

## **SPECIFICATION**

- Part No. : **TG.19.0112**
- Product Name : Mini Helical Quad-Band Cellular Antenna  
Connector Mount Monopole  
GSM-DCS-PCS -CDMA-GPRS-EDGE  
824 MHz ~ 1990 MHz (850/900/1800/1900)
- Features : 0dBi Gain  
SMA(M) Fixed Right Angle plug, 50 ohms  
28.5\*17.0\*7.8 mm  
**RoHS Compliant**



## **1. INTRODUCTION**

The TG.19 Quad-band GSM-DCS-PCS-CDMA-GPRS-EDGE 824MHz to 1990MHz monopole helical antenna is a quality robust antenna with high gain in a small form factor. Its tiny size allows it to be used inside as well as outside product housings.

Connection is made via fixed right angle SMA(M) connector with a hardened waterproof PU casing. Care should be taken that the antenna is connected to the device main-board ground, through the mating connector grounding on the device main-board.

For smaller ground-plane devices or for devices where a ground-connection to antenna is not possible we recommend the TG.10 or TG.30 dipole antennas which do not need to couple to ground.

## 2. SPECIFICATION

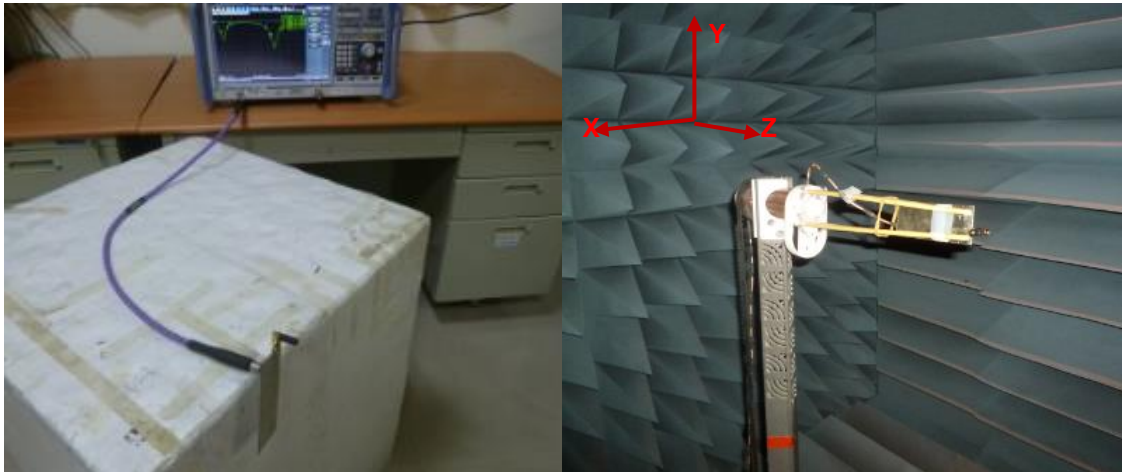
ELECTRICAL				
Antenna	TG19			
Standard	GSM/DCS/PCS/CDMA/GPRS/EDGE			
Operation Frequency (MHz)	824~880	880~960	1710~1880	1880~1990
Polarization	Linear	Linear	Linear	Linear
Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms
VSWR	2.0:1	2.3.0:1	2.3:1	<2.0:1
Return Loss (dB)	-10.0	-8.0	-8	-10
Efficiency (%)	45	45	45	55
Gain (dBi)	0.0	0.0	0.5	1.2
Average Gain (dB)	-3.5	-3.5	-3.5	-2.7
Max Input Power	5 W	5 W	5 W	5 W

\* The TG.19 antenna performance was measured on a 110\*45 mm evaluation board

MECHANICAL	
Dimensions (mm)	28.5x17.0x.7.8
Required Space (mm)	28.5x17x.7.8
Material	UV Resistant ABS
Connector	SMA(M)RA

