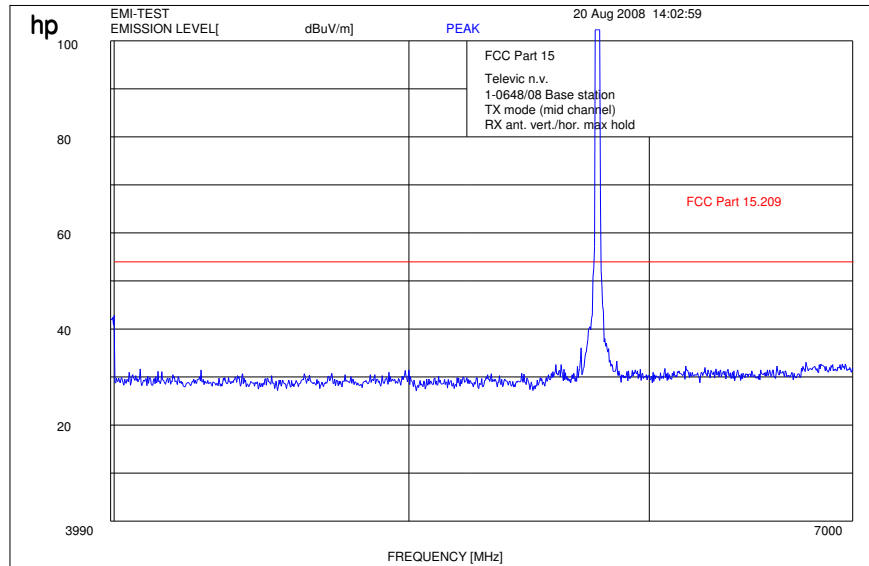
CETECOM ICT Services GmbH Saarbruecken, Germany



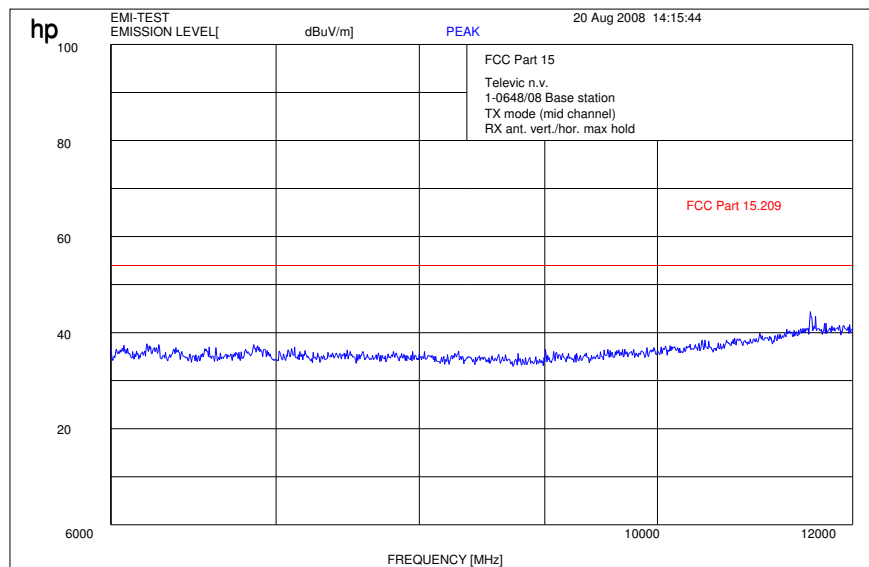
Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 42 of 76

Plot 10: 4 GHz to 7 GHz (middle channel)



Plot 11: 6 GHz to 12 GHz (middle channel)



Plot 12: 30 MHz to 1 GHz (highest channel)

## Information

EUT: SCDw 9000 AP + FRA012-S24-1 + confidea CIV + FRA030E-S15-I

Serial Number: 0x11 + R301212401 + 19 + R33E11501

Test Description: FCC @ 10 m

Operating Conditions: Transmit top frequency (5805 MHz)

Operator Name: Folz

Comment: Powered with AC 115V/ 60 Hz

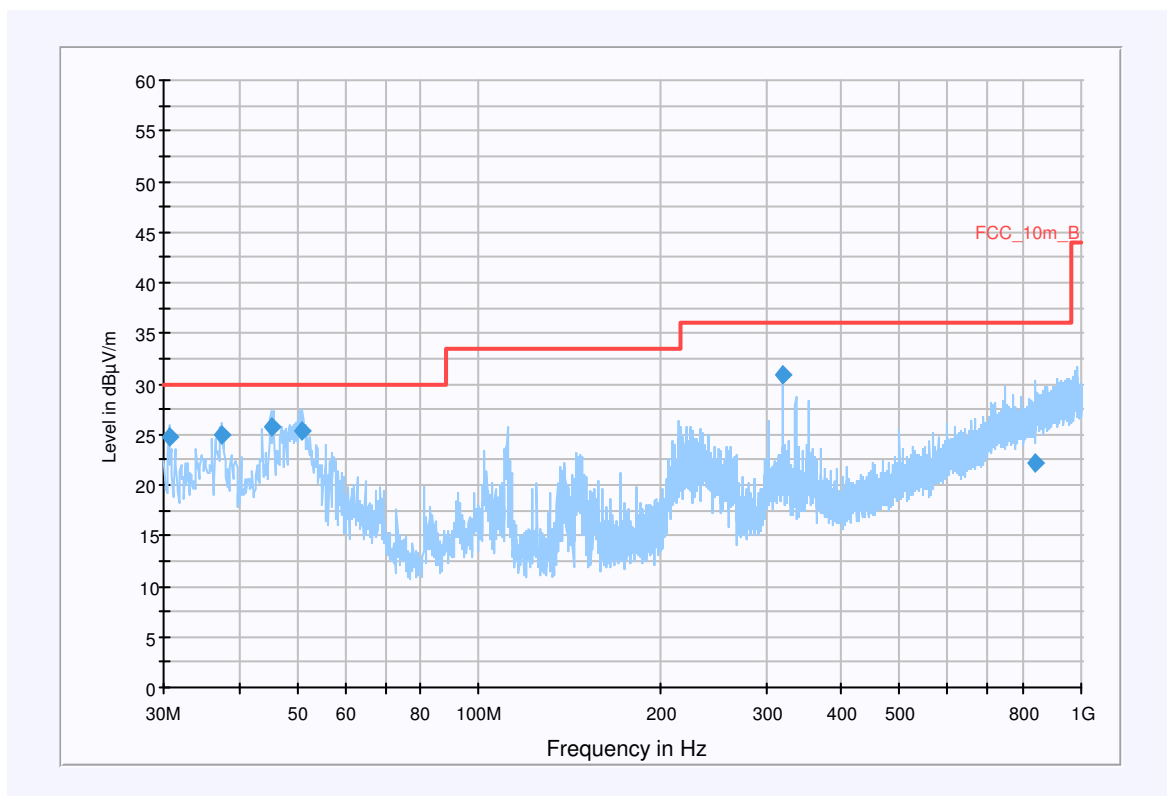
## Scan Setup: FCC\_Fin [EMI radiated]

Hardware Setup: EMI radiated\Electric Field (NOS)

Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

## FCC\_10m(B)\_4



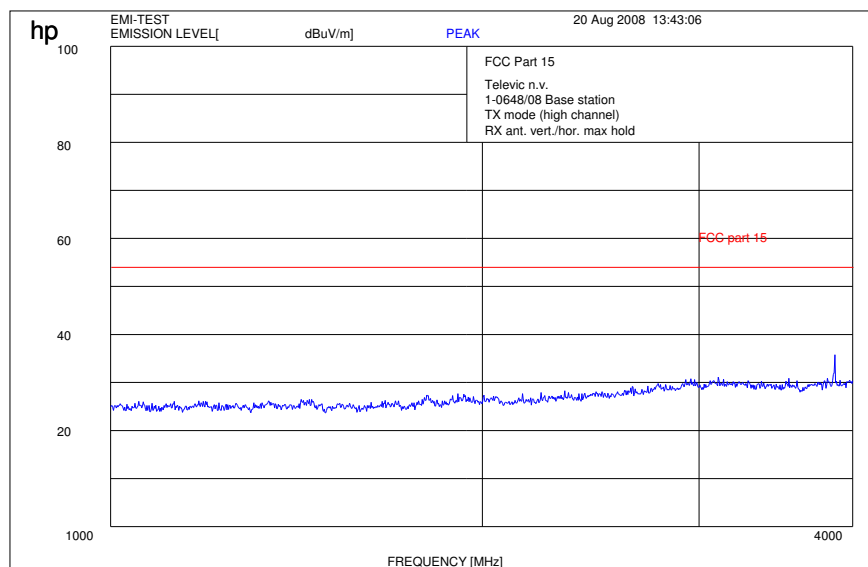
## Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.628600	24.8	15000.000	120.000	100.0	V	5.0	12.7	5.2	30.0	
37.381000	25.0	15000.000	120.000	115.0	V	113.0	13.4	5.0	30.0	
45.233600	25.8	15000.000	120.000	114.0	V	182.0	13.5	4.2	30.0	
50.982250	25.4	15000.000	120.000	100.0	V	226.0	13.5	4.6	30.0	
319.476300	30.9	15000.000	120.000	100.0	V	266.0	15.3	5.1	36.0	
835.950850	22.2	15000.000	120.000	114.0	H	253.0	25.1	13.8	36.0	

