

# High Frequency Ceramic Solutions

7GHz Mini UWB Antenna, AEC-Q200 Qualified

P/N 7000AT18A1600E-AEC

Detail Specification: 2/18/2020

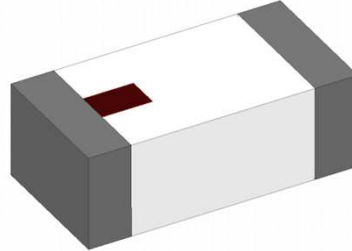
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Let us help you with the antenna design, optimization, and tuning!

<https://www.johansontechnology.com/ipc-antenna-services>

## General Specifications

|                     |                    |
|---------------------|--------------------|
| Part Number         | 7000AT18A1600E-AEC |
| Frequency (GHz)     | 6.2 - 8.24         |
| Avg. Rad Efficiency | 92%                |
| Peak Gain (dBi)     | 2.0 typ.           |
| Average Gain (dBi)  | -0.5 typ.          |
| Return Loss (dB)    | 9.5 min.           |
| Impedance           | 50 $\Omega$        |
| Input Power         | 3 Watts max. (CW)  |



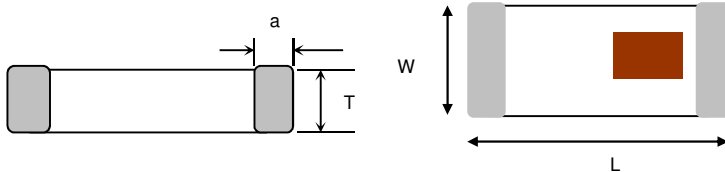
|                                                                  |                                                       |
|------------------------------------------------------------------|-------------------------------------------------------|
| Recommended Storage Conditions and Period for unused T&R Product | +5 to +35°C<br>Humidity 45 - 75% RH<br>18 months max. |
| Operating Temperature                                            | -40 to +105°C                                         |
| Reel Quantity                                                    | 3,000                                                 |

## Part Number Explanation

| P/N Suffix | Packing Style    | Bulk (loose)                                    | Suffix = S      | e.g. 7000AT18A1600S-AEC        |
|------------|------------------|-------------------------------------------------|-----------------|--------------------------------|
|            |                  | T & R                                           | Suffix = E      | e.g. 7000AT18A1600E-AEC        |
|            |                  | 100% Tin                                        | Suffix = E or S | e.g. 7000AT18A1600(E or S)-AEC |
|            | Evaluation Board | 7000AT18A1600-EB1SMA (see page 2&3 for details) |                 |                                |

## Mechanical Dimensions

|   | In                    | mm                |
|---|-----------------------|-------------------|
| L | 0.126 $\pm$ 0.008     | 3.20 $\pm$ 0.2    |
| W | 0.063 $\pm$ 0.008     | 1.60 $\pm$ 0.2    |
| T | 0.051 + 0.004/ -0.008 | 1.30 + 0.1 / -0.2 |
| a | 0.020 $\pm$ 0.012     | 0.50 $\pm$ 0.3    |



