

Annex 4 Measurement Diagrams to
PARTIAL TEST REPORT
No.: 6-0592-14-2-10b

According to:

FCC Part 15.247

for

ASCOM AB

SH1-ABAA
Wi-Fi Smartphone

FCC ID: BXZSH1B

Laboratory Accreditation and Listings			
 DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01	 FEDERAL COMMUNICATIONS COMMISSION FC USA 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-2666 C-2914, T-1967, G-301
 AUTHORIZED RF LABORATORY	 Authorized Test Lab LAB CODE 20011130-00		
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			

Table of contents

1. RADIATED FIELD STRENGTH MEASUREMENTS ACCORD. §15.209&15.205.....	3
1.1. Magnetic field measurements $f < 30\text{MHz}$	3
1.1.1. <i>b-Mode modulation</i>	3
1.2. Field strength measurements $30\text{MHz} < f < 1\text{GHz}$	4
1.2.1. <i>b-Mode modulation</i>	4
1.3. Field strength measurements $1\text{GHz} < f < 18\text{GHz}$	5
1.3.1. <i>b-Mode modulation</i>	5
1.4. Field strength measurements $18\text{GHz} < f < 25\text{GHz}$	6
1.4.1. <i>b-Mode modulation</i>	6
2. RADIATED BAND-EDGE MEASUREMENTS ACCORD. §15.209 & §15.205 (§15.247)	7
2.1. Channel 1 (left band edge)	7
2.2. Channel 11 (right band edge)	9

1. Radiated field strength measurements accord. §15.209&15.205

1.1. Magnetic field measurements $f < 30\text{MHz}$

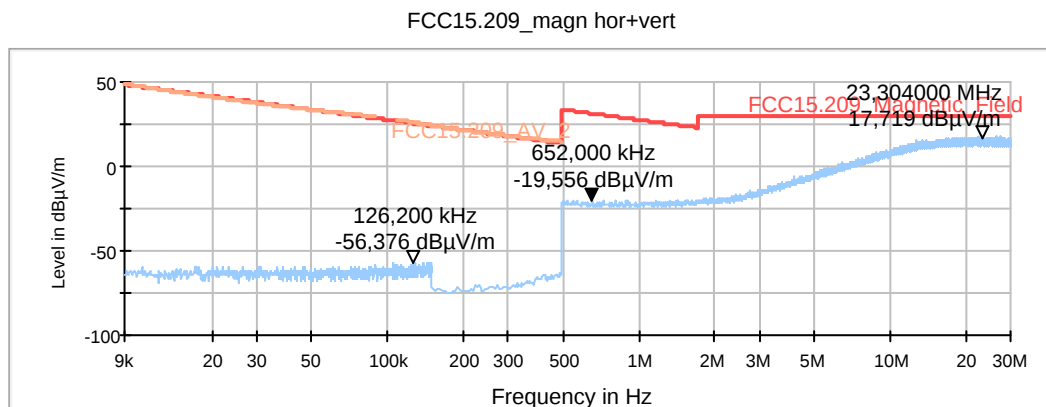
1.1.1. b-Mode modulation

Diagram No. 4.01_b-mode_ch1_1Mbit_sweep1

Test description:	Date: 18.03.2015 Page 1 of 1
Test site and distance:	Magnetic Field Strength Measurement related to 30/300 m distance
Version of Testsoftware:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Distance correction:	EMC32 V8.51.0
Technical Data:	used accord. table, pls. see test report
Rec. antenna (pre-scan):	Please see page 2 for detailed data of measurement setup
Used filter:	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	bypass
	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operating conditions:	TX-on, b-mode, ch1, 1Mbit
Power during tests:	110V/60Hz, full loaded batteries
Comment 1:	
Comment 2:	

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EEQA
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120VAC/60Hz



1.2. Field strength measurements 30MHz < f < 1GHz

1.2.1. b-Mode modulation

Diagram No. 4.01_ch1_b-mode_ch1_1Mbit_Sweep2

18.03.2015 Page 1 of 1
 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 15.209; RSS-Gen: Issue 3

Operator: HLa
 Operating conditions: MP3 play, camera active
 Power during tests: 110V/60Hz, full loaded batteries
 Comment 1:

EUT Information

Manufacturer: Ascom AB
 EuT: SH1-ACAA/PF

HW Version:
 SW Version: myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
 Serial Number: T26105EEQA
 Connected Interfaces: 1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
 Power Supply: 120VAC/60Hz

