

issued by an FCC listed Laboratory Reg. no. 93866. The test site complies with RSS-Gen, Issue 2, file no: IC 3482A-2.

2009-06-05

Reference F820792-F15C2 Page 1(1)



Handled by, department Fredrik Isaksson

Electronics

+46 10 516 55 80, fredrik.isaksson@sp.se

ARJO HUNTLEIGH Jörgen Jönsson Ideon Science Park Scheelevägen 19F 223 70 LUND

## **Equipment Authorization measurements on 903-913 MHz Transceiver Unit**

FCC ID: W7UMSSENS

(8 appendices)

### Test object

Product name: SENSOR Part. number: NE10 09205-10 EUT identity: REF SP 20090213

Software: NE50 09001-01 v1.0 FCC approval

### **Summary**

See appendix 1 for general information and appendix 8 for photos. Emission measurements as specified below have been performed.

Standard	Compliant	Appendix	Remarks
FCC 47 CFR Part 15 C (07-10-08)			
§15.249 Operation within the band			
902-928 MHz	Yes		
§15.249 (a) Field strength of fundamental	Yes	2	
§15.249 (d) (e) Radiated emission	Yes	3	
§15.215 (c) 20 dB bandwidth	Yes	4	
§15.207 Conducted emission limits	N/A		Note 1
§2.1049 Occupied bandwidth	Yes	5	
§2.1049 Band Edge	Yes	6	
RF Safety	Yes	7	

Note 1: Test not applicable, battery powered.

SP Technical Research Institute of Sweden

**Electronics - EMC** 

Technical Manager

Technical Officer

SP Technical Research Institute of Sweden

Office location

**SWEDEN** 

Postal address

SE-501 15 Borås

Box 857

**SWEDEN** 

Brinellgatan 4

Västeråsen SE-504 62 Borås Phone / Fax / E-mail +46 10 516 50 00

+46 33 13 55 02 info@sp.se

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### REPORT

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FCC ID: W7UMSSENS Appendix 1

### Performance test and requirements

The tests were performed to verify that the electromagnetic compatibility of Sensor meets the requirements of FCC 47 CFR part 15 C.

#### **Test facility**

The used test site (SP 504 114) is compliant with the requirements of section 2.948 of the FCC rules and listed, registration number 96866, as a facility accepted for certification under parts 15 and 18. The site complies with RSS-Gen, Issue 2 and is accepted by Industry Canada for the performance of radiated measurements, file number: IC 3482A-2.

### **Test object**

Transceiver: Sensor
Antenna: Integral
Antenna gain: <2.0 dBi

Frequency: 903.2125-913.2125 MHz

Frequency used during test: 903.2125 MHz 913.2125 MHz

Modulation: GFSK Data rate: 2400 baud

Supply voltage: 3.6 V DC, internal battery

primary lithium –thionyl chloride (Li-SOCI2)

Power setting, address 0x05 0x02

EEPROM:

#### Operational test mode

Modified test sample, continuous transmitting with modulation, was used to simplify the measurements.

(In normal operation 0-30 radio packages are transmitted during 24 hours (1 radio package = 150 ms). A maximum of 3 radio packages are transmitted during 2 seconds, and then a minimum of 30 seconds inactivity.)

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Appendix 1

### **Uncertainties**

Measurement and test instrument uncertainties are described in the quality assurance documentation "EL-QD 8.2". The measurement uncertainties can be found in the table below. The uncertainties are calculated with a coverage factor k=2 (95% level of confidence).

### Reservation

The test results in this report apply only to the particular test object as declared in the report.

### **Delivery of test object**

The test object was delivered: 2009-02-13

### **Test engineers**

Fredrik Isaksson Martin Forsberg

Date 2009-06-05

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Appendix 2

FCC ID: W7UMSSENS

## Field strength of fundamental measurements according to FCC 47 CFR part 15.249 (a)

Date	Temperature	Humidity
2009-02-13	22 °C ± 3 °C	$18 \% \pm 5 \%$
2009-02-18	$22  ^{\circ}\text{C} \pm 3  ^{\circ}\text{C}$	13 % ± 5 %

### Test set-up and procedure

The measurements were performed according to ANSI C63.4-2003.

The test was performed with continuous transmission (100% duty cycle) and with modulation.

The radiated maximum peak radiated output power measurements were performed in the semi-anechoic chamber. The test was also performed with rotation of the EUT through three orthogonal axes to determine the position that produces the highest emission relative to the limit.

The fundamental was scanned with PEAK-detector with the antenna height 1-4 m and the turntable was varied between 0-360 degrees for maximum response. The antenna distance during the measurements was 3.0 m

Test set-up photos during the tests can be found in appendix 8.

