CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10 . D-66117 Saarbrücken Phone: +49 (0) 681-598-0 Fax: -9075
RSC-Laboratory

Accredited testing-laboratory

DAR registration number: DGA-PL-176/94-D1

Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97

Recognized by the Federal Communications Commission
Anechoic chamber registration no.: 90462 (FCC)
Anechoic chamber registration no.: 3462C-1 (IC)
Certification ID: DE 0001
Accreditation ID: DE 0002

Accredited Bluetooth® Test Facility (BQTF)

Test report no.	**:**	**1-2031-01-11/10**
Type identification	**:**	**RCV72UW**
Applicant	**:**	**Research In Motion Limited**
FCC ID	**:**	**L6ARCV70UW**
IC Certification No	**:**	**2503A-RCV70UW**
Test standards	**:**	**47 CFR Part 15**
		RSS - 210 Issue 7

Table of contents

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 3.1.1. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

Test laboratory manager:

2010-03-31	**Stefan Bös**	
Date	Name	Signature

Technical responsibility for area of testing:

2010-03-31	**Michael Berg**	
Date	Name	Signature

1.2 Testing laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10
66117 Saarbrücken
Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
e-mail: info@ICT.cetecom.de
Internet: http://www.cetecom-ict.de

State of accreditation: **The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025**
DAR registration number: DGA-PL-176/94-D1

Accredited by: **Federal Motor Transport Authority (KBA)**
DAR registration number: KBA-P 00070-97

Testing location, if different from CETECOM ICT Services GmbH:

Name :
Street :
Town :
Country :
Phone :
Fax :

1.3 Details of applicant

Name:	**Research In Motion Limited**
Street:	**305 Phillip Street**
Town:	**Waterloo, ON N2L 3W8**
Country:	**Canada**
Telephone:	**+1-519-888-7465**
Fax:	**+1-519-888-6906**
Contact:	**Masud Attayi**
E-mail:	**mattayi@rim.com**
Telephone:	**+1-519-888-7465**

1.4 Application details

Date of receipt of order:	**2010-02-11**
Date of receipt of test item:	**2010-03-22**
Date of start test:	**2010-03-24**
Date of end test	**2010-03-30**
Persons(s) who have been present during the test:	**-/-**

2 Test standard/s

47 CFR Part 15	**2009-10**	**Title 47 of the Code of Federal Regulations; Chapter I-Federal Communications Commission subchapter A - general, Part 15-Radio frequency devices**
RSS - 210 Issue 7	**2007-06**	**Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment**

3 Technical tests

3.1 Details of manufacturer

Name:	**Research In Motion Limited**
Street:	**305 Phillip Street**
Town:	**Waterloo, ON N2L 3W8**
Country:	**Canada**

3.1.1 Test item

Kind of test item	:	**Mobile Phone**
Type identification	:	**RCV72UW**
S/N serial number	:	**Rad. RTS-2747-3.0 Sample 1** **Stratus 1,2,5 RCV72UW 14 key CER-31369-001**
HW hardware status	:	**-**
SW software status	:	**-**
Frequency Band [MHz]	:	**ISM 2.400 - 2.483,5**
Type of Modulation	:	**DSSS & OFDM**
Number of channels	:	**11**
Antenna	:	**Integrated antenna**
Power Supply	:	**3.7 V DC supplied by Li-Ion-Battery**

Max. power radiated: Not performed
Max. power conducted: Not performed

FCC ID: **L6ARCV70UW**
IC: **2503A-RCV70UW**

3.1.2 Additional EUT information For IC Canada (appendix 2)

IC Registration Number:	**2503A-RCV70UW**
Model Name:	**RCV72UW**
Manufacturer (complete Address):	**Research In Motion Limited** **305 Phillip Street** **Waterloo, ON N2L 3W8** **Canada**
Tested to Radio Standards Specification (RSS) No.:	**RSS-210 Issue 7**
Open Area Test Site Industry Canada Number:	**IC 3462C-1**
Frequency Range (or fixed frequency) [MHz]:	**2400 – 2483.5 MHz**
RF: Power [W] (max):	**DSSS: b-mode** **Rad. EIRP: not performed** **Conducted : not performed** **OFDM: g-mode** **Rad. EIRP: not performed** **Conducted : not performed** **OFDM: n-mode** **Rad. EIRP: not performed** **Conducted : not performed**
Antenna Type:	**Integrated antenna**
Occupied Bandwidth (99% BW) [kHz]:	**DSSS: Not performed** **OFDM: Not performed**
Type of Modulation:	**DSSS & OFDM**
Emission Designator (TRC-43):	**Not performed**
Transmitter Spurious (worst case) [µV/m in 3m]:	**336**
Receiver Spurious (worst case) [µV/m in 3m]:	**Not performed**

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:
Date: 2010-03-31

3.1.3 RF Technical Brief Cover Sheet acc. To RSS-102

Not performed

All Fields must be completed with the requested information or the following codes: N/A for Not Applicable, N/P for Not Performed or N/V for Not Available. Where applicable, check appropriate box.

1. COMPANY NUMBER: **2503A**

2. MODEL NUMBER: **RCV72UW**

3. MANUFACTURER: **Research In Motion Limited**

4. TYPE OF EVALUATION: **(c) RF Evaluation**

- Evaluated against exposure limits: General Public Use ☒ Controlled Use ☐
- Duty cycle used in evaluation: %
- Standard used for evaluation: RSS-102 Issue 4 (2010-03)
- Measurement distance: 0.20 m
- RF value: V/m ☐ A/m ☐ W/m^2 ☒

Measured ☐ Computed ☐ Calculated ☒

Declaration of RF Exposure Compliance

ATTESTATION: I attest that the information provided in this test report is correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.

