

Annex 4 Measurement Diagrams to
PARTIAL TEST REPORT
No.: 6-0592-14-2-11b

According to:

FCC Part 15.407

for

ASCOM AB

Wi-Fi Smartphone SH1-ABAA

FCC ID: BXZSH1B

Laboratory Accreditation and Listings			
 Deutsche Akkreditierungsstelle D-PL-12047-01-01	 FEDERAL COMMUNICATIONS COMMISSION 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
 WIFI ALLIANCE AUTHORIZED RF LABORATORY	 Authorized Test Lab LAB CODE 20011130-00		
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1. Measurement diagrams

1.1. Radiated field strength measurements accord. §15.209 (15.205) and §15.407

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

Diagram No. 4.01_ch64_MCS1_sweep1

Date: 18.03.2015 Page 1 of 1
 Test description: Magnetic Field Strength 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: npe
 Operating conditions: TX-on , n-mode, channel 64, MCS1
 Power during tests: 120V/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

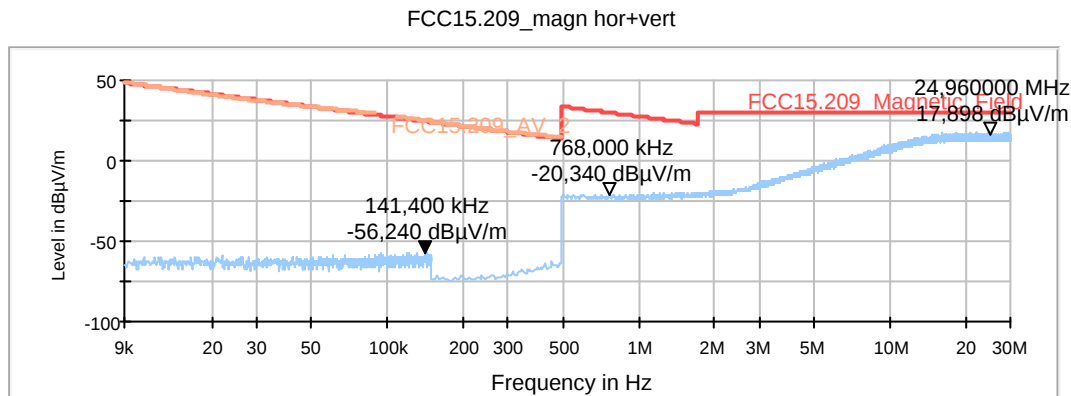


Diagram No. 4.02_ch116_6Mbit_sweep1

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
Operator:	npe
Operating conditions:	TX-on , a-mode, channel 116, 6Mbit
Power during tests:	120V/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:	230VAC

FCC15.209_magn hor+vert

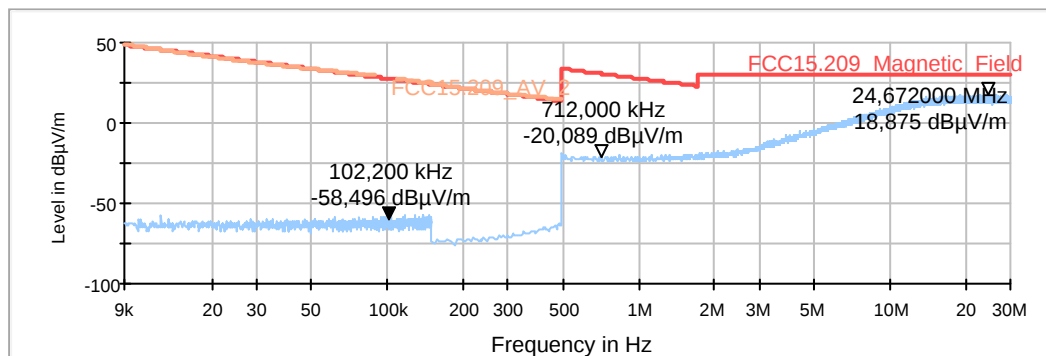


Diagram No. 4.03_ch149_6Mbit_sweep1

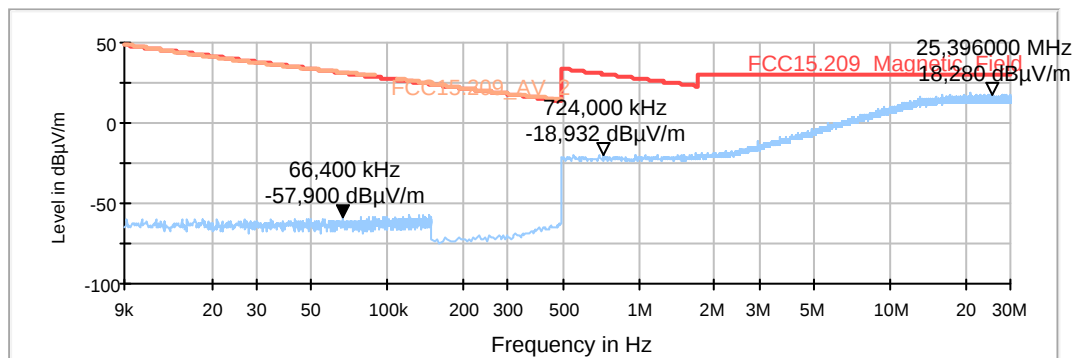
Test description:	Date: 18.03.2015 Page 1 of 1
Test site and distance:	Magnetic Field Strength Measurement related to 30/300 m distance
Version of Testsoftware:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Distance correction:	EMC32 V8.51.0
Technical Data:	used accord. table, pls. 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
Operator:	npe
Operating conditions:	TX-on , a-mode, channel 149, 6Mbit
Power during tests:	120V/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

FCC15.209_magn hor+vert



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

Diagram No. 4.01_ch64_MCS1_sweep2

Test description:	18.03.2015 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 15.209; 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

01_FCC15.209_hor+vert_kipp

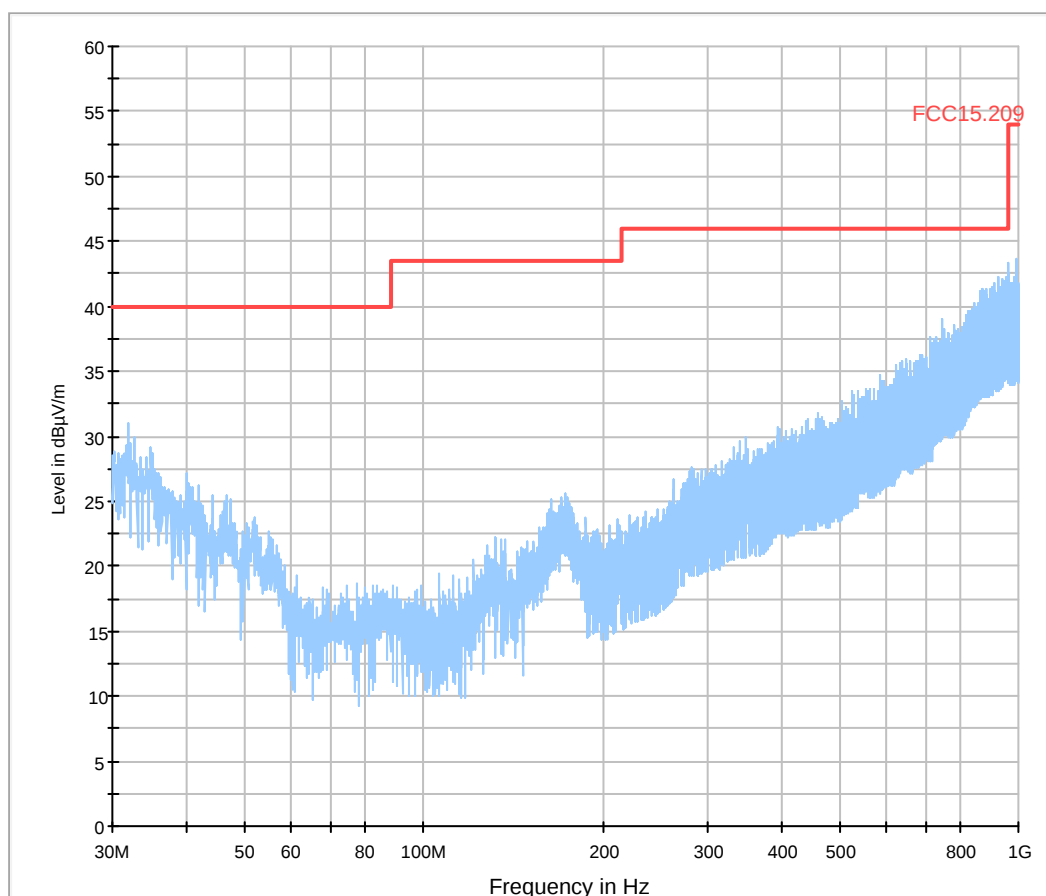


Diagram No. 4.02_ch116_6Mbit_sweep2

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 (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
927.750000	31.5	1000.0	120.000	368.0	H	319.0	90.0	27.0	14.50

