

ANNEX 4: MEASUREMENT DIAGRAMS TO TEST REPORT No.: 2-0037-12-1-1JJ

According to:
FCC Regulations
Part 15.109, Part15.247

IC-Regulations
RSS-Gen, Issue 3
RSS-210, Issue 8

for
Research In Motion Limited
Mobile Phone RFG81UW

FCC-ID: L6ARFG80UW
IC: 2503A-RFG80UW

Laboratory Accreditation and Listings			
 DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01	 Reg. No.: 736496 MRA US-EU 0003	 Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	 Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2665, R-2666 C-2914, T-1967, G-301
 WiFi ALLIANCE AUTHORIZED RF LABORATORY	 CTIA Authorized Test Lab LAB CODE 20011130-00		
accredited according to DIN EN ISO/IEC 17025			
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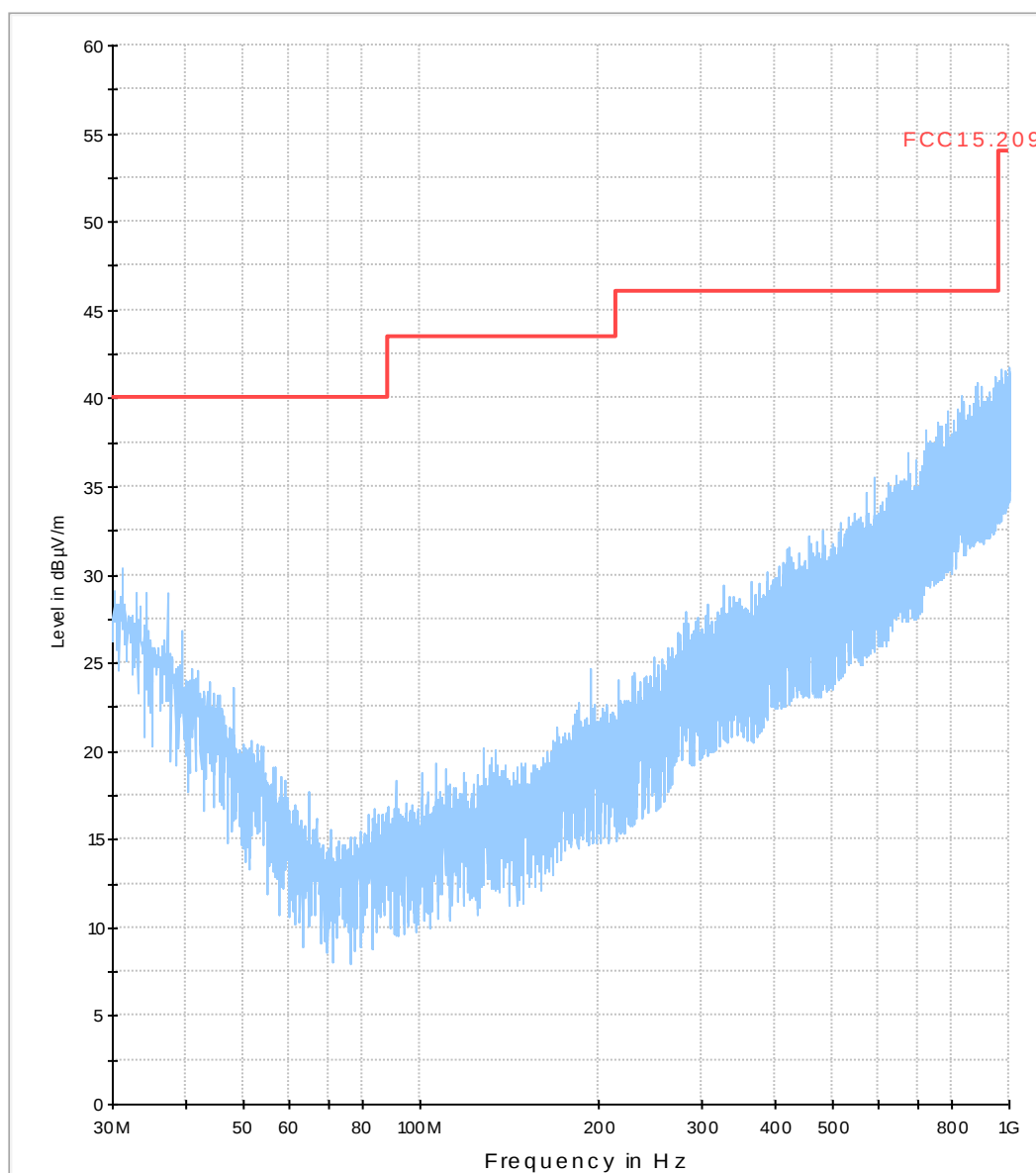
1. Radiated field strength measurements accord. §15.209&15.205

1.1. Channel 0

8.09_Ch0_Sweep1

Test description:	14.08.2012 Page 1 of 2
Test site and distance:	Electric Field Strength Measurement
Distance correction:	Semi Anechoic Room (SAR) with 3 m measurement distance
Used filter:	not used
Technical Data:	not used
Test specification.:	please see page 2 for detailed data of measurement setup
	FCC 15.209; RSS-Gen: Issue 3
Operator:	OOu
Operating conditions:	BT Low Energy Vers. 4.0
Power during tests:	real battery
Comment 1:	Channel 0

01_FCC15.209_hor+vert_kipp



EMI Auto Test Template: 01_FCC15.209_hor+vert_kipp

Hardware Setup: HW11_FCC_ESCS30_TP1200_EUTkipp
 Measurement Type: E(I)RP
 Frequency Range: 30 MHz - 1 GHz
 Graphics Level Range: 0 dB μ V/m - 60 dB μ V/m

Preview Measurements:
 Turntable position: 0 - 270 deg , Step Size = 90 deg , Positioning Speed = 8
 Elevation: 0 - 90 deg , Step Size = 90 deg , Positioning Speed = 5
 Polarization: H + V
 Scan Test Template: EMI Scan 01_fast_FCC_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	40 kHz	PK+	120 kHz	0,00005 s	0 dB

Receiver: [ESS]

Data Reduction:
 Limit Line #1: FCC15.209
 Peak Search: 6 dB , Maximum Results: 10
 Subrange Maxima: 25 Subranges , Maxima per Subrange: 1
 Acceptance Offset: -6 dB
 Maximum Number of Results: 20
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: EMI Scan 02_20ms_zoom_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	10 kHz	PK+	120 kHz	0,02 s	0 dB

Receiver: [ESS]

Adjustment:
 Turntable position: Adjustment with full Range , Measuring Speed = 3
 Elevation: Adjustment with full Range , Measuring Speed = 5
 Template for Single Meas.: EMI Scan 02_20ms_FCC_15_209B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	100 kHz	PK+	120 kHz	0,02 s	0 dB

Receiver: [ESS]

Final Measurements:
 Template for Single Meas.: EMI Scan 03_1s_FCC_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	100 kHz	QPK	120 kHz	1 s	0 dB

Receiver: [ESS]

Report Settings:
 Report Template: FCC15_209_vert_hor-30MHz-1GHz
 Create Electronic Report: RTF PDF
 Document Name: EMI Report

Actions:
 Test start
 Notify: "EUT auf ersten/zweiten/dritten Sendekanal stellen !!!"
 Notify: "bitte beachten: es gibt Frequenzbereiche von strenger Grenzwert gil..."
 Data Reduction: Before
 Notify: Sound (WAV file) 'tada.wav'
 Frequency Zoom 2: Before
 Notify: "EUT sendet noch ?"
 Final Measurements: After
 Notify: Sound (WAV file) 'tada.wav'

Diagram No.: 8.09_Ch0_Sweep2

Common Information

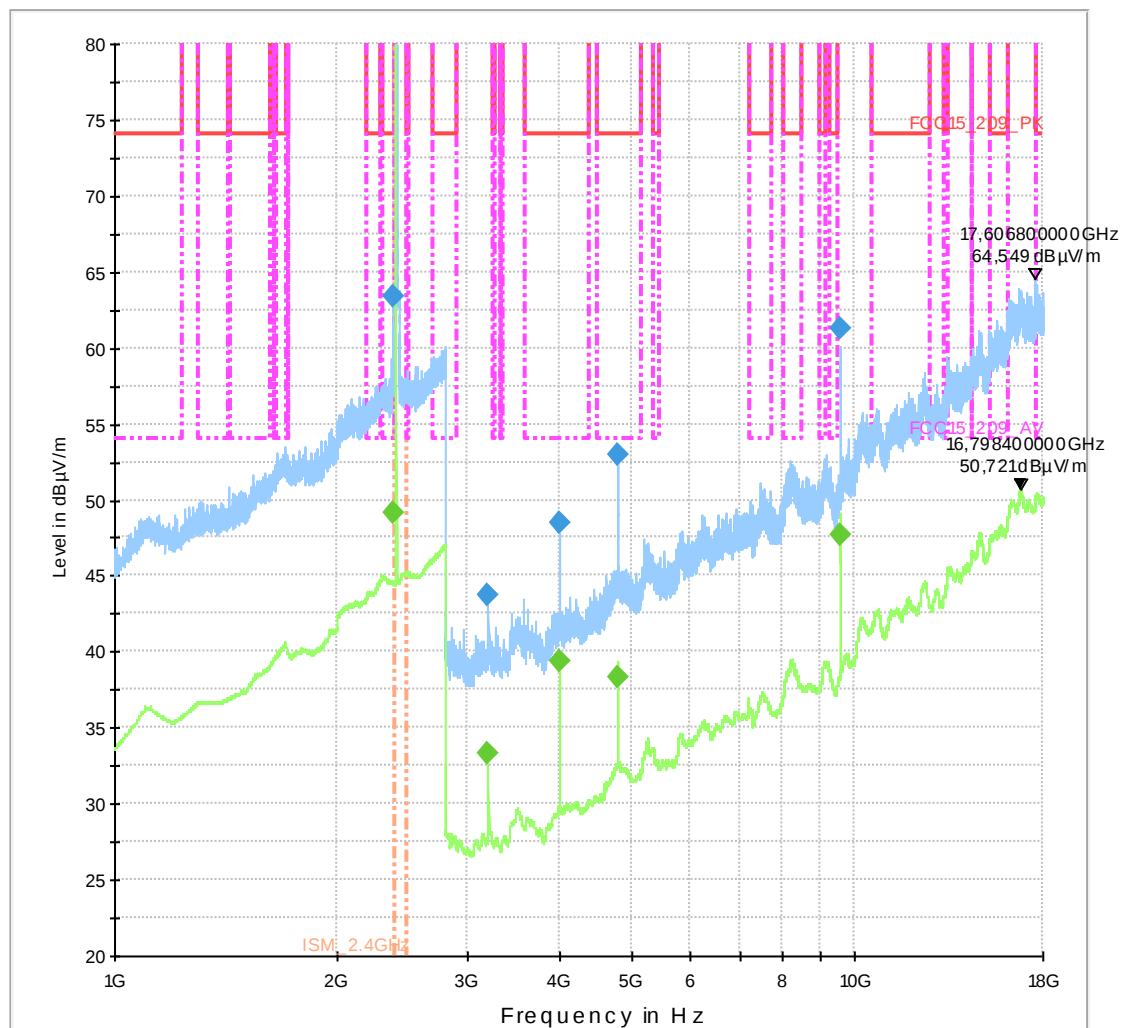
Test Description:	Radiated field strength emission accord. §15.247 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel 0 / 2402 MHz
Op. Mode:	Bluetooth Vers. 4.0 (low-energy)