Name: Stefan Boes
Company: Cetecom ICT Services GmbH

3.1.4 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 test plan

3.1.5 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T_{nom}	°C	**23**
Nominal Humidity	H_{nom}	%	**53**
Nominal Power Source	V_{nom}	V	**3.7 V**

Type of power source: **DC supplied by Li-Ion-Battery**

4 Summary of Measurement Results and list of all performed test cases

☒ **No deviations from the technical specifications were ascertained**

☐ There were deviations from the technical specifications ascertained

TC identifier	Description	verdict	date	Remark
RF-Testing	FCC Part 15 §15.247 - CANADA RSS-210	PASS	2010-03-31	

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(a)(2)	Spectrum Bandwidth of a DSSS System / 6dB BW				Yes
§15.247(a)(2)	Spectrum Bandwidth of a DSSS System / 20dB 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			
§ 15.109	Spurious Emissions-radiated (Receiver)				Yes
§ 15.209	Spurious Emissions-radiated <30 MHz				Yes
§ 15.107/207	Conducted Emissions <30 MHz				Yes

5 RF measurement testing

5.1 Description of test set-up

5.1.1 Radiated measurements

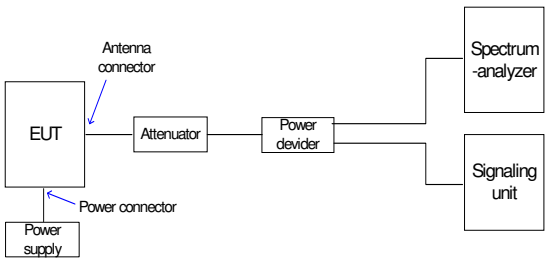
The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas 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 kHz: Quasi Peak measurement, 200 Hz Bandwidth, active loop antenna.
150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, active loop antenna.
30 MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, Trilog antenna
>1GHz: Average, RBW 1MHz, VBW 10 Hz, waveguide horn

All measurement settings are according to FCC 15.209 and 15.207

5.1.2 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.



5.2 Referenced Documents

None

5.3 Additional comments

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5.4 Antenna gain

Not performed

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	mid channel	high channel
Conducted power [dBm] *(measured)*			
Radiated power [dBm] *(measured)*			
Gain [dBi] *(calculated)*			

5.5 Peak Power Spectral density (digitally modulated systems) §15.247(e)

Not performed

DSSS

Plot 1: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)

Plot 2: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)

Plot 3: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)

Results: Plot 1: Power density: - dBm/Hz = - dBm / 3 kHz
Plot 2: Power density: - dBm/Hz = - dBm / 3 kHz
Plot 3: Power density: - dBm/Hz = - dBm / 3 kHz

Correction factor from dBm/Hz to dBm/3 kHz is +34,8 dB

OFDM

Plot 1: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)

Plot 2: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)

Plot 3: (result calculated by the Signal analyzer FSIQ 26 from Rohde & Schwarz)

Results: Plot 1: Power density: - dBm/Hz = - dBm / 3 kHz
Plot 2: Power density: - dBm/Hz = - dBm / 3 kHz
Plot 3: Power density: - dBm/Hz = - dBm / 3 kHz

Correction factor from dBm/Hz to 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

5.6 Spectrum Bandwidth of a DSSS System / 6 dB Bandwidth §15.247(a)(2)

Not performed

DSSS

Plot 1:

Plot 2:

Plot 3:

Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}			
Measurement uncertainty		±1kHz		

RBW: 100 kHz / VBW 100 kHz

OFDM

Plot 1:

Plot 2:

Plot 3:

Results:

Test conditions		**6 dB BANDWIDTH [MHz]**		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}			
Measurement uncertainty		±1kHz		

RBW: 100 kHz / VBW 100 kHz

Limits:

Under normal test conditions only	> 500 kHz

5.7 Spectrum Bandwidth of a DSSS System / 20 dB Bandwidth

Not performed

DSSS

Plot 1:

Plot 2:

Plot 3:

Results:

Test conditions		**20 dB BANDWIDTH [MHz]**		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}			
Measurement uncertainty		±1kHz		

RBW: 100 kHz / VBW 100 kHz

OFDM

Plot 1:

Plot 2:

Plot 3:

Results:

Test conditions		**20 dB BANDWIDTH [MHz]**		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}			
Measurement uncertainty		±1kHz		

RBW: 100 kHz / VBW 100 kHz

5.8 Maximum output power (conducted) §15.247 (b)(3)

Not performed

DSSS

Plot 1:

Plot 2:

Plot 3:

Results:

Test conditions		**Max. peak output power [dBm]**			
Frequency [MHz]		2412		2437	2462
T_{nom}	V_{nom}	PK			
		PK corrected			
De facto EIRP (Peak) [dBm]					
Antenna gain: [dBi]					
Measurement uncertainty		±3dB			

RBW / VBW: 10 MHz

OFDM

Plot 1:

Plot 2:

Plot 3:

Results:

Test conditions		**Max. peak output power [dBm]**			
Frequency [MHz]		2412		2437	2462
T_{nom}	V_{nom}	PK PK corrected			
De facto EIRP (Peak) [dBm] Antenna gain: [dBi]					
Measurement uncertainty		±3dB			

RBW / VBW: 10 MHz

Remark:

The correction factor is calculated by 10 ×log (measured BW / used BW) [dB]

Limits:

Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt / 30 dBm

MPE calculation

Not performed

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^2)
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 centre 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: dBm (mW)

calculated at distance of 20 cm:

power density = $/4\pi 20^2$ = mW/cm^2

Limit:

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

5.9 Max. peak output power (radiated) §15.247 (b)(3)

Not performed

DSSS

Results: b-mode

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	-	-	-
Measurement uncertainty		±3dB		

Measured at a distance of 3m

OFDM

Results: g-mode

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	-	-	-
Measurement uncertainty		±3dB		

Measured at a distance of 3m

Results: n-mode

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	-	-	-
Measurement uncertainty		±3dB		

Measured at a distance of 3m

Limits:

Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt

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

Not performed

Plot 1: lowest channel

Plot 2: highest channel

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)).

