

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.** : 2-4765-01-03/07  
**Applicant** : Feig Electronic GmbH  
**Type** : ID ISC.MRU200  
**Test Standard** : FCC Part 15.247  
RSS-210 Issue 7  
**FCC ID** : PJMMRU200  
**Certification No. IC** : -/-

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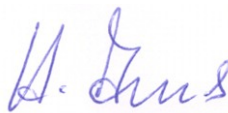
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## 1. Administrative data

### 1.1. Administrative data of the test facility

#### 1.1.1 Identification of the testing laboratory

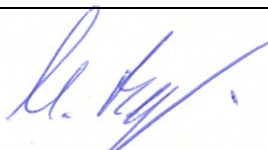
Company name:	Cetecom ICT Services GmbH
Address:	Untertürkheimerstr. 6-10 D-66117 Saarbruecken Germany
Laboratory accreditation:	DAR-Registration No. DAT-P-176/94-D1 Bluetooth Qualification Test Facility (BQTF)
Responsible for testing laboratory:	Michael Berg Phone: +49 681 598 0 Fax: +49 681 598 9075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



.....  
Responsible for testing  
(Harro Ames)

#### 1.1.2 Organizational items

Reference No.:	2-4765-01-03/07
Order No.:	
Receipt of EUT:	2007-11-05
Date(s) of test:	2007-11-05 to 2007-12-05
Date of report:	2007-12-20
Number of report pages:	73
Number of diagram pages (annex):	
-----	
Version of template:	1.8



.....  
Responsible for laboratory  
(Michael Berg)

## 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

Applicant's name:	Feig Electronic GmbH
Address:	Lange Strasse 4 35781 Weilburg-Waldhausen Germany
Contact person:	Mr. Andreas Wennrich Tel.: +49 6471-3109-468 Fax: +49 6471-3109-99 Email: andreas.wennrich@feig.de

### 1.2 Administrative data of manufacturer / member

Manufacturer's name:	same as applicant
Address:	

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

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

Product name : ID ISC.MRU200  
Product ID :  
Description : RFID Reader  
S/N serial number : -  
HW hardware status : -  
SW software status : -  
Frequency Band [MHz] : ISM 902 - 928  
Type of Modulation : FHSS  
Number of channels : 50  
Antenna : 2 external patch antennas  
Power Supply : 24 V DC  
Temperature Range : -20° to +55° C

Max. power radiated: 30.9 dBm

Max. power conducted: 25.5 dBm

FCC ID: PJMMRU200

IC: -/-

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

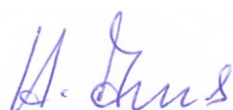
	Product name	Product ID	Description	S/N serial number	HW hardware status	SW software status
1						
2						
3						
4						

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

Company Number:	-/-
Model Name:	ID ISC.MRU200
Manufacturer (complete Adress):	Feig Electronic GmbH
Tested to Radio Standards Specification (RSS) No.:	RSS-210 Issue 7
Open Area Test Site Industry Canada Number:	IC 3463A-1
Frequency Range (or fixed frequency) [MHz]:	902 – 928 MHz
RF: Power [W] (max):	Rad. EIRP: 1230.3mW Conducted : 354.8mW
Antenna Type:	external patch antennas
Field Strength [dB $\mu$ V/m in 3m]:	-
Occupied Bandwidth (99% BW) [kHz]:	88.94 kHz
Type of Modulation:	ASK hopping
Emission Designator (TRC-43):	88k9A1D (FHSS)
Transmitter Spurious (worst case) [ $\mu$ V/m in 3m]:	-32.9 dB $\mu$ V/m at 1805.5 MHz
Receiver Spurious (worst case) [ $\mu$ V/m in 3m]:	no dedicated RX-mode

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 the applicable test conditions specified in the departmental standards and all of the requirements of the standards have been met.

Signature:



Date: 2007-12-07

Testengineer: Harro Ames

## 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. 2		low temperature, high power source conditions
Op. 3		high temperature, low power source conditions
Op. 4		high temperature, high power source conditions

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

## 1.3.5 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature / humidity	T <sub>nom</sub>	°C / %	+21 / 47
Low Temperature	T <sub>low</sub>	°C	-20
High Temperature	T <sub>high</sub>	°C	+55
Nominal Power Source	V <sub>nom</sub>	V	24
Low Power Source	V <sub>low</sub>	V	12
High Power Source	V <sub>high</sub>	V	24

Type of powersource: V DC

## 2. Teststandard & summary list of all performed test cases

TC identifier	Description	verdict	date	Remark
RF-Testing	FCC Part 15 §15.247 – CANADA RSS-210/RSS-GEN	PASS	2007-12-07	

Test Specification Clause	Test Case	Pass	Fail	Not applicable	Not performed
None	Antenna Gain	Yes			
§15.247(a1)	Carrier frequency separation	Yes			
§15.247(a1)	Number of hopping channels	Yes			
§15.247(a)(1)(iii)	Time of occupancy (dwell time)	Yes			
§15.247(e)	Power Spectral density (Hybrid system in Inquiry mode/Page scan)			Yes	
§15.247(a)(1)	Spectrum Bandwidth of a FHSS System / 20dB Bandwidth	Yes			
§ 15.247 (b)(1)	Maximum output power (conducted)	Yes			
§ 15.247 (b)(1)	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			
§ 15.247 (d)	Spurious Emission - radiated (Transmitter) >30 MHz	Yes			
§ 15.109	Spurious Emissions - radiated (Receiver)			Yes	
§ 15.209	Spurious Emissions - radiated (Transmitter) <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 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 conform 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 setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2003 clause 4.2.

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

9 kHz - 150 kHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.

150 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, passive loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120KHz Bandwidth, biconical antenna

200MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, log periodic antenna

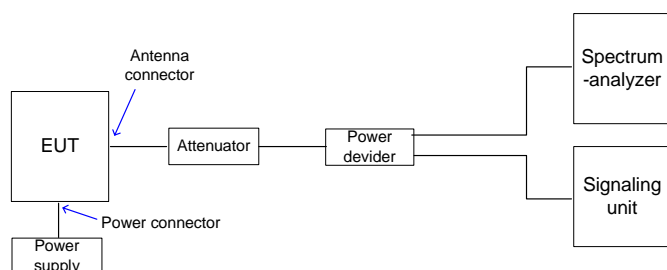
>1GHz: Average, RBW 1MHz, VBW 10 Hz, waveguide horn

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

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

#### 3.1.2 Conducted measurements

The EUT's RF signal is connected by the antenna connector which is supplied by the manufacturer to the spectrum analyzer. The specific loss for the signal path is first checked within a calibration. The measurement readings on the signaling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signaling unit and the spectrum analyzer are impedance matched on 50 Ohm.



## 3.2 Referenced documents

none

## 3.3 Additional comments

The sample has the possibility to use 3 different type of connections to other equipment, RS232, USB and LAN.

We tested all three types and defined the LAN version as the worst case.  
All measurements were performed with this setting.

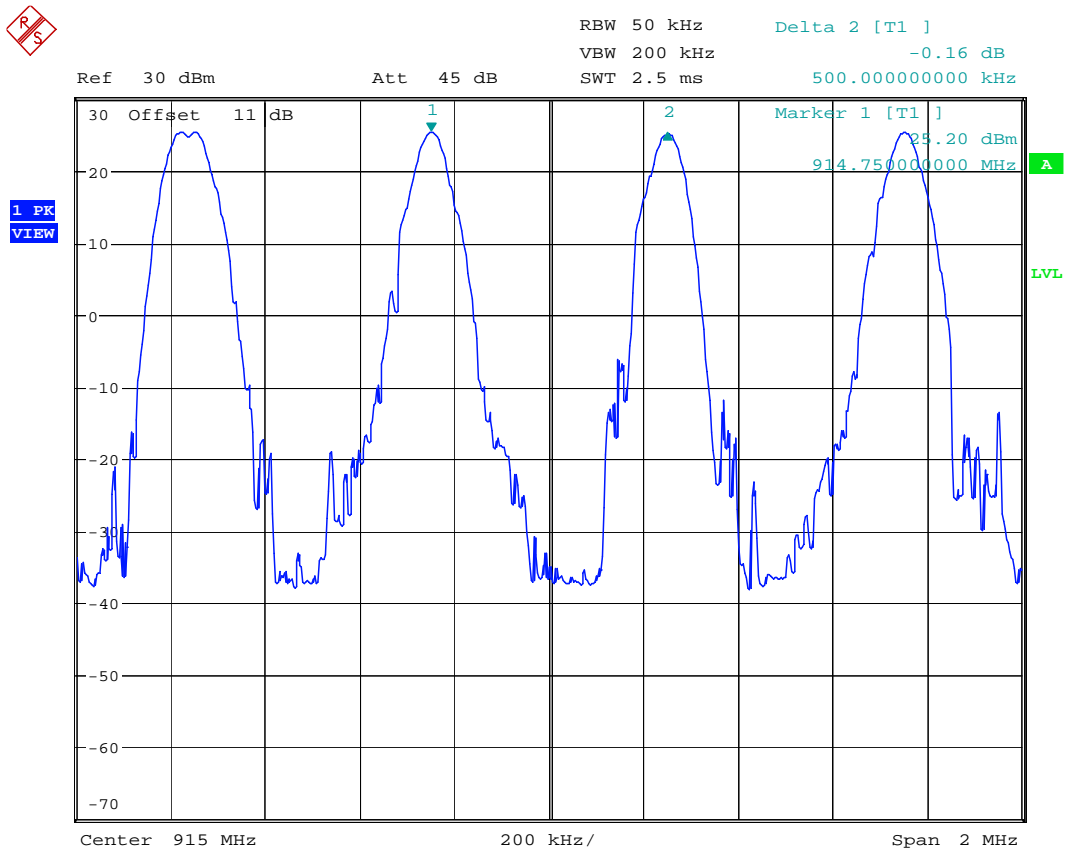
The sample is measured in two different ways.

- normal setting in metal housing with 2 antennas
- normal setting without housing with 2 antennas

In both settings the radiated emissions are below the limits.  
The sample passes all radiated tests with and without housing.

### 3.5 Carrier frequency separation §15.247(a)(1)(i)

Plot 1 of 1:



Date: 13.DEC.2007 09:45:41

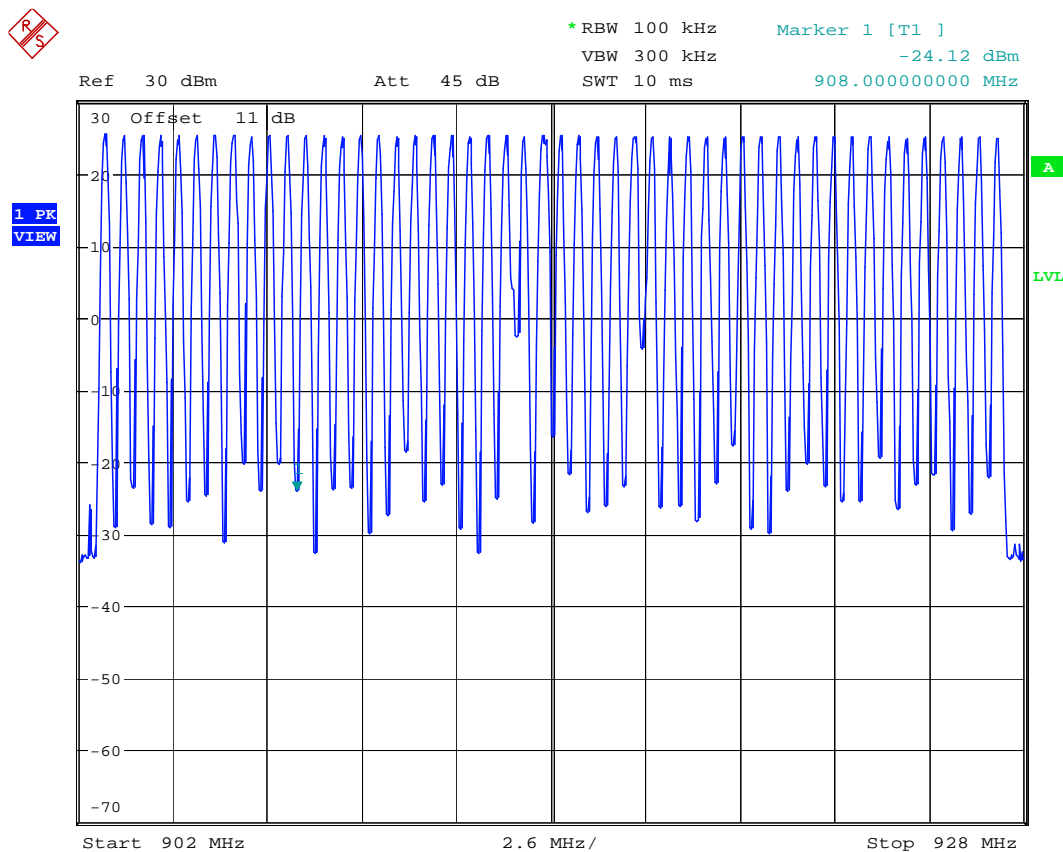
Result : Channel separation is: ~ 500 kHz

Limits :

Under normal test conditions only	Minimum 25 kHz or 20 dB Bandwidth of the hopping system
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### 3.6 Number of hopping channels §15.247(a)(1)(i)

Plot 1 of 1:



Date: 13.DEC.2007 09:47:53

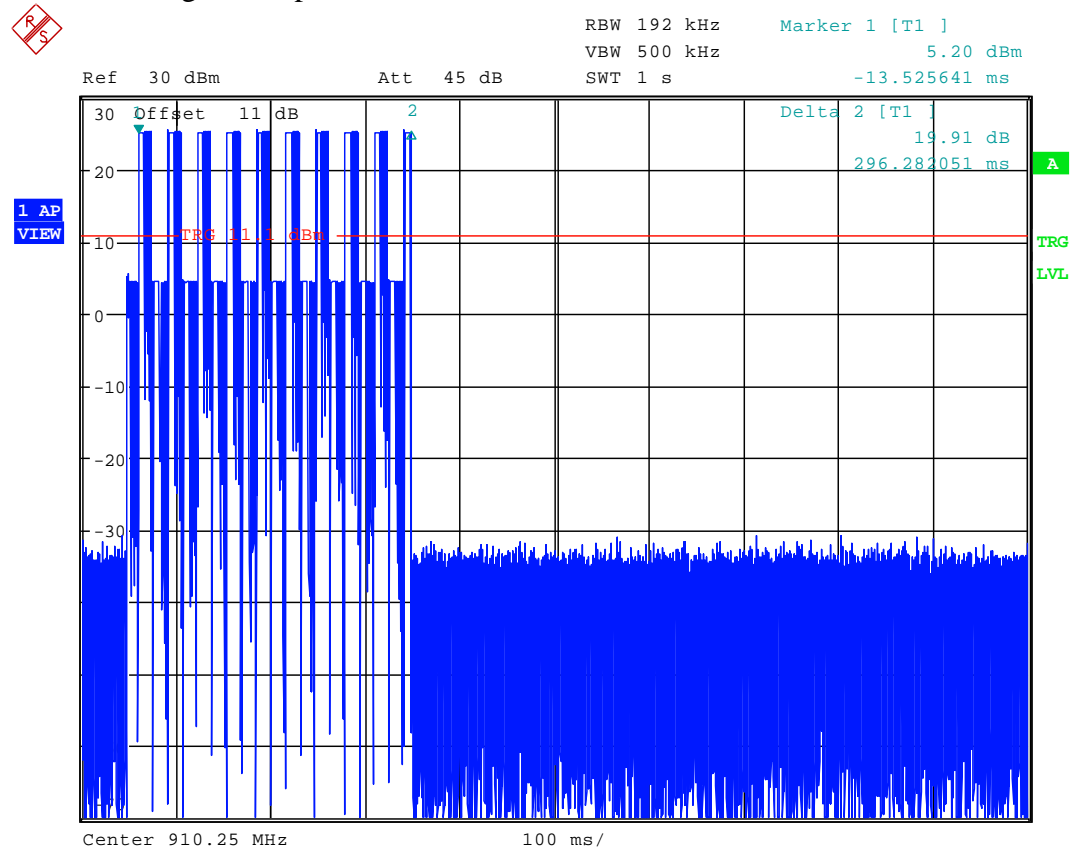
Result : The number of hopping channels is: 50

Limits :

Under normal test conditions only	at least 50 non-overlapping channels
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## Plot 2: Timing of this packet



Date: 13.DEC.2007 16:02:06

The length of one packet is 296 ms.

