



Kippy CAT US

Cellular antenna data information

1. Antenna Data

Type of Antenna	Monopole on Flex PCB (LTE)
Max Antenna Gain (LTE)	B12: -8.72 dBi / B4: -0.39 dBi / B2: 0.54 dBi

2. Antenna Description

Dimension	99.5 mm x 15.5 mm x 0.2 mm
Material	Polymide Flex
Finishing	Immersion gold

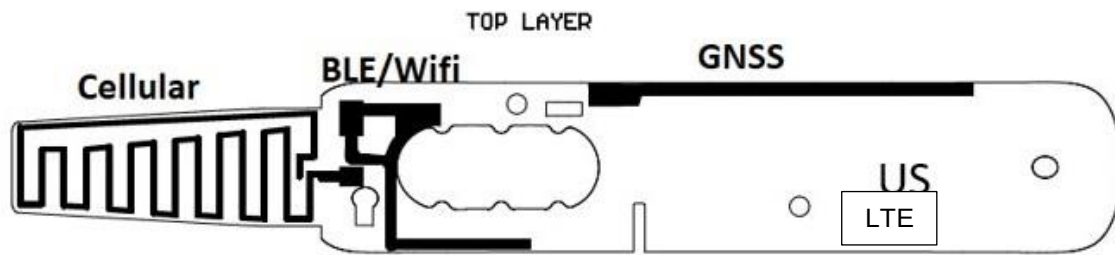


Fig. 1. Antenna location.

3. Radiation Diagram

In all operating bands the measurements for Total Radiated Power (TRP) and Effective Isotropic Radiated Power (EIRP) measurements were performed on lowest, middle and highest channels.

The output power of the device was set to maximum for all tests.

The EUT is rotated along two different spherical axes: theta (θ) and phi (Φ). The relationship between the 3D Cartesian coordinate system (X, Y, Z) and the theta and phi axes is illustrated in the following figure. This coordinate system should be used as reference in all 3D radiation pattern.