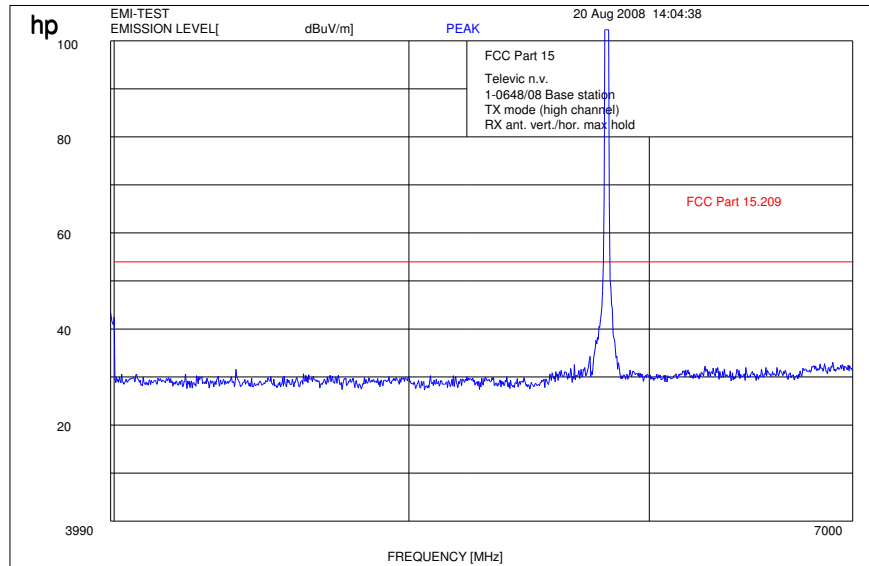
Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30MHz - 2GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 3.32, CAL 07.01.2009
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW ---, CAL 08.04.2010 Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cabel with switch (0408)
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

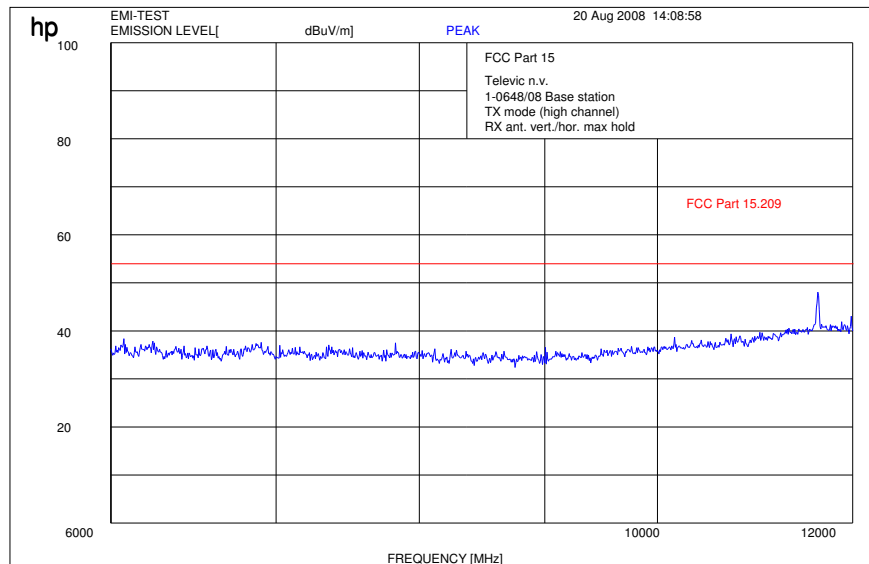
Plot 13: 1 GHz to 4 GHz (highest channel)



Plot 14: 4 GHz to 7 GHz (highest channel)



Plot 15: 6 GHz to 12 GHz (highest channel)



Results:

Spurious Emissions level [ $\mu\text{V/m}$ ]								
5745 MHz			5765 MHz			5805 MHz		
F [MHz]	Detector	Level [ $\text{dB}\mu\text{V/m}$ ]	F [MHz]	Detector	Level [ $\text{dB}\mu\text{V/m}$ ]	F [MHz]	Detector	Level [ $\text{dB}\mu\text{V/m}$ ]
No critical peaks detected.			11607	1 MHz	48.1	11487	1 MHz	48.1
Measurement uncertainty			$\pm 3 \text{ dB}$					

$f < 1 \text{ GHz}$  : RBW/VBW: 100 kHz       $f \geq 1 \text{ GHz}$  : RBW/VBW: 1 MHz

Limits: § 15.247 (d)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. 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)).

Limits: § 15.209

Frequency [MHz]	Field strength [ $\mu\text{V/m}$ ]	Measurement distance (m)
30 - 88	100 (40 $\text{dB}\mu\text{V/m}$ )	3
88 - 216	150 (43.5 $\text{dB}\mu\text{V/m}$ )	3
216 - 960	200 (46 $\text{dB}\mu\text{V/m}$ )	3
above 960	500 (54 $\text{dB}\mu\text{V/m}$ )	3

### 3.13 Spurious Emissions - radiated Receiver

§15.109 / 209

Plot 1: 30 to 1000 MHz

#### Information

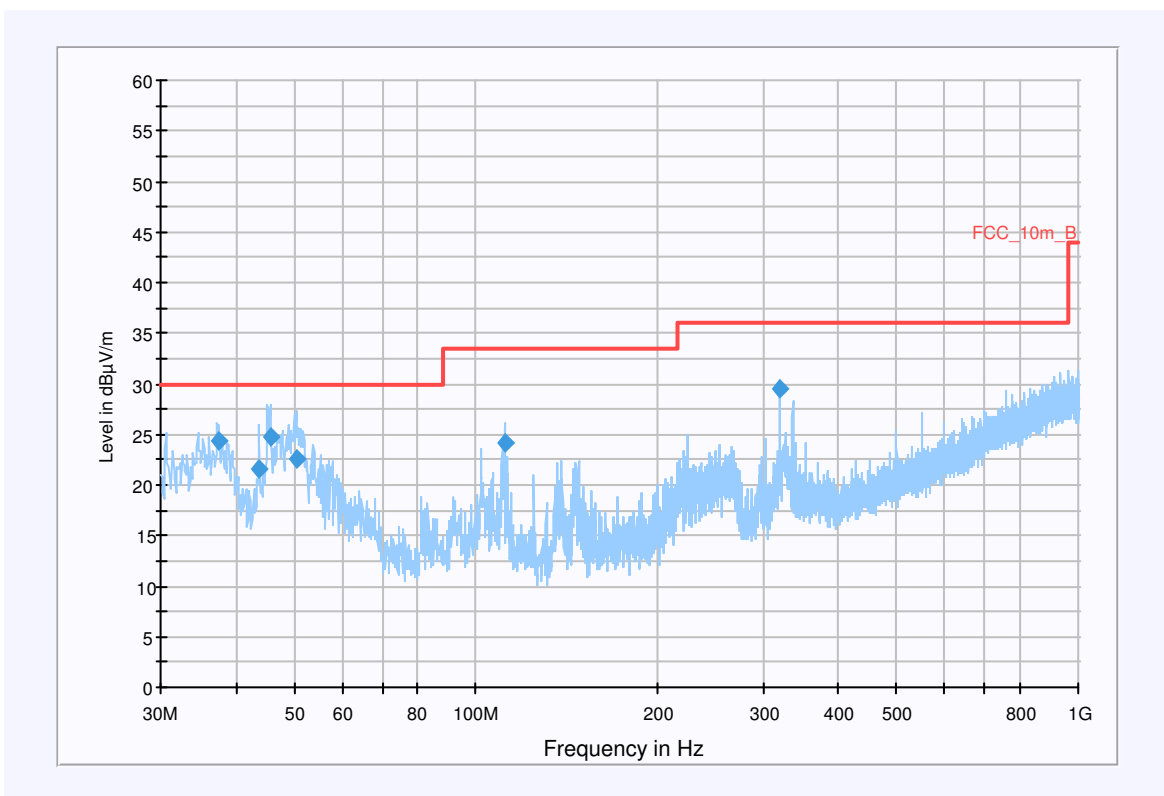
EUT: SCDw 9000 AP + FRA012-S24-1 + confidea CIV + FRA030E-S15-I  
 Serial Number: 0x11 + R301212401 + 19 + R33E11501  
 Test Description: FCC @ 10 m  
 Operating Conditions: Receive (5GHz)  
 Operator Name: Folz  
 Comment: Powered with AC 115V/ 60 Hz