Averaged over a 20s period we have  $\frac{4}{3} \cdot 296 \text{ms} = 394.7 \text{ms}$  transmit time

### 3.8 Power Spectral density

§15.247(e)

**not applicable, only for digitally modulated systems.**

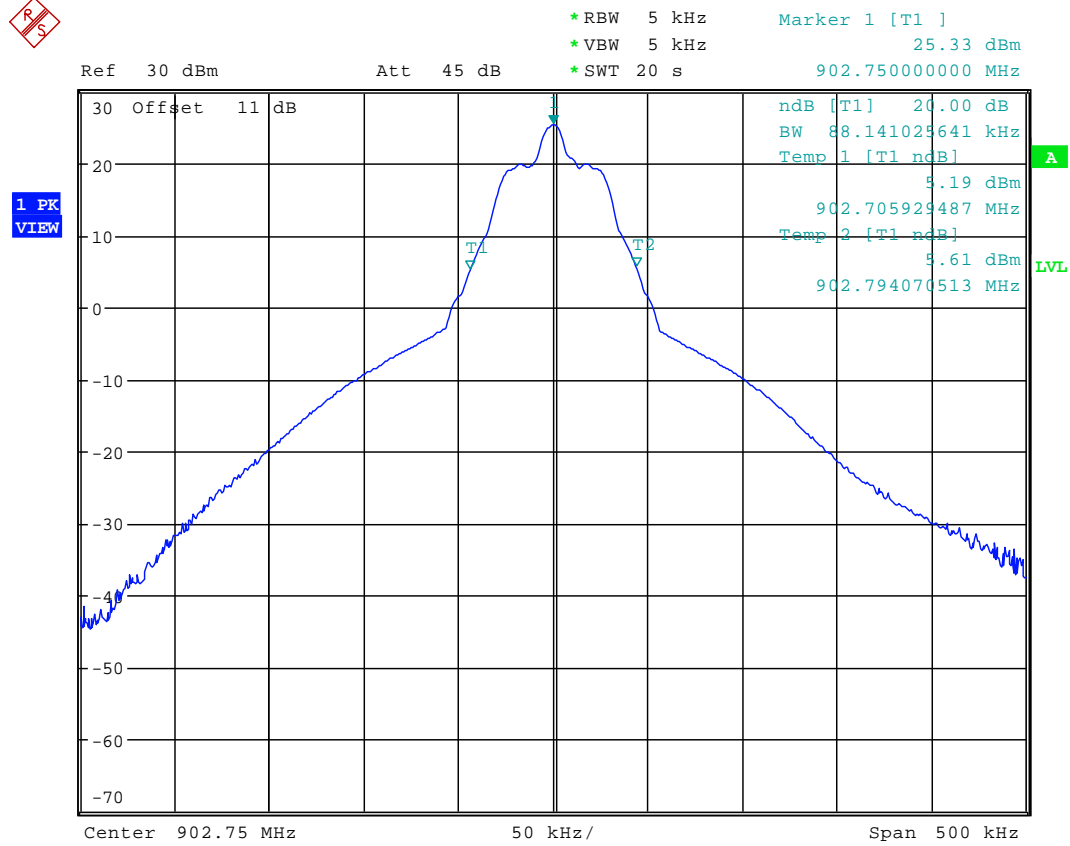
Result: Power density : - dBm/Hz = - dBm / 3 KHz  
Correction factor from dBm/Hz to dBm/3KHz is +34,8 dB

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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### 3.9 Spectrum Bandwidth of a FHSS System / 20dB Bandwith §15.247(a)(1)

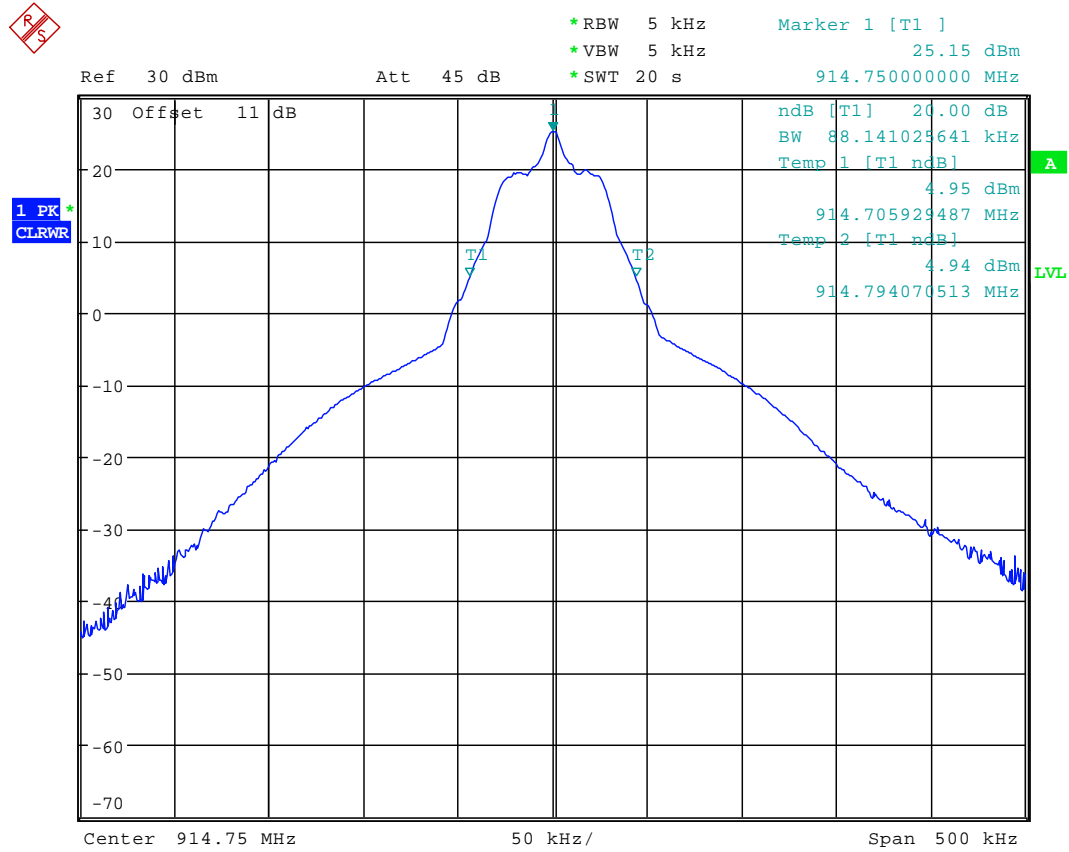
Plot 1 of 3



Date: 13.DEC.2007 16:07:01

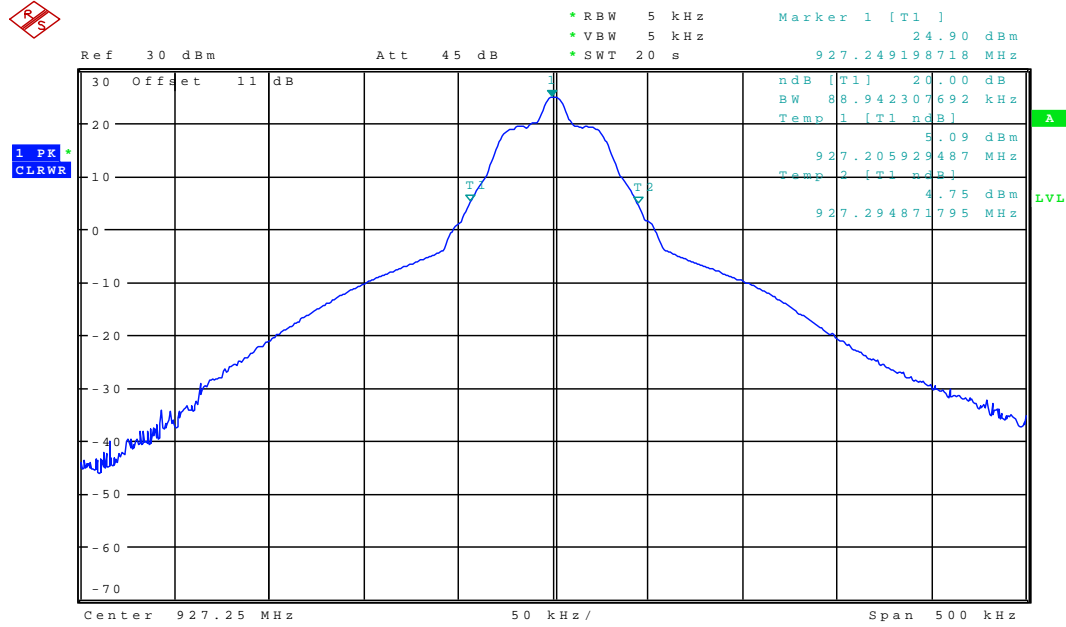


Plot 2 of 3



Date: 13.DEC.2007 16:08:21

Plot 3 of 3



Date: 13.DEC.2007 16:09:46

Results:

Test conditions		20 dB BANDWIDTH [KHz]		
Frequency [MHz]		902.75	914.76	927.25
T <sub>nom</sub>	V <sub>nom</sub>	88.141	88.141	88.942
Measurement uncertainty		±1kHz		

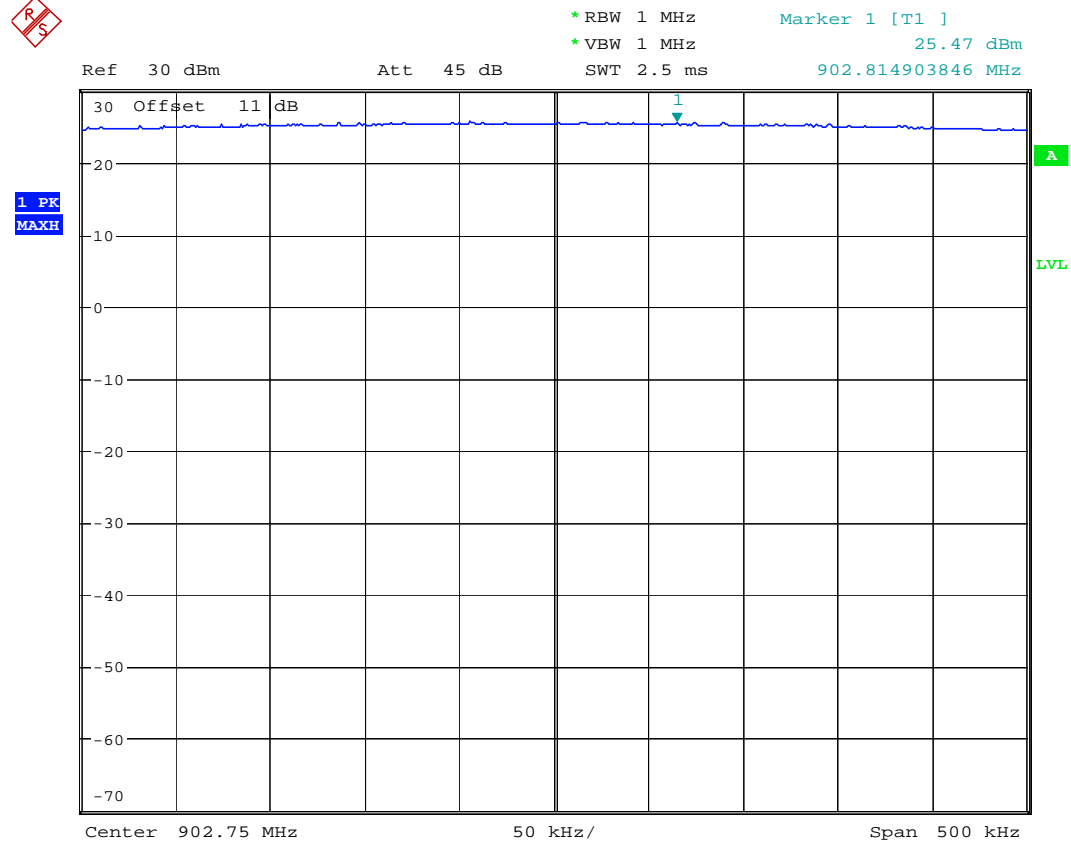
RBW / VBW ~ 1% of the span.

Limits :

Under normal test conditions only	<500 KHz
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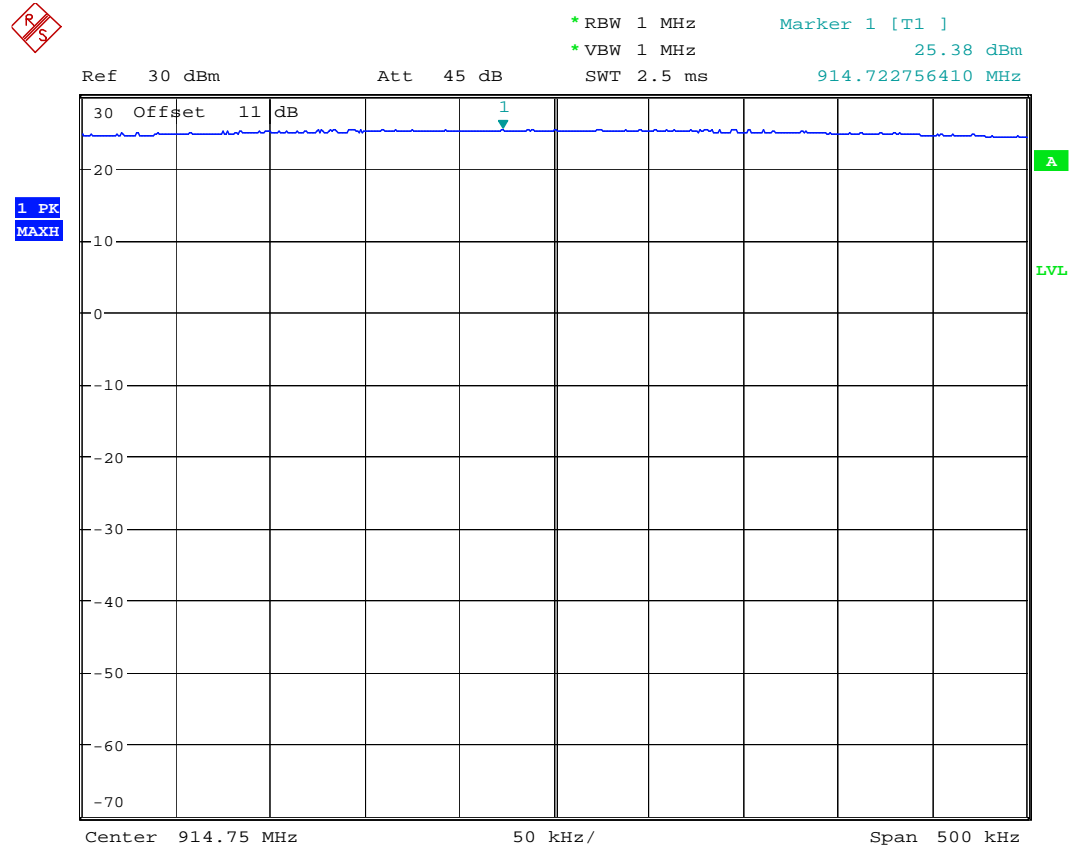
### 3.10 Maximum output power (conducted) § 15.247 (b)(2)

