Prediction of MPE Limit

1. Description of EUT

- FCC ID : STENRPCS10D
- Model No. : LGNR 1900CD-10S
- Freq. Range :
  - Downlink: 1945 ~ 1950MHz
  - Uplink: 1865 ~ 1870MHz
- Power Rating : AC110V, 50/60Hz
- EUT Type : RF Repeater(CDMA), 1900MHz PCS Block D

2. Friis Formula

Friis transmission formula : $P_d = (P_{out} * G) / (4 * \pi * r^2)$

$$R = \sqrt{\frac{PG}{4 \pi S}}$$

P_d = power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, $1mW/cm^2$. If we know the maximum Gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

3. EUT Operating condition

The software provided by Manufacturer enabled the EUT to Maximum Output Power with downlink and uplink mode.

4. Test Results

4.1 Antenna Gain

The maximum Gain measured in Fully Anechoic Chamber is 20.15dBi or 103.514 (numeric).

4.2 Output Power into Antenna & Distance at RF Exposure value(1mW/cm^2) :

MODE: Downlink

Channel	Channel Frequency (MHz)	Maximum Output Power to Antenna (mW)	R (m)
350	1947.50	9549.926	2.805

MODE: Uplink

Channel	Channel Frequency (MHz)	Maximum Output Power to Antenna (mW)	R (m)
350	1867.50	312.608	0.507