## Terminal Configuration

| No. | Function |
|-----|----------|
| 1   | FEED     |
| 2   | NC       |



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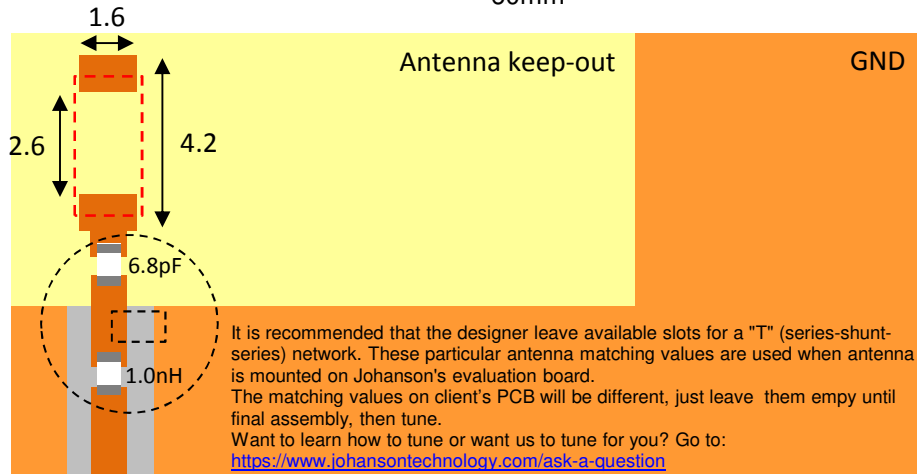
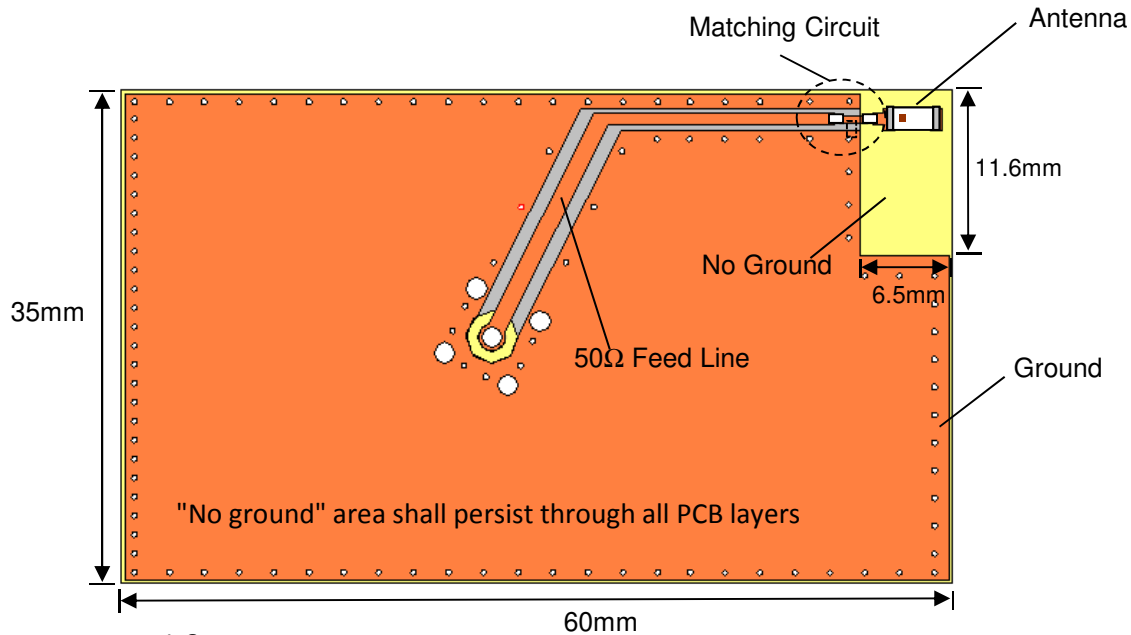
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## Mounting Considerations 1: Evaluation Board



To order a pre-tuned 50Ω EVB with a female SMA connector click here:

<https://www.johansontechnology.com/request-a-sample>

Reference p/n: 7000AT18A1600-EB1SMA

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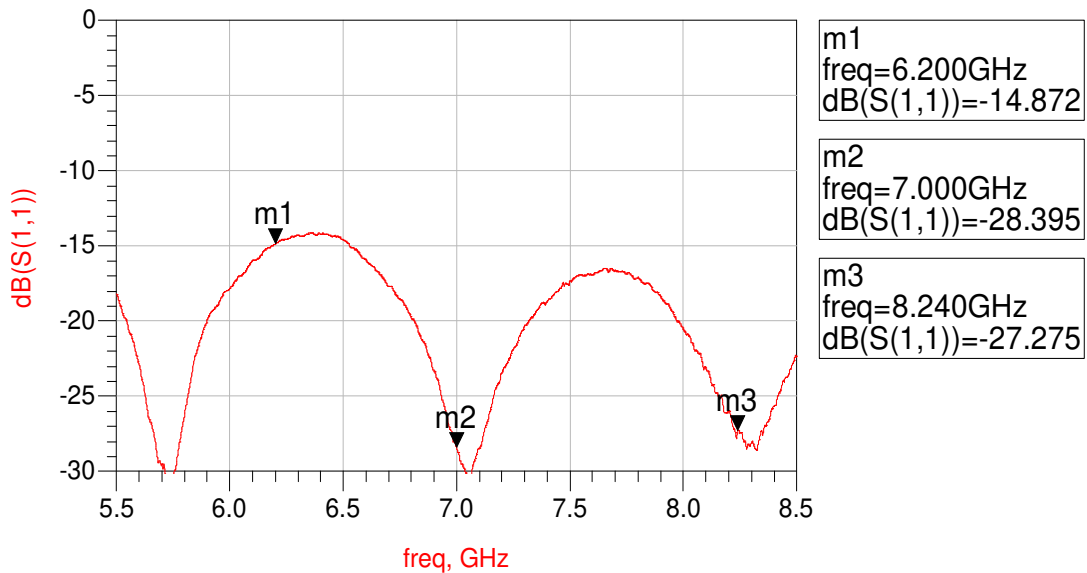
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## Mounting Considerations 1: Electrical Performance @25°C

Measured Return Loss



Would you like the antenna layout? Have antenna tuning issues?  
Please contact us if you have any questions regarding the implementation of this antenna in your PCB's layout. We'll be happy to guide you to maximize the antenna's performance.

Contact our applications engineers at:

<https://www.johansontechnology.com/ask-a-question>

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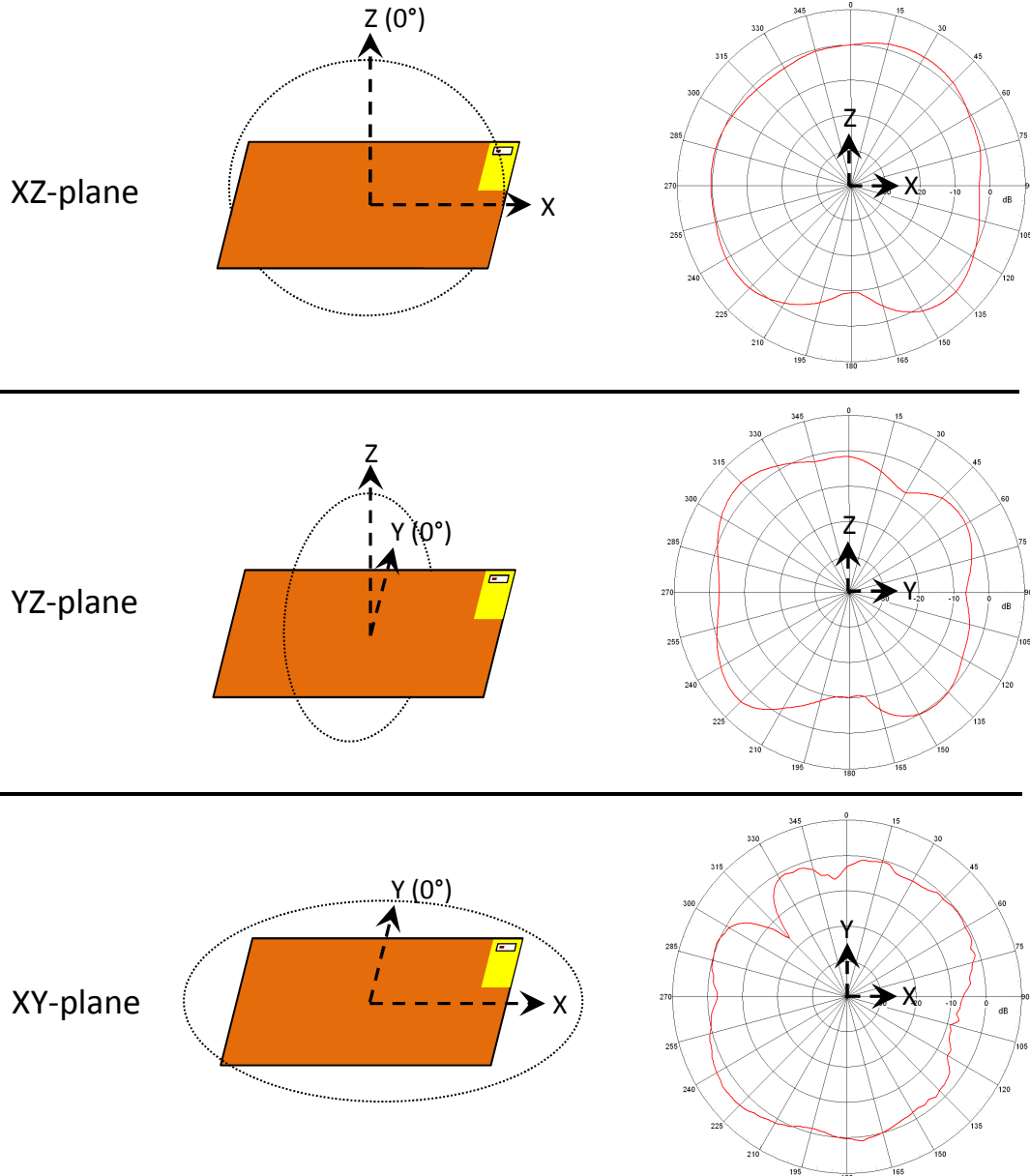
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## Mounting Considerations 1: Antenna Performance