Plot 1 of 3



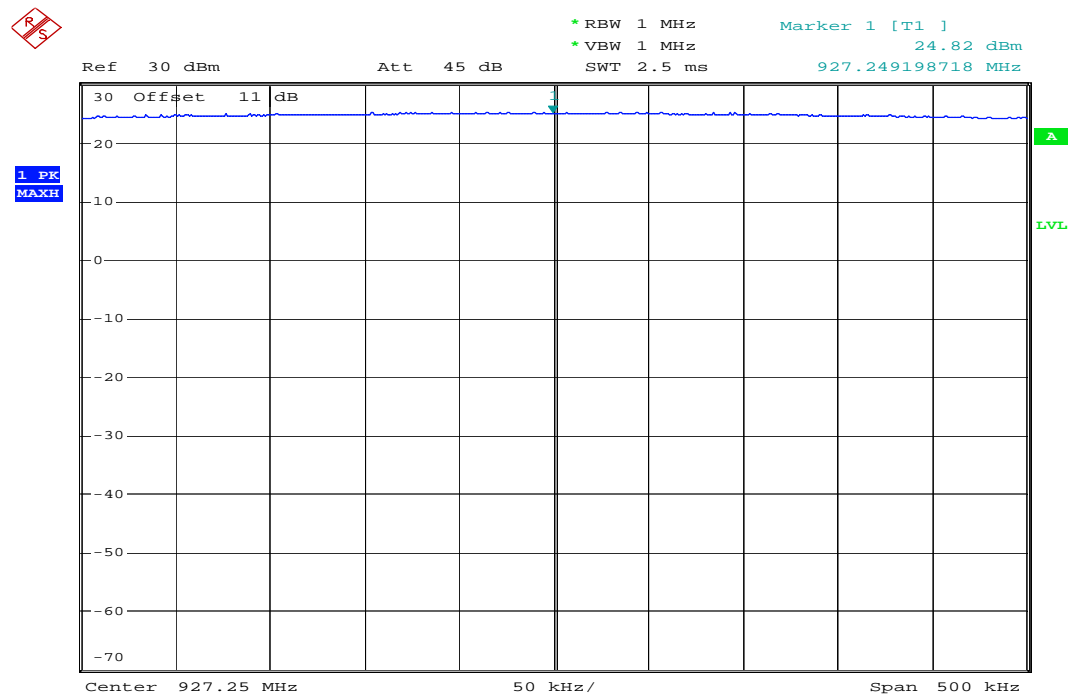
Date: 13.DEC.2007 16:12:50

Plot 2 of 3



Date: 13.DEC.2007 16:11:48

Plot 3 of 3



Date: 13.DEC.2007 16:10:41

Results:

Test conditions		Max. peak output power [dBm]					
Frequency [MHz]		902.75		914.76		927.25	
T <sub>nom</sub>	V <sub>nom</sub>	PK	25.5	PK	25.4	PK	24.8
Measurement uncertainty		±3dB					

RBW / VBW : 3 MHz

Limits:

Under normal test conditions only, for frequency range 902-928 MHz	Max. 1.0 Watt
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**3.11 Max. peak output power (radiated) § 15.247 (b)(2)**

Results:

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		902.75	914.76	927.25
T <sub>nom</sub>	V <sub>nom</sub>	30.9	30.8	30.2
Measurement uncertainty		±3dB		

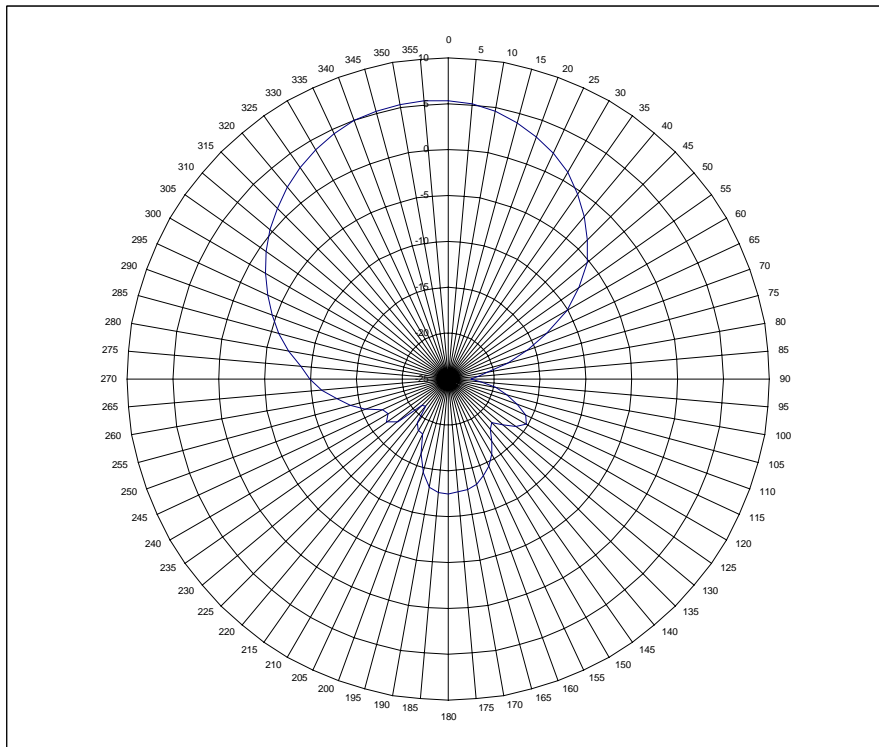
calculated by adding the conducted power and the antenna gain.

Limits:

Under normal test conditions only, for frequency range 902 - 928 MHz	Max. 4.0 Watt 30 dBm + 6 dBi gain
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The beamwidth of the antenna is 65 degrees.

max. Antenna gain is 5.5 dBi



## 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: 30.9 dBm = 1230 mW

calculated at distance of 20 cm:

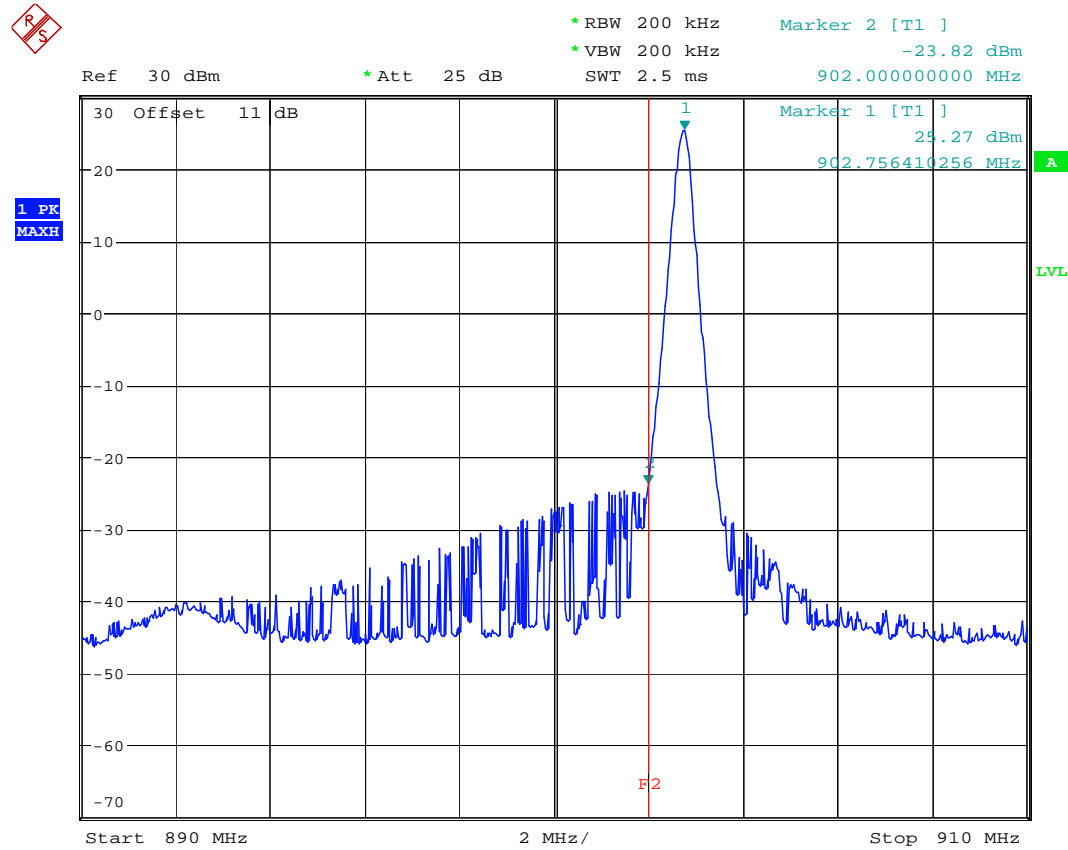
power density =  $1230 / 4\pi 20^2 = 0.245 \text{ mW/ cm}^2$

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.
---

### 3.12 Band-edge compliance of conducted emissions §15.247 (d)

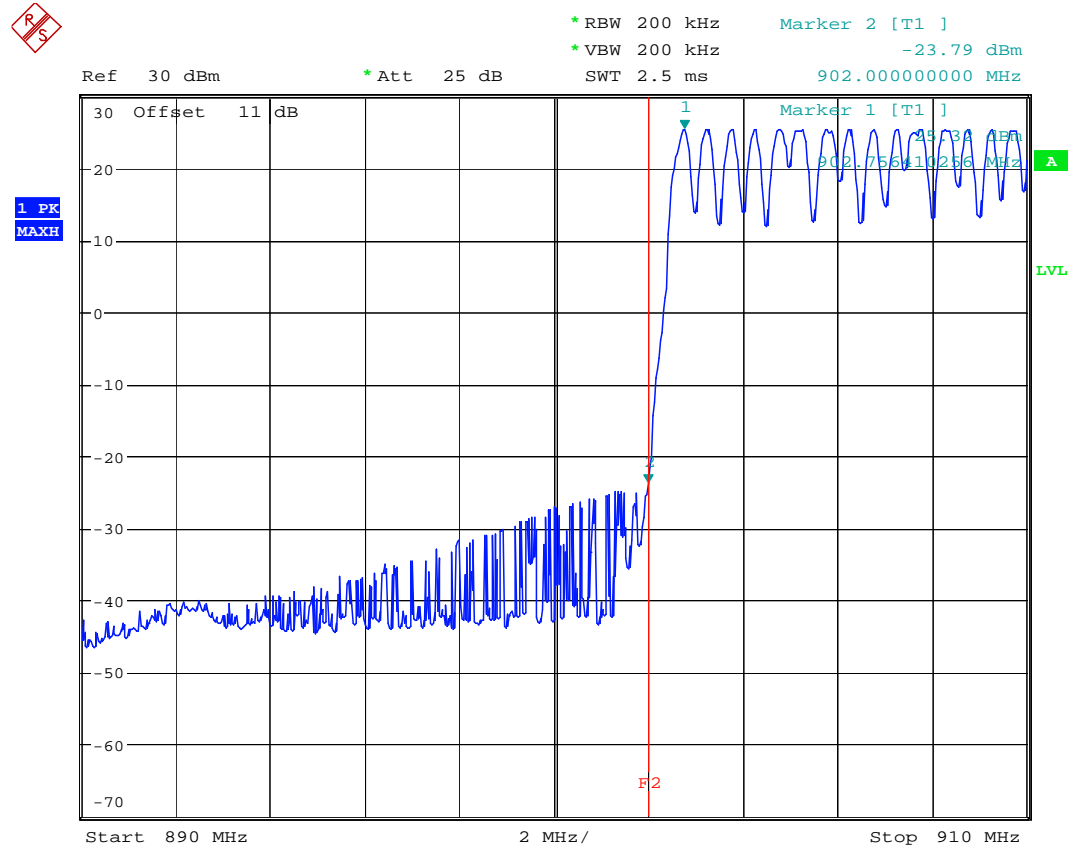
Plot 1 of 4 (hopping off, lowest frequency):



Date: 13.DEC.2007 16:16:37

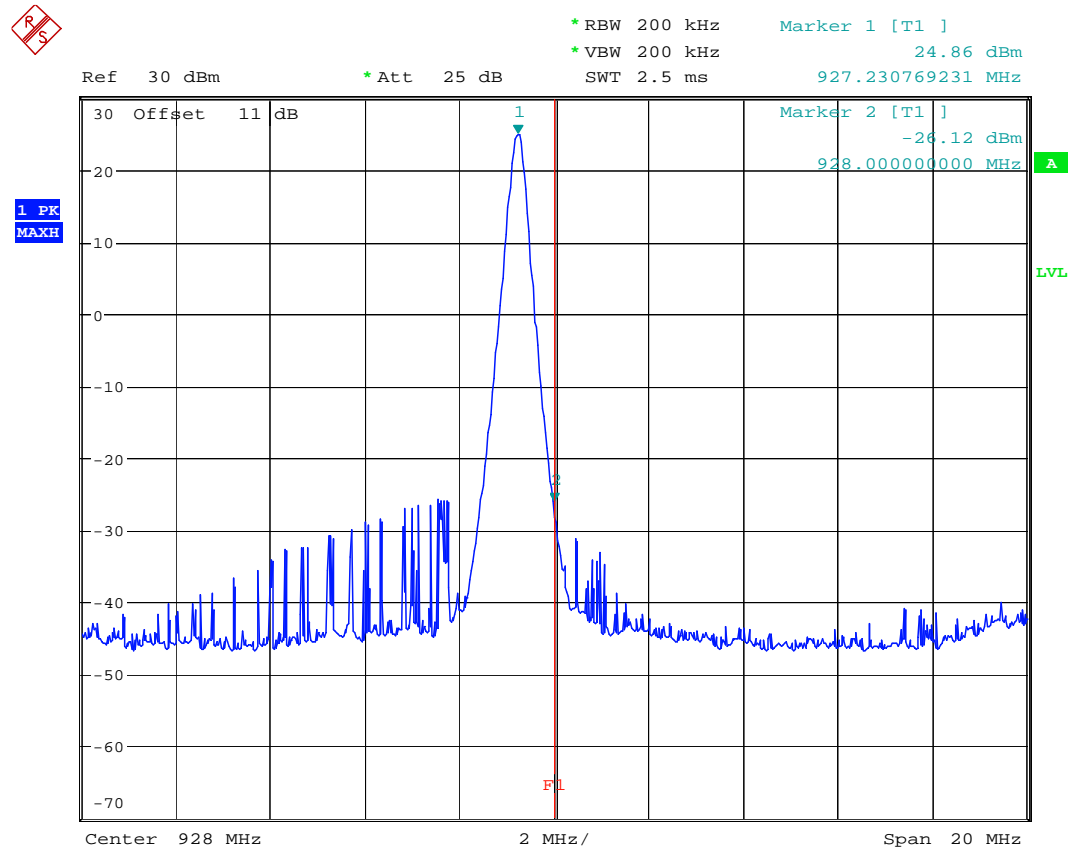


Plot 2 of 4 (hopping on, lowest frequency):