5.11 Band-edge compliance of radiated emissions §15.205

Not performed

DSSS

Plot 1: Restricted band low (2300 MHz – 2390 MHz)

Plot 2 : Band Edge (2390 MHz)

Plot 3: Restricted band high (2483.5 MHz – 2500 MHz)

Plot 4: Band Edge (2483.5 MHz)

OFDM (g-mode)

Plot 5: Restricted band low (2300 MHz – 2390 MHz)

Plot 6: Band Edge (2390 MHz)

Plot 7: Restricted band high (2483.5 MHz – 2500 MHz)

Plot 8: Band Edge (2483.5 MHz)

OFDM (n-mode)

Plot 9: Restricted band low (2300 MHz – 2390 MHz)

Plot 10: Band Edge (2390 MHz)

Plot 11: Restricted band high (2483.5 MHz – 2500 MHz)

Plot 12: Band Edge (2483.5 MHz)

5.12 Spurious Emissions - conducted (Transmitter) §15.247 (c)

Not performed

DSSS

Plot 1: Lowest Channel

Plot 2: Middle Channel

Plot 3: Highest Channel

Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emmision power	actual attenuation below frequency of operation [dB]	results
2412			30 dBm	-	Operating frequency
			-20 dBc		
2437			30 dBm		Operating frequency
			-20 dBc		
2462			30 dBm		Operating frequency
			-20 dBc		
Measurement uncertainty		± 3dB			

F < 1 GHz: RBW: 100 kHz VBW: 100 kHz
F > 1 GHz: RBW: 1 MHz VBW: 1 MHz

OFDM

Plot 1: Lowest Channel

Plot 2: Middle Channel

Plot 3: Highest Channel

Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emmision power	actual attenuation below frequency of operation [dB]	results
2412			30 dBm	-	Operating frequency
			-20 dBc		
2437			30 dBm		Operating frequency
			-20 dBc		
2462			30 dBm		Operating frequency
			-20 dBc		
Measurement uncertainty		± 3dB			

F < 1 GHz: RBW: 100 kHz VBW: 100 kHz
F > 1 GHz: RBW: 1 MHz VBW: 1 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)).

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

5.13 Spurious Emissions - radiated (Transmitter) §15.209

g-mode

Plot 1: 0.03 - 1 GHz (lowest channel)

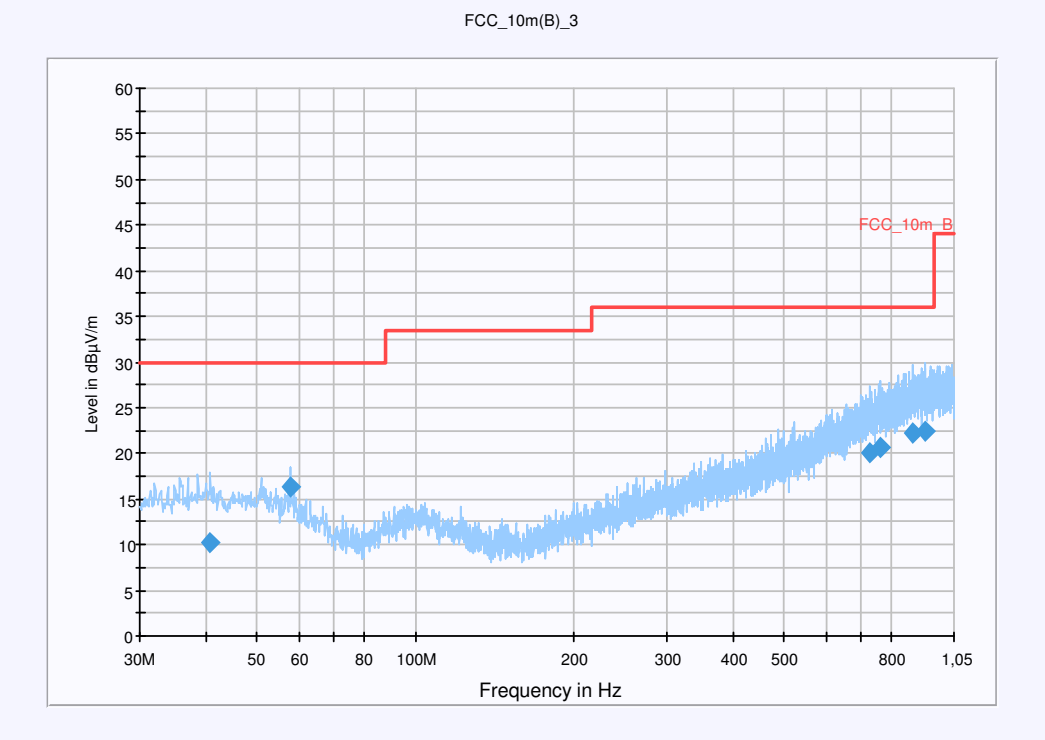
Common Information

EUT:	RCV72UW
Serial Number:	IMEI: 004401.13.589563.5
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN G-mode: CH:1
Operator Name:	Hennemann
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 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
40.737150	10.1	15000.000	120.000	108.0	V	291.0	13.4	19.9	30.0	
58.003200	16.4	15000.000	120.000	120.0	V	97.0	12.1	13.6	30.0	
724.551600	20.1	15000.000	120.000	220.0	V	278.0	23.0	15.9	36.0	
758.940150	20.6	15000.000	120.000	202.0	V	180.0	23.6	15.4	36.0	
876.548550	22.3	15000.000	120.000	98.0	H	235.0	24.9	13.7	36.0	
924.679050	22.5	15000.000	120.000	220.0	V	142.0	25.3	13.5	36.0	