Typical 2D radiation patterns @ 7.0GHz



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## Antenna tuning, optimization, and validation services:

<https://www.johansontechnology.com/ipc-antenna-services>

## For more antennas and to download measured S-parameters, go to:

<https://www.johansontechnology.com/antennas>

## Soldering Information

<https://www.johansontechnology.com/ipcsoldering-profile>

## MSL Info

<https://www.johansontechnology.com/msl-rating>

## Packaging Information

<https://www.johansontechnology.com/tape-reel-packaging>

## For layout review contact our applications team at:

<https://www.johansontechnology.com/ask-a-question>

## RoHS Compliance

<https://www.johansontechnology.com/rohs-compliance>

Need help designing the antenna in? Use our antenna design services!

<https://www.johansontechnology.com/ipc-antenna-services>

We provide 2 free layout reviews and if you need us to tune and characterize the antenna on your product (inside anechoic chamber) we can do that too. Small lab fee may apply for the latter.

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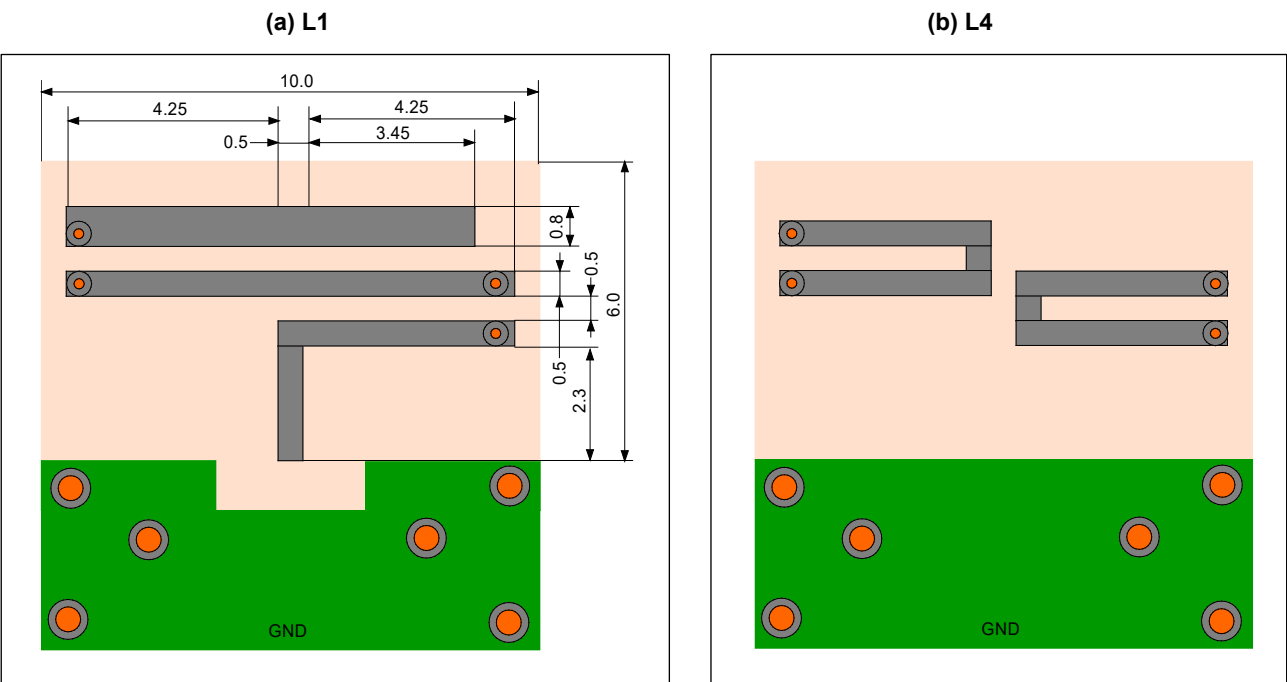
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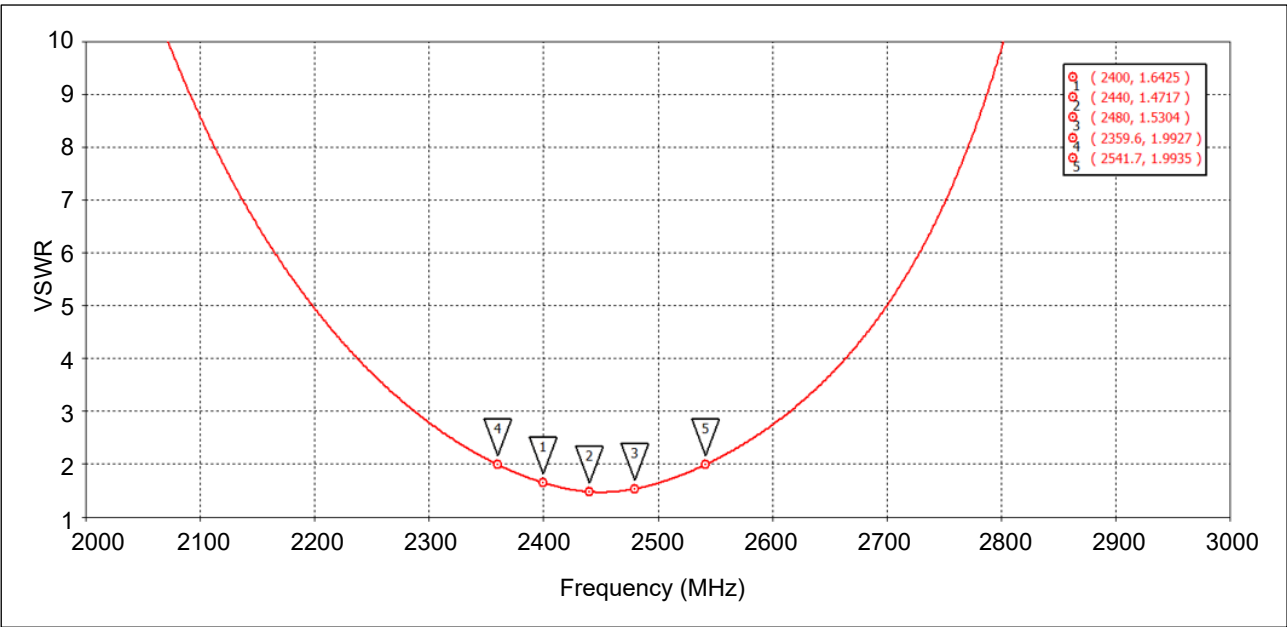
5.3.3 Dimensions of the Antenna Elements

