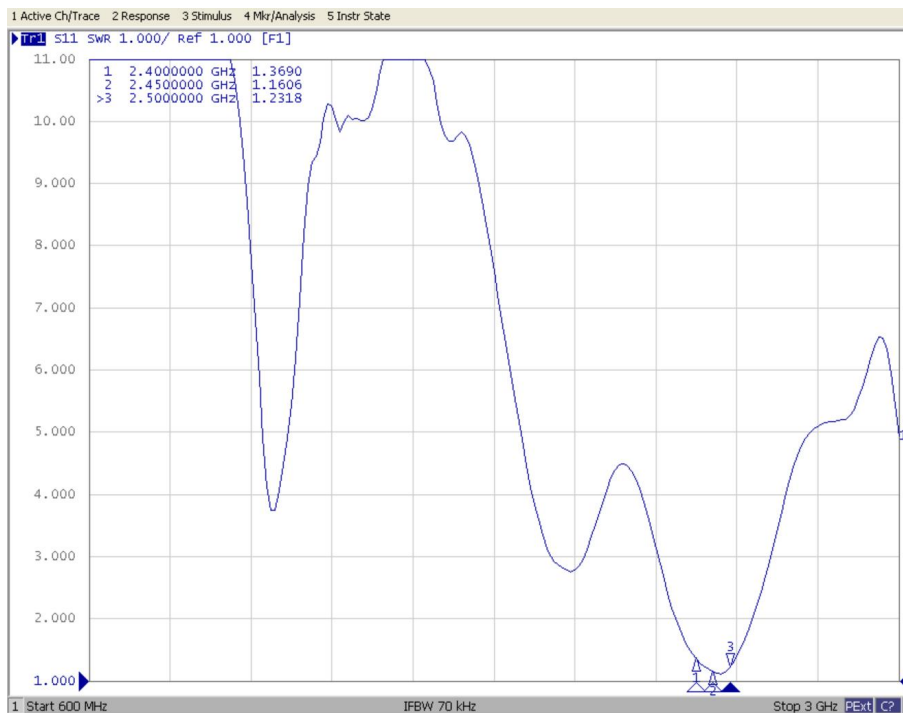


## OTA Passive Efficiency&Gain Test:

| Freq<br>(MHz) | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) |
|---------------|-------------|--------------|---------------|
| 2400          | 60.89       | -2.15        | 2.99          |
| 2410          | 61.54       | -2.11        | 3.06          |
| 2420          | 62.11       | -2.07        | 3.05          |
| 2430          | 62.17       | -2.06        | 3.03          |
| 2440          | 62.06       | -2.07        | 2.83          |
| 2450          | 61.36       | -2.12        | 2.75          |
| 2460          | 60.78       | -2.16        | 2.63          |
| 2470          | 60.3        | -2.2         | 2.56          |
| 2480          | 56.14       | -2.51        | 2.18          |
| 2490          | 54.23       | -2.66        | 2.06          |
| 2500          | 53.42       | -2.72        | 2.06          |

## 4、 Attachment chart

### 4.1 VSWR parameter diagram



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## 5、 BT antenna active parameters (0 channel)--TRP