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

Frequency (MHz)	Limit (dB μ V/m)
927.750000	46.00

01_FCC15.209_hor+vert_kipp

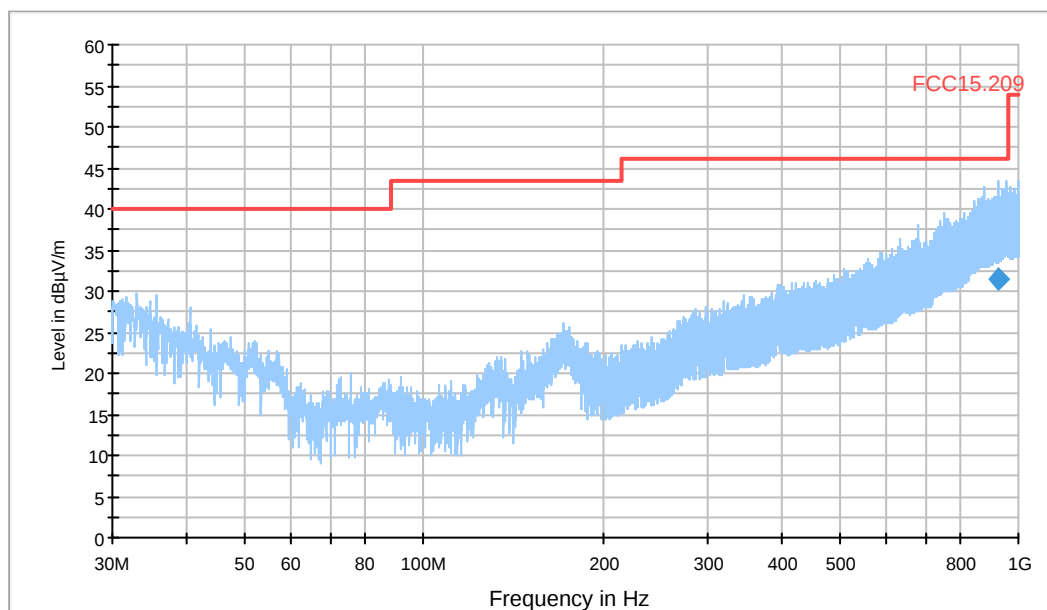


Diagram No. 4.03_ch149_6Mbit_Sweep2

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

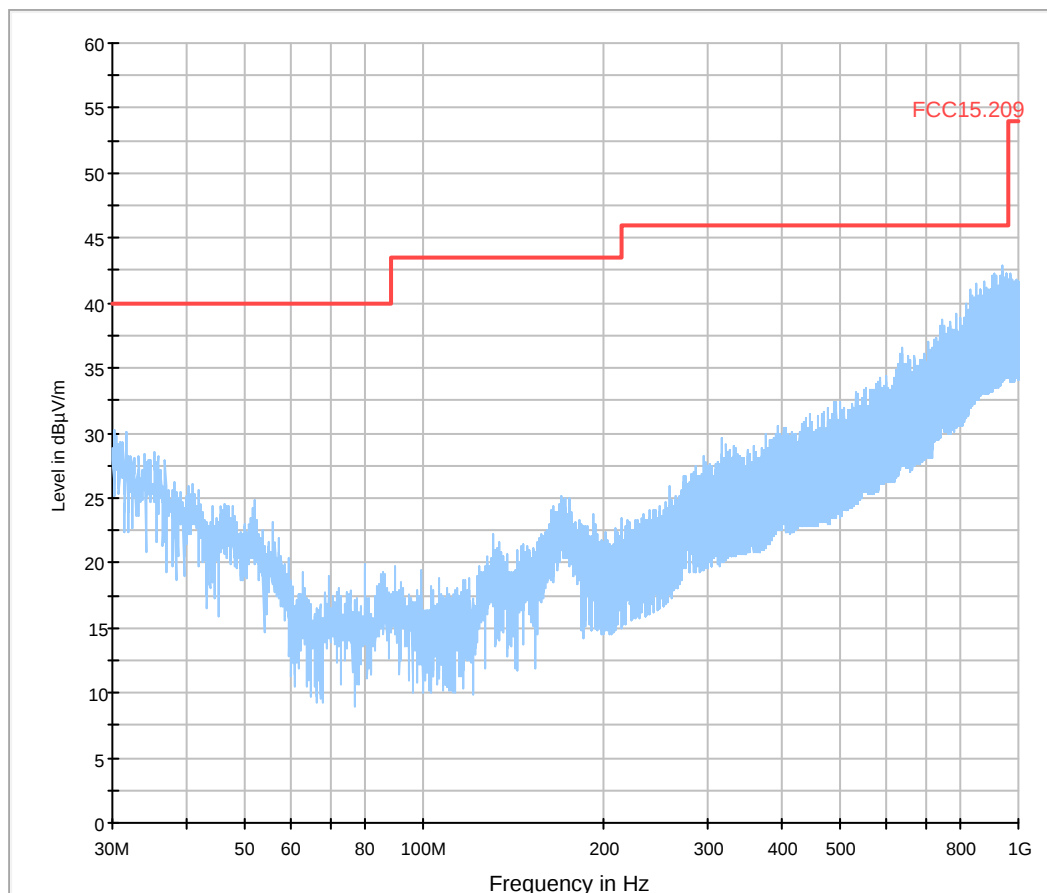
Operator: HLa
 Operating conditions: MP3 play, camera active
 Power during tests: 110V/60Hz, full loaded batteries
 Comment 1:

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

01_FCC15.209_hor+vert_kipp



1.1.3. Field strength measurements $1\text{GHz} < f < 18\text{GHz}$

Diagram No.: 4.01_ch64_MCS1_sweep3

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, n-mode, ch64, MCS1
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:	

