

Annex 1: Measurement diagrams
to TEST REPORT
No.: 2-0004-11-18-1e

According to:
FCC Regulations
Part 15 Part B
Part 15.249 (a)(c)(d)(e)
IC Regulations
RSS-Gen, Issue 3
RSS-210: Issue 8

for

Sony Ericsson Mobile Communications AB

Mobile phone AAD-3880121-BV

FCC-ID: PY7A3880121
IC: 4170B-A3880121

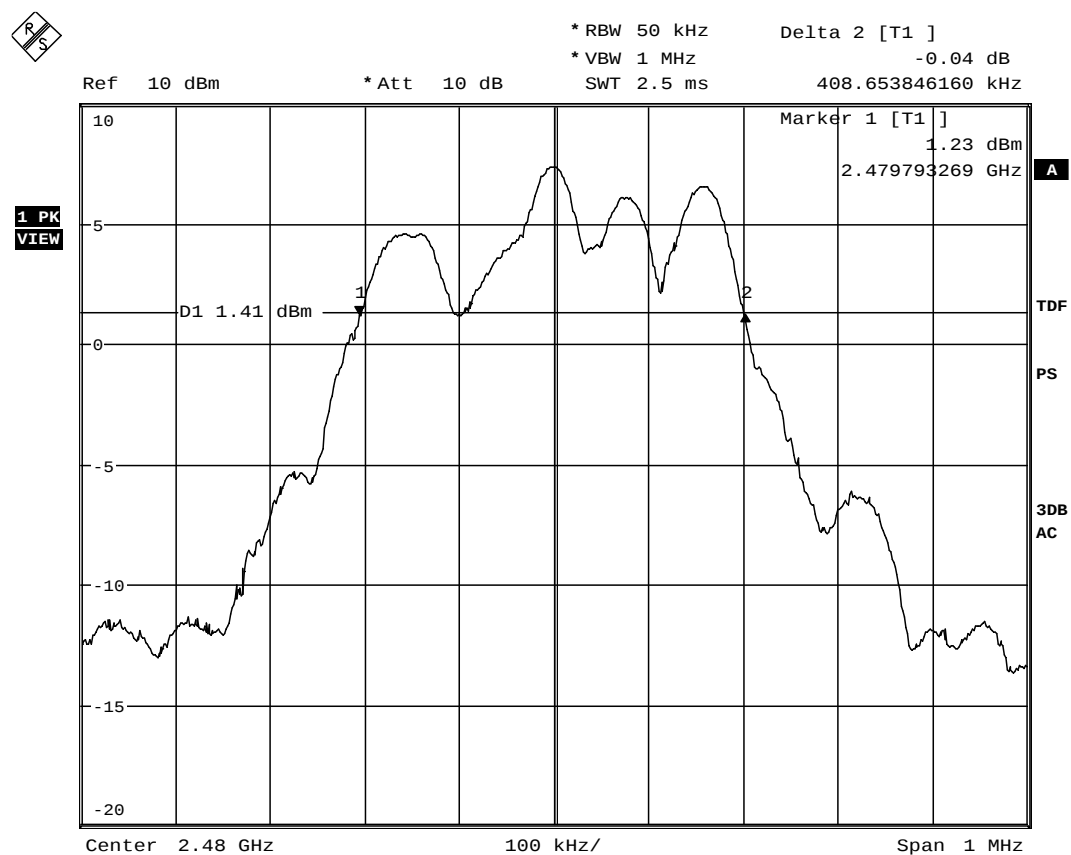
Laboratory Accreditation and Listings			
 Deutsche Akkreditierungsstelle D-PL-12047-01-01	 Reg. No.: 736496 MRA US-EU 0003	 Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	 Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2665, R-2666 C-2914, T-1967, G-301
 AUTHORIZED RF LABORATORY	 LAB CODE 20011130-00		
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1. Measurement diagrams

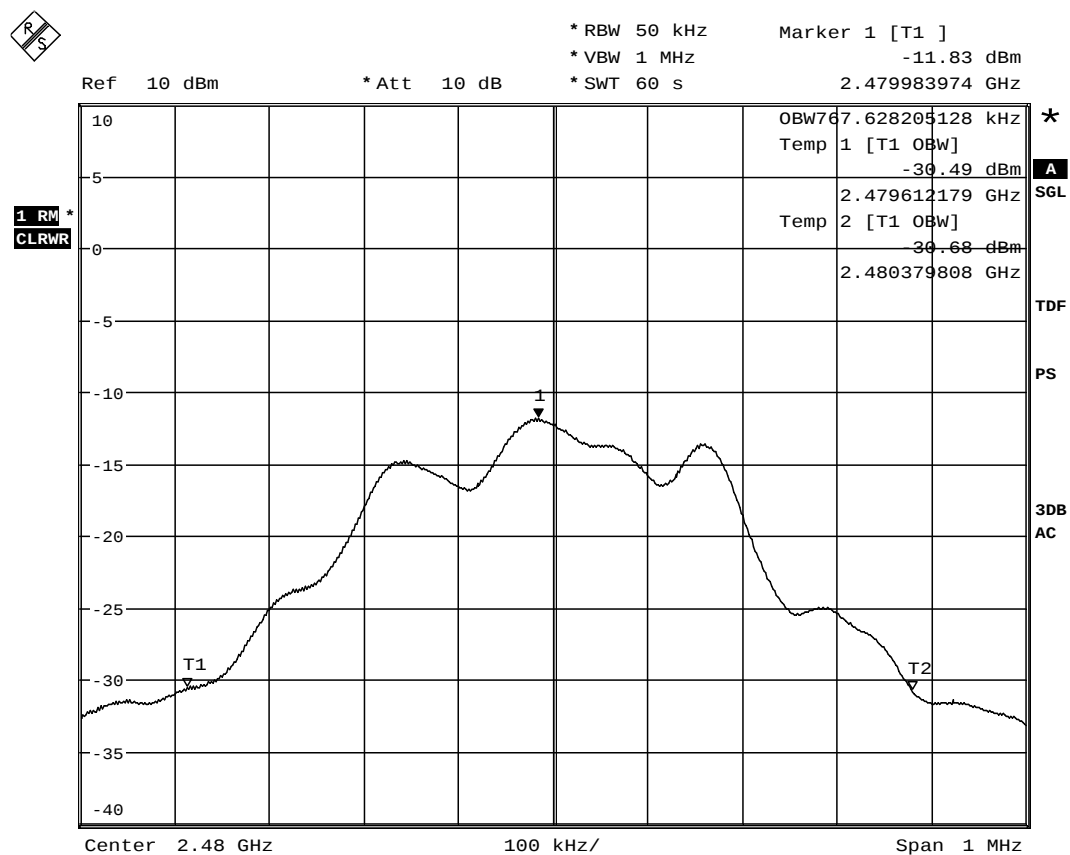
1.1. 6dB bandwidth



Date: 27.AUG.2011 12:04:59

Channel 78 (maximum 6dB BW)

1.2. 99% Occupied bandwidth



Date: 27.AUG.2011 12:19:02

Channel 78 (maximum 99% BW)

1.3. Radiated field strength (15.209/RSS-210)

1.3.1. Radiated magnetic field strength measurements (f<30MHz)

Common Information

Test description:	Magnetic Fieldstrength Measurement
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:	full loaded batteries
Comment 1:	Channel low

EUT Information

EUT Name:	AAD-3880121-BV
Manufacturer:	Sony Ericsson

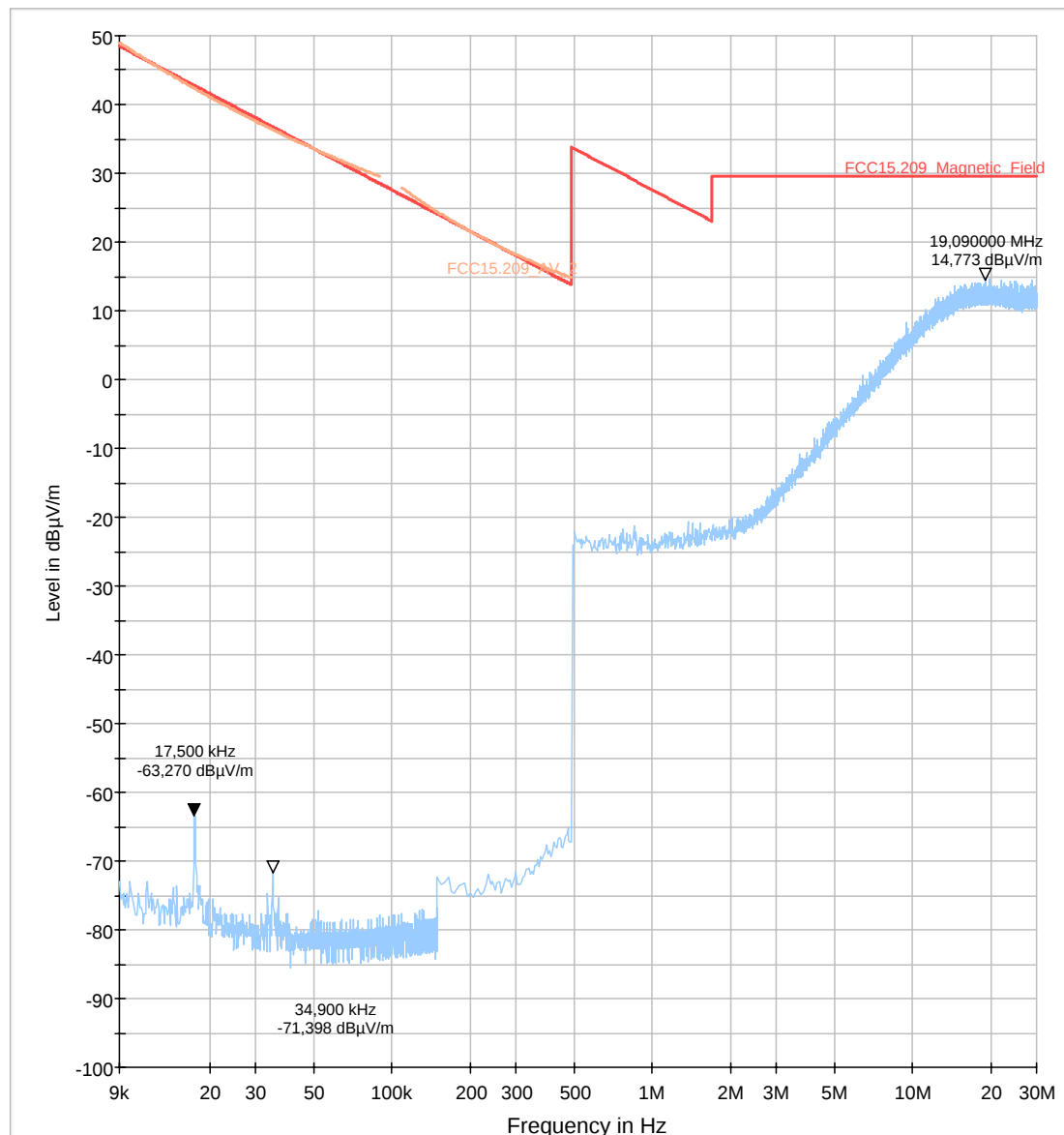


Diagram e_3.01 – channel 0

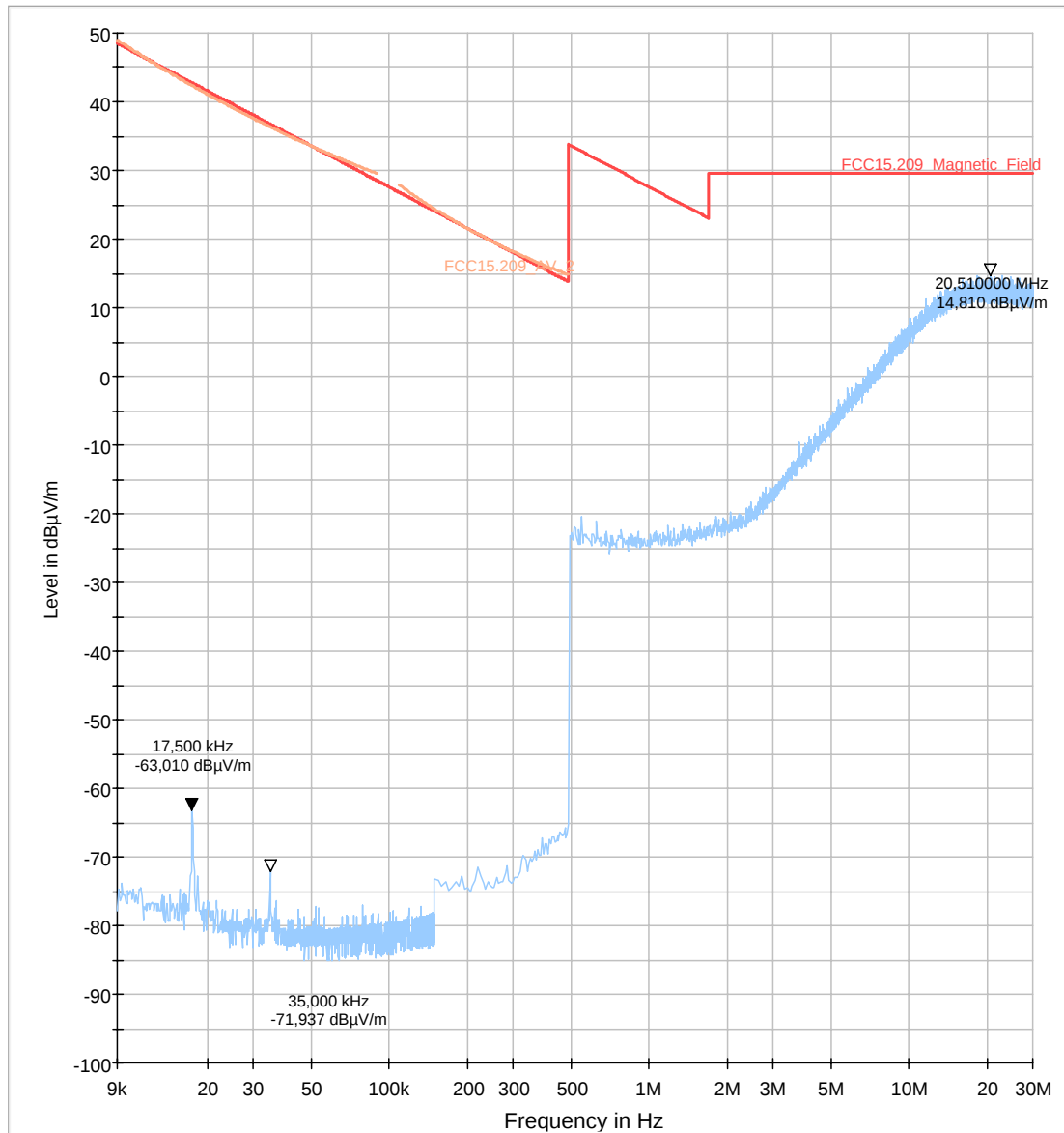


Diagram e_3.02 – channel 39

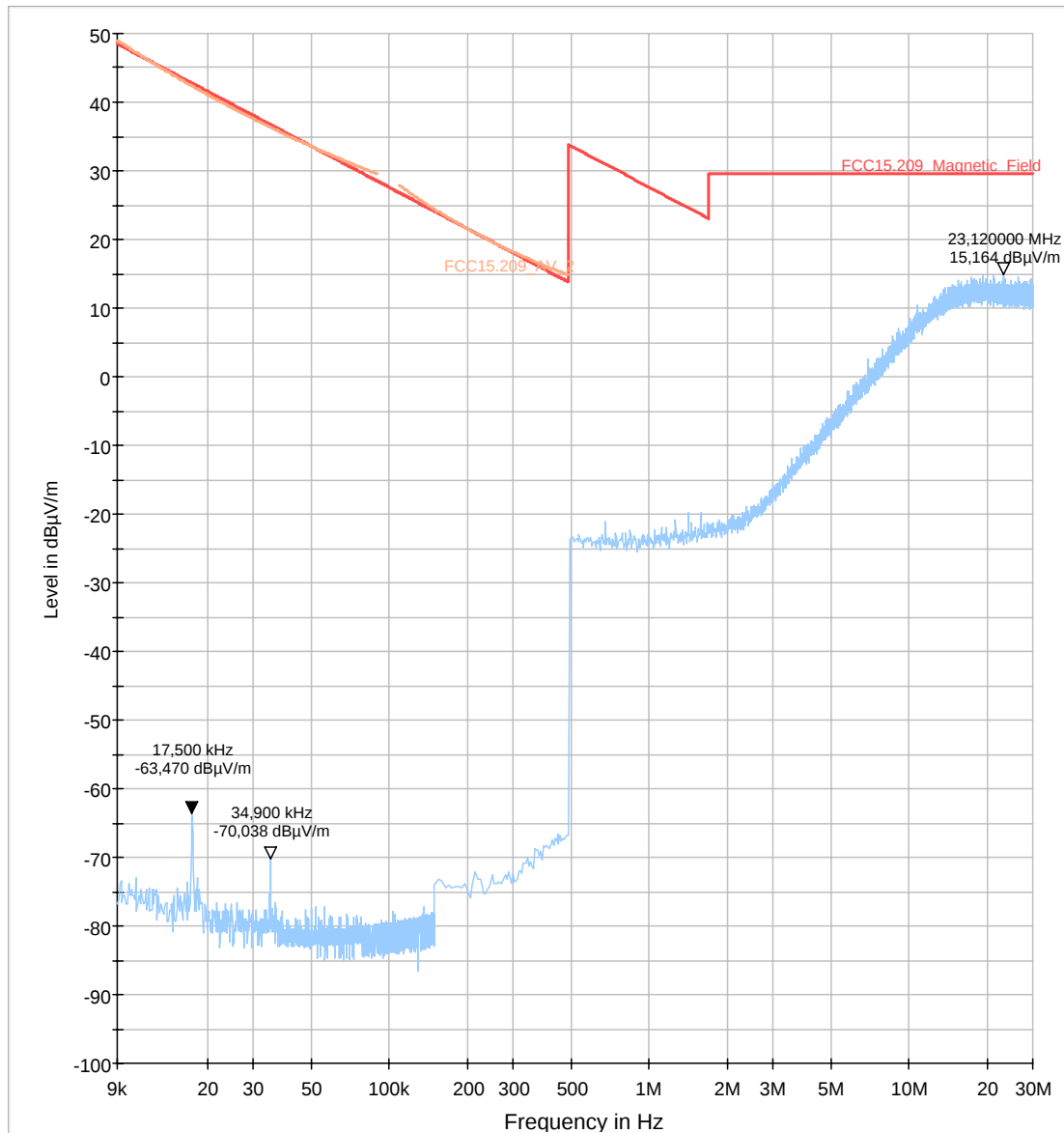


Diagram e_3.03 – Channel 78

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

Common Information

Test description:	Electric Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance
Measured sides of EUT:	front, right, rear, left,top, under
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:	HLA
Operating conditions:	TAN+ (TX)
Power during tests:	full loaded batteries
Comment 1:	Channel low/middle/high

EUT Information

EUT Name:	ADD-3880121-BV
Manufacturer:	Sony Ericsson
S/N:	CB5A1EYWJ33

FCC15.209_hor+vert_kipp

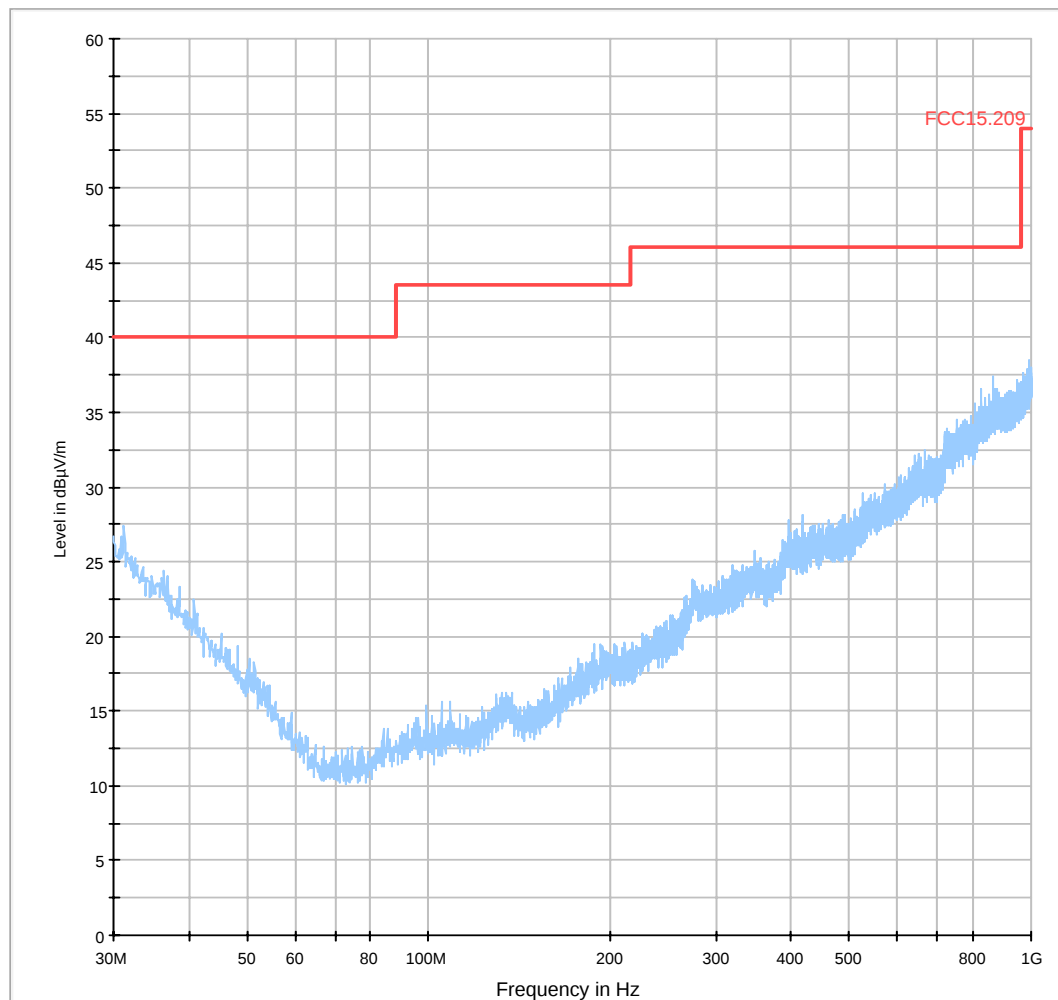


Diagram e_2.01 – Channel 78

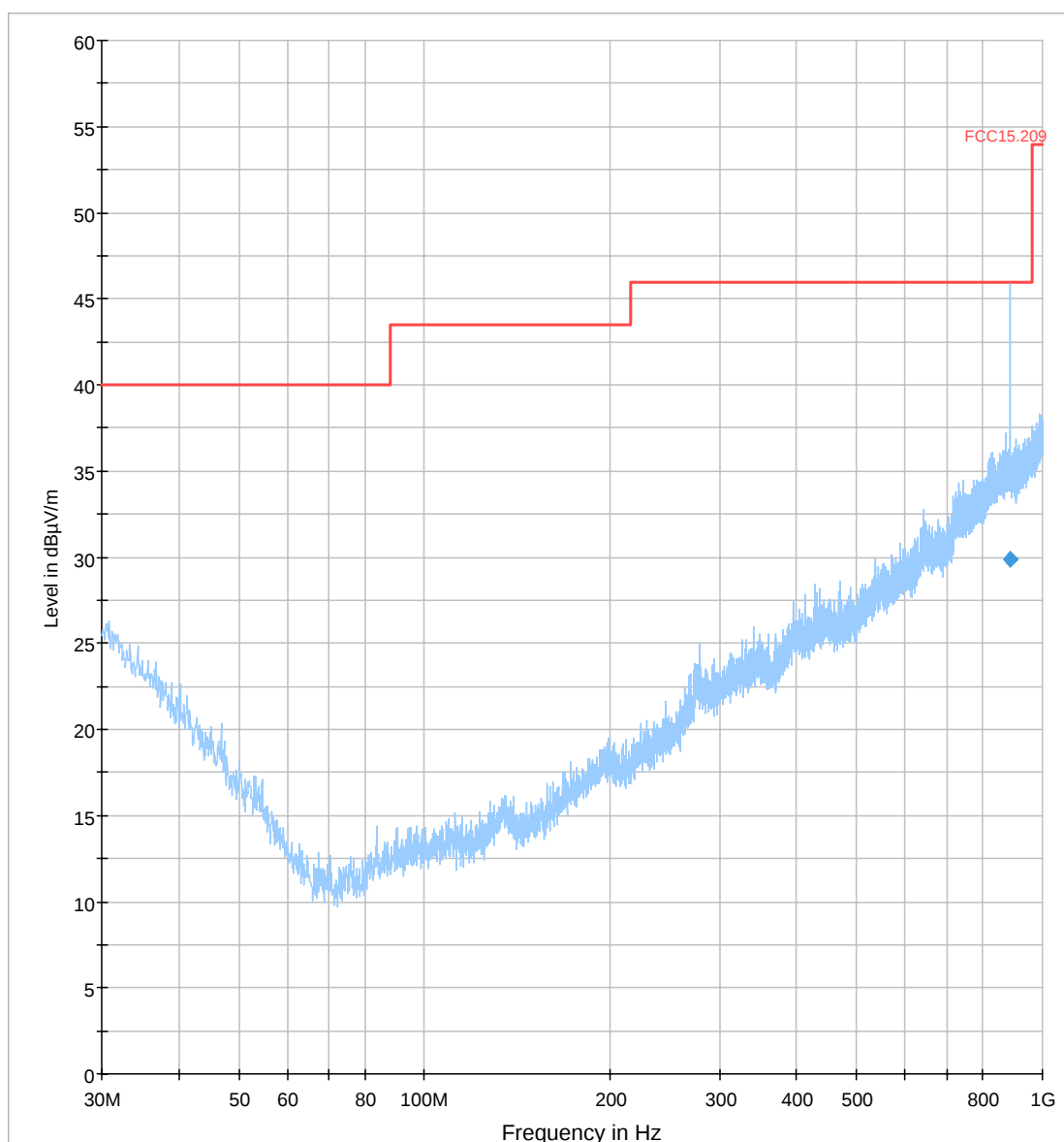


Diagram e_2.02 – Channel 39

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
886.55	29.88	1000.0	120.000	309.0	V	20	90	26.29	16.10

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

Limit (dBµV/m)	Comment
46.00	

01_FCC15.209_hor+vert_kipp

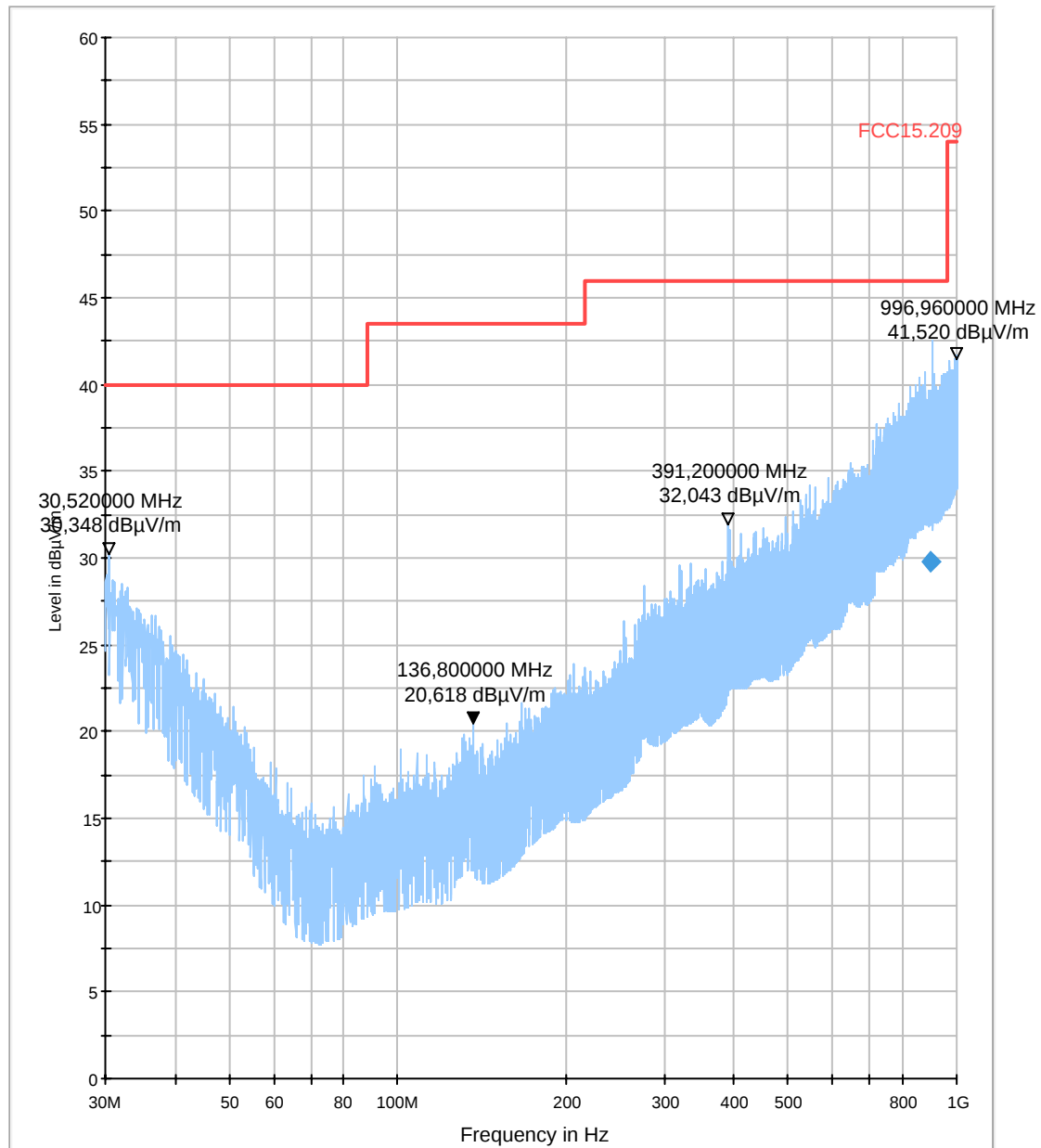


Diagram e_2.03

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
901.310000	29.8	1000.0	120.000	129.0	H	341.0	0.0	26.4	16.20

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

Frequency (MHz)	Limit (dBµV/m)	Comment
901.310000	46.00	

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

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/ RSS-210, Issue 8
Antenna polarisation:	horizontal/vertical
Operator Name:	Tas

EUT Information

EUT Name:	AAD-3880121-BV
Manufacturer:	SEM
Comment:	ANT+ technology

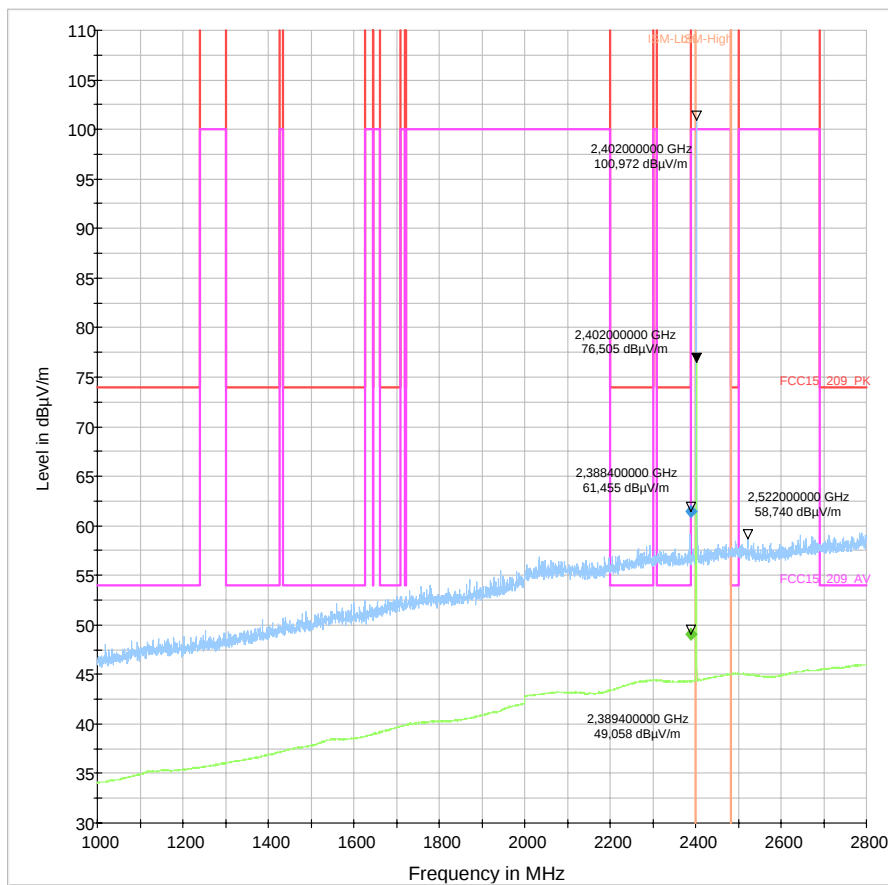


Diagram E_2.04, Channel 0

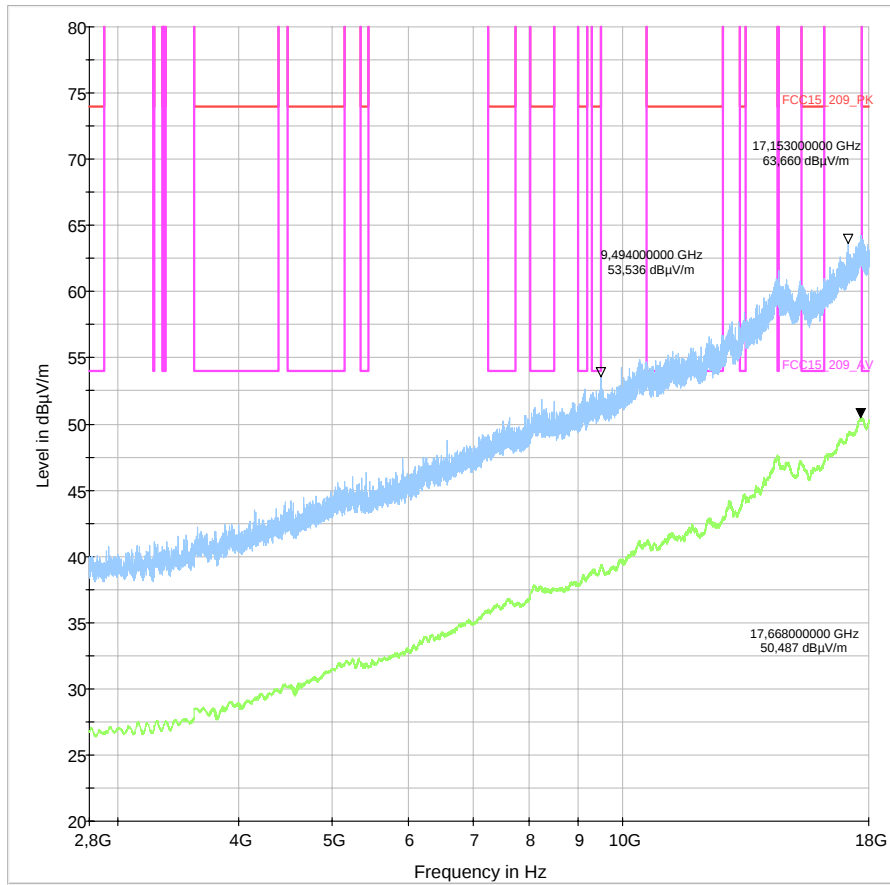


Diagram E_2.05, Channel 0

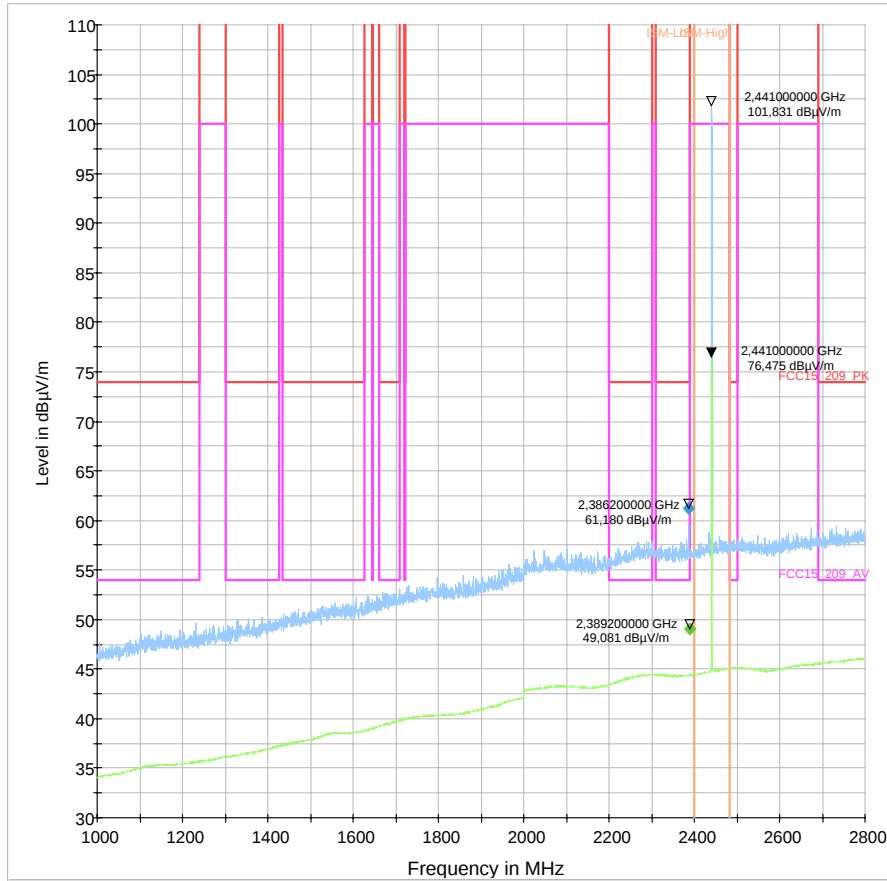


Diagram E_2.06, Channel 39

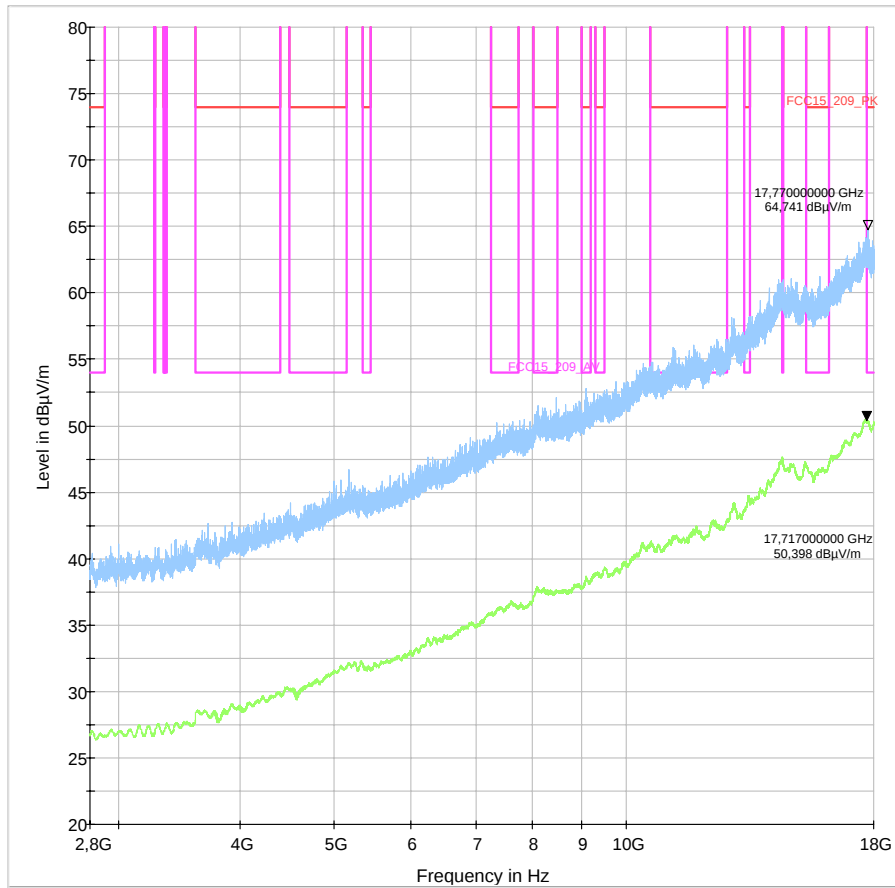


Diagram E_2.07, Channel 39

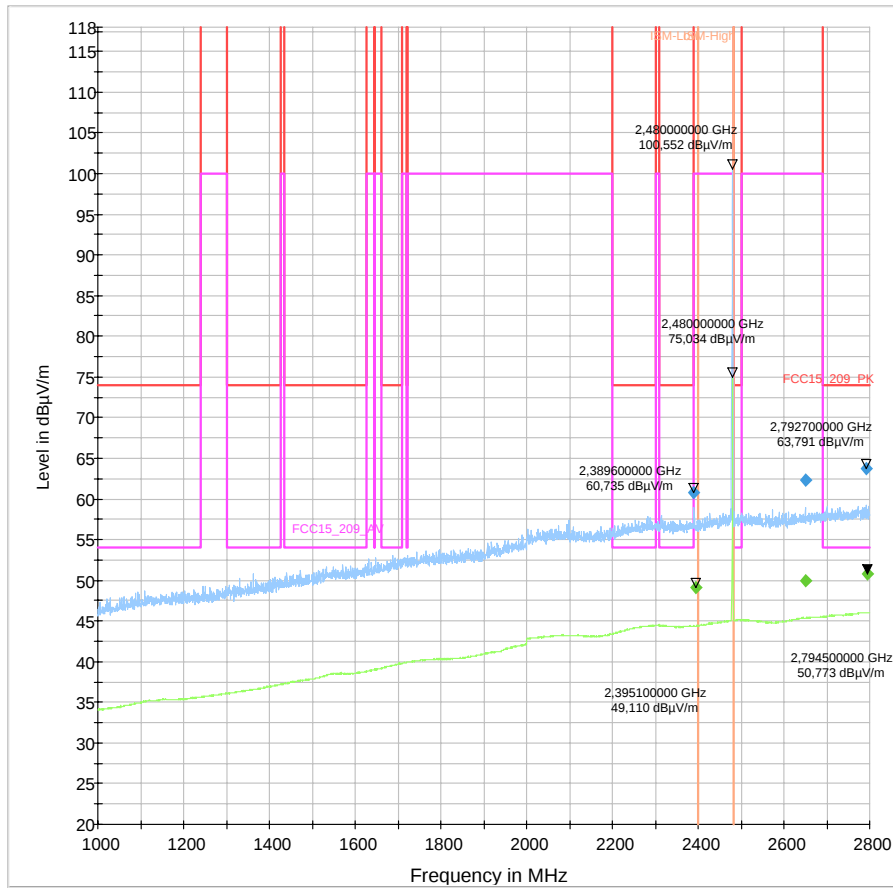


Diagram E_2.08, Channel 78

Final Result 1 (PK)

Frequency (GHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
2389.6	60.73	100.0	1000.000	155.0	H	176	35.4	13.3	74.0 (PK)
2651.2	62.26				V	180	36.5	1.)	
2792.7	63.79				H	354	37.1	10.2	

Final Result 2 (AV)

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
2395.1	49.11	100.0	1000.000	155.0	H	135	35.4	1.)	54.0 (AV)
2651.0	49.92				V	37	36.5	1.)	
2794.5	50.77				V	6	37.2	3.2	

Remark: 1.) Limit according FCC 15.209 less stringent

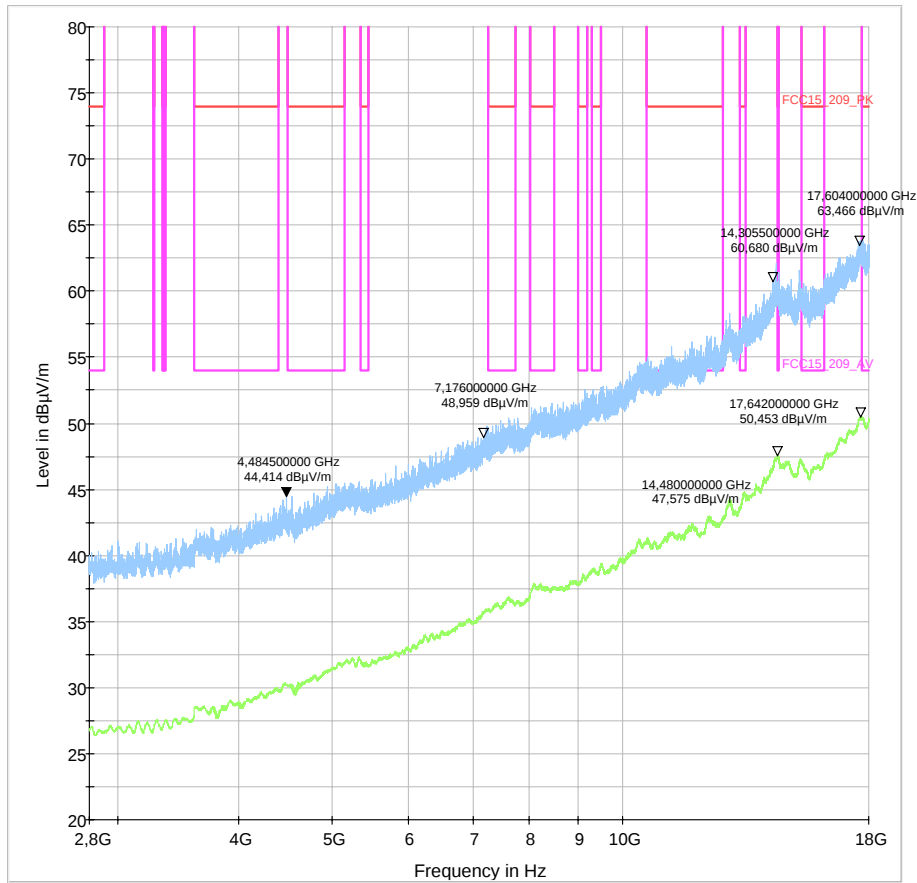
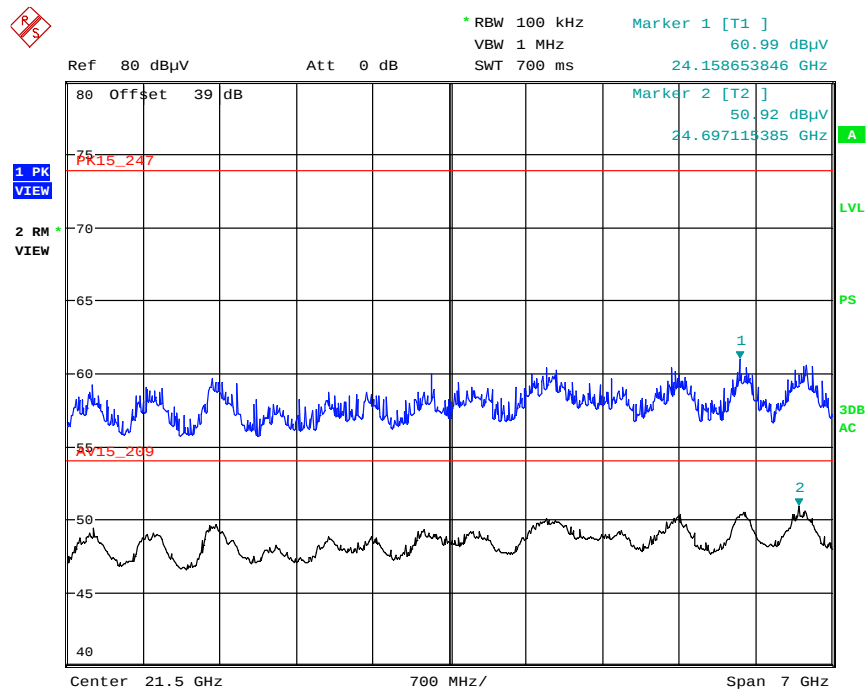


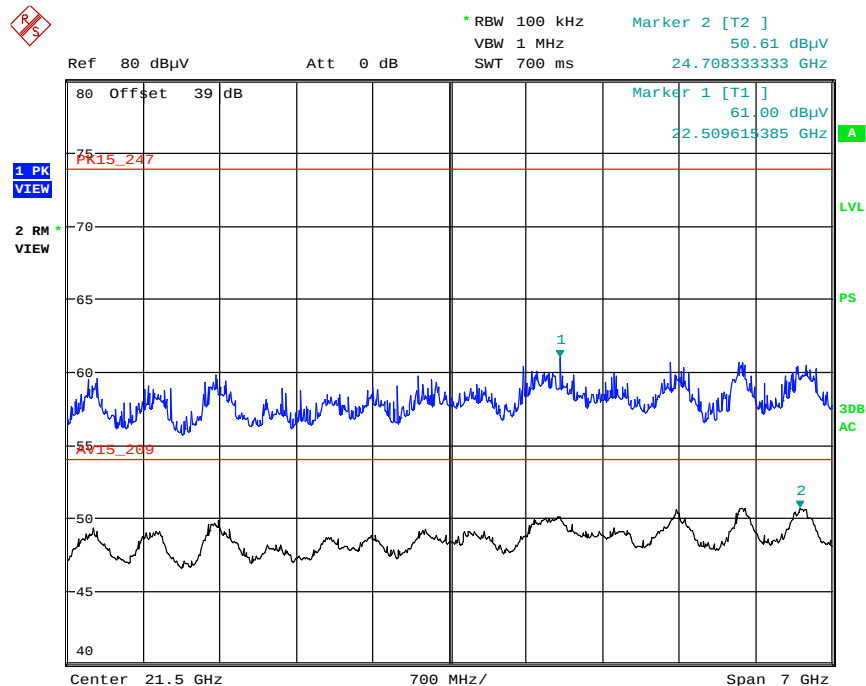
Diagram E_2.09, Channel 78

1.3.4. Radiated field strength (18GHz < f < 25GHz)



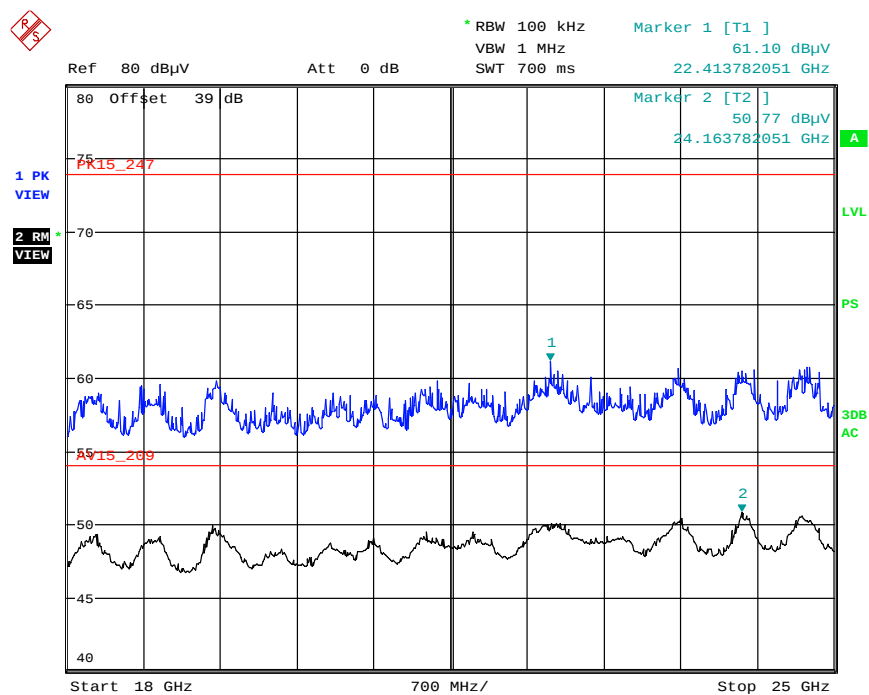
Date: 27.AUG.2011 11:17:46

Channel 0, Exploratory measurement



Date: 27.AUG.2011 11:22:08

Channel 39, Exploratory measurement



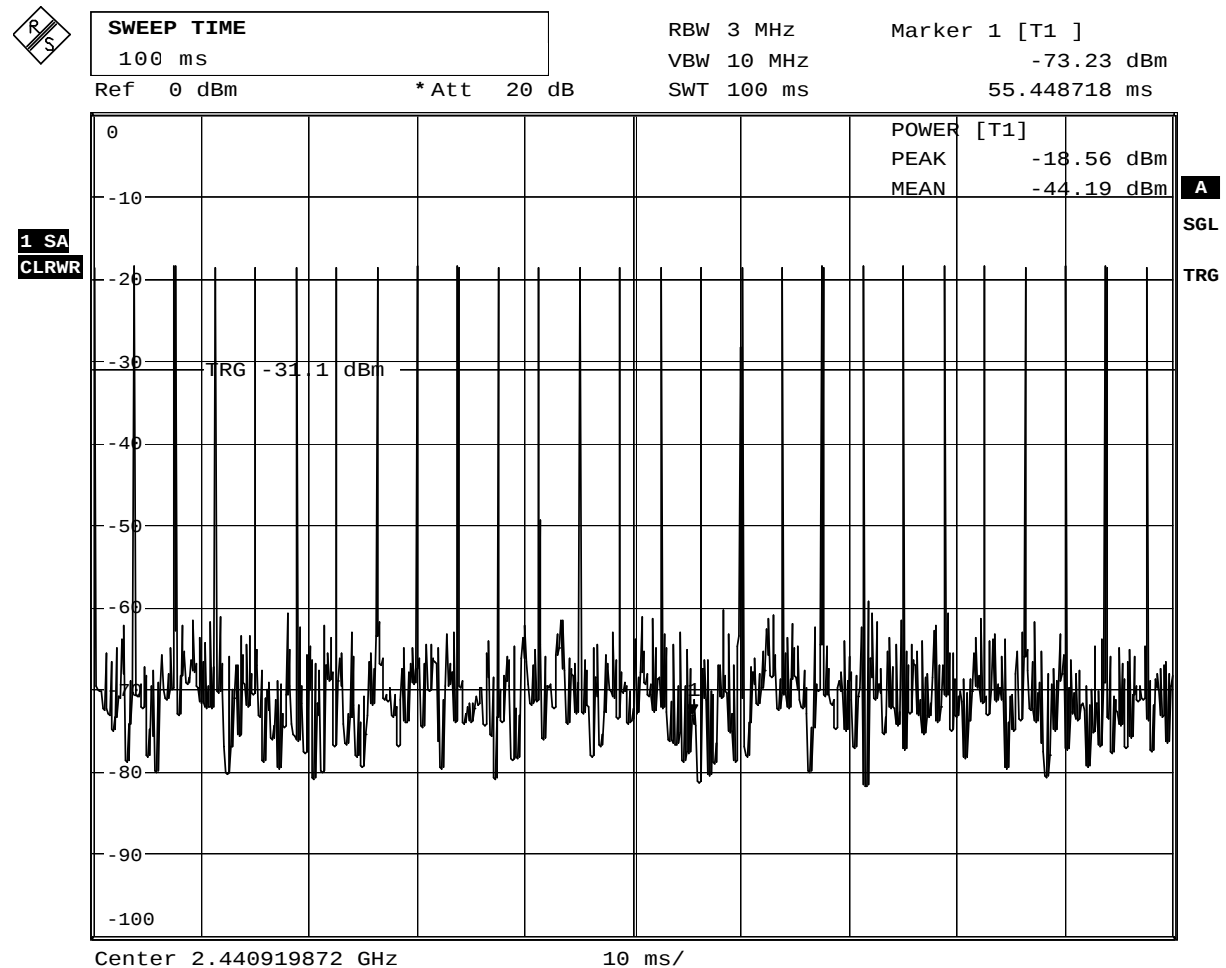
Date: 27.AUG.2011 11:33:27

Channel 78, Exploratory measurement

1.3.5. Carrier radiated field strength in 3m distance and band-edge compliance radiated according FCC §15.205 & §15.209

Because ANT+ technology is not sending continuously (pulsed emissions), FCC paragraph 15.35(c) applies. The longest duty-cycle possible was considered for this calculations.

Below diagrams are showing the pulsed emissions and the resulting correction factor when averaged over 100ms.

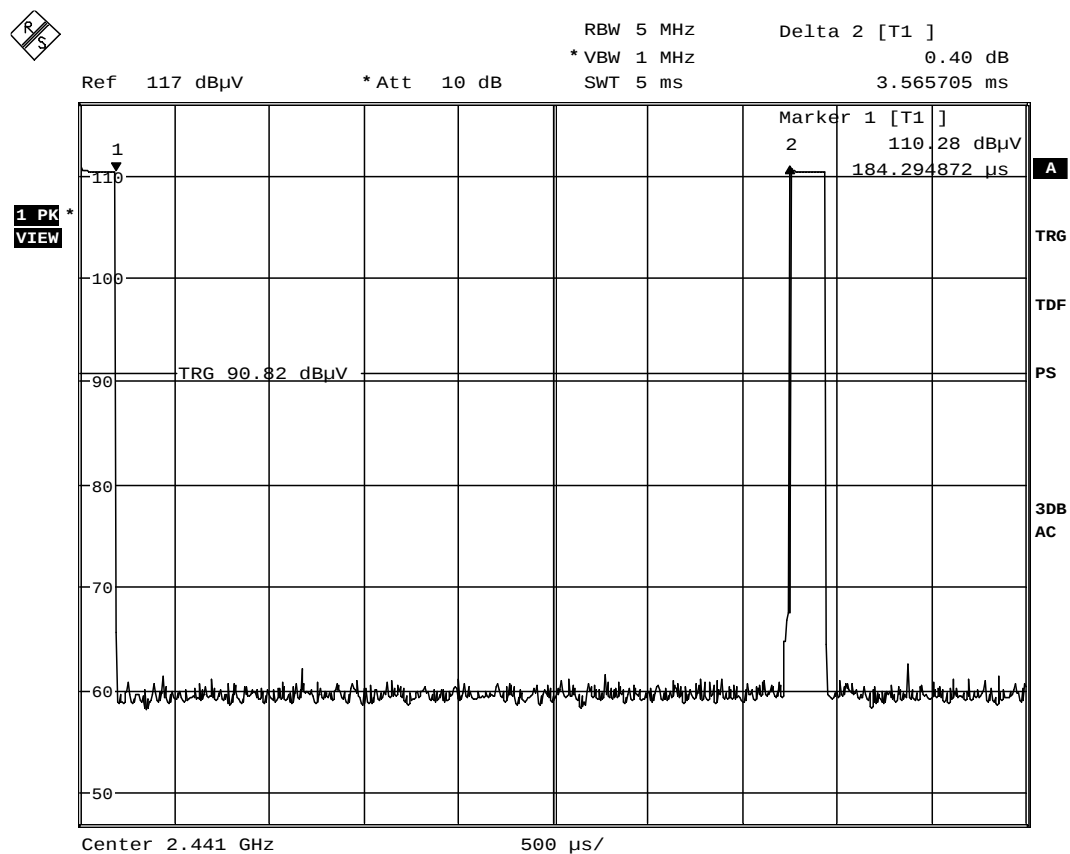


Date: 30.AUG.2011 08:38:20

Diagram: pulses over 100ms

The measured correction factor which applies is around 25dB when averaged over 100ms.

Following diagram show in more details the TX-on and TX-off time:



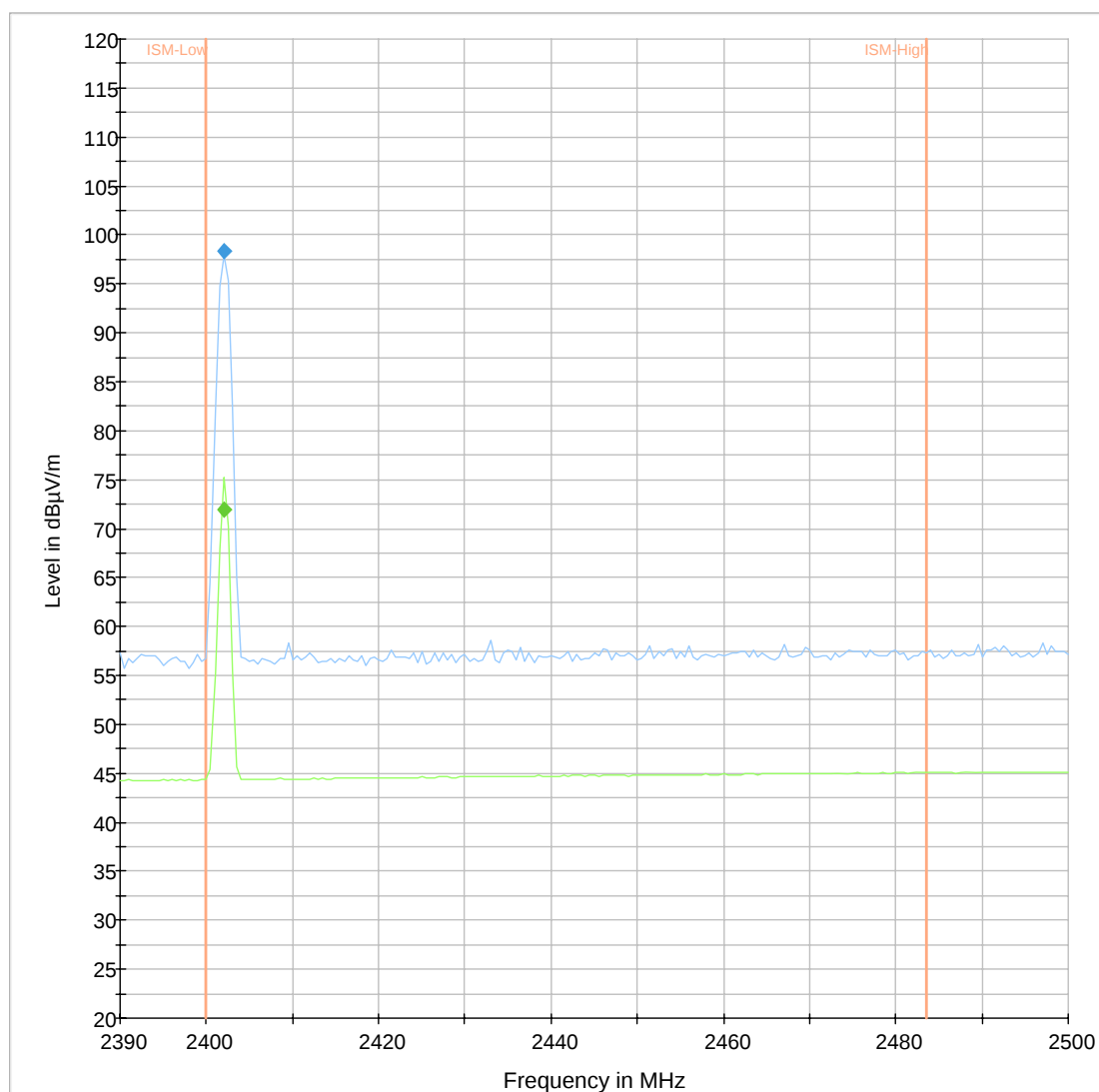
Date: 27.AUG.2011 12:42:14

Diagram: TX-on and TX-off time

The calculated resulting Duty Cycle correction factor (PEAK to AVERAGE) = $20 \cdot \log(\text{Tx-on}/\text{Tx-off}) = 20 \cdot \log(184.3\mu\text{s}/3565\mu\text{s}) = 20 \cdot \log(0.051) = -25.73\text{dB}$

1.3.5.1. Channel 1=2402MHz

Diagram No.: e_2.101



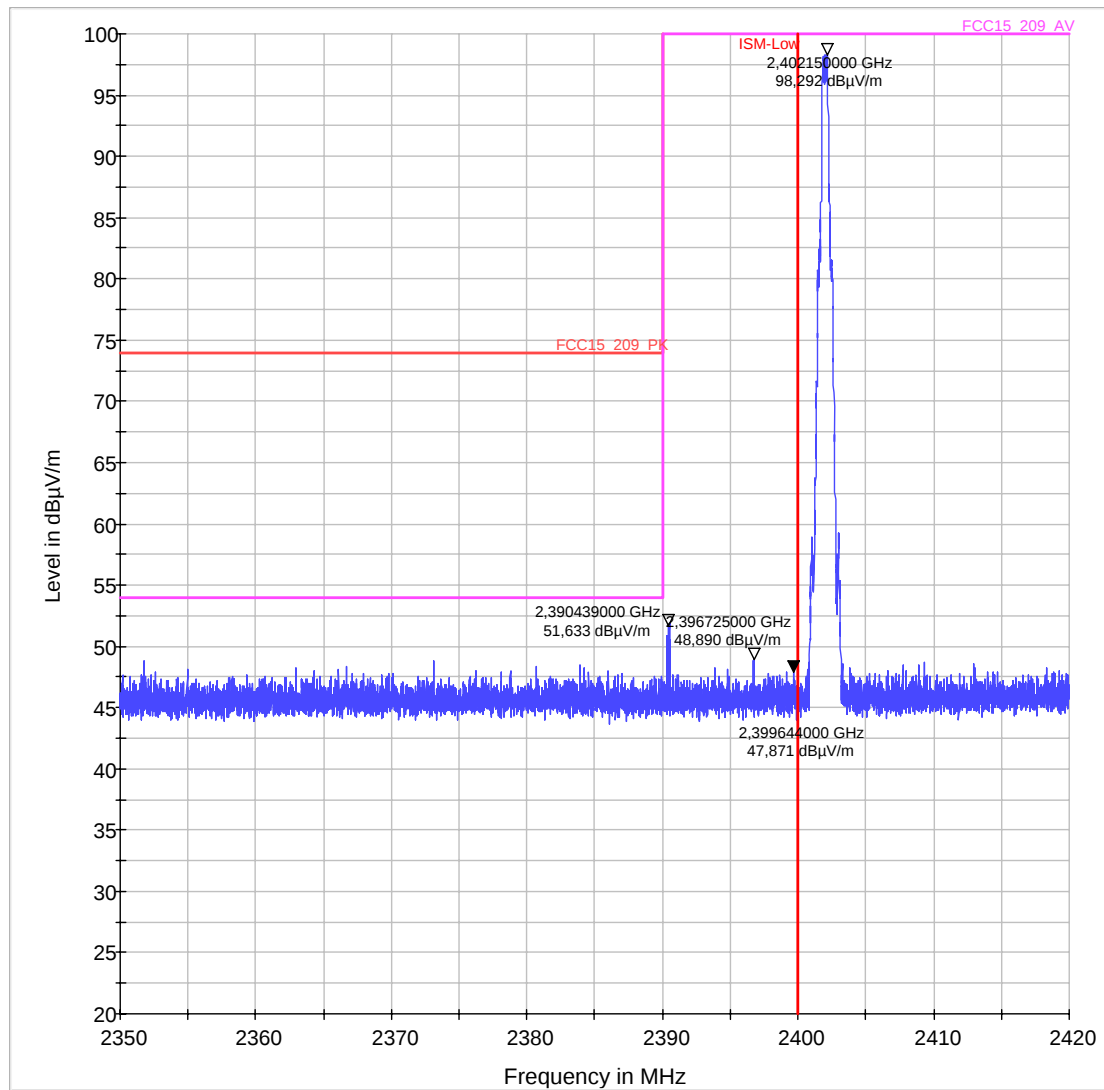
Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Comment
2402.000000	98.32	100.0	1000.000	155.0	V	96	90.0	35.4	

Final Result 2

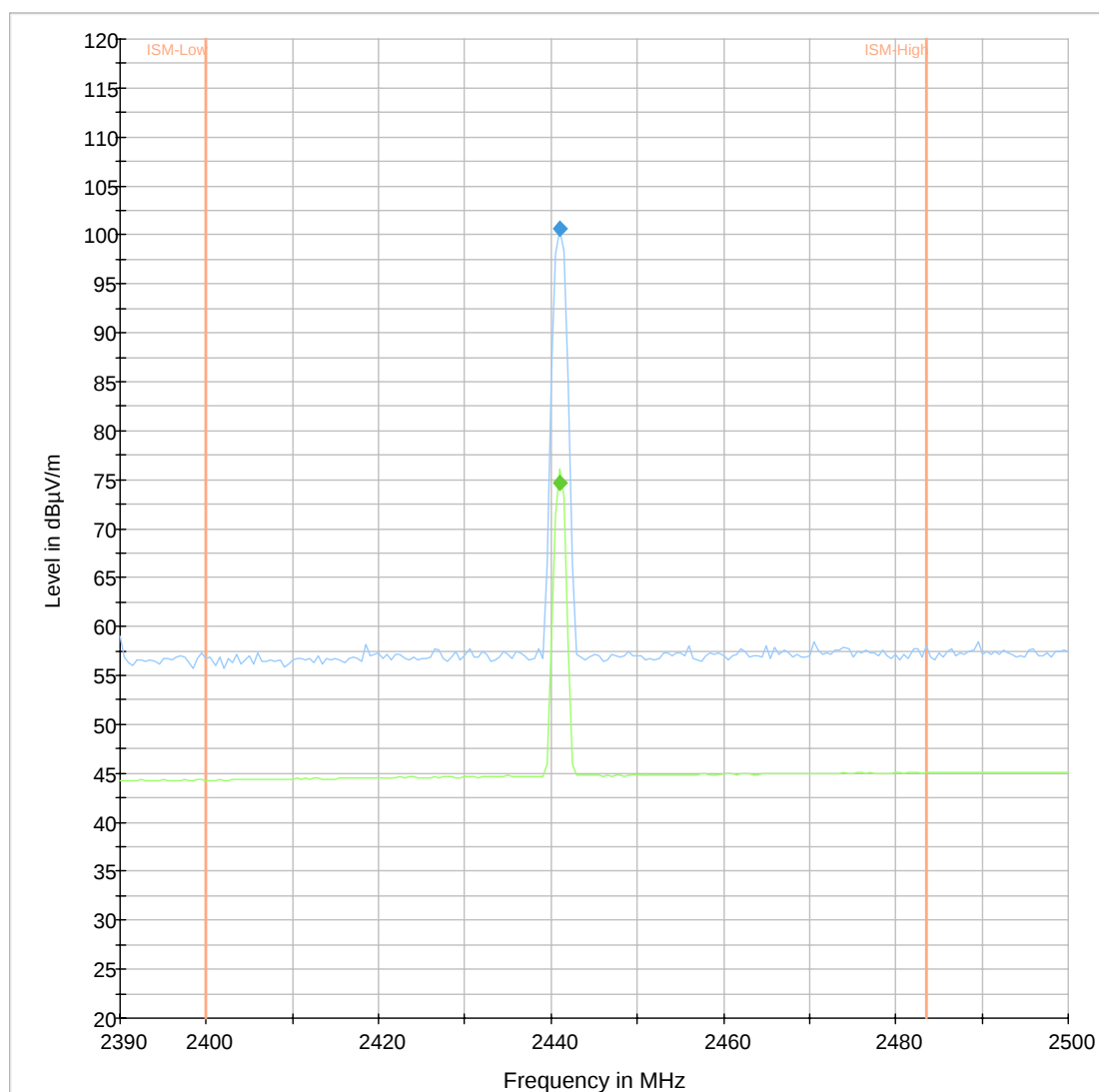
Frequency (MHz)	Average (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Comment
2402.000000	73.61	100.0	1000.000	155.0	H	10	90.0	35.4	

Diagram No.: E_BE_Ch0 (Band-Edge left)



1.3.5.2. Channel 39=2441MHz

Diagram No.: e_2.102



Final Result 1

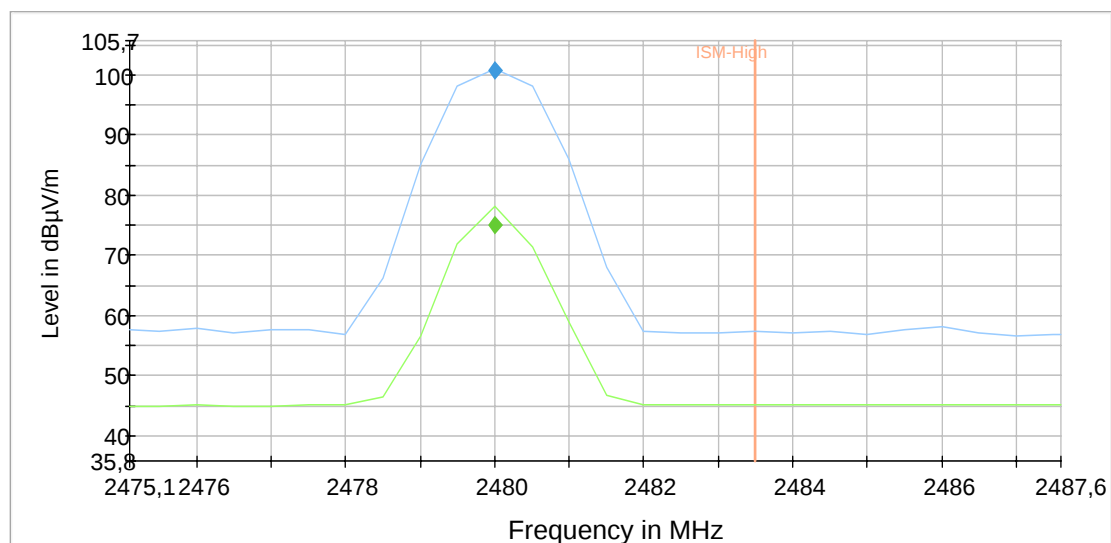
Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2441.000000	100.62	100.0	1000.000	155.0	H	-8	90.0	35.5	

Final Result 2

Frequency (MHz)	Average (dB μ V/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2441.000000	74.70	100.0	1000.000	155.0	H	197	0.0	35.5	

1.3.5.3. Channel 78=2480MHz

Diagram No.: e_2.103



Final Result 1

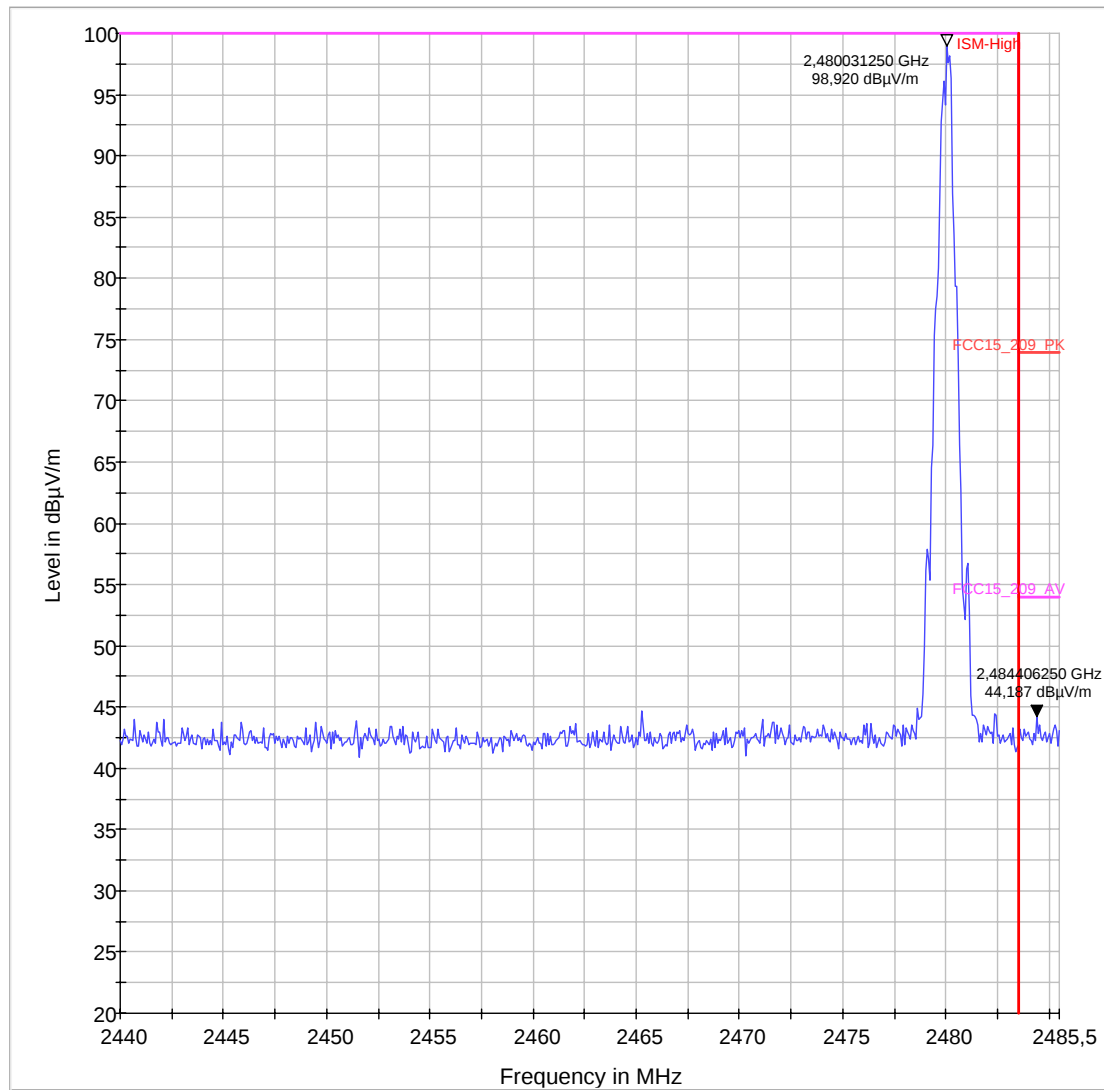
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2480.000000	100.73	100.0	1000.000	155.0	H	-5.0	0.0	35.7	

Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Correction (dB)	Comment
2480.000000	75.01	100.0	1000.000	155.0	H	-4.0	0.0	35.7	

EMI Auto Test Template: Sweep0_SM1_PA0_KP1_BT

Diagram No.: e_BE_Ch78 (Band-Edge right)



DELTA according STEP 2: 98.92 dBμV/m– 44.18dBμV/m = 54.74 dB

1.4. Radiated field strength (§15.109, Class B and RSS-Gen)

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

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 15.109 ClassB; RSS-Gen: Issue 3

Operator: YZH
 Operating conditions: RX
 Comment 1: Channel middle=39

EUT Information

EUT Name: AAD-3880121-BV
 Manufacturer: Sony Ericsson

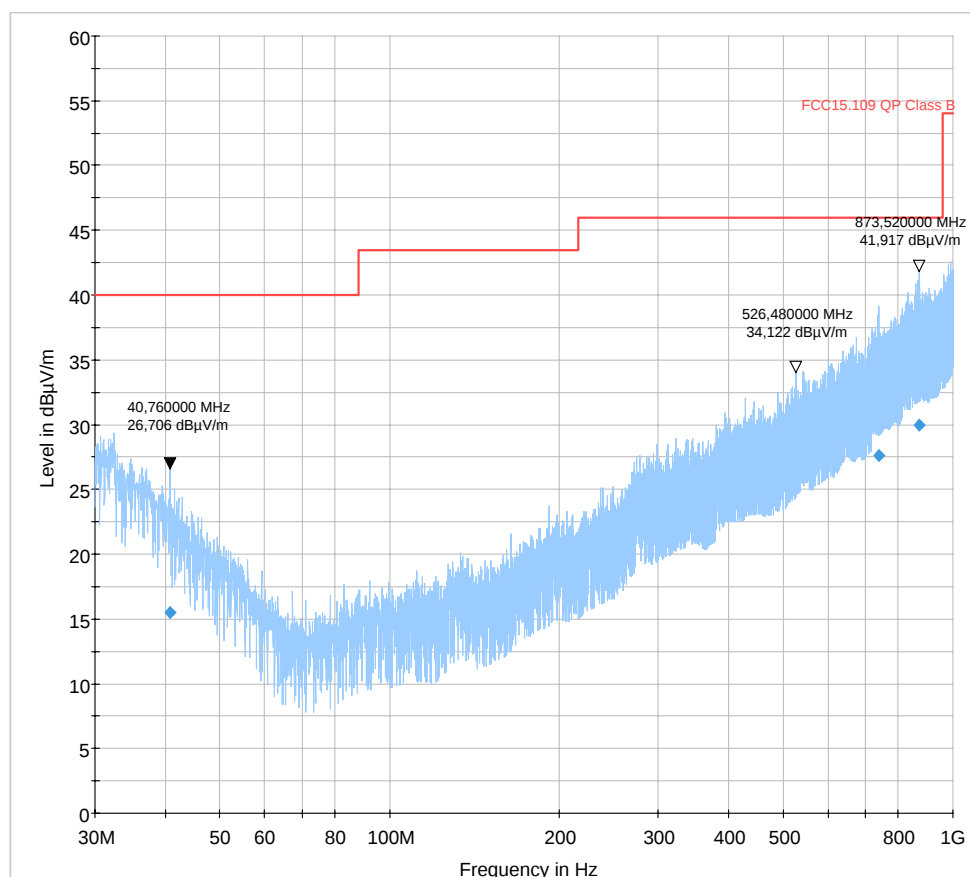


Diagram e_2.10 – Channel 39

Diagram no.	Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (m)	Polarity	Turntable position (deg)	Corr. (dB) (C _F)	Margin (dB) (M)	Limit (dBµV /m) (L _T)
E_2.10	40.82	15.47	1000	120.0	2.27	V	200°	16.97	24.50	40.0
	738.83	27.59	1000	120.0	2.22	V	211°	23.92	18.40	46.0
	872.92	29.92	1000	120.0	2.77	V	277°	25.98	16.10	46.0

1.4.2. Radiated field strength (1GHz < f < 12.75GHz)**Common Information**

Test Description:	Radiated field strength emission in 3m distance
Test Site:	FAR
Test Standard:	FCC 15.109 class B Unintentional Radiator/ RSS-Gen, Issue 3
Antenna polarisation:	horizontal/vertical
Operation mode:	RX (ANT+, Channel middle)
Operator Name:	YZH

EUT Information

EUT Name:	AAD-3880121-BV
Manufacturer:	SEM
Comment:	ANT+ technology

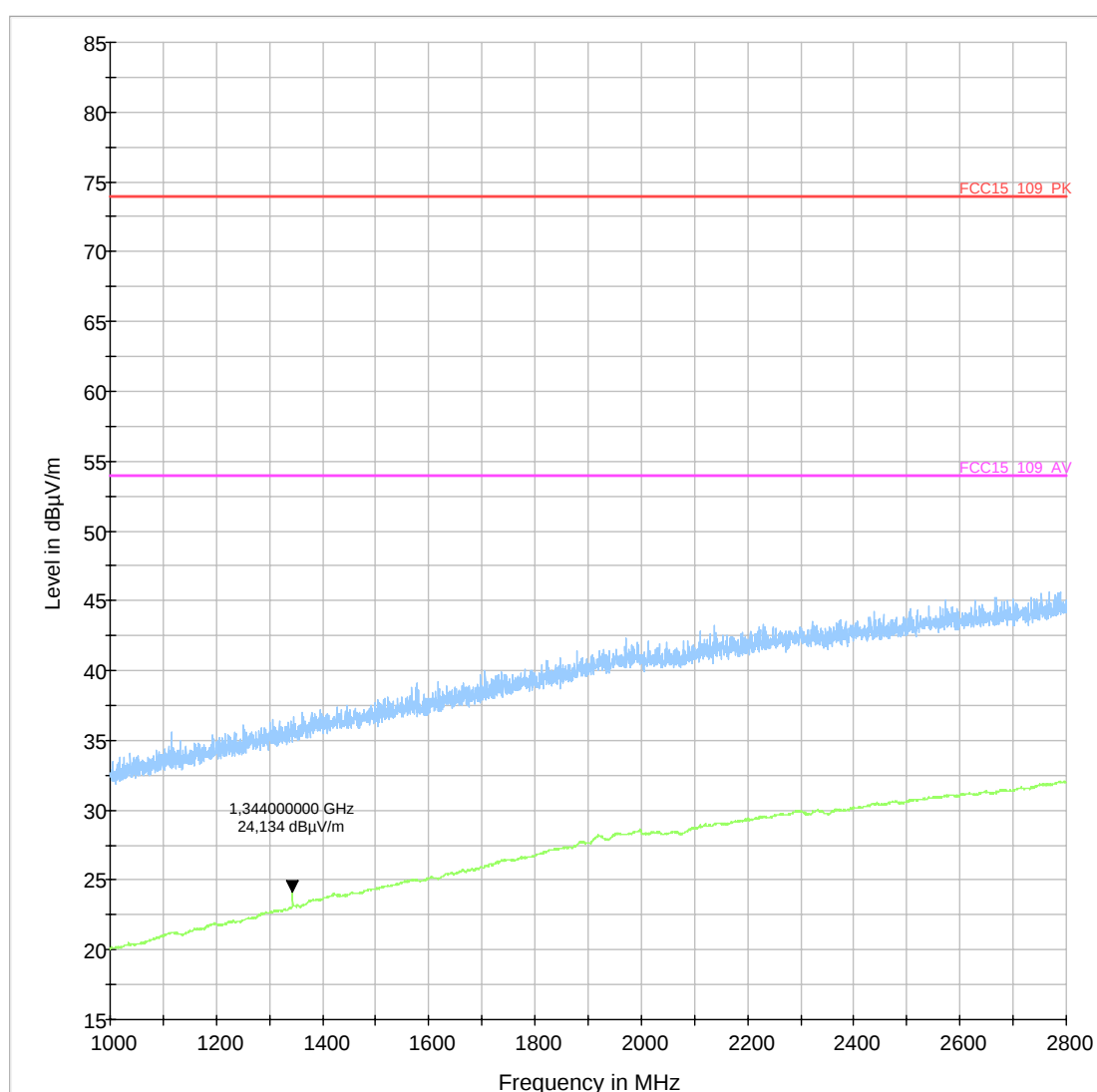


Diagram e_2.11

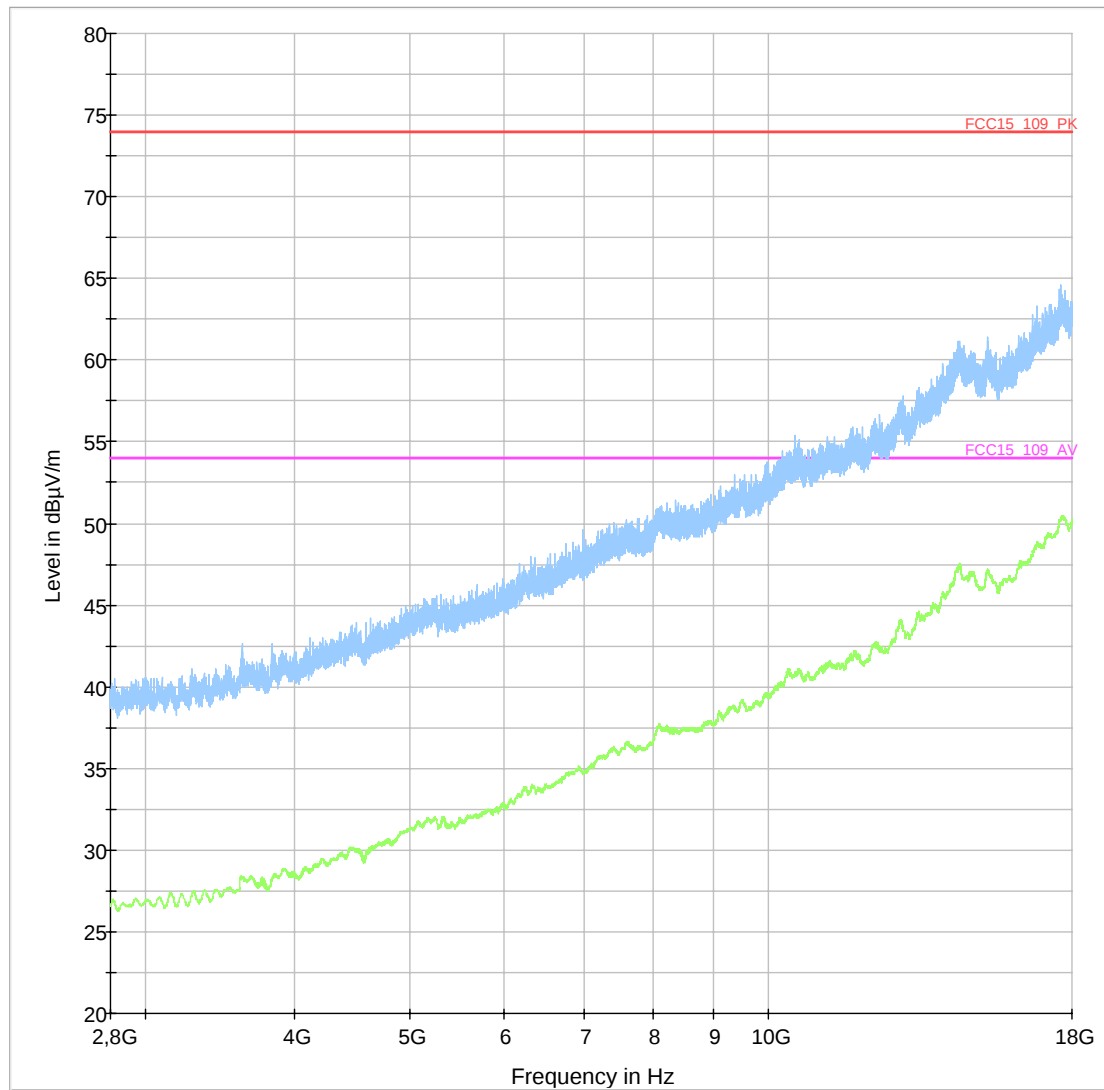


Diagram e_2.12