

25.09.01

RA-N2509-91

# APPROVAL SHEET

**MODEL : Mesh On  
Antenna layout**

| Review | Consent | Approval |
|--------|---------|----------|
|        |         |          |
|        |         |          |

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|                                                                                   |                        |                |                |     |      |        |
|-----------------------------------------------------------------------------------|------------------------|----------------|----------------|-----|------|--------|
|  | PRODUCT APPROVAL SHEET |                | GRSN250901BT91 |     |      |        |
|                                                                                   | MODEL NAME             | <b>Mesh On</b> | REV.           | 1.0 | Page | 2 / 10 |

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## 1. Revision History

| NO. | Before | After | Reason | Date |
|-----|--------|-------|--------|------|
| 1   |        |       |        |      |
| 2   |        |       |        |      |
| 3   |        |       |        |      |
| 4   |        |       |        |      |
| 5   |        |       |        |      |
| 6   |        |       |        |      |
| 7   |        |       |        |      |
| 8   |        |       |        |      |
| 9   |        |       |        |      |
| 10  |        |       |        |      |
| 11  |        |       |        |      |
| 12  |        |       |        |      |
| 13  |        |       |        |      |

|                                                                                   |                        |         |                |     |      |        |
|-----------------------------------------------------------------------------------|------------------------|---------|----------------|-----|------|--------|
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## 2.Product Information

### 2.1 General Features

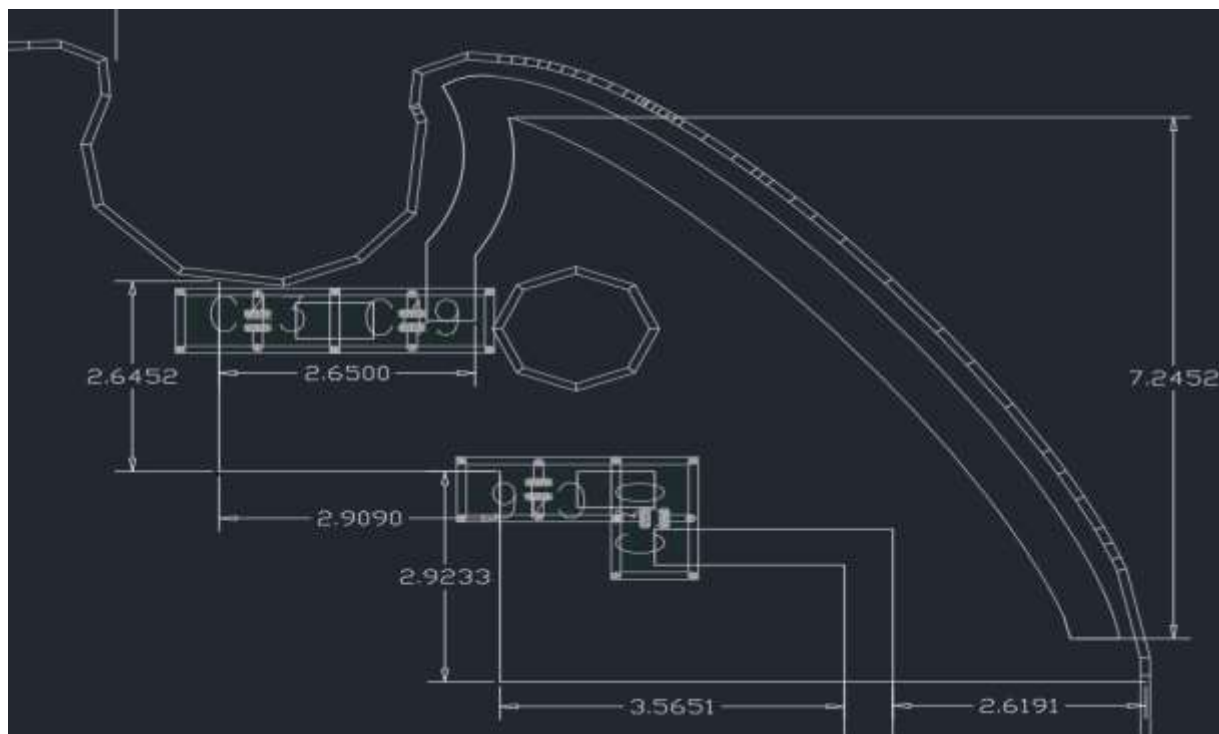
|              |                     |
|--------------|---------------------|
| PART NUMBER  | GradiANT            |
| ANTENNA TYPE | PCB pattern Antenna |
| APPLICATIONS | Bluetooth           |