Full Spectrum

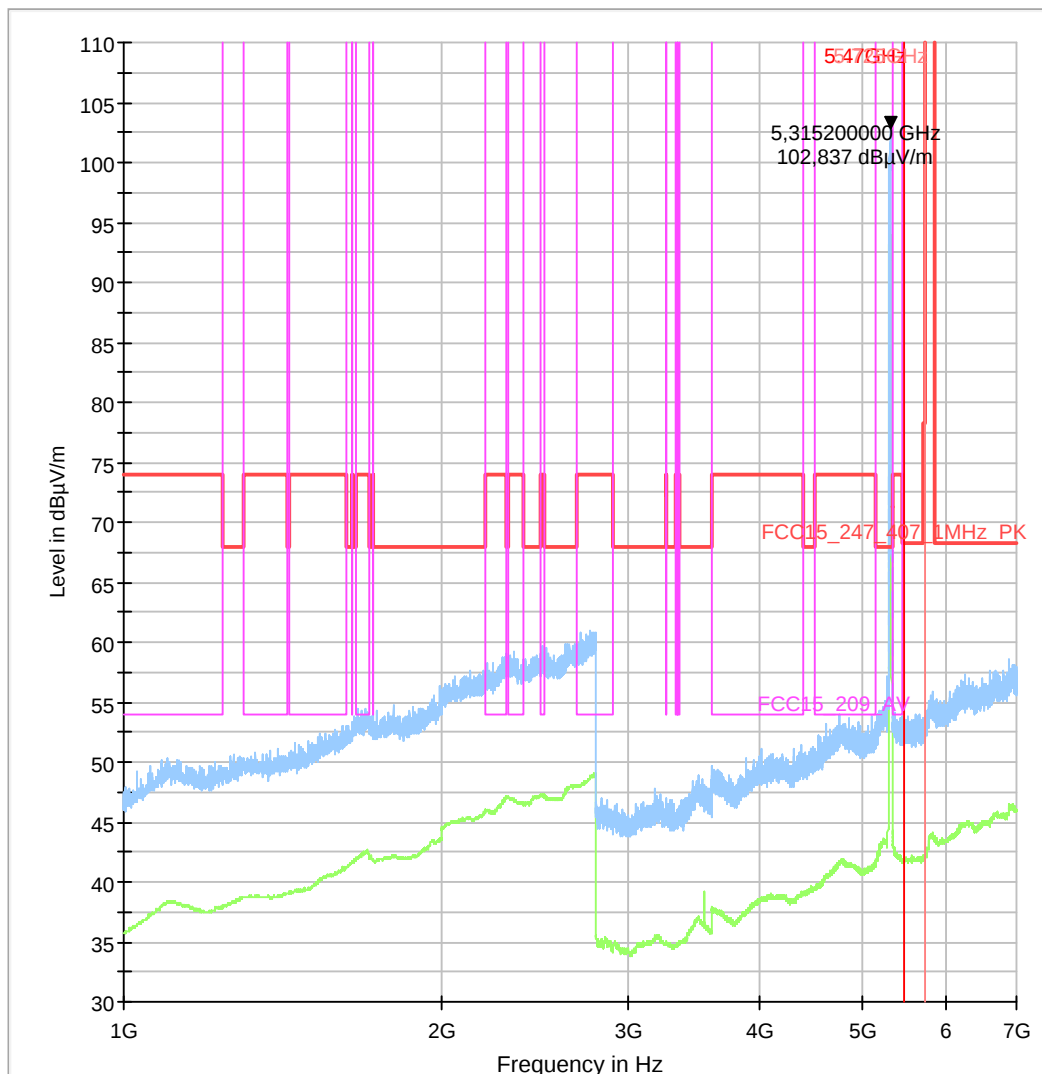


Diagram No.:4.01_ch64_MCS1_sweep4**Common Information**

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch64, MCS1
Operator Name:	HLA
Comment:	Channel no. 64

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:	

Full Spectrum

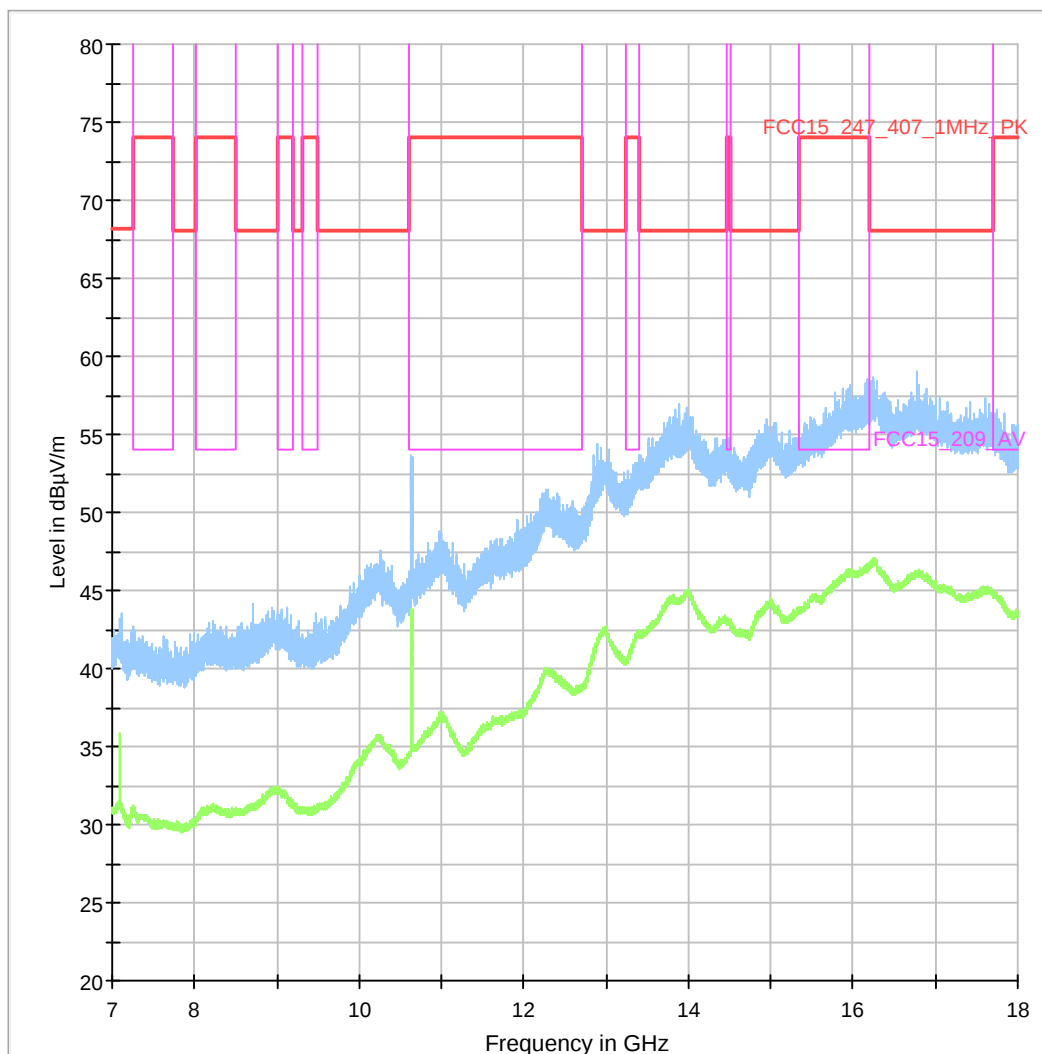


Diagram No.: 4.02_ch116_6Mbit_sweep3

Common Information

Test Description: Radiated field strength emission in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.407&15.209 Intentional Radiator
 Antenna polarisation: horizontal/vertical

Operation mode: TX, continuous, ch116, 6Mbit
 Operator Name: KRe

EUT Information

Manufacturer: Ascom AB
 EuT: SH1-ACAA/PF

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

Full Spectrum

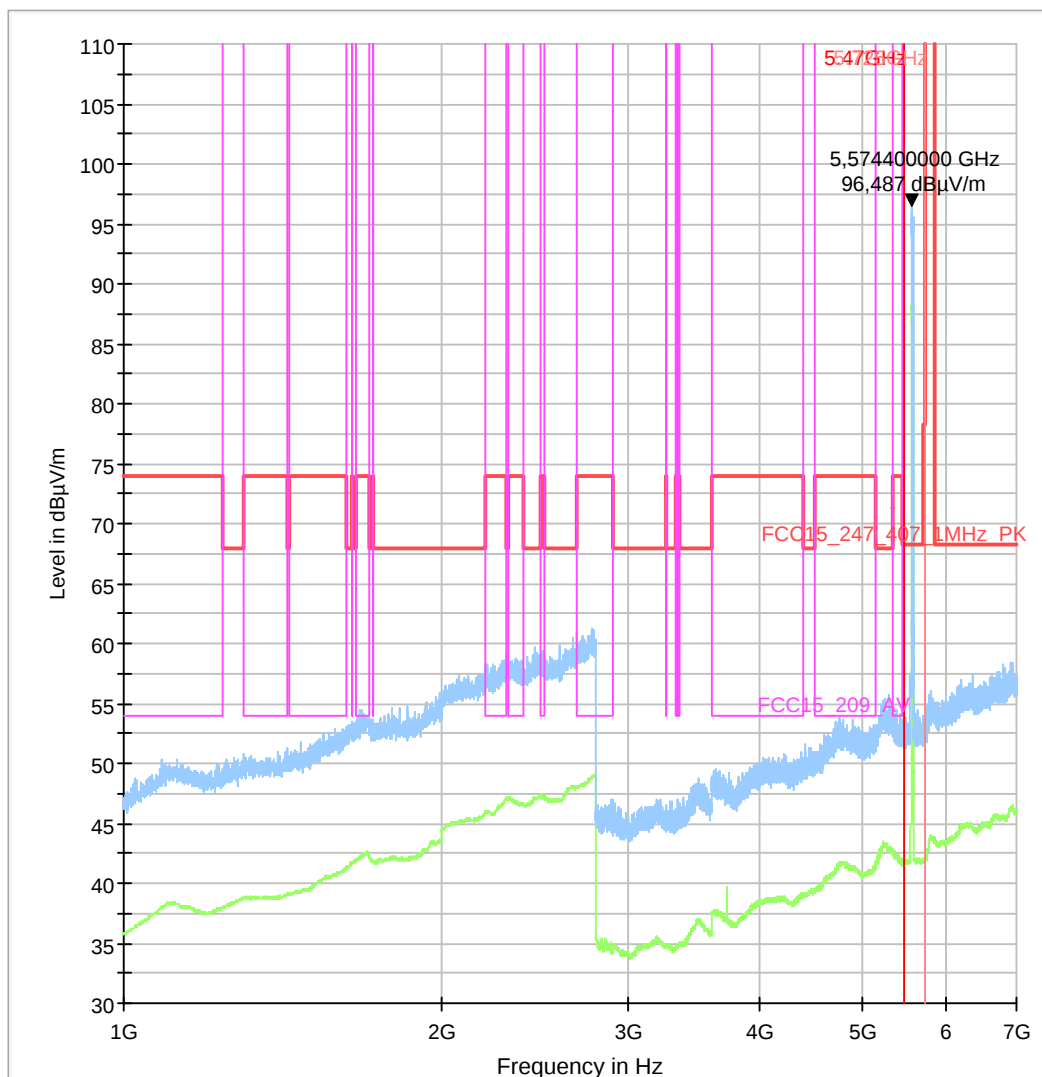


Diagram No.: 4.02_ch116_6Mbit_sweep4**Common Information**

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch116, 6Mbit
Operator Name:	HLa
Comment:	Channel no. 116

