

Numerex Corp / OM410

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# **RF Exposure Report**

Project	Number:	4066022
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Report Number: 4066022EMC02 Revision Level: 0

**Client: Numerex Corp** 

**Equipment Under Test: Omnilink Electronic Monitoring Device** 

Model: OM410

FCC ID: TWVOM410

Requirement: KDB 447498 D01 General RF Exposure Guidance v06

Report issued on: 2 December 2016

Test Result: Compliant

Reviewed by:	Anny Old
	Jeremy Pickens, Senior EMC Engineer

#### Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or Testing done by SGS International Electrical Approvals in connection with distribution or use of the product described in this report must be approved by SGS international Electrical Approvals in writing.



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### References

- 1) FCC CFR Part 1 (1.1307 & 1.1310), Part 2 (2.1091)
- 2) RSS-102: Issue4
- 3) ICNIRP Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz)
- 4) Council Recommendation 1999/519/EC of 12 July 1999 on the limitations of exposure of general public to electromagnetic fields
- 5) Council Recommendation 2004/40/EC of 29 April 2004 on the limitations of exposure of workers to electromagnetic fields
- 6) AS/NZS 2772.1 Radiofrequency fields, Part 1: Maximum exposure limits 3 kHz to 300 GHz

### Modifications Required for Compliance

None



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# 2 General Information

#### Client Information 2.1

Name: Numerex Corp

Address: 1095 Windward Ridge, Suite 160

City, State, Zip, Country: Alpharetta, GA 30005, USA

#### General Information of EUT 2.2

Product: Omnilink Electronic Monitoring Device

Model: OM410

Band: CDMA 850 CDMA 1900 802.15.4 MiWi Frequency (MHz): 824-849 1850-1910 2400-2483.5 0 dBm

Maximum EIRP: 24.7 dBm 24.7 dBm

Duty Cycle: Less than 1%

Antenna gain: Less than 1 dBi



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# SAR Exemption

## Exposure calculations CDMA 850

Stand Alone SAR Test Exclusion (<50mm) According to KDB 447498 D01 General RF Exposure Guidance v06

	Min Separation	Min Separation	
Frequency,	distance to	distance to	
GHz	Body	Extremity	
	mm	mm	
0.835	5.0	5.0	

Max Conducted Power, dBm	Duty Cycle %	External cable loss, dB
24.70	1%	0.00

Calculated Max Power, mW EIPR
5

1g head / body	10g Extremity
0.91	0.91

SAR DOES NOT apply for head / body worn operating conditions SAR DOES NOT apply for extremety operating conditions

a) For 100 MHz to 6 GHz and test separation distances  $\leq$  50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]  $[\sqrt{f_{(GHz)}}] \le 3.0$  for 1-g SAR, and  $\le 7.5$  for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GH
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

# Exposure calculations CDMA 1900

Stand Alone SAR Test Exclusion (<50mm) According to KDB 447498 D01 General RF Exposure Guidance v06

	Min Separation	Min Separation
Frequency,	distance to	distance to
GHz	Body	Extremity
	mm	mm
1.950	5.0	5.0

Max Conducted Power, dBm	Duty Cycle %	External cable loss, dB
24.70	1%	0.00

Calculated Max Power, mW EIPR
5

10g Extremity
1.40

SAR DOES NOT apply for head / body worn operating conditions SAR DOES NOT apply for extremety operating conditions

a) For 100 MHz to 6 GHz and test separation distances  $\leq$  50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]  $[\sqrt{f_{(GHz)}}] \le 3.0$  for 1-g SAR, and  $\le 7.5$  for 10-g extremity SAR, where

- $f({\tt GHz})$  is the RF channel transmit frequency in GH
- Power and distance are rounded to the nearest  $\underline{m}\underline{W}$  and  $\underline{m}\underline{m}$  before calculation
- The result is rounded to one decimal place for comparison



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### Exposure calculations 802.15.4 MiWi Transmission

Stand Alone SAR Test Exclusion (<50mm) According to KDB 447498 D01 General RF Exposure Guidance v06

	Min Separation	Min Separation
Frequency,	distance to	distance to
GHz	Body	Extremity
	mm	mm
2.450	5.0	5.0

Max Conducted Power, dBm	Duty Cycle %	External cable loss, dB
0.00	1%	0.00

Calculated Max Power, mW EIPR	
-20	•

1g head / body	10g Extremity
-6.26	-6.26

SAR DOES NOT apply for head / body worn operating conditions SAR DOES NOT apply for extremety operating conditions

a) For 100 MHz to 6 GHz and test separation distances  $\leq$  50 mm, the 1-g and 10-g SAR test exclusion

the sholds are determined by the following: [(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] -  $[\sqrt{f_0c_{H_2}}] \le 3.0$  for 1-g SAR, and  $\le 7.5$  for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GH
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison



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# 4 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	2 December 2016