

Annex 1: Measurement diagrams
to TEST REPORT
No.: 6-0036/11-1-2c

According to:
FCC Regulations
Part 15.109
Part 15.209 & Part 15.247
IC Regulations
RSS-Gen Issue 3
RSS-210: Issue 8

for

SMA Solar Technology AG

ZigBee RF MODEM (2.4 GHz) MULTI RF MODULE
FCC-ID: SVFMRFB
IC: 9440A-MRFB

Laboratory Accreditation and Listings			
 D-PL-12047-01-01	 Reg. No.: 736496 MRA US-EU 0003	 Reg. No.: 3462D-1 3462D-2	 Reg. No.: R-2665, R-2666 C-2914, T-1967 G-301
 LAB CODE 20011130-00		 AUTHORIZED RF LABORATORY	
accredited according to DIN EN ISO/IEC 17025			
CETECOM GmbH Laboratory Radio Communications & Electromagnetic Compatibility Im Teelbruch 116 • 45219 Essen • Germany Registered in Essen, Germany, Reg. No.: HRB Essen 8984 Tel.: + 49 (0) 20 54 / 95 19-954 • Fax: + 49 (0) 20 54 / 95 19-964 E-mail: info@cetecom.com • Internet: www.cetecom.com			

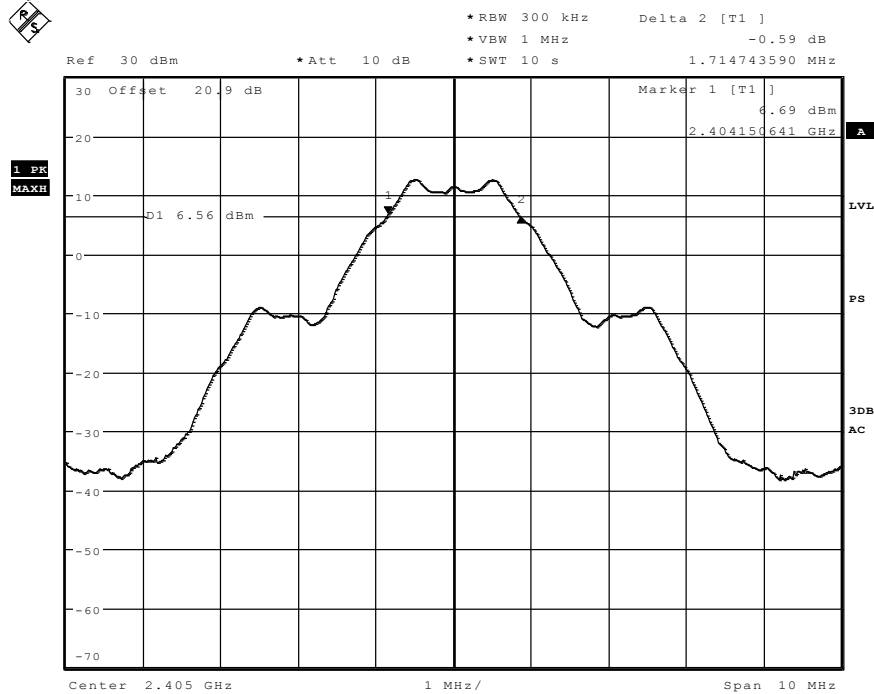
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1. Measurement diagrams

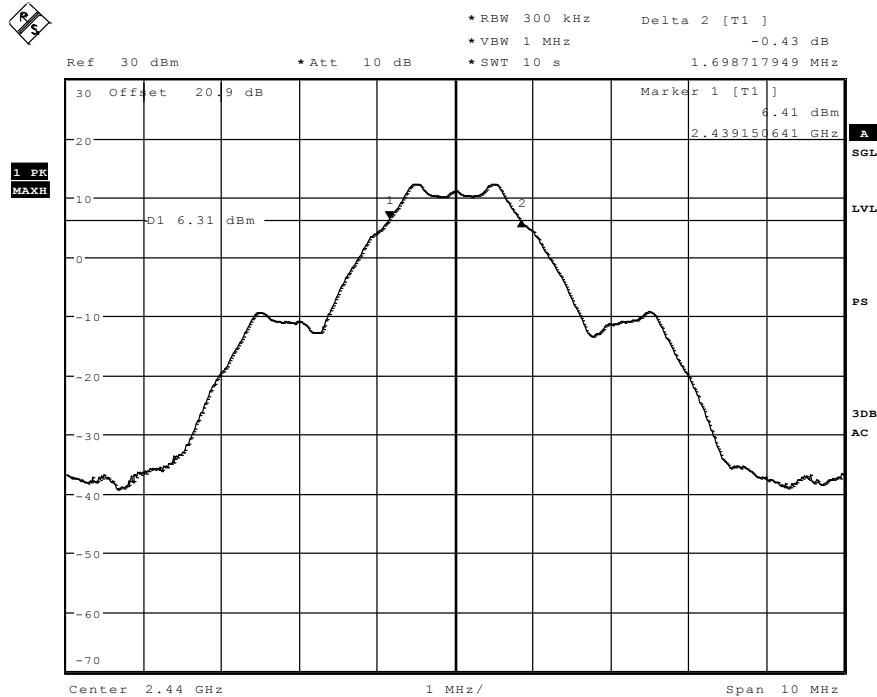
1.1. 6dB bandwidth

Low channel:



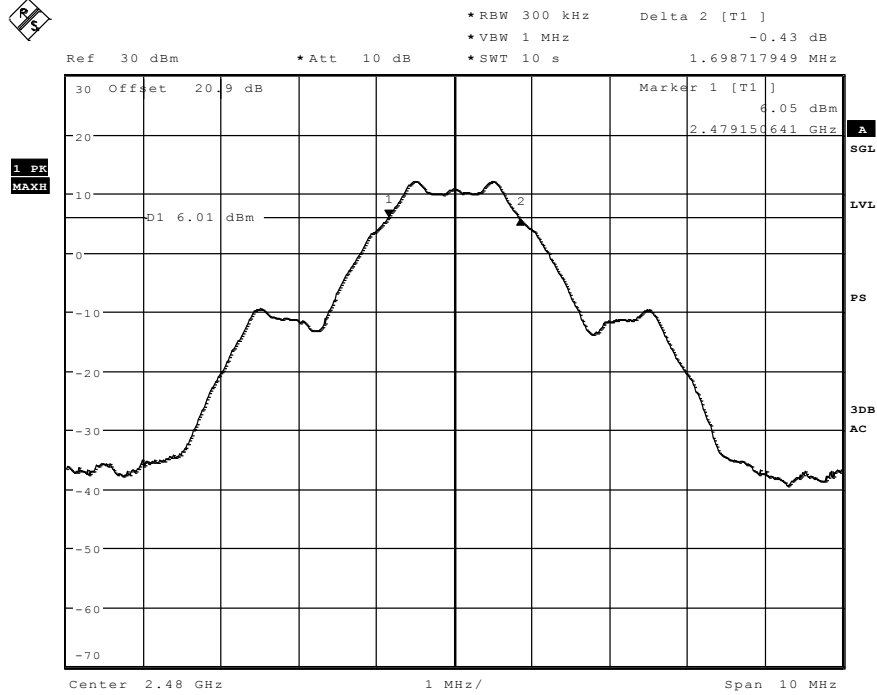
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Middle channel:



Date: 30.JUN.2011 17:30:59

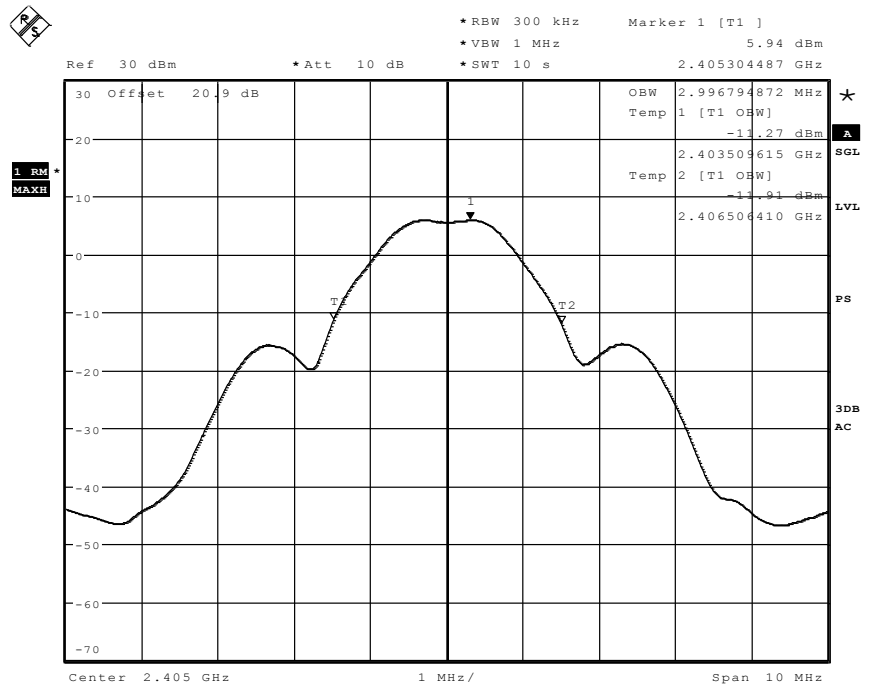
High channel:



Date: 30.JUN.2011 17:33:34

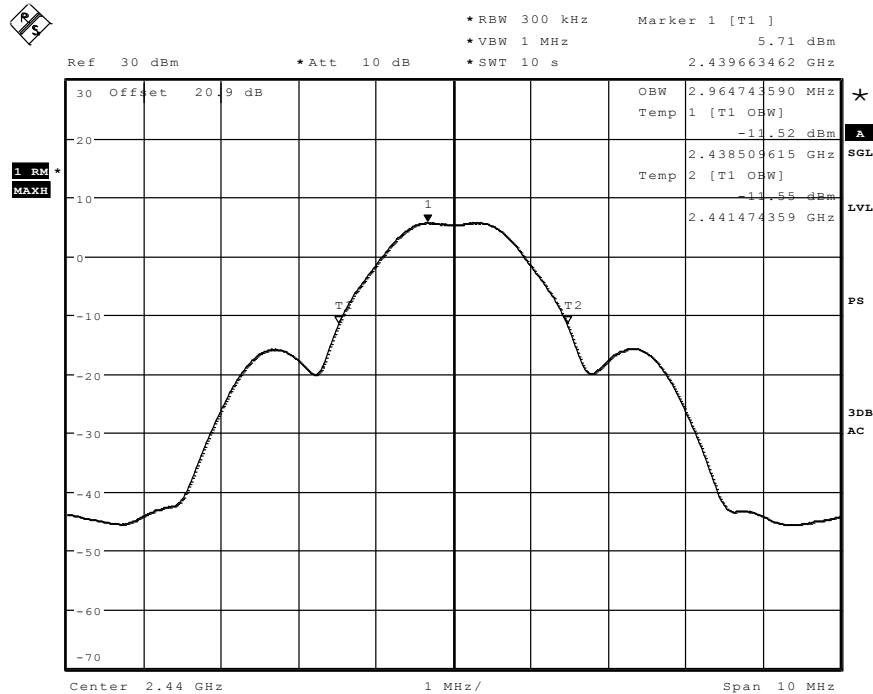
1.2. 99% Occupied bandwidth

Low channel:



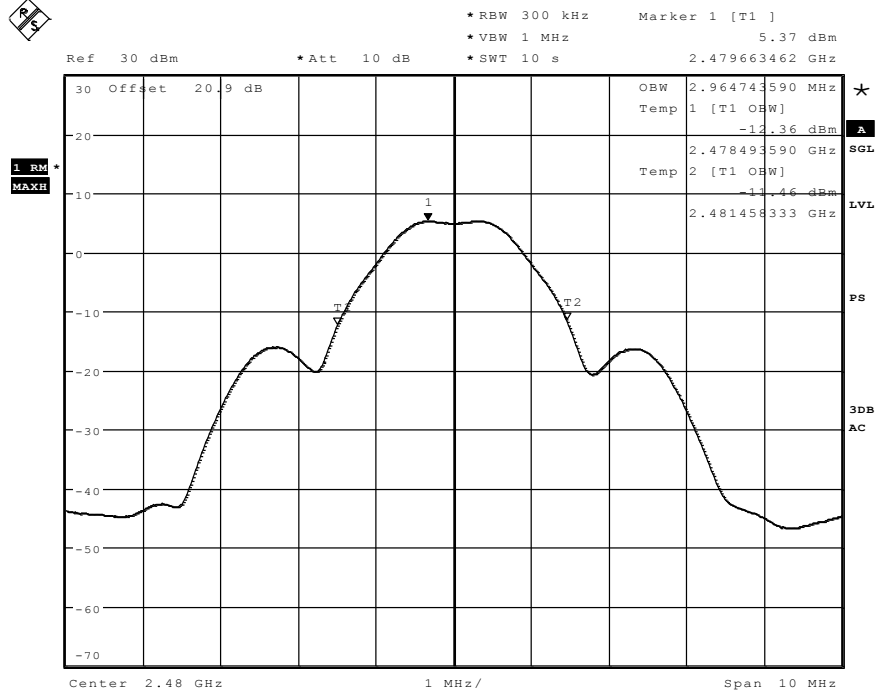
Date: 30.JUN.2011 18:12:07

Middle channel:



Date: 30.JUN.2011 18:06:10

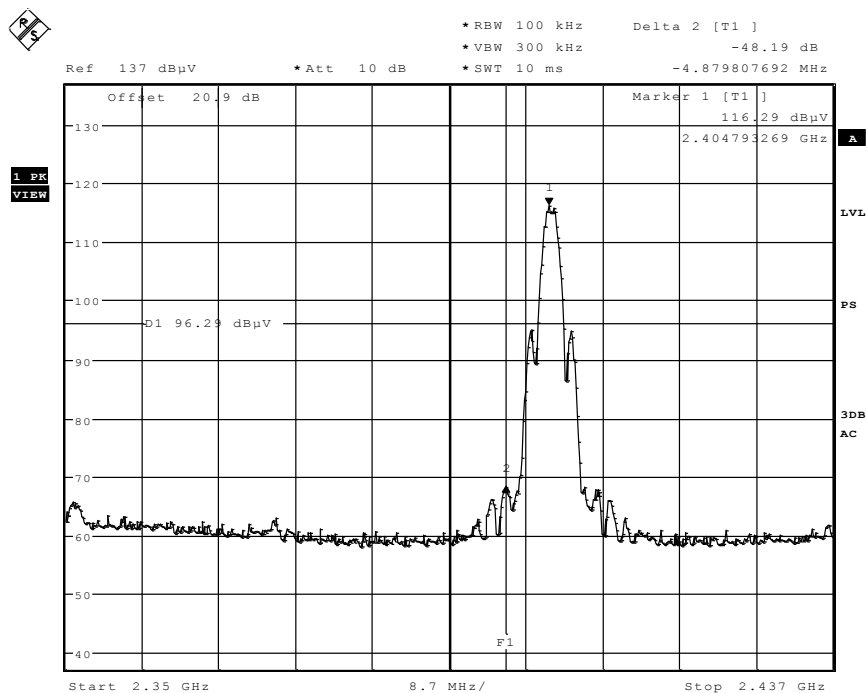
High channel:



Date: 30.JUN.2011 17:40:16

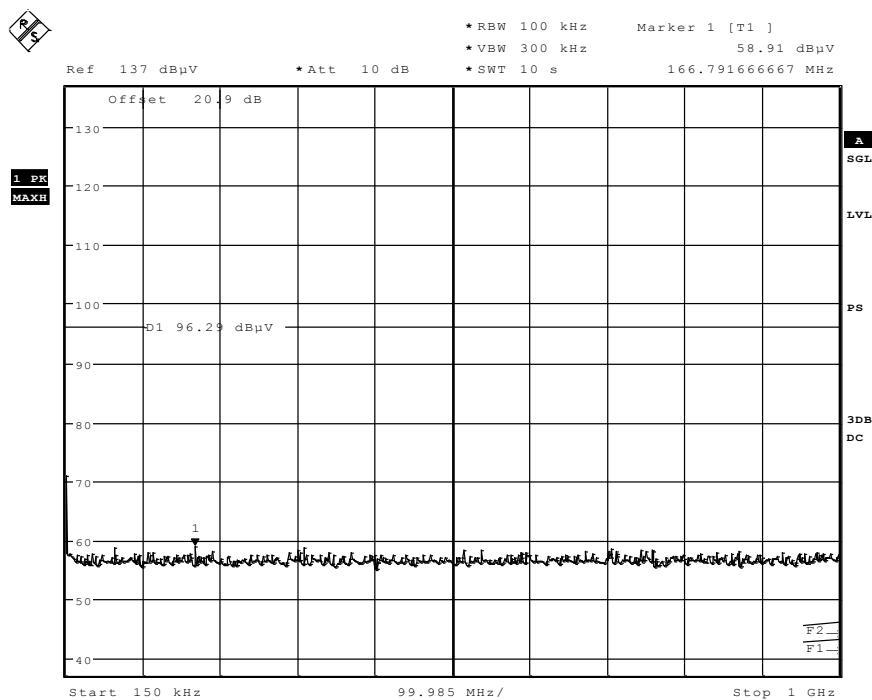
1.3. 20dBc conducted emissions

Low channel:



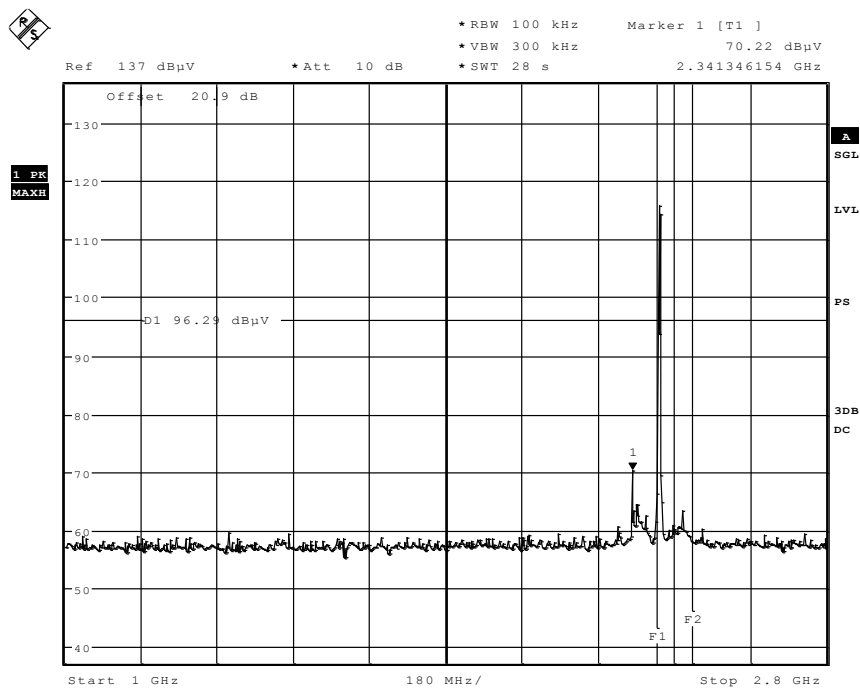
Date: 30.JUN.2011 19:48:01

Reference value for low channel



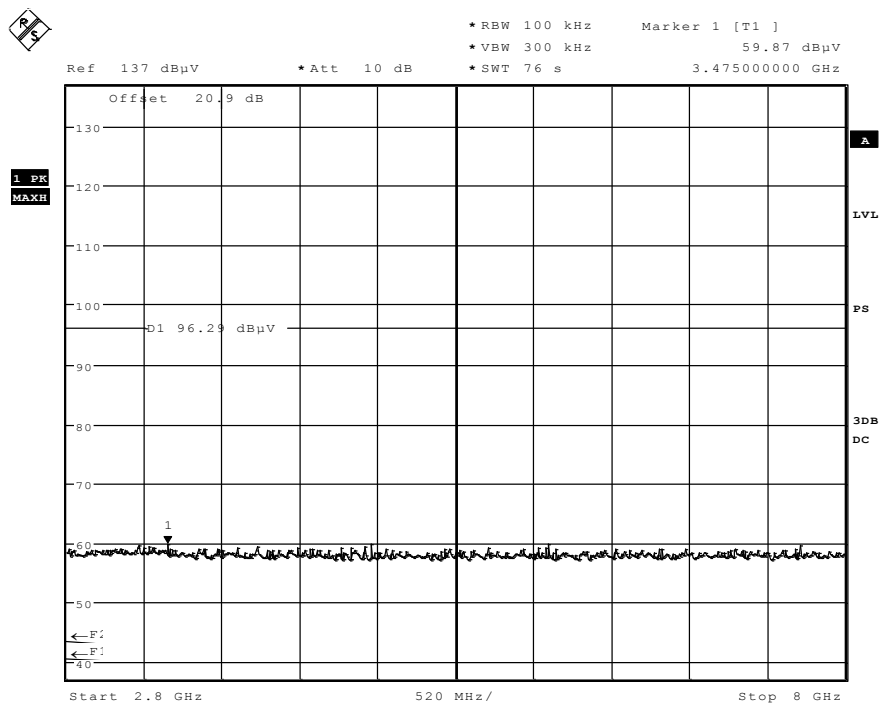
Date: 30.JUN.2011 20:19:09

Sweep 1



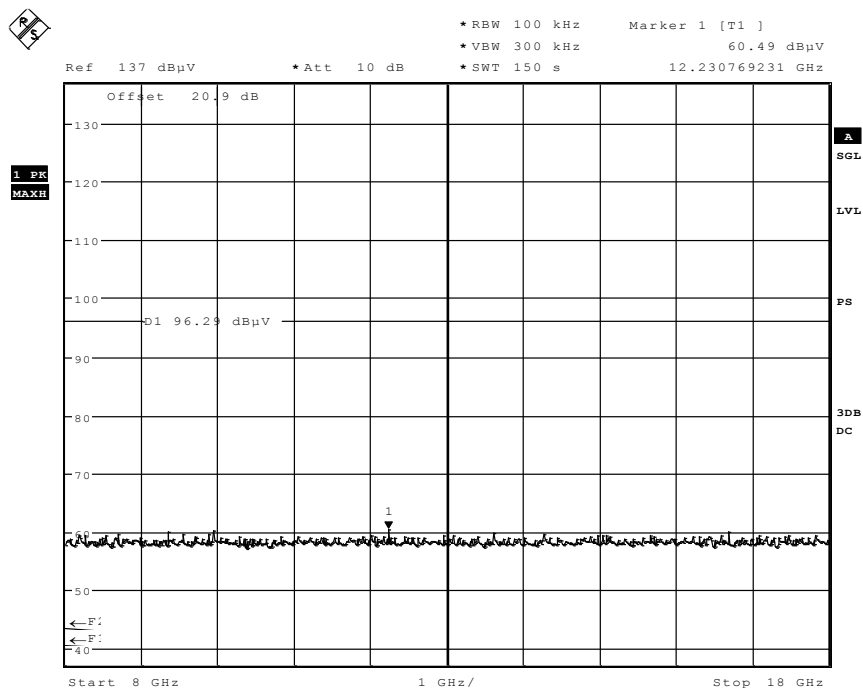
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Sweep 2