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:	

Full Spectrum

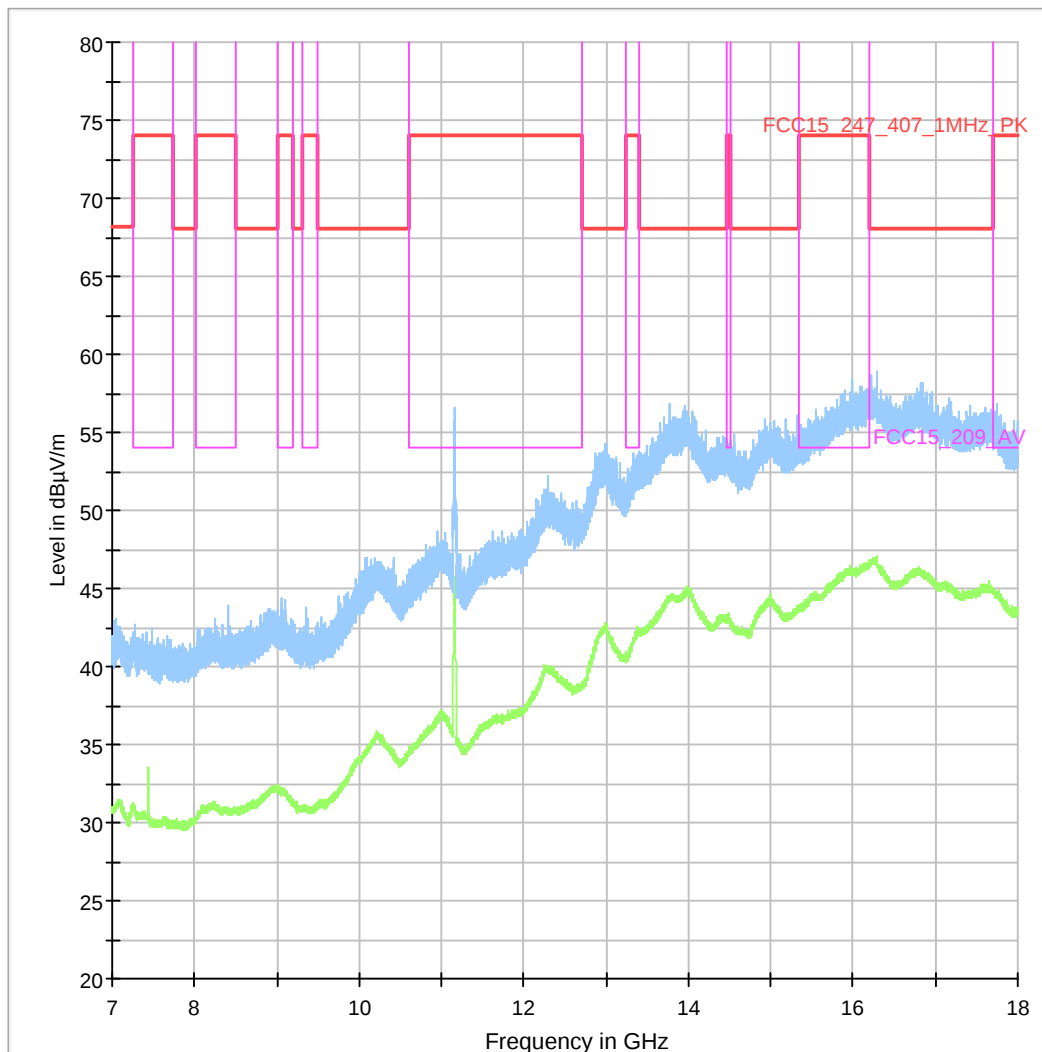


Diagram No.: 4.03_ch149_6Mbit_sweep3**Common Information**

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch149, 6Mbit
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:	

Full Spectrum

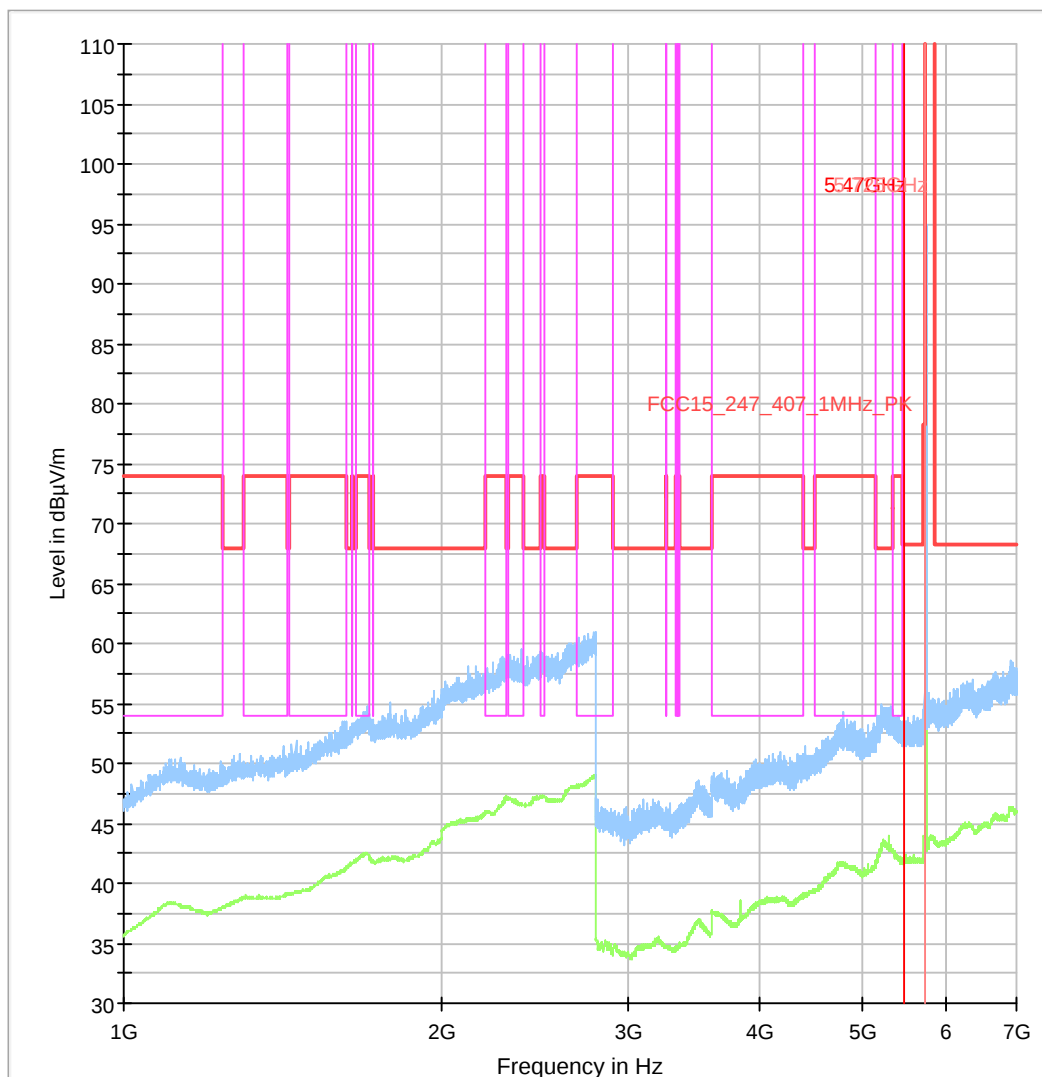


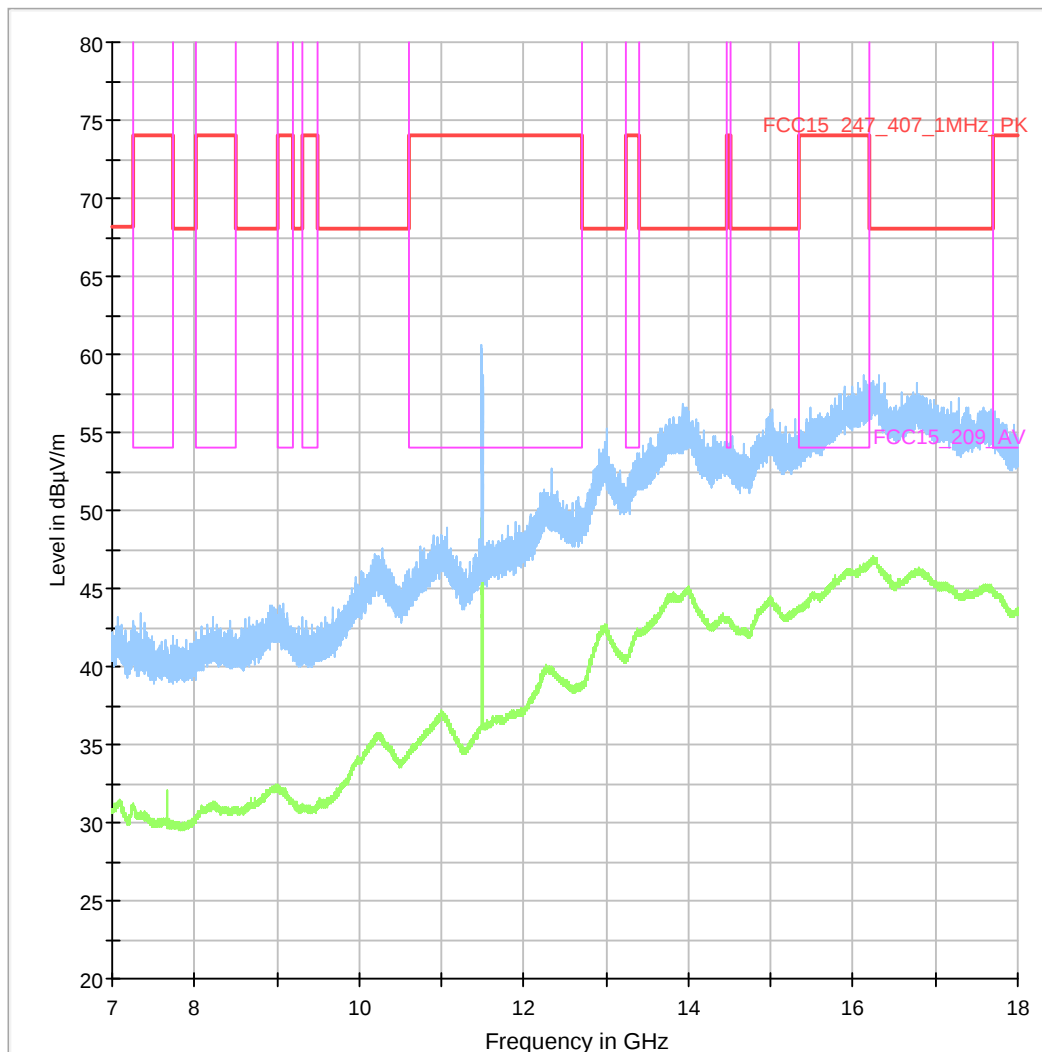
Diagram No.: 4.03_ch149_6Mbit_sweep4**Common Information**

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch149, 6Mbit
Operator Name:	HLa
Comment:	Channel no. 149

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:	

Full Spectrum



1.1.4. Field strength measurements 18GHz < f < 40GHz

Diagram No.: 4.01_ch64_MCS1_sweep5

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:	npe
Comment:	Channel 64, MCS1, gc=20

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

FCC_Sweep_15.407_18_40GHz_Pre

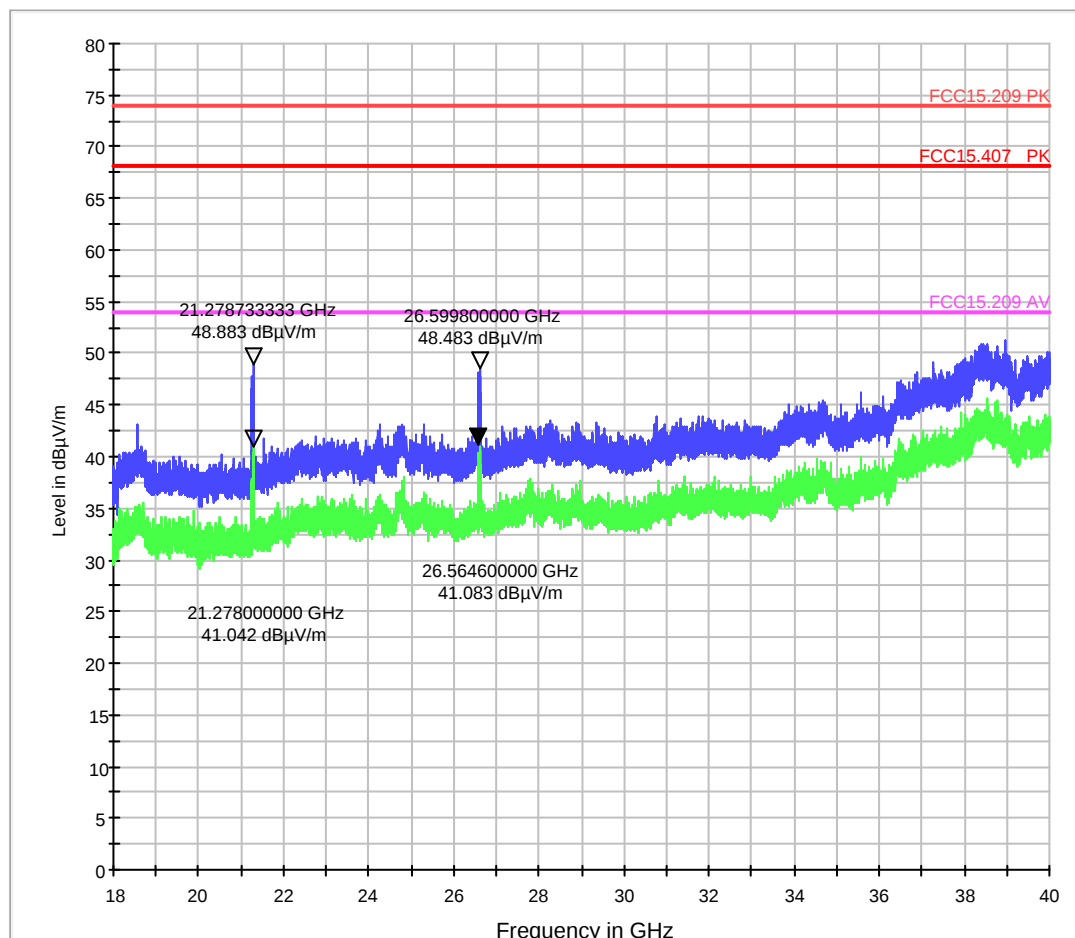


Diagram No.: 4.02_ch116_6Mbit_sweep5**Common Information**

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:	npe
Comment:	Channel 116, 6Mbit, gc=20

