

Annex 4: Diagrams to  
TEST REPORT  
No.: 2-20823290r/13

According to:  
**FCC Regulations**  
Part 15.109, Part15.249

for  
Sony Mobile Communications

Smart Phone  
(ANT+)

FCC-ID: PY7PM-0750

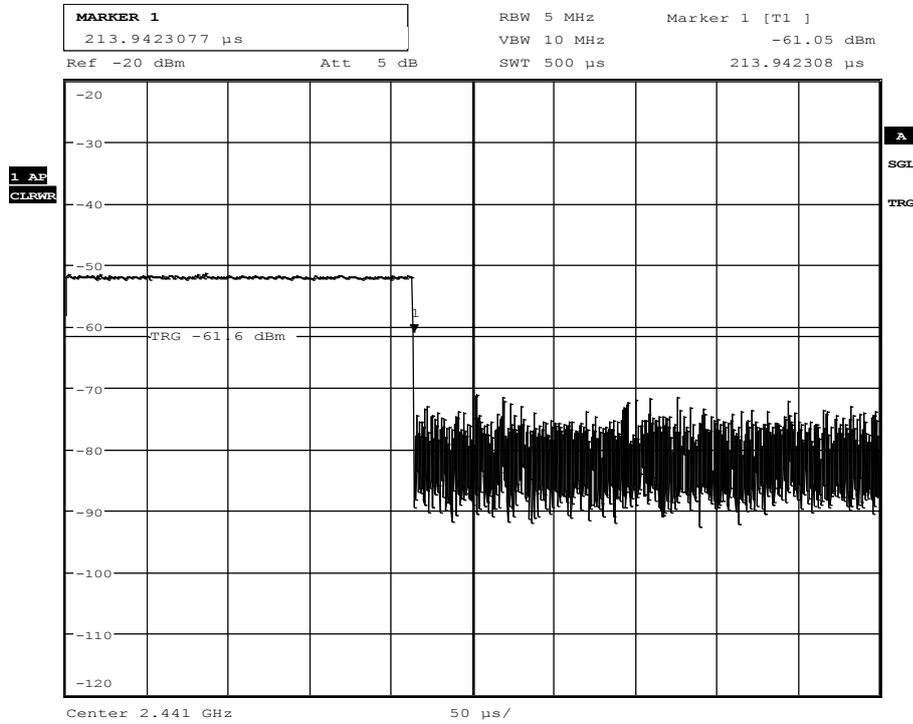
Laboratory Accreditation and Listings			
 <p><b>DAkKS</b> Deutsche Akkreditierungsstelle D-PL-12047-01-01</p>	 <p>FEDERAL COMMUNICATIONS COMMISSION <b>FC</b> USA Reg. No.: 736496 MRA US-EU 0003</p>	 <p>Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3</p>	 <p>Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2666 C-2914, T-1967, G-301</p>
 <p><b>WiFi</b> ALLIANCE AUTHORIZED RF LABORATORY</p>	 <p><b>CTIA</b> Authorized Test Lab LAB CODE 20011130-00</p>		
accredited according to DIN EN ISO/IEC 17025			
<p align="center"><b>CETECOM GmbH</b> Laboratory Radio Communications &amp; 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</p>			

## Table of contents

<b>1. TIMING OF TRANSMITTER</b> .....	<b>3</b>
<b>2. MAX. FIELD STRENGTH RADIATED</b> .....	<b>5</b>
<b>3. TRANSMITTER SPURIOUS EMISSIONS</b> .....	<b>8</b>
3.1. Spurious magnetic field strength for frequency range $f < 30\text{MHz}$ .....	8
3.2. Frequency range $30\text{MHz} < f < 1\text{GHz}$ .....	9
3.3. Frequency range $1\text{GHz} < f < 18\text{GHz}$ .....	12
3.4. Frequency range $18\text{GHz} < f < 25\text{GHz}$ .....	16
3.5. Band-Edge radiated .....	19
<b>4. RECEIVER SPURIOUS EMISSIONS</b> .....	<b>21</b>
4.1. Frequency range $f < 1\text{GHz}$ .....	21
4.2. Frequency range $f > 1\text{GHz}$ .....	22

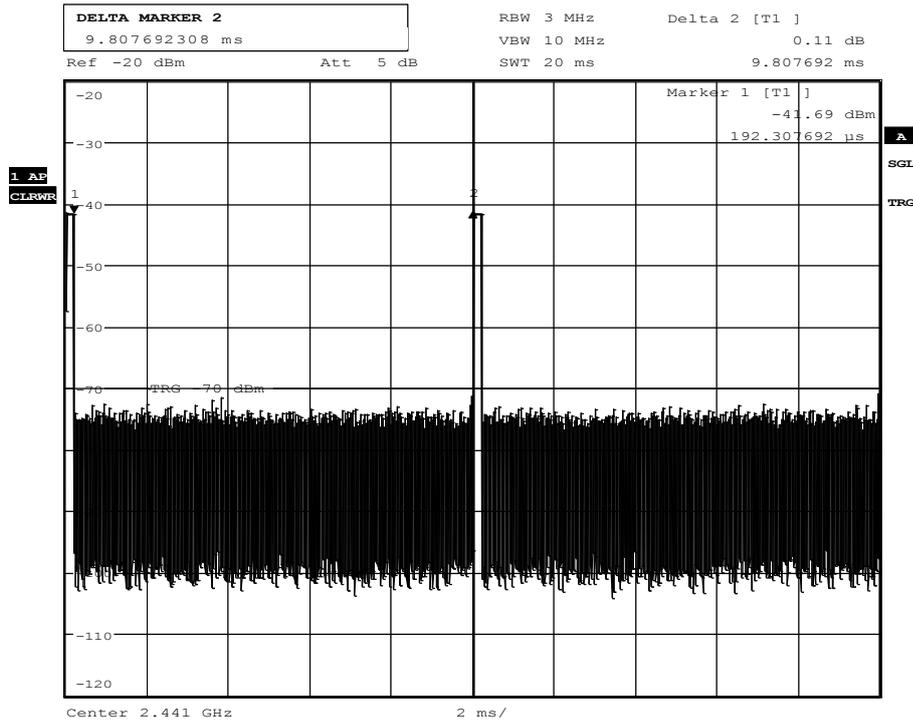
# 1. Timing of transmitter

A special script which run on Android-Shell was used to take a timing of the transmitter. We refer to applicants supplied documents for the special commands as described in document “ANT+ ETS\_SW test command” (Rev.5).