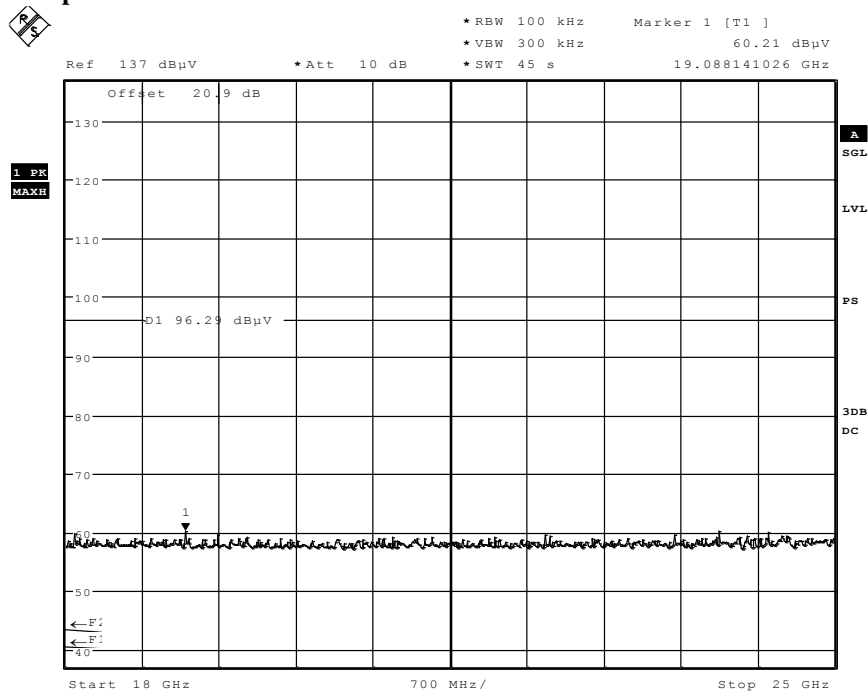


Date: 30.JUN.2011 20:02:42

Sweep 3

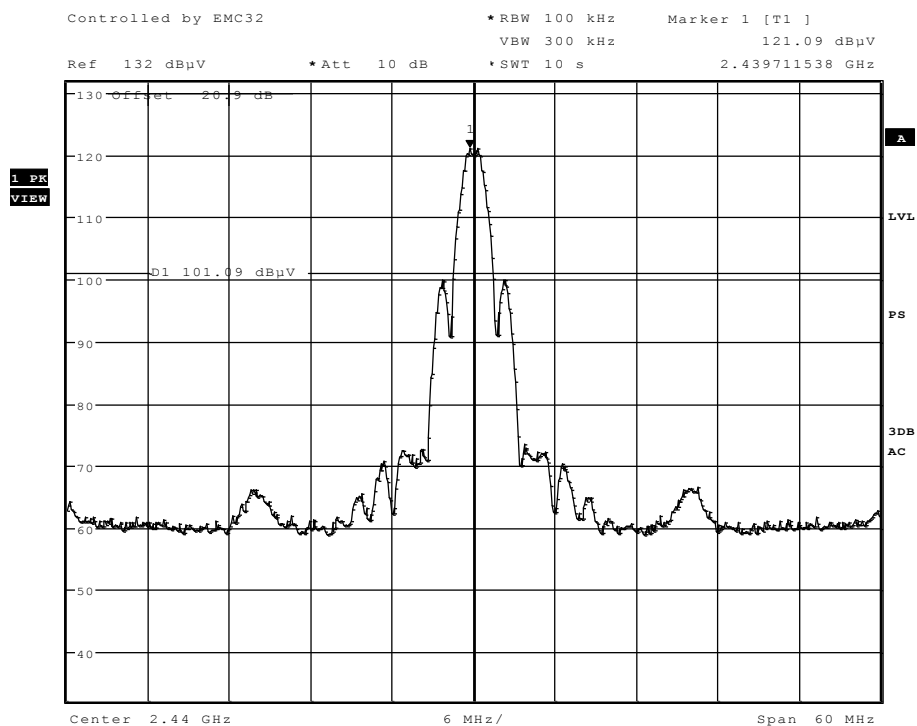


Date: 30.JUN.2011 20:13:48

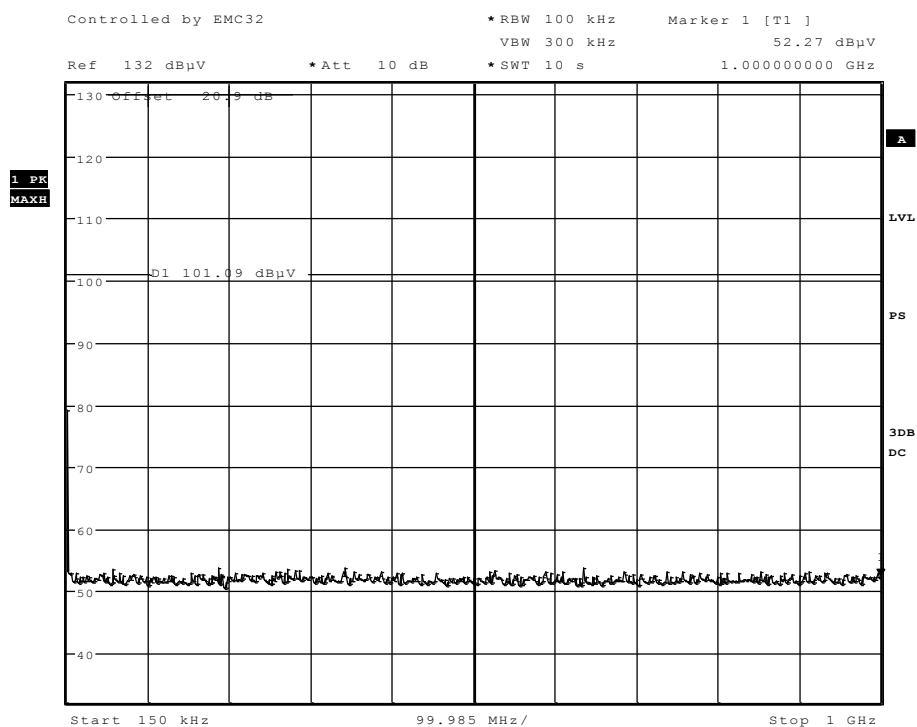
Sweep 4

Date: 30.JUN.2011 20:17:27

Sweep 5

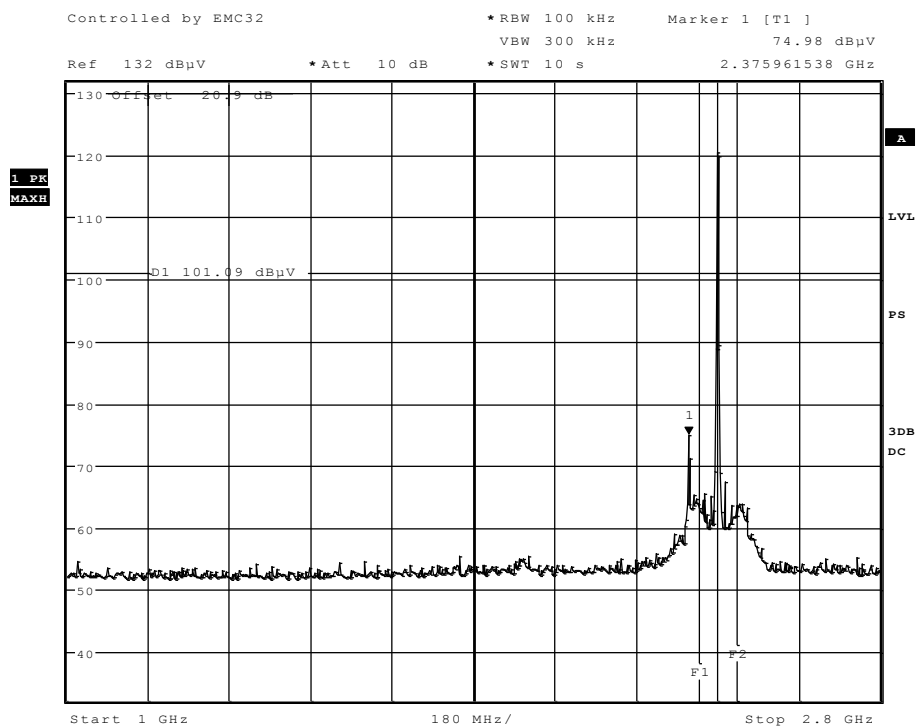


Date: 4.AUG.2011 08:34:30

Reference value for middle channel

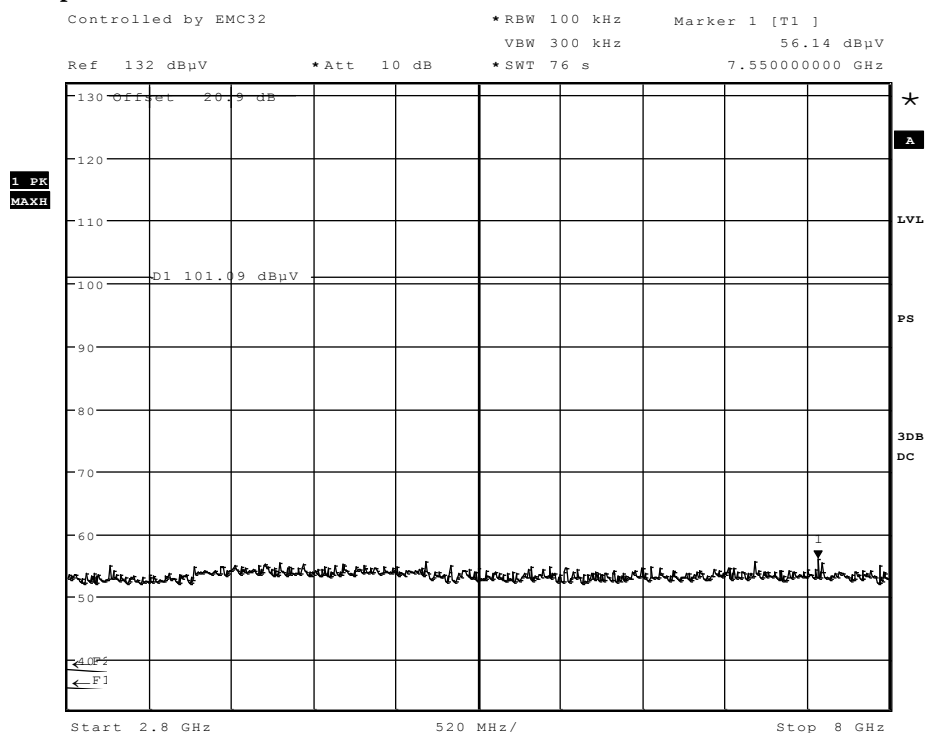
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Sweep 1



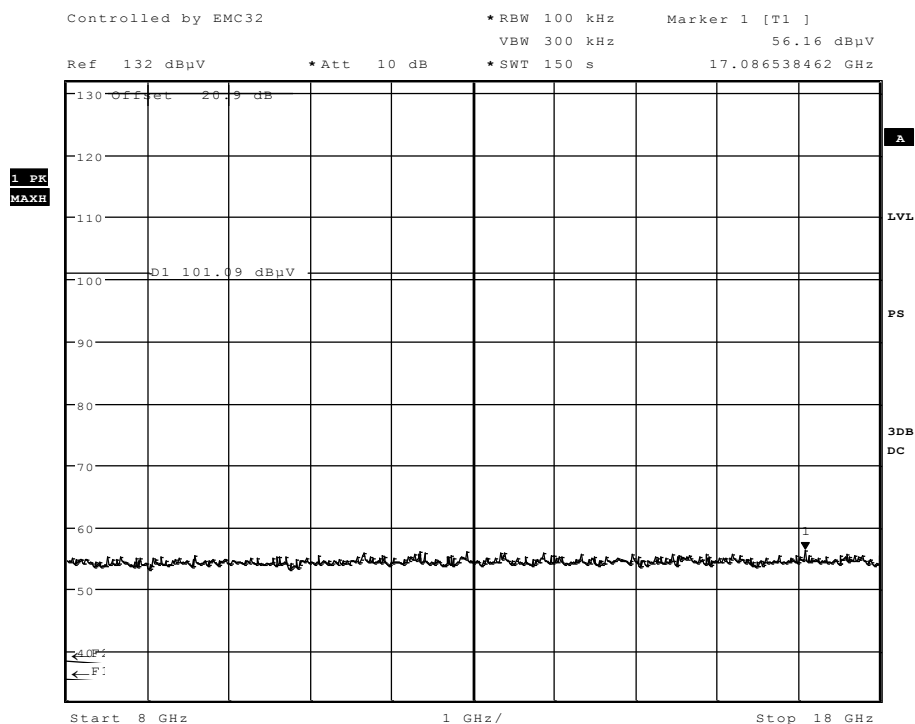
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Sweep 2

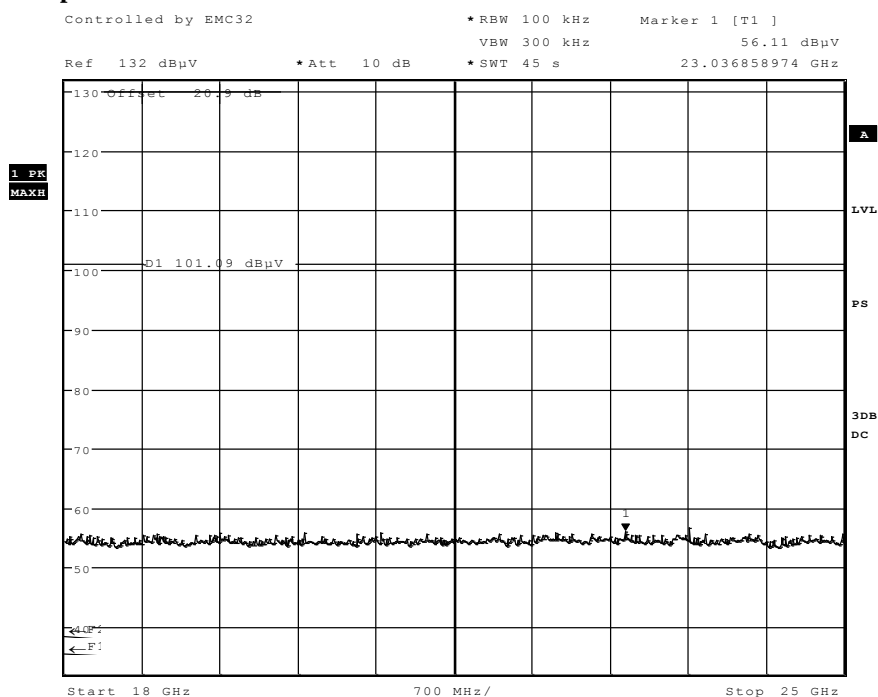


Date: 4.AUG.2011 08:41:54

Sweep 3

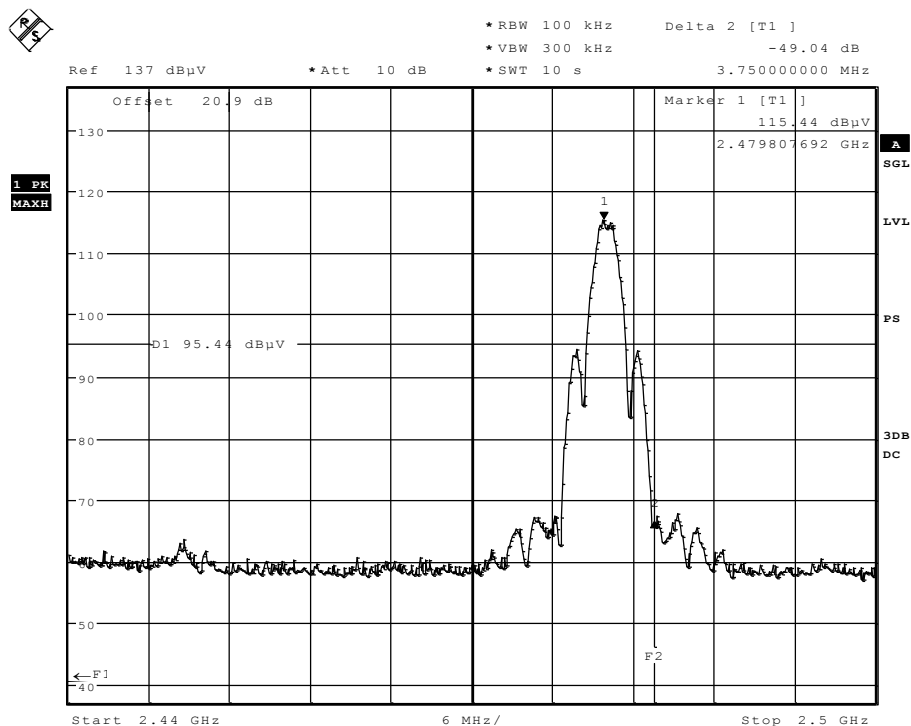


Date: 4.AUG.2011 08:45:49

Sweep 4

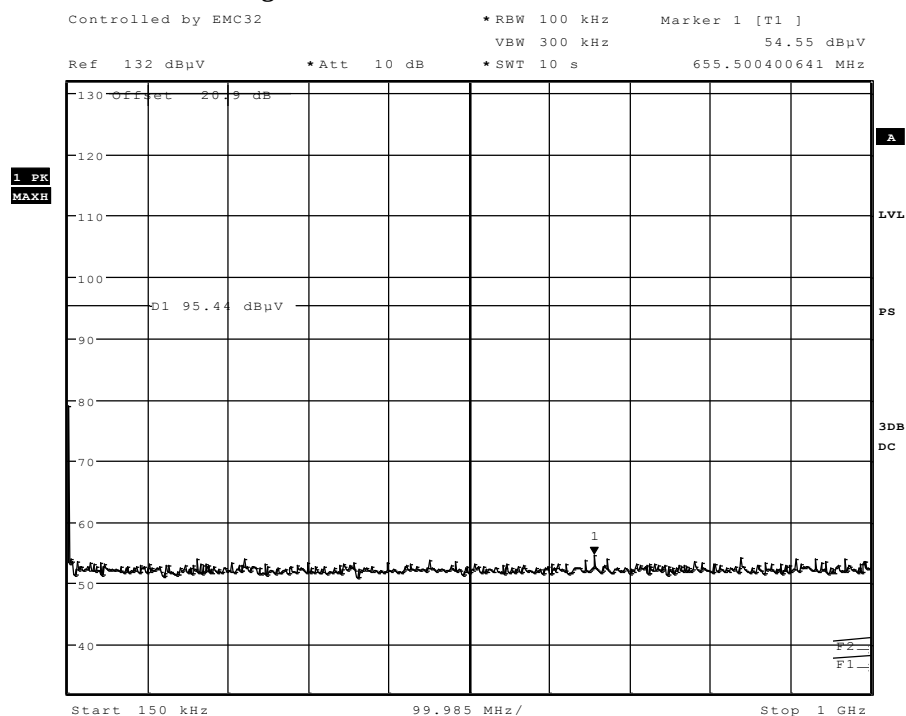
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High Channel:



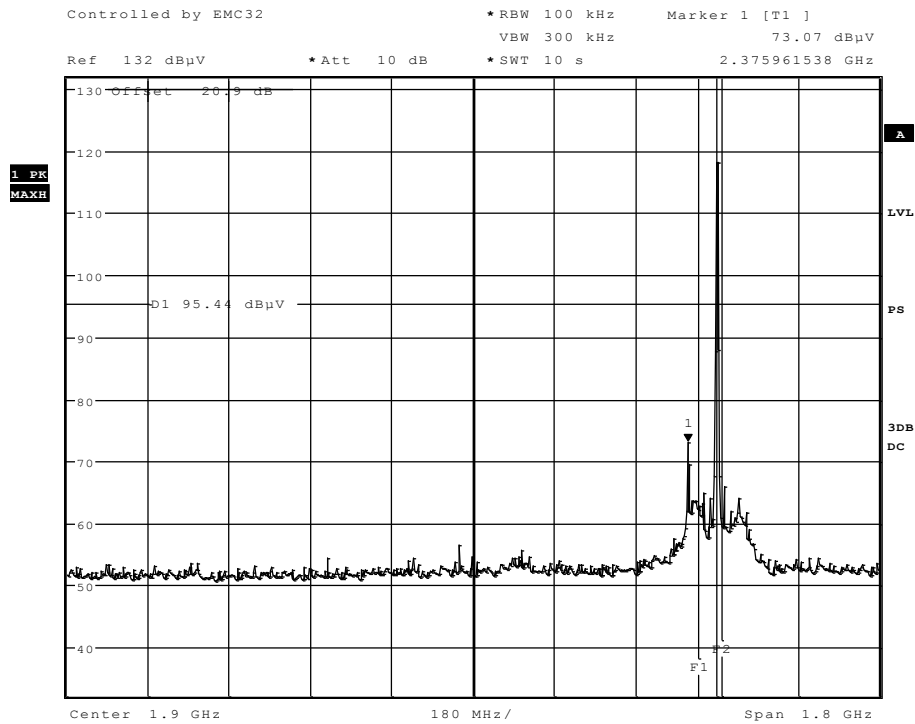
Date: 30.JUN.2011 20:23:49

Reference value for High channel

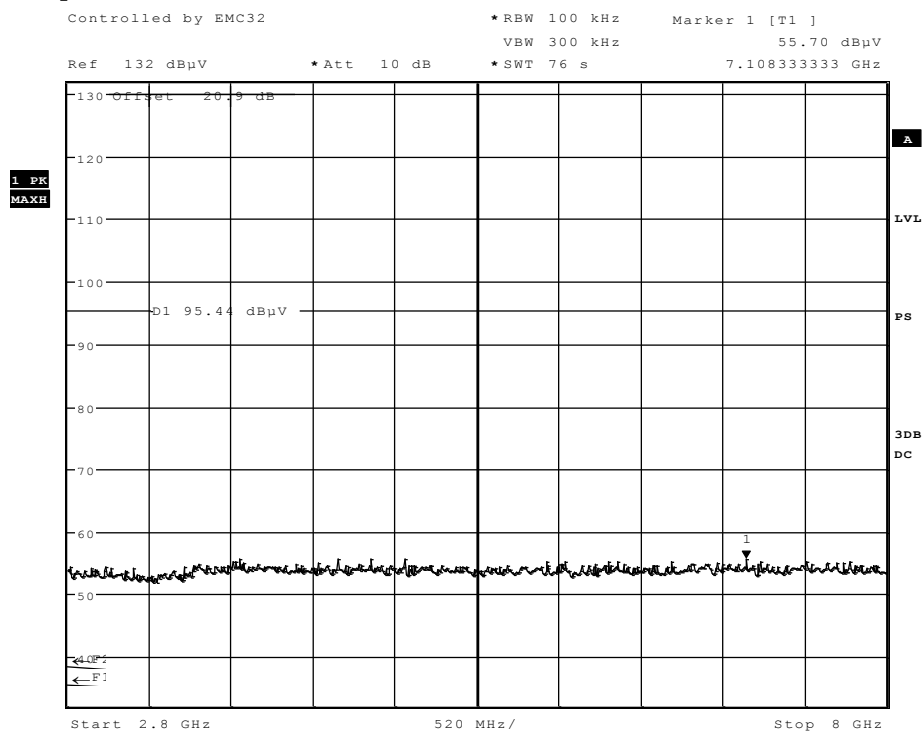


Date: 4.AUG.2011 09:27:08

Sweep 1

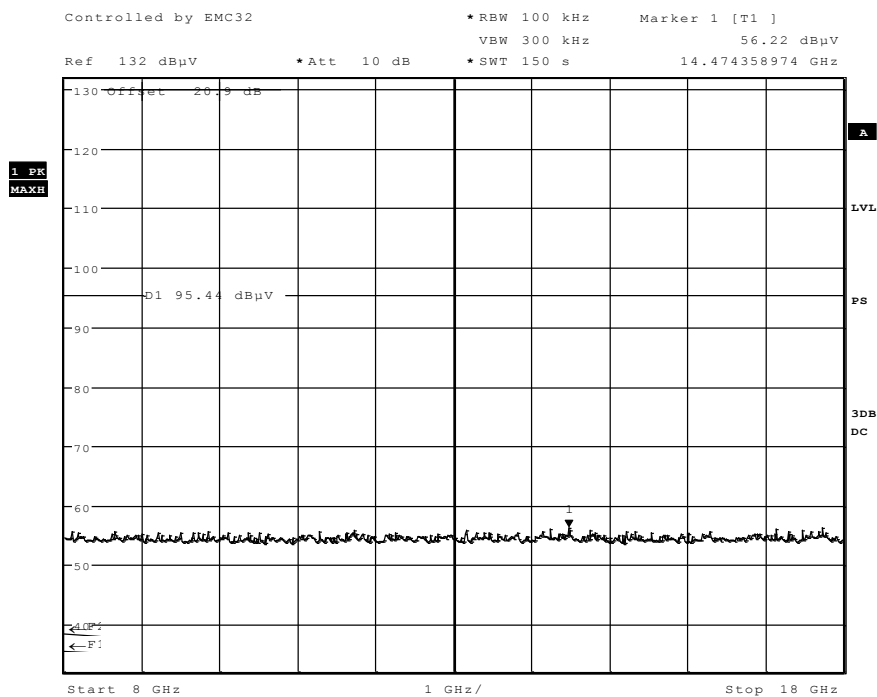


Date: 4.AUG.2011 09:25:15

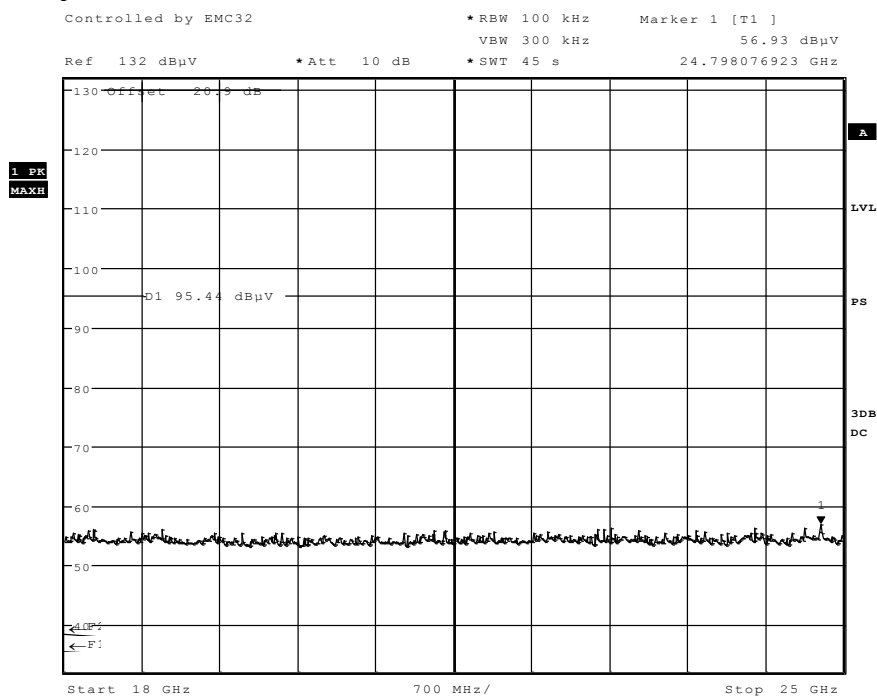
Sweep 2

Date: 4.AUG.2011 09:29:27

Sweep 3



Date: 4.AUG.2011 09:32:58

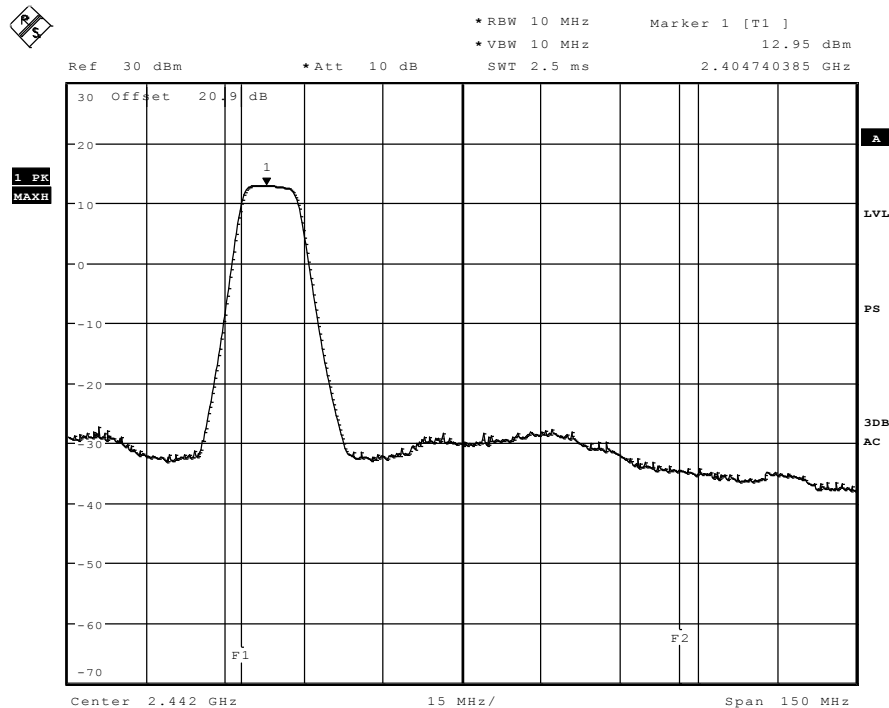
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Sweep 5

1.4. Maximum peak conducted power

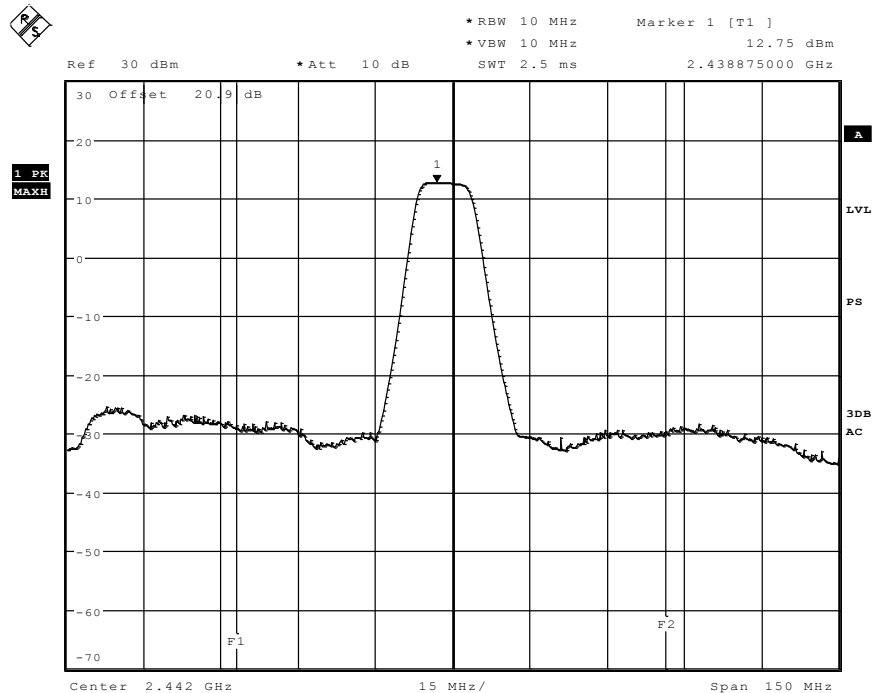
Low channel:



Date: 30.JUN.2011 20:56:57

Channel 11-> absolute maximum value of three channels

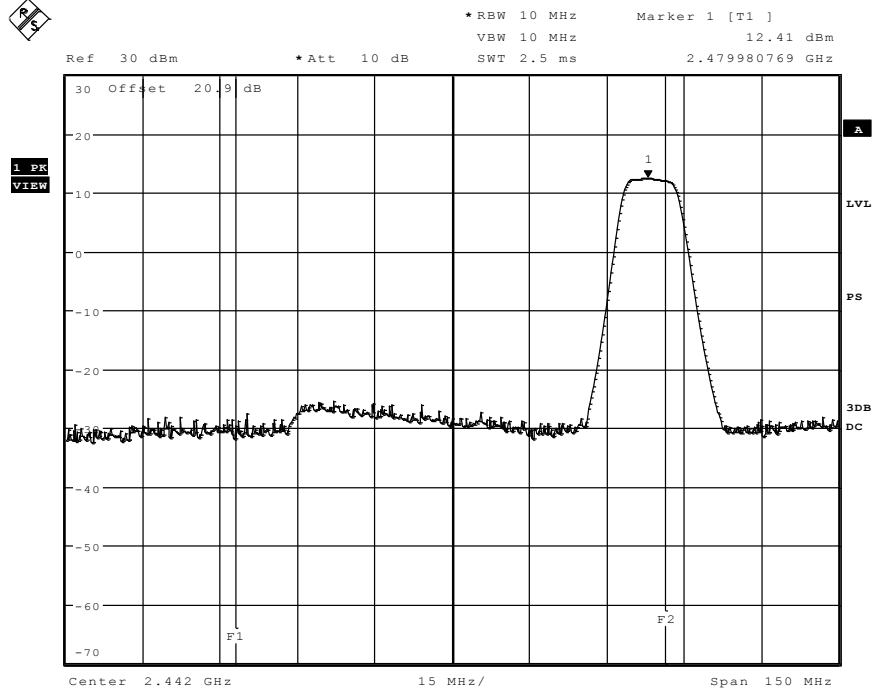
Middle channel:



Date: 30.JUN.2011 20:53:23

Channel 18

High channel:

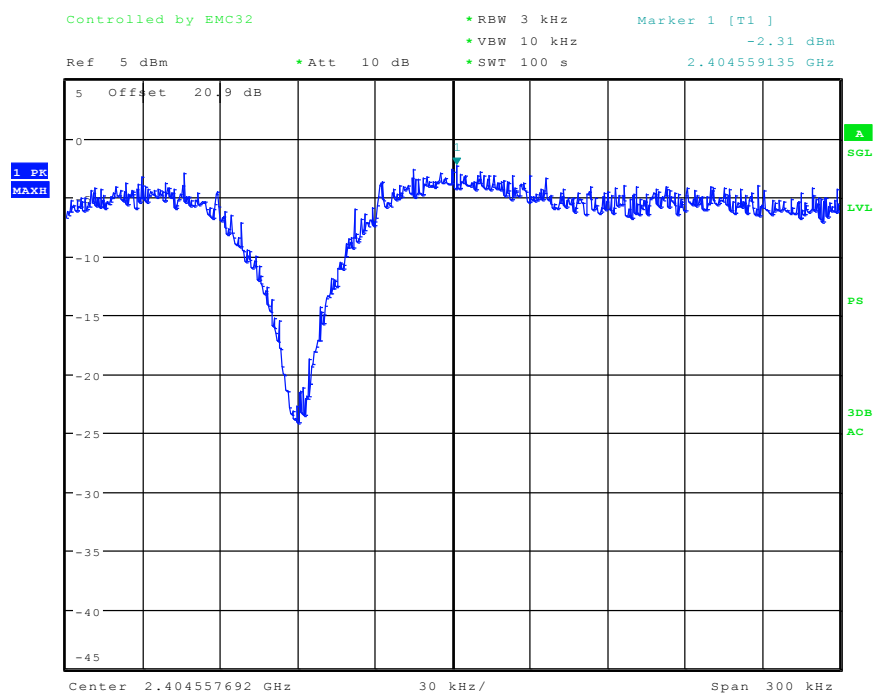


Date: 30.JUN.2011 20:48:15

Channel 26

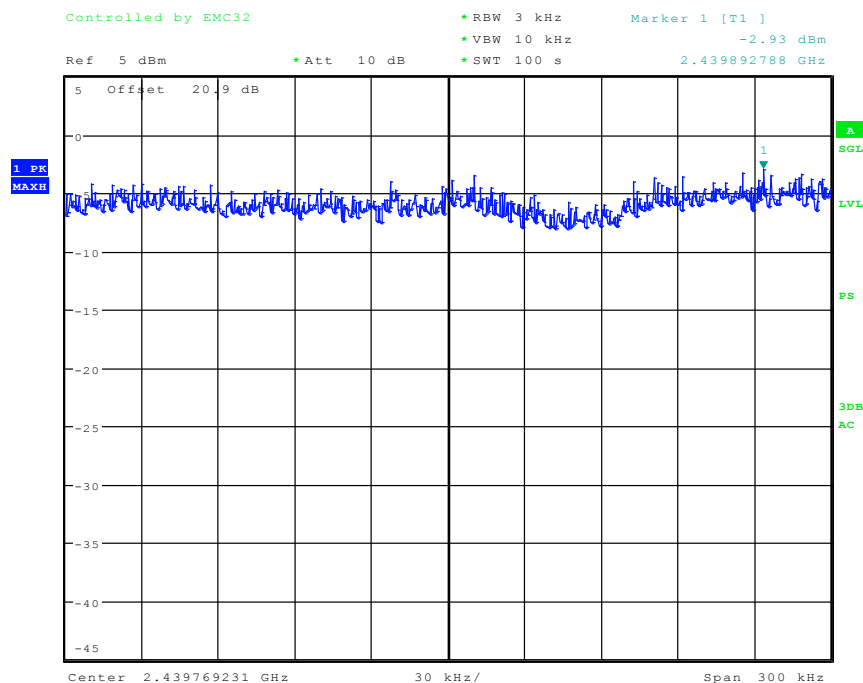
1.5. Power spectral density

Low channel:



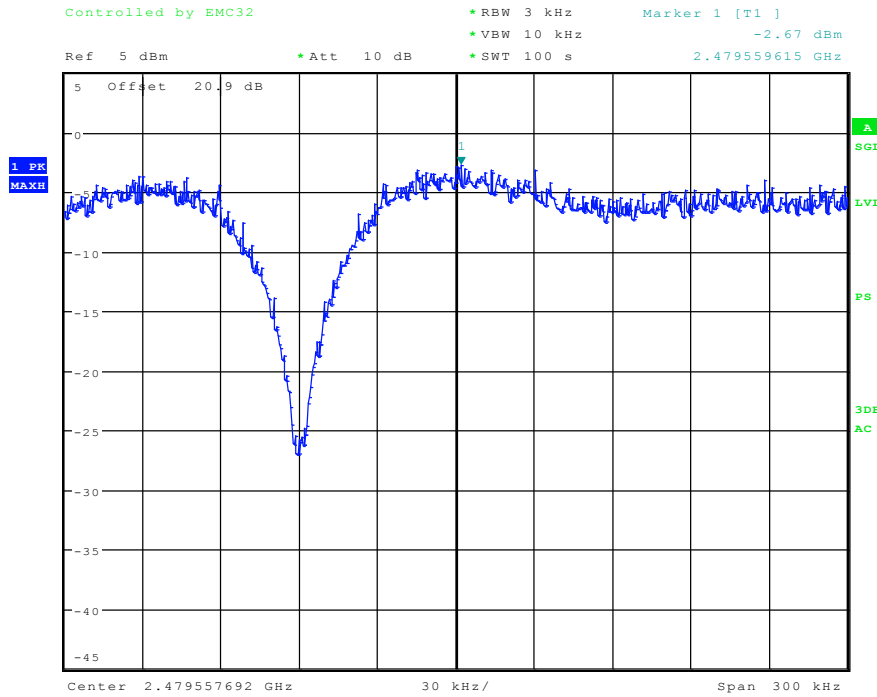
Date: 4.JUL.2011 11:32:54

Channel middle:



Date: 4.JUL.2011 11:23:07

Channel high:



Date: 4.JUL.2011 11:27:37

1.6. Radiated field strength (15.209)

1.6.1. Radiated magnetic field strength measurements ($f < 30\text{ MHz}$)

Diagram No. c_3.01

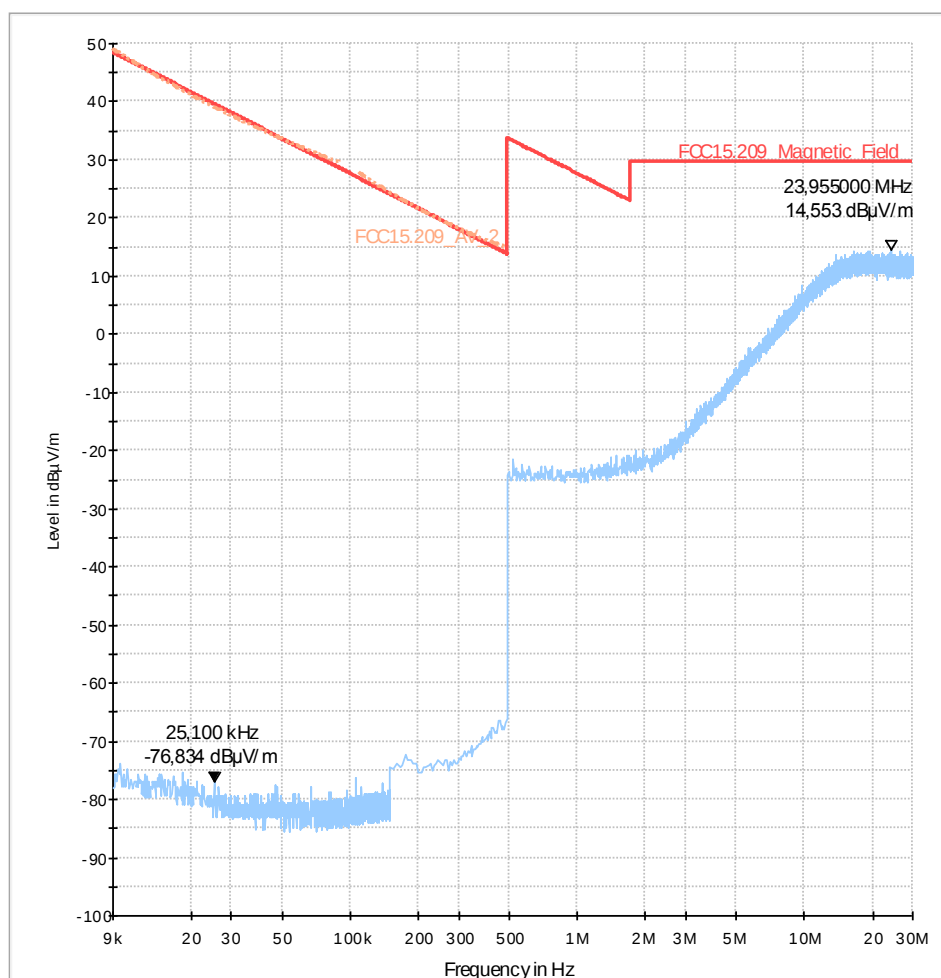
Common Information

Test description:	Magnetic Field strength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) + mobile floor absorbers and 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	TAS
Operating conditions:	TX-on
Power during tests:	5 V DC
Comment 1:	Channel low

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0
Comment:	ZigBee Technology

FCC15.209_magn hor+vert



EMI Auto Test Template: FCC15.209_magn hor+vert

Hardware Setup: HW25_FCC15109_ESCS_MgFeld_ohne_SAR_MATRIX
 Measurement Type: Open-Area-Test-Site
 Frequency Range: 9 kHz - 30 MHz
 Graphics Level Range: -100 dBµV/m - 50 dBµV/m

Preview Measurements:
 Antenna height: 1000 - 1000 cm , Step Size = 0 cm , Positioning Speed = 1
 Polarization: H + V
 Turntable position: 35 - 305 deg , Step Size = 90 deg , Positioning Speed = 8
 Scan Test Template: 01_FCC_MG_FELD_PK_FAST_H&V_EUT

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0,01 s	0 dB
150 kHz - 30 MHz	5 kHz	PK+	10 kHz	0,01 s	0 dB

Receiver: [ESS]

Data Reduction:
 Limit Line #1: FCC15.209_Magnetic_Field
 Limit Line #2: FCC15.209_AV_2
 Peak Search: 20 dB , Maximum Results: 10
 Subrange Maxima: 10 Subranges , Maxima per Subrange: 1
 Acceptance Offset: -10 dB
 Maximum Number of Results: 10
 After Data Reduction: Interactive data reduction

Adjustment:
 Antenna height: Adjustment with full Range , Measuring Speed = 1
 Turntable position: Adjustment with full Range , Measuring Speed = 3
 Template for Single Meas.: 01_FCC_MG_FELD_PK_FAST_H&V_EUT

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0,01 s	0 dB
150 kHz - 30 MHz	5 kHz	PK+	10 kHz	0,01 s	0 dB

Receiver: [ESS]

Final Measurements:
 Template for Single Meas.: 02_FCC_MG_FELD_QP_final_H&V_EUT

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	QPK	200 Hz	1 s	0 dB
150 kHz - 30 MHz	5 kHz	QPK	10 kHz	1 s	0 dB

Receiver: [ESS]

Report Settings:
 Report Template: FCC15_209_magn_vert_hor
 Create Electronic Report: PDF
 Document Name: EMI Report

Actions:
 Preview Measurements: Before
 Notify: "Achtung: es gibt Frequenzbereich mit AVERAGE detector als Ergebniss..."
 Data Reduction: Before
 Notify: Sound (WAV file) 'tada.wav'
 Frequency Zoom 1: Before
 Notify: "EUT funktioniert noch ?"
 Final Measurements: After
 Notify: Sound (WAV file) 'tada.wav'

Diagram No. c_3.02

Common Information

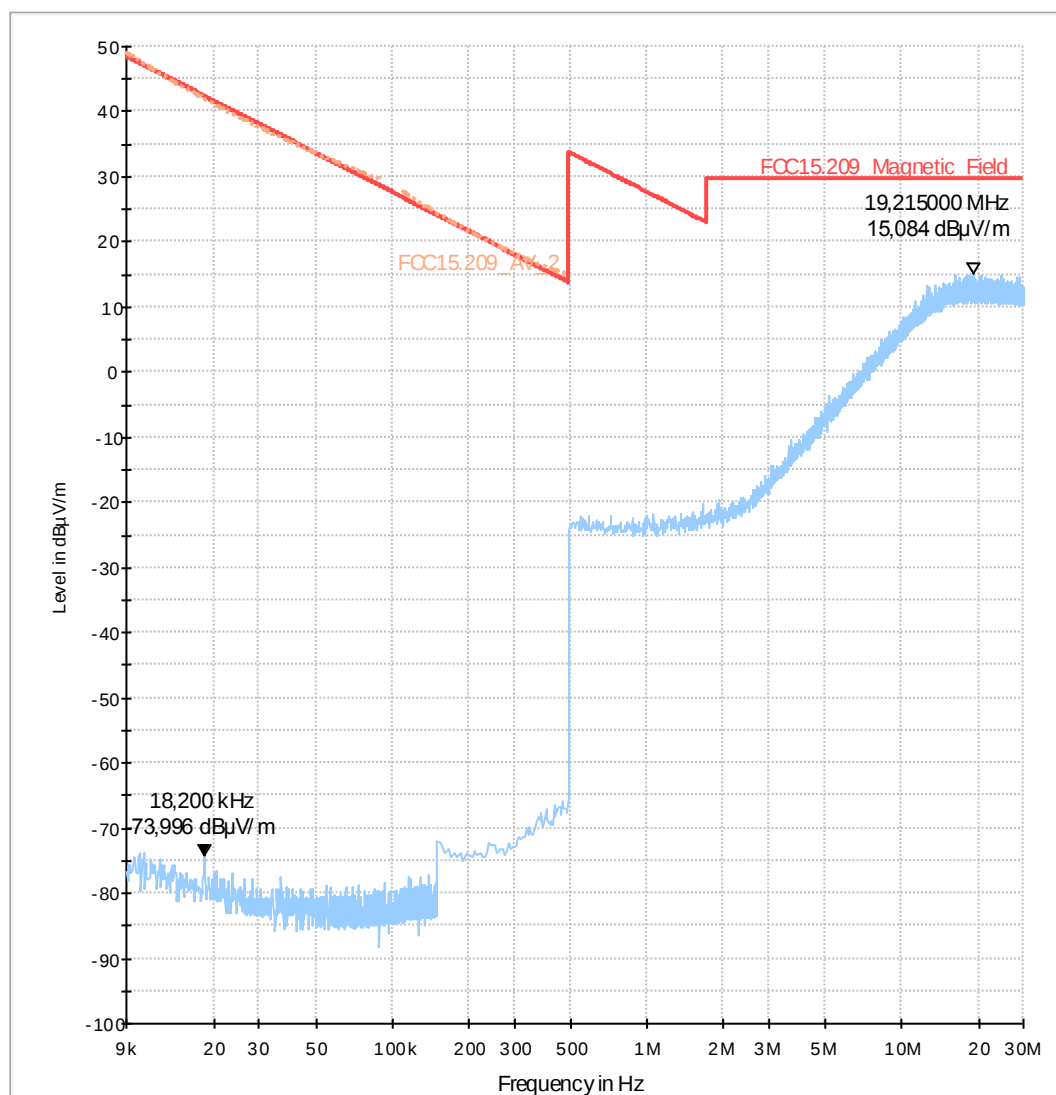
Test description:	Magnetic Field strength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) + mobile floor absorbers and 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 3

Operator:	TAS
Operating conditions:	TX-on
Power during tests:	5 V DC
Comment 1:	Channel middle

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0
Comment:	ZigBee Technology

FCC15.209_magn hor+vert



EMI Auto Test Template: FCC15.209_magn hor+vert

Hardware Setup: HW25_FCC15109_ESCS_MgFeld_ohne_SAR_MATRIX
 Measurement Type: Open-Area-Test-Site
 Frequency Range: 9 kHz - 30 MHz
 Graphics Level Range: -100 dBµV/m - 50 dBµV/m

Preview Measurements:
 Antenna height: 1000 - 1000 cm , Step Size = 0 cm , Positioning Speed = 1
 Polarization: H + V
 Turntable position: 35 - 305 deg , Step Size = 90 deg , Positioning Speed = 8
 Scan Test Template: 01_FCC_MG_FELD_PK_FAST_H&V_EUT

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0,01 s	0 dB
150 kHz - 30 MHz	5 kHz	PK+	10 kHz	0,01 s	0 dB

Receiver: [ESS]

Data Reduction:
 Limit Line #1: FCC15.209_Magnetic_Field
 Limit Line #2: FCC15.209_AV_2
 Peak Search: 20 dB , Maximum Results: 10
 Subrange Maxima: 10 Subranges , Maxima per Subrange: 1
 Acceptance Offset: -10 dB
 Maximum Number of Results: 10
 After Data Reduction: Interactive data reduction

Adjustment:
 Antenna height: Adjustment with full Range , Measuring Speed = 1
 Turntable position: Adjustment with full Range , Measuring Speed = 3
 Template for Single Meas.: 01_FCC_MG_FELD_PK_FAST_H&V_EUT

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0,01 s	0 dB
150 kHz - 30 MHz	5 kHz	PK+	10 kHz	0,01 s	0 dB

Receiver: [ESS]

Final Measurements:
 Template for Single Meas.: 02_FCC_MG_FELD_QP_final_H&V_EUT

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	QPK	200 Hz	1 s	0 dB
150 kHz - 30 MHz	5 kHz	QPK	10 kHz	1 s	0 dB

Receiver: [ESS]

Report Settings:
 Report Template: FCC15_209_magn_vert_hor
 Create Electronic Report: PDF
 Document Name: EMI Report

Actions:
 Preview Measurements: Before
 Notify: "Achtung: es gibt Frequenzbereich mit AVERAGE detector als Ergebniss..."
 Data Reduction: Before
 Notify: Sound (WAV file) 'tada.wav'
 Frequency Zoom 1: Before
 Notify: "EUT funktioniert noch ?"
 Final Measurements: After
 Notify: Sound (WAV file) 'tada.wav'

Diagram No. c_3.03

Common Information

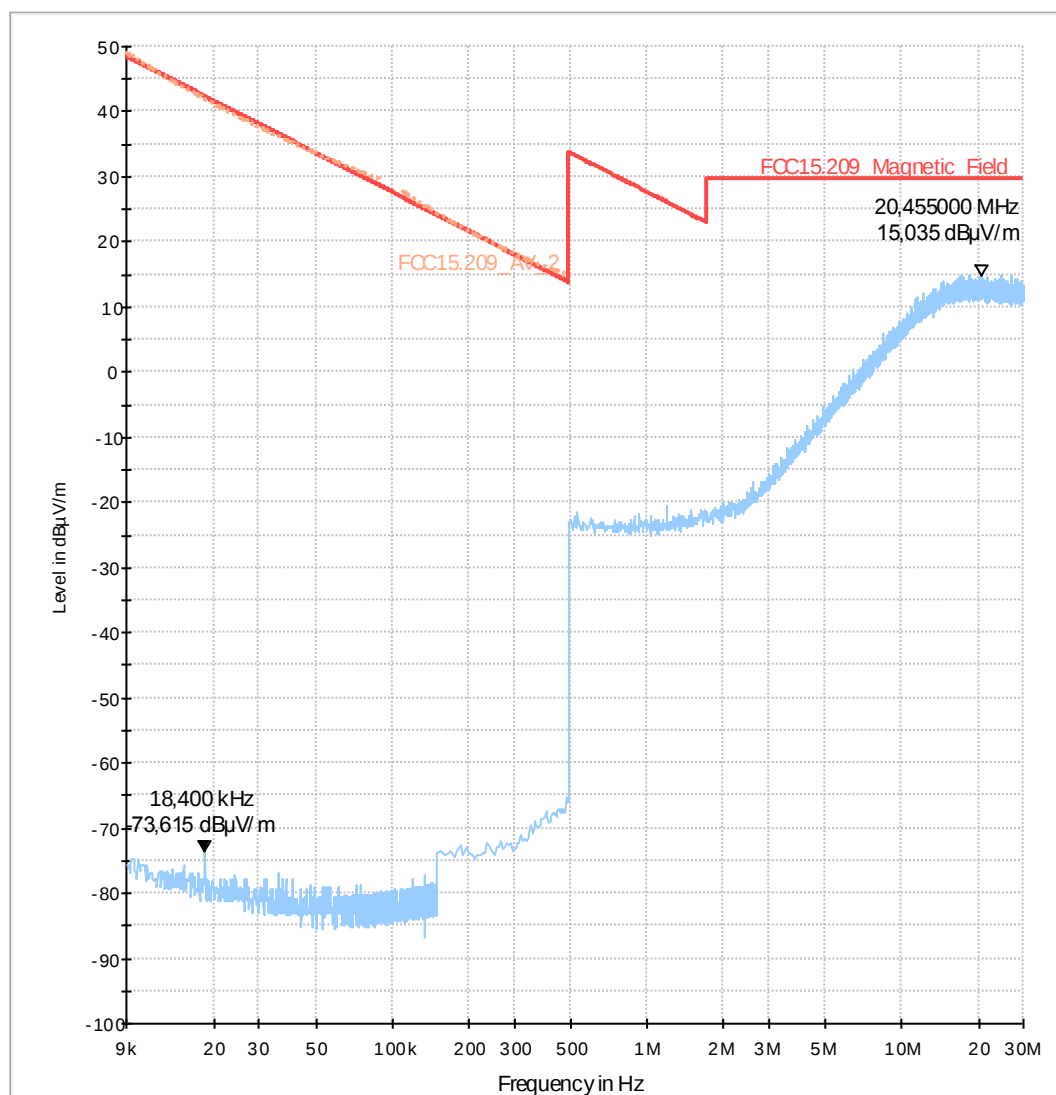
Test description:	Magnetic Field strength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) + mobile floor absorbers and 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 3

Operator:	TAS
Operating conditions:	TX-on
Power during tests:	5 V DC
Comment 1:	Channel high

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0
Comment:	ZigBee Technology

FCC15.209_magn hor+vert



1.6.2. Radiated field strength (30MHz < f < 1GHz)

Diagram No. c_2.109

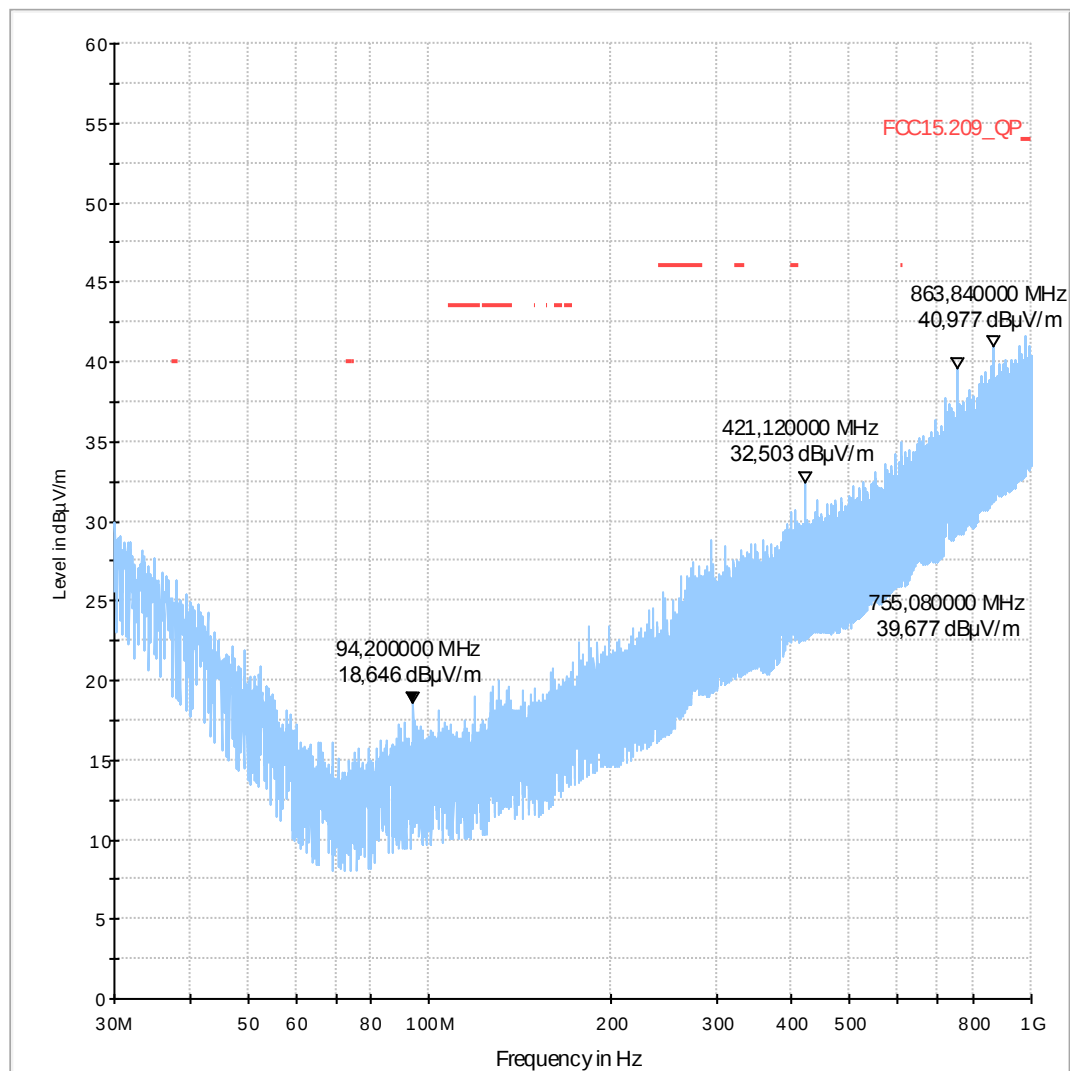
Common Information

Test description:	Electric Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) with 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m and 1.82 m, horizontal and vertical polarisation
Rec. antenna (final):	height between 1 m to 4 m, polarisation according to pre-scan results
Turntable step:	90° during pre-scan, continuously turning during final measurement
Used filter:	lowpass 1200 MHz
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	Tas
Operating conditions:	TX-on
Power during tests:	5 V DC
Comment 1:	Channel low

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0
Comment:	ZigBee Technology

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_QP
 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
 Create Electronic Report: RTF PDF
 Document Name: EMI Report