#### Scan Setup: FCC\_Fin [EMI radiated]

Hardware Setup: EMI radiated\Electric Field (NOS)  
 Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30MHz - 1GHz	QuasiPeak	120kHz	15s	Receiver

#### FCC\_10m(B)\_4



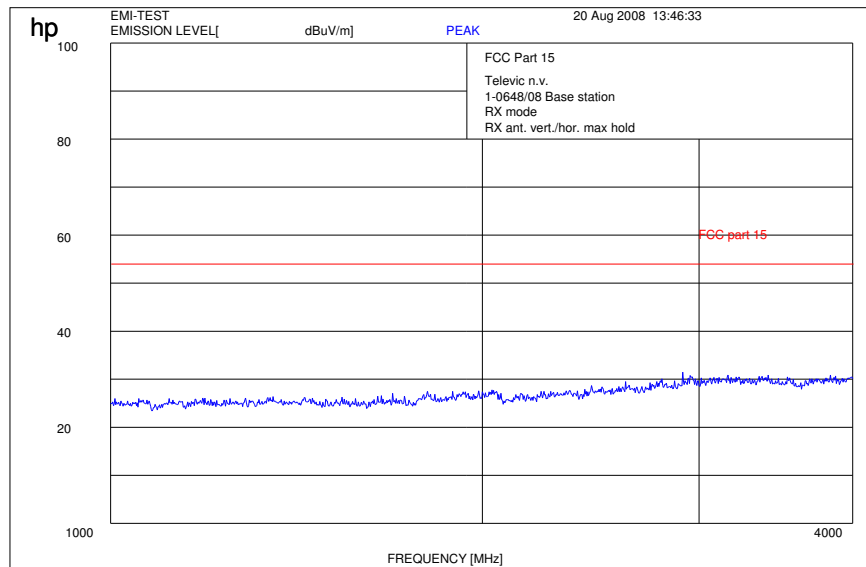
#### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
37.527150	24.5	15000.000	120.000	100.0	V	88.0	13.4	5.5	30.0	
43.799500	21.6	15000.000	120.000	100.0	V	155.0	13.5	8.4	30.0	
45.740050	24.8	15000.000	120.000	115.0	V	174.0	13.5	5.2	30.0	
50.348700	22.5	15000.000	120.000	100.0	V	131.0	13.6	7.5	30.0	
111.579500	24.2	15000.000	120.000	115.0	V	84.0	11.3	9.3	33.5	
319.481550	29.5	15000.000	120.000	123.0	V	276.0	15.3	6.5	36.0	

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

Subrange 1	
Frequency Range:	30MHz - 2GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 3.32, CAL 07.01.2009
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW ---, CAL 08.04.2010 Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cabel with switch (0408)
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

Plot 2: 1 GHz to 4 GHz





# SRD-Testreport

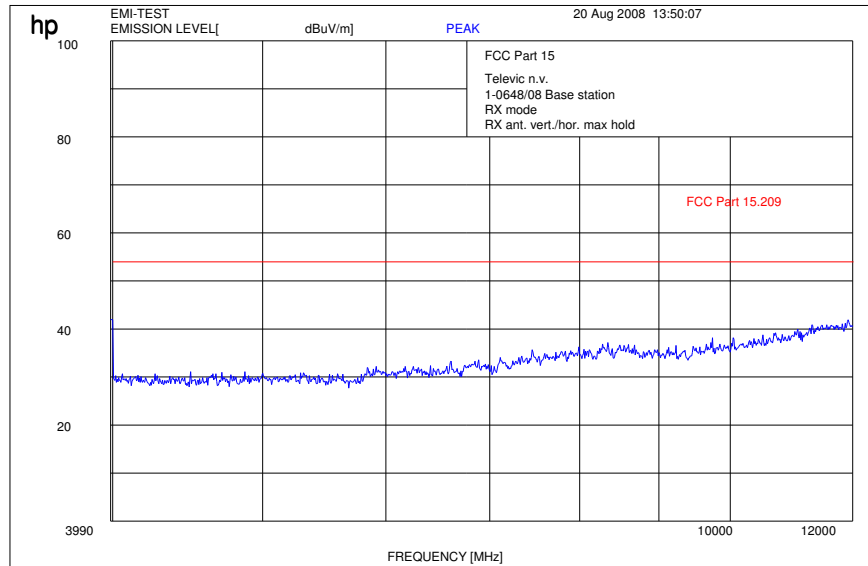
CETECOM ICT Services GmbH Saarbruecken, Germany



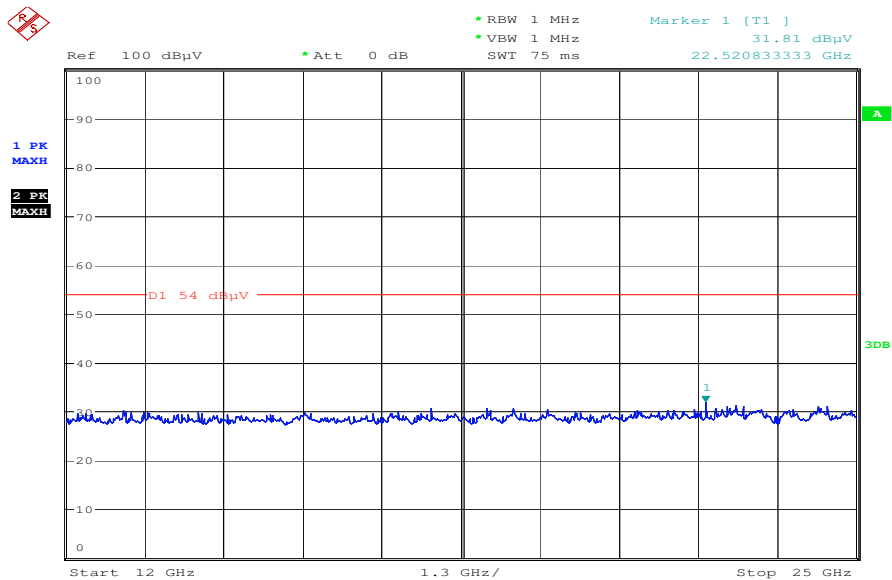
Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 49 of 76

Plot 3: 4 GHz to 12 GHz

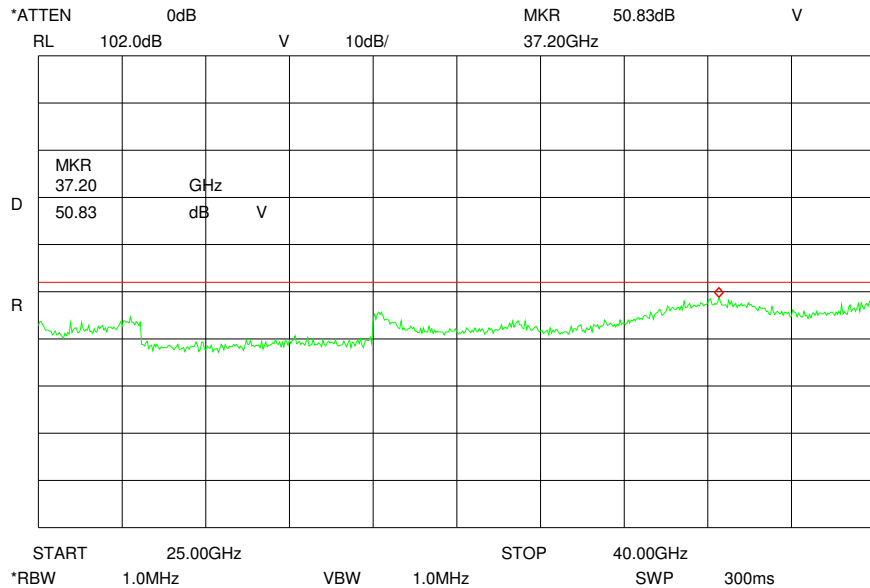


Plot 4: 12 GHz to 25 GHz

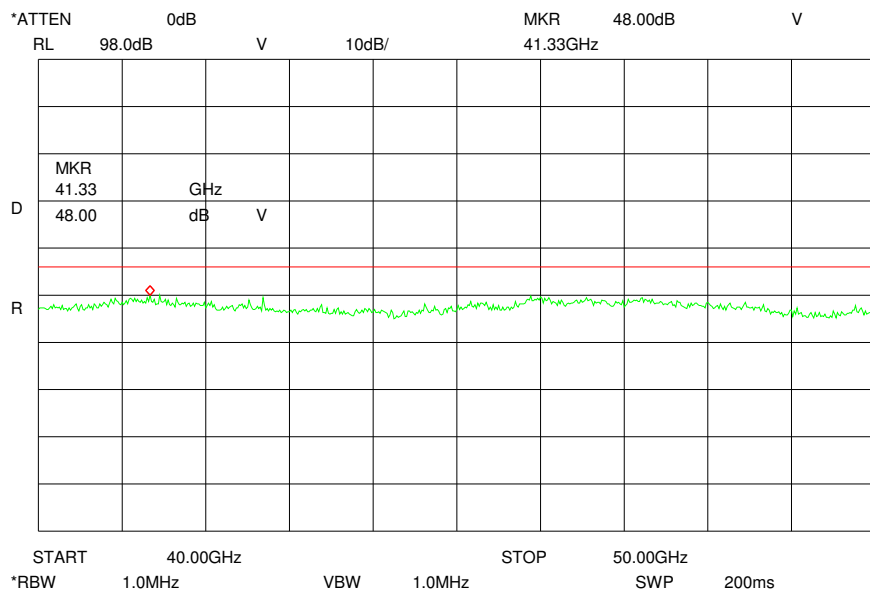


Date: 28.AUG.2008 09:54:04

Plot 5: 25 GHz to 40GHz



Plot 6: 40 GHz to 50GHz



# SRD-Testreport

CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 51 of 76

Results:

Spurious Emissions level [ $\mu\text{V/m}$ ]								
TX Idle mode			--			--		
f[MHz]	Detector	Level [ $\mu\text{V/m}$ ]	f[MHz]	Detector	Level [ $\mu\text{V/m}$ ]	f[MHz]	Detector	Level [ $\mu\text{V/m}$ ]
No peaks detected								
Measurement uncertainty			$\pm 3$ dB					

f < 1 GHz : RBW/VBW: 100 kHz  
see above plots

f  $\geq$  1GHz : RBW/VBW: 1 MHz

Measurement distance see table

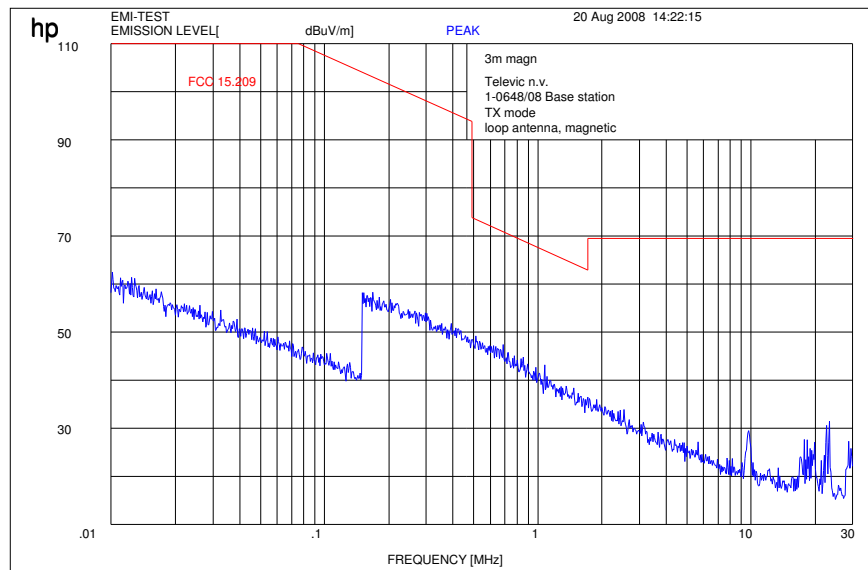
Limits : § 15.109 / 209

Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	Measurement distance (m)
30 - 88	100 (40 dB $\mu\text{V/m}$ )	3
88 - 216	150 (43.5 dB $\mu\text{V/m}$ )	3
216 - 960	200 (46 dB $\mu\text{V/m}$ )	3
above 960	500 (54 dB $\mu\text{V/m}$ )	3

**3.14 Spurious Emissions - radiated <30 MHz**  
**Transmit mode, valid for all three channels**

**§15.209**

Measured at 3 m distance.  
 Values recalculated with 40 dB/decade according to FCC rules.



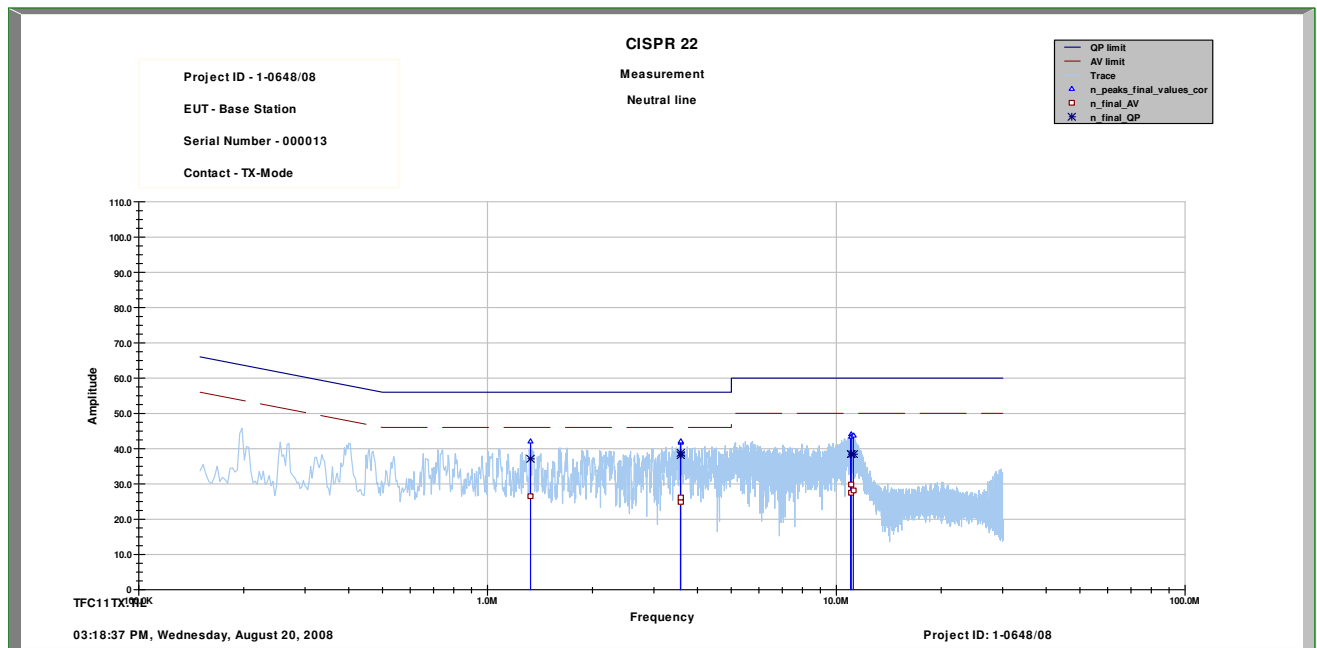
Limits:

Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dB $\mu\text{V/m}$	30
30 - 88	100 / 40 dB $\mu\text{V/m}$	3
88 - 216	150 / 43.5 dB $\mu\text{V/m}$	3
216 - 960	200 / 46 dB $\mu\text{V/m}$	3
above 960	54 dB $\mu\text{V/m}$	3