### 2.2 Electrical Specifications

|                       |    |                   |         |
|-----------------------|----|-------------------|---------|
| Frequency Range1 (TX) |    | 2400MHz~2485MHz   |         |
| Frequency Range1 (RX) |    | 2400MHz~2485MHz . |         |
| IMPEDANCE             |    | 50 Ω              |         |
| V.S.W.R               | TX | 2400MHz           | 2485MHz |
|                       |    | 5 ↓               | 5 ↓     |
|                       | RX | 2400MHz           | 2485MHz |
|                       |    | 5 ↓               | 5 ↓     |
| RADIATION PATTERN     |    | Omni-directional  |         |
| POLARIZATION          |    | Linear            |         |

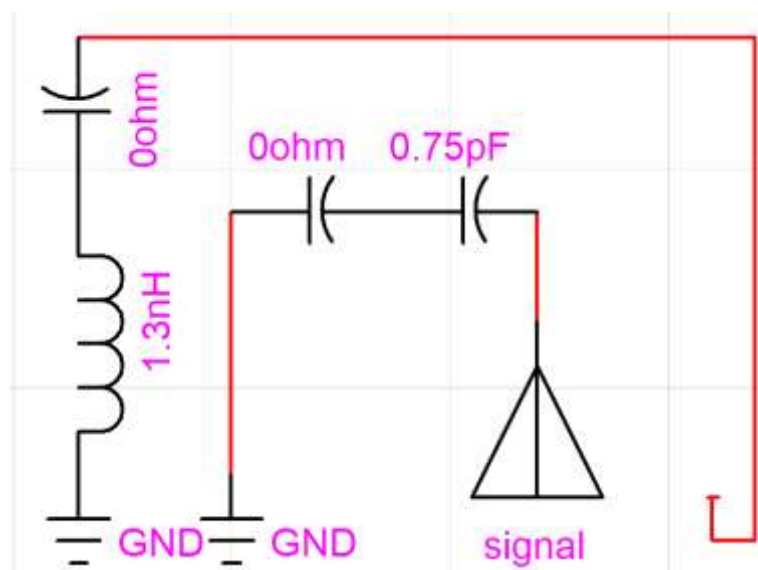
|                                                                                   |                        |         |                |     |      |        |
|-----------------------------------------------------------------------------------|------------------------|---------|----------------|-----|------|--------|
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### 3. Pattern Specifications



### 4. Matching Network

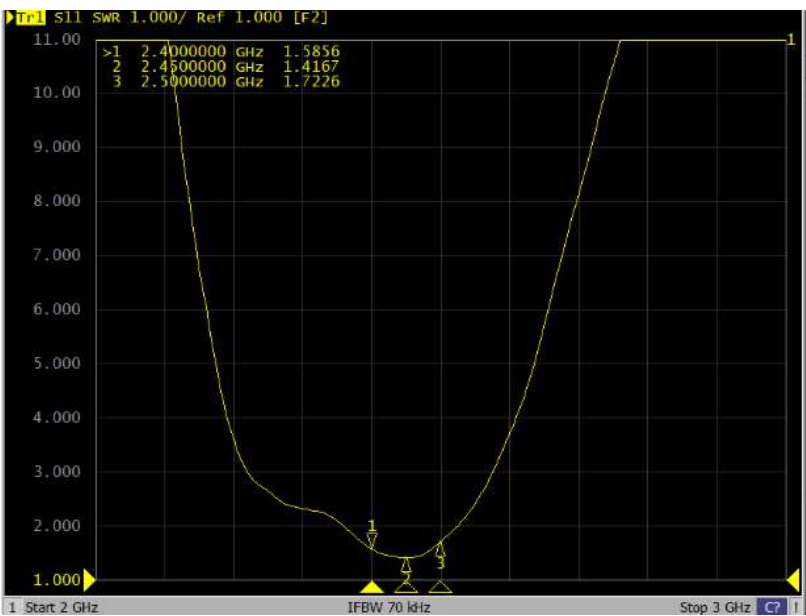
Capacitor value can be changed depending on different situation



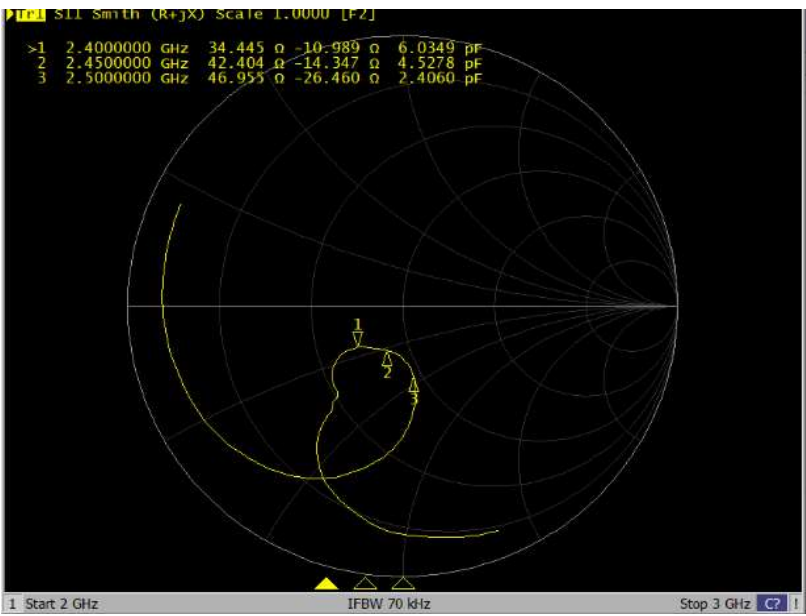
|                                                                                   |                        |         |                |     |      |        |
|-----------------------------------------------------------------------------------|------------------------|---------|----------------|-----|------|--------|
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5. Electrical Characterristics