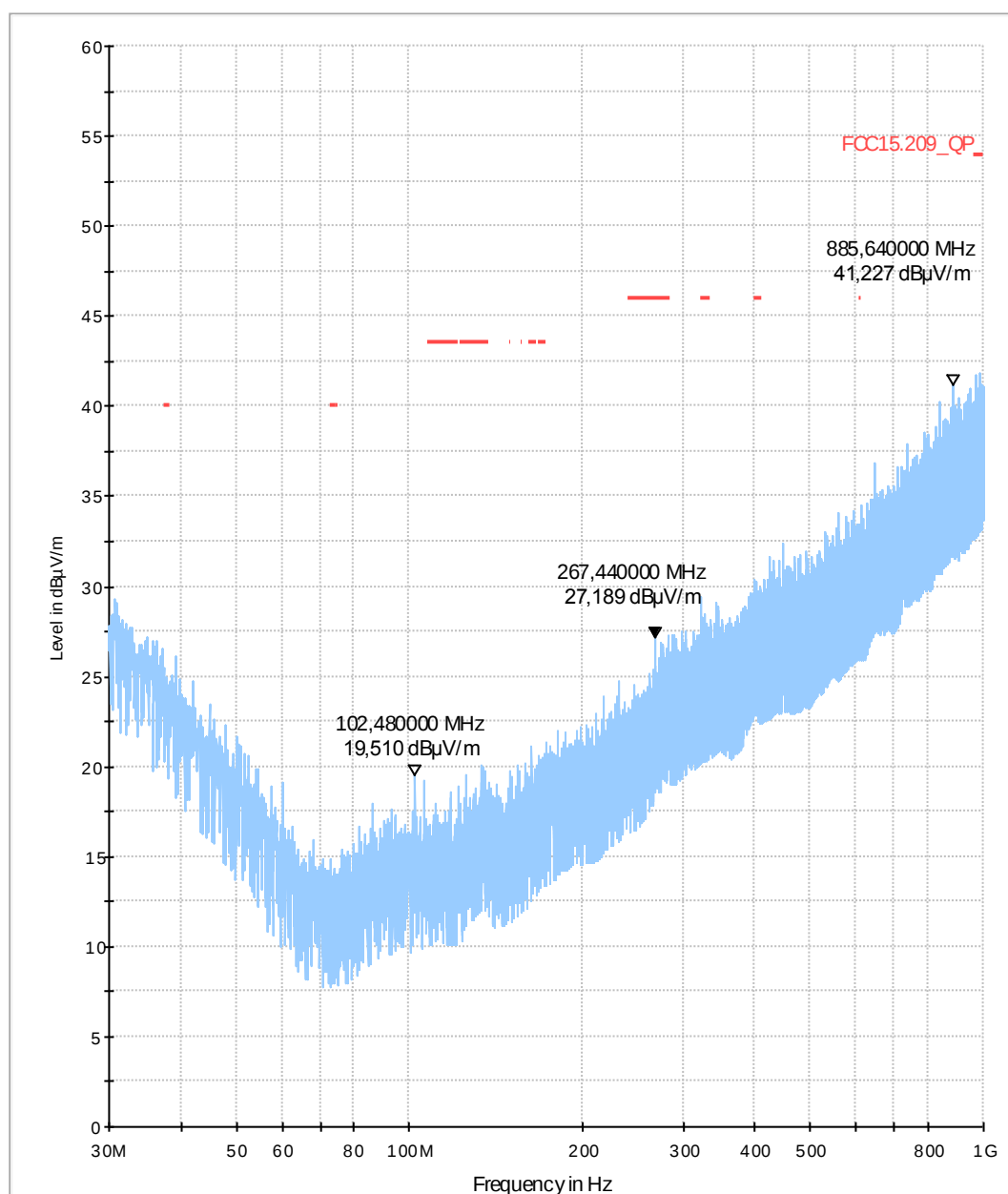
Actions:
 Test start
 Notify: "EUT auf ersten/zweiten/dritten Sendekanal stellen !!!"
 Notify: "bitte beachten: es gibt Frequenzbereiche von strenger Grenzwert gil..."
 Data Reduction: Before
 Notify: Sound (WAV file) 'tada.wav'
 Frequency Zoom 2: Before
 Notify: "EUT sendet noch ?"
 Final Measurements: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

Diagram No. c_2.110

Common Information

Test description:	Electric Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) with 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m and 1.82 m, horizontal and vertical polarisation
Rec. antenna (final):	height between 1 m to 4 m, polarisation according to pre-scan results
Turntable step:	90° during pre-scan, continuously turning during final measurement
Used filter:	lowpass 1200 MHz
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	Tas
Operating conditions:	TX-on
Power during tests:	5 V DC
Comment 1:	Channel middle

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_QP
 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
 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. c_2.111

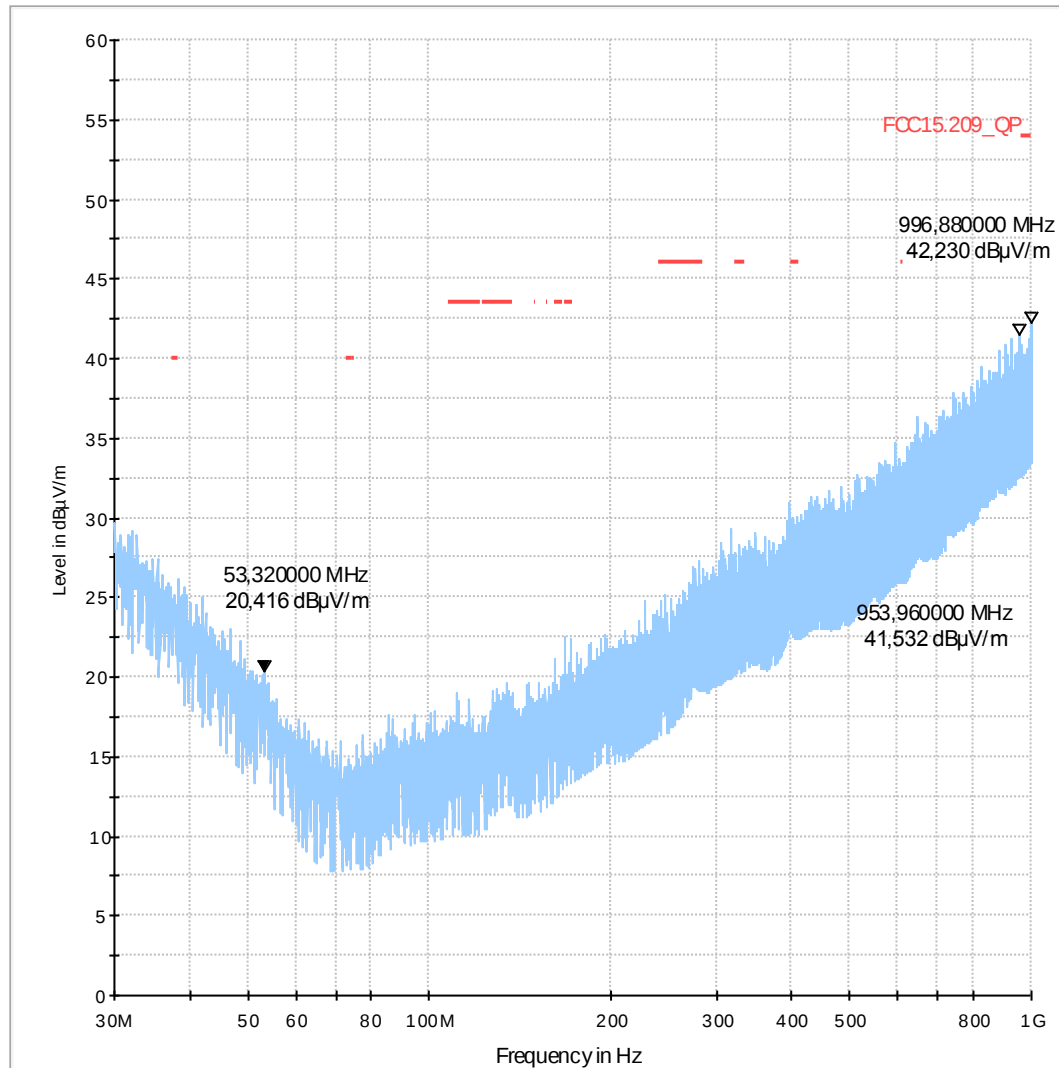
Common Information

Test description:	Electric Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) with 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m and 1.82 m, horizontal and vertical polarisation
Rec. antenna (final):	height between 1 m to 4 m, polarisation according to pre-scan results
Turntable step:	90° during pre-scan, continuously turning during final measurement
Used filter:	lowpass 1200 MHz
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	Tas
Operating conditions:	TX-on
Power during tests:	5 V DC
Comment 1:	Channel high

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0
Comment:	ZigBee Technology

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_QP
 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

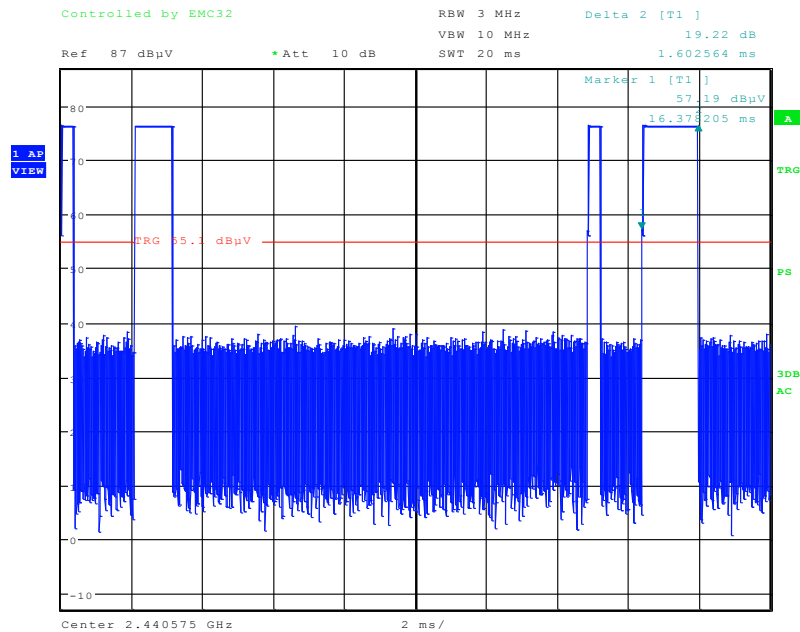
Receiver: [ESS]

Report Settings:
 Report Template: FCC15_209_vert_hor
 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'

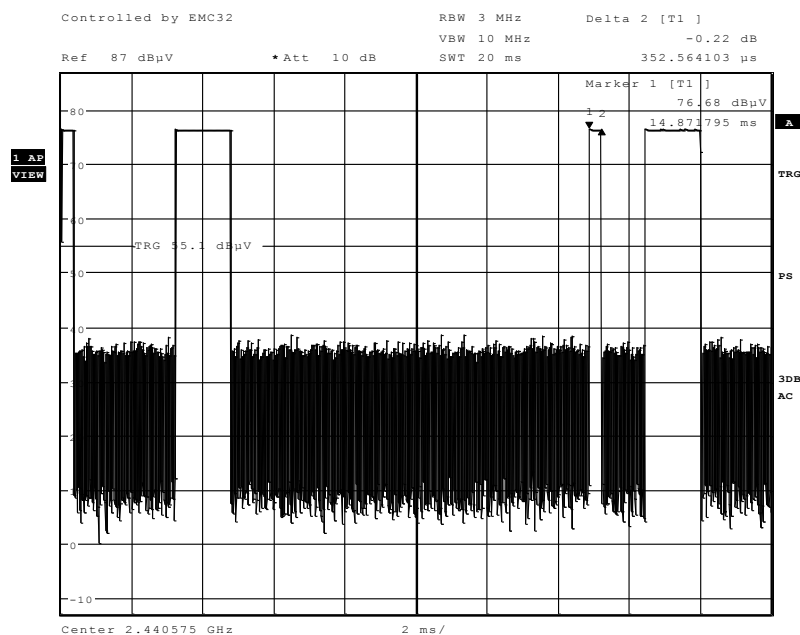
1.6.3. Radiated field strength (1GHz < f < 18GHz)

1.6.3.1 Period of operating mode 2 (pulsed transmitter)



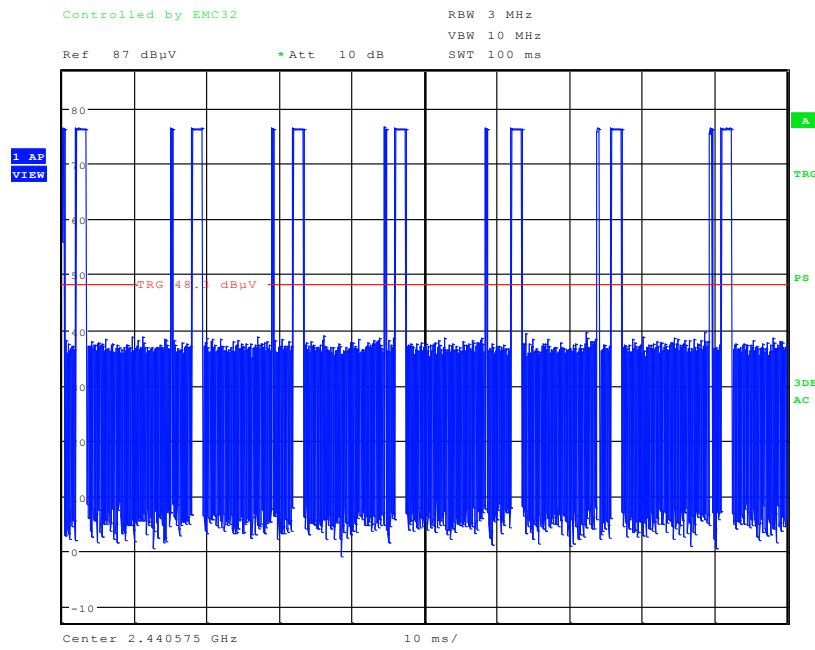
Date: 22.JUN.2011 13:11:33

x: TX-ON= 1.602ms, z:TX-OFF= 11.95ms



Date: 22.JUN.2011 13:19:08

y: TX-ON= 0.352ms



Date: 22.JUN.2011 13:06:14

Period on 100ms: $(x+y)/((x+y)+z) \Rightarrow$ Duty cycle 14%

Diagram No.:c_2.101

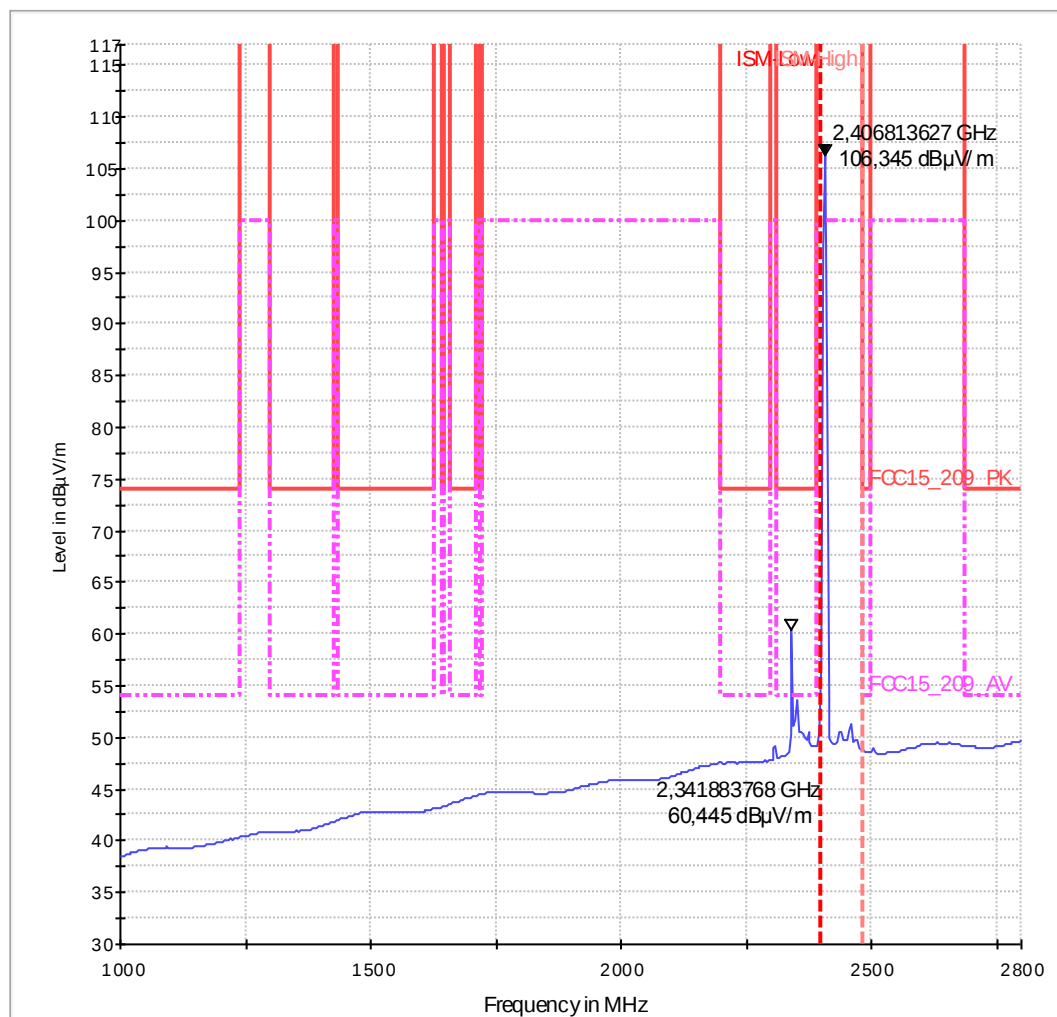
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	ZigBee, TCH mode (cont. mode)
Operator Name:	Tas
Comment:	Channel no. 11 (low), only PK measurement

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep1_final



Sweep Setup: Sweep1_final [EMI radiated]

Hardware Setup: 549_dBuVm_PA0_TH3_KP1_FSEK
Receiver: [FSEK]
Level Unit: dB μ V/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamplifier
1 GHz - 2,8 GHz	3,607 MHz	PK+	1 MHz	Coupled	dB

Diagram No.: c_2.102

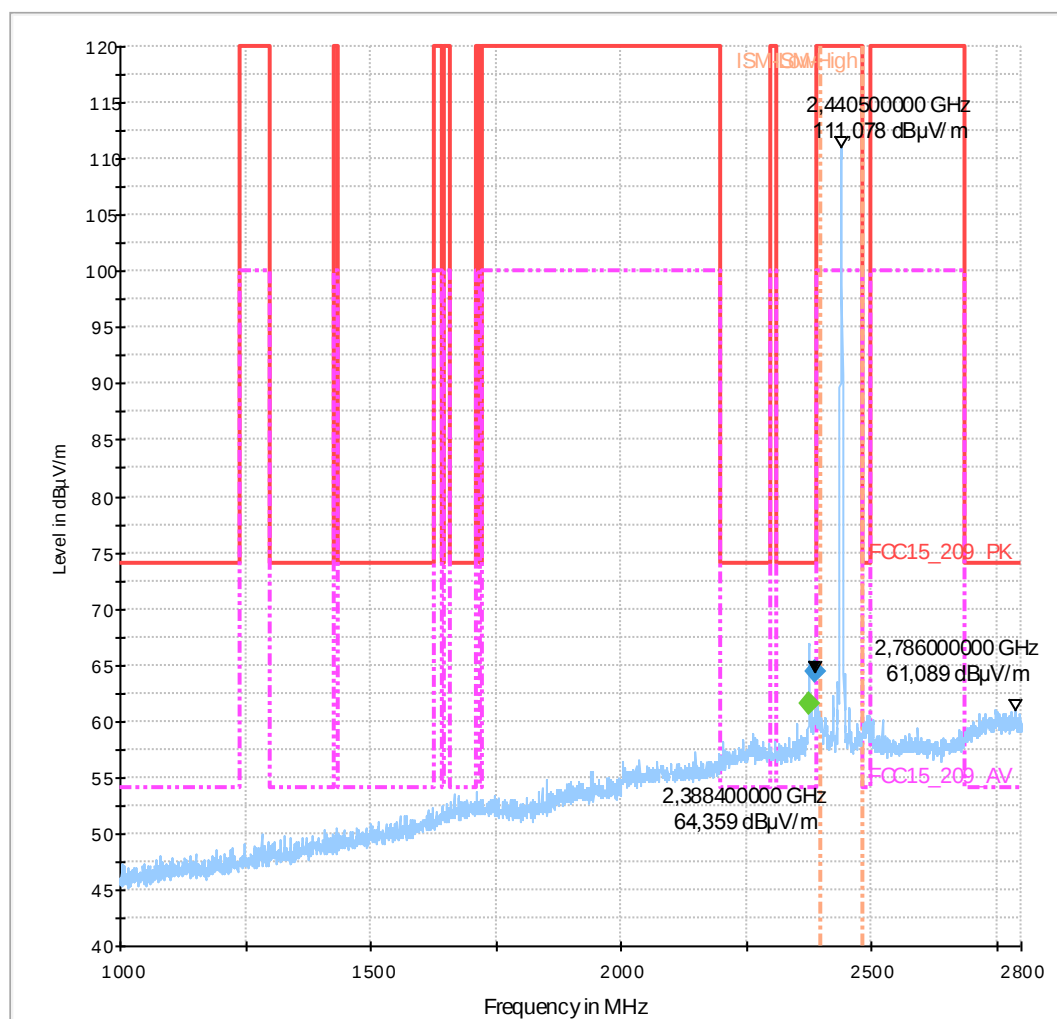
Common Information

Test Description:	Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Tas
Comment:	Channel no. 18, middle (2,44 GHz)
Op. Mode:	ZigBee – TX (cont. mode)