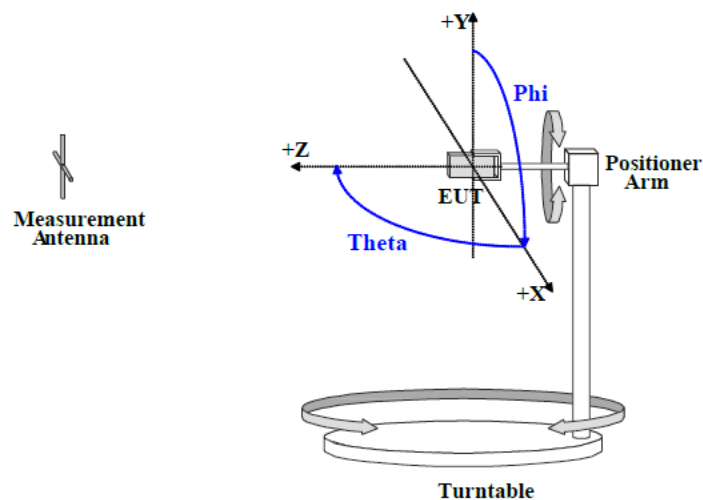
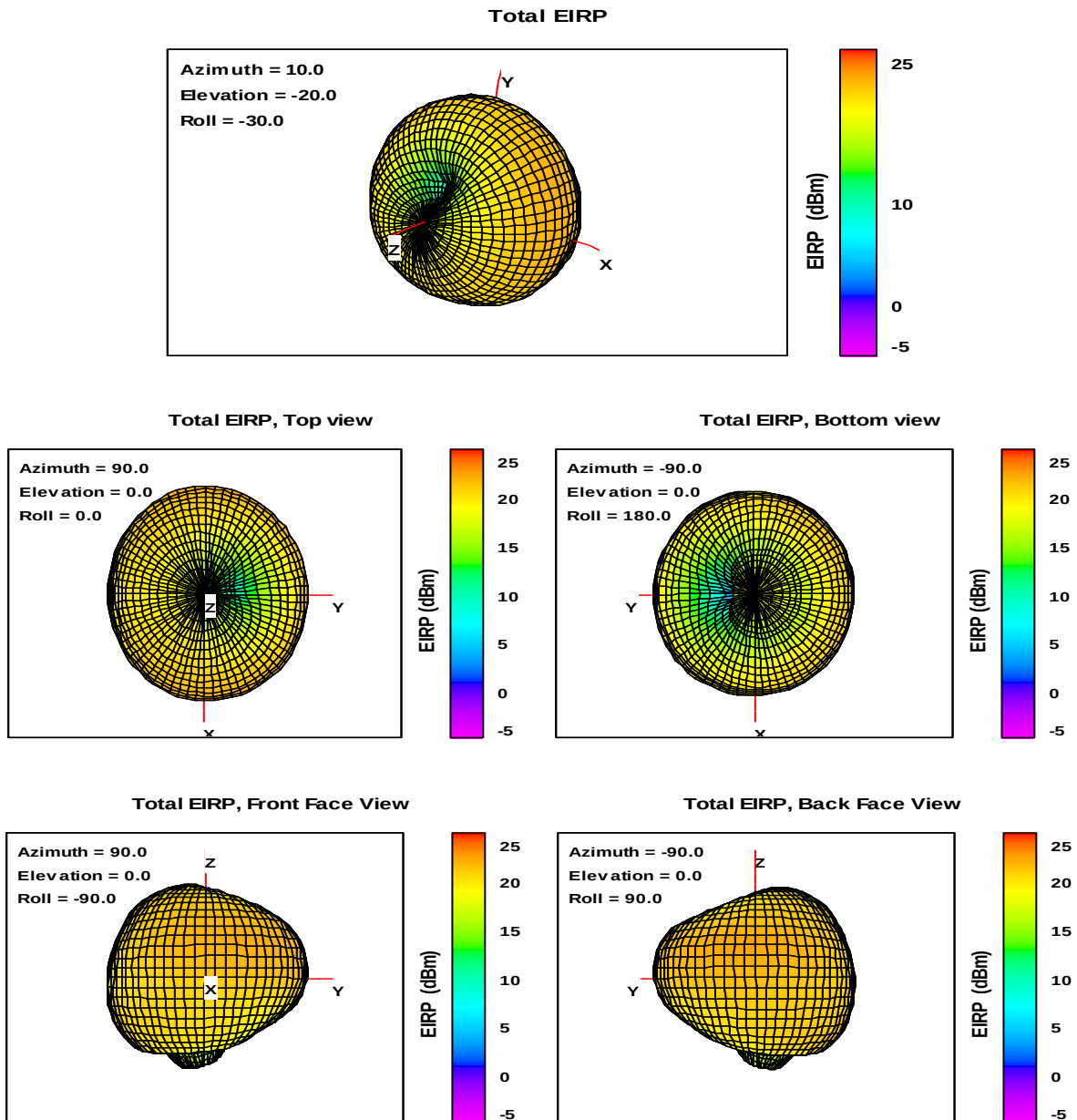


Fig. 2. Coordinate system.

Theta is the spherical axis that rotates along the Cartesian Y axis while Phi is the spherical axis that rotates along the Cartesian Z axis. The initial measurement position (Theta = 0° and Phi = 0°) is illustrated in each of the test setup photographs in Appendix B. The EUT has only one mechanical configuration and it was tested in the “Free-space” configuration, whereby the EUT has been placed directly on a support.