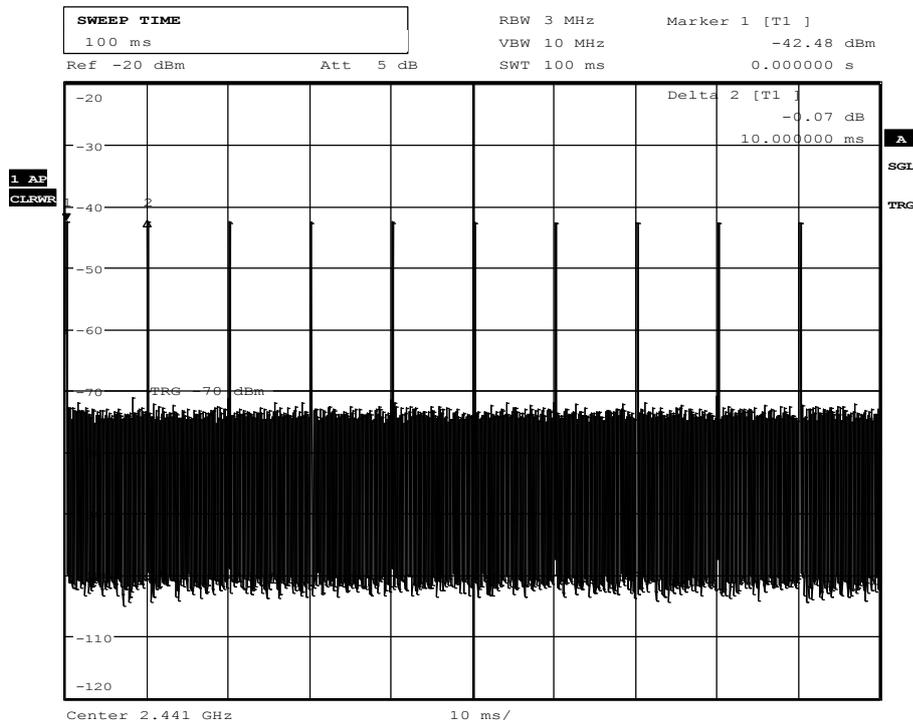
Date: 25.MAR.2014 14:29:38

Length of one burst= 213.942308 us



Date: 25.MAR.2014 14:28:25

TX-off time of transmitter between two consecutive TX-bursts = 9.807692ms



Date: 25.MAR.2014 14:27:21

Number of TX-bursts within 100ms period = 11

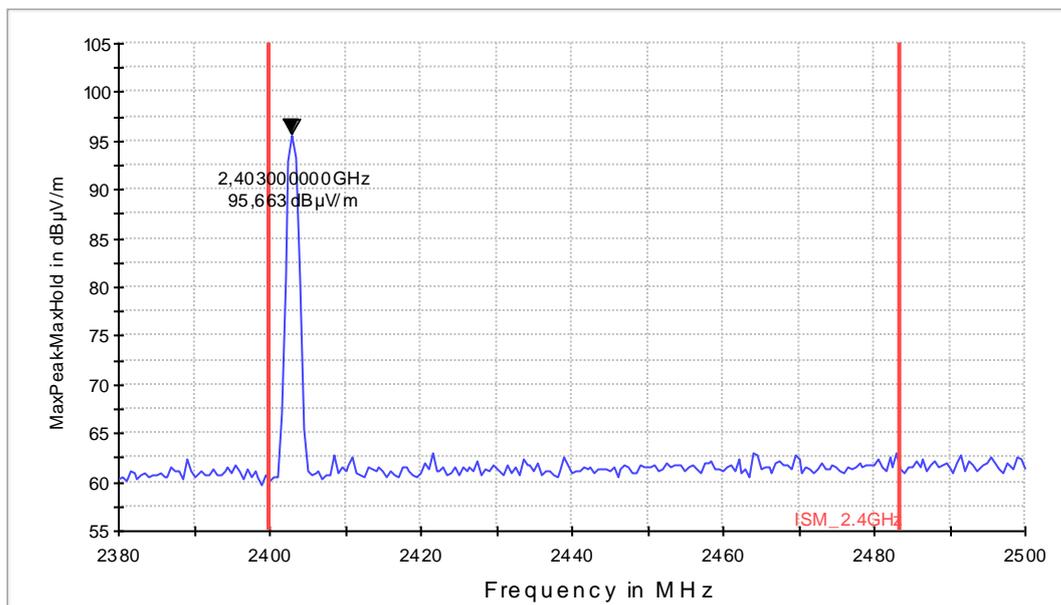
## 2. Max. field strength radiated

### Diagram No.: 7.01\_ANT\_Ch1

#### 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

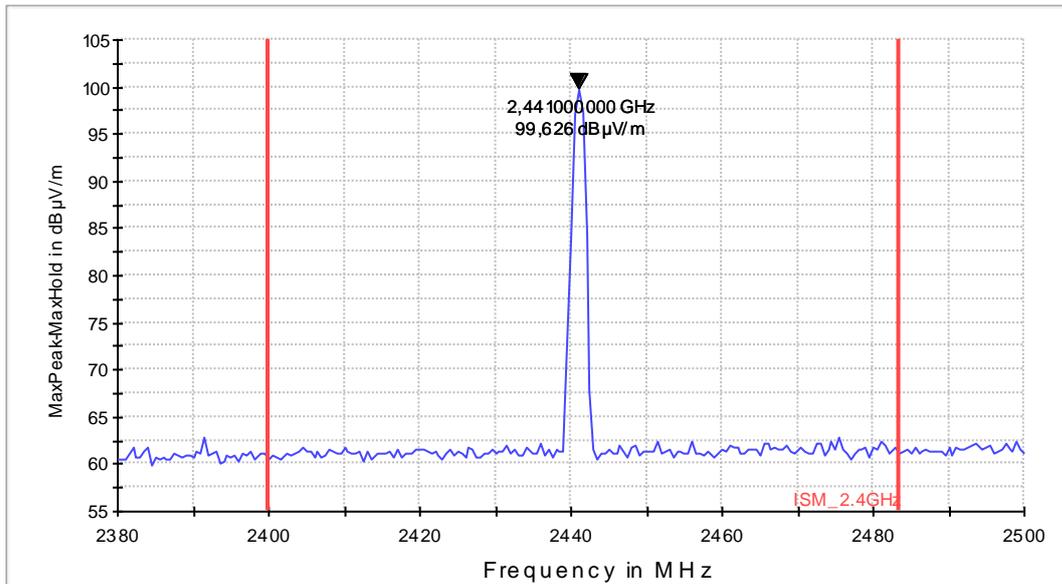
Operator Name: Lor  
Comment: Channel no. low=1  
Op. Mode: ANT+ TX continuous



# Diagram No.: 7.02\_Ch39

## Common Information

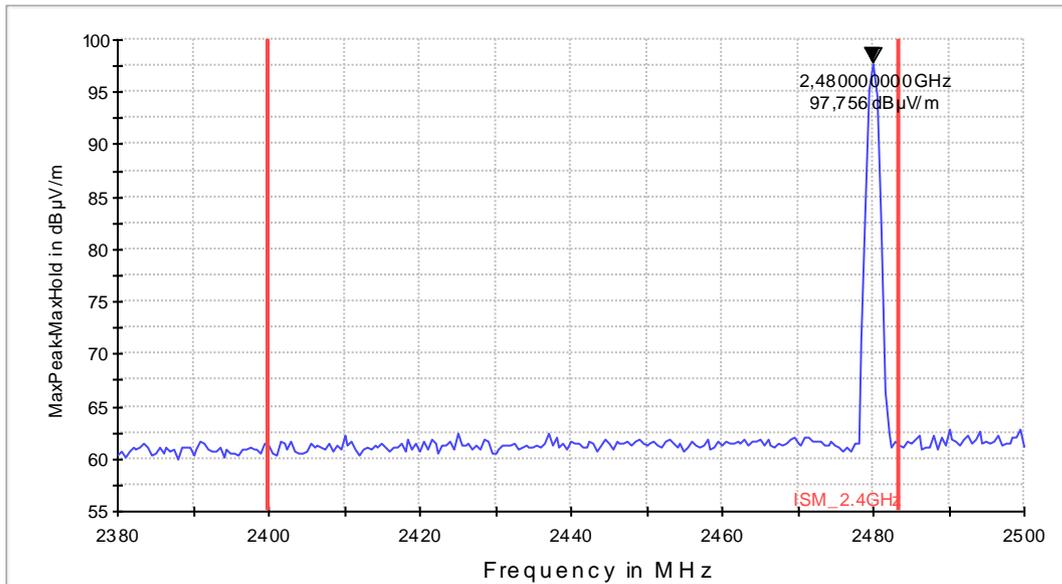
Test Description:	Max. Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.249 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel no. middle=39
Op. Mode:	ANT+ TX continuous



# Diagram No.: 7.03\_Ch78

## Common Information

Test Description:	Max. Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.249 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel no. high=78
Op. Mode:	ANT+ TX continuous