| Azimuths | 2.402 GHz<br>-150 Total | 2.402 GHz<br>-120 Total | 2.402 GHz<br>-90 Total | 2.402 GHz<br>-60 Total | 2.402 GHz<br>-30 Total | 2.402 GHz<br>0 Total | 2.402 GHz<br>30 Total | 2.402 GHz<br>60 Total | 2.402 GHz<br>90 Total | 2.402 GHz<br>120 Total | 2.402 GHz<br>150 Total |
|----------|-------------------------|-------------------------|------------------------|------------------------|------------------------|----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|
| 0        | 5.51                    | 8.25                    | 5.38                   | 3.09                   | 5.11                   | 5.49                 | 2.27                  | -7.27                 | 0.53                  | 0.02                   | 0.16                   |
| 30       | 3.81                    | 5.25                    | 4.07                   | -2.6                   | 2                      | 5.54                 | 6.4                   | 2.04                  | 0.29                  | 4.32                   | 6.05                   |
| 60       | 2.94                    | 3.38                    | 3.46                   | -6.31                  | -2.65                  | 5.87                 | 8.51                  | 5.77                  | 3.73                  | 8.61                   | 8.89                   |
| 90       | 4.2                     | -1.64                   | 4.98                   | 3.38                   | -9.33                  | 5.98                 | 9.57                  | 7.07                  | 5.06                  | 10.86                  | 9.77                   |
| 120      | 3.76                    | -1.59                   | 5.68                   | 5.06                   | -9.82                  | 5.76                 | 9.22                  | 6.59                  | 4.69                  | 11.16                  | 9.09                   |
| 150      | -1.45                   | -1.73                   | 3.09                   | -0.58                  | -4.93                  | 5.82                 | 7.68                  | 4.87                  | 5.2                   | 10.29                  | 7.4                    |
| 180      | 0.16                    | 0.02                    | 0.53                   | -7.27                  | 2.27                   | 5.49                 | 5.11                  | 3.09                  | 5.38                  | 8.25                   | 5.51                   |
| 210      | 6.05                    | 4.32                    | 0.29                   | 2.04                   | 6.4                    | 5.54                 | 2                     | -2.6                  | 4.07                  | 5.25                   | 3.81                   |
| 240      | 8.89                    | 8.61                    | 3.73                   | 5.77                   | 8.51                   | 5.87                 | -2.65                 | -6.31                 | 3.46                  | 3.38                   | 2.94                   |
| 270      | 9.77                    | 10.86                   | 5.06                   | 7.07                   | 9.57                   | 5.98                 | -9.33                 | 3.38                  | 4.98                  | -1.64                  | 4.2                    |
| 300      | 9.09                    | 11.16                   | 4.69                   | 6.59                   | 9.22                   | 5.76                 | -9.82                 | 5.06                  | 5.68                  | -1.59                  | 3.76                   |
| 330      | 7.4                     | 10.29                   | 5.2                    | 4.87                   | 7.68                   | 5.82                 | -4.93                 | -0.58                 | 3.09                  | -1.73                  | -1.45                  |

## 5.1、 BT antenna active parameters (0 channel)--TIS

| Azimuths | 2.402 GHz<br>-150 Total | 2.402 GHz<br>-120 Total | 2.402 GHz<br>-90 Total | 2.402 GHz<br>-60 Total | 2.402 GHz<br>-30 Total | 2.402 GHz<br>0 Total | 2.402 GHz<br>30 Total | 2.402 GHz<br>60 Total | 2.402 GHz<br>90 Total | 2.402 GHz<br>120 Total | 2.402 GHz<br>150 Total |
|----------|-------------------------|-------------------------|------------------------|------------------------|------------------------|----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|
| 0        | -92.72                  | -95.46                  | -92.59                 | -90.29                 | -92.32                 | -92.7                | -89.48                | -79.94                | -87.74                | -87.23                 | -87.37                 |
| 30       | -91.02                  | -92.46                  | -91.28                 | -84.61                 | -89.2                  | -92.75               | -93.61                | -89.25                | -87.5                 | -91.53                 | -93.26                 |
| 60       | -90.15                  | -90.59                  | -90.67                 | -80.9                  | -84.55                 | -93.08               | -95.72                | -92.98                | -90.94                | -95.82                 | -96.1                  |
| 90       | -91.41                  | -85.57                  | -92.19                 | -90.58                 | -77.88                 | -93.19               | -96.78                | -94.28                | -92.27                | -98.07                 | -96.98                 |
| 120      | -90.97                  | -85.61                  | -92.89                 | -92.27                 | -77.39                 | -92.96               | -96.43                | -93.8                 | -91.9                 | -98.37                 | -96.3                  |
| 150      | -85.76                  | -85.47                  | -90.3                  | -86.63                 | -82.28                 | -93.03               | -94.89                | -92.08                | -92.41                | -97.5                  | -94.61                 |
| 180      | -87.37                  | -87.23                  | -87.74                 | -79.94                 | -89.48                 | -92.7                | -92.32                | -90.29                | -92.59                | -95.46                 | -92.72                 |
| 210      | -93.26                  | -91.53                  | -87.5                  | -89.25                 | -93.61                 | -92.75               | -89.2                 | -84.61                | -91.28                | -92.46                 | -91.02                 |
| 240      | -96.1                   | -95.82                  | -90.94                 | -92.98                 | -95.72                 | -93.08               | -84.55                | -80.9                 | -90.67                | -90.59                 | -90.15                 |
| 270      | -96.98                  | -98.07                  | -92.27                 | -94.28                 | -96.78                 | -93.19               | -77.88                | -90.58                | -92.19                | -85.57                 | -91.41                 |
| 300      | -96.3                   | -98.37                  | -91.9                  | -93.8                  | -96.43                 | -92.96               | -77.39                | -92.27                | -92.89                | -85.61                 | -90.97                 |
| 330      | -94.61                  | -97.5                   | -92.41                 | -92.08                 | -94.89                 | -93.03               | -82.28                | -86.63                | -90.3                 | -85.47                 | -85.76                 |