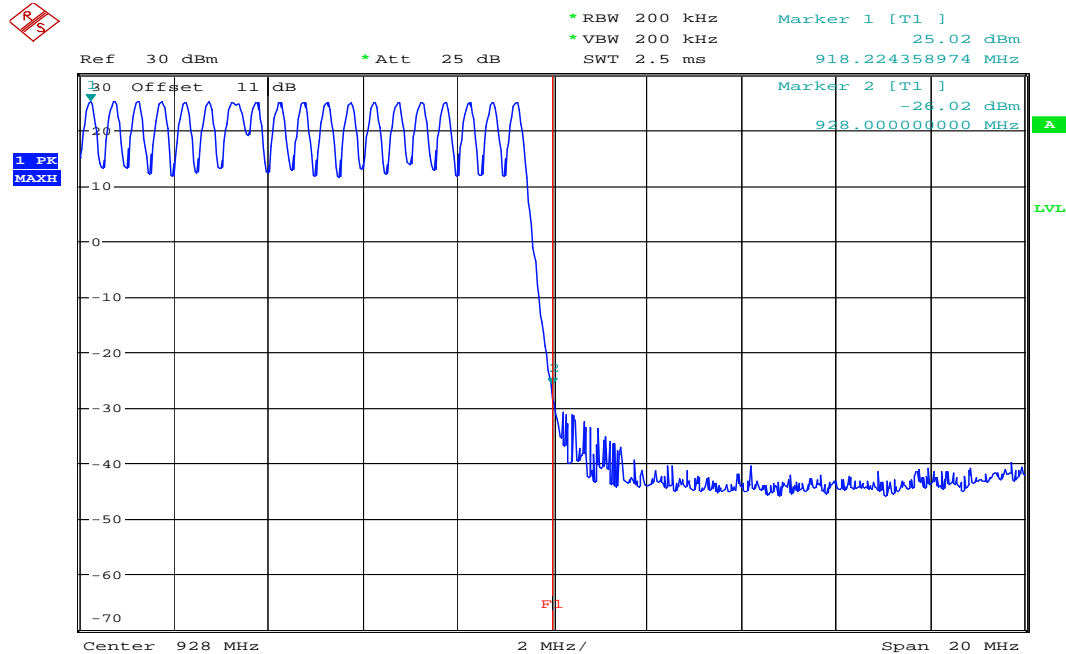
Date: 13.DEC.2007 16:19:56

Plot 3 of 4 (hopping off, highest frequency):



Date: 13.DEC.2007 16:22:27

Plot 4 of 4 (hopping on, highest frequency):



Date: 13.DEC.2007 16:21:45

**Results:**

SZENARIO	DELTA VALUE [DB]
hopping off, lowest frequency	> 20 dB
hopping on, lowest frequency	> 20 dB
hopping off, highest frequency	> 20 dB
hopping on, highest frequency	> 20 dB
Measurement uncertainty	±1,5dB

**Limits:**

Under normal test conditions only	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)).
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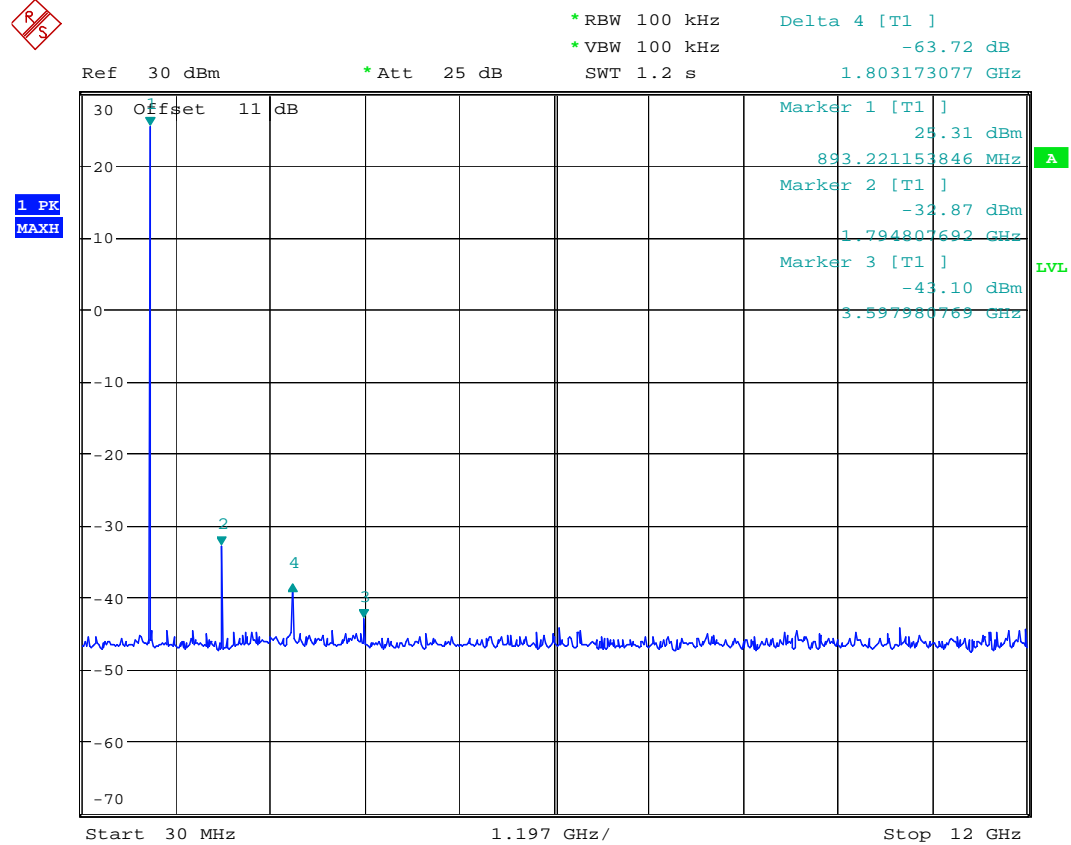
### **3.13 Band-edge compliance of radiated emissions**

**§15.205**

**not applicable, there are no restricted bands nearby the band edges.**

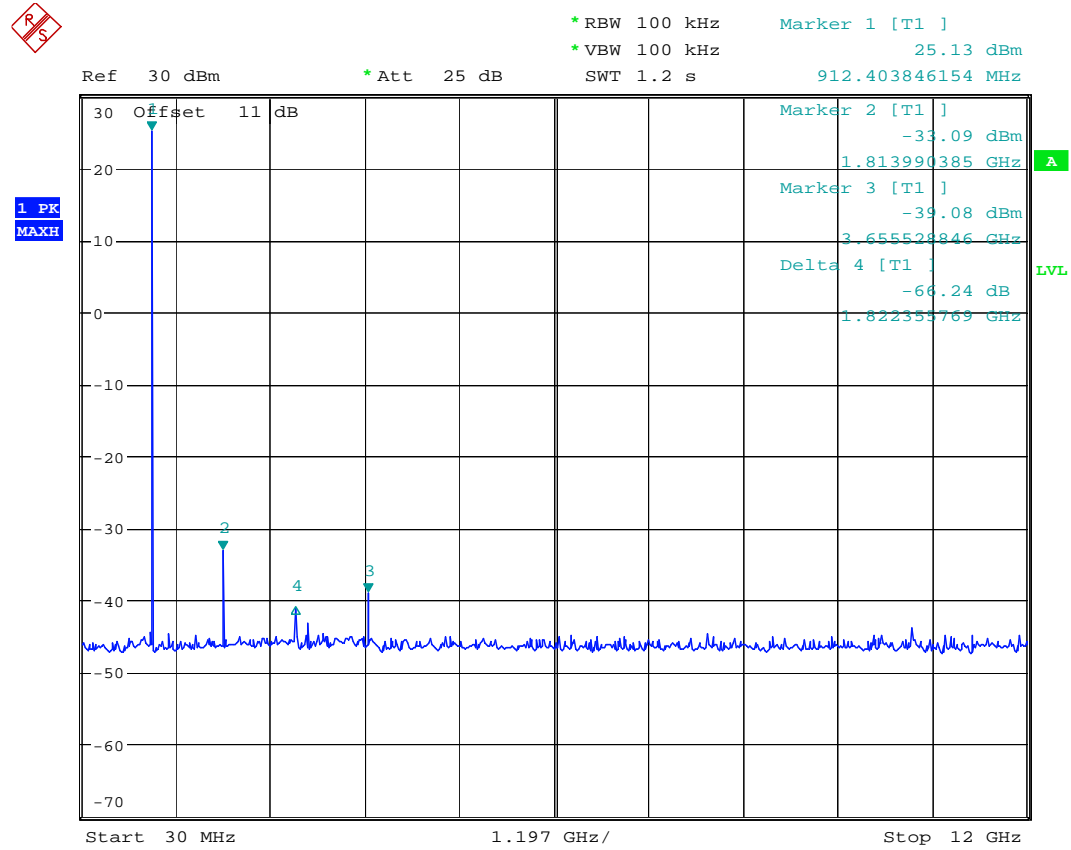
### 3.14 Spurious Emissions - conducted (Transmitter) § 15.247 (c)(1)

Plot 1 of 3: lowest channel



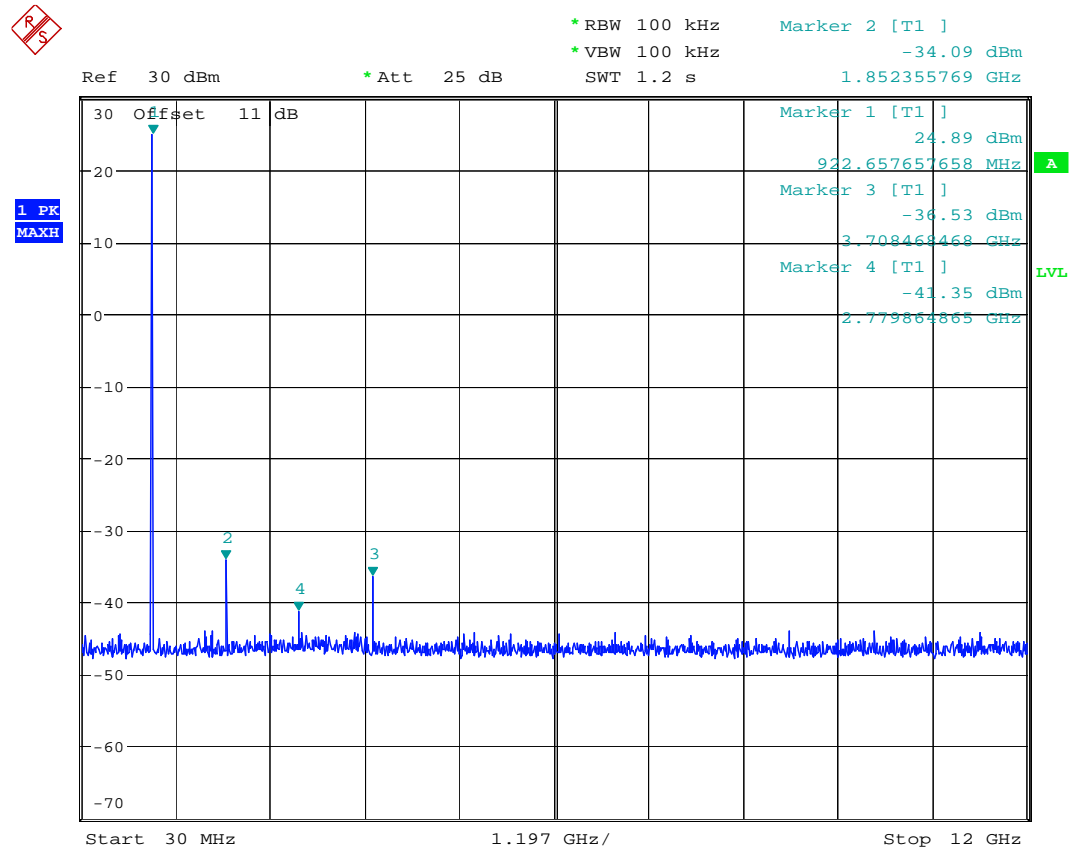
Date: 13.DEC.2007 16:26:34

Plot 2 of 3: middle channel



Date: 13.DEC.2007 16:25:36

Plot 3 of 3: highest channel



Date: 13.DEC.2007 16:28:56

Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emission power	actual attenuation below frequency of operation [dB]	results
902.75		25.4	30 dBm		Operating frequency
1805.5		-32.9	-20 dBc	> 20 dB	pass
2708.3		-38.4		> 20 dB	pass
3611		-43.1		> 20 dB	pass
914.75		25.1	30 dBm		Operating frequency
1829.5		-33.9	-20 dBc	> 20 dB	pass
2744.3		-41.1		> 20 dB	pass
3659		-39.1		> 20 dB	pass
927.25		24.9	30 dBm		Operating frequency
11854.5		-34.1	-20 dBc	> 20 dB	pass
2781.8		-36.5		> 20 dB	pass
3709		-41.4		> 20 dB	pass
Measurement uncertainty		± 3dB			

RBW : 100 kHz      VBW: 100 MHz

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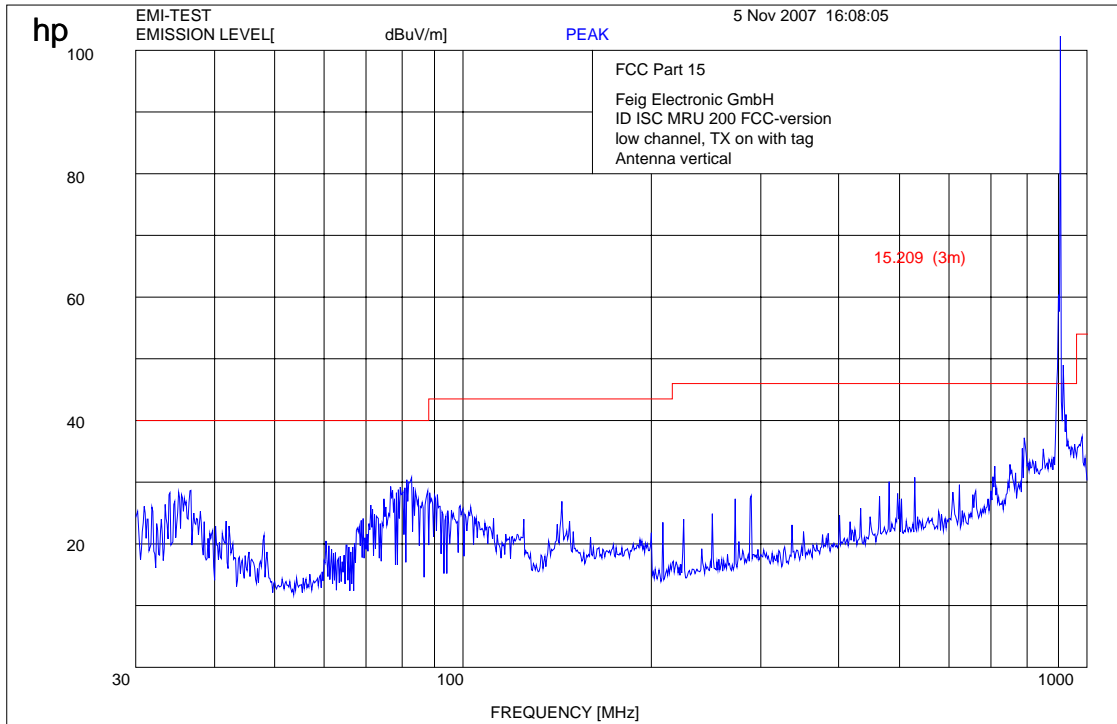
Note: For emissions that fall into restricted bands you find the radiated emissions later in the report.



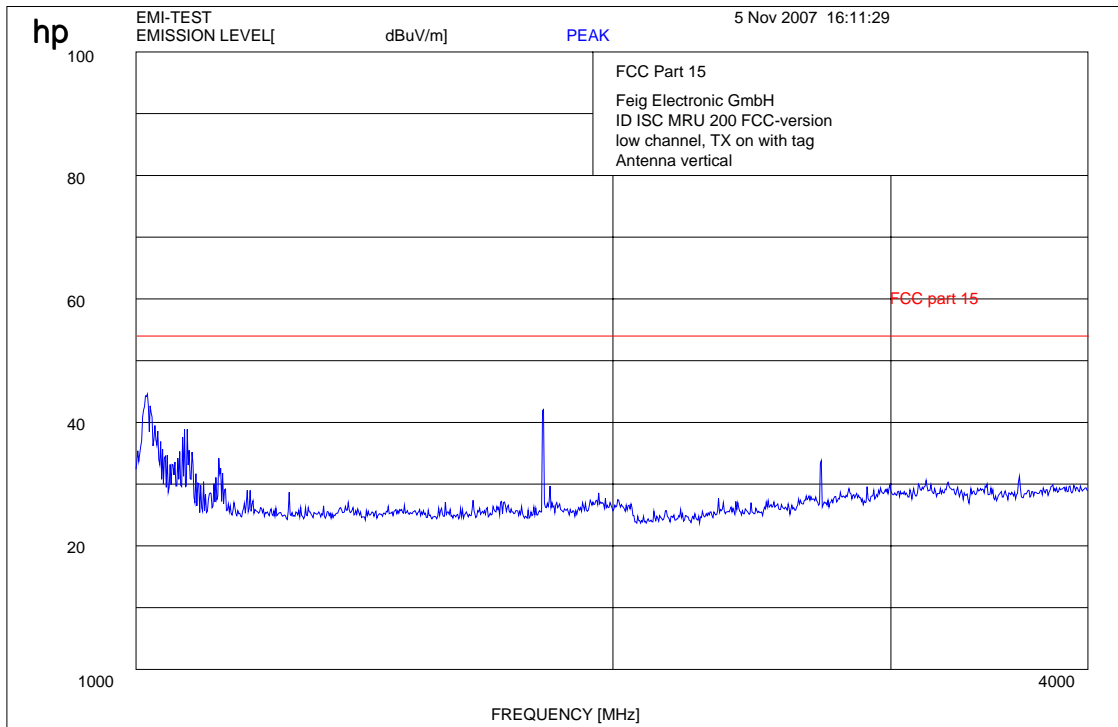
### 3.15 Spurious Emissions > 30 MHz- radiated (Transmitter) § 15.247 (c)(1)

Version 1 with housing.