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

FCC_Sweep_15.407_18_40GHz_Pre

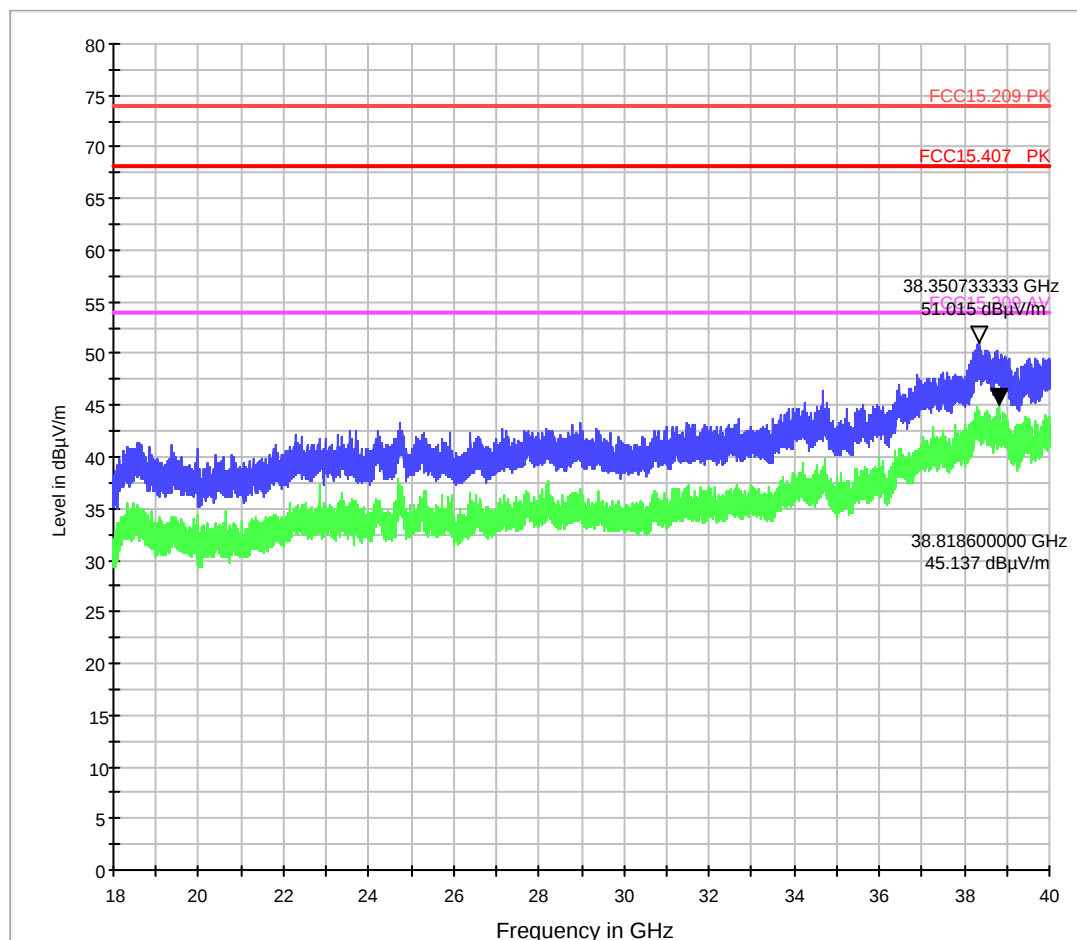


Diagram No.: 4.03_ch149_6Mbit_sweep5

Common Information

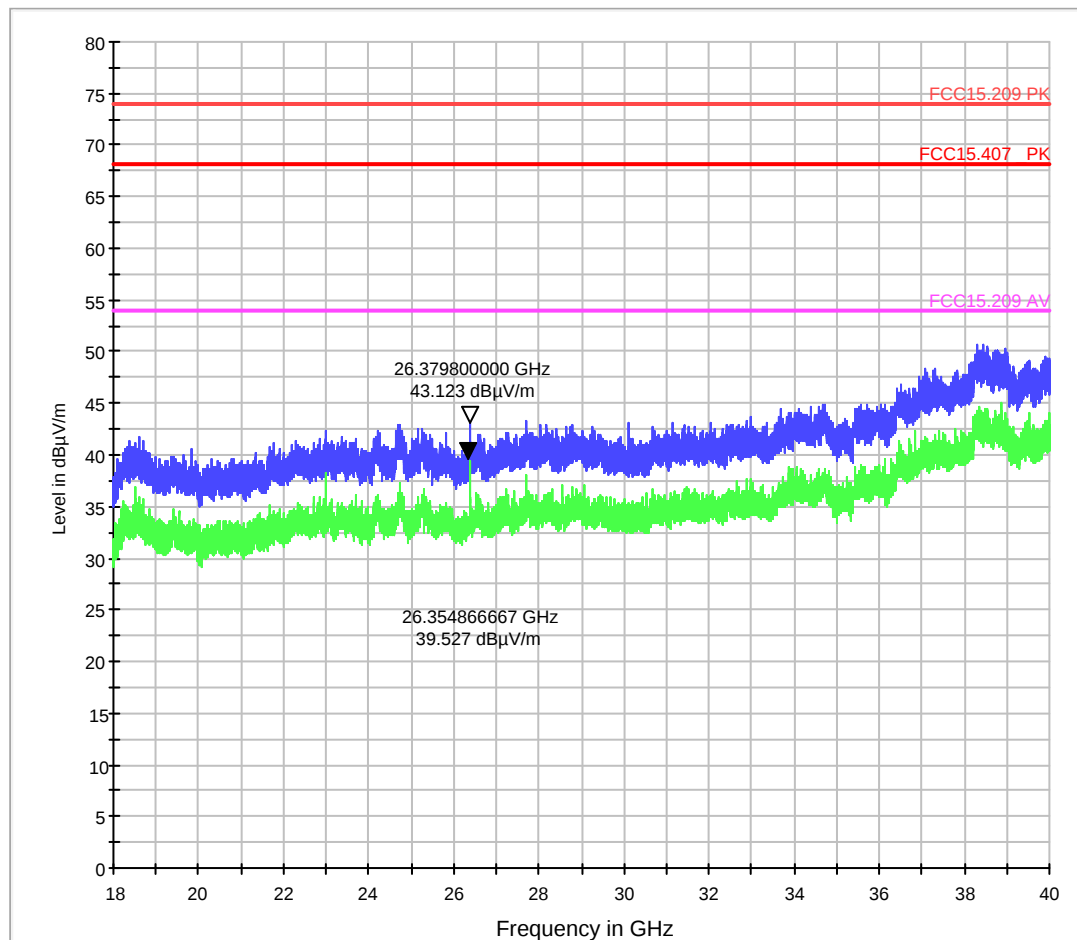
Test Description:	Radiated field strength emission in 1m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247, 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Distance correction factor	3 to 1m: -10.5 dB applying to measurement results
SW-Version:	EMC32 V8.53.0
Operation mode:	TX mode continuous
Operator Name:	npe
Comment:	Channel 149, 6Mbit, gc=35

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

FCC_Sweep_15.407_18_40GHz_Pre



1.2. Radiated band-edge measurements accord. §15.205 (§15.209) and §15.407

1.2.1. Channel 36 (20MHz Signal BW - left band edge)

Diagram No.: 9.01_BE_low_ch36_MCS0

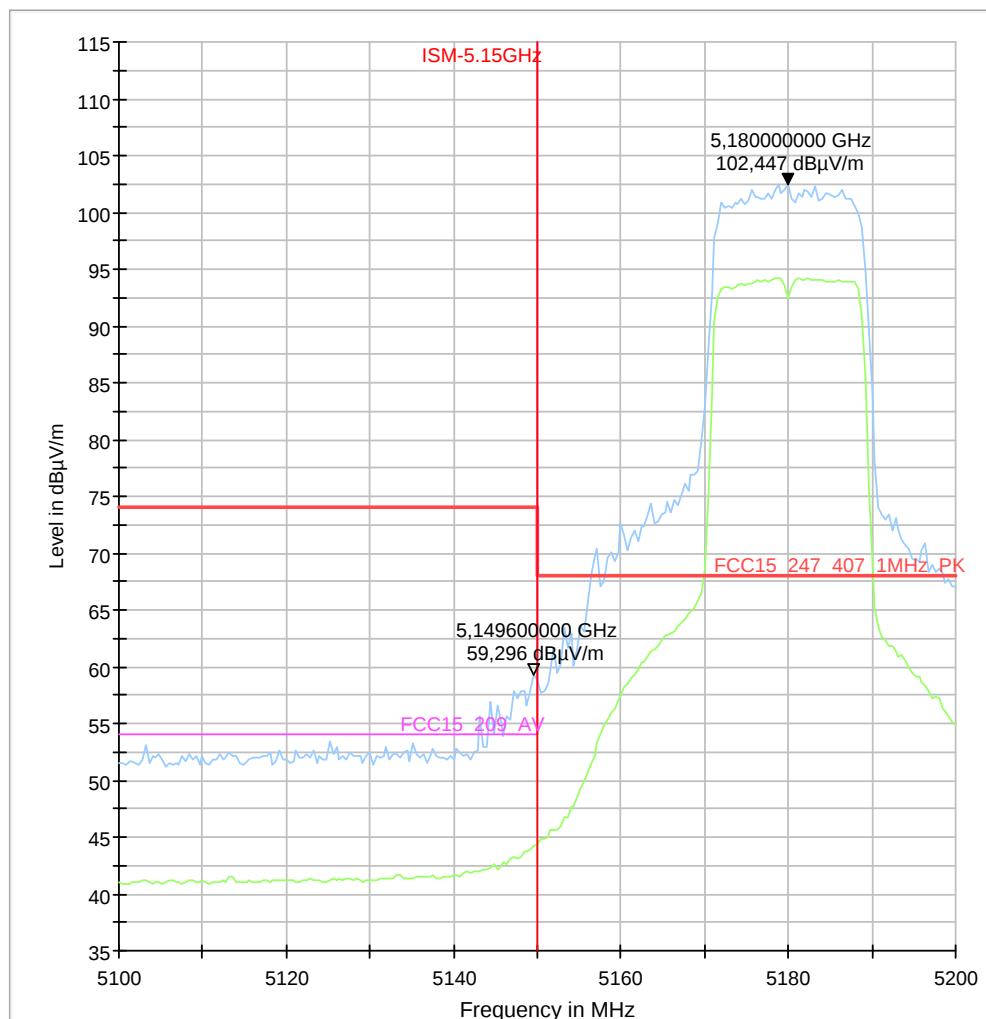
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch36, MCS0
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:	

