RF Exposure Requirements

RF Exposure Requirements: **§90.1335, §1.1307(b), 2.1091, 2.1093:** 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: **§1.1307:** 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.

Test Results: The EUT was compliant with the requirements of this section.

Test Engineer(s): Djed Mouada

Test Date(s): 06/12/15

12 dBi Antenna

MPE Limit Calculation: EUT's operating frequencies @ 3650-3700 MHz; highest conducted power = 1463.525 mW (i.e. 31.654 dBm) (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm2 or 10 W/m2

EUT maximum antenna gain = 12 dBi.

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

$S = PG / 4\Pi R2$

where, S = Power Density (1 mW/cm2)
P = Power Input to antenna (1463.525 mW)
G = Antenna Gain (15.85 numeric)
R = Distance to the center of Radiation of the antenna

P = 1463.525 mW
R = 43 cm
G = 15.85

S = 1463.525 *15.85 / 4(3.1416)(43)^2
S = 1 mW/cm^2

Therefore, EUT meets the Uncontrolled Exposure limit at 43 cm

26 dBi Antenna

MPE Limit Calculation: EUT's operating frequencies @ 3650-3700 MHz; highest conducted power = 62.373 mW (i.e. 17.95 dBm) (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm2 or 10 W/m2

EUT maximum antenna gain =26 dBi.

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

$S = PG / 4\Pi R2$

where, S = Power Density (1 mW/cm2)
P = Power Input to antenna (62.373 mW)
G = Antenna Gain (398.1 numeric)
R = Distance to the center of Radiation of the antenna

P = 62.373 mW
R = 45 cm
G = 398.107

S = 62.373*398.107 / 4(3.1416)(45)^2
S = 0.97 mW/cm^2

Therefore, EUT meets the Uncontrolled Exposure limit at 45 cm

29 dBi Antenna

MPE Limit Calculation: EUT's operating frequencies @ 3650-3700 MHz; highest conducted power = 31.28 mW (i.e. 14.953dBm) (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm2 or 10 W/m2

EUT maximum antenna gain =29 dBi.

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

$S = PG / 4\Pi R2$

where, S = Power Density (1 mW/cm2)
P = Power Input to antenna (31.282 mW)
G = Antenna Gain (794.328numeric)
R = Distance to the center of Radiation of the antenna

P = 62.373 mW
R = 45cm
G = 794.328lin

S = 31.282*794.328 / 4(3.1416)(45)^2
S = 0.97 mW/cm^2

Therefore, EUT meets the Uncontrolled Exposure limit at 45 cm