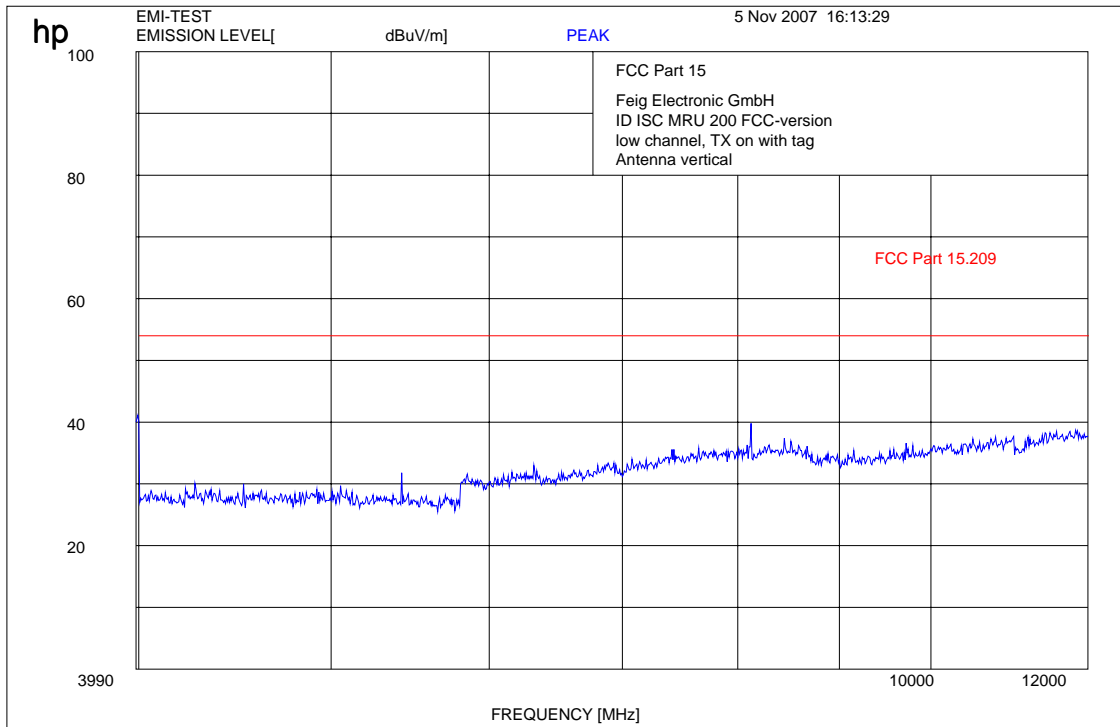
Plot : 0.03 - 1 GHz vertical worst case (lowest channel)



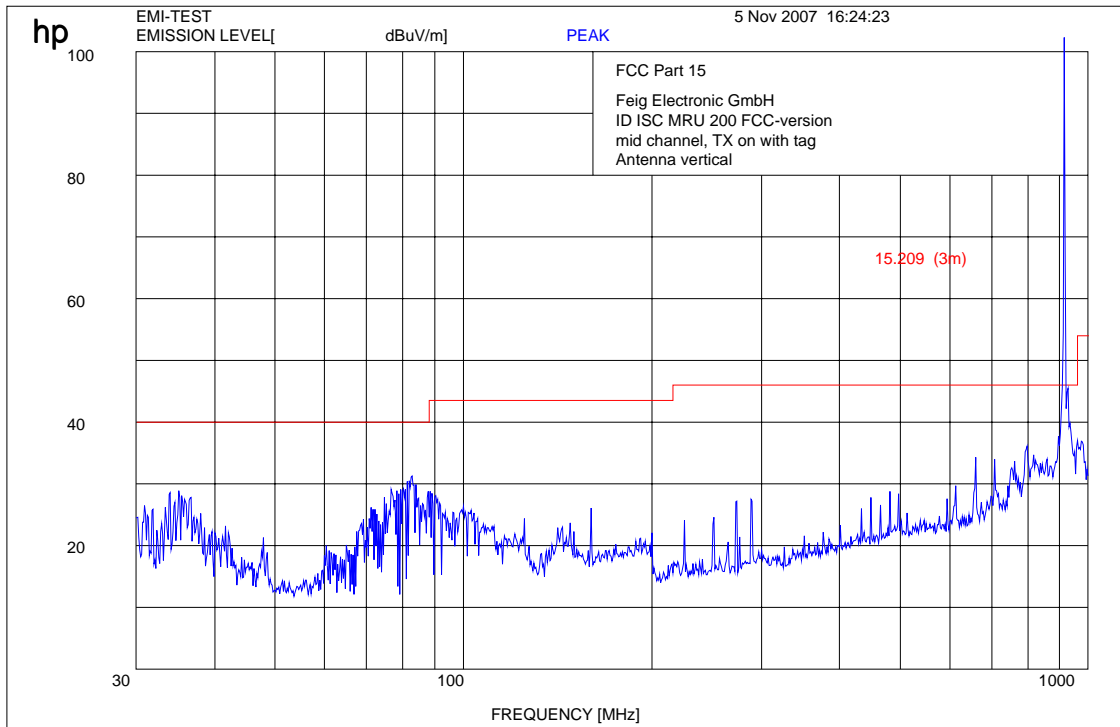
Plot : 1- 4 GHz vertical worst case (lowest channel)



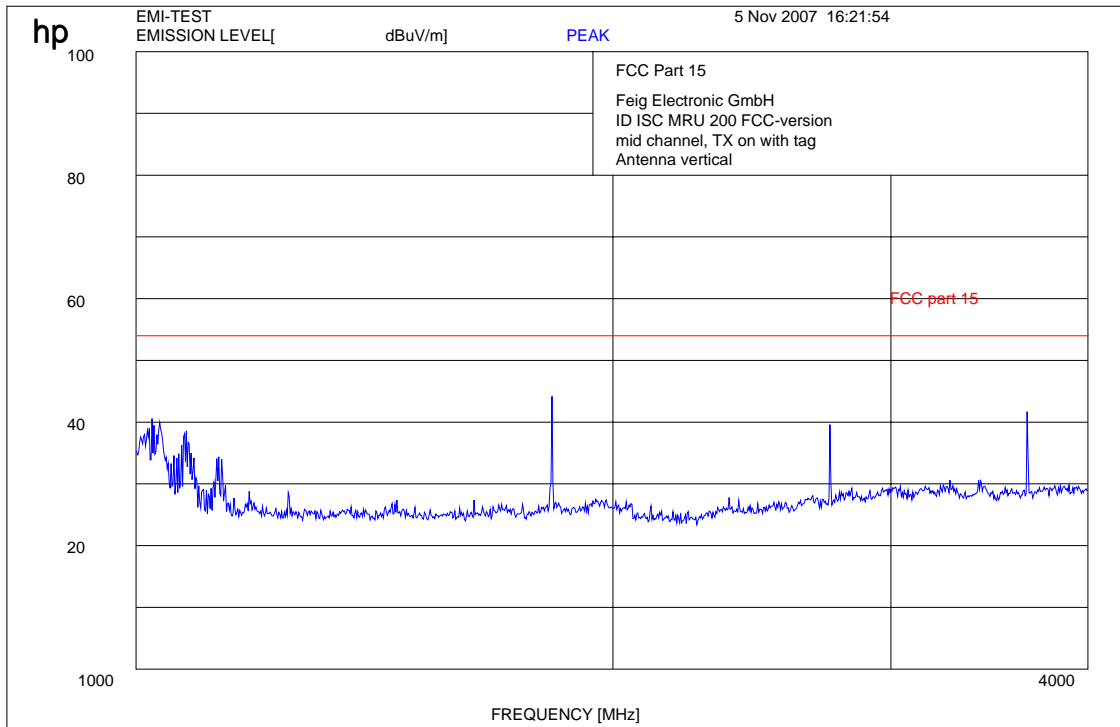
Plot : 4- 12 GHz vertical worst case (lowest channel)



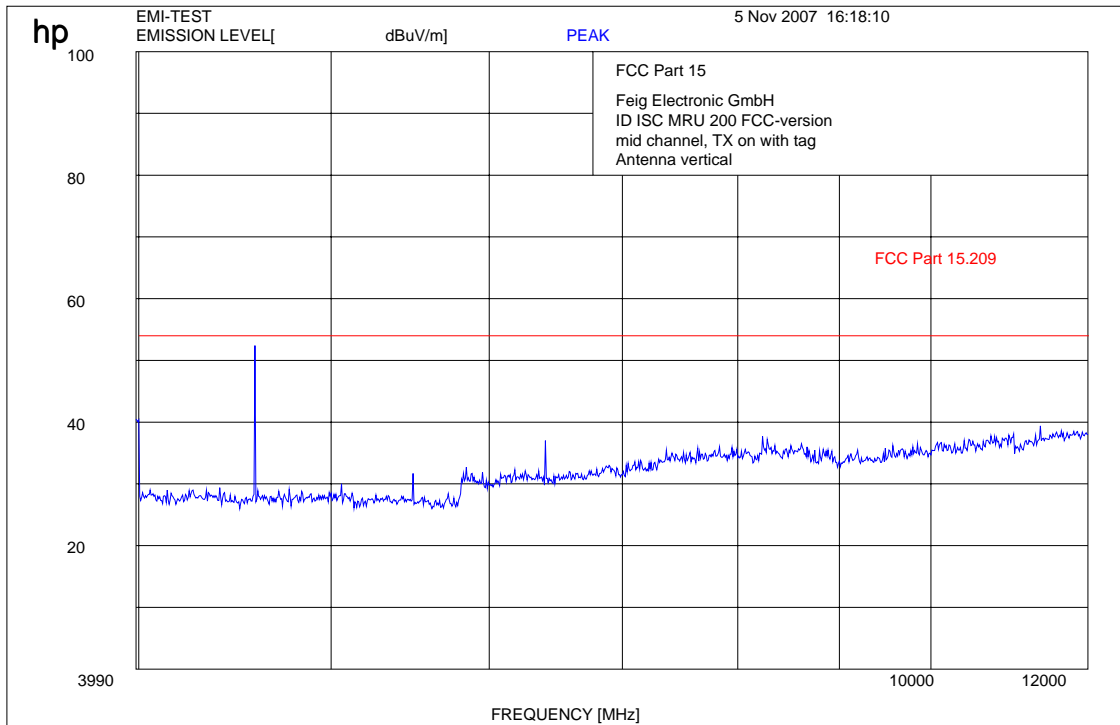
Plot : 0.03 - 1 GHz vertical worst case (middle channel)



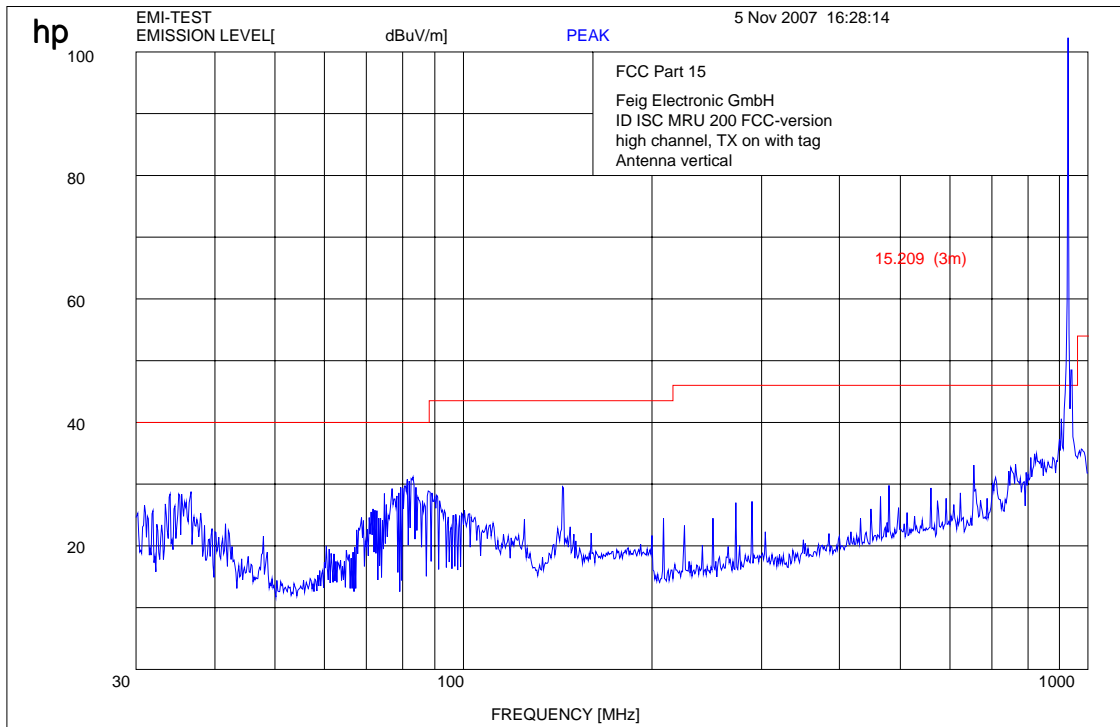
Plot : 1- 4 GHz vertical worst case (middle channel)



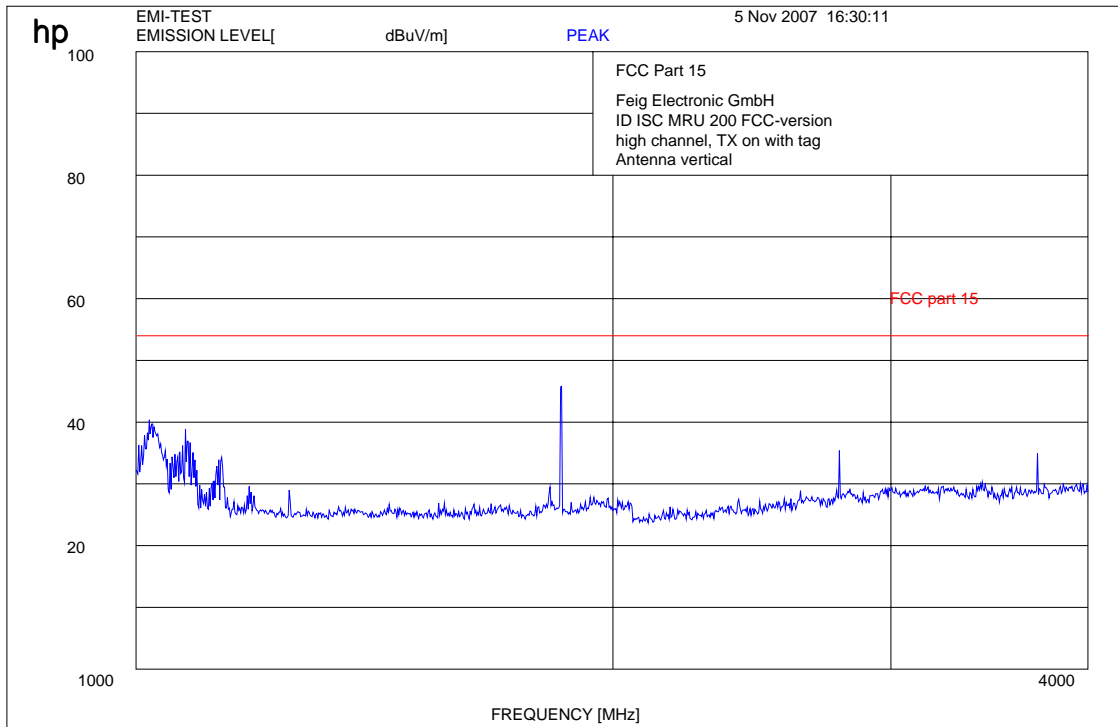
Plot : 4- 12 GHz vertical worst case (middle channel)