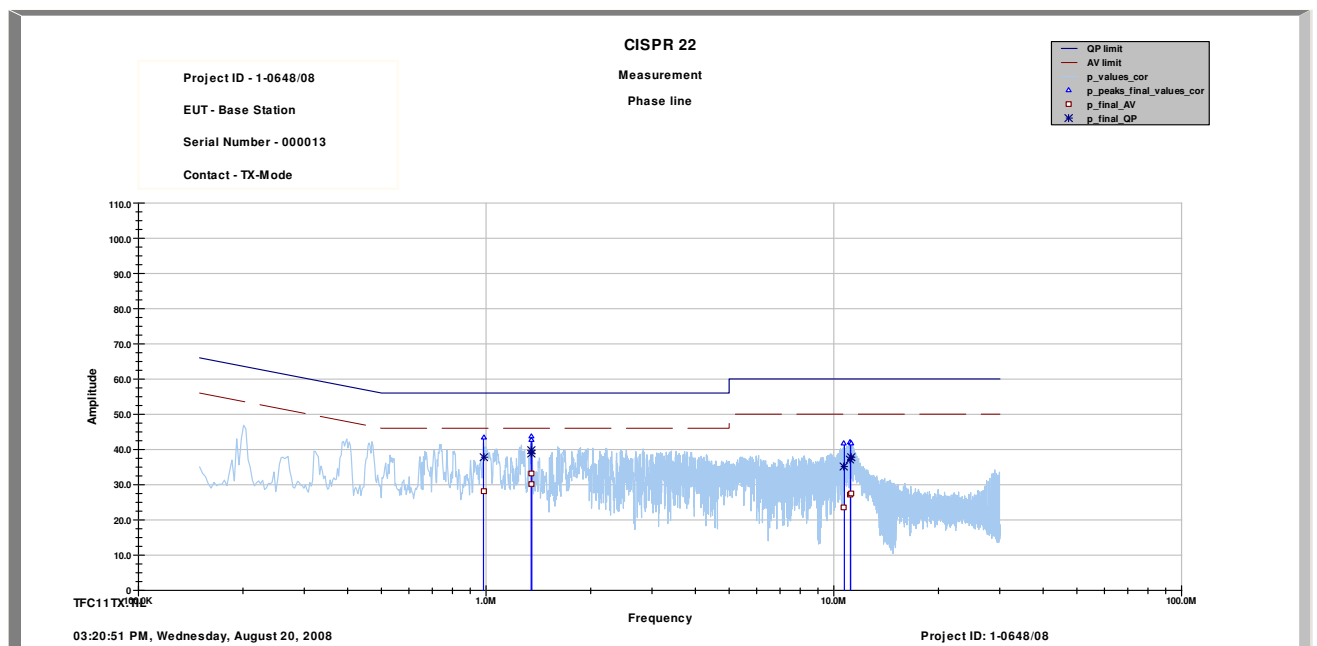
**3.15 Conducted Emissions <30 MHz**

§15.107/207

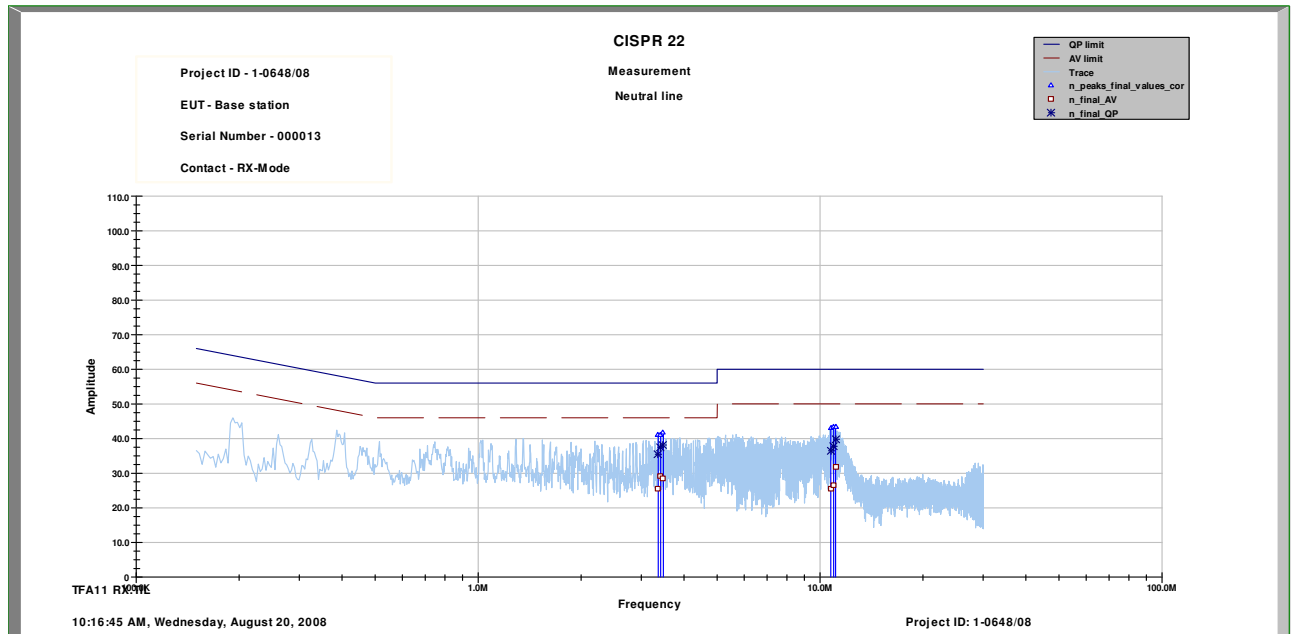
Plot 1: Neutral line TX mode



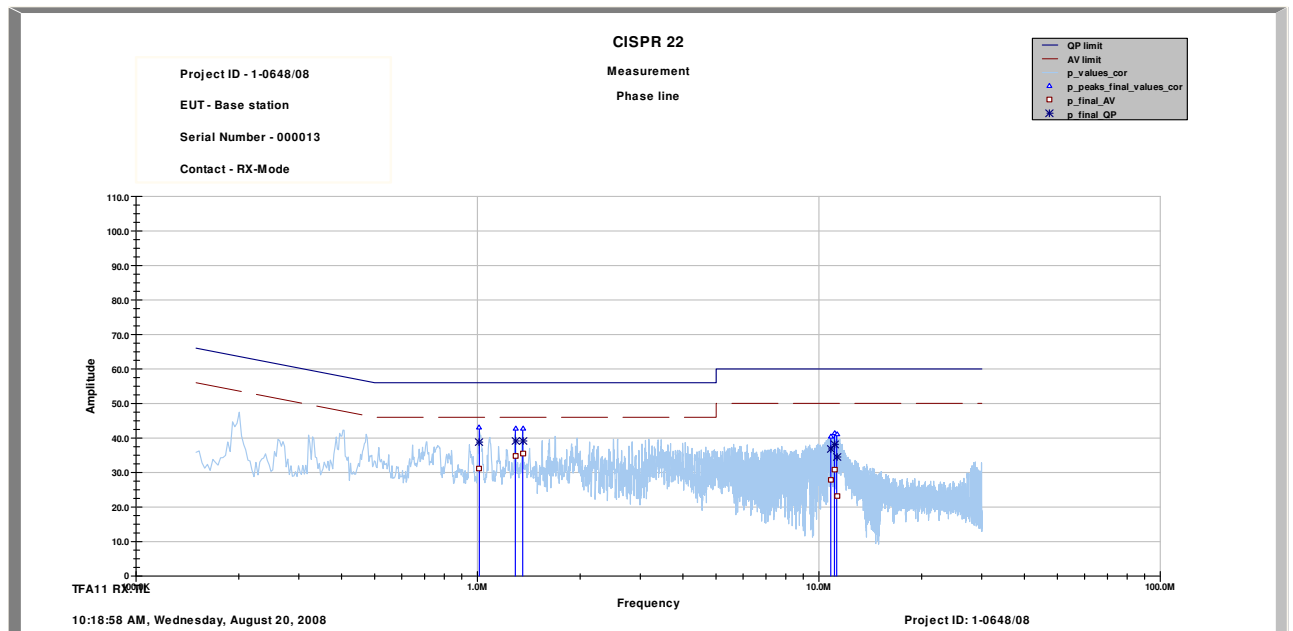
Plot 2: Phase line TX mode



Plot 3: Neutral line RX mode



Plot 4: Phase line RX mode



Limits:

Under normal test conditions only	See plots
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## 4 Test equipment and ancillaries used for tests

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

All reported calibration intervals are calibrations according to the EN/ISO/IEC 17025 standard. These calibrations were performed from an accredited external calibration laboratory.

Additional to these calibrations the laboratory performed comparison measurements with other calibrated systems and performed a weekly chamber inspection.

All used devices are connected with a 10 MHz external reference.

According to the manufacturers' instruction is it possible to establish a calibration interval for the FSP unit of 24 month, if the device has an external 10 MHz reference.

### *Anechoic chamber C:*

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Anechoic chamber	MWB	87400/02	300000996	Monthly verification		
2	System-Rack 85900	HP I.V.	*	300000222	n.a.		
3	Measurement System 1						
4	Spektrum Analyzer 8566B	HP	2747A05306	300001000	05.10.2006	24	05.10.2008
5	Spektrum Analyzer Display 85662A	HP	2816A16541	300002297	05.10.2006	24	05.10.2008
6	Quasi-Peak-Adapter 85650A	HP	2811A01131	300000999	05.10.2006	24	05.10.2008
7	RF-Preselector 85685A	HP	2837A00779	300000218	08.11.2006	24	08.11.2008
8	PC Vectra VL	HP		300001688	n.a.		
9	Software EMI	HP		300000983	n.a.		
10	Measurement System 2						
11	FSP 30	R&S	100623	ICT 300003464	05.10.2007	24	15.10.2009
12	PC	F+W			n.a.		
13	TILE	TILE			n.a.		
14	Biconical antenna	EMCO	S/N: 860 942/003		Monthly verification (System cal.)		
15	Log. Period. Antenna 3146	EMCO	2130	300001603	Monthly verification (System cal.)		
16	Double Ridged Antenna HP 3115P	EMCO	3088	300001032	Monthly verification (System cal.)		
17	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
18	Power Supply 6032A	HP	2818A03450	300001040	12.05.2007	36	12.05.2010
19	Busisolator	Kontron		300001056	n.a.		
20	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
21	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
22	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
23	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		

### *System Rack Room 005 :*

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	FSP 30	R&S		300003575	02.04.2007	24	02.04.2009
2	CBT	R&S	100313	300003516	24.10.2006	24	24.10.2008
3	Switch Matrix	HP		300000929	n.a.		
4	Power Supply	HP	3041A00544	300002270	13.05.2007	36	13.05.2010
5	Signal Generator	R&S	836206/0092	300002680	30.05.2007	36	30.05.2010