3.1 LTE Cat-M1 3D patterns:

LTE Cat-M1 Band 2 – Free Space



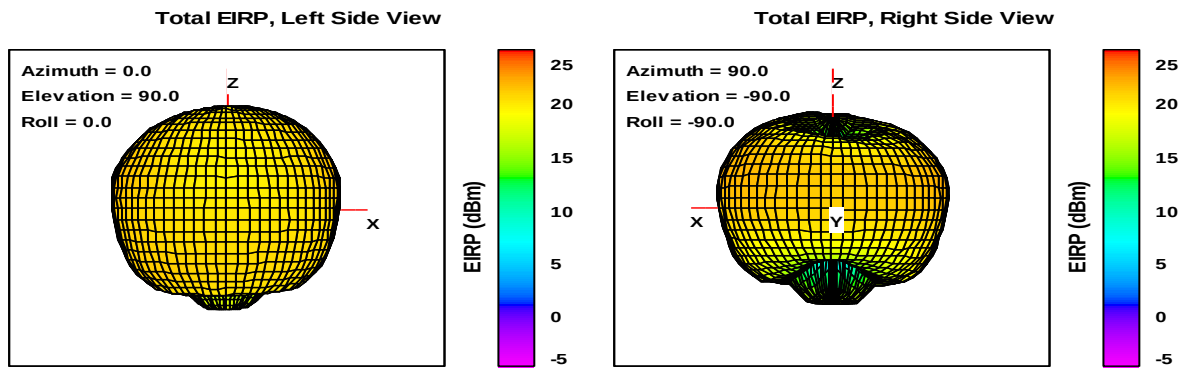
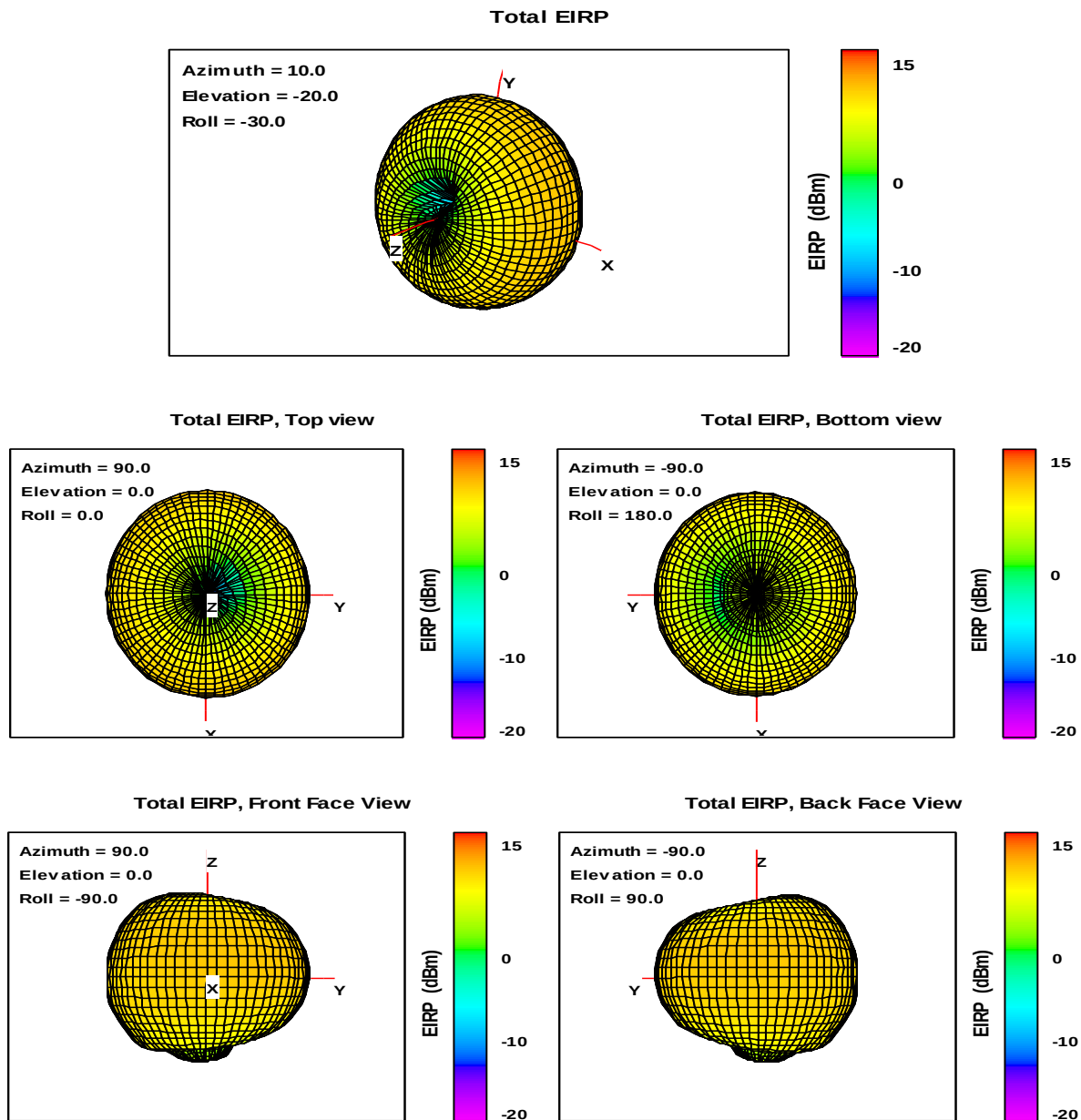


Fig. 3. Total EIRP, Free Space, LTE Cat-M1 Band 2.