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep1_SM1_KP1_WLAN_1_5ms



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Margin (dB)
2388.400000	64.4	100.0	1000.000	155.0	H	65.0	0.0	35.4	9.6

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

Frequency (MHz)	Limit (dBμV/m)	Comment
2388.400000	74.0	

EMI Auto Test Template: Sweep1_SM1_KP1_WLAN_1_5ms

Hardware Setup: 549_dBuVm_PA0_TH3_KP1_ESU
 Measurement Type: E(I)RP
 Frequency Range: 1 GHz - 2,8 GHz
 Graphics Level Range: 30 dBμV/m - 110 dBμV/m

Preview Measurements:
 Scan Test Template: Sweep1_pre

Data Reduction:
 Limit Line #1: FCC15_209_PK
 Limit Line #2: FCC15_209_AV
 Limit Line #3: ISM-Low
 Limit Line #4: ISM-High
 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: Sweep1_zoom

Adjustment:
 Template for Single Meas.: Sweep1_zoom

Final Measurements:
 Template for Single Meas.: Sweep1_fin

Template for Single Meas.:(>1GHz) Sweep1_fin

Report Settings:
 Report Template: Report Setup FCC 15_247

Diagram No.: c_2.103

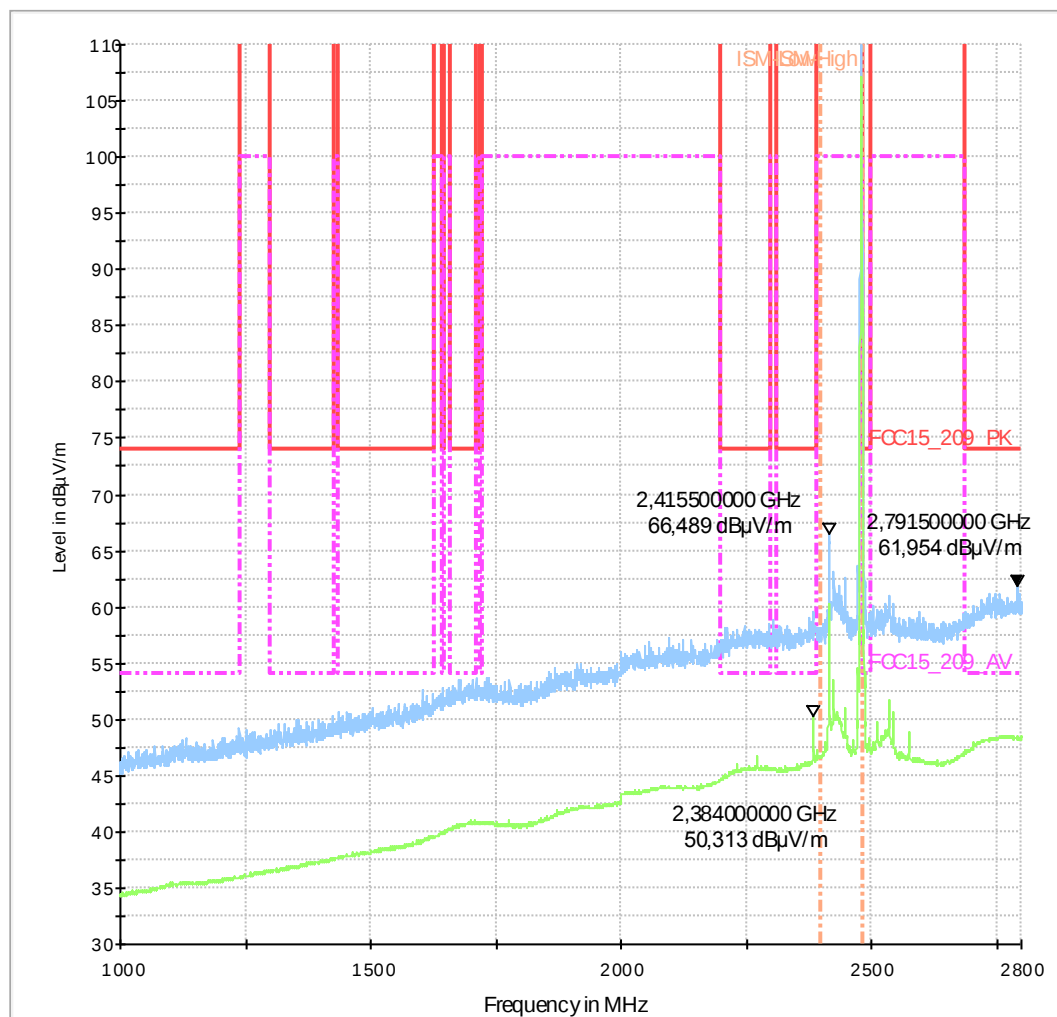
Common Information

Test Description:	Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	FAR
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Tas
Comment:	Channel no. 26, high (2,480 GHz)
Op. Mode:	ZigBee - TX

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep1_SM1_KP1_WLAN_1_5ms



EMI Auto Test Template: Sweep1_SM1_KP1_WLAN_1_5ms

Hardware Setup:	549_dBuVm_PA0_TH3_KP1_ESU
Measurement Type:	E(I)RP
Frequency Range:	1 GHz - 2,8 GHz
Graphics Level Range:	30 dBμV/m - 110 dBμV/m
Preview Measurements:	
Scan Test Template:	Sweep1_pre
Data Reduction:	
Limit Line #1:	FCC15_209_PK
Limit Line #2:	FCC15_209_AV
Limit Line #3:	ISM-Low
Limit Line #4:	ISM-High
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:	Sweep1_zoom
Adjustment:	
Template for Single Meas.:	Sweep1_zoom
Final Measurements:	
Template for Single Meas.:	Sweep1_fin
Template for Single Meas.:(>1GHz)	Sweep1_fin
Report Settings:	
Report Template:	Report Setup FCC 15_247

Diagram No.: c_2.104

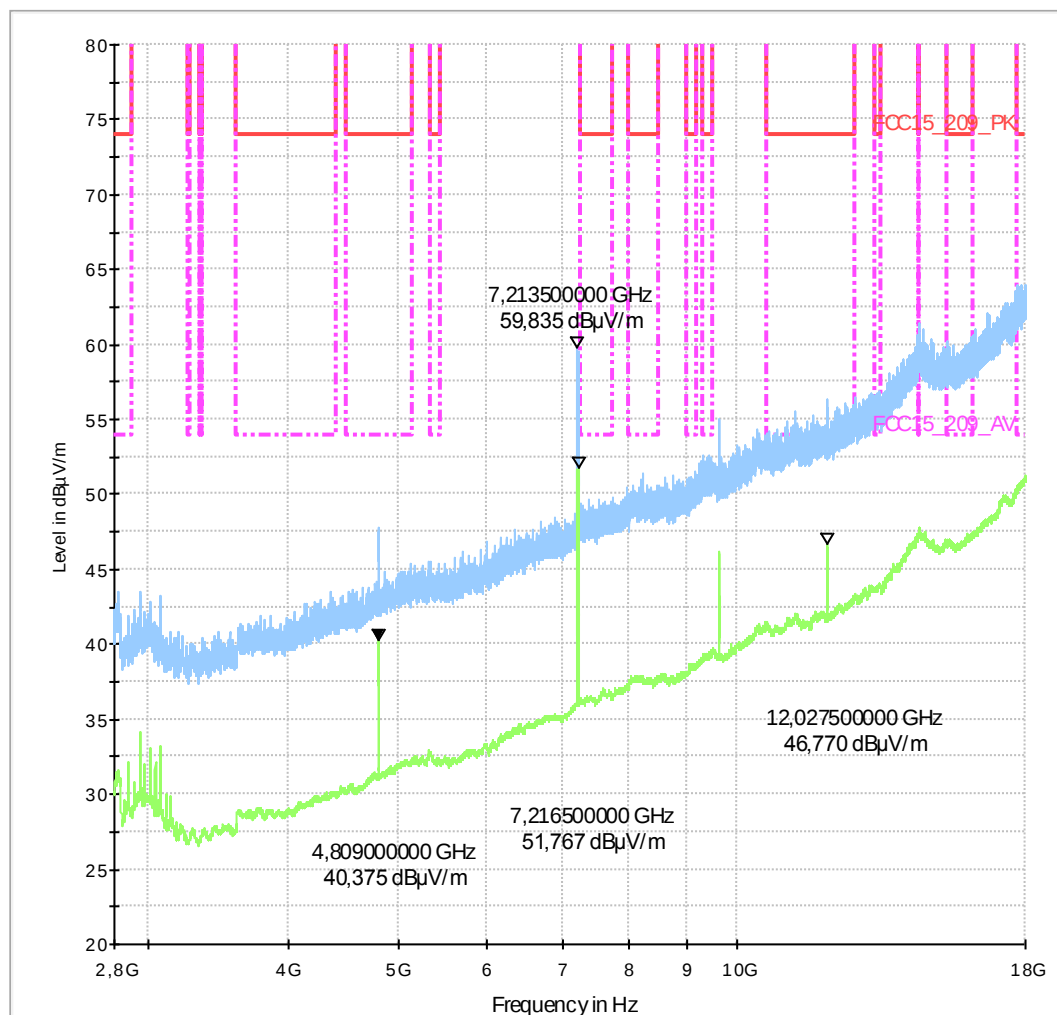
Common Information

Test Description:	Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Tas
Comment:	Channel no. 11, low (2,405 MHz)
Op. Mode:	ZigBee - TX

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep2_SM1_KP1_WLAN_1_5ms



EMI Auto Test Template: Sweep2_SM1_KP1_WLAN_1_5ms

Hardware Setup:	549_dBuVm_PA484_TH3_KP1_ESU
Measurement Type:	E(I)RP
Frequency Range:	2,8 GHz - 18 GHz
Graphics Level Range:	20 dB μ V/m - 80 dB μ V/m
Preview Measurements:	
Scan Test Template:	Sweep2_pre
Data Reduction:	
Limit Line #1:	FCC15_209_PK
Limit Line #2:	FCC15_209_AV
Peak Search:	6 dB , Maximum Results: 10
Subrange Maxima:	50 Subranges , Maxima per Subrange: 1
Acceptance Offset:	-20 dB
Maximum Number of Results:	10
After Data Reduction:	Interactive data reduction
Frequency Zoom:	
Zoom Scan Template:	Sweep2_zoom
Adjustment:	
Template for Single Meas.:	Sweep2_zoom
Final Measurements:	
Template for Single Meas.:	Sweep2_fin
Report Settings:	
Report Template:	Report Setup FCC 15_247
Create Electronic Report:	RTF PDF
Document Name:	dummy EMI Report

Diagram No.: c_2.105

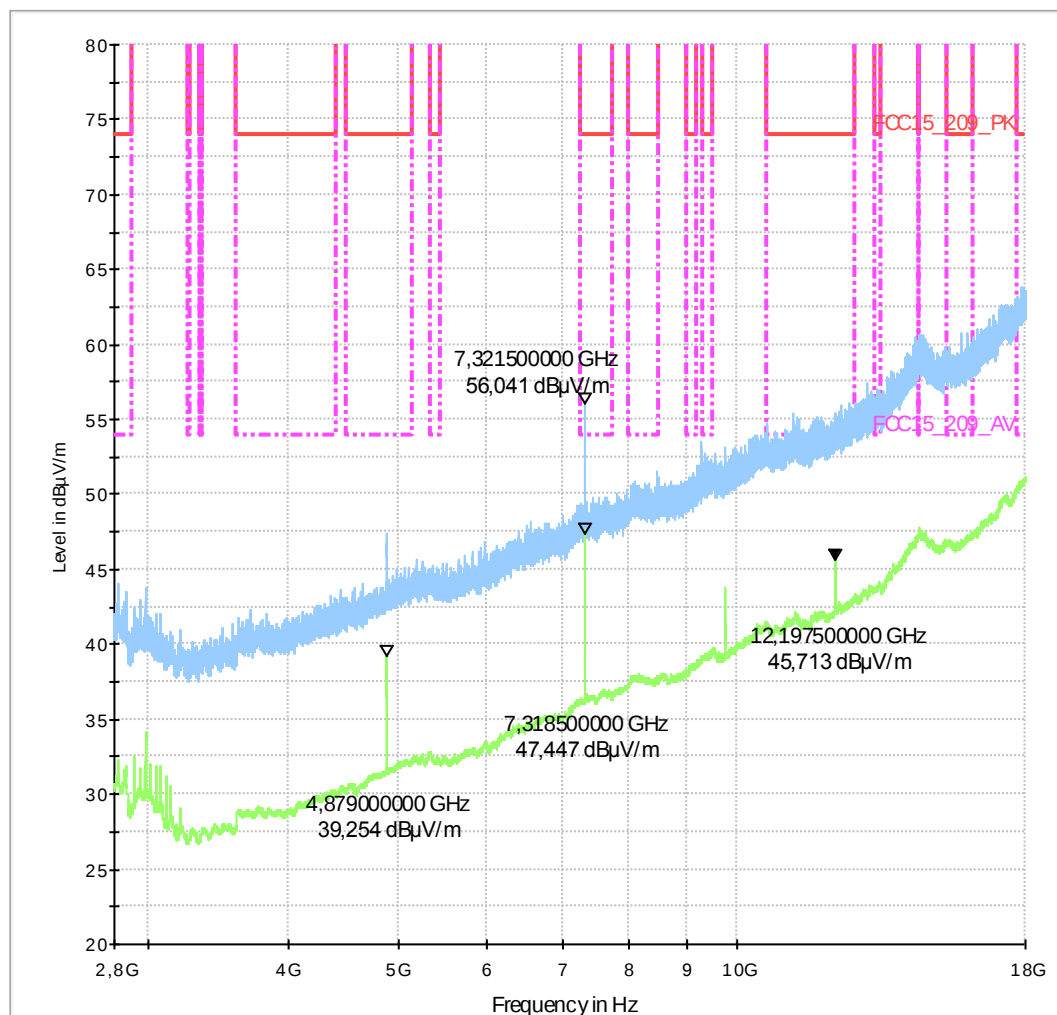
Common Information

Test Description:	Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	FAR
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Tas
Comment:	Channel no. 18, middle (2,44 GHz)
Op. Mode:	ZigBee - TX

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep2_SM1_KP1_WLAN_1_5ms



EMI Auto Test Template: Sweep2_SM1_KP1_WLAN_1_5ms

Hardware Setup:	549_dBuVm_PA484_TH3_KP1_ESU
Measurement Type:	E(I)RP
Frequency Range:	2,8 GHz - 18 GHz
Graphics Level Range:	20 dB μ V/m - 80 dB μ V/m
Preview Measurements:	
Scan Test Template:	Sweep2_pre
Data Reduction:	
Limit Line #1:	FCC15_209_PK
Limit Line #2:	FCC15_209_AV
Peak Search:	6 dB , Maximum Results: 10
Subrange Maxima:	50 Subranges , Maxima per Subrange: 1
Acceptance Offset:	-20 dB
Maximum Number of Results:	10
After Data Reduction:	Interactive data reduction
Frequency Zoom:	
Zoom Scan Template:	Sweep2_zoom
Adjustment:	
Template for Single Meas.:	Sweep2_zoom
Final Measurements:	
Template for Single Meas.:	Sweep2_fin
Report Settings:	
Report Template:	Report Setup FCC 15_247
Create Electronic Report:	RTF PDF
Document Name:	dummy EMI Report

Diagram No.: c_2.106

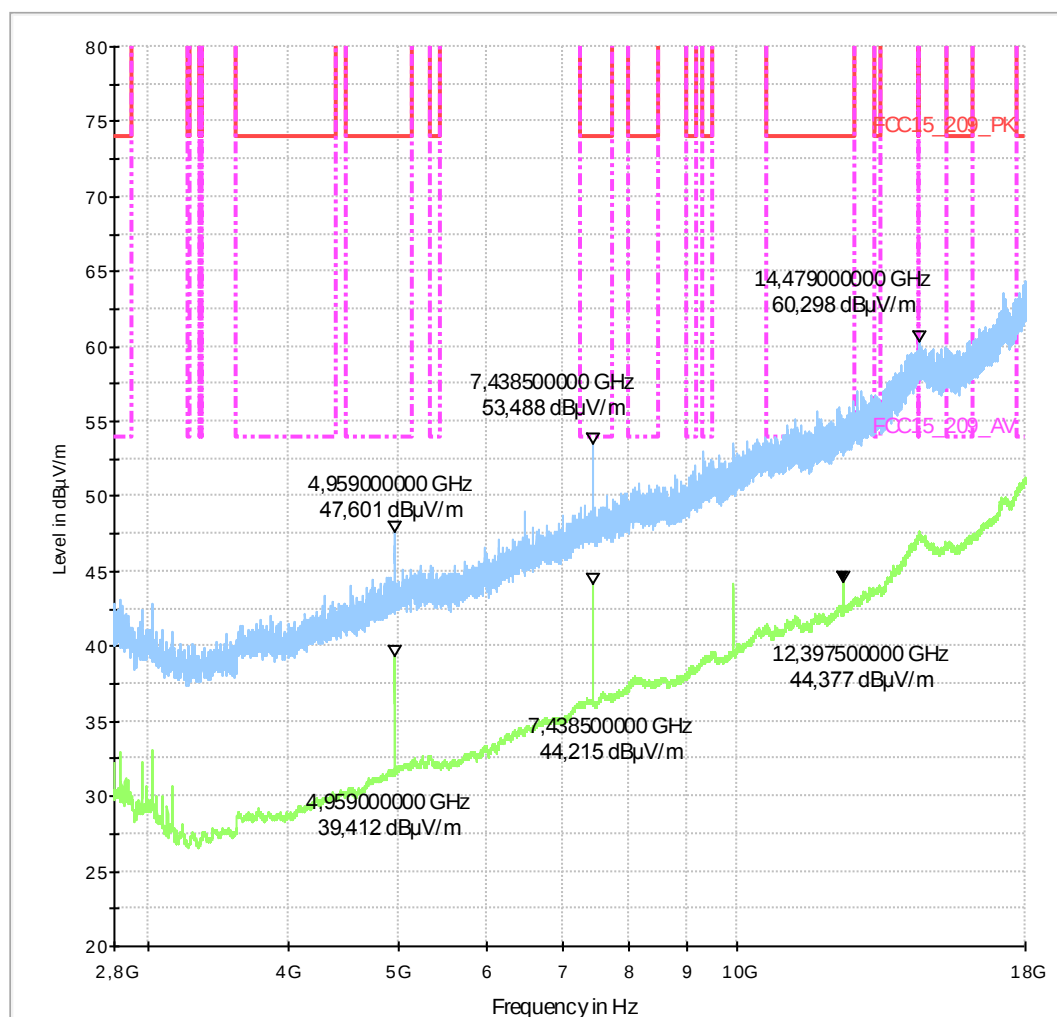
Common Information

Test Description:	Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Tas
Comment:	Channel no. 26, high (2,480 GHz)
Op. Mode:	ZigBee - TX

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep2_SM1_KP1_WLAN_1_5ms



EMI Auto Test Template: Sweep2_SM1_KP1_WLAN_1_5ms

Hardware Setup:	549_dBuVm_PA484_TH3_KP1_ESU
Measurement Type:	E(I)RP
Frequency Range:	2,8 GHz - 18 GHz
Graphics Level Range:	20 dB μ V/m - 80 dB μ V/m
Preview Measurements:	
Scan Test Template:	Sweep2_pre
Data Reduction:	
Limit Line #1:	FCC15_209_PK
Limit Line #2:	FCC15_209_AV
Peak Search:	6 dB , Maximum Results: 10
Subrange Maxima:	50 Subranges , Maxima per Subrange: 1
Acceptance Offset:	-20 dB
Maximum Number of Results:	10
After Data Reduction:	Interactive data reduction
Frequency Zoom:	
Zoom Scan Template:	Sweep2_zoom
Adjustment:	
Template for Single Meas.:	Sweep2_zoom
Final Measurements:	
Template for Single Meas.:	Sweep2_fin
Report Settings:	
Report Template:	Report Setup FCC 15_247
Create Electronic Report:	RTF PDF
Document Name:	dummy EMI Report

1.6.4. Carrier radiated field strength in 3m and band-edge compliance acc. FCC §15.205& §15.209

Diagram No.: c_01_BE_left

Common Information

Test Description:	Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	FAR
Test Standard:	§15.205 & §15.209 Intentional Radiator
Antenna polarisation:	horizontal
Operator Name:	Tas
Comment:	Channel no. 11, low (2,405 MHz)
Op. Mode:	ZigBee - TX