Measurement equipment	Calibration Due	SP number
Semi anechoic chamber, Edison	-	504 114
Spectrum analyzer R&S ESI 26	2009-07	503 885
EMI measurement computer	-	-
Software: R&S EMC32, ver. 6.30.10	-	503 745
Antenna Schaffner Bilog CBL6143	2010-03	504 079
Temperature and humidity meter Testo 625	2010-04	504 117

Measurement uncertainty: 5.6 dB

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Appendix 2

#### **Results**

#### RBW=100 kHz

		Max peak output power Quasi-peak detector				
		903.2125 MHz	913.2125 MHz			
	EUT axes	Y-axes	Y-axes			
	Antenna height	1.00 m	1.00 m			
	Azimuth	4 deg	4 deg			
	Polarization	Horizontal	Horizontal			
T <sub>nom</sub> 22°C	V <sub>nom</sub> 3.6 V DC	93.7 dBμV/m (=-1.5 dBm ERP) Note 1	93.0 dBμV/m (=2.2 dBm ERP) Note 1			

Note 1: The measurements were performed in field strength in  $dB\mu V/m$ . The ERP level was then calculated by the formula ERP =  $E(dB\mu V/m)-90+20log(d)-10log30$ 

Note 2: According 47CFR 15.31(e), For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

#### Limits

According to 47CFR 15.249(a), The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Field strength of Field strength of Frequency fundamental harmonics 902-928 MHz  $50 \text{ mv/m} = 94 \text{ dB}\mu\text{V/m}$   $50 \text{ }\mu\text{v/m} = 54 \text{ dB}\mu\text{V/m}$ 

Complies? Yes

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Appendix 3

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### Radiated emission measurements according to FCC 47 CFR part 15.249 (d) (e)

Date	Temperature	Humidity
2009-02-13	22 °C ± 3 °C	18 % ± 5 %
2009-02-17	22 °C ± 3 °C	14 % ± 5 %
2009-02-18	22 °C ± 3 °C	13 % ± 5 %

#### Test set-up and procedure

The measurements were performed according to ANSI C63.4-2003.

The test was performed with continuous transmission (100% duty cycle) and with modulation.

The radiated measurements were performed in the semi-anechoic chamber. A pre-scan with an antenna height of 1, 1.5, and 2 m was performed with both horizontal and vertical polarization, the turntable was varied between 0-360 degrees. Spurious emission detected with PEAK-detector was scanned with antenna height 1-4 m for maximum response. The antenna distance during the measurements was 3.0 m in the frequency range 30 MHz-10 GHz. The test was also performed with rotation of the EUT through three orthogonal axes to determine the position that produces the highest emission relative to the limit.

The measurement was first performed with peak detector.

The following RBW were used: 30 MHz-1 GHz: RBW=100 kHz

1-10 GHz: RBW=1 MHz

Emission on frequencies close to or above the limit was re-measured with quasi-peak or average detector.

Test set-up photos during the tests can be found in appendix 8.

Measurement equipment	Calibration Due	SP number
Semi anechoic chamber, Edison	-	504 114
Spectrum analyzer R&S ESI 26	2009-07	503 885
EMI measurement computer	-	-
Software: R&S EMC32, ver. 6.30.10	-	503 745
Antenna Schaffner Bilog CBL6143	2010-03	504 079
Horn antenna EMCO 3115	2011-10	501 548
Preamplifier Miteq, 1 18 GHz	2009-08	504 160
High pass filter Wainwright WHKY	2011-01	504 199
Temperature and humidity meter Testo 625	2010-04	504 117

**Measurement uncertainty:** 30-1000 MHz: 4.8/5.6 dB (V/H-pol)

1-10 GHz: 2.6 dB

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Appendix 3

#### Results

The emission spectra can be found appendix 3.1:

### Low channel, 903.2125 MHz

- Diagram 1: Radiated emission 30-1000 MHz, Low channel 903.2125 MHz, X-axes, vertical and horizontal polarizations.
- Diagram 2: Radiated emission 1-10 GHz, Low channel, 903.2125 MHz, X-axes, vertical and horizontal polarizations.
- Diagram 3: Radiated emission 30-1000 MHz, Low channel 903.2125 MHz, Y-axes, vertical and horizontal polarizations.
- Diagram 4: Radiated emission 1-10 GHz, Low channel 903.2125 MHz, Y-axes, vertical and horizontal polarizations.
- Diagram 5: Radiated emission 30-1000 MHz, Low channel 903.2125 MHz, Z-axes, vertical and horizontal polarizations.
- Diagram 6: Radiated emission 1-10 GHz, Low channel 903.2125 MHz, Z-axes, vertical and horizontal polarizations.