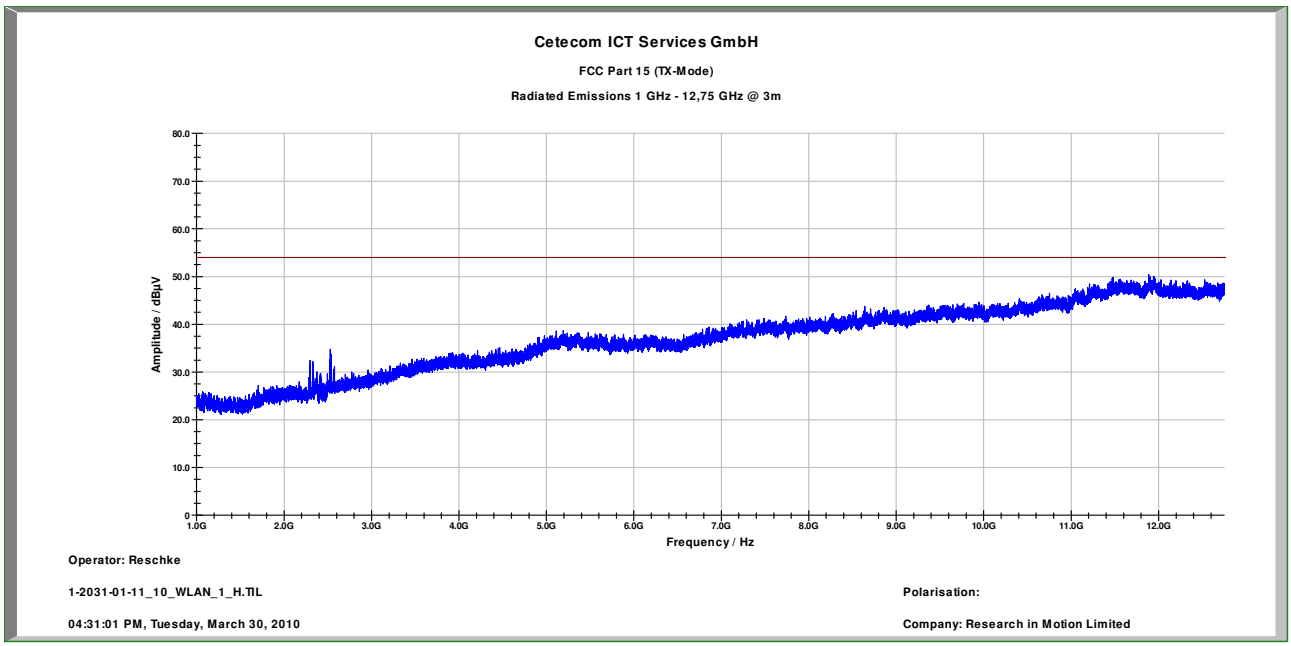
Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1

Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

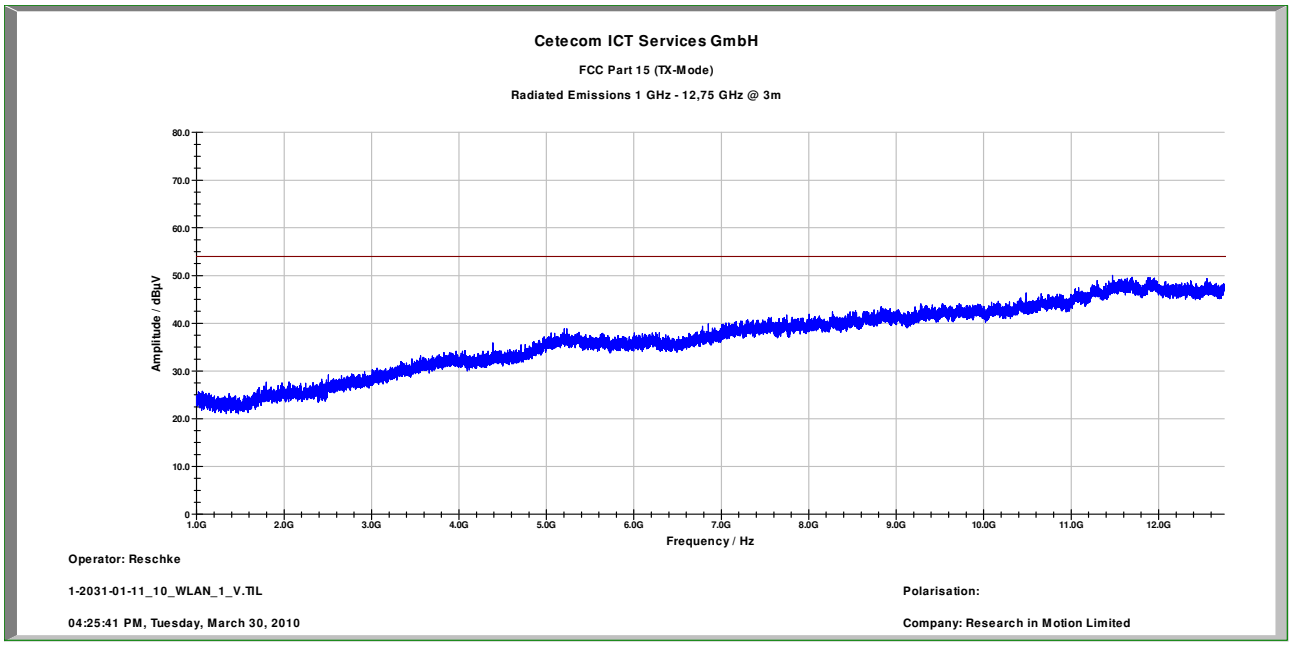
EMC 32 Version 8.10.00

Plot 2: 1 – 12.75 GHz horizontal (lowest channel)