Plot : 0.03 - 1 GHz vertical/horizontal (highest channel)

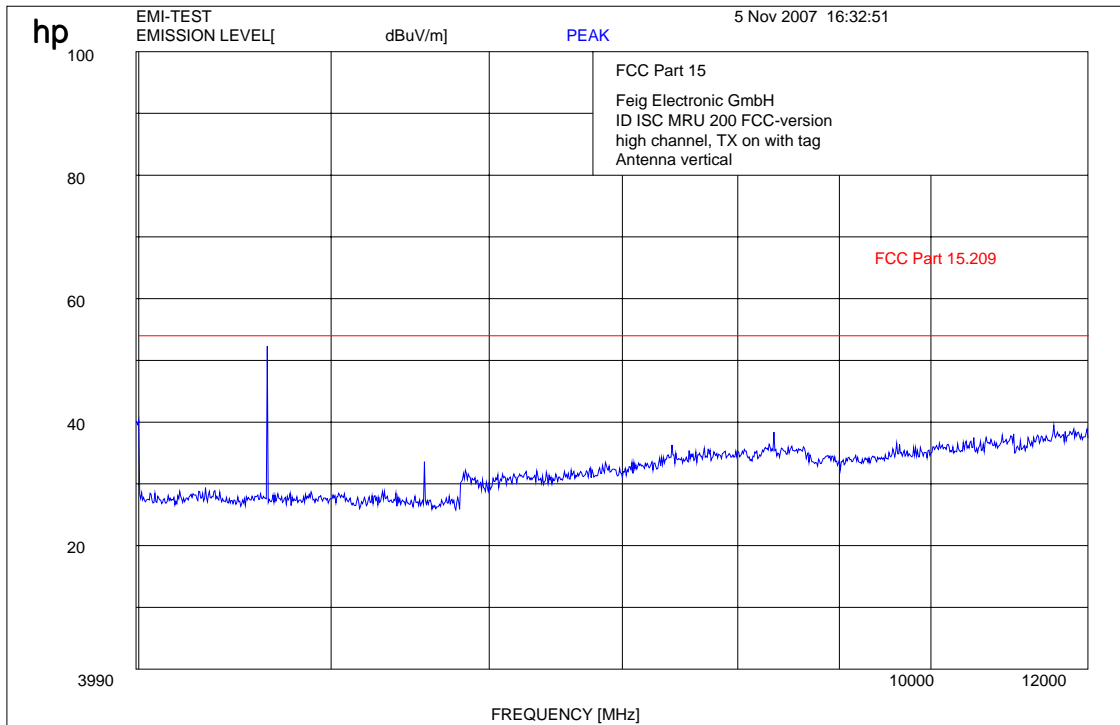


Plot : 1- 4 GHz vertical worst case (highest channel)





Plot : 4- 12 GHz vertical worst case (highest channel)



Results:

SPURIOUS EMISSIONS LEVEL (dB $\mu$ V/m)								
902.75 MHz			914.75 MHz			927.25 MHz		
F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [ $\mu$ V/m]
1805.5	Peak	43.2	1829.5	Peak	45.6	1854.5	Peak	47.6
			4573.8	AV	46.4	4876.3	AV	47.2
Measurement uncertainty			±3 dB					

f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

Limits: § 15.247 (c)

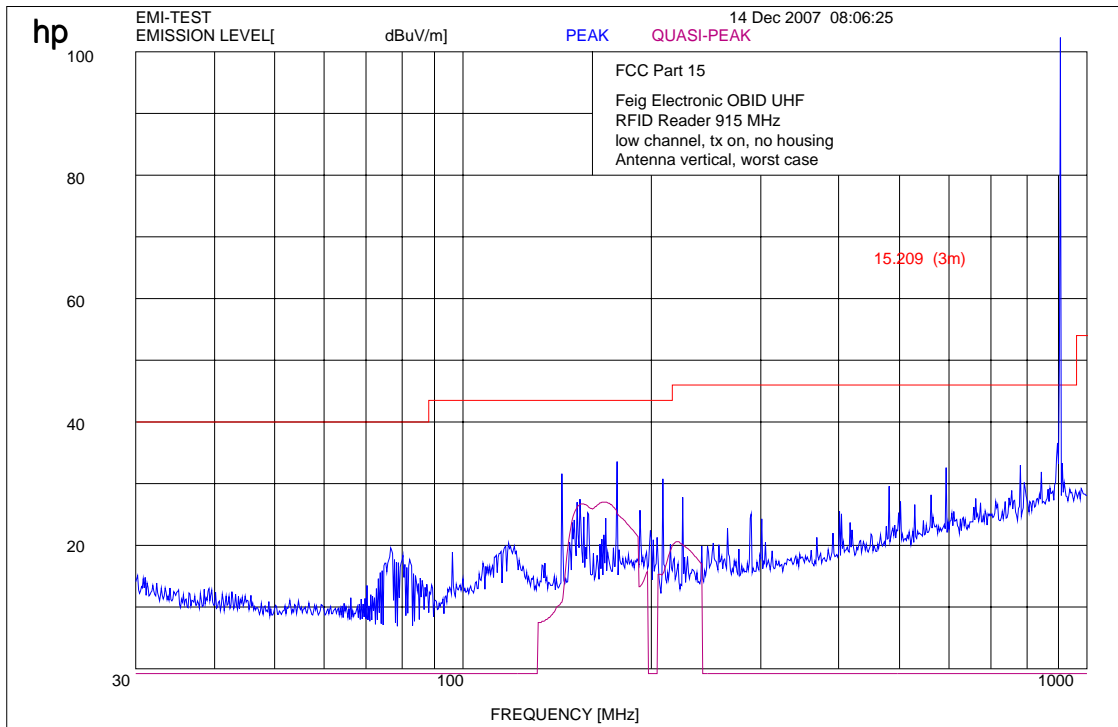
In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Limits: § 15.209

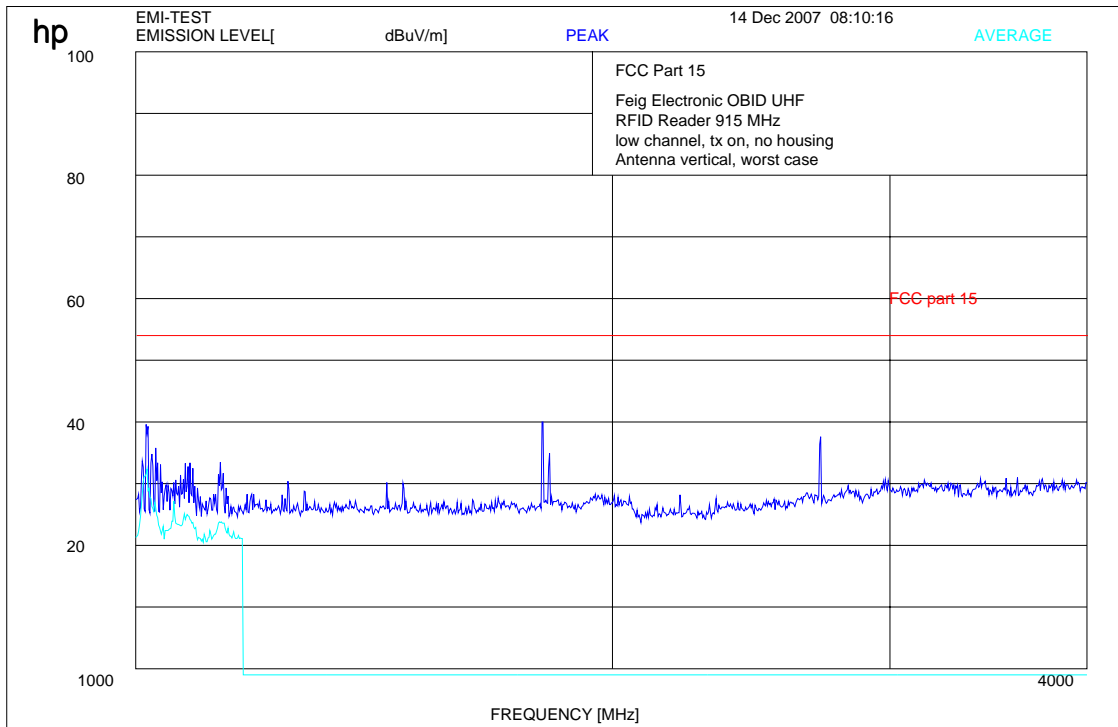
Frequency [MHz]	Field strength [ $\mu$ V/m]	Measurement distance (m)
30 - 88	100 (40 dB $\mu$ V/m)	3
88 - 216	150 (43.5 dB $\mu$ V/m)	3
216 - 960	200 (46 dB $\mu$ V/m)	3
above 960	500 (54 dB $\mu$ V/m)	3

### Version 2 without housing.

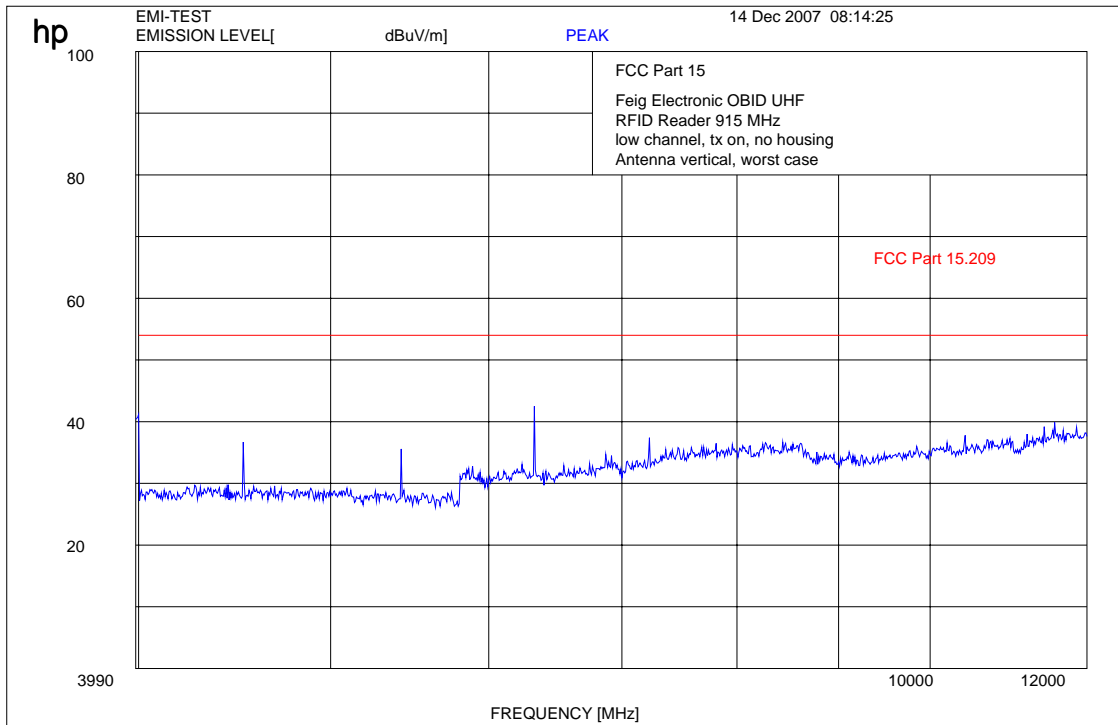
Plot : 0.03 - 1 GHz vertical worst case (lowest channel)



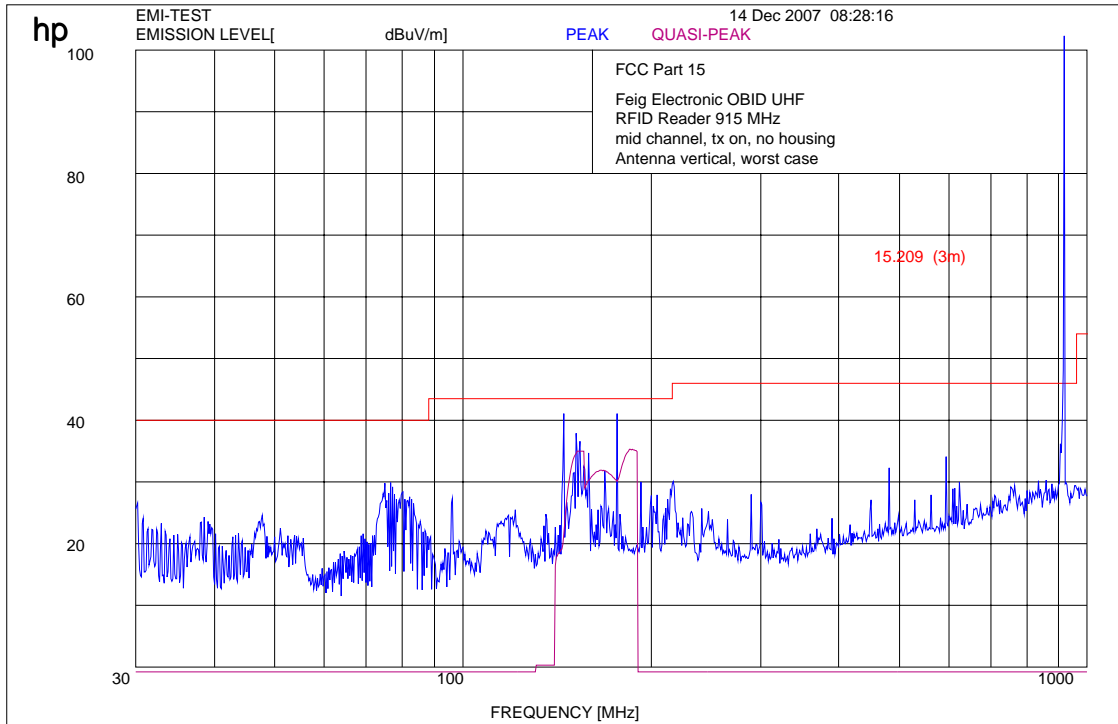
Plot : 1- 4 GHz vertical worst case (lowest channel)



Plot : 4- 12 GHz vertical worst case (lowest channel)