Full Spectrum



1.2.2. Channel 64 (20MHz Signal BW - right band edge)

Diagram No.: 9.02_BE_high_ch64_MCS1

Common Information

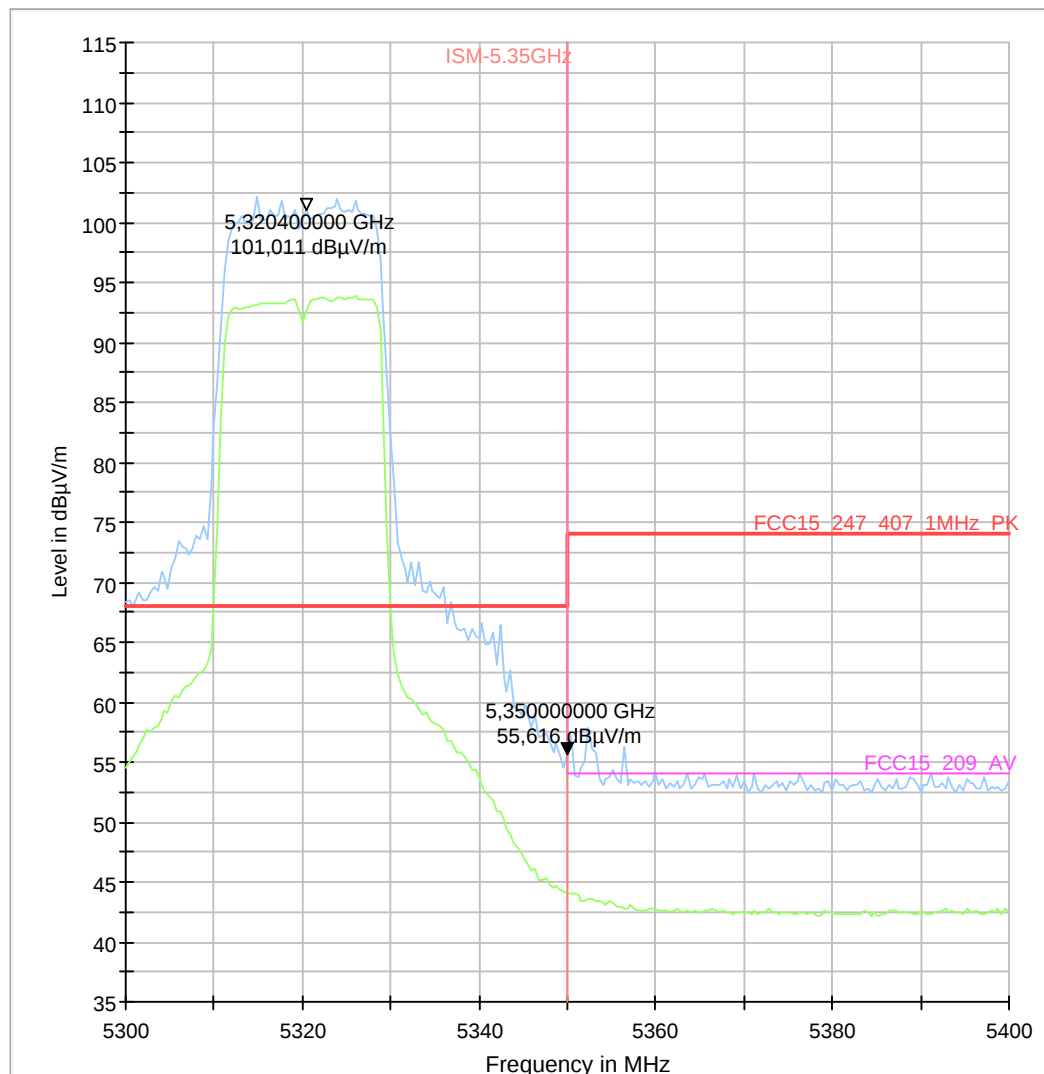
Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch64, MCS1
Operator Name:	HLA

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:	

Full Spectrum



1.2.3. Channel 100 (20MHz Signal BW - left band edge)

Diagram No.: 9.03_BE_low_ch100_6Mbit

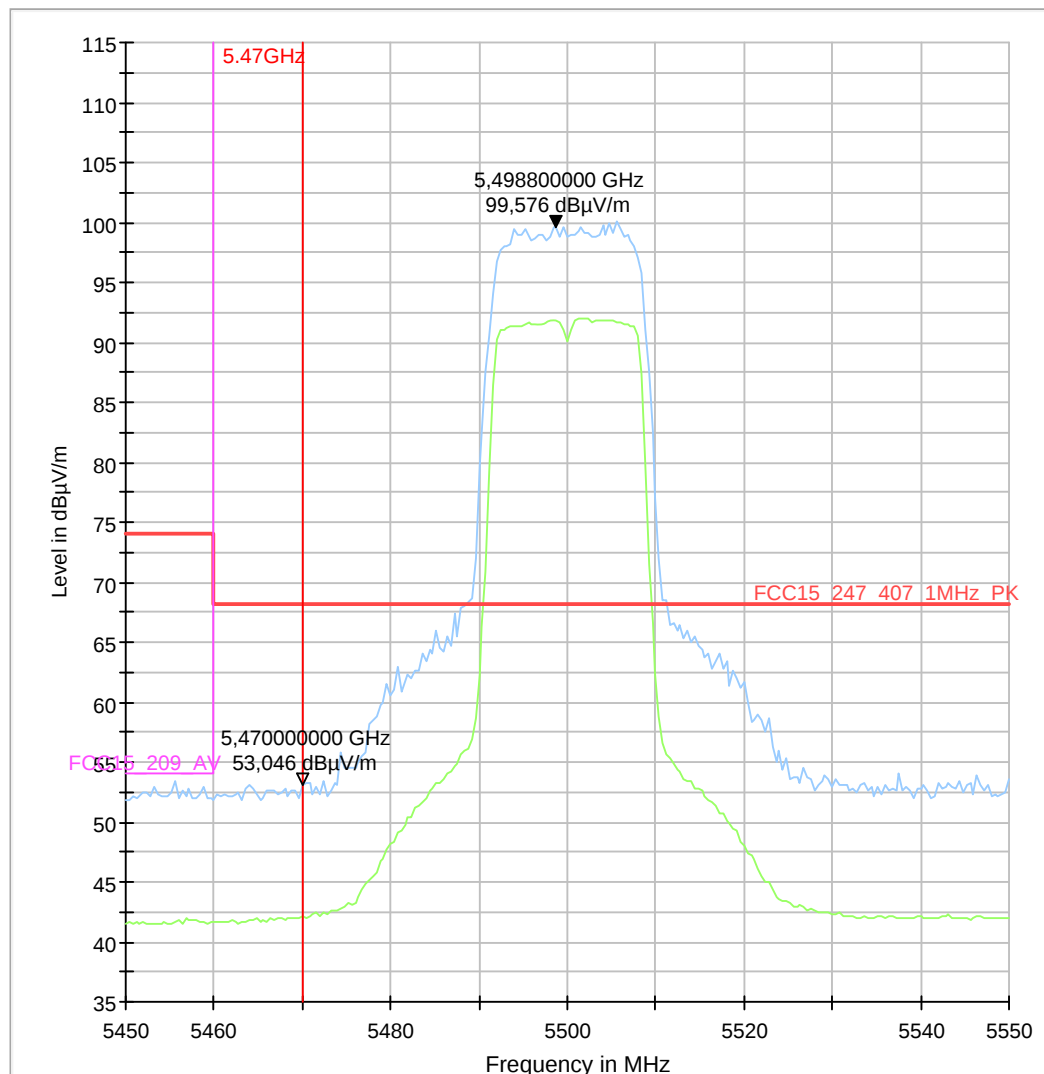
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch100, 6Mbit
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:	

Full Spectrum



1.2.4. Channel 140 (20MHz Signal BW - right band edge)

Diagram No.: 9.04_BE_high_ch140_6Mbit

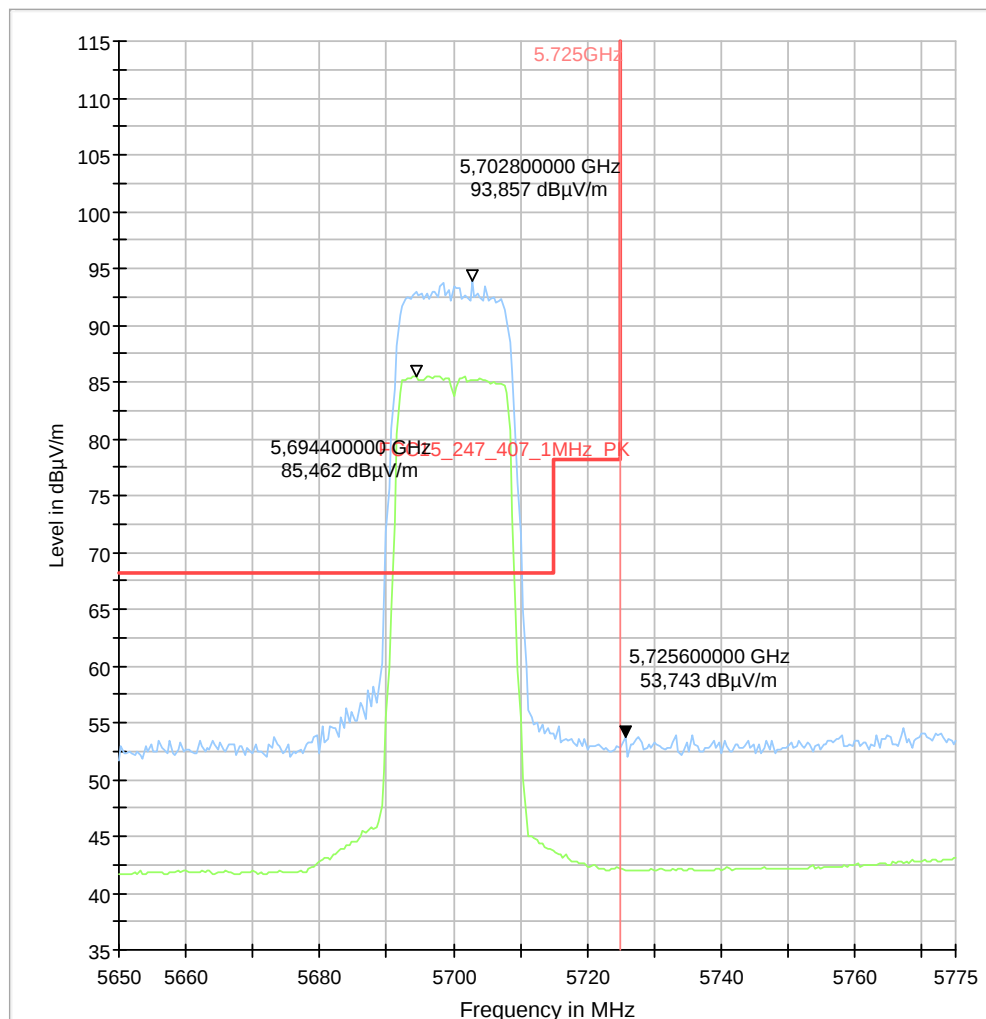
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch140, 6Mbit
Operator Name:	HLA

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:	

Full Spectrum



1.2.5. Channel 149 (20MHz Signal BW - left band edge)

Diagram No.: 9.05_BE_low_ch149_6MBit

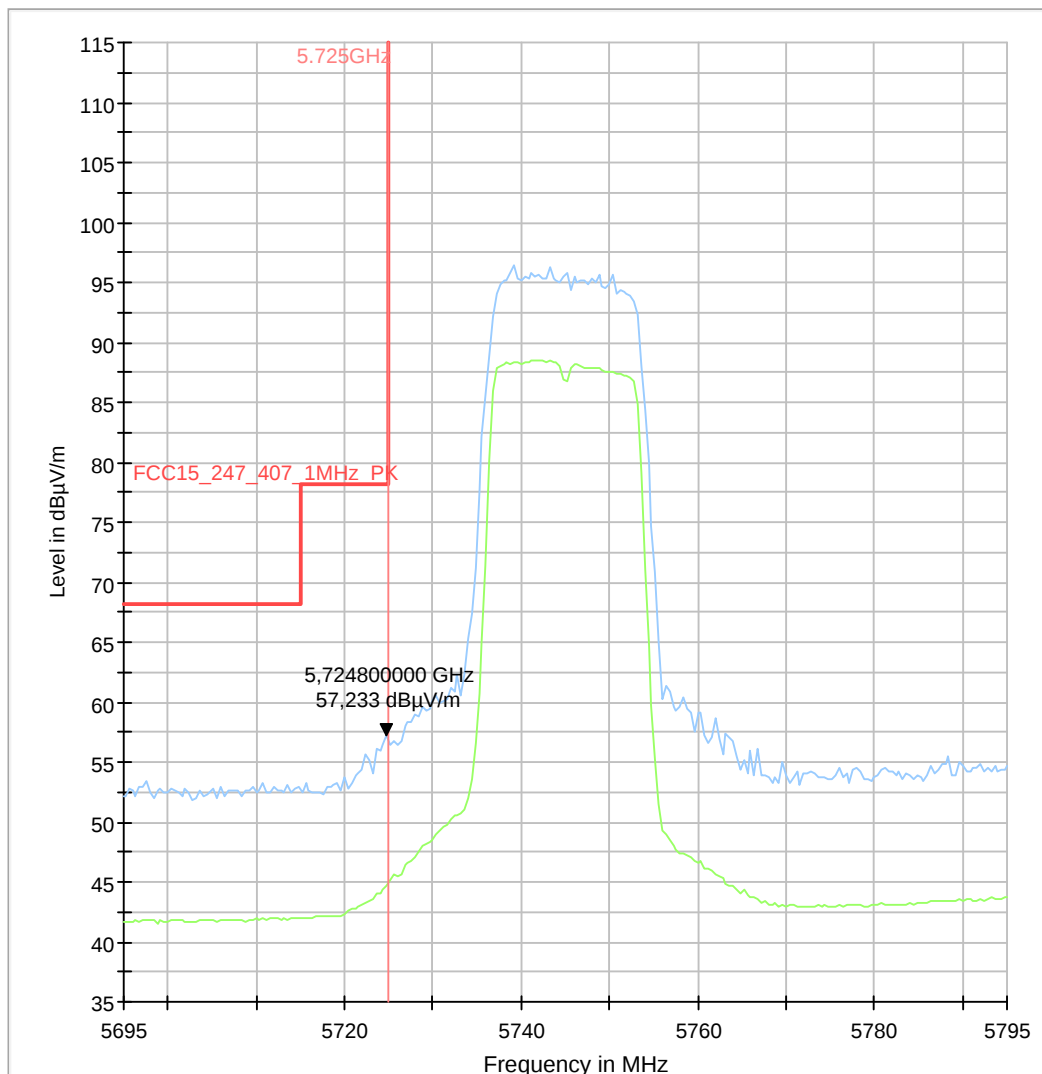
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous, ch149, 6Mbit
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:	

Full Spectrum



1.2.6. Channel 165 (20MHz Signal BW - right band edge)

Diagram No.: 9.06_BE_high_ch165_MCS2

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.407&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	HLA
Comment:	Channel no. 165

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:	

Full Spectrum