## 5.2、 BT antenna active parameters (39 channels)--TRP

| Azimuths | 2.441 GHz<br>-150 Total | 2.441 GHz<br>-120 Total | 2.441 GHz<br>-90 Total | 2.441 GHz<br>-60 Total | 2.441 GHz<br>-30 Total | 2.441 GHz<br>0 Total | 2.441 GHz<br>30 Total | 2.441 GHz<br>60 Total | 2.441 GHz<br>90 Total | 2.441 GHz<br>120 Total | 2.441 GHz<br>150 Total |
|----------|-------------------------|-------------------------|------------------------|------------------------|------------------------|----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|
| 0        | 5.25                    | 8.36                    | 4.65                   | 3.89                   | 5.41                   | 5.51                 | 1.72                  | -4.87                 | -2.42                 | 0.03                   | 1.04                   |
| 30       | 2.06                    | 5.01                    | 3.45                   | 0.21                   | 3.11                   | 5.61                 | 5.53                  | 2.32                  | -2.3                  | 4.4                    | 6.55                   |
| 60       | 0.63                    | 2.47                    | 3.43                   | -7.42                  | -0.67                  | 6.02                 | 8.43                  | 5.98                  | 2.47                  | 8.37                   | 8.93                   |
| 90       | 2.37                    | -1.16                   | 5.32                   | 2.95                   | -6.79                  | 6.05                 | 9.94                  | 7.64                  | 3.49                  | 10.24                  | 9.62                   |
| 120      | 3.16                    | -0.87                   | 5.97                   | 4.59                   | -8.02                  | 5.9                  | 10.09                 | 7.26                  | 3.77                  | 10.81                  | 9.23                   |
| 150      | -0.97                   | -0.04                   | 2.62                   | -2.68                  | -2.6                   | 5.86                 | 8.48                  | 5.15                  | 4.4                   | 10.1                   | 7.83                   |
| 180      | 1.04                    | 0.03                    | -2.42                  | -4.87                  | 1.72                   | 5.51                 | 5.41                  | 3.89                  | 4.65                  | 8.36                   | 5.25                   |
| 210      | 6.55                    | 4.4                     | -2.3                   | 2.32                   | 5.53                   | 5.61                 | 3.11                  | 0.21                  | 3.45                  | 5.01                   | 2.06                   |
| 240      | 8.93                    | 8.37                    | 2.47                   | 5.98                   | 8.43                   | 6.02                 | -0.67                 | -7.42                 | 3.43                  | 2.47                   | 0.63                   |
| 270      | 9.62                    | 10.24                   | 3.49                   | 7.64                   | 9.94                   | 6.05                 | -6.79                 | 2.95                  | 5.32                  | -1.16                  | 2.37                   |
| 300      | 9.23                    | 10.81                   | 3.77                   | 7.26                   | 10.09                  | 5.9                  | -8.02                 | 4.59                  | 5.97                  | -0.87                  | 3.16                   |
| 330      | 7.83                    | 10.1                    | 4.4                    | 5.15                   | 8.48                   | 5.86                 | -2.6                  | -2.68                 | 2.62                  | -0.04                  | -0.97                  |

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### 5.3、 BT antenna active parameters (39 channels)--TIS