#### High channel, 913.2125 MHz

- Diagram 7: Radiated emission 30-1000 MHz, High channel 913.2125 MHz, X-axes, vertical and horizontal polarizations.
- Diagram 8: Radiated emission 1-10 GHz, High channel, 913.2125 MHz, X-axes, vertical and horizontal polarizations.
- Diagram 9: Radiated emission 30-1000 MHz, High channel 913.2125 MHz, Y-axes, vertical and horizontal polarizations.
- Diagram 10:Radiated emission 1-10 GHz, High channel 913.2125 MHz, Y-axes, vertical and horizontal polarizations.
- Diagram 11:adiated emission 30-1000 MHz, High channel 913.2125 MHz, Z-axes, vertical and horizontal polarizations.
- Diagram 12:Radiated emission 1-10 GHz, High channel 913.2125 MHz, Z-axes, vertical and horizontal polarizations.

#### Limits

According to 47CFR 15.249(a), The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Field strength of

Frequency harmonics

902-928 MHz  $50 \mu v/m = 54 dB\mu V/m$ 

According to 47CFR 15.249(d), Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in section 15.209, whichever is the lesser attenuation.

According to 47CFR 15.249(e), The peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

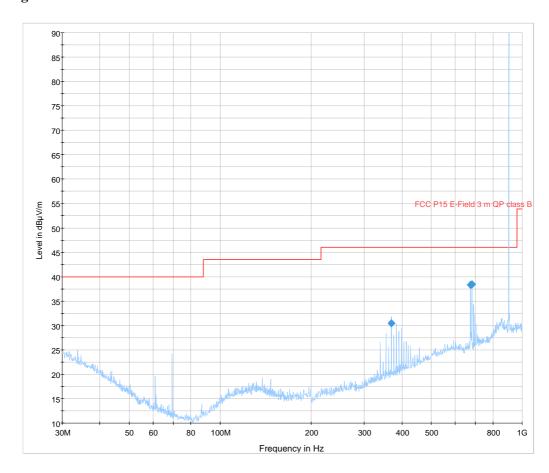
Complies?	Yes
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Appendix 3.1

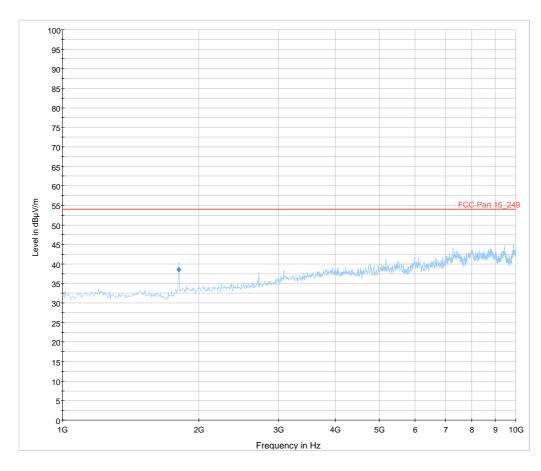
### Diagram 1



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
368.628256	30.5	1000.00	120.000	100.0	Н	180.0	16.8	15.5	46.0
674.666333	38.3	1000.00	120.000	144.0	Н	10.0	21.3	7.7	46.0
682.031062	38.4	1000.00	120.000	143.0	Н	198.0	21.3	7.6	46.0

Appendix 3.1

### Diagram 2



Frequ (MF		Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1806.	48296	38.6	1000.00	1000.000	109.0	٧	28.0	-17.5	15.4	54.0

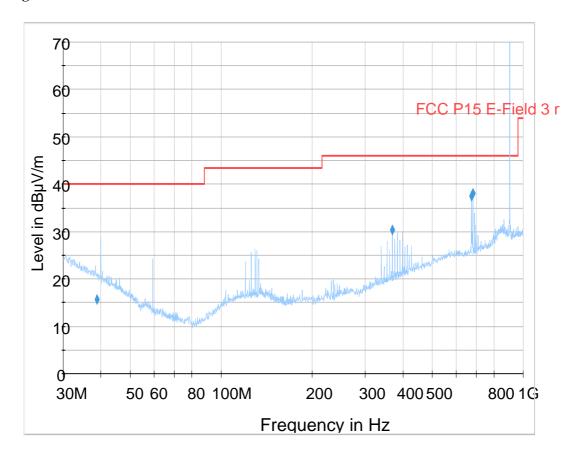
Date 2009-06-05

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Appendix 3.1

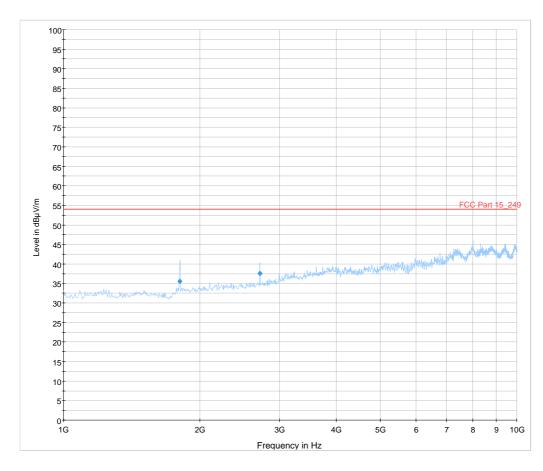
### Diagram 3



Frequency	QuasiPeak	Meas.	Bandwidth	Antenna	Polarity	Turntable	Corr.	Margin	Limit
(MHz)	(dBµV/m)	Time	(kHz)	height		position	(dB)	(dB)	(dBµV/m)
		(ms)		(cm)		(deg)			
38.738477	15.8	1000.00	120.000	100.0	٧	90.0	18.8	24.2	40.0
368.634268	30.3	1000.00	120.000	100.0	Н	180.0	16.9	15.7	46.0
674.660321	37.5	1000.00	120.000	145.0	Н	18.0	21.3	8.5	46.0
682.037074	38.1	1000.00	120.000	146.0	Н	187.0	21.3	7.9	46.0