ENVIRONMENTAL	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	40% to 95%
RoHs Compliant	Yes

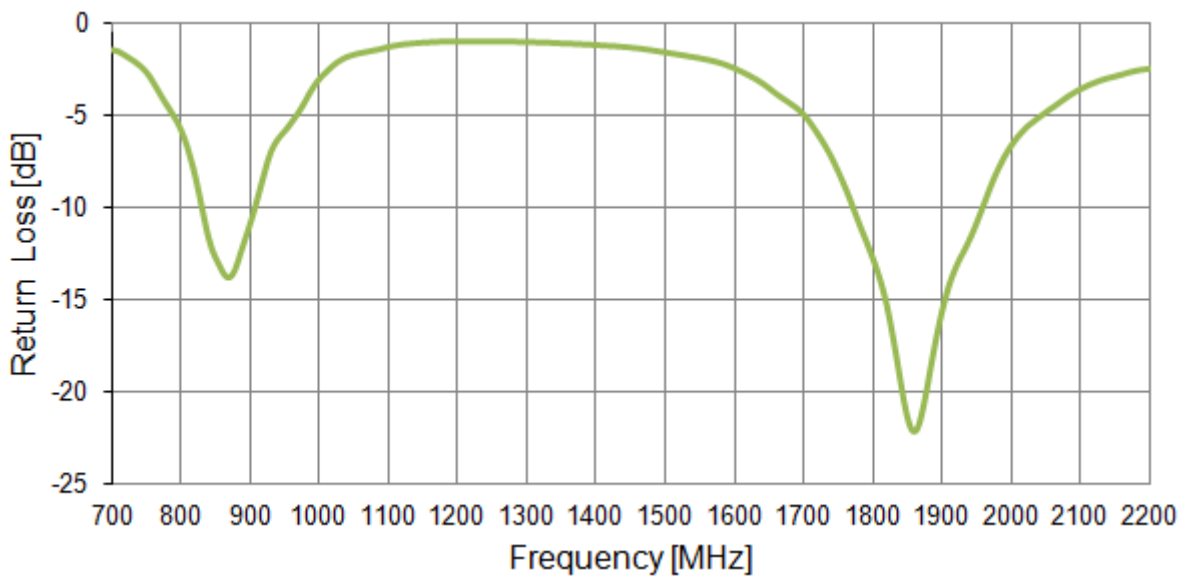
### 3. TEST SET UP



**Figure 1.** Impedance measurements (left hand) and peak gain, efficiency and radiation pattern measurements (right hand).