5.1 VSWR

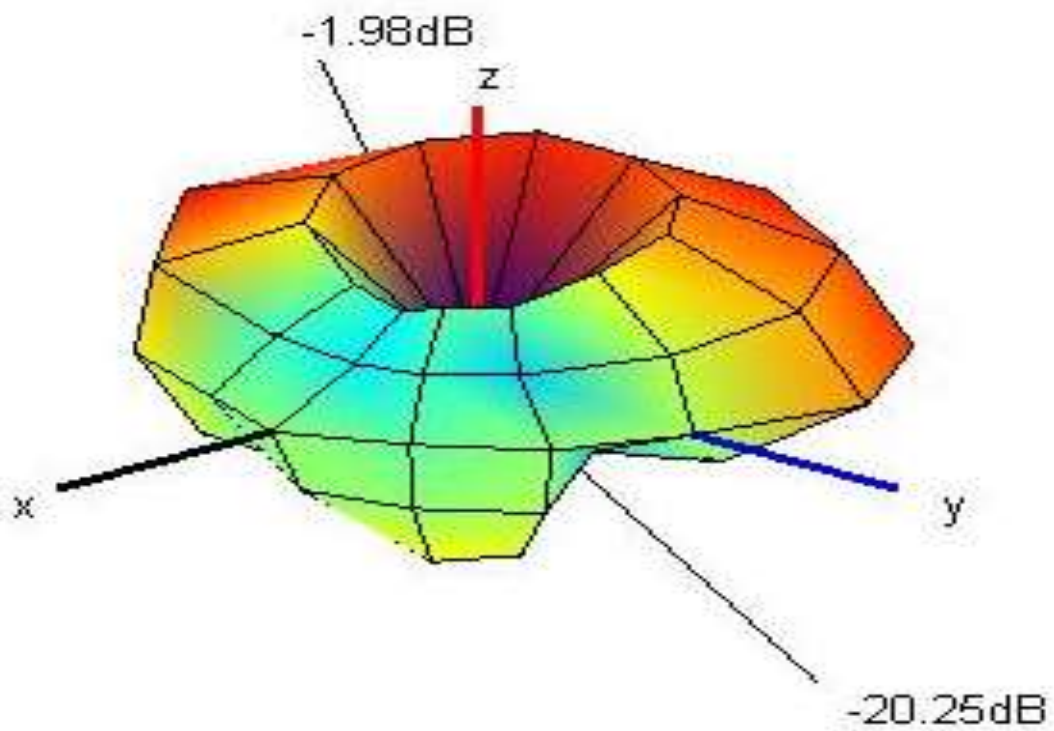


5.2 SMITH CHART

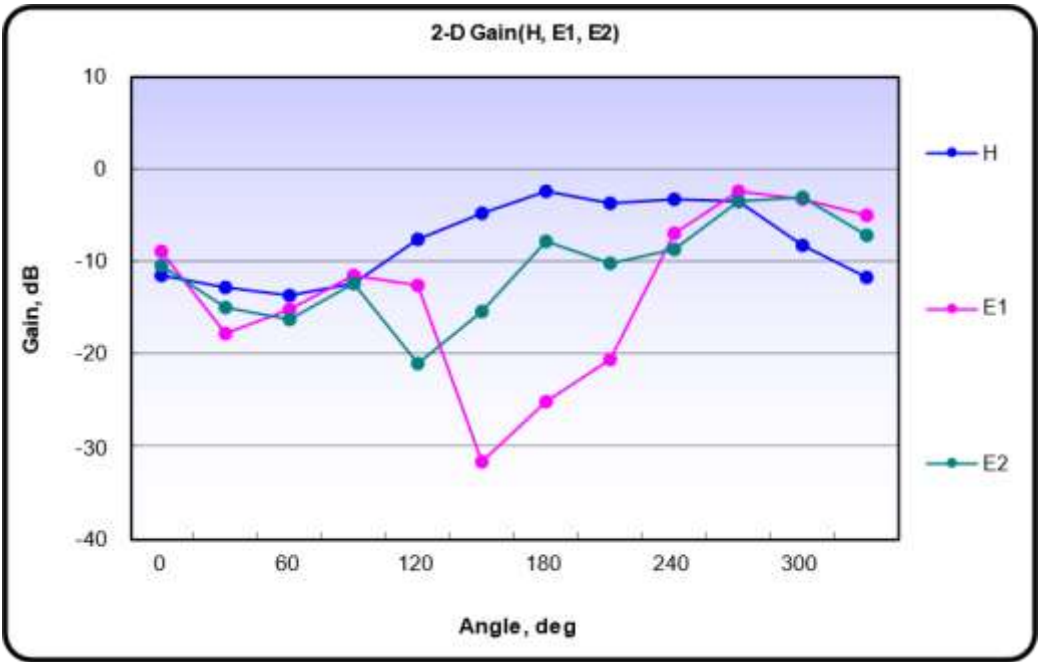


|                                                                                   |                        |         |                |     |      |        |
|-----------------------------------------------------------------------------------|------------------------|---------|----------------|-----|------|--------|
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5.3 3D-PLOTs



5.4 2D-Gain



|                                                                                   |                        |         |                |     |      |        |
|-----------------------------------------------------------------------------------|------------------------|---------|----------------|-----|------|--------|
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## 6. Passive Measurement

|                             | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Frequency [MHz]             | 2400   | 2405   | 2410   | 2415   | 2420   | 2425   | 2430   | 2435   | 2440   | 2445   |
| Efficiency [dB]             | -7.51  | -7.57  | -7.32  | -7.20  | -7.18  | -7.28  | -7.10  | -7.07  | -7.11  | -6.83  |
| Efficiency [%]              | 17.7   | 17.5   | 18.5   | 19.1   | 19.2   | 18.7   | 19.5   | 19.6   | 19.4   | 20.7   |
|                             |        |        |        |        |        |        |        |        |        |        |
| TRG <sub>θ</sub> [dB]       | -8.67  | -8.82  | -8.46  | -8.47  | -8.36  | -8.46  | -8.25  | -8.21  | -8.27  | -7.94  |
| Gain <sub>θ Peak</sub> [dB] | -2.18  | -2.12  | -2.14  | -2.23  | -2.50  | -2.37  | -1.95  | -2.14  | -2.77  | -1.99  |
| Gain <sub>θ Min</sub> [dB]  | -28.80 | -25.73 | -29.13 | -27.16 | -36.03 | -34.71 | -28.09 | -28.29 | -26.18 | -35.70 |
| TRG <sub>φ</sub> [dB]       | -13.81 | -13.61 | -13.69 | -13.16 | -13.41 | -13.53 | -13.42 | -13.43 | -13.42 | -13.30 |
| Gain <sub>φ Peak</sub> [dB] | -7.28  | -6.59  | -6.70  | -5.84  | -5.88  | -7.17  | -6.70  | -6.95  | -7.16  | -6.84  |
| Gain <sub>φ Min</sub> [dB]  | -36.04 | -39.35 | -39.48 | -34.96 | -36.73 | -34.55 | -42.86 | -28.21 | -50.88 | -30.29 |
| UHRG [dB]                   | -9.38  | -9.43  | -9.21  | -9.11  | -9.05  | -9.28  | -9.08  | -9.03  | -9.11  | -8.83  |
| UHRG/TRG [%]                | 65.1   | 65.2   | 64.8   | 64.5   | 64.9   | 63.1   | 63.4   | 63.6   | 63.1   | 63.2   |
| H-Plane                     | -7.07  | -7.14  | -6.89  | -6.65  | -6.72  | -6.90  | -6.43  | -6.43  | -6.52  | -6.29  |
| E1-Plane, AVG [dB]          | -9.43  | -9.59  | -8.96  | -8.99  | -8.84  | -8.93  | -8.82  | -8.55  | -8.62  | -8.13  |
| E2-Plane, AVG [dB]          | -8.97  | -8.94  | -8.79  | -8.96  | -8.82  | -8.64  | -8.70  | -8.65  | -8.53  | -8.37  |
| Peak Gain [dB]              | -2.17  | -2.11  | -2.13  | -2.23  | -2.32  | -2.32  | -1.90  | -2.12  | -2.50  | -1.98  |
| Directivity [dB]            | 5.35   | 5.46   | 5.19   | 4.97   | 4.85   | 4.96   | 5.19   | 4.95   | 4.61   | 4.86   |
| Minimum Gain [dB]           | -20.20 | -20.34 | -22.54 | -21.03 | -26.43 | -19.28 | -25.59 | -21.41 | -21.00 | -20.25 |

|                             | 11     | 12     | 13     | 14     | 15     | 16     | 17     | 18     | 19     | 20     |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Frequency [MHz]             | 2450   | 2455   | 2460   | 2465   | 2470   | 2475   | 2480   | 2485   | 2490   | 2497   |
| Efficiency [dB]             | -7.18  | -7.05  | -7.13  | -7.25  | -7.27  | -7.43  | -7.19  | -8.07  | -8.03  | -7.88  |
| Efficiency [%]              | 19.1   | 19.7   | 19.3   | 18.8   | 18.8   | 18.1   | 19.1   | 15.6   | 15.8   | 16.3   |
|                             |        |        |        |        |        |        |        |        |        |        |
| TRG <sub>θ</sub> [dB]       | -8.32  | -8.11  | -8.23  | -8.37  | -8.32  | -8.47  | -8.14  | -9.08  | -9.03  | -8.84  |
| Gain <sub>θ Peak</sub> [dB] | -2.59  | -2.41  | -2.22  | -2.42  | -2.77  | -2.43  | -2.40  | -3.69  | -3.58  | -2.96  |
| Gain <sub>θ Min</sub> [dB]  | -33.51 | -44.01 | -29.98 | -38.89 | -35.33 | -26.41 | -31.07 | -29.84 | -27.17 | -33.59 |
| TRG <sub>φ</sub> [dB]       | -13.56 | -13.70 | -13.66 | -13.69 | -13.96 | -14.15 | -14.26 | -14.87 | -14.87 | -14.91 |
| Gain <sub>φ Peak</sub> [dB] | -6.79  | -7.46  | -7.77  | -7.32  | -7.44  | -8.53  | -8.36  | -7.70  | -9.08  | -9.42  |
| Gain <sub>φ Min</sub> [dB]  | -36.19 | -50.58 | -35.89 | -30.74 | -28.86 | -41.98 | -28.59 | -35.41 | -35.77 | -38.98 |
| UHRG [dB]                   | -9.07  | -9.07  | -9.11  | -9.29  | -9.33  | -9.49  | -9.29  | -10.09 | -10.15 | -10.01 |
| UHRG/TRG [%]                | 64.7   | 62.8   | 63.4   | 62.5   | 62.2   | 62.2   | 61.7   | 62.7   | 61.3   | 61.2   |
| H-Plane                     | -6.61  | -6.50  | -6.34  | -6.79  | -6.72  | -6.90  | -6.24  | -7.71  | -7.48  | -7.47  |
| E1-Plane, AVG [dB]          | -8.67  | -8.71  | -8.46  | -8.51  | -8.46  | -8.78  | -8.61  | -9.45  | -9.26  | -9.11  |
| E2-Plane, AVG [dB]          | -8.62  | -8.43  | -8.90  | -8.68  | -9.20  | -8.82  | -8.92  | -9.46  | -9.64  | -9.18  |
| Peak Gain [dB]              | -2.52  | -2.37  | -1.82  | -2.40  | -2.65  | -2.39  | -2.07  | -3.54  | -3.12  | -2.89  |
| Directivity [dB]            | 4.66   | 4.68   | 5.31   | 4.85   | 4.62   | 5.05   | 5.12   | 4.53   | 4.90   | 5.00   |
| Minimum Gain [dB]           | -19.54 | -17.98 | -21.60 | -20.16 | -18.87 | -20.95 | -20.96 | -17.79 | -18.29 | -17.78 |

|                    |          |        |
|--------------------|----------|--------|
| Average Efficiency | -7.32dBi | 18.53% |
| Peak Gain          | -1.82dBi |        |