Appendix 3.1

### Diagram 4



Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1806.50300	35.5	1000.00	1000.000	100.0	V	268.0	-17.5	18.5	54.0
2709.72945	37.5	1000.00	1000.000	100.0	V	278.0	-14.0	16.5	54.0

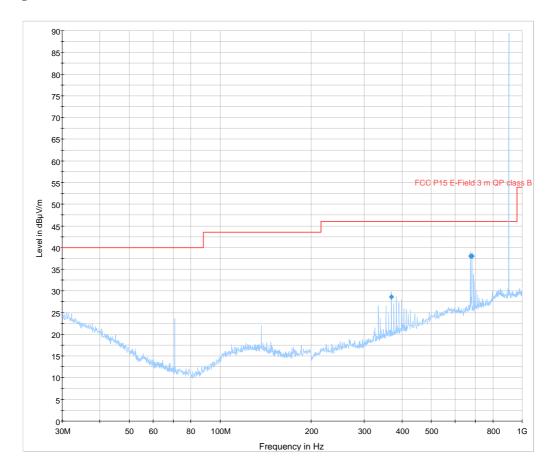
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Appendix 3.1

### Diagram 5

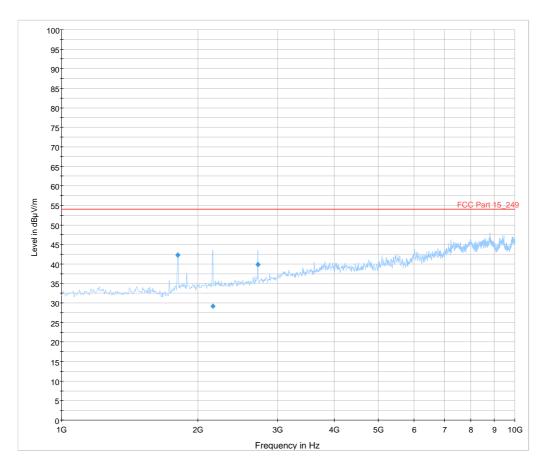
FCC ID: W7UMSSENS



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
368.646293	28.6	1000.00	120.000	150.0	V	225.0	16.9	17.4	46.0
674.666333	38.0	1000.00	120.000	100.0	٧	180.0	21.3	8.0	46.0
682.043087	38.0	1000.00	120.000	100.0	٧	90.0	21.3	8.0	46.0

### Appendix 3.1

### Diagram 6



### Final Result 1

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Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1806.48296	42.3	1000.00	1000.000	132.0	Н	223.0	-17.5	11.7	54.0
2157.56513	29.1	1000.00	1000.000	218.0	Н	327.0	-16.3	24.9	54.0
2709.68937	39.8	1000.00	1000.000	100.0	V	8.0	-14.0	14.2	54.0

Note: The peak emission at 2157 MHz was not related to the EUT.

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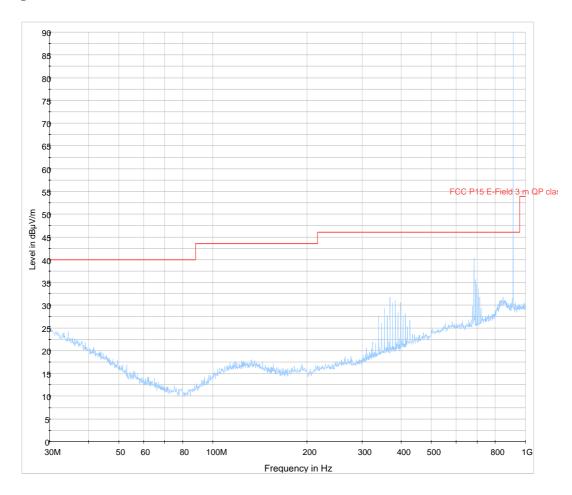
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Appendix 3.1