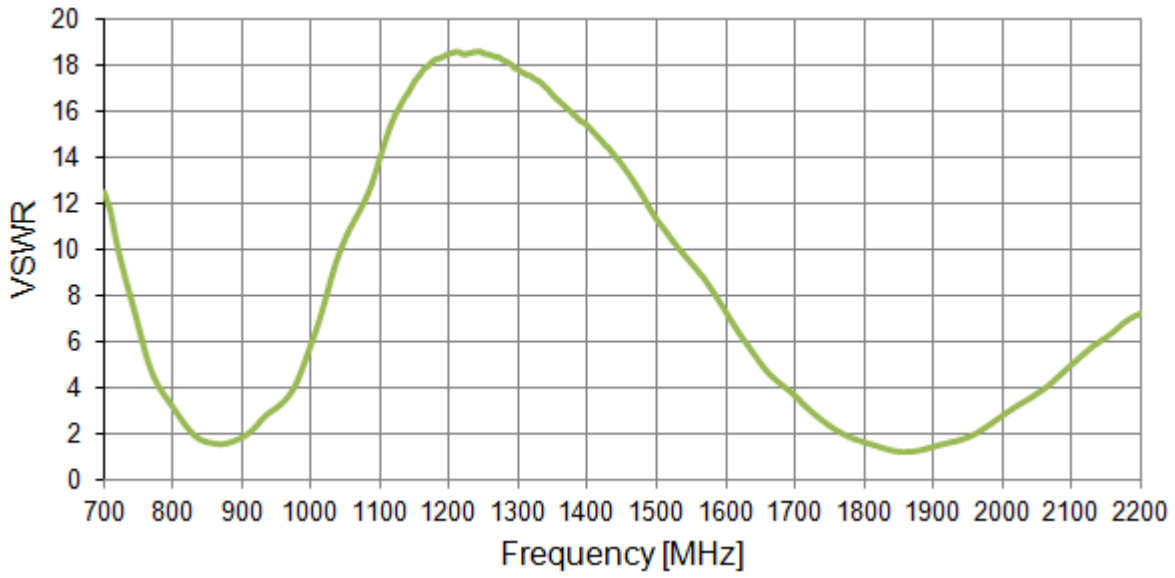
### 4. ANTENNA PARAMETERS

#### 4.1. Return Loss



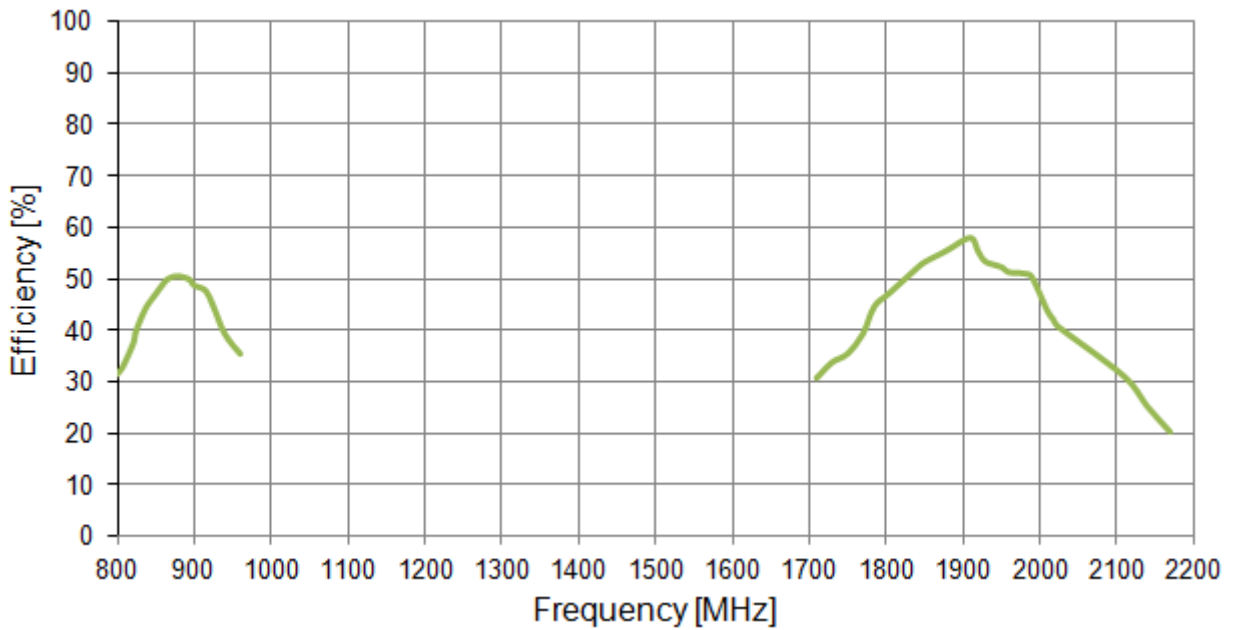
**Figure 2.** Return loss of the TG19 Antenna.