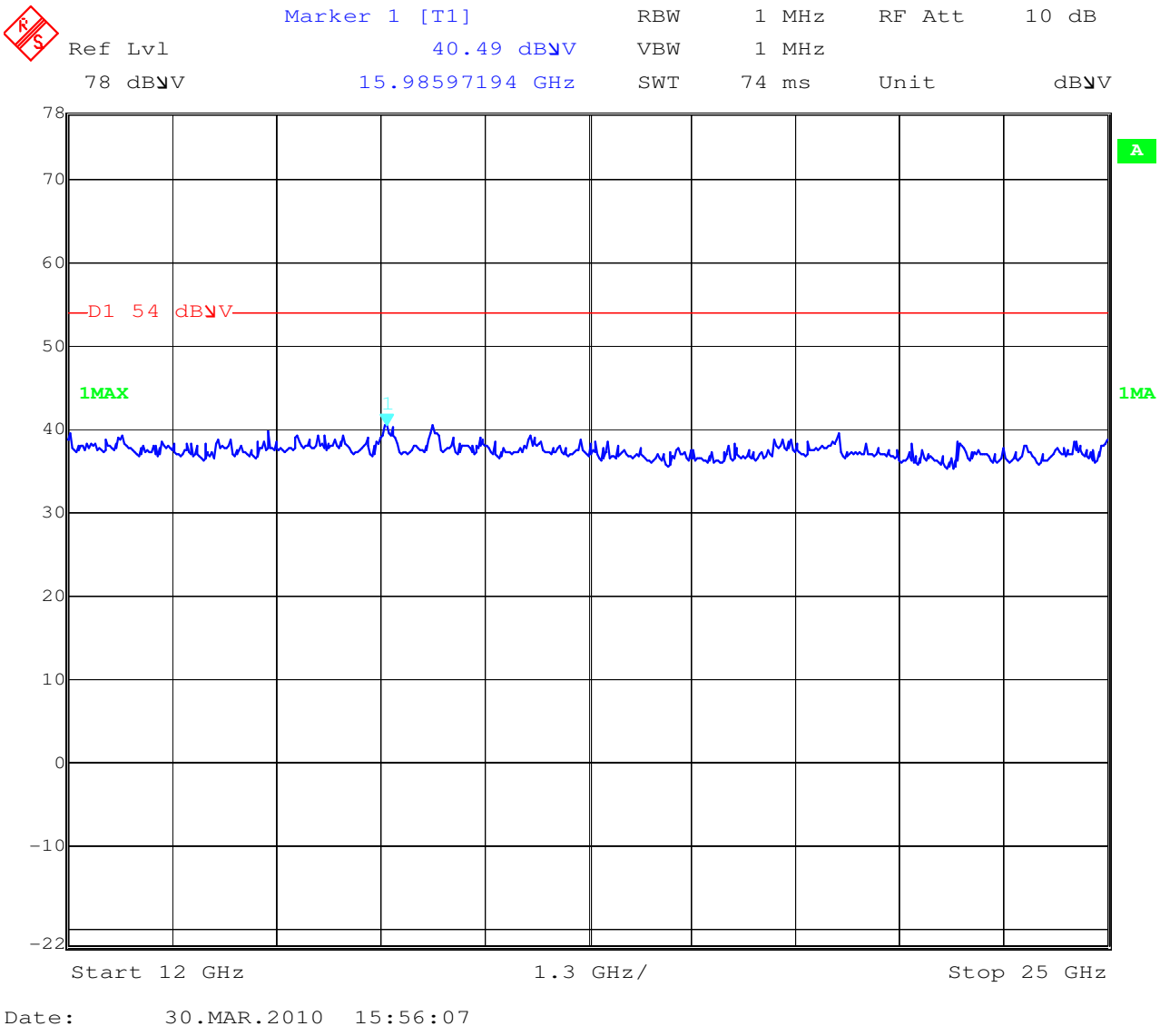
Carrier suppressed with a rejection filter

Plot 3: 1 – 12.75 GHz vertical (lowest channel)