### 3. Transmitter spurious emissions

#### 3.1. Spurious magnetic field strength for frequency range $f < 30\text{MHz}$

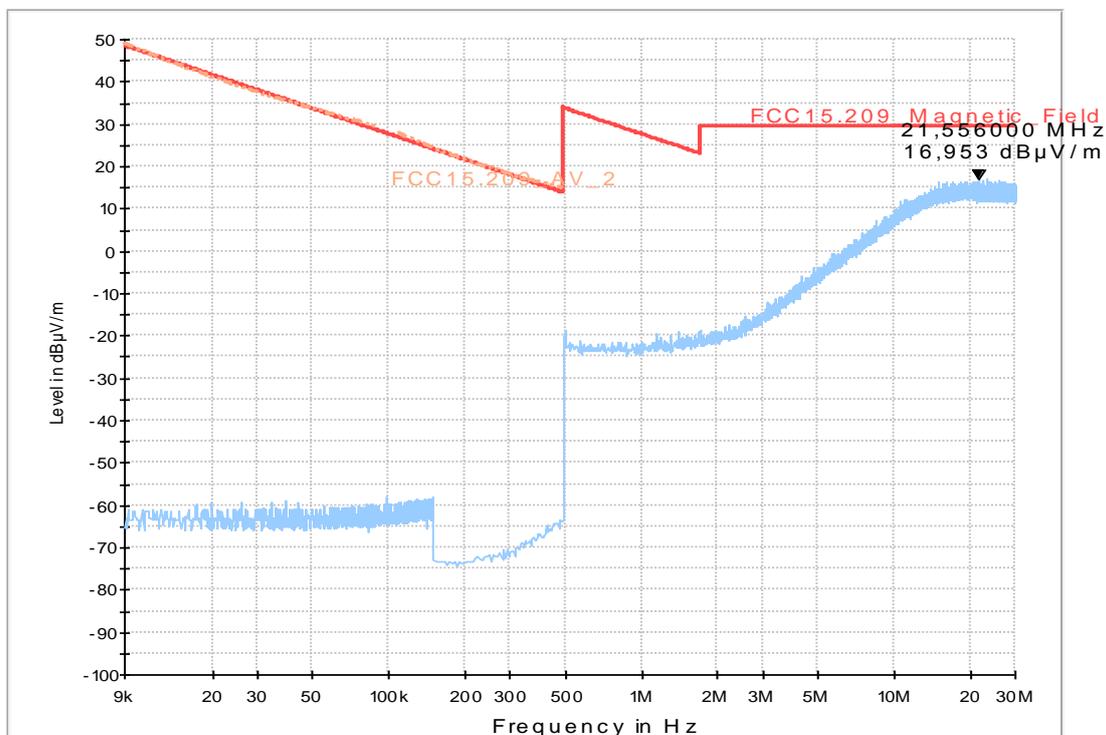
#### Diagram No. 2.03\_ANT\_Ch39

	Date: 03.03.2014	Page 1 of 2
Test description:	Magnetic Fieldstrength Measurement related to 30/300 m distance	
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance	
Version of Testsoftware:	EMC32 V8.51.0	
Distance correction:	used accord. table, pls. see test report	
Technical Data:	Please see page 2 for detailed data of measurement setup	
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation	
Used filter:	bypass	
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 3	
Operator:	Lor	
Operating conditions:	ANT Plus	
Power during tests:	5V DC over AE1 (120V/60Hz)	
Comment 1:	Channel middle=39	

#### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750
-----	
HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74D
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--

FCC15.209\_magn hor+vert



### 3.2. Frequency range 30MHz<f<1GHz

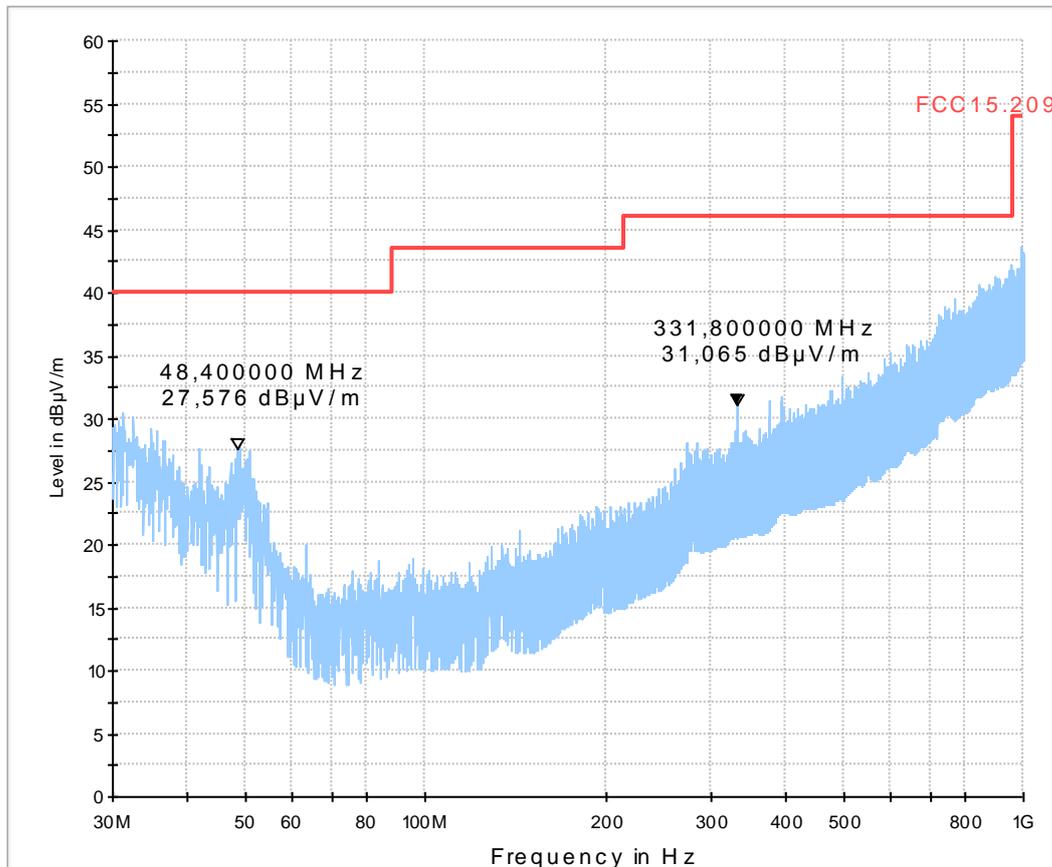
## Diagram No. 3.07\_Ant\_Ch1

Test description:	27.02.2014 Page 1 of 1
Test site and distance:	Electric Field Strength Measurement
Version of Testsoftware:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Distance correction:	EMC32 V8.51.0
Used filter:	not used
Technical Data:	not used
Test specification.:	please see page 2 for detailed data of measurement setup
	FCC 15.249
Operator:	Lor
Operating conditions:	ANT+

### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750
-----	
HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74G
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--

01\_FCC15.209\_hor+vert\_kipp



### Diagram No. 3.08\_Ant\_Ch39

27.02.2014 Page 1 of 2  
 Test description: Electric Field Strength Measurement  
 Test site and distance: Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance  
 Version of Testsoftware: EMC32 V8.51.0  
 Distance correction: not used  
 Used filter: not used  
 Technical Data: please see page 2 for detailed data of measurement setup  
 Test specification.: FCC 15.249

Operator: Lor  
 Operating conditions: ANT+

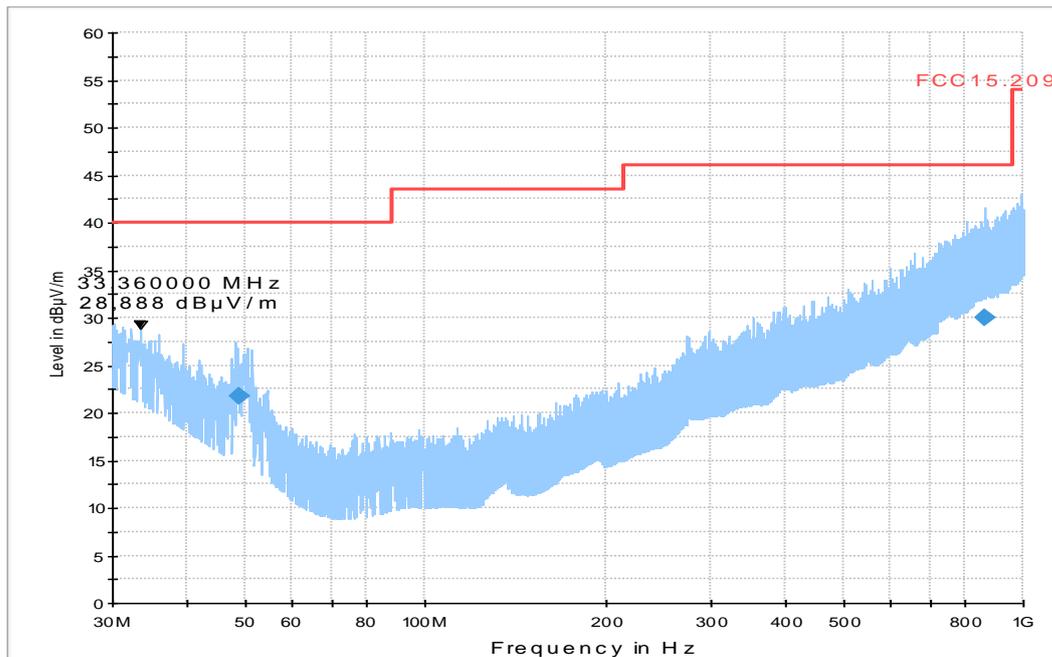
#### EUT Information

Manufacturer: Sony Mobile Communications AB  
 EuT: PY7PM-0750

---

HW Version: --  
 SW Version: ETS  
 Serial Number: CB5126D74G  
 Connected Interfaces: DC over USB  
 Power Supply: 5V DC over AE1 (120V/60Hz)  
 Comments: --