## 4.2. VSWR



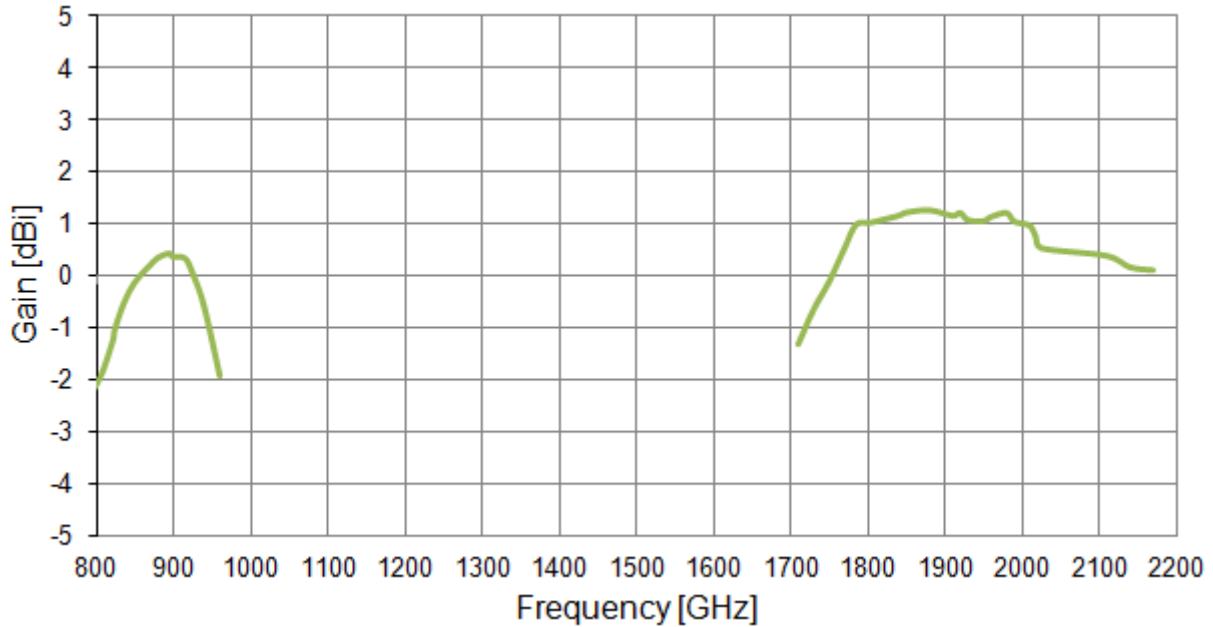
**Figure 3.** VSWR of the TG19 Antenna.

## 4.3. Efficiency



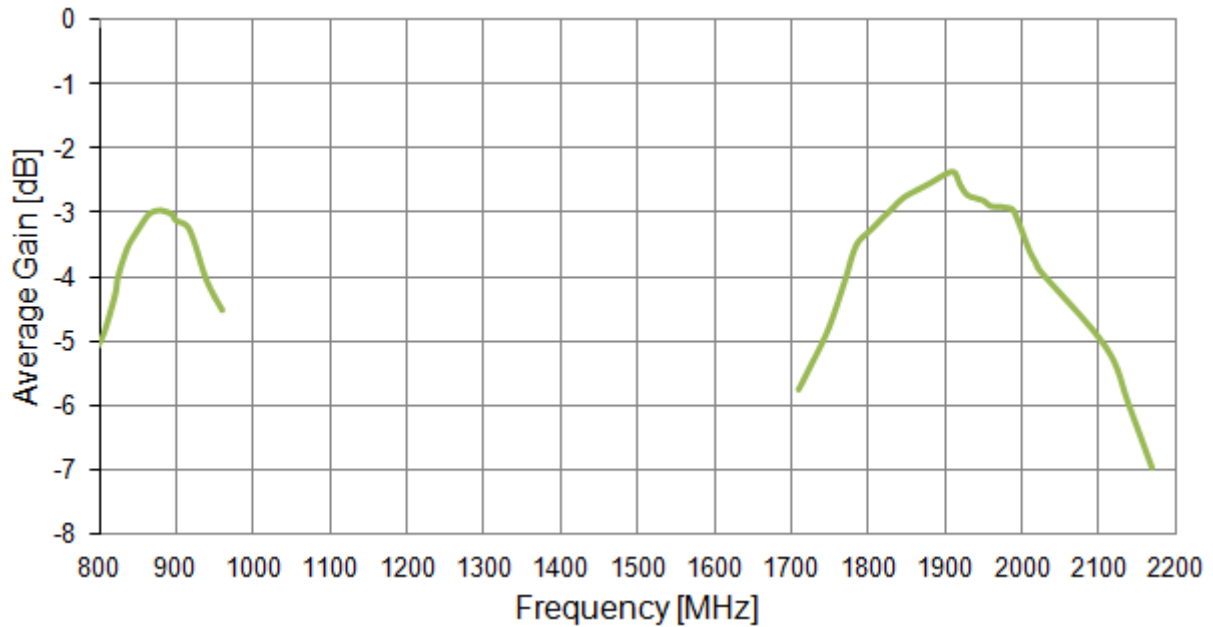
**Figure 4.** Efficiency of the TG19 antenna.