EUT Information

Manufacturer:	Research In Motion Limited
Type:	GSM/WCDMA/LTE Mobile Terminal

EUT:	RFG81UW
EUT additional information:	CER-48928-001 Rev2 17-Jul-12
HW version:	new
SW version:	tbd
Serial number:	004401139036988
Power Supply:	full internal battery
Comments:	--

00431_SM1_KP1_W LAN_1_5ms



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Margin (dB)
2380.900000	63.4	100.0	1000.000	155.0	H	271.0	0.0	35.5	10.6
3202.500000	43.8	100.0	1000.000	155.0	H	271.0	0.0	-0.1	106.2
4002.900000	48.5	100.0	1000.000	155.0	H	188.0	0.0	1.7	25.5
4803.700000	53.0	100.0	1000.000	155.0	H	181.0	0.0	4.9	21.0
9608.900000	61.3	100.0	1000.000	155.0	V	32.0	0.0	13.9	88.7

(continuation of the "Final Result 1" table from column 10 ...)

Frequency (MHz)	Limit (dBμV/m)	Comment
2380.900000	74.0	
3202.500000	150.0	
4002.900000	74.0	
4803.700000	74.0	
9608.900000	150.0	

Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Margin (dB)
2374.500000	49.1	100.0	1000.000	155.0	H	135.0	0.0	35.5	4.9
3202.500000	33.3	100.0	1000.000	155.0	H	269.0	0.0	-0.1	116.7
4003.300000	39.4	100.0	1000.000	155.0	H	228.0	0.0	1.7	14.6
4804.100000	38.3	100.0	1000.000	155.0	H	180.0	0.0	4.9	15.7
9607.300000	47.7	100.0	1000.000	155.0	V	29.0	0.0	13.9	102.3

(continuation of the "Final Result 2" table from column 10 ...)

Frequency (MHz)	Limit (dBμV/m)	Comment
2374.500000	54.0	
3202.500000	150.0	
4003.300000	54.0	
4804.100000	54.0	
9607.300000	150.0	

EMI Auto Test Template: 00431_SM1_KP1_WLAN_1_5ms

Hardware Setup: 00431_FCC_Part15_Unintentional_Radiator_1G-22G_dBuV_ESU
 Measurement Type: E(I)RP
 Frequency Range: 1 GHz - 18 GHz
 Graphics Level Range: 20 dBμV/m - 110 dBμV/m

Preview Measurements:
 Scan Test Template: Sweep_1_18GHz_Pre

Data Reduction:
 Limit Line #1: FCC15_209_PK
 Limit Line #2: FCC15_209_AV
 Limit Line #3: ISM_2.4GHz
 Peak Search: 6 dB, Maximum Results: 10
 Subrange Maxima: 10 Subranges, Maxima per Subrange: 1
 Maximum Number of Results: 20
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: Sweep_1_18GHz_Zoom

Adjustment:
 Template for Single Meas.: Sweep_1_18GHz_Zoom

Final Measurements:
 Template for Single Meas.: Sweep_1_18GHz_final
 Template for Single Meas.:(>1GHz) Sweep_1_18GHz_final

Report Settings:

Report Template:	Report Setup FCC 15_247
Create Electronic Report:	RTF PDF
Document Name:	EMI Report

Actions:

Test start	
Notify:	"stelle passenden Kanal ein !"
Frequency Zoom 2: Before	
Notify:	"EUT sendet noch ?"

Diagram No.: 8.09_Ch0_Sweep3

Common Information

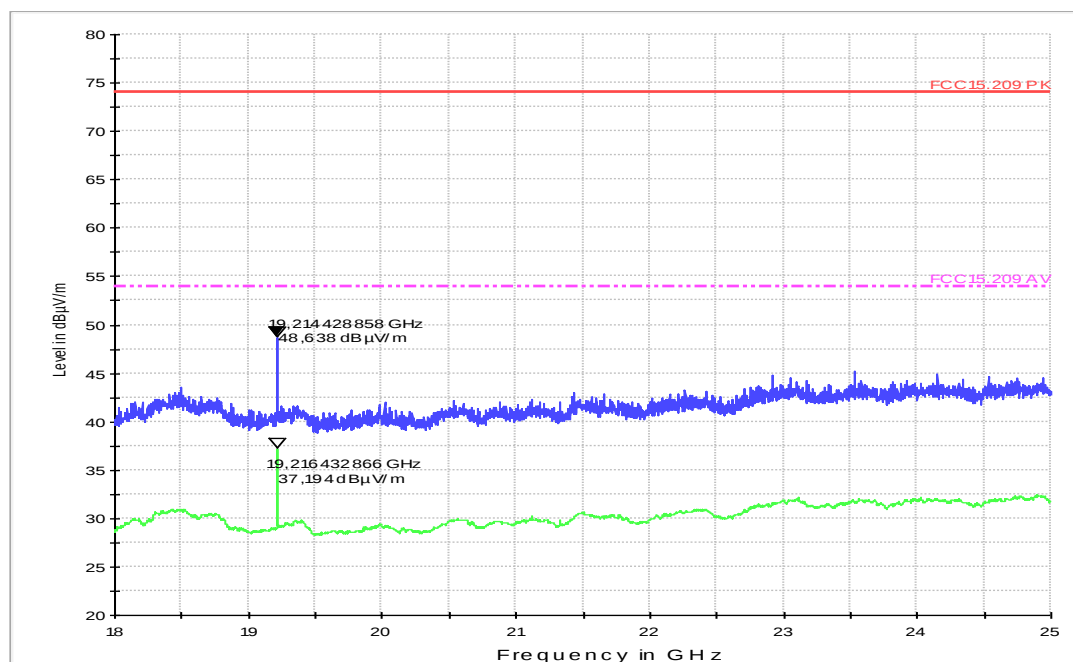
Test Description: Radiated field strength emission in 1m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.247, 15.205, 15.209 Intentional Radiator
 Antenna polarisation: horizontal/vertical

Operation mode: BT LE Vers. 4.0 & TX mode continuous
 Operator Name: Dpa
 Comment: Channel no. low 0

EUT Information

EUT Name: RFG81UW
 Manufacturer: RIM
 Serial Number: 004401139036988
 Hardware Rev: --
 Software Rev: --
 Comment: Sample 3, Rev 2, 17-Jul-12

EMI Sweep_18_25GHz_Preamp_On_Ref338_AntRef302_1m_dBuV



Sweep Setup: EMI

Sweep_18_25GHz_Preamp_On_Ref338_AntRef302_1m_dBuV [EMI radiated]

Hardware Setup: HW03_FSEM_15-26GHz_PreampRef336_dBuV_1m
 Receiver: [FSEM]
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
18 GHz - 19 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
19 GHz - 20 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
20 GHz - 21 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
21 GHz - 22 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
22 GHz - 23 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
23 GHz - 24 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
24 GHz - 25 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB

1.2. Channel 20

Diagram No. 8.09_Ch20_Sweep1

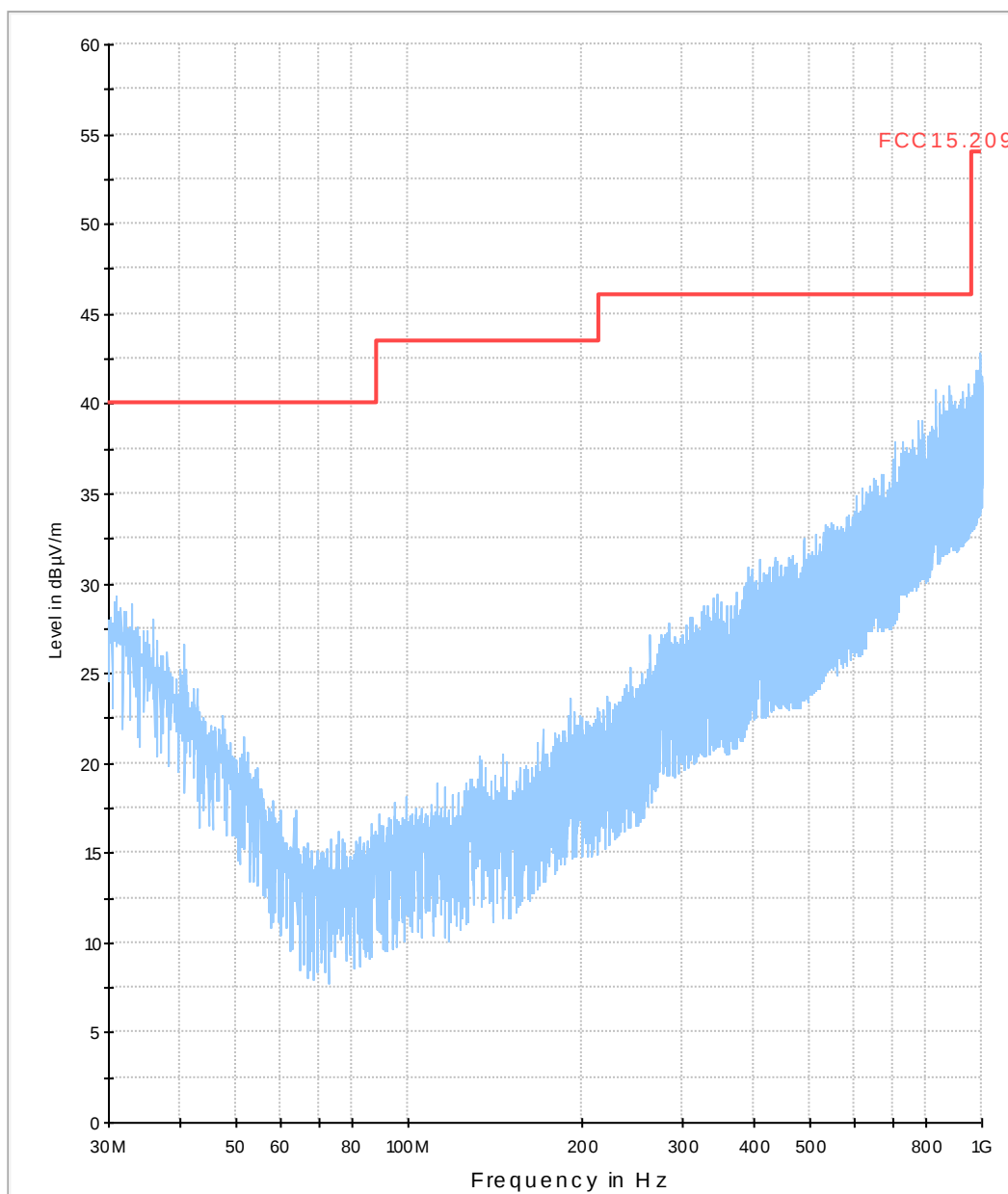
Test description:
Test site and distance:
Distance correction:
Used filter:
Technical Data:
Test specification.:

14.08.2012 Page 1 of 2
Electric Field Strength Measurement
Semi Anechoic Room (SAR) with 3 m measurement distance
not used
not used
please see page 2 for detailed data of measurement setup
FCC 15.209; RSS-Gen: Issue 3

Operator:
Operating conditions:
Power during tests:
Comment 1:

OOu
BT Low Energy Vers. 4.0
real battery
Channel 20

01_FCC15.209_hor+vert_kipp



EMI Auto Test Template: 01_FCC15.209_hor+vert_kipp

Hardware Setup: HW11_FCC_ESCS30_TP1200_EUTkipp
 Measurement Type: E(I)RP
 Frequency Range: 30 MHz - 1 GHz
 Graphics Level Range: 0 dBμV/m - 60 dBμV/m

Preview Measurements:
 Turntable position: 0 - 270 deg , Step Size = 90 deg , Positioning Speed = 8
 Elevation: 0 - 90 deg , Step Size = 90 deg , Positioning Speed = 5
 Polarization: H + V
 Scan Test Template: EMI Scan 01_fast_FCC_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	40 kHz	PK+	120 kHz	0,00005 s	0 dB

Receiver: [ESS]

Data Reduction:
 Limit Line #1: FCC15.209
 Peak Search: 6 dB , Maximum Results: 10
 Subrange Maxima: 25 Subranges , Maxima per Subrange: 1
 Acceptance Offset: -6 dB
 Maximum Number of Results: 20
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: EMI Scan 02_20ms_zoom_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	10 kHz	PK+	120 kHz	0,02 s	0 dB

Receiver: [ESS]

Adjustment:
 Turntable position: Adjustment with full Range , Measuring Speed = 3
 Elevation: Adjustment with full Range , Measuring Speed = 5
 Template for Single Meas.: EMI Scan 02_20ms_FCC_15_209B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	100 kHz	PK+	120 kHz	0,02 s	0 dB

Receiver: [ESS]

Final Measurements:
 Template for Single Meas.: EMI Scan 03_1s_FCC_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	100 kHz	QPK	120 kHz	1 s	0 dB

Receiver: [ESS]

Report Settings:
 Report Template: FCC15_209_vert_hor-30MHz-1GHz
 Create Electronic Report: RTF PDF
 Document Name: EMI Report

Actions:
 Test start
 Notify: "EUT auf ersten/zweiten/dritten Sendekanal stellen !!!"
 Notify: "bitte beachten: es gibt Frequenzbereiche von strenger Grenzwert gil..."
 Data Reduction: Before
 Notify: Sound (WAV file) 'tada.wav'
 Frequency Zoom 2: Before
 Notify: "EUT sendet noch ?"
 Final Measurements: After
 Notify: Sound (WAV file) 'tada.wav'

Diagram No.: 8.09_Ch20_Sweep2

Common Information

Test Description: Radiated field strength emission accord. §15.247 in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: §15.205 & §15.209 Intentional Radiator
 Antenna polarisation: horizontal/vertical

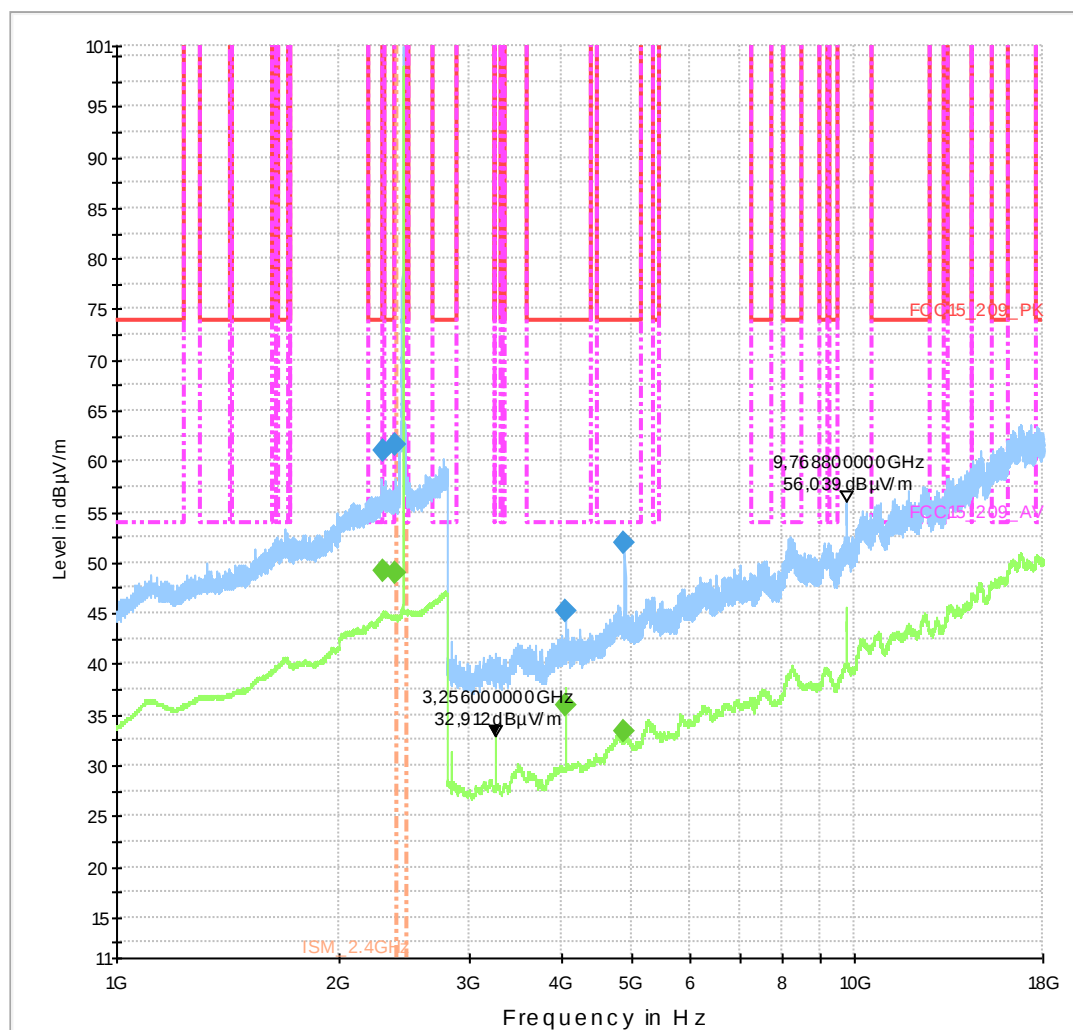
Operator Name: Lor
 Comment: Channel middle=20, BT LE Vers. 4.0
 Op. Mode: TX mode continuous

EUT Information

Manufacturer: Research In Motion Limited
 Type: GSM/WCDMA/LTE Mobile Terminal

EUT: RFG81UW
 EUT additional information: CER-48928-001 Rev2 17-Jul-12
 HW version: new
 SW version: tbd
 Serial number: 004401139036988
 Power Supply: full internal battery
 Comments: --

00431_SM1_KP1_W LAN_1ms



Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Margin (dB)
2292.500000	61.1	100.0	1000.000	155.0	H	82.0	0.0	35.6	12.9
2385.300000	61.6	100.0	1000.000	155.0	H	225.0	0.0	35.5	12.4
4070.500000	45.1	100.0	1000.000	155.0	H	173.0	0.0	1.8	28.9
4883.700000	51.9	100.0	1000.000	155.0	H	140.0	90.0	4.6	22.1

(continuation of the "Final Result 1" table from column 10 ...)