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

08_ESU_2.4GHz_Low_Band_Edge_PA0

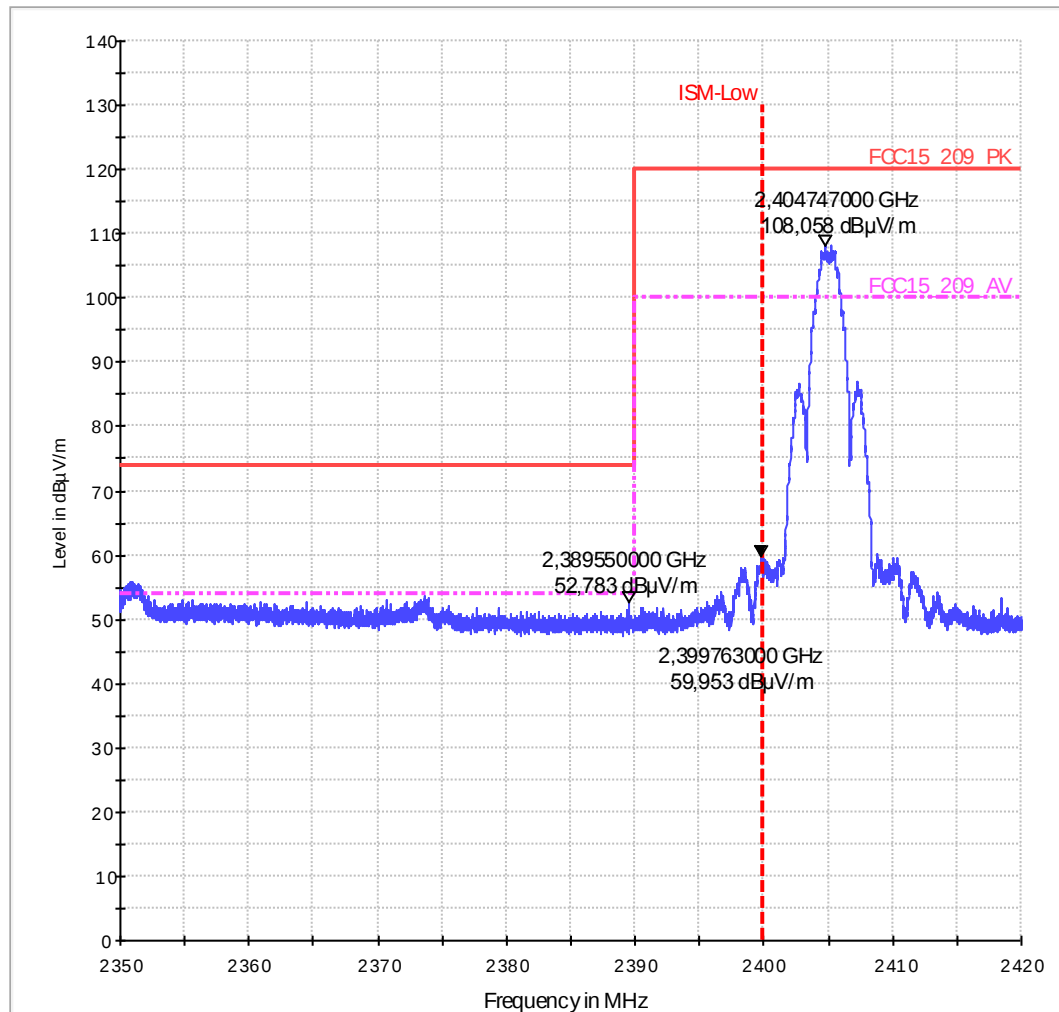
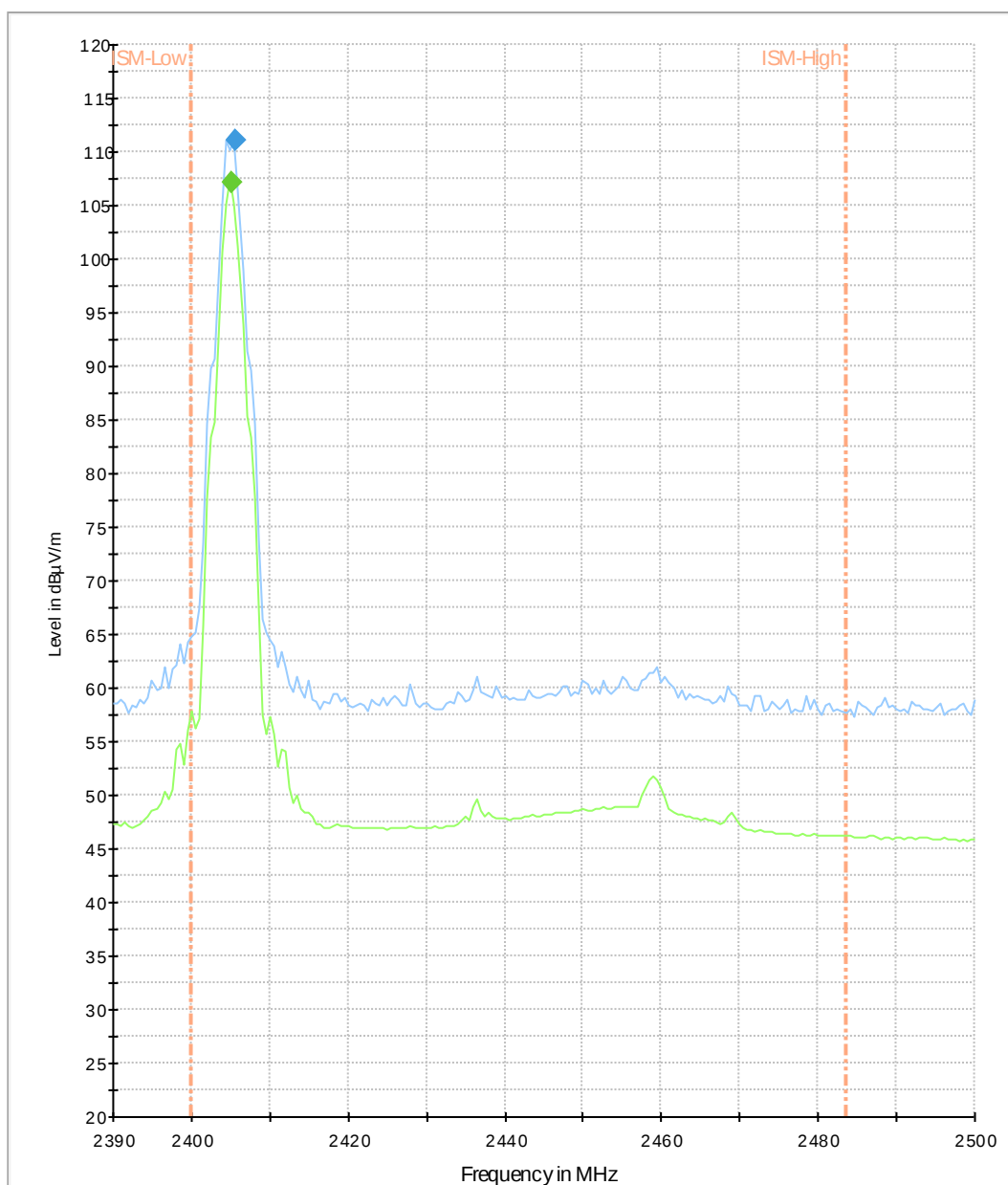


Diagram No.: c_01_BE

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:	Tas
Comment:	Channel no. low
Op. Mode:	ZigBee

Sweep0_SM1_PA0_KP1_BT



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2405.600000	111.0	100.0	1000.000	155.0	H	47.0	0.0	35.5	

Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2405.200000	107.2	100.0	1000.000	155.0	H	47.0	0.0	35.5	

EMI Auto Test Template: Sweep0_SM1_PA0_KP1_BT

Hardware Setup: 549_dBuVm_PA0_TH3_KP1_ESU
 Measurement Type: E(I)RP
 Frequency Range: 2,39 GHz - 2,5 GHz
 Graphics Level Range: 20 dBμV/m - 120 dBμV/m

Preview Measurements:
 Scan Test Template: Sweep1_pre

Data Reduction:
 Limit Line #1: ISM-Low
 Limit Line #2: ISM-High
 Peak Search: 6 dB , Maximum Results: 0
 Subrange Maxima: 0 Subranges , Maxima per Subrange: 1
 Maximum Number of Results: 10
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: Sweep1_zoom

Adjustment:
 Template for Single Meas.: Sweep1_pre

Final Measurements:
 Template for Single Meas.: Sweep1_fin

 Template for Single Meas.:(>1GHz) Sweep1_fin

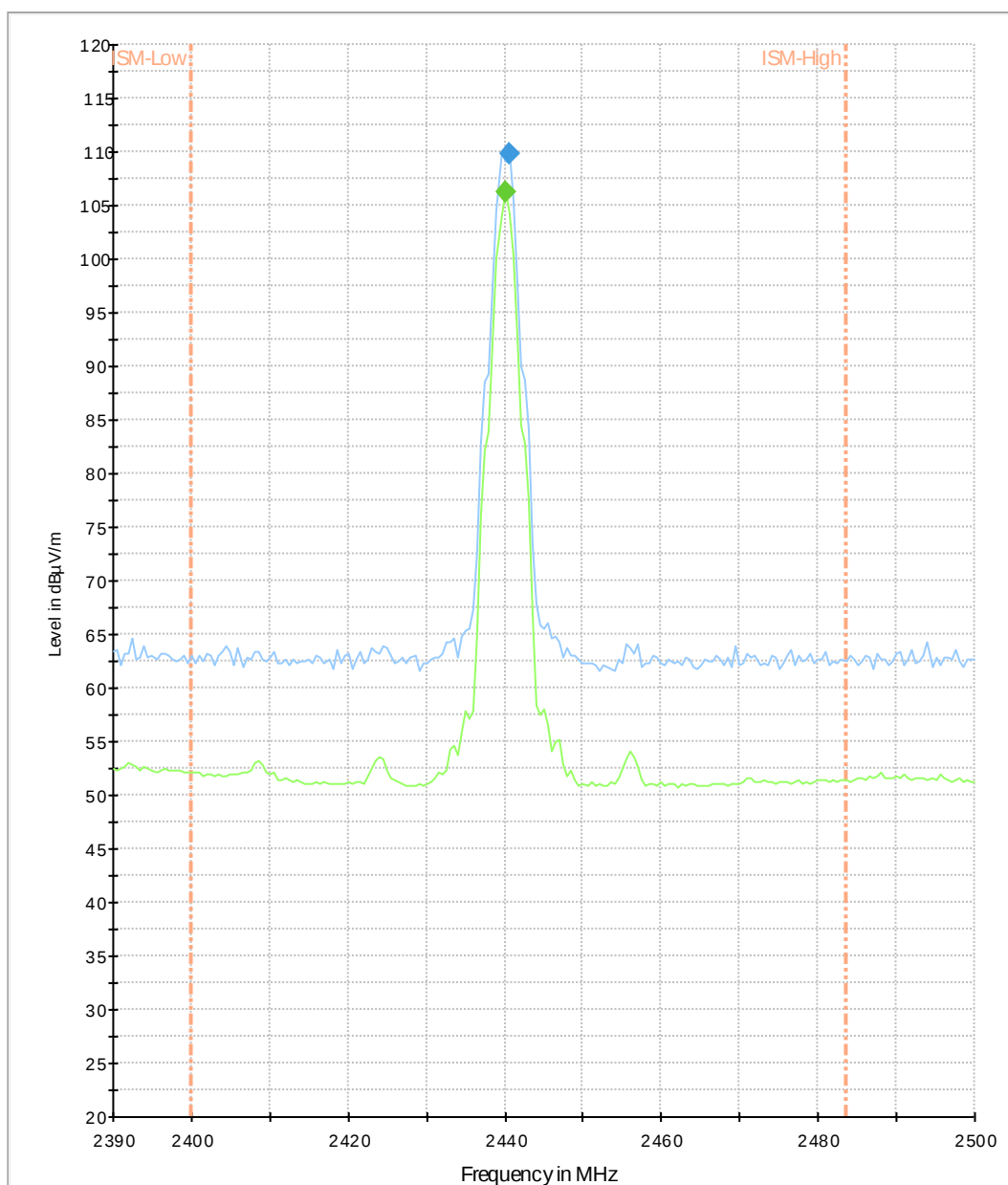
Report Settings:
 Report Template: Report Setup FCC 15_247
 Create Electronic Report: RTF PDF
 Document Name: E-Field Strength accord. §15.205&15.209

Diagram No.: c_02_Mid

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:	Tas
Comment:	Channel middle
Op. Mode:	ZigBee

Sweep0_SM1_PA0_KP1_WLAN



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2440.500000	109.9	100.0	1000.000	155.0	H	31.0	0.0	35.6	

Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2440.000000	106.2	100.0	1000.000	155.0	H	32.0	0.0	35.6	

EMI Auto Test Template: Sweep0_SM1_PA0_KP1_WLAN

Hardware Setup: 549_dBuVm_PA0_TH3_KP1_ESU
 Measurement Type: E(I)RP
 Frequency Range: 2,39 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: 0
 Subrange Maxima: 0 Subranges , Maxima per Subrange: 1
 Maximum Number of Results: 10
 After Data Reduction: Interactive data reduction

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.: c_03_BE_right

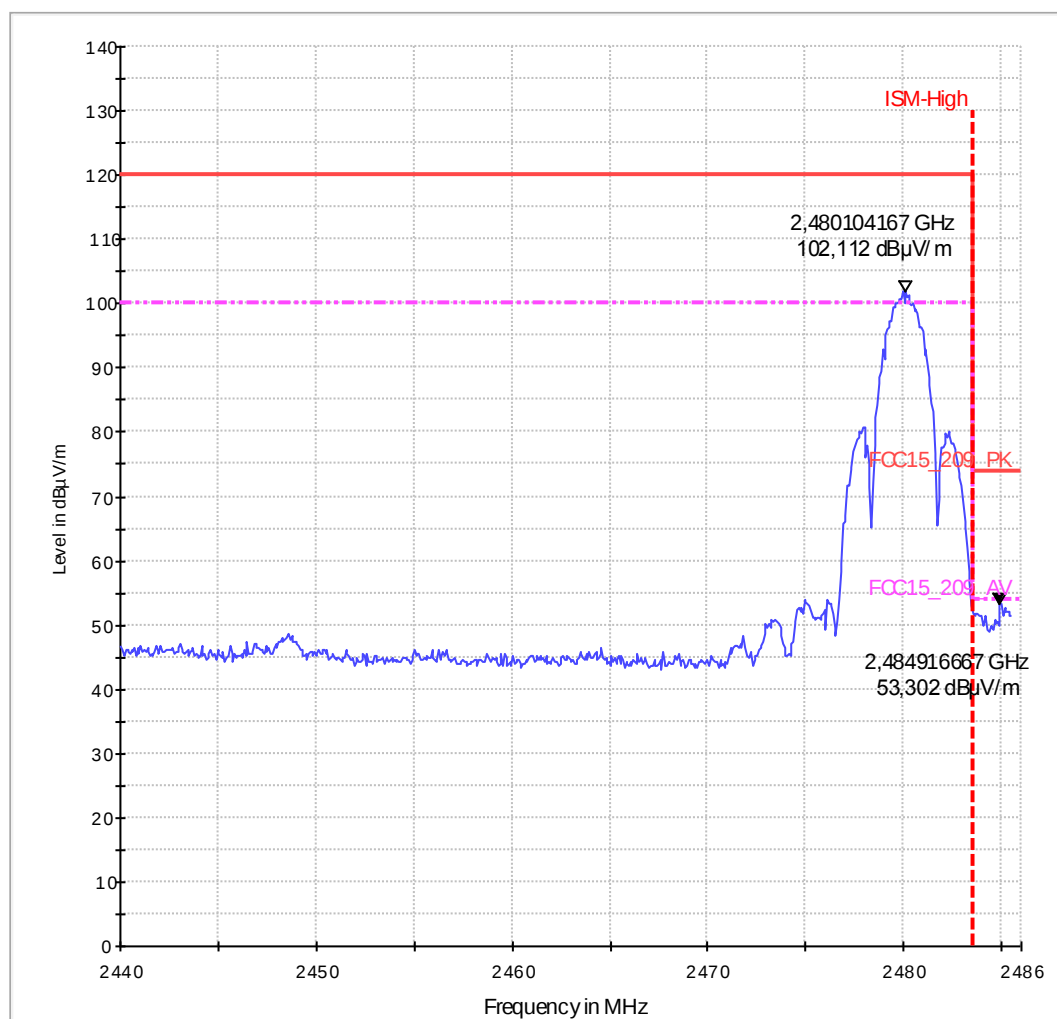
Common Information

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:	Tas
Comment:	Channel high
Op. Mode:	ZigBee

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

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: dB μ V/m

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

Diagram No.:c_03_BE

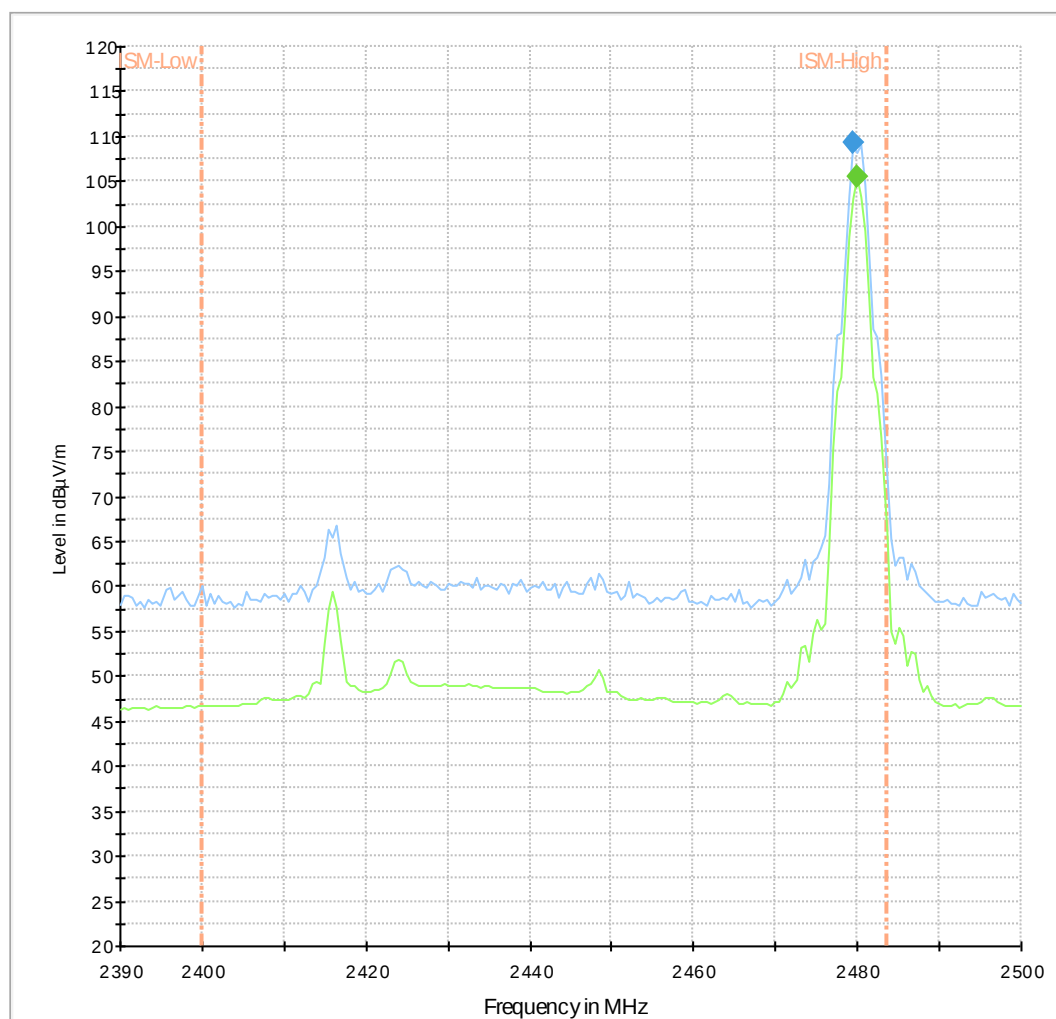
Common Information

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:	Tas
Comment:	Channel no.26, high
Op. Mode:	ZigBee

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep0_SM1_PA0_KP1_BT



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2479.500000	109.2	100.0	1000.000	155.0	H	47.0	0.0	35.7	

Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2480.000000	105.5	100.0	1000.000	155.0	H	47.0	0.0	35.7	

EMI Auto Test Template: Sweep0_SM1_PA0_KP1_BT

Hardware Setup: 549_dBuVm_PA0_TH3_KP1_ESU
 Measurement Type: E(I)RP
 Frequency Range: 2,39 GHz - 2,5 GHz
 Graphics Level Range: 20 dBμV/m - 120 dBμV/m

Preview Measurements:
 Scan Test Template: Sweep1_pre

Data Reduction:
 Limit Line #1: ISM-Low
 Limit Line #2: ISM-High
 Peak Search: 6 dB , Maximum Results: 0
 Subrange Maxima: 0 Subranges , Maxima per Subrange: 1
 Maximum Number of Results: 10
 After Data Reduction: Interactive data reduction