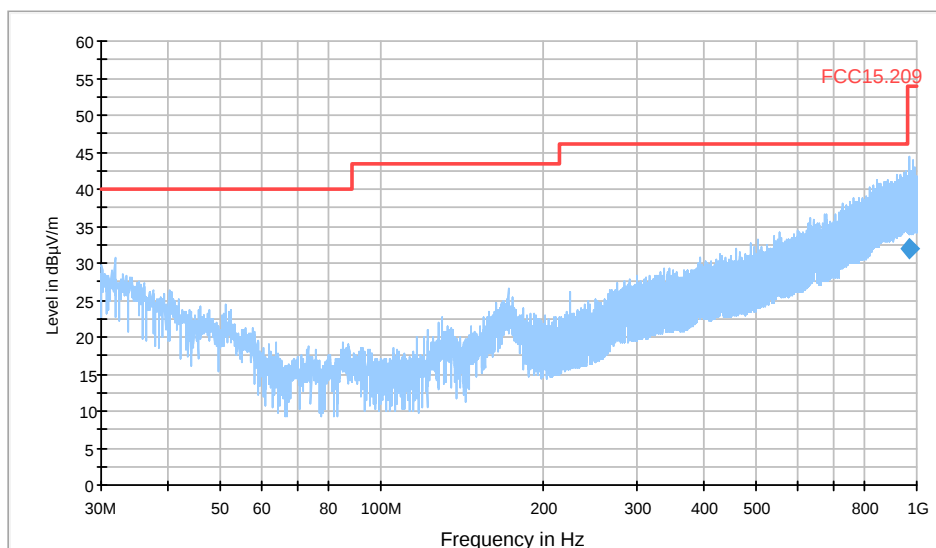
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
966.720000	31.9	1000.0	120.000	328.0	V	128.0	90.0	27.6	22.10

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

Frequency (MHz)	Limit (dBμV/m)
966.720000	54.00

01_FCC15.209_hor+vert_kipp



1.3. Field strength measurements 1GHz < f < 18GHz

1.3.1. b-Mode modulation

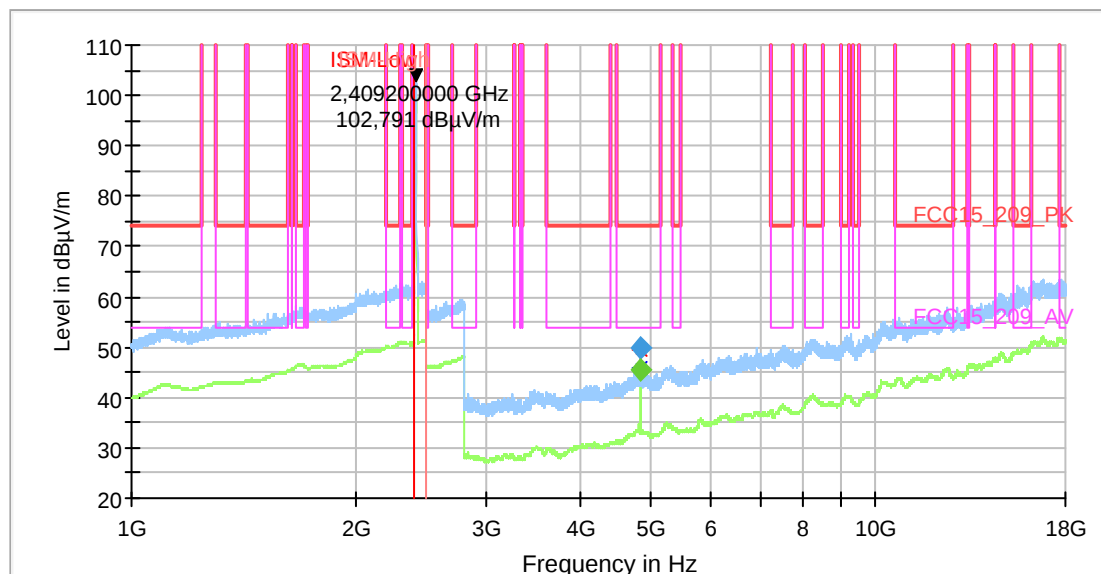
Diagram No.: 4.01_b-mode_ch1_1Mbit_sweep3

Common Information

Test Description:	Radiated Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, b-mode, ch1, 1Mbit
Operator Name:	KRe
Comment:	

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EEQA
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120VAC/60Hz
Comments:	



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4824.000000	---	45.55	54.00	8.45	100.0	1000.000	155.0	H	184.0	90.0
4824.000000	50.01	---	74.00	23.99	100.0	1000.000	155.0	H	184.0	90.0