Frequency (MHz)	Limit (dBµV/m)	Comment
2292.500000	74.0	
2385.300000	74.0	
4070.500000	74.0	
4883.700000	74.0	

Final Result 2

Frequency (MHz)	Average (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Margin (dB)
2292.300000	49.2	100.0	1000.000	155.0	H	188.0	0.0	35.5	4.8
2384.100000	49.0	100.0	1000.000	155.0	H	37.0	0.0	35.5	5.0
4070.100000	35.8	100.0	1000.000	155.0	H	190.0	0.0	1.8	18.2
4883.700000	33.4	100.0	1000.000	155.0	H	123.0	90.0	4.6	20.6

(continuation of the "Final Result 2" table from column 10 ...)

Frequency (MHz)	Limit (dBµV/m)	Comment
2292.300000	54.0	
2384.100000	54.0	
4070.100000	54.0	
4883.700000	54.0	

EMI Auto Test Template: 00431_SM1_KP1_WLAN_1ms

Hardware Setup: 00431_FCC_Part15_Unintentional_Radiator_1G-22G_dBuV_ESU
 Measurement Type: E(I)RP
 Frequency Range: 1 GHz - 18 GHz
 Graphics Level Range: 20 dBµV/m - 110 dBµV/m

Preview Measurements:
 Scan Test Template: Sweep_1_18GHz_Pre_1ms

Data Reduction:
 Limit Line #1: FCC15_209_PK
 Limit Line #2: FCC15_209_AV
 Limit Line #3: ISM_2.4GHz
 Peak Search: 6 dB , Maximum Results: 10
 Subrange Maxima: 50 Subranges , Maxima per Subrange: 1
 Maximum Number of Results: 10
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: Sweep_1_18GHz_Zoom

Adjustment:
 Template for Single Meas.: Sweep_1_18GHz_Zoom

Final Measurements:
 Template for Single Meas.: Sweep_1_18GHz_final

Template for Single Meas.:(>1GHz) Sweep_1_18GHz_final

Report Settings:
 Report Template: Report Setup FCC 15_247
 Create Electronic Report: RTF PDF
 Document Name: EMI Report

Actions:

Test start

Notify:

"stelle passenden Kanal ein !"

Frequency Zoom 2: Before

Notify:

"EUT sendet noch ?"

Diagram No.: 8.09_Ch20_Sweep3

Common Information

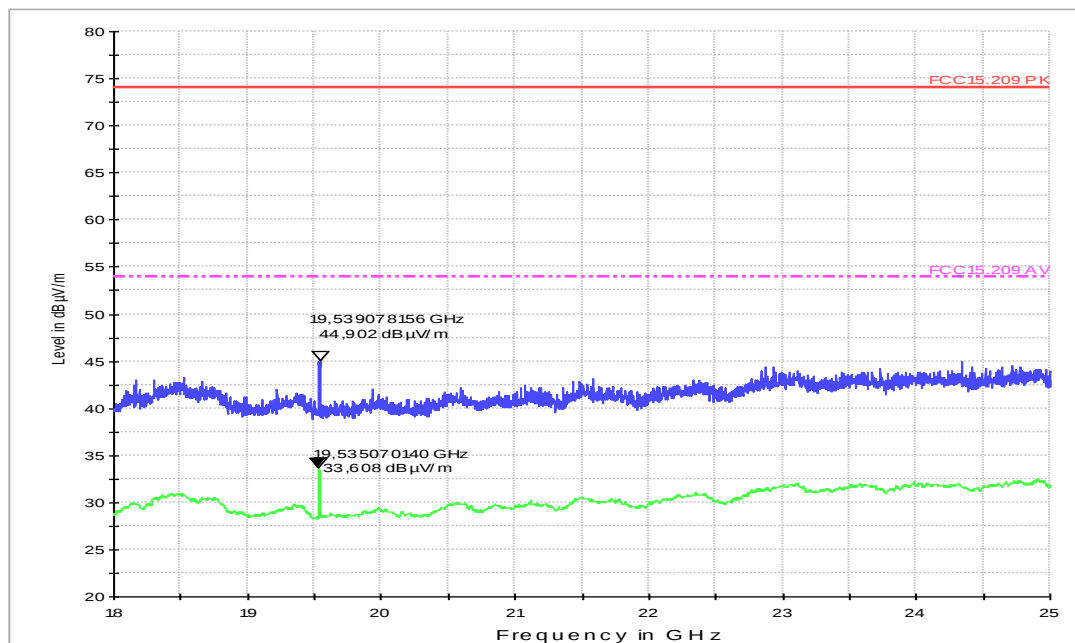
Test Description: Radiated field strength emission in 1m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.247, 15.205, 15.209 Intentional Radiator
 Antenna polarisation: horizontal/vertical

Operation mode: BT LE Vers. 4.0 & TX mode continuous
 Operator Name: Dpa
 Comment: Channel no. middle 20

EUT Information

EUT Name: RFG81UW
 Manufacturer: RIM
 Serial Number: 004401139036988
 Hardware Rev: --
 Software Rev: --
 Comment: Sample 3, Rev 2, 17-Jul-12

EMI Sweep_18_25GHz_Preamp_On_Ref338_AntRef302_1m_dBuV



Sweep Setup: EMI

Sweep_18_25GHz_Preamp_On_Ref338_AntRef302_1m_dBuV [EMI radiated]

Hardware Setup: HW03_FSEM_15-26GHz_PreampRef336_dBuV_1m
 Receiver: [FSEM]
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
18 GHz - 19 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
19 GHz - 20 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
20 GHz - 21 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
21 GHz - 22 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
22 GHz - 23 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
23 GHz - 24 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
24 GHz - 25 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB

1.3. Channel 39

8.09_Ch39_Sweep1

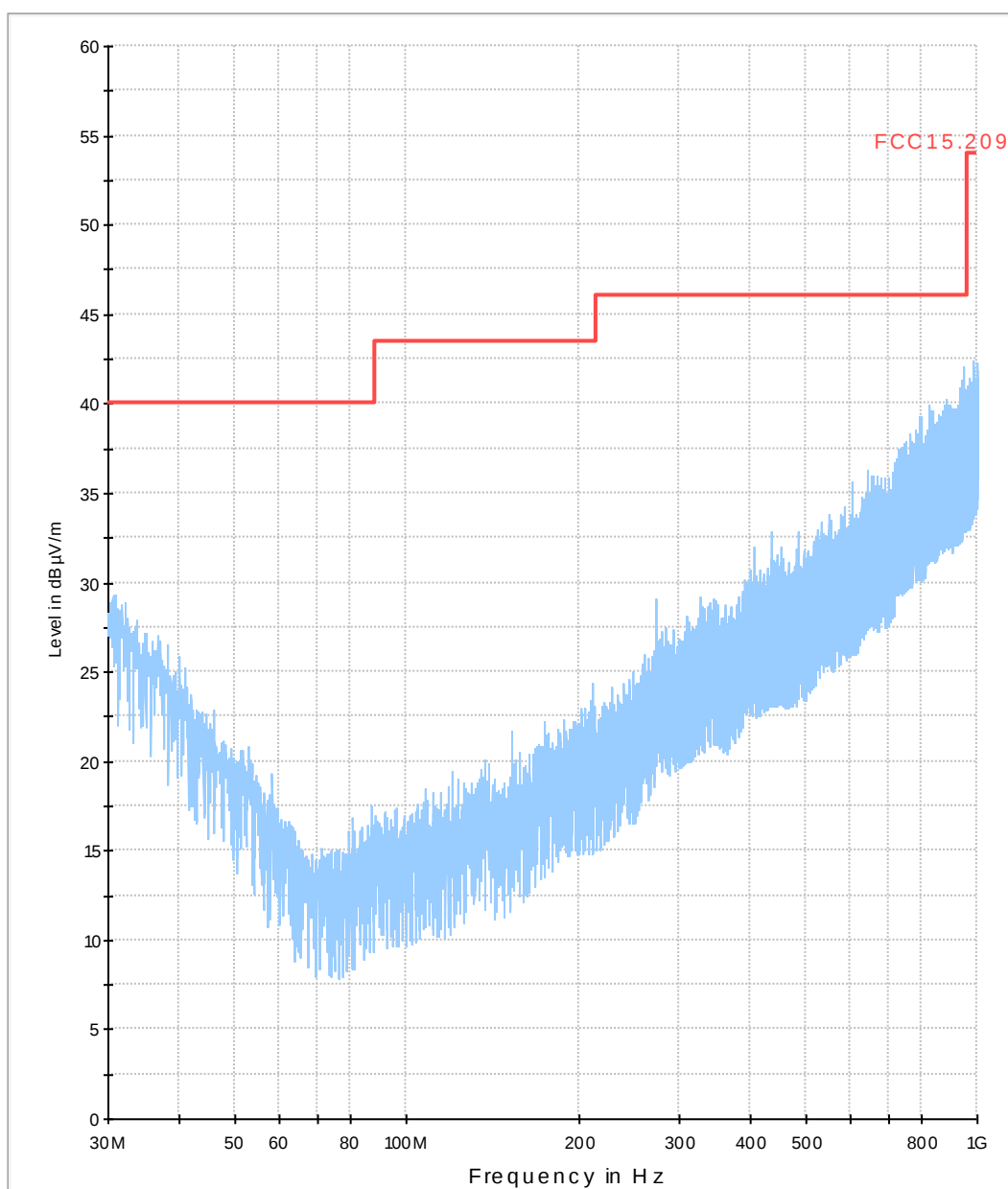
Test description:
Test site and distance:
Distance correction:
Used filter:
Technical Data:
Test specification.:

14.08.2012 Page 1 of 2
Electric Field Strength Measurement
Semi Anechoic Room (SAR) with 3 m measurement distance
not used
not used
please see page 2 for detailed data of measurement setup
FCC 15.209; RSS-Gen: Issue 3

Operator:
Operating conditions:
Power during tests:
Comment 1:

OOu
BT Low Energy Vers. 4.0
real battery
Channel 39

01_FCC15.209_hor+vert_kipp



EMI Auto Test Template: 01_FCC15.209_hor+vert_kipp

Hardware Setup: HW11_FCC_ESCS30_TP1200_EUTkipp
 Measurement Type: E(I)RP
 Frequency Range: 30 MHz - 1 GHz
 Graphics Level Range: 0 dB μ V/m - 60 dB μ V/m

Preview Measurements:
 Turntable position: 0 - 270 deg , Step Size = 90 deg , Positioning Speed = 8
 Elevation: 0 - 90 deg , Step Size = 90 deg , Positioning Speed = 5
 Polarization: H + V
 Scan Test Template: EMI Scan 01_fast_FCC_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	40 kHz	PK+	120 kHz	0,00005 s	0 dB

Receiver: [ESS]

Data Reduction:
 Limit Line #1: FCC15.209
 Peak Search: 6 dB , Maximum Results: 10
 Subrange Maxima: 25 Subranges , Maxima per Subrange: 1
 Acceptance Offset: -6 dB
 Maximum Number of Results: 20
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: EMI Scan 02_20ms_zoom_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	10 kHz	PK+	120 kHz	0,02 s	0 dB

Receiver: [ESS]

Adjustment:
 Turntable position: Adjustment with full Range , Measuring Speed = 3
 Elevation: Adjustment with full Range , Measuring Speed = 5
 Template for Single Meas.: EMI Scan 02_20ms_FCC_15_209B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	100 kHz	PK+	120 kHz	0,02 s	0 dB

Receiver: [ESS]

Final Measurements:
 Template for Single Meas.: EMI Scan 03_1s_FCC_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	100 kHz	QPK	120 kHz	1 s	0 dB

Receiver: [ESS]

Report Settings:
 Report Template: FCC15_209_vert_hor-30MHz-1GHz
 Create Electronic Report: RTF PDF
 Document Name: EMI Report

Actions:
 Test start
 Notify: "EUT auf ersten/zweiten/dritten Sendekanal stellen !!!"
 Notify: "bitte beachten: es gibt Frequenzbereiche von strenger Grenzwert gil..."
 Data Reduction: Before
 Notify: Sound (WAV file) 'tada.wav'
 Frequency Zoom 2: Before
 Notify: "EUT sendet noch ?"
 Final Measurements: After
 Notify: Sound (WAV file) 'tada.wav'

Diagram No.: 8.09_Ch39_Sweep2

Common Information

Test Description: Radiated field strength emission accord. §15.247 in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: §15.205 & §15.209 Intentional Radiator
 Antenna polarisation: horizontal/vertical

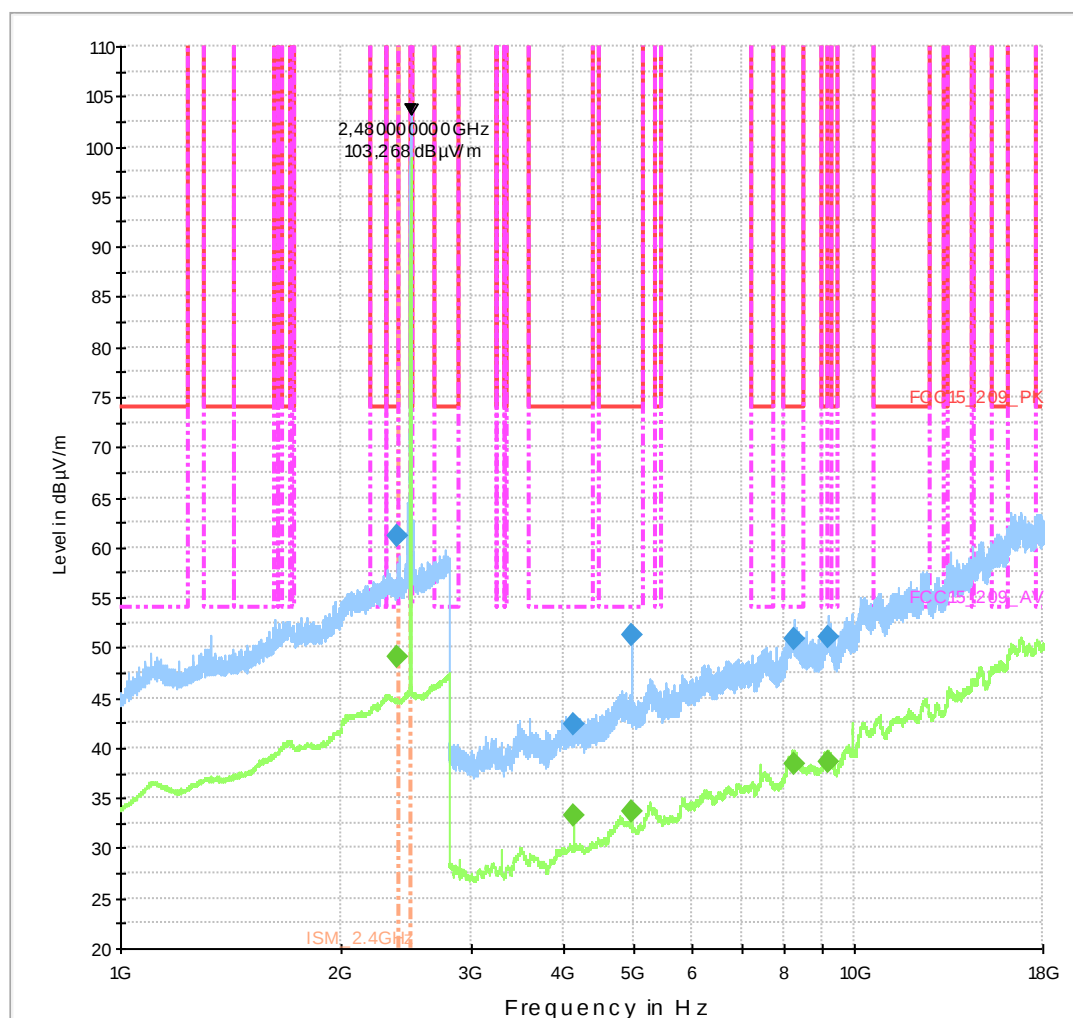
Operator Name: Lor
 Comment: Channel 39 / 2480 MHz
 Op. Mode: Bluetooth Vers. 4.0 (low-energy)

EUT Information

Manufacturer: Research In Motion Limited
 Type: GSM/WCDMA/LTE Mobile Terminal

EUT: RFG81UW
 EUT additional information: CER-48928-001 Rev2 17-Jul-12
 HW version: new
 SW version: tbd
 Serial number: 004401139036988
 Power Supply: full internal battery
 Comments: --

00431_SM1_KP1_W LAN_500us



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
2386.500000	61.2	100.0	1000.000	155.0	H	271.0	0.0	35.5	12.8
4133.300000	42.3	100.0	1000.000	155.0	V	297.0	0.0	1.8	31.7
4959.700000	51.3	100.0	1000.000	155.0	H	82.0	0.0	4.3	22.7
8247.700000	50.9	100.0	1000.000	155.0	H	217.0	0.0	14.1	23.1
9184.900000	51.0	100.0	1000.000	155.0	H	249.0	0.0	14.1	23.0

(continuation of the "Final Result 1" table from column 10 ...)

Frequency (MHz)	Limit (dBμV/m)	Comment
2386.500000	74.0	
4133.300000	74.0	
4959.700000	74.0	
8247.700000	74.0	
9184.900000	74.0	

Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
2387.300000	49.1	100.0	1000.000	155.0	H	-26.0	90.0	35.5	4.9
4133.300000	33.3	100.0	1000.000	155.0	H	225.0	0.0	1.8	20.7
4959.700000	33.6	100.0	1000.000	155.0	H	163.0	0.0	4.3	20.4
8249.700000	38.4	100.0	1000.000	155.0	H	295.0	0.0	14.1	15.6
9182.900000	38.6	100.0	1000.000	155.0	V	27.0	0.0	14.1	15.4

(continuation of the "Final Result 2" table from column 10 ...)

Frequency (MHz)	Limit (dBμV/m)	Comment
2387.300000	54.0	
4133.300000	54.0	
4959.700000	54.0	
8249.700000	54.0	
9182.900000	54.0	

EMI Auto Test Template: 00431_SM1_KP1_WLAN_500us

Hardware Setup: 00431_FCC_Part15_Unintentional_Radiator_1G-22G_dBuV_ESU
 Measurement Type: E(I)RP
 Frequency Range: 1 GHz - 18 GHz
 Graphics Level Range: 20 dBμV/m - 110 dBμV/m

Preview Measurements:
 Scan Test Template: Sweep_1_18GHz_Pre_500us

Data Reduction:
 Limit Line #1: FCC15_209_PK
 Limit Line #2: FCC15_209_AV
 Limit Line #3: ISM_2.4GHz
 Peak Search: 6 dB, Maximum Results: 10
 Subrange Maxima: 50 Subranges, Maxima per Subrange: 1
 Maximum Number of Results: 10
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: Sweep_1_18GHz_Zoom

Adjustment:
 Template for Single Meas.: Sweep_1_18GHz_Zoom

Final Measurements:
 Template for Single Meas.: Sweep_1_18GHz_final
 Template for Single Meas.:(>1GHz) Sweep_1_18GHz_final

Report Settings:

Report Template:
Create Electronic Report:
Document Name:

Report Setup FCC 15_247
RTF PDF
EMI Report

Actions:

Test start

Notify:

Frequency Zoom 2: Before

Notify:

"stelle passenden Kanal ein !"

"EUT sendet noch ?"

