



MEASUREMENTS OF SHURE MXW8X ANTENNAS FOR REGULATORY APPROVAL

1.9GHZ ANTENNA A

1.9GHZ ANTENNA B

2.4GHZ BLUETOOTH ANTENNA



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1. Overview and Reference Angles

1.1 DUT Overview

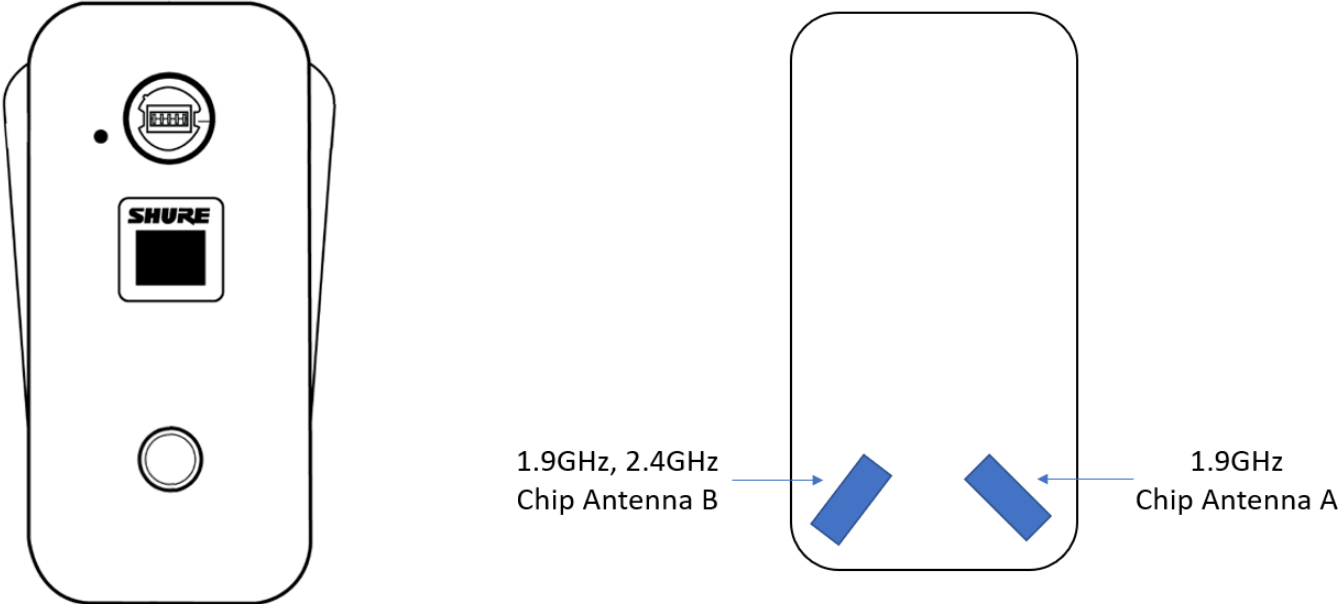


Figure 1-1. Shure MXW8X Internal Antennas Overview

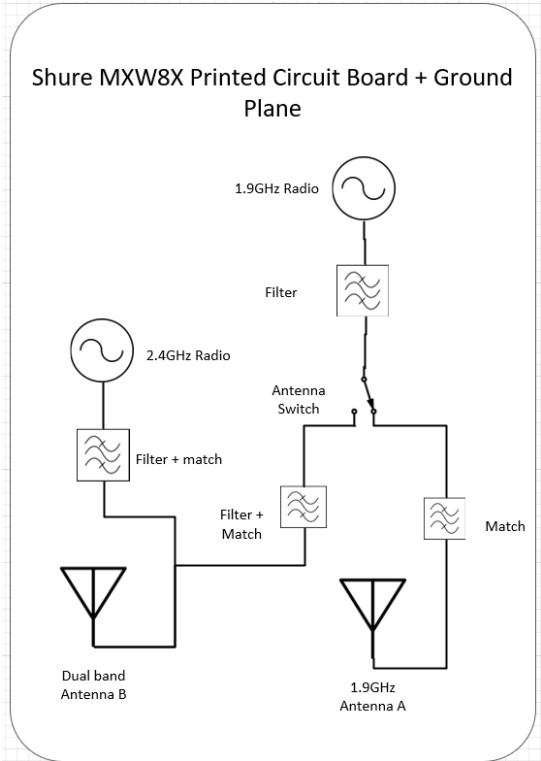


Figure 1-2. Shure MXW8X Antennas Block Diagram

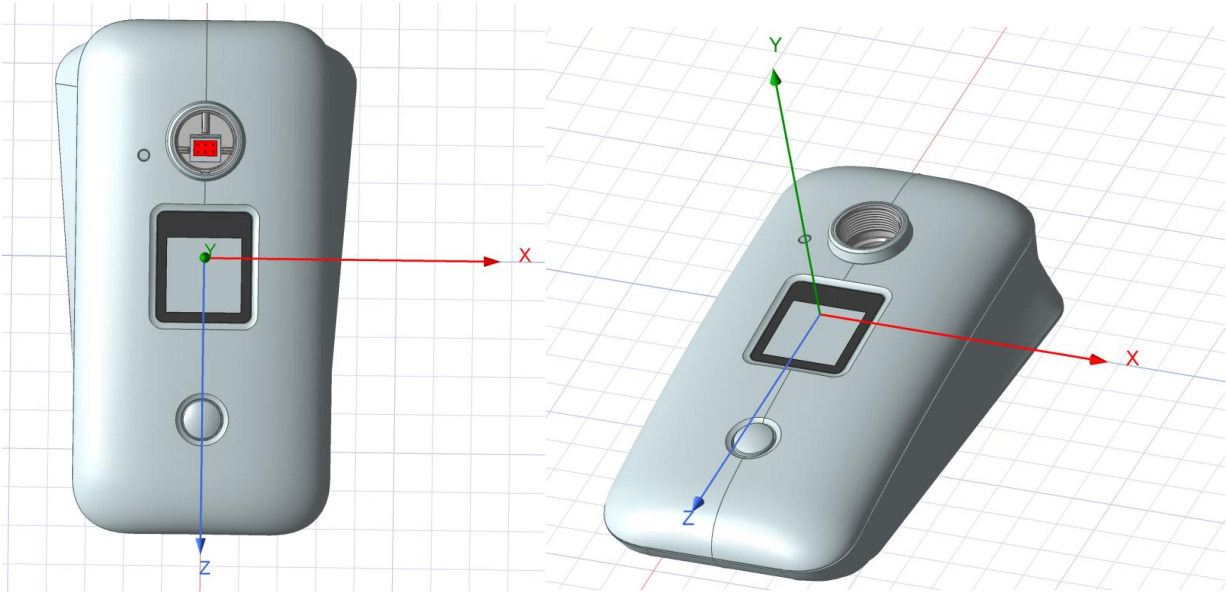


Figure 1-3. MXW8X Reference Angles

1.2 Test Setup Photo



Figure 1-4. Photo of MXW8X in antenna test chamber.



Figure 1-5. Photo of Shure's antenna test chamber with MXW8X ready for testing.

1.3 Supporting Test Equipment List

- E5071C ENA series Vector Network Analyzer 100kHz-8.5GHz
- ets model 2090 multi device controller
- ets lindgren model 3164-10 3164-10 Open Boundary Quad-Ridged Horn 400MHz-10GHz
- ets lindgren model no 3126-1920 precision sleeve dipole 1728-2112MHz
- EMQuest Data Acquisition and Analysis Software v1.12

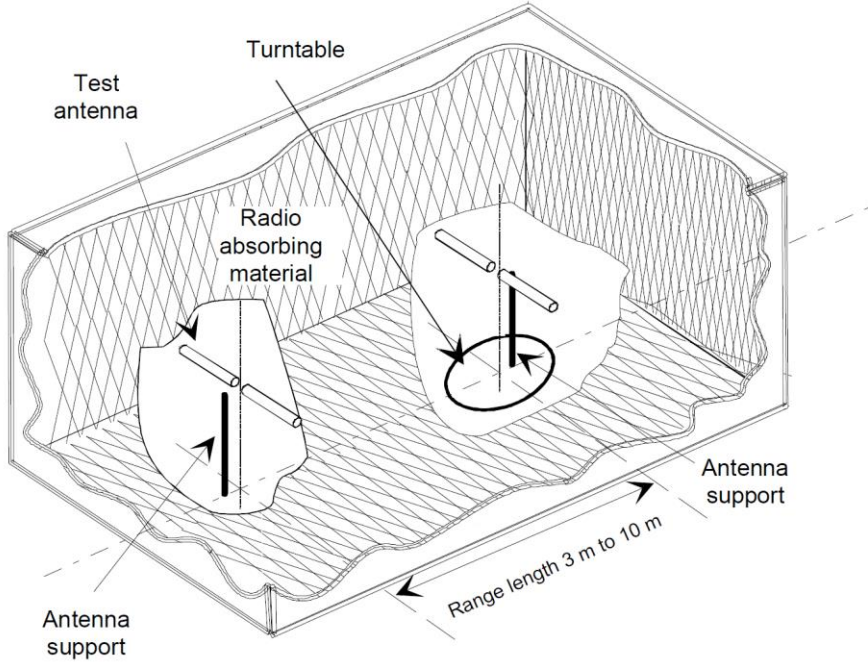


Figure 1-6. Diagram of Shure antenna chamber. Designed per ETSI EN 300 422-1, section D-1.



2. 1.9GHz Antenna A

| Peak Gain | | | | | |
|-----------|-----------------------|---------|----------|----------|----------|
| Parameter | Type | Pattern | 1880 MHz | 1905 MHz | 1930 MHz |
| Antenna A | Internal Chip Antenna | Omni | 0.7 dBi | 1.1 dBi | 1.3 dBi |

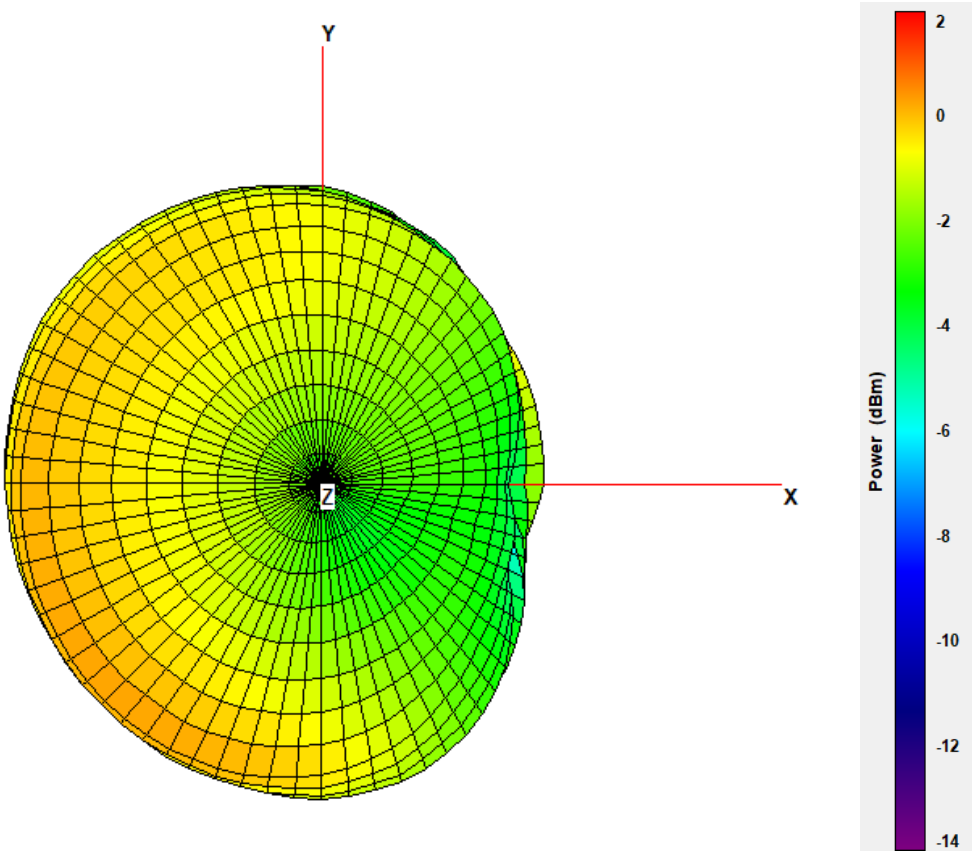


Figure 2-1. 1.9GHz Antenna A X-Y Plane.

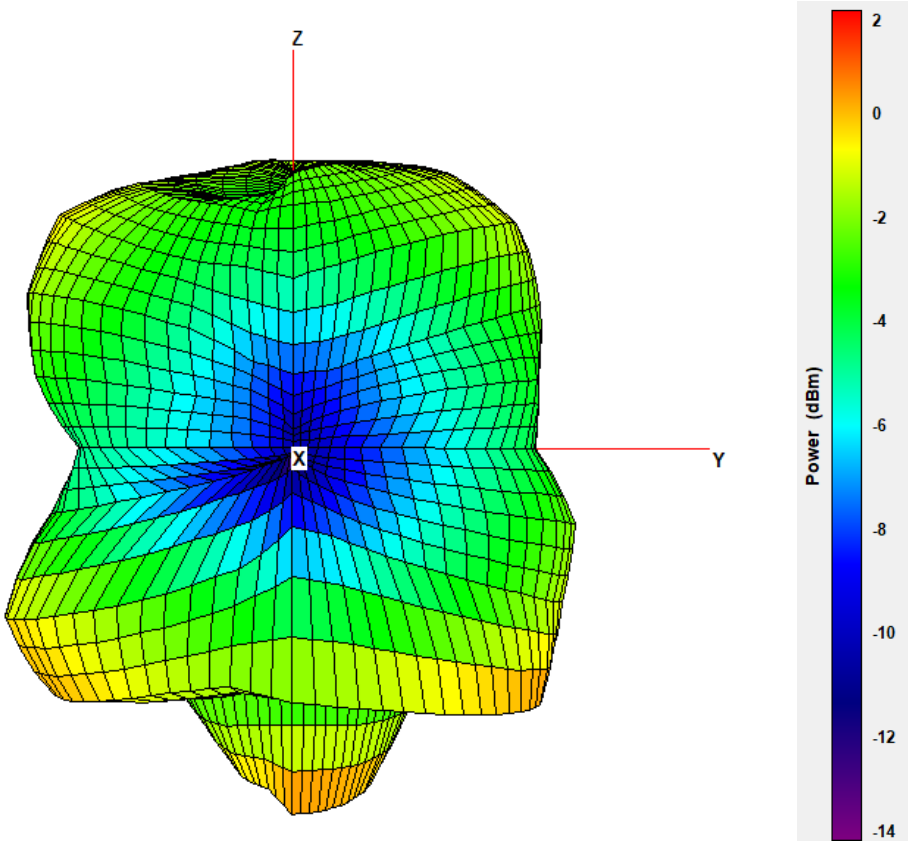


Figure 2-2. 1.9GHz Antenna A Y-Z Plane

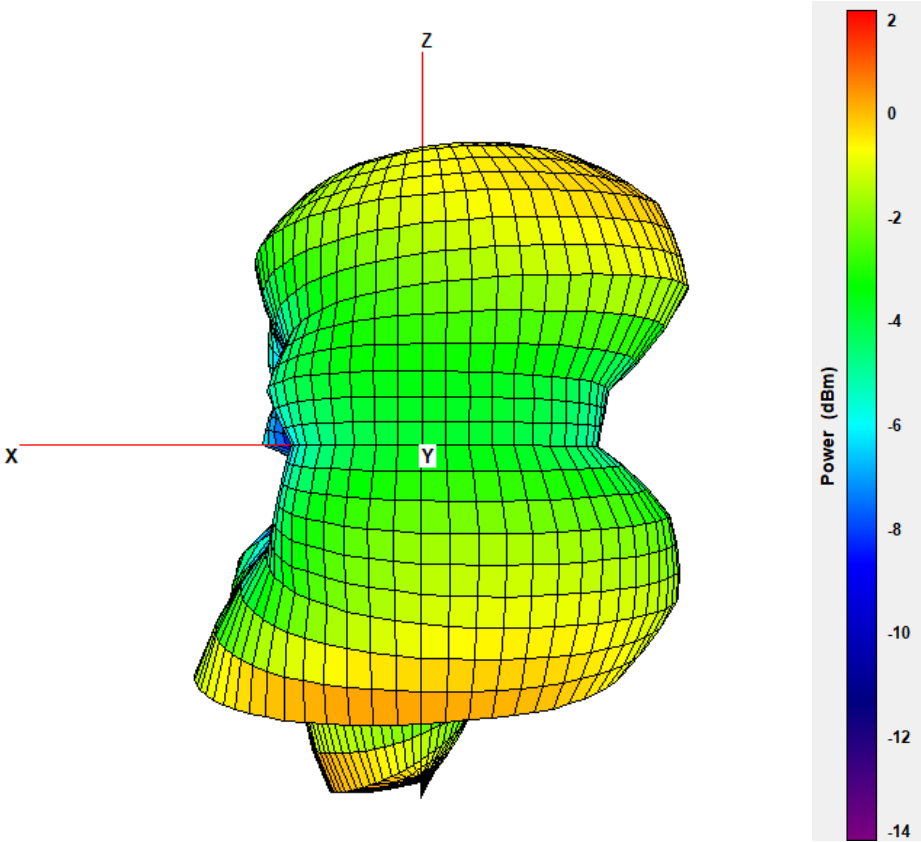


Figure 2-3. 1.9GHz Antenna A X-Z plane

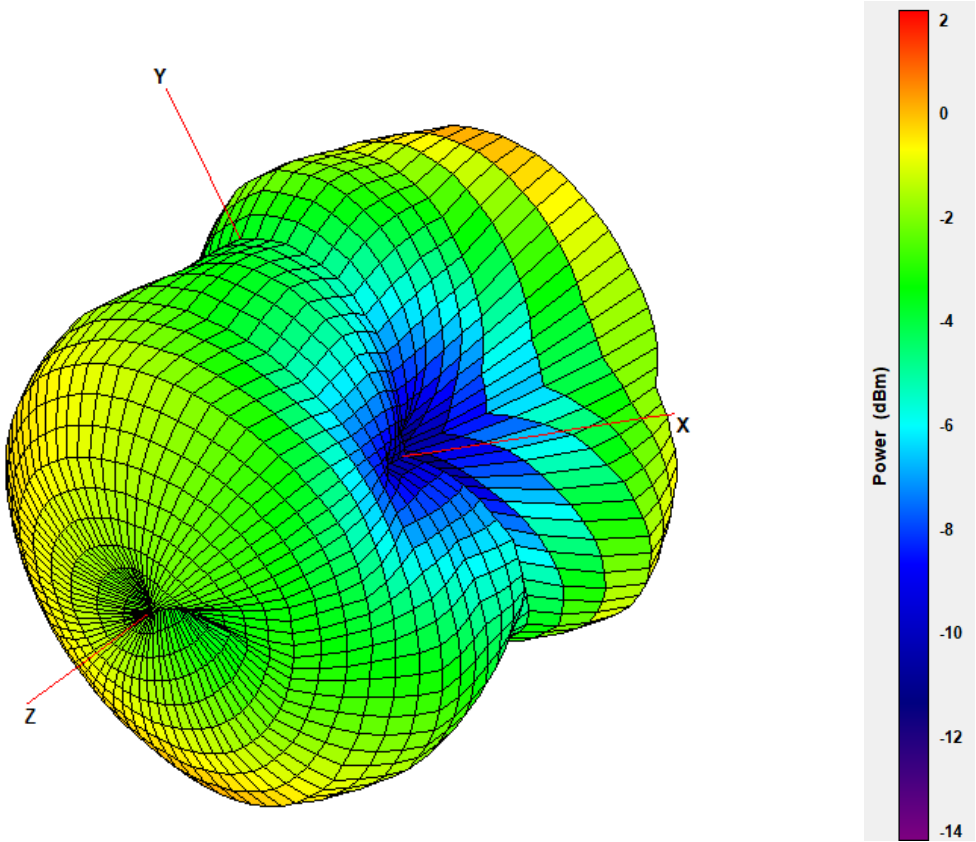


Figure 2-4. 1.9GHz Antenna A 3D



3. 1.9GHz Antenna B

| Peak Gain | | | | | |
|-----------|-----------------------|---------|----------|----------|----------|
| Parameter | Type | Pattern | 1880 MHz | 1905 MHz | 1930 MHz |
| Antenna B | Internal Chip Antenna | Omni | 0.8 dBi | 2.0 dBi | 3.2 dBi |

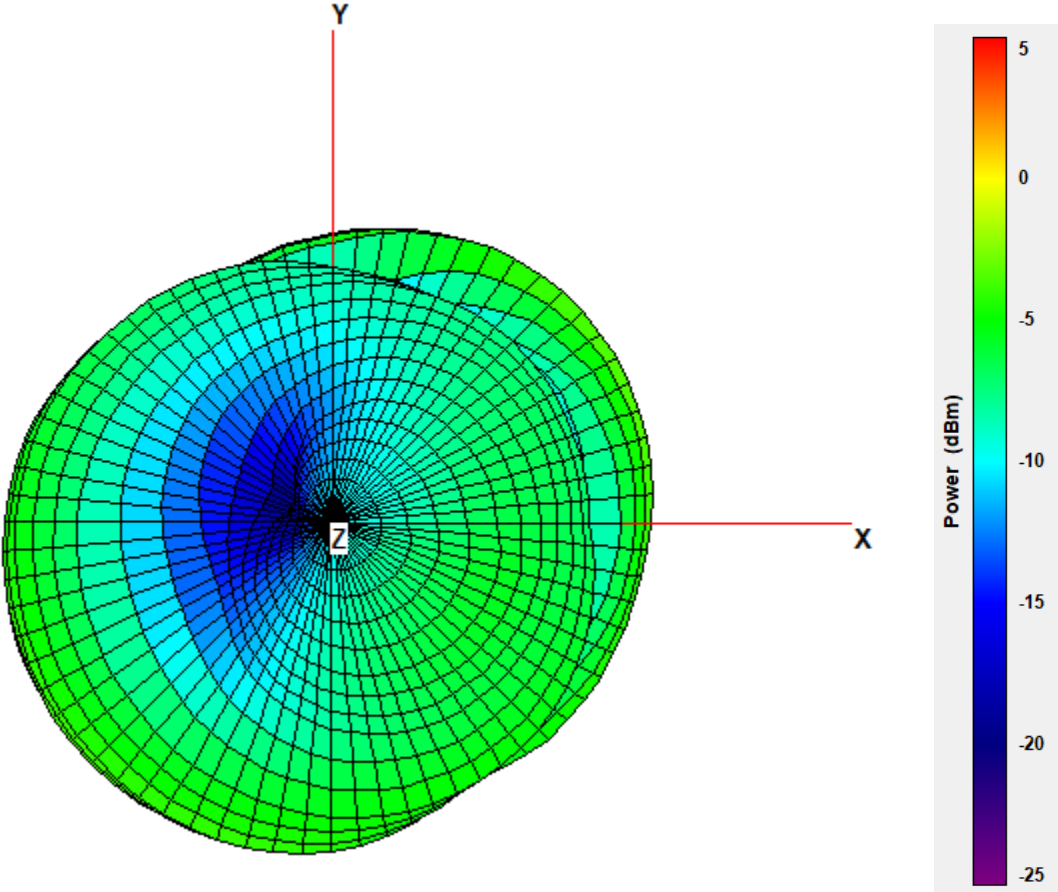


Figure 3-1. 1.9GHz Antenna B X-Y Plane.

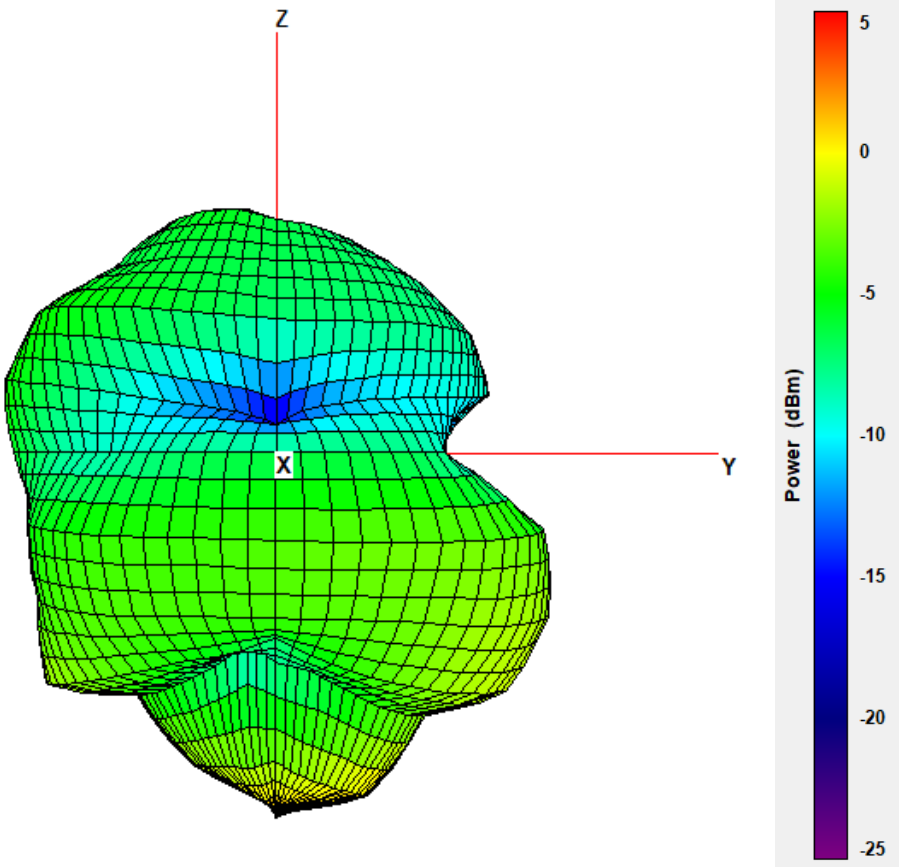


Figure 3-2. 1.9GHz Antenna B Y-Z Plane.

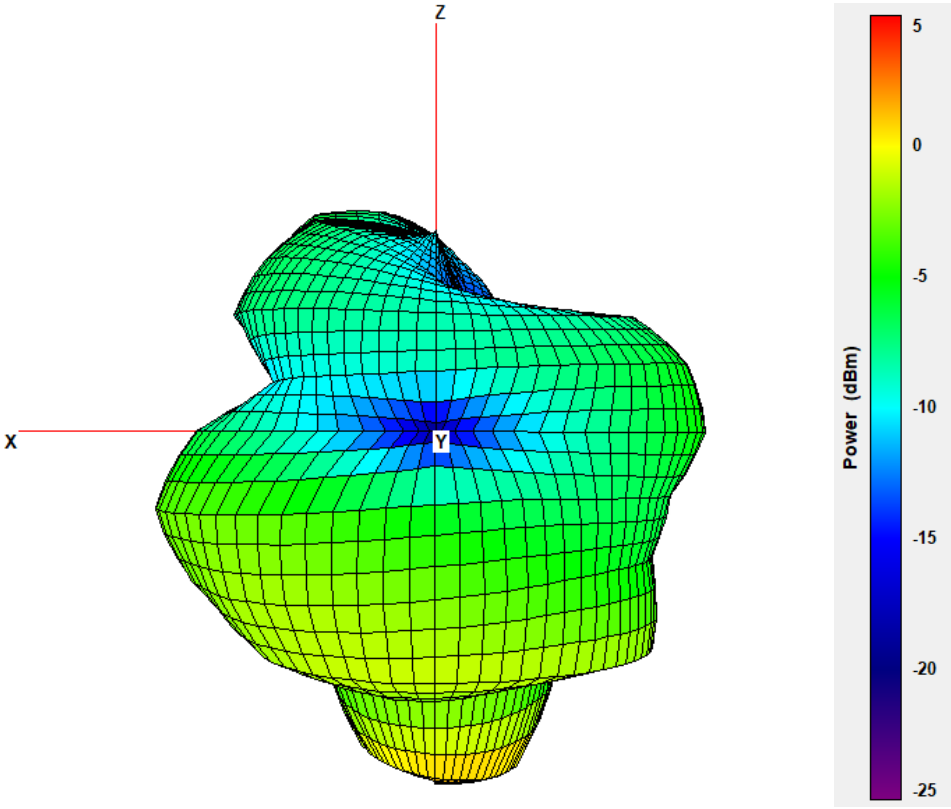


Figure 3-3. 1.9GHz Antenna B X-Z Plane.



Shure MXW8X Antenna Measurements

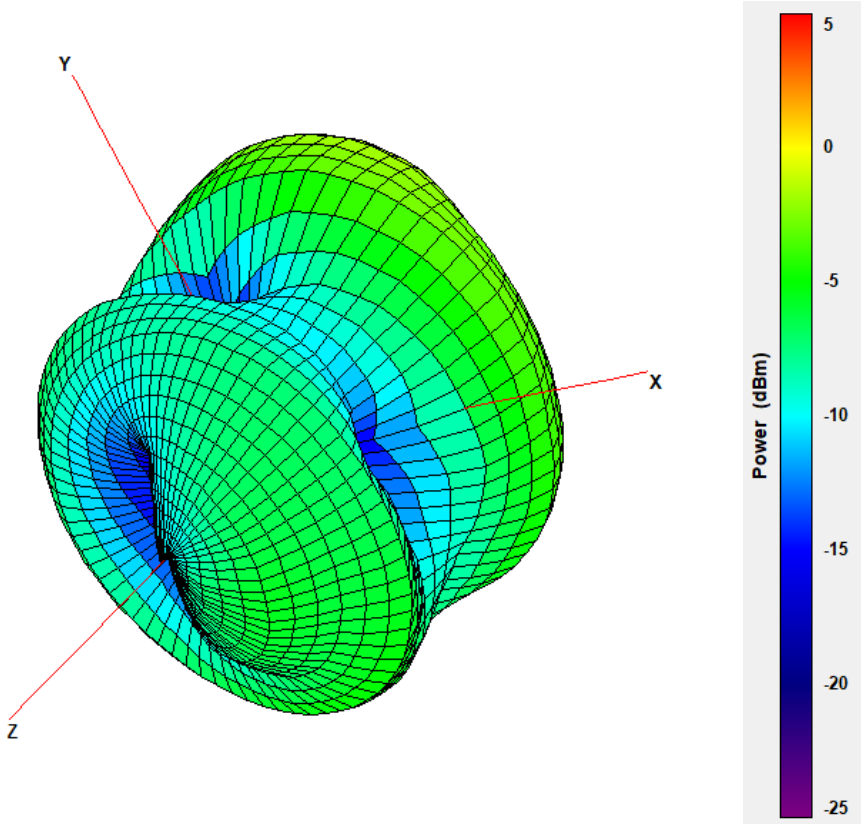


Figure 3-4. 1.9GHz Antenna B 3D



4. 2.4GHz Bluetooth Antenna

| Peak Gain | | | | | |
|----------------|---------------|---------|----------|----------|----------|
| Parameter | Type | Pattern | 2412 MHz | 2442 MHz | 2482 MHz |
| 2.4GHz Antenna | Internal Chip | Omni | 0.2 dBi | 0.5 dBi | 0.1 dBi |

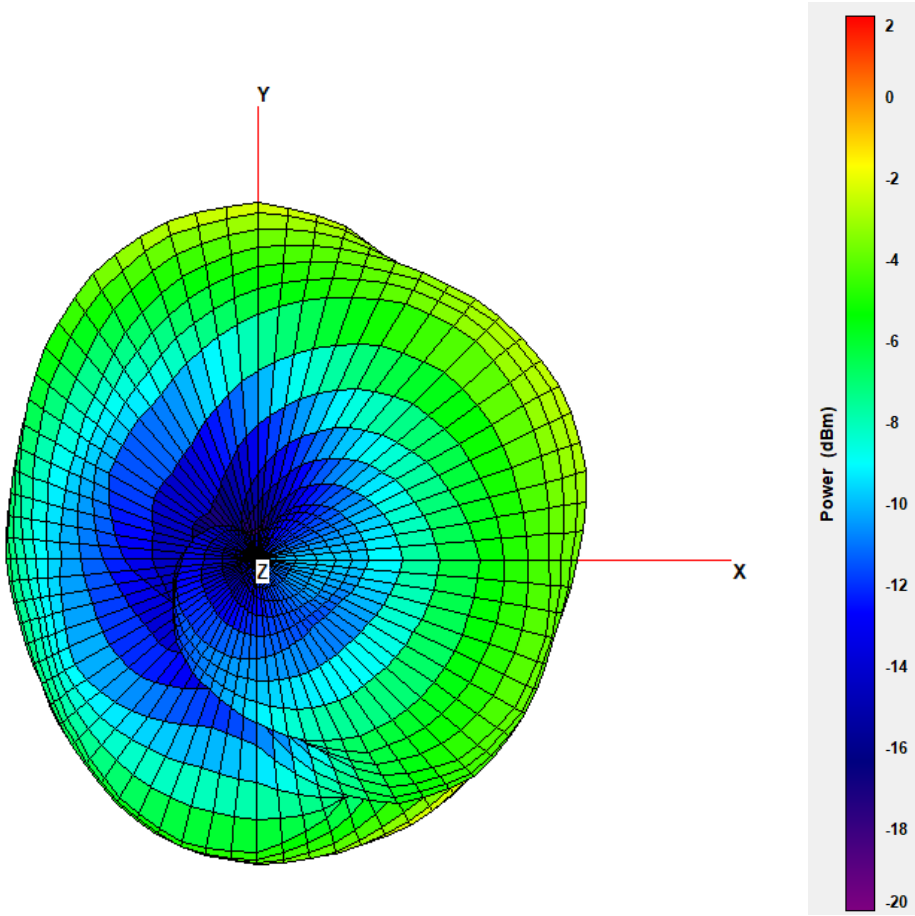


Figure 4-1. 2.4GHz Antenna X-Y plane. 2442MHz.

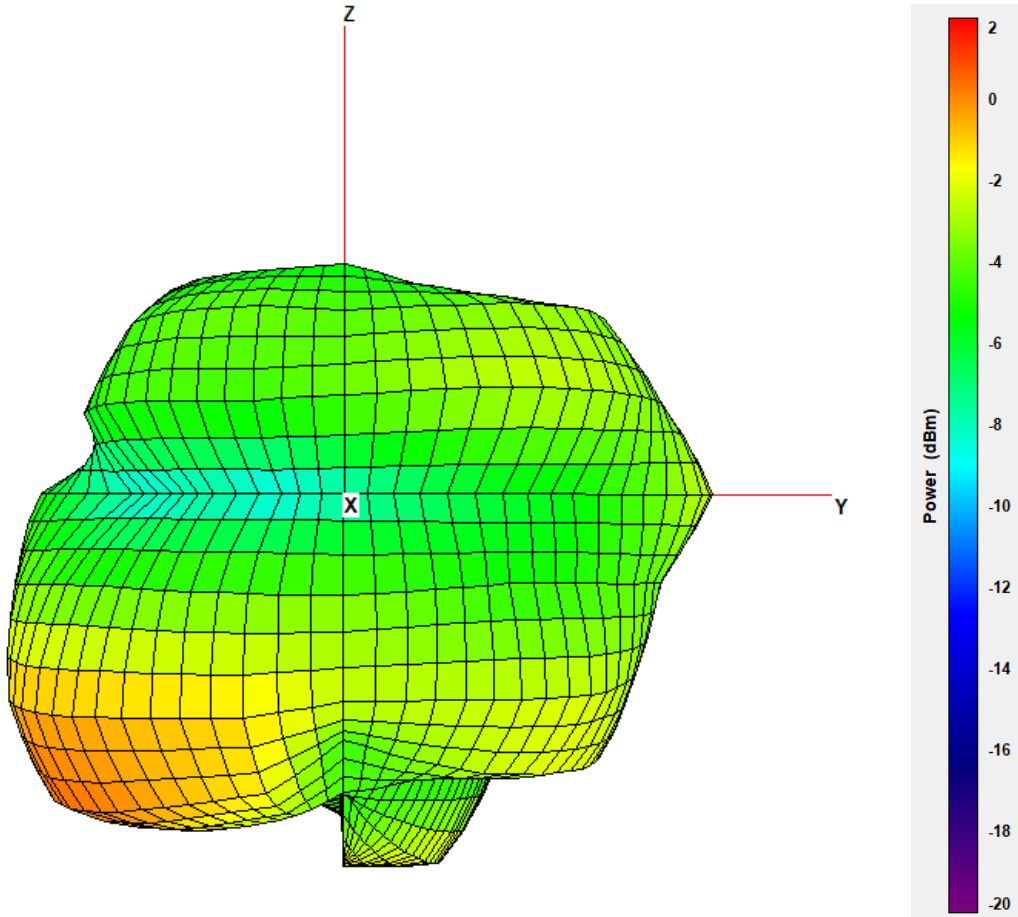


Figure 4-2. 2.4GHz Antenna Y-Z plane. 2442MHz

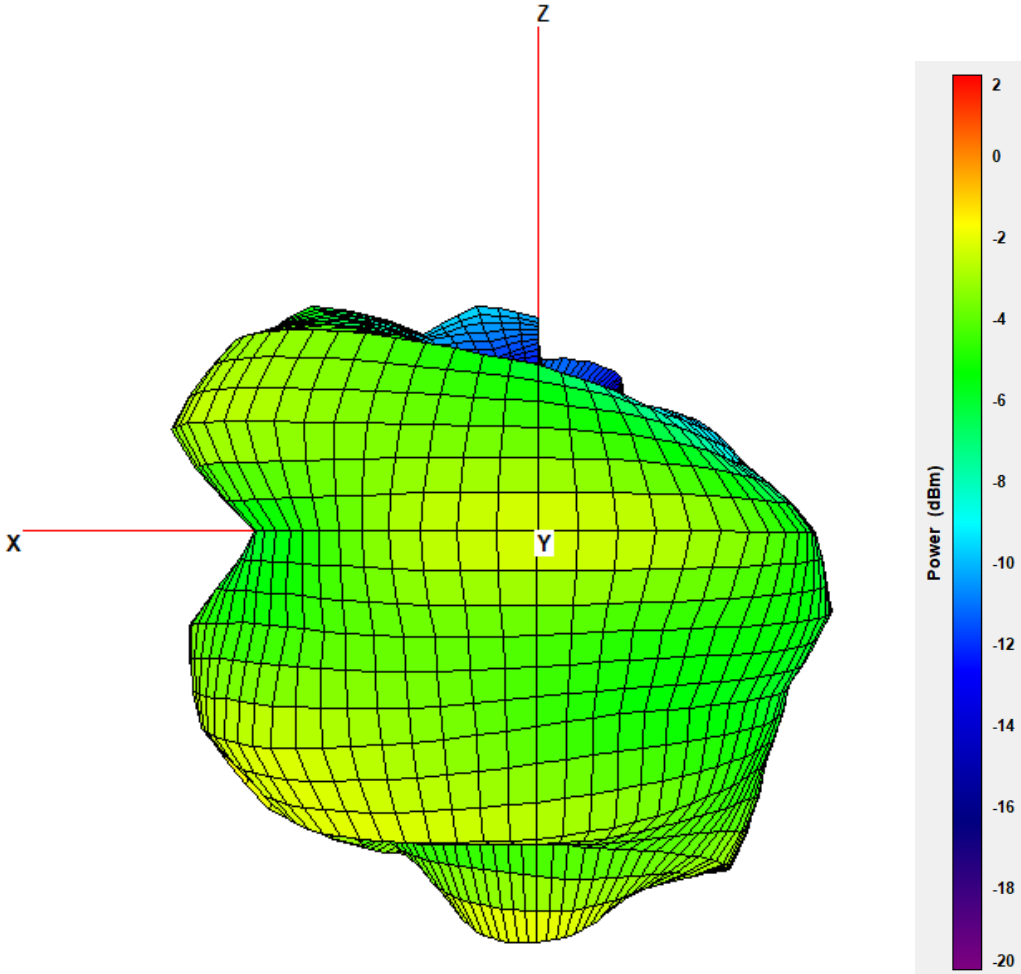


Figure 4-3. 2.4GHz Antenna X-Z plane. 2442MHz

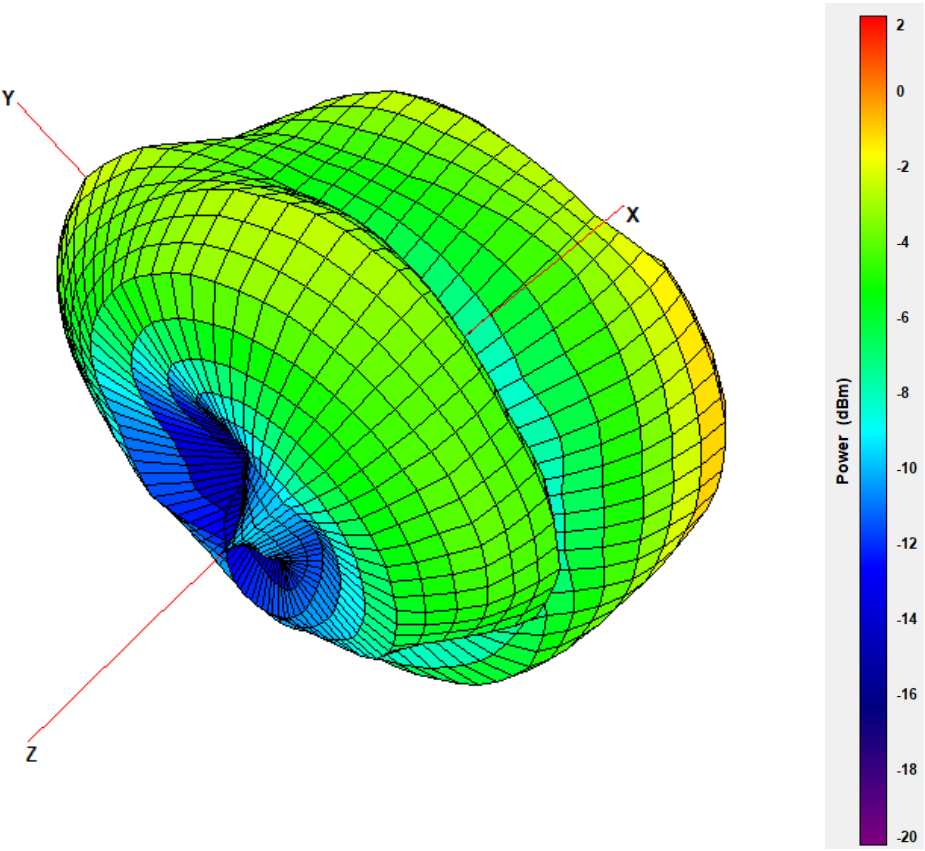


Figure 4-4. 2.4GHz Antenna 3D. 2442MHz