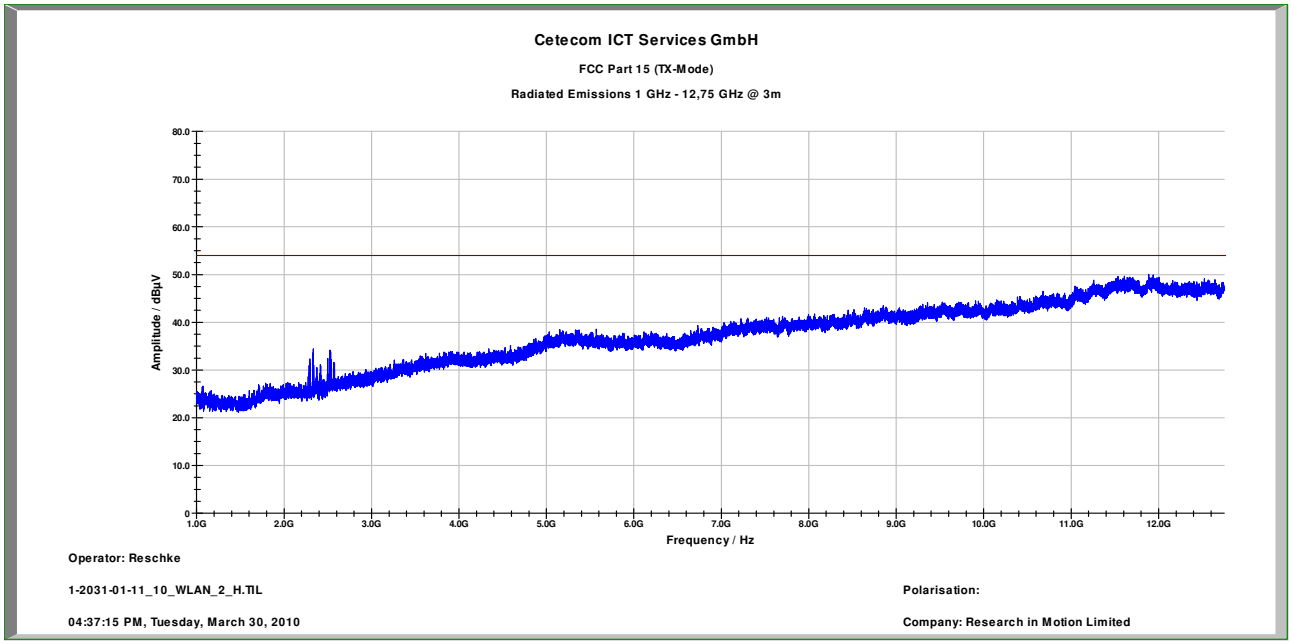


Carrier suppressed with a rejection filter

Plot 4: 12- 25 GHz (valid for all channels)

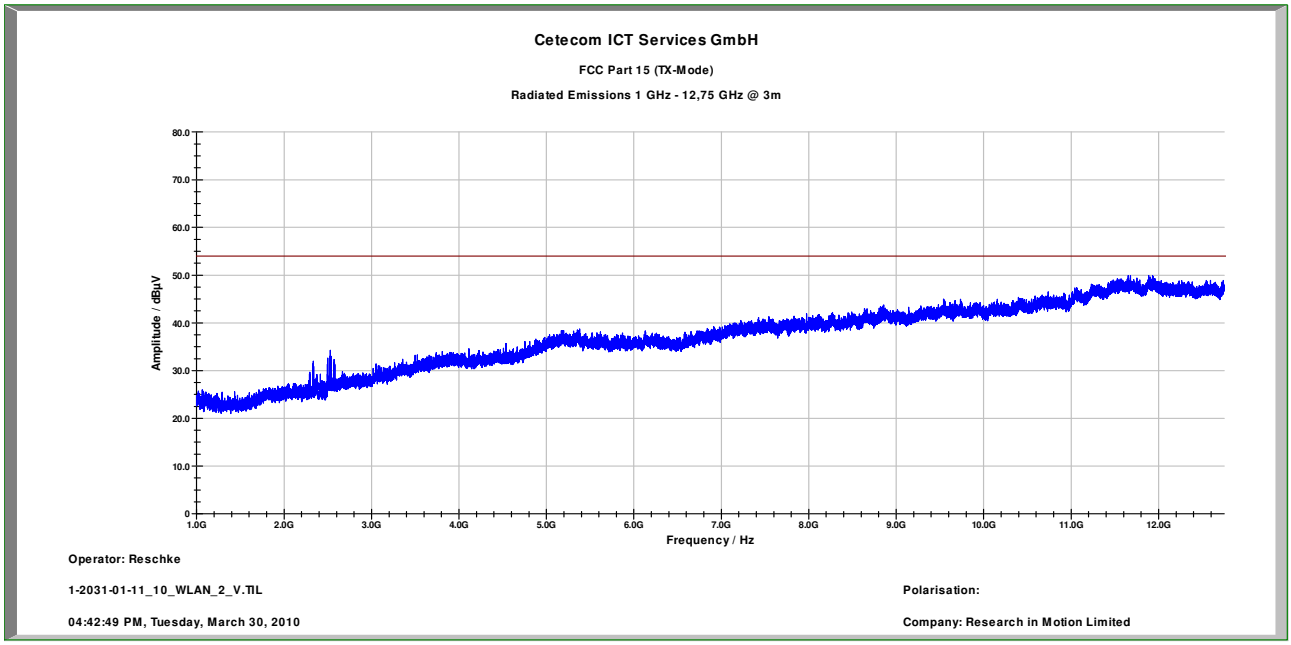


Plot 5: 1 – 12.75 GHz horizontal (middle channel)



Carrier suppressed with a rejection filter

Plot 6: 1 – 12.75 GHz vertical (middle channel)



Carrier suppressed with a rejection filter

Plot 7: 0.03 - 1 GHz (highest channel)

