MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*
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Electromagnetic Compatibility
MPE Calculation

For the

Go Networks, Inc
5GHz Module

Tested under

Title 47 of the Code of Federal Regulations (CFR),
Part 15 Subpart C

MET Report: EMC24453-MPE

May 6, 2008

Prepared For:

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Shawn McMillen
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Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the applicable limits. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Title 47 of the CFR, Part 15, Subpart C under normal use and maintenance.

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(b) Peak Power Output and RF Exposure

Test Purpose: Co-location of two modules, Go Networks, FCC ID: T3G-IFC-1502 and Go Networks, FCC ID: T3G-MBW-510F-0000. Co-location of two intentional radiators, FCC ID: T3G-IFC-1502 and Go Networks, FCC ID: T3G-WLP-1100F-TR0. Co-location of two intentional radiators, FCC ID: T3G-IFC-1502 and Go Networks, FCC ID: T3G-WLP-1100F-580.

RF Exposure Requirements: **§1.1307(b)(1) and §1.1307(b)(2):** 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 of the Commission's guidelines.

RF Radiation Exposure Limit: **§1.1310:** As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

MPE Calculation – Go Networks Modules: 2.4GHz& 5.725-5.825GHz (Models MBW-510F and 5GHz Module)

Equation from page 18 of OET 65, Edition 97-01

$P_1G_1 /4\pi R^2 + P_2G_2/4\pi R^2 = 1$ mW/cm^2
$1/4\pi R^2(P_1G_{1+} P_2G_2) = 1$
$\sqrt{1/4\pi}\ (P_1G_{1+} P_2G_2) = R$

MPE Limit Calculation: EUT's operating frequencies @ **2412 - 2462MHz**; highest conducted power = **28.1dBm** (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2

EUT maximum antenna gain = **7.4 dBi.**

where, S = Power Density (mW/cm^2)
P = Power Input to antenna (645.6542mW)
G = Antenna Gain (5.49 numeric)

P_1G_1:
645.6542*5.49 = 3548.134

MPE Limit Calculation: EUT's operating frequencies @ **5745 - 5825MHz;** highest conducted power = **29.97dBm** (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2

EUT maximum antenna gain = **10.5 dBi.**

where, S = Power Density (mW/cm^2)
P = Power Input to antenna (993.116mW)
G = Antenna Gain (11.22 numeric)

P_2G_2:
993.116*11.22 = 11142.95

MPE Calculation – Co-Location of Go Networks Modules: 2.4GHz& 5.725-5.825GHz (Models MBW-510F and 5GHz Module)

Test Requirements: $\sqrt{1/4\pi}\ (P_1G_{1+}\ P_2G_2) = R$

Test Results:

P_1G_1	P_2G_2	$P_1G_{1+}\ P_2G_2$	$\sqrt{1/4\pi}\ (P_1G_{1+}\ P_2G_2)$
3548.134	11142.95	14691.084	**34.2cm**

3548.134+ 11142.95 = √14691.084/4*3.14 = **34.2cm**

MPE Calculation – Go Networks Module: 2.4GHz& 5.725-5.825GHz (Models WLP1100F-TR and 5GHz Module)

Equation from page 18 of OET 65, Edition 97-01

$P_1G_1 /4\pi R^2 + P_2G_2/4\pi R^2 = 1$ mW/cm^2
$1/4\pi R^2(P_1G_{1+} P_2G_2) = 1$
$\sqrt{1/4\pi} (P_1G_{1+} P_2G_2) = R$

MPE Limit Calculation: EUT's operating frequencies @ **2412 - 2462MHz**; highest conducted power = **21.0dBm** (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2

EUT maximum antenna gain = **7.4 dBi.**

where, S = Power Density (mW/cm^2)
P = Power Input to antenna (125.8925mW)
G = Antenna Gain (5.49 numeric)

P_1G_1:
125.8925*5.49 = 691.831

MPE Limit Calculation: EUT's operating frequencies @ **5745 - 5825MHz;** highest conducted power = **29.97dBm** (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2

EUT maximum antenna gain = **10.5 dBi.**

where, S = Power Density (mW/cm^2)
P = Power Input to antenna (993.116mW)
G = Antenna Gain (11.22 numeric)

P_2G_2:
993.116*11.22 = 11142.95

MPE Calculation – Co-Location of Go Networks Modules: 2.4GHz& 5.725-5.825GHz (Models WLP1100F-TR and 5GHz Module)

Test Requirements: $\sqrt{1/4\pi}\ (P_1G_{1+}\ P_2G_2) = R$

Test Results:

P_1G_1	P_2G_2	$P_1G_{1+}\ P_2G_2$	$\sqrt{1/4\pi}\ (P_1G_{1+}\ P_2G_2)$
691.831	11142.95	11834.781	**30.7cm**

691.831 + 11142.95 = √11834.781/4*3.14 = **30.7cm**

MPE Calculation – Go Networks Module: 2.4GHz& 5.725-5.825GHz (Models WLP1100F-58 and 5GHz Module)

Equation from page 18 of OET 65, Edition 97-01

$P_1G_1 /4\pi R^2 + P_2G_2/4\pi R^2 = 1$ mW/cm^2
$1/4\pi R^2(P_1G_{1+} P_2G_2) = 1$
$\sqrt{1/4\pi} (P_1G_{1+} P_2G_2) = R$

MPE Limit Calculation: EUT's operating frequencies @ **2412 - 2462MHz**; highest conducted power = **21.0dBm** (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2

EUT maximum antenna gain = **7.4 dBi.**

where, S = Power Density (mW/cm^2)
P = Power Input to antenna (125.8925mW)
G = Antenna Gain (5.49 numeric)

P_1G_1:
125.8925*5.49 = 691.831

MPE Limit Calculation: EUT's operating frequencies @ **5745 - 5825MHz;** highest conducted power = **29.97dBm** (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2

EUT maximum antenna gain = **10.5 dBi.**

where, S = Power Density (mW/cm^2)
P = Power Input to antenna (993.116mW)
G = Antenna Gain (11.22 numeric)

P_2G_2:
993.116*11.22 = 11142.95

MPE Calculation – Co-Location of Go Networks Modules: 2.4GHz& 5.725-5.825GHz (Models WLP1100F-58 and 5GHz Module)

Test Requirements: $\sqrt{1/4\pi}\ (P_1G_{1+}\ P_2G_2) = R$

Test Results:

P_1G_1	P_2G_2	$P_1G_{1+}\ P_2G_2$	$\sqrt{1/4\pi}\ (P_1G_{1+}\ P_2G_2)$
691.831	11142.95	11834.781	**30.7cm**

691.831 + 11142.95 = √11834.781/4*3.14 = **30.7cm**