Figure 5-12. Dimensions of the Antenna Elements



5.3.4 VSWR and Emission Characteristics

Figure 5-13. VSWR Characteristic



## ID100-GTI-Qx1BA\_Rev0.2 안테나 성능 시험

- 시험일시: 2022년 7월 4일

- 시험장소: 서울시 용산구 원효로 41길 29 한국전자산업진흥회 전자파기술원 휴대폰 챔버

### 1) 시료 준비



### 2) 안테나 챔버 사양



■ Type: Rectangular, System : 주식회사 엠티지(대한민국)

■ 장비사양

- Chamber Size: 5.5(L) X 5.5(W) X 5.0(H)m

- Path Length : 2.94m

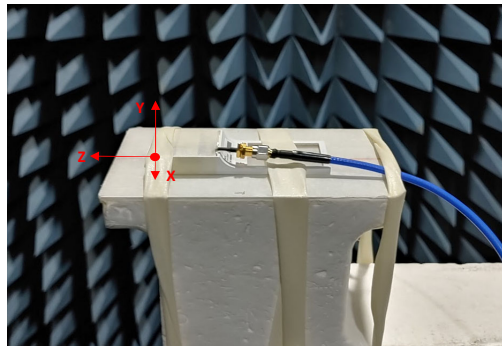
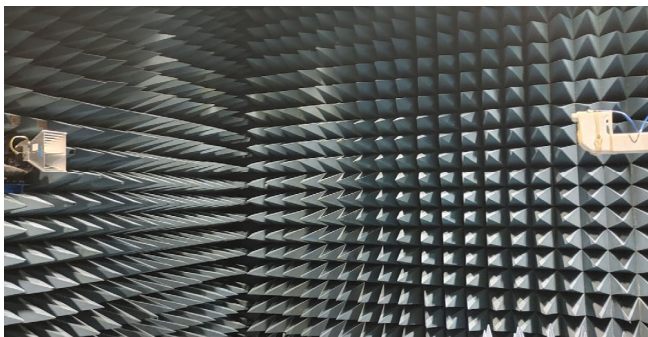
- Frequency Range: 0.7 to 8GHz (Far Field)

- Quiet Zone : 0.8m X 0.8m @ 800MHz

■ 기타

- 측정장비 : R&C ZVA24 Network Analyzer

### 3) 시험 사진



#### 4) 시험 결과

■ Measuring frequency : 2.402GHz(37ch), 2.426GHz(38ch), 2.480GHz(39ch)

##### - Theta-pol(H) Peak value

$\theta$ -Pol(H)

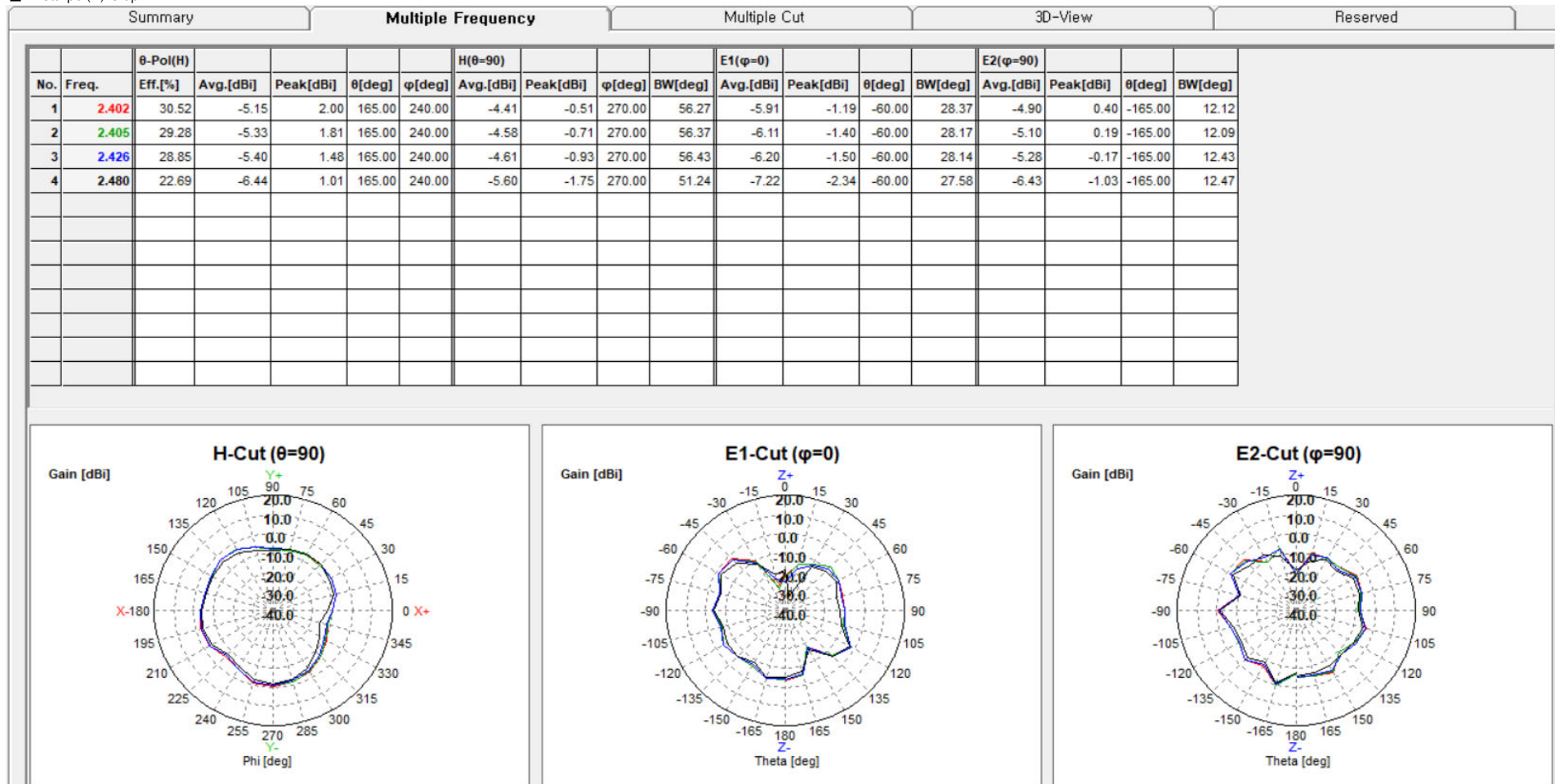
| Freq.[GHz] | Eff.[%] | Avg.[dBi] | Peak[dBi] | $\theta$ [deg] | $\varphi$ [deg] |
|------------|---------|-----------|-----------|----------------|-----------------|
| 2.402      | 30.52   | -5.15     | 2         | 165            | 240             |
| 2.405      | 29.28   | -5.33     | 1.81      | 165            | 240             |
| 2.426      | 28.85   | -5.4      | 1.48      | 165            | 240             |
| 2.48       | 22.69   | -6.44     | 1.01      | 165            | 240             |

##### - Phi-pol(V) Peak value

$\varphi$ -Pol(V)

| Freq.[GHz] | Eff.[%] | Avg.[dBi] | Peak[dBi] | $\theta$ [deg] | $\varphi$ [deg] |
|------------|---------|-----------|-----------|----------------|-----------------|
| 2.402      | 14.17   | -8.49     | 0.48      | 165            | 195             |
| 2.405      | 13.57   | -8.67     | 0.23      | 165            | 195             |
| 2.426      | 12.77   | -8.94     | 0.01      | 165            | 195             |
| 2.48       | 10.36   | -9.85     | -0.83     | 165            | 195             |

■ Theta-pol(H) Graph



■ Phi-pol(V) Graph