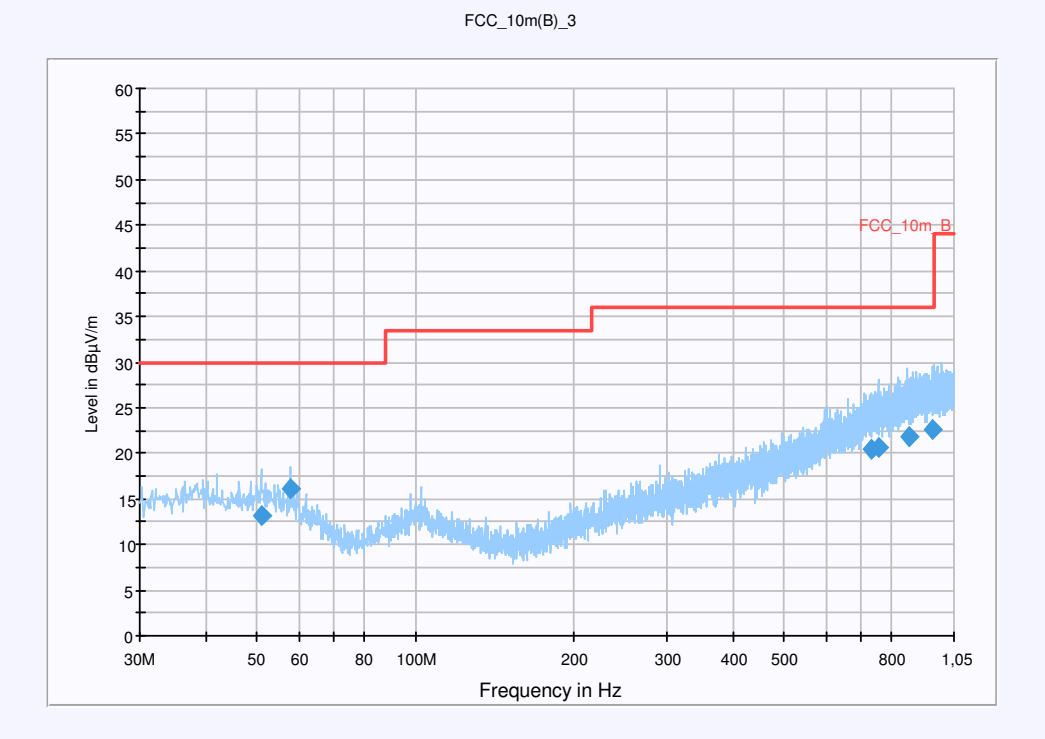
Common Information

EUT:	RCV72UW
Serial Number:	IMEI: 004401.13.589563.5
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	WLAN G-mode: CH:11
Operator Name:	Hennemann
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 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
51.022200	13.1	15000.000	120.000	134.0	V	87.0	13.3	16.9	30.0	
58.009050	16.1	15000.000	120.000	98.0	V	35.0	12.1	13.9	30.0	
733.219650	20.5	15000.000	120.000	112.0	V	32.0	23.2	15.5	36.0	
752.922900	20.7	15000.000	120.000	220.0	H	77.0	23.6	15.3	36.0	
859.983900	21.8	15000.000	120.000	220.0	V	145.0	24.7	14.2	36.0	
955.817250	22.7	15000.000	120.000	143.0	V	219.0	25.4	13.3	36.0	

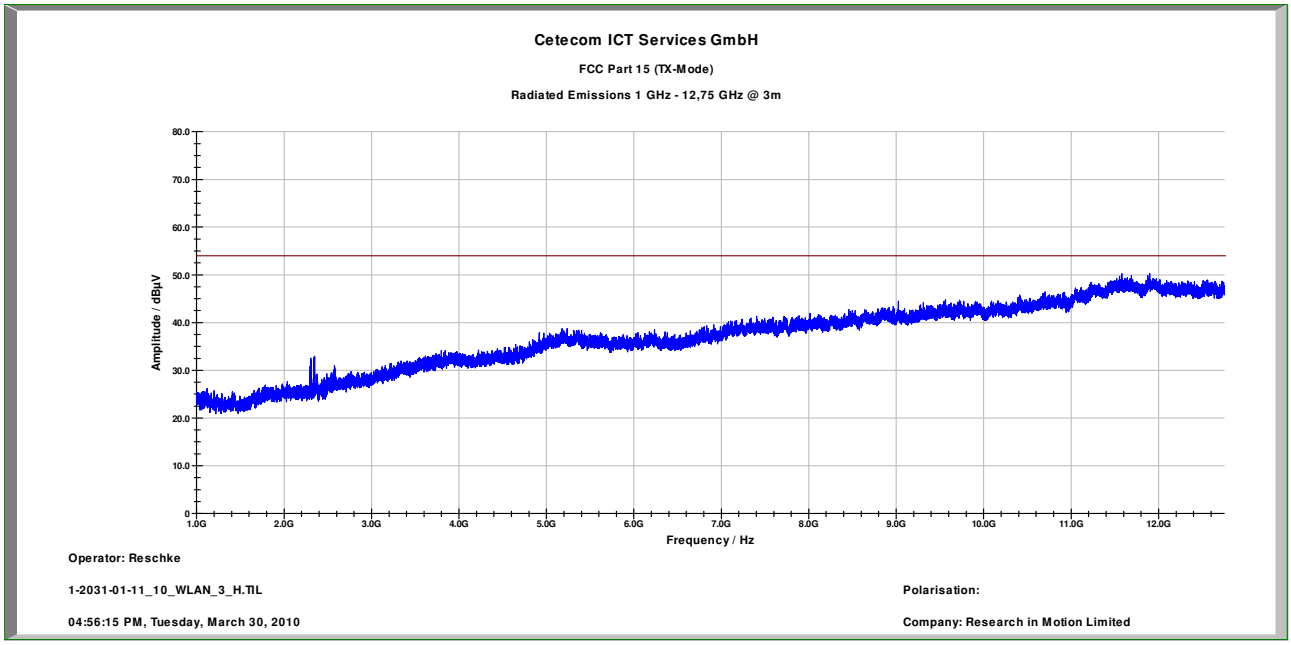
Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1

Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

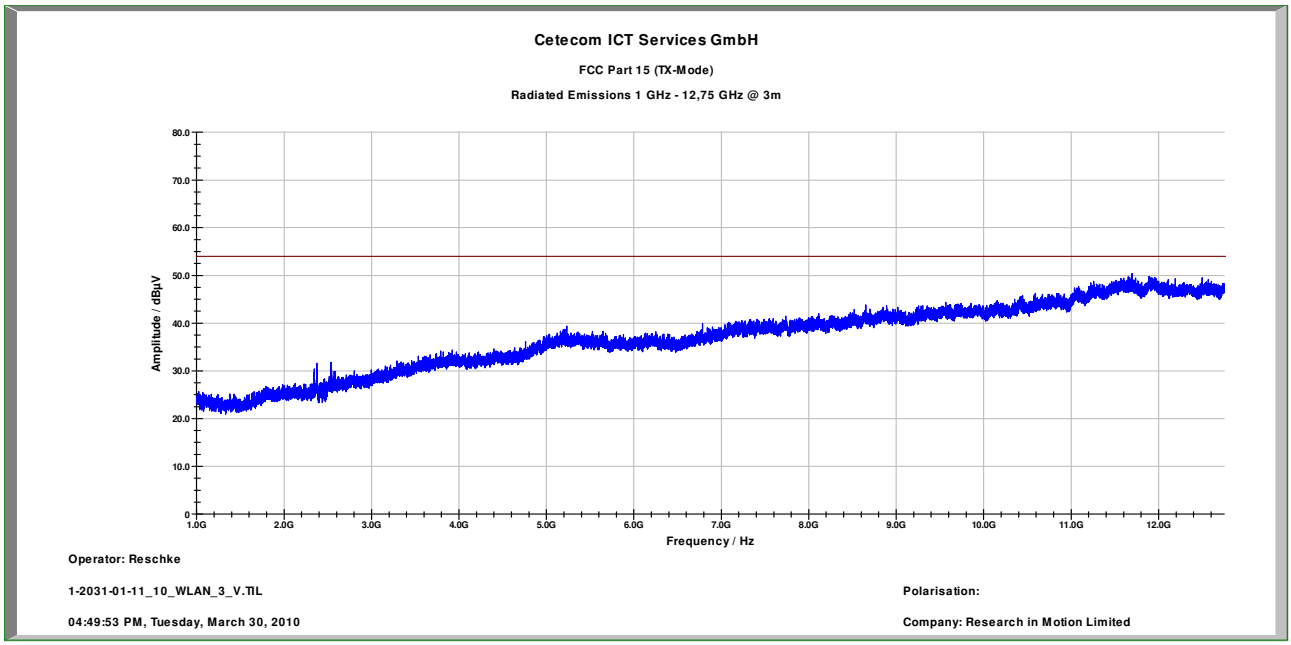
EMC 32 Version 8.10.00

Plot 8: 1 – 12.75 GHz horizontal (high channel)



Carrier suppressed with a rejection filter

Plot 9: 1 – 12.75 GHz vertical (high channel)



Carrier suppressed with a rejection filter

Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found			No peaks found			No peaks found		
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: § 15.109

Frequency (MHz)	**Field strength (dBµV/m)**	**Measurement distance (m)**
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

5.14 Spurious Emissions - radiated (Receiver) §15.109 / 209

Not performed

Results:

Spurious Emissisons level [dBµV/m]		
f[MHz]	Detector	Level [dBµV/m]
See plot		
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 (dBµV/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

5.15 Spurious Emissions - radiated <30 MHz §15.209

Not performed

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

Plot 1: (valid for all channels and modes)

Limits:

Frequency (MHz)	Field strength (µV/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 dBµV/m	30
30 - 88	100 / 40 dBµV/m	3
88 - 216	150 / 43.5 dBµV/m	3
216 - 960	200 / 46 dBµV/m	3
above 960	54 dBµV/m	3

5.16 Conducted Emissions <30 MHz §15.107/207

Not performed

Plot 1: CISPR 22

We measured in TX and RX mode, L1 and N floating and grounded, max value was hold.

Limits:

Under normal test conditions only	See plots

6 Test equipment and ancillaries used for tests

In order to simplify the identification of the equipment used at each specific test, each item of test equipment and ancillaries are provided with an identifier or number in the equipment list below.

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

No.	Labor / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kal. Art	Last Calibration	Next Calibration
1	n. a.	System Autoranging DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
2	n. a.	PowerAttenuator	8325	Byrd	1530	300001595			
3	n. a.	Double-Ridged Waveguide Horn Antenna 1-26.5GHz	3115	EMCO	8812-3088	300001032	vlK I!	05.03.2009	05.03.2011
4	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
5	n. a.	Anechoic chamber		MWB	87400/02	300000996			
6	Spec.A. 2_2e	System-Rack	85900	HP I.V.	*	300000222	ne		
7	9	Artificial Mains 9 kHz to 30 MHz, 4 x 25 Ampere	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
8	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
9	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
10	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
11	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
12	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
13	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
14	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
15	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
16	n. a.	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
17	n. a.	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
18	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
19	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Vertr. Bad Hom	MY48250080	300003812	k	05.08.2008	05.08.2010
20	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Vertr. Bad Hom	MY47420220	300003813	k	06.08.2008	06.08.2010
21	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Vertr. Bad Hom	MY48260003	300003825	vlK I!	19.08.2008	19.08.2010
22	n. a.	TRILOG Super Breitband Antenne	VULB9163	Schwarzbeck	371	300003854	vlK I!	17.12.2008	17.12.2010