Frequency Zoom:
 Zoom Scan Template: Sweep1_zoom

Adjustment:
 Template for Single Meas.: Sweep1_pre

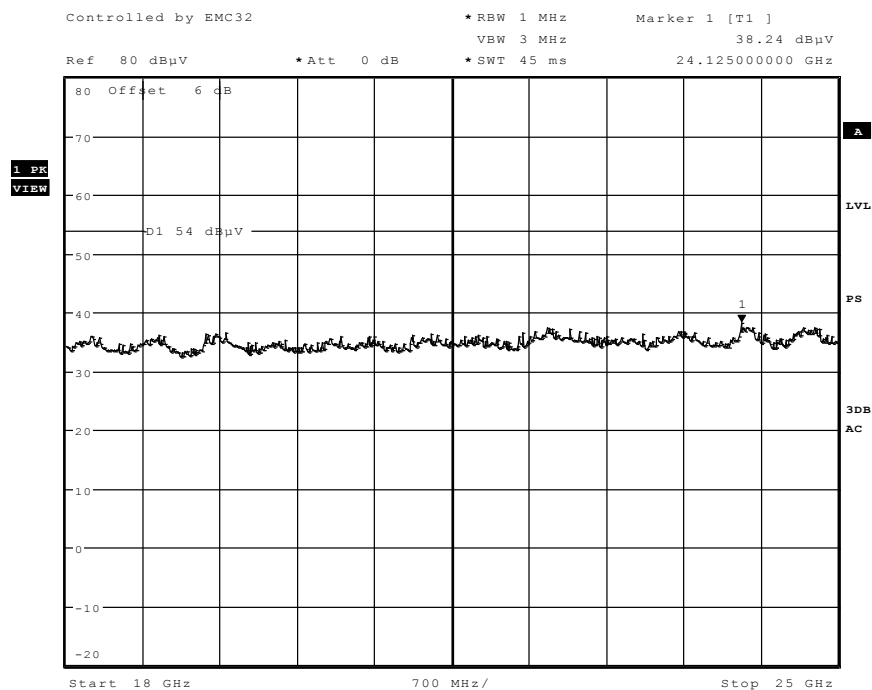
Final Measurements:
 Template for Single Meas.: Sweep1_fin

 Template for Single Meas.:(>1GHz) Sweep1_fin

Report Settings:
 Report Template: Report Setup FCC 15_247
 Create Electronic Report: RTF PDF
 Document Name: E-Field Strength accord. §15.205&15.209

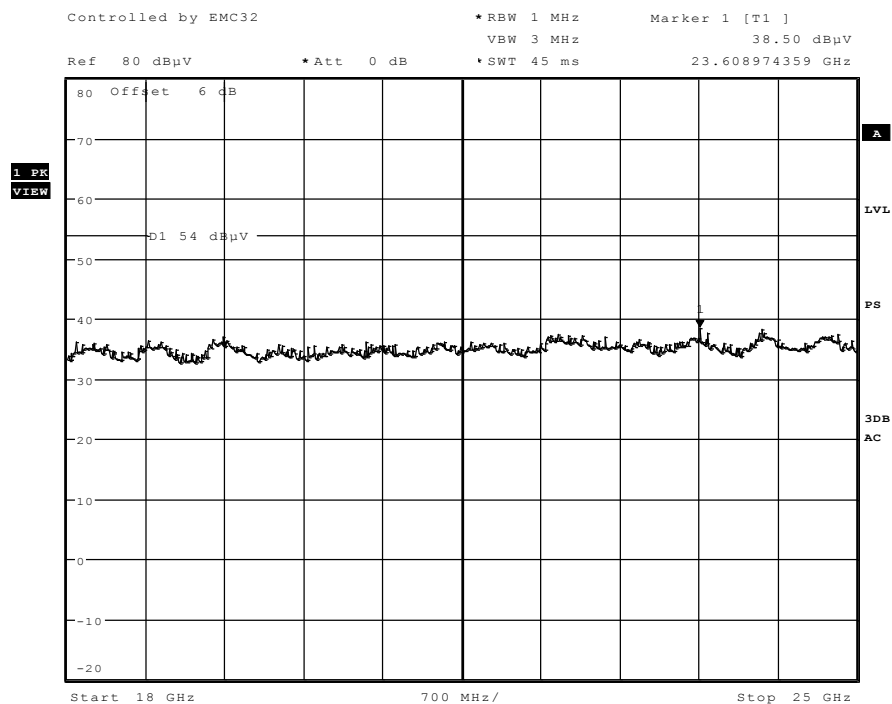
1.6.5. Radiated emissions in the frequency range above 18GHz

Diagram no. c_2.104x, Channel low:



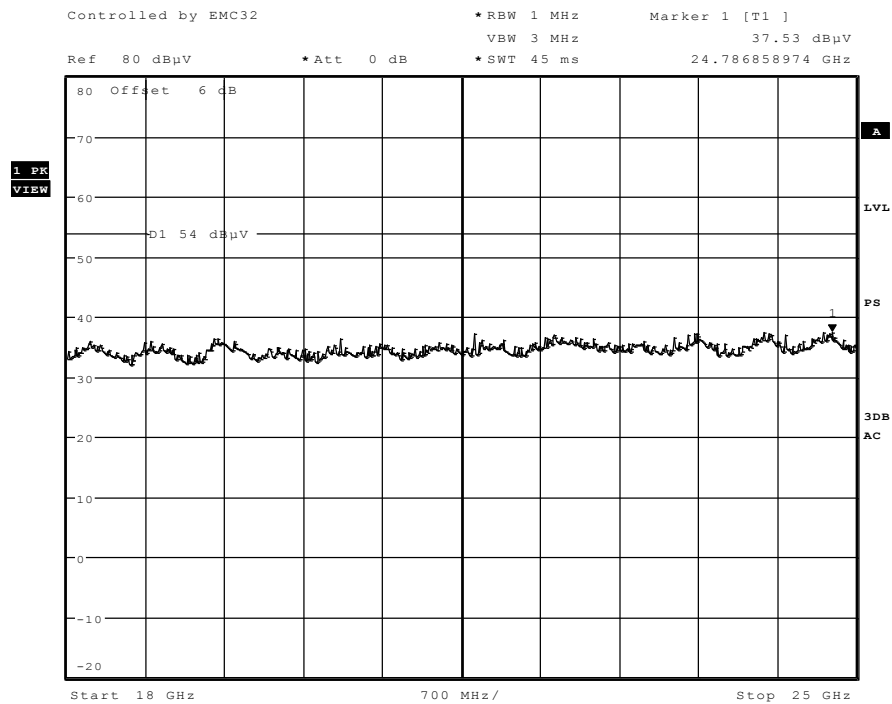
Date: 4.AUG.2011 10:11:02

Diagram no. c_2.105x, Channel middle:



Date: 4.AUG.2011 10:08:33

Diagram no. c_2.106x, Channel high:



Date: 4.AUG.2011 10:12:02

1.7. Radiated field strength (§15.109, Class B)

1.7.1. Radiated field strength (30MHz < f < 1GHz)

Diagram No. c_2.112_RX

Common Information

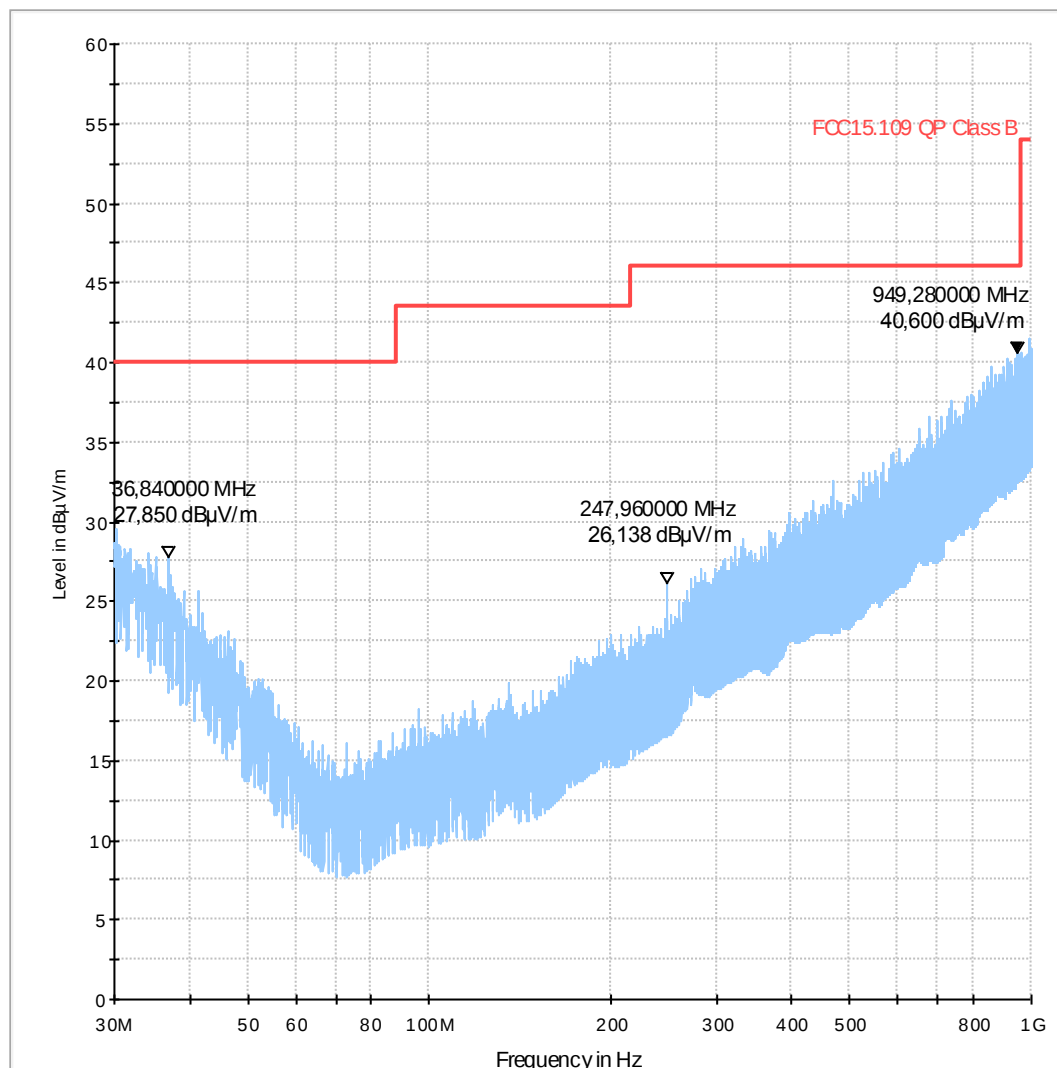
Test description:	Electric Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) with 3 m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m and 1.82 m, horizontal and vertical polarisation
Rec. antenna (final):	height between 1 m to 4 m, polarisation according to pre-scan results
Turntable step:	90° during pre-scan, continuously turning during final measurement
Used filter:	lowpass 1200 MHz
Test specification:	FCC 15.109; RSS-Gen: Issue 3

Operator:	Tas
Operating conditions:	RX
Power during tests:	3 V DC
Comment 1:	Channel middle

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0
Comment:	ZigBee Technology

05_FCC15.109_hor+vert_kipp



EMI Auto Test Template: 05_FCC15.109_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 = 4
 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: FCC15.109 QP Class B
 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
 Create Electronic Report: RTF PDF
 Document Name: EMI Report

Actions:
 Data Reduction: Before
 Notify: Sound (WAV file) 'tada.wav'
 Final Measurements: After
 Notify: Sound (WAV file) 'tada.wav'

1.7.2. Radiated field strength (1GHz < f < 12.75GHz)

Diagram No.: 2.107

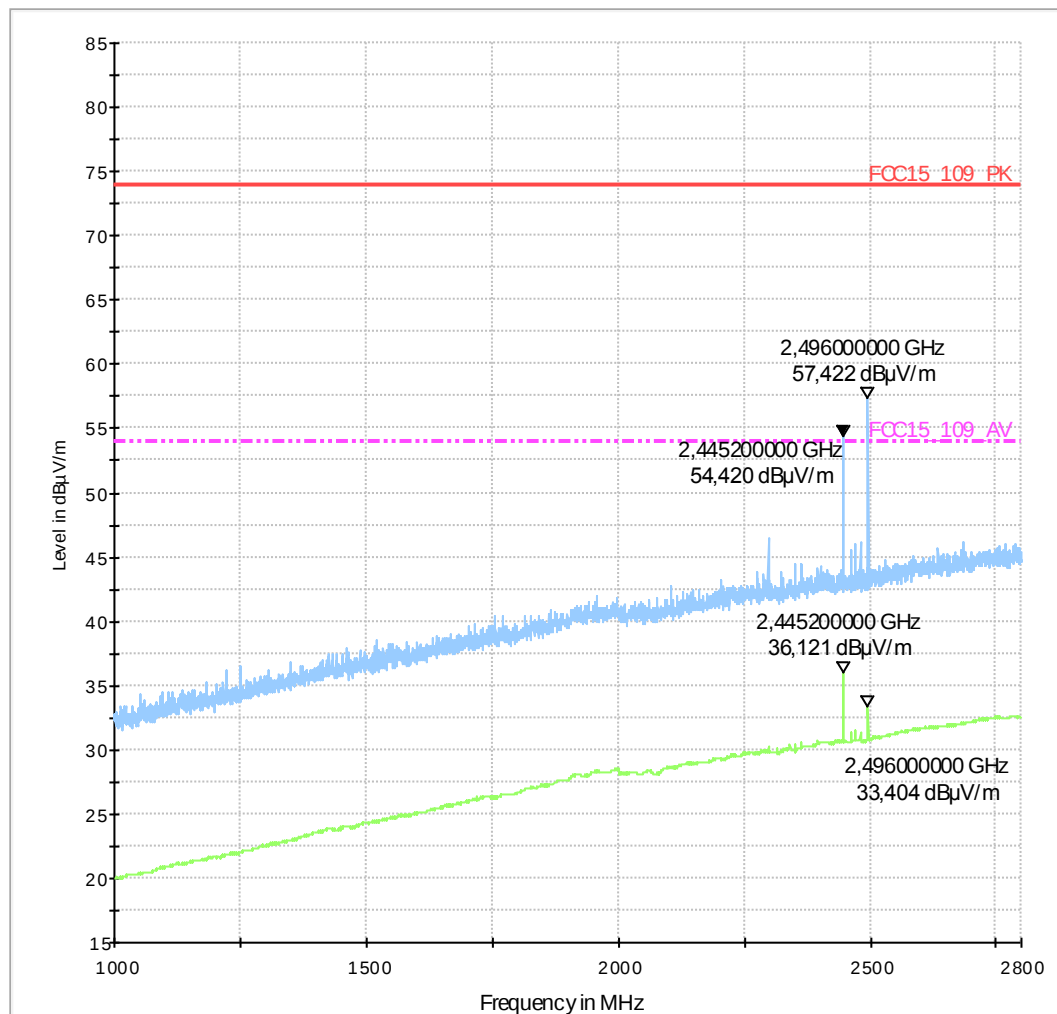
Common Information

Test Description:	Receiver Spurious emissions
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC 15.109 Unintentional Radiator
Antenna polarisation:	horizontal/vertical
Operator:	Tas
Operation condition:	Channel no. 18, middle (2,44 GHz)
Op. mode:	ZigBee - RX

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep1_SM1_K1



EMI Auto Test Template: Sweep1_SM1_K1

Hardware Setup:	549_dBuVm_PA287_TH1_KP1_ESU
Measurement Type:	E(I)RP
Frequency Range:	1 GHz - 2,8 GHz
Graphics Level Range:	15 dBµV/m - 85 dBµV/m
Preview Measurements:	
Scan Test Template:	Sweep1_pre
Data Reduction:	
Limit Line #1:	FCC15_109_PK
Limit Line #2:	FCC15_109_AV
Peak Search:	20 dB , Maximum Results: 10
Subrange Maxima:	50 Subranges , Maxima per Subrange: 1
Acceptance Offset:	-20 dB
Maximum Number of Results:	30
After Data Reduction:	Interactive data reduction
Frequency Zoom:	
Zoom Scan Template:	Sweep1_zoom
Adjustment:	
Template for Single Meas.:	Sweep1_pre
Final Measurements:	
Template for Single Meas.:	Sweep1_fin
Template for Single Meas.:(>1GHz)	Sweep1_fin
Report Settings:	
Report Template:	Report Setup FCC 15_109
Create Electronic Report:	RTF PDF
Document Name:	dummy FCC Report
Actions:	
Test start	
Notify:	"Matrix richtig geschaltet ?!? Spekki (ESU) angeschlossen ?"

Diagram No.: c_2.108_RX

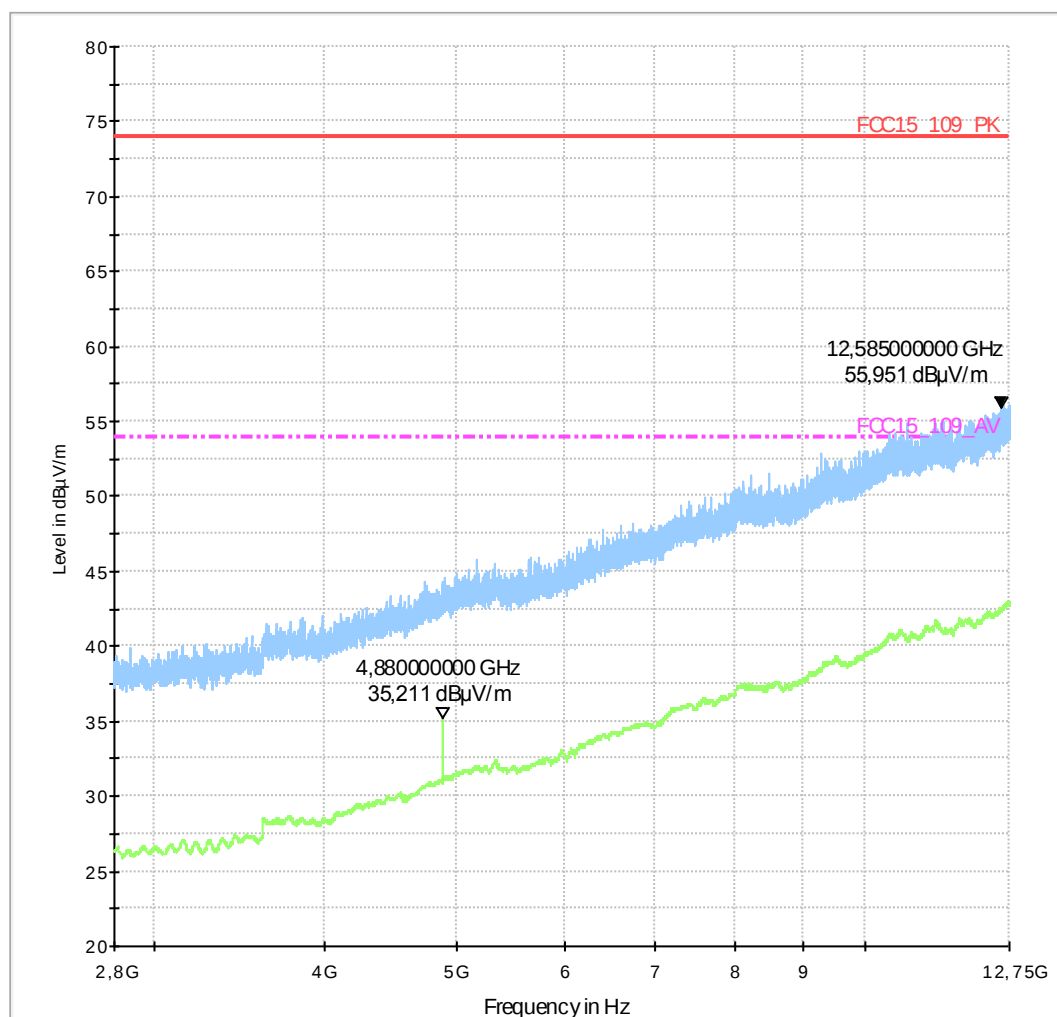
Common Information

Test Description:	Receiver Spurious emissions
Test Site:	FAR
Test Standard:	FCC 15.109 Unintentional Radiator
Antenna polarisation:	horizontal/vertical
Operator	Tas
Operation	Channel no. 18, middle (2,44 GHz)
Comment:	ZigBee - RX

EUT Information

EUT Name:	Multi RF Module
Manufacturer:	SMA Solar Technology AG
Serial Number:	54
Hardware Rev:	--
Software Rev:	v1.0

Sweep2_SM1_K1



EMI Auto Test Template: Sweep2_SM1_K1

Hardware Setup:	549_dBuVm_PA484_TH3_KP1_ESU
Measurement Type:	E(I)RP
Frequency Range:	2,8 GHz - 12,75 GHz
Graphics Level Range:	20 dB μ V/m - 80 dB μ V/m
Preview Measurements:	
Scan Test Template:	Sweep2_pre
Data Reduction:	
Limit Line #1:	FCC15_109_PK
Limit Line #2:	FCC15_109_AV
Peak Search:	6 dB , Maximum Results: 10
Subrange Maxima:	50 Subranges , Maxima per Subrange: 1
Acceptance Offset:	-20 dB
Maximum Number of Results:	30
After Data Reduction:	Interactive data reduction
Frequency Zoom:	
Zoom Scan Template:	Sweep2_zoom
Adjustment:	
Template for Single Meas.:	Sweep2_zoom
Final Measurements:	
Template for Single Meas.:	Sweep2_fin
Report Settings:	
Report Template:	Report Setup FCC 15_109
Create Electronic Report:	PDF
Document Name:	dummy EMI Report