LTE Cat-M1 Band 4 – Free Space



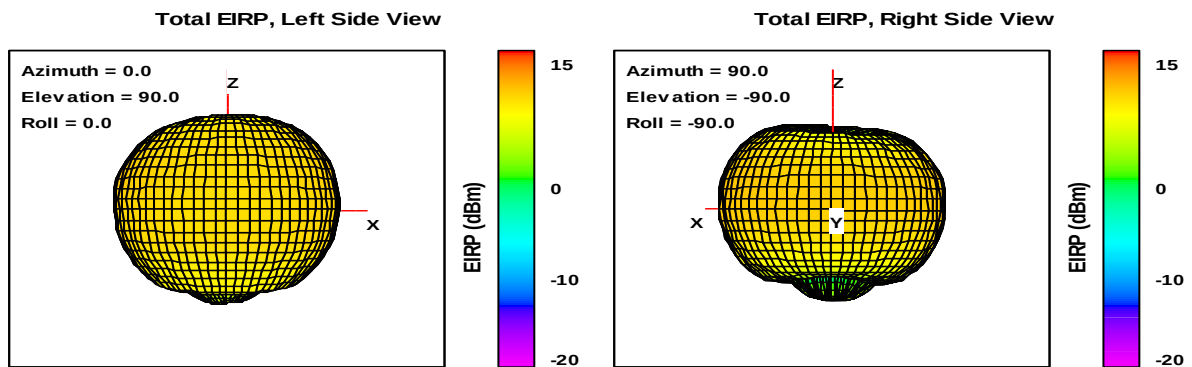
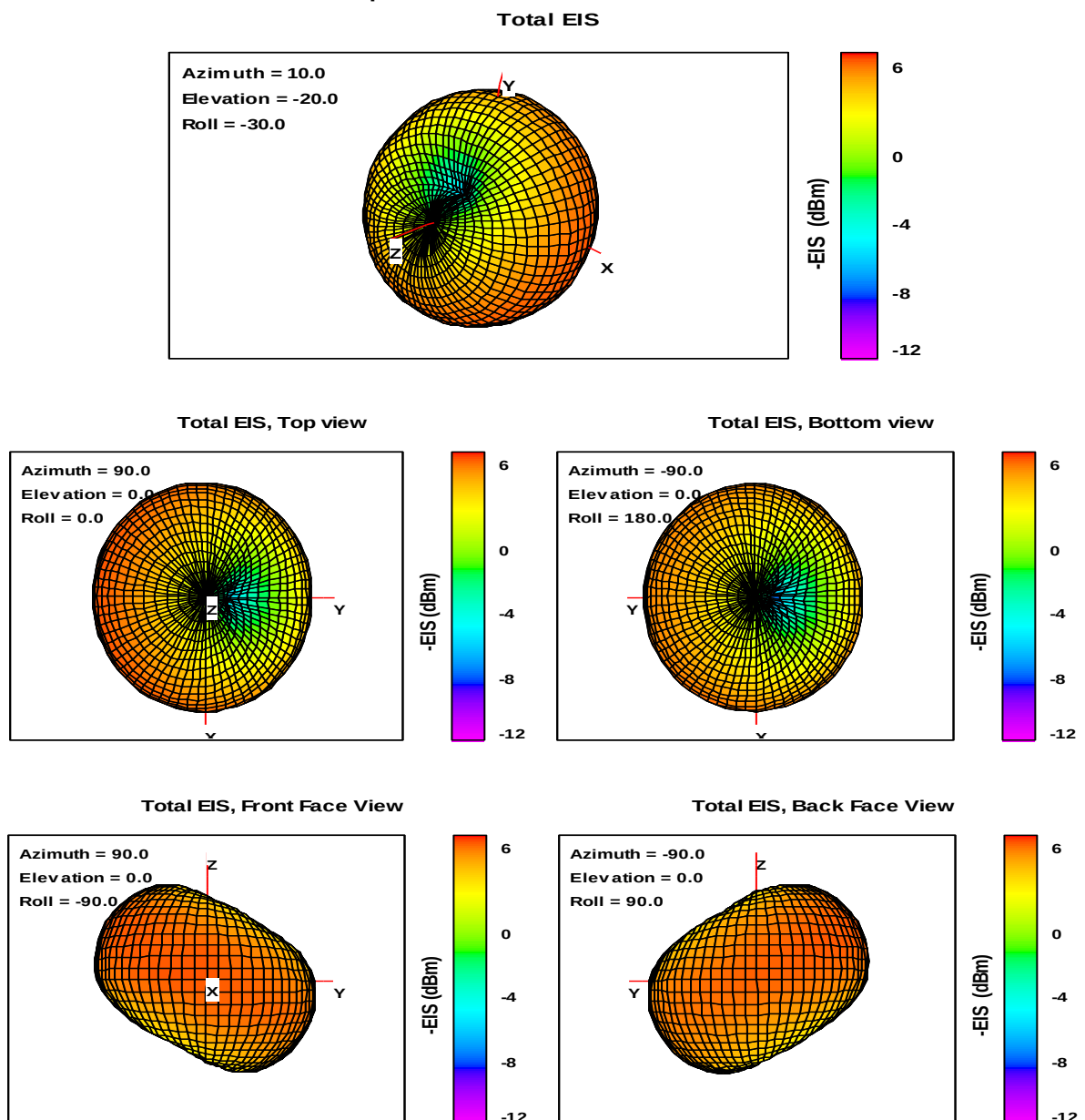