#### 4.4. Peak Gain



**Figure 5.** Peak Gain of the TG19 Antenna.

#### 4.5. Average Gain

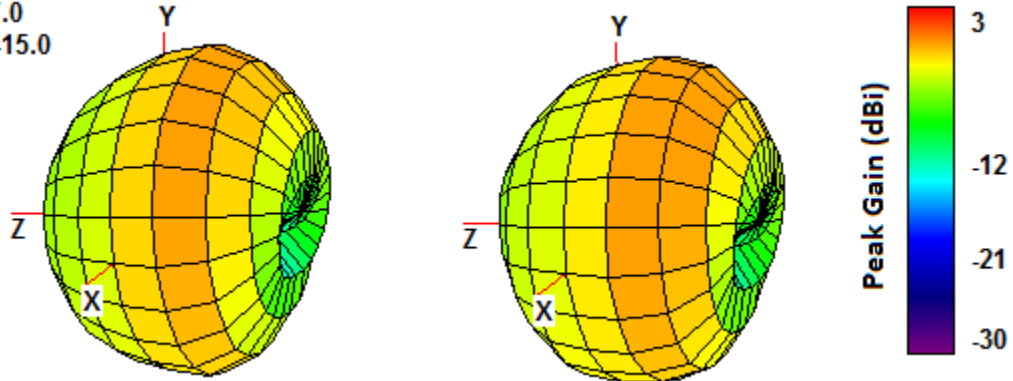


**Figure 6.** Average Gain of the TG19 Antenna.

## 5. Antenna Radiation Patterns

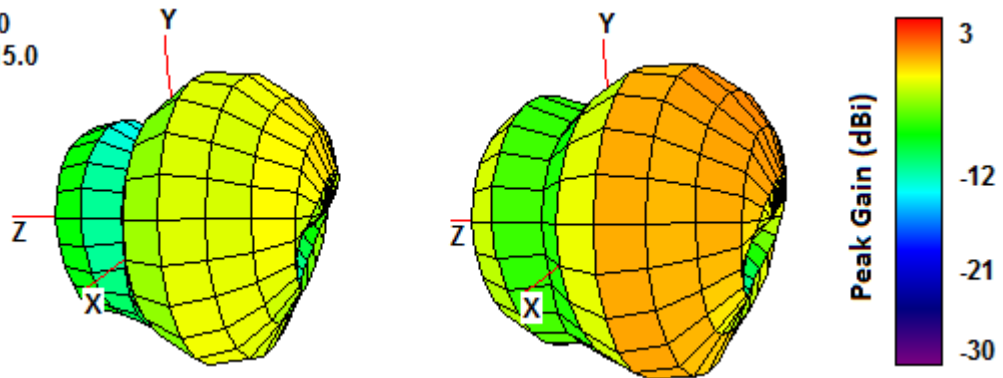
### 5.1. 3D Radiation pattern

Azimuth = -7.0  
Elevation = -15.0  