01\_FCC15.209\_hor+vert\_kipp



#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
48.820000	21.7	1000.0	120.000	105.0	V	263.0	0.0	14.0	18.30
865.420000	30.0	1000.0	120.000	191.0	V	131.0	90.0	26.5	16.00

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

Frequency (MHz)	Limit (dBµV/m)
48.820000	40.00
865.420000	46.00

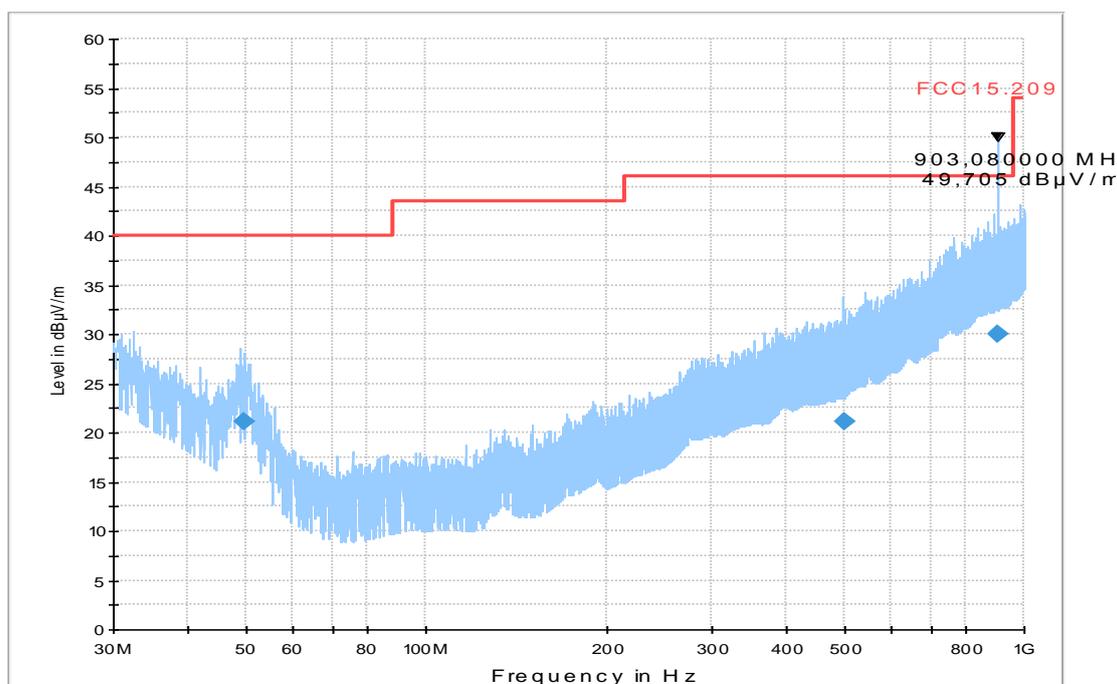
### Diagram No. 3.09\_Ant\_Ch78

27.02.2014 Page 1 of 2  
 Test description: Electric Field Strength Measurement  
 Test site and distance: Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance  
 Version of Testsoftware: EMC32 V8.51.0  
 Distance correction: not used  
 Used filter: not used  
 Technical Data: please see page 2 for detailed data of measurement setup  
 Test specification.: FCC 15.249  
 Comment 1: External temporar interferer at 903.08MHz, not relevant for test

#### EUT Information

Manufacturer: Sony Mobile Communications AB  
 EuT: PY7PM-0750  
 -----  
 HW Version: --  
 SW Version: ETS  
 Serial Number: CB5126D74G  
 Connected Interfaces: DC over USB  
 Power Supply: 5V DC over AE1 (120V/60Hz)  
 Comments: --

01\_FCC15.209\_hor+vert\_kipp



#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
49.500000	21.0	1000.0	120.000	105.0	V	240.0	90.0	13.7	19.00
500.010000	21.1	1000.0	120.000	150.0	H	0.0	0.0	19.9	24.90
903.600000	30.0	1000.0	120.000	118.0	V	339.0	90.0	26.9	16.00

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

Frequency (MHz)	Limit (dBµV/m)
49.500000	40.00
500.010000	46.00
903.600000	46.00

### 3.3. Frequency range 1GHz < f < 18GHz

#### Diagram No.: 4.04\_ANT\_Ch1

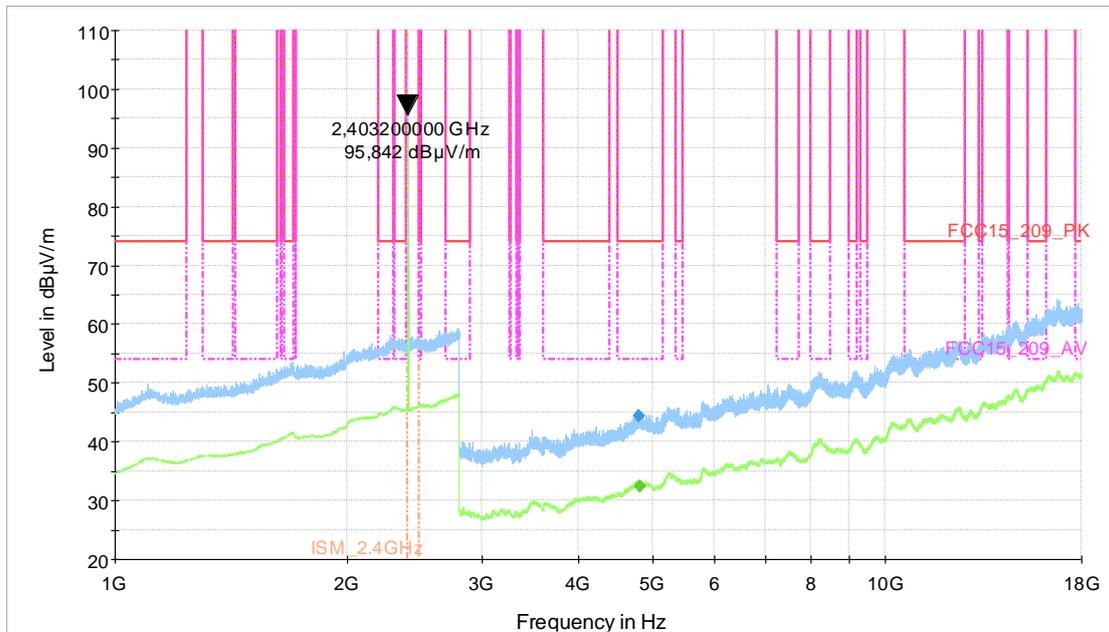
##### Common Information

Test Description: Radiated field strength emission accord. §15.249 in 3m distance  
 Test Site: CETECOM GmbH Essen  
 Test Standard: §15.249 Intentional Radiator  
 Antenna polarisation: horizontal/vertical

Operator Name: Lor  
 Comment: Channel no. low=1  
 Op. Mode: ANT+ TX continuous

##### EUT Information

Manufacturer: Sony Mobile Communications AB  
 EuT: PY7PM-0750  
 -----  
 HW Version: --  
 SW Version: ETS  
 Serial Number: CB5126D74D  
 Connected Interfaces: DC over USB  
 Power Supply: 5V DC over AE1 (120V/60Hz)  
 Comments: --



##### Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
4798.100000	44.5	100.0	1000.000	155.0	V	243.0	90.0	4.9	29.5
Frequency (MHz)	Limit (dBµV/m)	Comment							
4798.100000	74.0								

##### Final Result 2

Frequency (MHz)	RMS (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
4806.100000	32.3	100.0	1000.000	155.0	H	90.0	0.0	4.9	21.7
Frequency (MHz)	Limit (dBµV/m)	Comment							
4806.100000	54.0								

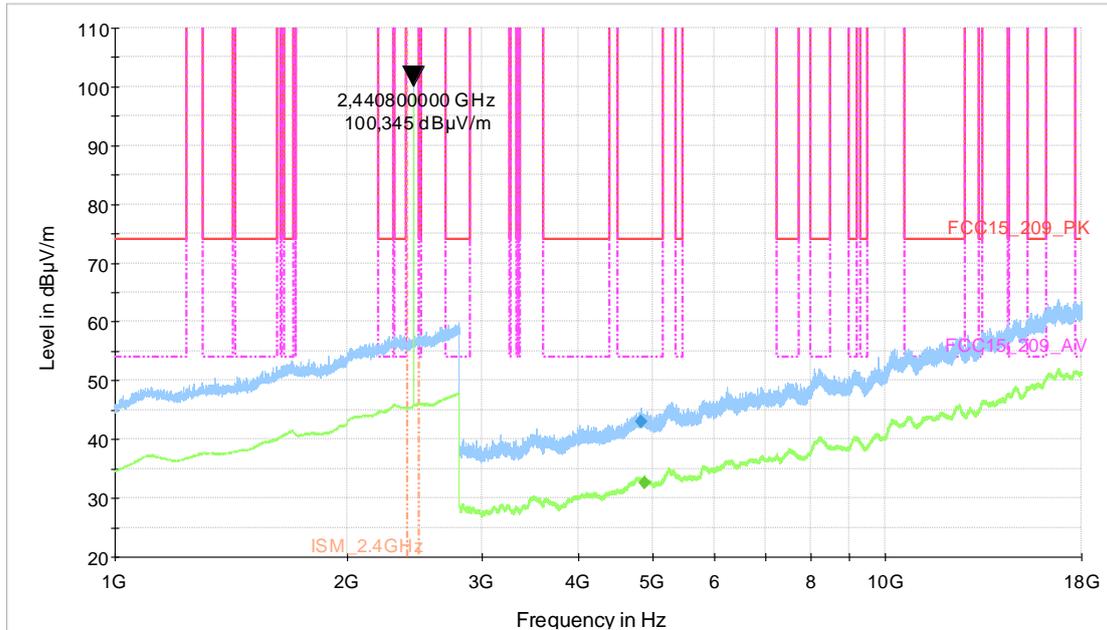
## Diagram No.: 4.05\_ANT\_Ch39

### Common Information

Test Description:	Radiated field strength emission accord. §15.249 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.249 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel no. middle=39
Op. Mode:	ANT+ TX continuous

### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750
-----	
HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74D
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--



### Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
4825.700000	42.9	100.0	1000.000	155.0	H	172.0	90.0	4.8	31.1
Frequency (MHz)	Limit (dBµV/m)	Comment							
4825.700000	74.0								

### Final Result 2

Frequency (MHz)	RMS (dBµV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
4882.100000	32.7	100.0	1000.000	155.0	V	88.0	90.0	4.6	21.3
Frequency (MHz)	Limit (dBµV/m)	Comment							
4882.100000	54.0								

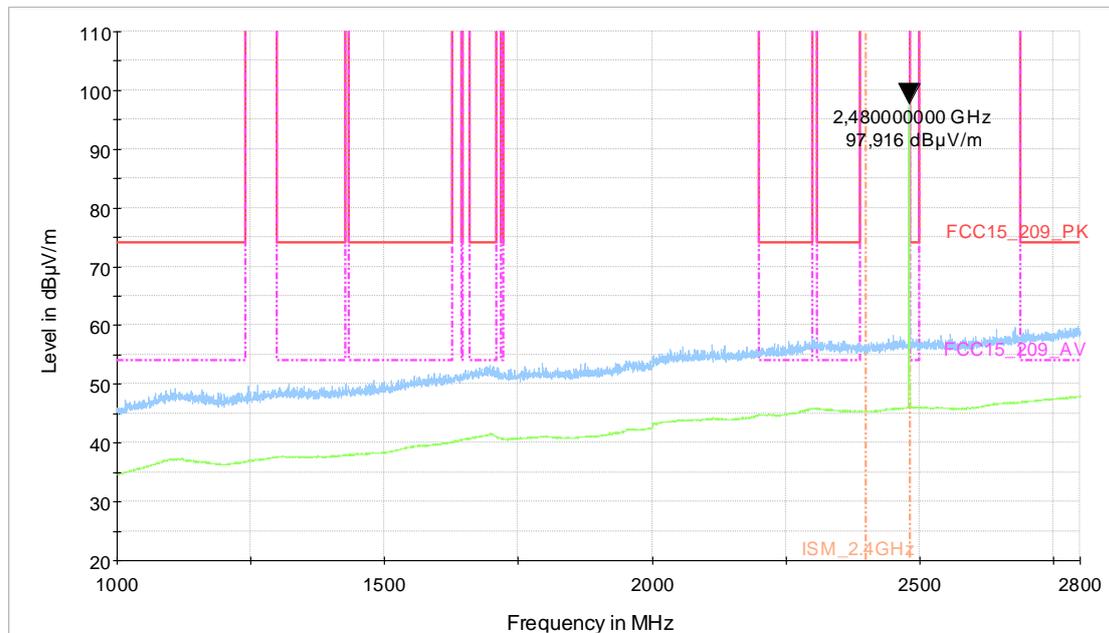
## Diagram No.: 4.06a\_Ch78

### Common Information

Test Description:	Radiated field strength emission accord. §15.247 in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.249 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operator Name:	Lor
Comment:	Channel no. high=78
Op. Mode:	ANT+ TX continuous

### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750
-----	
HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74D
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--



## Diagram No.: 4.06b\_ANT\_Ch78

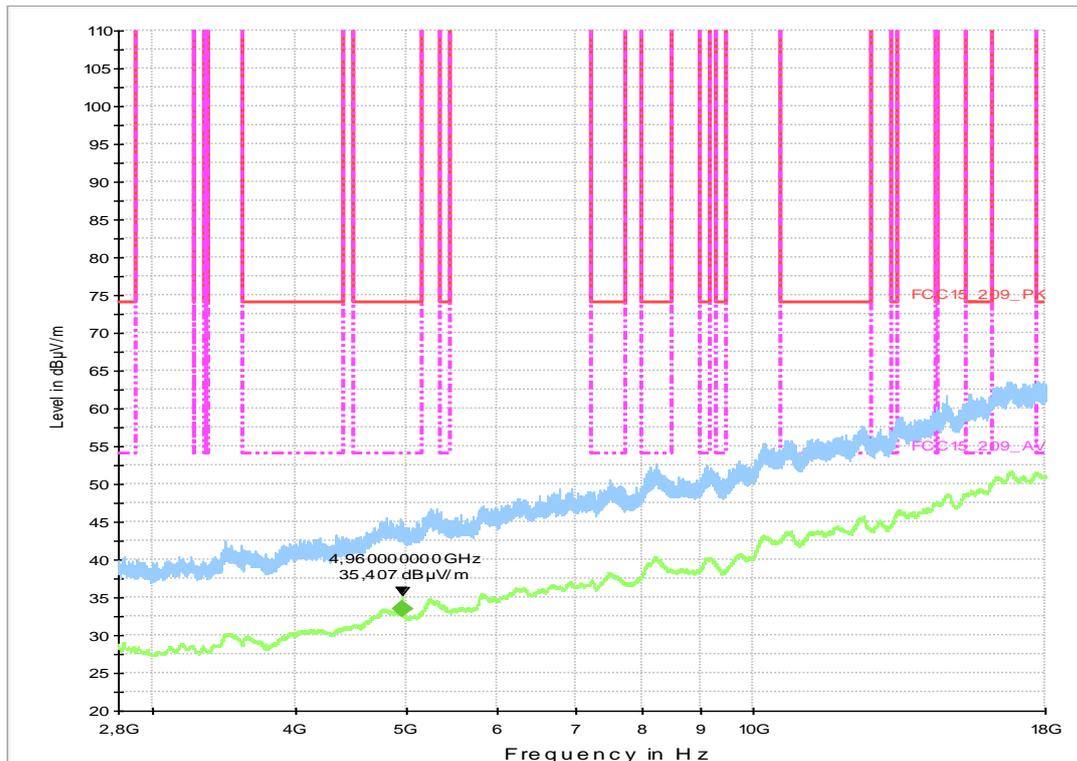
### Common Information

Test Description: Radiated field strength emission accord. §15.247 in 3m distance  
 Test Site: CETECOM GmbH Essen  
 Test Standard: §15.249 Intentional Radiator  
 Antenna polarisation: horizontal/vertical  
  