### Diagram 7

FCC ID: W7UMSSENS

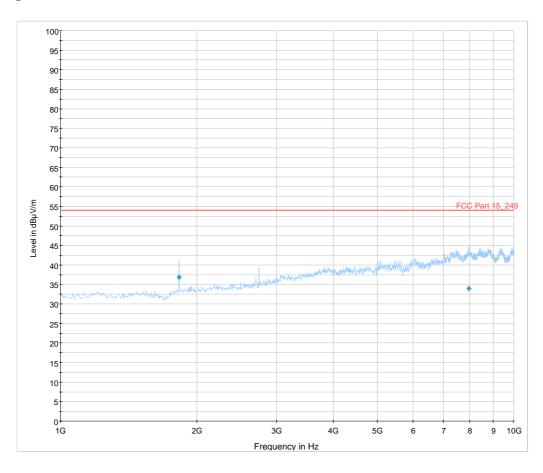


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Appendix 3.1

### Diagram 8



Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1826.42284	36.8	1000.00	1000.000	100.0	Н	156.0	-17.4	17.2	54.0
7958.20641	34.0	1000.00	1000.000	400.0	Н	179.0	0.9	20.0	54.0

ORT Date 2009-0

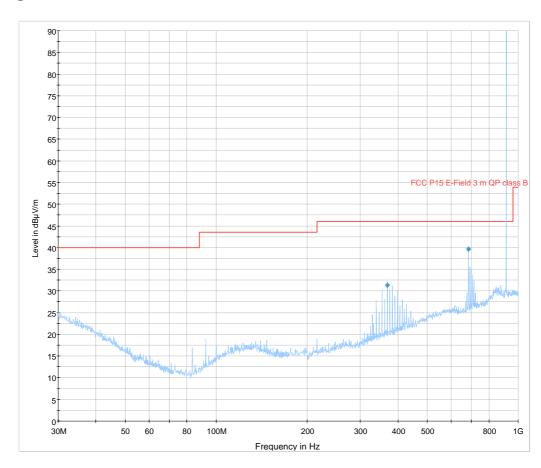
Date Reference F820792-F15C2

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Appendix 3.1

### Diagram 9

FCC ID: W7UMSSENS



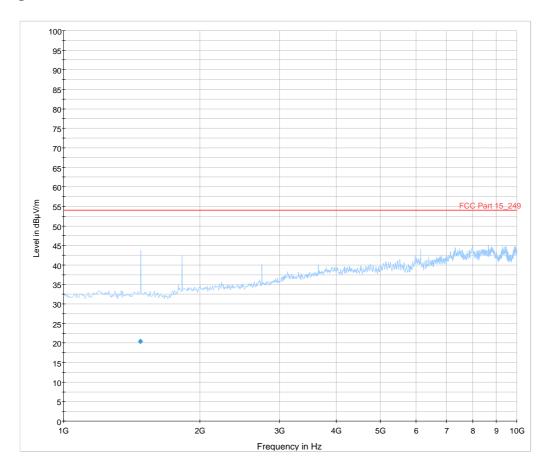
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
368.640281	31.4	1000.00	120.000	100.0	Н	1900.0	16.9	14.6	46.0
684.664329	39.7	1000.00	120.000	146.0	Н	16.0	21.3	6.3	46.0

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### Diagram 10



Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1476.08216	20.4	1000.00	1000.000	388.0	Н	260.0	-18.8	33.6	54.0

Date 2009-06-05

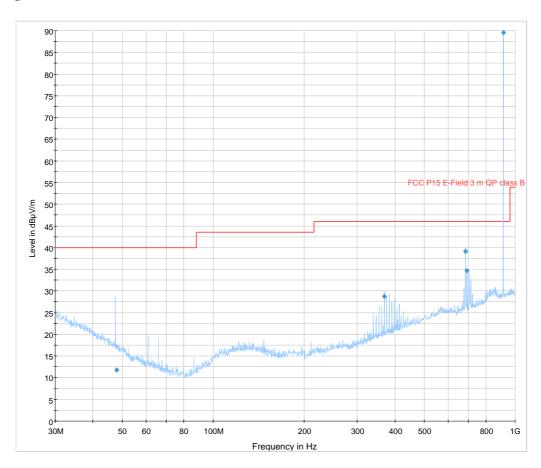
Reference F820792-F15C2

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Appendix 3.1

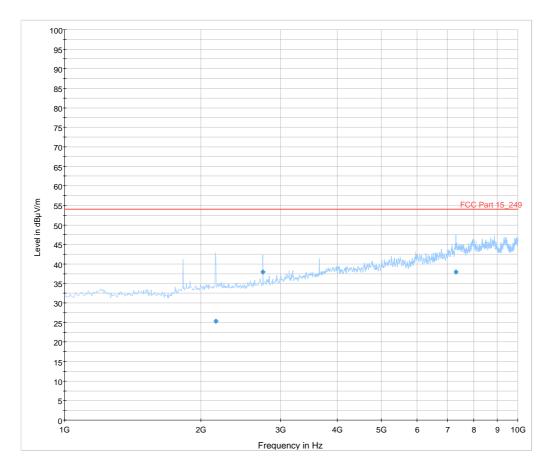
### Diagram 11



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
47.948898	11.8	1000.00	120.000	200.0	Н	0.0	14.6	28.2	40.0
368.652305	28.8	1000.00	120.000	150.0	٧	315.0	16.9	17.2	46.0
684.664329	39.2	1000.00	120.000	100.0	٧	105.0	21.3	6.8	46.0
692.029058	34.6	1000.00	120.000	100.0	٧	90.0	21.3	11.4	46.0