# SRD-Testreport

CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 56 of 76

## Signalling Units:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	CBT	R&S	100313	300003516	24.10.2006	24	24.10.2008
2	CBT	R&S	100185	300003416	21.02.2006	24	21.02.2008
3	CMU-200	R&S	103992	300003231	27.04.2007	12	27.04.2008
4	CMU-200	R&S	106240	300003321	02.05.2006	24	02.05.2008
5	CMU-200	R&S	832221/0055	300002862	20.03.2008	24	20.03.2010

## Climatic Box:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Climatic box VT 4002	Heraeus Vötsch	58566046820010	300003019	11.05.2007	24	11.05.2009
2	Climatic box CTS T-40/50	CTS	064023	300003540	03.01.2007	24	03.01.2009

## SRD Laboratory Room 002:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	System Controller PSM 12	R&S	835259/007	3000002681-00xx	n.a.		
2	Memory Extension PSM-K10	R&S	To 1	3000002681	n.a.		
3	Operating Software PSM-B2	R&S	To 1	3000002681	n.a.		
4	19" Monitor		22759020-ED	3000002681	n.a.		
5	Mouse		LZE 0095/6639	3000002681	n.a.		
6	Keyboard		G00013834L461	3000002681	n.a.		
7	Spectrum Analyser FSIQ 26	R&S	835540/018	3000002681-0005	01.08.2006	24	01.08.2008
8	Tracking Generator FSIQ-B10	R&S	835107/015	3000002681	s.No.7		
10	RF-Generator SMIQ03 (B1 Signal)	R&S	835541/056	3000002681-0002	01.08.2006	36	01.08.2009
11	Modulation Coder SMIQ-B20	R&S	To 10	3000002681	s.No.10		
12	Data Generator SMIQ-B11	R&S	To 10	3000002681	s.No.10		
13	RF Rear Connection SMIQ-B19	R&S	To 10	3000002681	s.No.10		
14	Fast CPU SM-B50	R&S	To 10	3000002681	s.No.10		
15	FM Modulator SM-B5	R&S	835676/033	3000002681	s.No.10		
16	RF-Generator SMIQ03 (B2 Signal)	R&S	835541/055	3000002681-0001	01.08.2006	36	01.08.2009
17	Modulation Coder SMIQ-B20	R&S	To 16	3000002681	s.No.16		
18	Data Generator SMIQ-B11	R&S	To 16	3000002681	s.No.16		
19	RF Rear Connection SMIQ-B19	R&S	To 16	3000002681	s.No.16		
20	Fast CPU SM-B50	R&S	To 16	3000002681	s.No.16		
21	FM Modulator SM-B5	R&S	836061/022	3000002681	s.No.16		
22	RF-Generator SMP03 (B3 Signal)	R&S	835133/011	3000002681-0003	01.08.2006	36	01.08.2009
23	Attenuator SMP-B15	R&S	835136/014	3000002681	S.No.22		
24	RF Rear Connection SMP-B19	R&S	834745/007	3000002681	S.No.22		
25	Power Meter NRVD	R&S	835430/044	3000002681-0004	01.08.2006	24	01.08.2008
26	Power Sensor NRVD-Z1	R&S	833894/012	3000002681-0013	01.08.2006	24	01.08.2008



# SRD-Testreport

CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 57 of 76

27	Power Sensor NRVD-Z1	R&S	833894/011	3000002681-0010	01.08.2006	24	01.08.2008
28	Rubidium Standard RUB	R&S		3000002681-0009	01.08.2006	24	01.08.2008
29	Switching and Signal Conditioning Unit SSCU	R&S	338864/003	3000002681-0006	01.08.2006	24	01.08.2008
30	Laser Printer HP Deskjet 2100	HP	N/A	3000002681-0011	n.a.		
31	19" Rack	R&S	11138363000004	3000002681	n.a.		
32	RF-cable set	R&S	N/A	3000002681	n.a.		
33	IEEE-cables	R&S	N/A	3000002681	n.a.		
34	Sampling System FSIQ-B70	R&S	835355/009	3000002681	s.No.7		
35	RSP programmable attenuator	R&S	834500/010	3000002681-0007	01.08.2006	24	01.08.2008
36	Signalling Unit	R&S	838312/011	3000002681	n.a.		
37	NGPE programmable Power Supply for EUT	R&S	192.033.41	3000002681			
39	Power Splitter 6005-3	Inmet Corp.	none	300002841	23.12.2006	24	23.12.2008
40	SMA Cables SPS-1151-985-SPS	Insulated Wire	different	different	n.a.		
41	CBT32 with EDR Signaling Unit	R&S					
42	Coupling unit	Narda	N/A	--	n.a.		
43	2xSwitch Matrix PSU	R&S	872584/021	300001329	n.a.		
44	RF-cable set	R&S	N/A	different	n.a.		
45	IEEE-cables	R&S	N/A	--	n.a.		

Note: 3000002681-00xx inventoried as a system

## SRD Laboratory Room 005:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Spektrum Analyzer 8566B	HP	2747A05275	300000219	08.11.2006	24	08.11.2008
2	Spektrum Analyzer Display 85662A	HP	2816A16497	300001690	08.11.2006	24	08.11.2008
3	Quasi-Peak-Adapter 85650A	HP	2811A01135	300000216	08.11.2006	24	08.11.2008
4	Power Supply	Heiden	003202	300001187	12.05.2007	36	12.05.2010
5	Power Supply	Heiden	1701	300001392	12.05.2007	36	12.05.2010

## SRD Laboratory Room 011:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	NRP Power Meter	R&S	100212	300003780	27.02.2008	24	27.02.2010

# SRD-Testreport

CETECOM ICT Services GmbH Saarbruecken, Germany



Test report No.: 1-0648-01-26/08 B Date: 2009-01-22

Page 58 of 76

## *Anechoic chamber F:*

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Control Computer	F+W	FW0502032	300003303	-/-	-/-	-/-
2	Trilog Antenna	9163-295	-/-	-/-	30.04.2008	24	30.04.2010
3	Amplifier - 0518C-138	Veritech Micro- wave Inc.	-/-	-/-	-/-	-/-	-/-
4	Switch - 3488A	HP		300000368	-/-	-/-	-/-
5	EMI Test receiver - ESCI	R&S	100083	300003312	31.01.2009	24	31.01.2009
6	Turntable Controller - 1061 3M	EMCO	1218	300000661	-/-	-/-	-/-
7	Tower Controller 1051 Controller	EMCO	1262	300000625	-/-	-/-	-/-
8	Tower - 1051	EMCO	1262	300000625	-/-	-/-	-/-
10	Ultra Notch-Filter Rejected band Ch. 62	WRCD	9	-/-	-/-	-/-	-/-

## 5 Photographs of test site

Photo documentation:

Photo 1:



Photo 2:



Photo 3:



Photo 4:



## 6 Photographs of equipment under test

Photo documentation:

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 5:

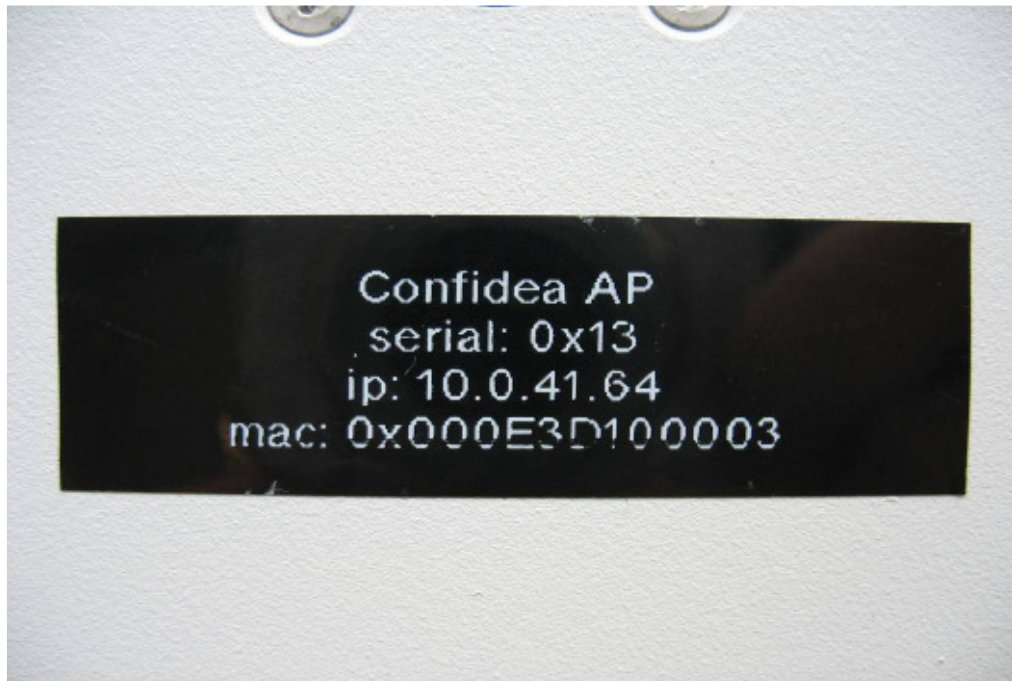


Photo 6:



Photo 7:



Photo 8:





Photo 9:



Photo 10:



Photo 11:



Photo 12:



Photo 13:



Photo 14:



Photo 15:



Photo 16:



Photo 17:

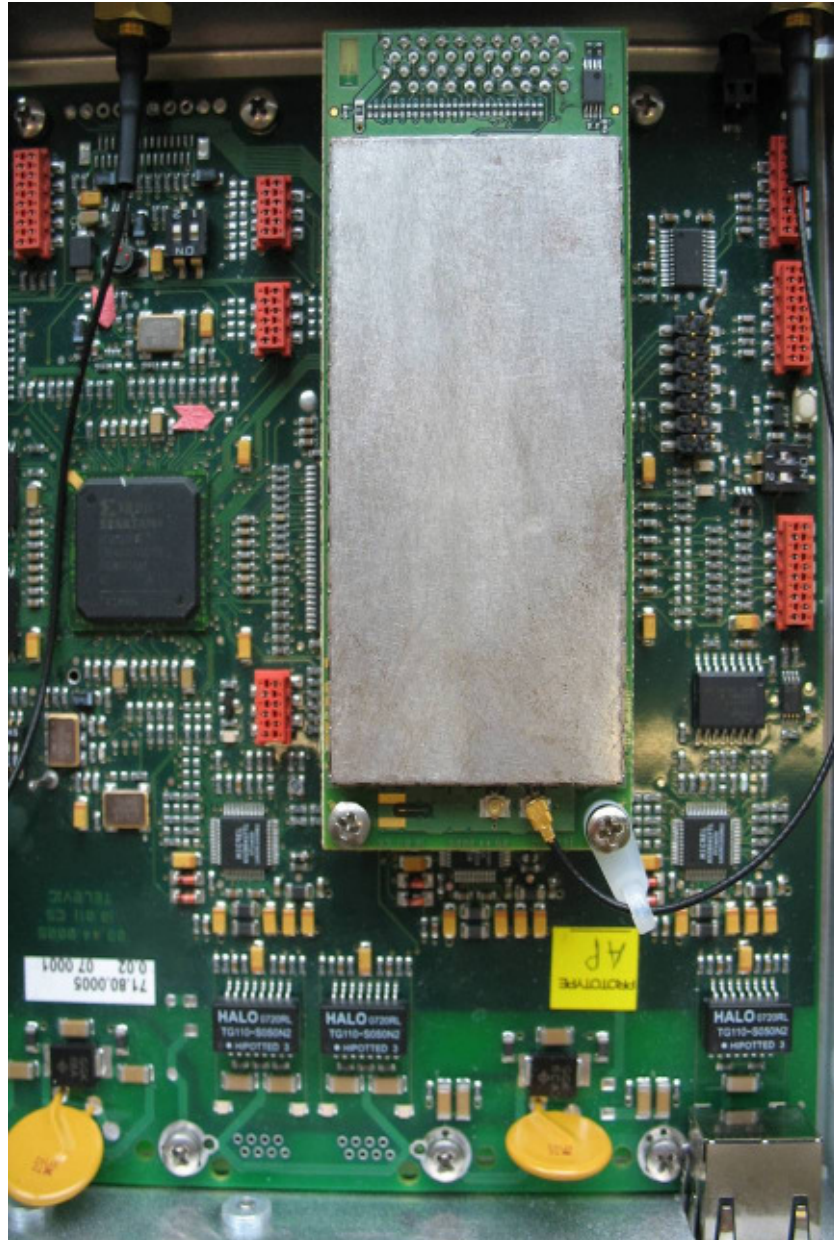


Photo 18:



Photo 19:

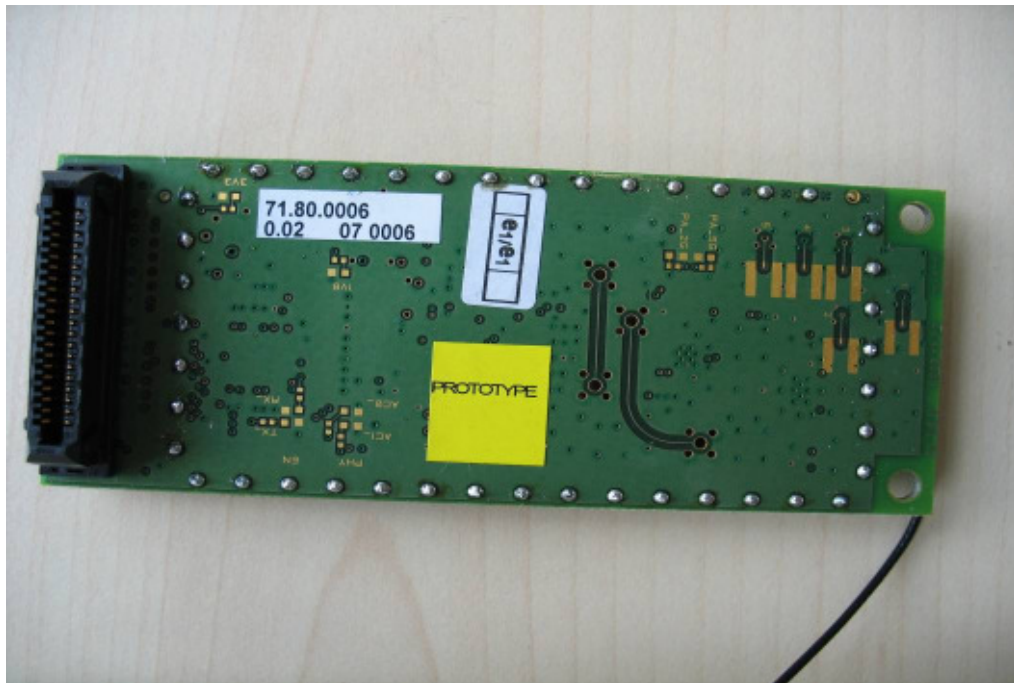


Photo 20:

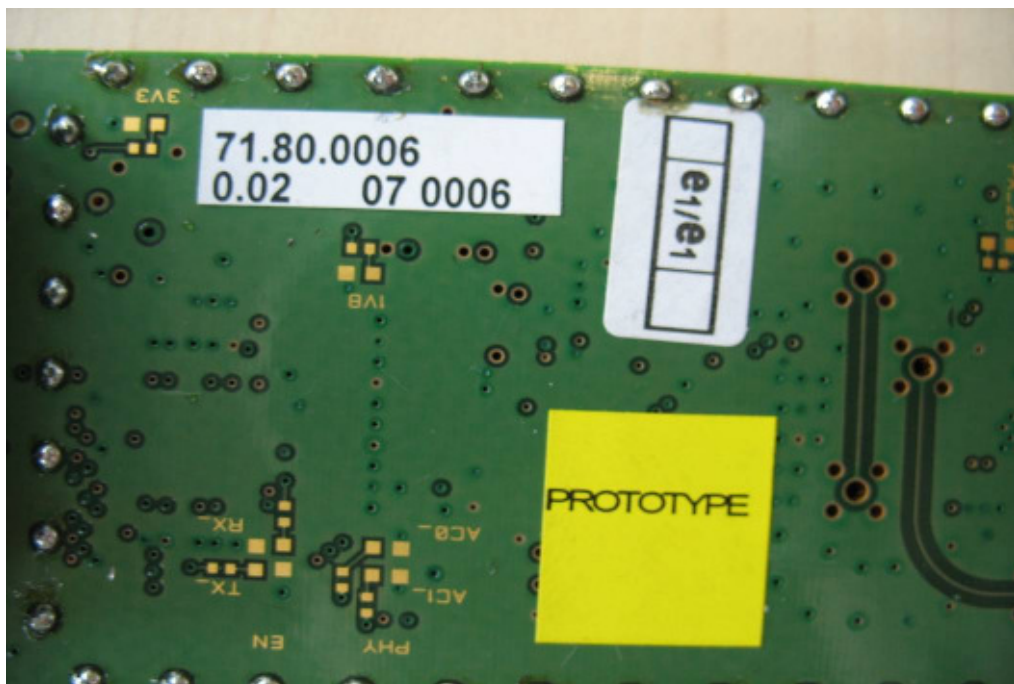


Photo 21:



Photo 22:

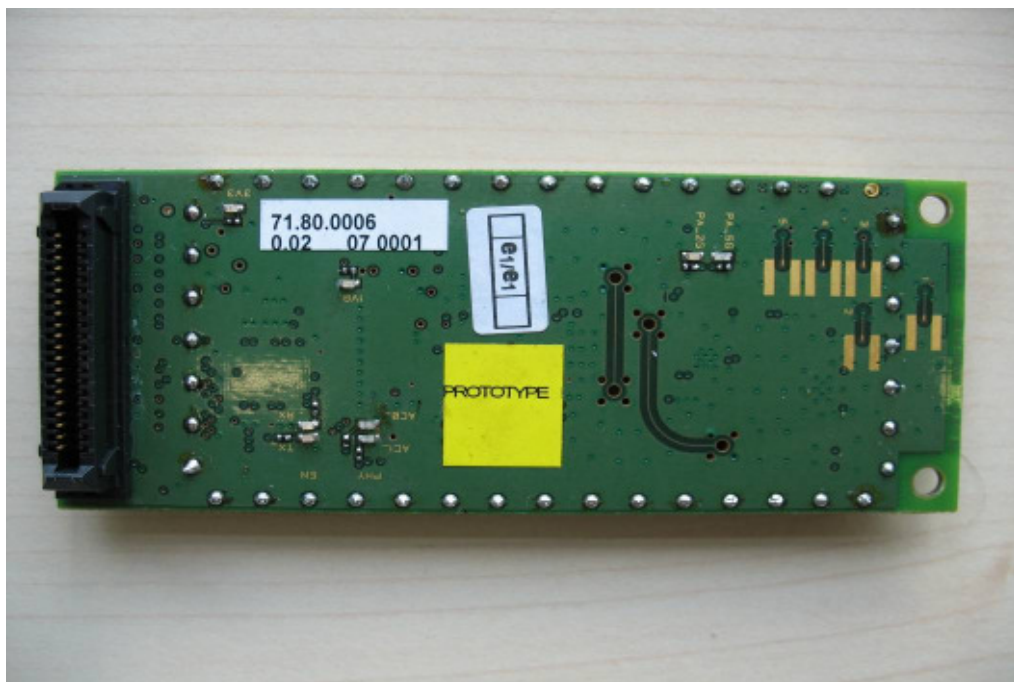




Photo 23:

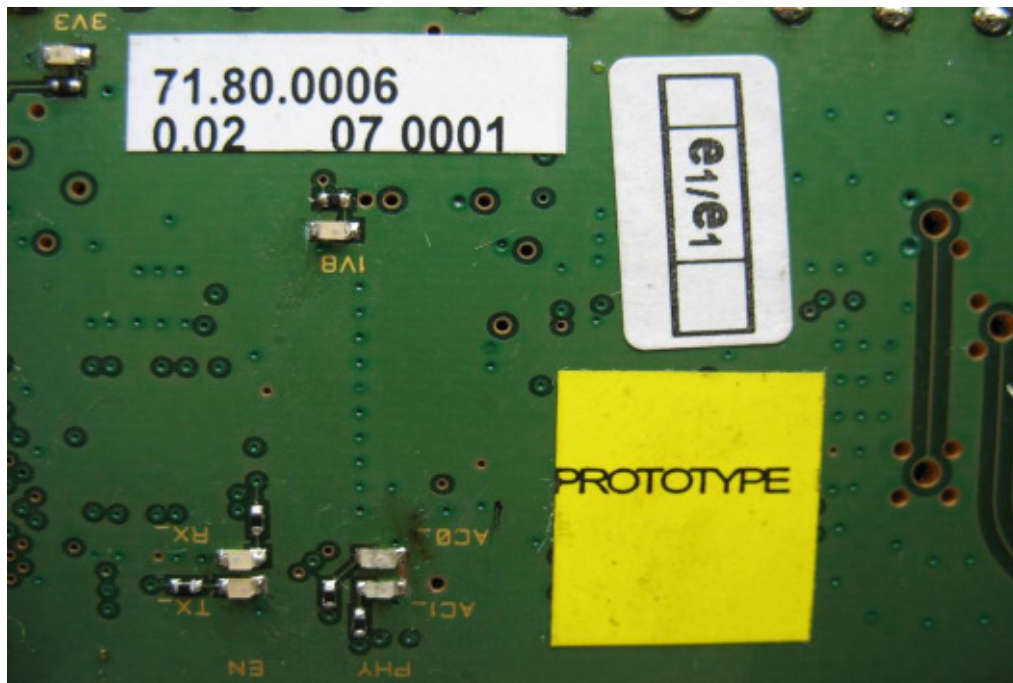


Photo 24:

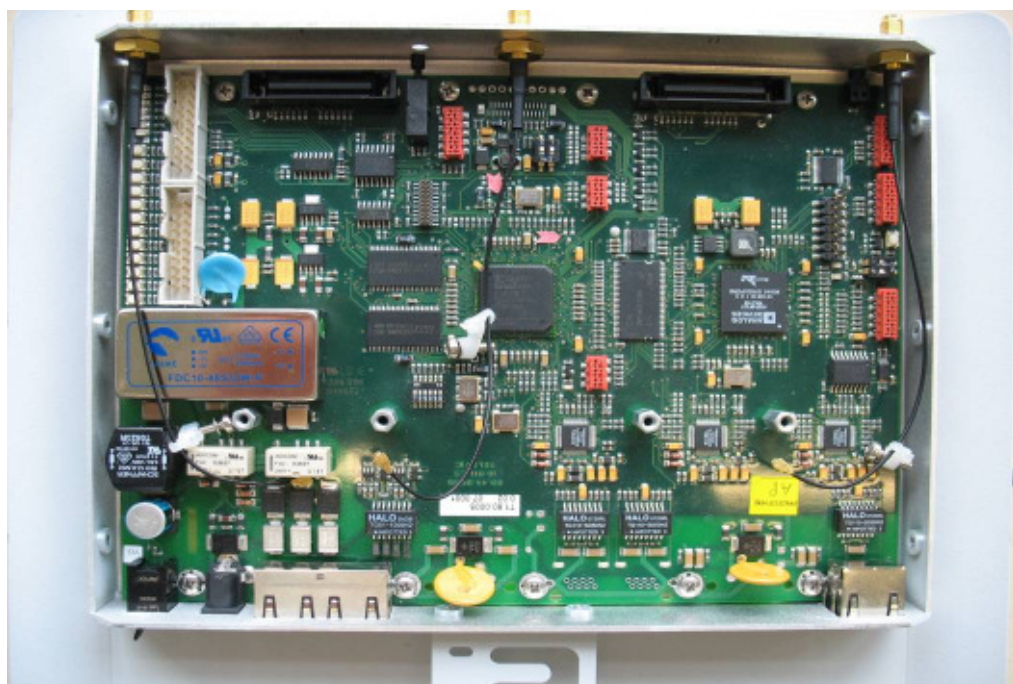


Photo 25:



Photo 26:

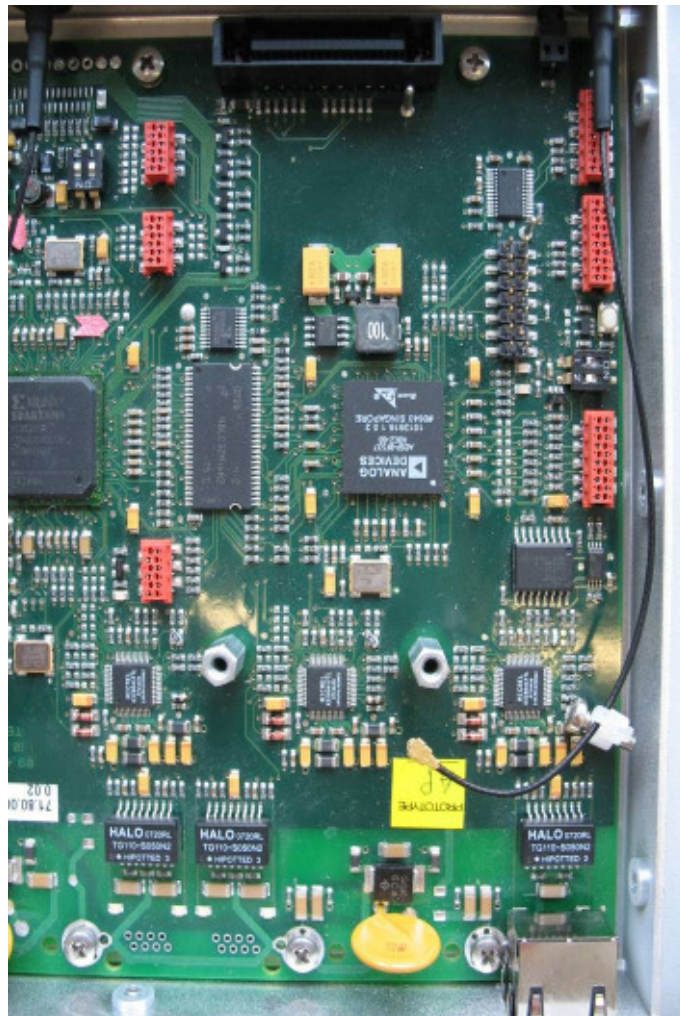


Photo 27:

