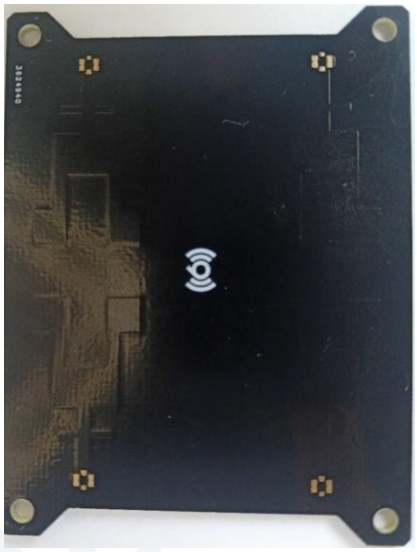
5G 4X4 MIMO Antenna

Model: Fab5G001/011



1. Features

- Terminal antenna for 5G applications.
- 5G bands: 41, 77, 78.
- 2469-2690MHz, 3300-3700MHz, 3700-4200MHz.
- High performance 4*4 MIMO design.
- Compact size fits small devices.
- Available in two terminal options: Vertical and Horizontal allocations.

2. Description

- Fab5G is constructed 5G MIMO antenna that operates over 3 different bands within an ergonomic blade design to blend well to the inside/outside of a device.
- The antenna is designed to work with various allocations in free space for ease of integration inside the proposed device.

3. Applications

- Routers
- Industrial devices
- Remote devices
- IoT devices

4. Part Number

Note. -xxx refers to options for antenna version, connector type, and cable length:

01/1- xxx

Fab5G:

-XX X

*Non-Standard connectors**

Antenna Type	xx
Vertical	00
Horizontal	01

x	Connector
1	UFL

x	
R	SMA Plug Reverse
J	SMA Jack
K	SMA Jack Reverse

Product name	Fab5G001/2
Part Number	xxx
Dimensions	70 * 55 * 1.65 mm
Frequency	2469-2690MHz 3300-3700MHz 3700-4200MHz
Polarization	Linear
Operating temperature	-20°C to +70°C
Impedance with matching	50 Ω
Weight	< 21g
Dimensions (Antenna)	See dimensions from page 18>
Connection	UFL Plug (Standard)
Substrate material	FR-4
Isolation	< -30 dB
Diversity gain	~ 10
Correlation Coefficients	~ 0.001

5. RF Characteristics

The RF characteristics are shown for each type in the below tables

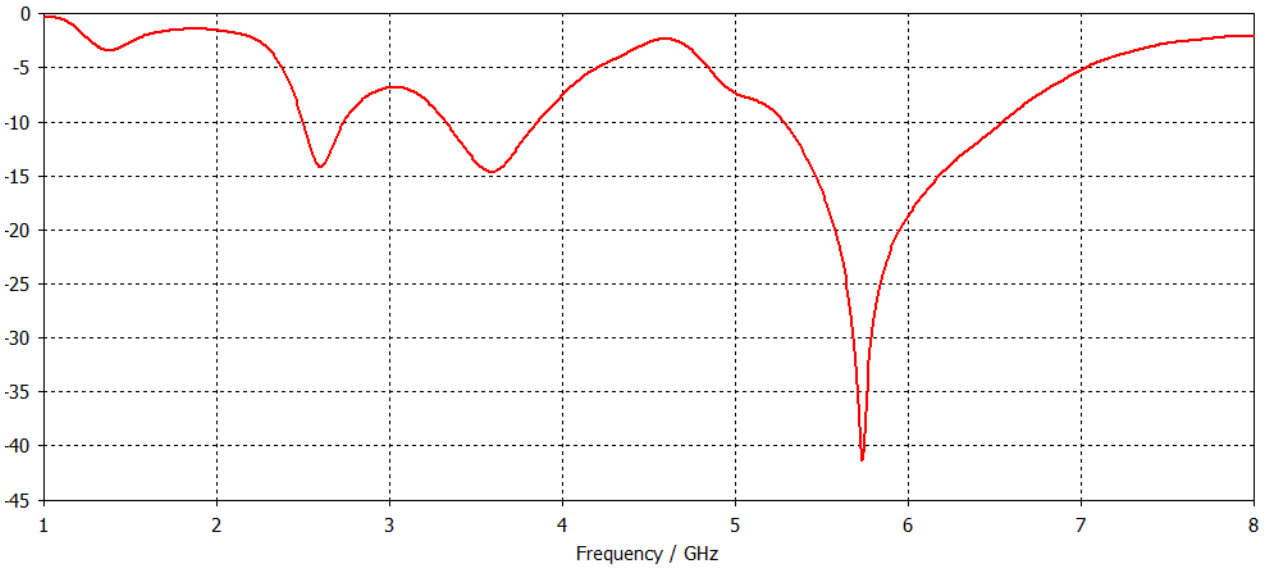
	2496-2690 MHz	
	Ver.	Horiz.
		
Peak gain	3.2dBi	3.1dBi
Average gain	-3.42dBi	-3.55dBi
Average efficiency	>65 %	>65 %
Maximum return loss	<-14 dB	<-14 dB
Maximum VSWR	1.07:1	1.07:1

	3300-3700 MHz	
	Ver.	Horiz.
		
Peak gain	1.99dBi	1.99dBi
Average gain	-3.42dBi	-3.55dBi
Average efficiency	>77%	>77%
Maximum return loss	<-14 dB	<-14 dB
Maximum VSWR	1.29:1	1.29:1

	3700-4200 MHz	
	Ver.	Horiz.
		
Peak gain	2.75dBi	2.75dBi
Average gain	-3.42dBi	-3.55dBi
Average efficiency	>82%	>82%
Maximum return loss	<-14 dB	<-14 dB
Maximum VSWR	1.32:1	1.32:1

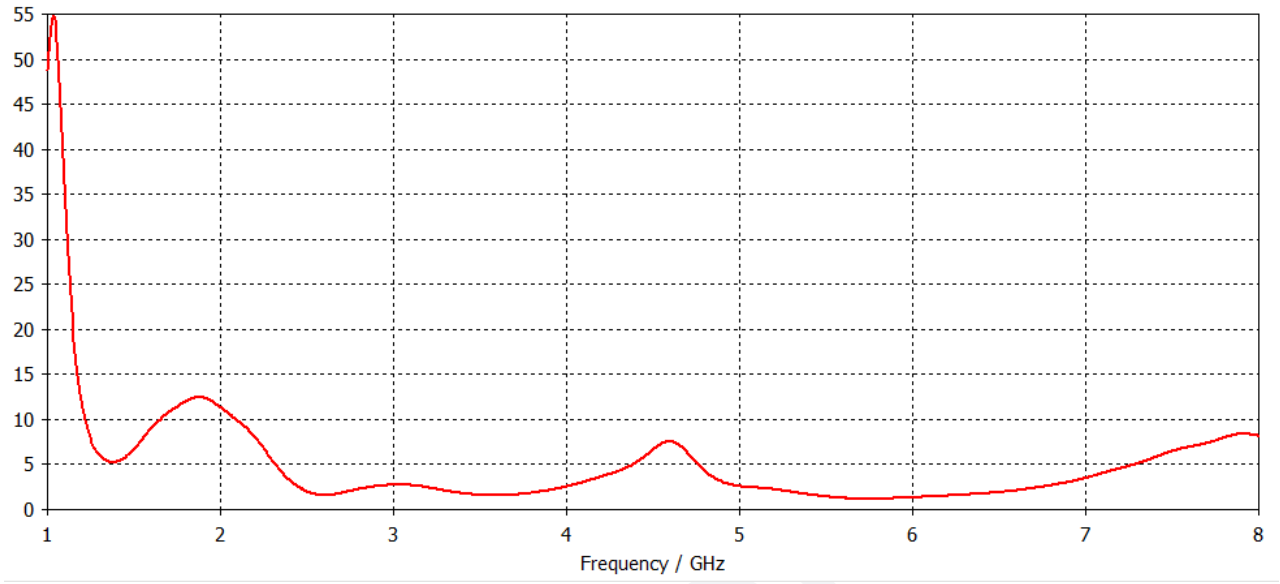
6. RF Performance

6.1 Return Loss



Return Loss			
Frequencies (MHz)	2579	3550	3750
Values (dB)	-14.1	-14.3	-14.62

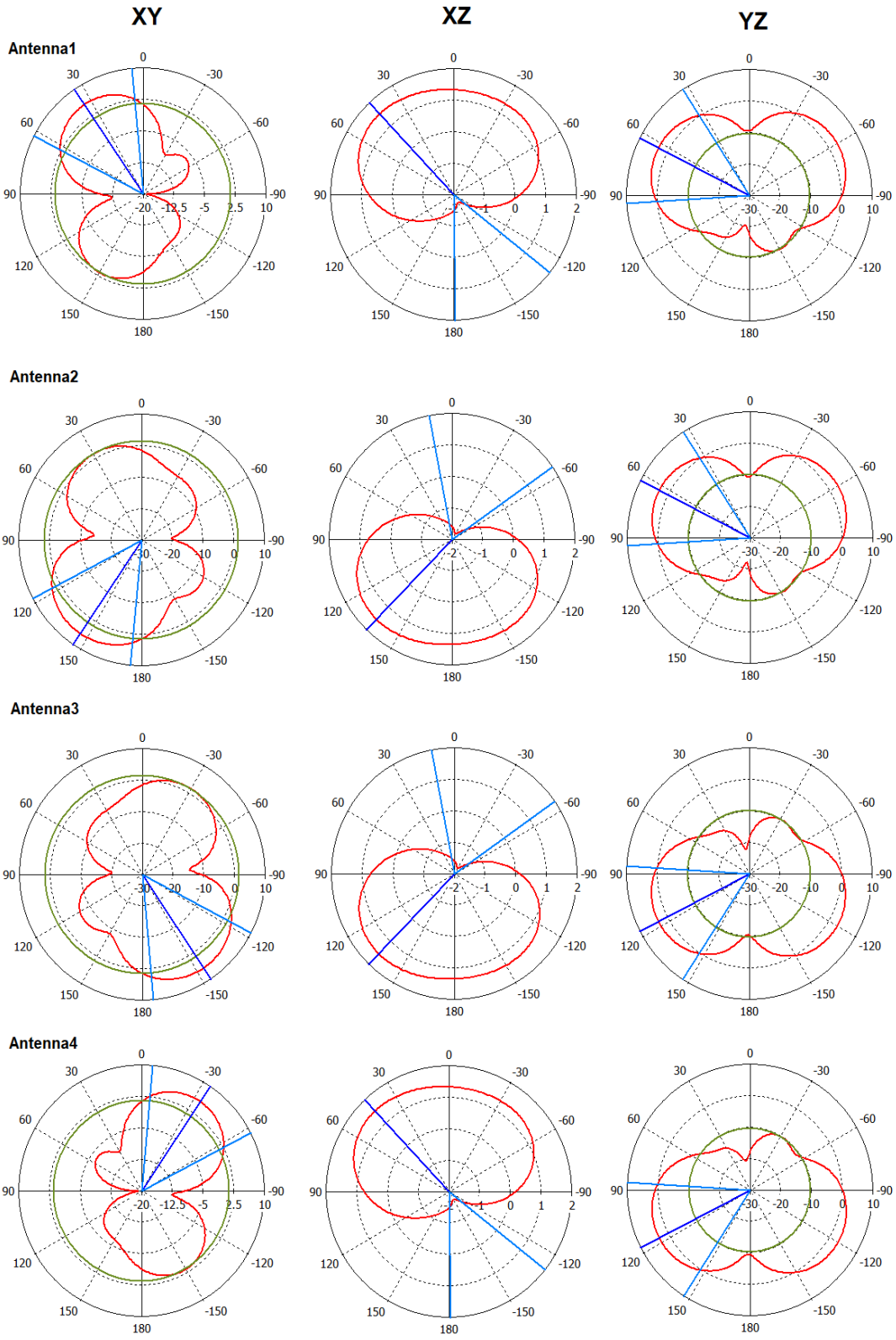
6.2 VSWR



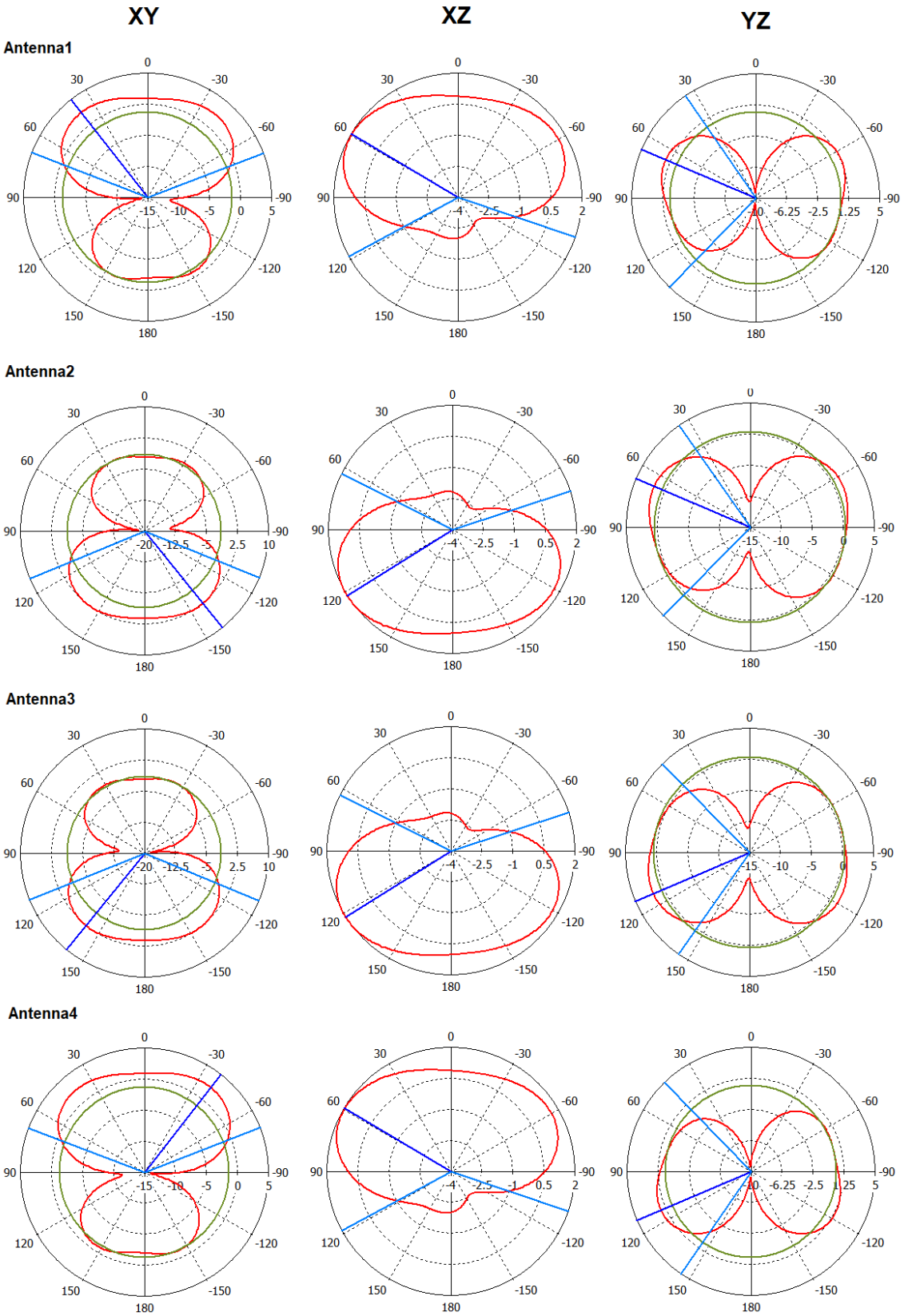
VSWR			
Frequencies (MHz)	2579	3550	3750
Values	1.07:1	1.29:1	1.32:1

6.3 Antenna Pattern Free Space

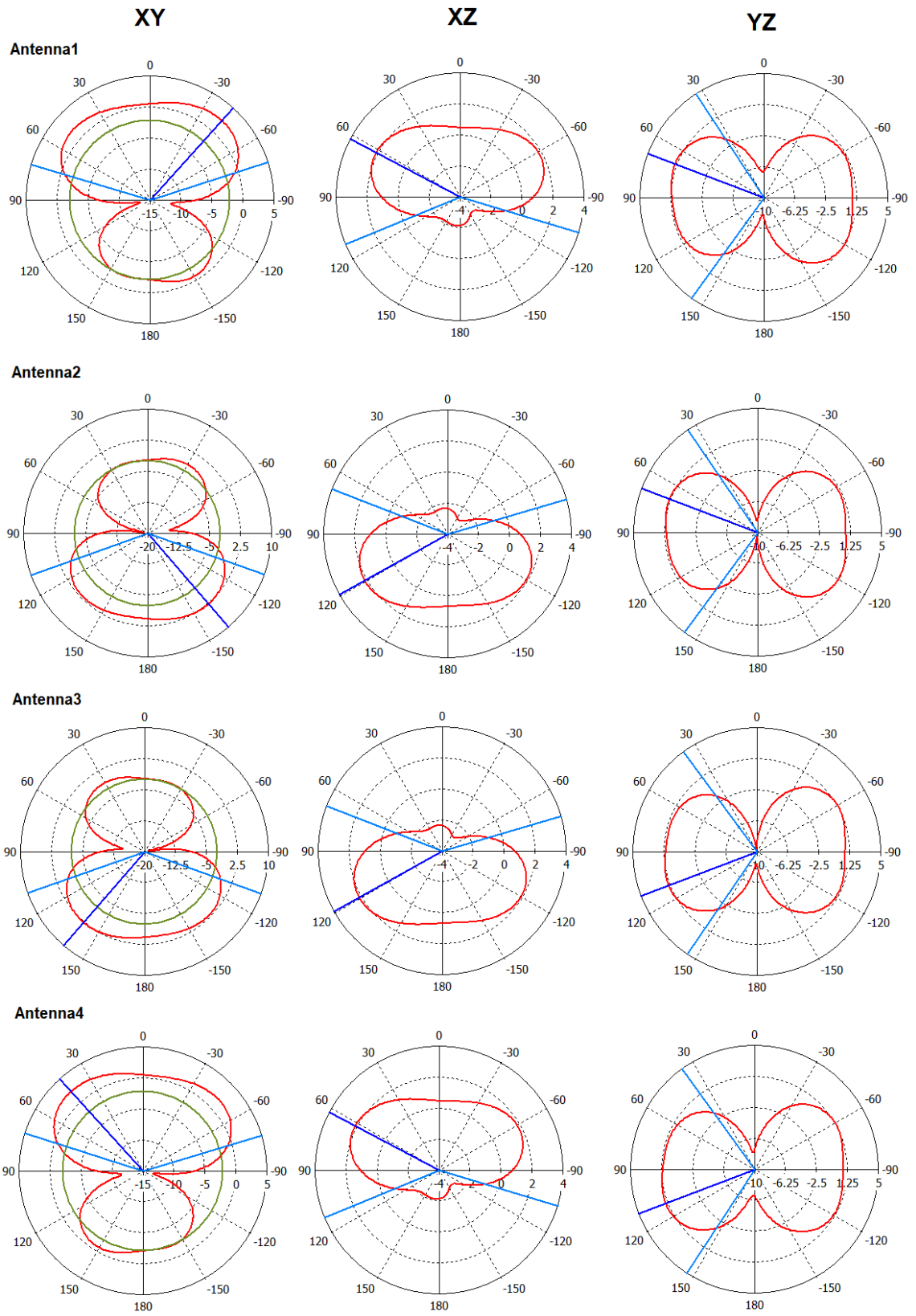
2469 – 2690 MHz



3300 – 3700 MHz

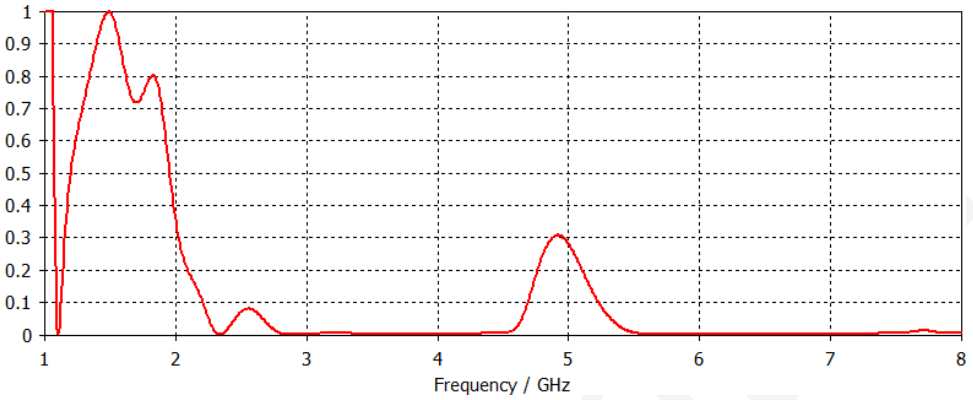


3700– 4200 MHz

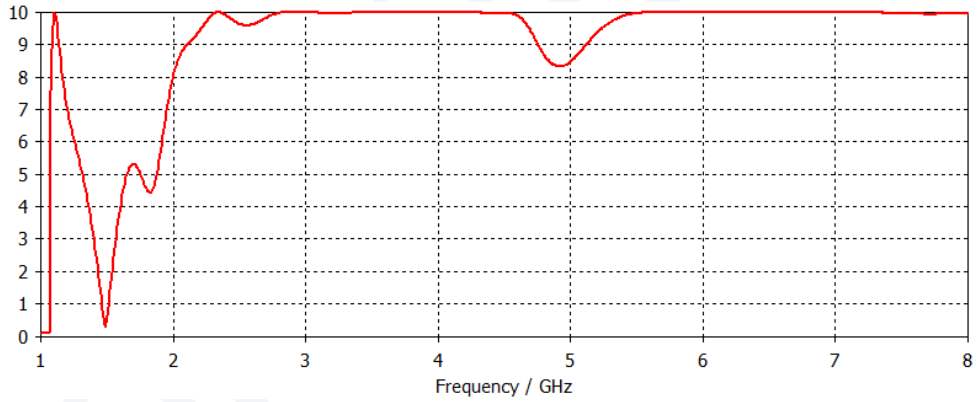


7. MIMO Analysis

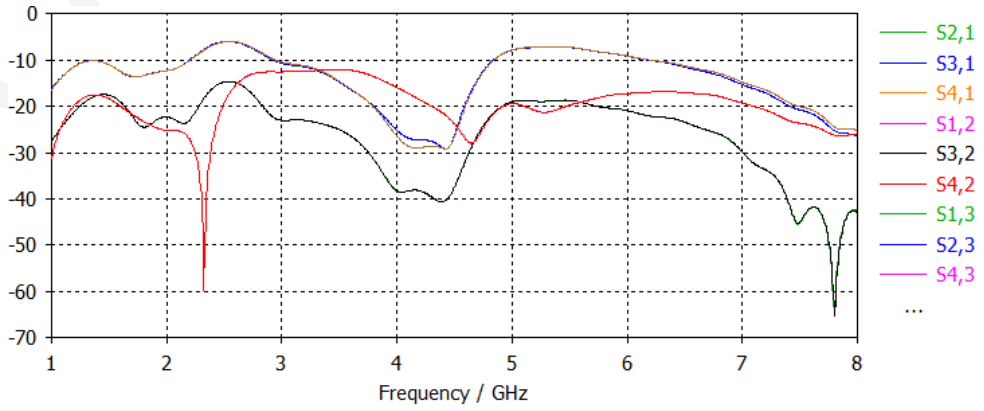
7..1 Correlation Coefficients



7..2 Diversity Gain



7..3 Ports Isolation



8. Electrical Interface

All transmission lines should be designed to have a characteristic impedance of 50Ω.

The length of the transmission lines should be kept to a minimum to any other parts of the RF system like transceivers, power amplifiers, etc., should alsobe designed to have an impedance of 50 Ω.

Once the material for the PCB has been chosen, (PCB thickness and dielectric constant) a coplanar transmission line can easily be designed using any of the commercial software packages for transmission line design. The program will calculate the appropriate transmission line width and gaps on either side of the feed for the chosen PCB thickness, copper thickness, and substrate dielectric constant.

9. Hazardous Material Regulation Conformance

The antenna has been tested to conform to RoHS requirements.

10. Optimal Storage Conditions

Temperature	-10ºC to 40ºC
Humidity	Less than 75% RH
Shelf life	5 Years
Storage place	Away from corrosive gas and direct sunlight
Packaging	Antennas should be stored in unopened sealed manufacturer's plastic packaging.