Appendix 3.1

### Diagram 12



### Final Result 1

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Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2157.08416	25.4	1000.00	1000.000	109.0	Н	0.0	-16.3	28.6	54.0
2739.72945	38.0	1000.00	1000.000	100.0	٧	17.0	-14.2	16.0	54.0
7305.80160	37.9	1000.00	1000.000	100.0	V	346.0	-0.9	16.1	54.0

Note: The peak emission at 2157 MHz was not related to the EUT.

Appendix 4

### 20 dB bandwidth measurements according to FCC 47 CFR part 15.215 (c)

]	Date	Temperature	Humidity
	2009-03-05	22 °C ± 3 °C	23 % ± 5 %

#### **Test set-up and procedure**

The measurements were performed according to ANSI C63.4-2003.

The test was performed with continuous transmission (100% duty cycle) and with modulation.

The radiated maximum peak radiated output power measurements were performed in the semianechoic chamber. The test was also performed with the position of the EUT in the orthogonal axes that produces the highest emission relative to the limit.

The fundamental was scanned with PEAK-detector with the antenna height 1-4 m and the turntable was varied between 0-360 degrees for maximum response, see appendix 2. The antenna distance during the measurements was 3.0 m.

Test set-up photos during the tests can be found in appendix 8.

Measurement equipment	Calibration Due	SP number
Semi anechoic chamber, Edison	-	504 114
Spectrum analyzer R&S ESI 26	2009-07	503 885
EMI measurement computer	-	-
Software: R&S EMC32, ver. 6.30.10	-	503 745
Antenna Schaffner Bilog CBL6143	2010-03	504 079
Temperature and humidity meter Testo 625	2010-04	504 117

**Measurement uncertainty:** 2.6 %

#### **Results**

The diagrams can be found in the appendix 4.1.

903.2125 MHz 20 dB BW = 33.57 kHzDiagram 1 Diagram 2 913.2125 MHz 20 dB BW = 33.57 kHz

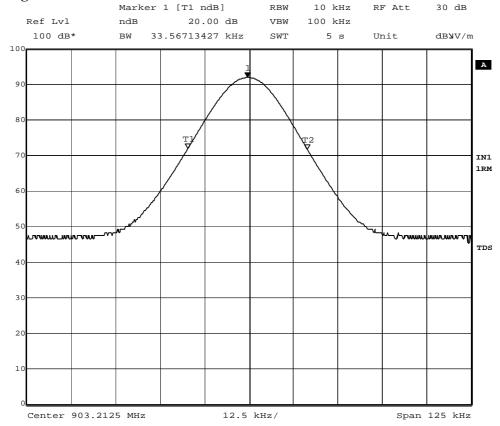
#### Limits

According to 47CFR 15.215(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Complies?	Yes
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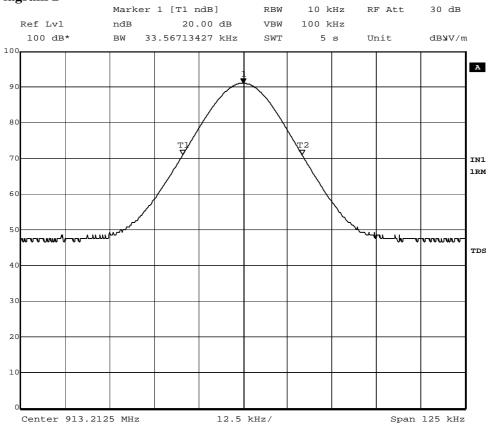
### Appendix 4.1

### Diagram 1



Date: 5.MAR.2009 12:46:44

### Diagram 2



Date: 5.MAR.2009 12:48:28

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Appendix 5

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### Occupied bandwidth measurements according to 47CFR 2.1049

Date	Temperature	Humidity
2009-02-18	22 °C ± 3 °C	13 % ± 5 %

#### Test set-up and procedure

The measurements were performed according to ANSI C63.4-2003.

The test was performed with continuous transmission (100% duty cycle) and with modulation.

The radiated maximum peak radiated output power measurements were performed in the semianechoic chamber. The test was also performed with the position of the EUT in the orthogonal axes that produces the highest emission relative to the limit.

The fundamental was scanned with PEAK-detector with the antenna height 1-4 m and the turntable was varied between 0-360 degrees for maximum response, see appendix 2. The antenna distance during the measurements was 3.0 m.

Test set-up photos during the tests can be found in appendix 8.