 Operator Name: Lor  
 Comment: Channel no. high=78  
 Op. Mode: ANT+ TX continuous

### EUT Information

Manufacturer: Sony Mobile Communications AB  
 EuT: PY7PM-0750  
 -----  
 HW Version: --  
 SW Version: ETS  
 Serial Number: CB5126D74D  
 Connected Interfaces: DC over USB  
 Power Supply: 5V DC over AE1 (120V/60Hz)  
 Comments: --

00431\_SM1\_KP1\_WLAN\_1\_5ms



### Final Result 2

Frequency (MHz)	RMS (dBµV/m)	Meas Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr (dB)	Margin (dB)
4960.100000	33.5	100.0	1000.000	155.0	V	84.0	90.0	4.3	20.5

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

Frequency (MHz)	Limit (dBµV/m)	Comment
4960.100000	54.0	

### 3.4. Frequency range 18GHz < f < 25GHz

#### Diagram no. 4.07\_ANT\_Ch1

##### Common Information

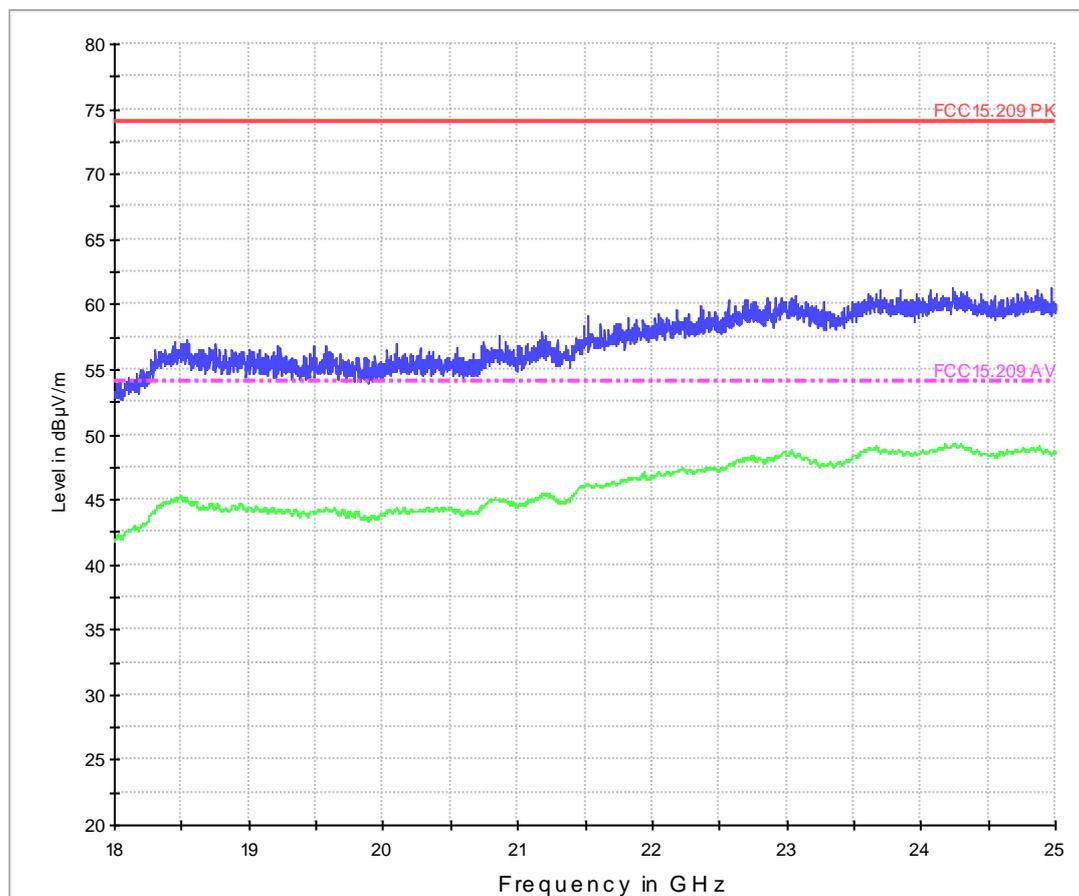
Test Description:	Radiated field strength emission in 1m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.249 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Distance correction factor	3 to 1m: -10.5 dB applying to measurement results
Operation mode:	TX mode continuous
Operator Name:	FTe
Comment:	Channel no. 1

##### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750

HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74G
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--

EMI Sweep\_18\_25GHz\_P reamp\_On\_Ref338\_AntRef302\_1m\_dBuV



## Diagram no. 4.08\_ANT\_Ch39

### Common Information

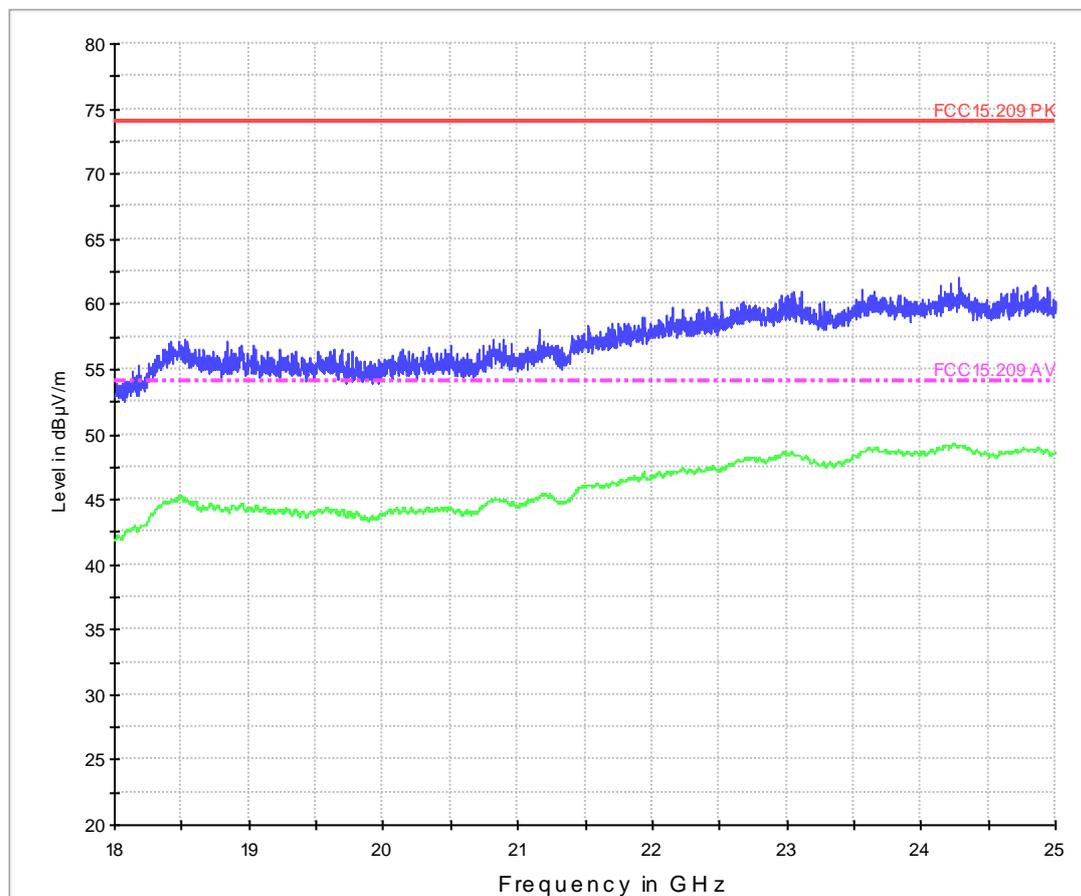
Test Description:	Radiated field strength emission in 1m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.249 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Distance correction factor	3 to 1m: -10.5 dB applying to measurement results
Operation mode:	TX mode continuous
Operator Name:	FTe
Comment:	Channel no. 39

### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750

HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74G
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--

EMI Sweep\_18\_25GHz\_Preamplifier\_On\_Ref338\_AntRef302\_1m\_dBuV



## Diagram no. 4.09\_ANT\_Ch78

### Common Information

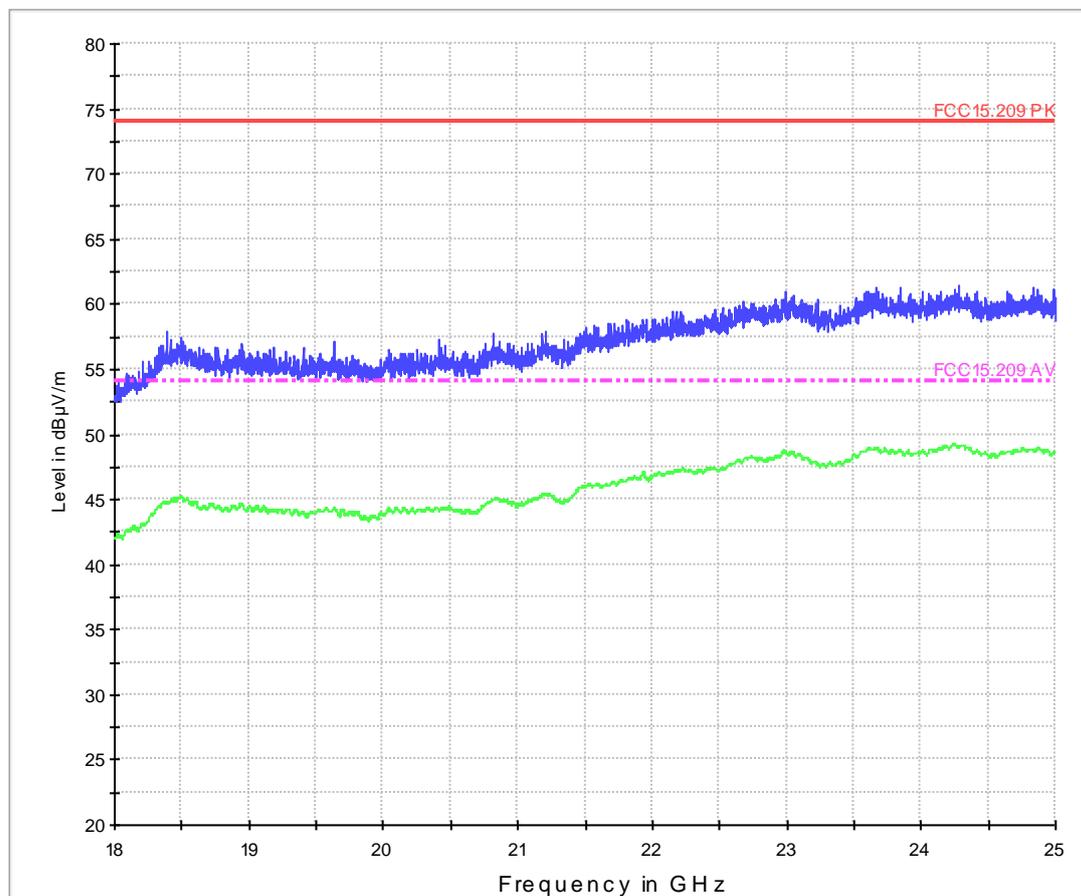
Test Description:	Radiated field strength emission in 1m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	§15.249 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Distance correction factor	3 to 1m: -10.5 dB applying to measurement results
Operation mode:	TX mode continuous
Operator Name:	FTe
Comment:	Channel no. 78

### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750

HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74G
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--

EMI Sweep\_18\_25GHz\_Preampl\_On\_Ref338\_AntRef302\_1m\_dBuV



### 3.5. Band-Edge radiated

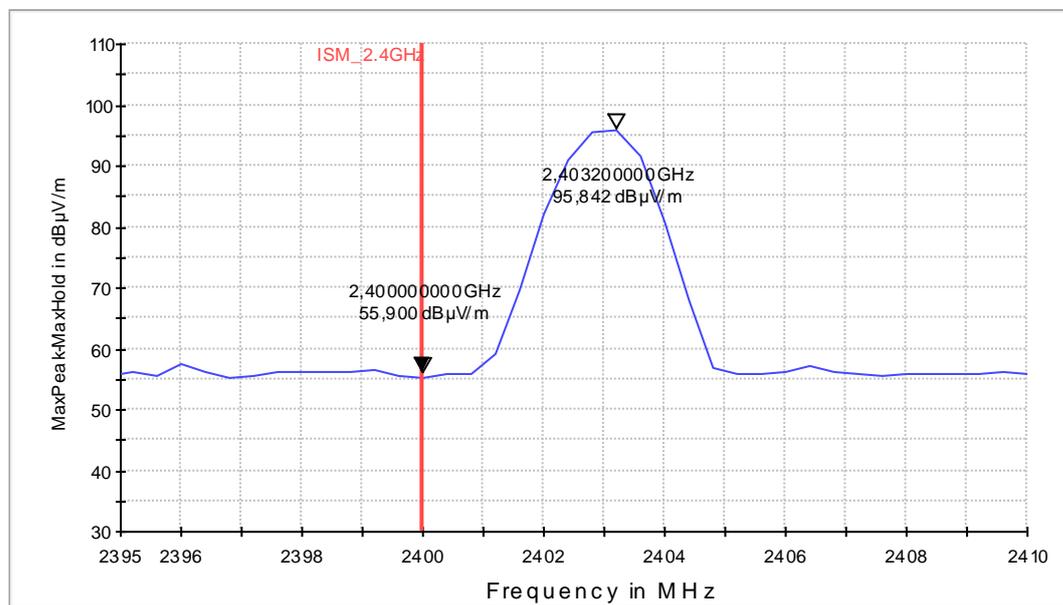
#### 3.5.1. Left Band-Edge on Channel 1

## Diagram No.: 9.01\_BE\_Low\_ANT\_Ch1

### Common Information

Test Description: Radiated Band-Edge emissions 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 no. low=1  
 Op. Mode: ANT+ TX continuous



**Delta Value: (95.84-55.90)dBuV/m=39.94 > 20/30dBc as required on non-restricted band**

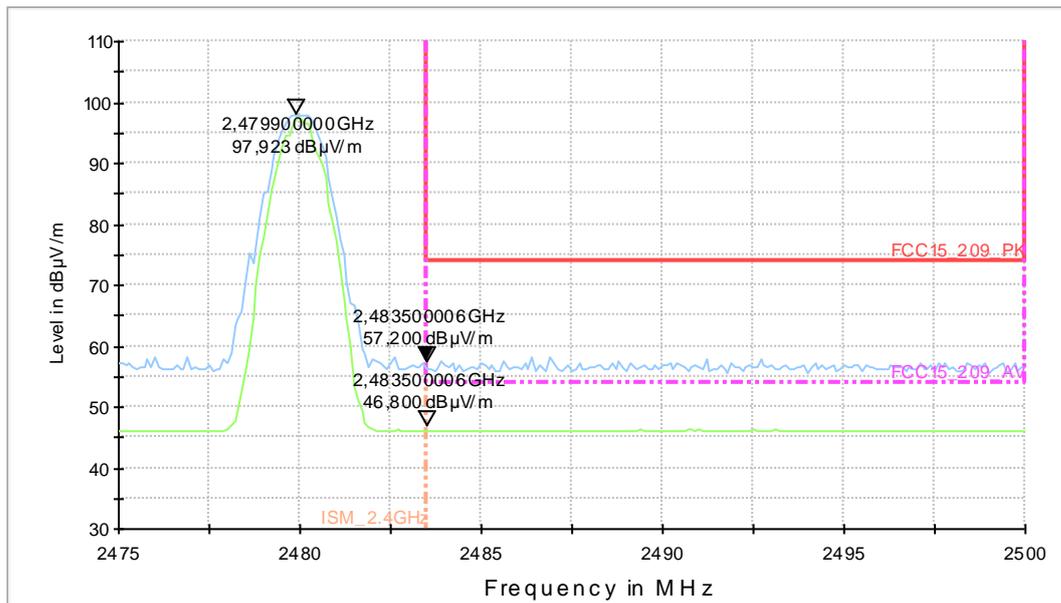
3.5.2. Right Band-Edge Channel 78

## Diagram No.: 9.02\_BE\_High\_Ch78

### Common Information

Test Description:	Radiated Band-Edge emissions 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 no. high=78
Op. Mode:	ANT+ TX continuous