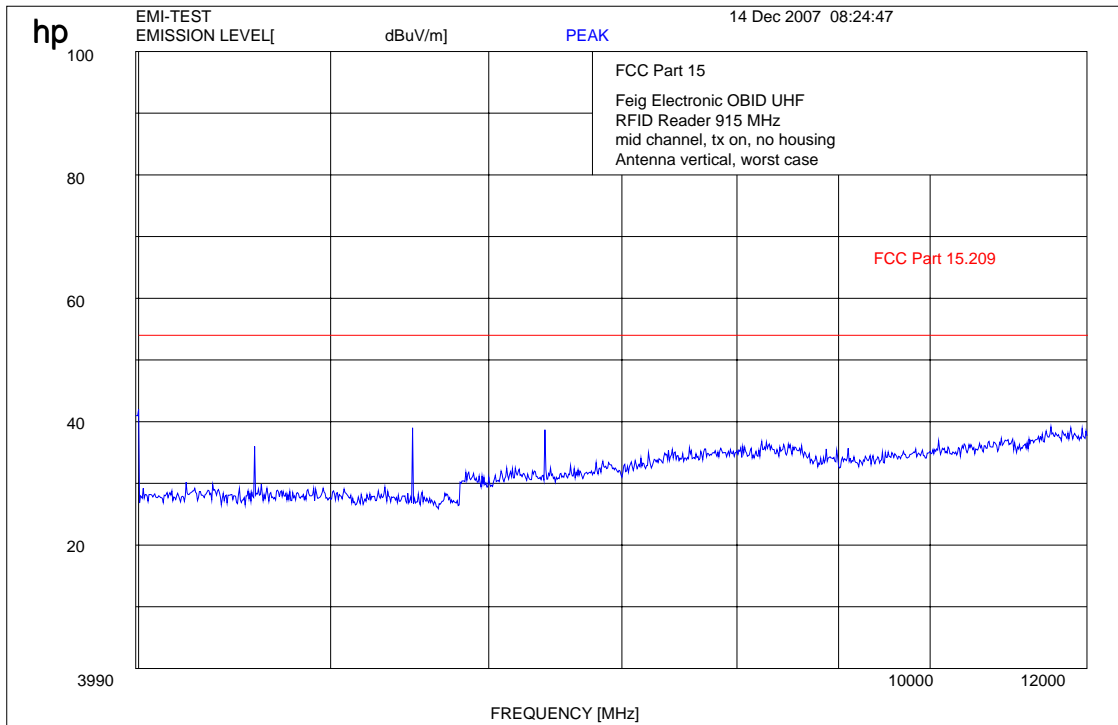
Plot : 0.03 - 1 GHz vertical worst case (middle channel)



Plot : 1- 4 GHz vertical worst case (middle channel)

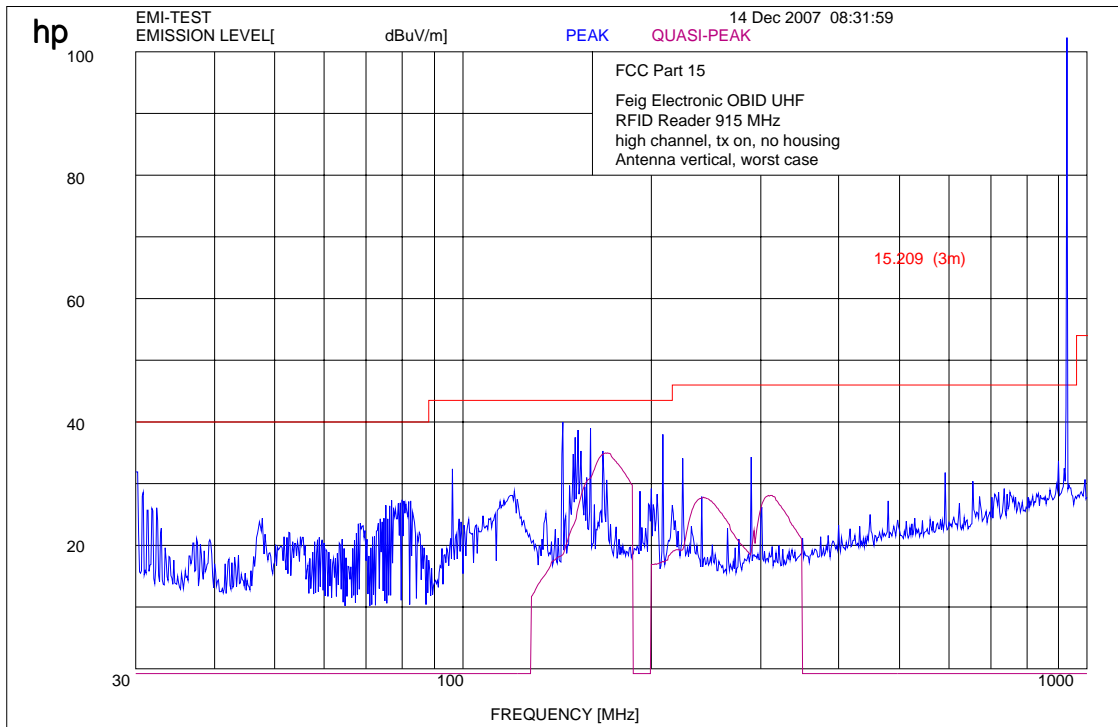


Plot : 4- 12 GHz vertical worst case (middle channel)

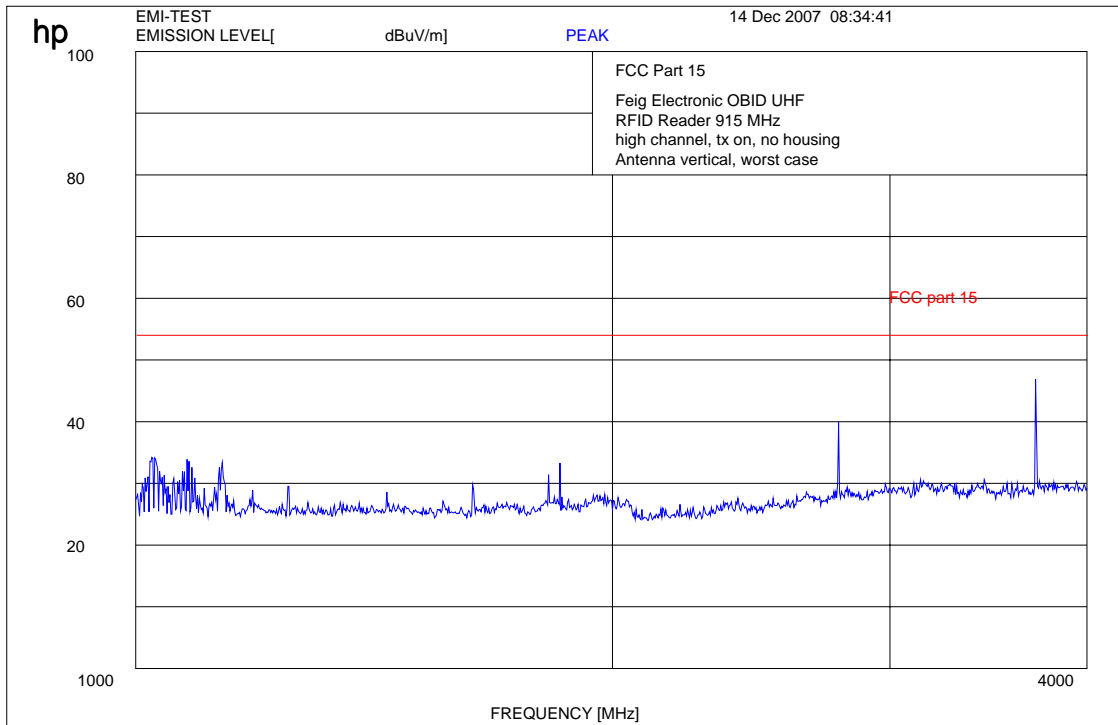




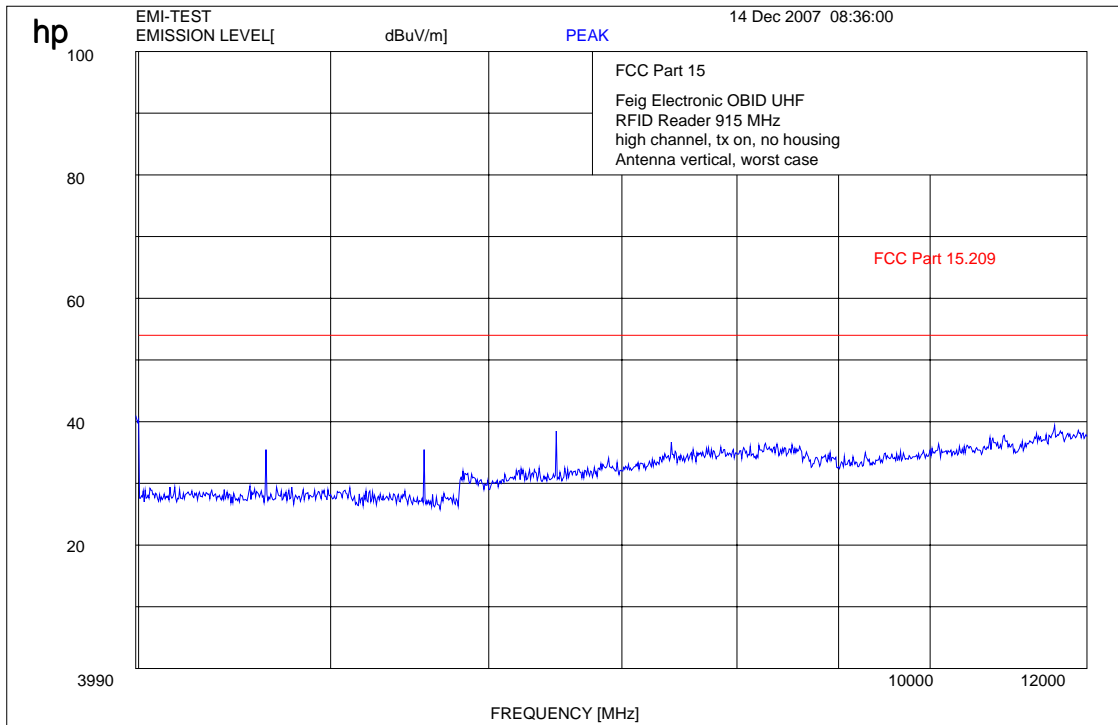
Plot : 0.03 - 1 GHz vertical/horizontal (highest channel)



Plot : 1- 4 GHz vertical worst case (highest channel)



Plot : 4- 12 GHz vertical worst case (highest channel)



Results:

SPURIOUS EMISSIONS LEVEL (dB $\mu$ V/m)								
902.75 MHz			914.75 MHz			927.25 MHz		
F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [dB $\mu$ V/m]	F [MHz]	Detector	Level [ $\mu$ V/m]
			140.9	QP	36.7	140.9	QP	36.7
			3659	Peak	45.2	3657	Peak	47.6
Measurement uncertainty			±3 dB					

f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

Limits: § 15.247 (c)

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

### 3.16 Spurious Emissions - radiated (Receiver) § 15.109

**not applicable, no dedicated receiver mode**

Spurious Emissions level [dB $\mu$ V/m]								
Receiving Mode								
f[MHz]	Detector	Level [dB $\mu$ V/m]	f[MHz]	Detector	Level [dB $\mu$ V/m]	f[MHz]	Detector	Level [dB $\mu$ V/m]
Measurement uncertainty			±3 dB					

f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

see above plots

Measurement distance see table

Limits : § 15.109

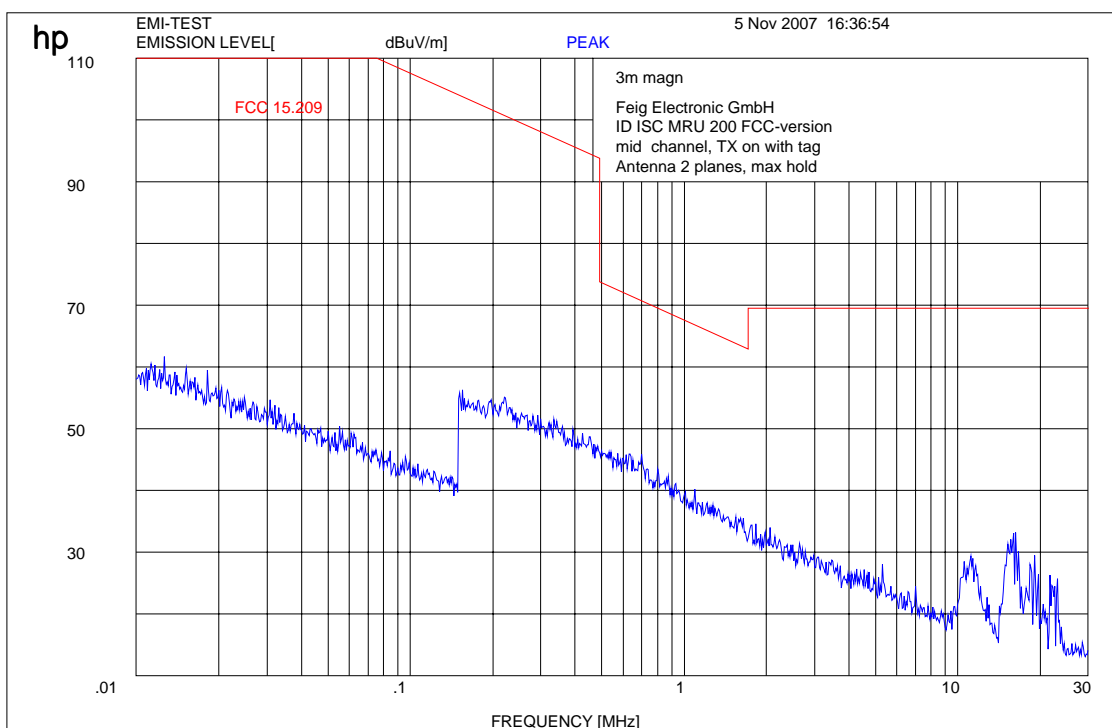
Frequency (MHz)	Field strength ( $\mu$ V/m)	Measurement distance (m)
30 - 88	100 (40 dB $\mu$ V/m)	3
88 - 216	150 (43.5 dB $\mu$ V/m)	3
216 - 960	200 (46 dB $\mu$ V/m)	3
above 960	500 (54 dB $\mu$ V/m)	3

### 3.17 Spurious Emissions < 30 MHz - Transmitter radiated § 15.209

Measured at 3 m distance.

Values recalculated with 40 dB/decade according to FCC rules.