Roll = -115.0



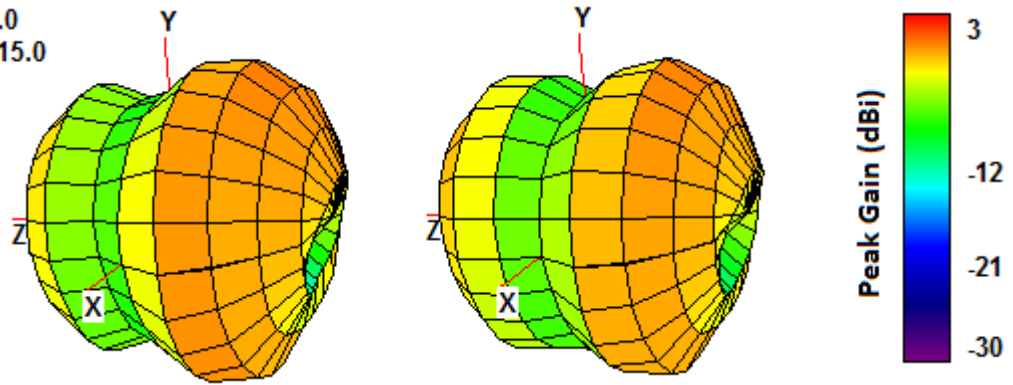
**Figure 7.** 3D Radiation Pattern at 850 MHz (left) 915 MHz (right) of the TG19 Antenna.

Azimuth = -7.0  
Elevation = -15.0  
Roll = -115.0



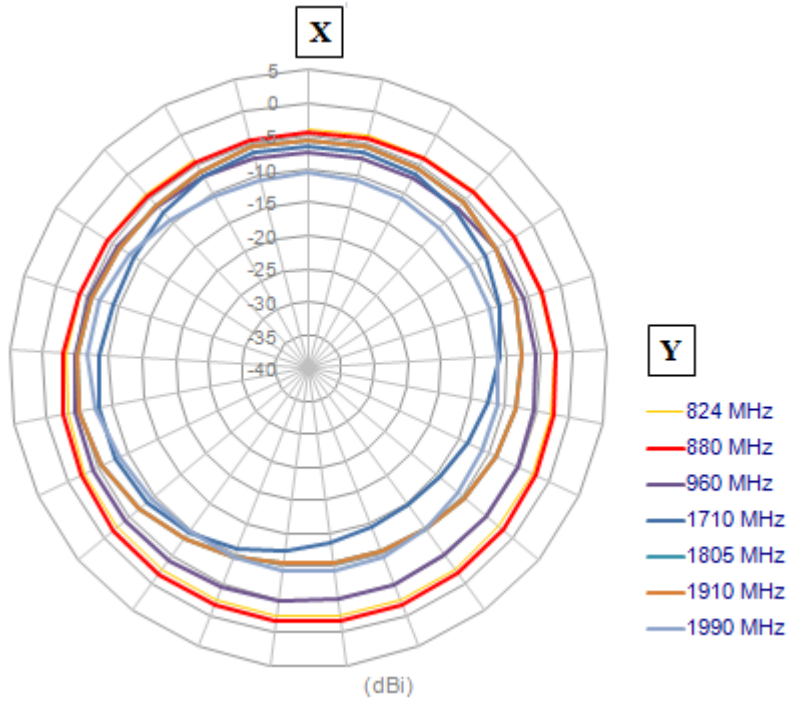
**Figure 8.** 3D Radiation Pattern at 1710 MHz (left), 1805 MHz (right) of the TG19 Antenna.