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Corr.	Comment
4824.000000	4.8	09:19:53 - 19.03.2015
4824.000000	4.8	09:18:31 - 19.03.2015

1.4. Field strength measurements 18GHz < f < 25GHz

1.4.1. b-Mode modulation

Diagram No.: 4.01_b-mode_ch1_1Mbit_sweep4

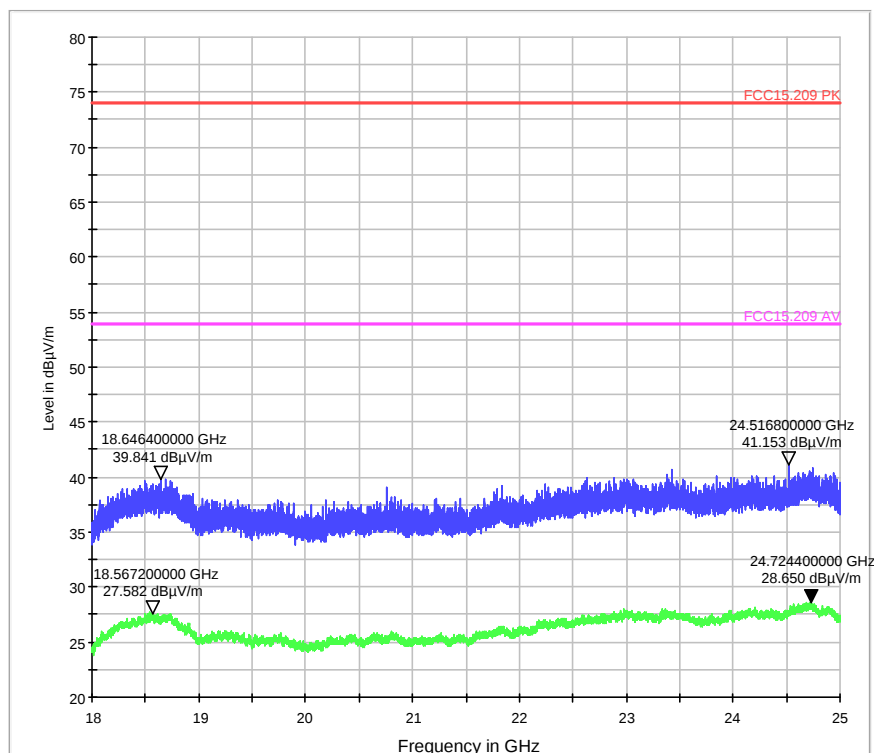
Common Information

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
Distance correction factor	3 to 1m: -10.5 dB applying to measurement results
SW-Version:	EMC32 V8.53.0
Operation mode:	TX mode continuous
Operator Name:	MFr
Comment:	ch1, 1Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EEQA
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120VAC/60Hz

EMI Scan_18_25GHz_Pre



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

2.1. Channel 1 (left band edge)

n-mode

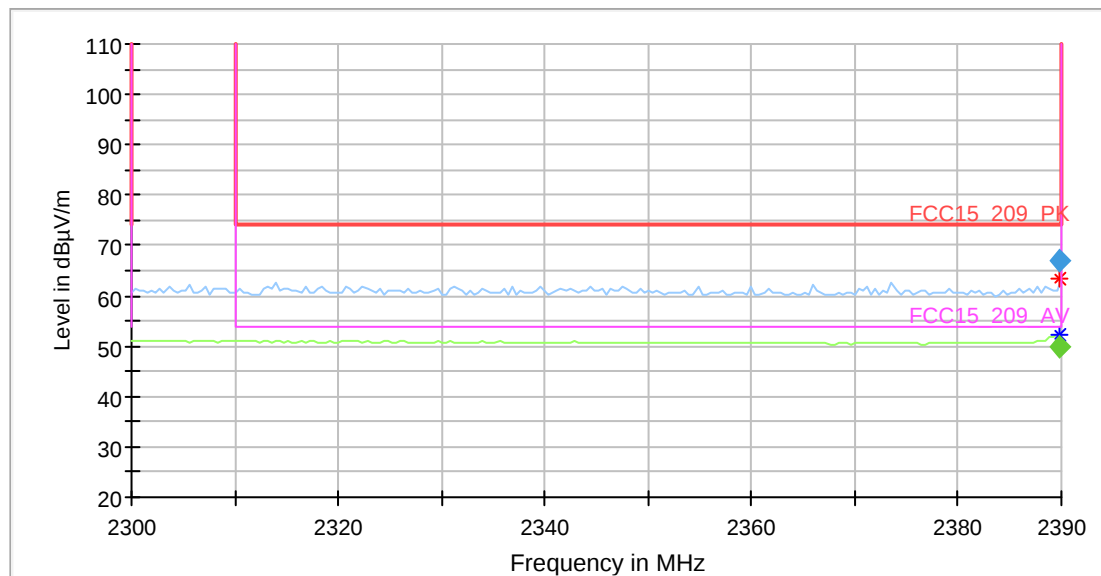
Diagram No.: 9.01a_BE_low_n-mode_ch1_MCS0