Diagram No.: 8.09_Ch39_Sweep3

Common Information

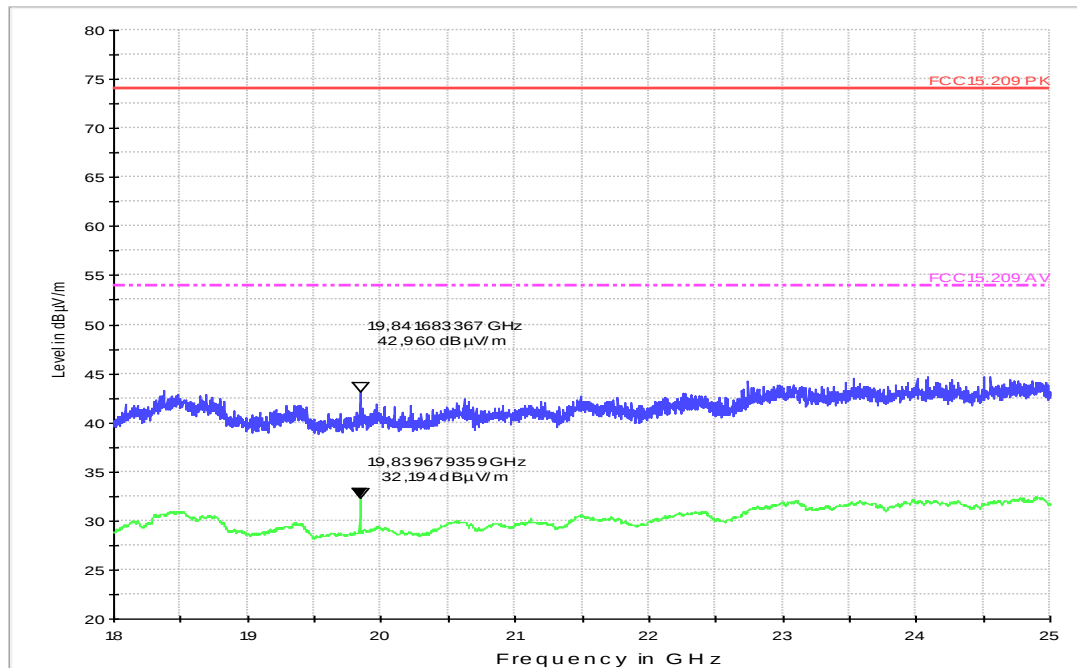
Test Description: Radiated field strength emission in 1m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.247, 15.205, 15.209 Intentional Radiator
 Antenna polarisation: horizontal/vertical

Operation mode: BT LE Vers. 4.0 & TX mode continuous
 Operator Name: Dpa
 Comment: Channel no. high

EUT Information

EUT Name: RFG81UW
 Manufacturer: RIM
 Serial Number: 004401139036988
 Hardware Rev: --
 Software Rev: --
 Comment: Sample 3, Rev 2, 17-Jul-12

EMI Sweep_18_25GHz_Preamp_On_Ref338_AntRef302_1m_dBuV



Sweep Setup: EMI

Sweep_18_25GHz_Preamp_On_Ref338_AntRef302_1m_dBuV [EMI radiated]

Hardware Setup: HW03_FSEM_15-26GHz_PreampRef336_dBuV_1m
 Receiver: [FSEM]
 Level Unit: dBµV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
18 GHz - 19 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
19 GHz - 20 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
20 GHz - 21 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
21 GHz - 22 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
22 GHz - 23 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
23 GHz - 24 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB
24 GHz - 25 GHz	2,004 MHz	PK+; RMS	1 MHz	1 s	dB

2. Radiated band-edge measurements accord. §15.209 & §15.205 (§15.247)

2.1. Channel 0 (left band edge)

Diagram No.: 8.09_Ch0_BE_1_PWR

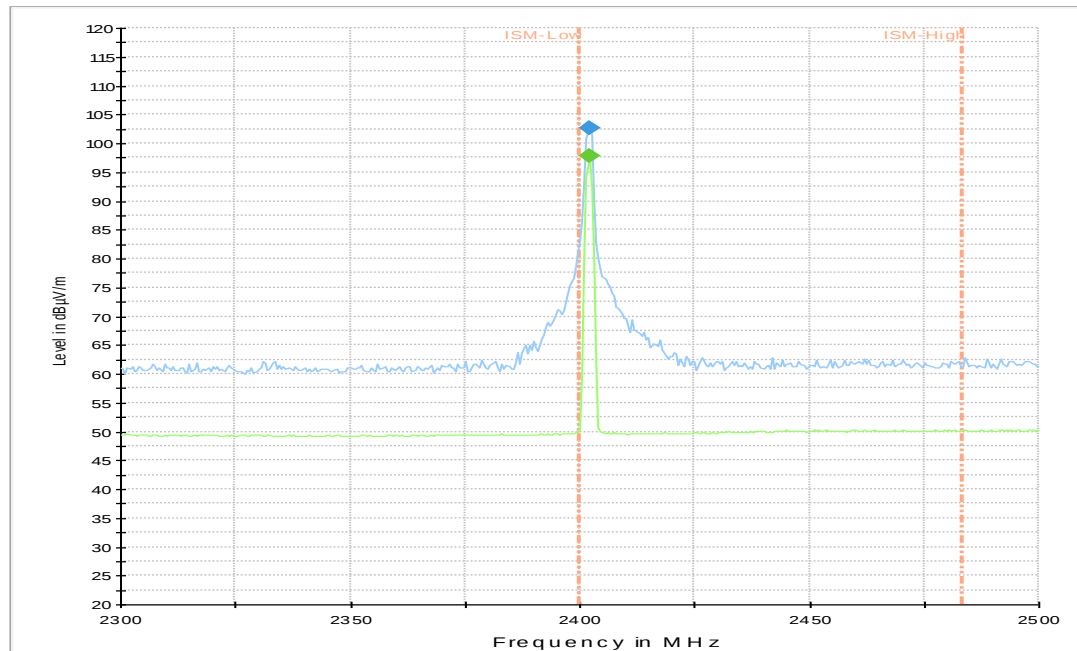
Common Information

Test Description:	Radiated field strength emission accord. §15.247 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel 0 / 2402 MHz
Op. Mode:	Bluetooth Vers. 4.0 (low-energy)

EUT Information

Manufacturer:	Research In Motion Limited
Type:	GSM/WCDMA/LTE Mobile Terminal
EUT:	RFG81UW
EUT additional information:	CER-48928-001 Rev2 17-Jul-12
HW version:	new
SW version:	tbd
Serial number:	004401139036988
Power Supply:	full internal battery
Comments:	--

Carrier_measurement_SM1_PA0_KP1_WLAN



Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Comment
2402.000000	102.6	100.0	1000.000	155.0	H	266.0	0.0	35.5	

Final Result 2

Frequency (MHz)	Average (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Comment
2402.000000	97.7	100.0	1000.000	155.0	H	266.0	0.0	35.5	

EMI Auto Test Template: Carrier_measurement_SM1_PA0_KP1_WLAN

Hardware Setup:	549_dBuVm_PA0_TH3_KP1_ESU
Measurement Type:	E(I)RP
Frequency Range:	2,3 GHz - 2,5 GHz
Graphics Level Range:	20 dBµV/m - 120 dBµV/m
Preview Measurements:	
Scan Test Template:	Sweep1_pre_pwr
Data Reduction:	
Limit Line #1:	ISM-Low
Limit Line #2:	ISM-High
Peak Search:	6 dB , Maximum Results: 1
Subrange Maxima:	0 Subranges , Maxima per Subrange: 1
Maximum Number of Results:	1
Frequency Zoom:	
Zoom Scan Template:	Sweep1_zoom_pwr
Adjustment:	
Template for Single Meas.:	Sweep1_pre_pwr
Final Measurements:	
Template for Single Meas.:	Sweep1_fin_pwr
Template for Single Meas.:(>1GHz)	Sweep1_fin_pwr
Report Settings:	
Report Template:	Report Setup FCC 15_247
Create Electronic Report:	RTF PDF
Document Name:	E-Field Strength Carrier accord. §15.205&15.209
Actions:	
Test start	
Notify:	"Matrix richtig geschaltet ?!?"

Diagram No.: 8.09_Ch0_BE_2

Common Information

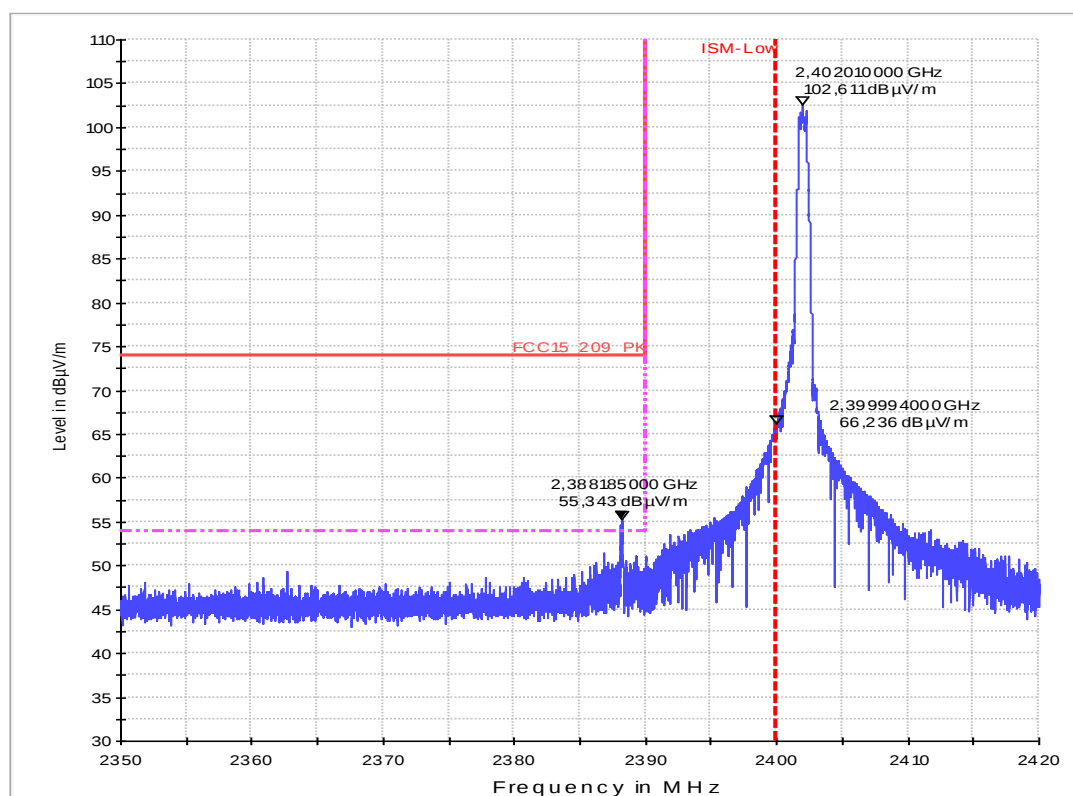
Test Description:	Radiated field strength emission accord. §15.247 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel 0 / 2402 MHz
Op. Mode:	Bluetooth Vers. 4.0 (low-energy)