| Azimuths | 2.441 GHz<br>-150 Total | 2.441 GHz<br>-120 Total | 2.441 GHz<br>-90 Total | 2.441 GHz<br>-60 Total | 2.441 GHz<br>-30 Total | 2.441 GHz<br>0 Total | 2.441 GHz<br>30 Total | 2.441 GHz<br>60 Total | 2.441 GHz<br>90 Total | 2.441 GHz<br>120 Total | 2.441 GHz<br>150 Total |
|----------|-------------------------|-------------------------|------------------------|------------------------|------------------------|----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|
| 0        | -93.12                  | -96.22                  | -92.51                 | -91.76                 | -93.28                 | -93.38               | -89.59                | -82.99                | -85.44                | -87.89                 | -88.9                  |
| 30       | -89.92                  | -92.88                  | -91.31                 | -88.07                 | -90.98                 | -93.47               | -93.39                | -90.19                | -85.56                | -92.27                 | -94.42                 |
| 60       | -88.49                  | -90.34                  | -91.3                  | -80.45                 | -87.2                  | -93.88               | -96.3                 | -93.84                | -90.34                | -96.23                 | -96.8                  |
| 90       | -90.23                  | -86.7                   | -93.19                 | -90.82                 | -81.07                 | -93.92               | -97.81                | -95.5                 | -91.36                | -98.11                 | -97.49                 |
| 120      | -91.03                  | -87                     | -93.83                 | -92.45                 | -79.85                 | -93.77               | -97.96                | -95.13                | -91.64                | -98.67                 | -97.09                 |
| 150      | -86.9                   | -87.83                  | -90.48                 | -85.19                 | -85.27                 | -93.72               | -96.35                | -93.01                | -92.27                | -97.97                 | -95.7                  |
| 180      | -88.9                   | -87.89                  | -85.44                 | -82.99                 | -89.59                 | -93.38               | -93.28                | -91.76                | -92.51                | -96.22                 | -93.12                 |
| 210      | -94.42                  | -92.27                  | -85.56                 | -90.19                 | -93.39                 | -93.47               | -90.98                | -88.07                | -91.31                | -92.88                 | -89.92                 |
| 240      | -96.8                   | -96.23                  | -90.34                 | -93.84                 | -96.3                  | -93.88               | -87.2                 | -80.45                | -91.3                 | -90.34                 | -88.49                 |
| 270      | -97.49                  | -98.11                  | -91.36                 | -95.5                  | -97.81                 | -93.92               | -81.07                | -90.82                | -93.19                | -86.7                  | -90.23                 |
| 300      | -97.09                  | -98.67                  | -91.64                 | -95.13                 | -97.96                 | -93.77               | -79.85                | -92.45                | -93.83                | -87                    | -91.03                 |
| 330      | -95.7                   | -97.97                  | -92.27                 | -93.01                 | -96.35                 | -93.72               | -85.27                | -85.19                | -90.48                | -87.83                 | -86.9                  |

### 5.4、 BT antenna active parameters (78 channels)--TRP

| Azimuths | 2.48 GHz -<br>150 Total | 2.48 GHz -<br>120 Total | 2.48 GHz -<br>90 Total | 2.48 GHz -<br>60 Total | 2.48 GHz -<br>30 Total | 2.48 GHz 0<br>Total | 2.48 GHz<br>30 Total | 2.48 GHz<br>60 Total | 2.48 GHz<br>90 Total | 2.48 GHz<br>120 Total | 2.48 GHz<br>150 Total |
|----------|-------------------------|-------------------------|------------------------|------------------------|------------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|
| 0        | 4.72                    | 7.62                    | 4.22                   | 2.63                   | 5.44                   | 5.3                 | -0.28                | -4.92                | -8.76                | -0.89                 | 1.77                  |
| 30       | 2.09                    | 3.99                    | 3.34                   | 1.05                   | 3.65                   | 5.52                | 3.84                 | 1.25                 | -4.74                | 2.95                  | 6.58                  |
| 60       | -1.29                   | 1.37                    | 2.93                   | -6.2                   | 0.96                   | 5.95                | 7.98                 | 5.1                  | 0.45                 | 6.94                  | 8.42                  |
| 90       | 0.69                    | -1.08                   | 5.24                   | 1.36                   | -3.47                  | 6.22                | 10.35                | 7.47                 | 1.71                 | 9.34                  | 8.58                  |
| 120      | 1.59                    | -0.61                   | 5.68                   | 3.02                   | -5.5                   | 5.98                | 10.39                | 7.27                 | 2.54                 | 9.87                  | 7.99                  |
| 150      | -1.07                   | -1.06                   | 0.88                   | -4.77                  | -2.21                  | 5.98                | 8.38                 | 4.23                 | 3.62                 | 9.25                  | 7.02                  |
| 180      | 1.77                    | -0.89                   | -8.76                  | -4.92                  | -0.28                  | 5.3                 | 5.44                 | 2.63                 | 4.22                 | 7.62                  | 4.72                  |
| 210      | 6.58                    | 2.95                    | -4.74                  | 1.25                   | 3.84                   | 5.52                | 3.65                 | 1.05                 | 3.34                 | 3.99                  | 2.09                  |
| 240      | 8.42                    | 6.94                    | 0.45                   | 5.1                    | 7.98                   | 5.95                | 0.96                 | -6.2                 | 2.93                 | 1.37                  | -1.29                 |
| 270      | 8.58                    | 9.34                    | 1.71                   | 7.47                   | 10.35                  | 6.22                | -3.47                | 1.36                 | 5.24                 | -1.08                 | 0.69                  |
| 300      | 7.99                    | 9.87                    | 2.54                   | 7.27                   | 10.39                  | 5.98                | -5.5                 | 3.02                 | 5.68                 | -0.61                 | 1.59                  |
| 330      | 7.02                    | 9.25                    | 3.62                   | 4.23                   | 8.38                   | 5.98                | -2.21                | -4.77                | 0.88                 | -1.06                 | -1.07                 |