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, n-mode, ch1, MCS0
Operator Name:	KRe
Comment:	

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EEQA
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120VAC/60Hz
Comments:	



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
2389.840000	---	49.68	54.00	4.32	100.0	1000.000	155.0	H	179.0	90.0
2389.840000	66.85	---	74.00	7.15	100.0	1000.000	155.0	H	197.0	90.0

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Corr.	Comment
2389.840000	35.5	10:14:25 - 19.03.2015
2389.840000	35.5	10:13:09 - 19.03.2015

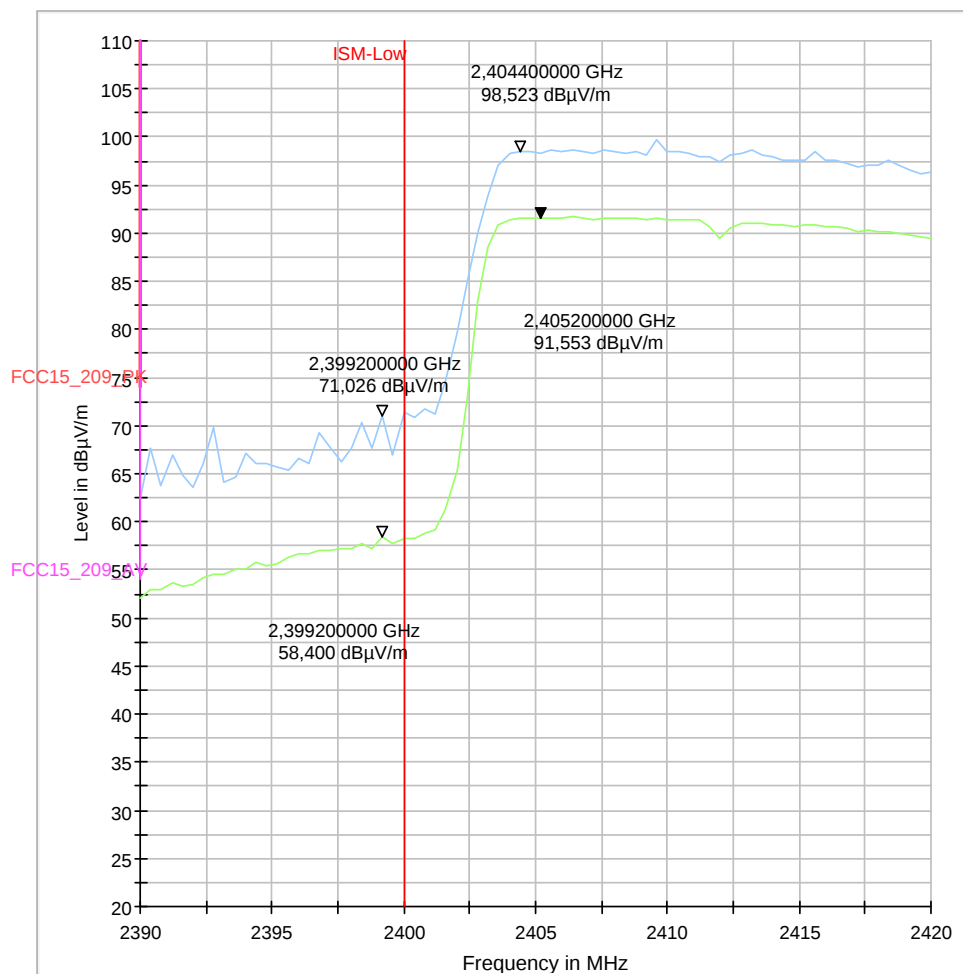
Diagram No.: 9.01b_BE_low_n-mode_ch1_MCS0

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, n-mode, ch1, MCS0
Operator Name:	KRe
environment condition:	Humidity: 35%rH; Temperature: 22°C

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EEQA
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120VAC/60Hz
Comments:	



2.2. Channel 11 (right band edge)

n-mode

Diagram No.: 9.02_BE_high_n-mode_ch11_MCS6

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, n-mode, ch11, MCS6
Operator Name:	KRe

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EEQA
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120VAC/60Hz
Comments:	