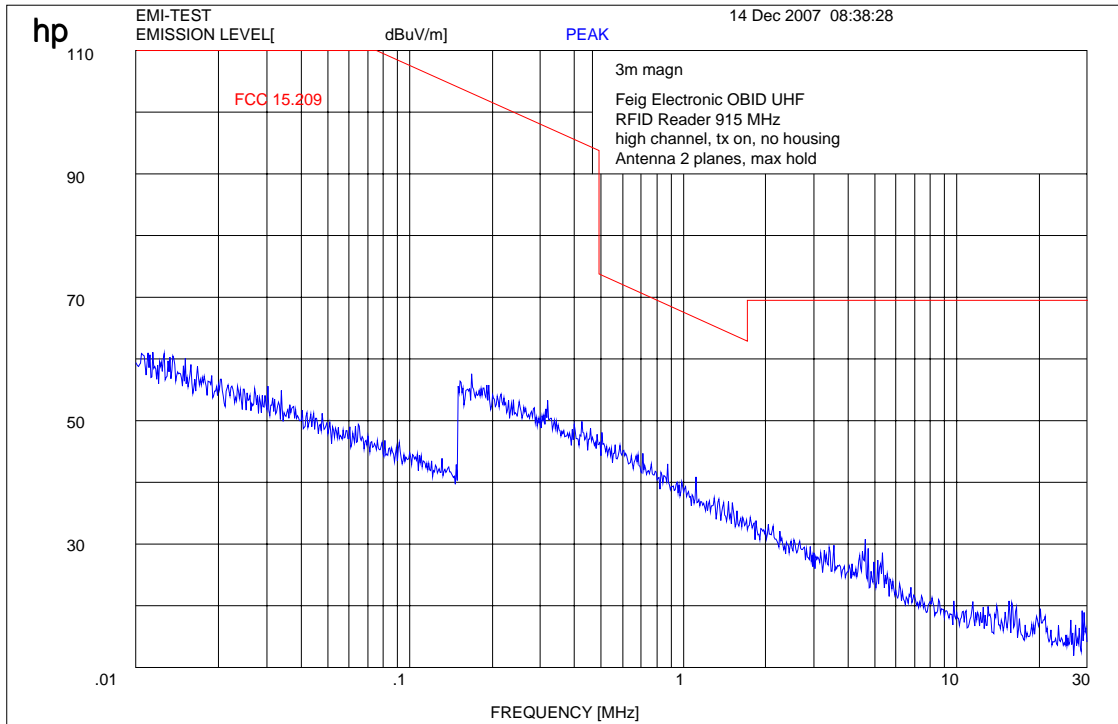
Plot 1: with housing



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

Plot 2: without housing

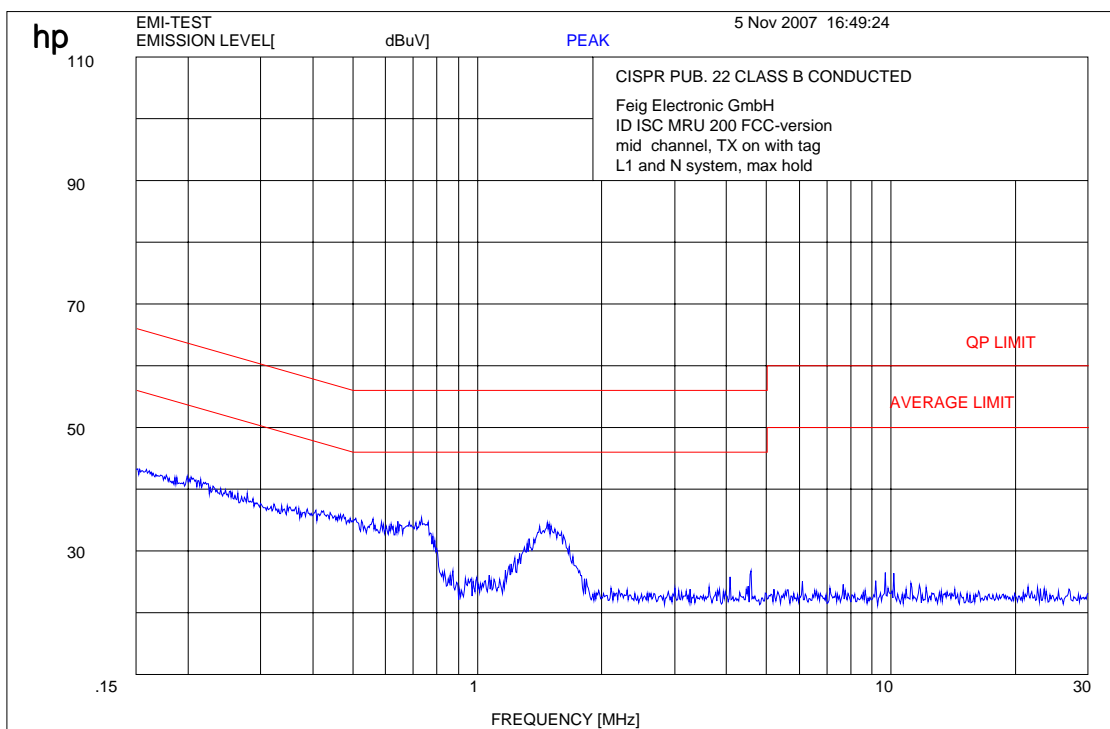


Limits:

Frequency (MHz)	Field strength ( $\mu\text{V}/\text{m}$ )	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 $\mu\text{V}/\text{m}$	30

## 3.18 Conducted Emissions <30 MHz § 15.107/207

Plot 1: valid for both versions



Limits :

Under normal test conditions only	See plots
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### Bluetooth Rack:

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

### Signaling 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

### 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		G00013834L 461	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
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			
38	Climatic box VT 4002	Heraeus Vötsch	58566046820010	300003019	11.05.2007	24	11.05.2009
39	Signaling Unit CMU200	R&S	832221/0055	300002862	12.01.2006	24	12.01.2008
40	Power Splitter 6005-3	Inmet Corp.	none	300002841	23.12.2006	24	23.12.2008
41	SMA Cables SPS-1151-985-SPS	Insulated Wire	different	different	n.a.		
42	CBT32 with EDR Signaling Unit	R&S					
43	Coupling unit	Narda	N/A	--	n.a.		
44	2xSwitch Matrix PSU	R&S	872584/021	300001329	n.a.		
45	RF-cable set	R&S	N/A	different	n.a.		
46	IEEE-cables	R&S	N/A	--	n.a.		

Anmerkung: 3000002681-00xx als Systeme inventarisiert

***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
6	Spectrum Analyzer FSU50	R&S	2000012	300003443	12.05.2007	12	12.05.2008

## 4 Photographs of Test Set-up

Photo 1: Radiated Emissions with housing



Photo 2: Radiated Emissions with housing



Photo 3: Radiated Emissions without housing

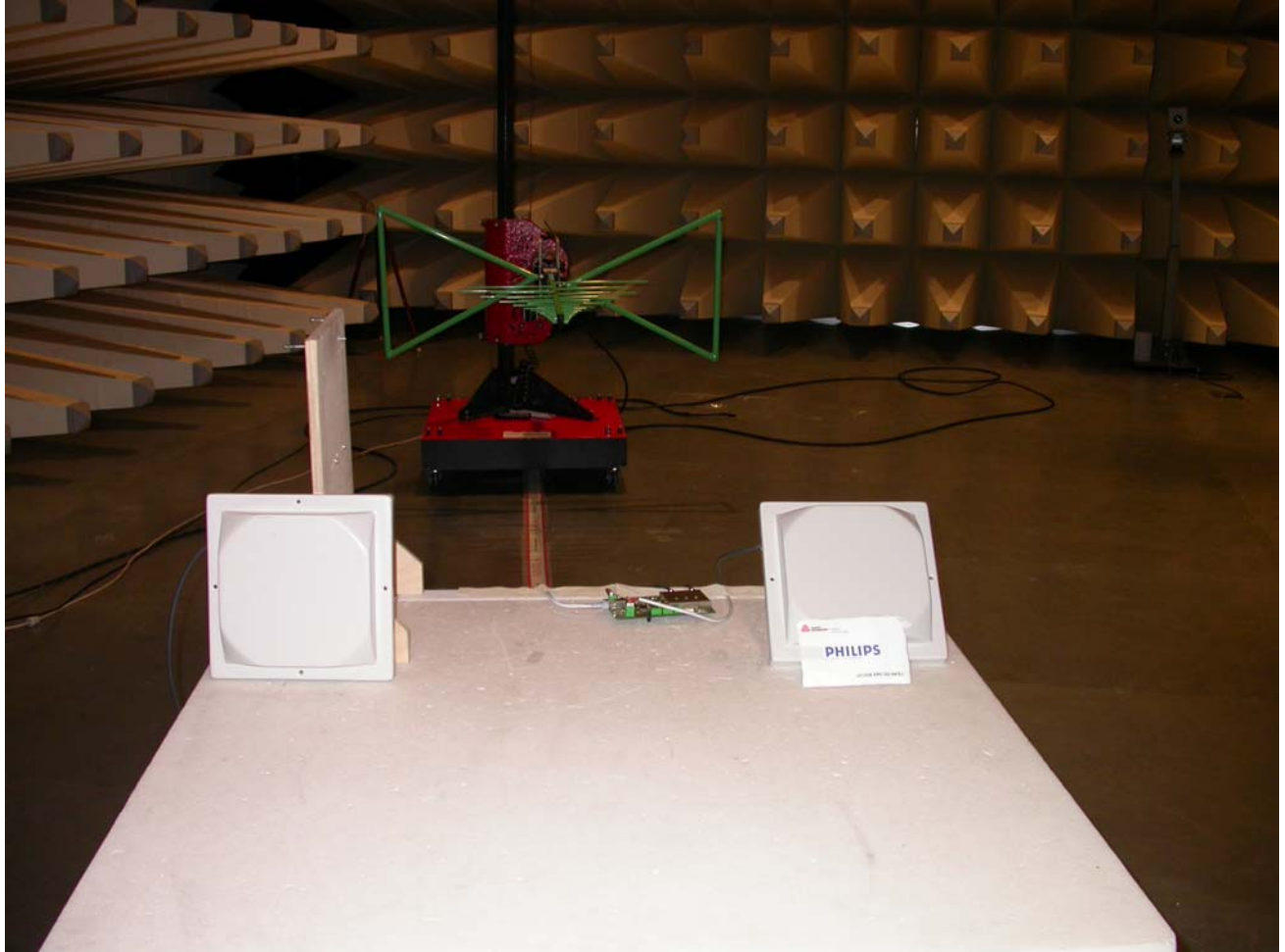


Photo 4: Radiated Emissions without housing

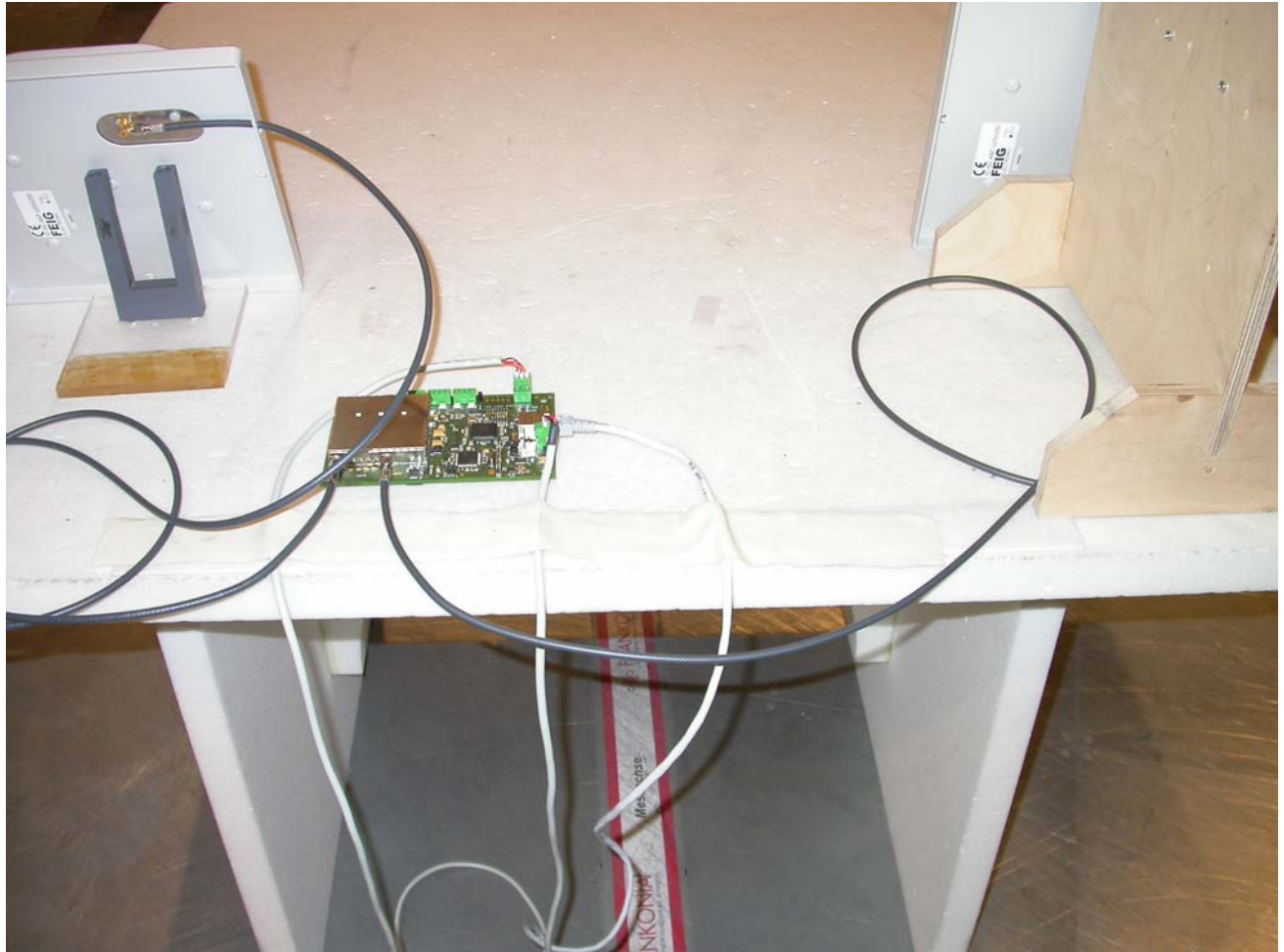




Photo 5: Conducted Emissions



## 5 Photographs of EUT

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 5:



Photo 6:

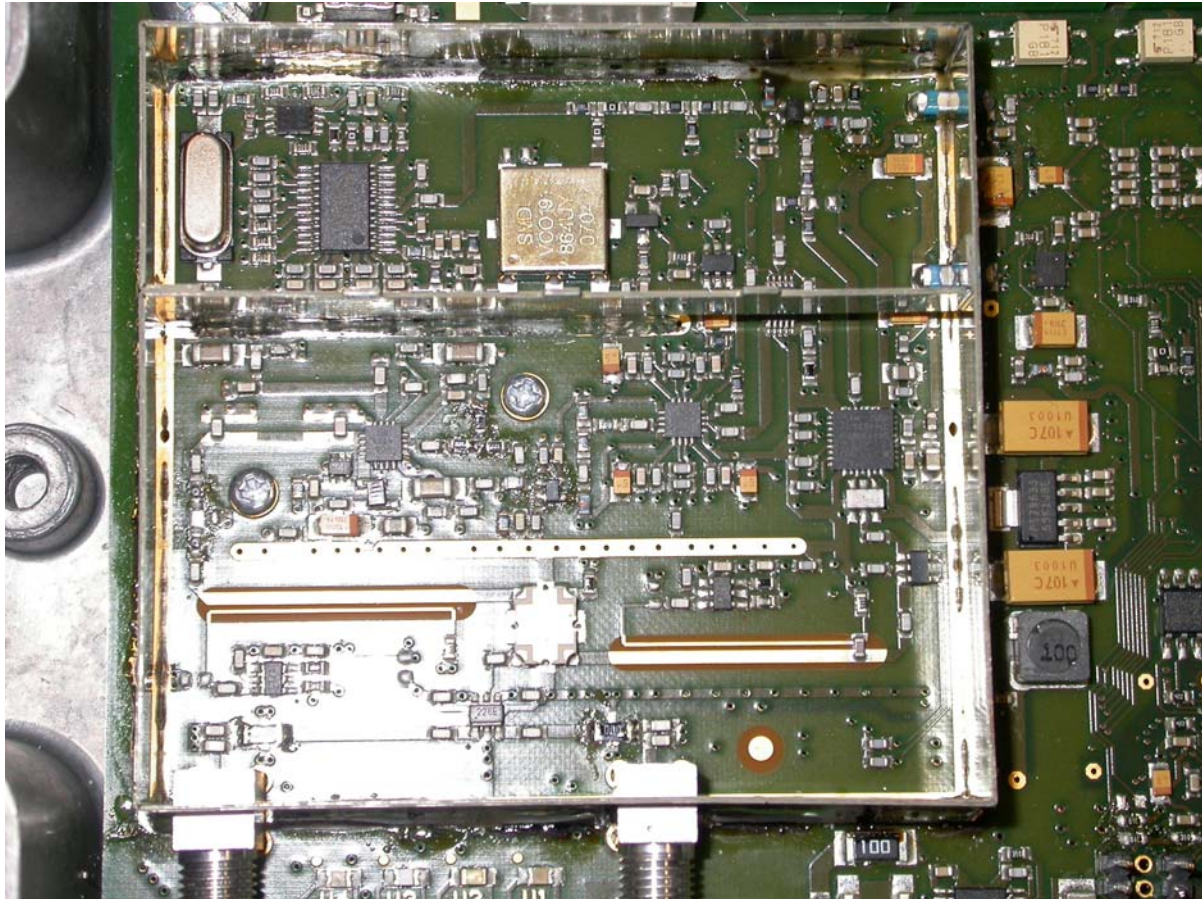


Photo 7:





Photo 8:

