

6.5 Spurious emission (WLAN)**6.5.1 Radiated emission - Electromagnetic field (30 MHz – 1 GHz)**

Test site: ☐ semi-anechoic chamber (foam) ☐ open test site
☒ semi-anechoic chamber (ferrites) ☐

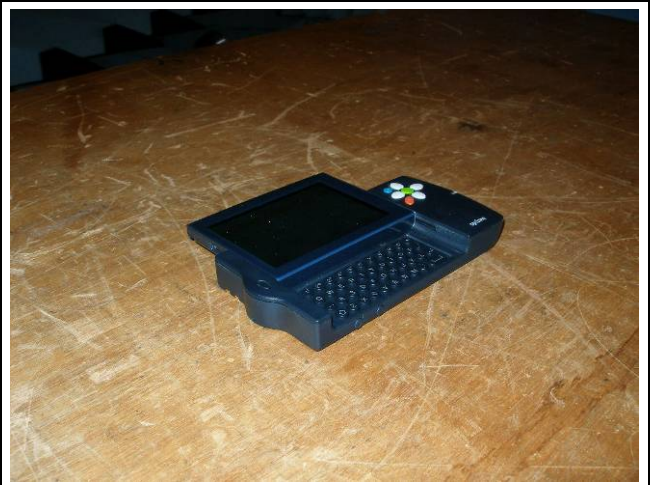
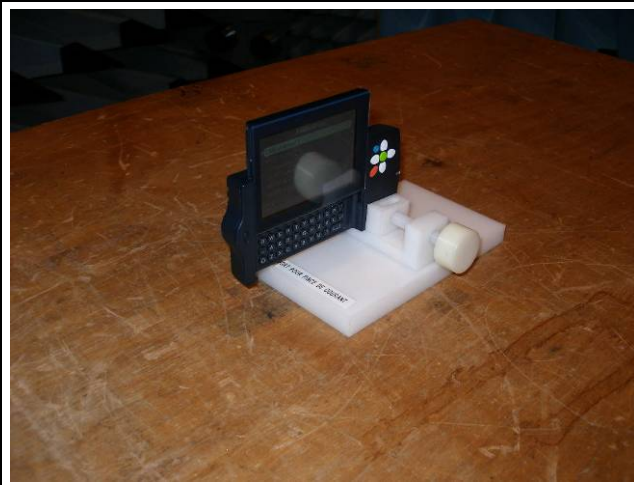
Distance: ☐ 30 m ☐ 10 m ☒ 3 m ☐

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.6 dB (30 - 300 MHz) / ± 3.7 dB (300 - 1000 MHz)

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is moved from 1 to 4 m in height successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 3m
(factor used = 20 dB/decade) if necessary
e.g.: for f = 40MHz the limit is 100 μ V/m at 3m;

$$20 \log \left(\frac{100_{[\mu V / m]}}{1_{[\mu V / m]}} \right) = 40 \text{ dB} \mu V \text{ at } 3m$$

Test equipment:

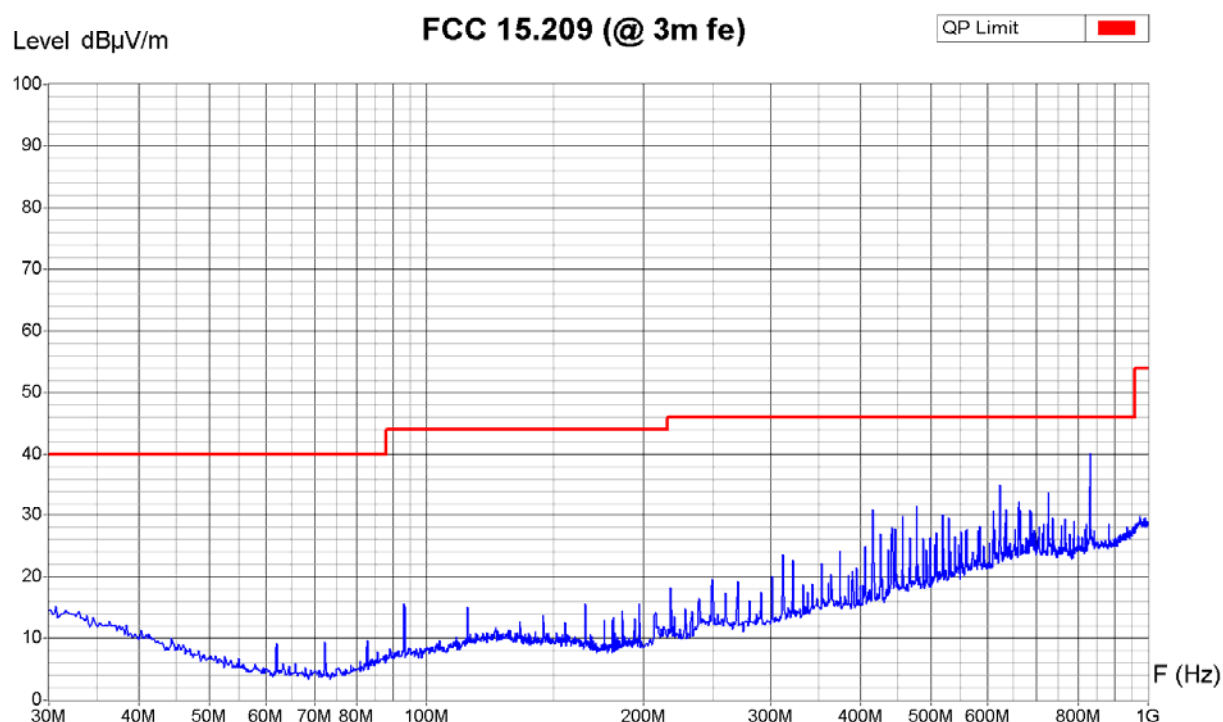
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☐ 02-06	☒ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☒ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☐ 05-56	☒ 05-59	☐ 05-62	☐
Antenna (biconical)	☐ 82-02	☐ 87-05	☐ 87-16	☐ 91-05	☐ 94-37	
Antenna (log-per)	☐ 88-20	☐ 90-30	☐ 91-35	☐ 94-64		
Antenna (bilog)	☒ 94-03	☐ 05-38	☐			
Antenna (horn)	☐ 90-24	☐ 90-29	☐ 98-12	☐ 98-13	☐	
Cables	☒ 06-01					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



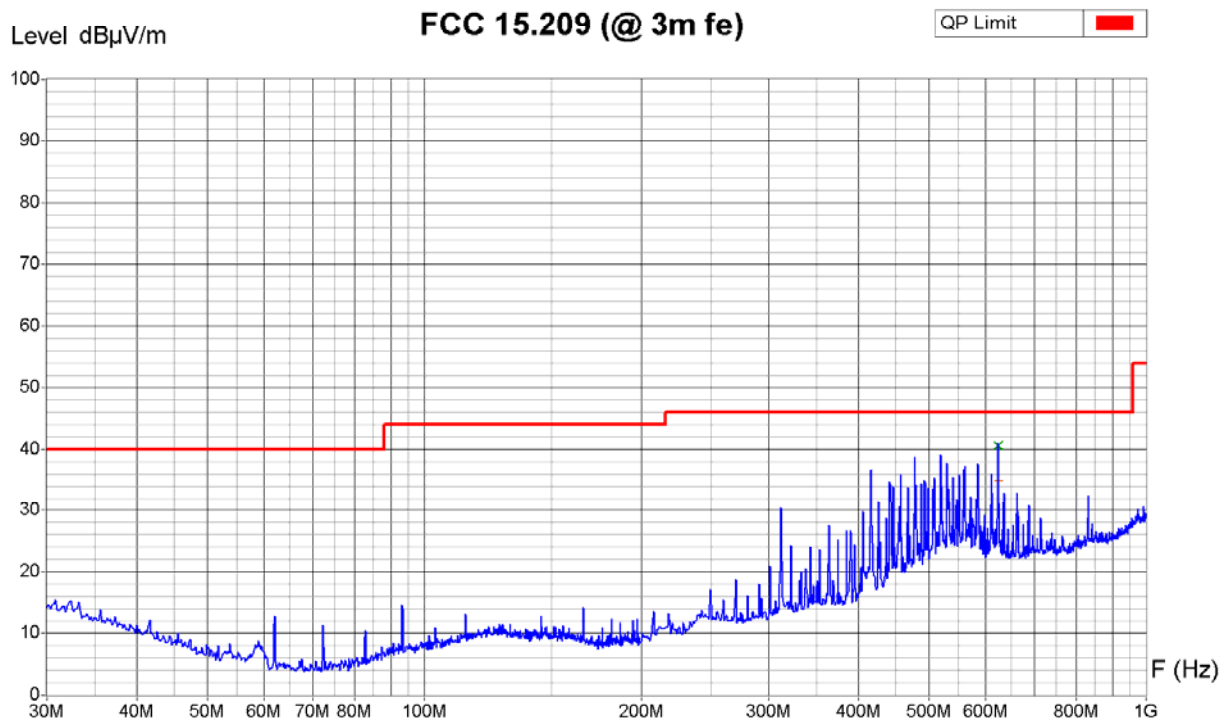
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 16.04.08 14:48
Filename:
20077722_handheld_FCC
SP-WLAN_018h.png/.txt

Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
 Set-Up : handheld open, upright
 Operating Conditions : Tx, WLAN Channel 1, Pmax
 Remarks :



Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Receiver Measures

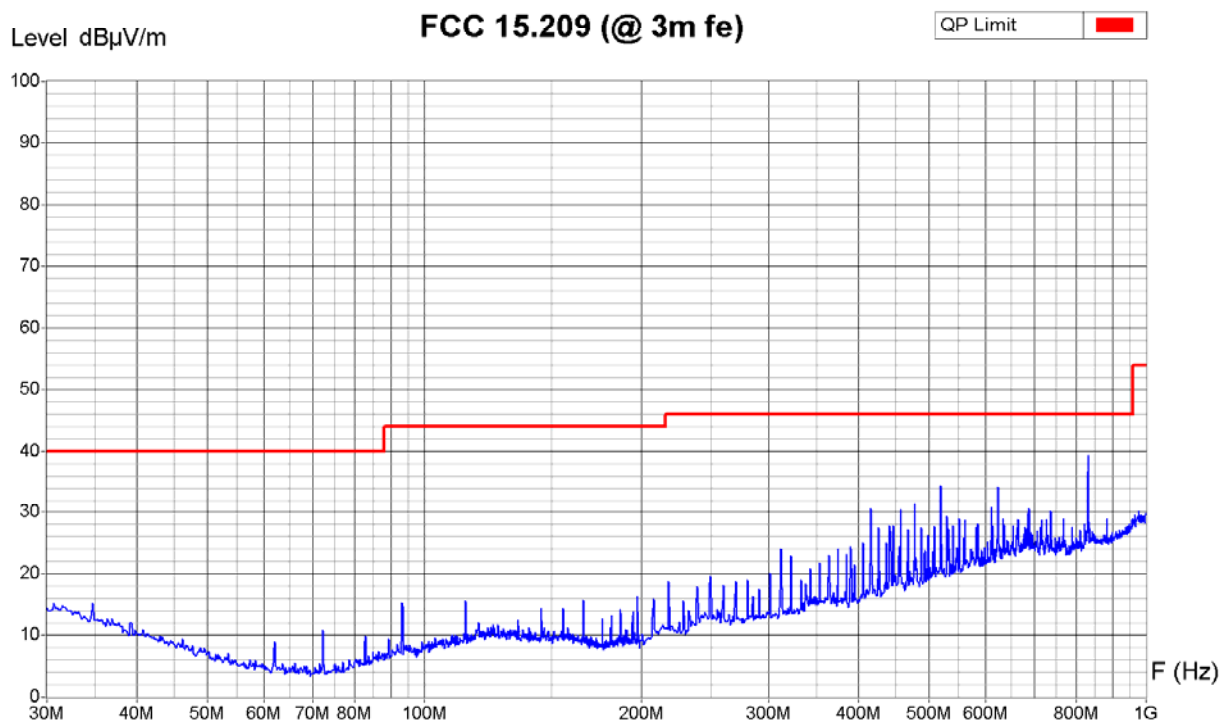
Frequency	Peak	QuasiPeak (x)	Average (+)	QP Margin
624.00 MHz	42.8 dB μ V/m	40.6 dB μ V/m	34.8 dB μ V/m	5.4 dB

Operator: E. Staub
 Date/Time: 16.04.08 14:38
 Filename:
 20077722_handheld_FCC
 SP-WLAN_018v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



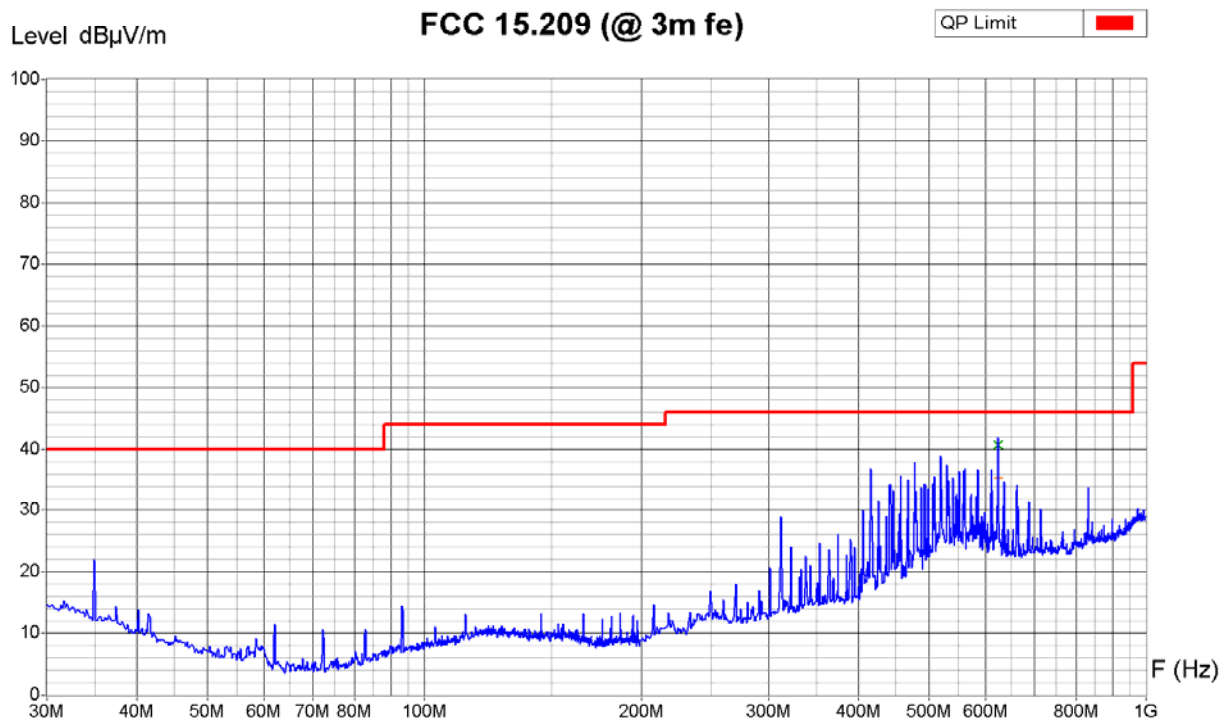
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 16.04.08 14:54
Filename:
20077722_handheld_FCC
SP-WLAN_019h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



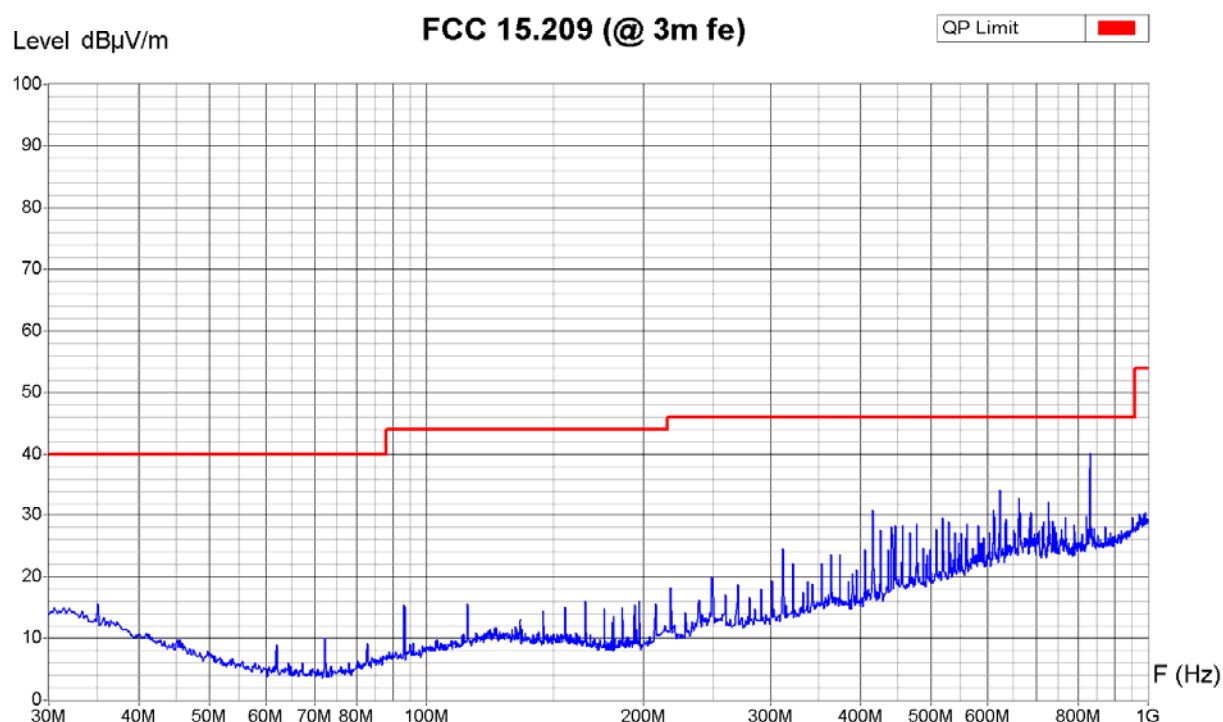
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Receiver Measures

Frequency	Peak	QuasiPeak (x)	Average (+)	QP Margin
624.00 MHz	43.5 dBμV/m	40.8 dBμV/m	35.4 dBμV/m	5.2 dB

Operator: E. Staub
Date/Time: 16.04.08 15:03
Filename:
20077722_handheld_FCC
SP-WLAN_019v.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1 - 4m
 Equipment Under Test : SpotMell handheld
 Set-Up : handheld open, upright
 Operating Conditions : Tx, WLAN Channel 11, Pmax
 Remarks :



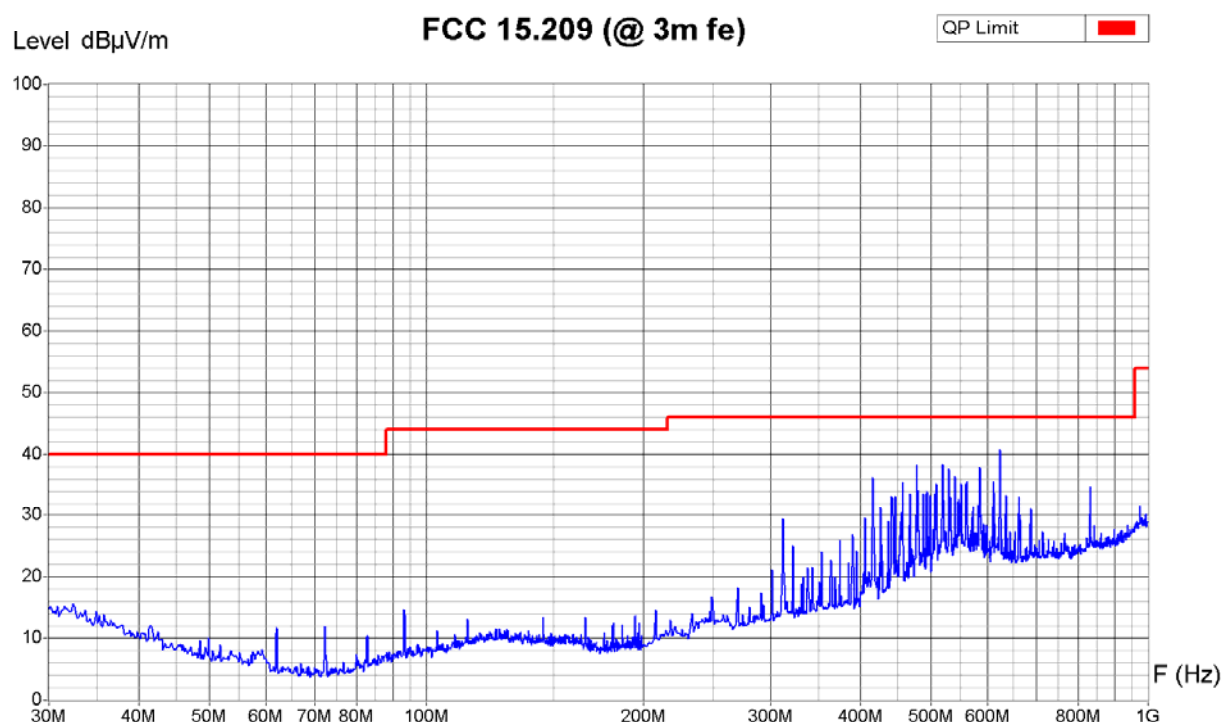
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
 Date/Time: 16.04.08 15:25
 Filename:
 20077722_handheld_FCC
 SP-WLAN_020h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 11, Pmax
Remarks :



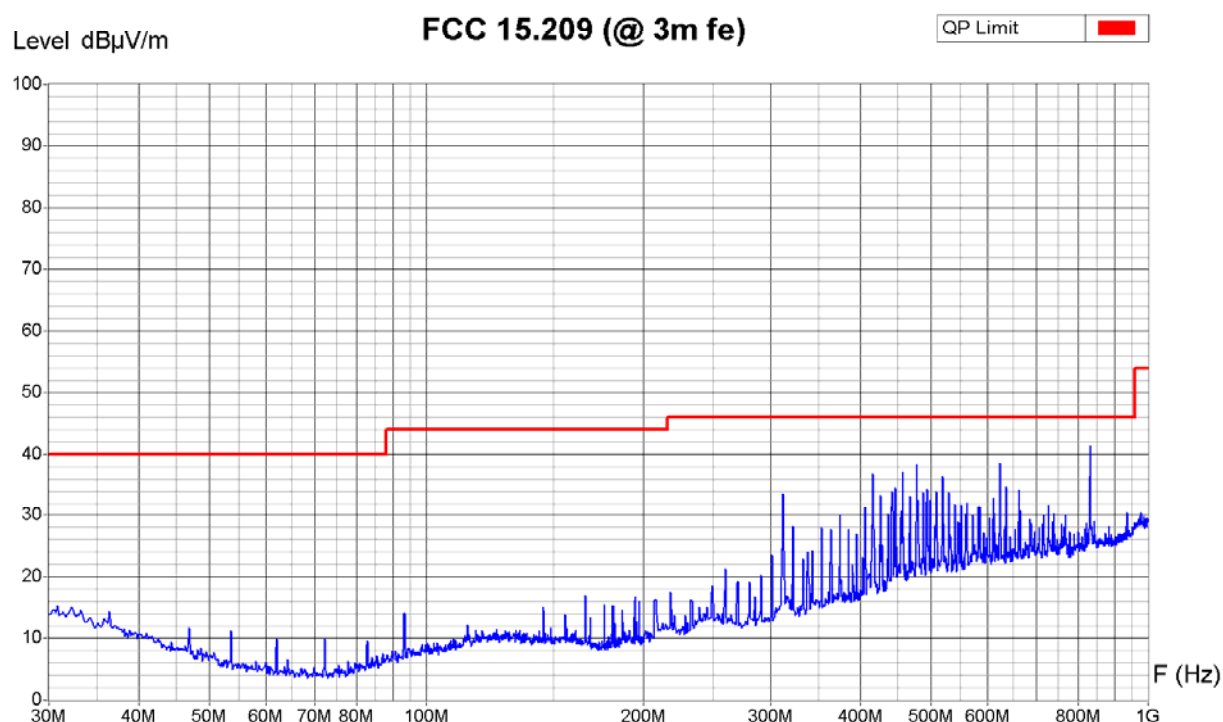
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 16.04.08 15:15
Filename:
20077722_handheld_FCC
SP-WLAN_020v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



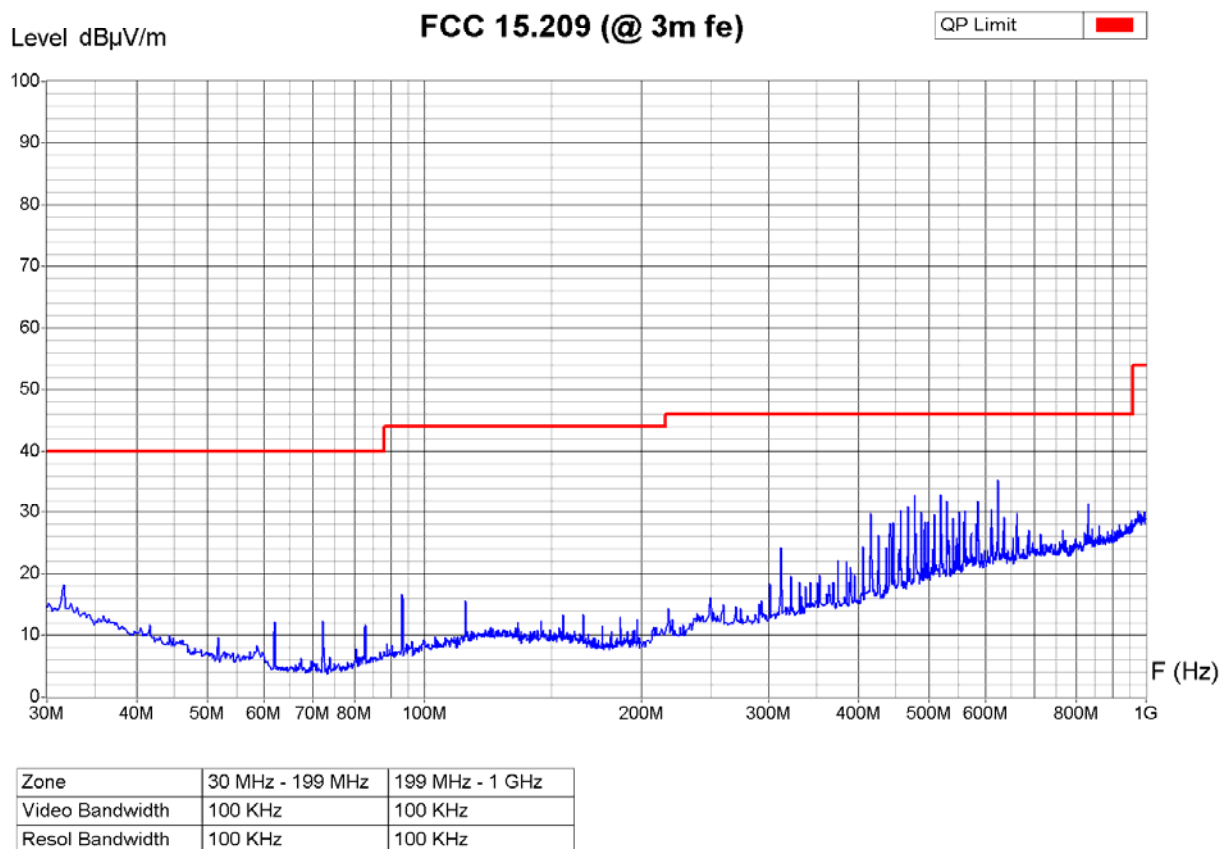
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 16.04.08 17:06
Filename:
20077722_handheld_FCC
SP-WLAN_021h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



Operator: E. Staub
Date/Time: 16.04.08 17:14
Filename:
20077722_handheld_FCC
SP-WLAN_021v.png/.txt

6.5.2 Radiated emission - Electromagnetic field (1 GHz – 2.8 GHz)

Test site: ☒ semi-anechoic chamber (foam) ☐ open test site
☐ semi-anechoic chamber (ferrites) ☐

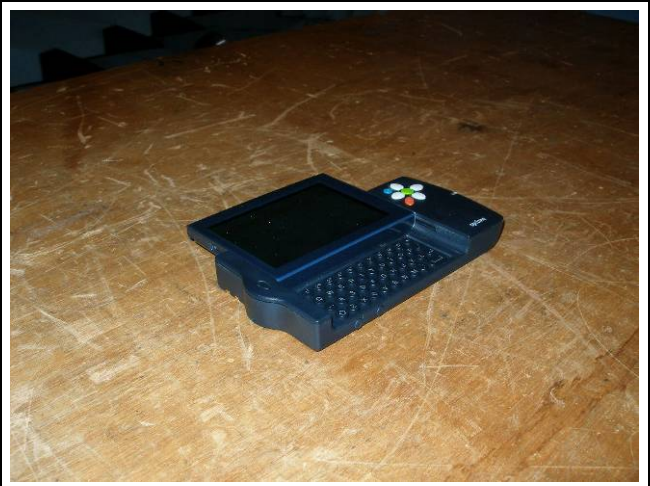
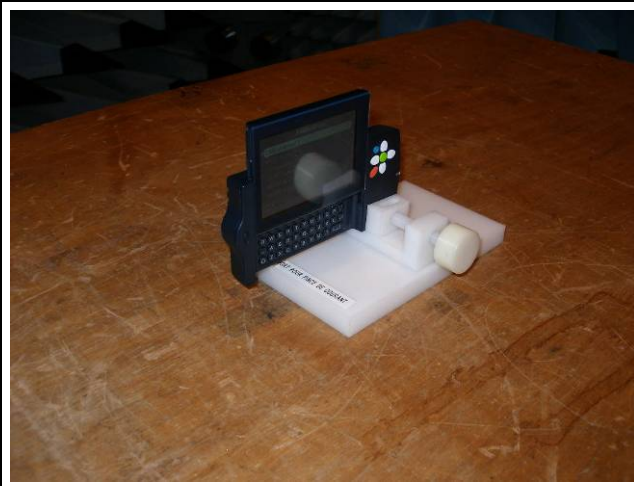
Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 1m
(factor used = 20 dB/decade) if necessary
e.g.: for f = 1GHz the limit is 500 μ V/m at 3m;

$$20 \log \left(\frac{500_{[\mu V / m]}}{1_{[\mu V / m]}} \right) + 20 \log \left(\frac{3_{[m]}}{1_{[m]}} \right) = 63.5 \text{ dB} \mu V \text{ at } 1 \text{ m}$$

Test equipment:

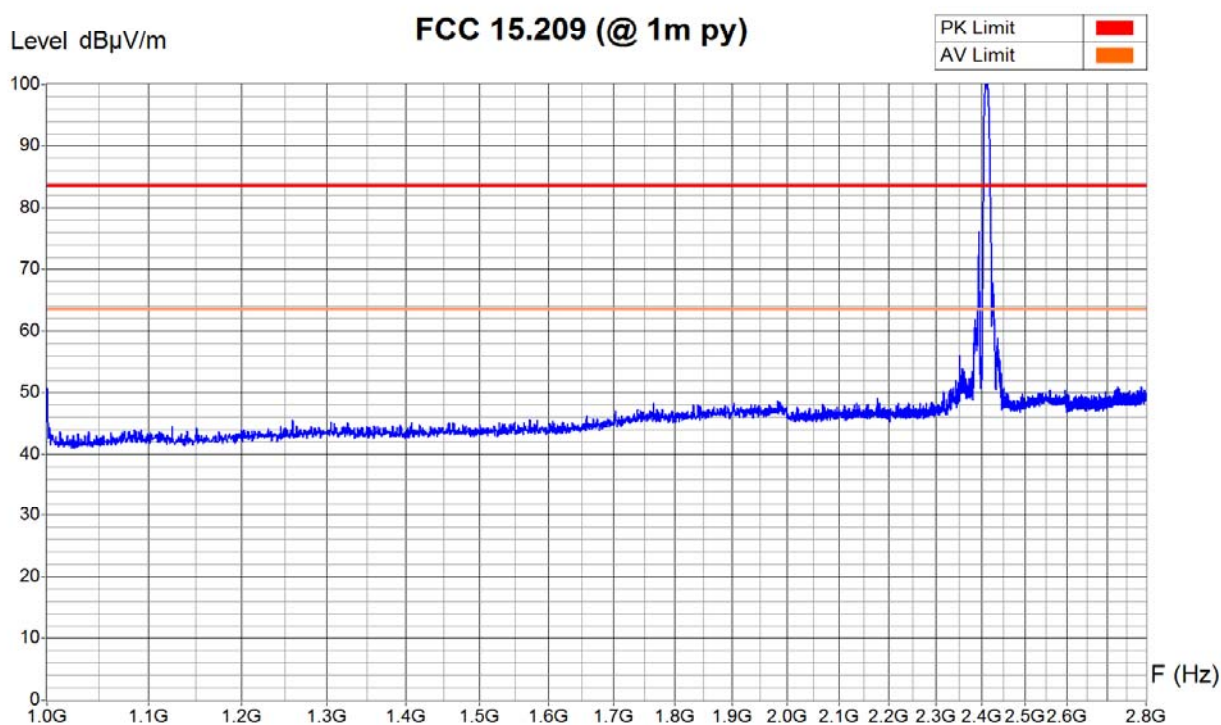
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☐ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☐ 05-56	☐ 05-59	☐ 05-62	☒ 05-87
Antenna (biconical)	☐ 82-02	☐ 87-05	☐ 87-16	☐ 91-05	☐ 94-37	
Antenna (log-per)	☐ 88-20	☐ 90-30	☐ 91-35	☐ 94-64		
Antenna (bilog)	☐ 94-03	☐ 05-38	☐			
Antenna (horn)	☒ 90-24	☐ 90-29	☐ 98-12	☐ 98-13	☐	
Cables	Succoflex 1 m					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



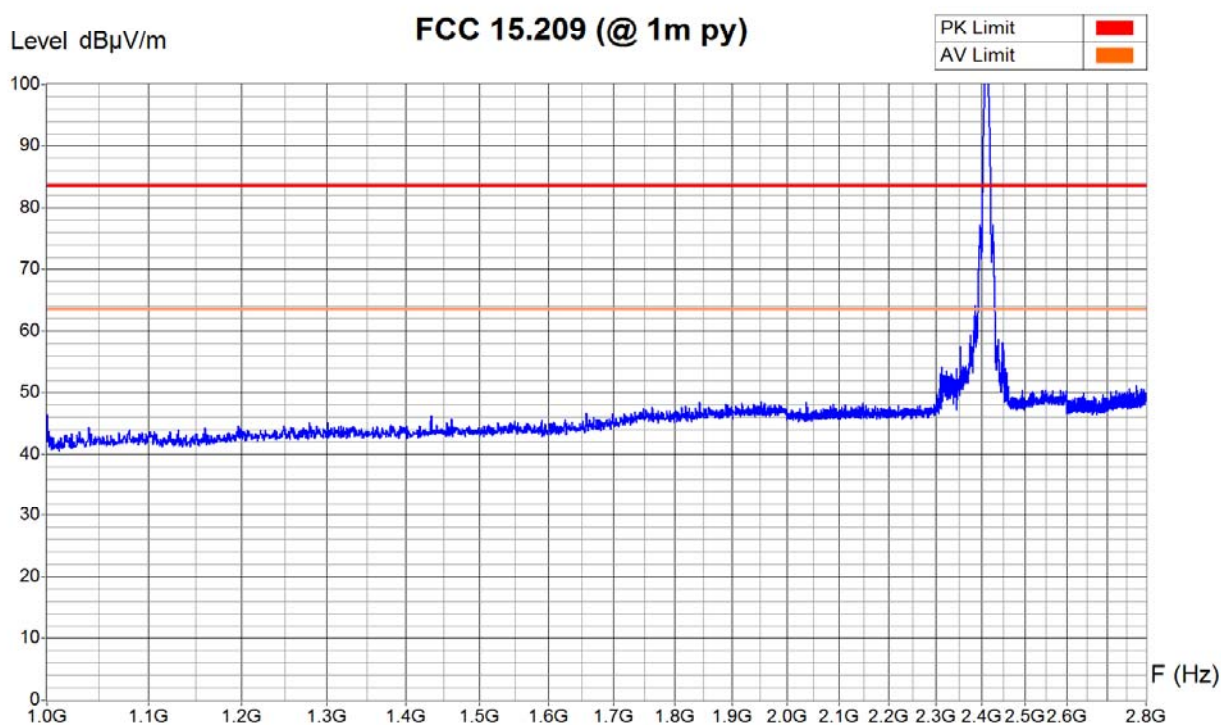
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 07.04.2008 16:15
Filename:
20077722_handheld_FCC
SP-WLAN_000h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



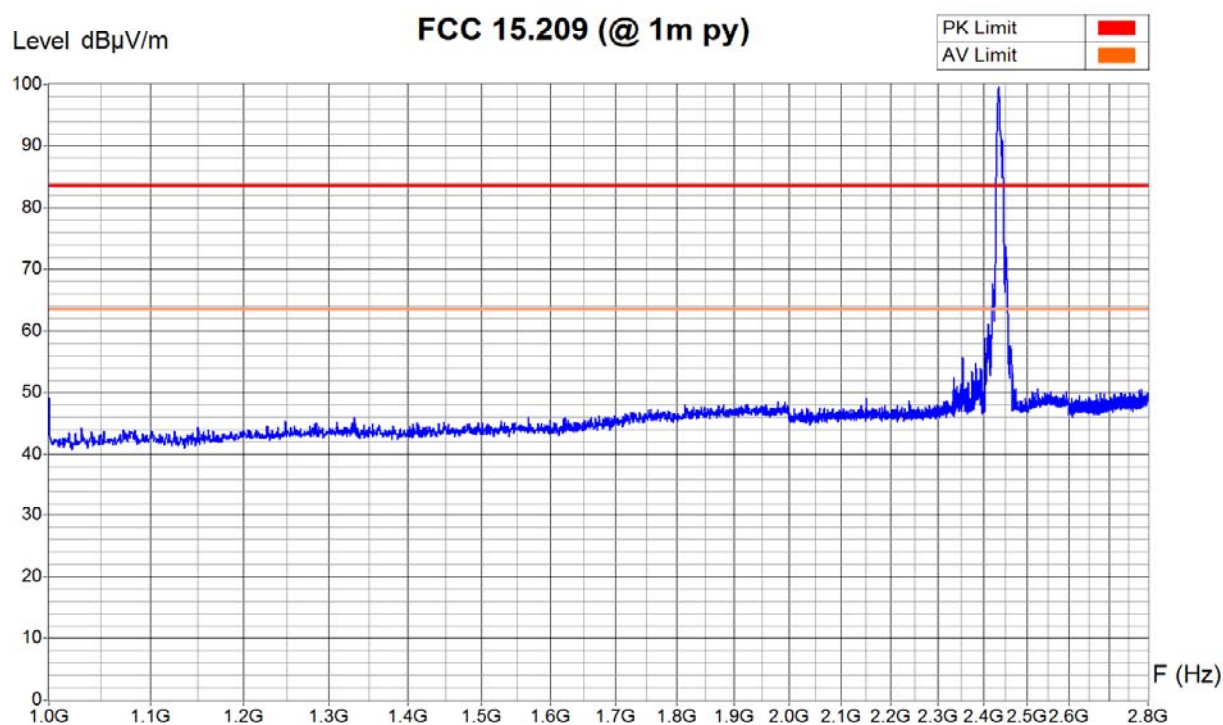
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 07.04.2008 16:18
Filename:
20077722_handheld_FCC
SP-WLAN_000v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



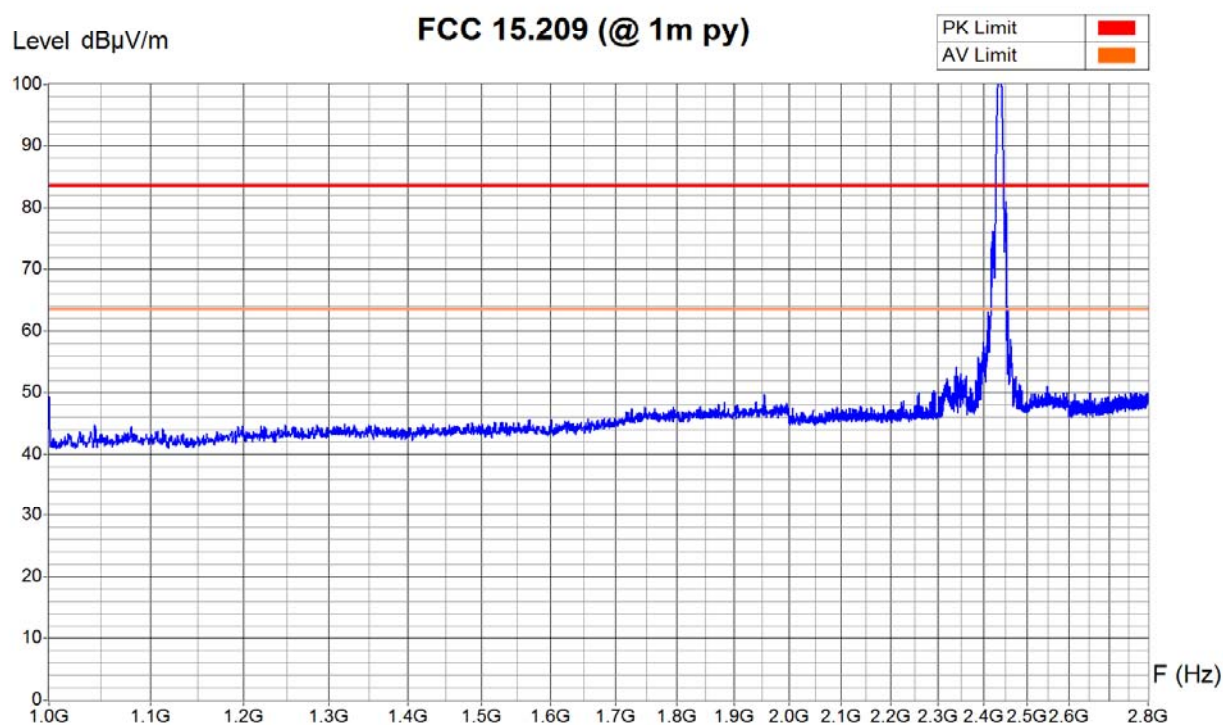
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 07.04.2008 16:27
Filename:
20077722_handheld_FCC
SP-WLAN_001h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



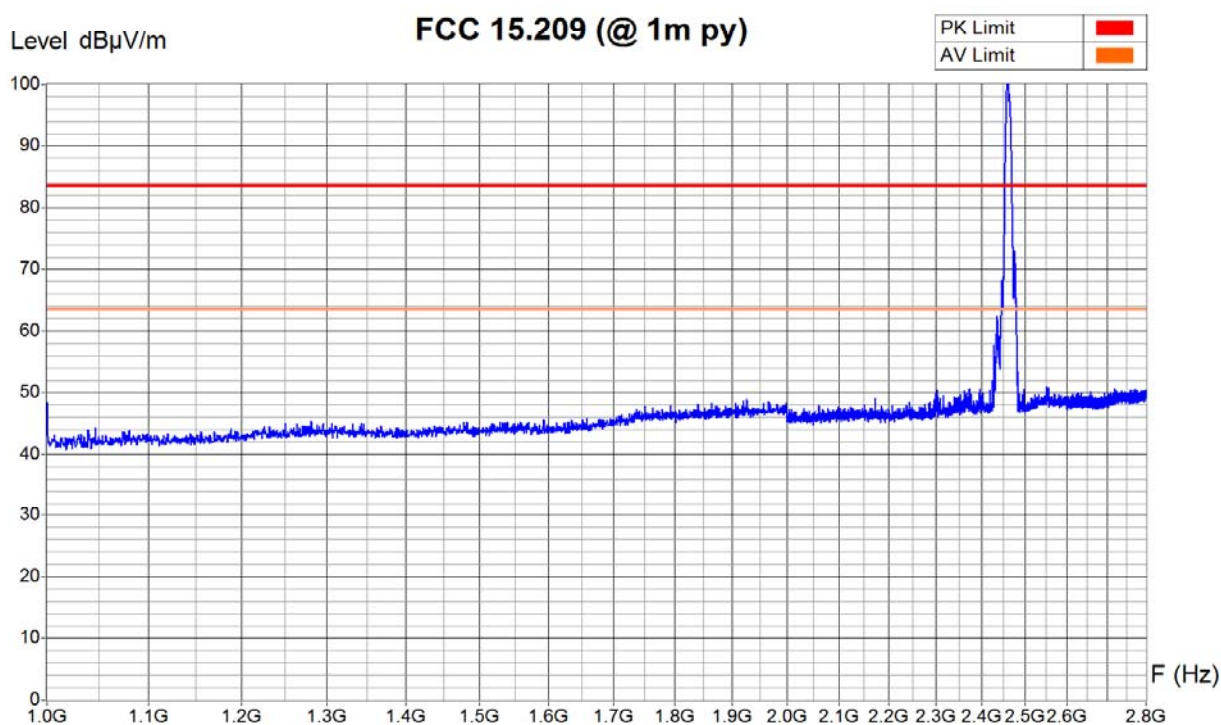
Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 07.04.2008 16:22
Filename:
20077722_handheld_FCC
SP-WLAN_001v.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 0.8m
 Equipment Under Test : SpotMell handheld
 Set-Up : handheld open, upright
 Operating Conditions : Tx, WLAN Channel 11, Pmax
 Remarks :



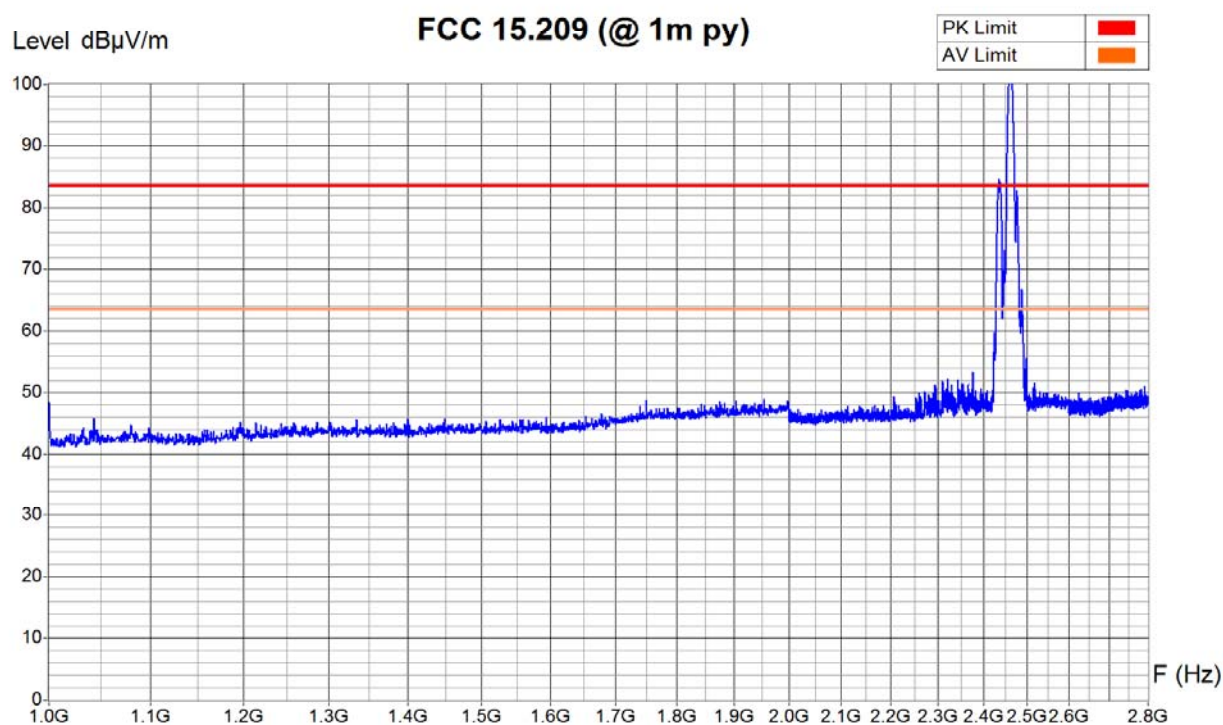
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
 Date/Time: 07.04.2008 16:32
 Filename:
 20077722_handheld_FCC
 SP-WLAN_002h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 11, Pmax
Remarks :



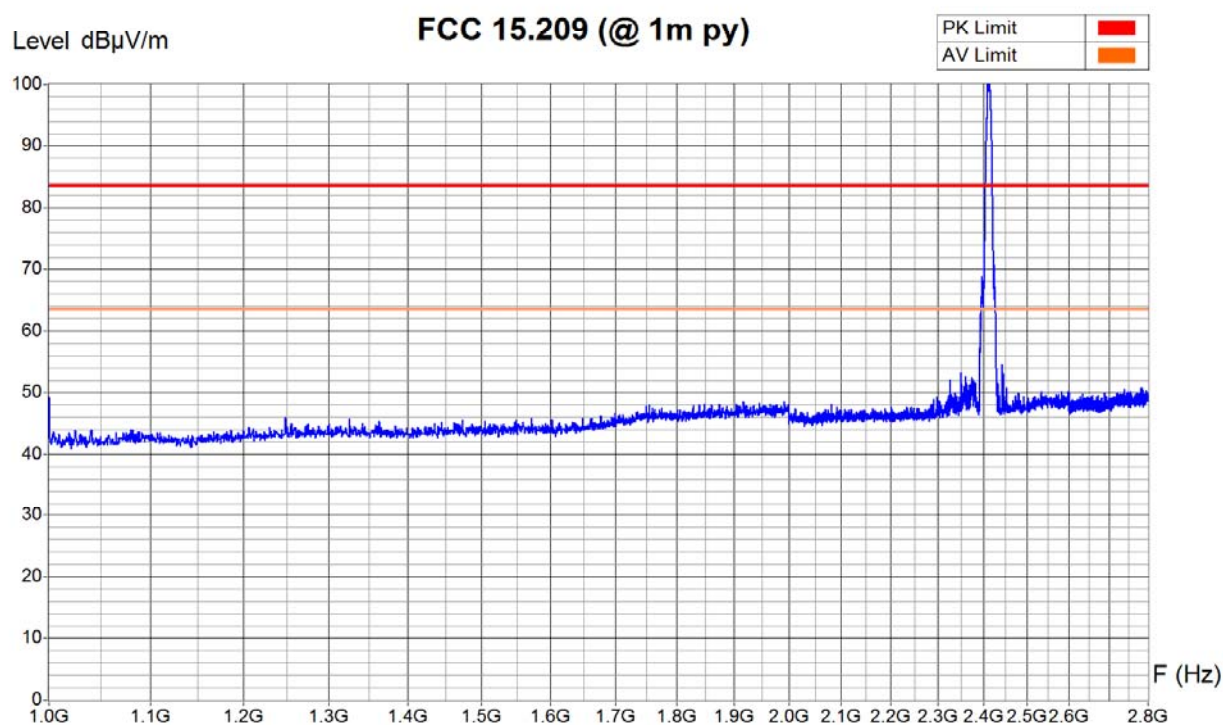
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 07.04.2008 16:38
Filename:
20077722_handheld_FCC
SP-WLAN_002v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



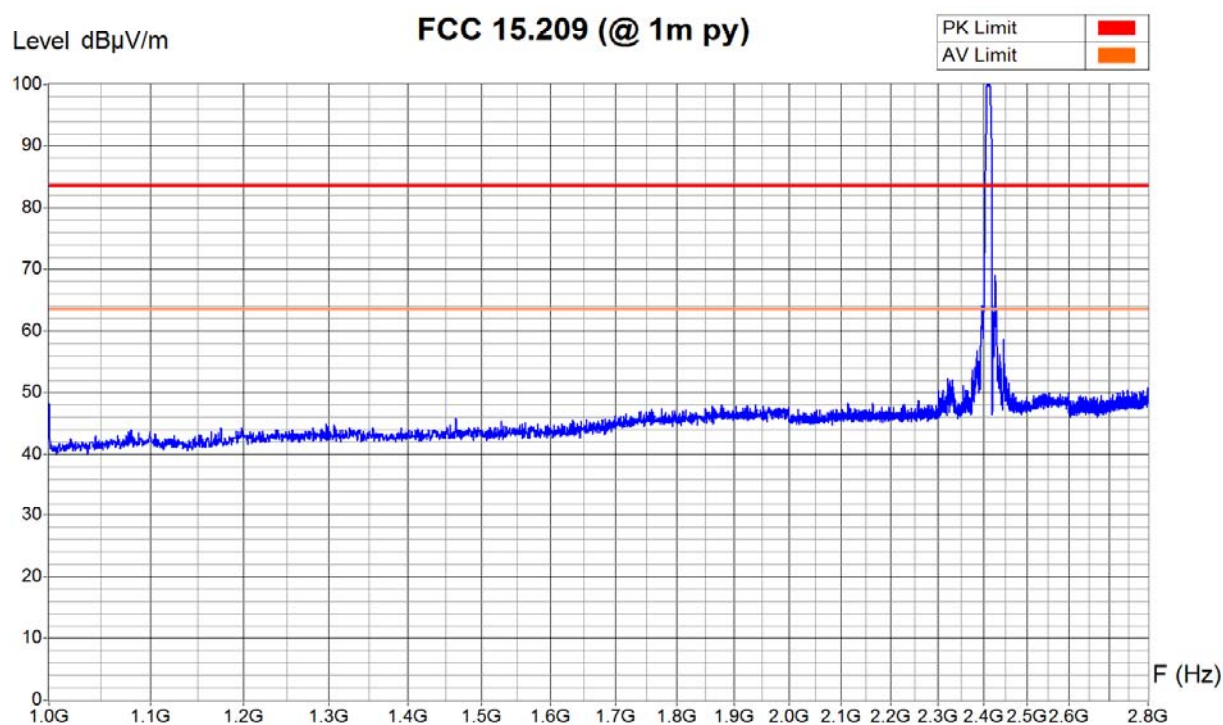
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 07.04.2008 16:48
Filename:
20077722_handheld_FCC
SP-WLAN_003h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 07.04.2008 16:44
Filename:
20077722_handheld_FCC
SP-WLAN_003v.png/.txt

6.5.3 Radiated emission - Electromagnetic field (2.8 GHz – 13 GHz)

Test site: ☒ semi-anechoic chamber (foam) ☐ open test site
☐ semi-anechoic chamber (ferrites) ☐

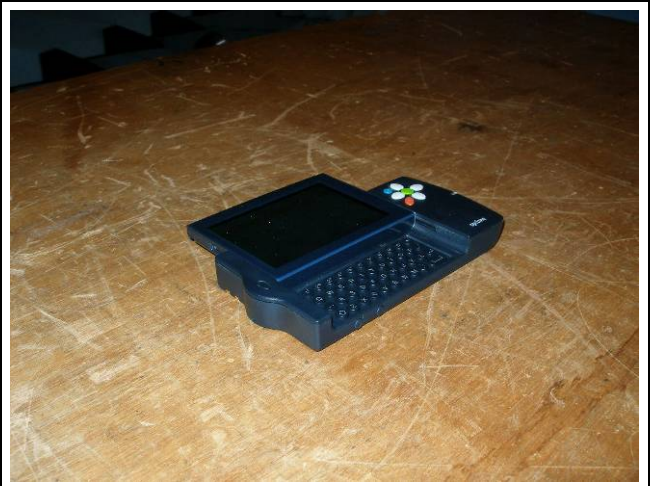
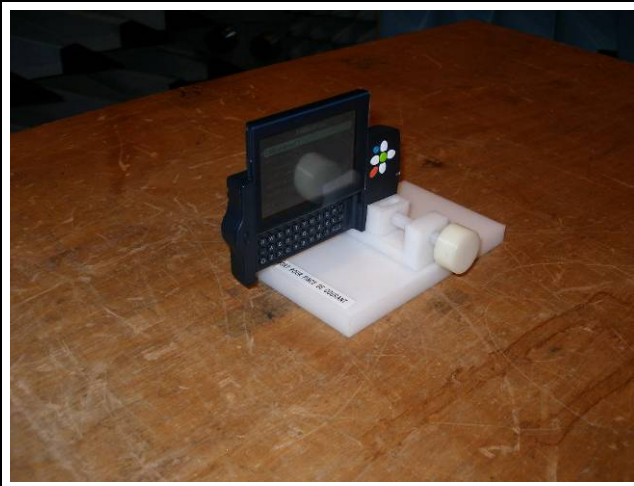
Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 1m
(factor used = 20 dB/decade) if necessary
e.g.: for f = 3GHz the limit is 500 μ V/m at 3m;

$$20 \log \left(\frac{500_{[\mu V / m]}}{1_{[\mu V / m]}} \right) + 20 \log \left(\frac{3_{[m]}}{1_{[m]}} \right) = 63.5 \text{ dB} \mu V \text{ at } 1 \text{ m}$$

Test equipment:

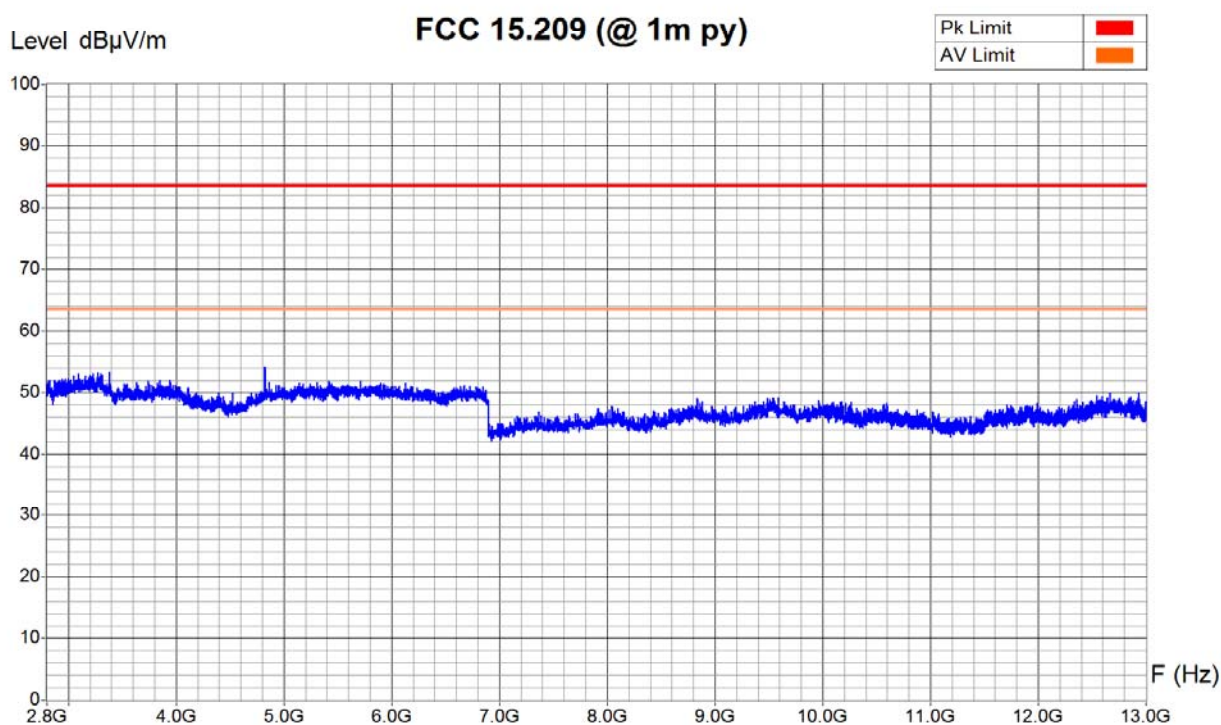
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☐ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☒ 05-56	☐ 05-59	☐ 05-62	☐ 05-87
Antenna (biconical)	☐ 82-02	☐ 87-05	☐ 87-16	☐ 91-05	☐ 94-37	
Antenna (log-per)	☐ 88-20	☐ 90-30	☐ 91-35	☐ 94-64		
Antenna (bilog)	☐ 94-03	☐ 05-38	☐			
Antenna (horn)	☒ 90-24	☐ 90-29	☐ 98-12	☐ 98-13	☐	
Cables	Succoflex 1 m					
Filters	☒ High pass					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



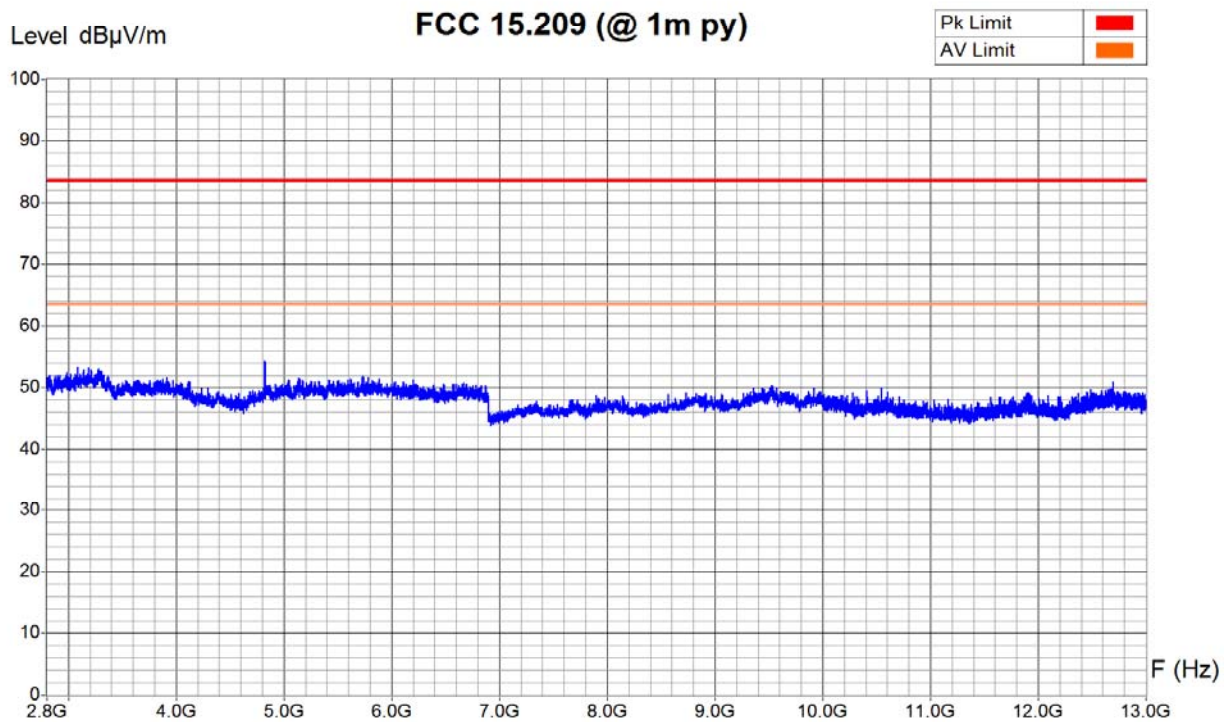
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 08.04.2008 17:22
Filename:
20077722_handheld_FCC
SP-WLAN_006h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



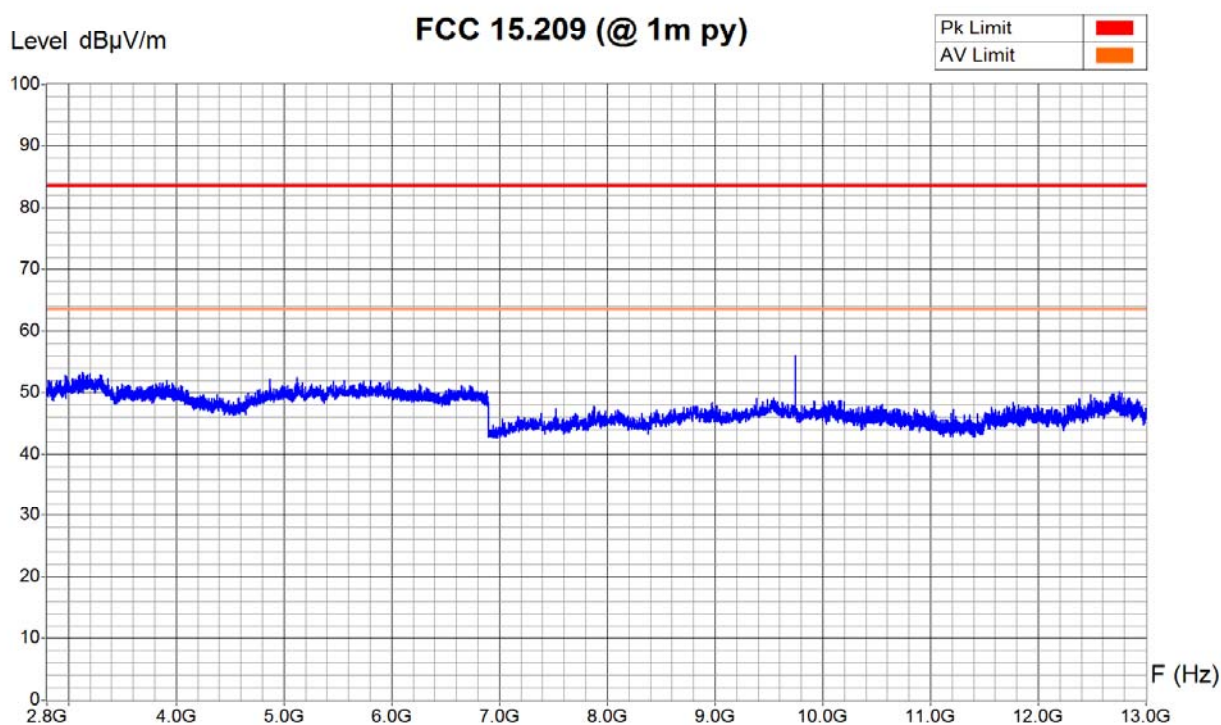
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 11:26
Filename:
20077722_handheld_FCC
SP-WLAN_006v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



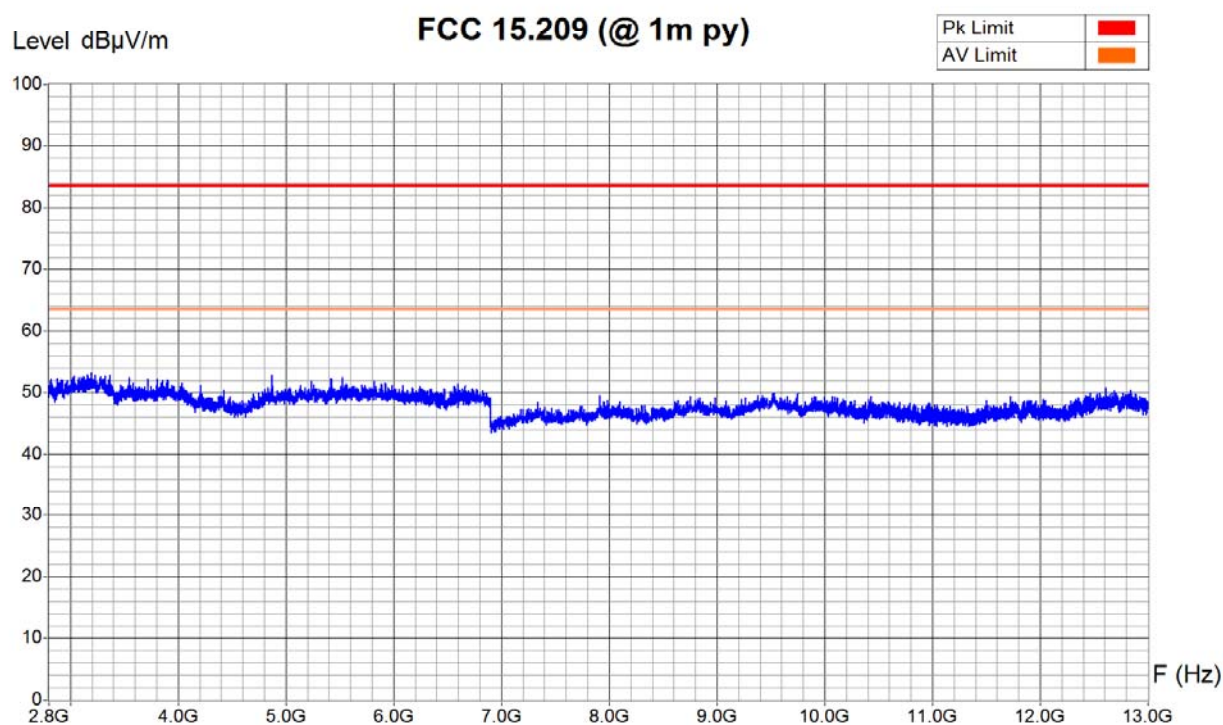
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 08.04.2008 17:27
Filename:
20077722_handheld_FCC
SP-WLAN_007h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



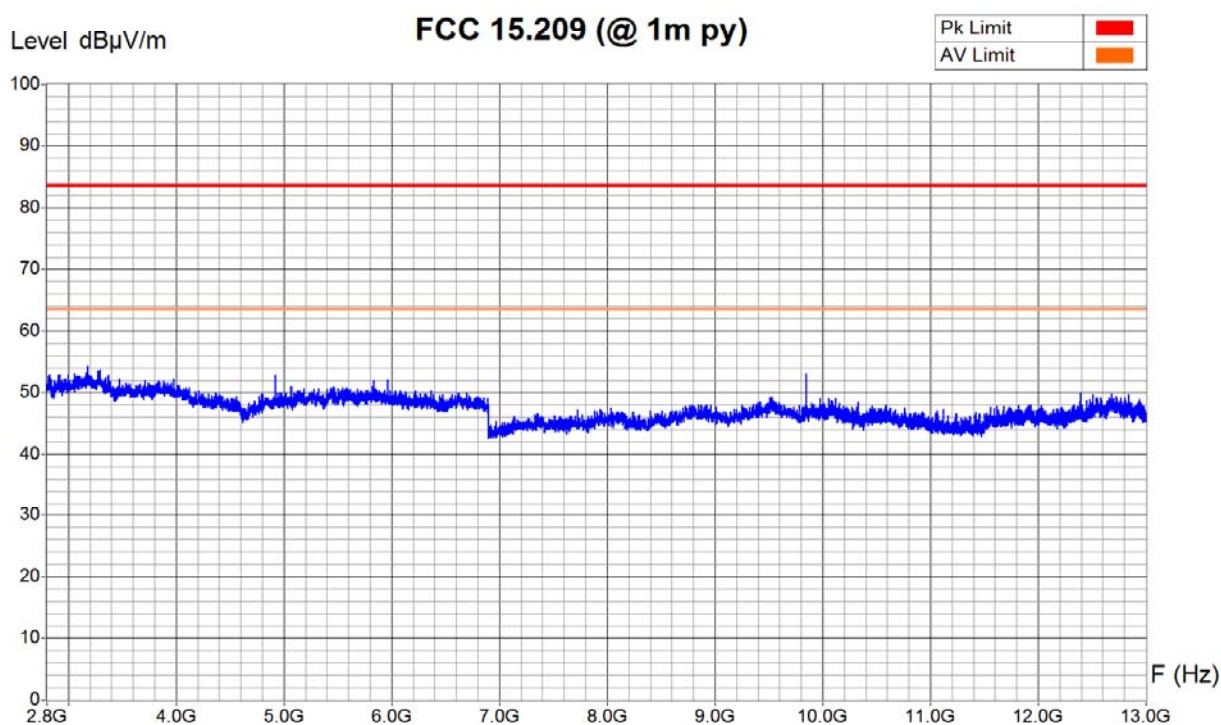
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 11:31
Filename:
20077722_handheld_FCC
SP-WLAN_007v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 11, Pmax
Remarks :



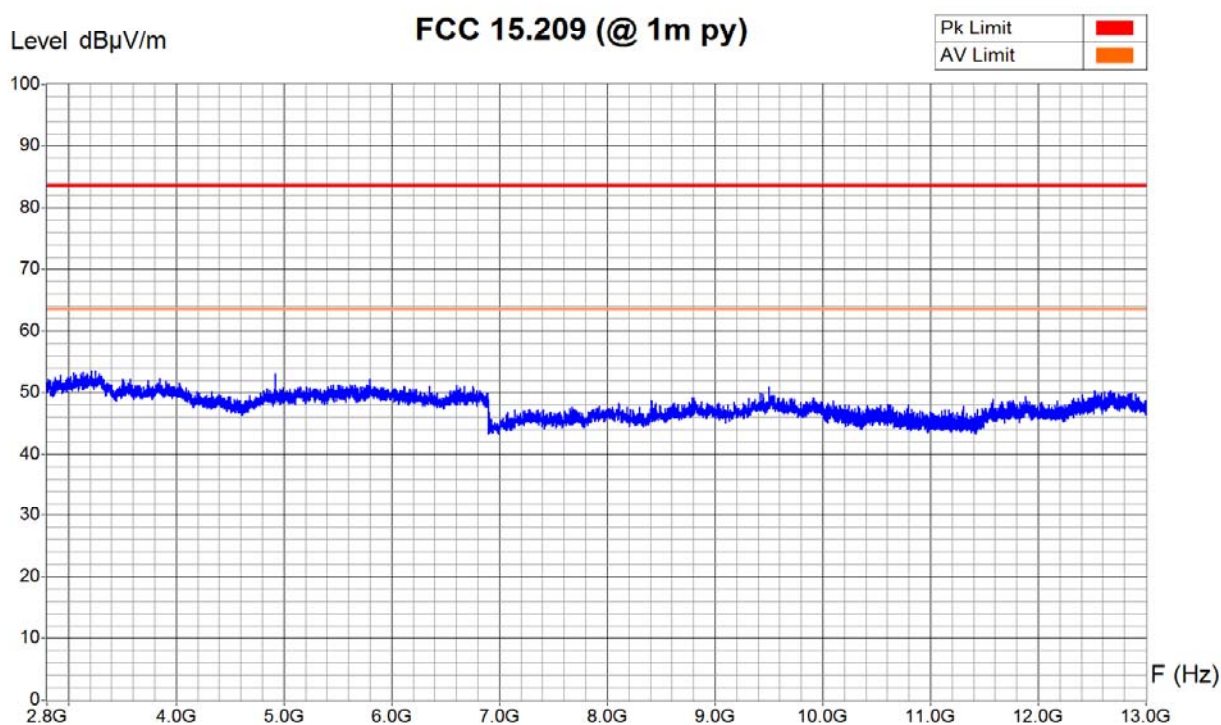
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 08.04.2008 17:34
Filename:
20077722_handheld_FCC
SP-WLAN_008h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 11, Pmax
Remarks :

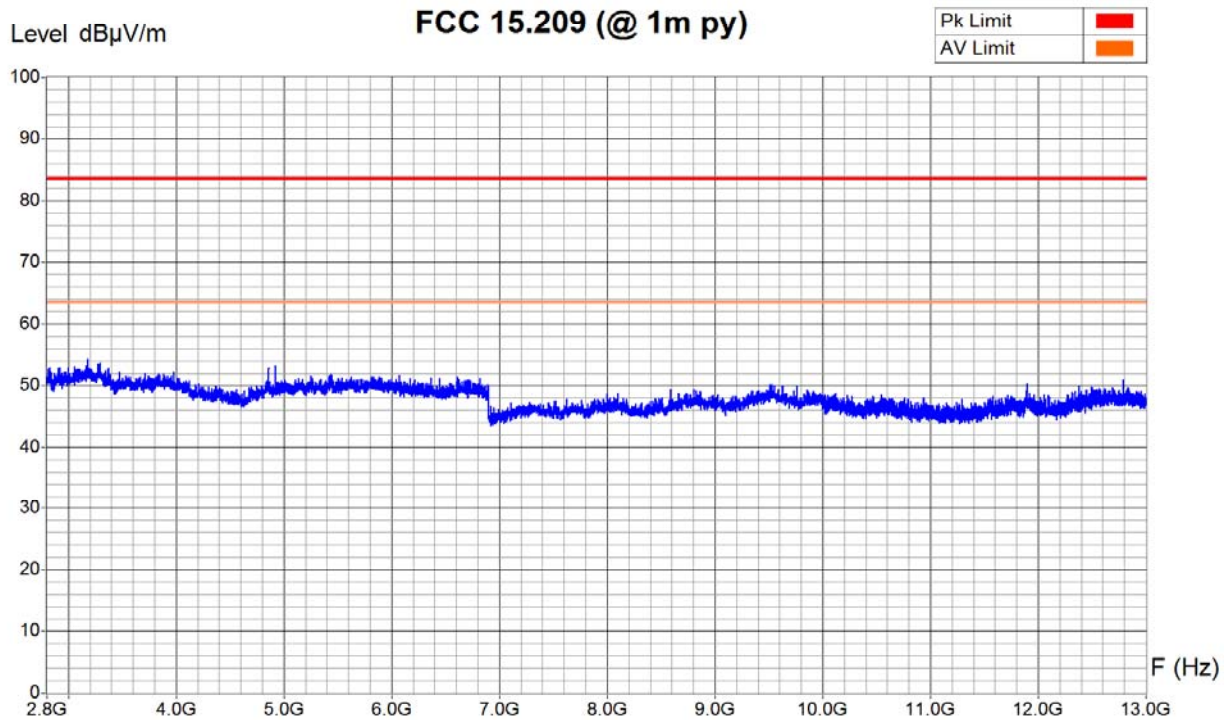


Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 11:35
Filename:
20077722_handheld_FCC
SP-WLAN_008v.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 0.8m

 Equipment Under Test : SpotMell handheld
 Set-Up : handheld open, upright
 Operating Conditions : Tx, WLAN Channel 11, Pmax
 Remarks :



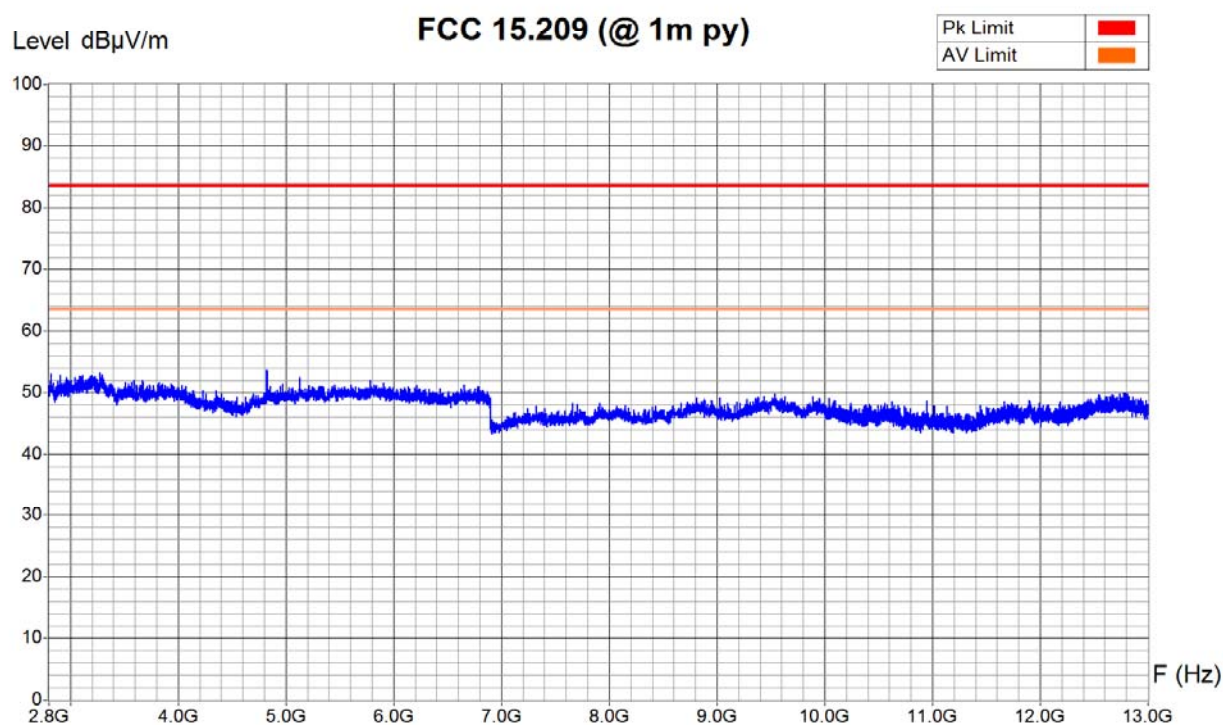
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
 Date/Time: 10.04.2008 12:11
 Filename:
 20077722_handheld_FCC
 SP-WLAN_015h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 12:08
Filename:
20077722_handheld_FCC
SP-WLAN_015v.png/.txt

6.5.4 Radiated emission - Electromagnetic field (13 GHz – 18 GHz)

Test site: ☒ semi-anechoic chamber (foam) ☐ open test site
☐ semi-anechoic chamber (ferrites) ☐

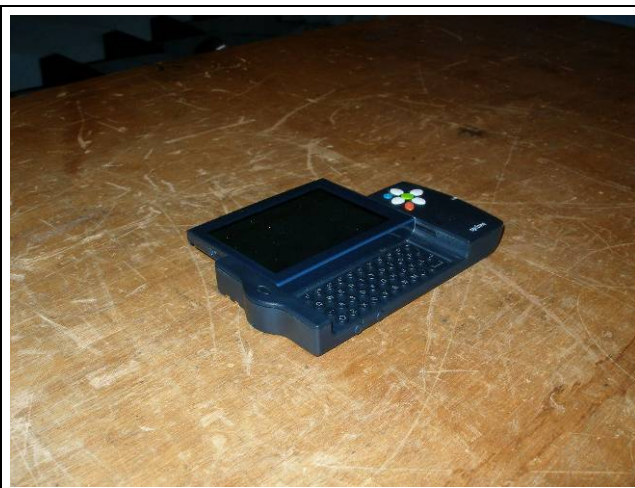
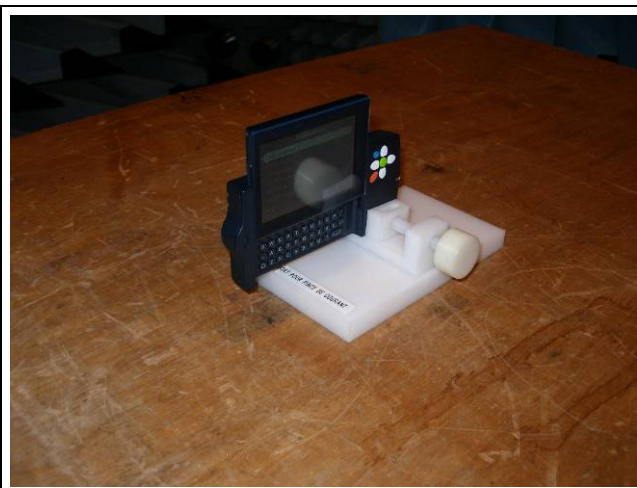
Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 1m
(factor used = 20 dB/decade) if necessary
e.g.: for f = 13GHz the limit is 500 μ V/m at 3m;

$$20 \log \left(\frac{500_{[\mu V / m]}}{1_{[\mu V / m]}} \right) + 20 \log \left(\frac{3_{[m]}}{1_{[m]}} \right) = 63.5 \text{ dB} \mu V \text{ at } 1 \text{ m}$$

Test equipment:

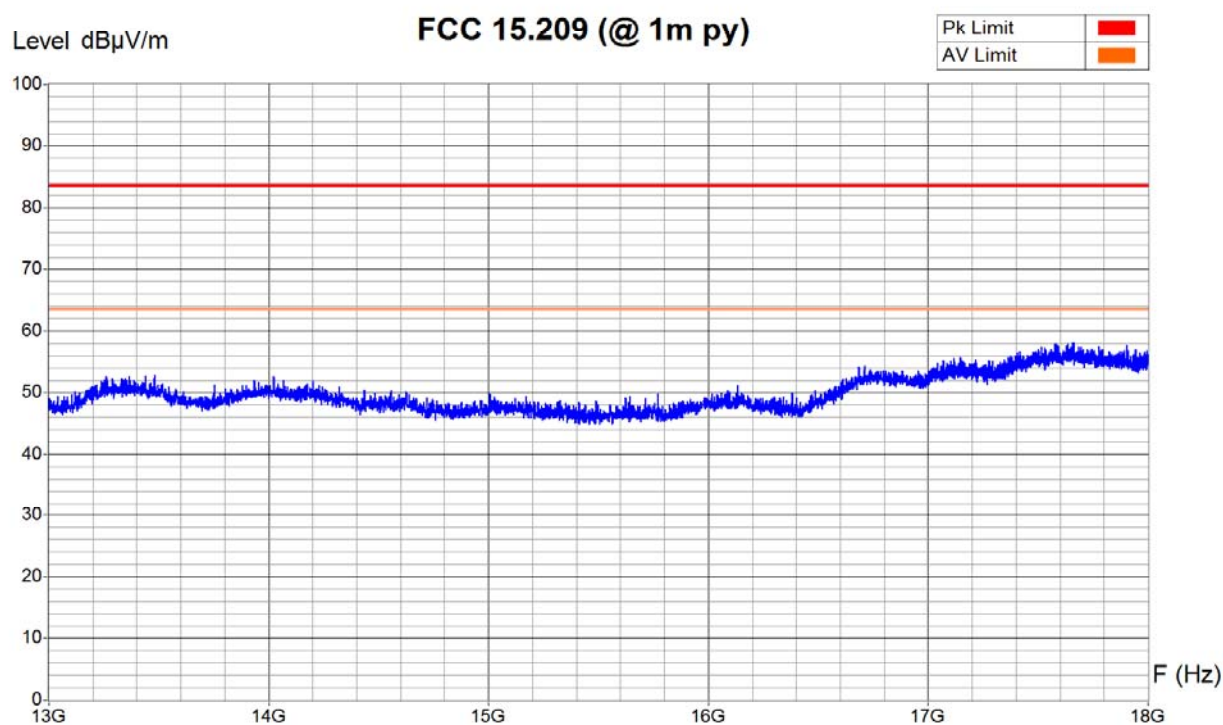
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☐ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☒ 05-56	☐ 05-59	☐ 05-62	☐ 05-87
Antenna (biconical)	☐ 82-02	☐ 87-05	☐ 87-16	☐ 91-05	☐ 94-37	
Antenna (log-per)	☐ 88-20	☐ 90-30	☐ 91-35	☐ 94-64		
Antenna (bilog)	☐ 94-03	☐ 05-38	☐			
Antenna (horn)	☒ 90-24	☐ 90-29	☐ 98-12	☐ 98-13	☐	
Cables	Succoflex 1 m					
Filters	☒ High pass					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



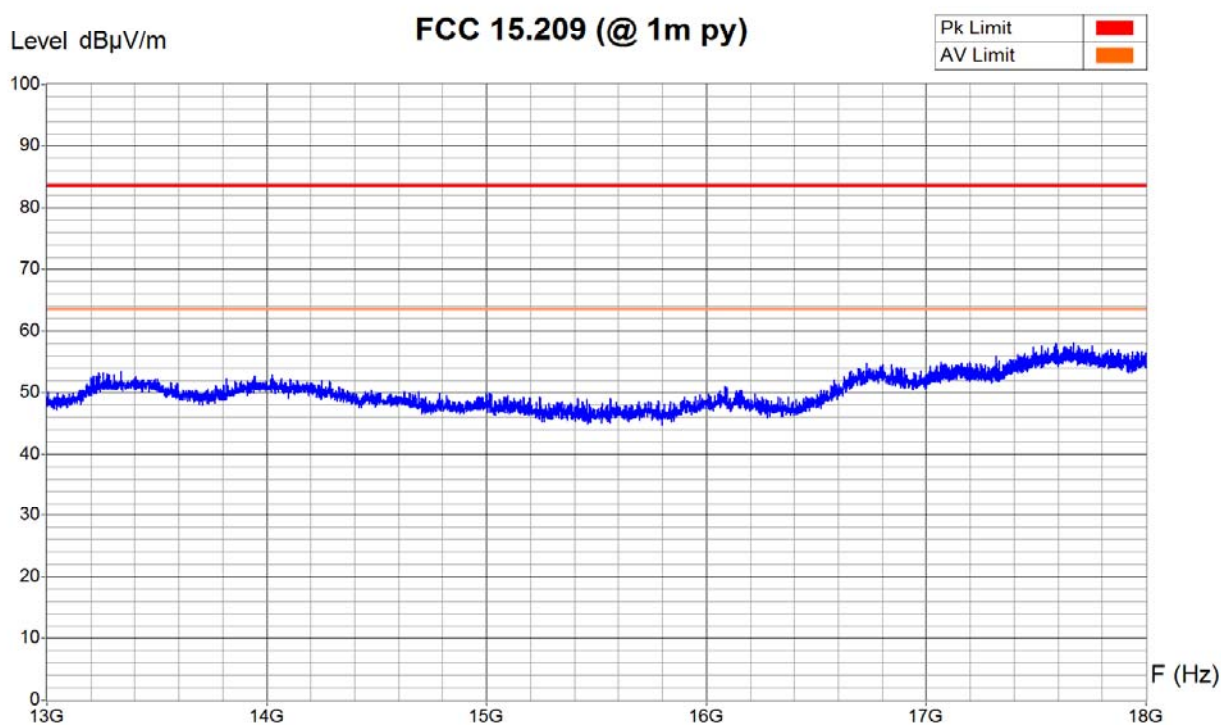
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 17:10
Filename:
20077722_handheld_FCC
SP-WLAN_009h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



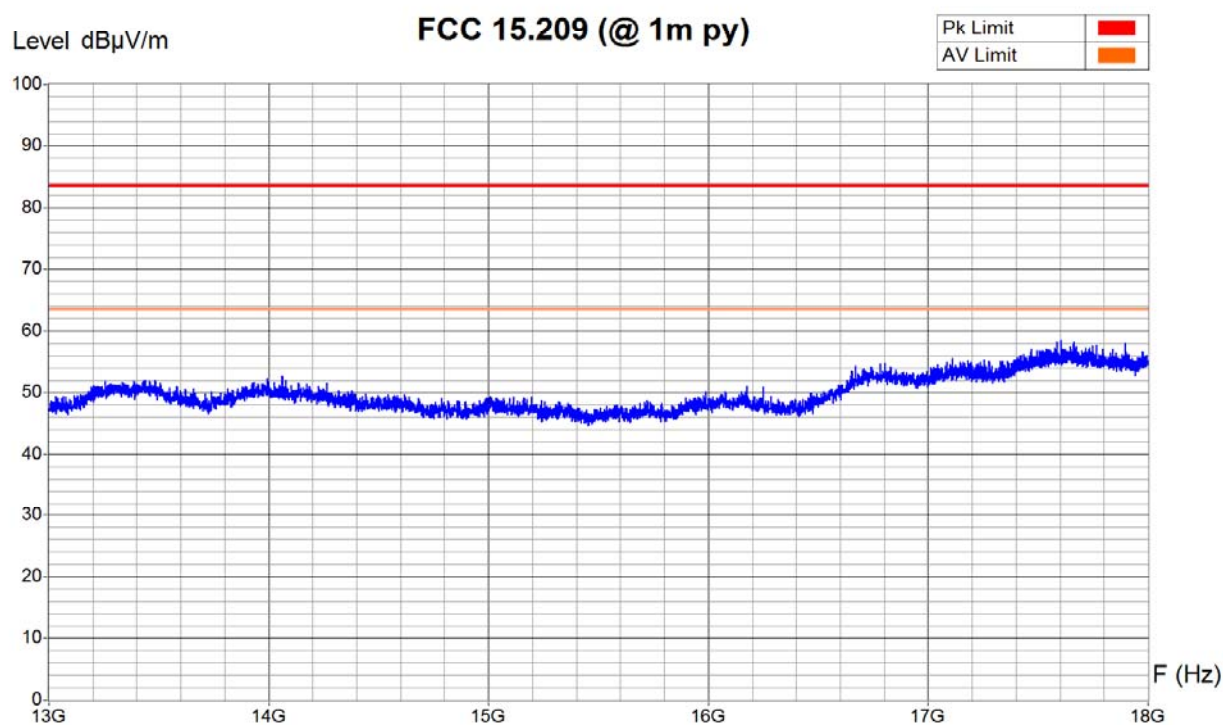
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 17:24
Filename:
20077722_handheld_FCC
SP-WLAN_009v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



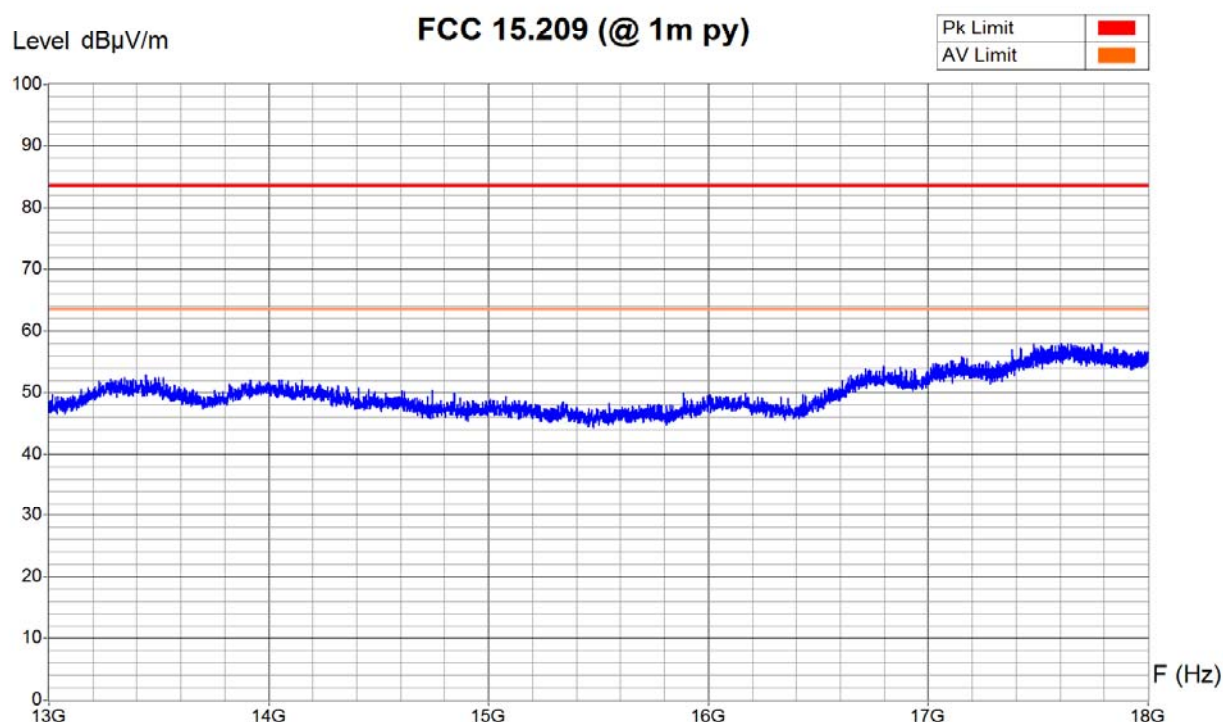
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 17:13
Filename:
20077722_handheld_FCC
SP-WLAN_010h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



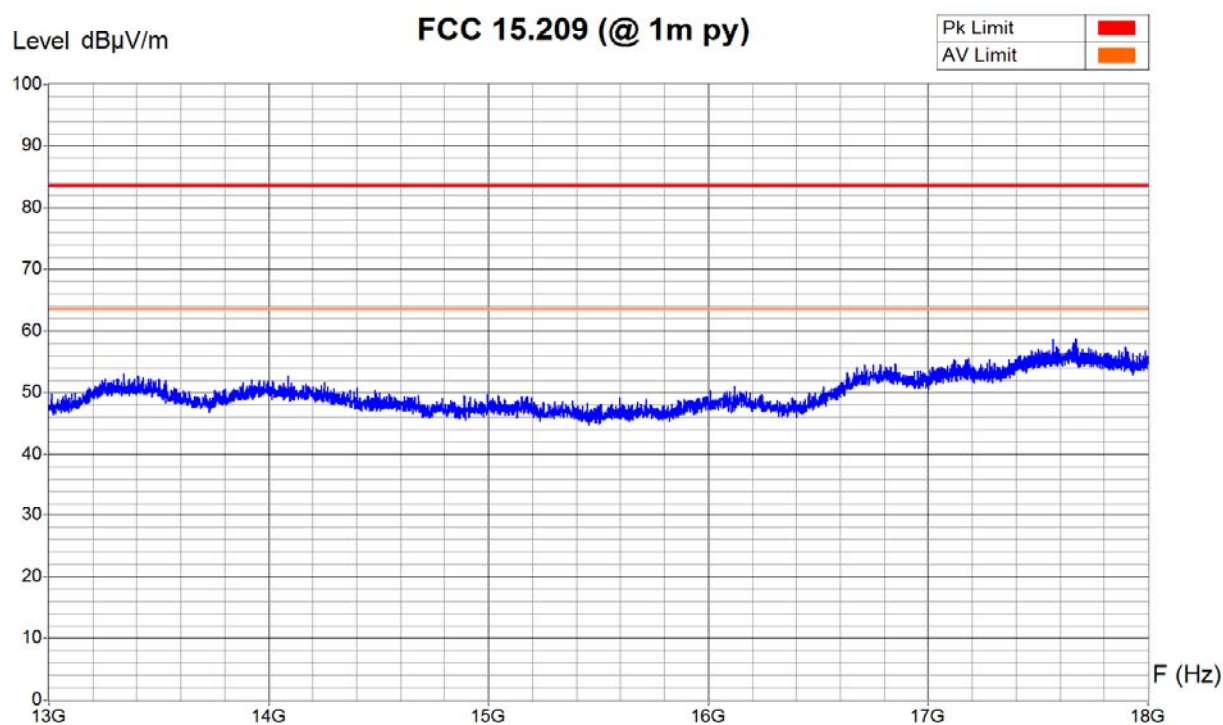
Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 17:26
Filename:
20077722_handheld_FCC
SP-WLAN_010v.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 0.8m
 Equipment Under Test : SpotMell handheld
 Set-Up : handheld open, upright
 Operating Conditions : Tx, WLAN Channel 11, Pmax
 Remarks :



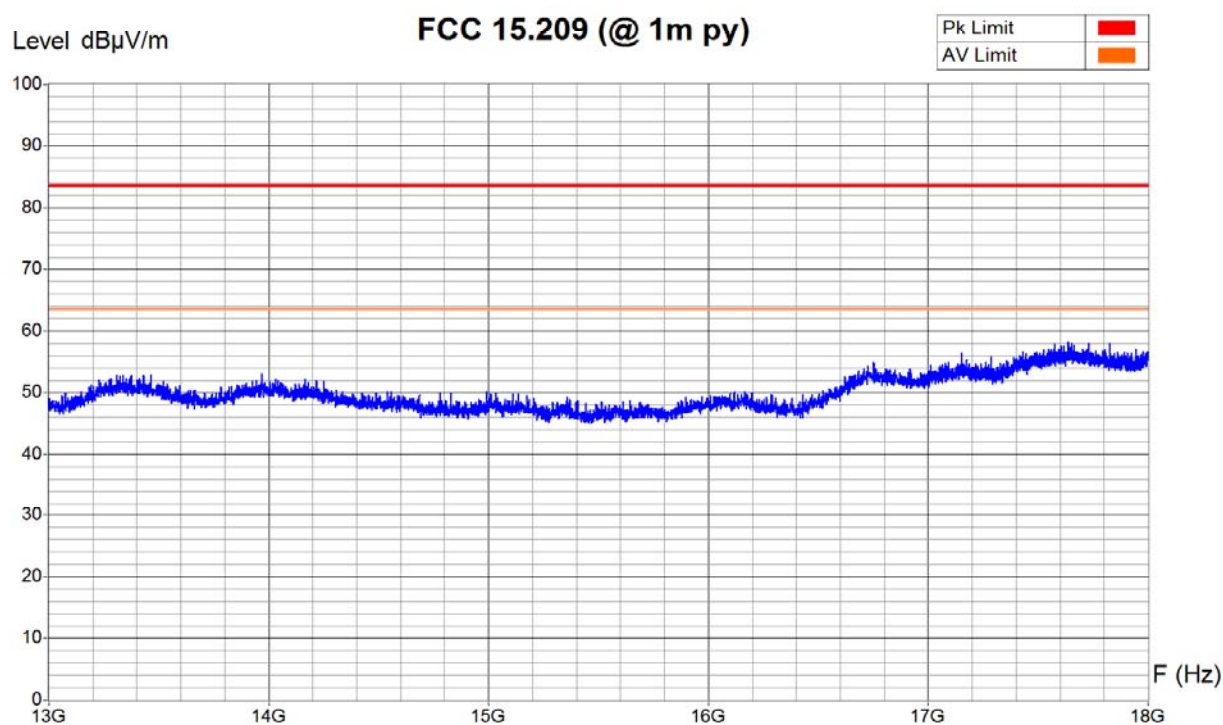
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
 Date/Time: 10.04.2008 17:15
 Filename:
 20077722_handheld_FCC
 SP-WLAN_011h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 11, Pmax
Remarks :



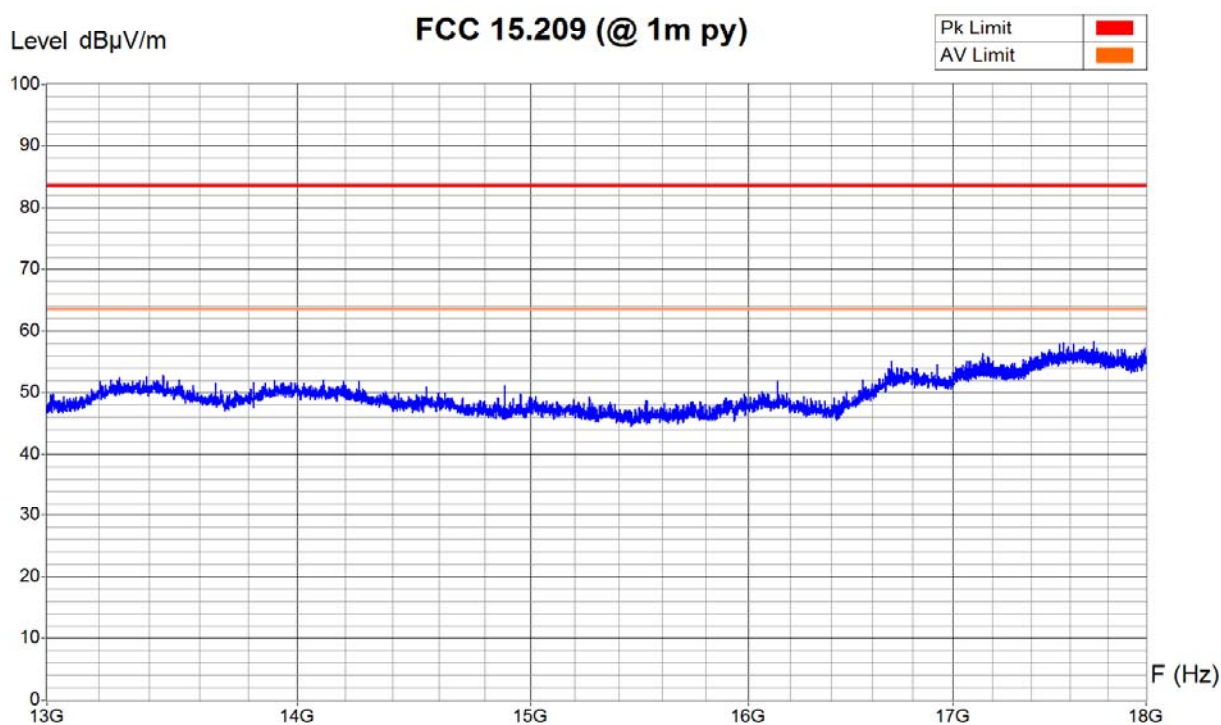
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 17:28
Filename:
20077722_handheld_FCC
SP-WLAN_011v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



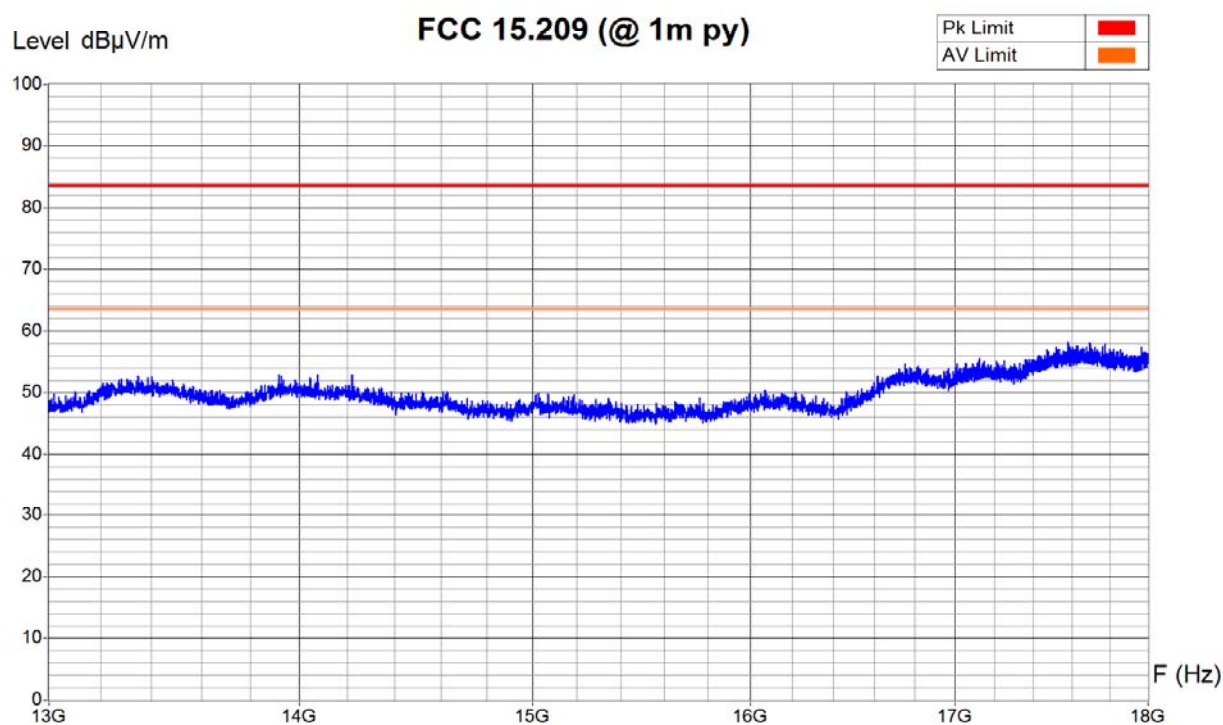
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 17:38
Filename:
20077722_handheld_FCC
SP-WLAN_016h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 17:36
Filename:
20077722_handheld_FCC
SP-WLAN_016v.png/.txt

6.5.5 Radiated emission - Electromagnetic field (18 GHz – 26.5 GHz)

Test site: ☒ semi-anechoic chamber (foam) ☐ open test site
☐ semi-anechoic chamber (ferrites) ☐

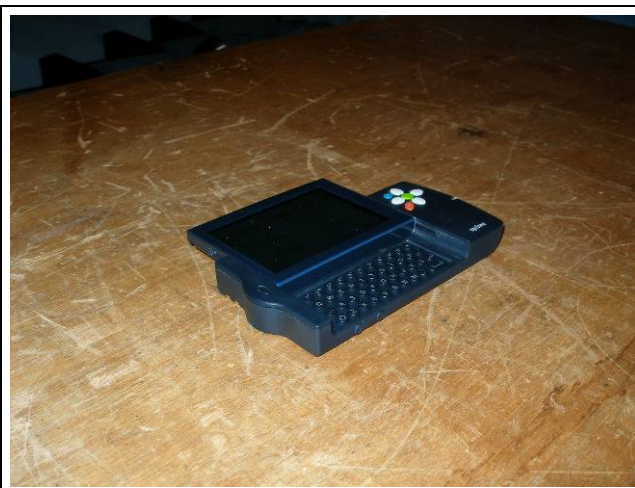
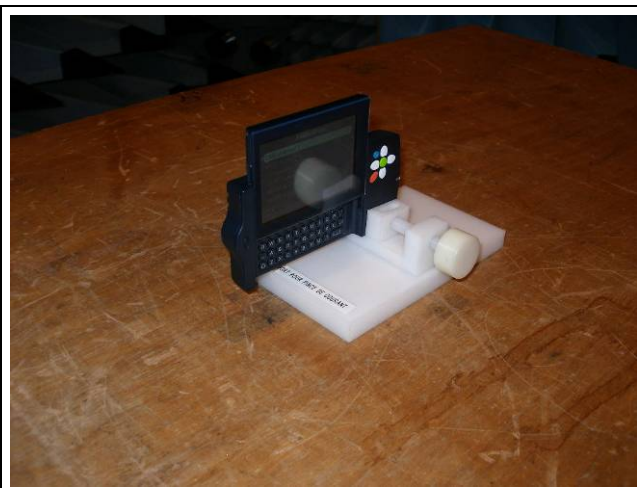
Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 1m
(factor used = 20 dB/decade) if necessary
e.g.: for f = 18GHz the limit is 500 μ V/m at 3m;

$$20 \log \left(\frac{500_{[\mu V / m]}}{1_{[\mu V / m]}} \right) + 20 \log \left(\frac{3_{[m]}}{1_{[m]}} \right) = 63.5 \text{ dB} \mu V \text{ at } 1m$$

Test equipment:

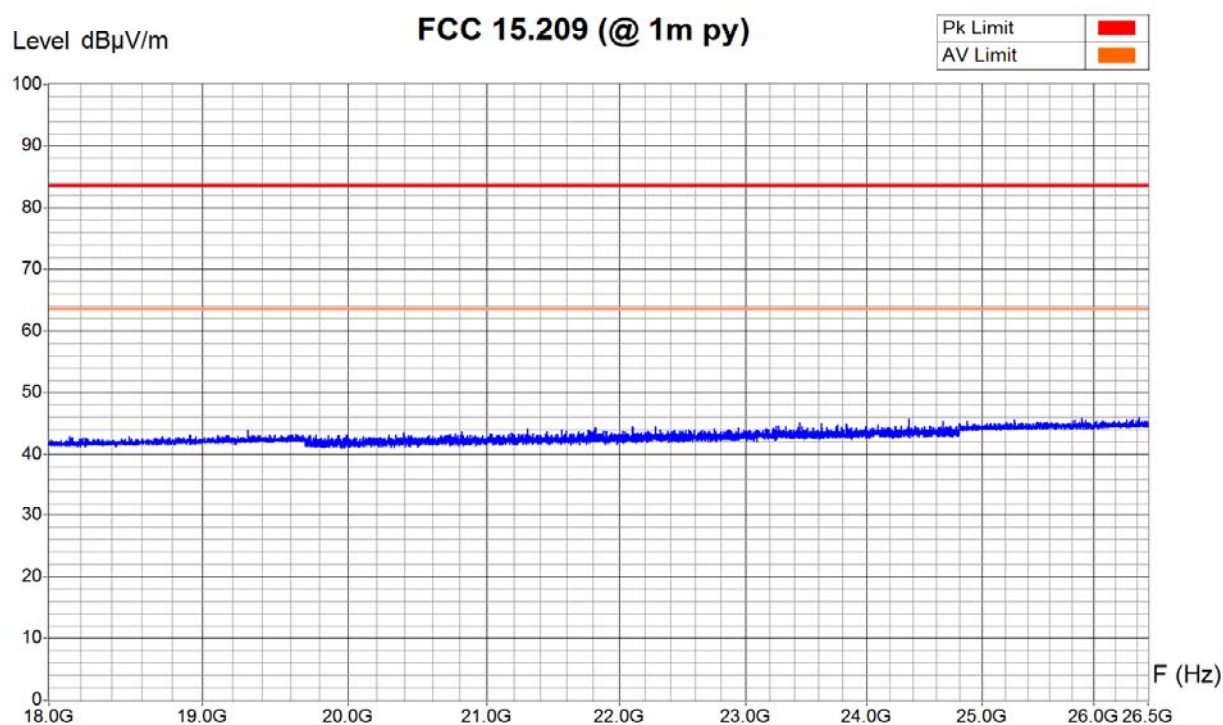
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☐ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☐ 05-56	☐ 05-59	☐ 05-62	☐
Antenna (horn)	☐ 90-24	☐ 90-29	☒ 98-12	☐ 98-13	☐	
External mixers	☐ 94-03	☐ 05-38	☒ 11970K			
Cables	Succoflex 1 m					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



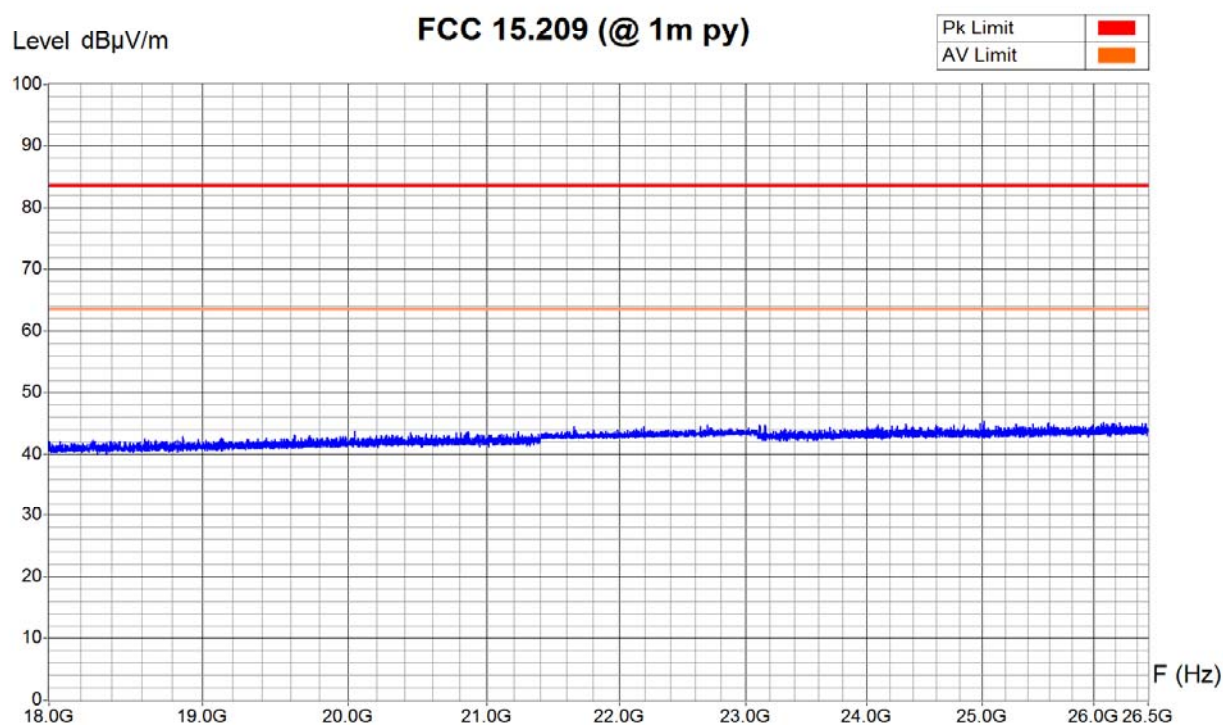
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 09:48
Filename:
20077722_handheld_FCC
SP-WLAN_012h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



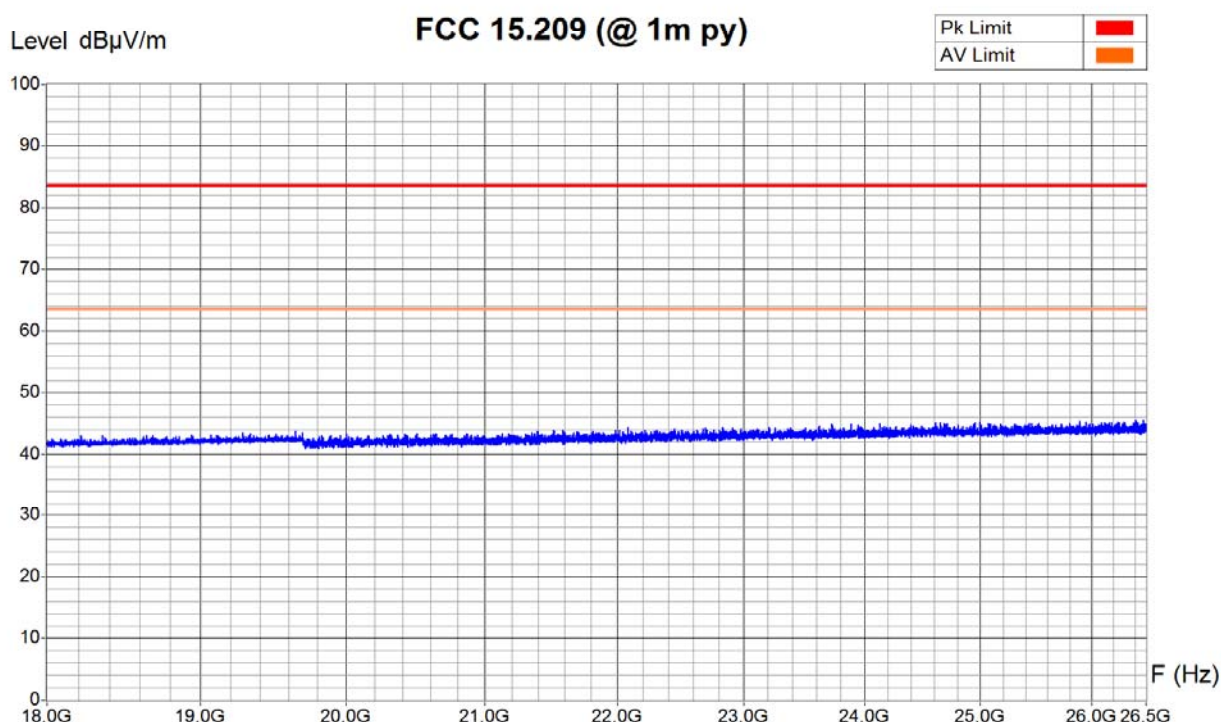
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 11:04
Filename:
20077722_handheld_FCC
SP-WLAN_012v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 6, Pmax
Remarks :



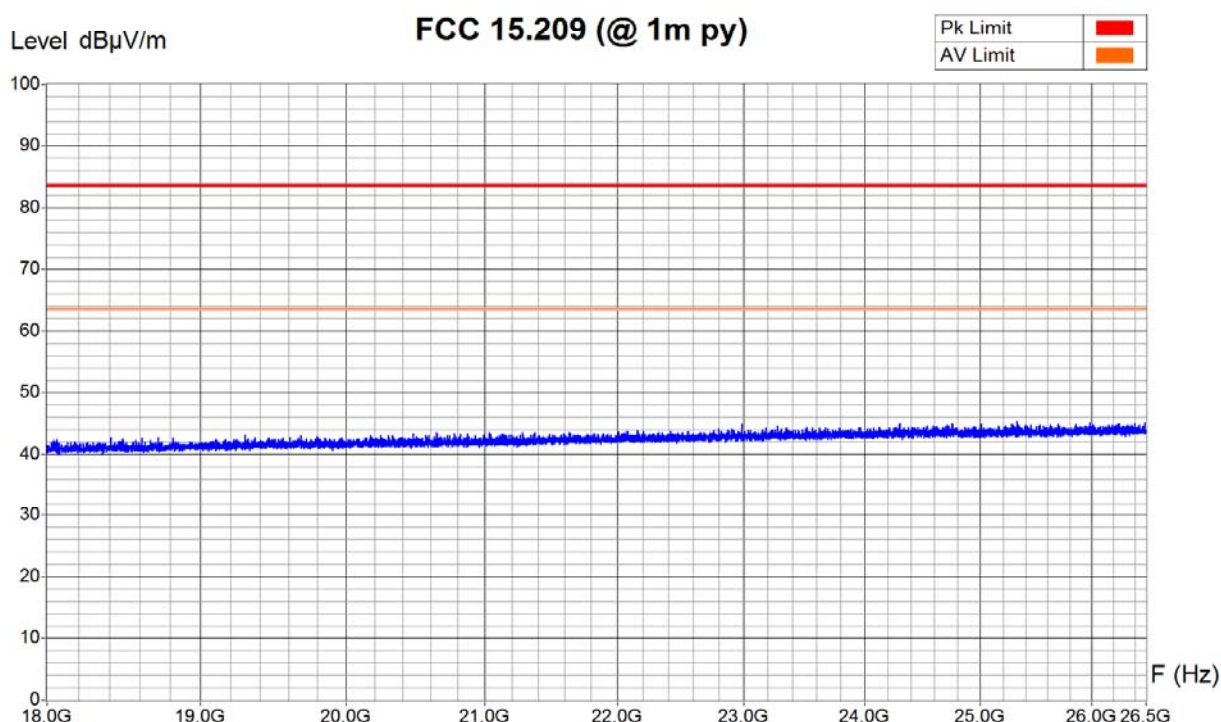
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 09:52
Filename:
20077722_handheld_FCC
SP-WLAN_013h.png/.txt

Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 0.8m



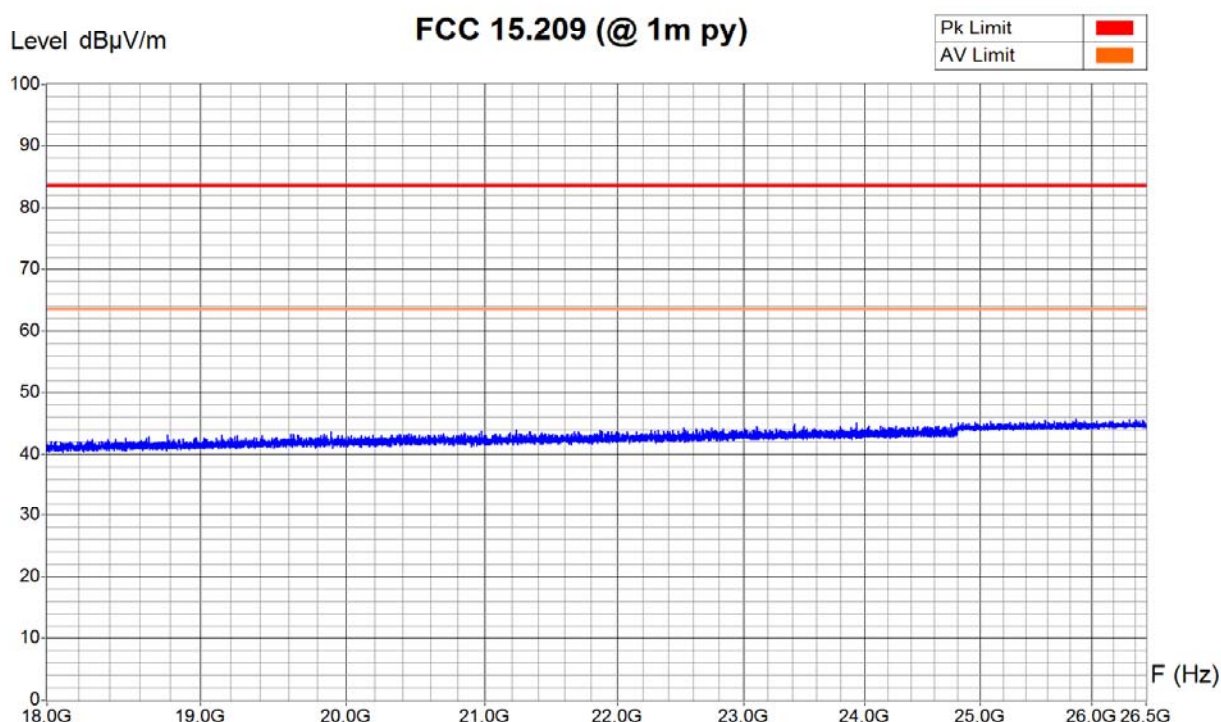
Equipment Under Test : SpotMell handheld
 Set-Up : handheld open, upright
 Operating Conditions : Tx, WLAN Channel 6, Pmax
 Remarks :



Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
 Date/Time: 15.04.2008 11:09
 Filename:
 20077722_handheld_FCC
 SP-WLAN_013v.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 0.8m
 Equipment Under Test : SpotMell handheld
 Set-Up : handheld open, upright
 Operating Conditions : Tx, WLAN Channel 11, Pmax
 Remarks :



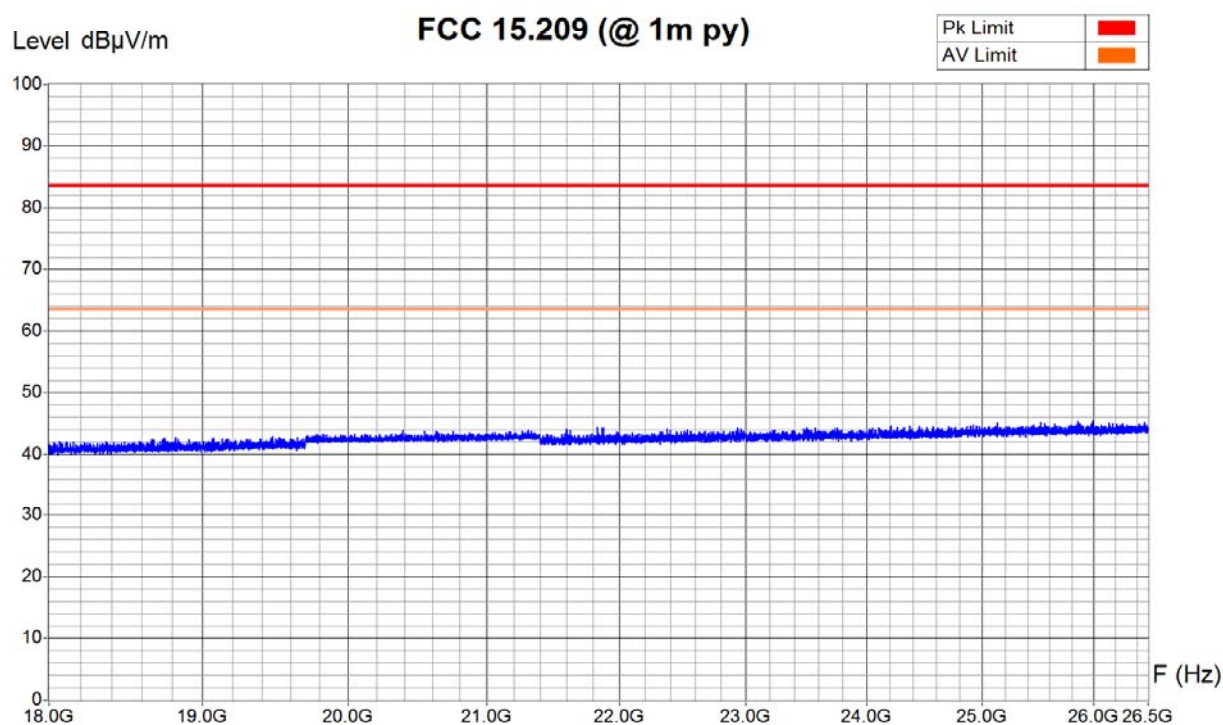
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
 Date/Time: 15.04.2008 09:56
 Filename:
 20077722_handheld_FCC
 SP-WLAN_014h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Tx, WLAN Channel 11, Pmax
Remarks :



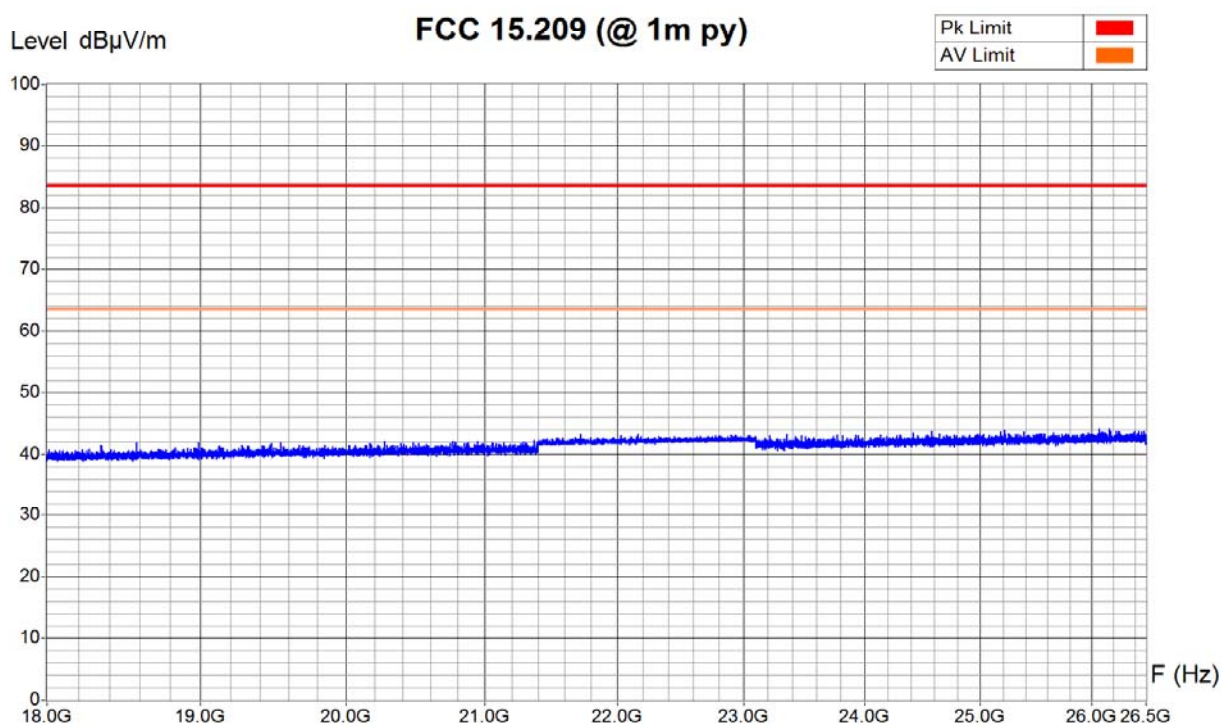
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 11:13
Filename:
20077722_handheld_FCC
SP-WLAN_014v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



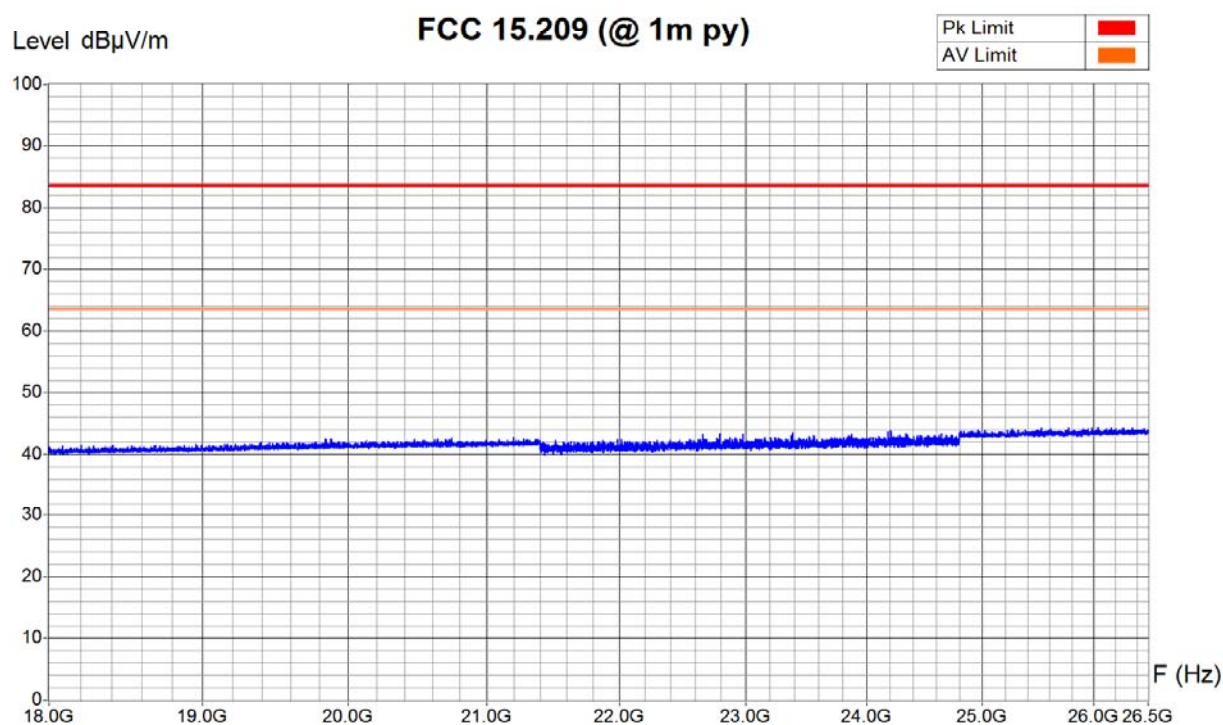
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 10:17
Filename:
20077722_handheld_FCC
SP-WLAN_017h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Tx, WLAN Channel 1, Pmax
Remarks :



Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

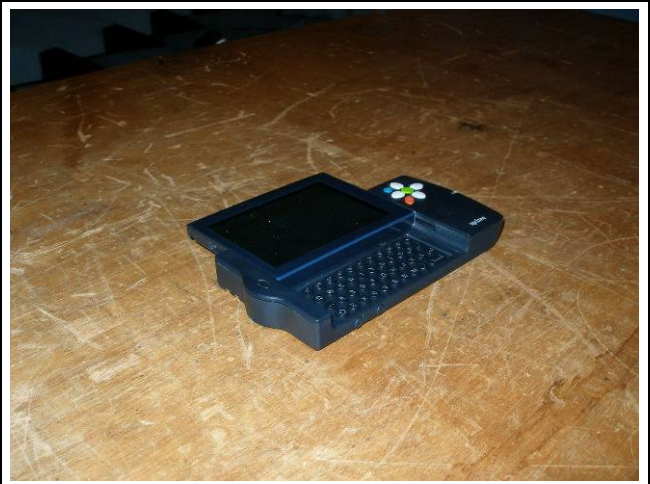
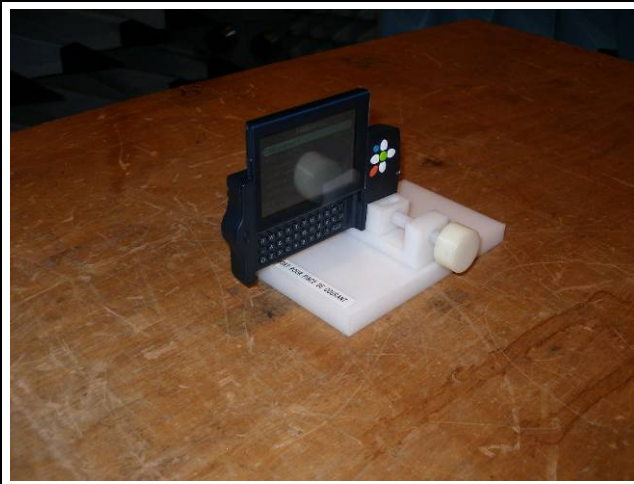
Operator: E. Staub
Date/Time: 15.04.2008 10:28
Filename:
20077722_handheld_FCC
SP-WLAN_017v.png/.txt

6.6 Spurious emission (Standby)**6.6.1 Radiated emission - Magnetic field (150 kHz – 30 MHz)**Test site: ☐ semi-anechoic chamber (ferrites) ☐ open test site☒ semi-anechoic chamber (foam) ☐Meas. distance: ☒ 3 m ☐ 10 m ☐ 30 m ☐ mMeas. uncertainty: ± 2.8 dB (10 m)

Position of EUT: 0.8 m (height above floor of equipment under test)

Measuring method: The magnetic disturbance radiated by the equipment under test is measured using a spectrum analyser and a wide band magnetic antenna. The center of the antenna is placed at 1 m of height, first in the direction of the apparatus under test, then at 90° to the apparatus and if required also horizontally. If possible the turning table is operated through 360° during the measurement. The recording is carried out taking into account the maximum value of the disturbance appearing during the functioning of the apparatus under test. The peak values are recorded continuously on a graph. The values exceeding the limits are remeasured using a measuring receiver.

Test set-up:



Remarks:

- The general limit does not apply to the intentional signal at 13.56 MHz.
- Limit values expressed in dB μ A/m (factor used = 377 Ω = -51.5 dB = free-space wave impedance) and transformed to a measuring distance of 3m (factor used = 40 dB/decade) if necessary
e.g.: for $f = 9\text{kHz}$ the general limit is $2400/f(\text{kHz})\mu\text{V/m}$ at 300 m;
 $20 \log_{10} (2400/9\mu\text{V/m}) - 20 \log_{10} (377 \Omega) + 40 \log_{10} (300\text{m}/3\text{m}) = 77 \text{ dB}\mu\text{A/m}$ at 3m

for $f = 30\text{MHz}$ the general limit is $30\mu\text{V/m}$ at 30 m;
 $20 \log_{10} (30\mu\text{V/m}) - 20 \log_{10} (377\Omega) + 40 \log_{10} (30\text{m}/3\text{m}) = 18 \text{ dB}\mu\text{A/m}$ at 3m

Test equipment:

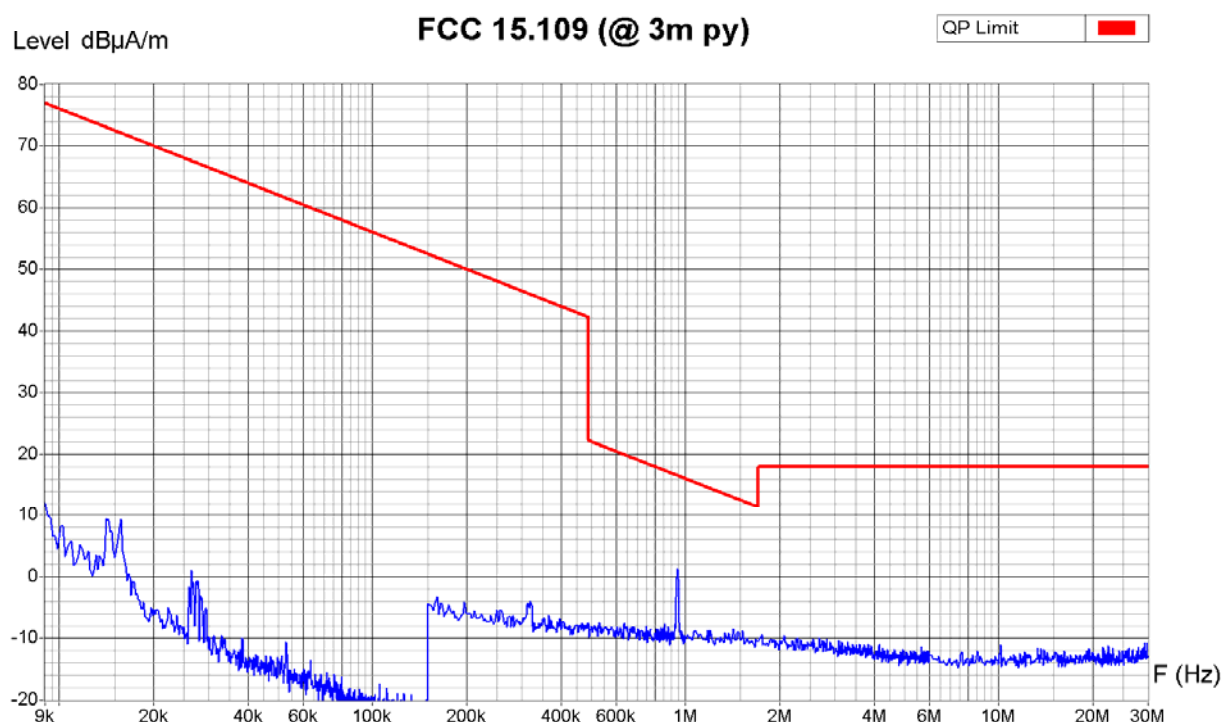
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☐ 02-06	☐ 03-45	☒ 03-57
Receiver	☐ 85-12	☐ 90-11	☐ 94-34	☐ 04-28	☐	
Preamplifier	☐ 90-01	☐ 95-86	☐ 05-56	☐ 05-59	☐ 05-62	☐ 05-87
Antenna (typ: magnetic)	☒ 90-25	☐ 90-28	☐ 99-32	☐		
Cables	☒ 06-00					

Result:	☒ pass	☐ fail	☐ not applicable	☐ not tested
----------------	--	-------------------------------	---	-------------------------------------

Measurement Type : Radiated Field
Polarisation : Parallel
Table Angle : 0 - 360°
Antenna Height : 1m (center of loop antenna)



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



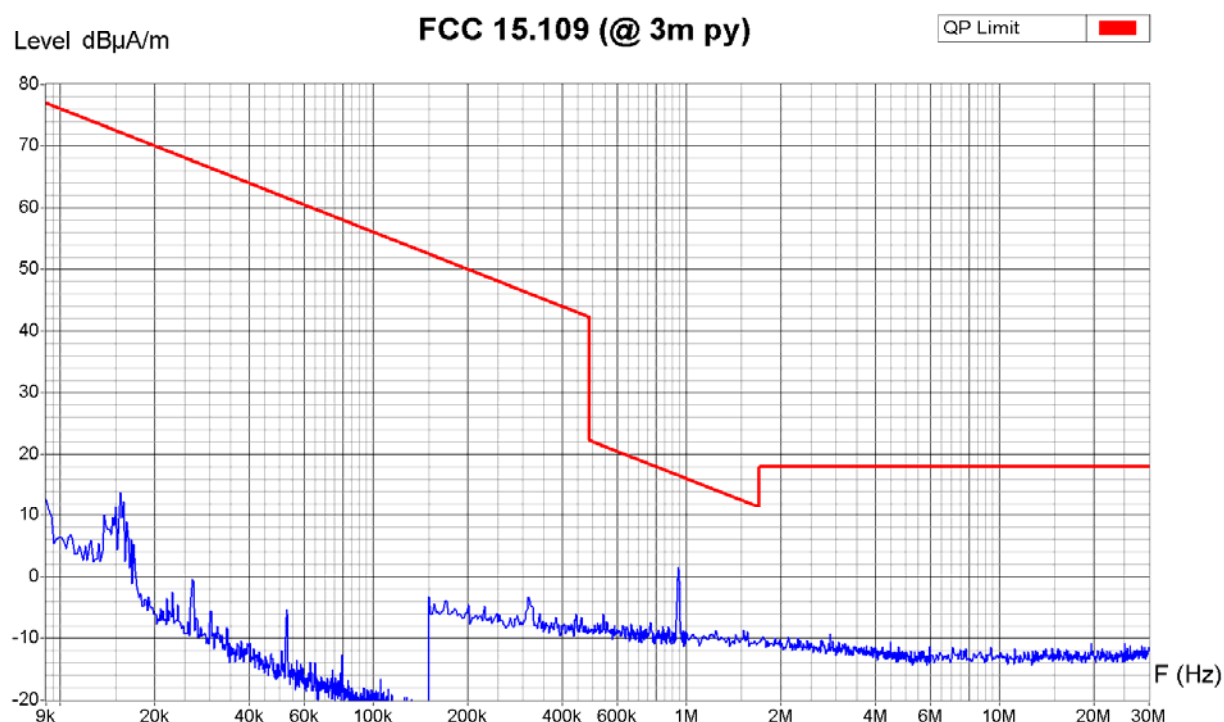
Zone	9 KHz - 80 KHz	150 KHz - 1 MHz	1 MHz - 6 MHz	6 MHz - 30 MHz	80 KHz - 150 KHz
Video Bandwidth	300 Hz	10 KHz	10 KHz	10 KHz	300 Hz
Resol Bandwidth	300 Hz	10 KHz	10 KHz	10 KHz	300 Hz

Operator: E. Staub
Date/Time: 15.04.08 13:26
Filename:
20077722_handheld_FCC
SP-RFID_002pa.png/.txt

Measurement Type : Radiated Field
Polarisation : Perpendicular
Table Angle : 0 - 360°
Antenna Height : 1m (center of loop antenna)



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



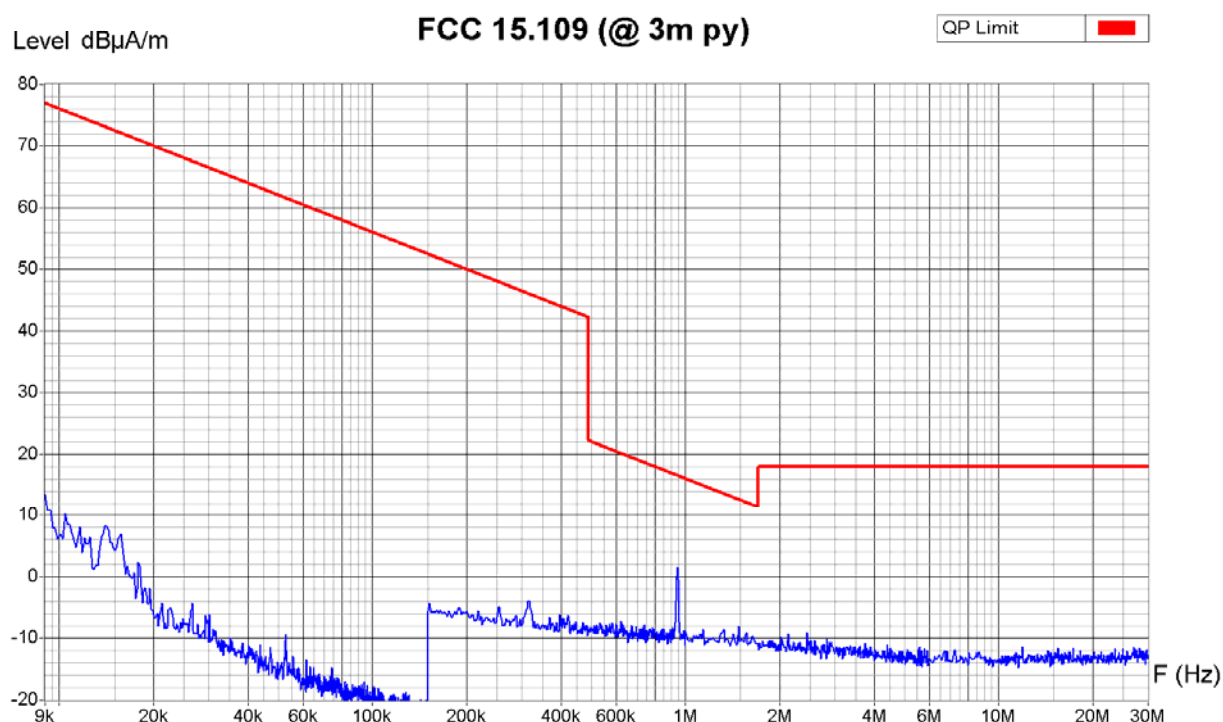
Zone	9 KHz - 80 KHz	150 KHz - 1 MHz	1 MHz - 6 MHz	6 MHz - 30 MHz	80 KHz - 150 KHz
Video Bandwidth	300 Hz	10 KHz	10 KHz	10 KHz	300 Hz
Resol Bandwidth	300 Hz	10 KHz	10 KHz	10 KHz	300 Hz

Operator: E. Staub
Date/Time: 15.04.08 13:19
Filename:
20077722_handheld_FCC
SP-RFID_002pe.png/.txt

Measurement Type : Radiated Field
Polarisation : Parallel
Table Angle : 0 - 360°
Antenna Height : 1m (center of loop antenna)



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



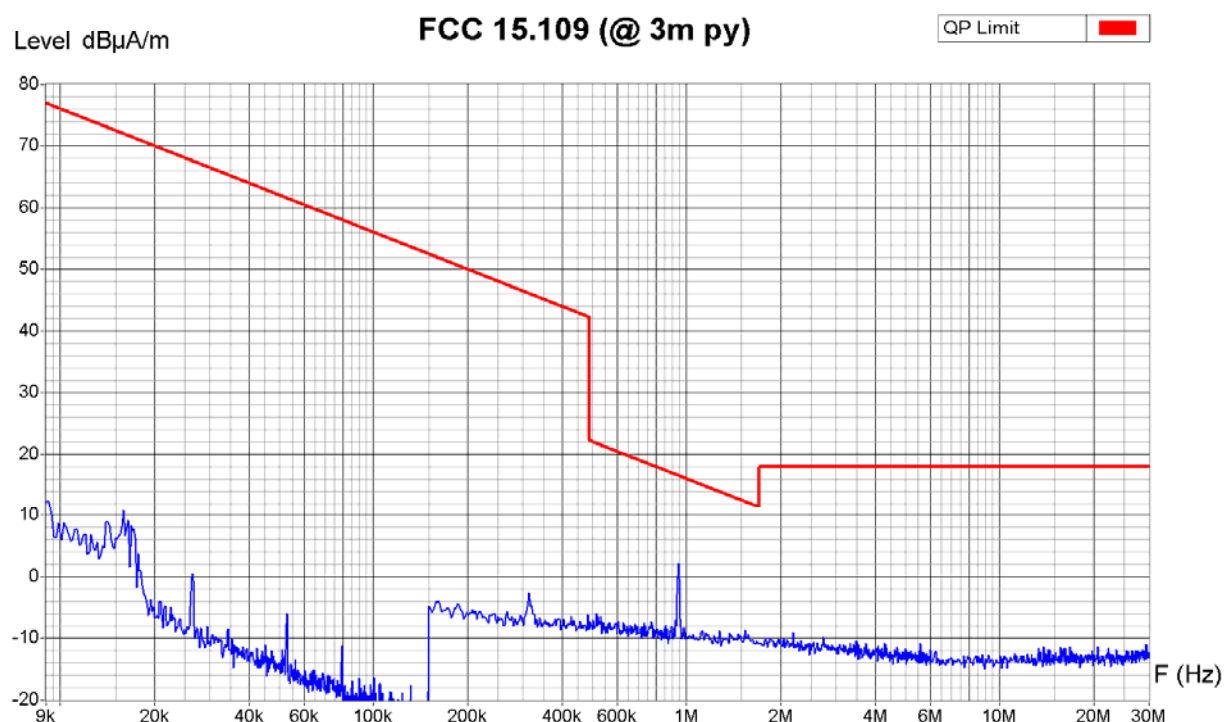
Zone	9 KHz - 80 KHz	150 KHz - 1 MHz	1 MHz - 6 MHz	6 MHz - 30 MHz	80 KHz - 150 KHz
Video Bandwidth	300 Hz	10 KHz	10 KHz	10 KHz	300 Hz
Resol Bandwidth	300 Hz	10 KHz	10 KHz	10 KHz	300 Hz

Operator: E. Staub
Date/Time: 15.04.08 13:51
Filename:
20077722_handheld_FCC
SP-RFID_003pa.png/.txt

Measurement Type : Radiated Field
Polarisation : Perpendicular
Table Angle : 0 - 360°
Antenna Height : 1m (center of loop antenna)



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



Zone	9 KHz - 80 KHz	150 KHz - 1 MHz	1 MHz - 6 MHz	6 MHz - 30 MHz	80 KHz - 150 KHz
Video Bandwidth	300 Hz	10 KHz	10 KHz	10 KHz	300 Hz
Resol Bandwidth	300 Hz	10 KHz	10 KHz	10 KHz	300 Hz

Operator: E. Staub
Date/Time: 15.04.08 13:14
Filename:
20077722_handheld_FCC
SP-RFID_003pe.png/.txt

6.6.2 Radiated emission - Electromagnetic field (30 MHz – 1 GHz)

Test site: ☐ semi-anechoic chamber (foam) ☐ open test site
☒ semi-anechoic chamber (ferrites) ☐

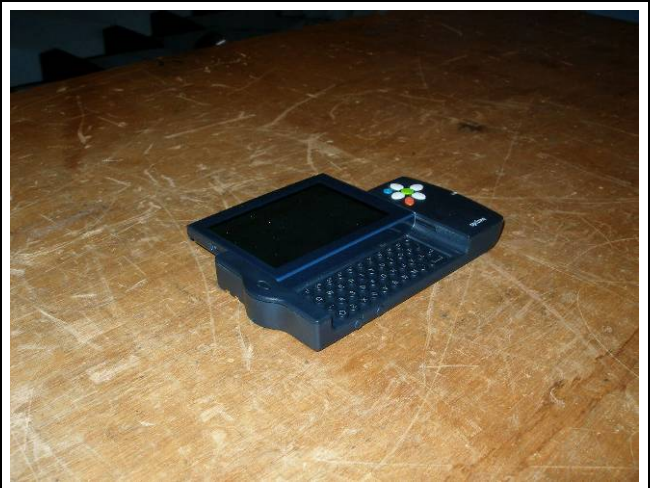
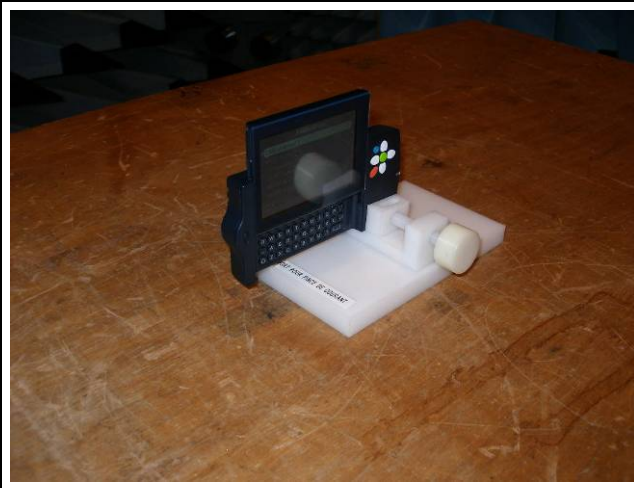
Distance: ☐ 30 m ☐ 10 m ☒ 3 m ☐

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.6 dB (30 - 300 MHz) / ± 3.7 dB (300 - 1000 MHz)

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is moved from 1 to 4 m in height successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 3m
 (factor used = 20 dB/decade) if necessary
 e.g.: for f = 40MHz the limit is 100 μ V/m at 3m;

$$20 \log \left(\frac{100_{[\mu V / m]}}{1_{[\mu V / m]}} \right) = 40 \text{ dB} \mu V \text{ at } 3m$$

Test equipment:

Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☐ 02-06	☒ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☒ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☐ 05-56	☒ 05-59	☐ 05-62	☐
Antenna (biconical)	☐ 82-02	☐ 87-05	☐ 87-16	☐ 91-05	☐ 94-37	
Antenna (log-per)	☐ 88-20	☐ 90-30	☐ 91-35	☐ 94-64		
Antenna (bilog)	☒ 94-03	☐ 05-38	☐			
Antenna (horn)	☐ 90-24	☐ 90-29	☐ 98-12	☐ 98-13	☐	
Cables	☒ 06-01					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field

Polarisation : Horizontal

Table Angle : 0 - 360°

Antenna Height : 1 - 4m

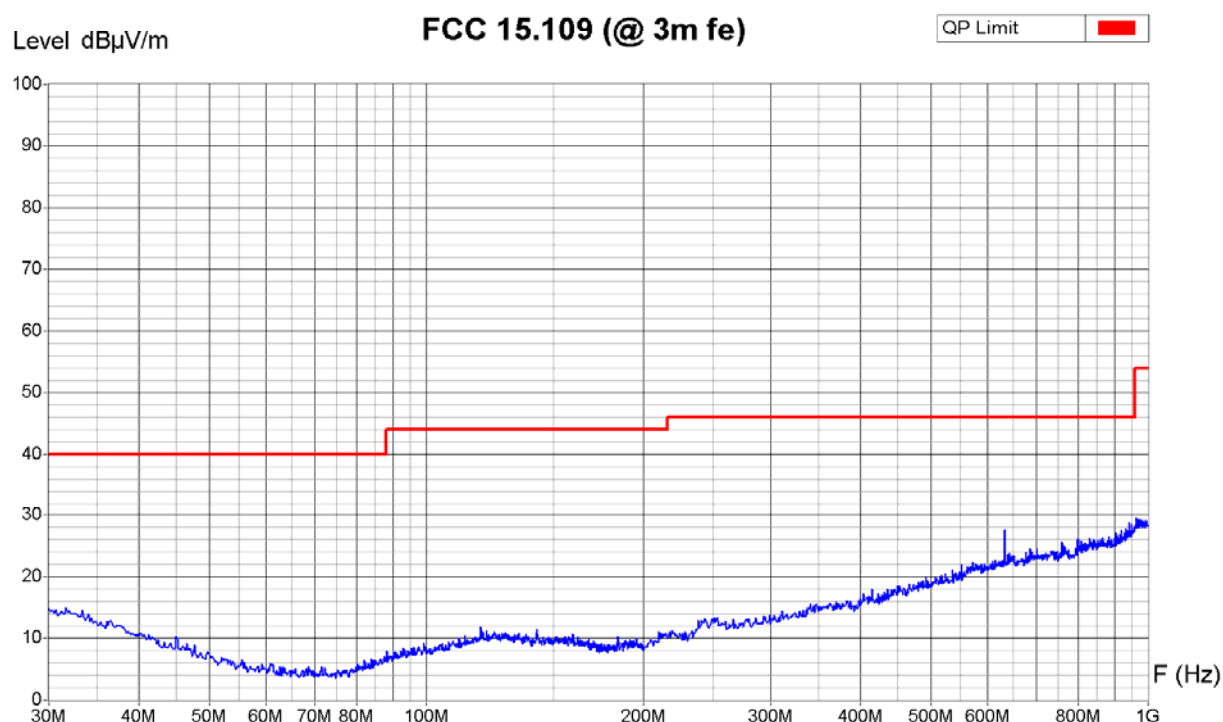


Equipment Under Test : SpotMell handheld

Set-Up : handheld open, upright

Operating Conditions : Standby

Remarks :



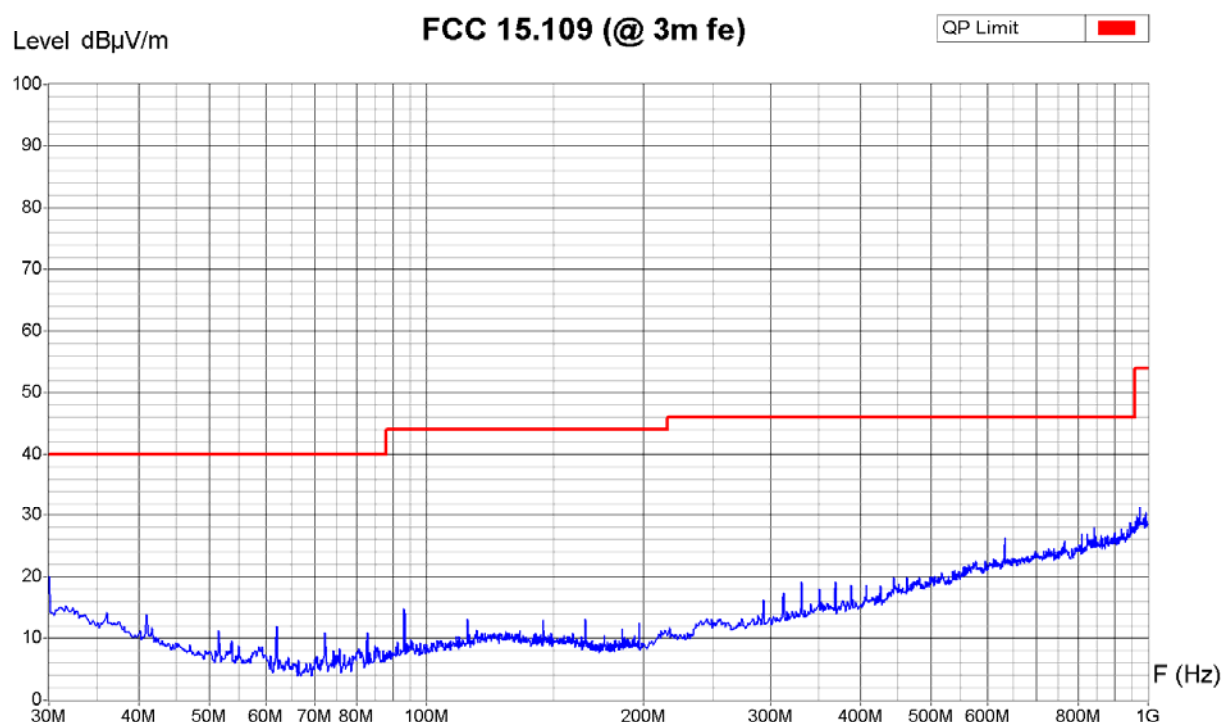
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
 Date/Time: 16.04.08 16:17
 Filename:
 20077722_handheld_FCC
 SP-stby_009h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



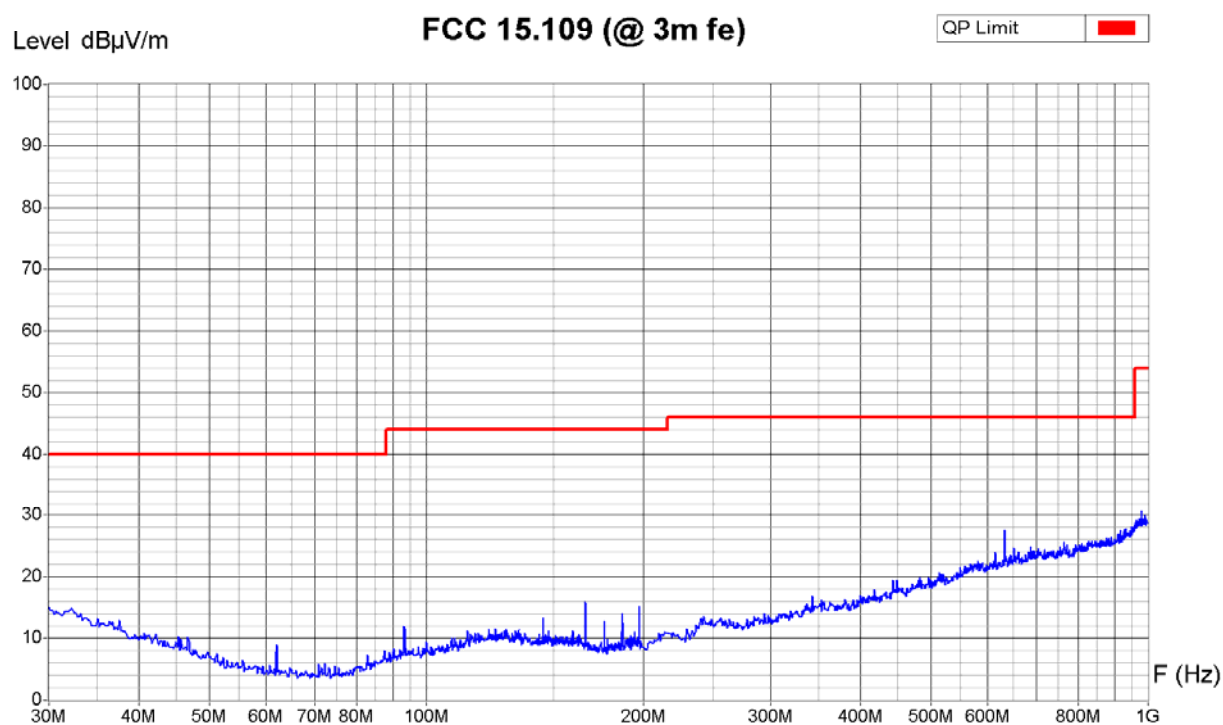
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 16.04.08 16:04
Filename:
20077722_handheld_FCC
SP-stby_009v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



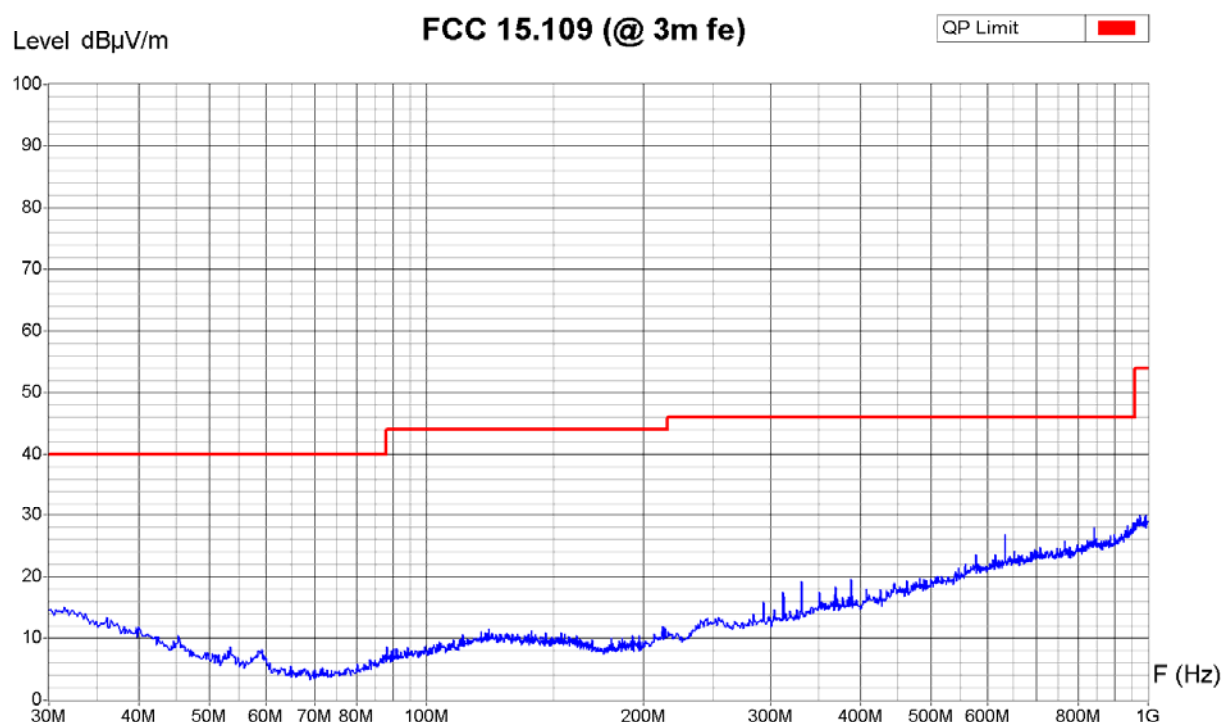
Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 16.04.08 16:26
Filename:
20077722_handheld_FCC
SP-stby_008h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 1 - 4m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



Zone	30 MHz - 199 MHz	199 MHz - 1 GHz
Video Bandwidth	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 16.04.08 16:40
Filename:
20077722_handheld_FCC
SP-stby_008v.png/.txt

6.6.3 Radiated emission - Electromagnetic field (1 GHz – 2.8 GHz)

Test site: ☒ semi-anechoic chamber (foam) ☐ open test site
☐ semi-anechoic chamber (ferrites) ☐

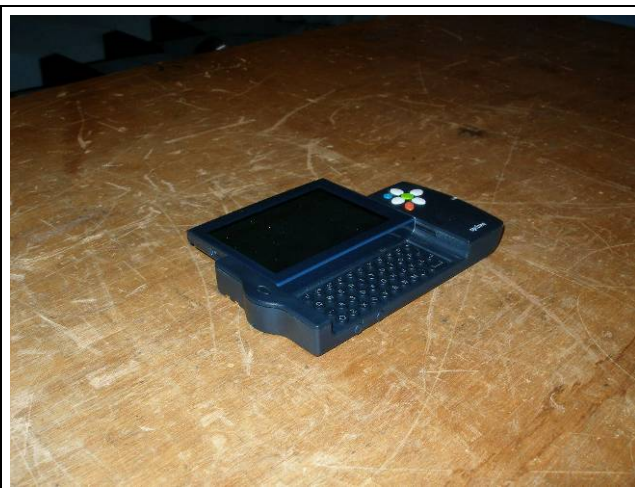
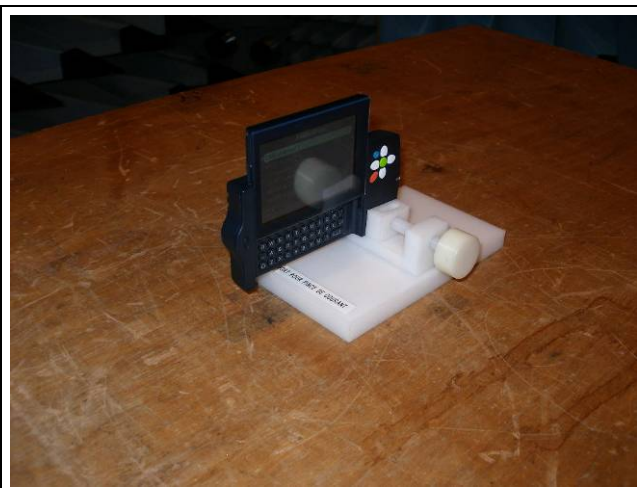
Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 1m
(factor used = 20 dB/decade) if necessary
e.g.: for f = 1GHz the limit is 500 μ V/m at 3m;

$$20 \log \left(\frac{500_{[\mu V / m]}}{1_{[\mu V / m]}} \right) + 20 \log \left(\frac{3_{[m]}}{1_{[m]}} \right) = 63.5 \text{ dB} \mu V \text{ at } 1 \text{ m}$$

Test equipment:

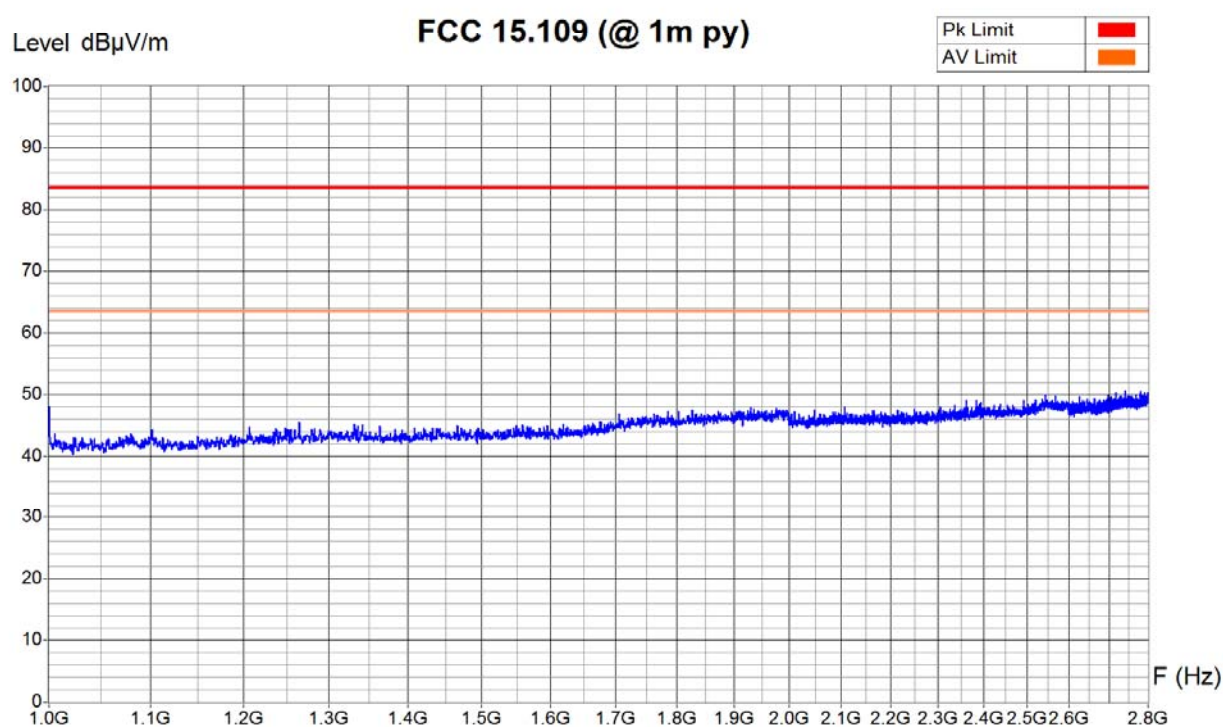
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☐ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☐ 05-56	☐ 05-59	☐ 05-62	☒ 05-87
Antenna (biconical)	☐ 82-02	☐ 87-05	☐ 87-16	☐ 91-05	☐ 94-37	
Antenna (log-per)	☐ 88-20	☐ 90-30	☐ 91-35	☐ 94-64		
Antenna (bilog)	☐ 94-03	☐ 05-38	☐			
Antenna (horn)	☒ 90-24	☐ 90-29	☐ 98-12	☐ 98-13	☐	
Cables	Succoflex 1 m					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



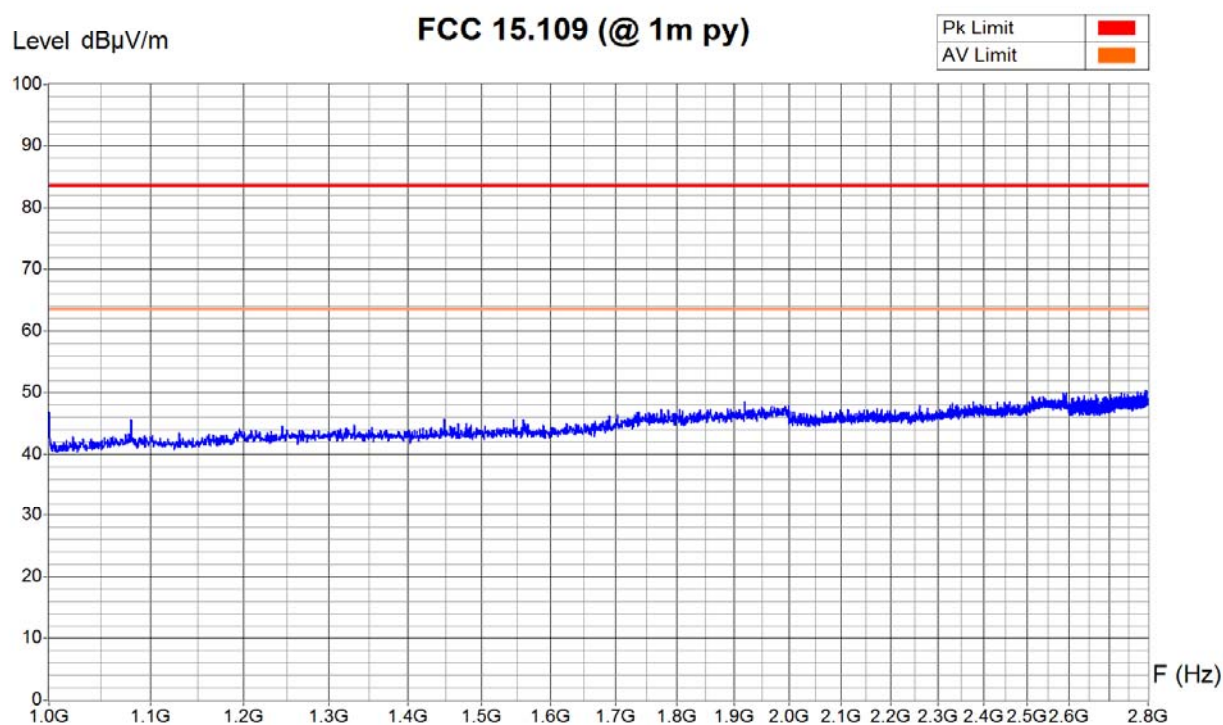
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 08.04.2008 09:12
Filename:
20077722_handheld_FCC
SP-stby_001h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



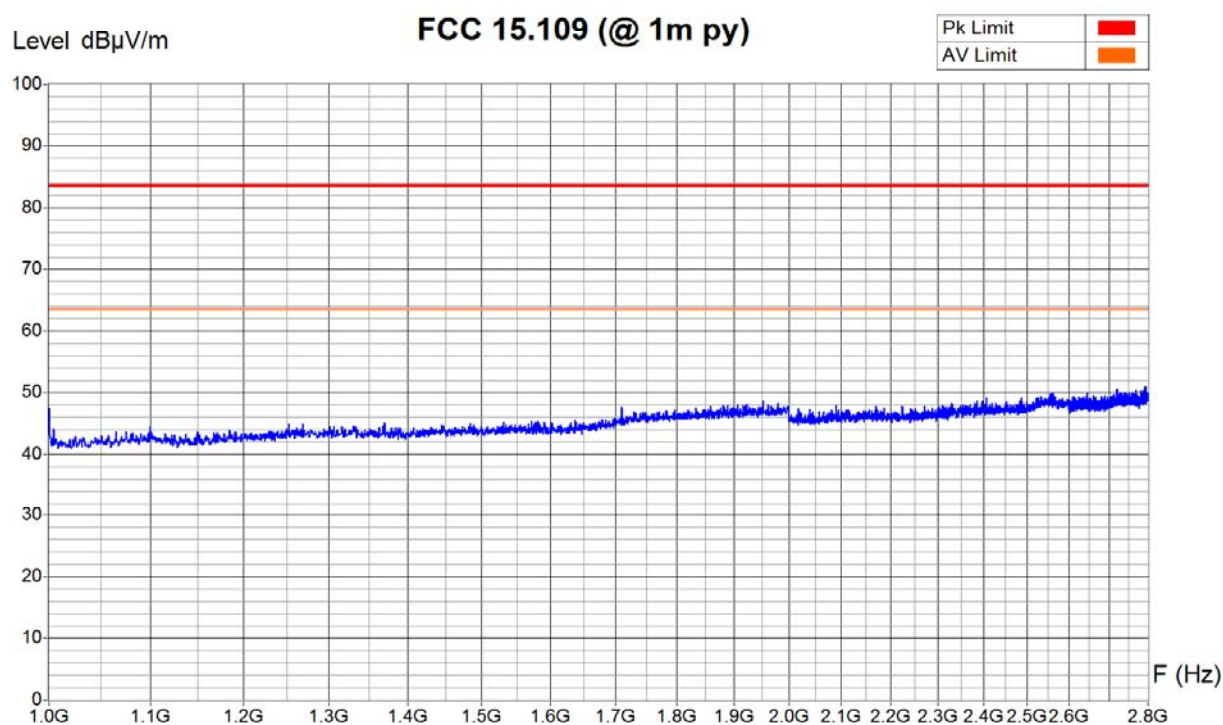
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 08.04.2008 09:17
Filename:
20077722_handheld_FCC
SP-stby_001v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



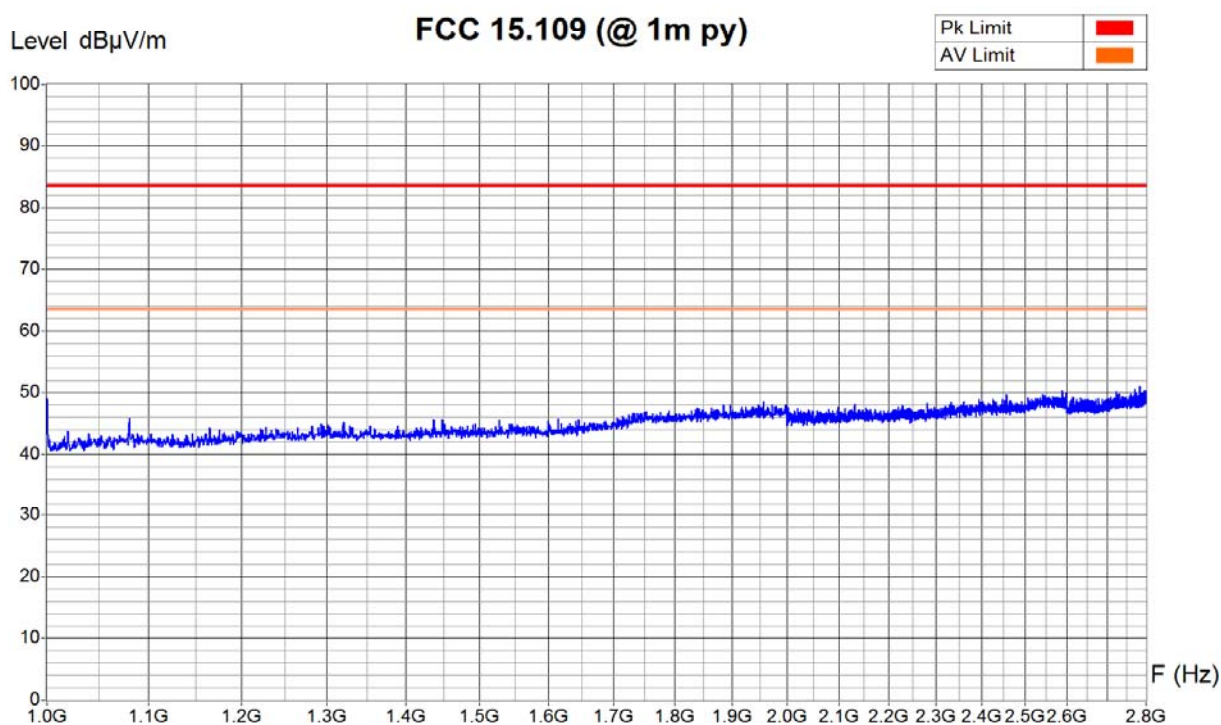
Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 08.04.2008 09:07
Filename:
20077722_handheld_FCC
SP-stby_000h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



Zone	1 GHz - 2 GHz	2 GHz - 2.60 GHz	2.60 GHz - 2.80
Video Bandwidth	1 MHz	1 MHz	1 MHz
Resol Bandwidth	1 MHz	1 MHz	1 MHz

Operator: E. Staub
Date/Time: 08.04.2008 08:47
Filename:
20077722_handheld_FCC
SP-stby_000v.png/.txt

6.6.4 Radiated emission - Electromagnetic field (2.8 GHz – 13 GHz)

Test site: ☒ semi-anechoic chamber (foam) ☐ open test site
☐ semi-anechoic chamber (ferrites) ☐

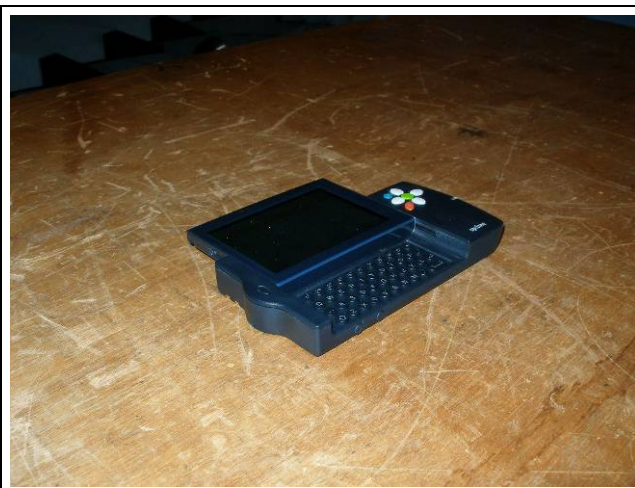
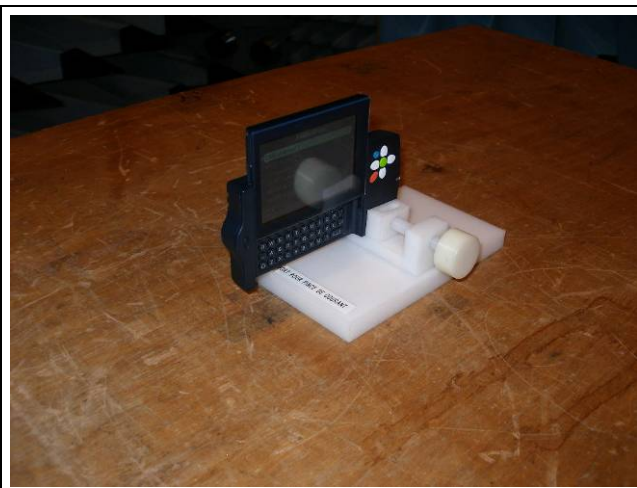
Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 1m
(factor used = 20 dB/decade) if necessary
e.g.: for f = 3GHz the limit is 500 μ V/m at 3m;

$$20 \log \left(\frac{500_{[\mu V / m]}}{1_{[\mu V / m]}} \right) + 20 \log \left(\frac{3_{[m]}}{1_{[m]}} \right) = 63.5 dB\mu V \text{ at } 1m$$

Test equipment:

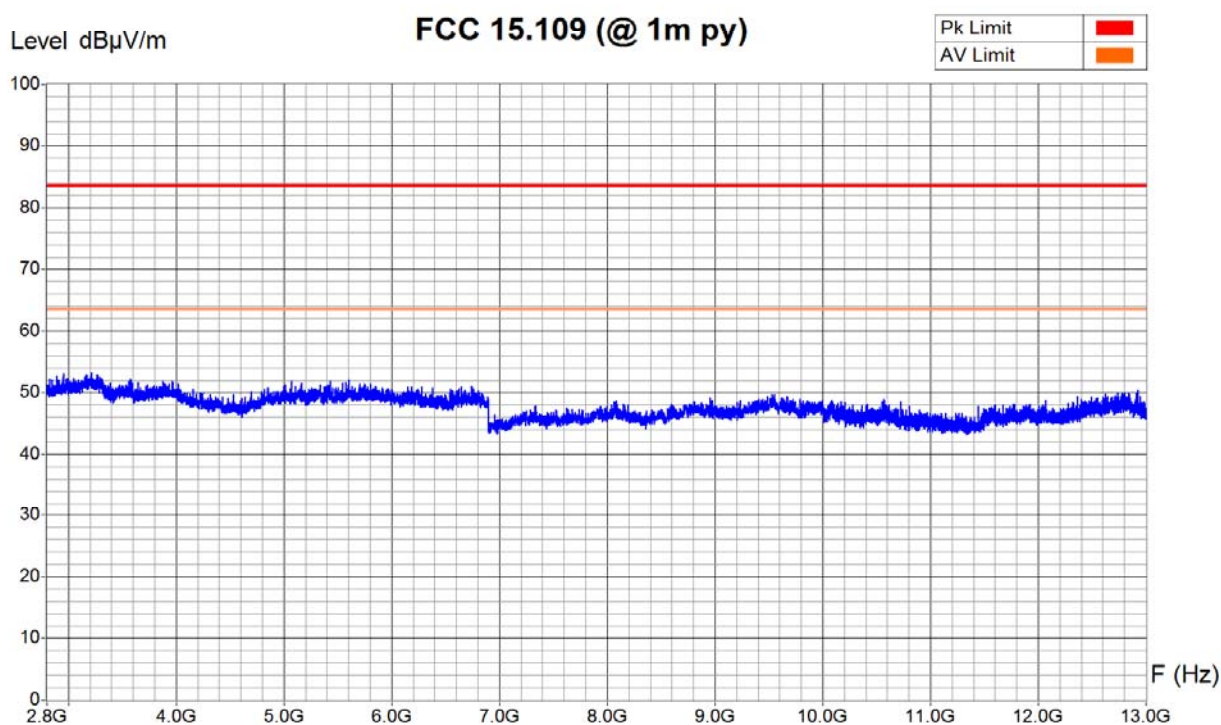
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☐ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☒ 05-56	☐ 05-59	☐ 05-62	☐ 05-87
Antenna (biconical)	☐ 82-02	☐ 87-05	☐ 87-16	☐ 91-05	☐ 94-37	
Antenna (log-per)	☐ 88-20	☐ 90-30	☐ 91-35	☐ 94-64		
Antenna (bilog)	☐ 94-03	☐ 05-38	☐			
Antenna (horn)	☒ 90-24	☐ 90-29	☐ 98-12	☐ 98-13	☐	
Cables	Succoflex 1 m					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



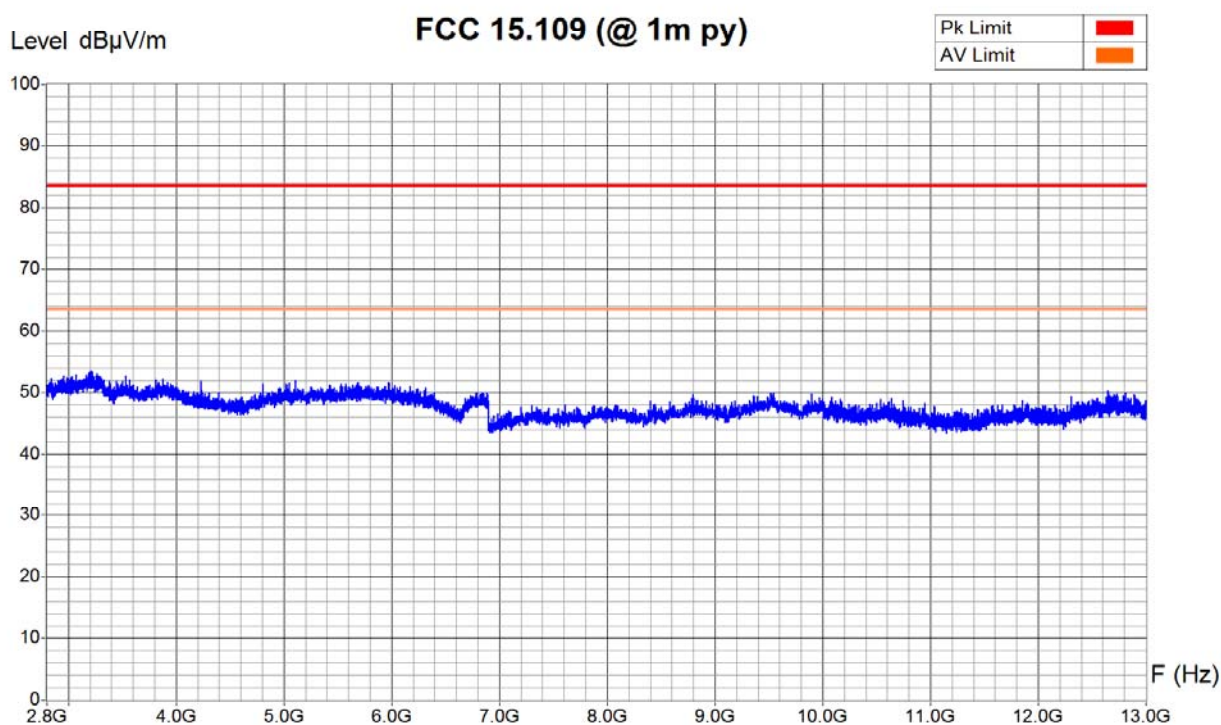
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 15:35
Filename:
20077722_handheld_FCC
SP-stby_003h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



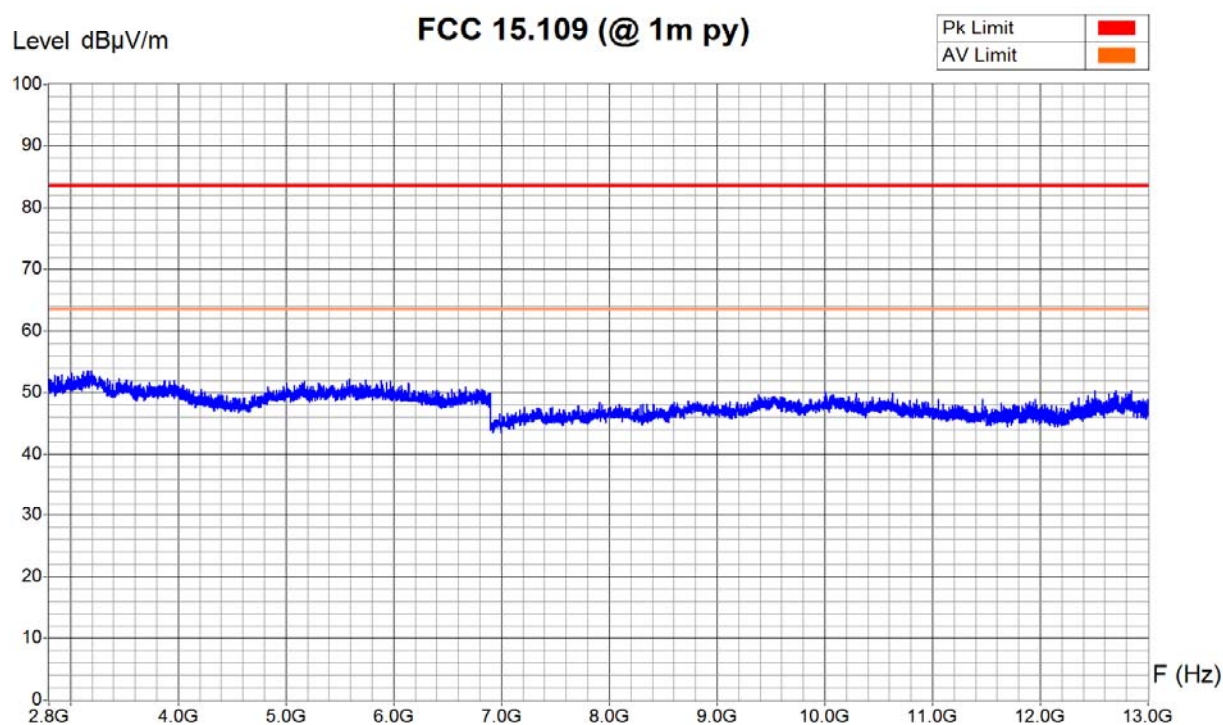
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 15:30
Filename:
20077722_handheld_FCC
SP-stby_003v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



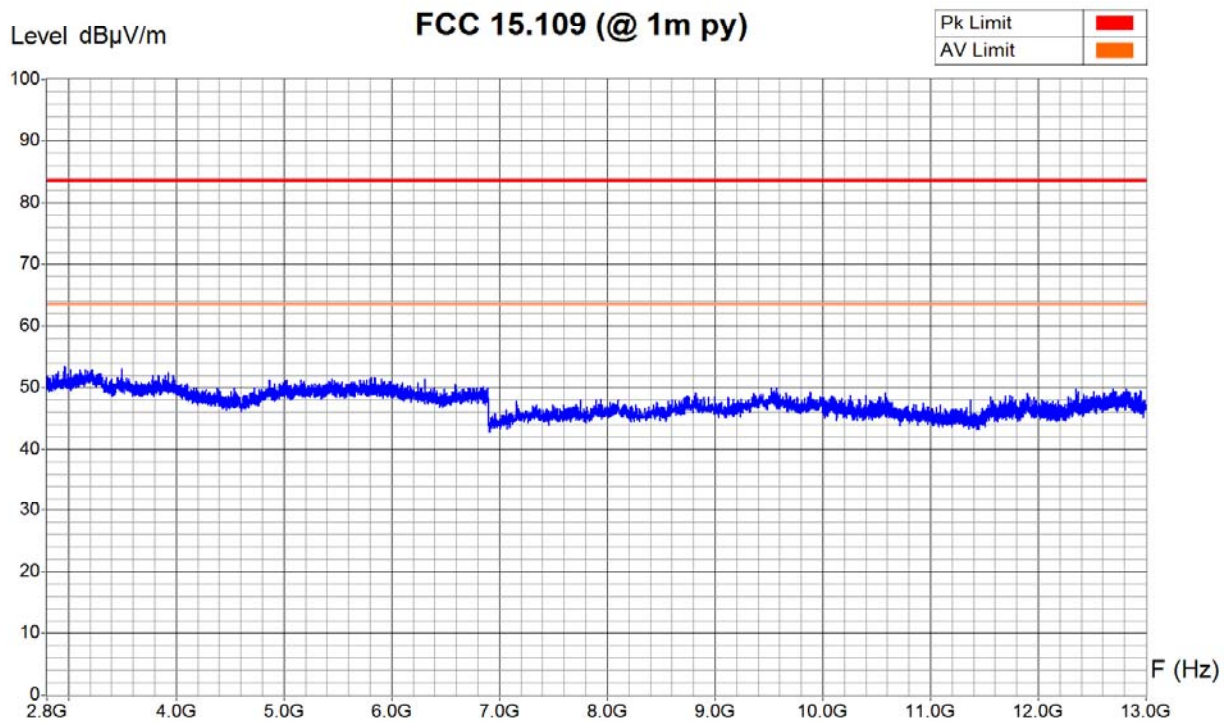
Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 15:20
Filename:
20077722_handheld_FCC
SP-stby_002h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



Zone	2.80 GHz - 4.60	4.60 GHz - 6.90	6.90 GHz - 10 GHz	10 GHz - 11.50 GHz	11.50 GHz - 13 GHz
Video Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz
Resol Bandwidth	1 MHz	1 MHz	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 15:25
Filename:
20077722_handheld_FCC
SP-stby_002v.png/.txt

6.6.5 Radiated emission - Electromagnetic field (13 GHz – 18 GHz)

Test site: ☒ semi-anechoic chamber (foam) ☐ open test site
☐ semi-anechoic chamber (ferrites) ☐

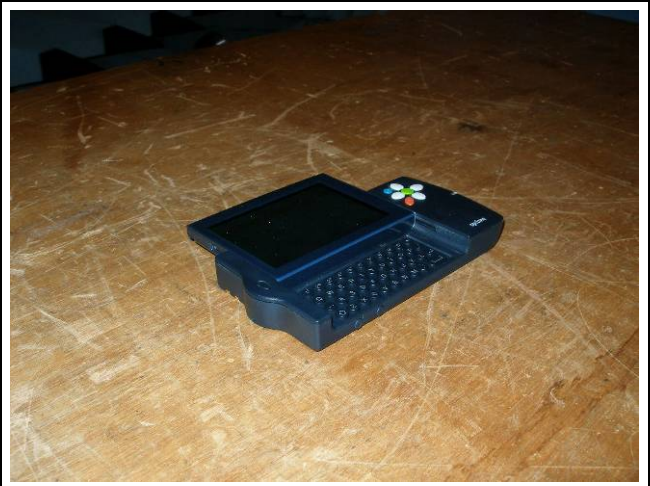
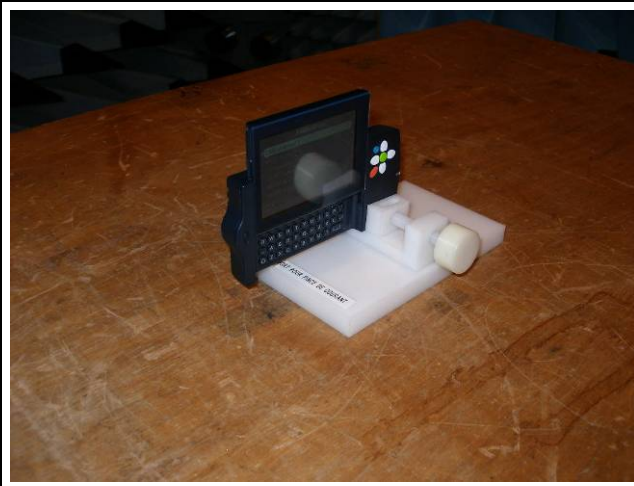
Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 1m
(factor used = 20 dB/decade) if necessary
e.g.: for $f = 13\text{GHz}$ the limit is 500 μ V/m at 3m;

$$20 \log \left(\frac{500_{[\mu V / m]}}{1_{[\mu V / m]}} \right) + 20 \log \left(\frac{3_{[m]}}{1_{[m]}} \right) = 63.5 \text{ dB} \mu V \text{ at } 1 \text{ m}$$