Fig. 4. Total EIRP, Free Space, LTE Cat-M1 Band 4.

LTE Cat-M1 Band 12 – Free Space



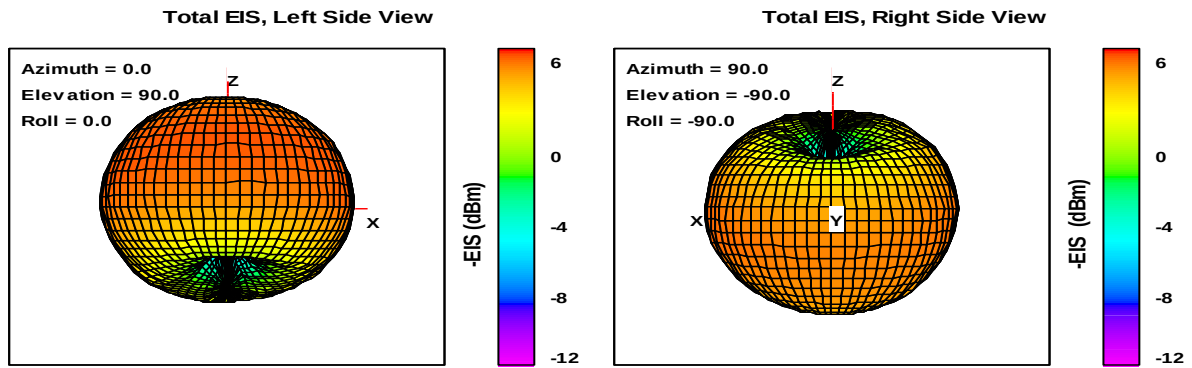


Fig. 5. Total EIRP, Free Space, LTE Cat-M1 Band 12.

Antenna Gain:

Technology /Band	Channel	TRP (dBm)	Max EIRP (dBm)
		FS	FS
LTE Cat-M1 2	Low	20.03	22.69
	Middle	19.87	22.56
	High	18.35	21.16
LTE Cat-M1 4	Low	19.06	21.47
	Middle	19.68	21.86
	High	19.94	22.09
LTE Cat-M1 12	Low	11.91	13.78
	Middle	11.33	13.22
	High	11.96	13.87



As mentioned before, the output power of the device was set to maximum for all tests. Therefore, the max antenna gain per band is:

Technology /Band	Channel	Max Output Power (dBm)	Max EIRP (dBm)	Max Antenna Gain (dBi)
LTE Cat-M1 2	Low	22.15	22.69	0.54
	Middle	22.07	22.56	0.49
	High	22.69	21.16	-1.53
LTE Cat-M1 4	Low	22.86	21.47	-1.39
	Middle	22.54	21.86	-0.68
	High	22.48	22.09	-0.39
LTE Cat-M1 12	Low	22.79	13.78	-9.01
	Middle	22.43	13.22	-9.21
	High	22.59	13.87	-8.72