### 5.5、 BT antenna active parameters (78 channels)--TIS

| Azimuths | 2.48 GHz -<br>150 Total | 2.48 GHz -<br>120 Total | 2.48 GHz -<br>90 Total | 2.48 GHz -<br>60 Total | 2.48 GHz -<br>30 Total | 2.48 GHz 0<br>Total | 2.48 GHz<br>30 Total | 2.48 GHz<br>60 Total | 2.48 GHz<br>90 Total | 2.48 GHz<br>120 Total | 2.48 GHz<br>150 Total |
|----------|-------------------------|-------------------------|------------------------|------------------------|------------------------|---------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|
| 0        | -93.04                  | -95.93                  | -92.54                 | -90.95                 | -93.75                 | -93.62              | -88.03               | -83.39               | -79.56               | -87.42                | -90.08                |
| 30       | -90.4                   | -92.3                   | -91.65                 | -89.37                 | -91.97                 | -93.83              | -92.15               | -89.56               | -83.57               | -91.26                | -94.9                 |
| 60       | -87.03                  | -89.68                  | -91.24                 | -82.11                 | -89.27                 | -94.26              | -96.29               | -93.41               | -88.76               | -95.26                | -96.73                |
| 90       | -89.01                  | -87.24                  | -93.55                 | -89.67                 | -84.84                 | -94.54              | -98.66               | -95.78               | -90.03               | -97.65                | -96.89                |
| 120      | -89.9                   | -87.7                   | -93.99                 | -91.33                 | -82.82                 | -94.29              | -98.7                | -95.58               | -90.86               | -98.18                | -96.31                |
| 150      | -87.25                  | -87.25                  | -89.2                  | -83.54                 | -86.11                 | -94.3               | -96.69               | -92.54               | -91.94               | -97.56                | -95.33                |
| 180      | -90.08                  | -87.42                  | -79.56                 | -83.39                 | -88.03                 | -93.62              | -93.75               | -90.95               | -92.54               | -95.93                | -93.04                |
| 210      | -94.9                   | -91.26                  | -83.57                 | -89.56                 | -92.15                 | -93.83              | -91.97               | -89.37               | -91.65               | -92.3                 | -90.4                 |
| 240      | -96.73                  | -95.26                  | -88.76                 | -93.41                 | -96.29                 | -94.26              | -89.27               | -82.11               | -91.24               | -89.68                | -87.03                |
| 270      | -96.89                  | -97.65                  | -90.03                 | -95.78                 | -98.66                 | -94.54              | -84.84               | -89.67               | -93.55               | -87.24                | -89.01                |
| 300      | -96.31                  | -98.18                  | -90.86                 | -95.58                 | -98.7                  | -94.29              | -82.82               | -91.33               | -93.99               | -87.7                 | -89.9                 |
| 330      | -95.33                  | -97.56                  | -91.94                 | -92.54                 | -96.69                 | -94.3               | -86.11               | -83.54               | -89.2                | -87.25                | -87.25                |