Test equipment:

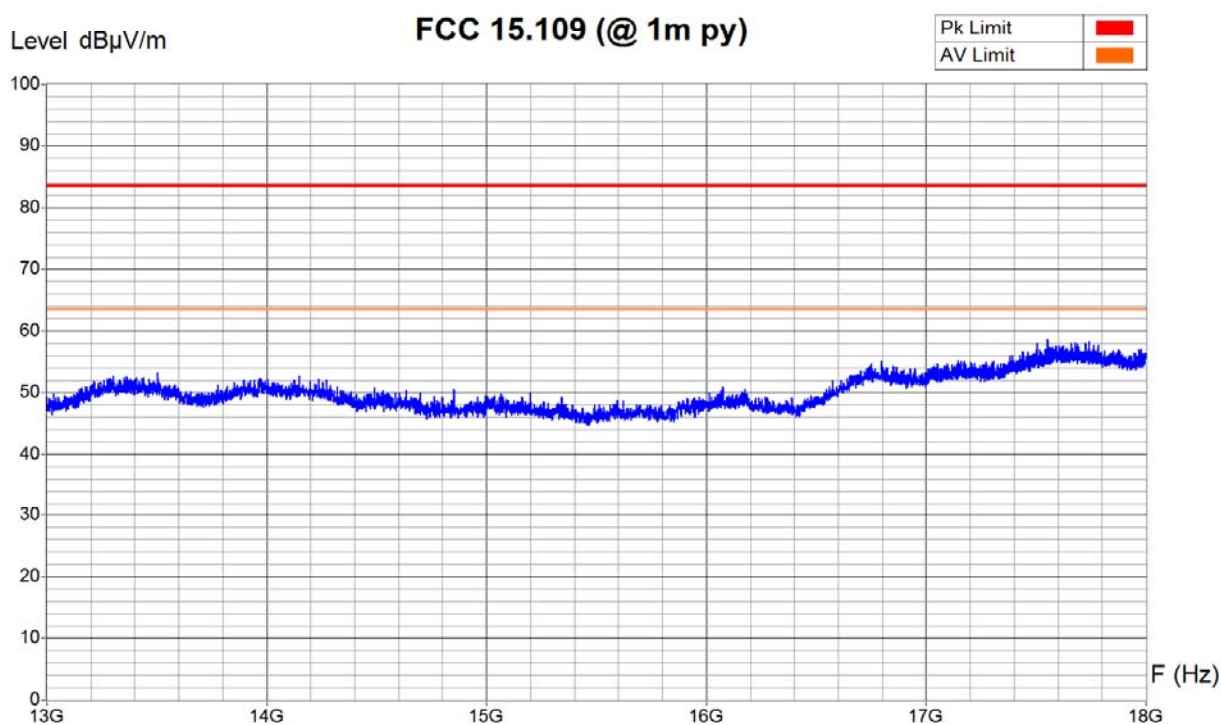
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☐ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☒ 05-56	☐ 05-59	☐ 05-62	☐ 05-87
Antenna (biconical)	☐ 82-02	☐ 87-05	☐ 87-16	☐ 91-05	☐ 94-37	
Antenna (log-per)	☐ 88-20	☐ 90-30	☐ 91-35	☐ 94-64		
Antenna (bilog)	☐ 94-03	☐ 05-38	☐			
Antenna (horn)	☒ 90-24	☐ 90-29	☐ 98-12	☐ 98-13	☐	
Cables	Succoflex 1 m					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



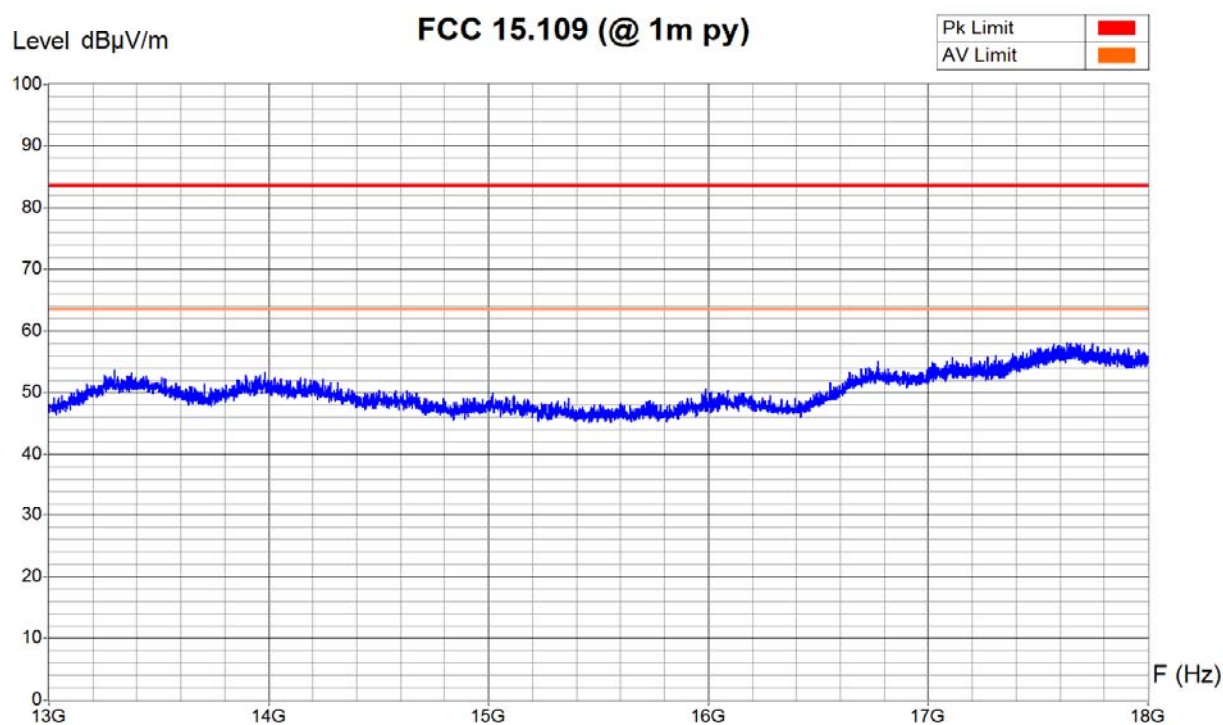
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 15:39
Filename:
20077722_handheld_FCC
SP-stby_005v.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



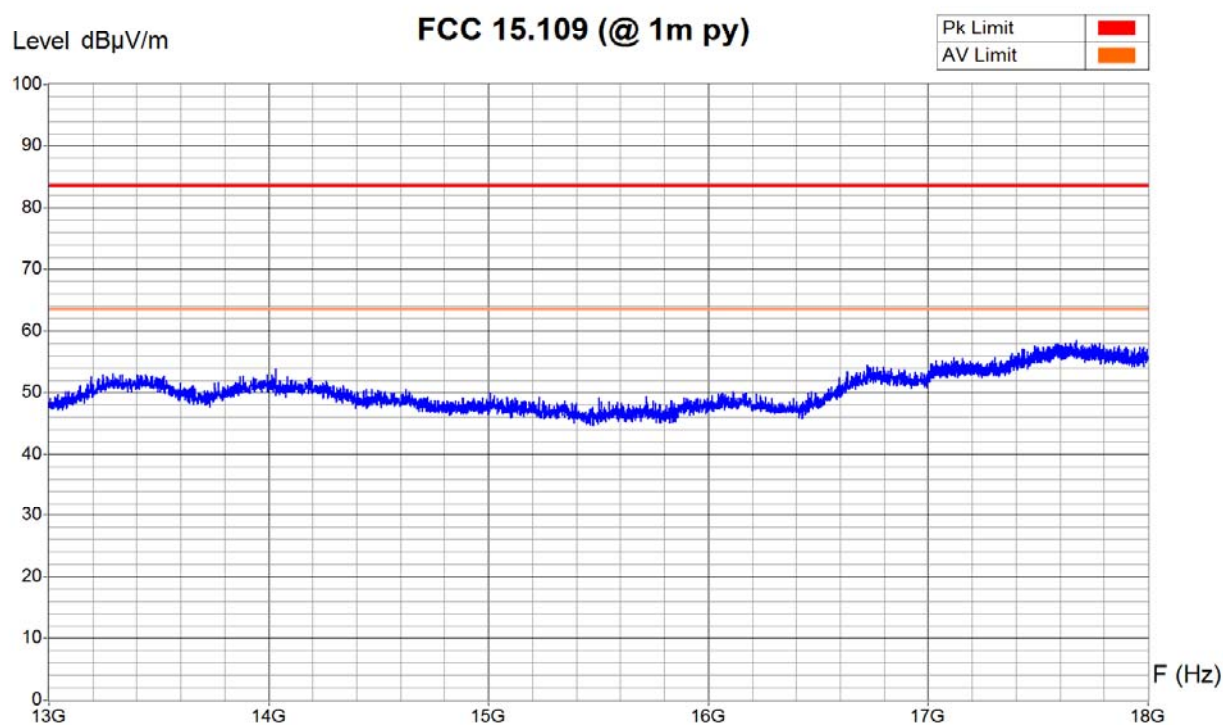
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 15:47
Filename:
20077722_handheld_FCC
SP-stby_005v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



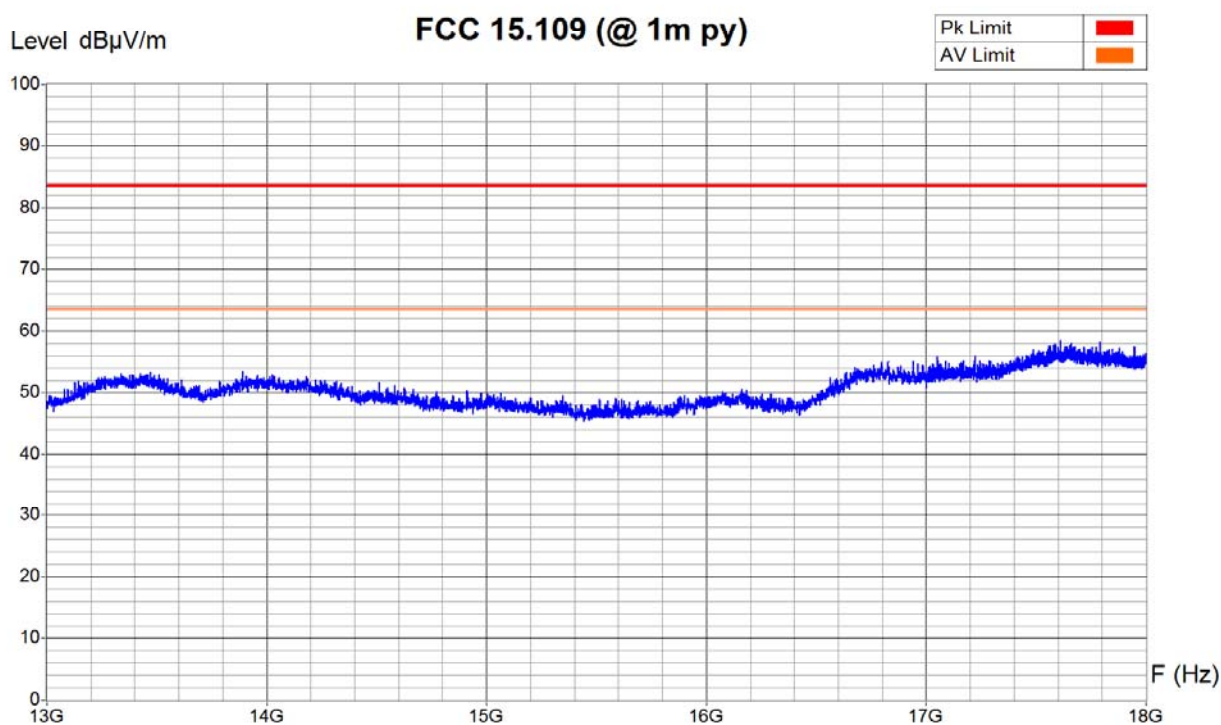
Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 15:55
Filename:
20077722_handheld_FCC
SP-stby_004h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



Zone	13 GHz - 15 GHz	15 GHz - 17 GHz	17 GHz - 18 GHz
Video Bandwidth	300 KHz	300 KHz	300 KHz
Resol Bandwidth	300 KHz	300 KHz	300 KHz

Operator: E. Staub
Date/Time: 10.04.2008 15:51
Filename:
20077722_handheld_FCC
SP-stby_004v.png/.txt

6.6.6 Radiated emission - Electromagnetic field (18 GHz – 26.5 GHz)

Test site: ☒ semi-anechoic chamber (foam) ☐ open test site
☐ semi-anechoic chamber (ferrites) ☐

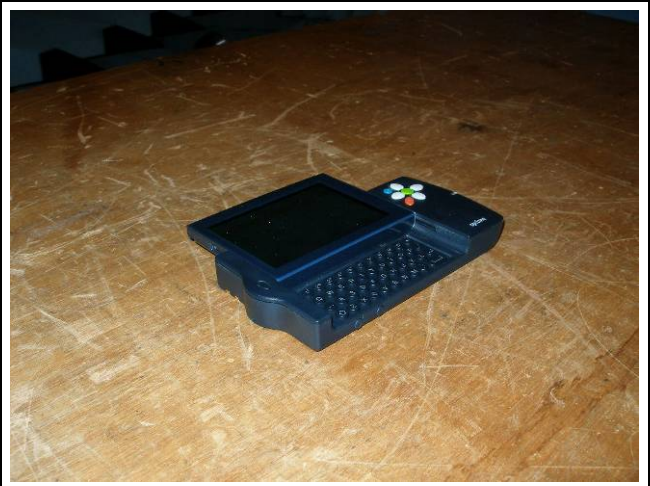
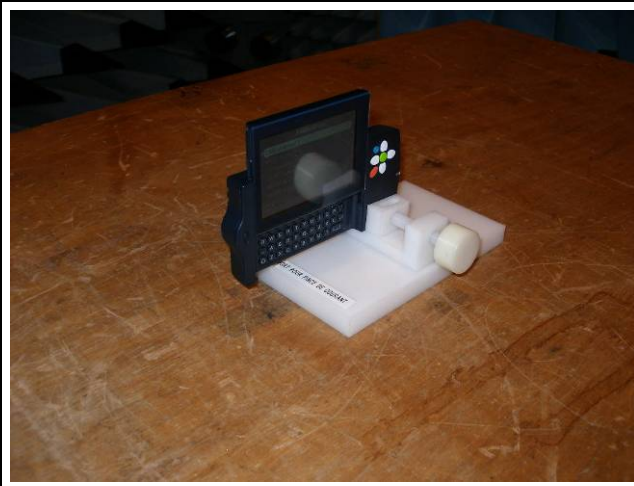
Distance: ☐ 30 m ☐ 10 m ☐ 3 m ☒ 1 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarisations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are remeasured manually using a receiver.

Test set-up:



Remarks: Limit values expressed in dB μ V/m and transformed to a measuring distance of 1m
(factor used = 20 dB/decade) if necessary
e.g.: for f = 18GHz the limit is 500 μ V/m at 3m;

$$20 \log \left(\frac{500_{[\mu V / m]}}{1_{[\mu V / m]}} \right) + 20 \log \left(\frac{3_{[m]}}{1_{[m]}} \right) = 63.5 \text{ dB} \mu V \text{ at } 1m$$

Test equipment:

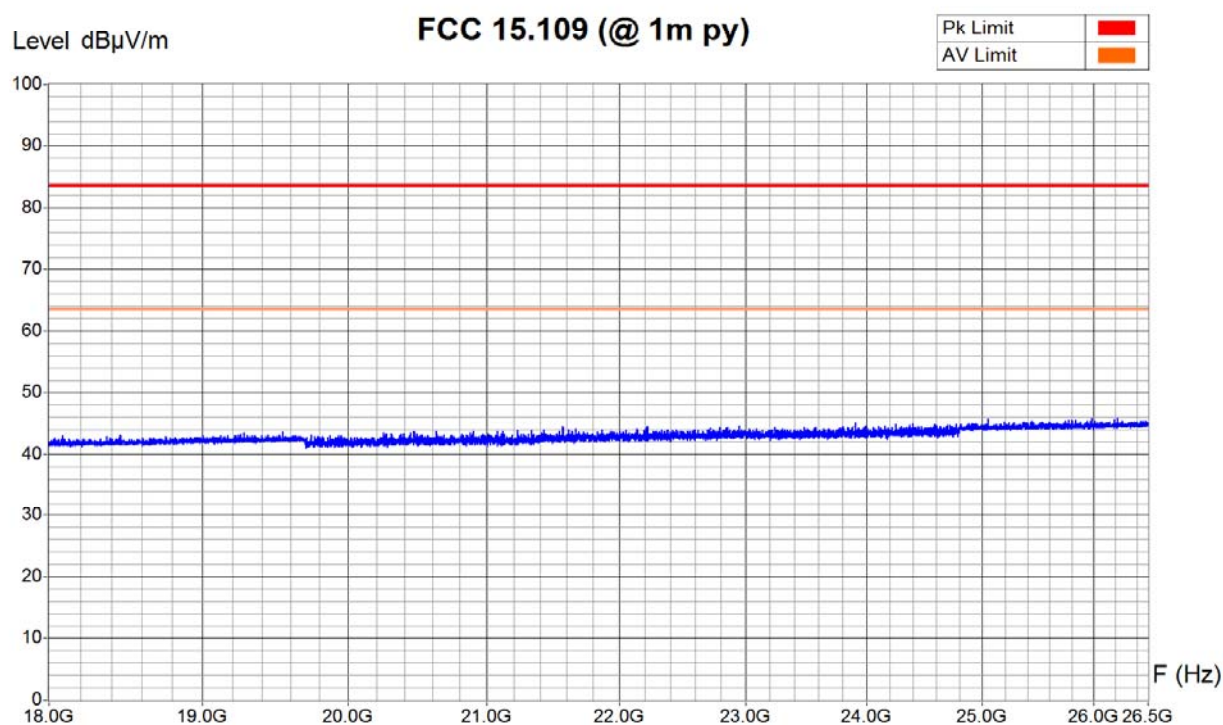
Spectrum analyser	☐ 88-14	☐ 90-26	☐ 94-24	☒ 02-06	☐ 03-45	☐ 03-57
Receiver	☐ 85-04	☐ 90-43	☐ 94-35			
Preamplifier	☐ 90-01	☐ 95-86	☐ 05-56	☐ 05-59	☐ 05-62	☐
Antenna (horn)	☐ 90-24	☐ 90-29	☒ 98-12	☐ 98-13	☐	
External mixers	☐ 94-03	☐ 05-38	☒ 11970K			
Cables	Succoflex 1 m					

Result: ☒ pass ☐ fail ☐ not applicable ☐ not tested

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



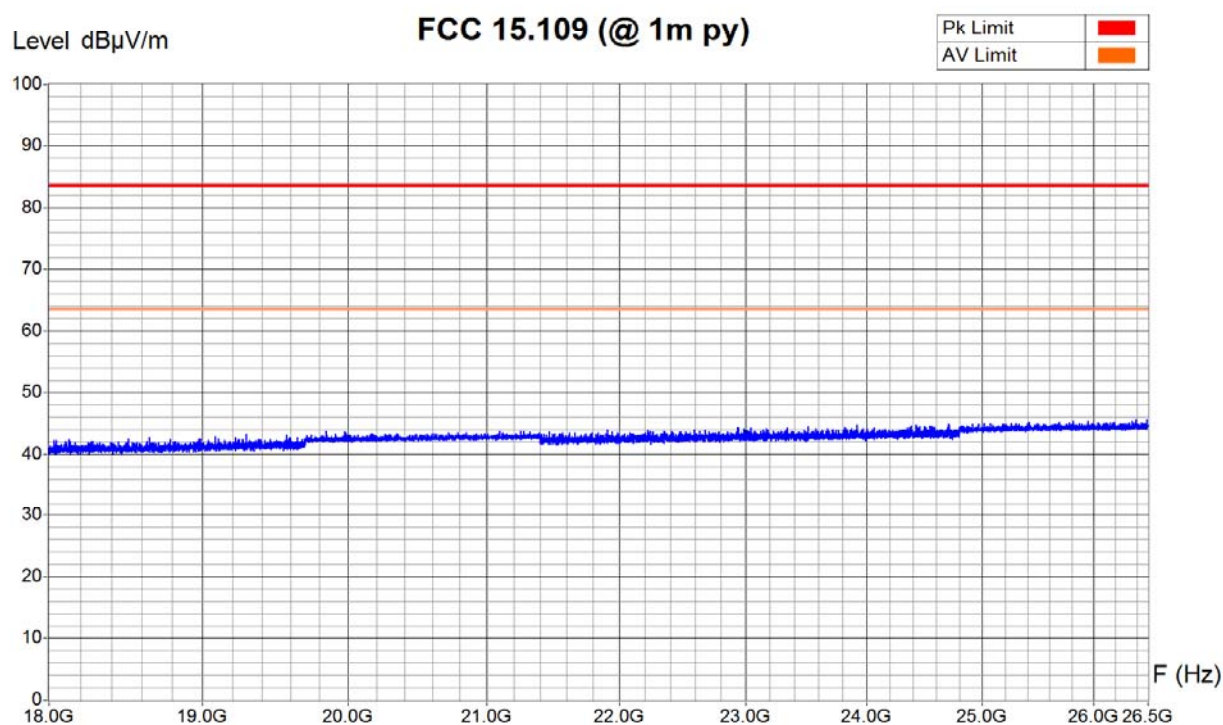
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 10:02
Filename:
20077722_handheld_FCC
SP-stby_007h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, upright
Operating Conditions : Standby
Remarks :



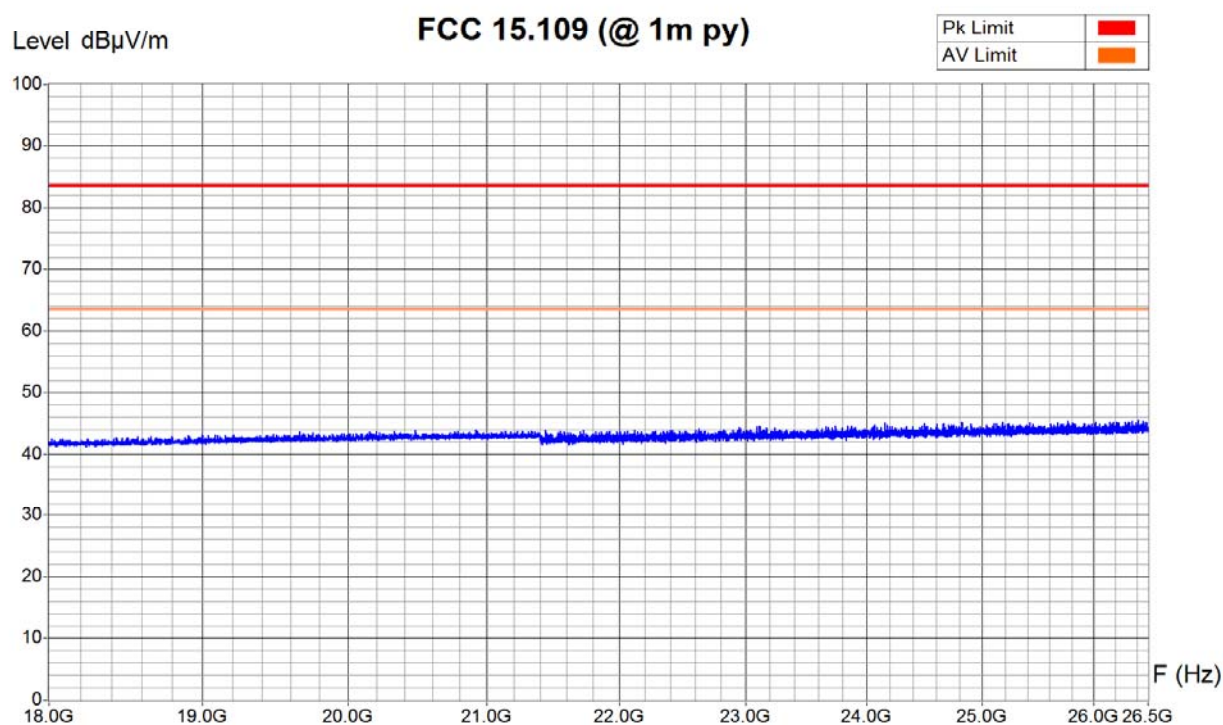
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 10:43
Filename:
20077722_handheld_FCC
SP-stby_007v.png/.txt

Measurement Type : Radiated Field
Polarisation : Horizontal
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



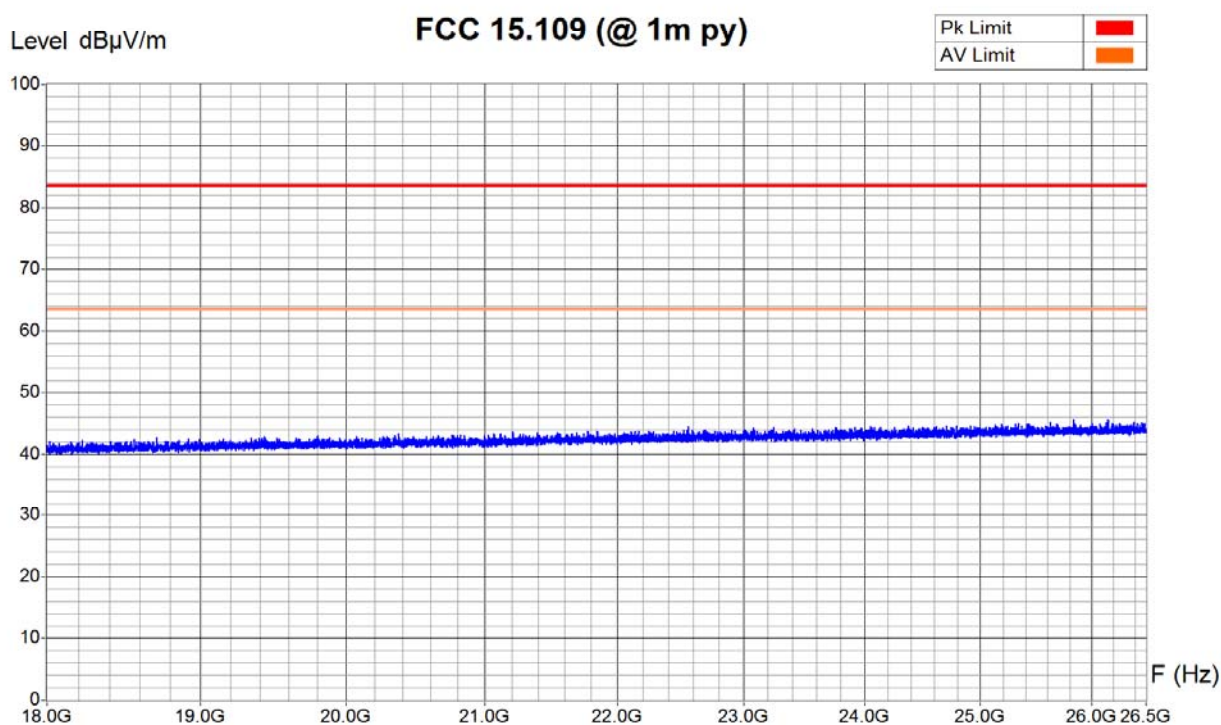
Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 10:07
Filename:
20077722_handheld_FCC
SP-stby_006h.png/.txt

Measurement Type : Radiated Field
Polarisation : Vertical
Table Angle : 0 - 360°
Antenna Height : 0.8m



Equipment Under Test : SpotMell handheld
Set-Up : handheld open, laying
Operating Conditions : Standby
Remarks :



Zone	18 GHz - 19.70 GHz	19.70 GHz - 21.40	21.40 GHz - 23.10	23.10 GHz - 24.80	24.80 GHz - 26.50
Video Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz
Resol Bandwidth	100 KHz	100 KHz	100 KHz	100 KHz	100 KHz

Operator: E. Staub
Date/Time: 15.04.2008 10:38
Filename:
20077722_handheld_FCC
SP-stby_006v.png/.txt