## 4. Receiver spurious emissions

### 4.1. Frequency range $f < 1\text{GHz}$

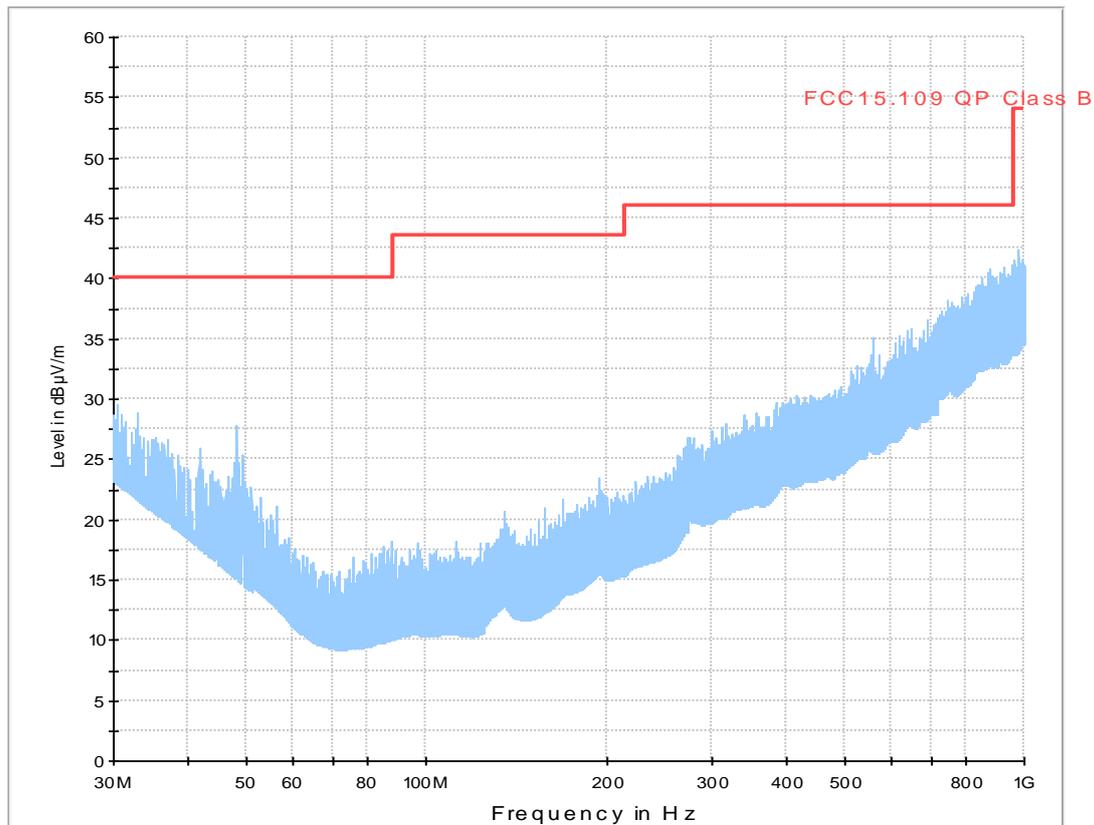
#### Diagram No. 3.10\_Ant\_RX

Test description:	25.03.2014 Page 1 of 2
Test site and distance:	Electric Field Strength Measurement
Version of Testsoftware:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Distance correction:	8.51.0
Used filter:	not used
Technical Data:	not used
Test specification.:	front, right, rear, left
Operator:	FCC 15.109 Class B; RSS-Gen. Issue 3
	dpa

#### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750
-----	
HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74G
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--

FCC15.109\_hor+vert



## 4.2. Frequency range $f > 1\text{GHz}$

### 4.07\_ANT\_Ch39\_RX

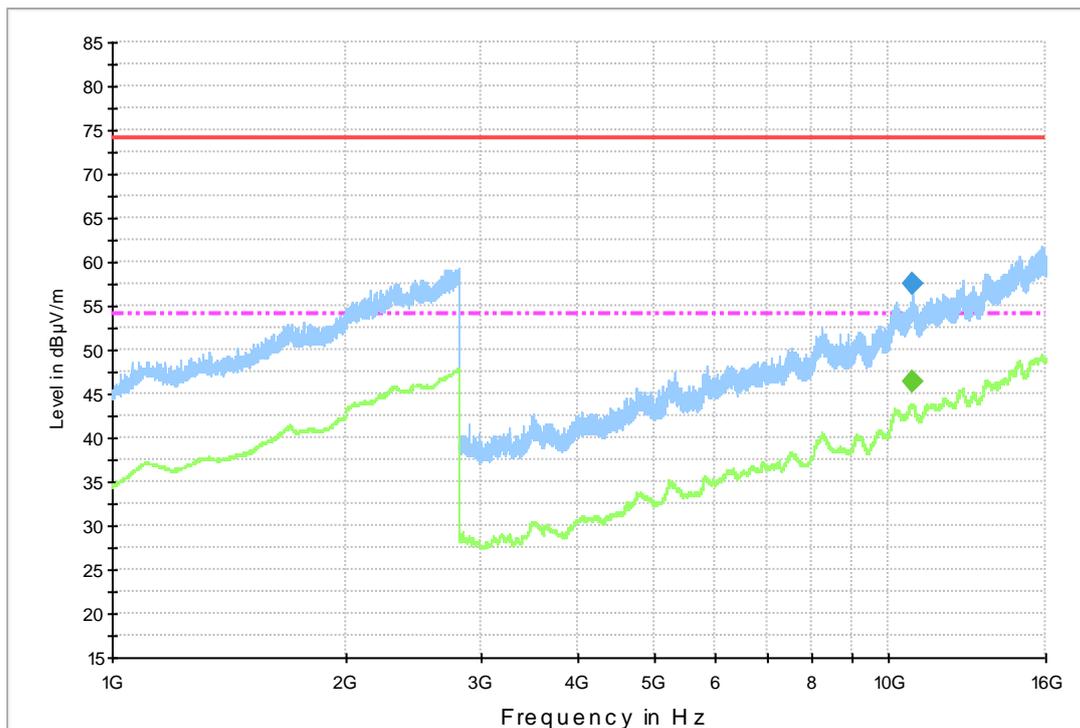
#### Common Information

Test Description:	Radiated Filed Strength Emission
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 15.109
Operating Mode:	ANT+ RX-Mode
Equipment Class:	Class B
Environmental Conditions:	Humidity: 22,2%rH; Temperature: 31°C
Operator:	Lor

#### EUT Information

Manufacturer:	Sony Mobile Communications AB
EuT:	PY7PM-0750
-----	
HW Version:	--
SW Version:	ETS
Serial Number:	CB5126D74G
Connected Interfaces:	DC over USB
Power Supply:	5V DC over AE1 (120V/60Hz)
Comments:	--

030442\_FCC\_Part15.109\_Unint\_Rad\_Class\_B\_1G-20G\_ESU40



#### 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)
10765.8000	57.5	100.0	1000.000	H	37.0	0.0	18.3	16.5	74.0

#### Final Result 2

Frequency (MHz)	RMS (dBµV/m)	Meas. Time	Bandwidth (kHz)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
10765.8000	46.3	100.0	1000.000	H	37.0	0.0	18.3	7.7	54.0