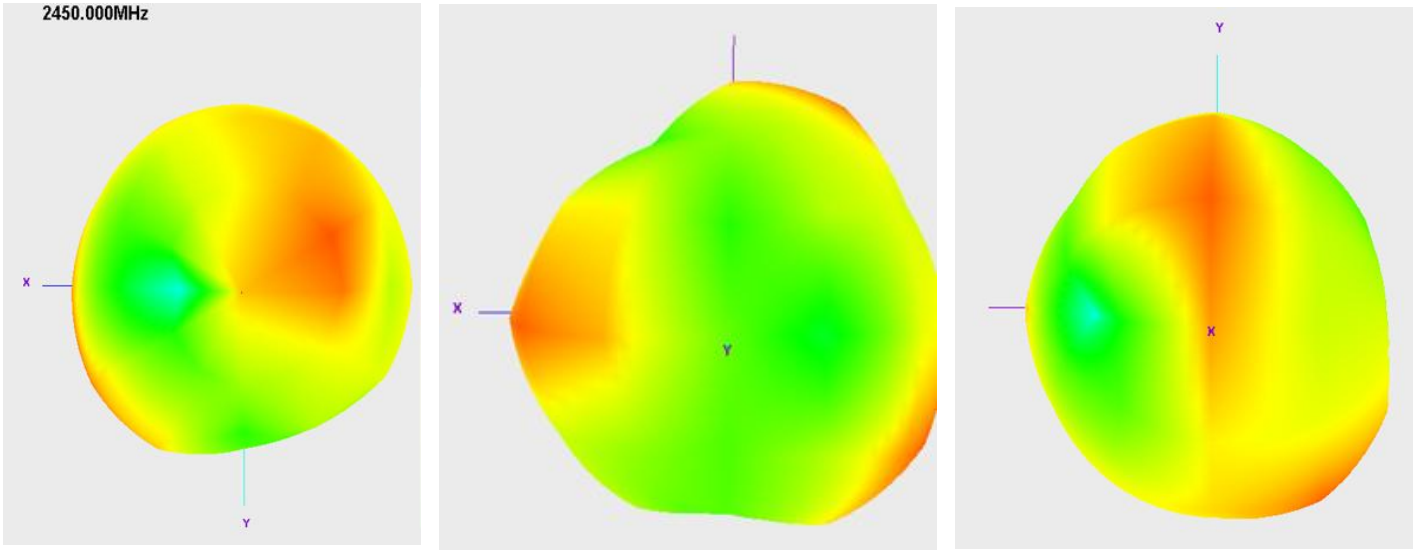
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## 6、 Antenna passive field pattern diagram

**Radiation Pattern For BT Antenna (2450MHz) , Peak Gain: 2.75dbi**

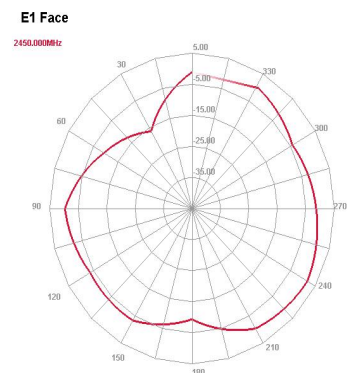
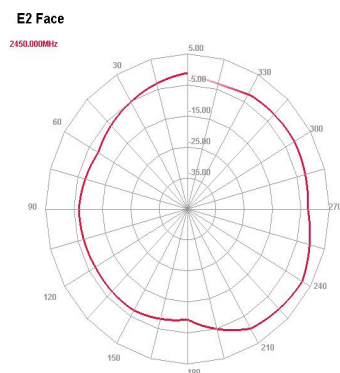
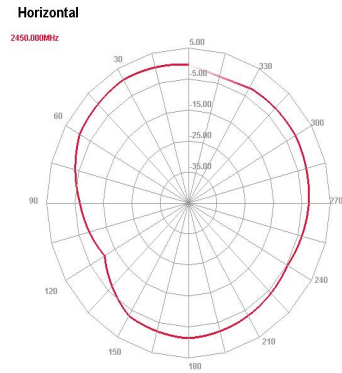
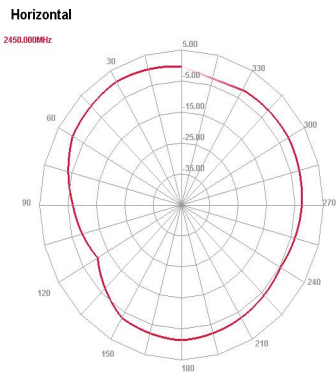