Measurement equipment	Calibration Due	SP number
Semi anechoic chamber, Edison	-	504 114
Spectrum analyzer R&S ESI 26	2009-07	503 885
EMI measurement computer	-	-
Software: R&S EMC32, ver. 6.30.10	-	503 745
Antenna Schaffner Bilog CBL6143	2010-03	504 079
Temperature and humidity meter Testo 625	2010-04	504 117

**Measurement uncertainty: 2.6 %** 

#### **Results**

The diagrams can be found in the appendix 5.1.

Diagram 1 903.2125 MHz OBW = 29.06 kHz (99%) Diagram 2 913.2125 MHz OBW = 29.06 kHz (99%)

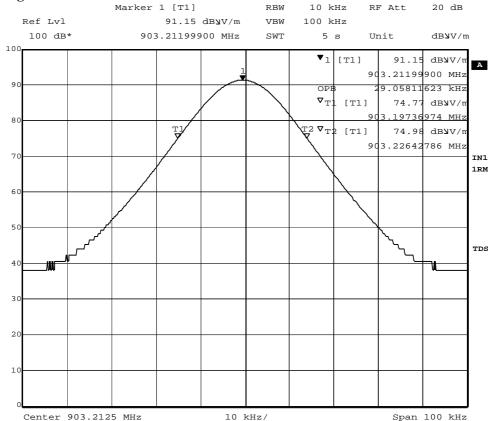
Date

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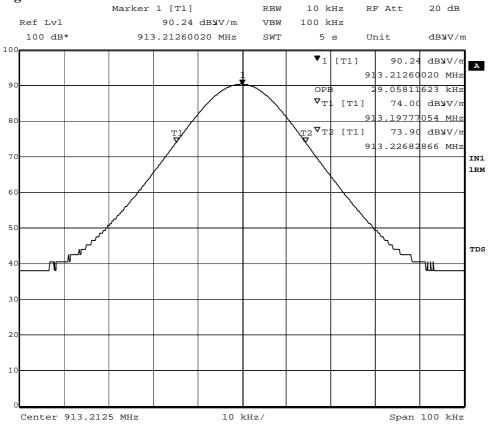
Appendix 5.1

### Diagram 1



21.FEB.1997 03:14:31 Date:

#### Diagram 2



21.FEB.1997 03:23:36 Date:

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Appendix 6

### Band edge measurements according to 47CFR 2.1049

Date	Temperature	Humidity
2008-10-01	22 °C ± 3 °C	41 % ± 5 %

#### Test set-up and procedure

The measurements were performed according to ANSI C63.4-2003.

The test was performed with continuous transmission (100% duty cycle) and with modulation.

The radiated maximum peak radiated output power measurements were performed in the semianechoic chamber. The test was also performed with the position of the EUT in the orthogonal axes that produces the highest emission relative to the limit.

The measurement was scanned with PEAK-detector with the antenna height 1-4 m and the turntable was varied between 0-360 degrees for maximum response, see appendix 2. The antenna distance during the measurements was 3.0 m.

Test set-up photos during the tests can be found in appendix 8.

Measurement equipment	Calibration Due	SP number
Semi anechoic chamber, Edison	-	504 114
Spectrum analyzer R&S ESI 26	2009-07	503 885
EMI measurement computer	-	-
Software: R&S EMC32, ver. 6.30.10	-	503 745
Antenna Schaffner Bilog CBL6143	2010-03	504 079
Temperature and humidity meter Testo 625	2010-04	504 117

Measurement uncertainty: 5.6 dB

#### Results

Operation band 902-928 MHz

The diagrams can be found in the appendix 6.1.

Diagram 1 903.2125 MHz Band edge at 960 MHz Diagram 2 913.2125 MHz Band edge at 960 MHz

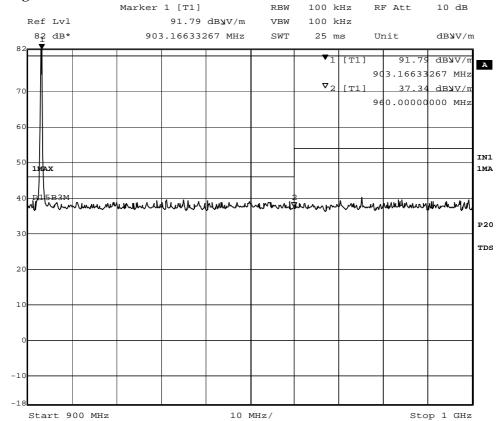
#### Limits

According to 47CFR 15.249(d), Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in section 15.209, whichever is the lesser attenuation.