EUT Information

Manufacturer:	Research In Motion Limited
Type:	GSM/WCDMA/LTE Mobile Terminal

EUT:	RFG81UW
EUT additional information:	CER-48928-001 Rev2 17-Jul-12
HW version:	new
SW version:	tbd
Serial number:	004401139036988
Power Supply:	full internal battery
Comments:	--

08_ESU_2.4GHz_Low_Band_Edge_PA0



Sweep Setup: 08_ESU_2.4GHz_Low_Band_Edge_PA0 [EMI radiated]

Hardware Setup:	549_dBuVm_PA0_TH3_KP1_ESU
Receiver:	[ESU 40]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
2.35 GHz - 2,42 GHz	7 kHz	PK+	100 kHz	Coupled	20 dB

2.2. Channel 39 (right band edge)

Diagram No.: 8.09_Ch39_BE_PWR_1

Common Information

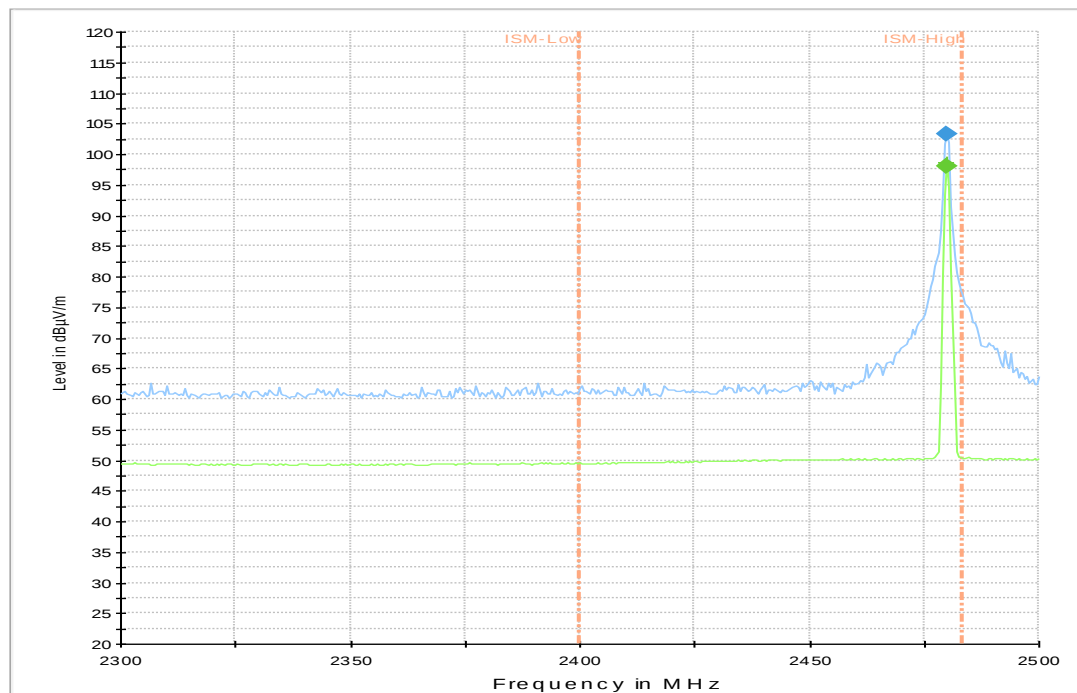
Test Description:	Radiated field strength emission accord. §15.247 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel 39 / 2480 MHz
Op. Mode:	Bluetooth Vers. 4.0 (low-energy)

EUT Information

Manufacturer:	Research In Motion Limited
Type:	GSM/WCDMA/LTE Mobile Terminal

EUT:	RFG81UW
EUT additional information:	CER-48928-001 Rev2 17-Jul-12
HW version:	new
SW version:	tbd
Serial number:	004401139036988
Power Supply:	full internal battery
Comments:	--

Carrier_measurement_SM1_PA0_KP1_WLAN



Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Comment
2480.000000	103.3	100.0	1000.000	155.0	H	270.0	0.0	35.7	

Final Result 2

Frequency (MHz)	Average (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Comment
2480.000000	98.0	100.0	1000.000	155.0	H	267.0	0.0	35.7	

EMI Auto Test Template: Carrier_measurement_SM1_PA0_KP1_WLAN

Hardware Setup:	549_dBuVm_PA0_TH3_KP1_ESU
Measurement Type:	E(I)RP
Frequency Range:	2,3 GHz - 2,5 GHz
Graphics Level Range:	20 dBµV/m - 120 dBµV/m
Preview Measurements:	
Scan Test Template:	Sweep1_pre_pwr
Data Reduction:	
Limit Line #1:	ISM-Low
Limit Line #2:	ISM-High
Peak Search:	6 dB , Maximum Results: 1
Subrange Maxima:	0 Subranges , Maxima per Subrange: 1
Maximum Number of Results:	1
Frequency Zoom:	
Zoom Scan Template:	Sweep1_zoom_pwr
Adjustment:	
Template for Single Meas.:	Sweep1_pre_pwr
Final Measurements:	
Template for Single Meas.:	Sweep1_fin_pwr
Template for Single Meas.:(>1GHz)	Sweep1_fin_pwr
Report Settings:	
Report Template:	Report Setup FCC 15_247
Create Electronic Report:	RTF PDF
Document Name:	E-Field Strength Carrier accord. §15.205&15.209
Actions:	
Test start	
Notify:	"Matrix richtig geschaltet ?!?"

Diagram No.: 8.09_Ch39_BE_2

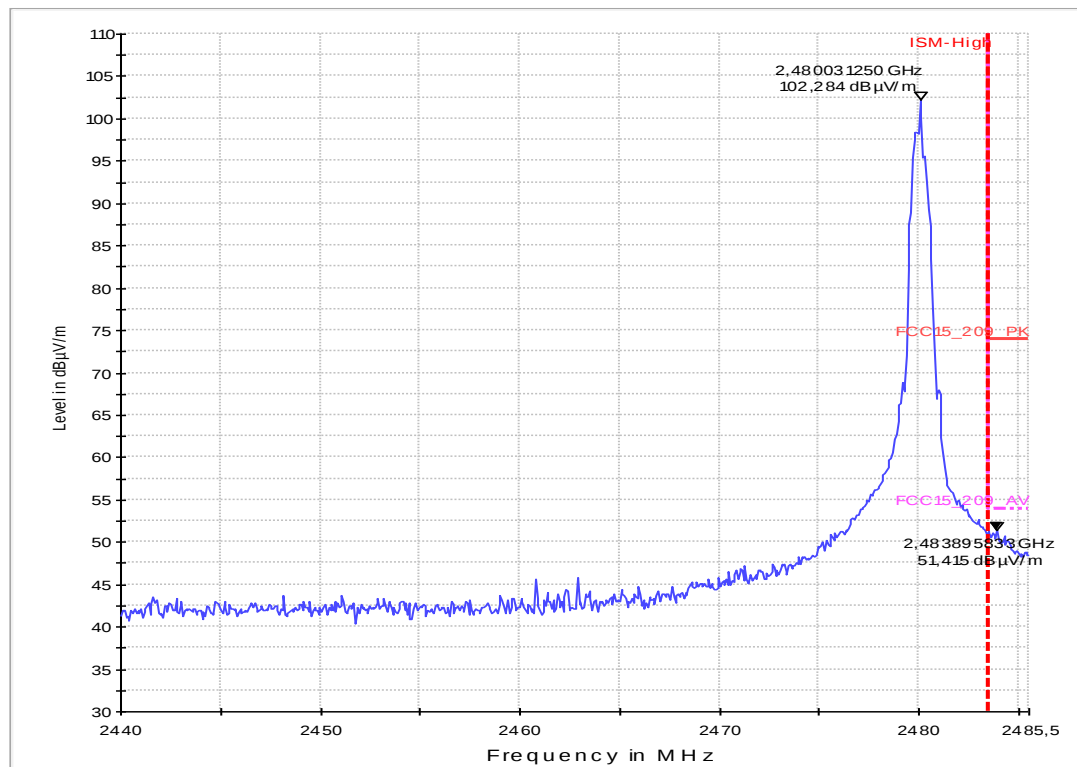
Common Information

Test Description:	Radiated field strength emission accord. §15.247 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel 39 / 2480 MHz
Op. Mode:	Bluetooth Vers. 4.0 (low-energy)

EUT Information

Manufacturer:	Research In Motion Limited
Type:	GSM/WCDMA/LTE Mobile Terminal
EUT:	RFG81UW
EUT additional information:	CER-48928-001 Rev2 17-Jul-12
HW version:	new
SW version:	tbd
Serial number:	004401139036988
Power Supply:	full internal battery
Comments:	--

09_ESU_2.4GHz_High_Band_Edge_PA0



Sweep Setup: 09_ESU_2.4GHz_High_Band_Edge_PA0 [EMI radiated]

Hardware Setup:	549_dBuVm_PA0_TH3_KP1_ESU
Receiver:	[ESU 40]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamplifier
2.44 GHz - 2,486 GHz	72,917 kHz	PK+	30 kHz	Coupled	20 dB