MIN= -8.6

270°

90°

180°



## 7、 conclusion:

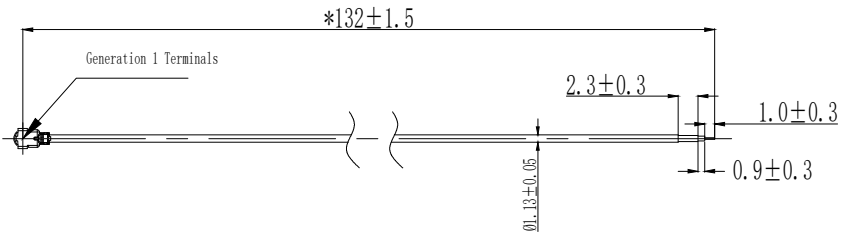
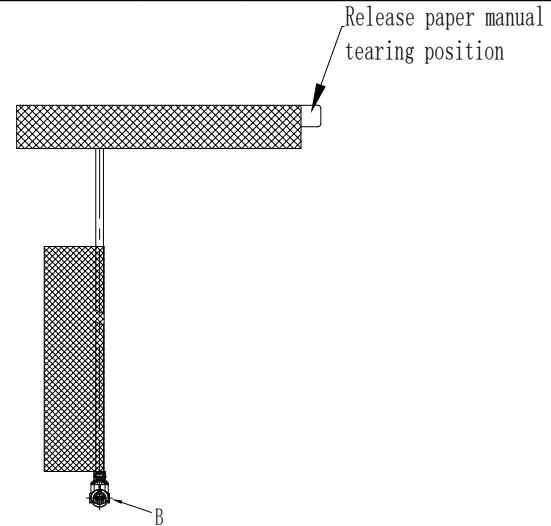
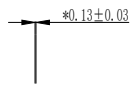
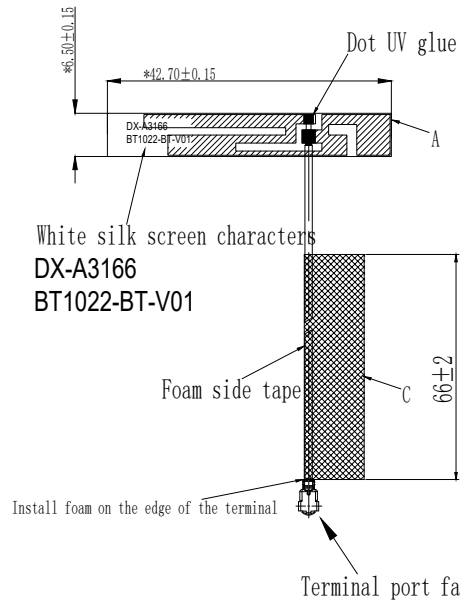
This antenna is designed on the basis of the prototype provided by the customer, electrical parameters and structural performance have reached the technical requirements, please confirm!

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
|      |       |       |      |       |      |      |      |      |
|------|-------|-------|------|-------|------|------|------|------|
| 0~10 | 10~30 | 30~50 | 50~  | angle | ○    | ◎    | ⊥    | ▱    |
| 0.05 | 0.10  | 0.15  | 0.20 | 1°    | 0.02 | 0.02 | 0.03 | 0.05 |



technical requirement:

1. "\*" is the key dimension;
2. Please refer to the drawing for unspecified dimensions;
3. There should be no poor operation such as faulty soldering, missing soldering, short wires, broken wires, etc;
4. Meet RoHS requirements.

|               |              |                        |        |      |
|---------------|--------------|------------------------|--------|------|
| C             | Cable sponge | PUF                    | black  |      |
| B             | RF connector | Cable                  | black  |      |
| A             | FPC          | PI electrolytic copper | black  |      |
| serial number | Part Name    | material               | colour | Note |

|   |               |                        |   |                 |           |
|---|---------------|------------------------|---|-----------------|-----------|
|  <b>Shenzhen Topant Technology Co., Ltd.</b> |               |                        |   |                 |           |
| Machine model   | A3166         | Product Color          | Black   | date            | 2023/8/31 |
| Project Code  | CA-3166X-041  | Mold surface treatment | NA  | MD              | BIYEZHI   |
| Part Name   | BT antenna    | unit                   | mm  | scale           | 1:1       |
| Part Number   | 1A-3166X-041  | Third perspective      |  | check           | wuxihuan  |
| material  | FPC+sponge+RF |                        |   | ratify          | ZHANGLEI  |
| Save Path   | connector     |                        |   | current version | A         |

|         |               |           |      |
|---------|---------------|-----------|------|
|         |               |           |      |
| A       | Initial Issue | 2023/8/31 |      |
| Edition | Describe      | Date      | Note |