Complies? Yes
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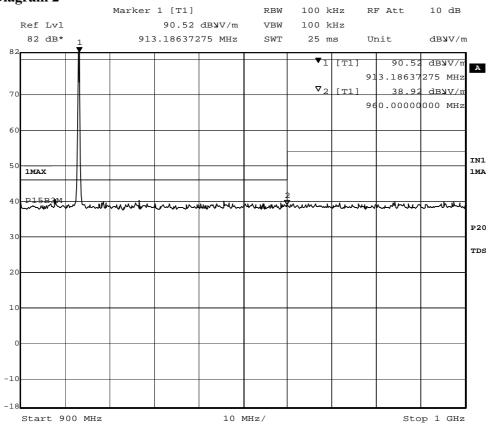
Appendix 6.1

### Diagram 1



21.FEB.1997 03:09:01

### Diagram 2



Date: 21.FEB.1997 03:04:59

Appendix 7

# RF exposure evaluation: Mobile equipment, measurements according to FCC 47 CFR part 15.247 (i)

Date	Temperature	Humidity
2009-02-13	22 °C ± 3 °C	18 % ± 5 %

#### **Procedure**

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

#### **Results**

The following formula was used to calculate the RF exposure, Pd = Pout x G/(4 x  $\pi$  x  $r_{cm}^2$ )

where,

 $Pd = power density in mW/cm^2$ 

Pout = output power to antenna in mW

G = gain of antenna in linear scale

 $\pi = 3.1416$ 

r = distance between observation and center of the radiator in cm

From the peak EUT RF output power, the minimum mobile separation distance, r=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

The maximum radiated peak output power from appendix 2 was used for calculation of MPE.

Antenna	Antenna	ERP Peak	Peak output	Power	Limit of
Gain (dBi)	Gain	output power	power (mW)	density, Pd	power
	(numeric)	(dBm)		[S]	density
				$(mW/cm^2)$	$(mW/cm^2)$
Note 1	Note 1	-1.5	0.7079	0.00014	0.602

Note 1: The antenna gain is not used in the MPE calculation as the ERP value (including the antenna) is used.

 Date
 Reference
 Page

 2009-06-05
 F820792-F15C2
 2 (2)

FCC ID: W7UMSSENS Appendix 7

### Limits

(A) Limits for Occupational/Controlled Exposure

Frequency range (MHz)	Electric field strength [E] (V/m)	Magnetic filed strength [H] (A/m)	Power density [S] (mW/cm <sup>2</sup> )	Averaging time $ E ^2$ , $ H ^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)	Electric field strength [E] (V/m)	Magnetic filed strength [H] (A/m)	Power density [S] (mW/cm <sup>2</sup> )	Averaging time $ E ^2$ , $ H ^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
			(=0.602 at 903	
			MHz)	
1500-100,000			1.0	30

Note: f=frequency in MHz, \*Plane-wave equivalent power density

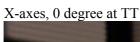
Complies?	Yes

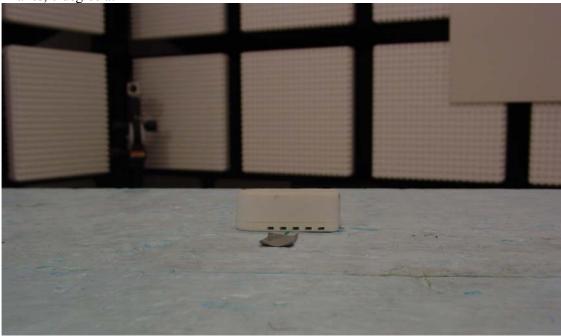
Appendix 8

### **Photos**

The test set-up during all the radiated tests can be seen in the pictures below.

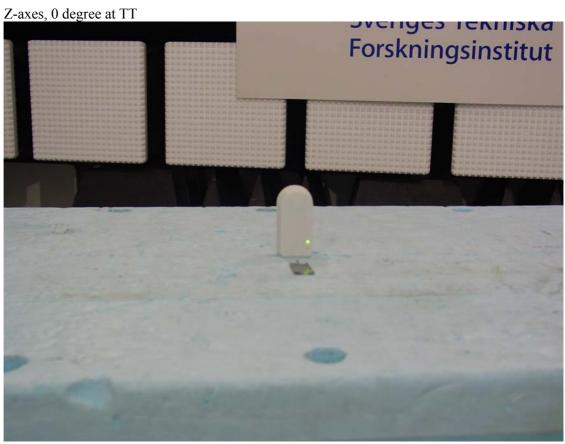






Appendix 8





Appendix 8

EUT



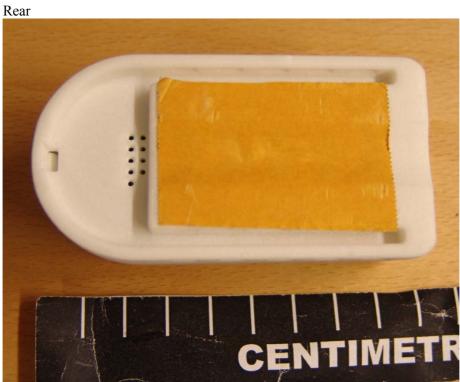


Appendix 8

FCC ID: W7UMSSENS

**REPORT** 





Side



Appendix 8

### Inside view 1



Inside view 2, PCB rear