3. Radiated EMI measurements accord. §15.109 class B

3.1. Frequency range 30MHz to 1000MHz

8.10_Ch20_Sweep1

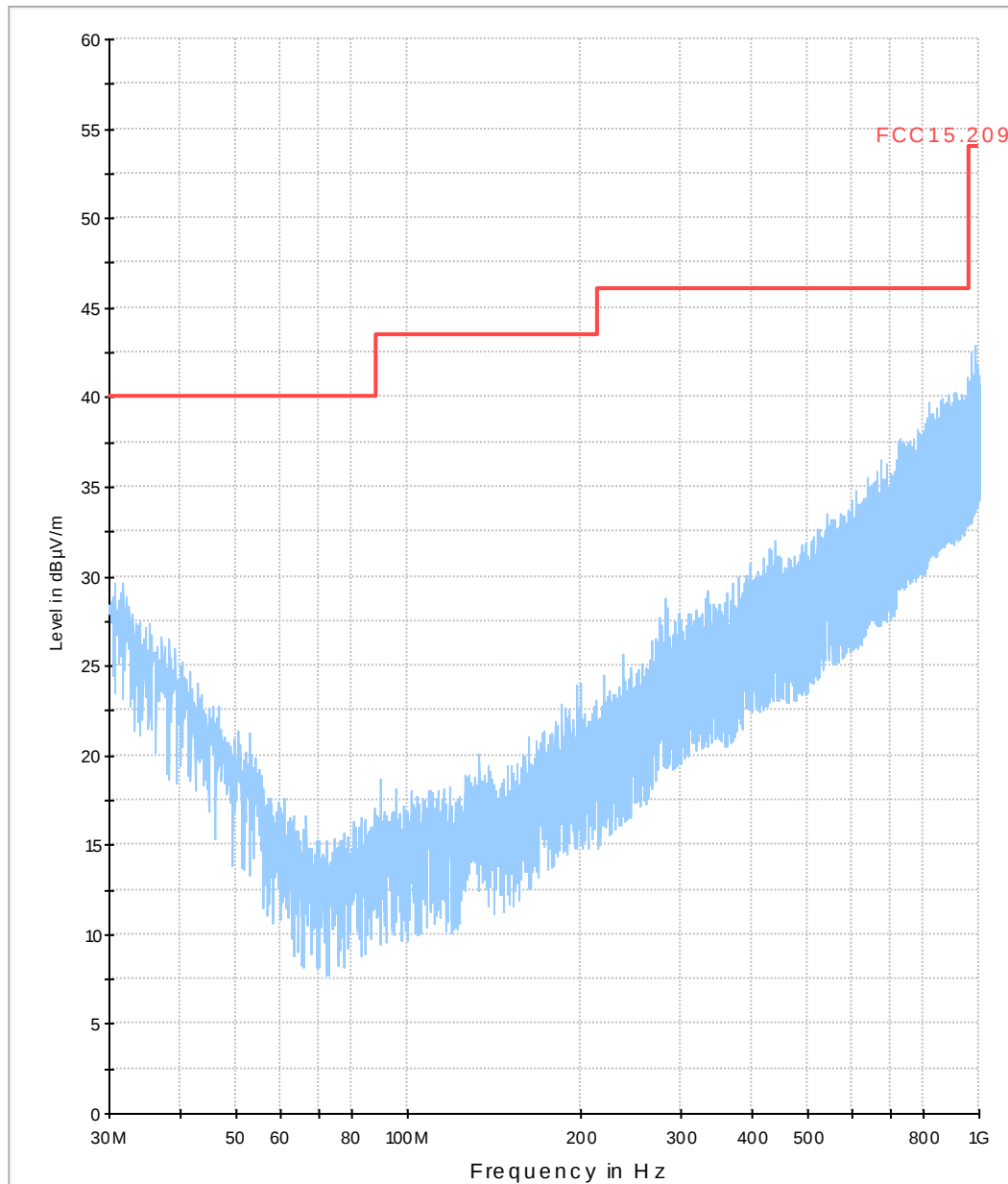
Test description:
Test site and distance:
Distance correction:
Used filter:
Technical Data:
Test specification.:

14.08.2012 Page 1 of 2
Electric Field Strength Measurement
Semi Anechoic Room (SAR) with 3 m measurement distance
not used
not used
please see page 2 for detailed data of measurement setup
FCC 15.109 class B; RSS-Gen: Issue 3

Operator:
Operating conditions:
Power during tests:
Comment 1:

OOu
IDLE BT Vers.4.0
real battery
Channel 20

01_FCC15.209_hor+vert_kipp



EMI Auto Test Template: 01_FCC15.209_hor+vert_kipp

Hardware Setup: HW11_FCC_ESCS30_TP1200_EUTkipp
 Measurement Type: E(I)RP
 Frequency Range: 30 MHz - 1 GHz
 Graphics Level Range: 0 dBμV/m - 60 dBμV/m

Preview Measurements:
 Turntable position: 0 - 270 deg , Step Size = 90 deg , Positioning Speed = 8
 Elevation: 0 - 90 deg , Step Size = 90 deg , Positioning Speed = 5
 Polarization: H + V
 Scan Test Template: EMI Scan 01_fast_FCC_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	40 kHz	PK+	120 kHz	0,00005 s	0 dB

Receiver: [ESS]

Data Reduction:
 Limit Line #1: FCC15.209
 Peak Search: 6 dB , Maximum Results: 10
 Subrange Maxima: 25 Subranges , Maxima per Subrange: 1
 Acceptance Offset: -6 dB
 Maximum Number of Results: 20
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: EMI Scan 02_20ms_zoom_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	10 kHz	PK+	120 kHz	0,02 s	0 dB

Receiver: [ESS]

Adjustment:
 Turntable position: Adjustment with full Range , Measuring Speed = 3
 Elevation: Adjustment with full Range , Measuring Speed = 5
 Template for Single Meas.: EMI Scan 02_20ms_FCC_15_209B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	100 kHz	PK+	120 kHz	0,02 s	0 dB

Receiver: [ESS]

Final Measurements:
 Template for Single Meas.: EMI Scan 03_1s_FCC_15_209 B

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	100 kHz	QPK	120 kHz	1 s	0 dB

Receiver: [ESS]

Report Settings:
 Report Template: FCC15_209_vert_hor-30MHz-1GHz
 Create Electronic Report: RTF PDF
 Document Name: EMI Report

Actions:
 Test start
 Notify: "EUT auf ersten/zweiten/dritten Sendekanal stellen !!!"
 Notify: "bitte beachten: es gibt Frequenzbereiche von strenger Grenzwert gil..."
 Data Reduction: Before
 Notify: Sound (WAV file) 'tada.wav'
 Frequency Zoom 2: Before
 Notify: "EUT sendet noch ?"
 Final Measurements: After
 Notify: Sound (WAV file) 'tada.wav'

3.2. Frequency range 1000MHz to 12750MHz

2-0037-12-1J, CETECOM GmbH

Page 1 of 1

2-0037-12-1J_8.10_Ch20_Sweep2

Common Information

Test Description: Radiated Field Strength Emission
 Test Site Location: CETECOM GmbH Essen
 Test Site: Fully Anechoic Room (FAR)
 Test Standard: FCC Part 15.109
 Section: 15.109
 Operating Mode: RX Mode Bluetooth Vers. 4.0
 Equipment Class: Class B
 Environmental Conditions: Humidity: 49%RH; Temperature: 23°C
 Operator: Lor

EUT Information

Manufacturer: Research In Motion Limited
 Type: GSM/WCDMA/LTE Mobile Terminal
 EUT: RFG81UW
 EUT additional information: CER-48928-001 Rev2 17-Jul-12
 HW version: new
 SW version: tbd
 Serial number: 004401139036988
 Power Supply: full internal battery
 Comments: Sample3

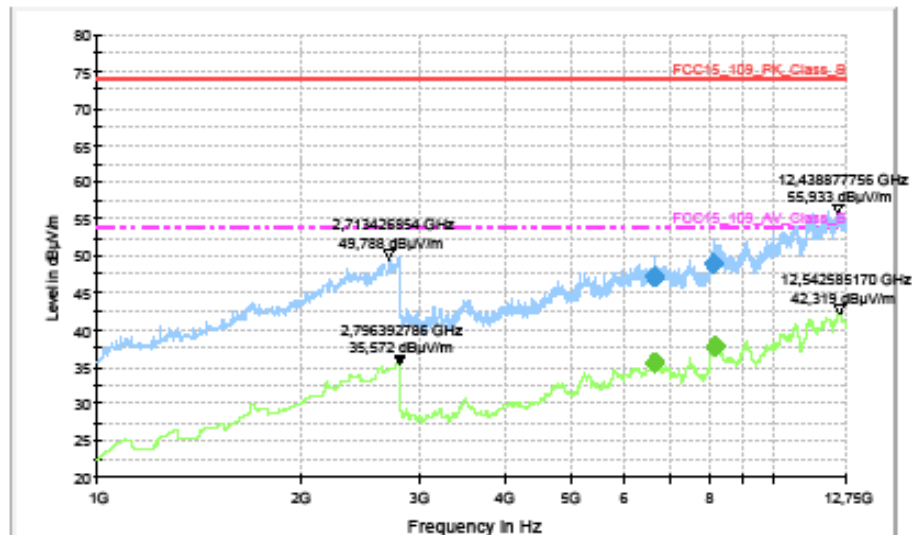
Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
6652.575150	47.2	100.0	1000.000	V	131.0	90.0	9.6	26.8	74.0
8171.052104	48.9	100.0	1000.000	V	295.0	90.0	13.6	25.1	74.0

Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
6661.252505	35.5	100.0	1000.000	H	20.0	90.0	9.7	18.5	54.0
8191.372746	37.7	100.0	1000.000	V	236.0	90.0	13.7	16.3	54.0

030445_FCC_Part15.109_Unint_Rad_Class_B_1G-20G_FSEK



10.08.2012

09:26:02