Azimuth = -7.0  
 Elevation = -15.0  
 Roll = -115.0

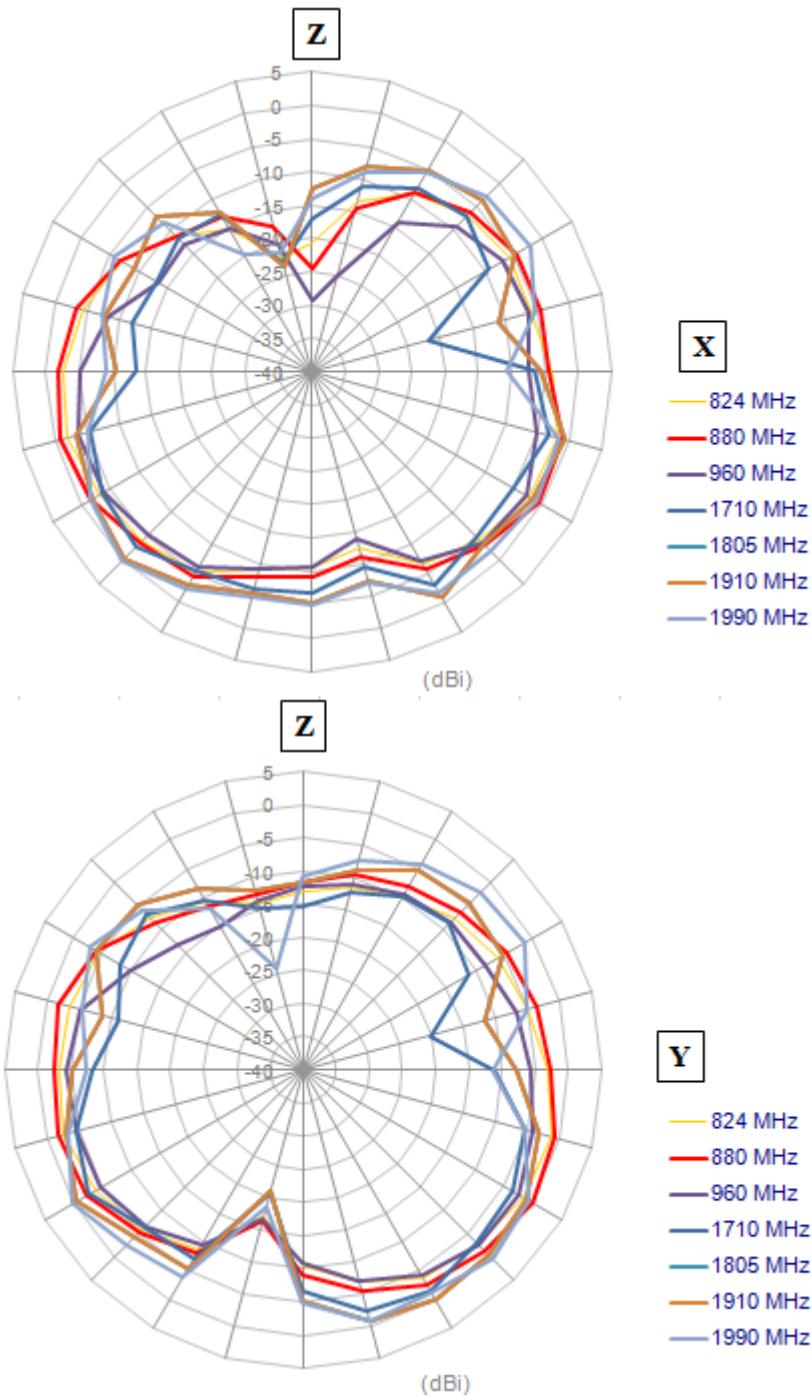


**Figure 9.** 3D Radiation Pattern at 1910 MHz (left), 1990 MHz (right) of the TG19 Antenna.

## 5.2. 2D Radiation pattern







**Figure 10.** 2D Radiation Pattern of the TG19 Antenna.