

HERP Analysis

ELTA Ku SATCOM

Introduction

- HERP Analysis for the MINOS 4 transmitters was performed
 - One of the installed system was the ELTA Ku SATCOM
- The analysis include the control and uncontrolled environments as defied in IEEE IEEE STD C95.1-2005, *IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*, 2005

Definition

- **Controlled Environment**

- Personal are aware of the exposure
- Results are used for defining a safety program

- **Uncontrolled Environment**

- Personal are unaware of the exposure
- Contains additional safety factor for the general public

- Exposure Limit for SATCOM Frequency Band

- Controlled (14 GHz worst case)
 - 100 W/m^2 with an exposure time of $\sim 1 \text{ min.}$
- Uncontrolled (14 GHz worst case)
 - 10 W/m^2 with an exposure time of $\sim 10 \text{ min.}$

ELTA Ku SATCOM (A/C TX Analysis)

Min. stand off distance from antenna

Controlled Environment								
Frequency	Tx Power [Px]	Cable Loss [L]	Antenna Gain [G]	ERIP = Px+L+G		Table 4-1 MPE limits		Distance from Antenna [R= SQRT(ERIP/(4π MPE))]
(MHz)	(dBm _{pk})	(dB)	(dBi)	(dBm _{pk})	(Watts _{pk})	(W/m ²)	(dBm/m ²)	(meters)
14000	46	0	30	76	39810.72	100.00	50	5.63
14000	46	0	17	63	1995.26	100.00	50	1.26

Uncontrolled Environment								
Frequency	Tx Power [Px]	Cable Loss [L]	Antenna Gain [G]	ERIP = Px+L+G		Table 4-2 MPE limits		Distance from Antenna [R= SQRT(ERIP/(4π MPE))]
(MHz)	(dBm _{pk})	(dB)	(dBi)	(dBm _{pk})	(Watts _{pk})	(W/m ²)	(dBm/m ²)	(meters)
14000	46	0	30	76	39810.72	10.00	40	17.80
14000	46	0	17	63	1995.26	10.00	40	3.98